MITSUBISHI ELECTRIC

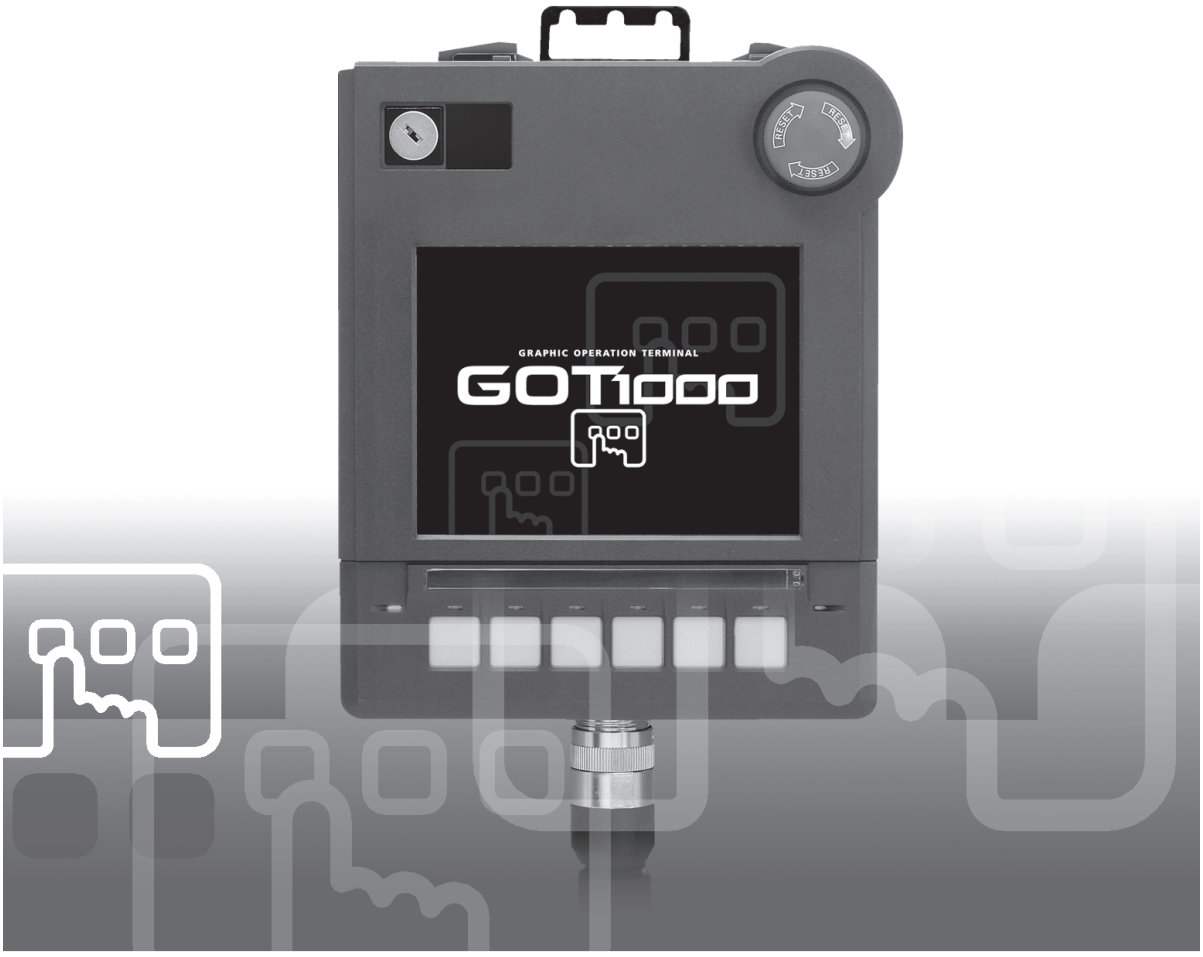
GRAPHIC OPERATION TERMINAL GOT

GRAPHIC OPERATION TERMINAL

GOT1000

GT11 Handy GOT User's Manual

(Hardware · Utility)



●SAFETY PRECAUTION●

(Read these precautions before using.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The precautions given in this manual are concerned with this product.
In this manual, the safety precautions are ranked as "WARNING" and "CAUTION"

⚠ WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Depending on circumstances, procedures indicated by "CAUTION" may also be linked to serious results.
In any case, it is important to follow the directions for usage.

[DESIGN PRECAUTIONS]

⚠WARNING

- Some failures of the GOT or cable may keep the outputs on or off.
  Some failures of a touch panel may cause malfunction of the input objects such as a touch switch.
  An external monitoring circuit should be provided to check for output signals which may lead to a serious accident.
  Not doing so can cause an accident due to false output or malfunction.

- If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative.
  A system where the GOT is used should be configured to perform any significant operation to the system by using the switches of a device other than the GOT on the assumption that a GOT communication fault will occur.
  Not doing so can cause an accident due to false output or malfunction.

- Do not use the GOT as the warning device that may cause a serious accident.
  An independent and redundant hardware or mechanical interlock is required to configure the device that displays and outputs serious warning.
  Failure to observe this instruction may result in an accident due to incorrect output or malfunction.

[DESIGN PRECAUTIONS]

⚠WARNING

- Incorrect operation of the touch switch(s) may lead to a serious accident if the GOT backlight is gone out.
  When the GOT backlight goes out, the POWER LED blinks (green/orange) and the display section dims, while the input of the touch switch(s) remains active.
  This may confuse an operator in thinking that the GOT is in "screensaver" mode, who then tries to release the GOT from this mode by touching the display section, which may cause a touch switch to operate.
  Note that the following occurs on the GOT when the backlight goes out.
  ▪ The POWER LED flickers (green/orange) and the monitor screen appears blank.

⚠CAUTION

- Do not bundle the control and communication cables with main-circuit, power or other wiring.
  Run the above cables separately from such wiring and keep them a minimum of 100mm (3.94in.) apart. Not doing so noise can cause a malfunction.
- Do not press the GOT display section with a pointed material as a pen or driver.
  Doing so can result in a damage or failure of the display section.
- Before connecting to GOT, turn ON the controller to enable the communication.
  When the communication of controller is not available, a communication error may occur in GOT.

[MOUNTING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT to/from the panel .
- Always turn off the power ON/OFF switch on the connector conversion box before connecting or disconnecting the GOT to it.
  Connecting or disconnecting the GOT with the power being turned on may result in damage to the unit or malfunctions.
- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the relay cable onto/from the GOT.
- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the option function board onto/from the GOT.
  Not doing so can cause the unit to fail or malfunction.
- When installing the option function board or battery, or operating the reset switch, wear an earth band etc. to avoid the static electricity.
  The static electricity can cause the unit to fail or malfunction.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- Use the GOT in the environment that satisfies the general specifications described in this manual. Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- Never drop cutting chips and electric wire chips into the ventilation window of the Handy GOT when you drill screw holes or perform wiring.
  Otherwise, fire, failure or malfunction may be caused.
- Connect connection cables securely to the specified connectors while the power is turned OFF.
  Imperfect connection may cause malfunction or failure.
- When connecting cables, pay attention to the contents described in this section.
  Especially, attach the rear cover so that PCBs inside the Handy GOT are not interfered with connection cables.
- Securely connect the option function board to the connector provided for the board.
- When inserting/removing a CF card into/from the GOT, turn the CF card access switch off in advance. Failure to do so may corrupt data within the CF card.
- When inserting a CF card into the GOT, push it into the insertion slot until the CF card eject button will pop out. Failure to do so may cause a malfunction due to poor contact.
- When removing a CF card from the GOT, make sure to support the CF card by hand, as it may pop out. Failure to do so may cause the CF card to drop from the GOT and break.

[WIRING PRECAUTIONS]

⚠WARNING

- Make sure to attach the back cover to the Handy GOT before turning on the power and starting operation after the installation or wiring work.
  Otherwise, electrical shock may be caused.

- Be sure to shut off all phases of the external power supply used by the system before wiring. Failure to do so may result in an electric shock, product damage or malfunctions.

- Please make sure to ground FG terminal of the GOT power supply section by applying 100 or less which is used exclusively for the GOT. Not doing so may cause an electric shock or malfunction.

- Correctly wire the GOT power supply section after confirming the rated voltage and terminal arrangement of the product. Not doing so can cause a fire or failure.

- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT. Not doing so can cause a fire, failure or malfunction.

[WIRING PRECAUTIONS]

⚠CAUTION

- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.

- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.

- Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range.
  Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

[TEST OPERATION PRECAUTIONS]

⚠WARNING

- Before performing the test operations of the user creation monitor screen (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method.
  During test operation, never change the data of the devices which are used to perform significant operation for the system. False output or malfunction can cause an accident.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠WARNING

- When power is on, do not touch the terminals.
  Doing so can cause an electric shock or malfunction.

- Connect the battery correctly. Do not discharge, disassemble, heat, short, solder or throw the battery into the fire. Incorrect handling may cause the battery to generate heat, burst or take fire, resulting in injuries or fires.

- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases. Not switching the power off in all phases can cause a unit failure or malfunction. Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

[STARTUP/MAINTENANCE PRECAUTIONS

⚠CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire

- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.

- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.

- When unplugging the cable connected to the unit, do not hold and pull the cable portion. Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.

- Replace battery with GT11-50BAT by Mitsubishi electric Co. only.
  Use of another battery may present a risk of fire or explosion.

- Dispose of used battery promptly.
  Keep away from children. Do not disassemble and do not dispose of in fire.

[DISPOSAL PRECAUTIONS]

⚠CAUTION

- When disposing of the product, handle it as industrial waste.
  When disposing of batteries, separate them from other wastes according to the local regulations.
  (For details of the battery directive in EU member states, refer to 18.4 2 .)

[TRANSPORTATION PRECAUTIONS]

⚠CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations.

- Before transporting the GOT, turn the GOT power on and check that the battery voltage status is normal on the Time setting & display screen (utilities screen). In addition, confirm that the adequate battery life remains on the rating plate.
  Transporting the GOT with the low battery voltage or the battery the reached battery life may unstabilize the backup data unstable during transportation.

- Make sure to transport the GOT main unit and/or relevant unit(s) in the manner they will not be exposed to the impact exceeding the impact resistance described in the general specifications of this manual, as they are precision devices. Failure to do so may cause the unit to fail.
  Check if the unit operates correctly after transportation.

REVISIONS

The manual number is given on the bottom left of the back cover.

Print Date	Manual Number	Ver.	Revision
Mar. 2006	JY997D20101	A	First edition
Oct. 2006	JY997D20101	B	Partial correcting SAFETY PRECAUTION, ABOUT MANUALS, Chapter 36, Chapter 37, Section 38.1, Chapter 40, Chapter 43 Partial additions ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, Chapter 2, Section 7.1, 8.1, Chapter 9, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 27, 28, 30, 31, 32, 33, 34, 35 Additions Section 6.7, Chapter 17, 18, 26, 29, Section 40.7, 41.8, 41.9
Feb. 2007	JY997D20101	C	Partial additions ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, Chapter 11, Chapter 20
May 2007	JY997D20101	D	Partial additions ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, Chapter19, Chapter22, Section25.3, 26.3, 28.3, 29.3, 30.3, Chapter31 Additions Chapter27
Aug.2007	JY997D20101	E	Partial correcting Section3.2 Partial additions ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, Section 2.2, Chapter10, Section11.1.3, 17.1, 18.1, 26.1, 30.1, Chapter32, Chapter33, Section34.1, Appendix3
Dec.2007	JY997D20101	F	Partial correcting ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, Section3.2, 32.1, 32.3, 35.3.1, 42.7.3, 45.1 Partial additions Section 10.1.9, 10.2.7, 10.3, 32.2
Feb.2008	JY997D20101	G	Partial correcting Chapter16, 23 Partial additions ABBREVIATIONS AND GENERIC TERMS IN THIS MANUAL, Chapter12, 36, 37 Additions Chapter15

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Print Date	Manual Number	Ver.	Revision
Oct. 2008	JY997D20101	H	Partial correcting HOW TO READ THIS MANUAL, Section 3.1, 3.2, 8.1, 9.4, 10.1, 23.1, 26.1, 35.1, 36.3, 39.1, 39.2, 41.2, Appendix 3.1, 3.2, WARRANTY Partial additions ABBREVIATIONS AND GENERIC TERMS, Section 2.2, 10.1, 10.2, 10.3, 11.1, 15.1, Chapter 30, 35, Section 39.3, Appendix 3.1, 3.2 Additions Chapter 13, 25, 26
Dec. 2008	JY997D20101	J	Partial additions Section 36.1, 36.2, 40.1, 40.2
Mar. 2009	JY997D20101	K	Partial correcting HOW TO READ THIS MANUAL, Chapter 14, 21 Partial additions Section 3.1, Chapter 38 Partial additions Chapter 29
Oct. 2009	JY997D20101 JY997D20102	L	Partial additions ABOUT MANUALS, ABBREVIATIONS AND GENERIC TERMS, HOW TO READ THIS MANUAL, Chapter 1, Section 2.2, 3.2, 5.1, 6.3, Chapter 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 21, 22, 29, 34, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50, 52, 53 Additions Section 13.2, 13.3, 13.4, Chapter 41
Jan. 2010	JY997D20101 JY997D20102	M	Partial correcting Section 5.1, 7.1, Chapter 9, 11, 13, Section 18.4, 27.1, 28.1, 30.1, 34.1, 37.1, Chapter 41, 45 Partial additions SAFETY PRECAUTION, ABBREVIATIONS AND GENERIC TERMS, HOW TO READ THIS MANUAL, Section 6.4, 19.3, Chapter 22, 23, 33, 44, 49, 54 Additions Chapter 40
Jun. 2010	JY997D20101 JY997D20102	N	Partial correcting HOW TO READ THIS MANUAL, Chapter 8, 10, 12, 13, 29, 31, 32, 33, 34, 35, 36, 39, 42, 43, 45, 46, 47, 48, 49, 53, 54, 55 56 Partial additions ABBREVIATIONS AND GENERIC TERMS, Section 2.2, Chapter 6, Section 12.1.3, 15.4.2, Chapter 22, 23, 27, 44, 57 Additions Chapter 50, 51, 52

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Print Date	Manual Number	Ver.	Revision
Oct. 2010	JY997D20101 JY997D20102	P	Partial correcting HOW TO READ THIS MANUAL, Chapter 12, Section 20.1, Chapter 22, 25, 32, Section 51.2 Partial additions ABBREVIATIONS AND GENERIC TERMS, Section 2.2, 3.2, 6.4, 9.3, Chapter 23, 41, 49, 57
Jan. 2011	JY997D20101 JY997D20102	Q	Partial correcting HOW TO READ THIS MANUAL Partial additions ABBREVIATIONS AND GENERIC TERMS, Section 4.2, 8.3, 10.5, 39.1, 43.2, Chapter 45, 46, 47, 49, 50, 53, 57
Apr. 2011	JY997D20101 JY997D20102	R	Partial correcting HOW TO READ THIS MANUAL Partial additions ABBREVIATIONS AND GENERIC TERMS, Section 3.2, 10.2, Chapter 24, 34, 36, 49
Jul. 2011	JY997D20101 JY997D20102	S	Partial correcting HOW TO READ THIS MANUAL Partial additions SAFETY PRECAUTION, ABBREVIATIONS AND GENERIC TERMS, Section 3.2, Chapter 48, 49, 51 Additions Chapter 53
Oct. 2011	JY997D20101 JY997D20102	T	Partial correcting HOW TO READ THIS MANUAL Partial additions ABBREVIATIONS AND GENERIC TERMS, Chapter 50
Apr. 2012	JY997D20101 JY997D20102	U	Partial correcting HOW TO READ THIS MANUAL, Section 3.1 Partial additions ABBREVIATIONS AND GENERIC TERMS, Section 13.4, Chapter 22, 34.
Jun. 2012	JY997D20101 JY997D20102	V	Partial correcting ABBREVIATIONS AND GENERIC TERMS, HOW TO READ THIS MANUAL, Section 2.2, Chapter 33 Partial additions Chapter 46, 55

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Sep. 2012	JY997D20101 JY997D20102	W	Partial correcting SAFETY PRECAUTION, Section 54.3 Partial additions Section 29.1, 50.1.5, 58.1.1
Nov. 2012	JY997D20101 JY997D20102	X	Partial correcting HOW TO READ THIS MANUAL, Section 23.1, 49.1, 54.1, 54.2.9, 58.1 Partial additions Section 54.2.11
Feb. 2013	JY997D20101 JY997D20102	Y	Partial correcting SAFETY PRECAUTION Partial additions Section 34.1.3
Jun. 2013	JY997D20101 JY997D20102	Z	Partial correcting Section 3.2, 5, 13.4, 22.1, 32, 33, 37, 39.1.2, 39.1.3, 47
Jan. 2014	JY997D20101 JY997D20102	AA	Compatible with GT Works3 Version1.108N • FREQROL-A800/F800 and FR-E700EX compatible • Azbil (former Yamatake) temperature controller (AHC2001) compatible • FX3U-232-ADP-MB compatible • RS-422/485 adapter (L6ADP-R4) compatible • FA transparent function (MX Component 4.03D) compatible • YOKOGAWA temperature controller (UT75A) compatible • MELSERVO-JE compatible
Apr. 2014	JY997D20101 JY997D20102	AB	Compatible with GT Works3 Version1.112S • Q24DHCCPU-VG is supported. • The enlargement of the communication setting range of the TOSHIBA PLC is supported. • The ALLEN-BRADLEY PLC MicroLogix1400 is supported. • Indirect specification all station specification for the station No. of MODBUS/RTU are supported.
Apr. 2015	JY997D20101 JY997D20102	AC	A part of the cover design is changed.
Dec. 2015	JY997D20101 JY997D20102	AD	Compatible with GT Works3 Version1.150G • FA Transparent Function MX Component Ver 4.11M is supported. • The PC link module F3LC11-2F of PLCs manufactured by Yokogawa Electric Corporation is supported.
Jun. 2020	JY997D20101 JY997D20102	AE	Some corrections

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Print Date	Manual Number	Ver.	Revision
Oct. 2022	JY997D20101 JY997D20102	AF	Some corrections

MEMO

INTRODUCTION

Thank you for choosing the Mitsubishi Electric Graphic Operation Terminal.
Before using the equipment, please read this manual carefully to use the equipment to its optimum.

OUTLINE PRECAUTIONS

- This manual provides information for the use of the graphic operation terminal. The manual has been written to be used by trained and competent personnel. The definition of such a person or persons is as follows;
  1) Any engineer who is responsible for the planning, design and construction of automatic equipment using the product associated with this manual should be of a competent nature, trained and qualified to the local and national standards required to fulfill that role. These engineers should be fully aware of all aspects of safety with regards to automated equipment.
  2) Any commissioning or service engineer must be of a competent nature, trained and qualified to the local and national standards required to fulfill that job. These engineers should also be trained in the use and maintenance of the completed product. This includes being completely familiar with all associated documentation for the said product. All maintenance should be carried out in accordance with established safety practices.
  3) All operators of the completed equipment should be trained to use that product in a safe and coordinated manner in compliance to established safety practices. The operators should also be familiar with documentation which is connected with the actual operation of the completed equipment.

  Note: the term 'completed equipment' refers to a third party constructed device which contains or uses the product associated with this manual.
- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi Electric.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.
- When using this product combining other products, please confirm the standard and the code, or regulation which a user should suit. Moreover, please confirm the compatibility of this product to the system, machine, and apparatus with which a user is used for user itself.
- If in doubt at any stage of the installation of the product always consult a professional electrical engineer who is qualified and trained to the local and national standards. If in doubt about the operation or use, please consult the nearest Mitsubishi Electric distributor.
- Since the example indicated by this manual, technical bulletin, the catalog, etc. is reference, please use it after confirming the function and safety of equipment and system when employing. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.
- About this manual content, specification etc. may be changed without a notice for improvement.
- The information in this manual has been carefully checked and is believed to be accurate; however, you have noticed a doubtful point, a doubtful error, etc., please contact the nearest Mitsubishi Electric distributor.

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GT11 Handy GOT User's Manual 2/2

21. HANDLING OF POWER WIRING AND SWITCH .....21-1 to 21-20

22. CONNECTION TO MITSUBISHI PLC .....22-1 to 22-65

ABOUT MANUALS

The following manuals are also related to this product.
In necessary, order them by quoting the details in the tables below.

Related Manuals

Manual Name	Manual Number (Model Code)
GT Designer2 Version2 Basic Operation/Data Transfer Manual (For GOT1000 Series) Describes methods of the GT Designer2 installation operation, basic operation for drawing and transmitting data to GOT1000 series. (Sold separately) *1	SH-080529ENG (1D7M24)
GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 1/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 2/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 3/3 Describes specifications and settings of the object functions used in GT Designer2. (Sold separately) *1	SH-080530ENG (1D7M25)
GT Designer3 Version1 Screen Design Manual (For GOT1000 Series) (Fundamentals)1/2, 2/2 Describes methods of the GT Designer3 installation operation, basic operation for drawing and transmitting data to GOT1000 series. (Sold separately) *1	SH-080866ENG (1D7MB9)
GT Designer3 Version1 Screen Design Manual (For GOT1000 Series) (Functions)1/2 GT Designer3 Version1 Screen Design Manual (For GOT1000 Series) (Functions)2/2 Describes specifications and settings of the object functions used in GT Designer3. (Sold separately) *1	SH-080867ENG (1D7MC1)

*1 The manual in PDF-format is included in the GT Works2, GT Designer2, GT Works3 and GT Designer3 products.

ABBREVIATIONS AND GENERIC TERMS

■ GOT

Abbreviations and generic terms			Description
GOT1000 Series	GT1695	GT1695M-X	Abbreviation of GT1695M-XTBA, GT1695M-XTBD
	GT1685	GT1685M-S	Abbreviation of GT1685M-STBA, GT1685M-STBD
	GT1675	GT1675M-S	Abbreviation of GT1675M-STBA, GT1675M-STBD
		GT1675M-V	Abbreviation of GT1675M-VTBA, GT1675M-VTBD
		GT1675-VN	Abbreviation of GT1675-VNBA, GT1675-VNBD
	GT1672	GT1672-VN	Abbreviation of GT1672-VNBA, GT1672-VNBD
	GT1665	GT1665M-S	Abbreviation of GT1665M-STBA, GT1665M-STBD
		GT1665M-V	Abbreviation of GT1665M-VTBA, GT1665M-VTBD
	GT1662	GT1662-VN	Abbreviation of GT1662-VNBA, GT1662-VNBD
	GT1655	GT1655-V	Abbreviation of GT1655-VTBD
	GT16		Abbreviation of GT1695, GT1685, GT1675, GT1672, GT1665, GT1662, GT1655, GT16 Handy GOT
	GT1595	GT1595-X	Abbreviation of GT1595-XTBA, GT1595-XTBD
	GT1585	GT1585V-S	Abbreviation of GT1585V-STBA, GT1585V-STBD
		GT1585-S	Abbreviation of GT1585-STBA, GT1585-STBD
	GT157□	GT1575V-S	Abbreviation of GT1575V-STBA, GT1575V-STBD
		GT1575-S	Abbreviation of GT1575-STBA, GT1575-STBD
		GT1575-V	Abbreviation of GT1575-VTBA, GT1575-VTBD
		GT1575-VN	Abbreviation of GT1575-VNBA, GT1575-VNBD
		GT1572-VN	Abbreviation of GT1572-VNBA, GT1572-VNBD
	GT156□	GT1565-V	Abbreviation of GT1565-VTBA, GT1565-VTBD
		GT1562-VN	Abbreviation of GT1562-VNBA, GT1562-VNBD
	GT155□	GT1555-V	Abbreviation of GT1555-VTBD
		GT1555-Q	Abbreviation of GT1555-QTBD, GT1555-QSBD
		GT1550-Q	Abbreviation of GT1550-QLBD
	GT15		Abbreviation of GT1595, GT1585, GT157□, GT156□, GT155□
	GT145□	GT1455-Q	Abbreviation of GT1455-QTBDE, GT1455-QTBD
		GT1450-Q	Abbreviation of GT1450-QLBDE, GT1450-QLBD
	GT14		Abbreviation of GT1455-Q, GT1450-Q
	GT1275	GT1275-V	Abbreviation of GT1275-VNBA, GT1275-VNBD
	GT1265	GT1265-V	Abbreviation of GT1265-VNBA, GT1265-VNBD
	GT12		Abbreviation of GT1275, GT1265
	GT115□	GT1155-Q	Abbreviation of GT1155-QTBDQ, GT1155-QSBDQ, GT1155-QTBDA, GT1155-QSBDA, GT1155-QTBD, GT1155-QSBD
		GT1150-Q	Abbreviation of GT1150-QLBDQ, GT1150-QLBDA, GT1150-QLBD
	GT11		Abbreviation of GT115□, GT11 Handy GOT,
	GT105□	GT1055-Q	Abbreviation of GT1055-QSBD
		GT1050-Q	Abbreviation of GT1050-QBBD
	GT104□	GT1045-Q	Abbreviation of GT1045-QSBD
		GT1040-Q	Abbreviation of GT1040-QBBD
	GT1030		Abbreviation of GT1030-LBD, GT1030-LBD2, GT1030-LBL, GT1030-LBDW, GT1030-LBDW2, GT1030-LBLW, GT1030-LWD, GT1030-LWD2, GT1030-LWL, GT1030-LWDW, GT1030-LWDW2, GT1030-LWLW, GT1030-HBD, GT1030-HBD2, GT1030-HBL, GT1030-HBDW, GT1030-HBDW2, GT1030-HBLW, GT1030-HWD, GT1030-HWD2, GT1030-HWL, GT1030-HWDW, GT1030-HWDW2, GT1030-HWLW
	GT1020		Abbreviation of GT1020-LBD, GT1020-LBD2, GT1020-LBL, GT1020-LBDW, GT1020-LBDW2, GT1020-LBLW, GT1020-LWD, GT1020LWD2, GT1020-LWL, GT1020-LWDW, GT1020-LWDW2, GT1020-LWLW
	GT10		Abbreviation of GT105□, GT104□, GT1030, GT1020

Abbreviations and generic terms				Description
GOT1000 Series	Handy GOT	GT16 Handy GOT	GT1665HS-V	Abbreviation of GT1665HS-VTBD
		GT11 Handy GOT	GT1155HS-Q	Abbreviation of GT1155HS-QSBD
			GT1150HS-Q	Abbreviation of GT1150HS-QLBD
	GT SoftGOT1000			Abbreviation of GT SoftGOT1000
GOT900 Series				Abbreviation of GOT-A900 series, GOT-F900 series
GOT800 Series				Abbreviation of GOT-800 series

■ Communication unit

Abbreviations and generic terms	Description
Bus connection unit	GT15-QBUS, GT15-QBUS2, GT15-ABUS, GT15-ABUS2, GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE
RS-422 conversion unit	GT15-RS2T4-9P, GT15-RS2T4-25P
Ethernet communication unit	GT15-J71E71-100
MELSECNET/H communication unit	GT15-J71LP23-25, GT15-J71BR13
MELSECNET/10 communication unit	GT15-75J71LP23-Z[*1], GT15-75J71BR13-Z[*2]
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX
CC-Link IE Field Network communication unit	GT15-J71GF13-T2
CC-Link communication unit	GT15-J61BT13, GT15-75J61BT13-Z[*3]
Interface converter unit	GT15-75IF900
Serial multi-drop connection unit	GT01-RS4-M
Connection Conversion Adapter	GT10-9PT5S
RS-232/485 signal conversion adapter	GT14-RS2T4-9P

*1 A9GT-QJ71LP23 + GT15-75IF900 set
*2 A9GT-QJ71BR13 + GT15-75IF900 set
*3 A8GT-J61BT13 + GT15-75IF900 set

■ Option unit

Abbreviations and generic terms		Description
Printer unit		GT15-PRN
Video/RGB unit	Video input unit	GT16M-V4, GT15V-75V4
	RGB input unit	GT16M-R2, GT15V-75R1
	Video/RGB input unit	GT16M-V4R1, GT15V-75V4R1
	RGB output unit	GT16M-ROUT, GT15V-75ROUT
Multimedia unit		GT16M-MMR
CF card unit		GT15-CFCD
CF card extension unit[*1]		GT15-CFEX-C08SET
External I/O unit		GT15-DIO, GT15-DIOR
Sound output unit		GT15-SOUT

*1 GT15-CFEX + GT15-CFEXIF + GT15-C08CF set.

■ Option

Abbreviations and generic terms		Description	
Memory card	CF card	GT05-MEM-16MC, GT05-MEM-32MC, GT05-MEM-64MC, GT05-MEM-128MC, GT05-MEM-256MC, GT05-MEM-512MC, GT05-MEM-1GC, GT05-MEM-2GC, GT05-MEM-4GC, GT05-MEM-8GC, GT05-MEM-16GC	
	SD card	L1MEM-2GBSD, L1MEM-4GBSD	
Memory card adaptor		GT05-MEM-ADPC	
Option function board		GT16-MESB, GT15-FNB, GT15-QFNB, GT15-QFNB16M, GT15-QFNB32M, GT15-QFNB48M, GT11-50FNB, GT15-MESB48M	
Battery		GT15-BAT, GT11-50BAT	
Protective Sheet		For GT16	GT16-90PSCB, GT16-90PSGB, GT16-90PSCW, GT16-90PSGW, GT16-80PSCB, GT16-80PSGB, GT16-80PSCW, GT16-80PSGW, GT16-70PSCB, GT16-70PSGB, GT16-70PSCW, GT16-70PSGW, GT16-60PSCB, GT16-60PSGB, GT16-60PSCW, GT16-60PSGW, GT16-50PSCB, GT16-50PSGB, GT16-50PSCW, GT16-50PSGW, GT16-90PSCB-012, GT16-80PSCB-012, GT16-70PSCB-012, GT16-60PSCB-012, GT16-50PSCB-012, GT16H-60PSC
		For GT15	GT15-90PSCB, GT15-90PSGB, GT15-90PSCW, GT15-90PSGW, GT15-80PSCB, GT15-80PSGB, GT15-80PSCW, GT15-80PSGW, GT15-70PSCB, GT15-70PSGB, GT15-70PSCW, GT15-70PSGW, GT15-60PSCB, GT15-60PSGB, GT15-60PSCW, GT15-60PSGW, GT15-50PSCB, GT15-50PSGB, GT15-50PSCW, GT15-50PSGW
		For GT14	GT14-50PSCB, GT14-50PSGB, GT14-50PSCW, GT14-50PSGW
		For GT12	GT11-70PSCB, GT11-65PSCB
		For GT11	GT11-50PSCB, GT11-50PSGB, GT11-50PSCW, GT11-50PSGW, GT11H-50PSC
		For GT10	GT10-50PSCB, GT10-50PSGB, GT10-50PSCW, GT10-50PSGW, GT10-40PSCB, GT10-40PSGB, GT10-40PSCW, GT10-40PSGW, GT10-30PSCB, GT10-30PSGB, GT10-30PSCW, GT10-30PSGW, GT10-20PSCB, GT10-20PSGB, GT10-20PSCW, GT10-20PSGW
Protective cover for oil		GT05-90PCO, GT05-80PCO, GT05-70PCO, GT05-60PCO, GT05-50PCO, GT16-50PCO, GT10-40PCO, GT10-30PCO, GT10-20PCO	
USB environmental protection cover		GT16-UCOV, GT16-50UCOV, GT15-UCOV, GT14-50UCOV, GT11-50UCOV	
Stand		GT15-90STAND, GT15-80STAND, GT15-70STAND, A9GT-50STAND, GT05-50STAND	
Attachment		GT15-70ATT-98, GT15-70ATT-87, GT15-60ATT-97, GT15-60ATT-96, GT15-60ATT-87, GT15-60ATT-77, GT15-50ATT-95W, GT15-50ATT-85	
Backlight		GT16-90XLTT, GT16-80SLTT, GT16-70SLTT, GT16-70VLTT, GT16-70VLTTA, GT16-70VLTN, GT16-60SLTT, GT16-60VLTT, GT16-60VLTN, GT15-90XLTT, GT15-80SLTT, GT15-70SLTT, GT15-70VLTT, GT15-70VLTN, GT15-60VLTT, GT15-60VLTN	
Multi-color display board		GT15-XHNB, GT15-VHNB	
Connector conversion box		GT11H-CNB-37S, GT16H-CNB-42S	
Emergency stop sw guard cover		GT11H-50ESCOV, GT16H-60ESCOV	
Memory loader		GT10-LDR	
Memory board		GT10-50FMB	
Panel-mounted USB port extension		GT14-C10EXUSB-4S, GT10-C10EXUSB-5S	

■ Software

Abbreviations and generic terms	Description
GT Works3	Abbreviation of the SW□DNC-GTWK3-E and SW□DNC-GTWK3-EA
GT Designer3	Abbreviation of screen drawing software GT Designer3 for GOT1000 series
GT Simulator3	Abbreviation of screen simulator GT Simulator3 for GOT1000/GOT900 series
GT SoftGOT1000	Abbreviation of monitoring software GT SoftGOT1000
GT Converter2	Abbreviation of data conversion software GT Converter2 for GOT1000/GOT900 series
GT Designer2 Classic	Abbreviation of screen drawing software GT Designer2 Classic for GOT900 series
GT Designer2	Abbreviation of screen drawing software GT Designer2 for GOT1000/GOT900 series
iQ Works	Abbreviation of iQ Platform compatible engineering environment MELSOFT iQ Works
MELSOFT Navigator	Generic term for integrated development environment software included in the SW□DNC-IQWK (iQ Platform compatible engineering environment MELSOFT iQ Works)
GX Works2	Abbreviation of SW□DNC-GXW2-E and SW□DNC-GXW2-EA type programmable controller engineering software
GX Simulator2	Abbreviation of GX Works2 with the simulation function
GX Simulator	Abbreviation of SW□D5C-LLT-E(-EV) type ladder logic test tool function software packages (SW5D5C-LLT (-EV) or later versions)
GX Developer	Abbreviation of SW□D5C-GPPW-E(-EV)/SW D5F-GPPW-E type software package
GX LogViewer	Abbreviation of SW□DNN-VIEWER-E type software package
PX Developer	Abbreviation of SW□D5C-FBDQ-E type FBD software package for process control
MT Works2	Abbreviation of motion controller engineering environment MELSOFT MT Works2 (SW□DNC-MTW2-E)
MT Developer	Abbreviation of SW□RNC-GSV type integrated start-up support software for motion controller Q series
MR Configurator2	Abbreviation of SW□DNC-MRC2-E type Servo Configuration Software
MR Configurator	Abbreviation of MRZJW□-SETUP□E type Servo Configuration Software
FR Configurator	Abbreviation of Inverter Setup Software (FR-SW□-SETUP-WE)
NC Configurator	Abbreviation of CNC parameter setting support tool NC Configurator
FX Configurator-FP	Abbreviation of parameter setting, monitoring, and testing software packages for FX3U-20SSC-H (SW□D5C-FXSSC-E)
FX3U-ENET-L Configuration tool	Abbreviation of FX3U-ENET-L type Ethernet module setting software (SW1D5-FXENETL-E)
RT ToolBox2	Abbreviation of robot program creation software (3D-11C-WINE)
MX Component	Abbreviation of MX Component Version□ (SW□D5C-ACT-E, SW□D5C-ACT-EA)
MX Sheet	Abbreviation of MX Sheet Version□ (SW□D5C-SHEET-E, SW□D5C-SHEET-EA)
QnUDVCPU & LCPU Logging Configuration Tool	Abbreviation of QnUDVCPU & LCPU Logging Configuration Tool (SW1DNN-LLUTL-E)

■ License key (for GT SoftGOT1000)

Abbreviations and generic terms	Description
License	GT15-SGTKEY-U, GT15-SGTKEY-P

■ Others

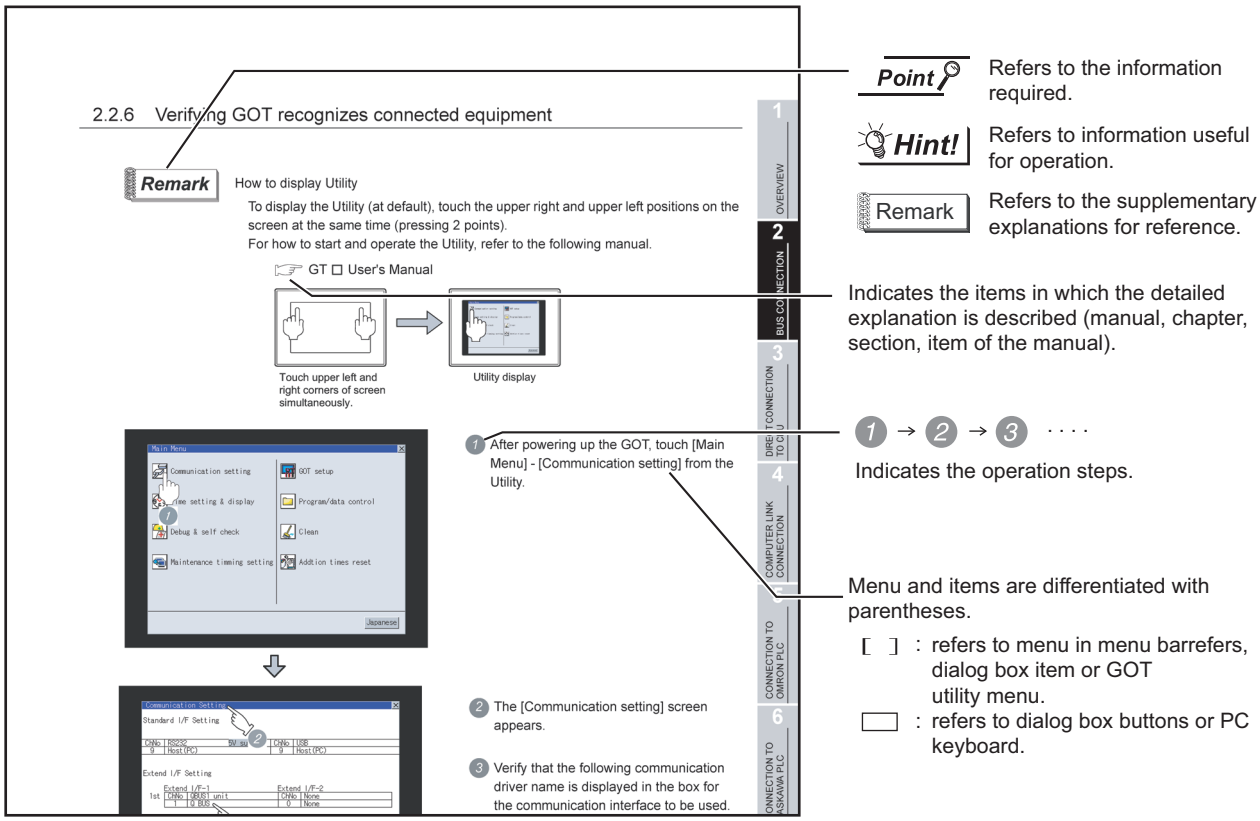
Abbreviations and generic terms	Description
IAI	Abbreviation of IAI Corporation
AZBIL	Abbreviation of Azbil Corporation (former Yamatake Corporation)
OMRON	Abbreviation of OMRON Corporation
KEYENCE	Abbreviation of KEYENCE CORPORATION
KOYO EI	Abbreviation of KOYO ELECTRONICS INDUSTRIES CO., LTD.
SHARP	Abbreviation of Sharp Manufacturing Systems Corporation
JTEKT	Abbreviation of JTEKT Corporation
SHINKO	Abbreviation of Shinko Technos Co., Ltd.
CHINO	Abbreviation of CHINO CORPORATION
TOSHIBA	Abbreviation of TOSHIBA CORPORATION
TOSHIBA MACHINE	Abbreviation of TOSHIBA MACHINE CO., LTD.
HITACHI IES	Abbreviation of Hitachi Industrial Equipment Systems Co., Ltd.
HITACHI	Abbreviation of Hitachi, Ltd.
FUJI	Abbreviation of FUJI ELECTRIC CO., LTD.
PANASONIC	Abbreviation of Panasonic Corporation
PANASONIC INDUSTRIAL DEVICES SUNX	Abbreviation of Panasonic Industrial Devices SUNX Co., Ltd.
YASKAWA	Abbreviation of YASKAWA Electric Corporation
YOKOGAWA	Abbreviation of Yokogawa Electric Corporation
ALLEN-BRADLEY	Abbreviation of Allen-Bradley products manufactured by Rockwell Automation, Inc.
GE	Abbreviation of GE Intelligent Platforms
LS IS	Abbreviation of LS Industrial Systems Co., Ltd.
SCHNEIDER	Abbreviation of Schneider Electric SA
SICK	Abbreviation of SICK AG
SIEMENS	Abbreviation of Siemens AG
RKC	Abbreviation of RKC INSTRUMENT INC.
HIRATA	Abbreviation of Hirata Corporation
MURATEC	Abbreviation of Muratec products manufactured by Muratec Automation Co., Ltd.
PLC	Abbreviation of programmable controller
Temperature controller	Generic term for temperature controller manufactured by each corporation
Indicating controller	Generic term for indicating controller manufactured by each corporation
Control equipment	Generic term for control equipment manufactured by each corporation
CHINO controller	Abbreviation of indicating controller manufactured by CHINO CORPORATION
PC CPU module	Abbreviation of PC CPU Unit manufactured by CONTEC CO., LTD
GOT (server)	Abbreviation of GOTs that use the server function
GOT (client)	Abbreviation of GOTs that use the client function
Windows® font	Abbreviation of TrueType font and OpenType font available for Windows® (Differs from the True Type fonts settable with GT Designer3)
Intelligent function module	Indicates the modules other than the PLC CPU, power supply module and I/O module that are mounted to the base unit
MODBUS® /RTU	Generic term for the protocol designed to use MODBUS® protocol messages on a serial communication
MODBUS® /TCP	Generic term for the protocol designed to use MODBUS® protocol messages on a TCP/IP network

1 About each of functions

This manual includes information of GT Designer2 Version2.96A, GT Designer3 Version1.63R.
For additional functions of upgraded version, refer to the List of functions added by version upgrade.

2 Symbols

Following symbols are used in this manual.

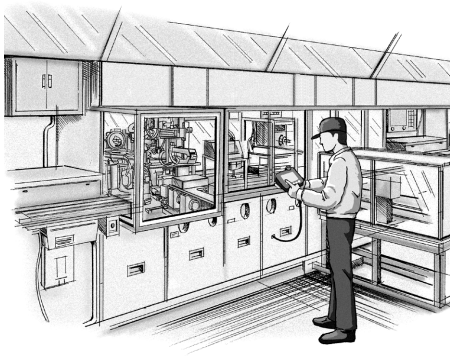


* Since the above page was created for explanation purpose, it differs from the actual page.

1. OVERVIEW

1 Handy GOT

The Handy GOT (hereinafter abbreviated as GOT) is used as an operation terminal in connection with the controllers such as MELSEC-FX, QnA, Q series or third party PLCs.
It is an all-in-one operation terminal that is equipped with the display unit with touch switches integrated with the mechanical keys (operation switches) for inputting a command to a machine.



For the display screen, two kinds of display screens are available: user screen and utility screen.

(1) User Screen

The user screen is a screen created by drawing software.
The objects such as "Touch switch", "Lamp display", "Comment display" and "Numerical display" can be arbitrarily placed on the display.
Moreover, multiple screens created by drawing software can be displayed individually or overlapped with each other.

For details, refer to the following.

☞ GT Designer2 Version☐ Basic Operation/Data Transfer Manual
GT Designer2 Version☐ Screen Design Manual
GT Designer3 Version1 Screen Design Manual

(2) Utility Screen

The utility screen is a factory drawn horizontal screen that cannot be edited.
The utility screen is displayed by installing the Standard monitor OS in the GOT from drawing software or CF card.
The utility screen has display and setting screens for "Brightness/contrast", "Memory check", etc.

For details, refer to the following.

☞ Chapter 8. to Chapter 17.

2 About Manual

The following manuals are related to the GOT.
Refer to each manual in accordance with the intended use.

Related Manuals

Manual Name	Manual Number (Model Code)
GT Designer2 Version2 Basic Operation/Data Transfer Manual (For GOT1000 Series) Describes methods of the GT Designer2 installation operation, basic operation for drawing and transmitting data to GOT1000 series. (Sold separately) *1	SH-080529ENG (1D7M24)
GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 1/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 2/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 3/3 Describes specifications and settings of the object functions used in GT Designer2. (Sold separately) *1	SH-080530ENG (1D7M25)
GT Designer3 Version1 Screen Design Manual (For GOT1000 Series) (Fundamentals)1/2, 2/2 Describes methods of the GT Designer3 installation operation, basic operation for drawing and transmitting data to GOT1000 series. (Sold separately) *1	SH-080866ENG (1D7MB9)
GT Designer3 Version1 Screen Design Manual (For GOT1000 Series) (Functions) 1/2 GT Designer3 Version1 Screen Design Manual (For GOT1000 Series) (Functions) 2/2 Describes specifications and settings of the object functions used in GT Designer3. (Sold separately) *1	SH-080867ENG (1D7MC1)

*1 The manual in PDF-format is included in the GT Works2, GT Designer2, GT Works3 and GT Designer3 products.

(1) Installation of the software programs → Drawing → Data transfer

For operations from creating project data to transferring data to GOT, refer to the following manuals.

Purpose	 GT Designer2 Version ❑ Basic Operation/Data Transfer Manual[*1] GT Designer3 Version1 Screen Design Manual (Fundamentals)[*1]	 GT Designer2 Version ❑ Screen Design Manual[*1] GT Designer3 Version1 Screen Design Manual (Functions)[*1]
Installing product on PC	Detailed	
Creating projects	Detailed	
Creating screens	Detailed	
Drawing figures	Detailed	
Making Common Settings	Overview	Detailed
Placing/Setting objects	Overview	Detailed
Transferring data to GOT	Detailed	

*1 Stored in the GT Works 2/GT Designer2/GT Works 3/GT Designer3 in PDF format.

(2) Other manuals

The following manuals are stored in the GT Works 2/GT Designer2/GT Works 3/GT Designer3 in PDF format.

(a) GT Simulator2 Version □ Operating Manual
Describes how to simulate the created project data with GT Simulator2.

(b) GT Converter2 Version □ Operating Manual
Describes how to use the GT Converter2.

1.1 Features

1 Display unit

For the display unit, the LCD with touch switches equivalent to that of GT1155HS-QSBD (256 colors) or GT1150HS-QLBD (monochrome) type graphic operation terminal is adopted.
Monitoring for turning ON/OFF bit devices of a PLC, forced turning ON/OFF the bit devices of a PLC, monitoring the word device set value/current value and changing that numeric values are easily made.

(1) The display unit is used for engineers' stage replacement, setting change and troubleshooting or for operation guidance to an operator.

- Monitor
- Forced turning ON/OFF
- Set value change
- Trouble check

(2) Improved monitoring performance and connectivity to FA devices

- Multiple languages are displayed using the Unicode2.1-compatible fonts and beautiful characters are drawn using the TrueType and high quality fonts.
- Two types of display modes are provided: 256-color display and monochrome display.
  In the monochrome display, 16 scales are used to improve the display.
- High speed monitoring through high speed communication at maximum of 115.2kbps.
- High speed display and high speed touch switch response.

(3) More efficient GOT operations including screen design, startup, adjustment, management and maintenance works

- The display screen of the display unit is created using a drawing software for PC (GT Designer2 Ver2.18U or later, GT Designer3 Ver1.01B or later).
- The 3MB built-in flash memory is included as standard.
- CF card interface is included as standard.
- The USB connector is included as standard.

(4) Enhanced support of FA device setup tools

- Transferring or monitoring the sequence programs using the personal computer connected to GOT is available, during direct connection to A, QnA, L, Q, or FX series PLC CPU (FA Transparent function).

2 Operation switch

The operation switches are the mechanical keys directly connected to the input of a PLC.
The switch can be used for the inputs that require a quick response to machine such as run or stop since a command is directly given to the PLC.

(1) The operation switches are used as keys for operator to provide operation commands to the machine.

- Start/Stop
- Stage replacement
- Trouble removal
- Mode selection such as automatic or individual

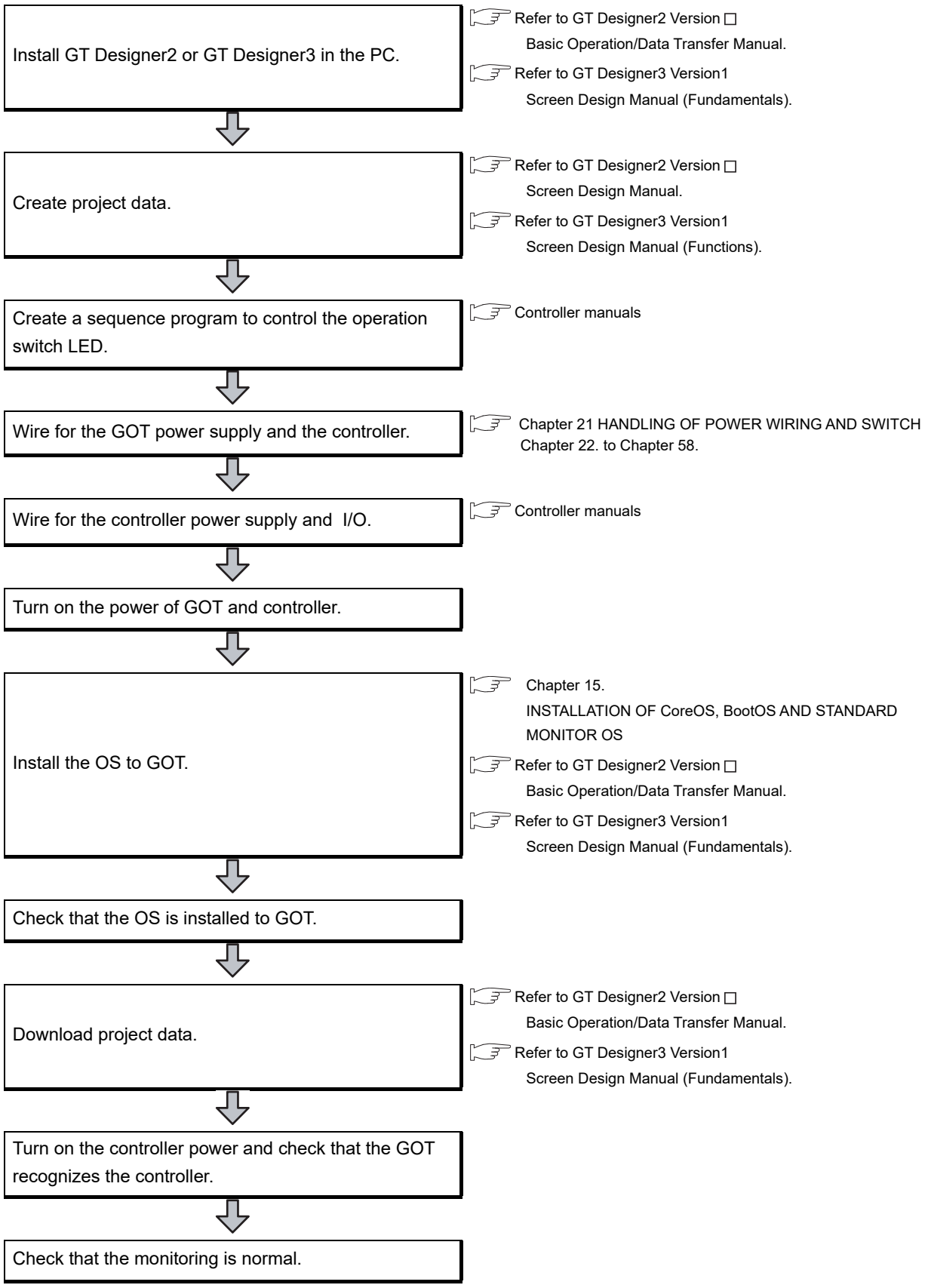
3 Connection cable

A optional connection cable is required to connect the GOT to a PLC.

1.2 Pre-operation Procedure

1.2.1 Rough procedure

The outline procedures before operating GOT and the descriptions of each item are shown below.

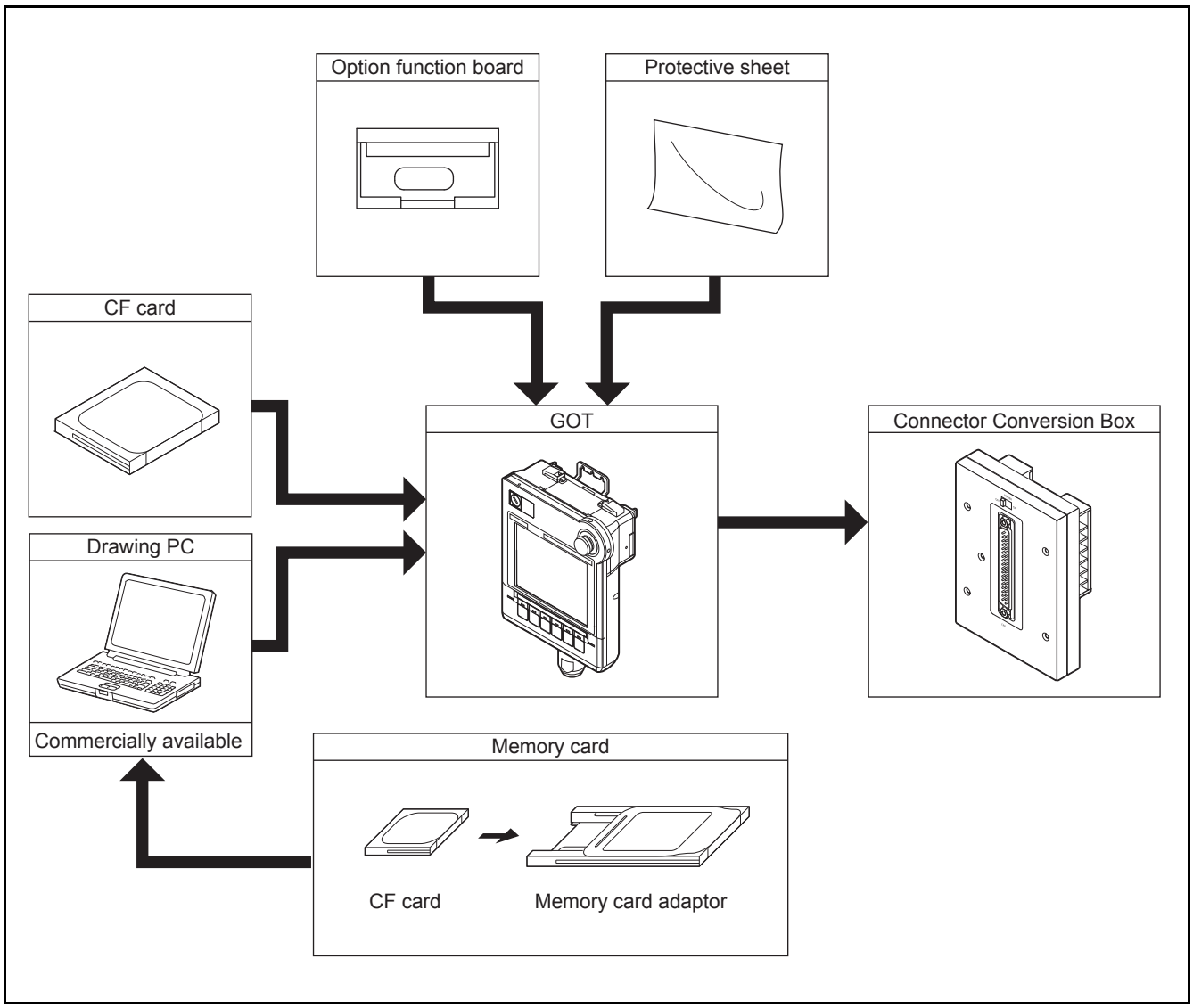


2. SYSTEM CONFIGURATION

2.1 Overall Configuration

The overall configuration of GOT is as follows.
For the controllers and cables applicable to GOT1000 series, refer to the following manual.

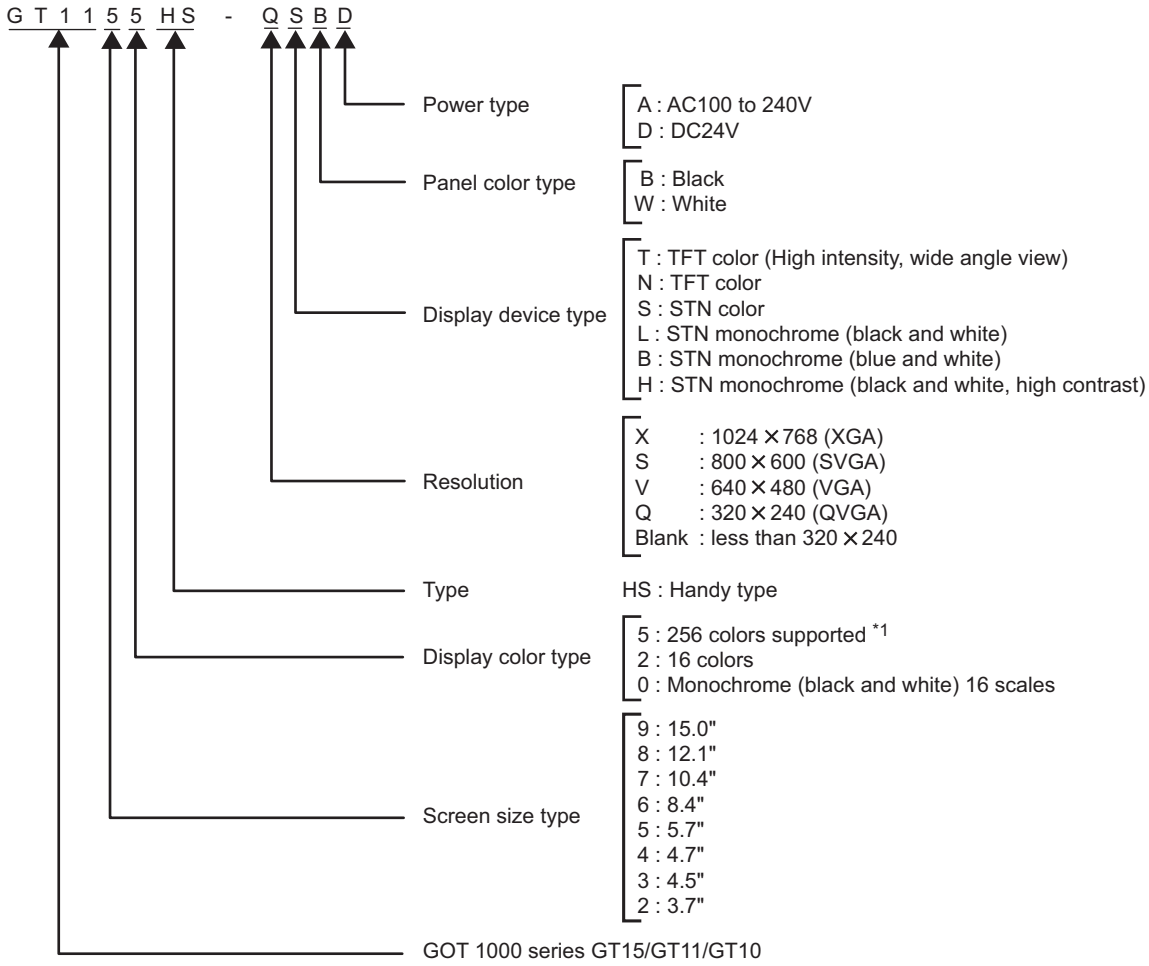
☞ GOT1000 Series Connection Manual



- The Handy GOT cannot be connected to a bar code reader or a printer.

2.2 System Equipment

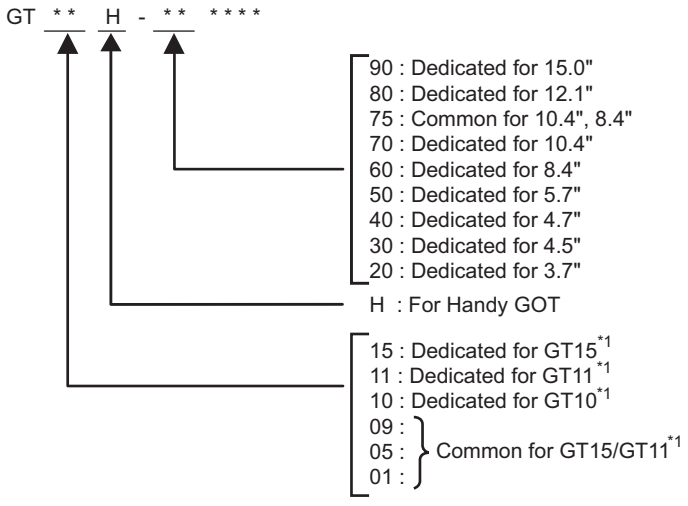
(1) Explanation of the GOT model name



*1: For GT15 that can display 65536 colors, refer to the following.

☞ GT15 User's Manual

(2) Explanation of the option model name



*1: There are optional components common for GT15, GT11 and GT10.

2.2.1 GOT

Product name	Model name	Specifications
GOT	GT1155HS-QSBD	5.7" [320 × 240 dots], STN color liquid crystal, 256 colors, 24VDC, memory size 3MB, built-in battery
	GT1150HS-QLBD	5.7" [320 × 240 dots], STN monochrome liquid crystal, monochrome (black and white) 16 scales, 24VDC, memory size 3MB, built-in battery

Accessories
The following products are the accessories of the GOT main unit.
- Sheets for operation switch name characters (one for each of OHP and reference dimensions sheet)
- Two keys for selector switch
- GT11 Handy GOT General Description (describes product outline, specifications, external dimensions, etc.)

For the creating procedure of transparent sheet, refer to the following.

☞ Section 21.4.6 Operation switch name sheet creation

2.2.2 OPTION

External cable (Sold separately)

Product name	Model name	Contents
External cable (for connecting GOT and relay cable)	GT11H-C30-37P	Relay cable connection side D-Sub 37 pins, 3m
	GT11H-C60-37P	Relay cable connection side D-Sub 37 pins, 6m
	GT11H-C100-37P	Relay cable connection side D-Sub 37 pins, 10m
	GT11H-C30	Relay cable connection side untied wire, 3m
	GT11H-C60	Relay cable connection side untied wire, 6m
	GT11H-C100	Relay cable connection side untied wire, 10m

Relay cable (Sold separately)

Product name	Model name	Contents
Relay cable (for connecting external cable and PLC)	GT11H-C15R4-8P	RS-422 cable for FX CPU (MINI-DIN 8 pins) direct connection, 1.5m
	GT11H-C15R4-25P	RS-422 cable for A/QnA CPU (D-Sub 25 pins) direct connection, 1.5m
	GT11H-C15R2-6P	RS-232 cable for Q CPU (MINI-DIN 6 pins) direct connection, 1.5m

Connector Conversion Box

Product name	Model name	Contents
Connector Conversion Box	GT11H-CNB-37S	The 37-pin D-Sub connector of an external cable is converted into terminal blocks and a connector for PLC (9-pin D-Sub type).

Connection cables for MITSUBISHI PLCs (Sold separately)

Product name		Model name	Cable length	Contents
RS-422 Cable	FXCPU direct connection cable FX expansion board connection	GT01-C10R4-8P	1m	For connecting FXCPU (MINI DIN 8 pins) and Connector Conversion Box. For connecting FXCPU expansion board (MINI DIN 8 pins) and Connector Conversion Box.
		GT01-C30R4-8P	3m	
		GT01-C100R4-8P	10m	
	QnA/A/FXCPU direct connection cable computer link connection cable	GT01-C30R4-25P	3m	For connecting QnA/ACPU/Motion controller CPU (A series) FXCPU (D-Sub 25 pins) and Connector Conversion Box. For connecting FA-CNV □ CBL and Connector Conversion Box For connecting serial communication unit (AJ71QC24(N)-R4) and Connector conversion Box
		GT01-C100R4-25P	10m	
	Computer link connection cable	GT09-C30R4-6C	3m	For connecting computer link module/serial communication module and Connector Conversion Box
		GT09-C100R4-6C	10m	
RS-232 Cable	QCPU direct connection cable	GT11H-C30R2-6P	3m	For connecting QCPU/Motion controller CPU (Q series) and Connector Conversion Box
	FX expansion board connection, FX special adaptor connection, data transfer cable	GT01-C30R2-9S	3m	For connecting FXCPU expansion board (D-Sub 9pins), special adapter (D-Sub 9 pins) and Connector conversion Box. For connecting personal computer (drawing software) (D-Sub 9 pins) and Connector Conversion Box.
	FX special adaptor connection	GT01-C30R2-25P	3m	For connecting FXCPU special adaptor (D-Sub 25 pins) and Connector Conversion Box.
	Computer link connection cable	GT09-C30R2-9P	3m	For connecting computer link module/serial communication module and Connector Conversion Box
		GT09-C30R2-25P	3m	

Connection cables for OMRON PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R40101-9P	3m	For connecting Connector Conversion Box to OMRON PLC, serial communication module, serial communication board
	GT09-C100R40101-9P	10m	
	GT09-C30R40102-9P	3m	For connecting Connector Conversion Box to OMRON rack type host link unit, communication board
	GT09-C100R40102-9P	10m	
	GT09-C30R40103-5T	3m	For connecting Connector Conversion Box to serial communication board
	GT09-C100R40103-5T	10m	
RS-232 cable	GT09-C30R20101-9P	3m	For connecting Connector Conversion Box to OMRON PLC, serial communication module, communication board, serial communication board
	GT09-C30R20102-25P	3m	For connecting Connector Conversion Box to OMRON connection cable
	GT09-C30R20103-25P	3m	For connecting Connector Conversion Box to OMRON rack type host link unit

Connection cables for KEYENCE PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R41101-5T	3m	For connecting Connector Conversion Box to KEYENCE multi-communication unit
	GT09-C100R41101-5T	10m	
RS-232 cable	GT09-C30R21101-6P	3m	For connecting Connector Conversion Box to KEYENCE PLC
	GT09-C30R21102-9S	3m	For connecting Connector Conversion Box to KEYENCE multi-communication unit
	GT09-C30R21103-3T	3m	

Connection cables for JTEKT PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R41201-6C	3 m	For connecting Connector Conversion Box to JTEKT PLC
	GT09-C100R41201-6C	10 m	
RS-232 cable	GT09-C30R21201-25P	3 m	

Connection cables for SHARP PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R40601-15P	3m	For connecting Connector Conversion Box to SHARP PLC
	GT09-C100R40601-15P	10m	
	GT09-C30R40602-15P	3m	
	GT09-C100R40602-15P	10m	
	GT09-C30R40603-6T	3m	For connecting Connector Conversion Box to SHARP link unit
	GT09-C100R40603-6T	10m	
RS-232 cable	GT09-C30R20601-15P	3m	For connecting Connector Conversion Box to SHARP PLC
	GT09-C30R20602-15P	3m	

Connection cables for TOSHIBA PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R40501-15P	3m	For connecting Connector Conversion Box to TOSHIBA PLC
	GT09-C100R40501-15P	10m	
	GT09-C30R40502-6C	3m	
	GT09-C100R40502-6C	10m	
	GT09-C30R40503-15P	3m	
	GT09-C100R40503-15P	10m	
RS-232 cable	GT09-C30R20501-9P	3m	
	GT09-C30R20502-15P	3m	

Connection cables for HITACHI PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R41301-9S	3m	For connecting Connector Conversion Box to HITACHI PLC
	GT09-C100R41301-9S	10m	
RS-232 cable	GT09-C30R21301-6P	3m	For connecting Connector Conversion Box to HITACHI communication module

Connection cables for HITACHI IES PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R40401-7T	3m	For connecting Connector Conversion Box to HITACHI IES intelligent serial port module
	GT09-C100R40401-7T	10m	
RS-232 cable	GT09-C30R21101-6P	3m	
	GT09-C30R21103-3T	3m	For connecting Connector Conversion Box to HITACHI IES PLC

Connection cables for FUJI PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R41001-6T	3m	For connecting Connector Conversion Box to FUJI RS-232C interface card, RS-232C/485 interface capsule, general-purpose interface module
	GT09-C100R41001-6T	10m	
RS-232 cable	GT09-C30R21003-25P	3m	

Connection cables for PANASONIC INDUSTRIAL DEVICES SUNX PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-232 cable	GT09-C30R20901-25P	3m	For connecting Connector Conversion Box to PANASONIC INDUSTRIAL DEVICES SUNX RS422/232C conversion adapter
	GT09-C30R20902-9P	3m	For connecting Connector Conversion Box to the tool port or RS232C port of PANASONIC INDUSTRIAL DEVICES SUNX PLC, computer communication unit
	GT09-C30R20903-9P	3m	For connecting Connector Conversion Box to the RS232C port of PANASONIC INDUSTRIAL DEVICES SUNX PLC
	GT09-C30R20904-3C	3m	

Connection cables for YASKAWA PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R40201-9P	3m	For connecting Connector Conversion Box to YASKAWA MEMOBUS module
	GT09-C100R40201-9P	10m	
	GT09-C30R40202-14P	3m	For connecting Connector Conversion Box to YASKAWA PLC
	GT09-C100R40202-14P	10m	
RS-232 cable	GT09-C30R20201-9P	3m	
	GT09-C30R20202-15P	3m	
	GT09-C30R20203-9P	3m	
	GT09-C30R20204-14P	3m	
	GT09-C30R20205-25P	3m	For connecting Connector Conversion Box to YASKAWA MEMOBUS module

Connection cables for YOKOGAWA PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-422 cable	GT09-C30R40301-6T	3m	For connecting Connector Conversion Box to YOKOGAWA PC link module
	GT09-C100R40301-6T	10m	
	GT09-C30R40302-6T	3m	
	GT09-C100R40302-6T	10m	
	GT09-C30R40303-6T	3m	For connecting Connector Conversion Box to YOKOGAWA temperature controller
	GT09-C100R40303-6T	10m	
	GT09-C30R40304-6T	3m	
	GT09-C100R40304-6T	10m	
RS-232 cable	GT09-C30R20301-9P	3m	For connecting Connector Conversion Box to YOKOGAWA CPU port/D-Sub 9-pin conversion cable
	GT09-C30R20302-9P	3m	For connecting Connector Conversion Box to YOKOGAWA PC link module
	GT09-C30R20304-9S	3m	For connecting Connector Conversion Box to YOKOGAWA converter

Connection cables for Allen-Bradley PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-232 cable	GT09-C30R20701-9S	3m	For connecting Connector Conversion Box to Allen-Bradley PLC

Connection cables for SIEMENS PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-232 cable	GT09-C30R20801-9S	3m	For connecting Connector Conversion Box to SIEMENS HMI Adapter

Connection cables for SHINKO indicating controller PLCs (Sold separately)

Product name	Model name	Cable length	Description
RS-232 cable	GT09-C30R21401-4T	3m	For connecting Connector Conversion Box to SHINKO indicating controller

CF card (Sold separately)

Product name	Model name	Contents
CF card	GT05-MEM-128MC	Flash ROM 128MB
	GT05-MEM-256MC	Flash ROM 256MB
	GT05-MEM-512MC	Flash ROM 512MB
	GT05-MEM-1GC	Flash ROM 1GB
	GT05-MEM-2GC	Flash ROM 2GB
	–	Commercially-available CF card *1

*1: Some models with the operations checked by our company are usable.
For the operation-checked models, refer to "List of valid devices applicable for GOT1000 series" (T10-0039) separately available, or contact your local distributor.

Memory card adaptor (Sold separately)

Product name	Model name	Contents
Memory card adaptor	GT05-MEM-ADPC	CF card to memory card (Type II) conversion adaptor

Option function board (Sold separately)

Product name	Model name	Contents
Option function board	GT11-50FNB	Option function board*2

*2: Necessity of mounting the option function board may differ depending on the hardware version . Refer to the following for details.

☞ Section 6.3 Option Function Board

Battery (Sold separately)

Product name	Model name	Contents
Battery*3	GT11-50BAT	For storing clock data, alarm history, recipe data and time action setting value

*3: At GOT purchase, it is installed in the main unit.

Protective sheet (Sold separately)

Product name	Model name	Contents	
Protective sheet	GT11H-50PSC	Display section clear 5 sheets	Transparent protective sheet which protects the display section only.

Emergency stop SW guard (Sold separately)

Product name	Model name	Contents
Emergency stop SW guard	GT11H-50ESCOV	Cover for preventing the emergency stop SW incorrect operation

Drawing software (Sold separately)

Product name	Model name	Contents
GT Designer2	SW☐D5C-GTD2-E (☐indicates the version.)*4	Drawing software for GOT1000/GOT900 series
GT Designer3	SW☐DNC-GTD3-E (☐indicates the version.)	Drawing software for GOT1000 series

*4: ☐integers more than 2.

PC connection cable (Sold separately)

Product name	Model name	Cable length	Description
Project data transfer cable	GT01-C30R2-6P	3m	GOT (RS-232) ↔ PC (D-Sub 9 pins female)
	GT11H-C30R2-6P		
	GT09-C20USB-5P	2m	GOT (USB mini) ↔ PC (USB)
	GT09-C30USB-5P	3m	

3. SPECIFICATIONS

3.1 General Specifications

<table>
<tr><th colspan="2">Item</th><th colspan="6">Specifications</th></tr>
<tr><td rowspan="2">Operating ambient temperature</td><td>Display section</td><td colspan="6">0 to 40℃</td></tr>
<tr><td>Other than display section</td><td colspan="6">0 to 40℃</td></tr>
<tr><td colspan="2">Storage ambient temperature</td><td colspan="6">-20 to 60℃</td></tr>
<tr><td colspan="2">Operating ambient humidity*1</td><td colspan="6">10 to 90% RH, non-condensing</td></tr>
<tr><td colspan="2">Storage ambient humidity*1</td><td colspan="6">10 to 90% RH, non-condensing</td></tr>
<tr><td colspan="2" rowspan="5">Vibration resistance</td><td rowspan="5">Conforms to JIS B3502 and IEC61131-2</td><td></td><td>Frequency</td><td>Acceleration</td><td>Half-amplitude</td><td>Sweep Count</td></tr>
<tr><td rowspan="2">Under intermittent vibration</td><td>5 to 8.4Hz</td><td>—</td><td>3.5mm</td><td rowspan="2">10 times each in X, Y and Z directions</td></tr>
<tr><td>8.4 to 150Hz</td><td>9.8m/s^2</td><td>—</td></tr>
<tr><td rowspan="2">Under continuous vibration</td><td>5 to 8.4Hz</td><td>—</td><td>1.75mm</td><td rowspan="2">—</td></tr>
<tr><td>8.4 to 150Hz</td><td>4.9m/s^2</td><td>—</td></tr>
<tr><td colspan="2">Shock resistance</td><td colspan="6">Conforms to JIS B3502, IEC 61131-2 (147 m/s^2, 3 times each in X, Y and Z directions)</td></tr>
<tr><td colspan="2">Operating atmosphere</td><td colspan="6">Must be free of lamp black, corrosive gas, flammable gas, or excessive amount of electro conductive dust particles and must be no direct sunlight. (Same as for saving)</td></tr>
<tr><td colspan="2">Operating altitude*2</td><td colspan="6">2000 m (6562 ft) max.</td></tr>
<tr><td colspan="2">Overvoltage category*3</td><td colspan="6">II or less</td></tr>
<tr><td colspan="2">Pollution degree*4</td><td colspan="6">2 or less</td></tr>
<tr><td colspan="2">Cooling method</td><td colspan="6">Self-cooling</td></tr>
<tr><td colspan="2">Grounding</td><td colspan="6">Class D grounding (100Ω or less),
To be connected to the panel when grounding is not possible.</td></tr>
</table>

*1 : The wet bulb temperature is 39℃ or less.

*2 : Do not use or store the GOT under pressures higher than the atmospheric pressure of altitude 0m (0ft.). Failure to observe this instruction may cause a malfunction.
When the air inside the control panel is purged by pressurization, the surface sheet may be lifted by high pressure. As a result, the touch panel may be difficult to press, and the sheet may be peeled off.

*3 : This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within the premises.
Category II applies to equipment for which electrical power is supplied from fixed facilities.
The surge voltage withstand level for up to the raged voltage of 300 V is 2500 V.

*4 : This index indicates the degree to which conductive pollution is generated in the environment where the equipment is used.
In pollution degree 2, only non-conductive pollution occurs but temporary conductivity may be produced due to condensation.

3.2 Performance Specifications

Item		Specifications	
		GT1155HS-QSBD	GT1150HS-QLBD
Display section*1	Type	STN color liquid crystal	STN monochrome (white/black) liquid crystal
	Screen size	5.7"	
	Resolution	320 × 240 dots	
	Display size	W115(4.53) × H86(3.39)[mm](inch)	
	Display character	16-dot standard font: 40 characters × 15 lines, 12-dot standard font: 52 characters × 20 lines	
	Display color	256 colors	Monochrome (white/black), 16 scales
	Display angle	Left/Right: 50 degrees, Top: 50 degrees, Bottom: 60 degrees (Hardware version A or B) Left/Right: 55 degrees, Top: 65 degrees, Bottom: 70 degrees (Hardware version C to K) Left/Right: 50 degrees, Top: 50 degrees, Bottom: 70 degrees (Hardware version L or later)	Left/Right: 45 degrees, Top: 20 degrees, Bottom: 40 degrees
	Contrast adjustment	16-level adjustment	
	Intensity of LCD only	350[cd/m^2] (Hardware version A or B) 380[cd/m^2] (Hardware version C or later)	220[cd/m^2]
	Intensity adjustment	8-level adjustment	
	Life	Approx. 50,000h. (Time for display intensity to become 1/5 at operating ambient temperature of 25℃)	
Backlight		Cold cathode fluorescent tube (irreplaceable by a user) backlight shutoff detection function is included. Backlight off/screen saving time can be set.	
	Life*2	Approx. 75,000h or longer (Time for display intensity reaches 50% at the operating ambient temperature of 25℃)	Approx. 54,000h or longer (Time for display intensity reaches 50% at the operating ambient temperature of 25℃)
Touch panel	Number of touch keys	300 keys/screen (Matrix structure of 15 lines × 20 columns)	
	Key size	Minimum 16 × 16 dots (per key)	
	Number of points touched simultaneously	Maximum of 2 points	
	Life	1 million times or more (operating force 0.98N max.)	
Buzzer output		Single tone (tone length adjustable)	
Internal clock	Accuracy	-45 seconds, +45 seconds per month	
Memory	C drive*3	Flash memory (Internal), for storing project data (3Mbytes) and OS	
	Life (Number of write times)	100,000 times	
	D drive	SRAM (Internal), 512kbyes (battery backup)	
Battery		GT11-50BAT lithium battery	
	Backup target	Clock data, alarm history, recipe data and time action setting value	
	Life	Approx. 5 years (Operating ambient temperature of 25℃)	

Item		Specifications	
		GT1155HS-QSBD	GT1150HS-QLBD
Environmental protective structure*5		Equivalent to IP65F (valid when the external cable is connected except for the relay connector side)	
Weight		1kg (Handy GOT main unit only)	
Switch	Operation switch	6 switches (6 contacts/common) N/O contact, Maximum rating 10mA/24VDC, Life: 1,000,000 times	
	Grip switch	1 switch (single wiring) (IDEC HE3B-M2PB) Enable switch (deadman switch) 3-position system of OFF ↔ ON ↔ OFF 2 N/O contacts Maximum rating 1A/24VDC (resistance load), Maximum rating 0.3A/24VDC (induction load), Life: 100,000 times	
	Emergency stop switch	1 switch (single wiring) (OMRON A165E-S-02) 2 N/C contacts Maximum rating 1A/24VDC (resistance load), Maximum rating 0.3A/24VDC (induction load), Life: 100,000 times	
	Keylock switch (2-position switch)	1 switch (single wiring) (IDEC AS6Q-2KT1PB) 2-notch type (Manual stop at each position/A key can be inserted and removed on only the left side./On the right side, a key cannot be removed./Two keys are provided.) 2-position, Maximum rating 1A/24VDC (resistance load), Maximum rating 0.3A/24VDC (induction load), Life: 100,000 times	
LED	POWER LED	1 LED Lit in green: Power is correctly supplied. Lit in orange: Screen saving and backlight not lit. Blinks in orange/green: Blown back light bulb. Not lit: Power is not supplied.	
	LED for operation switch display	6 LEDs, green (lighting control from the display section)	
	LED for grip switch display	1 LED, green (lighting control from display unit part)	
Built-in interface	RS-422/RS-232	RS422/RS232, 1ch Transmission speed : 115,200/57,600/38,400/19,200/9,600/4,800bps Connector shape : Round 32 pins (Male) (Select either RS-422 or RS-232 when used) Application : PLC communication	
	RS-232	RS232, 1ch Transmission speed : 115,200/57,600/38,400/19,200/9,600/4,800bps Connector shape : MINI-DIN 6-pin (Female) Application : PC communication, bar code reader connection, PC communication (Project data upload/download, OS installation, transparent function)	
	USB	USB (Full Speed 12Mbps), device, 1ch Connector shape : Mini-B Application : PC communication (Project data upload/download, OS installation, transparent function)	
	CF card	Conforming to PCMCIA, compact flash slot, 1ch Connector shape : Dedicated for TYPE I Application : Data transfer, data storage	
	Option function board*4	For mounting the option function board, 1ch	
Compatible software package		GT Designer2 Version2 or later/GT Designer3 Version1 or later	

*1: • Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements. Flickers may be observed depending on the display color.
Please note that these dots appear due to its characteristic and are not caused by product defect.
• Flickers and partial discoloration may be generated on the liquid crystal display panel due to the display contents or the contrast adjustment. However, please note that these phenomena appear due to its characteristic and are not caused by product defect.
• There is a difference in the display brightness and the color tones between liquid crystal display panels. When using multiple liquid crystal display panels, please note that there is an individual difference between them.
• A crosstalk (shadow as an extension of the display) may appear on the liquid crystal display panel. Please note that it appears due to its characteristic.
• When the display section is seen from the outside of the display angle, the display color seems like it has changed. Please note that it is due to its characteristic.
Please note that the response time, brightness and color of the liquid crystal display panel may vary depending on the usage environmental temperature.
Especially in the low temperature environment, the display response becomes slow due to the characteristics of the STN liquid crystal. Please check the display response in advance for using this product.
• When the same screen is displayed for a long time, an incidental color or partial discoloration is generated on the screen due to heat damage, and it may not disappear.
To prevent the heat damage, the screen saver function is effective.
For details on the screen saver function, refer to the following.

☞ Section 10.1 Display Settings

*2: Using the GOT Backlight OFF function can prolong the life of the backlight.
For details on the Backlight OFF function, refer to the following.

☞ Section 10.1 Display Settings

*3: ROM in which new data can be written without deleting the written data.

*4: Necessity of mounting the option function board may differ depending on the hardware version.
Refer to the following for details.

☞ Section 6.3 Option Function Board

*5: Note that this does not guarantee all user's operation environment.
The protection is not applied when the interface environment protection cover or environment protection back cover is removed. In addition, the product may not be used in environments under exposition of oil or chemicals for a long period of time, or in environments filled with oil-mist.

3.3 Power Supply Specifications

Item	Specifications	
	GT1155HS-QSBD	GT1150HS-QLBD
Input power supply voltage	24VDC (+10% -15%), ripple voltage 200mV or less	
Fuse (built-in, not exchangeable)	1.0A	
Power consumption	9.84W (410mA/24VDC) or less	9.36W (390mA/24VDC) or less
At backlight off	4.32W (180mA/24VDC) or less	
Inrush current	15A or less (26.4V) 2ms	
Permissible instantaneous power failure time	Within 5ms	
Noise immunity	Noise voltage: 1000Vp-p, Noise width: 1μs (by noise simulator of 30 to 100Hz noise frequency)	
Dielectric withstand voltage	500VAC for 1 minute (across power supply terminals and earth)	
Insulation resistance	10MΩ or larger by insulation resistance tester (across power supply terminals and earth)	

Remark

Operation at momentary power failure

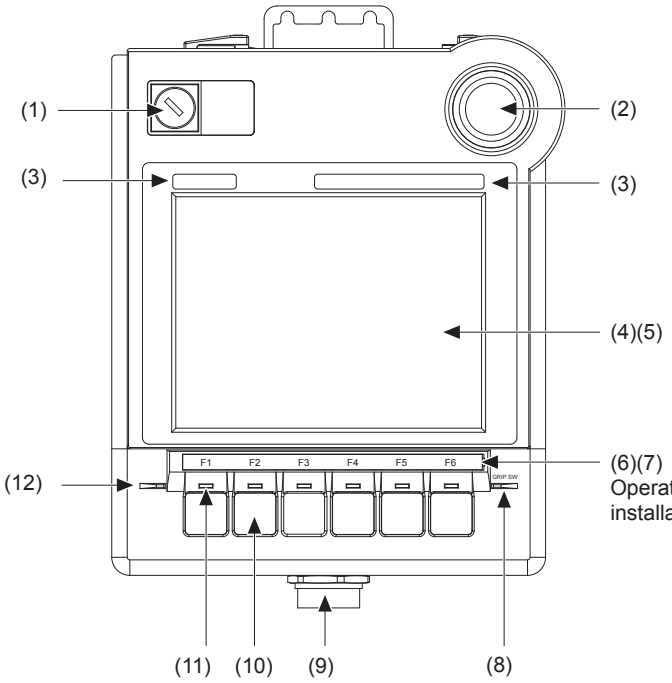
The GOT continues to operate even upon 5ms or shorter instantaneous power failure.

The GOT stops operating if there is extended power failure or voltage drop, while it automatically resumes operation as soon as the power is restored.

4. PARTS NAME

4.1 Front Panel

4.1.1 Name and specifications

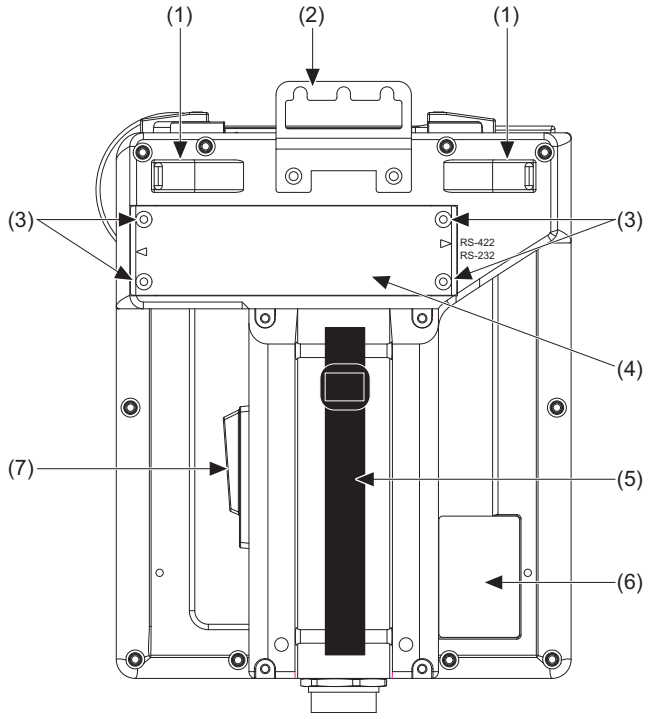


No.	Name	Specifications
(1)	Keylock switch (2-position SW)	Switch for external direct wiring (independent contact)
(2)	Emergency stop switch	Switch for external direct wiring (independent contact)
(3)	Logo (2 places)	Removable
(4)	Display section	Displays the utility screen and the user creation screen.
(5)	Touch panel	For touch switch operation on the utility screen and the user creation screen.
(6)	Operation switch name sheet installation place	Place (concave shape) where the operation switch name sheet (created by user) is installed.
(7)	Operation switch name sheet cover	Transparent cover to fix the operation switch name sheet (created by user) (removed when a sheet is inserted).
(8)	Display LED for grip switch	Display LED for grip switch (green) (lighting control from display section)
(9)	External interface connector	For external connection cable connection (for PLC, switch and power supply external wiring) (connector: round 32 pins, male)
(10)	Operation switch (6 switches)	Switch for external direct wiring (independent contact)
(11)	Display LED for operation switch (6 LEDs)	Display LED for operation switch (green) (lighting control from display section)
(12)	POWER LED	Lit in green : Power is correctly supplied. Lit in orange : Screen saving and backlight not lit. Blinks in orange/green: Blown back light bulb. Not lit : Power is not supplied.

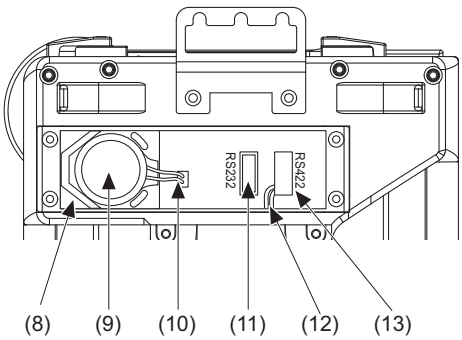
4.2 Back Panel

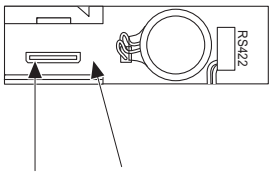
4.2.1 Name and specifications

Environmental protection back cover closed



Environmental protection back cover opened



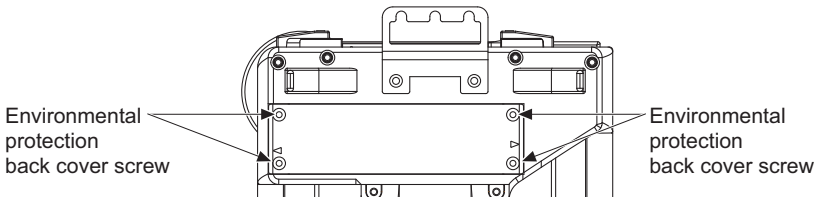


(14) Option function board installed

No.	Name	Specifications
(1)	Hook for mounting a neck strap	Hook for mounting a neck strap (must be prepared by the user)
(2)	Hook for hanging on walls	Hook when the Handy GOT is used hanging on walls.
(3)	Environmental protection back cover screw	For opening and closing the environmental protection back cover (drop prevention screw)
(4)	Environmental protection back cover	Opened and closed when the PLC communication type is changed (RS-422 ⇔ RS-232, before shipping: RS-422), the option function board is mounted, or the battery is replaced.
(5)	Hand strap	Used to hold the Handy GOT in hand by putting a hand under the strap. Length adjustable.
(6)	Rating plate	Model, consumption current, serial No., Hardware/Firmware version is indicated.
(7)	Grip switch	Switch for external direct wiring (independent contact)
(8)	Battery holder	GT11-50BAT type battery holder
(9)	Battery	GT11-50BAT type battery. For storing clock data, alarm history, recipe data and time action setting value.
(10)	Connector for battery connection	For GT11-50BAT type battery connection
(11)	RS-232 interface	Connector for PLC communication using RS-232
(12)	Cable connector for PLC communication	Interface cable connector for PLC communication Connector for either (11) or (13) and for selection of the PLC communication type. (Connected to RS-422 before shipping.)
(13)	RS-422 interface	Connector for PLC communication using RS-422
(14)	Connector for option function board	Connector for mounting the GT11-50FNB type option function board

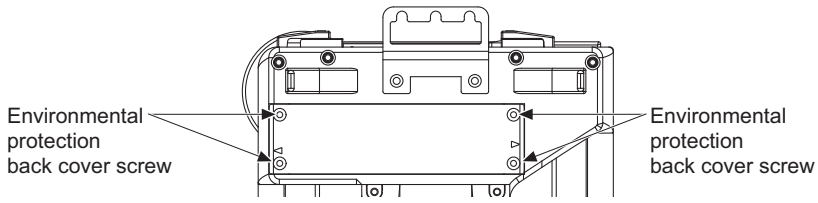
4.2.2 Opening and closing of environmental protection back cover

1 Opening



1 Loosen the environmental protection back cover screws at four points to remove the cover.

2 Closing



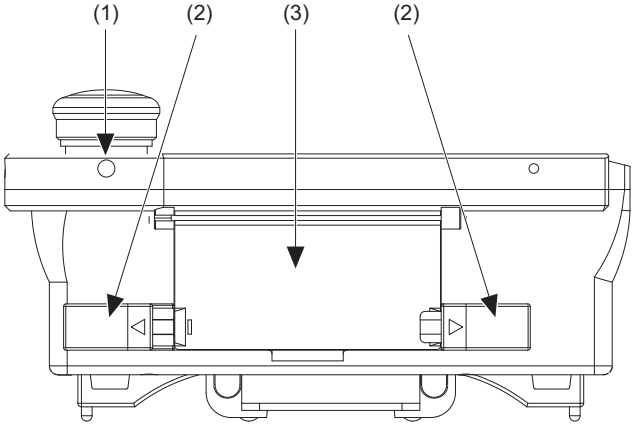
1 Attach the environmental protection back cover and tighten the screws.

Tightening torque: 36 to 48 N · cm

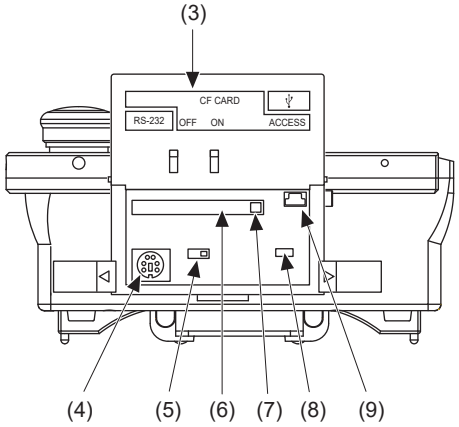
4.3 Top Face (Interface)

4.3.1 Names and specifications

1 Interface environmental protection cover closed



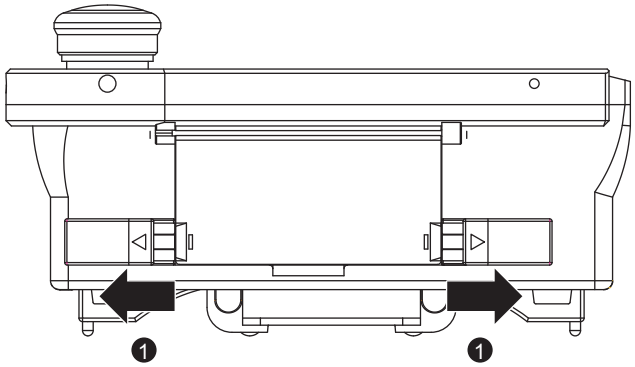
2 Interface environmental protection cover opened



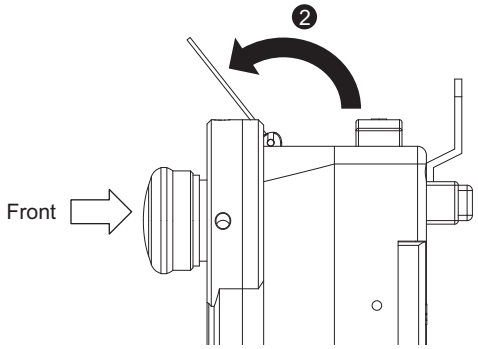
No.	Name	Specifications
(1)	Screw for mounting emergency stop switch guard	Screw for mounting the GT11H-50ESCOV type emergency stop switch guard (option) (M3)
(2)	Interface environmental protection cover hook (2 hooks)	Slide the interface environmental protection cover hook to the outside when opening the cover and slide the hook to the inside when closing the cover.
(3)	Interface environmental protection cover	Opened and closed when using the USB port, and the RS-232 port and inserting or removing the CF card.
(4)	RS-232 connector	For PC connection (connector: MINI-DIN 6 pins, female)
(5)	CF card access switch	Prohibits accessing the CF card before removing the card from the Handy GOT. (OFF before shipping.) ON : CF card being accessed. (CF card removal prohibited) OFF : CF card not accessed. (CF card removal possible)
(6)	CF card interface	Connector for mounting the CF card (compact flash card) to the Handy GOT
(7)	CF card eject button	CF card removal button
(8)	CF card access LED	Lit (green) : CF card being accessed. (transferring between the CF card and the Handy GOT) Not lit : CF card not accessed.
(9)	USB interface	USB port for PC connection (connector: USB Mini-B)

4.3.2 Opening and closing of interface environmental protection cover

1 Opening

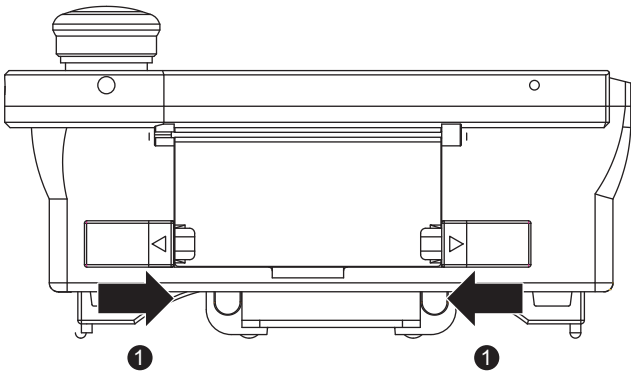


1 Slide the interface environmental protection cover hook to the outside.



2 Open the interface environmental protection cover in the arrow-pointing direction.

2 Closing



1 Close the interface environmental protection cover and slide the interface environmental protection cover hook to the inside.

5. UL, cUL STANDARDS AND EMC DIRECTIVE

5.1 UL, cUL STANDARDS

■ **Using GOT**
GOT is for use on a Flat Surface of a Type 1 Enclosure.

5.2 EMC DIRECTIVE

For the products sold in European countries, the conformance to the EMC Directive, which is one of the European Directives, has been a legal obligation since 1996. Also, conformance to the Low Voltage Directive, another European Directives, has been a legal obligation since 1997.
Manufacturers who recognize their products must conform to the EMC and Low Voltage Directives required to declare that their products conform to these Directives and put a "CE mark" on their products.
Products that the EMC Directive applies to are marked with the CE mark logo.

Point Authorized representative in Europe

- This product is designed for use in industrial applications.
- Authorized Representative in the European Community: Mitsubishi Electric Europe B.V.
  Gothaer Str. 8, 40880 Ratingen, Germany

5.2.1 Requirements for Conformance to EMC Directive

The EMC Directive specifies that products placed on the market must "be so constructed that they do not cause excessive electromagnetic interference (emissions) and are not unduly affected by electromagnetic interference (immunity)".
The applicable products are requested to meet these requirements.

The paragraphs *1* through *3* summarize the precautions on conformance to the EMC Directive of the machinery constructed using the GOT.
The details of these precautions has been prepared based on the requirements and the applicable standards control. However, we will not assure that the overall machinery manufactured according to these details conforms to the above-mentioned directives. The method of conformance to the EMC Directive and the judgment on whether or not the machinery conforms to the EMC Directive must be determined finally by the manufacturer of the machinery.

1 Standards applicable to the EMC Directive

The following products have shown compliance through direct testing (to the identified standards) and design analysis (forming a technical construction file) to the European Directive for Electromagnetic Compatibility (2004/108/EC) when used as directed by the appropriate documentation

Type : Programmable Controller (Open Type Equipment)

Standard		Remark
EN61131-2 : 2007 Programmable controllers - Equipment, requirement and tests	EMI	Compliance with all relevant aspects of the standard. (Radiated Emissions)
	EMS	Compliance with all relevant aspects of the standard. (ESD,RF electromagnetic field, EFTB, Surge, RF conducted disturbances and Power frequency magnetic field)

Models : MELSEC GOT1000 series products, identified here, manufactured from April 1st, 2006
GT1155HS-QSBD and GT1150HS-QLBD (For this product see note under and over the page).

For more details please contact the local Mitsubishi Electric sales site.
Notes Regarding the use of Handy GOT Units

2 General notes on the use of Communication Cables

Any device which utilizes a data communication function is susceptible to the wider effects of local EMC noise. Therefore, when installing any communication cables care should be taken with the routing and location of those cables. The Handy GOT units identified on the previous page are compliant with the EMC requirement when the following communication cables are used :

Handy GOT Units	External Cable	Relay Cable for PLC
GT1155HS-QSBD GT1150HS-QLBD	GT11H-C30-37P, GT11H-C60-37P, GT11H-C1000-37P, GT11H-C30, GT11H-C600, GT11H-C1000	GT11H-C15R4-8P(for FX), GT11H-C15R2-6P(for Q)

When using the cable the Earth Strap must be connected to a suitable earth point.

3 About models applicable to the EMC Directive

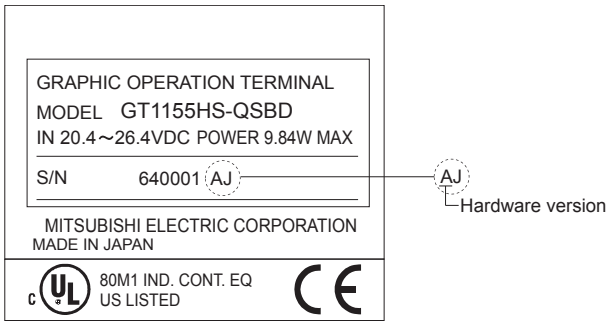
The following table lists the modules compliant with the EMC Directive.

○ : Compliant with EMC Directive ×: Not compliant with EMC Directive

Item	EMC Directive	Hardware version
GT1155HS-QSBD	○	A
GT1150HS-QLBD	○	A

Point

Please use the GOT whose hardware version is later than that described.
Confirm the hardware version with the products rating plate.
(Products that the EMC Directive applies to are marked with the CE mark logo.)



6. OPTION

6.1 CF Card

The CF card is used to transmit the OS or project data and to save the data of the alarm history function.
Refer to the following for details.

☞ Chapter 12 FILE DISPLAY AND COPY (PROGRAM/DATA CONTROL)

6.1.1 Applicable CF card

The following CF cards are applicable for Handy GOT.

Model	Description
GT05-MEM-128MC	Flash ROM 128MB
GT05-MEM-256MC	Flash ROM 256MB
GT05-MEM-512MC	Flash ROM 512MB
GT05-MEM-1GC	Flash ROM 1GB
GT05-MEM-2GC	Flash ROM 2GB
–	Commercially-available CF card *1

*1: Some models with the operations checked by our company are usable.
For the operation-checked models, refer to "List of valid devices applicable for GOT 1000 series" (T10-0039) separately available, or contact your local distributor.

Point

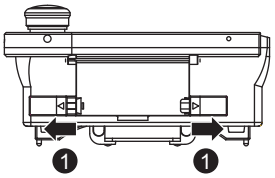
The flash PC card of the GOT-A900 series

In the Handy GOT, the flash PC card for GOT-A900 series cannot be used.
Use the CF card which is described in the above.

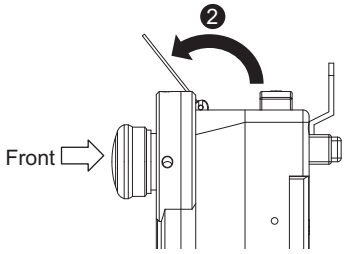
6.1.2 Installing and removing procedures of the CF card

Install/remove the CF card with the power supply of GOT is OFF or CF card access switch is "OFF".

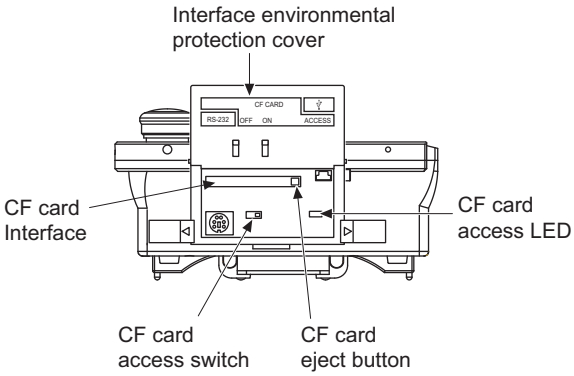
1 Installing



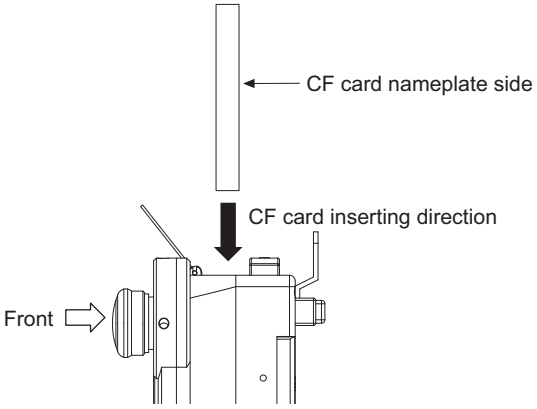
1 Slide the interface environmental protection cover hook to the outside.



2 Open the interface environmental protection cover in the arrow-pointing direction.



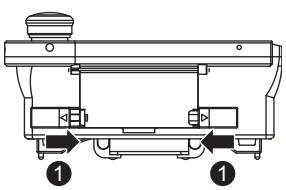
3 Set the CF card access switch of the GOT to "OFF", and make sure that the CF card access LED turns off. When the CF card access LED turns off, the CF card can be installed even during the GOT power on.



4 To install the CF card to the GOT, insert the CF card into the CF card interface with its front side outside.

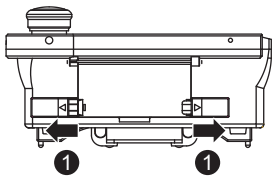
5 Push-in the CF card until the CF card eject button snaps.

6 Turn the CF card access switch on. After the CF card access switch is turned on, the CF card can be used.

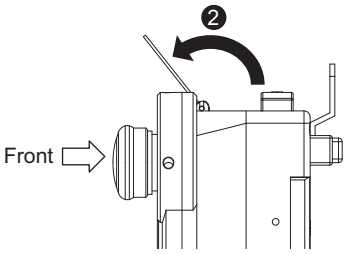


7 Close the interface environmental protection cover and slide the interface environmental protection cover hook to the inside.

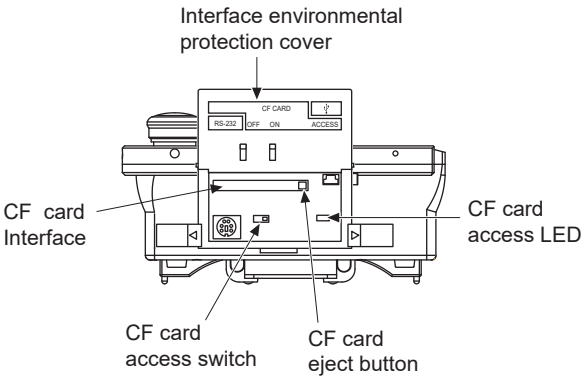
2 Removing



1 Slide the interface environmental protection cover hook to the outside.

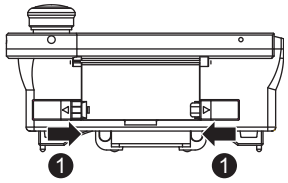


2 Open the interface environmental protection cover in the arrow-pointing direction.



3 Set the CF card access switch of the GOT to "OFF."
Make sure that the CF card access LED turns off.
When the CF card access LED turns off, the CF card can be installed or removed even during the GOT power on.

4 Push-in the CF card eject button of the GOT to eject the CF card, and then remove the CF card.



5 Close the interface environmental protection cover and slide the interface environmental protection cover hook to the inside.

Point

Precautions for removing the CF card

(1) While the CF card access LED is on, do not install/remove the CF card or power off the GOT.
To do so may cause data corruption or malfunction.

(2) When ejecting the CF card, support it by hand since it may pop out.
Failure to do so may cause a fall of the CF card leading to failure or damage of the card.

6.2 Memory Card Adaptor

The memory card adaptor is used to convert the CF card into the memory card (Type II).
Install the memory card adaptor to a PC equipped with a PCMCIA interface, to write the OS or project data on the CF card from the PC or load alarm history data from the CF card to the PC.
Refer to the following for the details related to CF card.

☞Section 6.1 CF Card

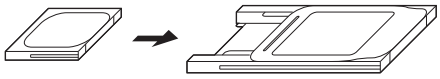
6.2.1 Applicable memory card adaptor

The following memory card adaptor is applicable.

Model	Contents
GT05-MEM-ADPC	Adaptor converting from CF card to memory card (Type II)

6.2.2 Installing procedure of the CF card into a memory card adaptor

Fit the CF card in the memory card adaptor.



CF card Memory card adaptor

6.3 Option Function Board

To use the optional functions, the option function board is necessary.
For GT11 with hardware version B or later, option function can be used without mounting the option function board.
Refer to the following for the functions requiring the option function board.

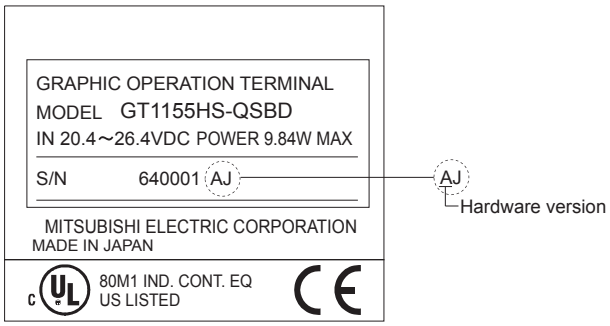
☞ GT Designer2 Version □ Screen Design Manual

GT Designer3 Version1 Screen Design Manual

Point

Checking method of hardware version

Confirm the hardware version with the products rating plate.

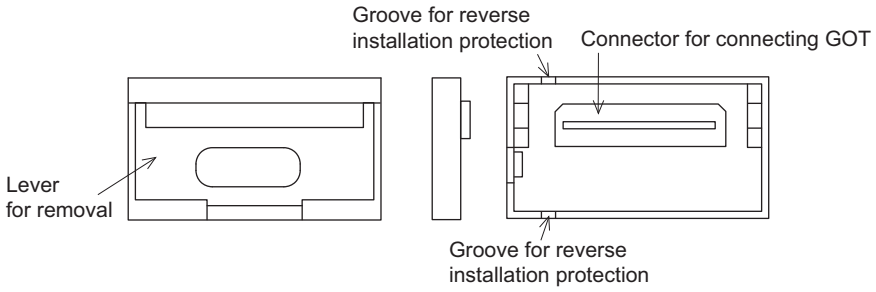


6.3.1 Applicable option function board

The following option function board is applicable for Handy GOT.

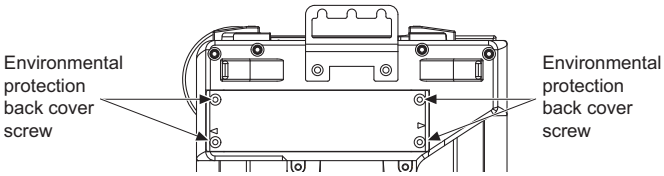
Model	Contents
GT11-50FNB	Option function board

6.3.2 Part names



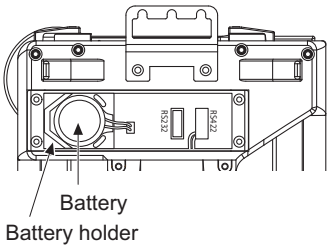
6.3.3 How to install or remove the option function board

1 Installing

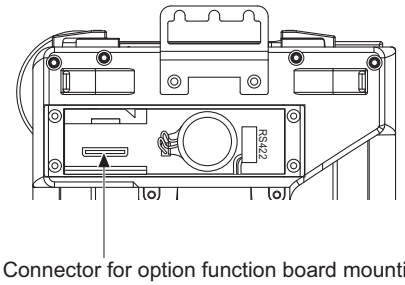


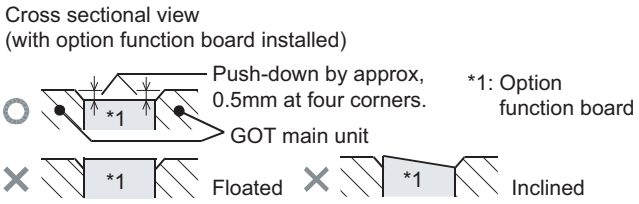
1 Turn the GOT power off.

2 Loosen the environmental protection back cover screws at four points on GOT rear face to remove the cover.

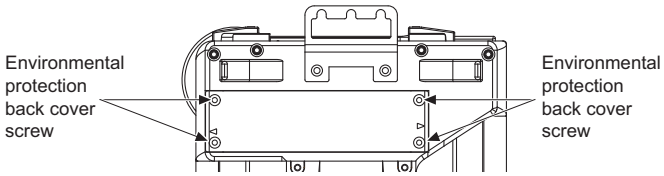


3 Remove the battery holder and mount the option function board on the connector for option function board mounting on GOT rear face.





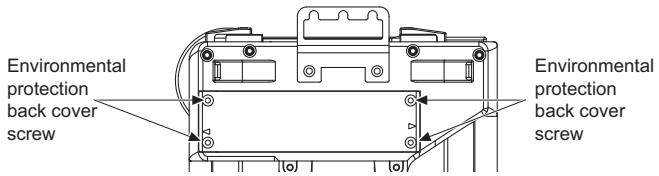
Push-down the option function board by approximately 0.5mm with fingers along the groove for reverse installation protection.



4 Attach the environmental protection back cover and tighten the screws.

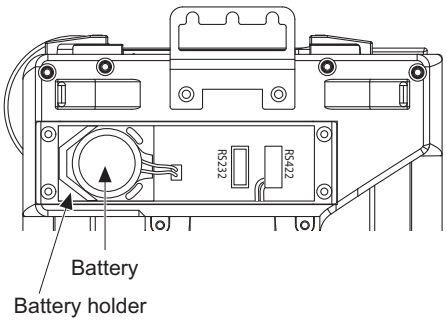
Tightening torque: 36 to 48 N ▪ cm

2 Removing

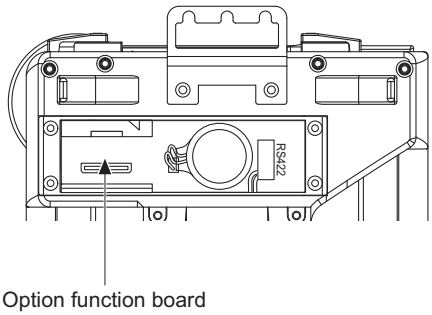


1 Turn the GOT power off.

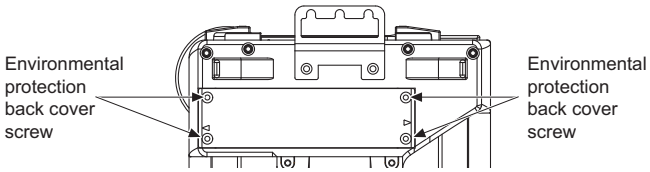
2 Loosen the environmental protection back cover screws of four points on GOT rear face to remove the cover.



3 Remove the battery holder.



4 Pinch the lever with fingers and pull-up it vertically to remove the option function board.



5 Attach the environmental protection back cover and tighten the screws.

Tightening torque: 36 to 48 N ▪ cm

Point

Precautions for installing/removing the option function board

(1) Do not twist the lever when removing the option function board. Otherwise the lever may be broken.

(2) Do not keep the option function board in a floated or inclined status.

(3) Do not touch the circuit board in the GOT main unit during the option function board installation.

6.4 Battery

The battery backs up clock data, alarm history and recipe data.
A battery is installed to Handy GOT when the GT11 is shipped from the factory.

6.4.1 Applicable battery

The following battery is applicable for Handy GOT.

Model	Contents
GT11-50BAT	Battery for backup of clock data, alarm history, recipe data and time action setting value

6.4.2 Battery specifications

Item	Specifications
Type	Magnesium manganese dioxide lithium primary battery
Initial voltage	3.0V
Storage life	Approx. 5 years (Operating ambient temperature of 25℃)
Application	For backup of clock data, alarm history, recipe data and time action setting value

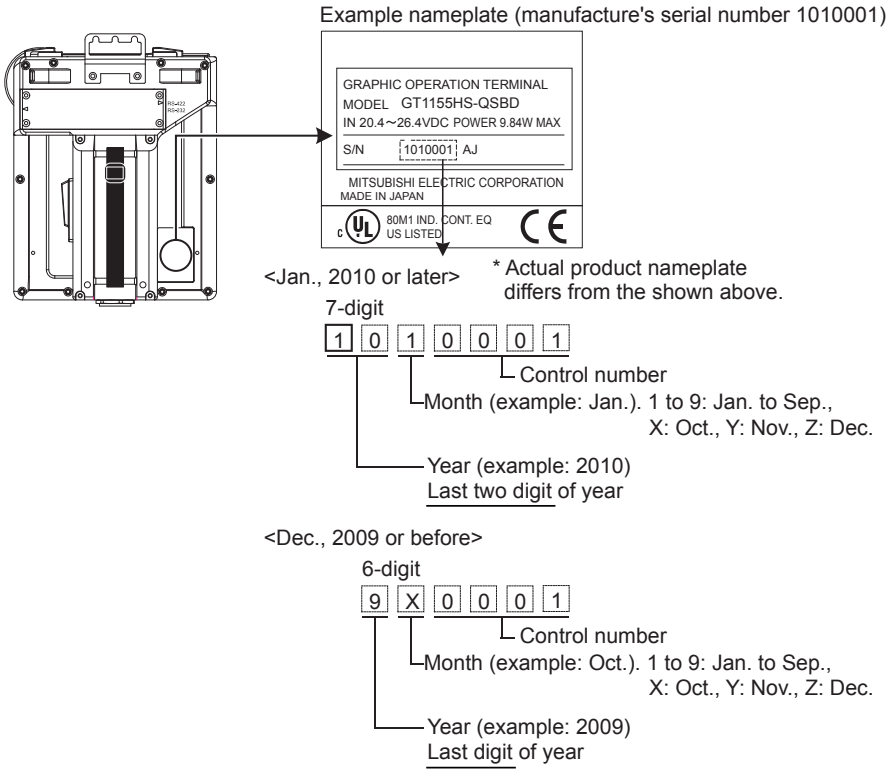
Remark

For the battery directive in EU member states, refer to 18.4 2 Handling of Batteries and Devices with Built-in Batteries in EU Member States.

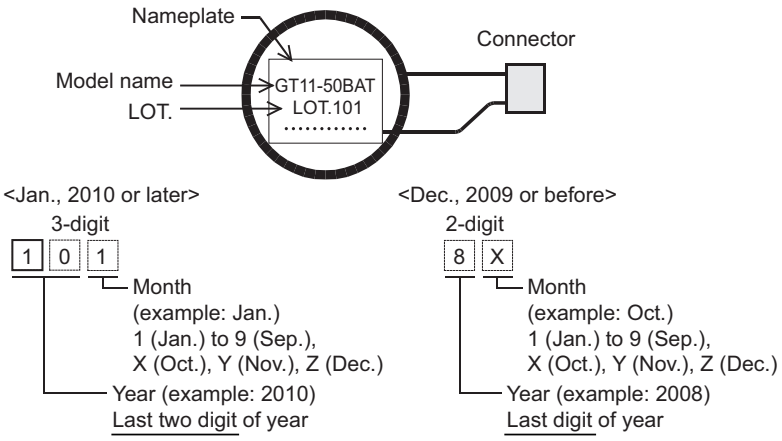
Point

(1) Battery life

The battery life is approximately 5 years.
The production date of the battery built in the purchased GOT can be confirmed by the production No. (S/N) marked on the GOT main unit.



The production date of the optional replacement battery can be confirmed by the lot No. marked on the nameplate (label) affixed on the battery.

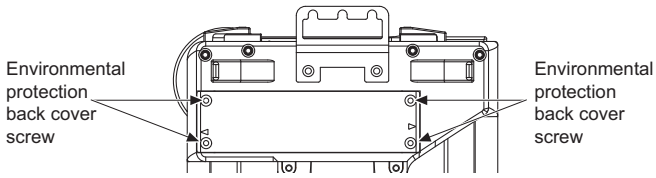


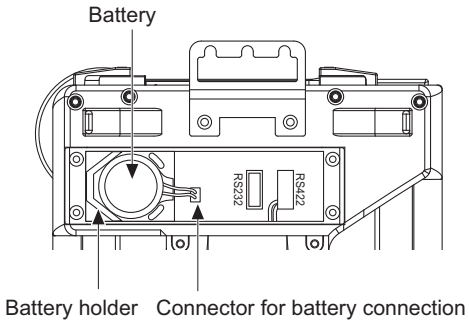
(2) Battery procurement

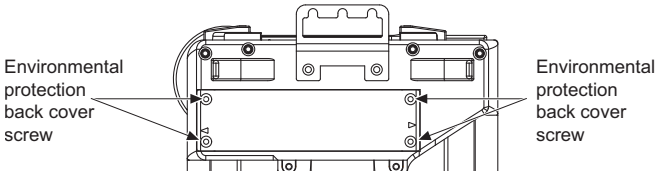
The battery is susceptible to natural discharge. Order one when necessary.

6.4.3 Battery replacement procedure

Replace battery periodically at intervals of 4 to 5 years as reference.







1. Turn the GOT power off.
2. Loosen the environmental protection back cover screws at four points on GOT rear face to remove the cover.
3. Remove the old battery from the holder.
4. Disconnect the old battery connector and insert the new battery connector within 30s.
5. Insert a new battery into the holder.
6. Attach the environmental protection back cover and tighten the screws.
   Tightening torque: 36 to 48 N ▪ cm
7. Turn the GOT power on.
8. Check if the battery condition is normal with the utility.
   Refer to the following for the details of battery status display.
   ☞ Chapter 11 CLOCK SETTINGS AND BATTERY STATUS DISPLAY (TIME SETTING AND DISPLAY)

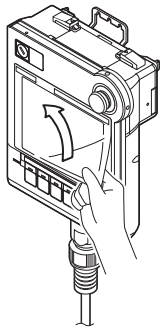
6.5 Protective Sheet

The protective sheet is used to protect the operation surface from damage or dirt when the touch key of GOT display section is operated.
For the Handy GOT, the protective sheet is attached for transportation.
(It is different from the one described in this chapter.)

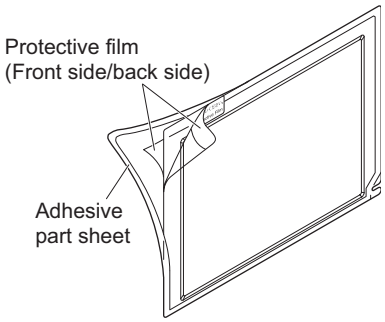
6.5.1 Applicable protective sheet

Product name	Model	Contents	Contents
Protective sheet	GT11H-50PSC	Protective sheet for GOT	Clear 5 sheets

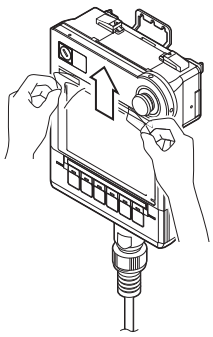
6.5.2 Installing procedure



1 If the protective sheet has been already attached to the GOT, remove the old one from the GOT display section holding the lower right corner.
If the protective sheet for transportation is attached to the GOT, remove it too.



2 Peel the protective films (front side and back side) and the adhesive part sheet of a new protective sheet.



3 Attach the adhesive side to the GOT display section. When attaching the protective sheet, make sure to fit it on the display section closely without leaving any clearance between them.

Remark

Replacement time of protective sheet

Check the status of the protection sheet visually by to the daily inspection. The visibility becomes worse when there is too much dirt and cracks, causing malfunction. Proceeds replacement promptly.

6.6 Emergency Stop Switch Guard Cover

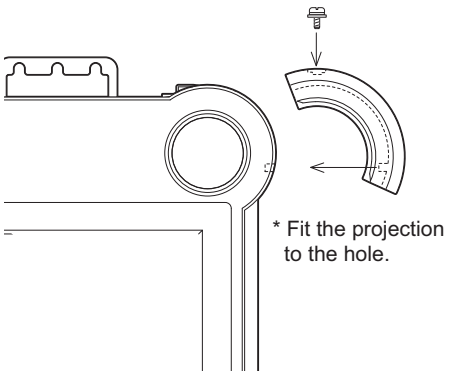
The emergency stop SW guard cover is attached to prevent the emergency stop SW from being operated incorrectly.

6.6.1 Applicable emergency stop SW guard cover

The following emergency stop SW guard cover is applicable for the Handy GOT.

Product name	Model	Contents
Emergency stop SW guard cover	GT11H-50ESCOV	Mounting screw (M3 × 6) × 1 (accessory)

6.6.2 Installing procedure



1. Remove the Handy GOT from the device or turn the entire system power off. (Make sure that the device does not operate even if the emergency stop of the Handy GOT is activated while mounting the emergency stop SW guard cover.)
2. Insert the projection on the inner lateral side into the hole of the Handy GOT and fix the cover to GT11H-50ESCOV with the accessory screw (M3 × 6) at the top. (Tightening torque: 36 to 48 N ▪ cm)

6.7 Connector Conversion Box

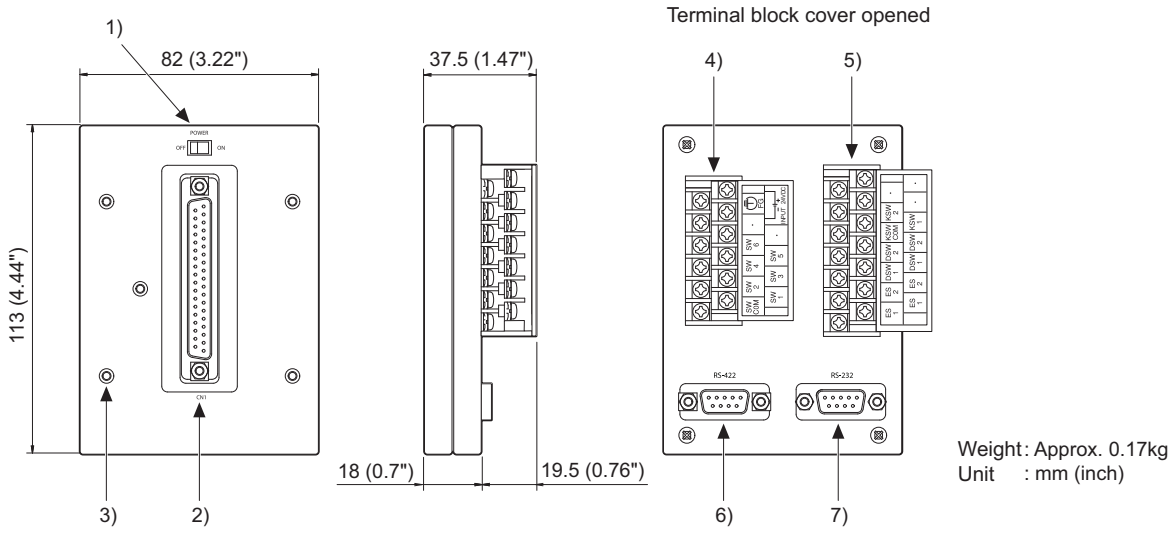
The Connector Conversion Box relays the GOT's external D-Sub 37-pin connector to the power supply/ switch and the PLC's connector and terminal block, while enabling users to operate the Handy GOT outside the enclosure.

6.7.1 Applicable Connector Conversion Box

The following Connector Conversion Box is applicable for the Handy GOT.

Product name	Model	Contents
Connector Conversion Box	GT11H-CNB-37S	Metal fixture × 1 (accessory) Mounting screw (M3 × 8) × 3 (accessory)

6.7.2 Part name and External dimensions



No.	Name	Specification
1)	Power switch	Supplies the power to the Handy GOT. When this switch is set to ON, the power is supplied. Turn off the power when attaching or detaching the Handy GOT.
2)	Connector for Handy GOT (D-Sub,37pin,female type)	Connects a Handy GOT through an external connection cable.
3)	Mounting hole (for M3 screw)	Allows to fix the Connector Conversion Box on the panel face directly or through a mounting bracket.
4)	Terminal block for power supply and operation switches	Connects the operation switches and the 24V DC power supply of the Handy GOT.
5)	Terminal block for emergency stop switch, grip switch, keylock switch	Connects the emergency stop switch, grip switch, keylock switch.
6)	Connector for PLC (RS-422: D-Sub, 9-pin, female type) connector model name: 17JE-13090-37D23A (DDK)	Connects the PLC through a PLC connection cable. RS-422 and RS-232 are not available simultaneously.
7)	Connector for PLC (RS-232: D-Sub, 9-pin, male type) connector model name: JES-9P-2A3A (JST)	

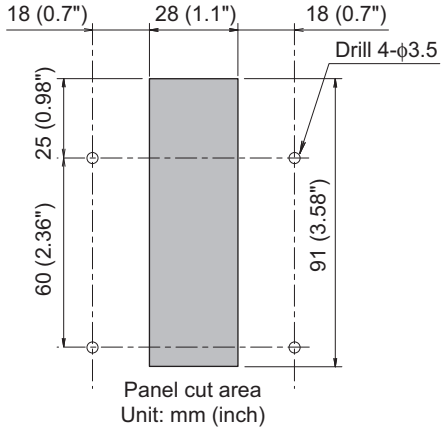
6.7.3 Installation

The Connector Conversion Box can be installed on the panel face directly or with mounting bracket offered as an accessory.

1 Direct mounting on the panel face

(1) Direct mounting on the panel face

Drill a mounting slot of the following size on the panel face.



(2) Mounting on the panel face

Fit the Connector Conversion Box from the back side of the panel face, and fix it with four M3 screws (prepared by user).

In the Connector Conversion Box, thread of M3, 6 mm in depth is cut in each mounting hole.

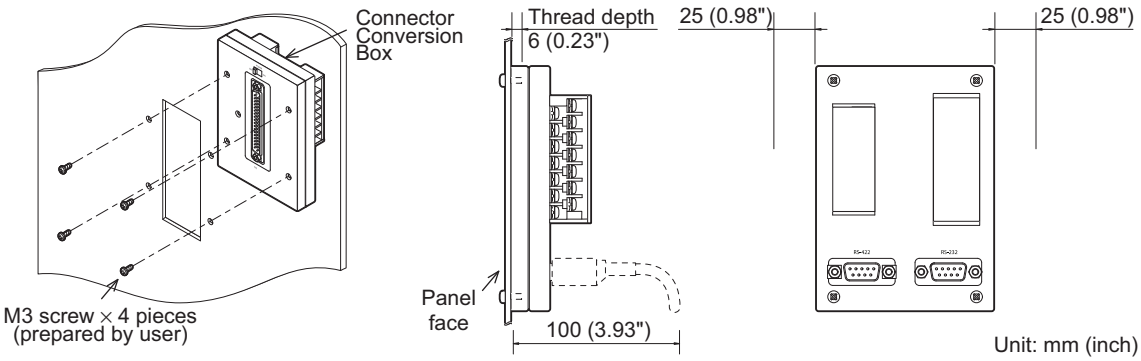
Prepare four M3 mounting screws separately while considering the thickness of the panel face.

Tighten the mounting screw with the specified torque.

Tightening torque	0.49 to 0.68 N/m

Make sure that interfering objects are not located within 100 mm from the rear face so that the connector of a PLC cable is not hindered.

To wire the terminal block, keep a space of 25 mm or more on both sides of the Connector Conversion Box.

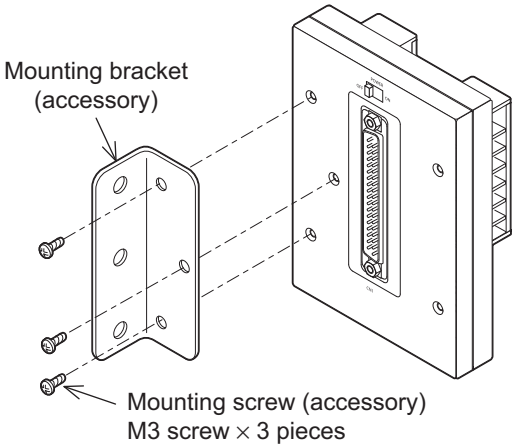


2 Mounting with a mounting bracket

(1) Attaching a mounting bracket

Attach the provided mounting bracket to the Connector Conversion Box.
Tighten the mounting screw with the specified torque.

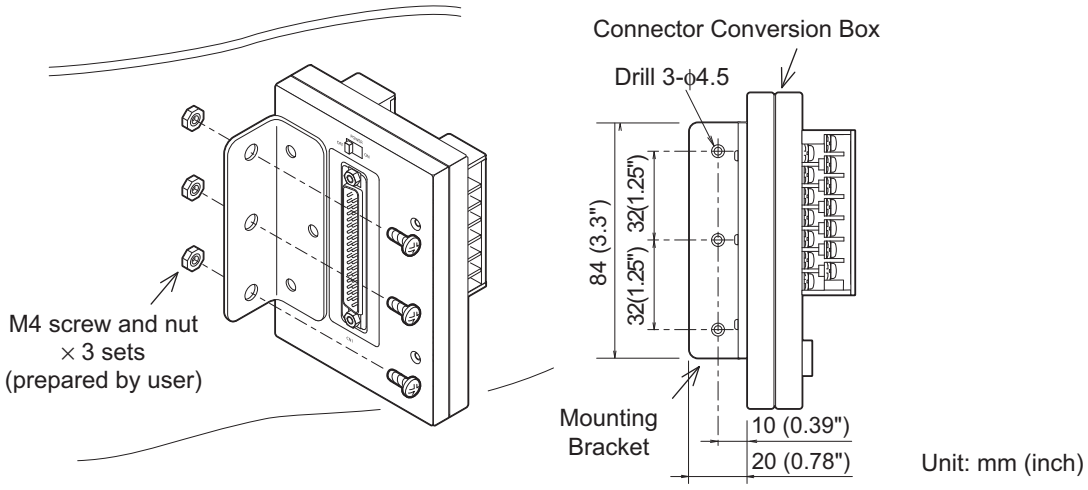
Tightening torque	0.49 to 0.68 N/m



(2) Mounting on the panel face

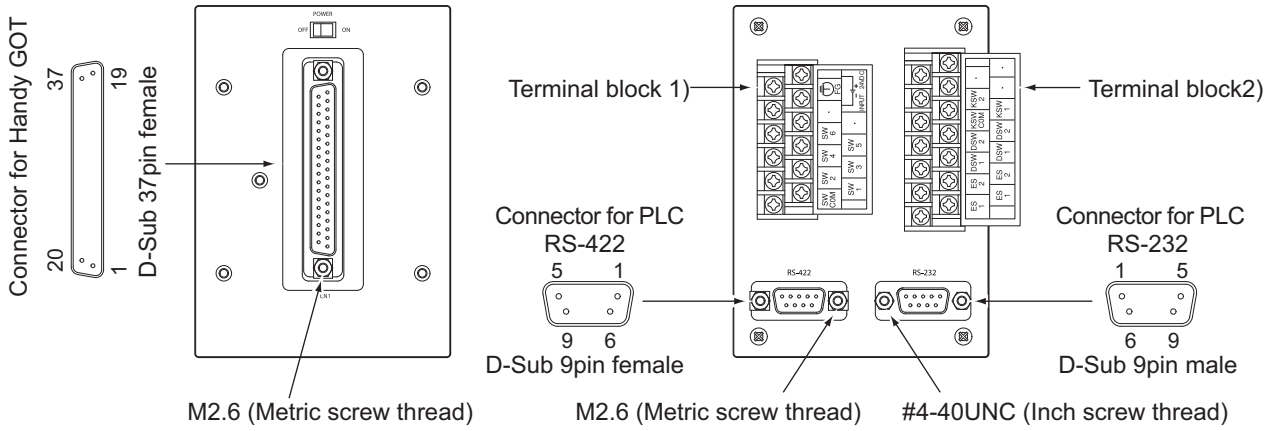
Mount the Connector Conversion Box on the panel face.
Drill screw holes on the panel face as follows.
Tighten the mounting screw with the specified torque.

Tightening torque	0.69 to 0.88 N/m



6.7.4 Pin assignment

The 37-pin D-Sub connector of an external cable is converted into terminal blocks and a connector for PLC (D-Sub 9-pin type).



(1) Connector for PLC (RS-422: D-Sub, 9-pin, female type)

GT11H-CNB-37S	GT11H-C□□□-37P		Application
Connector for PLC RS-422	Connector for Handy GOT		
	D-Sub 37pin	Signal name	
1	2	TXD+(SDA)	Signal line for PLC communication (For wiring, refer to the chapter corresponding to the connected controller.)
2	6	RXD+(RDA)	
3	4	RTS+(RSA)	
4	8	CTS+(CSA)	
5	10	SG	
6	3	TXD-(SDB)	
7	7	RXD-(RDB)	
8	5	RTS-(RSB)	
9	9	CTS-(CSB)	

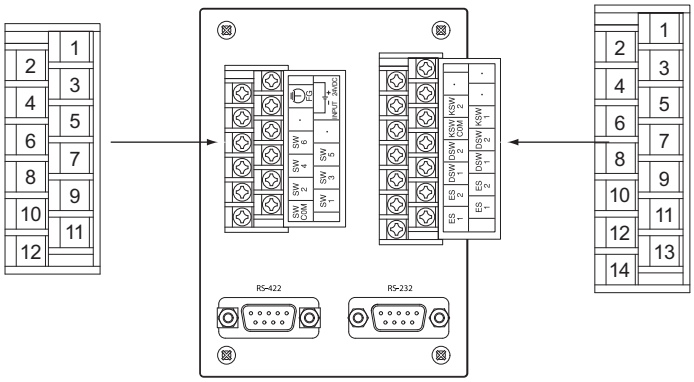
(2) Connector for PLC (RS-232: D-Sub, 9-pin, male type)

GT11H-CNB-37S	GT11H-C□□□-37P		Application
Connector for PLC RS-232	Connector for Handy GOT		
	D-Sub 37pin	Signal name	
1	–	N.C	Signal line for PLC communication (For wiring, refer to the chapter corresponding to the connected controller.)
2	4	RXD(RD)	
3	2	TXD(SD)	
4	3	DTR(ER)	
5	10	SG	
6	5	DSR(DR)	
7	6	RTS(RS)	
8	7	CTS(CS)	
9	–	N.C	

(3) Terminal block 1) , 2)

Terminal block 1)
(Terminal block for power supply
and operation switches)

Terminal block 2)
(Terminal block for emergency stop switch,
grip switch, keylock switch)



GT11H-CNB-37S		GT11H-C□□□-37P		Application
Terminal block		Connector for Handy GOT		
		D-Sub 37pin	Signal name	
Terminal block 1)	1	36, 37	DC24V+	24VDC power supply "+"
	2	1	FG	Frame ground
	3	18, 19	DC24-	24VDC power supply "-"
	4	–	N.C	Disable
	5	–	N.C	
	6	34	SW6	For Operation switch
	7	33	SW5	
	8	16	SW4	
	9	15	SW3	
	10	14	SW2	
	11	13	SW1	
	12	12	SW-COM	
Terminal block 2)	1	–	N.C	Disable
	2	–	N.C	
	3	–	N.C	
	4	30	KSW-2	For Keylock switch
	5	29	KSW-1	
	6	28	KSW-C	
	7	27	DSW-2	For Grip switch
	8	26	DSW-2	
	9	25	DSW-1	
	10	24	DSW-1	
	11	23	ES-2	For Emergency stop switch
	12	22	ES-2	
	13	21	ES-1	
	14	20	ES-1	

7. INSTALLATION

[MOUNTING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT to/from the panel .

- Always turn off the power ON/OFF switch on the connector conversion box before connecting or disconnecting the GOT to it.
  Connecting or disconnecting the GOT with the power being turned on may result in damage to the unit or malfunctions.

- Be sure to shut off all phaps of the external power supply used by the system before mounting or removing the relay cable onto/from the GOT.

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the option function board onto/from the GOT.
  Not doing so can cause the unit to fail or malfunction.

- When installing the option function board or battery, or operating the reset switch, wear an earth band etc. to avoid the static electricity.
  The static electricity can cause the unit to fail or malfunction.

[MOUNTING PRECAUTIONS]

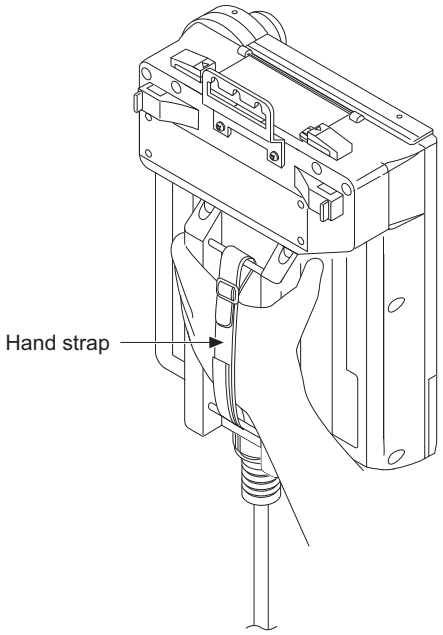
⚠CAUTION

- Use the GOT in the environment that satisfies the general specifications described in this manual. Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- Never drop cutting chips and electric wire chips into the ventilation window of the Handy GOT when you drill screw holes or perform wiring.
  Otherwise, fire, failure or malfunction may be caused.
- Connect connection cables securely to the specified connectors while the power is turned OFF.
  Imperfect connection may cause malfunction or failure.
- When connecting cables, pay attention to the contents described in this section.
  Especially, attach the rear cover so that PCBs inside the Handy GOT are not interfered with connection cables.
- Securely connect the option function board to the connector provided for the board.
- When inserting/removing a CF card into/from the GOT, turn the CF card access switch off in advance. Failure to do so may corrupt data within the CF card.
- When inserting a CF card into the GOT, push it into the insertion slot until the CF card eject button will pop out. Failure to do so may cause a malfunction due to poor contact.
- When removing a CF card from the GOT, make sure to support the CF card by hand, as it may pop out. Failure to do so may cause the CF card to drop from the GOT and break.

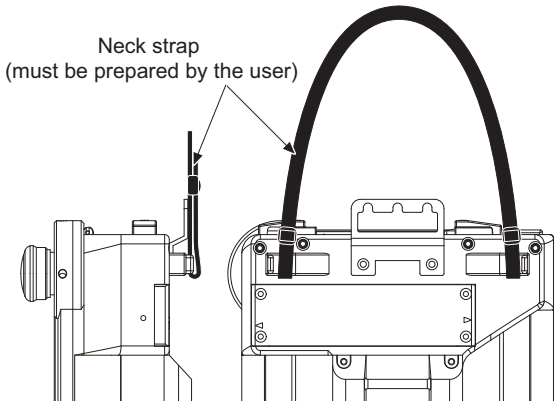
7.1 Installing Procedure

7.1.1 Holding the Handy GOT in hand

When operating the Handy GOT with holding it in hand, put a hand under the hand strap on the back. The hand strap length is adjustable.

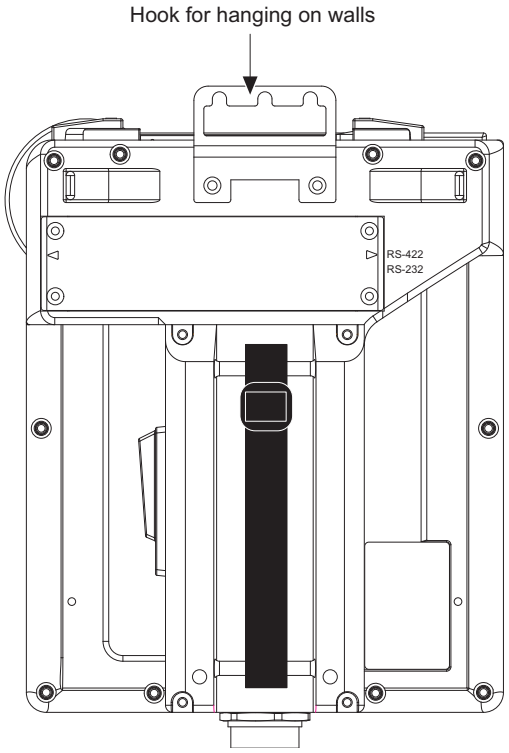


A neck strap (prepared by the user) can also be installed to prevent the GOT from dropping.



7.1.2 Hanging on a wall

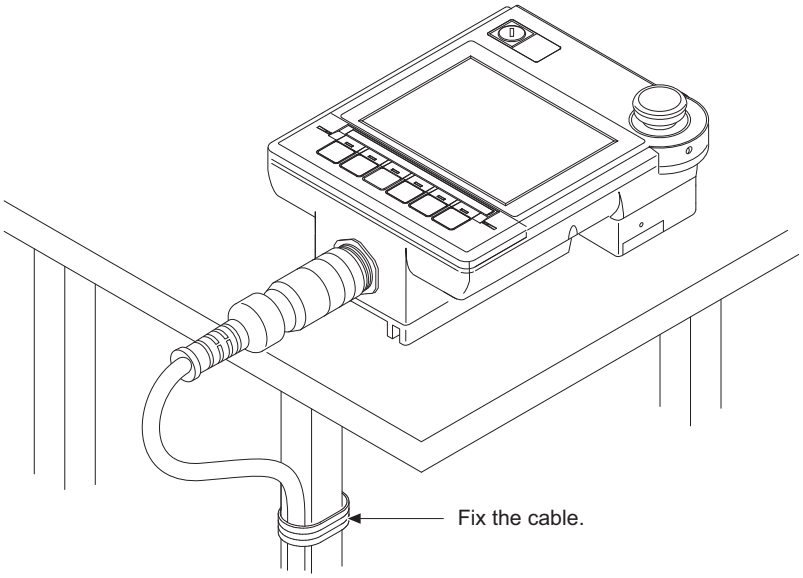
When operating the Handy GOT with hanging on a wall, use the hook for hanging on a wall on the back .



Load (approx. 1.2 to 5 kg) is applied to the wall depending on the weight of the GOT (approx. 1kg) main unit and the length of the connection cable.
Take the load into a consideration to attach a fitting on the wall.

7.1.3 Placing on a desk or a floor

When placing the Handy GOT on a desk or floor, pay attention to the following.

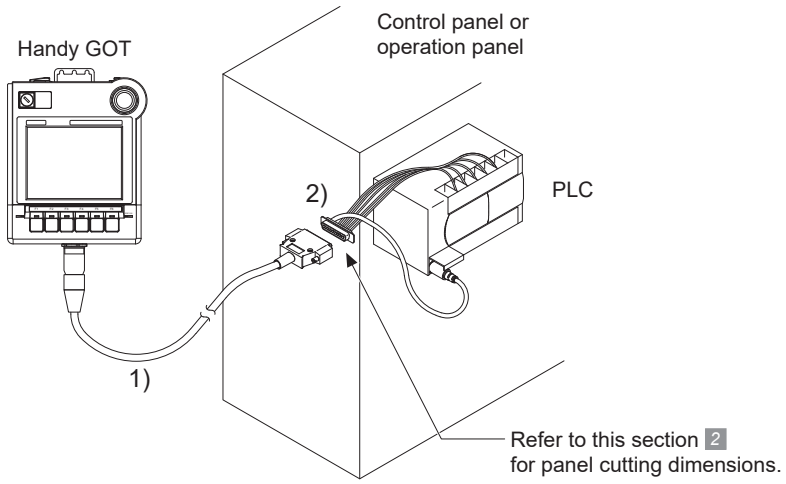


Keep the GOT main unit horizontal to the desktop not to fall from and fix the connection cable to the desk, etc.

7.1.4 Installing to/removing from panel

1 Installing a connector on the panel of control box or cabinet

The following describes the panel processing when the GOT is installed or removed by attaching a connector to the control panel or operation panel.



Name	Cable
1) External cable (relay cable connection side D-Sub 37 pins)	GT11H-C30-37P
	GT11H-C60-37P
	GT11H-C100-37P
2) Relay cable for connection between PLCs	GT11H-C15R4-8P
	GT11H-C15R4-25P
	GT11H-C15R2-6P

Select the cable according to the communication method and controller.
For the cable selection, refer to the following.

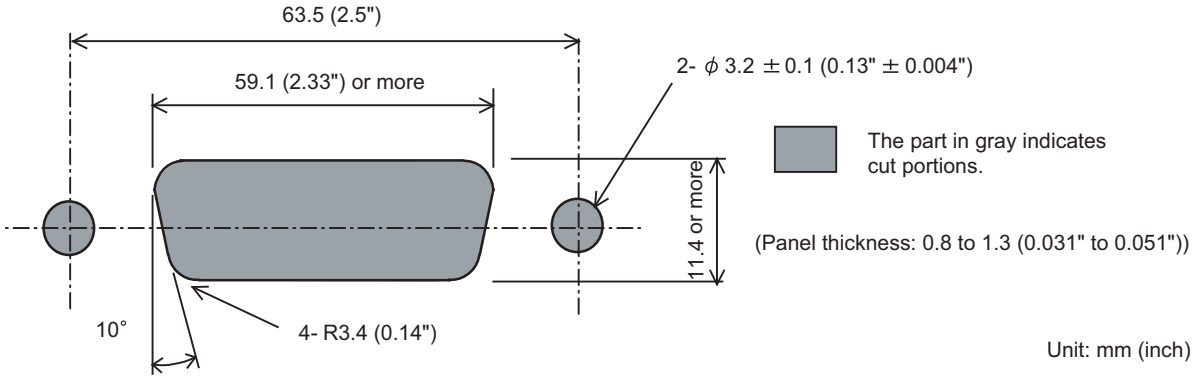
☞ Chapter 20 COMMUNICATION CABLE

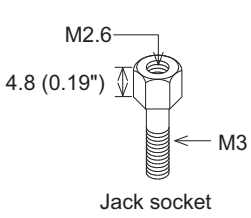
The relay cables other than mentioned above must be prepared by the user.
When using the external cable that is untied on one side (GT11H-C30, GT11H-C60 or GT11H-C100), refer to the following and connect it according to applications.

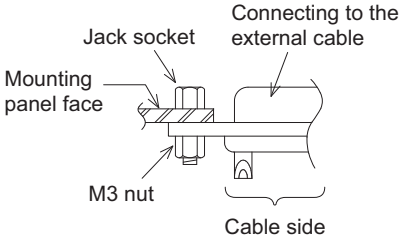
☞ Section 20.1.1 Pinlayout of cable and connector, and signal name

2 Panel cutting dimensions for relay cable

When mounting the connector of the relay cable on a panel, process the panel with the following dimensions.





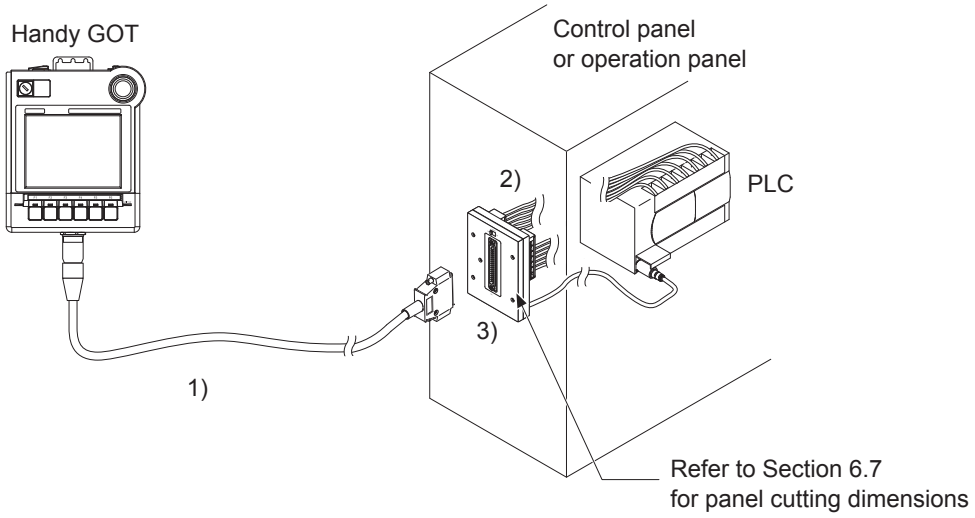


Insert a jack socket into the above round hole and fix it with the M3 nut (accessory for relay cable).

3 Installing the Connector Conversion Box (GT11H-CNB-37S) on the panel

(1) Overview

The following describes the panel processing when the GOT is installed or removed by attaching a Connector Conversion Box to the control panel or operation panel.



Name		Cable
1)	External cable (Connector Conversion Box connection side D-Sub 37 pins)	GT11H-C30-37P
		GT11H-C60-37P
		GT11H-C100-37P
2)	PLC connection cable	Select or prepare appropriate cables for the communication method and controllers.
3)	Connector Conversion Box	GT11H-CNB-37S

Select the cable according to the communication method and controller.
For the cable selection, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

☞ Chapter 22 to Chapter 58

(2) Panel cutting dimensions for Connector Conversion Box

The Connector Conversion Box can be installed on the panel face directly or with mounting bracket offered as an accessory.
For details on installing procedure and panel cutting dimensions, refer to the following.

☞ Section 6.7 Connector Conversion Box

8. UTILITY FUNCTION

Utility is a function, which carries out connection of GOT and PLC, screen display and operation method settings, program/data control and self-check etc.

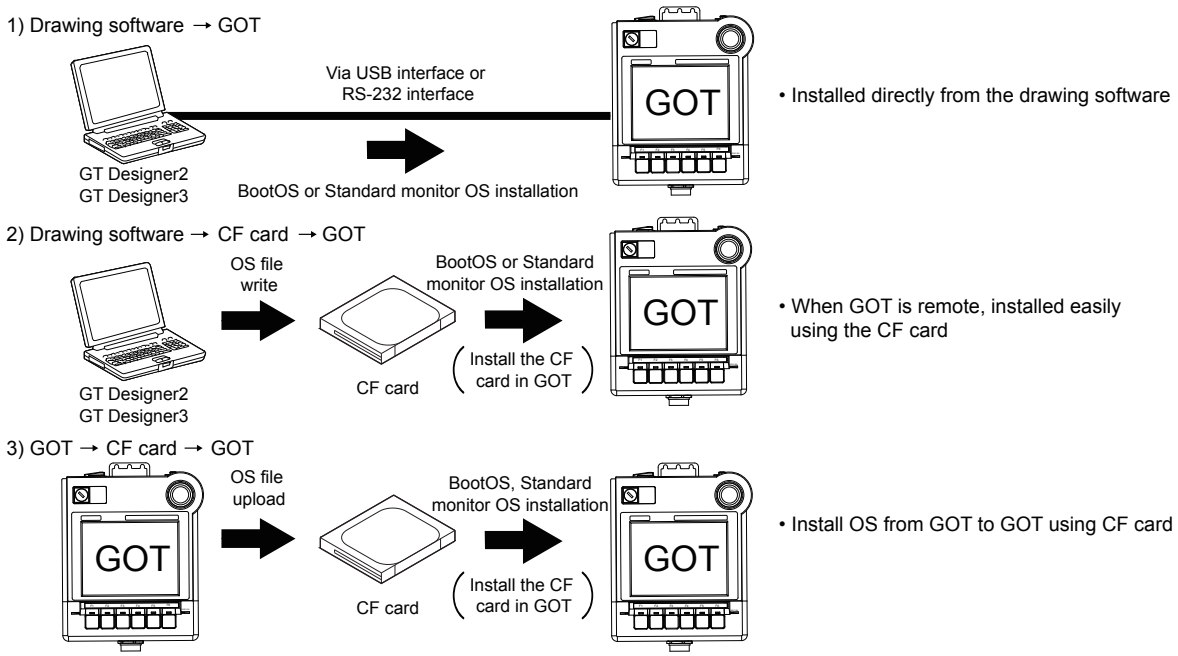
Refer to the following for the utility function list.

☞ Section 8.2 Utility Function List

8.1 Utility Execution

For utility execution, utility has to be displayed by installing BootOS and Standard monitor OS in the C drive (Flash memory).

There are following three types for the installing Standard monitor OS methods.



Refer to the following for the installation which uses drawing software.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

Refer to the following for the installation which uses GOT.

☞ Chapter 15 INSTALLATION OF CoreOS, BootOS AND STANDARD MONITOR OS

8.2 Utility Function List

The items in the following list can be set/operated on the utility screens.

Item			Functions overview
Communication setting *1			Setting of channel number for the communication interface and assignment of communication driver
	Detail settings		Setting of communication parameter.
			Sequence program protection key word setting. (When FX series PLC is connected)
			Sequence program protection key word deleting. (When FX series PLC is connected)
			Sequence program protection status cancel. (When FX series PLC is connected)
			Sequence program protection status reactivate. (When FX series PLC is connected)
GOT setup	Display		Setting of opening screen time.
			Setting of screen saving time.
			Setting of screen saving back light ON/OFF.
			Switching message language (Japanese/English/Chinese (Simplified)/Korean/German) *2
			Setting of battery alarm display ON/OFF
			Setting of Invert colors ON/OFF *3
		Brightness, contrast	Liquid crystal intensity setting.
			Liquid crystal contrast setting
	Operation		Setting of buzzer volume.
			Setting of window move buzzer volume.
		Security setting *4	Security level change. (Security password input of each object)
		Utility call key	Setting of the menu call key.
		Key sensitivity	Key sensitivity setting
		Key reaction speed	Display of key reaction speed
	Handy GOT Setting		ON/OFF action setting of grip SW LED
Time setting & display			Selection of base clock.
			Display current time of clock.
			Set current time of clock.
			Display of battery status.

Item			Functions overview
Program/data control	OS information		Installing OS.
			Uploading OS.
			Property display of OS. (Kind, version, and date)
			Data check of system file. (OS)
	Project Information		Downloading project file.
			Uploading project file.
			Project file deleting.
			Copying project file. (A drive → A drive)
			Property display of project file. (Date, version and screen title)
			Data check of project file.
	Alarm information		Deleting alarm log file.
			Copying alarm log file.
	Memory card format		Formatting of CF card and Internal SRAM
	Memory information		Display of free memory space in GOT
	GOT data package acquisition		Copies the OS and project data to the memory card.
Debug & Self check	Debug	System monitor	Device monitor of PLC, Test function, Present value change of the buffer memory monitor and the buffer memory of intelligent module
		A List editor	Sequence program and parameter change of ACPU
		FX list editor	Sequence program and parameter change of FX PLC
	Self check	Memory check	A drive memory check (Standard CF card)
			C drive memory check (Built-in flash memory)
			D drive memory check (Internal SRAM)
		Drawing check	Missing bits, color, draw, display and overlap display check of liquid crystal
		Font check	Installed fonts check
		Touch panel checking	Touch panel operation check
		I/O check	Connected target confirmation
			Self-loopback check*5
	System alarm display		Displaying GOT errors, CPU errors, network errors
			Resetting GOT errors
	GOT start time		Displaying GOT start date and time, current time, accumulated operating hours
Clean			Display the screen to clean the display section.

*1: Perform the following with the drawing software.
- Installing the communication driver
- Downloading the project data with communication settings (channel number and communication driver assignment)

*2: Selectable languages vary, depending on the standard fonts that are installed.

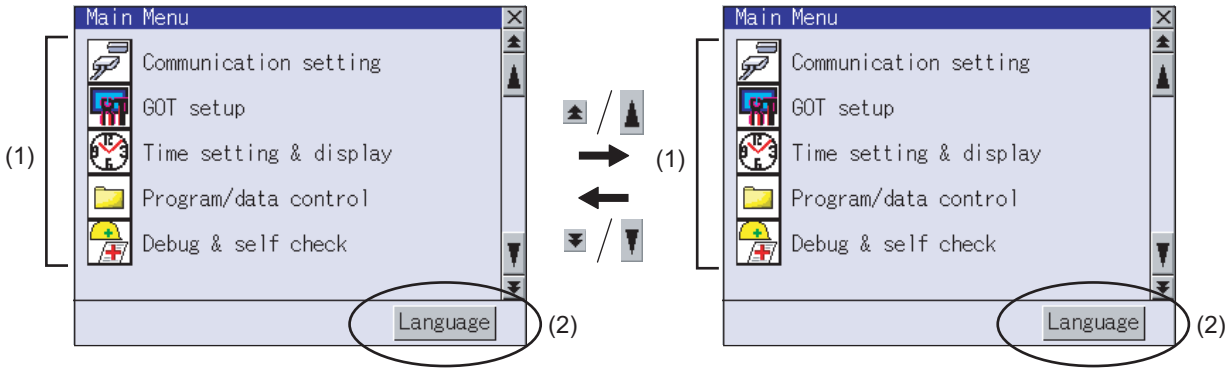
*3: Applicable to GT1150HS-QLBD only.

*4: It is necessary to set the security level with drawing software.

*5: It is necessary to install the RS-232 connector for test. (Section 13.10 I/O Check)

8.3 Utility Display

To display setting screens for each utility, the main menu must displayed first.
(The utility screen is a factory installed horizontal format screen that cannot be edited.)



(1) Main menu

The menu items that can be selected from the GOT utility are displayed.
Touching a menu item in the main menu will display the setting screen or following selection screen for the item.

(2) System message switch button

This button switches the language used for the utility screen and system alarms.

When touching the [Language] button, the Select Language screen is displayed.

1 Touch the button of a language to be displayed and then [OK] button, and the language is selected. *1
(The [▶] mark moves.)

2 Touching the [☒] button restarts the GOT and the language on the utility is switched to the selected one.

*1: Only selectable languages are displayed.
The selectable languages differ depending on the fonts installed in the GOT.
For details of the fonts, refer to the following manual.

GT Designer2 Version☐ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

Point

Switching the display language of the utility

(1) When starting the GOT without selecting any language or the selected language and the installed fonts are not matched.
The following screen will be displayed.
Touching the button of a desired language restarts the GOT and the language is switched to the selected one.

(2) Switching the display language of the utility by devices
Any device can be used for switching the display language of the utility.
For details, refer to the following.

☞ GT Designer3 Version1 Screen Design Manual (Fundamentals)

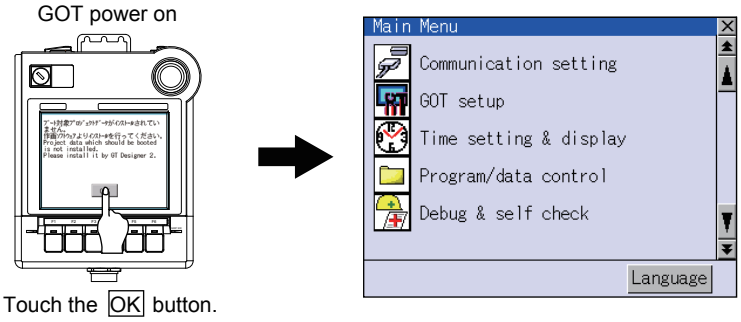
When using devices to switch the display language of the utility, it does not change even if the display language is switched from the GOT utility screen.

8.3.1 Display operation of main menu

The following four types of operation can display the main menu.
(Display the main menu after installing the Standard monitor OS from drawing software to the GOT Flash memory (Internal).)

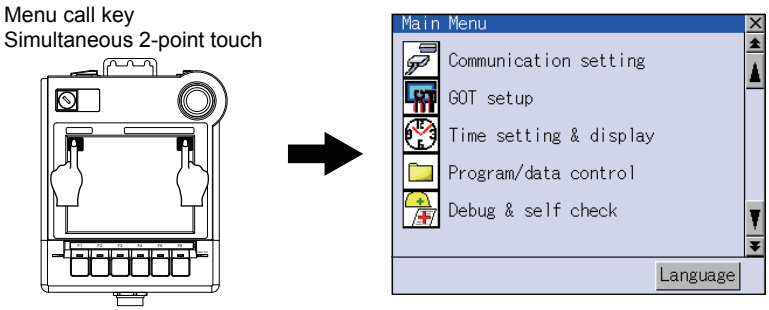
(1) When project data is undownloaded

After the GOT is turned on, a dialog box for notifying of absence of project data is displayed. After the dialog box is displayed, touch the OK button to display the main menu.



(2) When touching menu call key

If you touch the menu call key while user-created screen is displayed, the main menu is displayed. The menu call key can be set by the GOT utility or drawing software.
(At factory shipment, the GOT is set to "Simultaneous 2-point presses on GOT screen upper-right and upper-left corners".)



Point

When the utility call key is set to the zero point

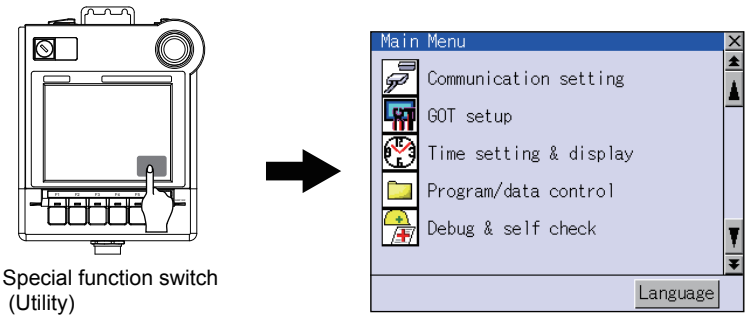
Even when the utility call key is set to the zero point, you can display the main menu using either of the following two operations:

- Pressing the special function switch set on the user-created screen
- Powering ON the GOT while touching the upper left corner of the screen

(3) When touching special function switch (utility)

If you touch the special function switch (utility) while user-created screen is displayed, the main menu is displayed.

The special function switch (utility) can be set as a touch switch that is displayed on a user-created screen by drawing software.



Special function switch (Utility)

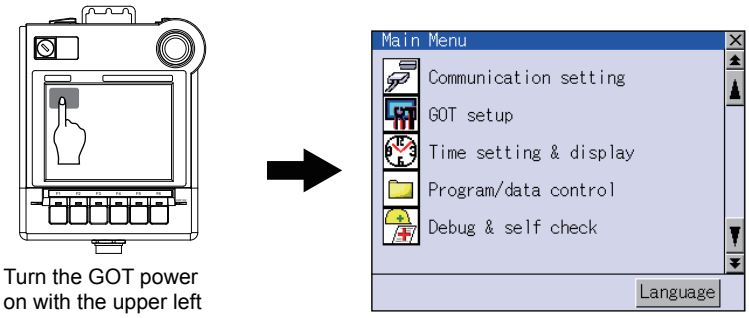
For the details of the special function switch, refer to the following.

☞GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Functions)

(4) When powering ON the system

If you power ON the GOT while touching the upper left corner of the screen, the main menu is displayed.

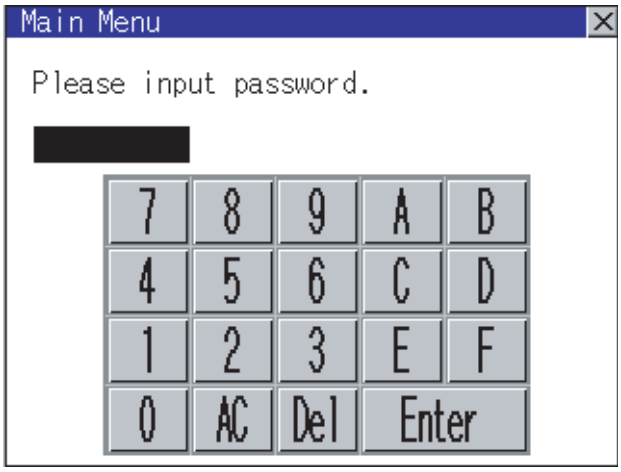


Turn the GOT power on with the upper left corner touched.

Remark

Lock the utility display by password.

When a password is set on the GOT using drawing software, a password dialog box is displayed when trying to access the main menu of the utility display.
(The password setting option in drawing software is located in the common menu.)



When the password is not matched, the following error message is displayed.

When touching [OK], the screen returns to the monitor screen.

(1) Input operation of password

1) Input the password after touching [0] to [9], [A] to [F] key.
2) Define the password by touching [Enter] key, after inputting password.
3) To correct the input character, touch [Del] key to delete the correcting character and then reinput/retype the new character.

(2) Password input cancel operation

When [☒] button is touched, the screen returns to the monitor screen.

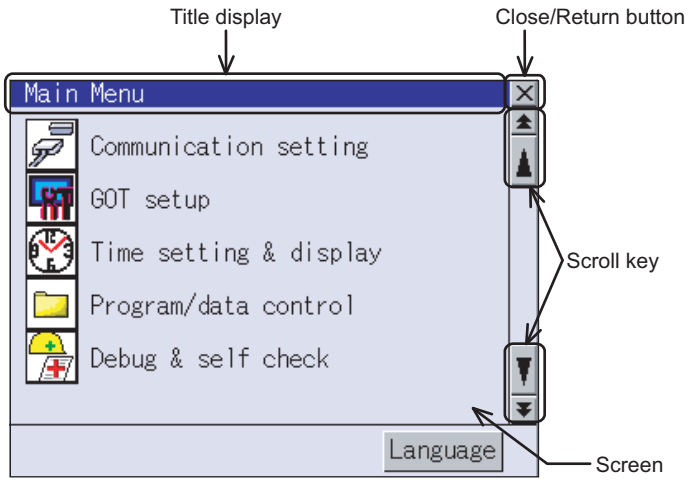
Refer to the following for details on setting passwords.

☞GT Designer2 Version□ Screen Design Manual

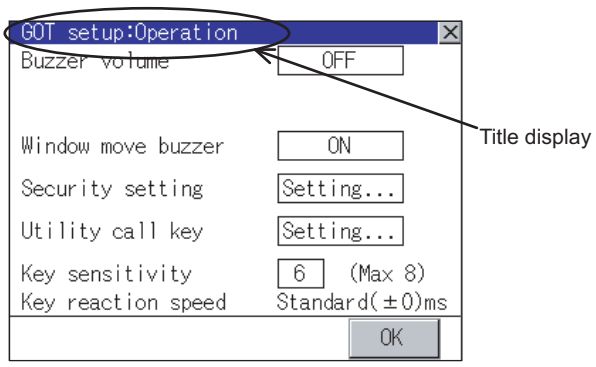
GT Designer3 Version1 Screen Design Manual (Fundamentals)

8.3.2 Utility basic configuration

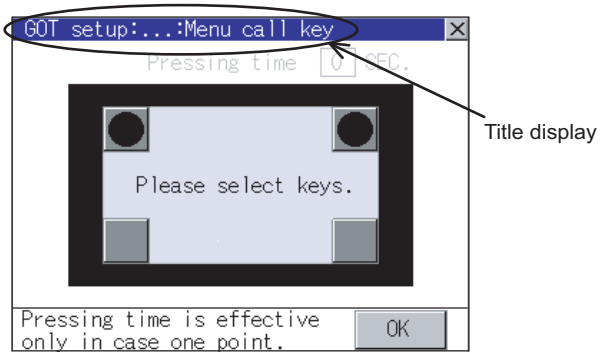
The basic configuration of the screen is as follows.



(1) Title display



The screen title name is displayed in title display part.
As the screen is composed of multiple layers, the title including these layers is displayed.



If the title overflows the title display area, the middle section is omitted and "..." is displayed at the section.

(2) Close/Return button

When a middle screen of the layers is displayed, if the ☒ (Close/return) button in the right corner of screen is touched, returns to the previous screen.
If this button is touched when directly displayed from monitor screen, the screen is closed and returns to monitor screen.

(3) Scroll button

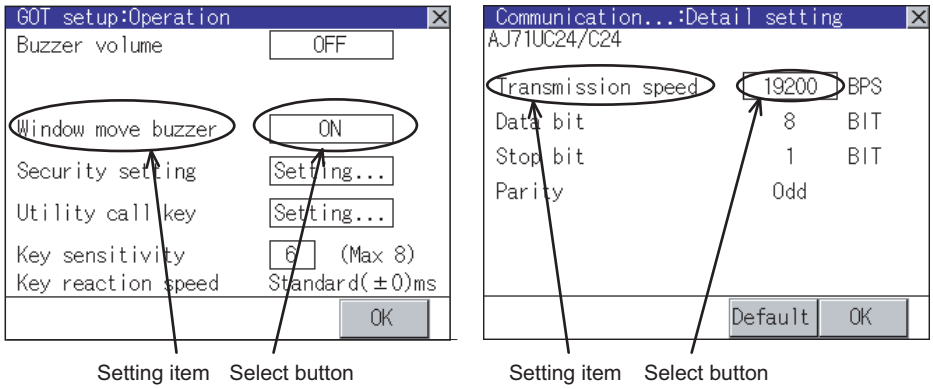
For screens in which the content does not fit on one screen page, there is a right or down scroll button on the screen.

▲▼◀▶ Scroll one line/column

⏫⏬⏪⏩ Scroll window

8.3.3 Basic operation of settings change

1 Change of setting value



1 Touch the select button (setting point) on the screen.

- OK Key: It is a key for selecting the setting value. Repeats with each touch ON OFF .
- Numerical Key: It is a key for inputting the numerical value. It displays the keyboard on the bottom of the screen when touched.

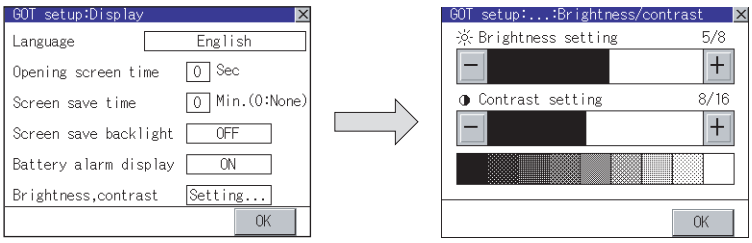
In the above mentioned screen example, there is no setting item which displays the keyboard. For the operation of keyboard refer to the next page.

Touching Enter confirms the numerical input.

When the setting range exists it repeats the numerical without displaying keyboard.

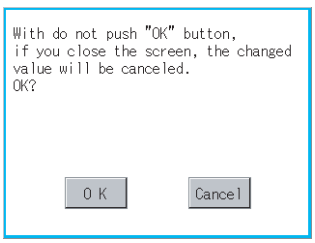
Example: 4800bps 9600bps 19200bps

- Setting... Key: It shifts to the setting screen of each setting item when touched.



2 Setting contents are reflected if OK button is touched.

3 If ☒ button is pressed without touching OK button, the dialogue below is displayed and the changes are canceled, then the dialog box is closed.



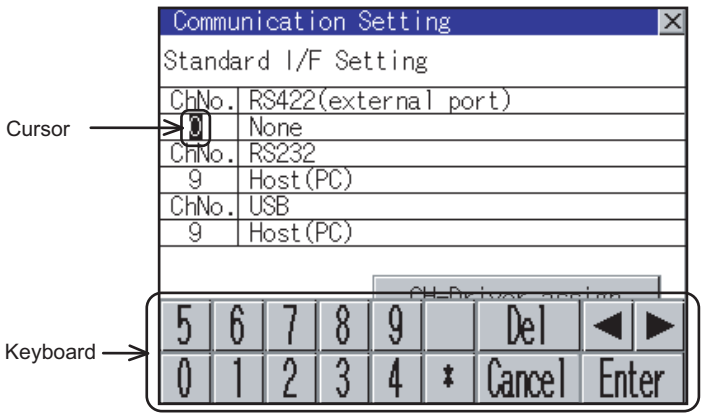
OK button : The changed value is canceled, and the screen is closed.

Cancel button : The operation setting screen is displayed.

2 Keyboard operation

1 Touch the numerical value to be changed.

2 Keyboard for numerical input is displayed and cursor is displayed simultaneously.
The key board display position changes by the position of numerical value touched.
(At the time of numerical input, displayed in the position which will not interrupt the inputting.)



3 Input numeric with keyboard.

- [0] to [9] Key : Input the numeric.
- [Enter] Key : Touching the [Enter] key completes numeric input and closes the keyboard.
- [Cancel] Key : Touching the [Cancel] key cancels numeric input and closes the keyboard.
- [◀] [▶] Key : Moves the cursor left or right if there is an item that can be entered.
- [Del] Key : [Del] key is used when canceling the input by 1 character.
- [*] key and the key which is not mentioned do not function.

4 If [Enter] key is touched, numeric input is completed and keyboard is closed.

9. COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

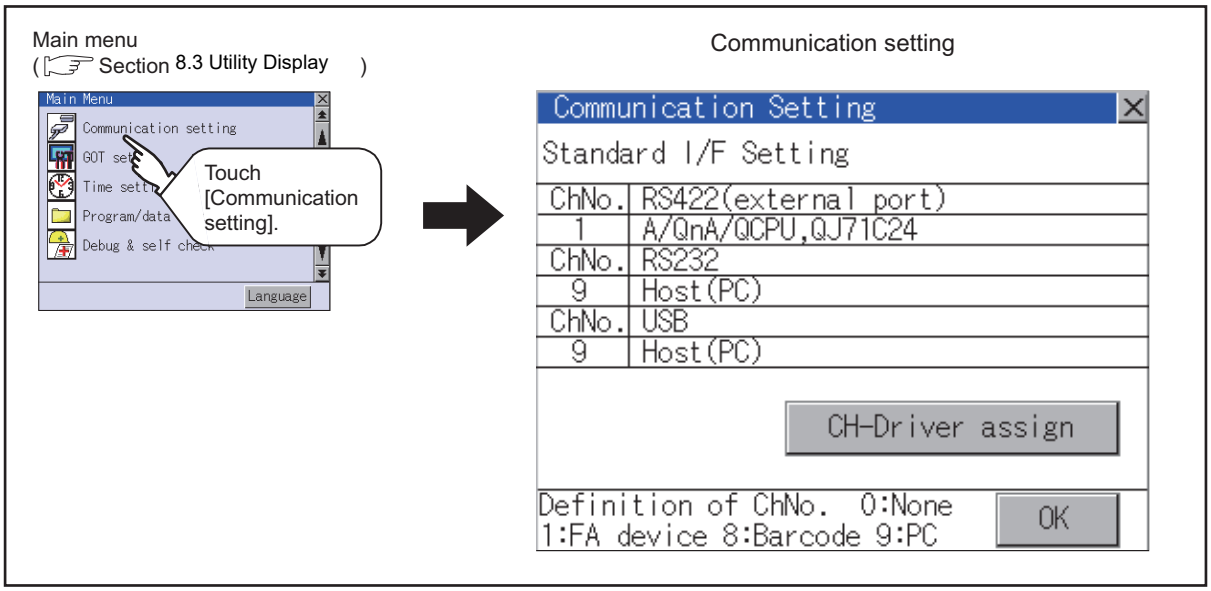
In [Communication Setting], the communication interface names and the related communication channel, communication driver names display and channel numbers are set.
Moreover, in [Communication Detail setting], the communication interface details are set. (Communication parameters setting)

9.1 Communication Setting

9.1.1 Communication setting functions

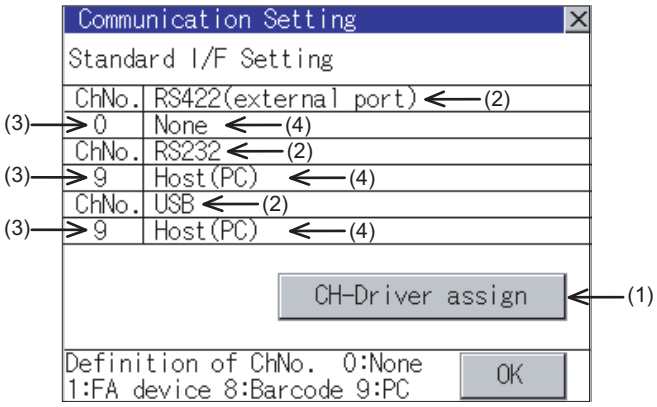
Function	Contents
Channel-Driver assign	Change the assignment of channel No. and communication driver name.
Channel no. (Ch No.) setting	Set the channel numbers of the communication interface.
Communication parameters setting	Set communication parameters of communication devices.

9.1.2 Communication setting display operation



9.1.3 Description of communication setting screen

Name of setting item and display item columns for [Communication Setting]



(1) Channel - Driver assign

(a) Assigning channel No.

Channel No.s can be assigned to each of the communication drivers installed in the GOT.
Without setting [Communication Settings] in drawing software, communication with PLC CPU is only available after assigning a channel No. with this function.

(b) Changing communication driver

The communication driver assigned to the channel can be changed using the communication setting.
(To change the communication driver, it is required to pre-install the communication driver to be changed in the GOT.)

For details on the Channel-Driver assign, refer to the following.

☞Section 9.1.4 Operation of communication setting

(2) Standard interface display box: Communication interface included as standard in Handy GOT.

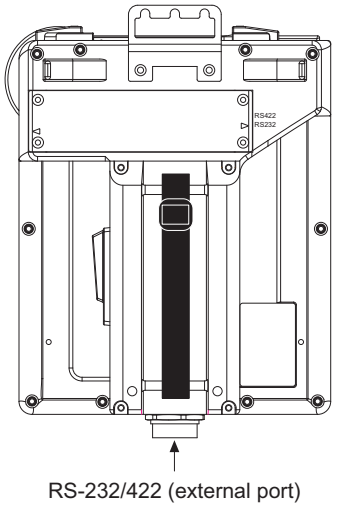
The standard interface includes the following three types.

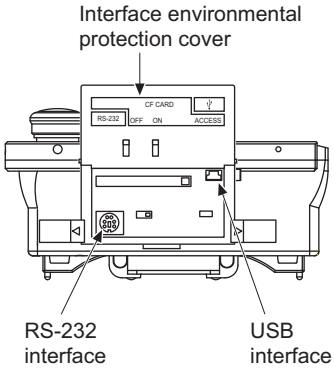
RS232..... An interface used for communication with a PC (drawing software) on the top of a Handy GOT.

RS232/RS422 (External port)..... An interface that connects an external cable.
Used for communication with a controller.
Automatically recognized and displayed with the wiring of the cable connector used for PLC communication.

☞ Section 20.1 Overview of Communication Cable

USB..... An interface used for communication with a PC (drawing software) on the top of a Handy GOT.





(3) Channel number specification menu BOX

- 0: Set when the communication interface is not used.
- 1: Set when connecting to PLC or microcomputer. (Only one can be set among arbitrary communication interfaces.)
- 8: Set when connecting to a bar code reader.
  (Bar code reader cannot be connected to Handy GOT.)
- 9: Set when connecting to PC (drawing software) or modem. (For USB and RS-232 interfaces, the simultaneous setting is possible. However, when either interface is communicating, the communication is not allowed for another interface.)
- Setting is not allowed for 2 to 7, *.
- Fixed to 9 for the RS-232 interface.
- Fixed to 9 for the USB interface.

(4) Driver display BOX

The name of the communication driver for which a channel number is assigned is displayed.
"None" is displayed in the driver display BOX in the following cases :

- The communication driver is not installed. (☞Section 12.2 OS Information)
- "0" is set in the channel number specification menu BOX.

When setting the channel number to "9", the communication driver "Host (PC)" is automatically assigned.

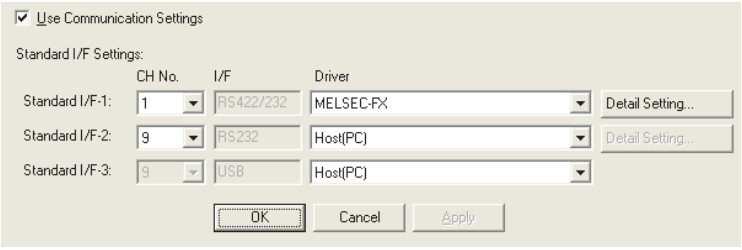
When setting the channel number to "9" for the RS-232 interface, the communication driver [Host(PC)] or [Host(Modem)] can be selected.

When setting the channel number to "9" for the USB interface, the communication driver [Host(PC)] is automatically assigned.

Point

Precautions for communication between GOT and connected devices

(1) Installing [Communication driver] and downloading [Communication Settings]
To perform communication with the connected device, the following actions are necessary.
1) Installing [Communication driver] (Up to 4, OS installation)
2) Assigning channel number and communication driver to communication interface (Communication Setting)
3) Downloading [Communication Settings] (project data) assigned in step 2)
Perform 1), 2) and 3) with drawing software.



For [Communication Settings], refer to the following manual.

☞GT Designer 2 Version□ Screen Design Manual

GT Designer 3 Version1 Screen Design Manual (Fundamentals)

For installation of [Communication driver] (OS) and download of project data, refer to the following manual.

☞GT Designer 2 Version□ Basic Operation/Data Transfer Manual

GT Designer 3 Version1 Screen Design Manual (Fundamentals)

(2) When [Communication Settings] has not been downloaded using drawing software
When [Communication Settings] has not been downloaded, the GOT automatically assigns the installed communication driver as the RS-422/RS-232 (External port) interface.
When multiple communication drivers are installed, the GOT automatically assigns the first-installed communication driver to the RS-422/RS-232 (External port) interface.
In the case of already assigned communication driver, change the settings in the [Communication Settings] of the utility screen or in the [Communication Settings] of drawing software.

(a) After automatic assignment

If the OK button is clicked to store the settings in the GOT after automatic assignment, the automatic assignment will not be executed from the next startup.

(b) Priority of [Communication Settings] of drawing software

When [Communication Settings] is downloaded to the GOT from drawing software after automatic assignment, the GOT will operate according to the [Communication Settings] of drawing software. (The GOT operates in the [Communication Settings] set last time.)

9.1.4 Operation of communication setting

1 Channel and driver assignment operation

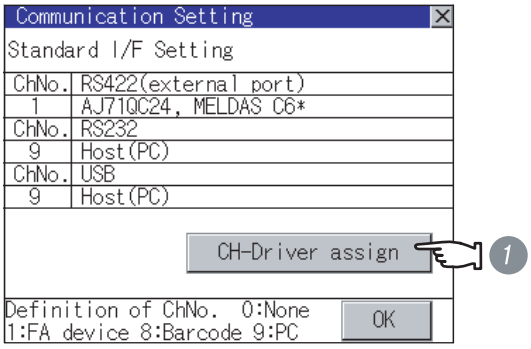
The operation method for the channel and communication driver assignment is described here.
In this section, the case for changing the computer link connection (Communication driver: [AJ71QC24, MELDAS C6*]) to CPU direct connection (Communication driver: [A/QnA/QCPU, QJ71C24]) is described.
(In the present example, [Communication Settings] is not downloaded.)

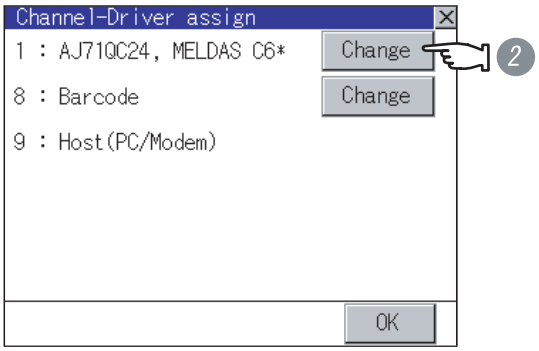
Point

Before starting operation

(1) Restarting the GOT
After Communication Setting is executed, the GOT automatically restarts.
If the project data is downloaded, GOT starts monitoring the communication device after restarting.
Before starting the operation, check for safe conditions.

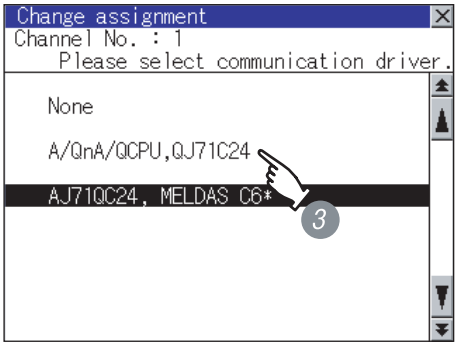
(2) Setting retention
Once being established, [Channel-Driver assign] is retained until [Communication Settings] is updated.



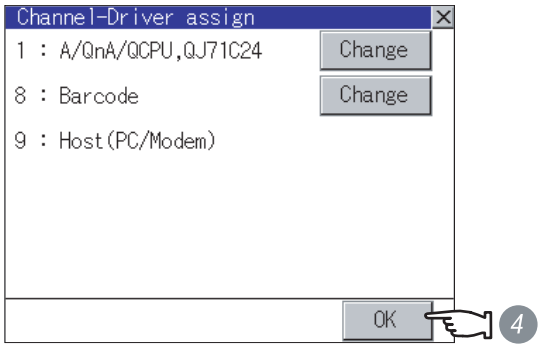


1 Install communication driver [A/QnA/QCPU, QJ71C24] to the GOT [Communication Settings] with AJ71QC24, MELDAS C6*.
([Communication Settings] is not downloaded from drawing software.)
After installing the communication driver, touch the CH-Driver assign button in [Communication Settings].

2 The screen shown on the left is displayed.
Touch the Change button.

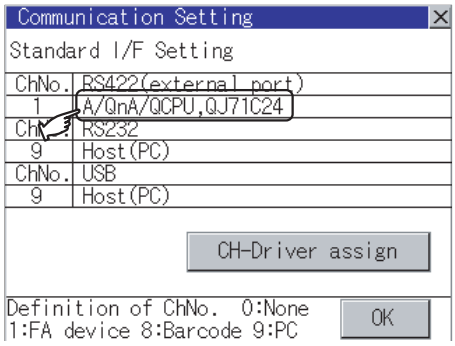


3 Touch the communication driver installed to the GOT ([A/QnA/QCPU, QJ71C24]).



4 The [Channel-Driver assign] screen is displayed again.
Touch the [OK] button.

5 Touch the ☒ button to return to the [Communication Settings] screen.



6 Check that the selected communication driver ([A/QnA/QCPU, QJ71C24]) is assigned.

7 After checking, touch the [OK] button.

8 Touch the ☒ button. The GOT restarts.

Point

Communication driver

(1) Multi-channel function
Handy GOT can install up to 4 communication drivers.
However, multiple communication drivers cannot be used at the same time.
(Multi-channel function cannot be used.)

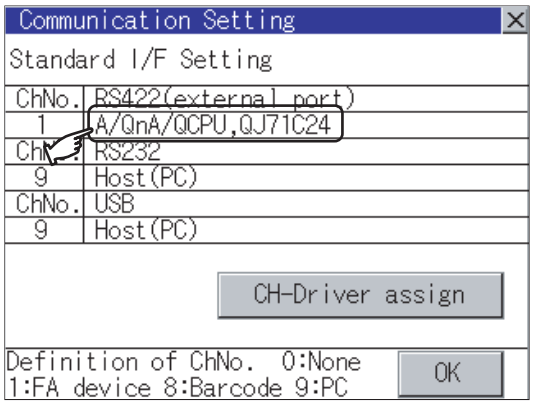
(2) Display of communication driver
Communication drivers are displayed in the order of installation.
To change the assigned communication driver to one that is not listed, change the [Communication Settings] of drawing software and download to the GOT.

2 Channel number setting operation

1 Touch channel number specification menu BOX to be set.

2 The cursor for the channel number specification menu BOX is displayed.
Simultaneously the keyboard for a numerical input is displayed.

3 Enter the channel number from the keyboard and touch the [Enter] key to settle the entered value.
Setting the channel number to "1" displays the name of the communication driver for which CH No.1 is assigned with drawing software in the driver display box.



3 Communication detail settings switching operation

1 If you touch the driver display BOX, the screen switches to the [Detailed setting] screen of the related communication device.
(☞Section 9.2 Communication Detail Settings)

9.2 Communication Detail Settings

9.2.1 Communication detail settings functions

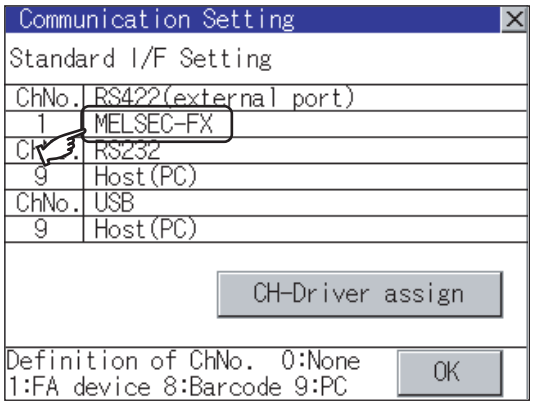
Function	Contents
Communication parameters setting	Set various communication parameters of communication devices. The settable parameters differ according to the communication device.
Keyword Register	For the FX series PLCs, key word for protecting program in the PLC can be set.
Keyword Delete	For the FX series PLCs, key word for protecting program in the PLC can be deleted.
Keyword Clear	For the FX series PLCs, the program protection status in the PLC can be cancelled.
Keyword Protect	When 2nd keyword*1 of FX series PLCs can be used, the cancelled program protection in the PLC can be reactivated.

*1: For details on 2nd keyword, refer to the following

FX series PLCs Manual

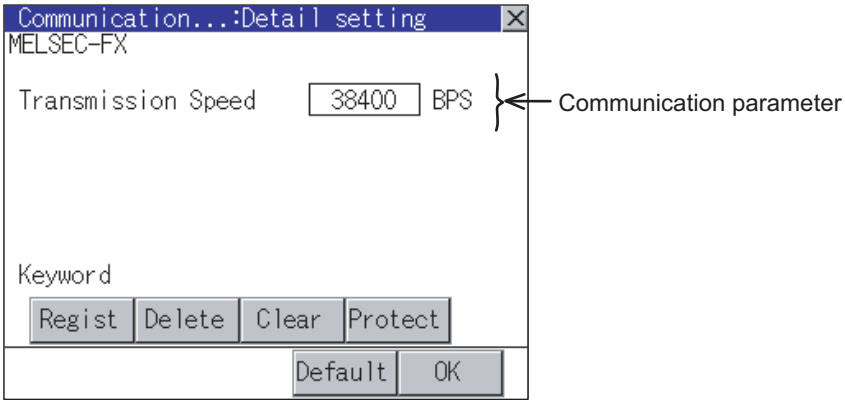
9.2.2 Communication detail settings display operation

1 Touch the driver display BOX of the communication parameter to be set in the [Communication setting] screen.



2 The screen switches to the [Communication Detail setting] screen.
Set communication parameters from this screen.
Refer to the following for the setting change operation.

Section 8.3.3 Basic operation of settings change



Point

Communication parameter setting using drawing software

(1) Select [System Environment] → [Communication Settings] from GT Designer2 to enter the communication parameters for each communication driver.
When using GT Designer3, execute the settings at [Controller Setting...] of [Common].
To change the communication parameter setting after downloading project data, change the setting at [Communication Detail Setting] (described in this section).
For [Communication Settings] using drawing software, refer to the following manual.

☞GT Designer 2 Version□ Screen Design Manual

GT Designer 3 Version1 Screen Design Manual (Fundamentals)

9.2.3 Display contents of communication detail settings

Display items or setting items of communication detail settings depend on the type of communication driver installed in the GOT.
For the setting contents of each driver, refer to the following.

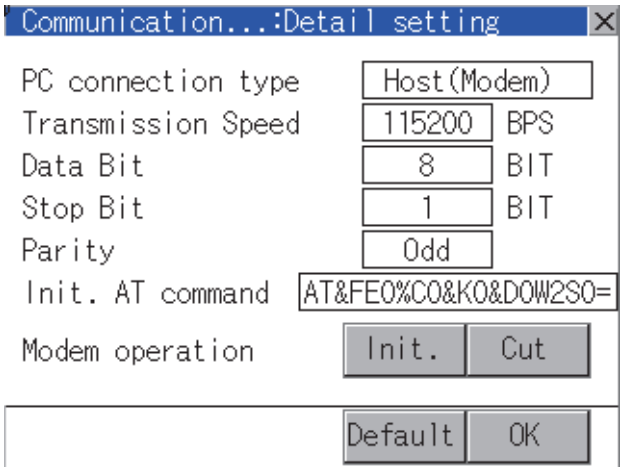
☞GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

This section describes the items that can be set using only the utility screen.

(1) Detail setting of Host (Modem)

On the communication detail setting screen of the Host (Modem), communication settings between GOT and modem, and model operation can be executed.

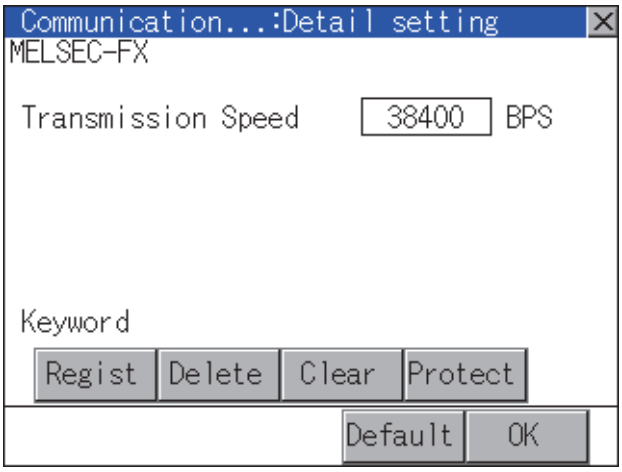


Item	Description	Setting range
PC connection type	Select the connection method to the personal computer.	Host (PC) / Host (Modem) <Default: Host (PC)>
Transmission Speed	Set the transmission speed when communicating.	9600/19200/38400/57600/115200 <Default: 115200>
Data Bit	Set the data bit when communicating.	7bit/8bit <Default: 8bit>
Stop Bit	Set the stop bit length when communicating.	1bit/2bit <Default: 1bit>
Parity	Set whether to execute or not the parity check during communication. When executing, set the type of the parity check.	Odd/Even/None <Default: Odd>
Init. AT command	Set the AT command for initialize the modem.	<Default: AT & FE0%C0 & K0 & D0W2S0=1>
Modem operation	Touch the [Init.] button to initialize the modem. Touch the [Cut] button to disconnect the line.	-

(2) Keyword settings of MELSEC-FX

On the communication detail setting screen of MELSEC-FX, registration, deletion, cancellation, or protection of the keyword for FX series PLC can be executed.

MELSEC FX



1 Regist

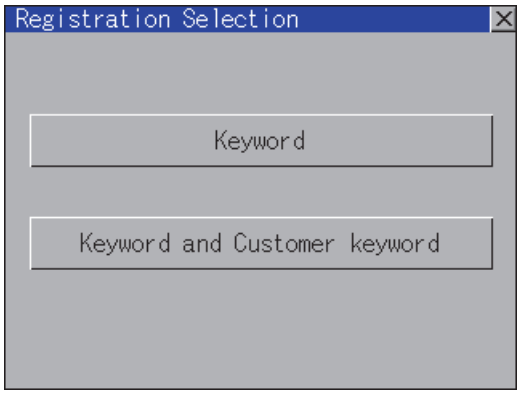
Keyword is registered.

(1) Touching the Regist key displays the selection screen for the registration.

For a FX PLC*1 that is not compatible with the customer keyword, the keyboard for the keyword input of (2) is displayed.

Select [Keyword] or [Keyword and Customer keyword].

When the [Enter] key is touched, the selection is completed and the keyboard for the keyword input is displayed.



Selection	Details
When [Keyword] is selected	Only keyword can be registered.
When [Keyword and Customer Keyword] is selected	The Customer Keyword can be registered after registration of the keyword.

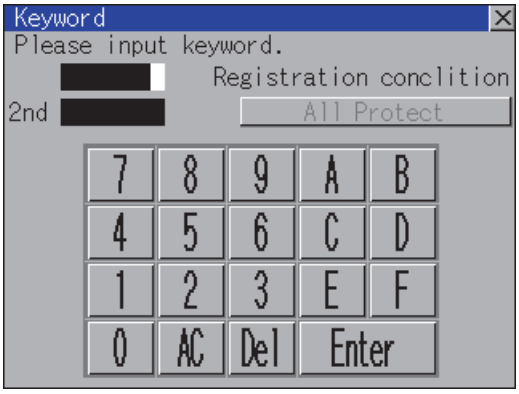
*1 For details on FX PLC compatible with customer keyword, refer to the following.

Point

The customer keyword allows the user to clear the protection set by a keyword. However, the protection cannot be deleted.

(2) When the registration is selected or the Regist key is touched on a PLC not compatible with the customer keyword, the keyboard for the keyword input is displayed in a pop-up window.

When the keyword is input and the [Enter] key is touched, registration is completed.
When [Keyword and Customer Keyword] is selected on the selection screen for the registration, the Customer Keyword entry screen of (3) is displayed.
For the keyword, 8 digits from 0 to 9 or A to F must be set.



Target PLC	Settings	
	When keyword and 2nd keyword are registered	When only keyword is registered
FX PLC compatible with 2nd keyword*1	Registration options can be selected.	Registration options*2 cannot be selected.
FX PLC not compatible with 2nd keyword*1	—	

*1: For details on FX PLC compatible with 2nd keyword, refer to the following.

☞ FX series PLCs Manual

*2: Registration options
Options can be selected among "Read/Write Protect", "Write Protect", or "All Protect".
For access restrictions of each setting, refer to the manual of the PLC to be used.

Point

(1) Selection of keyword protection level

For the devices which can perform the online operation of FX PLC, 3 levels of protection can be set.
When the monitoring or setting change by online devices is needed, set the keyword taking the following into consideration.

(a) When only keyword is registered

Protection level is selected by the head character of keyword.
All operation prohibition: Set the keyword starting with one of A, D to F, or 0 to 9.
Read / Incorrect write protection: Set the keyword starting with B.
Erroneous write prohibition: Set the keyword starting with C.

(b) When keyword and 2nd keyword are registered

Protection level is selected by "Registration options".

(2) Applicability of monitoring for each keyword protection level

The applicability of monitoring for each protection level is as follows.

Setting items		When only keyword is registered			When keyword and 2nd keyword are registered			Keyword unregistered/ protection cancelled
		All operation prohibition	Read / Incorrect write protection	Erroneous write prohibition	All Protect	Read/ Write prohibition	Write Protect	
Device monitoring		○	○	○	×	○	○	○
Device change	T, C setting values and file register (from D1000)	× *1	× *1	× *1	×	○	○	○
	Other than the above	○	○	○	×	○	○	○

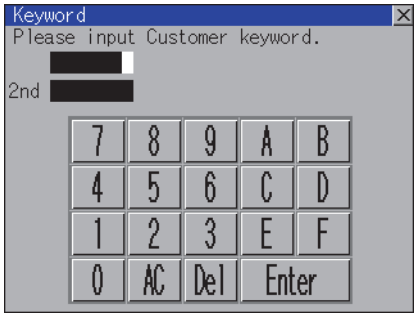
*1 When the T, C set values are specified indirectly, changing devices is available.

(3) Difference between "All Protect" and "All operation prohibition"

When "All Protect" is selected, both device display and input by the programming tool or GOT are prohibited.
When "All operation prohibition" is selected, device display and input are possible although operations by the programming tool are all prohibited.

3 When [Keyword and Customer Keyword] is selected on the selection screen for registration and the keyword input is completed, the Customer Keyword registration screen is the displayed.

When the customer keyword is input and the Enter key is touched, registration is completed.
To set the customer keyword, 8 digits from 0 to 9 or A to F must be used.

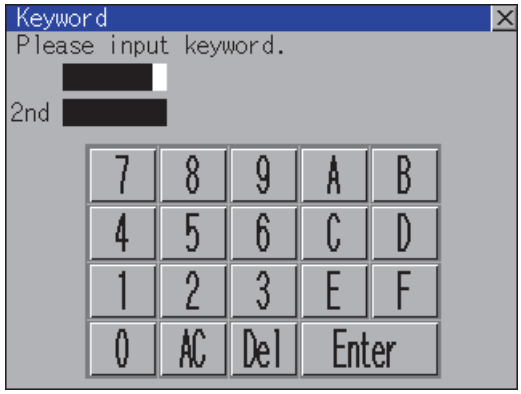


2 Delete

Registered keyword is deleted.

1 Touching the [Delete] key pops up a keyboard for keyword input.

2 When the correct keyword is input and the [Enter] key is touched, the keyword is deleted.



Target PLC	Settings
FX PLC compatible with 2nd keyword*1	Input a keyword to be deleted.
FX PLC not compatible with 2nd keyword*1	Input a keyword to be deleted only into "keyword". "2nd keyword" is ignored.

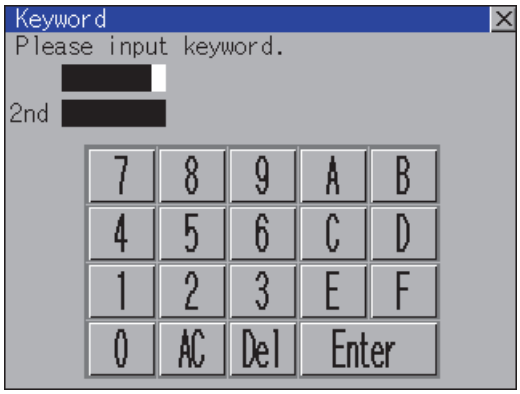
*1: For details on FX PLC compatible with 2nd keyword, refer to the following.

FX series PLCs Manual

3 Clear

To access an FX PLC where a keyword has been registered, keyword protection is cancelled.

1. Touching the [Clear] key pops up a keyboard for keyword input.
2. When the correct keyword is input and the [Enter] key is touched, the protection is cancelled.



Target PLC	Settings
FX PLC compatible with 2nd keyword*1	Input a keyword or Customer Keyword to cancel the protection.
FX PLC not compatible with 2nd keyword*1	Input a keyword into "keyword" to cancel the protection. "2nd keyword" is ignored.

*1: For details on FX PLCs a compatible with the 2nd keyword or customer keyword, refer to the following.

☞ FX series PLCs Manual

4 Protect

A keyword with cancelled protection is reactivated for protection.
Keyword protection function is valid when the second keyword is registered.

1. Touching the [Protect] key activates keyword protection.

10. DISPLAY AND OPERATION SETTINGS (GOT SETUP)

Setting screen for display and setting screen for operation can be displayed from GOT setup.
In the setting screen for display and the setting screen for operation, the following settings can be set.

Screen	Description	Reference page
Setting screen for display	Opening screen time, screen save time, screen save backlight, language, battery alarm display, invert colors	10-1
	Brightness, contrast	10-8
Setting screen for operation	Buzzer volume, window move buzzer, key sensitivity, key reaction speed	10-12
	Security setting	10-13
	Utility call key	10-15
Handy GOT Settings	ON/OFF operation of Grip SW LED	10-18

10.1 Display Settings

10.1.1 Display setting function

Setting regarding display is possible.
The items which can be set are shown below.

Items	Contents	Setting range
Opening screen time	The title display period at the main unit boot can be set.	0 to 60 seconds*1 <At factory shipment: 5 seconds>
Screen save time	The period from the user stops the touch panel operation till the screen save function starts can be set.	0 to 60 minutes <At factory shipment: 0 minutes> When set to 0, the function becomes invalid.
Screen save backlight	Whether turn ON or OFF the backlight simultaneously at the screen save function start can be specified	ON/OFF <At factory shipment: OFF>
Language	Confirmation of the current language and switching language can be performed regarding with the language displayed by utility and dialogue.	日本語 Japanese English English 中文(简体) Chinese(Simplified) 한국어 Korean Deutsch German <At factory shipment: Japanese>
Battery alarm display	Whether to display system alarm when the voltage of the GOT internal battery has dropped can be specified.	ON/OFF <At factory shipment: OFF>
Brightness, Contrast	The brightness or contrast can be adjusted. ☞ Section 10.2 Brightness, Contrast Adjustment	—
Invert colors*2	User creation screen and utility screen can be set to be highlighted or not.	ON/OFF <At factory shipment: OFF>

*1: If setting 0, the title screen is not hidden.
The title screen always displayed for 4 seconds or longer (which changes depending on the project data contents).
*2: Applicable to GT1150HS-QLBD only. (Standard monitor OS Ver.03.01.00 or later)
(BootOS Ver.03.01.**.M or later)

Point

(1) Display setting by drawing software

Set title display period, screen save time and screen save backlight at [GOT setup] in [System Environment] of GT Designer2.
When using GT Designer3, execute the settings at [GOT Setup...] of [GOT Environmental Setting].
When change a part of the setting after downloading the project data, change the setting by [Display] screen of the GOT.

☞ GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

(2) Screen save and screen save backlight OFF function

When using the screen save and screen save backlight OFF function, select valid/invalid by the system information reading device in [System Environment] of GT Designer2.
When using GT Designer3, select valid/invalid by the reading device of [System Information...] in [GOT Environmental Setting].
For system information details, refer to the following.

☞ GT Designer2 Version□ Screen Design Manual

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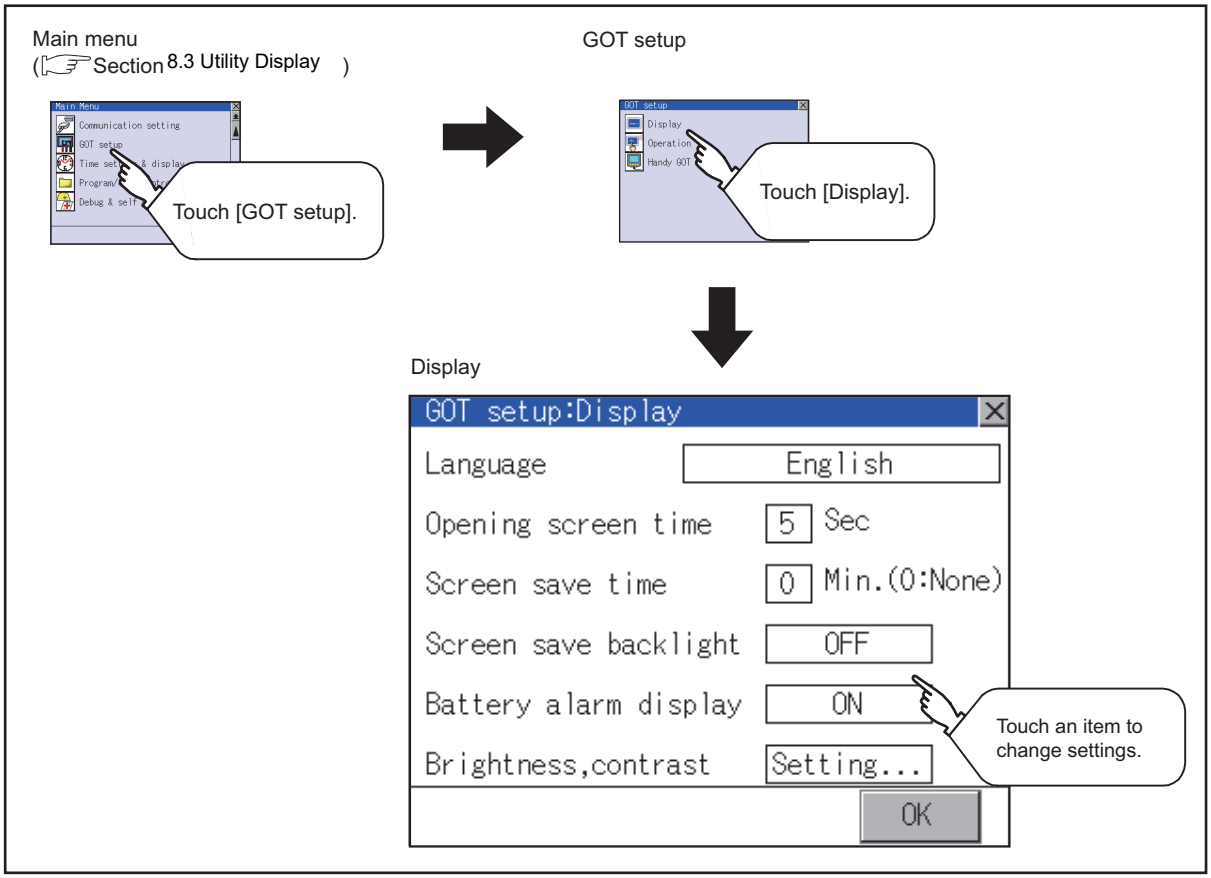
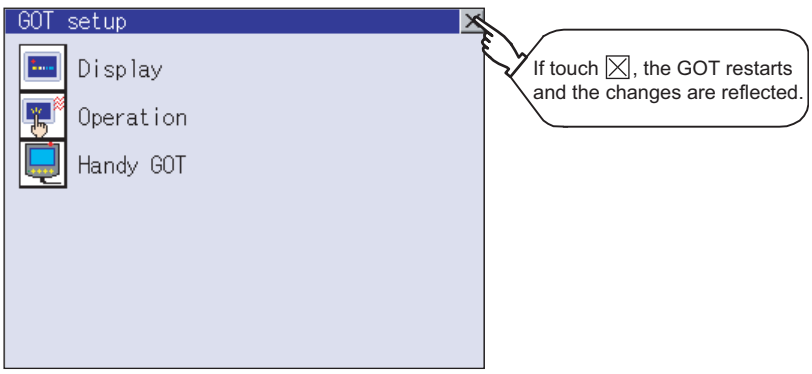
10.1.2 Display operation of display setting



Point

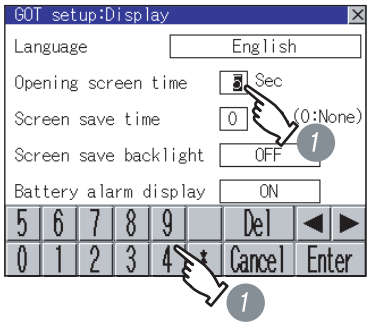
Restart after setting change

If return the display to the GOT setup screen by touching the ☒ button after the setting of each item is changed and touch the ☒ button on the GOT setup screen, the GOT will restart.
After GOT restarts, it is displayed with the changed settings.
If restarted the GOT by powering OFF the GOT without the procedure above, the setting contents are canceled without reflected.

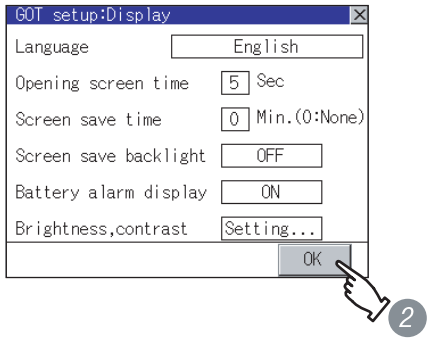


10.1.3 Display setting operations

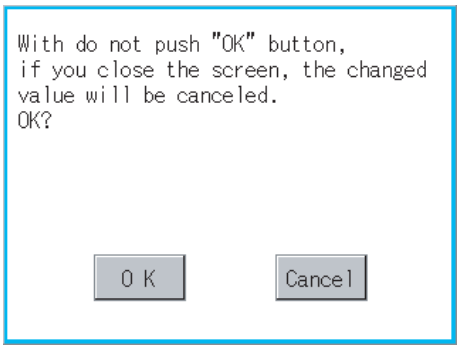
1 Opening screen, screen save time



1 If touching the setting time (numerical), keyboard is displayed. Input numeric with the keyboard.



2 Setting contents are defined if [OK] button is touched.



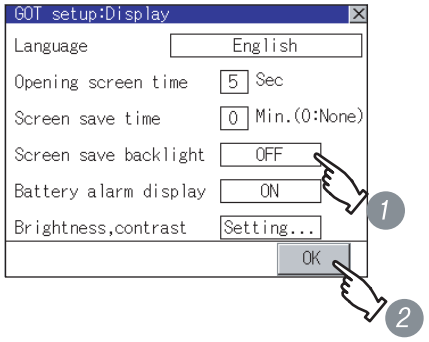
3 If [☒] button is touched without touching [OK] button, the dialogue box shown on the left is displayed.

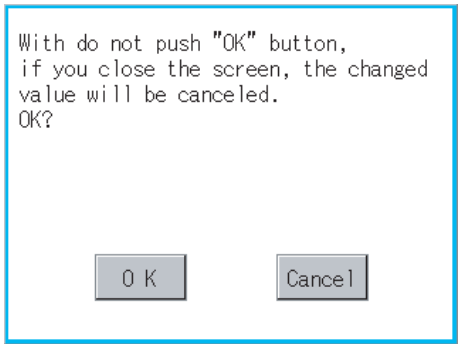
[OK] button: The changed value is canceled, and the screen is closed.

[Cancel] button: The display setting screen is displayed.

4 If close the display setting and GOT setup screens after completing the setting of all items to change with [☒] button, GOT restarts and reflects the setting contents.

2 Screen save backlight, Battery alarm display





1 Setting item is changed if setting item is touched. (ON ⇄ OFF)

2 Setting contents are defined if [OK] button is touched.

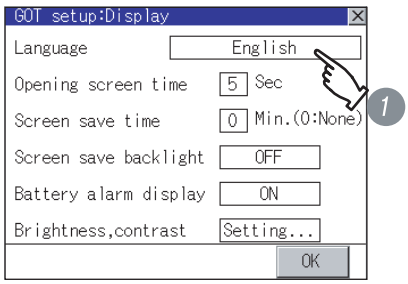
3 If [☒] button is touched without touching [OK] button, the dialogue box shown on the left is displayed.

[OK] button: The changed value is canceled, and the screen is closed.

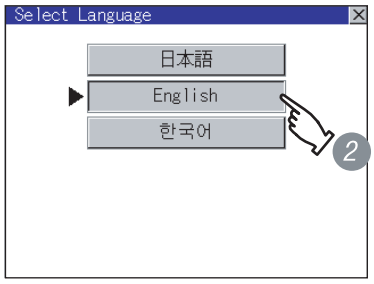
[Cancel] button: The display setting screen is displayed.

4 If close the display setting and GOT setup screens after completing the setting of all items to change with [☒] button, GOT restarts and reflects the setting contents.

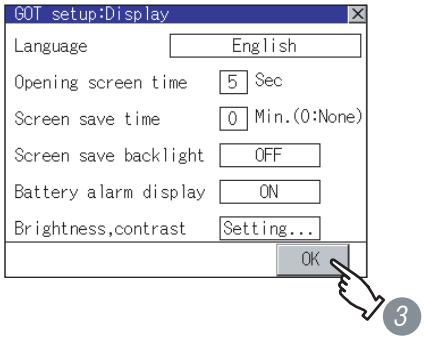
3 Language



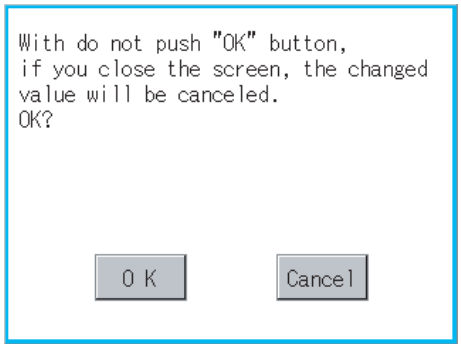
1 Touch the setting item to display the Select Language screen.



2 When touching the button of a desired language, the language is selected and the screen returns to the Display screen.



3 Setting contents are defined if OK button is touched. The language display does not change till 5 is carried out.



4 If ☒ button is touched without touching OK button, the dialogue box shown on the left is displayed.

OK button: The changed value is canceled, and the screen is closed.

Cancel button: The display setting screen is displayed.

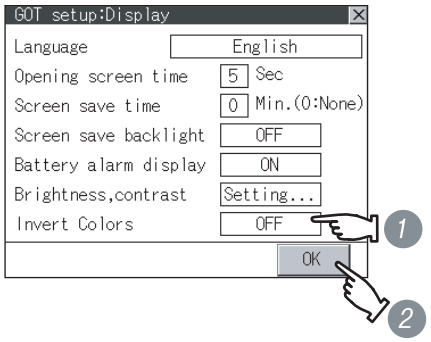
5 If close the display setting and GOT setup screens after completing the setting of all items to change with ☒ button, GOT restarts and reflects the setting contents.

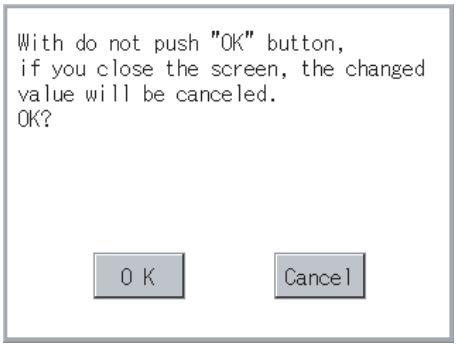
4 Brightness, Contrast

Refer to the following for brightness, contrast setting.

☞ Section 10.2 Brightness, Contrast Adjustment

5 Invert colors (GT1150HS-QLBD only)





1 Setting item is changed if setting item is touched. (ON ⇄ OFF)

2 Setting contents are defined if [OK] button is touched.

3 If ☒ button is touched without touching [OK] button, the dialogue box shown on the left is displayed.

[OK] button: The changed value is canceled, and the screen is closed.

[Cancel] button: The display setting screen is displayed.

4 If close the display setting and GOT setup screens after completing the setting of all items to change with ☒ button, GOT restarts and reflects the setting contents.

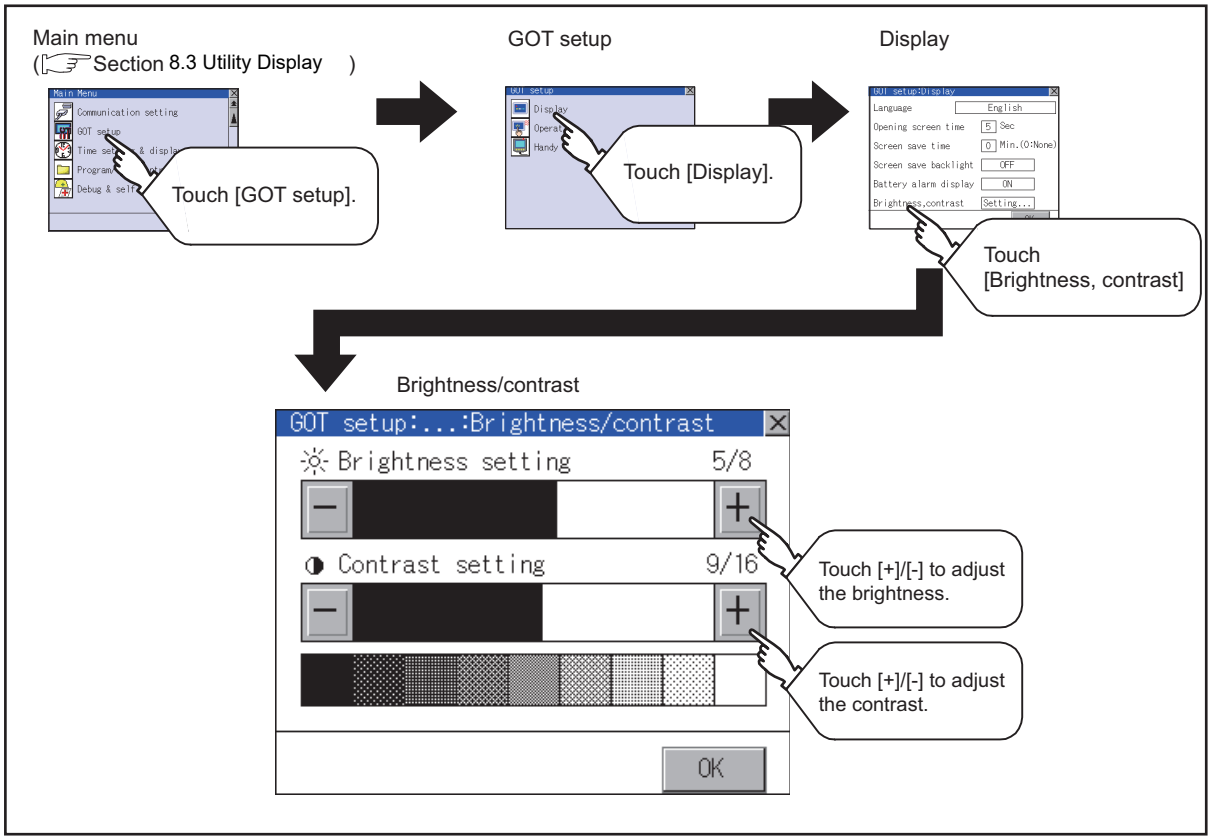
10.2 Brightness, Contrast Adjustment

10.2.1 Brightness, contrast adjustment function

Brightness or contrast can be adjusted.

Function	Contents
Brightness setting	Brightness of display part can be adjusted by 8 levels.
Contrast setting	Contrast of display part can be adjusted by 16 levels.

10.2.2 Display operation of brightness, contrast

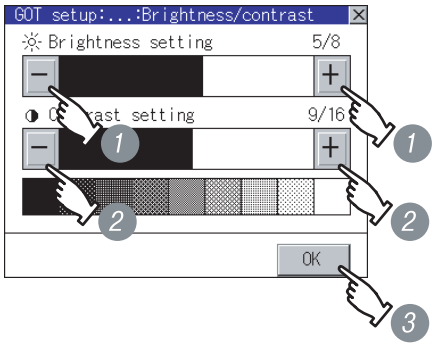


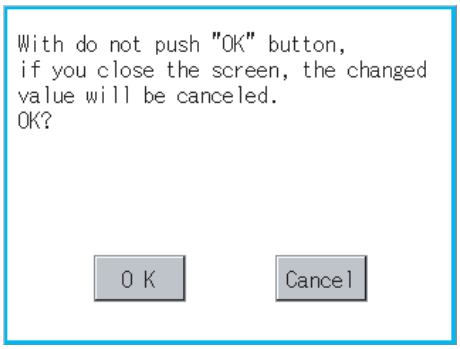
Remark

Display immediately after the power is turned ON

On the "Booting" window displayed immediately after the power is turned ON, the contrast set value set in the factory before shipment is displayed.
On the "Booting project data ..." window and later after that, the contrast set value set in the utility is reflected, and the value displayed immediately after the power is turned ON changes.

10.2.3 Brightness adjustment operation





1 Brightness can be adjusted by touching [+], [−] key of brightness adjustment.

2 Contrast can be adjusted by touching [+], [−] key of contrast adjustment.

3 Setting contents are defined if [OK] button is touched.

4 If [OK] button is touched without touching [⊠] button, the dialogue box shown on the left displayed.

[OK] button: The changed value is canceled, and the screen is closed.

[Cancel] button: The brightness/contrast adjustment screen is displayed.

10.3 Operation Settings

10.3.1 Operation setting functions

Setting regarding GOT operation can be set.
The items which can be set are described below.

Function	Contents	Setting range
Buzzer volume setting	Buzzer volume setting can be changed.	OFF/SHORT/LONG <At factory shipment: SHORT>
Window move buzzer volume setting	Whether turn ON/OFF buzzer when move window can be selected.	ON/OFF <At factory shipment: ON>
Security setting screen change	Security level change screen can be displayed. ☞ Section 10.4 Security Level Change	—
Utility call key screen change	Utility call key setting screen can be displayed. ☞ Section 10.5 Utility Call Key Setting	—
Key sensitivity setting	The sensitivity of touch panel when GOT screen is touched can be set.	1 to 8*1

*1 Relationship between the "key sensitivity" setting and the "key reaction speed"

The relationship between "key sensitivity" and "key reaction speed" is shown in the table below.

- Decreasing the "key sensitivity" value will speed up the key reaction speed.
- Increasing the "key sensitivity" value will slow down the key reaction speed.

"Key sensitivity" setting value	8	7	6	5	4	3	2	1
"Key reaction speed"	-20	-10	Standard(±0)	+10	+20	+40	+80	+120

For example, when touching the GOT screen once causes a two-touch operation, set the key sensitivity to a smaller value. (It makes reaction speed slower.)

Point

Operation settings by drawing software

Set buzzer volume and window move buzzer volume by [GOT setup] in [System Environment] of GT Designer2.
When using GT Designer3, execute the settings at [GOT Setup...] of [GOT Environmental Setting].
When change a part of the setting, change the setting by the GOT display setting after downloading the project data.

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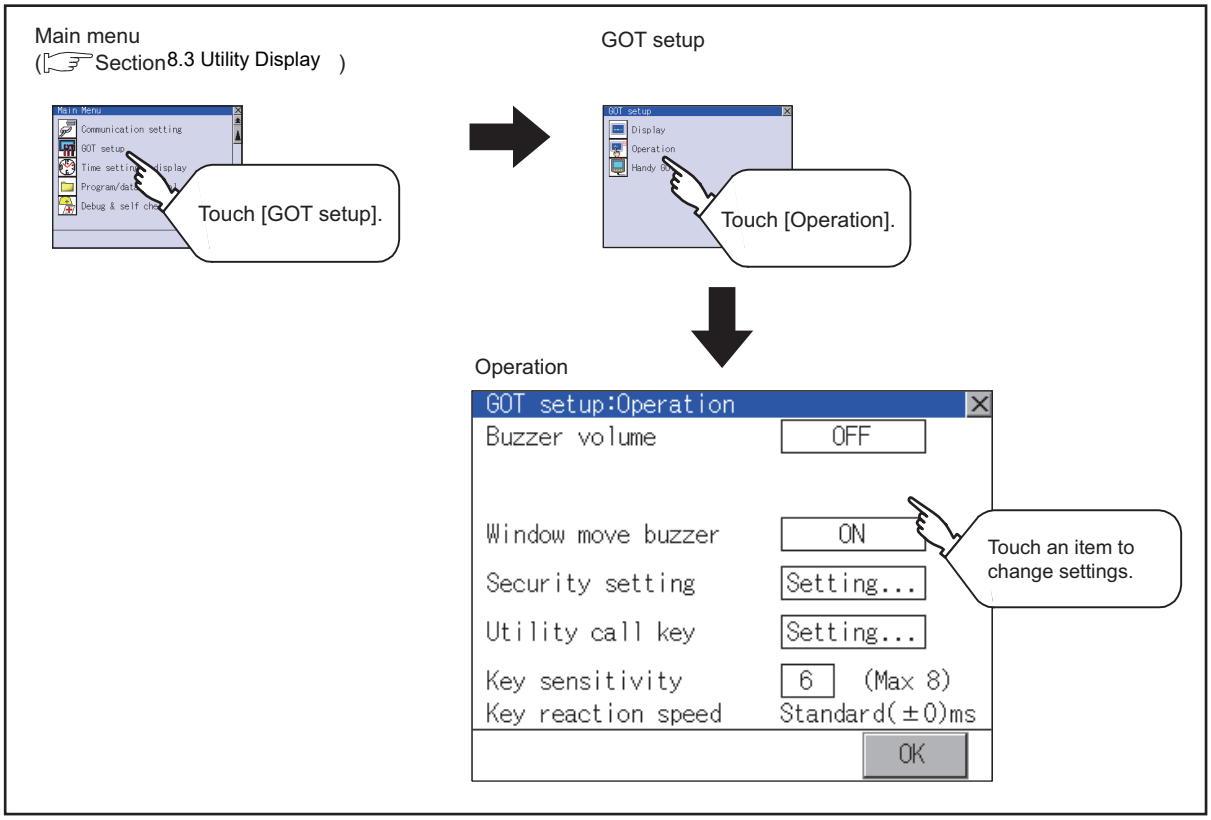
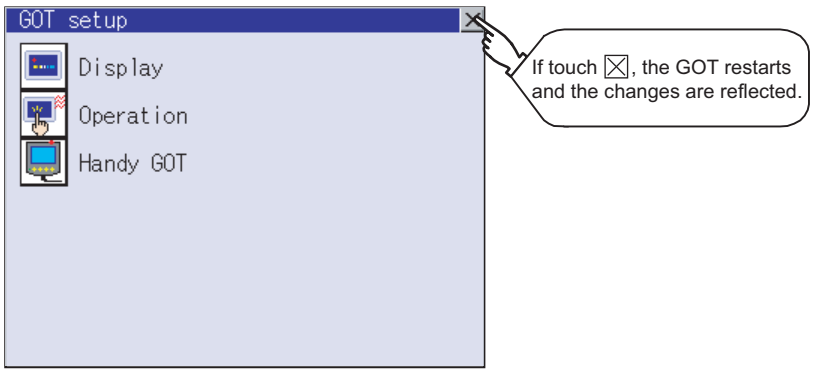
10.3.2 Display operation of operation setting



Point

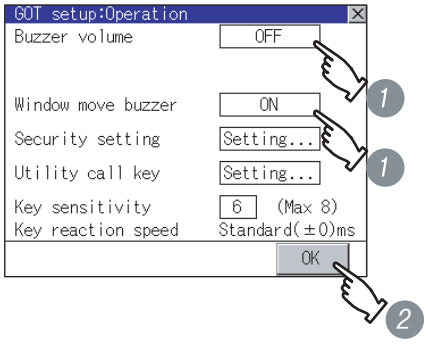
Restart after setting change

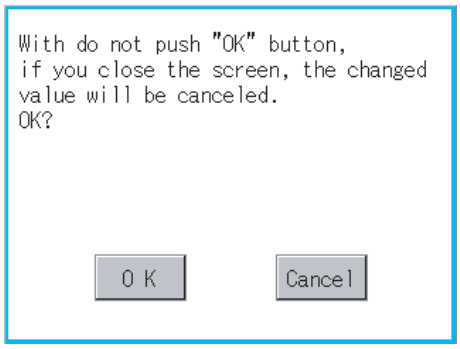
If return the display to the GOT setup screen by touching the ☒ button after the setting of each item (excluding the security setting) is changed and touch the ☒ button on the GOT setup screen, the GOT will restart.
After GOT restarts, it is displayed with the changed settings.
If restarted the GOT by powering OFF the GOT without the procedure above, the setting contents are canceled without reflected.



10.3.3 Setting operation of operation

1 Buzzer volume, window move buzzer





1 Setting items are changed if setting item is touched.

(Buzzer volume: SHORT → LONG → OFF
Window move buzzer: OFF ⇄ ON)

2 Setting contents are defined if [OK] button is touched.

3 If [OK] button is touched without touching ☒ button, the dialogue box shown on the left is displayed.

[OK] button: The changed value is canceled, and the screen is closed.

[Cancel] button: The operation setting screen is displayed.

4 If close the display setting and GOT setup screens with ☒ button after completing the setting of all items to change, GOT restarts and reflects the setting contents.

2 Security setting

Refer to the following for the security setting operation.

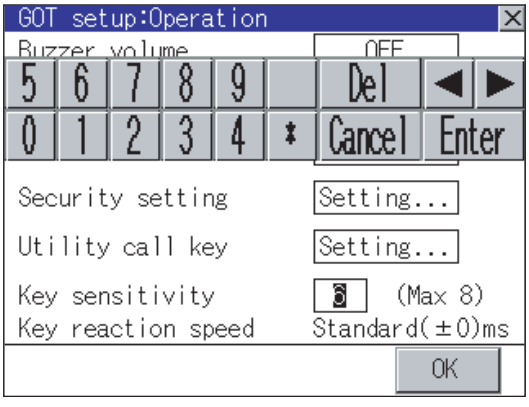
☞ Section 10.4 Security Level Change

3 Utility call key

Refer to the following for the utility call key operation.

☞ Section 10.5 Utility Call Key Setting

4 Key sensitivity setting



1 The keyboard is displayed if setting item is touched.

2 Enter the numerical value from the keyboard.

3 The key reaction speed according to the "key sensitivity" setting is displayed.

4 Setting contents are defined if [OK] button is touched.

10.4 Security Level Change

10.4.1 Security level change functions

Changes the security level to the same security level set by each object or screen switch.
To change the security level, input the password of the security level which is set in drawing software.

Security level setting ..... ☞ GT Designer2 Version □ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

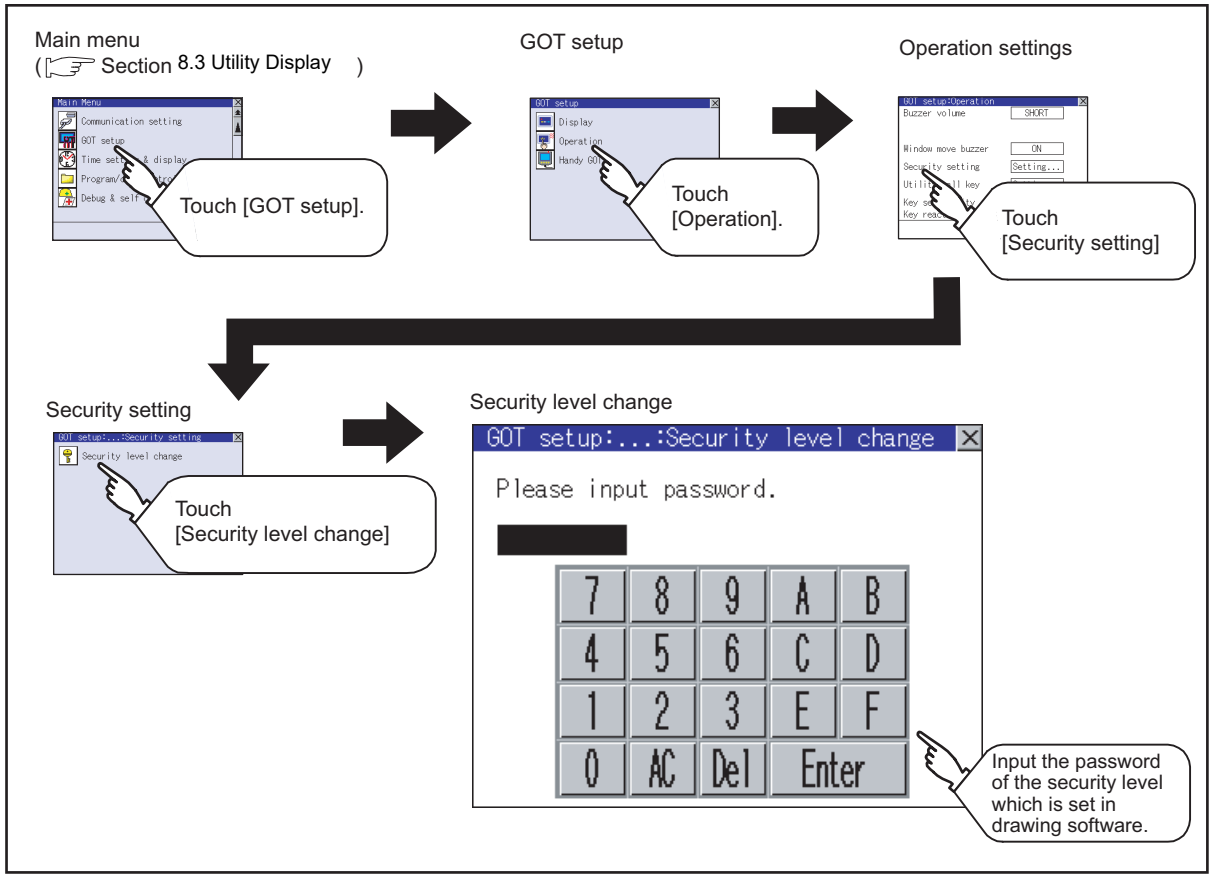
Password setting ..... ☞ GT Designer2 Version □ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

Point

Restrictions on screen display

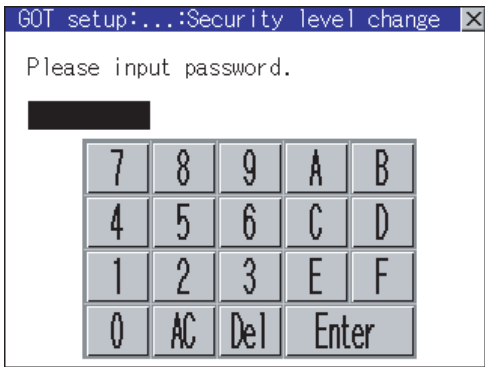
The security level change screen cannot be displayed when project data do not exist in GOT.
Change the security level after downloading the project data to GOT.

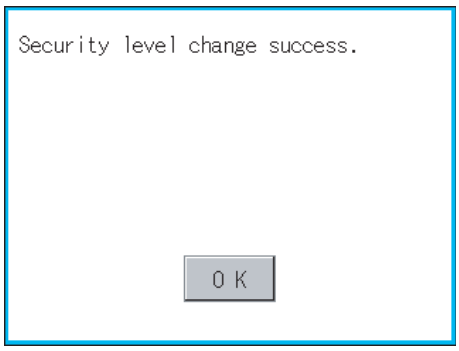
10.4.2 Security change display operation

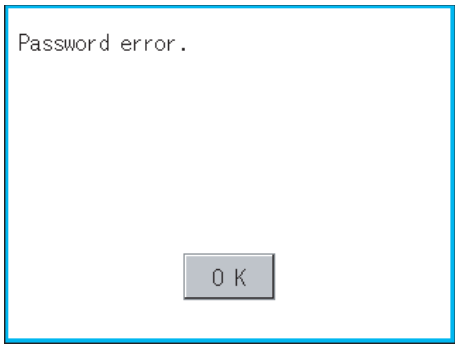


10.4.3 Security level change operation

1 Password input operation







1 By touching [0] to [9], [A] to [F] key, the password of the changed security level is input.

2 When correcting the input character, touch [Del] key to delete the correcting character and input the password again.

3 After inputting password, touch the [Enter] key.
When the password matches, a message notifying successful change of the security level is displayed.
When the password does not match, an error message is displayed.

4 If [OK] button is touched it returns to the password input screen again.

5 If [☒] button is touched it returns to security setting screen.

Remark

About forgetting to return to the original level after changing security level temporarily

When use GOT after temporarily changing the security level, do not forget to return the security level to the original level.

10.5 Utility Call Key Setting

10.5.1 Utility call key setting function

The key position for calling the main menu of the utility can be specified.
The key position can be specified by one point or two points of 4 corners on the screen.
When the key position is specified by one point, the time to switch to the utility when the key position is kept pressing can be set.
For default setting, the upper left and upper right corners are specified.

Point

Operation settings by drawing software

Set the utility call key at [GOT set up] in [System Environment] of GT Designer2.
When using GT Designer3, execute the settings at [GOT Setup...] of [GOT Environmental Setting].
When change a part of the setting after downloading the project data, change the setting by [Display] screen of the GOT.

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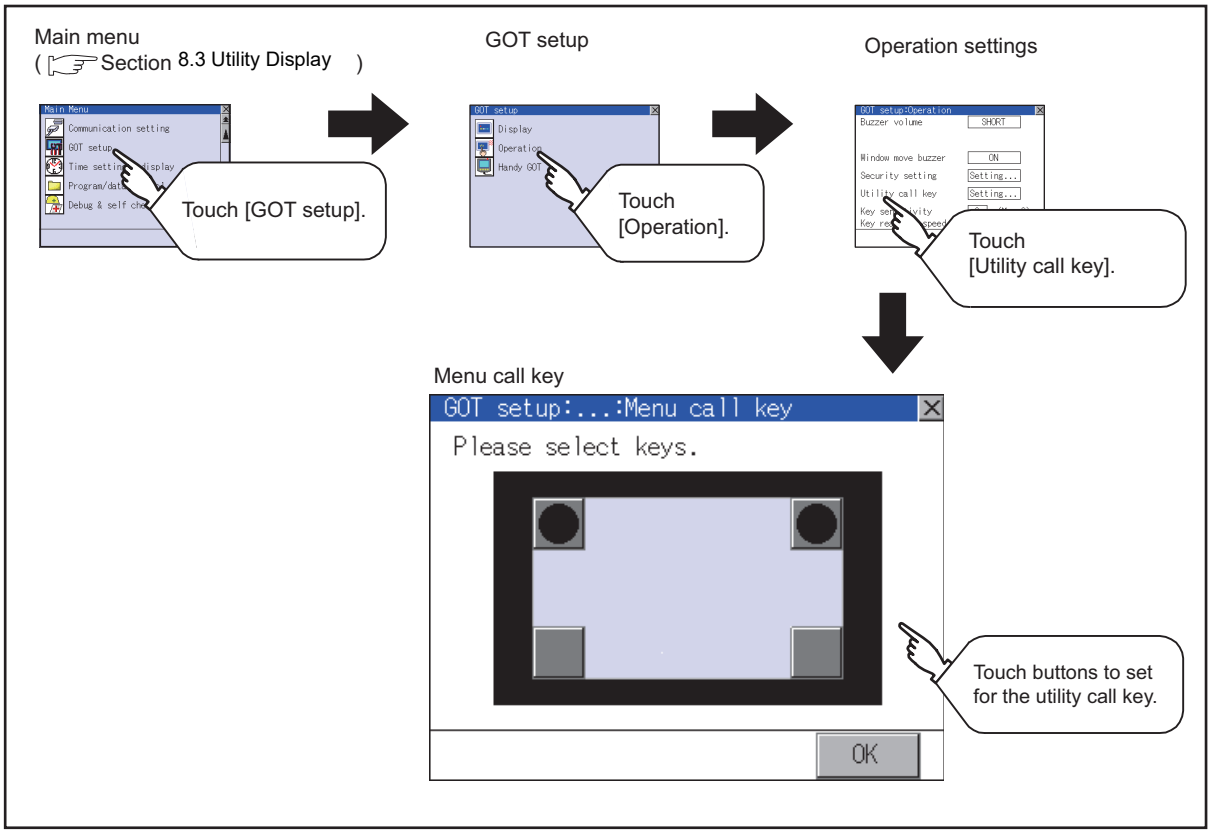
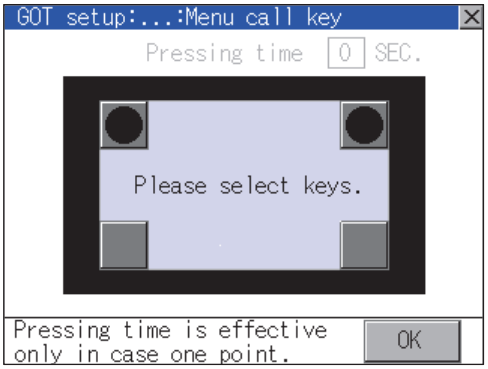
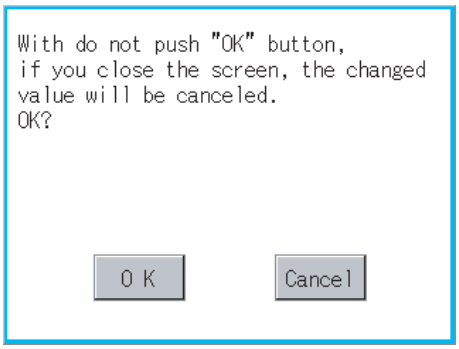
10.5.2 Utility call key display operation



10.5.3 Utility call key setting operation





1 Touch ● or □ displayed on the four corners of the setting screen.
The button repeats ● ⇄ □ every time it is pressed.
Change the part to be set as a key position to ●.
The key position can be set to the zero point.

2 When the key position is specified by one point, the time to switch to the utility when the key position is kept pressing can be set.
Touch the time area.

3 The keyboard is displayed if the input area is touched.
Input a setting time from the keyboard.

4 Setting contents are defined by touching OK button.

5 If ☒ button is touched without touching OK button, the dialogue box shown on the left is displayed.

OK button: The changed value is canceled, and the screen is closed.

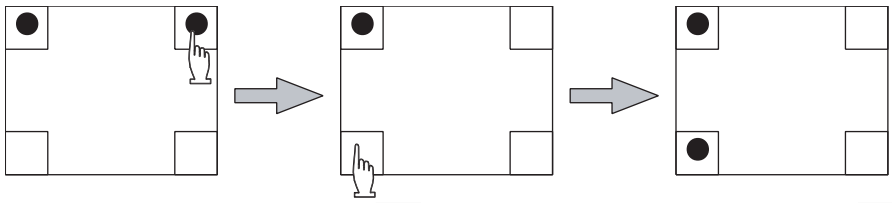
Cancel button: The utility call key setting screen is displayed.

6 After finishing all the settings for items to be changed on the operation screen, closing "Operation" and "GOT setup" screens with ☒ button restarts GOT and reflects the setting contents.

Point

(1) Setting another key position when there are two ●
Make the setting after changing either one of the key positions from ● to □.
Three of ● cannot be set at the same time.

Example: When changing the two positions from the upper left and upper right corners to the upper left and lower left corners



Change the upper right ● to □. Change the lower left □ to ●.

(2) When the utility call key is set to the zero point
Refer to the following for the utility screen displaying method:
- Pressing the special function switch set on the user-created screen
- Powering ON the GOT while touching the upper left corner of the screen

☞ Section 8.3.1 Display operation of main menu

(3) When limiting the display and operation of the utility
When limiting the display and operating users, set a password to the GOT using the drawing software.
If a user tries to display the main menu of the utility, the password is displayed.
Refer to the following for details on setting passwords.

☞GT Designer 2 Version□ Screen Design Manual
GT Designer 3 Version1 Screen Design Manual (Fundamentals)

10.6 Handy GOT Settings

10.6.1 ON/OFF operation of Grip SW LED

Set the operation of the grip SW LED.

Function	Contents
Link with bit device	The LED is lit when the bit assigned to the system information is 1 and not lit when the bit is 0.
Always OFF	The LED stays not lit regardless of the status of the bit assigned to the system information.

Point

Operation settings by drawing software

Select [System Environment] → [Handy GOT Setting] from GT Designer2 for the Handy GOT settings.
When using GT Designer3, execute the settings at [Handy GOT] in [GOT Setup...] of [GOT Environmental Setting].
[Handy GOT Setting] of drawing software is disabled at factory shipment.
Make the setting after marking the check box of [Use GOT Setup] provided in [GOT setup] of [System Environment].
When changing the setting after downloading the project data, change the setting by [Handy GOT Setting] of the GOT.

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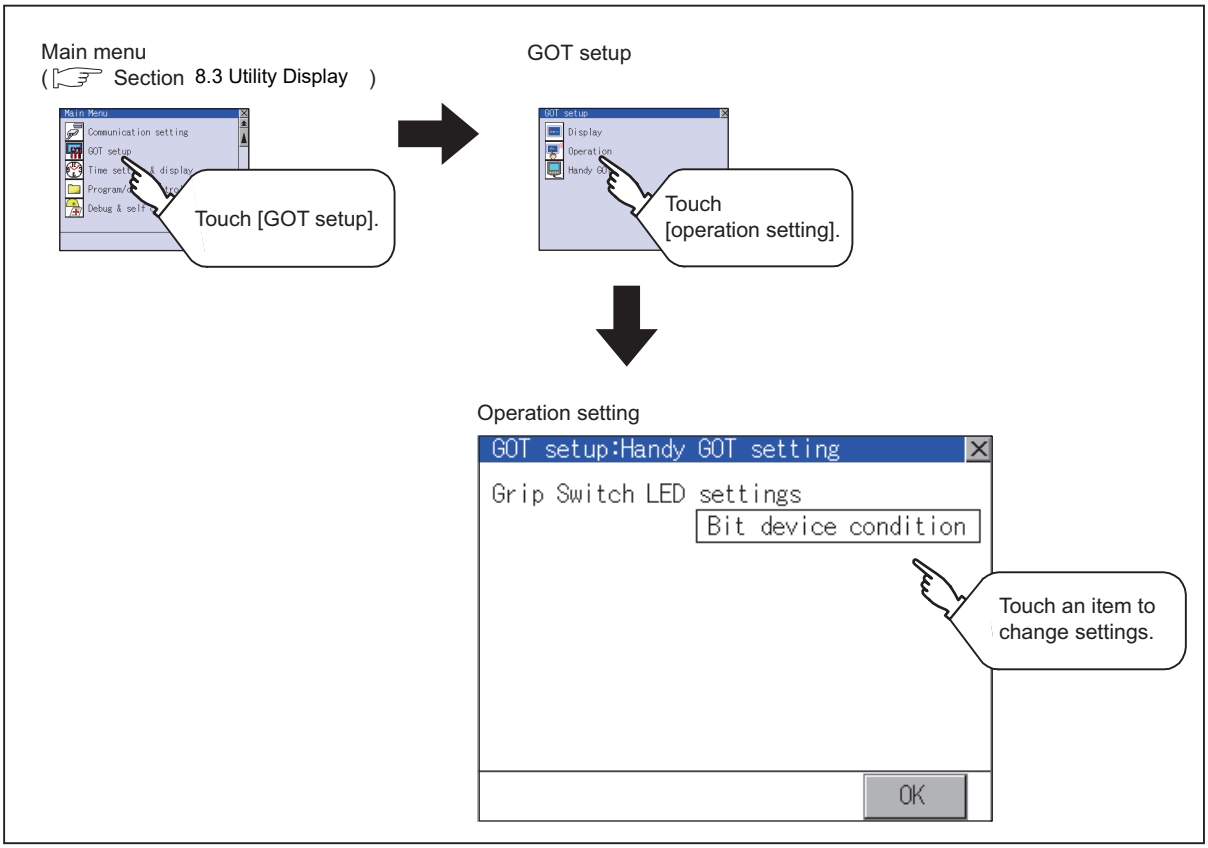
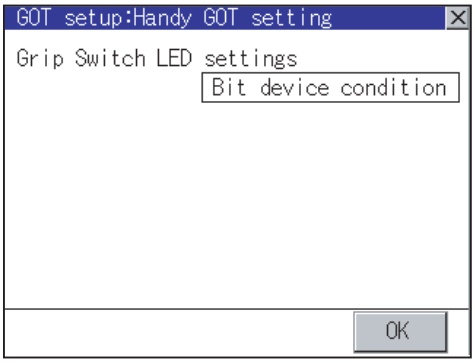
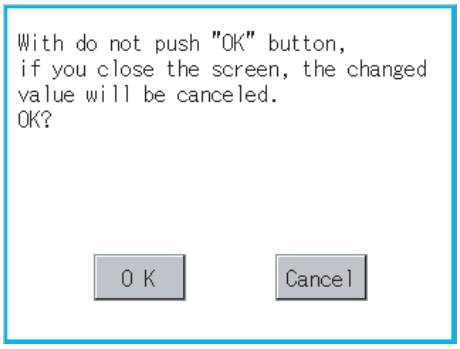
10.6.2 Display operation of Handy GOT settings



10.6.3 Change of Handy GOT setting

1 Changing the setting operation of grip switch ON from to OFF





1. Touch the setting item and select a setting. The button repeats [Bit device condition] ⇄ [Always OFF] every time it is pressed.
2. Setting contents are defined by touching [OK] button.
3. If close the display setting and GOT setup screens after completing the setting of all items to change with ☒ button, GOT restarts and reflects the setting contents.
4. If the ☒ button is touched without touching the [OK] button, the dialog box shown on the left is displayed.
   [OK] button: The changed value is canceled, and the screen is closed.
   [Cancel] button: The operation setting screen is displayed.

11. CLOCK SETTINGS AND BATTERY STATUS DISPLAY (TIME SETTING AND DISPLAY)

The clock display setting items and the time when displayed the setting screen are displayed.
The voltage status of the built-in battery is also displayed.

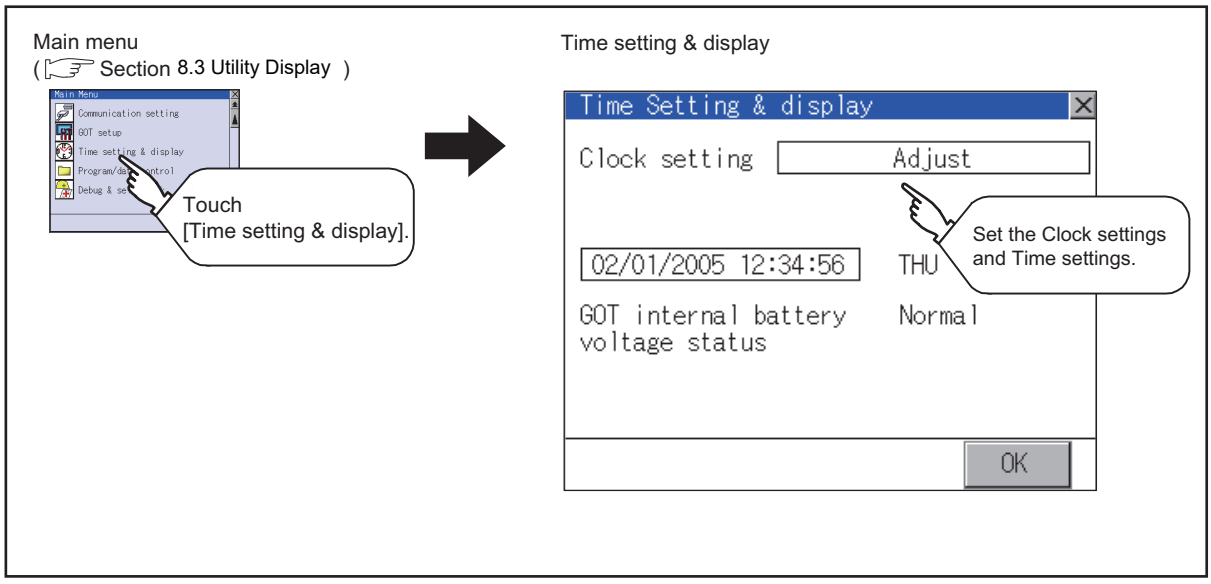
11.1 Time Setting and Display

11.1.1 Time setting and display functions

Time settings and displaying of the status of GOT built-in battery are possible.

Function	Contents	Reference page
Clock setting	Setup the method to adjust the time between GOT clock data and clock data of PLC CPU connected with GOT.	11-2
Clock display	Carry out the display and setup of GOT clock data.	11-4
GOT internal battery voltage status	Displays GOT internal battery voltage status.	11-5

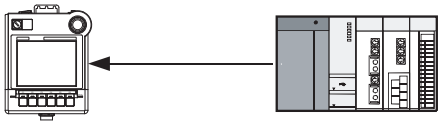
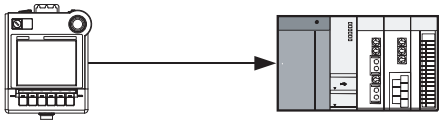
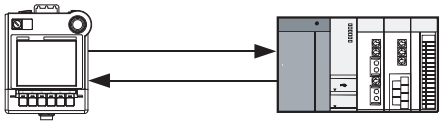
11.1.2 Display operation of clock display and setting

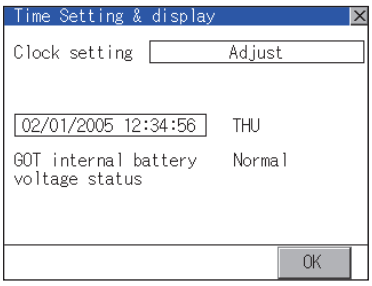


11.1.3 Clock setting operations

1 Clock setting

Setup the method to adjust the time between GOT data and the clock data of PLC CPU connected with GOT.

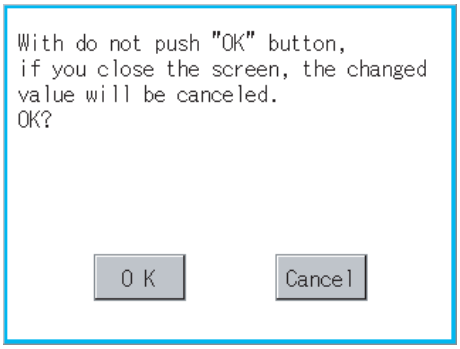
Setting	Contents
Adjust	Adjust the time of GOT clock data to the clock data of PLC CPU.  Same as setting in [GOT setup] in [System Environment] of GT Designer2. Same as setting in [GOT Setup...] in [GOT Environmental Setting] of GT Designer3. GT Designer2 Version☐ Screen Design Manual GT Designer3 Version1 Screen Design Manual (Fundamentals)
Broadcast	Adjust the time of PLC CPU clock data to the clock data of GOT.  Same as setting in [GOT setup] in [System Environment] of GT Designer2. Same as setting in [GOT Setup...] in [GOT Environmental Setting] of GT Designer3. GT Designer2 Version☐ Screen Design Manual GT Designer3 Version1 Screen Design Manual (Fundamentals)
Adjust/Broadcast	Adjust and Broadcast can be used appropriately.  Same as setting in [GOT setup] in [System Environment] of GT Designer2. Same as setting in [GOT Setup...] in [GOT Environmental Setting] of GT Designer3. GT Designer2 Version☐ Screen Design Manual GT Designer3 Version1 Screen Design Manual (Fundamentals)
None	No adjustment of clock data.



1 If touch the setup item, the setup contents is changed.

(Adjust → Broadcast → Adjust/Broadcast → None)

2 If touch OK button, the setup contents is reflected.



3 If touch ☒ button without touching OK button, the dialogue box shown on the left is displayed.

OK button: The changed value is canceled, and the screen is closed.

Cancel button: The time display and setting screen is displayed.

4 If touch ☒ button, GOT restarts. After restart, GOT operates with the changed settings.

Point

(1) When connecting with an external device which does not have clock function.
If set to [Adjust] or [Broadcast] for [Clock setting] while the GOT is connected with external devices (PLC or microcomputers) which do not have clock function, the clock data will not be adjusted.
Refer to the following for the list of PLC installed with clock function.

☞ GT Designer2 Version□ Screen Design Manual
GOT1000 Series Connection Manual (for GT Works3)
(Mitsubishi Products), (Non-Mitsubishi Products 1), (Non-Mitsubishi Products 2), (Microcomputer, MODBUS Products, Peripherals)

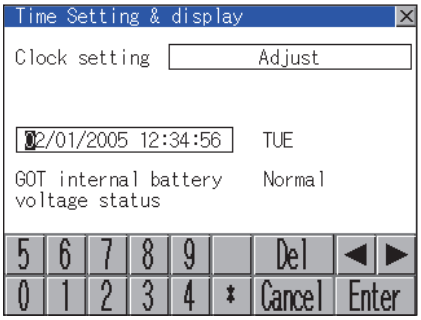
(2) Clock setting and battery
If [Broadcast] or [None] is selected for [Clock setting], the battery status of the GOT is required to be normal.
Refer to 3 "GOT internal battery voltage status" to check the battery status.

(3) Operation setting by drawing software
Carry out the setting of clock setting in [GOT setup] in [System Environment] of GT Designer2.
When using GT Designer3, execute the settings at [GOT Setup...] of [GOT Environmental Setting].
To change a part of the setting after downloading the project data, change the setting at the display setting of GOT.

☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

2 Clock display

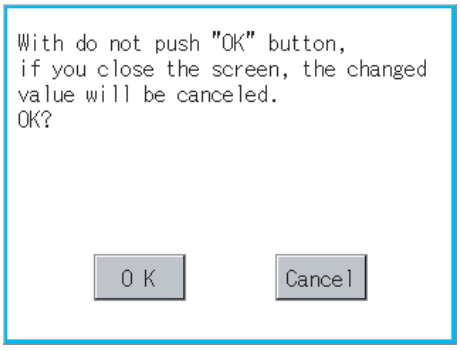
Carry out the display and setting of GOT clock data.
The clock data on the GOT and controller will be changed regardless of clock setting by setting the clock data.
The setup methods of clock data are shown below.



1 If touch the clock display section, the keyboard for input is displayed and the clock update stops.

2 Input time with the keyboard by referring to the table below. Input the scheduled time when the operation of 3 is to be carried out since the input time is reflected at the time of the operation of 3.
The day of the week is displayed automatically according to the input date.

Key	Contents
0 to 9 Key	Input numeric value in cursor position.
← / → Key	Move the cursor.
Del Key	Move the cursor to the left by one character when Del Key is touched while inputting year, month, day, time, minutes, seconds. Carry out nothing when touched other than when inputting the above.
Enter Key	Close the keyboard after the input time is displayed in clock display. The update of the clock display does not restart even if the keyboard is closed. The update of the clock display restarts with the operation of 3.
Cancel Key	Cancel the input time and returns the time of clock display to the time at which the keyboard was displayed and close the keyboard. The update of the clock display does not restart even if the keyboard is closed. The update of the clock display restarts with the operation of 3.



3 Touching the OK button reflects the settings and restarts updating the clock display.
The settings are reflected to both clock data on the GOT and controller.

4 If touch ☒ button, the GOT restarts if the clock settings is changed, or the screen closes if clock settings is not changed.
If touch ☒ button without touching OK button, the dialogue box shown on the left is displayed.

OK button: The changed value is canceled, and the screen is closed.

Cancel button: The time display and setting screen is displayed.

3 GOT internal battery voltage status

Displays battery voltage status.

Display	Status
Normal	Normal
Low/None	Low voltage

When the battery voltage is low, replace the battery immediately.
Refer to the following for battery replacement procedure.

☞Section 6.4 Battery

12. FILE DISPLAY AND COPY (PROGRAM/DATA CONTROL)

The display of OS, project data or alarm data which is written in the GOT or CF card and the data transmission between GOT and CF card are possible.
The format of the CF card is also possible.

12.1 Data Storage Location

12.1.1 Drive name allocation

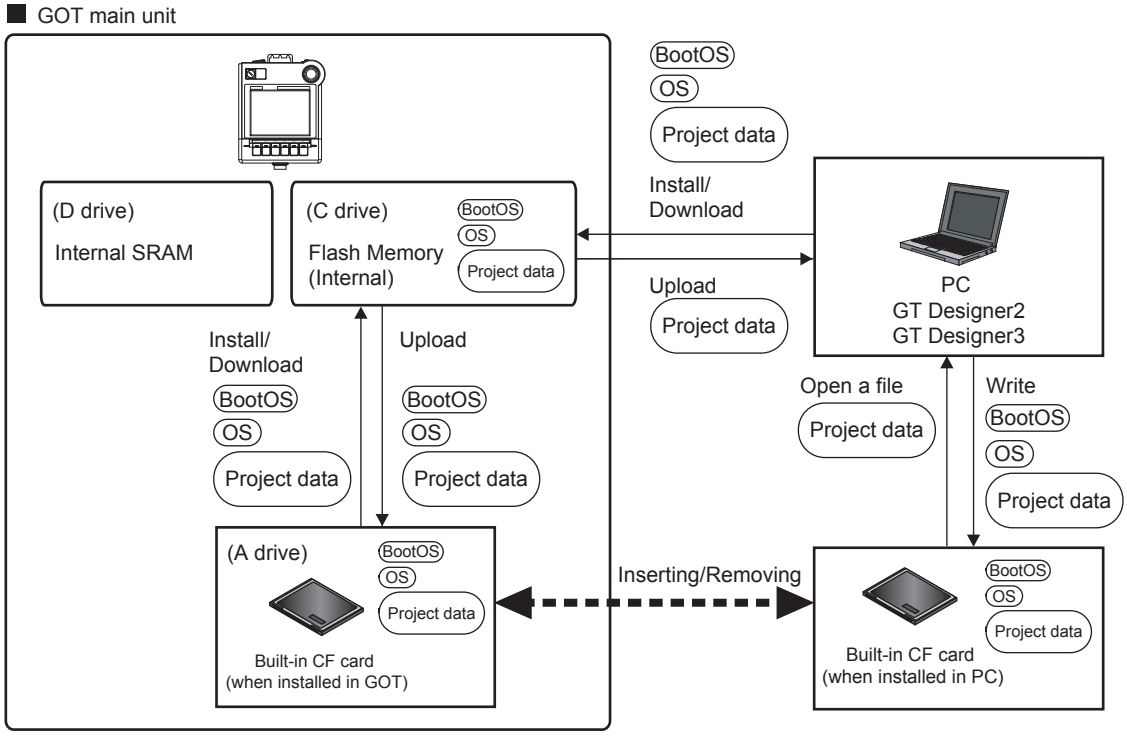
For the Built-in CF card, Flash Memory (Internal) or Internal SRAM, the following drive names (A drive, C drive and D drive) are allocated.

Drive name	Allocation
A drive	Built-in CF card
C drive	Flash Memory (Internal)
D drive	Internal SRAM

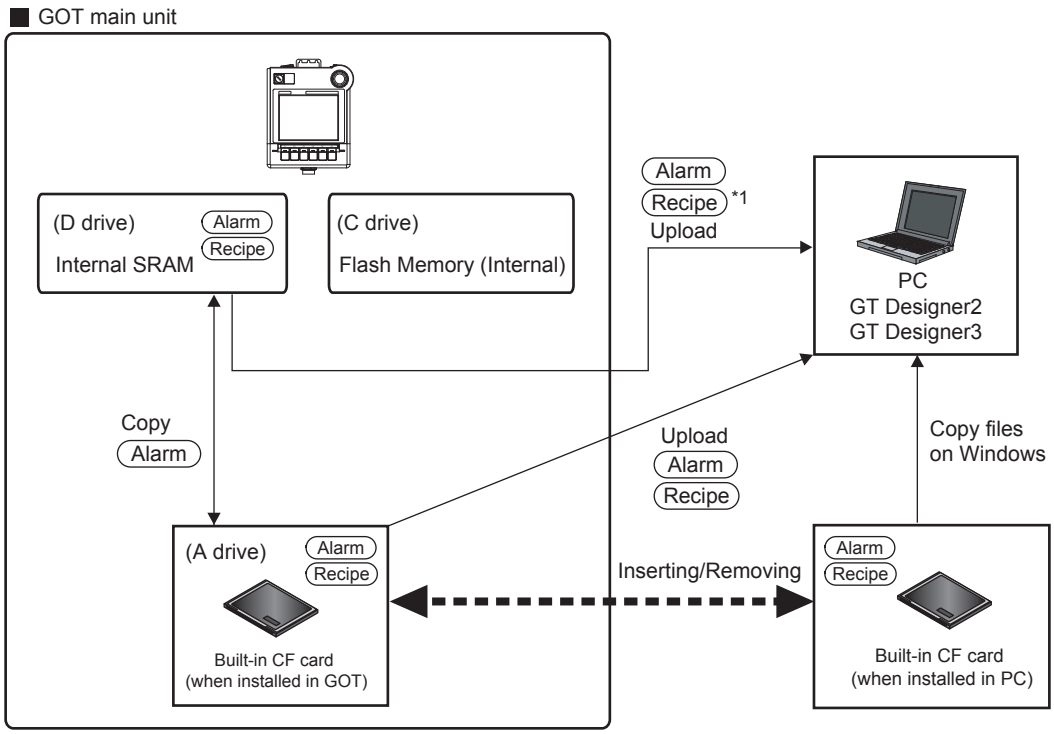
12.1.2 Data type and storage location

1 At system startup

The data storage location and transferring (write/read) route for each data type are shown below.



2 At maintenance



*1 The recipe data may not be transferred to the built-in CF card (A drive) or flash memory (C drive). While the data can be read with the resource data upload function of drawing software, the user may not use the read file.

The data of the Flash Memory (Project data, etc.) can be saved even if the battery voltage becomes low.

	Data type	Storage location
BootOS	BootOS	Flash Memory (C drive)
OS	Standard monitor OS	
	Communication driver	
	Extended function OS	
	Option OS	
Project data	Project data (Including recipe setting, alarm conditions, time action, and GOT setup.)	Flash Memory (C drive) *1
Alarm	Alarm data (Alarm log file)	Internal SRAM (D drive) Built-in CF card (A drive)
Recipe	Recipe data	

*1 The project data can be started only from the flash memory (C drive). It cannot be started from the built-in CF card (A drive).

Point

Folder and file in memory card

Multiple folders and files will be created when OS or project data is transferred to the memory card.

Do not delete or edit these folders and files since the GOT uses them.

If the folders or files are deleted or edited, the GOT will not function normally.

12.1.3 OS version confirmation

Confirm the OS version carefully when install BootOS and Standard monitor OS.
When OS is installed, GOT checks and compares the OS version automatically.

(1) When install BootOS

When the BootOS to be installed has the older major version, GOT displays the installation disapproving message to cancel the installation so that the older version may not be written.
(Even when the version of the BootOS to be installed has the same or later version, the version information and the dialog for selecting continue/not continue will be displayed.)
When installing from the standard CF card, the dialog is displayed by the main unit.
When installing from drawing software via USB or RS-232, the dialog is displayed by the drawing software.

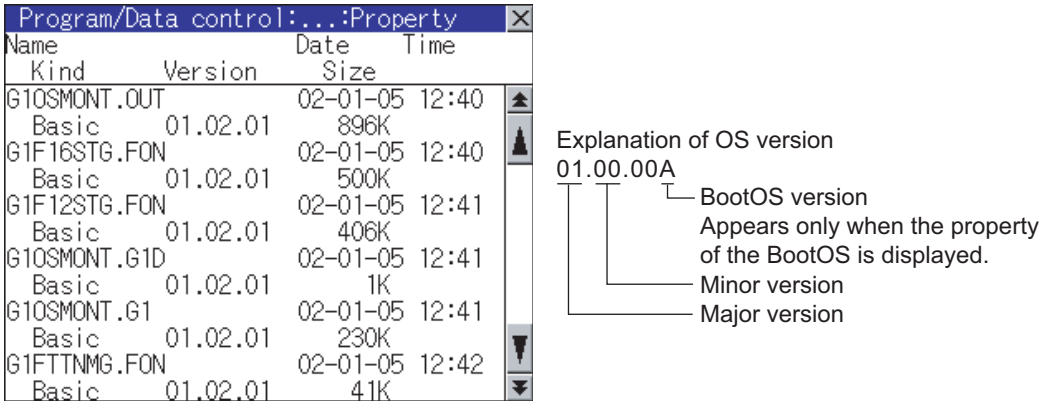
(2) When install Standard monitor OS, communication driver, Option OS

When Standard monitor OS, communication driver, or Option OS has already been installed, the version information of the OS which has been installed and the dialog for selecting continue/not continue will be displayed.
Moreover, when the different versions will coexist among all OSs (Standard monitor OS, communication driver, and Option OS) by installing OS, the installation disapproving dialog will be displayed and the installation process is canceled.

(3) When download project data

GOT automatically compares the version between the project data to be downloaded and the installed OS.
When the versions are different, the dialog confirming whether to install the OS together is displayed.
When downloading the project data from the CF card, storing the project data and OS beforehand is recommended.

The version of each OS can be confirmed by [Property] of [OS information] screen.



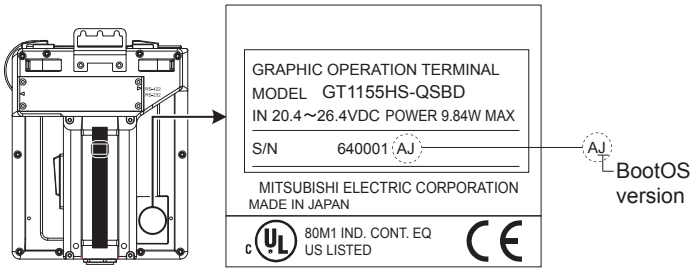
Refer to the following for details of the screen display operation.

☞Section 12.2 OS Information

Point

Version confirmation of BootOS by rating plate

Confirm the version of BootOS installed in the GOT at product shipment by rating plate of GOT rear face.



When the Boot OS version is 2 digits, only the lower digit is printed.

Example H/W version: H
Boot OS version: AD
↓
Rating plate: HD

12.1.4 Display file

The files that can be displayed in each screen are as follows.

Contents			Display screen	Storage location (Drive name and folder name)
BootOS			OS information screen	Built-in flash memory C:\G1BOOT*3
Standard monitor OS	Standard monitor OS system screen data			Built-in flash memory C:\G1SYS*3
	Standard monitor OS system screen management information file			
	Standard monitor OS (monitor function)*1			
		6 × 8-dot font (ASCII characters)		
		12-dot numerical HQ font		
		16-dot numerical HQ font		
	TrueType numerical font			
	12-dot standard font			
	16-dot standard font			
Extended function OS				
Option OS				
Communication driver				
Project data*2			Project information screen	Built-in flash memory C:\PROJECT1*3*4
	User-created screen data			
	Comment data			
	12-dot HQ fonts (Mincho/Gothic)			
	16-dot HQ fonts (Mincho/Gothic)			
	TrueType (Mincho/Gothic)			
Resource data	Alarm log file CSV file		Alarm information screen	Internal SRAM D:\ or Standard CF card A:\ The folder name can be specified voluntarily by drawing software. The file name is fixed to "ALARMHST.CSV".

*1 6 × 8-dot font, 12-dot numerical HQ font and 16-dot numerical HQ font are displayed as Standard monitor OS.

*2 The user-created screen data, comment data, and font data are displayed as project data.

*3 Each folder is created automatically at installation, download and upload of each file.

*4 The folder name and file name can be set at [System Setting] in [System Environment] of GT Designer2. When using GT Designer3, execute the settings by [GOT Type Setting...] in [Common].

☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

12.2 OS Information

12.2.1 Function of OS information

Each file name/folder name of BootOS and OS (Standard monitor OS, PC communication driver and Option OS) by which each drive (A: Built-in CF card, C: Flash memory) holds can be displayed in lists.
Installation and uploading of the files are also possible.

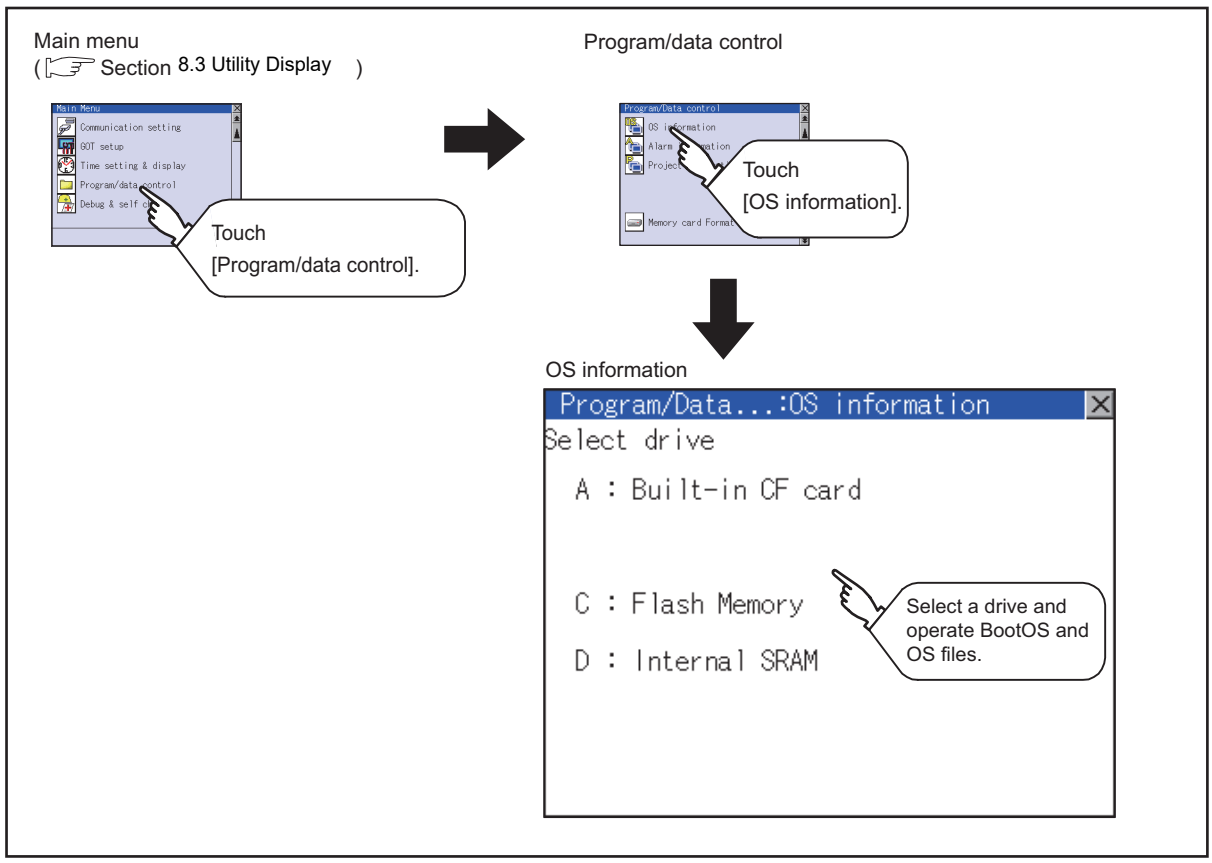
Function	Contents	Reference page
Information display of files and folders	Displays the kind, name, data size, creation date and time of the file or folder.	12-7, 12-8
Install	All files written in the A drive (Built-in CF card) can be installed in the C drive (Flash memory).	12-8
Upload	All files in the C drive (Flash memory) can be uploaded to the A drive (Built-in CF card).	12-8
Property display	Displays the property (file name, data size, type, version and creation date) of the file.	12-11
Data check	Data check of files is possible.	12-12

Point

Notes on installing OS

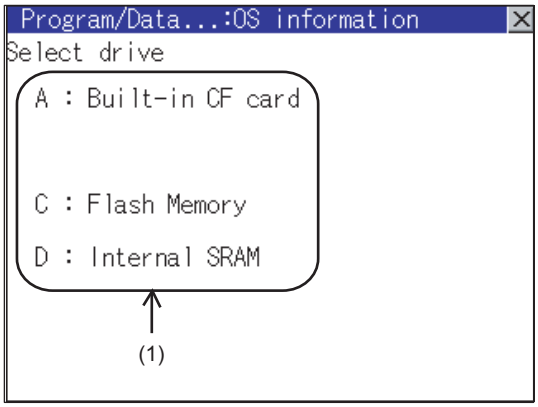
If the Boot OS or the Standard monitor OS is installed, such data on the GOT as the project data will be deleted.
After installing the Boot OS or the Standard monitor OS, reinstall/download necessary data.

12.2.2 Display operation of OS information screen

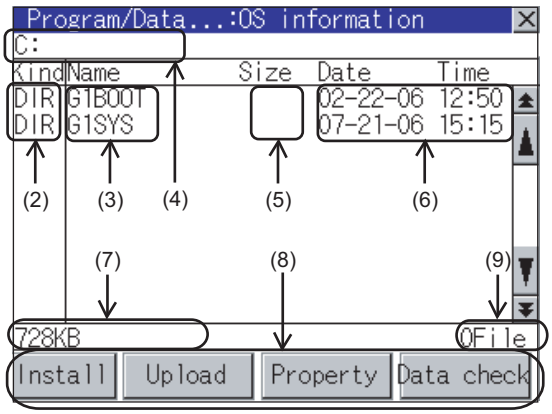


12.2.3 Display example of OS information

OS information screen



OS information screen: Storage file/folder display screen



Number	Item	Contents
(1)	Select drive	The drive of which file or folder is displayed can be selected. When the CF card is not installed, [A: Built-in CF card] will not be displayed.
(2)	Kind	Indicates whether the displayed name is for file or folder. In case of file, displays the extension; in case of folder, displays "DIR".
(3)	Name	The file name or folder name which is stored in the selected drive or folder is displayed. When the file name or folder name exceeds 20 characters, the exceeding characters (the 21th character or after) are not displayed.
(4)	Path name	The path name of the currently displayed drive/folder is displayed.
(5)	Size	Displays the size of the file displayed in Name.
(6)	Date and time	The date and time when each file was installed are displayed.
(7)	The size of drive	Displays the size in use of the drive which is selected by drive selection.
(8)	Operation switch	Execution switch of each function (install, upload, etc.) which can be executed on the OS information screen.
(9)	Number of files	Displays the total number of the displayed files.

Remark Displayed folders and files

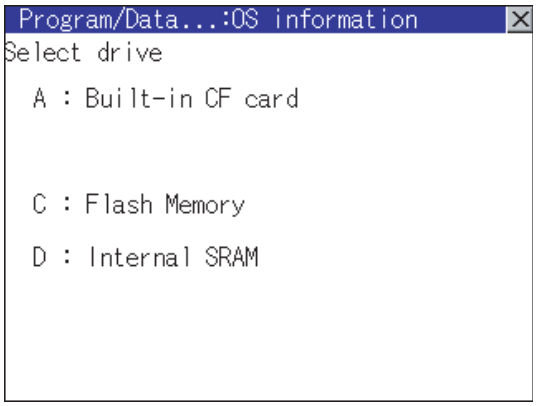
Refer to the following for the details of displayed folders and files.

☞ Section 12.1.4 Display file

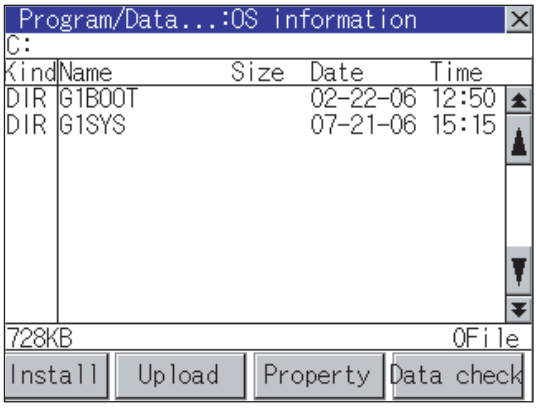
12.2.4 Operation of OS information

1 Display operation of OS information

OS information screen



OS information screen: Storage file/folder display screen



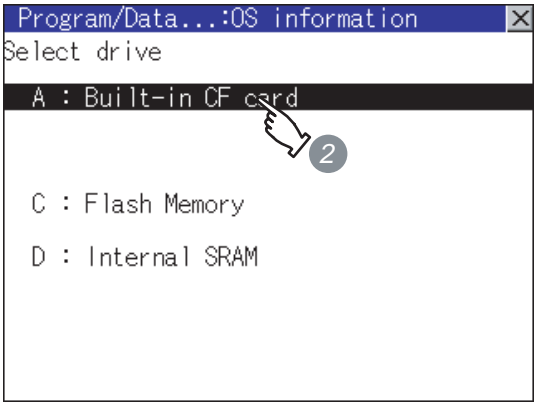
1. If touch a drive in [Select drive], the information of the first folder of the touched drive is displayed.
2. If touch a folder name, the information of the touched folder is displayed.
3. If touch a folder name of [. .], the information of the folder in one higher hierarchy is displayed.
4. If touch ▲▼ button of the scrollbar, the screen scrolls up/down by one line.
   If touch ⏫⏬ button, the screen scrolls up/down by one screen.
5. If touch a file name, the touched file name is selected and inverted.
6. Refer to the following for operation of installation, upload, property, data check.
   - Installation ..... ☞ this section 2
   - Upload ..... ☞ this section 3
   - Property ..... ☞ this section 4
   - Data check ..... ☞ this section 5
7. Touching ☒ button closes the screen.

2 Installation operation

BootOS and OS which are written in the A drive (Built-in CF card) can be installed in GOT.

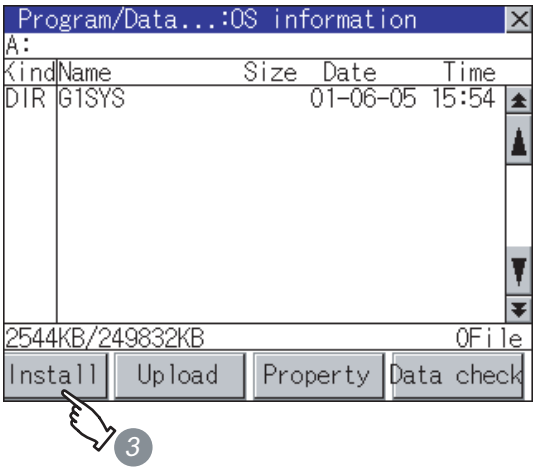
1 Install the CF card to which the BootOS or OS to install is written to the GOT.
Refer to the following for inserting/removing method of CF card.
☞ Section 6.1 CF Card

OS information screen



2 Touch [A: Built-in CF Card] for drive selection.

OS information screen: Storage file/folder display screen



3 Touching [Install] button starts the install.

4 When the installation is completed, the dialog shown left is displayed.

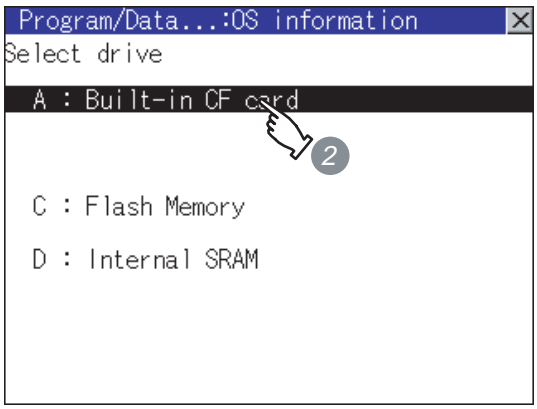
GOT restarts if touch [OK] button.

3 Upload operation

BootOS and OS in the C drive (Flash memory) can be uploaded to the A drive (Built-in CF card).

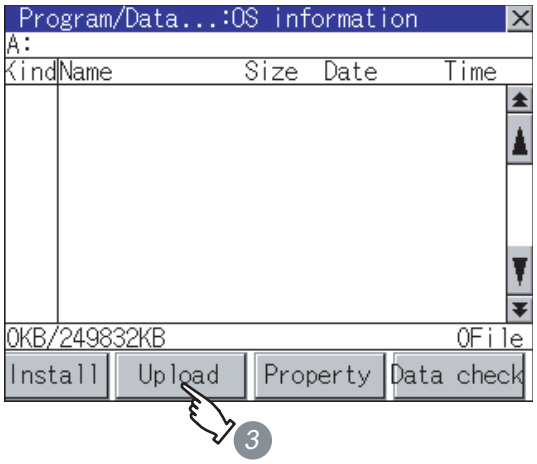
1 Install the CF card used as the uploading destination to GOT. Refer to the following for inserting/removing method of CF card.
☞ Section 6.1 CF Card

OS information screen

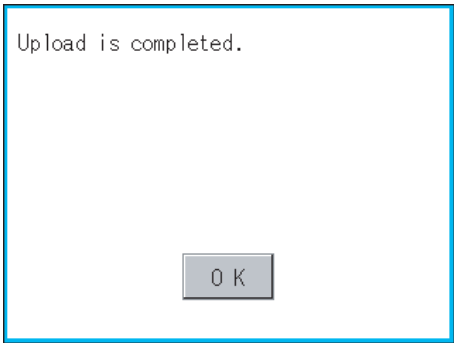


2 Touch [A: Built-in CF Card] of [Select drive].

OS information screen: Storage file/folder display screen



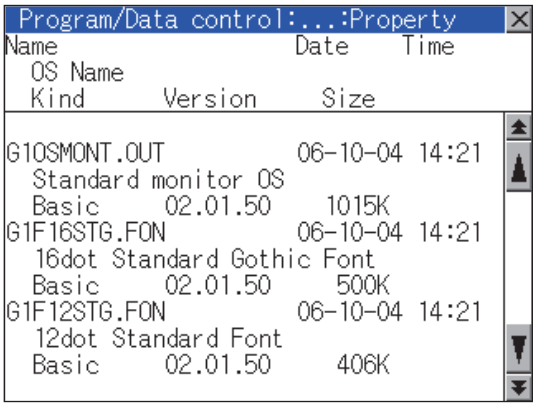
3 Touching [Upload] starts the uploading.



4 When the upload is completed, the dialog shown left is displayed.
Touching [OK] closes the dialog.

4 Property display operation

Displays the property of the file stored in the selected folder.



1 If touch [Property] button after selecting the property displaying target folder, the [Property] screen shown left is displayed. In the [Property] screen, the following information is displayed for each file selected by 1.

Item	Contents
Name	Displays the file name.
Kind	Displays the following items according to the file type. Boot : BootOS Standard : Standard monitor OS Communication : Communication driver Option : Option OS Extend : Extended function OS
Version	Displays the version of BootOS and OS.
Date, Time	Displays the date and time of the file creation.
Size	Displays the file size.

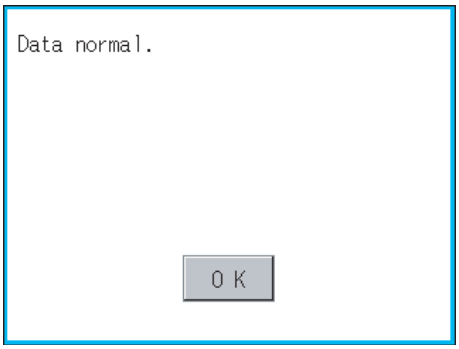
2 If touch [▲][▼] button of the scrollbar, the screen scrolls up/down by one line.
If touch [⏫][⏬] button, the screen scrolls up/down by one screen.

3 Touching [☒] button returns the screen to the previous screen display.

5 Data check operation

Carries out data check of the selected system file.

When data is normal.



When data is erroneous.

1. Touch [Data check] button after selecting a data check target file.
   The dialog mentioned left will be displayed after executing data check.
2. Touching [OK] button closes the dialog.
3. If the data check fails, the target file may be broken.
   Install the target file again.
   For details of installation, refer to the following.
   ☞ Chapter 15 INSTALLATION OF CoreOS, BootOS AND STANDARD MONITOR OS

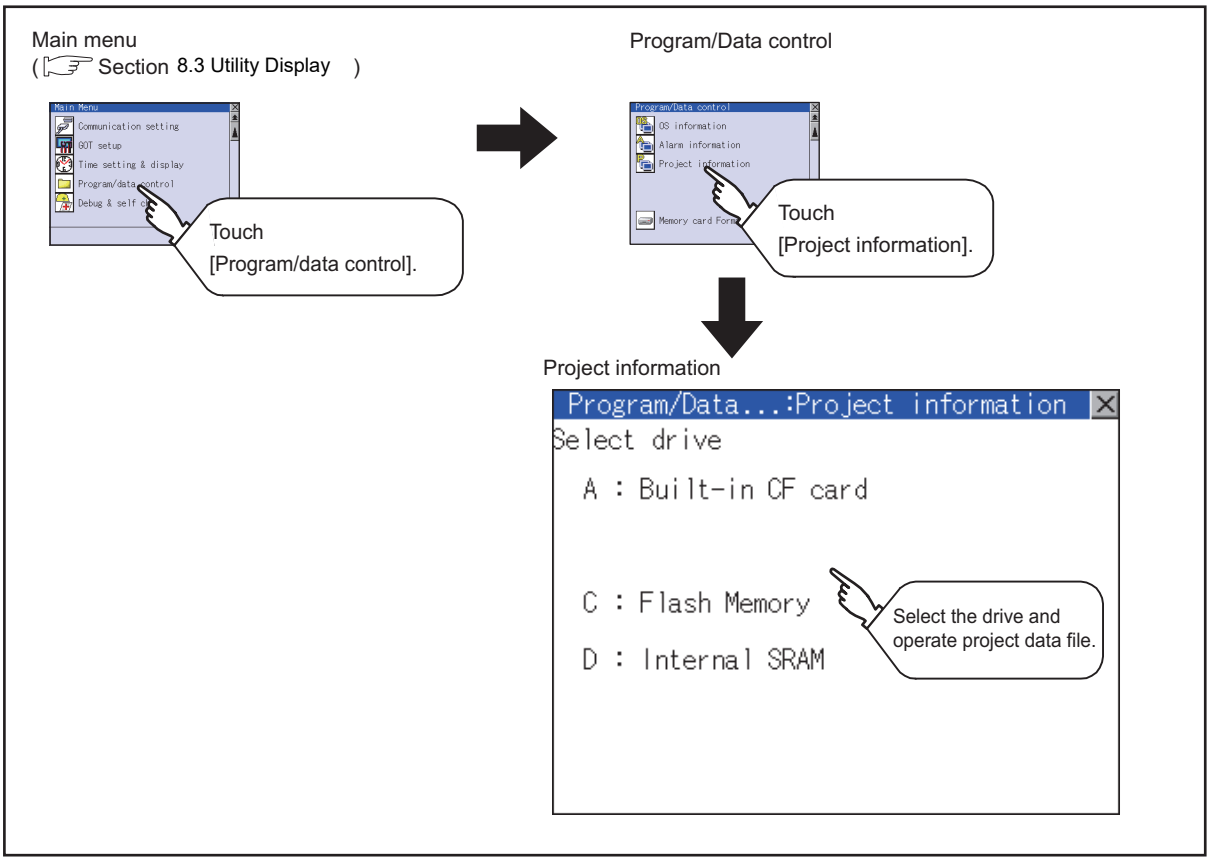
12.3 Project Information

12.3.1 Function of project information

The project data files stored in each drive (A: Built-in CF card, C: Flash memory) can be displayed by lists. In addition, the files can be downloaded, uploaded, deleted or copied, etc.

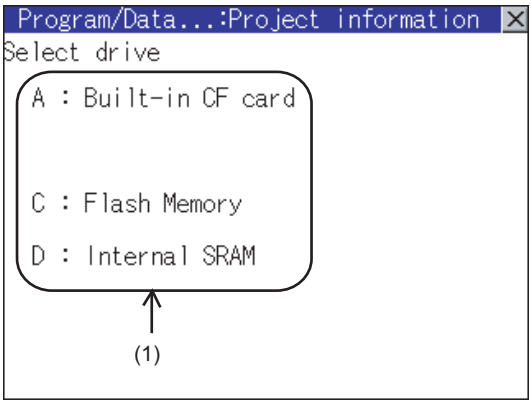
Function	Contents	Reference page
Information display of files and folders	Displays the kind, name, data size, the creation date and time of the file or folder.	12-14, 12-15
Delete	Deletes project data.	12-16
Copy	Copies project data. (Enabled to copy only from the A drive to the A drive)	12-17
Property display	Displays the project data creation date, author name and the version of drawing software.	12-18
Data check	Data check of the file can be executed.	12-19
Download	Downloads the project data written in the A drive (Built-in CF card) to C drive (Flash memory).	12-20
Upload	Uploads the project data written in the C drive (Flash memory) to the A drive (Built-in CF card).	12-22

12.3.2 Display operation of project information

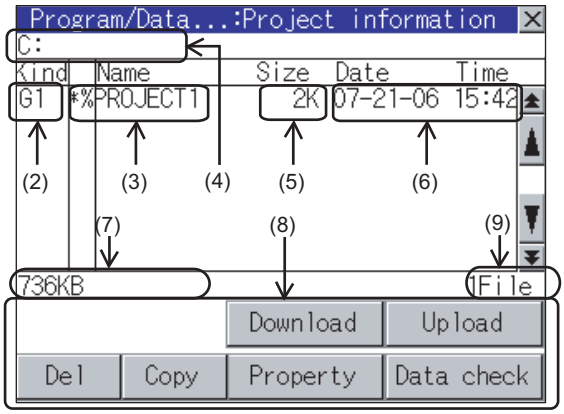


12.3.3 Display example of project information

Project information screen



Project information screen:
Storage file/folder display screen



Number	Item	Contents
(1)	Select drive	The drive by which a file or folder is displayed can be selected. When the CF card is not connected, [A: Built-in CF card] is not displayed.
(2)	Kind	Indicates the type of the displayed name (file or folder). The file is indicated with an extension, while the folder is indicated with "DIR."
(3)	Name	Displays the name of file or folder saved in the selected drive or contained in the selected folder. When the file or folder name exceeds 18 characters, the 19th and later characters are not displayed. If the displayed project data is a GOT monitoring target file, "%" mark precedes the file name. If the displayed project data is currently selected to be displayed, asterisk "*" precedes the file name.
(4)	Path name	Displays the path name of drive/folder which is currently displayed.
(5)	Size	Displays the size of the file displayed in [Name].
(6)	Date and time	Displays the date and time when each file is installed.
(7)	Size of the drive	Displays the size in use of the drive selected in [Select drive].
(8)	Operation switch	Displays the execution switch of functions (download, upload, etc.) which can be carried out in [Project information].
(9)	Number of files	Displays the total number of the displayed files.

Remark Displayed folders and files

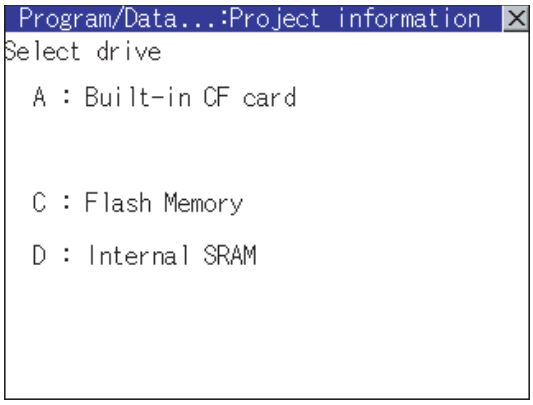
Refer to the following for the details of displayed folders and files.

☞ Section 12.1.4 Display file

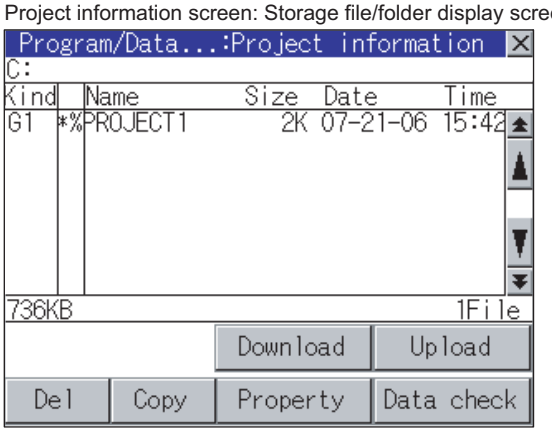
12.3.4 Operation of project information

1 Display operation of project information

Project information screen



Project information screen: Storage file/folder display screen



1) Touch a drive in [Select drive], and the data in the first folder contained in the touched drive is displayed.

2) If touch a folder name, the data contained in the touched folder is displayed.

3) If touch the folder with name [. .], the data in the one-higher hierarchy folder is displayed.

4) Touching the ▲▼ button in the scroll bar scrolls up or down by 1 line.
Touching the ⏫⏬ button scrolls up or down by 1 screen.

5) If touch a file name, the file is selected and the file name is highlighted.

6) Refer to the following for operation of delete, copy, property, data check, download, upload.

Delete ..... ☞ this section 2
Copy ..... ☞ this section 3
Property ..... ☞ this section 4
Data check ..... ☞ this section 5
Download ..... ☞ this section 6
Upload ..... ☞ this section 7

7) Touching ☒ button closes the screen.

2 Delete operation

This operation deletes the selected file.

1 Touch and select the file to delete.

2 Screen mentioned left is displayed if [Del] button is touched.

Confirm the deletion targeted file is specified correctly.

If touch [OK] button, the file is deleted.

If touch [Cancel] button, the deletion is canceled.

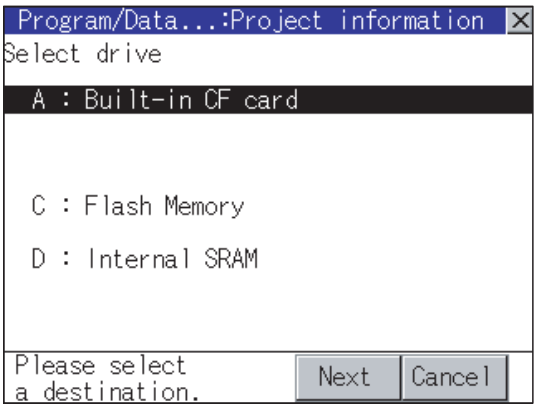
3 When the deletion completes, the dialog box shown left is displayed.

If touch [OK] button, the dialog is closed.

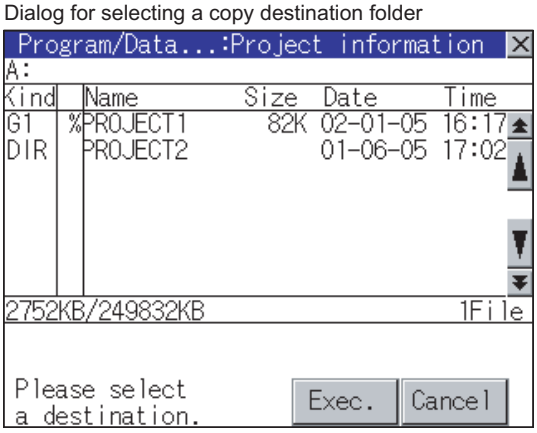
3 Copy operation

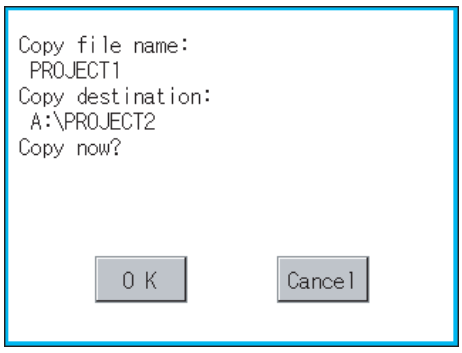
The file in the A drive is copied to another directory of the A drive.
Copy to/from C drive or D drive is disabled.

Dialog for selecting a copy destination drive



Dialog for selecting a copy destination folder





1 Install CF card in the PC, in which create a folder for the copy destination.
Set the same character with [System Setting] of [System Environment] of GT Designer2 for the folder name.
When using GT Designer3, set the same character with [GOT Type Setting...] in [Common].

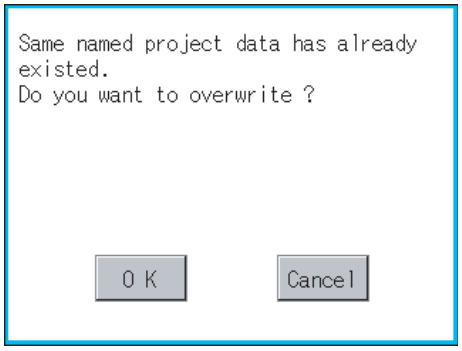
☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

2 Install the CF card mentioned above to GOT.
Refer to the following for inserting/removing method of CF card.

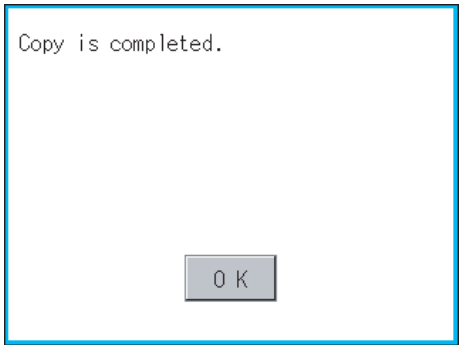
☞ Section 6.1 CF Card

3 Open [Project information] and touch the drive of the file to be copied to select the drive, and then touch the [Next] button.
The dialog for selecting a copy destination folder as shown left is displayed.

4 Touch the folder display area to select a folder, and then touch the [Exec.] button.
The dialog shown left is displayed.



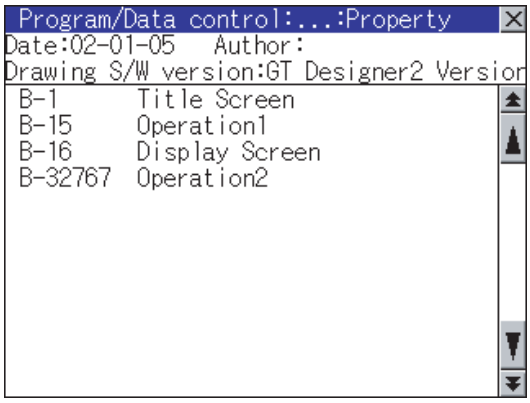
5 Touch OK button.
If there is no file of the same name in the copy destination folder, starts to copy.
When there is a file of the same name in the copy destination folder, the dialog mentioned left is displayed without starting the copy.
If copy, in this case, the copied file is overwritten to the project data in the copy destination folder.
If touch OK button, starts to copy.
If touch Cancel button, cancels to copy.



6 When copying completes, the dialog of completion is displayed.
If touch OK button, closes the dialog.

4 Property display operation

Displays the property of the project data in the selected folder.



1 If touch Property button after selecting the project data to display the property, the property is displayed as shown left.
In property display, the following information is displayed.

Item	Contents
Date	Displays the creation date of the file.
Author	Displays the author of the project data.
Drawing S/W version	Displays name and version of the drawing software by which the project data is created.

2 If touch ▲▼ button, the screen scrolls up/down line by line.

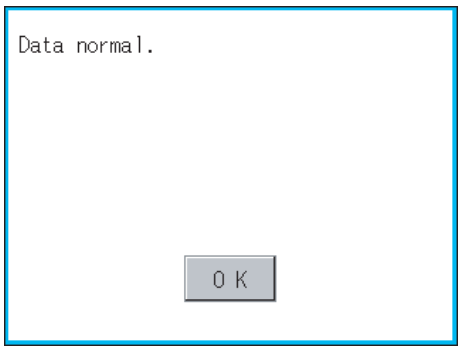
3 If touch ⏫⏬ button, the screen scrolls up/down by one screen.

4 If touch ☒ button, the property display is closed and returned to the previous screen.

5 Data check operation

Carrys out data check of the selected project file.

When data is normal.

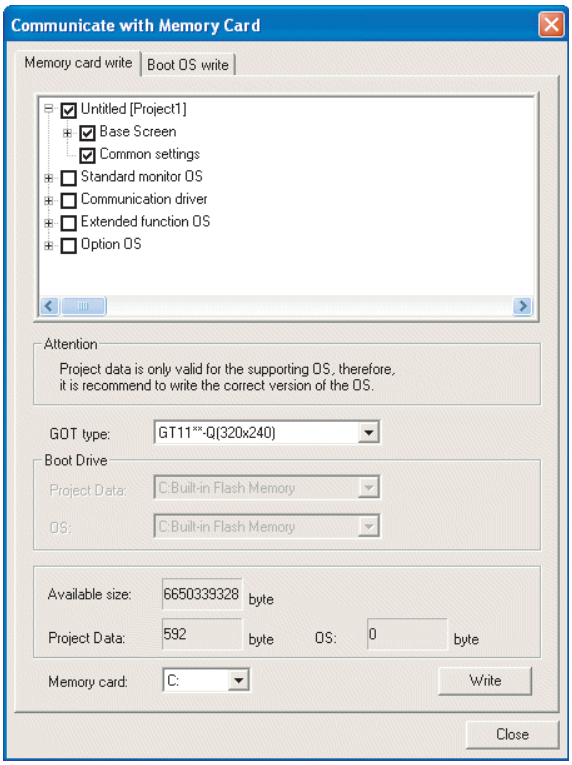


When data is erroneous.

1. Touch the [Data check] button after selecting the file for data check.
   The data check is executed and the result is displayed by the dialog shown left.
2. If touch [OK] button, the dialog is closed.
3. If [Data error] is displayed, the target file may be broken.
   Download the target file again.

6 Download

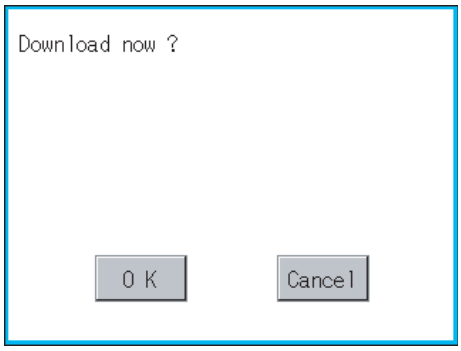
Transfers the project data from the A drive (Built-in CF card) to the C drive (Flash Memory).



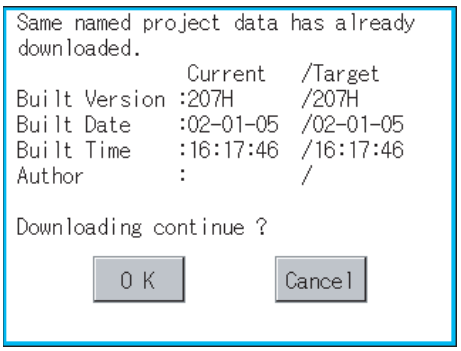
1 Transfer the project data to be downloaded to the GOT to the CF card, using drawing software or another GOT.

2 Install the CF card mentioned by 1 to GOT. Refer to the following for inserting/removing method of CF card.
☞ Section 6.1 CF Card

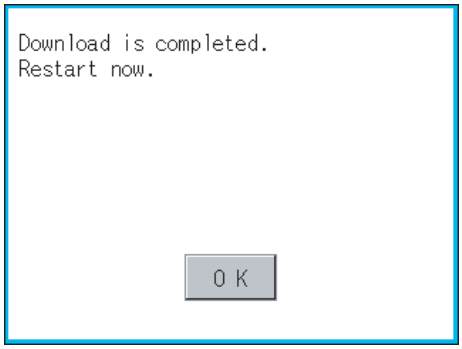
3 Touch [A: Built-in CF card] in [Select drive].



4 If touching [Download] button, the screen mentioned left is displayed.
If touching [OK] button, the download is executed.



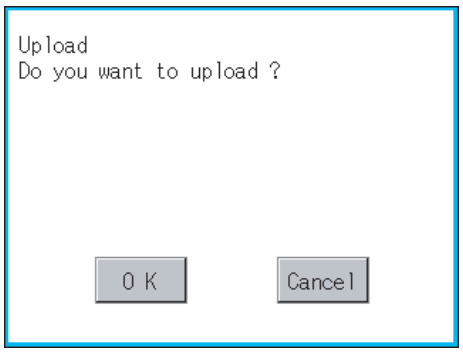
5 Touch [OK] button. If there is no project data of the same name in the C drive, starts the download.
If there is a project data of the same name in the C drive, the screen shown left is displayed without starting the download.
If touching [OK] button, an overwrite download is executed to a project data of the same name.
If touching [Cancel] button, cancels the downloading.

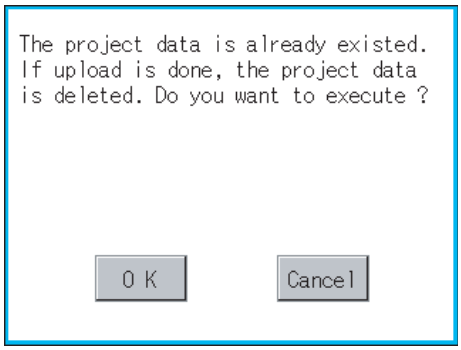


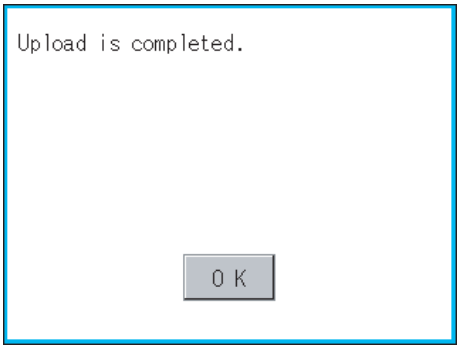
6 When the downloading is completed, the completion dialog mentioned left is displayed.
GOT is restarted if [OK] button is touched.

7 Upload

Transfers the project data from the C drive (Flash Memory) to the A drive (Built-in CF card).







1. Mount the CF card to GOT.
   For the CF card installation/removal method, refer to the following.
   ☞ Section 6.1 CF Card
2. Touch "A: Standard CF card" in the drive selection.
3. If touching [Upload] button, the screen shown on the left is displayed.
4. If touching [OK] button, the upload is executed.
5. If there is a project data of the same name in the A drive, the screen shown on the left is displayed without starting the upload.
   If touching [OK] button, an overwrite upload is executed to the project data of the same name.
   If touching [Cancel] button, the upload is canceled.
6. When the upload is completed, the dialogue box shown on the left is displayed.
   If touching [OK] button, the dialogue box is closed.

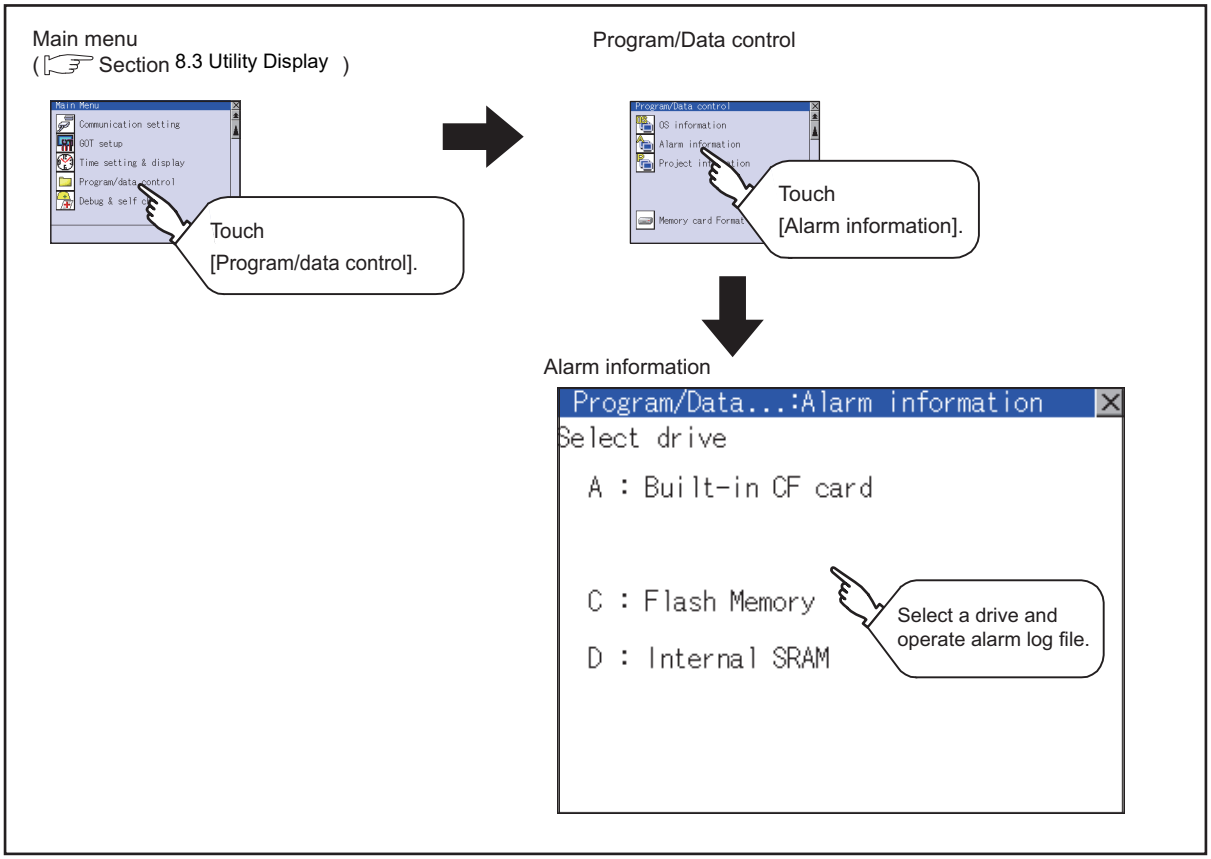
12.4 Alarm Information

12.4.1 Function of alarm information

The alarm log file held by the D drive (Internal SRAM) is displayed.
The functions below can be carried out for files.

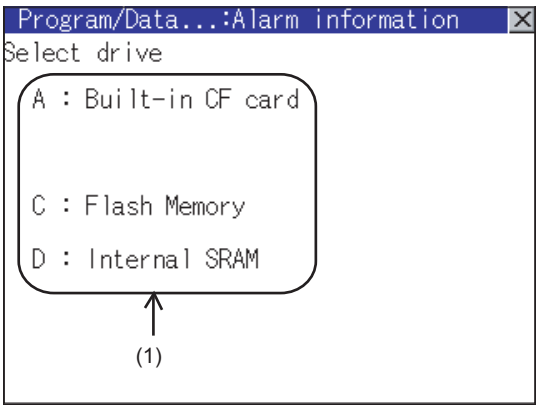
Function	Contents	Reference page
Information display of files and folders	Displays name, data size, creation date and time of file or folder.	12-24, 12-25
Deletion	Deletes file.	12-26
Copy	Copys file.	12-27

12.4.2 The display operation of alarm information

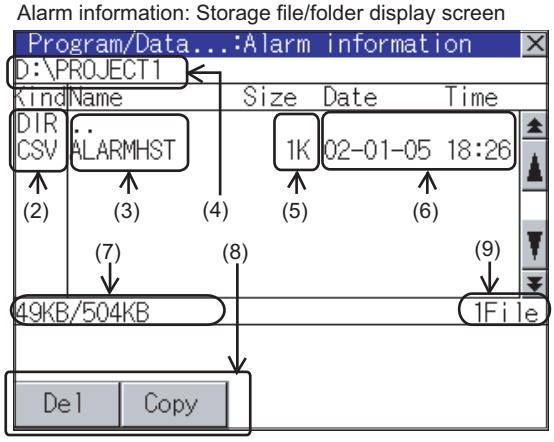


12.4.3 The display example of alarm information

Alarm information screen



Alarm information: Storage file/folder display screen



Number	Item	Contents
(1)	Select drive	The drive of which file or folder is displayed can be selected. When the CF card is not installed, [A: Built-in CF card] is not displayed.
(2)	Kind	Indicates whether the displayed name is file or folder. In case of file, displays the extension; in case of folder, displays "DIR".
(3)	Name	Displays the file name or folder name held by the selected drive or folder. When the file name or folder name exceeds 20 characters, the exceeding characters (the 21th character and after) are not displayed.
(4)	Path name	Displays the path name of drive/folder which is currently displayed.
(5)	Size	Displays the size of the file displayed in Name.
(6)	Date and time	Displays the date and time when each file has been created.
(7)	Drive size	Displays the size in use and the entire size of the drive selected by "Select drive".
(8)	Operation switch	Displays the execution switch of each function (Delete, copy) which can be executed on the alarm information screen.
(9)	Number of files	Displays the total number of the displayed files.

Point

Display of creation date and time

The creation date and time display is not updated even if a file is created or updated while displaying the alarm information display screen.
If close the screen currently displayed (moving the screen to the folder of the upper hierarchy, etc.) and display the screen again, the updated contents are displayed.

Remark

Folders and files displayed

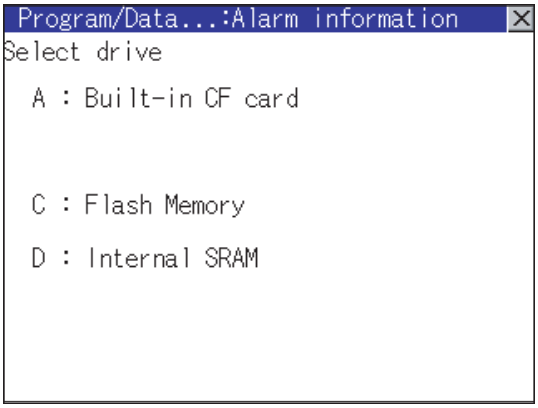
Refer to the following for the details of folders and files displayed.

☞ Section 12.1.4 Display file

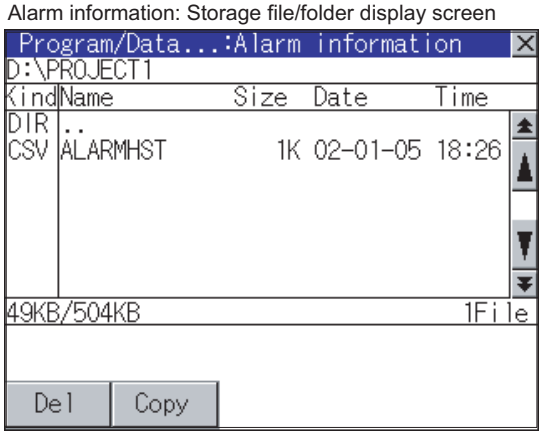
12.4.4 Alarm information operation

1 The display operation of alarm information

Alarm information screen



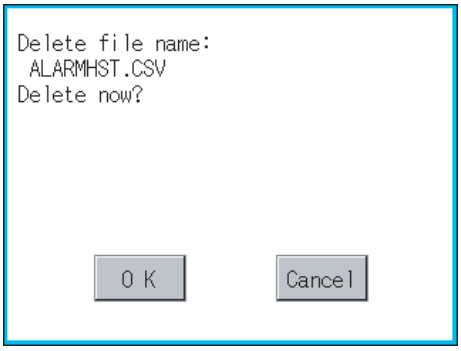
Alarm information: Storage file/folder display screen



1. If touch a drive of [Select drive], the information in the first folder of the touched drive is displayed.
2. If touch a folder name, the information of the touched folder is displayed.
3. If touch a folder of [. .], the information of the folder of the one upper hierarchy is displayed.
4. If touch ▲▼ button of the scrollbar, the screen scrolls up/down by one line.
   If touch ⏫⏬ button, the screen scrolls up/down by one screen.
5. If touch a file name, the touched file name is selected and inverted.
6. Refer to the following for delete, copy, operations.
   Delete ..... ☞ this section 2
   Copy ..... ☞ this section 3
7. If touch ☒ button, the screen is closed.

2 Deletion operation

Deletes selected files.



1 Touch and select the file to delete.

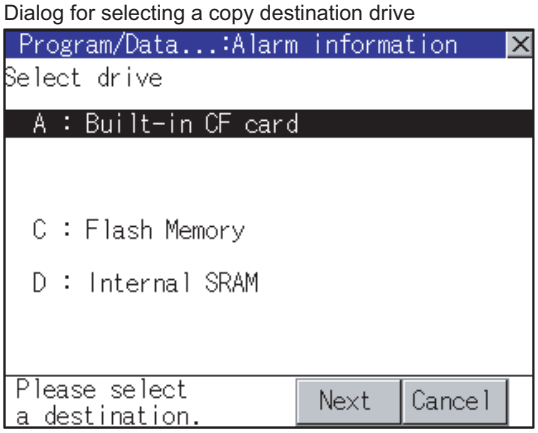
2 If touch [Del] button, the dialog mentioned left is displayed.
Confirm deletion targeted file is specified correctly.
If touch [OK] button, the file is deleted.
If touch [Cancel] button, the deletion is canceled.

3 When the deletion is completed, the completion dialog is displayed.
If touch [OK] button, the dialog is closed.

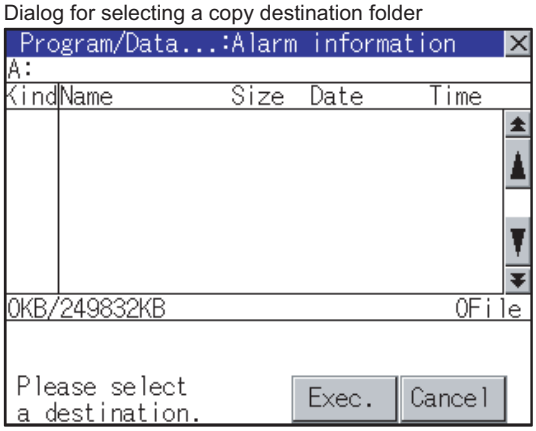
3 Copy operation

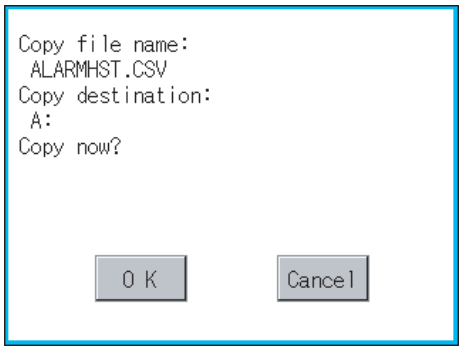
Copies the selected file.

Dialog for selecting a copy destination drive

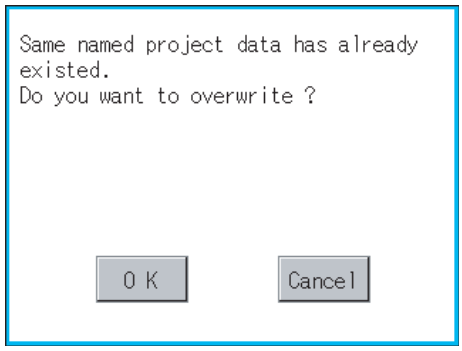


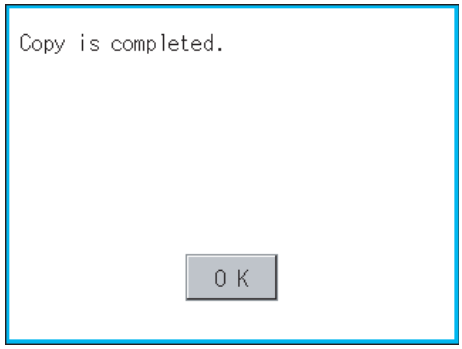
Dialog for selecting a copy destination folder





1. Touch and select the file to copy.
2. If touch [Copy] button, the message [Please select a destination.] is displayed in the left bottom of the screen.
3. Touch the drive name display area to select a drive, and then touch the [Next] button. The dialog for selecting a copy destination folder is displayed as shown left.
4. Touch the folder display area to select a folder, and then touch the [Exec.] button. The confirmation dialog shown left is displayed.





5 Touch [OK] button.
If there is no file of the same name in the copy destination folder, starts to copy.
If there is a file of the same name in the copy destination folder, the following dialog is displayed without starting the copy.
If copy, in this case, the copied file is overwritten to the project data in the copy destination folder.
If touch [OK] button, starts to copy.
If touch [Cancel] button, cancels to copy.

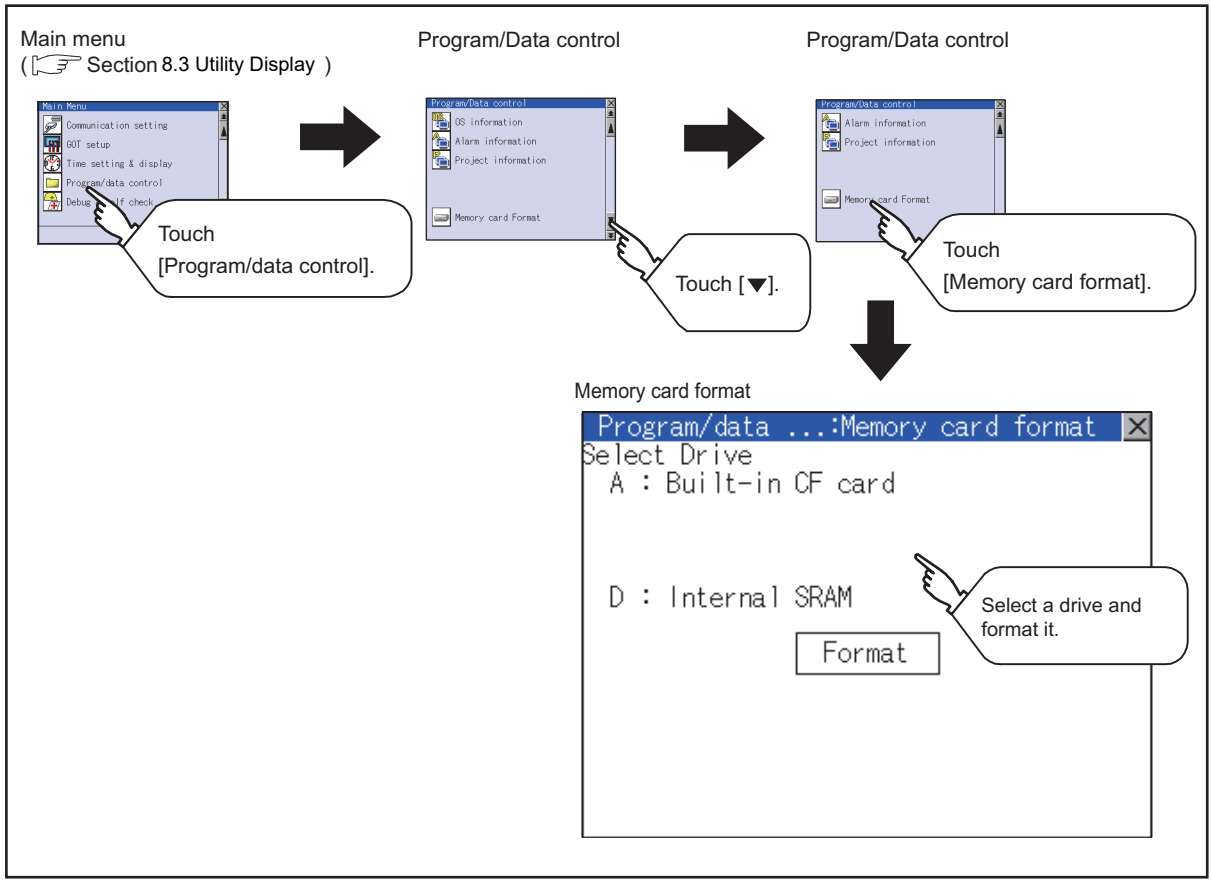
6 When the copy is completed, the dialog of completion is displayed.
If touch [OK] button, closes the dialog.

12.5 Memory Card Format

12.5.1 Format function of memory card

Formats the CF card or Internal SRAM.

12.5.2 Display operation of memory card format

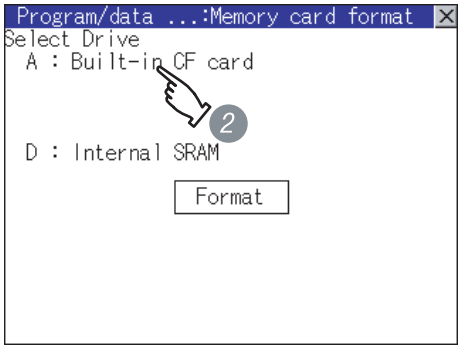


Point

Formatting the D drive (Internal SRAM)

If the GOT is turned off and left in the status without a battery for 30s or longer, the data in the D drive (Internal SRAM) becomes indefinite, possibly disabling data writing. If the GOT is left in the status without a battery for 30s or longer, format the D drive (Internal SRAM).

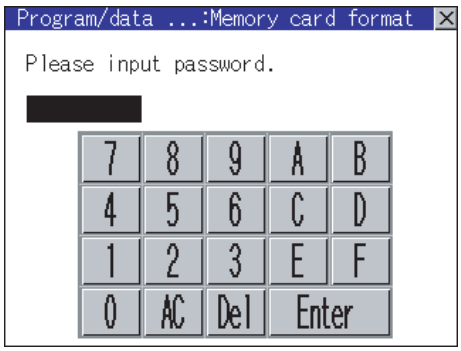
12.5.3 Format operation of memory card



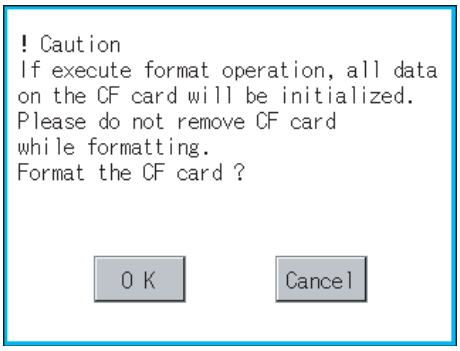
1 To format the CF card, install the CF card to the GOT first.
For the CF card installation/removal method, refer to the following.

Section 6.1 CF Card

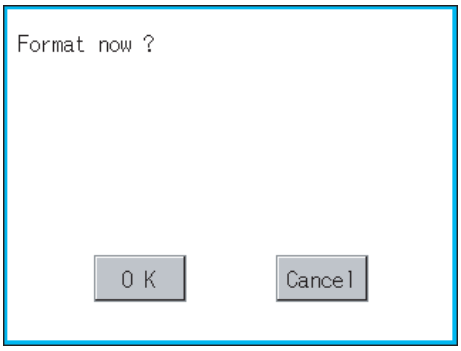
2 Touch and select the drive to format by [Select Drive].



3 If touch [Format] button, the password input screen is displayed.

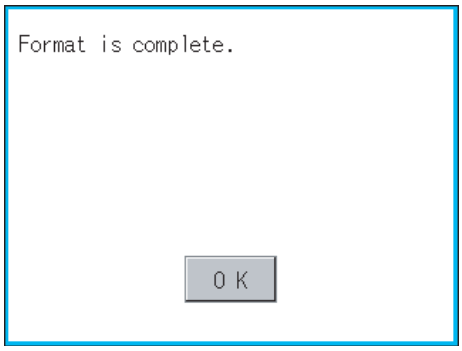


4 Type [1][1][1][1] and touch the [Enter] key. The dialog box shown on the left will appear. (The password is fixed to 1111.)
Confirm the contents of the dialog.
When execute the CF card format, touch [OK] button.
When cancel the CF card format, touch [Cancel] button.



5 If touch [OK] button by 4, the dialog mentioned left is displayed for reconfirm.

6 Reconfirm whether to format the CF card.
If touch [OK] button, starts formatting.
If touch [Cancel] button, cancels formatting.



7 When the formatting is completed, the completion dialog mentioned left is displayed.

8 If touch [OK] button, closes the dialog.

Remark Restrictions on formatting

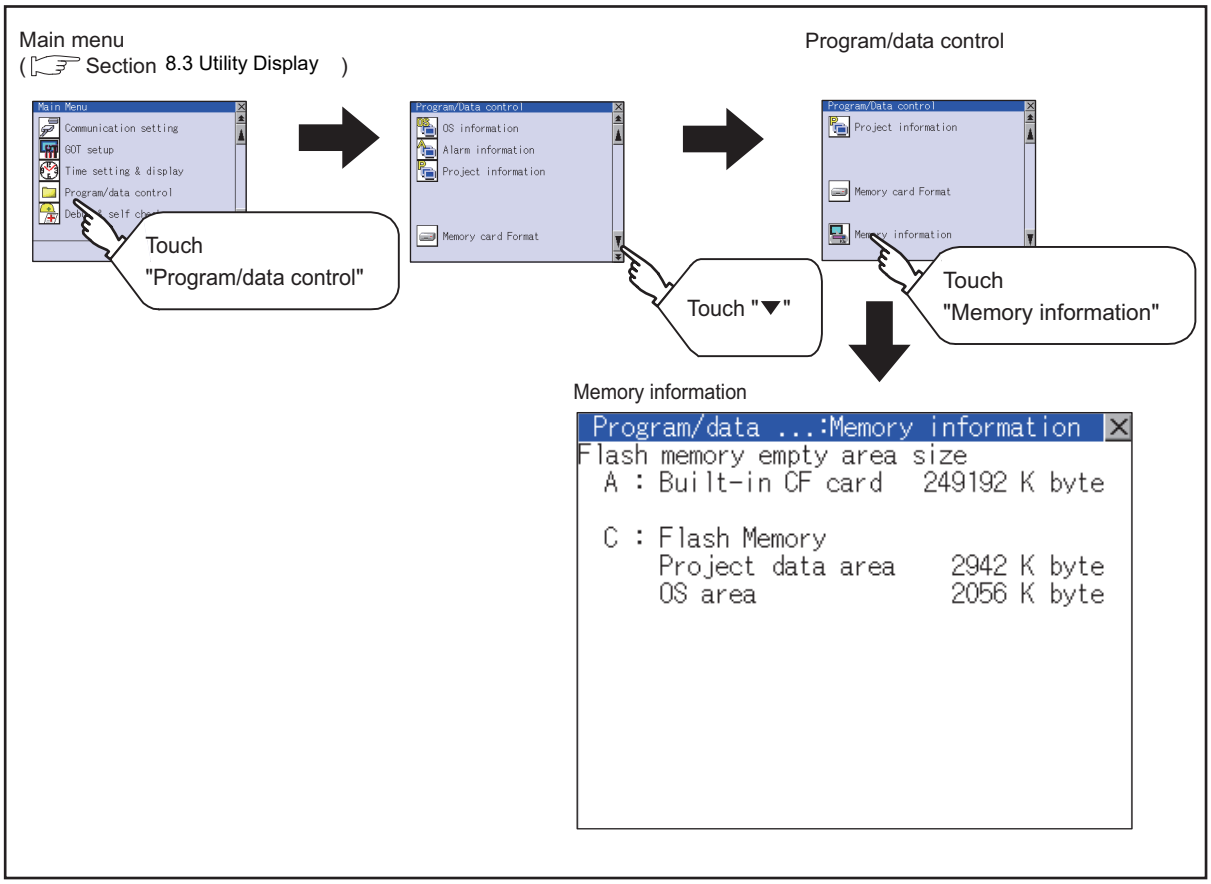
- When use an unformatted CF card in GOT, format the CF card by PC. GOT cannot format the unformatted CF card.
- The formatting of GOT does not change the file system (Example: FAT16) of the CF card and inherits the file system before formatting.

12.6 Memory Information

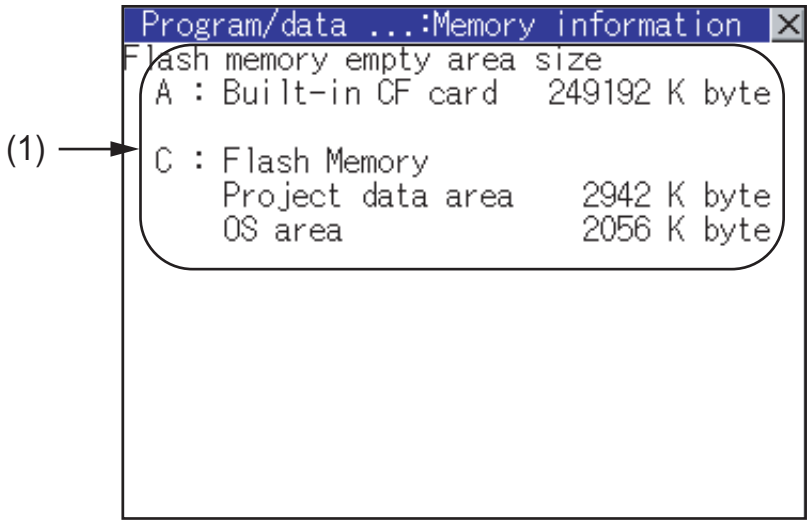
12.6.1 Memory information function

The following shows the amount of the memory empty area size and boot Drive information empty area size which can be used by the user of each drive (A: Standard CF card, C: Built-in Flash Memory).

12.6.2 Memory information display operation



12.6.3 Display example of memory information



No.	Setting items	Description
(1)	Flash memory empty area size	Indicates the amount of memory empty area size for each drive in which a file or folder can be stored. If CF card is not mounted, "A: Standard CF card" is not displayed.

12.7 GOT data package acquisition

12.7.1 GOT data package acquisition function

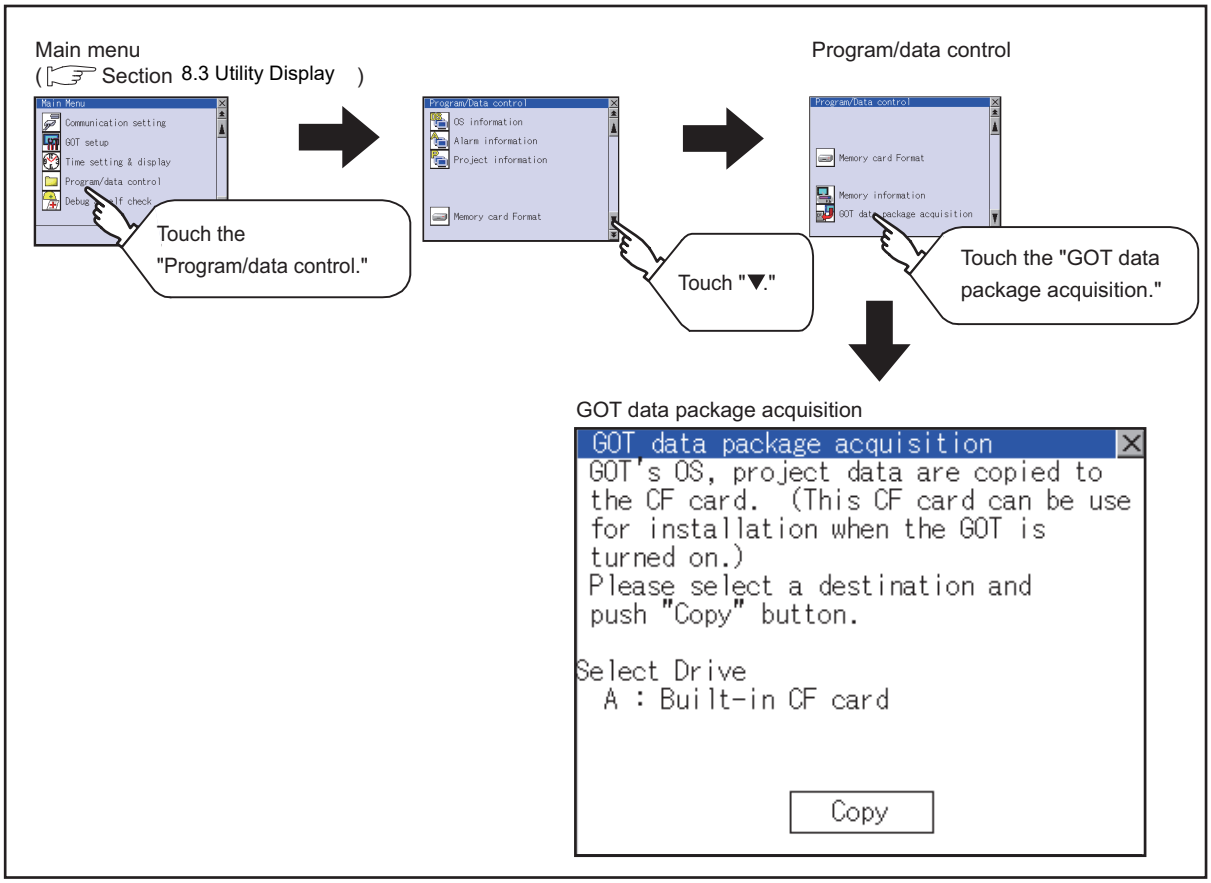
This function copies the following OSs that are installed on the GOT and the data to the memory card.

- OS (Boot OS, Standard monitor OS, Communication driver, Extended function OS, Option OS)
- Project data

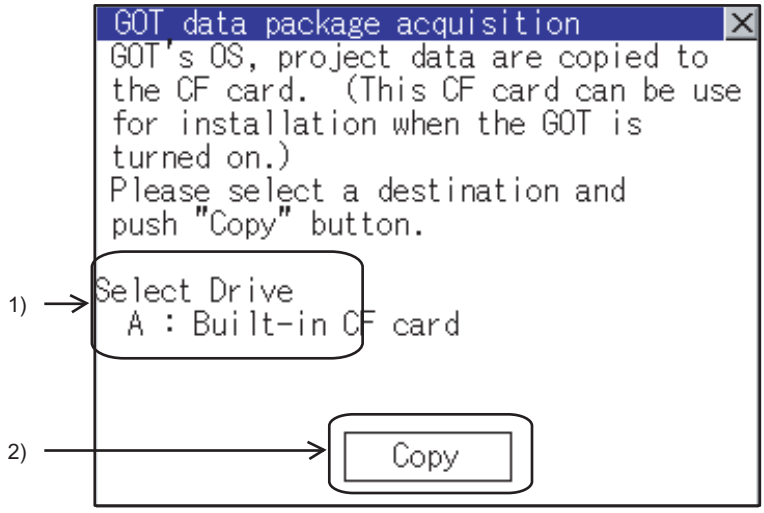
Copied data can be used as a backup, or they can be installed on another GOT to create a GOT that has the same configuration.
Refer to the following section for the Installation function of the GOT.

☞ Section 15.3.2 BootOS and Standard Monitor OS Installation Using CF Card

12.7.2 Operating the GOT data package acquisition function



12.7.3 Display example of GOT data package acquisition

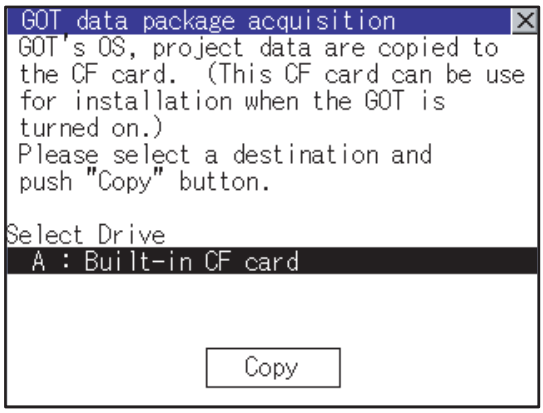


No.	Setting items	Description
1)	Select Drive	Displays the drive to which the user can copy the OS and data. [A: Standard CF Card] will not appear if a CF card is not inserted.
2)	Copy	Copying begins when [Copy] is touched.

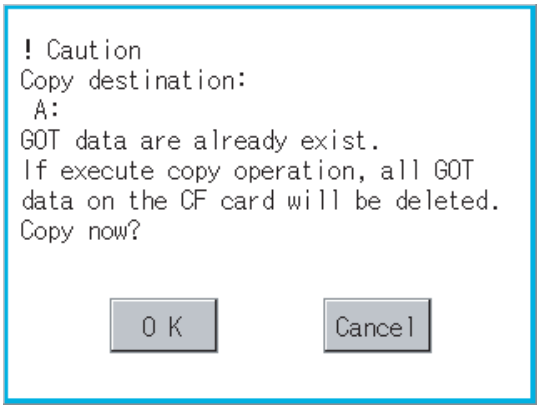
12.7.4 GOT data package acquisition operation

1 GOT data package acquisition operation on the display

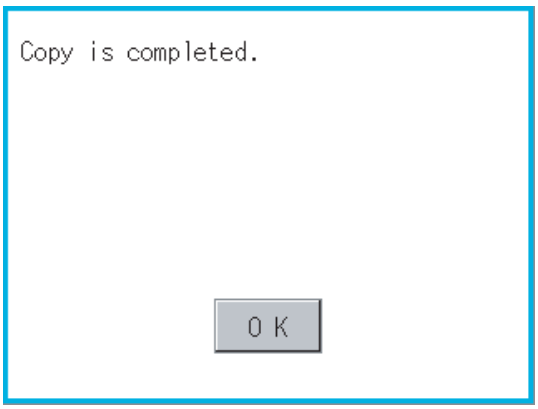
Copy the following OS that is installed on the GOT and data to the CF card.



1 Touch [A: Standard CF Card] under Select drive to highlight it.
Touch the Copy button to begin copying.



2 Different dialogs appear, depending on the status of the copying destination. Follow the dialog that appears.



3 Upon completion of OS/Data copying, a dialog that indicates a completion of copying will appear.
Touch the OK button to close the dialog window.

2 Notes on copying operations

(1) Copying the OS/Project data to the GOT
When the OS or project data are copied to the memory card using the GOT data package acquisition function and then to the GOT, the utility settings will also be copied.
After copying the OS and project data to the GOT, check the utility settings and reconfigure the settings as necessary.

(2) Storage of other data on the CF card
When using the GOT data package acquisition function, do not store any other data to the memory card.
Other data on the memory card will become unusable.

13. GOT SELF CHECK (DEBUG & SELF CHECK)

The GOT can display the screen for debugging or self-checking.
The following describes the functions available as the debugging and self-checking function.

Items	Contents	Reference page
Debug	System monitor, A list editor and FX list editor	13-1
Self check	Memory check, Drawing check, Font check, Touch panel check and I/O check	13-114
System alarm display	GOT errors, CPU errors	13-131
GOT start time	Time when the GOT was started	13-133

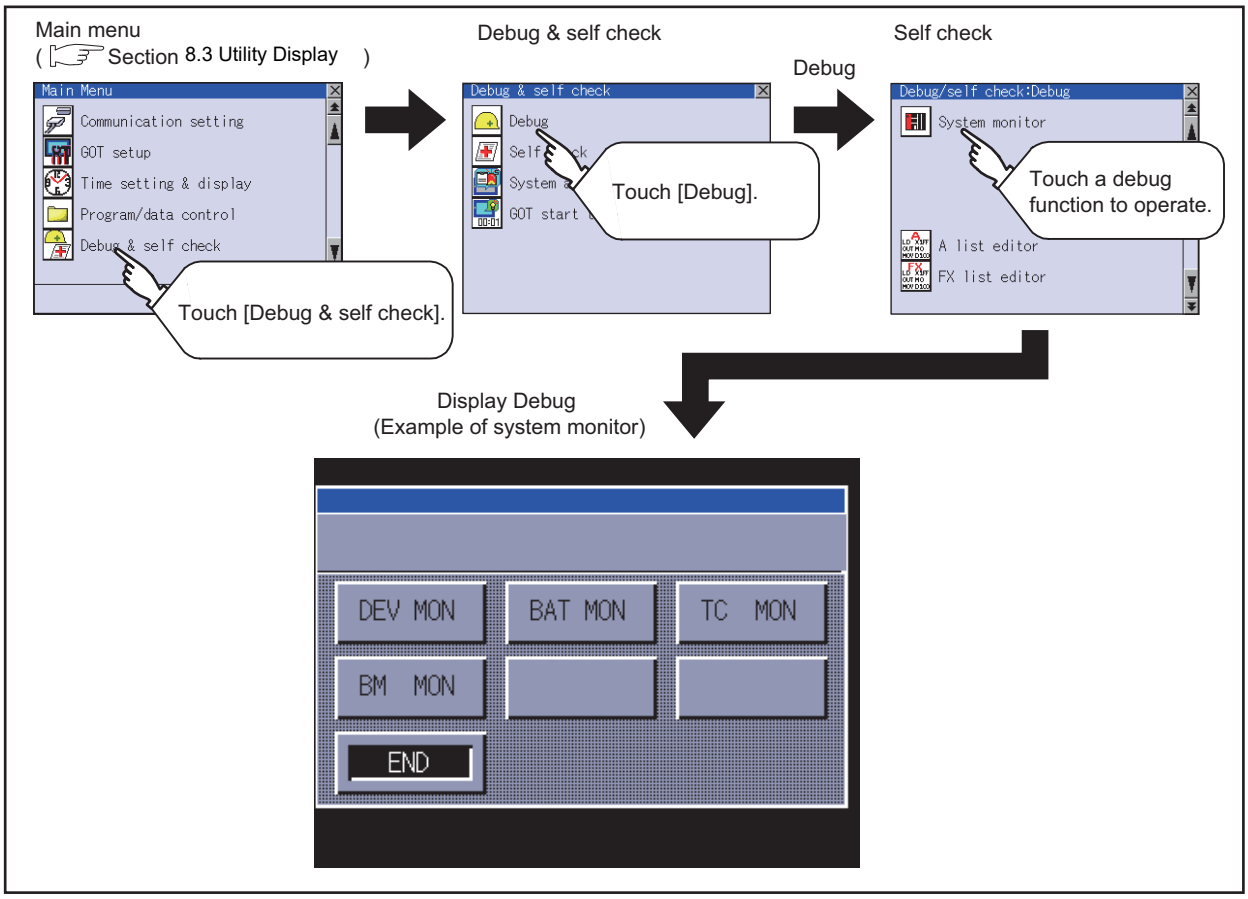
13.1 Debug

13.1.1 Debug functions

The debug function includes functions for the PLC system status check and those for increasing the efficiency in troubleshooting.
The following items can be realized with the debug function.

Items	Contents
System monitor	The device of PLC CPU or buffer memory of the intelligent function module can be monitored and tested.
A list editor	The sequence program of ACPU can be list edited.
FX list editor	The sequence program of FX PLC can be list edited.

13.1.2 Display operation of debug



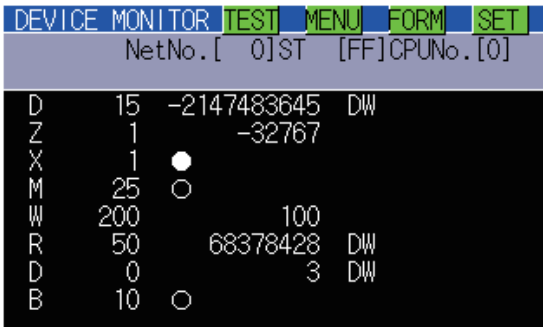
13.2 System Monitor

The system monitor function is capable of monitoring and changing the devices within a target controller. It is intended to troubleshoot the controller system and to streamline maintenance operations.
By installing the system monitor, an extended function OS, from drawing software into the GOT, you can monitor and test the devices of the controller and the buffer memory of the intelligent function module.

1 Any device on four dedicated screens can be monitored

The system monitor function comprises four monitors - entry monitor, batch monitor, TC monitor, and BM monitor, and you can monitor any device according to the application.

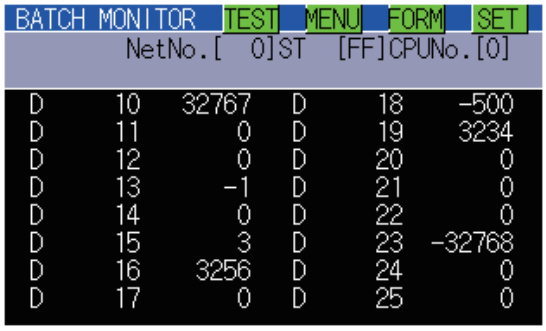
Entry monitor



The entry monitor function monitors up to 8 controller devices entered by the user in a single window.

(☞ Subsection 13.2.9 Entry monitor)

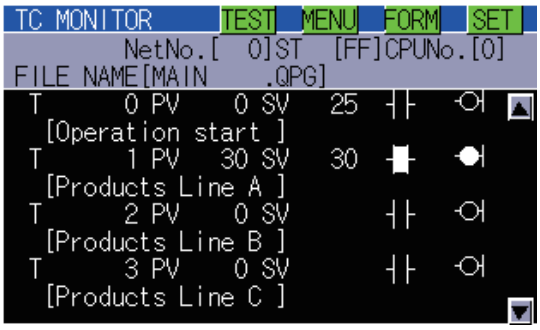
Batch monitor



The batch monitor function monitors up to 16 controller devices from the device number specified by the user in a single window.

(☞ Subsection 13.2.13 Batch monitor)

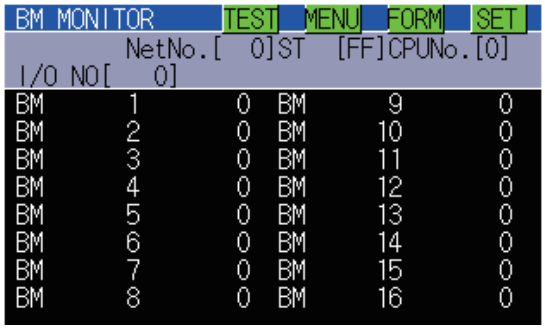
TC monitor



The TC monitor function monitors the present value, set value, contact point, and coil of up to 8 controller timers (T)/ counters (C) from the device number specified by the user in a single window.

(☞ Subsection 13.2.16 TC Monitor (Monitoring Timers and Counters))

BM monitor (monitoring Buffer memory)



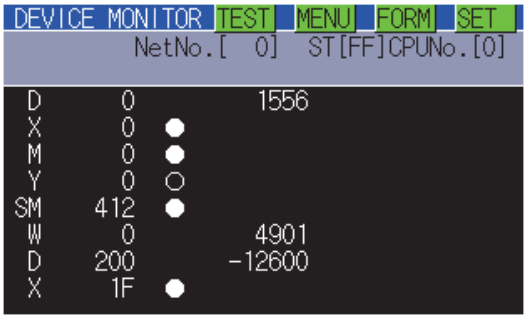
The BM monitor function monitors up to 16 devices from the initial device number in the buffer memory of the intelligent function module specified by the user in a single window.

(☞ Subsection 13.2.20 BM monitor (monitoring buffer memory))

Point

Displaying the system monitor screen

The GOT can display one of the four monitor screens as a full screen.



2 Data can be changed by test operation

For further information, see the following:

☞ Subsection 13.2.23 Test operation

(Test example)

When turning ON MO

When changing the present value of DO

(1) Testing a bit device

A device specified by the user is turned on and off.

(2) Testing a word device

A specified value is written to a device specified by the user.

(3) Testing a timer/counter

Specified values are written as the present and set values of a device specified by the user.

(4) Testing buffer memory

A specified value is written to buffer memory specified by the user.

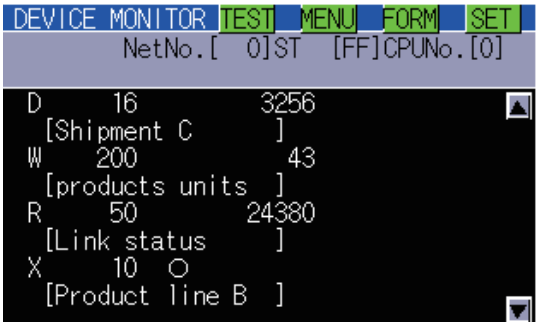
3 The display format and device comment/no-comment display can be switched

For further information, see the following:

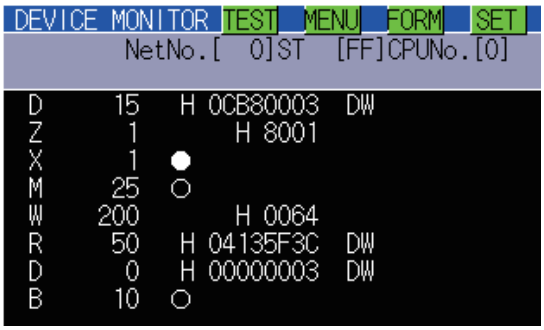
☞ Subsection 13.2.6 Switching the display format (DEC/HEX) and comment/no-comment display

(Test example)

When the entry monitor is displayed (comment display)



When the entry monitor is displayed (hexadecimal display)



(1) Switching the display format

Word device values are displayed in decimal or hexadecimal numbers on the entry, batch, TC, and BM monitors.

(2) Device comment display

Comments written in the controller are displayed when a controller device is monitored.

4 Other stations can be monitored

You can monitor other stations in the data link system containing the GOT (or GOT-connected station), network system or CC-Link system.

For further information about the connection forms that can be monitored, see the following:

☞ Subsection 13.2.1 1 System configuration

13.2.1 Specifications

1 System configuration

This subsection describes the controller names and the connection forms between the GOT and the controller that can be covered by the system monitor function.
For further information about communication units and cables for each connection form, see the following:

☞ GOT1000 Series Connection Manual

2 Target controller

Controller
QCPU (Q mode), Q series motion controller CPU
QSCPU*1
QnACPU
ACPU/QCPU (A mode), A series motion controller CPU
FXCPU
Remote I.O station (MELSECNET/H system)

*1 The GOT cannot write data to devices in the QSCPU. (The test operation is not available.)

3 Connection type

(1) When the GOT is connected to a QCPU (Q mode), Q series motion controller CPU, or QSCPU

(○: Available, △: Partly restricted, ×: Unavailable)

Function		Connection type between GOT and controller					Reference
Name	Description	Bus connection *6	Direct CPU connection *6	Computer link connection *6	CC-Link connection G4*4*6	GOT multidrop connection	
Entry monitor	Monitoring present values by entering devices to be monitored in advance	○	○	○	○	×	Subsection 13.2.9
Batch monitor	Monitoring the present value of n devices from a specified device						Subsection 13.2.13
TC monitor	Monitoring the present value, set value, contact point, and coil of m devices from a specified device	△*1	△*1	△*1	△*1		Subsection 13.2.16
BM monitor	Monitoring the present value of x devices in specified buffer memory of a specified intelligent function module						Subsection 13.2.20
Data change by test operation	Setting/Resetting bit devices	△*3	△*3	○	△*3		Subsection 13.2.23
	Changing the present value of word devices and buffer memory			△*2			
	Changing the present value of TC (possible during TC monitoring)			△*3			
	Changing the set value of TC (possible during TC monitoring)*5						
Quick test	Changing device values by performing a quick test						Subsection 13.2.7
Display switching	Displaying device comments						Subsection 13.2.6
	Displaying word device and buffer memory values in decimal or hexadecimal						

*1 These items cannot be monitored when a motion controller (Q series) is monitored.
*2 The present value of Z cannot be changed. None of the connection types supports V.
*3 When a motion controller (Q series) is connected, device comments cannot be displayed.
*4 Indicates CC-Link connection (via G4).
*5 When a QCPU redundant system is used, data of the set value cannot be changed.
*6 The QSCPU does not support the connection type.

(2) When the GOT is connected to a QnACPU

(○: Available, △: Partly restricted, ×: Unavailable)

Function		Connection type between GOT and controller					Reference
Name	Description	Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4*3	GOT multidrop connection	
Entry monitor	Monitoring present values by entering devices to be monitored in advance	△*2	△*2	○	×	×	Subsection 13.2.9
Batch monitor	Monitoring the present value of n devices from a specified device						Subsection 13.2.13
TC monitor	Monitoring the present value, set value, contact point, and coil of m devices from a specified device						Subsection 13.2.16
BM monitor	Monitoring the present value of x devices in specified buffer memory of a specified intelligent function module						Subsection 13.2.20
Data change by test operation	Setting/Resetting bit devices						Subsection 13.2.23
	Changing the present value of word devices and buffer memory			△*1			
	Changing the present value of TC (possible during TC monitoring)						
	Changing the set value of TC (possible during TC monitoring)						
Quick test	Changing device values by performing a quick test			△*2			Subsection 13.2.7
Display switching	Displaying device comments						Subsection 13.2.6
	Displaying word device and buffer memory values in decimal or hexadecimal						

*1 The present value of Z cannot be changed. None of the connection forms supports V.

*2 When the GOT is connected to a QnACPU whose date shown on the rating plate is earlier than 9707B, device comments cannot be displayed.

*3 Indicates CC-Link connection (via G4).

(3) When the GOT is connected to a ACPU/QCPU (A mode) or A series motion controller CPU

(○: Available, △: Partly restricted, ×: Unavailable)

Function		Connection type between GOT and controller					Reference
Name	Description	Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4*3	GOT multidrop connection	
Entry monitor	Monitoring present values by entering devices to be monitored in advance	○	○	△*2	×	×	Subsection 13.2.9
Batch monitor	Monitoring the present value of n devices from a specified device						Subsection 13.2.13
TC monitor	Monitoring the present value, set value, contact point, and coil of m devices from a specified device	△*1	△*1	△*1			Subsection 13.2.16
BM monitor	Monitoring the present value of x devices in specified buffer memory of a specified intelligent function module						Subsection 13.2.20
Data change by test operation	Setting/Resetting bit devices	○	○	○			Subsection 13.2.23
	Changing the present value of word devices and buffer memory			△*2			
	Changing the present value of TC (possible during TC monitoring)			○			
	Changing the set value of TC (possible during TC monitoring)						
Quick test	Changing device values by performing a quick test			△*2			Subsection 13.2.7
Display switching	Displaying device comments			○			Subsection 13.2.6
	Displaying word device and buffer memory values in decimal or hexadecimal						

*1 These items cannot be monitored when an A motion controller CPU is monitored.

*2 V, Z, and A cannot be monitored, or their present values cannot be changed.

*3 Indicates CC-Link connection (via G4).

(4) When the GOT is connected to an FXCPU

(○: Available, △: Partly restricted, ×: Unavailable)

Function		Connection type between GOT and controller		Reference
Name	Description	Direct CPU connection	GOT multidrop connection	
Entry monitor	Monitoring present values by entering devices to be monitored in advance	△*2*3		Subsection 13.2.9
Batch monitor	Monitoring the present value of n devices from a specified device	△*1*3		Subsection 13.2.13
TC monitor	Monitoring the present value, set value, contact point, and coil of m devices from a specified device	○		Subsection 13.2.16
BM monitor	Monitoring the present value of x devices in specified buffer memory of a specified intelligent function module	○		Subsection 13.2.20
Data change by test operation	Setting/Resetting bit devices	△*3	×	Subsection 13.2.23
	Changing the present value of word devices and buffer memory	△*3		
	Changing the present value of TC (possible during TC monitoring)	○		
	Changing the set value of TC (possible during TC monitoring)	○		
Quick test	Changing device values by performing a quick test	△*3		Subsection 13.2.7
Display switching	Displaying device comments	×		Subsection 13.2.6
	Displaying word device and buffer memory values in decimal or hexadecimal	△*3		

*1 Set value of T/C and contact coil cannot be monitored.

*2 Set value of T/C, contact coil, and actual value cannot be monitored. Use the TC monitor.

*3 V, Z, and A cannot be monitored, or their present values cannot be changed.

(5) When the GOT is connected to a remote I/O station of MELSECNET/H system

(○: Available, △: Partly restricted, ×: Unavailable)

Function		Connection type between GOT and controller					Reference
Name	Description	Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4[*2]	GOT multidrop connection	
Entry monitor	Monitoring present values by entering devices to be monitored in advance	×	○	○	×	×	Subsection 13.2.9
Batch monitor	Monitoring the present value of n devices from a specified device						Subsection 13.2.13
TC monitor	Monitoring the present value, set value, contact point, and coil of m devices from a specified device						Subsection 13.2.16
BM monitor	Monitoring the present value of x devices in specified buffer memory of a specified intelligent function module						Subsection 13.2.20
Data change by test operation	Setting/Resetting bit devices						Subsection 13.2.23
	Changing the present value of word devices and buffer memory			△[*1]			
	Changing the present value of TC (possible during TC monitoring)			○			
	Changing the set value of TC (possible during TC monitoring)[*3]						
Quick test	Changing device values by performing a quick test						Subsection 13.2.7
Display switching	Displaying device comments						Subsection 13.2.6
	Displaying word device and buffer memory values in decimal or hexadecimal						

*1 The present value of V and Z cannot be changed.

*2 Indicates CC-Link connection (via G4).

*3 When a QCPU redundant system is used, data of the set value cannot be changed.

4 Required Extended function OS

(1) The Extended function OS shown in the table below is required.

Extended function OS	OS memory space (user area)	Option function board
System monitor	0KB	Not required

(2) Install the Extended function OS.

Install System monitor (Extended function OS) in the GOT.
For a detailed installation procedure, see the following:

☞ GT Designer2 Version☐ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

5 Devices that can be monitored

For further information about the monitor device names that can be monitored and the scope, see the following:

☞ GT Designer2 Version☐ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

6 Access range

When the GOT is connected to the remote I/O station in MELSECNET/H network system, only the master station can be monitored.
The access range other than above is the same as the access range when the GOT is connected to a controller.
Refer to the following manual for details of the access range.

☞ GT Designer2 Version ☐ Screen Design Manual
GOT1000 Series Connection Manual (Mitsubishi Products) for GT Works3

7 Precautions

(1) Monitoring and testing real number data

Real number data cannot be monitored and tested.

All word devices containing real number data are monitored in integer data (binary data).

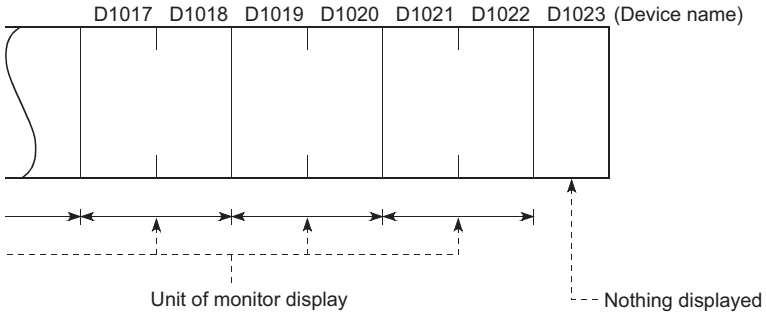
(2) Monitoring devices in 32-bit (two-word) module

When monitoring word devices (T, C, D, W, etc.) in 32-bit (two-word) module, those with 32 bits of data remaining are monitored.

Devices with 16 bits (one-word) of data remaining are not monitored.

If an odd number is specified for the first monitor device number, the last device number of the specified controller will not be displayed.

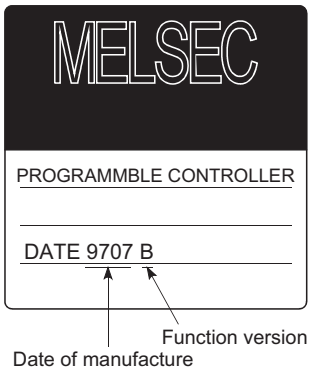
(Example) When the data entry of the A2NCPU is monitored in units of 32 bits from odd numbers (D1, D3 ...)



(3) Changing the T/C set values of large-size and small-size QnACPUs and displaying device comments

The T/C set values of QnACPUs whose date on the CPU rating plate is after [9707B] can be changed, and device comments can be displayed.

<Information on the rating plate>



(4) Programs capable of changing timer/counter set values

- Only the main program can change the timer/counter set values of AnNCPUs, AnACPUs, and AnUCPUS.
- When executing multiple programs with the QCPU (Q mode) and QnACPU, setting values of timer/counter can be changed only to the program (scan execution type program set at the lowest number among them in parameter settings of GX Developer) whose file name is displayed on the TC Monitor screen.
  Note that a file to be displayed cannot be changed on the GOT.

(5) Z0 of Q/QnACPUs and Z0 and V0 of ACPUs

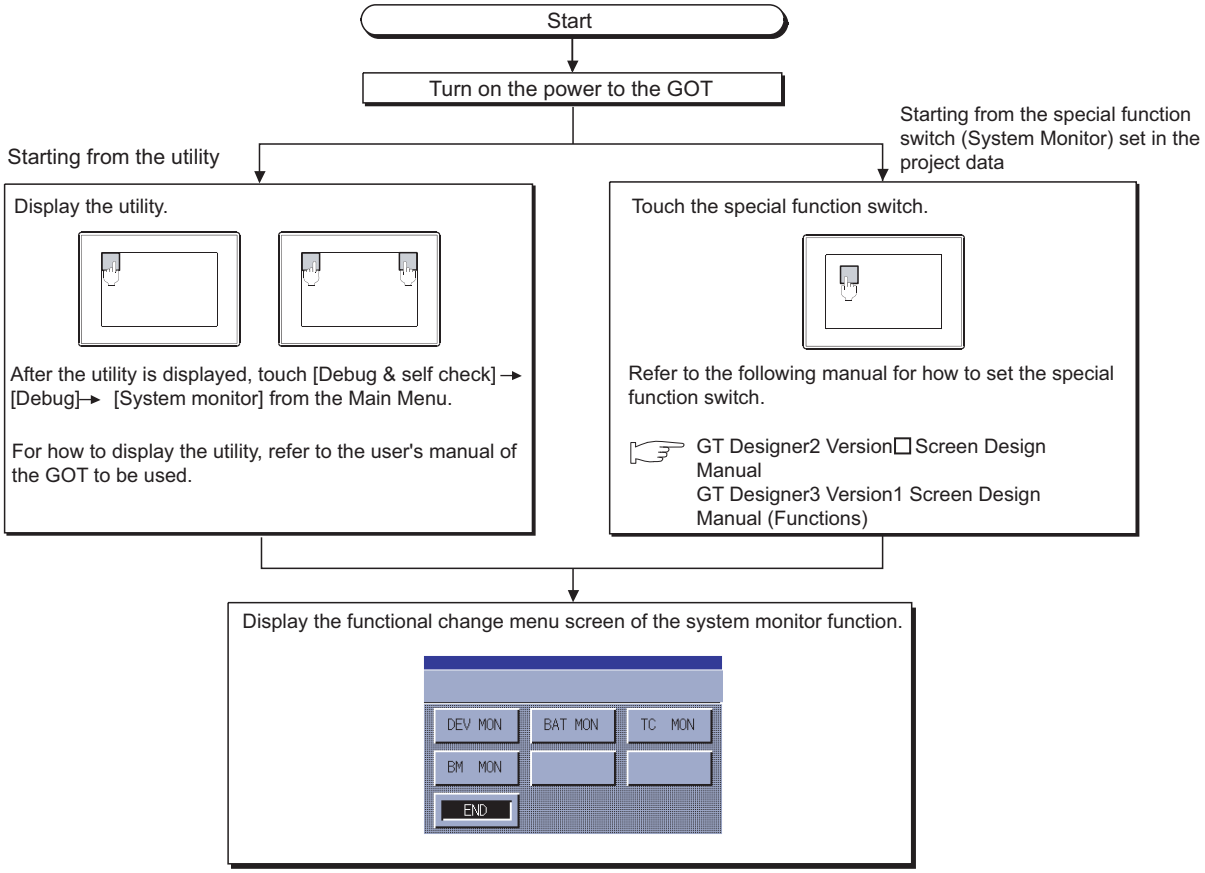
- Z0 of Q/QnACPUs and Z0 and V0 of ACPUs are displayed as Z and V respectively.

13.2.2 Display

This section describes the operation procedure from turning on the power to the GOT to system monitor display.

1 Outline until starting the system monitor

This subsection describes the flow until the system monitor function screen is displayed after System monitor (Extended function OS) is installed in the GOT.



Point

(1) How to display the utility

For how to display the utility, refer to the following.

Section 8.3 Utility Display

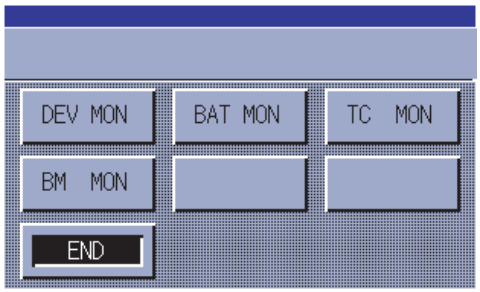
(2) If the project data has not been downloaded

The system monitor can be started from the utility even if the project data has not been downloaded to the GOT.

13.2.3 Operation procedure common to the system monitor screens

1 Functional change menu screen

This subsection describes the configuration of the functional change menu screen and the functions of the keys displayed on it.

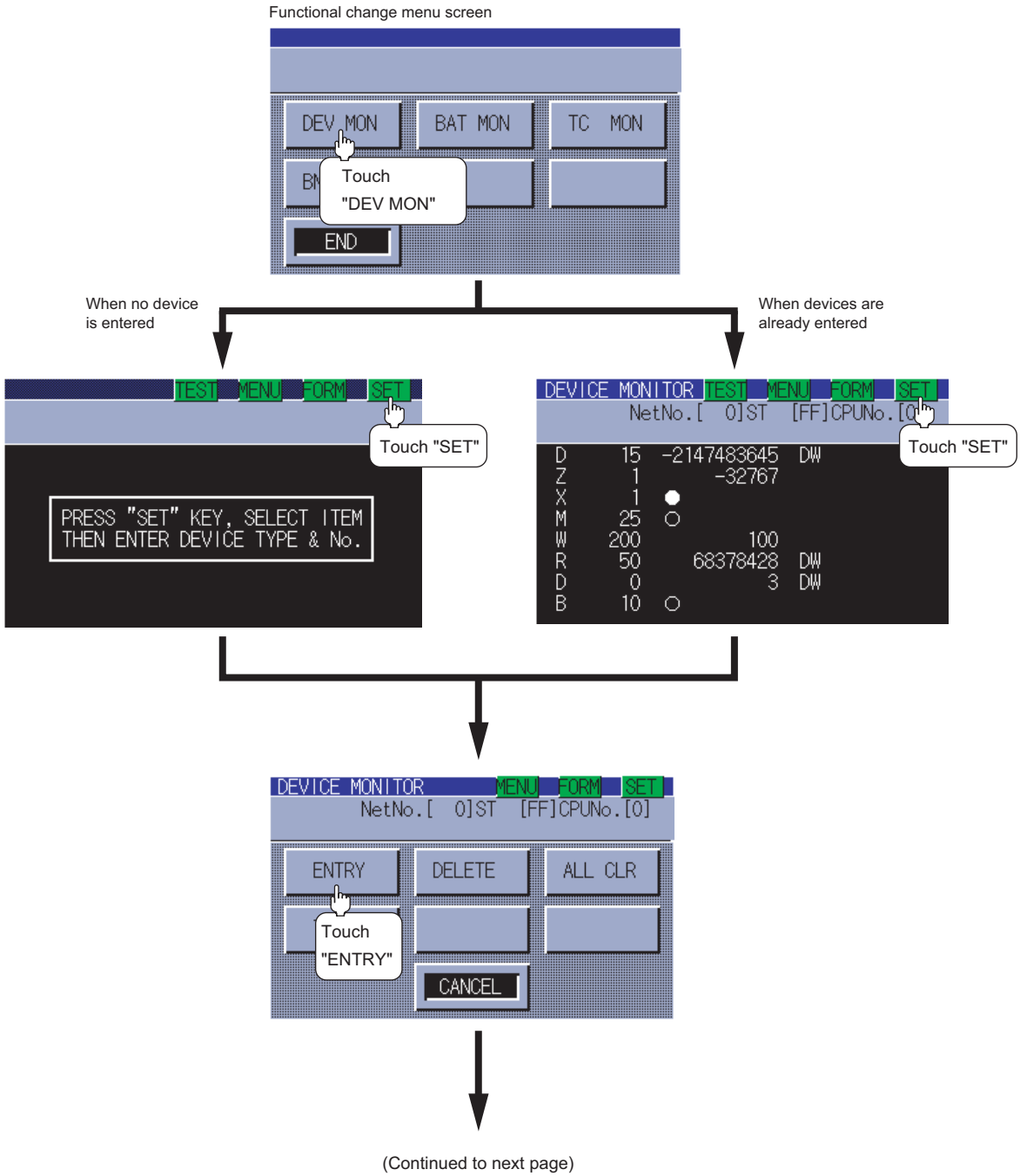


The table below describes the functions of the keys displayed on the functional change menu screen.

Key	Function
DEV MON	Performs entry monitoring in the Entry Monitor window. ☞ Subsection 13.2.9 Entry monitor
BAT MON	Performs batch monitoring in the Batch Monitor window. ☞ Subsection 13.2.13 Batch monitor
TC MON	Performs TC monitoring in the TC Monitor window. ☞ Subsection 13.2.16 TC Monitor (Monitoring Timers and Counters)
BM MON	Performs buffer memory monitoring in the BM Monitor window. ☞ Subsection 13.2.20 BM monitor (monitoring buffer memory)
END	The system monitor function is deactivated, and the screen returns to Main Menu of the utility. If the system is activated from the User screen, the screen returns to it.

13.2.4 Entering monitor devices (specifying monitor stations and devices)

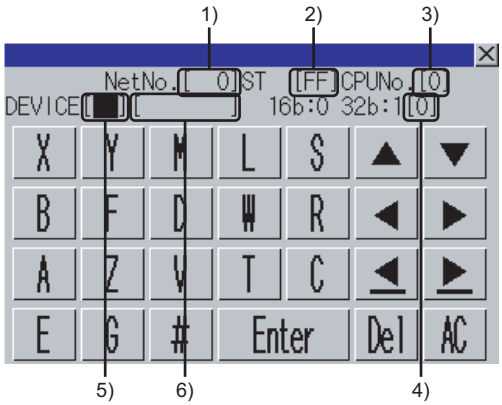
This subsection describes how to specify network numbers, monitor stations, and monitor devices by taking the Entry Monitor window as an example.
The procedure for specifying network numbers, monitor stations, and monitor devices is the same even if other items than the "entry monitor."
(Example) Entering a monitor device when the entry monitor is used.



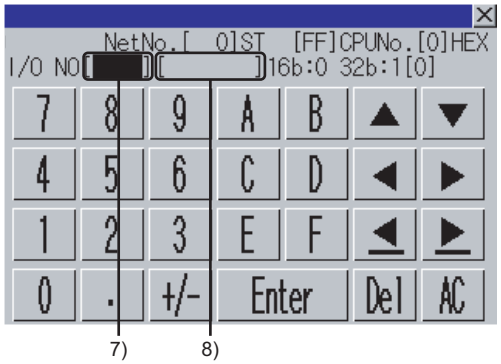
(Continued to next page)

(From previous page)

Device entry screen when the entry monitor, batch monitor or TC monitor is selected



Device entry screen when the BM monitor is selected



Set 1) to 8) as shown in the table below, and then touch the Enter key.
For the operation of key windows, see the following:

☞ Subsection 13.2.5 Key window setting columns and operation procedure

No.	Item	Description of setting			
		Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4*2
1)	Network No.	0			
2)	Station No.	FF			FF: When the host station is selected 0: When the master station is selected 1 to 64: When a local station is selected
3)*3	CPU No.	0 to 4: This item must be set only when the system is connected to multiple QCPUs. It is not necessary when the system is connected to another CPU.			
4)	Data range	1: Indicates that the device value is a 32-bit (two-word) module. 0: Indicates that the device value is a 16-bit (one-word) module.			
5)	Device name	Set the name and number of the device to be monitored.			
6)*1	Device number				
7)*1	I/O number	When the initial I/O signal of module is displayed with three digits, specify the first two digits.			
8)*1	Initial device number	Set the initial device number of the buffer memory in decimal.			

*1 For devices that can be set, see the following:

☞ GT Designer 2 Version□ Screen Design Manual
GT Designer 3 Version1 Screen Design Manual(Fundamentals)

*2 Indicates CC-Link connection (via G4).

*3 When the station No. is set to the host station (FF), set the network No. to 0.

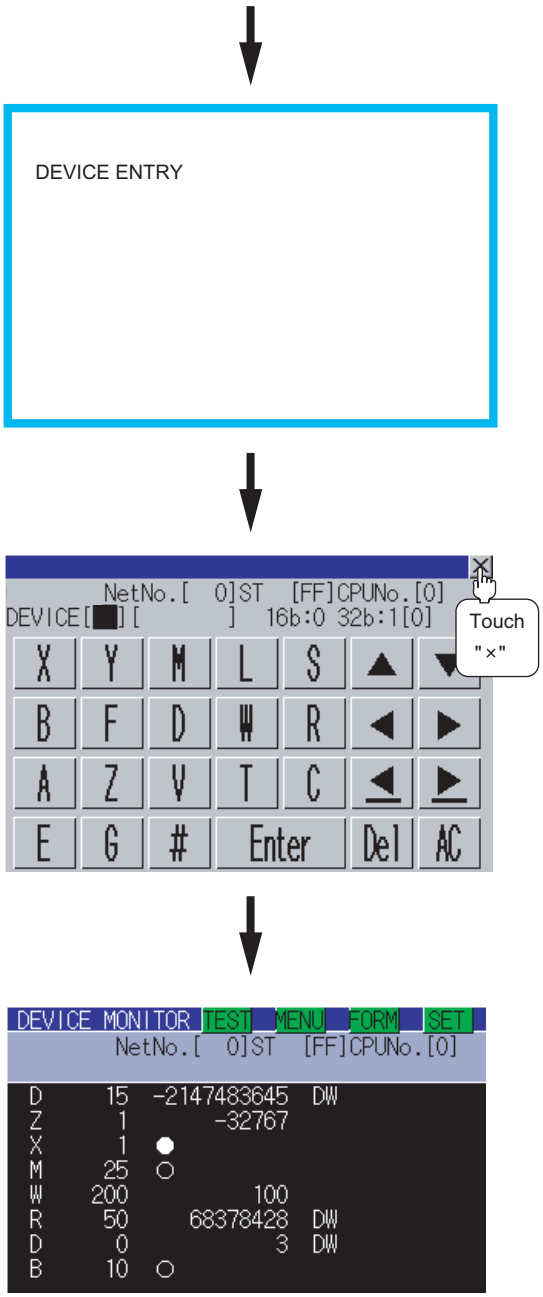
Point Displaying the data range

The Entry Monitor, Batch Monitor, TC Monitor, and BM Monitor screens display the data range as shown below.

- DW : 32-bit (two-word) module
- Nothing displayed : 16-bit (one-word) module

(Continued to next page)

(From previous page)



Point

(1) Retaining entered information

If the system monitor function is reactivated without turning off the power to the GOT, the last displayed information will be retained.

If the power to the GOT is turned on again and the system monitor function is reactivated, the last displayed information will be deleted.

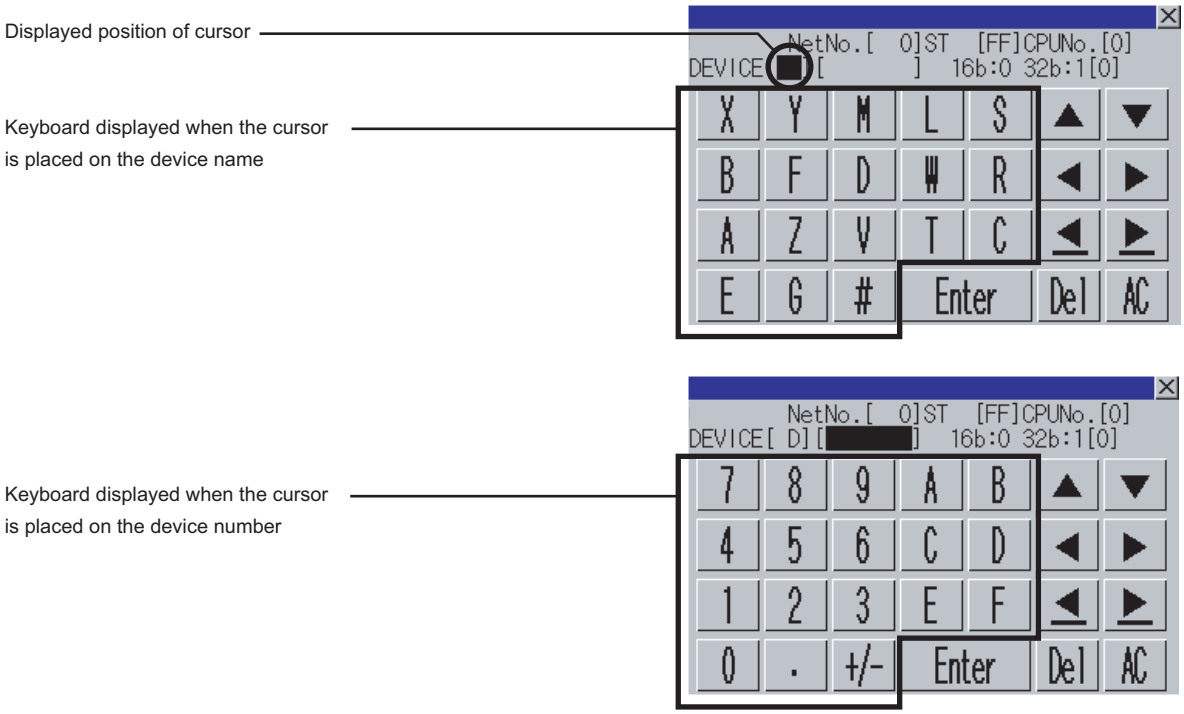
(2) Entry unit of monitor devices

Each monitor device is entered in a combination of a network number and a CPU station number. If the CPU station number is changed, the entered monitor device will become invalid.

13.2.5 Key window setting columns and operation procedure

1 Operating the key window

1 Using the ◀ and ▶ keys, move the cursor to the item you want to set.
The displayed keyboard depends on the position of the cursor as shown below.



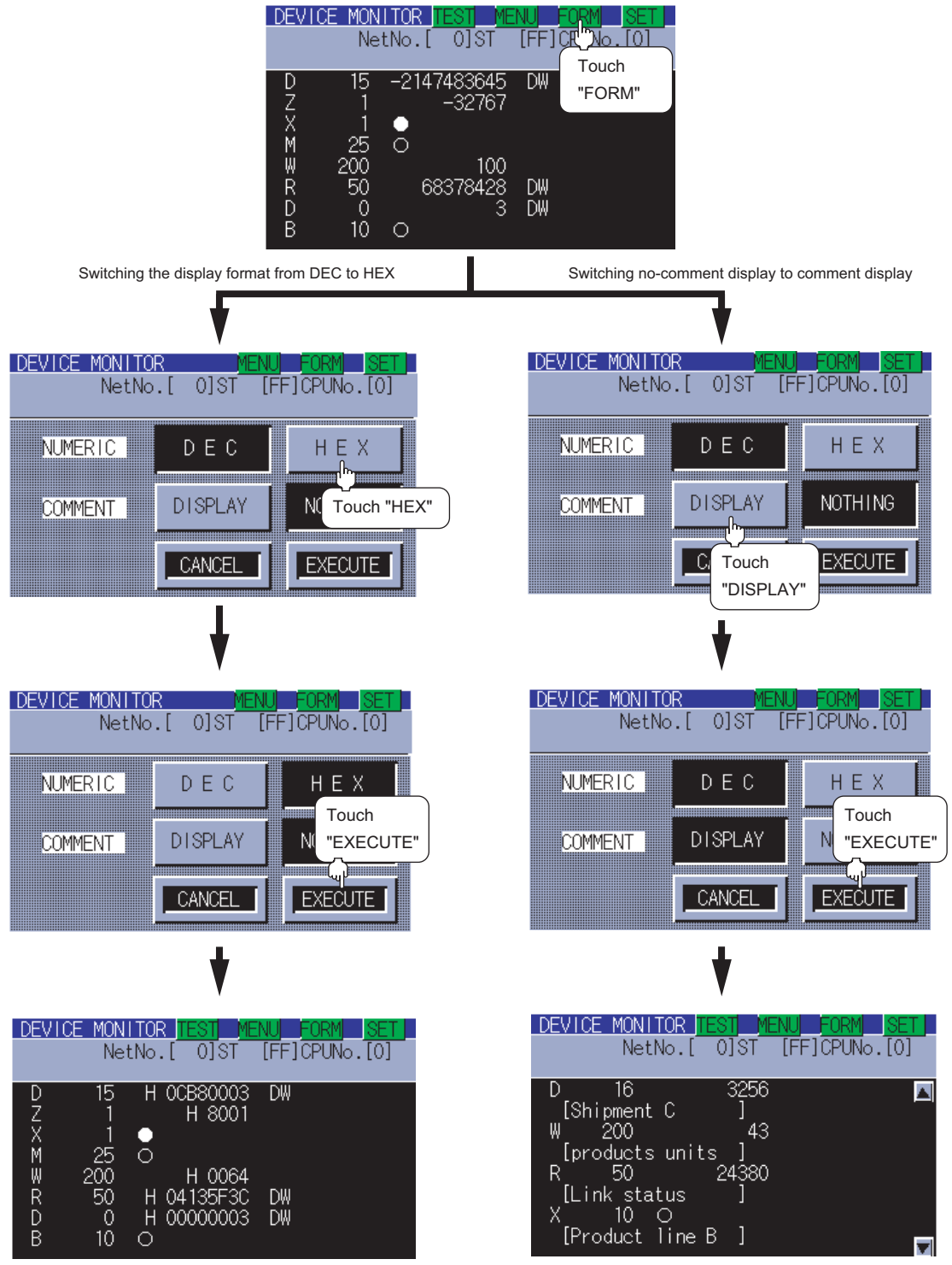
2 If necessary, enter numbers or characters from the keyboard.

- Del key: Used to delete a character of the entered information.
- AC key: Used to delete all characters under the cursor.
- The ▲/▼ keys without a description do not function.

3 Entry is completed by touching the Enter key.
The keyboard closes by touching the ⊠ key.

13.2.6 Switching the display format (DEC/HEX) and comment/no-comment display

This subsection describes how to switch the display format and comment/no-comment display.
The Entry Monitor window is taken here as an example to describe the specification of a monitor station and a monitor device when the system monitor function is executed.
The procedure for switching the display format (DEC/HEX) and comment display when another item is selected.
(Example of switching when the entry monitor is selected)
Switching the display format from DEC to HEX
Switching no-comment display to comment display



Point

(1) Changing the comment or comment capacity of the controller
If you change a comment or comment capacity of the controller after the system monitor function is activated, the comment may not be properly displayed on each monitor screen.
After a comment or comment capacity is changed, turn off the GOT and turn it on again.

(2) Switching the display format (DEC/HEX)
The present value of word devices and the present value and set value of timers/ counters will be displayed in decimal or hexadecimal numbers.

(3) Switching comment/no-comment display
The comments written to the target controller will be displayed or not be displayed. (Priority of comment display: Extension comment > Comment)

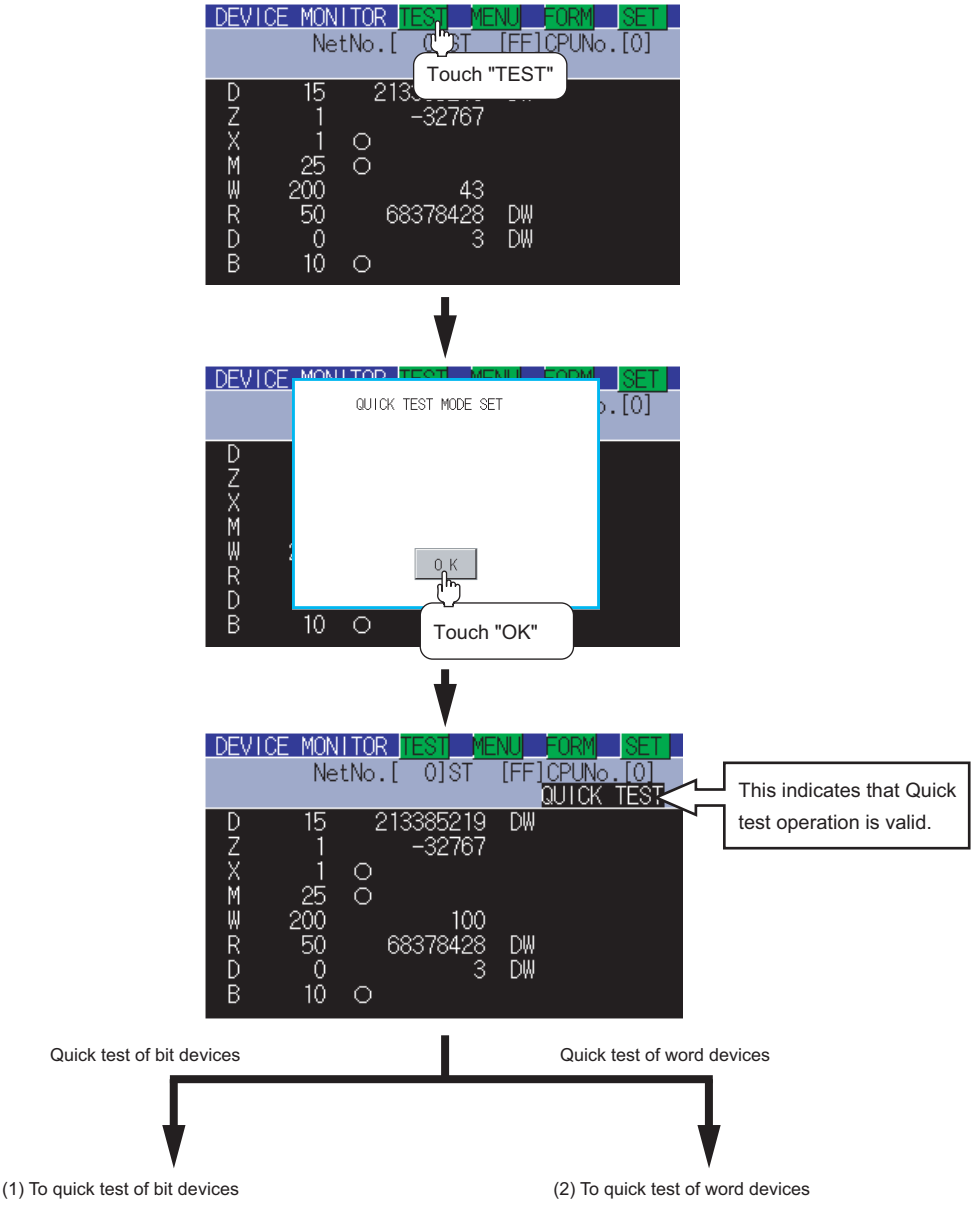
(4) Comment/No-comment display
(a) The BM monitor does not display comments.
(b) Comments will not be displayed when any of the CPUs listed below is monitored.
• FXCPU
• QnACPU or Q series motion controller CPU whose date on the rating plate is earlier than 9707B
(c) Comments will not be displayed when any of the devices listed below is monitored.
• Internal device of the GOT (GB, GD, GS)
• Host device (X,Y, WW, WR) when a CC-Link is connected
(d) Displaying the comments of QCPUs (Q02CPU, Q02HCPU, Q06HCPU, Q12HCPU, Q25HCPU, Q12PHCPU, Q25PHCPU, Q12PRHCPU, Q25PRHCPU, Q02UCPU, Q03UDCPU, Q04UDHCPU, Q06UDHCPU)
Comments will not be displayed when the following PLC parameters (PLC file settings) are set:
• When the comment file is set to "Not used"
• When the comment file is set to "Use the same file name as the program"
• When a password is set to the comment file
• When a comment file is stored in program memory
(e) Displaying the comments of QCPUs (Q00JCPU, Q00CPU, Q01CPU)
Comments will not be displayed when the following PLC parameter (PLC file setting) is set:
• When the comment file "MAIN" does not exist in the program memory
(f) Displaying the comments of QnACPUs
With a QnACPU whose date on the rating plate is earlier than 9707B, comments cannot be displayed.
Use a QnACPU whose date on the rating plate is 9707B or later.
Also, comments will not be displayed when the following settings are made to the PLC parameter (PLC file setting) is set.
• When the comment file is not set "Not used"
• When the comment file is set to "Use the same file name as the program"
• When a keyword is entered for each memory

13.2.7 Quick test operation of monitor devices

⚠WARNING

- Before performing the quick test operations of the system monitor function (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method.
  During quick test operation, never change the data of the devices which are used to perform significant operation for the system.
  False output or malfunction can cause an accident.

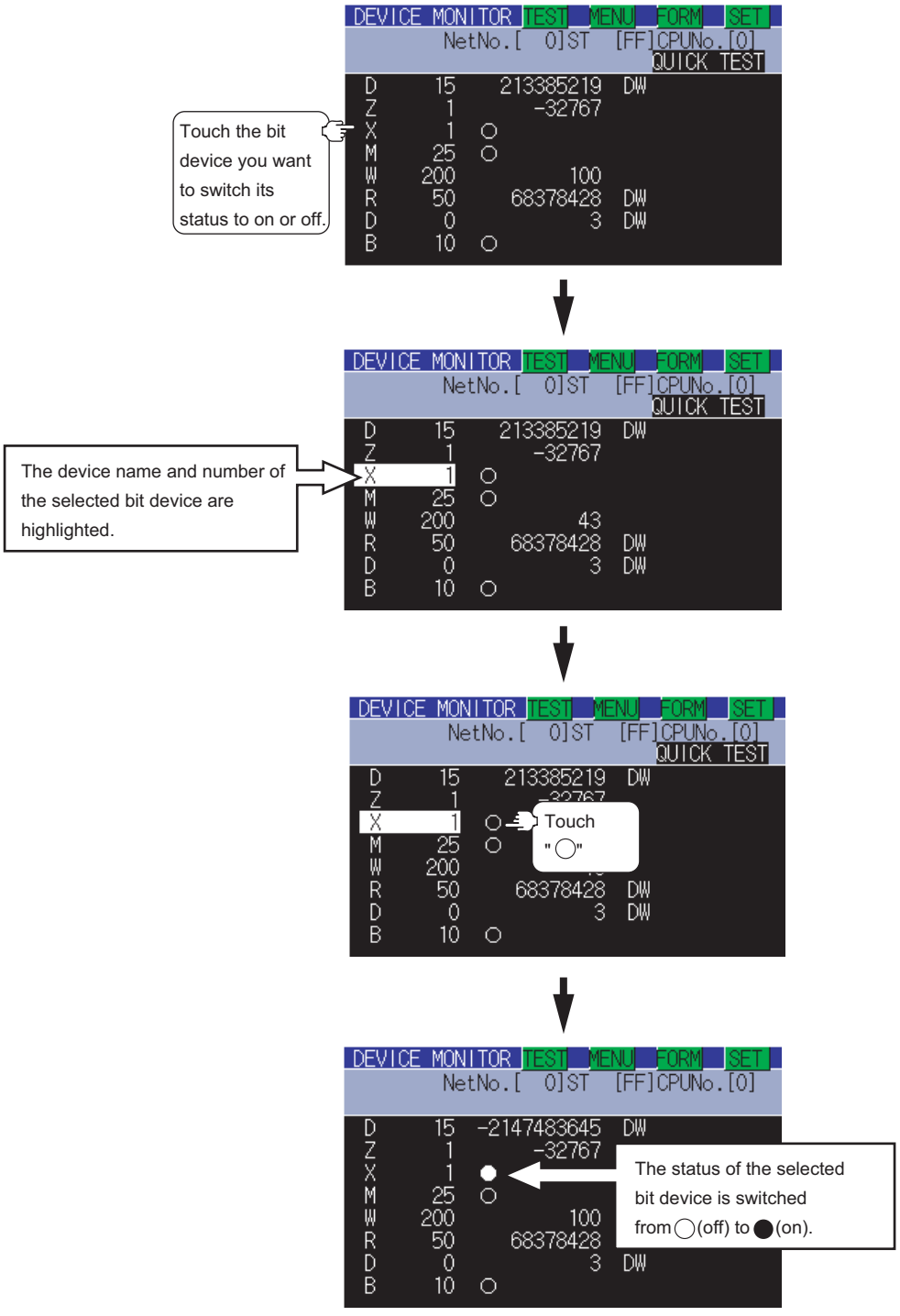
The quick test operation procedure for monitor devices is described below.
The Entry Monitor screen is taken as an example to describe quick test operation when the system monitor function is executed.
The operation procedure is the same even if the batch monitor, TC monitor or BM monitor is selected.
(Example of quick test operation when the entry monitor is selected)



(1) Quick test of bit devices

(Operation example)

Change the status of bit device X001 from off (○) to on (●).

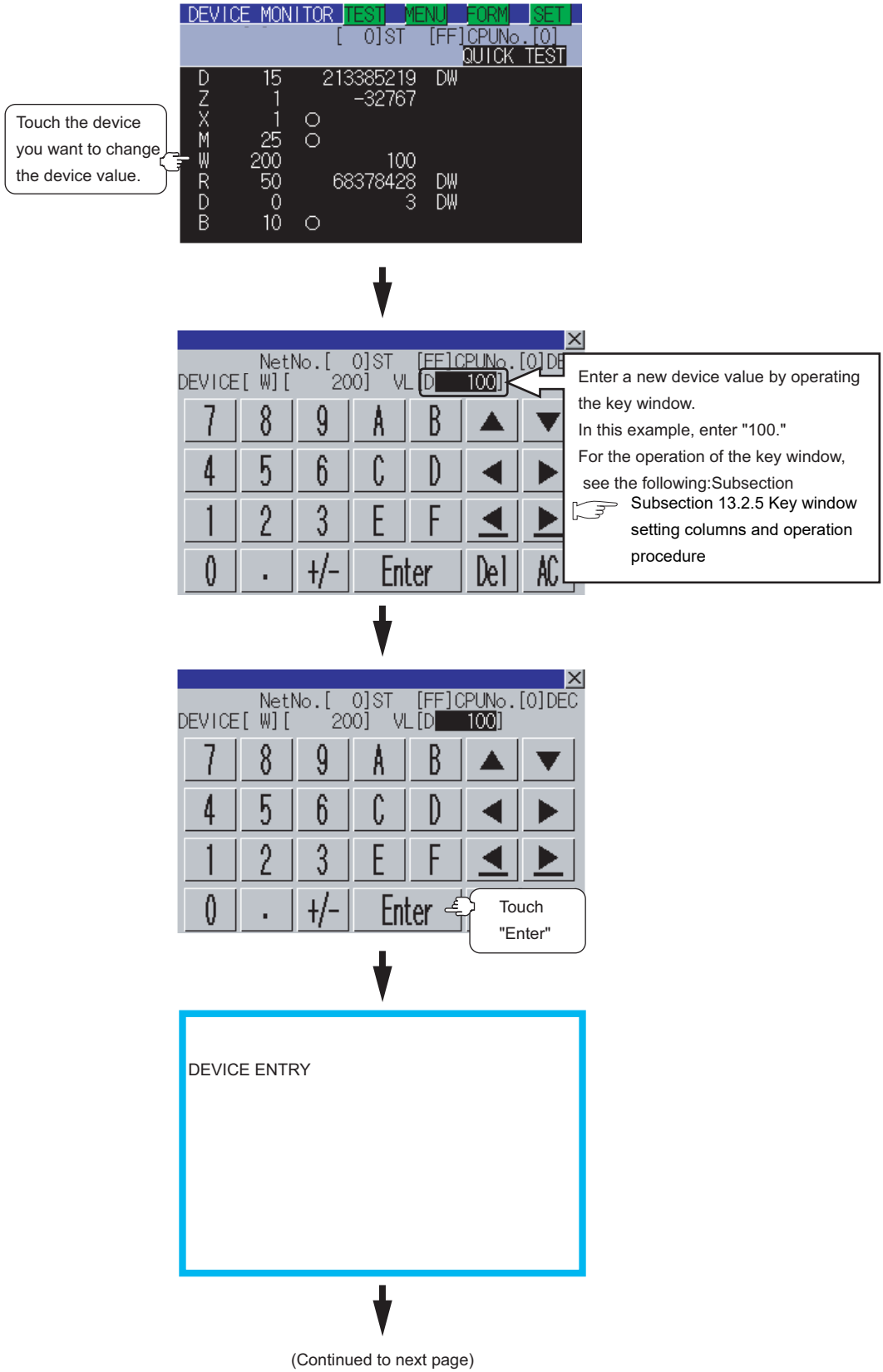


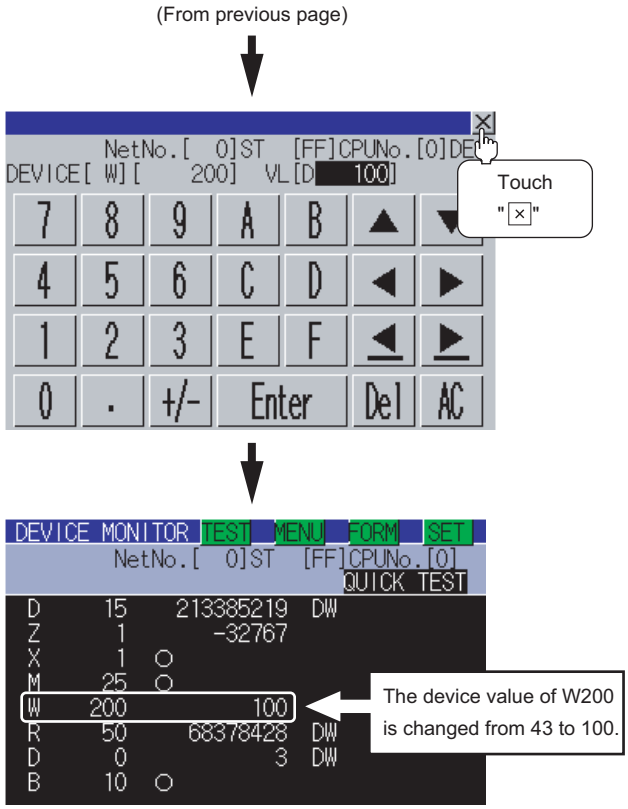
(2) Quick test of word devices

(Operation example)

Change the device value of word device W200 from 43 to 100.

Conditions: Data range: 16 bits, device value display format: decimal number





Point

Effective number of digits of device values that can be changed

If an entered value exceeds the corresponding number of digits specified below, the device value cannot be changed.

[Decimal number]

16-bit (one-word) module : Six digits (including a digit for a sign)

32-bit (two-word) module : Ten digits (including a digit for a sign)

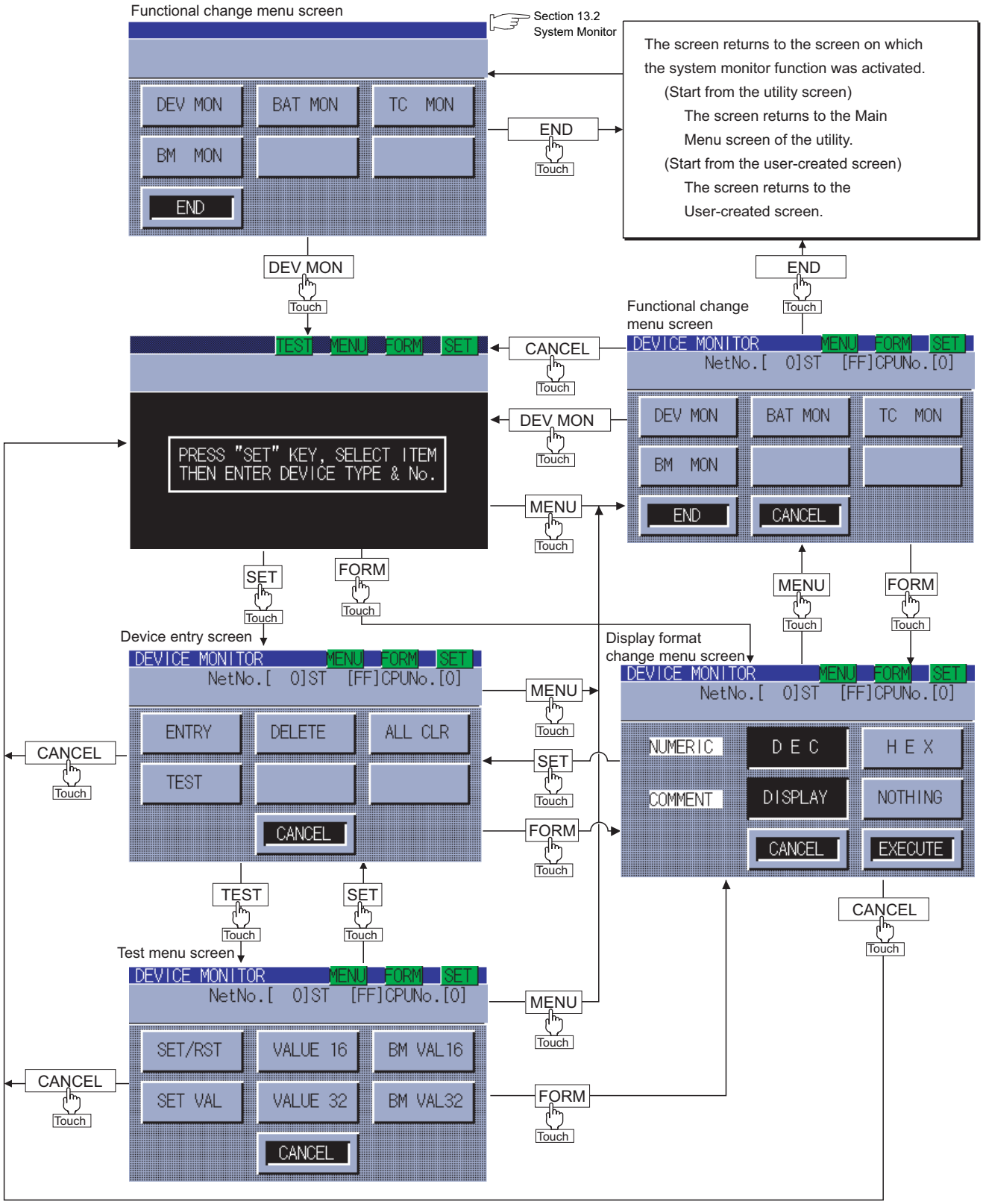
[Hexadecimal number]

16-bit (one-word) module : Four digits

32-bit (two-word) module : Eight digits

13.2.8 Changing screens (common operation)

This subsection takes the entry monitor as an example to describe how to change screens.

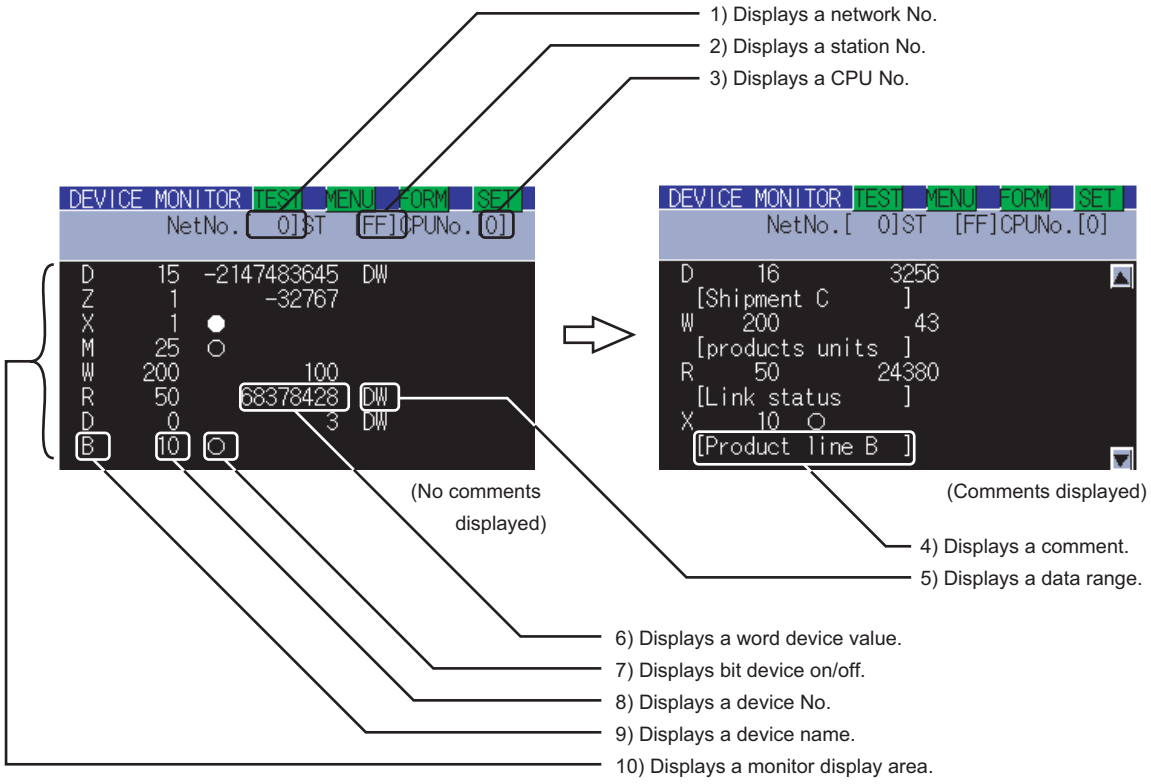


13.2.9 Entry monitor

The device monitor is a function to enter devices to be monitored in advance and monitor only entered devices.
This section describes how to activate the entry monitor when the system monitor function is executed.

13.2.10 Information displayed on the entry monitor screen and key functions

(1) The information displayed on the Entry Monitor screen is described below.
For the key functions, see the page that follows.



For further information about items 1) to 10) shown above, see the page that follows.

(2) The following table describes the key functions displayed on the Entry Monitor screen.

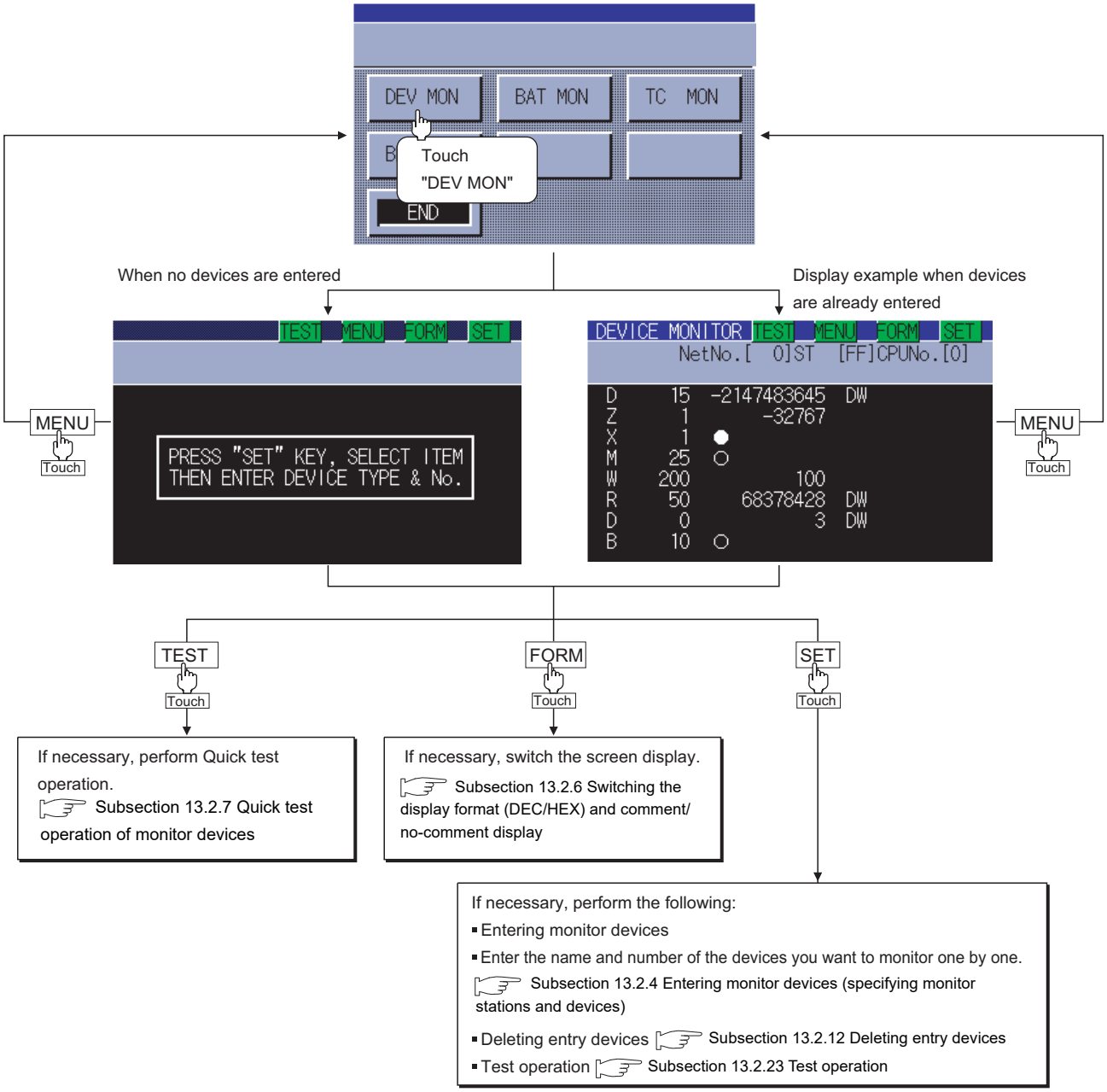
Key switch	Function
TEST	Activates the Quick test operation. ☞ Subsection 13.2.7 Quick test operation of monitor devices
MENU	Switches the screen to the functional change menu screen to activate another monitor function or terminate the system monitor function. ☞ Subsection 13.2.8 Changing screens (common operation)
FORM	Switches the screen to the display format switching screen to change the value display format (DEC/HEX) on the Entry Monitor screen or comment/no-comment display. ☞ Subsection 13.2.6 Switching the display format (DEC/HEX) and comment/no-comment display
SET	Switches the screen to the Device entry screen to enter monitor devices or delete or test entry devices. ・Entering monitor devices: ☞ Subsection 13.2.4 Entering monitor devices (specifying monitor stations and devices) ・Deleting entry devices: ☞ Subsection 13.2.12 Deleting entry devices ・Test operation: ☞ Subsection 13.2.23 Test operation
▲ ▼	Scroll displayed information upward or downward by a line to display the preceding or next monitor device that is not currently displayed. When five or more monitor devices are entered, these switches are available when their comments are displayed. ▲ : Scrolls information upward by a line. ▼ : Scrolls information downward by a line.

(3) The following table below describes the range of display of items 1) to 10) displayed

No.	Item	Description of setting			
		Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4 *1
1)	Network No.	0			
2)	Station No.	FF			F: When the host station is selected 0: When the master station is selected 1 to 64: When a local station is selected
3)	CPU No.	0 to 4: This item must be set only when the system is connected to multiple QCPUs. It is not necessary when the system is connected to another CPU.			
4)	Comment	Displays a comment (maximum number of characters: 16 one-byte characters) A comment is displayed when "DISPLAY" is selected for comment display on the display format switching screen.			
5)	Data range	DW: Indicates that the device value is a 32-bit (two-word) module. Nothing displayed: Indicates that the device value is a 16-bit (one-word) module.			
6)	Word device value	[Decimal number] 16-bit (one-word) module: Six digits (including a digit for a sign) are displayed. (Display example: -12345) 32-bit (two-word) module: Ten digits (including a digit for a sign) are displayed. (Display example: -123456789) [Hexadecimal number] 16-bit (one-word) module: Four digits are displayed. (Display example: H AB12) 32-bit (two-word) module: Eight digits are displayed. (Display example: H ABCDE123)			
7)	Bit device ON/OFF	●: ON ○: OFF			
8)	Device No.	Up to eight devices can be monitored with regard to each CPU station number. For further information about device numbers and names that can be entered: ☞ GT Designer 2 Version□ Screen Design Manual GT Designer 3 Version1 Screen Design Manual (Fundamentals)			
9)	Device name				
10)	Monitor display area	When no comments are displayed: Up to eight devices can be displayed. When comments are displayed : Up to four devices can be displayed.			

*1: Indicates CC-Link connection (via G4).

13.2.11 Procedure for entry monitor basic operation



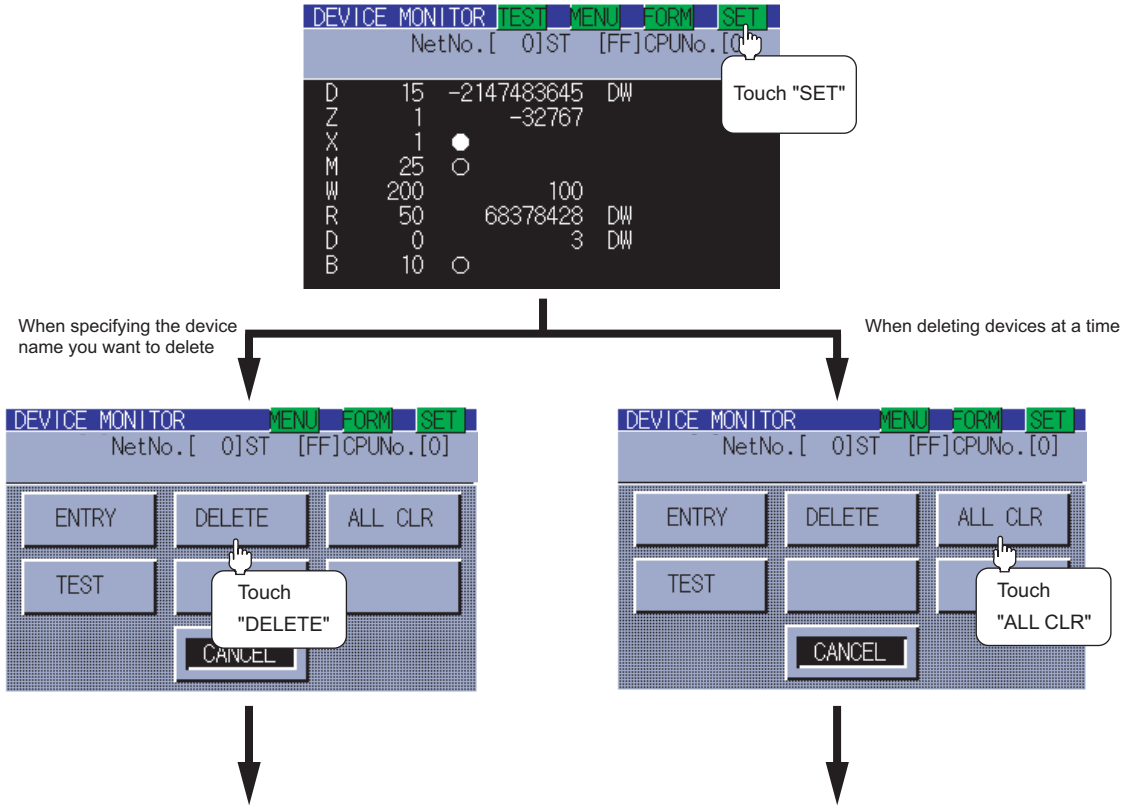
Point

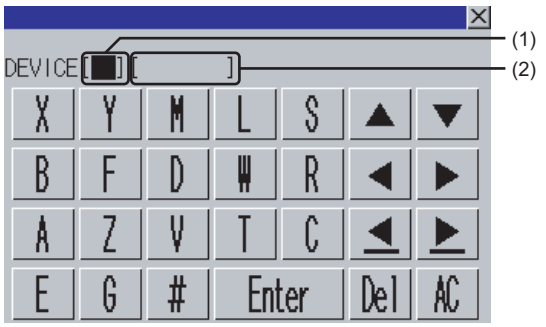
If more than eight devices are registered

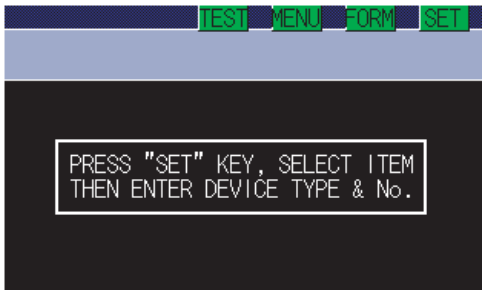
You can register up to eight entry devices.
If more than eight devices are registered, the oldest ones will be deleted one by one, and the eight latest entry devices will be monitored.
If necessary, delete unnecessary entry devices and re-enter ones you want to monitor.

13.2.12 Deleting entry devices

This subsection describes how to delete entry devices.
Deleting entry devices with the system monitor function executed is described below.







1. Enter the device name you want to delete in (1).
2. Enter the device number you want to delete in (2).
3. Touch the Enter key.
4. Touch the × key. The window closes.

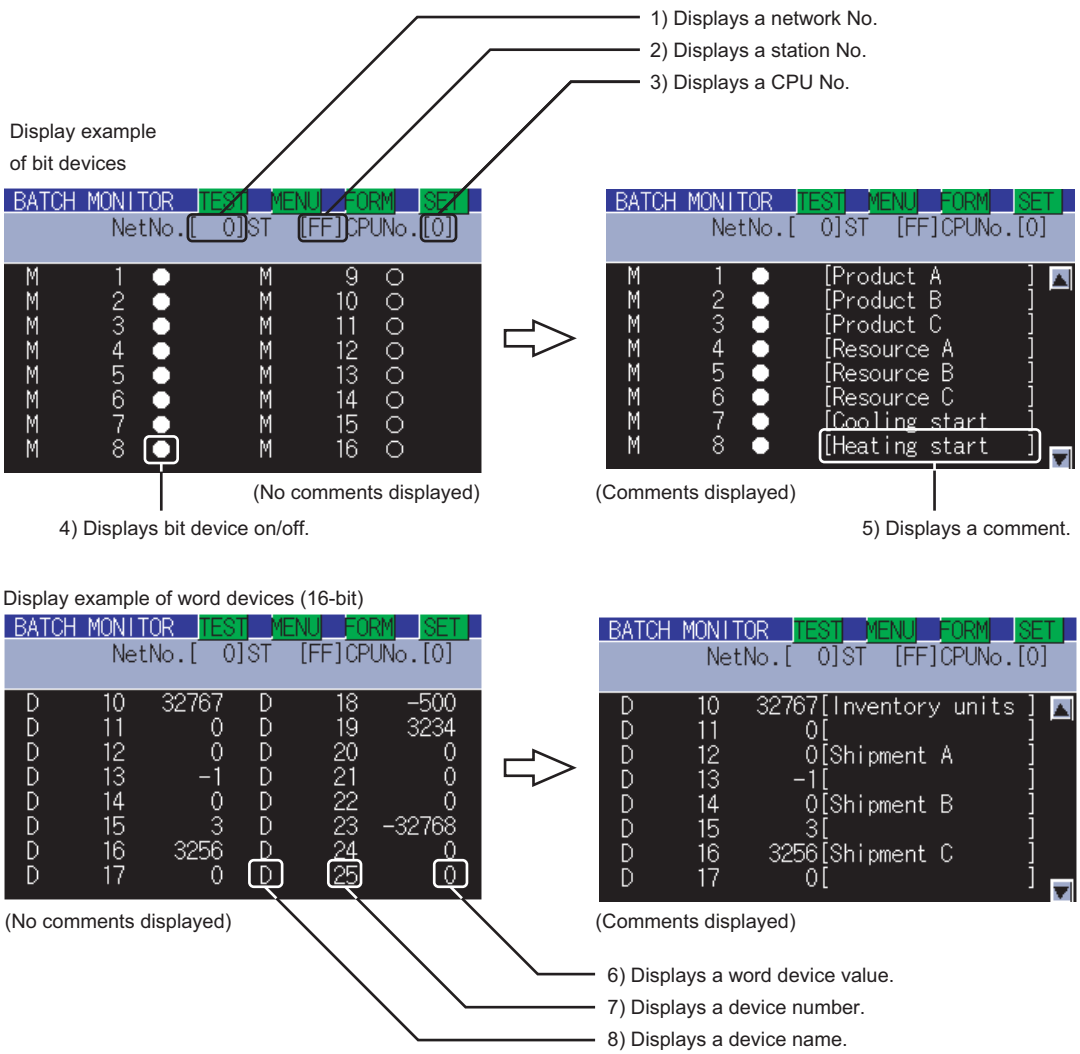
For further information about key window operation, see Subsection 13.2.5 Key window setting columns and operation procedure

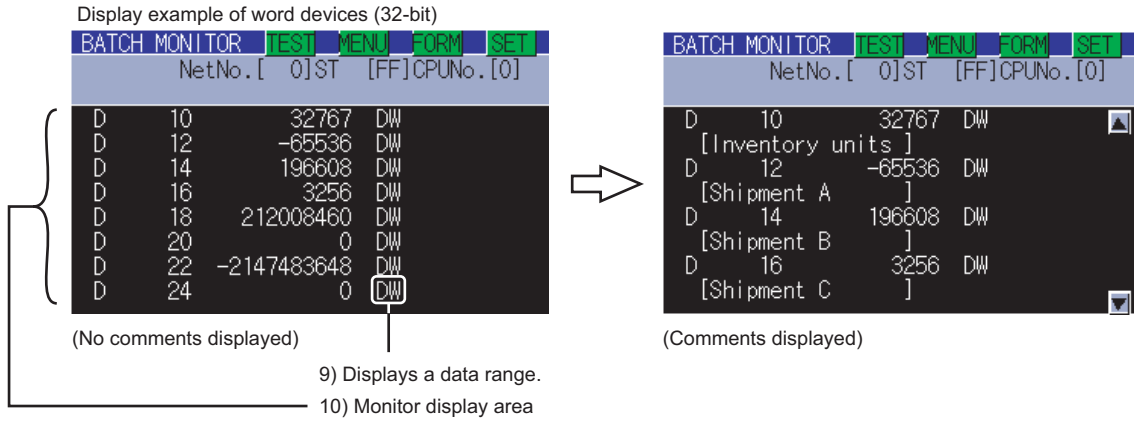
13.2.13 Batch monitor

The batch monitor is a function to specify the head device of any device range to perform monitoring.
This section describes how to operate the batch monitor when the system monitor function is executed.

13.2.14 Information displayed on the Batch Monitor screen and key functions

(1) The information displayed on the Batch Monitor screen is described below.





For further information about items 1) to 10) shown above, see the page that follows.

Point

Number of devices displayed on a single screen

The number of devices displayed on a single screen depends on the setting of the data range, as shown below.

Word devices (16-bit) : 16 devices (no comments displayed), eight devices (comments displayed)

Word devices (32-bit) : Eight devices (no comments displayed), four devices (comments displayed)

Bit devices : 16 devices (no comments displayed), eight devices (comments displayed)

For further information about the setting of the data range, see the following:

☞ Subsection 13.2.4 Entering monitor devices (specifying monitor stations and devices)

(2) The following table describes the key functions displayed on the Batch Monitor screen.

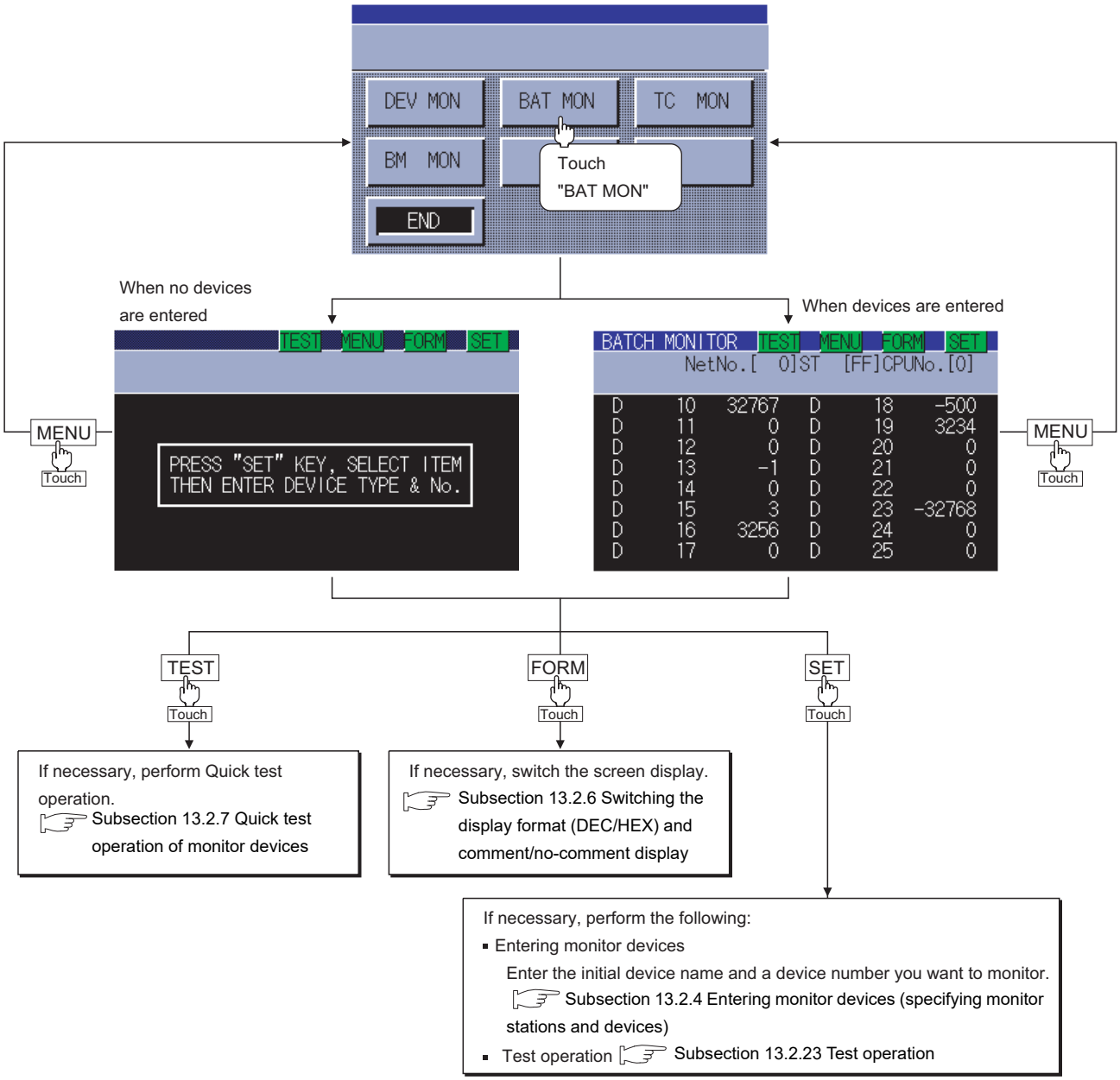
Key switch	Function
TEST	Activates the Quick test operation. ☞ Subsection 13.2.7 Quick test operation of monitor devices
MENU	Switches the screen to the functional change menu screen to activate another monitor function or terminate the system monitor function. ☞ Subsection 13.2.8 Changing screens (common operation)
FORM	Switches the screen to the display format switching screen to change the value display format (DEC/HEX) on the Batch Monitor screen or comment/no-comment display. ☞ Subsection 13.2.6 Switching the display format (DEC/HEX) and comment/no-comment display
SET	Switches the screen to the Device entry screen to enter or test monitor devices. ・Entering monitor devices :☞ Subsection 13.2.4 Entering monitor devices (specifying monitor stations and devices) ・Test operation :☞ Subsection 13.2.23 Test operation
▲ ▼	Scroll displayed information upward or downward by a line to display the preceding or next monitor device that is not currently displayed. When five or more monitor devices are entered, these switches are available when their comments are displayed. ▲ : Scrolls information upward by a line. ▼ : Scrolls information downward by a line.

(3) The following table below describes the range of display of items 1) to 10) displayed.

No.	Item	Description of setting			
		Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4*1
1)	Net No.	0			
2)	Station No.	FF			FF: When the host station is selected 0: When the master station is selected 1 to 64: When a local station is selected
3)	CPU No.	0 to 4: This item must be set only when the system is connected to multiple QCPUs. It is not necessary when the system is connected to another CPU.			
4)	Bit device ON/OFF	●: ON ○: OFF			
5)	Comment	Displays a comment (maximum number of characters: 16 one-byte characters). A comment is displayed when "DISPLAY" is selected for comment display on the display format switching screen.			
6)	Word device value	[Decimal number] 16-bit (one-word) module: Six digits (including a digit for a sign) are displayed. (Display example: -12345) 32-bit (two-word) module: Ten digits (including a digit for a sign) are displayed. (Display example: -123456789) [Hexadecimal number] 16-bit (one-word) module: Four digits are displayed. (Display example: H AB12) 32-bit (two-word) module: Eight digits are displayed. (Display example: H ABCDE123)			
7)	Device No.	Up to 16 devices can be entered when the data range is word (16 bits). Up to eight devices can be entered when the data range is two-word (32 bits). For further information about device numbers and names that can be entered: ☞ GT Designer 2 Version□ Screen Design Manual GT Designer 3 Version1 Screen Design Manual (Fundamentals)			
8)	Device name				
9)	Data range	DW: Indicates that the device value is a 32-bit (two-word) module. Nothing displayed: Indicates that the device value is a 16-bit (one-word) module.			
10)	Monitor display area	When no comments are displayed: Up to 16 devices can be displayed at a time (monitor module: one-word). Up to eight devices can be displayed at a time (monitor module: two-word). When comments are displayed : Up to eight devices can be displayed at a time (monitor module: one-word). Up to four devices can be displayed at a time (monitor module: two-word).			

*1: Indicates CC-Link connection (via G4).

13.2.15 Procedure for batch monitor basic operation

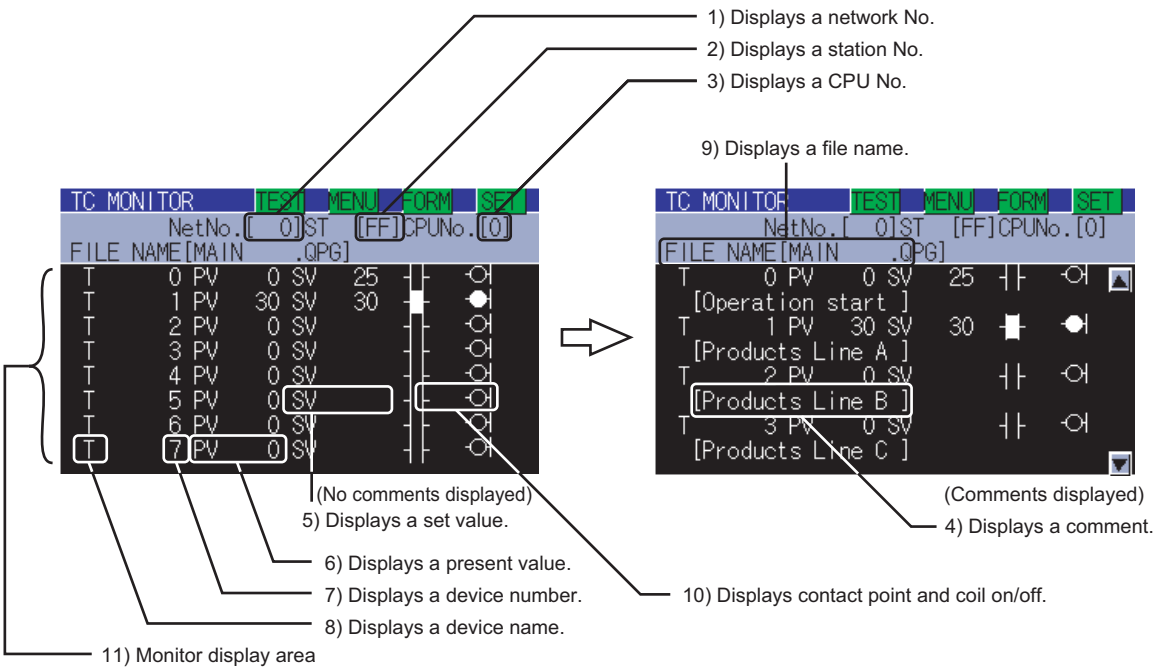


13.2.16 TC Monitor (Monitoring Timers and Counters)

The TC monitor is a function to monitor only timers (T) and counters (C).
This section describes how to operate the TC monitor when the system monitor function is executed.

13.2.17 Information displayed on the TC Monitor screen and key functions

(1) The information displayed on the TC Monitor screen is described below.



For further information about items 1) to 11) shown above, see the page that follows.

(2) The following table describes the key functions displayed on the TC Monitor screen.

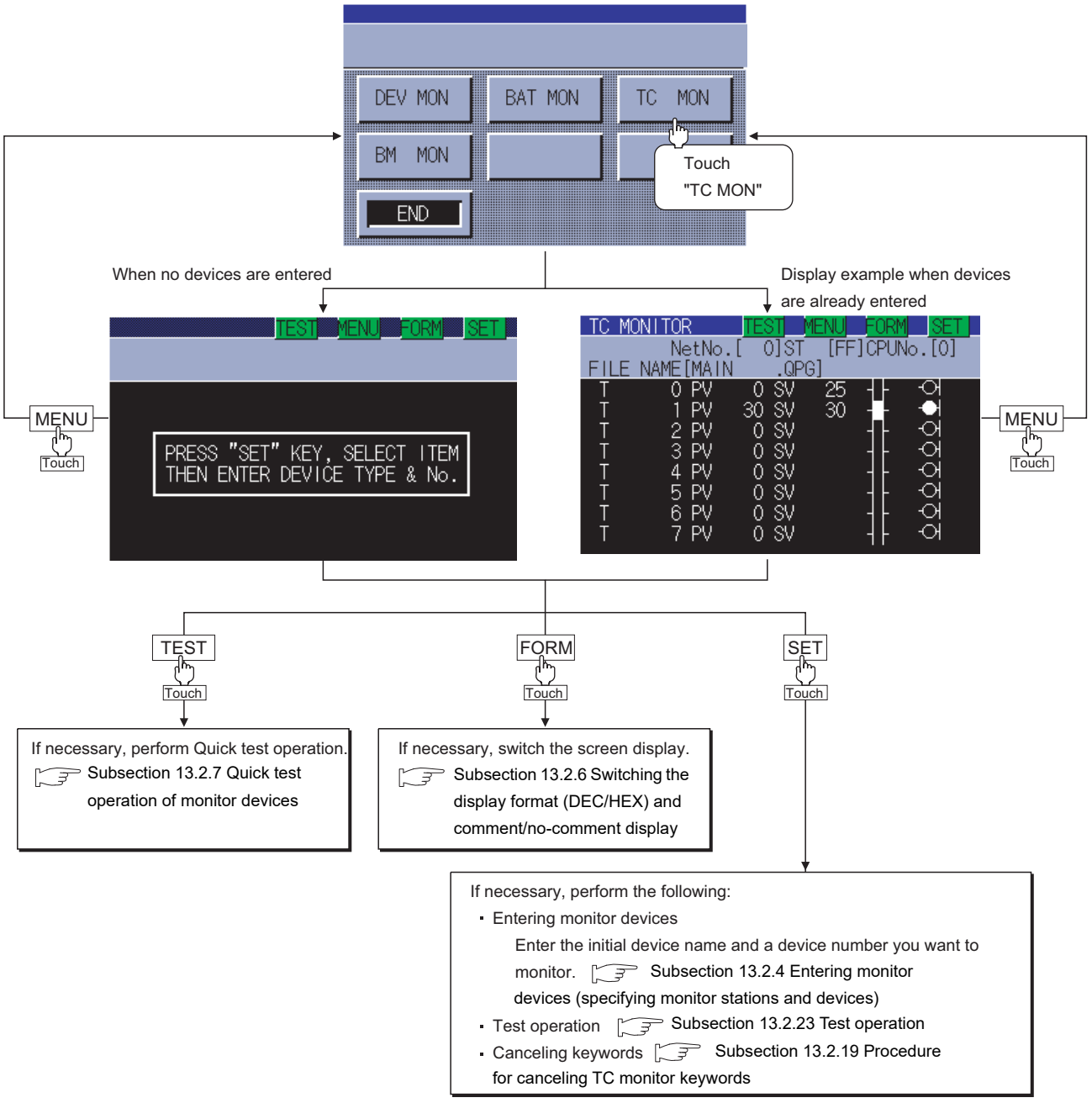
Key switch	Function
TEST	Activates the Quick test operation. ☞ Subsection 13.2.7 Quick test operation of monitor devices
MENU	Switches the screen to the functional change menu screen to activate another monitor function or terminate the system monitor function. ☞ Subsection 13.2.8 Changing screens (common operation)
FORM	Switches the screen to the display format switching screen to change the value display format (DEC/HEX) on the TC Monitor screen or comment/no-comment display. ☞ Subsection 13.2.6 Switching the display format (DEC/HEX) and comment/no-comment display
SET	Switches the screen to the Device entry screen to enter or test monitor devices. ・Entering monitor devices: ☞ Subsection 13.2.4 Entering monitor devices (specifying monitor stations and devices) ・Test operation: ☞ Subsection 13.2.23 Test operation ・Canceling keywords: ☞ Subsection 13.2.19 Procedure for canceling TC monitor keywords
▲ ▼	Scroll displayed information upward or downward by a line to display the preceding or next monitor device that is not currently displayed. When five or more monitor devices are entered, these switches are available when their comments are displayed. ▲ : Scrolls information upward by a line. ▼ : Scrolls information downward by a line.

(3) The following table below describes the range of display of items 1) to 11) displayed.

No.	Item	Description of setting			
		Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4*1
1)	Network No.	0			
2)	Station No.	FF			FF: When the host station is selected 0: When the master station is selected 1 to 64: When a local station is selected
3)	CPU No.	0 to 4: This item must be set only when the system is connected to multiple QCPUs. It is not necessary when the system is connected to another CPU.			
4)	Comment	Displays a comment (maximum number of characters: 16 one-byte characters). A comment is displayed when "DISPLAY" is selected for comment display on the display format switching screen.			
5)	Set value	[Decimal number] Four digits are displayed. (Display example: 1234) [Hexadecimal number] Four digits are displayed. (Display example: H AB12)			
6)	Present value	[Decimal number] Four digits are displayed. (Display example: 1234) [Hexadecimal number] Four digits are displayed. (Display example: H AB12) (Present values cannot be monitored when the CPU is an FXCPU.)			
7)	Device No.	Up to eight devices can be entered. For further information about device numbers and names that can be entered: ☞ GT Designer 2 Version☐ Screen Design Manual GT Designer 3 Version1 Screen Design Manual (Fundamentals)			
8)	Device name				
9)	File name	When the CPU is a QnACPU or QCPU : A program name will be displayed. When there are plural program names, the initial file name to be executed will be displayed. When the CPU is an ACPU or FXCPU : "MAIN PROGRAM" will always be displayed.			
10)	Contact point and coil on/off	⊣●⊢ : ON ⊣○⊢ : OFF (When the CPU is an FXCPU, contact points and coils cannot be monitored.)			
11)	Monitor display area	When no comments are displayed : Up to eight devices can be displayed at a time. When comments are displayed : Up to four devices can be displayed at a time.			

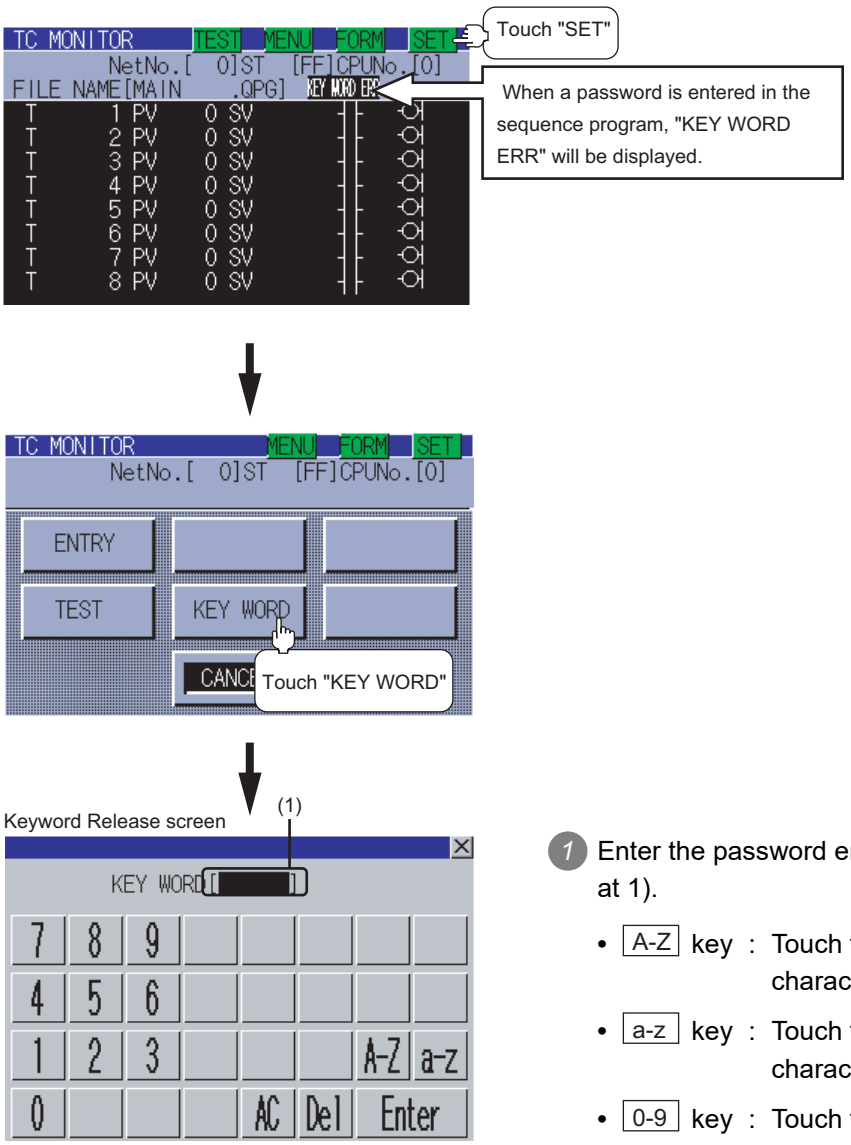
*1: Indicates CC-Link connection (via G4).

13.2.18 Procedure for TC monitor basic operation



13.2.19 Procedure for canceling TC monitor keywords

When the target controller is a QCPU and a password is entered in the sequence program, the keyword must be canceled to display the set values of times and counters.
The procedure for canceling keywords is described below.



1 Enter the password entered in the sequence program at 1).

- A-Z key : Touch this key to enter alphabetic characters A to Z (uppercase).
- a-z key : Touch this key to enter alphabetic characters a to z (lowercase).
- 0-9 key : Touch this key to enter numbers 1 to 9.
- Del key : Use this key to delete an entered character.
- AC key : Use this key to delete all characters under the cursor.

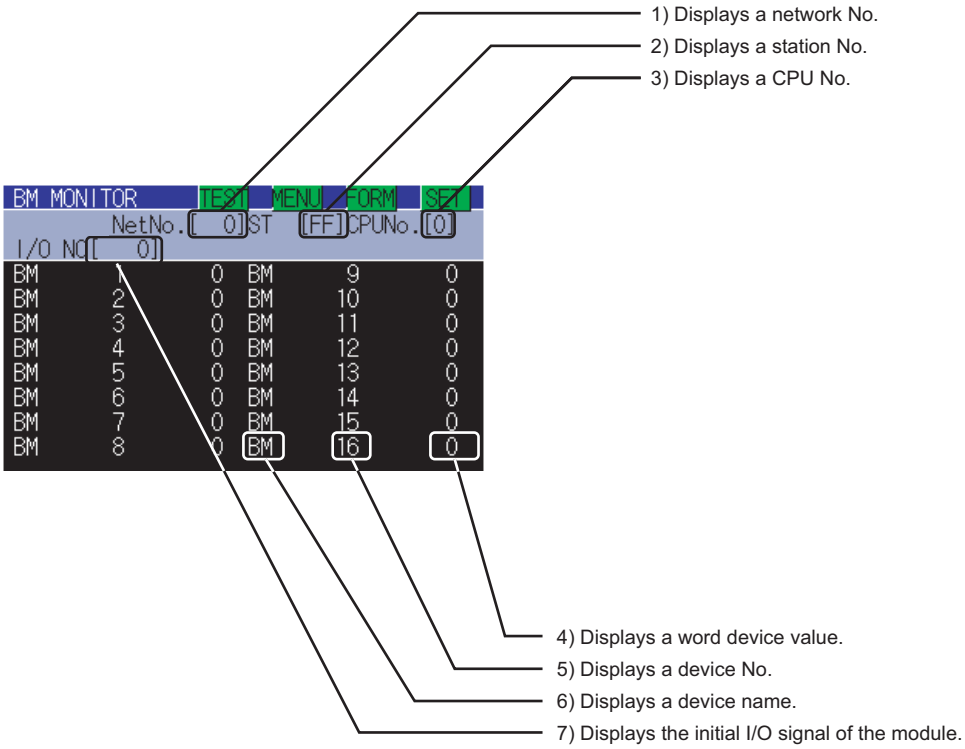
2 Entry is completed by touching the Enter key, and the keyboard closes.

13.2.20 BM monitor (monitoring buffer memory)

The BM monitor (buffer memory monitor) is a function to monitor the buffer memory of special function modules.
This section describes how to operate the BM monitor when the system monitor function is executed.

13.2.21 Information displayed on the BM Monitor screen and key functions

(1) The information displayed on the BM Monitor screen is described below.



For further information about items 1) to 7) shown above, see the page that follows.

(2) The following table describes the key functions displayed on the BM Monitor screen.

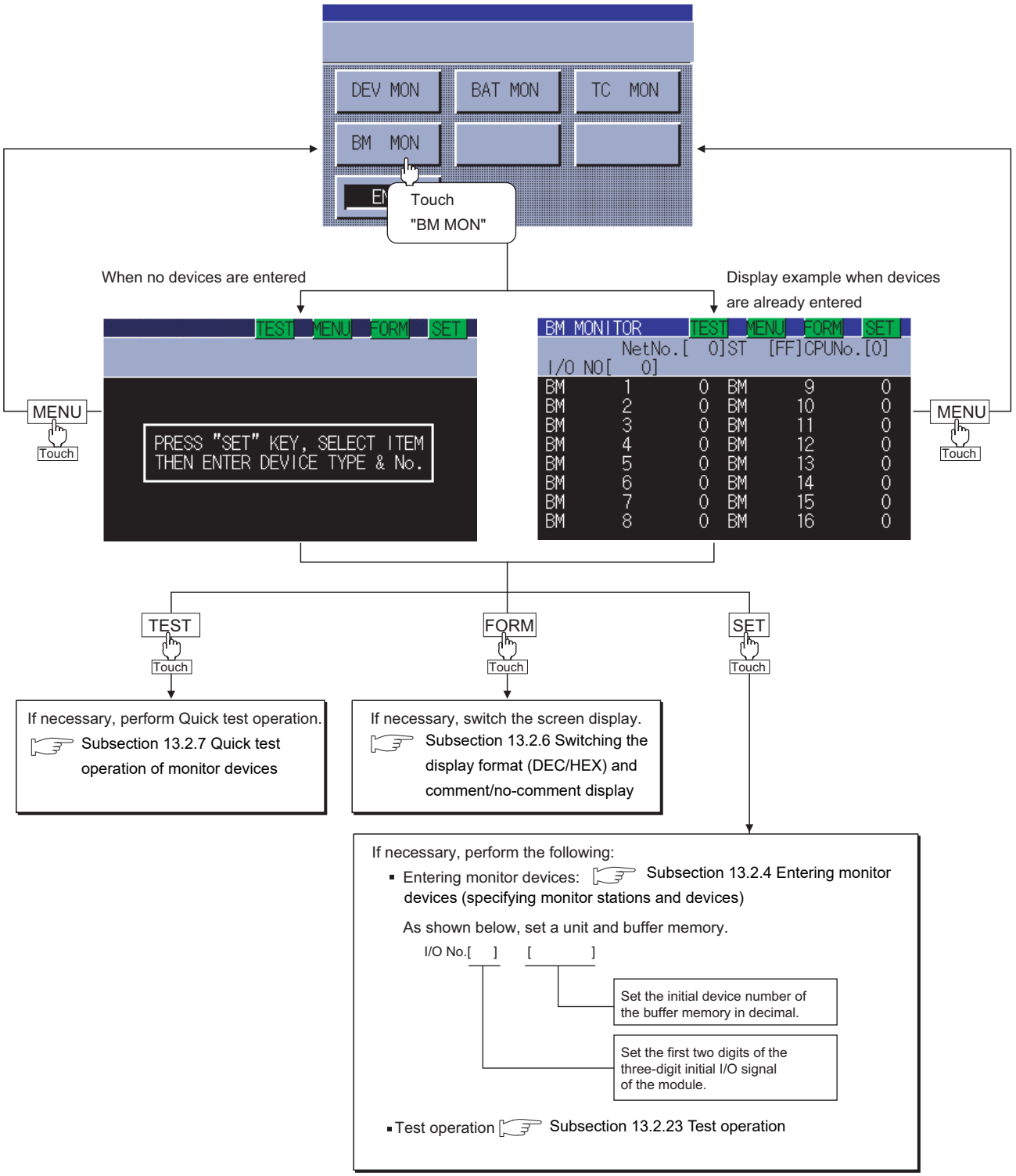
Key switch	Function
TEST	Activates the Quick test operation. ☞ Subsection 13.2.7 Quick test operation of monitor devices
MENU	Switches the screen to the functional change menu screen to activate another monitor function or terminate the system monitor function. ☞ Subsection 13.2.8 Changing screens (common operation)
FORM	Switches the screen to the display format switching screen to change the value display format (DEC/HEX) on the BM Monitor screen or comment/no-comment display. ☞ Subsection 13.2.6 Switching the display format (DEC/HEX) and comment/no-comment display
SET	Switches the screen to the Device entry screen to enter or test monitor devices. ・Entering monitor devices: ☞ Subsection 13.2.4 Entering monitor devices (specifying monitor stations and devices) ・Test operation: ☞ Subsection 13.2.23 Test operation
▲ ▼	Scroll displayed information upward or downward by a line to display the preceding or next monitor device that is not currently displayed. When five or more monitor devices are entered, these switches are available when their comments are displayed. ▲ : Scrolls information upward by a line. ▼ : Scrolls information downward by a line.

(3) The following table below describes the range of display of items 1) to 7) displayed.

No.	Item	Description of setting			
		Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4 *1
1)	Network No.	0			
2)	Station No.	FF			FF: When the host station is selected 0: When the master station is selected 1 to 64: When a local station is selected
3)	CPU No.	0 to 4: This item must be set only when the system is connected to multiple QCPUs. It is not necessary when the system is connected to another CPU.			
4)	Word device value	[Decimal number] four digits (including a digit for a sign) are displayed. (Display example: 1234) [Hexadecimal number] four digits are displayed. (Display example: H AB12)			
5)	Device No.	Up to 16 devices can be entered. (When the CPU is an FXCPU, devices cannot be entered.) For further information about device numbers and names that can be entered: ☞ GT Designer 2 Version□ Screen Design Manual GT Designer 3 Version1 Screen Design Manual (Fundamentals)			
6)	Device name				
7)	Monitor display area	Up to 16 devices can be displayed at a time.			

*1: Indicates CC-Link connection (via G4).

13.2.22 Procedure for BM monitor basic operation



13.2.23 Test operation

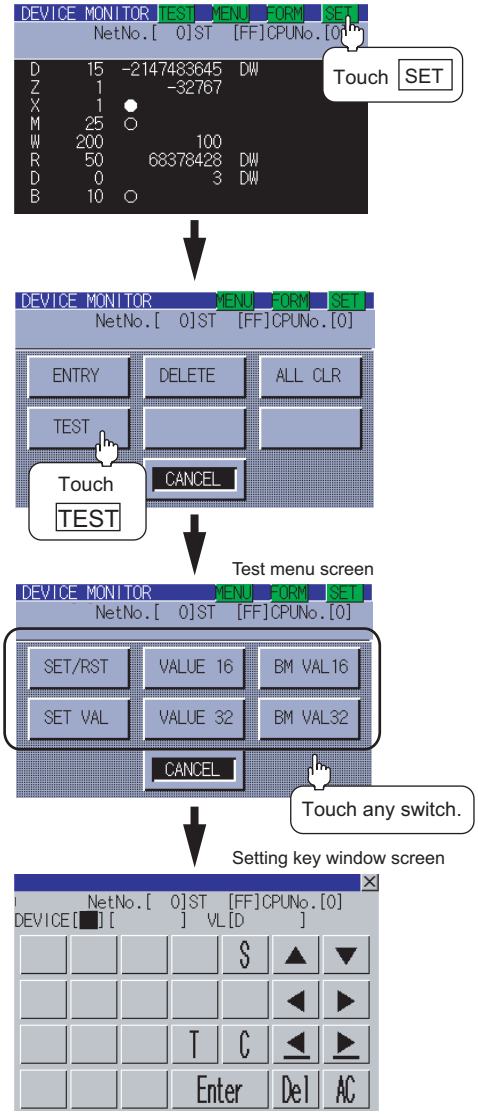
⚠WARNING

- Before performing the quick test operations of the system monitor function (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method.
  During test operation, never change the data of the devices which are used to perform significant operation for the system.
  False output or malfunction can cause an accident.

You can specify and test any station and device that can be monitored during monitoring by the system monitor function. This section describes how to test the bit or word devices of the controller or the buffer memory of the intelligent function unit.

13.2.24 Procedure for displaying the test menu screen and the setting key window screen

This subsection describes how to display the test menu screen and the setting key window screen.



1 Touch SET .
(When performing test operation from the Entry Monitor screen)

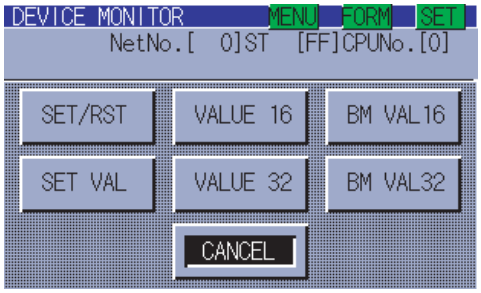
2 Touch TEST .

3 The test menu screen appears.
Touch SET/RST , SET VAL , VALUE 16 , VALUE 32 , BM VAL 16 or BM VAL 32
Operation example: touch SET VAL
For a detailed description of each key function, see the following:
☞ Subsection 13.2.25 Information displayed on the test menu screen and key functions

4 The setting key window screen appears.
Display example: set value operation screen of T (timer) and C (counter)
For further information about each setting key window, see the following:
☞ Subsection 13.2.26 Information and set items displayed on each setting key window screen
For further information about the test operation procedure, see the following:
☞ Subsection 13.2.27 Test operation procedure

13.2.25 Information displayed on the test menu screen and key functions

(1) Test menu screen



The table shown below describes the key functions.

Key	Function
MENU	Switches the screen to the functional change menu screen to activate another monitor function or terminate the system monitor function. ☞ Subsection 13.2.8 Changing screens (common operation)
FORM	Switches the screen to the display format switching screen to change the value display format (DEC/HEX) or comment/no-comment display. ☞ Subsection 13.2.6 Switching the display format (DEC/HEX) and comment/no-comment display
SET	Switches the screen to the Device entry screen.
SET/RST	Displays the screen for bit device on/off operation.
SET VAL	Displays the Set value operation screen for T (timers) and C (counters).
VALUE 16	Displays the Present value operation screen for word devices. Data range: 16-bit (one-word) module
VALUE 32	Displays the Present value operation screen for word devices. Data range: 32-bit (two-word) module
BM VAL 16	Displays the Present value operation screen for buffer memory. Data range: 16-bit (one-word) module
BM VAL 32	Displays the Present value operation screen for buffer memory. Data range: 32-bit (two-word) module
CANCEL	Terminates the test menu screen and displays each monitor screen.

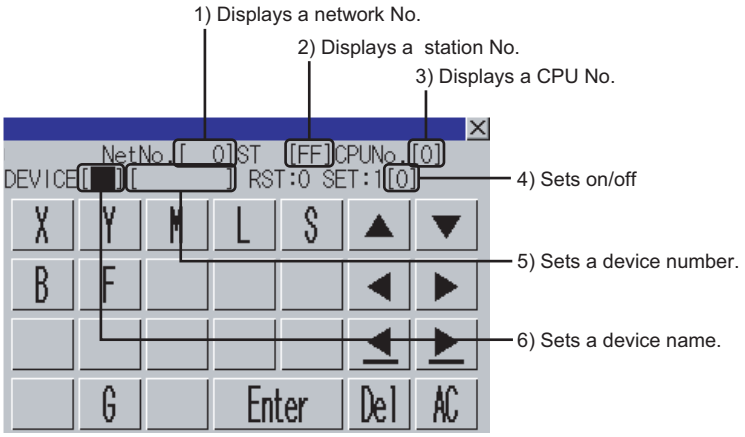
13.2.26 Information and set items displayed on each setting key window screen

The information and set items on the setting key window screen to be used for each test are described below.

(1) Information displayed on each setting key window screen

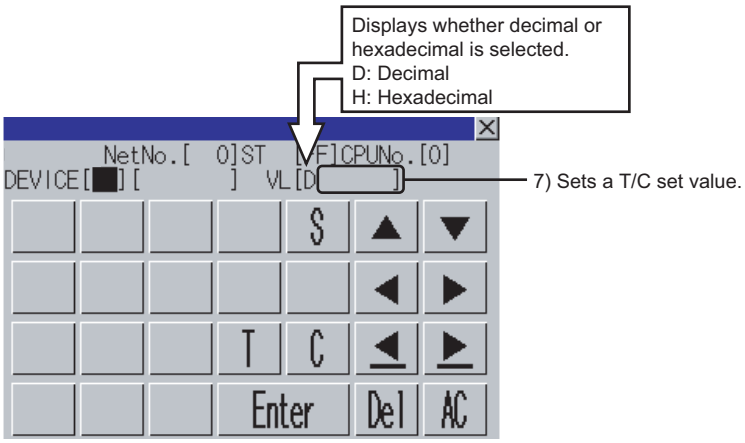
SET/RST

Screen for bit device on/off operation



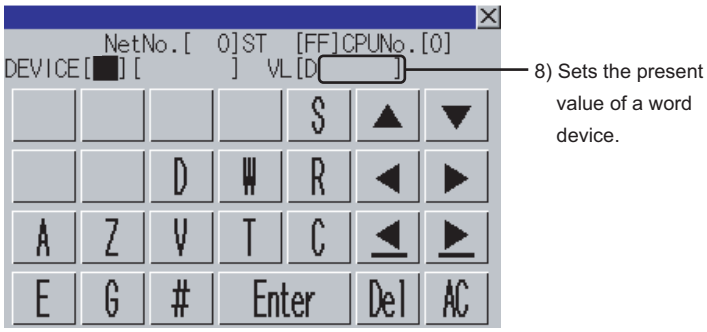
SET VAL

Set value operation screen for timers and counters



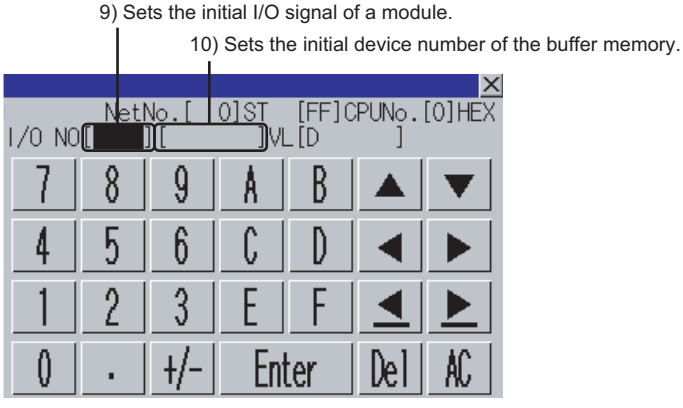
VALUE 16 VALUE 32

Present value operation screen for word devices (16-bit (one-word) module/32-bit (two-word) module)



BM VAL 16 BM VAL 32

Present value operation screen for buffer memory (16-bit (one-word) module/32-bit (two-word) module)



(2) Set items on the setting key window screen

The table shown below describes details of the set items mentioned on the preceding page.

No.	Item	Description of setting			
		Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4 *1
1)	Net No.	0			
2)	Station number	FF			FF: When the host station is selected 0: When the master station is selected 1 to 64: When a local station is selected
3)	CPU No.	0 to 4: This item must be set only when the system is connected to multiple QCPUs. It is not necessary when the system is connected to another CPU.			
4)	On/Off setting	Set "1": On, Set "0": Off			
5)	Device No.	For further information about device numbers and names that can be entered: ☞ GT Designer 2 Version☐ Screen Design Manual GT Designer 3 Version1 Screen Design Manual (Fundamentals)			
6)	Device name				
7)	T/C set value	[Decimal number] 16-bit (one-word) module: Six digits (including a digit for a sign) are set. (Entry example: -12345) 32-bit (two-word) module: Ten digits (including a digit for a sign) are set. (Entry example: -123456789) [D] displayed in the number entry box indicates that the entry is decimal. [Hexadecimal number] 16-bit (one-word) module: Four digits are set. (Entry example: H AB12) 32-bit (two-word) module: Eight digits are set. (Entry example: H ABCDE123) [H] displayed in the number entry box indicates that the entry is hexadecimal.			
8)	Word device present value	[Decimal number] 16-bit (one-word) module: Six digits (including a digit for a sign) are set. (Entry example: -12345) 32-bit (two-word) module: Ten digits (including a digit for a sign) are set. (Entry example: -123456789) [D] displayed in the number entry box indicates that the entry is decimal. [Hexadecimal number] 16-bit (one-word) module: Four digits are set. (Entry example: H AB12) 32-bit (two-word) module: Eight digits are set. (Entry example: H ABCDE123) [H] displayed in the number entry box indicates that the entry is hexadecimal.			
9)	Initial I/O signal of module	Set the first two digits of the three-digit initial I/O signal of the module.			
10)	Initial device number of buffer memory	Set the number in a decimal number.			

*1: Indicates CC-Link connection (via G4).

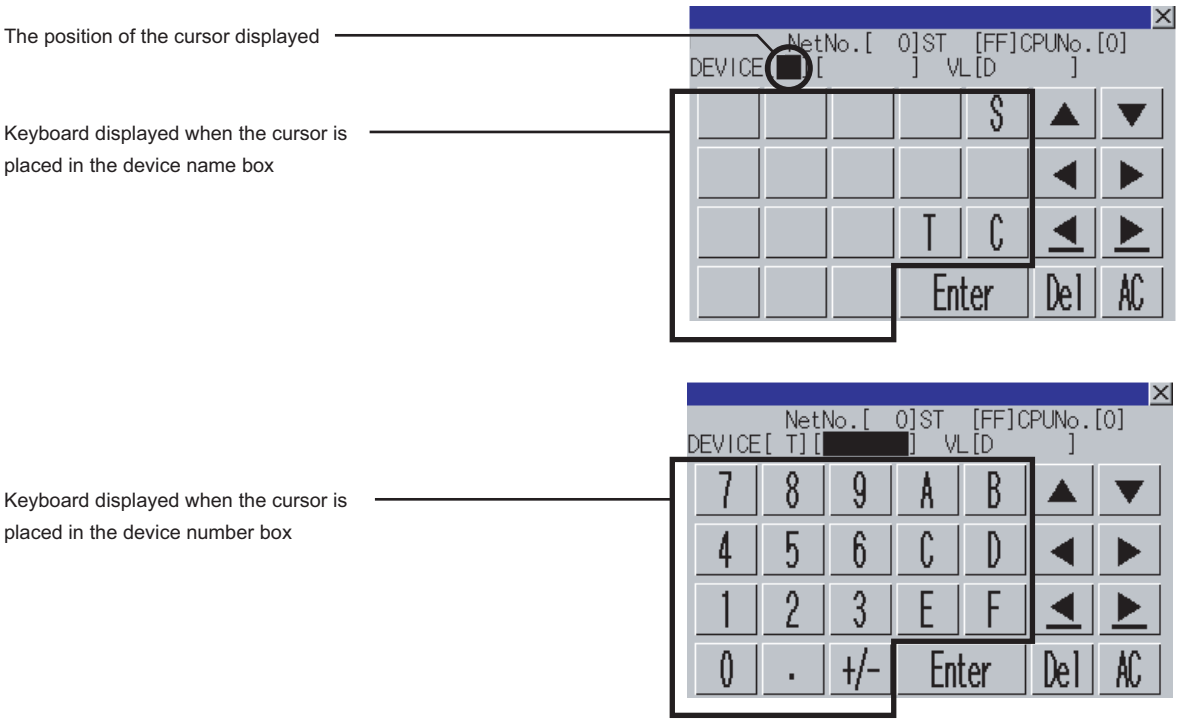
13.2.27 Test operation procedure

Test operation takes place by setting on the setting key window screen the name and number of a device, initial device number of the buffer memory, and the initial I/O of the module or entering change values. This subsection takes a change of set values as an example to describe the test operation procedure.

1. Touch the [SET VAL] key on the test menu screen.
   The setting key window screen appears.

2. Using the [◀] and [▶] keys, move the cursor to the item you want to set.

The keyboard displayed depends on the position of the cursor, as shown below.



3. If necessary, enter numbers or characters on the keyboard.
   - [Del] key: Use the [Del] key to delete an entered character.
   - [AC] key: Use the [AC] key to delete all characters under the cursor.
   - The ▲/▼ and the keys on which nothing is displayed are not available.
   - For further information about the setting ranges, see the following:
     ☞ Subsection 13.2.26 Information and set items displayed on each setting key window screen

4. Entry is completed by touching the [Enter] key.

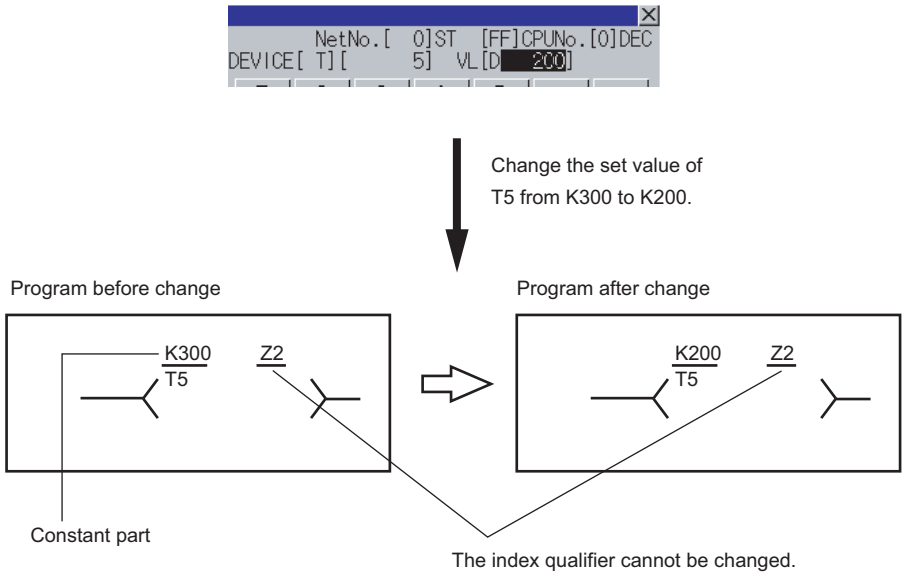
5. The keyboard closes by touching the [⊠] key.

Point

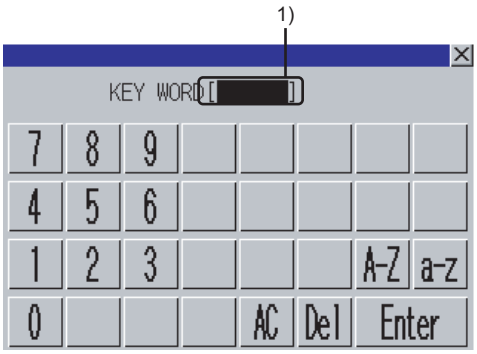
Operating the set values of timers and counters

(1) Time-up/Count-up status
Even if a set value or present value is changed after a timer or counter is up, the time-up or count-up status does not change. The present status is retained.

(2) Changing an index qualifier
Only the constant part of a T/C set value with a qualifier can be changed. The index qualifier cannot be changed.
(Example) Change the set value of T5 from 300 to 200.

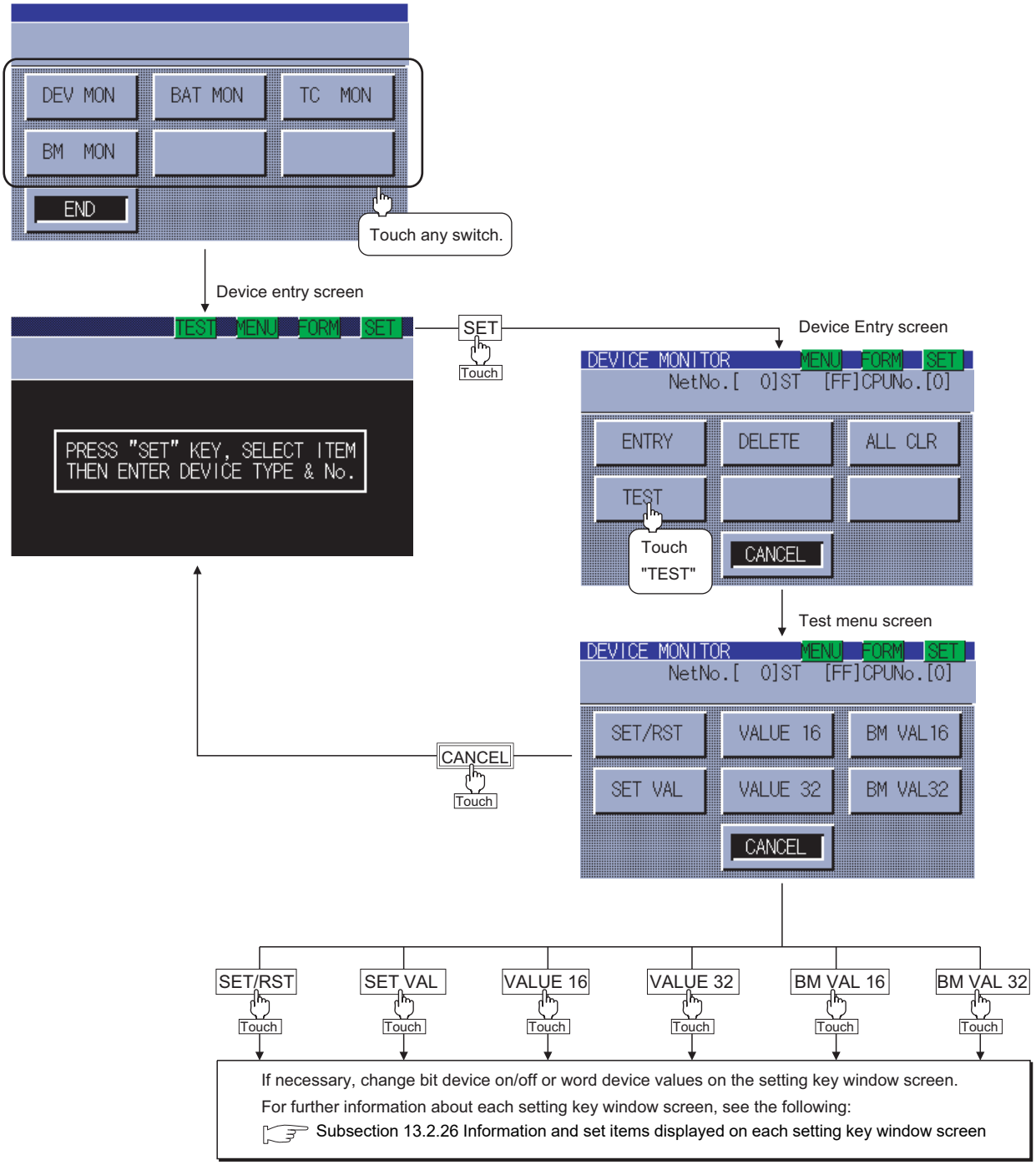


(3) Operation when a password is entered for the controller
When the target controller is a QCPU, the Keyword Release screen appears. Enter the password.



1. Enter the password entered in the sequence program at 1).
   - A-Z key : Touch this key to enter alphabetic characters A to Z (uppercase).
   - a-z key : Touch this key to enter alphabetic characters a to z (lowercase).
   - 0-9 key : Touch this key to enter numbers 1 to 9.
   - Del key : Use this key to delete an entered character.
   - AC key : Use this key to delete all characters under the cursor.
2. Entry is completed by touching the Enter key, and the keyboard closes.

13.2.28 Test operation basic procedure



13.2.29 Error messages and corrective actions

This section describes the error messages displayed when the system monitor function is executed, and corrective action.

Error message	Description	Corrective action
PLC communications error	Communication could not be established with the PLC CPU.	(1) Connections between the PLC CPU and the GOT. (disconnected or cut cables). (2) Has an error occurred in the PLC CPU. (3) Refer to the following manual for confirming whether the error has occurred in network. ☞ GT11 User's Manual

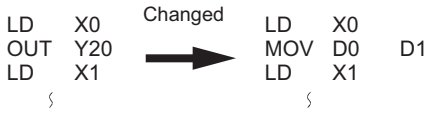
13.3 MELSEC-A List Editor

The MELSEC-A list editor enables you to change the sequence program in the ACPU/QCPU (A mode). This function is intended to troubleshoot the PLC system and to streamline maintenance operations.
By installing list editor for MELSEC-A, an Option OS, from drawing software into the GOT, you can edit the ACPU/QCPU (A mode) PLC program.
The features of the MELSEC-A list editor are described below.

1 Parameters and sequence programs are easy to maintain

You can check or partly correct, change or add PLC CPU parameters and sequence programs simply by operating keys.
You can easily edit sequence programs without preparing any peripheral unit other than the GOT.

Example of changing sequence program commands



2 Other stations are accessible

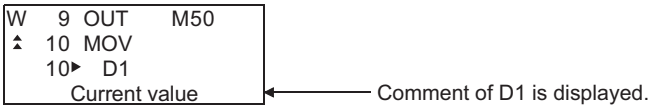
You can edit the sequence program for other stations in the data link system containing the GOT (or GOT-connected station), network system or CC-Link system.

3 Help function

A convenient help function is supported, which enables you to read, write, insert, and delete data as you select menus.

4 Comment for each device can be displayed

Comment of the device at the cursor position can be displayed.



13.3.1 Specifications

1 System configuration

This subsection describes the PLC CPU series names and the connection forms between the GOT and the PLC for which the MELSEC-A list editor is available.
For further information about communication units and cables for each connection form, see the following:

☞ GOT1000 Series Connection Manual

2 Targeted PLC

PLC
ACPU/QCPU (A mode)*1*2

*1 Motion controller CPUs cannot be connected. The message "MOTION CONTROLLER NOT SUPPORTED" will be displayed when the MELSEC-A list editor function is activated.

*2 When the PLC is A2USH-S1, it operates within the range of A3U; when the PLC is the A2SH-S1, A2SH, A1SH, or A1SJH, it operates within the range of A3N.

3 Connection forms

When the GOT is connected to an ACPU/QCPU (A mode)

(○: Available, ×: Unavailable)

Function name	Connection form between GOT and PLC				
	Bus connection*1*3	Direct CPU connection	Computer link connection	CC-Link connection*1*2	GOT multidrop connection
				G4*4	
MELSEC-A list editor	○	○	×	×	×

*1 When the PLC is the A2SH-S1/A2SH/A1SH/A1SJH, use a CPU of version E or a later version. Programs cannot be written to CPUs of version D or an earlier version.

*2 When the PLC is A3N, A2N-S1, A2N, or A1N, it can not be used.

*3 When the PLC is QCPU (A mode), it cannot be used.

*4 Indicates CC-Link connection (via G4).

4 Required option OS and option function board

The option OS and option function board shown below are required.

Option OS	OS memory space (user area)	Option function board
MELSEC-A list editor	0KB	GT11-50FNB

(1) Option OS

Install the option OS in the above table to the GOT.

Refer to the following manual for the procedure for installing the option OS.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

(2) OS memory space

The available memory space shown in the table above is required in the user area to install the option OS to the GOT.

Refer to the following manual for the procedure for checking the available memory space of the user area and information about the data using other user areas.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

(3) Option function board

Mount one of the option function boards in the above table on the GOT.

For how to mount an option function board on the GOT, refer to the following manual.

☞ Section 6.3 Option Function Board

13.3.2 Access range

The access range is the same as the access range when the GOT is connected to a controller.
Refer to the following manual for details of the access range.

☞ GT Designer2 Version ☐ Screen Design Manual
GOT1000 Series Connection Manual (Mitsubishi Products) for GT Works3

13.3.3 Precautions

The points of precaution when using MELSEC-A list editor are described.

(1) Reading the MELSEC-A list editor by specifying a command
The MELSEC-A list editor cannot be ready by specifying a dedicated command.

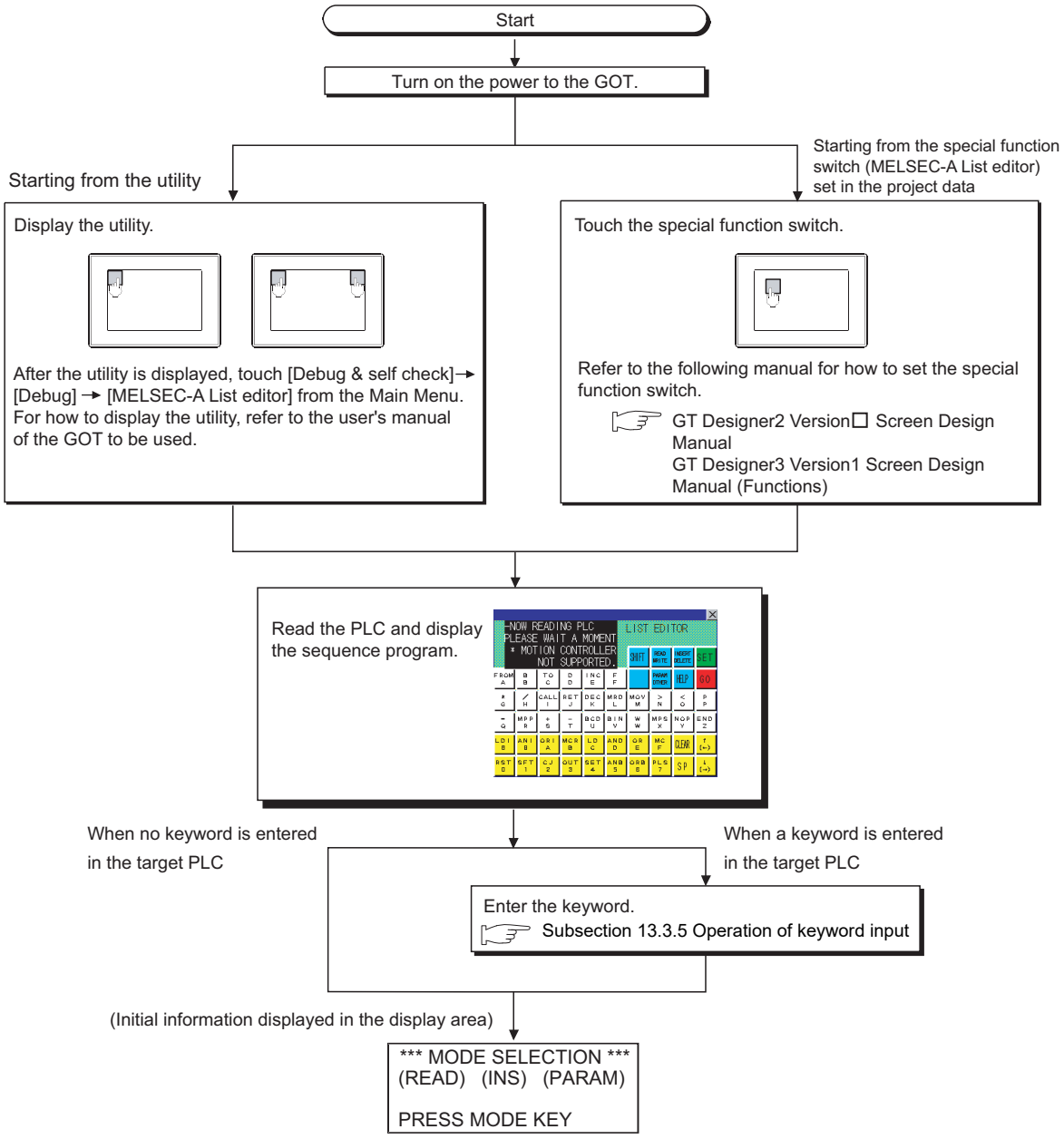
(2) Executing the MELSEC-A list editor
Execute the MELSEC-A list editor when the target PLC is not running.
It cannot be executed when the PLC is running.

(3) Changing sequence programs/parameters using another peripheral equipment
When using the MELSEC-A list editor, do not change programs or parameters in the PLC CPU from other peripheral equipment.
If you change programs or parameters, either reset the GOT main unit or set the PLC No. again.
If you carelessly change the program on one PLC from multiple units of peripheral equipment (including GOT), the contents of the program in the PLC CPU and the peripheral equipment may not be the same, resulting in an unintended operation of the PLC CPU.

(4) Writing sequence programs
Sequence programs cannot be written when the target CPU is operating EEPROM.

1 Outline until the start

This subsection describes an outline until the system monitor screen is displayed after List editor for MELSEC-A (Option OS) is installed in the GOT.



Point

(1) How to display the utility

For how to display the utility, refer to the following.

Section 8.3 Utility Display

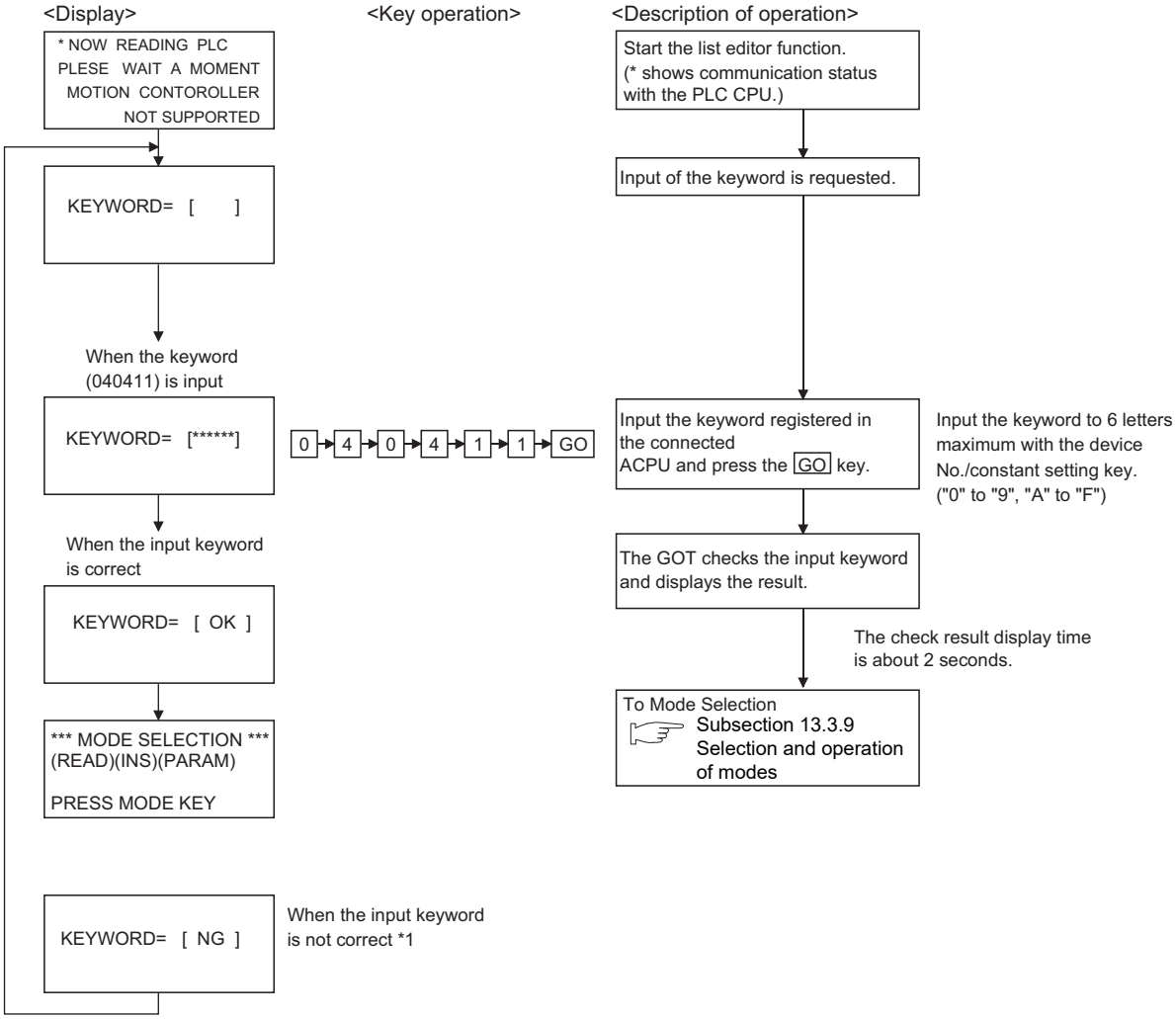
(2) If the project data has not been downloaded

The A list editor can be started from the utility even if the project data has not been downloaded to the GOT.

13.3.5 Operation of keyword input

If a keyword is registered in the ACPU when the connected ACPU or the ACPU PLC No. No. corresponding to the operation is changed, the GOT requests for input of the registered keyword.
Input the keyword registered in the ACPU and press the GO key.
If a keyword is not registered in the ACPU, this operation is not required.

Procedure for inputting the keyword for the MELSEC-A list editor



*1 When the input keyword does not match with the registered keyword, only the following operations in subsection 13.3.26 can be allowed.

Other modes
- Error step reading
- Buffer memory overall monitor
- Time monitor
- PLC No. setting
- Main/sub switching

Point

When you forgot the keyword entered in the ACPU

- Even if you are unsure of the keyword entered in the ACPU, you cannot delete it independently. If deleting user data, including sequence programs, does not cause any inconvenience to you, clear (delete) the entered keyword by <PLC memory all clear.>
  Note that <PLC memory all clear> clears user data, including sequence programs, as well.
  For further information about PLC memory all clear, see the following:

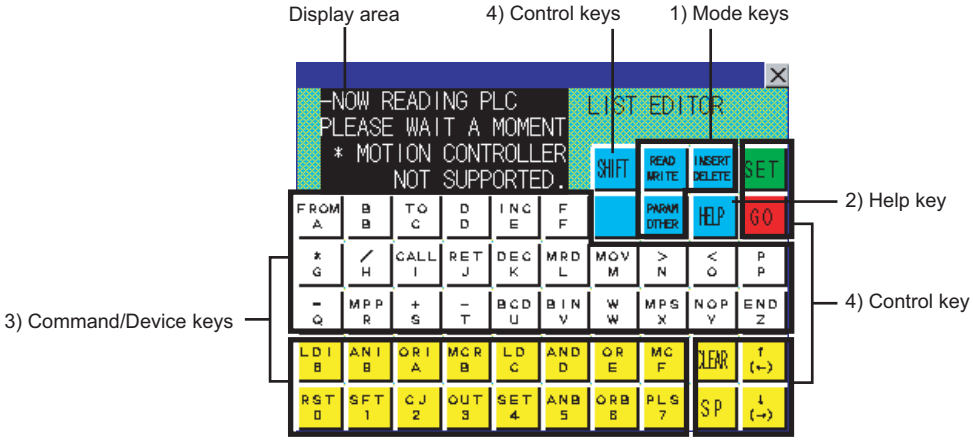
  ☞ Subsection 13.3.19 PLC memory all clear

- When you know the keyword and want to change it or add a new keyword, see the following:

  ☞ Subsection 13.3.20 List of operation procedures

1 Key arrangement and a list of key functions

(1) The arrangement and functions of the keys displayed on the MELSEC-A List Editor window are described below.



Key name		Summary of function	Reference
1) Mode key	READ WRITE	The key that specifies read or write mode. Switch the valid key with SHIFT.	Subsection 13.3.9 Subsection 13.3.21 Subsection 13.3.22
	INSERT DELETE	The key that specifies insert or delete mode. Switch the valid key with SHIFT.	Subsection 13.3.9 Subsection 13.3.23 Subsection 13.3.24
	PARAM OTHER	The key that specifies parameter or other mode. Switch the upper and lower lines with SHIFT.	Subsection 13.3.9 Subsection 13.3.25 Subsection 13.3.26
2) Help key	HELP	The key that can operate the help function.	Subsection 13.3.18
3) Command/ Device key	FROM A ~ END Z	Key that inputs K/H at the input of command, device name and constant input. Only when the valid key of upper/lower character needs to be switched, switching is allowed with input of the SHIFT and SET keys.	-
	RST 0 ~ MC F	Key that inputs the command, device number and constant. Only when the valid key of upper/lower character needs to be switched, switching is allowed with input of the SHIFT and SET keys.	-
4) Control key	SET	Key that declares start of step number input or automatic scroll. Switch key that makes the lower character valid on each key with dual functions. Whether upper or lower character is valid can be checked on the display.	Subsection 13.3.9
	SHIFT	Switch key that makes the upper character valid on each key with dual functions. Whether upper or lower character is valid can be checked on the display.	Subsection 13.3.9
	CLEAR	When the Help function is used, the screen returns to the display at the input of the HELP key.	-
		In the Parameter mode, the process is cancelled. After restarting, continue the operation.	-
		If the Clear key is pressed when the system is not in the Parameter mode, other mode or Help function, the screen returns to the initial status of the mode selection. (The input commands or device numbers except for the mode are cleared.) This is used for repeating the procedure if incorrect keys are pressed.	Subsection 13.3.11
		In the Other mode, the screen returns to the previous display.	-
	SP	Key that provides blank space at the command and at between device names.	-
	↑ (←) ↓ (→)	Key that moves the cursor on the display (▶, ■) or determines scroll directions.	Subsection 13.3.8
	GO	Press this key at the last of a series of key operations to execute the operation. Check the details of key operations on the display before pressing this key.	Subsection 13.3.10

(2) How to express keys and key operation descriptions

The keys for the MELSEC-A list editor and operation procedures are described in text in a simplified manner as shown below.

(a) Some keys, such as [RST 0] and [MOV M], are available for two different purposes.
Operate such keys with either the upper or lower function indicated on them valid according to the operation. In descriptions, only the necessary functions are indicated on keys.
(Example of description)

When entering the character "M," the [MOV M] key is indicated as [M] in the description.

Make upper or lower functions valid by using the [SHIFT] key or the [SET] key.For further information about the procedure for making upper or lower functions valid, see the following:

☞ Subsection 13.3.8 Switching valid keys (upper/lower functions)

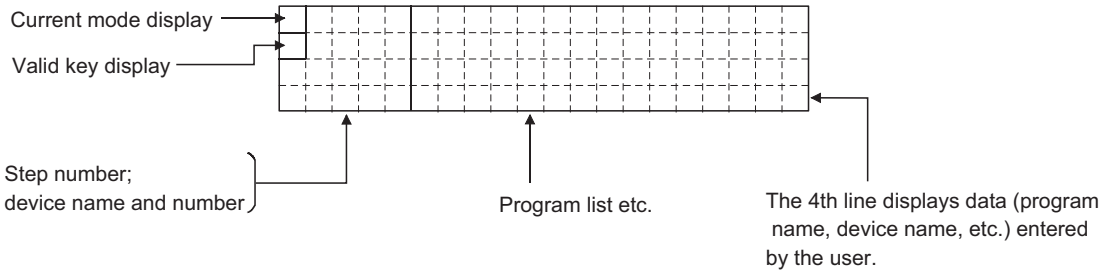
(b) The expression [Key 1] → [Key 2] → ... [Key n] means touching keys from [Key 1] to [Key n] in order.
(Example of description)

The example of description shown below indicates that [SET] must be touched first, [F] second, [0] third, and [GO] finally.

[SET] → [F] → [0] → [R] → [SP] → [K] → [5] → [GO]

13.3.7 Display format of the display area

The following describes the position and content of each data field in the MELSEC-A list editor display area.

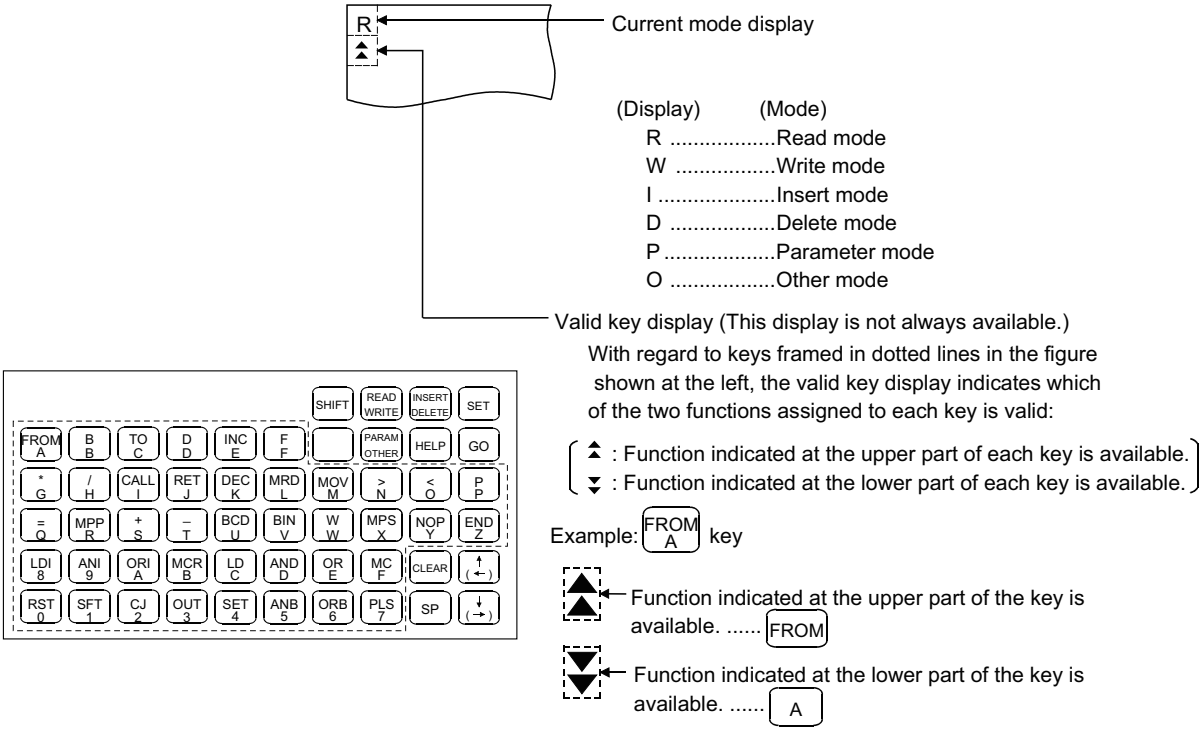


(1) Mode and valid key display

The following describes the mode and valid key display.

The mode display shows the MELSEC-A list editor mode selected by the user.

The valid key display shows which of the two functions assigned to each key is currently available: the function indicated at the upper part of the key or the function indicated at the lower part of the key.



Point

To switch between two functions of keys (functions indicated at upper and lower parts of the keys), press the SHIFT and SET keys.

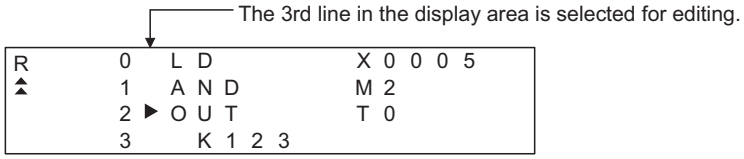
☞ Subsection 13.3.8 Switching valid keys (upper/lower functions)

(2) The cursor appears

The cursor appears ■ and is highlighted during data input.

(3) Indication of the selected line

When a program list is displayed, the line currently selected for editing is indicated by " ▶ " appearing immediately after the step number.



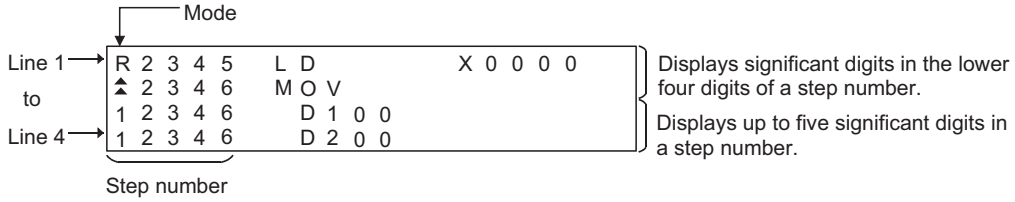
You can use the [↑] and [↓] keys to move " ▶ " up and down.

(4) Step number display

A step number is displayed as a decimal number.

On the 1st and 2nd lines in the display area, significant digits in the lower four digits of a step number are displayed.

On the 3rd and 4th lines in the display area, up to five significant digits in a step number are displayed.



(5) Device display

Two or more device specifications attached to a basic or application instruction are displayed using the same step number.

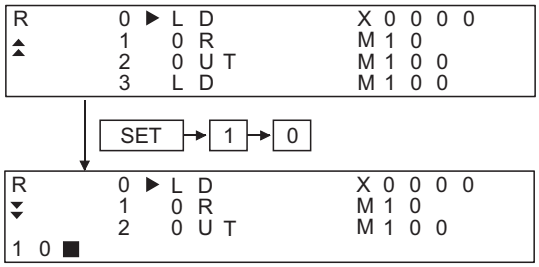
For information on the step numbers, see Paragraph (4) above.

(6) Display of data input from the keys

Data input from the keys will appear at the cursor position. As more characters are input, the cursor moves to the right.

The cursor appears as " ■ ".

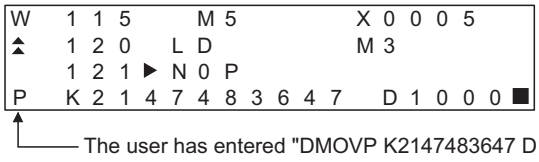
Example: The user enters [SET] → [1] → [0]



(7) Shifting of data to the left during the input of a program

When the user inputs a program, the codes entered before a touch on the GO key will appear on the 4th (bottom) line of the display area.

If the codes cannot appear on a single line, the display on the 4th line only will shift by a single character position to the left each time the user touches a key. (Each character that goes out of the display area by the left-shift operation is retained in the memory.)



You can move " ■ " in the specified direction (right or left) with the (←) or (→) key.

(8) Display of an error message

An error message will appear on the 4th line of the display area.

An error message on the display is cleared when you press any key. Then the display resumes the state before the appearance of the error message.

When an error message is displayed, take action according to the procedure described in the following section:

☞ Subsection 13.3.27 Error messages and corrective actions

13.3.8 Switching valid keys (upper/lower functions)

Make valid the upper or lower function of keys available for two different purposes to operate the MELSEC-A list editor.

(1) Switching the upper and lower functions of mode keys

In general, the upper functions of mode keys are valid.

To make the lower function of a mode key valid, touch the SHIFT key and then the mode key.

During switching of the upper and lower functions of mode keys, the mark on the valid keys remains ▲.

(2) Switching the upper and lower functions of command/device keys

Switch the upper and lower functions of command/device keys using the keys shown below, if necessary.

SHIFT :Makes the upper function valid.

SET :Makes the lower function valid.

* The keys shown below can be operated even if the lower function of a key is valid.

(You do not need to operate the SHIFT key.)

- Comparison symbol keys at the input of comparison operation commands: <, >, =
- Minus key in command source data: −

For further information about the display of valid keys, see the following:

☞ Subsection 13.3.7 Display format of the display area

(3) Valid command/device keys after setting each mode

Valid command/device keys after setting each mode are shown below.

(a) Valid keys after setting read, write, and insert modes.
The upper functions of the command/device keys are valid.
If necessary, switch the upper and lower functions of necessary keys for operation.

(b) Valid keys after setting parameter, other, and help modes.
The lower functions of the command/device keys are valid.
If necessary, switch the upper and lower functions of necessary keys for operation.

13.3.9 Selection and operation of modes

Select appropriate modes of the MELSEC-A list editor for the operations described in Subsections 13.3.13 and 13.3.20.

You can change modes as you desire during any of the operations described in Subsections 13.3.13 and 13.3.20, so that you can continue operations while changing modes.

READ ····· Read mode
WRITE ····· Write mode
INSERT ····· Insert mode
DELETE ····· Delete mode
PARAM ····· Parameter mode
OTHER ····· Other mode

Remark

Mode key input is always valid.
Input of the mode key clears the input data except for the step numbers. The display returns to the initial status of the mode selection.

13.3.10 Command input procedures

Command input procedures can be classified as follows:

1) Input the command key to use the command on the key.
2) Input the alphanumeric keys corresponding to each character of command sequentially.
3) Select and input the command to be used from the Help function.

Command input procedures for 1) and 2) above are as follows.
For command input procedure 3) from the Help function, refer to Subsection 13.3.10 Command input procedures

Point

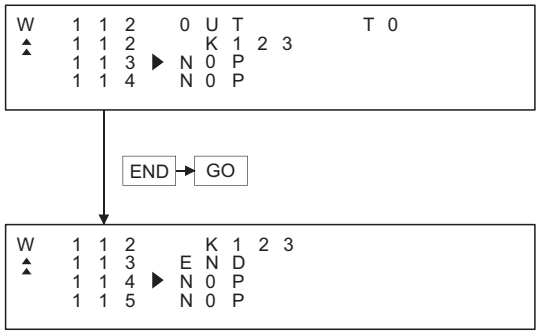
When the command is input, the input details are displayed at the 4th line (the bottom line) on the display. In the following description, the input of [SP] key may be omitted when a blank space between the input command and the cursor position is automatically inserted. Refer to the example in each description.

(1) For command code only

(a) When the command available on the keyboard is input

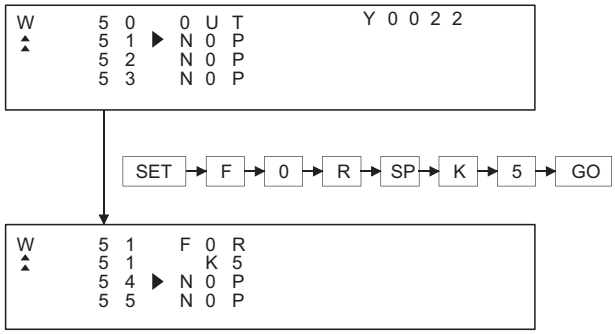
Command → [GO]

(Ex) When END is input



(b) When the command not available on the keyboard is input

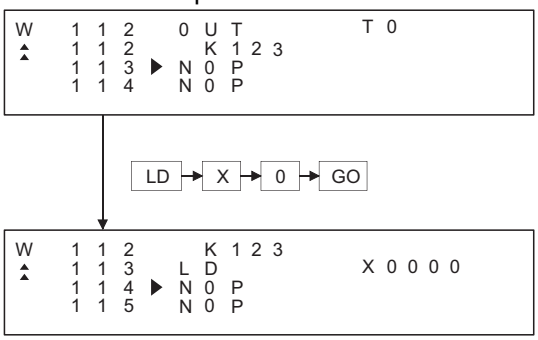
(Ex) When FOR K5 is input



(2) For command code and device (1)

Command → SP → DEVICE → DEVICE No. → GO

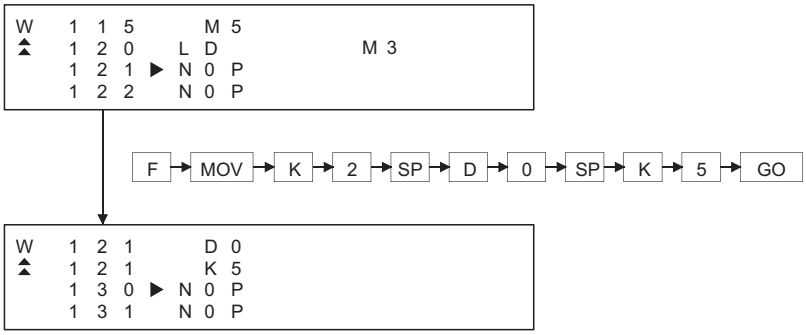
(Ex) When LD X0 is input



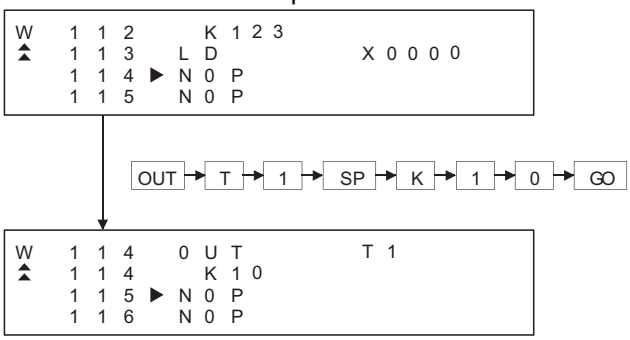
(3) For commands other than above

Input the SP key between the command and the device, the source data, and the destination data.

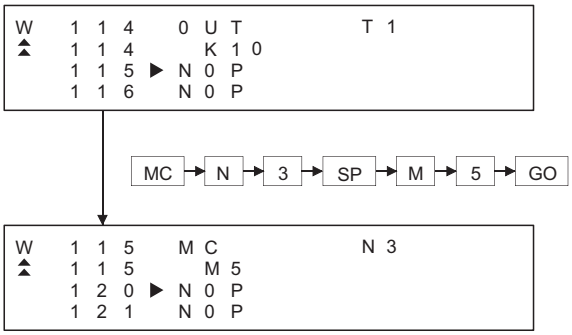
(Ex 1) When FMOV K2 DO K5 is input



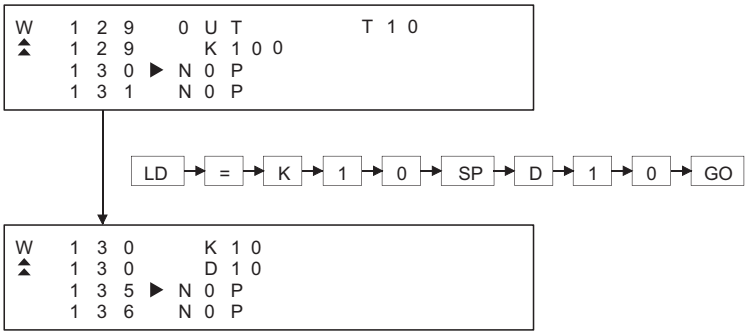
(Ex 2) When OUT T1 K10 is input



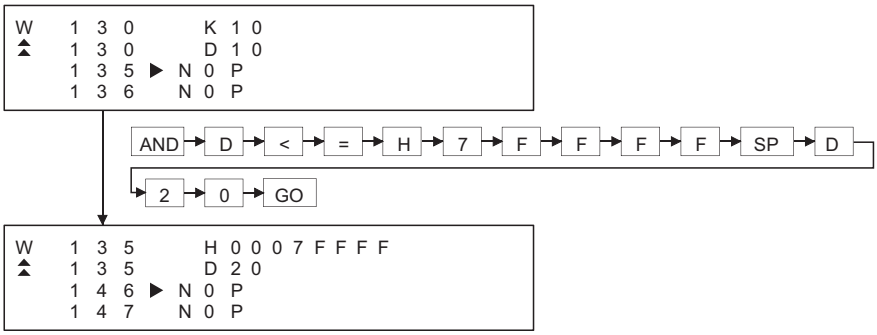
(Ex 3) When MC N3 M5 is input



(Ex 4) When LD = K10 D10 is input



(Ex 5) When ANDD<=H7FFFF D20 is input



(4) Handling of devices M, L and S

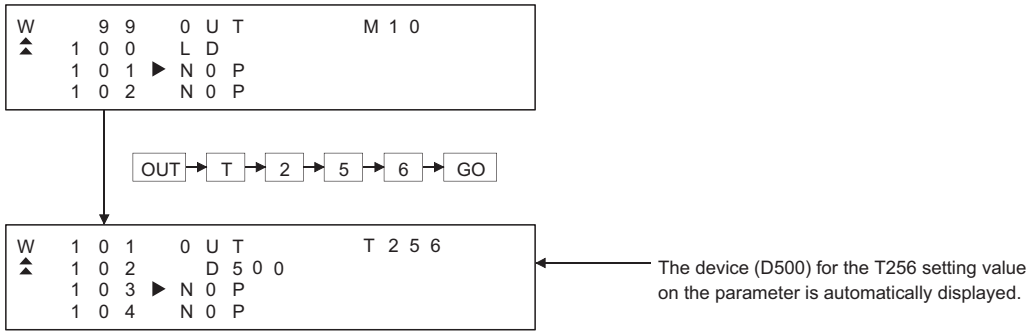
Devices M, L and S in the Test, Monitor, Write and Insert modes change the display depending on the set parameters.

If LD L0 is input for the parameter setting of M0 to 999 and L1000 to L2047, the result is LD M0.

(5) For extension timer/extension counter of AnA and AnUCPU

When the extension timer (T256 to T2047) and the extension counter (C256 to C1023) are input as the first device of the command, input the first device and the device number.

(Ex) When OUT T256 D500 is input



Point

When the extension timer and the extension counter are used, be sure to set the 257 points or more and the setting value device (D, W, R) on the parameter for both the timer and the counter.

13.3.11 Action if an incorrect key is input

If an incorrect key is input, cancel the input contents.

1 Operation

(1) Before touching the GO key (before reading/writing the input contents)

Before touching the GO key, touch the CLEAR key.

(2) After touching the GO key (after reading/writing the input contents)

Write the command again. (☞ Subsection 13.4.9 Writing commands)
Commands finalized by writing and inserting operations are revised (overwritten) with the program writing.

Remark

When the CLEAR key is input in the parameter mode, the GOT stops the process. To continue the operation, carry on the key input.

13.3.12 List of functions

The table below shows the functions available for each mode.

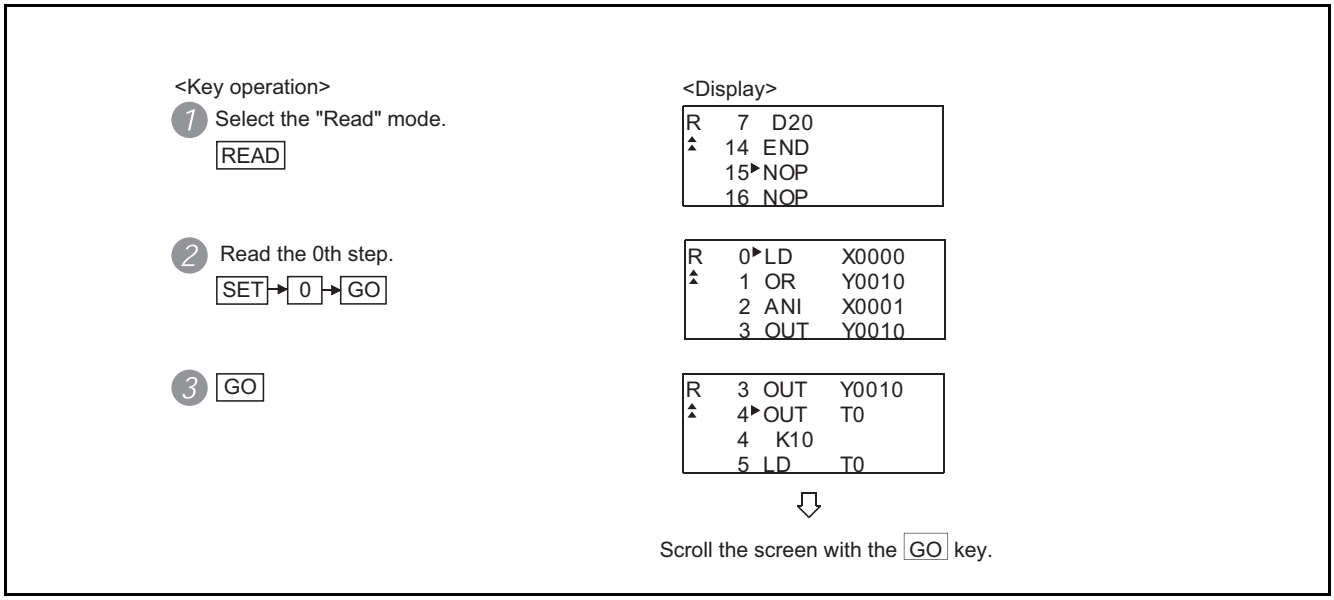
Mode (mode display)	Function
Write (W)	Writes, adds, or modifies a program.
	Changes a device used at the selected step in the program.
	Displays a list of instructions that start with the specified character and allows the user to choose from them.
	Reads a program after allowing the user to specify a step number.
	Declares the specified part of the program NOP.
	Displays a comment for the specified device.
Read (R)	Reads a program after allowing the user to specify a step number.
	Reads a program after allowing the user to specify an instruction used.
	Reads a program after allowing the user to specify a device used.
	Automatically scrolls the display of a program that has been read up to a specified step.
	Corresponds to program read and automatic scroll functions described above.
	Displays a comment for the specified device.
Insert (I)	Inserts a new program into the displayed program.
	Displays a list of instructions that start with the specified character and allows the user to choose from them.
	Reads a program after allowing the user to specify a step number.
	Moves the selected part of the program to a specified part of the program.
	Copies the selected part of the program to a specified part of the program.
	Displays a comment for the specified device.
Delete (D)	Deletes a program at the specified step.
	Deletes the specified block in the program.
	Deletes all NOP instructions found in program codes described before the END instruction. (NOPLF instructions will not be deleted.)
	Displays a comment for the specified device.
Parameter (P)	Clears all parameters in the ACPU only.
	Sets or changes various parameters like those for the memory capacity, timer/counter, and latching range.
	Sets or changes a keyword.
Others (O)	Changes values set to timer/counter devices.
	Displays details of an error in the ACPU and the associated step number.
	Checks duplex coils, instruction codes, and other elements in the program.
	With regard to a special function unit of the specified I/O number, monitors the contents of the buffer memory at the specified address.
	Monitors the ACPU clock (D9025 through D9027).
	Clears all contents of the ACPU memory and resets it to the initial state.
	Clears the program (Main/Sub) currently selected.
	Clears all device memories except for special-D, special-M, and R.
	Switches the target ACPU in GOT operations in each mode.
	Switches the target program (Main/Sub) in GOT operations in each mode.
	Forcibly changes the ACPU running status between RUN and STOP.
	Performs a read or write operation to the ACPU memory in the machine language.

13.3.13 Basic Operation

This section takes an easy operation example to describe the basic operation of the MELSEC-A list editor.

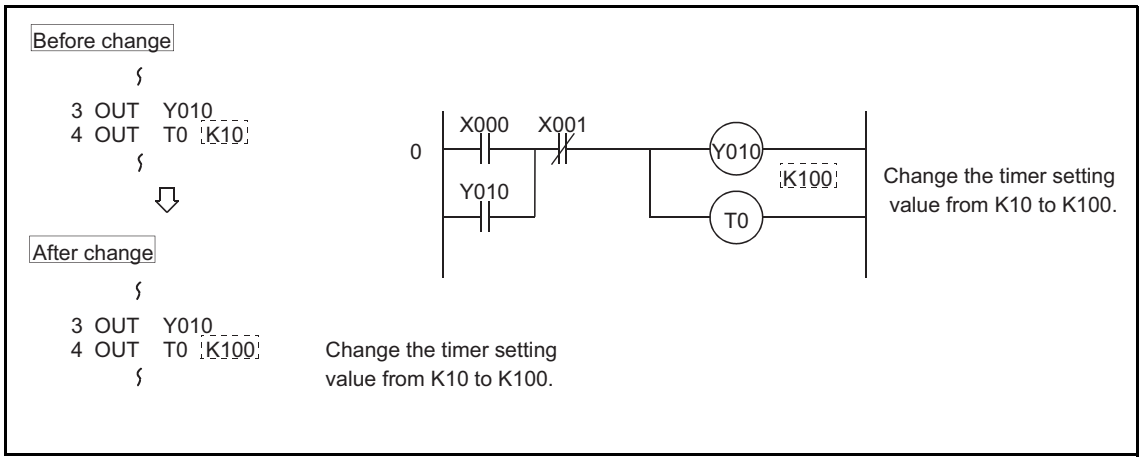
13.3.14 Reading sequence programs

[Operation example]

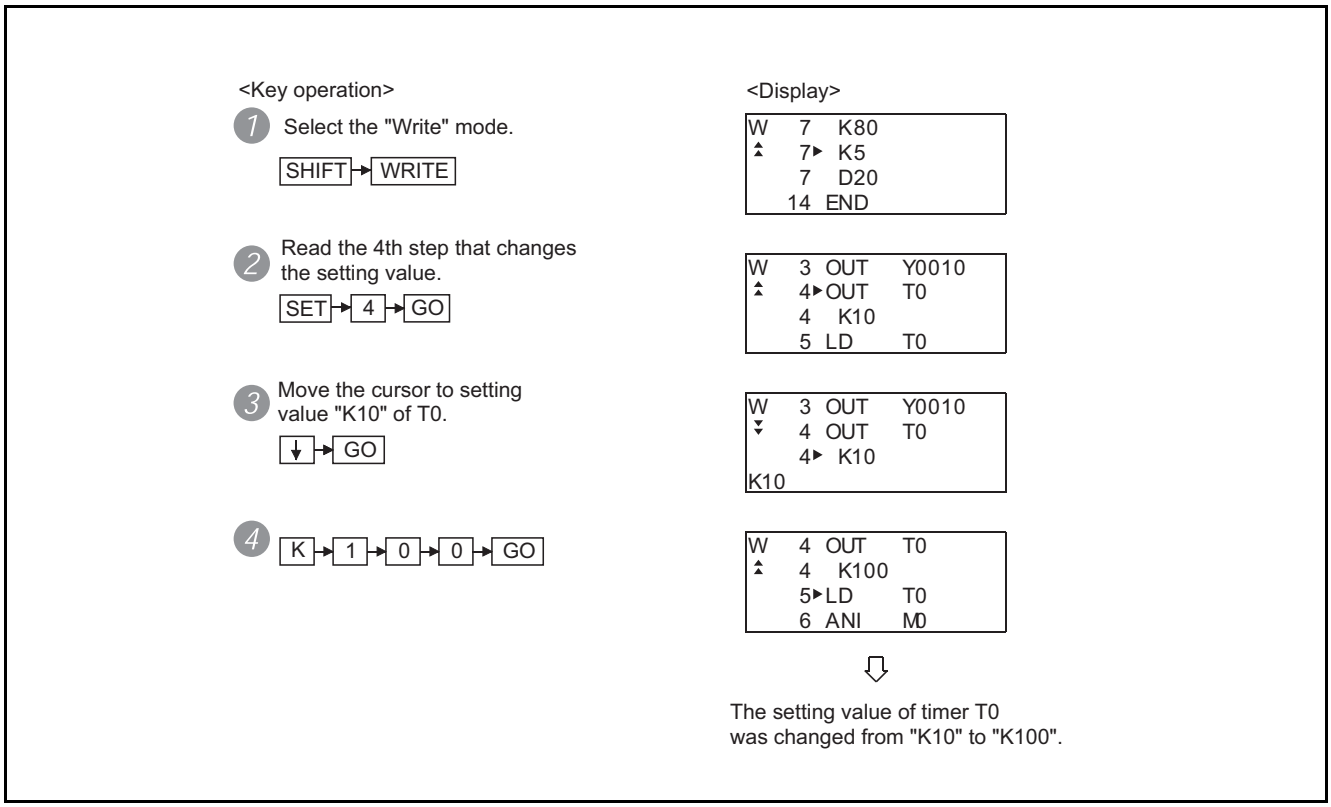


13.3.15 Changing (Overwriting) commands

The example shown below is used to describe how to change sequence program commands.

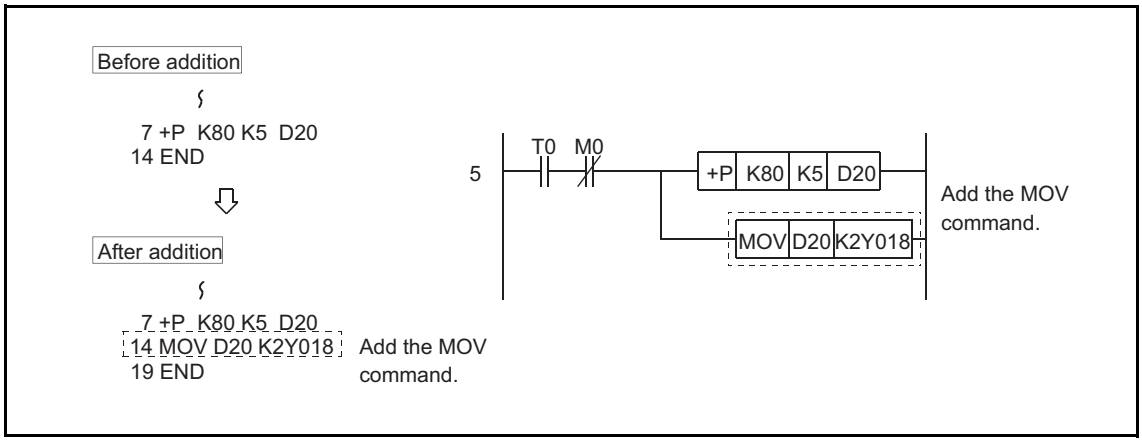


[Operation example]

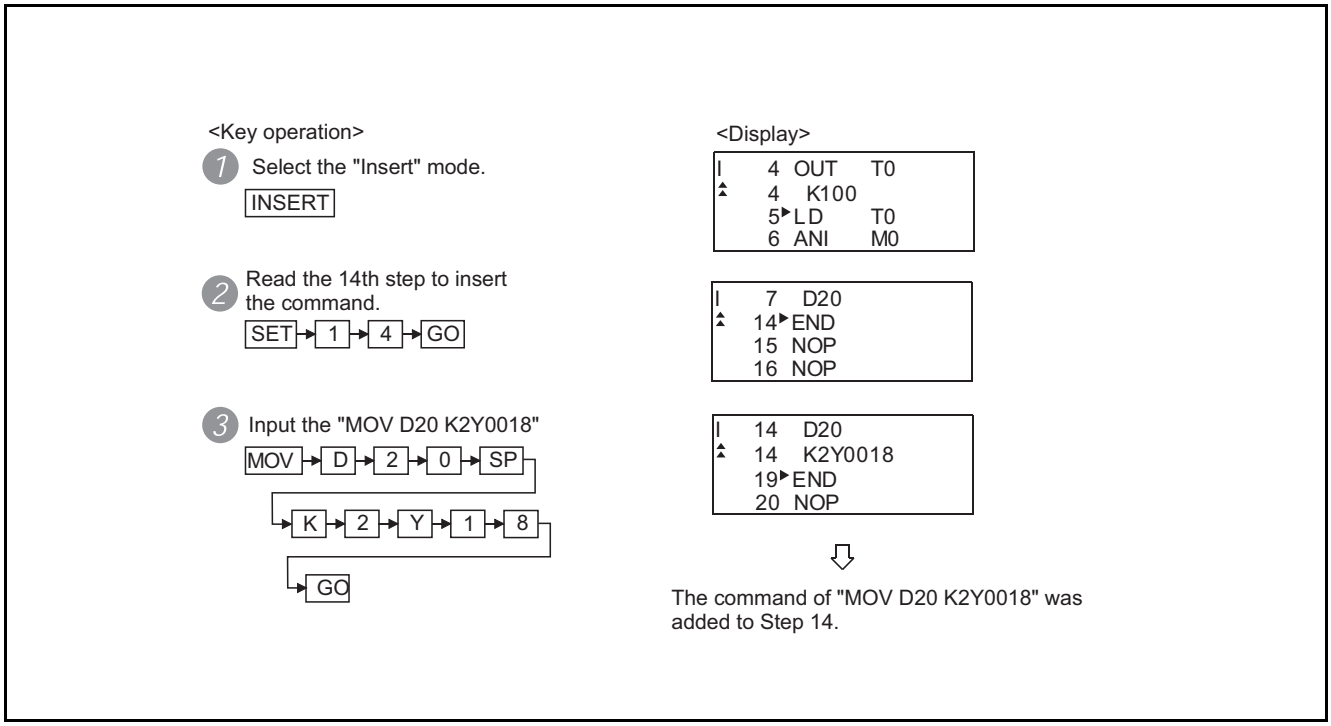


13.3.16 Adding (Inserting) commands

The example shown below is used to describe how to add sequence program commands.

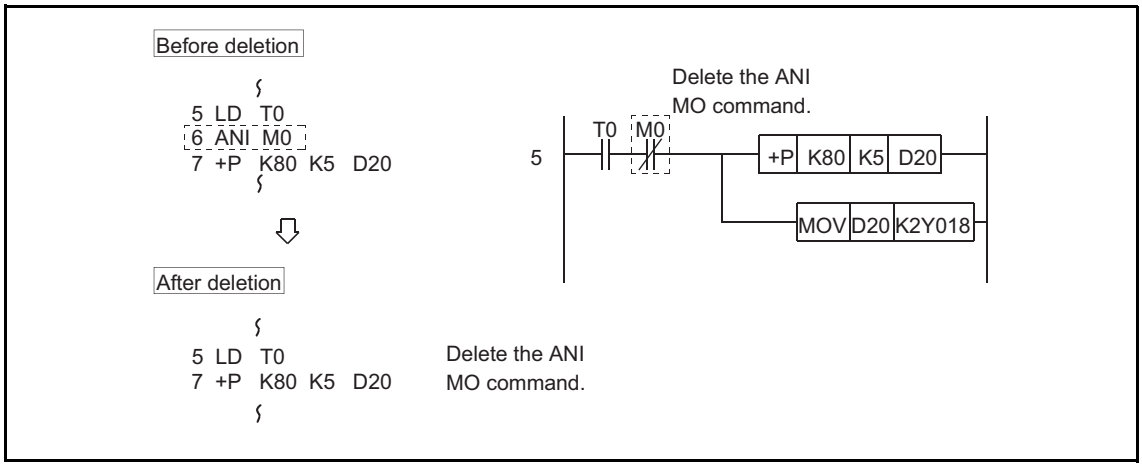


[Operation example]

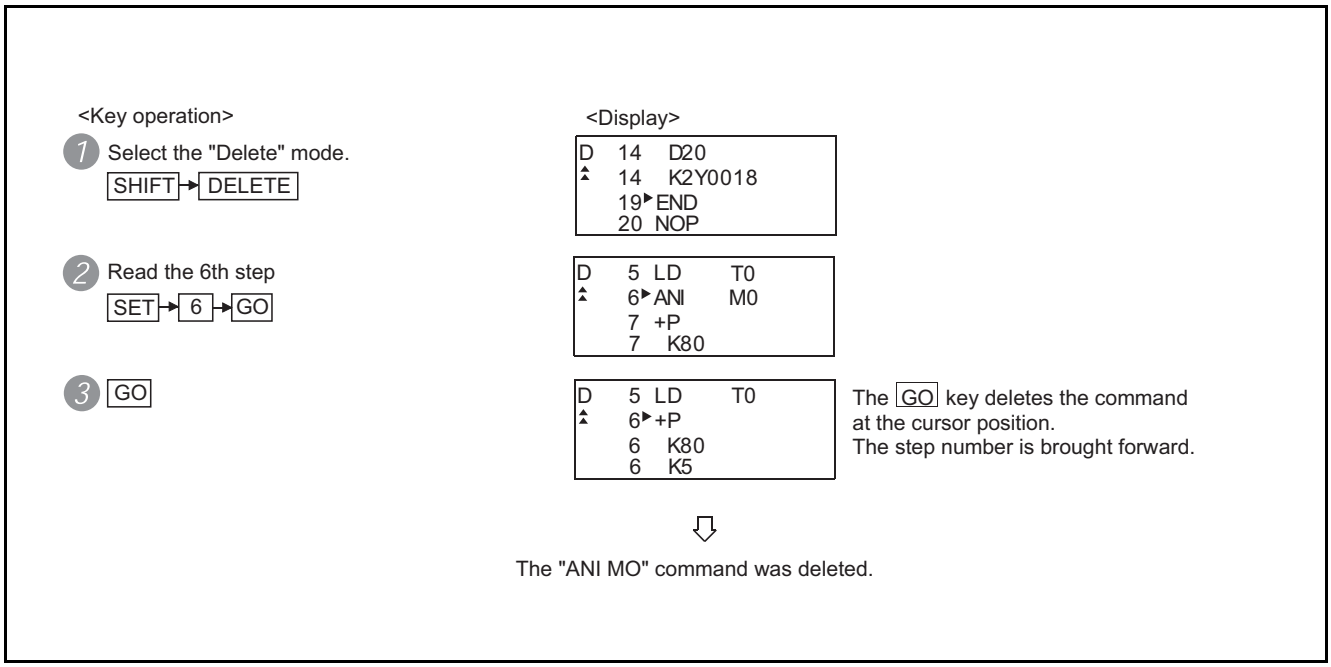


13.3.17 Deleting commands

The example shown below is used to describe how to delete sequence program commands.



[Operation example]



13.3.18 Using the help function

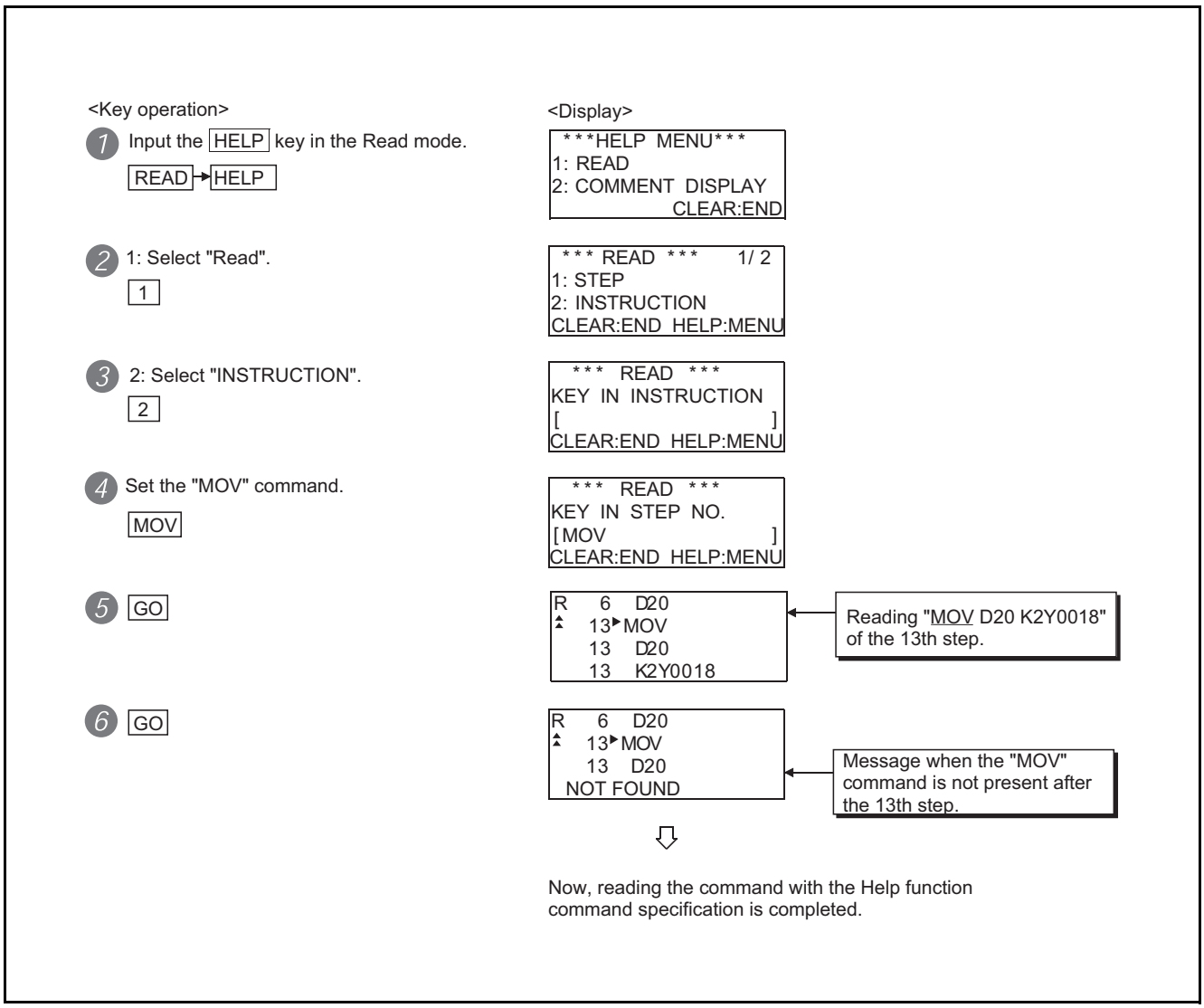
HELP is input to use the Help function.

Input of HELP displays the Help function menus in each mode. Select the corresponding item for execution.

(1) Reading the command in the sequence program

Example of reading the area using the "MOV" command in the sequence program.

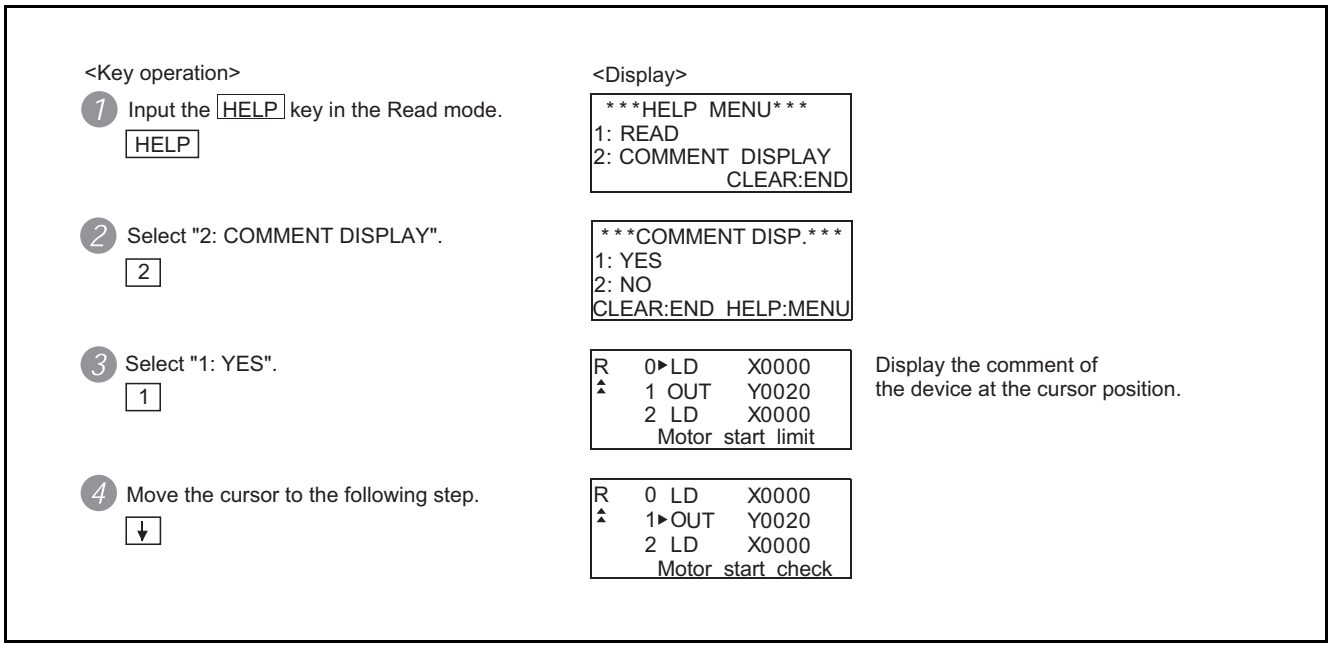
[Operation example]



(2) Displaying comment

The following example shows the procedure of displaying the comment in the Read mode.

[Operation example]

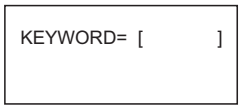


13.3.19 PLC memory all clear

When input of a keyword is requested, all parameters and sequence programs can be cleared together with the keyword registered in the ACPU using the operation below.

[Operation example]

1 Display the keyword input request.



2 Stop operation of ACPU

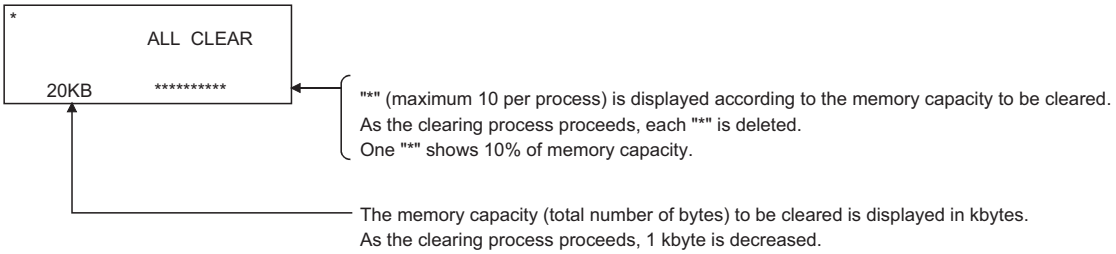
Set the target ACPU to the stop status.

3 Operation of PC memory all clear

Input "ALLCLR" and press the GO key.

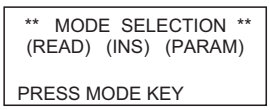
4 Display of PC memory all clear process

When the GOT starts clearing the process, the display in the left appears. "*" column and the total number of bytes change sequentially.



5 Completion of PC memory all clear process

When the GOT completes the clearing process, the screen in the left appears.
(status before the mode selection)



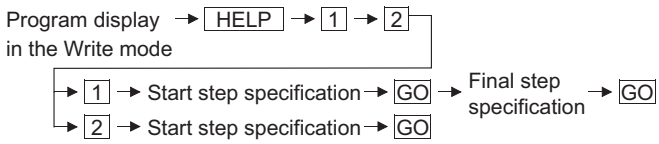
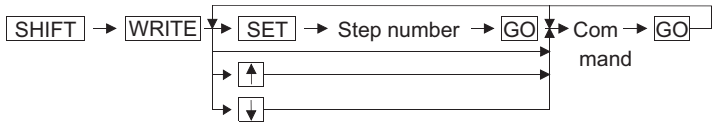
6 If necessary, start the next operation.

13.3.20 List of operation procedures

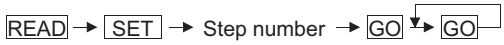
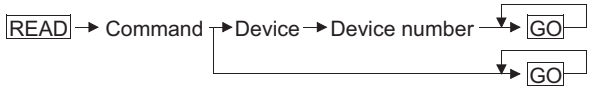
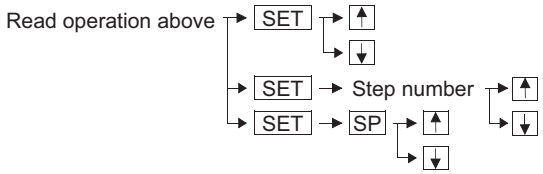
1 Common operation

Details		Purpose	Procedures (key input sequence)
Basic operation	Input of keyword at start-up	Input when the keyword is registered in the ACPU.	Keyword → GO
	Mode selection Switching of valid key	Select the mode.	Mode key (READ, INSERT, PARAM) SHIFT → Mode key (WRITE, DELETE, OTHERS)
	Switching of valid key	Switch the valid key (function indicated at the upper/lower part of the key) by a user.	SHIFT or SET
	Action for incorrect input	Perform the operation for incorrect key input.	CLEAR, Mode key or SHIFT → Mode key
	Operation of command help function	Perform operation with the Help function command specification.	Perform program display operation in the Write/Insert mode. → HELP → 1 → 1 → 1 → Input the capital letter of the command. → GO → 1 / 1 → Input the capital letter of the command. → Input the corresponding command number. → GO
	Display of Comment	Display the comment stored in the ACPU.	Perform program display operation in the Write/Read/Insert/Delete mode. → HELP → 2 → 1 / 2
Command input operation	Command code only	Input the command code only.	Command → GO
	Command code and 1 device	Input the command code and 1 device.	Command → SP → Device → Device No. → GO
	Other than above (command key input)	Input the command other than above with the command key.	Input the SP between the device, the source data and the destination.
	Other than above (device key input)	Input the command other than above without the command key.	Input the SP between the command, the device, the source data and the destination.

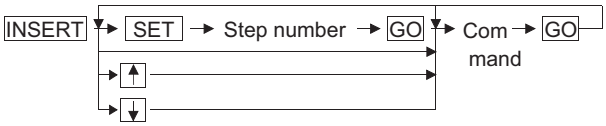
13.3.21 Operation in write mode (W)

Details	Purpose	Procedures (key input sequence)
Continuous write in NOP	Set the specified range in the program to NOP.	
Write/modify (change) of program	Write the new program/ modify (change)	

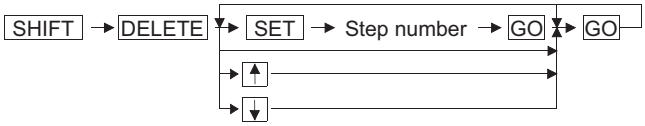
13.3.22 Operation in read mode (R)

Details	Purpose	Procedures (key input sequence)
Command reading with the specified step number	Read the command of the specified step number in the program.	
Read the command with the specified command.	Read the specified command in the program.	
Read the command with the specified device.	Read the command with the specified device used in the program.	
Automatic scroll	Display the program with automatic scroll.	

13.3.23 Operation in insert mode (I)

Details	Purpose	Procedures (key input sequence)
Insert a command in the program.	Insert a command in the program.	
Move the program.	Move the whole program.	Display the program in the Insert mode. → HELP → 1 → 2 → Specify the movement start step. → GO → Specify the movement end step. → GO → Specify the movement destination step. → GO
Copy the program.	Copy the program.	Display the program in the Insert mode. → HELP → 1 → 3 → Specify the copy start step. → GO → Specify the copy end step. → GO → Specify the copy destination step. → GO

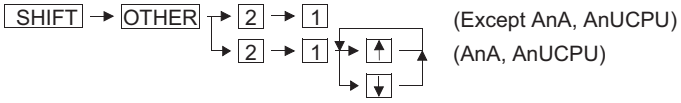
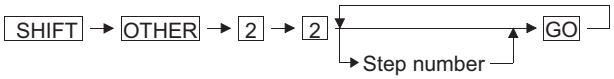
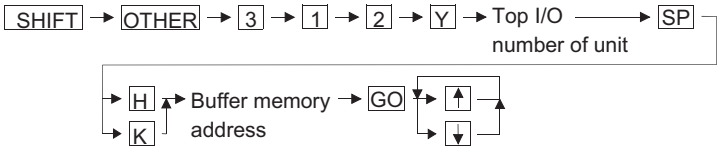
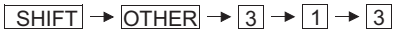
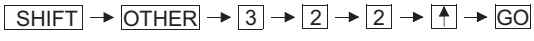
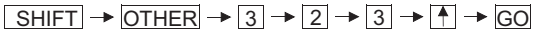
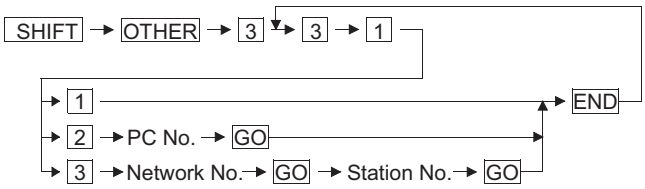
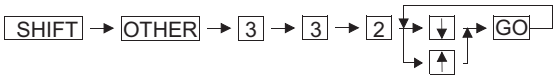
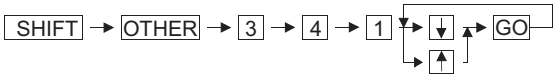
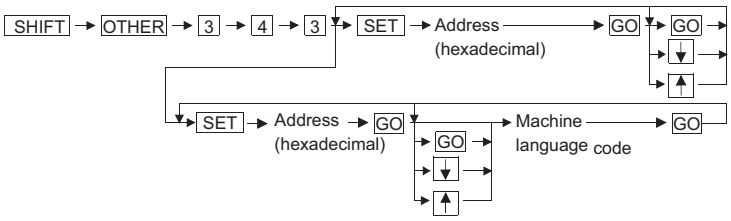
13.3.24 Operation in delete mode (D)

Details	Purpose	Procedures (key input sequence)
Delete a command from the program.	Delete a command from the program.	
Delete the specified range of the program.	Specify the range of the program for deletion.	Display the program in the Delete mode. → HELP → 1 → 1 → Specify the deletion start step. → GO → Specify the deletion end step. → GO
Delete the whole NOP.	Delete the whole NOP in the program.	Display the program in the Delete mode. → HELP → 1 → 2

13.3.25 Operation in parameter mode (P)

Details	Purpose	Procedures (key input sequence)
Clearing all parameters	Return the parameters to the initial setting status.	PARAM → 1 → ↑ → GO → END → ↑ → GO
Parameter setting (for A0J2HCPU)	Set the parameters for the A0J2HCPU.	PARAM → 2 → 1)
Setting of latch range	Select the latch range from "No latch", "1/2 latch" and "All latch".	1) → 1 → ↑/↓ → GO → 2)
Setting of step relay	Set the availability (S1536 to 2047) of the step relay.	1) → 2 → ↑/↓ → GO → 2)
Completion of setting	When the parameter setting is complete, write the PLC CPU.	2) → CLEAR → END → ↑ → GO (End of writing is displayed.) Setting for multiple items is also available.
Parameter setting (other than A0J2HCPU)	Set the parameters other than A0J2HCPU.	PARAM → 2 → 1)
Setting of memory capacity	Set the main sequence program capacity and the file register capacity.	1) → 1 → Capacity → GO → END → 2) (For main, input unit: 1K step) 1) → 1 → ↓ → Capacity → GO → END → 2) (For sub, input unit: 1K step) 1) → 1 → ↓ → points → GO → END → 2) (For file register, input unit: 1K point)
M, L, S setting (other than AnA, AnUCPU)	Set the top device number used in the latch relay/step relay.	1) → 2 → Top number of L → GO → Top number of S → GO → 2)
M, L, S setting (AnA, AnUCPU only)	Set the top device number used in the latch relay/step relay/internal relay.	1) → 2 → Top number of L → GO → Top number of S → GO → Top number of M → GO → 2)
Timer setting (other than AnACPU)	Set the top device used in the low speed/high speed/ retentive timers.	1) → 3 → Top number of timer → GO → 2)
Timer setting (AnACPU)	Set the number of timers used, the top device number that stores the setting value after T256, and the top device used in the low speed/ highspeed/retentive timers.	1) → 3 → No. of timers → GO → Top device for storage of setting values → GO → Top number of timer → GO → 2)
Counter setting (AnACPU only)	Set the number of counters used, and the top device number that stores the setting value after C255.	1) → 4 → No. of counters → GO → Top device for storage of setting values → GO → 2)
Setting of latch range WDT setting	Set the range of the device for latch setting.	1) → 5 → ↑/↓ → Top number of latch → GO / End number of latch → GO → ↑/↓ → GO / END → 2)
WDT setting (other than AnA, AnU)	Set the value of the watchdog timer in the unit of 10 ms.	1) → 6 → WDT value → GO → 2) (input unit: 10 ms)
Setting of I/O control system (only for A3HCPU and A3MCPU)	Set the I/O control system.	1) → 7 → ↑/↓ → GO → 2)
Completion of setting (write)	When parameter setting is complete, write the PLC CPU.	2) → CLEAR → END → ↑ → GO (End of writing is displayed.) Setting for multiple items is also available.

13.3.26 Operation in other mode (O)

Details	Purpose	Procedures (key input sequence)
Error check	Operation that checks the error step number/error code for the current error in the ACPU. (other than AnA and AnUCPU)	
Program check	Check the program(double coil, command code, END command).	
Buffer memory batch monitoring	Monitor the buffer memory details of the special function unit.	
Clock monitor	Monitor the clock data of the ACPU.	
Clearing of all PC memories	Clear all memories in the ACPU.	
Clearing of all programs	Clear all sequence program, microcomputer program and T/C setting value areas.	
Clearing of all device memories	Clear all details of the bit device and the word device in the ACPU.	
PLC No. setting	Set the PLC No. of other stations for access on the MELSECNET II (/B) or MELSECNET/10.	
Main/sub-program switching	Select the main/sub- program displayed on the list edit screen.	
Remote run/stop	Operate the run/stop status of the ACPU from the GOT.	
Read/write of machine language	Specify the memory address (absolute address) of the ACPU. Read the memory details and write the machine language to the memory.	

13.3.27 Error messages and corrective actions

1 Error messages and corrective actions in direct CPU connection

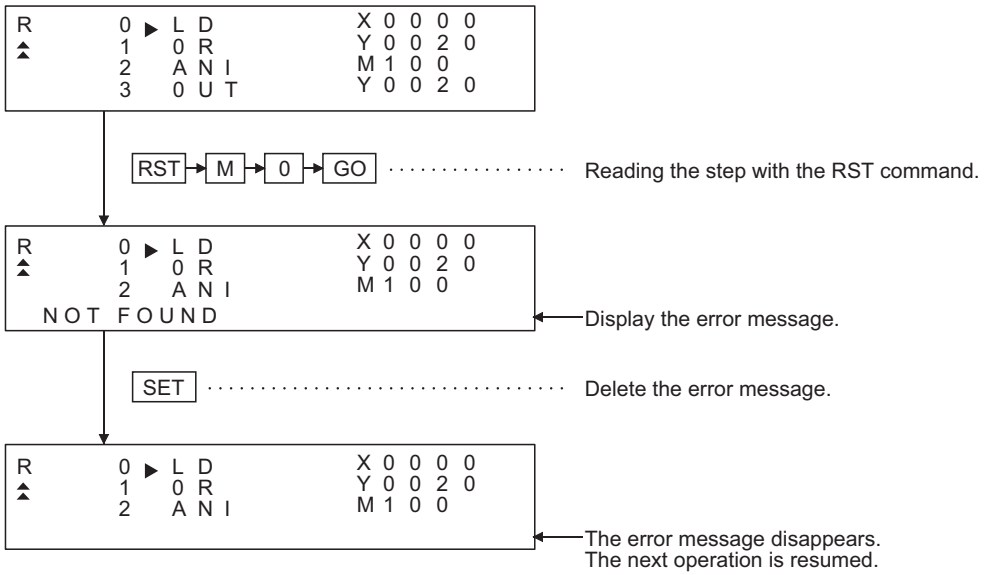
If an error is detected with the MELSEC-A list editor during operation of each mode, an error message appears at the 4th line of the display.

Error messages, display conditions and corrective actions are displayed below.

If an error message appears, take the following actions to resume operation.

1. Check the error message.
2. Remove the cause of the error.
3. Input the corresponding key.
   (The error message disappears. The screen returns to the status before error.)

(Example)



Error message	Description	Corrective action
Address error	In machine language writing, the address which was tried to be written was at the write-protect area.	Set the correct address.
No corresponding program	The specified command was not found.	Check the program.
Memory cassette check	In communication with the CPU for clearing the keyword or writing the parameter, the memory cassette is insufficient or not mounted.	(1) Mount the memory cassette properly. (2) Replace the memory cassette with a new one.
Step over error	The set step number is larger than the maximum step number.	Set the correct step number.
Setting error	Setting value is not correct.	Set the correct value.
Not selectable	The function which cannot be executed was selected.	Select other function.
Operation error	The set device symbol is incorrect.	Perform the correct key operation.
Device error	The specified command was not found. The device number exceeds the range.	(1) Set the correct device symbol. (2) Set the number within the range of CPU device.
Identical coil	The identical coil is found in the sequence program.	Proceed to the next operation if it does not affect the control. Correct the program if it affects the control.
Command error	When the program is read, it cannot be converted to the proper command.	When the CPU has detected the error, stop running of the operation. After resetting the CPU, check the command around the error. Write the correct command. (For check of the error step, refer to 13.3.26.)
Command setting error	The command set at the time of read, write or insert is not correct.	Set the correct command.
Memory protect	When writing in the Write or the Insert/Delete mode, the memory protect switch in the memory cassette is ON.	Turn OFF the memory protect switch in the memory cassette.
Capacity over	Memory assignment set in the parameter exceeded the capacity of the memory cassette.	Set the parameter within the capacity of the memory cassette.
No END command	There is no END command.	Write the END command at the last step of the program.
PLC communication error	When the list editor function is started, proper communication with the PLC is not made.	Restart the list editor function. If communication is not made properly, check the following: (1) GOT main unit (2) Connection of the cable (3) CPU main unit (if any error has occurred)
PLC COMM ERROR PLEASE CLOSE	When the editor for MELSEC-A is started, proper communication with the CPU is not made.	Close and restart the editor for MELSEC-A. If communication is not made properly, check the following: (1) GOT main unit (2) Connection of the cable (3) CPU main unit
PC write error	Correct writing was not made in the Write or Insert mode.	(1) Check the setting of RAM/ROM. (2) Check the RAM mounting. (3) Check the setting of the memory protect switch in the CPU.
PLC is running	Writing, insertion or deletion was attempted during running of the CPU.	Stop the CPU.
PC No. error	The PLC number is set to other station.	Change the PLC number and set the station for access to the host.

(Continued to next page)

Error message	Description	Corrective action
**KS over	The value exceeding the range of the program capacity by **K steps was attempted to be set.	Reduce the program capacity by **K steps for setting.
**KP over	The value exceeding the range of the file register capacity by **K points was attempted to be set.	The value exceeding the range of the file register capacity by **K points was attempted to be set.
Not available for QnACPU. Set the PLC No.	The CPU at the list edit destination is QnACPU.	Set the PLC number and change the station for access.
The keyword is not input. Set the PLC No.	The "GO" key was pressed without input of the keyword on the keyword input screen.	Set the PLC number and change the station for list edit. Or select the same station and input the keyword.
The PLC parameter was changed. Read the ladder monitor again.	The PLC parameter exceeding the file (R) register capacity was set.	Restart the GOT system if required.
The PLC parameter was changed. Restart the GOT system.	The capacity of the file (R) register was set.	Read the ladder monitor on the PLC again if required.
The PLC program was edited. Read the ladder monitor again.	Edit the PLC program.	Read the ladder monitor on the PLC again if required.

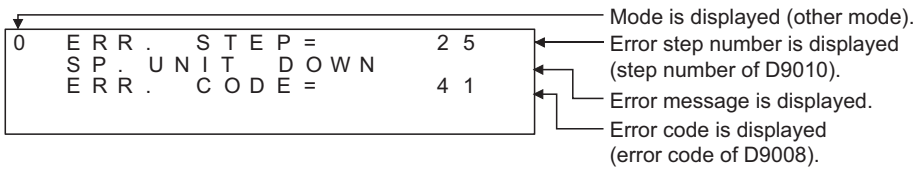
2 PLC CPU error messages and troubleshooting

When the error step read in other mode is performed, the error message and the error step of the current error in the ACPU are displayed.
Error messages, error details and corrective actions are displayed below.
If an error message appears, take the following actions to resume operation.

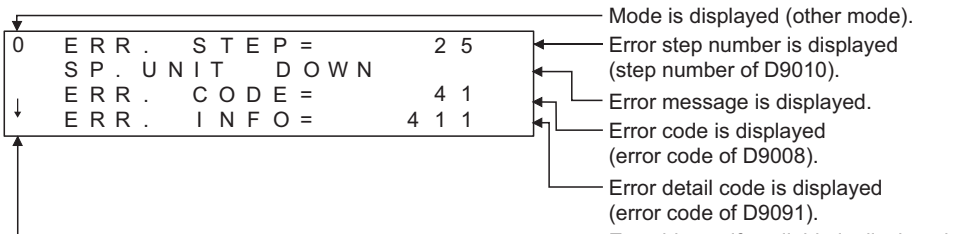
1. Check the error message.
2. If the error code is not displayed, check the error code of special register D9008 with the system monitor function (Refer to Section 13.2).
3. Remove the cause of the error.

(Display)

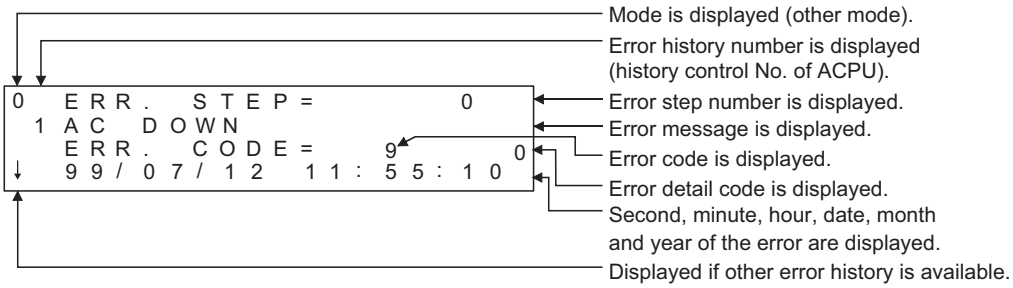
(1) Example of display for an error in the CPU other than AnA and AnU



(2) Example of display for an error in the AnA or AnUCPU



(3) Example of next display for the display of "↓" above (error history is available)



Point

When an error message of the PLC CPU appears, refer to the ACPU programming manual (Common Command) and the user's manual for each CPU for corrective actions.

3 Error using list editor function on the link system

When the MELSEC-A list editor is used on the link system, the "PLC communication error (**)" may appear.

In this case, check the error details and the corrective actions.

Error No.	Error message	Corrective action
2	Time-out error: No response to the request	Check the cable wiring.
4	Process cancel: New process request was given to the list editor function while the CPU is processing.	Perform correct key operations on the GOT.
5	Sum check error: A sum check error from the link communication has occurred.	There may be noise interference. Check the system again.
16	PLC No. error: There is no station corresponding to the PLC number.	Check the PLC number setting. Set the correct number.
19	This error may occur when the ACPU is reset during monitoring.	Perform the monitor setting again.
24	Remote error: Although remote stop/pause is performed from the computer link unit, remote run/stop is additionally performed.	Perform the remote run/stop/pause from either unit.
25	Refer to the next page for error messages and actions. After confirming the device value explained at the next page with the system monitor function, take action.	
32	Link error: While the slave station is monitoring the master station, the master station is reset.	Perform the monitor setting again.
34	EEPROM failure: The EEPROM, cannot be written due to EEPROM failure.	Replace the EEPROM with a new one.

[Detailed description of error No. "25"]

If error number "25" appears, the following causes are possible. Check the details and the corrective actions.

(1) When connected to the master station

Device number	Description	Details	
M9210	Link card error (for master station)	OFF : Normal ON : Error	The control depends on whether there is an error at the hardware of the link card. The link card in the CPU link unit is judged at the CPU. Replace the link unit.
M9224	Link status	OFF : Online ON : Offline, station-to-station test, or self-loopback test	The control depends on whether the master station itself is online or offline, or in the station-to-station mode or the self-loopback mode. Check the mode switch.
M9227	Loop test status	OFF : Not executed ON : Forward loop test and reverse loop test are being executed.	The control depends on whether the master station itself is executing the forward loop test or the reverse loop test.

(2) When connected to the local station

Device number	Description	Details	
M9211	Link card error (for local station)	OFF : Normal ON : Error	The control depends on whether there is an error at the hardware of the link card. The link card in the CPU link unit is judged at the CPU. Replace the link unit.
M9240	Link status	OFF : Online ON : Offline, station-to-station test, or self-loopback test	The control depends on whether the local station itself is online or offline, or in the station-to-station mode or the self-loopback mode. Check the mode switch.
M9257	Loop test status	OFF : Not executed ON : Forward loop test and reverse loop test are being executed.	The control depends on whether the local station itself is executing the forward loop test or the reverse loop test.

If an error code not listed in the previous page is displayed, contact the nearest of our system service centers, agents, and branch offices.

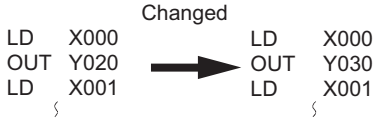
13.4 MELSEC-FX List Editor

The MELSEC-FX list editor enables you to change the sequence program in the FX PLC.
This function is intended to troubleshoot the PLC system and to streamline maintenance operations.
By installing list editor for MELSEC-FX, an Option OS, from drawing software into the GOT, you can edit the FX PLC program.
The features of the MELSEC-FX list editor are described below.

1 Parameters and sequence programs are easy to maintain

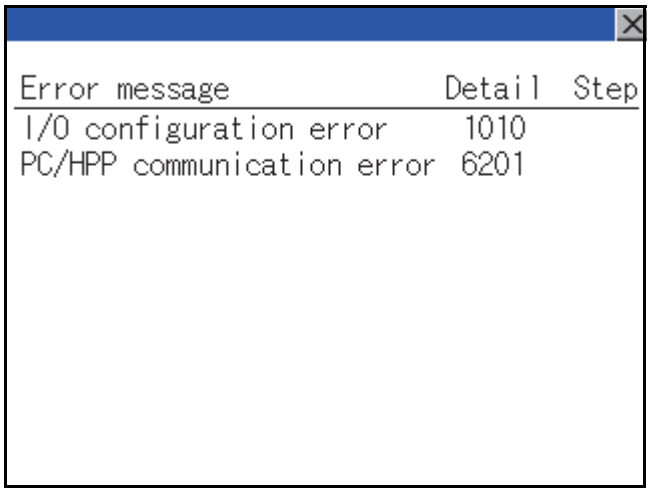
You can check or partly correct, change or add FX PLC CPU parameters and sequence programs simply by operating keys.
You can easily edit sequence programs without preparing any peripheral unit other than the GOT.

(Example of changing sequence program commands)



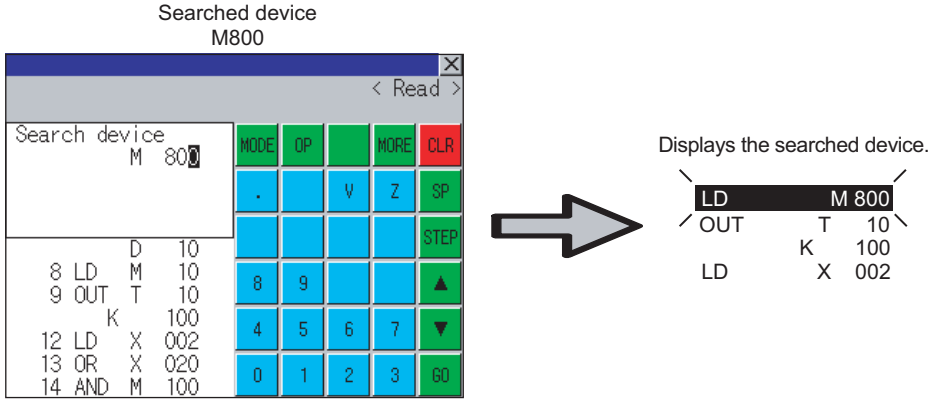
2 Errors that occur during list editing can be checked easily

Error messages, error codes, and number of steps for errors that occur in the FX PLC can be checked.
Details can be checked immediately even for errors that occur during list editing.



3 Commands and devices can be searched and displayed

Commands and devices used in sequence programs can be searched.
The correction position can be searched for cases such as when you want to correct a specific device.



13.4.1 Specifications

1 System configuration

This section describes the system configuration of the MELSEC-FX list editor.
For further information about communication units and cables for each connection form, see the following.

☞ GOT1000 Series Connection Manual

2 Controllers that can be edited with the MELSEC-FX list editor

Target controller
FXCPU

3 Connection forms

(○: Available, ×: Unavailable)

Function name		Connection form between GOT and PLC				
Name	Description	Bus connection	Direct CPU connection	Computer link connection	CC-Link connection G4*1	GOT multidrop connection
MELSEC-FX list editor	Sequence program writing, parameter setting, PLC diagnostics and keyword registration, etc.	×	○	×	×	×

*1 Indicates CC-Link connection (via G4).

4 Required option OS and option function board

The option OS and option function board shown below are required.

Option OS	OS memory space (user area)	Option function board
MELSEC-FX list editor	0KB	GT11-50FNB

(1) Option OS

Install the option OS in the above table to the GOT.
Refer to the following manual for the procedure for installing the option OS.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

(2) OS memory space

The available memory space shown in the table above is required in the user area to install the option OS to the GOT.
Refer to the following manual for the procedure for checking the available memory space of the user area and information about the data using other user areas.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

(3) Option function board

For how to mount an option function board on the GOT, refer to the following manual.

☞ Section 6.3 Option Function Board

5 Functions list and monitor conditions

The following shows the memory that can be monitored by the MELSEC-FX list editor and the FX PLC status conditions.

(○ : Can be monitored △ : Can be monitored under certain conditions × : Cannot be monitored)

Function		Memory that can be monitored *2				FX PLC status	Reference
		Built-in memory	RAM memory cassette	EEPROM memory cassette, flash memory cassette	EPROM memory cassette		
Reading sequence programs	Displaying sequence programs	○	○	○	○	RUN/ STOP	Subsection 13.4.7
	Searching commands/ devices						Subsection 13.4.8
Writing sequence programs	Writing commands	○	○	△ *1	×	For Stop only	Subsection 13.4.9
	Changing operands/set values						Subsection 13.4.10
Inserting commands							Subsection 13.4.9
Deleting commands							Subsection 13.4.11
Sequence program all clear							Subsection 13.4.12
PLC diagnostics		○	○	○	○	RUN/ STOP	Subsection 13.4.13
Parameter setting	Display						Subsection 13.4.14
	Set	○	○	△ *1	×	For Stop only	
Keyword		○	○	○	○	RUN/ STOP	Subsection 13.4.15

*1 The operation is available only when the protect switch is OFF.

*2 The available memory differs depending on the FX PLC being used.
For further information, see the following manual.

☞ The hardware manual of the FX PLC being used

13.4.2 Access range

The access range is the same as the access range when the GOT is connected to a controller.
Refer to the following manual for details of the access range.

☞ GT Designer2 Version □ Screen Design Manual
GOT1000 Series Connection Manual (Mitsubishi Products) for GT Works3

13.4.3 Precautions

(1) Using other peripheral equipment for sequence program/parameter change

When using the MELSEC-FX list editor, do not change programs or parameters in the PLC CPU from other peripheral equipment.

If you make a change, temporarily exit the MELSEC-FX list editor after the change is made, then start the MELSEC-FX list editor again.

If you carelessly change the program on one PLC from multiple units of peripheral equipment (including GOT), the contents of the program in the PLC CPU and the peripheral equipment may not be the same, resulting in an unintended operation of the PLC CPU.

(2) Sequence program change

Stop the FX PLC before changing (writing, inserting, deleting) a sequence program or changing parameters.

Operation is not possible with the FX PLC running.

(3) If you press the GO key but the system does not proceed to the next operation (for example, a search)

Check the input contents (applied instruction number, device value, etc.).

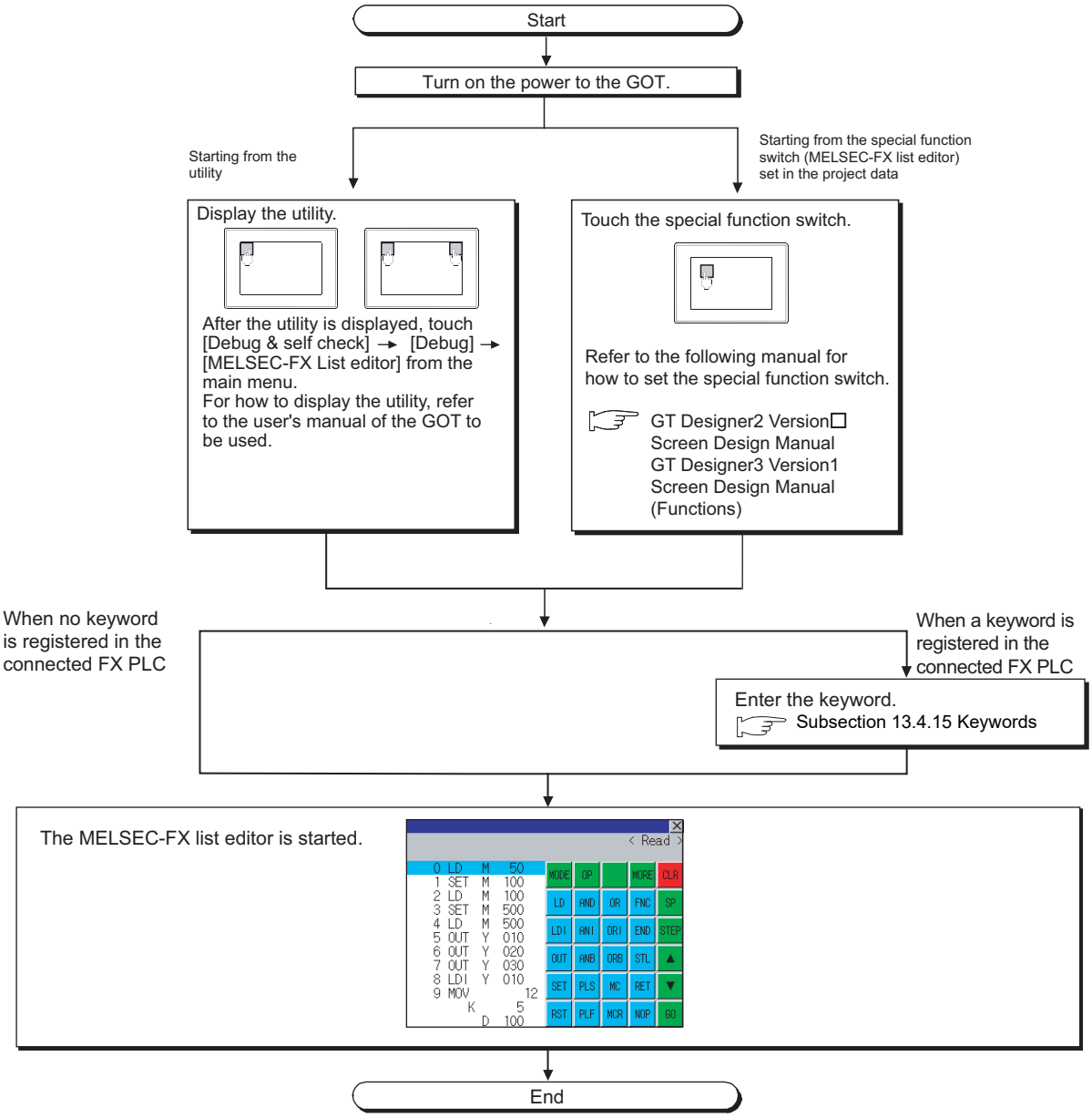
(4) When using list monitor

Only devices to be used for basic instructions can be monitored.

The status of devices (word, bit) to be used for application instructions cannot be monitored.

1 Outline until the start

This subsection describes an outline until the MELSEC-FX list editor screen is displayed after List editor for MELSEC-FX (Option OS) is installed in the GOT.



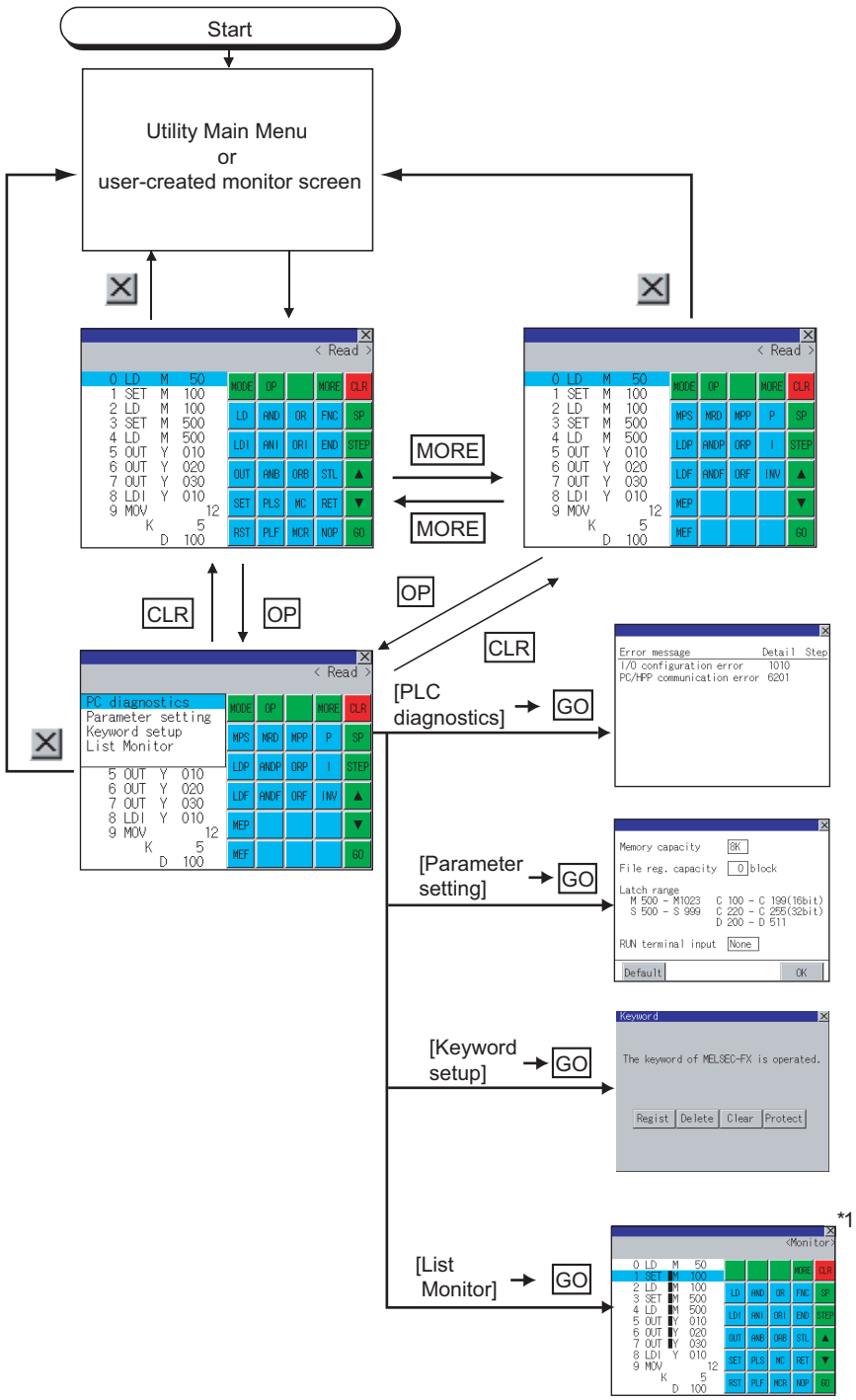
Point

(1) How to display the utility
For how to display the utility, refer to the following.
Section 8.3 Utility Display

(2) If the project data has not been downloaded
The MELSEC-FX list editor can be started from the utility even if the project data has not been downloaded to the GOT.

2 Change screens

This section describes how to change the screen.



*1 With setting special function switches (FX list monitor), the list monitor can be started on the monitor screen. When the list monitor is started on the monitor screen, the list editor cannot be used. For how to set special function switches, refer to the following manual.

GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Functions)

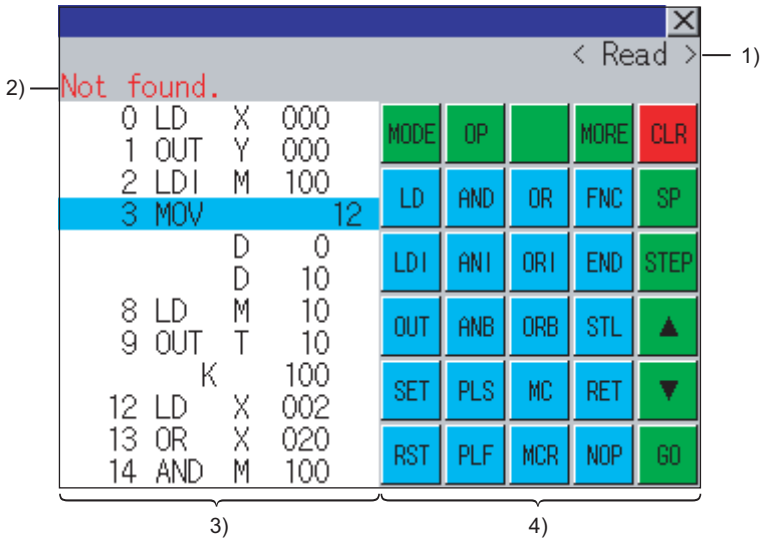
13.4.5 Operation procedures

This section describes the contents of the MELSEC-FX list editor and the key functions displayed on the screen.

1 Key arrangement and a list of key functions

The arrangement and functions of the keys displayed on the MELSEC-FX List Editor window are described below.

2 Displayed contents



No.	Item	Description
1)	Mode	Displays a mode for MELSEC-FX list editor. (☞ Subsection 13.4.6 Selection and operation of modes) [Monitor] is displayed when the list monitor is executed.(☞ Subsection 13.4.16 List monitor)
2)	Error message	Displays the contents of errors that occur with the MELSEC-FX list editor. (☞ Subsection 13.4.18 Error messages and corrective actions)
3)	List display area	Displays the sequence program in list format (12 digits). The position (line) that can be edited is displayed with a bar.
4)	Key area	Displays the keys that can be used with the MELSEC-FX list editor.

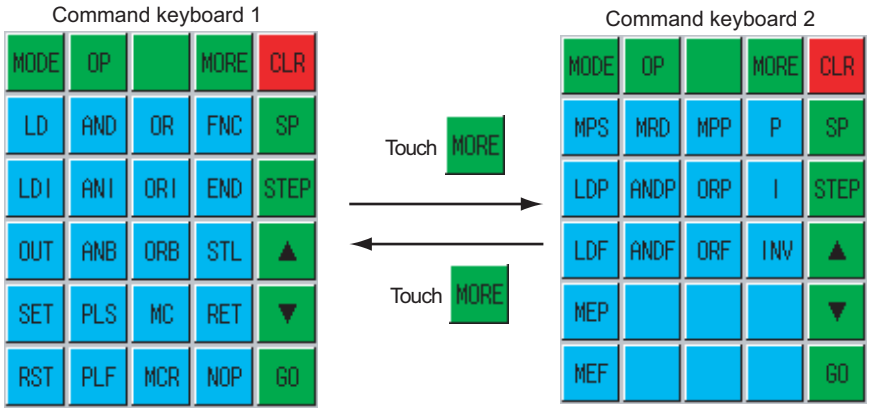
3 Key functions

The table below shows the functions of the keys that are used for the operation on the MELSEC-FX list editor screen.

Key	Function
MODE	Selects a mode for MELSEC-FX list editor. (☞ Subsection 13.4.6 Selection and operation of modes)
OP	Displays the PLC diagnostics, parameter setting, and keyword selection menu.
MORE	Switches between command keyboard 1 and command keyboard 2. (☞ 4 "Keyboard switching" in this section)
CLR	When inputting commands :Cancels the key input when only part of the command has been input. (☞ Subsection 13.4.17 Action for an incorrect key input) When option menu is displayed: Closes the option menu. Commands cannot be deleted with this key. (☞ Subsection 13.4.11 Deleting commands)
SP	Space key. This key is used when setting timers and counters, writing applied commands, etc.
STEP	Displays the list from a specified step No. when the step No. is input.
▲ ▼	Moves the list display area bar up and down and switches the line being edited.
GO	Determines the key operation.
LD to INV , 0 to 9 , etc.	Inputs commands, device names, etc. The key contents depend on the input contents. The commands that can be used differ depending on the target FX PLC. Refer to the manual for the FX PLC to be used.
⊠	Exits the MELSEC-FX list editor.

4 Keyboard switching

Touching the MORE button switches the command keyboard 1 and command keyboard 2.
When you touch the button for a keyboard function, the optimum keyboard for input for that function is displayed automatically.

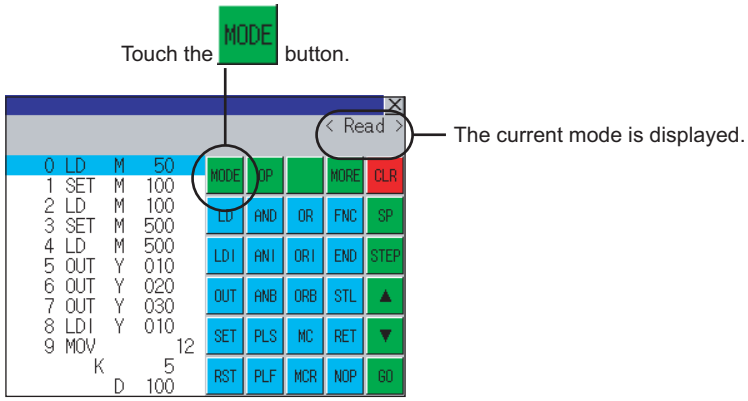


13.4.6 Selection and operation of modes

The MELSEC-FX list editor has four modes: READ, WRITE, INSERT, and DELETE.
Select an appropriate mode for the intended operation.
For more information on the mode to select, refer to the function operations from subsection 13.4.7 onward.

1 How to change modes

Touch the MODE button.
Each time you touch this button, the mode changes.



2 In the case the mode cannot be changed

In the following cases, only READ mode is allowed.
If you try to change to other than READ mode, an error message is displayed.
To change to other than READ mode, take the action below.

Error Message	Description	Corrective action
PLC is running	The FX PLC is in the RUN status.	Stop the FX PLC.
Can not write.	The protect switch of the EEPROM memory cassette is on.	Switch off the protect switch of the EEPROM memory cassette.
	The EPROM memory cassette is enabled.	Set a memory other than EPROM as the memory to write to.

13.4.7 Sequence program display

Sequence programs are read from the FX PLC to the GOT and displayed.
There are two displaying methods: specifying the step number, and scrolling one screen at a time.

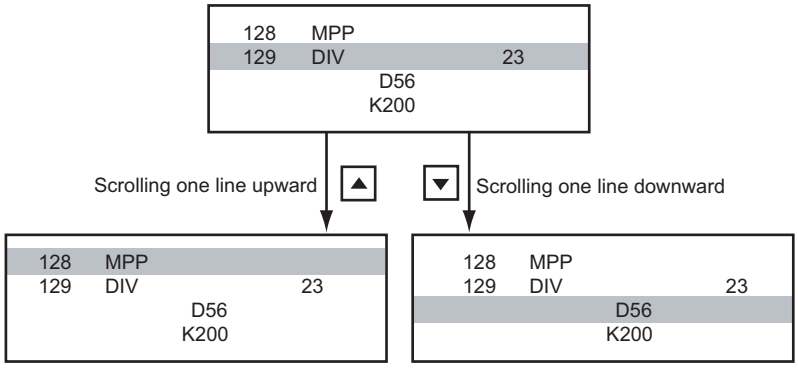
1 Display using cursor keys

(1) Operation

Scroll with ▲ or ▼.

(2) Example

Scroll one line upward or downward.



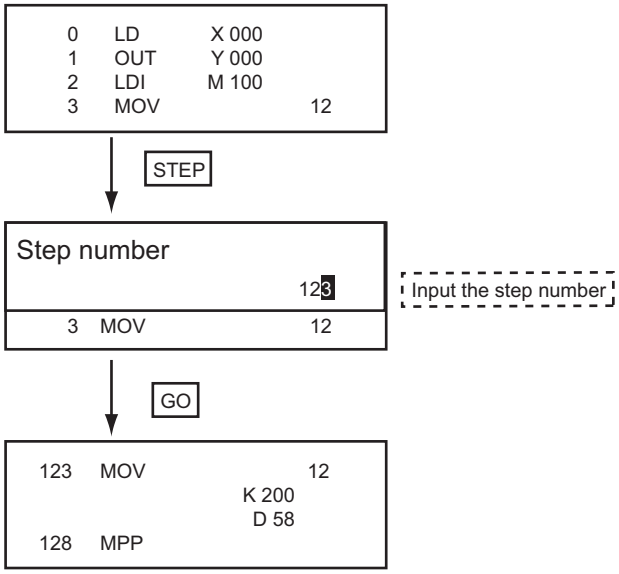
2 Display specifying the step number

(1) Operation

STEP → Input the step number. → GO

(2) Example

Displaying step number 123.



Hint!

When the specified step number is the operand of an applied instruction

If the specified step number is a timer (T) or counter (C) set value or the operand of an applied instruction, that command section is displayed at the head.

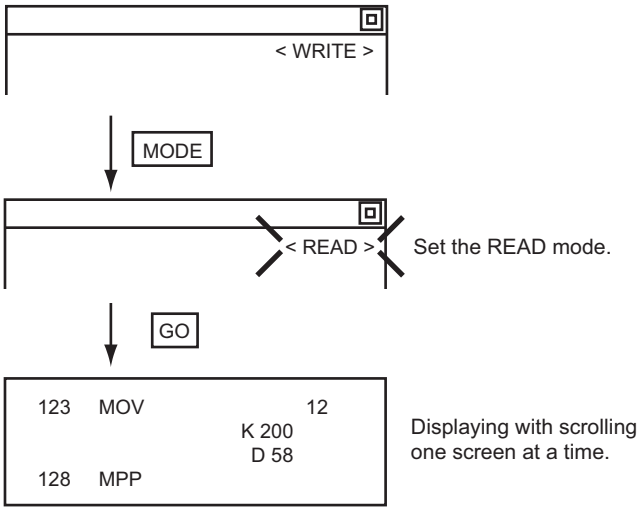
3 Display scrolling one screen at a time

(1) Operation

MODE → GO
(Read mode)

(2) Example

Displaying with scrolling one screen at a time.



13.4.8 Searching commands and devices

Displays a command or device by searching it in sequence program from Step 0.

1 Command search

(1) Operation

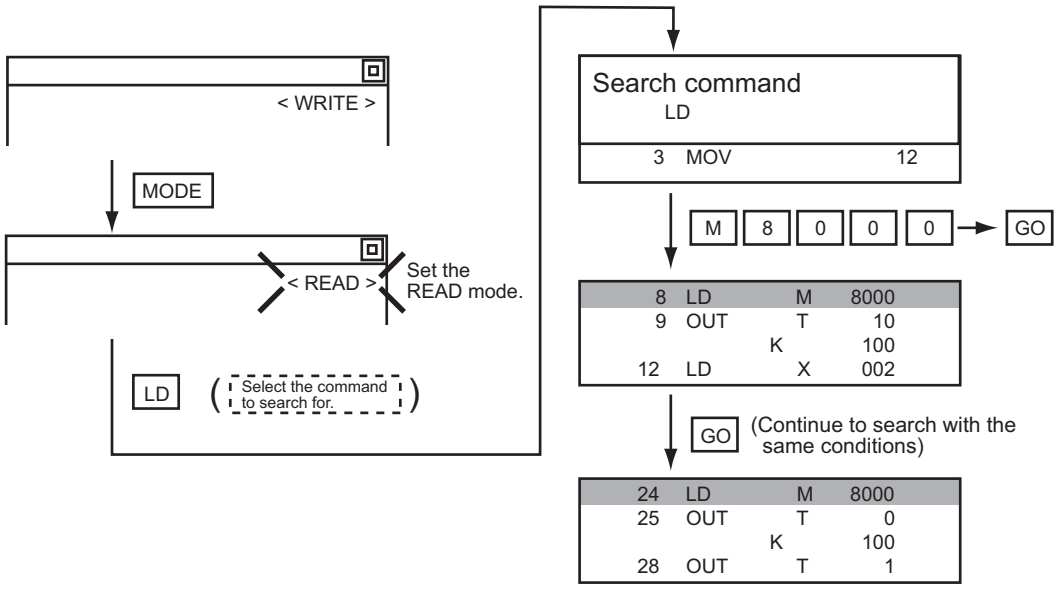
*1 If the command you want to search for is not on the keyboard, touch the MORE key to switch to the other keyboard.
When searching for an applied instruction, touch the FNC key and input the applied instruction number.
When searching for a label, touch P or I and input the pointer number.
(☞ Subsection 13.4.9 2 Writing applied instructions)

*2 Input only when searching for commands requiring a device name and device number.

*3 After the search results are displayed, you can continue searching with the same conditions by touching the GO key.
Touching any key other than the GO key ends the search.

(2) Example

Searching for LD M8000.



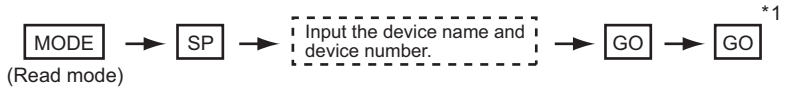
Point

Pointer (P, I) searches

For pointer searches, only labels are searched.
Pointers specified as operands in applied instructions are not searched.

2 Device search

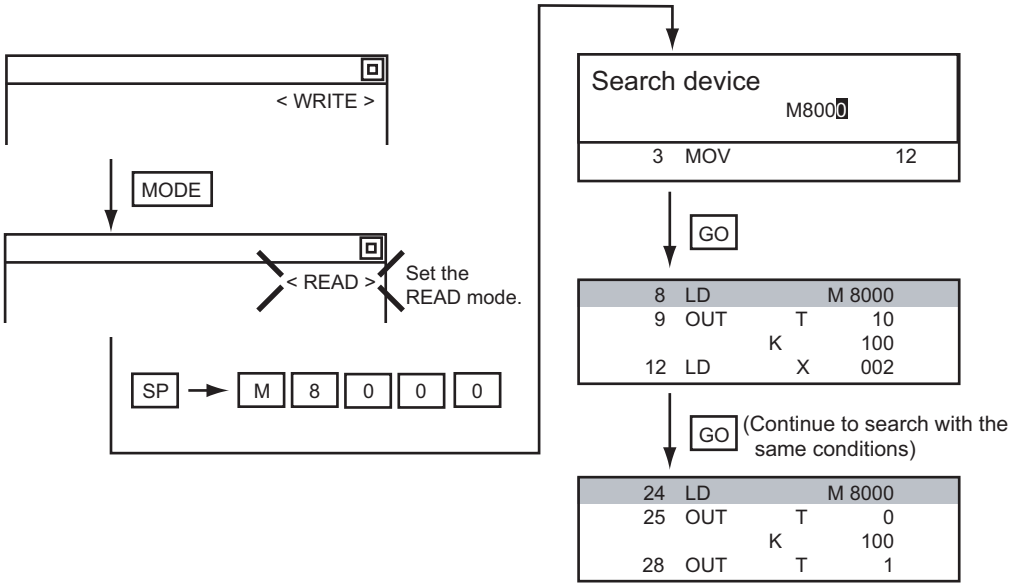
(1) Operation



*1 After the search results are displayed, you can continue searching with the same conditions by touching the GO key.
Touching any key other than the GO key ends the search.

(2) Example

Searching for LD M8000.



Point

Devices that cannot be searched

The following devices cannot be searched.

- Pointers, interrupt pointers
- Constant K, constant H, constant E
- Bit devices with specifying numbers only
- Special function unit/block buffer memory
- Devices specified with the operand of an applied instruction

Pointers and interrupt pointers can be searched for with command searches.

(☞ 1 "Command search" in this section)

13.4.9 Writing commands

Writes a sequence program to the FX PLC. (Overwrite/Insert)

1 Writing basic commands

(1) Operations

(a) Inputting command only (Ex.: ANB, ORB command etc.)

Stop the FX PLC → MODE → Input the command → GO

For overwriting: (WRITE mode)
For insertion: (INSERT mode)

(b) Inputting command and device (LD, AND commands etc.)

Stop the FX PLC → MODE → Input the command

For overwriting: (WRITE mode)
For insertion: (INSERT mode)

→ Input the device name and device number → GO

(c) Inputting command, No. 1 device, No. 2 device (MC, OUT (T, C) commands, etc.)

Stop the FX PLC → MODE → Input the command → Input the device name and device number

For overwriting: (WRITE mode)
For insertion: (INSERT mode)

→ SP → Input the device name and device number → GO

Point

Moving the cursor to the position to write the command

When starting to write a command, place the cursor on the command line (the line on which the step number is displayed).
You cannot write a command with the cursor on an operand or set value line.

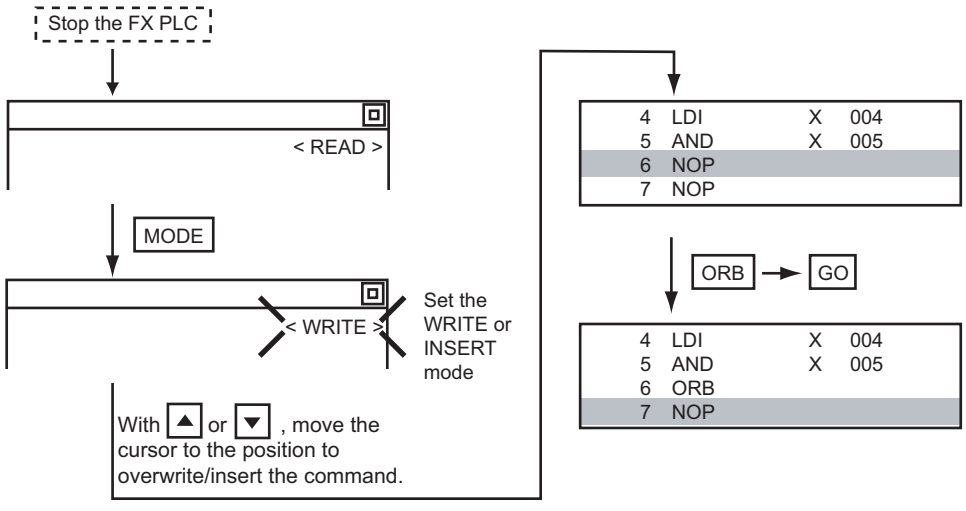
```
2  LDI    M   100
3  MOV            12
          D     0
          D    10
```

Command line (Place the cursor on this line.)

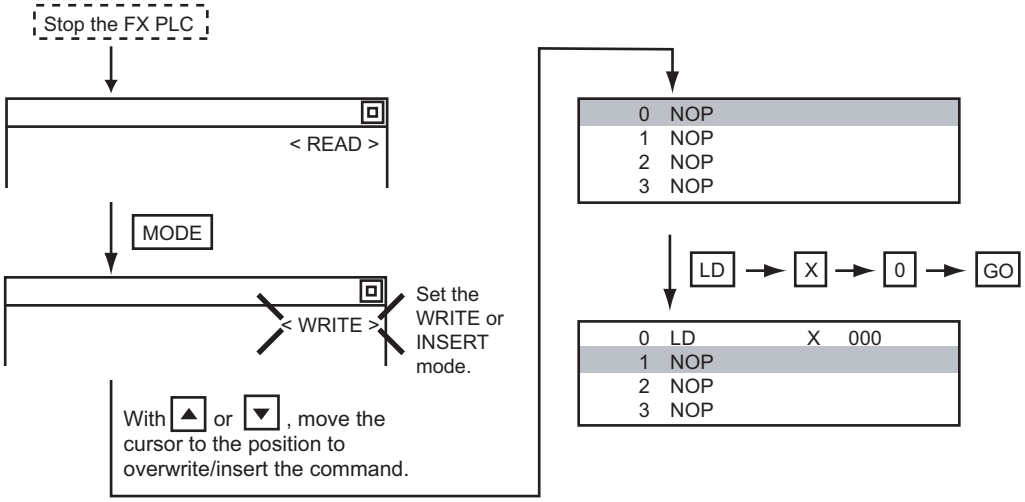
Operand, set value line (Cannot operate on this line.)

(2) Example

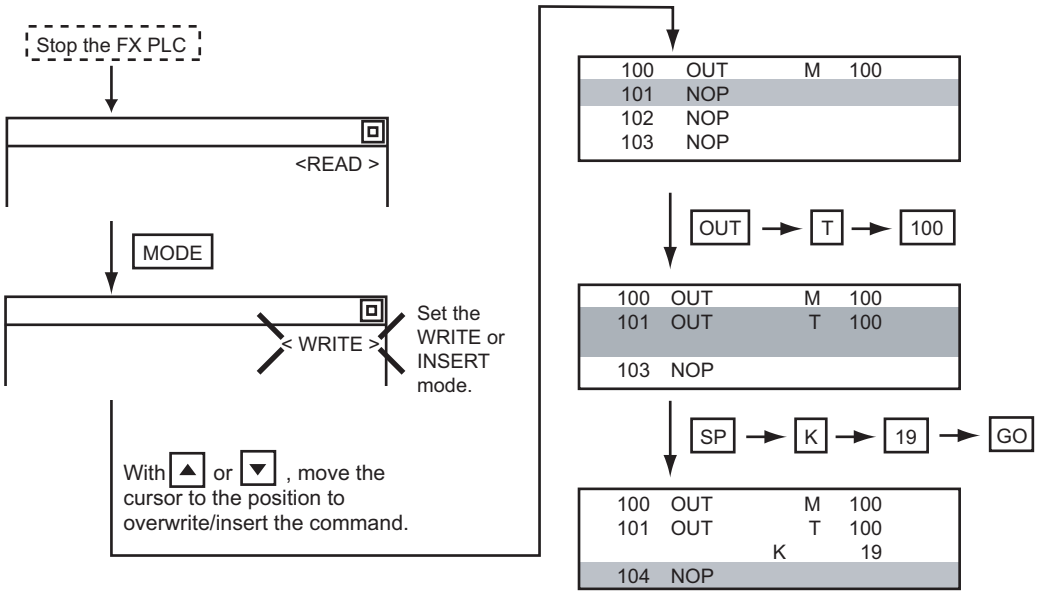
(a) Writing ORB command



(b) Inputting LD X000

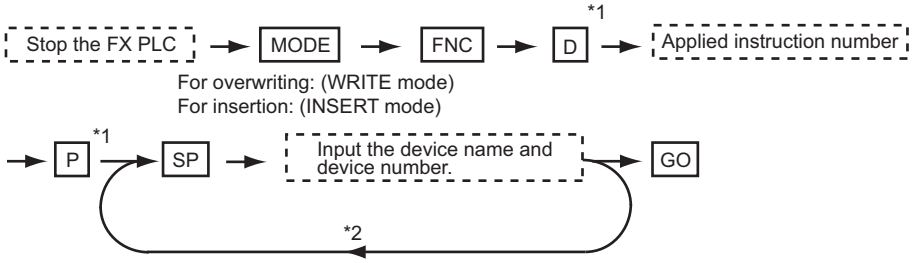


(c) Inputting OUT T100 K19



2 Writing applied instructions

(1) Operations

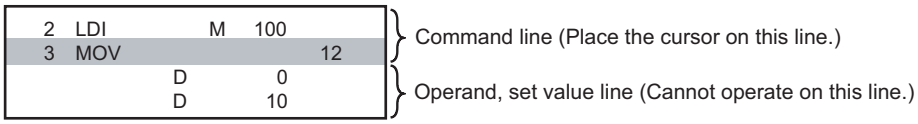


*1 D (double word command) and P (pulse execution format command) can also be input after the applied instruction number is input.
Inputting in the order P → D is also possible.

*2 When a command specifies multiple devices for operations, input the SP key followed by the device name and device number.

Point

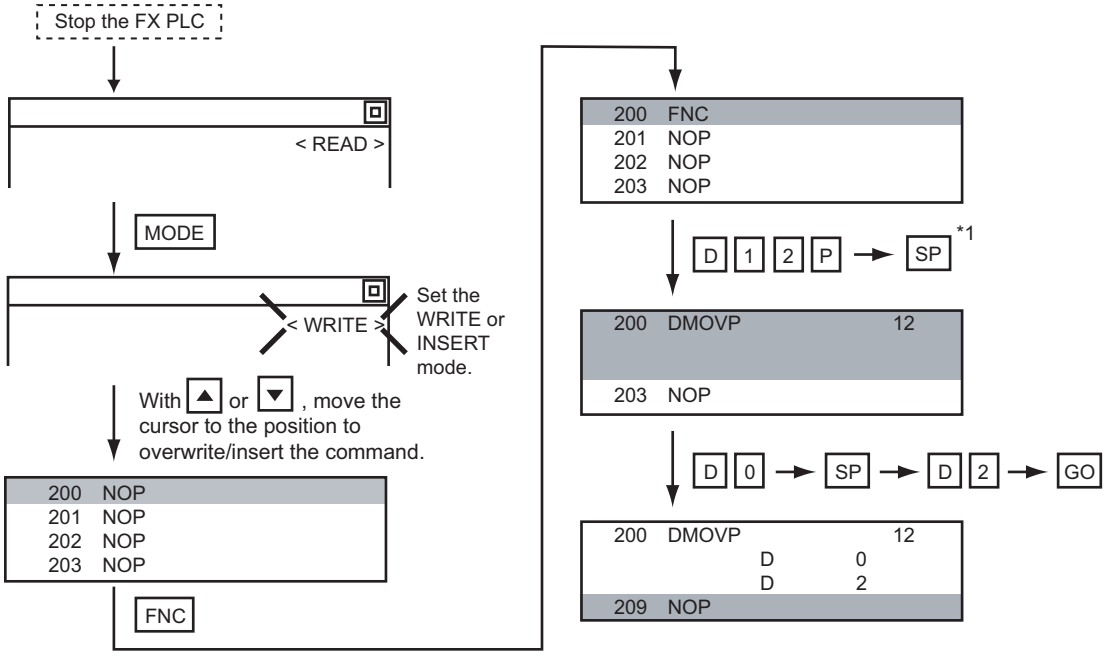
(1) Moving the cursor to the position to write the command
When starting to write a command, place the cursor on the command line (the line on which the step number is displayed).
You cannot write a command with the cursor on any other line.



(2) Commands using a text string constant for a command operand (such as ASC command)
With the MELSEC-FX list editor, text string constants cannot be written as operands. (such as ASC commands)
Use GX Developer for writing such commands.

(2) Example

Input "DMOVP D0 D2".

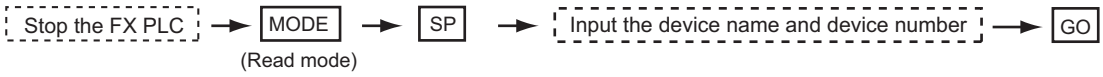


*1 The MOV command is FNC12.

13.4.10 Changing operands, set values

Changes the operand section of an applied instruction and OUT (T, C) command set value.

1 Operation



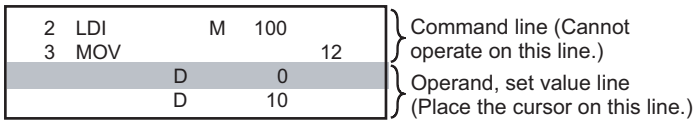
*1 For decimal numbers, input K, then the number.
For hexadecimal numbers, input H, then the number.

Point

Moving the cursor to the line on which the operand or set value is to be changed

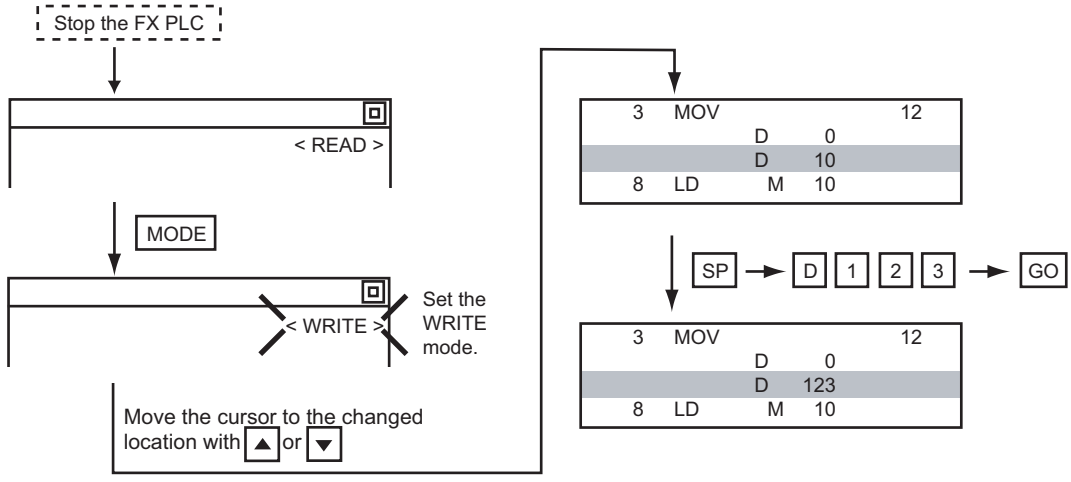
When starting to change an operand or a set value, place the cursor on the line of the operand or set value to be changed (the line on which the step number is not displayed).

If you place the cursor on the command line, the input operation is not possible.



2 Example

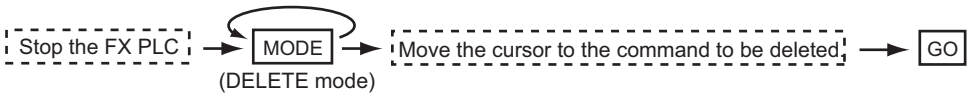
Changing "MOV D0 D10" to "MOV D0 D123".



13.4.11 Deleting commands

Deletes one command at a time from a sequence program.

1 Operation

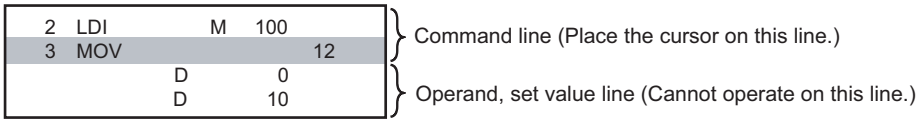


Point

When moving the cursor to the position where the command is to be deleted.

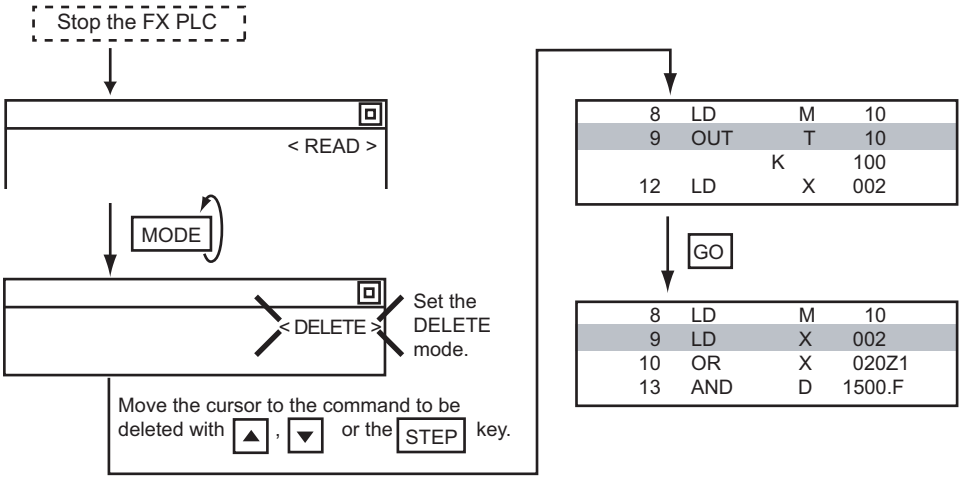
Place the cursor on the command line (the line on which the step number is displayed).

You cannot delete the command if the cursor is placed on the line of an operand or set value.



2 Example

Deleting "OUT T10 K100".



13.4.12 Sequence program all clear

Clears all the sequence programs.

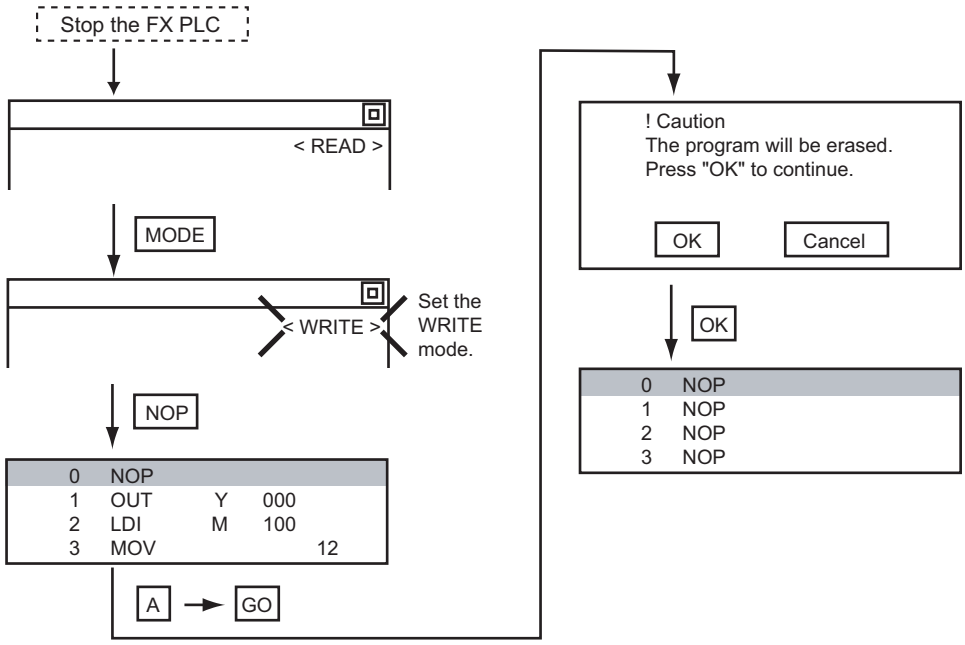
1 Operation

Stop the FX PLC → MODE → NOP → A → GO

(WRITE mode)

2 Example

Clears all the sequence programs.



Point

Items cleared when All Clear for a sequence program is performed

When All Clear is executed, the parameters before program execution are initialized and Latch Clear is executed.

The memory space becomes the default value, the comment area a 0 block, the file register space a 0 block, and keywords unregistered.

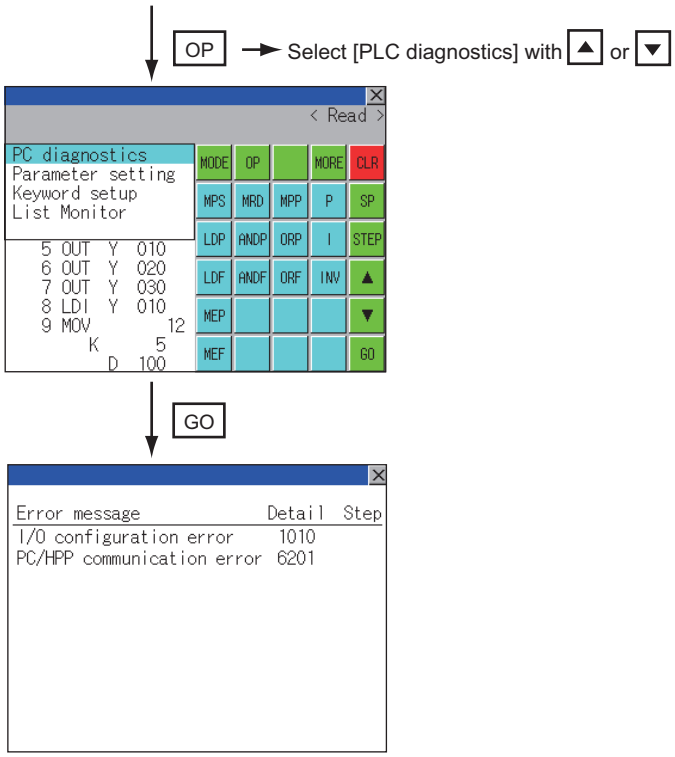
After All Clear, set the above parameters etc. again.

13.4.13 PLC diagnostics

Displays the FX PLC error message, error code, and step at which the error occurred.

1 Operation

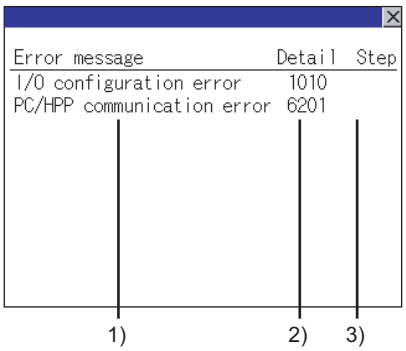
OP → [PLC diagnostics] → GO



2 PLC diagnostics screen

The following describes the contents displayed on the PLC diagnostics screen and the function of on-screen key.

(1) Displayed contents



No.	Item	Display contents
1)	Error message	Displays the error message. (I/O configuration error/PLC hardware error/PC/HPP communication error/Serial communication error/Parameter error/Syntax error/Circuit error/Operation error)
2)	Detail	Displays the error code.
3)	Step	Displays the step number in the sequence program at which the error occurred. (This is displayed only for a syntax error, circuit error, or operation error.)

Remark Error details

For details on an FX PLC error, refer to the manual below.

☞ Programming manual for the FX CPU used

(2) Key functions

The table below shows the functions of the keys that are used for the operation on the PLC diagnostics screen.

Key	Function
	Exits the PLC diagnostics.

13.4.14 Parameter setting

Sets FX PLC parameters.

1 Parameters that can be changed and change targets

(1) Parameters that can be changed

The parameters that can be changed with the MELSEC-FX list editor and the target FX PLCs are as follows.

(○: Can be set/changed ×: Cannot be set/changed)

Item	Target CPU								
	FX0(S) /FX0N	FX1	FX2(C)	FX1S	FX1N(C)	FX2N(C)	FX3S	FX3G(C)	FX3U(C)
Memory space setting	×	○	○	×	×	○	○	○	○
File register space setting	○*1	×	○	○	○	○	○	○	○
Latch range setting	×*2	○	○	×*2	×*2	○	×	×	○
RUN terminal setting	×	×	×	○	○	○	○	○	○
Initialization of parameters	○	○	○	○	○	○	○	○	○

*1 When connecting an FX0(S), set "0".
Setting other than "0" causes a parameter error.

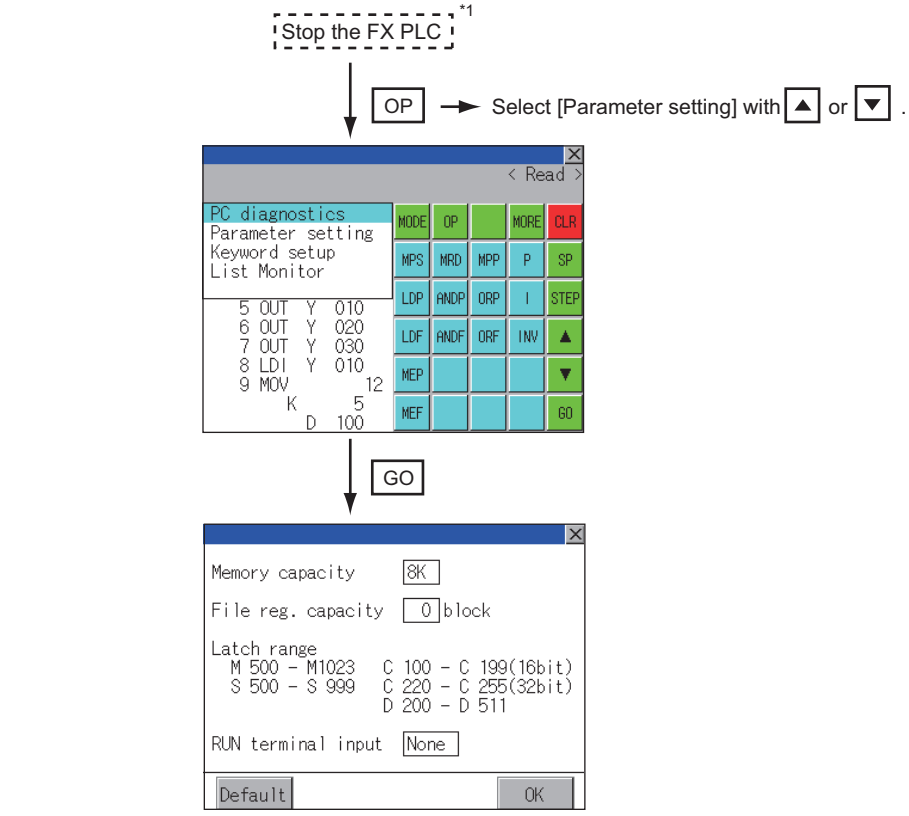
*2 When the parameters are initialized, the display on the MELSEC-FX list editor is different from the FX PLC default values, but do not change the latch range. Changing the latch range causes an error.

(2) Change targets

When a memory cassette is mounted, the parameters in the memory cassette are targeted for changes.

2 Operation

Stop the FX PLC *1 → OP → [Parameter setting] → GO

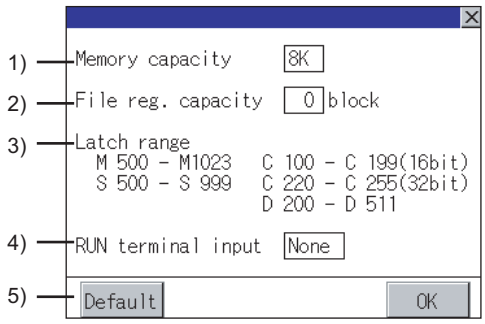


*1 When checking parameters (not changing), it is not necessary to stop the PLC.

3 Parameter setting screen

The following describes the contents displayed on the PLC diagnostics screen and the function of on-screen keys.

(1) Displayed contents



No.	Item	Display contents
1)	Memory capacity	Sets the memory space (number of steps). If you touch the *K section, you can change the memory space.
2)	File reg. capacity	Sets the memory space (number of blocks) allocated to the file register. Touch the ☐ section and input the number of blocks.
3)	Latch range	Sets the latch range (power failure hold area). Touch the number display section and input the value.
4)	RUN terminal input	Sets whether or not to use one of the FX PLC input terminals for RUN input. Touch the ☐ section and set the device to be set for the RUN terminal.
5)	Default	Initializes the parameters

Point

Memory space for kana comments after changing memory space, file register space

If the memory space is set smaller than the total of the file register space and kana comment space, the kana comment space is automatically reduced.
(With the MELSEC-FX list editor, the kana comment space is not displayed.)
Note that if any setting as described below is made, the kana comment space is reduced.
(Settings that reduce kana comment space and the kana comment space after setting change)
Settings resulting in Nm < Nf × 500 + Nk × 500 + 500

$$\text{Kana comment space (steps) after setting change} = \frac{\text{Nm - Nf x 500 - 500}}{500}$$

Nm: Memory space after change (steps)
Nf: File register space after change (blocks)
Nk: Comment space before change (blocks)

Remark

Settable range and default value

The settable range and the default value depend on the FX PLC type.
Refer to the following manual for details of the settable range and the default value.
☞ Programming manual for the FX PLC used

(2) Key functions

The table below shows the functions of the keys that are used for the operation on the parameter setting screen.

Key	Function
Default	Initializes the parameters
OK	Completes the changed setting contents.
	Ends parameter setting.

13.4.15 Keywords

Registers, deletes, releases protection for, and sets protection for the FX PLC keywords.

1 Function usability of the MELSEC-FX list editor for keyword protection levels

The functions that can be used with the MELSEC-FX list editor depend on the keyword protection level.

(○: Available, ×: Unavailable)

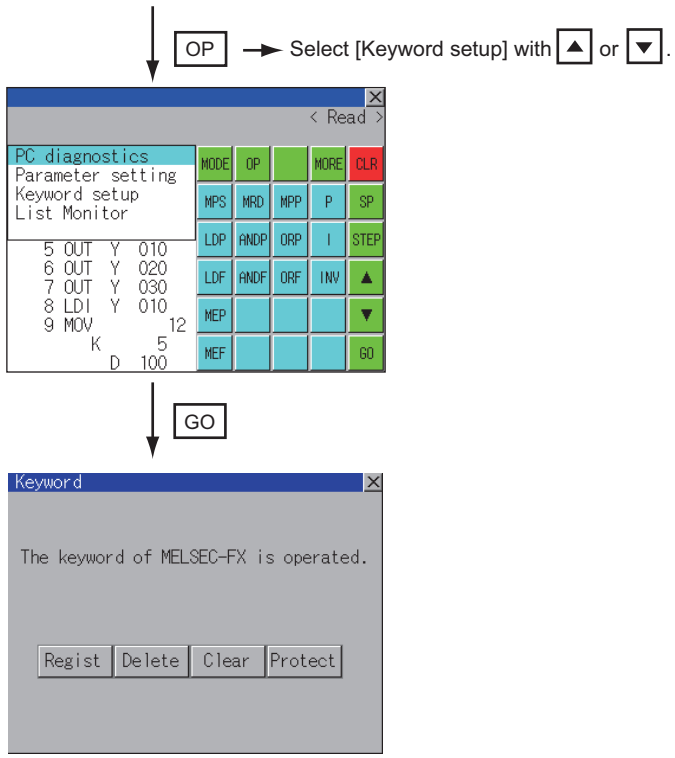
Function		Keyword protection level				Reference
		All operation protect (All on-line operation protect) *2	Read/Incorrect write protection (Read/write protect) *2	Incorrect write protect (Write protect) *2	Keyword not registered/keyword protection canceled	
Reading sequence programs	Displaying sequence programs	×	×	○	○	Subsection 13.4.7
	Searching commands/ devices	×	×	○	○	Subsection 13.4.8
Writing sequence programs	Writing commands	×	×	×	○	Subsection 13.4.9
	Changing operands/set values	×	×	×	○	Subsection 13.4.10
Inserting commands		×	×	×	○	Subsection 13.4.9
Deleting commands		×	×	×	○	Subsection 13.4.11
Sequence program all clear		×	×	×	○	Subsection 13.4.12
PLC diagnostics		○*1	○	○	○	Subsection 13.4.13
Parameter setting		×	×	×	○	Subsection 13.4.14

*1 When the 2nd keyword is set to an FX PLC that supports 2nd keyword, it becomes "×" (cannot be used).

*2 The names within the parentheses ( ) are for when a keyword + 2nd keyword is set.

2 Operation

OP → [Keyword setup] → GO



3 Keyword screen and protection level

When [Keyword setup] is selected with the MELSEC-FX list editor, the keyword screen is displayed.
Refer to the following manual for the procedure for keyword operations.

☞ Subsection 9.2.3 Display contents of communication detail settings

Remark

Keywords

Refer to the following manual for details of keyword.

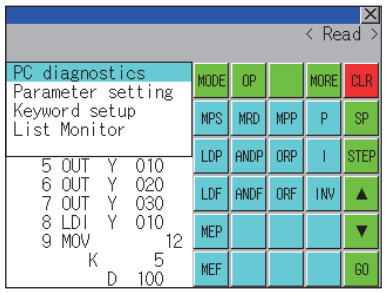
☞ Programming manual for the FX PLC used

The status of contacts and coils in a sequence program is displayed.

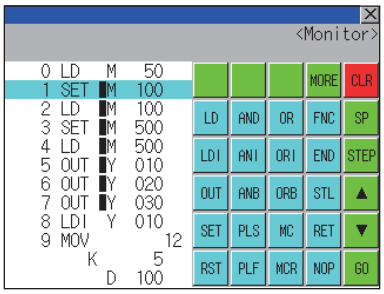
1 Operation

OP → [List Monitor] → GO

OP → Select [List Monitor] with ▲ or ▼.



GO



When the list monitor is started on the FX list editor screen, the step numbers displayed on the FX list editor screen is displayed on the list monitor screen.

Point

Starting list monitor with special function switches (FX list monitor)

With setting special function switches (FX list monitor), the list monitor can be started on the monitor screen.

When the list monitor is started on the monitor screen, the list editor cannot be used.

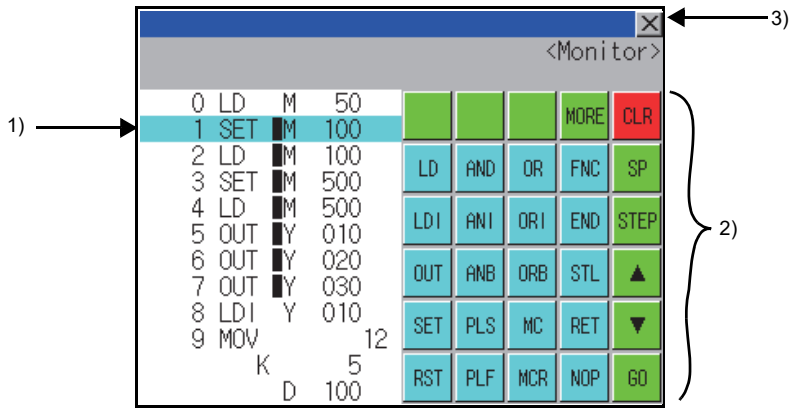
For how to set special function switches, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Functions)

2 Displays and key functions

The following describes the displays for the list monitor.



No.	Item	Display contents
1)	List display area*1	The status of contacts and coils is displayed on the left of device displays.
2)	Keys	The same operations as in the READ mode of the FX list editor can be executed. ☞ Subsection 13.4.7 Sequence program display
3)	☒	Ends the list monitor. When the list monitor is executed on the FX list editor screen, the screen is switched to the FX list editor screen.

*1 The status of contacts and coils is displayed as below.

Type of instruction	Description	Status	
		■ Displayed	■ Not displayed
LD, AND, OR(Contact instruction (Normal open))	Contact	ON	OFF
LDI, ANI, ORI(Contact instruction (Normal close))	Contact	OFF	ON
OUT, SET	TC: Coil	ON	OFF
	Except TC: Contact	ON	OFF
RST	TC: Reset	ON	OFF
	Word device	Value: 0	Value: Except 0
	Except TC and word device: Contac	OFF	ON
MC, STL	Contact	ON	OFF
LDP, ANDP, ORP, LDF, ANDF, ORF (Rise or fall contact instruction)	Not monitored	Always ■ not displayed	

13.4.17 Action for an incorrect key input

If an incorrect key is input, cancel the input contents.

1 Operation

(1) Before touching the GO key (before reading/writing the input contents)

Before touching the GO key, touch the CLR key.

(2) After touching the GO key (after reading/writing the input contents)

Write the command again. (☞ Subsection 13.4.9 Writing commands)

Commands finalized by writing and inserting operations are revised (overwritten) with the program writing.

13.4.18 Error messages and corrective actions

This section describes the error messages displayed when the MELSEC-FX list editor is executed, and corrective action.

Error Message	Description	Corrective action
Can not display while protected.	The all-operation protect, anti-plagiarism, or incorrect write protect keyword is set.	· Check the protected operation. · Clear the keyword protection or delete the keyword. ☞ Subsection 13.4.15 Keywords
Can not operate while protected.		
PLC parameter error.	An FX PLC parameter is defective.	Set correct parameters in the FX PLC.
PLC communications error.	The communication with the FX PLC is defective.	· Check the FX PLC, cable, and GOT for abnormality. · Check whether the communication settings are correct or not.
PLC is running.	A writing operation etc. has been made while the FX PLC is running.	Stop the FX PLC.
Can not write.	· The memory to write to is EPROM. · The protect switch of the EEPROM is on.	· Set other than EPROM for the memory to write to. · Switch off the protect switch of the EEPROM.
Step number is out of a range.	The specified step number exceeded the maximum number.	Specify a step number below the maximum value.
Not found.	The specified command cannot be found.	Proceed to the next operation.
Not found.	The specified device cannot be found.	Proceed to the next operation.
Step overflow.	The program may exceed the available space. (Writing is not executed.)	Check the program memory space and delete commands to keep it within the space. ☞ Subsection 13.4.11 Deleting commands
Command error.	An invalid command (non-existent command) was specified.	Input the correct command.

Point

How to erase an error message

An error message is not erased even if the cause of the error is eliminated.
To erase an error message, touch a key on the MELSEC-FX list editor screen.

13.5 Self Check

13.5.1 Self check function

Carries out self-check for the GOT hardware or memory etc.
The items that can be self-checked are as follows.

Items	Contents	Reference page
Memory check	Carries out write/read check of the Built-in CF card, Flash memory, and Internal SRAM. Password: "5920" (fixed)	13-115
Drawing Check	Carries out missing bit check, color check and drawing check.	13-119
Font check	Displays the character data on the screen to check visually.	13-123
Touch panel Check	Checks whether there are no dead zone area in the Touch key minimum unit (16 dots x 16 dots).	13-125
I/O check	Carries out RS-422 and RS-232 connecting target confirmation (CPU communication check) and the RS-232 self-loopback check (hardware check of the RS-232 interface).	13-127

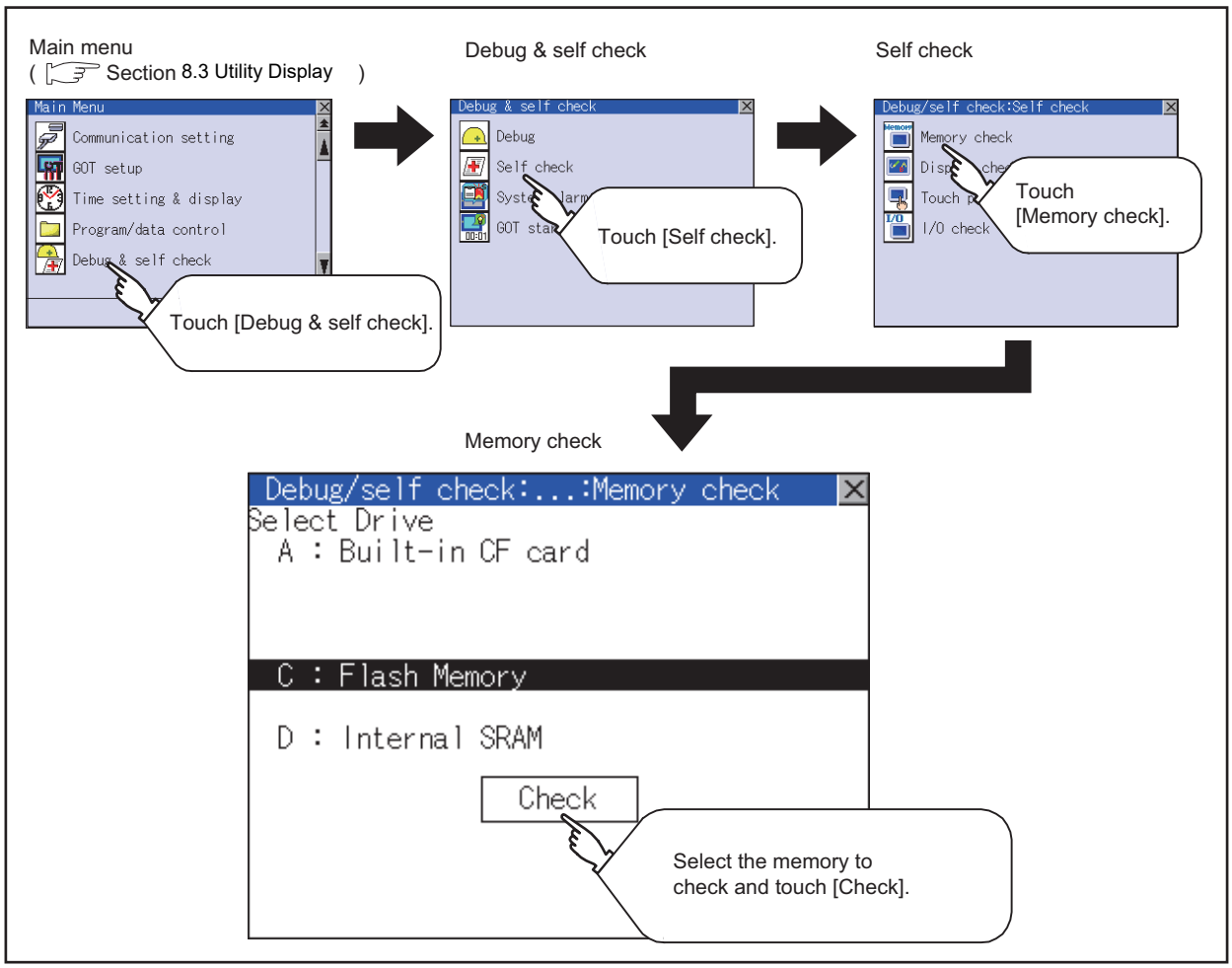
13.6 Memory Check

13.6.1 Memory check function

The memory check function carries out the write/read check of the Standard CF card, Flash memory, and Internal SRAM.

Function	Contents
A drive memory check	Checks whether the memory (Standard CF card) of the A drive can be read/written normally.
C drive memory check	Checks whether the memory (Flash memory) of the C drive can be read/written normally.
D drive memory check	Checks whether the memory (Internal SRAM) of the D drive can be read/written normally.

13.6.2 Display operation of memory check



13.6.3 Memory check operation

Carries out write/read check of memory.

Point

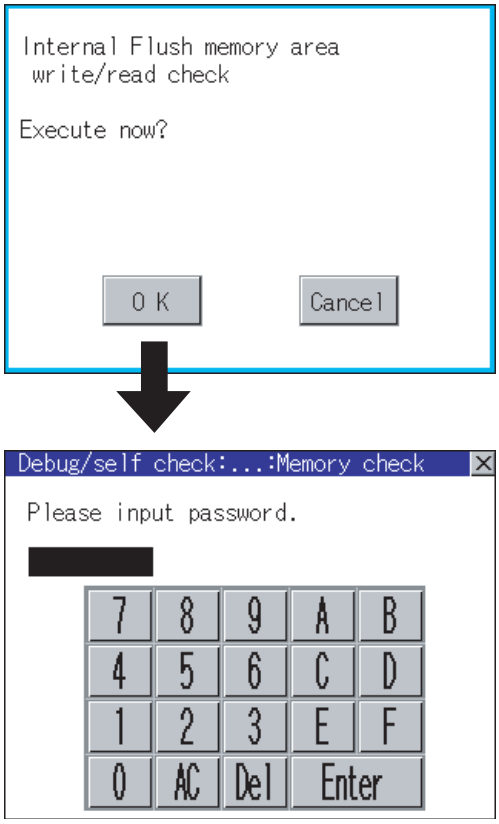
When drive is not displayed

When the drive (memory) to check is not displayed, confirm the mounting procedure or memory type with reference to the following.

- CF card inserting/removing method ☞ Section 6.1 CF Card

When no faults are found in mounting, etc, a memory failure may be arisen.
Replace the CF card or Flash memory (C drive).
For details of Flash memory, contact your nearest sales office or FA Center.

The following example explains about Memory Check using Flash memory (C drive).
For the standard CF card (A drive) memory check, install the CF card before carrying out the same key operations as Flash memory.

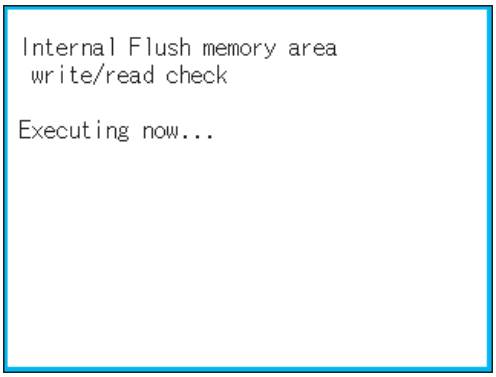


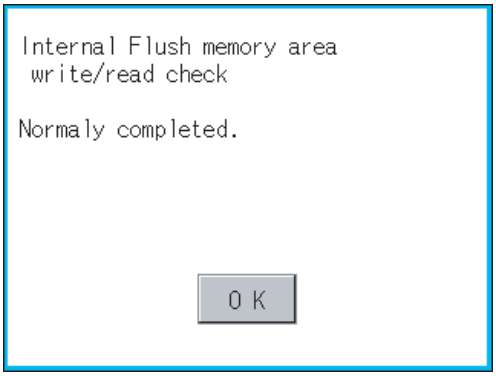
1 Select [Flash Memory] in the [Memory check] setting screen, and touch the [Check] button.

If select the [OK] button, the numeric keyboard window is displayed.

If select the [Cancel] button, the screen returns to the initial menu.

2 Touch [5][9][2][0] and then [Enter].
(The password is fixed to 5920.)
Touching [Enter] executes read/write check for the flash memory.





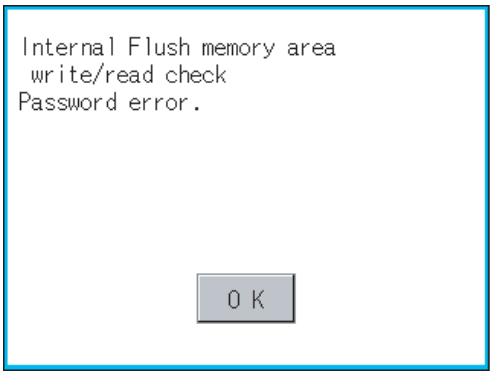
3 Touching the OK button returns to the [Memory check] screen.

Remark

Password change

The password cannot be changed.

When input password error, the cancel dialog is displayed.



If touch OK, returns to the [Memory check] screen.

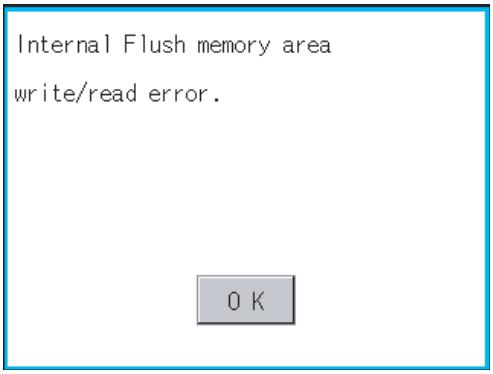
Point

When error is found in the memory

When error is found by memory check, the dialog indicating the area in which the error occurred is displayed.
If an error is found in the D drive [Internal SRAM], format the internal SRAM.
For details of the formatting of the D drive [Internal SRAM], refer to the following.

☞ Section 12.5 Memory Card Format

If an error is found in the C drive [Flash memory] or the D drive [Internal SRAM] right after formatting, contact your nearest sales office or FA Center.



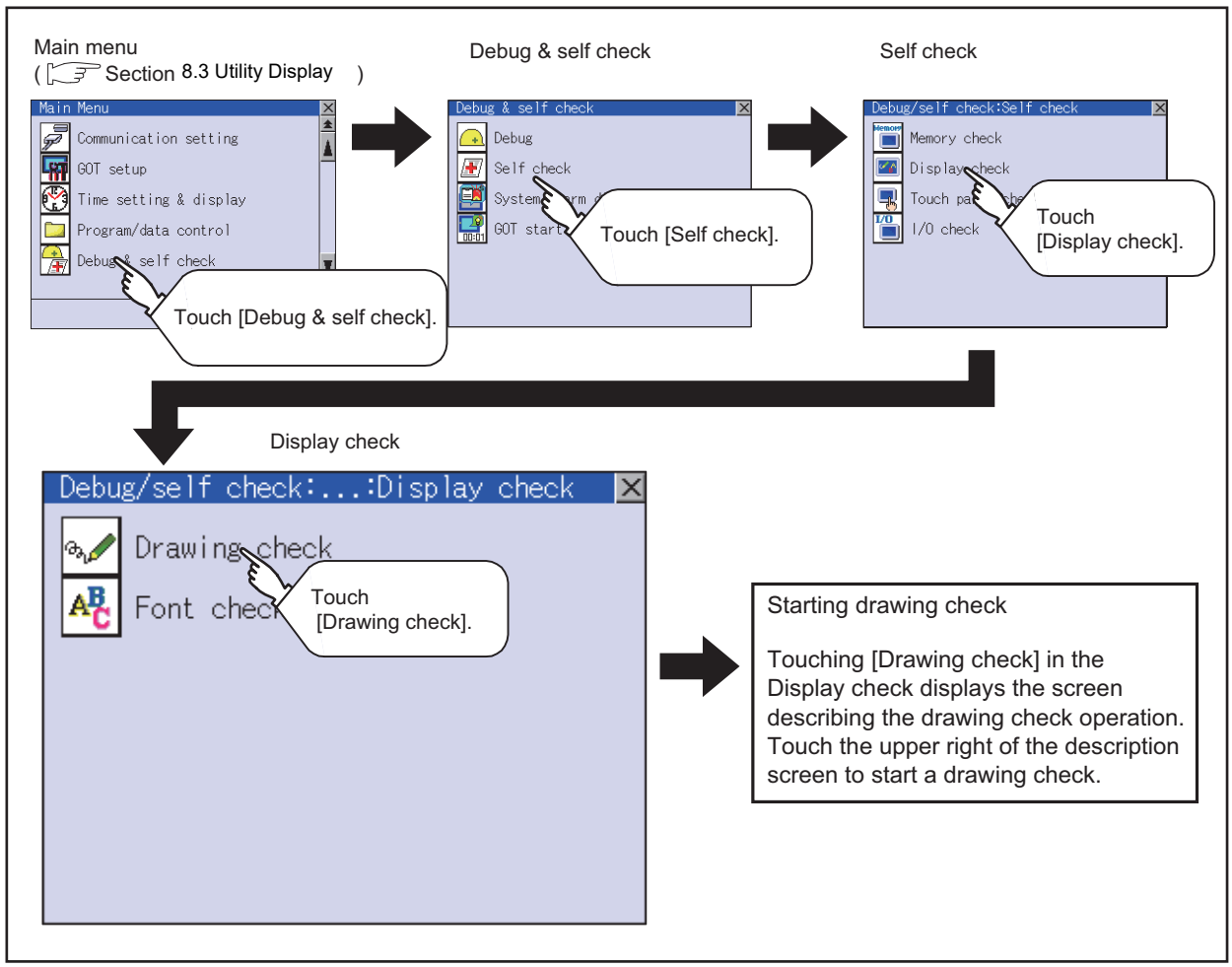
If touch [OK], the screen returns to the [Memory check] screen.

13.7 Drawing Check

13.7.1 Drawing check function

The drawing check function carries out display checks as missing bit check, color check, basic figure display check, move check among screens.

13.7.2 Display operation of drawing check



Point

Notes on drawing check

Missing bits is occurred in the following cases.

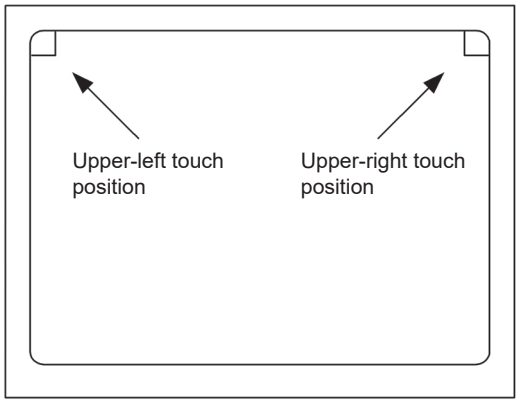
1. There are parts drawn in different color with the filled color.
2. There are parts of basic figure and drawing patterns which are not drawn according to the layout and procedures described in "Section 13.7.3 Display and operation of drawing check".

When missing bits occurs, contact your nearest sales office or FA Center.
Bright dots (always lit) and dark dots (unlit) may appear on a liquid crystal display panel. It is impossible to completely avoid this symptom, as the liquid crystal display comprises of a great number of display elements.
Flickers may be observed depending on the display color.
Please note that these dots appear due to its characteristic and are not caused by product defect.

13.7.3 Display and operation of drawing check

Touching [Drawing check] in the [Display check] displays the screen describing the drawing check operation.
Touch the upper right of the screen to start a drawing check.

1 Before execute drawing check



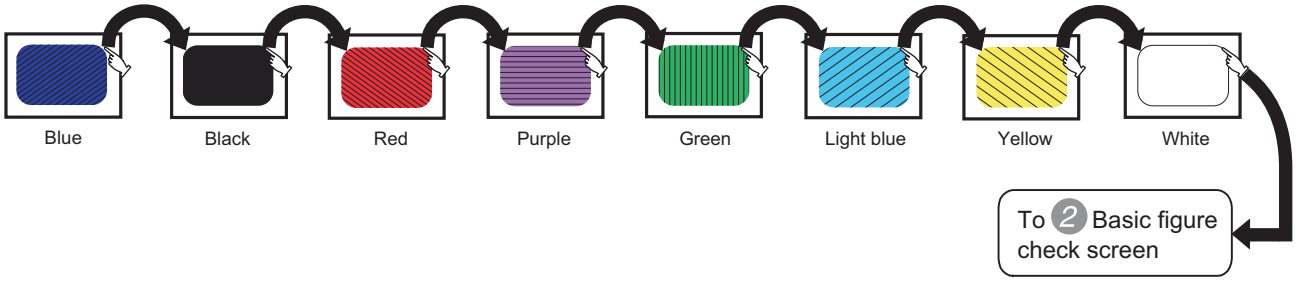
(1) Touching the upper right part of the screen proceeds to the next check in each step during the drawing check. Touching the upper left part of the screen returns to the [Display check] screen.

(2) For GT1155 (256 colors), color display (blue, black, red, purple, green, light blue, yellow and white) is available.
For GT1150 (monochrome 16 scales), the colors are reduced to the 16-scale monochrome.
This section describes with an example using GT1155 (256 colors).

1 Missing bit, Color Check

By touching the upper-right part of the screen, the entire screen color changes in the following order:

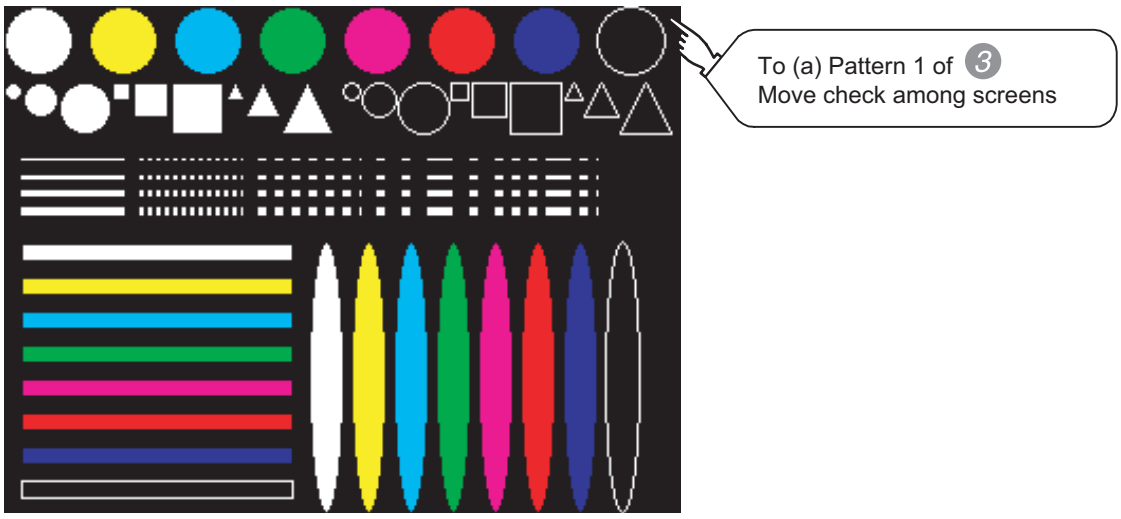
blue → black → red → purple → green → light blue → yellow → white.
Check missing bit and color visually.



If touch the upper right part of the screen at the final color (white screen), the following 2 Basic figure check screen is displayed.

2 Basic figure check

Check whether there is no shape transformation of basic figure or display losses.
The basic figure drawn has 4 types: 1. Filled circle, 2. Line, 3. Rectangle, 4. Ellipse.



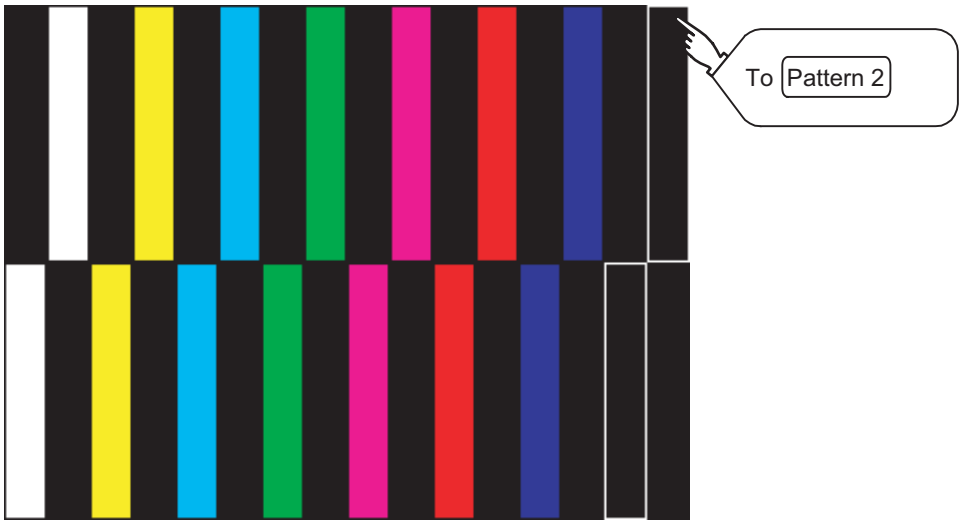
3 Move check among screens

(a) Pattern 1: Shape transformation, color check

The drawn figures are displayed in order and at regular intervals.

If the shape and color (white, yellow, light blue, green, purple, red, blue, black) are displayed visually in order, it is normal.

For GT1150HS (monochrome 16 scales), each color is subtracted to monochrome 16-scale.



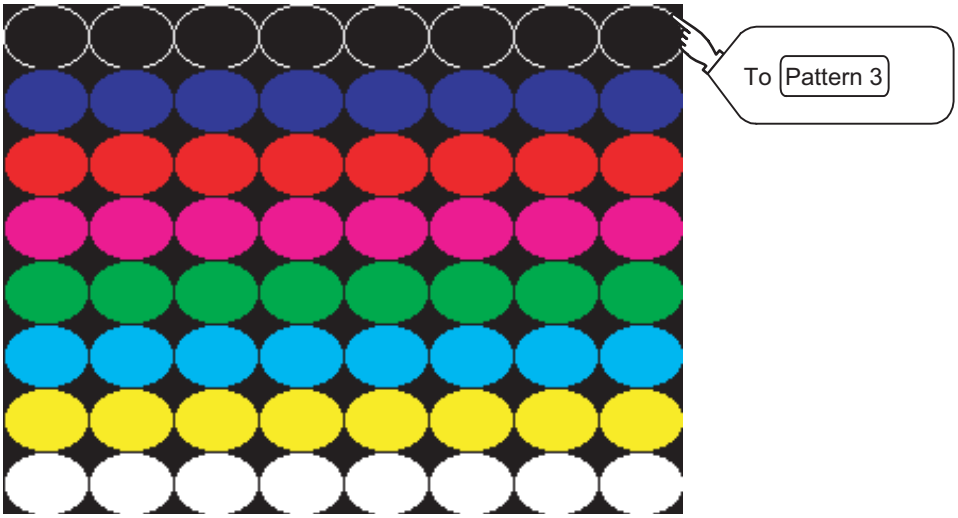
Pattern 1

(b) Pattern 2: Shape transformation, color check

The drawn figures are displayed in order and at regular intervals.

If the shape and color (white, yellow, light blue, green, purple, red, blue, black) are displayed visually in order, it is normal.

For GT1150HS (monochrome 16 scales), each color is subtracted to monochrome 16-scale.



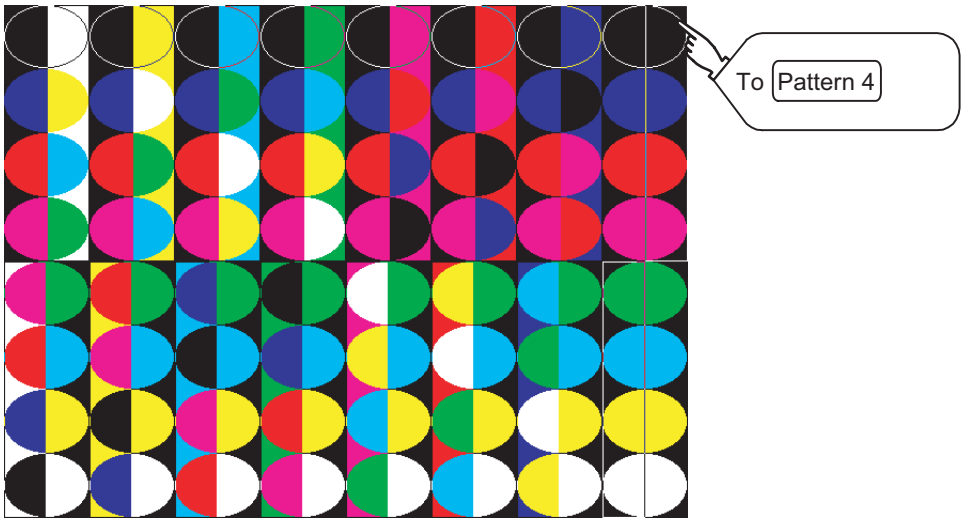
Pattern 2

(c) Pattern 3: Shape transformation, color check

The overlapped shapes of pattern 1 and pattern 2 are displayed.

If the shape and color (white, yellow, light blue, green, purple, red, blue, black) are displayed visually in order, it is normal.

For GT1150HS (monochrome 16 scales), each color is subtracted to monochrome 16-scale.

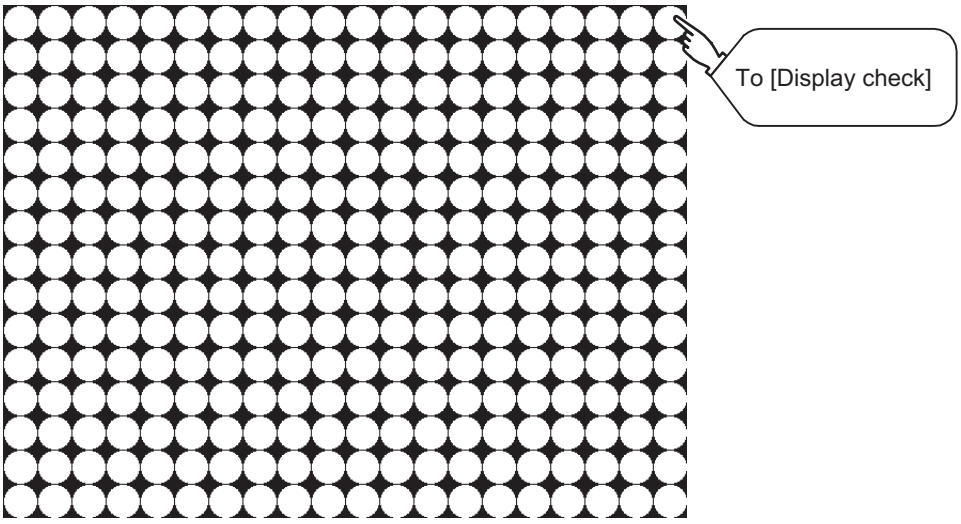


(d) Pattern 4: Shape Check

The drawn figures are displayed in order and at regular intervals.

If the shape and color are displayed visually in order, it is normal.

If touch the upper right part of the screen, returns to [Display check] screen.

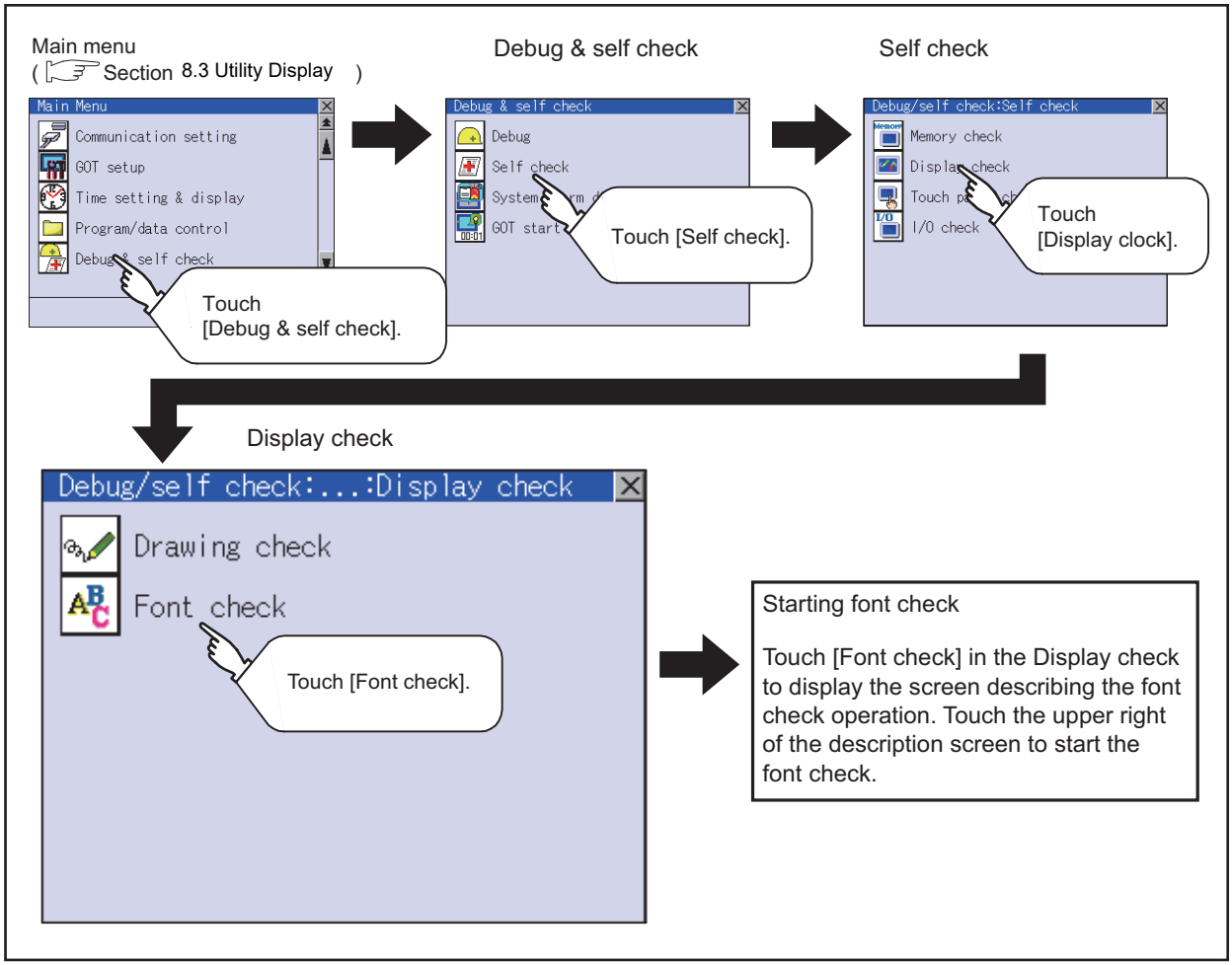


13.8 Font Check

13.8.1 Font check function

The font check is a function which confirms fonts installed in GOT. The character data of the font is displayed on the upper left part of the screen one by one.

13.8.2 Display operation of font check



Point

Notes on font check

Judged as normal if the following characters are correctly displayed. (UNICODE)

Alphabetic & etc.	: 0 x 0000 to 0 x 04F9 (From basic Latin to Krill)
Hangul	: 0 x AC00 to 0 x D7A3 (Hangul / Hangul auxiliary)
Chinese Characters	: 0 x 4E00 to 0 x 9FA5 (CJK integrated Kanjis)

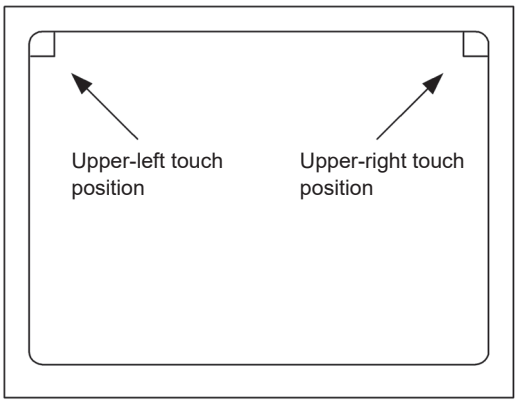
If the characters above are not displayed correctly, the fonts may not be normally installed.

Install the Standard monitor OS again.

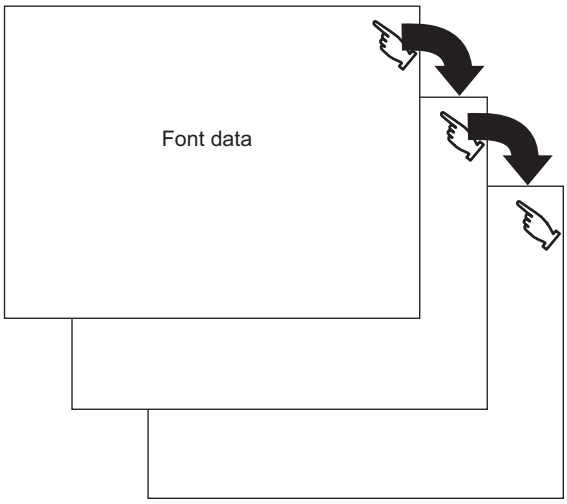
13.8.3 Font check operation

Touching [Font check] in the [Display check] menu displays the screen describing the font check operation.
Touching the upper right of the screen starts the font check.
The character data of the installed font (stored in the flash memory) can be displayed on the screen one by one to confirm the font drawings visually.

1 Before execute font check



Touching the upper right part of the screen proceeds to the next check in each step during Font check.
Touching the upper left part of the screen returns to the [Display check] screen.



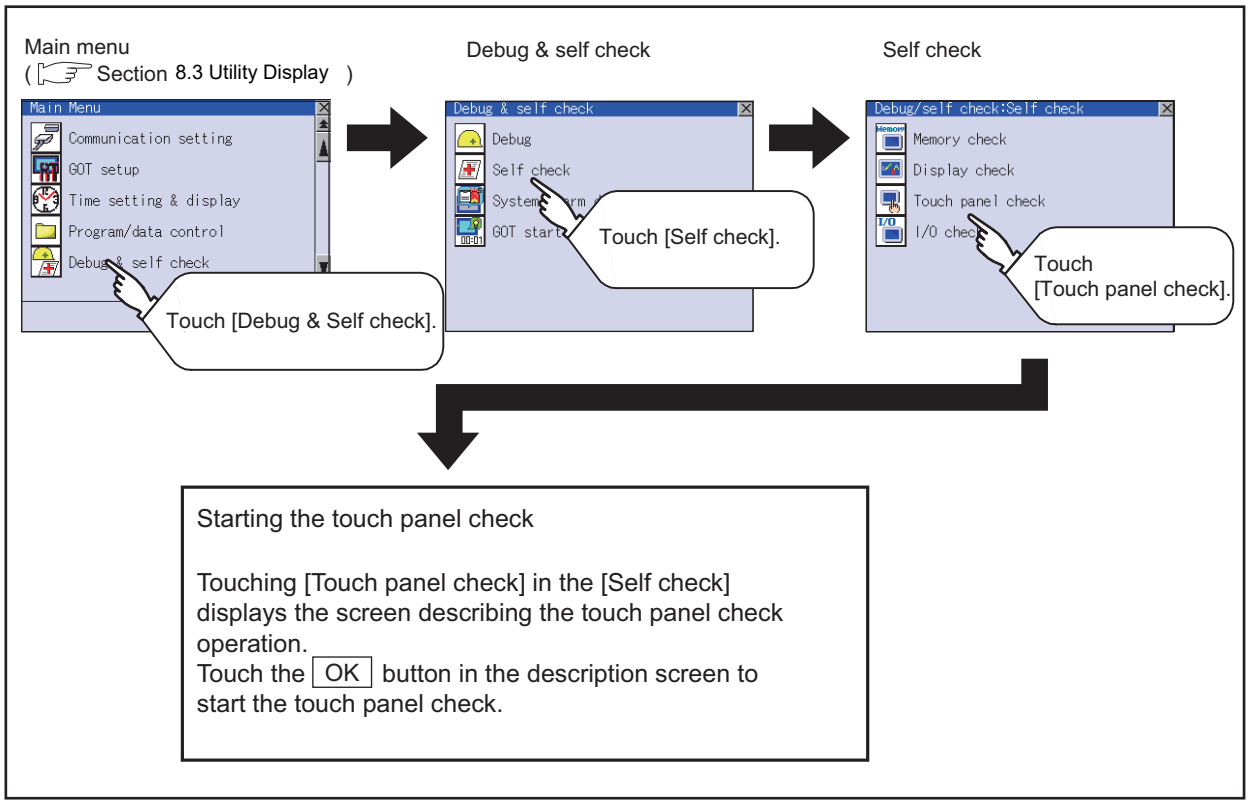
The installed font data is displayed by touching the upper right part of the screen.

13.9 Touch Panel Check

13.9.1 Touch panel check function

Touch panel check is a function which checks whether there is no dead zone area in touch key minimum unit (16 dots x 16 dots).

13.9.2 Display operation of touch panel check



Point

Notes on Touch panel check

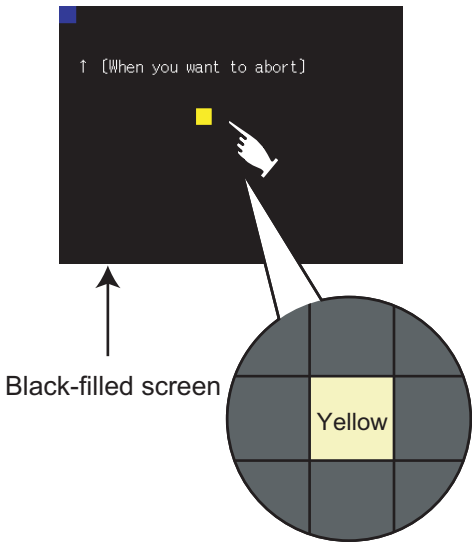
If the touched part is not filled with yellow color, there are the following two possible causes.

1. Display part failure
2. Touch panel failure

In that case, contact your nearest sales office or FA Center.

13.9.3 Touch panel check operations

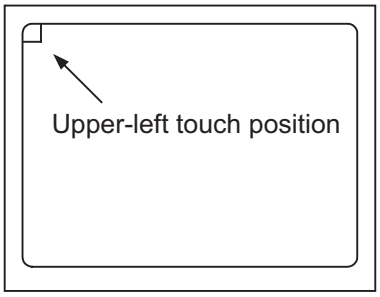
Touching [Touch panel check] of [Self check] displays the screen explaining the touch panel check operation.
Touch the OK button to start the touch panel check.



1 Touch a part of the screen.

The touched part becomes a yellow*1-filled display.
If not displayed in yellow even when touched, the display part may be faulty. In this case, contact your nearest sales office or FA Center.

*1: For a monochrome 16-scale GOT, the part is displayed with a subtracted yellow color.



2 If touch the upper left part, returns to the [Self-check] screen.

Remark

Checking the upper left part of the screen

Only the upper left part of the screen cannot be filled with yellow.*1
If returns to the [Self check] screen by touching the upper left part, judge that the upper left area operates normally.

*1: For a monochrome 16-scale GOT, the part is displayed with a subtracted yellow color.

13.10 I/O Check

13.10.1 I/O check function

The I/O check is a function which checks whether GOT and PLC can communicate with each other.
If I/O check ends normally, the communication interface and the connection cable hardwares are normal.
To execute I/O check, the PLC communication driver has to be installed in GOT in advance from drawing software.
Refer to the following for the details related to the installation of the PLC communication driver.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

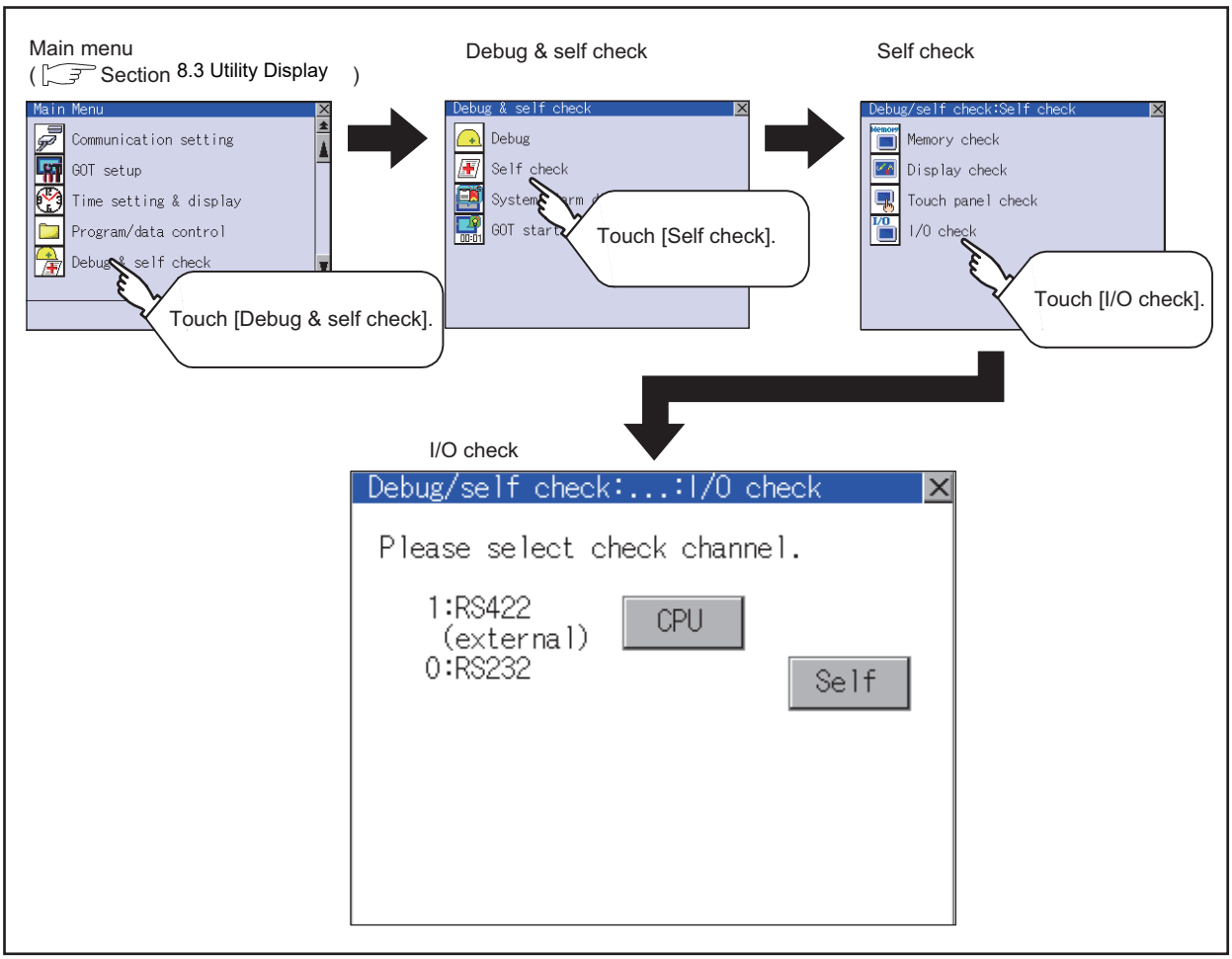
Point

I/O check function

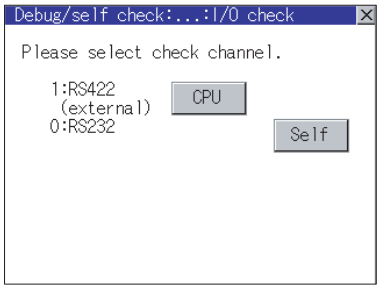
Controllers except MITSUBISHI PLC cannot be checked with the use of I/O check function.
When checking the communication between GOT and controller, follow “Preparatory Procedures for Monitoring” in “GOT 1000 Series Connection Manual”.

☞ GOT 1000 Series Connection Manual

13.10.2 Display operation of I/O check



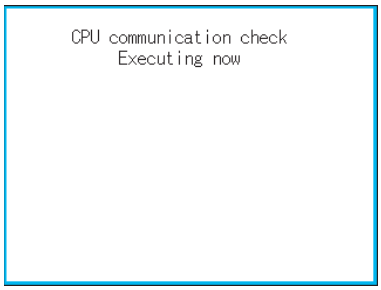
1 Target confirmation



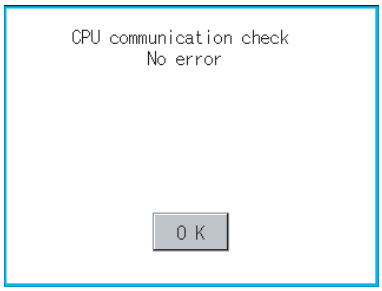
1 As a preparatory step for the CPU communication check, perform the following items.

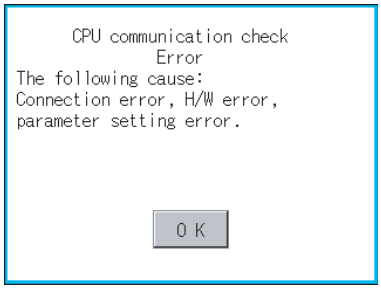
- Installing [Communication driver]: Use drawing software to install.
- Setting [Communication settings]: Use drawing software to enter and download.
- Connecting connection device: Connect a PLC to the communication interface for which the CPU communication check is applied in order to start the communication.
  (Check for the power is on or if any error occurred.)

2 If touch the CPU button, the CPU communication check is carried out.



3 After the CPU communication starts normally, the dialog mentioned left notifying that it is on checking, until the CPU communication check ends normally.





4 When the CPU communication check ends, its result is notified by dialog.

If the CPU communication check ends normally, the dialog notifying of the normal termination mentioned left is displayed. If touch the OK button in the dialog after confirming the result, returns to I/O check.

If the dialog mentioned left is displayed after selecting CPU or during CPU communication check, confirm the following.

- No misconnection with CPU
  (☞ GOT1000 Series Connection Manual)
- No hardware error
  (☞ GOT1000 Series Connection Manual)
- No missettings of parameter
  (☞ Section 9.2 Communication Detail Settings)

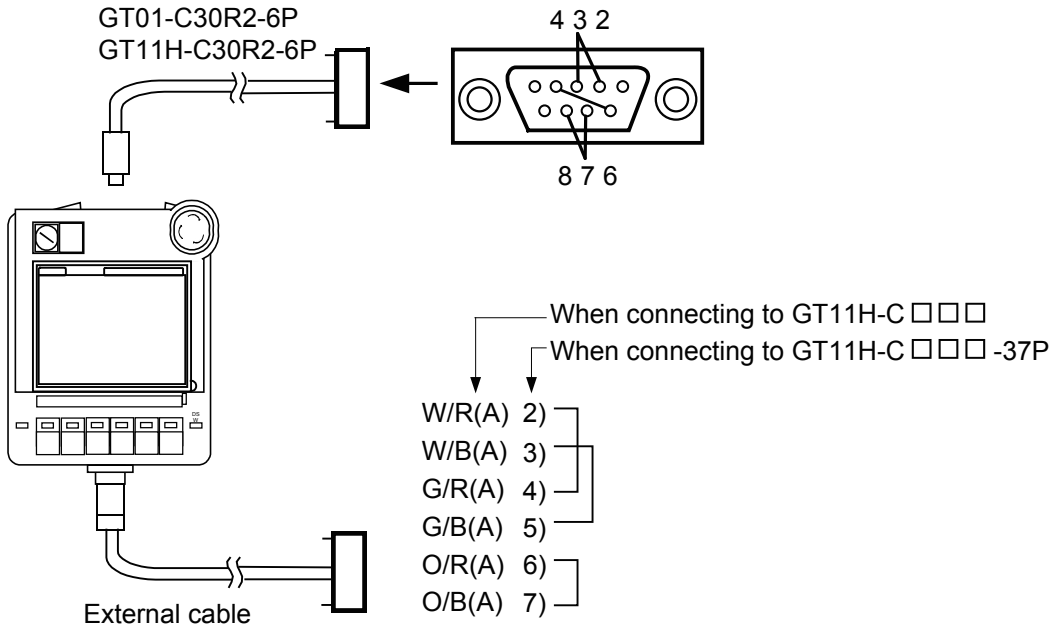
If touch the OK button in the dialog after confirming the result, returns to I/O check.

2 Self-loopback

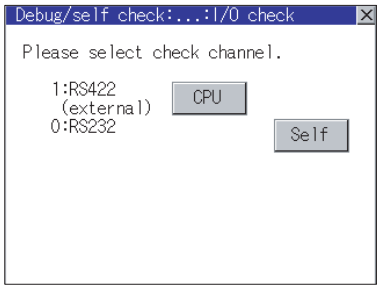
Perform the followings before executing the self-loopback check.

(a) Self-loopback check of the RS-232 interface for PC connection
Prepare a user-made connector for the self-loopback check as shown below, and connect it to a PC connection cable (GT01-C30R2-6P or GT11H-C30R2-6P).
On this connector, short-circuit between pin 2 and 3, pin 4 and 6, and pin 7 and 8 respectively.

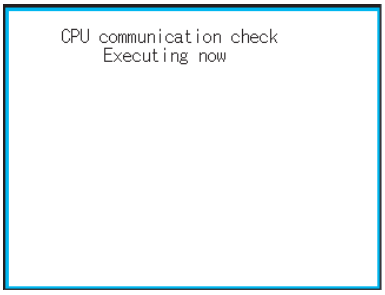
(b) Self-loopback check of the RS-232 interface for controller connection
When using GT11H-C☐☐☐, conduct wiring for the self-loopback check as shown below.
When using GT11H-C☐☐☐-37P, prepare a user-made connector for the self-loopback check and connect it to the external cable (GT11H-C☐☐☐-37P).
On this connector, short-circuit between pin 2 and 4, pin 3 and 5, and pin 6 and 7 respectively.



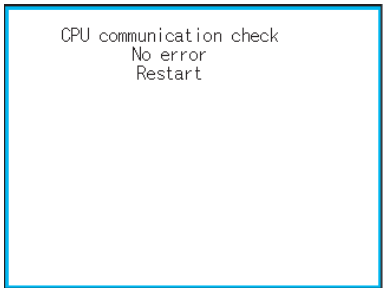
(c) Set the interface channel setting for the self-loopback check to none (ChNo. : 0) by using Communication Settings of the GOT main unit. Refer to the followings for the Communication Settings.



1 When the Self button is touched, the hardware check for the RS-232 interface is carried out.
To execute the self-loopback check of the RS-232 interface for controller connection, touch the upper Self button on the screen.
(The Self button is not displayed for the RS-422 connection.)
To execute the self-loopback check of the RS-232 interface for PC connection, touch the lower Self button on the screen.



2 During check, the dialog shown left is displayed.



3 When all checks end normally, the dialog shown left is displayed, and the GOT restarts.

4 If an error occurs the dialog is displayed at that point, notifying the GOT has terminated abnormally and which byte the error occurred, and then the GOT restarts.

If a verification error occurs, the RS-232 interface hardware may be faulty.

13.11 System Alarm Display

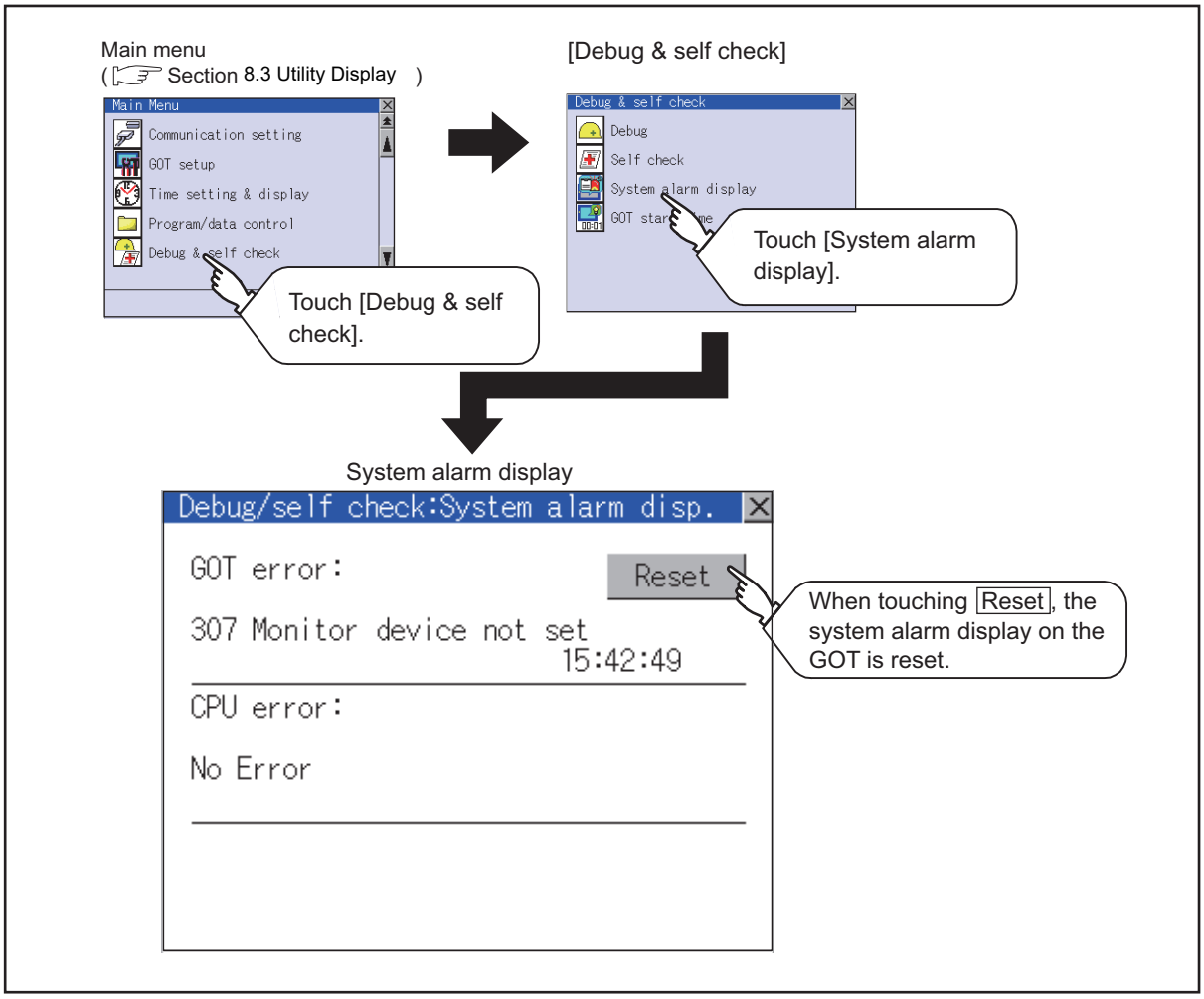
13.11.1 system alarm display function

System alarm display is the function to display error code and error message when an error occurs in GOT, controller or network.
System alarms can be reset on the System alarm display screen.
For details of system alarm, refer to the following manual.

☞ GT Designer2 Version☐ Screen Design Manual

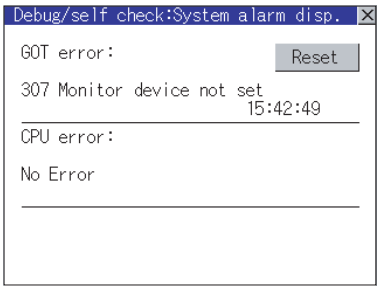
GT Designer3 Version1 Screen Design Manual (Functions)

13.11.2 Operating the system alarm display

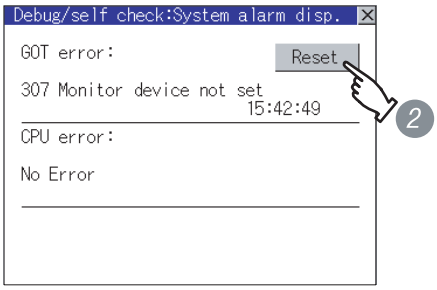


13.11.3 Operating the system alarm

1 System Alarm display resetting



1 Eliminate each cause of the system alarm being occurred.
Error causes can be identified by the error code, error message and channel No. displayed on the System alarm display screen.
(☞ Chapter 19 ERROR MESSAGE AND SYSTEM ALARM)



2 Touch the Reset button to reset system alarms.

Point

(1) Before resetting System Alarm display
Eliminate each cause before resetting system alarms.
Without eliminating causes, System Alarm display cannot be reset even when touching the [Reset] button.

(2) Processings with reset operation
The following data in the system information are also reset.
- GOT error code (Write device)
- GOT error detection signal (System Signal 2-1.b13)

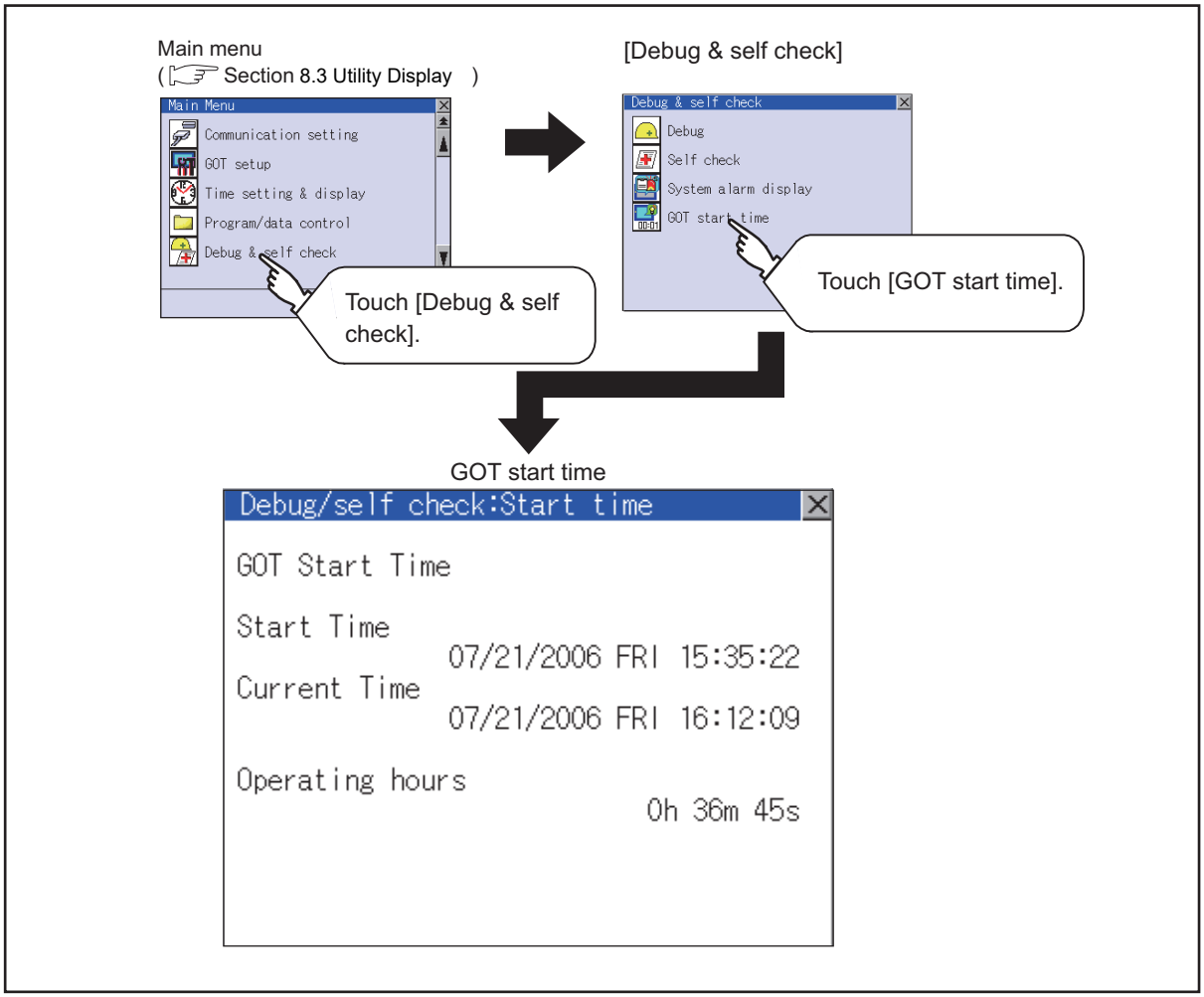
13.12 GOT Start Time

13.12.1 GOT start time function

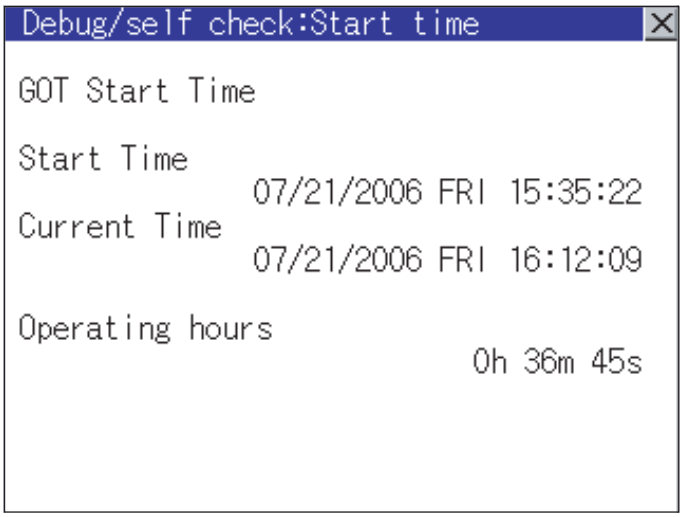
GOT start time is the function to display the following date and time.

- Start time of GOT
- Current time of GOT
- Operating hours of GOT

13.12.2 Operating the GOT start time display



13.12.3 Display of GOT start time



Item	Description
Start Time	Displays the time when the GOT was powered on or reset-restarted (OS installation, communication setting change).
Current Time	Displays the current time.
Operating hours	Displays operating hours of the GOT. The displayed operating hours is the accumulated time while GOT is powered on or reset-restarted (OS installation, communication setting change). When powering off or reset-restarting the GOT, the operating hours is cleared.

Point

To display correct time

Set the clock of GOT. (☞ Section 11.1 Time Setting and Display)
When the clock has not been set, the correct time is not displayed at [Start Time] and [Current Time].

Remark

Time displayed at [Operating hours]

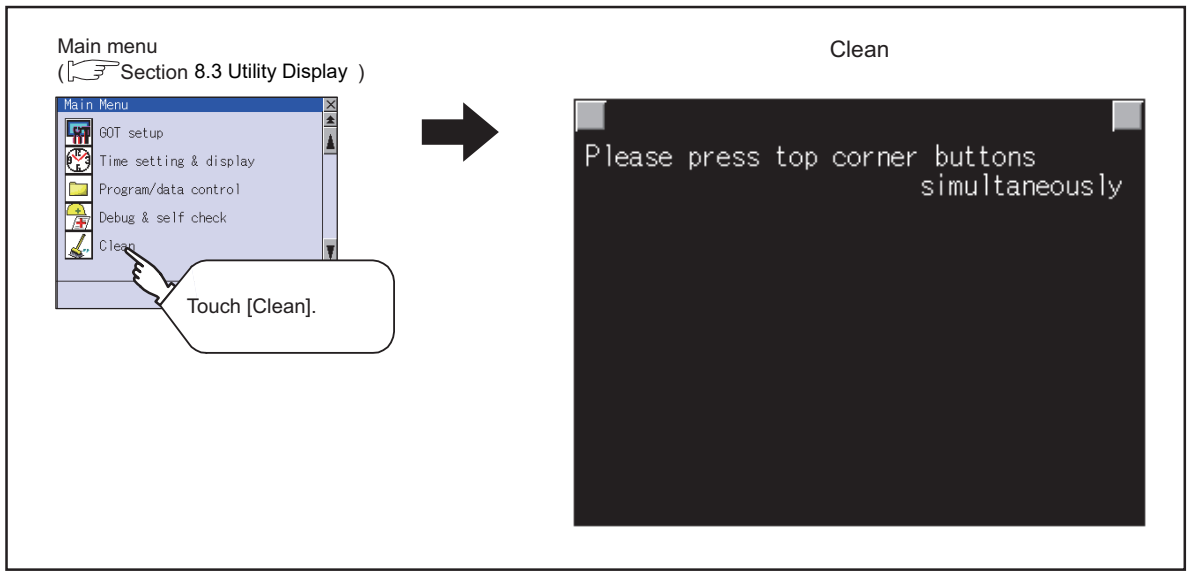
[Operating hours] is displayed irrespective of [Start Time] and [Current Time].
When changing the clock of the GOT, [Operating hours] does not match with the difference between [Current Time] and [Start Time]. ([Operating hours] is not the time calculated from [Current Time] and [Start Time].)
The time displayed at [Operating hours] is a reference for the accumulated time while GOT is powered on or reset-restarted (OS installation, communication setting change).

14. CLEANING OF DISPLAY SECTION (CLEAN)

In utility, the screen can be set as not to be effected by touching the screen when clean with clothes.
For cleaning method, refer to "Section 18.3 Cleaning Method".

14.1 Clean

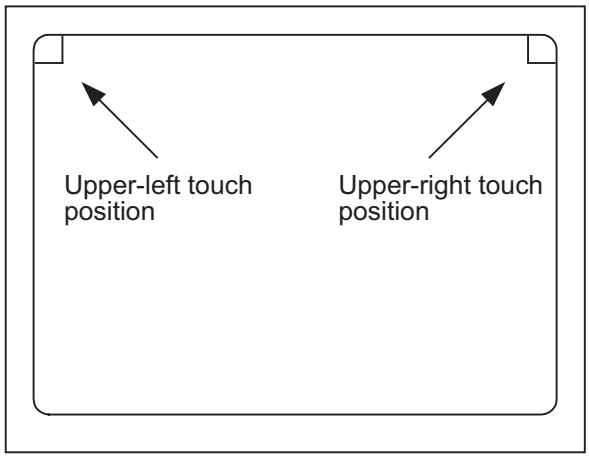
14.1.1 Display operation of clean



Even if touch points other than the upper left corner and upper right corner of the screen, the GOT does not operates.

14.1.2 Operation of clean

If touch the upper left and upper right corners of the screen at the same time, the screen returns to the previous screen display.



For details of cleaning method, refer to the following.

☞ Section 18.3 Cleaning Method

15. INSTALLATION OF CoreOS, BootOS AND STANDARD MONITOR OS

To execute the GOT utility, BootOS or Standard monitor OS has to be installed in the C drive (Flash memory).
To use the Extended functions, Extended function OS has to be installed, and to use Option functions, Option OS has to be installed.
This chapter explains the installation of BootOS and Standard monitor OS.
For details on Extended functions and Option functions, refer to the followings.

Details on how to install Extended function OS and Option OS

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

1 BootOS and Standard Monitor OS Required for Installation

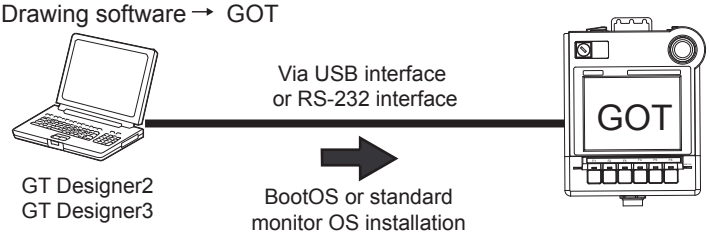
Under-mentioned BootOS and Standard monitor OS are necessary to execute utility.

<table>
<tr><th>OS name</th><th colspan="2">Function overview</th><th>Storage location</th></tr>
<tr><td>BootOS</td><td colspan="2">Required for the control of GOT and the communication between PC and GOT.
Installed at factory shipment.
(BootOS can be installed from drawing software or the CF card. When installed from drawing software or the CF card, GOT is initialized to be the factory shipment status.)</td><td>Flash memory
C: G1BOOT</td></tr>
<tr><td rowspan="7">Standard monitor OS</td><td>Standard monitor OS</td><td rowspan="7">Required for display and operation of the user-created screen and utility screen.
Not installed in GOT at factory shipment.
Install it from drawing software or the CF card.
At installation, select Mincho or Gothic for the 16-dot standard font.</td><td rowspan="7">Flash memory
C:G1SYS</td></tr>
<tr><td>System Screen Data</td></tr>
<tr><td>System Screen Information</td></tr>
<tr><td>TrueType numerical font</td></tr>
<tr><td>12-dot Standard Font (Gothic)</td></tr>
<tr><td>16-dot Standard Font (Mincho)</td></tr>
<tr><td>16-dot Standard Font (Gothic)</td></tr>
</table>

15.1 How to Install BootOS and Standard Monitor OS

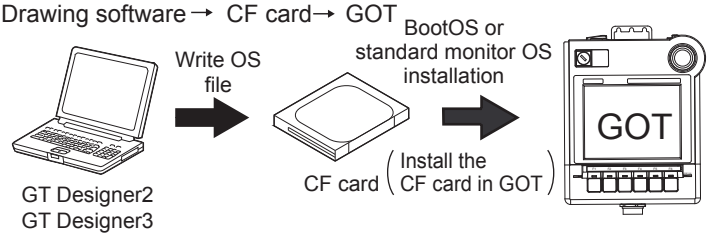
There are following three methods for the installing BootOS and Standard monitor OS.

1) Drawing software → GOT



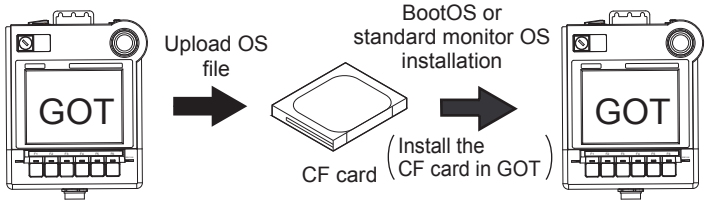
· Installed directly from the drawing software

2) Drawing software → CF card → GOT



· When GOT is remote, installed easily using the CF card

3) GOT → CF card → GOT



· Install OS from GOT to GOT using the CF card

This chapter explains the installation using the CF card.
For the installation using drawing software, this chapter describes the connection method only.

For details of the installation using drawing software, refer to the following.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

Point

CoreOS

Section 15.1 to 15.4 of this chapter describes BootOS and Standard monitor OS only.
For CoreOS, refer to the following.

☞ Section 15.5 CoreOS

15.2 Installation Using Drawing Software

15.2.1 Connection cable between Handy GOT and PC

PC connection cable (Sold separately)

Product name	Model name	Length	Contents
Project data transfer cable	GT01-C30R2-6P	3m	GOT (RS-232) ↔ PC (D-Sub 9 pins female)*1
	GT11H-C30R2-6P		
	GT09-C20USB-5P	2m	GOT (USB mini) ↔ PC (USB)
	GT09-C30USB-5P	3m	

*1: Connector shape on the cable side is shown in ( ).

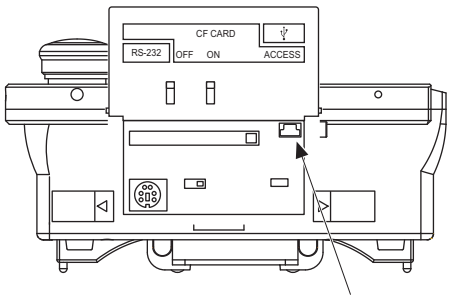
15.2.2 Connecting PC to GOT via USB cable

Make sure to follow the procedures below to securely connect the USB cable to a PC and GOT.

1 Connect the USB cable to the USB Type-A connector on the PC.

2 Connect the USB cable to the USB connector on the GOT.
When a PC and GOT are connected via a USB cable, some OS are required to install a USB driver depending on the OS to be used.
For details on installing USB driver installation, refer to the following.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

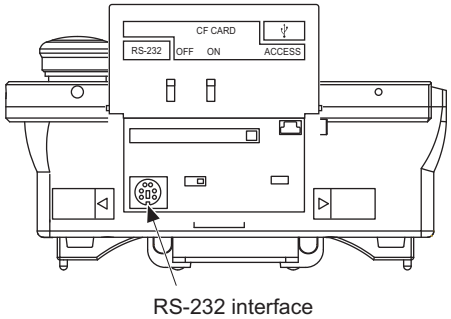


15.2.3 Connecting PC to GOT via RS-232 cable

Make sure to follow the procedures below to securely connect the RS-232 cable to a PC and GOT.

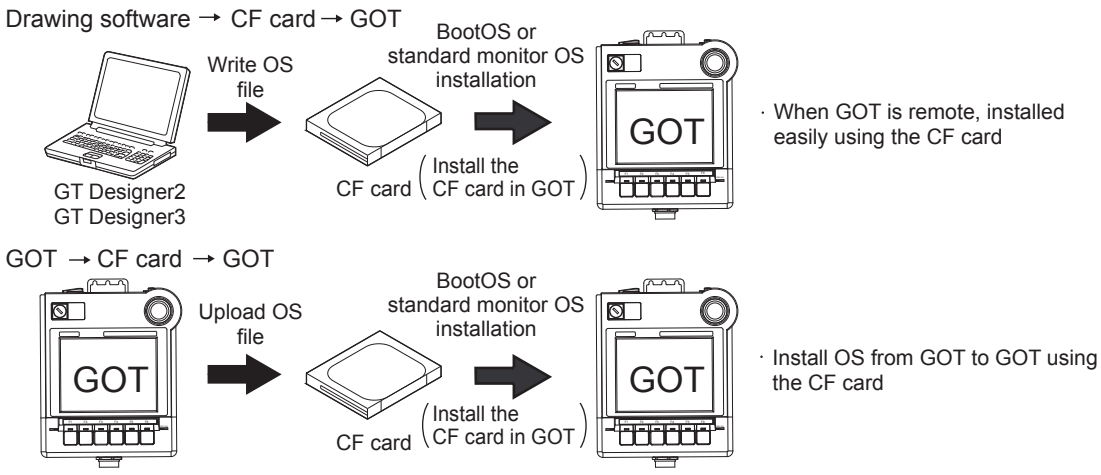
1 Connect the RS-232 cable to the COM port on the PC.

2 Connect the RS-232 cable to the RS-232 interface on the Handy GOT.



15.3 Installation Using CF Card

15.3.1 Overview of installation using CF Card



For the installation using GOT, the CF card storing BootOS or Standard monitor OS is required.
For the method of writing BootOS and Standard monitor OS in the CF card, the following two methods are available.

(1) [To Memory Card] from drawing software

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

(2) Uploading from other GOT (BootOS or Standard monitor OS has been installed)

☞ Chapter 12 FILE DISPLAY AND COPY (PROGRAM/DATA CONTROL)

Point

Precautions on writing BootOS, Standard monitor OS in CF card

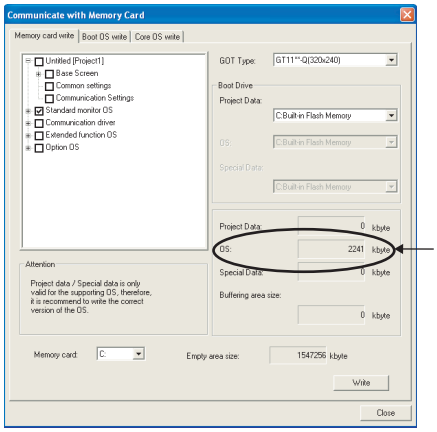
When writing BootOS, Standard monitor OS, etc. in the CF card, be sure to execute by the utility of other GOT or drawing software.

The installation is not executed properly with the CF card to which uploaded from the utility of GOT or copied by softwares other than drawing software.

Note the available capacity of the CF card.

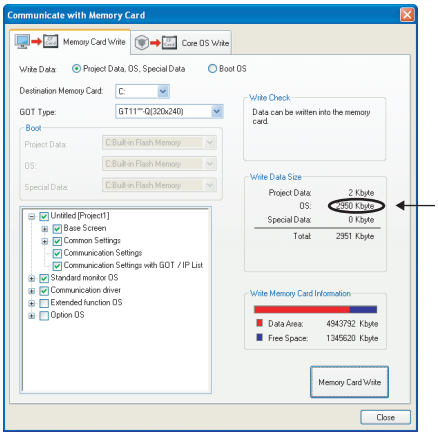
The available capacity of BootOS and Standard monitor OS can be confirmed by [To Memory Card] of drawing software.

- For GT Designer2



Capacity of data of OS to be transferred

- For GT Designer3



Capacity of data of OS to be transferred

15.3.2 BootOS and Standard Monitor OS Installation Using CF Card

There are the following two types for the BootOS, Standard monitor OS installation using CF card.

(1) Installation method when the GOT is turned on
When the GOT is turned on, all the OS and project data stored in the memory card are transferred to the GOT.
This installation method is valid for the following cases.
- When the utility of GOT cannot be displayed
- When the standard monitor OS is not installed
- To create a GOT with the same configuration as the copy source by using the GOT data package acquisition function

(2) Installation method using the program/data control function (Utility)
By the operation of the utility, the OS and project data stored in the memory card are selected and transferred to GOT.

Point

Notes on installing the Boot OS and Standard monitor OS

(1) Installing both the Boot OS and Standard monitor OS
Install the Boot OS first, and then install the Standard monitor OS.
The Boot OS comes factory installed. Installation of the Boot OS is not necessary unless upgrading the Boot OS version.
When the Boot OS is installed, the built-in flash memory on the GOT becomes initialized to the factory setting. (All OSs and project data will be deleted.)

(2) Copying the project data using the CF card
Download the project data after installing the Boot OS, Standard monitor OS, and other OSs.
Make sure that the version of the Standard monitor OS on the GOT and that of the Standard monitor OS that created the project data match.

(3) When the OS and project data are on the CF card (When drawing software is in use)
When the 2-point press installation function is used, project data will be installed at the completion of the OS installation.
When installing the system using the utility screen, install the OS and download the project data on their respective operation screens.

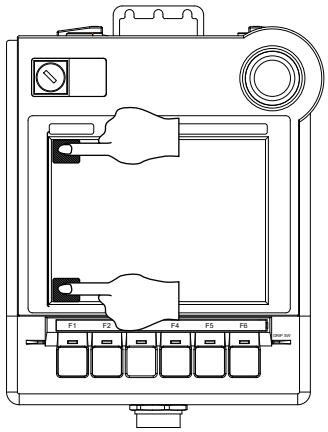
(4) The installation cannot be interrupted.
The followings should not be performed during the installation of BootOS or standard monitor OS.
The installation may fail, and GOT may not operate.
- Turning OFF the GOT power
- Pressing the reset button of GOT
- Turning OFF the CF card access switch
- Removing the CF card

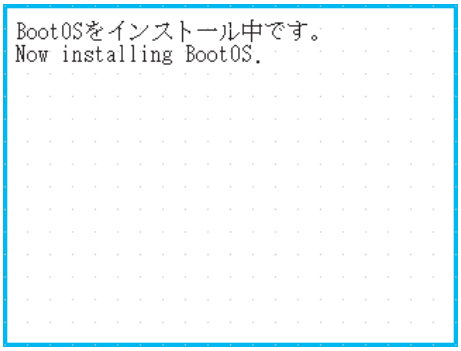
When GOT does not operate due to the failure of the installation, follow the procedures mentioned below.
- When the installation of BootOS is failed:
  Install CoreOS.
  ☞ Section 15.5.1 Installation method of CoreOS
- When the installation of standard monitor OS is failed:
  Install BootOS.
  ☞ Section 15.3.3 Installation method when the GOT is turned on

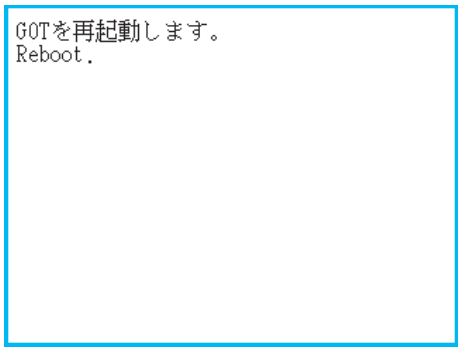
15.3.3 Installation method when the GOT is turned on

The displayed message is different depending on the installation condition of Standard monitor OS. When the screen requesting operation is displayed, operate the GOT according to the instructions on the screen.

1 Operation procedure







1. Power OFF GOT and CF card access switch. Insert the CF card in which BootOS, Standard monitor OS or project data is stored in the CF card interface of GOT.
2. Switch ON the CF card access switch of GOT.
3. Power ON the GOT touching the upper and lower left corners of the GOT screen.
4. BootOS and Standard monitor OS are installed in the built-in Flash memory.
5. The CF card access LED is lit during installation. Do not pull out the CF card or power off the GOT while the CF card access LED is lit.
6. GOT restarts automatically after installation is completed.
   (When Standard monitor OS is already installed, touch the OK button to reboot the GOT.)
7. After confirming that GOT restarted normally, switch OFF the CF card access switch of GOT.
8. Confirm the CF card access LED is extinguished, remove the CF card from the CF interface of GOT.

15.3.4 Installation method using the program/data control function (Utility)

For details of program/data control function, refer to the following.

☞ Chapter 12 FILE DISPLAY AND COPY (PROGRAM/DATA CONTROL)

Program/data control is a function to install OS files from the CF card to GOT by the Utility operation.

Point

Precautions on executing program/data control function

When execute program/data control function, Standard monitor OS has to be installed in GOT in advance. Thus, this function cannot be used for the initial installation of Standard monitor OS after purchasing GOT.
Install Standard monitor OS by the following two methods.

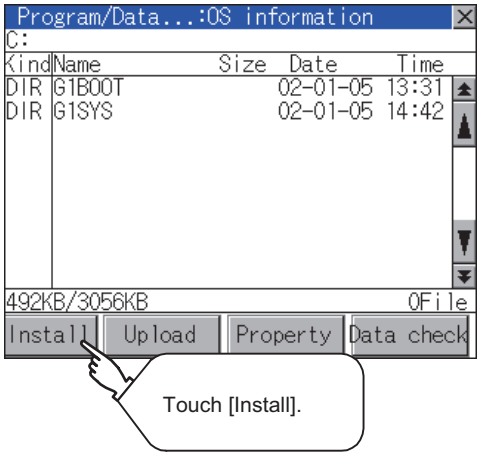
(1) Method using drawing software

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

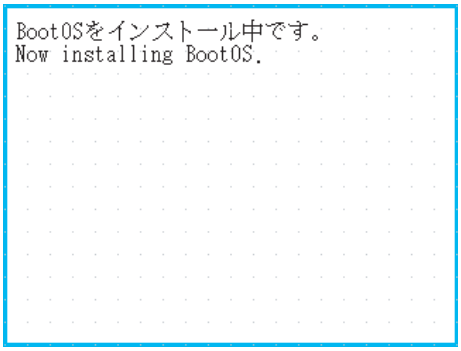
(2) Installation method when turning the GOT power on

☞ Section 15.3.3 Installation method when the GOT is turned on

1 Operation procedure

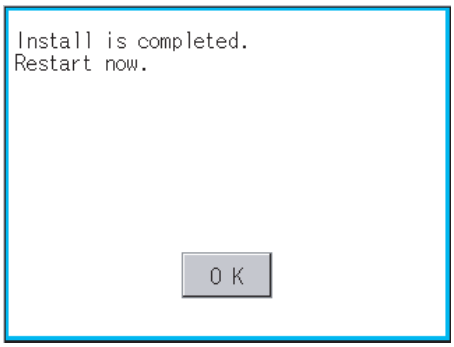


1. Power OFF the GOT. After CF card access LED is off, install the CF card in which BootOS, Standard monitor OS or project data is stored in the CF card interface of GOT.
2. Switch ON the CF card access switch of GOT.
3. Display the program/data control function screen (Utility) on the GOT, and install BootOS, Standard monitor OS from the CF card to GOT.



4 The CF card access LED is lit during install execution.

5 Do not pull out the CF card, power OFF, or reset the GOT while the CF card access card is lit.



6 After the installation is finished, the dialog box shown on the left is displayed.

7 Touch the OK button to reboot the GOT.

8 After confirming that GOT restarted normally, switch OFF the CF card access switch of GOT.

9 Confirm the CF card access LED is extinguished, remove the CF card from the CF card interface of GOT.

15.4 When Installing the Different Version of BootOS, Standard Monitor OS

15.4.1 BootOS installation

When the Boot OS is installed, the GOT compares the version of the current Boot OS and the version of the Boot OS to be installed.
When the major version of the Boot OS to be installed is older than that of the current Boot OS, the following warning dialogs will appear to prevent an accidental overwriting.
(When installing from drawing software, follow the messages that appear on the PC screen.)

(a) When only the Boot OS is stored on the CF card.
A message will appear to indicate that the installation cannot be proceeded.

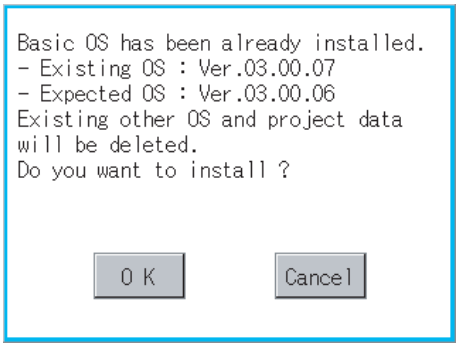
Touch the OK button to cancel the installation.

Restart the GOT.

(b) When the Boot OS, Standard monitor OS, and other OSs are stored on the CF card.

The installation of the Boot OS will be skipped, and an installation of the Standard monitor OS and other OSs will take place.

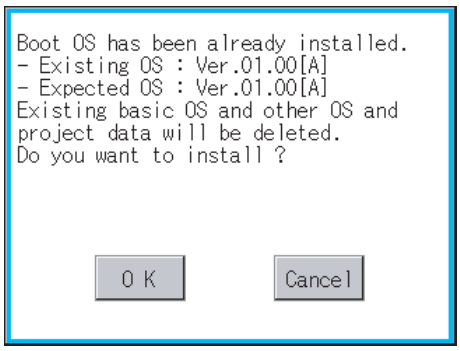
The following message will appear if the Standard monitor OS is already installed on the GOT.



Touching the [OK] button will start the installation.

Touching the [Cancel] button will stop the installation.

Regardless of the types of data (as described in section (a) and (b) above) on the CF card, or whether the version of the OS to be installed is the same as the current one or newer, a window that has the version information and a message that asks whether to continue installation will appear.



<The GOT screen that appears when the Boot OS was installed from the CF card>

Touching the [OK] button will start the installation.
Touching the [Cancel] button will stop the installation.

15.4.2 Standard monitor OS installation

Match the version of each OS file when installing Standard monitor OS.
Standard monitor OS cannot be installed if the version of each OS file does not match.

When the installation process is discontinued.

Standard monitor OS	:	1.	O.	O
Communication driver	:	2.	O.	O
Option OS	:	2.	O.	O

Please match the number.

When the installation process is normally executed.

Standard monitor OS	:	2.	O.	O
Communication driver	:	2.	O.	O
Option OS	:	2.	O.	O

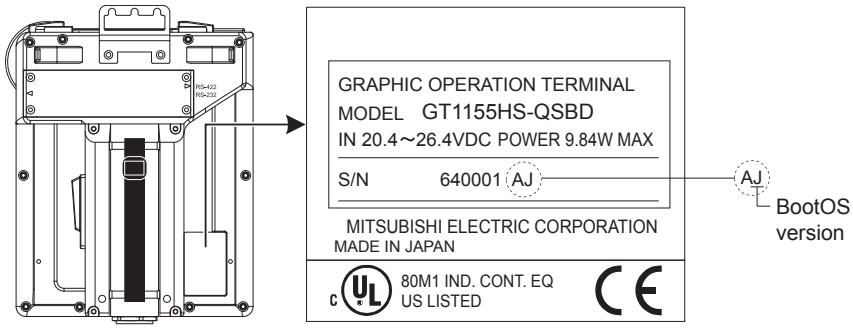
Point

Checking method of BootOS, Standard monitor OS version

1. Check the version of BootOS or Standard monitor OS installed in GOT at [OS information] of the utility.
   Refer to the following for details.

   Section 12.2 OS Information

2. Check the version of BootOS installed in GOT at product shipment on the rating plate on GOT rear face.



When the Boot OS version is 2 digits, only the lower digit is printed.

Example H/W version: H
Boot OS version: AD

↓

Rating plate: HD

15.5 CoreOS

Install CoreOS only if the GOT is not in its factory-shipped condition, even if BootOS is installed.
Normally, installation is not required.

Point Precautions when installing CoreOS.

The installation cannot be interrupted.
The followings should not be performed during the installation of CoreOS.
GOT may not operate.

- Turning OFF the GOT power
- Pressing the reset button of GOT
- Turning ON the CF card access switch
- Removing the CF card

If GOT does not operate, please consult your nearest sales office or FA Center.

If GOT does not recover after CoreOS is installed, there may be a hardware problem.
Please consult your nearest sales office or FA Center.

15.5.1 Installation method of CoreOS

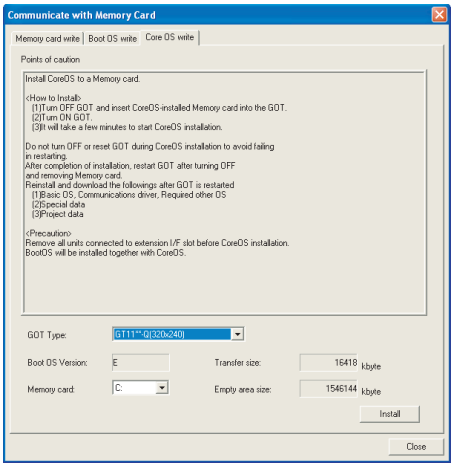
1 Before installing CoreOS.

(1) Installation method
CoreOS can be installed only using the memory card.
The installation via USB, RS-232 or Ethernet is not available.

(2) CF card to be used
CF card of 32MB or more is required.

(3) BootOS
By installing CoreOS, BootOS is also installed with its latest version automatically.
(No operation is required to the user.)

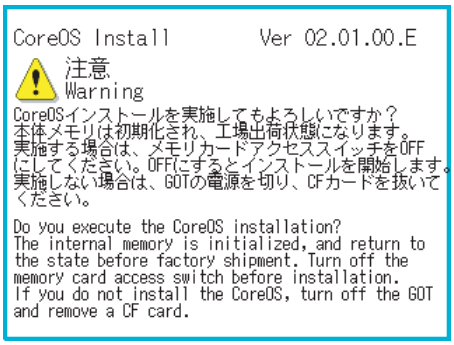
2 Installation method of CoreOS



1 Write CoreOS from drawing software to the CF card
For details on the operation method of drawing software, refer to the following manual.

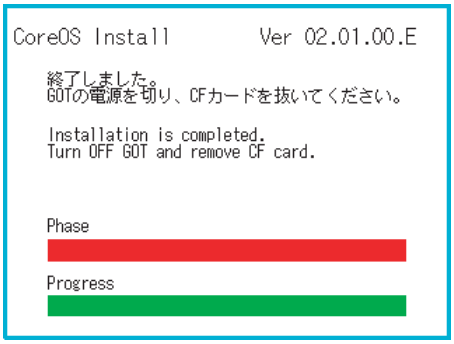
☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

2 Check that the power of GOT main unit is OFF, and then mount the CF card to GOT. After mounting it, turn ON the CF card access switch.



3 Turn ON the GOT power
After the power is turned on, CoreOS installation execution screen is automatically displayed after a brief interval.

4 After the CF card access switch is turned off, the installation of CoreOS is started.



5 When the installation is completed, the dialogue box shown on the left is displayed. Check that the message is displayed, and turn the GOT power OFF.
(When the installation is completed, the power LED blinks.)

6 Remove the CF card after turning the power OFF.

7 If the power is turned on again, the screen shown on the left is displayed.
(The GOT goes into its factory shipped condition.)
As necessary, install each OS (Standard monitor OS, communication driver, etc.) or download a project data.
For the installation method of each OS or the download method of project data, refer to the following manual.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

15.5.2 When CoreOS cannot be installed

When CoreOS cannot be installed, check the following contents.
When CoreOS cannot be installed even after the following contents are checked, there may be a hardware problem.
Please consult your nearest sales office or FA Center.

Description	Action
The installation of CoreOS is not executed after the CF card is inserted to GOT.	• Check that the CF card access switch of GOT is ON. If it is OFF, turn it ON. • Memory card write from drawing software may not be normally completed. Execute memory card write from drawing software again.
The following message is displayed on GOT. "GOT error. Contact your local sales office."	GOT main unit is breakdown. Please consult your nearest sales office or FA Center.
The following message is displayed on GOT. "CF card error. Installation will be canceled. Check whether the CF card can be used."	CF card is broken. • Format the CF card and execute the installation again. • Replace the CF card.
The following message is displayed on GOT. "Wrong operating system."	Either the wrong type of GOT was selected for the [Core OS write] setting of the drawing software, or the data on the CF card are broken. Make sure that the correct type of GOT is selected, and execute [Core OS write] again.
The following message is displayed on GOT. "The version of OS is not acceptable to this GOT. Installation will be canceled. Confirm the version of OS."	Install Core OS from the latest version of drawing software.

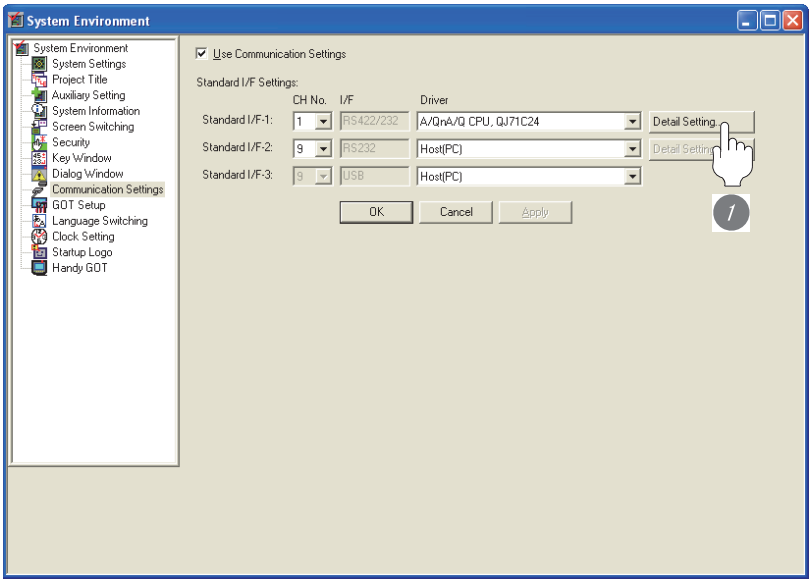
16. DOWNLOAD OF COMMUNICATION SETTINGS

16.1 Communication Settings

In [Communication Settings] of drawing software, set "1" to the channel No. to be used and select a communication driver. For details on [Communication Settings] of drawing software, refer to the following manual.

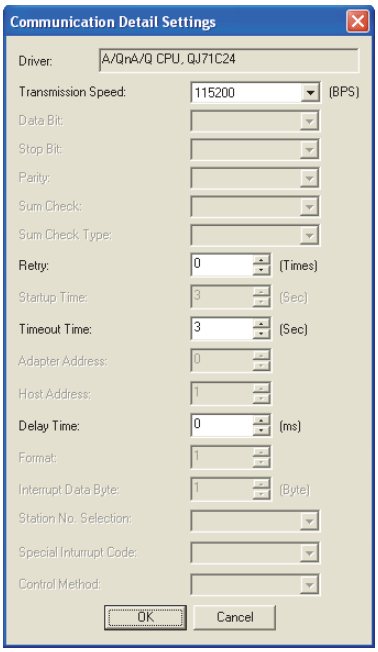
☞GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

1 Communication Settings



1 Make the detail settings of communication driver.

Example of Communication detail settings



16.2 Downloading project data

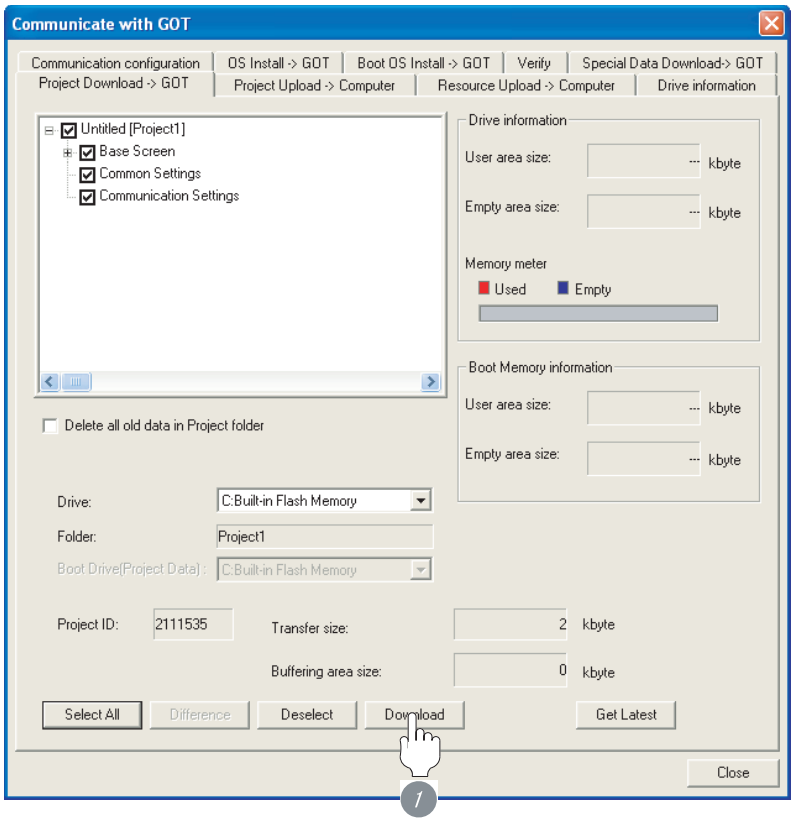
Download project data to the GOT.
For how to download project data, refer to the following manual.

☞ GT Designer2 Version☐ Basic Operation/Data Transfer Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

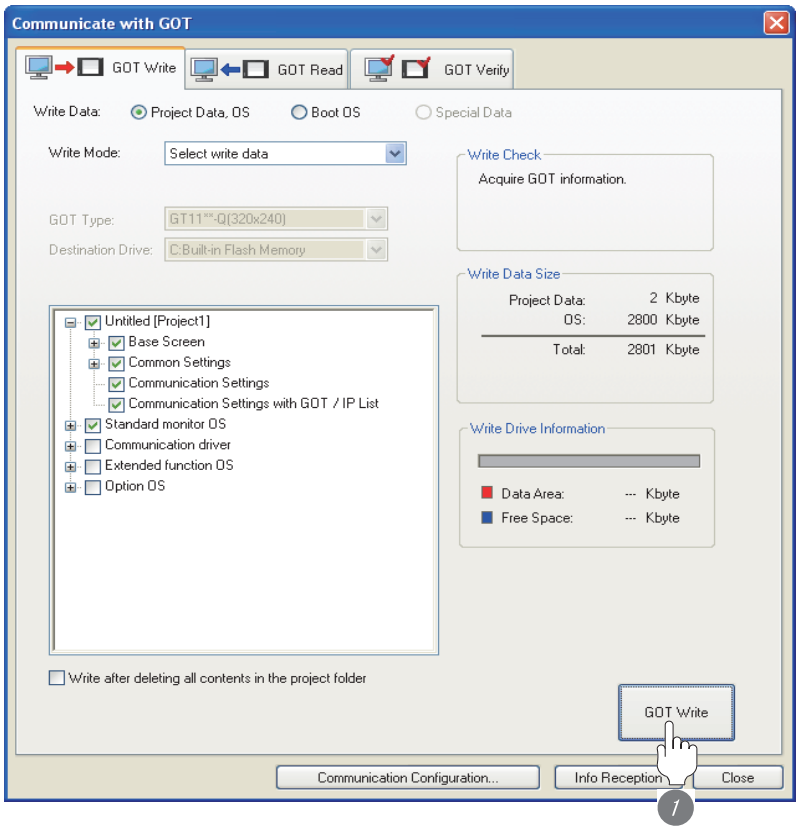
Communication Settings download screen

- For GT Designer2



1 Check the necessary items and click the Download button.

- For GT Designer3



1 Check the necessary items and click the GOT Write button.

Point

(1) Communication interface setting by Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication Setting" of project data.
For details on the Utility, refer to the following manual.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

(2) Precedence in communication settings
When settings are made by drawing software or the Utility, the latest setting is effective.

17. DOWNLOAD OF COMMON SETTINGS

17.1 Common Settings Dedicated to Handy GOT

The following data are downloaded as common settings: the system information to control the LED display for the Handy GOT operation switch and the Handy GOT setting to define the operation of the LED display for the grip switch.
After defining the system information and the Handy GOT setting in [Common Settings] of drawing software, download the common settings to the Handy GOT.

For details on Common Settings, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

For the settings on the display LED for operation switch, refer to the following section.

☞ Section 21.4.5 LED setting of operation switch

For the settings on the display LED for grip switch, refer to the following section.

☞ Section 21.4.10 LED settings of grip switch

17.2 Downloading Common Settings

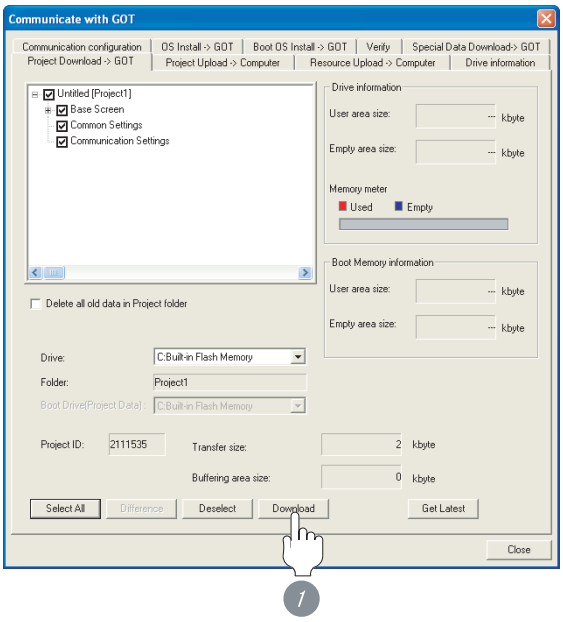
The Common Settings are always downloaded with project data or [Communication Settings] when they are downloaded from drawing software to a Handy GOT.
For the download method, refer to the following manual.

☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

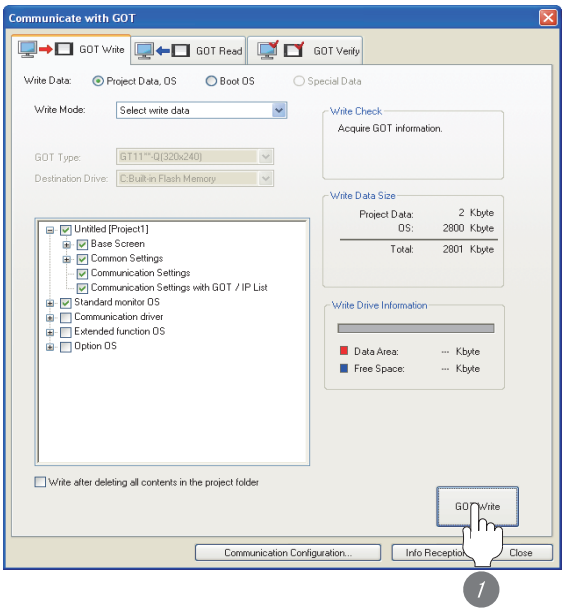
Common Settings download screen

- For GT Designer2



1 Check the necessary items and click the Download button.
(Common Settings cannot be unchecked.)

- For GT Designer3



1 Check the necessary items and click the GOT Write button.
(Common Settings cannot be unchecked.)

18. MAINTENANCE AND INSPECTION

STARTUP AND MAINTENANCE PRECAUTIONS

⚠WARNING

- When power is on, do not touch the terminals.
  Doing so can cause an electric shock or malfunction.
- Connect the battery correctly.
  Do not discharge, disassemble, heat, short, solder or throw the battery into the fire.
  Incorrect handling may cause the battery to generate heat, burst or take fire, resulting in injuries or fires.
- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases.
  Not switching the power off in all phases can cause a unit failure or malfunction.
  Undertightening can cause a short circuit or malfunction.
  Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

STARTUP AND MAINTENANCE PRECAUTIONS

⚠CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire.
- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.
- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.
- Do not drop or apply any impact to the battery.
  If any impact has been applied, discard the battery and never use it.
  The battery may be damaged by the drop or impact.
- Before touching the unit, always touch grounded metal, etc. to discharge static electricity from human body, etc.
  Not doing so can cause the unit to fail or malfunction.

DISPOSAL PRECAUTIONS

⚠CAUTION

- When disposing of the product, handle it as industrial waste.

The GOT does not include consumable components that will cause the shorten life.
However, the battery, liquid crystal screen and backlight have each life length.
It is recommended to replace the battery periodically.
(For the replacement of the liquid crystal screen and backlight, please consult your nearest sales office or FA center.)
For the life of the LCD screen or backlight, refer to the following.

☞ Section 3.2 Performance Specifications

18.1 Daily Inspection

Daily inspection items

No.	Inspection Item		Inspection Method	Criterion	Action
1	GOT mounting status		Check for loose mounting screws.	Securely mounted	Retighten screws within the specified torque range
2	Connection status	Loose terminal screws	Retighten screws with screwdriver	Not loose	Retighten terminal screws
		Proximate solderless terminals	Visual check	Proper intervals	Correct
		Loose connectors	Visual check	Not loose	Retighten connector fixing screws
3	Usage status	Dirt on protection sheet	Visual check	Not outstanding	Replace with new one
		Foreign material attachment	Visual check	No foreign matter sticking	Remove clean

Refer to the following for the model names of the protection sheet or the replacement procedure.

☞ Section 6.5 Protective Sheet

18.2 Periodic Inspection

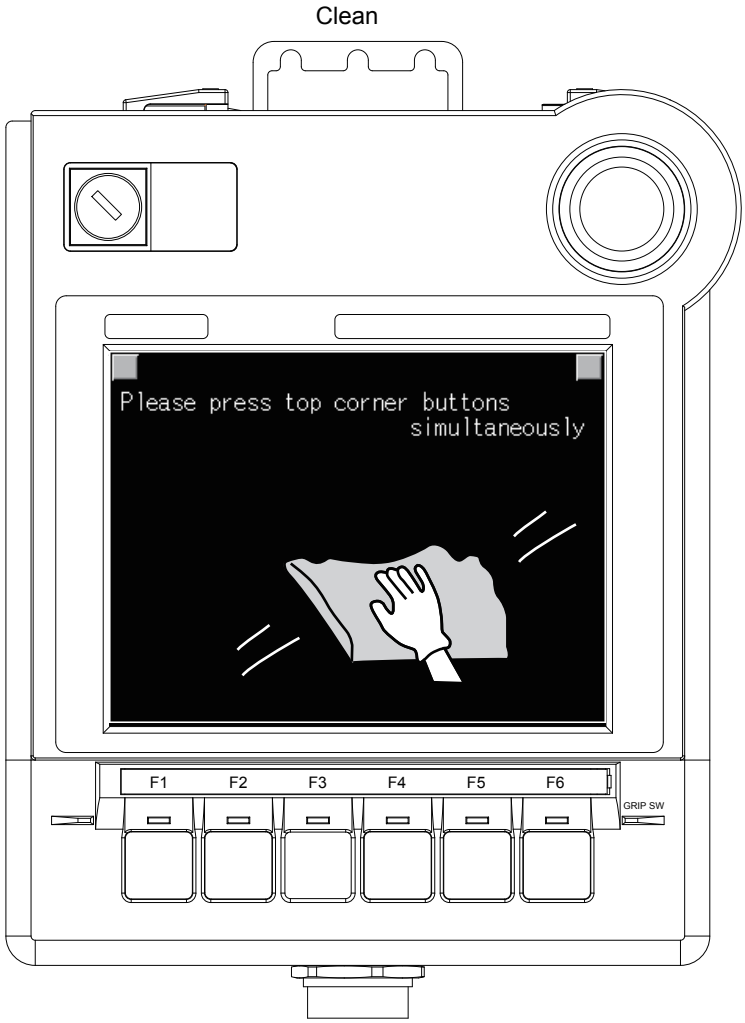
Yearly or half-yearly inspection items
The following inspection should also be performed when equipment has been moved or modified or the wiring changed.

No.	Inspection Item		Inspection Method	Criterion		Action
1	Surrounding environment	Ambient temperature	Make measurement with thermometer or hygrometer Measure corrosive gas	Display section	0 to 50°C	For use in control panel, temperature inside control panel is ambient temperature
				Other portions	0 to 55°C	
		Ambient humidity		10 to 90%RH		
		Atmosphere		No corrosive gas		
2	Power supply voltage check		24VDC Measure voltage across terminals.	20.4 to 26.4VDC		Change supply power
3	Mounting status	Looseness	Move module	Should be mounted firmly		Retighten screws
		Dirt, foreign matter	Visual check	No dirt, foreign matter sticking		Remove, clean
4	Connection status	Loose terminal screws	Retighten screws with screwdriver	Not loose		Retighten terminal screws
		Proximate solderless terminals	Visual check	Proper intervals		Correct
		Loose connectors	Visual check	Not loose		Retighten connector fixing screws
5	Battery		Check the system alarm (error code: 500) report on the Alarm Information screen (Section 12.4 Alarm Information).	(Preventive maintenance)		Replace with new battery when the current battery has reached the specified life span, even if battery voltage is not displayed.

18.3 Cleaning Method

Use the GOT always in a clean condition.
To clean the GOT, wipe the dirty part with a soft cloth using neutral detergent.
For the display operation of the [Clean] screen, refer to the following.

☞ Chapter 14 CLEANING OF DISPLAY SECTION (CLEAN)



Point

Precautions for cleaning

Do not use chemicals such as thinner, organic solvents and strong acids, since they may cause the protective sheet to be deformed or the dissolvable paint on the surface to peel off.
In addition, do not use spray solvents since they may cause the electrical failure of the GOT and peripheral devices.

18.4 Battery Voltage Low Detection and Battery Replacement

1 Low battery voltage detection and replacement

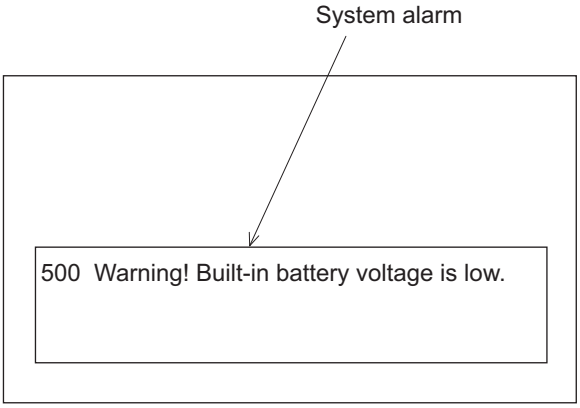
The battery is used for backing up the clock data, alarm history or recipe data.
It is recommended that you replace battery periodically.
Refer to the following for the replacement procedure.

☞ Section 6.4 Battery

The battery voltage low detection can be confirmed by the utility screen and system alarm.
Refer to the following for details of the battery status display by the utility screen.

☞ Chapter 11 CLOCK SETTINGS AND BATTERY STATUS DISPLAY (TIME SETTING AND DISPLAY)

By using system alarm, the message that notifies the battery voltage has decreased can be displayed at the battery voltage low on the screen of the GOT.



Refer to the following for details of the system alarm display.

☞ GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Functions)

Point

Battery replacement timing

When detecting voltage low, replace the battery immediately.
Data can be saved for approximately a month after the battery voltage low detection and cannot be saved after that.
If it exceeds a month from the voltage low detection to battery replacement, the clock data or D-drive (Internal SRAM) data may become indefinite.
Adjust the clock and format the D drive (Internal SRAM).

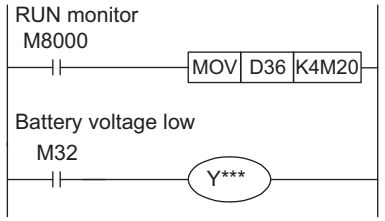
Hint!

Example of alarm output to external device (lamp, buzzer, etc.)

The following describes an example of outputting the battery voltage low signal from a FX series PLC to an external device with system information.

Condition: The Write Device is "D20" and all data is used (the Select All button is clicked on the setting screen of drawing software) for the system information assignment.

D36 b12: Battery voltage low (System Signal 2-2)
Turned on upon a battery voltage drop.
Used as shown below in the sequence program.



"*" indicates the output number at which the external device is connected.

For details of system information, refer to the following.

☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

2 Handling of Batteries and Devices with Built-in Batteries in EU Member States

This section describes the precautions for disposing of waste batteries in EU member states and exporting batteries and/or devices with built-in batteries to EU member states.

(1) Disposal precautions

In EU member states, there is a separate collection system for waste batteries. Dispose of batteries properly at the local community waste collection/recycling center.

The following symbol is printed on the batteries and packaging of batteries and devices with built-in batteries used for Mitsubishi Graphic Operation Terminal (GOT).

Symbol

Point This symbol is for EU member states only.
The symbol is specified in the new EU Battery Directive (2006/66/EC) Article 20 "Information for end-users" and Annex II.

The symbol indicates that batteries need to be disposed of separately from other wastes.

(2) Exportation precautions

The new EU Battery Directive (2006/66/EC) requires the following when marketing or exporting batteries and/or devices with built-in batteries to EU member states.

- To print the symbol on batteries, devices, or their packaging
- To explain the symbol in the manuals of the products

(a) Labelling

To market or export batteries and/or devices with built-in batteries, which have no symbol, to EU member states on September 26, 2008 or later, print the symbol shown in (1) on the GOT or their packaging.

(b) Explaining the symbol in the manuals

To export devices incorporating Mitsubishi Graphic Operation Terminal to EU member states on September 26, 2008 or later, provide the latest manuals that include the explanation of the symbol.

If no Mitsubishi manuals or any old manuals without the explanation of the symbol are provided, separately attach an explanatory note regarding the symbol to each manual of the devices.

Remark The requirements apply to batteries and/or devices with built-in batteries manufactured before the enforcement date of the new EU Battery Directive (2006/66/EC).

18.5 Backlight Shutoff Detection

The backlight is built into GOT for the liquid crystal display.
When GOT detects backlight shutoff, the POWER LED blinks green/orange alternately.
The brightness of the backlight decreases with the lapse of usage period. When backlight shutoff is detected or the display becomes unclear, replace the backlight.
For replacement of the backlight, contact your nearest sales office or FA Center.

(1) Life of backlight

The usable duration of backlight can be extended by setting to "Screen saving backlight off" in the utility of GOT (GOT set up).
Refer to the following for details.

☞ Chapter 10 DISPLAY AND OPERATION SETTINGS (GOT SETUP)

18.5.1 Backlight shutoff detection and external alarm

When the GOT detects a backlight shutoff, the system information set with drawing software is turned on.
You can issue a backlight shutoff of the GOT from the PLC to external devices (such as the lamp or buzzer), using system information.
To avoid any screen touch operation by the user who misunderstands it is in screen saving mode, install an external alarm and interlock the loads that would cause danger.
For details of the system information, refer to the following.

☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

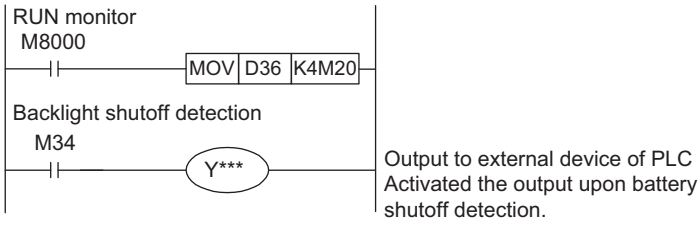
Hint!

Example of alarm output to external devices (such as lamp or buzzer)

The following provides an example of outputting the backlight shutoff detection signal from a FX Series PLC to an external device, using system information.

Condition: The Written Device is "D20" and all data is used (the Select All button is clicked on the setting screen of drawing software) for the system information assignment.

D36 b14: D36b14: Backlight shutoff detection (System Signal 2-2)
Turned on upon a backlight shutoff.
Used as shown below in the sequence program.



"*" indicates the output number at which the external device is connected.

Point

Precautions for the backlight shutoff status

In the backlight shutoff status, the touch key operates.
Early replacement of backlight is recommended.

19. ERROR MESSAGE AND SYSTEM ALARM

This chapter describes the error messages and system alarm displayed in the GOT.
As the error code and error message displaying functions when an error occurs at the GOT or Controller, the system alarm is available.
The error code can also be confirmed in the error code storage area of the system information.
For details of system alarm and system information, refer to the following.

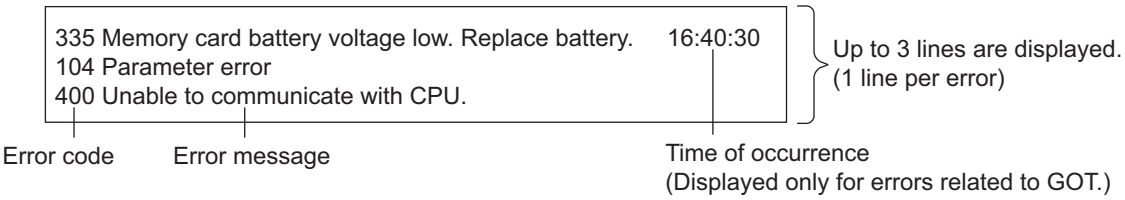
☞GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

19.1 Error Contents Display

This section describes how to identify the error code and system alarm displayed on the monitor screen by the system alarm display function and the reference material.

(1) Displaying format on monitor screen ... Displayed in user setting position
The system alarm is displayed together with an error code, its error message and occurrence time.
The displayed error code and error message are registered to the GOT in advance and need not to be prepared by the user.



Display priority
The alarm is displayed in the following priority if the displaying range is one or two lines.
(1) GOT error :The error in the GOT is displayed as an alarm.
(2) CPU error :The error in the PLC CPU is displayed as an alarm.
(3) Network error :The error in the network is displayed as an alarm.
Alarms with smaller priority cannot be displayed if system alarms overflow the displaying range.
As well, the error code, error message or time is not displayed if the displayed message overflows each line in the displaying range.

(2) Error code and reference manual

Error source	Error code	Contents	Reference
CPU	0 to 99 (Value of D9008)	Error code of CPU (for ACPU)	User's manual of the ACPU connected with GOT
	100 to 299	Error code of CPU • FX PLC*1 • Third party PLC • Temperature controller (OMRON temperature controller only)	User's manual of the FXCPU to which GOT is connected If a third-party PLC is connected, take actions referring to the error message. ☞GOT 1000 Series Connection Manual
GOT	300 to 399	Error code of the GOT main unit function	Section 19.2
	400 to 499	Error code of the GOT communication function	
	500 to 699	Error code of the GOT main unit function	
CPU	1000 to 10000 (Value of SD0)	Error code of CPU (for QCPU, QnACPU)	User's manual of the QCPU and QnACPU connected with GOT
Servo amplifier*2	20016 to 20237	Error code of servo amplifier	User's manual of the servo amplifier connected to GOT

*1 The assigned error code for FXPLC is 100 to 109, which displays the status of M8060 to M8069.
(Example) When the error code (100) error occurs, correct the error according to the M8060 description.

*2 The error code displayed on GOT is calculated by changing the error code displayed on the servo amplifier to a decimal number and adding "20000" to it.
For this reason, to refer to the manual of the servo amplifier based on the error code displayed upon a system alarm caused to the GOT, subtract the error code by "20000" and convert the lower three digits into a hexadecimal.
(Example: If the system alarm displayed at GOT is "20144," the error code of the servo amplifier is: 20144 - 20000 = 144 (BIN) = 90 (HEX).

19.2 List of Error Message/System Alarm

The system alarm detected with GOT is shown below

Error code	Error message	Action
303	Set monitor points too large. Decrease setting points.	The number of objects of the screen to be displayed is too large and the system work area cannot be secured. Decrease the number of objects from the displayed screen. For the number of maximum objects for 1 screen, refer to the following. ☞ GT Designer2 Version□ Screen Design Manual GT Designer3 Version1 Screen Design Manual (Fundamentals)
304	Set trigger points too large. Decrease setting points.	When cycle is / ON and when cycle is / OFF the number of objects used exceeds 100. Decrease the number of objects.
306	No project data. Download screen data.	The project data is not downloaded to the built-in flash memory. Download the project data to the built-in flash memory.
307	Monitor device not set	The monitor device of the object is not set. Set the monitor device of the object.
308	No comment data. Download comment.	The comment file does not exist. Create the comment file and download to GOT.
309	Device reading error. Correct device.	The error occurred when reading a continuous device. Correct the device.
310	Project data does not exist or out of range.	1. Specified base screen / window screen does not exist in the project data. 2. Specified base screen / window screen is out of the permissible area. Specify the existing base screen / window screen.
311	No. of alarm has exceeded upper limit. Delete restored alarm.	The number of alarm histories that can be observed by the alarm history display function has exceeded the maximum points (1024 points). Delete the restored history to decrease the number of alarm histories.
312	No. of alarm has exceeded upper limit. Delete collected data.	The collection frequency exceeded the upper limit when "Store Memory" and "Accumulate/Average" were set in the scatter graph. 1. Approve "Clear trigger" setup in the scatter graph. 2. Set the "Operation at frequency over time" and "initialize and continue" in scatter graph.
315	Device writing error. Correct device.	Error occurred while writing in the device. Correct the device.
316	Cannot display or input operation value. Review expression.	In indirect specification of comment/parts number, the data operation result exceeded the range in which device type can be expressed. Review the data operational expression, in order not exceeding the range in which the device type can be expressed.

Error code	Error message	Action
320	Specified object does not exist or out of range.	The part file does not exist. Create the part file and download to GOT.
321	Station No. for monitor device is wrong	Check the monitor target station No. of the project data.
322	Dedicated device is out of range. Confirm device range.	The monitored device No. is set out of the permissible range of the targeted PLC CPU, or the data length for a device dedicated to 32 bits is set other than 32 bits. 1. Set the device within the range that can be monitored by the monitored PLC CPU and parameter settings. 2. AB: L device/ S7-200: HC device/ OMPON temperature controller: Set the data length of C0, C1 and C3 devices to 32 bits.
330	Insufficient memory media capacity. Confirm M-card capacity.	Available memory of the memory card is insufficient. Check the available memory of the memory card on the Drive Information of drawing software. ☞ GT Designer2 Version□ Basic Operation/Data Transfer Manual GT Designer3 Version1 Screen Design Manual (Fundamentals)
331	Memory card not installed or M-CARD switched OFF	The memory card is uninstalled or access switch is OFF in drive. 1. Install the memory card in the specified drive. 2. Turn ON the access switch.
332	Memory media is not formatted.	Memory card is not formatted or formatted incorrectly. Format the memory card.
334	Memory media error. Replace memory media.	Memory card is faulty. Replace the memory card.
345	BCD/BIN conversion error. Correct data	The BCD/BIN conversion disabled data is being displayed/input. 1. Change the device data to be displayed to the BCD value. 2. Correct the input value to the 4 digits integer.
351	Recipe file error. Confirm content of recipe file.	The contents of the recipe file are not normal. 1. Confirm the contents of the recipe files in the memory card. 2. Reboot the GOT after deleting the recipe file in the memory card (format).
352	Recipe file make error. Reboot GOT after inserting memory card.	Failed to generate recipe file. Reboot the GOT after installing the memory card.
353	Unable to write Recipe file. Confirm memory card is inserted.	Failed to write in the recipe file. 1. Confirm the contents of the memory card. 2. Do not pull out the memory card while recipe is operating.
354	Recipe file write error	Error occurred while writing in the recipe file. Do not unplug the memory card while recipe is operating.

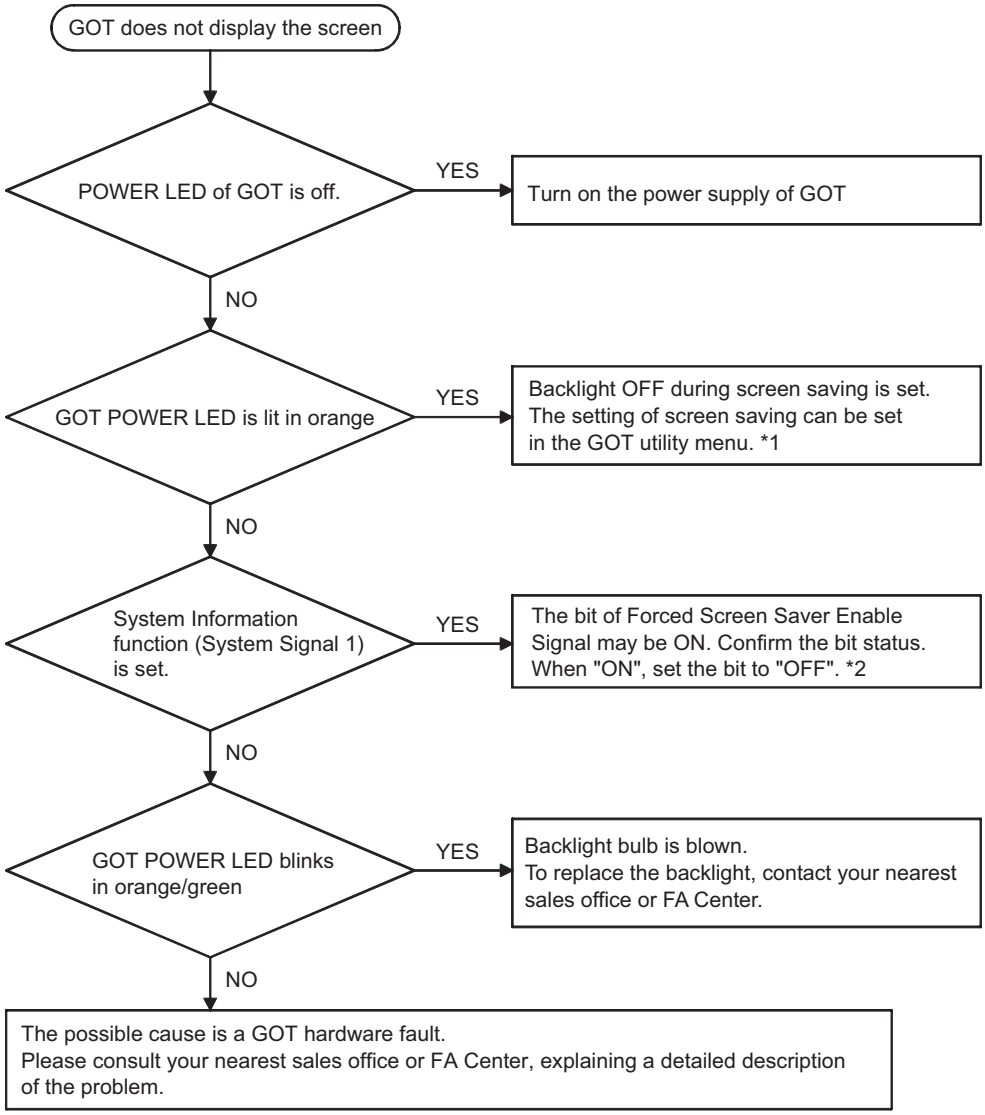
Error code	Error message	Action
355	Recipe file read error	Error occurred while writing in the recipe file. 1. Do not unplug the memory card while recipe is operating. 2. Confirm the contents (device value) of the recipe file in the memory card.
356	File system error occurred in PLC. Confirm file register.	Error occurred in the specified file register when executing the recipe function by specifying the file register name. 1. Execute the recipe function again after confirming the file register name. 2. Execute the recipe function again after formatting the PC memory in the specified PLC CPU drive with GX Developer.
357	Error in specified PLC drive. Confirm PLC drive.	When executing the recipe function specifying the file register name, error occurred in PLC CPU drive. 1. Execute the recipe function again after confirming the specified PLC CPU drive. 2. Execute the recipe function again after formatting the PC memory in the specified PLC CPU drive with GX Developer.
358	PLC file access failure. Confirm PLC drive.	When the recipe function is executed specifying the file register name, PLC CPU file register could not be accessed. Execute the recipe function again after confirming the specified PLC CPU drive / file register name. (When you specify drive 0, execute the recipe function again after changing to other drives.)
359	Processing from another peripheral device. Execute it after.	When the recipe function is executed specifying the file register name, other peripherals carry out the process to the file register. Wait until the processing of other peripherals end, and execute the recipe function again.
360	0 divisor division error. Confirm operation expression.	Division 0 was generated by the data operational expression. Review the data operational expression so that the divisor should not become 0.
370	Upper and lower limit value error. Confirm value setting.	The setting of lower/upper limit value is [Upper limit ≤ Lower limit]. Correct the setting so as to be "Upper limit > Lower limit".
402	Communication timeout. Confirm communication pathway or modules.	The time-out error occurred during communication. 1. Confirm the cable omission and PLC status. 2. Put COM instruction when A, QnA or QCPU is connected and the PLC scanning is long.
403	SIO status error. Confirm communication pathway or modules.	Either of the overrun error, parity bit error or flaming error was generated when the RS-422 / RS-232 communication was received. Confirm the cable omission, status of the PLC, and the transmission speed of the computer link.
406	Specified station access is out of range. Confirm station no.	1. Station numbers other than master/local station are specified at the CC-Link connection (via G4). 2. Accessed PLC CPUs other than QCPU. Confirm the station number of the monitor screen data.
410	Cannot perform operation because of PLC run mode. stop the PLC.	The operation, which could not be performed during RUN of PLC CPU, was performed. Stop the PLC CPU.

Error code	Error message	Action
411	Memory cassette is write-protected. Check the memory cassette.	The memory cassette installed in PLC CPU is in the state protected with EPROM or E^2PROM. Confirm the memory cassette installed in PLC CPU.
412	Cannot read/write device protected by keyword. Remove key word.	The key word is set in PLC CPU. Cancel the key word.
448	PLC cannot handle as requested. Correct devices.	The file register of QnACPU and the device beyond the outside range of buffer memory was specified. Correct the monitor device by setting file register of PLC CPU.
480	Communication channel not set. Set channel number on Utility.	One or more channel for PLC and host (microcomputer) connection (Ch.1 to 5) is not allocated by drawing software or utility. Set the channel by drawing software or utility.
500	Warning! Built-in battery voltage is low.	The voltage of the GOT built-in battery is decreased. Replace the GOT built-in battery.
510	Clock data input out of range	The value that is input as clock data is out of the input enabled range. In this case, the input value is not accepted. Confirm the input range of the value to be input as clock data, and input the proper value again.
522	Unnecessary file deleted to create new file.	Cancelled the file of different contents and created a new file. Note that the old file is cancelled and the new file is created if the file of the same name with different contents exists when creating files.
524	Device writing error. Correct device.	When writing in the device, error occurred. Correct the device.
525	Unable to read/write alarm log files under different projects.	Unable to read the alarm log file saved by the different project. Confirm where to store the alarm log file and alarm log file.
535	Cannot open image file.	• No CF card is installed in the drive or the access switch is turned on. 1. Install a recording medium in the specified drive. 2. Turn the access switch on. • The specified file is not found in the card. 3. Add the image file or change the image file name to a correct one.
536	Image file error or invalid file format.	There is an error in the image file data or the image file format is not supported. Change to the correct image file.

Error code	Error message	Action
550	Invalid key code	The key code input execution trigger was ON with the non-target key code set in the key code storage device. Confirm the key code supported by the object where error occurs.
570	Recipe device points too large.	The number of the set points of the recipe device exceeds the specified range. Put the number of the set points of the recipe device within the specified range.
571	Capacity shortage of user memory (RAM)	There is no empty area/space in D drive. If the alarm log file located in the D drive needs to be backed up, copy it to the CF card with the utility and then format the D drive. If the recipe function is used to read devices, format the D drive and then read again to create the recipe data.

19.3 Troubleshooting for Monitoring

This section describes the countermeasures when GOT does not display the monitor screen.
If the trouble is not cleared even after the following action is taken, contact the nearest branch office or agency of Mitsubishi Electric System & Service Co., and explain the phenomenon.



*1 For utility menu, refer to the following.

☞ Chapter 10 DISPLAY AND OPERATION SETTINGS (GOT SETUP)

*2 For the details of the forced screen saver enable signal, refer to the following.

☞ GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

19.4 Starting GOT

19.4.1 Power-Off

Do not turn the GOT power OFF during the start-up right after turning the GOT power on or during the restart-up after transferring each OS or project data and changing the setting on the utility screen.
"When "Booting" or "Booting project data" is displayed on the screen, GOT is in start-up mode or restart-up mode."

<When GOT standard monitor OS is V 01. 02. 01 or before>
When the GOT power in turned OFF, the setting may return to the factory-shipped default when the GOT power turned on next time.
If the power is turned off due to power failure or others, install the OS or download the project data again.

<When GOT standard monitor OS is V 01. 02. 02 or later>
Even if the power is turned off during the start-up, GOT operates in the condition that the OS and project data before the power OFF are stored when turning the GOT power on.

19.4.2 Communication from drawing software to the GOT

Drawing software cannot communicate with the GOT while "Booting" is displayed on the GOT screen.
"Booting" is displayed on the GOT screen under the following conditions:

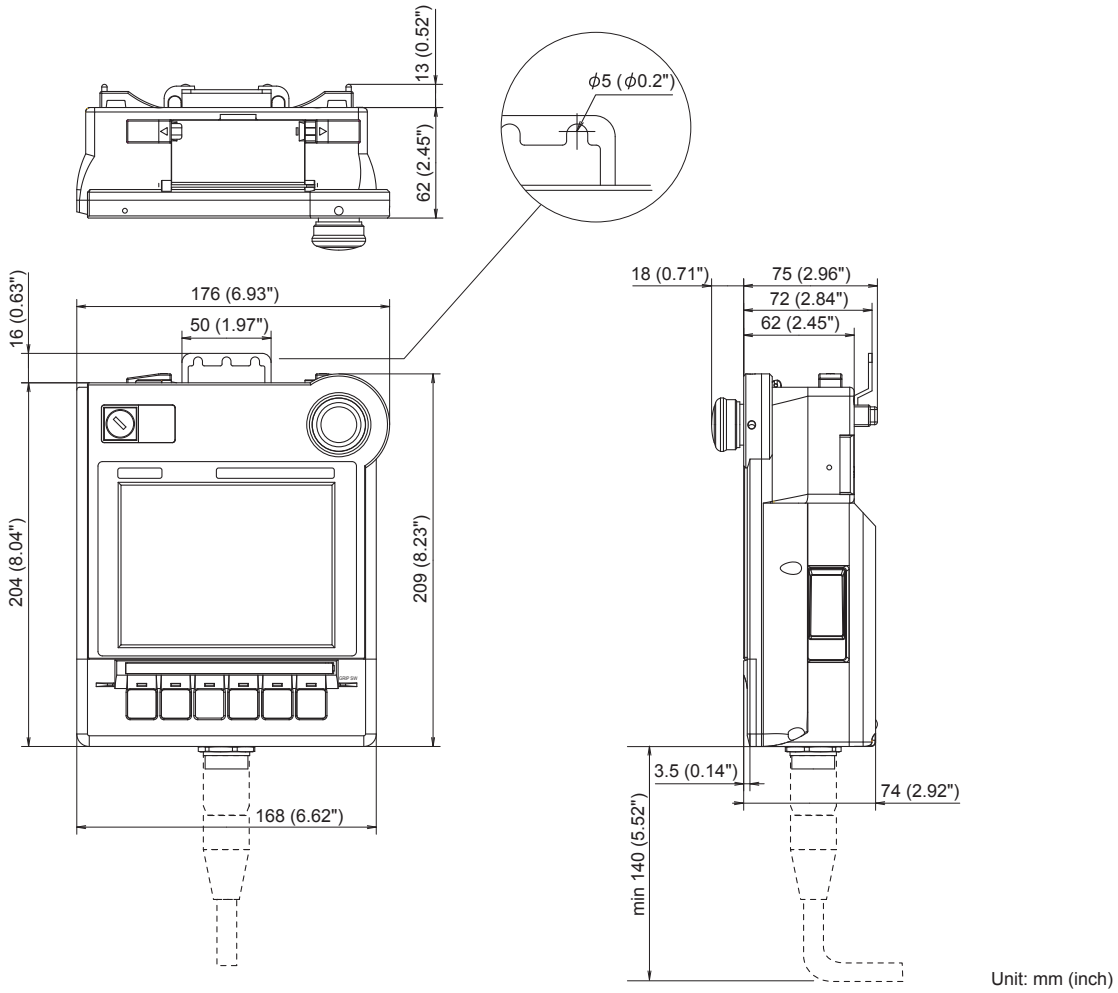
(1) Right after turning on the power to the GOT.
(2) When rebooting after transferring OSs and project data.
(3) When rebooting after changing the settings on the utility screen.

When the communication with GOT is attempted, communication errors will occur on drawing software.
Carry out the communication after "Booting project data" is displayed on the GOT screen.
It may take time to start the communication between the GOT and the controller depending on the type of controllers.
GOT starts the communication with drawing software after the communication with the controller has been established.

APPENDICES

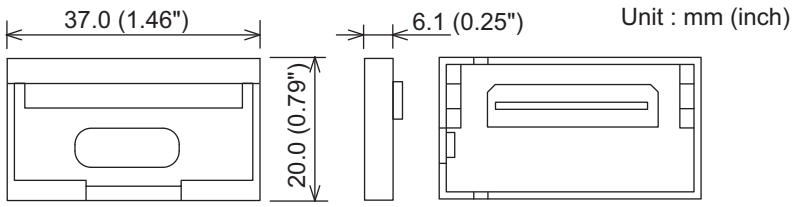
Appendix.1 External Dimensions

External dimensions of Handy GOT



Unit: mm (inch)

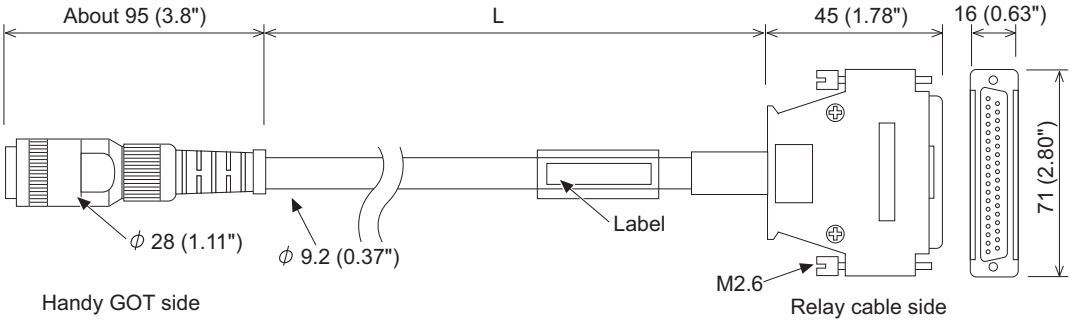
External dimensions of memory board



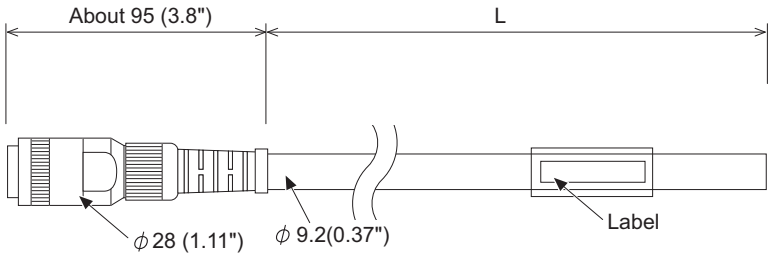
External dimensions of external cables

GT11H-C□□□-37P

Unit : mm (inch)



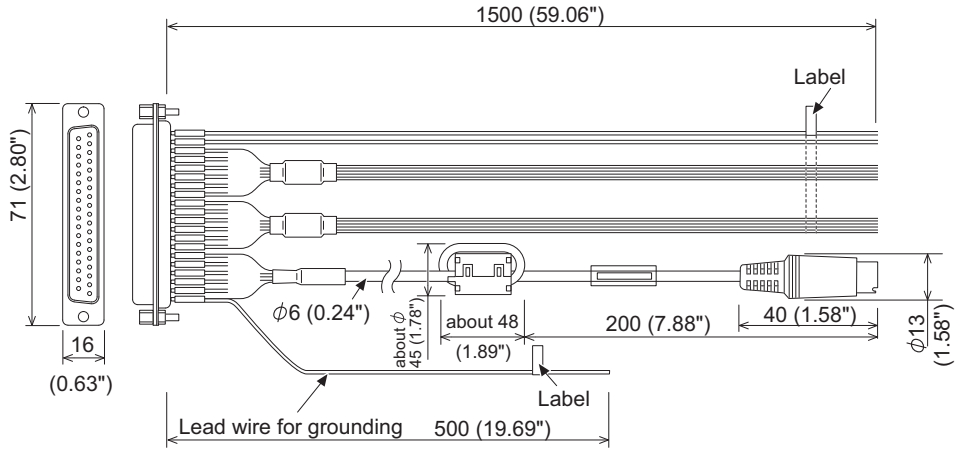
GT11H-C□□□



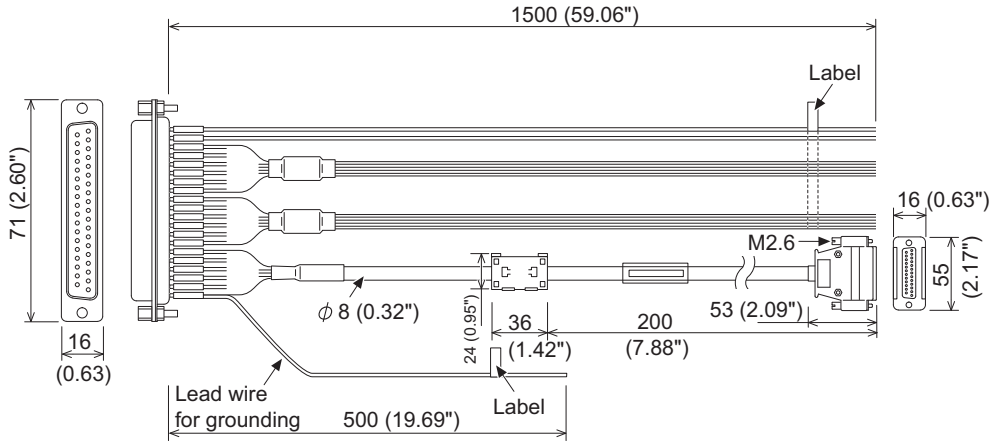
Value of □□□	Length L mm (inch)
30	3000 (118.1")
60	6000 (240.0")
100	10000 (393.7")

External dimensions of communication cable

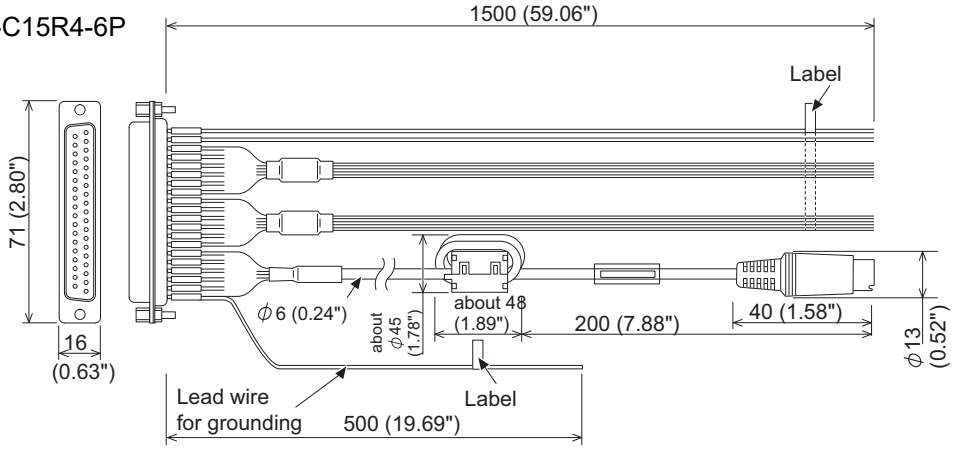
GT11H-C15R4-8P



GT11H-C15R4-25P

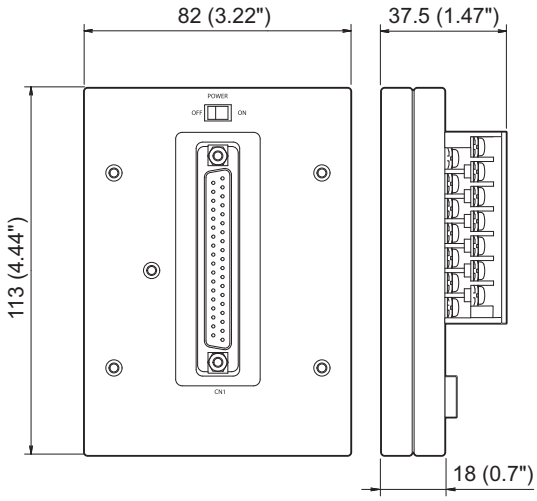


GT11H-C15R4-6P

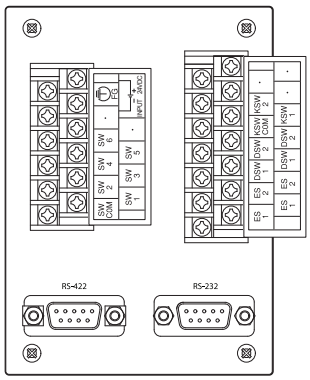


Unit: mm (inch)

External dimensions of Connector Conversion Box

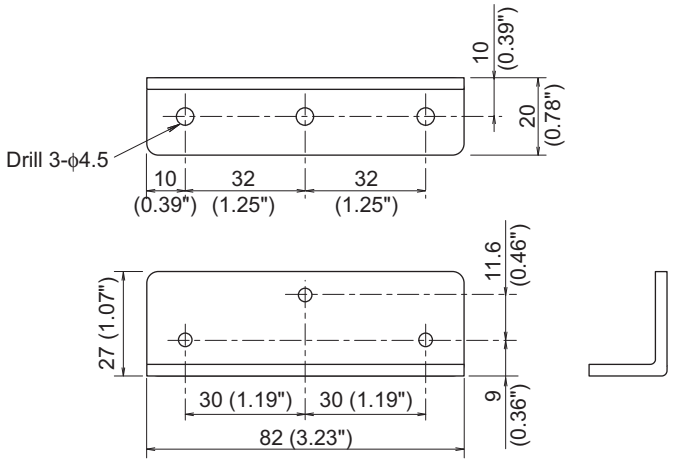


Terminal block cover opened



Unit: mm (inch)

External dimensions of Metal fixture



Unit: mm (inch)

Appendix.2 Transportation Precautions

When transporting lithium batteries, make sure to treat them based on the transport regulations.

Appendix 2.1 Relevant models

The battery for the GOT1000 Series is classified as shown in the table below.

Product name	Model	Description	Handled as
Battery for GOT1000 Series	GT11-50BAT	Lithium coin battery	Non-dangerous goods

Appendix 2.2 Transport guidelines

Products are packed properly in compliance with the transportation regulations prior to shipment. When repacking any of the unpacked products to transport it to another location, make sure to observe the IATA Dangerous Goods Regulations, IMDG Code and other local transportation regulations.
For details, please consult your transportation company.

Appendix.3 List of Functions Added by GT Designer2 Version Upgrade (For GOT1000 Series)

For the functions added by version upgrade of the GT Designer2, refer to the following, or contact your local distributor.

☞ GT Designer2 Version2 Screen Design Manual

WARRANTY

Please check the following product warranty details before using this product.

■1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion.
Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

(1) Gratis Warranty Term

The gratis warranty term of the product shall be for thirty-six (36) months after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be forty-two (42) months.
The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

(2) Gratis Warranty Range

(a) The customer shall be responsible for the primary failure diagnosis unless otherwise specified.
If requested by the customer, Mitsubishi Electric Corporation or its representative firm may carry out the primary failure diagnosis at the customer's expense.
The primary failure diagnosis will, however, be free of charge should the cause of failure be attributable to Mitsubishi Electric Corporation.

(b) The range shall be limited to normal use within the usage state, usage methods, and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(c) Even within the gratis warranty term, repairs shall be charged in the following cases.
- Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
- Failure caused by unapproved modifications, etc., to the product by the user.
- When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
- Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
- Replacing consumable parts such as a battery, backlight, and fuse.
- Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
- Failure caused by reasons that could not be predicted by scientific technology standards at the time of shipment from Mitsubishi.
- Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

■2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Mitsubishi shall not accept a request for product supply (including spare parts) after production is discontinued.

■3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center.
Note that the repair conditions at each FA Center may differ.

■4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

■5. Changes in product specifications

The specifications given in the catalogs, manuals, or technical documents are subject to change without prior notice.

■6. Product application

(1) In using the Mitsubishi graphic operation terminal, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the graphic operation terminal device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi graphic operation terminal has been designed and manufactured for applications in general industries, etc.
Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service shall be excluded from the graphic operation terminal applications.
In addition, applications in which human life or property could be greatly affected, such as in aircraft, medical, railway applications, incineration and fuel devices, manned transportation equipment, recreation and amusement devices, safety devices, shall also be excluded from the graphic operation terminal.
Even for the above applications, however, Mitsubishi Electric Corporation may consider the possibility of an application, provided that the customer notifies Mitsubishi Electric Corporation of the intention, the application is clearly defined and any special quality is not required, after the user consults the local Mitsubishi representative.

GRAPHIC OPERATION TERMINAL

GOT1000

GT11 Handy GOT User's Manual 1/2

(Hardware · Utility)

MODEL	GT11HS-U-E
MODEL CODE	09R817
JY997D20101AF	

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

Effective October 2022
Specifications are subject to change without notice.

MITSUBISHI ELECTRIC

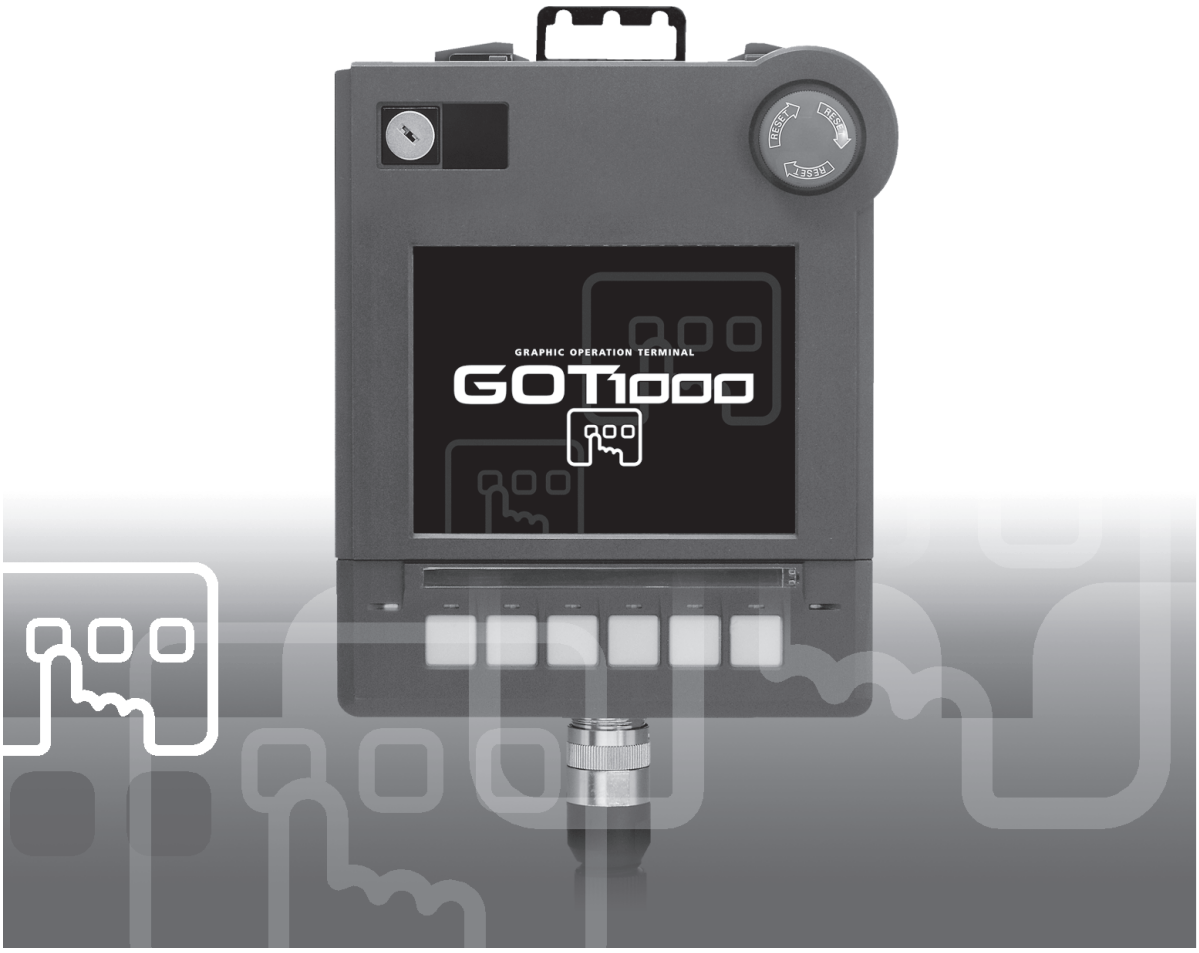
GRAPHIC OPERATION TERMINAL GOT

GRAPHIC OPERATION TERMINAL

GOT1000

GT11 Handy GOT User's Manual

(Connection)



●SAFETY PRECAUTION●

(Read these precautions before using.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.
The precautions given in this manual are concerned with this product.
In this manual, the safety precautions are ranked as "WARNING" and "CAUTION"

⚠ WARNING	Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.
⚠ CAUTION	Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Depending on circumstances, procedures indicated by "CAUTION" may also be linked to serious results.
In any case, it is important to follow the directions for usage.

[DESIGN PRECAUTIONS]

⚠WARNING

- Some failures of the GOT or cable may keep the outputs on or off.
  Some failures of a touch panel may cause malfunction of the input objects such as a touch switch.
  An external monitoring circuit should be provided to check for output signals which may lead to a serious accident.
  Not doing so can cause an accident due to false output or malfunction.

- If a communication fault (including cable disconnection) occurs during monitoring on the GOT, communication between the GOT and PLC CPU is suspended and the GOT becomes inoperative.
  A system where the GOT is used should be configured to perform any significant operation to the system by using the switches of a device other than the GOT on the assumption that a GOT communication fault will occur.
  Not doing so can cause an accident due to false output or malfunction.

- Do not use the GOT as the warning device that may cause a serious accident.
  An independent and redundant hardware or mechanical interlock is required to configure the device that displays and outputs serious warning.
  Failure to observe this instruction may result in an accident due to incorrect output or malfunction.

[DESIGN PRECAUTIONS]

⚠WARNING

- Incorrect operation of the touch switch(s) may lead to a serious accident if the GOT backlight is gone out.
  When the GOT backlight goes out, the POWER LED blinks (green/orange) and the display section dims, while the input of the touch switch(s) remains active.
  This may confuse an operator in thinking that the GOT is in "screensaver" mode, who then tries to release the GOT from this mode by touching the display section, which may cause a touch switch to operate.
  Note that the following occurs on the GOT when the backlight goes out.
  ▪ The POWER LED flickers (green/orange) and the monitor screen appears blank.

⚠CAUTION

- Do not bundle the control and communication cables with main-circuit, power or other wiring.
  Run the above cables separately from such wiring and keep them a minimum of 100mm (3.94in.) apart. Not doing so noise can cause a malfunction.
- Do not press the GOT display section with a pointed material as a pen or driver.
  Doing so can result in a damage or failure of the display section.
- Before connecting to GOT, turn ON the controller to enable the communication.
  When the communication of controller is not available, a communication error may occur in GOT.

[MOUNTING PRECAUTIONS]

⚠WARNING

- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the GOT to/from the panel .
- Always turn off the power ON/OFF switch on the connector conversion box before connecting or disconnecting the GOT to it.
  Connecting or disconnecting the GOT with the power being turned on may result in damage to the unit or malfunctions.
- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the relay cable onto/from the GOT.
- Be sure to shut off all phases of the external power supply used by the system before mounting or removing the option function board onto/from the GOT.
  Not doing so can cause the unit to fail or malfunction.
- When installing the option function board or battery, or operating the reset switch, wear an earth band etc. to avoid the static electricity.
  The static electricity can cause the unit to fail or malfunction.

[MOUNTING PRECAUTIONS]

⚠CAUTION

- Use the GOT in the environment that satisfies the general specifications described in this manual. Not doing so can cause an electric shock, fire, malfunction or product damage or deterioration.
- Never drop cutting chips and electric wire chips into the ventilation window of the Handy GOT when you drill screw holes or perform wiring.
  Otherwise, fire, failure or malfunction may be caused.
- Connect connection cables securely to the specified connectors while the power is turned OFF.
  Imperfect connection may cause malfunction or failure.
- When connecting cables, pay attention to the contents described in this section.
  Especially, attach the rear cover so that PCBs inside the Handy GOT are not interfered with connection cables.
- Securely connect the option function board to the connector provided for the board.
- When inserting/removing a CF card into/from the GOT, turn the CF card access switch off in advance. Failure to do so may corrupt data within the CF card.
- When inserting a CF card into the GOT, push it into the insertion slot until the CF card eject button will pop out. Failure to do so may cause a malfunction due to poor contact.
- When removing a CF card from the GOT, make sure to support the CF card by hand, as it may pop out. Failure to do so may cause the CF card to drop from the GOT and break.

[WIRING PRECAUTIONS]

⚠WARNING

- Make sure to attach the back cover to the Handy GOT before turning on the power and starting operation after the installation or wiring work.
  Otherwise, electrical shock may be caused.

- Be sure to shut off all phases of the external power supply used by the system before wiring. Failure to do so may result in an electric shock, product damage or malfunctions.

- Please make sure to ground FG terminal of the GOT power supply section by applying 100 or less which is used exclusively for the GOT. Not doing so may cause an electric shock or malfunction.

- Correctly wire the GOT power supply section after confirming the rated voltage and terminal arrangement of the product. Not doing so can cause a fire or failure.

- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT. Not doing so can cause a fire, failure or malfunction.

[WIRING PRECAUTIONS]

⚠CAUTION

- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.

- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.

- Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range.
  Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

[TEST OPERATION PRECAUTIONS]

⚠WARNING

- Before performing the test operations of the user creation monitor screen (such as turning ON or OFF bit device, changing the word device current value, changing the settings or current values of the timer or counter, and changing the buffer memory current value), read through the manual carefully and make yourself familiar with the operation method.
  During test operation, never change the data of the devices which are used to perform significant operation for the system. False output or malfunction can cause an accident.

[STARTUP/MAINTENANCE PRECAUTIONS]

⚠WARNING

- When power is on, do not touch the terminals.
  Doing so can cause an electric shock or malfunction.

- Connect the battery correctly. Do not discharge, disassemble, heat, short, solder or throw the battery into the fire. Incorrect handling may cause the battery to generate heat, burst or take fire, resulting in injuries or fires.

- Before starting cleaning or terminal screw retightening, always switch off the power externally in all phases. Not switching the power off in all phases can cause a unit failure or malfunction. Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

[STARTUP/MAINTENANCE PRECAUTIONS

⚠CAUTION

- Do not disassemble or modify the unit.
  Doing so can cause a failure, malfunction, injury or fire

- Do not touch the conductive and electronic parts of the unit directly.
  Doing so can cause a unit malfunction or failure.

- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.

- When unplugging the cable connected to the unit, do not hold and pull the cable portion. Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.

- Replace battery with GT11-50BAT by Mitsubishi electric Co. only.
  Use of another battery may present a risk of fire or explosion.

- Dispose of used battery promptly.
  Keep away from children. Do not disassemble and do not dispose of in fire.

[DISPOSAL PRECAUTIONS]

⚠CAUTION

- When disposing of the product, handle it as industrial waste.
  When disposing of batteries, separate them from other wastes according to the local regulations.
  (For details of the battery directive in EU member states, refer to 18.4 2 .)

[TRANSPORTATION PRECAUTIONS]

⚠CAUTION

- When transporting lithium batteries, make sure to treat them based on the transport regulations.

- Before transporting the GOT, turn the GOT power on and check that the battery voltage status is normal on the Time setting & display screen (utilities screen). In addition, confirm that the adequate battery life remains on the rating plate.
  Transporting the GOT with the low battery voltage or the battery the reached battery life may unstabilize the backup data unstable during transportation.

- Make sure to transport the GOT main unit and/or relevant unit(s) in the manner they will not be exposed to the impact exceeding the impact resistance described in the general specifications of this manual, as they are precision devices. Failure to do so may cause the unit to fail.
  Check if the unit operates correctly after transportation.

REVISIONS

The manual number is given on the bottom left of the back cover.

Print Date	Manual Number	Ver.	Revision
Mar. 2006	JY997D20101	A	First edition
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Mar. 2009	JY997D20101	K	Partial correcting HOW TO READ THIS MANUAL, Chapter 14, 21 Partial additions Section 3.1, Chapter 38 Partial additions Chapter 29
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Jan. 2010	JY997D20101 JY997D20102	M	Partial correcting Section 5.1, 7.1, Chapter 9, 11, 13, Section 18.4, 27.1, 28.1, 30.1, 34.1, 37.1, Chapter 41, 45 Partial additions SAFETY PRECAUTION, ABBREVIATIONS AND GENERIC TERMS, HOW TO READ THIS MANUAL, Section 6.4, 19.3, Chapter 22, 23, 33, 44, 49, 54 Additions Chapter 40
Jun. 2010	JY997D20101 JY997D20102	N	Partial correcting HOW TO READ THIS MANUAL, Chapter 8, 10, 12, 13, 29, 31, 32, 33, 34, 35, 36, 39, 42, 43, 45, 46, 47, 48, 49, 53, 54, 55 56 Partial additions ABBREVIATIONS AND GENERIC TERMS, Section 2.2, Chapter 6, Section 12.1.3, 15.4.2, Chapter 22, 23, 27, 44, 57 Additions Chapter 50, 51, 52

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Jun. 2013	JY997D20101 JY997D20102	Z	Partial correcting Section 3.2, 5, 13.4, 22.1, 32, 33, 37, 39.1.2, 39.1.3, 47
Jan. 2014	JY997D20101 JY997D20102	AA	Compatible with GT Works3 Version1.108N • FREQROL-A800/F800 and FR-E700EX compatible • Azbil (former Yamatake) temperature controller (AHC2001) compatible • FX3U-232-ADP-MB compatible • RS-422/485 adapter (L6ADP-R4) compatible • FA transparent function (MX Component 4.03D) compatible • YOKOGAWA temperature controller (UT75A) compatible • MELSERVO-JE compatible
Apr. 2014	JY997D20101 JY997D20102	AB	Compatible with GT Works3 Version1.112S • Q24DHCCPU-VG is supported. • The enlargement of the communication setting range of the TOSHIBA PLC is supported. • The ALLEN-BRADLEY PLC MicroLogix1400 is supported. • Indirect specification all station specification for the station No. of MODBUS/RTU are supported.
Apr. 2015	JY997D20101 JY997D20102	AC	A part of the cover design is changed.
Dec. 2015	JY997D20101 JY997D20102	AD	Compatible with GT Works3 Version1.150G • FA Transparent Function MX Component Ver 4.11M is supported. • The PC link module F3LC11-2F of PLCs manufactured by Yokogawa Electric Corporation is supported.
Jun. 2020	JY997D20101 JY997D20102	AE	Some corrections

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Print Date	Manual Number	Ver.	Revision
Oct. 2022	JY997D20101 JY997D20102	AF	Some corrections

MEMO

INTRODUCTION

Thank you for choosing the Mitsubishi Electric Graphic Operation Terminal.
Before using the equipment, please read this manual carefully to use the equipment to its optimum.

OUTLINE PRECAUTIONS

- This manual provides information for the use of the graphic operation terminal. The manual has been written to be used by trained and competent personnel. The definition of such a person or persons is as follows;
  1) Any engineer who is responsible for the planning, design and construction of automatic equipment using the product associated with this manual should be of a competent nature, trained and qualified to the local and national standards required to fulfill that role. These engineers should be fully aware of all aspects of safety with regards to automated equipment.
  2) Any commissioning or service engineer must be of a competent nature, trained and qualified to the local and national standards required to fulfill that job. These engineers should also be trained in the use and maintenance of the completed product. This includes being completely familiar with all associated documentation for the said product. All maintenance should be carried out in accordance with established safety practices.
  3) All operators of the completed equipment should be trained to use that product in a safe and coordinated manner in compliance to established safety practices. The operators should also be familiar with documentation which is connected with the actual operation of the completed equipment.

  Note: the term 'completed equipment' refers to a third party constructed device which contains or uses the product associated with this manual.
- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi Electric.
- This product has been manufactured under strict quality control. However when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.
- When using this product combining other products, please confirm the standard and the code, or regulation which a user should suit. Moreover, please confirm the compatibility of this product to the system, machine, and apparatus with which a user is used for user itself.
- If in doubt at any stage of the installation of the product always consult a professional electrical engineer who is qualified and trained to the local and national standards. If in doubt about the operation or use, please consult the nearest Mitsubishi Electric distributor.
- Since the example indicated by this manual, technical bulletin, the catalog, etc. is reference, please use it after confirming the function and safety of equipment and system when employing. Mitsubishi Electric will accept no responsibility for actual use of the product based on these illustrative examples.
- About this manual content, specification etc. may be changed without a notice for improvement.
- The information in this manual has been carefully checked and is believed to be accurate; however, you have noticed a doubtful point, a doubtful error, etc., please contact the nearest Mitsubishi Electric distributor.

CONTENTS

GT11 Handy GOT User's Manual 2/2

21. HANDLING OF POWER WIRING AND SWITCH .....21-1 to 21-20

22. CONNECTION TO MITSUBISHI PLC .....22-1 to 22-65

ABOUT MANUALS

The following manuals are also related to this product.
In necessary, order them by quoting the details in the tables below.

Related Manuals

Manual Name	Manual Number (Model Code)
GT Designer2 Version2 Basic Operation/Data Transfer Manual (For GOT1000 Series) Describes methods of the GT Designer2 installation operation, basic operation for drawing and transmitting data to GOT1000 series. (Sold separately) *1	SH-080529ENG (1D7M24)
GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 1/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 2/3 GT Designer2 Version2 Screen Design Manual (For GOT1000 Series) 3/3 Describes specifications and settings of the object functions used in GT Designer2. (Sold separately) *1	SH-080530ENG (1D7M25)
GT Designer3 Version1 Screen Design Manual (For GOT1000 Series) (Fundamentals)1/2, 2/2 Describes methods of the GT Designer3 installation operation, basic operation for drawing and transmitting data to GOT1000 series. (Sold separately) *1	SH-080866ENG (1D7MB9)
GT Designer3 Version1 Screen Design Manual (For GOT1000 Series) (Functions)1/2 GT Designer3 Version1 Screen Design Manual (For GOT1000 Series) (Functions)2/2 Describes specifications and settings of the object functions used in GT Designer3. (Sold separately) *1	SH-080867ENG (1D7MC1)

*1 The manual in PDF-format is included in the GT Works2, GT Designer2, GT Works3 and GT Designer3 products.

ABBREVIATIONS AND GENERIC TERMS

■ GOT

Abbreviations and generic terms			Description
GOT1000 Series	GT1695	GT1695M-X	Abbreviation of GT1695M-XTBA, GT1695M-XTBD
	GT1685	GT1685M-S	Abbreviation of GT1685M-STBA, GT1685M-STBD
	GT1675	GT1675M-S	Abbreviation of GT1675M-STBA, GT1675M-STBD
		GT1675M-V	Abbreviation of GT1675M-VTBA, GT1675M-VTBD
		GT1675-VN	Abbreviation of GT1675-VNBA, GT1675-VNBD
	GT1672	GT1672-VN	Abbreviation of GT1672-VNBA, GT1672-VNBD
	GT1665	GT1665M-S	Abbreviation of GT1665M-STBA, GT1665M-STBD
		GT1665M-V	Abbreviation of GT1665M-VTBA, GT1665M-VTBD
	GT1662	GT1662-VN	Abbreviation of GT1662-VNBA, GT1662-VNBD
	GT1655	GT1655-V	Abbreviation of GT1655-VTBD
	GT16		Abbreviation of GT1695, GT1685, GT1675, GT1672, GT1665, GT1662, GT1655, GT16 Handy GOT
	GT1595	GT1595-X	Abbreviation of GT1595-XTBA, GT1595-XTBD
	GT1585	GT1585V-S	Abbreviation of GT1585V-STBA, GT1585V-STBD
		GT1585-S	Abbreviation of GT1585-STBA, GT1585-STBD
	GT157□	GT1575V-S	Abbreviation of GT1575V-STBA, GT1575V-STBD
		GT1575-S	Abbreviation of GT1575-STBA, GT1575-STBD
		GT1575-V	Abbreviation of GT1575-VTBA, GT1575-VTBD
		GT1575-VN	Abbreviation of GT1575-VNBA, GT1575-VNBD
		GT1572-VN	Abbreviation of GT1572-VNBA, GT1572-VNBD
	GT156□	GT1565-V	Abbreviation of GT1565-VTBA, GT1565-VTBD
		GT1562-VN	Abbreviation of GT1562-VNBA, GT1562-VNBD
	GT155□	GT1555-V	Abbreviation of GT1555-VTBD
		GT1555-Q	Abbreviation of GT1555-QTBD, GT1555-QSBD
		GT1550-Q	Abbreviation of GT1550-QLBD
	GT15		Abbreviation of GT1595, GT1585, GT157□, GT156□, GT155□
	GT145□	GT1455-Q	Abbreviation of GT1455-QTBDE, GT1455-QTBD
		GT1450-Q	Abbreviation of GT1450-QLBDE, GT1450-QLBD
	GT14		Abbreviation of GT1455-Q, GT1450-Q
	GT1275	GT1275-V	Abbreviation of GT1275-VNBA, GT1275-VNBD
	GT1265	GT1265-V	Abbreviation of GT1265-VNBA, GT1265-VNBD
	GT12		Abbreviation of GT1275, GT1265
	GT115□	GT1155-Q	Abbreviation of GT1155-QTBDQ, GT1155-QSBDQ, GT1155-QTBDA, GT1155-QSBDA, GT1155-QTBD, GT1155-QSBD
		GT1150-Q	Abbreviation of GT1150-QLBDQ, GT1150-QLBDA, GT1150-QLBD
	GT11		Abbreviation of GT115□, GT11 Handy GOT,
	GT105□	GT1055-Q	Abbreviation of GT1055-QSBD
		GT1050-Q	Abbreviation of GT1050-QBBD
	GT104□	GT1045-Q	Abbreviation of GT1045-QSBD
		GT1040-Q	Abbreviation of GT1040-QBBD
	GT1030		Abbreviation of GT1030-LBD, GT1030-LBD2, GT1030-LBL, GT1030-LBDW, GT1030-LBDW2, GT1030-LBLW, GT1030-LWD, GT1030-LWD2, GT1030-LWL, GT1030-LWDW, GT1030-LWDW2, GT1030-LWLW, GT1030-HBD, GT1030-HBD2, GT1030-HBL, GT1030-HBDW, GT1030-HBDW2, GT1030-HBLW, GT1030-HWD, GT1030-HWD2, GT1030-HWL, GT1030-HWDW, GT1030-HWDW2, GT1030-HWLW
	GT1020		Abbreviation of GT1020-LBD, GT1020-LBD2, GT1020-LBL, GT1020-LBDW, GT1020-LBDW2, GT1020-LBLW, GT1020-LWD, GT1020LWD2, GT1020-LWL, GT1020-LWDW, GT1020-LWDW2, GT1020-LWLW
	GT10		Abbreviation of GT105□, GT104□, GT1030, GT1020

Abbreviations and generic terms				Description
GOT1000 Series	Handy GOT	GT16 Handy GOT	GT1665HS-V	Abbreviation of GT1665HS-VTBD
		GT11 Handy GOT	GT1155HS-Q	Abbreviation of GT1155HS-QSBD
			GT1150HS-Q	Abbreviation of GT1150HS-QLBD
	GT SoftGOT1000			Abbreviation of GT SoftGOT1000
GOT900 Series				Abbreviation of GOT-A900 series, GOT-F900 series
GOT800 Series				Abbreviation of GOT-800 series

■ Communication unit

Abbreviations and generic terms	Description
Bus connection unit	GT15-QBUS, GT15-QBUS2, GT15-ABUS, GT15-ABUS2, GT15-75QBUSL, GT15-75QBUS2L, GT15-75ABUSL, GT15-75ABUS2L
Serial communication unit	GT15-RS2-9P, GT15-RS4-9S, GT15-RS4-TE
RS-422 conversion unit	GT15-RS2T4-9P, GT15-RS2T4-25P
Ethernet communication unit	GT15-J71E71-100
MELSECNET/H communication unit	GT15-J71LP23-25, GT15-J71BR13
MELSECNET/10 communication unit	GT15-75J71LP23-Z[*1], GT15-75J71BR13-Z[*2]
CC-Link IE Controller Network communication unit	GT15-J71GP23-SX
CC-Link IE Field Network communication unit	GT15-J71GF13-T2
CC-Link communication unit	GT15-J61BT13, GT15-75J61BT13-Z[*3]
Interface converter unit	GT15-75IF900
Serial multi-drop connection unit	GT01-RS4-M
Connection Conversion Adapter	GT10-9PT5S
RS-232/485 signal conversion adapter	GT14-RS2T4-9P

*1 A9GT-QJ71LP23 + GT15-75IF900 set
*2 A9GT-QJ71BR13 + GT15-75IF900 set
*3 A8GT-J61BT13 + GT15-75IF900 set

■ Option unit

Abbreviations and generic terms		Description
Printer unit		GT15-PRN
Video/RGB unit	Video input unit	GT16M-V4, GT15V-75V4
	RGB input unit	GT16M-R2, GT15V-75R1
	Video/RGB input unit	GT16M-V4R1, GT15V-75V4R1
	RGB output unit	GT16M-ROUT, GT15V-75ROUT
Multimedia unit		GT16M-MMR
CF card unit		GT15-CFCD
CF card extension unit[*1]		GT15-CFEX-C08SET
External I/O unit		GT15-DIO, GT15-DIOR
Sound output unit		GT15-SOUT

*1 GT15-CFEX + GT15-CFEXIF + GT15-C08CF set.

■ Option

Abbreviations and generic terms		Description	
Memory card	CF card	GT05-MEM-16MC, GT05-MEM-32MC, GT05-MEM-64MC, GT05-MEM-128MC, GT05-MEM-256MC, GT05-MEM-512MC, GT05-MEM-1GC, GT05-MEM-2GC, GT05-MEM-4GC, GT05-MEM-8GC, GT05-MEM-16GC	
	SD card	L1MEM-2GBSD, L1MEM-4GBSD	
Memory card adaptor		GT05-MEM-ADPC	
Option function board		GT16-MESB, GT15-FNB, GT15-QFNB, GT15-QFNB16M, GT15-QFNB32M, GT15-QFNB48M, GT11-50FNB, GT15-MESB48M	
Battery		GT15-BAT, GT11-50BAT	
Protective Sheet		For GT16	GT16-90PSCB, GT16-90PSGB, GT16-90PSCW, GT16-90PSGW, GT16-80PSCB, GT16-80PSGB, GT16-80PSCW, GT16-80PSGW, GT16-70PSCB, GT16-70PSGB, GT16-70PSCW, GT16-70PSGW, GT16-60PSCB, GT16-60PSGB, GT16-60PSCW, GT16-60PSGW, GT16-50PSCB, GT16-50PSGB, GT16-50PSCW, GT16-50PSGW, GT16-90PSCB-012, GT16-80PSCB-012, GT16-70PSCB-012, GT16-60PSCB-012, GT16-50PSCB-012, GT16H-60PSC
		For GT15	GT15-90PSCB, GT15-90PSGB, GT15-90PSCW, GT15-90PSGW, GT15-80PSCB, GT15-80PSGB, GT15-80PSCW, GT15-80PSGW, GT15-70PSCB, GT15-70PSGB, GT15-70PSCW, GT15-70PSGW, GT15-60PSCB, GT15-60PSGB, GT15-60PSCW, GT15-60PSGW, GT15-50PSCB, GT15-50PSGB, GT15-50PSCW, GT15-50PSGW
		For GT14	GT14-50PSCB, GT14-50PSGB, GT14-50PSCW, GT14-50PSGW
		For GT12	GT11-70PSCB, GT11-65PSCB
		For GT11	GT11-50PSCB, GT11-50PSGB, GT11-50PSCW, GT11-50PSGW, GT11H-50PSC
		For GT10	GT10-50PSCB, GT10-50PSGB, GT10-50PSCW, GT10-50PSGW, GT10-40PSCB, GT10-40PSGB, GT10-40PSCW, GT10-40PSGW, GT10-30PSCB, GT10-30PSGB, GT10-30PSCW, GT10-30PSGW, GT10-20PSCB, GT10-20PSGB, GT10-20PSCW, GT10-20PSGW
Protective cover for oil		GT05-90PCO, GT05-80PCO, GT05-70PCO, GT05-60PCO, GT05-50PCO, GT16-50PCO, GT10-40PCO, GT10-30PCO, GT10-20PCO	
USB environmental protection cover		GT16-UCOV, GT16-50UCOV, GT15-UCOV, GT14-50UCOV, GT11-50UCOV	
Stand		GT15-90STAND, GT15-80STAND, GT15-70STAND, A9GT-50STAND, GT05-50STAND	
Attachment		GT15-70ATT-98, GT15-70ATT-87, GT15-60ATT-97, GT15-60ATT-96, GT15-60ATT-87, GT15-60ATT-77, GT15-50ATT-95W, GT15-50ATT-85	
Backlight		GT16-90XLTT, GT16-80SLTT, GT16-70SLTT, GT16-70VLTT, GT16-70VLTTA, GT16-70VLTN, GT16-60SLTT, GT16-60VLTT, GT16-60VLTN, GT15-90XLTT, GT15-80SLTT, GT15-70SLTT, GT15-70VLTT, GT15-70VLTN, GT15-60VLTT, GT15-60VLTN	
Multi-color display board		GT15-XHNB, GT15-VHNB	
Connector conversion box		GT11H-CNB-37S, GT16H-CNB-42S	
Emergency stop sw guard cover		GT11H-50ESCOV, GT16H-60ESCOV	
Memory loader		GT10-LDR	
Memory board		GT10-50FMB	
Panel-mounted USB port extension		GT14-C10EXUSB-4S, GT10-C10EXUSB-5S	

■ Software

Abbreviations and generic terms	Description
GT Works3	Abbreviation of the SW□DNC-GTWK3-E and SW□DNC-GTWK3-EA
GT Designer3	Abbreviation of screen drawing software GT Designer3 for GOT1000 series
GT Simulator3	Abbreviation of screen simulator GT Simulator3 for GOT1000/GOT900 series
GT SoftGOT1000	Abbreviation of monitoring software GT SoftGOT1000
GT Converter2	Abbreviation of data conversion software GT Converter2 for GOT1000/GOT900 series
GT Designer2 Classic	Abbreviation of screen drawing software GT Designer2 Classic for GOT900 series
GT Designer2	Abbreviation of screen drawing software GT Designer2 for GOT1000/GOT900 series
iQ Works	Abbreviation of iQ Platform compatible engineering environment MELSOFT iQ Works
MELSOFT Navigator	Generic term for integrated development environment software included in the SW□DNC-IQWK (iQ Platform compatible engineering environment MELSOFT iQ Works)
GX Works2	Abbreviation of SW□DNC-GXW2-E and SW□DNC-GXW2-EA type programmable controller engineering software
GX Simulator2	Abbreviation of GX Works2 with the simulation function
GX Simulator	Abbreviation of SW□D5C-LLT-E(-EV) type ladder logic test tool function software packages (SW5D5C-LLT (-EV) or later versions)
GX Developer	Abbreviation of SW□D5C-GPPW-E(-EV)/SW D5F-GPPW-E type software package
GX LogViewer	Abbreviation of SW□DNN-VIEWER-E type software package
PX Developer	Abbreviation of SW□D5C-FBDQ-E type FBD software package for process control
MT Works2	Abbreviation of motion controller engineering environment MELSOFT MT Works2 (SW□DNC-MTW2-E)
MT Developer	Abbreviation of SW□RNC-GSV type integrated start-up support software for motion controller Q series
MR Configurator2	Abbreviation of SW□DNC-MRC2-E type Servo Configuration Software
MR Configurator	Abbreviation of MRZJW□-SETUP□E type Servo Configuration Software
FR Configurator	Abbreviation of Inverter Setup Software (FR-SW□-SETUP-WE)
NC Configurator	Abbreviation of CNC parameter setting support tool NC Configurator
FX Configurator-FP	Abbreviation of parameter setting, monitoring, and testing software packages for FX3U-20SSC-H (SW□D5C-FXSSC-E)
FX3U-ENET-L Configuration tool	Abbreviation of FX3U-ENET-L type Ethernet module setting software (SW1D5-FXENETL-E)
RT ToolBox2	Abbreviation of robot program creation software (3D-11C-WINE)
MX Component	Abbreviation of MX Component Version□ (SW□D5C-ACT-E, SW□D5C-ACT-EA)
MX Sheet	Abbreviation of MX Sheet Version□ (SW□D5C-SHEET-E, SW□D5C-SHEET-EA)
QnUDVCPU & LCPU Logging Configuration Tool	Abbreviation of QnUDVCPU & LCPU Logging Configuration Tool (SW1DNN-LLUTL-E)

■ License key (for GT SoftGOT1000)

Abbreviations and generic terms	Description
License	GT15-SGTKEY-U, GT15-SGTKEY-P

■ Others

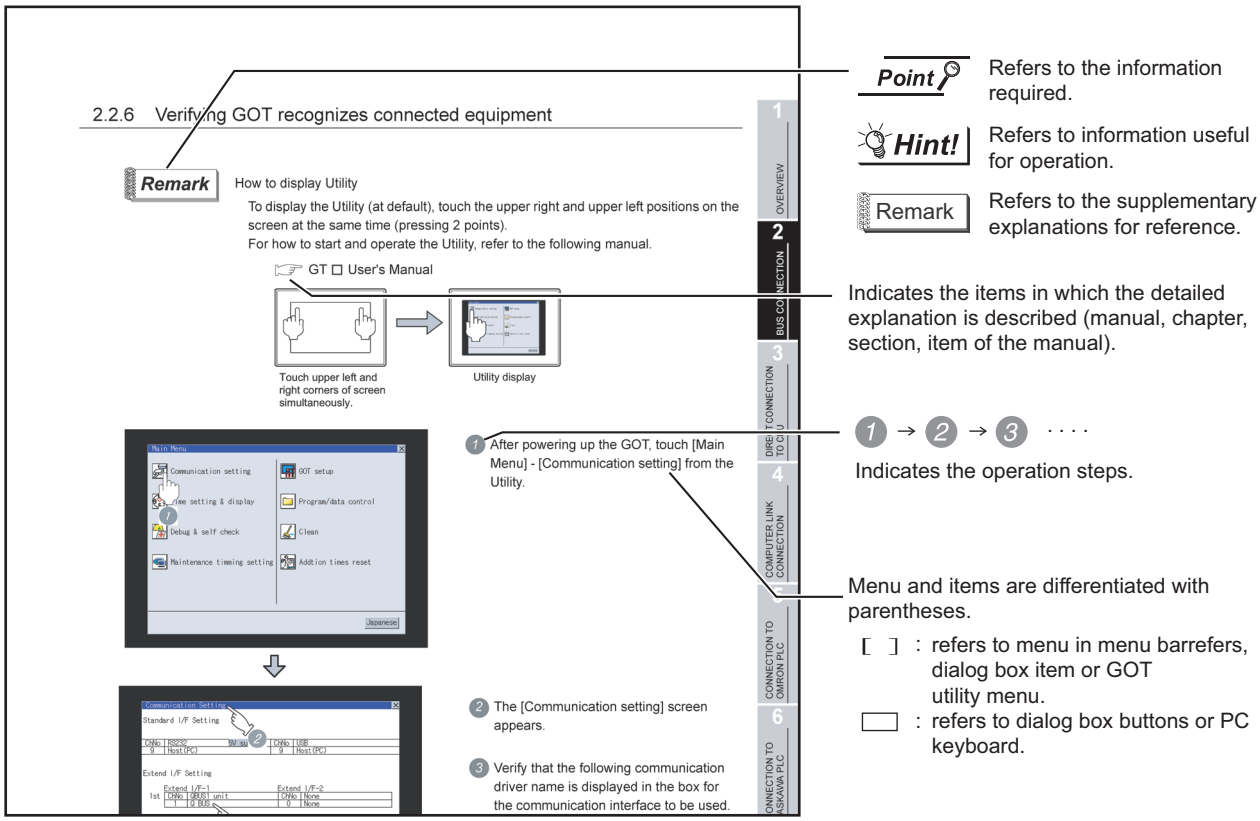
Abbreviations and generic terms	Description
IAI	Abbreviation of IAI Corporation
AZBIL	Abbreviation of Azbil Corporation (former Yamatake Corporation)
OMRON	Abbreviation of OMRON Corporation
KEYENCE	Abbreviation of KEYENCE CORPORATION
KOYO EI	Abbreviation of KOYO ELECTRONICS INDUSTRIES CO., LTD.
SHARP	Abbreviation of Sharp Manufacturing Systems Corporation
JTEKT	Abbreviation of JTEKT Corporation
SHINKO	Abbreviation of Shinko Technos Co., Ltd.
CHINO	Abbreviation of CHINO CORPORATION
TOSHIBA	Abbreviation of TOSHIBA CORPORATION
TOSHIBA MACHINE	Abbreviation of TOSHIBA MACHINE CO., LTD.
HITACHI IES	Abbreviation of Hitachi Industrial Equipment Systems Co., Ltd.
HITACHI	Abbreviation of Hitachi, Ltd.
FUJI	Abbreviation of FUJI ELECTRIC CO., LTD.
PANASONIC	Abbreviation of Panasonic Corporation
PANASONIC INDUSTRIAL DEVICES SUNX	Abbreviation of Panasonic Industrial Devices SUNX Co., Ltd.
YASKAWA	Abbreviation of YASKAWA Electric Corporation
YOKOGAWA	Abbreviation of Yokogawa Electric Corporation
ALLEN-BRADLEY	Abbreviation of Allen-Bradley products manufactured by Rockwell Automation, Inc.
GE	Abbreviation of GE Intelligent Platforms
LS IS	Abbreviation of LS Industrial Systems Co., Ltd.
SCHNEIDER	Abbreviation of Schneider Electric SA
SICK	Abbreviation of SICK AG
SIEMENS	Abbreviation of Siemens AG
RKC	Abbreviation of RKC INSTRUMENT INC.
HIRATA	Abbreviation of Hirata Corporation
MURATEC	Abbreviation of Muratec products manufactured by Muratec Automation Co., Ltd.
PLC	Abbreviation of programmable controller
Temperature controller	Generic term for temperature controller manufactured by each corporation
Indicating controller	Generic term for indicating controller manufactured by each corporation
Control equipment	Generic term for control equipment manufactured by each corporation
CHINO controller	Abbreviation of indicating controller manufactured by CHINO CORPORATION
PC CPU module	Abbreviation of PC CPU Unit manufactured by CONTEC CO., LTD
GOT (server)	Abbreviation of GOTs that use the server function
GOT (client)	Abbreviation of GOTs that use the client function
Windows® font	Abbreviation of TrueType font and OpenType font available for Windows® (Differs from the True Type fonts settable with GT Designer3)
Intelligent function module	Indicates the modules other than the PLC CPU, power supply module and I/O module that are mounted to the base unit
MODBUS® /RTU	Generic term for the protocol designed to use MODBUS® protocol messages on a serial communication
MODBUS® /TCP	Generic term for the protocol designed to use MODBUS® protocol messages on a TCP/IP network

1 About each of functions

This manual includes information of GT Designer2 Version2.96A, GT Designer3 Version1.63R.
For additional functions of upgraded version, refer to the List of functions added by version upgrade.

2 Symbols

Following symbols are used in this manual.

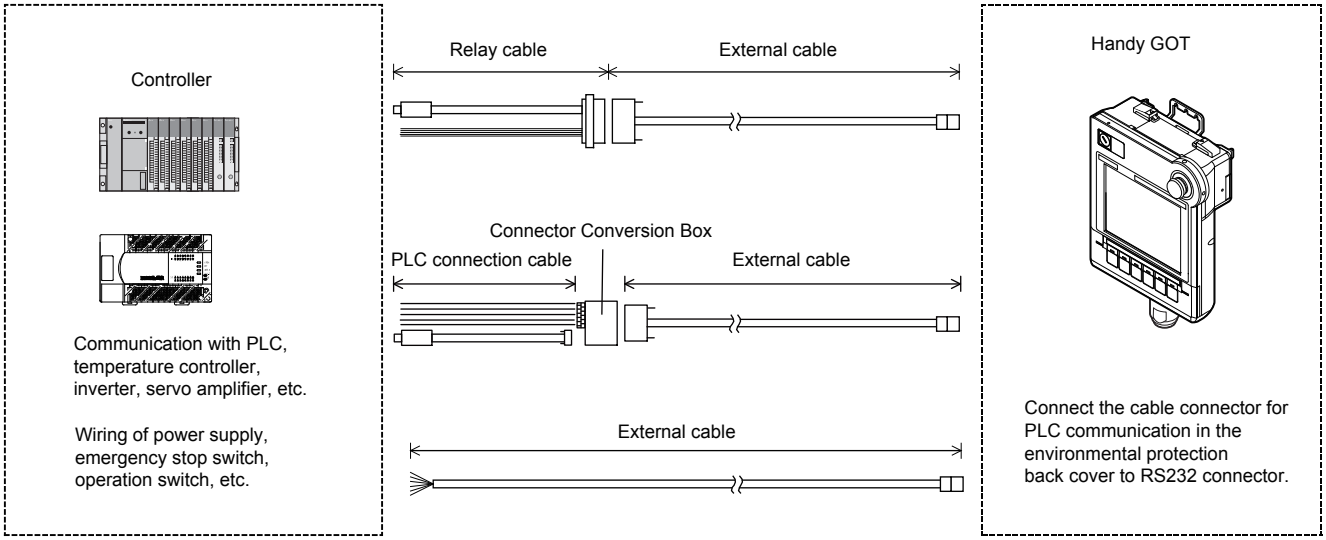


* Since the above page was created for explanation purpose, it differs from the actual page.

20. COMMUNICATION CABLE

20.1 Overview of Communication Cable

The following communication cables are available.



- External cable : A cable for connecting the Handy GOT to a controller or a relay cable.
  There are two types for the controller side, the connector type and the untied wire type. Select the type according to the equipment to be connected.

  When using the external cable (GT11H-C30, GT11H-C60 or GT11H-C100) of which one end is untied, process the cable according to applications.
  This cable is required for using the Handy GOT.

- Relay cable : A cable which connects an external cable and a controller.
  There are several types which can be selected according to a controller.
  However, this cable must be prepared by the user depending on the controller to be used.

- PLC connection cable: A cable which connects a Connector Conversion Box and a controller.
  There are several types which can be selected according to a controller.
  However, this cable must be prepared by the user depending on the controller to be used.

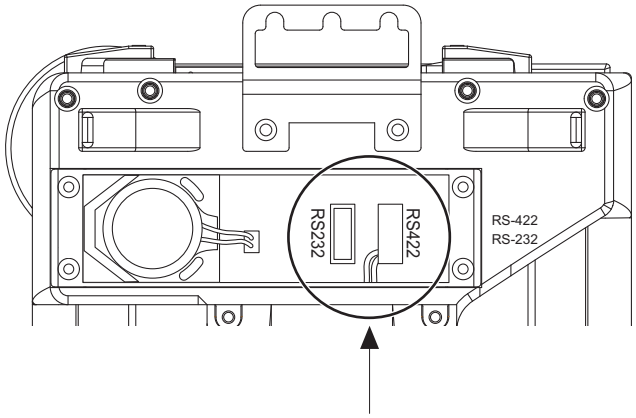
Name	Model name	Length	Remark
External cable	GT11H-C30-37P	3m	Relay cable connection side D-Sub 37 pins
	GT11H-C60-37P	6m	
	GT11H-C100-37P	10m	
	GT11H-C30	3m	Relay cable connection side untied wire
	GT11H-C60	6m	
	GT11H-C100	10m	
Relay cable (for connecting between PLCs and External cable)	GT11H-C15R4-8P	1.5m	For FX PLC connection (PLC side MINI-DIN 8 pins)
	GT11H-C15R4-25P	1.5m	For A/QnA CPU/FX1, FX2, FX2C PLC connection (PLC side D-Sub 25 pins)
	GT11H-C15R2-6P	1.5m	For Q CPU connection (PLC side MINI-DIN 6pins)
PLC connection cable (for connecting between PLCs and Connecter Conversion Box)	Select or prepare appropriate cables for the communication method and controllers.		

The relay cables other than mentioned above must be prepared by the user.

Point

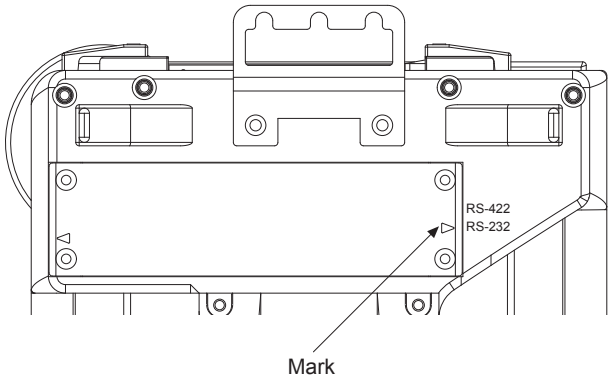
Selection of RS-232 connection and RS-422 connection

The Handy GOT can be connected to a controller with either of RS-232 or RS-422 connection.
The selection of RS-232 connection and RS-422 connection is made using the cable connector for PLC communication in the environmental protection back cover.
For the RS-232 connection, connect the cable connector for PLC communication to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication to RS-422 connector.
In addition, the external cable can be used for both RS-232 and RS-422 connections.
(RS-422 connection is selected before shipping.)



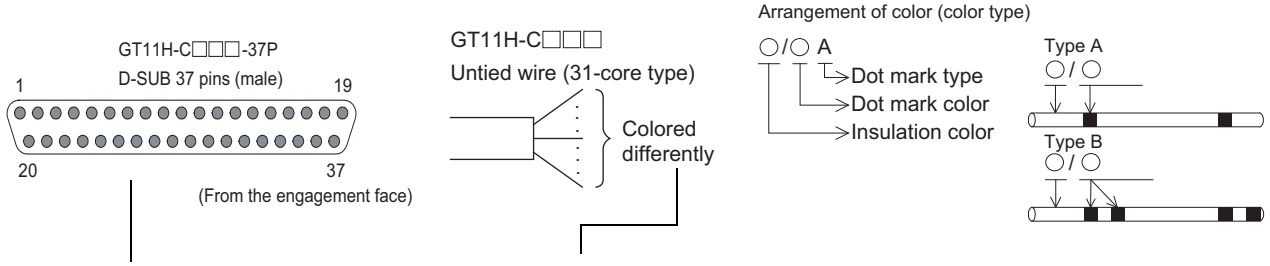
For switching between the RS-232 connection and the RS-422 connection, make sure to turn off the Handy GOT power before disconnecting or connecting the cable connector for PLC communication in the environmental protection back cover.
Disconnecting or connecting the cable connector without turning off the Handy GOT power causes a failure. The selected connection method (RS-232 connection or RS-422 connection) is applied when the Handy GOT power is turned on.

When the environmental protection back cover is closed, the mark position can be changed according to the cover facing direction.
It can be used as a method to check the connection type from the outside of Handy GOT.



20.1.1 Pinlayout of cable and connector, and signal name

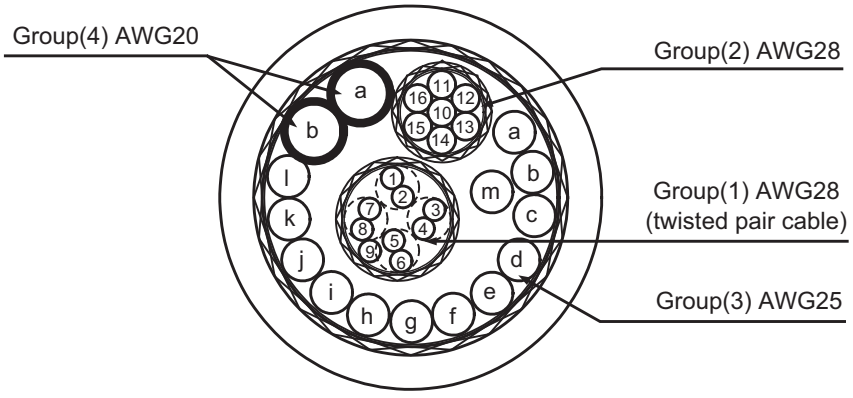
1 External cable



External cable				Communication, power, operation switch signal name		Application
GT11H-C□□□-37P	GT11H-C□□□			RS-422	RS-232C	
D-Sub Pin No.	Group	Cable diameter	Wire color (color type)			
1	—	—	Shield	FG (Shield)		Frame ground
2	Group(1)	AWG28 twisted pair cable	W/R (A)	TXD+(SDA)	TXD(SD)	Signal line for PLC communication
3			W/BK (A)	TXD-(SDB)	DTR(ER)	
4			GY/R (A)	RTS+(RSA)	RXD(RD)	
5			GY/BK (A)	RTS-(RSB)	DSR(DR)	
6			O/R (A)	RXD+(RDA)	RTS(RS)	
7			O/BK (A)	RXD-(RDB)	CTS(CS)	
8			Y/R (A)	CTS+(CSA)	Disable	
9			Y/BK (A)	CTS-(CSB)	Disable	
10		AWG28	PK/R (A)	SG		Signal ground
11	—	—	—	Disable		Disable
12	Group(2)	AWG28	W/R (B)	SW-COM (common)		For Operation switch
13			W/BK (B)	SW1		
14			GY/R (B)	SW2		
15			GY/BK (B)	SW3		
16			PK/BK (A)	SW4		
17	—	—	—	Disable		Disable
18	Group(4)	AWG20	BK	DC24G		24VDC power supply "-"
19	Bridge to 18	—	—	DC24G		

External cable				Communication, power, operation switch signal name		Application
GT11H-C□□□-37P	GT11H-C□□□			RS-422	RS-232C	
D-Sub Pin No.	Group	Cable diameter	Wire color (color type)			
20	Group(3)	AWG25	PL	ES-1		For Emergency stop switch
21			O	ES-1		
22			GY	ES-2		
23			BL	ES-2		
24			BW	DSW-1		For Grip switch
25			Y	DSW-1		
26			GR	DSW-2		
27			R	DSW-2		
28			W	KSW-C (common)		For Keylock switch (2-position SW)
29			BK	KSW-1		
30			SB	KSW-2		
31			YG	Disable		Disable
32			PK	Disable		
33	Group(2)	AWG28	O/R (B)	SW5		For Operation switch
34			O/BK (B)	SW6		
35	—	—	—	N.C.		Disable
36	Group(4)	AWG20	R	DC24V+		24VDC power supply "+"
37	Bridge to 36	—	—	DC24V+		

2 Cross-section of external cable

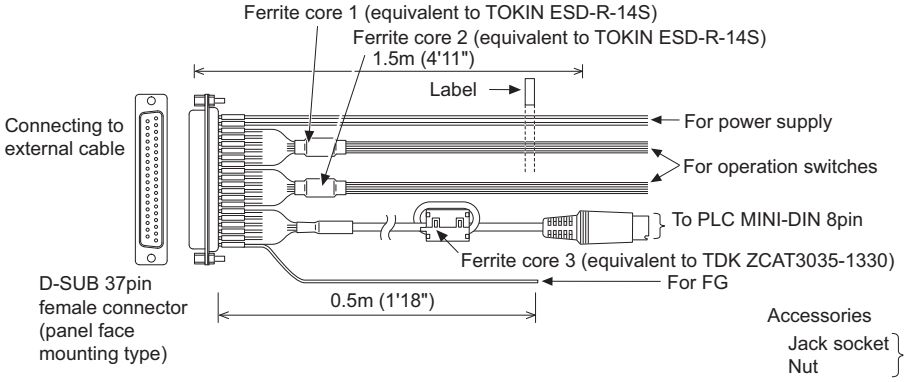


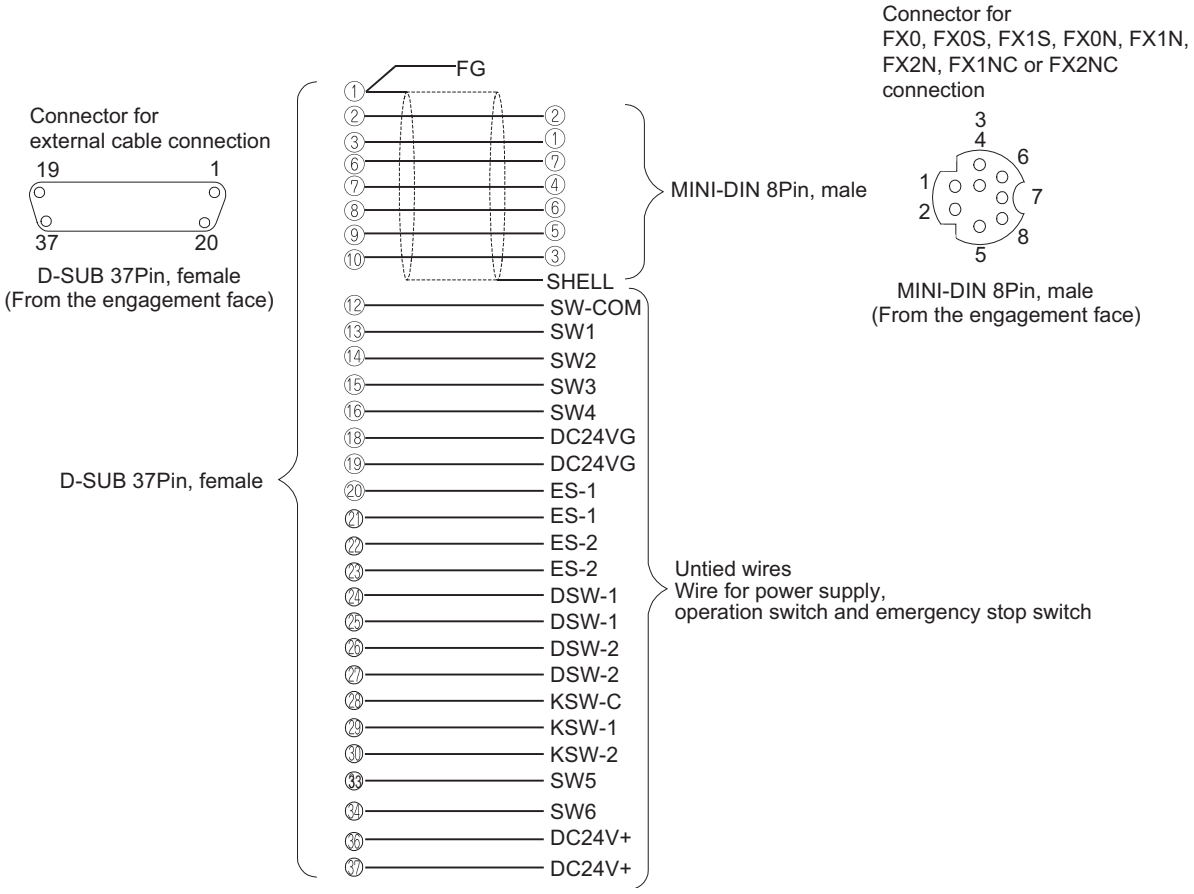
a: Black (BK)
b: Red (R)
c: White (W)
d: Green (GY)
e: Yellow (Y)
f : Brown (BW)
g: Blue (BL)
h: Gray (GY)
i : Orange (O)
j : Purple (PL)
k: Pink (PK)
l : Yellow green (YG)
m: Sky blue (SB)

3 Relay cable

(1) GT11H-C15R4-8P relay cable

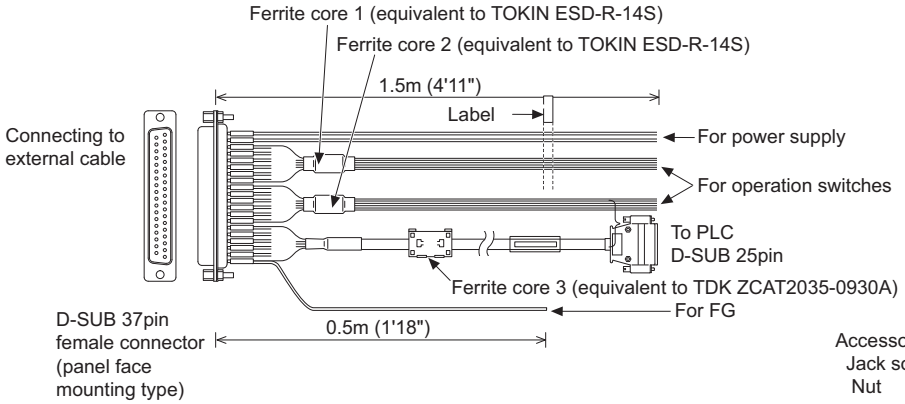
(FX0, FX0S, FX1S, FX0N, FX1N, FX2N, FX1NC, FX2NC PLC dedicated cable)

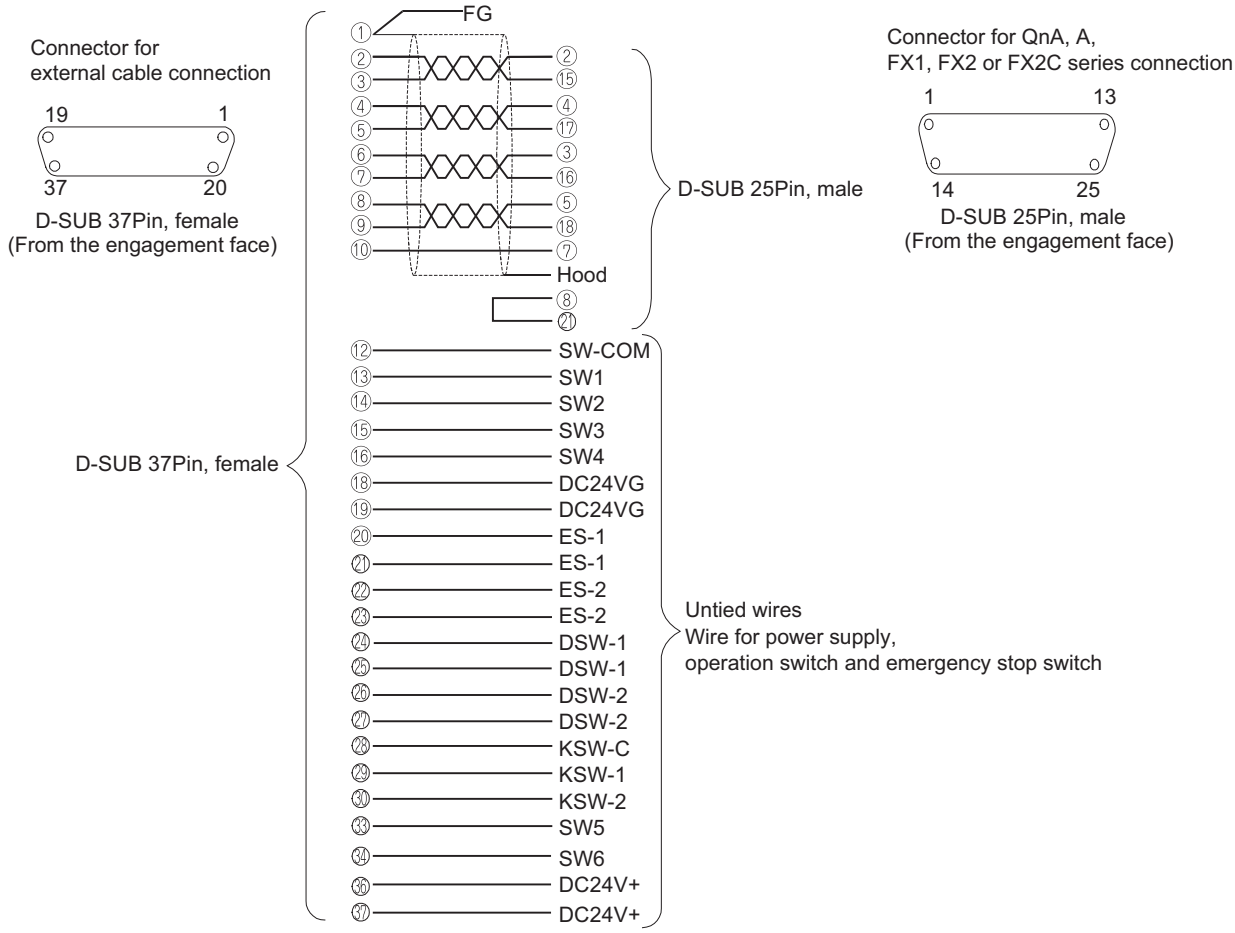




(2) GT11H-C15R4-25P relay cable

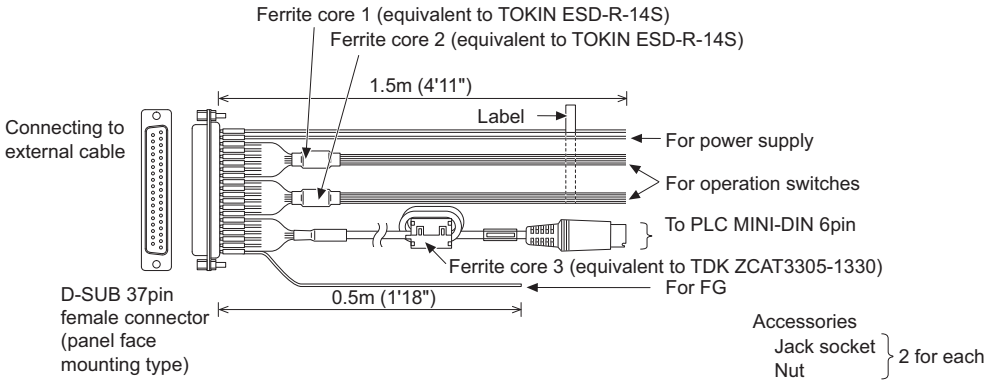
(A, QnA, FX1, FX2, FX2C PLC dedicated cable)

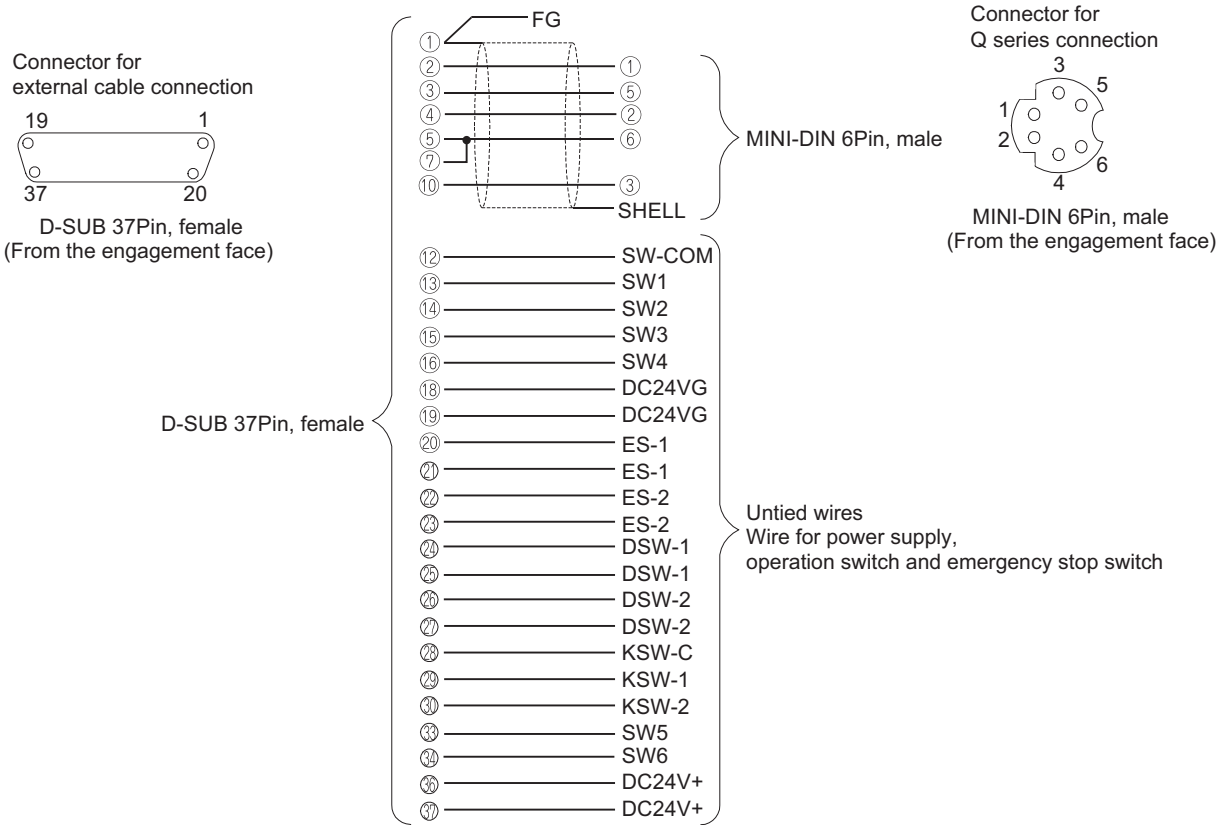




(3) GT11H-C15R2-6P relay cable

(Q series PLC dedicated cable)





20.1.2 Connector specifications

1 Applicable connector

(1) GT11H-C□□□-37P connector

The following connector is used as a connector for the relay cable connection of external cable (GT11H-C□□□-37P).

For a connector and connector cover to be connected to GT11H-C□ □ □-37P, use products applicable to the GT11H-C□□□-37P connector.

Connector model	Connector type	Manufacturer
17JE-23370-02(D8A2)-CG	D-Sub 37-pin (male) M2.6screw fixed type	DDK Ltd.

(2) Controller side connector

Use a connector compatible with the controller.

For details, refer to the manual of the controller to be used.

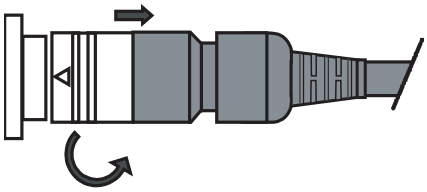
20.1.3 Installing and removing of external cable

1 Installation procedure of external cable

1. Check that the 24VDC power to the external cable is OFF.
2. Insert the external cable adjusting the triangle marks of the main unit side connector and cable side connector.
   (The connectors are locked after inserted.)

2 Removal procedure

1. Check that the 24VDC power to the external cable is OFF.
2. Remove the cable side connector while turning the body part with a triangle mark, to the left.



21. HANDLING OF POWER WIRING AND SWITCH

[WIRING PRECAUTIONS]

⚠WARNING

- Make sure to attach the back cover to the Handy GOT before turning on the power and starting operation after the installation or wiring work.
  Otherwise, electrical shock may be caused.
- Be sure to shut off all phases of the external power supply used by the system before wiring. Failure to do so may result in an electric shock, product damage or malfunctions.
- Please make sure to ground FG terminal of the GOT power supply section by applying 100 or less which is used exclusively for the GOT. Not doing so may cause an electric shock or malfunction.
- Correctly wire the GOT power supply section after confirming the rated voltage and terminal arrangement of the product. Not doing so can cause a fire or failure.
- Exercise care to avoid foreign matter such as chips and wire offcuts entering the GOT. Not doing so can cause a fire, failure or malfunction.

[WIRING PRECAUTIONS]

⚠CAUTION

- The cables connected to the unit must be run in ducts or clamped.
  Not doing so can cause the unit or cable to be damaged due to the dangling, motion or accidental pulling of the cables or can cause a malfunction due to a cable connection fault.
- When unplugging the cable connected to the unit, do not hold and pull the cable portion.
  Doing so can cause the unit or cable to be damaged or can cause a malfunction due to a cable connection fault.
- Plug the communication cable into the connector of the connected unit and tighten the mounting and terminal screws in the specified torque range.
  Undertightening can cause a short circuit or malfunction. Overtightening can cause a short circuit or malfunction due to the damage of the screws or unit.

For the dimensional drawing of connection cables, refer to the following.

☞ Appendix.1 External Dimensions

Remark

General preventive measures against noise

There are two kinds of noises: Radiated noise that is transmitted into the air and Conductive noise that is directly transmitted along connected lines.
Countermeasures must be taken considering both kinds of noises and referring to the following 3 points.

(1) Protecting against noise
  (a) Keep signal lines away from noise sources such as a power cable or a high-power drive circuit.
  (b) Shield the signal lines.

(2) Reducing generated noise
  (a) Use a noise filter, etc. to reduce the level of the noise generated due to a source such as a high-power motor drive circuit.
  (b) Attach surge killers to the terminals on the No Fuse Breaker (NFB), electromagnetic contactors, relays, solenoid valves, and generators to suppress noise interference.

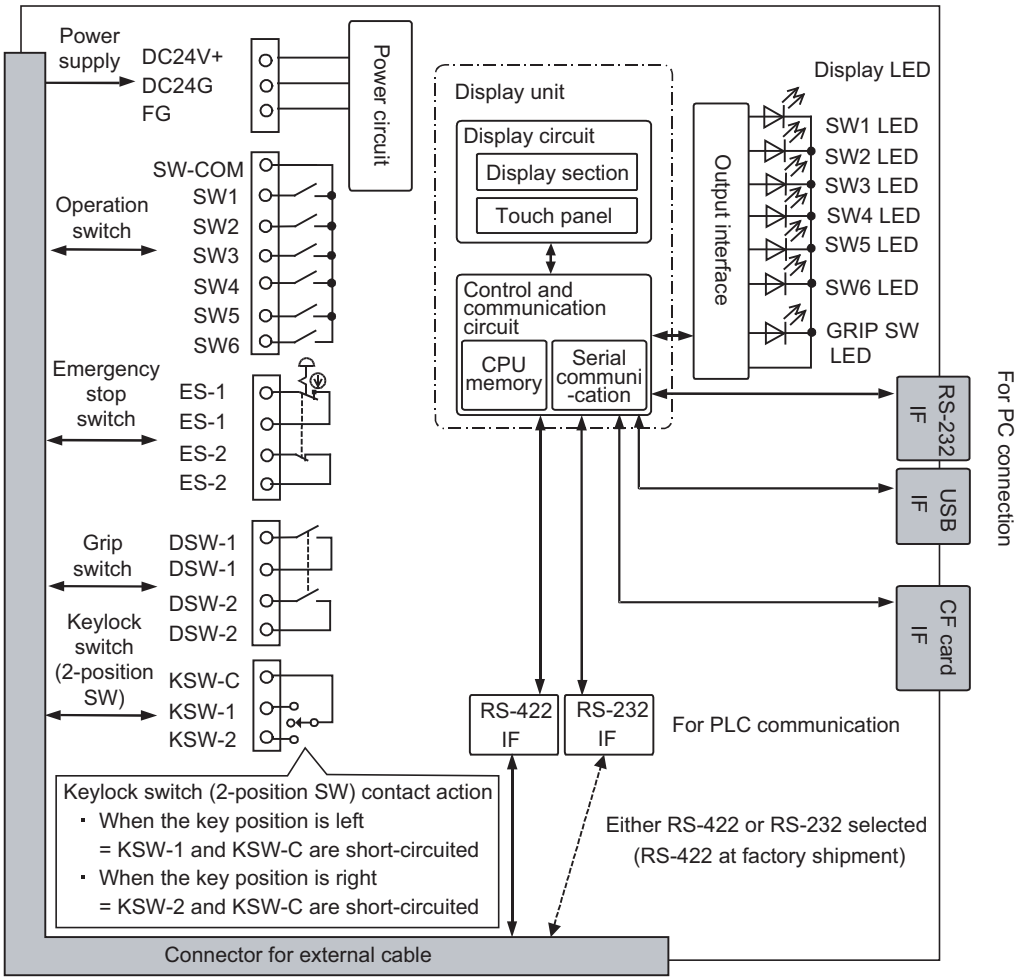
(3) Releasing noise to the ground
  (a) Make sure to connect the ground cable to the ground.
  (b) Use a short and thick cable to lower its impedance.
  (c) Ground the power system and the control system separately.

Operation at momentary power failure

The GOT continues to operate even upon 5ms or shorter instantaneous power failure.
The GOT stops operating if there is extended power failure or voltage drop, while it automatically resumes operation as soon as the power is restored.

21.1 Internal Wiring Diagram of Handy GOT

Each switch is wired inside the Handy GOT as shown in the following diagram.



21.2 Power Wiring

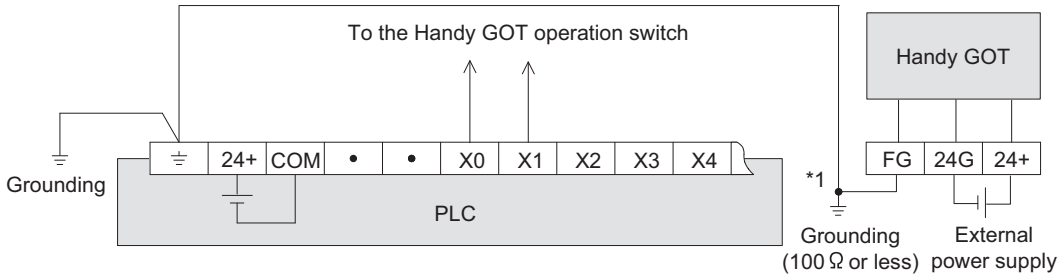
21.2.1 Power wiring and grounding

GOT power is supplied from the external power.
In addition, the following table shows the input power supply voltage and the consumed current.

Item		Specifications	
		GT1155HS-QSBD	GT1150HS-QLBD
Input power supply voltage		24VDC (+10% -15%), ripple voltage: 200mV or less	
Power consumption		9.84W or less (410mA/24VDC)	9.36W or less (390mA/24VDC)
	At backlight off	4.32W or less (180mA/24VDC)	
Inrush current		15A or less (26.4V)2ms	

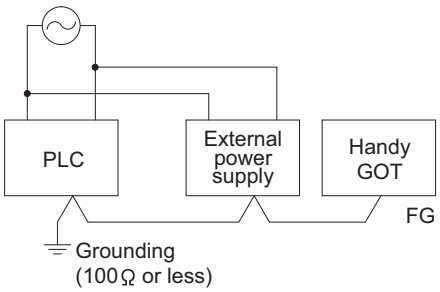
Example of feeding with external power

Connect the power (untied wire or connector) of the external cable or relay cable to the external power.



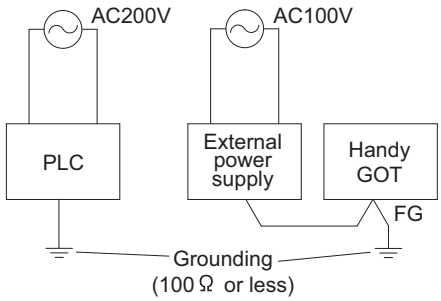
*1 Cautions for grounding with the input power

a) When the input powers are the same



When the input powers of the PLC main unit and external power (24VDC) are the same, connect the FG cable of the GOT and the ground terminal of the PLC (⏚) and carry out the grounding.

b) When the input powers are different



When the input powers are different (PLC: 200VAC, Power: 100VAC), connect the ground terminal (⏚) of PLC and the FG cable of GOT separately and carry out the independent grounding.

Pin layout

Cable		Signal name		
		24+	24G	FG
External cable	GT11H-C□□□-37P	36,37 (Short circuit inside connector)	18,19 (Short circuit inside connector)	1
	GT11H-C□□□	Red, (cable core 4))	Black, (cable core 4))	Shield *1
Relay cable		24+ (label)	24G (label)	FG (label)
Connector Conversion Box		Terminal block 1) 1	Terminal block 1) 3	Terminal block 1)*2 2

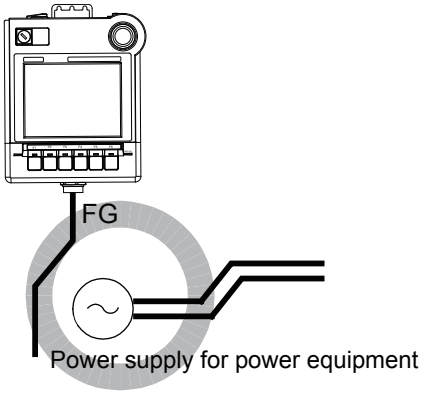
*1 The external cables include three braided shields. Bundle the three shields and carry out grounding.
*2 Be sure to ground FG terminal.

21.2.2 The cause of malfunctions related wiring/Remedy

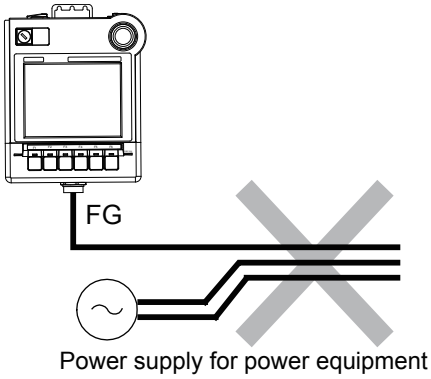
Grounding of the GOT may cause electric potential difference and noise interference, which may result in GOT malfunctions.
These problems may be resolved by taking the following measures.

1 Wiring path of the GOT's ground cable and power line

Bundling the GOT's ground cable and power line together can cause interference noise, which may result in malfunctions.
Keeping the GOT's ground cable and power line away from each other will help minimize noise interference.



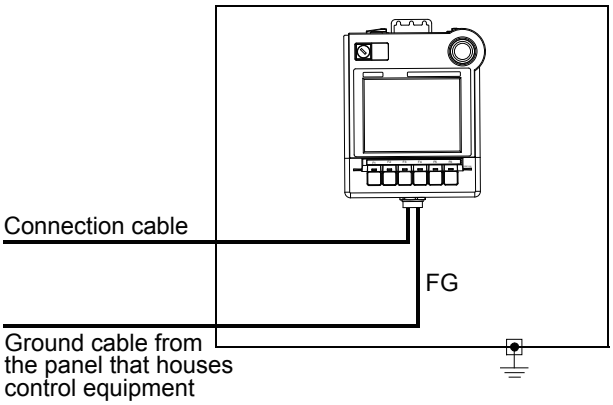
Good: Wiring the ground cable away from the power cable



Bad: Bundling the ground cable and the power cable

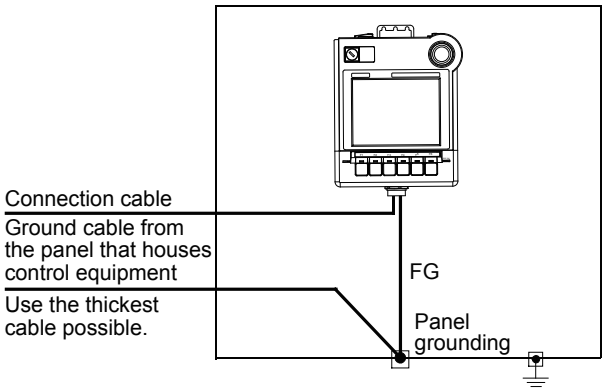
2 Connecting the ground cable from the panel that houses control equipment to the panel to which the GOT is grounded

When running a single ground cable from the panel that houses such piece of control equipment as a sequencer to the panel to which the GOT is grounded, the ground cable may have to be directly connected to the terminal on the GOT.

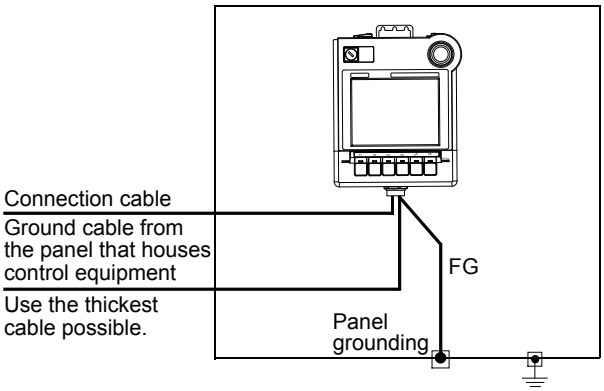


If electric potential difference between the ground points created by it causes malfunctions, lowering the voltage as shown in Remedy 1 below may solve the problem.

- Remedy 1 (Refer to the figures Remedy 1-1 and 1-2 below.)
  If the electric potential difference between the ground cable and the panel that houses the GOT is creating problems, connect the ground cable to the panel also.
  If the wiring method as shown in Remedy 1-1 is not feasible, follow Remedy 1-2.



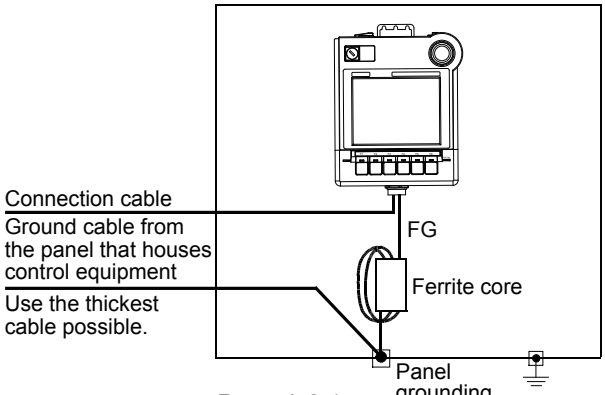
Remedy1-1



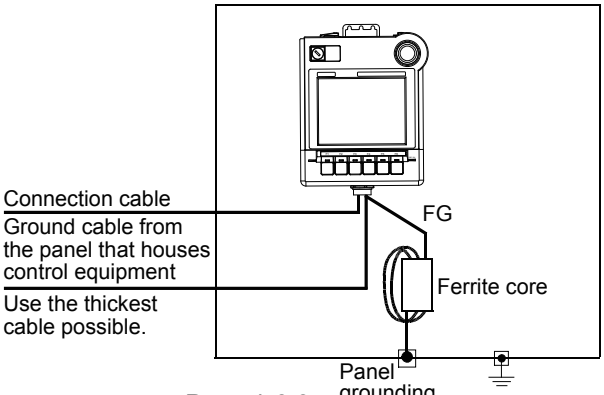
Remedy1-2

If taking Remedy 1 worsens noise interference, taking Remedy 2 may alleviate it.

- Remedy 2 (Refer to the figures Remedy 2-1 and 2-2 below.)
  Attach a ferrite core to the cable if noise from the GOT panel has adverse effects on the GOT when Remedy 1 is taken.
  Wind the wire around the ferrite core several times (approx. 3 times), if a ferrite core is used.
  If the wiring method as shown in Remedy 2-1 is not feasible, follow Remedy 2-2.



Remedy2-1



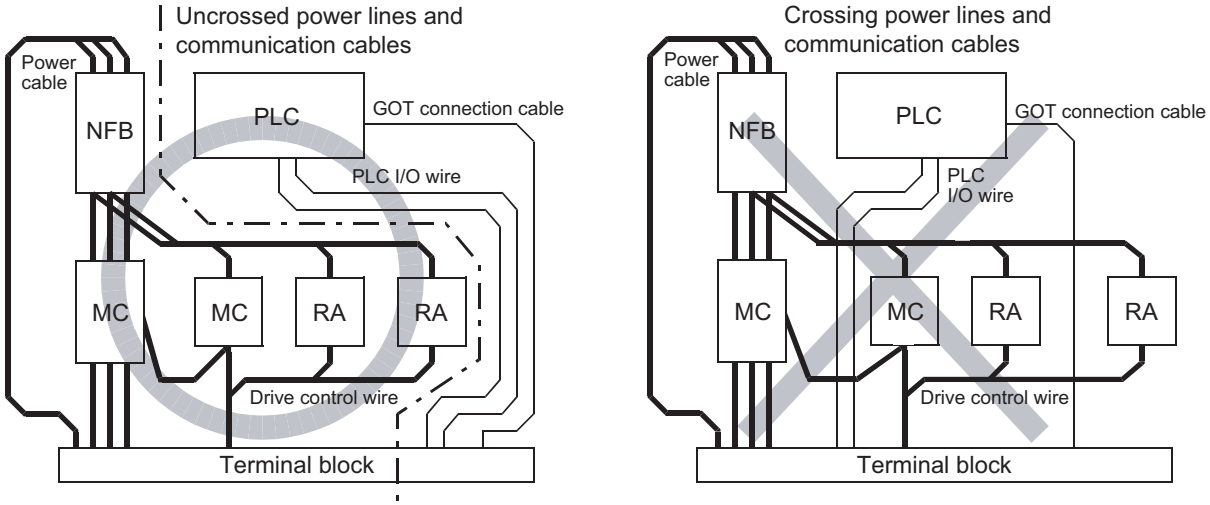
Remedy2-2

21.3 Wiring inside and outside the panel

21.3.1 Wiring inside

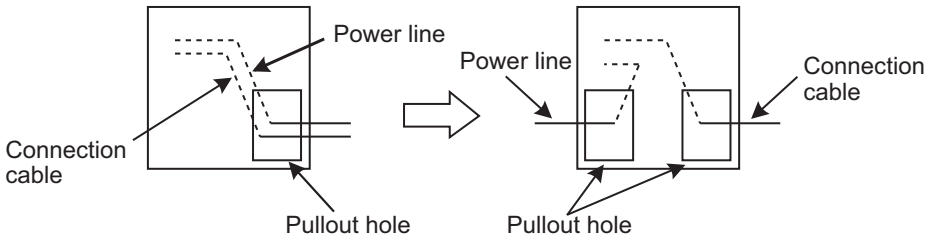
Run power lines, servo amplifier drive wires, and communication cables so that they do not cross each other. Noise interference that is generated by cables that cross each other may cause malfunctions.
Surge suppressors are an effective way to filter out surge noise that is generated from no fuse breakers (NFB), electromagnetic contactors (MC), relays (RA), solenoid valves, and induction motors.
Refer to the section to follow for surge killers.

☞ Section 21.3.3 Attaching surge killers to control equipment

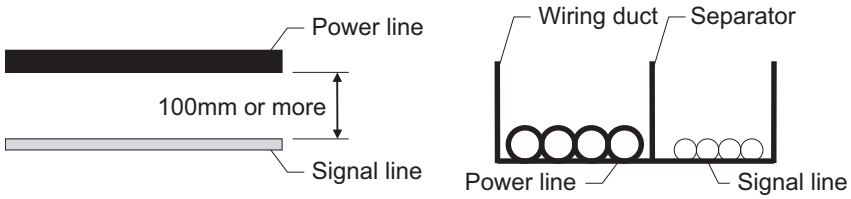


21.3.2 Outside the panel

To pull the power line and communication cable out of the panel, make two pullout holes away from each other and pull the cables through.
Putting both cables through the same pullout hole will increase noise interference.



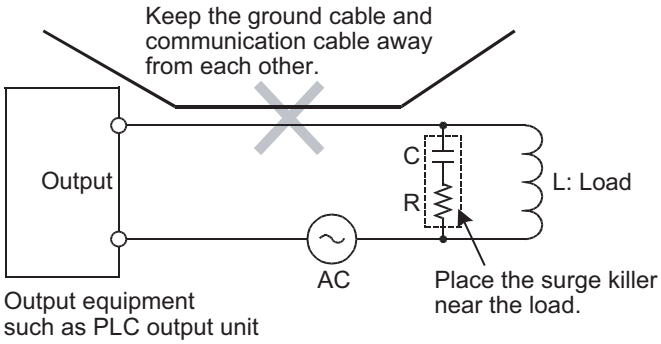
Keep the power line and communication cable inside the duct at least 100 mm away from each other.
If that is not possible, the use of a metal separator inside the duct can reduce noise interference.



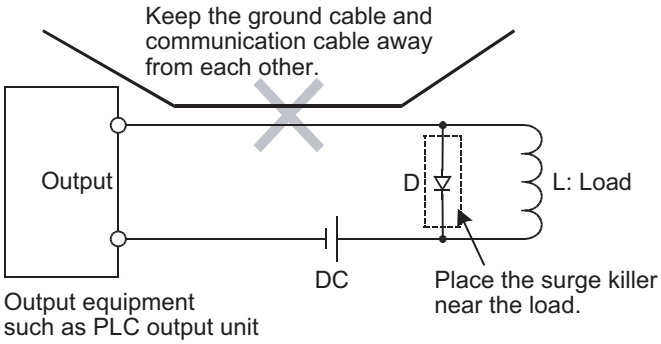
21.3.3 Attaching surge killers to control equipment

If communication errors happen in synch with the on/off signals from certain control equipment (referred to as "load" hereafter) such as no fuse breakers, electromagnetic contactors, relays, solenoid valves, and induction motors, surge noise interference is suspected.
If this problem happens, keep the ground cable and communication cable away from the load.
If that is not possible, an installation of a surge killer will help reduce noise interference.
Place the surge killer as close to the load as possible.

Remedy for AC inductive load

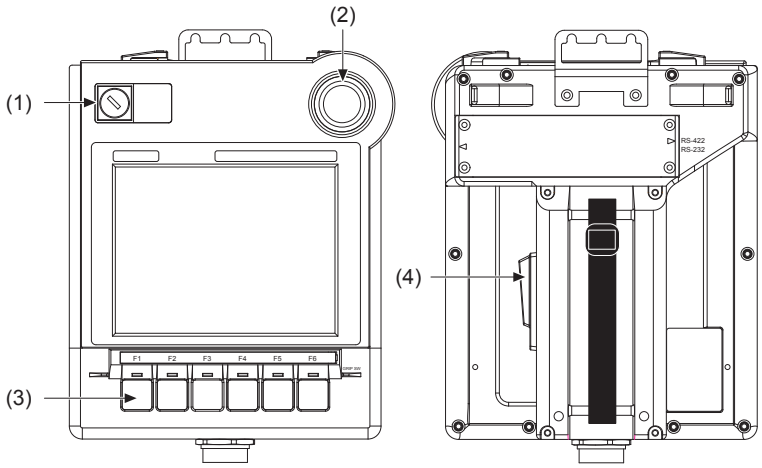


Remedy for DC inductive load



21.4 Switch Wiring

21.4.1 Overview for switch



No.	Name	Abbreviations	Specifications
(1)	Keylock switch (2-position SW)	KSW-1,KSW-2	Switch for external direct wiring (independent contact)
(2)	Emergency stop switch	ES-1,ES-2	Switch for external direct wiring (independent contact)
(3)	Operation switch (6 switches)	SW1 to SW6	Switch for external direct wiring (independent contact)
(4)	Grip switch	DSW-1,DSW-2	Switch for external direct wiring (independent contact)

Switch

The following switches require the connection to a PLC or a controller through an external cable.

- Operation switch
- Emergency stop switch
- Grip switch
- Keylock switch (2-position SW)

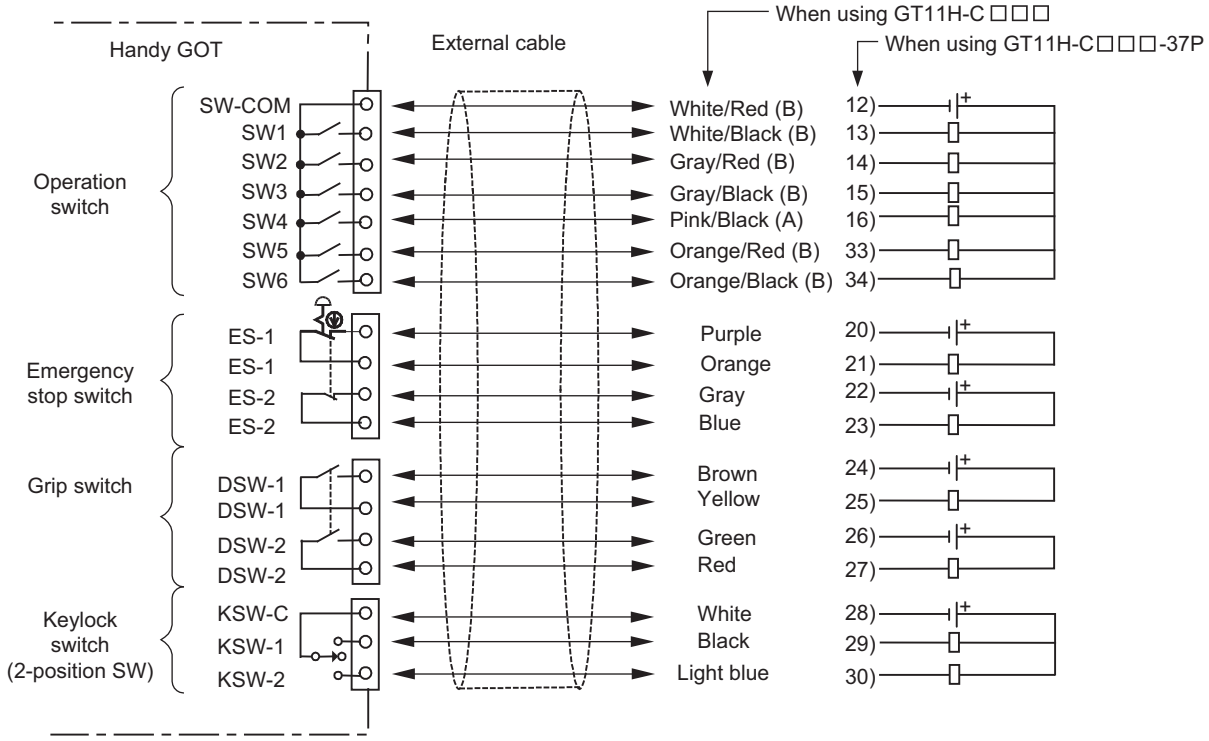
LED

The following LED is turned ON/OFF in the serial communication with a controller.
The independent wiring to control the LED is not required.

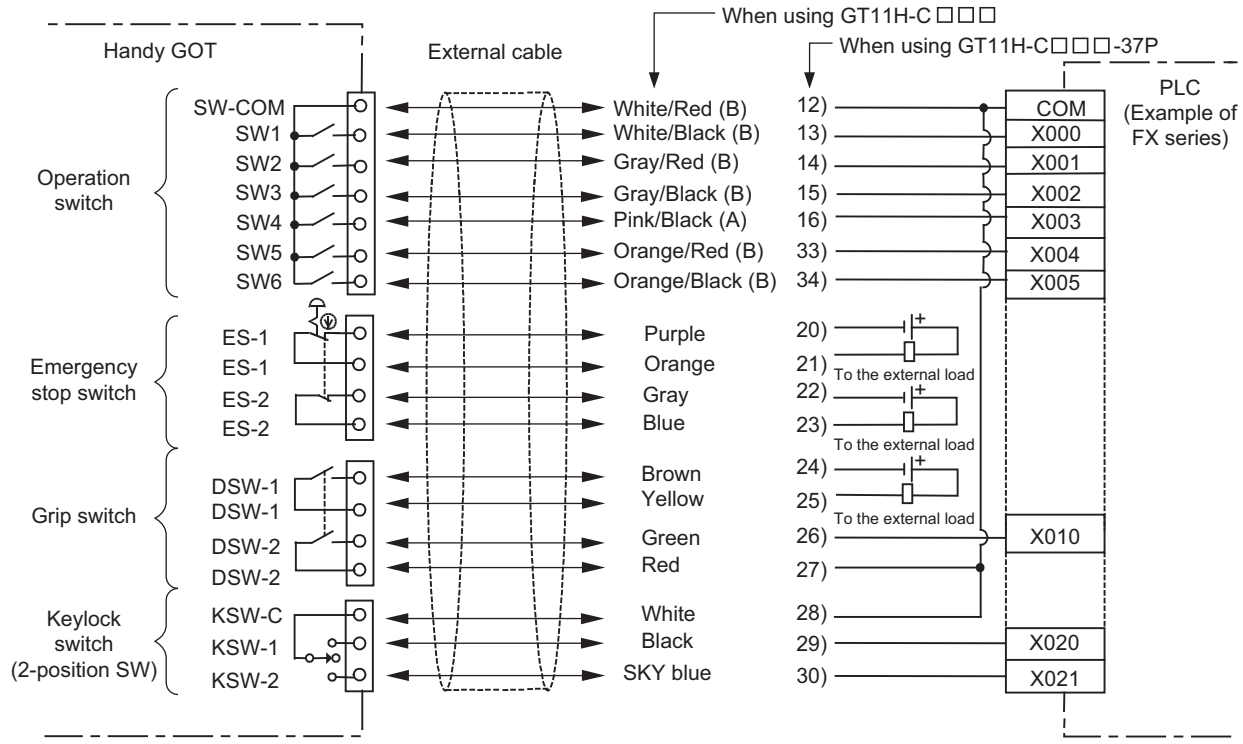
- Operation display LED

21.4.2 Switch wiring example

1 When connecting general load



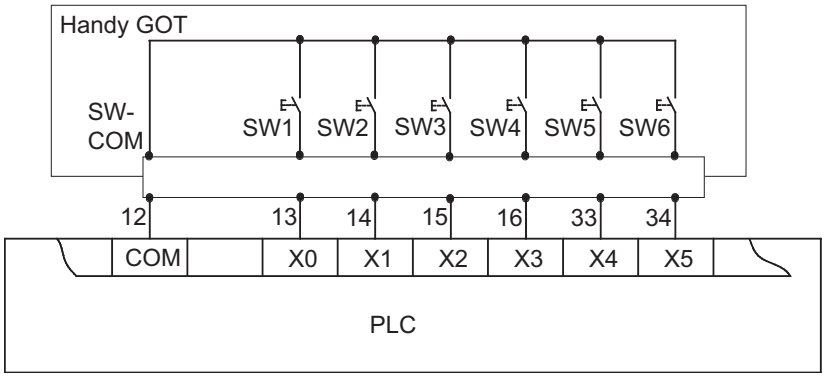
2 When connecting PLC input



21.4.3 Operation switch wiring

The operation stop switch is connected to the PLC through an external cable.

1 Connection example



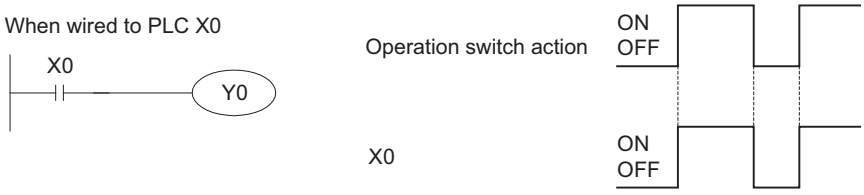
2 Pin layout

Cable		Signal name						
		SW-COM	SW1	SW2	SW3	SW4	SW5	SW6
External cable	GT11H-C□□□-37P	12	13	14	15	16	33	34
	GT11H-C□□□	W/R (B)	W/BK (B)	GY/R (B)	GY/BK (B)	PK/BK (A)	O/R (B)	O/BK (B)
Relay cable		SW-COM (label)	SW1 (label)	SW2 (label)	SW3 (label)	SW4 (label)	SW5 (label)	SW6 (label)
Connector Conversion Box		Terminal block 1) 12	Terminal block 1) 11	Terminal block 1) 10	Terminal block 1) 9	Terminal block 1) 8	Terminal block 1) 7	Terminal block 1) 6

21.4.4 Operation switch input

The operation switch (SW1 to SW6) can directly connect to the PLC input and be used in the sequence program as general input devices.

- The operation switch is loaded into the PLC as the momentary switch of the a contact.



- In the case of handling the input as the b contact or the alternate switch, create the input in the sequence program.

21.4.5 LED setting of operation switch

For operation check, the green LED is attached to the six operation switches (SW1 to SW6).
Each LED is related to the bit 0 to bit 5 of the word device. The LED is lit when the bit value is 1, and not lit when it is 0.

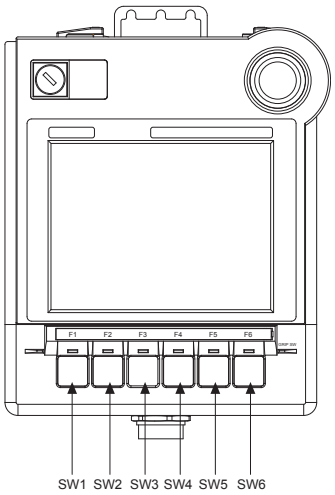
1 Allocation of device to control LED

The device to control LED is allocated by the drawing software. The external input and output function/output information (read device +1) set in [read device] of [system information function] in the common settings is allocated to the LED control.
The following shows the relationship between each bit and the LED of the external input and output function/output information.
The LED is lit when the bit value is 1 and not lit when the bit value is 0.

External input and output function/output information

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
										SW6	SW5	SW4	SW3	SW2	SW1

For example, when D100 is set in the read device of system information, each bit value of D101 is reflected to the LED lit/not lit.



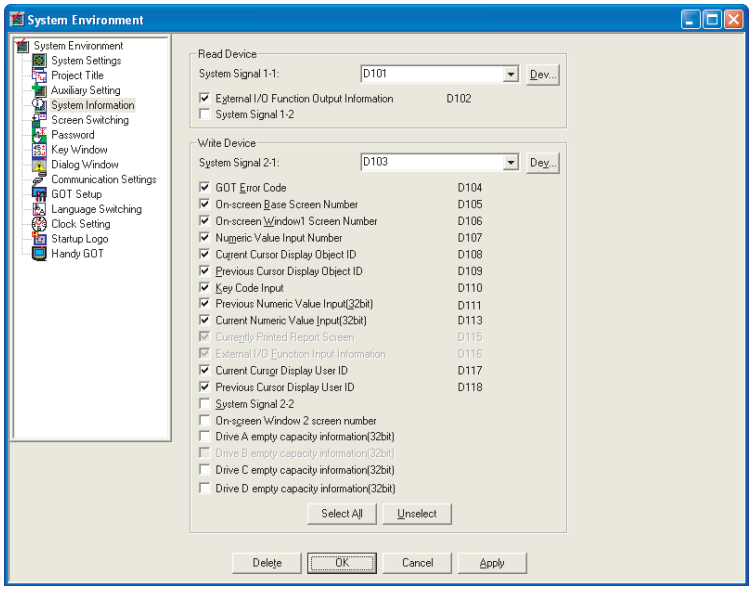
b0 of D101 → LED of SW1
b1 of D101 → LED of SW2
b2 of D101 → LED of SW3
b3 of D101 → LED of SW4
b4 of D101 → LED of SW5
b5 of D101 → LED of SW6

2 Drawing software settings

The read device of the system information is set by the screen editor software as follows.

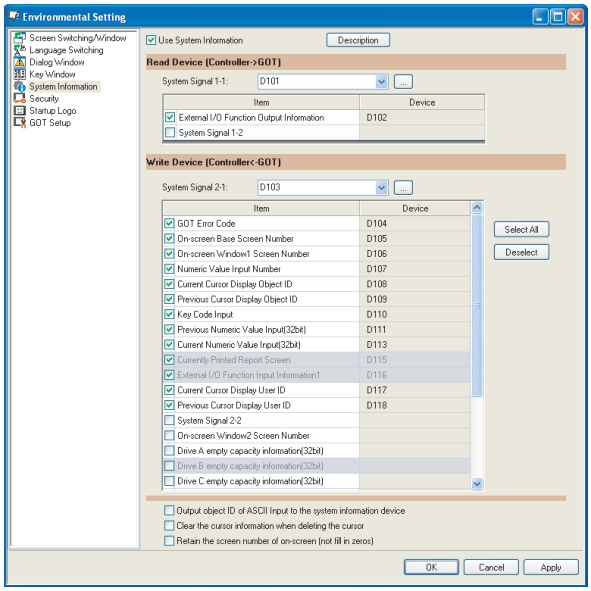
- GT Designer2 (SW ☐ D5C-GTD2-E)

1. Select [System Environment] of [Common Settings] to open the [System Environment] window.
2. Select the system information.
3. Set the read device.(System signal 1-1)
4. Tick the check box of [External input and output function/output information].
5. When the settings are completed, click the [OK] button to close the [System Environment] window.



- GT Designer3 (SW ☐ DNC-GTD3-E)

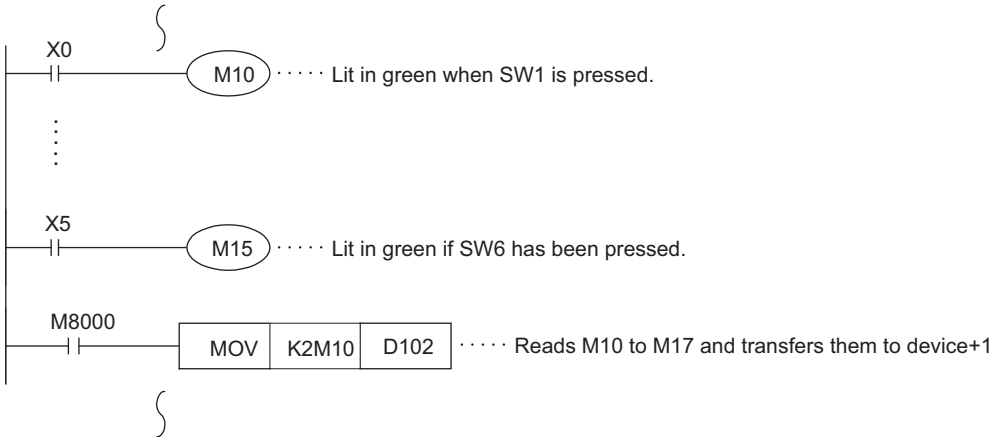
1. Select [GOT Environmental Setting] of [Common] to open the [System Information...] window.
2. Select the system information.
3. Set the read device.(System signal 1-1)
4. Tick the check box of [External I/O Function Output Information].
5. When the settings are completed, click the [OK] button to close the [System Information...] window.



3 Program example

The sequence program example with the following conditions is described.

- System information : Set the read device to D101 (using the drawing software)
- Wiring : Wire the operation switch of SW1 to X0, SW2 to X1, SW3 to X2, SW4 to X3, SW5 to X4 and SW6 to X5.
- Device allocation : The LED lit is allocated from M10 with the sequence program.



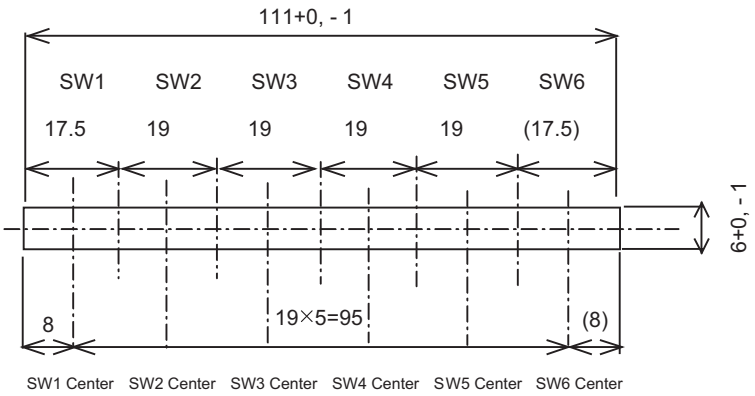
21.4.6 Operation switch name sheet creation

This section describes the operation switch name sheet creation.

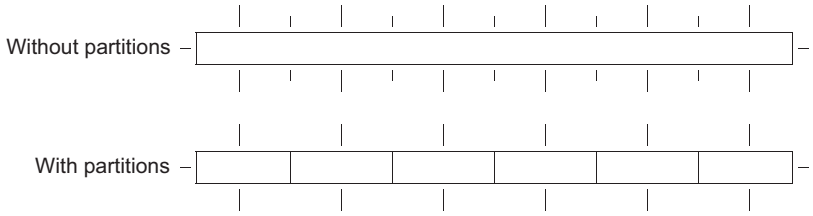
1 Creating the name sheet

1. Prepare the name sheet board and OHP sheet (transparent and colorless sheet) included in this product.

2. Write a original switch name for the user on the name sheet board.
   Create the name sheet in the following dimensions.

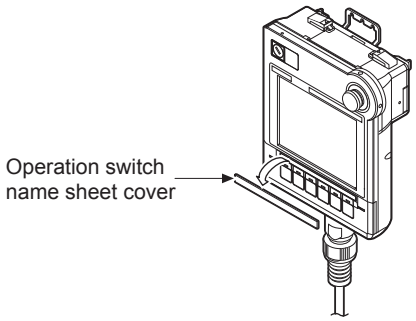


Creation example

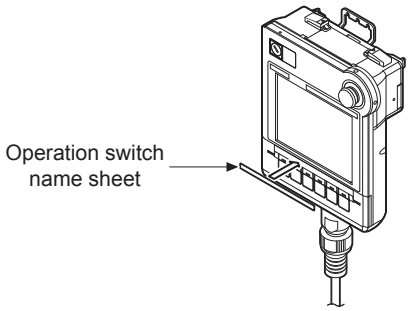


3. When the step of 2) is completed, copy the contents of the name sheet board to the OHP sheet in full size (100%) with a copier. Since the board is half size of the OHP sheet, use remaining half of the sheet if copying has failed.
   When using another OHP sheet, prepare the following sheet. In addition, the sheet must be copiable.
   : Material ・・・・・・polyester film
   : Thickness・・・・・0.1mm

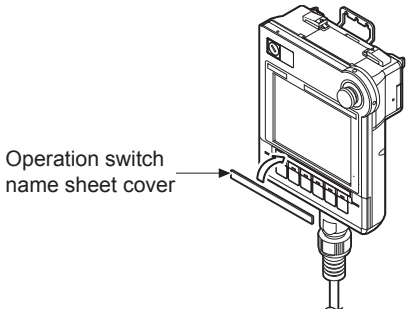
2 Mounting the name sheet



1 Remove the operation switch name sheet cover.



2 Insert the operation switch name sheet.

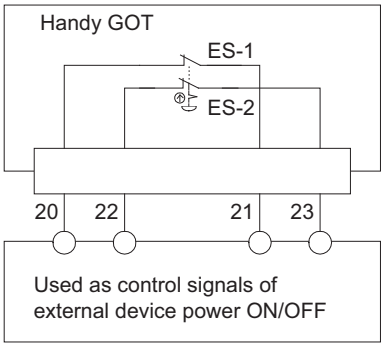


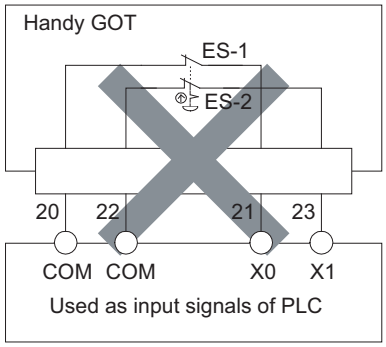
3 Mount the operation switch name sheet cover.

21.4.7 Emergency stop switch wiring

The emergency stop switch is connected to the PLC through an external cable.

1 Connection example





When turning ON/OFF the external device power, set the load up to 24VDC/1A (contact specification).
For the emergency stop circuit, be sure to configurate the circuit outside the PLC.

2 Pin layout

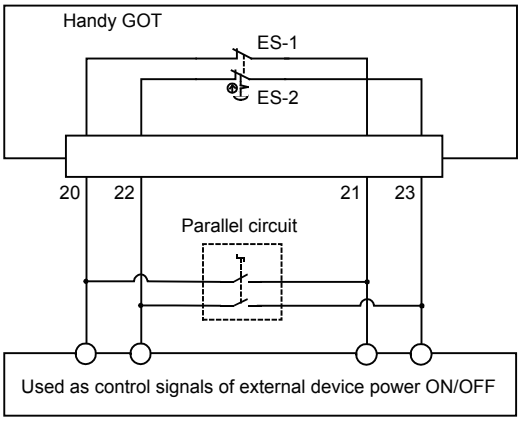
Cable		Signal name			
		ES-1	ES-1	ES-2	ES-2
External cable	GT11H-C□□□-37P	20	21	22	23
	GT11H-C□□□	Purple	Orange	Gray	Blue
Relay cable		ES-1 (label)	ES-1 (label)	ES-2 (label)	ES-2 (label)
Connector Conversion Box		Terminal block 2) 14	Terminal block 2) 13	Terminal block 2) 12	Terminal block 2) 11

3 Applicable switch model name

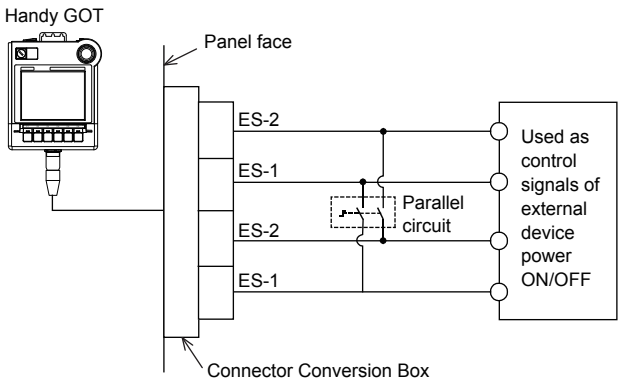
Model name	A165E-S-02 (manufactured by OMRON)
Specifications	2b contact, 1A/24VDC, single wiring

4 Cautions for use

For the emergency stop SW, the b contact type is used.
When the Handy GOT is disconnected from the relay cable connector or removed from the connector conversion box, the emergency stop switch goes off, and the Handy GOT goes into the same state as when the switch is pressed.
Design such as configuring a parallel circuit outside must be taken into consideration to avoid emergency stop while the Handy GOT is being removed.

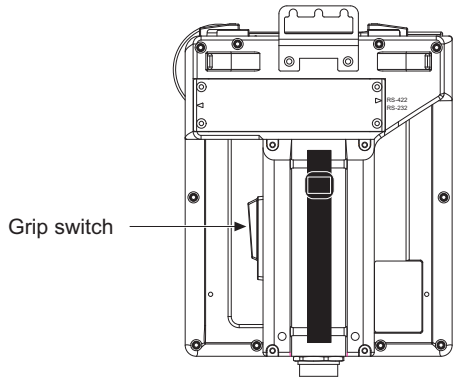


For the Connector Conversion Box



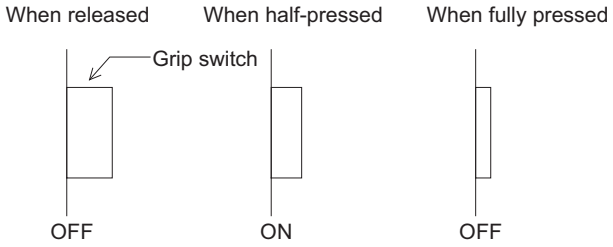
21.4.8 Grip switch

The grip switch is on the side surface of the Handy GOT and wired to the input of PLC, etc.



The grip switch is the 3-position system switch and makes the ON/OFF state of Handy GOT as shown below.

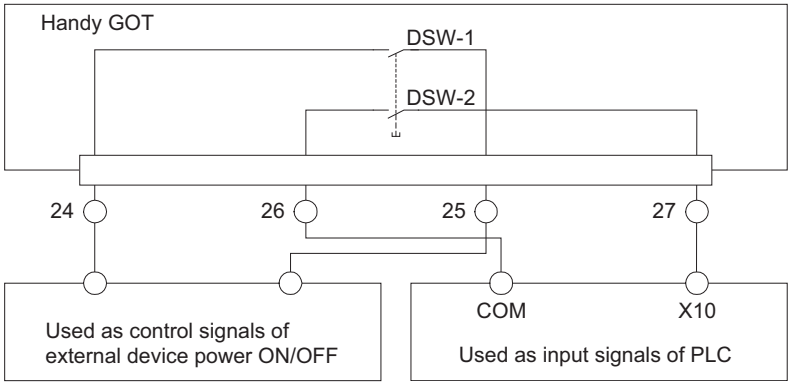
Side surface of grip switch



21.4.9 Grip switch wiring

The grip switch is a switch with two circuits of the above 3-position system a contact.

1 Connection example



Set the load up to 24VDC/1A (contact specification) for each contact.

2 Pin layout

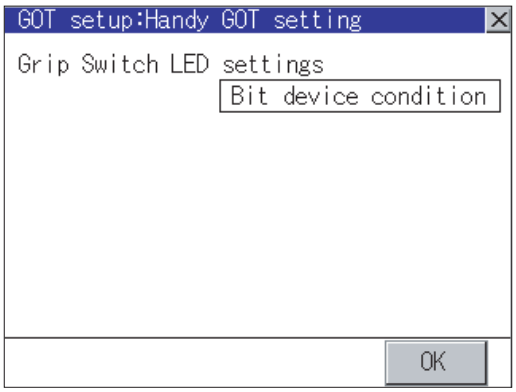
Cable		Signal name			
		DSW-1	DSW-1	DSW-2	DSW-2
External cable	GT11H-C□□□-37P	24	25	26	27
	GT11H-C□□□	Brown	Yellow	Green	Red (cable core 3)
Relay cable		DSW-1 (label)	DSW-1 (label)	DSW-2 (label)	DSW-2 (label)
Connector Conversion Box		Terminal block 2) 10	Terminal block 2) 9	Terminal block 2) 8	Terminal block 2) 7

21.4.10 LED settings of grip switch

The LED for the grip switch on the front of the Handy GOT is set by the main unit or the drawing software.

1 Main unit settings

Operate the main unit in the order of [GOT setup] - [Handy GOT Settings] to display the following screen.



2 Drawing software

- Setting with GT-Designer2

1. Operate the software in the order of [Common Settings] - [System Environment].
2. Double-click [Handy GOT Settings] on the tree of the [System Environment] window.

- Setting with GT-Designer3

1. Operate the software in the order of [Common] - [GOT Environmental Setting] - [GOT Setup...].
2. Double-click [Handy GOT] on the tree of the [GOT Setup...] window.

21.4.11 LED operation explanations

For the state of the grip switch pressed, the ON/OFF display of LED can be selected by "Bit device condition" or "Always OFF".

Selecting items	Contents
Bit device condition	When the bit device of a PLC is turned ON, the LED lights.
Always OFF	The LED remains not lit.

1 Allocation of device to control LED

When selecting [Bit device condition], the device to control LED is allocated by the drawing software. The external input and output function/output information (read device +1) set in [read device] of [system information function] in the common settings is allocated to the LED control.
The LED control for the grip switch is allocated to b6 (7th bit from the lower) of the device allocated to the external input and output function/output information. The LED is lit when the bit value is 1 and not lit when the bit value is 0.

External input and output function/output information (read device +1)

b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
									Grip switch						

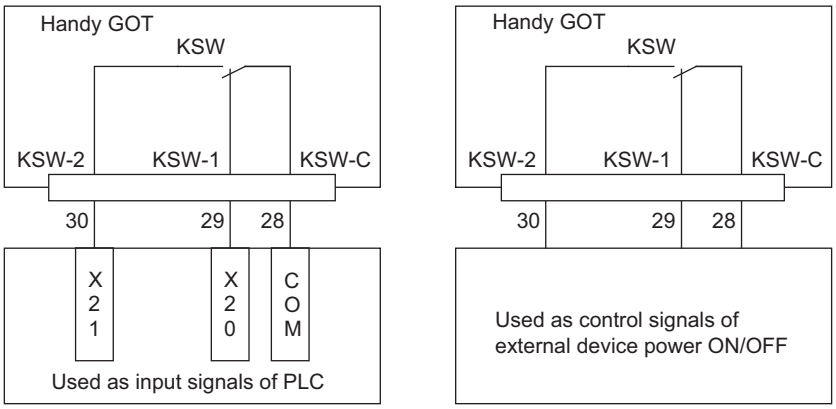
For example, when D100 is set in the read device of system information, the value in b6 of D101 is reflected to the LED lit/not lit.

21.4.12 Keylock switch (2-position SW)

The keylock switch (2-position SW) is used with wiring to the input of PLC

1 Connection example

The following describes the connection example when the notch of the switch is set to the left.



Set the load up to 24VDC/1A (contact specification) for each contact.

2 Pin layout

Cable		Signal name		
		KSW-C	KSW-1	KSW-2
External cable	GT11H-C□□□-37P	28	29	30
	GT11H-C□□□	White (Group (3))	Black (Group (3))	SKY blue (Group (3))
Relay cable		KSW-C (label)	KSW-1 (label)	KSW-2 (label)
Connector Conversion Box		Terminal block 2) 6	Terminal block 2) 5	Terminal block 2) 4

22. CONNECTION TO MITSUBISHI PLC

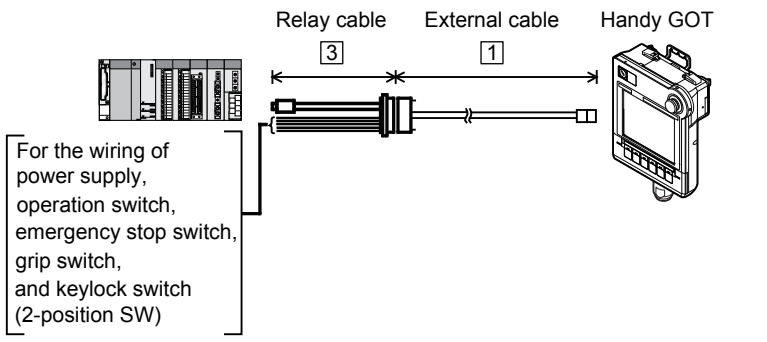
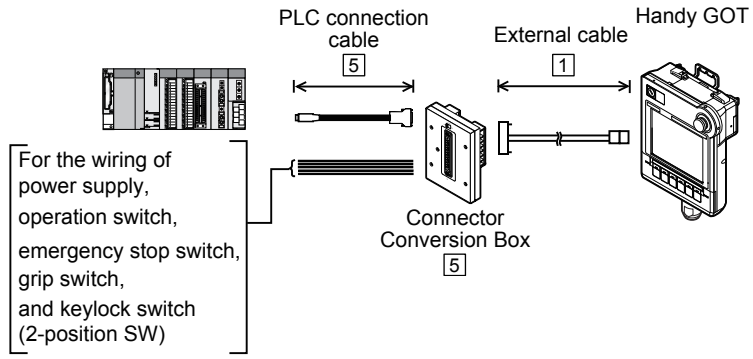
22.1 Direct CPU Connection

22.1.1 Connecting to QCPU, LCPU

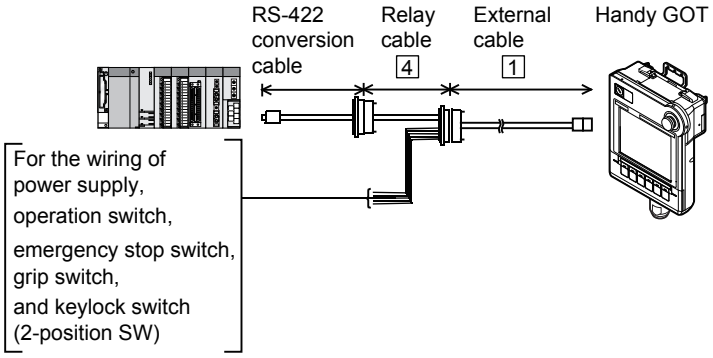
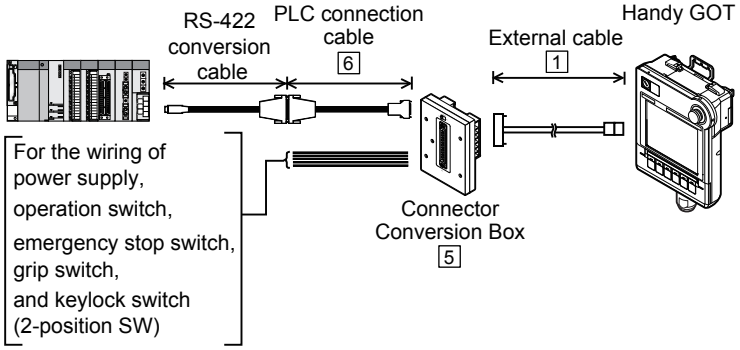
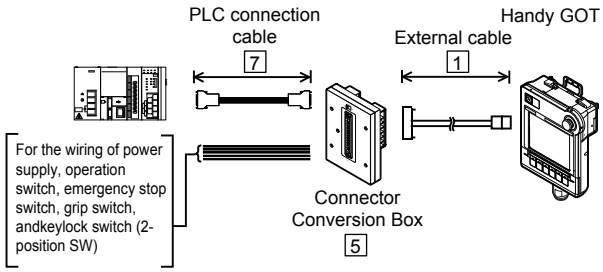
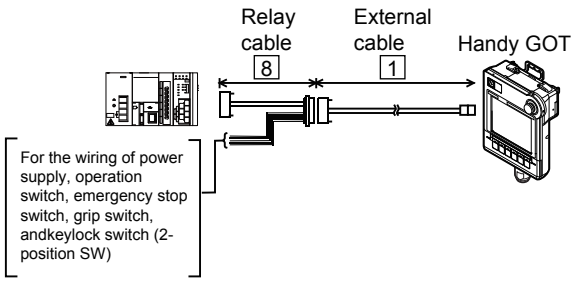
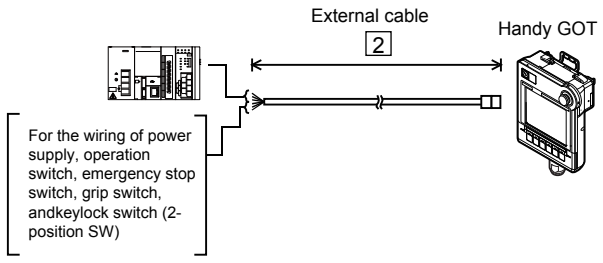
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

1 System configuration and connection conditions

Refer to the numbers described in System configuration (1, 2...) according to the numbers described in "*2* System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
QCPU LCPU*1	RS-232	6m or less	
			

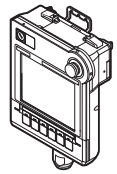
*1 The adapter L6ADP-R2 is required to connect the LCPU.
Only GT Designer3 (Ver. 1.10L or later) supports connection to the LCPU.

Connection conditions			System configuration
PLC	Communication	Distance	
QCPU LCPU*1	RS-422	13.5m or less	
			
LCPU*1	RS-422	13.5m or less	
			
			

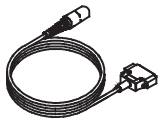
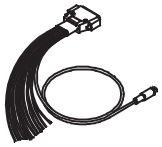
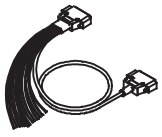
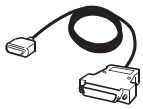
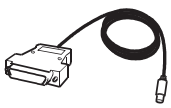
*1 The adapter (L6ADP-R2 or L6ADP-R4) is required to connect the LCPU.
Only GT Designer3 (Ver. 1.10L or later) supports connection to the LCPU.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Remark
	—	Handy GOT	GT1155HS-QSBD	STN color
			GT1150HS-QLBD	STN monochrome

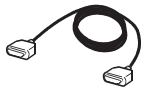
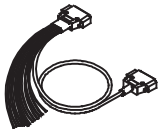
(2) Cable

Image	No.	Name	Model name	Remark
	1	External cable	GT11H-C□□□-37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
	2	External cable	GT11H-C□□□ □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
	3	Relay cable*1	GT11H-C15R2-6P	PLC side MINI-DIN 6 pins (1.5m)
	4	Relay cable*1	GT11H-C15R4-25P	PLC side D-Sub 25 pins (1.5m)
	5	PLC connection cable*2 RS-232 cable	GT11H-C30R2-6P	PLC side MINI-DIN 6 pins (3m)
	6	PLC connection cable RS-422 cable	GT01-C30R4-25P (3m) GT01-C100R4-25P (10m)	PLC side D-sub 25 pins
	—	RS-422 conversion cable Between QCPU, LCPU and RS-422 cable	FA-CNV2402CBL	0.2m
			FA-CNV2405CBL	0.5m

*1 Relay cables other than the ones mentioned above must be prepared by the user.

Chapter 20 COMMUNICATION CABLE

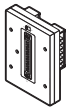
*2 Connect the FG cable on the GOT side to FG of the Connector Conversion Box.
Connect the FG cable on the PLC side to FG of the PLC's power supply module.

Image	No.	Name	Model name	Remark
	7	PLC connection cable RS-422	Must be prepared by the user. ☞ 22.1.5 Connection cable	—
	8	Relay cable*1	Must be prepared by the user. ☞ 22.1.5 Connection cable	—

*1 Relay cables other than the ones mentioned above must be prepared by the user.

☞ Chapter 20 COMMUNICATION CABLE

(3) Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

3 Number of connectable GOTs and PLCs

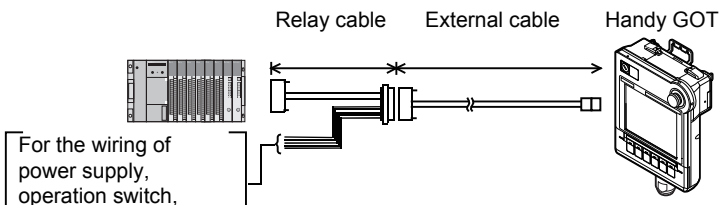
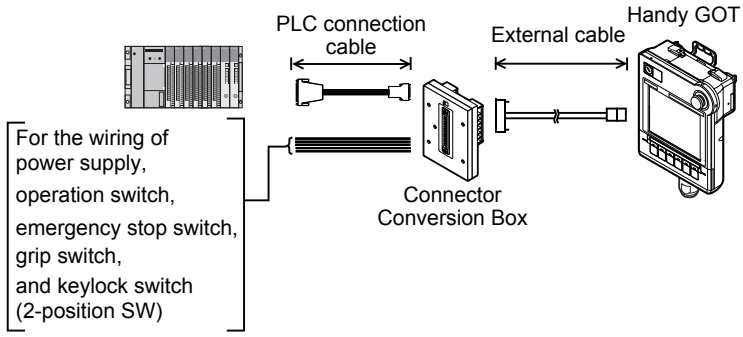
PLC	Number of GOTs	Number of PLCs
QCPU, LCPU	1	1

22.1.2 Connecting to QnACPU, ACPU

Connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

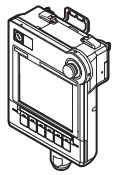
1 System configuration and connection conditions

Refer to the numbers described in System configuration (1, 2...) according to the numbers described in "*2* System equipment".

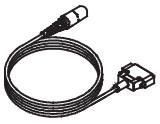
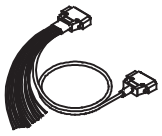
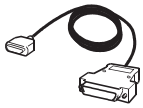
Connection conditions			System configuration
PLC	Communication	Distance	
QnACPU, ACPU	RS-422	13m or less	 

2 System equipment

(1) GOT

Image	No.	Name	Model name	Remark
	—	Handy GOT	GT1155HS-QSBD	STN color
			GT1150HS-QLBD	STN monochrome

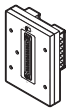
(2) Cable

Image	No.	Name	Model name	Remark
	—	External cable	GT11H-C□□□-37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
	—	Relay cable	GT11H-C15R4-25P	PLC side D-Sub 25 pins (1.5m)
	—	PLC Connection Cable RS-422 cable	GT01-C30R4-25P (3m) GT01-C100R4-25P (10m)	PLC side D-sub 25 pins

Relay cables other than the ones mentioned above must be prepared by the user.

☞ Chapter 20 COMMUNICATION CABLE

(3) Option

Image	No.	Name	Model name	Remark
	—	Connector Conversion Box	GT11H-CNB-37S	—

3 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
QnACPU, ACPU	1	1

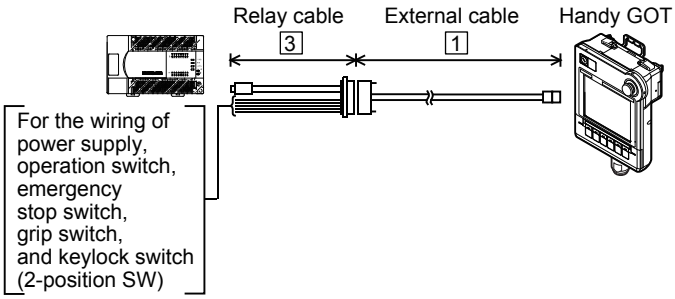
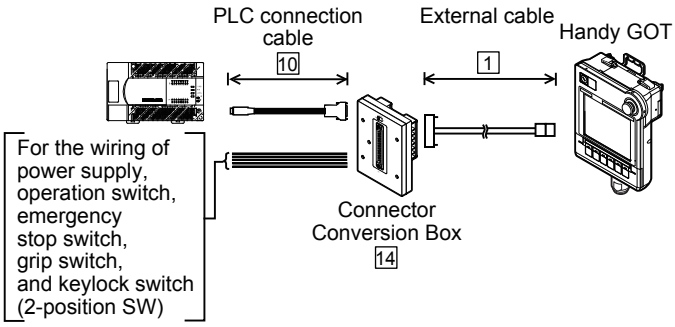
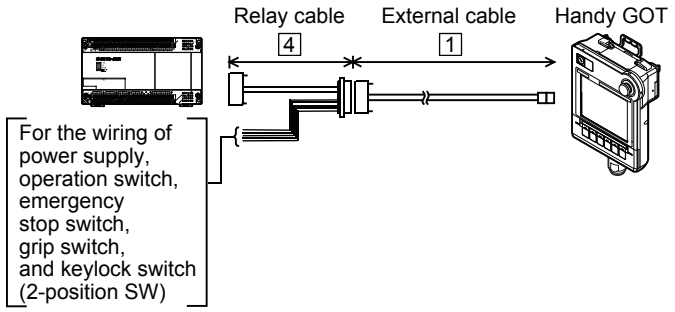
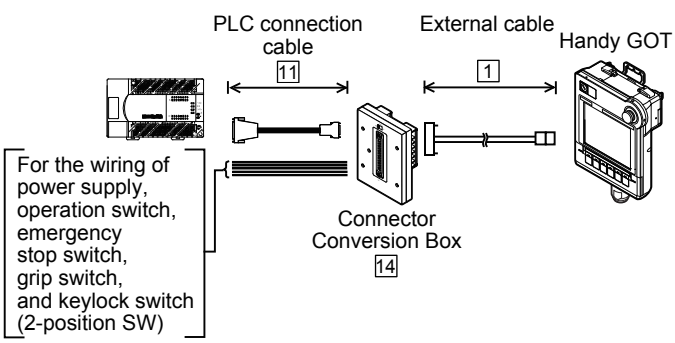
22.1.3 Connecting to FX PLC

For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

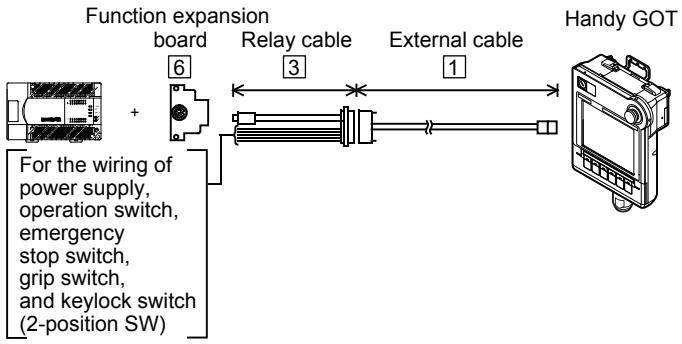
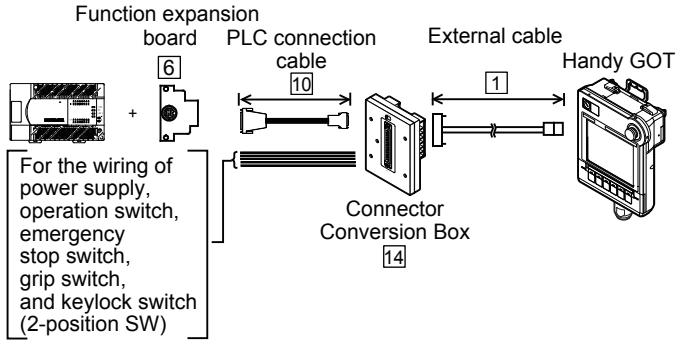
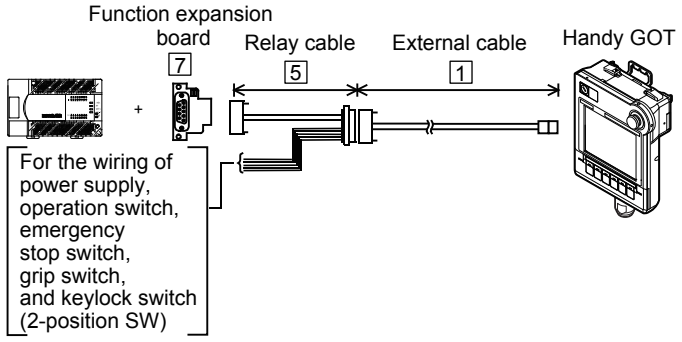
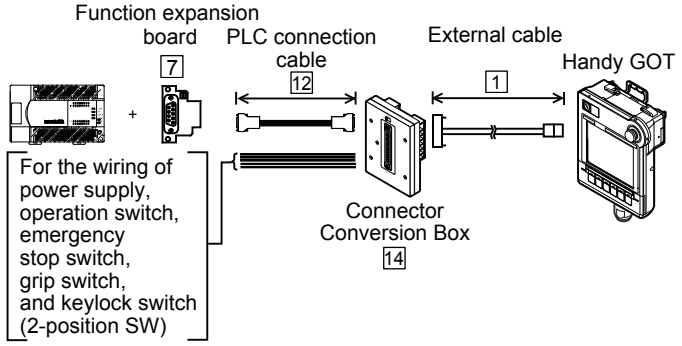
1 System configuration and connection conditions

Refer to the numbers described in System configuration (1, 2...) according to the numbers described in "2 System equipment".

(1) When connecting to a programming port

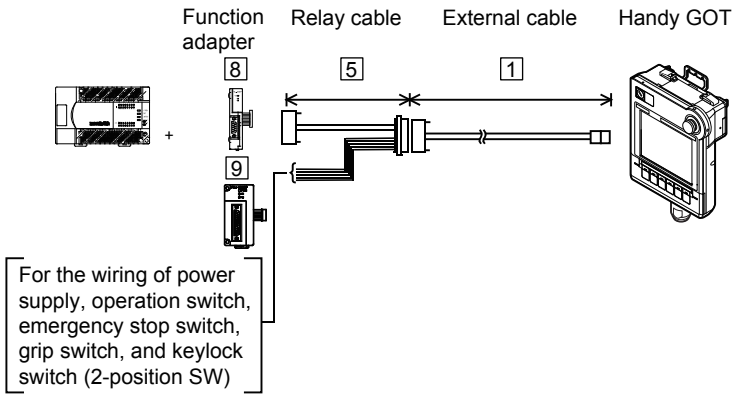
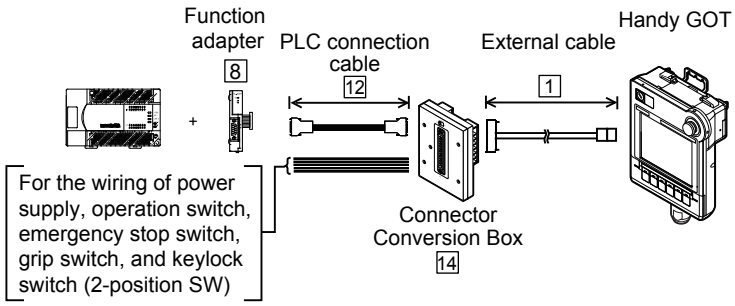
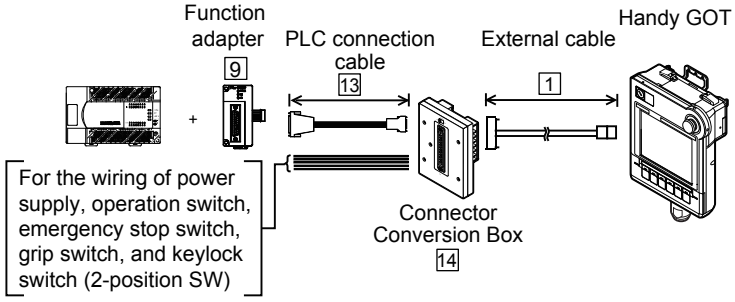
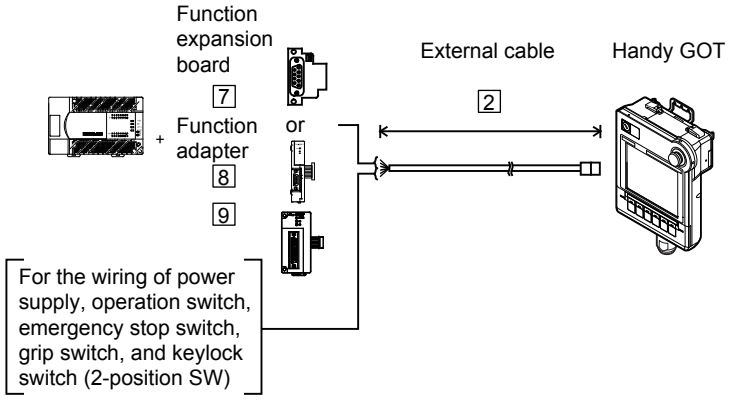
<table>
<tr><th colspan="3">Connection conditions</th><th rowspan="2">System configuration</th></tr>
<tr><th>PLC</th><th>Communication</th><th>Distance</th></tr>
<tr><td rowspan="2">FX0,
FX0S,
FX0N,
FX1S,
FX1N,
FX1NC,
FX2N,
FX2NC,
FX3G,
FX3GC,
FX3U,
FX3UC</td><td rowspan="4">RS-422</td><td rowspan="4">13m or less</td><td> 
</td></tr>
<tr><td> 
</td></tr>
<tr><td rowspan="2">FX1,
FX2,
FX2C</td><td> 
</td></tr>
<tr><td> 
</td></tr>
</table>

(2) When connecting to a function expansion board or function adapter
For function expansion boards, which can be connected to each PLC, or the number and specification of function adapters, refer to the manual of each PLC.

Connection conditions			System configuration
PLC	Communication	Distance	
FX1S, FX1N, FX2N, FX3S, FX3G, FX3GC*2, FX3U, FX3UC*1	RS-422	13m or less	
			
	RS-232	6m or less	
			

*1 For FX3UC-□□/D and FX3UC-□□/DSS, a function expansion board cannot be used.

*2 In FX3GC, a function expansion board cannot be used.

Connection conditions			System configuration
PLC	Communication	Distance	
FX1S, FX1N, FX1NC, FX2N, FX2NC, FX3S, FX3G, FX3GC*3, FX3U, FX3UC*1*2	RS-232	6m or less	
			
			
			

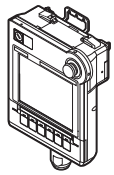
*1 When a function adapter is connected to the FX3U or FX3UC series PLC (excluding the FX3UC-□□/D and FX3UC-□□/DSS PLCs), either of the function expansion board for function adapter connection (FX3U-CNV-BD) or the function expansion board for communication (FX3U-232-BD, FX3U-422-BD, FX3U-485-BD, FX3U-USB-BD) is required.

*2 When a function adapter is connected to the FX3U-□□/D or FX3UC-□□/DSS PLC, it should be directly connected to the main unit. (A function expansion board cannot be used.)

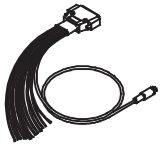
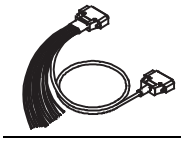
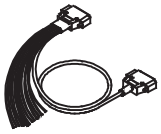
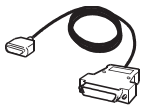
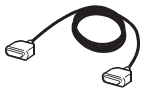
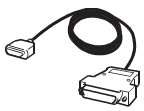
*3 In FX3GC, a function expansion board cannot be used.

2 System equipment

(1) GOT

Image	No.	Name	Model name	Remark
	—	Handy GOT	GT1155HS-QSBD	STN color
			GT1150HS-QLBD	STN monochrome

(2) Cable

Image	No.	Name	Model name	Remark
	1	External cable	GT11H-C□□□-37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
	2		GT11H-C□□□*2 □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
	3	Relay cable*1	GT11H-C15R4-8P	PLC side MINI-DIN 8 pins (1.5m)
	4		GT11H-C15R4-25P	PLC side D-Sub 25 pins (1.5m)
	5		Must be prepared by the user. Section 22.1.5 Connection cable	—
	10	PLC connection cable RS-422	GT01-C10R4-8P (1m) GT01-C30R4-8P (3m) GT01-C100R4-8P (10m)	PLC side MINI-DIN 8 pins
	11		GT01-C30R4-25P (3m) GT01-C100R4-25P (10m)	PLC side D-sub 25 pins
	12	PLC connection cable RS-232*3	GT01-C30R2-9S	PLC side D-sub 9 pins (3m)
	13		GT01-C30R2-25P	PLC side D-sub 25 pins (3m)

*1: The relay cables other than mentioned above must be prepared by the user.

*2: When an external cable of which one end is untied (GT11H-C30, GT11H-C60, GT11H-C100) is used, the cable must be processed by the user according to the following.

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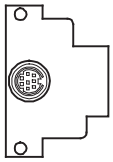
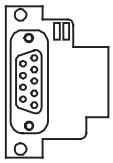
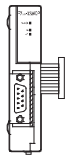
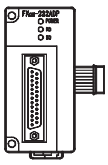
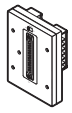
*3: The PLC connection cable RS-232 can be prepared by the user.

(3) Function expansion board/Function adapter

Image	No.	Name	Model name	Remark
	6	Function expansion board (for RS-422 communication)	<FX1S, FX1N> ・FX1N-422-BD <FX2N> ・FX2N-422-BD <FX3G, FX3S> ・FX3G-422-BD <FX3U, FX3UC>*5 ・FX3U-422-BD	<Interface> MINI-DIN 8 pins
	7	Function expansion board (for RS-232 communication)	<FX1S, FX1N> ・FX1N-232-BD <FX2N> ・FX2N-232-BD <FX3G, FX3S> ・FX3G-232-BD <FX3U, FX3UC>*4 ・FX3U-232-BD	<Interface> D-Sub 9 pins
	8	Function adapter (for RS-232 communication)	<FX0N, FX1NC, FX2NC> ・FX2NC-232ADP <FX1S, FX1N>*1 ・FX1N-CNV-BD+FX2NC-232ADP <FX2N>*2 ・FX2N-CNV-BD+FX2NC-232ADP <FX3S> ・FX3S-CNV-ADP+FX3U-232ADP*7 ・FX3S-CNV-ADP+FX3U-232ADP-MB*7 <FX3G> ・FX3G-CNV-ADP+FX3U-232ADP*3 ・FX3G-CNV-ADP+FX3U-232ADP-MB*3 <FX3GC>*6 ・FX3U-232ADP ・FX3U-232ADP-MB <FX3U, FX3UC>*4 ・Function expansion board+FX3U-232ADP ・Function expansion board+FX3U-232ADP-MB	<Interface> D-Sub 9 pins
	9		<FX0N, FX1NC, FX2NC> ・FX0N-232ADP <FX1S, FX1N>*1 ・FX1N-CNV-BD+FX0N-232ADP <FX2N>*2 ・FX2N-CNV-BD+FX0N-232ADP	<Interface> D-Sub 25 pins

*1: When a function adapter is connected to the FX1S or FX1N series PLC, FX1N-CNV-BD is required.
*2: When a function adapter is connected to the FX2N series PLC, FX2N-CNV-BD is required.
*3: When a function adapter is connected to the FX3G series PLC, a special adapter connection conversion adapter (FX3G-CNVADP) is required.
*4: When a function adapter is connected to the FX3U or FX3UC series PLC (excluding the FX3UC-□□/D and FX3UC-□□/DSS PLCs), either of the function expansion board for function adapter connection (FX3U-CNV-BD) or the function expansion board for communication (FX3U-232-BD, FX3U-422-BD, FX3U-485-BD, FX3U-USB-BD) is required.
When a function adapter is connected to the FX3U-□□/D or FX3UC-□□/DSS PLC, it should be directly connected to the main unit. (A function expansion board cannot be used.)
*5: For FX3UC-□□/D and FX3UC-□□/DSS, a function expansion board cannot be used.
*6: In FX3GC, a function expansion board cannot be used.
*7: When a function adapter is connected to the FX3S series PLC, a special adapter connection conversion adapter (FX3S-CNV-ADP) is required.

(4) Option

Image	No.	Name	Model name	Remark
	14	Connector Conversion Box	GT11H-CNB-37S	—

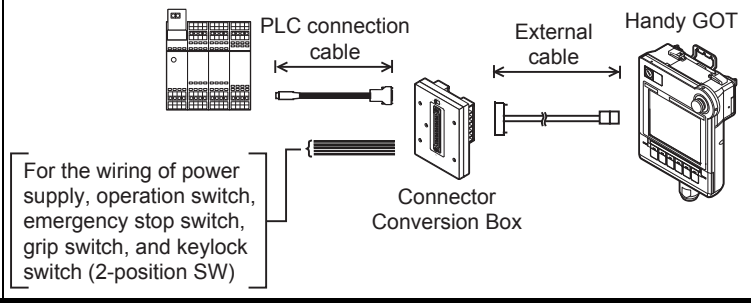
3 Number of connectable GOTs and PLCs

Connection	Number of GOTs	Number of PLCs
When connecting to a programming port	1	1
When connecting to a function expansion board/ function adapter	1	1

22.1.4 Connecting to WSCPU

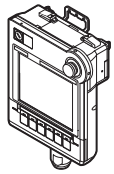
Connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.

1 System configuration and connection conditions

Connection conditions			System configuration
PLC	Communication	Distance	
WSCPU	RS-232	5m or less	

2 System equipment

(1) GOT

Image	No.	Name	Model name	Remark
	—	Handy GOT	GT1155HS-QSBD	STN color
			GT1150HS-QLBD	STN monochrome

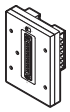
(2) Cable

Image	No.	Name	Model name	Remark
	—	External cable	GT11H-C□□□-37P □□□: 30 (3m)	Relay cable connection side D-Sub 37 pins
	—	PLC connection cable RS-232 cable	WS0-C20R2 (2m)	—

Relay cables other than the ones mentioned above must be prepared by the user.

☞ Chapter 20 COMMUNICATION CABLE

(3) Option

Image	No.	Name	Model name	Remark
	—	Connector Conversion Box	GT11H-CNB-37S	—

3 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
WSCPU	1	1

22.1.5 Connection cable

Remark PLC side connector

Use a connector compatible with PLC side.
For details, refer to the following manual.

☞ User's manual for the function expansion board/function adapter to be used

When the Handy GOT is connected to the FX PLC using a function expansion or function adapter via RS-232, the RS-232 cable must be prepared by the user.
Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Model name		Connector shape of function expansion board and function adapter	Connection cable
			RS-232 cable
Function expansion board	<FX1S, FX1N> ・FX1N-232-BD <FX2N> ・FX2N-232-BD <FX3G, FX3S> ・FX3G-232-BD <FX3U, FX3UC>*5 ・FX3U-232-BD	D-Sub 9 pins	RS-232 cable 1)
Function adapter	<FX0N, FX1NC, FX2NC> ・FX0N-232ADP <FX1S, FX1N>*1 ・FX1N-CNV-BD+FX0N-232ADP <FX2N>*2 ・FX2N-CNV-BD+FX0N-232ADP	D-Sub 25 pins	RS-232 cable 2)
	<FX0N, FX1NC, FX2NC> ・FX2NC-232ADP <FX1S, FX1N>*1 ・FX1N-CNV-BD+FX2NC-232ADP <FX2N>*2 ・FX2N-CNV-BD+FX2NC-232ADP <FX3S> ・FX3S-CNV-ADP+FX3U-232ADP*7 ・FX3S-CNV-ADP+FX3U-232ADP-MB*7 <FX3G> ・FX3G-CNV-ADP+FX3U-232ADP*3 ・FX3G-CNV-ADP+FX3U-232ADP-MB*3 <FX3GC>*6 ・FX3U-232ADP ・FX3U-232ADP-MB <FX3U, FX3UC>*4 ・Function expansion board+FX3U-232ADP ・Function expansion board+FX3U-232ADP-MB	D-Sub 9 pins	RS-232 cable 1)

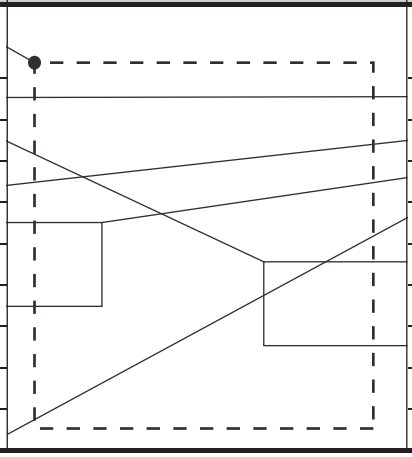
*1 When a function adapter is connected to the FX1S or FX1N series PLC, FX1N-CNV-BD is required.
*2 When a function adapter is connected to the FX2N series PLC, FX2N-CNV-BD is required.
*3 When a function adapter is connected to the FX3G series PLC, a special adapter connection conversion adapter (FX3G-CNV-ADP) is required.
*4 When a function adapter is connected to the FX3U or FX3UC series PLC (excluding the FX3UC-□□/D and FX3UC-□□/DSS PLCs), either of the function expansion board for function adapter connection (FX3U-CNV-BD) or the function expansion board for communication (FX3U-232-BD, FX3U-422-BD, FX3U-485-BD, FX3U-USB-BD) is required.
When a function adapter is connected to the FX3U-□□/D or FX3UC-□□/DSS PLC, it should be directly connected to the main unit. (A function expansion board cannot be used.)
*5 For FX3UC-□□/D and FX3UC-□□/DSS, a function expansion board cannot be used.
*6 In FX3GC, a function expansion board cannot be used.
*7: When a function adapter is connected to the FX3S series PLC, a special adapter connection conversion adapter (FX3S-CNV-ADP) is required.

1 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

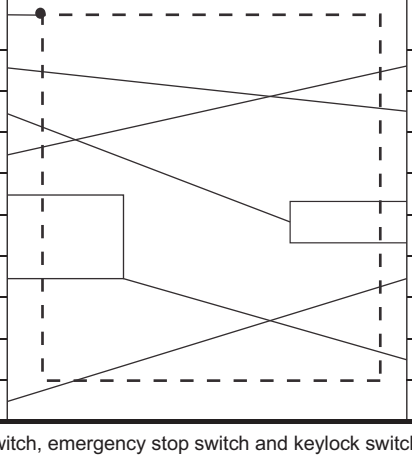
(1) RS-232 cable 1) (When the connector of a function expansion board or function adapter is a 9-pin D-Sub)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	PLC side (Function expansion board or function adapter)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	CD
SD(TXD)	2	W/R (A)	3		2	RD(RXD)
ER(DTR)	3	W/BK (A)	4		3	SD(TXD)
RD(RXD)	4	GY/R (A)	2		4	ER(DTR)
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DR(DSR)
CS(CTS)	7	O/BK (A)	8		7	RS(RTS)
—	8	Y/R (A)	—		8	CS(CTS)
—	9	Y/BK (A)	—		9	—
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2) (When the connector of a function adapter is a 25-pin D-Sub)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	PLC side (Function adapter (FX0N-232ADP))	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SD(TXD)	2	W/R (A)	3		2	SD(TXD)
ER(DTR)	3	W/BK (A)	4		3	RD(RXD)
RD(RXD)	4	GY/R (A)	2		—	—
DR(DSR)	5	GY/BK (A)	6		5	CS(CTS)
RS(RTS)	6	O/R (A)	7		6	DR(DSR)
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		—	—
—	9	Y/BK (A)	—		20	ER(DTR)
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

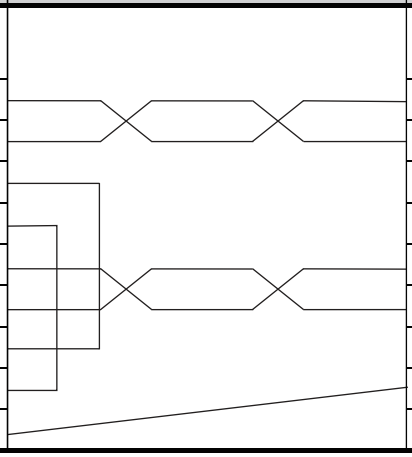
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

2 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	PLC side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		—
SDA	2	W/R (A)	1		RDA
SDB	3	W/BK (A)	6		RDB
RSA	4	GY/R (A)	3		—
RSB	5	GY/BK (A)	8		—
RDA	6	O/R (A)	2		SDA
RDB	7	O/BK (A)	7		SDB
CSA	8	Y/R (A)	4		—
CSB	9	Y/BK (A)	9		SG
SG	10	PK/R (A)	5		FG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

22.1.6 Precautions when preparing a cable

1 Cable Length

- The Length of the RS-232 cable must be 6m or less.
- The Length of the RS-422 cable must be following or less.
  QCPU/LCPU: 13.5m
  Except QCPU/LCPU: 13m

22.1.7 PLC Side Setting

- When a GOT and an LCPU are connected via an L6ADPR4 adapter, communication configuration is required of the PLC side.
  For details, refer to the following.
  ☞ GOT1000 Series Connection Manual (Mitsubishi Products) 6.5 PLC Side Setting
- When a GOT and an LCPU are connected via an L6ADPR4 adapter, Refer to the following for the details of a setup on the GOT side.
  ☞ GOT1000 Series Connection Manual (Mitsubishi Products) 6.4.2 Communication detail settings

22.1.8 Connecting to motion controller CPU

A motion controller CPU (Q Series) mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.

The system configuration, connection conditions, and system equipment when connecting a GOT to a motion controller CPU (Q Series) are the same as those for the QCPU.
(☞ Section 22.1.1 Connecting to QCPU, LCPU)

The system configuration, connection conditions, and system equipment when connecting to a motion controller CPU (A Series) are the same as those for the ACPU.
(☞ Section 22.1.2 Connecting to QnACPU, ACPU)

22.1.9 Connecting to CNC C70

CNC C70 mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.

The system configuration, connection conditions, and system equipment when connecting a GOT to a CNC C70 are the same as those for the QCPU.
(☞ Section 22.1.1 Connecting to QCPU, LCPU)

22.1.10 Connecting to CRnQ-700

CRnQ-700 mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.

The system configuration, connection conditions, and system equipment when connecting a GOT to a CRnQ-700 are the same as those for the QCPU.
(☞ Section 22.1.1 Connecting to QCPU, LCPU)

1 When connecting to FXCPU with function extension board or communication special adapter

When a sequence program and settings that the FXCPU communicates with devices other than the GOT are set with software, including GX Developer, the FXCPU cannot communicate with the GOT.

☞FX SERIES PROGRAMMABLE CONTROLLERS USER'S MANUAL - Data Communication Edition

(1) Settings with sequence program
Check the sequence program and delete the following.

(a) No protocol communication (RS or RS2 instruction) to the port to which the GOT is connected

(b) No sequence program that sets the computer link, N:N network, and parallel link to the port to which the GOT is connected

(c) Parameter setting
Set the following special registers to 0.
- Except FX3U, FX3UC : D8120
- FX3U, FX3UC : D8120, D8400, D8420
- FX3G, FX3GC : D8120, D8370, D8400, D8420
- FX3S : D8120, D8400

(2) Settings with GX Developer
Select [PLC parameter] in [Parameter], and then click the [PLC system(2)] tab on the [FX parameter] screen.

22.2 Computer Link Connection

When the Handy GOT is connected to FX PLC using a function expansion board or function adapter, refer to the following.

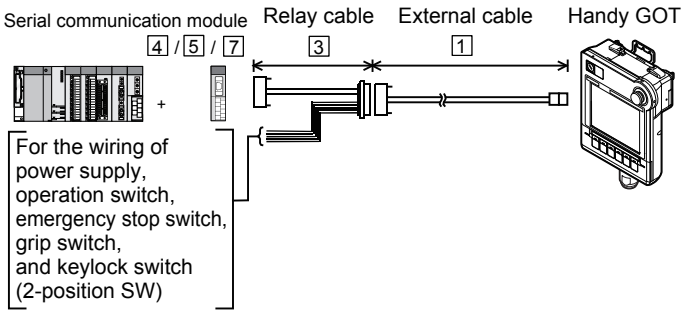
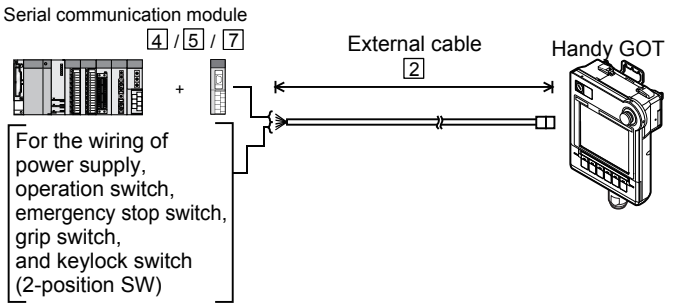
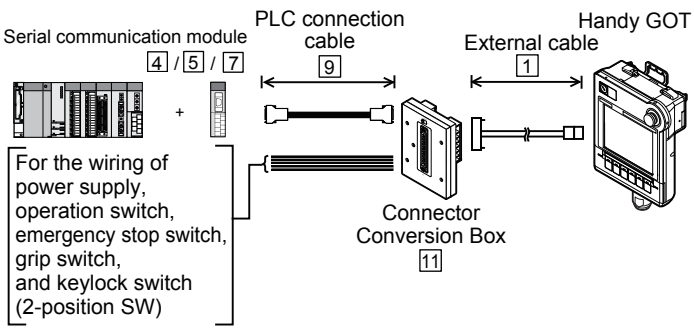
☞ Section 22.1 Direct CPU Connection

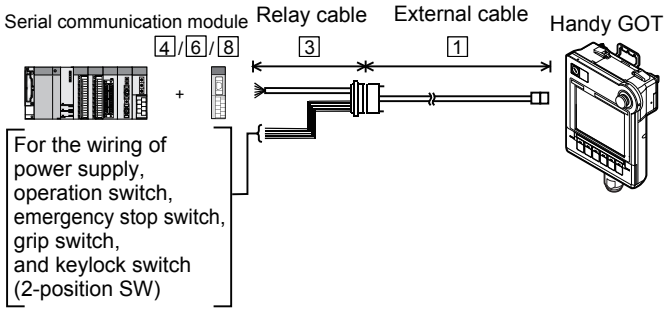
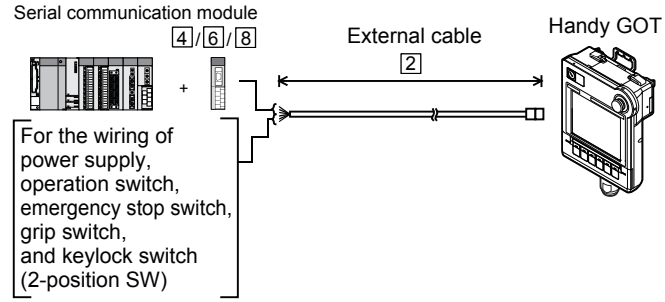
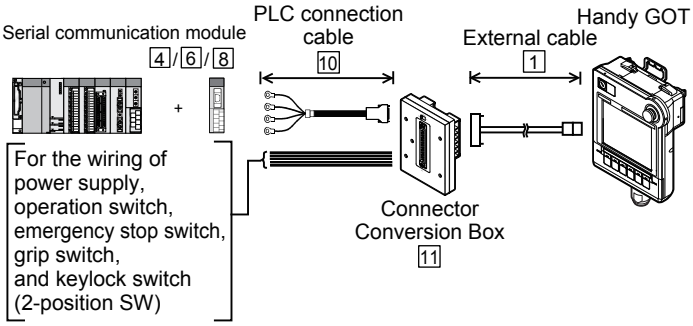
22.2.1 Connecting to QCPU

For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

1 System configuration and connection conditions

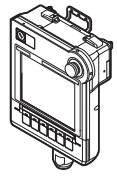
Refer to the numbers described in System configuration (1, 2...) according to the numbers described in "*2* System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
QCPU	RS-232	6m or less	
			
			

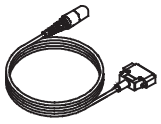
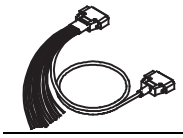
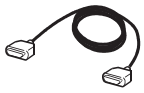
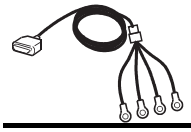
Connection conditions			System configuration
PLC	Communication	Distance	
QCPU	RS-422	13m or less	
			
			

2 System equipment

(1) GOT

Image	No.	Name	Model name	Remark
	—	Handy GOT	GT1155HS-QSBD	STN color
			GT1150HS-QLBD	STN monochrome

(2) Cable

Image	No.	Name	Model name	Remark
	1	External cable	GT11H-C□□□-37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
	2		GT11H-C□□□*2 □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
	3	Relay cable*1	Must be prepared by the user. ☞ Section 22.2.9 Connection Cable	—
	9	PLC connection cable*3	GT09-C30R2-9P (3m)	—
	10		GT09-C30R4-6C (3m) GT09-C100R4-6C (10m)	—

*1: The relay cables other than mentioned above must be prepared by the user.

*2: When an external cable of which one end is untied (GT11H-C30, GT11H-C60, GT11H-C100) is used, the cable must be processed by the user according to the following.

☞ Chapter 20 COMMUNICATION CABLE

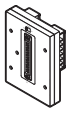
*3: The PLC connection cable can be prepared by the user. (☞ Section 22.2.9 Connection Cable)

(3) Serial communication module/Modem interface module

	Image	No.	Name	Model name	Remark
Q mode		4	Serial communication module*1	QJ71C24, QJ71C24N	<Interface> RS-232: D-Sub 9 pins RS-422: Terminal block
		5		QJ71C24-R2, QJ71C24N-R2	<Interface> D-Sub 9 pins
		6		QJ71C24N-R4	<Interface> Terminal block
A mode		7	Computer link module*1	A1SJ71UC24-R2, A1SJ71C24-R2, A1SJ71UC24-PRF, A1SJ71C24-PRF	<Interface> D-Sub 9 pins
		8		A1SJ71UC24-R4, A1SJ71C24-R4 AJ71UC24	<Interface> Terminal block

*1 Since it is recommended that the GOT be connected directly to a basic model QCPU, the GOT is not compatible with the serial communication function of the basic model QCPU.
For the system configuration on the serial communication module side, refer to the following manual.
☞ Q Corresponding Serial Communication Module User's Manual (Basic)

(4) Option

Image	No.	Name	Model name	Remark
	11	Connector Conversion Box	GT11H-CNB-37S	—

3 Number of connectable GOTs and PLCs

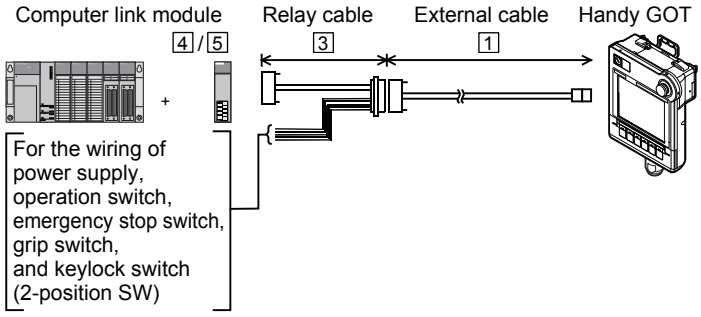
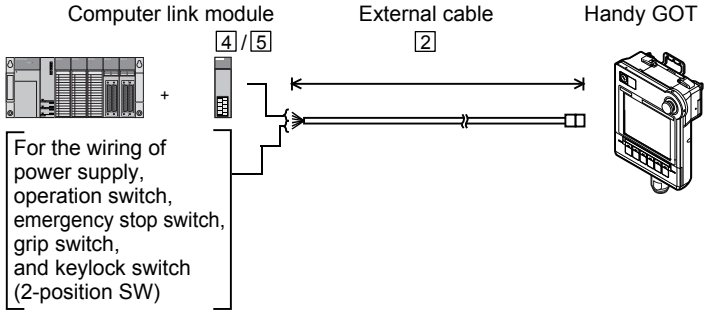
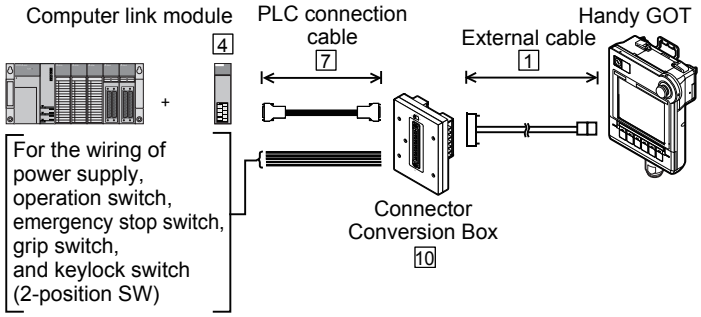
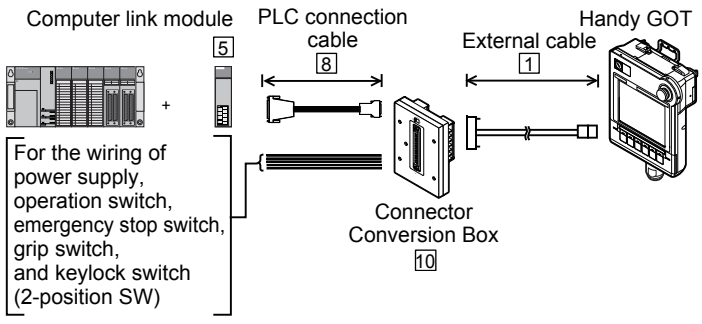
PLC	Number of GOTs	Number of PLCs
QCPU (Q Mode, A Mode)	1	1

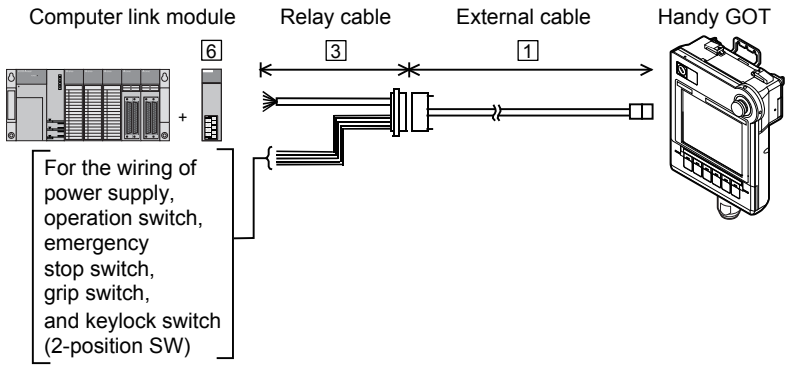
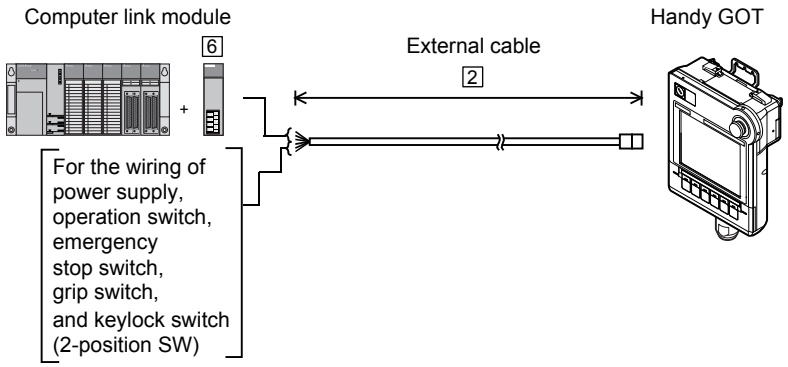
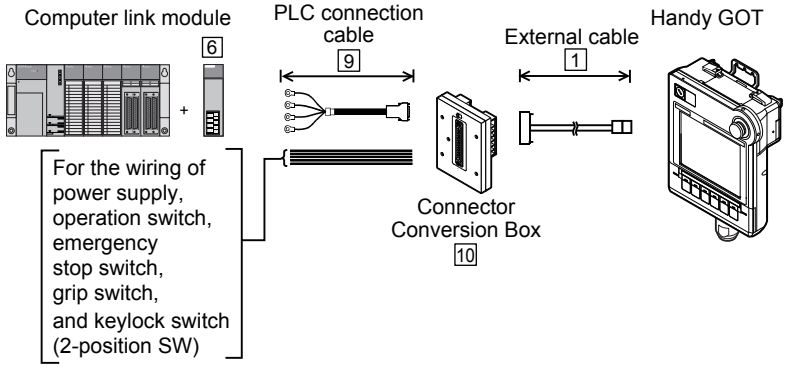
22.2.2 Connecting to ACPU

For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

1 System configuration and connection conditions

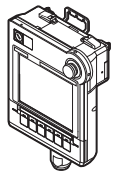
Refer to the numbers described in System configuration (1, 2...) according to the numbers later described in "*2* System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
ACPU	RS-232	6m or less	
			
ACPU	RS-232	6m or less	
			

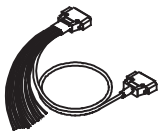
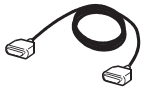
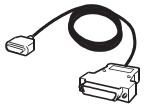
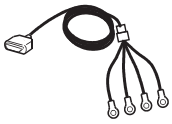
Connection conditions			System configuration
PLC	Communication	Distance	
ACPU	RS-422	13m or less	  

2 System equipment

(1) GOT

Image	No.	Name	Model name	Remark
	—	Handy GOT	GT1155HS-QSBD	STN color
			GT1150HS-QLBD	STN monochrome

(2) Cable

Image	No.	Name	Model name	Remark
	1	External cable	GT11H-C□□□-37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
	2		GT11H-C□□□*2 □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
	3	Relay cable*1	Must be prepared by the user. ☞ Section 22.2.9 Connection Cable	—
	7	PLC connection cable*3	GT09-C30R2-9P (3m)	PLC side D-sub 9 pins
	8		GT09-C30R2-25P (3m)	PLC side D-sub 25 pins
	9		GT09-C30R4-6C (3m) GT09-C100R4-6C (10m)	—

*1: The relay cables other than mentioned above must be prepared by the user.

*2: When an external cable of which one end is untied (GT11H-C30, GT11H-C60, GT11H-C100) is used, the cable must be processed by the user according to the following.

☞ Chapter 20 COMMUNICATION CABLE

*3: The PLC connection cable can be prepared by the user. (☞ Section 22.2.9 Connection Cable)

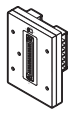
(3) Computer link module

Image	No.	Name	Model name	Remark
	4	Computer link module*1	A1SJ71UC24-R2, A1SJ71C24-R2, A1SJ71UC24-PRF, A1SJ71C24-PRF A1SCPUC24-R2 A2CCPUC24 A2CCPUC24-PRF	<Interface> D-Sub 9 pins
	5		AJ71UC24	<Interface> D-Sub 25 pins
	6		A1SJ71UC24-R4, A1SJ71C24-R4 AJ71UC24	<Interface> Terminal block

*1 For the system configuration on the computer link module side, refer to the following manual.

☞ Computer Link Module (Com. link func./Print. func.) User's Manual

(4) Option

Image	No.	Name	Model name	Remark
	10	Connector Conversion Box	GT11H-CNB-37S	—

3 Number of connectable GOTs and PLCs

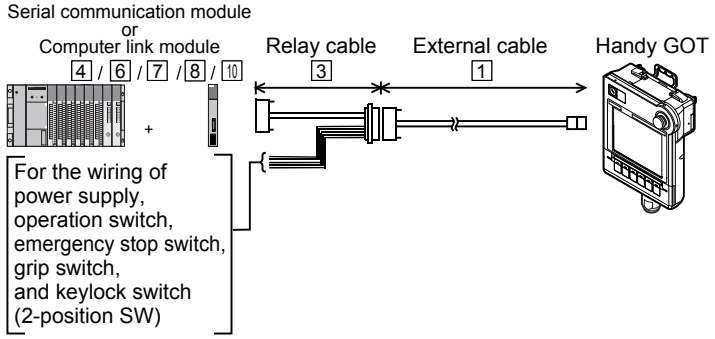
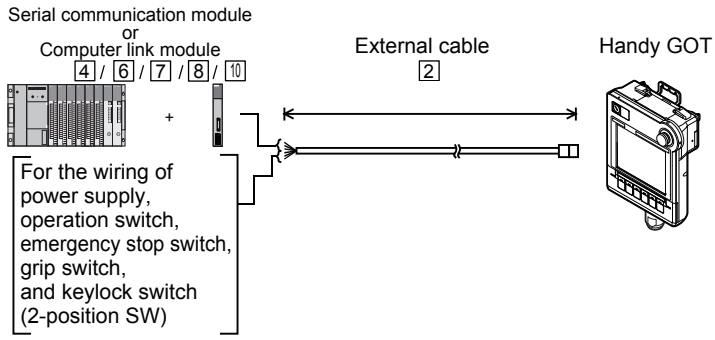
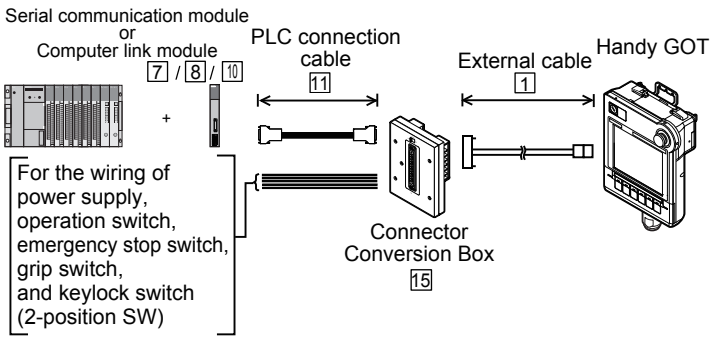
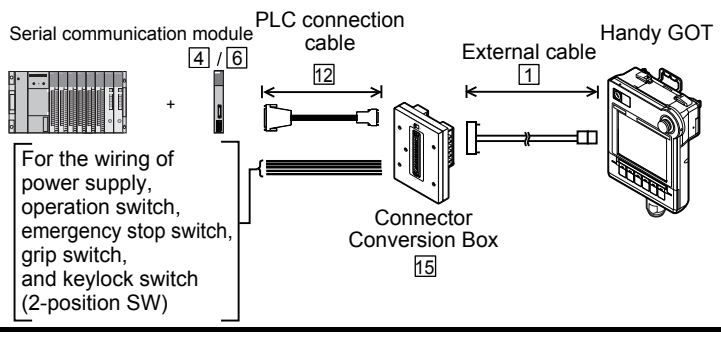
PLC	Number of GOTs	Number of PLCs
ACPU	1	1

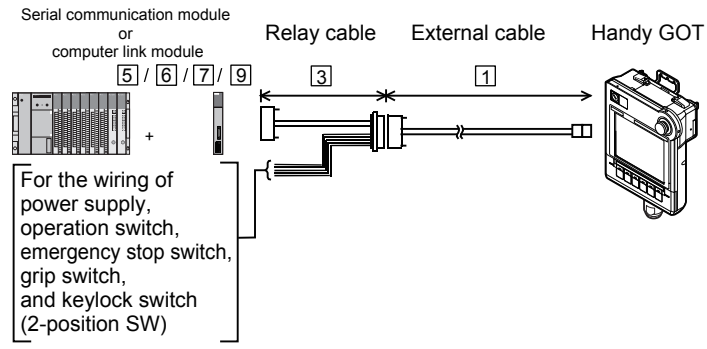
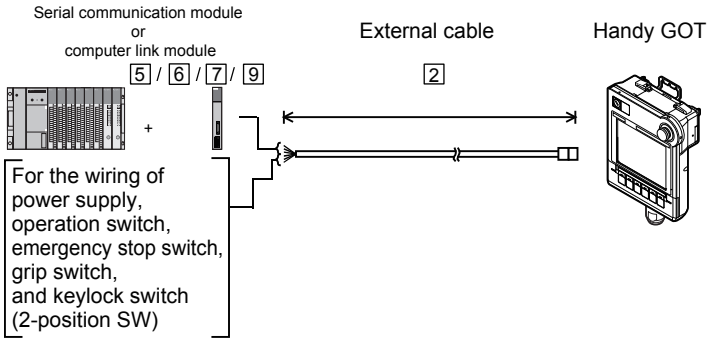
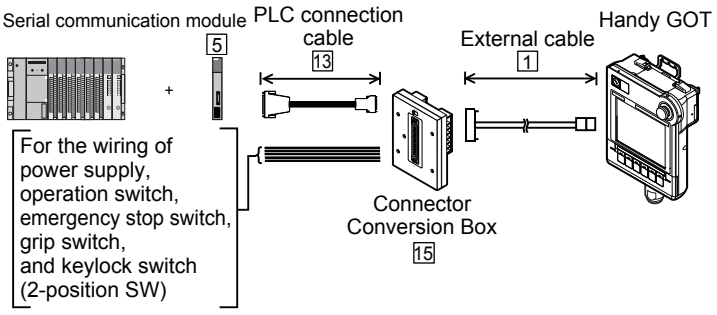
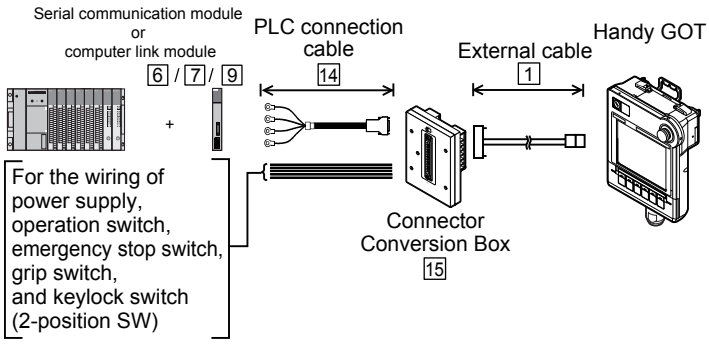
22.2.3 Connecting to QnA type

For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

1 System configuration and connection conditions

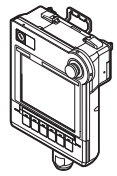
Refer to the numbers described in System configuration (1, 2...) according to the numbers described in "*2* System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
QnACPU	RS-232	6m or less	
			
			
			

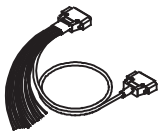
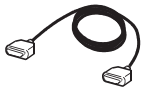
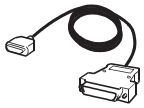
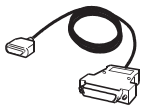
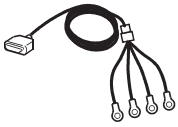
Connection conditions			System configuration
PLC	Communication	Distance	
QnACPU	RS-422	13m or less	
			
			
			

2 System equipment

(1) GOT

Image	No.	Name	Model name	Remark
	—	Handy GOT	GT1155HS-QSBD	STN color
			GT1150HS-QLBD	STN monochrome

(2) Cable

Image	No.	Name	Model name	Remark
	1	External cable	GT11H-C□□□-37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
	2		GT11H-C□□□*2 □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
	3	Relay cable*1	Must be prepared by the user. ☞ Section 22.2.9 Connection Cable	—
	11	PLC connection cable*3	GT09-C30R2-9P (3m)	PLC side D-sub 9 pins
	12		GT09-C30R2-25P (3m)	PLC side D-sub 25 pins
	13		GT01-C30R4-25P (3m) GT01-C100R4-25P (10m)	PLC side D-sub 25 pins
	14		GT09-C30R4-6C (3m) GT09-C100R4-6C (10m)	—

*1: The relay cables other than mentioned above must be prepared by the user.

*2: When an external cable of which one end is untied (GT11H-C30, GT11H-C60, GT11H-C100) is used, the cable must be processed by the user according to the following.

☞ Chapter 20 COMMUNICATION CABLE

*3: The PLC connection cable can be prepared by the user. (☞ Section 22.2.9 Connection Cable)

(3) Serial communication module

Image	No.	Name	Model name	Remark
	4	Serial communication module*1	AJ71QC24-R2, AJ71QC24N-R2	<Interface> D-Sub 25 pins
	5		AJ71QC24-R4, AJ71QC24N-R4	<Interface> D-Sub 25 pins
	6		AJ71QC24, AJ71QC24N	<Interface> RS-232: D-Sub 25 pins RS-422: Terminal block
	7		A1SJ71QC24N, A1SJ71QC24	<Interface> RS-232: D-Sub 9 pins RS-422: Terminal block
	8		A1SJ71QC24N-R2, A1SJ71QC24-R2	<Interface> D-Sub 9 pins
	9	Computer link module*2	AJ71UC24 A1SJ71UC24-R4, A1SJ71C24-R4	<Interface> Terminal block
	10		A1SJ71UC24-R2, A1SJ71UC24-PRF, A1SJ71C24-R2, A1SJ71C24-PRF	<Interface> D-Sub 9 pins

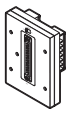
*1 For the system configuration on the serial communication module side, refer to the following manual.

Q Corresponding Serial Communication Module User's Manual (Basic)

*2 When connecting to a computer link module, set the communication driver to "AJ71C24/UC24".
For the system configuration on the computer link module side, refer to the following manual.

Computer Link Module (Com. link func./Print. func.) User's Manual

(4) Option

Image	No.	Name	Model name	Remark
	15	Connector Conversion Box	GT11H-CNB-37S	—

3 Number of connectable GOTs and PLCs

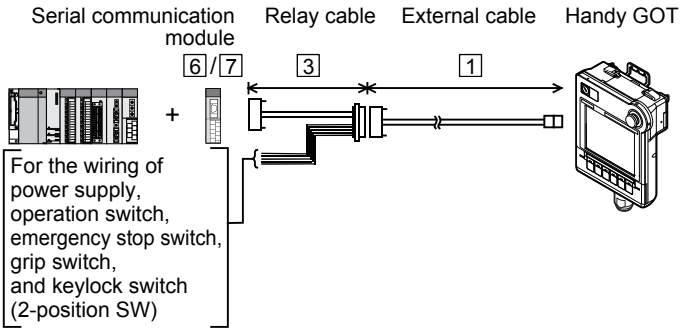
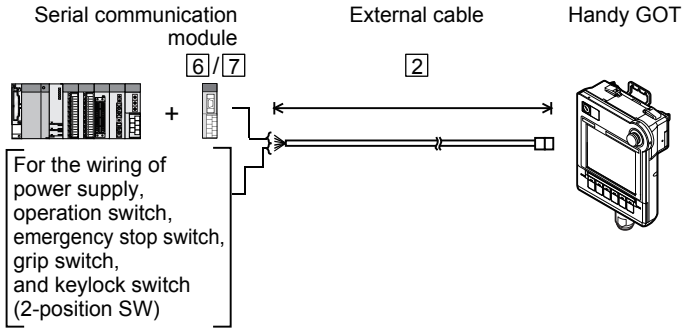
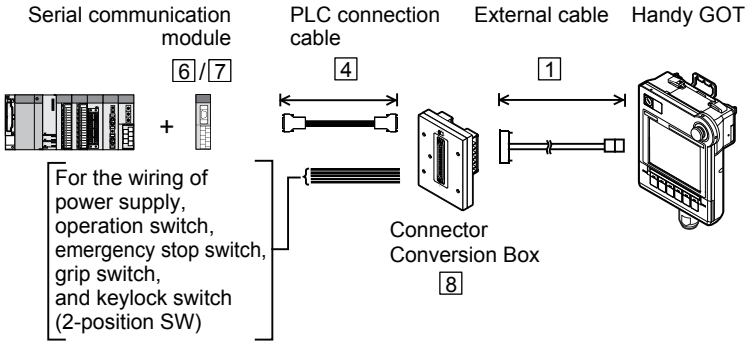
PLC	Number of GOTs	Number of PLCs
QnACPU	1	1

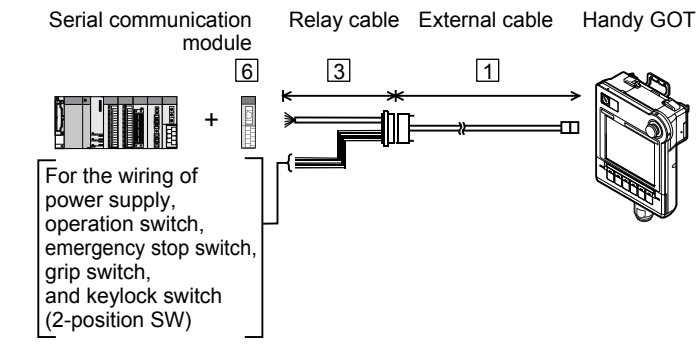
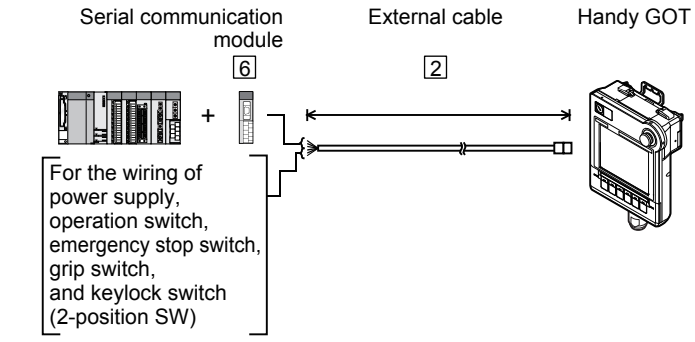
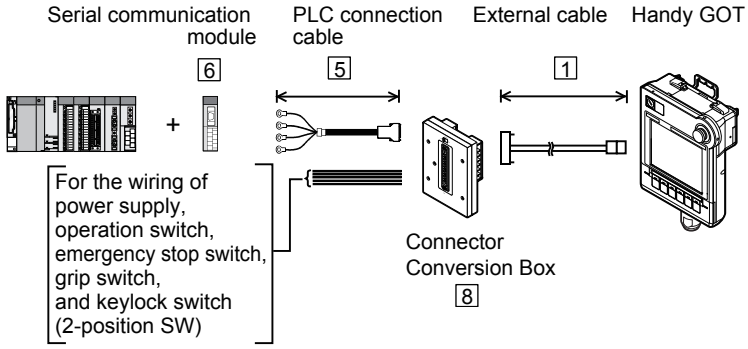
22.2.4 Connecting to LCPU

For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Only GT Designer3 (Ver. 1.10L or later) supports connection to the LCPU.

1 System configuration and connection conditions

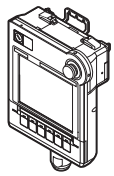
Refer to the numbers described in System configuration (1, 2...) according to the numbers described in "*2* System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
LCPU	RS-232	6m or less	
			
			

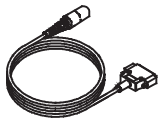
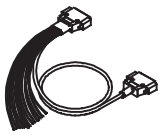
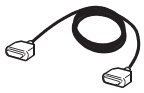
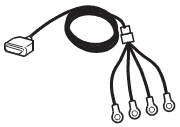
Connection conditions			System configuration
PLC	Communication	Distance	
LCPU	RS-422	13m or less	
			
			

2 System equipment

(1) GOT

Image	No.	Name	Model name	Remark
	—	Handy GOT	GT1155HS-QSBD	STN color
			GT1150HS-QLBD	STN monochrome

(2) Cable

Image	No.	Name	Model name	Remark
	1	External cable	GT11H-C□□□-37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
	2		GT11H-C□□□*2 □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
	3	Relay cable*1	Must be prepared by the user. ☞ Section 22.2.9 Connection Cable	—
	4	PLC connection cable*3	GT09-C30R2-9P (3m)	—
	5		GT09-C30R4-6C (3m) GT09-C100R4-6C (10m)	—

*1: The relay cables other than mentioned above must be prepared by the user.

*2: When an external cable of which one end is untied (GT11H-C30, GT11H-C60, GT11H-C100) is used, the cable must be processed by the user according to the following.

☞ Chapter 20 COMMUNICATION CABLE

*3: The PLC connection cable can be prepared by the user. (☞ Section 22.2.9 Connection Cable)

(3) Serial communication module

Image	No.	Name	Model name	Remark
	6	Serial communication module*1	LJ71C24	<Interface> RS-232: D-Sub 9 pins RS-422: Terminal block
	7		LJ71C24-R2	<Interface> D-Sub 9 pins

*1 For the system configuration on the serial communication module side, refer to the following manual.

☞ MELSEC-L Serial Communication Module User's Manual (Basic)

(4) Option

Image	No.	Name	Model name	Remark
	8	Connector Conversion Box	GT11H-CNB-37S	—

3 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
LCPU	1	1

22.2.5 Connecting to motion controller CPU (Q Series)

A motion controller CPU (Q Series) mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.

The system configuration, connection conditions, and system equipment when connecting a GOT to a motion controller CPU (Q Series) are the same as those for the QCPU (Q mode).
(☞ Section 22.1.1 Connecting to QCPU, LCPU)

22.2.6 Connecting to motion controller CPU (A Series)

The system configuration, connection conditions, and system equipment when connecting a GOT to a motion controller CPU (A273UCPU, CA273UHCPU (-S3), CA373UCPU (-S3)) are the same as the case of the AnCPU type.

The system configuration, connection conditions, and system equipment when connecting a GOT to a motion controller CPU (A171SHCPUN, CA172SHCPUN, CA173UHCPU (-S1)) are the same as the case of the AnCPU type.
(☞ Section 22.2.2 Connecting to ACPU)

22.2.7 Connecting to CNC C70

CNC C70 mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.
The system configuration, connection conditions, and system equipment when connecting a GOT to a CNC C70 are the same as those for the QCPU (Q mode).
(☞ Section 22.2.1 Connecting to QCPU)

22.2.8 Connecting to CRnQ-700

CRnQ-700 mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.
The system configuration, connection conditions, and system equipment when connecting a GOT to a CRnQ-700 are the same as those for the QCPU (Q mode).
(☞ Section 22.2.1 Connecting to QCPU)

22.2.9 Connection Cable

Remark

PLC side connector

Use the connector compatible with the PLC side module. For details, refer to the following manual.

☞ User's Manual for the serial communication module or computer link module.

The RS-232 cable or RS-422 cable used for connecting the GOT to the PLC must be prepared by the user.
Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Model name		Connection cable	
		RS-232 cable	RS-422 cable
Serial communication module (Q Series)	QJ71C24N, CQJ71C24	RS-232 cable 1)	RS-422 cable
	QJ71C24N-R2, CQJ71C24-R2	RS-232 cable 1)	—
	QJ71C24N-R4	—	RS-422 cable
Serial communication module (QnA Series)	AJ71QC24N, CAJ71QC24	RS-232 cable 3)	RS-422 cable
	AJ71QC24N-R2, CAJ71QC24-R2	RS-232 cable 1)	—
	AJ71QC24N-R4, CAJ71QC24-R4	—	RS-422 cable
	A1SJ71QC24N, CA1SJ71QC24	RS-232 cable 1)	RS-422 cable
	A1SJ71QC24N-R2, CA1SJ71QC24-R2	RS-232 cable 3)	—
Serial communication module (L Series)	LJ71C24	RS-232 cable 1)	RS-422 cable
	LJ71C24-R2	RS-232 cable 1)	—
Computer link module	AJ71UC24	RS-232 cable 4)	RS-422 cable
	A1SJ71UC24-R2, CA1SJ71UC24-PRF, A1SJ71C24-R2, A1SJ71C24-PRF	RS-232 cable 2)	—
	A1SJ71UC24-R4, A1SJ71C24-R4	—	RS-422 cable
	A1SCPUC24-R2	RS-232 cable 2)	—
	A2CCPUC24, CA2CCPUC24-PRF	RS-232 cable 2)	RS-422 cable

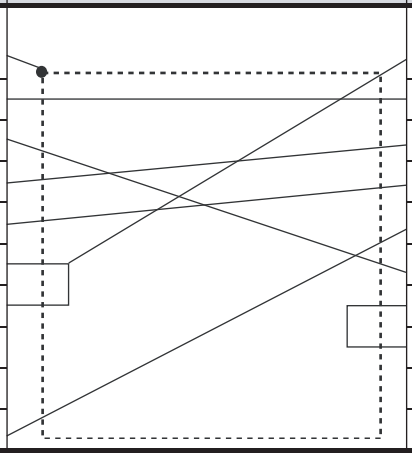
1 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

<When the connector of Q/L/QnA serial communication module is a 9-pin D-Sub>

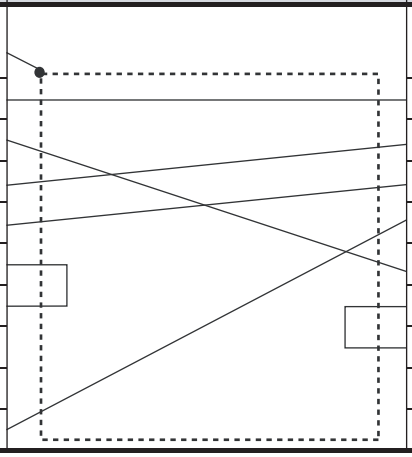
Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	PLC side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	CD
SD(TXD)	2	W/R (A)	3		2	RD(RXD)
ER(DTR)	3	W/BK (A)	4		3	SD(TXD)
RD(RXD)	4	GY/R (A)	2		4	ER(DTR)
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DR(DSR)
CS(CTS)	7	O/BK (A)	8		7	RS(RTS)
—	8	Y/R (A)	—		8	CS(CTS)
—	9	Y/BK (A)	—		9	—
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

<When the connector of A computer link module is a 9-pin D-Sub>

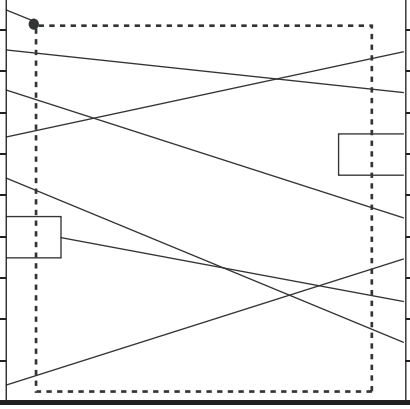
Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	PLC side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	CD
SD(TXD)	2	W/R (A)	3		2	RD(RXD)
ER(DTR)	3	W/BK (A)	4		3	SD(TXD)
RD(RXD)	4	GY/R (A)	2		4	ER(DTR)
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DR(DSR)
CS(CTS)	7	O/BK (A)	8		7	RS(RTS)
—	8	Y/R (A)	—		8	CS(CTS)
—	9	Y/BK (A)	—		9	—
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(3) RS-232 cable 3)

<When the connector of Q/QnA computer link module is a 25-pin D-Sub>

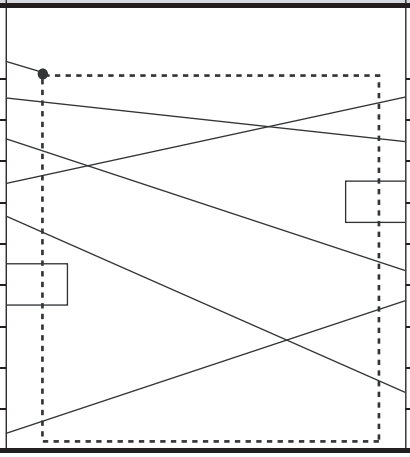
Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	PLC side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD(TXD)
ER(DTR)	3	W/BK (A)	4		3	RD(RXD)
RD(RXD)	4	GY/R (A)	2		4	RS(RTS)
DR(DSR)	5	GY/BK (A)	6		5	CS(CTS)
RS(RTS)	6	O/R (A)	7		6	DR(DSR)
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		8	CD
—	9	Y/BK (A)	—		20	ER(DTR)
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(4) RS-232 cable 4)

<When the connector of A computer link module is a 25-pin D-Sub>

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	PLC side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD(TXD)
ER(DTR)	3	W/BK (A)	4		3	RD(RXD)
RD(RXD)	4	GY/R (A)	2		4	RS(RTS)
DR(DSR)	5	GY/BK (A)	6		5	CS(CTS)
RS(RTS)	6	O/R (A)	7		6	DR(DSR)
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		8	CD
—	9	Y/BK (A)	—		20	ER(DTR)
SG	10	PK/R (A)	5			

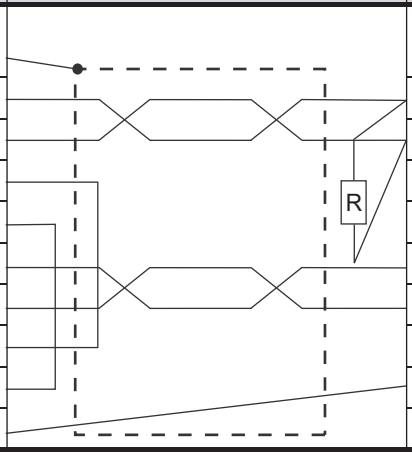
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

2 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 connecting the GOT to the PLC.

(1) RS-422 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	PLC side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		—
SDA	2	W/R (A)	1		RDA
SDB	3	W/BK (A)	6		RDB
RSA	4	GY/R (A)	3		—
RSB	5	GY/BK (A)	8		—
RDA	6	O/R (A)	2		SDA
RDB	7	O/BK (A)	7		SDB
CSA	8	Y/R (A)	4		—
CSB	9	Y/BK (A)	9		SG
SG	10	PK/R (A)	5		FG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

22.2.10 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

2 Connecting terminating resistors

Connect terminating resistors (330 1/4W (orange/orange/brown/ □)) on the serial communication module or computer link module side. No terminating resister needs to be connected on the GOT side as one is already built into the GOT.
For details, refer to the following manual:

☞ The User's Manual of the serial communication module or computer link module

(1) Other than A2CCPUC24 (-PRF)
Connect the terminating resistors supplied with the module across RDA and RDB.

(2) A2CCPUC24 (-PRF)
Set TXD and RXD on the terminating resistor setting pin to "A".

22.2.11 PLC Side Setting

The GOT operates under the following transmission specifications when it is connected to Mitsubishi PLC in the computer link connection.

Transmission specifications	Setting
Data bit	8 bits
Parity bit	Yes (Odd)
Stop bit	1 bit
Sum check	Yes
Transmission speed	Set the same transmission speed on both the GOT and the PLC.

1 Connecting serial communication module (Q Series, L Series)

(1) Target Models

Model name	
Serial communication module (Q Series)	QJ71C24N, CQJ71C24
	QJ71C24N-R2, CQJ71C24-R2
	QJ71C24N-R4
Serial communication module (L Series)	LJ71C24
	LJ71C24-R2

Point

(1) Serial communication module (Q Series)
For details of the serial communication module (Q Series), refer to the following manual.

☞ Q Corresponding Serial Communication Module User's Manual (Basic)

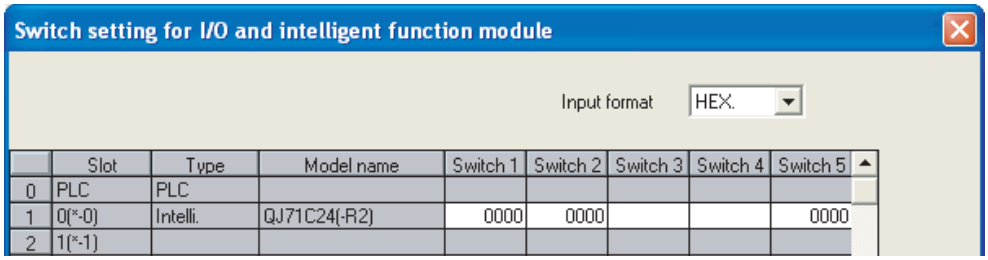
(2) Serial communication module (L Series)
For details of the serial communication module (L Series), refer to the following manual.

☞ MELSEC-L Serial Communication Module User's Manual (Basic)

(2) [Intelligent function module switch setting] on GX developer

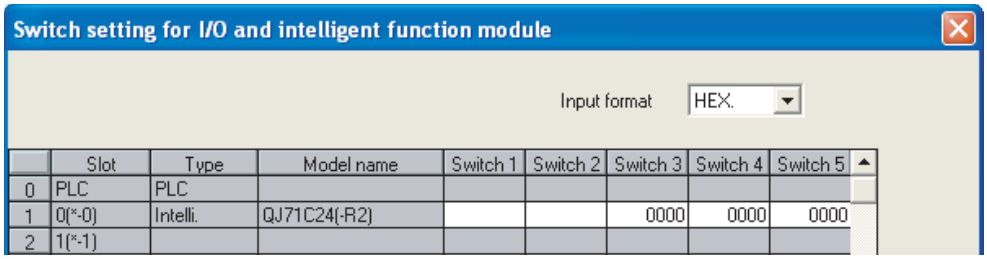
[Intelligent function module switch setting] on GX developer is not necessary. (When no [Intelligent function module switch setting] is made, the module runs in the GX Developer connection mode.) A module can be also connected to a GOT by making the following [Intelligent function module switch setting] on GX Developer.

(a) When connecting to the CH1 side



Switch No.	Bit		Description			Setting
	Position	Specified value				
Switch 1	b0	OFF	CH1 transmission settings*1	Operating setting	(Operates according to the GOT side specifications.)	0000H
	b1	OFF		Data bit		
	b2	OFF		Parity bit		
	b3	OFF		Even/odd parity		
	b4	OFF		Stop bit		
	b5	OFF		Sum check code		
	b6	OFF		Write during RUN		
	b7	OFF		Setting modifications		
	b8 to b15	—	CH1 transmission speed setting*2			
Switch 2	—		CH1Communication protocol setting		GX Developer connection	0000H
Switch 5	—		Station number setting		0th station	0000H

(b) When connecting to the CH2 side



Switch No.	Bit		Description			Setting
	Position	Specified value				
Switch 3	b0	OFF	CH2 transmission setting*1	Operation setting	(Operates according to the GOT side specifications.)	0000H
	b1	OFF		Data bit		
	b2	OFF		Parity bit		
	b3	OFF		Even/odd parity		
	b4	OFF		Stop bit		
	b5	OFF		Sum check code		
	b6	OFF		Write during run		
	b7	OFF		Setting modifications		
	b8 to b15	—	CH2 transmission speed setting*2			
Switch 4	—		CH2 Communication protocol setting		GX Developer connection	0000H
Switch 5	—		Station number setting		0th station	0000H

*1 The module operates under the following transmission specifications.

Transmission specifications	Setting details
Operation setting	Independent
Data bit	8 bits
Parity bit	Yes
Even/odd parity	Odd
Stop bit	1 bit
Sum check code	Yes

* 2 The serial communication mod, speed on the GOT side setting, refer to the following.

Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Point

(1) When the [Intelligent function module switch setting] has been set
After writing PLC parameters to the PLC CPU, turn the PLC CPU OFF then back ON again, or reset the PLC CPU.

(2) Connection of multiple GOTs
To some serial communication module models, two GOTs can be connected, using both CH1 and CH2.

Model	Function version A	Function version B
QJ71C24 (-R2)	△	○
QJ71C24N (-R2/R4)	—	○
LJ71C24(-R2)	○	—

○ : 2 GOTs connectable, △ : 1 GOT connectable, —: Not applicable

2 Connecting serial communication module (QnA Series)

(1) Target Models

Model name	
Serial communication module (QnA Series)	AJ71QC24N, CAJ71QC24
	AJ71QC24N-R2, CAJ71QC24-R2
	AJ71QC24N-R4, CAJ71QC24-R4
	A1SJ71QC24N, CA1SJ71QC24
	A1SJ71QC24N-R2, CA1SJ71QC24-R2

Point

Serial communication module (QnA Series)

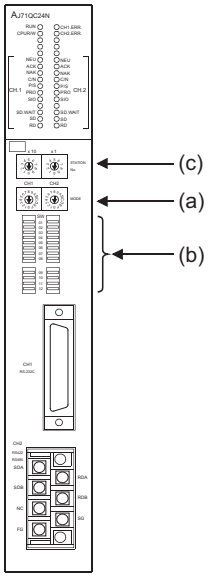
For details of the serial communication module (QnA Series), refer to the following manual.

☞ Serial Communication Module User's Manual (Modem Function Additional Version)

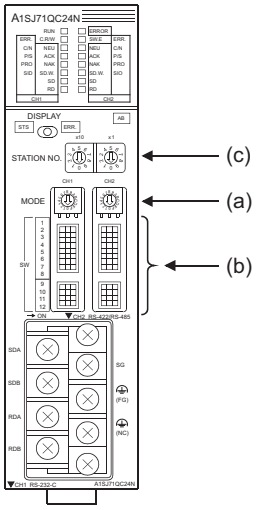
(2) Switch setting on serial communication module

Set the Station number switches, the Mode switch for the channel used for GOT connection, and the Transmission specifications switches.

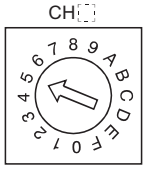
AJ71QC24N, AJ71QC24N-R2, AJ71QC24N-R4,
AJ71QC24, AJ71QC24-R2, AJ71QC24-R4



A1SJ71QC24N, A1SJ71QC24N-R2,
A1SJ71QC24, A1SJ71QC24-R2



(a) Mode switch

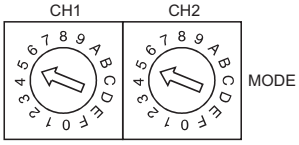
Mode switch*1	Description	Setting
	Detailed protocol (format 5) (Binary mode)	5

*1) The mode switch in the figure for the AJ71QC24 (N) (-R2/R4)

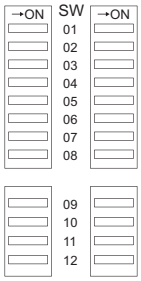
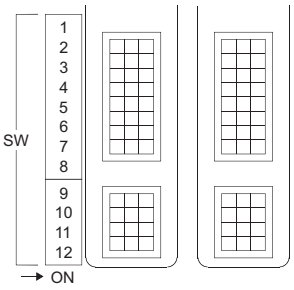
Point

When connecting a GOT to CH2

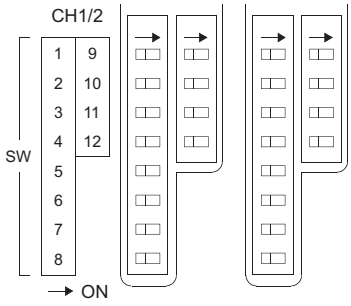
Set the CH1 side mode switch to any other than "0" (interlocked operation).



(b) Transmission specification setting switch

Transmission specifications setting switch	Setting switch	Description		Setting
AJ71QC24 (N) (-R2/R4)  A1SJ71QC24 (N) (-R2)*1  	SW01	Operation setting	Independent operation	OFF
	SW02	Data bit setting	8 bits	ON
	SW03	Parity bit enable/disable setting	Enable	ON
	SW04	Even/odd party setting	Odd	OFF
	SW05	Stop bit setting	1 bit	OFF
	SW06	Sum check enable/disable setting	Enable	ON
	SW07	Write during RUN enable/disable setting	Enable	ON
	SW08	Setting change enable/ disable	Disable (Prohibit)	OFF
	SW09 to SW12	Transmission speed setting	(Consistent with the GOT side specifications.)	See (a)
	SW13 to SW15	—	The switch is located on the left side of the module. (Only on AJ71QC24 (-R2/R4))	All OFF

*1 The following shows the layout of switches in the case of the following hardware versions for the module. Switch settings and switch ON/OFF directions are the same.



Target unit	Hardware version
A1SJ71QC24	Version E hardware or earlier
A1SJ71QC24-R2	Version D hardware or earlier
A1SJ71QC24N, CA1SJ71QC24N-R2	Version A

- Transmission speed setting (SW09 to SW12)
  Set the transmission speed (SW09 to SW12) as follows.
  The transmission speed setting must be consistent with that of the GOT side.
  For how to set the GOT side transmission speed, refer to the following.

  ☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Setting switch	Transmission speed*1*2*3					
	4800bps	9600bps	19200bps	38400bps*4	57600bps*4	115200bps*4
SW09	OFF	ON	OFF	ON	OFF	ON
SW10	OFF	OFF	ON	ON	ON	ON
SW11	ON	ON	ON	ON	OFF	OFF
SW12	OFF	OFF	OFF	OFF	ON	ON

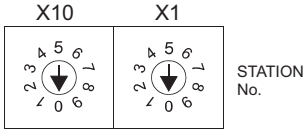
*1 Only transmission speeds available on the GOT side are shown.

*2 When the software version of AJ71QC24 (-R2/R4) and A1SJ71QC24 (-R2) is "L" or earlier, and when 2 devices are connected to the two interfaces individually, make the setting so that the total transmission speed of the two interfaces is within 19200bps.
When only one device is connected to either of the interfaces, a maximum transmission speed of 19200bps can be set to the one where the device is connected. In this instance, set SW09 to SW12 to "OFF" on to the other side.

*3 When 2 devices are connected to the two interfaces individually in the case of AJ71QC24N (-R2/R4) and A1SJ71QC24N (-R2), make the setting so that the total transmission speed of the two interfaces is within 115200bps.
When only one device is connected to either of the interfaces, a maximum transmission speed of 115200bps can be set to the one where the device is connected. In this instance, set SW09 to SW12 to "OFF" on to the other side.

*4 This can be set only in the case of AJ71QC24N (-R2/R4) or A1SJ71QC24N (-R2).

- Station number switch (for both CH1 and CH2)

Station number switch*5	Description	Setting
	Set the station number of the serial communication module to which an access is made from the GOT.	0

*5 The station number switch in the figure is for the AJ71QC24 (N) (-R2/R4)

Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

3 Connecting computer link module

(1) Target Models

Model name	
Computer link module	AJ71UC24
	A1SJ71UC24-R2, CA1SJ71UC24-PRF, CA1SJ71C24-R2, CA1SJ71C24-PRF
	A1SJ71UC24-R4, CA1SJ71C24-R4
	A1SCPUC24-R2
	A2CCPUC24, CA2CCPUC24-PRF

Point

Computer link module

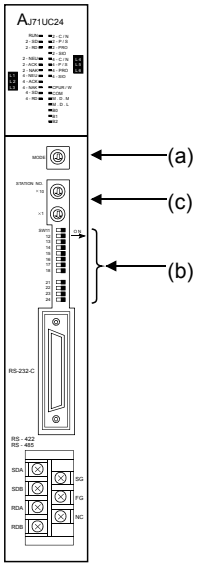
For details of the computer link module, refer to the following manual.

☞ Computer Link Module (Com. link func./Print. func.) User's Manual

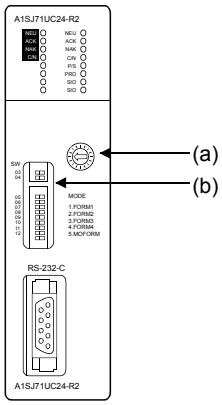
(2) Switch setting on the computer link module

Set the Mode setting switch, the Transmission specifications switches and the Station number setting switches.

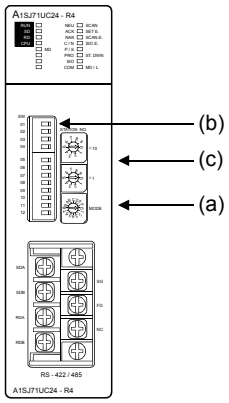
AJ71UC24



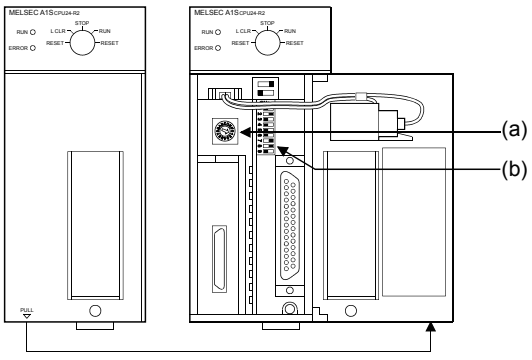
A1SJ71UC24-R2, A1SJ71UC24-PRF,
A1SJ71C24-R2, A1SJ71C24-PRF



A1SJ71UC24-R4, A1SJ7124-R4

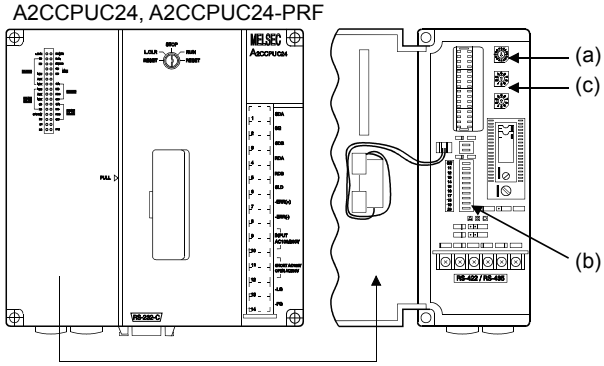


A1SCPUC24-R2



When the cover is open

A2CCPUC24, A2CCPUC24-PRF



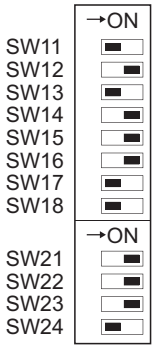
When the cover is open

(a) Mode setting switch

Mode setting switch	Description		Setting
	Dedicated protocol type 1	RS-232 connection	1
		RS-422 connection	5

(b) Transmission specifications switch

• AJ71UC24

Transmission specifications switch	Setting switch	Description		Setting
	SW11	Main channel setting	RS-232 connection	OFF
			RS-422 connection	ON
	SW12	Data bit setting	8 bits	ON
	SW13	Transmission speed setting	(Consistent with the GOT side specifications.)	See descriptions below
	SW14			
	SW15			
	SW16	Parity bit setting	Set	ON
	SW17	Even/odd parity setting	Odd	OFF
	SW18	Stop bit setting	1 bit	OFF
	SW21	Sum check setting	Set	ON
	SW22	Write during RUN enabled/disabled setting	Enabled	ON
	SW23	Computer link/ Multidrop selection	Computer link	ON
	SW24	Master station/Local station setting	(Setting ignored)	OFF

• Transmission speed setting (SW13 to SW15)

Set the transmission speed (SW13 to SW15) as follows.

The transmission speed setting must be consistent with that of the GOT side.

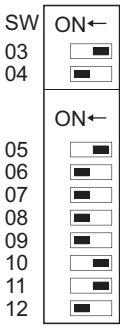
For how to set the GOT side transmission speed, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Setting switch	Transmission speed*1		
	4800bps	9600bps	19200bps
SW13	OFF	ON	OFF
SW14	OFF	OFF	ON
SW15	ON	ON	ON

*1 Only transmission speeds available on the GOT side are shown.

• A1SJ71UC24-R2, CA1SJ71UC24-PRF, CA1SJ71C24-R2, CA1SJ71C24-PRF

Transmission specifications switch	Setting switch	Description		Setting
	SW03	Unused	—	OFF
	SW04	Write during RUN enabled/disabled setting	Enabled	ON
	SW05	Transmission speed setting	(Consistent with the GOT side specifications.)	See descriptions below
	SW06			
	SW07			
	SW08	Data bit setting	8 bits	ON
	SW09	Parity bit setting	Set	ON
	SW10	Even/Odd parity setting	Odd	OFF
	SW11	Stop bit setting	1 bit	OFF
	SW12	Sum check setting	Set	ON

• Transmission speed setting (SW05 to SW07)

Set the transmission speed (SW05 to SW07) as follows.

The transmission speed setting must be consistent with that of the GOT side.

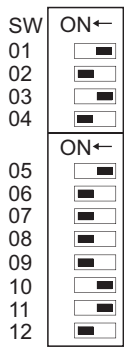
For how to set the GOT side transmission speed, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Setting switch	Transmission speed*1		
	4800bps	9600bps	19200bps
SW05	OFF	ON	OFF
SW06	OFF	OFF	ON
SW07	ON	ON	ON

*1 Only transmission speeds available on the GOT side are shown.

• A1SJ71UC24-R4, CA1SJ71C24-R4

Transmission specifications switch	Setting switch	Description		Setting
	SW01	Master station/Local station setting	(Setting ignored)	OFF
	SW02	Computer link/ multidrop link selection	Computer link	ON
	SW03	Unused	—	OFF
	SW04	Write during RUN enabled/disabled setting	Enabled	ON
	SW05	Transmission speed setting	(Consistent with the GOT side specifications.)	See descriptions below
	SW06			
	SW07			
	SW08	Data bit setting	8 bits	ON
	SW09	Parity bit setting	Set	ON
	SW10	Even/odd parity setting	Odd	OFF
	SW11	Stop bit setting	1 bit	OFF
	SW12	Sum check setting	Set	ON

• Transmission speed setting (SW05 to SW07)

Set the transmission speed (SW05 to SW07) as follows.

The transmission speed setting must be consistent with that of the GOT side.

For how to set the GOT side transmission speed, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Setting switch	Transmission speed*1		
	4800bps	9600bps	19200bps
SW05	OFF	ON	OFF
SW06	OFF	OFF	ON
SW07	ON	ON	ON

*1 Only transmission speeds available on the GOT side are shown.

• A1SCPUC24-R2

Transmission specifications switch	Setting switch	Description		Setting
	1	Write during RUN enabled/disabled setting	Enabled	ON
	2	Transmission speed setting	(Consistent with the GOT side specifications.)	See descriptions below
	3			
	4			
	5	Data bit setting	8 bits	ON
	6	Parity bit setting	Set	ON
	7	Even/odd parity setting	Odd	OFF
	8	Stop bit setting	1 bit	OFF
	9	Sum check setting	Set	ON

• Transmission speed setting (2 to 4)

Set the transmission speed (2 to 4) as follows.

The transmission speed setting must be consistent with that of the GOT side.

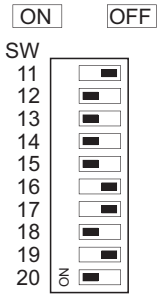
For how to set the GOT side transmission speed, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Setting switch	Transmission speed*2		
	4800bps	9600bps	19200bps
2	OFF	ON	OFF
3	OFF	OFF	ON
4	ON	ON	ON

*2 Only transmission speeds available on the GOT side are shown.

• A2CCPUC24, CA2CCPUC24-PRF

Transmission specification switch	Setting switch	Description		Setting
	SW11	Transmission speed setting	(Consistent with the GOT side specifications.)	See descriptions below
	SW12			
	SW13			
	SW14	Data bit setting	8 bits	ON
	SW15	Parity bit setting	Set	ON
	SW16	Even/odd parity setting	Odd	OFF
	SW17	Stop bit setting	1 bit	OFF
	SW18	Main channel setting	Set	ON
	SW19	Main channel setting	RS-232	OFF
	SW20	Write during RUN enabled/disabled setting	Enabled	ON

• Transmission speed setting (SW11 to SW13)

Set the transmission speed (SW11 to SW13) as follows.

The transmission speed setting must be consistent with that of the GOT side.

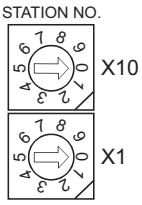
For how to set the GOT side transmission speed, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Setting switch	Transmission speed*1		
	4800bps	9600bps	19200bps
SW11	OFF	ON	OFF
SW12	OFF	OFF	ON
SW13	ON	ON	ON

*1 Only transmission speeds available on the GOT side are shown.

(c) Station number setting switch

Station number setting switch*2	Description	Setting
	Set the station number of the computer link module to which an access is made from the GOT.	0

*2 The station number setting switch in the figure is for the A1SJ71UC24-R4

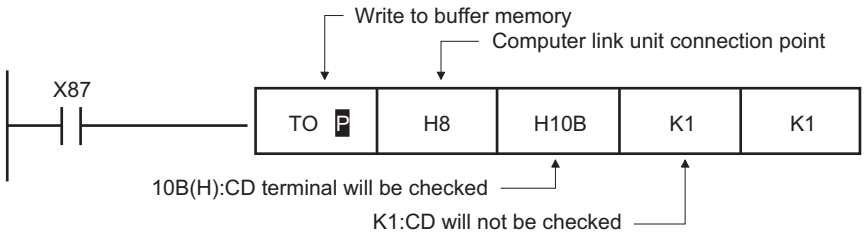
Point

(1) When the switch setting has been changed
Turn the PLC CPU OFF then ON again, or reset the PLC CPU

(2) When connecting the Handy GOT and the computer link unit
When the Handy GOT and the computer link unit are connected via RS-232C, set the buffer memory in the computer link unit using the sequence program so that CD signals are not checked.
Examples of the CPU units equipped with built-in computer link are explained below also.

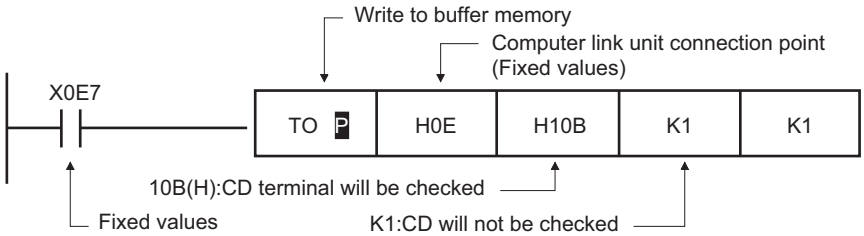
(a) In the case of A computer link

Refer to the program example below in which the I/O signals of the computer link unit are 80 to 9F (H).

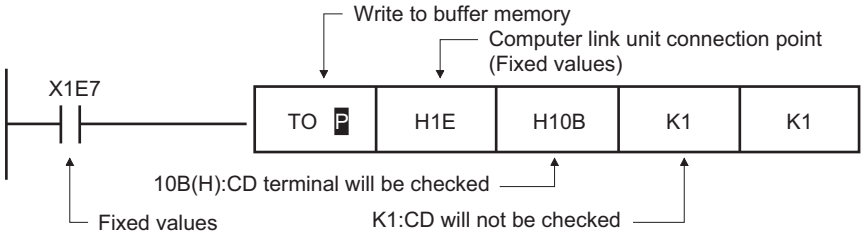


(b) In the case of CPU equipped with built-in computer link

• A1SCPUC24-R2



• A2CCPUC2



22.3 CC-Link Connection (via G4)

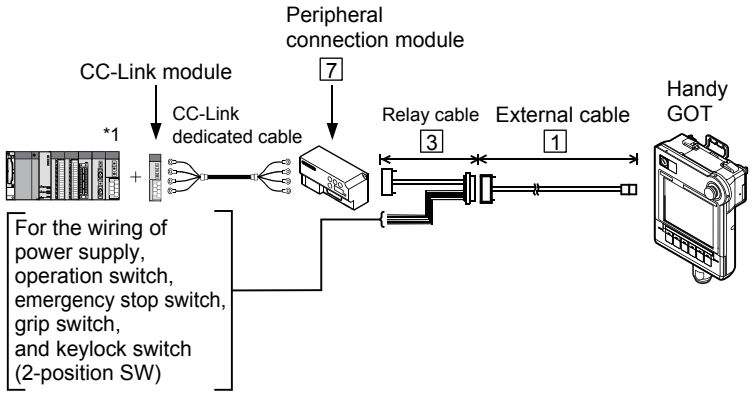
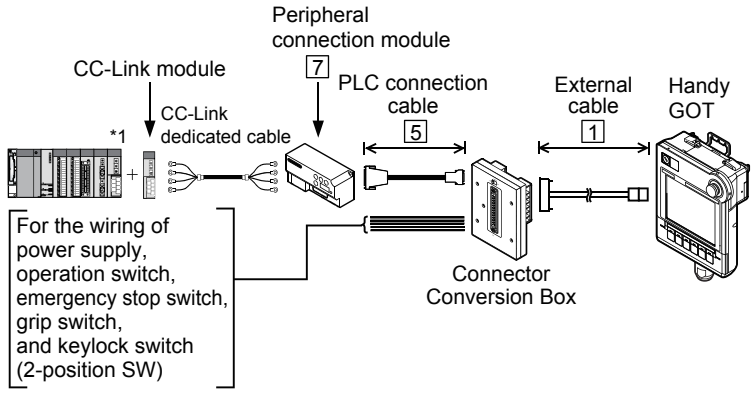
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector

Point

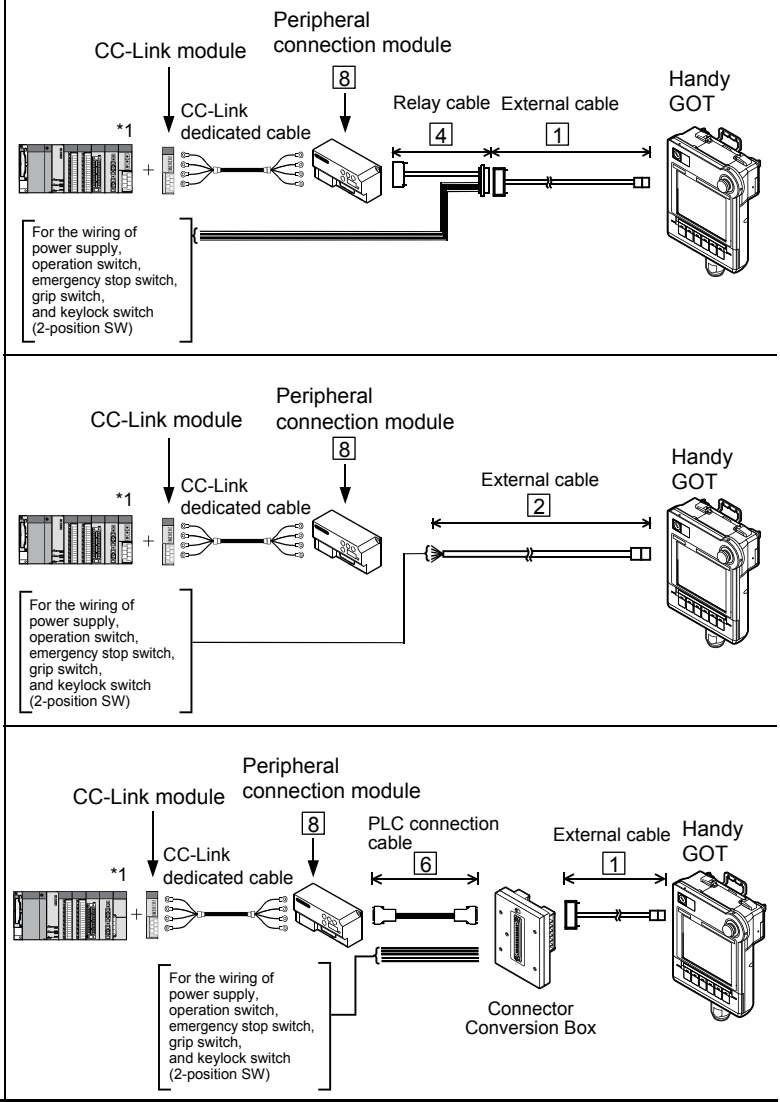
(1) PLC CPU which can be monitored in the CC-Link connection (via G4)
QCPU (Q Mode), LCPU of the master station can be monitored.
QnACPU, ACPU, and QCPU (A mode) cannot be monitored.
Only GT Designer3 (Ver. 1.10L or later) supports connection to the LCPU.
In addition, PLC of local stations cannot be monitored.

22.3.1 When connecting to QCPU (Q Mode), LCPU

1 System configuration and connection conditions

Connection conditions			System configuration
PLC	Communication	Distance	
QCPU (Q Mode), LCPU	RS-422	13m or less	 

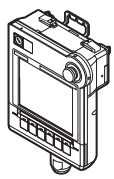
*1: Connection to the built-in CC-Link port is enabled in connection to the L26CPU-BT.
Refer to the following for the details about the built-in CC-Link port.
☞ MELSEC-L CPU Module User's Manual

Connection conditions			System configuration
PLC	Communication	Distance	
QCPU (Q Mode), LCPU	RS-232	6m or less	

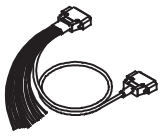
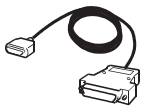
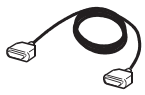
*1: Connection to the built-in CC-Link port is enabled in connection to the L26CPU-BT.
Refer to the following for the details about the built-in CC-Link port.
☞ MELSEC-L CPU Module User's Manual

2 System equipment

(1) GOT

Image	No.	Name	Model name	Remark
	—	Handy GOT	GT1155HS-QSBD	STN color
			GT1150HS-QLBD	STN monochrome

(2) Cable

Image	No.	Name	Model name	Remark
	1	External cable	GT11H-C□□□-37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
	2		GT11H-C□□□*2 □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
	3	Relay cable*1	GT11H-C15R4-25P	PLC side D-Sub 25 pins (1.5m)
	4		Must be prepared by the user. ☞ Section 22.2.9 Connection Cable	—
	—	CC-Link dedicated cable	For the specifications and inquiries of the CC-Link dedicated cable, refer to the following. ☞ CC-Link Partner Association's home page: http://www.cc-link.org/	—
	5	PLC connection cable	GT01-C30R4-25P (3m) GT01-C100R4-25P (10m)	PLC side D-sub 25 pins
	6	PLC connection cable*3	GT09-C30R2-9P(3m)	PLC side D-sub 9 pins

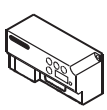
*1: The relay cables other than mentioned above must be prepared by the user.

*2: When an external cable of which one end is untied (GT11H-C30, GT11H-C60, GT11H-C100) is used, the cable must be processed by the user according to the following.

☞ Chapter 20 COMMUNICATION CABLE

*3: The PLC connection cable RS-232 can be prepared by the user.

(3) CC-Link module/peripheral connection module

Image	No.	Name	Model name	Remark
	—	CC-Link module*1	QJ61BT11, QJ61BT11N, LJ61BT11	—
	7	Peripheral connection module*2	AJ65BT-G4-S3	—
	8	Peripheral connection module	AJ65BT-R2N	—

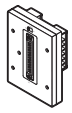
*1 For the system configuration on the CC-Link module side, refer to the following manual.

☞ CC-Link System Master/Local Module User's Manual QJ61BT11N

☞ CC-Link System Master/Local Module User's Manual LJ61BT11

*2 AJ65BT-G4 cannot be connected to the GOT.

(4) Option

Image	No.	Name	Model name	Remark
	—	Connector Conversion Box	GT11H-CNB-37S	—

3 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
QCPU (Q Mode), LCPU	1	64

22.3.2 Connecting to motion controller CPU (Q Series)

A motion controller CPU (Q Series) mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.
The system configuration, connection conditions and system equipment when connecting the GOT to a motion controller CPU (Q Series) are the same as the case of the QCPU (Q mode).

22.3.3 Connecting to CNC C70

CNC C70 mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.
The system configuration, connection conditions, and system equipment when connecting a GOT to a CNC C70 are the same as those for the QCPU (Q mode).

22.3.4 Connecting to CRnQ-700

CRnQ-700 mounted to the multiple CPU system of the QCPU (Q mode) can be monitored.
The system configuration, connection conditions, and system equipment when connecting a GOT to a CRnQ-700 are the same as those for the QCPU (Q mode).

22.3.5 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□ □ □ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Communication unit		PLC connection cable	
Name	Model name	RS-232 cable*1	RS-422 cable
Peripheral connection module	AJ65BT-R2N	GT09-C30R2-9P(3m)	—
	AJ65BT-G4-S3	—	GT01-C30R4-25P (3m) GT01-C100R4-25P (10m)

*1 The RS-232 cable can be prepared by the user. (this section 2)

2 Available connection cable classification

Refer to the following table to select the cable No. to be used.

Refer to the connection diagram of the cable No. to be used.

Communication unit		PLC connection cable	
Name	Model name	RS-232 cable*1	RS-422 cable
Peripheral connection module	AJ65BT-R2N	RS-232 cable 1)	—
	AJ65BT-G4-S3	—	—

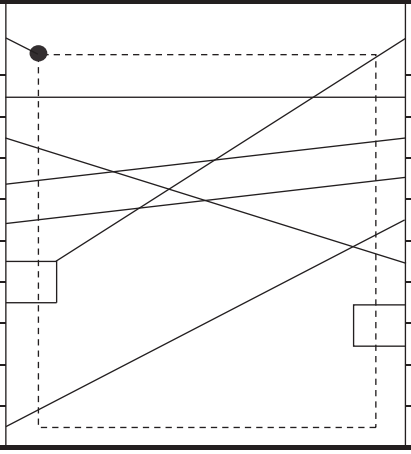
3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the GOT to the PLC.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	PLC side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	—
CS(CTS)	7	O/BK (A)	8		7	FR
—	8	Y/R (A)	—		8	ER
—	9	Y/BK (A)	—		9	SG
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

22.3.6 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.

22.3.7 PLC Side Setting (Connecting to AJ65BT-G4-S3)

This section describes the settings of the GOT and peripheral connection module using an example of system configuration shown as 1.

Point

(1) Peripheral connection module
For details of the peripheral connection module, refer to the following manual.

☞ Peripheral Connection Module Type AJ65BT-G4-S3 User's Manual (detail volume)

(2) CC-Link module (Q Series)
For details of the CC-Link module (Q Series), refer to the following manual.

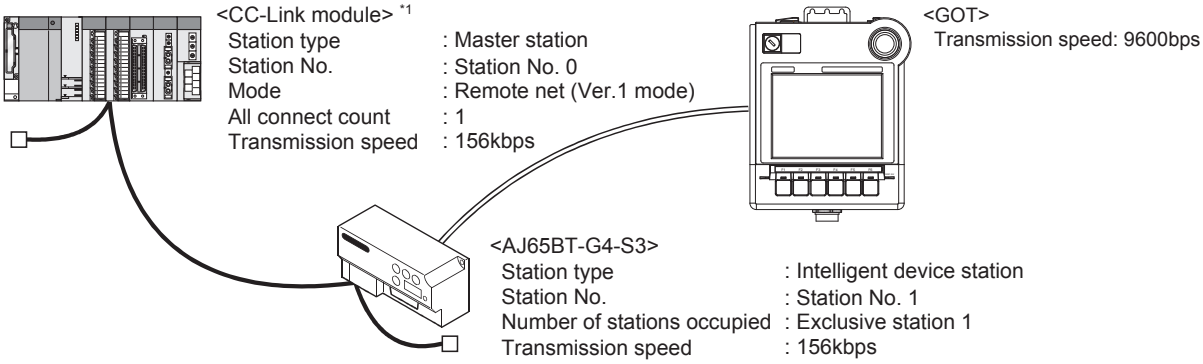
☞ CC-Link System Master/Local Module User's Manual QJ61BT11N

(3) CC-Link module (L Series)
For details of the CC-Link module (L Series), refer to the following manual.

☞ MELSEC-L CC-Link System Master/Local Module User's Manual (detail volume)

1 An example of system configuration

☞ • Section 22.3.9 Switch setting of CC-Link module (Q series)
• Section 22.3.10 [Network parameter] of GX Developer

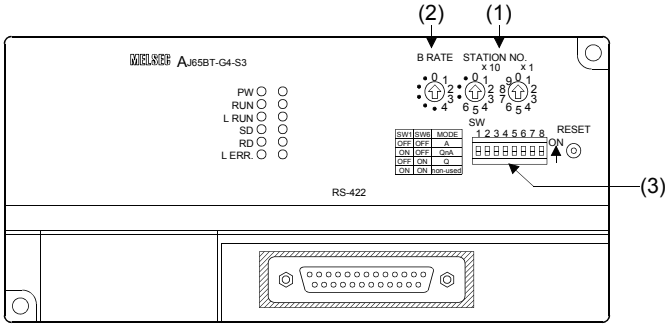


☞ 2 Switch setting of peripheral connection module

*1 In this system, the CC-Link module is mounted on the base unit slot 0.
The Start I/O No. of the CC-Link module is set to "0"
One intelligent device station (exclusive station 1) is connected.

2 Switch setting of peripheral connection module

Set the station number setting switch, data link transmission speed setting switch, and operation setting DIP switch.



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
STATION NO. ×10 ×1	AJ65BT-G4-S3 station number setting	1 to 64	○

○: Necessary △: As necessary ×: Not necessary

(2) Data link transmission speed setting switch

Data link transmission speed setting switch	Description	Setting	Setting necessity at GOT connection
B RATE	Data link transmission speed setting	0 : 156kbps 1 : 625kbps 2 : 2.5Mbps 3 : 5Mbps 4 : 10Mbps	○

○: Necessary △: As necessary ×: Not necessary

(3) Operation setting DIP switch

Operation setting DIP switch	Setting switch	Description	Setting	Setting necessity at GOT connection
SW 1 2 3 4 5 6 7 8 ON	SW1, SW6	Operation mode	SW1 = OFF (fixed) SW6 = ON (fixed) (Q mode)	○
	SW2	Peripheral transmission speed*1	OFF (fixed)	×
	SW3			
	SW4	Not used	OFF (fixed)	×
	SW5			
	SW7			
	SW8	Test mode	OFF (fixed) (Online mode)	○

○: Necessary △: As necessary ×: Not necessary

*1 The peripheral connection module operates with the baud rate set in the GOT.

Point

Operation mode of peripheral connection module

Be sure to set the "Q mode" as an operation mode of the peripheral connection module.

22.3.8 PLC Side Setting (Connecting to AJ65BT-R2N)

This section describes the settings of the GOT and peripheral connection module using an example of system configuration shown as *1*.

Point

(1) Peripheral connection module
For details of the peripheral connection module, refer to the following manual.

☞ Peripheral Connection Module Type AJ65BT-R2N User's Manual

(2) CC-Link module (Q Series)
For details of the CC-Link module (Q Series), refer to the following manual.

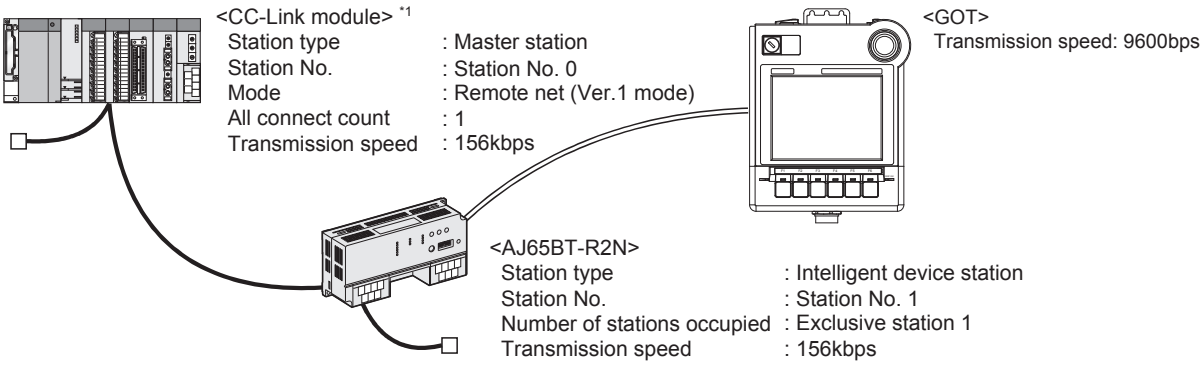
☞ CC-Link System Master/Local Module User's Manual QJ61BT11N

(3) CC-Link module (L Series)
For details of the CC-Link module (L Series), refer to the following manual.

☞ MELSEC-L CC-Link System Master/Local Module User's Manual (detail volume)

1 An example of system configuration

☞ ・ Section 22.3.9 Switch setting of CC-Link module (Q series)
・ Section 22.3.10 [Network parameter] of GX Developer

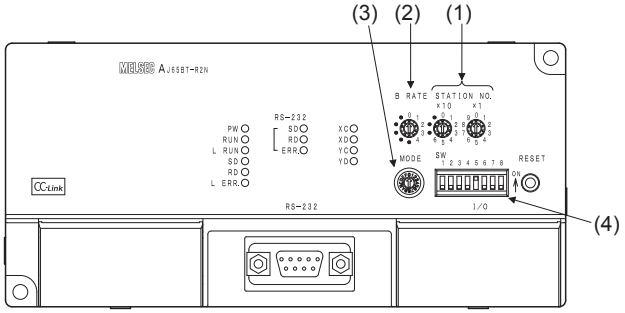


☞ *2* Switch setting of peripheral connection module

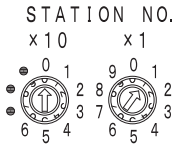
*1 In this system, the CC-Link module is mounted on the base unit slot 0.
The Start I/O No. of the CC-Link module is set to "0"
One intelligent device station (exclusive station 1) is connected.

2 Switch setting of peripheral connection module

Set the station number setting switch, data link transmission speed setting switch, and operation setting DIP switch.

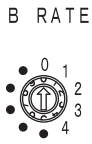


(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
	AJ65BT-R2N station number setting	1 to 64	○

○: Necessary △: As necessary ×: Not necessary

(2) Data link transmission speed setting switch

Data link transmission speed setting switch	Description	Setting	Setting necessity at GOT connection
	Data link transmission speed setting	0 : 156kbps 1 : 625kbps 2 : 2.5Mbps 3 : 5Mbps 4 : 10Mbps	○

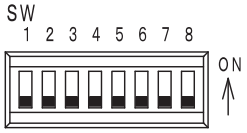
○: Necessary △: As necessary ×: Not necessary

(3) Mode setting switch

Mode setting switch	Description	Setting	Setting necessity at GOT connection
	Mode setting	5 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(4) RS-232 transmission setting switch

RS-232 transmission setting switch	Setting switch	Description	Setting	Setting necessity at GOT connection
	SW1	Peripheral transmission speed*1	OFF (fixed)	○
	SW2			
	SW3			
	SW4			
	SW5	Data bit length	OFF (fixed)	○
	SW6	Parity bit length	OFF (fixed)	○
	SW7			
	SW8	Stop bit length	OFF (fixed)	○

○: Necessary △: As necessary ×: Not necessary

*1 The peripheral connection module operates with the baud rate set in the GOT.

Point

Precautions when setting peripheral connection module

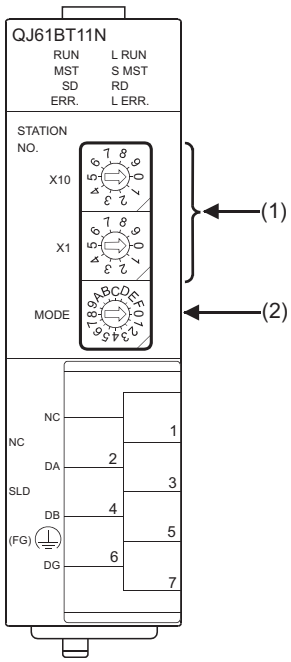
(1) Mode setting switch
Be sure to set the Operation mode setting switch to "5 (MELSOFT/connection mode)".

(2) RS-232 transmission setting switch
If any switch of SW1 through SW8 is ON, setting error will occur (RUN LED turns off).

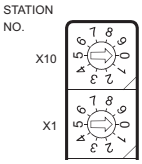
22.3.9 Switch setting of CC-Link module (Q series)

Set the station number setting switch, transmission speed / mode setting switch.

QJ61BT11, QJ61BT11N



(1) Station number setting switch

Station number setting switch	Description	Setting	Setting necessity at GOT connection
	Station number setting (master station)	0 (fixed)	○

○: Necessary △: As necessary ×: Not necessary

(2) Transmission rate/mode setting switch

Transmission rate/mode setting switch	Description	Setting	Setting necessity at GOT connection
	Transmission rate/mode setting	0 : 156kbps 1 : 625kbps 2 : 2.5Mbps 3 : 5Mbps 4 : 10Mbps	○

○: Necessary △: As necessary ×: Not necessary

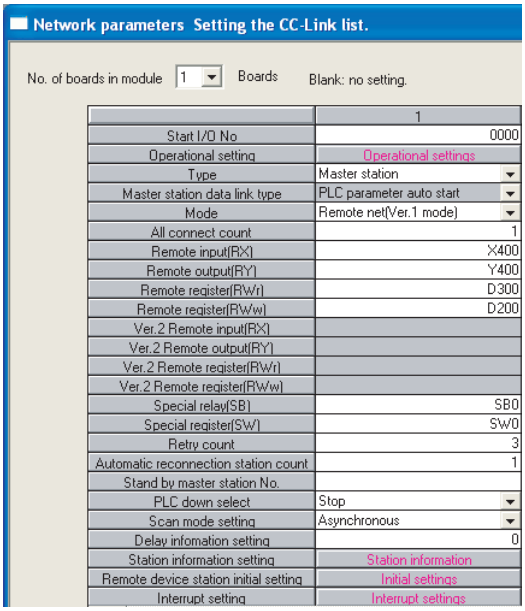
Point

When the switch setting has been changed

Turn the PLC CPU OFF then ON again, or reset the PLC CPU.

22.3.10 [Network parameter] of GX Developer

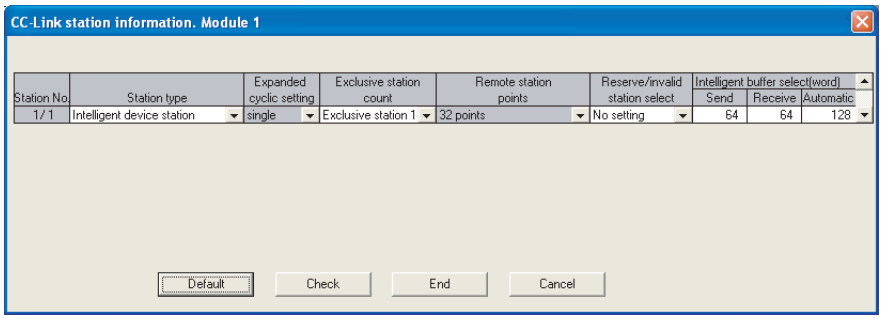
(1) Network parameter



Item	Setting	Setting necessity at GOT connection
No. of boards in module	1	○
Start I/O No.	0000H	○
Operational setting	(Use default value.)	△
Type	Master station (fixed)	○
Mode	Remote net (Ver. 1 mode)	○
All connect count	1	○
Remote input (RX)	X400	△
Remote output (RY)	Y400	△
Remote register (RWr)	D300	△
Remote register (RWw)	D200	△
Special relay (SB)	SB0	△
Special register (SW)	SW0	△
Retry count	(Use default value.)	△
Automatic reconnection station count		△
Stand by master station No.		×
PLC down select		△
Scan mode setting		△
Delay information setting		△
Station information setting	Refer to (2).	○
Remote device station initial setting	(Use default value.)	×
Interrupt setting		×

○: Necessary △: As necessary ×: Not necessary

(2) Station information setting



Item[*1]	Setting	Setting necessity at GOT connection
Station type[*2]	Intelligent device station (fixed)	○
Exclusive station count	Exclusive station 1 (fixed)	○
Reserve/invalid station select	No setting	○
Intelligent buffer select (word)	(Use default value.)	×

○: Necessary △: As necessary ×: Not necessary

*1 When the [Mode] of the CC-Link module is set at [Remote net - (Ver. 2 mode)], [Remote station points] is available to set.
[Remote station points] is a setting for the remote I/O station.
The default value (32 points) must be used on the GOT.

*2 When the [Mode] of the CC-Link module is set at [Remote net - (Ver. 2 mode)] or [Remote net - Additional mode], set it to [Ver. 1 Intelligent device station].

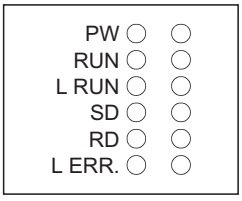
Point

When changing the network parameter

After writing the network parameter to the PLC CPU, operate the PLC CPU either turning OFF and then ON or resetting.

(3) Completion confirmation

After initial communication of CC-Link are completed, the L RUN LED of AJ65BT-G4-S3 turns on.
The GOT starts to monitor after the L RUN LED of AJ65BT-G4-S3 turns on.
It does not monitor while the L RUN LED turns off.



22.3.11 Precautions

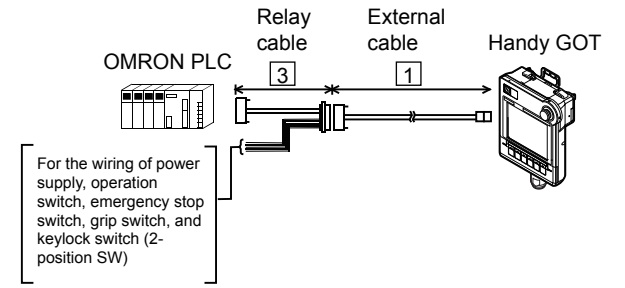
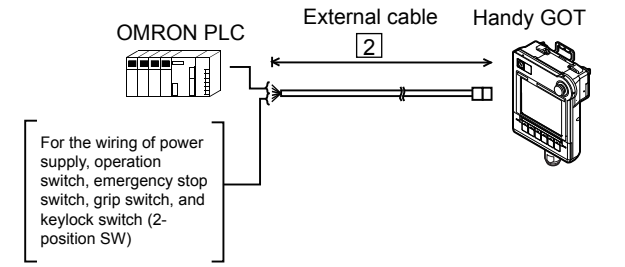
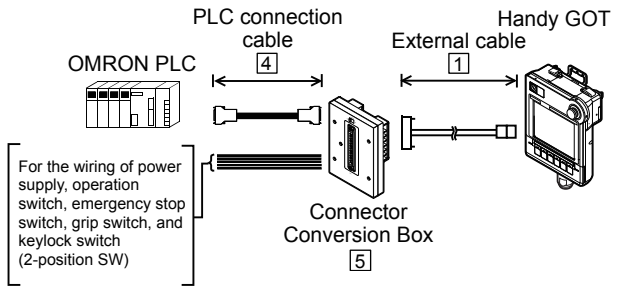
The Q17nDCPU, CNC C70 and CRnQ-700 are applicable to the CC-Link network system Ver.2 only.
For connecting to the CC-Link (G4) network system, set the CC-Link (G4) network system to the CC-Link Ver.2 mode.

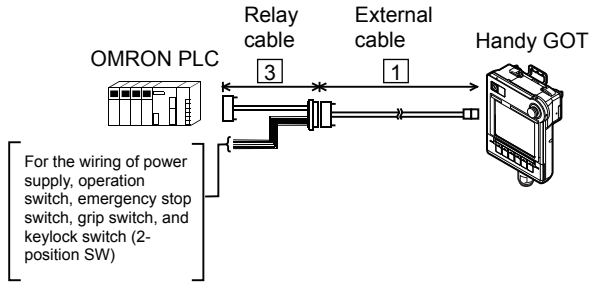
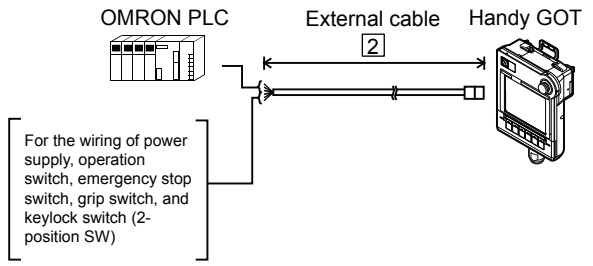
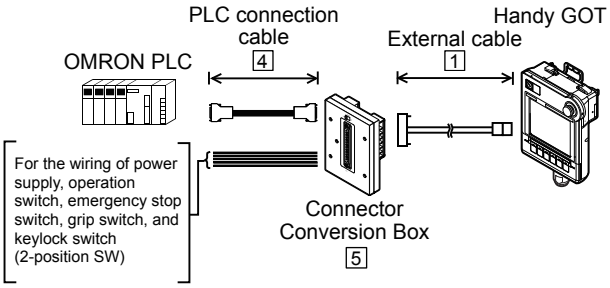
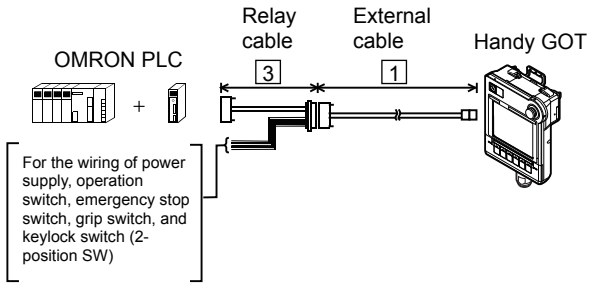
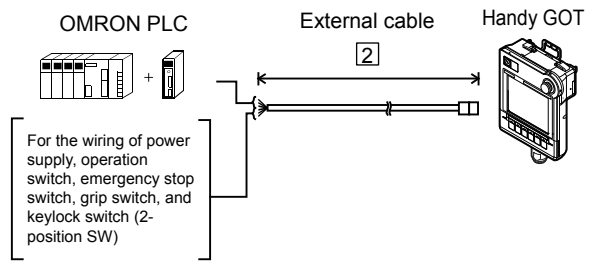
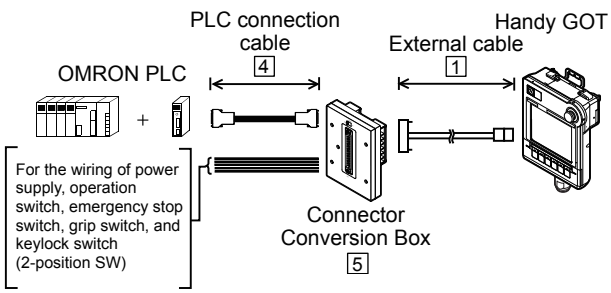
23. CONNECTION TO OMRON PLC

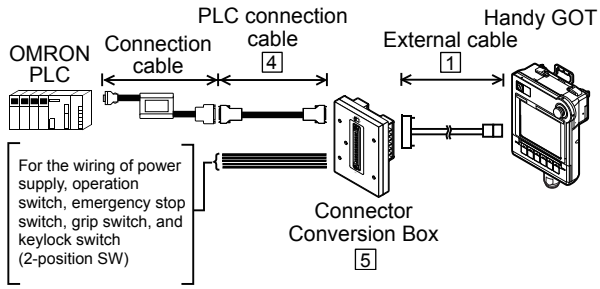
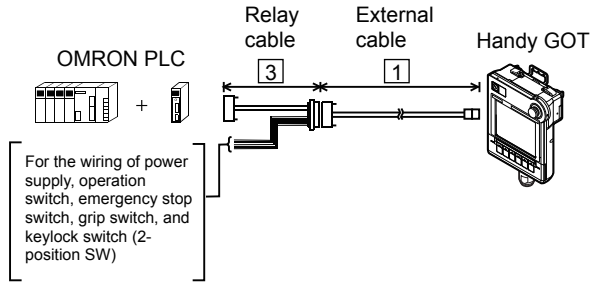
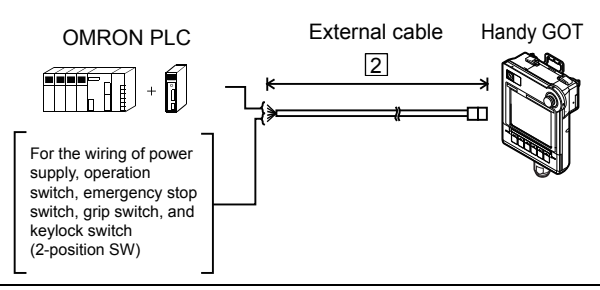
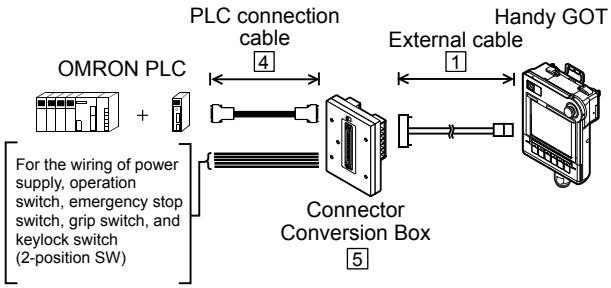
23.1 System Configuration and System Equipment

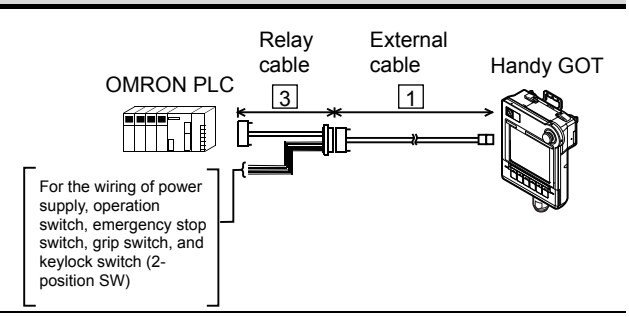
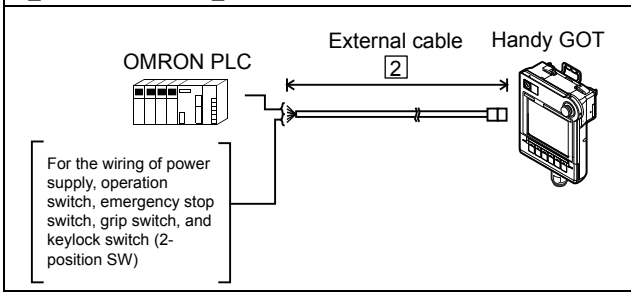
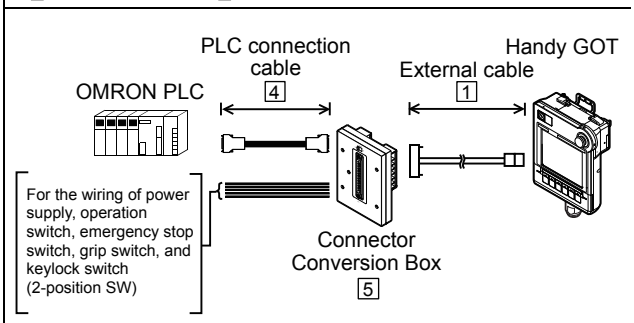
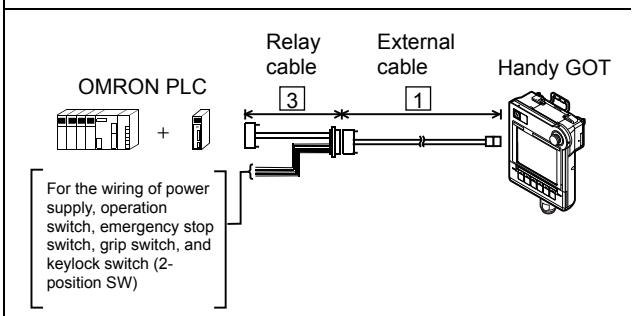
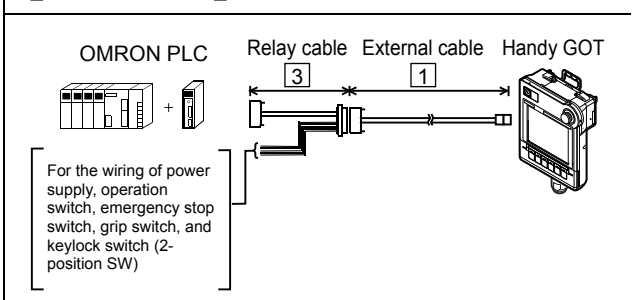
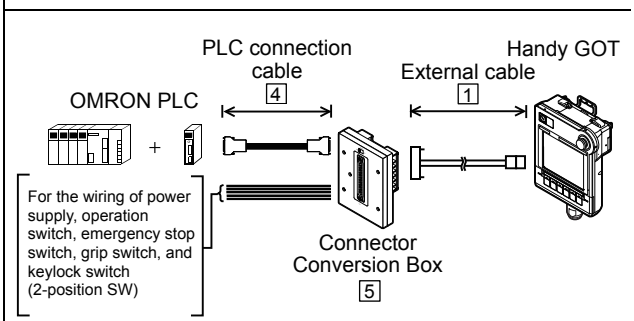
23.1.1 System configuration

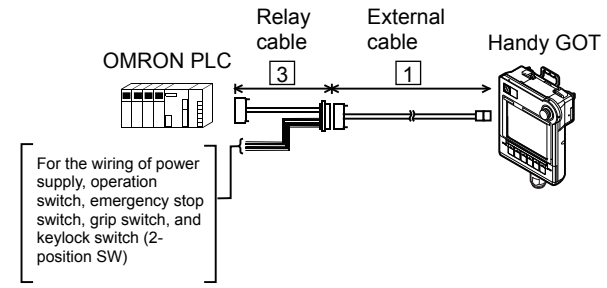
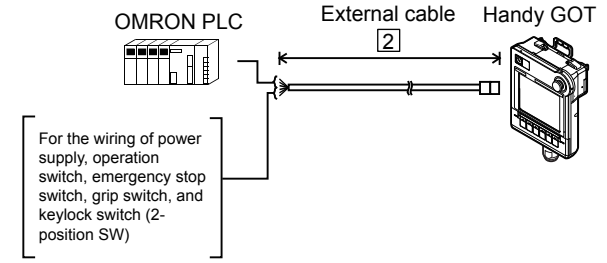
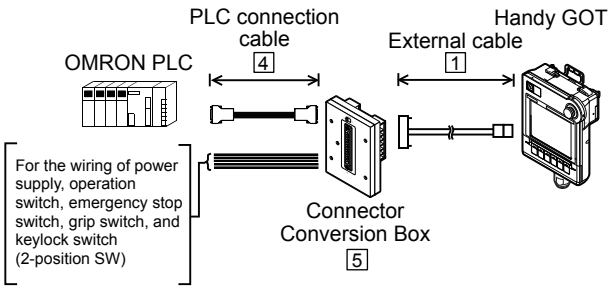
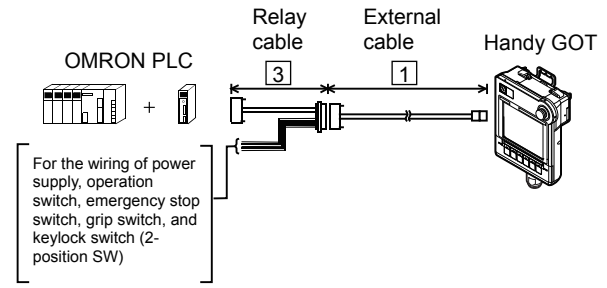
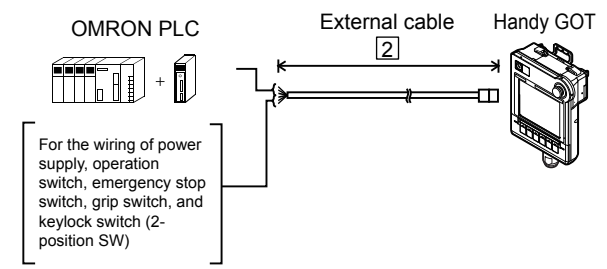
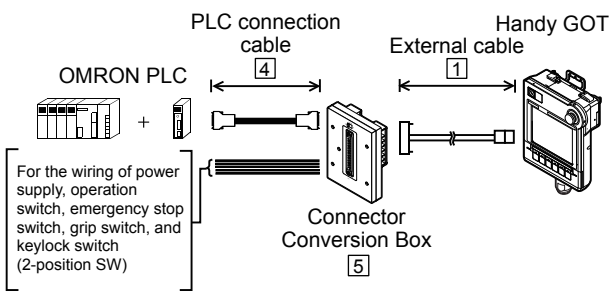
When connecting the Handy GOT to an OMRON PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "23.1.2 System equipment".

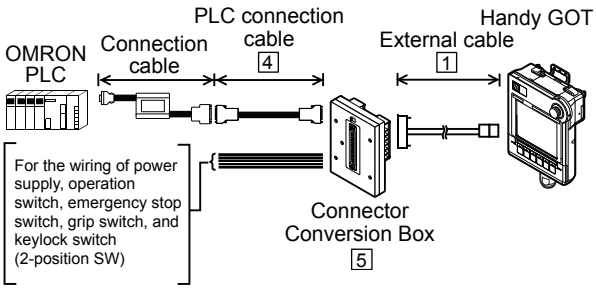
Connection conditions			System configuration
PLC	Communication	Distance	
CQM1	RS-232	6m or less (RS232)	
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
CV500, CV1000, CV2000, CVM1	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	  
CPM1, CPM1A, CPM2C	RS-232	6m or less (RS232)	  

Connection conditions			System configuration
PLC	Communication	Distance	
CPM1A, CPM2C	RS-232	6m or less (RS232)	
C200HS, C200H, C1000H, C2000H	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	  

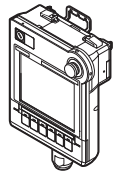
Connection conditions			System configuration
PLC	Communication	Distance	
CPM2A	RS-232	6m or less (RS232)	
			
			
			
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
CQM1H, CJ1, CJ2, C200Hα, CS1	RS-232	6m or less (RS232)	
			
			
CQM1H, CJ1, CJ2, C200Hα, CS1, CP1H, CP1L, CP1E	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

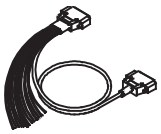
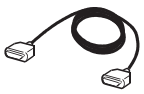
Connection conditions			System configuration
PLC	Communication	Distance	
CQM1H	RS-232	6m or less (RS232)	

23.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 23.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 23.1.3 Connection cable	

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
CPM1	Computer link	RS-232	RS-232C adapter	CPM1-CIF01
CPM1A	Computer link	RS-232	RS-232C adapter	CPM1-CIF01
			Connection cable	CQM1-CIF01
CPM2A	Direct CPU connection	RS-232	—	—
	Computer link		RS-232C adapter	CPM1-CIF01
CPM2C	Computer link	RS-232	RS-232C adapter	CPM1-CIF01
				CPM2C-CIF01-V1
			Connection cable	CPM2C-CN111
CQM1	Direct CPU connection	RS-232	—	—
CQM1H	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	Serial communication module	CQM1-SCB41
		RS-422	Serial communication module	CQM1-SCB41
		RS-232	Connection cable	CQM-CIF02
CJ1	Direct CPU connection	RS-232	—	—
		RS-422	RS-422A converter	CJ1W-CIF11
	Computer link	RS-232	Serial communication unit	CJ1W-SCU41
				CJ1W-SCU21-V1
		RS-422		CJ1W-SCU41
				CJ1W-SCU31-V1
CJ2H*2	Direct CPU connection	RS-232	—	—
		RS-422	RS-422A converter	CJ1W-CIF11
	Computer link	RS-232	Serial communication unit	CJ1W-SCU41-V1
				CJ1W-SCU21-V1
		RS-422		CJ1W-SCU41-V1
				CJ1W-SCU31-V1
CJ2M-CPU1□*3	Direct CPU connection	RS-232	—	—
		RS-422	RS-422A converter	CJ1W-CIF11
CJ2M-CPU3□*3	Computer link	RS-232	Serial communication unit	CJ1W-SCU41-V1
				CJ1W-SCU21-V1
		RS-422		CJ1W-SCU41-V1
				CJ1W-SCU31-V1
		RS-232	RS-232C Option board	CP1W-CIF01
		RS-422	RS-422A/485 Option board	CP1W-CIF11
				CP1W-CIF12
C200HS C200H	Computer link	RS-232	Rack type host link unit	C200H-LK201-V1
		RS-422	Rack type host link unit	C200H-LK202-V1
C200Hα	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	Rack type host link unit	C200H-LK201-V1
			Communication board*1	C200HW-COM02
				C200HW-COM05
				C200HW-COM06
		RS-422	Rack type host link unit	C200H-LK202-V1
			Communication board*1	C200HW-COM03
				C200HW-COM06

(Continued to next page)

PLC	Connection type	Communication	Communication unit	
			Name	Model name
CS1	Direct CPU connection	RS-232	—	—
		RS-422	RS-422A converter	CJ1W-CIF11
	Computer link	RS-232	Serial communication module	CS1W-SCU21(-V1)
			Serial communication module	CS1W-SCB21(-V1)
				CS1W-SCB41(-V1)
		RS-422	Serial communication module	CS1W-SCB41(-V1)
CP1H	Computer link	RS-232	RS-232C Option board	CP1W-CIF01
		RS-422	RS-422A/485 Option board	CP1W-CIF11
				CP1W-CIF12
		RS-232	Serial communication unit	CJ1W-SCU21(-V1)
				CJ1W-SCU41(-V1)
		RS-422		CJ1W-SCU41(-V1)
				CJ1W-SCU31-V1
CP1L	Computer link	RS-232	RS-232C Option board	CP1W-CIF01
		RS-422	RS-422A/485 Option board	CP1W-CIF11
				CP1W-CIF12
CP1E (N type)	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	RS-232C Option board	CP1W-CIF01
		RS-422	RS-422A/485 Option board	CP1W-CIF11
				CP1W-CIF12
C1000H	Computer link	RS-232	Rack type host link unit	C500H-LK201-V1
C2000H	Computer link	RS-422		
CV500	Direct CPU connection	RS-232	—	—
CV1000 CV2000 CVM1	Direct CPU connection	RS-422	—	—

*1: The communication board cannot be mounted on C200HE-CPU11. Use the host link unit.

*2: Only GT Designer3 (Ver. 1.10L or later) supports connection to the CJ2H.

*3: Only GT Designer3 (Ver. 1.19V or later) supports connection to the CJ2M.

- The communication unit is manufactured by OMRON Corporation.
  For details of the communication unit, contact OMRON Corporation.

Point

(1) Connection to CP1H
When connecting using Serial communication unit, CJ Unit Adapter(CP1W-EXT01) and End Cover(CJ1W-TER01) are required.

5 Number of connectable GOTs and PLCs

PLC			Number of GOTs	Number of PLCs
CPM1,	CPM1A,	CPM2A,	1	1
CPM2C,	CQM1,	CQM1H,		
CJ1,	C200HS,	C200H,		
C200Hα,	CS1,	CJ2,		
C1000H,	C2000H,	CV500,		
CV1000,	CV2000,	CVM1,		
CP1H,	CP1L,	CP1E		

23.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Communication unit		PLC connection cable*1	
Name	Model name	RS-232 cable	RS-422 cable
PLC CPU	CPM2A	GT09-C30R20101-9P	—
	CQM1		—
	CQM1H		—
	CJ1		—
	CJ2		—
	C200Hα		—
	CS1		—
	CV500		GT09-C30R40101-9P GT09-C100R40101-9P
	CV1000		
	CV2000		
	CVM1		
RS-232C adapter	CPM1-CIF01	GT09-C30R20101-9P	—
	CPM2C-CIF01-V1		—
Connection cable	CQM1-CIF01	GT09-C30R20102-25S	—
	CQM1-CIF02	GT09-C30R20101-9P	—
	CPM2C-CN111		—
Rack type host link module	C200H-LK201-V1	GT09-C30R20103-25P	—
	C200H-LK202-V1	—	GT09-C30R40102-9P GT09-C100R40102-9P
	C500H-LK201-V1	GT09-C30R20103-25P	
Serial communication unit	CJ1W-SCU41(-V1)	GT09-C30R20101-9P	Must be prepared by the user.
	CS1W-SCU21(-V1)		—
	CJ1W-SCU21(-V1)		—
	CJ1W-SCU31-V1	—	Must be prepared by the user.
Communication board	C200HW-COM02	GT09-C30R20101-9P	—
	C200HW-COM03	—	GT09-C30R40101-9P GT09-C100R40101-9P
	C200HW-COM05	GT09-C30R20101-9P	—
	C200HW-COM06		GT09-C30R40101-9P GT09-C100R40101-9P
RS-232C Option board	CP1W-CIF01	GT09-C30R20101-9P	—
RS-422A converter	CJ1W-CIF11	—	GT09-C30R40103-5T GT09-C100R40103-5T
RS-422A/485 Option board	CP1W-CIF11		
	CP1W-CIF12		

(Continued to next page)

Communication unit		PLC connection cable*1	
Name	Model name	RS-232 cable	RS-422 cable
Serial Communication board	CQM1-SCB41	GT09-C30R20101-9P	Must be prepared by the user.
	CS1W-SCB21(-V1)		—
	CS1W-SCB41(-V1)		Must be prepared by the user.

*1 The PLC connection cable can be prepared by the user. (this section 2)

2 Available connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

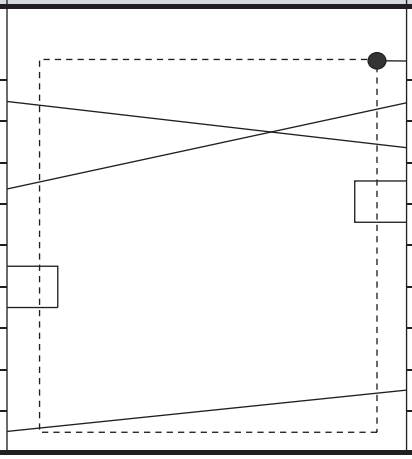
Communication unit		Connection cable	
Name	Model name	RS-232 cable	RS-422 cable
PLC CPU	CPM2A	RS-232 cable 1)	—
	CQM1		—
	CQM1H		—
	CJ1		—
	CJ2		—
	C200Hα		—
	CS1		—
	CV500		RS-422 cable 1)
	CV1000		
	CV2000		
	CVM1		
RS-232C adapter	CPM1-CIF01	RS-232 cable 1)	—
	CPM2C-CIF01-V1		—
Connection cable	CQM1-CIF01	RS-232 cable 2)	—
	CQM1-CIF02	RS-232 cable 1)	—
	CPM2C-CN111		—
Rack type host link module	C200H-LK201-V1	RS-232 cable 3)	—
	C200H-LK202-V1	—	RS-422 cable 2)
	C500H-LK201-V1	RS-232 cable 3)	
Serial communication unit	CJ1W-SCU41(-V1)	RS-232 cable 1)	RS-422 cable 3)
	CS1W-SCU21(-V1)		—
	CJ1W-SCU21(-V1)		—
	CJ1W-SCU31-V1	—	RS-422 cable 3)
Communication board	C200HW-COM02	RS-232 cable 1)	—
	C200HW-COM03	—	RS-422 cable 3)
	C200HW-COM05	RS-232 cable 1)	—
	C200HW-COM06		RS-422 cable 3)
RS-232C Option board	CP1W-CIF01	RS-232 cable 1)	—
RS-422A converter	CJ1W-CIF11	—	RS-422 cable 4)
RS-422A/485 Option board	CP1W-CIF11		
	CP1W-CIF12		
Serial Communication board	CQM1-SCB41	RS-232 cable 1)	RS-422 cable 3)
	CS1W-SCB21(-V1)		—
	CS1W-SCB41(-V1)		RS-422 cable 3)

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

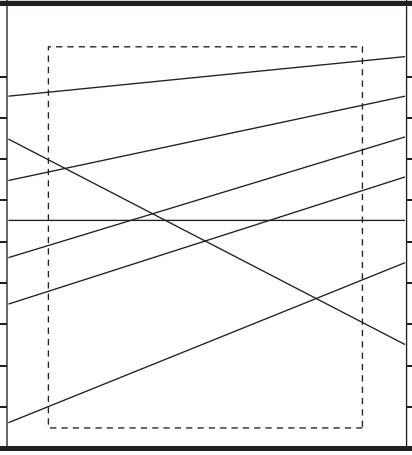
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	OMRON product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	—
CS(CTS)	7	O/BK (A)	8		7	FR
—	8	Y/R (A)	—		8	ER
—	9	Y/BK (A)	—		9	SG
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

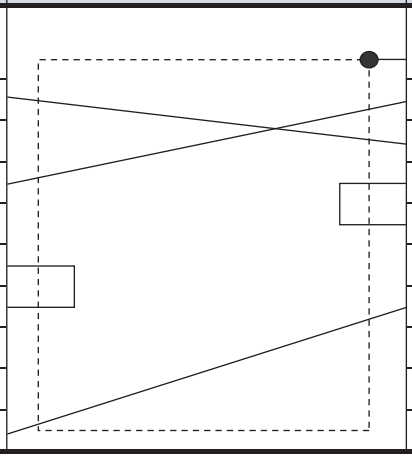
(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	OMRON product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		2	SD
SD(TXD)	2	W/R (A)	3		3	RD
ER(DTR)	3	W/BK (A)	4		4	RS
RD(RXD)	4	GY/R (A)	2		5	CS
DR(DSR)	5	GY/BK (A)	6		6	DR
RS(RTS)	6	O/R (A)	7		7	SG
CS(CTS)	7	O/BK (A)	8		8	—
—	8	Y/R (A)	—		20	ER
—	9	Y/BK (A)	—		22	—
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(3) RS-232 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	OMRON product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	—
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		8	—
—	9	Y/BK (A)	—		20	ER
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

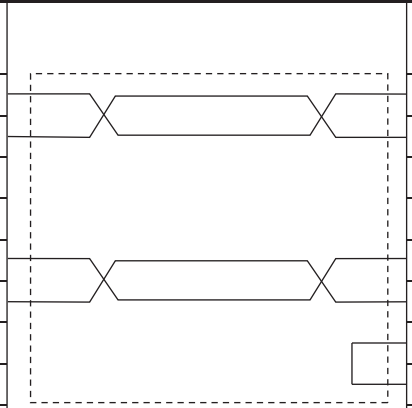
☞ Chapter 20 COMMUNICATION CABLE

Point

Difference in polarity between GOT and OMRON products.

The polarity of poles A and B in signal names is reversed between GOT and OMRON products.
Prepare a cable according to the following connection diagrams.

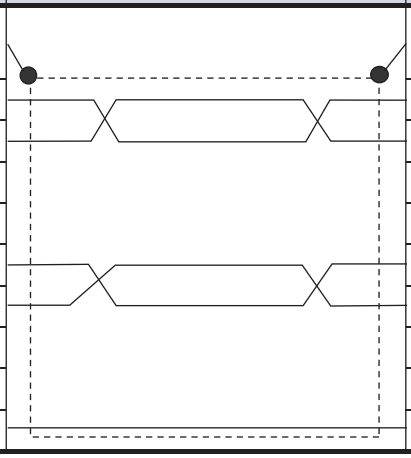
(1) RS-422 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	OMRON product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		8	RDB
SDB	3	W/BK (A)	6		6	RDA
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		—	—
RDA	6	O/R (A)	2		2	SDB
RDB	7	O/BK (A)	7		1	SDA
CSA	8	Y/R (A)	4		4	RS
CSB	9	Y/BK (A)	9		5	CS
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

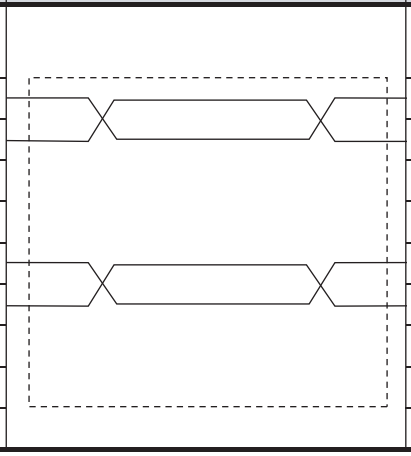
(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	OMRON product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	FG
SDA	2	W/R (A)	1		1	RDB
SDB	3	W/BK (A)	6		6	RDA
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		—	—
RDA	6	O/R (A)	2		5	SDB
RDB	7	O/BK (A)	7		9	SDA
CSA	8	Y/R (A)	4		—	—
CSB	9	Y/BK (A)	9		—	—
SG	10	PK/R (A)	5		3	SG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

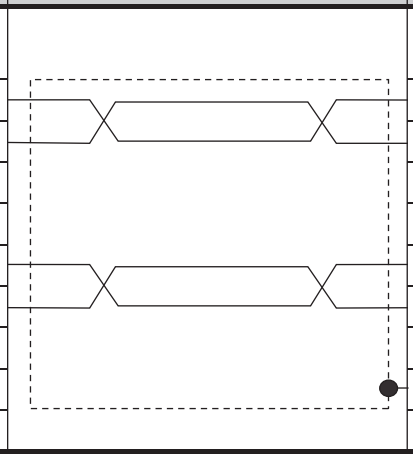
(3) RS-422 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	OMRON product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		8	RDB
SDB	3	W/BK (A)	6		6	RDA
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		—	—
RDA	6	O/R (A)	2		2	SDB
RDB	7	O/BK (A)	7		1	SDA
CSA	8	Y/R (A)	4		4	RS
CSB	9	Y/BK (A)	9		5	CS
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(4) RS-422 cable 4)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	OMRON product side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		—
SDA	2	W/R (A)	1		RDB+
SDB	3	W/BK (A)	6		RDA-
RSA	4	GY/R (A)	3		—
RSB	5	GY/BK (A)	8		—
RDA	6	O/R (A)	2		SDB+
RDB	7	O/BK (A)	7		SDA-
CSA	8	Y/R (A)	4		—
CSB	9	Y/BK (A)	9		FG
SG	10	PK/R (A)	5		—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

23.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

2 Connecting terminating resistors

When connecting an OMRON PLC to a GOT, a terminating resistor must be set to the OMRON PLC. No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

☞ Section 23.1.5 PLC Side Setting

Point OMRON PLC

For details of OMRON PLCs, refer to the following manuals.

☞ Manuals for OMRON PLCs

1 Connecting CPM2A, CQM1, CQM1H, C200Hα or RS-232C adapter

(1) Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name	Settings
DM6645	0001H (fixed)
DM6646	b15 to b8: 2) / b7 to b0: 1) 1) RS-232C port transmission speed setting *1*2 02H: 4800bps 03H: 9600bps 04H: 19200bps 2) RS-232C port communication frame format 03H (fixed): The settings are: Start bit : 1 bit Data length: 7 bits Stop bit : 2 bits Parity : Even bits
DM6647	0000 (fixed)
DM6648 *3	0000 to 0031
DM6649	0000 (fixed)

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed of the RS-232C port as that of the GOT side.

*3 Set the RS-232C port host link station No. according to the Host Address on the GOT side.

Remark **Precautions for changing device values**

Before changing the device values, make sure that the switch settings have been changed as follows:

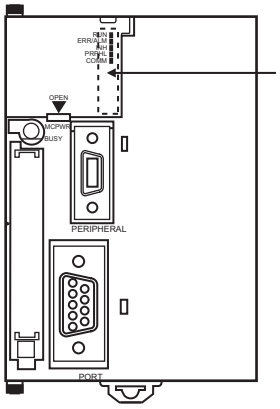
CPM2A: The communication condition switch to "individual"

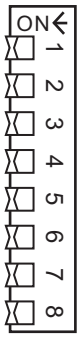
Other PLC CPU: Front panel DIP switch SW5 to "OFF"

2 Connecting CJ1, CJ2, CS1, CP1H, CP1L or CP1E

(1) Setting DIP switches

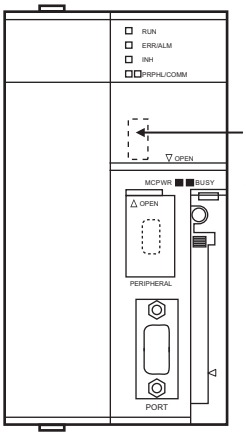
(a) Setting on the CJ1, CJ2





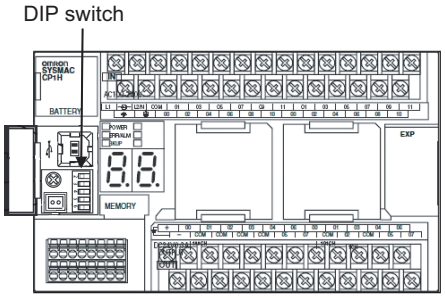
Switch	Description	Setting
SW1	Enable/disable write to user memory (UM)	OFF
SW2	Enable/disable automatic transfer of user program at power ON	OFF
SW3	Free	OFF
SW4	CJ1:Peripheral port communication condition CJ2:Free	OFF
SW5	RS-232C communication condition	OFF
SW6	User customized DIP switch	OFF
SW7	Type specification for simplified backup	OFF
SW8	—	OFF

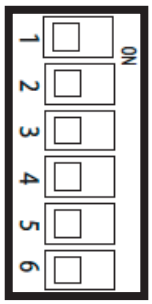
(b) Setting on the CS1



Switch	Description	Setting
SW1	Enable/disable write to user memory (UM)	OFF
SW2	Enable/disable automatic transfer of user program at power ON	OFF
SW3	Programming console message display language (Japanese/English)	OFF
SW4	Peripheral port communication condition	OFF
SW5	RS-232C communication condition	OFF
SW6	User customized DIP switch	OFF
SW7	Type specification for simplified backup	OFF
SW8	—	OFF

(c) Setting on the CP1H or CP1L





Switch	Description		Setting
SW4	Option Board Slot1	According to PLC Setup.	OFF
SW5	Option Board Slot2		OFF

(d) Setting on the CP1E

Setting of the DIP switches is not required on the CP1E.

(2) Setting PLC system settings

(a) CJ1, CJ2 and CS1

Make the PLC system settings.

Channel	Bit	Item	Setting
160	15	Arbitrary settings ON/OFF	1H: Arbitrary settings (fixed)
	8 to 11	Serial communication mode	0H: Upper link (fixed)
	3	Data length	0H: 7 bits (fixed)
	2	Stop bit	0H: 2 bits (fixed)
	0 to 1	Parity	0H: Even (fixed)
161	0 to 7	Port transmission speed *1*2	00H: 9600bps 08H : 38400bps 05H: 4800bps 09H: 57600bps 06H: 9600bps 0AH : 115200bps 07H: 19200bps
163	0 to 7	Host link station No. *3	0H to 1FH: No.00 to 31

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same port transmission speed as that of the GOT side.

*3 Set the host link station No. according to the Host Address on the GOT side.

Remark

Precautions for changing the PLC system settings

Before changing the PLC system settings, make sure that the switch settings have been changed as follows:

CJ1, CS1: Front panel DIP switch SW5 to "OFF"

(b) CP1H, CP1L and CP1E

Set the PLC Setup from the CX-Programmer.

Item	Setting
Mode	Host link
Parameter	7, 2, E
Baud rate *1 *2	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps,
Unit number *3	00 to 31

*1 Only Baud rate available on the GOT side are shown.

*2 Set the same port transmission speed as that of the GOT side.

*3 Set the host link station No. according to the Host Address on the GOT side.

Remark

Precautions for changing the PLC system settings

Before changing the PLC system settings, check the setting of the front DIP switch corresponding to the option slot used at the time of communication with GOT.

☞ (1) Setting DIP switches

3 Connecting CV500/CV1000/CV2000 or CVM1

(1) Setting DIP switches

Set the DIP switches.

(a) Host link RS-422/232 switch

Setting	
RS-232 communication	RS-422 communication
RS-232 (up)	RS-422 (down)

(b) DIP switches

Switch No.	Setting	
	RS-232 communication	RS-422 communication
6	OFF (no terminating resistor)	ON (terminating resistor attached)
5	OFF	
4	OFF	
3	OFF	
2	OFF	
1	OFF	

(2) PLC system settings

Make the PLC system settings.

Item	Setting
Transmission speed *1*2	4800bps/9600bps/19200bps
Stop bit	2 stop bits (fixed)
Parity	Even (fixed)
Data length	7 bits (fixed)
Station No. *3	00 to 31

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed as that of the GOT side.

*3 Set the station No. according to the Host Address on the GOT side.

4 Connecting connection cable

(1) Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name	Settings
DM6650	0001H (fixed)
DM6651	b15 to b8 | b7 to b0 2) | 1) 1) RS-232C port transmission speed setting*1*2 02H: 4800bps 03H: 9600bps 04H: 19200bps 2) RS-232C port communication frame format 03H (fixed): The settings are: Start bit : 1 bit Data length: 7 bits Stop bit : 2 bits Parity : Even bits
DM6652	0000 (fixed)
DM6653 *3	0000 to 0031

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed of the peripheral port as that of the GOT side.

*3 Set the peripheral port host link station No. according to the Host Address on the GOT side.

Remark

Precautions for changing device values

Before changing the device values, make sure that the switch settings have been changed as follows:

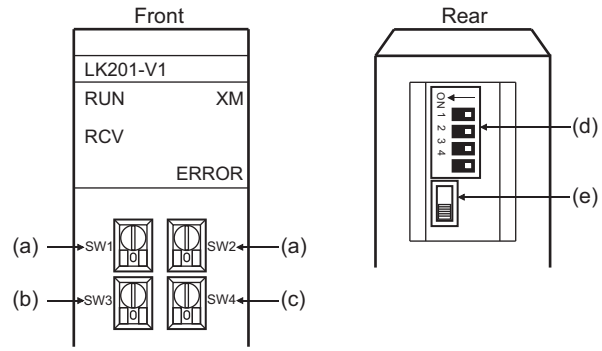
CPM2A: The communication condition switch to "individual"

CPM2C: The communication port function switch to "OFF"

5 Connecting rack type host link unit

(1) Switch setting on C200H-LK201-V1

Set the switches accordingly.



(a) Setting Machine No. (SW1, SW2)

Set the Machine No. within the range of 00 to 31 according to the Host Address setting on the GOT side.

Rotary switch	Description	Setting
SW1	Machine No. upper digit ($x10^1$)	0 to 3
SW2	Machine No. lower digit ($x10^0$)	0 to 9

(b) Setting transmission speed (SW3)

Set the same transmission speed as that of the GOT side.

Setting *1	Setting
4	4800bps
5	9600bps
6	19200bps

*1 Only transmission speeds available on the GOT side are shown.

(c) Setting command level/ parity/ transmission code (SW4)

Setting	Setting details		
	Command level	Parity	Transmission code
2 (fixed)	Levels 1, 2 and 3 enabled	Even	ASCII 7 bits 2 stop bits

(d) Setting DIP switches

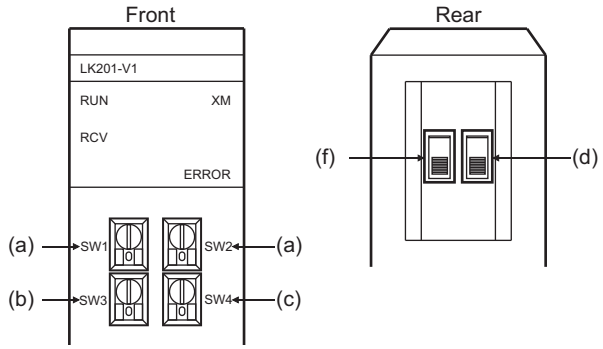
Switch No.	Setting
1	OFF
2	OFF
3	ON (1:N procedure)
4	OFF (no 5V power supply)

(e) Setting the CTS switch

Setting
0V

(2) Switch setting on C200H-LK202-V1

Set the switches accordingly.



(a) Setting Machine No. (SW1, SW2)

Set the Machine No. within the range of 00 to 31.

Set the Machine No. according to the Host Address setting on the GOT side.

Rotary switch	Description	Setting
SW1	Machine No. upper digit ($x10^1$)	0 to 3
SW2	Machine No. lower digit ($x10^0$)	0 to 9

(b) Setting transmission speed (SW3)

Set the same transmission speed as that of the GOT side.

Setting *1	Setting
4	4800bps
5	9600bps
6	19200bps

*1 Only transmission speeds available on the GOT side are shown.

(c) Setting command level/ parity/ transmission code (SW4)

Setting	Setting details		
	Command level	Parity	Transmission code
2 (fixed)	Levels 1, 2 and 3 enabled	Even	ASCII 7 bits 2 stop bits

(d) Setting the 1:1 / 1:N procedure switch

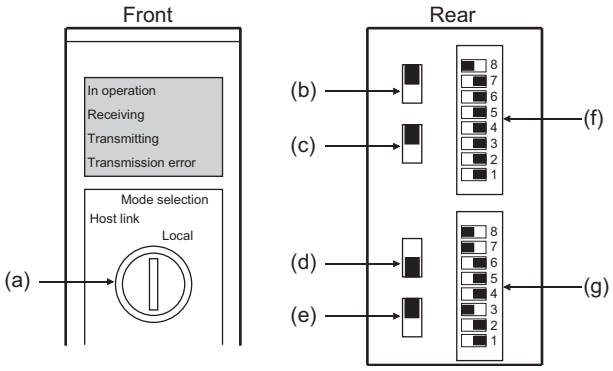
Setting
OFF (1:N procedure)

(e) Setting the terminating resistor connection switch

Setting
ON (terminating resistor attached)

(3) Switch setting on C500-LK201-V1

Set the switches accordingly.



(a) Setting host link/local

Setting
Host link

(b) RS-232C/RS-422 switch

Setting	
RS-232 communication	RS-422 communication
RS-232 (down)	RS-422 (up)

(c) Internal/external clock switch

Setting
Internal (up)

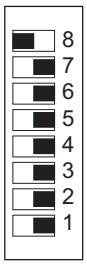
(d) Terminating resistor connection switch

Setting
Attached (down)

(e) CTS switch

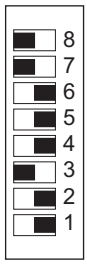
Setting
0V (up)

(f) Setting SW1 (Station No., Run/Stop)



Switch No.	Setting	Description
8	ON	Run
7	OFF	—
6	OFF	—
5	Set the station No. within the range of 00 to 31. Refer to the following manual for details. ☞ Manuals for OMRON PLCs	
4		
3		
2		
1		

(g) Setting SW2 (Transmission speed, Procedure, Level)



Switch No.	Setting	Description
8	ON	Levels 1, 2 and 3 enabled
7	ON	
6	OFF	1:N procedure
5	OFF	—
4	*1	Transmission speed
3		
2		
1		

*1 Only transmission speeds available on the GOT side are shown.

Transmission speed	Switch No.			
	SW1	SW2	SW3	SW4
4800bps	OFF	ON	ON	OFF
9600bps	ON	OFF	ON	OFF
19200bps	OFF	OFF	ON	OFF

6 Connecting serial communication unit

(1) Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name		Settings
Port 1	Port 2	
DM(m)	DM(m+10)	8000H (fixed): The settings are: Port setting : Arbitrary setting Serial communication mode : Host link Start bit : 1 bit Data length : 7 bits Stop bit : 2 bits Parity : Even
DM(m+1)	DM(m+11)	b15 to b8 | b7 to b0 0H | 1) 1) Transmission speed*1*2 00H: 9600bps 08H: 38400bps 05H: 4800bps 09H: 57600bps 06H: 9600bps 0AH: 115200bps 07H: 19200bps
DM(m+2)	DM(m+12)	8000H (fixed)
DM(m+3) *3	DM(m+13) *3	8000H to 801FH

m = 30000 + (100 x unit No.)

*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed as that of the GOT side.

*3 Set the host link station No. according to the Host Address setting on the GOT side.

7 Connecting communication board, serial communication board (CQM1-SCB41)

(1) Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name		Setting
Port B	Port A	
DM6550	DM6555	0001H (fixed)
DM6551	DM6556	b15 to b8: 2) / b7 to b0: 1) 1) Transmission speed*1*2 02H:4800bps 03H:9600bps 04H:19200bps 2) Frame format setting 03H (fixed): The settings are: Start bit :1 bit Data length:7 bits Stop bit :2 bits Parity :Even bits
DM6552	DM6557	0000 (fixed)
DM6553 *3	DM6558 *3	0000 to 0031

*1 Only transmission speeds available on the GOT side are shown.

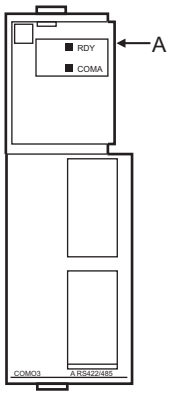
*2 Set the same transmission speed as that of the GOT side.

*3 Set the host link station No. according to the Host Address setting on the GOT side.

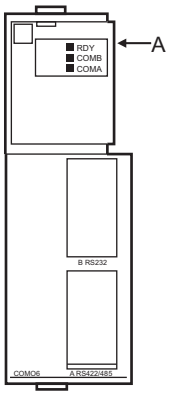
(2) Setting DIP switches (C200HW-COM3 and C200HW-COM6 only)

Set the DIP switches when performing the RS-422 communications on the C200HW-COM3 and C200HW-COM6.

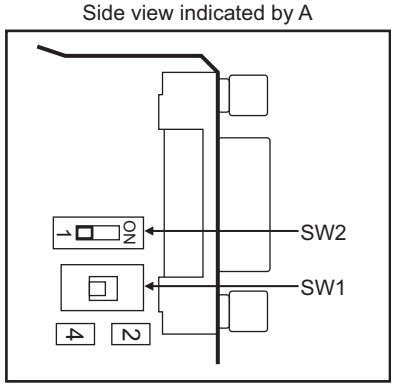
C200HW-COM3



C200HW-COM6



Side view indicated by A



DIP switch		Settings
No.	Item	
SW1	RS-422/485 cable (2-wire/4-wire type) switching	4 (4-wire type)
SW2	Terminator ON/OFF	1 (no terminating resistor attached)

8 Connecting serial communication board (CS1W-SCB21, CS1W-SCB41)

(1) Device settings

Write the following set values to devices of each PLC CPU and initialize each port using a peripheral tool or DM monitor.

Device name		Setting
Port 1	Port 2	
D32000	D32010	8000H (fixed): The settings are: Port setting : Arbitrary setting Serial communication mode : Host link Start bit : 1 bit Data length : 7 bits Stop bit : 2 bits Parity : Even
D32001	D32011	b15 to b8 | b7 to b0 0H | 1) 1) Transmission speed*1*2 00H: 9600bps 08H: 38400bps 05H: 4800bps 09H: 57600bps 06H: 9600bps 0AH: 115200bps 07H: 19200bps
D32002	D32012	8000H (fixed)
D32003 *3	D32013 *3	0000H to 0001FH

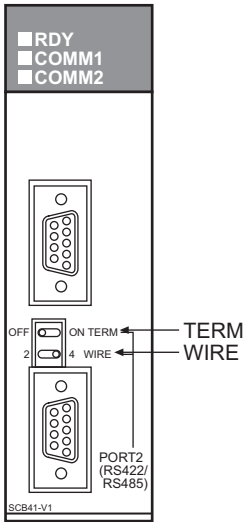
*1 Only transmission speeds available on the GOT side are shown.

*2 Set the same transmission speed as that of the GOT side.

*3 Set the host link station No. according to the Host Address setting on the GOT side.

(2) Setting the DIP switches (CS1W-SCB41 only)

Set the DIP switches when performing the RS-422 communications on the CS1W-SCB41.



DIP switch		Settings
Name	Description	
WIRE	2-wire/4-wire type switch	4 (4-wire type)
TERM	Terminator ON/OFF switch	OFF (no terminating resistor attached)

Remark Precautions for changing the DM area

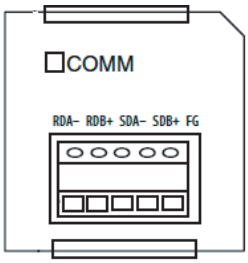
Before changing the DM area, make sure that the switch setting has been changed as follows

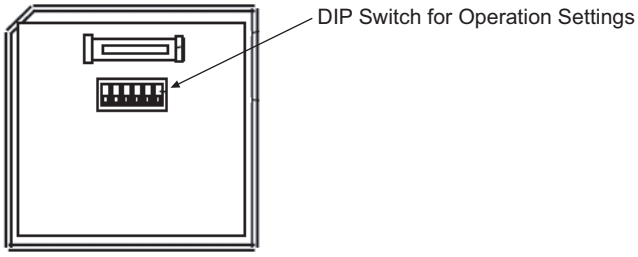
CS1: Front panel DIP switch SW5 to "OFF"

9 Connecting RS-422A/485 Option board

(1) Setting the DIP switches

Set the DIP switches.



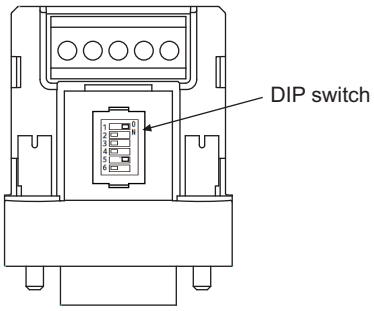


Switch No.	Settings	Description	
1	ON	ON	Terminating resistance selection
2	OFF	4-wire	2-wire or 4-wire selection
3	OFF	4-wire	2-wire or 4-wire selection
5	ON	RS control enabled	RS control selection for RD
6	ON	RS control enabled	RS control selection for SD

10 Connecting RS-422A converter

(1) Setting the DIP switches

Make the communication settings by operating the DIP switch.



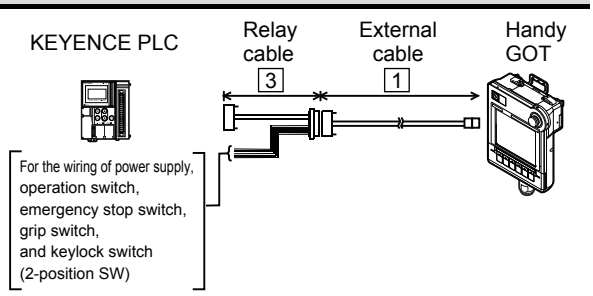
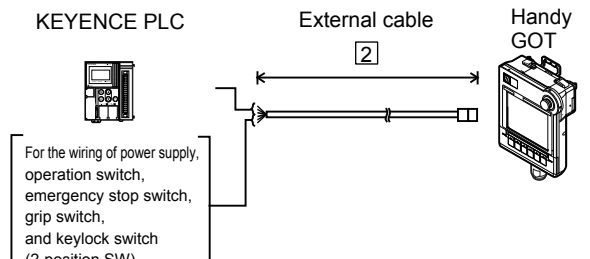
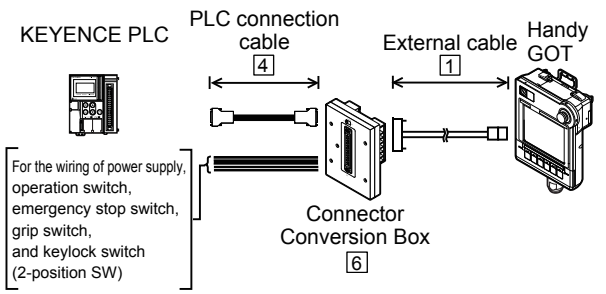
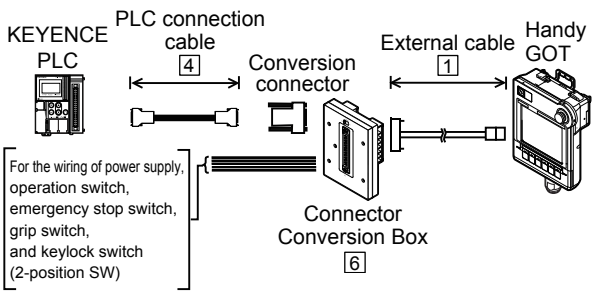
Switch No.	Settings	Description	
1	ON	ON	Terminating resistance selection
2	OFF	4-wire	2-wire or 4-wire selection
3	OFF	4-wire	2-wire or 4-wire selection
5	ON	RS control enabled	RS control selection for RD
6	ON	RS control enabled	RS control selection for SD

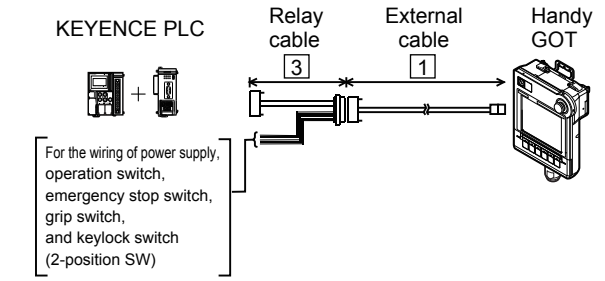
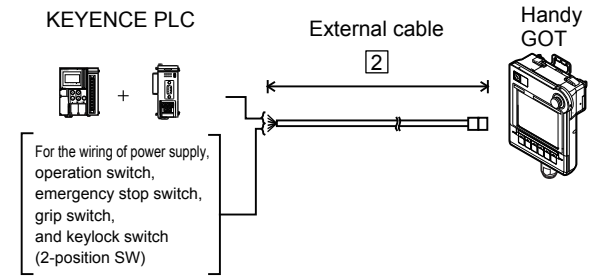
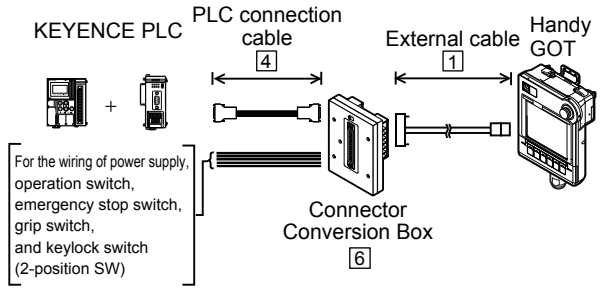
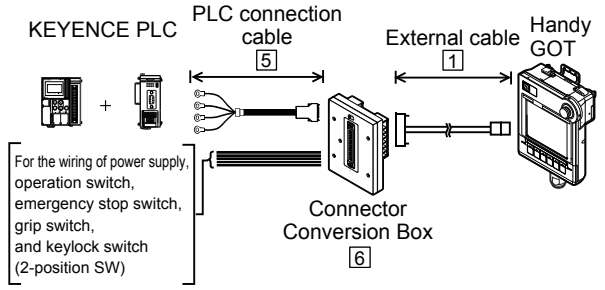
24. CONNECTION TO KEYENCE PLC

24.1 System Configuration and System Equipment

24.1.1 System configuration

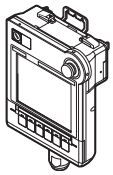
When connecting the Handy GOT to a KEYENCE PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "24.1.2 System equipment"

Connection conditions			System configuration
PLC	Communication	Distance	
KV-3000, KV-1000, KV-700	RS-232	6m or less	
			
			
			

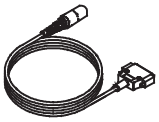
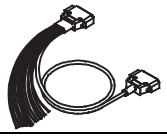
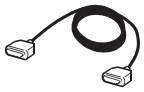
Connection conditions			System configuration
PLC	Communication	Distance	
KV-5500, KV-5000, KV-3000, KV-1000, KV-700	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			
			

24.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 24.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 24.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
KV-5500, KV-5000	Computer link	RS-232	Multi-communication unit	KV-L20V
		RS-422		
KV-3000	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	Multi-communication unit	KV-L20V
		RS-422		
KV-1000	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	Multi-communication unit	KV-L20R KV-L20V
		RS-422		
KV-700	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	Multi-communication unit	KV-L20 KV-L20R KV-L20V
		RS-422		

- The communication unit is manufactured by KEYENCE CORPORATION.
  For details of the communication unit, contact KEYENCE CORPORATION.

5 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
KV-5500, KV-5000, KV-3000, KV-1000, KV-700	1	1

24.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Model name			PLC connection cable*2	
			RS-232 cable	RS-422 cable
PLC CPU	KV-3000		Must be prepared by the user.	—
	KV-1000			—
	KV-700			—
Conversion connector	OP-26486*1		OP-26487 (2.5m)*1	—
Serial communication module	KV-L20V	Port 1	GT09-C30R21102-9S (3m)	—
		Port 2	GT09-C30R21103-3T (3m)	GT09-C30R41101-5T (3m) GT09-C100R41101-5T (10m)
	KV-L20R	Port 1	GT09-C30R21102-9S (3m)	—
		Port 2	GT09-C30R21103-3T (3m)	GT09-C30R41101-5T (3m) GT09-C100R41101-5T (10m)
	KV-L20	Port 1	GT09-C30R21102-9S (3m)	—
		Port 2	GT09-C30R21103-3T (3m)	GT09-C30R41101-5T (3m) GT09-C100R41101-5T (10m)

*1 OP-26486,OP-26487 are products manufactured by KEYENCE. For details of these products, contact KEYENCE.

*2 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

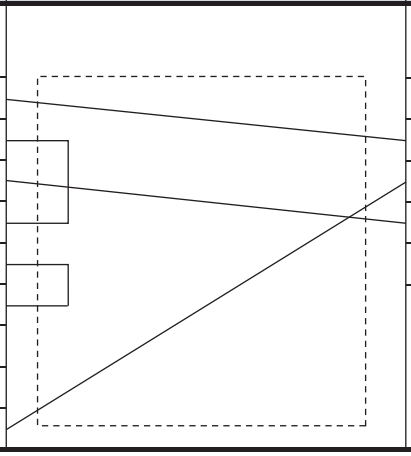
Model name			Connection cable	
			RS-232 cable	RS-422 cable
PLC CPU	KV-3000		RS-232 cable 1)	—
	KV-1000			—
	KV-700			—
Serial communication module	KV-L20V	Port 1	RS-232 cable 2)	—
		Port 2	RS-232 cable 3)	RS-422 cable
	KV-L20R	Port 1	RS-232 cable 2)	—
		Port 2	RS-232 cable 3)	RS-422 cable
	KV-L20	Port 1	RS-232 cable 2)	—
		Port 2	RS-232 cable 3)	RS-422 cable

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

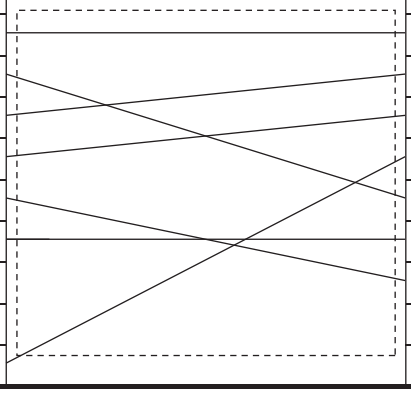
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	KEYENCE product side (Modular 6-pin)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	+5V
SD(TXD)	2	W/R (A)	3		2	+5V
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	SG
DR(DSR)	5	GY/BK (A)	6		5	SD
RS(RTS)	6	O/R (A)	7		6	SG
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

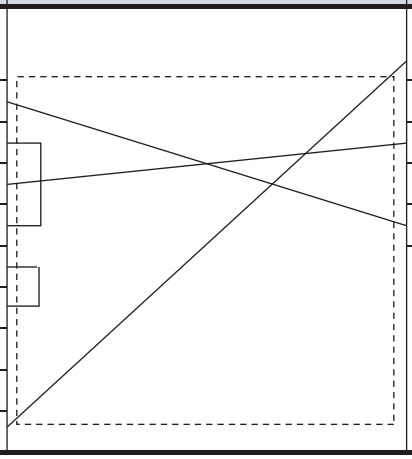
(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	KEYENCE product side (D-Sub 9-pin)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	CD
SD(TXD)	2	W/R (A)	3		2	RD
ER(DTR)	3	W/BK (A)	4		3	SD
RD(RXD)	4	GY/R (A)	2		4	ER
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DR
CS(CTS)	7	O/BK (A)	8		7	RS
—	8	Y/R (A)	—		8	CS
—	9	Y/BK (A)	—		9	—
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(3) RS-232 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	KEYENCE product side (Terminal block)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	SG
SD(TXD)	2	W/R (A)	3		2	—
ER(DTR)	3	W/BK (A)	4		3	SD
RD(RXD)	4	GY/R (A)	2		4	—
DR(DSR)	5	GY/BK (A)	6		5	RD
RS(RTS)	6	O/R (A)	7			
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

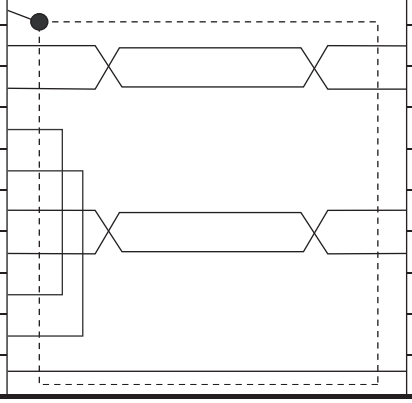
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	KEYENCE product side (Terminal block)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		4	RDB(+)
SDB	3	W/BK (A)	6		2	RDA(-)
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		—	—
RDA	6	O/R (A)	2		5	SDB(+)
RDB	7	O/BK (A)	7		3	SDA(-)
CSA	8	Y/R (A)	4		—	—
CSB	9	Y/BK (A)	9		—	—
SG	10	PK/R (A)	5		1	SG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

24.1.4 Precautions when preparing cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

24.2 PLC Side Setting

Point KEYENCE PLC

For details of KEYENCE PLC, refer to the following manual.

☞ User's Manual for the KEYENCE PLC

24.2.1 Connecting KV-3000, KV-1000

Setting items	Set value
Transmission speed	9600bps to 115200bps*1
Data length	8 bits
Parity bit	Even
Stop bit	1 bit

*1 There is no transmission speed setting on the PLC side. The transmission speed of the PLC side is automatically adjusted to that of the GOT side.

24.2.2 Connecting KV-700

Setting items	Set value
Transmission speed	9600bps
Data length	8 bits
Parity bit	Even
Stop bit	1 bit

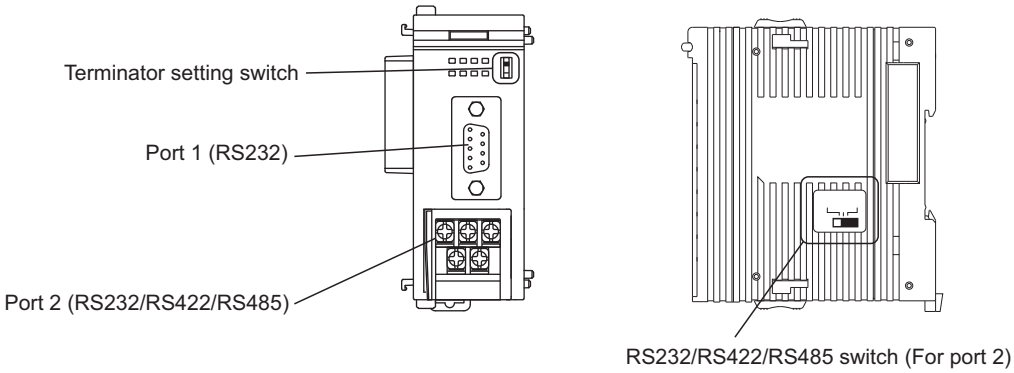
1 Communication settings

Setting items	Set value
Communication mode	KV mode (upper link)
Transmission speed*1*2	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data length	8 bits
Parity bit	Even
Stop bit	1 bit
Station No.*3	0 to 9

*1 Only the transmission speed that can be set on the GOT side is indicated.
*2 Set the transmission speed according to that of the GOT side
For the setting method of the transmission speed on the GOT side, refer to the following.
Section 9.2 Communication Detail Settings
*3 Set the station No. according to the host address on the GOT side.
For the setting method of the host address on the GOT side, refer to the following.
Section 9.2 Communication Detail Settings

2 DIP switch setting

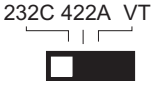
(1) When using KV-L20R or KV-L20



(a) RS232/RS422/RS485 switch (For port 2)
(When using KV-L20R)

Settings	
When carrying out RS-232 communication	When carrying out RS-422 communication
RS-232C	RS-422A 485(4)

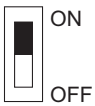
(When using KV-L20)



Settings	
When carrying out RS-232 communication	When carrying out RS-422 communication
RS-232C	RS-422A

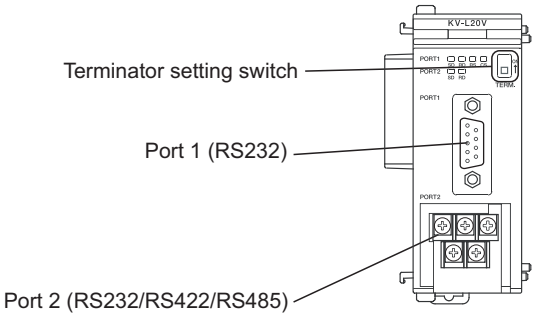
(b) Terminator setting switch

Set when carrying out RS-422 communication.



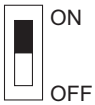
Settings	
When multi-communication unit is a terminal	When multi-communication unit is not a terminal
ON	OFF

(2) When using KV-L20V



(a) Terminator setting switch

Set when carrying out RS-422 communication.



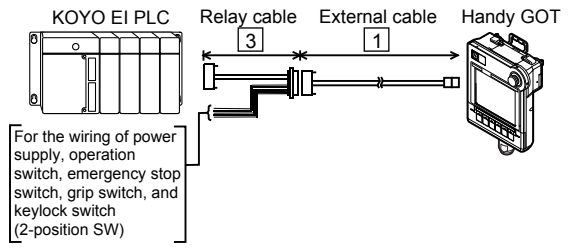
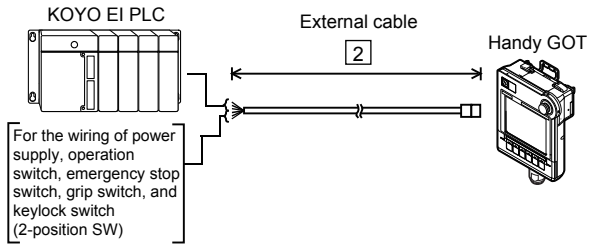
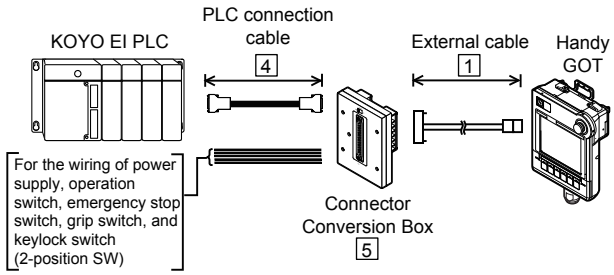
Settings	
When multi-communication unit is a terminal	When multi-communication unit is not a terminal
ON	OFF

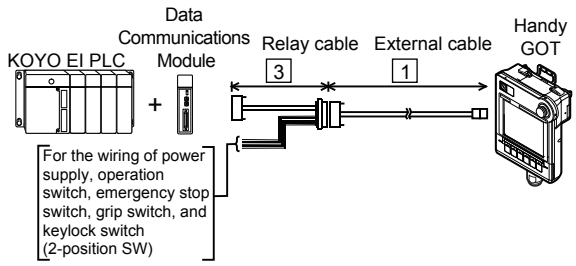
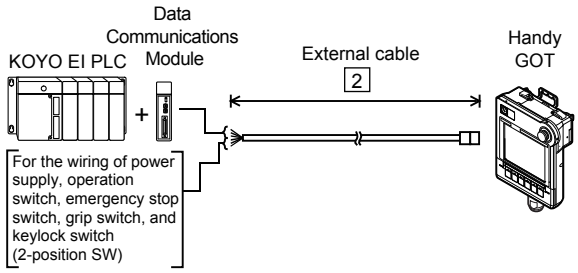
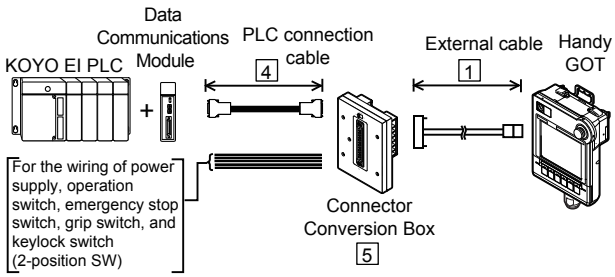
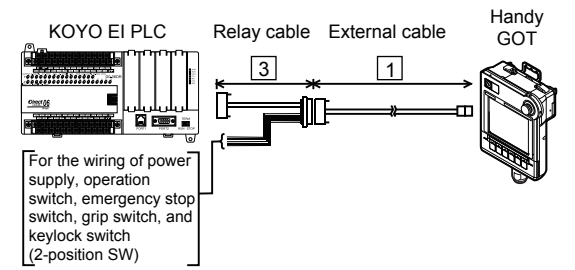
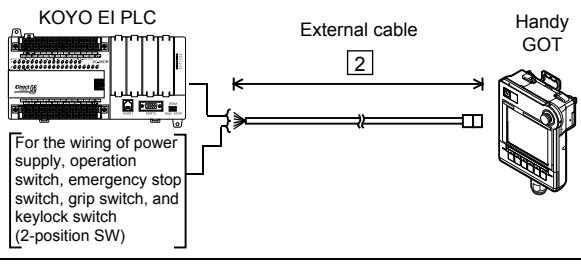
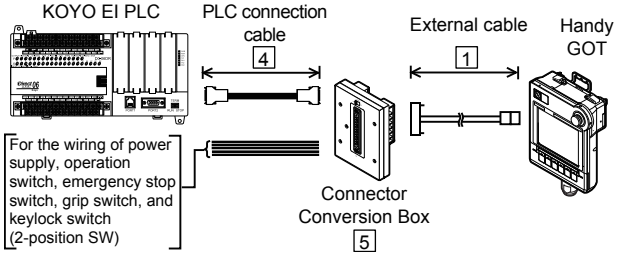
25. CONNECTION TO KOYO EI PLC

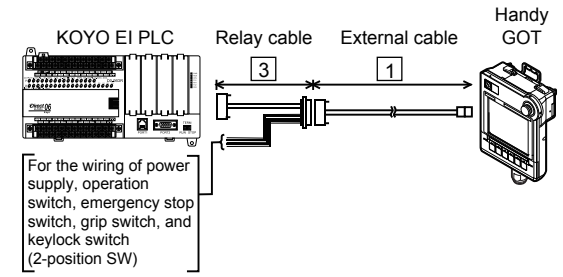
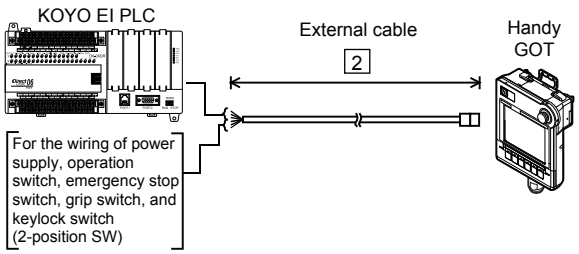
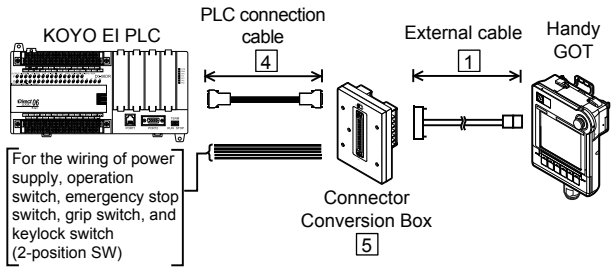
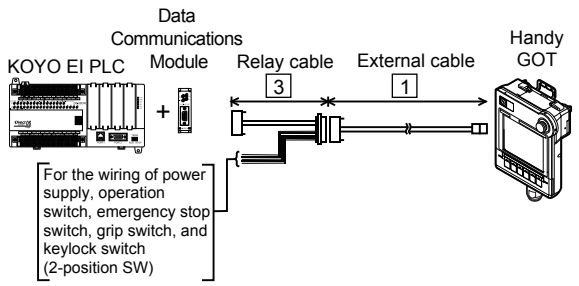
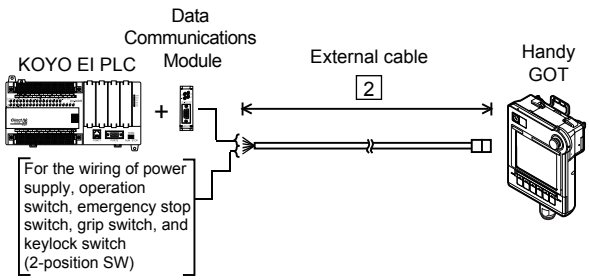
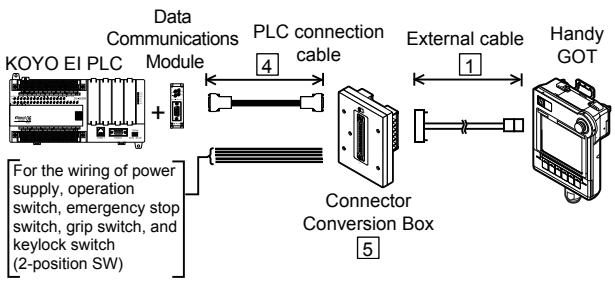
25.1 System Configuration and System Equipment

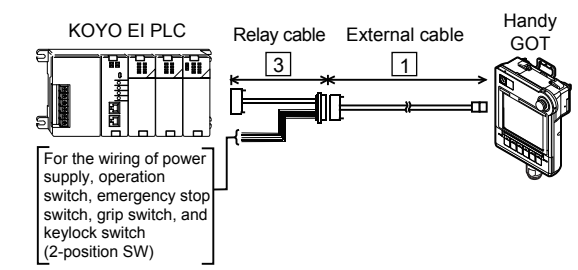
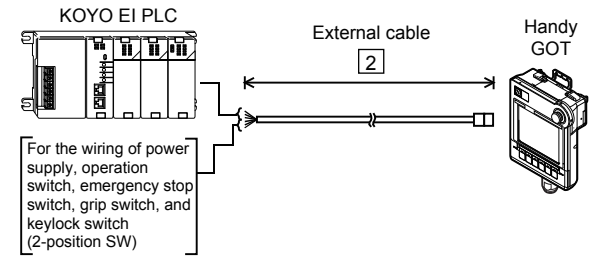
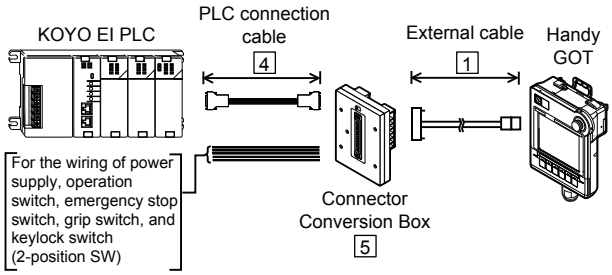
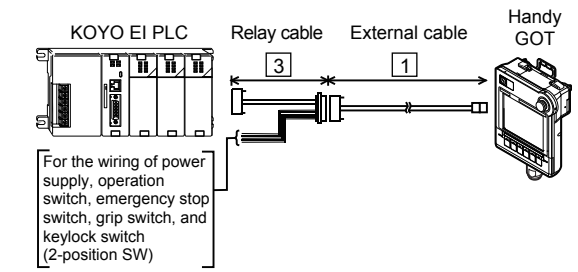
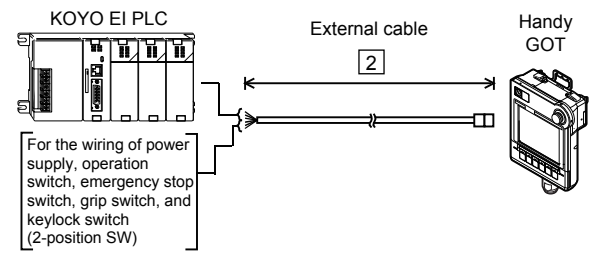
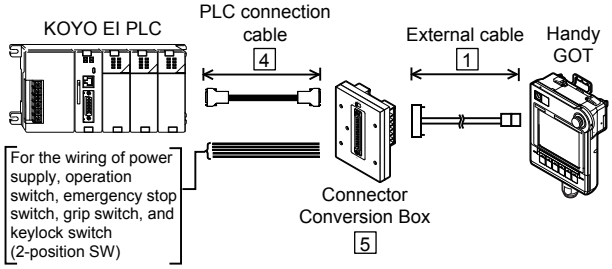
25.1.1 System configuration

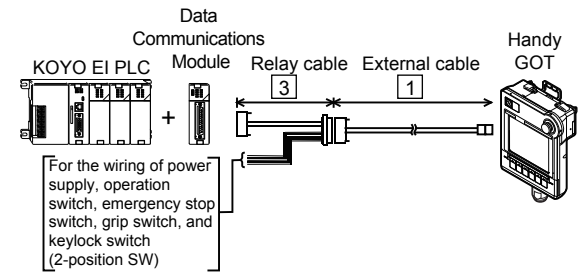
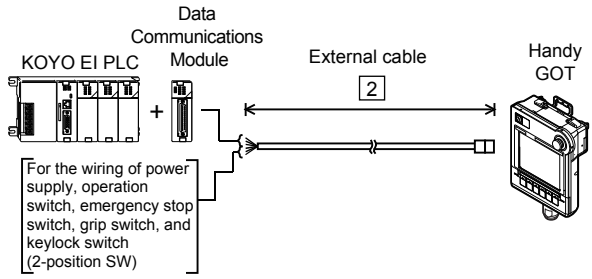
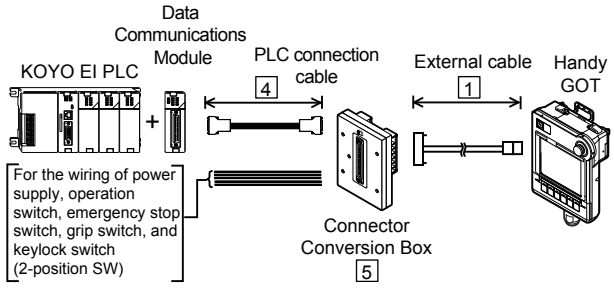
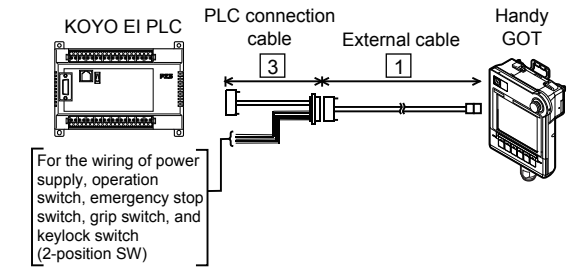
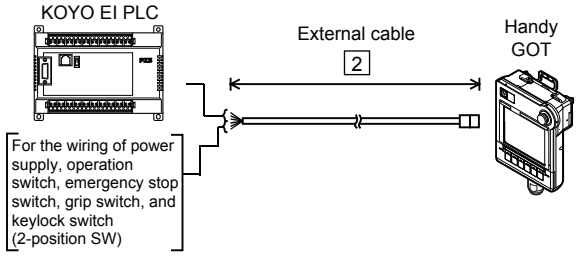
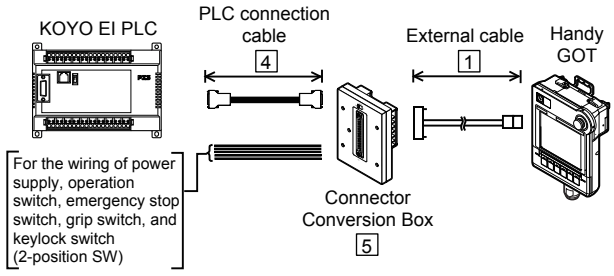
When connecting the Handy GOT to a KOYO EI PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "25.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
SU-5E/6B, SU-5M/6M	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
SU-5E/6B SU-5M/6M	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			
DL05/06	RS-232	6m or less (RS232)	
			
			

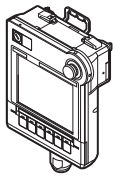
Connection conditions			System configuration
PLC	Communication	Distance	
DL06	RS-422	13m or less (RS422)	
			
			
DL05/06	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
D2-240	RS-232	6m or less (RS232)	
			
			
D2-250-1, D2-260	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

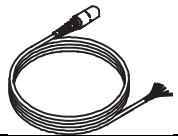
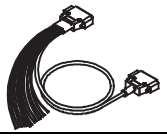
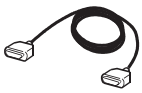
Connection conditions			System configuration
PLC	Communication	Distance	
D2-240, D2-250-1, D2-260	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			
PZ3	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

25.1.2 System equipment

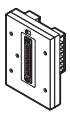
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 25.1.3 Connection cable	
PLC connection cable		4	Must be prepared by the user. ☞ Section 25.1.3 Connection cable	

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication port	Communication	Communication unit	
				Name	Model name
SU-5E/6B	Direct CPU connection	—	RS-232	—	—
			RS-422		
	Computer link	—	RS-232	Data Communications Module*1	U-01DM
			RS-422		
SU-5M/6M	Direct CPU connection	port1	RS-232	—	—
			RS-422		
		port2	RS-232		
		port3	RS-422		
	Computer link	—	RS-232	Data Communications Module*1	U-01DM
			RS-422		
DL05	Direct CPU connection	port1	RS-232	—	—
		port2			
	Computer link	port1	RS-232	Serial Data Communications Module*1	D0-DCM
		port2	RS-232		
			RS-422		
DL06	Direct CPU connection	port1	RS-232	—	—
		port2	RS-232		
			RS-422		
	Computer link	port1	RS-232	Serial Data Communications Module*1	D0-DCM
		port2	RS-232		
			RS-422		
D2-240	Direct CPU connection	port2	RS-232	—	—
	Computer link	—	RS-232	Data Communications Module*1	D2-DCM
			RS-422		
D2-250-1, D2-260	Direct CPU connection	port2	RS-232	—	—
			RS-422		
	Computer link	—	RS-232	Data Communications Module*1	D2-DCM
			RS-422		
PZ3	Direct CPU connection	port2	RS-232	—	—
			RS-422		

*1 The communication unit is manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.
For details of the communication unit, contact KOYO ELECTRONICS INDUSTRIES CO., LTD.

5 Number of connectable GOTs and PLCs

PLC	Communication	Number of GOTs	Number of PLCs
SU-5E/6B	RS-232	1	1
	RS-422		30*1
SU-5M/6M	RS-232		1
	RS-422		30*1
DL05/DL06	RS-232		1
	RS-422		30*1
D2-240, D2-250-1 D2-260	RS-232		1
	RS-422		30*1
PZ3	RS-232		1
	RS-422		30*1

*1 When connecting more than 30 PLCs, use a transmission line conversion unit (D-01CV) per 30 PLCs. For details of the transmission line conversion unit (D-01CV), refer to the following manual.

☞ User's Manual for the KOYO EI PLC

25.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C☐☐☐ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Model name			PLC connection cable*2	
			RS-232 cable	RS-422 cable
PLC CPU	SU-5E, SU-6B	general communication port	Must be prepared by the user.	Must be prepared by the user.
	SU-5M, SU-6M	general communication port 1		
		general communication port 2	Z-20JP + S-9CNS1*1	—
		general communication port 3	—	Must be prepared by the user.
	DL05	general communication port 1	Z-20JP + S-9CNS1*1	—
		general communication port 2		
	DL06	communication port 1		—
		communication port 2	Must be prepared by the user.	Must be prepared by the user.
	D2-240	communication port 2	Z-20JP + S-9CNS1*1	—
	D2-250-1, D2-260	communication port 2	Must be prepared by the user.	Must be prepared by the user.
	PZ3	communication port 2		
Data Communications Module	U-01DM		Must be prepared by the user.	Must be prepared by the user.
	D2-DCM			
Serial Data Communications Module	D0-DCM	port 1	Z-20JP + S-9CNS1*1	—
		port 2	Must be prepared by the user.	Must be prepared by the user.

*1 Z-20JP (programmer connection cable) and S-9CNS1 (conversion connector) are manufactured by KOYO ELECTRONICS INDUSTRIES CO., LTD.
For these products, contact KOYO ELECTRONICS INDUSTRIES CO., LTD.

*2 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

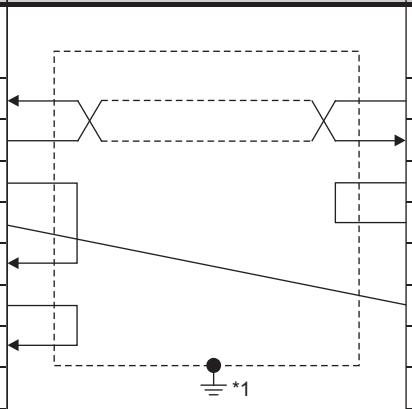
<table>
<tr><th colspan="3" rowspan="2">Model name</th><th colspan="2">Connection cable</th></tr>
<tr><th>RS-232 cable</th><th>RS-422 cable</th></tr>
<tr><td rowspan="6">PLC CPU</td><td>SU-5E, SU-6B</td><td>general communication port</td><td rowspan="2">RS-232 cable 1)</td><td rowspan="2">RS-422 cable 1)
RS-422 cable 5)</td></tr>
<tr><td rowspan="2">SU-5M, SU-6M</td><td>general communication port 1</td></tr>
<tr><td>general communication port 3</td><td>—</td><td>RS-422 cable 2)
RS-422 cable 6)</td></tr>
<tr><td>DL06</td><td>communication port 2</td><td>RS-232 cable 3)</td><td>RS-422 cable 4)
RS-422 cable 8)</td></tr>
<tr><td>D2-250-1, D2-260</td><td>communication port 2</td><td rowspan="2">RS-232 cable 3)</td><td rowspan="2">RS-422 cable 4)
RS-422 cable 8)</td></tr>
<tr><td>PZ3</td><td>communication port 2</td></tr>
<tr><td rowspan="2">Data Communications Module</td><td colspan="2">U-01DM</td><td rowspan="2">RS-232 cable 1)</td><td>RS-422 cable 3)
RS-422 cable 7)</td></tr>
<tr><td colspan="2">D2-DCM</td><td rowspan="2">RS-422 cable 4)
RS-422 cable 8)</td></tr>
<tr><td>Serial Data Communications Module</td><td>D0-DCM</td><td>port 2</td><td>RS-232 cable 3)</td></tr>
</table>

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

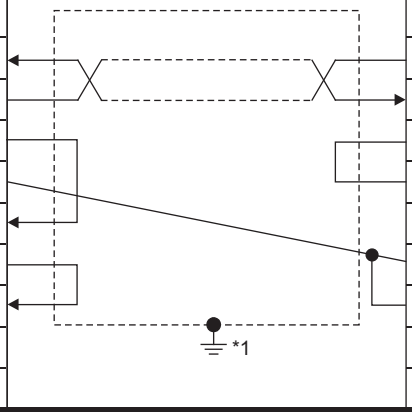
Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	—
RD(RXD)	4	W/R (A)	2		2	TXD
SD(TXD)	2	W/BK (A)	3		3	RXD
ER(DTR)	3	GY/R (A)	4		4	RTS
SG	10	GY/BK (A)	5		5	CTS
DR(DSR)	5	O/R (A)	6		6	—*2
RS(RTS)	6	O/BK (A)	7		7	0V
CS(CTS)	7	Y/R (A)	8		8 to 25	—
—	8	Y/BK (A)	—			
—	9	PK/R (A)	—			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.
*2 For U-01DM and D2-DC, it will be +5V.

(2) RS-232 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	5V
RD(RXD)	4	W/R (A)	2		2	TXD
SD(TXD)	2	W/BK (A)	3		3	RXD
ER(DTR)	3	GY/R (A)	4		4	RTS
SG	10	GY/BK (A)	5		5	CTS
DR(DSR)	5	O/R (A)	6		6	—
RS(RTS)	6	O/BK (A)	7		7	0V
CS(CTS)	7	Y/R (A)	8		8	0V
—	8	Y/BK (A)	—		9 to 15	—
—	9	PK/R (A)	—			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

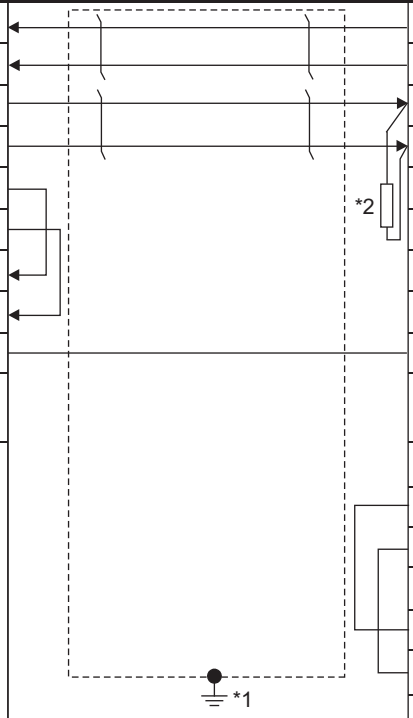
4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
RDA	6	O/R (A)	2		14	+TXD
RDB	7	O/BK (A)	7		16	-TXD
SDA	2	W/R (A)	1		9	+RXD
SDB	3	W/BK (A)	6		10	-RXD
RSA	4	GY/R (A)	3		1 to 6	—
RSB	5	GY/BK (A)	8		8	—
CSA	8	Y/R (A)	4		12	—
CSB	9	Y/BK (A)	9		13	—
SG	10	PK/R (A)	5		7	SG
FG (Shield)	1	(Shield)	—		15	—
					17	—
					18	-RTS
					19	+RTS
					20 to 22	—
					23	-CTS
					11	+CTS
					24,25	—



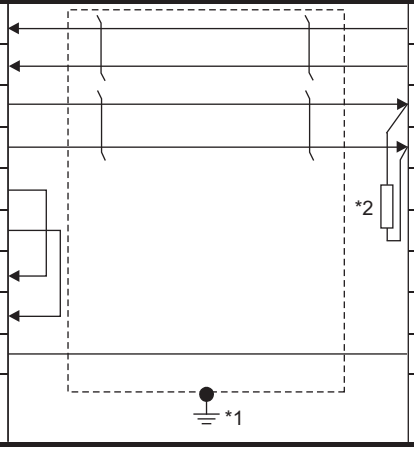
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.

(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
RDA	6	O/R (A)	2		12	+TXD3
RDB	7	O/BK (A)	7		13	-TXD3
SDA	2	W/R (A)	1		24	+RXD3
SDB	3	W/BK (A)	6		25	-RXD3
RSA	4	GY/R (A)	3		1 to 6	—
RSB	5	GY/BK (A)	8		8 to 11	—
CSA	8	Y/R (A)	4		14 to 23	—
CSB	9	Y/BK (A)	9		—	—
SG	10	PK/R (A)	5		7	SG
FG (Shield)	1	(Shield)	—			

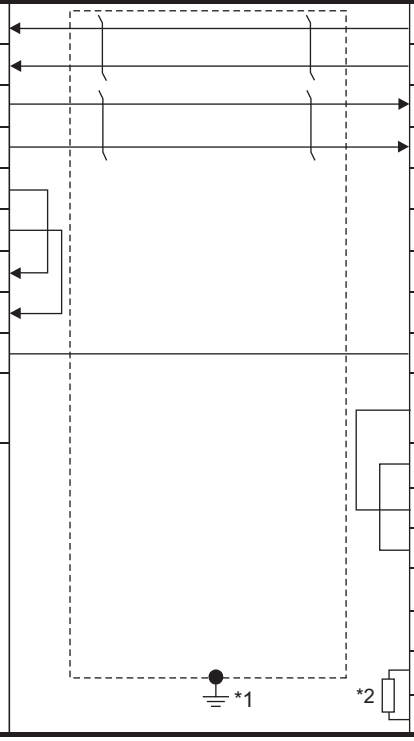
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.

(3) RS-422 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
RDA	6	O/R (A)	2		14	+TXD
RDB	7	O/BK (A)	7		15	-TXD
SDA	2	W/R (A)	1		17	+RXD
SDB	3	W/BK (A)	6		16	-RXD
RSA	4	GY/R (A)	3		1 to 6	—
RSB	5	GY/BK (A)	8		8	+RTS
CSA	8	Y/R (A)	4		9	-RTS
CSB	9	Y/BK (A)	9		18 to 21	—
SG	10	PK/R (A)	5		7	SG
FG (Shield)	1	(Shield)	—		10	+RTS
					11	-RTS
					12	+CTS
					13	-CTS
					22	+TXD
					23	-TXD
					24	-RXD
					25	+RXD

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.

(4) RS-422 cable 4)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
RDA	6	O/R (A)	2		9	+TXD3
RDB	7	O/BK (A)	7		10	-TXD3
SDA	2	W/R (A)	1		13	+RXD3
SDB	3	W/BK (A)	6		6	-RXD3
RSA	4	GY/R (A)	3	*2	1	—
RSB	5	GY/BK (A)	8		2 to 5	—
CSA	8	Y/R (A)	4		—	—
CSB	9	Y/BK (A)	9		8	—
SG	10	PK/R (A)	5		7	SG
FG (Shield)	1	(Shield)	—		11	+RTS
					12	-RTS
					14	+CTS
				*1	15	-CTS

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately 100 to 500Ω) to the PLC to be a terminal.

(5) RS-422 cable 5)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	KOYO EI product side		KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name	Pin No.	Signal name
RDA	6	O/R (A)	2	14	+TXD	14	+TXD
RDB	7	O/BK (A)	7	16	-TXD	16	-TXD
SDA	2	W/R (A)	1	9	+RXD	9	+RXD
SDB	3	W/BK (A)	6	10	-RXD	10	-RXD
RSA	4	GY/R (A)	3	1 to 6	–	1 to 6	–
RSB	5	GY/BK (A)	8	8	–	8	–
CSA	8	Y/R (A)	4	12	–	12	–
CSB	9	Y/BK (A)	9	13	–	13	–
SG	10	PK/R (A)	5	7	SG	7	SG
FG (Shield)	1	(Shield)	—	15	–	15	–
				17	–	17	–
				18	-RTS	18	-RTS
				19	+RTS	19	+RTS
				20 to 22	–	20 to 22	–
				23	-CTS	23	-CTS
				11	+CTS	11	+CTS
				24, 25	–	24, 25	–

*1 *1 *2

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.

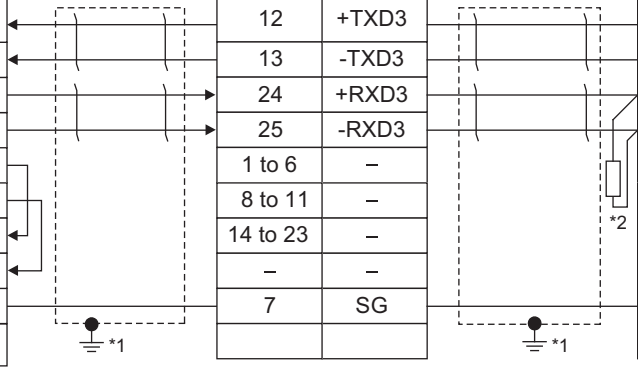
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.

For the connection method in the case that the number of links exceeds 30, refer to the following manual.

User's Manual for the KOYO EI PLC

(6) RS-422 cable 6)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	KOYO EI product side		KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name	Pin No.	Signal name
RDA	6	O/R (A)	2	12	+TXD3	12	+TXD3
RDB	7	O/BK (A)	7	13	-TXD3	13	-TXD3
SDA	2	W/R (A)	1	24	+RXD3	24	+RXD3
SDB	3	W/BK (A)	6	25	-RXD3	25	-RXD3
RSA	4	GY/R (A)	3	1 to 6	–	1 to 6	–
RSB	5	GY/BK (A)	8	8 to 11	–	8 to 11	–
CSA	8	Y/R (A)	4	14 to 23	–	14 to 23	–
CSB	9	Y/BK (A)	9	–	–	–	–
SG	10	PK/R (A)	5	7	SG	7	SG
FG (Shield)	1	(Shield)	–				



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.

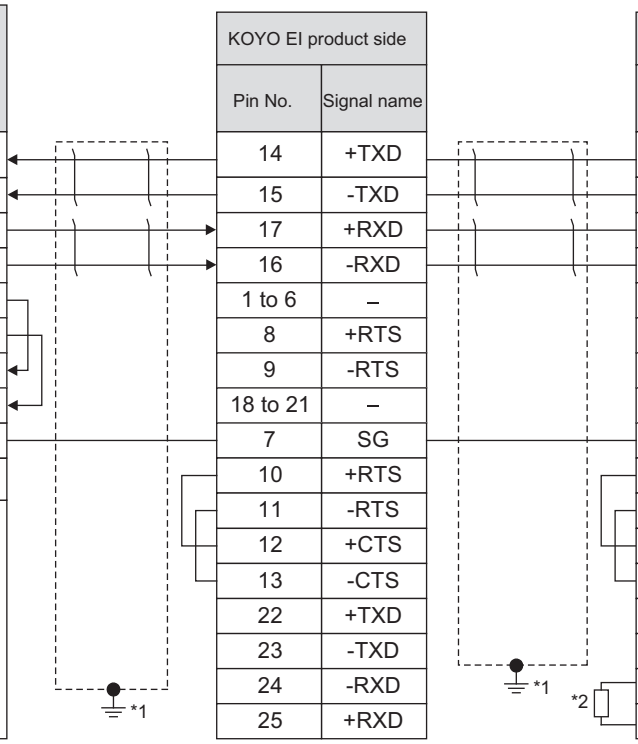
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.

For the connection method in the case that the number of links exceeds 30, refer to the following manual.

User's Manual for the KOYO EI PLC

(7) RS-422 cable 7)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	KOYO EI product side		KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name	Pin No.	Signal name
RDA	6	O/R (A)	2	14	+TXD	14	+TXD
RDB	7	O/BK (A)	7	15	-TXD	15	-TXD
SDA	2	W/R (A)	1	17	+RXD	17	+RXD
SDB	3	W/BK (A)	6	16	-RXD	16	-RXD
RSA	4	GY/R (A)	3	1 to 6	–	1 to 6	–
RSB	5	GY/BK (A)	8	8	+RTS	8	+RTS
CSA	8	Y/R (A)	4	9	-RTS	9	-RTS
CSB	9	Y/BK (A)	9	18 to 21	–	18 to 21	–
SG	10	PK/R (A)	5	7	SG	7	SG
FG (Shield)	1	(Shield)	–	10	+RTS	10	+RTS
				11	-RTS	11	-RTS
				12	+CTS	12	+CTS
				13	-CTS	13	-CTS
				22	+TXD	22	+TXD
				23	-TXD	23	-TXD
				24	-RXD	24	-RXD
				25	+RXD	25	+RXD



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.

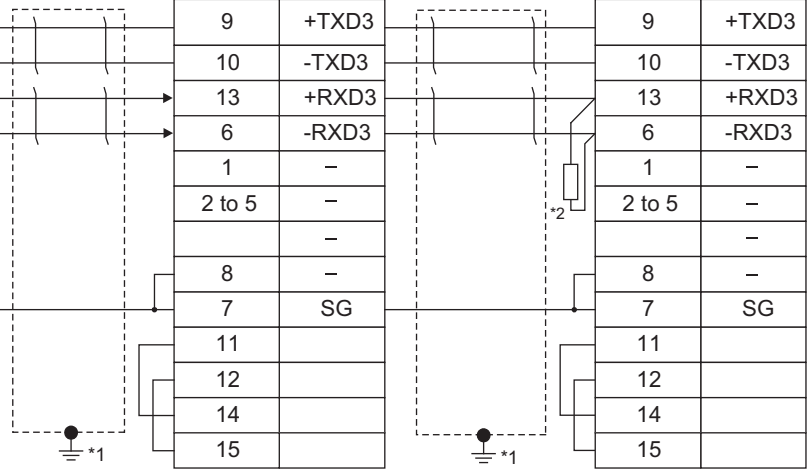
When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.

For the connection method in the case that the number of links exceeds 30, refer to the following manual.

User's Manual for the KOYO EI PLC

(8) RS-422 cable 8)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	KOYO EI product side		KOYO EI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name	Pin No.	Signal name
RDA	6	O/R (A)	2	9	+TXD3	9	+TXD3
RDB	7	O/BK (A)	7	10	-TXD3	10	-TXD3
SDA	2	W/R (A)	1	13	+RXD3	13	+RXD3
SDB	3	W/BK (A)	6	6	-RXD3	6	-RXD3
RSA	4	GY/R (A)	3	1	–	1	–
RSB	5	GY/BK (A)	8	2 to 5	–	2 to 5	–
CSA	8	Y/R (A)	4		–		–
CSB	9	Y/BK (A)	9	8	–	8	–
SG	10	PK/R (A)	5	7	SG	7	SG
FG (Shield)	1	(Shield)	—	11		11	
				12		12	
				14		14	
				15		15	



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 Connect a terminating resistor (approximately150Ω) to the PLC to be a terminal.

When the number of links exceeds 30, use a transmission line conversion unit D-01CV per 30 links.

For the connection method in the case that the number of links exceeds 30, refer to the following manual.

User's Manual for the KOYO EI PLC

25.1.4 Precautions when preparing cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

25.2 PLC Side Setting

Point

KOYO EI PLC

For details of KOYO EI PLCs, refer to the following manuals.

☞ Manuals for KOYO EI PLCs

25.2.1 Connecting to SU-5E/6B

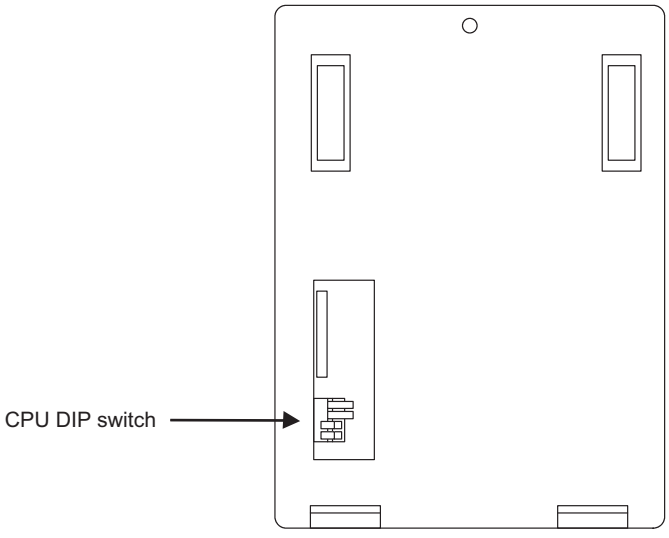
1 Communication settings

Make the following settings using the programmer system parameter setting.

Item	Setting
Station No.	1 to 90
Transmission mode	HEX
Parity	NONE, ODD
Data length	8 bit (Fixation)
Stop bit	1 bit (Fixation)

2 Setting DIP switches

Set the transmission speed using the CPU DIP switch.



Item	Setting	Switch No.	
		3	4
Transmission speed*1	9600bps	ON	OFF
	19200bps	ON	ON

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Section 9.2 Communication Detail Settings

25.2.2 Connecting to SU-5M/6M

1 Communication settings

Make the following settings using the programmer system parameter setting.

Item	Setting
Protocol	CCM
Response delay time	0ms
Timeout Time	800ms/960ms/1200ms/1600ms/4000ms/8000ms/16000ms/40000ms
Station No.	1 to 90
Transmission mode	HEX
Stop bit	1 bit, 2 bit
Data length	8 bit (Fixation)
Parity	NONE, ODD, EVEN
Transmission speed*1	9600bps, 19200bps, 38400bps

*1 Set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Section 9.2 Communication Detail Settings

25.2.3 Connecting to DL05/DL06

1 Communication settings

Make the following settings using the programmer system parameter setting.

Item	Setting
Protocol	CCM NET (DirectNET)
Timeout	780ms or more
RTS On Delay Time	0ms*1
RTS Off Delay Time	0ms*1
Station No.	1 to 90
Transmission speed*2	9600bps, 19200bps, 38400bps
Stop bit	1 bit, 2 bit
Parity	NONE, ODD, EVEN
Communication format	HEX

*1 To use a PLC with multidrop, set the "RTS on delay time" to 5ms or more and the "RTS off delay time" to 2ms or more.

*2 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Section 9.2 Communication Detail Settings

25.2.4 Connecting to DL205 Series

1 Communication settings

Make the following settings using the programmer system parameter setting.

Item	Setting
Protocol	CCM NET (DirectNET)
Station No.	1 to 90
Transmission speed*1	9600bps, 19200bps, 38400bps
Data length	8 bit (Fixation)
Stop bit	1 bit (Fixation)
Parity	NONE, ODD
Self-diagnostic mode	OFF
Response delay time	0ms
Peer to Peer	OFF
Master/Slave	Slave
Timeout	Enable
Transmission mode	HEX
MODBUS	OFF

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Section 9.2 Communication Detail Settings

25.2.5 Connecting to PZ3

1 Communication settings

Make the following settings using the programmer system parameter setting.

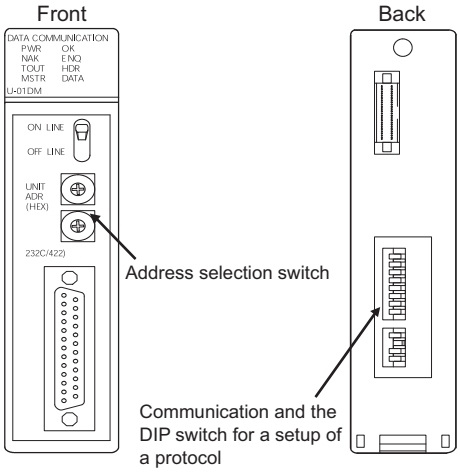
Item	Setting
Protocol	CCM NET
Timeout	800ms/960ms/1200ms/1600ms/4000ms/8000ms/16000ms/40000ms
Response delay time	0ms
Station No.	1 to 90
Communication format	HEX
Transmission speed*1	9600bps, 19200bps, 38400bps
Stop bit	1 bit
Parity	NONE, ODD

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

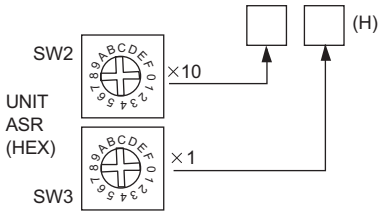
☞ Section 9.2 Communication Detail Settings

1 Setting switches

Make the communication settings using each setting switch.

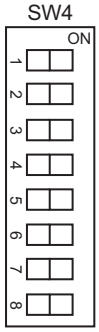


(1) Address selection switch (SW2, SW3)



Switch No.	Setting	Setting details
SW2	Code higher rank (10^1 figures)	01 to 5A
SW3	Code low rank (10^0 figures)	

(2) Communication and the DIP switch for a setup of a protocol (SW4)

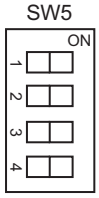


Switch No.	Setting	Switch No.							
		1	2	3	4	5	6	7	8
Transmission speed*1	9600bps	OFF	ON	ON					
	19200bps	ON	ON	ON					
	38400bps	OFF	OFF	OFF					
Parity	ODD				ON				
	NONE				OFF				
Self check	OFF					OFF			
Response delay time	0ms						OFF	OFF	OFF

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

Section 9.2 Communication Detail Settings

(3) Communication and the DIP switch for a setup of a protocol (SW5)



Switch No.	Setting	Switch No.			
		1	2	3	4
Peer to Peer	OFF	OFF			
M/S	Slave		OFF		
TOUT existence	Enable			OFF	
ASCII/HEX	HEX				OFF

25.2.7 Connecting to D0-DCM

1 Communication settings

Write the following communication settings to the specified register using the programmer.
For details on the register, refer to the following manual.

☞ User's Manual for the KOYO EI PLC.

Item	Setting
Transmission mode	HEX
Protocol	DirectNET
Station No.	1 to 90
Transmission speed*1	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Parity	NONE, ODD, EVEN (Only communication port 2)
RTS On Delay Time (Only communication port 2)	0ms
RTS Off Delay Time (Only communication port 2)	0ms
Timeout (Only communication port 2)	800ms/960ms/1200ms/1600ms/4000ms/8000ms/16000ms/40000ms
485 mode selection (Only communication port 2)	RS232, RS422/485 4 line type
Data bit (Only communication port 2)	8bit, 7bit
Stop bit (Only communication port 2)	1bit, 2bit
The timeout between characters (Only communication port 2)	0 to 9999ms
The completion of a setting	Default use, A preset value is effective
Reset timeout	Invalid, Effective

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Section 9.2 Communication Detail Settings

25.2.8 Connecting to D2-DCM

1 Communication settings

Make the following settings using the programmer.

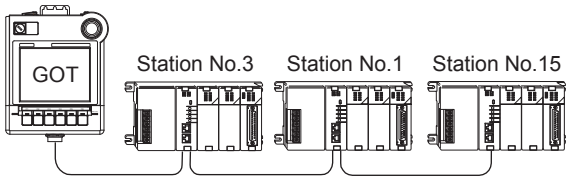
Item	Setting
Station No.	1 to 90
Transmission speed*1	9600bps, 19200bps, 38400bps
Data length	8 bit (Fixation)
Stop bit	1 bit (Fixation)
Parity	NONE, ODD
Self-diagnostic mode	OFF
Response delay time	0ms
Peer to Peer	OFF
Master/Slave	Slave
Timeout	Enable
Transmission mode	HEX
MODBUS	OFF

*1 Indicates only the transmission speeds that can be set on the GOT side.
Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Section 9.2 Communication Detail Settings

25.2.9 Station No. settings

Set each station number so that no station number overlaps.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



The example of a Station No. setting

1 Direct specification

Specify the station No. of the PLC to be changed when setting device.

Specification range
1 to 90

25.3 Precautions

1 GOT clock control

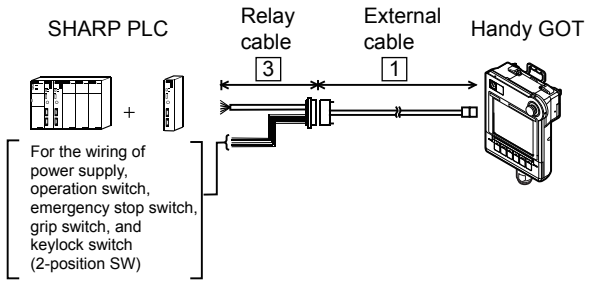
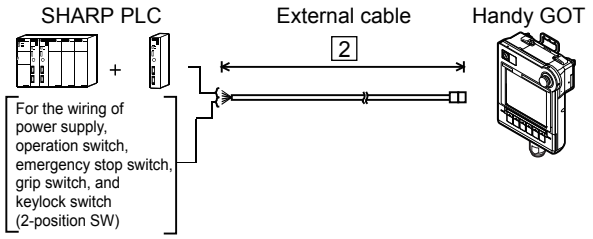
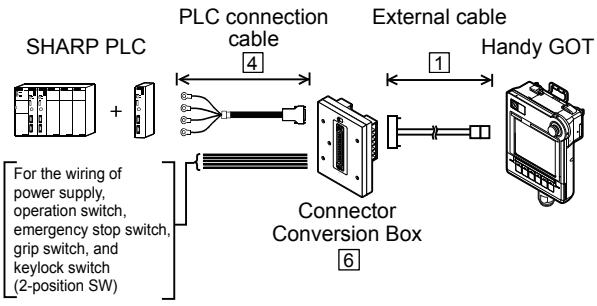
The GOT clock function is available only for the PLC with a calendar function.
Note: Although the "time adjusting" and "time broadcast" functions can be selected on the GOT, the "time broadcast" function is not available. Do not select the "time broadcast" function. If both of the functions are selected, not only the "time broadcast" function but also the "time adjusting" function will be disabled.

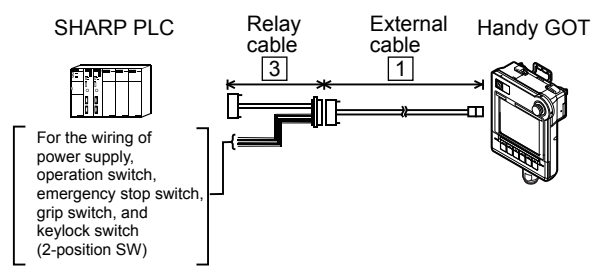
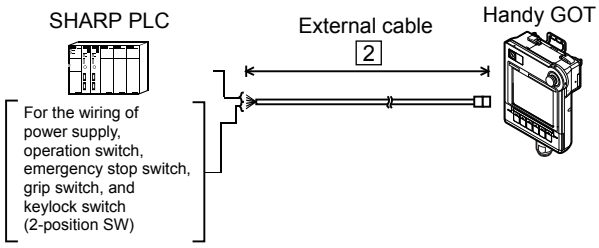
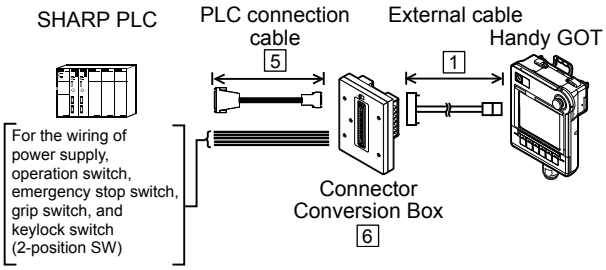
26. CONNECTION TO SHARP MANUFACTURING SYSTEMS PLC

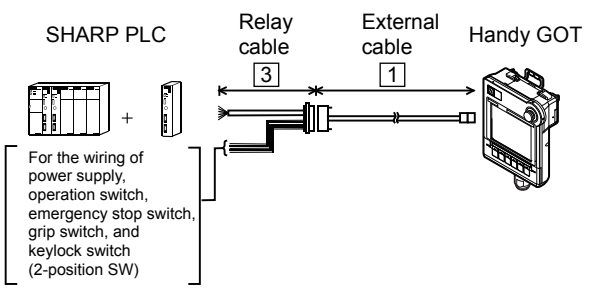
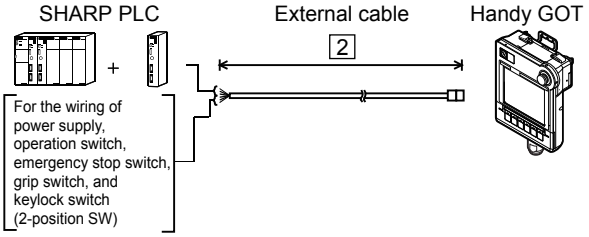
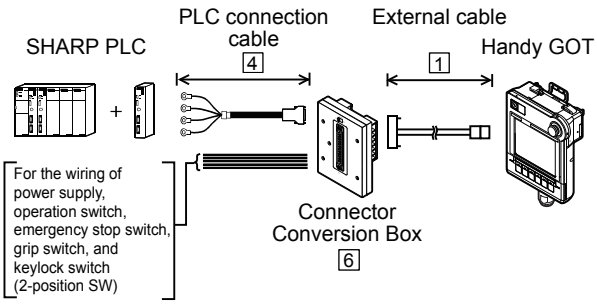
26.1 System Configuration and System Equipment

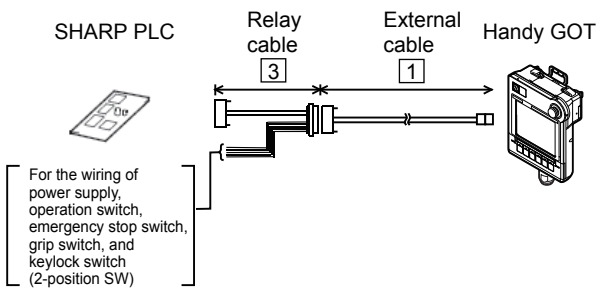
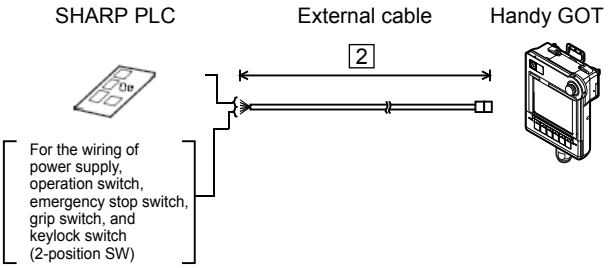
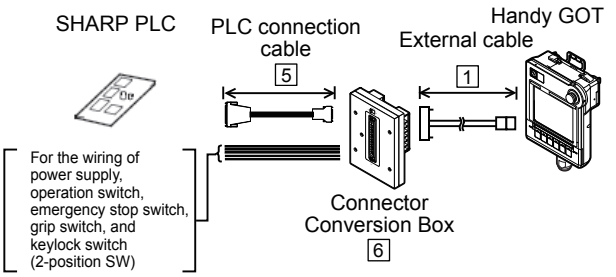
26.1.1 System configuration

When connecting the Handy GOT to a SHARP PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "26.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
JW-21CU, JW-31CUH, JW-50CUH	RS-422	13m or less	
			
			

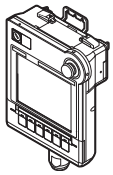
Connection conditions			System configuration
PLC	Communication	Distance	
JW-22CU, JW-32CUH, JW-33CUH, JW-70CUH, JW-100CUH, JW-100CU	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	  

Connection conditions			System configuration
PLC	Communication	Distance	
JW-22CU, JW-32CUH, JW-33CUH, JW-70CUH, JW-100CUH, JW-100CU	RS-422	13m or less	  

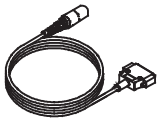
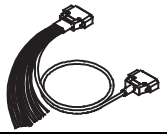
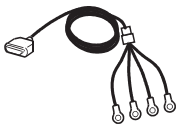
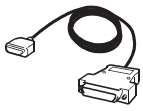
Connection conditions			System configuration
PLC	Communication	Distance	
Z-512J	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

26.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 26.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 26.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
JW-21CU	Computer link	RS-422	Link unit	JW-21CM
JW-22CU	Direct CPU connection	RS-232	—	—
	Direct CPU connection	RS-422	—	—
	Computer link	RS-422	Link unit	JW-21CM
JW-31CUH	Computer link	RS-422	Link unit	JW-21CM *1
JW-32CUH JW-33CUH	Direct CPU connection	RS-232	—	—
	Direct CPU connection	RS-422	—	—
	Computer link	RS-422	Link unit	JW-21CM *1
JW-50CUH	Computer link	RS-422	Link unit	JW-10CM, ZW-10CM
JW-70CUH JW-100CUH JW-100CU	Direct CPU connection	RS-232	—	—
	Direct CPU connection	RS-422	—	—
	Computer link	RS-422	Link unit	JW-10CM, ZW-10CM
Z-512J	Direct CPU connection	RS-232	—	—
	Direct CPU connection	RS-422	—	—

*1 Use the link unit of a product compatible with JW-31CUH, JW-32CUH and JW-33CUH.

- The link unit is manufactured by SHARP Corporation.
  For details of the link unit, contact SHARP Corporation.

5 Number of connectable GOTs and PLCs

PLC		Number of GOTs	Number of PLCs
JW-21CU, JW-31CUH, JW-33CUH, JW-70CUH, JW-100CU,	JW-22CU, JW-32CUH, JW-50CUH, JW-100CUH, Z-512J	1	1

26.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Communication unit			PLC connection cable*1	
Name	Model name		RS-232 cable	RS-422 cable
PLC CPU	JW-22CU		GT09-C30R20601-15P (3m)	GT09-C30R40601-15P (3m) GT09-C100R40601-15P (10m)
	JW-32CUH, JW-33CUH	For PG/COMM1 port connection	—	GT09-C30R40602-15P (3m) GT09-C100R40602-15P (10m)
		For PG/COMM2 port connection	GT09-C30R20602-15P (3m)	
	JW-70CUH, JW-100CUH, JW-100CU		GT09-C30R20601-15P (3m)	GT09-C30R40601-15P (3m) GT09-C100R40601-15P (10m)
	Z-512J	For PG/COMM1 port connection	—	GT09-C30R40602-15P (3m) GT09-C100R40602-15P (10m)
		For PG/COMM2 port connection	GT09-C30R20602-15P (3m)	
Link unit	JW-21CM		—	GT09-C30R40603-6T (3m) GT09-C100R40603-6T (10m)
	JW-10CM, ZW-10CM		—	

*1 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

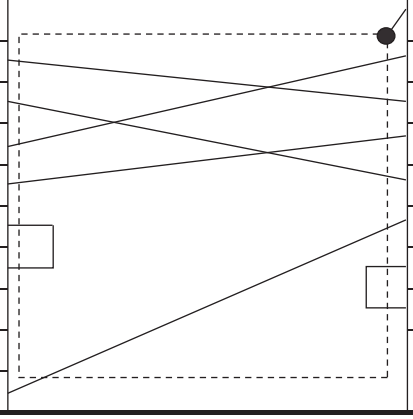
Communication unit			Connection cable	
Name	Model name		RS-232 cable	RS-422 cable
PLC CPU	JW-22CU		RS-232 cable 1)	RS-422 cable 1)
	JW-32CUH, JW-33CUH	For PG/COMM1 port connection	—	RS-422 cable 2)
		For PG/COMM2 port connection	RS-232 cable 2)	
	JW-70CUH, JW-100CUH, JW-100CU		RS-232 cable 1)	RS-422 cable 1)
	Z-512J	For PG/COMM1 port connection	—	RS-422 cable 2)
		For PG/COMM2 port connection	RS-232 cable 2)	
Link unit	JW-21CM		—	RS-422 cable 3)
	JW-10CM, ZW-10CM		—	

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

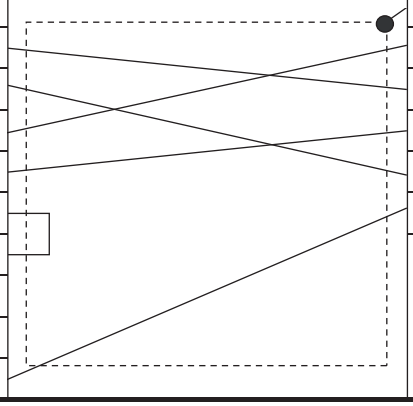
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	SHARP MANUFACTURING SYSTEMS product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	RTS
DR(DSR)	5	GY/BK (A)	6		5	CTS
RS(RTS)	6	O/R (A)	7		7	SG
CS(CTS)	7	O/BK (A)	8		12	—
—	8	Y/R (A)	—		14	—
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	SHARP MANUFACTURING SYSTEMS product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		4	RD
RD(RXD)	4	GY/R (A)	2		8	RTS
DR(DSR)	5	GY/BK (A)	6		12	CTS
RS(RTS)	6	O/R (A)	7		7	SG
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

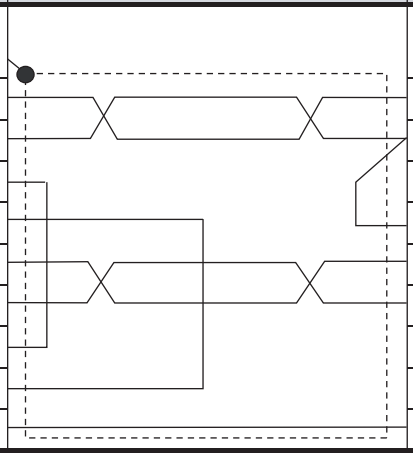
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable 1)

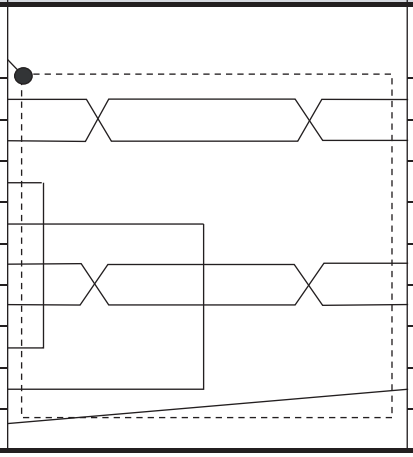
Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	SHARP MANUFACTURING SYSTEMS product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		12	RXD(RD(+))
SDB	3	W/BK (A)	6		13	$\overline{\text{RXD}}$(RD(-))
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		6	Terminating resistor*1
RDA	6	O/R (A)	2		10	TXD(SD(+))
RDB	7	O/BK (A)	7		11	$\overline{\text{TXD}}$(SD(-))
CSA	8	Y/R (A)	4		—	—
CSB	9	Y/BK (A)	9		—	—
SG	10	PK/R (A)	5		7	SG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 For the terminating resistor of No.6 pin, connect only the terminating station to No.13 pin ($\overline{\text{RXD}}$).
(Applicable to JW-70CUH and JW-100UH. The terminating resistor does not exist in JW-22CU and JW-100CU.)

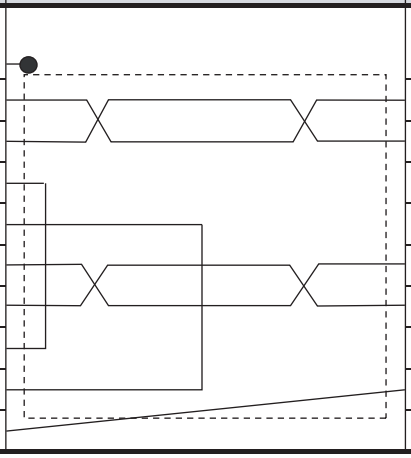
(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	SHARP MANUFACTURING SYSTEMS product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		9	RD(+)
SDB	3	W/BK (A)	6		10	RD(-)
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		—	
RDA	6	O/R (A)	2		3	SD(+)
RDB	7	O/BK (A)	7		11	SD(-)
CSA	8	Y/R (A)	4		—	—
CSB	9	Y/BK (A)	9		6	SG
SG	10	PK/R (A)	5		7	SG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(3) RS-422 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	SHARP MANUFACTURING SYSTEMS product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		L3	RD(+)
SDB	3	W/BK (A)	6		L4	RD(-)
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		—	—
RDA	6	O/R (A)	2		L1	SD(+)
RDB	7	O/BK (A)	7		L2	SD(-)
CSA	8	Y/R (A)	4		—	—
CSB	9	Y/BK (A)	9		SHIELD*1	—
SG	10	PK/R (A)	5		FG(GND)	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Two SHIELD terminals exist in JW-10CM and ZW-10CM.
Connect the cable to either of them.

26.1.4 Precautions when preparing cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

2 Connecting terminating resistors

When connecting a SHARP PLC to a GOT, a terminating resistor must be set to the SHARP PLC. No terminating resistor needs to be connected on the GOT side as one is already built into the GOT. The PLC CPUs and the modules on the PLC CPU side requiring a terminating resistor are shown below.

(1) JW-22CU

Turn "ON" the terminating resistor setting switch (SW1) on the back of JW-22CU to validate the terminating resistor.

(2) JW-70CUH and JW-100CUH

Connect the pin 6 (terminating resistor) of the communication port connection connector with the pin 13 ($\overline{\text{RXD}}$) only at the terminal station to validate the terminating resistor.

(3) JW-21CM, JW-10CM and ZW-10CM

Turn "ON" the terminator switch (SW7) on the front panel only at the terminal station to validate the terminating resistor.

26.1.5 PLC Side Setting

Model name		Reference
PLC CPU	JW-22CU	this section 1
	JW-32CUH, JW-33CUH	this section 2
	JW-70CUH, JW-100CUH, JW-100CU	this section 1
	Z-512J	this section 2
Link unit	JW-21CM	this section 3
	JW-10CM, ZW-10CM	this section 4

Point

SHARP PLC

For details of the SHARP PLC, refer to the following manual.

☞ User's Manual for the SHARP PLC

1 Connecting to JW-22CU, JW-70CUH, JW-100CUH or JW-100CU

(1) System memory setting

Make the system memory setting.

System memory No.	Item	Setting
#236	Transmission speed, parity and stop bit	D7 D6 D5 D4 D3 D2 ～ D0 0 0 (3) (2) (1) (1) Transmission speed *1 *2 000: 19200bps 001: 9600bps 010: 4800bps (2) Parity 10 (fixed): Even (3) Stop bit 1 (fixed): 2 bits
#237	Station No.	1: Station No. 1 (fixed)

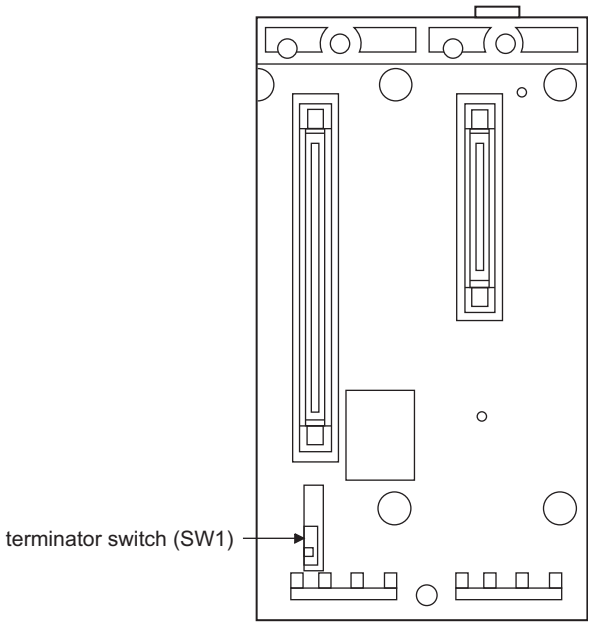
*1 This indicates only the transmission speed that can be specified on the GOT side.

*2 Specify the transmission speed to match the transmission speed of the GOT.
For how to set the transmission speed of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

(2) Terminating resistor setting switch (For JW-22CU only)

Set the terminating resistor setting switch.



Setting	
RS-232 communication	RS-422 communication
OFF (terminating resistor validated)	ON (terminating resistor invalidated)

2 Connecting to JW-32CUH, JW-33CUH or Z-512J

(1) Settings for connecting to communication port 1 (PG/COMM1 port)

Set the system memory.

System memory No.	Item	Setting
#234	Transmission speed, parity and stop bit	D7 D6 D5 D4 D3 D2 ~ D0 0 0 (3) (2) (1) (1) Transmission speed *1 *2 000: 19200bps 001: 9600bps 010: 4800bps (2) Parity 10 (fixed): Even (3) Stop bit 1 (fixed): 2 bits
#235	Station No.	1: Station No. 1 (fixed)

*1 This indicates only the transmission speeds that can be specified on the GOT side.

*2 Specify the transmission speed to match the transmission speed of the GOT.
For how to set the transmission speed of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

(2) Settings for connecting to communication port 2 (PG/COMM2 port)

Set the system memory.

System memory No.	Item	Setting
#236	Transmission speed, parity and stop bit	D7 D6 D5 D4 D3 D2 ~ D0 0 0 (3) (2) (1) (1) Transmission speed *3 *4 000: 19200bps 001: 9600bps 010: 4800bps (2) Parity 10 (fixed): Even (3) Stop bit 1 (fixed): 2 bits
#237	Station No.	1: Station No. 1 (fixed)

*3 This indicates only the transmission speeds that can be specified on the GOT side.

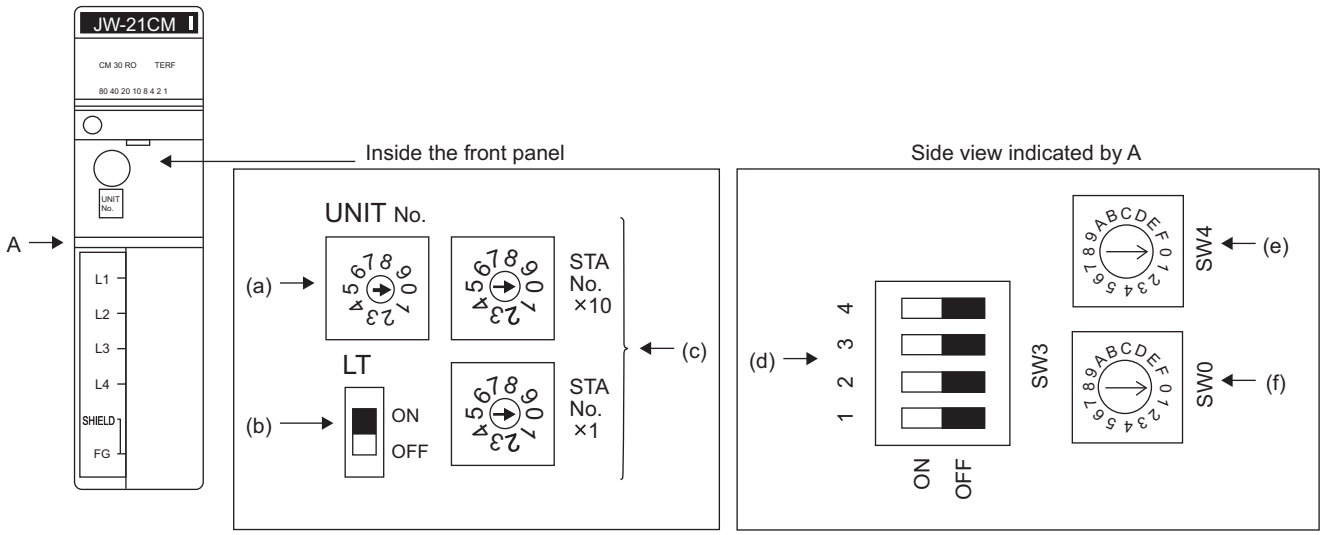
*4 Specify the transmission speed to match the transmission speed of the GOT.
For how to set the transmission speed of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

3 Connecting to the link unit (JW-21CM)

(1) Switch setting of the link unit (JW-21CM)

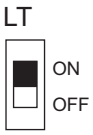
Make setting for each switch.



(a) Module No. switch (SW8)

The module No. switch is not used for communication with the GOT.

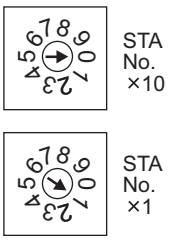
(b) Terminator switch (SW7)



Setting	Description
ON*1	Terminating resistor validated

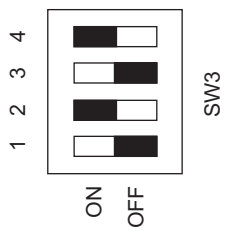
*1 Turn on only for the terminal station.

(c) Station number setting switch (SW1,SW2)



Switch No.	Setting	Description
SW1	Station No. lower digit (10^0 digit)	1 (fixed)
SW2	Station No. upper digit (10^1 digit)	0 (fixed)

(d) Operation mode setting switch (SW3)



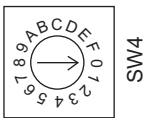
Switch No.	Setting	Description
SW3-1	OFF (fixed)	Invalid
SW3-2	ON (fixed)	4-wire type
SW3-3	OFF (fixed)	Invalid
SW3-4	ON (fixed)	Even

(e) Transmission speed setting switch (SW4)

Specify the transmission speed to match the transmission speed of the GOT.

For how to set the transmission speed of the GOT, refer to the following.

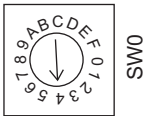
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)



Setting*1	Description
0	19200bps
1	9600bps
2	4800bps

*1 Indicates only the transmission speed that can be specified on the GOT side.

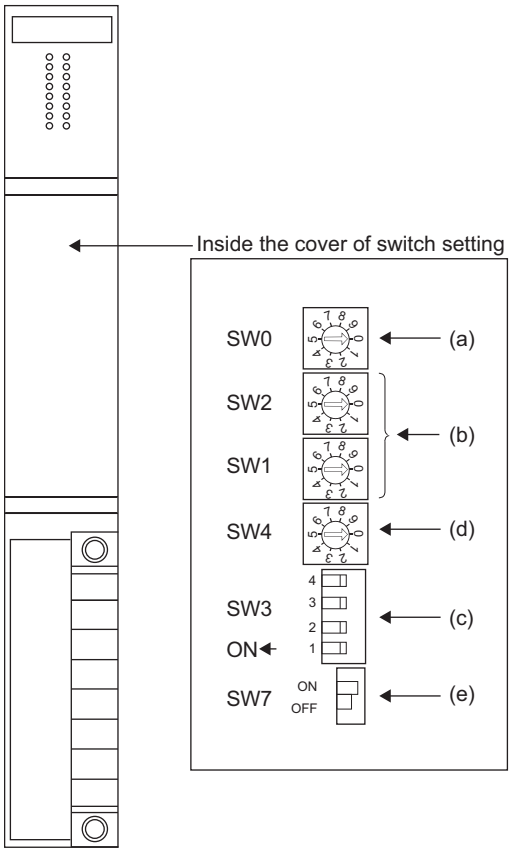
(f) Function setting switch (SW0)



Setting	Description
4 (fixed)	Computer link

4 Connecting to the link unit (JW-10CM or ZW-10CM)

(1) Switch setting of link unit (JW-10CM and ZW-10CM)



(a) Function setting switch (SW0)

SW0

Setting	Description
4 (fixed)	Computer link (command mode)

(b) Station number switch (SW1,SW2)

SW2
SW1

Switch No.	Setting	Description
SW1	Station No. lower digit (10^0 digit)	1 (fixed)
SW2	Station No. upper digit (10^1 digit)	0 (fixed)

(c) Operation mode setting switch (SW3)

SW3
ON

Switch No.	Setting	Description
SW3-1	OFF (fixed)	Invalid
SW3-2	ON (fixed)	4-wire type
SW3-3	OFF (fixed)	Invalid
SW3-4	ON (fixed)	Even

(d) Transmission speed setting switch (SW4)

Specify the transmission speed to match the transmission speed of the GOT.

For how to set the transmission speed of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

SW4

Setting*1	Description
0	19200bps
1	9600bps
2	4800bps

*1 This indicates only the transmission speed that can be specified on the GOT side.

(e) Terminator switch (SW7)

SW7 ON OFF

Setting	Description
ON*2	Terminating resistor

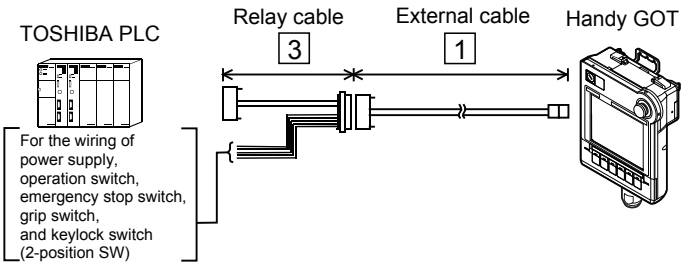
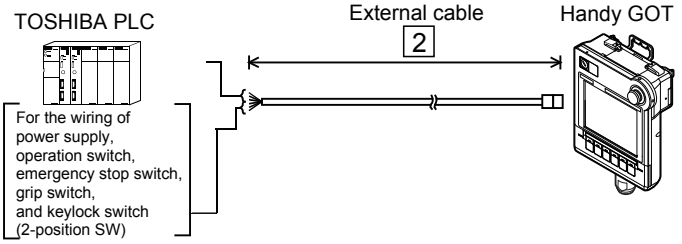
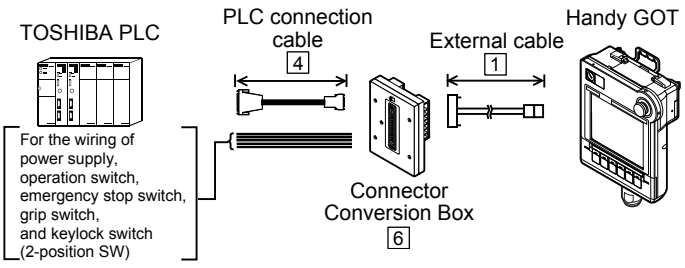
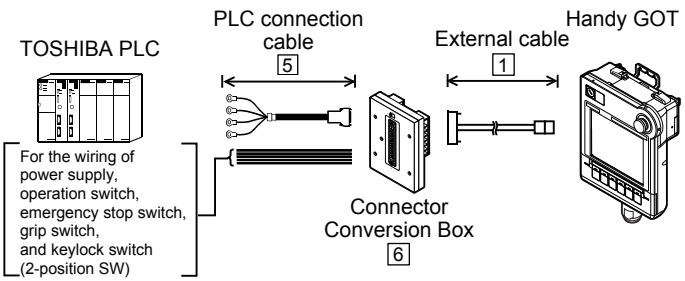
*2 Set to ON only for the terminal station.

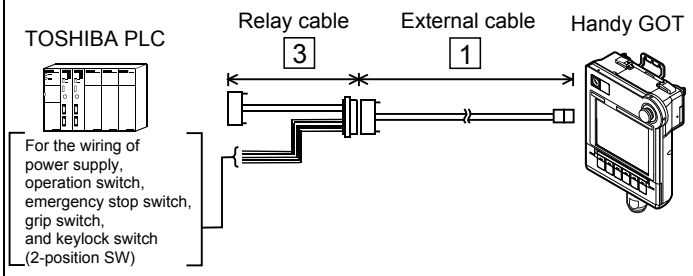
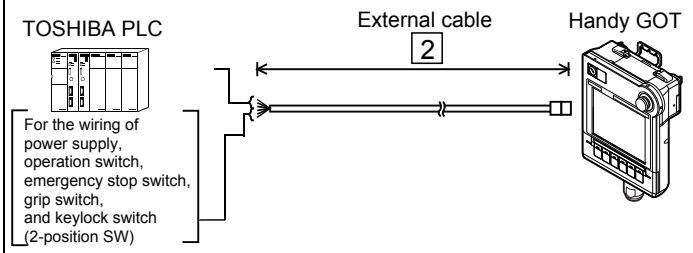
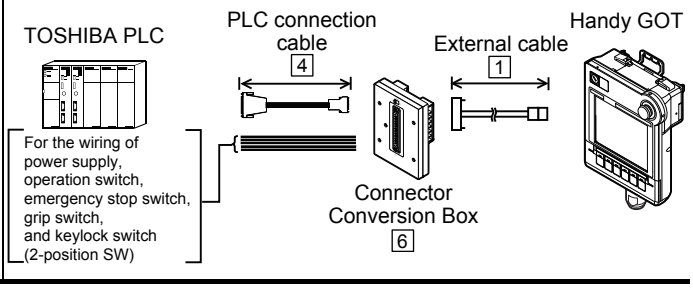
27. CONNECTION TO TOSHIBA PLC

27.1 System Configuration and System Equipment

27.1.1 System configuration

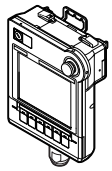
When connecting the Handy GOT to a TOSHIBA PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "27.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
T2 (PU224), T3, T3H, T2E, T2N, model 2000 (S2, S2T, S2E), model 3000 (S3)	RS-422	13m or less	
			
T2 (PU224), T3, T3H, T2N, model 3000 (S3)			
T2E, model 2000 (S2, S2T, S2E)			

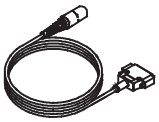
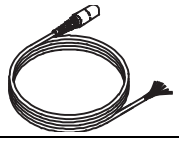
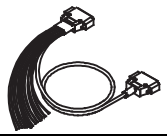
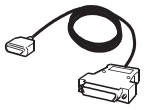
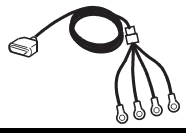
Connection conditions			System configuration
PLC	Communication	Distance	
T2E, T2N	RS-232	6m or less	  

27.1.2 System equipment

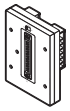
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 27.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 27.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
T2 (PU224), T3, T3H	Direct CPU connection	RS-422	—	—
T2E	Direct CPU connection	RS-422	—	—
T2N	Direct CPU connection	RS-422	—	—
model 2000 (S2, S2T, S2E)	Direct CPU connection	RS-422	—	—
model 3000 (S3)	Direct CPU connection	RS-422	—	—

- The connection cannot be made using a general-purpose communication interface .

5 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
T2 (PU224), T3, T3H, T2E, T2N, model 2000 (S2, S2T, S2E), model 3000 (S3)	1	1

27.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Communication unit		PLC connection cable*1	
Name	Model name	RS-232 cable	RS-422 cable
PLC CPU	T2 (PU224)	—	GT09-C30R40501-15P (3m) GT09-C100R40501-15P (10m)
	T2E	GT09-C30R20501-9P (3m)	GT09-C30R40502-6C (3m) GT09-C100R40502-6C (10m)
	T2N	Must be prepared by the user.	Must be prepared by the user.
	T3, T3H	—	GT09-C30R40501-15P (3m) GT09-C100R40501-15P (10m)
	model 2000 (S2, S2T, S2E)	—	GT09-C30R40502-6C (3m) GT09-C100R40502-6C (10m)
	model 3000 (S3)	—	GT09-C30R40501-15P (3m) GT09-C100R40501-15P (10m)

*1 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

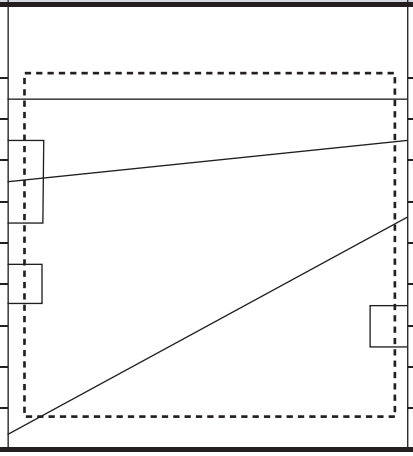
Communication unit		Connection cable	
Name	Model name	RS-232 cable	RS-422 cable
PLC CPU	T2 (PU224)	—	RS-422 cable 1)
	T2E	RS-232 cable 1)	RS-422 cable 2)
	T2N	RS-232 cable 2)	RS-422 cable 3)
	T3, T3H	—	RS-422 cable 1)
	model 2000 (S2, S2T, S2E)	—	RS-422 cable 2)
	model 3000 (S3)	—	RS-422 cable 1)

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

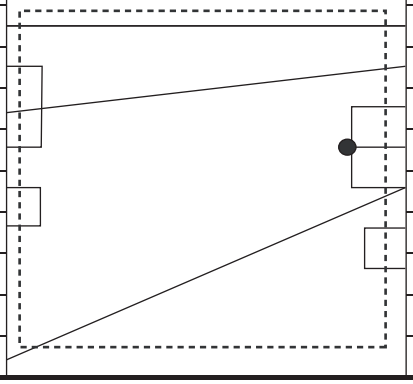
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	TOSHIBA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	SG
SD(TXD)	2	W/R (A)	3		2	RXD
ER(DTR)	3	W/BK (A)	4		3	TXD
RD(RXD)	4	GY/R (A)	2		4	—
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	5V
CS(CTS)	7	O/BK (A)	8		7	RTS
—	8	Y/R (A)	—		8	—
—	9	Y/BK (A)	—		9	5V
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	TOSHIBA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	—
SD(TXD)	2	W/R (A)	3		12	RXD
ER(DTR)	3	W/BK (A)	4		5	TXD
RD(RXD)	4	GY/R (A)	2		7	SG
DR(DSR)	5	GY/BK (A)	6		8	SG
RS(RTS)	6	O/R (A)	7		15	SG
CS(CTS)	7	O/BK (A)	8		6	RTS
—	8	Y/R (A)	—		14	CTS
—	9	Y/BK (A)	—		13	—
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

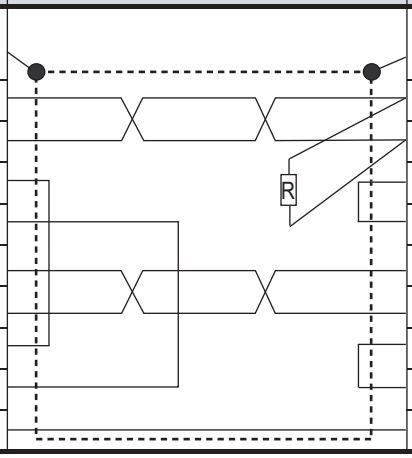
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

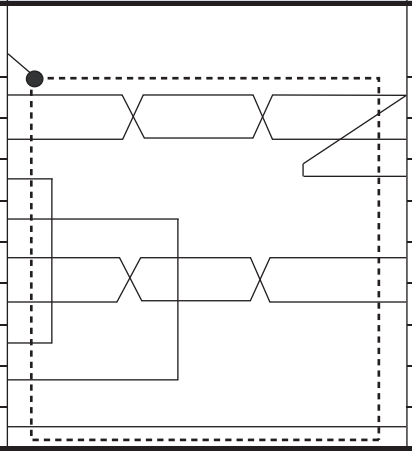
(1) RS-422 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	TOSHIBA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SDA	2	W/R (A)	1		2	RXA
SDB	3	W/BK (A)	6		10	RXB
RSA	4	GY/R (A)	3		4	CTSA
RSB	5	GY/BK (A)	8		5	RTSA
RDA	6	O/R (A)	2		3	TXA
RDB	7	O/BK (A)	7		11	TXB
CSA	8	Y/R (A)	4		12	CTSB
CSB	9	Y/BK (A)	9		13	RTSB
SG	10	PK/R (A)	5		7	SG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

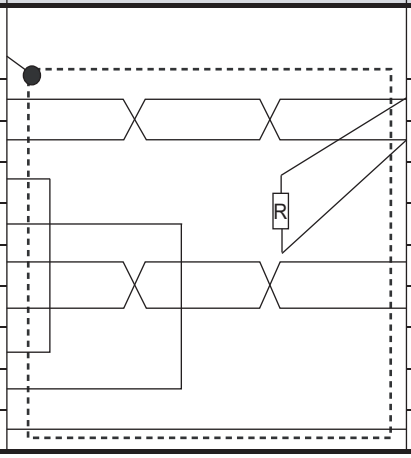
(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	TOSHIBA product side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Terminal block name
FG (Shield)	1	Shield	—		—
SDA	2	W/R (A)	1		RXA
SDB	3	W/BK (A)	6		RXB
RSA	4	GY/R (A)	3		TERM
RSB	5	GY/BK (A)	8		—
RDA	6	O/R (A)	2		TXA
RDB	7	O/BK (A)	7		TXB
CSA	8	Y/R (A)	4		—
CSB	9	Y/BK (A)	9		—
SG	10	PK/R (A)	5		SG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(3) RS-422 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	TOSHIBA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		2	RXA
SDB	3	W/BK (A)	6		10	RXB
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		—	—
RDA	6	O/R (A)	2		3	TXA
RDB	7	O/BK (A)	7		11	TXB
CSA	8	Y/R (A)	4		—	—
CSB	9	Y/BK (A)	9		—	—
SG	10	PK/R (A)	5		8	SG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

27.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

2 Connecting terminating resistors

When connecting a TOSHIBA PLC to a GOT, a terminating resistor must be set to the TOSHIBA PLC. No terminating resistor needs to be connected on the GOT side as one is already built into the GOT. For the setting of the terminating resistor, refer to the following manual.

☞ User's Manual for the TOSHIBA PLC

(1) T2(PU224), T2N, T3, T3H, model 3000(S3)

Connect the terminating resistor (1/2W-120Ω) across RXA and RXB.

(2) T2E, model 2000 (S2, S2T, S2E)

Short across the RXA and TERM terminals.

Model name	
PLC CPU	T2 (PU224), T2E, T2N
	T3, T3H
	model 2000 (S2, S2T, S2E), model 3000 (S3)

Point TOSHIBA PLC

For details of the TOSHIBA PLC, refer to the following manual.

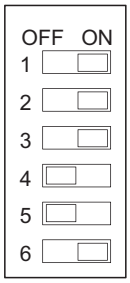
☞ User's Manual for the TOSHIBA PLC

1 Connecting to T2 (PU224), T2E or T2N

(1) Switch setting

Configure the switches.

(a) Operation mode setting switch



Switch No.	Setting	Set data
4	OFF (fixed)	Computer link
5	OFF (fixed)	

(b) DIP switch on module PCB (T2N only)

Switch No.	Setting	
	For RS-232 communication	For RS-422 communication
DIP switch : No.1	ON (RS-232C)	OFF (RS-485 *1)

*1 Can be used as RS-422.

(2) Transmission parameter setting

Enter the transmission parameters.

Item	Setting
Transmission speed *2*3*4	4800bps, 9600bps, 19200bps
Data length	7bit
Stop bit	2bit
Parity bit	Even
Station No.	1

*2 Indicates only the transmission that can be specified on the GOT side.

*3 Fixed to 9600bps for T2E only

*4 Specify the transmission speed to match the baud rate of the GOT.
For how to set the baud rate of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 Connecting to T3 or T3H

Enter the transmission parameters.

Item	Setting
Transmission speed *1*2	4800bps, 9600bps, 19200bps
Data length	7bit
Stop bit	2bit
Parity bit	Even
Station No.	1

*1 Indicates only the transmission speeds that can be specified on the GOT side.

*2 Specify the transmission speed to match the baud rate of the GOT.
For how to set the baud rate of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

3 Connecting to model 2000 (S2, S2T, S2E), model 3000 (S3)

Enter the transmission parameters.

Item	Setting
Transmission method	RS485 *3
RS485	COM1
Timeout time	5 Sec
Transmission speed *4*5	4800bps, 9600bps, 19200bps
Data length	7bit
Stop bit	2bit
Parity bit	Even
Station No.	1

*3 Can be used as RS-422.

*4 Indicates only the transmission speeds that can be specified on the GOT side.

*5 Specify the transmission speed to match the baud rate of the GOT.
For how to set the baud rate of the GOT, refer to the following.

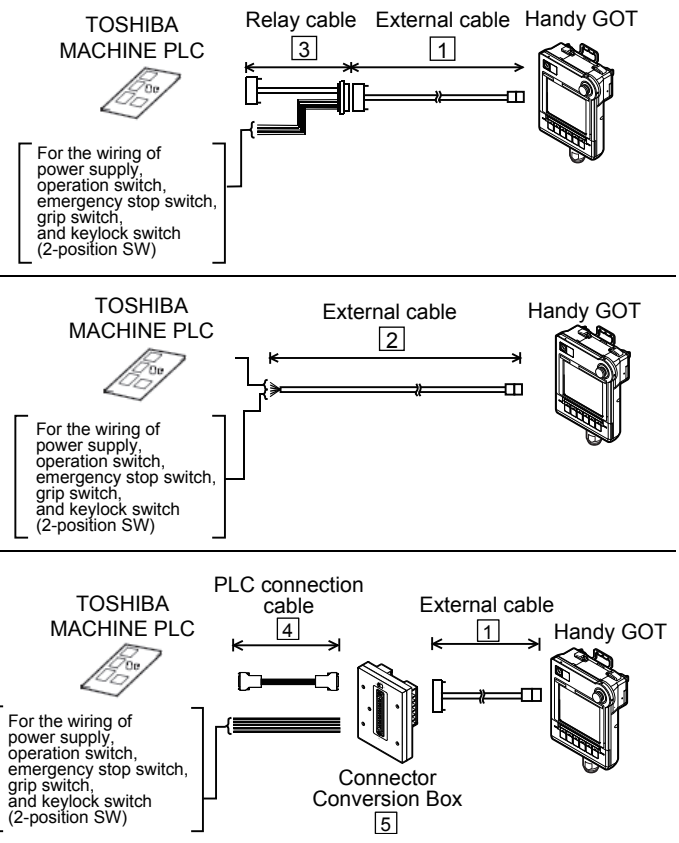
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

28. CONNECTION TO TOSHIBA MACHINE PLC

28.1 System Configuration and System Equipment

28.1.1 System configuration

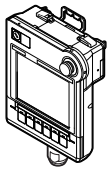
When connecting the Handy GOT to a TOSHIBA MACHINE PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "28.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
TC3, TC6, TC8*1	RS-232	6m or less	

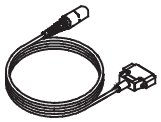
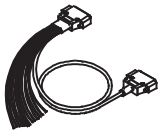
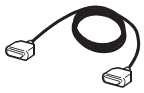
*1 Connectable to the products only, which have RS-232 communication function.

28.1.2 System equipment

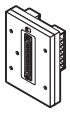
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 28.1.3 Connection cable	
PLC connection cable		4	Must be prepared by the user. ☞ Section 28.1.3 Connection cable	

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
TC3, TC6, TC8	Direct CPU connection	RS-232	—	—

5 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
TC3, TC6, TC8	1	1

28.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Communication unit		PLC connection cable
Name	Model name	RS-232 cable
PLC CPU	TC3, TC6, TC8	RS-232 cable 1)

2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	TOSHIBA MACHINE product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	CI
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	DSR
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DTR
CS(CTS)	7	O/BK (A)	8		7	CTS
—	8	Y/R (A)	—		8	RTS
—	9	Y/BK (A)	—		9	CD
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

28.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.

28.1.5 PLC Side Setting

Point TOSHIBA MACHINE PLC

For details of the TOSHIBA MACHINE PLC, refer to the following manual.

☞ User's Manual for the TOSHIBA MACHINE PLC

1 Connecting to TC3 or TC8

No communication settings.

Communication is available using default value of the PLC.

2 Connecting to TC6

The setting of transmission speed is changeable.

Set the following Special AUX Relay(A) using engineer link tool.

The communication may not work properly if the settings are made using the GOT.

Transmission speed *1	Special AUX Relay		
	A158	A159	A15A
9600bps	OFF	OFF	OFF
19200bps	ON	OFF	OFF
38400bps	—	ON	OFF
57600bps	—	OFF	ON
115200bps	—	ON	ON

*1 Specify the transmission speed to match the baud rate of the GOT.

For how to set the baud rate of the GOT, refer to the following.

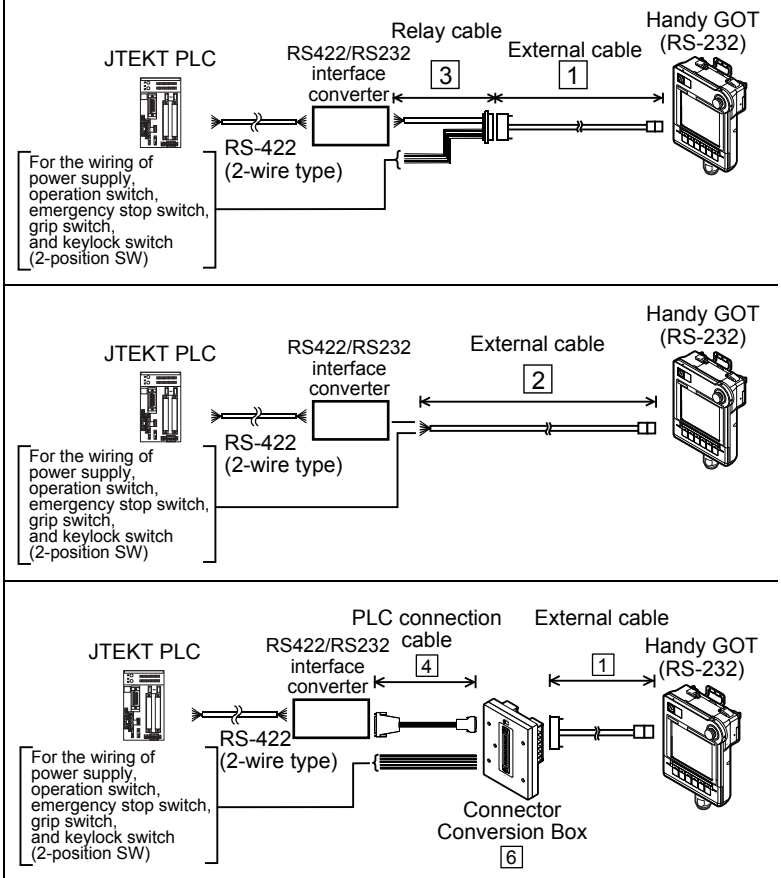
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

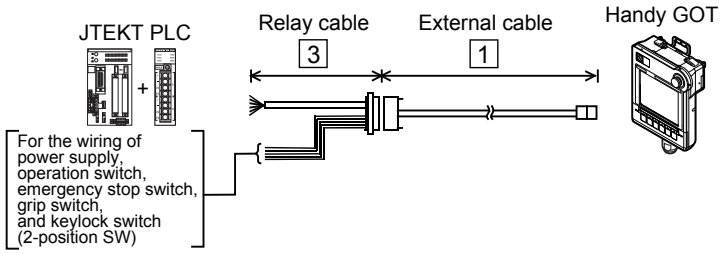
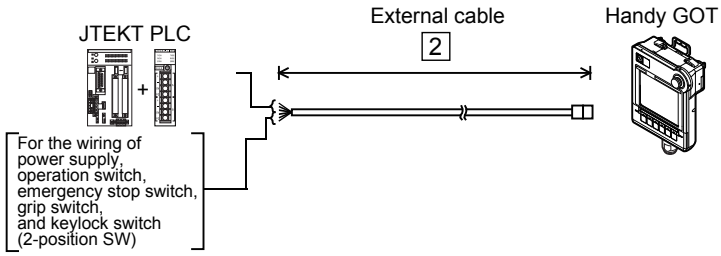
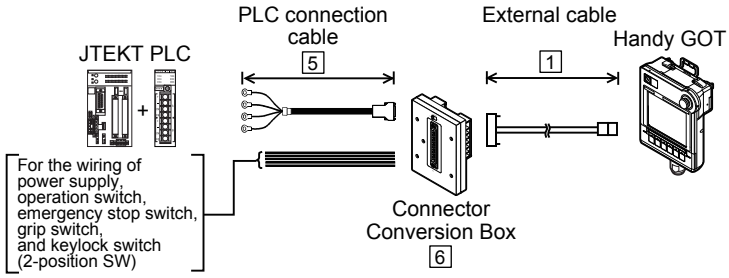
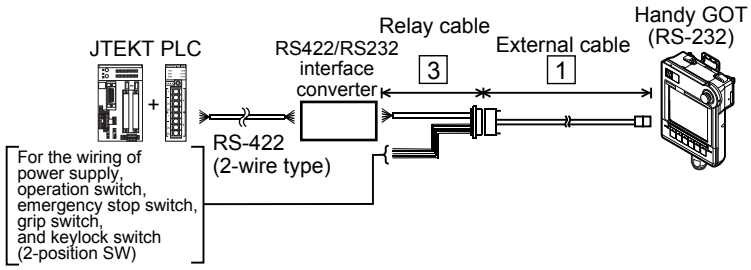
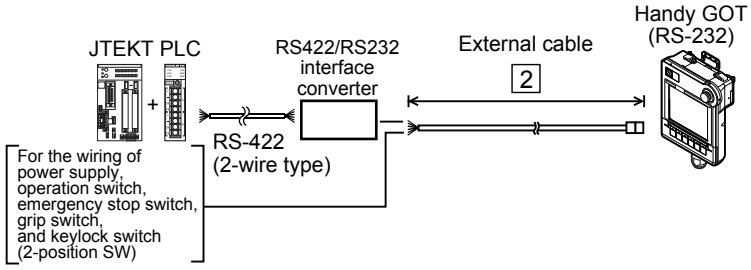
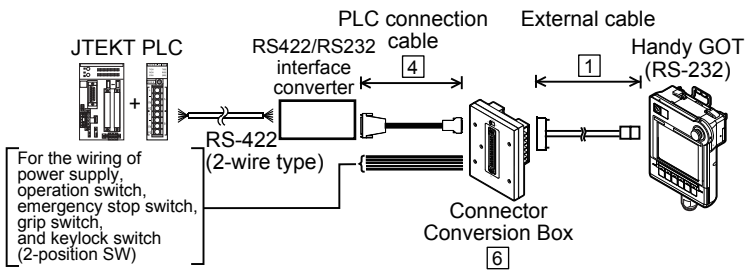
29. CONNECTION TO JTEKT PLC

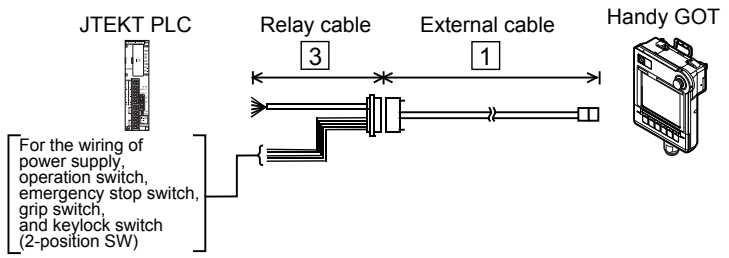
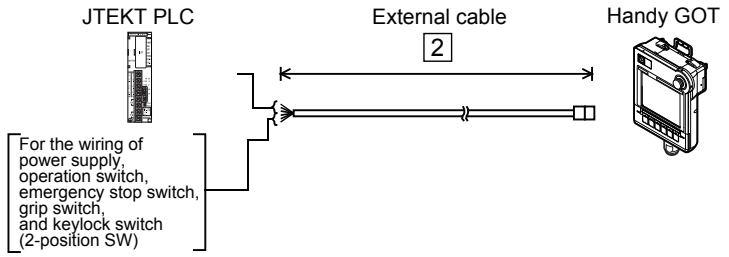
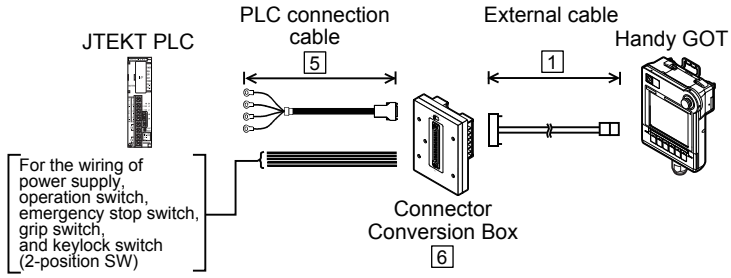
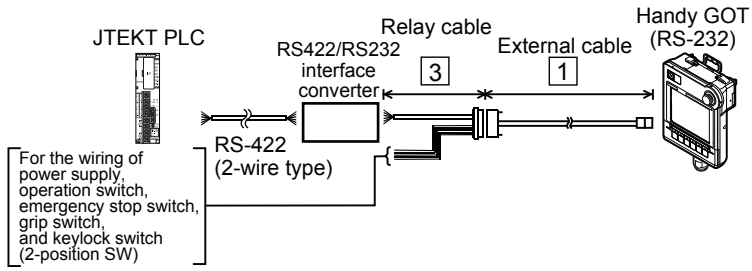
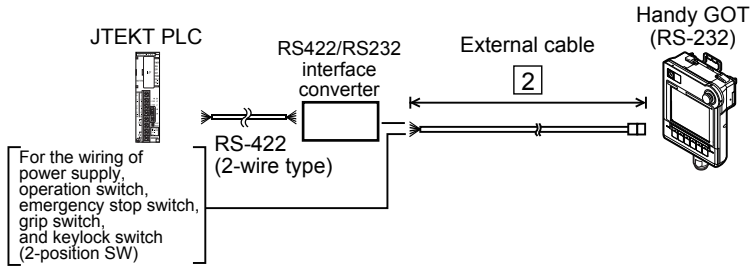
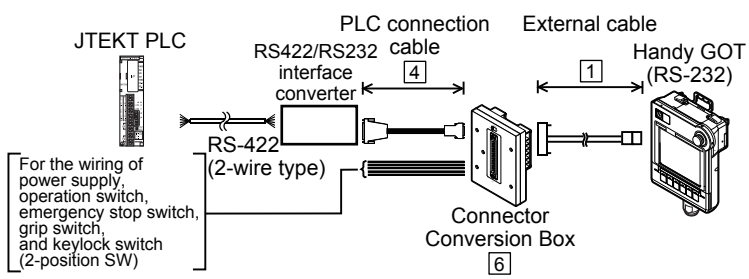
29.1 System Configuration and System Equipment

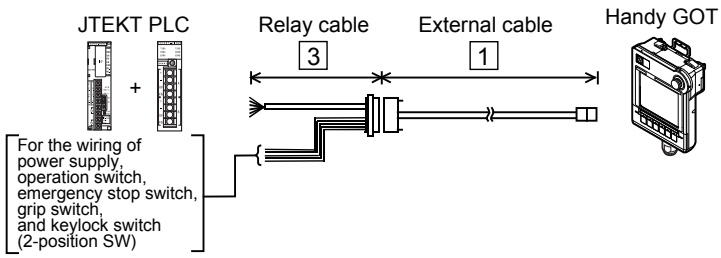
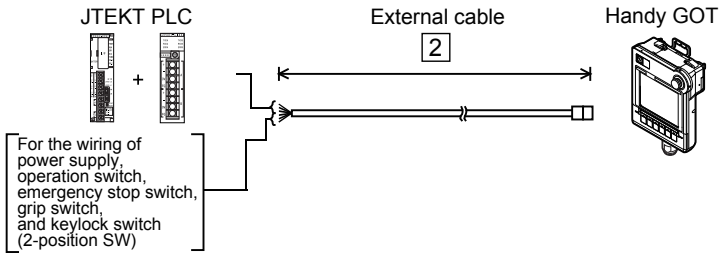
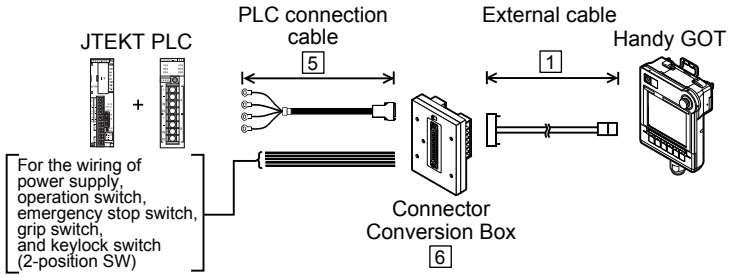
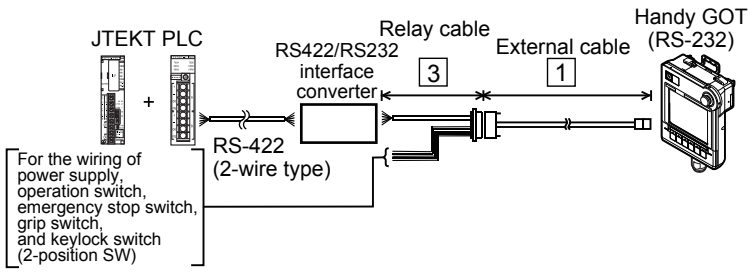
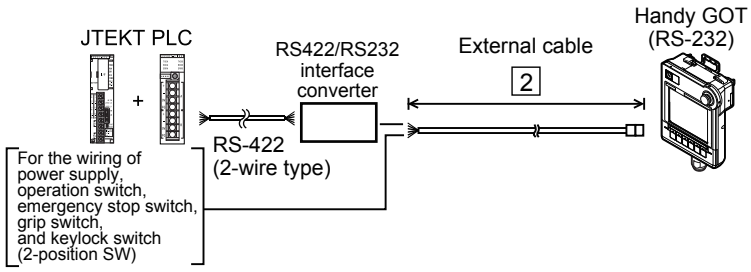
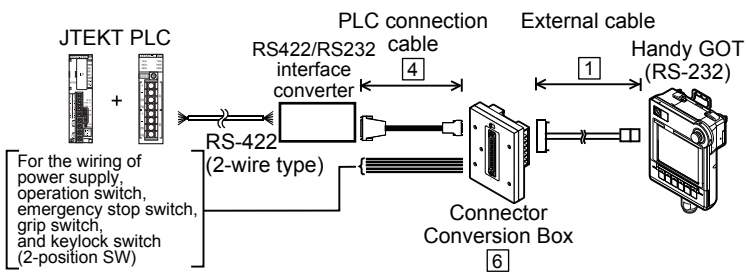
29.1.1 System configuration

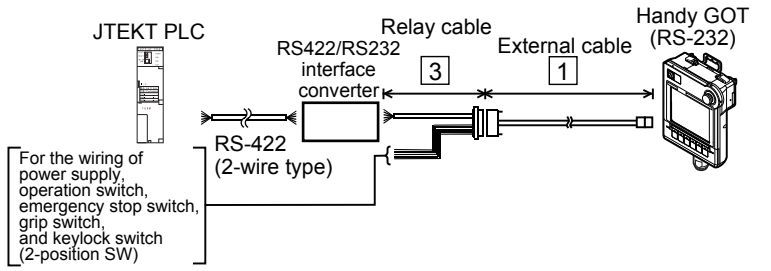
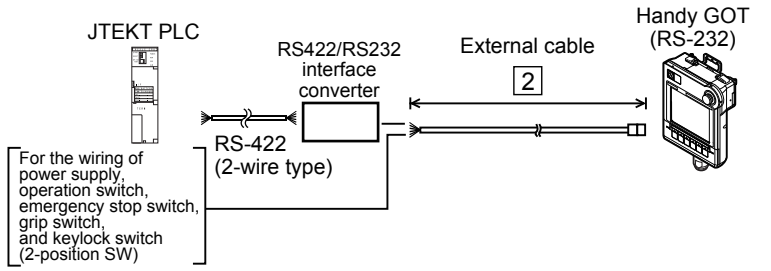
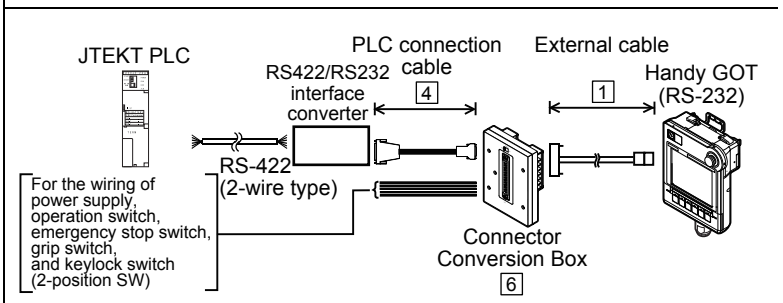
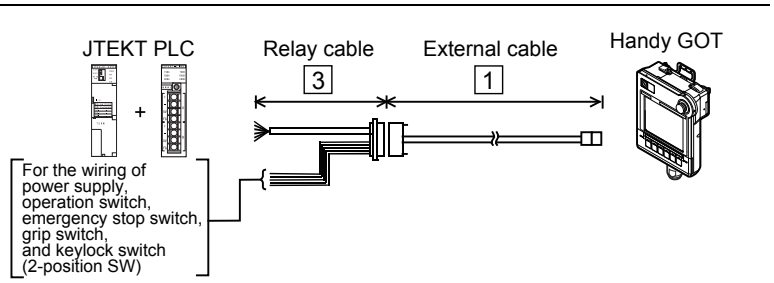
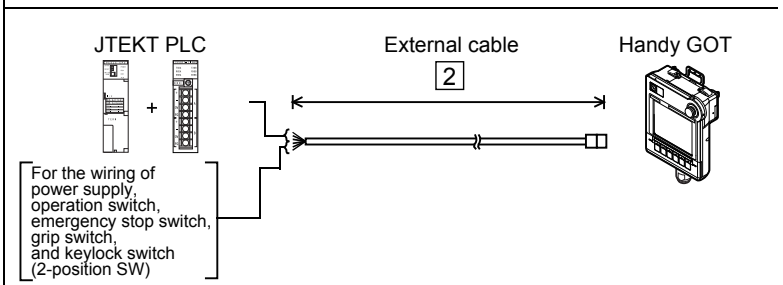
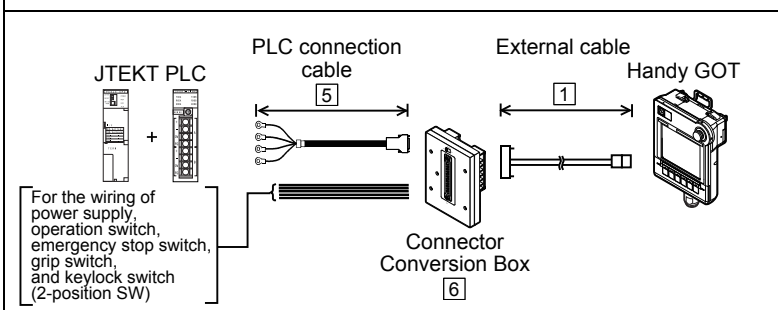
When connecting the Handy GOT to a JTEKT PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "29.1.2 System equipment".

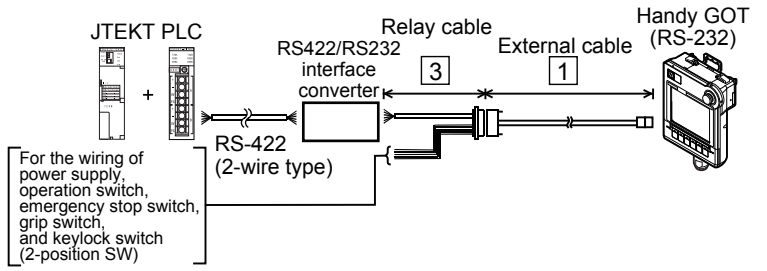
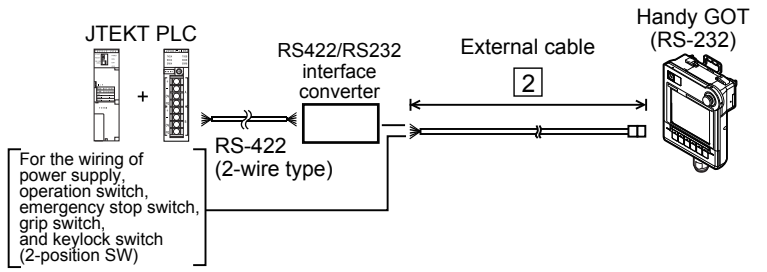
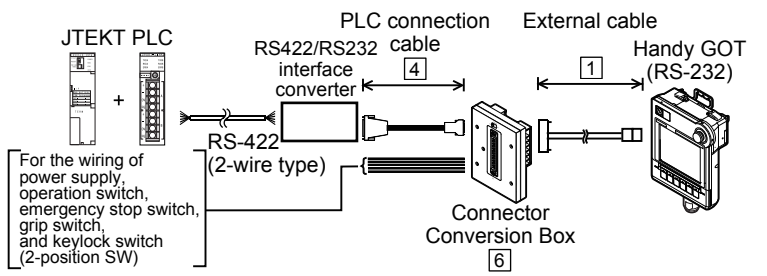
Connection conditions			System configuration
PLC	Communication	Distance	
PC3JG-P, PC3JG, PC3JD, PC3JD-C	<Between GOT and interface converter> RS-232 <Between interface converter and PLC> RS-422 (2-wire type)	6m or less (RS232) /13m or less (RS422)	

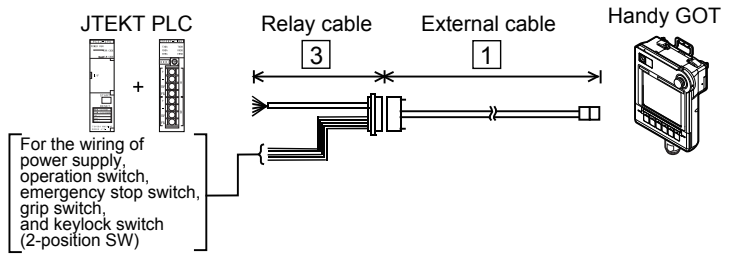
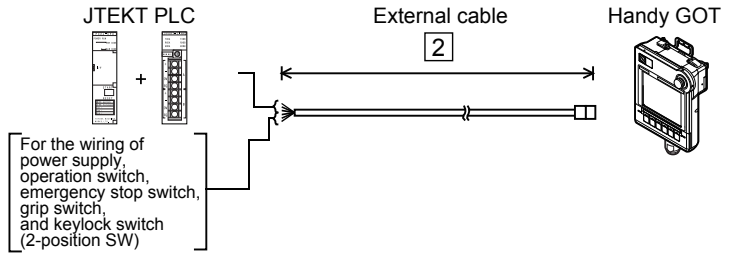
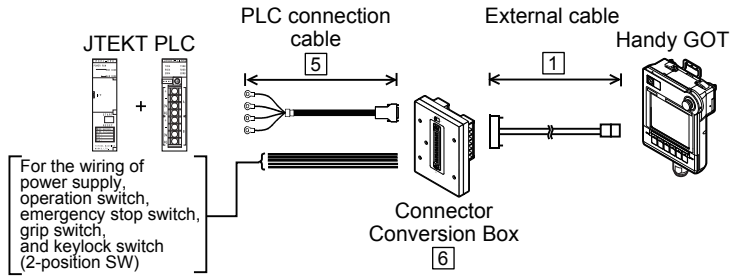
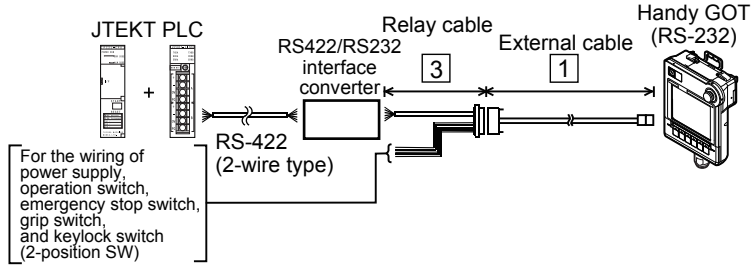
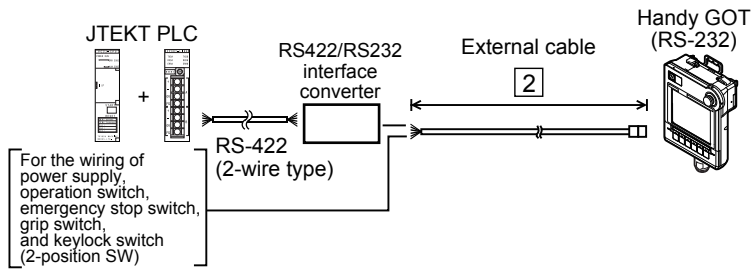
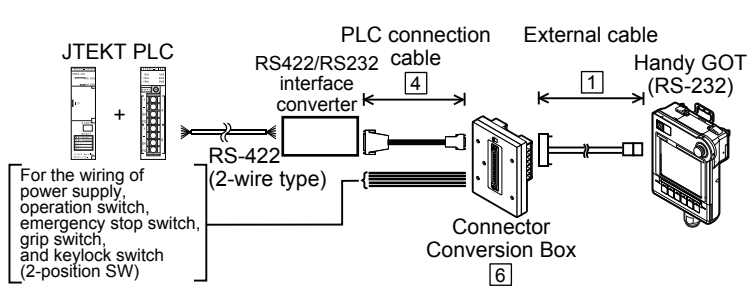
Connection conditions			System configuration
PLC	Communication	Distance	
PC3JG-P, PC3JG, PC3JD, PC3JD-C	RS-422 (4-wire type)	13m or less	
			
			
	<Between GOT and interface converter> RS-232 <Between interface converter and PLC> RS-422 (2-wire type)	6m or less (RS232) /13m or less (RS422)	
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
PC3J, PC3JL	RS-422 (4-wire type)	13m or less	
			
			
	<Between GOT and interface converter> RS-232 <Between interface converter and PLC> RS-422 (2-wire type)	6m or less (RS232) /13m or less (RS422)	
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
PC3J, PC3JL	RS-422 (4-wire type)	13m or less	
			
			
	<Between GOT and interface converter> RS-232 <Between interface converter and PLC> RS-422 (2-wire type)	6m or less (RS232) /13m or less (RS422)	
			
			

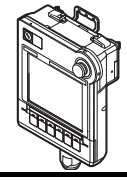
Connection conditions			System configuration
PLC	Communication	Distance	
PC2JC, PC2J16P PC2J16PR	<Between GOT and interface converter> RS-232 <Between interface converter and PLC> RS-422 (2-wire type)	6m or less (RS232) /13m or less (RS422)	
			
			
	RS-422 (4-wire type)	13m or less	
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
PC2JC, PC2J16P PC2J16PR	<Between GOT and interface converter> RS-232 <Between interface converter and PLC> RS-422 (2-wire type)	6m or less (RS232) /13m or less (RS422)	  

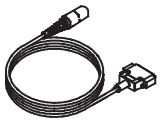
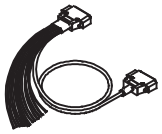
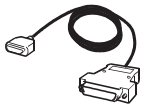
Connection conditions			System configuration
PLC	Communication	Distance	
PC2J, PC2JS, PC2JR, PC2J16	RS-422 (4-wire type)	13m or less	
			
			
	<Between GOT and interface converter> RS-232 <Between interface converter and PLC> RS-422 (2-wire type)	6m or less (RS232) /13m or less (RS422)	
			
			

29.1.2 System equipment

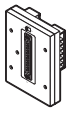
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 29.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 29.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication unit		Remark
		Name	Model name	
PC3JG-P, PC3JG, PC3JD, PC3JD-C	Direct CPU connection	—	—	Connect the GOT by using an RS-232/RS-422 interface converter (TXU-2051) in combination. Use RS-422 (2-wire type) for the wiring between the interface converter and PLC.
	Computer link	Link unit	THU-2755 (PC/CMP-LINK)	
			THU-2927 (2PORT-LINK)	
			THU-5139 (PC/CMP2-LINK)	RS-422 (4-wire type)
PC3J (Ver.2.1 or later), PC3JL	Direct CPU connection	—	—	RS-422 (4-wire type)
		—	—	Connect the GOT by using an RS-232/RS-422 interface converter (TXU-2051) in combination. Use RS-422 (2-wire type) for the wiring between the interface converter and PLC.
	Computer link	Link unit	THU-2755 (PC/CMP-LINK)	Connect the GOT by using an RS-232/RS-422 interface converter (TXU-2051) in combination. Use RS-422 (2-wire type) for the wiring between the interface converter and PLC.
			THU-2927 (2PORT-LINK)	
			THU-5139 (PC/CMP2-LINK)	RS-422 (4-wire type)
PC2JC, PC2J16P, PC2J16PR	Direct CPU connection	—	—	Connect the GOT by using an RS-232/RS-422 interface converter (TXU-2051) in combination. Use RS-422 (2-wire type) for the wiring between the interface converter and PLC.
	Computer link	Link unit	THU-2755 (PC/CMP-LINK)	
			THU-2927 (2PORT-LINK)	
			THU-5139 (PC/CMP2-LINK)	RS-422 (4-wire type)
PC2J, PC2JS, PC2JR, PC2J16	Computer link	Link unit	THU-2755 (PC/CMP-LINK)	Connect the GOT by using an RS-232/RS-422 interface converter (TXU-2051) in combination. Use RS-422 (2-wire type) for the wiring between the interface converter and PLC.
			THU-2927 (2PORT-LINK)	
			THU-5139 (PC/CMP2-LINK)	RS-422 (4-wire type)

5 Number of connectable GOTs and PLCs

PLC	Connection type	Number of GOTs	Number of PLCs
PC3JG-P, PC3JG, PC3JD, PC3JD-C	Direct CPU connection	1	32
	Computer link		
PC3J (Ver.2.1 or later), PC3JL	Direct CPU connection		
	Computer link		
PC2JC, PC2J16P, PC2J16PR	Direct CPU connection		
	Computer link		
PC2J, PC2JS, PC2JR, PC2J16	Computer link		

29.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

(1) PC3JG, PC3JG-P, PC3JD, PC3JD-C

Connection type	Connection point	PLC connection cable*1	
		RS-232 cable	RS-422 cable
Connection of the GOT directly to the CPU via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	GT09-C30R21201-25P (3m)	—
	Between RS-232/RS-422 interface converter (TXU-2051) and PLC	—	Must be prepared by the user.
	Between PLC and PLC		
Connection of the GOT to the Link unit (THU-5139)	Between GOT and Link unit (THU-5139)	—	GT09-C30R41201-6C (3m) GT09-C100R41201-6C (10m)
	Between Link unit (THU-5139) and Link unit (THU-5139)		Must be prepared by the user.
Connection of the GOT to the Link unit (THU-2755 or THU-2927) via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	GT09-C30R21201-25P (3m)	—
	Between RS-232/RS-422 interface converter (TXU-2051) and Link unit (THU-2755 or THU-2927)	—	Must be prepared by the user.
	Between Link unit (THU-2755 or THU-2927) and Link unit (THU-2755 or THU-2927)		

(2) PC2J, PC2JS, PC2JR, PC2J16

Connection type	Connection point	PLC connection cable*1	
		RS-232 cable	RS-422 cable
Connection of the GOT to the Link unit (THU-5139)	Between GOT and Link unit (THU-5139)	—	GT09-C30R41201-6C (3m) GT09-C100R41201-6C (10m)
	Between Link unit (THU-5139) and Link unit (THU-5139)		Must be prepared by the user.
Connection of the GOT to the Link unit (THU-2755 or THU-2927) via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	GT09-C30R21201-25P (3m)	—
	Between RS-232/RS-422 interface converter (TXU-2051) and Link unit (THU-2755 or THU-2927)	—	Must be prepared by the user.
	Between Link unit (THU-2755 or THU-2927) and Link unit (THU-2755 or THU-2927)		

(3) PC3J (Ver.2.1 or later), PC3JL

Connection type	Connection point	PLC connection cable*1	
		RS-232 cable	RS-422 cable
Direct CPU connection	Between GOT and PLC	—	GT09-C30R41201-6C (3m) GT09-C100R41201-6C (10m)
	Between PLC and PLC		Must be prepared by the user.
Connection of the GOT directly to the CPU via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	GT09-C30R21201-25P (3m)	—
	Between RS-232/RS-422 interface converter (TXU-2051) and PLC RS-422 (2-wire type)	—	Must be prepared by the user.
	Between PLC and PLC RS-422 (2-wire type)		
Connection of the GOT to the Link unit (THU-5139)	Between GOT and Link unit (THU-5139)	—	GT09-C30R41201-6C (3m) GT09-C100R41201-6C (10m)
	Between Link unit (THU-5139) and Link unit (THU-5139)		Must be prepared by the user.
Connection of the GOT to the Link unit (THU-2755 or THU-2927) via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	GT09-C30R21201-25P (3m)	—
	Between RS-232/RS-422 interface converter (TXU-2051) and Link unit (THU-2755 or THU-2927)	—	Must be prepared by the user.
	Between Link unit (THU-2755 or THU-2927) and Link unit (THU-2755 or THU-2927)		

(4) PC2JC, PC2J16P, PC2J16PR

Connection type	Connection point	PLC connection cable*1	
		RS-232 cable	RS-422 cable
Connection of the GOT directly to the CPU via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	GT09-C30R21201-25P (3m)	—
	Between RS-232/RS-422 interface converter (TXU-2051) and PLC	—	Must be prepared by the user.
	Between PLC and PLC		
Connection of the GOT to the Link unit (THU-5139)	Between GOT and Link unit (THU-5139)	—	GT09-C30R41201-6C (3m) GT09-C100R41201-6C (10m)
	Between Link unit (THU-5139) and Link unit (THU-5139)		Must be prepared by the user.
Connection of the GOT to the Link unit (THU-2755 or THU-2927) via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	GT09-C30R21201-25P (3m)	—
	Between RS-232/RS-422 interface converter (TXU-2051) and Link unit (THU-2755 or THU-2927)	—	Must be prepared by the user.
	Between Link unit (THU-2755 or THU-2927) and Link unit (THU-2755 or THU-2927)		

*1 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Model name / PLC	Connection type	Connection point	Connection cable	
			RS-232 cable	RS-422 cable
PC3JG-P, PC3JG, PC3JD, PC3JD-C	Connection of the GOT directly to the CPU via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	RS-232 cable 1)	—
		Between RS-232/RS-422 interface converter (TXU-2051) and PLC	—	RS-422 cable 1) (2-wire type)
		Between PLC and PLC		
	Connection of the GOT to the Link unit (THU-5139)	Between GOT and Link unit (THU-5139)	—	RS-422 cable 5) (4-wire type)
		Between Link unit (THU-5139) and Link unit (THU-5139)		
	Connection of the GOT to the Link unit (THU-2755 or THU-2927) via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	RS-232 cable 1)	—
		Between RS-232/RS-422 interface converter (TXU-2051) and Link unit (THU-2755 or THU-2927)	—	RS-422 cable 4) (2-wire type)
		Between Link unit (THU-2755 or THU-2927) and Link unit (THU-2755 or THU-2927)		
PC3J (Ver.2.1 or later), PC3JL	Direct CPU connection	Between GOT and PLC	—	RS-422 cable 6) (4-wire type)
		Between PLC and PLC		
	Connection of the GOT directly to the CPU via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	RS-232 cable 1)	—
		Between RS-232/RS-422 interface converter (TXU-2051) and PLC RS-422 (2-wire type)	—	RS-422 cable 2) (2-wire type)
		Between PLC and PLC RS-422 (2-wire type)		
	Connection of the GOT to the Link unit (THU-5139)	Between GOT and Link unit (THU-5139)	—	RS-422 cable 5) (4-wire type)
		Between Link unit (THU-5139) and Link unit (THU-5139)		
	Connection of the GOT to the Link unit (THU-2755 or THU-2927) via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	RS-232 cable 1)	—
		Between RS-232/RS-422 interface converter (TXU-2051) and Link unit (THU-2755 or THU-2927)	—	RS-422 cable 4) (2-wire type)
		Between Link unit (THU-2755 or THU-2927) and Link unit (THU-2755 or THU-2927)		

Model name	Connection type	Connection point	Connection cable	
PLC			RS-232 cable	RS-422 cable
PC2JC, PC2J16P, PC2J16PR	Connection of the GOT directly to the CPU via the RS-232/RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	RS-232 cable 1)	—
		Between RS-232/RS-422 interface converter (TXU-2051) and PLC	—	RS-422 cable 3) (2-wire type)
		Between PLC and PLC		
	Connection of the GOT to the Link unit (THU-5139)	Between GOT and Link unit (THU-5139)	—	RS-422 cable 5) (4-wire type)
		Between Link unit (THU-5139) and Link unit (THU-5139)		
	Connection of the GOT to the Link unit (THU-2755 or THU-2927) via the RS-232/ RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	RS-232 cable 1)	—
		Between RS-232/RS-422 interface converter (TXU-2051) and Link unit (THU-2755 or THU-2927)	—	RS-422 cable 4) (2-wire type)
		Between Link unit (THU-2755 or THU-2927) and Link unit (THU-2755 or THU-2927)		
PC2J, PC2JS, PC2JR, PC2J16	Connection of the GOT to the Link unit (THU-5139)	Between GOT and Link unit (THU-5139)	—	RS-422 cable 5) (4-wire type)
		Between Link unit (THU-5139) and Link unit (THU-5139)		
	Connection of the GOT to the Link unit (THU-2755 or THU-2927) via the RS-232/ RS-422 interface converter (TXU-2051)	Between RS-232/RS-422 interface converter (TXU-2051) and GOT	RS-232 cable 1)	—
		Between RS-232/RS-422 interface converter (TXU-2051) and Link unit (THU-2755 or THU-2927)	—	RS-422 cable 4) (2-wire type)
		Between Link unit (THU-2755 or THU-2927) and Link unit (THU-2755 or THU-2927)		

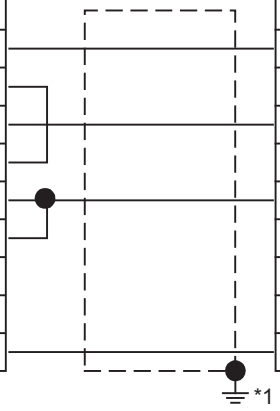
3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	JTEKT product side (RS-232/RS-422 interface converter)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—	1	FG
SD(TXD)	2	W/R (A)	3	2	TD
ER(DTR)	3	W/BK (A)	4		
RD(RXD)	4	GY/R (A)	2	3	RD
DR(DSR)	5	GY/BK (A)	6		
RS(RTS)	6	O/R (A)	7	4	RS
CS(CTS)	7	O/BK (A)	8		
—	8	Y/R (A)	—		
—	9	Y/BK (A)	—		
SG	10	PK/R (A)	5	7	0V



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

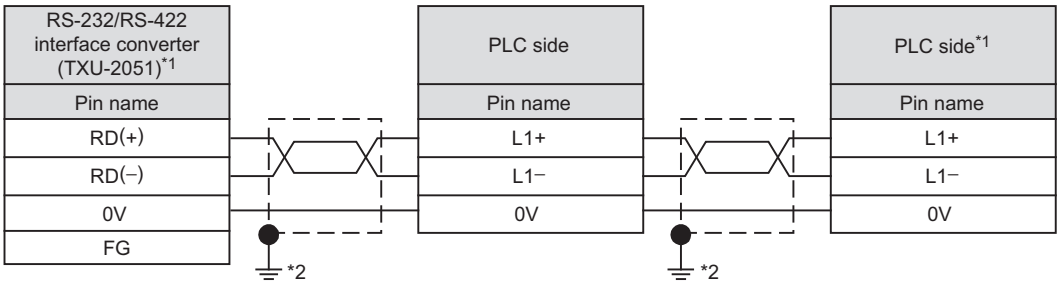
*1 Connect FG grounding to the appropriate part of a cable shield line.

4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

Chapter 20 COMMUNICATION CABLE

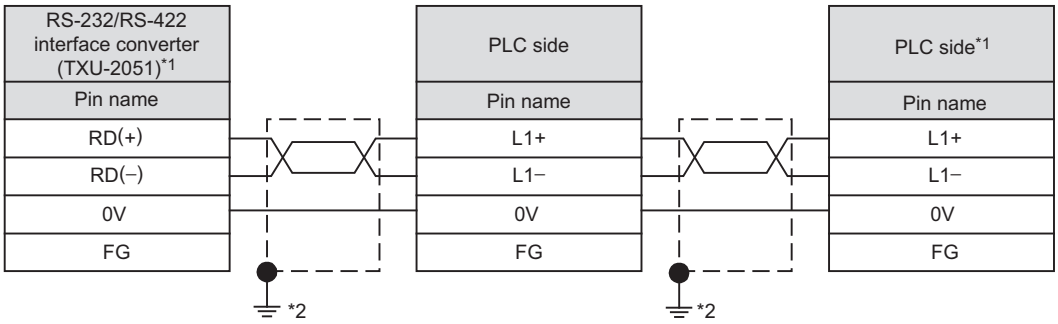
(1) RS-422 cable 1)



*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

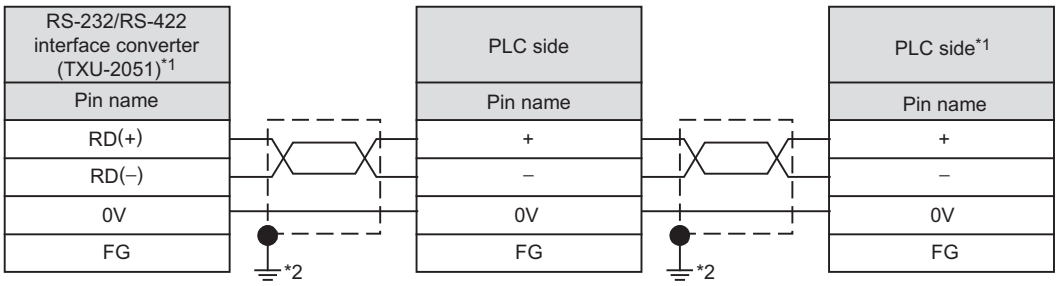
(2) RS-422 cable 2)



*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

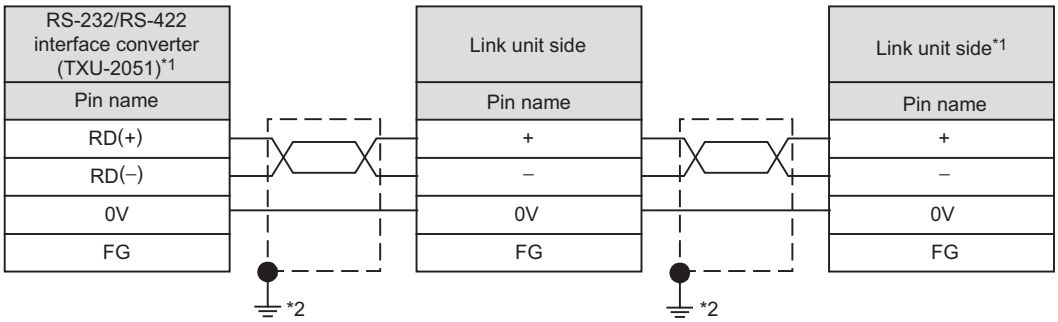
(3) RS-422 cable 3)



*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

(4) RS-422 cable 4)

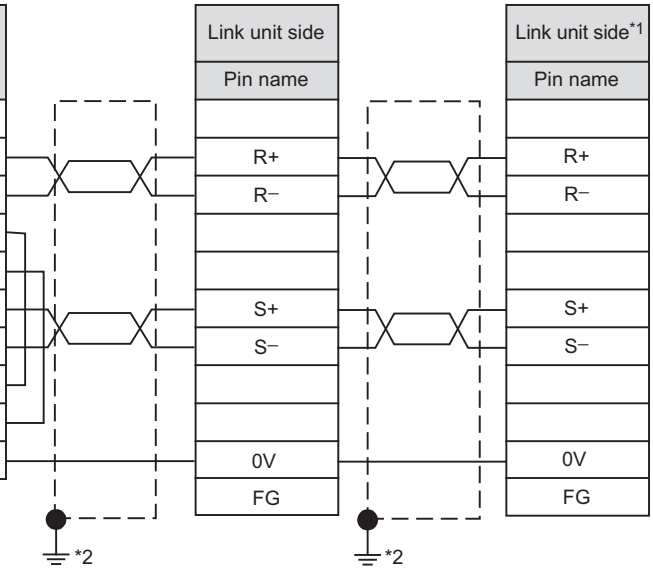


*1 Terminating resistors should not be provided for a PLC and an RS-232/RS-422 interface converter which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

(5) RS-422 cable 5)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)	
FG(Shield)	1	Shield	—
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
SG	10	PK/R (A)	5

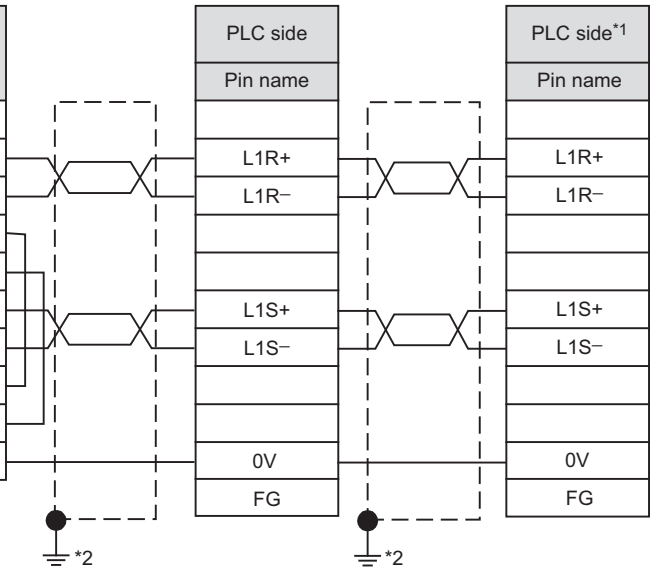


*1 Terminating resistors should not be provided for a PLC which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

(6) RS-422 cable 6)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)	
FG(Shield)	1	Shield	—
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
SG	10	PK/R (A)	5



*1 Terminating resistors should not be provided for a PLC which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

29.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

2 Connecting terminating resistors

When connecting a JTEKT PLC to a GOT, terminating resistor is not required.

29.1.5 PLC Side Setting

Point JTEKT PLC

For details of the JTEKT PLC, refer to the following manual.

☞ User's Manual for the JTEKT PLC

Model name	
PLC CPU	PC3JG, PC3JG-P, PC3JD, PC3JD-C, PC3J, PC3JL, PC2J, PC2JC, PC2J16P, PC2J16PR, PC2JS, PC2JR, PC2J16
RS-232/RS-422 interface converter	TXU-2051
Link unit	THU-2755
	THU-2927
	THU-5139

29.1.6 Connecting to PC3JG, PC3JG-P, PC3JD, PC3JD-C, PC3J, PC3JL or PC2J

1 Communication settings

Make the communication settings using the PLC peripheral device (PCwin).

Item	Set value
Transmission speed*1	9600bps, 19200bps, 38400bps
Data length*1	8 bits or 7 bits
Parity bit	Even (fixed)
Stop bit*1	1 bit or 2 bits
Station No.*2	0 to 37 (Octal)
2-wire/4-wire type*3	2-wire type or 4-wire type

*1 Adjust the settings with GOT settings.

*2 Avoid duplication of the station No. with any of the other units.

*3 Make the settings referring to the following connection diagram.

☞ Section 29.1.3 Connection cable

1 Communication settings

Make the communication settings using each setting switch.
For the detail settings, refer to the following manual.

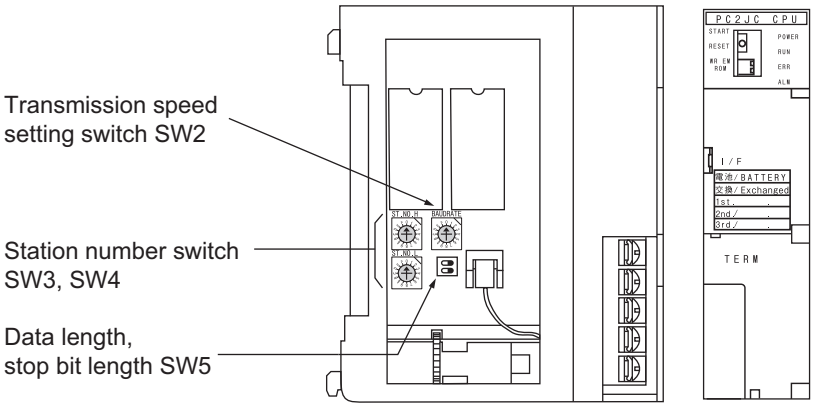
☞ User's Manual for the JTEKT PLC

Item	Set value
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Stop bit*1	1 bit or 2 bits
Station No.*1	0 to 37 (Octal)

*1 Adjust the settings with GOT settings.

2 Settings by switch

Make the communication settings using each setting switch.



(1) Station No. settings

Set the station No. between 00 and 37 (Octal).

Switch name	Station No. setting
SW3	Upper digit
SW4	Lower digit

(2) Transmission speed settings

Switch name	Switch position	Transmission speed (bps)
SW2	1	19200
	2	9600

(3) Settings of data length and stop bit length

Switch name	Setting item	Set value	Switch No.	
			2	1
SW5	Data length	8 bits	OFF	
		7 bits	ON	
	Stop bit length	2 bits		OFF
		1 bit		ON

29.1.8 Connecting to PC2J16P or PC2J16PR

1 Communication settings

Make the communication settings using each setting switch.
For the detail settings, refer to the following manual.

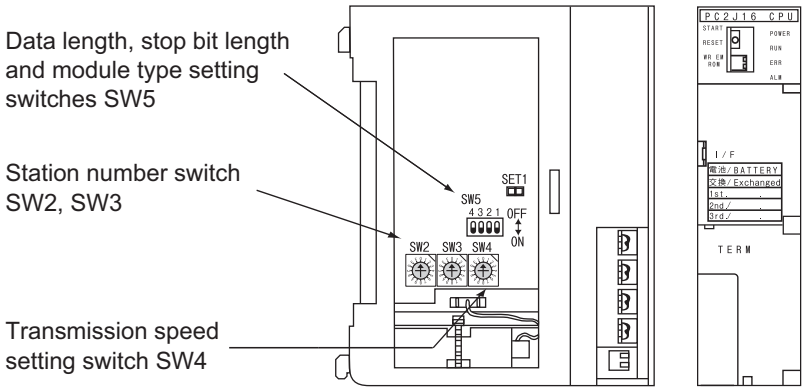
☞ User's Manual for the JTEKT PLC

Item	Set value
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Stop bit*1	1 bit or 2 bits
Station No.*1	0 to 37 (Octal)
Selection of module type	Computer link

*1 Adjust the settings with GOT settings.

2 Settings by switch

Make the communication settings using each setting switch.



(1) Station No. settings

Set the station No. between 00 and 37 (Octal).

Switch name	Station No. setting
SW2	Upper digit
SW3	Lower digit

(2) Transmission speed settings

Switch name	Switch position	Transmission speed (bps)
SW4	1	19200
	2	9600

(3) Settings of data length, stop bit length and module type

Switch name	Setting item	Set value	Switch No.		
			4	3	2
SW5	Data length	8 bits	OFF		
		7 bits	ON		
	Stop bit length	2 bits		OFF	
		1 bit		ON	
	Module type	Computer link			OFF

1 Communication settings

Make the communication settings by the setting switch of the RS-232/RS-422 interface converter.

Item	Set value
Transmission speed*1	9600bps, 19200bps
2-wire/4-wire type*2	2-wire type or 4-wire type
Echoback	ON, OFF

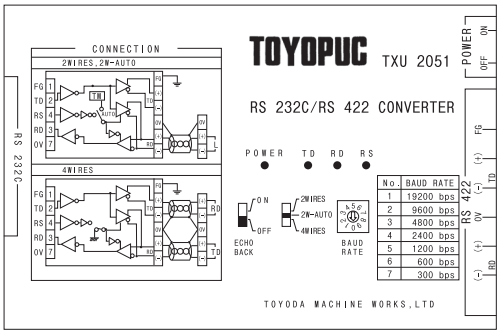
*1 Adjust the settings with GOT settings.

*2 Set referring to the RS-422 connection diagram.For details, refer to the following.

Section 29.1.3 Connection cable

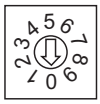
2 Settings by switch

Make the communication settings by each setting switch of the RS-232/RS-422 interface converter.



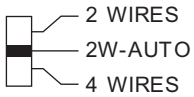
(1) Transmission speed settings

Transmission speed (bps)	Switch position
9600	2
19200	1



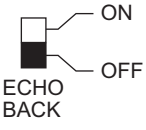
(2) Mode setting switch

Mode	Switch position
2-wire type	2W-AUTO
4-wire type	4 WIRES



(3) Echoback setting switch

Setting	Switch position
OFF	OFF



29.1.10 Link unit setting

1 Communication settings

Make the communication settings using each setting switch.
For the detail settings, refer to the following manual.

☞ User's Manual for the JTEKT PLC

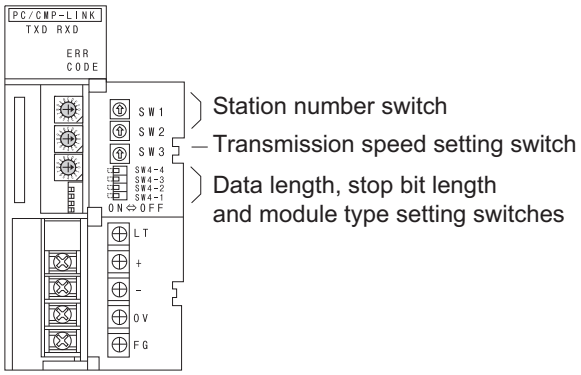
Item	Set value
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Parity bit	Even (fixed)
Stop bit*1	1 bit or 2 bits
Station No.*1	0 to 37 (Octal)
Selection of module type	Computer link
2-wire/4-wire type*2	2-wire type or 4-wire type

*1 Adjust the settings with GOT settings.

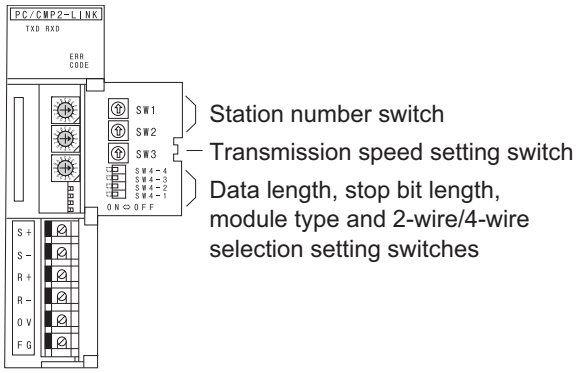
*2 Set referring to the RS-422 connection diagram.For details, refer to the following.

☞ Section 29.1.3 Connection cable

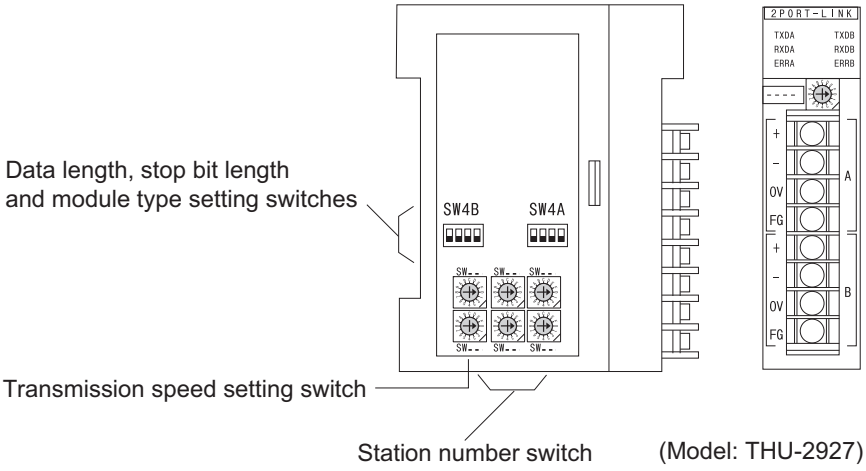
2 Settings by switch



(Model: THU-2755)



(Model: THU-5139)



(Model: THU-2927)

(1) Station No. settings

Set the station No. between 00 and 37 (Octal).

Switch name	Station No. setting
SW1	Upper digit
SW2	Lower digit

(2) Transmission speed settings

Switch name	Switch position	Transmission speed (bps)
SW3	1	19200
	2	9600

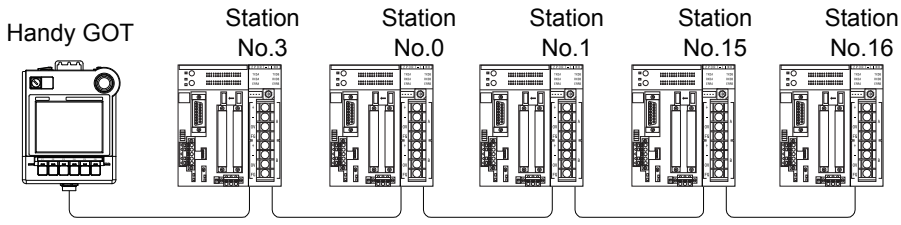
(3) Data length, stop bit length, module type and 2-wire/4-wire type communication selection setting

Switch name	Setting item	Set value	Switch No.			
			4	3	2	1
SW4	Data length	8 bits	OFF			
		7 bits	ON			
	Stop bit length	2 bits		OFF		
		1 bit		ON		
	Module type	PLC link unit			OFF	
		Computer link			ON	
	2-wire type/4-wiretype communicationselection*1	2-wire type communication				OFF
		4-wire type communication				ON

*1 The setting is available only for the link unit (Model: THU-5139).

29.1.11 Station No. settings

Set each station number so that no station number overlaps.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

Specify the station No. of the PLC to be changed when setting device.

Specification range
0 to 37 (Octal)

29.2 Precautions

29.2.1 Precautions

1 Station No. settings of the PLC side

In the system configuration, the PLC with the station number set with the host address must be included. For details of host address setting, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 GOT clock function

The GOT clock function is available only for the PLC with the station number set with the host address. For details of host address setting, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

3 System configuration

If the system is configured by mixing the PC3J extended function compliant PLC with the PC3J extended function incompliant PLC, normal communication may not be performed. Unify the PLCs into PC3J extended function compliant or PC3J extended function incompliant to configure the system.

4 System alarm

The system alarm can be displayed only for the PLC set with a host address. When connected to the PC3J extended function compliant PLC, only the system alarm of program No. 1 can be displayed.

5 Device range

The device range differs depending on the PLC type and the operation mode.
For details, refer to the following manual.

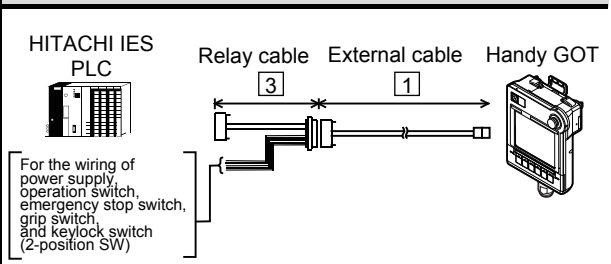
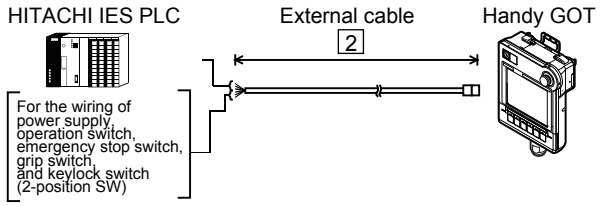
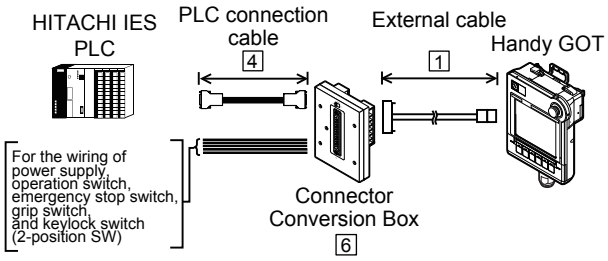
☞ GT Designer2 Version2 Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

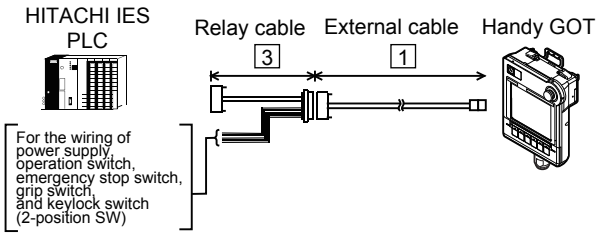
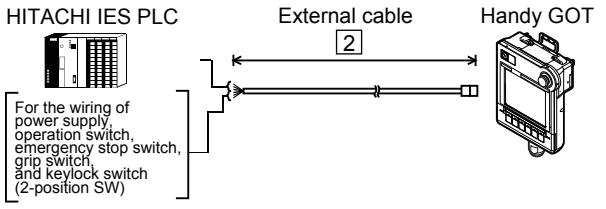
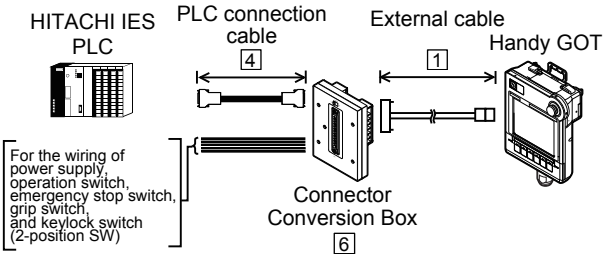
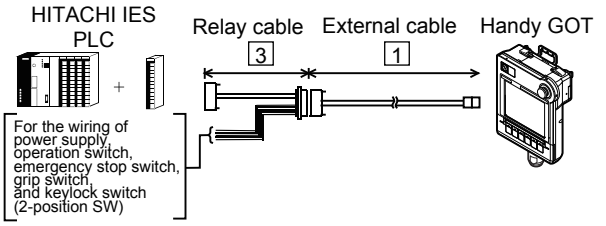
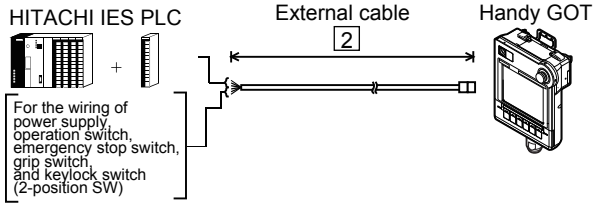
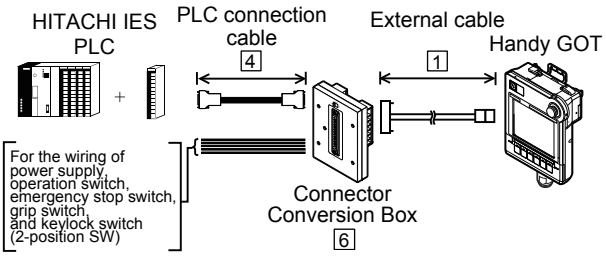
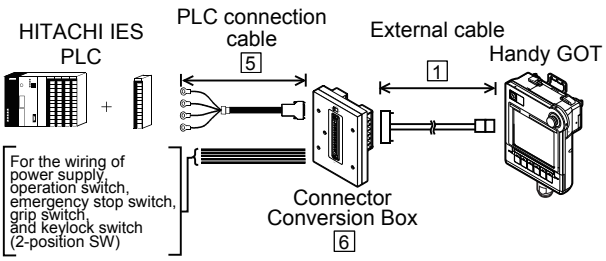
30. CONNECTION TO HITACHI IES PLC

30.1 System Configuration and System Equipment

30.1.1 System configuration

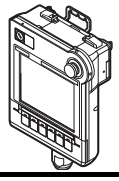
When connecting the Handy GOT to a HITACHI IES PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "30.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
H-200 to 252 series, H series board type, EH-150 series	RS-232	6m or less	  

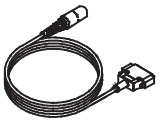
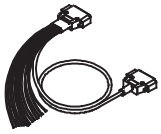
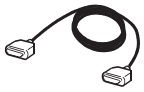
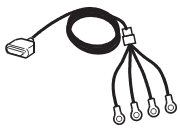
Connection conditions			System configuration
PLC	Communication	Distance	
Large-sized H series	RS-232	6m or less	
			
			
	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
	RS-232	6m or less	
	RS-422	13m or less	

30.1.2 System equipment

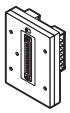
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 30.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 30.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
Large-sized H series	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	Intelligent serial port module	COMM-H, COMM-2H
		RS-422		
H-200 to 252 series, H series board type, EH-150 series	Direct CPU connection	RS-232	—	—

When using the large-sized H series

*1 When "transmission control procedure 2" is used in a protocol, set the communication driver to "HITACHI HIDIC H (transmission procedure 2)".

*2 When connecting to the large-sized H series, connect to the peripheral port of a CPU module.

When using the H-200 to 252 series, H series board type or EH-150 series

*1 When "transmission control procedure 2" is used in a protocol, set the communication driver to "HITACHI HIDIC H (transmission procedure 2)".

*2 When connecting to the H-200 to 252 series, connect to the peripheral port of a CPU module.

*3 When connecting to the EH-150 series, connect to the serial port of a CPU module.
The conversion cable (HITACHI: EH-RS05) of modular jack (8 pins)/D-Sub connector (15 pins) is required.

*4 When connecting to the serial port 2 of H-252C (CPU22-02HC or CPE22-02HC), the conversion cable (HITACHI: CNCOM-05) of round connector (8 pins)/D-Sub connector (15 pins) is required.

*5 The cable connection diagram to be used differs depending on the set transmission speed.

(Section 30.1.3 Connection cable)

5 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
Large-sized H series, H-200 to 252 series, H series board type, EH-150 series	1	1

30.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

(1) Large-sized H series

Communication unit		Set transmission speed	PLC connection cable *1	
Name	Model name		RS-232 cable	RS-422 cable
PLC CPU	H-302/702 /1002/2002	—	GT09-C30R20401-15P (3m)	—
	H-4010	4800bps	GT09-C30R20401-15P (3m)	—
		19200bps	GT09-C30R20402-15P (3m)	—
		38400bps	GT09-C30R20402-15P (3m)	—
		Other than the above	GT09-C30R20401-15P (3m) GT09-C30R20402-15P (3m)	—
	H-300/700/2000	—	GT09-C30R20401-15P (3m)	—
Intelligent serial port module	COMM-H, COMM-2H	—	GT09-C30R20401-15P (3m)	GT09-C30R40401-7T (3m) GT09-C100R40401-7T (10m)

(2) H-200 to 252 series, H series board type, EH-150 series

Communication unit		Set transmission speed	PLC connection cable *1	
Name	Model name		RS-232 cable	RS-422 cable
PLC CPU	H-200/250 /252/252B	—	GT09-C30R20401-15P (3m)	—
	H-252C	4800bps	GT09-C30R20401-15P (3m)	—
		19200bps	GT09-C30R20402-15P (3m)	—
		Other than the above	GT09-C30R20401-15P (3m) GT09-C30R20402-15P (3m)	—
	H series board type	—	GT09-C30R20401-15P (3m)	—
	EH-150 series	4800bps	GT09-C30R20401-15P (3m)	—
		19200bps	GT09-C30R20402-15P (3m)	—
		38400bps	GT09-C30R20402-15P (3m)	—
		Other than the above	GT09-C30R20401-15P (3m) GT09-C30R20402-15P (3m)	—

*1 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

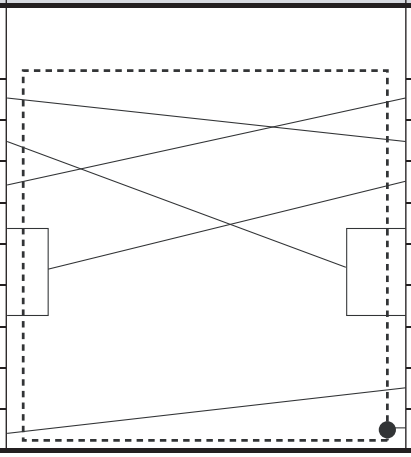
Communication unit			Set transmission speed	Connection cable	
Name		Model name		RS-232 cable	RS-422 cable
Large-sized H series	PLC CPU	H-302/702 /1002/2002	—	RS-232 cable 1)	—
		H-4010	4800bps	RS-232 cable 1)	—
			19200bps	RS-232 cable 2)	—
			38400bps	RS-232 cable 2)	—
			Other than the above	RS-232 cable 1) 2)	—
		H-300/700/2000	—	RS-232 cable 1)	—
	Intelligent serial port module	COMM-H, COMM-2H	—	RS-232 cable 1)	RS-422 cable
H-200 to 252 series, H series board type, EH-150 series	PLC CPU	H-200/250 /252/252B	—	RS-232 cable 1)	—
		H-252C	4800bps	RS-232 cable 1)	—
			19200bps	RS-232 cable 2)	—
			Other than the above	RS-232 cable 1) 2)	—
		H series board type	—	RS-232 cable 1)	—
		EH-150 series	4800bps	RS-232 cable 1)	—
			19200bps	RS-232 cable 2)	—
			38400bps	RS-232 cable 2)	—
			Other than the above	RS-232 cable 1) 2)	—

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

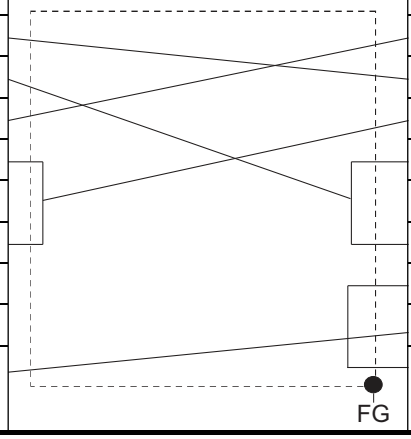
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	HITACHI IES product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	NC
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	RV1(ER)
CS(CTS)	7	O/BK (A)	8		7	RV2(DR)
—	8	Y/R (A)	—		8	PHL
—	9	Y/BK (A)	—		9	SG
SG	10	PK/R (A)	5		FG	

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	HITACHI IES product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	NC
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	RV1(ER)
CS(CTS)	7	O/BK (A)	8		7	RV2(DR)
—	8	Y/R (A)	—		8	PHL
—	9	Y/BK (A)	—		9	SG
SG	10	PK/R (A)	5	FG	14	ER

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

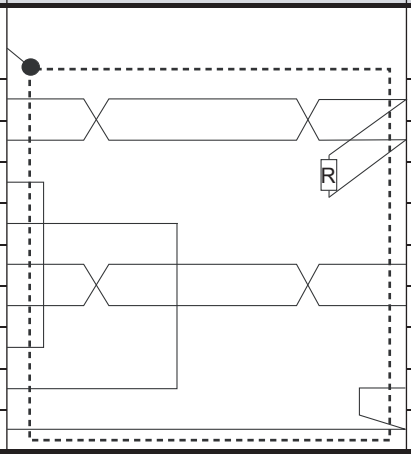
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	HITACHI IES product side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Terminal block name
FG (Shield)	1	Shield	—		—
SDA	2	W/R (A)	1		RXDP
SDB	3	W/BK (A)	6		RXDN
RSA	4	GY/R (A)	3		—
RSB	5	GY/BK (A)	8		—
RDA	6	O/R (A)	2		TXDP
RDB	7	O/BK (A)	7		TXDN
CSA	8	Y/R (A)	4		—
CSB	9	Y/BK (A)	9		TXDG
SG	10	PK/R (A)	5		RXDG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

30.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

2 Connecting terminating resistors

When connecting an intelligent serial port module to a GOT, a terminating resistor must be set to the intelligent serial port module.
No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

☞ User's Manual for the HITACHI IES PLC

Point

HITACHI IES PLC

For details of the HITACHI IES PLC, refer to the following manual.

☞ User's Manual for the HITACHI IES PLC

1 Directly connecting to the CPU

Item	Setting
Transmission speed *1*2*3	4800bps, 9600bps, 19200bps, 38400bps
Station No.	0
Data length	7bit
Stop bit	1bit
Parity bit	Even
Control procedure	DTR control
Communication format	RS-232
Sum check	Performed
Protocol	transmission control procedure 1

*1 Indicates only the transmission speeds that can be specified on the GOT side.

*2 Specify the transmission speed to match the transmission speed of the GOT.
For the transmission speed setting method of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*3 The setting range varies according to the PLC to be connected.

2 Connecting to the intelligent serial port module

(1) For transmission control procedure1

Item	Setting
Transmission speed	19200bps
Station No.	0
Data length	7bit
Stop bit	1bit
Parity bit	Even
Control procedure	None
Communication format	For RS-232 communication : RS-232 MODE switch 2 For RS-422 communication :RS-422MODEswitch2
Sum check	Performed

(2) For transmission control procedure2

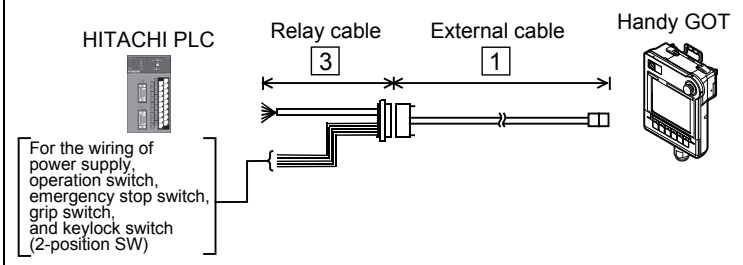
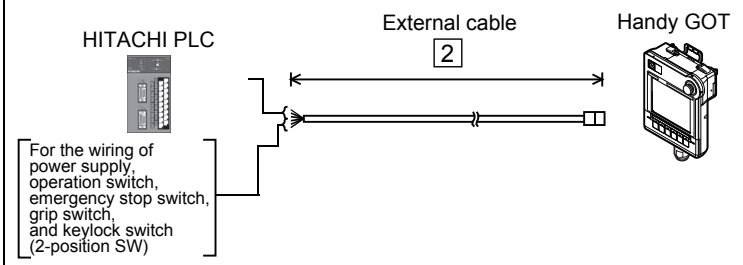
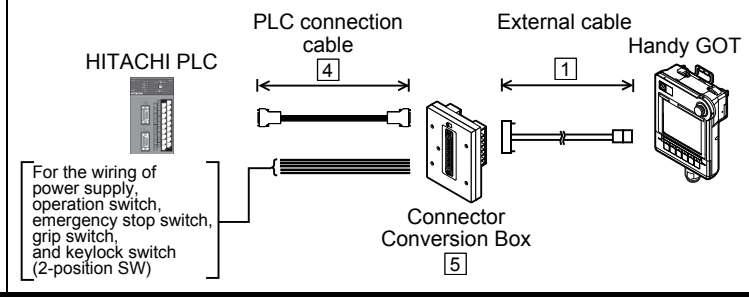
Item	Setting
Transmission speed	19200bps
Station No.	0
Data length	7bit
Stop bit	1bit
Parity bit	Even
Control procedure	None
Communication format	For RS-232 communication: RS-232 MODE switch 9 For RS-422 communication: RS-422 MODE switch 9
Sum check	Performed

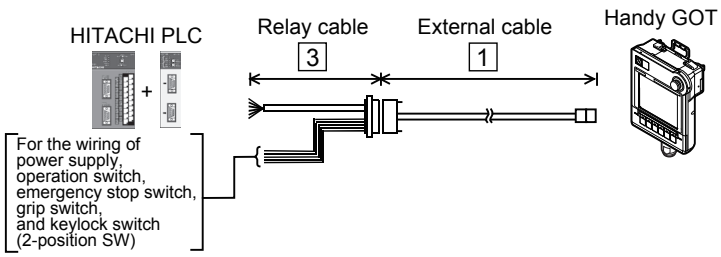
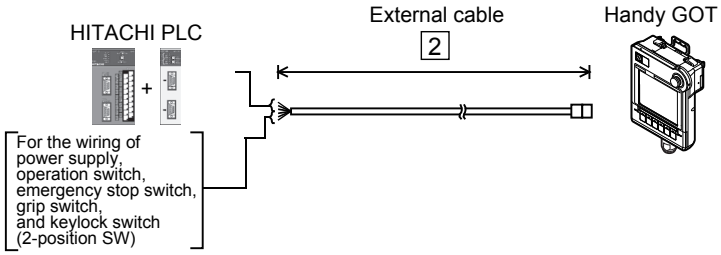
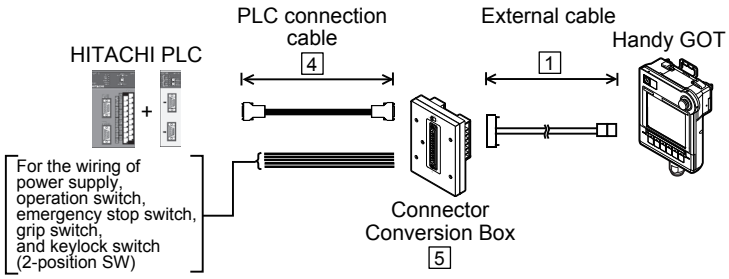
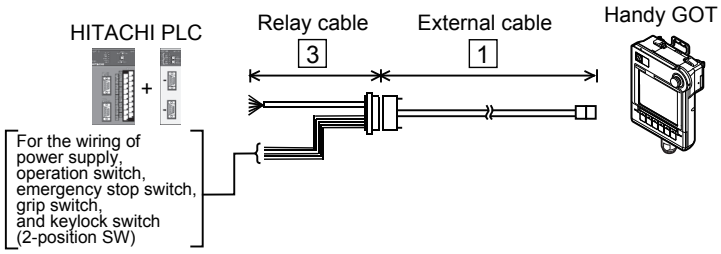
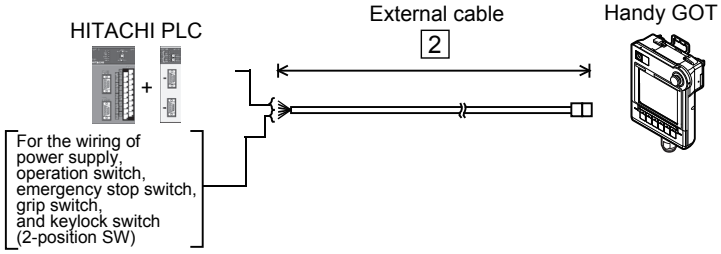
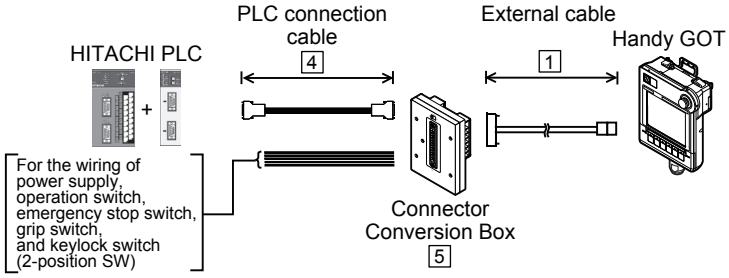
31. CONNECTION TO HITACHI PLC

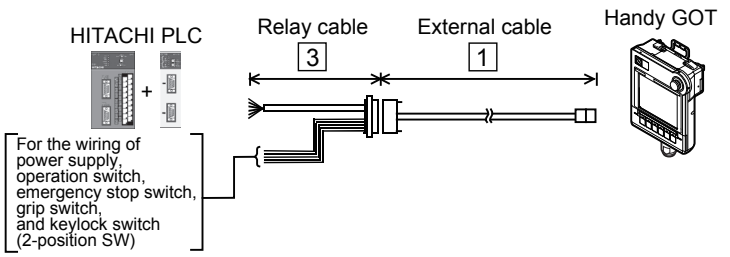
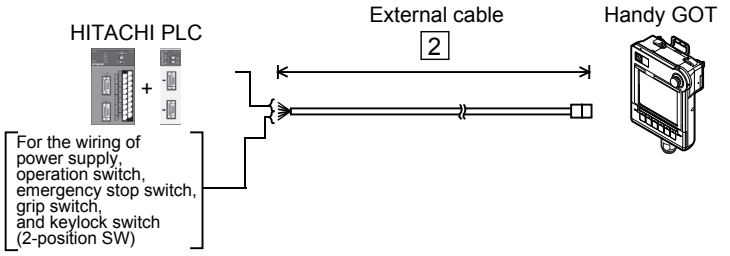
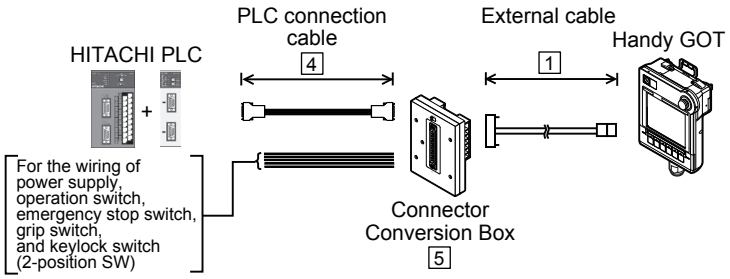
31.1 System Configuration and System Equipment

31.1.1 System configuration

When connecting the Handy GOT to a HITACHI PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "31.1.2 System equipment".

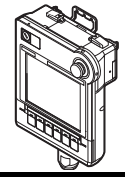
Connection conditions			System configuration
PLC	Communication	Distance	
S10V Series LQP510	RS-422	13m or less	
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
S10V Series LQP510	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			
S10V Series LQP520	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

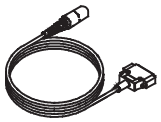
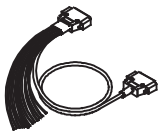
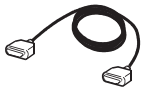
Connection conditions			System configuration
PLC	Communication	Distance	
S10mini Series	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

31.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 31.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 31.1.3 Connection cable	

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
LQP510	Direct CPU connection	RS-422	—	—
	Computer link	RS-232	Communication module	LQE560
		RS-422		LQE565
LQP520	Computer link	RS-232	Communication module	LQE560
		RS-422		LQE565
S10mini Series	Computer link	RS-232	Communication module	LQE060 LQE160 LQE560
		RS-422		LQE165 LQE565

Communication module is manufactured by HITACHI CORPORATION.
For details of the product, contact HITACHI CORPORATION.

5 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
LQP510 LQP520 S10mini Series	1	1

31.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Communication unit		PLC connection cable*1	
Name	Model name	RS-232 cable	RS-422 cable
PLC CPU	LQP510	—	GT09-C30R41301-9S GT09-C100R41301-9S
Communication module	LQE560	GT09-C30R21301-9S	—
	LQE060		
	LQE160		
	LQE565	—	GT09-C30R41301-9S GT09-C100R41301-9S
	LQE165		

*1 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Communication unit		Connection cable	
Name	Model name	RS-232 cable	RS-422 cable
PLC CPU	LQP510	—	RS-422 cable
Communication module	LQE560	RS-232 cable	—
	LQE060		
	LQE160		
	LQE565	—	RS-422 cable
	LQE165		

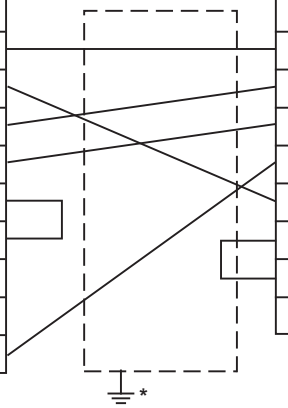
3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	HITACHI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—	1	CD
SD(TXD)	2	W/R (A)	3	2	RD
ER(DTR)	3	W/BK (A)	4	3	SD
RD(RXD)	4	GY/R (A)	2	4	ER
DR(DSR)	5	GY/BK (A)	6	5	SG
RS(RTS)	6	O/R (A)	7	6	DR
CS(CTS)	7	O/BK (A)	8	7	RS
—	8	Y/R (A)	—	8	CS
—	9	Y/BK (A)	—	9	—
SG	10	PK/R (A)	5		



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

* Connect FG grounding to the appropriate part of a cable shield line.

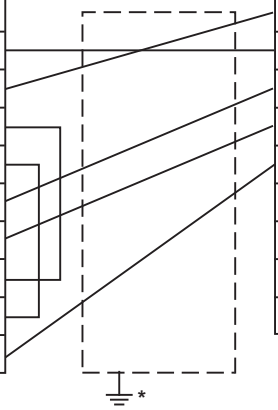
4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	HITACHI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—	1	RD-L
SDA	2	W/R (A)	1	2	RD-H
SDB	3	W/BK (A)	6	3	SD-H
RSA	4	GY/R (A)	3	4	SD-L
RSB	5	GY/BK (A)	8	5	SG
RDA	6	O/R (A)	2	6	—
RDB	7	O/BK (A)	7	7	ATT-H
CSA	8	Y/R (A)	4	8	—
CSB	9	Y/BK (A)	9	9	ATT-L
SG	10	PK/R (A)	5		



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

* Connect FG grounding to the appropriate part of a cable shield line.

31.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

Point HITACHI PLC

For details of the HITACHI PLC, refer to the following manual.

☞ User's Manual for the HITACHI PLC

1 Connecting to communication module

(1) Communication settings

Make the communication settings of the Communication module.

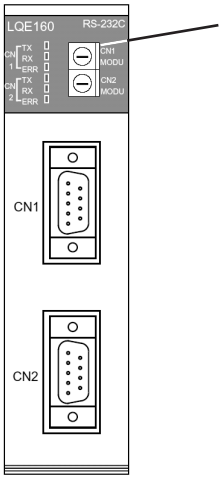
Item	Set value
Channel No. setting*1*2	#0 to #3
Protocol setting	H-7338 protocol
Transmission speed	19200bps (fixed)
Data length	8 bits (fixed)
Parity bit	Odd (fixed)
Start bit	1 bit (fixed)
Stop bit	1 bit (fixed)

*1 The ranges of available channel No. differ depending on the model of communication module.

*2 Avoid duplication of the channel No..

(2) Settings by switch

Make the communication settings using each setting switch.



Setting switches for the channel No. and the protocol
CN1 MODU, CN2 MODU

(a) Settings of the channel No. and the protocol

Switch positions	Protocol	Channel No.
8	H-7338	#0
9		#1
A		#2
B		#3


CN1 MODU

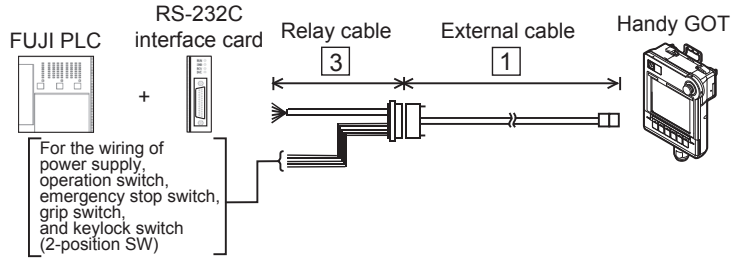
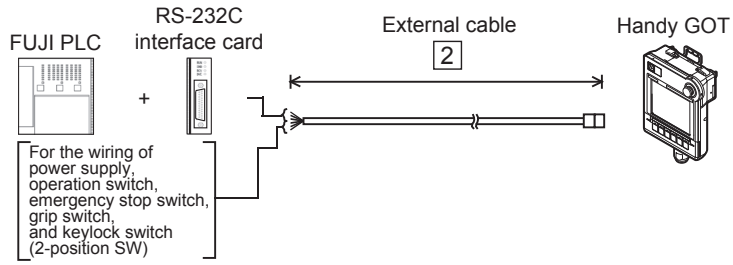
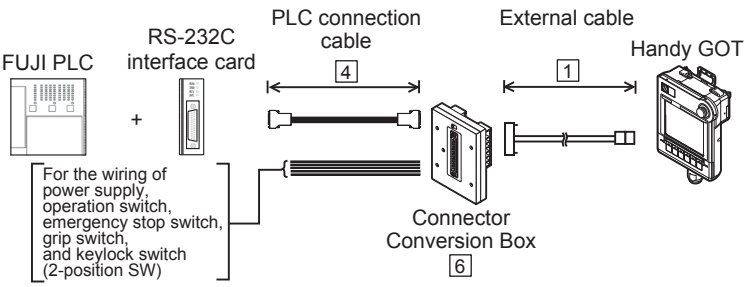

CN2 MODU

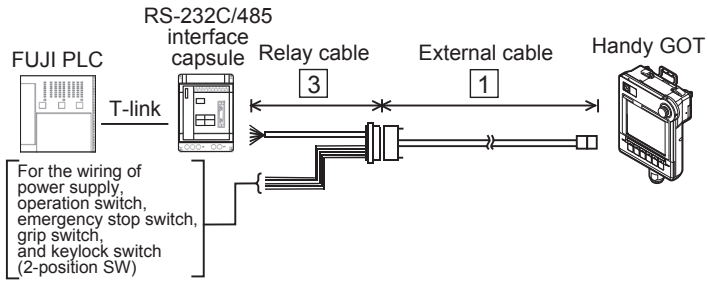
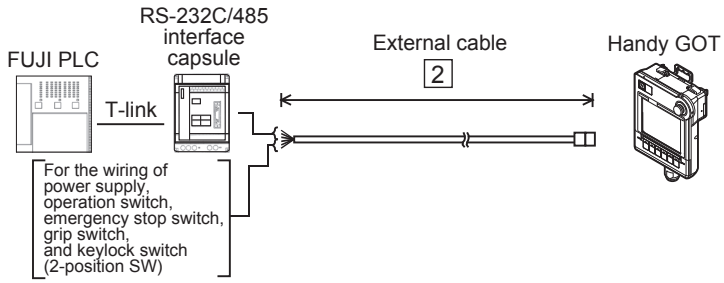
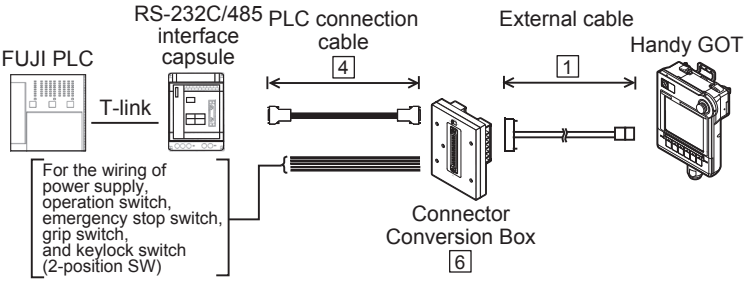
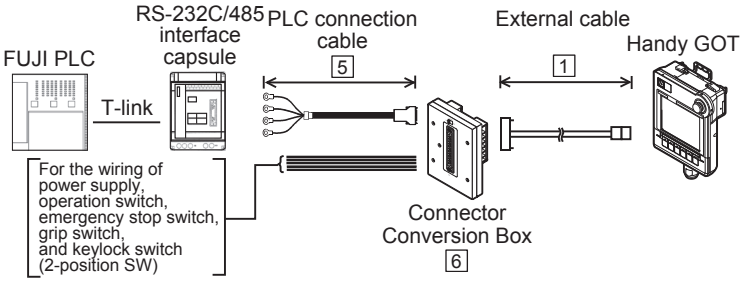
32. CONNECTION TO FUJI PLC

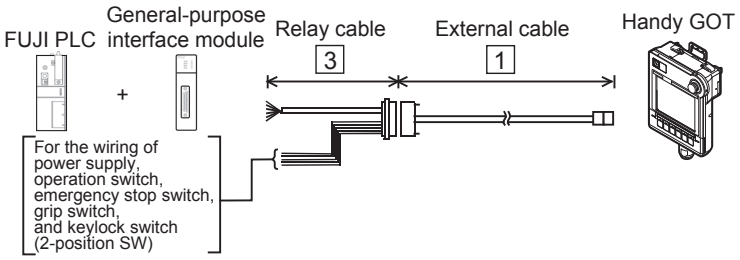
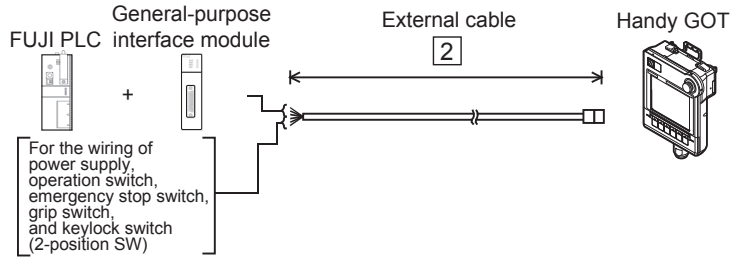
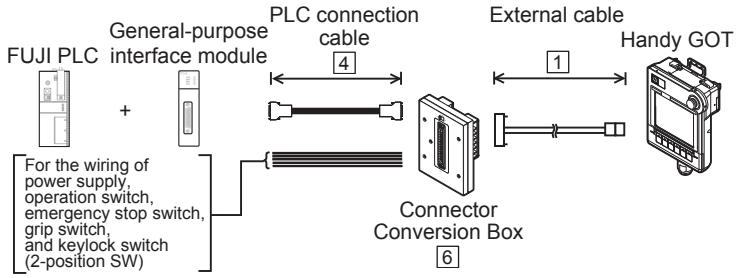
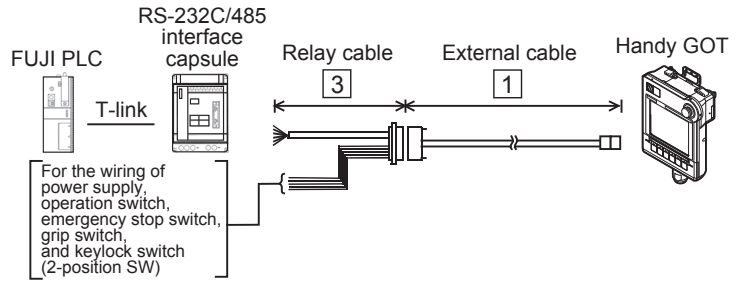
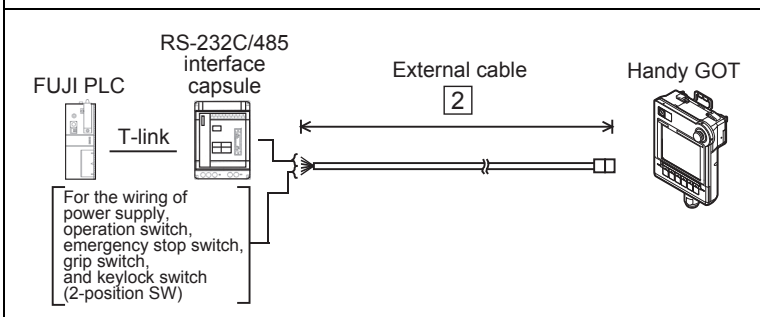
32.1 System Configuration and System Equipment

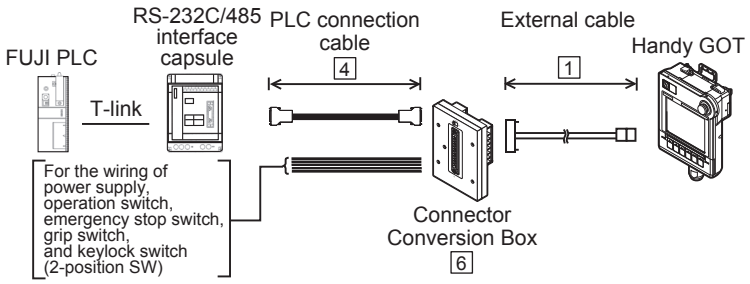
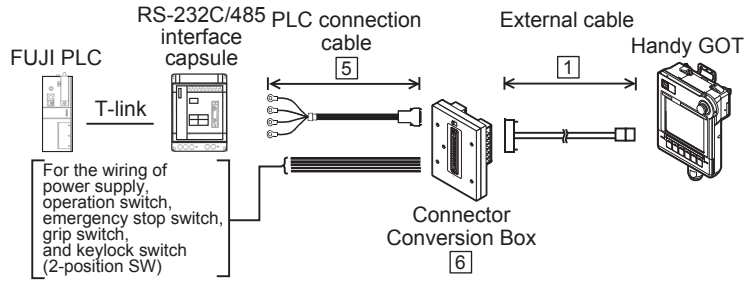
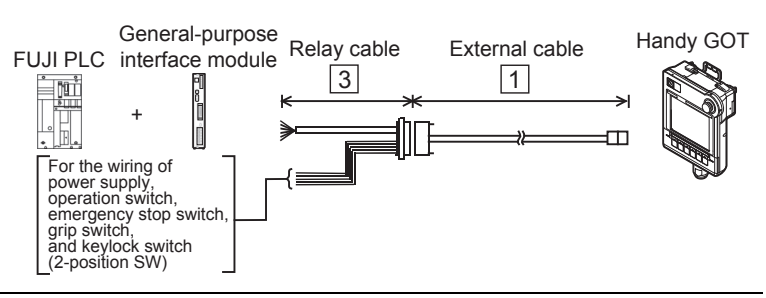
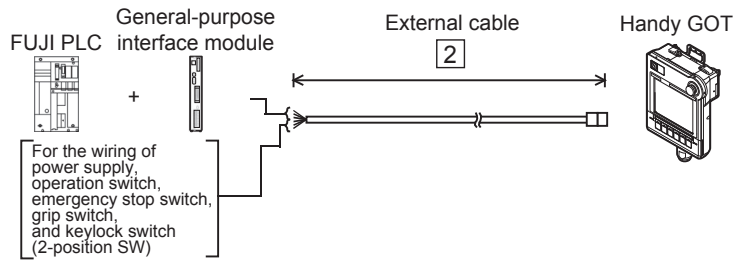
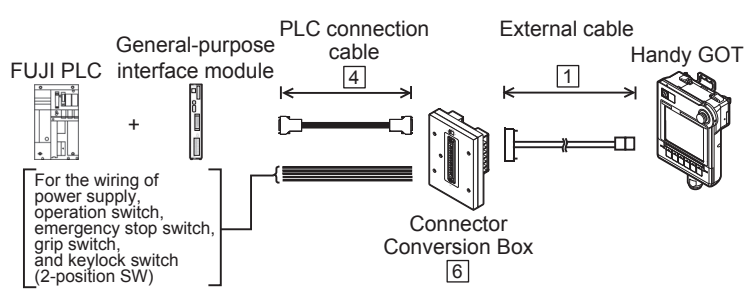
32.1.1 System configuration

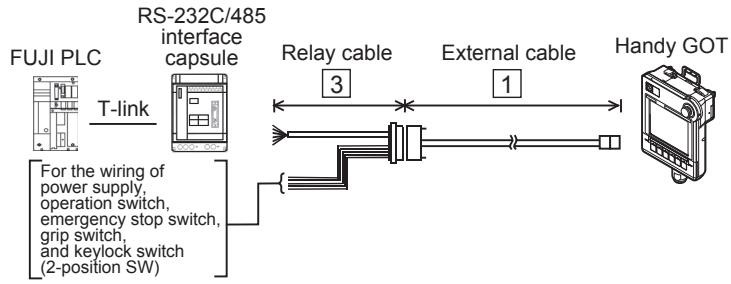
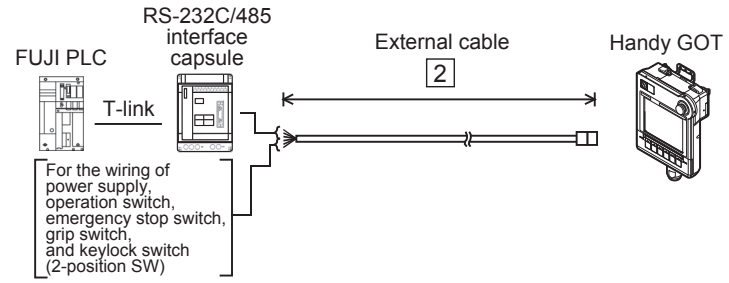
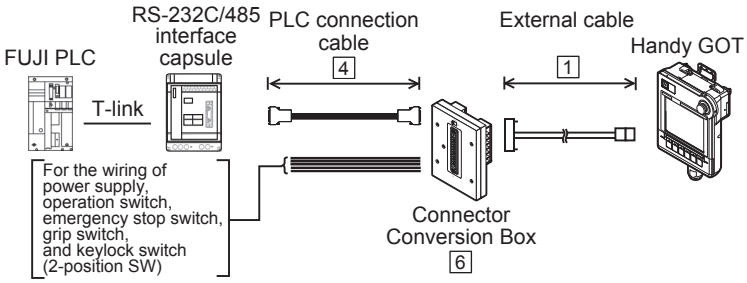
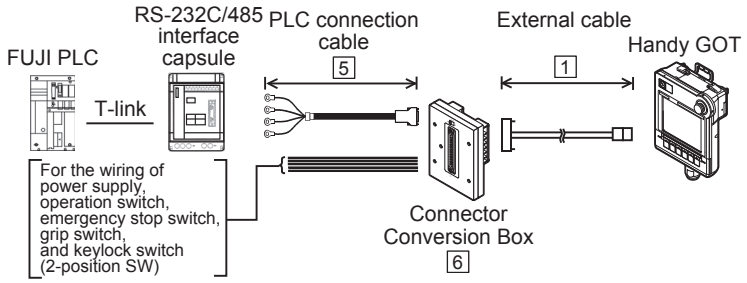
When connecting the Handy GOT to a FUJI PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-485 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "32.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
MICREX-F F55 Series	RS-232	6m or less	
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
MICREX-F F55 Series	RS-232 /RS-485	6m or less (RS232) /13m or less (RS485)	
			
	RS-232	6m or less	
	RS-485	13m or less	

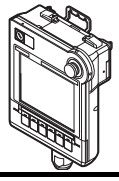
Connection conditions			System configuration
PLC	Communication	Distance	
MICREX-F F70 Series	RS-232 /RS-485	6m or less (RS232 /13m or less (RS485)	
			
			
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
MICREX-F F70 Series	RS-232	6m or less	
	RS-485	13m or less	
MICREX-F F120S/ F140S/ F15□S Series	RS-232 /RS-485	6m or less (RS232 /13m or less (RS485)	
			
			

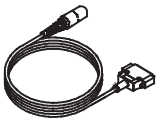
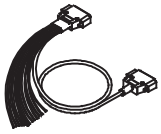
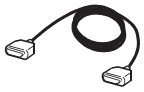
Connection conditions			System configuration
PLC	Communication	Distance	
MICREX-F F120S/ F140S/ F15□S Series	RS-232 /RS-485	6m or less (RS232) /13m or less (RS485)	
			
	RS-232	6m or less	
	RS-485	13m or less	

32.1.2 System equipment

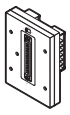
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 32.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 32.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC		Connection type	Communication	Communication unit	
				Name	Model name
MICREX-F	F55 Series	Direct CPU connection	RS-232	RS-232C/485 interface capsule	FFK120A-C10
			RS-485		
		Computer link	RS-232	RS-232C interface card	NV1L-RS2
	F70 Series	Direct CPU connection	RS-232	RS-232C/485 interface capsule	FFK120A-C10
			RS-485		
		Computer link	RS-232	General-purpose interface module	NC1L-RS2
			RS-485		NC1L-RS4
	F120S/ F140S/ F15□S Series	Direct CPU connection	RS-232	RS-232C/485 interface capsule	FFK120A-C10
			RS-485		
		Computer link	RS-232	General-purpose interface module	FFU120B
			RS-485		

5 Number of connectable GOTs and PLCs

PLC		Number of GOTs	Communication	Number of PLCs
MICREX-F	F55 Series	1	RS-232	1
			RS-485	10
	F70 Series		RS-232	1
			RS-485	10
	F120S/F140S/ F15□S Series		RS-232	1
			RS-485	10

32.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Model name		PLC connection cable*1	
		RS-232 cable	RS-485 cable
RS-232C interface card	NV1L-RS2	GT09-C30R21003-25P	—
RS-232C/485 interface capsule	FFK120A-C10	GT09-C30R21003-25P	GT09-C30R41001-6T GT09-C100R41001-6T
General-purpose interface module	NC1L-RS2	GT09-C30R21003-25P	—
	NC1L-RS4	—	GT09-C30R41001-6T GT09-C100R41001-6T
	FFU120B	GT09-C30R21003-25P	GT09-C30R41001-6T GT09-C100R41001-6T

*1 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.

Refer to the connection diagram of the cable No. to be used.

Model name		Connection cable	
		RS-232 cable	RS-485 cable
RS-232C interface card	NV1L-RS2	RS-232 cable	—
RS-232C/485 interface capsule	FFK120A-C10	RS-232 cable	RS-485 cable
General-purpose interface module	NC1L-RS2	RS-232 cable	—
	NC1L-RS4	—	RS-485 cable
	FFU120B	RS-232 cable	RS-485 cable

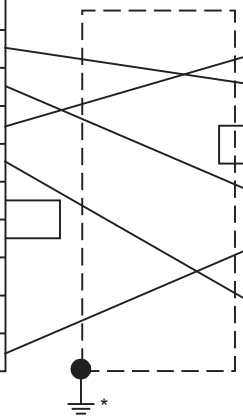
3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	FUJI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—	1	FG
SD(TXD)	2	W/R (A)	3	2	SD
ER(DTR)	3	W/BK (A)	4	3	RD
RD(RXD)	4	GY/R (A)	2	4	RS
DR(DSR)	5	GY/BK (A)	6	5	CS
RS(RTS)	6	O/R (A)	7	6	DR
CS(CTS)	7	O/BK (A)	8	7	SG
—	8	Y/R (A)	—	8	CD
—	9	Y/BK (A)	—	20	ER
SG	10	PK/R (A)	5		



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

* Connect FG grounding to the appropriate part of a cable shield line.

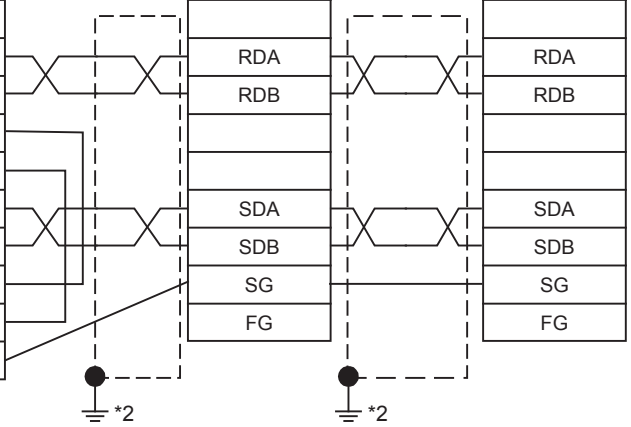
4 Connection diagram of RS-485 cable

The following provides the connection diagram of RS-485 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-485 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	FUJI product side*1	FUJI product side*1
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Signal name	Signal name
FG(Shield)	1	Shield	—		
SDA	2	W/R (A)	1	RDA	RDA
SDB	3	W/BK (A)	6	RDB	RDB
RSA	4	GY/R (A)	3		
RSB	5	GY/BK (A)	8		
RDA	6	O/R (A)	2	SDA	SDA
RDB	7	O/BK (A)	7	SDB	SDB
CSA	8	Y/R (A)	4	SG	SG
CSB	9	Y/BK (A)	9	FG	FG
SG	10	PK/R (A)	5		



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Terminating resistors should not be provided for a PLC which will be terminals.
*2 Connect FG grounding to the appropriate part of a cable shield line.

32.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-485 cable must be 13m or less.

2 Connecting terminating resistors

When connecting FUJI PLC to a GOT, a terminating resistor must be set to the FUJI PLC.
No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

☞ Section 32.1.5 PLC Side Setting

Point FUJI PLC

For details of the FUJI PLC, refer to the following manual.

☞ User's Manual for the FUJI PLC

1 Connecting to NV1L-RS2, NC1L-RS2

(1) Communication settings

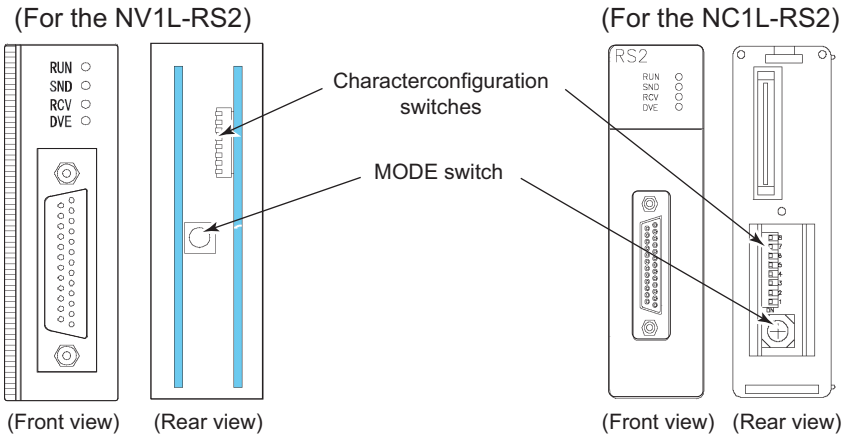
Make the communication settings using the setting switches.

Item	Set value
MODE	Command-setting-type start-stop synchronization, nonsequence format
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Parity bit*1	Even or Odd
	Done, None
Stop bit*1	1 bit or 2 bits
Initializing method	By switch

*1 Adjust the settings with GOT settings.

(2) Settings by switch

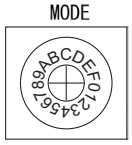
Make the communication settings using each setting switch.



(a) Setting of MODE

Make the MODE settings using the MODE switch.

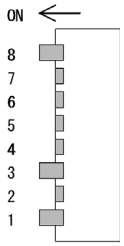
MODE	Switch position	
	NV1L-RS2	NC1L-RS2
Command-setting-type start-stop synchronization, nonsequence format	1	1



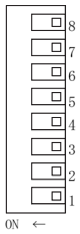
(b) **Setting of Transmission speed, Stop bit, Data length, Parity bit, Initializing method**

Setting item	Set value	Switch No.							
		1	2	3	4	5	6	7	8
Transmission speed	9600bps	ON	OFF	ON					
	19200bps	OFF	ON	ON					
Stop bit	1 bit				ON				
	2 bits				OFF				
Data length	7bits					ON			
	8bits					OFF			
Parity bit	Even						ON		
	Odd						OFF		
	Done							ON	
	Non							OFF	
Initializing method	By switch								ON

When NV1L-RS2



When NV1L-RS2



2 Connecting to NC1L-RS4

(1) Communication settings

Make the communication settings using the setting switches.

Item	Set value
MODE	Command-setting-type start-stop synchronization, nonsequence format
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Parity bit*1	Even or Odd
	Done, None
Stop bit*1	1 bit or 2 bits
Initializing method	By switch
Station No.*2	0 to 99
Terminating resistor*3	ON or OFF

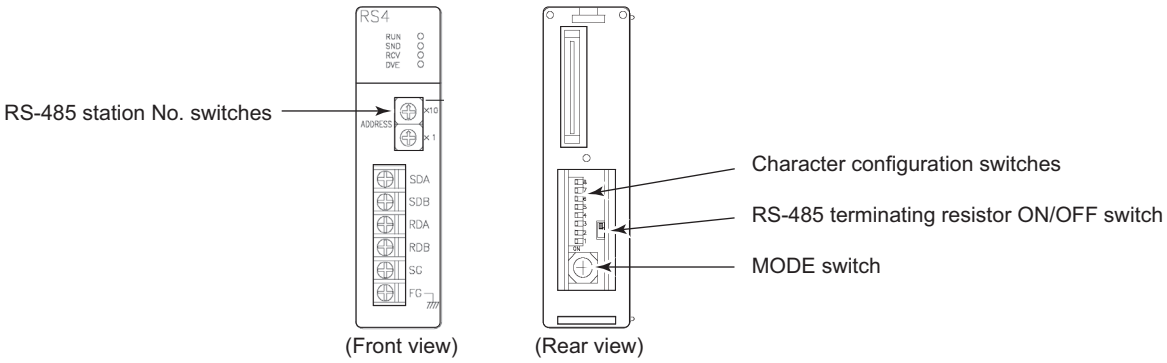
*1 Adjust the settings with GOT settings.

*2 Avoid duplication of the station No. with any of the other units.

*3 Turn ON the terminating switch of a general-purpose interface module which will be a terminal.

(2) Settings by switch

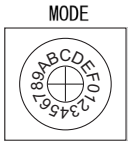
Make the communication settings using each setting switch.



(a) Setting of MODE

Make the MODE settings using the MODE switch.

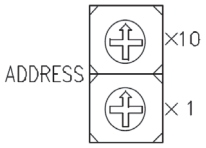
MODE	Switch positions
Command-setting-type start-stop synchronization, nonsequence format	3



(b) Setting of the station No.

Make the station No. using RS-485 station No. switches.

Station No.
0 to 99



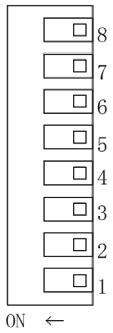
(c) Setting of the terminating resistor

Turn ON/OFF the terminating resistor using RS-485 terminating resistor ON/OFF switch.

(d) Setting of Transmission speed, Stop bit, Data length, Parity bit, Initializing method

Make the settings using the character configuration switches.

Setting item	Set value	Switch No.							
		1	2	3	4	5	6	7	8
Transmission speed	9600bps	ON	OFF	ON					
	19200bps	OFF	ON	ON					
Stop bit	1 bit				ON				
	2 bits				OFF				
Data length	7bits					ON			
	8bits					OFF			
Parity bit	Even						ON		
	Odd						OFF		
	Done							ON	
	Non							OFF	
Initializing method	By switch								ON



3 Connecting to FFU120B

(1) Communication settings

Make the communication settings using the setting switches.

Item	Set value
MODE	Command-setting-type start-stop synchronization, nonsequence format
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Parity bit*1	Even or Odd
	Done, None
Stop bit*1	1 bit or 2 bits
Initializing method	By switch
Station No.*1*2	0 to 99
Terminating resistor*3	ON or OFF

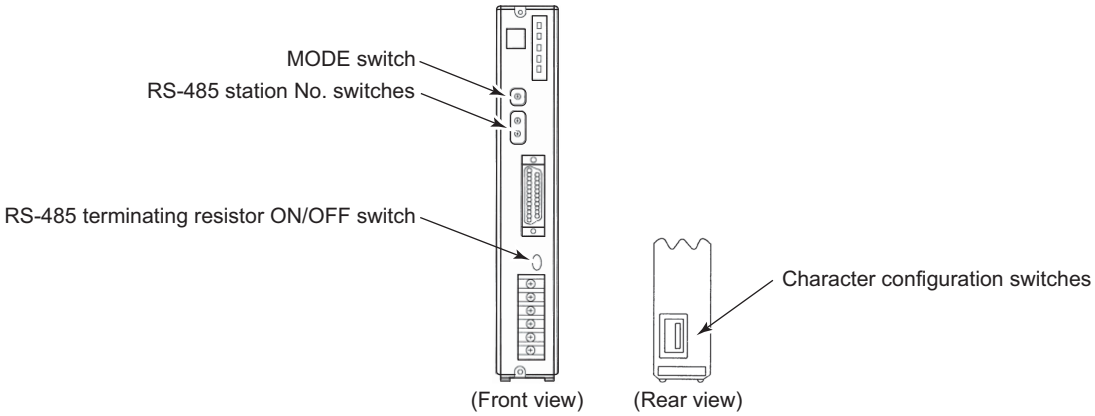
*1 Adjust the settings with GOT settings.

*2 Avoid duplication of the station No. with any of the other units.

*3 Turn ON the terminating switch of a general-purpose interface module which will be a terminal.

(2) Settings by switch

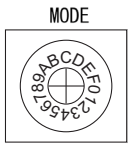
Make the communication settings using each setting switch.



(a) Setting of MODE

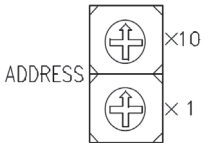
Make the MODE settings using the MODE switch.

MODE	Switch positions
Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1	1
Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1, and RS-485 1:N	2
Command-setting-type start-stop synchronization, nonsequence format RS-485 1:N	3



(b) Setting of the station No.

Make the station No. using RS-485 station No. switches.

Station No.	
0 to 99	

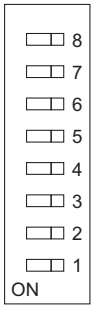
(c) Setting of the terminating resistor

Turn ON/OFF the terminating resistor using RS-485 terminating resistor ON/OFF switch.

(d) Setting of Transmission speed, Stop bit, Data length, Parity bit, Initializing method

Make the settings using the character configuration switches.

Setting item	Set value	Switch No.							
		1	2	3	4	5	6	7	8
Transmission speed	9600bps	ON	OFF	ON					
	19200bps	OFF	ON	ON					
Stop bit	1 bit				ON				
	2 bits				OFF				
Data length	7bits					ON			
	8bits					OFF			
Parity bit	Even						ON		
	Odd						OFF		
	Done							ON	
	Non							OFF	
Initializing method	By switch								ON



4 Connecting to RS-232/RS-485 interface capsule

(1) Communication settings

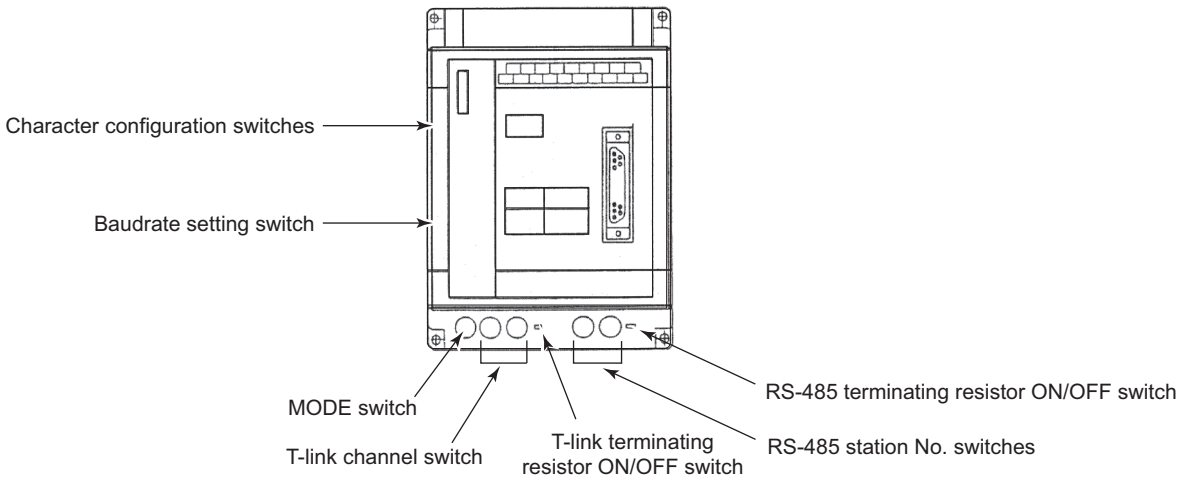
Make the communication settings using the setting switches.

Item	Set value
MODE*4	Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1
	Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1 and RS-485 1:N
	Command-setting-type start-stop synchronization, nonsequence format RS-485 1:N
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits or 7 bits
Parity bit*1	Even or Odd
	Done, None
Stop bit*1	1 bit or 2 bits
Initializing method	By switch
Station No.*1*2	0 to 99
Terminating resistor*3	ON or OFF
T-link channel switch	☞ Manuals for FUJI PLCs
T-link terminating resistor	

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.
*3 Turn ON the terminating switch of a general-purpose interface module which will be a terminal.
*4 Set as necessary.

(2) Settings by switch

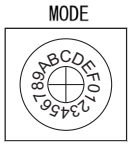
Make the communication settings using each setting switch.



(a) Setting of MODE

Make the MODE settings using the MODE switch.

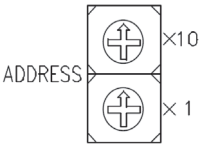
MODE	Switch positions
Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1	1
Command-setting-type start-stop synchronization, nonsequence format RS-232C 1:1, and RS-485 1:N	2
Command-setting-type start-stop synchronization, nonsequence format RS-485 1:N	3



(b) Setting of the station No.

Make the station No. using RS-485 station No. switches.

Station No.
0 to 99



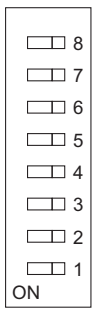
(c) Setting of the terminating resistor

Turn ON/OFF the terminating resistor using RS-485 terminating resistor ON/OFF switch.

(d) Setting of Stop bit, Data length, Parity bit, Initializing method

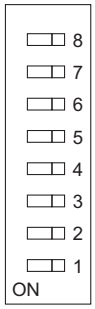
Make the settings using the character configuration switches.

Setting item	Set value	Switch No.							
		1	2	3	4	5	6	7	8
Disable		OFF	OFF	OFF					
Stop bit	1 bit				ON				
	2 bits				OFF				
Data length	7bits					ON			
	8bits					OFF			
Parity bit	Even						ON		
	Odd						OFF		
	Done							ON	
	Non							OFF	
Initializing method	By switch								ON



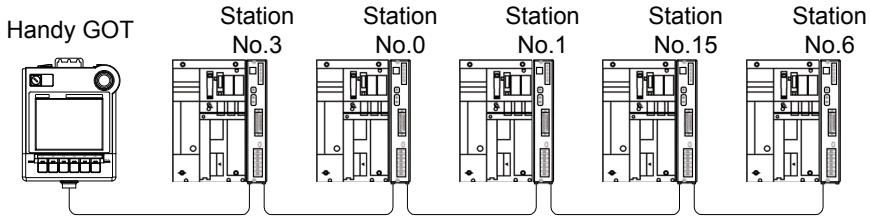
(e) Setting of Transmission speed

Setting item	Set value	Switch No.							
		1	2	3	4	5	6	7	8
Transmission speed	9600bps	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
	19200bps	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF



32.1.6 Station No. settings

Set each station number so that no station number overlaps.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



Examples of station number setting

1 Direct specification

Specify the station No. of the PLC to be changed when setting device.

Specification range
0 to 99

32.2 Precautions

32.2.1 Precautions

1 Station No. settings of the PLC side

In the system configuration, the PLC with the station number set with the host address must be included.

For details of host address setting, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 GOT clock function

The GOT clock function is available only for the PLC with the station number set with the host address.

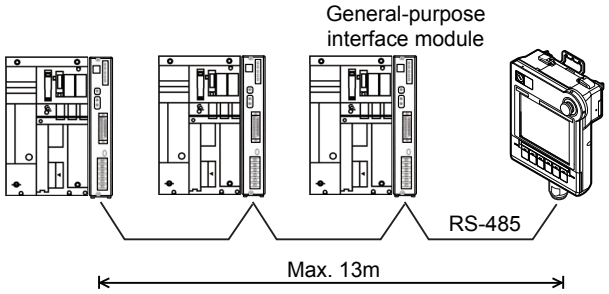
For details of host address setting, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

3 Connection distance

For the RS-232 connection, the connection distance must be 6m or less and for the RS-485 connection, the connection distance must be 13m or less.

In addition, when connecting multiple temperature controllers for the RS-485 connection, the overall extension distance must be 13m or less.

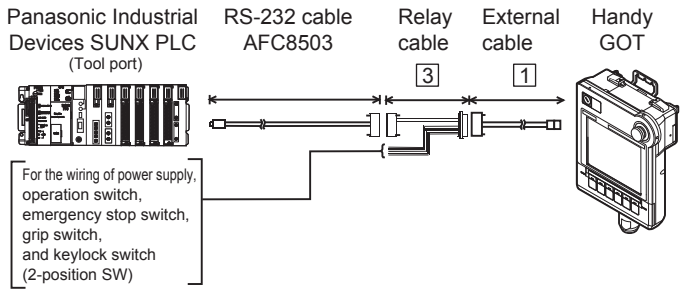
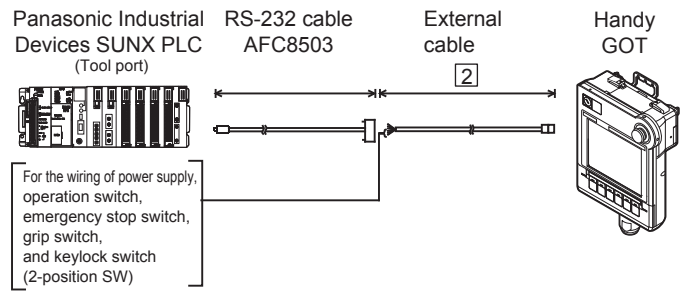
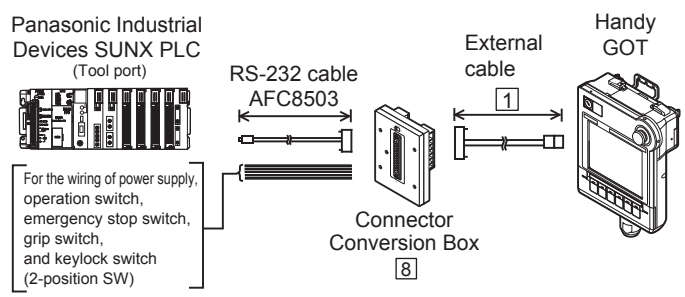


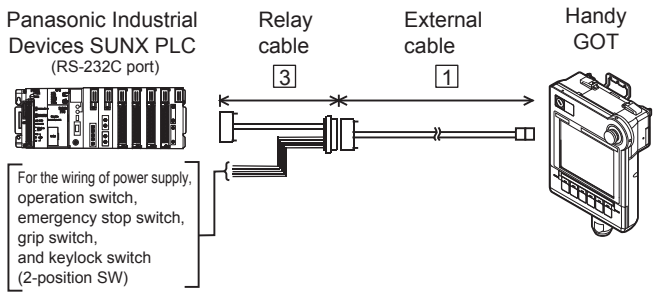
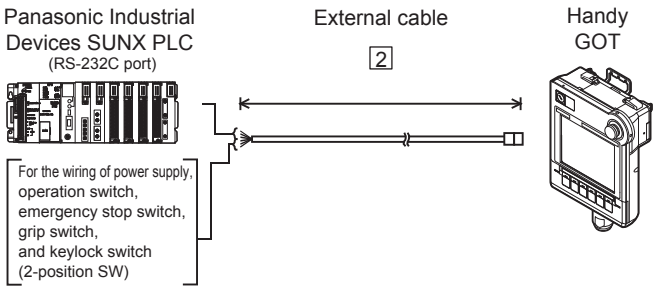
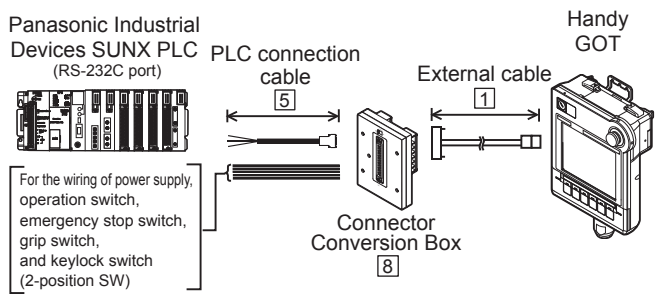
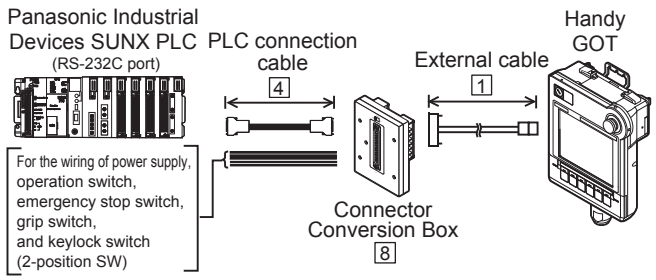
33. CONNECTION TO PANASONIC INDUSTRIAL DEVICES SUNX PLC

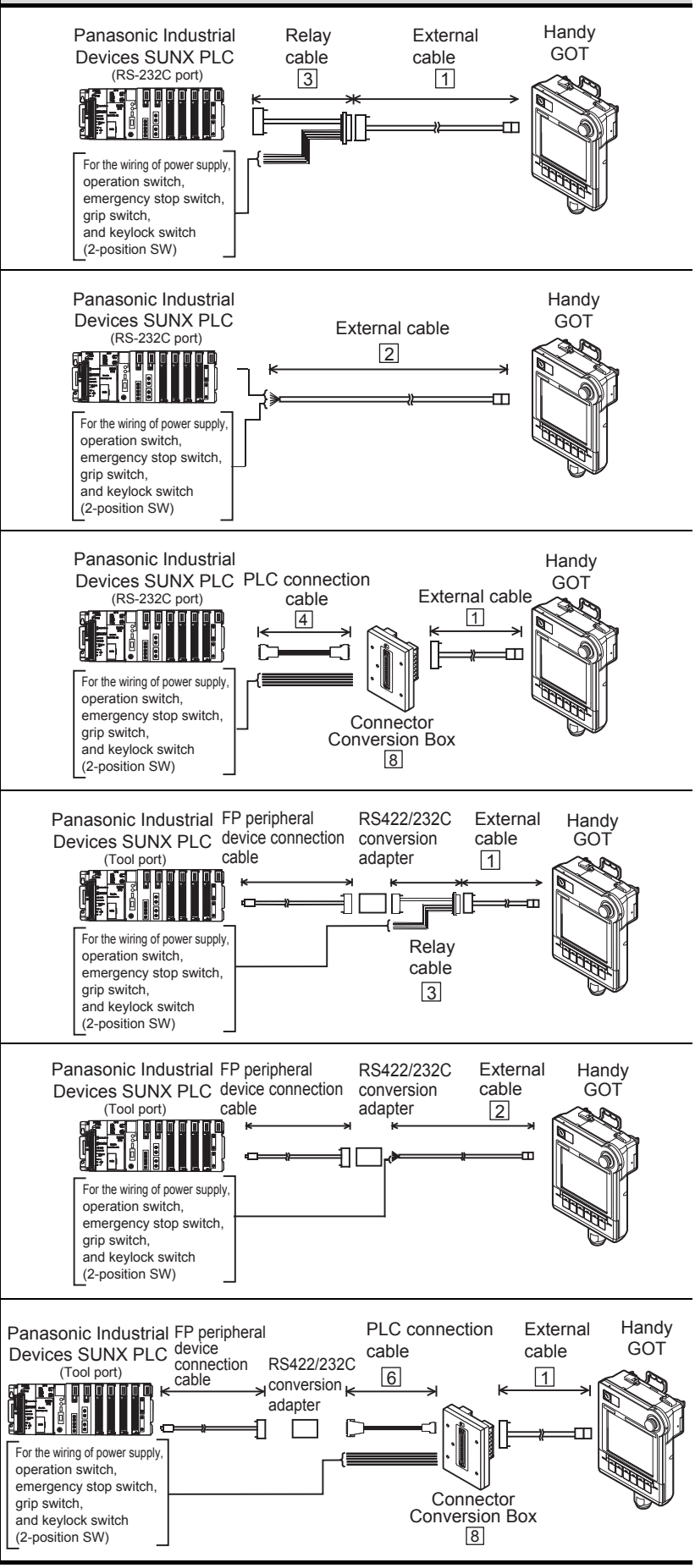
33.1 System Configuration and System Equipment

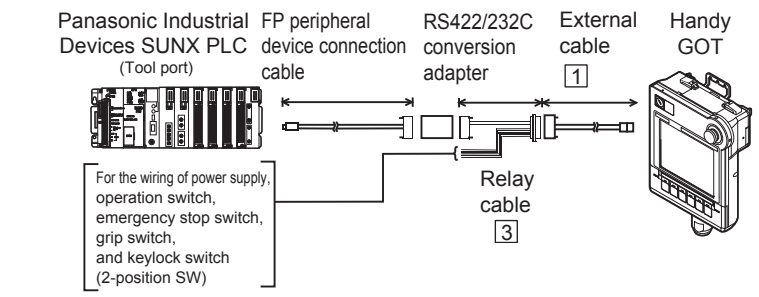
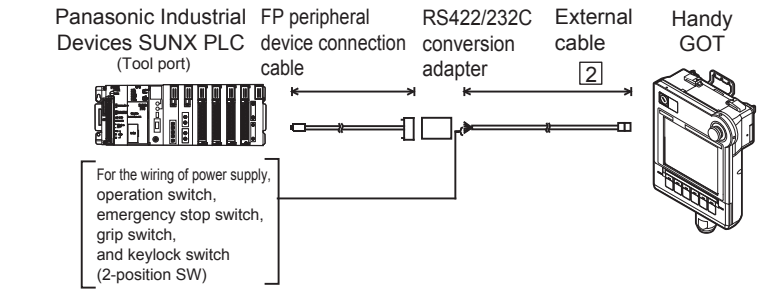
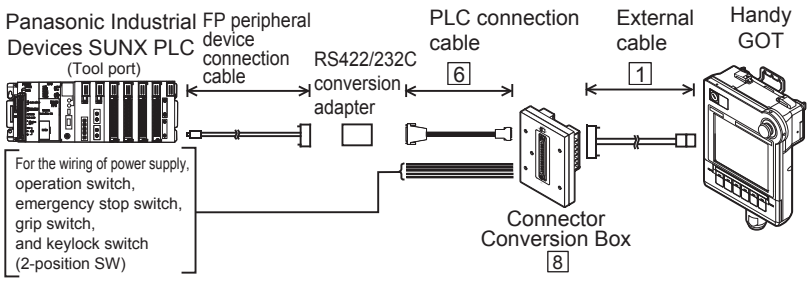
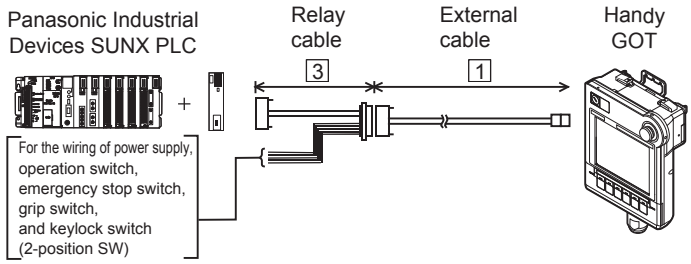
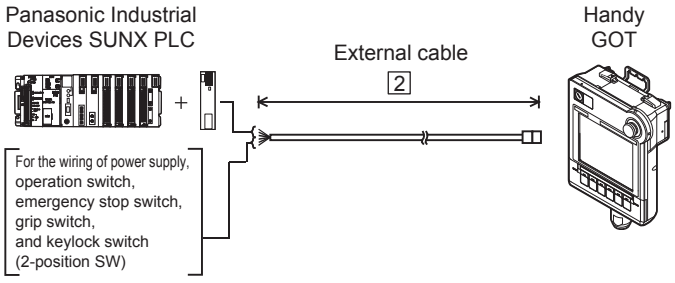
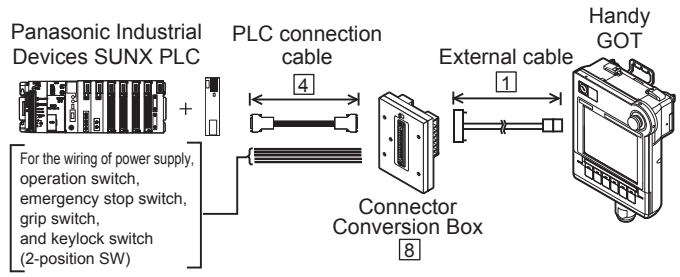
33.1.1 System configuration

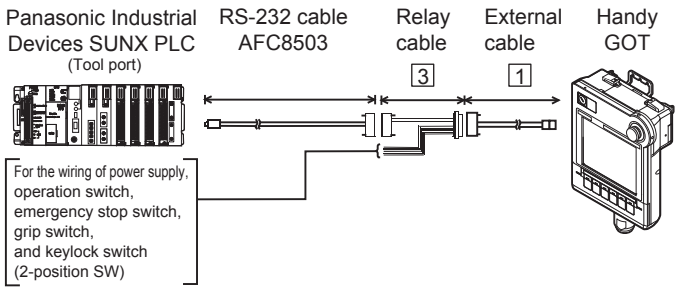
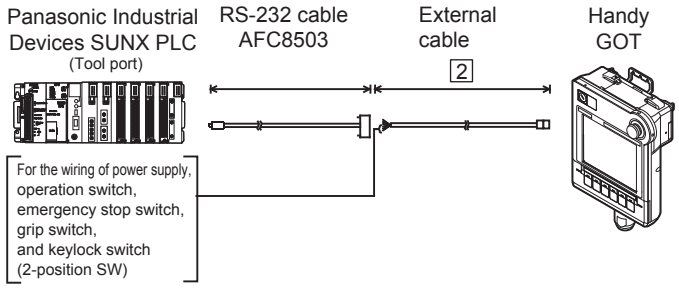
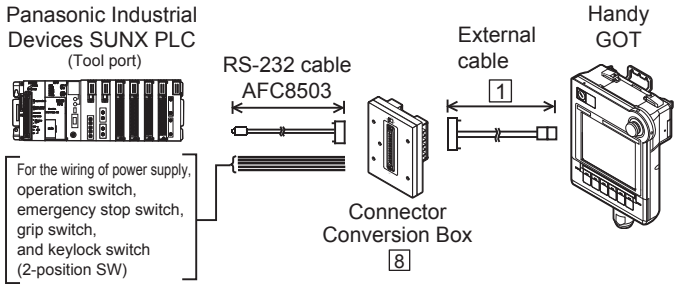
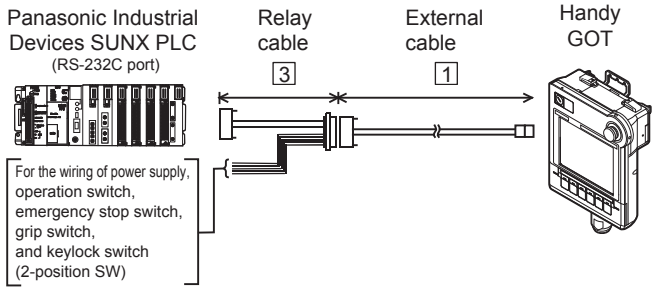
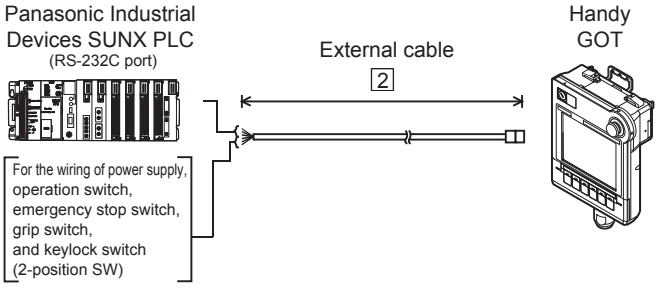
When connecting the Handy GOT to a Panasonic Industrial Devices SUNX PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the numbers described in System configuration (1, 2...) according to the numbers later described in "33.1.2 System equipment".

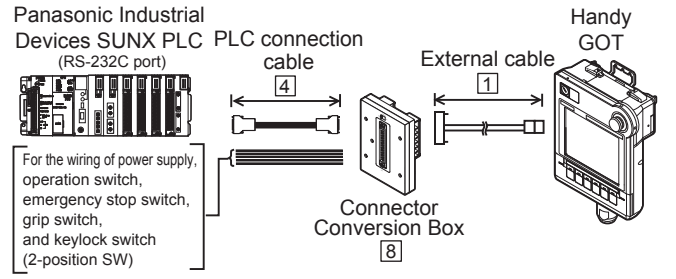
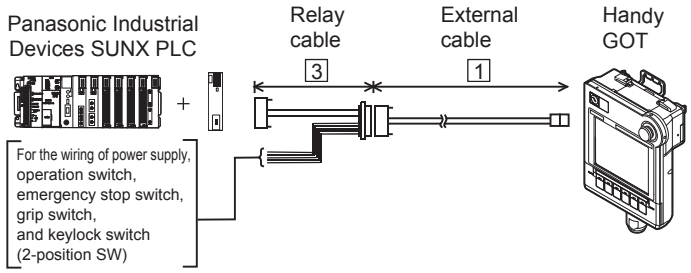
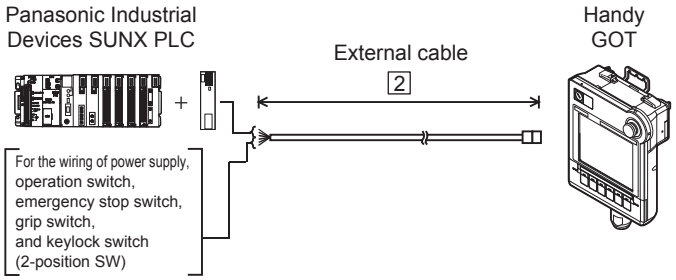
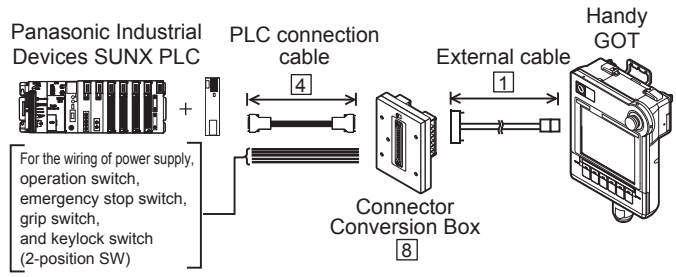
Connection conditions			System configuration
PLC	Communication	Distance	
FP0R, FP0-C16CT, FP0-C32CT, FP-M (C20TC), FP-M (C32TC)	RS-232	6m or less	
			
			

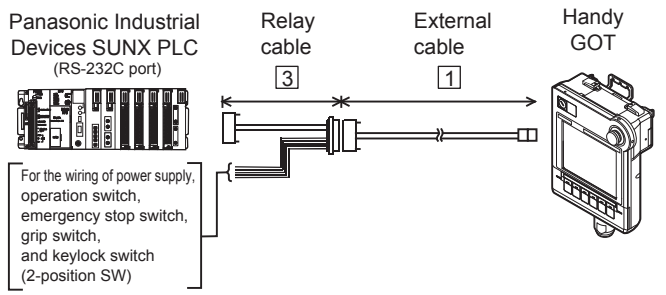
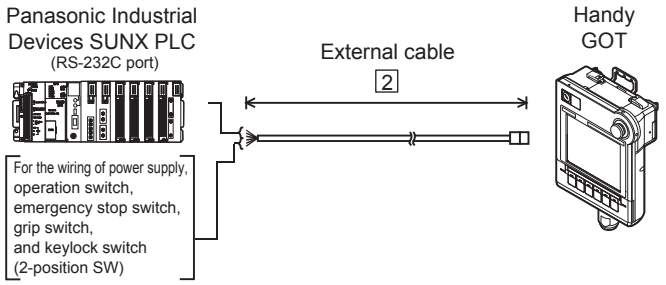
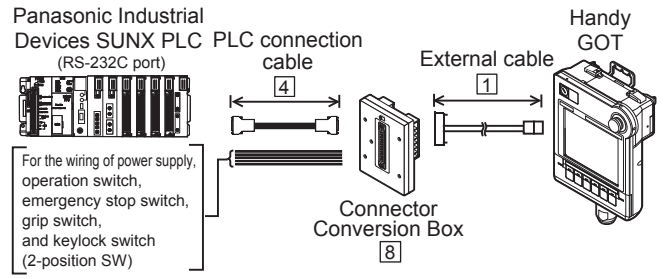
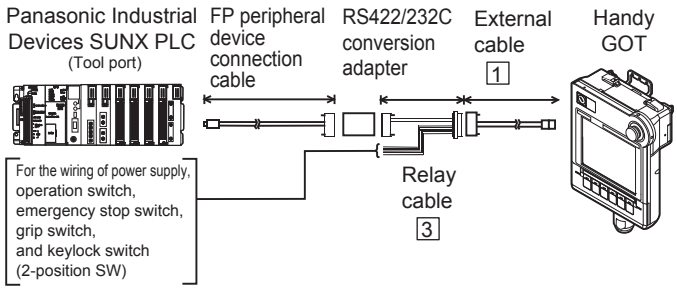
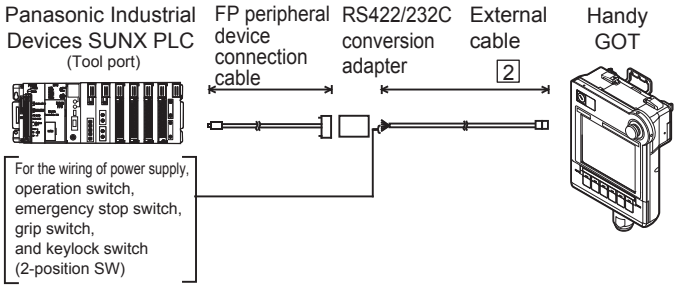
Connection conditions			System configuration
PLC	Communication	Distance	
FP0R(C10CR), FP0R(C14CR), FP0R(C16C), FP0R(C32C), FP0R(T32C), FP0-C16CT, FP0-C32CT, FP-M (C20TC), FP-M (C32TC)	RS-232	6m or less	
			
FP0R(C10CR), FP0R(C14CR), FP0R(C16C), FP0R(C32C), FP0R(T32C), FP0-C16CT, FP0-C32CT			
FP-M (C20TC), FP-M (C32TC)			

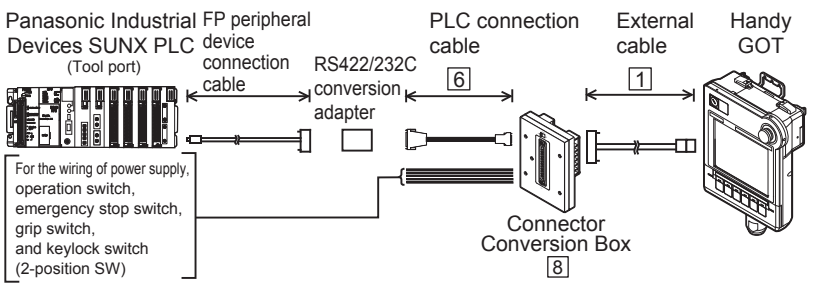
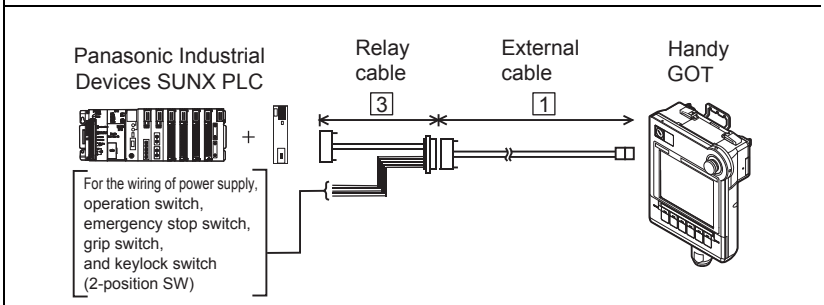
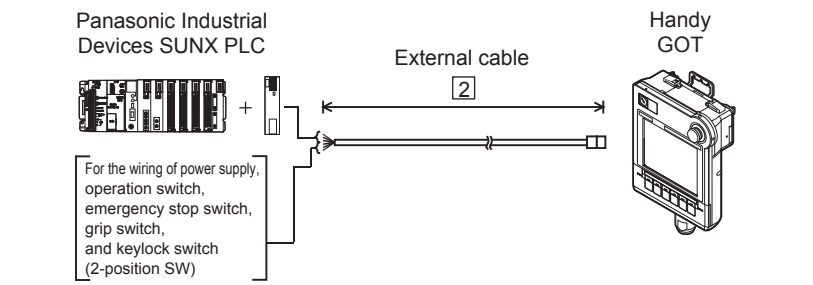
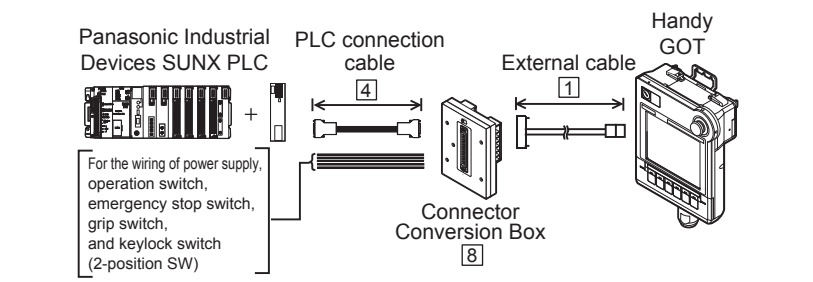
Connection conditions			System configuration
PLC	Communication	Distance	
FP1-C24C, FP1-C40C	RS-232	6m or less	

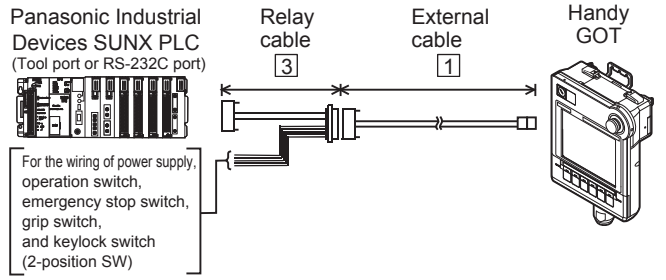
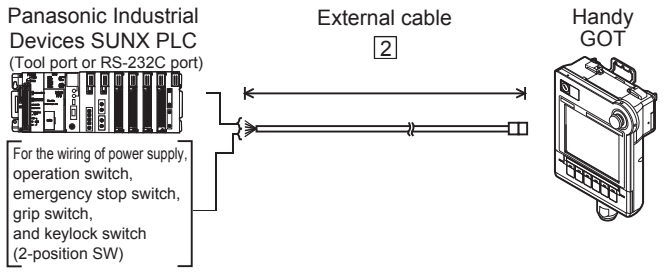
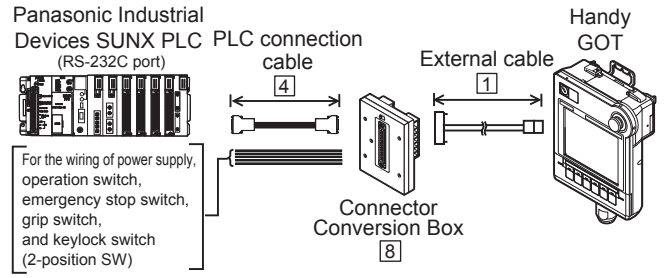
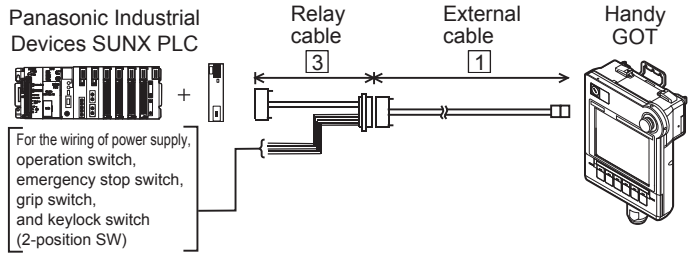
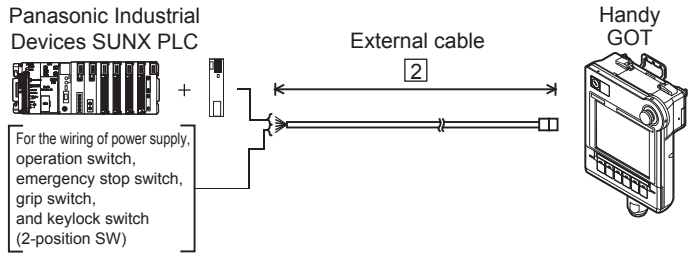
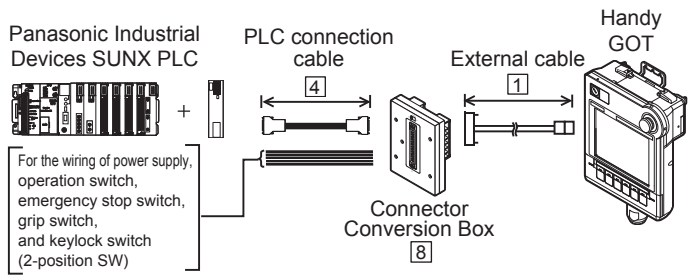
Connection conditions			System configuration
PLC	Communication	Distance	
FP3, FP5	RS-232	6m or less	
			
			
			
			
			

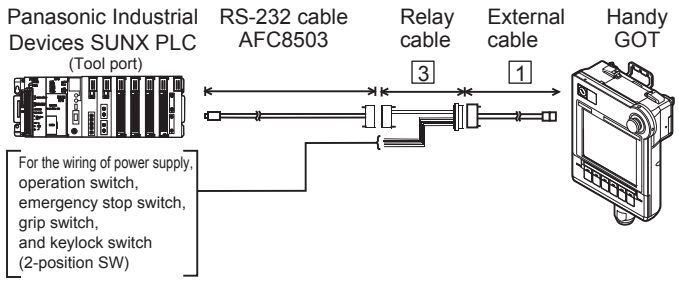
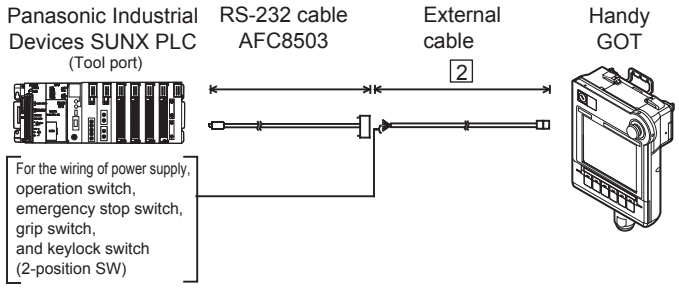
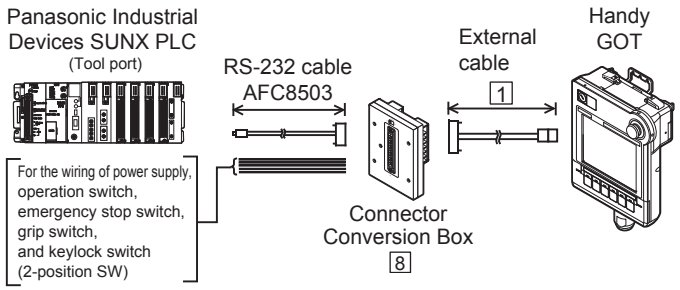
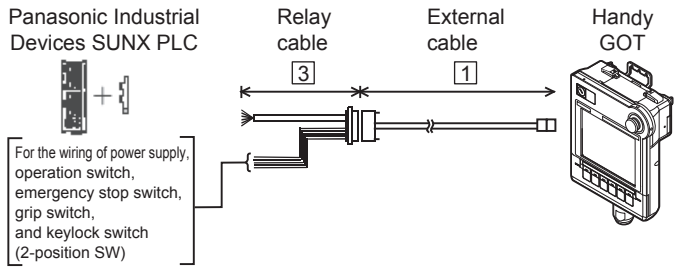
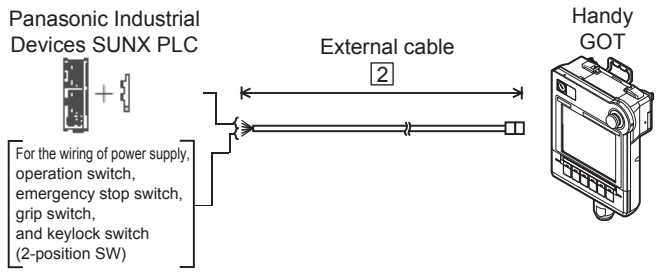
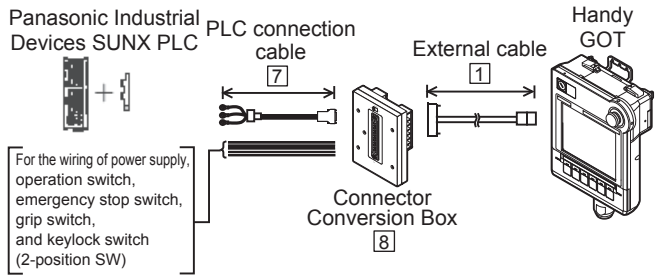
Connection conditions			System configuration
PLC	Communication	Distance	
FP2, FP2SH,	RS-232	6m or less	
			
			
			
			

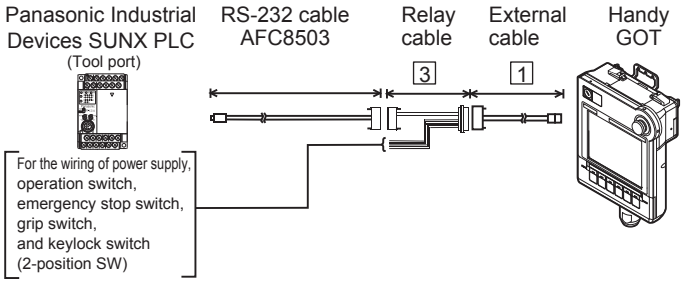
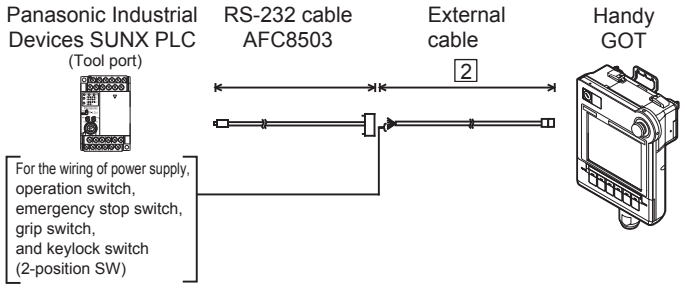
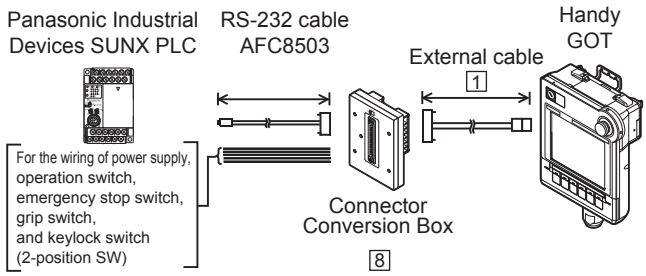
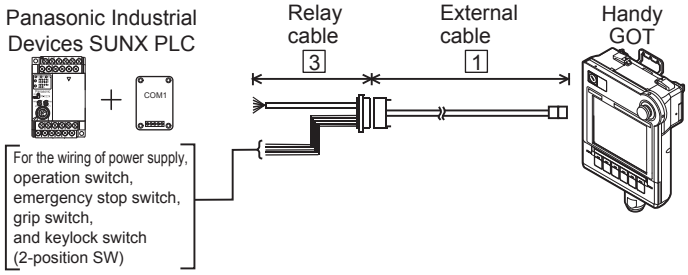
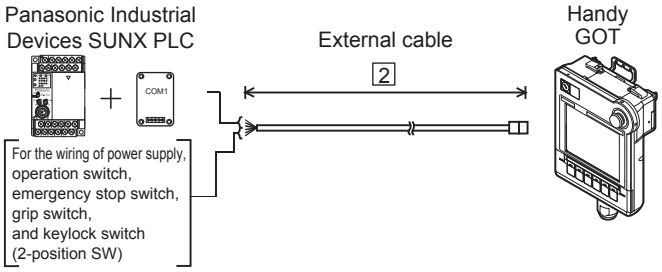
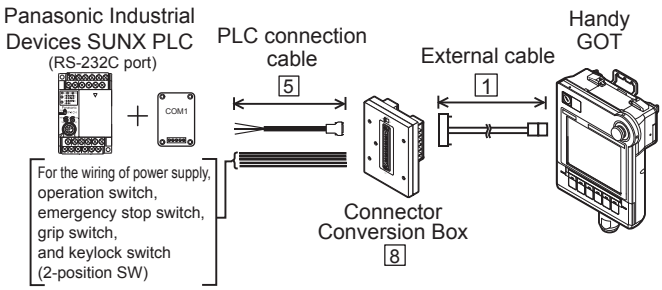
Connection conditions			System configuration
PLC	Communication	Distance	
FP2, FP2SH	RS232	6m or less	   

Connection conditions			System configuration
PLC	Communication	Distance	
FP10(S)	RS-232	6m or less	
			
			
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
FP10(S)	RS-232	6m or less	   

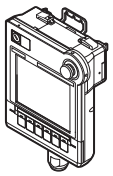
Connection conditions			System configuration
PLC	Communication	Distance	
FP10SH	RS232	6m or less	
			
			
			
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
FPΣ	RS-232	6m or less	
			
			
			
			
			

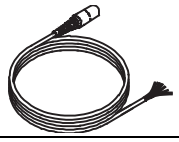
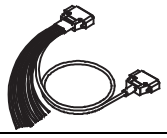
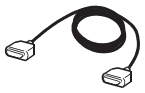
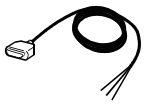
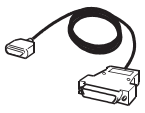
Connection conditions			System configuration
PLC	Communication	Distance	
FP-X	RS-232	6m or less	
			
			
	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

33.1.2 System equipment

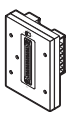
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 33.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 33.1.3 Connection cable	
		5		
		6		
		7		

3 Option

Image	No.	Name	Model name	Remark
	8	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
FP0R[*1], FP0-C16CT, FP0-C32CT	Direct CPU connection	RS-232 (Tool port)	—	—
		RS-232 (RS-232C port)	—	—
FP1-C24C, FP1-C40C	Direct CPU connection	RS-232 (Tool port)	RS422/232C conversion adapter	AFP8550
		RS-232 (RS-232C port)	—	—
FP2, FP2SH	Direct CPU connection	RS-232 (Tool port)	—	—
		RS-232 (RS-232C port)	—	—
	Computer link	RS-232	Computer communication unit	AFP2462
FP3	Direct CPU connection	RS-232 (Tool port)	RS422/232C conversion adapter	AFP8550
	Computer link	RS-232	Computer communication unit	AFP3462
FP5	Direct CPU connection	RS-232 (Tool port)	RS422/232C conversion adapter	AFP8550
	Computer link	RS-232	Computer communication unit	AFP5462
FP10(S)	Direct CPU connection	RS-232 (Tool port)	RS422/232C conversion adapter	AFP8550
		RS-232 (RS-232C port)	—	—
	Computer link	RS-232	Computer communication unit	AFP3462
FP10SH	Direct CPU connection	RS-232 (Tool port)	—	—
		RS-232 (RS-232C port)	—	—
	Computer link	RS-232	Computer communication unit	AFP3462
FP-M (C20TC), FP-M (C32TC)	Direct CPU connection	RS-232 (Tool port)	—	—
		RS-232 (RS-232C port)	—	—
FPΣ	Direct CPU connection	RS-232 (Tool port)	—	—
	Direct CPU connection	RS-232	COM port	AFPG801
			COM port	AFPG802
FP-X	Direct CPU connection	RS-232 (Tool port)	—	—
		RS-232	Communication cassette	AFPX-COM1
				AFPX-COM2
		RS-422		AFPX-COM3
		RS-232		AFPX-COM4

*1 Only GT Designer3 (Ver. 1.10L or later) supports the FP0R Series.

5 Number of connectable GOTs and PLCs

PLC		Number of GOTs	Number of PLCs
FP0-C16CT, FP1-C24C, FP2, FP3, FP10(S), FP-M (C20TC), FPΣ, FP0R	FP0-C32CT, FP1-C40C, FP2SH, FP5, FP10SH, FP-M (C32TC), FP-X,	1	1

33.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C☐☐☐ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Communication unit			PLC connection cable[*2]
PLC CPU	Interface	Communication unit	
FP0R	Tool port	—	AFC8503(3m)[*1]
FP0R(C10CR), FP0R(C14CR), FP0R(C16C), FP0R(C32C), FP0R(T32C), FP0R(F32C)	RS-232C port	—	GT09-C30R20904-3C (3m)
FP0-C16CT, FP0-C32CT	Tool port	—	AFC8503(3m)[*1]
	RS-232C port	—	GT09-C30R20904-3C (3m)
FP1-C24C, FP1-C40C	RS422/232C conversion adapter (Tool port)	AFP8550	Must be prepared by the user.
	RS-232C port	—	Must be prepared by the user.
FP2, FP2SH	Tool port	—	AFC8503(3m)[*1]
	RS-232C port	—	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)
	Computer communication unit	AFP2462	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)
FP3	RS422/232C conversion adapter (Tool port)	AFP8550	Must be prepared by the user.
	Computer communication unit	AFP3462	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)
FP5	RS422/232C conversion adapter (Tool port)	AFP8550	Must be prepared by the user.
	Computer communication unit	AFP5462	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)
FP10(S)	RS422/232C conversion adapter (Tool port)	AFP8550	Must be prepared by the user.
	RS-232C port	—	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)
	Computer communication unit	AFP3462	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)
FP10SH	Tool port	—	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)
	RS-232C port	—	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)
	Computer communication unit	AFP3462	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)
FP-M (C20TC), FP-M (C32TC)	Tool port	—	AFC8503(3m)[*1]
	RS-232C port	—	AFB85853(3m)[*1] GT09-C30R20902-3C (3m)

(Continued to next page)

Communication unit			PLC connection cable*2
PLC CPU	Interface	Communication unit	
FPΣ	Tool port	—	AFC8503(3m)*1
	COM port	AFPG801	Must be prepared by the user.
	COM port	AFPG802	Must be prepared by the user.
FP-X	Tool port	—	AFC8503(3m)*1
	Communication cassette	AFPX-COM1	Must be prepared by the user.
		AFPX-COM2	
		AFPX-COM3	
		AFPX-COM4	

*1 AFC8503 and AFC85853 is manufactured by Panasonic Industrial Devices SUNX Co., Ltd.

*2 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Communication unit			Connection cable
PLC CPU	Interface	Communication unit	
FP0R	Tool port	—	RS-232 cable 1) +AFC8503(3m)*1
FP0R(C10CR), FP0R(C14CR), FP0R(C16C), FP0R(C32C), FP0R(T32C), FP0R(F32C)	RS-232C port	—	RS-232 cable 5)
FP0-C16CT, FP0-C32CT	Tool port	—	RS-232 cable 1) +AFC8503(3m)*1
	RS-232C port	—	RS-232 cable 5)
FP1-C24C, FP1-C40C	RS422/232C conversion adapter (Tool port)	AFP8550	RS-232 cable 2)
	RS-232C port	—	RS-232 cable 4)
FP2, FP2SH	Tool port	—	RS-232 cable 1) +AFC8503(3m)*1
	RS-232C port	—	RS-232 cable 3)
	Computer communication unit	AFP2462	RS-232 cable 3)
FP3	RS422/232C conversion adapter (Tool port)	AFP8550	RS-232 cable 2)
	Computer communication unit	AFP3462	RS-232 cable 3)
FP5	RS422/232C conversion adapter (Tool port)	AFP8550	RS-232 cable 2)
	Computer communication unit	AFP5462	RS-232 cable 3)
FP10(S)	RS422/232C conversion adapter (Tool port)	AFP8550	RS-232 cable 2)
	RS-232C port	—	RS-232 cable 3)
	Computer communication unit	AFP3462	RS-232 cable 3)

(Continued to next page)

Communication unit			Connection cable
PLC CPU	Interface	Communication unit	
FP10SH	Tool port	—	RS-232 cable 3)
	RS-232C port	—	RS-232 cable 3)
	Computer communication unit	AFP3462	RS-232 cable 3)
FP-M (C20TC), FP-M (C32TC)	Tool port	—	RS-232 cable 1) +AFC8503(3m)*1
	RS-232C port	—	RS-232 cable 3)
FPΣ	Tool port	—	RS-232 cable 1) +AFC8503(3m)*1
	COM port	AFPG801	RS-232 cable 6)
	COM port	AFPG802	RS-232 cable 7)
FP-X	Tool port	—	RS-232 cable 1) +AFC8503(3m)*1
	Communication cassette	AFPX-COM1	RS-232 cable 6)
		AFPX-COM2	RS-232 cable 7)
		AFPX-COM3	RS-422 cable 1)
		AFPX-COM4	RS-232 cable 8)

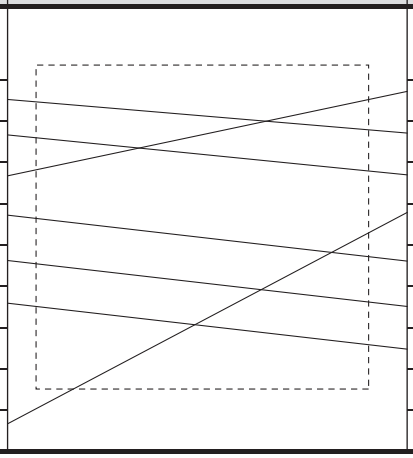
*1: AFC8503 is manufactured by Panasonic Industrial Devices SUNX Co., Ltd.

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

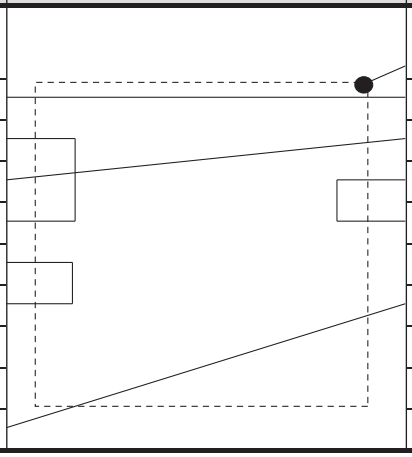
(1) RS-232 cable 1) (Between AFC8503 and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic Industrial Devices SUNX Co., Ltd. product side (AFC8503)
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.
FG (Shield)	1	Shield	—		1
SD(TXD)	2	W/R (A)	3		2
ER(DTR)	3	W/BK (A)	4		3
RD(RXD)	4	GY/R (A)	2		4
DR(DSR)	5	GY/BK (A)	6		5
RS(RTS)	6	O/R (A)	7		6
CS(CTS)	7	O/BK (A)	8		7
—	8	Y/R (A)	—		8
—	9	Y/BK (A)	—		9
SG	10	PK/R (A)	5		—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

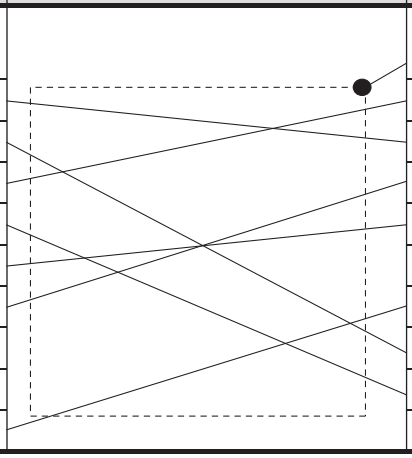
(2) RS-232 cable 2) (Between RS422/232C conversion adapter and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic Industrial Devices SUNX Co., Ltd. product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	DR
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		8	CD
—	9	Y/BK (A)	—		20	ER
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

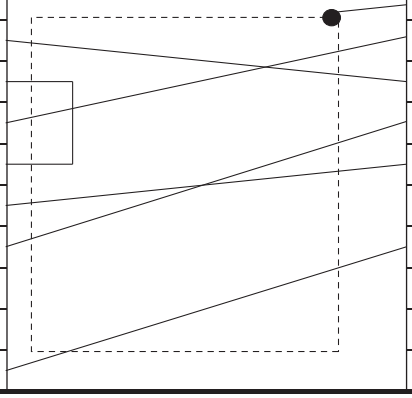
(3) RS-232 cable 3) (Between tool port and GOT (for FP10SH), between RS232C port and GOT, between computer communication unit and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic Industrial Devices SUNX Co., Ltd. product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	RI
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		8	CD
—	9	Y/BK (A)	—		9	ER
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

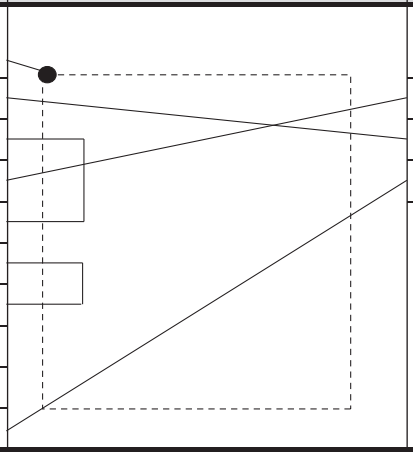
(4) RS-232 cable 4) (Between RS232C port and GOT (for FP1))

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic Industrial Devices SUNX Co., Ltd. product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	—
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		8	—
—	9	Y/BK (A)	—		9	—
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

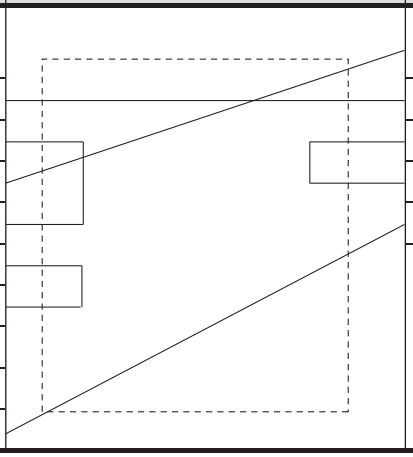
(5) RS-232 cable 5) (Between RS232C port and GOT (for FP0))

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic Industrial Devices SUNX Co., Ltd. product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Terminal name	Signal name
FG (Shield)	1	Shield	—		—	
SD(TXD)	2	W/R (A)	3		S	SD
ER(DTR)	3	W/BK (A)	4		R	RD
RD(RXD)	4	GY/R (A)	2		G	SG
DR(DSR)	5	GY/BK (A)	6			
RS(RTS)	6	O/R (A)	7			
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

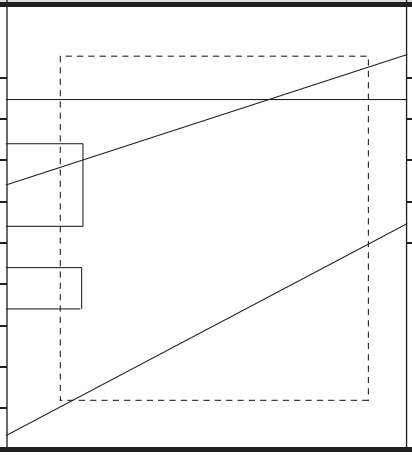
(6) RS-232 cable 6) (Between COM port and GOT, Between Communication cassette and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic Industrial Devices SUNX Co., Ltd. product side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin name
FG (Shield)	1	Shield	—		SD
SD(TXD)	2	W/R (A)	3		RD
ER(DTR)	3	W/BK (A)	4		RS
RD(RXD)	4	GY/R (A)	2		CS
DR(DSR)	5	GY/BK (A)	6		SG
RS(RTS)	6	O/R (A)	7		
CS(CTS)	7	O/BK (A)	8		
—	8	Y/R (A)	—		
—	9	Y/BK (A)	—		
SG	10	PK/R (A)	5		

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(7) RS-232 cable 7) (Between COM port and GOT, Between Communication cassette and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic Industrial Devices SUNX Co.,Ltd. product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin name*1	
FG (Shield)	1	Shield	—		S1	Serial port
SD(TXD)	2	W/R (A)	3		R1	
ER(DTR)	3	W/BK (A)	4		S2	Serial port
RD(RXD)	4	GY/R (A)	2		R2	
DR(DSR)	5	GY/BK (A)	6		SG	
RS(RTS)	6	O/R (A)	7			
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

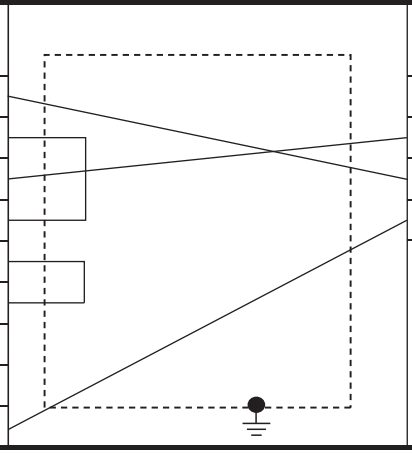
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Panasonic Industrial Devices SUNX PLC CPU has two serial ports, S1 and R1, S2 and R2. Use either of the serial ports.

For FP-X C30/C60, USB port is set at COM2. To use RS-232 COM2 (S2/R2) on a cassette, change the settings.

☞ User's Manual for the Panasonic Industrial Devices SUNX PLC.

(8) RS-232 cable 8) (Between COM port and GOT, Between Communication cassette and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic Industrial Devices SUNX Co., Ltd. product side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin name
FG (Shield)	1	Shield	—		+*1
SD(TXD)	2	W/R (A)	3		-*1
ER(DTR)	3	W/BK (A)	4		SD*2
RD(RXD)	4	GY/R (A)	2		RD*2
DR(DSR)	5	GY/BK (A)	6		SG
RS(RTS)	6	O/R (A)	7		
CS(CTS)	7	O/BK (A)	8		
—	8	Y/R (A)	—		
—	9	Y/BK (A)	—		
SG	10	PK/R (A)	5		

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 2-wire RS485 port cannot be used.

*2 For FP-X C30/C60, USB port is set at COM2. Change the COM2 setting.

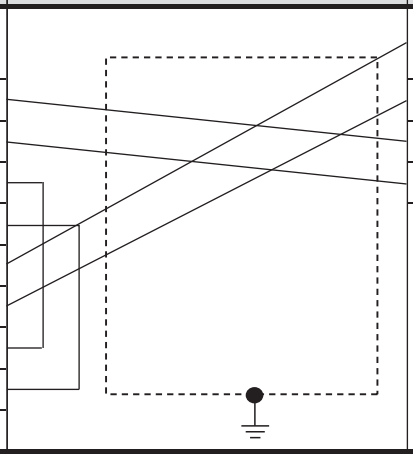
☞ User's Manual for the Panasonic Industrial Devices SUNX PLC.

4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable 1) (Between Communication cassette and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	Panasonic Industrial Devices SUNX Co., Ltd. product side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin name
FG (Shield)	1	Shield	—		S+
SDA	2	W/R (A)	1		S-
SDB	3	W/BK (A)	6		R+
RSA	4	GY/R (A)	3		R-
RSB	5	GY/BK (A)	8		
RDA	6	O/R (A)	2		
RDB	7	O/BK (A)	7		
CSA	8	Y/R (A)	4		
CSB	9	Y/BK (A)	9		
SG	10	PK/R (A)	5		

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

33.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
  However, for use the transmission speed of 38400bps, the length must be 3m or less.
- The length of the RS-422 cable must be 13m or less.

33.1.5 PLC side setting

Point

Panasonic Industrial Devices SUNX PLC

For details of the Panasonic Industrial Devices SUNX PLC, refer to the following manual.

☞ User's Manual for the Panasonic Industrial Devices SUNX PLC.

1 Connecting to the tool port of the PLC CPU

Item	Setting
Transmission speed*1*2*3	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data length*2	7bit, 8bit
Stop bit	1bit
Parity bit	Odd
Modem connection	No
Module No.	1

*1 Indicates only the transmission speeds that can be set on the GOT side.

*2 Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*3 The setting range varies with the connected PLC.

2 Connecting to the RS232C and COM port of the PLC CPU

Item	Setting
Transmission speed*4*5*6	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Data length*5	7bit, 8bit
Stop bit	1bit
Parity bit	Odd
Modem connection	No
Serial port action selection*7	1 (Computer link)
Module No.	1

*4 Indicates only the transmission speeds that can be set on the GOT side.

*5 Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*6 The setting range varies with the connected PLC.

*7 Set when connecting to FP0, FP1, FP2 or FP-M.

3 Connecting to the computer communication unit

Item	Setting
Transmission speed*1*2*3	4800bps, 9600bps, 19200bps
Data length*2	7bit, 8bit
Stop bit	1bit
Parity bit	Odd
Parity check	Yes
Control signal	Invalidate CS, CD

*1 Indicates only the transmission speeds that can be set on the GOT side.

*2 Set the same transmission speed of the GOT.
For the transmission speed setting of the GOT, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*3 The setting range varies with the connected PLC.

4 Connecting to the Communication cassette

(1) Communication settings

Item	Setting
Communication mode	Computer link
Transmission speed*4*5	4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Modem Enable	Disable
Data length*5	7bit, 8bit
Parity check	Odd
Stop bit	1bit
Unit No.	1
Port selection*6	Communication cassette

*4 Indicates only the transmission speeds that can be set on the GOT side.

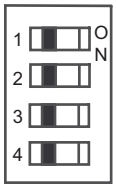
*5 Set the same setting of the GOT.
For the setting of the GOT, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*6 Set port selection to connect with communication cassette (AFPX-COM2, AFPX-COM4) of FP-X C30/C60.

(2) Switch setting on the Communication cassette (AFPX-COM3)

Set the switch on the book.

Switch No.	Setting	Description
1	OFF	RS422
2	OFF	
3	OFF	
4	OFF	Terminating resistor OFF



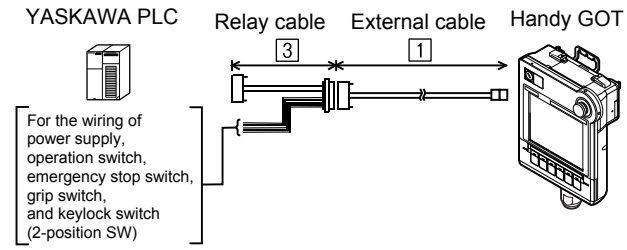
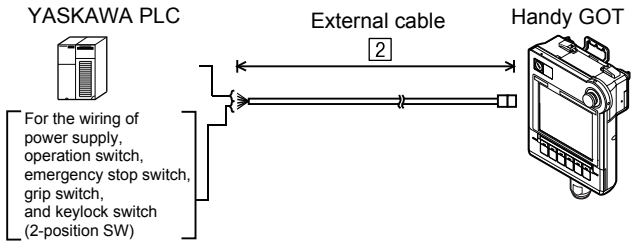
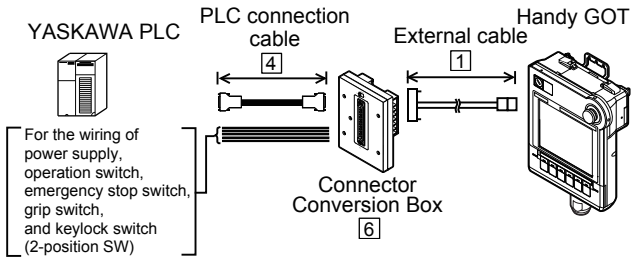
34. CONNECTION TO YASKAWA PLC

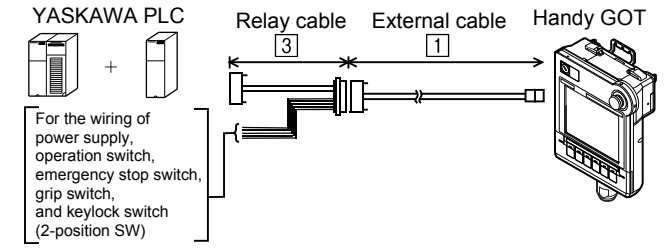
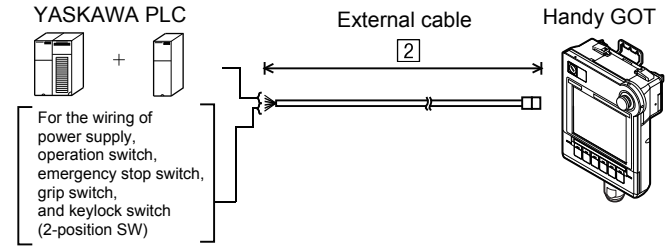
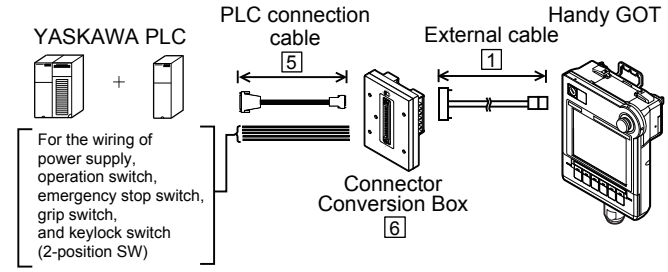
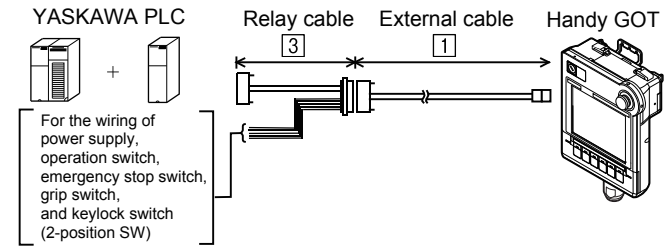
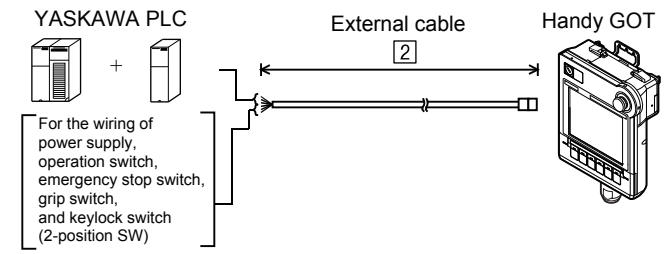
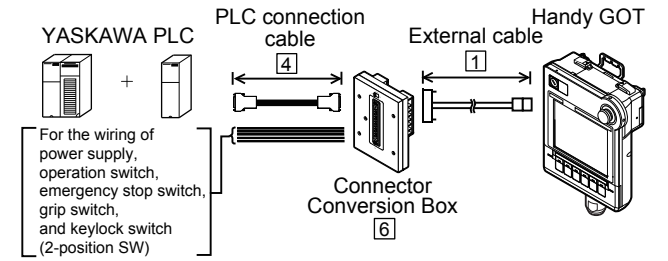
34.1 System Configuration and System Equipment

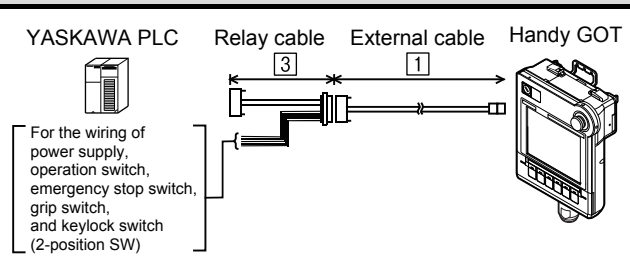
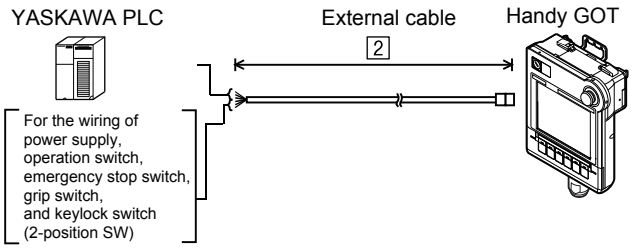
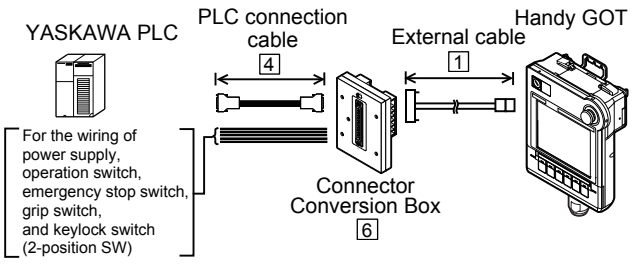
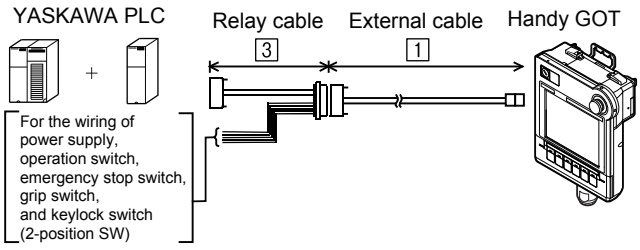
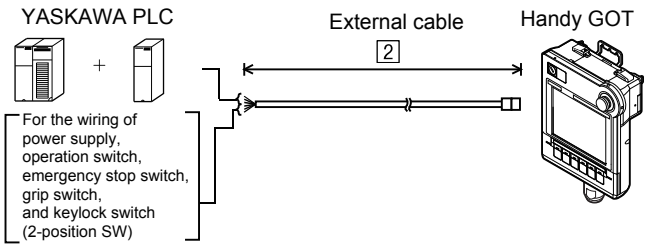
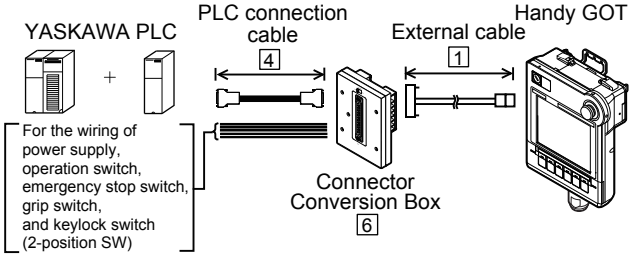
34.1.1 System configuration

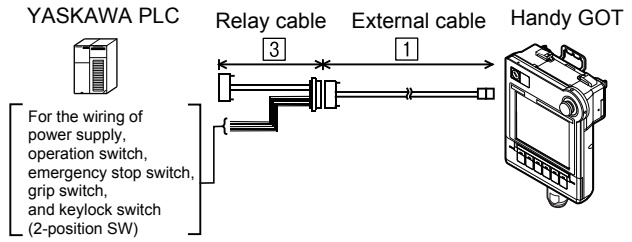
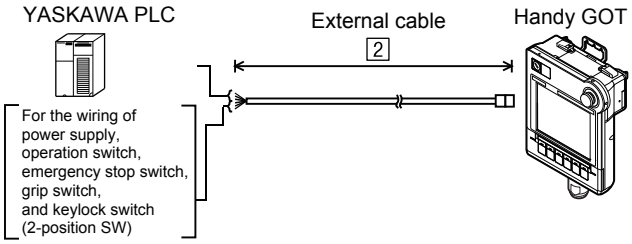
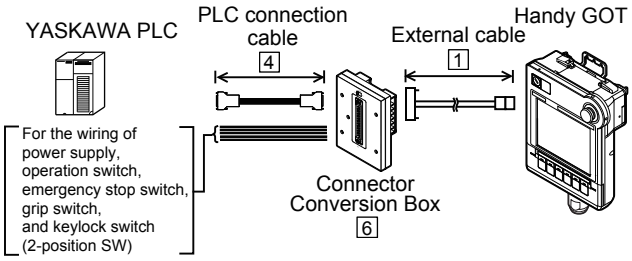
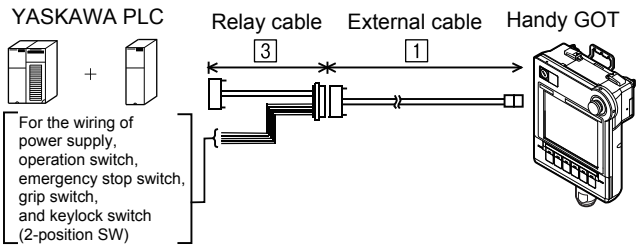
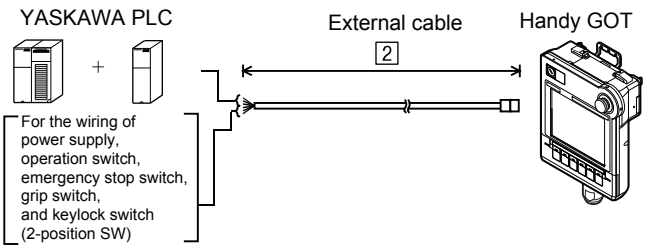
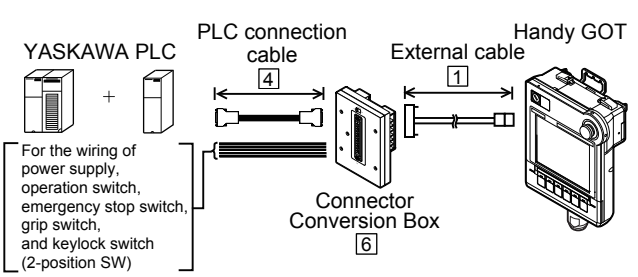
When connecting the Handy GOT to a YASKAWA PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user. For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector. For the RS-422 connection, connect the cable connector for PLC connection in the environmental protection back cover to RS-422 connector.

Refer to the number (1, 2...) described in System configuration according to the numbers described in "34.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
GL120, GL130	RS-232	6m or less	
			
			

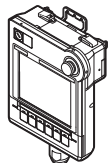
Connection conditions			System configuration
PLC	Communication	Distance	
GL120, GL130	RS-422	13m or less	
			
			
GL60S, GL60H, GL70H	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
MP-920/930, CP-9300MS/ 9200(H), PROGIC-8	RS-232	6m or less	
			
			
MP-920, MP-2200, MP-2300, MP-2300S	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

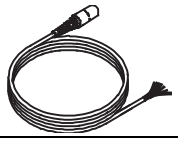
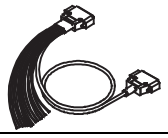
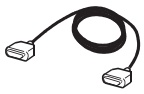
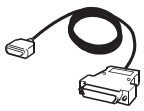
Connection conditions			System configuration
PLC	Communication	Distance	
MP-940	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			
CP-9200SH, CP-317	RS-232	6m or less (RS232)	
			
			

34.1.2 System equipment

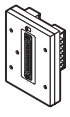
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 34.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 34.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
GL120, GL130	Direct CPU connection	RS-232	—	—
	Computer link	RS-422	MEMOBUS module	JAMSC-120NOM27100
GL60S, GL60H, GL70H	Computer link	RS-232	MEMOBUS module	JAMSC-IF60, JAMSC-IF61
	Computer link	RS-422	MEMOBUS module	JAMSC-IF612
MP-930, PROGIC-8 CP-9300MS/9200(H)	Direct CPU connection	RS-232	—	—
MP-920	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	General-purpose Serial Communications Module	217IF
		RS-422		
MP-940	Direct CPU connection	RS-232	—	—
	Direct CPU connection	RS-422	—	—
CP-9200SH, CP-317	Computer link	RS-232	MEMOBUS module	CP-217IF
MP-2200, MP-2300, MP-2300S	Computer link	RS-232	General-purpose Serial Communications Module	217IF-01
			Ethernet Communications Module	218IF-01, 218IF-02*1
		RS-422	General-purpose Serial Communications Module	217IF-01

*1 Though the maximum transmission speed of the 218IF-02 is 115200 bps, the maximum transmission speed selectable in the GOT is 57600 bps.

5 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
GL120, GL130, GL60S, GL60H, GL70H, MP-920/930, CP-9300MS/9200(H), PROGIC-8, MP-940, CP-9200SH, CP-317 MP-2200, MP-2300, MP-2300S	1	1

34.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Model name			PLC connection cable*1	
			RS-232 cable	RS-422 cable
PLC CPU	GL120		GT09-C30R20201-9P (3m)	—
	GL130			—
	CP-9300MS (CP-9300MC compatible/non-compatible)		GT09-C30R20203-9P (3m)	—
	CP-9200(H)		GT09-C30R20201-9P (3m)	—
	PROGIC-8	For port 1 connection	GT09-C30R20201-9P (3m)	—
		For port 2 connection	GT09-C30R20202-15P (3m)	—
	MP-920		GT09-C30R20201-9P (3m)	—
	MP-930			—
	MP-940		GT09-C30R20204-14P (3m)	GT09-C30R40202-14P (3m) GT09-C100R40202-14P (10m)
MEMOBUS module	JAMSC-120NOM27100		—	GT09-C30R40201-9P (3m) GT09-C100R40201-9P (10m)
	JAMSC-IF60		GT09-C30R20201-9P (3m)	—
	JAMSC-IF61			—
	JAMSC-IF612		—	GT09-C30R40201-9P (3m) GT09-C100R40201-9P (10m)
	CP-217IF	For CN1 connection	GT09-C30R20203-9P (3m)	—
		For CN2 connection	GT09-C30R20205-25P (3m)	—
General-purpose Serial Communications Module	217IF		GT09-C30R20201-9P (3m)	Must be prepared by the user.
	217IF-01		GT09-C30R20201-9P (3m)	Must be prepared by the user.
Ethernet Communications Module	218IF-01, 218IF-02*2		GT09-C30R20201-9P (3m)	—

*1 The PLC connection cable can be prepared by the user. (this section 2)

*2 Though the maximum transmission speed of the 218IF-02 is 115200 bps, the maximum transmission speed selectable in the GOT is 57600 bps.

2 Connection cable classification

Refer to the following table to select the cable No. to be used.

Refer to the connection diagram of the cable No. to be used.

Model name			Connection cable	
			RS-232 cable	RS-422 cable
PLC CPU	GL120		RS-232 cable 1)	—
	GL130			—
	CP-9300MS (CP-9300MC compatible/non-compatible)		RS-232 cable 3)	—
	CP-9200(H)		RS-232 cable 1)	—
	PROGIC-8	For port 1 connection	RS-232 cable 1)	—
		For port 2 connection	RS-232 cable 2)	—
	MP-920		RS-232 cable 1)	—
	MP-930			—
	MP-940		RS-232 cable 4)	RS-422 cable 2)
MEMOBUS module	JAMSC-120NOM27100		-	RS-422 cable 1)
	JAMSC-IF60		RS-232 cable 1)	—
	JAMSC-IF61			—
	JAMSC-IF612		-	RS-422 cable 1)
	CP-217IF	For CN1 connection	RS-232 cable 6)	—
		For CN2 connection	RS-232 cable 5)	—
General-purpose Serial Communications Module	217IF		RS-232 cable 1)	RS-422 cable 3)
	217IF-01		RS-232 cable 1)	RS-422 cable 4)
Ethernet Communications Module	218IF-01, 218IF-02*1		RS-232 cable 1)	—

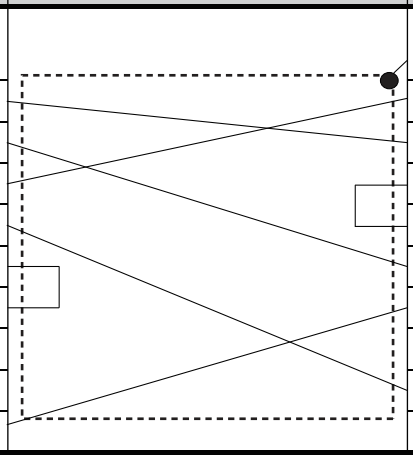
*1 Though the maximum transmission speed of the 218IF-02 is 115200 bps, the maximum transmission speed selectable in the GOT is 57600 bps.

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

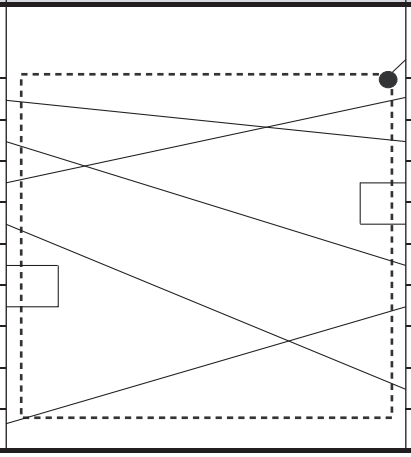
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	RTS
DR(DSR)	5	GY/BK (A)	6		5	CTS
RS(RTS)	6	O/R (A)	7		6	DSR
CS(CTS)	7	O/BK (A)	8		7	GND
—	8	Y/R (A)	—		8	EST
—	9	Y/BK (A)	—		9	DTR
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

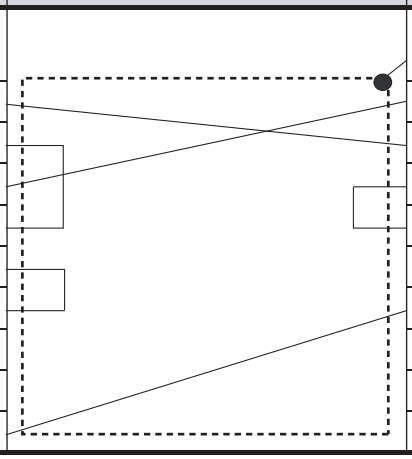
(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	RTS
DR(DSR)	5	GY/BK (A)	6		5	CTS
RS(RTS)	6	O/R (A)	7		6	DSR
CS(CTS)	7	O/BK (A)	8		7	GND
—	8	Y/R (A)	—		8	NC
—	9	Y/BK (A)	—		9	DTR
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

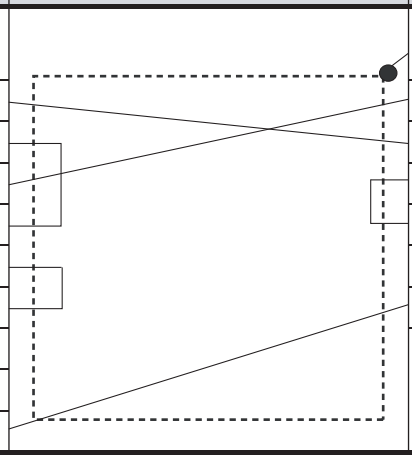
(3) RS-232 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	RTS
DR(DSR)	5	GY/BK (A)	6		5	OP/CTS
RS(RTS)	6	O/R (A)	7		6	DSR
CS(CTS)	7	O/BK (A)	8		7	GND
—	8	Y/R (A)	—		8	PWR
—	9	Y/BK (A)	—		9	DTR
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

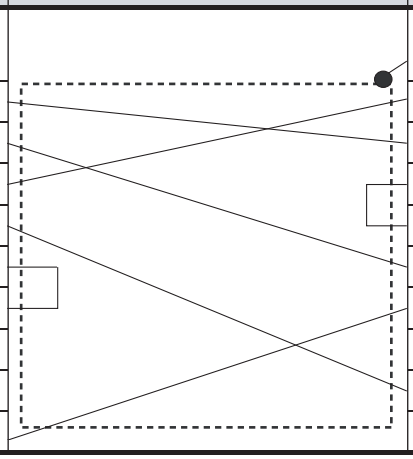
(4) RS-232 cable 4)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		Clamped by hood	
SD(TXD)	2	W/R (A)	3		1	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		12	RTS
DR(DSR)	5	GY/BK (A)	6		6	CTS
RS(RTS)	6	O/R (A)	7		2	—
CS(CTS)	7	O/BK (A)	8		14	GND
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

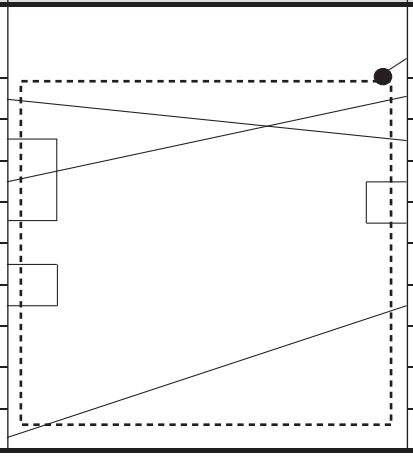
(5) RS-232 cable 5)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	DSR
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		8	CD
—	9	Y/BK (A)	—		20	DTR
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(6) RS-232 cable 6)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	RTS
DR(DSR)	5	GY/BK (A)	6		5	CTS
RS(RTS)	6	O/R (A)	7		6	NC
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		8	EST
—	9	Y/BK (A)	—		9	—
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

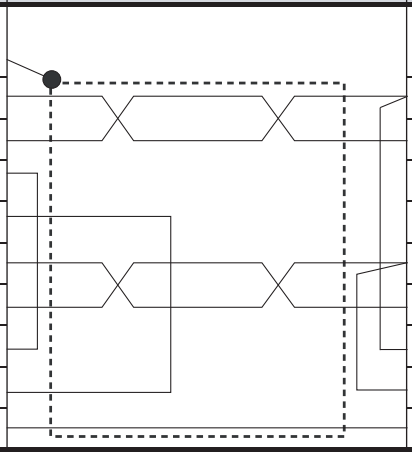
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

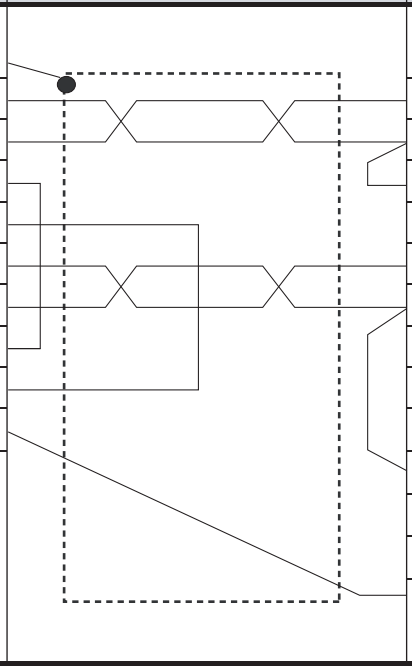
(1) RS-422 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		3	RDA
SDB	3	W/BK (A)	6		6	RDB
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		1	PGND
RDA	6	O/R (A)	2		2	SDA
RDB	7	O/BK (A)	7		9	SDB
CSA	8	Y/R (A)	4		4	Receiving side termination
CSB	9	Y/BK (A)	9		8	Sending side termination
SG	10	PK/R (A)	5		7	SG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

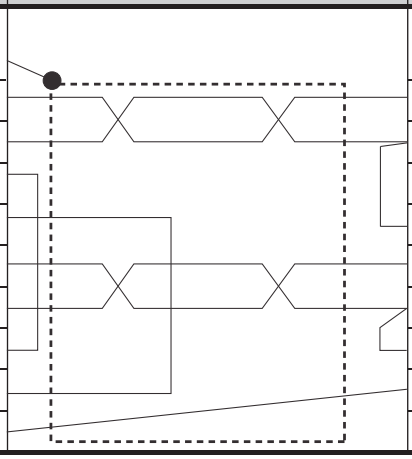
(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		6	RX-
SDA	2	W/R (A)	1		3	RX+
SDB	3	W/BK (A)	6		4	RX-
RSA	4	GY/R (A)	3		7	Receiving side termination
RSB	5	GY/BK (A)	8		5	—
RDA	6	O/R (A)	2		1	TX+
RDB	7	O/BK (A)	7		2	TX-
CSA	8	Y/R (A)	4		8	TX+
CSB	9	Y/BK (A)	9		9	TX-
SG	10	PK/R (A)	5		10	RX+
					11	Sending side termination
					12	—
					13	VCC
					14	GND

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

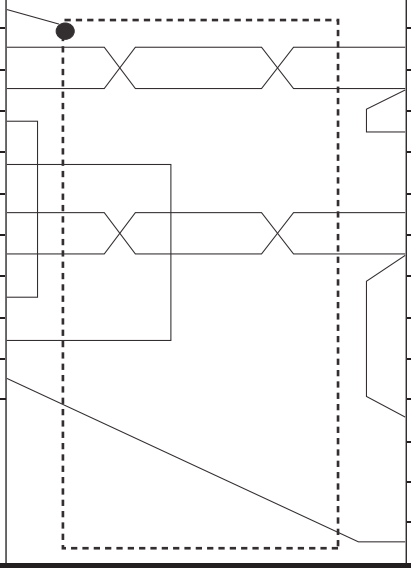
(3) RS-422 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		2	RX(+)
SDB	3	W/BK (A)	6		1	RX(-)
RSA	4	GY/R (A)	3		3	NC
RSB	5	GY/BK (A)	8		4	RXR(+)
RDA	6	O/R (A)	2		7	TX(+)
RDB	7	O/BK (A)	7		6	TX(-)
CSA	8	Y/R (A)	4		5	TXR(+)
CSB	9	Y/BK (A)	9		8	SG
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(4) RS-422 cable 4)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	YASKAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		6	RX-
SDA	2	W/R (A)	1		3	RX+
SDB	3	W/BK (A)	6		4	RX-
RSA	4	GY/R (A)	3		7	RXR
RSB	5	GY/BK (A)	8		5	—
RDA	6	O/R (A)	2		1	TX+
RDB	7	O/BK (A)	7		2	TX-
CSA	8	Y/R (A)	4		8	TX+
CSB	9	Y/BK (A)	9		9	TX-
SG	10	PK/R (A)	5		10	RX+
					11	TXR
					12	—
					13	VCC
					14	GND

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

34.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

2 Connecting terminating resistors

When connecting a YASKAWA PLC to a GOT, a terminating resistor must be set to the YASKAWA PLC. No terminating resistor needs to be on the GOT side as one is already built into the GOT.

☞ User's Manual for the YASKAWA PLC

34.1.5 PLC Side Setting

Point

(1) Delay time

When connecting to PLC CP-9200(H) and CP-9300MS, set the following.

Model name		Delay time
CP-9200(H)		30ms or more
CP-9300MS	Port:0	10ms or more
	Port:1	30ms or more

(2) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

(3) Precedence in communication settings

When settings are made by drawing software or the Utility, the latest setting is effective.

(4) YASKAWA PLC

For details of the YASKAWA PLCs, refer to following manual.

☞ Manuals for YASKAWA PLCs

1 Communication and port settings

Make the communication and port settings with a peripheral tool.

Device Name	Settings
Address *1	1 to 31
Protocol	MEMOBUS
Mode	RTU
Transmission speed *2*3	4800bps, 9600bps, 19200bps, 38400bps, 57600bps
Data length	8bits
Stop bit	1bit
Parity bit	Even
Error check	CRC16

*1 Set the address according to the Host Address setting on the GOT side.
For the Host Address setting on the GOT side, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*2 Only transmission speeds available on the GOT side are shown.
Also, the setting range differs depending on the YASKAWA PLC model.

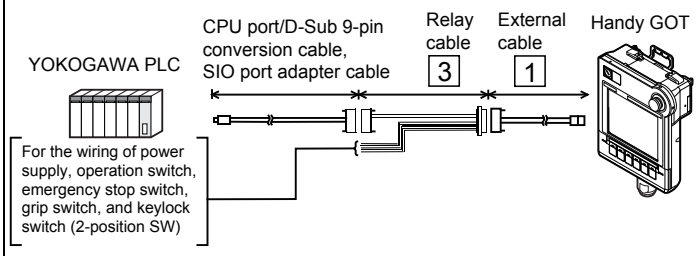
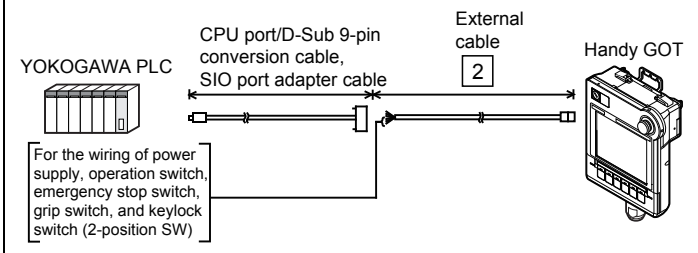
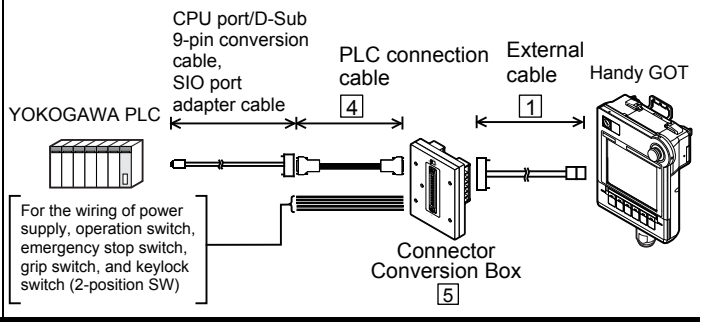
*3 Set the same transmission speed as that of the GOT side, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

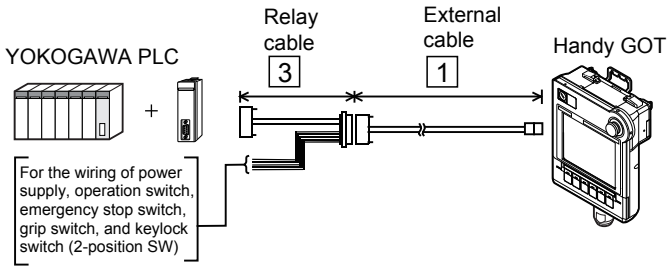
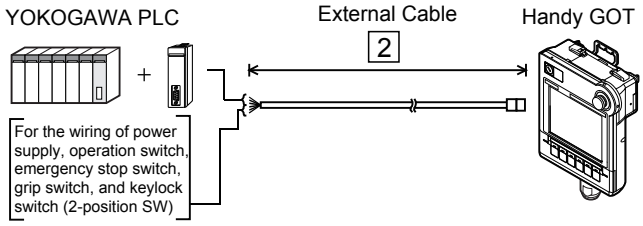
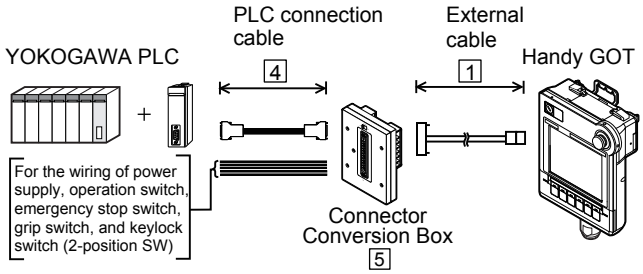
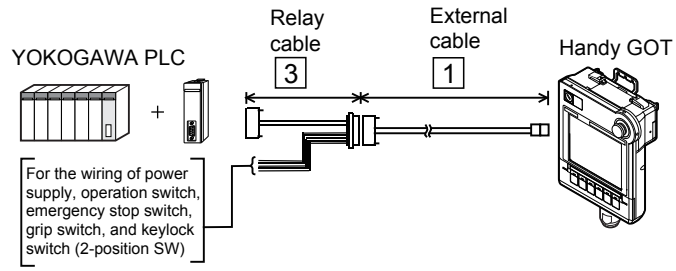
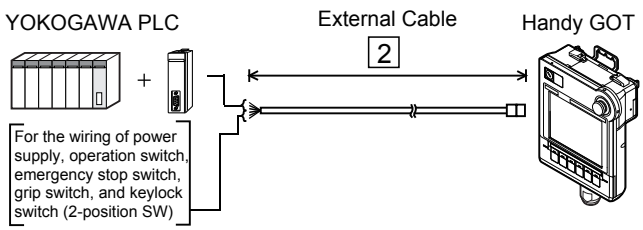
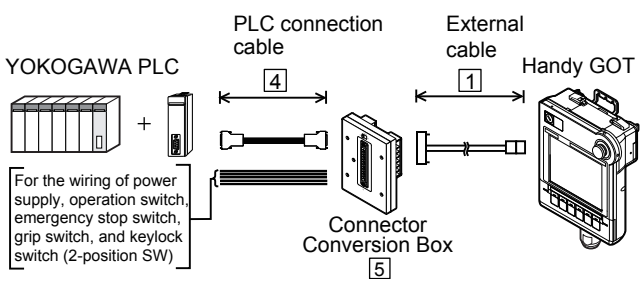
35. CONNECTION TO YOKOGAWA PLC

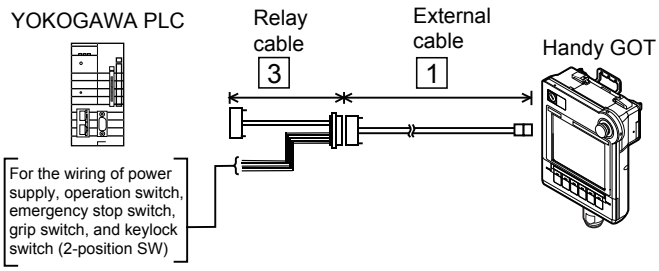
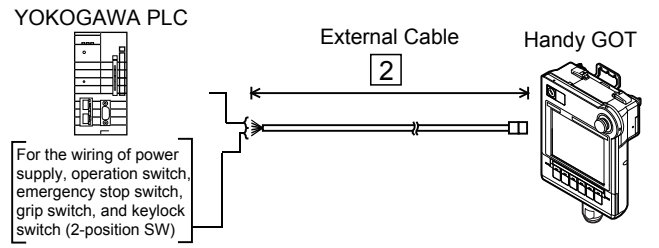
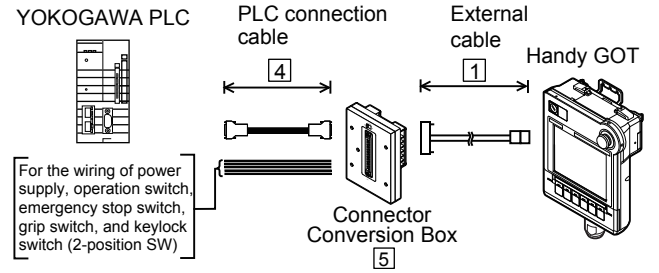
35.1 System Configuration and System Equipment

35.1.1 System configuration

When connecting the Handy GOT to a YOKOGAWA PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "35.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
FA-M3	RS-232	6m or less *1	  

Connection conditions			System configuration
PLC	Communication	Distance	
FA-M3	RS-232 /RS-422	6m or less (RS232) *1 /13m or less (RS422)	
			
			
FA-500			
			
			

Connection conditions			System configuration
PLC	Communication	Distance	
STARDOM	RS-232	6m or less *1	  

*1 This includes the length of the CPU port/D-Sub 9-pin conversion cable.

Point FA-M3

(1) Precautions when using a conversion cable

When connecting the following PLC CPUs with a programming tool interface connector to a GOT, use the compatible conversion cable as detailed below.

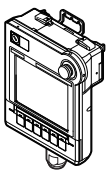
PLC CPU	Conversion cable
F3SP10, F3SP20, F3SP30, F3FP36	—
F3SP05, F3SP21, F3SP25, F3SP35, F3SP08, F3SP28, F3SP38, F3SP53, F3SP58, F3SP59	CPU port/D-Sub 9-pin conversion cable
F3SP66, F3SP67	SIO port adapter cable

(2) Precautions when using a PC link module

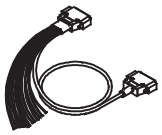
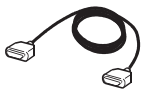
Since the F3SP10 is not compatible with the PC link module (F3LC11-2N), RS-422 connection is not available.

35.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C □□□ -37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C □□□ □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 35.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 35.1.3 Connection cable	

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
FA-M3	Direct CPU connection	RS-232	CPU port/D-Sub 9-pin conversion cable	KM10-0C
	Computer link	RS-232	PC link module	F3LC01-1N, F3LC11-1N, F3LC11-1F, F3LC12-1F
		RS-422	PC link module	F3LC11-2N, F3LC11-2F
FA-500	Computer link	RS-232	PC link module	LC01-0N,LC02-0N
		RS-422	PC link module	LC02-0N
STARDOM	Direct CPU connection	RS-232	—	—

5 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
FA-M3, FA-500, STARDOM	1	1

35.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Model name		PLC connection cable*1	
		RS-232 cable	RS-422 cable
CPU port/D-Sub 9-pin conversion cable	KM10-0C	GT09-C30R20301-9P (3m)	—
SIO port adapter cable	KM10-0S		—
PC link module	F3LC01-1N	GT09-C30R20302-9P (3m)	—
	F3LC11-1N		—
	F3LC11-2N	—	GT09-C30R40301-6T (3m) GT09-C100R40301-6T (10m)
	F3LC11-2F		
	F3LC11-1F	GT09-C30R20302-9P (3m)	—
	F3LC12-1F		—
	LC01-0N	GT09-C30R20305-9P (3m)	—
	LC02-0N		GT09-C30R40302-6T (3m) GT09-C100R40302-6T (10m)
STARDOM		Must be prepared by the user.	—

*1 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

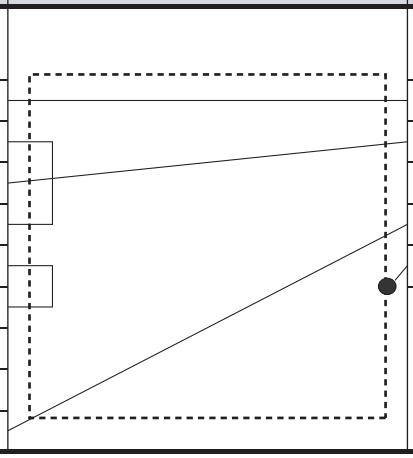
Model name		Connection cable	
		RS-232 cable	RS-422 cable
CPU port/D-Sub 9-pin conversion cable	KM10-0C	RS-232 cable 1)	—
SIO port adapter cable	KM10-0S		—
PC link module	F3LC01-1N	RS-232 cable 2)	—
	F3LC11-1N		—
	F3LC11-2N	—	RS-422 cable 1)
	F3LC11-2F		
	F3LC11-1F	RS-232 cable 2)	—
	F3LC12-1F		—
	LC01-0N	RS-232 cable 3)	—
	LC02-0N		RS-422 cable 2)
STARDOM		RS-232 cable 2)	—

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

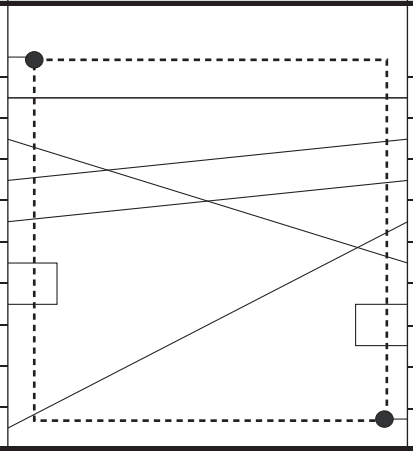
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	YOKOGAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SD(TXD)	2	W/R (A)	3		2	RD
ER(DTR)	3	W/BK (A)	4		3	SD
RD(RXD)	4	GY/R (A)	2		—	—
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		SHIELD	—
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

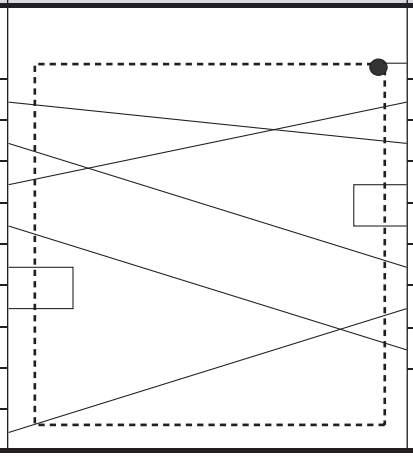
Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	YOKOGAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	—
SD(TXD)	2	W/R (A)	3		2	RD
ER(DTR)	3	W/BK (A)	4		3	SD
RD(RXD)	4	GY/R (A)	2		4	ER
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DR
CS(CTS)	7	O/BK (A)	8		7	RS
—	8	Y/R (A)	—		8	CS
—	9	Y/BK (A)	—		9	—
SG	10	PK/R (A)	5		—	Shell*1

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect the shield to the chassis of the connectors on YOKOGAWA product side.

(3) RS-232 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	YOKOGAWA product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	SD
ER(DTR)	3	W/BK (A)	4		3	RD
RD(RXD)	4	GY/R (A)	2		4	RS
DR(DSR)	5	GY/BK (A)	6		5	CS
RS(RTS)	6	O/R (A)	7		6	DR
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		20	ER
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

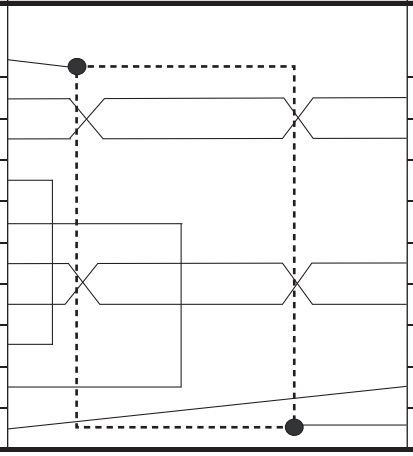
Chapter 20 COMMUNICATION CABLE

Point

Difference in polarity between GOT and YOKOGAWA products.

The polarity of poles A and B in signal names is reversed between GOT and YOKOGAWA products.
Prepare a cable according to the following connection diagrams.

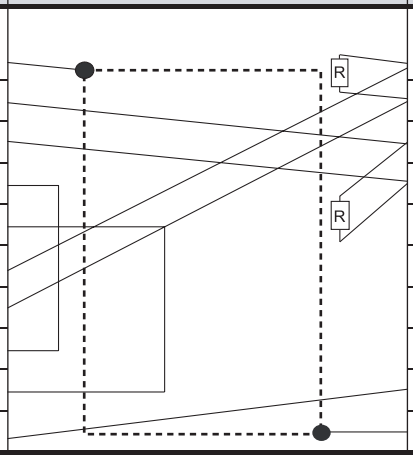
(1) RS-422 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	YOKOGAWA product side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Terminal block name
FG (Shield)	1	Shield	—		—
SDA	2	W/R (A)	1		RDB
SDB	3	W/BK (A)	6		RDA
RSA	4	GY/R (A)	3		—
RSB	5	GY/BK (A)	8		—
RDA	6	O/R (A)	2		SDB
RDB	7	O/BK (A)	7		SDA
CSA	8	Y/R (A)	4		—
CSB	9	Y/BK (A)	9		SG
SG	10	PK/R (A)	5		SHIELD

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	YOKOGAWA product side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Terminal block name
FG (Shield)	1	Shield	—		SDB
SDA	2	W/R (A)	1		SDA
SDB	3	W/BK (A)	6		RDB
RSA	4	GY/R (A)	3		RDA
RSB	5	GY/BK (A)	8		—
RDA	6	O/R (A)	2		—
RDB	7	O/BK (A)	7		—
CSA	8	Y/R (A)	4		—
CSB	9	Y/BK (A)	9		SG
SG	10	PK/R (A)	5		FG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

35.1.4 Precautions when preparing a cable

1 Cable length

- The length of cables RS-232 2) and 3) must be 6m or less.
- The length of the cable RS-232 1) must not exceed 6m including the CPU port/D-Sub 9-pin conversion cable length.
- The length of the RS-422 cable must be 13m or less.

☞ Manuals for YOKOGAWA PLCs

2 Connecting the terminating resistor

When connecting a PLC link module to a GOT, a terminating resistor must be set to the PC link module. No terminating resistor needs to be connected on the GOT side as one is already built into the GOT. The following describes how to connect it on the PC link module.

(1) F3LC11-2N

Set the terminator switch (TERMINATOR) on the front panel of F3LC11-2N to the "4-WIRE" side to enable the terminator.

(2) LC02-0N

Connect the terminating resistor provided with the LC02-0N across SDA and SDB, and across RDA and RDB on the terminal block.

Point YOKOGAWA PLC

For details of YOKOGAWA PLCs, refer to the following manuals.

☞ Manuals for YOKOGAWA PLCs

1 Connecting CPU port/D-Sub 9-pin conversion cable or SIO port adapter cable

(1) Setting of PLC CPU

Make the PLC CPU setting, displaying [Configuration] → [Communication setting] with the program development tool or the ladder-programming tool.

<table>
<tr><th>Item</th><th>Setting</th></tr>
<tr><td>Communication mode*1</td><td>
Set the communication mode of the CPU (transmission speed and data format).
Set the transmission speed and data format according to settings of the transmission speed, data length, parity and stop bit on the GOT side.
For details on these GOT side settings, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)
<table>
<tr><th rowspan="2">Item</th><th colspan="4">Transmission speed and data format</th></tr>
<tr><th>Transmission speed</th><th>Data length</th><th>Parity</th><th>Stop bit</th></tr>
<tr><td>Communication mode 0</td><td>9600bps</td><td>8 bits</td><td>Even</td><td>1 bit</td></tr>
<tr><td>Communication mode 1</td><td>9600bps</td><td>8 bits</td><td>None</td><td>1 bit</td></tr>
<tr><td>Communication mode 2</td><td>19200bps</td><td>8 bits</td><td>Even</td><td>1 bit</td></tr>
<tr><td>Communication mode 3</td><td>19200bps</td><td>8 bits</td><td>None</td><td>1 bit</td></tr>
<tr><td>Communication mode 4</td><td>38400bps</td><td>8 bits</td><td>Even</td><td>1 bit</td></tr>
<tr><td>Communication mode 5</td><td>38400bps</td><td>8 bits</td><td>None</td><td>1 bit</td></tr>
<tr><td>Communication mode 6</td><td>57600bps</td><td>8 bits</td><td>Even</td><td>1 bit</td></tr>
<tr><td>Communication mode 7</td><td>57600bps</td><td>8 bits</td><td>None</td><td>1 bit</td></tr>
<tr><td>Communication mode 8</td><td>115200bps</td><td>8 bits</td><td>Even</td><td>1 bit</td></tr>
<tr><td>Communication mode 9</td><td>115200bps</td><td>8 bits</td><td>None</td><td>1 bit</td></tr>
</table>
</td></tr>
<tr><td>CPU PC link function settings</td><td>
Set the following when using the CPU programming port as the PC link function.
Make the checksum setting according to the sum check setting on the GOT side.
For the sum check setting on the GOT side, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)
<table>
<tr><th>Item</th><th>Setting</th></tr>
<tr><td>Use of PC link function</td><td>Mark. (Use enabled)</td></tr>
<tr><td>Checksum</td><td>Mark. (ON) Do not mark. (OFF)</td></tr>
<tr><td>End character</td><td>Do not mark. (OFF)</td></tr>
<tr><td>Protect function</td><td>Do not mark. (OFF)</td></tr>
</table>
</td></tr>
</table>

*1 The communication mode that can be selected differs according to the CPU.

2 Connecting PC link module (F3LC01-1N, F3LC11-1N, F3LC11-2N, F3LC11-2F)

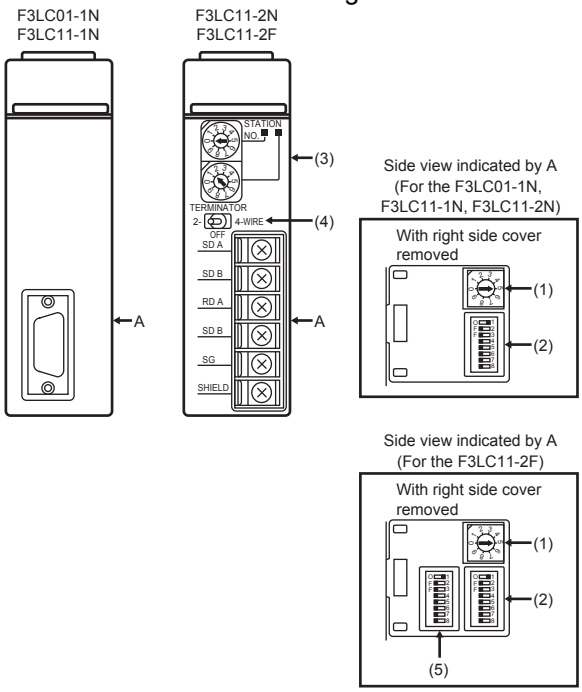
(1) Switch setting on the PC link module

Set the switches accordingly.

Point

Switch setting

Set the switches before mounting the PC link module to the base unit.

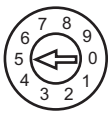


(2) Transmission speed switch

Set the same transmission speed as that of the GOT side.

For the transmission speed setting on the GOT side, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)



Setting*1	Transmission speed
4	4800bps
5	9600bps
6	19200bps

*1 Only transmission speeds available on the GOT side are shown.

(3) Data format setting switch

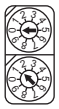
Set the data length, parity, stop bit and checksum consistent with the corresponding settings on the GOT side.

For the settings on the GOT side, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

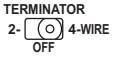
Switch No.	Description	Setting
1	Data length	ON (8 bits), OFF (7 bits)
2	Parity	ON, OFF
3		ON (even), OFF (odd)
4	Stop bit	ON (2 bits), OFF (1 bit)
5	Checksum	ON, OFF
6	End character specification	OFF (none)
7	Protect function	OFF (disabled)
8	—	OFF

(4) Station No. switch (F3LC11-2N only)



Rotary switch	Description	Setting
1)	Station No. (10's digit)	0
2)	Station No. (1's digit)	1

(5) Terminator switch (F3LC11-2N only)



Setting	Description
4-WIRE	Resistor connected (4-wire type)

(6) SW3 switch (F3LC11-2F only)

Unused switch.Turn off all the unused switches.

3 Connecting PC link module (F3LC11-1F, F3LC12-1F)

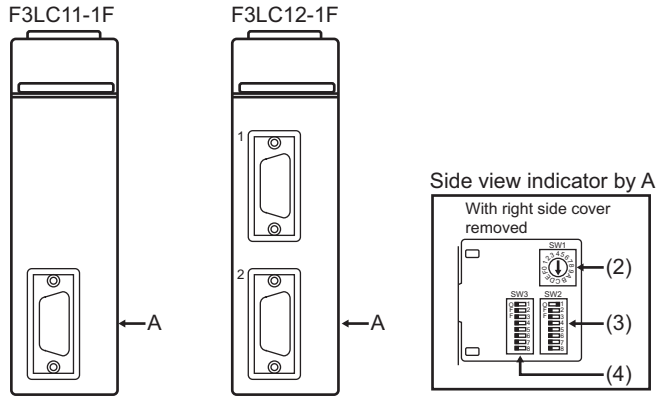
(1) Switch setting on the PC link module

Set the switches accordingly.

Point

Switch setting

Set the switches before mounting the PC link module to the base unit.



(2) Transmission speed switch (SW1)

Set the same transmission speed setting as that of the GOT side.

For the transmission speed setting on the GOT side, refer to the following.

Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Setting*1	Transmission speed
4	4800bps
5	9600bps
7	19200bps
9	38400bps
A	57600bps
C	115200bps

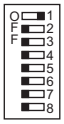
*1 Only transmission speeds available on the GOT side are shown.

(3) Data format switch (SW2)

Set the character length, parity, stop bit and checksum consistent with the corresponding setting on the GOT side.

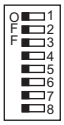
For the settings on the GOT side, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)



Switch No.	Description	Setting
1	Character length	ON (8 bits), OFF (7 bits)
2	Parity	ON, OFF
3		ON (even), OFF (odd)
4	Stop bit	ON (2 bits), OFF (1 bit)
5	Checksum	ON, OFF
6	End character specification	OFF
7	Protect function	OFF (disabled)
8	Security function	OFF (disabled)

(4) Module function switch (SW3)



Switch No.	Description	Setting
1 to 6	User setting inhibited	OFF
7	Modem compatibility	OFF (not compatible)
8	External modem	OFF (none)

4 Connecting PC link module (LC01-0N, LC02-0N)

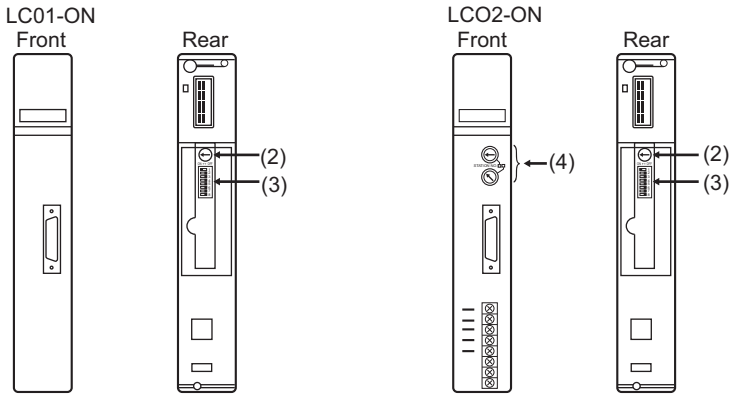
(1) Switch setting on the PC link module

Set the switches accordingly.

Point

Switch setting

Set the switches before mounting the PC link module to the base unit.



(2) Transmission speed switch

Set the same transmission speed as that of the GOT side.

For the transmission speed setting n the GOT side, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Setting*1	Transmission speed
4	4800bps
5	9600bps
6	19200bps

*1 Only transmission speeds available on the GOT side are shown.

(3) Data format switch

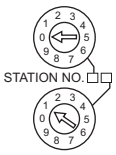
Set the data length, parity, stop bit and checksum consistent with the corresponding settings on the GOT side.

For the settings on the GOT side, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Switch No.	Description	Setting
1	Data length	ON (8 bits), OFF (7 bits)
2	Parity	ON, OFF
3		ON (even), OFF (odd)
4	Stop bit	ON (2 bits), OFF (1 bit)
5	Checksum	ON, OFF
6	End character specification	OFF
7	Protect function	OFF (disabled)
8	—	OFF

(4) Station No. Switch (LC02-0N only)



Rotary switch	Description	Setting	
		RS-232 communication	RS-422 communication
1)	Station No. (10's digit)	0	0
2)	Station No. (1's digit)	1	2

5 Connecting to STARDOM

Make the communication settings as shown below. For details of the communication settings, refer to the following manual.

☞ Peripheral Software Manual for YOKOGAWA PLC

Point

Connection between STARDOM and the PC for communication settings

For the communication settings of STARDOM, STARDOM and the PC for communication settings must be connected to Ethernet using the Resource Configurator (peripheral software).

1 COM port setting

Make the settings on the FCX Maintenance Page for STARDOM.

(1) Select "Reboot (Maintenance Mode)" on the Reboot screen of the FCX Maintenance Page to set the maintenance mode.

(2) Set the COM1 port driver to be used. Execute "JEROS Basic Setting File" from the "Edit System Setting File" screen on the FCX Maintenance Page.
Confirm that the line of "Com1SioDriver" is as follows.
Com1SioDriver =DUONUS_SIO

(3) Set the COM1 port to be used. Execute "COM1 Port Setting File" from the "Edit System Setting Files" screen on the FCX Maintenance Page.
Make the settings as follows according to the communication specifications on the setting screen.
Leave the settings as default if not listed on the communication setting items.

(Communication setting items) ( ) in the table shows the names on the FCX Maintenance Page.

Item	Set value
Transmission speed (Baudrate)*1	4800bps, 9600bps, 9200bps, 38400bps, 57600bps 115200bps
Data length (DataBitLength)*1	8 bits or 7 bits
Stop bit (StopBitLength)*1	1 bit or 2 bits
Parity bit (Parity)*1	none/odd/even

Baudrate =*1
DataBitLength =*1
StopBitLength =*1
Parity =*1
FifoMode =YES
InitialDTRState =ON
SendFlowControlMode =CTS
ReceiveFlowControlMode =DTR

*1 Adjust the settings with GOT communication settings.
(☞ Chapter 10 DISPLAY AND OPERATION SETTINGS (GOT SETUP))

(4) Select "Reboot (Online Mode)" on the "Reboot" screen of the FCX Maintenance Page to set the online mode.

2 Defining Logic POU

Define Logic POU using Logic Designer (peripheral software), and download the project to STARDOM. For the detail procedures of communication settings, refer to the following manual.

☞ Peripheral Software Manual for YOKOGAWA PLC

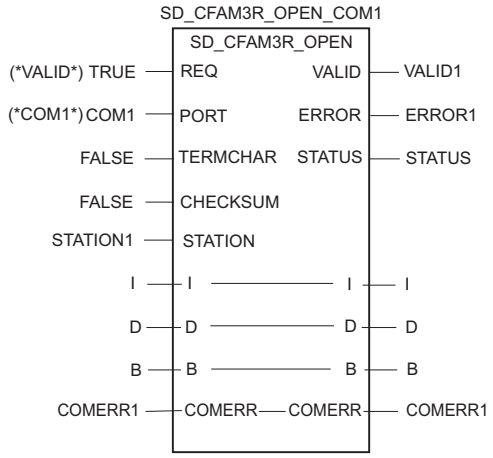
(1) Start Logic Designer and create a new project using a template.
Use "STARDOM Serial Communication" template.

(2) Insert FA-M3 Emulator Firmware Library to the new project.
The library path inserted in the procedures above is as follows.
{Install Folder}\LogicDesigner\Mwt\Plc\Fw_lib\SD_FCXPLCR_LIB\SD_FCXPLCR_LIB.fwl

(3) Insert FA-M3 Emulator User Library to the new project.
The library path inserted in the procedures above is as follows.
{Install Folder}\LogicDesigner\Libraries\SD_CFAM3R_PF.mwt

(4) Copy a sample project POU to the new project.
For the following terminals, set as shown below.

REQ terminal : TRUE
TERMCHAR terminal : FALSE
PORT terminal : COM1
STATION terminal : STATION1



(Definition example of Logic POU)

(5) Defining the instance
Instantiate Logic POU. Define an already defined instance to Task0.

(6) Defining Target Setting
Define the IP address or host name of STARDOM for which the communication settings are made.

(7) Downloading the project
When the download is completed, start STARDOM.

35.2 Precautions

35.2.1 Device range

When performing monitoring with the GOT connected to a YOKOGAWA PLC and setting devices for objects, use devices within the device range of the YOKOGAWA PLC.
When a device outside the range is set on an object, an indefinite value is displayed on the object.
(No error is displayed in the system alarm.)
For details on the device range of YOKOGAWA PLCs, refer to the following manual:

☞ Manuals for YOKOGAWA PLCs

35.2.2 Connecting to STARDOM

1 Redundant system

When STARDOM is configured with a redundant system, the connection is not supported.

2 System alarm

The PLC error does not appear in the system alarm.

3 GOT clock control

Since the STARDOM does not have a clock function, the settings of [time adjusting] or [time broad cast] by GOT clock control will be disabled.

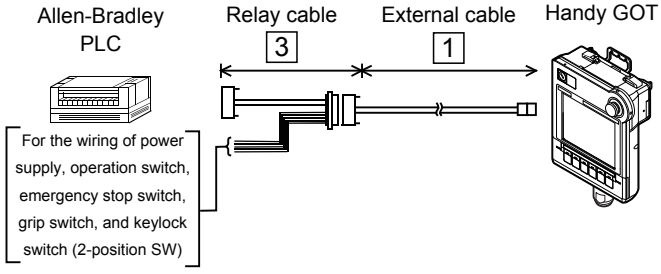
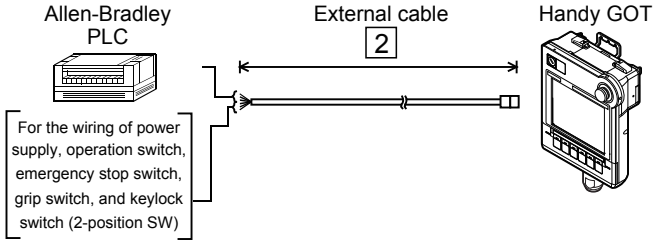
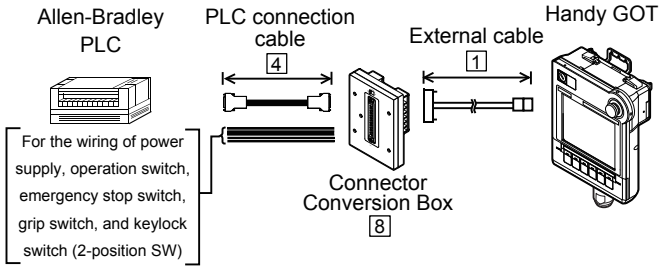
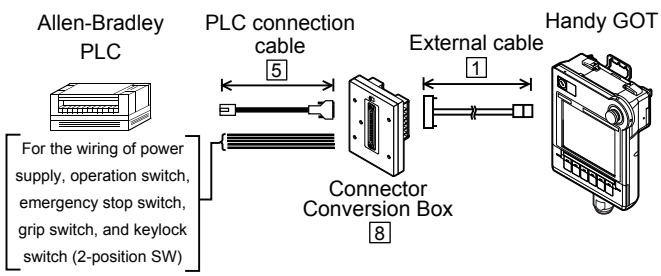
36. CONNECTION TO ALLEN-BRADLEY PLC

36.1 System Configuration and System Equipment

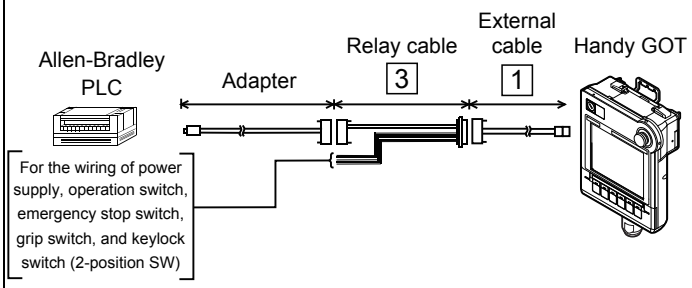
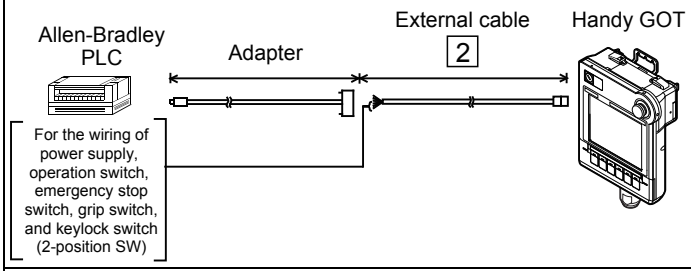
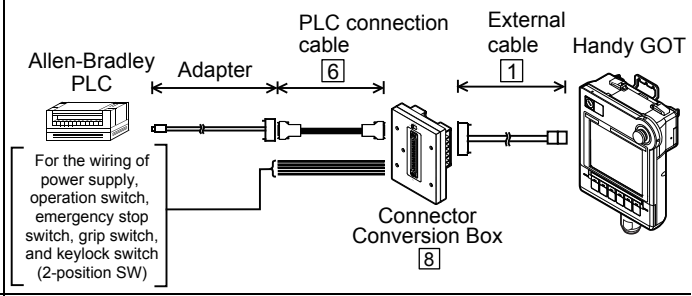
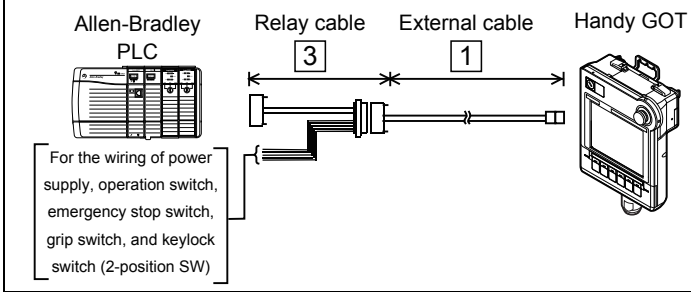
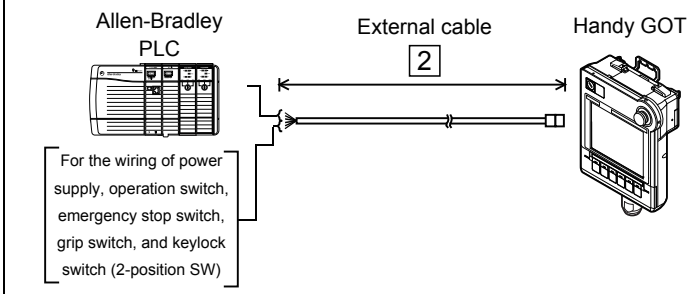
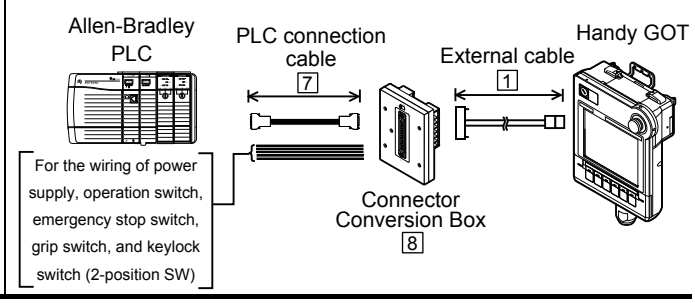
36.1.1 System configuration

When connecting the Handy GOT to an Allen-Bradley PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user. Connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.

Refer to the numbers described in System configuration (1, 2...) according to the numbers later described in "36.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
SLC500, MicroLogix1000*1/1200/1400/1500	RS-232	6m or less	
			
SLC500			
MicroLogix1000*1/1200/1400/1500			

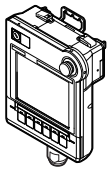
*1 For MicroLogix1000 (Digital CPU), it is supported in the series C and later.

Connection conditions			System configuration
PLC	Communication	Distance	
SLC500, MicroLogix1000*1/1200/ 1400/1500	RS-232	6m or less	
			
			
ControlLogix5555/5561, ControlLogix5562/5563, CompactLogix5331/5332E, CompactLogix5332C/ 5335E, CompactLogix5335CR, FlexLogix(1794L34)	RS-232	6m or less	
			
			

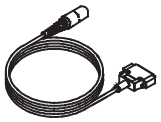
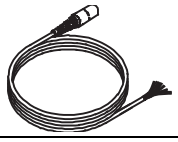
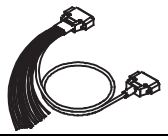
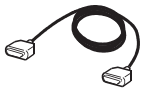
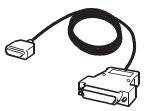
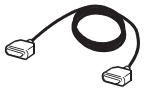
*1 For MicroLogix1000 (Digital CPU), it is supported in the series C and later.

36.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

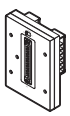
2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 36.1.3 Connection cable	
PLC connection cable*1		4	GT09-C30R20701-9S (3m)	—
		5	Must be prepared by the user. ☞ Section 36.1.3 Connection cable	
		6	GT09-C30R20702-25P (3m)	—
		7	1747-CP3, 1756-CP3*2	—

*1 The PLC connection cable can be prepared by the user. (☞ Section 36.1.3 Connection cable)

*2 7 is manufactured by Allen-Bradley(Rockwell Automation, inc). For details of the product, contact Allen-Bradley(Rockwell Automation, inc).

3 Option

Image	No.	Name	Model name	Remark
	8	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
SLC500	Direct CPU connection	RS-232	—	—
	Direct CPU connection	RS-232	Adapter	1770-KF3
MicroLogix1000/1200/1400/1500	Direct CPU connection	RS-232	—	—
	Direct CPU connection	RS-232	Adapter	1770-KF3
ControlLogix5555, ControlLogix5561, ControlLogix5562, ControlLogix5563	Direct CPU connection	RS-232	—	—
CompactLogix5331, CompactLogix5332E, CompactLogix5332C, CompactLogix5335E, CompactLogix5335CR	Direct CPU connection	RS-232	—	—
FlexLogix(1794L34)	Direct CPU connection	RS-232	—	—

5 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
Direct CPU connection	1	1
Adapter	1	—

36.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

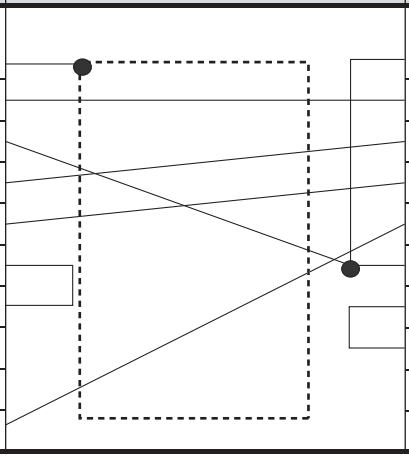
Model name		Connection cable
PLC CPU	SLC500	RS-232 cable 1)
	MicroLogix1000/1200/1400/1500	RS-232 cable 3)
	ControlLogix5555/5561, ControlLogix5562/5563, CompactLogix5331/5332E, CompactLogix5332C/5335E, CompactLogix5335CR, FlexLogix(1794L34)	RS-232 cable 4)
Adapter	1770-KF3	RS-232 cable 2)

2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

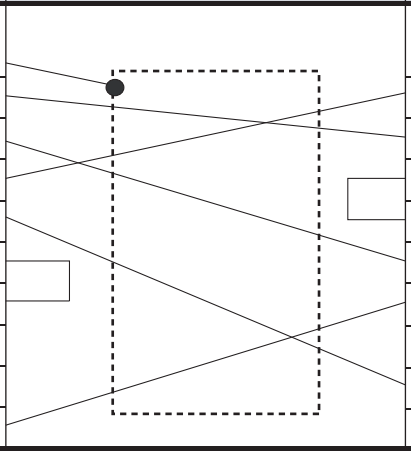
(1) RS-232 cable 1) (Between SLC500 series CPU and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Allen-Bradley product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	CD
SD(TXD)	2	W/R (A)	3		2	RXD
ER(DTR)	3	W/BK (A)	4		3	TXD
RD(RXD)	4	GY/R (A)	2		4	DTR
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DSR
CS(CTS)	7	O/BK (A)	8		7	RTS
—	8	Y/R (A)	—		8	CTS
—	9	Y/BK (A)	—		—	FG
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

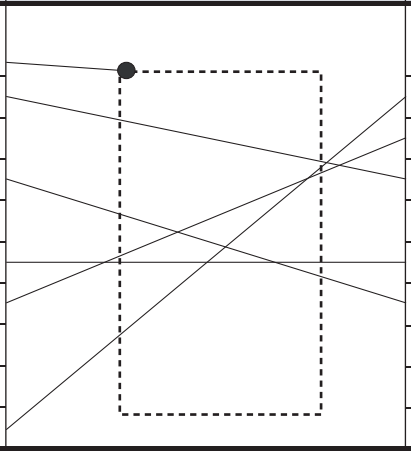
(2) RS-232 cable 2) (Between 1770-KF3 and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Allen-Bradley product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	FG
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	RTS
DR(DSR)	5	GY/BK (A)	6		5	CTS
RS(RTS)	6	O/R (A)	7		6	DSR
CS(CTS)	7	O/BK (A)	8		7	SG
—	8	Y/R (A)	—		8	CD
—	9	Y/BK (A)	—		20	DTR
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

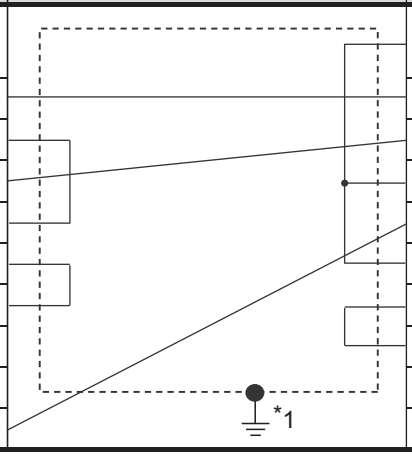
(3) RS-232 cable 3) (Between MicroLogix1000/1200/1400/1500 series CPU and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Allen-Bradley product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	24V
SD(TXD)	2	W/R (A)	3		2	SG
ER(DTR)	3	W/BK (A)	4		3	RTS
RD(RXD)	4	GY/R (A)	2		4	RXD
DR(DSR)	5	GY/BK (A)	6		5	CD
RS(RTS)	6	O/R (A)	7		6	CTS
CS(CTS)	7	O/BK (A)	8		7	TXD
—	8	Y/R (A)	—		8	SG
—	9	Y/BK (A)	—		—	FG
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(4) RS-232 cable 4) (Between MicroLogix, CompactLogix, FlexLogix series CPU and GOT)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Allen-Bradley product side	
	GT11H-C□□□-37P Pin No.	GT11H-C □□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	DCD
SD(TXD)	2	W/R (A)	3		2	RXD
ER(DTR)	3	W/BK (A)	4		3	TXD
RD(RXD)	4	GY/R (A)	2		4	DTR
DR(DSR)	5	GY/BK (A)	6		5	GND
RS(RTS)	6	O/R (A)	7		6	DSR
CS(CTS)	7	O/BK (A)	8		7	RTS
—	8	Y/R (A)	—		8	CTS
—	9	Y/BK (A)	—		9	NC
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

36.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.

36.1.5 PLC Side Setting

Point Allen-Bradley PLC

For details of Allen-Bradley PLCs, refer to the following manuals.

☞ Manuals for Allen-Bradley PLCs

1 Direct CPU connection (setting of Allen-Bradley PLC)

Item	Setting details		
	SLC500 Series	MicroLogix1000/1200/1500 Series	Control / Compact / FlexLogix series
Baud Rate*1	4800bps, 9600bps, 19200bps	4800bps, 9600bps, 19200bps, 38400bps	4800bps, 9600bps, 19200bps, 38400bps
Parity	EVEN	NONE	NONE
Control Line	NO HANDSHAKING		
Communication Driver	DF1 HALF-DUPLEX SLAVE		
Duplicate Packet Detection	DISABLE		
Station Address	0		
Error Detection	BCC	BCC, CRC*2	BCC, CRC*2

*1 Set the Baud Rate according to the transmission speed setting on the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*2 Set the Error Detection according to the sum check format setting on the GOT side.
For the sum check format setting on the GOT side, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 Connecting to DH485 network via adapter (1770-KF3) (Setting of Adapter)

Item	Setting details
Baud Rate*1	4800bps, 9600bps, 19200bps
Parity	Even
Flow Control	Disable (No Handshaking)
DF1 Device Category	DF1 half-duplex slave, local mode
Error Detection*2	BCC
DH-485 Baud Rate	19200bps
Maximum Node Address	1 to 31*3
DH-485 Node Address	0 to 31*4

*1 Set the Baud Rate according to the transmission speed setting on the GOT side.
For the transmission speed setting on the GOT side, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*2 Set the Error Detection according to the sum check format setting on the GOT side.
For the sum check format setting on the GOT side, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*3 For the Maximum Node Address, set the same address as the Maximum Node Address on the DH-485 network.

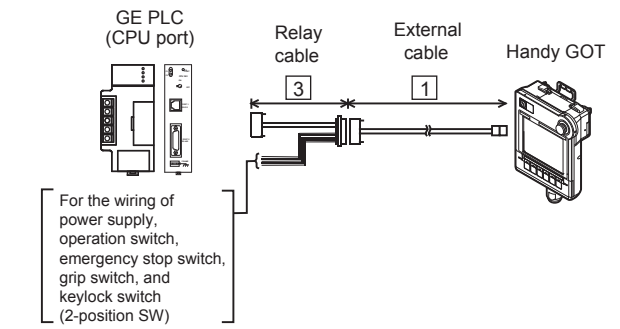
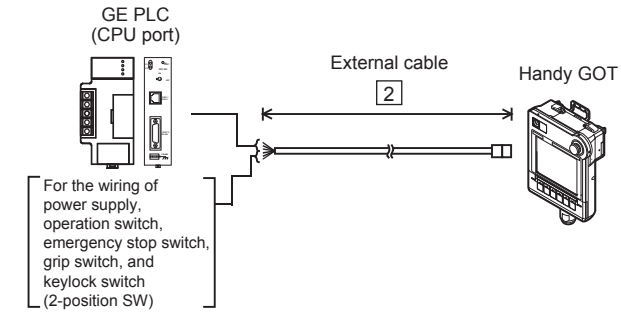
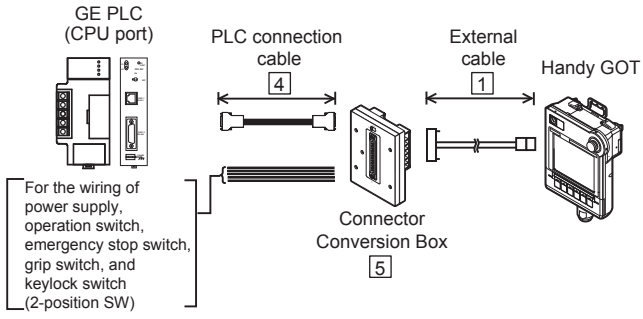
*4 Set the DH-485 Node Address according to the Host Address on the GOT side.
Set a unique DH-485 Node Address so that it does not conflict with the Node Address of the PLC CPU on the DH-485 network.
For the Host Address setting on the GOT side, refer to the following.
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

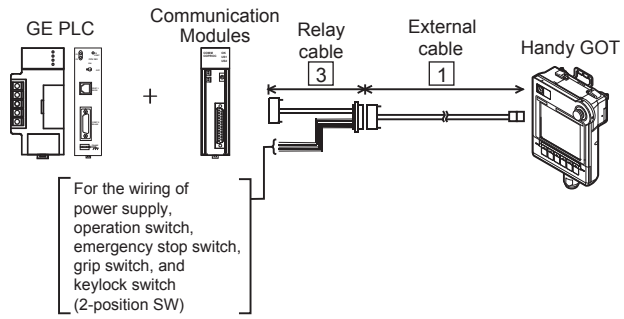
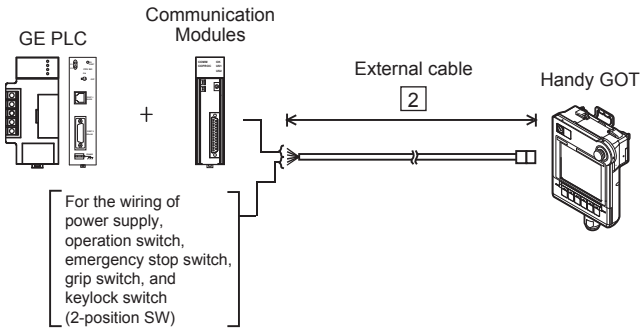
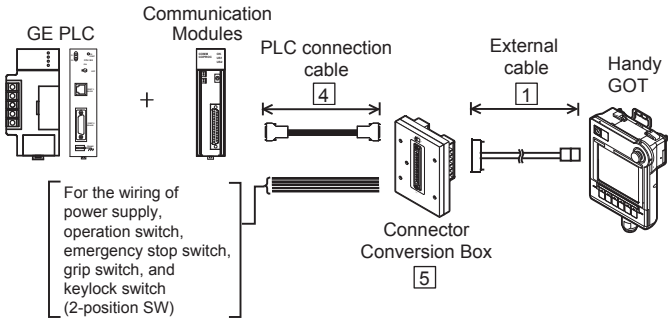
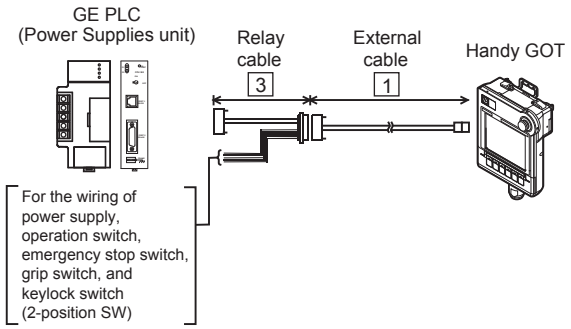
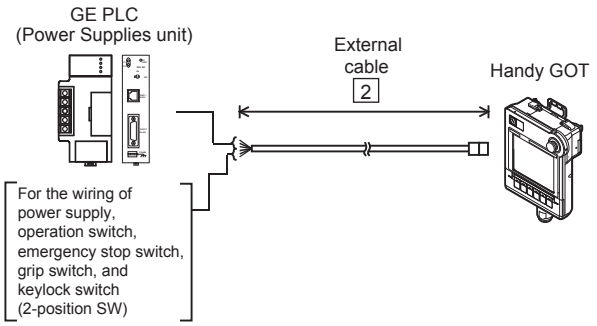
37. CONNECTION TO GE PLC

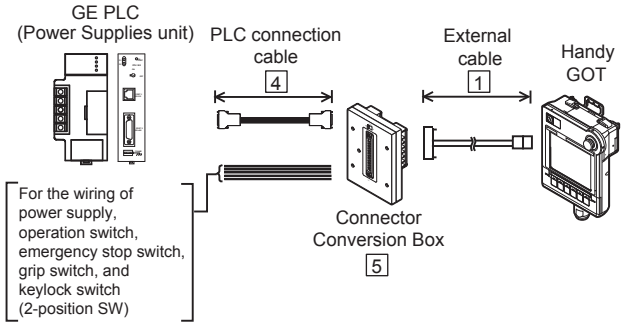
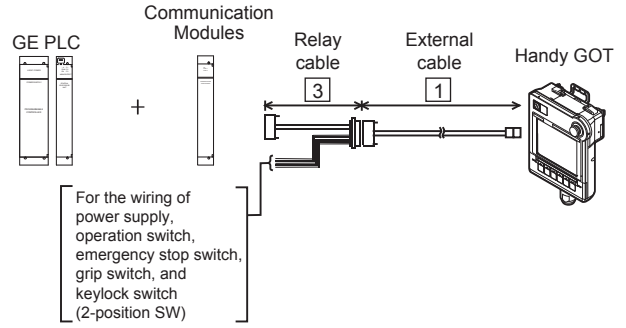
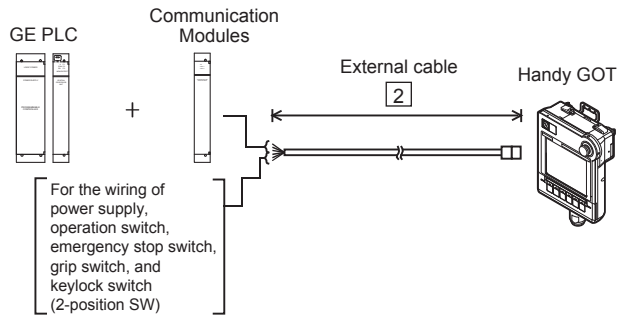
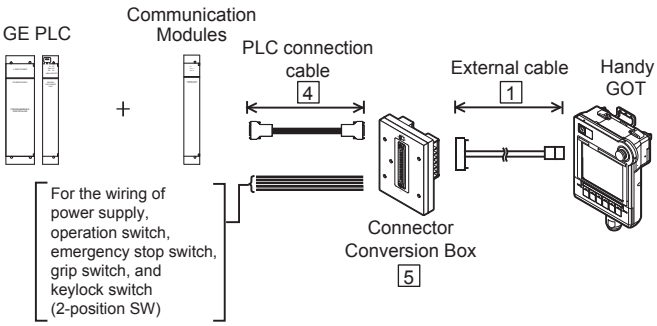
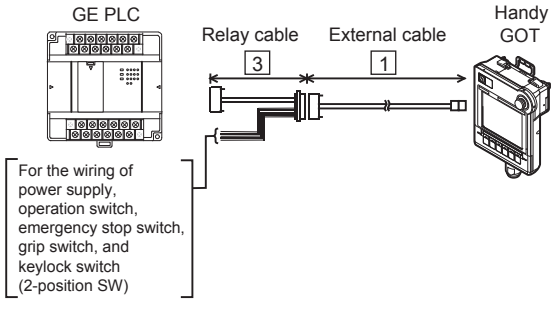
37.1 System Configuration and System Equipment

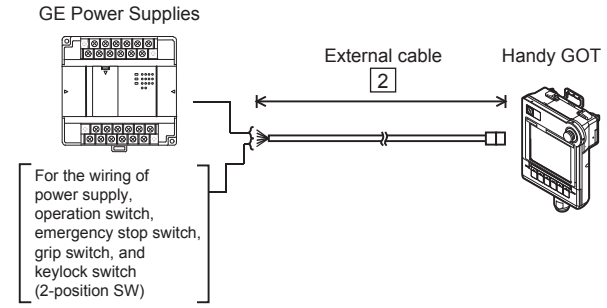
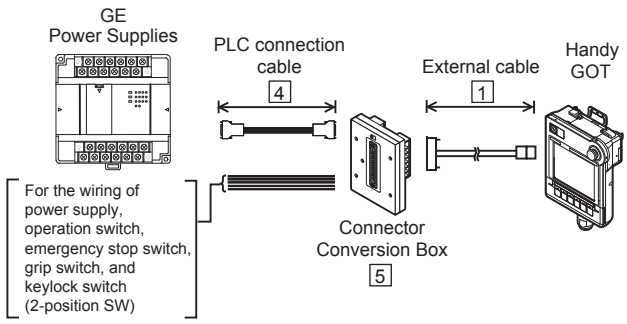
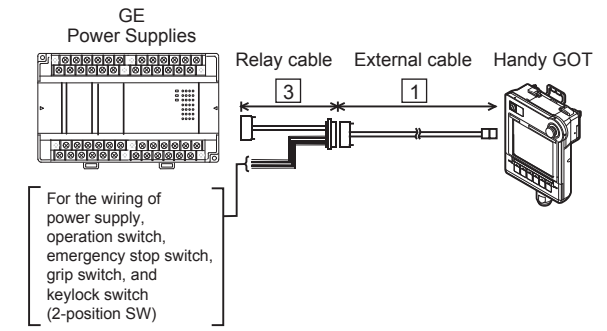
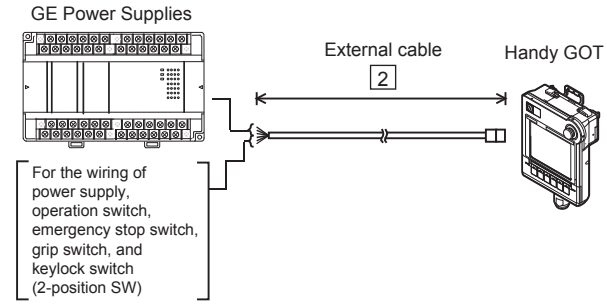
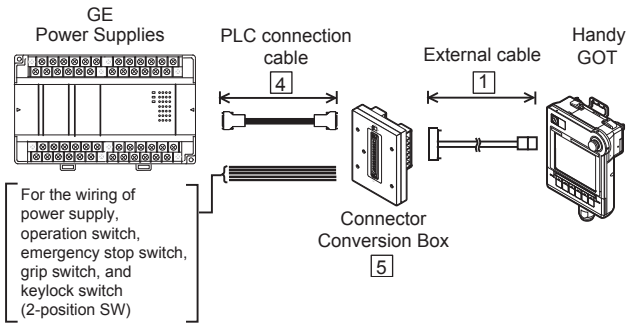
37.1.1 System configuration

When connecting the Handy GOT to a GE PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "37.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
IC693CPU363	RS-422	13m or less	
			
			

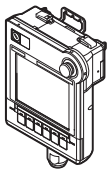
Connection conditions			System configuration
PLC	Communication	Distance	
IC693CPU311, IC693CPU313, IC693CPU323, IC693CPU350, IC693CPU360, IC693CPU366, IC693CPU367, IC693CPU374, IC693CPU363	RS-232 /RS-422	6m or less /13m or less	
			
			
IC693CPU350, IC693CPU360, IC693CPU366, IC693CPU367, IC693CPU374, IC693CPU363	RS-422	13m or less	
			

Connection conditions			System configuration
PLC	Communication	Distance	
IC693CPU350, IC693CPU360, IC693CPU366, IC693CPU367, IC693CPU374, IC693CPU363	RS-422	13m or less	
IC697CPX772, IC697CPX782, IC697CPX928, IC697CPX935, IC697CPU780, IC697CPU788, IC697CPU789, IC697CPU731, IC697CGR772, IC697CGR935, IC697CPM790	RS-232 /RS-422	6m or less /13m or less	
			
			
IC200UAA003, IC200UAR014, IC200UDD104, IC200UDD112, IC200UDR001, IC200UDR002, IC200UDR003	RS-232	6m or less	

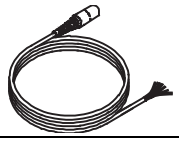
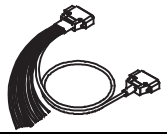
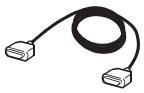
Connection conditions			System configuration
PLC	Communication	Distance	
IC200UAA003, IC200UAR014, IC200UDD104, IC200UDD112, IC200UDR001, IC200UDR002, IC200UDR003	RS-232	6m or less	
			
IC200UAL004, IC200UAL005, IC200UAL006, IC200UAA007, IC200UAR028, IC200UDD110, IC200UDD120, IC200UDD212, IC200UDR005, IC200UDR006, IC200UDR010, IC200UDD064, IC200UDD164, IC200UDR164, IC200UDR064	RS-232 /RS-422	6m or less /13m or less	
			
			

37.1.2 System equipment

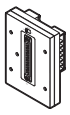
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C □□□-37P □□□: 30(3m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C □□□ □□□: 30(3m)/60(6m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 37.1.3 Connection cable	
PLC connection cable		4	Must be prepared by the user. ☞ Section 37.1.3 Connection cable	

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
IC693CPU311, IC693CPU313, IC693CPU323	Computer link connection	RS-232	Communication Modules	IC693CMM311
		RS-422		
IC693CPU350, IC693CPU360, IC693CPU366, IC693CPU367, IC693CPU374	Direct CPU connection	RS-422	Power Supplies unit	IC693PWR321, IC693PWR330, IC693PWR331, IC693PWR332, ICPWR328
	Computer link connection	RS-232	Communication Modules	IC693CMM311
		RS-422		
IC693CPU363	Direct CPU connection	RS-422	—	—
			Power Supplies unit	IC693PWR321, IC693PWR330, IC693PWR331, IC693PWR332, ICPWR328
	Computer link connection	RS-232	Communication Modules	IC693CMM311
		RS-422		
IC697CPX772, IC697CPX782, IC697CPX928, IC697CPX935, IC697CPU780, IC697CPU788, IC697CPU789, IC697CPU731, IC697CGR772, IC697CGR935, IC697CPM790	Computer link connection	RS-232	Communication Modules	IC697CMM711
		RS-422		
IC200UAA003, IC200UAR014, IC200UDD104, IC200UDD112, IC200UDR001, IC200UDR002, IC200UDR003	Direct CPU connection	RS-232	—	—
IC200UAL004, IC200UAL005, IC200UAL006, IC200UAA007, IC200UAR028, IC200UDD110, IC200UDD120, IC200UDD212, IC200UDR005, IC200UDR006, IC200UDR010, IC200UDD064, IC200UDD164, IC200UDR164, IC200UDR064	Direct CPU connection	RS-232	—	—
		RS-422		

5 Number of connectable GOTs and PLCs

PLC	Connection type	Communication	Number of GOT	Number of PLCs
IC693CPU311, IC693CPU313, IC693CPU323	Computer link connection	RS-232	1	1
		RS-422		8
IC693CPU350, IC693CPU360, IC693CPU366, IC693CPU367, IC693CPU374	Direct CPU connection	RS-422		8
	Computer link connection	RS-232		1
		RS-422		8
IC693CPU363	Direct CPU connection	RS-422		8
	Computer link connection	RS-232		1
		RS-422		8
IC697CPX772, IC697CPX782, IC697CPX928, IC697CPX935, IC697CPU780, IC697CPU788, IC697CPU789, IC697CPU731, IC697CGR772, IC697CGR935, IC697CPM790	Computer link connection	RS-232		1
		RS-422		8
IC200UAA003, IC200UAR014, IC200UDD104, IC200UDD112, IC200UDR001, IC200UDR002, IC200UDR003	Direct CPU connection	RS-232		1
IC200UAL004, IC200UAL005, IC200UAL006, IC200UAA007, IC200UAR028, IC200UDD110, IC200UDD120, IC200UDD212, IC200UDR005, IC200UDR006, IC200UDR010, IC200UDD064, IC200UDD164, IC200UDR164, IC200UDR064	Direct CPU connection	RS-232		1
		RS-422		8

37.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□and its connection target device are shown below.

1 Connection cable classification

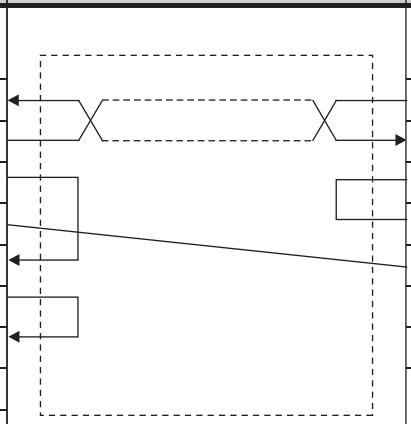
Model name			Connection cable	
			RS-232 cable	RS-422 cable
PLC CPU	Series 90-30	IC693CPU350 IC693CPU360 IC693CPU366 IC693CPU367 IC693CPU374	—	RS-422 2)
		IC693CPU363	—	RS-422 2)
	VersaMax Micro	IC200UAA003 IC200UAR014 IC200UDD104 IC200UDD112 IC200UDR001 IC200UDR002 IC200UDR003	RS-232 2)	—
		IC200UAL004 IC200UAL005 IC200UAL006 IC200UAA007 IC200UAR028 IC200UDD110 IC200UDD120 IC200UDD212 IC200UDR005 IC200UDR006 IC200UDR010 IC200UDD064 IC200UDD164 IC200UDR164 IC200UDR064	RS-232 2)	RS-422 3)
Communication controller		IC693CMM311	RS-232 1)	RS-422 1)
		IC697CMM711		

2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

Chapter 20 COMMUNICATION CABLE

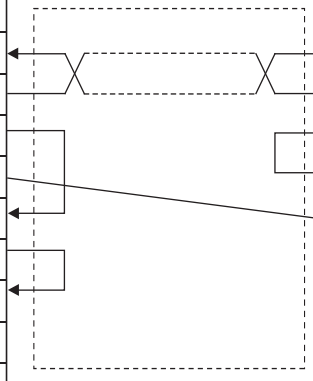
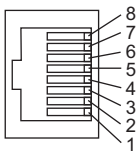
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Communication Modules	
	GT11H-C □□□ - 37P Pin No.	GT11H-C- □□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	SHLD
RD(RXD)	4	W/R (A)	2		2	TD
SD(TXD)	2	W/BK (A)	3		3	RD
ER(DTR)	3	GY/R (A)	4		4	RTS
SG	10	GY/BK (A)	5		5	CTS
DR(DSR)	5	O/R (A)	6		7	SG
RS(RTS)	6	O/BK (A)	7		8	DCD
CS(CTS)	7	Y/R (A)	8		20	DTR
—	8	Y/BK (A)	—			
—	9	PK/R (A)	—			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	PLC		
	GT11H-C □□□- 37P Pin No.	GT11H-C- □□□ Wire color (color type)			Pin No.	Signal name	Pin assignment
FG (Shield)	1	Shield	—				 RJ-45 socket
RD(RXD)	4	W/R (A)	2		4	TXD	
SD(TXD)	2	W/BK (A)	3		3	RXD	
ER(DTR)	3	GY/R (A)	4		1	RTS	
SG	10	GY/BK (A)	5		2	CTS	
DR(DSR)	5	O/R (A)	6		8	GND	
RS(RTS)	6	O/BK (A)	7		5	DCD	
CS(CTS)	7	Y/R (A)	8		6	DTR	
—	8	Y/BK (A)	—		7	5V	
—	9	PK/R (A)	—				

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

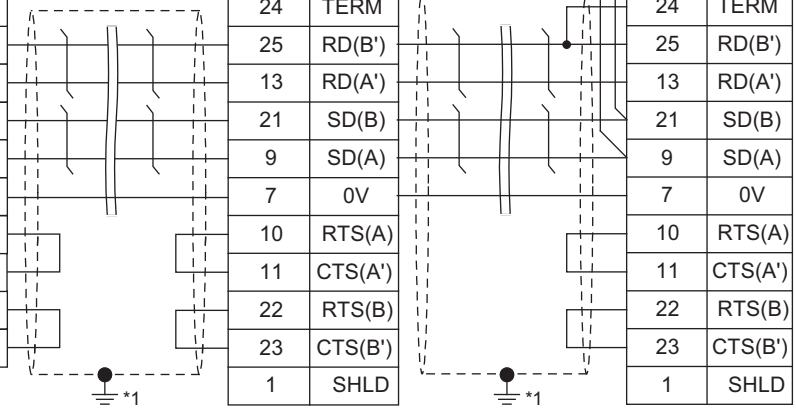
3 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C - □□□- 37P Pin No.	GT11H-C □□□ Wire color (color type)	
FG (Shield)	1	Shield	—
SDA	2	W/BK (A)	1
SDB	3	W/BK (A)	6
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
SG	10	PK/R (A)	5
RSA	4	GY/R (A)	3
CSA	8	Y/R (A)	4
RSB	5	GY/BK (A	8
CSB	9	Y/BK (A)	9



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

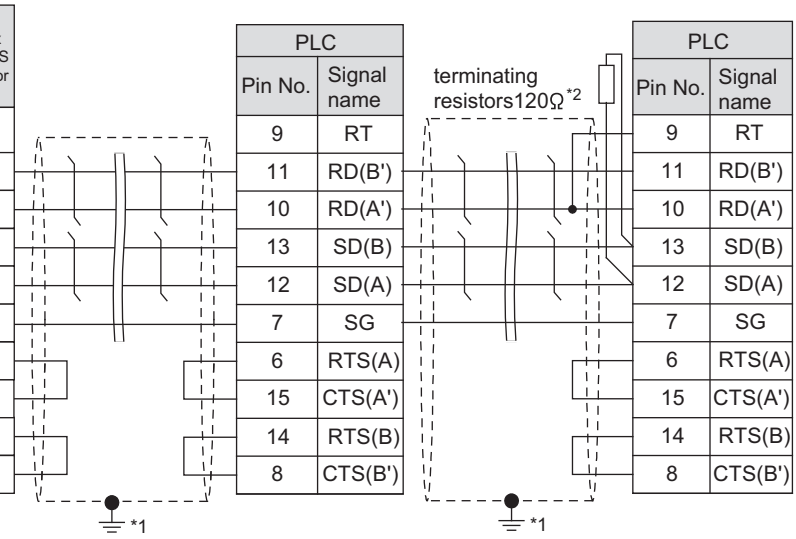
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 A terminating resistor should be connected to communication module at a terminal station.

(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C - □□□- 37P Pin No.	GT11H-C □□□ Wire color (color type)	
FG (Shield)	1	Shield	—
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
SG	10	PK/R (A)	5
RSA	4	GY/R (A)	3
CSA	8	Y/R (A)	4
RSB	5	GY/BK (A)	8
CSB	9	Y/BK (A)	9



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

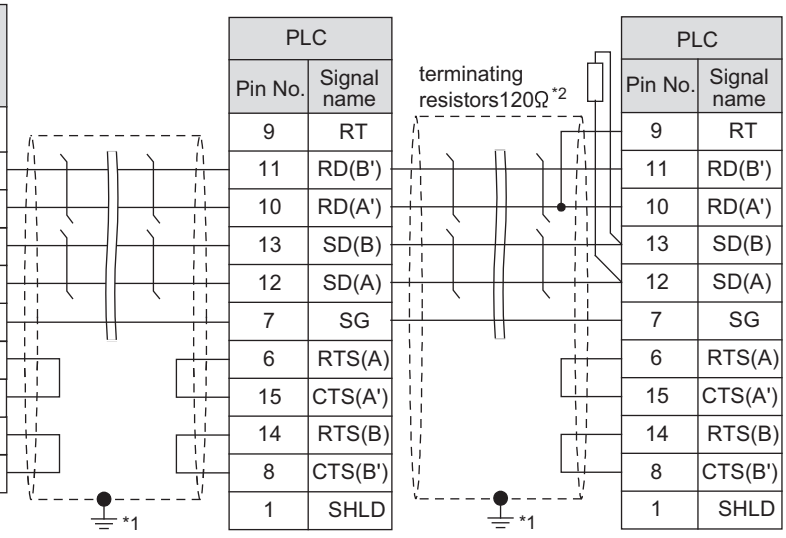
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 A terminating resistor should be connected to communication module at a terminal station.

(3) RS-422 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C - □□□-37P Pin No.	GT11H-C □□□ Wire color (color type)	
FG (Shield)	1	Shield	—
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
SG	10	PK/R (A)	5
RSA	4	GY/R (A)	3
CSA	8	Y/R (A)	4
RSB	5	GY/BK (A)	8
CSB	9	Y/BK (A)	9



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

*2 A terminating resistor should be connected to communication module at a terminal station.

37.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

37.1.5 PLC Side Setting

Point GE PLC

For details of GE PLCs, refer to the following manuals.

☞ Manuals for GE PLCs

1 Connecting to Series 90-30

(1) Communication settings

Make the communication settings using the engineering tool.

When making the settings, set [Configuration Mode] on the [Setting] tab of the engineering tool to "SNP only".

Setting item	PLC side setting
Port Mode*1	SNP
Port Type*2	Slave
Data Rate	9600bps, 19200bps
Flow Control	NONE
Parity	EVEN, ODD, NONE
Stop Bits	1 bit, 2 bit
Timeout*3	Long
Turn Around Delay*4	0
SNP ID*5	00 to 31
Converter Power Consumption*6	0

*1 Set to SNP.

*2 Set to Slave.

*3 Set to Long.

*4 Set to 0.

*5 Set within the range of 00 to 31.
When specifying the station No. from 0 to 9, add "0"before the number and set it as 00 to 09.

*6 Set to 0.(only when connecting to Port2)

2 Connecting to VersaMaxMicro

(1) Communication settings

Make the communication settings using the engineering tool.

Setting item	PLC side setting
Data Rate	9600bps, 19200bps, 38400bps
Bits / Character*6	7 bit, 8 bit
Parity	EVEN, ODD, NONE
Stop Bits	1 bit, 2 bit
Port Mode*1	SNP
Port Type*2	Slave
Flow Control	NONE
Timeout*3	Long
Turn Around Delay*4	0
SNP ID*5	00 to 31

*1 Set to the SNP protocol.
*2 Set to Slave.
*3 Set to Long.
*4 Set to 0.
*5 Set within the range of 00 to 31.
When specifying the station No. from 0 to 9, add "0" before the number and set it as 00 to 09.
*6 Set the same set value for the data length for the GOT and PLC.

3 Connecting to IC693CMM311

(1) Communication settings

Make the communication settings using the engineering tool.
When making the settings, set [Configuration Mode] on the [Setting] tab of the engineering tool to "SNP only".

Setting item	PLC side setting
SNP Enable*1	YES
SNP Mode*2	Slave
Interface*3	RS232, RS485
Data Rate	9600bps, 19200bps
Parity	ODD, NONE, EVEN
Stop Bits	1 bit, 2 bit
Flow Control*4	NONE
Turn Around Delay*5	NONE
Timeout*6	Long

*1 Set to YES.
*2 Set to SLAVE.
*3 Set the communication format to be used. (only when connecting to Port2)
*4 Set to NONE.
*5 Set to NONE.
*6 Set to LONG.

4 Connecting to IC697CMM711

(1) Communication settings

Make the communication settings using the engineering tool.

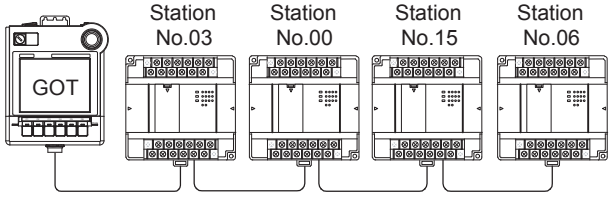
When making the settings, set [Configuration Mode] on the [Setting] tab of the engineering tool to "SNP only"

Setting item	PLC side setting
SNP Enable*1	YES
SNP Mode*2	Slave
Interface*3	RS232, RS485
Data Rate	9600bps, 19200bps
Parity	ODD, NONE, EVEN
Stop Bits	1 bit, 2 bit
Flow Control*4	NONE
Turn Around Delay*5	NONE
Timeout*6	Long

*1 Set to YES.
*2 Set to SLAVE.
*3 Set the communication format to be used. (only when connecting to Port2)
*4 Set to NONE.
*5 Set to NONE.
*6 Set to LONG.

37.1.6 Station NO. settings

Set each station number so that no station number overlaps.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



The example of a Station No. setting

1 Direct specification

Specify the station No. of the PLC to be changed when setting device.

Specification range
0 to 31

37.2 Precautions

37.2.1 Precautions

1 GOT clock control function

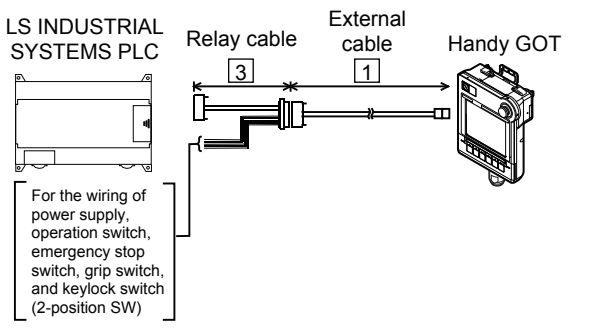
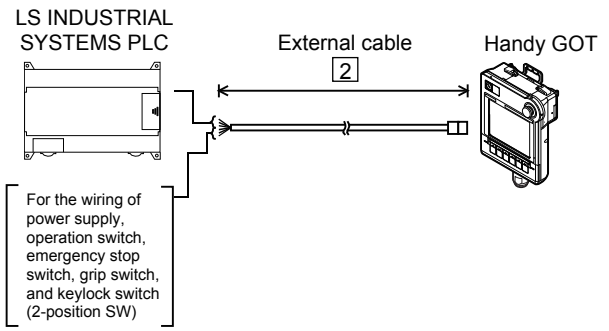
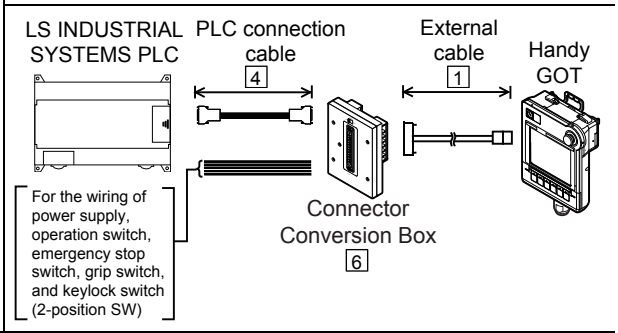
The PLC clock data cannot be written to or read from the GOT.
The settings of "time adjusting" or "time broadcast" made on the GOT will be disabled on the PLC.

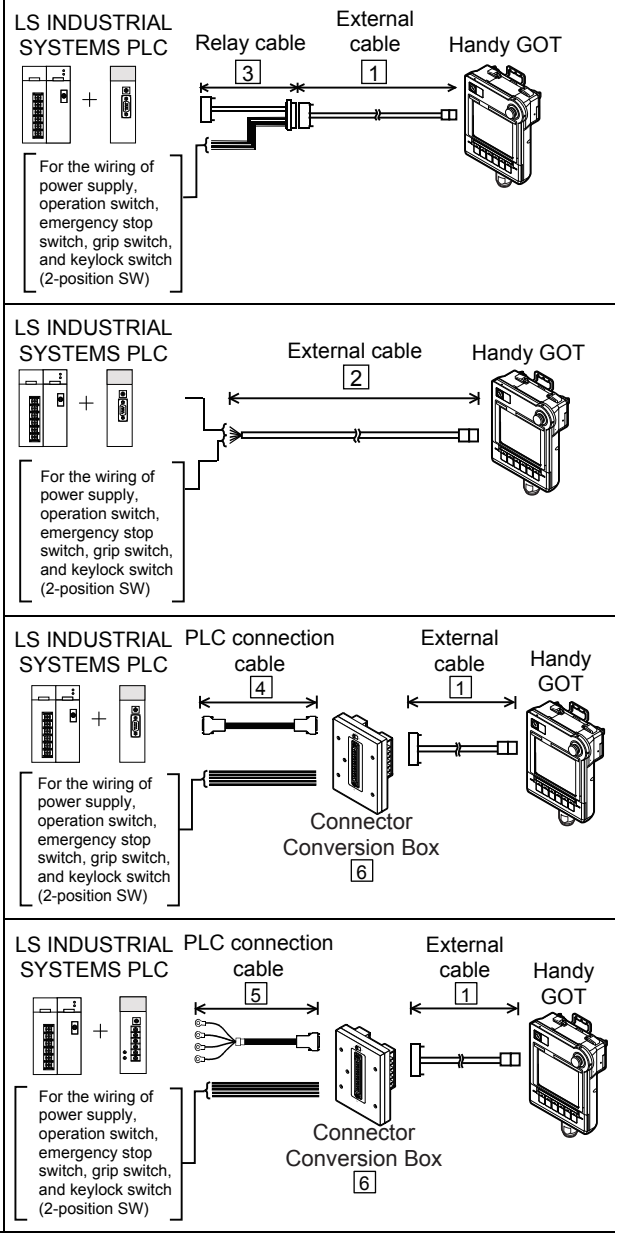
38. CONNECTION TO LS INDUSTRIAL SYSTEMS PLC

38.1 System Configuration and System Equipment

38.1.1 System configuration

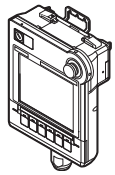
When connecting the Handy GOT to a LS INDUSTRIAL SYSTEMS PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "38.1.2 System equipment"

Connection conditions			System configuration
PLC	Communication	Distance	
K80S, K120S	RS-232	6m or less	
			
			

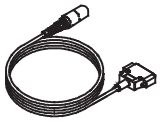
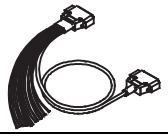
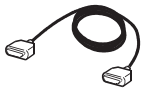
Connection conditions			System configuration
PLC	Communication	Distance	
K80S, K120S, K200S, K300s	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	

38.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image		Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 38.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 38.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication module	
			Name	Model name
K80S	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	Cnet I/F modules	G7L-CUEB
		RS-422	Cnet I/F modules	G7L-CUEC
K120S	Direct CPU connection	RS-232	—	—
	Computer link	RS-232	Cnet I/F modules	G7L-CUEB
		RS-422	Cnet I/F modules	G7L-CUEC
K200S	Computer link	RS-232	Cnet I/F modules	G6L-CUEB
		RS-422	Cnet I/F modules	G6L-CUEC
K300S	Computer link	RS-232	Cnet I/F modules	G4L-CUEA
		RS-422		

- Communication modules are products manufactured by LS Industrial Systems Co., Ltd.
  For details on the communication module, contact LS Industrial Systems Co., Ltd.

5 Number of connectable GOTs and PLCs

PLC	Number of GOTs	Number of PLCs
K80S, K120S, K200S, K300S	1	10

38.1.3 Connection cable

PLC connection cable model names and schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

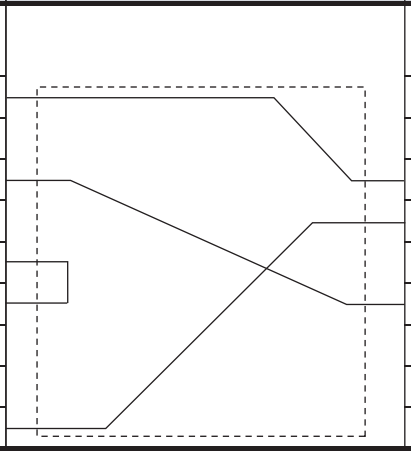
Model name		Connection cable	
		RS-232 cable	RS-422 cable
PLC CPU	K80S	RS-232 cable 1)	—
	K120S		—
Communication module	G7L-CUEB	RS-232 cable 2)	—
	G7L-CUEC	—	RS-422 cable 1)
	G6L-CUEB	RS-232 cable 2)	—
	G6L-CUEC	—	RS-422 cable 1)
	G4L-CUEA	RS-232 cable 2)	RS-422 cable 1)

2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

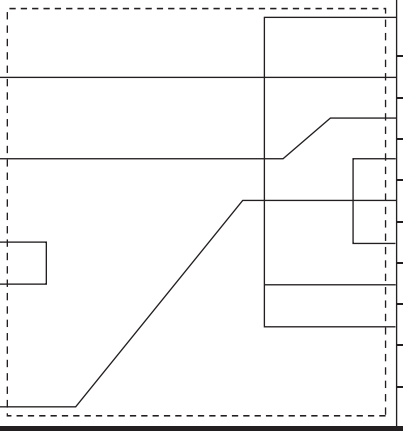
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	LS INDUSTRIAL SYSTEMS PLC side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	5V
SD(TXD)	2	W/R (A)	3		2	RXD1
ER(DTR)	3	W/BK (A)	4		3	TXD1
RD(RXD)	4	GY/R (A)	2		4	RXD2
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	5V
CS(CTS)	7	O/BK (A)	8		7	TXD2
—	8	Y/R (A)	—		8	SG
—	9	Y/BK (A)	—		9	SG
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	LS INDUSTRIAL SYSTEMS PLC side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	CD
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	DTR
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DSR
CS(CTS)	7	O/BK (A)	8		7	RTS
—	8	Y/R (A)	—		8	CTS
—	9	Y/BK (A)	—		9	—
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

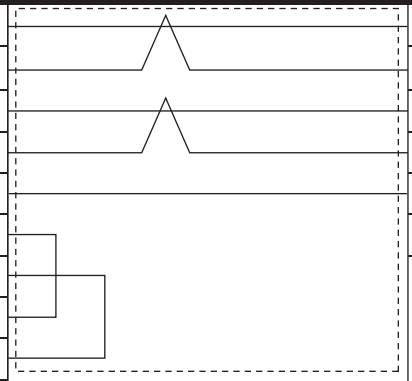
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

3 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 connecting the GOT to the PLC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	LS INDUSTRIAL SYSTEMS PLC side (terminal block) *1
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
SDA	2	W/R (A)	1		RDA
SDB	3	W/BK (A)	6		RDB
RDA	6	O/R (A)	2		SDA
RDB	7	O/BK (A)	7		SDB
SG	10	PK/R (A)	5		SG
RSA	4	GY/R (A)	3		FG
RSB	5	GY/BK (A)	8		
CSA	8	Y/R (A)	4		
CSB	9	Y/BK (A)	9		
FG (Shield)	1	Shield	—		

*1 : For the system terminal, connect a 120 (1/2W) terminating resistor across RDA and RDB, and across SDA and SDB respectively.
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

38.1.4 Precautions when preparing cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

38.2 PLC Side Setting

Point

LS INDUSTRIAL SYSTEMS PLC

For details of LS INDUSTRIAL SYSTEMS PLCs, refer to the following manual.

☞ User's Manual for the LS INDUSTRIAL SYSTEMS PLCs

Model		Reference
PLC CPU	K80S, K120S	Section 38.2.1
	K200S	
	K300S	
Cnet I/F modules	G7L-CUEB	Section 38.2.2
	G7L-CUEC	
Cnet I/F modules	G6L-CUEB	
	G6L-CUEC	
	G4L-CUEA	

38.2.1 Connecting to PLC

1 Settings of the communication specifications

There is no item to be set using the hardware.

Set the items using the engineering software.

Item	Setting details
Host Address No.	0 to 31
Communication speed	1200,2400,4800,9600,19200,38400,57600bps
Data bit	7 or 8
Parity bit	None, Even, Odd
Stop bit	1 or 2

*1 For the setting method of the engineering software, refer to the following.

☞ Manuals for LS INDUSTRIAL SYSTEMS PLCs

1 Settings of the communication specifications

There is no item to be set using the hardware. Set the items using the engineering software.

Item		Setting details
Communication protocol		Dedicated protocol
Communication format	Data bit	7 or 8
	Stop bit	1 or 2
	Start bit	1
	Parity bit	Even/Odd/None
Channel selection		Independent channel/Interlock channel
Synchronous method		Asynchronous method
Transmission speed (bps)	RS-232C	300/600/1200/2400/4800/9600/19200/38400
	RS-422/485	300/600/1200/2400/4800/9600/19200/38400/76800

*1 For the setting method of the engineering software, refer to the following.

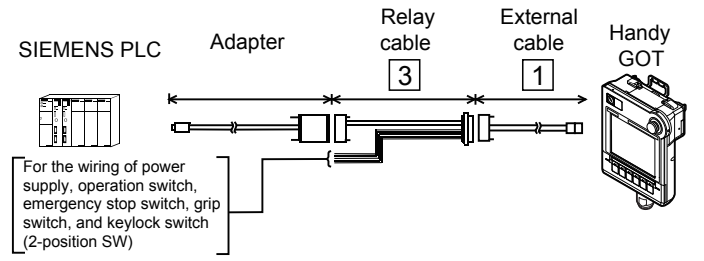
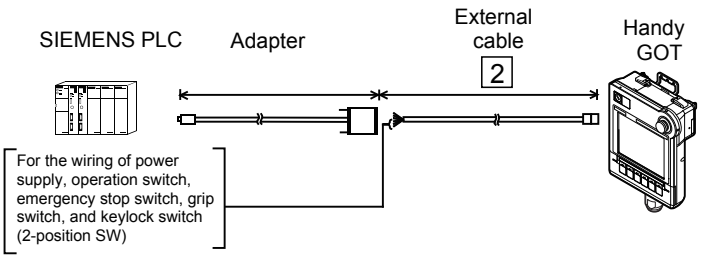
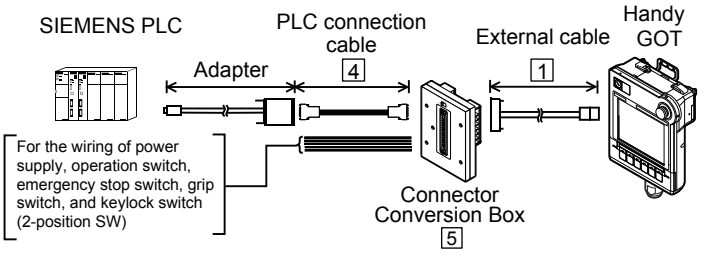
☞ Manuals for LS INDUSTRIAL SYSTEMS PLCs

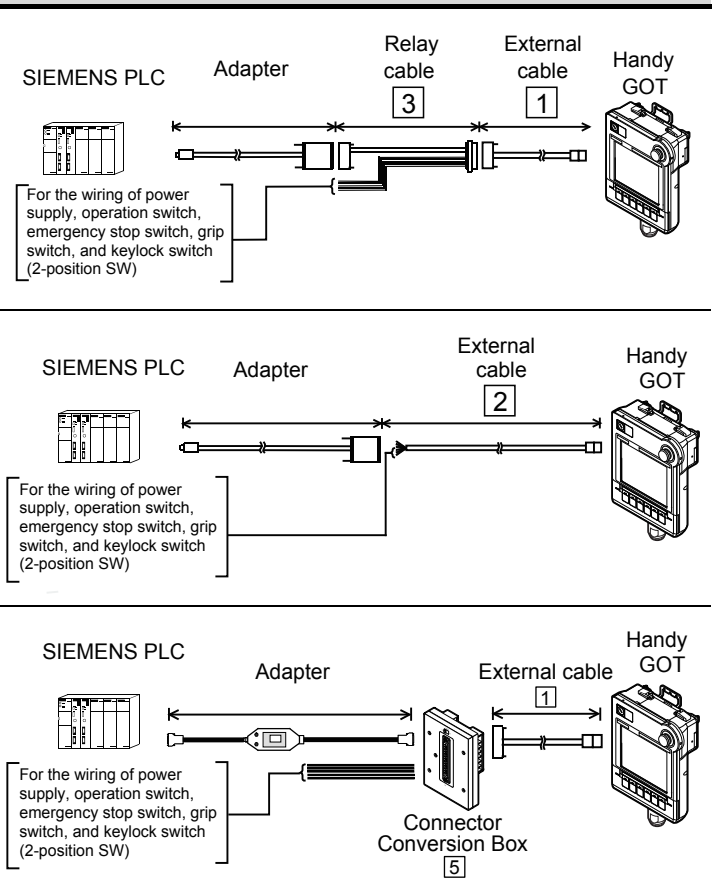
39. CONNECTION TO SIEMENS PLC

39.1 System Configuration and System Equipment

39.1.1 System configuration

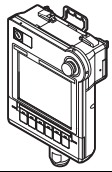
When connecting the Handy GOT to a SIEMENS PLC, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
Connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
Refer to the numbers described in System configuration (1, 2...) according to the numbers later described in "39.1.2 System equipment".

Connection conditions			System configuration
PLC	Communication	Distance	
SIMATIC S7-300/400	RS-232	6m or less	
			
			

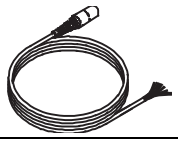
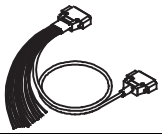
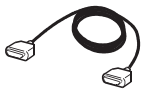
Connection conditions			System configuration
PLC	Communication	Distance	
SIMATIC S7-200	RS-232	6m or less	

39.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 39.1.3 Connection cable	
PLC connection cable*1		4	GT09-C30R20801-9S (3m)	—

*1 The PLC connection cable can be prepared by the user. (☞ Section 39.1.3 Connection cable)

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

PLC	Connection type	Communication	Communication unit	
			Name	Model name
SIMATIC S7-300/400	Direct CPU connection	RS-232	HMI Adapter	MLFB: 6ES7 972-0CA11-0XA0
SIMATIC S7-200	Direct CPU connection	RS-232	PC/PPI cable	6ES7 901-3BF20-0XA0 6ES7 901-3CB30-0XA0

5 Number of connectable GOTs and PLCs

PLC, connection cable	Number of GOTs	Number of PLCs
HMI Adapter	1	—
PC/PPI cable	1	—

39.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

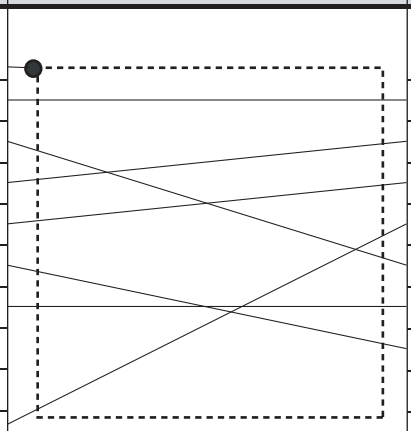
Model name		Connection cable
HMI Adapter	MLFB-F6ES7 972-0CA11-0XA0	RS-232 cable
PC/PPI cable	6ES7 901-3BF20-0XA0 6ES7 901-3CB30-0XA0	

2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the PLC. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	SIEMENS product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	CD
SD(TXD)	2	W/R (A)	3		2	RXD
ER(DTR)	3	W/BK (A)	4		3	TXD
RD(RXD)	4	GY/R (A)	2		4	DTR
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DSR
CS(CTS)	7	O/BK (A)	8		7	RTS
—	8	Y/R (A)	—		8	CTS
—	9	Y/BK (A)	—		9	FG
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

39.1.4 Precautions when preparing a cable

1 Cable Length

The cable of RS-232 cable must be 6m or less.

39.1.5 PLC Side Setting

Point SIEMENS PLC

For details of SIEMENS PLCs, refer to the following manuals.

☞ USER's Manual for the SIEMENS PLC

Model name		Reference
PLC CPU	S7-200	This section 2
HMI Adapter	6ES7 972-0CA11-0XA0	This section 1
PC/PPI cable	6ES7 901-3BF20-0XA0	This section 2

1 Connecting to HMI Adapter

(1) Communication settings

The following communication settings are made at the communication detail settings of the GOT side.

For details, refer to the following.

☞ Section 9.2 Communication Detail Settings

Setting item	PLC side settings
Transmission speed	9600bps, 19200bps, 38400bps
Data bit	8bits (fixed)
Parity bit	Odd (fixed)
Stop bit	1bit (fixed)
Adapter address	1 to 31
Host address	1 to 31

2 Connecting to SIMATIC S7-200

(1) Communication settings

Set the communication settings of PLC and PC/PPI cable.

(2) PLC settings

Set the communication settings of PLC by operating the SIEMENS programming tool(STEP7-WIN32).

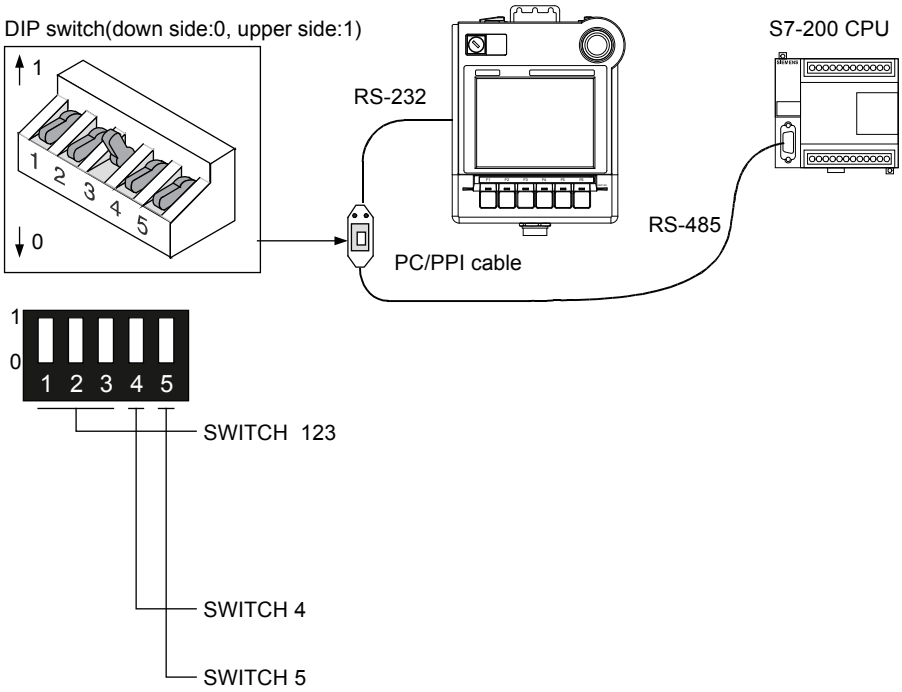
Setting item	PLC settings
Transmission speed*1	9600bps,19200bps
Data bit	8-bit (fixed)
Parity bit	Even (fixed)
Stop bit	1-bit (fixed)
Host address*2	1 to 31

*1 Adjust with GOT settings.

*2 Set the address without overlapping the address of other units.

(3) PC/PPI cable settings

Set the transmission speed by operating the DIP switch on the PC/PPI cable



SWITCH1	SWITCH2	SWITCH3	SWITCH4	SWITCH5	Transmission speed
0	0	1	0	0	19200bps*1
0	1	0	0	0	9600bps*1

*1 Adjust with GOT settings.

39.2 Precautions

39.2.1 Precautions

1 GOT alarm list (system alarm) function

Error information cannot be monitored when the GOT is connected to a SIEMENS PLC.
(The error information on the PLC CPU side can be monitored.)
For details on the alarm list (system alarm), refer to the following manual:

☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Functions)

2 At system startup

(1) When powering ON the system
Turn ON all PLC CPUs before turning ON the GOT.
If the GOT is turned ON before power-up of the PLC CPUs, restart the GOT.

(2) When powering OFF a PLC CPU at another station
When a PLC CPU at another station (the PLC CPU to which the HMI Adapter is not connected) is turned OFF, monitoring by the GOT is stopped.
To resume the monitoring, restart the GOT.
(Monitoring will not be resumed on GOT even if the PLC CPU is turned ON again.)

40. CONNECTION TO HIRATA CORPORATION HNC CONTROLLER

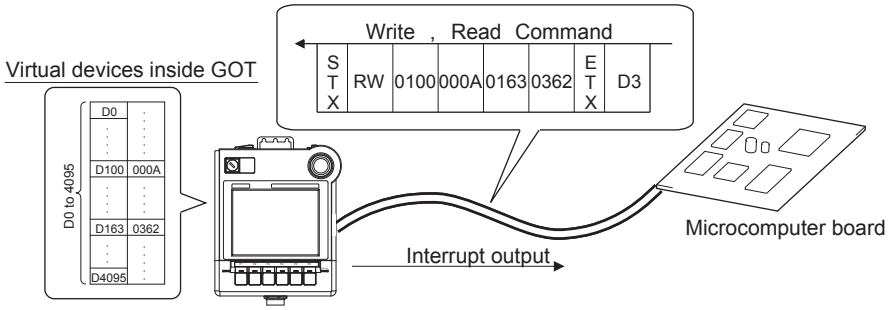
Contact us for connection to the Hirata Corporation HNC controller.

41. CONNECTION TO MICROCOMPUTER

41.1 Microcomputer Connection

41.1.1 Overview

The "microcomputer connection" is a function by which data can be written or read from a PC, microcomputer board, PLC, etc. (hereinafter referred to as "host") to virtual devices of the GOT. Interrupt output is also available from the GOT to the host.



Point Virtual devices inside the GOT

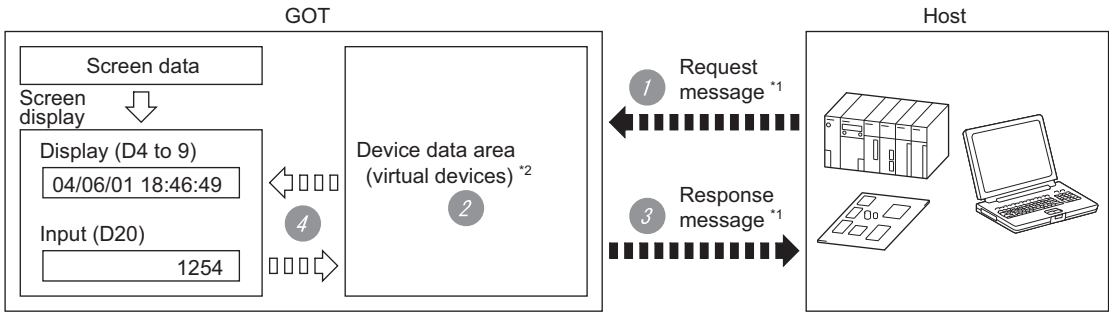
The devices inside the GOT are used in the microcomputer connection.

(PLC devices are not used.)

☞ Section 41.3 Available Devices

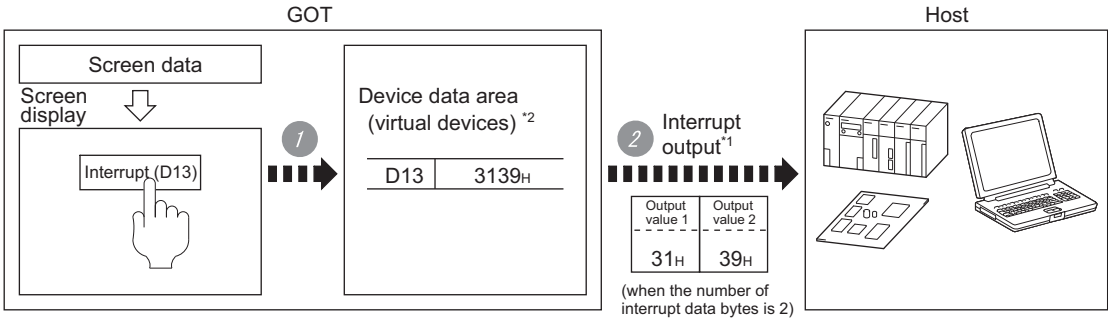
1 Flow of data processing

(1) When reading or writing data



1. The host sends a request message (the read/write command) to the GOT.
2. The GOT performs a read/write processing to its virtual devices according to the request from the host.
3. Upon completion of the processing, the GOT sends a response message (processing result) to the host.
4. Creating the following objects on the screen allows you to use the data read/written to the virtual devices:
   - Numerical Display that displays data written by the write command
   - Numerical Input that is used to input data to be upload to the host

(2) When outputting interrupts



1 Data are written to the virtual devices for interrupt output from the touch switches on the GOT.

2 The GOT sends the written data (interrupt output) to the host.

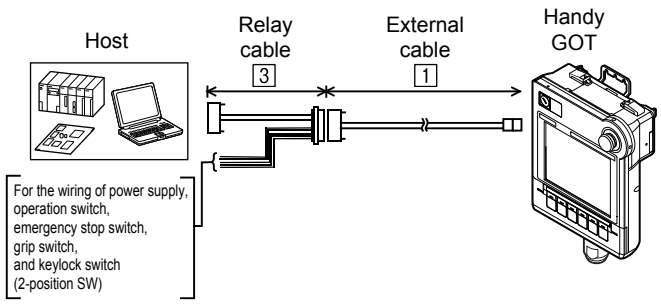
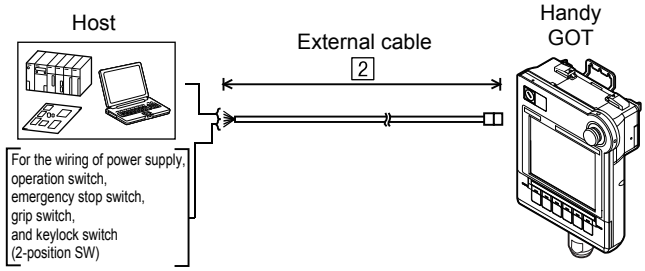
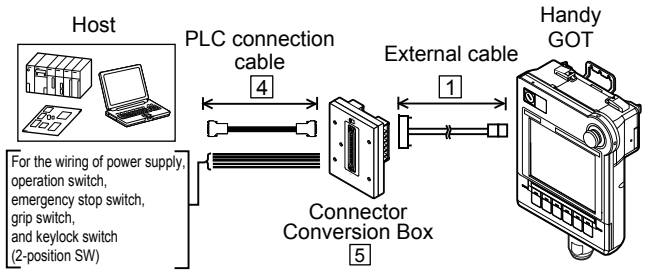
*1 Section 41.5 Message Formats

*2 Section 41.3 Available Devices

41.2 System Configuration and System Equipment

41.2.1 System configuration

When connecting the Handy GOT to a microcomputer, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the numbers described in System configuration (1, 2 ...) according to the numbers later described in "41.2.2 System equipment".

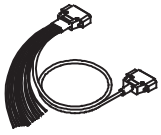
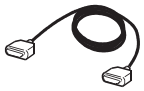
Connection conditions		System configuration
Communication	Distance	
RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
		
		

41.2.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 41.2.3 Connection cable	
PLC connection cable		4		

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Number of connectable GOTs and PLCs

Number of GOTs	Number of microcomputers
1	1

41.2.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

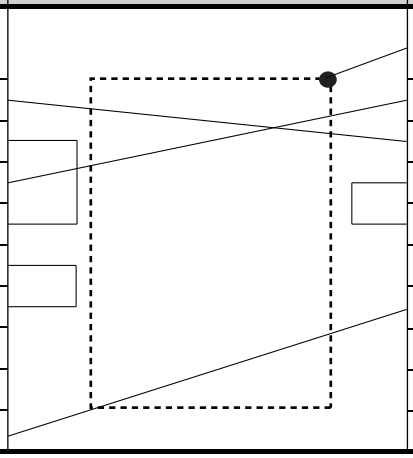
1 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the microcomputer.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

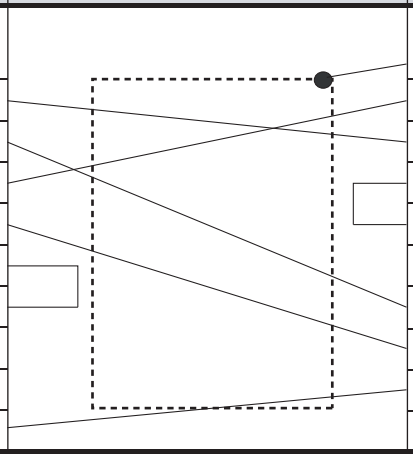
(1) Example of the case where the DTR/DSR signal is not used

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Host side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		FG
SD(TXD)	2	W/R (A)	3		SD(TXD)
ER(DTR)	3	W/BK (A)	4		RD(RXD)
RD(RXD)	4	GY/R (A)	2		RS(RTS)
DR(DSR)	5	GY/BK (A)	6		CS(CTS)
RS(RTS)	6	O/R (A)	7		—
CS(CTS)	7	O/BK (A)	8		SG
—	8	Y/R (A)	—		—
—	9	Y/BK (A)	—		ER(DTR)
SG	10	PK/R (A)	5		—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) Example of the case where the DTR/DSR signal is used

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Host side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		FG
SD(TXD)	2	W/R (A)	3		SD(TXD)
ER(DTR)	3	W/BK (A)	4		RD(RXD)
RD(RXD)	4	GY/R (A)	2		RS(RTS)
DR(DSR)	5	GY/BK (A)	6		CS(CTS)
RS(RTS)	6	O/R (A)	7		5V
CS(CTS)	7	O/BK (A)	8		DR(DSR)
—	8	Y/R (A)	—		ER(DTR)
—	9	Y/BK (A)	—		SG
SG	10	PK/R (A)	5		—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

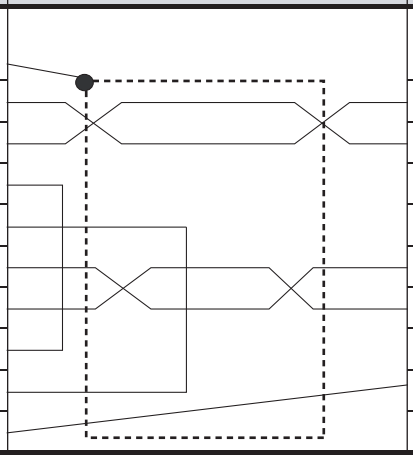
2 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the Handy GOT to the microcomputer.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	Host side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		—
SDA	2	W/R (A)	1		RDA
SDB	3	W/BK (A)	6		RDB
RSA	4	GY/R (A)	3		—
RSB	5	GY/BK (A)	8		—
RDA	6	O/R (A)	2		SDA
RDB	7	O/BK (A)	7		SDB
CSA	8	Y/R (A)	4		—
CSB	9	Y/BK (A)	9		SHELL
SG	10	PK/R (A)	5		—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

41.2.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

41.3 Available Devices

41.3.1 Device data area

The following shows a list of virtual devices inside the GOT available in the microcomputer connection, and the address specification values for each data format.

The address specification of the virtual devices differs depending on the data format.*1

Virtual device*2			Address specification value				
Name	Device range (decimal)	Device type	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
D	0 to 4095	Word	0 to 4095	D0 to 4095	D0 to 4095	0000 to 0FFFH	8000 to 9FFFH
R	0 to 4095	Word	4096 to 8191	R0 to 4095	R0 to 4095	1000 to 1FFFH	0000 to 1FFFH
L	0 to 2047	Bit	8192 to 8319	L0 to 2047	L0 to 2047	2000 to 207FH	A000 to A0FFH
M	0 to 2047	Bit	8320 to 8447	M0 to 2047	M0 to 2047	2080 to 20FFH	2000 to 20FFH
SD	0 to 15	Word	8448 to 8463	D9000 to 9015	SD0 to 15	2100 to 210FH	2100 to 211FH (3000 to 300DH)*3
SM	0 to 63	Bit	8464 to 8467	M9000 to 9063	SM0 to 63	2110 to 2113H	2200 to 2207H

*1 For the address specification method for each data format, refer to the following.

Section 41.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 When reusing GOT900 Series project data

- GOT-A900 Series virtual devices (D0 to 2047)
  Can be used as they are without changing the assignments.
- GOT-F900 Series virtual devices
  Since some of the assigned virtual device values differ as indicated below, change the assignment using device batch edit of drawing software.
  Refer to the following manual for device batch edit of drawing software.

GT Designer2 Version□ Basic Operation/Data Transfer Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

GOT1000 Series virtual devices	GOT-F900 Series virtual devices
D0 to 2047	—
D2048 to 4095	—
R0 to 4095	D0 to 4095
L0 to 2047	—
M0 to 2047	M0 to 2047
SD0 to 15	D8000 to 8015 GD0 to 6
SM0 to 63	M8000 to 8063

*3 Access to SD3 to 9 can also be made by the specification of the addresses (3000 to 300DH) of GD0 to 6 on the GOT-F900 Series.

Point

About values of virtual devices inside the GOT

When the GOT is turned OFF or reset, values are cleared to their defaults (bit devices: OFF, word devices: 0).

Values are held in the memory when project data are downloaded to the GOT.

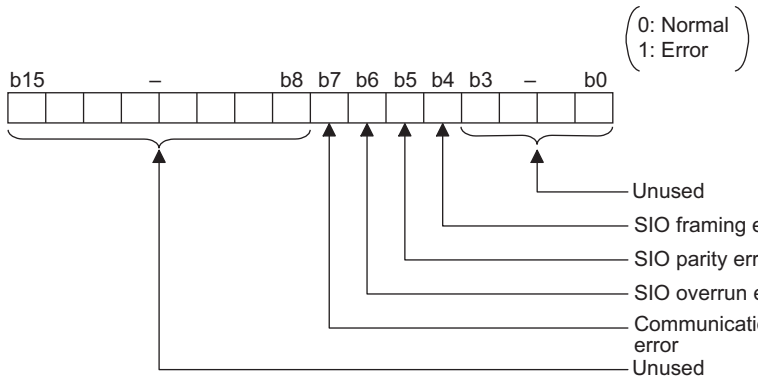
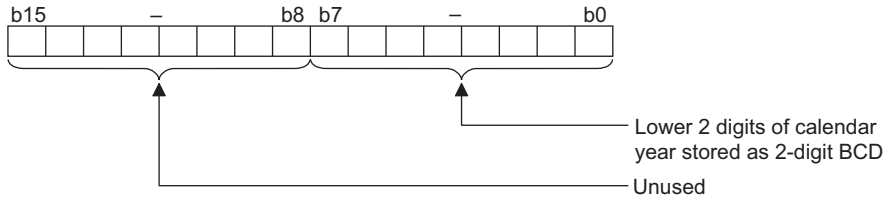
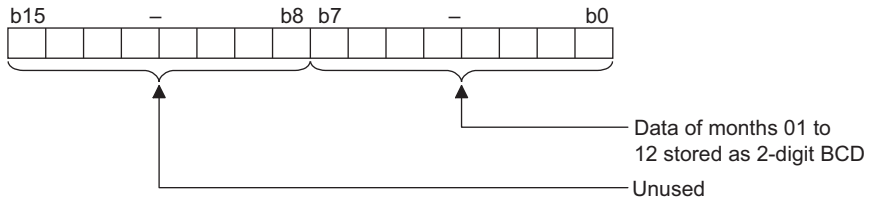
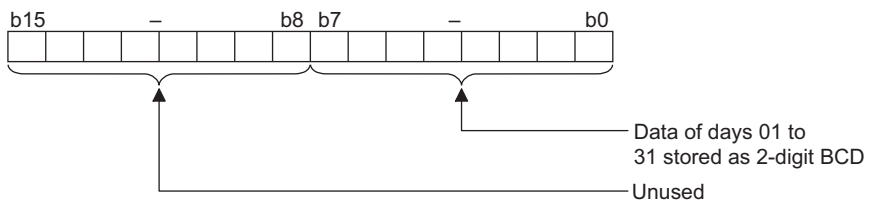
1 D devices

The D devices are word devices into which GOT communication errors, clock data or other information are stored.

The user can also store data using the user area.

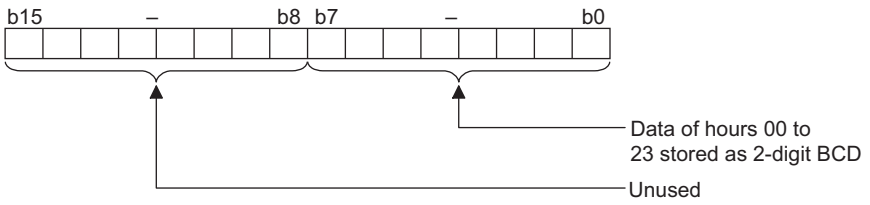
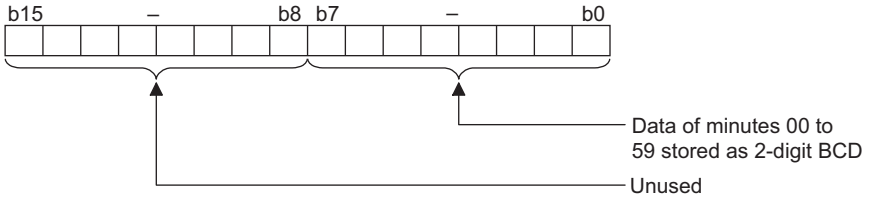
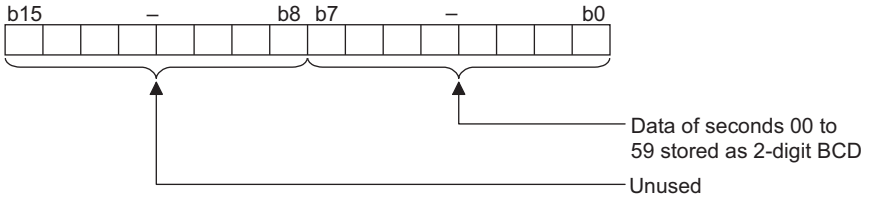
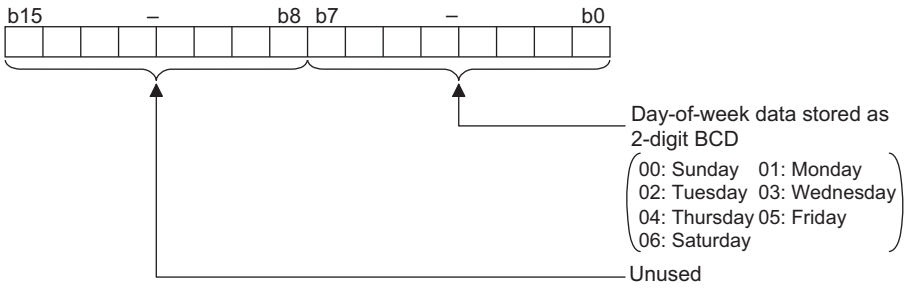
(1) List of D devices

The following lists the D devices (virtual devices inside the GOT).

Address	Description	Set side
D0 ∼ 2	Unused	—
D3	Communication error status Stores the communication error details of GOT.  • b4 to 6 turn ON when an SIO error occurs, and turn OFF when an request message from the host is received successfully after the error occurrence. • b7 turns ON about 3 seconds after the host side DTR becomes OFF, and turns OFF when transmission is performed successfully to the host after the error occurrence.	System
D4	Clock data (year) 	
D5	Clock data (month) 	
D6	Clock data (day) 	

(Continued to next page)

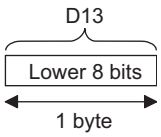
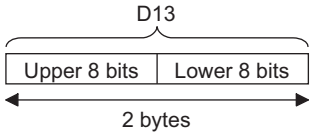
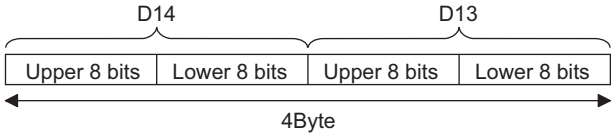
(from previous page)

Address	Description	Set side
D7	Clock data (hour) 	System
D8	Clock data (minute) 	
D9	Clock data (second) 	
D10	Clock data (day of week)*1 	
D11, D12	Unused	—

(Continued to next page)

*1 If a wrong day of the week is set by the clock data setting command, the clock data will differ from the time displayed on the utility.
Example:When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of the week is Tuesday),
"04" is stored to D10 although Tuesday (TUE) will be displayed on the utility time display.

(from previous page)

Address	Description	Set side
D13 D14	Interrupt output When data are written to D13 and D14 from a GOT touch switch, for example, the data of D13 and D14 are transmitted (interrupt output) to the host side.*1 *2 The data amount (the number of bytes) to be interrupt-output is set at "Interrupt Data Byte" in "Communication Detail Settings". (☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)) • Output value when 1 is set to "Interrupt Data Byte" in "Communication Detail Settings"  • Output value when 2 is set to "Interrupt Data Byte" in "Communication Detail Settings"  • Output value when 4 is set to "Interrupt Data Byte" in "Communication Detail Settings" 	User
D15 to 19	Unused	—
D20 to 2031	User area	User
D2032 to 2034	Unused	—
D2035	1-second binary counter The counter is incremented at 1-second intervals after the GOT is turned ON. (The time elapsed after the GOT is turned ON is stored in 1-second units.) Data are stored in binary format.	System
D2036 to 4095	User area	User

*1 After writing data, the interrupt is output within a period of 1 to 10ms.

*2 When data are written to D13 and D14 from the host side, interrupt output is not performed.

Point

(1) About the side where virtual devices are set

System: Set on the system side.

User: Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

(2) About interrupt output (D13, D14)

- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag). (☞ 6 SM devices)
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings". (☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FFH → 7FH)

(2) Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1

The following shows the address specification values of each data format.

Address	Address specification value				
	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
D0	0	D0	D0	0000_H	8000_H / 8001_H (8000H: Upper 8 bits, 8001H: Lower 8 bits)
D1	1	D1	D1	0001_H	8002_H / 8003_H (8002H: Upper 8 bits, 8003H: Lower 8 bits)
to	to	to	to	to	to
D4095	4095	D4095	D4095	$0FFF_H$	$9FFE_H$ / $9FFF_H$ (9FFEH: Upper 8 bits, 9FFFH: Lower 8 bits)

*1 For the address specification method for each data format, refer to the following.

Section 41.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

2 R devices

The R devices are word devices into which user data are stored.
All of these devices can be used as a user area.

(1) List of R devices and differences in address specification by data format

The following shows the R devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Address	Address specification value				
	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
R0	4096	R0	R0	1000H	0000H / 0001H — 0000H (Upper 8 bits), 0001H (Lower 8 bits)
R1	4097	R1	R1	1001H	0002H / 0003H — 0002H (Upper 8 bits), 0003H (Lower 8 bits)
to	to	to	to	to	to
R4095	8191	R4095	R4095	1FFFH	1FFEH / 1FFFH — 1FFEH (Upper 8 bits), 1FFFH (Lower 8 bits)

*1 For the address specification method for each data format, refer to the following.

Section 41.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

3 L devices

The L devices are bit devices into which user data are stored.
All of these devices can be used as a user area.

(1) List of L devices and differences in address specification by data format

The following shows the L devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Address								Address specification value				
b7	b6	b5	b4	b3	b2	b1	b0	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
L7	L6	L5	L4	L3	L2	L1	L0	8192	Same as address column on left*2		2000H	A000H
L15	L14	L13	L12	L11	L10	L9	L8					A001H
L23	L22	L21	L20	L19	L18	L17	L16	8193			2001H	A002H
L31	L30	L29	L28	L27	L26	L25	L24					A003H
to								to			to	to
L2039	L2038	L2037	L2036	L2035	L2034	L2033	L2032	8319			207FH	A0FEH
L2047	L2046	L2045	L2044	L2043	L2042	L2041	L2040					A0FFH

*1 For the address specification method for each data format, refer to the following.

Section 41.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 For reading or writing data in word units, specify the addresses in 16-point units. (Example: L0, L16, L32, etc.)

4 M devices

The M devices are bit devices into which user data are stored.
All of these devices can be used as a user area.

(1) List of M devices and differences in address specification by data format

The following shows the M devices (virtual devices inside the GOT).

The address specification values different depending on the data format are also given below.*1

Address								Address specification value				
b7	b6	b5	b4	b3	b2	b1	b0	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15
M7	M6	M5	M4	M3	M2	M1	M0	8320	Same as address column on left*2		2080H	2000H
M15	M14	M13	M12	M11	M10	M9	M8					2001H
M23	M22	M21	M20	M19	M18	M17	M16	8321			2081H	2002H
M31	M30	M29	M28	M27	M26	M25	M24					2003H
to								to			to	to
M2039	M2038	M2037	M2036	M2035	M2034	M2033	M2032	8447			20FFH	20FEH
M2047	M2046	M2045	M2044	M2043	M2042	M2041	M2040					20FFH

*1 For the address specification method for each data format, refer to the following.

Section 41.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

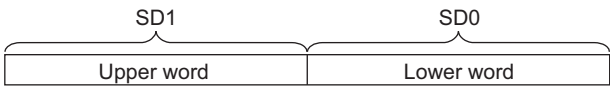
*2 For reading or writing data in word units, specify the addresses in 16-point units. (Example: M0, M16, M32, etc.)

5 SD devices

The SD devices are word devices into which GOT communication errors (error codes), clock data and other information are stored.

(1) List of SD devices

The following lists the SD devices (virtual devices inside the GOT).

Address	Description	Set side
SD0 SD1	100ms counter (32 bits) The counter is incremented at 100ms intervals after GOT is turned ON. (The time elapsed after GOT is turned ON is stored in 100ms units.) The lower and upper words are stored to SD0 and SD1 respectively. 	System
SD2*1	Communication error status An error data (error code) occurred during communication is stored. • Host Address (Communication error that occurred on the request destination GOT) 0: No error 1: Parity error 2: Framing error 3: Overrun error 4: Communication message error 5: Command error 6: Clock data setting error • Other station (Communication error that occurred on another GOT when multiple GOTs are connected) 101: Parity error 102: Framing error 103: Overrun error 104: Communication message error 105: Timeout error (No station of the specified address exists.) 106: Multiple units not connectable 107: Clock data setting error	
SD3	Clock data (second) Second data of 00 to 59 is stored.	
SD4	Clock data (minute) Minute data of 00 to 59 is stored.	
SD5	Clock data (hour) Hour data of 00 to 23 is stored.	
SD6	Clock data (day) Day data of 01 to 31 is stored.	
SD7	Clock data (month) Month data of 01 to 12 is stored.	

(Continued on next page)

*1 For details and corrective actions for the errors (error codes) that are stored into SD2, refer to the following:

(2) Details and actions for errors (error codes) stored into SD2

(From previous page)

Address	Description	Set side
SD8	Clock data (year) 4-digit year data is stored.	System
SD9	Clock data (day of week)*1 Day-of-the-week data is stored. 0: Sunday 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday	
SD10 to 15	Unused	—

*1 If a wrong day of the week is set by the clock data setting command, the clock data will differ from the time displayed on the utility.
Example: When June 1, 2004 (Thursday) is set by the clock data setting command (the actual day of week is Tuesday),"04" is stored to D9 although Tuesday (TUE) will be displayed on the utility time display.

Point About the side where virtual devices are set

System: Set on the system side.
User: Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

(2) Details and actions for errors (error codes) stored into SD2

Error code	Description	Action
0	No error	—
1,101	Parity error The parity bit is not correct.	• Check the communication cable and communication unit for correct connection. • Check the Communication Detail Settings. • Set the same transmission settings on the GOT and the host.
2,102	Framing error The data bit and/or stop bit are not correct.	
3,103	Overrun error The next data were transmitted from the host before completion of the received data processing on the GOT.	• Check the Communication Detail Settings. • Decrease the transmission speed.
4,104	Communication message error EXT/CR could not be found before the upper limit of the receive buffer was exceeded.	• Check the communication cable and communication unit for correct connection. • Check the Communication Detail Settings. • Review the contents of the sending message
5	Command error An unsupported command was used.	• Review the contents of the sending message. • Check the command in the message. (☞ Section 41.4 Commands)
105	Timeout error There is no response from the GOT, or the station of the specified address does not exist.	• Check the communication cable and communication unit for correct connection. • Check the Communication Detail Settings. • Review the contents of the sending message.
106	Multiple units not connectable The RS-232 port is occupied.	• Check the communication cable and communication unit for correct connection. • Check the Communication Detail Settings. • Check to see if the RS-232 port is occupied.
6,107	Clock data setting error A wrong value is set in the clock data.	• Review the contents of the sending message. • Check if any invalid data (e.g. "07" set as a day of the week) is set as clock data.

(3) Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1
The following shows the address specification values for each data format.

Address	Address specification value				
	Formats 1, 2	Formats 3 to 6	Formats 7 to 10	Formats 11 to 13	Formats 14, 15 *2
SD0	8448	D9000	SD0	2100H	2100H: 2100H (Upper 8 bits) / 2101H (Lower 8 bits)
SD1	8449	D9001	SD1	2101H	2102H: 2102H (Upper 8 bits) / 2103H (Lower 8 bits)
SD2	8450	D9002	SD2	2102H	2104H: 2104H (Upper 8 bits) / 2105H (Lower 8 bits)
SD3	8451	D9003	SD3	2103H	2106H (3000H): 2106H(3000H) (Upper 8 bits) / 2107H (3001H) (Lower 8 bits)
SD4	8452	D9004	SD4	2104H	2108H (3002H): 2108H(3002H) (Upper 8 bits) / 2109H (3003H) (Lower 8 bits)
SD5	8453	D9005	SD5	2105H	210AH (3004H): 210AH(3004H) (Upper 8 bits) / 210BH (3005H) (Lower 8 bits)
SD6	8454	D9006	SD6	2106H	210CH (3006H): 210CH(3006H) (Upper 8 bits) / 210DH (3007H) (Lower 8 bits)
SD7	8455	D9007	SD7	2107H	210EH (3008H): 210EH(3008H) (Upper 8 bits) / 210FH (3009H) (Lower 8 bits)
SD8	8456	D9008	SD8	2108H	2110H (300AH): 2110H(300AH) (Upper 8 bits) / 2111H (300BH) (Lower 8 bits)
SD9	8457	D9009	SD9	2109H	2112H (300CH): 2112H(300CH) (Upper 8 bits) / 2113H (300DH) (Lower 8 bits)

*1 For the address specification method for each data format, refer to the following.

Section 41.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

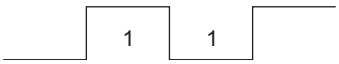
*2 SD3 to 9 correspond to GD0 to 6 on the GOT-F900 Series.
Access to SD3 to 9 can be also made by the specification of the addresses (3000 to 300DH) of GD0 to 6 on the GOT-F900 Series.

6 SM devices

The SM devices are bit devices into which interrupt outputs and clock data that turn ON/OFF at 1-second cycles.

(1) List of SM devices

The following shows the SM devices (virtual devices inside the GOT).

<table>
<tr><th>Address</th><th>Description</th><th>Set side</th></tr>
<tr><td>SM0 to 49</td><td>Interrupt output
When the ON/OFF state of SM0 to 49 is changed by a touch switch on the GOT, for example, the interrupt codes shown below are transmitted (interrupt output) to the host side.*1*2
The data amount (number of bytes) to be interrupt-output is set at "Interrupt Data Byte" in "Communication Detail Settings". (☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING))
<table>
<tr><th>Address</th><th>Event type</th><th>Interrupt code</th></tr>
<tr><td rowspan="2">SM0</td><td>Changed from OFF to ON</td><td>50H</td></tr>
<tr><td>Changed from ON to OFF</td><td>51H</td></tr>
<tr><td rowspan="2">SM1</td><td>Changed from OFF to ON</td><td>52H</td></tr>
<tr><td>Changed from ON to OFF</td><td>53H</td></tr>
<tr><td rowspan="2">SM2</td><td>Changed from OFF to ON</td><td>54H</td></tr>
<tr><td>Changed from ON to OFF</td><td>55H</td></tr>
<tr><td>to</td><td>to</td><td>to</td></tr>
<tr><td rowspan="2">SM48</td><td>Changed from OFF to ON</td><td>B0H</td></tr>
<tr><td>Changed from ON to OFF</td><td>B1H</td></tr>
<tr><td rowspan="2">SM49</td><td>Changed from OFF to ON</td><td>B2H</td></tr>
<tr><td>Changed from ON to OFF</td><td>B3H</td></tr>
</table></td><td>User</td></tr>
<tr><td>SM50</td><td>1-second cycle clock
Turns ON/OFF at a 1-second cycle.
 
</td><td rowspan="2">System</td></tr>
<tr><td>SM51</td><td>2-second cycle clock
Turns ON/OFF at a 2-second cycle.
 
</td></tr>
<tr><td>SM52</td><td>Interrupt code output disable flag
Enables or disables the output of the interrupt code.
OFF : Interrupt code output enabled
ON : Interrupt code output disabled
When set to disable the interrupt code output, no interrupt data are output to the host.
(Relevant devices: D13, D14, SM0 to 49)</td><td>User</td></tr>
<tr><td>SM53 to 63</td><td>Unused</td><td>—</td></tr>
</table>

*1 After the ON/OFF state is changed, the interrupt data are output within a period of 1 to 10 ms.

*2 When the ON/OFF state of SM0 to 49 is changed from the host side, interrupt output is not performed.

Point

(1) About the side where virtual devices are set

System: Set on the system side.

User: Set on the user side (by sending request messages from host or using the touch switches, etc. on the GOT).

(2) About interrupt outputs (SM0 to 49)

- To disable the interrupt output, turn ON SM52 (interrupt code output disable flag).
- To enable the interrupt output, set 8 bits to the data length at "Communication Detail Settings". (☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FF$_H$ → 7F$_H$)

(2) Differences in address specifications by data format

The address specification of devices varies depending on the data format.*1

The following shows the address specification values for each data format.

<table>
<tr><th colspan="8">Address</th><th colspan="5">Address Specification Value</th></tr>
<tr><th>b7</th><th>b6</th><th>b5</th><th>b4</th><th>b3</th><th>b2</th><th>b1</th><th>b0</th><th>Formats 1, 2</th><th>Formats 3 to 6</th><th>Formats 7 to 10</th><th>Formats 11 to 13</th><th>Formats 14, 15</th></tr>
<tr><td>SM7</td><td>SM6</td><td>SM5</td><td>SM4</td><td>SM3</td><td>SM2</td><td>SM1</td><td>SM0</td><td rowspan="2">8464</td><td rowspan="8">*2*4</td><td rowspan="8">*3*4</td><td rowspan="2">2110$_H$</td><td>2200$_H$</td></tr>
<tr><td>SM15</td><td>SM14</td><td>SM13</td><td>SM12</td><td>SM11</td><td>SM10</td><td>SM9</td><td>SM8</td><td>2201$_H$</td></tr>
<tr><td>SM23</td><td>SM22</td><td>SM21</td><td>SM20</td><td>SM19</td><td>SM18</td><td>SM17</td><td>SM16</td><td rowspan="2">8465</td><td rowspan="2">2111$_H$</td><td>2202$_H$</td></tr>
<tr><td>SM31</td><td>SM30</td><td>SM29</td><td>SM28</td><td>SM27</td><td>SM26</td><td>SM25</td><td>SM24</td><td>2203$_H$</td></tr>
<tr><td>SM39</td><td>SM38</td><td>SM37</td><td>SM36</td><td>SM35</td><td>SM34</td><td>SM33</td><td>SM32</td><td rowspan="2">8466</td><td rowspan="2">2112$_H$</td><td>2204$_H$</td></tr>
<tr><td>SM47</td><td>SM46</td><td>SM45</td><td>SM44</td><td>SM43</td><td>SM42</td><td>SM41</td><td>SM40</td><td>2205$_H$</td></tr>
<tr><td colspan="3">Unused</td><td>SM52</td><td>SM51</td><td>SM50</td><td>SM49</td><td>SM48</td><td>8467</td><td rowspan="2">2113$_H$</td><td>2206$_H$</td></tr>
<tr><td colspan="8">Unused</td><td>—</td><td>—</td></tr>
</table>

*1 For the address specification method for each data format, refer to the following.

☞ Section 41.5 Message Formats

- Formats 1, 2 : GOT-A900 Series microcomputer connection
- Formats 3 to 6 : A compatible 1C frame
- Formats 7 to 10 : QnA compatible 3C/4C frame
- Formats 11 to 13 : Digital Electronics Corporation's memory link method
- Formats 14, 15 : GOT-F900 Series microcomputer connection

*2 In formats 3 to 6, values are specified within a range of M9000 to 9052.

*3 In formats 7 to 10, values are specified within a range of SM0 to 52.

*4 For reading or writing data in word units, specify the addresses in 16-point units. (Example: SM0, SM16, SM32, etc.)

1 Data format type and application

Communication is possible using any of the data formats shown below.

(1) Formats 1, 2 (GOT-A900 series microcomputer connection)

This is the same message format as when a microcomputer connection is established with the GOT-A900 series.

Type	Name	Description
Format 1	GOT-A900 series microcomputer connection (format 1)	This format is used when the GOT is connected to the host in a 1:1 connection.
Format 2	GOT-A900 series microcomputer connection (format 2)	This is the appended format with error code at the error response of the GOT-A900 series microcomputer connection (format 1).

(2) Formats 3 to 6 (A compatible 1C frame)

This is the same message format as when communication is performed using the dedicated protocol of the A series computer link module.

Type	Name	Description
Format 3	A compatible 1C frame (format 1)	This is the basic format of the dedicated protocols.
Format 4	A compatible 1C frame (format 2)	This is the appended format of the A compatible 1C frame (format 1) with a block No.
Format 5	A compatible 1C frame (format 3)	This is the enclosed format of the A compatible 1C frame (format 1) with STX and ETX.
Format 6	A compatible 1C frame (format 4)	This is the appended format of the A compatible 1C frame (format 1) with CR and LF.

(3) Formats 7 to 10 (QnA compatible 3C/4C frame)

This is the same message format as when a communication is performed using the MC protocol of Q/QnA Series serial communication module.

Type	Name	Description
Format 7	QnA compatible 3C/4C frame (format 1)	This is the basic format of the MC protocols.
Format 8	QnA compatible 3C/4C frame (format 2)	This is the appended format of the QnA compatible 3C/4C frame (format 1) with block No.
Format 9	QnA compatible 3C/4C frame (format 3)	This is the enclosed format of the QnA compatible 3C/4C frame (format 1) with STX and ETX.
Format 10	QnA compatible 3C/4C frame (format 4)	This is the appended format of the QnA compatible 3C/4C frame (format 1) with CR and LF.

(4) Formats 11 to 13 (Digital Electronics Corporation's memory link method

This is the same format as the protocol of the Digital Electronics Corporation's memory link method.

Type	Name	Description
Format 11	Digital Electronics Corporation's memory link method (compatible mode)	This is the basic format of the Digital Electronics Corporation's memory link method.
Format 12	Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:1)	This is the appended format of the Digital Electronics Corporation's memory link method (compatible mode) with sum check, CR and LF.
Format 13	Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n)	This is the appended format of the Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:1) with a station No.

(5) Formats 14, 15 (GOT-F900 series microcomputer connection)

This is the same message format as when a microcomputer connection is established with the GOT-F900 Series.

Type	Name	Description
Format 14	GOT-F900 series microcomputer connection (format 1)	Use this format when establishing a 1:1 or m:n connection between the GOT and the host. The end code is CR.
Format 15	GOT-F900 series microcomputer connection (format 2)	Use this format when establishing a 1:1 or m:n connection between the GOT and the host. The end code is ETX or sum check.

2 How to set data format

Set the data format at "Communication Detail Settings" in drawing software.
For details of the data format setting method, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

41.4 Commands

41.4.1 List of commands

The following shows the list of commands available in each data format.

1 List of commands for formats 1, 2 (GOT-A900 series microcomputer connection)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
RD	52H 44H	Batch read in word units	Reads bit devices in 16-point units.	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
WD	57H 44H	Batch write in word units	Writes to bit devices in 16-point units.	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
RR	52H 52H	Random read in word units*1	Reads multiple different bit devices in 16-point units.	64 words (1024 points)
			Reads multiple different word devices in 1-point units.	64 points
RW	52H 57H	Random write in word units*1	Writes to multiple different bit devices in 16-point units.	64 words (1024 points)
			Writes to multiple different word devices in 1-point units.	64 points
TR	54H 52H	Read clock data	Reads the clock data of the GOT.	—
TS	54H 53H	Set clock data	Sets the clock data of the GOT.	—

*1 Mixed specification of bit devices and word devices is also possible.

2 List of commands for formats 3 to 6 (A compatible 1C frame)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
BR JR	42H 52H 4AH 52H	Batch read in bit units	Reads bit devices in 1-point units.	64 points
WR QR	57H 52H 51H 52H	Batch read in word units	Reads bit devices in 16-point units.*3	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
BW JW	42H 57H 4AH 57H	Batch write in bit units	Writes to bit devices in 1-point units.	64 points
WW QW	57H 57H 51H 57H	Batch write in word units	Writes to bit devices in 16-point units.*3	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
BT JT	42H 54H 4AH 54H	Test in bit units(random write)	Writes to multiple different bit devices in 1-point units.	64 points
WT QT	57H 54H 51H 54H	Test in word units(random write)	Writes to multiple different bit devices in 16-point units.*3	64 words (1024 points)
			Writes to multiple different word devices in 1-point units.	64 points
TR*2	54H 52H	Read clock data	Reads the clock data of the GOT.	—
TS*2	54H 53H	Set clock data	Sets the clock data of the GOT.	—

*2 This is a dedicated command of GOT for the microcomputer connection.

*3 Specifies the address of bit devices in 16-point units. (Example: M0, M16, M32, and others)

3 Command lists for formats 7 to 10 (QnA compatible 3C/4C frame)

Command	Sub-command	Command name	Description	Max. number of points processed
0401	0001	Batch read in bit units	Reads bit devices in 1-point units.	64 points
0401	0000	Batch read in word units	Reads bit devices in 16-point units.*3	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
1401	0001	Batch write in bit units	Writes to bit devices in 1-point units.	64 points
1401	0000	Batch read in word units	Writes to bit devices in 16-point units.*3	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
0403	0000	Random read in word units*1	Reads multiple different bit devices in 16-point and 32-point units.*3	64 words (1024 points)
			Reads multiple different word devices in 1-point and 2-point units.	64 points
1402	0001	Random write in bit units	Writes to multiple different bit devices in 1-point units.	64 points
1402	0000	Random write in word units*1	Writes to multiple different bit devices in 16-point and 32-point units.*3	64 words (1024 points)
			Writes to multiple different word devices in 1-point and 2-point units.	64 points
0406	0000	Multiple block batch read	Reads multiple blocks. A bit device (16 bits for 1 point) or a word device (1 word for 1 point) is regarded as one block. *3	64 points
1406	0000	Multiple block batch write	Writes multiple blocks. A bit device (16 bits for 1 point) or a word device (1 word for 1 point) is regarded as one block. *3	64 points
1901*2	0000	Read clock data	Reads the clock data of the GOT.	—
0901*2	0000	Set clock data	Sets the clock data of the GOT.	—

*1 Mixed specification of bit devices and word devices is also possible.

*2 This is a dedicated command of GOT for the microcomputer connection.

*3 Specifies the address of bit devices in 16-point units. (Example: M0, M16, M32, and others)

4 List of commands for formats 11 to 13 (Digital Electronics Corporation's memory link method)

Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
R	52H	Batch read in word units	Reads bit devices in 16-point units.	64 words (1024 points)
			Reads word devices in 1-point units.	64 points
W	57H	Batch write in word units	Writes to bit devices in 16-point units.	64 words (1024 points)
			Writes to word devices in 1-point units.	64 points
I	49H	Interrupt inquiry	Issues an interrupt inquiry. (format 13 only)	—
N*4	4DH	Read clock data	Reads the clock data of the GOT.	—
M*4	4EH	Set clock data	Sets the clock data of the GOT.	—

*4 This is a dedicated command of GOT for the microcomputer connection.

5 List of commands for formats 14, 15 (GOT-F900 series microcomputer connection)

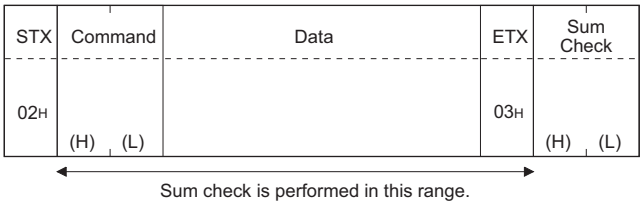
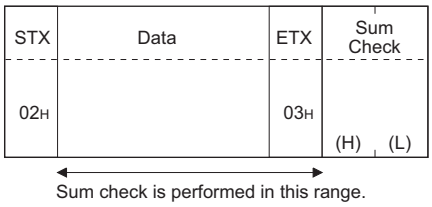
Command		Command name	Description	Max. number of points processed
Symbol	ASCII code			
0	30H	Batch read (w/out station No.)	Reads bit devices in byte units.	255bytes (2040 points)
			Reads word devices in byte units.	255bytes (127 points)
A	41H	Batch read (w/ station No.)	Reads bit devices in byte units.	255bytes (2040 points)
			Reads word devices in byte units.	255bytes (127 points)
1	31H	Batch write (w/out station No.)	Writes to bit devices in byte units.	255bytes (2040 points)
			Writes to word devices in byte units.	255bytes (127 points)
B	42H	Batch write (w/ station No.)	Writes to bit devices in byte units.	255bytes (2040 points)
			Writes to word devices in byte units.	255bytes (127 points)
3	33H	Multi-point write in bit units (w/ station No.)	Writes bit patterns (bit ON/OFF, inversion, direct specification) in 1-point units (8 bits for 1 point) to a specified device.	70 bytes (560 points)
D	44H	Multi-point write in bit units (w/ station No.)		
4	34H	Fill command (w/out station No.)	Writes the same value to a range of specified devices.	—
E	45H	Fill command (w/ station No.)		
5	35H	Set clock data (w/out station No.)	Sets the clock data of the GOT.	—
F	46H	Set clock data (w/ station No.)		
6	36H	Read clock data (w/out station No.)	Reads the clock data of the GOT.	—
G	47H	Read clock data (w/ station No.)		

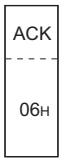
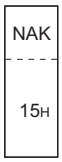
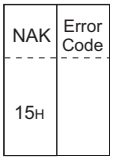
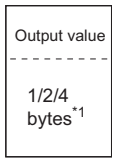
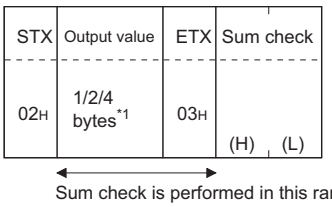
41.5 Message Formats

This section describes the format of messages that can be used in microcomputer connection.

41.5.1 Formats 1, 2 (GOT-A900 series microcomputer connection)

1 Basic format of data communication

<table>
<tr><th>Item</th><th colspan="2">Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td colspan="2"> 
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td colspan="2">(1) During processing of read commands
 

(2) During processing of write commands
 
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>(format 1: GOT-A900 series microcomputer connection (format 1))
 
</td><td>(format 2: GOT-A900 series microcomputer connection (format 2))
 
</td></tr>
<tr><td>During interrupt output</td><td>(format 1: GOT-A900 series microcomputer connection (format 1))
 
</td><td>(format 2: GOT-A900 series microcomputer connection (format 2))
 
</td></tr>
</table>

*1 Set the number of interrupt data bytes at "Communication Detail Settings" in drawing software.
For the setting of the number of interrupt data bytes, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 Details of data items in message format

Point

Data code during communication

Communication is performed in ASCII code. (excluding interrupt output)

(1) Control codes

Symbol	ASCII code	Description
STX	02H	Start of Text (start marker of message frame)
ETX	03H	End of Text (end marker of message frame)
EOT	04H	End of Transmission
ENQ	05H	Enquiry (start of enquiry)
NAK	15H	Negative ACK (error response)
ACK	06H	Acknowledge (write completion response)
LF	0AH	Line Feed
CL	0CH	Clear
CR	0DH	Carriage Return

(2) Command

Specifies the contents to access from the host to GOT.
The command is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of commands that can be used, refer to the following.

☞ Section 41.4 Commands

(3) Address

Specifies the head No. of the device data to be read/written.
The address notated in decimal is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device ranges that can be accessed, refer to the following.

☞ Section 41.3 Available Devices

(4) Number of points

Specifies the number of device data to be read/written. (Setting range: 1 to 64)
The number of points notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(5) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (5) Read clock data (TR) command

☞ 3 (6) Set clock data (TS) command

(6) Data

Specifies data to read from/write to the specified device data. (word unit)
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

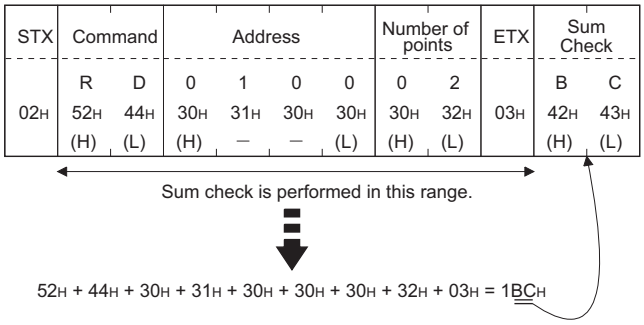
(7) Error code

This is the response message at faulty communication appended with error contents.
Error code is transmitted in 1 byte.
For details of the error codes generated in format 2 (GOT-A900 series microcomputer connection (format 2)), refer to the following:

☞ 4 Error code list

(8) Sum check code

The sum check code is obtained by converting the lower 1 byte (8 bits) of the result (sum), after having added the sum check target data as binary data, to 2-digit ASCII code (Hex).



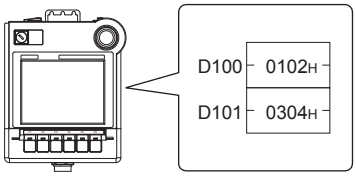
3 Message format

(1) Batch read in word units (RD) command

(a) When reading a word device

The following shows an example of reading the two points of the virtual devices D100 and D101.

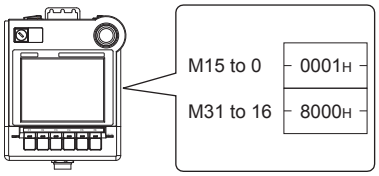
(Assuming D100="0102H" and D101="0304H" are stored.)



Item	Message format
Request message (host → GOT)	STX: 02H Command: R (52H) D (44H) Address: 0 (30H) 1 (31H) 0 (30H) 0 (30H) Number of points: 0 (30H) 2 (32H) ETX: 03H Sum Check: B (42H) C (43H) Sum check is performed in this range.
Response message during normal communication (GOT → host)	STX: 02H Data 1 (D100): 0 (30H) 1 (31H) 0 (30H) 2 (32H) Data 2 (D101): 0 (30H) 3 (33H) 0 (30H) 4 (34H) ETX: 03H Sum Check: 8 (38H) D (44H) Sum check is performed in this range.
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(b) When reading a bit device

The following shows an example of reading the two points of the virtual devices M0 to M31. (Assuming M0="1" and M31="1" are stored.)

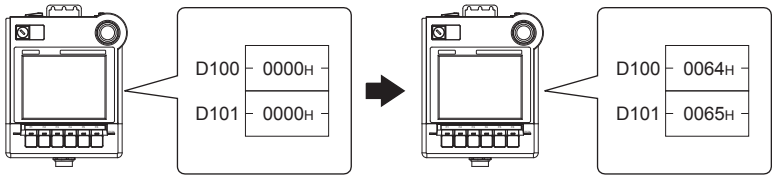


Item	Message format
Request message (host → GOT)	STX: 02H Command: R D = 52H (H) 44H (L) Address: 8 3 2 0 = 38H (H) 33H 32H 30H (L) Number of points: 0 2 = 30H (H) 32H (L) ETX: 03H Sum Check: C 8 = 43H (H) 38H (L) Sum check is performed in this range.
Response message during normal communication (GOT → host)	Sum check is performed in this range. STX: 02H Data 1 (M15 to 0): 0 0 0 1 = 30H 30H 30H 31H (H – – L) Data 2 (M31 to 16): 8 0 0 0 = 38H 30H 30H 30H (H – – L) ETX: 03H Sum Check: 8 C = 38H (H) 43H (L) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 M M M M M M M M M M M M M M M M M M M M M M M M M M M M 1 1 1 1 1 1 9 8 7 6 5 4 3 2 1 0 3 3 2 2 2 2 2 2 2 2 2 1 1 1 1 5 4 3 2 1 0 1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H Error code: 06H The above is a case where the sum check error (06H) has occurred.

(2) Batch write in word units (WD) command

(a) When writing to a word device

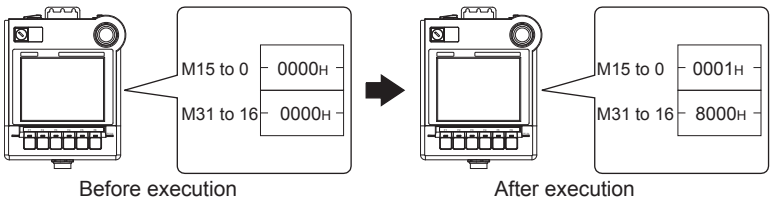
The following shows as example of writing "0064H" and "0065H" to virtual devices D100 and D101.



Item	Message format
Request message (host → GOT)	STX: 02H Command: W 57H (H), D 44H (L) Address: 0 30H (H), 1 31H, 0 30H, 0 30H (L) Number of points: 0 30H (H), 2 32H (L) Data 1(D100): 0 30H (H), 0 30H, 6 36H, 4 34H (L) Data 2 (D101): 0 30H (H), 0 30H, 6 36H, 5 35H (L) ETX: 03H Sum Check: 5 35H (H), 6 36H (L) Sum check is performed in this range.
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(b) When writing to a bit device

The following shows an example of writing "1"s to virtual devices M0 and M31.

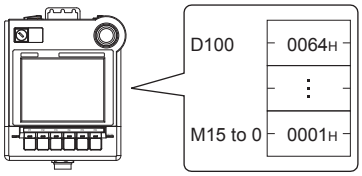


Item	Message format
Request message (host → GOT)	Sum check is performed in this range. STX: 02H Command: W (57H) D (44H) Address: 8 (38H) 3 (33H) 2 (32H) 0 (30H) Number of points: 0 (30H) 2 (32H) Data 1 (M15 to 0): 0 (30H) 0 (30H) 0 (30H) 1 (31H) Data 2 (M31 to 16): 8 (38H) 0 (30H) 0 (30H) 0 (30H) ETX: 03H Sum Check: 5 (35H) 6 (36H) 0000000000000001 1000000000000000 M15 M14 M13 M12 M11 M10 M9 M8 M7 M6 M5 M4 M3 M2 M1 M0 M31 M30 M29 M28 M27 M26 M25 M24 M23 M22 M21 M20 M19 M18 M17 M16
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(3) Random read in word units (RR) command

The following shows an example of reading the two points of the virtual devices D100 and M0 to M15.

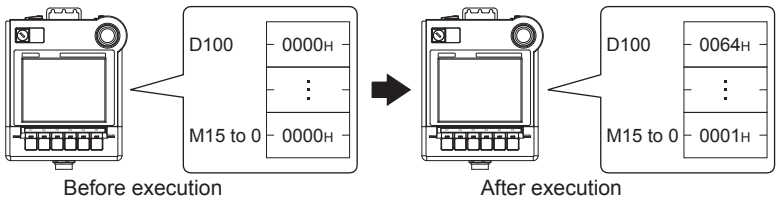
(Assuming D100="0064H" and M0="1" are stored.)



Item	Message format
Request message (host → GOT)	STX: 02H Command: R (52H) R (52H) Address 1: 0 (30H) 1 (31H) 0 (30H) 0 (30H) Address 2: 8 (38H) 3 (33H) 2 (32H) 0 (30H) ETX: 03H Sum Check: 3 (33H) 5 (35H) Sum check is performed in this range.
Response message during normal communication (GOT → host)	Sum check is performed in this range. STX: 02H Data 1 (D100): 0 (30H) 0 (30H) 6 (36H) 4 (34H) Data 2 (M15 to 0): 0 (30H) 0 (30H) 0 (30H) 1 (31H) ETX: 03H Sum Check: 8 (38H) E (45H) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 M M M M M M M M M M M M M M M M 1 1 1 1 1 1 1 9 8 7 6 5 4 3 2 1 0 5 4 3 2 1 0
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(4) Random write in word units (RW) command

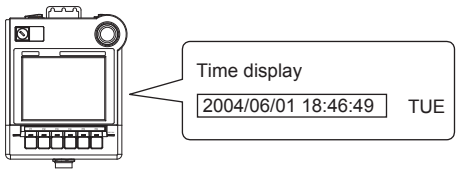
The following shows an example of writing "0064H" and "1" to virtual devices D100 and M0, respectively.



Item	Message format
Request message (host → GOT)	STX: 02H Command: R 52H (H), W 57H (L) Following*1 ETX: 03H Sum Check: C 43H (H), 5 35H (L) Sum check is performed in this range. *1 Address 1: 0 30H (H), 1 31H, 0 30H, 0 30H (L) Data 1 (D100): 0 30H (H), 0 30H, 6 36H, 4 34H (L) Address 2: 8 38H (H), 3 33H, 2 32H, 0 30H (L) Data 2 (M15 to 0): 0 30H (H), 0 30H, 0 30H, 1 31H (L) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 M M M M M M M M M M M M M M M M 1 1 1 1 1 1 9 8 7 6 5 4 3 2 1 0 5 4 3 2 1 0
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	(format 1: GOT-A900 series microcomputer connection (format 1)) NAK: 15H (format 2: GOT-A900 series microcomputer connection (format 2)) NAK: 15H, Error code: 06H The above is a case where the sum check error (06H) has occurred.

(5) Read clock data (TR) command

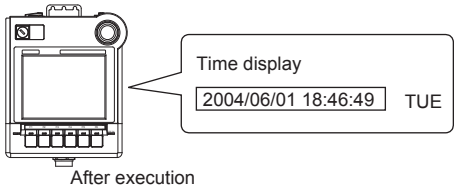
The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
<table>
<tr><td>STX</td><td>Command</td><td></td><td>ETX</td><td>Sum Check</td><td></td></tr>
<tr><td></td><td>T</td><td>R</td><td></td><td>A</td><td>9</td></tr>
<tr><td>02H</td><td>54H</td><td>52H</td><td>03H</td><td>41H</td><td>39H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
<table>
<tr><td>STX</td><td>Year data</td><td></td><td>Month data</td><td></td><td>Day data</td><td></td><td>Hour data</td><td></td><td>Minute data</td><td></td><td>Second data</td><td></td><td>Day-of-week data</td><td></td><td>ETX</td><td>Sum Check</td><td></td></tr>
<tr><td></td><td>0</td><td>4</td><td>0</td><td>6</td><td>0</td><td>1</td><td>1</td><td>8</td><td>4</td><td>6</td><td>4</td><td>9</td><td>0</td><td>2</td><td></td><td>D</td><td>0</td></tr>
<tr><td>02H</td><td>30H</td><td>34H</td><td>30H</td><td>36H</td><td>30H</td><td>31H</td><td>31H</td><td>38H</td><td>34H</td><td>36H</td><td>34H</td><td>39H</td><td>30H</td><td>32H</td><td>03H</td><td>44H</td><td>30H</td></tr>
<tr><td></td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td>(H)</td><td>(L)</td><td></td><td>(H)</td><td>(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
(format 1: GOT-A900 series microcomputer connection (format 1))
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
(format 2: GOT-A900 series microcomputer connection (format 2))
<table>
<tr><td>NAK</td><td>Error code</td></tr>
<tr><td>15H</td><td>06H</td></tr>
</table>
The above is a case where the sum check error (06H) has occurred.
</td></tr>
</table>

(6) Set clock data (TS) command

The following shows an example of setting the clock data of GOT.
(Assuming the clock data of GOT is to be set to "2004, June 1, 18:46:49 Tuesday".)



Item: Request message (host → GOT)

Message format

STX	Command		Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data		ETX	Sum Check	
	T	S	0	4	0	6	0	1	1	8	4	6	4	9	0	2		7	7
02H	54H	53H	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H	03H	37H	37H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Item: Response message during normal communication (GOT → host)

Message format

ACK
06H

Item: Response message during faulty communication (GOT → host)

(format 1: GOT-A900 series microcomputer connection (format 1))

NAK
15H

(format 2: GOT-A900 series microcomputer connection (format 2))

NAK	Error code
15H	06H

The above is a case where the sum check error (06H) has occurred.

Point

When a wrong day of the week has been set by the clock data setting command

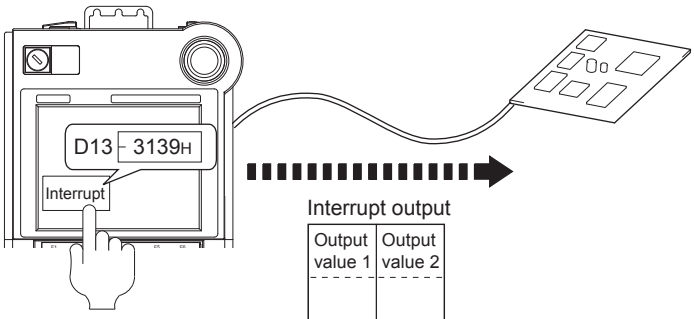
If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

(7) In the case of interrupt outputs

The following shows an example of an interrupt output when data are written to the interrupt output devices (D13 and D14).
(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2



Output value 1	Output value 2
31H	39H

Item	Message format
Interrupt output (GOT → host)	(1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte"

(format 1: in the case of GOT-A900 Series microcomputer connection (format 1))

Output value 1
39H

(format 2: in the case of GOT-A900 Series microcomputer connection (format 2))

STX	Output value 1	ETX	Sum check	
			3	C
02H	39H	03H	33H (H)	43H (L)

Sum check is performed in this range.

(2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 bytes"

(format 1: in the case of GOT-A900 Series microcomputer connection (format 1))

Output value 1	Output value 2
31H	39H

(format 2: in the case of GOT-A900 Series microcomputer connection (format 2))

STX	Output value 1	Output value 2	ETX	Sum check	
				6	D
02H	31H	39H	03H	36H (H)	44H (L)

Sum check is performed in this range.

(3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 bytes"

(format 1: in the case of GOT-A900 Series microcomputer connection (format 1))

Output value1	Output value2	Output value3	Output value4
AAH	55H	31H	39H

(format 2: in the case of GOT-A900 Series microcomputer connection (format 2))

STX	Output value1	Output value2	Output value3	Output value4	ETX	Sum Check	
						6	C
02H	AAH	55H	31H	39H	03H	36H (H)	43H (L)

Sum check is performed in this range.

Point

Interrupt output

- To set so that interrupts are not issued, set SM52 (interrupt code output inhibit flag) ON. (☞ Section 41.3 Available Devices)
- To issue interrupts, set the data length to "8 bits" at "Communication Detail Settings". (☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: $FF_H \rightarrow 7F_H$)

4 Error code list

In the case of format 2 (GOT-A900 series microcomputer connection (format 2)), the error contents (error code) are appended to the response message during faulty communication.
The following shows error code, error contents, cause, and measures.

Error code	Description	Measures
06_H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
10_H	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the command in the message. (☞ Section 41.4 Commands)
11_H	Message length error The message exceeds the upper limit of the data length that GOT can received.	• Review the contents of the message to transmit. • Check the data length of the message. (Data length of the data section, etc.)
12_H	Communication message error EXT was not found within the upper limit of the receive buffer.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
15_H	Clock data setting error The setting value of clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
$7A_H$	Address error The start address of the read/write device is out of range.	• Review the contents of the message to transmit. • Check the devices and the device range that can be used. (☞ Section 41.3 Available Devices)
$7B_H$	Exceeded number of points error The read/write range exceeded the device range.	

5 Precautions

(1) Batch reading/writing crossing over different devices

When using the batch read (RD) or batch write (WD) command, do not batch read/write crossing over the different devices.
This will cause an error response.

1 Basic format of data communication

This is the same message format as when communication is performed using the dedicated protocol (A compatible 1C frame) of the A Series computer link module.
For details of the basic format of data communication, refer to the following manual:

☞ Q Corresponding MELSEC Communication Protocol Reference Manual

This section describes items whose settings differ from the dedicated protocol of the A Series computer link modules, and the dedicated commands for a GOT microcomputer connection.

Example: Request message for the batch read in word units (QR) command in format 4 (A compatible 1C frame (format 2))

Character A section

ENQ	Block No.		Station No.		PLC No.		Command		Wait	Address							Number of points		Sum Check	
	0	0	0	0	0	0	Q	R	0	D	0	0	0	1	0	0	0	2	B	A
05H	30H	30H	30H	30H	30H	30H	51H	52H	30H	44H	30H	30H	30H	31H	30H	30H	30H	32H	42H	41H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	–	–	–	–	–	(L)	(H)	(L)	(H)	(L)

Sum check is performed in this range.

2 Details of data items in message format

Point Data code during communication

Communication is performed in ASCII code.

(1) Block No, PLC No.

The block No. and PLC No. are ignored in a microcomputer connection of the GOT.
Specify "00".
"00" is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(2) Station No.

Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 31)
The data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes the command whose station No. matches to "Host Address (0 to 31)" set at "Communication Detail Settings". (The message of command whose station No. does not match is ignored.)
For setting method of "Communication Detail Settings", refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

(3) Command

Specifies the contents of the GOT to which the host accesses.
The command is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the commands that can be used, refer to the following.

☞ Section 41.4 Commands

(4) Address

Specifies the head No. of the device data to be read/written.
The data annotated in decimal is converted to a 5- or 7-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ Section 41.3 Available Devices

(5) Number of points

Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
The data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(6) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (5) Read clock data (TR) command

☞ 3 (6) Set clock data (TS) command

(7) Error Code

This is the response message at faulty communication appended with error contents.
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes generated in formats 3 to 6 (A compatible 1C frame), refer to the following:

☞ 4 Error code list

Point

When connecting a microcomputer, etc. that uses the dedicated protocol of the A series computer link module with the GOT

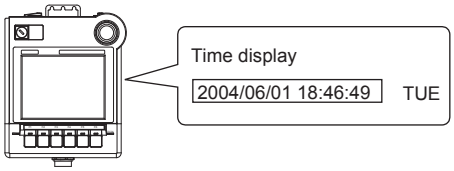
When connecting a microcomputer, etc. that uses the dedicated protocol of the A series computer link module with the GOT, correct the commands to use and the device range according to the specifications of GOT.

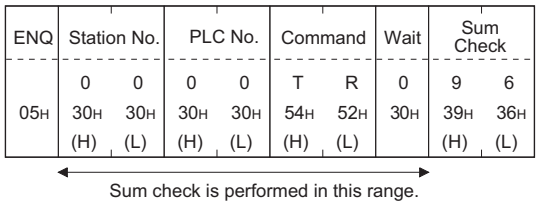
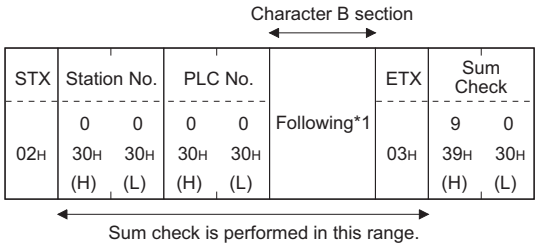
3 Message Format

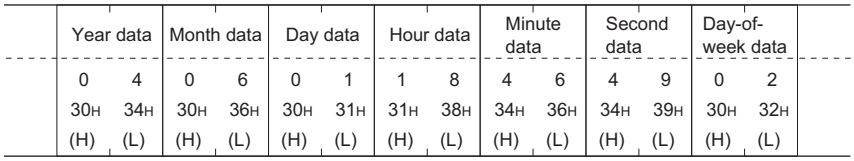
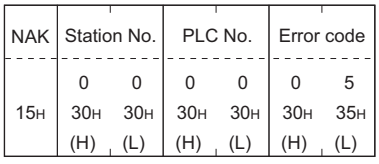
The following shows the message format of the dedicated commands for the GOT microcomputer connection.

(1) Read clock data (TR) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



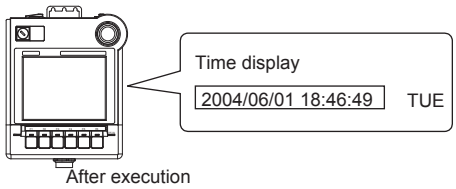
<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>Example: Format 3 (A compatible 1C frame (format 1))
 
</td></tr>
<tr><td>Response message during normal communication (GOT → host)</td><td>Example: Format 3 (A compatible 1C frame (format 1))
 

*1
 
</td></tr>
<tr><td>Response message during faulty communication (GOT → host)</td><td>Example: Format 3 (A compatible 1C frame (format 1))
 

The above is the case where an overrun error (05H) has occurred.</td></tr>
</table>

(2) Set clock data (TS) command

The following shows an example of setting the clock data of GOT.
(Assuming that the clock data is to be set to "2004, June 1, 18:46:49 Tuesday".)



Item	Message format

Request message (host → GOT)

Example: Format 3 (A compatible 1C frame (format 1))

Character C section

ENQ	Station No.		PLC No.		Command		Wait	Following*1	Sum Check	
	0	0	0	0	T	S	0		6	4
05H	30H	30H	30H	30H	54H	53H	30H		36H	34H
	(H)	(L)	(H)	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Response message during normal communication (GOT → host)

Example: Format 3 (A compatible 1C frame (format 1))

ACK	Station No.		PLC No.	
	0	0	0	0
06H	30H	30H	30H	30H
	(H)	(L)	(H)	(L)

Response message during faulty communication (GOT → host)

Example: Format 3 (A compatible 1C frame (format 1))

NAK	Station No.		PLC No.		Error code	
	0	0	0	0	0	5
15H	30H	30H	30H	30H	30H	35H
	(H)	(L)	(H)	(L)	(H)	(L)

The above is the case where an overrun error (05H) has occurred.

Point

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

4 Error code list

The following shows error code, error contents, cause, and measures.

Error code	Description	Measures
01H	Parity error The parity bit does not match.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Match the GOT and host transmission settings.
02H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
03H	Protocol error Received a message that does not follow the control procedure of the format set at "Communication Detail Settings".	• Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
05H	Overrun error The next data was transmitted from the host before GOT completes the processing of the data received.	• Check the settings of "Communication Detail Settings". • Decrease the transmission speed.
06H	Character section error The character section specification error. • The method of specifying the character section is wrong. • The specified command has error. • The number of points of the processing requests exceeds the allowable range. • A non-existent device is specified. • The setting value of the clock data has error.	• Review the contents of the message to transmit. • Check the commands in the message (☞ Section 41.4 Commands) • Check the devices that can be used and the device ranges. (☞ Section 41.3 Available Devices) • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
07H	Character error A character other than "A to Z", "0 to 9", space, and control codes has been received.	• Review the contents of the message to transmit.

41.5.3 Formats 7 to 10 (QnA compatible 3C/4C frame)

1 Basic format of data communication

This is the same message format as when communication is performed using the MC protocol (QnA compatible 3C/4C frame) of the Q/QnA Series serial communication module.
For details of the basic format of data communication, refer to the following manual:

☞ Q Corresponding MELSEC Communication Protocol Reference Manual

This section describes items whose settings differ from the MC protocol of the Q/QnA Series serial communication module, and the dedicated commands for a GOT microcomputer connection.

Example: Request message for the batch read in word units (0401) command in format 8 (QnA compatible 4C frame (format 2))

ENQ	Block No.		Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following *1	Sum check	
	0	0	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0		B	A
05H	30H	30H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		42H	41H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

*1 Character A section

Command				Sub-command				Device code		Start Device						Number of device points			
0	4	0	1	0	0	0	0	D	*	0	0	0	1	0	0	0	0	0	2
30H	34H	30H	31H	30H	30H	30H	30H	44H	2AH	30H	30H	30H	31H	30H	30H	30H	30H	30H	32H
(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	–	–	(L)	(H)	–	–	(L)

Point

QnA compatible 4C frame (format 5)

GOT cannot use the QnA compatible 4C frame (format 5).

2 Data item contents of message format

Point

Data code during communication

Communication is performed in ASCII code.

(1) Block No., network No., PLC No., request destination module I/O No. and station No.

Ignored in a microcomputer connection of the GOT.
Specify "00". (The request destination module I/O No. is "0000".)
"00" is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
(The request destination module I/O No. is 4-digit.)

(2) Station No.

Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 1FH)
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes the command whose station No. matches to "Host Address (0 to 31)" set at "Communication Detail Settings". (The message of command whose station No. does not match is ignored.)
For setting method of "Communication Detail Settings", refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

(3) Command, sub-command

Specifies the contents to access from the host to GOT.
The command and sub-command are converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the commands that can be used, refer to the following.

☞ Section 41.4 Commands

(4) Device code

Specifies the code by which the device data to be read/written is recognized.
The device code is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ Section 41.3 Available Devices

(5) Head device

Specifies the head No. of the device data to be read/written.
Data notated in decimal is converted to a 6-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ Section 41.3 Available Devices

(6) Number of devices

Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
When specifying multiple devices as follows, limit the total number of devices to within 64 points.

(a) When using random read/write command

When setting multiple bit accesses, word accesses or double word accesses, limit the total number of access points to within 64 points

(b) When using multiple block batch read/write commands

When setting multiple blocks, limit the total number of points of all blocks to within 64 points.

(7) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (1) Read clock data (1901) command

☞ 3 (2) Set clock data (0901) command

(8) Error Code

This is the response message at faulty communication appended with error contents.
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes that are generated in formats 7 to 10 (QnA compatible 3C/4C frame), refer to the following:

☞ 4 Error code list

Point

When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT

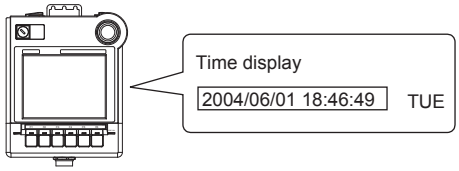
When connecting a microcomputer, etc. that uses the MC protocol of the Q/QnA series serial communication module with the GOT, correct the commands to be used and the device ranges to match the GOT specifications.

3 Message Format

The following shows the message format of the dedicated commands for a microcomputer connection of GOT.

(1) Read clock data (1901) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



Request message (host → GOT)

Example: Format 7 (QnA compatible 4C frame (format 1))

ENQ	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following *1	Sum check	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0		A	9
05H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		41H	39H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

*1 Character A section

Host Address No.		Command				Sub-command			
0	0	1	9	0	1	0	0	0	0
30H	30H	31H	39H	30H	31H	30H	30H	30H	30H
(H)	(L)	(H)	–	–	(L)	(H)	–	–	(L)

Response message during normal communication (GOT → host)

Example: Format 7 (QnA compatible 4C frame (format 1))

STX	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Following *1	ETX	Sum check	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0			E	E
02H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		03H	43H	43H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1 Character B section

Host Address No.		Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	0	0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	30H	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

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Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 7 (QnA compatible 4C frame (format 1))

NAK	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following *1
15H	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

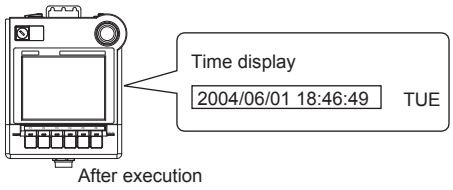
*1

Error code			
7	F	6	9
37H	46H	36H	39H
(H)	–	–	(L)

The above is the case where a parity error (7F69H) has occurred.

(2) Set clock data (0901) command

The following shows an example of setting the clock data of GOT.
(Assuming that the clock data is to be set to "2004, June 1, 18:46:49 Tuesday".)



Item	Message format

Request message (host → GOT)

Example: Format 7 (QnA compatible 4C frame (format 1))

ENQ	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.			Sum check	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Following *1	7	5
05H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H		37H	35H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Character C section

*1

Command				Sub-command				
0	9	0	1	0	0	0	0	→ 1)
30H	39H	30H	31H	30H	30H	30H	30H	
(H)	–	–	(L)	(H)	–	–	(L)	

Character C section

1) →

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Response message during normal communication (GOT → host)

Example: Format 7 (QnA compatible 4C frame (format 1))

ACK	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.	
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)

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Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 7 (QnA compatible 4C frame (format 1))

NAK	Frame ID No.		Station No.		Network No.		PLC No.		Request destination module I/O No.				Request destination module station No.		Host Address No.		Following*1
	F	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15H	46H	38H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	30H	
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	(L)	

*1

	Error code			
	7	F	6	9
	37H	46H	36H	39H
	(H)	–	–	(L)

The above is the case where a parity error (7F69H) has occurred.

Point

When a wrong day of the week has been set by the clock data setting command

If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

4 Error code list

The following shows error code, error contents, cause, and measures.

Error code	Description	Measures
7E40H	Command error An unsupported command or sub-command was used.	• Review the contents of the message to transmit. • Check the commands in the message. (☞ Section 41.4 Commands)
7E41H	Data length error Specified points exceeding the number of points that can be communicated during random read/write.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (☞ Section 41.3 Available Devices)
7E42H	Number of data error The number of requests exceeds the command range.	
7E43H	Device error A non-existent device has been specified.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (☞ Section 41.3 Available Devices)
7E46H	Clock data setting error The setting value of clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
7E4FH	Exceeded number of points error The read/write range exceeded the device range.	• Review the contents of the message to transmit. • Check the devices that can be used and the device ranges. (☞ Section 41.3 Available Devices)
7F20H	Character error A character other than "A to Z", "0 to 9", space, and control codes has been received.	• Review the contents of the message to transmit.
7F23H	Communication message error EXT/CR+LF was not found within the upper limit of the receive buffer.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
7F24H	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit
7F67H	Overrun error The next data was transmitted from the host before GOT completes the processing of the data received.	• Check the settings of "Communication Detail Settings". • Decrease the transmission speed.
7F68H	Framing error The data bit and stop bit do not match.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Match the GOT and host transmission settings.
7F69H	Parity error The parity bit does not match.	
7F6AH	Buffer full error The receive buffer overflowed.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.

1 Basic format of data communication

This is the same format as the protocol of the Digital Electronics Corporation's memory link method.
For details of the basic format of data communication, refer to the following manual:

☞ The connection manual of the device manufactured by Digital Electronics Corporation

This section describes items whose settings differ from the protocols of the Digital Electronics Corporation's memory link method and dedicated commands for a microcomputer connection of GOT.

Example: Request message for the batch read in word units (R) command in format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

ENQ	Station No.		ESC	Com-mand	Address				Number of points				Sum Check		CR	LF
	0	0		R	0	0	6	4	0	0	0	2	5	E		
05H	30H	30H	1BH	52H	30H	30H	36H	34H	30H	30H	30H	32H	35H	45H	0DH	0AH
	(H)	(L)			(H)	–	–	(L)	(H)	–	–	(L)	(H)	(L)		

Sum check is performed in this range.

2 Details of data items in message format

Point Data code during communication

Communication is performed in ASCII code.

(1) Command

Specifies the items to access from the host to GOT.
The command is converted to a 1-digit ASCII code (Hex) and transmitted.
For details of the commands that can be used, refer to the following.

☞ Section 41.4 Commands

(2) Station No.

Station No. is used to identify the GOT with which the host communicates. (Setting range: 0 to 1FH)
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes only commands whose station No. matches the "Host Address (0 to 31)" set at "Communication Detail Settings". (The messages of commands whose station No. do not match are ignored.)
For details of setting "Communication Detail Settings", refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

(3) Address

Specifies the head No. of the device data to be read/written.
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device range that can be accessed, refer to the following.

☞ Section 41.3 Available Devices

(4) Number of points

Specifies the number of device data to be read/written. (Setting range: 1 to 40H)
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

(5) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second, and day of the week to be read/set to the GOT clock data.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (1) Read clock data (N) command

☞ 3 (2) Set clock data (M) command

(6) Error Code

This is the response message at faulty communication appended with error contents.
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
For details of error codes generated in formats 12 and 13 (Digital Electronics Corporation's memory link method (extended mode)), refer to the following:

☞ 4 Error code list

Point

When connecting a microcomputer, etc. that uses the protocol of the Digital Electronics Corporation's memory link method with the GOT

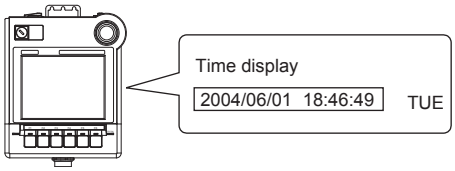
When connecting a microcomputer, etc. that uses the protocol of the Digital Electronics Corporation's memory link method with the GOT, correct the commands to be used and the device ranges to match the specifications of the GOT.

3 Message Format

The following shows the message format of the dedicated command of the GOT for a microcomputer connection.

(1) Read clock data (N) command

The following shows an example of reading the clock data of GOT.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



Item	Message format
Request message (host → GOT)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n)) • Digital compatible signal (GS580 to GS583): OFF (Partly compatible) • Digital compatible signal (GS580 to GS583): ON (Fully compatible)

• Digital compatible signal (GS580 to GS583): OFF (Partly compatible)

ENQ	Station No.		ESC	Com-mand	Sum Check		CR	LF
	0	0		N	C	E		
05H	30H (H)	30H (L)	1BH	4EH	43H (H)	45H (L)	0DH	0AH

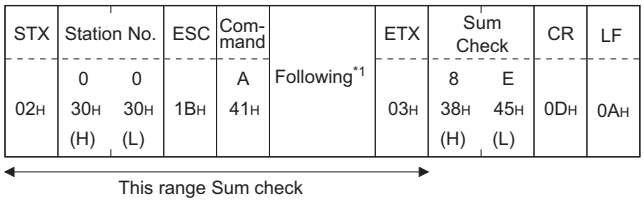
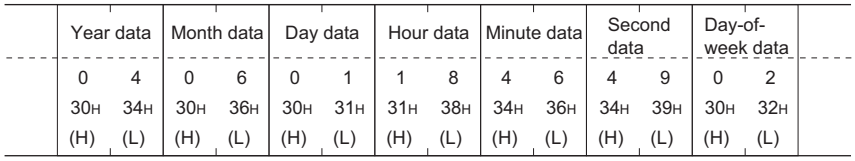
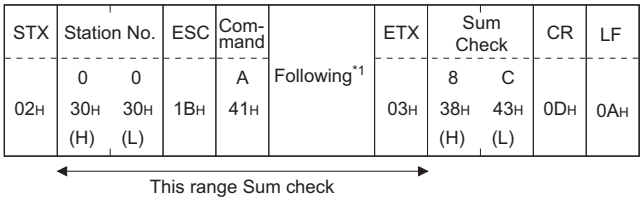
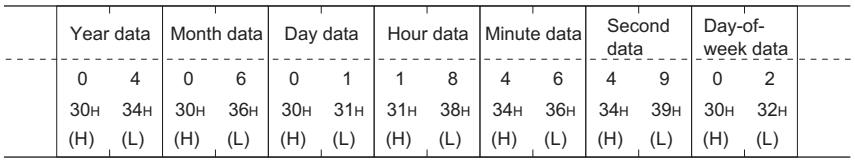
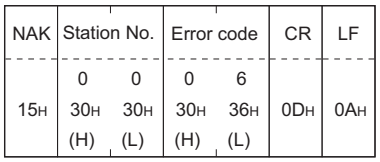
This range Sum check

• Digital compatible signal (GS580 to GS583): ON (Fully compatible)

ENQ	Station No.		ESC	Com-mand	Sum Check		CR	LF
	0	0		N	C	9		
05H	30H (H)	30H (L)	1BH	4EH	43H (H)	39H (L)	0DH	0AH

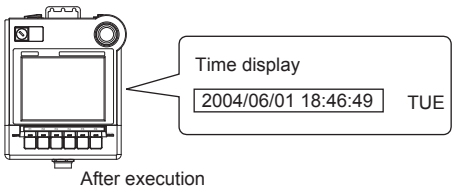
This range Sum check

(Continued to next page)

Item	Message format
Response message during normal communication (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n)) • Digital compatible signal (GS580 to GS583): OFF (Partly compatible)  *1  • Digital compatible signal (GS580 to GS583): ON (Fully compatible)  *1 
Response message during faulty communication (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))  The above is a case where the sum check error (06H) has occurred.

(2) Set clock data (M) command

The following shows an example of setting the clock data of GOT.
(Assuming that the clock data is to be set to "2004, June 1, 18:46:49 Tuesday".)



After execution

<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

• Digital compatible signal (GS580 to GS583): OFF (Partly compatible)
<table>
<tr><th>ENQ</th><th colspan="2">Station No.</th><th>ESC</th><th>Com-mand</th><th>Following*1</th><th colspan="2">Sum Check</th><th>CR</th><th>LF</th></tr>
<tr><td>05H</td><td>0
30H
(H)</td><td>0
30H
(L)</td><td>1BH</td><td>M
4DH</td><td></td><td>9
39H
(H)</td><td>A
41H
(L)</td><td>0DH</td><td>0AH</td></tr>
</table>
Sum check is performed in this range.

*1
<table>
<tr><th colspan="2">Year data</th><th colspan="2">Month data</th><th colspan="2">Day data</th><th colspan="2">Hour data</th><th colspan="2">Minute data</th><th colspan="2">Second data</th><th colspan="2">Day-of-week data</th></tr>
<tr><td>0
30H
(H)</td><td>4
34H
(L)</td><td>0
30H
(H)</td><td>6
36H
(L)</td><td>0
30H
(H)</td><td>1
31H
(L)</td><td>1
31H
(H)</td><td>8
38H
(L)</td><td>4
34H
(H)</td><td>6
36H
(L)</td><td>4
34H
(H)</td><td>9
39H
(L)</td><td>0
30H
(H)</td><td>2
32H
(L)</td></tr>
</table>

• Digital compatible signal (GS580 to GS583): ON (Fully compatible)
<table>
<tr><th>ENQ</th><th colspan="2">Station No.</th><th>ESC</th><th>Com-mand</th><th>Following*1</th><th colspan="2">Sum Check</th><th>CR</th><th>LF</th></tr>
<tr><td>05H</td><td>0
30H
(H)</td><td>0
30H
(L)</td><td>1BH</td><td>M
4DH</td><td></td><td>9
39H
(H)</td><td>5
35H
(L)</td><td>0DH</td><td>0AH</td></tr>
</table>
Sum check is performed in this range.

*1
<table>
<tr><th colspan="2">Year data</th><th colspan="2">Month data</th><th colspan="2">Day data</th><th colspan="2">Hour data</th><th colspan="2">Minute data</th><th colspan="2">Second data</th><th colspan="2">Day-of-week data</th></tr>
<tr><td>0
30H
(H)</td><td>4
34H
(L)</td><td>0
30H
(H)</td><td>6
36H
(L)</td><td>0
30H
(H)</td><td>1
31H
(L)</td><td>1
31H
(H)</td><td>8
38H
(L)</td><td>4
34H
(H)</td><td>6
36H
(L)</td><td>4
34H
(H)</td><td>9
39H
(L)</td><td>0
30H
(H)</td><td>2
32H
(L)</td></tr>
</table>
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))
<table>
<tr><th>ACK</th><th colspan="2">Station No.</th><th>CR</th><th>LF</th></tr>
<tr><td>06H</td><td>0
30H
(H)</td><td>0
30H
(L)</td><td>0DH</td><td>0AH</td></tr>
</table>
</td></tr>
</table>

(Continued to next page)

Item	Message format
Response message during faulty communication (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n))

NAK	Station No.		Error code		CR	LF
	0	0	0	6		
15H	30H	30H	30H	36H	0DH	0AH
	(H)	(L)	(H)	(L)		

The above is a case where the sum check error (06H) has occurred.

Point

When a wrong day of the week has been set by the clock data setting command

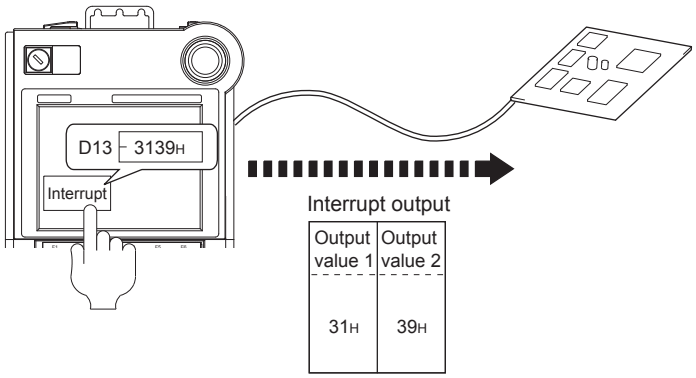
If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

(3) In the case of interrupt outputs

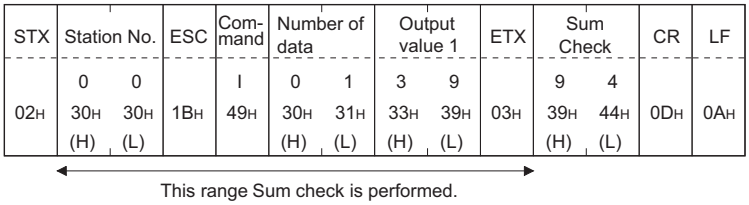
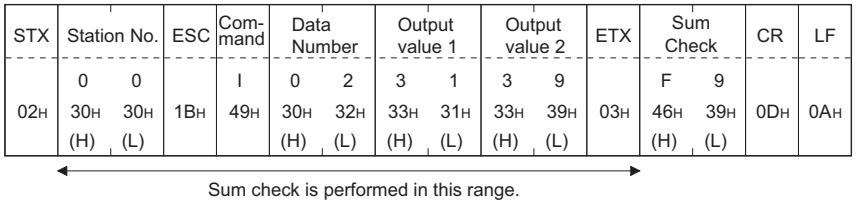
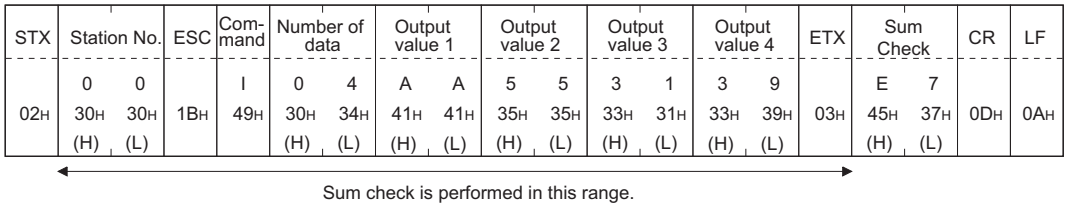
The following shows an example of an interrupt output when data are written to the interrupt output devices (D13 and D14).
(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2 in format 11



Item	Message format
Request message (host → GOT)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n)) • Digital compatible signal (GS580 to GS583): OFF (Partly compatible) ENQ: 05H Station No.: 0 0 (30H 30H) (H) (L) ESC: 1BH Command: I 49H Sum Check: C 9 (43H 39H) (H) (L) CR: 0DH LF: 0AH This range Sum check • Digital compatible signal (GS580 to GS583): ON (Fully compatible) ENQ: 05H Station No.: 0 0 (30H 30H) (H) (L) ESC: 1BH Command: I 49H Sum Check: C 4 (43H 34H) (H) (L) CR: 0DH LF: 0AH This range Sum check

(Continued to next page)

Item	Message format
Interrupt output (GOT → host)	Example: Format 13 (Digital Electronics Corporation's memory link method (extended mode, ASCII code 1:n)) (1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte"  (2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 bytes"  (3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 bytes" 

Point

Interrupt output

- To set so that interrupts are not issued, set SM52 (interrupt code output inhibit flag) ON. (☞ Section 41.3 Available Devices)
- To issue interrupts in format 11, set the data length to "8 bits" at "Communication Detail Settings". (☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FF$_H$ → 7F$_H$)

4 Error code list

In the case of formats 12 and 13 (Digital Electronics Corporation's memory link method (extended mode)), the details (error code) of the error are appended to the response message during faulty communication.

The following shows error code, error contents, cause, and measures.

Error code	Description	Measures
06$_H$	Sum check error The sum check code created from received data differs from the sum check code in the receive data.	• Review the contents of the message to transmit.
10$_H$	Command error An unsupported command was used.	• Review the contents of the message to transmit. • Check the command in the message. (☞ Section 41.4 Commands)
12$_H$	Message length error The upper limit of the data length that can be received by the GOT has been exceeded.	• Review the contents of the message to transmit. • Check the data length of the message. (data length of the data section, etc.)
16$_H$	Clock data setting error The setting value of clock data has error.	• Review the contents of the message to transmit. • Check whether the non-existent data is set (e.g. setting "07" at the day of the week) as clock data.
FA$_H$	Address error The head address of the read/write device is out of range.	• Review the contents of the message to transmit. • Check the devices that can be used and device ranges. (☞ Section 41.3 Available Devices)
FB$_H$	Exceeded number of points error The read/write range exceeded the device range.	
FC$_H$	Message format error The format of the received message has error.	• Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.
FF$_H$	Timeout error There is no response from the GOT, or the slave of the specified address does not exist.	• Check the communication cable and communication module attachment. • Check the settings of "Communication Detail Settings". • Review the contents of the message to transmit.

5 Precautions

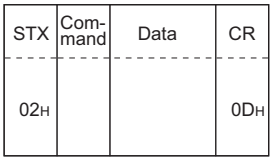
(1) Batch reading/writing crossing over different devices

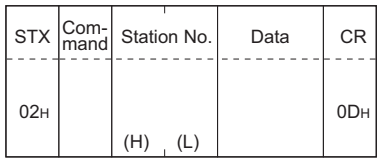
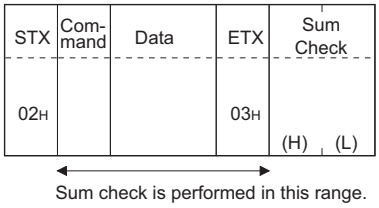
When using the batch read (R) or batch write (W) command, do not batch read/write crossing over the different devices.

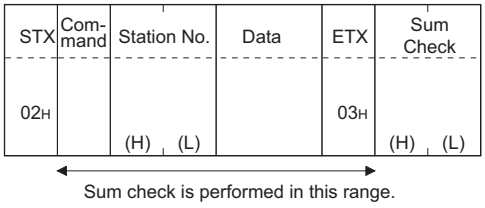
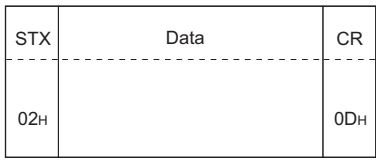
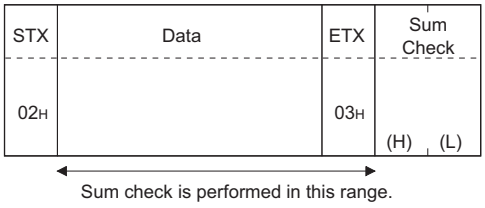
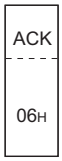
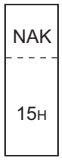
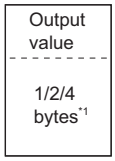
This will cause an error response.

41.5.5 Formats 14, 15 (GOT-F900 series microcomputer connection)

1 Basic format of data communication

<table>
<tr><th>Item</th><th colspan="2">Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>(format 14: GOT-F900 series microcomputer connection (format 1))
(1) w/out station No.
 

(2) w/ station No.
 
</td><td>(format 15: GOT-F900 series microcomputer connection (format 2))
(1) w/out station No.
 

(2) w/station No.
 
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>(1) During processing of read commands
(format 14: GOT-F900 series microcomputer connection (format 1))
 
</td><td>(format 15: GOT-F900 series microcomputer connection (format 2))
 
</td></tr>
<tr><td></td><td colspan="2">(2) During processing of write commands
 
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td colspan="2"> 
</td></tr>
<tr><td>During interrupt output</td><td colspan="2"> 
</td></tr>
</table>

*1 Set the number of interrupt data bytes at "Communication Details Settings" on drawing software.
For details of setting the number of interrupt data bytes, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 Details of data items in message format

Point Data code during communication

Communication is performed in ASCII code. (excluding interrupt output)

(1) Control codes

Symbol	ASCII code	Description
STX	02H	Start of Text (start marker of message frame)
ETX	03H	End of Text (end marker of message frame)
EOT	04H	End of Transmission
ENQ	05H	Enquiry (start of enquiry)
NAK	15H	Negative ACK (error response)
ACK	06H	Acknowledge (write completion response)
LF	0AH	Line Feed
CL	0CH	Clear
CR	0DH	Carriage Return

(2) Command

Specifies the contents to access from the host to the GOT.
The command is converted to a 1-digit ASCII code (Hex) and transmitted.
For details of the commands that can be used, refer to the following.

☞ Section 41.4 Commands

(3) Station No.

Station No. is used to identify the GOT that the host is to communicate with. (Setting range: 0 to 31)
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.
The GOT processes only commands whose station No. matches the "Host Address (0 to 31)" set at "Communication Detail Settings". (The messages of commands whose station No. do not match are ignored.)
For details of setting "Communication Detail Settings", refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

(4) Address

Specifies the head No. of the device data to be read/written.
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.
For details of the device ranges that can be accessed, refer to the following.

☞ Section 41.3 Available Devices

(5) Bit pattern

Specifies the pattern of the bits to change.
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)

(6) Write specification

Specifies how to change the data of the specified address by bit pattern.
(Setting range: 0 to 3)
Data notated in decimal is converted to a 1-digit ASCII code (Hex) and transmitted.

☞ 3 (3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)

(7) Number of bytes

Specifies the number of bytes of the device data to be batch read/written. (Setting range: 0 to FF_H)
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(8) Number of points

Specifies the number of device data to be written to multiple points in bit units. (Setting range: 0 to 70)
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit

(9) Year, month, day, hour, minute, second and day of the week data

Specifies year, month, day, hour, minute, second and day of the week to be read/set to the clock data of the GOT.
Data notated in decimal is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

☞ 3 (5) Read clock data (6) command (w/out station No.), read clock data (G) command (w/station No.)

☞ 3 (6) Set clock data (5) command (w/out station No.), set clock data (F) command (w/ station No.)

(10) Data

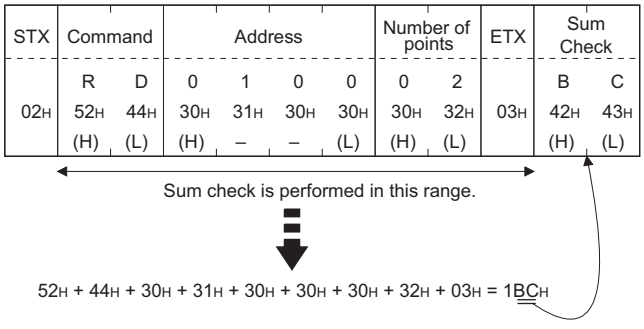
Specifies the data to read from/write to the specified device data. (word unit)
Data notated in Hex is converted to a 4-digit ASCII code (Hex) and transmitted from the upper digit.

(11) Write data

Specifies the data to write to the specified device data.
Data notated in Hex is converted to a 2-digit ASCII code (Hex) and transmitted from the upper digit.

(12) Sum check code (for format 15: GOT-F900 series microcomputer connection (format 2) only)

The sum check code is obtained by converting the lower 1 byte (8 bits) of the result (sum), after having added the sum check target data as binary data, to 2-digit ASCII code (Hex).



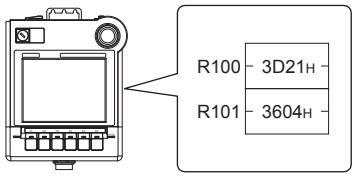
3 Message format

(1) Batch read (0) command (w/out station No.), batch read (A) command (w/station No.)

(a) When reading word device

The following shows an example of reading four bytes of virtual devices R100 to R101 from the GOT at station No.15.

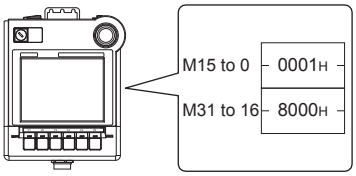
(Assuming that R100="3D21H" and R101="3604H" are stored.)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>CR</td></tr>
<tr><td></td><td>A</td><td>1</td><td>5</td><td>0</td><td>0</td><td>C</td><td>8</td><td>0</td><td>4</td><td></td></tr>
<tr><td>02H</td><td>41H</td><td>31H
(H)</td><td>35H
(L)</td><td>30H
(H)</td><td>30H
–</td><td>43H
–</td><td>38H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>0DH</td></tr>
</table>
(format 15: GOT-F900 series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td>Com-mand</td><td colspan="2">Station No.</td><td colspan="4">Address</td><td colspan="2">Number of bytes</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>A</td><td>1</td><td>5</td><td>0</td><td>0</td><td>C</td><td>8</td><td>0</td><td>4</td><td></td><td>E</td><td>9</td></tr>
<tr><td>02H</td><td>41H</td><td>31H
(H)</td><td>35H
(L)</td><td>30H
(H)</td><td>30H
–</td><td>43H
–</td><td>38H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>03H</td><td>45H
(H)</td><td>39H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><td>STX</td><td colspan="2">Data 1
(R100 upper)</td><td colspan="2">Data 2
(R100 lower)</td><td colspan="2">Data 3
(R101 upper)</td><td colspan="2">Data 4
(R101 lower)</td><td>CR</td></tr>
<tr><td></td><td>3</td><td>D</td><td>2</td><td>1</td><td>3</td><td>6</td><td>0</td><td>4</td><td></td></tr>
<tr><td>02H</td><td>33H
(H)</td><td>44H
(L)</td><td>32H
(H)</td><td>31H
(L)</td><td>33H
(H)</td><td>36H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>0DH</td></tr>
</table>
(format 15: GOT-F900 series microcomputer connection (format 2))
<table>
<tr><td>STX</td><td colspan="2">Data 1
(R100 upper)</td><td colspan="2">Data 2
(R100 lower)</td><td colspan="2">Data 3
(R101 upper)</td><td colspan="2">Data 4
(R101 lower)</td><td>ETX</td><td colspan="2">Sum Check</td></tr>
<tr><td></td><td>3</td><td>D</td><td>2</td><td>1</td><td>3</td><td>6</td><td>0</td><td>4</td><td></td><td>A</td><td>A</td></tr>
<tr><td>02H</td><td>33H
(H)</td><td>44H
(L)</td><td>32H
(H)</td><td>31H
(L)</td><td>33H
(H)</td><td>36H
(L)</td><td>30H
(H)</td><td>34H
(L)</td><td>03H</td><td>41H
(H)</td><td>41H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><td>NAK</td></tr>
<tr><td>15H</td></tr>
</table>
</td></tr>
</table>

(b) When reading bit device

The following shows an example of reading four bytes of the virtual devices M0 to M31. (Assuming that M0="1" and M31="1" are stored.)



Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Address				Number of bytes		CR
	A	1	5	2	0	0	0	0	4	
02H	41H	31H	35H	32H	30H	30H	30H	30H	34H	0DH
		(H)	(L)	(H)	–	–	(L)	(H)	(L)	

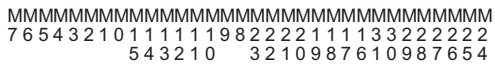
(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Address				Number of bytes		ETX	Sum Check	
	A	1	5	2	0	0	0	0	4		D	0
02H	41H	31H	35H	32H	30H	30H	30H	30H	34H	03H	44H	30H
		(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

Response message during normal communication (GOT → host)	(format 14: GOT-F900 series microcomputer connection (format 1))

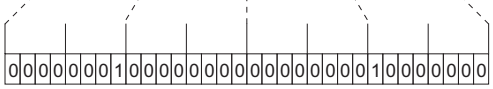
STX	Data 1 (M7 to 0)		Data 2 (M15 to 8)		Data 3 (M23 to 16)		Data 4 (M31 to 24)		CR
	0	1	0	0	0	0	8	0	
02H	30H	31H	30H	30H	30H	30H	38H	30H	0DH
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	



(format 15: GOT-F900 series microcomputer connection (format 2))

Sum check is performed in this range.

STX	Data 1 (M7 to 0)		Data 2 (M15 to 8)		Data 3 (M23 to 16)		Data 4 (M31 to 24)		ETX	Sum Check	
	0	1	0	0	0	0	8	0		8	C
02H	30H	31H	30H	30H	30H	30H	38H	30H	03H	38H	43H
	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)		(H)	(L)



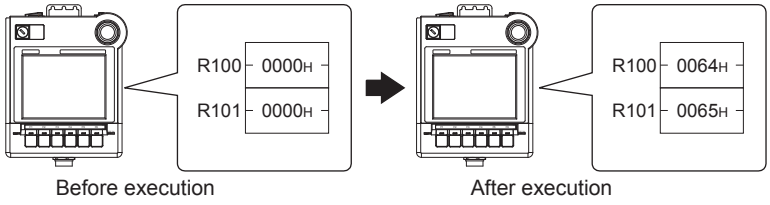
Response message during faulty communication (GOT → host)

NAK
15H

(2) Batch write (1) command (w/out station No.), batch write (B) command (w/station No.)

(a) When writing to word device

The following shows an example of writing "3D21H" and "3604H" to virtual devices R100 and R101 on the GOT at station No.15.



Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Address				Number of bytes		Following*1	CR
	B	1	5	0	0	C	8	0	4		
02H	42H	31H	35H	30H	30H	43H	38H	30H	34H		0DH
		(H)	(L)	(H)	–	–	(L)	(H)	(L)		

(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Address				Number of bytes		Following*1	ETX	Sum Check	
	B	1	5	0	0	C	8	0	4			9	1
02H	42H	31H	35H	30H	30H	43H	38H	30H	34H		03H	39H	31H
		(H)	(L)	(H)	–	–	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

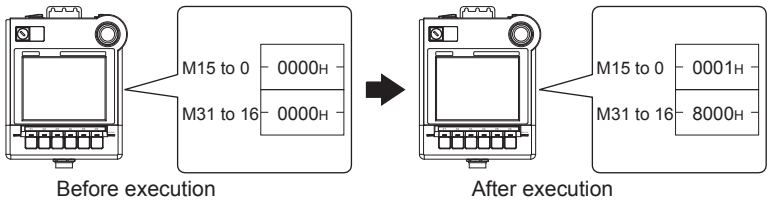
*1

Data 1 (R100 upper)		Data 2 (R100 lower)		Data 3 (R101 upper)		Data 4 (R101 lower)	
3	D	2	1	3	6	0	4
33H	44H	32H	31H	33H	36H	30H	34H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Item	Message format
Response message during normal communication (GOT → host)	ACK 06H
Response message during faulty communication (GOT → host)	NAK 15H

(b) When writing to bit device

The following shows an example of writing "1"s to virtual devices M0 and M31 on the GOT at station No.15.



Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Address				Number of bytes		Following*1	CR
	B	1	5	2	0	0	0	0	4		
02H	42H	31H	35H	32H	30H	30H	30H	30H	34H		0DH
		(H)	(L)	(H)	–	–	(L)	(H)	(L)		

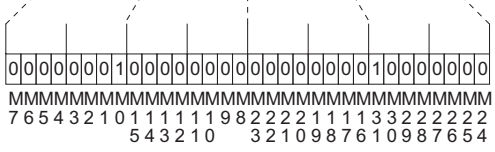
(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Address				Byte Number		Following*1	ETX	Sum Check	
	B	1	5	2	0	0	0	0	4			5	A
02H	42H	31H	35H	32H	30H	30H	30H	30H	34H		03H	35H	41H
		(H)	(L)	(H)	–	–	(L)	(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Data 1 (M7 to 0)		Data 2 (M15 to 8)		Data 3 (M23 to 16)		Data 4 (M31 to 24)	
0	1	0	0	0	0	8	0
30H	31H	30H	30H	30H	30H	38H	30H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)



Response message during normal communication (GOT → host)	ACK 06H
Response message during faulty communication (GOT → host)	NAK 15H

(3) Multi-point write in bit units (3) command (w/out station No.), multi-point write in bit units (D) command (w/ station No.)

The following shows an example of turning OFF the virtual device M31 and turning ON the virtual device M2038 on the GOT at station No.31.

Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Number of points		Following*1	CR
	D	3	1	0	2		
02H	44H	33H (H)	31H (L)	30H (H)	32H (L)		0DH

(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Number of points		Following *1	ETX	Sum check	
	D	3	1	0	2			E	C
02H	44H	33H (H)	31H (L)	30H (H)	32H (L)		03H	45H (H)	43H (L)

Sum check is performed in this range.

*1

Write specification 1	Address1				Bit pattern1		Write specification 2	Address2				Bit pattern2	
1	2	0	0	3	8	0	0	2	0	F	E	4	0
31H	32H (H)	30H –	30H –	33H (L)	38H (H)	30H (L)	30H	32H (H)	30H –	46 –	45H (L)	34H (H)	30H (L)

*2 (write specification1=1)

	MM 32 10	MM 32 98	MM 22 76	MM 22 54
Source data bit pattern	10101010	10000000		
Result	00101010			

*2 (write specification2=0)

	MM 22 00	MM 22 00	MM 33 33	MM 33 98
Source data bit pattern	10101010	01000000		
Result	11101010			

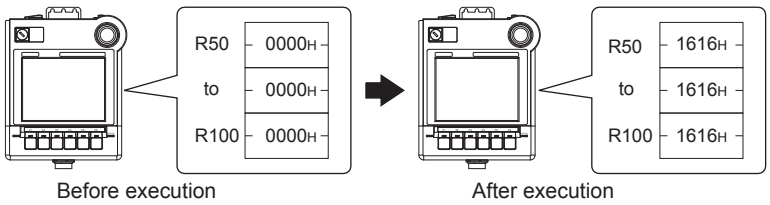
Item	Message format
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

*2 The write specification specifies how the data of the specified address is changed in the bit pattern.

Write specification	Function	Description	Action example	
0	ON specification	Bits set to "1" by the bit pattern are turned ON.	Original data Bit pattern Result	1010 1100 1110
1	OFF specification	Bits set to "1" by the bit pattern are turned OFF.	Original data Bit pattern Result	1010 1100 0010
2	Invert specification	Bits set to "1" by the bit pattern are inverted.	Original data Bit pattern Result	1010 1100 0110
3	Write specification	The numerical values to write by the bit pattern are specified directly.	Original data Bit pattern Result	1010 1100 1100

(4) Fill command (4) (w/out station No.), fill command (E) (w/station No.)

The following shows an example of writing "16"s to virtual devices R50 to R100 on the GOT at station No.27.



Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Com-mand	Station No.		Start address				End address				Write Data		CR
	E	2	7	0	0	6	4	0	0	C	9	1	6	
02H	45H	32H (H)	37H (L)	30H (H)	30H –	36H –	34H (L)	30H (H)	30H –	43H –	39H (L)	31H (H)	36H (L)	0DH

(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Com-mand	Station No.		Start address				End address				Write Data		ETX	Sum Check	
	E	2	7	0	0	6	4	0	0	C	9	1	6		B	E
02H	45H	32H (H)	37H (L)	30H (H)	30H –	36H –	34H (L)	30H (H)	30H –	43H –	39H (L)	31H (H)	36H (L)	03H	42H (H)	45H (L)

Sum check is performed in this range.

Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

Point

(1) Start address/end address specification conditions

Specify addresses so that the start address is the same or less than the end address.

Error response occurs in the following cases:

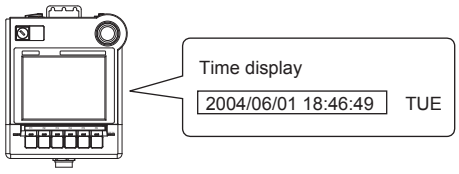
- The address to specify has the start address greater than the end address.
- Either of the start address or end address exceeds the device range that can be specified.

(2) Address specifying crossing over different devices

The start address and end address can be specified crossing over different devices.

(5) Read clock data (6) command (w/out station No.), read clock data (G) command (w/station No.)

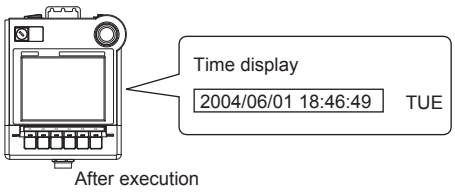
The following shows an example of reading the clock data of GOT at station No.27.
(Assuming that the clock data of GOT has been set to "2004, June 1, 18:46:49, Tuesday".)



<table>
<tr><th>Item</th><th>Message format</th></tr>
<tr><td>Request message
(host → GOT)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><th>STX</th><th>Com-mand</th><th colspan="2">Station No.</th><th>CR</th></tr>
<tr><td></td><td>G</td><td>2</td><td>7</td><td></td></tr>
<tr><td>02H</td><td>47H</td><td>32H
(H)</td><td>37H
(L)</td><td>0DH</td></tr>
</table>
(format 15: GOT-F900 series microcomputer connection (format 2))
<table>
<tr><th>STX</th><th>Com-mand</th><th colspan="2">Station No.</th><th>ETX</th><th colspan="2">Sum Check</th></tr>
<tr><td></td><td>G</td><td>2</td><td>7</td><td></td><td>B</td><td>3</td></tr>
<tr><td>02H</td><td>47H</td><td>32H
(H)</td><td>37H
(L)</td><td>03H</td><td>42H
(H)</td><td>33H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during normal communication
(GOT → host)</td><td>
(format 14: GOT-F900 series microcomputer connection (format 1))
<table>
<tr><th>STX</th><th colspan="2">Year data</th><th colspan="2">Month data</th><th colspan="2">Day data</th><th colspan="2">Hour data</th><th colspan="2">Minute data</th><th colspan="2">Second data</th><th colspan="2">Day-of-week data</th><th>CR</th></tr>
<tr><td></td><td>0</td><td>4</td><td>0</td><td>6</td><td>0</td><td>1</td><td>1</td><td>8</td><td>4</td><td>6</td><td>4</td><td>9</td><td>0</td><td>2</td><td></td></tr>
<tr><td>02H</td><td>30H
(H)</td><td>34H
(L)</td><td>30H
(H)</td><td>36H
(L)</td><td>30H
(H)</td><td>31H
(L)</td><td>31H
(H)</td><td>38H
(L)</td><td>34H
(H)</td><td>36H
(L)</td><td>34H
(H)</td><td>39H
(L)</td><td>30H
(H)</td><td>32H
(L)</td><td>0DH</td></tr>
</table>
(format 15: GOT-F900 series microcomputer connection (format 2))
<table>
<tr><th>STX</th><th colspan="2">Year data</th><th colspan="2">Month data</th><th colspan="2">Day data</th><th colspan="2">Hour data</th><th colspan="2">Minute data</th><th colspan="2">Second data</th><th colspan="2">Day-of-week data</th><th>ETX</th><th colspan="2">Sum Check</th></tr>
<tr><td></td><td>0</td><td>4</td><td>0</td><td>6</td><td>0</td><td>1</td><td>1</td><td>8</td><td>4</td><td>6</td><td>4</td><td>9</td><td>0</td><td>2</td><td></td><td>D</td><td>0</td></tr>
<tr><td>02H</td><td>30H
(H)</td><td>34H
(L)</td><td>30H
(H)</td><td>36H
(L)</td><td>30H
(H)</td><td>31H
(L)</td><td>31H
(H)</td><td>38H
(L)</td><td>34H
(H)</td><td>36H
(L)</td><td>34H
(H)</td><td>39H
(L)</td><td>30H
(H)</td><td>32H
(L)</td><td>03H</td><td>44H
(H)</td><td>30H
(L)</td></tr>
</table>
Sum check is performed in this range.
</td></tr>
<tr><td>Response message during faulty communication
(GOT → host)</td><td>
<table>
<tr><th>NAK</th></tr>
<tr><td>15H</td></tr>
</table>
</td></tr>
</table>

(6) Set clock data (5) command (w/out station No.), set clock data (F) command (w/station No.)

The following shows an example of setting clock data of GOT at station No.27.
(Assuming that the clock data is to be set to "2004, June 1, 18:46:49 Tuesday".)



Item	Message format
Request message (host → GOT)	(format 14: GOT-F900 series microcomputer connection (format 1))

STX	Command	Station No.		Year data		Month data		Day Data		Hour data		Minute data		Second data		Day-of-week data		CR
	F	2	7	0	4	0	6	0	1	1	8	4	6	4	9	0	2	
02H	46H	32H	37H	30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H	0DH
		(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	

(format 15: GOT-F900 series microcomputer connection (format 2))

STX	Command	Station No.			ETX	Sum Check	
	F	2	7			7	F
02H	46H	32H	37H	Following*1	03H	37H	46H
		(H)	(L)			(H)	(L)

Sum check is performed in this range.

*1

Year data		Month data		Day data		Hour data		Minute data		Second data		Day-of-week data	
0	4	0	6	0	1	1	8	4	6	4	9	0	2
30H	34H	30H	36H	30H	31H	31H	38H	34H	36H	34H	39H	30H	32H
(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)	(H)	(L)

Item	Message format
Response message during normal communication (GOT → host)	ACK: 06H
Response message during faulty communication (GOT → host)	NAK: 15H

Point

When a wrong day of the week has been set by the clock data setting command

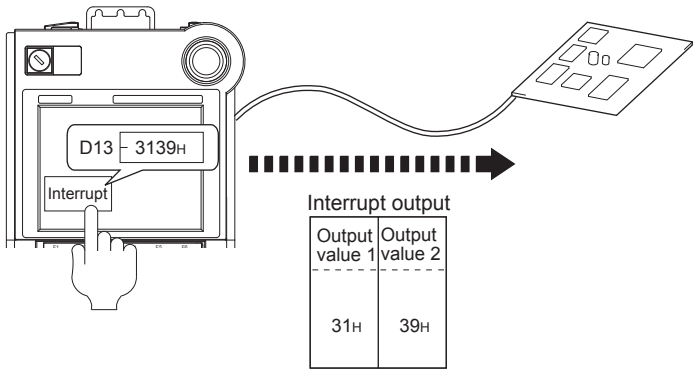
If a wrong day of the week is set by the clock data setting commands, the clock data will differ from the time displayed on the utility.

Example: When June 1, 2004 (Thursday) is set by the clock data setting command(the actual day of week is Tuesday), Tuesday (TUE) will be displayed on the utility time display.

(7) In the case of interrupt outputs

The following shows an example of an interrupt output when data has been written to interrupt output devices D13 and D14.
(Assuming that "3139H" is written to D13 and "AA55H" to D14.)

Example: When the number of interrupt data bytes is 2



Item	Message format
Interrupt output (GOT → host)	(1) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "1 byte" Output value 1: 39H (2) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "2 bytes" Output value 1: 31H, Output value 2: 39H (3) When [Interrupt Data Byte] in "Communication Detail Settings" is set to "4 bytes" Output value 1: AAH, Output value 2: 55H, Output value 3: 31H, Output value 4: 39H

Point

Interrupt output

- To set so that interrupts are not issued, set SM52 (interrupt code output inhibit flag) ON. (☞ Section 41.3 Available Devices)
- To issue interrupts, set the data length to "8 bits" at "Communication Detail Settings". (☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING))
- When "7 bits" is set, the MSB (8th bit) is ignored. (Example: FFH → 7FH)

4 Error code list

When faulty, the error code is stored in SD2.
For details of error code stored in SD2, the error contents, cause and measures, refer to the following:

☞ Section 41.3.1 5 Details and actions for errors (error codes) stored into SD2

When an error other than those to be stored in SD2 occurs, at faulty, only the NAK response is executed.

5 Precautions

(1) Batch reading/writing crossing over different devices

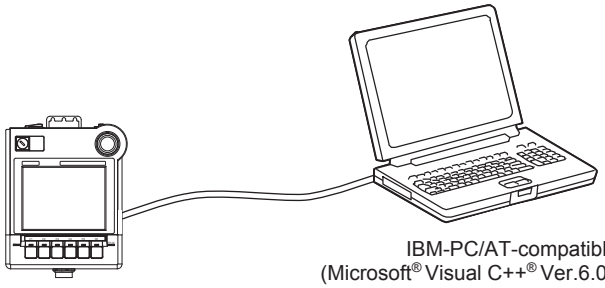
When using the batch read (0, A) or batch write (1, B) command, do not batch read/write crossing over different devices.
This will cause an error response.

41.6 System Configuration Examples

The following shows a system configuration example in the case of the microcomputer connection.

41.6.1 System configuration

The system configuration example illustrated below is explained in this section.



IBM-PC/AT-compatible PC
(Microsoft® Visual C++® Ver.6.0)

41.6.2 Communication settings on GOT side and monitor screen settings

(1) Transmission settings

Set the transmission settings of the GOT.
The transmission settings in the microcomputer connection are made at "Communication Details Settings" on drawing software

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Setting item	Setting
Transmission speed	38400bps
Data length	8 bits
Stop bit	1 bit
Parity	Even
Interrupt Data Byte	1 byte
Host Address (0 to 31)	0
Format	1

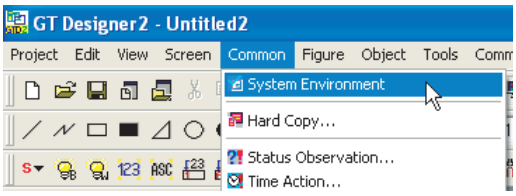
(2) Monitor screen settings

The following shows the monitor screen settings in this system configuration example.

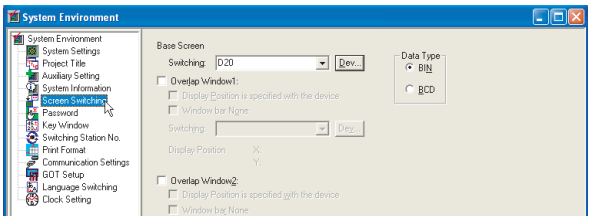
(a) Common settings

Set D20 to the screen switching device (base screen).

• For GT Designer2

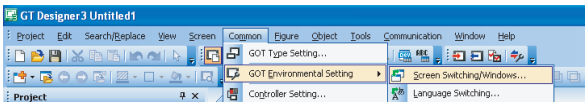


1 Select [Common] → [System Environment] on GT Designer2, and display the [System Environment].

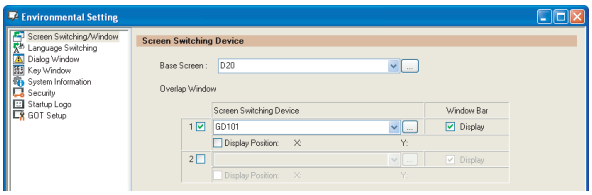


2 Set D20 to the screen switching device (base screen).

• For GT Designer3



1 Select [Common] → [GOT Environmental Setting] → [Screen Switching/Windows...] on GT Designer3, and display the [Environmental Setting].

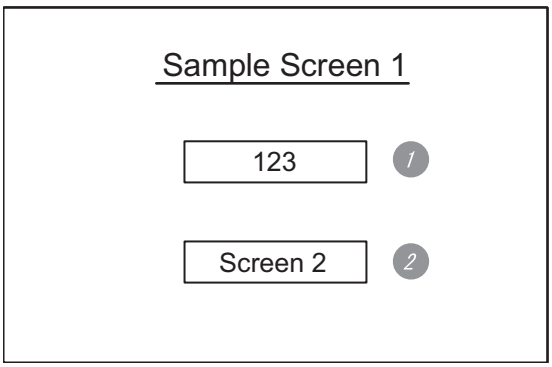


2 Set D20 to the screen switching device (base screen).

(b) Monitor screen image

Create the following screens by drawing software.

Base screen 1



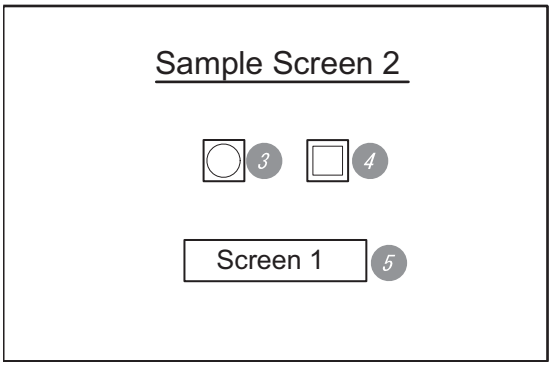
1 Numerical value display function

By setting this with the numerical value display function, the device value of D21 can be monitored. The device value is incremented only while "Sample Screen 1" is displayed.

2 Touch switch 1

This is the screen switching switch to "Sample Screen 2". Touching this changes the base screen to "Sample Screen 2".

Base screen 2



3 Lamp display function

The device status of D22.b0 is displayed as a lamp.

4 Touch switch 2

This is an alternate switch for changing the state of D22.b0.

5 Touch switch 3

This is the screen switching switch to "Sample Screen 1".
Touching this changes the base screen to "Sample Screen 1".

Numerical value display function

No.	Basic setting	Display settings		
	Device	Display format	Display size	Number of display digits
1	D21, unsigned binary, 16 bits	Unsigned 16 bits	Arbitrary	4

Touch switch function

No.	Basic setting	Display setting	Operation setting				
			Action	Switch destination	Device	Data format	Action type
2	Arbitrary	Arbitrary	Base switching	Fixed value 2	—	—	—
			Word	—	D13	Signed binary	Fixed value 01
4	Arbitrary	Arbitrary	Bit	—	D22.b0	—	Bit ALT
5	Arbitrary	Arbitrary	Base switching	Fixed value 1	—	—	—
			Word	—	D13	Signed binary	Fixed value 255

Lamp display function

No.	Basic setting		Display method (bit)	
	Device	Graphic	ON	OFF
3	D22.b0, bit	Basic figure	Arbitrary	Arbitrary

41.6.3 Host side sample program

The sample program (written in C) on the host side is included in drawing software and installed when drawing software is installed.

41.6.4 Outline of system operation

The following describes the processing on the host side, display/processing on the GOT side, and data transfer packets.

Processing	Processing on host side		Packet used for data transfer	Display/Processing on GOT side
Initial processing	Opens the port.		—	—
	Writes "1" to the screen switching device (D20).		Screen 1 batch switching Write packet*1	Displays base screen 1.
	Receives a response from the GOT.		—	—
	Judges whether or not there is an error in the response from the GOT.		—	—
	Writes an initial value to device (D21).		Batch numerical value display Write packet*2	Displays "0" on the numerical value display on base screen 1.
Reception of response/ interrupt from GOT	When receiving a response to writing to device (D21) from the GOT	Issues the current value acquisition request to device (D21).	Batch numerical value display Read packet*3	Increments the numerical value displayed on base screen 1. (The host side repeats the processing on the left as long as base screen 1 is displayed.)
	When receiving a response to reading of device (D21) from the GOT	Creates the next device value (D21).	—	
		Calculates the sum check of the send packet.	—	
		Issues the update request of device (D21).	Batch numerical value display Write packet*2	
	When receiving an interrupt requesting the base screen switching from 1 to 2	Sets the state of the base screen to base screen 2.	Interrupt receive packet*6	Touch touch switch 1 to switch to base screen 2. Notify the host by an interrupt.
	When receiving an interrupt requesting the base screen switching from 2 to 1	Sets the state of the base screen to base screen 1.	Interrupt receive packet*6	Touch touch switch 3 to switch to base screen 1. Notify the host by an interrupt.
End processing (only when receiving an error response)	Close the port.		—	—

*1 Displays the send packet structure of the screen 1 batch switching write packet.

STX	Command		Address				Number of points		Data 1 (D20)				ETX	Sum Check	
	W	D	0	0	2	0	0	1	0	0	0	1		8	2
02H	57H	44H	30H	30H	32H	30H	30H	31H	30H	30H	30H	31H	03H	38H	32H
	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)		(H)	(L)

Sum check is performed in this range.

*2 Displays the send packet structure of the numerical value display batch write packet.

STX	Command		Address				Number of points		Data 1 (D21)				ETX	Sum check
	W	D	0	0	2	1	0	1	(any value)					(Changes according to data section.)
02H	57H	44H	30H	30H	32H	31H	30H	31H					03H	
	(H)	(L)	(H)	–	–	(L)	(H)	(L)	(H)	–	–	(L)		(H) (L)

Sum check is performed in this range.

*3 Displays the send packet structure of the numerical value display batch read packet.

STX	Command		Address				Number of points		ETX	Sum Check	
	R	D	0	0	2	1	0	1		B	D
02H	52H	44H	30H	30H	32H	31H	30H	31H	03H	42H	44H
	(H)	(L)	(H)	–	–	(L)	(H)	(L)		(H)	(L)

Sum check is performed in this range.

*4 Displays the receive packet structure of the batch write response packet.

When normally operated

ACK
06H

When an error occurred

NAK
15H

*5 Displays the receive packet structure of the batch read response packet.

When normally operated

STX	Data				ETX	Sum check
02H	(any data)				03H	(Changes according to data section.)
	(H)	–	–	(L)		(H) (L)

Sum check is performed in this range.

When an error occurred

NAK
15H

*6 Displays the receive packet structure of the interrupt receive packet.

Output value
Interrupt data (value of D13)

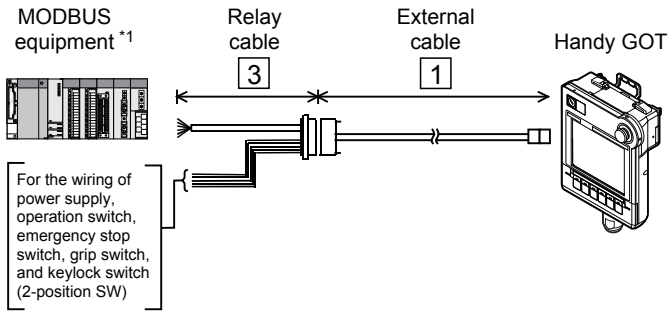
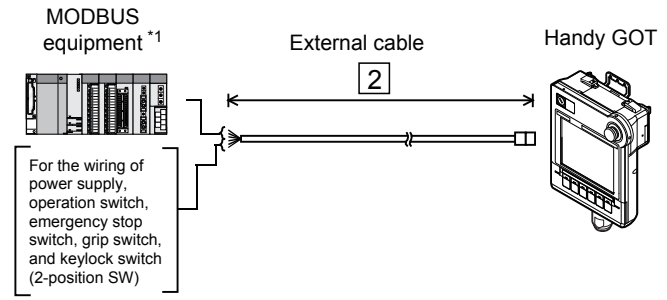
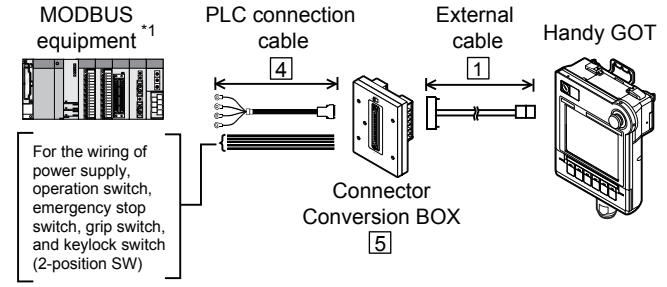
42. CONNECTION TO MODBUS(R)/RTU

42.1 System Configuration and System Equipment

42.1.1 System configuration

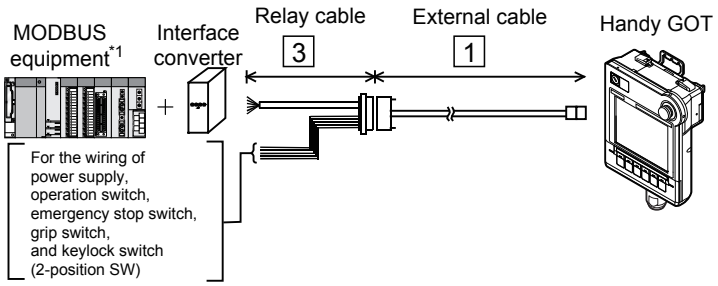
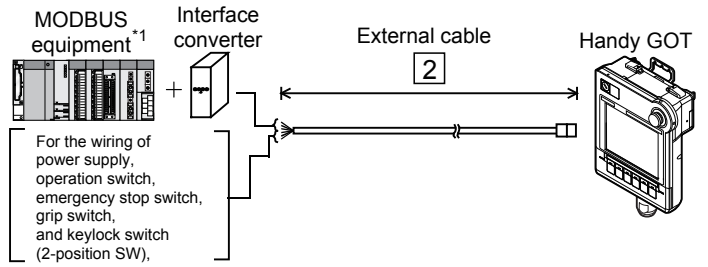
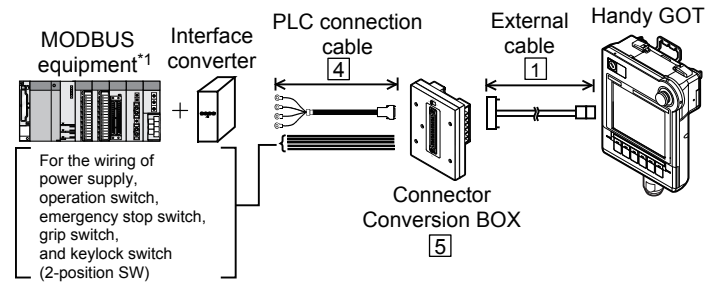
When connecting the Handy GOT to a MODBUS(R)/RTU, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user. Connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.

Refer to the numbers described in System configuration (1, 2...) according to the numbers later described in "42.1.2 System equipment".

Connection conditions		System configuration
Communication	Distance	
RS-232	6m or less*2	
		
		

*1 The MODBUS equipment can be connected to models compatible with MODBUS/RTU slave function.

*2 When the communication specification of the MODBUS equipment is less than 6m, the communication distance specification of the MODBUS equipment prevails.

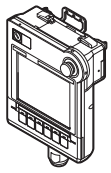
Connection conditions		System configuration
Communication	Distance	
RS-232	6m or less*2	
		
		

*1 The MODBUS equipment can be connected to models compatible with MODBUS/RTU slave function. When the MODBUS equipment supports only RS-422/RS-485 communications, or when multiple MODBUS equipments are connected, use an interface converter compatible with the MODBUS equipment for connecting.

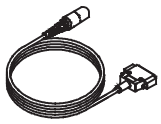
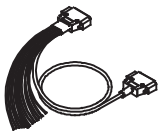
*2 When the communication specification of the MODBUS equipment (interface converter) is less than 6m, the communication distance specification of the MODBUS equipment prevails.

42.1.2 System equipment

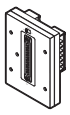
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C □□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub37 pins
		2	GT11H-C □□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. Section 42.1.3 Connection cable	
PLC connection cable		4		

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Number of GOTs	Number of MODBUS	Communication	Communication unit
1	1	RS-232	—
1	31*1	RS-232	Interface converter

*1 When the communication specification of the MODBUS equipment is less than 31 modules, the maximum number of modules of the MODBUS equipment must be considered.

42.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Connection type	Connection cable
Between GOT and MODBUS equipment, between GOT and interface converter	RS-232 cable 1)
Between interface converter and MODBUS equipment	--*1

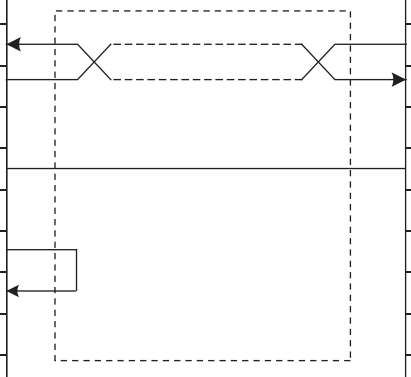
*1 Connect according to the MODBUS equipment specifications.

2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the MODBUS equipment or the communication controller.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

Signal name	GOTside (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection and signal direction	MODBUS equipment side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		—
RD(RXD)	4	W/R (A)	2		TXD
SD(TXD)	2	W/BK (A)	3		RXD
ER(DTR)	3	GY/R (A)	4		—
SG	10	GY/BK (A)	5		SG
DR(DSR)	5	O/R (A)	6		—
RS(RTS)	6	O/BK (A)	7		—
CS(CTS)	7	Y/R (A)	8		—
—	8	Y/BK (A)	—		—
—	9	PK/R (A)	—		—

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

42.1.4 Precautions when preparing cable

1 Cable length

The length of the RS-232 cable must be 6m or less.

42.2 MODBUS Equipment Setting

Point

MODBUS equipment

For details of the MODBUS equipment, refer to the manual of MODBUS/RTU equipment to be used.

42.2.1 Communication settings

1 Function Code

The GOT supports the following function codes.

Function code	Function	Number of device that is accessible with one message [Unit: point(s)]
0x01	Read Coils	1 to 2000
0x02	Read Discrete Inputs	1 to 2000
0x03	Read Holding Registers	1 to 125
0x04	Read Input Registers	1 to 125
0x05	Write Single Coil	1
0x06	Write Single Register	1
0x0F	Write Multiple Coils	1 to 1968
0x10	Write Multiple Register	1 to 123
0x14	Read File Record	1 to 124
0x15	Write File Record	1 to 122

2 Address

Drawing software converts the device numbers into decimal format according to the address map of the MODBUS equipment to be used.

The table below shows the representations on the MODBUS/RTU communication protocol and drawing software.

MODBUS/RTUCommunication protocol				Representation on drawing software
Device name	Function code to be used		Address	
	Read	Write		
Coil	0x01	0x05 0x0F	0000 0001 to FFFE FFFF	000001 000002 to 065535 065536
Input relay	0x02	-	0000 0001 to FFFE FFFF	100001 100002 to 165535 165536
Input register	0x04	-	0000 0001 to FFFE FFFF	300001 300002 to 365535 365536
Holding register	0x03	0x06 0x10	0000 0001 to FFFE FFFF	400001 400002 to 465535 465536
Extension file register	0x14	0x15	0000 0001 to 270E 270F	600000 600001 to 609998 609999

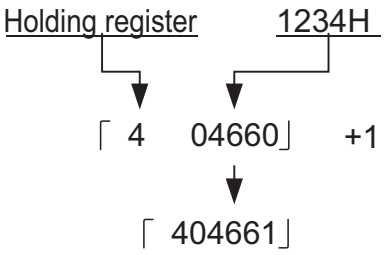
Point

Address conversion example

When monitoring the holding register's address "1234H," drawing software displays "4*****" since drawing software processes the internal conversion in decimal format as follows:

Drawing software converts the holding register's address "1234H" to "04660" in decimal format. Then, "+1" is added to this decimal address since the holding register's address on drawing software always starts from "1."

Therefore, the holding register's address "1234H" is displayed as "404661" on drawing software.



3 MODBUS communication control function on the GS device

This function is to prevent the communication response delay that occurs because the devices on the MODBUS network differs from each other in network specification.

This function is effective for the MODBUS network conditions as described below:

- When only a part of function codes is supported (Example: "0F" is not supported)
- When the maximum transfer size of function code is small (Example: The maximum number of coil read times is 1000)

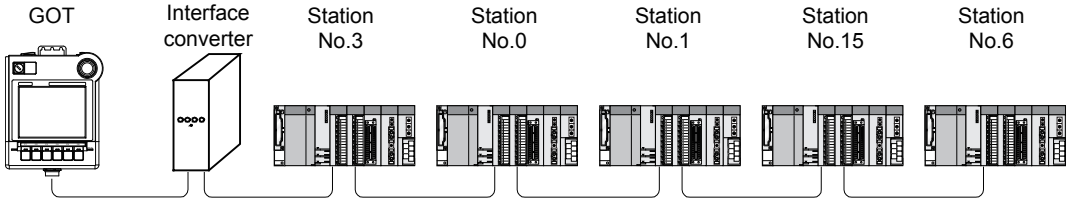
(1) GS device set value

The table below shows the settings for the GS device.

GS device	Description	Set value
GS570	Command selection	Bit0 : 0: Using Function Code "0F" 1: Not using Function Code "0F" Bit1 : 0: Using Function Code "10" 1: Not using Function Code "10"
GS571	Function Code "01" Specification for the max. number of coil read times	0 : 2000 1 to 2000 : Specify the maximum number. Other than above : 2000
GS572	Function Code "02" Specification for the max. number of input relay read times	0 : 2000 1 to 2000 : Specify the maximum number. Other than above : 2000
GS573	Function Code "03" Specification for the max. number of holding register read times	0 : 125 1 to 125 : Specify the maximum number. Other than above : 125
GS574	Function Code "04" Specification for the max. number of input register read times	0 : 125 1 to 125 : Specify the maximum number. Other than above : 125
GS575	Function Code "0F" Specification for the max. number of multiple-coil write times	0 : 800 1 to 1968 : Specify the maximum number. Other than above : 1968 When Bit0 of GS570 is "1", the function code "0F" is not used, and therefore the setting of GS575 will be disabled.
GS576	Function Code "10" Specification for the max. number of multiple-holding register write times	0 : 100 1 to 123 : Specify the maximum number. Other than above: 123 When Bit1 of GS570 is "1", the function code "10" is not used, and therefore the setting of GS576 will be disabled.

42.2.2 Station number setting

In the MODBUS network, a maximum of 31 MODBUS equipment can be connected to one GOT.
Assign a non-overlapped station number ranging from 1 to 247 arbitrarily to each MODBUS equipment.
In the system configuration, the MODBUS equipment with the station number set with the host address must be included.
The station number can be set without regard to the cable connection order. There is no problem even if station numbers are not consecutive.



Examples of station number setting

1 Direct specification

When setting the device, specify the station number of the MODBUS®/RTU equipment of which data is to be changed.

Specification range
1 to 247

2 Indirect specification

When setting the device, indirectly specify the station number of the MODBUS®/RTU equipment of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD16).
When specifying the station No. from 248 to 254 on GT Designer3, the value of GD10 to GD16 compatible to the station No. specification will be the station No. of the MODBUS®/RTU equipment.

Specification station NO.	Compatible device	Setting range
248	GD10	0 to 255: 0: All station specification (broadcast) 255: Host station access For the setting other than the above, an error (dedicated device is out of range) willoccur.
249	GD11	
250	GD12	
251	GD13	
252	GD14	
253	GD15	
254	GD16	

3 All station specification (broadcast)

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
- For read-out operation, only the host station will be a target.

42.3 Precautions

42.3.1 Precautions

1 Station No. settings of the MODBUS equipment side

In the system configuration, the MODBUS equipment with the station number set with the host address must be included.For details of host address setting, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

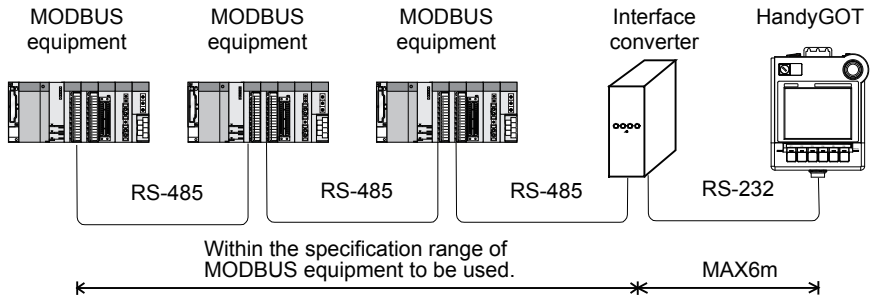
2 GOT clock control function

The settings of "time adjusting" or "time broadcast" made on the GOT will be disabled on the PLC.

3 Connection distance

The connection distance must be 6m or less.

When connecting multiple MODBUS equipments with an interface converter, the distance between the GOT and the interface converter must be 6m or less. The distance between systems after the interface converter must be within the specification range of MODBUS equipment.



4 Disconnecting a part of multiple connected equipments

The GOT can disconnect some of multiple connected equipments by setting GOT internal device. For example, the faulty station where a communication timeout error occurs can be disconnected from connected equipments.

For details of GOT internal device setting, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual

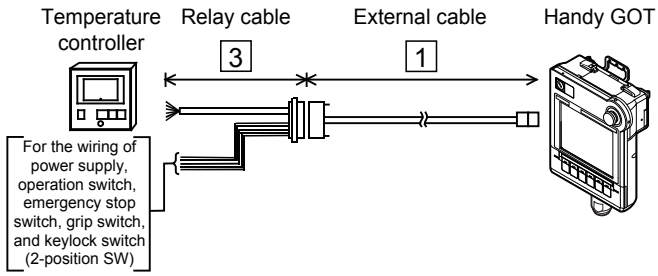
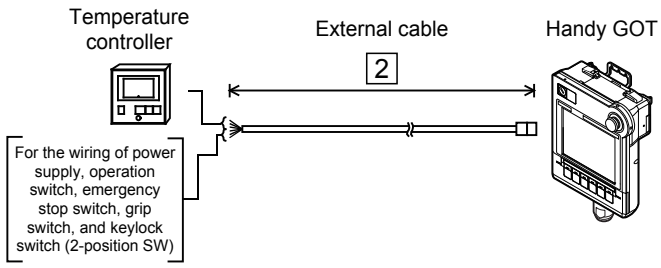
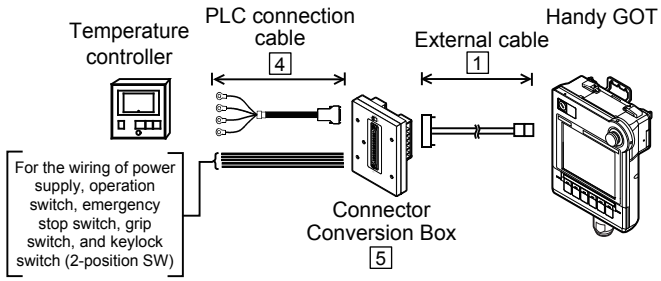
43. CONNECTION TO OMRON TEMPERATURE CONTROLLER

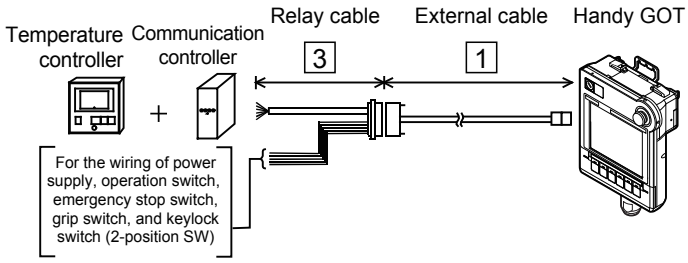
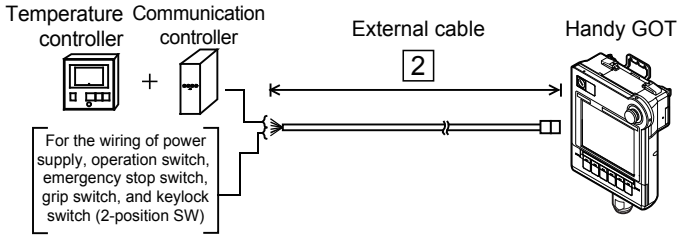
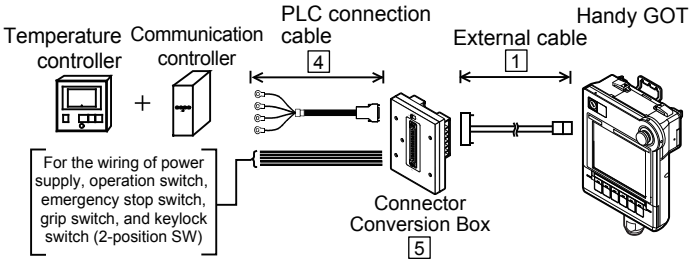
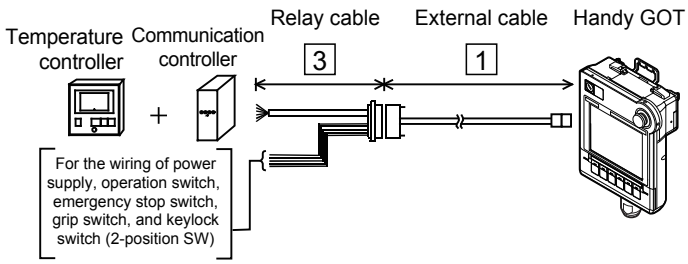
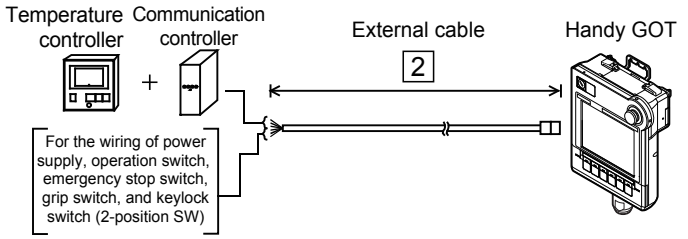
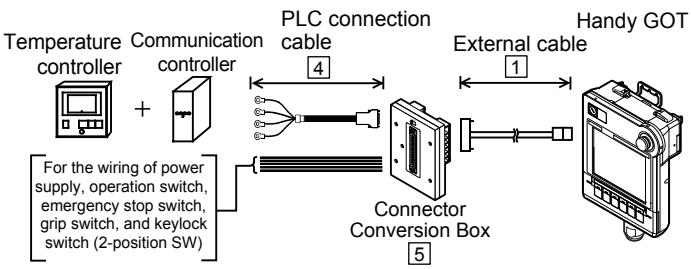
43.1 System Configuration and System Equipment

43.1.1 System configuration

When connecting the Handy GOT to a temperature controller, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user. Connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.

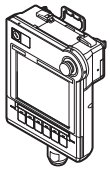
Refer to the numbers described in System configuration (1, 2...) according to the numbers later described in "43.1.2 System equipment".

Connection conditions			System configuration
Temperature controller	Communication	Distance	
E5AN, E5EN	RS-232	6m or less	
			
			

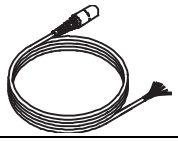
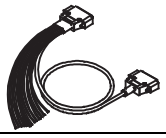
Connection conditions			System configuration
Temperature controller	Communication	Distance	
E5AN, E5EN	RS-232	6m or less	
			
			
E5CN, E5GN, E5ZN			
			
			

43.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C □□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub37 pins
		2	GT11H-C □□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 43.1.3 Connection cable	
PLC connection cable		4		

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Temperature controller	Number of GOTs	Number of temperature controllers	Communication	Communication unit	
				Name	Model name
E5AN, E5EN	1	1	RS-232	—	—
	1	32	RS-232	Communication controller	K3SC-10
E5CN, E5GN	1	32	RS-232	Communication controller	K3SC-10
E5ZN	1	16	RS-232	Communication controller	K3SC-10

43.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

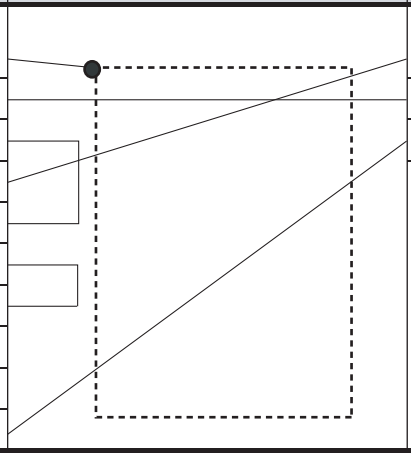
Model name		Connection cable
Temperature controller	E5AN	RS-232 cable 1), RS-232 cable 2)
	E5EN	RS-232 cable 1), RS-232 cable 2)
	E5CN	RS-232 cable 2)
	E5GN	RS-232 cable 2)
	E5ZN	RS-232 cable 2)
Communication controller	K3SC-10	RS-232 cable 2)

2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the temperature controller or the communication controller.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

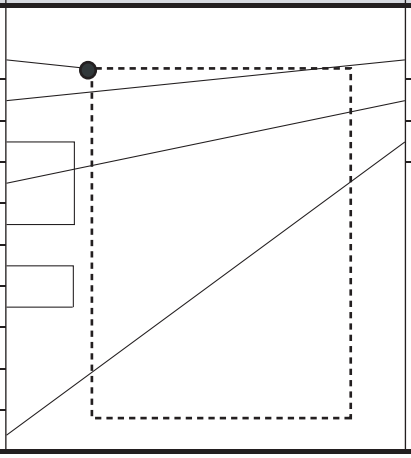
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	OMRON product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		11	SD
SD(TXD)	2	W/R (A)	3		12	RD
ER(DTR)	3	W/BK (A)	4		13	SG
RD(RXD)	4	GY/R (A)	2			
DR(DSR)	5	GY/BK (A)	6			
RS(RTS)	6	O/R (A)	7			
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	OMRON product side communication controller (K3SC-10)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		5	SD
SD(TXD)	2	W/R (A)	3		6	RD
ER(DTR)	3	W/BK (A)	4		3	SG
RD(RXD)	4	GY/R (A)	2			
DR(DSR)	5	GY/BK (A)	6			
RS(RTS)	6	O/R (A)	7			
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

43.1.4 Precautions when preparing cable

1 Cable length

The length of the RS-232 cable must be 6m or less.

43.2 Temperature Controller Side Setting

43.2.1 Communication settings

Point

(1) Delay time

When connecting to the temperature controller E5ZN, set the delay time to 5ms or more.

(2) Format setting

The compatible format of temperature controller differs depending on models.

Model	Compatible format
E5AN, E5CN, E5EN, E5GN	Format 1 only
E5ZN	Format 1 or Format 2

For the continuous access and random access of the temperature controller, refer to the following manual.

☞ User's Manual for the OMRON temperature controller

(3) OMRON temperature controller

For details of OMRON temperature controller, refer to the following manual.

☞ User's Manual for the OMRON temperature controller

1 Connecting E5AN, E5EN, E5CN, E5GN

Set the communication data by operating the key of the temperature controller.

Setting items	Set value
Transmission speed*1	9600bps, 19200bps
Data length*1	8 bits, 7 bits
Parity bit*1	Even, odd or none
Stop bit*1	1 bit, 2 bits
Communication unit NO.*2	0 to 99
CMWT(Communications writing)*3	ON

*1 Make the same setting as that of the GOT side.

*2 Select the communication unit No. without overlapping with that of other units.

*3 When changing the device values of the temperature controller from the GOT, turn ON CMWT (Communications writing) in advance.

2 Connecting E5ZN

Set the communication data by operating the key of the temperature controller.

Setting items	Set value
Transmission speed*1	9600bps, 38400bps
Data length*1	8 bits, 7 bits
Parity bit*1	Even, odd, none
Stop bit*1	1 bit, 2 bits
Communication unit NO.*2	0 to 15
CMWT (Communications writing)*3	ON

*1 Make the same setting as that of the GOT side.

*2 Select the communication unit No. without overlapping with that of other unit.

*3 When changing the device values of the temperature controller from the GOT, turn ON CMWT (Communications writing) in advance.

3 Connecting to interface converter (K3SC-10)

(1) Communication settings

Make the communication settings by operating the DIP switch of the temperature controller.

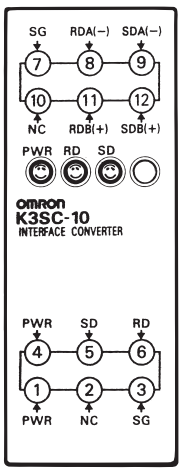
Item	Set value
Transmission speed*1	19200bps, 38400bps
Data length*1	7 bits, 8 bits
Parity bit*1	Odd, even, none
Stop bit*1	1 bit, 2 bits
Master/slave device*2	RS-232C ↔ RS-422/485, USB↔ RS-232C
Echoback*3	With, Without

*1 Make the same setting as that of GOT side.

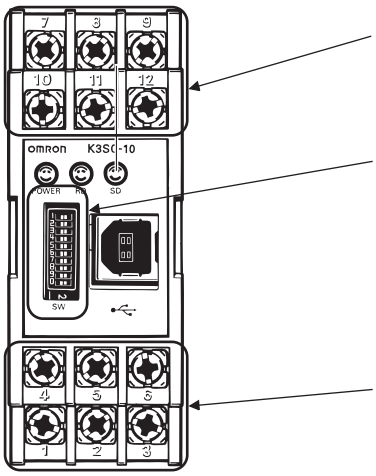
*2 Set to "RS-232C↔RS-422/485".

*3 Set to "Without".

(2) Settings by DIP switch



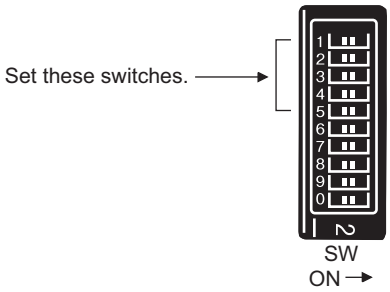
Front of K3SC-10 body



Inside of K3SC-10 body
(When removing the front cover)

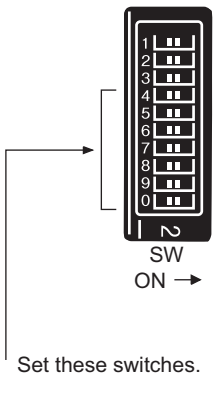
(a) Transmission speed settings

Transmission speed(bps)	Switch No.		
	1	2	3
1200	ON	OFF	OFF
2400	OFF	ON	OFF
4800	ON	ON	OFF
9600	OFF	OFF	OFF
19200	ON	OFF	ON
38400	OFF	ON	ON



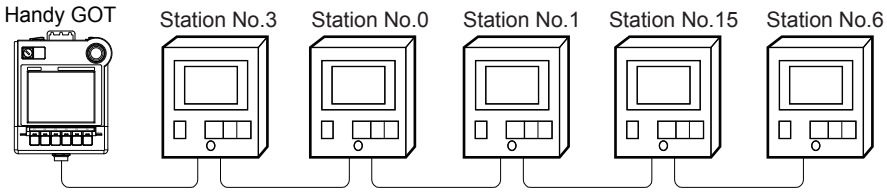
(b) Settings of data length, parity bit, stop bit, master/slave device and echoback

Setting item	Set value	Switch No.						
		4	5	6	7	8	9	0
Data length	7bits	OFF						
	8bits	ON						
Stop bit	2bits		OFF					
	1bits		ON					
Parity	Even			OFF	OFF			
	Odd			ON	OFF			
	None			OFF	ON			
Master/slave device	RS232 ↔ RS422					OFF	ON	
	RS-232 ↔ RS485					OFF	OFF	
Echoback	Without							OFF
	With							ON



43.2.2 Station No. settings

Set each station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the temperature controller of which data is to be changed.

Model	Specification range
E5AN, E5EN, E5CN, E5GN	0 to 99
E5ZN	0 to 15

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 115 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station No.	Compatible device	Setting range
100	GD10	0 to 99: For E5AN, E5EN, E5CN or E5GN 0 to 15: For E5ZN For the setting other than the above, communication timeout error will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
- For read-out operation, only one station will be a target.

43.3 Precautions

43.3.1 Precautions

1 Station number setting of the temperature controller system

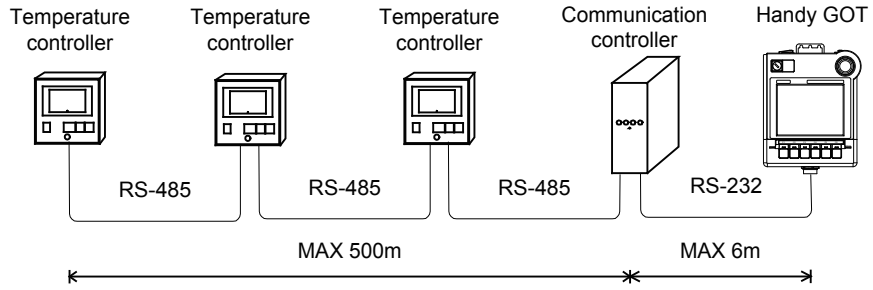
Make sure to establish temperature controller system with No.1 station.

2 GOT clock function

Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

3 Connection distance

The connection distance must be 6m or less.
When using multiple temperature controllers with the communication controller (K3SC-10), the connection distance between the GOT and the communication controller must be 6m or less and between the systems after the controller must be 500m or less.



4 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller. For example, faulty station that has communication timeout can be cut from the system. For details of the setting contents of GOT internal device, refer to the following manual.

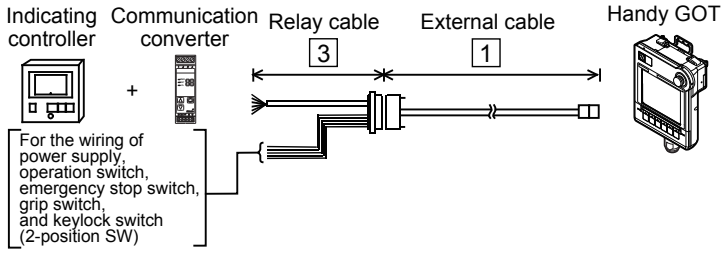
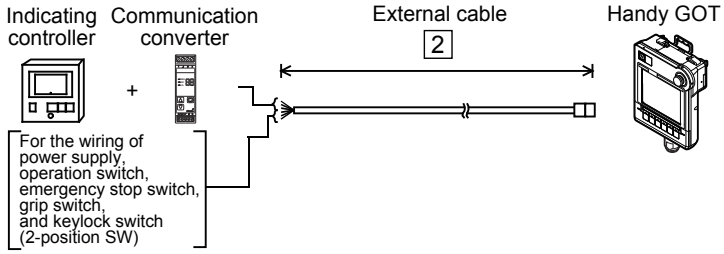
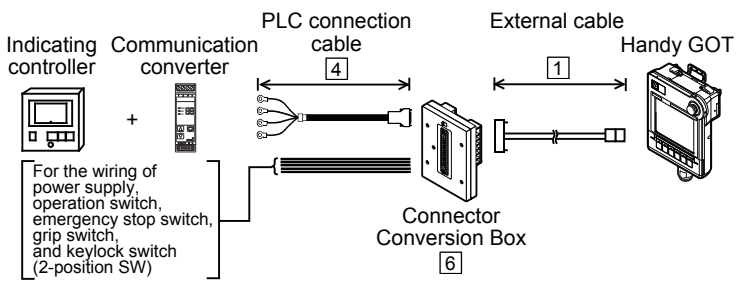
☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

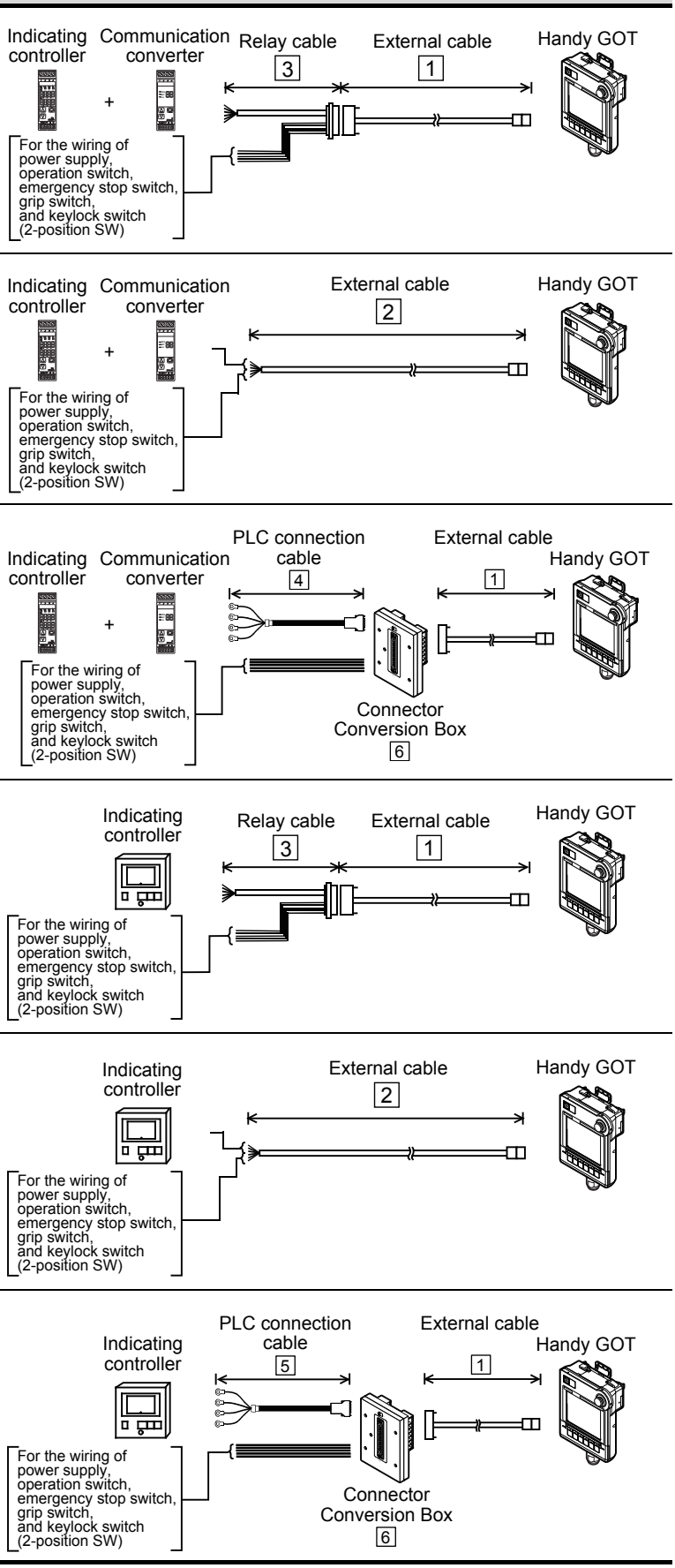
44. CONNECTION TO SHINKO TECHNOS INDICATING CONTROLLER

44.1 System Configuration and System Equipment

44.1.1 System configuration

When connecting the Handy GOT to an indicating controller, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user. Connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.Refer to the numbers described in System configuration (1, 2...) according to the numbers later described in "44.1.2 System equipment".

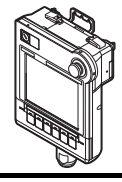
Connection conditions			System configuration
Temperature controller	Communication	Distance	
ACS-13A, JC, JCM-33A, JIR-301-M, PCD-300, PC-900 (PC-955-□/M,C5, PC-935-□/M,C5) Series	RS-232	6m or less	
			
			

Connection conditions			System configuration
Temperature controller	Communication	Distance	
DCL-33A	RS-232	6m or less	
FCR-100, FCD-100, FCR-23A PC-900 (PC-955-□/M,C, PC-935-□/M,C), FIR Series*			

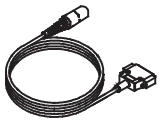
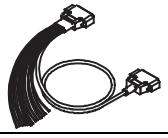
* Only the indicating controller equipped with RS-232 communication function can be connected.

44.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C □□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub37 pins
		2	GT11H-C □□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 44.1.3 Connection cable	
PLC connection cable		4	RS-232C CFP-C2	—
		5	Select appropriate cables for the communication method. ☞ Section 44.1.3 Connection cable	

4 is manufactured by Shinko Technos Co., Ltd. For details of the product, contact Shinko Technos Co., Ltd.

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

indicating controller	Number of GOTs	Number of indicating controllers	Communication	Communication unit	
				Name	Model name
ACS-13A[*1], JC[*1], JCM-33A[*1], JIR-301-M[*1], PCD-300[*1], PC-900[*1] (PC-955-□/M,C5, PC-935-□/M,C5) Series	1	31	RS-232	Communication converter	IF-400
DCL-33A[*1]	1	31	RS-232	Communication converter	IF-400
FCR-100[*2], FCD-100[*2], FCR-23A[*2], PC-900[*2] (PC-955-□/M,C, PC-935-□/M,C), FIR[*2] Series	1	1	RS-232	—	—

*1 The indicating controller of the following version or later can be connected.

Series	Model name	Version
ACS-13A Series	ACS-13A□/□. □, C5	Products manufactured in October 2007 or later (Indicating controllers with the serial numbers 07Axxxxxx, 07Kxxxxxx, and 07Xxxxxxx or later) (The first two digits of the serial numbers show the last two digits of the year.)
JC Series	JCS-33A-□/□ □, C5	
	JCR-33A-□/□ □, C5	
	JCD-33A-□/□ □, C5	
JCM-33A Series	JCM-33A□/□, □C5	
JIR-301-M Series	JIR-301-M□, C5	
PCD-300 Series	PCD-33A-□/M, C5	
PC-900 Series	PC935-□/M, C5	
	PC955-□/M, C5	
DCL-33A Series	DCL-33A-□/M, □, C5	

*2 Only the indicating controller equipped with RS-232 communication function can be connected.

44.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Model name		PLC connection cable*1	
		RS-232 cable	RS-485 cable
indicating controller	FCR-100, FCD-100, FCR-23A, PC-900 (PC-955-□/M,C, PC-935-□/M,C), FIR Series	GT09-C30R21401-4T	—
	ACS-13A, JC, JCM-33A, JIR-301-M, PCD-300, PC-900 (PC-955-□/M,C5, PC-935-□/M,C5) Series	—	Must be prepared by the user.
	DCL-33A	—	—
Communication converter	IF-400	Must be prepared by the user.	—

*1 The PLC connection cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Model name		Connection cable	
		RS-232 cable	RS-485 cable
indicating controller	FCR-100, FCD-100, FCR-23A, PC-900 (PC-955-□/M,C, PC-935-□/M,C), FIR Series	RS-232 cable 1)	—
	ACS-13A, JC, JCM-33A, JIR-301-M, PCD-300, PC-900 (PC-955-□/M,C5, PC-935-□/M,C5) Series	—	RS-485 cable 1)
	DCL-33A	—	—
Communication converter	IF-400	RS-232 cable 2)	—

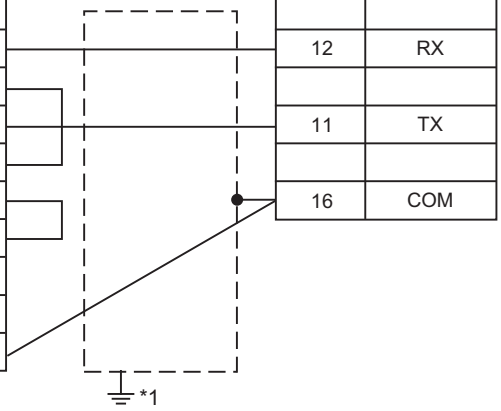
3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the indicating controller or the communication converter.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	SHINKO TECHNOS product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—		
SD(TXD)	2	W/R (A)	3	12	RX
ER(DTR)	3	W/BK (A)	4		
RD(RXD)	4	GY/R (A)	2	11	TX
DR(DSR)	5	GY/BK (A)	6		
RS(RTS)	6	O/R (A)	7	16	COM
CS(CTS)	7	O/BK (A)	8		
—	8	Y/R (A)	—		
—	9	Y/BK (A)	—		
SG	10	PK/R (A)	5		



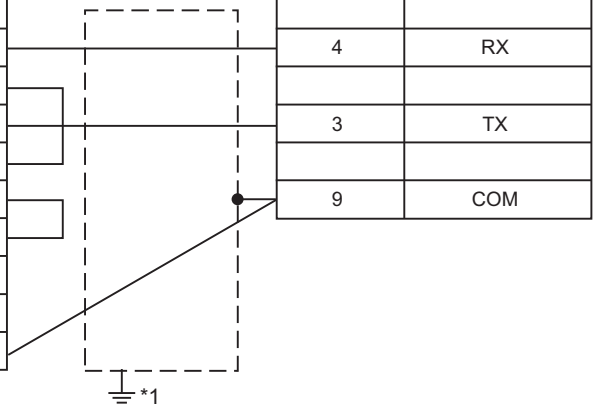
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	SHINKO TECHNOS product side Communication converter (IF-400)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—		
SD(TXD)	2	W/R (A)	3	4	RX
ER(DTR)	3	W/BK (A)	4		
RD(RXD)	4	GY/R (A)	2	3	TX
DR(DSR)	5	GY/BK (A)	6		
RS(RTS)	6	O/R (A)	7	9	COM
CS(CTS)	7	O/BK (A)	8		
—	8	Y/R (A)	—		
—	9	Y/BK (A)	—		
SG	10	PK/R (A)	5		



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

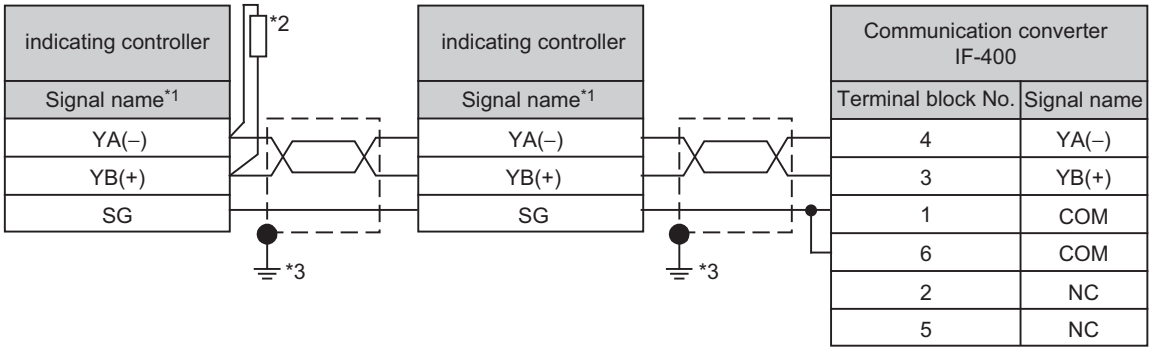
Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

4 Connection diagram of RS-485 cable

The following shows the connection diagrams and connector specifications of the RS-485 cable used for connecting the communication converter to an indicating controller.

(1) RS-485 cable 1)



*1 Pin No. of communication converter differs depending on the model.
Refer to the following table.

Signal name	Model of indicating controller					
	JCS-13A	JCR-33A	JCD-33A	JCM-33A	JIR-301-M	ACS-13A
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
YA (–)	13	11	11	10	11	16
YB (+)	14	14	14	13	14	17
SG	15	17	17	14	17	18

*2 For details of the terminating resistor specifications, refer to the following manual.
☞ User's Manual for the Shinko Technos indicating controller

*3 Connect FG grounding to the appropriate part of a cable shield line.

44.1.4 Precautions when preparing cable

1 Cable length

The length of the RS-232 cable must be 6m or less.

44.2 Indicating Controller Side Setting

44.2.1 Communication settings

Point

(1) Shinko Technos indicating controller
For details of Shinko Technos indicating controller, refer to the following manual.
☞ User's Manual for the Shinko Technos indicating controller

(2) Communication converter
For details on communication settings of the communication converter, refer to the following manual.
☞ User's Manual for communication converter

44.2.2 Connecting to ACS-13A, DCL-33A, JC, JCM-33A, JIR-301-M, PCD-300, PC-900 (PC-955-[ ]/M,C5, PC-935-[ ]/M,C5) Series

1 Communication settings

Make the communication settings by operating the key of the indicating controller.

Setting items	Set value
Transmission speed*1	9600bps, 19200bps
Data length	7 bits (fixed)
Parity bit	Even (fixed)
Stop bit	1 bit (fixed)
Station No.*2 *3	0 to 95
Communication protocol	Shinko protocol

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.
*3 When setting the "95" to the station No., the read-out of data cannot be performed.

44.2.3 Connecting to FCD-100, FCR-100, FCR-23A, FIR, PC-900 (PC-955-[ ]/M,C, PC-935-[ ]/M,C) Series

1 Communication settings

Make the communication settings by operating the key of the indicating controller.

Setting items	Set value
Transmission speed*1	9600bps, 19200bps
Data length	7 bits (fixed)
Parity bit	Even (fixed)
Stop bit	1 bit (fixed)
Station No.*2 *3	0 to 95
Communication protocol	Shinko protocol

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.
*3 When setting the "95" to the station No., the read-out of data cannot be performed.

44.2.4 Connecting to communication converter (IF-400)

1 Communication settings

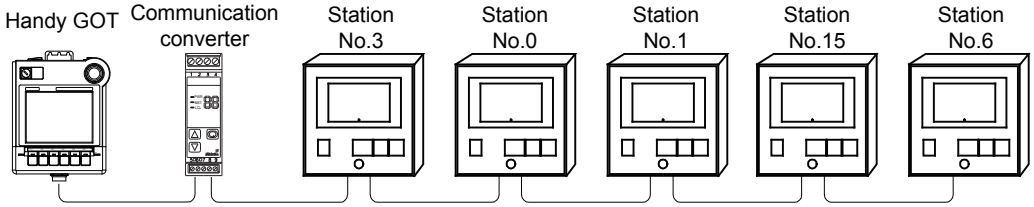
Make the communication settings by operating switches

Setting items	Set value
Transmission speed*1	9600bps, 19200bps
Sending/Receiving switching period*2	1 character, 2 character

*1 Adjust the settings with GOT and the indicating controller settings.
*2 The setting of 1 character is recommended.

44.2.5 Station No. settings

Set each station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the temperature controller of which data is to be changed.

Specification range
0 to 94

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 115 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station No.	Compatible device	Setting range
100	GD10	0 to 94 For the setting other than the above, error (dedicated device is out of range) will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
  However, when carrying out WORD BIT write-in operation, only the indicating controller of which the station No. is same as the host address will be a target.
- For read-out operation, only the indicating controller of which the station No. is same as the host address will be a target.

44.3 Precautions

44.3.1 Precautions

1 Station number settings of indicating controller

In the system configuration, the temperature controller with the station number set with the host address must be included. For details of host address setting, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

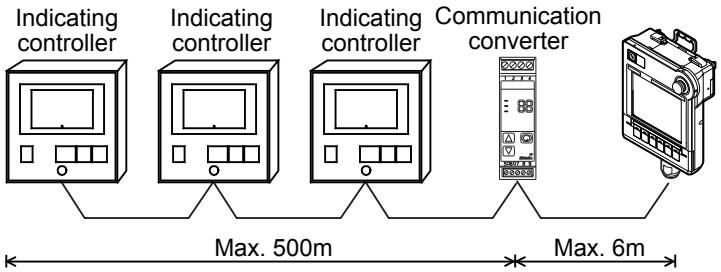
2 GOT clock function

Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

3 Connection distance

The connection distance must be 6m or less

When using the communication converter (IF-400), the connection distance between the GOT and the converter must be 6m or less and between the communication systems after the converter must be 500m or less.



4 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller. For example, faulty station that has communication timeout can be cut from the system.

For details of the setting contents of GOT internal device, refer to the following manual.

☞ GT Designer2 Version☐ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

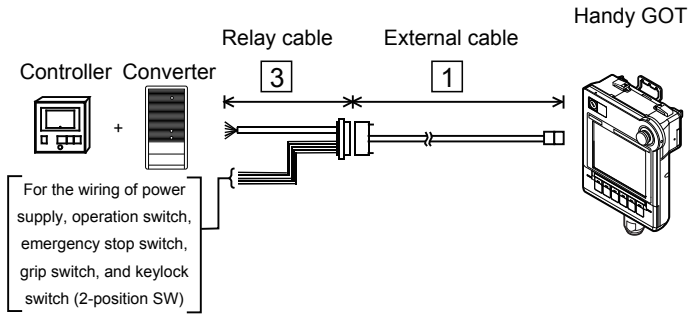
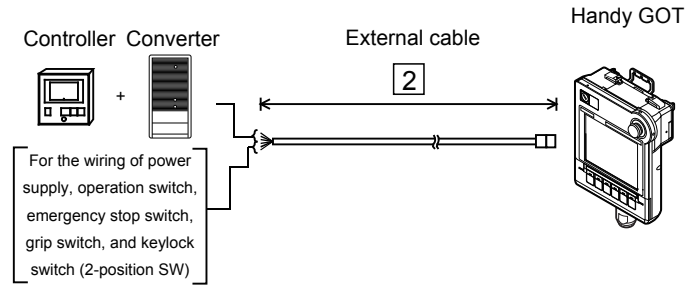
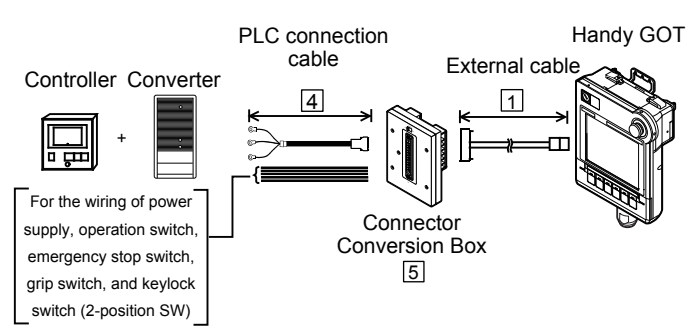
45. CONNECTION TO CHINO CONTROLLER

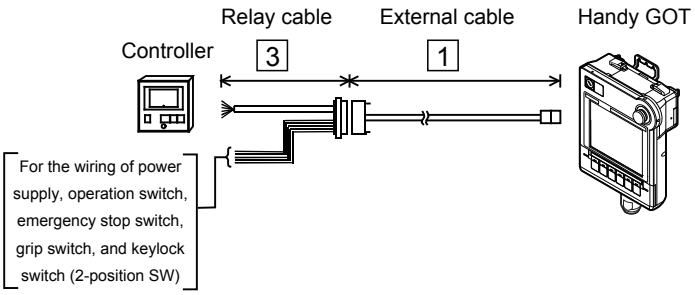
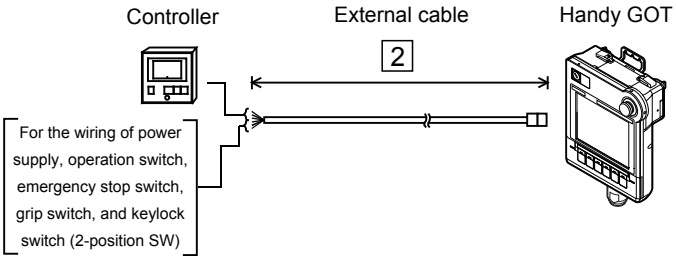
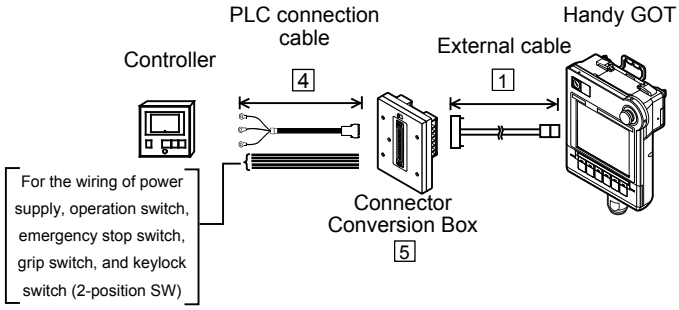
45.1 System Configuration and System Equipment

45.1.1 System configuration

When connecting the Handy GOT to a controller, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

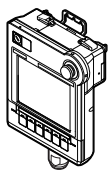
Refer to the numbers described in System configuration (1, 2 ...) according to the numbers later described in "45.1.2 System equipment".

Connection conditions			System configuration
controller	Communication	Distance	
LT230, LT300, LT400, LT830, DZ1000, DZ2000, DB1000, DB2000, GT120, KP1000, KP2000, AL3000, AH3000, KE3000, SE3000, LE5100, LE5200, LE5300, JU	RS-232	6m or less	
			
			

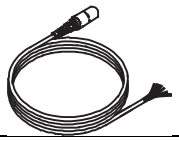
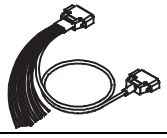
Connection conditions			System configuration
controller	Communication	Distance	
LT300, LT400 DZ1000, DZ2000 DB1000, DB2000, KP1000, KP2000, AL3000, AH3000, KE3000, SE3000, LE5100, LE5200, LE5300, JU	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	  

45.1.2 System equipment

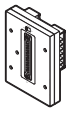
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 45.1.3 Connection cable	
PLC connection cable		4		

3 Option

Image	No.	Name	Model name	Remark
	5	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

controller	Number of GOTs	Number of temperature controllers	Communication	Communication unit	
				Name	Model name
LT230, LT300, LT400, LT830,DZ1000, DZ2000, DB1000, DB2000, GT120, KP1000, KP2000, AL3000, AH3000, KE3000, SE3000, LE5100, LE5200, LE5300, JU	1	31	RS-232	Line converter	SC8-10
LT300, LT400, DZ1000, DZ2000, DB1000, DB2000, KP1000, KP2000, AL3000, AH3000, SE3000	1	1	RS-232	—	—
LT300, LT400, DZ1000, DZ2000, DB1000, DB2000, KP1000, KP2000, AL3000, AH3000, KE3000, SE3000, LE5100, LE5200, LE5300, JU	1	10	RS-422	—	—

45.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Model name		Communication unit	Connection cable		
			RS-232 cable	RS-422 cable	RS-485 cable
controller	LT300, LT400 DZ1000*1, DZ2000*1 DB1000, DB2000 KP1000, KP2000 AL3000, AH3000	GOT ↔ controller	RS-232 cable	RS-422 cable 1)	—
		GOT ↔ converter	RS-232 cable	—	—
		converter ↔ controller	—	RS-422 cable 2)	RS-485 cable 1)
	SE3000	GOT ↔ controller	RS-232 cable	RS-422 cable 1)	—
		GOT ↔ converter	RS-232 cable	—	—
		converter ↔ controller	—	RS-422 cable 2)	RS-485 cable 2)
	KE3000, LE5100 LE5200, LE5300, JU	GOT ↔ controller	—	RS-422 cable 1)	—
		GOT ↔ converter	RS-232 cable	—	—
		converter ↔ controller	—	RS-422 cable 2)	RS-485 cable 2)
	LT230, LT830	GOT ↔ converter	RS-232 cable	—	—
		converter ↔ controller	—	—	RS-485 cable 1)
	GT120	GOT ↔ converter	RS-232 cable	—	—
		converter ↔ controller	—	—	GT8-CDM *2
		controller ↔ controller	—	—	GT8-CDD *2

*1 For DZ1000, DZ2000 series, select the model name that support MODBUS communication function.
For details of the models, refer to the following manual.

☞ User's Manual for the CHINO controller

*2 GT8-CDM, GT8-CDD is manufactured by CHINO corporation. For details of the connection cable, contact CHINO corporation.

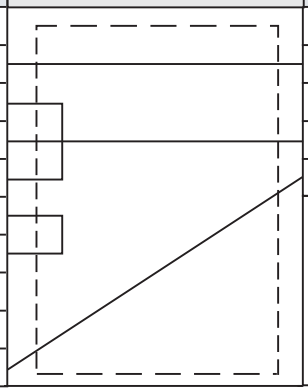
2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the controller or the communication controller.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	CHINO corporation product side controller, converter
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name*1
FG(Shield)	1	Shield	—		—
SD(TXD)	2	W/R (A)	3		RD
ER(DTR)	3	W/BK (A)	4		—
RD(RXD)	4	GY/R (A)	2		SD
DR(DSR)	5	GY/BK (A)	6		SG
RS(RTS)	6	O/R (A)	7		
CS(CTS)	7	O/BK (A)	8		
—	8	Y/R (A)	—		
—	9	Y/BK (A)	—		
SG	10	PK/R (A)	5		

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Pin No. of controller differs depending on the model. Refer to the following table.

signal name	Model of controller								Model of converter
	LT300	LT400	DZ1000,DZ2000	DB1000	DB2000	KP1000	KP2000*2		SC8-10
							R, B, C, D	B, E	
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
SD	11	11	19	13	27	13	27	30	2
RD	13	13	21	12	26	12	26	29	1
SG	15	15	23	14	28	14	28	31	3

*2 This indicates the symbols of the position 10) (third zone) of the following models.
Model: KP2 4) 5) 6) 7) 8) 9) 10) - 12) 13) 14)
For the symbol B, two terminal numbers are available.
Select as necessary.

3 Connection diagram of RS-422 cable

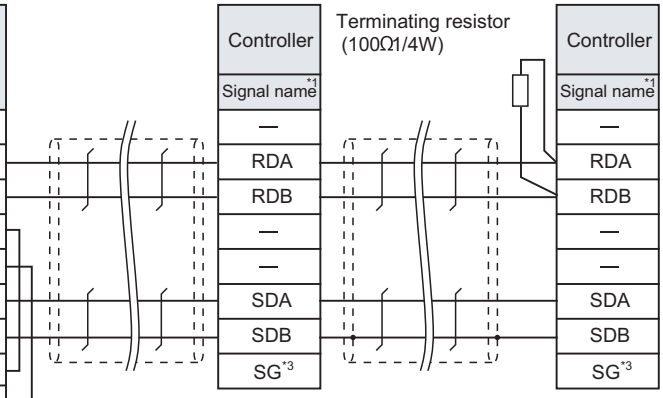
The following provides the connection diagram of RS-422 cable connecting the Handy GOT to the controller or the line converter.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)	
FG (Shield)	1	Shield	—
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
SG	10	PK/R (A)	5



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Pin No. of controller differs depending on the model. Refer to the following table.

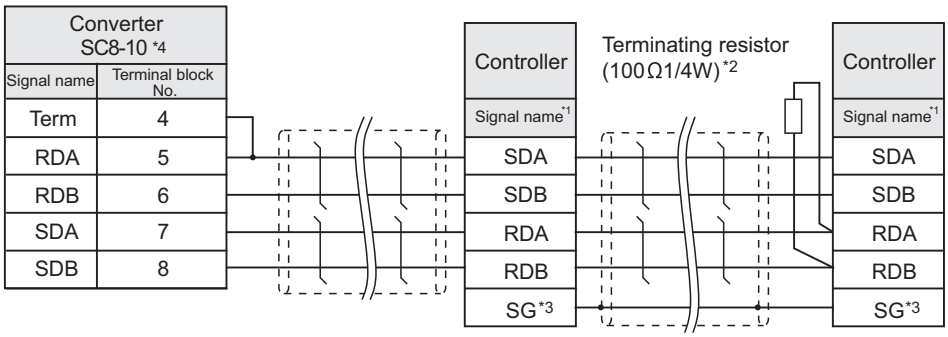
*2 Terminating resistor should be provided for a controller which will be a terminal.

*3 Do not connect SG of the controller and SG of the GOT.

signal name	Model of controller								
	LT300	LT400	DZ1000,DZ2000	DB1000	DB2000	KP1000	KP2000*4		JU
							A	C, F	
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
SDA	11	11	19	14	28	14	28	31	1
SDB	12	12	20	15	29	15	29	32	2
RDA	13	13	21	12	26	12	26	29	3
RDB	14	14	22	13	27	13	27	30	4
SG	15	15	23	16	30	16	30	28	5

*4 For KP2000 series, the terminal No. differs according to the model.
This indicates the symbols of the position 10) (third zone) of the following models.
Model: KP2 4) 5) 6) 7) 8) 9) 10) - 12) 13) 14)

(2) RS-422 cable 2)



*1 Pin No. of controller differs depending on the model. Refer to the following table.

*2 Terminating resistor should be provided for a controller which will be a terminal.

*3 Do not connect SG of the controller and SG of the GOT.

*4 Set the Communication Type switch of the converter to RS-422.

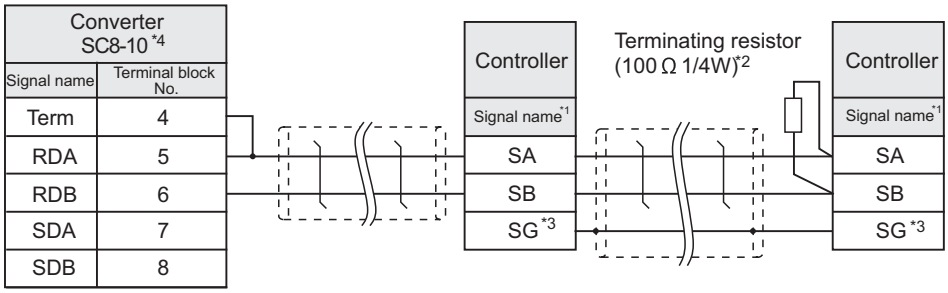
signal name	Model of controller								
	LT300	LT400	DZ1000,DZ2000	DB1000	DB2000	KP1000	KP2000*5		JU
							A	C, F	
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
SDA	11	11	19	14	28	14	28	31	1
SDB	12	12	20	15	29	15	29	32	2
RDA	13	13	21	12	26	12	26	29	3
RDB	14	14	22	13	27	13	27	30	4
SG	15	15	23	16	30	16	30	28	5

*5 For KP2000 series, the terminal No. differs according to the model.
This indicates the symbols of the position 10) (third zone) of the following models.
Model: KP2 4) 5) 6) 7) 8) 9) 10) - 12) 13) 14)

4 Connection diagram of RS-485 cable

The following provides the connection diagram of RS-485 cable connecting the line converter to the controller.

(1) RS-485 cable 1)

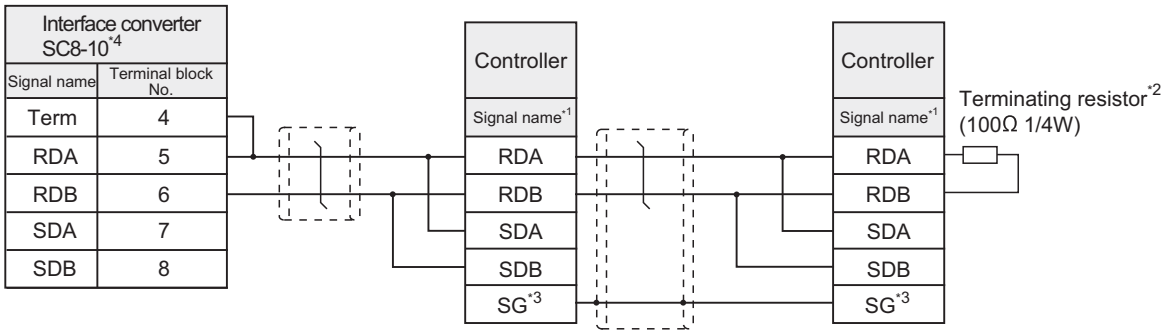


*1 Pin No. of controller differs depending on the model. Refer to the following table.
*2 Terminating resistor should be provided for a controller which will be a terminal.
*3 Do not connect SG of the controller and SG of the GOT.
*4 Set the Communication Type switch of the converter to RS-485.

Signal name	Model of controller							
	LT230	LT300	LT400	LT830	DZ1000, DZ2000	KP1000	KP2000*5	
							S, E, F, G	D, G
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
SA	6	11	11	6	19	12	26	29
SB	7	12	12	7	20	13	27	30
SG	8	15	15	8	23	14	28	31

*5 For KP2000 series, the terminal No. differs according to the model.
This indicates the symbols of the position 10) (third zone) of the following models.
Model: KP2 4) 5) 6) 7) 8) 9) 10) - 12) 13) 14)
For the symbol G, two terminal numbers are available. Select as necessary.

(2) RS-485 cable 2)



*1 Pin No. of controller differs depending on the model. Refer to the following table.
*2 Terminating resistor should be provided for a controller which will be a terminal.
*3 Do not connect SG of the controller and SG of the GOT.
*4 Set the Communication Type switch of the converter to RS-485.

Signal name	Model of controller			
	SE3000	JU	KE3000	LE5000
	Pin No.	Pin No.	Pin No.	Pin No.
RDA	RDA	3	RDA	RDA
RDB	RDB	4	RDB	RDB
SDA	SDA	1	SDA	SDA
SDB	SDB	2	SDB	SDB
SG	SG	5	SG	SG

45.1.4 Precautions when preparing a cable

1 Cable length

(1) The length of the RS-232 cable must be 6m or less.

(2) The length of the RS-422 cable must be as follows:

(a) The length of the RS-422 cable used for connecting the controller to the converter.
The length of the RS-422 cable must be 500m or less.

(b) The length of the RS-422 cable used for connecting the controller to the GOT.
The total distance (between GOT and the controller) of the RS-422 cable must be 13m or less.

(3) The length of the RS-485 cable must be 500m or less.

45.2 Controller Side Setting

Point

(1) CHINO controller
For details of CHINO controller, refer to the following manual.

☞User's Manual for the CHINO controller

(2) Line converter
For details of line converter, refer to the following manual.

☞User's Manual for the CHINO line converter

45.2.1 Connecting to LT230, LT300

1 Key lock setting

To write the Digital and the Analog parameters, set the Key Lock setting to Lock 4.

2 Communication settings

Make the communication settings by operating the key of the controller.

Setting items	Set value
Protocol	rtU : MODBUS RTU
function	Com : Upper communication
Station No.*1	1 to 99
Transmission speed*2	9600bps, 19200bps
Character*2 (Bit length, Parity bit, Stop bit)	5 : 8bit, None, 1bit 6 : 8bit, None, 2bit 7 : 8bit, Even, 1bit 8 : 8bit, Even, 2bit 9 : 8bit, Odd, 1bit 10: 8bit, Odd, 2bit

*1 Avoid duplication of the Station No. with any of the other units.
*2 Adjust the settings with GOT settings.

45.2.2 Connecting to LT400, LT830

1 Key lock setting

To write the Digital and the Analog parameters, set the following Key Lock setting.

- LT400 : Lock4
- LT830 : Lock3

2 Communication settings

Make the communication settings by operating the key of the controller.

Setting items	Set value
Protocol	rtU : MODBUS RTU
function	Com : Upper communication
Station No.*1	1 to 99
Transmission speed*2	9600bps, 19200bps
Character*2 (Bit length, Parity bit, Stop bit)	8N1: 8bit, None, 1bit 8N2: 8bit, None, 2bit 8E1: 8bit, Even, 1bit 8E2: 8bit, Even, 2bit 8O1: 8bit, Odd, 1bit 8O2: 8bit, Odd, 2bit

*1 Avoid duplication of the Station No. with any of the other units.

*2 Adjust the settings with GOT settings.

45.2.3 Connecting to DZ1000, DZ2000

1 Key lock setting

To write the Digital and the Analog parameters, set the Key Lock setting to Lock 2.

2 Communication settings

Make the communication settings by operating the key of the controller.

Setting items	Set value
Protocol	rtU : MODBUS RTU
function	Com : Upper communication
Station No.*1	1 to 31
Transmission speed*2	9600bps, 19200bps
Data length	8bit (fixed)
Stop bit	1bit (fixed)
Parity bit	None (fixed)

*1 Avoid duplication of the Station No. with any of the other units.

*2 Adjust the settings with GOT settings.

45.2.4 Connecting to DB1000, DB2000

1 Communication settings

Set the communication settings with controller key operation.

Setting items	Set value
Protocol	MODBUS (RTU)
Function	Com: Upper communication
Station No.*1	1 to 99
Transmission speed*2	9600bps, 19200bps, 38400bps
Communication character	7BIT/EVEN/STOP1 7BIT/EVEN/STOP2 7BIT/ODD/STOP1 7BIT/ODD/STOP2 8BIT/NON/STOP1 8BIT/NON/STOP2 8BIT/EVEN/STOP1 8BIT/EVEN/STOP2 8BIT/ODD/STOP1 8BIT/ODD/STOP2

*1 Avoid duplication of the Station No. with any of the other units.

*2 Adjust the settings with GOT settings.

45.2.5 Connecting to GT120

1 Key lock setting

To write the Digital and the Analog parameters, set the Key Lock setting to Lock 3.

2 Communication settings

Release the controller lock function in advance and set the following communication settings.
After completing the communication settings, set the Key Lock setting to Lock 3.

Setting items	Set value
Key lock	Loc3 : Lock3
Protocol	comr : MODBUS RTU
Station No.*1	1 to 95
Transmission speed*2	96 : 9600bps 192 : 19200bps
Data length	8bit
Stop bit*2	1bit, 2bit
Parity bit*2	none : None even : Even odd : Odd

*1 Avoid duplication of the Station No. with any of the other units.

*2 Adjust the settings with GOT settings.

45.2.6 Connecting to KP1000, KP2000

1 Key lock setting

To write the Digital and the Analog parameters, set the Key Lock setting.

2 Communication settings

Set the communication settings with controller key operation.

Setting items	Set value
Protocol	MODBUS (RTU)
Function	COM
Station No.*1	1 to 99
Transmission speed*2	2400bps, 4800bps, 9600bps, 19200bps, 38400bps
Character*2 (Bit length, Parity bit, Stop bit)	8BIT/NON/STOP1 8BIT/NON/STOP2 8BIT/EVEN/STOP1 8BIT/EVEN/STOP2 8BIT/ODD/STOP1 8BIT/ODD/STOP2

*1 Avoid duplication of the Station No. with any of the other units.

*2 Adjust the settings with GOT settings.

45.2.7 Connecting to AL3000, AH3000

1 Key lock setting

To write the Digital and the Analog parameters, set the Key Lock setting.

2 Communication settings

Set the communication settings with controller key operation.

Setting items	Set value
Protocol	MODBUS
Transmission code	rtu
Communication type	RS-232C, RS-422A, RS-485
Station No.*1	1 to 31
Transmission speed*2	2400bps, 4800bps, 9600bps, 19200bps
Character*2 (Bit length, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit

*1 Avoid duplication of the Station No. with any of the other units.

*2 Adjust the settings with GOT settings.

45.2.8 Connecting to SE3000

1 Key lock setting

To write the Digital and the Analog parameters, set the Key Lock setting.

2 Communication settings

Make the communication settings using the engineering software package (PASS).

Setting items	Set value
Protocol	MODBUS RTU
Station No.*1*3	1 to 31
Transmission speed*2*3	9600bps, 19200bps
Data length	8bit (fixed)
Parity bit*2	Even, Odd, Non
Stop bit*2	1bit, 2bit
Transmission code	Binary (fixed)
Error check	CRC-16 (fixed)

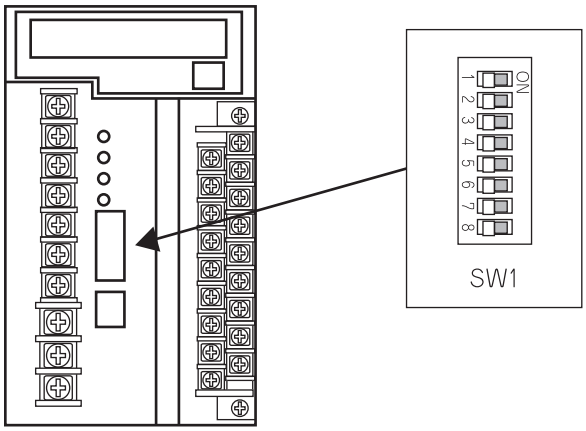
*1 Avoid duplication of the Station No. with any of the other units.

*2 Adjust the settings with GOT settings.

*3 Instrument No. and Transmission speed can also be set by switch SW1.

3 Setting by switch (SW1)

Station No. and Transmission speed can be set.



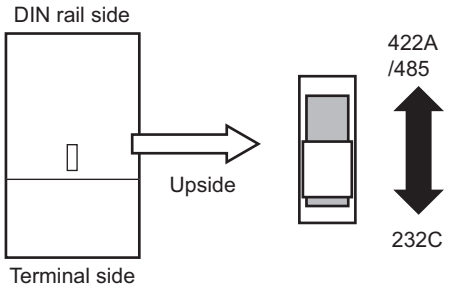
(1) Station No.

SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	Station No.
OFF	OFF	OFF	OFF	OFF	1
ON	OFF	OFF	OFF	OFF	1
OFF	ON	OFF	OFF	OFF	2
ON	ON	OFF	OFF	OFF	3
		:			
ON	OFF	ON	ON	ON	29
OFF	ON	ON	ON	ON	30
ON	ON	ON	ON	ON	31

(2) Transmission speed

SW1-6	SW1-7	Commuication port	Transmission speed
OFF	OFF	Upper communication	9600bps
OFF	ON	Upper communication	19200bps
ON	OFF	ENG	-
ON	ON	User setting inhibited	

4 Setting by switch (SW2)



SW2	
Front side (Terminal side)	Back side (DIN rail side)
RS232C	RS422A/485

45.2.9 Connecting to JU

1 Key lock setting

To write the Digital and the Analog parameters, set the Key Lock setting.

2 Communication settings

Set the communication settings with controller key operation.

Setting items	Set value
Protocol	rtU
Station No.*1	1 to 99
Transmission speed*2	9600bps, 19200bps
Character*2 (Bit length, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit

*1 Avoid duplication of the Station No. with any of the other units.

*2 Adjust the settings with GOT settings.

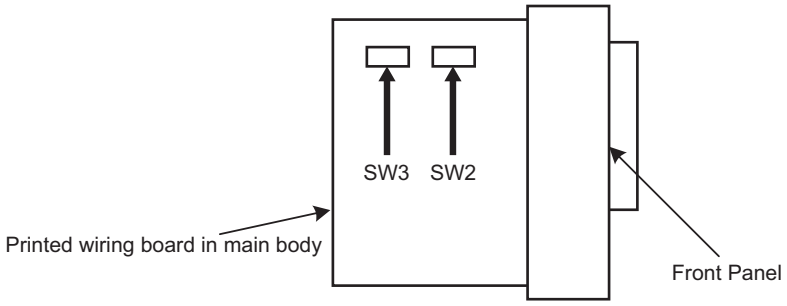
45.2.10 Connecting to KE3000

1 Key lock setting

To write the Digital and the Analog parameters, set the Key Lock setting.

2 Communication settings

Make the communication settings by operating the switches SW2 and SW3 of the module.



(1) Setting by SW2

Item	Set value	SW2-2	SW2-3
Transmission code*2	MODBUS RTU	OFF	-
Transmission speed*1	9600bps	-	OFF
	19200bps	-	ON
Transmission character structure*2	8bit, none, 1bit (Fixed)	-	-

*1 Adjust the settings with GOT settings.

*2 When the transmission code is MODBUS RTU, the setting of the transmission character structure is fixed.

(2) Setting by SW3

Set the Station No. as follows.

SW3-4	SW3-5	SW3-6	SW3-7	SW3-8	Station No.*1
OFF	OFF	OFF	OFF	OFF	1
ON	OFF	OFF	OFF	OFF	1
OFF	ON	OFF	OFF	OFF	2
ON	ON	OFF	OFF	OFF	3
			:		
			:		
ON	OFF	ON	ON	ON	29
OFF	ON	ON	ON	ON	30
ON	ON	ON	ON	ON	31

*1 Avoid duplication of the Station No. with any of the other units.

1 Key lock setting

To write the Digital and the Analog parameters, set the Key Lock setting.

2 Communication settings

Set the communication settings with controller key operation.

Setting items	Set value
RTU/ASCII	RTU
Station No.*1	1 to 99
Transmission speed*2	9600bps, 19200bps
Character*2 (Bit length, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit

*1 Avoid duplication of the Station No. with any of the other units.

*2 Adjust the settings with GOT settings.

45.2.12 Connecting SC8-10

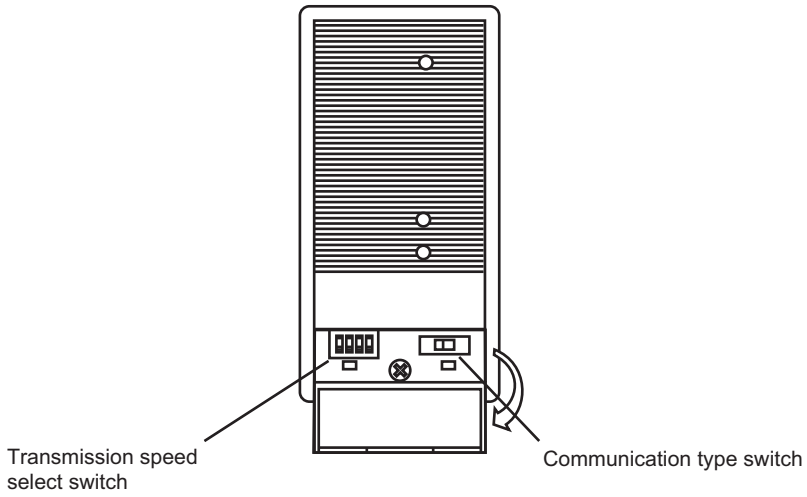
1 Communication settings

Make the communication settings by operating the switches.

Setting items	Set value
Transmission speed select switch*1	9600bps, 19200bps
Communication type switch	RS-485, RS-422

*1 Adjust the settings with GOT and controller settings.

2 Switch settings



(1) Transmission speed setting

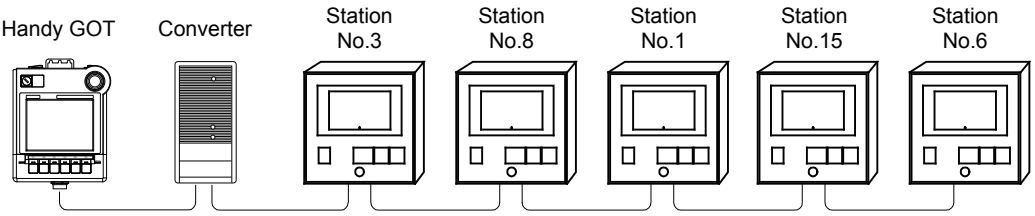
Setting item	Set value	Switch No.			
		1	2	3	4
Transmission speed	9600bps	OFF	ON	OFF	OFF
	19200bps	OFF	OFF	ON	OFF

(2) Communication type setting

Setting item
RS-485/RS-422

45.2.13 Station No. settings

Set each station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the controller of which data is to be changed.

Model	Specification range
LT230, LT300, LT400, LT830	1 to 99
DZ1000, DZ2000	1 to 31
DB1000, DB2000	1 to 99
GT120	1 to 95
KP1000, KP2000	1 to 99
AL3000, AH3000, SE3000	1 to 31
JU	1 to 99
KE3000	1 to 31
LE5100, LE5200, LE5300	1 to 99

(2) Indirect specification

When setting the device, indirectly specify the station number of the controller of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 115 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the controller.

Specification station No.	Compatible device	Setting range
100	GD10	1 to 99 : For LT230, LT300, LT400, LT830, DB1000, DB2000, LE5100, LE5200, LE5300, JU, KP1000, KP2000 1 to 31 : For DZ1000, DZ2000, SE3000, KE3000, AL3000, AH3000 1 to 95 : For GT120 For the setting other than the above, a communication timeout error will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
- For read-out operation, only one station will be a target.
- All station specification is not available for KE3000.
  Do not use the all station specification for systems which include KE3000.

45.3 Precautions

45.3.1 Precautions

1 Station number setting of the controller system

In the system configuration, the controller with the station number set with the host address must be included. For details of host address setting, refer to the following.

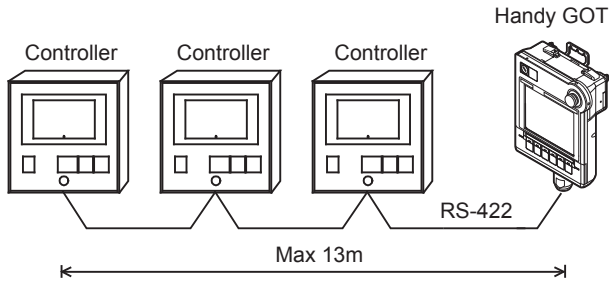
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 GOT clock function

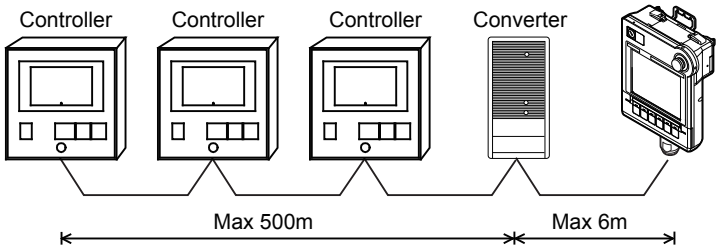
Since the controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

3 Connection distance

For the RS-232 connection, the connection distance must be 6m or less and for the RS-422 connection, the connection distance must be 13m or less.
In addition, when connecting multiple controllers for the RS-422 connection, the overall extension distance must be 13m or less.



When using the line converter (SC8-10), the connection distance between the GOT and the controller must be 6m or less and between the communication systems after the controller must be 500m or less.



4 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller.
For example, faulty station that has communication timeout can be cut from the system.
For details of the setting contents of GOT internal device, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

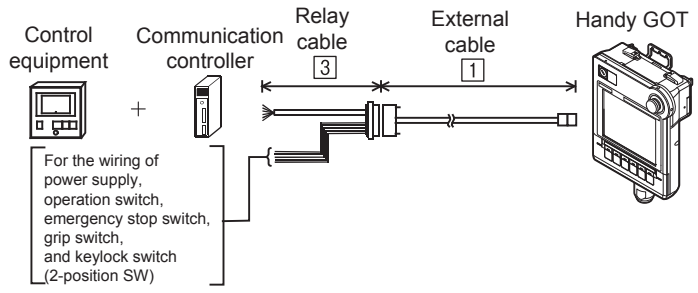
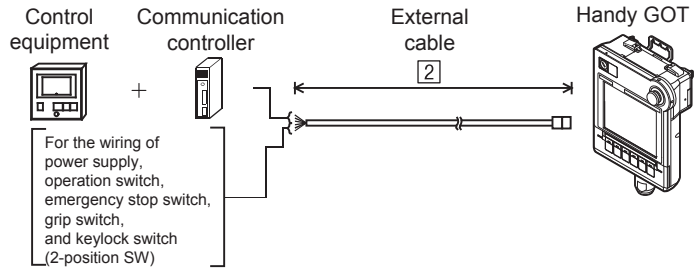
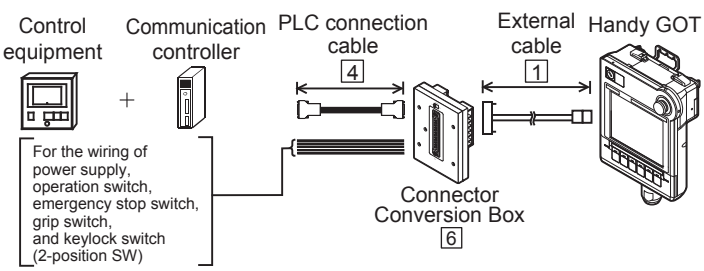
46. CONNECTION TO AZBIL CONTROL EQUIPMENT

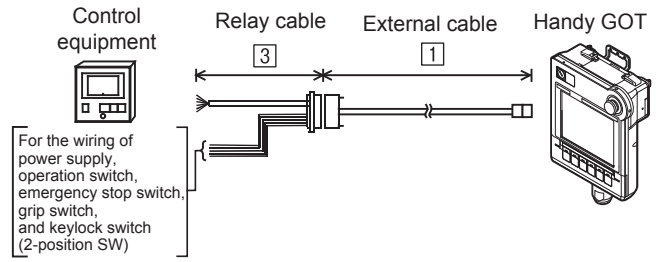
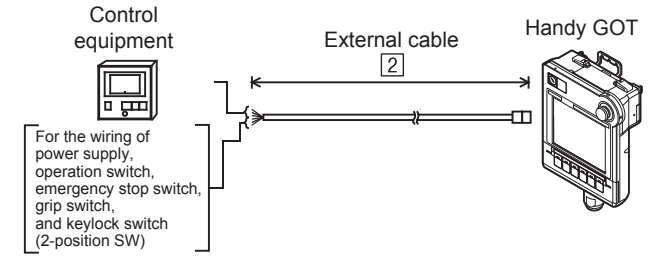
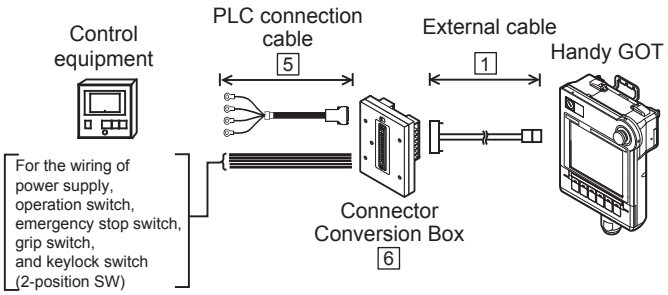
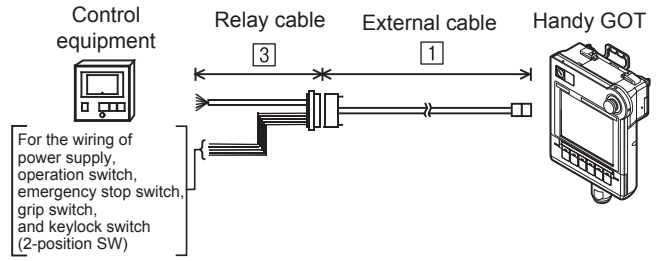
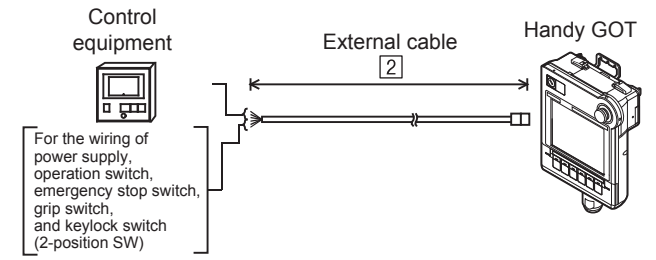
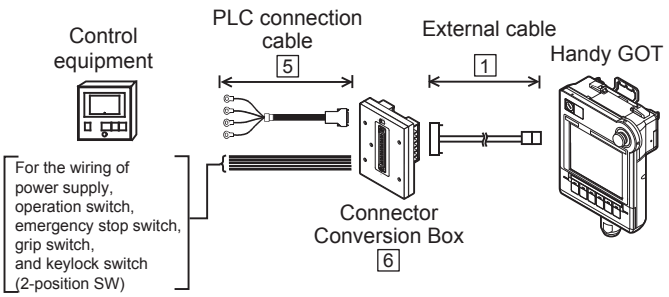
46.1 System Configuration and System Equipment

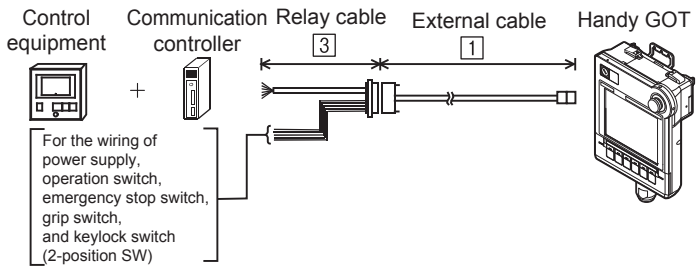
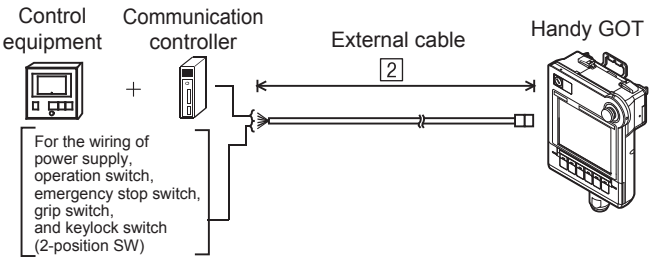
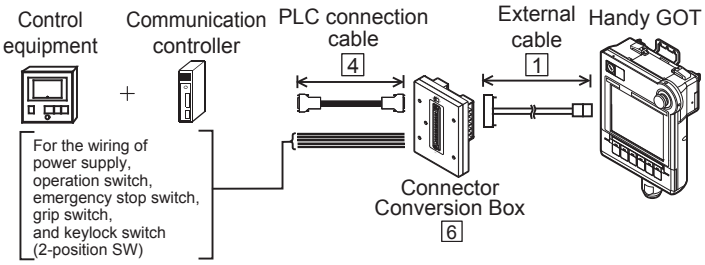
46.1.1 System configuration

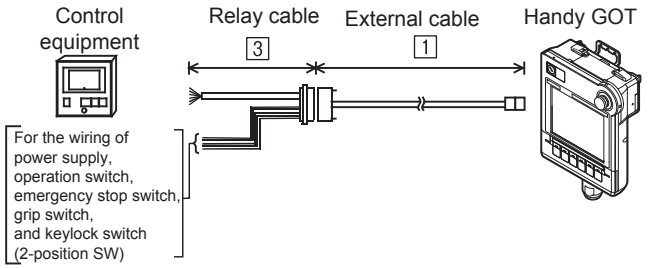
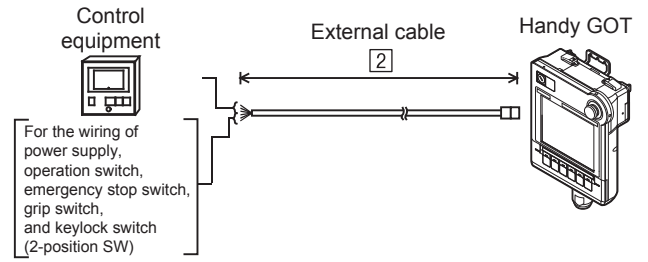
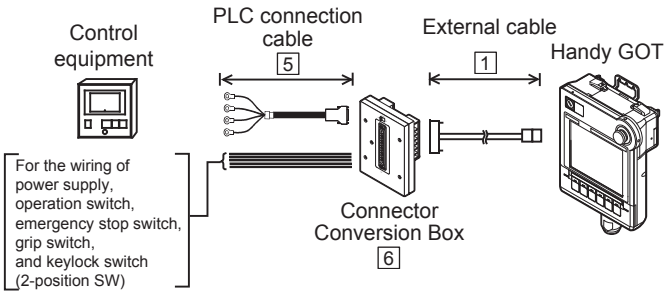
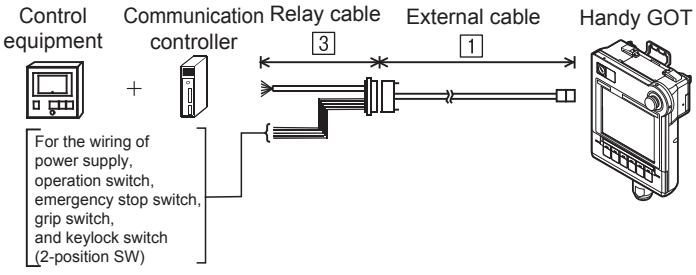
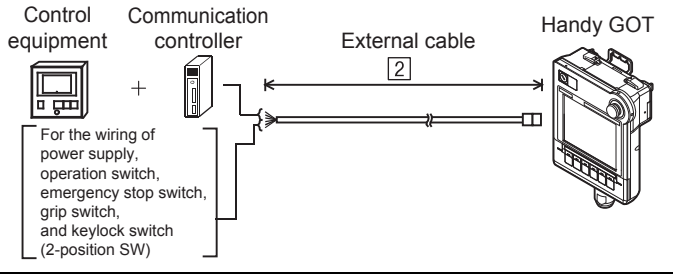
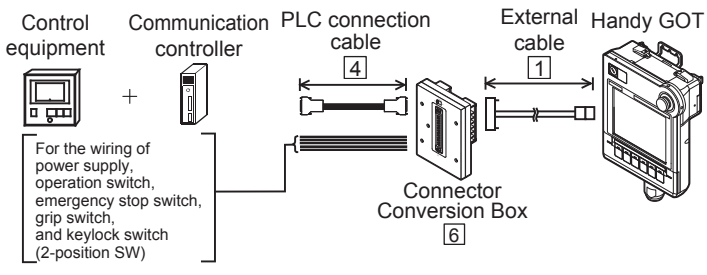
When connecting the Handy GOT to a control equipment, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-485 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

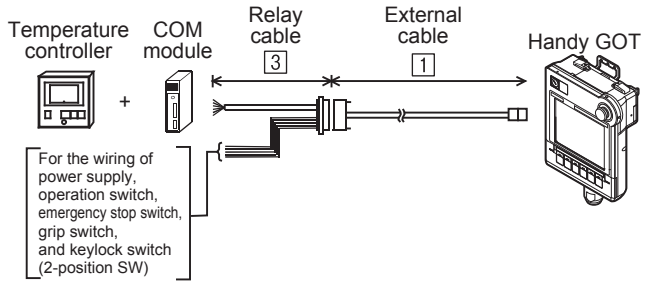
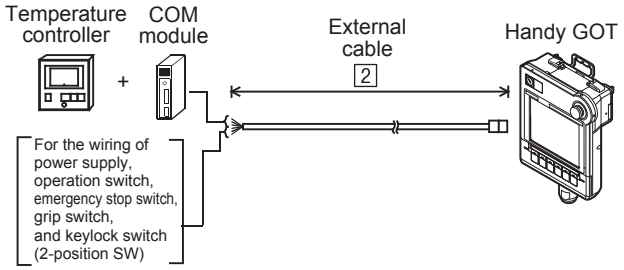
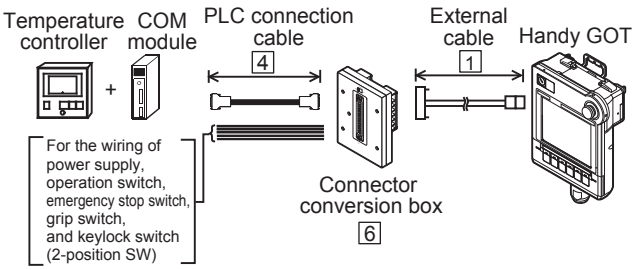
Refer to the numbers described in System configuration (1, 2 ...) according to the numbers later described in "46.1.2 System equipment".

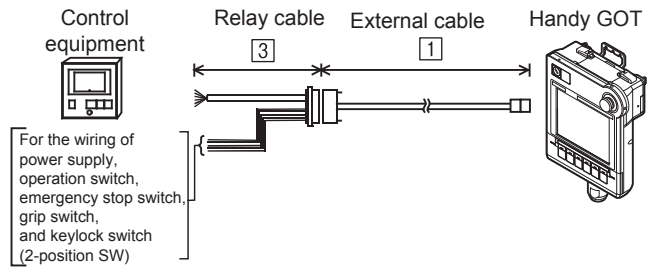
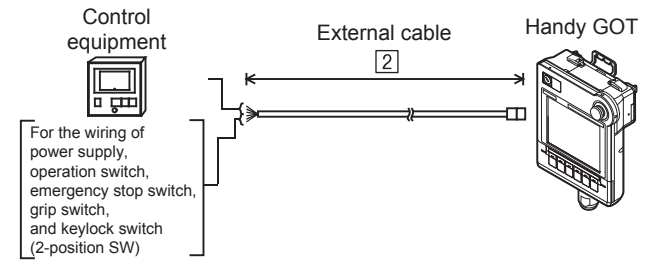
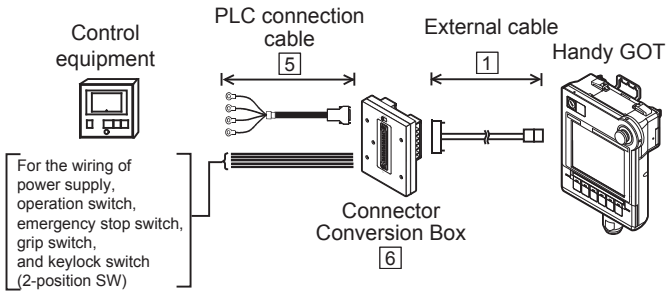
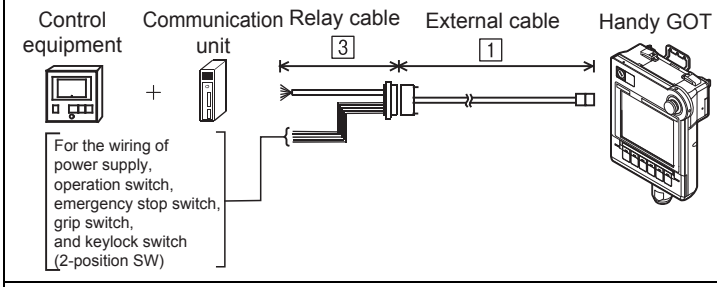
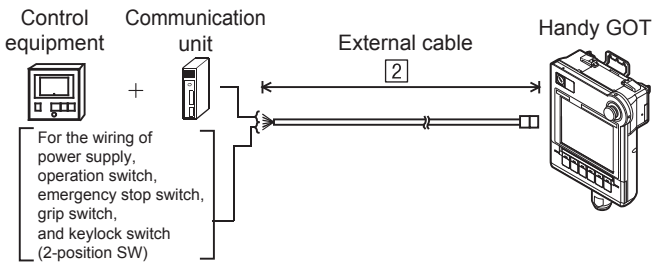
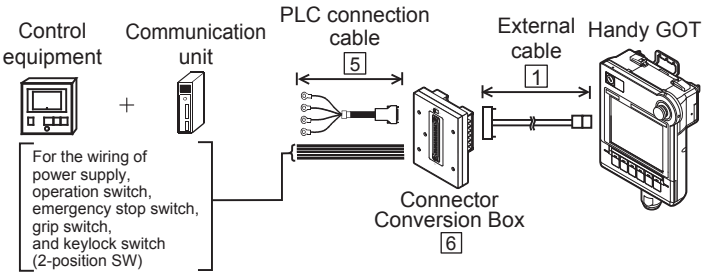
Connection conditions			System configuration
Control equipment	Communication	Distance	
DMC10, SDC15, SDC25/26, SDC35/36, SDC45/46, CMS, MQV, MPC, MVF, RX, CMF015	RS-232	6m or less	
			
			

Connection conditions			System configuration
Control equipment	Communication	Distance	
SDC20/21, SDC40A/40B	RS-232 /RS-485	6m or less (RS232) /13m or less (RS485)	
			
			
SDC40G	RS-485	13m or less	
			
			

Connection conditions			System configuration
Control equipment	Communication	Distance	
SDC20/21, SDC40A/40B/ 40G	RS-232	6m or less	
			
			

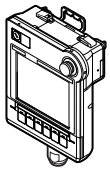
Connection conditions			System configuration
Control equipment	Communication	Distance	
SDC30/31, CMF050, CML, PBC201-VN2, AUR350C, AUR450C, CMC10B	RS-485	13m or less	
			
			
	RS-232	6m or less	
			
			

Connection conditions			System configuration
Control equipment	Communication	Distance	
DMC50	RS-485	13m or less	
			
			

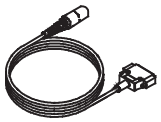
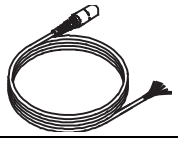
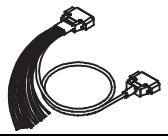
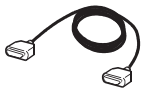
Connection conditions			System configuration
Control equipment	Communication	Distance	
AHC2001	RS-232	6m or less	
			
			
	RS-232/RS-485	6m or less/ 13m or less	
			
			

46.1.2 System equipment

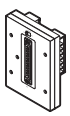
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 46.1.3 Connection cable	
PLC connection cable		4		
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Control equipment	Number of GOTs	Number of control equipments	Communication	Communication unit	
				Name	Model name
DMC10	1	15	RS-232	Communication controller	CMC10L
DMC50	1	120	RS-485	COM module	DMC50M□20X
SDC15, SDC25/26, SDC35/36, SDC45/46, CMS, MQV, MPC, MVF, RX, CMF015	1	31	RS-232	Communication controller	CMC10L
SDC20/21	1	1	RS-232	-	-
	1	31	RS-232	Communication controller	CMC10L
	1	31	RS-485	-	-
SDC30/31, CMF050, CML, PBC201-VN2, AUR350C, AUR450C, CMC10B	1	31	RS-232	Communication controller	CMC10L
	1	31	RS-485	-	-
SDC40A/40B	1	1	RS-232	-	-
	1	31	RS-232	Communication controller	CMC10L
	1	15	RS-485	-	-
SDC40G	1	31	RS-232	Communication controller	CMC10L
	1	15	RS-485	-	-
AHC2001	1	1	RS-232	-	-
	1	1	RS-232	Communication module	SCU module
	1	31	RS-485	Communication module	SCU module

46.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Model name		Connection cable	
		RS-232 cable	RS-485 cable
Control equipment *1	DMC10	RS-232 cable 1) (Connected via communication controller)	RS-485 cable 1)
	DMC50	-	RS-485 cable 4)
	SDC15, SDC25/26, SDC35/36	RS-232 cable 1) (Connected via communication controller)	RS-485 cable 1)
	SDC45/46, CMS, MQV, MPC, MVF, RX, CMF015	RS-232 cable 1) (Connected via communication controller)	RS-485 cable 5)
	SDC20/21	RS-232 cable 2)	RS-485 cable 2), RS-485 cable 3)
	SDC30/31, CMF050, CML, PBC201-VN2, AUR350C, AUR450C, CMC10B	RS-232 cable 1) (Connected via communication controller)	RS-485 cable 2), RS-485 cable 3)
	SDC40A/40B	RS-232 cable 2)	RS-485 cable 2), RS-485 cable 3)
	SDC40G	RS-232 cable 1) (Connected via communication controller)	RS-485 cable 2), RS-485 cable 3)
	AHC2001 CPU module	RS-232 cable 2)	-
Communication controller	CMC10L	RS-232 cable 1)	RS-485 cable 1), RS-485 cable 2)
Communication module	AHC2001 SCU module	RS-232 cable 2)	RS-485 cable 3)

*1 Select a control equipment with communication function.

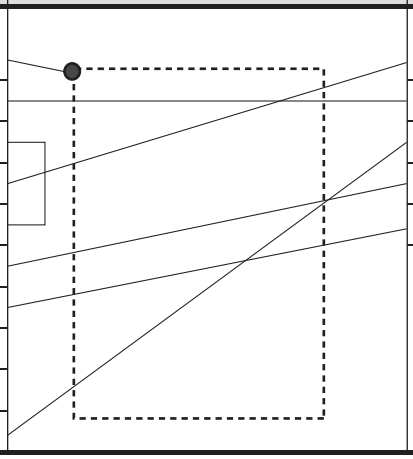
2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the temperature controller or the communication controller.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Communication controller (CMC10L)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			TERMINAL mode*1 Pin No.	Signal name
FG (Shield)	1	Shield	—		3	SD
SD(TXD)	2	W/R (A)	3		2	RD
ER(DTR)	3	W/BK (A)	4		5	SG
RD(RXD)	4	GY/R (A)	2		8	CS
DR(DSR)	5	GY/BK (A)	6		7	RS
RS(RTS)	6	O/R (A)	7			
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

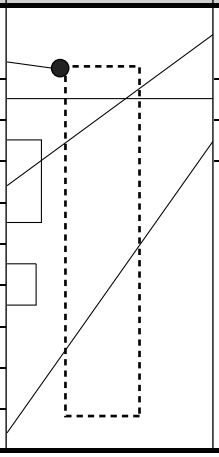
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 For details on the setting method of the TERMINAL mode, refer to the following.

☞ Section 46.2.1 Communication settings

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Model of temperature controller						Signal name
					SDC20		SDC21	SDC40A SDC40B SDC40G	AHC2001		
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			(03, 05)	(10)	(04, 07, 09)		CPU module	SCU module	
					Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	
FG (Shield)	1	Shield	—		17	16	27	60	5	5	SD
SD(TXD)	2	W/R (A)	3		18	17	28	59	3	3	RD
ER(DTR)	3	W/BK (A)	4		5	18	29	61	2	2	SG
RD(RXD)	4	GY/R (A)	2								
DR(DSR)	5	GY/BK (A)	6								
RS(RTS)	6	O/R (A)	7								
CS(CTS)	7	O/BK (A)	8								
—	8	Y/R (A)	—								
—	9	Y/BK (A)	—								
SG	10	PK/R (A)	5								

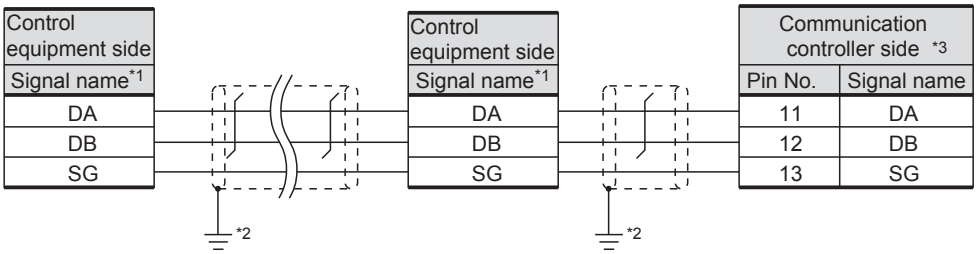
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

3 Connection diagram of RS-485 cable

The following provides the connection diagram of RS-485 cable connecting the Handy GOT to the control equipment or the communication controller.

(1) RS-485 cable 1)



*1 Pin No. of control equipment differs depending on the model. Refer to the following table.

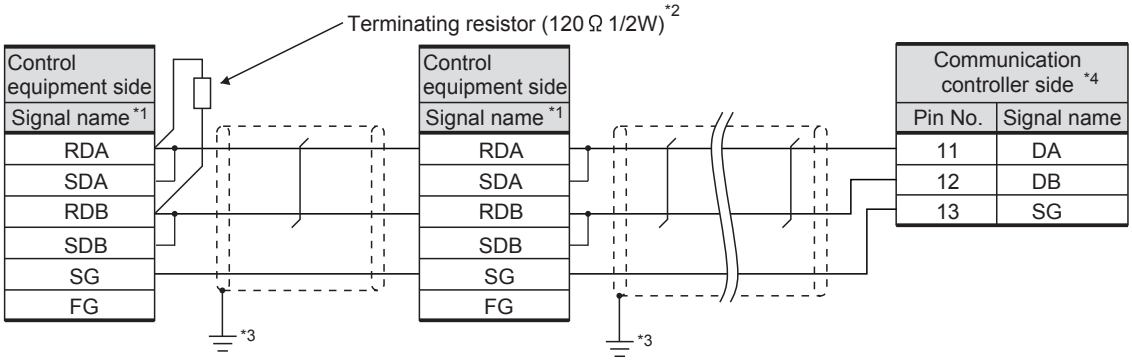
Signal name	Model of control equipment			
	DMC10	SDC15	SDC25/26, SDC35/36	AUR350C, AUR450C
	Pin No.	Pin No.	Pin No.	Pin No.
DA	4	16	22	DA
DB	5	17	23	DB
SG	6	18	24	SG

*2 Perform FG grounding on only one side of the shield line.

*3 Set the terminating resistor to "Disable".
For details of terminating resistor settings, refer to the following.

☞ Section 46.2.1 Communication settings

(2) RS-485 cable 2)



*1 Pin No. of control equipment differs depending on the model or the optional function model. Refer to the following table. The numbers in ( ) in the following table correspond to the optional function models.

Signal name	Model of control equipment								
	SDC20		SDC21	SDC30	SDC31	SDC40A/ 40B/40G	CMF050 CML	PBC201-VN2	CMC10B
	(02, 04)	(09)	(03, 06, 08)	(040, 041)	(446, 546)				
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RDA	17	18	27	18	27	59	7	14	13
SDA	15	16	25	16	25	57	9	12	11
RDB	18	19	28	19	28	60	8	15	14
SDB	16	17	26	17	26	58	10	13	12
SG	5	5	29	20	29	61	12	16	15
FG	3, 4	3, 4	3, 4	3, 4	3, 4	3	19	3	-

*2 Terminating resistor should be provided for a communication controller and a control equipment which will be terminals.

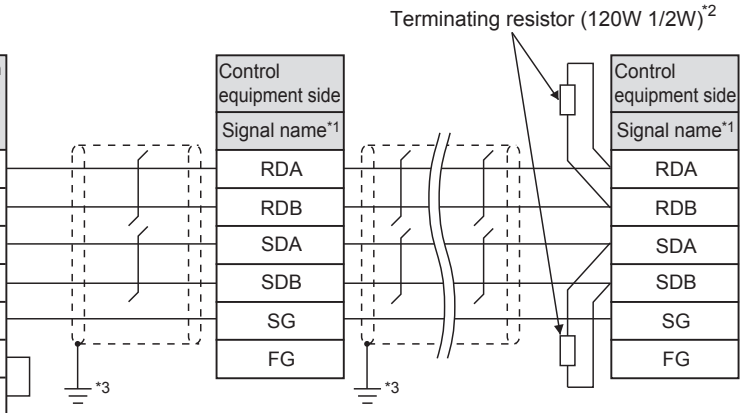
*3 Perform FG grounding on only one side of the shield line.

*4 Since the interface converter has a built-in terminating resistor, set the terminating resistor of GOT to "Enable". For details of terminating resistor settings, refer to the following.

Section 46.2.1 Communication settings

(3) RS-485 cable 3)

Signal name	GOT side (External cable)*4		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C□□□-37P Pin No.	GT11H-C □□□ Wire color (color type)	
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
SG	10	PK/R (A)	5
RSA	4	GY/R (A)	3
CSA	8	Y/R (A)	4
RSB	5	GY/BK (A)	8
CSB	9	Y/BK (A)	9
FG	1	Shield (A)	—



*1 Pin No. of control equipment differs depending on the model or the optional function model. Refer to the following table. The numbers in ( ) in the following table correspond to the optional function models.

Signal name	Model of control equipment									
	SDC20		SDC21	SDC30	SDC31	SDC40A/ 40B/40G	CMF050 CML	PBC201-VN2	CMC10B	AHC2001 SCU module
	(02, 04)	(09)	(03, 08)	(040, 041)	(446, 546)					
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RDA	17	18	27	18	27	59	7	14	13	3
SDA	15	16	25	16	25	57	9	12	11	5
RDB	18	19	28	19	28	60	8	15	14	2
SDB	16	17	26	17	26	58	10	13	12	4
SG	5	5	29	5	29	61	12	16	15	1
FG	3, 4	3, 4	3, 4	3, 4	3, 4	3	19	3	-	-

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

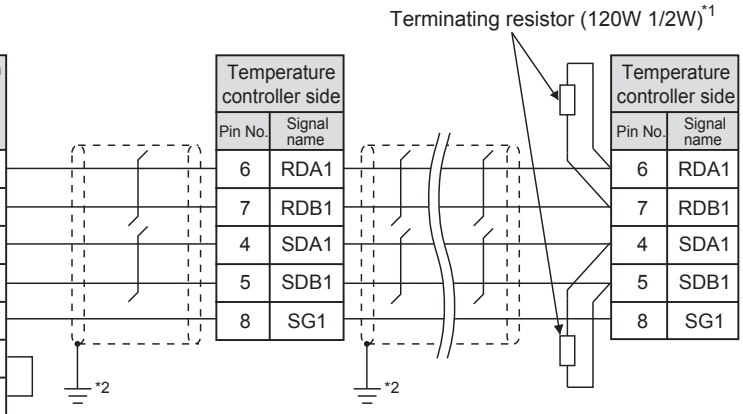
*2 Terminating resistor should be provided for a control equipment which will be a terminal.

*3 Perform FG grounding on only one side of the shield line.

*4 No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

(4) RS-485 cable 4)

Signal name	GOT side (External cable)*3		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C□□□-37P Pin No.	GT11H-C □□□ Wire color (color type)	
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
SG	10	PK/R (A)	5
RSA	4	GY/R (A)	3
CSA	8	Y/R (A)	4
RSB	5	GY/BK (A)	8
CSB	9	Y/BK (A)	9
FG	1	Shield (A)	—



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

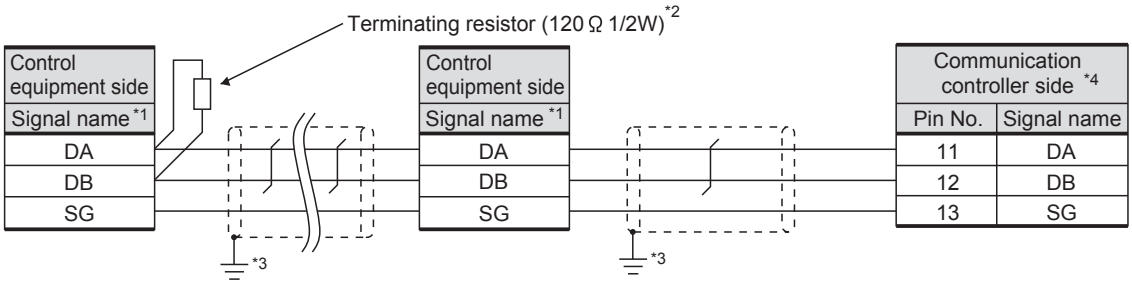
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Terminating resistor should be provided for a temperature controller which will be a terminal.

*2 Perform FG grounding on only one side of the shield line.

*3 No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

(5) RS-485 cable 5)



*1 Pin No. of control equipment differs depending on the model. Refer to the following table.

Signal name	Model of control equipment				
	SDC45/46	CMS CMF015	MQV MPC	MVF	RX
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
DA	C10	5	7	1	1
DB	C11	6	8	2	2
SG	C12	10	9	7	3

*2 Terminating resistor should be provided for a communication controller and a control equipment which will be terminals.

*3 Perform FG grounding on only one side of the shield line.

*4 Since the interface converter has a built-in terminating resistor, set the terminating resistor of GOT to "Enable". For details of terminating resistor settings, refer to the following.

☞ Section 46.2.1 Communication settings

46.1.4 Precautions when preparing a cable

1 Cable length

(1) The length of the RS-232 cable must be 6m or less.

(2) The length of the RS-485 cable must be within the following range:

(a) The length of the RS-485 cable used for connecting the control equipment to the communication converter
The total distance (between communication converter and controllers) of RS-485 cable must be 500m or less.

(b) The length of the RS-485 cable used for connecting the control equipment to the GOT
The total distance (between GOT and control equipment) of RS-485 cable must be 13m or less.

2 Connecting terminating resistors

(1) AZBIL control equipment
When connecting a AZBIL control equipment, a terminating resistor must be set to the AZBIL control equipment.
☞ Section 46.2 Control Equipment Side Setting

46.2 Control Equipment Side Setting

46.2.1 Communication settings

Point

Format setting

The compatible format of control equipment differs depending on model.

Model	Compatible format
SDC20/21, SDC30/31, SDC40A/40B/40G, CMS, CMF, CML, MQV, MPC, MVF, PBC201-VN2, RX	Format 1 only
DMC10, SDC15, SDC25/26, SDC35/36, SDC45/46, AUR350C, AUR450C, CMC10B	Format 1 or Format 2
DMC50, AHC2001 module	The format setting is invalid.

For the continuous access and random access of the control equipment, refer to the following manual.

☞User's Manual for the AZBIL control equipment

1 Connecting to DMC10

(1) Communication settings

Make the communication settings by operating the Smart Loader Package (SLP-D10) of the temperature controller.

Setting items	Set value
Transmission speed *1	9600bps, 19200bps
Communication mode *2	CPL
Data length	8 bits
Parity bit *1	Even, none
Stop bit	2 bits
Communication minimum response time	1ms, 10ms, 100ms, 200ms
Station address *3*4	0 to F

*1 Set the transmission speed according to the GOT side.

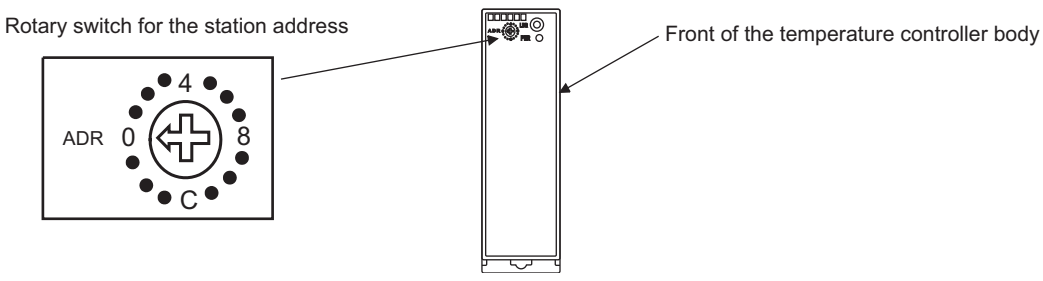
*2 Set to CPL.

*3 Do not set to "0".

*4 Select the station address without overlapping with that of other units.

(2) Station address setting

Set the station address using the rotary switch for the station address.



2 Connecting SDC40A/40B/40G

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting items	Set value
Transmission speed *1	9600bps
Data length	8 bits
Parity bit *1	Even, none
Stop bit	1bits, 2bits
Station address *2*3	0 to 127

*1 Set the transmission speed according to the baud rate of the GOT side.
*2 Do not set to "0".
*3 Select the station address without overlapping with that of other unit.

3 Connecting SDC15, SDC25/26, SDC35/36

(1) Communication settings

Make the communication settings by operating the key or Smart Loader Package (SLP-C35) of the temperature controller.

Setting items	Set value
Transmission speed *1	9600bps, 19200bps
Communication mode *2	CPL
Data length *1	7bits, 8bits
Parity bit *1	Odd, even, none
Stop bit *1	1bits, 2bits
Communication minimum response time	1 to 250ms
Station address *3*4	0 to 127

*1 Set the transmission speed according to the baud rate of the GOT side.
*2 Set to CPL.
*3 Do not set to "0".
*4 Select the station address without overlapping with that of other units.

4 Connecting SDC20/21, SDC30/31

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting items	Set value
Transmission speed *1	9600bps
Data length	8 bits
Parity bit	None
Stop bit	2 bits
Station address *2*3	0 to 127

*1 Set the transmission speed according to the baud rate of the GOT side.
*2 Do not set to "0".
*3 Select the station address without overlapping with that of other unit.

5 Connecting CMC10L

(1) Communication settings

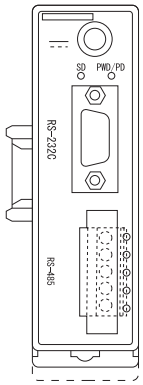
Make the communication settings by operating the DIP switch of the interface converter.

Setting items	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Frame length *2	9 to 15 bits

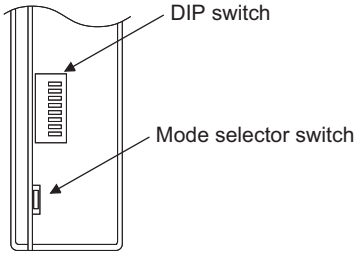
*1 Set the transmission speed according to the baud rate of the GOT side.

*2 The sum of data length, parity bit and stop bit.

(2) DIP switch settings



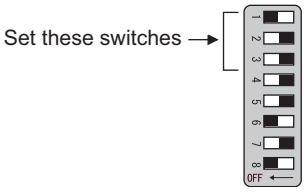
Front view of CMC10L body



Rear view of CMC10L body

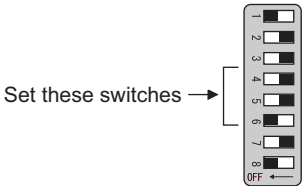
(a) Transmission speed settings

Transmission speed settings	Switch No.		
	1	2	3
9600	ON	OFF	ON
19200	OFF	ON	ON
38400	ON	ON	ON



(b) Frame length settings

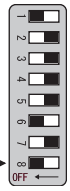
Frame length	Switch No.		
	4	5	6
8 bit	OFF	OFF	OFF
9 bit	ON	OFF	OFF
10 bit	OFF	ON	OFF
11 bit	ON	ON	OFF
12 bit	OFF	OFF	ON
13 bit	ON	OFF	ON
14 bit	OFF	ON	ON
15 bit	ON	ON	ON



(c) Termination resistor settings

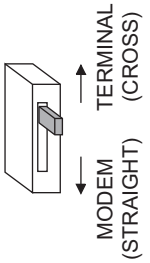
Terminating resistor	Switch No.
	8
Enable	ON
Disable	OFF

Set these switches



(3) Mode selector switch settings

Set the switch to "TERMINAL".



6 Connecting to SDC45/46

(1) Communication settings

Make the communication settings by operating the Smart Loader Package (SLP-C45) of the temperature controller.

Item	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Communication mode *2	CPL
Data bit	7bits, 8bits
Parity bit *1	Odd, even, none
Stop bit	1bit, 2bits
Communication minimum response time *5	1 to 250ms
Station address *3*4	0 to 120

*1 Adjust the settings with GOT settings.
*2 Set to CPL.
*3 Do not set to "0".
*4 Select the station address without overlapping with that of other units.
*5 When using the interface converter CMC10L, set the communication minimum response time to 3ms or more.

7 Connecting to CMS, CMF015

(1) Communication settings

Make the communication settings by operating the key of the control equipment.

Item	Set value
Transmission speed *1	9600bps
Communication condition selection	0: 8-bit data length, Even parity, Stop bit 1
	1: 8-bit data length, Non parity, Stop bit 2
Station address *2*3	0 to 99

*1 Adjust the settings with GOT settings.

*2 Do not set to "0".

*3 Select the station address without overlapping with that of other units.

8 Connecting to CML, CMF050

(1) Communication settings

Make the communication settings by operating the key of the control equipment.

Item	Set value
Transmission speed *1	9600bps
Communication condition selection *1	00: 8-bit data length, Even parity, Stop bit 1
	01: 8-bit data length, Non parity, Stop bit 2
Station address *2*3	0 to 7F

*1 Adjust the settings with GOT settings.

*2 Do not set to "0".

*3 Select the station address without overlapping with that of other units.

9 Connecting to MQV

(1) Communication settings

Make the communication settings by operating the key of the control equipment.

Item	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Communication condition selection *1	00: 8-bit data length, Even parity, Stop bit 1
	01: 8-bit data length, Non parity, Stop bit 2
Station address *2*3	0 to 127

*1 Adjust the settings with GOT settings.

*2 Do not set to "0".

*3 Select the station address without overlapping with that of other units.

10 Connecting to MPC

(1) Communication settings

Make the communication settings by operating the key of the control equipment.

Item	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Communication condition selection *1	0: 8-bit data length, Even parity, Stop bit 1
	1: 8-bit data length, Non parity, Stop bit 2
Station address *2*3	0 to 127

*1 Adjust the settings with GOT settings.
*2 Do not set to "0".
*3 Select the station address without overlapping with that of other units.

11 Connecting to PBC201-VN2

(1) Communication settings

Make the communication settings by operating the key of the control equipment.

Item	Set value
Communication protocol	CPL
Transmission speed *1	9600bps, 19200bps, 38400bps, 115200bps
Communication condition selection *1 (Fixed 8-bit data length)	0: Even parity, Stop bit 1
	1: Odd parity, Stop bit 1
	2: Non parity, Stop bit 2
Station address *2*3	0 to 126

*1 Adjust the settings with GOT settings.
*2 Do not set to "0".
*3 Select the station address without overlapping with that of other units.

12 Connecting to MVF

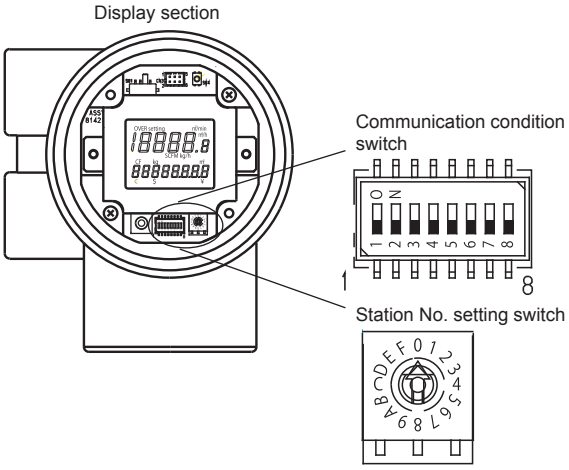
(1) Communication settings

Make the communication settings by operating the switch of the control equipment.

Item	Set value
Transmission speed *1	9600bps, 19200bps
Communication condition selection *1	8-bit data length, Even parity, Stop bit 1
	8-bit data length, Non parity, Stop bit 2
	2: Non parity, Stop bit 2
Station address *2*3	0 to F

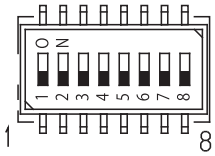
*1 Adjust the settings with GOT settings.
*2 Do not set to "0".
*3 Select the station address without overlapping with that of other units.

(2) Settings by switch



(a) Transmission speed settings
Set the communication condition switch.

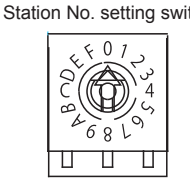
Transmission speed (bps)	Switch No.		
	1	2	3
9600	ON	ON	OFF
19200	ON	OFF	OFF



(b) Communication condition selection
Set the communication condition switch.

Communication condition	Switch No.
	4
8-bit data length, Even parity, Stop bit 1	OFF
8-bit data length, Non parity, Stop bit 2	ON

(c) Station address setting
Set the station address switch.



13 Connecting to AUR350C, AUR450C

(1) Communication settings

Make the communication settings by operating the Smart Loader Package (SLP-A35, SLP-A45) of the control equipment.

Item	Set value
Transmission speed *1	9600bps, 19200bps
Communication condition selection *1	8-bit data length, Even parity, Stop bit 1
	8-bit data length, Non parity, Stop bit 2
	2: Non parity, Stop bit 2
Station address *2*3	0 to F

*1 Adjust the settings with GOT settings.

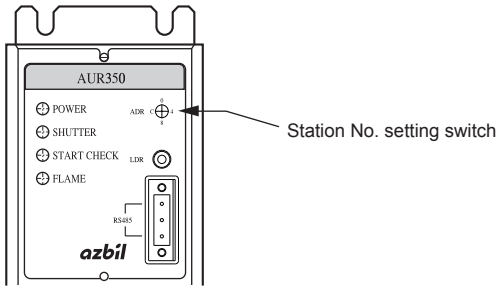
*2 Do not set to "0".

*3 Select the station address without overlapping with that of other units.

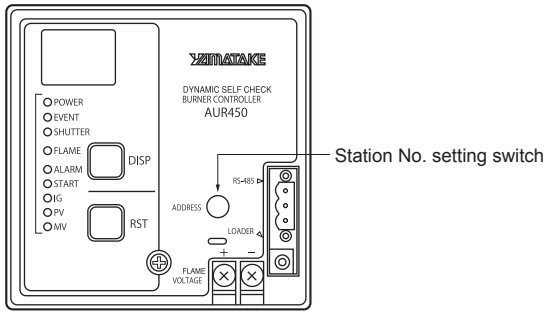
(2) Station address setting

Set the station address switch.

(a) For AUR350C



(b) For AUR450C



14 Connecting to RX

(1) Communication settings

Make the communication settings by operating the Smart Loader Package (SLP-RX) of the control equipment.

Item	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Communication condition selection *1	Even parity stop 1 (8-bit data length, Even parity, Stop bit 1)
	Even parity stop 2 (8-bit data length, Even parity, Stop bit 2)
	Odd parity stop 1 (8-bit data length, Odd parity, Stop bit 1)
	Odd parity stop 2 (8-bit data length, Odd parity, Stop bit 2)
Station address *2*3	1 to 32

*1 Adjust the settings with GOT settings.

*2 Do not set to "0".

*3 Select the station address without overlapping with that of other units.

15 Connecting to CMC10B

(1) Communication settings

Make the communication settings by operating the Smart Loader Package (SLP-CM1) of the control equipment.

Item	Set value
Transmission speed *1	9600bps, 19200bps
Communication format *1	0: 8-bit data length, Even parity, Stop bit 1
	1: 8-bit data length, Non parity, Stop bit 2
Station address *2*3	0 to 99

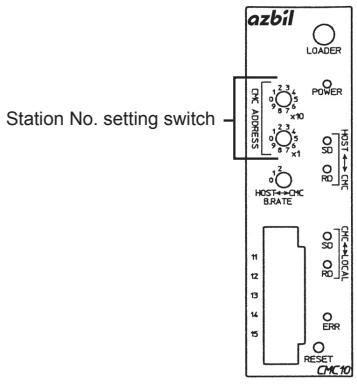
*1 Adjust the settings with GOT settings.

*2 Do not set to "0".

*3 Select the station address without overlapping with that of other units.

(2) Station address setting

Set the station address switch.



46.2.2 Connecting to DMC50

1 Communication settings

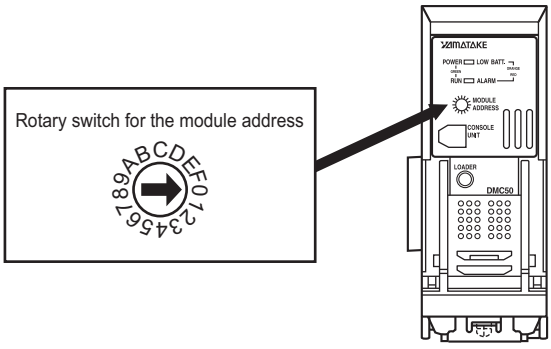
Make the communication settings by operating the Smart Loader Package (SLP-D50/SLP-H21) of the temperature controller.

Setting items	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Communication mode	CPL
Data bit	8bits (fixed)
Parity bit*1	Even (fixed)
Stop bit	1bit (fixed)
Module address*2*3*4	0 to F

*1 Adjust the settings with GOT settings.
*2 Set the module address using the rotary switch for module address.
*3 Do not set to "0".
*4 Select the module address without overlapping with that of other units.

2 Mudule address setting

Set the module address using the rotary switch for module address.



46.2.3 Connecting to AHC2001 CPU module

1 Communication settings

Make the communication settings by operating the key of the temperature controller or Smart Loader Package (SLP-D50 or SLP-H21).

Setting items	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps, 57600bps
Mode*2	1:CPL
Data bit	8bits (fixed)
Parity bit	Even (fixed)
Stop bit	1bit (fixed)
Module address*3	1 to 15*4

*1 Set the transmission speed according to the GOT side.
*2 Set to 1:CPL.
*3 Select the module address without overlapping with that of other units.
*4 Although the device address range of AHC2001 is 1 to 127, use the device setting range of DMC50 of 1 to 15.

46.2.4 Connecting to AHC2001 SCU module

1 Communication settings

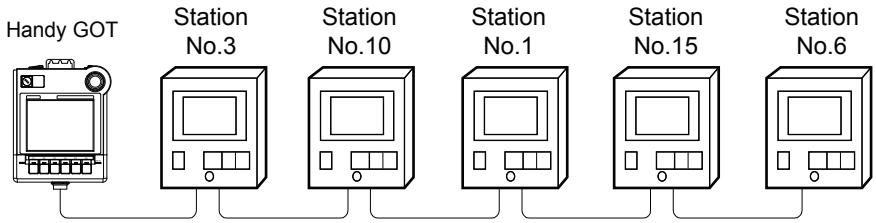
Make the communication settings by operating the key of the temperature controller or Smart Loader Package (SLP-D50 or SLP-H21).

Setting items	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Protocol setting*2	2:CPL
Data bit*1	7bits, 8bits
Parity bit*1	0: None, 1: Even, 2: Odd
Stop bit*1	1bit, 2bits
Half-duplex/Duplex*3	0: Half-duplex
Spacing transmission	0 (fixed)

*1 Adjust the settings of transmission speed, data length, parity bit, and stop bit with that of the GOT.
*2 Set to 2:CPL.
*3 Set to 0: Half-duplex.

46.2.5 Station No. settings

Set each station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the control equipment of which data is to be changed.

Model	Specification range
SDC40A/40B/40G, SDC15, SDC25/26, SDC35/36, SDC20/21, SDC30/31, CML, CMF050, MQV, MPC	1 to 127
PBC201-VN2	1 to 126
SDC45/46	1 to 120
CMS, CMF015, CMC10B	1 to 99
RX	1 to 32
DMC10, DMC50, MVF, AUR350C, AUR450C, AHC2001	1 to 15

*1 Although the station number range of AHC2001 is 1 to 127, use the station number range of DMC50 of 1 to 15.

(2) Indirect specification

When setting the device, indirectly specify the station number of the control equipment of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. shown in the table below on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the control equipment.

Specification station No.		Compatible device	Setting range
DMC50, AHC2001	Other than DMC50		
100	200	GD10	1 to 127 : For SDC40A/40B/40G, SDC15, SDC25/26, SDC35/36, SDC20/21, SDC30/31, CML, CMF050, MQV, MPC 1 to 126 : PBC201-VN2 1 to 120 : SDC45/46 1 to 99 : CMS, CMF015, CMC10B 1 to 32 : RX 1 to 15 : For DMC10, DMC50, MVF, AUR350C, AUR450C, AHC2001 For the setting other than the above, a communication timeout error will occur.
101	201	GD11	
102	202	GD12	
103	203	GD13	
104	204	GD14	
105	205	GD15	
106	206	GD16	
107	207	GD17	
108	208	GD18	
109	209	GD19	
110	210	GD20	
111	211	GD21	
112	212	GD22	
113	213	GD23	
114	214	GD24	
115	215	GD25	

*1 Although the station number range of AHC2001 is 1 to 127, use the station number range of DMC50 of 1 to 15.

46.3 Precautions

46.3.1 Precautions

1 Station number setting of the temperature controller system

- When connecting to DMC10 or SDC
  Make sure to establish temperature controller system with No.1 station.
- When connecting to DMC50, AHC2001
  A COM module or temperature controller with the station number set with the host address must be included.

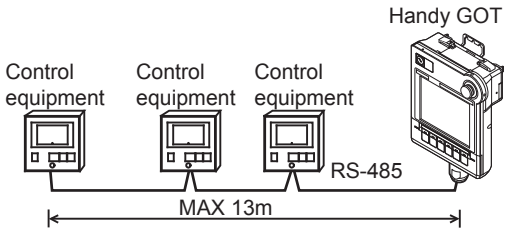
☞ Section 9.2 Communication Detail Settings

2 GOT clock function

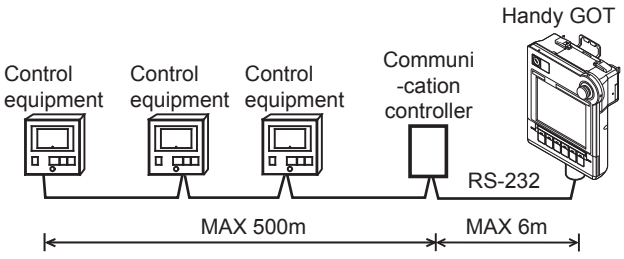
Since the control equipment does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

3 Connection distance

For the RS-232 connection, the connection distance must be 6m or less and for the RS-485 connection, the connection distance must be 13m or less.
In addition, when connecting multiple control equipments for the RS-485 connection, the overall extension distance must be 13m or less.



When using the communication controller (CMC10L), the connection distance between the GOT and the controller must be 6m or less and between the communication systems after the controller must be 500m or less.



4 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller. For example, faulty station that has communication timeout can be cut from the system.
For details of the setting contents of GOT internal device, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

5 When DMC50, AHC2001 and DMC10/SDC are mixed

GOT does not support connections with DMC50 and DMC10/SDC mixed.

6 Station number range of AHC2001

Although the station number range of AHC2001 is 1 to 127, use the station number range of DMC50 of 1 to 15.

7 Device range of AHC2001

The GOT does not support all the devices of AHC2001.
Use AHC2001 with the GOT within the device range equivalent to that of DMC50.

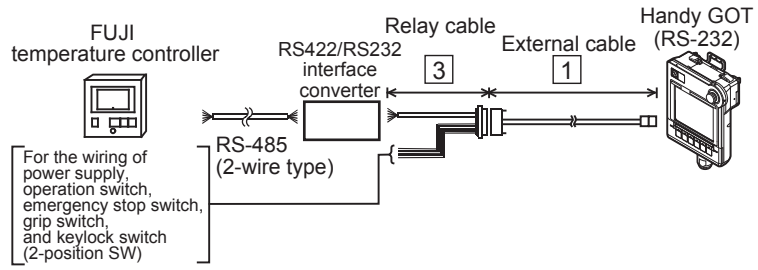
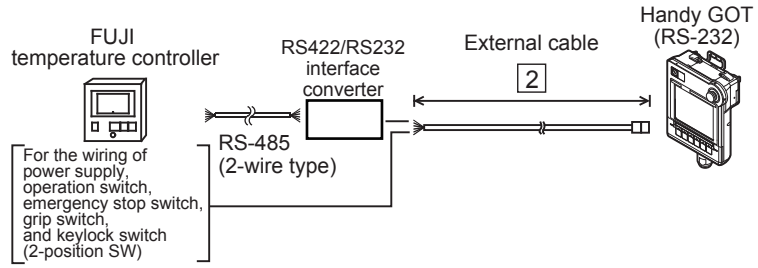
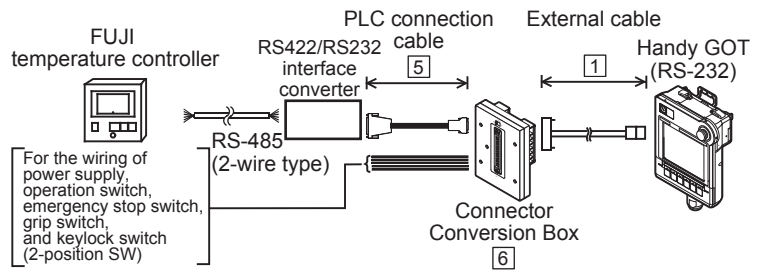
47. CONNECTION TO FUJI TEMPERATURE CONTROLLER

47.1 System Configuration and System Equipment

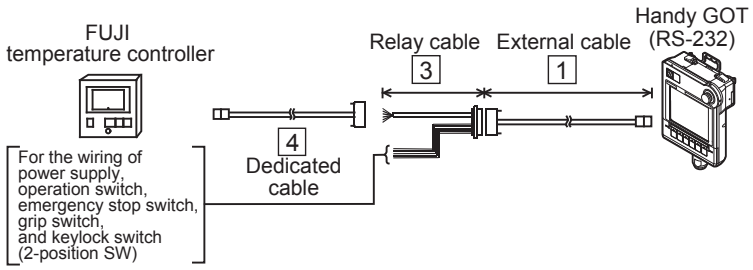
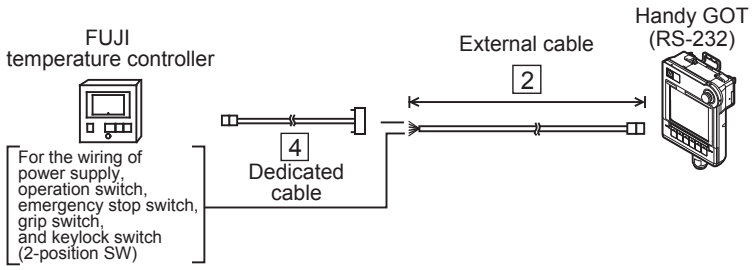
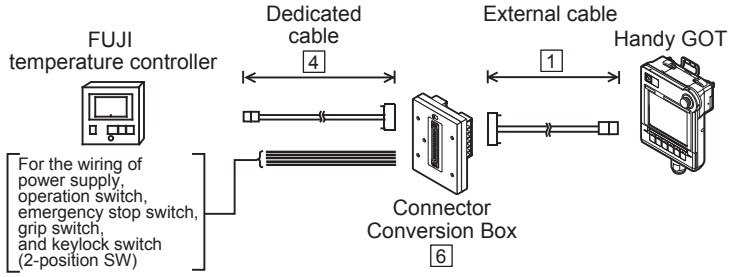
47.1.1 System configuration

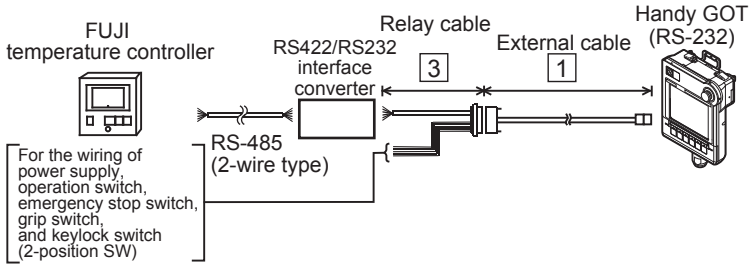
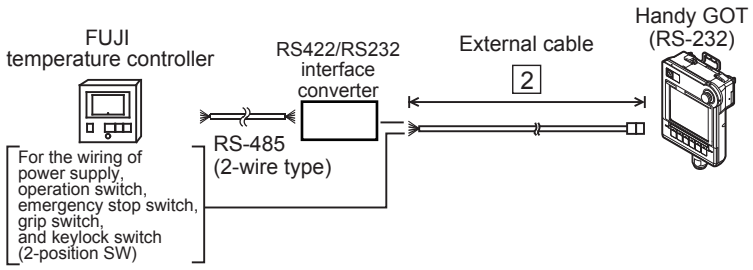
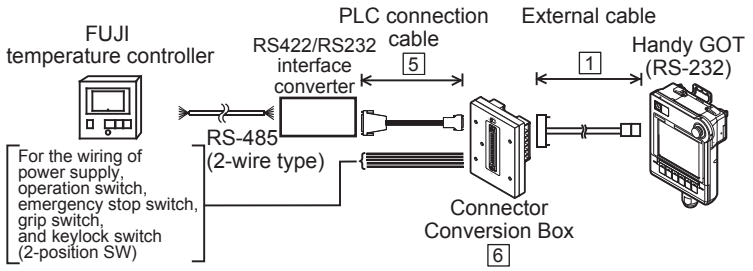
When connecting the Handy GOT to a temperature controller, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-485 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

Refer to the numbers described in System configuration (1, 2 ...) according to the numbers later described in "47.1.2 System equipment".

Connection conditions			System configuration
Temperature controller	Communication	Distance	
PXR3, PXR4, PXR5, PXR9	<Between GOT and interface converter> RS-232 <Between interface converter and temperature controller> RS-485 (2-wire type)	6m or less	  

- For PXR Series select a model to support the RS-485 MODBUS communication function.

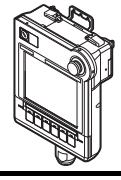
Connection conditions			System configuration
Temperature controller	Communication	Distance	
PXG4, PXG5, PXG9, PXH9	RS-232	6m or less	  

Connection conditions			System configuration
Temperature controller	Communication	Distance	
PXG4, PXG5, PXG9, PXH9	<Between GOT and interface converter> RS-232 <Between interface converter and temperature controller> RS-485 (2-wire type)	6m or less	  

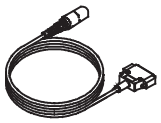
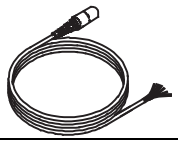
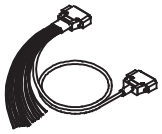
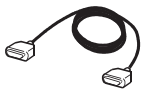
- When carrying out RS-485 communication with the GOT, select a model to support the RS-485 function for PXG4, PXG5, PXG9 and PXH9.

47.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 47.1.3 Connection cable	
Dedicated cable		4	ZZPPXH1*TK4H4563	
PLC connection cable		5	Must be prepared by the user. ☞ Section 47.1.3 Connection cable	

4 is manufactured by Fuji Electric CO., LTD. For details of the product, contact Fuji Electric Systems CO., LTD.

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Temperature controller	Number of GOTs	Number of temperature controllers	Communication unit	
			Name	Model name
PXR3, PXR4, PXR5, PXR9	1	31	Interface converter	RC-77
				SI-30A
				KS-485
PXG4, PXG5, PXG9, PXH9	1	1	Direct CPU connection	
		31	Interface converter	RC-77
				K3SC-10

RC-77 is manufactured by SYSMEXRA CO., LTD. For details of the product, contact SYSMEXRA CO., LTD.
SI-30A is manufactured by LINEEYE CO., LTD. For details of the product, contact LINEEYE CO., LTD.
KS-485 is manufactured by System Sacom corp. For details of the product, contact System Sacom corp.
K3SC-10 is manufactured by OMRON Corporation. For details of the product, contact OMRON Corporation.

47.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Model name		Interface converter	Connection cable	
			RS-232 cable	RS-485 cable
Temperature controller	PXR3, PXR4, PXR5, PXR9	RC-77	RS-232 cable 1)	RS-485 cable 1)
		SI-30A	RS-232 cable 2)	RS-485 cable 2)
		KS-485	RS-232 cable 2)	RS-485 cable 3)
	PXG4, PXG5, PXG9, PXH9	ZZPPXH1*TK4H4563	RS-232 cable 3)	—
		RC-77	RS-232 cable 1)	RS-485 cable 1)
		K3SC-10	RS-232 cable 4)	RS-485 cable 4)

For details of the models, refer to the following manual.

☞ User's Manual for the Fuji Electric temperature controller

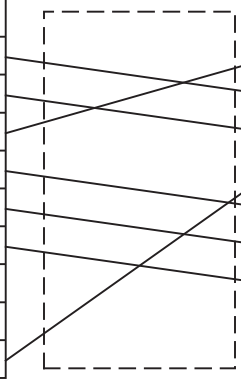
2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the temperature controller or the interface converter.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Interface converter side (RC-77)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—	1	CD
SD(TXD)	2	W/R (A)	3	2	RXD
ER(DTR)	3	W/BK (A)	4	3	TXD
RD(RXD)	4	GY/R (A)	2	4	DTR
DR(DSR)	5	GY/BK (A)	6	5	SG
RS(RTS)	6	O/R (A)	7	6	DSR
CS(CTS)	7	O/BK (A)	8	7	RTS
—	8	Y/R (A)	—	8	CTS
—	9	Y/BK (A)	—	9	NC
SG	10	PK/R (A)	5		

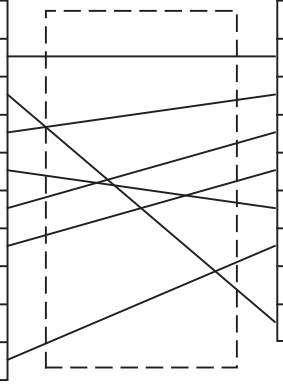


Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Interface converter side (SI-30A/KS-485)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—	1	FG
SD(TXD)	2	W/R (A)	3	2	TXD
ER(DTR)	3	W/BK (A)	4	3	RXD
RD(RXD)	4	GY/R (A)	2	4	RTS
DR(DSR)	5	GY/BK (A)	6	5	CTS
RS(RTS)	6	O/R (A)	7	6	DSR
CS(CTS)	7	O/BK (A)	8	7	SG
—	8	Y/R (A)	—		
—	9	Y/BK (A)	—	20	DTR
SG	10	PK/R (A)	5		

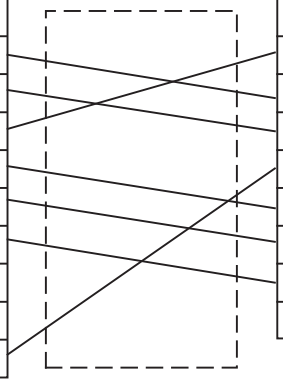


Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(3) RS-232 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	ZZPXH1*TK4H4563	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—	1	NC
SD(TXD)	2	W/R (A)	3	2	RD
ER(DTR)	3	W/BK (A)	4	3	SD
RD(RXD)	4	GY/R (A)	2	4	ER
DR(DSR)	5	GY/BK (A)	6	5	SG
RS(RTS)	6	O/R (A)	7	6	DR
CS(CTS)	7	O/BK (A)	8	7	RS
—	8	Y/R (A)	—	8	CS
—	9	Y/BK (A)	—	9	NC
SG	10	PK/R (A)	5		

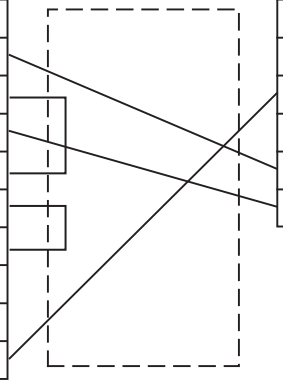


Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(4) RS-232 cable 4)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Interface converter side (K3SC-10)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—	1	—
SD(TXD)	2	W/R (A)	3	2	—
ER(DTR)	3	W/BK (A)	4	3	SG
RD(RXD)	4	GY/R (A)	2	4	—
DR(DSR)	5	GY/BK (A)	6	5	SD
RS(RTS)	6	O/R (A)	7	6	RD
CS(CTS)	7	O/BK (A)	8		
—	8	Y/R (A)	—		
—	9	Y/BK (A)	—		
SG	10	PK/R (A)	5		



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

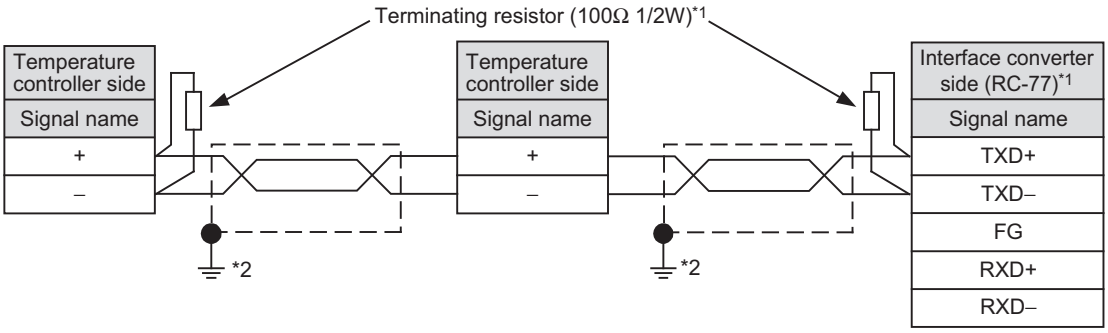
3 Connection diagram of RS-485 cable

The following provides the connection diagram of RS-485 cable connecting the Handy GOT to the temperature controller or the interface converter.

Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	PXR3	PXR4	PXR5/PXR9	PXG4	PXG5/PXG9	PXH9
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RS485 (+)	15	7	1	7	1	14
RS485 (–)	14	8	2	8	2	16

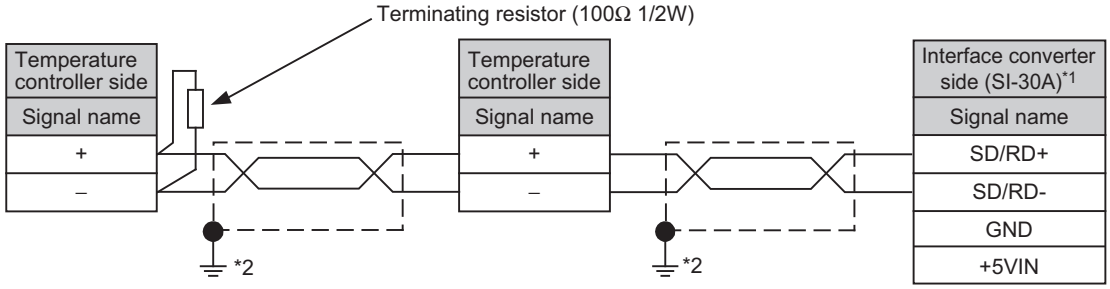
(1) RS-485 cable 1) (Between interface converter (RC-77) and temperature controller)



*1 Terminating resistor should be provided for a temperature controller which will be a terminal.
Terminating resistor should be provided outside for a interface converter which will be a terminal, with the terminating switch turned OFF.

*2 Connect FG grounding to the appropriate part of a cable shield line.

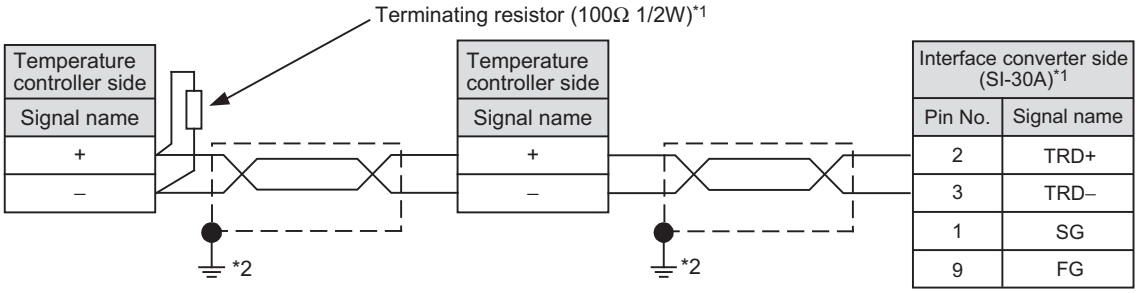
(2) RS-485 cable 2) (Between interface converter (SI-30A) and temperature controller)



*1 Terminating resistor should be provided for a temperature controller which will be a terminal.
Turn ON the terminating switch of an interface converter which will be a terminal.

*2 Connect FG grounding to the appropriate part of a cable shield line.

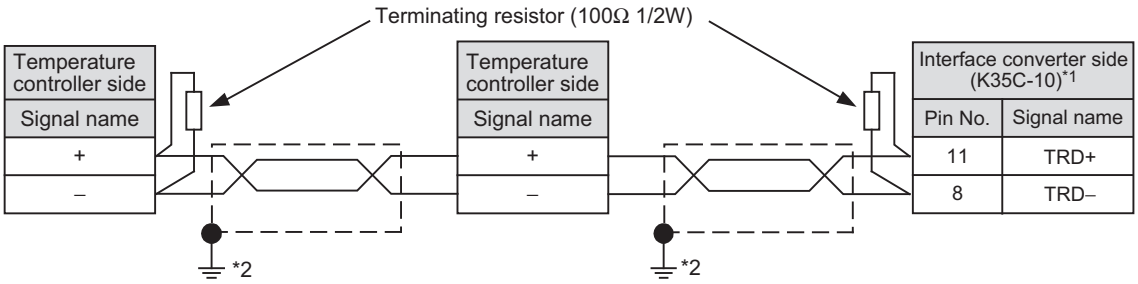
(3) RS-485 cable 3) (Between interface converter (KS-485) and temperature controller)



*1 Terminating resistor should be provided for a temperature controller which will be a terminal.
Turn ON the terminating switch of an interface converter which will be a terminal.

*2 Connect FG grounding to the appropriate part of a cable shield line.

(4) RS-485 cable 4) (Between interface converter (K3SC-10) and temperature controller)



*1 Terminating resistor should be provided for an interface converter and a temperature controller which will be terminals.

*2 Connect FG grounding to the appropriate part of a cable shield line.

47.1.4 Precautions when preparing a cable

1 Cable length

• The length of the RS-232 cable must be 6m or less.

2 Connecting terminating resistors

(1) FUJI temperature controller

When connecting a FUJI temperature controller, a terminating resistor must be set to the FUJI temperature controller.

☞ Section 47.2 Temperature Controller Side Setting

47.2 Temperature Controller Side Setting

47.2.1 Communication settings

Point

(1) Fuji Electric temperature controller
For details of Fuji Electric temperature controller, refer to the following manual.

☞ User's Manual for the Fuji Electric temperature controller

(2) Interface converter
For details on communication settings of the interface converter, refer to the following manual.

☞ User's Manual for interface converter

1 Connecting to PXG4, PXG5 or PXG9.

Make the communication settings by operating the key of the temperature controller.

(1) RS-485 communication settings

Setting items	Set value
Transmission speed *1	9600bps, 19200bps
Data length	8 bits (fixed)
Parity bit *1	Even, odd, none
Stop bit	1 bit (fixed)
Station No. *2	1 to 255
Communication permissions *3	Read only permission or read and overwrite permission

*1 Adjust with GOT settings.
*2 Avoid duplication of the station No. with any of the other units.
*3 Set if required.

(2) RS-232 communication settings (PC loader communication)

Setting items	Set value
Transmission speed	9600bps (fixed)
Data length	8 bits (fixed)
Parity bit	None (fixed)
Stop bit	1 bit (fixed)

2 Connecting to PXH9

Make the communication settings by operating the key of the temperature controller.

(1) RS-485 communication settings

Setting items	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Data length	8 bits (fixed)
Parity bit *1	Even, odd, none
Stop bit	1 bit (fixed)
Station No. *2	1 to 255

*1 Adjust with GOT settings.

*2 Avoid duplication of the station No. with any of the other units.

(2) RS-232 communication settings (PC loader communication)

Setting items	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Data length	8 bits (fixed)
Parity bit *1	Even, odd, none
Stop bit	1 bit (fixed)
Station No.	1 (fixed)

*1 Adjust with GOT settings.

3 Connecting to PXR3/4/5/9

Make the communication settings by operating the key of the temperature controller.

Setting items	Set value
Transmission speed	9600bps (fixed)
Data length	8 bits (fixed)
Parity bit *1	Even, odd, none
Stop bit	1 bit (fixed)
Station No. *2	1 to 255
Communication protocol	MODBUS

*1 Adjust with GOT settings.

*2 Avoid duplication of the station No. with any of the other units.

4 Connecting to interface converter (RC-77)

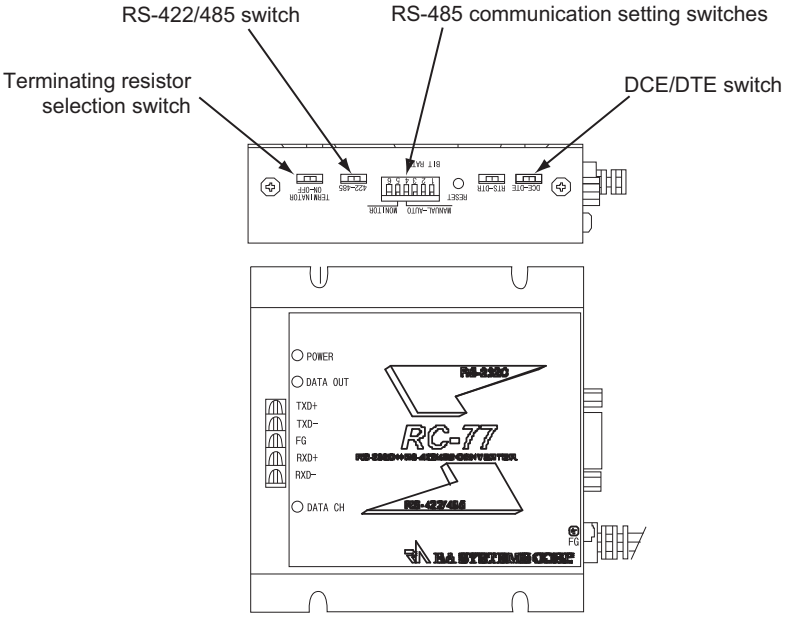
(1) Communication settings

Make the communication settings using a setting switch.

Setting items	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
MANUAL-AUTO	AUTO
DCE/DTE switching	DCE
RS-422/485 switching	RS-485
Terminating resistor selection	OFF

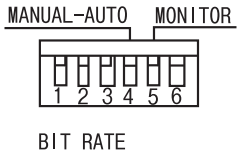
*1 Adjust with GOT and temperature controller settings.

(2) Settings by switch



(a) Settings of transmission speed and MANUAL-AUTO

Item	Set value	Switch No.			
		1	2	3	4
Transmission speed	9600bps	ON	ON	OFF	
	19200bps	OFF	OFF	ON	
	38400bps	ON	OFF	ON	
MANUAL-AUTO	AUTO				ON



(b) Settings of DCE/DTE, RS-422/485 and terminating resistor selection

Item	Set value
DCE/DTE	DCE
RS-422/485	RS-485
Terminating resistor selection	OFF

5 Connecting to interface converter (SI-30A)

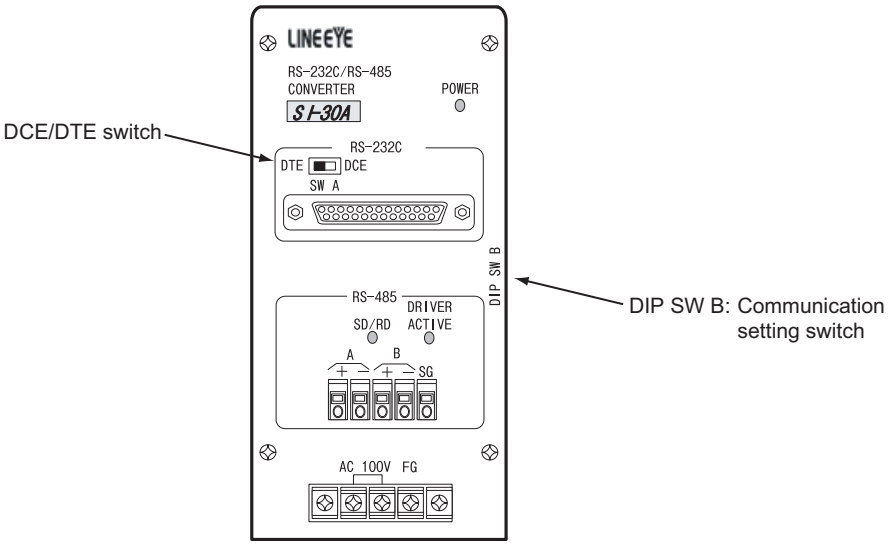
(1) Communication settings

Make the communication settings using a setting switch.

Setting items	Set value
Transmission speed	9600bps
MANUAL-AUTO	AUTO
DCE/DTE switching	DCE
Terminating resistor selection*1	ON/OFF

*1 Set if required.

(2) Settings by switch



(a) Settings of transmission speed

transmission speed	Switch No.		
	1	2	3
9600bps	ON	ON	OFF

(b) Settings of MANUAL-AUTO

MANUAL-AUTO	Switch No.
	5
AUTO	ON

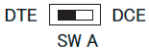
(c) Settings of terminating resistor

terminating resistor*1	Switch No.
	4
Enable	ON
Disable	OFF

*1 Set if required.

(d) Setting of DCE/DTE switching

Setting items	Set value
DCE/DTE	DCE



6 Connecting to interface converter (KS-485)

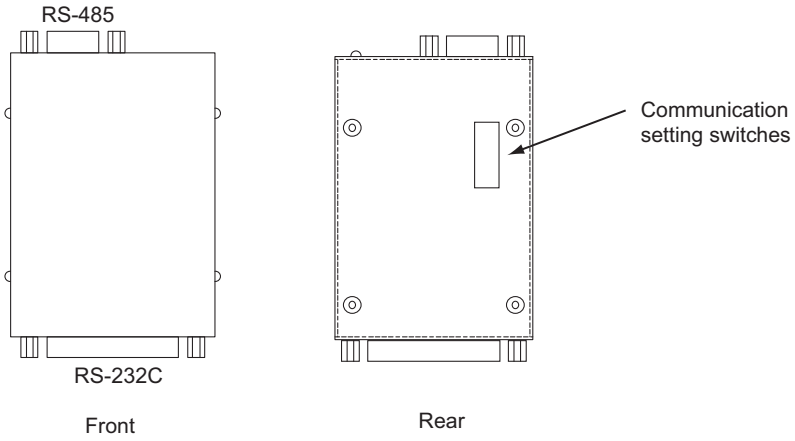
(1) Communication settings

Make the communication settings using a setting switch.

Setting items	Set value
Transmission speed	9600bps
Terminating resistor selection*1	ON/OFF

*1 Set if required.

(2) Settings by switch



(a) Settings of transmission speed and terminating resistor selection

Setting items	Set value	Switch No.							
		1	2	3	4*2	5	6*2	7	8
Transmission speed	9600bps	ON	OFF	ON	–	ON	–		
Terminating resistor selection*1	Enable							ON	ON
	Disable							OFF	OFF

*1 Set if required.

*2 Disabled.

7 Connecting to interface converter (K3SC-10)

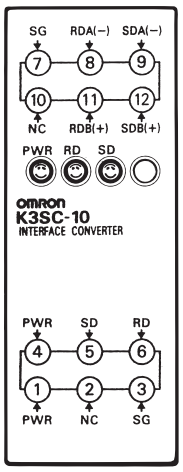
(1) Communication settings

Make the communication settings by operating the DIP switch of the temperature controller.

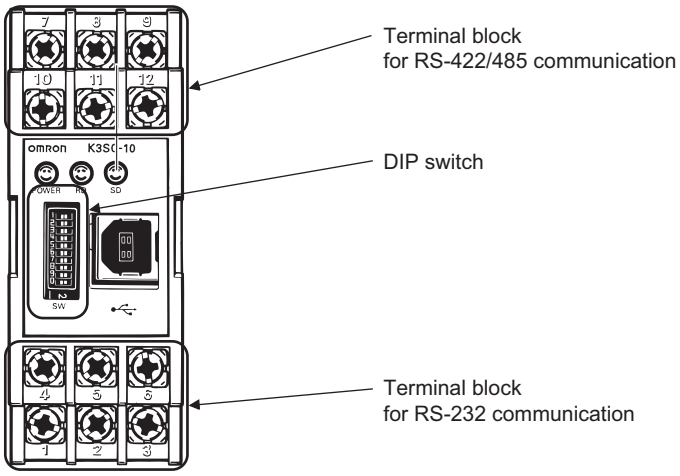
Setting items	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Data length*1	8 bits
Parity bit *1	Even, odd, none
Stop bit*1	1 bit
Master/slave device	RS-232↔RS-485
Echoback	Without

*1 Make the same setting as that of GOT side.

(2) Settings by DIP switch



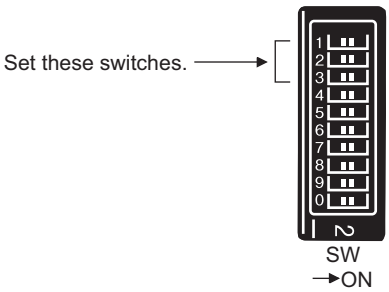
Front of K3SC-10 body



Inside of K3SC-10 body
(when removing the front cover)

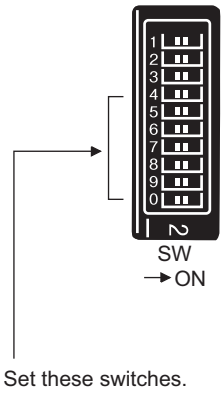
(a) Transmission speed settings

Transmission speed (bps)	Switch No.		
	1	2	3
9600	OFF	OFF	OFF
19200	ON	OFF	ON
38400	OFF	ON	ON



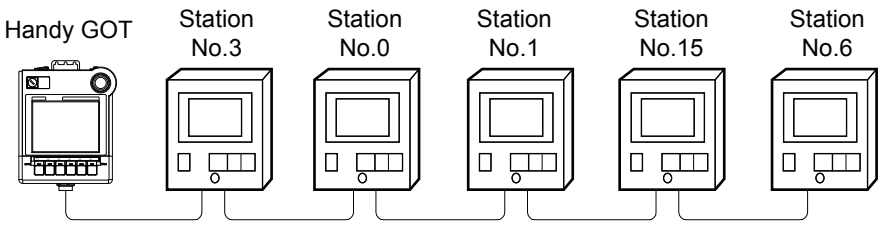
(b) Settings of data length, parity bit, stop bit, master/slave device and echoback

Setting items	Set value	Switch No.						
		4	5	6	7	8	9	0
Data length	8 bits	ON						
Stop bit	1 bit		ON					
Parity bit	Even			OFF	OFF			
	Odd			ON	OFF			
	None			OFF	ON			
Master/slave device	RS-232C↔RS-485					OFF	OFF	
Echoback	Without							OFF



47.2.2 Station No. settings

Set each station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the temperature controller of which data is to be changed.

Specification range
1 to 199
216 to 255

(2) Indirect specification

When setting the device, indirectly specify the station number of the temperature controller of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 200 to 215 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station No.	Compatible device	Setting range
200	GD10	1 to 255 For the setting other than the above, communication timeout error will occur.
201	GD11	
202	GD12	
203	GD13	
204	GD14	
205	GD15	
206	GD16	
207	GD17	
208	GD18	
209	GD19	
210	GD20	
211	GD21	
212	GD22	
213	GD23	
214	GD24	
215	GD25	

Point

Host address of the GOT

Make sure to set the host address of the GOT within the direct specification range (from 1 to 199 and from 216 to 255).

47.3 Precautions

47.3.1 Precautions

1 Station number setting of the temperature controller system

In the system configuration, the temperature controller with the station number set with the host address must be included. For details of host address setting, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 Communication detail settings

1 Format 1 and format 2

Format 1: Available when the GOT is connected to the PXR, PXG or PXH Series.

The communication speed may be low when many points are monitored because only small quantity of data can be handled in each communication.

Format 2: Available when the GOT is connected to the PXR or PXG Series.

The communication is performed efficiently when many points are monitored because large quantity of data can be handled in each communication.
(The format 2 is not available when the GOT is connected to the PXH Series.)

2 Host address of the GOT

Set the host address of the GOT within the range from 1 to 199 or from 216 to 255.

3 Delay time

Set the delay time to 5 ms or more (Recommended value: 10 ms or more).

3 GOT clock function

Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

4 FIX processing of temperature controller

The temperature controller power must not be turned off during the FIX processing. Otherwise, data within the non-volatile memory will corrupt and the temperature controller will be unavailable.

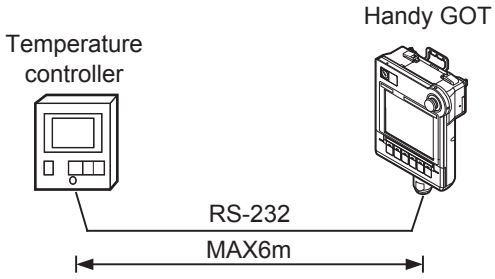
5 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller. For example, faulty station that has communication timeout can be cut from the system. For details of the setting contents of GOT internal device, refer to the following manual.

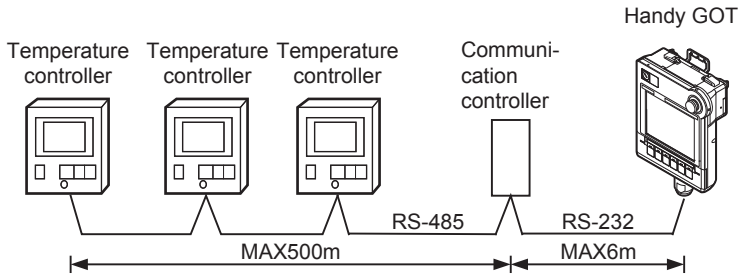
☞ GT Designer2 Version☐ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

6 Connction distance

In RS-232 connection, make sure that the distance between the GOT and the temperature controller is 6m or less (including the dedicated cable).



When using a communication controller, make sure that the distance between the GOT and the communication controller is 6m or less, and the distance of the system after the communication controller is 500m or less.



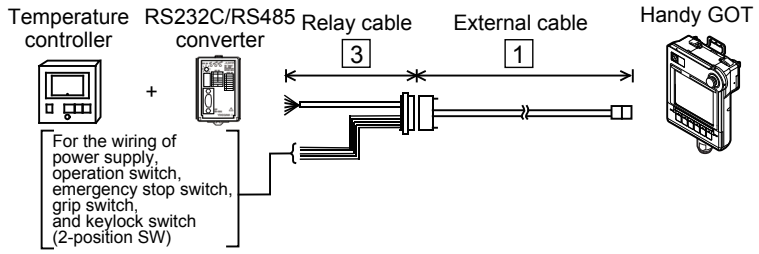
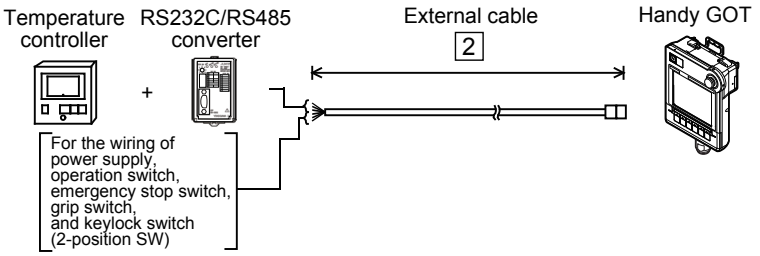
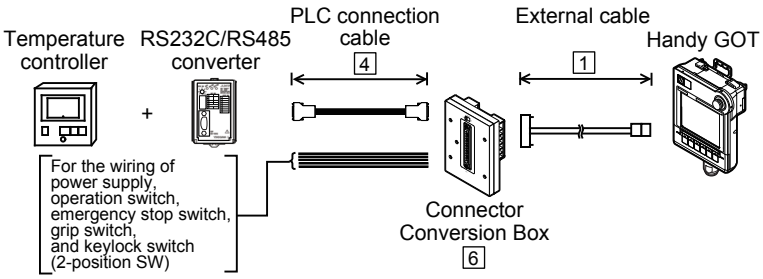
48. CONNECTION TO YOKOGAWA TEMPERATURE CONTROLLER

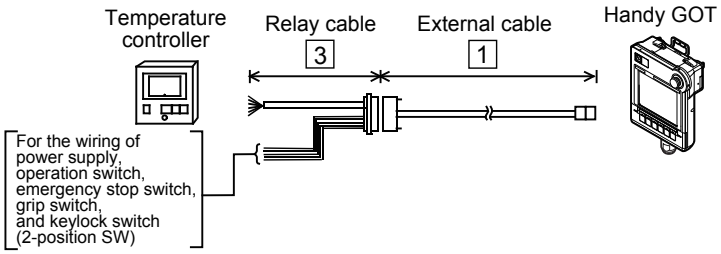
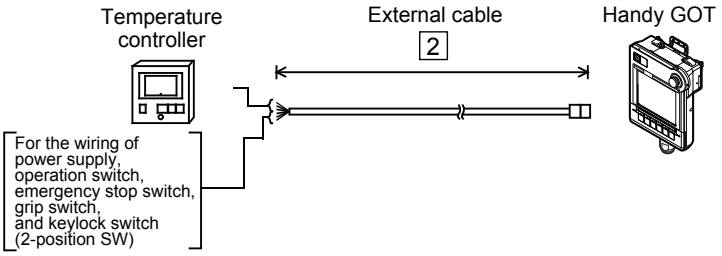
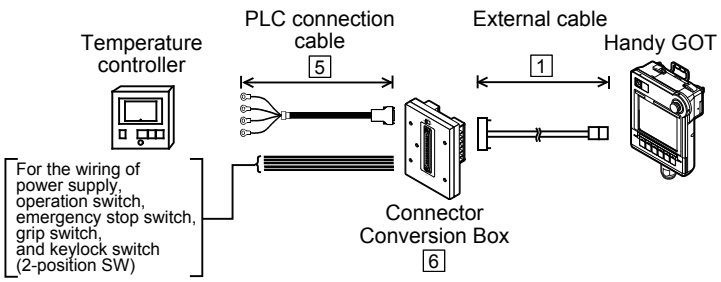
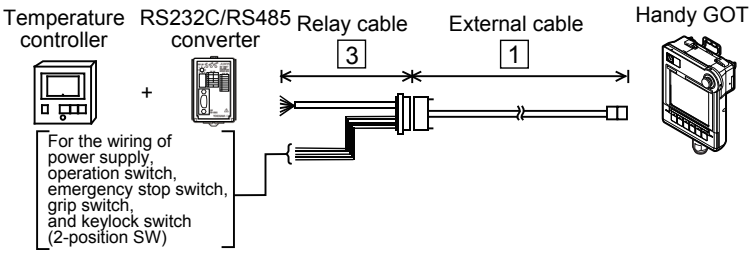
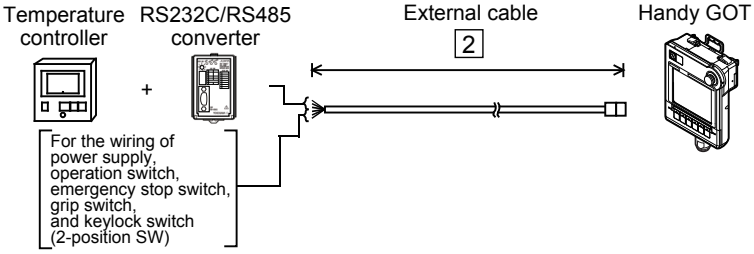
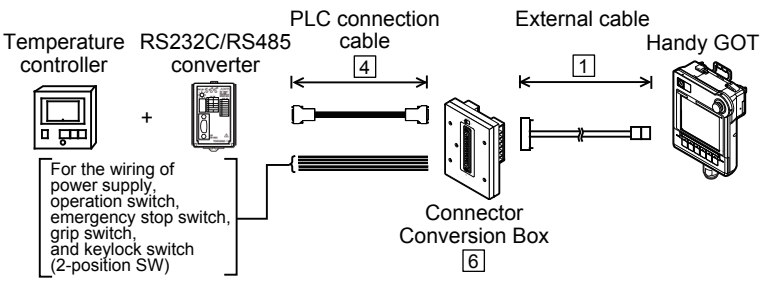
48.1 System Configuration and System Equipment

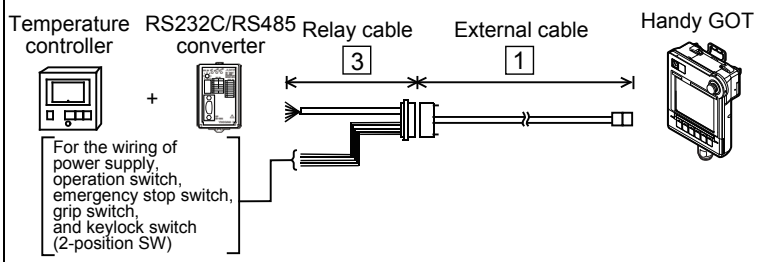
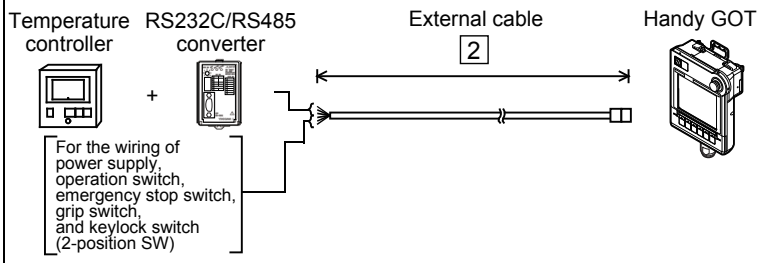
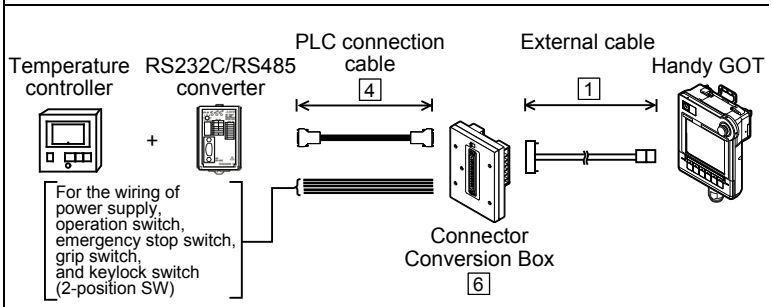
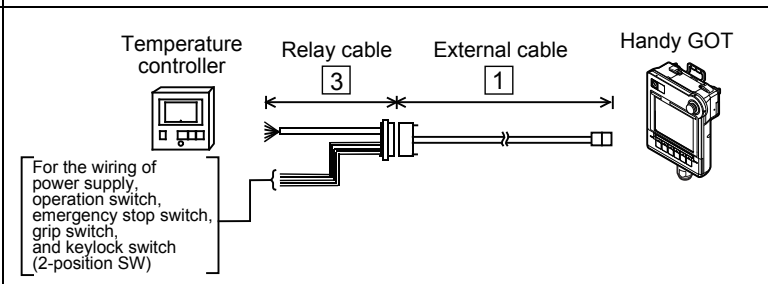
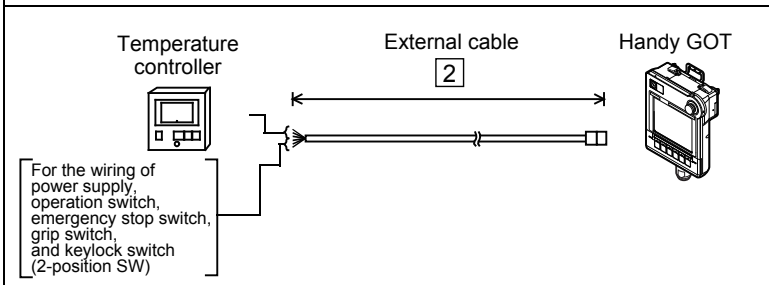
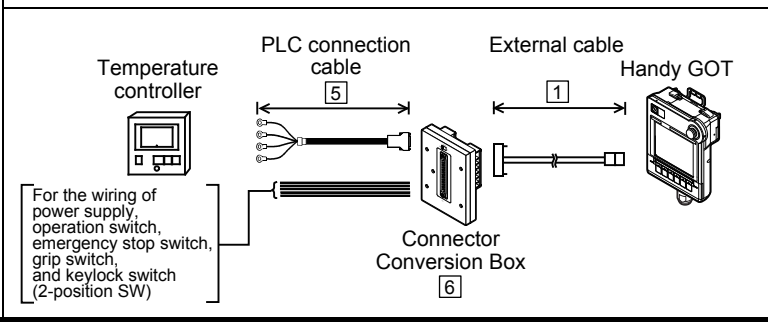
48.1.1 System configuration

When connecting the Handy GOT to a temperature controller, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-485 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

Refer to the numbers described in System configuration (1, 2 ...) according to the numbers later described in "48.1.2 System equipment".

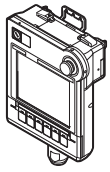
Connection conditions			System configuration
Temperature controller	Communication	Distance	
GREEN Series UT100 Series UT2000 Series UTAdvanced Series	RS-232	6m or less	
			
			

Connection conditions			System configuration
Temperature controller	Communication	Distance	
GREEN Series UT2000 Series UTAdvanced Series	RS-485	13m or less	
			
			
UT100 Series	RS-232	6m or less	
			
			

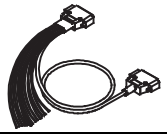
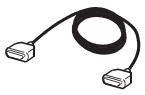
Connection conditions			System configuration
Temperature controller	Communication	Distance	
UT2000 Series	RS-232	6m or less	
			
			
	RS-485	13m or less	
			
			

48.1.2 System equipment

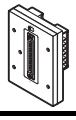
1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 48.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 48.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Temperature controller	Number of GOTs	Number of temperature controllers	Communication	Communication unit	
				Name	Model name
GREEN Series UT100 Series UTAdvanced Series	1	31	RS-232	RS232C/RS485 converter	ML2-□
UT2000 Series	1	16			
GREEN Series UT2000 Series UTAdvanced Series	1	10	RS-485	—	—

48.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable to be used.

Connection point		Connection cable
Between temperature controller and connector conversion box	GREEN Series	GT09-C30R40303-6T GT09-C100R40303-6T
	UT2000 Series	GT09-C30R40304-6T GT09-C100R40304-6T
Between RS232C/RS485 converter and GOT	—	GT09-C30R20304-9S

2 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Connection point		Connection cable
Between temperature controller and GOT	GREEN Series	RS-485 cable 1)
	UT2000 Series	RS-485 cable 5)
	UTAdvanced Series	RS-485 cable 1)
Between temperature controller and RS232C/RS485 converter	GREEN Series	RS-485 cable 2), RS-485 cable 3)
	UT100 Series	RS-485 cable 3)
	UT2000 Series	RS-485 cable 4)
	UTAdvanced Series	RS-485 cable 2), RS-485 cable 3)
Between RS232C/RS485 converter and GOT	—	RS-232 cable 1)

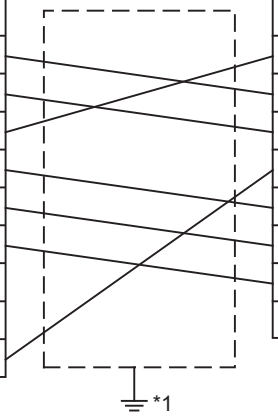
3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the temperature controller or the communication controller.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	RS232C/RS485 converter side (ML2-□)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)		Pin No.	Signal name
FG(Shield)	1	Shield	—	1	CD
SD(TXD)	2	W/R (A)	3	2	RD
ER(DTR)	3	W/BK (A)	4	3	SD
RD(RXD)	4	GY/R (A)	2	4	ER
DR(DSR)	5	GY/BK (A)	6	5	SG
RS(RTS)	6	O/R (A)	7	6	DR
CS(CTS)	7	O/BK (A)	8	7	RS
—	8	Y/R (A)	—	8	CS
—	9	Y/BK (A)	—	9	NC
SG	10	PK/R (A)	5		



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect FG grounding to the appropriate part of a cable shield line.

4 Connection diagram of RS-485 cable

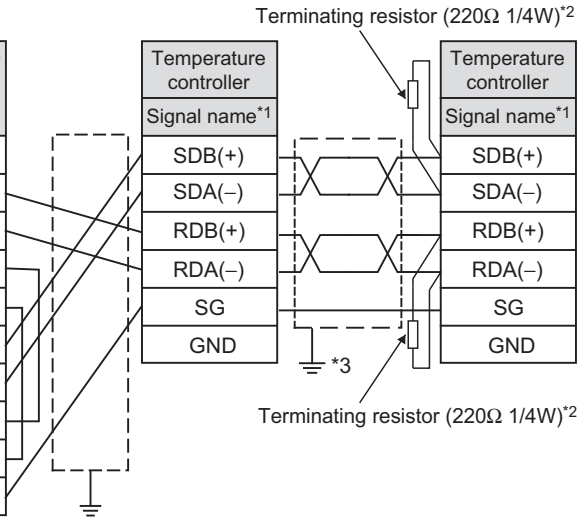
The following provides the connection diagram of RS-485 cable connecting the Handy GOT to the temperature controller or the communication controller.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-485 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C □□□-37P Pin No.	GT11H-C □□□ Wire color (color type)	
FG(Shield)	1	Shield	—
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
SG	10	PK/R (A)	5



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	GREEN Series		UTAdvanced Series			
	UT/UP/UM	US	UT32A/UP35A/UM33A	UT35A/UT55A*4/UP55A*6	UT55A*5/UP55A*7	UT75A
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
SDB (+)	23	21	301	407	501	1
SDA (-)	24	22	302	408	502	2
RDB (+)	25	23	304	410	504	4
RDA (-)	26	24	305	411	505	5
SG	27	25	303	409	503	3

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Connect FG grounding to the appropriate part of a cable shield line.

*4 When the suffix code is "1" in type 3 except "1" or "6" in type 2

*5 When the suffix code is "1" or "2" in type 2 without the optional suffix code "/LP"

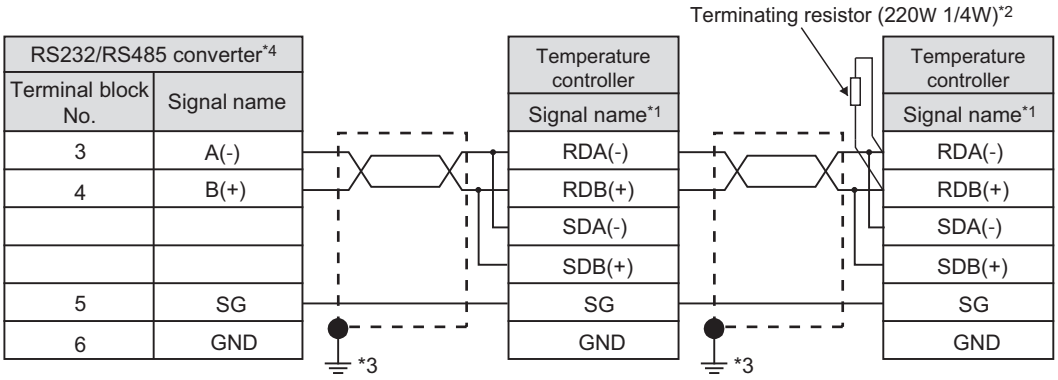
*6 (For standard) when the suffix code is "1" in type 3 except "3" in type 2, (for detail) when the optional suffix code is "/CH3"

*7 (For standard) when the suffix code is "2" in type 2, (for detail) when the optional suffix code is "/C4"

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-485 cable 2)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	GREEN Series		UTAdvanced Series			
	UT/UP/ UM	US	UT32A/UP35A/ UM33A	UT35A/UT55A*5/ UP55A*7	UT55A*6/UP55A*8	UT75A
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RDA (-)	26	24	305	411	505	5
RDB (+)	25	23	304	410	504	4
SDA (-)	24	22	302	408	502	2
SDB (+)	23	21	301	407	501	1
SG	27	25	303	409	503	3

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Connect FG grounding to the appropriate part of a cable shield line.

*4 Terminating resistor should be provided outside for a RS232C/RS485 converter which will be a terminal, with the terminating switch turned ON.

*5 When the suffix code is "1" in type 3 except "1" or "6" in type 2

*6 When the suffix code is "1" or "2" in type 2 without the optional suffix code "/LP"

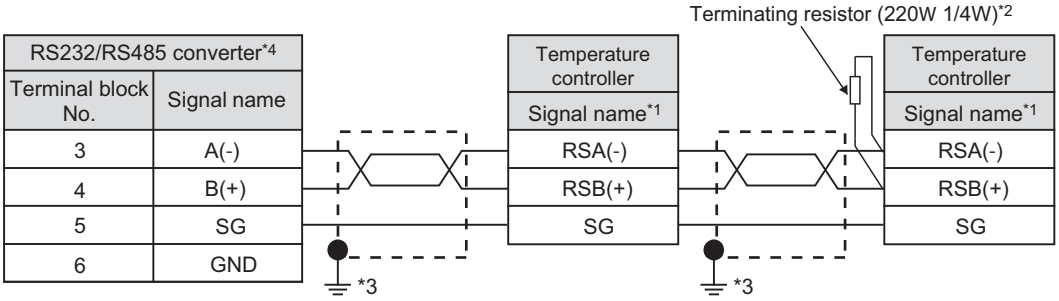
*7 (For standard) when the suffix code is "1" in type 3 except "3" in type 2, (for detail) when the optional suffix code is "/CH3"

*8 (For standard) when the suffix code is "2" in type 2, (for detail) when the optional suffix code is "/C4"

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(3) RS-485 cable 3)



*1 Pin No. of temperature controller differs depending on the model. Refer to the following table.

Signal name	Model of temperature controller					
	GREEN Series	UT100 Series		UTAdvanced Series		
	UT750/ UP750	UT130/UT150/UP150	UT152/UT155	UT52A/UM33A*7	UT55A*5/UP55A*6	UT75A
	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.	Pin No.
RSA (-)	29	4	27	302	502	2
RSB (+)	28	3	26	301	501	1
SG	30	5	28	303	503	3

*2 Terminating resistor should be provided for a temperature controller which will be a terminal.

*3 Connect FG grounding to the appropriate part of a cable shield line.

*4 Terminating resistor should be provided outside for a RS232C/RS485 converter which will be a terminal, with the terminating switch turned ON.

*5 When the suffix code is "1" or "2" in type 2 with the optional suffix code "/LP"

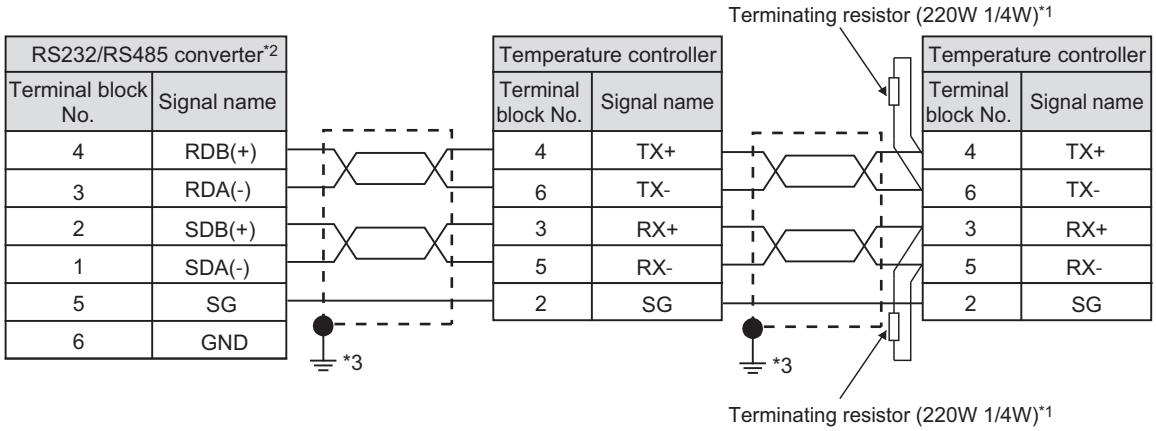
*6 (For standard) when the suffix code is "2" in type 2, (for detail) when the optional suffix code is "/C4"

*7 When the suffix code is "1" in type 2 with the optional suffix code "/LP"

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(4) RS-485 cable 4)



*1 Terminating resistor should be provided for a temperature controller which will be a terminal.

*2 Terminating resistor should be provided outside for a RS232C/RS485 converter which will be a terminal, with the terminating switch turned ON.

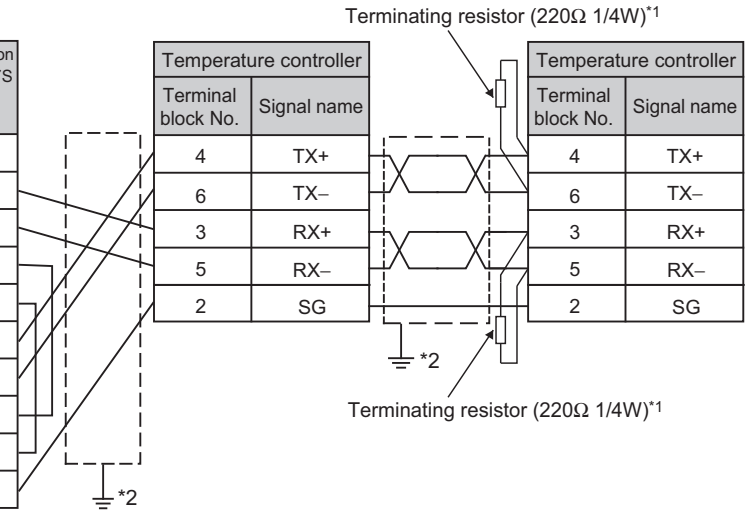
*3 Connect FG grounding to the appropriate part of a cable shield line.

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(5) RS-485 cable 5)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)	
FG(Shield)	1	Shield	—
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
SG	10	PK/R (A)	5



*1 Terminating resistor should be provided for a temperature controller which will be a terminal.

*2 Connect FG grounding to the appropriate part of a cable shield line.

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

48.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-485 cable must be 13m or less.

48.2 Temperature Controller Side Setting

48.2.1 Communication settings

Point

(1) YOKOGAWA temperature controller
For details of YOKOGAWA temperature controller, refer to the following manual.

☞User's Manual for the YOKOGAWA temperature controller

(2) RS232C/RS485 converter
For details on communication settings of the RS232C/RS485 converter, refer to the following manual.

☞User's Manual for RS232C/RS485 converter

1 Connecting to GREEN Series

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

(a) For the UT□ /UP□ /UM□ /US100 (except UT750, UP750)

Setting items	Set value
Transmission speed	9600bps (fixed)
Data length*1	7 bits, 8 bits
Parity bit *1	Even, odd, none
Stop bit*1	1 bit, 2 bits
Address*2	1 to 99
Protocol selection*1	0:PC link communication (without sum check) 1:PC link communication (with sum check)

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the address with any of the other units.

(b) For the UT750, UP750

Setting items	Set value	
Transmission speed*1	RS-485 communication	9600bps (fixed)
	High performance RS-485 communication	9600bps, 19200bps, 38400bps
Data length*1	7 bits, 8 bits	
Parity bit *1	Even, odd, none	
Stop bit*1	1 bit, 2 bits	
Address*2	1 to 99	
Protocol selection*1	0:PC link communication (without sum check) 1:PC link communication (with sum check)	

*1 Adjust the settings with GOT settings.
*2 Avoid duplication of the address with any of the other units.

2 Connecting to UT100 Series

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting items	Set value
Transmission speed	9600bps
Data length*1	7 bits, 8 bits
Parity bit *1	Even, odd, none
Stop bit*1	1 bit, 2 bits
Address*2	1 to 99
Protocol selection*1	0:PC link communication (without sum check) 1:PC link communication (with sum check)

*1 Adjust the settings with GOT settings.

*2 Avoid duplication of the address with any of the other units.

3 Connecting to UT2000 Series

(1) Communication settings

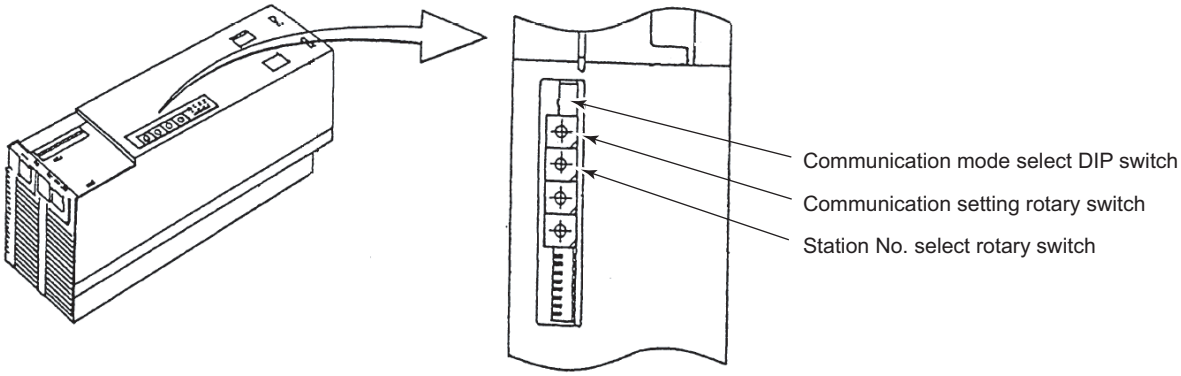
Make the communication settings using setting switches.

Setting items	Set value
Transmission speed	9600bps (fixed)
Data length *1	8bits (fixed)
Parity bit *1	Odd, even, none
Stop bit *1	1bits (fixed)
Station No.*1*2	1 to 16
Communication mode	PC link communication mode

*1 Adjust the settings with GOT settings.

*2 Avoid duplication of the address with any of the other units.

(2) Settings by switch



(a) Settings of the transmission speed and the parity

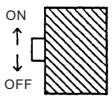
Make those settings by operating the communication setting rotary switch.

Switch positions	Transmission speed	Parity
0	9600bps	None
1		Odd
2		Even

(b) A setting of the communication mode

Make this setting by operating the communication mode select DIP switch.

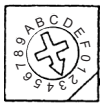
Switch positions	Communication mode
ON	PC link communication mode



(3) A setting of the station No.

Make this setting by operating the station No. select rotary switch.

Switch positions	Station No.
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
A	11
B	12
C	13
D	14
E	15
F	16



4 Connecting to UTAdvanced Series

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting items	Set value
Transmission speed*1	9600bps, 19200bps, 38400bps
Data length*1	7 bits, 8 bits
Parity bit *1	Even, odd, none
Stop bit*1	1 bit, 2 bits
Address*1*2	1 to 99
Minimum response time	0 to 10(x 10ms)
Protocol selection*1	PCL(0):PC link communication (without sum check) PCLSM(1):PC link communication (with sum check)

*1 Adjust the settings with GOT settings.

*2 Avoid duplication of the address with any of the other units.

5 Connecting to RS232C/RS485 converter (ML2-□)

(1) Communication settings

Make the communication settings using setting switches.

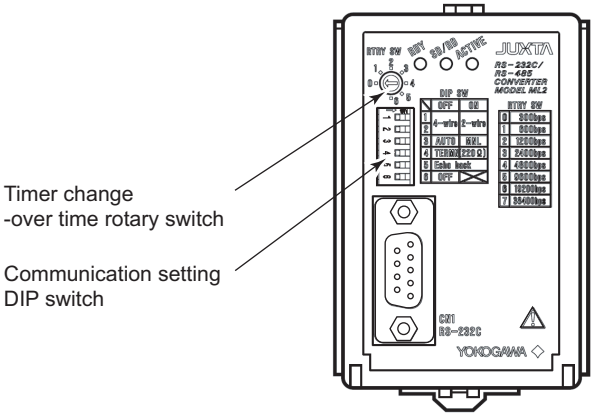
Setting items	Set value
Transmission speed *1	9600bps, 19200bps, 38400bps
Setting (2-wire/4-wire) *2	2-wire, 4-wire
Terminating resistor *2	with, without
Echo back	OFF
RS-485 driver-active control	AUTO

*1 Adjust the settings with GOT settings.

*2 Set it depending on the following cable connection diagram.

Section 48.1.3 Connection cable

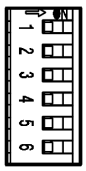
(2) Settings by switch



(a) Settings of the setting (2-wire/4-wire), the RS-485 driver-active control, the terminating resistor, the echo back

Make those settings by operating the communication setting DIP switch.

Setting items	Set value	Switch No.				
		1	2	3	4	5
Setting (2-wire/4-wire)	4-wire	OFF	OFF			
	2-wire	ON	ON			
RS-485 driver-active control	AUTO			OFF		
Terminating resistor	with				ON	
	without				OFF	
Echo back	OFF					OFF



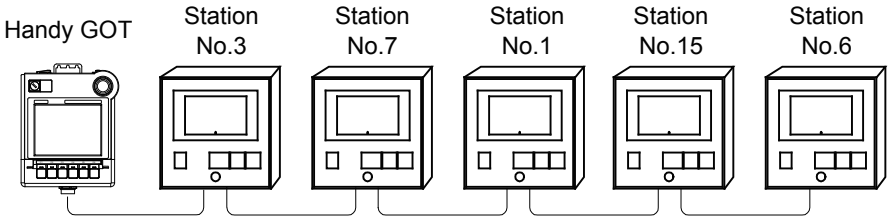
(b) A setting of the transmission speed

Make this setting by operating the timer change-over time rotary switch.

Switch position	Transmission speed
5	9600bps
6	19200bps
7	38400bps

48.2.2 Station No. settings

Set each station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the temperature controller of which data is to be changed.

Specification range
1 to 99

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 115 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station No.	Compatible device	Setting range
100	GD10	1 to 99 For the setting other than the above, a communication timeout error will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
  However, when carrying out WORD BIT write-in operation, only the indicating controller of which the station No. is same as the host address will be a target.
  For details of host address setting, refer to the following.
  ☞Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)
- For read-out operation, only the indicating controller of which the station No. is same as the host address will be a target. For details of host address setting, refer to the following.
  ☞Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Point

Temperature controllers that are available for all station specification

All station specification can be used only for the following temperature controllers.
UT420, UT450, UT520, UT550, UT551, UT750,
UP550, UP750, US1000

48.3 Precautions

48.3.1 Precautions

1 Station number setting of the temperature controller system

In the system configuration, the temperature controller with the station number set with the host address must be included. For details of host address setting, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

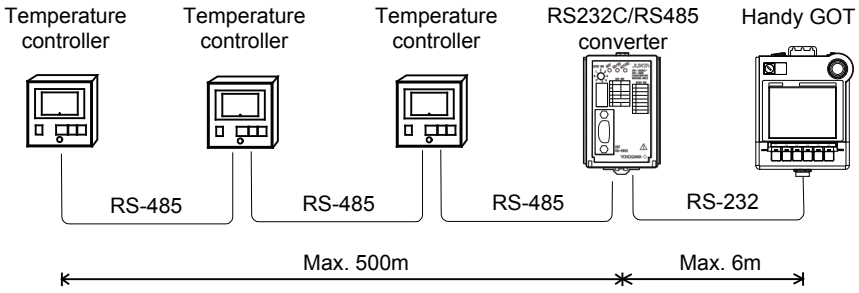
2 GOT clock function

Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

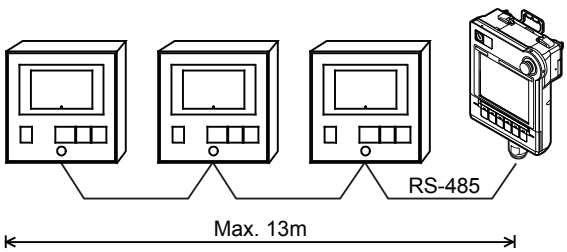
3 Connection distance

For the RS-232 connection, the connection distance must be 6m or less and for the RS-485 connection, the connection distance must be 13m or less.

When using the RS232C/RS485 converter, the connection distance between the GOT and the controller must be 6m or less and between the communication systems after the controller must be 500m or less.



In addition, when connecting multiple temperature controllers for the RS-485 connection, the overall extension distance must be 13m or less.



4 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller. For example, faulty station that has communication timeout can be cut from the system. For details of the setting contents of GOT internal device, refer to the following manual.

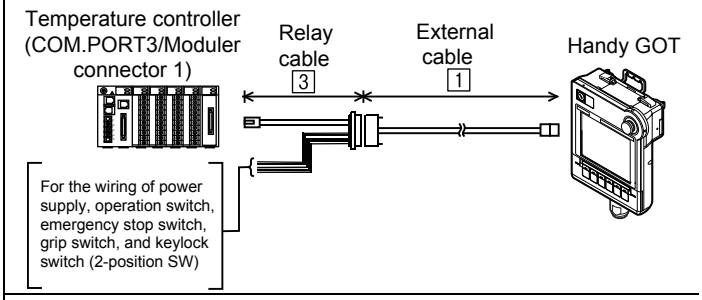
☞ GT Designer2 Version☐ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

49. CONNECTION TO RKC TEMPERATURE CONTROLLER

49.1 System Configuration and System Equipment

49.1.1 System configuration

When connecting the Handy GOT to a temperature controller, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the numbers described in System configuration (1, 2...) according to the numbers later described in "49.1.2 System equipment".

<table>
<tr><th colspan="3">Connection conditions</th><th rowspan="2">System configuration</th></tr>
<tr><th>Temperature controller</th><th>Communication</th><th>Distance</th></tr>
<tr><td rowspan="2">H-PCP-J,
H-PCP-A,
H-PCP-B</td><td rowspan="2">RS-232
/RS-422</td><td rowspan="2">6m or less (RS232)
/13m or less (RS422)</td><td> 
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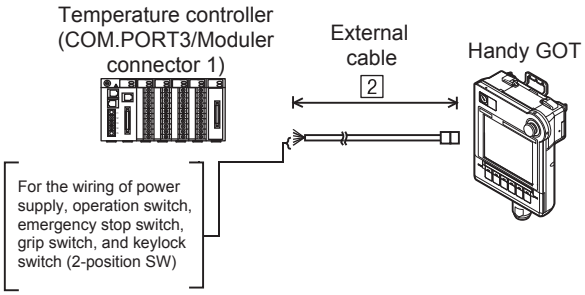
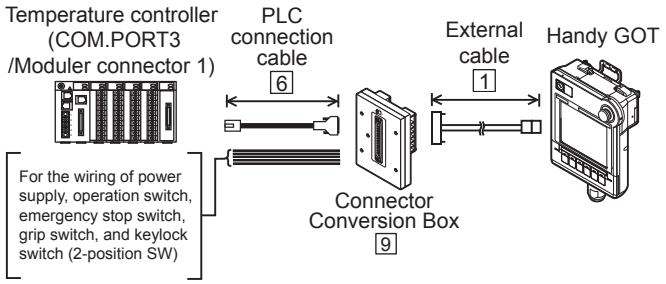
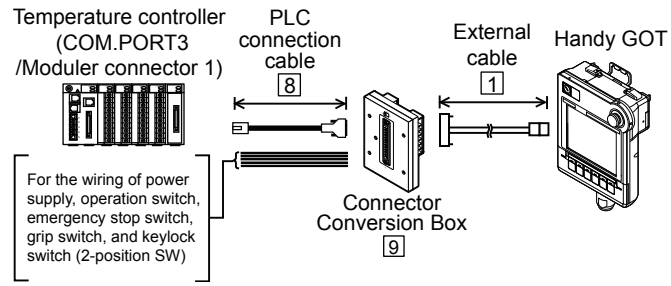
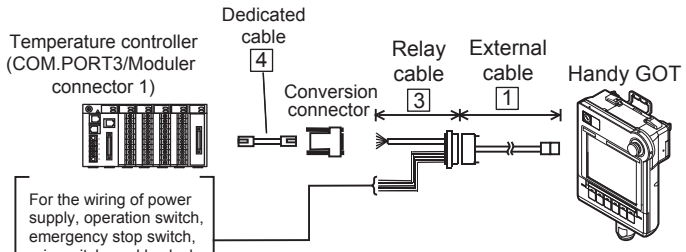
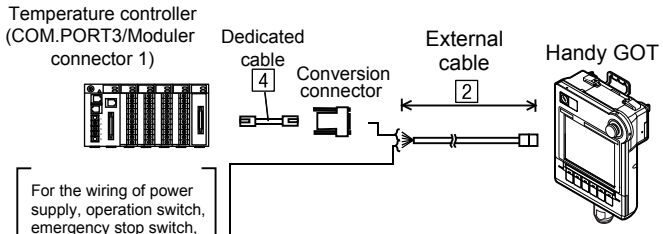
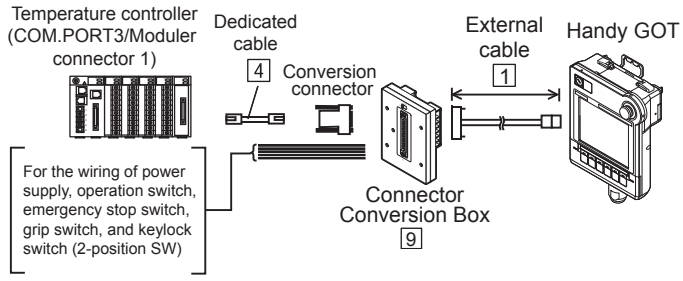
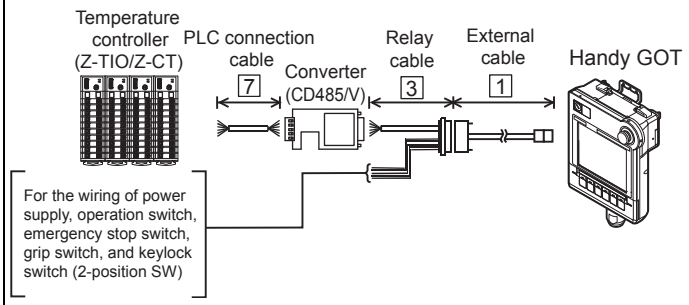
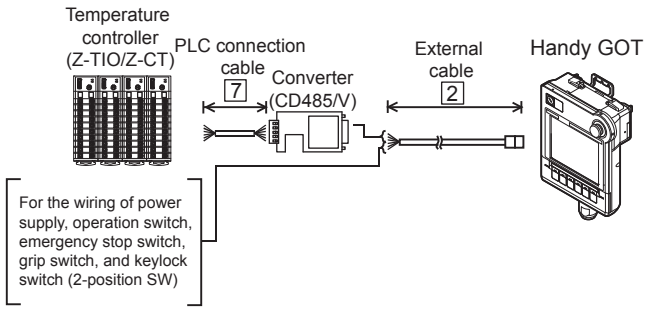
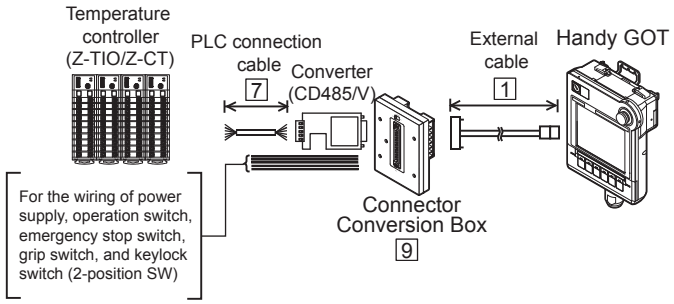
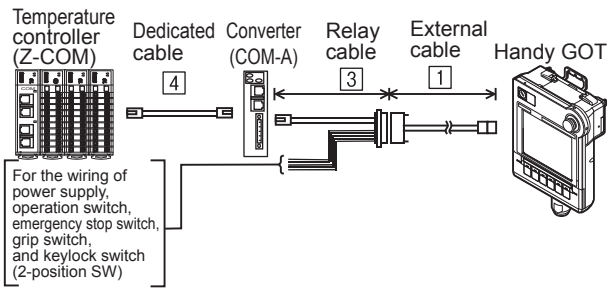
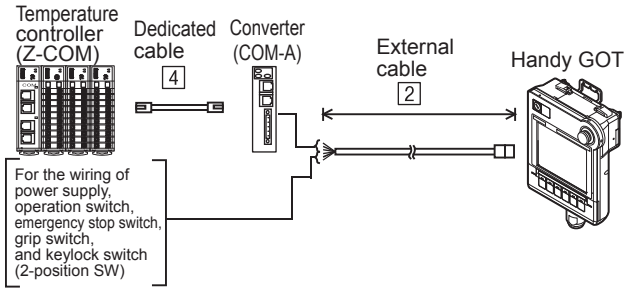
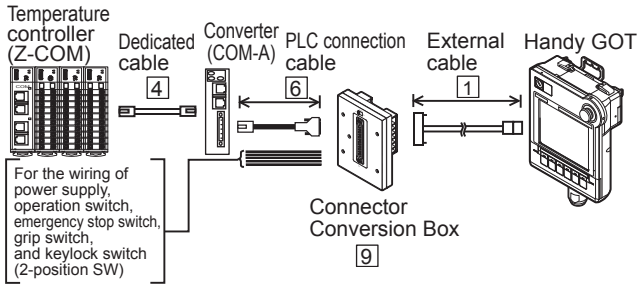
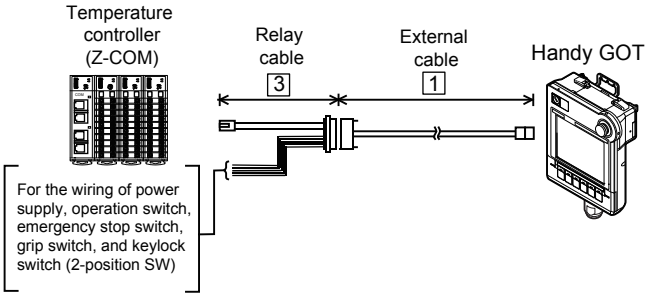
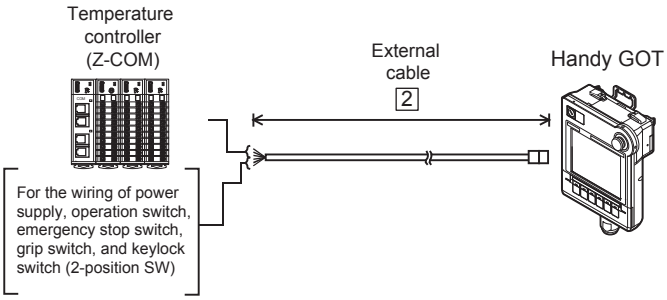
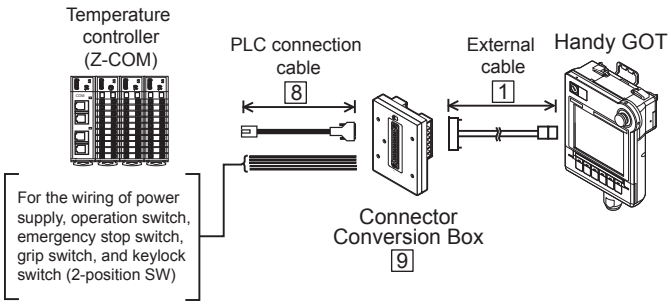
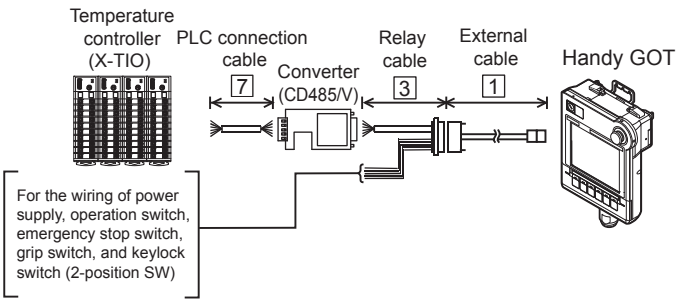
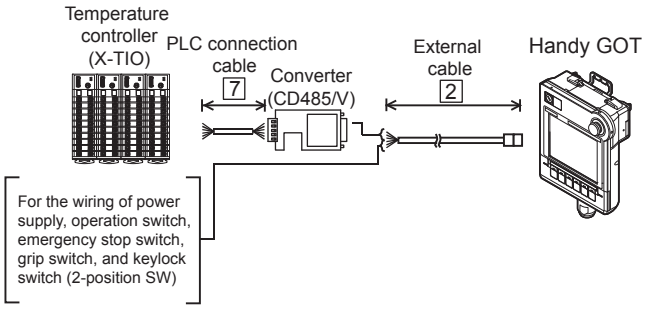
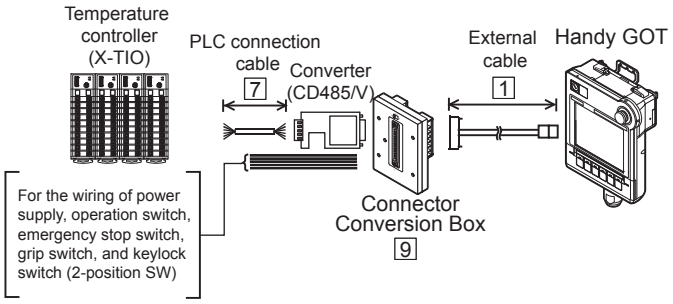
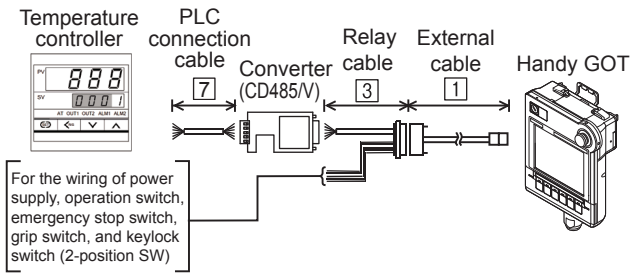
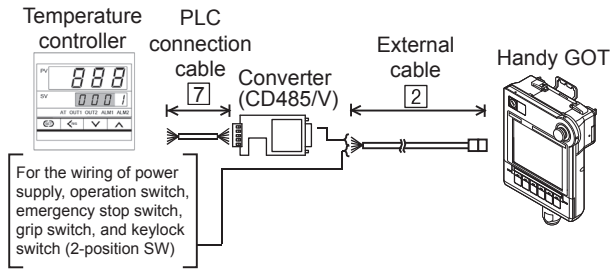
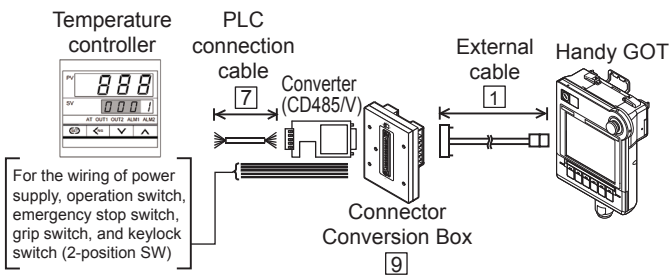
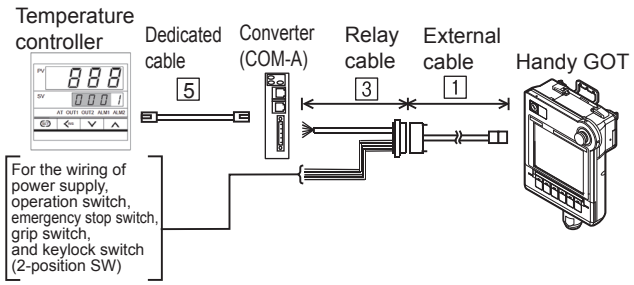
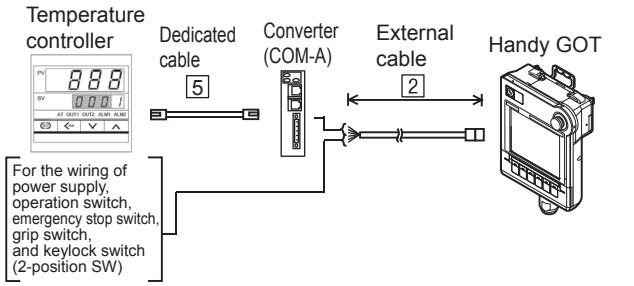
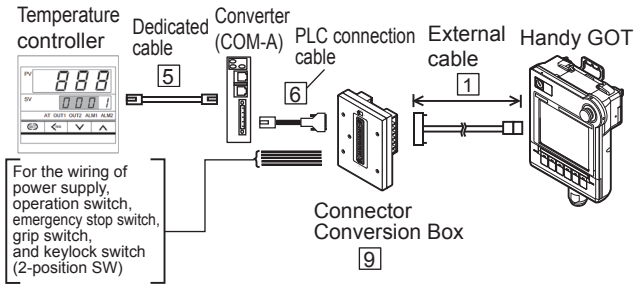
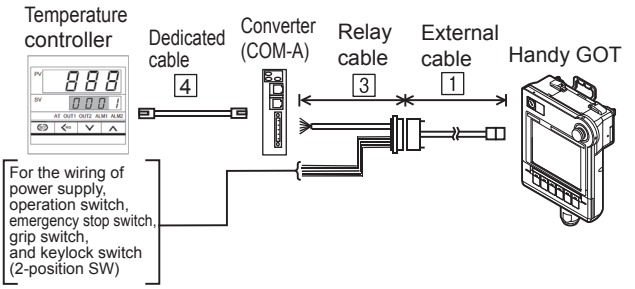
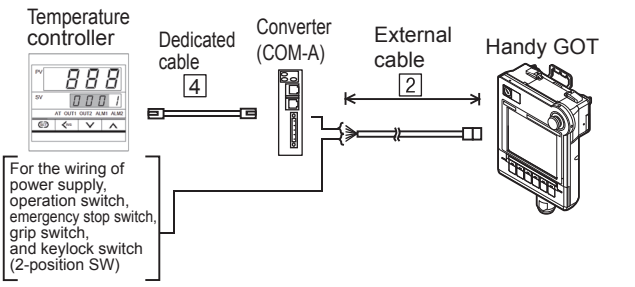
<tr><td> 
</td></tr>
<tr><td>RS-232</td><td>6m or less</td><td> 
</td></tr>
</table>

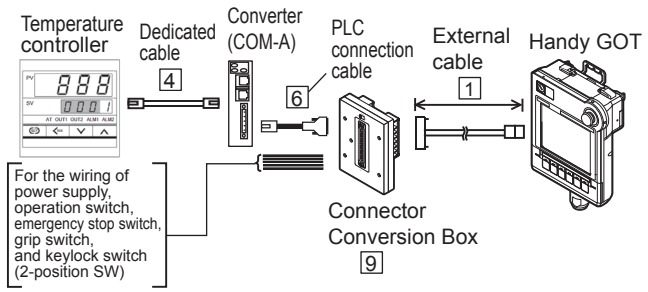
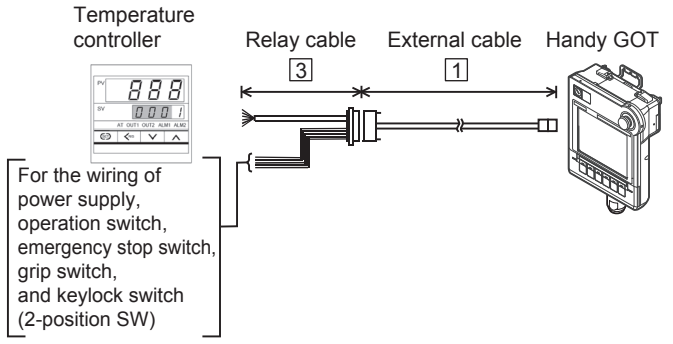
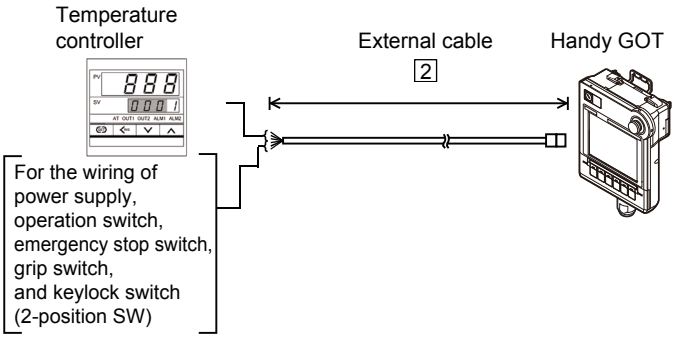
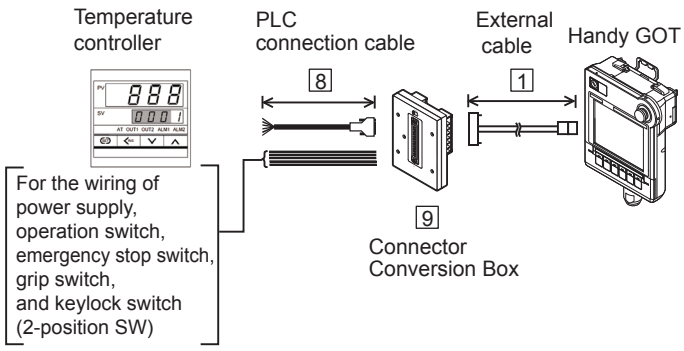
Connection conditions			System configuration
Temperature controller	Communication	Distance	
H-PCP-J, H-PCP-A, H-PCP-B	RS-422	13m or less	
	RS-232	6m or less	
			
			

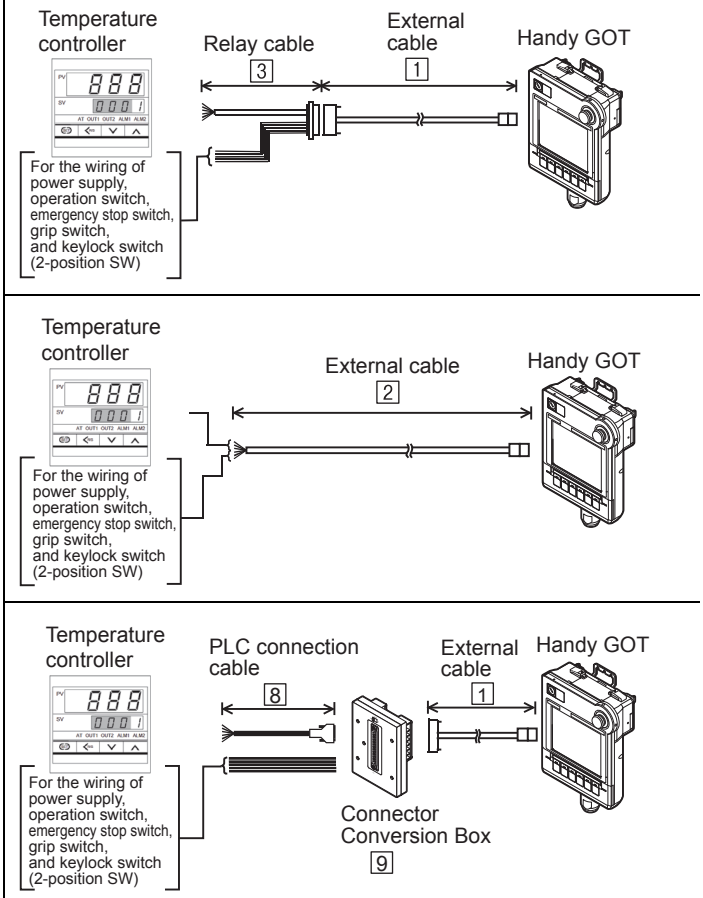
Connection conditions			System configuration
Temperature controller	Communication	Distance	
SRZ series	RS-232	6m or less	
			
			
			
			

Connection conditions			System configuration
Temperature controller	Communication	Distance	
SRZ series	RS-232	6m or less	
	RS-422	13m or less	
			
			
SRX series	RS-232	6m or less	

Connection conditions			System configuration
Temperature controller	Communication	Distance	
SRX series	RS-232	6m or less	
			
CB series CB100, CB400, CB500, CB700, CB900 FB series FB100, FB400, FB900 RB series RB100, RB400, RB500, RB700, RB900 PF series PF900 HA series HA400, HA900 RMC series RMC500 THV series THV-A1 SA series SA100, SA200 SB series SB1	RS-232	6m or less	
			
			

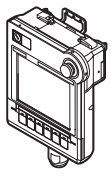
Connection conditions			System configuration
Temperature controller	Communication	Distance	
FB series FB400, FB900 PF series PF900	RS-232	6m or less	
			
			
THV series THV-A1	RS-232	6m or less	
			

Connection conditions			System configuration
Temperature controller	Communication	Distance	
THV series THV-A1	RS-232	6m or less	
FB series FB400, FB900 PF series PF900 HA series HA400, HA900 MA series MA900, MA901	RS-232 /RS-422	6m or less (RS232) /13m or less (RS422)	
			
			

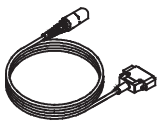
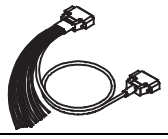
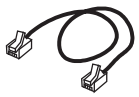
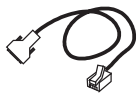
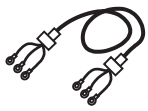
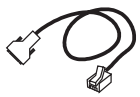
Connection conditions			System configuration
Temperature controller	Communication	Distance	
AG series AG500 THV series THV-A1 B400 series B400 (RS-422 specifications)	RS-422	13m or less	

49.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 49.1.3 Connection cable	
Dedicated cable		4	W-BF-02-0500(0.5m), W-BF-02-1000(1.0m), W-BF-02-3000(3.0m)	
		5	W-BF-01-0500(0.5m), W-BF-01-1000(1.0m), W-BF-01-3000(3.0m)	
PLC connection cable		6	W-BF-28-0500 (0.5m), W-BF-28-1000 (1.0m), W-BF-28-3000 (3.0m)	
		7	Must be prepared by the user. ☞ Section 49.1.3 Connection cable	
		8		

4, 5 are products manufactured by RKC. For details of these products, contact RKC.

3 Option

Image	No.	Name	Model name	Remark
	9	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Temperature controller	Number of GOTs	Number of temperature controllers	Communication	Communication unit	
				Name	Model name
H-PCP-J, H-PCP-A, H-PCP-B	1	1	RS-232	—	—
	1	1	RS-232	Conversion connector	FAX067*1
	1	16	RS-422	—	—
SRZ (Connecting to Z-TIO/Z-CT)	1	31*2	RS-232	RS232C/485 Conversion connector	CD485/V*3
SRZ (Connecting to Z-COM)	1	16*4	RS-232	Communication level converter	COM-A*1
	1	10*4	RS-422	—	—
SRX*8 (Connecting to X-TIO)	1	31*7	RS-232	RS232C/485 Conversion connector	CD485/V*3
CB100, CB400, CB500, CB700, CB900	1	31	RS-232	RS232C/485 Conversion connector	CD485/V*3
FB100*5	1	31	RS-232	RS232C/485 Conversion connector	CD485/V*3
FB400, FB900*5	1	1	RS-232	—	—
	1	31	RS-232	Communication level converter	COM-A*1
	1	31	RS-232	RS232C/485 Conversion connector	CD485/V*3
	1	31	RS-422	—	—
RB100, RB400, RB500, RB700, RB900*5	1	31	RS-232	RS232C/485 Conversion connector	CD485/V*3
PF900*6	1	1	RS-232	—	—
	1	11	RS-422	—	—
	1	31	RS-232	Communication level converter	COM-A*1
	1	31	RS-232	RS232C/485 Conversion connector	CD485/V*3
HA400, HA900*6	1	1	RS-232	—	—
	1	11	RS-422	—	—
	1	31	RS-232	RS232C/485 Conversion connector	CD485/V*3
MA900, MA901*6	1	1	RS-232	—	—
	1	11	RS-422	—	—
RMC500*6	1	31	RS-232	RS232C/485 Conversion connector	CD485/V*3
SA100, SA200*8	1	31	RS-232	RS232C/485 Conversion connector	CD485/V*3
AG500*6	1	11	RS-422	—	—
THV-A1*6	1	11	RS-422	—	—
	1	31	RS-232	Communication level converter	COM-A*1
	1	31	RS-232	RS232C/485 Conversion connector	CD485/V*3
SB1	1	31	RS-422	RS232C/485 Conversion connector	CD485/V*3
B400 (RS-422 specifications)	1	31	RS-422	—	—

*1 FAX067 and COM-A is manufactured by RKC. For details of the product, contact RKC

*2 For SRZ unit, up to 16 temperature control modules (Z-TIO) can be connected.
Max. of 31 units of digital input/output modules (Z-DIO) and temperature control modules (Z-TIO) combined can be connected.

*3 CD485/V is manufactured by DATA LINK Co.,Ltd. For details of the product, contact DATA LINK Co.,Ltd.

*4 For Handy GOT, up to 10 communication extension modules (Z-COM) can be connected (up to 16 units can be connected when using Communication level converter).
For communication extension module, up to 16 temperature control module (Z-TIO) can be connected.
Max. of 31 units of digital input/output modules (Z-DIO) and temperature control modules (Z-TIO) can be connected with communication extension module (Z-COM).

*5 Only GT Designer3 (Ver. 1.10L or later) supports the FB and RB Series.

*6 Only GT Designer3 (Ver. 1.22Y or later) supports the PF, HA, MA, RMC, AG and THV Series.

*7 For SRX unit, up to 31 temperature control modules (X-TIO) can be connected.
Max. of 31 units of digital input/output modules (X-DI/X-DO) and temperature control modules (X-TIO) combined can be connected.

*8 Only GT Designer3 (Ver. 1.28E or later) supports the SRX unit, SA100 and SA200.

49.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C☐☐☐ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Model name		Connection cable		
		RS-232 cable	RS-422 cable	RS-485 cable
Temperature controller	H-PCP-J*1,H-PCP-A*2,H-PCP-B*2	RS-232 cable 1)	RS-422 cable 1)	—
	SRZ*3	—	RS-422 cable 2) RS-422 cable 3)	—
	FB400, FB900, PF900, HA400, HA900, MA900, MA901	RS-232 cable 5)	RS-422 cable 4) RS-422 cable 5)	—
	AG500	—	RS-422 cable 4) RS-422 cable 5)	—
	THV-A1	—	RS-422 cable 2)	—
	B400 (RS-422 specifications)	—	RS-422 cable 4)	—
Conversion connector	FAX067	RS-232 cable 2)	—	—
RS232C/485 Conversion connector	CD485/V	RS-232 cable 3)	—	RS-485 cable
Communication level converter	COM-A	RS-232 cable 4)	—	—

*1 For H-PCP-J, select the following models.

Connector	Communication format	Models
COM.PORT1 COM.PORT2	RS-422	H-PCP-J-☐4☐-D*☐☐-☐☐☐
	RS-485	H-PCP-J-☐5☐-D*☐☐-☐☐☐
COM.PORT3	RS-232	H-PCP-J-☐☐1-D*☐☐-☐☐☐
	RS-422	H-PCP-J-☐☐4-D*☐☐-☐☐☐
	RS-485	H-PCP-J-☐☐5-D*☐☐-☐☐☐

*2 For H-PCP-A and H-PCP-B, select the following models.

Connector	Communication format	Models
Modular connector 1	RS-232	H-PCP-A-☐1N-☐*☐☐Z-1021 H-PCP-B-☐1N-☐☐☐Z-1021
	RS-422	H-PCP-A-☐4N-☐*☐☐Z-1021 H-PCP-B-☐4N-☐*☐☐Z-1021

For details of the models, refer to the following manual.

☞ User's Manual for the RKC temperature controller

*3 For SRZ, select the following models.

module name	Connector	Communication format	Models
Temperature Control module (Z-TIO)	terminal block	RS-485	Z-TIO-A-☐-☐☐☐☐/☐
			Z-TIO-B-☐-☐☐☐☐/☐
Digital Input/Output module			Z-DIO-A-☐-☐☐/☐
Communication Extension module	COM.PORT1 COM.PORT2	RS-422	Z-COM-A-4 ☐-☐☐☐
	COM.PORT3 COM.PORT4	RS-422	Z-COM-A-4 ☐-☐☐☐

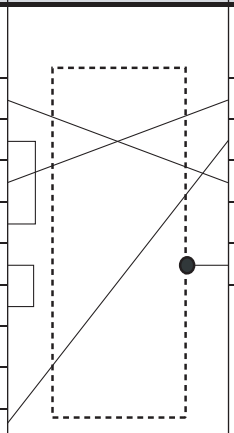
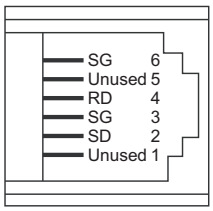
2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the temperature controller or the conversion connector.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1) Between Handy GOT and temperature controller)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	RKC product side (Modular connector)		
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name	Pin assignment*1
FG (Shield)	1	Shield	—		1	NC	
SD(TXD)	2	W/R (A)	3		2	SD	
ER(DTR)	3	W/BK (A)	4		3	SG	
RD(RXD)	4	GY/R (A)	2		4	RD	
DR(DSR)	5	GY/BK (A)	6		5	NC	
RS(RTS)	6	O/R (A)	7		6	SG	
CS(CTS)	7	O/BK (A)	8				
—	8	Y/R (A)	—				
—	9	Y/BK (A)	—				
SG	10	PK/R (A)	5				

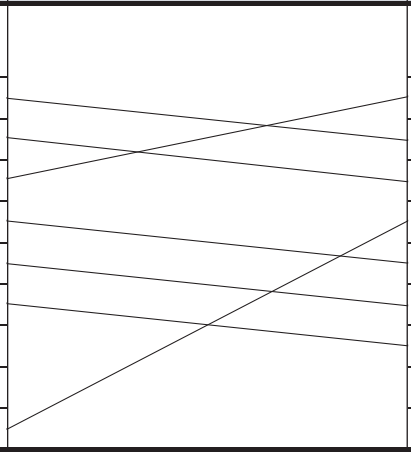
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

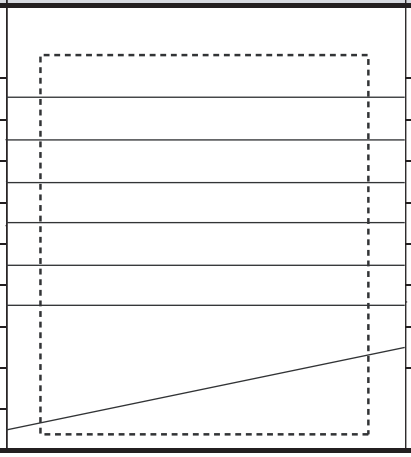
(2) RS-232 cable 2) (Between Handy GOT and conversion connector)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Conversion connector side (D-Sub 9 pins)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	CD
SD(TXD)	2	W/R (A)	3		2	RD(RXD)
ER(DTR)	3	W/BK (A)	4		3	SD(TXD)
RD(RXD)	4	GY/R (A)	2		4	ER(DTR)
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DR(DSR)
CS(CTS)	7	O/BK (A)	8		7	RS(RTS)
—	8	Y/R (A)	—		8	CS(CTS)
—	9	Y/BK (A)	—		9	—
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

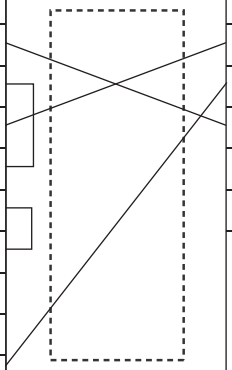
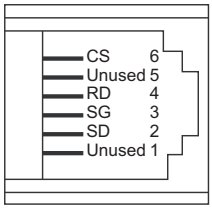
(3) RS-232 cable 3) (Between Handy GOT and RS232C/485 Conversion Connector)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	RS232C/485 Conversion connector CD485/V	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SD(TXD)	2	W/R (A)	3		3	TXD
ER(DTR)	3	W/BK (A)	4		4	DTR
RD(RXD)	4	GY/R (A)	2		2	RXD
DR(DSR)	5	GY/BK (A)	6		6	DSR
RS(RTS)	6	O/R (A)	7		7	RTS
CS(CTS)	7	O/BK (A)	8		8	CTS
—	8	Y/R (A)	—		5	GND
—	9	Y/BK (A)	—			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(4) RS-232 cable 4) Between Handy GOT and Communication line converter)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	RKC product side (Moduler connector)		
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name	Pin assignment *1
FG (Shield)	1	Shield	—		1	NC	
SD(TXD)	2	W/R (A)	3		2	SD	
ER(DTR)	3	W/BK (A)	4		3	SG	
RD(RXD)	4	GY/R (A)	2		4	RD	
DR(DSR)	5	GY/BK (A)	6		5	NC	
RS(RTS)	6	O/R (A)	7		6	CS	
CS(CTS)	7	O/BK (A)	8				
—	8	Y/R (A)	—				
—	9	Y/BK (A)	—				
SG	10	PK/R (A)	5				

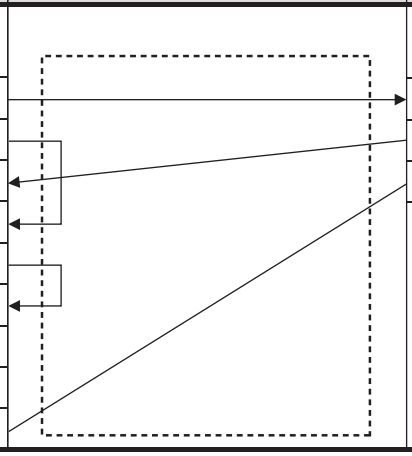
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

(5) RS-232 cable 5) (Between Handy GOT and temperature controller)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	RKC product side*1
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		
SD(TXD)	2	W/R (A)	3		RD(RXD)
ER(DTR)	3	W/BK (A)	4		SD(TXD)
RD(RXD)	4	GY/R (A)	2		SG
DR(DSR)	5	GY/BK (A)	6		
RS(RTS)	6	O/R (A)	7		
CS(CTS)	7	O/BK (A)	8		
—	8	Y/R (A)	—		
—	9	Y/BK (A)	—		
SG	10	PK/R (A)	5		

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 For the terminal number of the temperature controller, refer to the following table.

Signal name	Terminal No.				
	FB400, FB900	PF900	HA400, HA900		MA900, MA901
			COM1	COM2	
SG	25	25	13	25	44
SD (TXD)	26	26	14	26	45
RD (RXD)	27	27	15	27	46

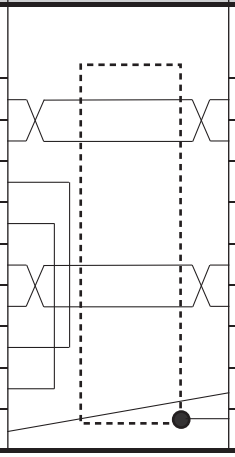
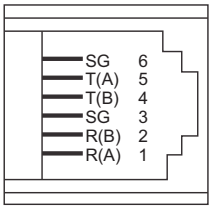
3 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the Handy GOT to the temperature controller.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable 1)

Signal name	GOT side (External cable)*1		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	RKC product side (Modular connector)		
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name	Pin assignment*2
FG (Shield)	1	Shield	—				
SDA	2	W/R (A)	1		2	R(B)	
SDB	3	W/BK (A)	6		1	R(A)	
RSA	4	GY/R (A)	3				
RSB	5	GY/BK (A)	8				
RDA	6	O/R (A)	2		4	T(B)	
RDB	7	O/BK (A)	7		5	T(A)	
CSA	8	Y/R (A)	4				
CSB	9	Y/BK (A)	9		3	SG	
SG	10	PK/R (A)	5		6	SG	

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

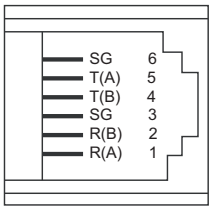
*1 No terminating resistor needs to be connected on the GOT side.

*2 For details of the pin assignment, refer to the following manual.

☞ User's Manual for the RKC temperature controller

(2) RS-422 cable 2)

Signal name	GOT side (External cable) *1		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	RKC product side *1 (Moduler connector)		
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name	Pin assignment *2
FG (Shield)	1	Shield	—				
SDA	2	W/R (A)	1		2	R(B)	
SDB	3	W/BK (A)	6		1	R(A)	
RSA	4	GY/R (A)	3				
RSB	5	GY/BK (A)	8				
RDA	6	O/R (A)	2		4	T(B)	
RDB	7	O/BK (A)	7		5	T(A)	
CSA	8	Y/R (A)	4				
CSB	9	Y/BK (A)	9		3	SG	
SG	10	PK/R (A)	5		6	SG/N.C.	



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

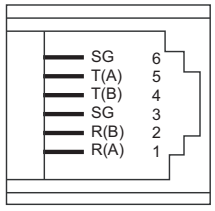
*1 No terminating resistor needs to be connected on the GOT side.
When communication error occurs frequently depending on the usage circumstance or the communication distance, connect the dedicated terminating resistor to the vacant COM.PORT on the terminating controller (Z-COM).
For details of the terminating resistor, refer to the following manual.

*2 For details of the pin assignment, refer to the following manual.

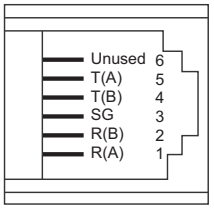
User's Manual for the RKC temperature controller

(3) RS-422 cable 3)

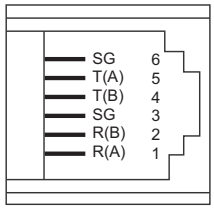
RKC product side (Modular connector)		Cable connection	RKC product side (Modular connector)		
Signal name	Pin No.		Signal name	Pin No.	Pin assignment *1
R(A)	1		1	R(A)	
R(B)	2		2	R(B)	
SG	3		3	SG	
T(B)	4		4	T(B)	
T(A)	5		5	T(A)	
SG/N.C.	6		6	SG/N.C.	



(Communication extension module(Z-COM))



(Level converter(COM-A))

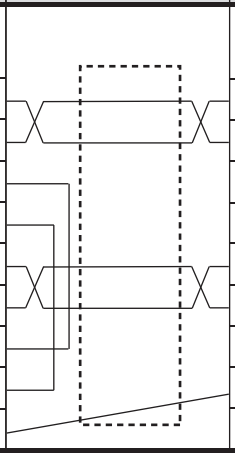


(Communication extension module(Z-COM))

*1 For details of the pin assignment, refer to the following manual.

User's Manual for the RKC temperature controller

(4) RS-422 cable 4)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	RKC product side*1
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		
SDA	2	W/R (A)	1		R(B)
SDB	3	W/BK (A)	6		R(A)
RSA	4	GY/R (A)	3		
RSB	5	GY/BK (A)	8		
RDA	6	O/R (A)	2		T(B)
RDB	7	O/BK (A)	7		T(A)
CSA	8	Y/R (A)	4		
CSB	9	Y/BK (A)	9		SG
SG	10	PK/R (A)	5		

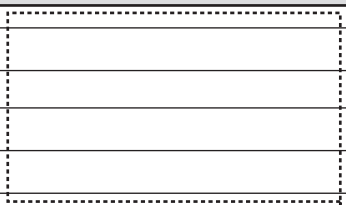
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 For the terminal number of the temperature controller, refer to the following table.

Signal name	Terminal No.			
	FB400, FB900	PF900, AG500, HA400, HA900	MA900, MA901	B400 (RS-422 specifications)
SG	25	25	44	3/6
T (A)	26	26	45	5
T (B)	27	27	46	4
R (A)	28	28	47	1
R (B)	29	29	48	2

(5) RS-422 cable 5)

RKC product side*1	Cable connection	RKC product side*1
Signal name		Signal name
R(A)		R(A)
R(B)		R(B)
SG		SG
T(B)		T(B)
T(A)		T(A)

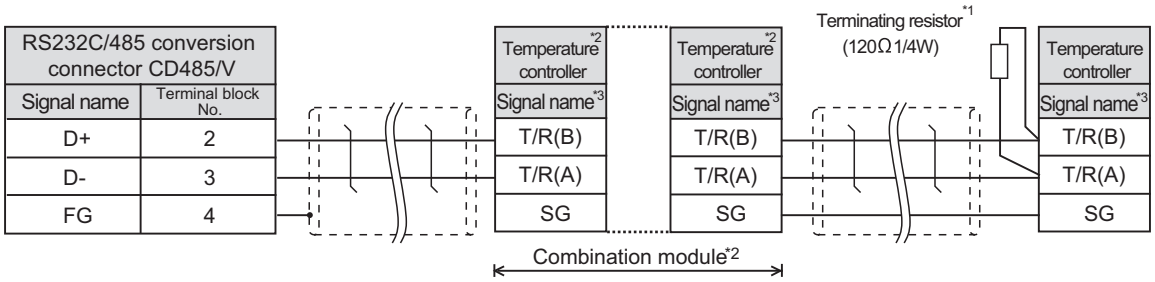
*1 For the terminal number of the temperature controller, refer to the following table.

Signal name	Terminal No.		
	FB400, FB900	PF900, AG500, HA400, HA900	MA900, MA901
SG	25	25	44
T (A)	26	26	45
T (B)	27	27	46
R (A)	28	28	47
R (B)	29	29	48

4 Connection diagram of RS-485 cable

The following provides the connection diagram of RS-485 cable connecting the RS232C/485 conversion connector to the temperature controller.

(1) RS-485 cable



*1 Terminating resistor should be provided for a temperature controller which will be a terminal.
When combining the module, provide the terminating resistor to the end of the combination module (the one that is far from the converter).
When using X-TIO, turn ON the terminating resistor selector in the terminal base.

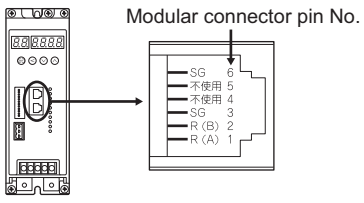
*2 When combining the module, because the communication line is connected between the modules with each other, wire only the communication terminal on the both end of the combination module.

*3 For the terminal number of the temperature controller, refer to the following table.

Signal name	Pin No.								
	Z-TIO/ Z-CT	CB100/CB400/ CB500/CB900	CB700	FB100		FB400/FB90		RB100/RB400/ RB500/RB900	RB700
				COM1	COM2	COM1	COM2		
SG	5	13	7	13	16	25	25	13	25
T/R(A)	3	14	8	14	17	26	28	14	26
T/R(B)	4	15	9	15	18	27	29	15	27

Signal name	Pin No.									
	PF900/ AG500	HA400/HA900		MA900/ MA901	RMC500	THV-A1*4	X-TIO	SA100	SA200	SB1
		COM1	COM2							
SG	25	25	25	44	13	3	17	1	10	1
T/R(A)	26	26	26	45	14	1	16	2	11	2
T/R(B)	27	27	27	46	15	2	15	3	12	3

*4 The following shows the pin assignment of the modular connector.



49.1.4 Precautions when preparing a cable

1 Cable length

(1) The length of RS-232 cable must be 6m or less.

(2) The length of the RS-422 cable must be as follows:

(a) The length of the RS-422 cable used for connecting the temperature controller to the communication converter.
The total distance (between communication converter and controllers) of RS-422 cable must be 500m or less.

(b) The length of the RS-422 cable used for connecting the temperature controller to the GOT.
The total distance (between GOT and temperature controller) of RS-422 cable must be 13m or less.

(3) The length of RS-485 cable must be 500m or less.

49.2 Temperature Controller Side Setting

49.2.1 Communication settings

Point

RKC temperature controller

For details of RKC temperature controller, refer to the following manual.

☞ User's Manual for the RKC temperature controller

1 Connecting to H-PCP-J

(1) Communication settings

Make the communication settings of the temperature controller.

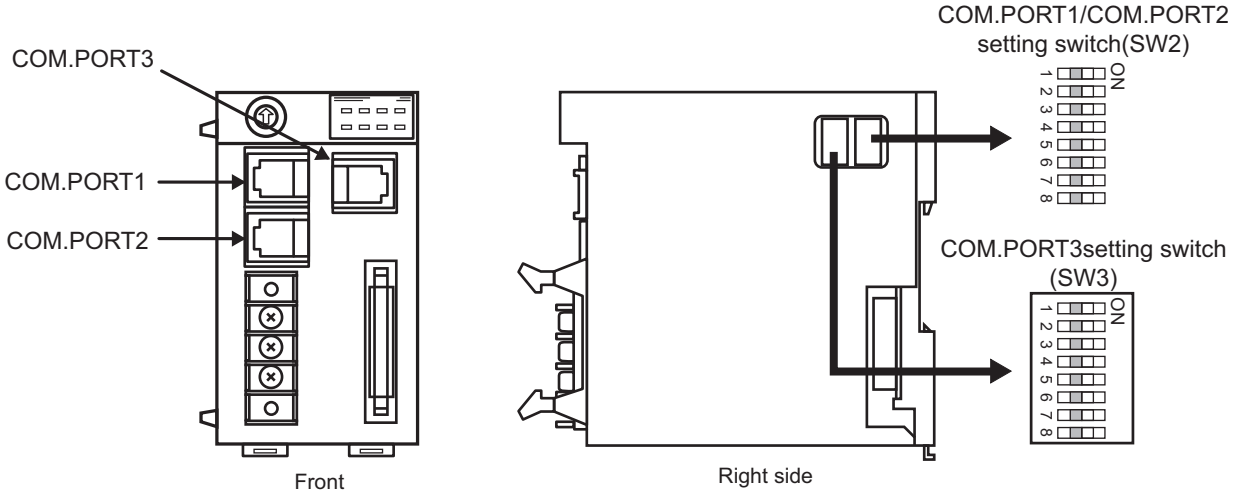
Setting item	Setting range
Communication speed*1	9600bps, 19200bps, 38400bps
Communication mode	MODBUS
Data length	8bits
Parity bit	None
Stop bit	1bit
Unit address*2	0 to F

*1 Make the same setting as that of the GOT side.

*2 Select the unit address without overlapping with that of other units.

(2) DIP switch settings

Make the settings of transmission speed, communication mode, data length, parity bit and stop bit.



(a) Transmission speed settings

COM.PORT1/COM.PORT2

SW2		Communication speed
3	4	
OFF	OFF	9600bps
ON	OFF	19200bps
OFF	ON	38400bps

COM.PORT3

SW3		Communication speed
3	4	
OFF	OFF	9600bps
ON	OFF	19200bps
OFF	ON	38400bps

(b) Communication mode settings

COM.PORT1/COM.PORT2

SW2				Communication protocol
5	6	7	8	
ON	OFF	OFF	OFF	MODBUS protocol

COM.PORT3

SW3	Communication protocol
5	
ON	MODBUS protocol

(c) Settings of data length, parity bit, and stop bit

COM.PORT1/COM.PORT2

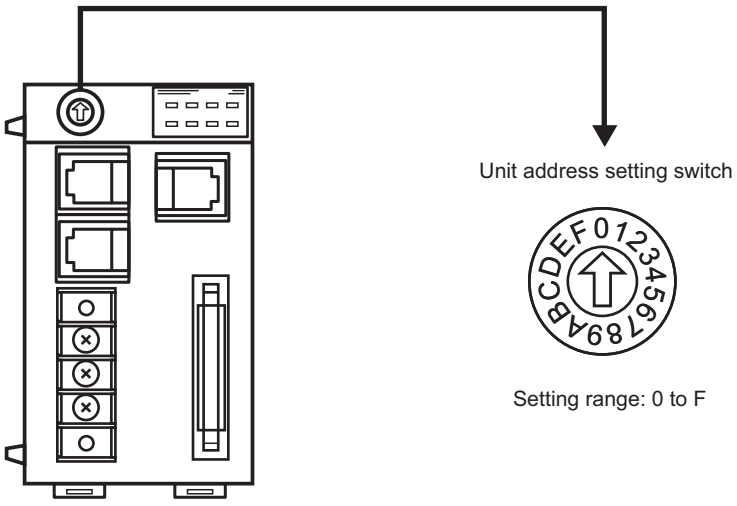
SW2		Data bit configuration
1	2	
OFF	OFF	Data 8-bit, Non parity, Stop 1 bit

COM.PORT3

SW3		Data bit configuration
1	2	
OFF	OFF	Data 8-bit, Non parity, Stop 1 bit

(3) Unit address settings

Set the unit address using the unit address setting switch



2 Connecting to H-PCP-A, H-PCP-B

(1) Communication settings

Make the communication settings of the temperature controller.

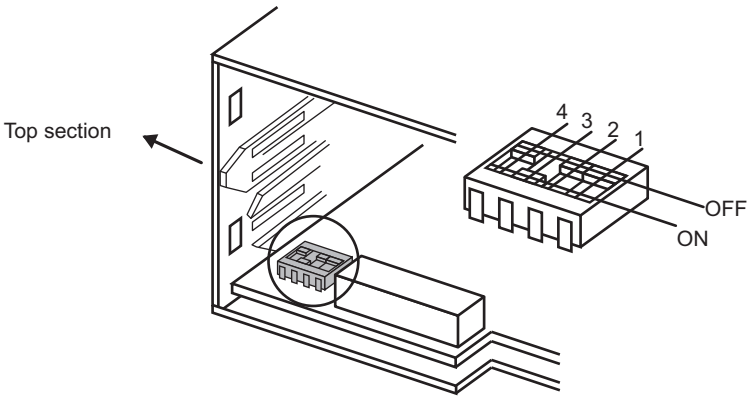
Setting item	Set value
Communication speed*1	9600bps, 19200bps
Data length	8bits
Parity bit	None
Unit address*2	0 to F

*1 Make the same setting as that of the GOT side.

*2 Select the unit address without overlapping with that of other units.

(2) DIP switch settings

Make the settings of transmission speed, data length, parity bit, and stop bit.



Rear view of module mainframe with mother block removed

(a) Transmission speed

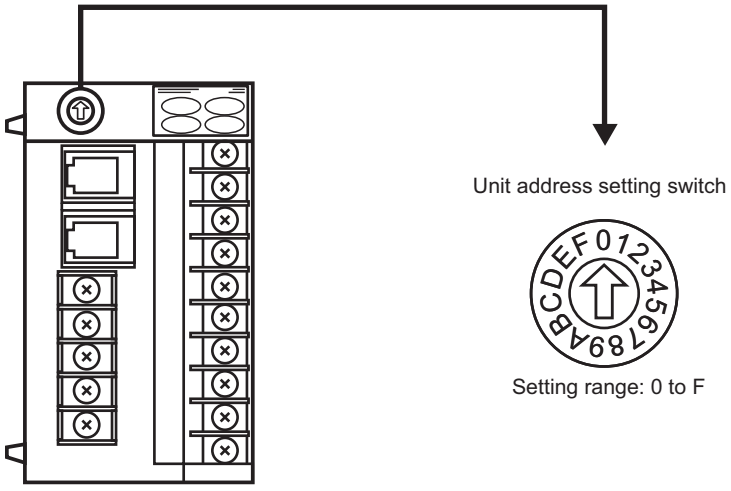
3	4	Communication speed
OFF	ON	9600bps
ON	ON	19200bps

(b) Settings of data length and parity bit

1	2	Data bit configuration
OFF	OFF	Data 8-bit, Non parity

(3) Unit address settings

Set the unit address using the unit address setting switch.



Setting range: 0 to F

3 Connecting to Z-TIO module, Z-DIO module, Z-CT module

(1) Communication settings

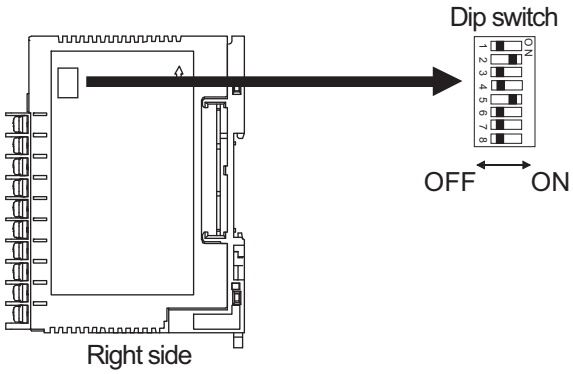
Setting item	Set value
Communication speed*1	9600bps, 19200bps, 38400bps
Data bit configuration	Data length : 8-bit, Parity : None
	Data length : 8-bit, Parity : Even
	Data length : 8-bit, Parity : Odd
	Stop bit : 1-bit (fixed)
Communication protocol	MODBUS
Module address*2	0 to F
Interval time	0 to 250ms

*1 Make the same setting as that of the GOT side.

*2 Select the module address without overlapping with that of other module.

(2) DIP switch settings

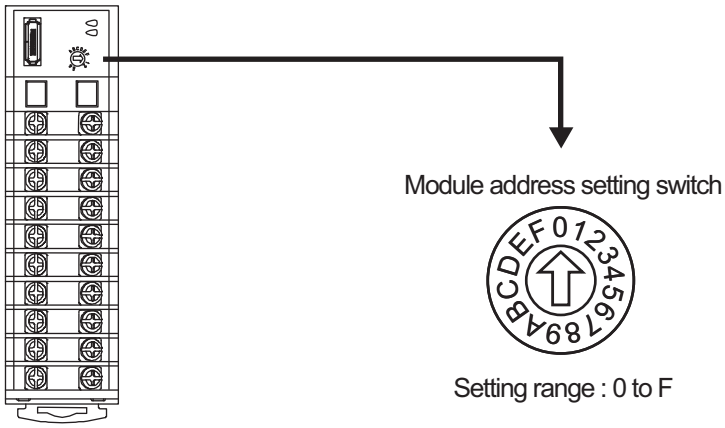
Make the settings of transmission speed, Data bit configuration, communication protocol



Setting item	Set value	Switch No.					
		1	2	3	4	5	6
Communication speed	9600bps	ON	OFF				
	19200bps	OFF	ON				
	38400bps	ON	ON				
Data bit configuration	Data length : 8-bit, Parity : None			OFF	OFF	ON	
	Data length : 8-bit, Parity : Even			OFF	ON	ON	
	Data length : 8-bit, Parity : Odd			ON	ON	ON	
Communication protocol	MODBUS						ON

(3) Module address settings

Set the module address using the module address setting switch



(4) Interval time settings

Make the interval time settings using the RKC communication setting tool (WinPCI).
After the communication is started, set as follows.

Setting item	Set value
Instrument	0
CFG file	ZTIO_rkc.cfg
Interval time	0 to 250ms

4 Connecting to Z-COM

(1) Communication settings

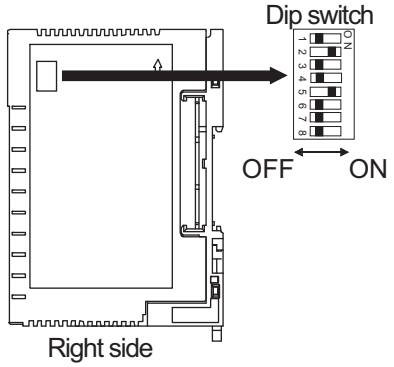
Setting item	Set value
Communication speed*1	9600bps, 19200bps, 38400bps
Data bit configuration	Data length : 8-bit, Parity : None, Stop bit : 1-bit (fixed)
Communication protocol	Host (MODBUS)
Interval time	0 to 250ms
Dip switch settings valid / invalid	Valid

*1 Make the same setting as that of the GOT side.

*2 Select the unit address without overlapping with that of other unit.

(2) DIP switch settings

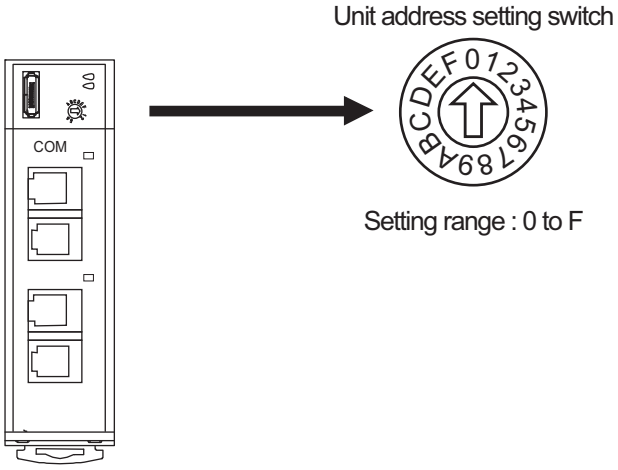
Make the settings of transmission speed, Data bit configuration, communication protocol



Setting item	Set value	Switch No.							
		1	2	3	4	5	6	7	8
Transmission speed (COM 1)	9600bps	ON	OFF						
	19200bps	OFF	ON						
	38400bps	ON	ON						
Communication protocol (COM 1)	Host (MODBUS)			ON					
Transmission speed (COM 2)	9600bps				OFF				
	19200bps				ON				
Communication protocol (COM 2)	Host (MODBUS)					ON	OFF	OFF	
Dip switch settings valid / invalid	Valid								OFF

(3) Unit address settings

Set the unit address using the unit address setting switch



(4) Interval time settings

Make the interval time settings using the RKC communication setting tool (WinPCI).
After the communication is started, set as follows.

Setting item	Set value
Instrument	0
CFG file	ZCOM_rkc.cfg
Communication 1 interval time	0 to 250ms
Communication 2 interval time	

5 Connecting to CB Series

(1) Communication settings

Setting item	Set value
Slave address*1	1 to 99
Communication speed*2	2 : 9600bps 3 : 19200bps
Data configuration	0: 8/1/ None 6: 8/1/Even 7: 8/1/Odd
Interval time	0 to 150ms

*1 When the setting value is set to 0, a communication cannot be made.
*2 Make the same setting as that of the GOT side.

(2) Communication setting mode

Set the communication setting mode using the operation panel of the CB series main unit.
For details on the communication setting mode, refer to the following manual.

☞ Communication Instruction Manual

6 Connecting to FB Series

(1) Communication settings

(a) COM1

Setting item	Set value
Communication protocol (COM1)	1: MODBUS
Device address 1*1 (Slave address 1)	1 to 99
Communication speed 1*2	9.6 : 9600bps, 19.2 : 19200bps, 38.4 : 38400bps
Data bit configuration 1	8n1: 8/1/ None, 8n2: 8/2/ None 8E1: 8/1/ Even, 8E2: 8/2/ Even 8o1: 8/1/ Odd, 8o2: 8/2/ Odd
Interval time 1	0 to 250ms

*1 When the setting value is set to 0, a communication cannot be made.

*2 Make the same setting as that of the GOT side.

(b) COM2

Setting item	Set value
Communication protocol (COM2)	1: MODBUS
Device address 2*1 (Slave address 2)	1 to 99
Communication speed 2*2	9.6 : 9600bps, 19.2 : 19200bps, 38.4 : 38400bps
Data bit configuration 2	8n1: 8/1/ None, 8n2: 8/2/ None 8E1: 8/1/ Even, 8E2: 8/2/ Even 8o1: 8/1/ Odd, 8o2: 8/2/ Odd
Interval time 2	0 to 250ms

*1 When the setting value is set to 0, a communication cannot be made.

*2 Make the same setting as that of the GOT side.

(2) Communication setting mode

Set the communication setting mode using the operation panel of the FB series main unit.
For details on the communication setting mode, refer to the following manual.

☞ Communication Instruction Manual

7 Connecting to RB Series

(1) Communication settings

Setting item	Set value
Communication protocol	1: MODBUS
Device address 1*1 (Slave address 1)	1 to 99
Communication speed 1*2	2 : 9600bps 3 : 19200bps
Data bit configuration 1	0: 8/1/ None, 1: 8/2/ None 2: 8/1/ Even, 3: 8/2/ Even 4: 8/1/ Odd, 5: 8/2/ Odd
Interval time 1	0 to 250ms

*1 When the setting value is set to 0, a communication cannot be made.

*2 Make the same setting as that of the GOT side.

(2) Communication setting mode

Set the communication setting mode using the operation panel of the RB series main unit.
For details on the communication setting mode, refer to the following manual.

☞ Communication Instruction Manual

8 Connecting to PF900

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting item	Set value
Communication speed 1*1	9600bps, 19200bps, 38400bps, 57600bps
Communication protocol 1	MODBUS
Data bit configuration 1*1 (Data bit, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit
Device address 1*2 (Slave address 1)	1 to 99*4
Interval time*3	0 to 250ms

*1 Adjust the settings with GOT settings.
*2 Select the device address1 without overlapping with that of other units.
*3 Set the maximum time from the sending of the last character stop bit from the GOT side until the switching of the GOT side to the receiving status (until the temperature controller becomes ready to send). Set as necessary.
*4 When the setting value is set to 0, a communication is not made.

9 Connecting to HA400, HA900

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

(Communication 1)

Setting item	Set value
Communication speed 1*1	9600bps, 19200bps, 38400bps
Data bit configuration 1*1 (Data bit, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit
Device address 1*2 (Slave address 1)	1 to 99*4
Interval time*3	0 to 250ms

(Communication 2)

Setting item	Set value
Communication speed 2*1	9600bps, 19200bps, 38400bps
Data bit configuration 2*1 (Data bit, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit
Device address 2*2 (Slave address 2)	1 to 99*4
Interval time*3	0 to 250ms

*1 Adjust the settings with GOT settings.
*2 Select the device address1/2 without overlapping with that of other units.
*3 Set the maximum time from the sending of the last character stop bit from the GOT side until the switching of the GOT side to the receiving status (until the temperature controller becomes ready to send). Set as necessary.
*4 When the setting value is set to 0, a communication is not made.

10 Connecting to AG500

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting item	Set value
Communication speed*1	9600bps, 19200bps, 38400bps
Communication protocol	MODBUS
Data bit configuration*1 (Data bit, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit
Device address*2 (Slave address)	1 to 99*4
Interval time*3	0 to 250ms

*1 Adjust the settings with GOT settings.

*2 Select the device address without overlapping with that of other units.

*3 Set the maximum time from the sending of the last character stop bit from the GOT side until the switching of the GOT side to the receiving status (until the temperature controller becomes ready to send). Set as necessary.

*4 When the setting value is set to 0, a communication is not made.

11 Connecting to RMC500

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting item	Set value
Communication speed*1	9600bps, 19200bps, 38400bps
Communication protocol	MODBUS
MODBUS data*2 Extension time	0 to 255
Data bit configuration*1 (Data bit, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit
Device address*3 (Slave address)	1 to 99*4
Interval time*5	0 to 250ms

*1 Adjust the settings with GOT settings.

*2 Set the extension time for the data interval time in the MODBUS communication (which is lower than 24 bit time). Set when the data time interval exceeds 24 bit time.

*3 Select the device address without overlapping with that of other units.

*4 When the setting value is set to 0, a communication is not made.

*5 Set the maximum time from the sending of the last character stop bit from the GOT side until the switching of the GOT side to the receiving status (until the temperature controller becomes ready to send). Set as necessary.

12 Connecting to MA900, MA901

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting item	Set value
Communication speed*1	9600bps, 19200bps
Data bit configuration 1*1 (Data bit, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit
Device address*2 (Slave address)	1 to 99*4
Interval time*3	0 to 250ms

*1 Adjust the settings with GOT settings.

*2 Select the device address without overlapping with that of other units.

*3 Set the maximum time from the sending of the last character stop bit from the GOT side until the switching of the GOT side to the receiving status (until the temperature controller becomes ready to send).
Set as necessary.

*4 When the setting value is set to 0, a communication is not made.

13 Connecting to THV-A1

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting item	Set value
Communication speed*1	9600bps (fixed)
Data bit configuration*1	Data bit: 8bits (fixed) Parity bit: None (fixed) Stop bit: 1bit (fixed)
Device address*2 (Slave address)	1 to 99*4
Interval time*3	0 to 250ms

*1 Adjust the settings of the GOT side with the temperature controller settings.

*2 Select the device address without overlapping with that of other units.

*3 Set the maximum time from the sending of the last character stop bit from the GOT side until the switching of the GOT side to the receiving status (until the temperature controller becomes ready to send).
Set as necessary.

*4 When the setting value is set to 0, a communication is not made.

14 Connecting to SA100, SA200

(1) Communication settings

Make the communication settings by operating the key of the temperature controller.

Setting item	Set value
Communication speed*1	9600bps, 19200bps
Data bit configuration*1 (Data bit, Parity bit, Stop bit)	[8N1]: 8bit, None, 1bit [8N2]: 8bit, None, 2bit [8E1]: 8bit, Even, 1bit [8E2]: 8bit, Even, 2bit [8O1]: 8bit, Odd, 1bit [8O2]: 8bit, Odd, 2bit
Device address*2 (Slave address)	1 to 99*4
Interval time*3	0 to 250ms

*1 Adjust the settings with GOT settings.

*2 Select the device address without overlapping with that of other units.

*3 Set the maximum time from the sending of the last character stop bit from the GOT side until the switching of the GOT side to the receiving status (until the temperature controller becomes ready to send).
Set as necessary.

*4 When the setting value is set to 0, a communication is not made.

15 Connecting to X-TIO module

(1) Communication settings

Make the communication settings of the temperature controller.

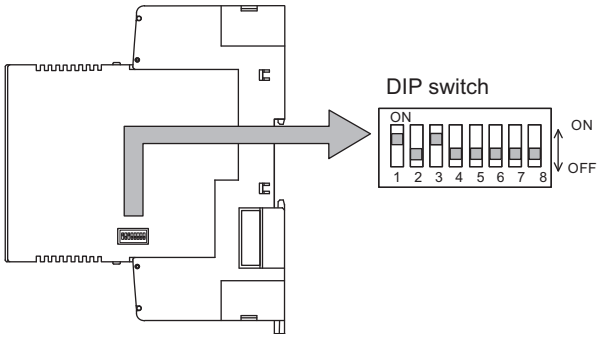
Setting item	Set value
Communication speed*1	9600bps, 19200bps, 38400bps
Communication protocol	MODBUS
Data bit configuration	Data length : 8-bit, Parity : None
	Data length : 8-bit, Parity : Even
	Data length : 8-bit, Parity : Odd
	Stop bit : 1-bit (fixed)
Module address*2	1 to 99
Internal data bus terminating resistor	When combining the module, turn ON the internal data bus terminating resistor at both ends of the module.
Data interval extension time	0 to 99ms

*1 Adjust the settings with GOT settings.

*2 When the setting value is set to 0, a communication is not made.

(2) DIP switch settings

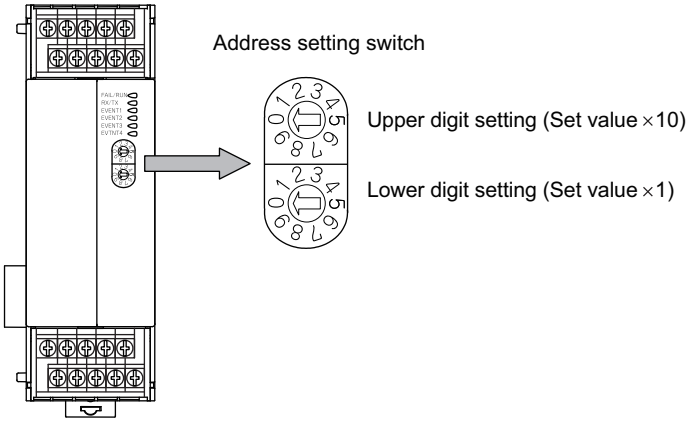
Make the settings of transmission speed, Data bit configuration, communication protocol.



Setting item	Set value	Switch No.							
		1	2	3	4	5	6	7	8
Communication speed	9600bps	ON	OFF						
	19200bps	OFF	ON						
	38400bps	ON	ON						
Data bit configuration	Data length : 8-bit, Parity : None			ON	OFF	OFF			
	Data length : 8-bit, Parity : Even			ON	OFF	ON			
	Data length : 8-bit, Parity : Odd			ON	ON	ON			
Communication protocol	MODBUS						ON		
Internal data bus terminating resistor	OFF								OFF
	ON								ON
Data interval extension time	0 to 99ms				ON	OFF	ON		

(3) Module address settings

Set the module address using the rotary switch (address setting switch).



(4) Data interval extension time settings

Set the data interval extension time as the following precedue.

1. Turn the module power OFF.
2. Set the DIP switch 4 and 6 to ON and 5 to OFF.
3. Set the data interval extension time using the rotary switch (address setting switch).
   The setting method is the same as that of the module address.
4. Turn the module power ON.
   The FAIL/RUN lamp lights in green and the set time becomes valid.
5. Turn the module power OFF again and set the DIP switches and rotary switch to the original position.

16 Connecting to SB Series

(1) Communication settings

Setting item	Setting range*1
Communication protocol	1: MODBUS
Device address (Slave address)	1 to 99
Communication speed*2	2: 9600bps 3: 19200bps
Data bit configuration	■ Refer to the Data bit configuration.
Interval time*3	0 to 250

*1 When the setting value is set to 0, a communication is not made.

*2 Adjust the settings with GOT settings.

*3 Set the maximum time from the sending of the last character stop bit from the GOT side until the switching of the GOT side to the receiving status (until the temperature controller becomes ready to send). Set as necessary.

(2) Data bit configuration

Set value	Data bit	Parity bit	Stop bit
0	8	None	1
1	8	None	2
2	8	Even	1
3	8	Even	2
4	8	Odd	1
5	8	Odd	2

(3) Communication setting mode

Set the communication settings for the SB series with the front key switch. For details of the settings, refer to the following manual.

☞ 1-channel Type Temperature Controller with Built-in SSR SB1 Instruction Manual

17 Connecting to B400 Series

(1) Communication settings

Set the communication settings for the B400 series with the rotary switch and the DIP switch.
For the operation of the B400 series, refer to the manual of the B400 series.

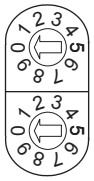
Setting item	Setting range	Set value
Unit address setting (CH1 to CH8)	0 to 99*1	(1) Rotary switch settings (SW1, SW2)
Communication speed	4800bps, 9600bps, 19200bps, 38400bps	(2) DIP switch settings (SW3)
Data bit configuration	0 to 5	
Communication specifications setting	RS-422A, RS-485	(3) DIP switch settings (SW4)
Terminating resistor setting	with, without	

*1 When 98 or 99 is set, the same communication address will be set as the one when 97 is set.

(2) Rotary switch settings (SW1, SW2)

Set the unit address with the rotary switch.

Rotary switch
(Address setting switch)



SW1: Lower digit setting (Set value 1)

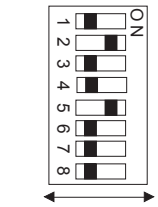
SW2: Upper digit setting (Set value 10)

Setting item	Setting range
Unit address setting (CH1 to CH4)	The setting value of the rotary switch plus 1 is the communication address.
Unit address setting (CH5 to CH8)	The setting value of the rotary switch plus 2 is the communication address.

(3) DIP switch settings (SW3)

Set the communication speed and the data bit configuration with the DIP switch (SW3).

DIP switch (SW3)

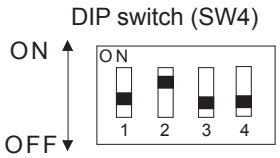


OFF ON

Setting item	Set value	Switch No.							
		1	2	3	4	5	6	7	8
Communication speed	4800bps	OFF	OFF						
	9600bps	ON	OFF						
	19200bps	OFF	ON						
	38400bps	ON	ON						
Data bit configuration	Data length: 8-bit, Parity: None Stop 2bit			OFF	OFF				
	Data length: 8-bit, Parity: None Stop 1bit			ON	OFF				
	Data length: 8-bit, Parity: Even Stop 1bit			ON	OFF				
	Data length: 8-bit, Parity: Odd Stop 1bit			ON	ON				

(4) DIP switch settings (SW4)

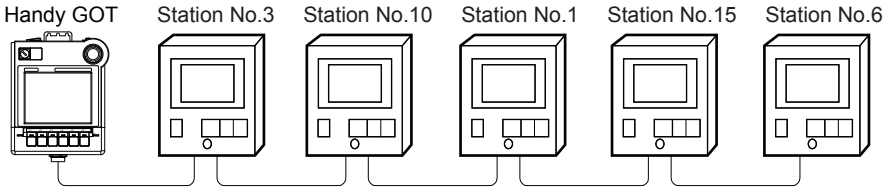
Set the communication specifications and the terminating resistor with the DIP switch (SW4).



Setting item	Set value	Switch No.			
		1	2	3	4
Communication specifications setting	RS-422A	OFF	OFF		
	RS485	ON	ON		
Terminating resistor setting	with				ON
	without				OFF

49.2.2 Station No. settings

Set each station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

The station number setting range of the temperature controller side differs from that of the GOT side. Specify the station No. of the temperature controller to be changed when setting devices referring the following table.

Temperature controller	Module address setting of temperature controller side	GOT side station number setting	Remark
H-PCP-J, H-PCP-A, H-PCP-B, Z-TIO, Z-COM	0 to F (Hexadecimal number)	1 to 16 (Decimal number)	The GOT side station number setting is the module address setting value +1.
Z-DIO	0 to F (Hexadecimal number)	17 to 32 (Decimal number)	The GOT side station number setting is the module address setting value +17.
Z-CT	0 to F (Hexadecimal number)	33 to 48 (Decimal number)	The GOT side station number setting is the module address setting value +33.
X-TIO, X-DI, X-DO	1 to 99 (Decimal number)	2 to 100 (Decimal number)	The GOT side station number setting is the module address setting value +1.
CB, FB, RB, PF, AG, HA, MA, RMC, THV, SA, SB	1 to 99 (Decimal number)	1 to 99 (Decimal number)	The GOT side station number setting is the same as the module address setting value.
B400	0 to 99 (Decimal number)	1 to 99 (Decimal number)	The GOT side station number setting is the module address setting value +1 or +2.

(2) Indirect specification

When setting the device, indirectly specify the station number of the temperature controller of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 115 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the temperature controller.

Specification station No.	Compatible device	Setting range
100	GD10	1 to 99 For the setting other than the above, communication timeout error will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

49.3 Precautions

49.3.1 Precautions

1 Station number setting of the temperature controller system

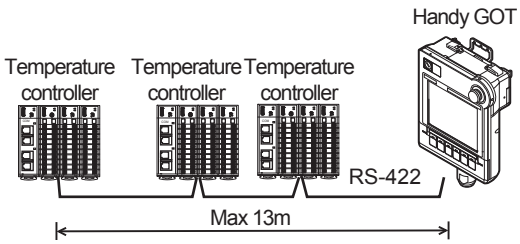
Make sure to establish temperature controller system with No.01 station.

2 GOT clock function

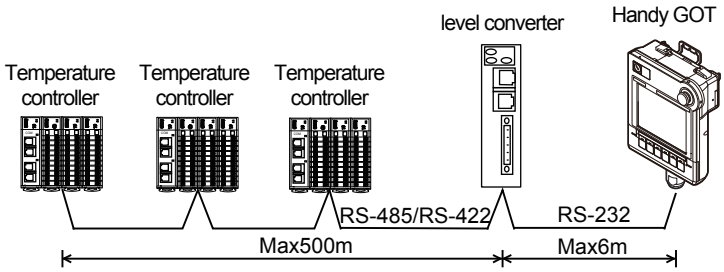
Since the temperature controller does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock function will be disabled.

3 Connection distance

For the RS-232 connection, the connection distance must be 6m or less and for the RS-422 connection, the connection distance must be 13m or less.
In addition, when connecting multiple temperature controllers for the RS-422 connection, the overall extension distance must be 13m or less.



When using the converter, the connection distance between the GOT and the converter must be 6m or less and between the communication systems after the converter must be 500m or less.



4 Cutting the portion of multipul connection of the controller

By setting GOT internal device, GOT can cut the portion of multipul connection of the controller. For example, faulty station that has communication timeout can be cut from the system.
For details of the setting contents of GOT internal device, refer to the following manual.

☞GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

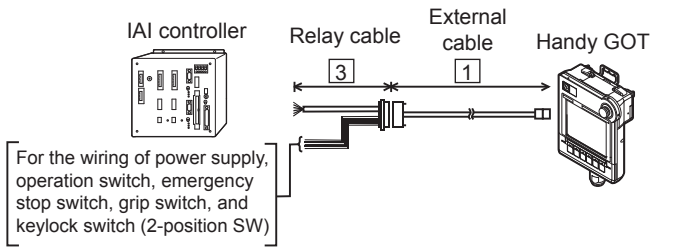
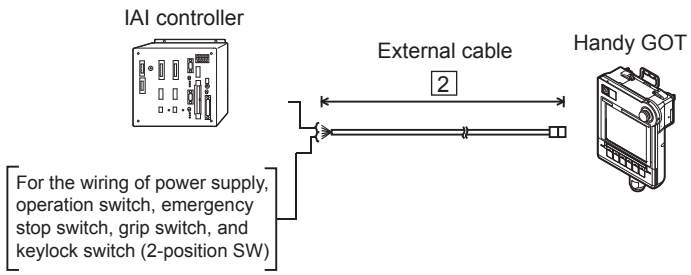
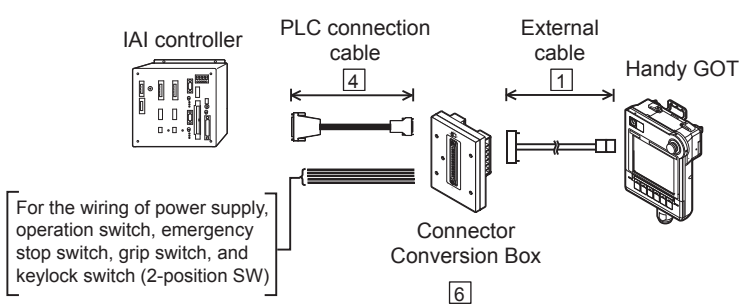
50.CONNECTION TO IAI ROBOT CONTROLLER

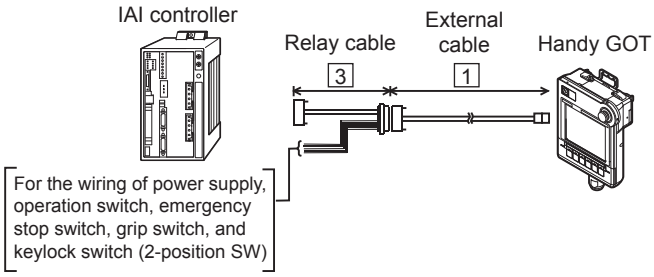
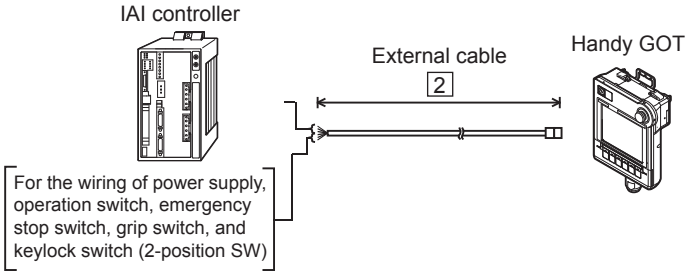
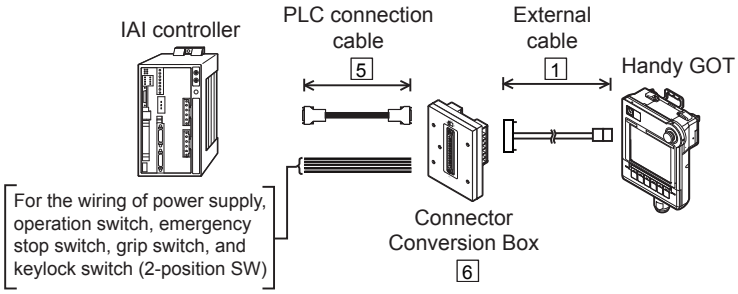
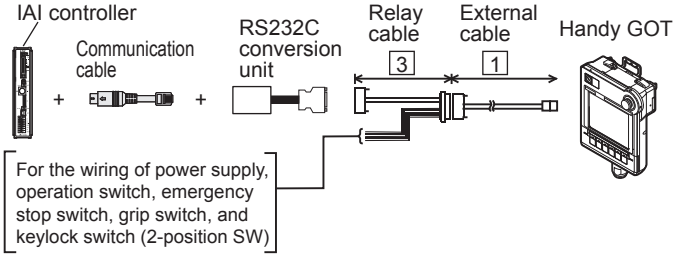
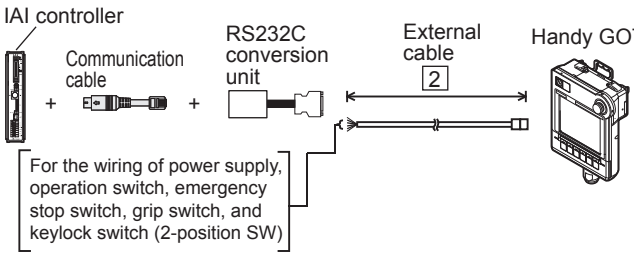
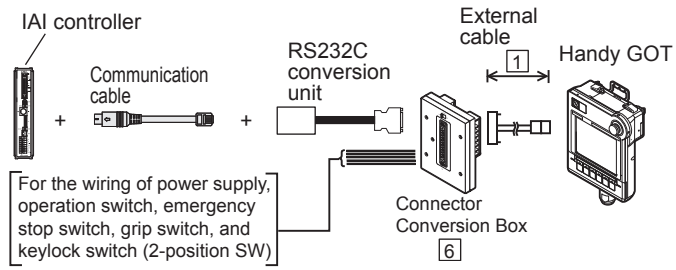
50.1 System Configuration and System Equipment

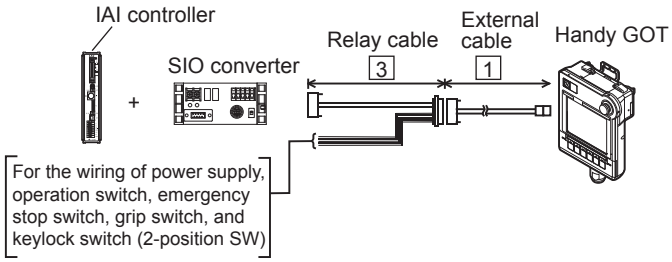
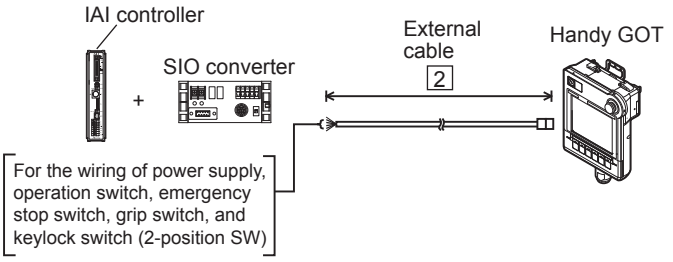
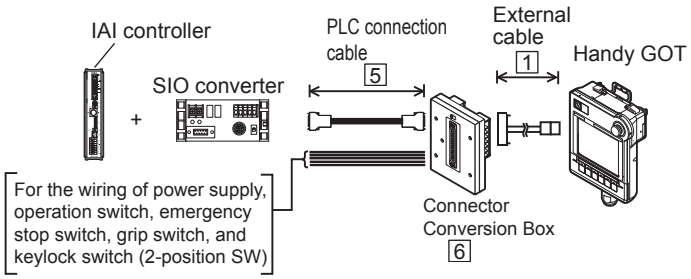
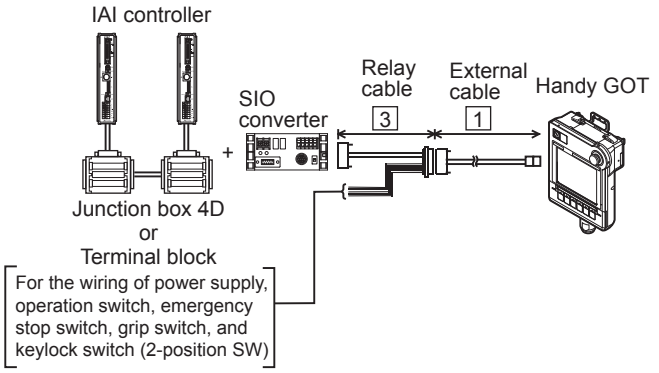
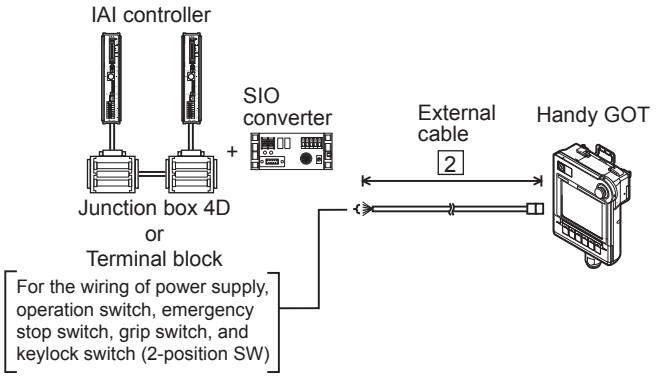
Only GT Designer3 Version1.17T or later supports connection to the IAI robot controller.

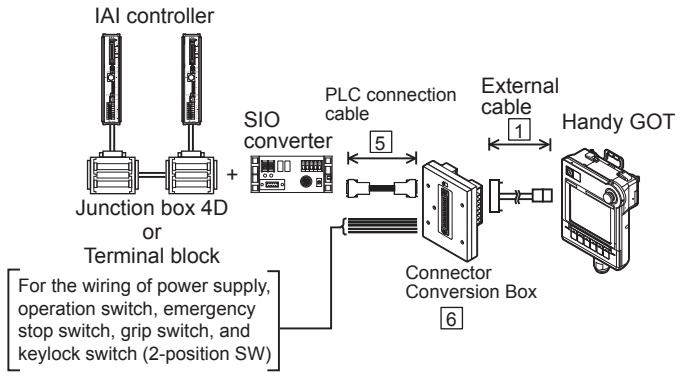
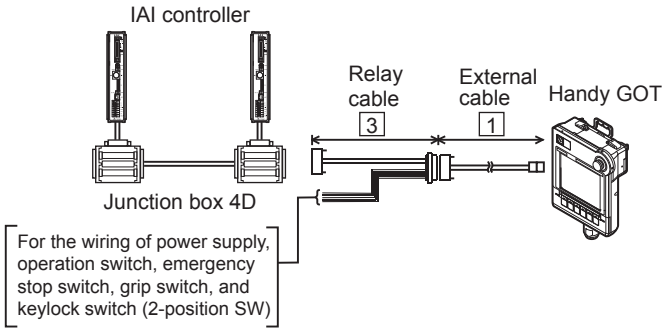
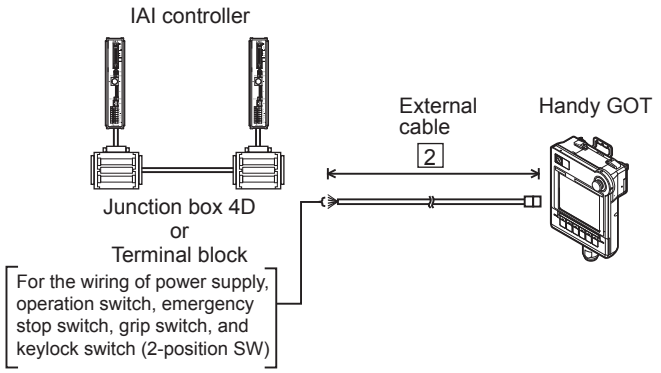
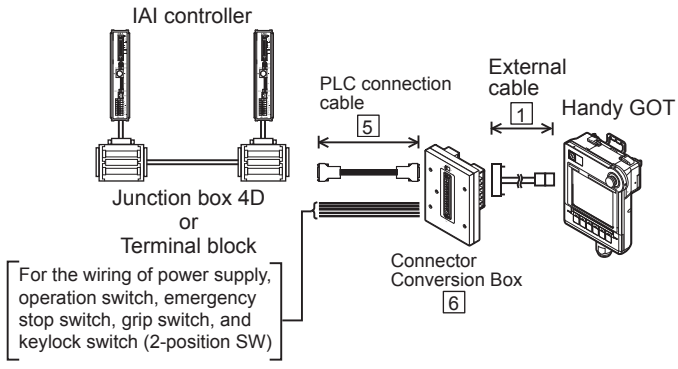
50.1.1 System configuration

When connecting the Handy GOT to an IAI robot controller, a relay cable must be created, or an external cable of which one end is untied must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "50.1.2 System equipment".

Connection conditions			System configuration
Controller	Communication	Distance	
X-SEL	RS-232	6m or less	
			
			

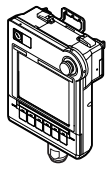
Connection conditions			System configuration
Controller	Communication	Distance	
SSEL ASEL PSEL	RS-232	6m or less	
			
			
PCON ACON SCON ERC2	RS-232	6m or less	
			
			

Connection conditions			System configuration
Controller	Communication	Distance	
PCON ACON SCON ERC2	RS-232	6m or less <Between Handy GOT and SIO converter> 100m or less <Between Controller and SIO converter>	
			
			
PCON ACON SCON ERC2	RS -232	6m or less <Between Handy GOT and SIO converter> 100m or less <Between Controller and SIO converter>	
			

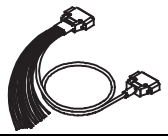
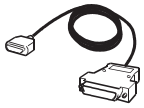
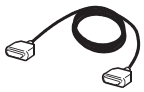
Connection conditions			System configuration
Controller	Communication	Distance	
PCON ACON SCON ERC2	RS-232	6m or less <Between Handy GOT and SIO converter> 100m or less <Between Controller and SIO converter>	
PCON ACON SCON ERC2	RS-422	13m or less	
			
			

50.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. Section 50.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. Section 50.1.3 Connection cable	
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Controller	Number of GOTs	Number of controllers	Communication	Communication unit	
				Name	Model name
X-SEL	1	1	RS-232	—	—
SSEL ASEL PSEL	1	1	RS-232	Connector conversion cable*1 + External cable*1	CB-SEL-SJ002 + CB-ST-E1MW050
PCON ACON SCON ERC2 (NP/PN specifications)*4	1	1	RS-232	Communication cable*1 + RS232C conversion unit*1	CB-RCA-SIO050 + RCB-CV-MW
ERC2 (SIO specifications)*3	1	1	RS-232	Communication cable*1	CB-ERC2-SIO020 + CB-ERC2-PWBIO□□□ or CB-ERC2-PWBIO□□□-RB
				RS232C conversion unit*1	RCB-CV-MW
PCON ACON SCON ERC2 (NP/PN specifications)*4 ERC2 (SIO specifications)*3	1	2	RS-232	SIO converter*1	RCB-TU-SIO-□
	1	16	RS-232	SIO converter*1 + Junction box 4D*2	RCB-TU-SIO-□ + 5-1473574-4
			RS-422	Junction box 4D*2	5-1473574-4

*1 Product manufactured by IAI Corporation. For details of the product, contact IAI Corporation.

*2 Product manufactured by Tyco Electronics. For details of the product, contact Tyco Electronics.

*3 Use ERC2-□-□-□-□-□-SE-□-□.

*4 Use the following models.

ERC2-□-□-□-□-□-NP-□-□, ERC2-□-□-□-□-□-PN-□-□

50.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable No. to be used.

Communication unit	Connection cable	
	RS-232 cable	RS-422 cable
X-SEL (Teaching connector) ↔ Connector Conversion Box	CB-ST-E1MW050*1	-
X-SEL (Connector for PC connection) ↔ Connector Conversion Box	Must be prepared by the user.	-
SSEL, ASEL, PSEL (connector conversion cable (CB-SEL-SJ002)) ↔ Connector Conversion Box	CB-ST-E1MW050	-
PCON, ACON, SCON, ERC2 (NP/PN specifications)*3 ↔ Connector Conversion Box	CB-RCA-SIO050 + RCB-CV-MW	-
ERC2 (SIO specifications)*2 ↔ Connector Conversion Box	(CB-ERC2-SIO020 + CB-ERC2-PWBIO□□□ or CB-ERC2-PWBIO□□□+ RB) + RCB-CV-MW	-
Junction box 4D ↔ Connector Conversion Box	-	Must be prepared by the user.
SIO converter ↔ Connector Conversion Box	CB-RCA-SIO050 + RCB-CV-MW	-

*1 The PLC connection cable can be prepared by the user. (this section 2)

*2 Use ERC2-□-□-□-□-□-SE-□-□.

*3 Use the following models.
ERC2-□-□-□-□-□-NP-□-□, ERC2-□-□-□-□-□-PN-□-□

2 Connection cable classification

Refer to the following table to select the cable No. to be used.

Refer to the connection diagram of the cable No. to be used.

Communication unit	Connection cable	
	RS-232 cable	RS-422 cable
X-SEL (Teaching connector) ↔ GOT	RS-232 cable 1)	-
X-SEL (Connector for PC connection) ↔ GOT	RS-232 cable 2)	-
SSEL (connector conversion cable (CB-SEL-SJ002)) ↔ GOT	RS-232 cable 1)	-
PCON, ACON, SCON (RS232C conversion unit (RCB-CV-MW)) ↔ GOT	RS-232 cable 3)	-
Junction box 4D ↔ GOT	-	RS-422 cable 3)
Terminal block ↔ GOT	-	RS-422 cable 8)
SIO converter ↔ GOT	RS-232 cable 4)	-
PCON, ACON, SCON, ERC2 (NP/PN specifications)*2 ↔ Junction box 4D	-	CB-RCB-CTL002
PCON, ACON, SCON ↔ SIO converter	-	CB-RCB-CTL002
ERC2 (SIO specifications)*1 ↔ Junction box 4D	-	CB-ERC2-CTL001 + CB-ERC2-PWBIO□□□ or CB-ERC2-PWBIO□□□-RB
ERC2 (SIO specifications)*1 ↔ SIO converter	-	
ERC2 (NP/PN specifications)*2 ↔ Junction box 4D	-	CB-ERC-PWBIO□□□ or CB-ERC-PWBIO□□□-RB + RS-422 cable 5) or RS-422 cable 9)
ERC2 (NP/PN specifications)*2 ↔ SIO converter	-	RS-422 cable 6) or RS-422 cable 7)
Junction box 4D terminating resistor	-	RS-422 cable 1)
Junction box 4D ↔ Junction box 4D	-	RS-422 cable 2)
Junction box 4D ↔ SIO converter	-	RS-422 cable 4)

*1 Use ERC2-□-□-□-□-□-SE-□-□.

*2 Use the following models.

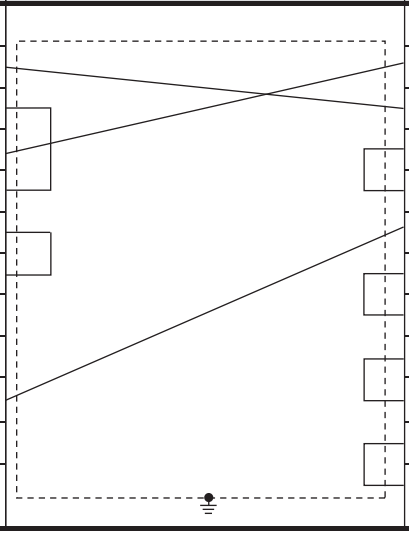
ERC2-□-□-□-□-□-NP-□-□, ERC2-□-□-□-□-□-PN-□-□

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the GOT to the controller.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

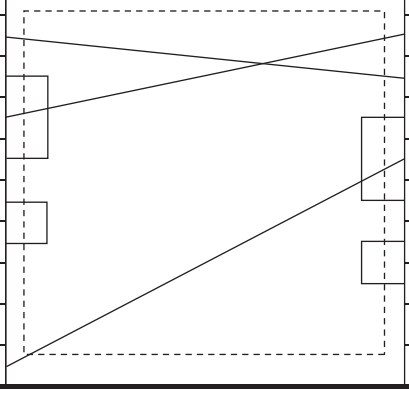
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	IAI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG(Shield)	1	Shield	-		1	
SD(TXD)	2	W/R (A)	3		2	TXD
ER(DTR)	3	W/BK (A)	4		3	RXD
RD(RXD)	4	GY/R (A)	2		4	RTS
DR(DSR)	5	GY/BK (A)	6		5	CTS
RS(RTS)	6	O/R (A)	7		7	SG
CS(CTS)	7	O/BK (A)	8		12	EMGOUT
-	8	Y/R (A)	-		13	EMGIN
-	9	Y/BK (A)	-		18	Vcc
SG	10	PK/R (A)	5		19	ENBTBX
					6	DSR
					20	DTR

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

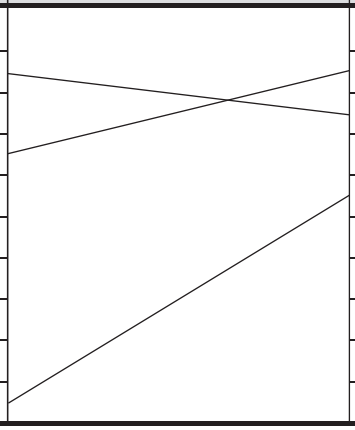
(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	IAI product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG(Shield)	1	Shield	-		1	NC
SD(TXD)	2	W/R (A)	3		2	SD(TXD)
ER(DTR)	3	W/BK (A)	4		3	RD(RXD)
RD(RXD)	4	GY/R (A)	2		4	DR(DSR)
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	ER(DTR)
CS(CTS)	7	O/BK (A)	8		7	RS(RTS)
-	8	Y/R (A)	-		8	CS(CTS)
-	9	Y/BK (A)	-		9	NC
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

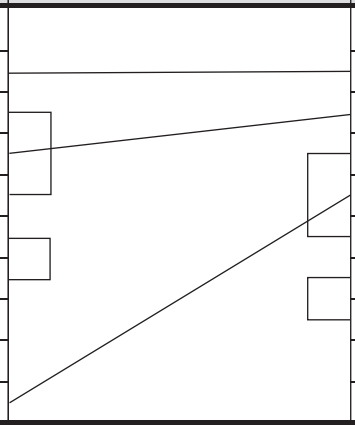
(3) RS-232 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	RS232C conversion unit side (RCB-CV-MW)
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.
FG(Shield)	1	Shield	-		1
SD(TXD)	2	W/R (A)	3		2
ER(DTR)	3	W/BK (A)	4		3
RD(RXD)	4	GY/R (A)	2		4
DR(DSR)	5	GY/BK (A)	6		5
RS(RTS)	6	O/R (A)	7		6
CS(CTS)	7	O/BK (A)	8		7
-	8	Y/R (A)	-		8
-	9	Y/BK (A)	-		9
SG	10	PK/R (A)	5		

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(4) RS-232 cable 4)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	SIO converter side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG(Shield)	1	Shield	-		1	-
SD(TXD)	2	W/R (A)	3		2	RD
ER(DTR)	3	W/BK (A)	4		3	SD
RD(RXD)	4	GY/R (A)	2		4	ER
DR(DSR)	5	GY/BK (A)	6		5	SG
RS(RTS)	6	O/R (A)	7		6	DR
CS(CTS)	7	O/BK (A)	8		7	RS
-	8	Y/R (A)	-		8	CS
-	9	Y/BK (A)	-		9	-
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

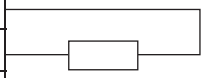
Chapter 21 HANDLING OF POWER WIRING AND SWITCH

4 Connection diagram of RS-422 cable

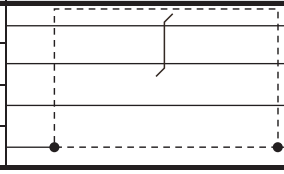
The following provides the connection diagram of RS-422 cable connecting the GOT to the controller. For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

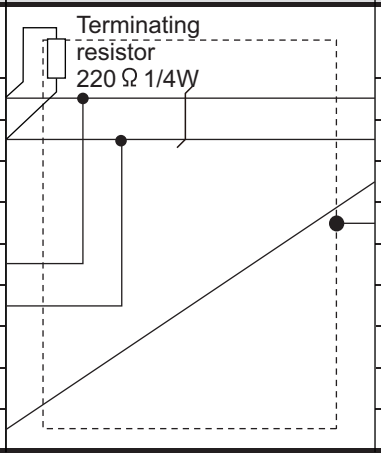
(1) RS-422 cable 1)

Junction box 4D side Pin No.	Cable connection
1	
2	
3	Terminating resistor 220Ω 1/4W
4	

(2) RS-422 cable 2)

Junction box 4D side Pin No.	Cable connection	Junction box 4D side Pin No.
1		1
2		2
3		3
4		4

(3) RS-422 cable 3)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	Junction box 4D side
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.
FG(Shield)	1	Shield	-		
SDA	2	W/R (A)	1		1
SDB	3	W/BK (A)	6		2
RSA	4	GY/R (A)	3		3
RSB	5	GY/BK (A)	8		4
RDA	6	O/R (A)	2		
RDB	7	O/BK (A)	7		
CSA	8	Y/R (A)	4		
CSB	9	Y/BK (A)	9		
SG	10	PK/R (A)	5		

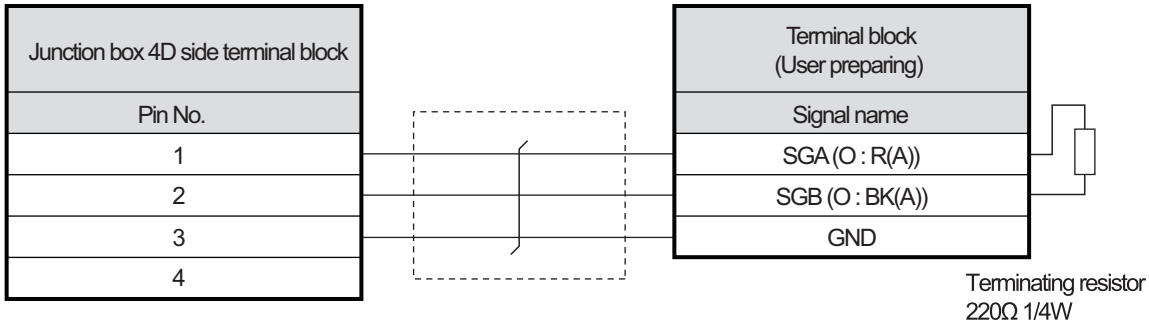
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

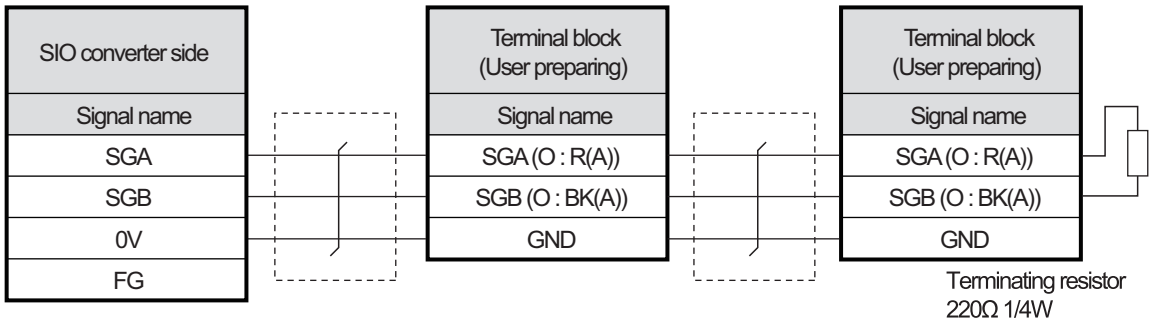
(4) RS-422 cable 4)

SIO converter side	Cable connection	Junction box 4D side
Signal name		Pin No.
SGA		1
SGB		2
0V		3
FG		4

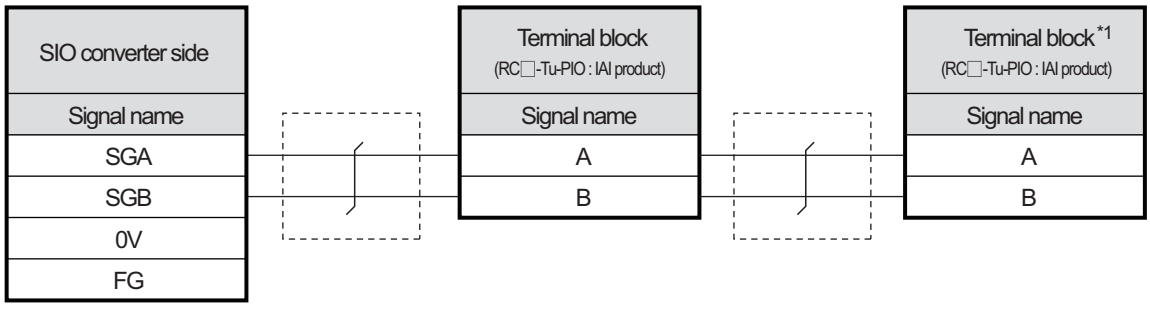
(5) RS-422 cable 5)



(6) RS-422 cable 6)



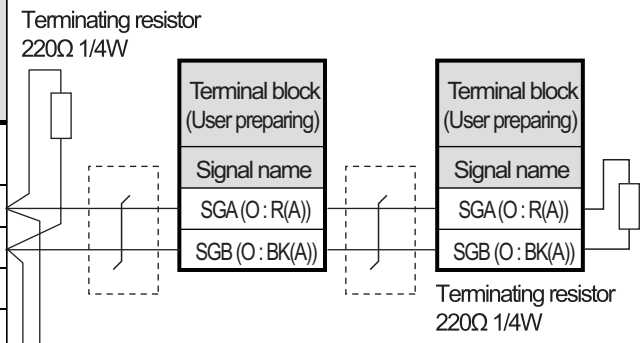
(7) RS-422 cable 7)



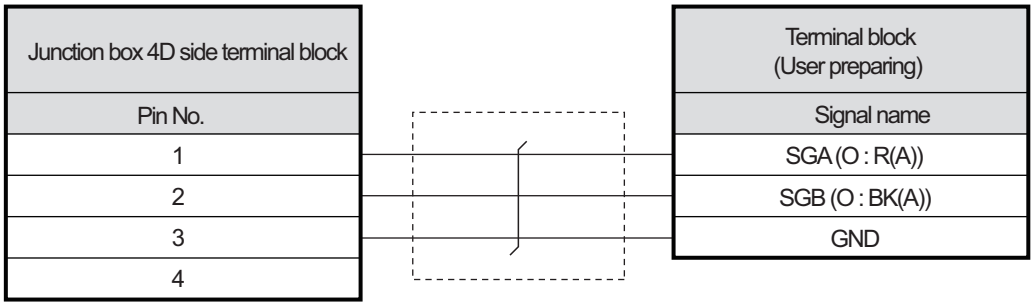
*1 Turn the terminator switch of a terminal block which will be a terminal to "RTON".

(8) RS-422 cable 8)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C □□□-37P Pin No.	GT11H-C □□□-Wire color (color type)	
FG (Shield)	1	Shield	-
SDA	2	W/R (A)	1
SDB	3	W/BK (A)	6
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
SG	10	PK/R (A)	5



(9) RS-422 cable 9)



50.1.4 Precautions when preparing a cable

1 Cable length

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be as follows:

(1) When the communication route between the GOT and the robot controller does not go through the SIO converter

The distance from the robot controller to the handy GOT must be 13 m or less.

(2) When the communication route between the GOT and the robot controller goes through the SIO converter

The distance from the robot controller to the SIO converter must be 100 m or less.

50.1.5 Robot Controller Side Setting

Point

IAI robot controller

For details of the IAI robot controller, refer to the following manual.

☞ User's Manual for the IAI robot controller

1 Connecting to X-SEL

(1) Parameter setting

Enter the following parameters using peripheral software. When setting parameters, set the mode switch of the controller to "MANU".

Parameter	Parameter Name	Set Value*4
I/O parameter 90	Usage of SIO channel 1*1 opened to user	• When used in "MANU" Set either of the following. 0 : SEL opened program 2 : IAI protocol B • When used in "AUTO" 2 : IAI protocol B
I/O parameter 91	Station code of SIO channel 1*1 opened to user	0 to 255
I/O parameter 92*2	Baud rate type of SIO channel 1*1 opened to user	0 : 9600bps, 1 : 19200bps, 2 : 38400bps, 3 : 57600bps, 5 : 115200bps
I/O parameter 93	Data length of SIO channel 1*1 opened to user	7bit, 8bit
I/O parameter 94	Stop bit length of SIO channel 1*1 opened to user	1bit, 2bit
I/O parameter 95	Parity type of SIO channel 1*1 opened to user	0 : None*, 1 : Odd, 2 : Even
I/O parameter 97*3	IAI-protocol minimum response delay for SIO channel 1*1 opened to user	0 to 999(ms)
Other parameter 46	Other setting bit pattern 1	bit0 to 3 = 1 (fixed)

*1 For X-SEL(P/Q/PX/QX), the parameter becomes the SIO channel 0 opened to user.

*2 Indicates only the transmission that can be specified on the GOT side.
Specify the transmission speed to match the baud rate of the GOT.

*3 Set it only when a wait time is required before the response and transmission to the GOT request. Normally, the communication is available using default values.

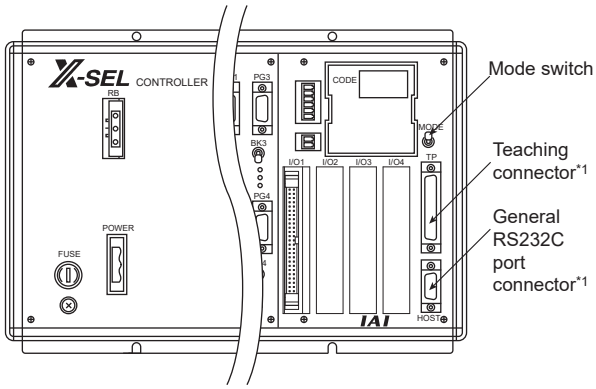
*4 When using the "MANU" mode, the set value is fixed to the value with *. Adjust the settings of the GOT side to the * settings.
However, the communication setting of the PC software becomes the setting of X-SEL after the PC software for XSEL is connected. In this case, adjust the communication setting of the GOT to the setting of the PC software.

(2) Mode switch

X-SEL K type

(a) When setting the mode switch to "MANU"
Connect the GOT to the following teaching connector.

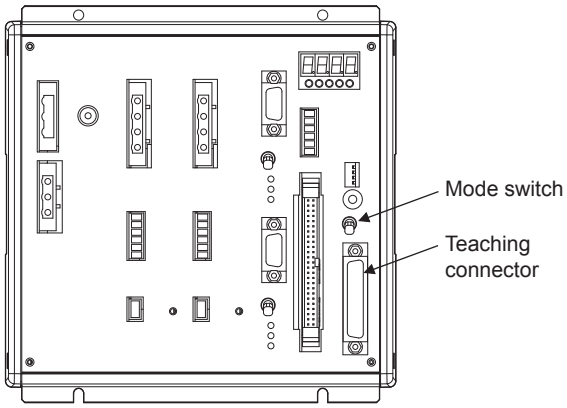
(b) When setting the mode switch to "AUTO"
Connect the GOT to the following general RS232C port connector.



*1 The teaching connector and general RS232C port connector cannot be used at the same time.

Other than X-SEL K type

Set the mode switch to "MANU" or "AUTO" and connect the GOT to the following teaching connector.



2 Connecting to SSEL, ASEL, PSEL

(1) Parameter setting

Enter the following parameters using peripheral software. When setting parameters, set the mode switch of the controller to "MANU".

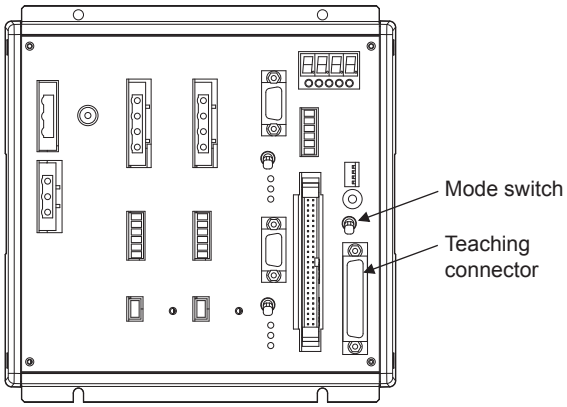
Parameter	Parameter Name	Set Value
I/O parameter 90	Usage of SIO channel 0 opened to user	2 : IAI protocol B (fixed)
I/O parameter 91	Station code of SIO channel 0 opened to user	0 to 255
I/O parameter 92 *1	Baud rate type of SIO channel 0 opened to user	0 : 9600bps, 1 : 19200bps, 2 : 38400bps, 3 : 57600bps, 5 : 115200bps
I/O parameter 93	Data length of SIO channel 0 opened to user	7bit, 8bit
I/O parameter 94	Stop bit length of SIO channel 0 opened to user	1bit, 2bit
I/O parameter 95	Parity type of SIO channel 0 opened to user	0 : None, 1 : Odd, 2 : Even
I/O parameter 97*2	IAI-protocol minimum response delay for SIO channel 0 opened to user	0 to 999(ms)
Other parameter 46	Other setting bit pattern 1	bit0 to 3 = 1 (fixed)

*1 Indicates only the transmission that can be specified on the GOT side.
Specify the transmission speed to match the baud rate of the GOT.

*2 Set it only when a wait time is required before the response and transmission to the GOT request. Normally, the communication is available using default values.

(2) Mode switch

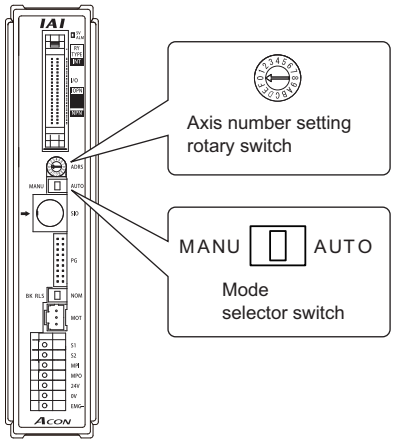
Set the mode switch to "AUTO" and connect the GOT to the following teaching connector.



50.1.6 Connecting to PCON, ACON, SCON

1 Axis number setting and mode select

For controllers without the following switches, set from the setting tool (PC software).



Switch	Set value
Axis number setting rotary switch	0 to 15
Mode selector switch	<Only the monitor> AUTO <monitor, data change> MANU

2 Transmission speed setting

Set the transmission speed from the setting tool (PC software).

Item	Range
SIO communication speed*1	9600 /19200 /38400 /57600 /115200bps Default: 38400bps

*1 Indicates only the transmission speeds that can be set on the GOT side.
Specify the transmission speed to match the transmission speed of the GOT.

50.1.7 Connecting to ERC2

1 Axis number setting and mode select

Set from the setting tool (PC software).

2 Transmission speed setting

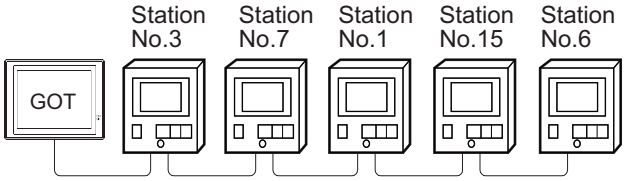
Set the transmission speed from the setting tool (PC software).

Item	Range
SIO communication speed*1	9600 /19200 /38400 /57600 /115200bps Default: 38400bps

*1 Indicates only the transmission speeds that can be set on the GOT side.
Specify the transmission speed to match the transmission speed of the GOT.

50.1.8 Station No. settings

Set each station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the temperature controller of which data is to be changed.

Model	Specification range
PCON, ACON, SCON, ERC2	0 to 15

(2) Indirect specification

When setting the device, indirectly specify the station number of the robot controller of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 115 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the robot controller.

Specification station No.	Compatible device	Setting range
100	GD10	0 to 15: For PCON, ACON, SCON, ERC2 For the setting other than the above, communication timeout error will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

50.2 Precautions

50.2.1 Precautions

1 Program control device

- When Program Execution Command (0), Program Exit Command (2), or Program Restart Command (4) is written to the program control device (PRG 0), it will be a request for all programs running in the controllers.
- When unsupported write data is input to the program control device, the following error is displayed in the system alarm.
  315 : Device writing error.
  Correct device.

2 Variable devices

The variable No.99 of Integer device and variable No.199 of real device are special devices used for operations by the X-SEL controller system. Do not use these variables for general purpose.

3 Command trigger compatible device

- For the device whose obtained data No.0 is a command trigger, communication with the controller is performed when the Write(1)/Read(2) is set to the command trigger.
  When the command trigger and setting value are written in a batch, the communication is performed based on the value set with batch write.
- When Clear(4) is set to the command trigger, the communication with the controller is not performed and the setting value is initialized.
- When an unsupported setting value is input to the command trigger, the following error is displayed in the system alarm.
  315 : Device writing error.
  Correct device.

4 Device reserved for system use

Devices of "Reserved for system use" are devices with indefinite values. Do not write to this device.

5 Writing to the flash ROM

- The point data can be written to the flash ROM of the X-SEL controller. When the point data is written to the flash ROM, it is not erased even if the X-SEL controller power supply is turned OFF. However, the number of write times is restricted. For details, refer to the user's manual of X-SEL controller to be used.
- Never turn off the main power supply during the flash ROM write. Doing so may cause the loss of data and malfunction of controllers. For details, refer to the user's manual of X-SEL controller to be used.

6 Communication disconnection

- Writing to the flash ROM disconnects the communication with controllers until the writing is completed.
- Performing the software restarts the controllers. During this time, the communication with controllers is disconnected.

7 Station number setting of the IAI robot controller system

The robot controller with the station number set with the host address must be included.

☞ Section 9.2 Communication Detail Settings

8 Connection of the IAI X-SEL K type

Note the following precaution when using the controller with the mode switch set to MANU.

- After powering up the X-SEL, connecting the GOT before the PC software causes the program startup disabled (A1D alarm) on the X-SEL side.

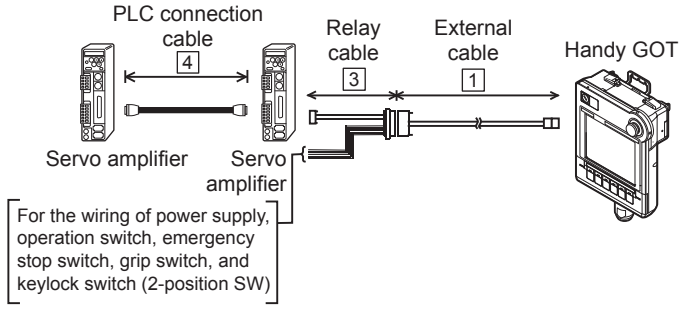
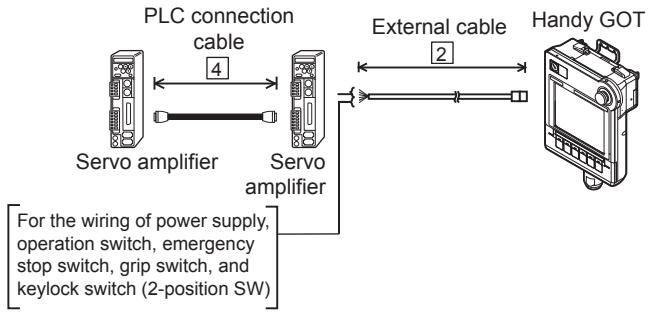
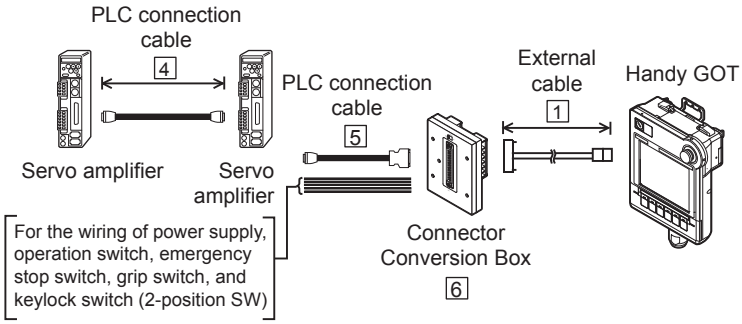
51. CONNECTION TO PANASONIC SERVO AMPLIFIER

51.1 System Configuration and System Equipment

Only GT Designer3 Version1.17T or later supports connection to the Panasonic servo amplifier.

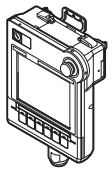
51.1.1 System configuration

When connecting the Handy GOT to a servo amplifier, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "51.1.2 System equipment".

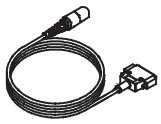
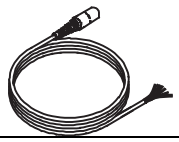
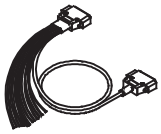
Connection conditions			System configuration
Servo amplifier	Communication	Distance	
MINAS A4, MINAS A4F, MINAS A4L, MINAS A5	RS-232/ RS-422	Overall cable length 13m or less	
			
			

51.1.2 System equipment

1 GOT

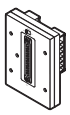
Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C □□□ -37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C □□□ □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 51.1.3 Connection cable	
PLC connection cable		4	Select appropriate cables for the communication method. ☞ Section 51.1.3 Connection cable	
		5		

4 product manufactured by Panasonic Corporation.
For details of this product, contact Panasonic Corporation.

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Servo amplifier	Number of GOTs	Number of servo amplifiers	Communication	Communication unit	
				Name	Model name
MINAS A4, MINAS A4F, MINAS A4L	1	16	RS-232	—	
		10	RS-422	—	
MINAS A5	1	32	RS-232	—	
		10	RS-422	—	

51.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable No. to be used.

Connection point	PLC connection cable	
	RS-232 cable*1	RS-422 cable
Between MINAS A4 and connector conversion box	DVOP1960 (2m)	Must be prepared by the user.
Between MINAS A4 and MINAS A4	—	DVOP1970 (0.2m) DVOP1971 (0.5m) DVOP1972 (1m)
Between MINAS A5 and GOT	Must be prepared by the user.	Must be prepared by the user.
Between MINAS A5 and MINAS A5	—	Must be prepared by the user.

*1 The RS-232 cable can be prepared by the user. (this section 2)

2 Connection cable classification

Refer to the following table to select the cable No. to be used.

Refer to the connection diagram of the cable No. to be used.

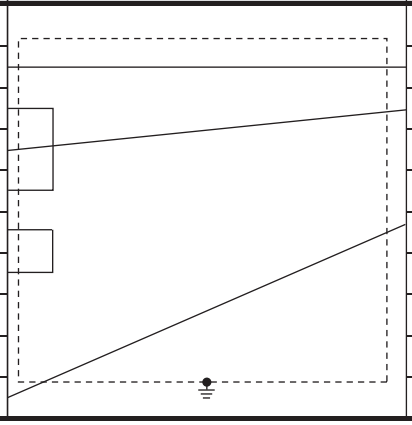
Connection point	PLC connection cable	
	RS-232 cable	RS-422 cable
Between MINAS A4 and GOT	RS-232 cable 1)	RS-422 cable 1)
Between MINAS A4 and MINAS A4	—	DVOP1970 (0.2m) DVOP1971 (0.5m) DVOP1972 (1m)
Between MINAS A5 and GOT	RS-232 cable 2)	RS-422 cable 2)
Between MINAS A5 and MINAS A5	—	RS-422 cable 3)

3 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to a servo amplifier.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

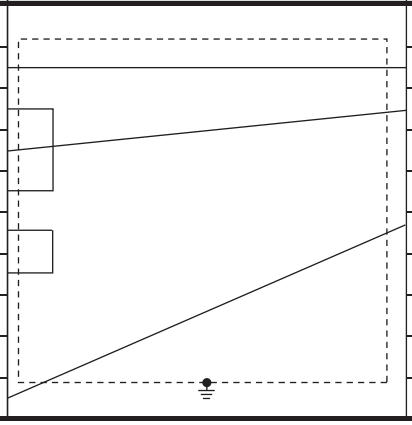
(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG(Shield)	1	Shield	-		1	
SD(TXD)	2	W/R (A)	3		5	RXD
ER(DTR)	3	W/BK (A)	4		3	TXD
RD(RXD)	4	GY/R (A)	2		2	
DR(DSR)	5	GY/BK (A)	6		6	
RS(RTS)	6	O/R (A)	7		4	G
CS(CTS)	7	O/BK (A)	8		7	RS485+
-	8	Y/R (A)	-		8	RS485-
-	9	Y/BK (A)	-			
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch,emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-232 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Panasonic product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG(Shield)	1	Shield	-			
SD(TXD)	2	W/R (A)	3		4	RXD
ER(DTR)	3	W/BK (A)	4		3	TXD
RD(RXD)	4	GY/R (A)	2		2	
DR(DSR)	5	GY/BK (A)	6			
RS(RTS)	6	O/R (A)	7		1	GND
CS(CTS)	7	O/BK (A)	8		8	RS485+
-	8	Y/R (A)	-		7	RS485-
-	9	Y/BK (A)	-		6	RS485+
SG	10	PK/R (A)	5		5	RS485-

Refer to the following for the wiring of the power, operation switch, grip switch,emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

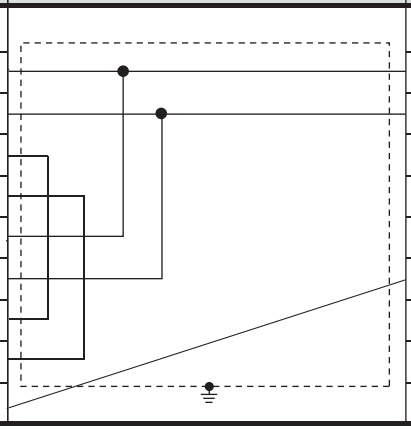
4 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the Handy GOT to a servo amplifier or the servo amplifiers.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

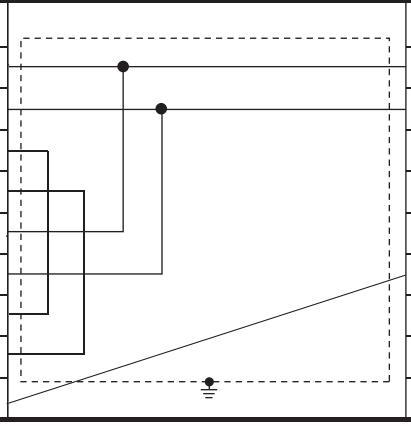
(1) RS-422 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	Panasonic product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG(Shield)	1	Shield	-		1	
SDA	2	W/R (A)	1		7	RS485+
SDB	3	W/BK (A)	6		8	RS485-
RSA	4	GY/R (A)	3		2	
RSB	5	GY/BK (A)	8		3	TXD
RDA	6	O/R (A)	2		5	RXD
RDB	7	O/BK (A)	7		4	G
CSA	8	Y/R (A)	4		6	
CSB	9	Y/BK (A)	9		-	-
SG	10	PK/R (A)	5		-	-

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

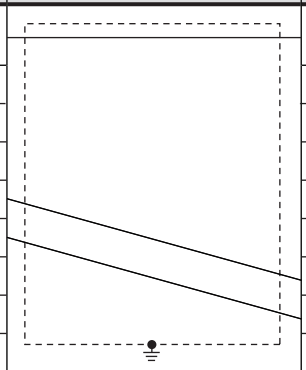
(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	Panasonic product side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG(Shield)	1	Shield	-		-	-
SDA	2	W/R (A)	1		8	RS485+
SDB	3	W/BK (A)	6		7	RS485-
RSA	4	GY/R (A)	3		2	
RSB	5	GY/BK (A)	8		3	TXD
RDA	6	O/R (A)	2		4	RXD
RDB	7	O/BK (A)	7		1	GND
CSA	8	Y/R (A)	4		6	RS485+
CSB	9	Y/BK (A)	9		5	RS485-
SG	10	PK/R (A)	5		-	-

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(3) RS-422 cable 3)

Panasonic product side		Cable connection	Panasonic product side	
Signal name	Pin No.		Pin No.	Signal name
GND	1		1	GND
NC	2		2	NC
TXD	3		3	TXD
RXD	4		4	RXD
RS485-	5		5	RS485-
RS485+	6		6	RS485+
RS485-	7		7	RS485-
RS485+	8		8	RS485+
FG	9		9	FG

Refer to the following for the wiring of the power, operation switch, grip switch,emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

51.1.4 Precautions when preparing cable

1 Cable length

- The length of the RS-232 cable must be 2m or less.
- The length of the RS-422 cable must be 1m or less.

51.2 Setting on Servo Amplifier Side

51.2.1 Communication setting

Point

Panasonic servo amplifier

For details of panasonic servo amplifiers, refer to the user's manual or technical manual of each panasonic servo amplifier.

☞ User's Manual for the Panasonic servo amplifier

1 Connecting to MINAS A4/A4F/A4L

(1) Communication settings

Set them from the front panel of MINAS A4/A4F/A4L or using the setup support software.

Pin No.	Set value
Address of axis (Parameter No.00)	0 to 15
Baud rate setup of RS232 (Parameter No.0C)*1	2 : 9600bps 3 : 19200bps 4 : 38400bps 5 : 57600bps
Baud rate setup of RS485 (Parameter No.0D)*1	2 : 9600bps 3 : 19200bps 4 : 38400bps 5 : 57600bps

*1 Only transmission speeds available on the GOT side are shown.
Specify it to match the baud rate of the GOT.

Point

Axis address setting

- The address of axis is determined by the setting values of the rotary switch ID on the front panel when powering ON the servo amplifier.
  This value is used as the station number at communication.
- The address of axis can be changed only with the rotary switch ID.

2 Connecting to MINAS A5

(1) Communication settings

Set them from the front panel of MINAS A5 or using the setup support software.

Pin No.	Set value
Address of axis (Parameter No.5.31)	0 to 31
Baud rate setup of RS232 (Parameter No.5.29)*1	2 : 9600bps 3 : 19200bps 4 : 38400bps 5 : 57600bps
Baud rate setup of RS485 (Parameter No.5.30)*1	2 : 9600bps 3 : 19200bps 4 : 38400bps 5 : 57600bps

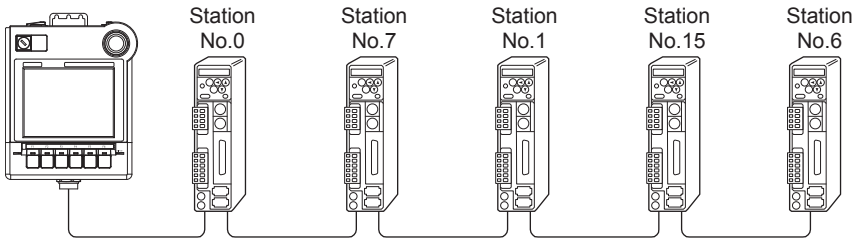
*1 Only transmission speeds available on the GOT side are shown.
Specify it to match the baud rate of the GOT.

51.2.2 Station No. settings

Set the station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order.
No problem is expected even if station numbers are not consecutive.

- When connect the GOT and servo amplifier using the RS-232
  Set the station number (axis number) of the servo amplifier connected to the GOT to 0. Set other station numbers (axis numbers) of the servo amplifier to other than 0.
- When connect the GOT and servo amplifier using the RS-422
  The station number (axis number) of GOT becomes 0. Set station numbers (axis numbers) of the servo amplifier to connect to other than 0.

Example of RS-232 connection between GOT-servo amplifier



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the servo amplifier of which data is to be changed.

Model	Specification range
MINAS A4, MINAS A4F, MINAS A4L	0 to 15
MINAS A5	0 to 31

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 115 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the servo amplifier.

Specification Station No.	Compatible device	Setting range
100	GD10	0 to 15 : For MINAS A4, MINAS A4F, MINAS A4L 0 to 31 : For MINAS A5 For the setting other than the above, a communication timeout error will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

51.3 Precautions

51.3.1 Precautions

1 Station number setting in the servo system

Configure the servo system so that there is a servo amplifier with a station number set with a host address.

For details of host address setting, refer to the following manual.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 Monitor speed

When monitoring multiple station devices placed on the same GOT screen, the monitor speed is delayed. Even when monitoring a single station, the monitor speed is delayed if the number of device points is large.

3 Mixing of MINAS A4 series and MINAS A5 series

MINAS A4 series and MINAS A5 series cannot be mixed. The models in the MINAS A4 series can be used together.

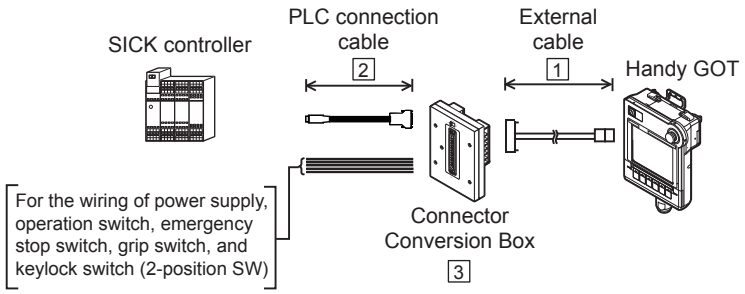
52. CONNECTION TO SICK SAFETY CONTROLLER

52.1 System Configuration and System Equipment

Only GT Designer3 Version1.17T or later supports connection to the SICK safety controller.

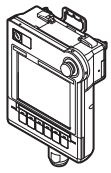
52.1.1 System configuration

For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "52.1.2 System equipment"

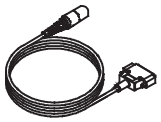
Connection conditions			System configuration
Controller	Communication	Distance	
Flexi Soft	RS-232	6m or less	

52.1.2 System equipment

1 GOT

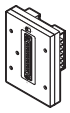
Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30 (3m)	Relay cable connection side D-Sub 37 pins
PLC connection cable*1		2	Part Number: 6021195(2m) Part Number: 6036342(3m)	—

*1 The SICK connection cable is a product manufactured by SICK AG.
For details of the product, contact SICK AG.

3 Option

Image	No.	Name	Model name	Remark
	3	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Controller	Number of GOTs	Number of controllers
Flexi Soft	1	1

52.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C☐☐☐ and its connection target device are shown below.

1 PLC connection cable

Refer to the following table to select the cable No. to be used.

Communication unit		PLC connection cable*1
Name	Model name	RS-232 cable
Controller	Flexi Soft	Part Number:6021195(2m) Part Number:603642(3m)

*1 The SICK connection cable is a product manufactured by SICK AG.
For details of the product, contact SICK AG.

52.1.4 PLC Side Setting

Point

SICK safety controller

For details of the SICK safety controller, refer to the following manual.

☞ User's Manual for the SICK safety controller

1 Connecting to Flexi Soft

(1) Communication settings

No communication setting is required since the settings are fixed with the following items.

Setting item	Controller side setting
Communication speed	115200bps (fixed)
Data length	8 bits (fixed)
Parity bit	None (fixed)
Stop bit	1 bit (fixed)

MEMO

53. CONNECTION TO MURATEC CONTROLLER

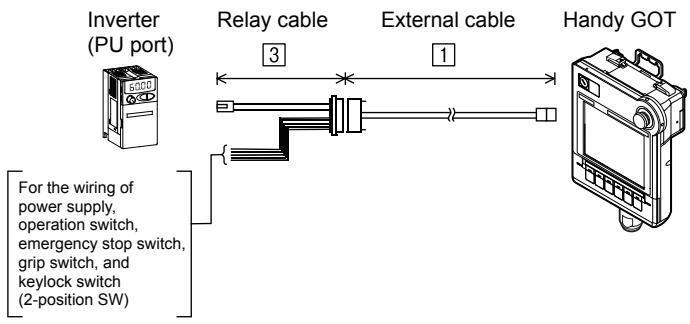
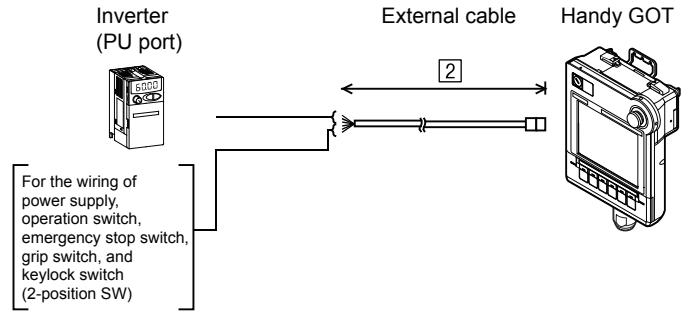
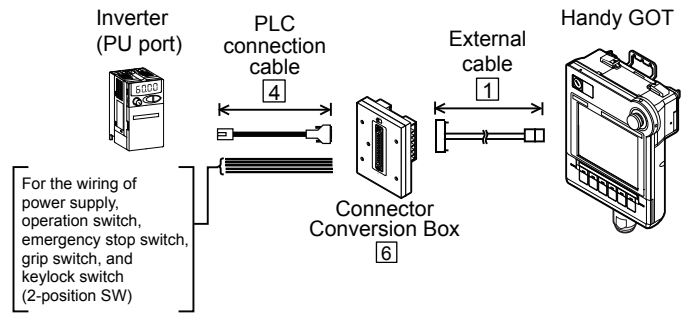
Contact us for connection to the Muratec controller.

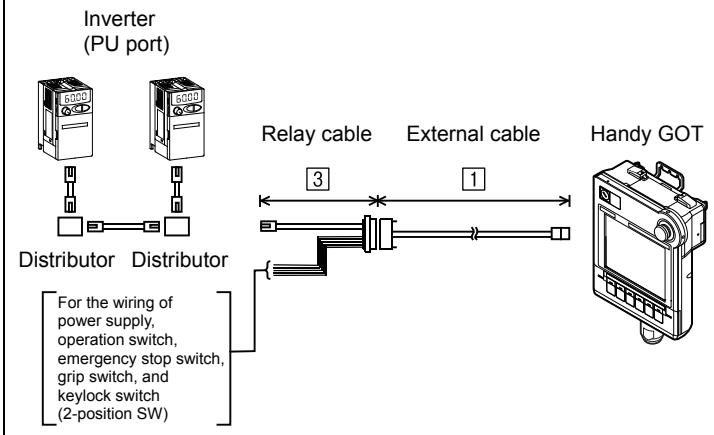
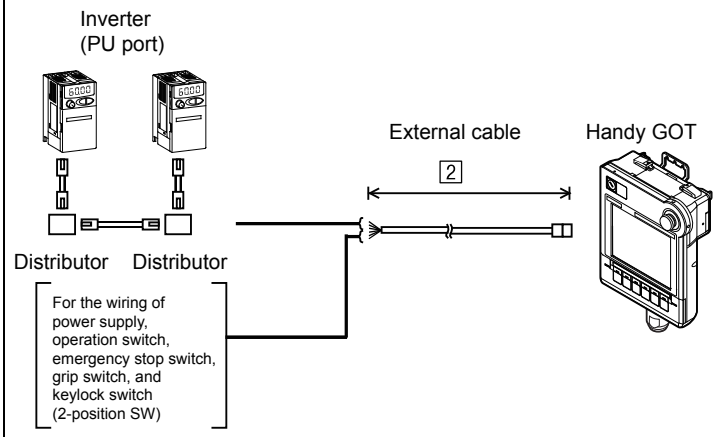
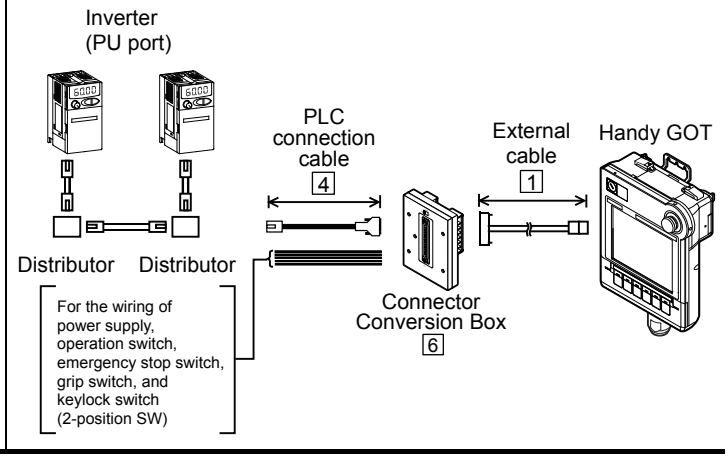
54. CONNECTION TO INVERTER

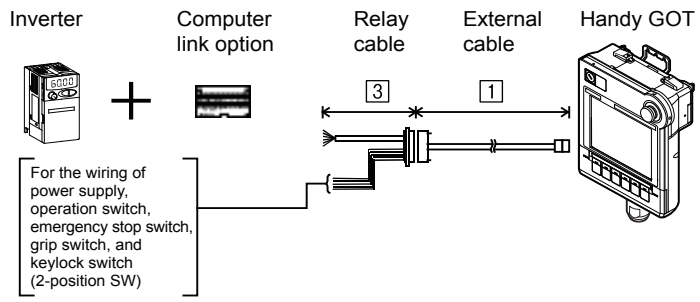
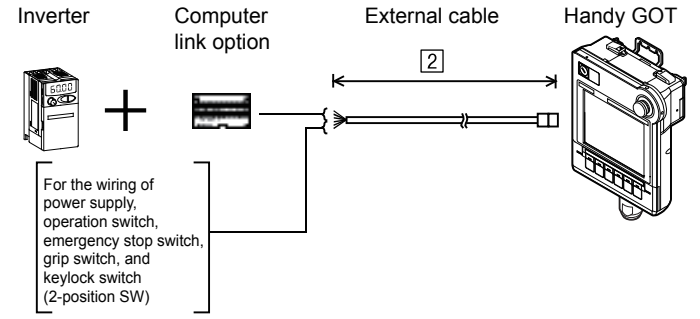
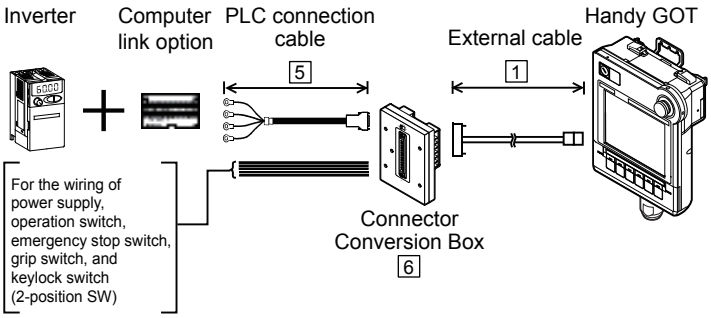
54.1 System Configuration and System Equipment

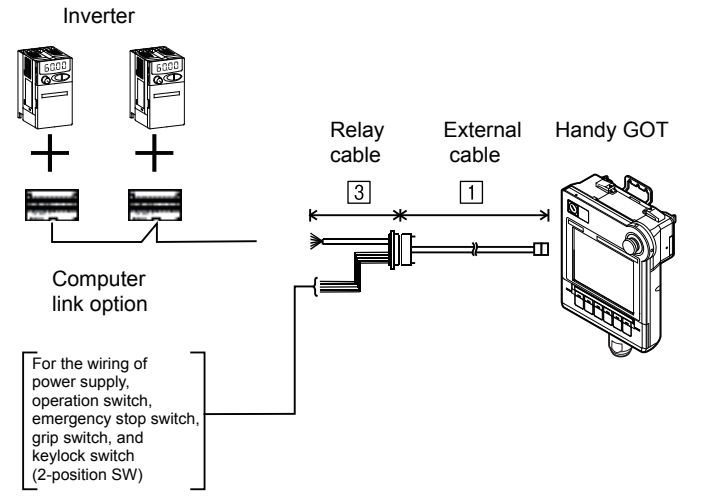
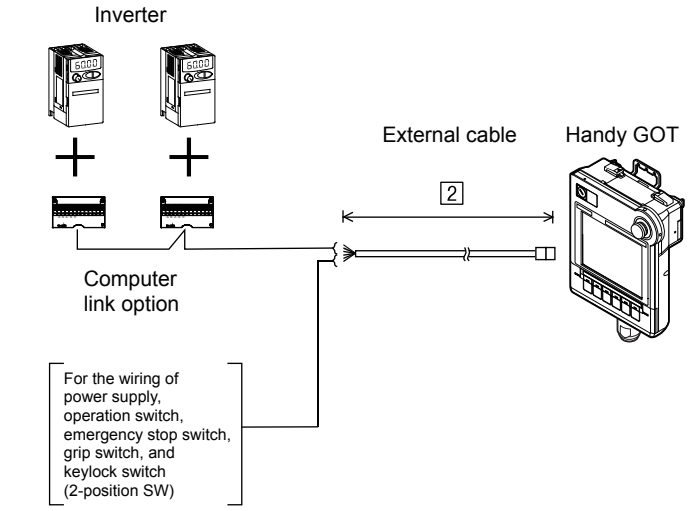
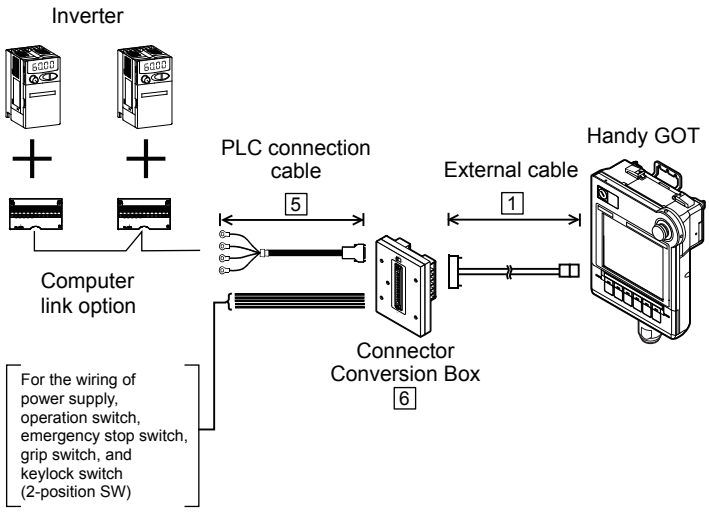
54.1.1 System configuration

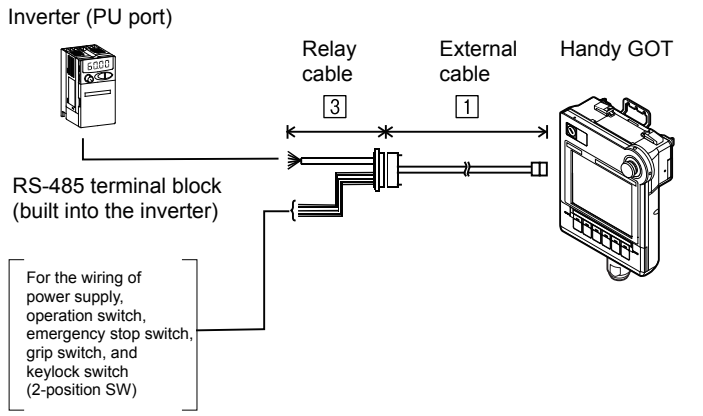
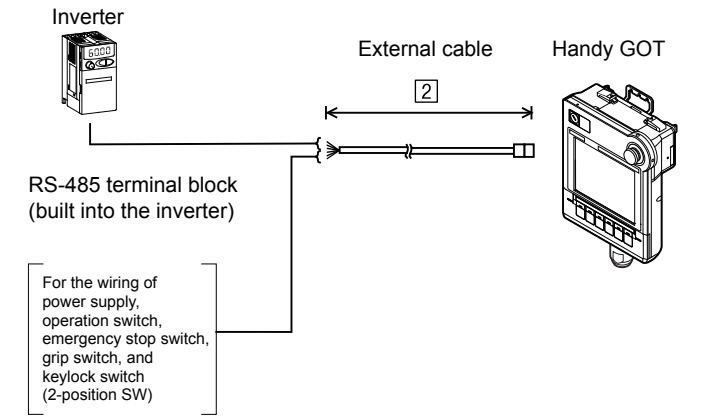
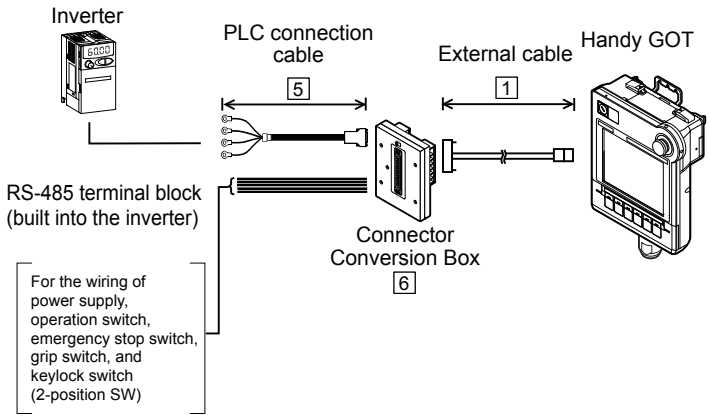
When connecting the Handy GOT to an inverter, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
Connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "54.1.2 System equipment".

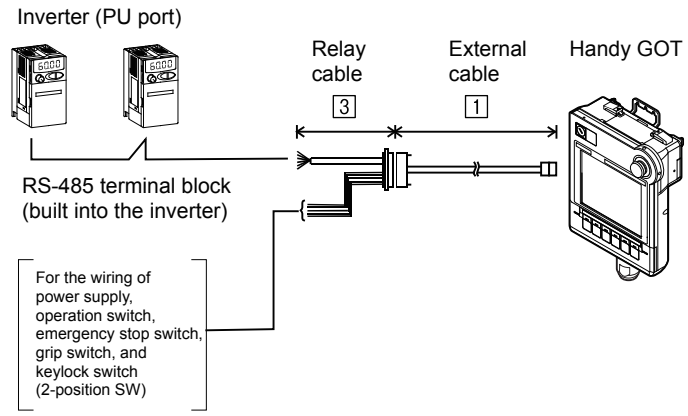
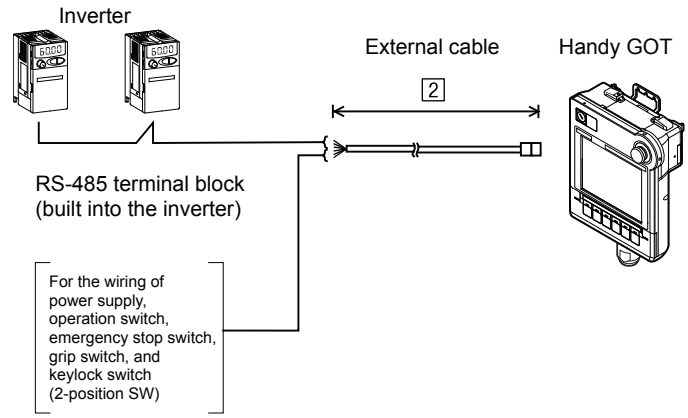
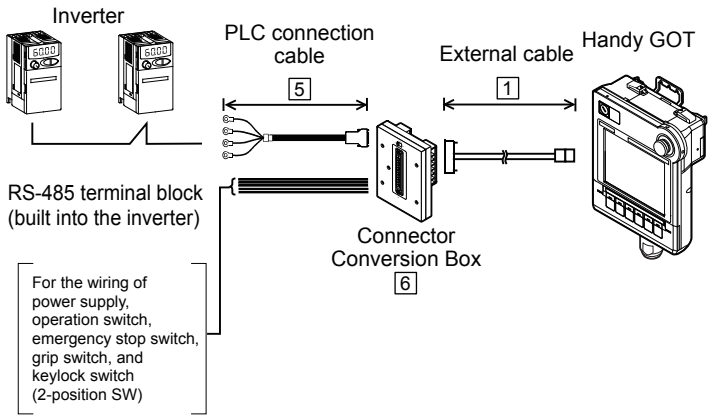
Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
A500/A500L F500/F500L V500/V500L E500 S500/S500E F500J/E700/ A700/F700 /F700P /D700 /F700PJ A800/F800 sensorless servo (FREQROL- E700EX)	1	RS-422	Overall cable length 13m or less	  

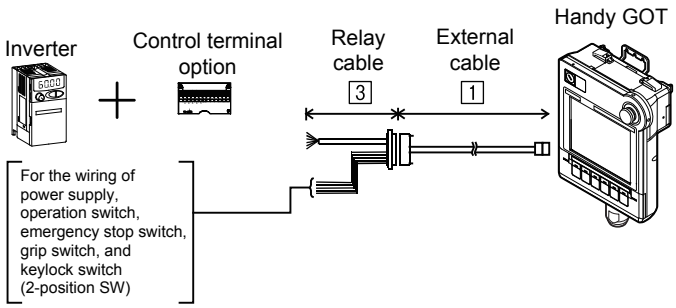
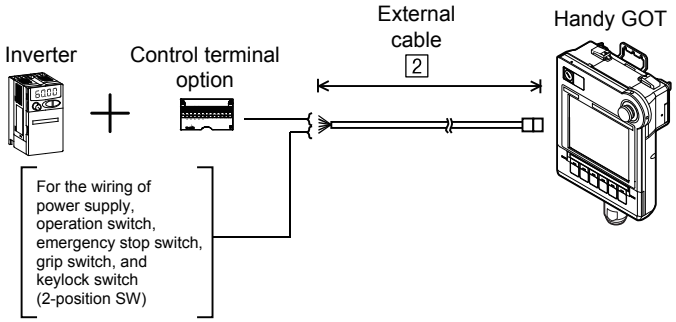
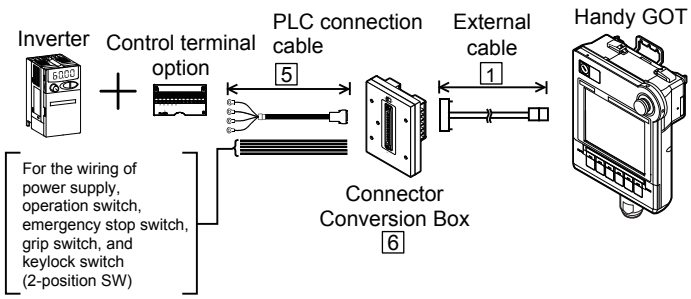
Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
A500/A500L F500/F500L V500/V500L E500 S500/S500E F500J/E700/ A700/F700 /F700P /D700 /F700PJ A800/F800 sensorless servo (FREQROL- E700EX)	10	RS-422	Overall cable length 13m or less	  

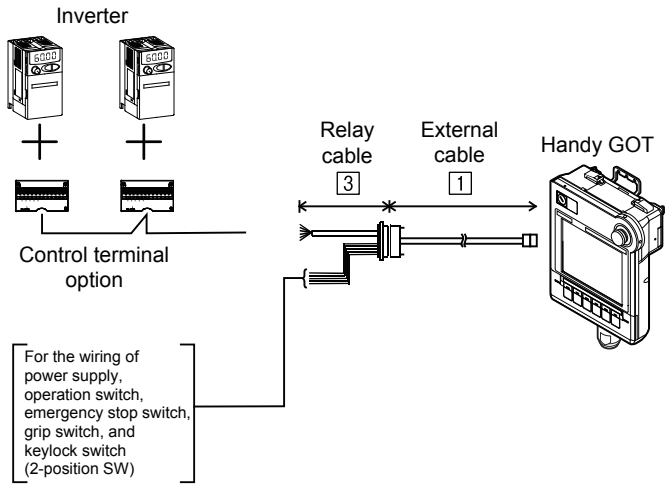
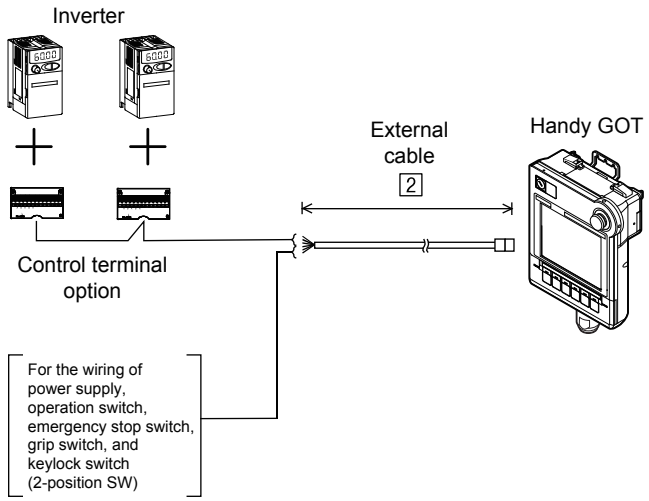
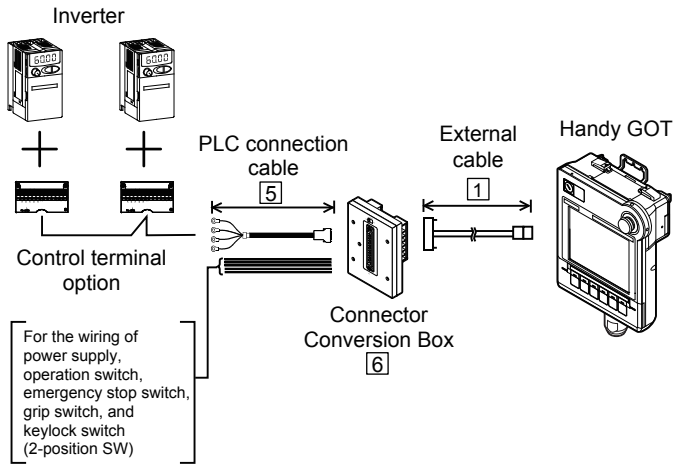
Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
A500/A500L F500/F500L V500/V500L	1	RS-422	Overall cable length 13m or less	  

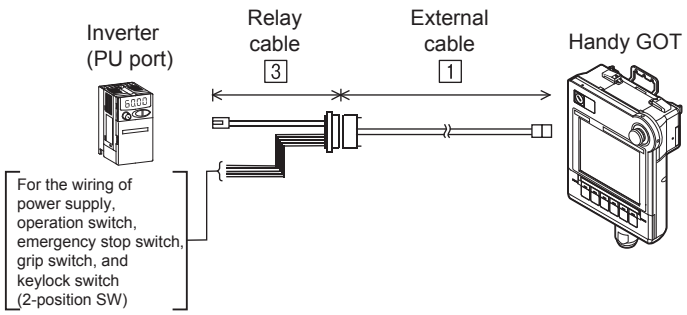
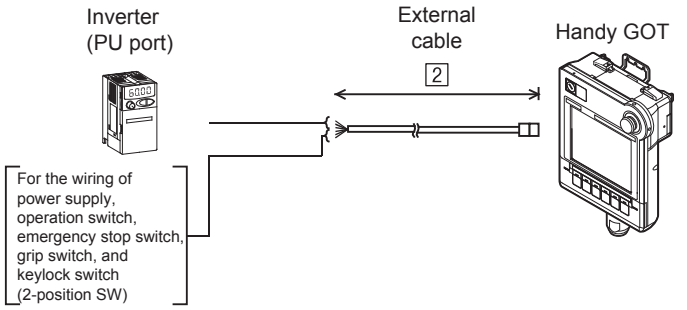
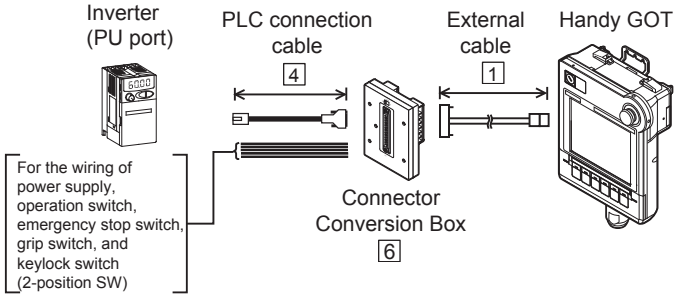
Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
A500/A500L F500/F500L V500/V500L	10	RS-422	Overall cable length 13m or less	
				
				

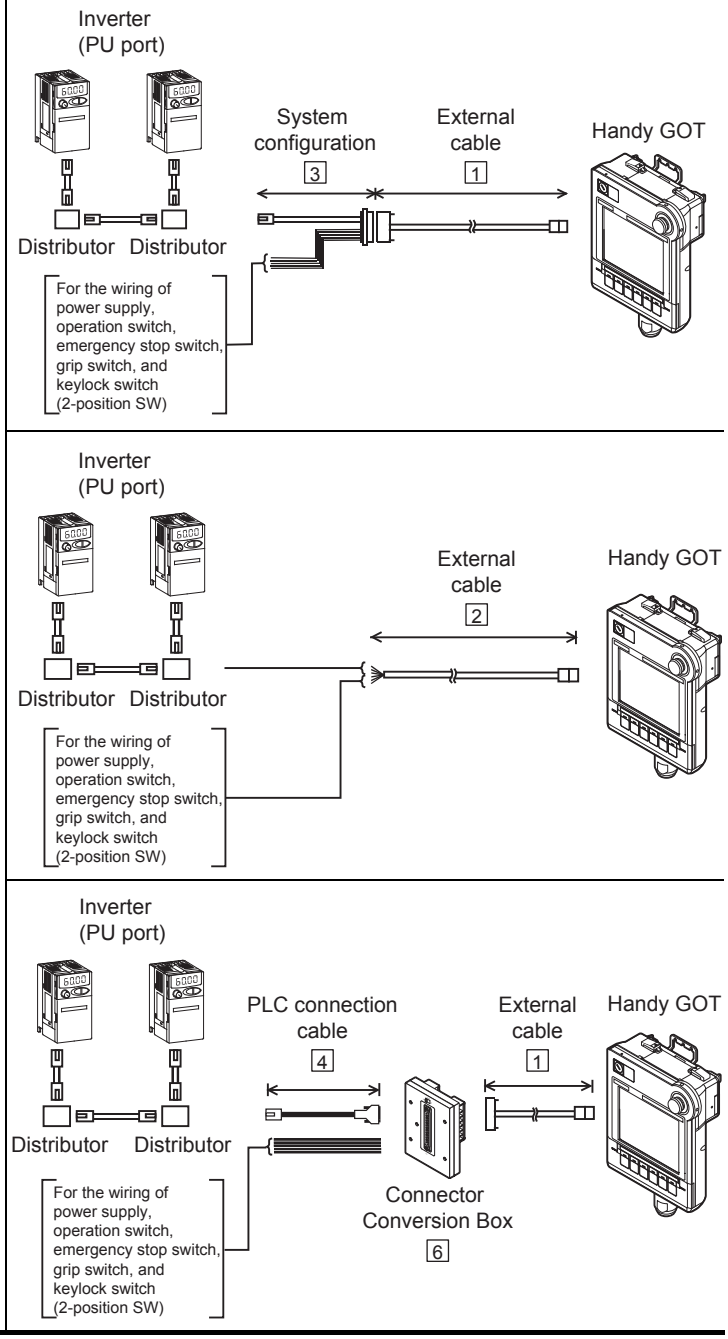
Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
A700/F700 /F700P A800/F800	1	RS-422	Overall cable length 13m or less	
				
				

Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
A700/F700 /F700P A800/F800	10	RS-422	Overall cable length 13m or less	
				
				

Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
E700/ sensorless servo (FREQROL-E700EX)	1	RS-422	Overall cable length 13m or less	
				
				

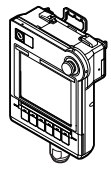
Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
E700/ sensorless servo (FREQROL-E700EX)	10	RS-422	Overall cable length 13m or less	
				
				

Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
MD-CX522-☐☐K(-A0)	1	RS-422	Overall cable length 13m or less	  

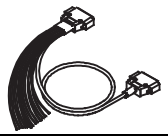
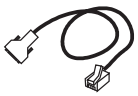
Connection conditions				System configuration
Inverter	Number of connectable GOTs and PLCs	Communication	Distance	
MD-CX522-☐☐K(-A0)	10	RS-422	Overall cable length 13m or less	

54.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30(3m)/60(6m)/100(10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. Section 54.1.3 Connection cable	
PLC connection cable		4		
		5		

3 Option

Image	No.	Name	Model name	Remark
	6	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Inverter	Number of GOTs	Number of inverters	Communication	Communication unit	
				Name	Model name
FREQROL A500/A500L F500/F500L V500/V500L	1	1	RS-422	Connect to the PU port of the inverter.	
	1	10	RS-422	Computer link option	FR-A5NR
	1	10	RS-422	Distributor	BMJ-8 (Recommended)
FREQROL E500/S500 S500E/F500J D700	1	1	RS-422	Connect to the PU port of the inverter.	
	1	10	RS-422	Distributor	BMJ-8 (Recommended)
FREQROL E700/E700EX	1	1	RS-422	Connect to the PU port of the inverter.	
	1	10	RS-422	Control terminal option	FR-E7TR
	1	10	RS-422	Distributor	BMJ-8 (Recommended)
FREQROL A700/F700 A800/F800	1	1	RS-422	Connect to the PU port of the inverter.	
	1	1	RS-422	Connect to the RS485 terminal block (built into the inverter).	
	1	10	RS-422	Connect to the RS485 terminal block (built into the inverter).	
	1	10	RS-422	Distributor	BMJ-8 (Recommended)
MD-CX522-□□K(-A0)	1	1	RS-422	Connect to the PU port of the inverter.	
	1	10	RS-422	Distributor	BMJ-8 (Recommended)

BMJ-8 is manufactured by HACHIKO ELECTRIC CO.,LTD. For details of the product, contact HACHIKO ELECTRIC CO.,LTD.

54.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

Model name		Number of inverters	Controller	Connection cable
FREQROL	A500/A500L F500/F500L V500/V500L	1	GOT ↔ Inverter	RS-422 cable 1)
		1	GOT ↔ Computer link option	RS-422 cable 2)
		10	GOT ↔ Computer link option	RS-422 cable 4)
		10	GOT ↔ Distributor	RS-422 cable 1)
	E500/S500 S500E/F500J D700	1	GOT ↔ Inverter	RS-422 cable 1)
		10	GOT ↔ Distributor	RS-422 cable 1)
	E700/E700EX	1	GOT ↔ Inverter	RS-422 cable 1)
		1	GOT ↔ Control terminal option	RS-422 cable 8)
		10	GOT ↔ Control terminal option	RS-422 cable 9)
		10	GOT ↔ Distributor	RS-422 cable 1)
	A700/F700 A800/F800	1	GOT ↔ Inverter	RS-422 cable 1)
		1	GOT ↔ Inverter (Built-in RS-485 terminal)	RS-422 cable 5)
		10	GOT ↔ Distributor	RS-422 cable 1)
		10	GOT ↔ Inverter (Built-in RS-485 terminal)	RS-422 cable 6)
		—	Inverter (Built-in RS-485 terminal) ↔ Inverter (Built-in RS-485 terminal)	RS-422 cable 6)
MELIPM	MD-CX522-□□K(-A0)	1	GOT ↔ Inverter	RS-422 cable 1)
		10	GOT ↔ Distributor	RS-422 cable 1)
Distributor	BMJ-8	—	Distributor ↔ Inverter (Modular connector)	RS-422 cable 3)
		—	Distributor ↔ Distributor	RS-422 cable 3)
Computer link option	FR-A5NR	—	Computer link option ↔ Computer link option	RS-422 cable 4)
		—	Inverter (Built-in RS-485 terminal) ↔ Inverter (Built-in RS-485 terminal)	RS-422 cable 6)
Terminating resistor	—	—	Terminating resistor	RS-422 cable 7)

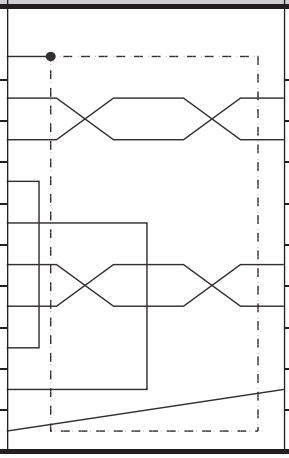
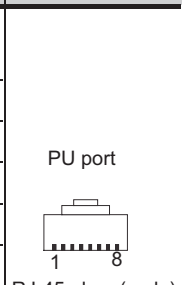
2 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the Handy GOT to the inverters.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable 1)

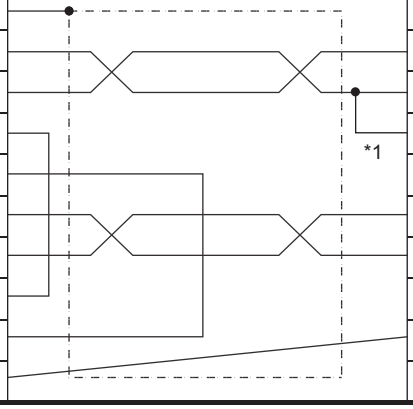
Signal name	GOT side (External cable)*1		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	Inverter side or Distributor side		
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name	Pin layout*1
FG (Shield)	1	Shield	—		—	—	
SDA	2	W/R (A)	1		3	RDA	
SDB	3	W/BK (A)	6		6	RDB	
RSA	4	GY/R (A)	3		8	P5S	
RSB	5	GY/BK (A)	8		2	P5S	
RDA	6	O/R (A)	2		5	SDA	
RDB	7	O/BK (A)	7		4	SDB	
CSA	8	Y/R (A)	4		—	—	
CSB	9	Y/BK (A)	9		1	SG	
SG	10	PK/R (A)	5		—	—	

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 The connector figure shows the engagement face.

(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	FR-A5NR side (Terminal block)
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Signal name
FG (Shield)	1	Shield	—		—
SDA	2	W/R (A)	1		RDA
SDB	3	W/BK (A)	6		RDB
RSA	4	GY/R (A)	3		RDR
RSB	5	GY/BK (A)	8		—
RDA	6	O/R (A)	2		SDA
RDB	7	O/BK (A)	7		SDB
CSA	8	Y/R (A)	4		—
CSB	9	Y/BK (A)	9		SG
SG	10	PK/R (A)	5		—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect a terminating resistor jumper to RDB and RDR. The terminating resister jumper is packed together with the FR-A5NR.

(3) RS-422 cable 3)

Distributor side (Modular connector)			Cable connection	Inverter side or Distributor side (Modular connector)		
Pin wiring*1	Signal name	Pin No.		Pin No.	Signal name	Pin layout*1
PU port  RJ-45 plug (male)	SDA	5		5	SDA	PU port  RJ-45 plug (male)
	SDB	4		4	SDB	
	RDA	3		3	RDA	
	RDB	6		6	RDB	
	P5S	2		2	P5S	
	P5S	8		8	P5S	
	SG	1		1	SG	

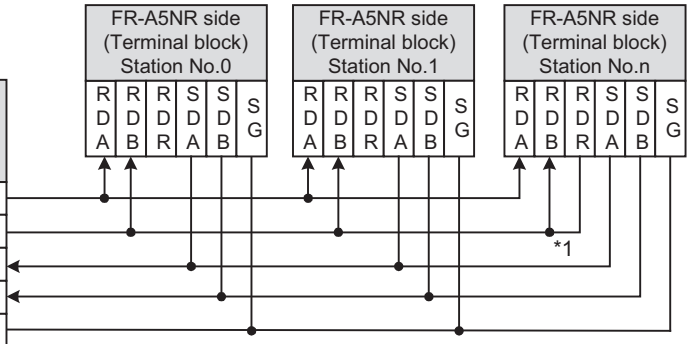
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 The connector figure shows the engagement face.

(4) RS-422 cable 4)

Signal name	GOT side(External cable)*2		Connector Conversion Box GT11H-CNB-37S RS422 Connector Pin No.
	GT11H-C□□ □-37P Pin No.	GT11H-C□□□ Wire color (color type)	
SDA	2	W/R(A)	1
SDB	3	W/BK(A)	6
RDA	6	O/R(A)	2
RDB	7	O/BK(A)	7
SG	10	PK/R(A)	5
RSA	4	GY/R(A)	3
RSB	5	GY/BK(A)	8
CSA	8	Y/R(A)	4
CSB	9	Y/BK(A)	9
FG (Shield)	1	Shield	-



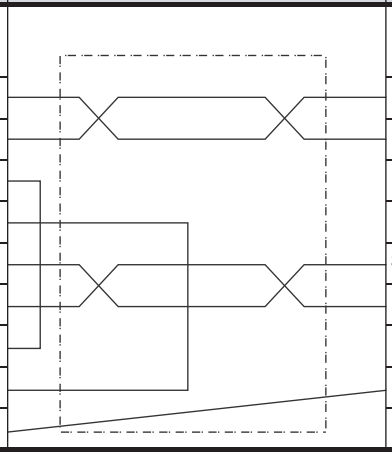
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Connect a terminating resistor jumper to RDB and RDR. The terminating resister jumper is packed together with the FR-A5NR.

*2 No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

(5) RS-422 cable 5)

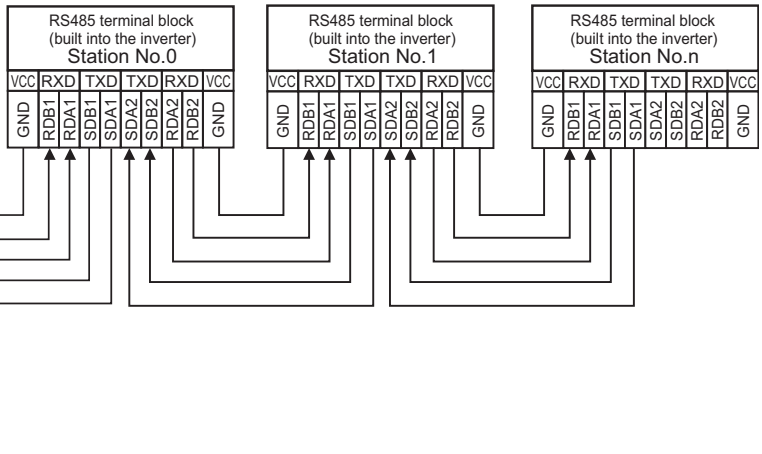
Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	Inverter side RS485 terminal block (built into the inverter)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Terminal name	Terminal block name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		RDA1 (RXD+)	RXD
SDB	3	W/BK (A)	6		RDB1 (RXD-)	
RSA	4	GY/R (A)	3		—	—
RSB	5	GY/BK (A)	8		—	—
RDA	6	O/R (A)	2		SDA1 (TXD1+)	TXD
RDB	7	O/BK (A)	7		SDB1 (TXD1-)	
CSA	8	Y/R (A)	4		—	—
CSB	9	Y/BK (A)	9		SG (GND)	VCC
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

- RDA2, RDB2, SDA2 and SDB2 terminals of the RS485 terminal block (built into the inverter) cannot be used.

(6) RS-422 cable 6)



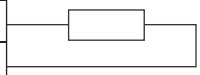
Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C □□□ -37P Pin No.	GT11H-C □□□ Wire color (color type)	
SG	10	PK/R (A)	5
SDB	3	W/BK (A)	6
SDA	2	W/R (A)	1
RDB	7	O/BK (A)	7
RDA	6	O/R (A)	2
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
FG (Shield)	1	Shield	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

- Set the terminator switch built in the farthest inverter from the GOT to ON (100Ω).
- No terminating resistor need to be connected on the GOT side as one is already built into the GOT.

(7) RS-422 cable 7)

Distributor side			Cable connection and signal direction
Pin layout*1	Signal name	Pin No.	
PU port  1 8 RJ-45 plug (male)	SDA	5	Terminating resistor:100Ω 1/2W 
	SDB	4	
	RDA	3	
	RDB	6	
	P5S	2	
	P5S	8	
	SG	1	

*1 The connector figure shows the engagement face.

(8) RS-422 cable 8)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	FR-E7TR side*1 (Terminal block)
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			
SDA	2	W/R (A)	1		RDA
SDB	3	W/BK (A)	6		RDB
RDA	6	O/R (A)	2		SDA
RDB	7	O/BK (A)	7		SDB
SG	10	PK/R (A)	5		SG
RSA	4	GY/R (A)	3		
RSB	5	GY/BK (A)	8		
CSA	8	Y/R (A)	4		
CSB	9	Y/BK (A)	9		
FG (Shield)	1	Shield	—		

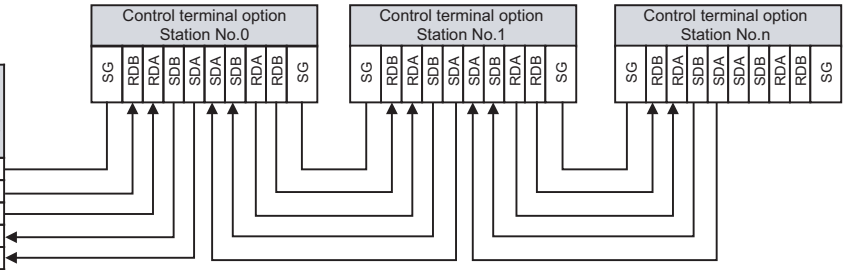
Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Set the terminator switch of FR-E7TR to ON (100Ω side).

(9) RS-422 cable 9)

Signal name	GOT side (External cable)*1		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C □□□ -37P Pin No.	GT11H-C □□□ Wire color (color type)	
SG	10	PK/R (A)	5
SDB	3	W/BK (A)	6
SDA	2	W/R (A)	1
RDB	7	O/BK (A)	7
RDA	6	O/R (A)	2
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
FG (Shield)	1	Shield	–



Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 Set the terminator switch of FR-E7TR connected to the farthest inverter from GOT1000 to ON (100Ω side).

*2 No terminating resistor needs to be connected on the GOT side as one is already built into the GOT.

*3 For details on the transition wiring method, refer to the following manual.

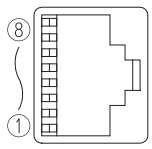
Control terminal option FR-ETR INSTRUCTION MANUAL

3 Connector specifications

(1) Inverter connector specifications

(a) Pin layout in the PU port

When seen from the front of the inverter (receptacle side)



Modular jack

Pin No.	Signal name	Remark
1	GND (SG)	
2	(P5S)	Not used
3	RXD+ (RDA)	
4	TXD- (SDB)	
5	TXD+ (SDA)	
6	RXD- (RDB)	
7	GND (SG)	
8	(P5S)	Not used

The contents inside ( ) indicate symbols described in the inverter manual.
The pins number 2 and 8 (P5S) are connected to the power supply for an operation panel or a parameter unit. Do not use them in RS-422 communication.

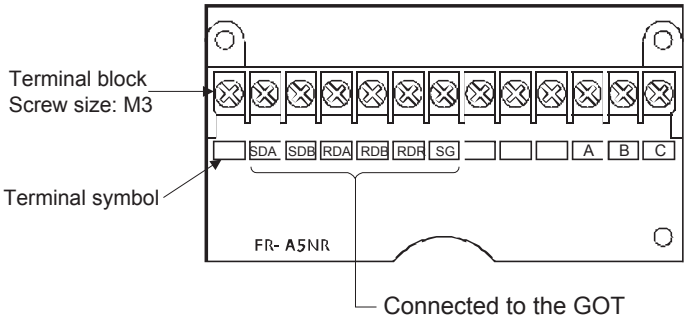
(b) Connector of cable between FREQROL Series inverters

Use the commercial connectors and cables shown in the table below or the comparable products. (Refer to the manual for the inverter.)

Name	Model name	Specifications	Manufacture
Connector	5-554720-3	RJ45 connector	Tyco International, Ltd
Modular ceiling rossette	BMJ-8		HACHIKO ELECTRIC CO.,LTD.
Cable	SGLPEV 0.5mm × 4P	Cable conforming to EIA568 (such as cable 10BASE-T)	MITSUBISHI CABLE INDUSTRIES, LTD.

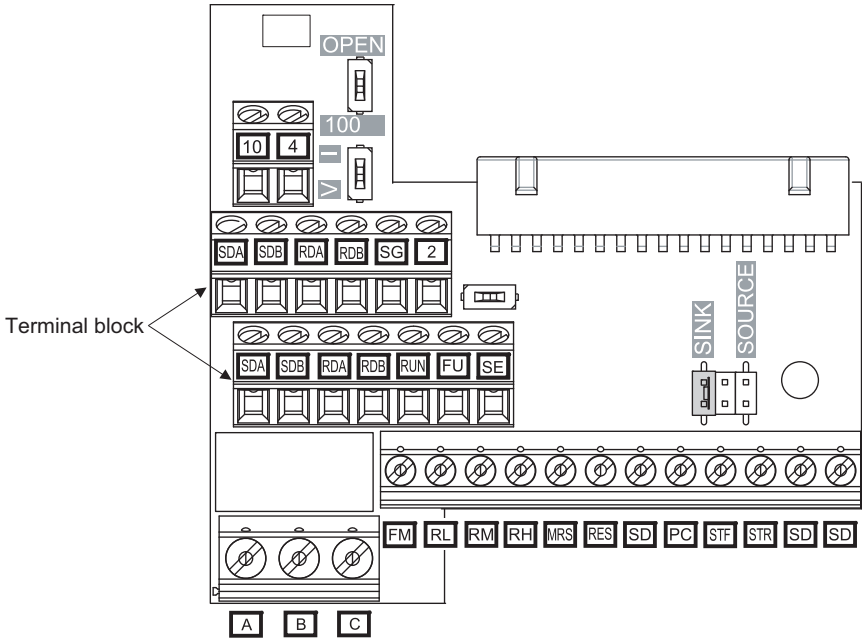
(2) Terminal block layout in the FR-A5NR computer link option

Attach this option to the A500 and F500 Series.



(3) Terminal block layout in the FR-E7TR control terminal option

Attach this option to the E700 Series.



4 Precautions when preparing a cable

The length of the RS-422 cable must be 13m or less.

54.2 Inverter Side Settings

For details of the inverter, refer to the manual of each series.

54.2.1 Connecting FREQROL-S500, S500E, F500J series

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
RS-485 port	Pr.79, n1 to n7, n10 to n12

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.30 (Extended function selection) to 1 "With display" before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled

Setting item*1	Parameter No.*4	Set value	Contents of setting
Communication station number	n1 (331)	0 to 31	Section 54.2.14
Communication speed*2	n2 (332)	192*3	19200bps
Stop bit length*2	n3 (333)	10	Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	n4 (334)	1	Odd
Number of communication retries	n5 (335)	--- (65535)	The inverter will not come to an alarm stop.
Communication check time interval	n6 (336)	---	Communication check suspension
Wait time setting	n7 (337)	0	0ms
CR ▪ LF selection	n11 (341)	1*3	With CR, without LF
Protocol selection*5	—	—	—
Operation mode selection	Pr.79	0*3	External operation mode at power on
Link start mode selection	n10 (340)	1	Computer link operation
E^2PROM write selection	n12 (342)	0*3	Written to RAM and E^2PROM

*1 Setting items are parameter names described in the manual of FREQROL-S500, S500E, and F500J series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 When being monitored from the GOT, the parameter n1 through n7 correspond with Pr.331 through Pr.337, and the parameter n10 through n12 correspond with Pr.340 through Pr.342.
Numbers in brackets show the parameter number when the parameter unit is in use.
*5 There is no Protocol selection setting on the inverter side.

54.2.2 Connecting FREQROL-E500 series

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.146, Pr.342

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled

Setting item*1	Parameter No.	Set value	Contents of setting
Communication station number	Pr.117	0 to 31	Section 54.2.14
Communication speed*2	Pr.118	192*3	19200bps
Stop bit length*2	Pr.119	10	Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	Pr.120	1	Odd
Number of communication retries	Pr.121	9999 (65535)	The inverter will not come to an alarm stop.
Communication check time interval	Pr.122	9999	Communication check suspension
Wait time setting	Pr.123	0	0ms
CR • LF presence/ absence selection	Pr.124	1*3	With CR, without LF
Protocol selection*4	—	—	—
Operation mode selection	Pr.79	1*3	PU operation mode
Link startup mode selection*4	—	—	—
E^{2}PROM write selection	Pr.342	0*3	Written to RAM and E^{2}PROM
Frequency setting command selection*5	Pr.146	9999	Built-in frequency setting potentiometer invalid

*1 Setting items are parameter names described in the manual of FREQROL-E500 series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 There is no Protocol selection setting on the inverter side.
*5 The setting is required for Frequency setting command selection.

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124
FR-A5NR (Option unit)	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.160 (user group read selection) to 0 "All parameters can be accessed for reading and writing." before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	FR-A5NR			
Communication station number	Pr.117	Pr.331	0 to 31		Section 54.2.14
Communication speed*2	Pr.118	Pr.332	192*4		19200bps
Stop bit length/data length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	Pr.120	Pr.334	1		Odd
Number of communication retries	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
Communication check time interval	Pr.122	Pr.336	9999		Communication check suspension
Waiting time setting	Pr.123	Pr.337	0		0ms
CR ▪ LF presence/ absence selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection*5	—	—	—		—
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			FR-A5NR	0*3	External operation mode at power on
Link startup mode selection*6	—	Pr.340	1		Computer link operation
E^{2}PROM write yes/no*6	—	Pr.342	0*3		Written to RAM and E^{2}PROM

*1 Setting items are parameter names described in the manual of FREQROL-F500 and F500L series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.
*5 There is no Protocol selection setting on the inverter side.
*6 The setting is required on the inverter side when FR-A5NR is used

54.2.4 Connecting FREQROL-A500, A500L series

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.342
FR-A5NR (Option unit)	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	FR-A5NR			
Communication station number	Pr.117	Pr.331	0 to 31		Section 54.2.14
Communication speed*2	Pr.118	Pr.332	192*4		19200bps
Stop bit length/data length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	Pr.120	Pr.334	1		Odd
Number of communication retries	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
Communication check time interval	Pr.122	Pr.336	9999		Communication check suspension
Waiting time setting	Pr.123	Pr.337	0		0ms
CR • LF presence/ absence selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection*5	—	—	—		—
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			FR-A5NR	0*3	External operation mode at power on
Link startup mode selection*6	—	Pr.340	1		Computer link operation
E^2PROM write yes/no	Pr.342		0*3		Written to RAM and E^2PROM

*1 Setting items are parameter names described in the manual of FREQROL-A500 and A500L series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.
*5 There is no Protocol selection setting on the inverter side.
*6 The setting is required on the inverter side when FR-A5NR is used.

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.342
FR-A5NR (Option unit)	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.160 (Extended function display selection) to 1 "All parameters are accessible." before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	FR-A5NR			
Communication station number	Pr.117	Pr.331	0 to 31		Section 54.2.14
Communication speed*2	Pr.118	Pr.332	192*4		19200bps
Stop bit length/data length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
Parity check presence/ absence*2	Pr.120	Pr.334	1		Odd
Number of communication retries	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
Communication check time interval	Pr.122	Pr.336	9999		Communication check suspension
Waiting time setting	Pr.123	Pr.337	0		0ms
CR • LF presence/ absence selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection*5	—	—	—		—
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			FR-A5NR	0*3	External operation mode at power on
Link startup mode selection*6	—	Pr.340	1		Computer link operation
E^{2}PROM write selection	Pr.342		0*3		Written to RAM and E^{2}PROM

*1 Setting items are parameter names described in the manual of FREQROL-V500 and V500L series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.
*5 There is no Protocol selection setting on the inverter side.
*6 The setting is required on the inverter side when FR-A5NR is used.

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector FR-E7TR (RS-485 terminal block)	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342, Pr.549

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled

Setting item*1	Parameter No.	Set value	Contents of setting
PU communication station number	Pr.117	0 to 31	Section 54.2.14
PU communication speed*2	Pr.118	192*3	19200bps
PU communication stop bit length*2	Pr.119	10	Data length: 7bit Stop bit length: 1bit
PU communication parity check*2	Pr.120	1	Odd
Number of PU communication retries	Pr.121	9999	The inverter will not come to an alarm stop.
PU communication check time interval	Pr.122	9999	Communication check suspension
PU communication wait time setting	Pr.123	0	0ms
PU communication CR/LF selection	Pr.124	1*3	With CR, without LF
Protocol selection	Pr.549	0*3	Mitsubishi inverter protocol
Operation mode selection	Pr.79	0*3	PU operation mode
Communication startup mode selection	Pr.340	1	Network operation mode.
Communication EEPROM write selection	Pr.342	0*3	Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of FREQROL-E700 series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342
RS-485 terminal	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342, Pr.549

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.160 (User group read selection) to 0 "The simple mode and extended parameters can be displayed" before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	RS-485			
PU communication station number/ RS-485 communication station number	Pr.117	Pr.331	0 to 31		Section 54.2.14
PU communication speed/ RS-485 communication speed*2	Pr.118	Pr.332	192*4		19200bps
PU communication stop bit length/ RS-485 communication stop bit length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
PU communication parity check/ RS-485 communication parity check*2	Pr.120	Pr.334	1		Odd
Number of PU communication retries/ RS-485 communication retry count	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
PU communication check time interval/ RS-485 communication check time interval	Pr.122	Pr.336	9999*4		Communication check suspension
PU communication waiting time setting/ RS-485 communication waiting time setting	Pr.123	Pr.337	0		0ms
PU communication CR/LF selection/ RS-485 communication CR/LF selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection	—	Pr.549	0*3		Mitsubishi inverter protocol
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			RS-485	0*3	External operation mode at power on
Link startup mode selection	Pr.340		PU connector	0*3	Refer to the Pr.79 settings.
			RS-485	1	Network operation mode.
Communication EEPROM write selection	Pr.342		0*3		Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of FREQROL-F700 series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)
*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.

Hint! Automatic setting with Pr.999 (FREQROL-F700P series only)

If Pr.999 is set as the following, the communication settings other than [PU communication station number] and [Communication EEPROM write selection] can be automatically set in a batch to the default communication settings of the GOT side.

Parameter No.	Set value	Description	Operation in parameter setting mode
Pr.999*1	10	GOT Initial settings (PU connector)	[AUTO] → [GOT] → [1]Write
	11	GOT Initial settings (RS-485 terminal)	-

*1 When monitoring the value of Pr.999, 9999 is always monitored.

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342, Pr.549

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.160 (User group read selection) to 0 "The simple mode and extended parameters can be displayed" before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.	Set value	Contents of setting
PU communication station number	Pr.117	0 to 31	Section 54.2.14
PU communication speed*2	Pr.118	192*3	19200bps
PU communication stop bit length	Pr.119	10	Data length: 7bit Stop bit length: 1bit
PU communication parity check*2	Pr.120	1	Odd
Number of PU communication retries	Pr.121	9999	The inverter will not come to an alarm stop.
PU communication check time interval	Pr.122	9999	Communication check suspension
PU communication waiting time setting	Pr.123	0	0ms
PU communication CR/LF selection	Pr.124	1*3	With CR, without LF
Protocol selection	Pr.549	0*3	Mitsubishi inverter protocol
Operation mode selection	Pr.79	0*3	External operation mode at power on
Link startup mode selection	Pr.340	1	Network operation mode.
Communication EEPROM write selection	Pr.342	0*3	Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of FREQROL-F700PJ series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)

Hint!

Automatic setting with Pr.999

If Pr.999 is set as the following, the communication settings other than [PU communication station number] and [Communication EEPROM write selection] can be automatically set in a batch to the default communication settings of the GOT side.

Parameter No.	Set value	Description	Operation in parameter setting mode
Pr.999*1	10	GOT Initial settings (PU connector)	[AUTO]→[GOT]→[1]Write

*1 When monitoring the value of Pr.999, 9999 is always monitored.

54.2.9 Connecting FREQROL-A700 series

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342
RS-485 terminal	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342, Pr.549

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	RS-485			
PU communication station number/ RS-485 communication station number	Pr.117	Pr.331	0 to 31		Section 54.2.14
PU communication speed/ RS-485 communication speed*2	Pr.118	Pr.332	192*4		19200bps
PU communication stop bit length/ RS-485 communication stop bit length*2	Pr.119	Pr.333	10		Data length: 7bit Stop bit length: 1bit
PU communication parity check/ RS-485 communication parity check*2	Pr.120	Pr.334	1		Odd
Number of PU communication retries/ RS-485 communication retry count	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
PU communication check time interval/ RS-485 communication check time interval	Pr.122	Pr.336	9999*4		Communication check suspension
PU communication waiting time setting/ RS-485 communication waiting time setting	Pr.123	Pr.337	0		0ms
PU communication CR/LF selection/ RS-485 communication CR/LF selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection	—	Pr.549	0*3		Mitsubishi inverter protocol
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			RS-485	0*3	External operation mode at power on
Link startup mode selection	Pr.340		PU connector	0*3	Refer to the Pr.79 settings.
			RS-485	1	Network operation mode.
Communication EEPROM write selection	Pr.342		0*3		Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of FREQROL-A700 series.

*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.

*3 Inverter default values (No need to change)

*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.

Hint!

(1) Automatic setting with Pr.999

If Pr.999 is set as the following, the communication settings other than [PU communication station number] and [Communication EEPROM write selection] can be automatically set in a batch to the default communication settings of the GOT side.

Parameter No.	Set value	Description	Operation in parameter setting mode
Pr.999*1	10	GOT Initial settings (PU connector)	[AUTO] → [GOT] → [1]Write
	11	GOT Initial settings (RS-485)	-

*1 When monitoring the value of Pr.999, 9999 is always monitored.

(2) Inverters available for automatic batch setting

Parameters are not automatically set in a batch depending on the SERIAL (production number) symbol of the inverter to be used. For details, contact your local distributor.

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342, Pr.549

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.160 (User group read selection) to 0 "The simple mode and extended parameters can be displayed" before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled

Setting item*1	Parameter No.	Set value	Contents of setting
PU communication station number	Pr.117	0 to 31	Section 54.2.13
PU communication speed*2	Pr.118	192*3	19200bps
PU communication stop bit length*2	Pr.119	10	Data length: 7bit Stop bit length: 1bit
PU communication parity check*2	Pr.120	1	Odd
Number of PU communication retries	Pr.121	9999	The inverter will not come to an alarm stop.
PU communication check time interval	Pr.122	9999	Communication check suspension
PU communication wait time setting	Pr.123	0	0ms
PU communication CR/LF selection	Pr.124	1*3	With CR, without LF
Protocol selection	Pr.549	0*3	Mitsubishi inverter protocol
Operation mode selection	Pr.79	0*3	PU operation mode
Communication startup mode selection	Pr.340	1	Network operation mode.
Communication EEPROM write selection	Pr.342	0*3	Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of FREQROL-D700 series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.
The GOT1000 series does not support the automatic connection of inverters.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342
RS-485 terminal	Pr.79, Pr.331 to Pr.337, Pr.340 to Pr.342, Pr.549

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Set Pr.160 (User group read selection) to 0 [The simple mode and extended parameters can be displayed] before making the parameter settings.
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.		Set value		Contents of setting
	PU connector	RS-485 terminal			
PU communication station number/RS-485 communication station number	Pr.117	Pr.331	0 to 31		54.2.14 Station No. settings
PU communication speed/RS-485 communication speed*2	Pr.118	Pr.332	192*4		19200bps
PU communication stop bit length/RS-485 communication stop bit length*2	Pr.119	Pr.333	10		Data length: 7bits Stop bit length: 1bit
PU communication parity check/RS-485 communication parity check*2	Pr.120	Pr.334	1		Odd
Number of PU communication retries/RS-485 communication retry count	Pr.121	Pr.335	9999		The inverter will not come to an alarm stop.
PU communication check time interval/RS-485 communication check time interval	Pr.122	Pr.336	9999*4		Communication check suspension
PU communication waiting time setting/RS-485 communication waiting time setting	Pr.123	Pr.337	0		0ms
PU communication CR/LF selection/RS-485 communication CR/LF selection	Pr.124	Pr.341	1*3		With CR, without LF
Protocol selection	-	Pr.549	0*3		Mitsubishi inverter protocol
Operation mode selection	Pr.79		PU connector	1	PU operation mode
			RS-485	0*3	External operation mode at power on
Communication startup mode selection	Pr.340		PU connector	0*3	Refer to Pr.79 settings.
			RS-485	1	Network operation mode.
Communication EEPROM write selection	Pr.342		0*3		Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of FREQROL-A800 and F800 series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change).
*4 Since the value has been set as a default, no setting is required when connecting to the PU connector on the inverter side.

Hint! Automatic setting with Pr.999

If Pr.999 is set as the following, the communication settings other than [PU communication station number] and [Communication EEPROM write selection] can be automatically set in a batch to the default communication settings of the GOT side.

Parameter No.	Set value	Description	Operation in parameter setting mode
Pr.999*1	10	GOT Initial settings (PU connector)	[AUTO]→[GOT]→[1]Write
	11	GOT initial setting (RS-485 terminal)	-

*1 When monitoring the value of Pr.999, 9999 is always monitored.

1 Communication settings

Make the communication settings of the sensorless servo (FREQROL-E700EX series).
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124, Pr.340, Pr.342, Pr. 549
FR-E7TR (RS-485 terminal block)	

(2) Communication settings of inverter

Set the following parameters using the PU (parameter unit).
Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.	Set value	Contents of setting
PU communication station number	Pr.117	0 to 31	54.2.14 Station No. settings
PU communication speed*2	Pr.118	192*3	19200bps
PU communication stop bit length*2	Pr.119	10	Data length: 7bits Stop bit length: 1bit
PU communication parity check*2	Pr.120	1	Odd
Number of PU communication retries	Pr.121	9999	The inverter will not come to an alarm stop.
PU communication check time interval	Pr.122	9999	Communication check suspension
PU communication wait time setting	Pr.123	0	0ms
PU communication CR/LF selection	Pr.124	1*3	With CR, without LF
Protocol selection	Pr.549	0*3	Mitsubishi inverter protocol
Operation mode selection	Pr.79	0*3	PU operation mode
Communication startup mode selection	Pr.340	1	Mitsubishi inverter protocol
Communication EEPROM write selection	Pr.342	0*3	Written to RAM and EEPROM

*1 Setting items are parameter names described in the manual of sensorless servo (FREQROL-E700EX series).
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Sensorless servo (FREQROL-E700EX series) default values (No need to change)

54.2.13 Connecting MD-CX522-[ ][ ]K(-A0)

1 Communication settings

Make the communication settings of the inverter.
Be sure to perform the inverter reset after updating each parameter.

(1) Communication port and corresponding parameters

GOT connection destination	Parameters corresponding to inverter
PU connector	Pr.79, Pr.117 to Pr.124

(2) Communication settings of inverter

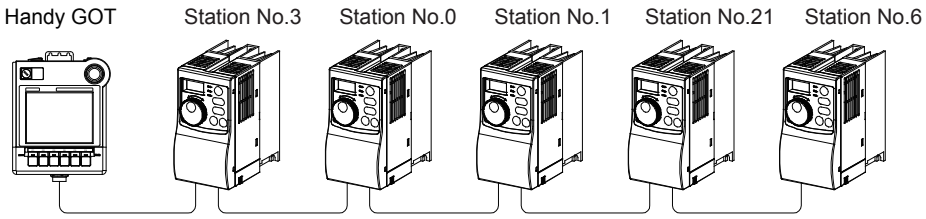
- Set the following parameters using the PU (parameter unit).
- After setting the parameters for the communication settings, reset the inverter.
- Do not change these parameters, even though they can be monitored from the GOT. If they are changed, communication with the GOT is disabled.

Setting item*1	Parameter No.	Set value	Contents of setting
Communication station number	Pr.117	0 to 31	☞ Section 54.2.14
Communication speed*2	Pr.118	192*3	19200bps
Stop bit length/data length*2	Pr.119	10	Data length: 7bit Stop bit length: 1bit
Parity check presence/absence*2	Pr.120	1	Odd
Number of communication retries	Pr.121	9999	The inverter will not come to an alarm stop.
Communication check time interval	Pr.122	9999	Communication check suspension
Wait time setting	Pr.123	0	0ms
CRLF presence/absence selection	Pr.124	1*3	With CR, without LF

*1 Setting items are parameter names described in the manual of MELIPM series.
*2 Settings on the GOT can be changed.
When changing the settings on the GOT, be sure to change the parameters on the inverter to correspond with the GOT settings.
*3 Inverter default values (No need to change)

54.2.14 Station No. settings

Set each station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order. No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the inverter of which data is to be changed.

Specification range
0 to 31

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 115 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the inverter.

Specification station No.	Compatible device	Setting range
100	GD10	0 to 31 For the setting other than the above, communication timeout error will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

54.3 Precautions

54.3.1 Precautions

1 Station No. of inverter system

Make sure to establish inverter system with No.0 station.

2 Number of inverter

Up to 10 inverters can be connected.

3 Parameter setting

(1) Do not make any change for each communication parameter of the inverter side from GOT. If changed, the communication to the inverter cannot be made.

(2) When setting "8888" or "9999" to the parameter (Pr) of the inverter
"8888" and "9999" are numerical values which have special roles. When specifying from the GOT, it will be as follows.

Set value of inverter side	Value specified by GOT
8888	65520
9999	65535

4 Screen switching devices, system information devices

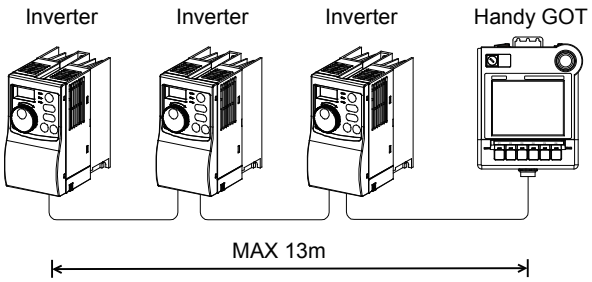
Make sure to use GD for screen switching devices and system information devices when the GOT is connected to only the inverter.

5 GOT clock control

Since the inverter does not have a clock function, the settings of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

6 Connection distance

The connection distance must be 13m or less.



55. CONNECTION TO SERVO AMPLIFIER

55.1 System Configuration and System Equipment

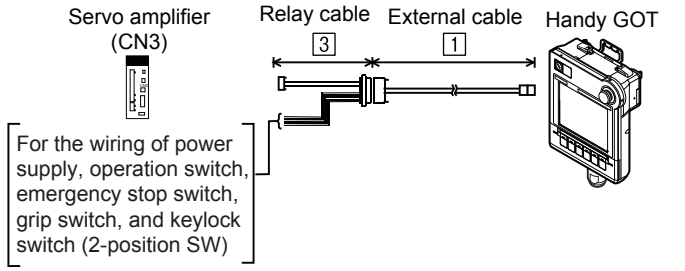
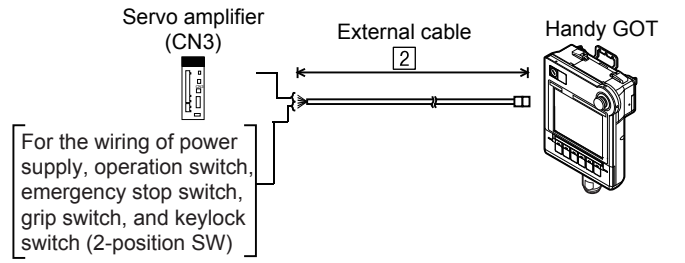
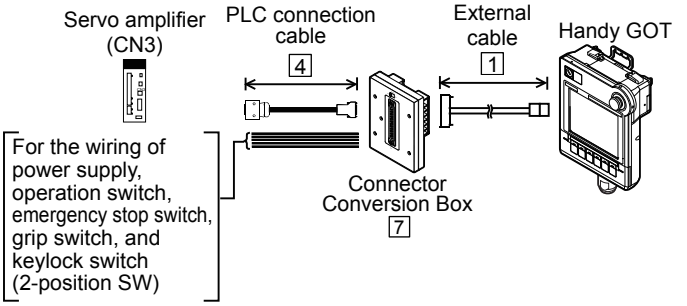
The series names of connectable servo amplifiers are as follows.

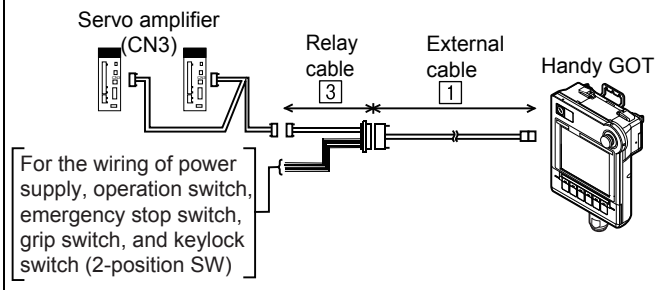
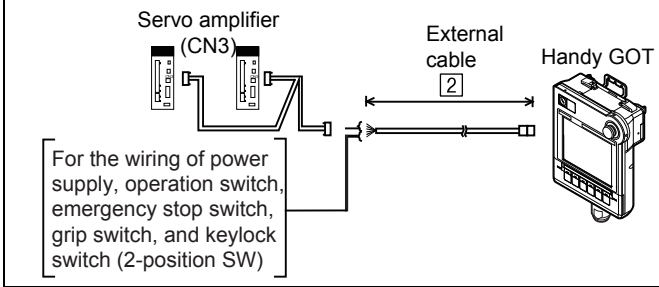
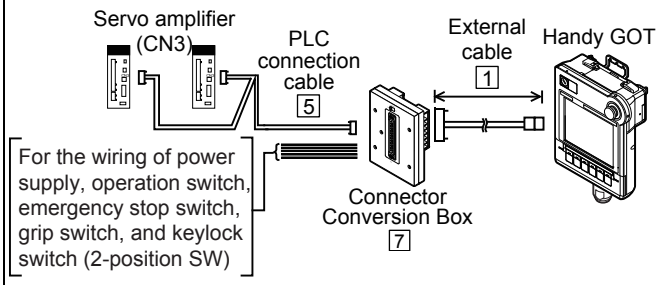
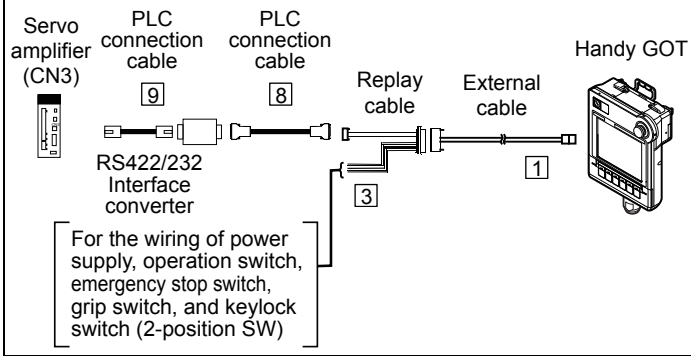
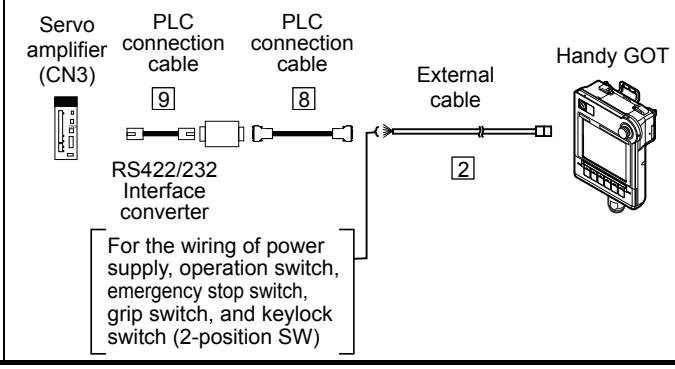
Series name	Model name
MELSERVO-J2-Super series	MR-J2S- □□□ A, MR-J2S- □ CP, MR-J2S- □ CL
MELSERVO-J2M series	MR-J2M-P8, MR-J2M- □ DU
MELSERVO-J3 series	MR-J3- □ A, MR-J3- □ T
MELSERVO-J4 series*1	MR-J4- □ A
MELSERVO-JE series	MELSERVO-JE- □ A

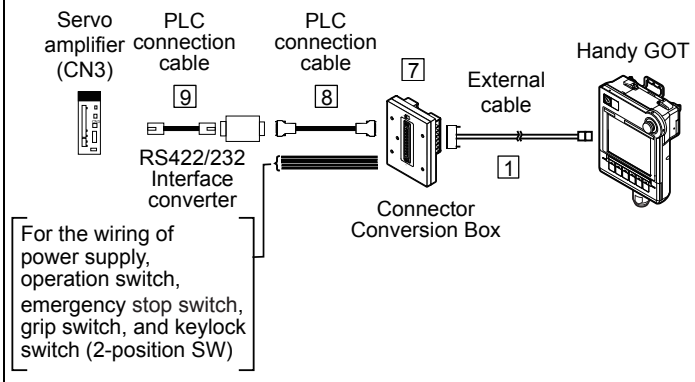
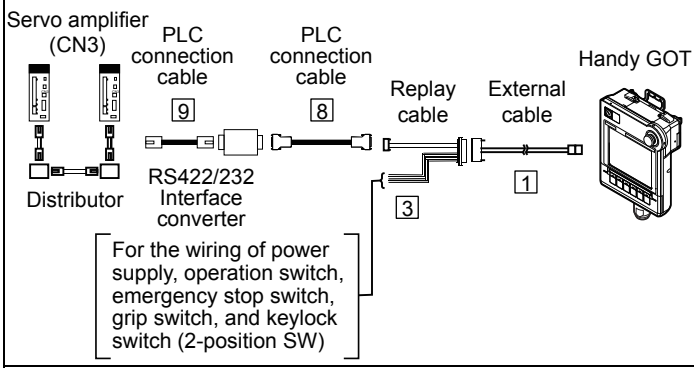
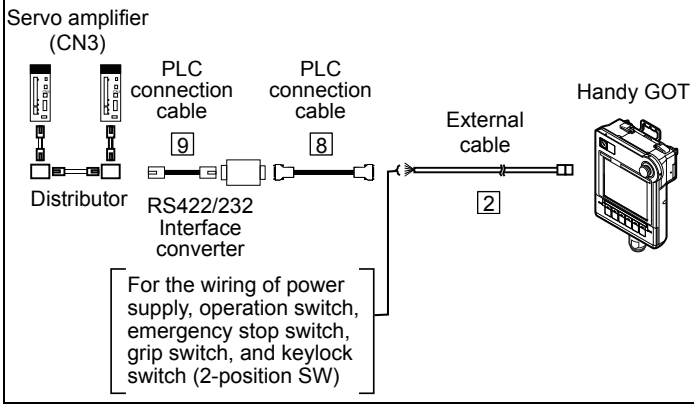
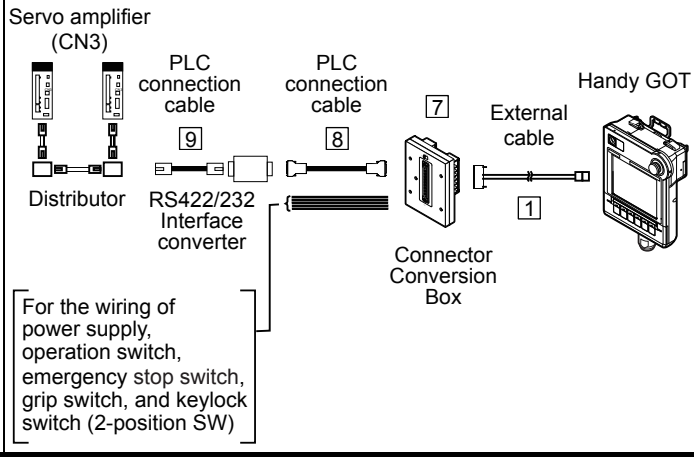
*1 For the RS-422 communication, use MELSERVO-J4 of software version A3 or a later version.

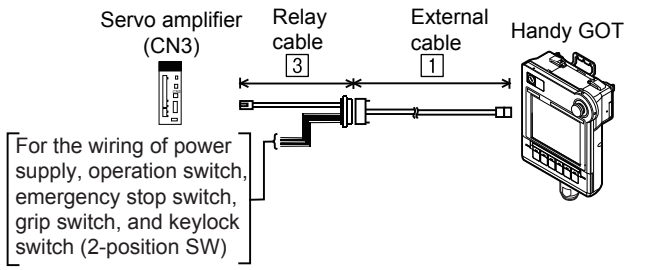
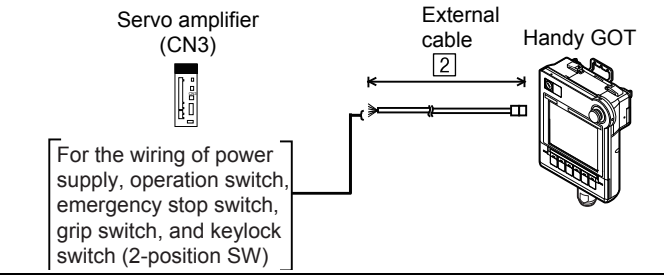
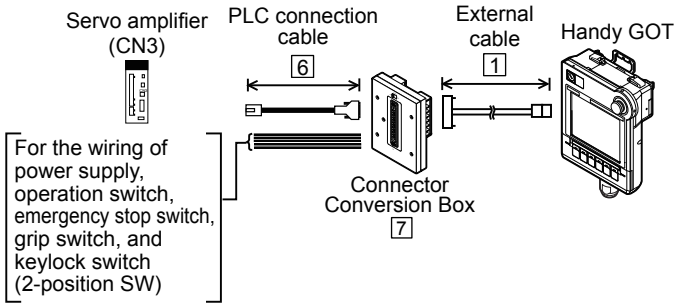
55.1.1 System configuration

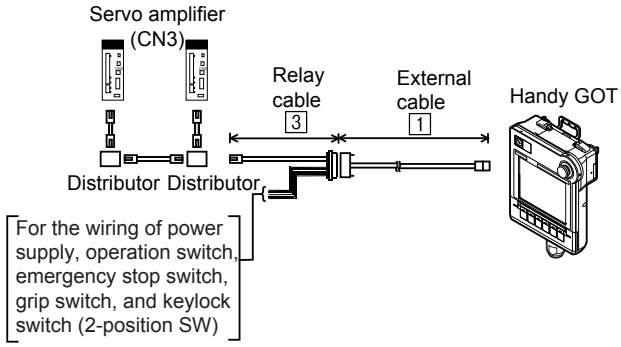
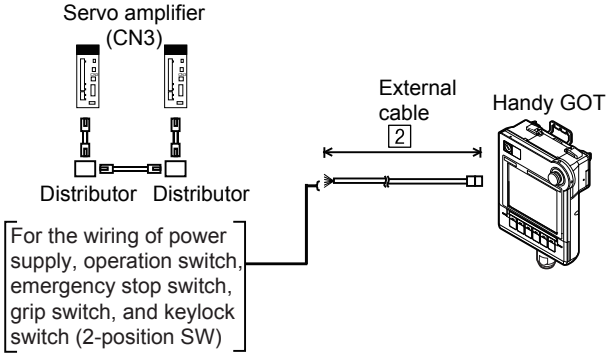
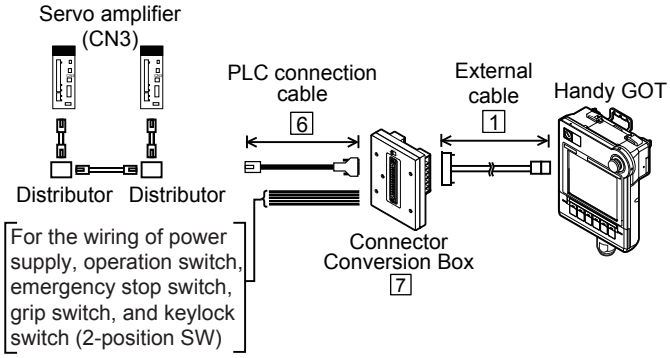
When connecting the Handy GOT to a servo amplifier, a relay cable must be created, or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "55.1.2 System equipment".

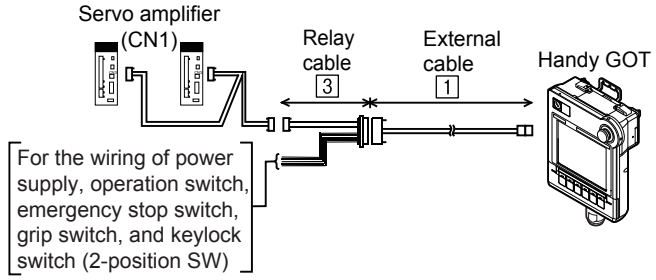
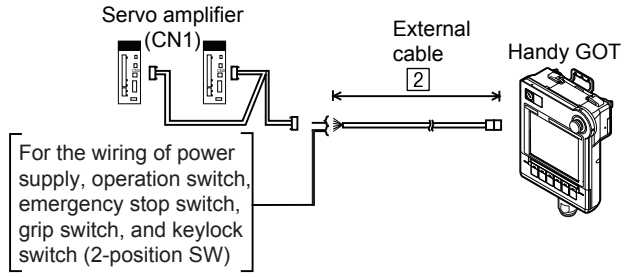
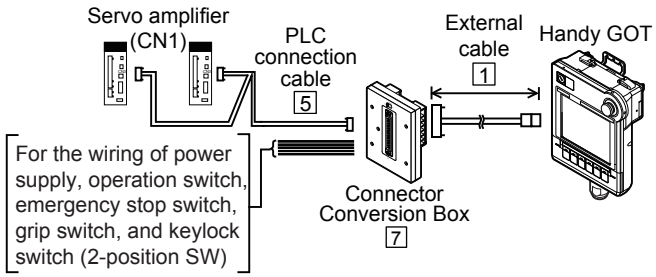
Connection conditions			System configuration
Servo amplifier	Communication	Distance	
MELSERVO-J2-Super, MELSERVO-J2M	RS-232	6m or less	
			
			

Connection conditions			System configuration
Servo amplifier	Communication	Distance	
MELSERVO-J2-Super, MELSERVO-J2M	RS-422	Overall extension distance 13m or less	
			
			
MELSERVO-J3	RS-232	6m or less	
			

Connection conditions			System configuration
Servo amplifier	Communication	Distance	
MELSERVO-J4, J3	RS-232	6m or less	
			
			
			

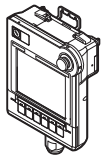
Connection conditions			System configuration
Servo amplifier	Communication	Distance	
MELSERVO-J4, J3	RS-422	Overall extension distance 13m or less	
			
			

Connection conditions			System configuration
Servo amplifier	Communication	Distance	
MELSERVO-J4, J3	RS-422	Overall extension distance 13m or less	
			
			

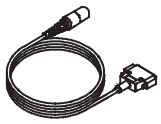
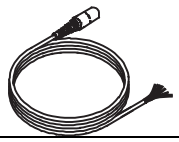
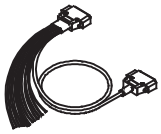
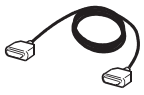
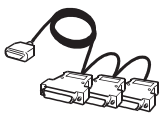
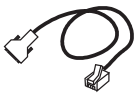
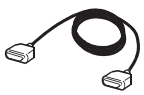
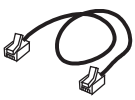
Connection conditions			System configuration
Servo amplifier	Communication	Distance	
MELSERVO-JE	RS-422	Overall extension distance 13m or less	
			
			

55.1.2 System equipment

1 GOT

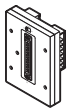
Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C □□□ -37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C □□□ □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. Section 55.1.3 Connection cable	
PLC connection cable		4	MR-CPCATCBL3M (3m)	—
		5	Must be prepared by the user. Section 55.1.3 Connection cable	
		6		
		8	RS-PCATCBL-0.5M (0.5m)	—
		9	RS-422SCBL-2M (2m)	—

8, 9 are products manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.
For details of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

3 Option

Image	No.	Name	Model name	Remark
	7	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

Servo amplifier	Number of GOTs	Number of servo amplifiers	Communication	Communication unit	
				Name	Model name
MELSERVO-J2-Super	1	1	RS-232	Connect to CN3 of servo amplifier	
		32 (Multi-drop communication)	RS-422	Connect to CN3 of servo amplifier	
MELSERVO-J2M	1	1	RS-232	Connect to CN3 of servo amplifier	
		32 (Installation of 0 to 31 interface unit or drive unit stations are available.)	RS-422	Connect to CN3 of servo amplifier	
MELSERVO-J4, J3	1	1	RS-232	Interface converter	FA-T-RS40VS*2
		32 (Multi-drop communication)	RS-232	Interface converter	FA-T-RS40VS*2
				Distributor *1	BMJ-8 (Recommended)*3
		1	RS-422	Connect to CN3 of servo amplifier	
		32 (Multi-drop communication)	RS-422	Distributor *1	BMJ-8 (Recommended)*3

*1 Connect the connector of servo amplifier to CN3.

*2 FA-T-RS40VS is a product manufactured by MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED. For details of this product, contact MITSUBISHI ELECTRIC ENGINEERING COMPANY LIMITED.

*3 BMJ-8 is a product manufactured by HACHIKO ELECTRIC CO., LTD. For details of this product, contact HACHIKO ELECTRIC CO., LTD.

55.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

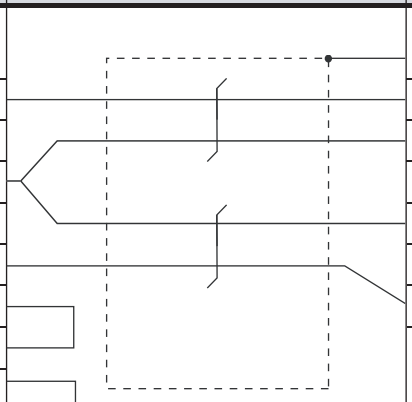
Series name/model name			Connection cable	
			RS-232 cable	RS-422 cable
Servo amplifier	MELSERVO-J2-Super series		RS-232 cable 1)	RS-422 cable 1)
	MELSERVO-J2M series		RS-232 cable 1)	RS-422 cable 1)
	MELSERVO-J4, J3 series		RS-232 cable 2)	RS-422 cable 2)
	MELSERVO-JE series		—	RS-422 cable 6)
Distributor	BMJ-8	GOT ⇔ Distributor	—	RS-422 cable 2)
		Distributor ⇔ Servo amplifier	—	RS-422 cable 3)
		Distributor ⇔ Distributor	—	RS-422 cable 4)
		Last axis	—	RS-422 cable 5)
Interface converter	FA-T-RS40VS	GOT ⇔ Interface converter	RS-PCATCBL-0.5M	—
		Interface converter ⇔ Servo amplifier Interface converter ⇔ Distributor	—	RS-422SCBL-2M

2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to a servo amplifier.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	Connector for interface unit's or servo amplifier's CN3	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		Plate	FG
SD(TXD)	2	W/R (A)	3		2	RXD
—	—	—	—		1	LG
SG	10	PK/R (A)	5		—	—
—	—	—	—		11	LG
RD(RXD)	4	GY/R (A)	2		—	—
ER(DTR)	3	W/BK (A)	4		12	TXD
DR(DSR)	5	GY/BK (A)	6			
RS(RTS)	6	O/R (A)	7			
CS(CTS)	7	O/BK (A)	8			
—	8	Y/R (A)	—			
—	9	Y/BK (A)	—			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

3 Connection diagram of RS-422 cable

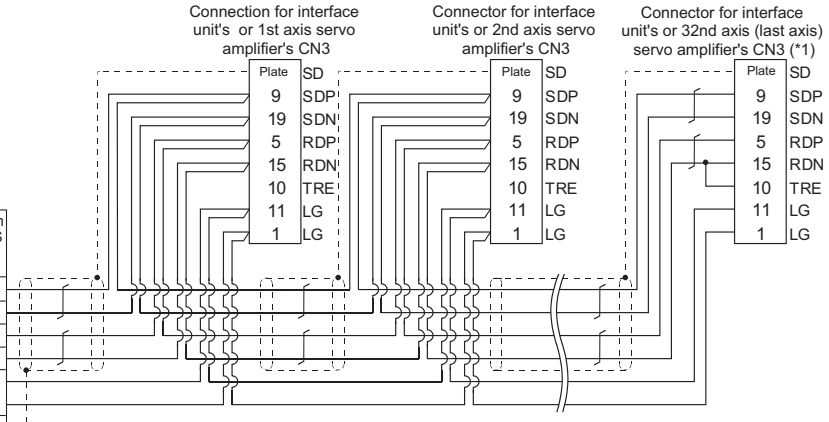
The following provides the connection diagram of RS-422 cable connecting the Handy GOT to a servo amplifier.

For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable 1)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C□□□ -37P Pin No.	GT11H-C□□□ untied wire color	
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
SDA	2	W/R (A)	1
SDB	3	W/B (A)	6
SG	10	PK/R (A)	5
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
FG (Shield)	1	Shield	—



*1 At the last axis, connect TRE to RDN.

- Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

(2) RS-422 cable 2)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	Servo amplifier side or distributor side (Modular connector)		
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name	Pin layout*1
FG (Shield)	1	Shield	—		1	LG	
SDA	2	W/R (A)	1		2	P5D	
SDB	3	W/BK (A)	6		3	RDP	
RSA	4	GY/R (A)	3		4	SDN	
RSB	5	GY/BK (A)	8		5	SDP	
RDA	6	O/R (A)	2		6	RDN	
RDB	7	O/BK (A)	7		7	LG	
CSA	8	Y/R (A)	4		8	NC	
CSB	9	Y/BK (A)	9		—	—	
SG	10	PK/R (A)	5		—	—	

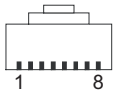
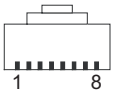
RJ-45 plug (male)

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 The pin layout shows the engagement face.

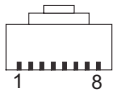
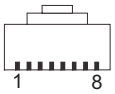
(3) RS-422 cable 3)

Servo amplifier side (Modular connector)			Cable connection*2	Distributor side (Modular connector)		
Pin layout*1	Pin No.	Signal name		Pin No.	Signal name	Pin layout*1
 RJ-45 plug (male)	1	LG		1	LG	 RJ-45 plug (male)
	2	P5D		2	P5D	
	3	RDP		3	RDP	
	4	SDN		4	SDN	
	5	SDP		5	SDP	
	6	RDN		6	RDN	
	7	LG		7	LG	
	8	NC		8	NC	

*1 The pin layout shows the engagement face.

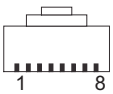
*2 Wiring between the distributor and the Servo amplifier should be minimum length.

(4) RS-422 cable 4)

Distributor side (Modular connector)			Cable connection	Distributor side (Modular connector)		
Pin layout*1	Pin No.	Signal name		Pin No.	Signal name	Pin layout*1
 RJ-45 plug (male)	1	LG		1	LG	 RJ-45 plug (male)
	2	P5D		2	P5D	
	3	RDP		3	RDP	
	4	SDN		4	SDN	
	5	SDP		5	SDP	
	6	RDN		6	RDN	
	7	LG		7	LG	
	8	NC		8	NC	

*1 The pin layout shows the engagement face.

(5) RS-422 cable 5)

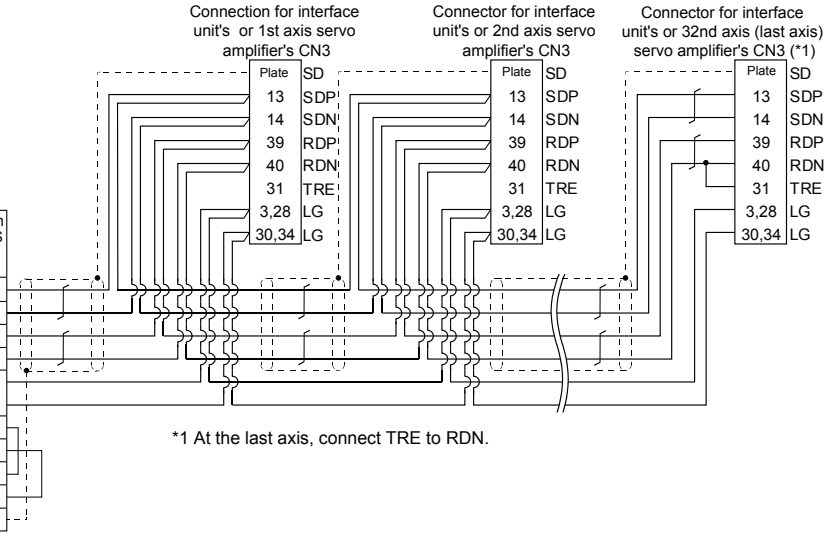
Distributor side (Modular connector)			Cable connection
Pin layout*1	Pin No.	Signal name	
 RJ-45 plug (male)	1	LG	
	2	P5D	
	3	RDP	*2
	4	SDN	
	5	SDP	
	6	RDN	
	7	LG	
	8	NC	

*1 The pin layout shows the engagement face.

*2 Perform terminal processing on the part between RDP (3-pin) and RDN (6pin) with a 150Ω resistor.

(6) RS-422 cable 6)

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.
	GT11H-C□□□ -37P Pin No.	GT11H-C□□□ untied wire color	
RDA	6	O/R (A)	2
RDB	7	O/BK (A)	7
SDA	2	W/R (A)	1
SDB	3	W/B (A)	6
SG	10	PK/R (A)	5
CSA	8	Y/R (A)	4
CSB	9	Y/BK (A)	9
RSA	4	GY/R (A)	3
RSB	5	GY/BK (A)	8
FG (Shield)	1	Shield	—



- Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

  ☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

55.1.4 Precautions when preparing cable

1 Cable length

- Use a shielded multi-core cable and connect the shielded to the FG terminal securely.
- The length of the RS-232 cable must be 6m or less.
  However, for use at the transmission speed of 38400 bps or higher, the length must be 3m or less.
- The length of the RS-422 cable must be 13m or less.

55.2 Setting on Servo Amplifier Side

55.2.1 Communication setting

Point

Servo amplifier

For details of servo amplifiers, refer to the user's manual or technical manual of each servo amplifier.

1 Parameters of MELSERVO-J2-Super series

(1) Parameter

Enter the parameters of the MELSERVO-J2-Super series.

Item	Setting
Basic parameter No. 15	Station No. setting: 0 to 31 <Default: 0> (*1)
Basic parameter No.16	Serial communication function selection <Default: 0000> Basic parameter No.16 ③ ② 0 ① 1) Serial communication baud rate selection (*2) 0: 9600bps 1: 19200bps 2: 38400bps 3: 57600bps 2) Serial communication I/F selection 0: RS-232 1: RS-422 3) Communication response delay time selection 0: Invalid 1: Valid (Response after 800 μs or longer delay)
In case of MR-J2S-_A Expansion parameter 2 No. 53 In case of MR-J2S-_CP Expansion parameter 2 No. 57 In case of MR-J2S-_CL Expansion parameter 2 No. 57	Function selection 8 <Default: 0000> (*3) Expansion parameter 2 No.53 or No.57 0 ① 0 0 1) Station No. selection for protocol 0: With station No. 1: Without station No.

*1 Avoid duplication of the same station No. with any of the other axes.

*2 Specify the same transmission speed as that of the GOT.
For the transmission speed setting method of the GOT, refer to the following.

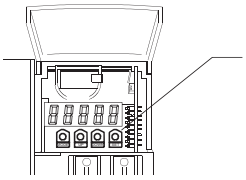
Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*3 To change the set value, enter "000E" to basic parameter No.19.

Point

(1) Parameter setting

Set the parameter at the pushbutton switch provided on the operation section of the servo amplifier or setup software.



Pushbutton switch provided on
the operation section of the servo amplifier

(2) When changing the parameter

Turn off then on the servo amplifier to be effective the new parameter.

2 Parameter of MELSERVO-J2M series

(1) Parameter

Enter the parameters of the MELSERVO-J2M series.

Item	Setting
Basic IFU parameter No.0	Serial communication selection <Default: 0000> Basic IFU parameter No.0 ③②0①
	1) Serial communication baud rate selection (*1) 0: 9600bps 1: 19200bps 2: 38400bps 3: 57600bps
	2) Serial communication I/F selection 0: RS-232 1: RS-422
	3) Communication response delay time selection 0: Invalid 1: Valid (Response after 800 μs or longer delay time)
Basic IFU parameter No.10	Interface unit serial communication station No. selection: 0 to 31 <Default: 0> (*2)
Basic IFU parameter No.11	Slot 1 serial communication station No. selection: 0 to 31 <Default: 1> (*2)
Basic IFU parameter No.12	Slot 2 serial communication station No. selection: 0 to 31 <Default: 2> (*2)
Basic IFU parameter No.13	Slot 3 serial communication station No. selection: 0 to 31 <Default: 3> (*2)
Basic IFU parameter No.14	Slot 4 serial communication station No. selection: 0 to 31 <Default: 4> (*2)
Basic IFU parameter No.15	Slot 5 serial communication station No. selection: 0 to 31 <Default: 5> (*2)
Basic IFU parameter No.16	Slot 6 serial communication station No. selection: 0 to 31 <Default: 6> (*2)
Basic IFU parameter No.17	Slot 7 serial communication station No. selection: 0 to 31 <Default: 7> (*2)
Basic IFU parameter No.18	Slot 8 serial communication station No. selection: 0 to 31 <Default: 8> (*2)

*1 Specify the same transmission speed as that of the GOT.
For the transmission speed setting method of the GOT, refer to the following.

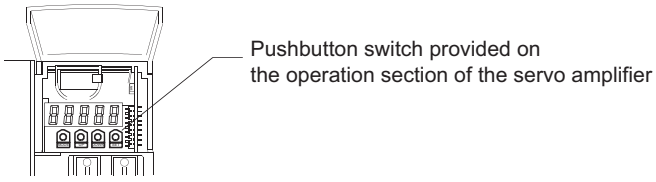
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

*2 Avoid duplication of the station No. with any of the other units.

Point

(1) Parameter setting

Set the parameter at the pushbutton switch provided on the operation section of the servo amplifier or setup software.



(2) When changing the parameter

Turn off then on the servo amplifier to be effective the new parameter.

3 Parameters of MELSERVO-J4, J3, JE series

(1) Parameter

Enter the parameters of the MELSERVO-J4, J3, JE series.

Item	Setting
Basic parameter No.PC20	Station No. setting: 0 to 31 <Default: 0> (*1)
Basic parameter No.PC21	Serial communication function selection <Default: 0000> Basic parameter No.PC21 [ ][②][①][ ] 1) Serial communication baud rate selection (*2) 0: 9600bps 1: 19200bps 2: 38400bps 3: 57600bps 4: 115200bps 2) Communication response delay time selection 0: Invalid 1: Valid (Response after 800 μs or longer delay)

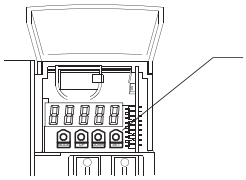
*1 Avoid duplication of the station No. with any of the other axes.

*2 Specify the same transmission speed as that of the GOT.
For the transmission speed setting method of the GOT, refer to the following.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

Point

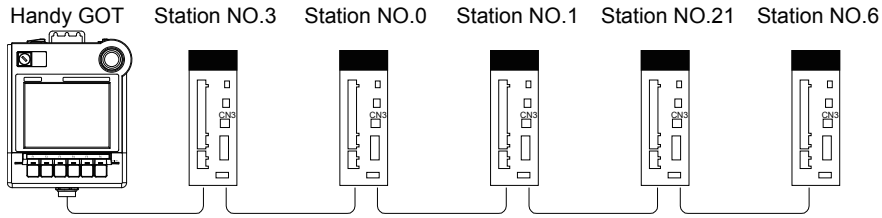
(1) Parameter setting
Set the parameter at the pushbutton switch provided on the operation section of the servo amplifier or setup software.



(2) When changing the parameter
Turn off then on the servo amplifier to be effective the new parameter.

55.2.2 Station No. settings

Set the station number while making sure that one station number is used only once.
The station number can be set without regard to the cable connection order.
No problem is expected even if station numbers are not consecutive.



Examples of station number setting

(1) Direct specification

When setting the device, specify the station number of the servo amplifier of which data is to be changed.

Specification range
0 to 31

(2) Indirect specification

When setting the device, indirectly specify the station number of the inverter of which data is to be changed using the 16-bit GOT internal data register (GD10 to GD25).
When specifying the station No. from 100 to 115 on drawing software, the value of GD10 to GD25 compatible to the station No. specification will be the station No. of the servo amplifier.

Specification Station No.	Compatible device	Setting range
100	GD10	0 to 31 For the setting other than the above, a communication timeout error will occur.
101	GD11	
102	GD12	
103	GD13	
104	GD14	
105	GD15	
106	GD16	
107	GD17	
108	GD18	
109	GD19	
110	GD20	
111	GD21	
112	GD22	
113	GD23	
114	GD24	
115	GD25	

(3) All station specification

Target station differs depending on write-in operation or read-out operation.

- For write-in operation, all station will be a target.
- For read-out operation, only one station will be a target.

55.3 Precautions

55.3.1 Precautions

1 Station number setting in the servo system

Configure the servo system so that there is a servo amplifier with a station number set with a host address.
For details of host address setting, refer to the following manual.

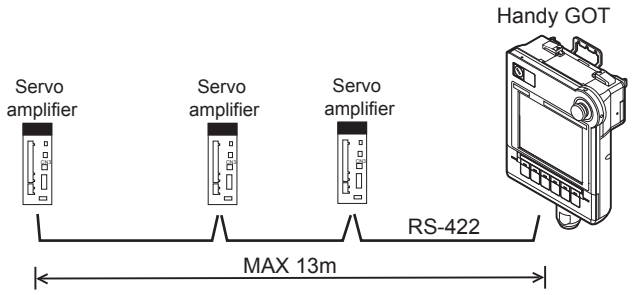
☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

2 GOT clock function

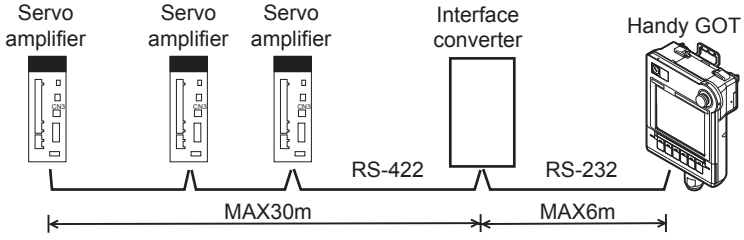
Since the servo amplifier does not have a clock function, the setting of "time adjusting" or "time broad cast" by GOT clock control will be disabled.

3 Connection distance

For the RS-232 connection, the connection distance must be 6m or less and for the RS-422 connection, the connection distance must be 13m or less.
In addition, when connecting multiple servo amplifiers, the overall extension distance must be 13m or less.



When using multiple Servo amplifiers with interface converter (FA-T-RS40VS), the distance between the GOT and the interface converter must be 6m or less, and the distance between the interface converter and the furthest Servo amplifier must be 30m or less.



56. CONNECTION TO CNC

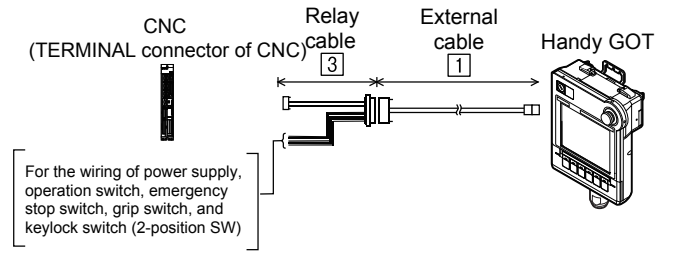
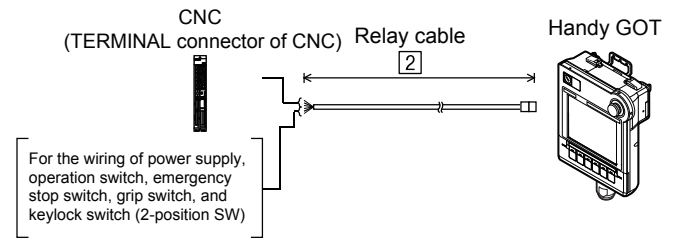
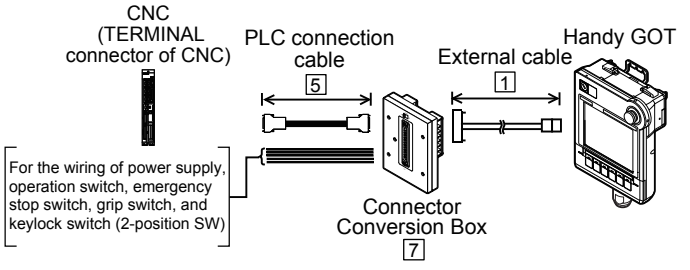
56.1 System Configuration and System Equipment

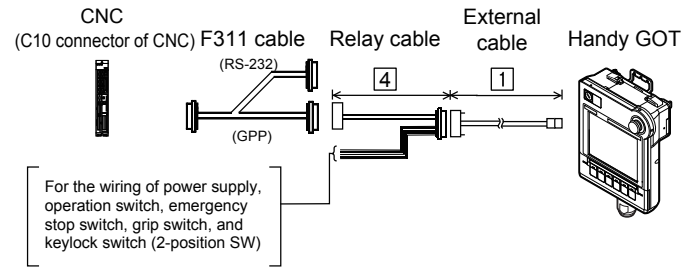
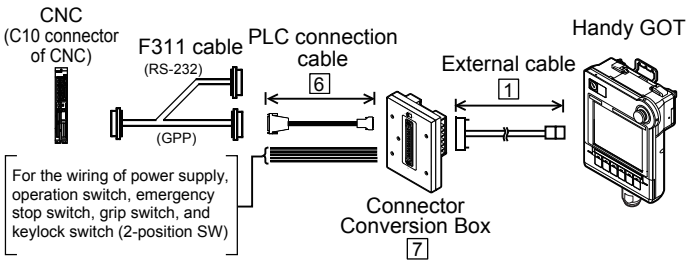
Connectable CNC is MELDAS C6/C64 series.
Refer to the following section for connecting to CNC C70.

☞ Chapter 22 CONNECTION TO MITSUBISHI PLC

56.1.1 System configuration

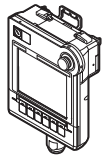
When connecting the Handy GOT to a CNC, a relay cable must be created or an external cable of which one end is untied (GT11H-C30, GT11H-C60 or GT11H-C100) must be processed by the user.
For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector. For the
RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.
Refer to the number (1, 2...) described in System configuration according to the numbers described in "56.1.2 System equipment"

Connection conditions			System configuration
CNC	Communication	Distance	
MELDAS C6/C64	RS-232	6m or less	
			
			

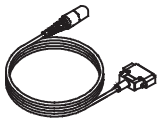
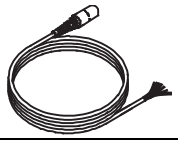
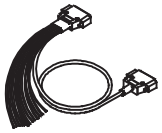
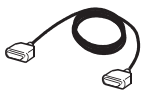
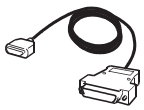
Connection conditions			System configuration
CNC	Communication	Distance	
MELDAS C6/C64	RS-422	13m or less	 

56.1.2 System equipment

1 GOT

Name	Image	No.	Model name	Remark
Handy GOT		—	GT1155HS-QSBD	STN color
		—	GT1150HS-QLBD	STN monochrome

2 Cable

Name	Image	No.	Model name	Remark
External cable		1	GT11H-C□□□-37P □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side D-Sub 37 pins
		2	GT11H-C□□□ □□□: 30 (3m)/60 (6m)/100 (10m)	Relay cable connection side untied wire
Relay cable		3	Must be prepared by the user. ☞ Section 56.1.3 Connection cable	
		4	GT11H-C15R4-25P (1.5m)	D-sub 25 pins
PLC connection cable		5	Must be prepared by the user. ☞ Section 56.1.3 Connection cable	
		6	GT01-C30R4-25P (3m) GT01-C100R4-25P (10m)	—

3 Option

Image	No.	Name	Model name	Remark
	7	Connector Conversion Box	GT11H-CNB-37S	—

4 Connection type and required communication unit

CNC	Number of GOTs	Number of CNCs	Communication	Communication unit	
				Name	Model name
MELDAS C6/C64	1	1	RS-232	—	—
			RS-422	Cable	F311

56.1.3 Connection cable

PLC connection cable schematics, relay cable schematics, and the connection diagrams of the GT11H-C□□□ and its connection target device are shown below.

1 Connection cable classification

Refer to the following table to select the cable No. to be used.
Refer to the connection diagram of the cable No. to be used.

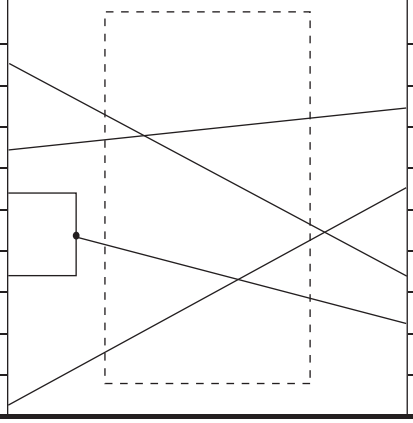
Series name/model name			Connection cable	
			RS-232 cable	RS-422 cable
CNC	MELDAS C6/C64	RS-232	RS-232 cable	—
		RS-422	—	GT11H-C15R4-25P (Connected via F311 cable)

2 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the CNC.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	MELDAS C6/C64 side*1 (20-pin half pitch)	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		1	GND
SD(TXD)	2	W/R (A)	3		—	—
ER(DTR)	3	W/BK (A)	4		6	SD
RD(RXD)	4	GY/R (A)	2		—	—
DR(DSR)	5	GY/BK (A)	6		11	GND
RS(RTS)	6	O/R (A)	7		—	—
CS(CTS)	7	O/BK (A)	8		16	RD
—	8	Y/R (A)	—		18	ER(DTR)
—	9	Y/BK (A)	—		—	—
SG	10	PK/R (A)	5		—	—

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

*1 For details of the MELDAS C6/C64 side connection, refer to the following manuals.

☞ · MELDAS C6/C64/C64T CONNECTION AND MAINTENANCE MANUAL BNP-B2255
· MELDAS C6/C64 NETWORK MANUAL BNP-B2372

3 RS-422 cable

When the Handy GOT is connected to CNC via RS-422 cable, GT11H-C□□□-37P external cable and GT11H-C15R4-25P relay cable are available.
To connect via GT11H-C□□□ external cables, refer to the following chapter so that the same connection configuration can be achieved.

☞ Chapter 20 COMMUNICATION CABLE

56.1.4 Precautions when preparing a cable

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

56.2 Precautions

56.2.1 Precautions

1 Version of CNC

For MELDAS C6/C64,use NC system software version D0 or later.

57. MULTIPLE-GT11 CONNECTION FUNCTION

57.1 Multiple-GT11 Connection

The multiple-GT11 connection is a function that allows multiple GOTs to be alternately connected (i.e. in series) using the 2-channel serial communication function built in a GOT.
A Handy GOT can be connected up to two units (one GT11 + one Handy GOT).
For the multiple-GOT connection, the first GOT must be GT11 and the second GOT must be a Handy GOT.

Point

Connection type applicable to the multiple-GT11 connection function

The multiple-GT11 connection function is available for the following types of connection of the GOT and a MITSUBISHI PLC. For the system configuration between the GOT and MITSUBISHI PLC, refer to the corresponding section.

- Direct CPU connection (☞ Section 22.1 Direct CPU Connection)
- Computer link connection (☞ Section 22.2 Computer Link Connection)*1

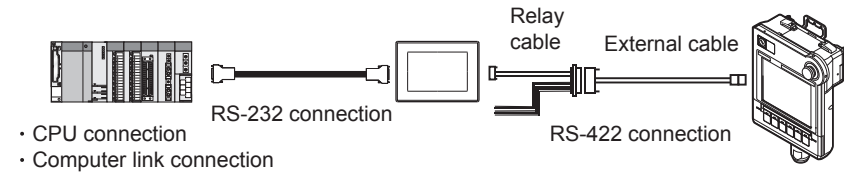
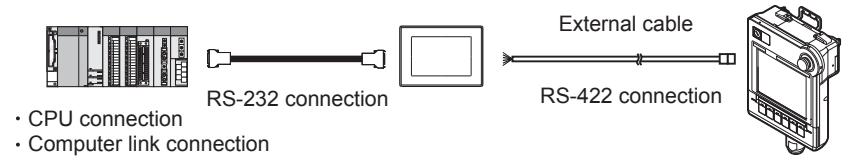
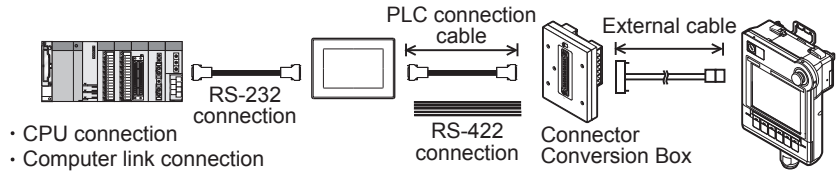
*1 Only for connection to QCPU (Q mode)

57.2 System Configuration and System Equipment

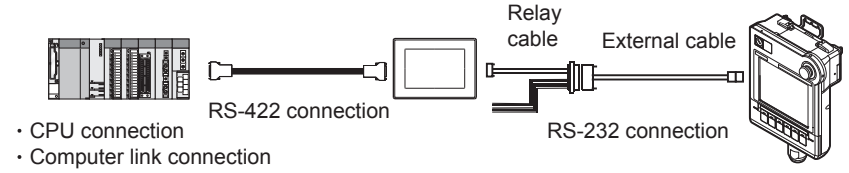
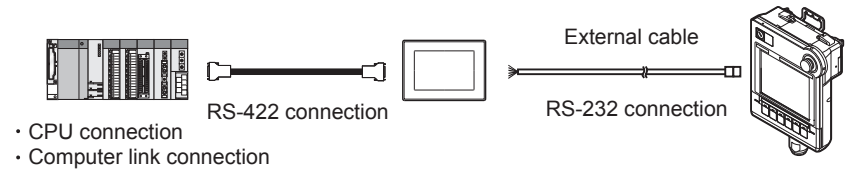
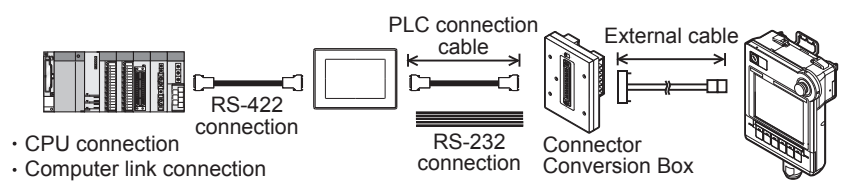
57.2.1 System configuration

For the RS-232 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-232 connector.
For the RS-422 connection, connect the cable connector for PLC communication in the environmental protection back cover to RS-422 connector.

(1) Connecting the first GOT to MITSUBISHI PLC via RS-232 interface

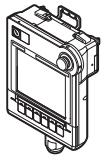
Connection conditions		System configuration
Number of GOTs	Distance	
2 (max.)	13m (Between GT11 and Handy GOT)	
		
		

(2) Connecting the first GOT to MITSUBISHI PLC via RS-422 interface

Connection conditions		System configuration
Number of GOTs	Distance	
2 (max.)	6m (Between GT11 and Handy GOT)	
		
		

57.2.2 System equipment

1 GOT

Name	Image	Model name	Remark
Handy GOT		GT1155HS-QSBD	STN color
		GT1150HS-QLBD	STN monochrome

2 Cable

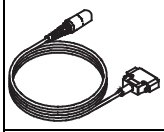
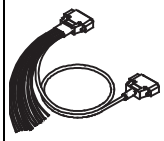
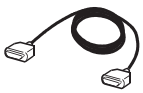
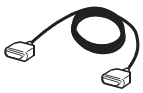
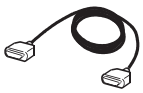
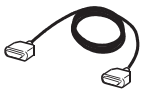
Point

System configuration between GOT and MITSUBISHI PLC

For the system configuration between a GOT and a MITSUBISHI PLC, refer to the following.

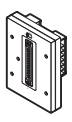
☞ Section 22.1 Direct CPU Connection

☞ Section 22.2 Computer Link Connection

Name		Image	Model name
External cable			☞ Section 22.1 Direct CPU Connection ☞ Section 22.2 Computer Link Connection
			☞ Section 22.1 Direct CPU Connection ☞ Section 22.2 Computer Link Connection
Relay cable			Must be prepared by the user. ☞ Section 57.2.3 Connection cable
PLC connection cable*1	RS-232 cable		GT01-C30R2-9S (3m)
	RS-422 cable		Must be prepared by the user. ☞ Section 57.2.3 Connection cable
PLC ↔ GT11 connection cable	RS-232 cable		☞ GOT1000 Series Connection Manual
	RS-422 cable		☞ GOT1000 Series Connection Manual

*1 The PLC connection cable can be prepared by the user. (☞ Section 57.2.3 Connection cable)

3 Option

Image	Name	Model name	Remark
	Connector Conversion Box	GT11H-CNB-37S	—

57.2.3 Connection cable

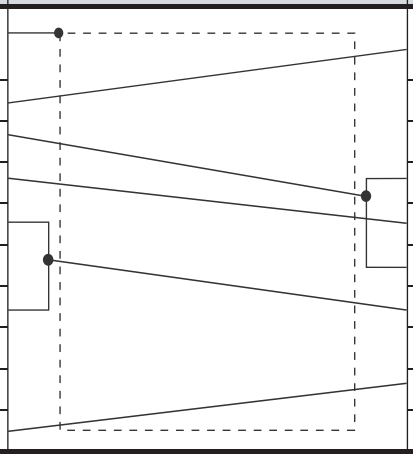
The following provides the connection diagram for each cable.

1 Connection diagram of RS-232 cable

The following provides the connection diagram of RS-232 cable connecting the Handy GOT to the GT11.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-232 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS232 connector Pin No.	Cable connection	GT11 side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		2	RD(RXD)
SD(TXD)	2	W/R (A)	3		7	RS(RTS)
ER(DTR)	3	W/BK (A)	4		1	NC
RD(RXD)	4	GY/R (A)	2		6	DR(DSR)
DR(DSR)	5	GY/BK (A)	6		3	SD(TXD)
RS(RTS)	6	O/R (A)	7		8	CS(CTS)
CS(CTS)	7	O/BK (A)	8		4	ER(DTR)
—	8	Y/R (A)	—		9	NC
—	9	Y/BK (A)	—		5	SG
SG	10	PK/R (A)	5			

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

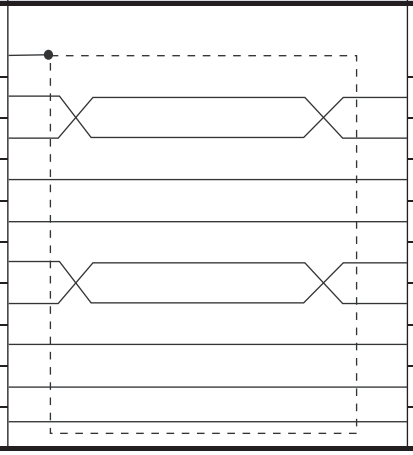
☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

2 Connection diagram of RS-422 cable

The following provides the connection diagram of RS-422 cable connecting the Handy GOT to the GT11.
For details on the pin layout of the external cable and the external cable color of untied side, refer to the following.

☞ Chapter 20 COMMUNICATION CABLE

(1) RS-422 cable

Signal name	GOT side (External cable)		Connector Conversion Box GT11H-CNB-37S RS422 connector Pin No.	Cable connection	GT11 side	
	GT11H-C□□□-37P Pin No.	GT11H-C□□□ Wire color (color type)			Pin No.	Signal name
FG (Shield)	1	Shield	—		—	—
SDA	2	W/R (A)	1		2	RDA
SDB	3	W/BK (A)	6		7	RDB
RSA	4	GY/R (A)	3		4	CSA
RSB	5	GY/BK (A)	8		9	CSB
RDA	6	O/R (A)	2		1	SDA
RDB	7	O/BK (A)	7		6	SDB
CSA	8	Y/R (A)	4		3	RSA
CSB	9	Y/BK (A)	9		8	RSB
SG	10	PK/R (A)	5		5	SG

Refer to the following for the wiring of the power, operation switch, grip switch, emergency stop switch and keylock switch (2-position SW).

☞ Chapter 21 HANDLING OF POWER WIRING AND SWITCH

57.2.4 Precautions when preparing a cable

- The length of the RS-232 cable must be 6m or less.
- The length of the RS-422 cable must be 13m or less.

57.3 Setting communication interface

57.3.1 Communication settings

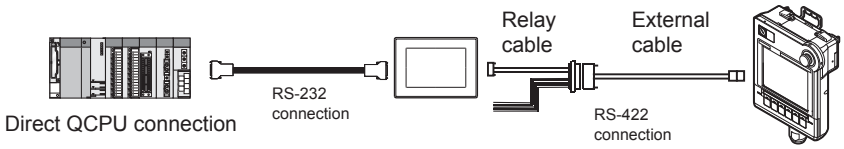
Make the GOT communication interface settings on [Communication setting] of GT Designer2 or [Controller Setting...] of GT Designer3.
Select the same communication driver as the one installed on the GOT for each communication interface.
For details of the settings, refer to the following manuals.

☞ GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

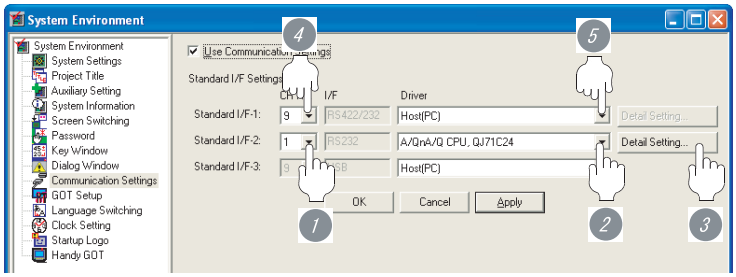
1 Communication settings

Select "1: A/QnA/QCPU, QJ71C24 or MELSEC-FX" as a communication interface used for connecting the MITSUBISHI PLC or the GOT on the preceding stage.
Select "9: Host (PC)" as a communication interface used for connecting the GOT on the next stage.
Example: To connect the 1st GOT to the QCPU via RS-232 interface



(1) The 1st GOT

• For GT Designer2



(a) Setting the communication interface connected to the QCPU (RS-232 interface)

1 Set "1" to the channel No. used.

2 Set the driver to "A/QnA/QCPU, QJ71C24".

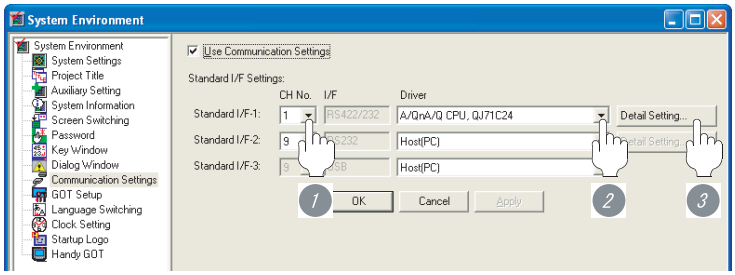
3 Perform the detailed settings for the driver. (☞ 2 Communication detail settings)

(b) Setting the communication interface connected to the 2nd GOT (RS-422 interface)

4 Set "9" to the channel No. used.

5 Set the driver to "Host (PC)".

(2) The 2nd GOT



(a) Setting the communication interface connected to the 1st GOT (RS-422 interface)

1 Set "1" to the channel No. used.

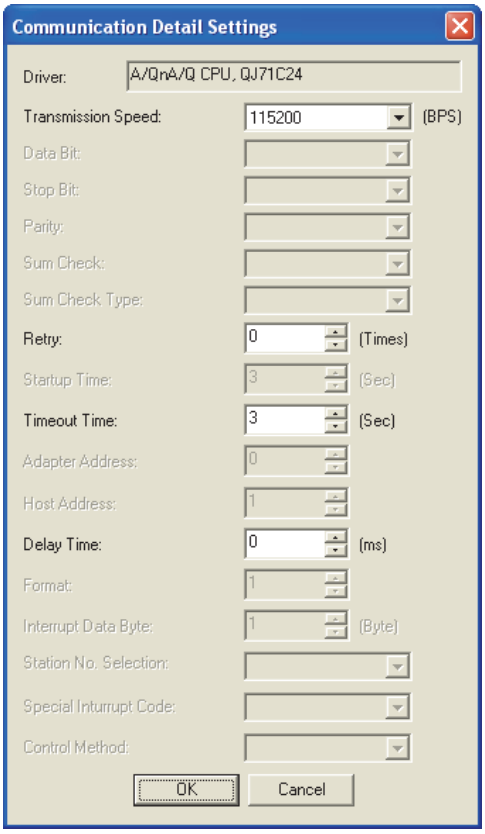
2 Set the driver to "A/QnA/QCPU, QJ71C24".

3 Perform the detailed settings for the driver. (☞ 2 Communication detail settings)

2 Communication detail settings

(1) A/QnA/QCPU, QJ71C24

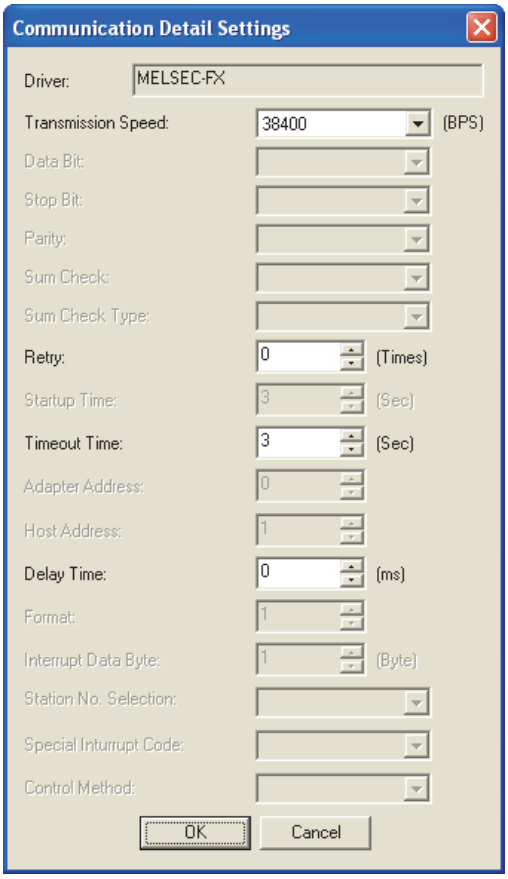
• For GT Designer2



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 115200bps> When the setting exceeds the limit of the connected equipment, communication is performed at the fastest transmission speed supported by the connected equipment	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

(2) MELSEC-FX

• For GT Designer2



Item	Description	Range
Transmission Speed	Set this item when change the transmission speed used for communication with the connected equipment. <Default: 38400bps>	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
Retry	Set the number of retries to be performed when a communication error occurs. When receiving no response after retries, the communication times out. <Default: 0 Times>	0 to 5 Times
Timeout Time	Set the time period for a communication to time out. <Default: 3 Sec>	3 to 30 Sec
Delay Time	Set this item to adjust the transmission timing of the communication request from the GOT. <Default: 0 ms>	0 to 300 ms

Point

(1) Communication interface setting by Utility

The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.

For details on the Utility, refer to the following manual.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

(2) Precedence in communication settings

When settings are made by drawing software or the Utility, the latest setting is effective.

57.3.2 Connecting cable

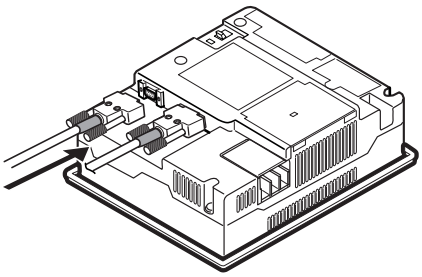
Point Cautions when connecting the cable

Shut off all phases of the GOT power supply before connecting the cable.

1 How to connect the cable

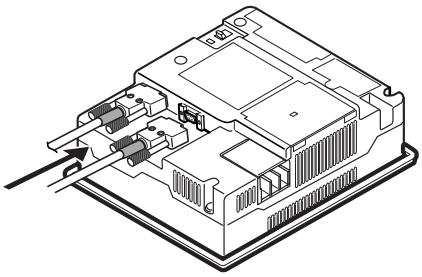
Using the RS-232 and RS-422 interfaces alternately, connect the GT11 and Handy GOT (connection in series).
(The USB interface is not usable for the multiple-GT11 connection.)
Up to two GOTs can be connected.

(1) How to connect the RS-232 cable



1 Connect the RS-232 cable to the RS-232 interface on the GOT.

(2) How to connect the RS-422 cable



1 Connect the RS-422 cable to the RS-422 conversion unit.

57.3.3 Verifying GOT recognizes connected equipment

Verify the GOT recognizes connected equipments on [Communication Setting] of the Utility.

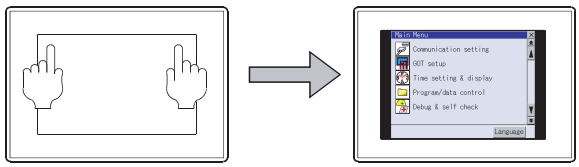
- Channel number of communication interface, communication drivers allocation status

Remark

How to display Utility

To display the Utility (at default), touch the upper right and upper left positions on the screen at the same time (pressing 2 points).
For how to start and operate the Utility, refer to the following manual.

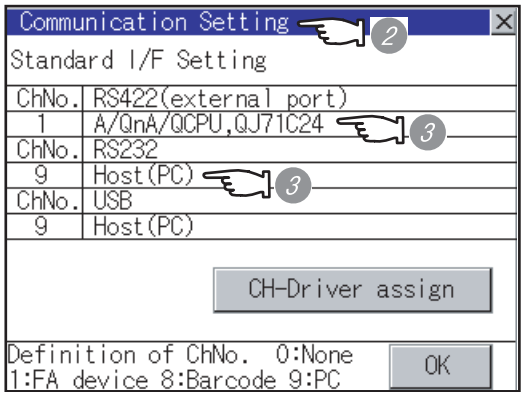
Section 8.3.1 Display operation of main menu



Touch upper left and right corners of screen simultaneously.

Utility display

1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

- Communication driver of the communication interface connected to MITSUBISHI PLC or the GOT on the preceding stage (either of the following)
  A/QnA/QCPU, QJ71C24
  MELSEC-FX
- Communication driver of the communication interface connected to the GOT on the next stage
  Host (PC)

4 When the communication driver name is not displayed normally, carry out the following procedure again.

Point

When changing communication interface setting by Utility

The communication interface setting can be changed by the Utility.
For details on the Utility, refer to the following manual.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

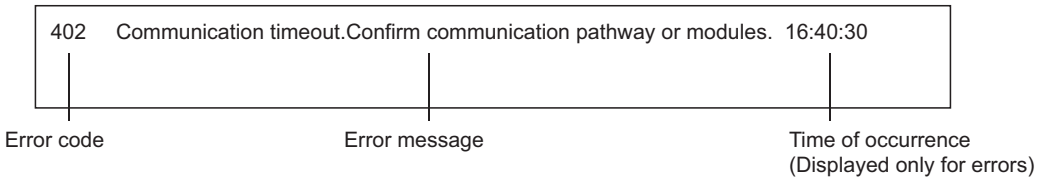
57.3.4 Checking for normal monitoring

1 Check for errors occurring on the GOT

Presetting the system alarm to project data allows you to identify errors occurred on the GOT, PLC CPU, servo amplifier and communications.
For details on the system alarm, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Functions)

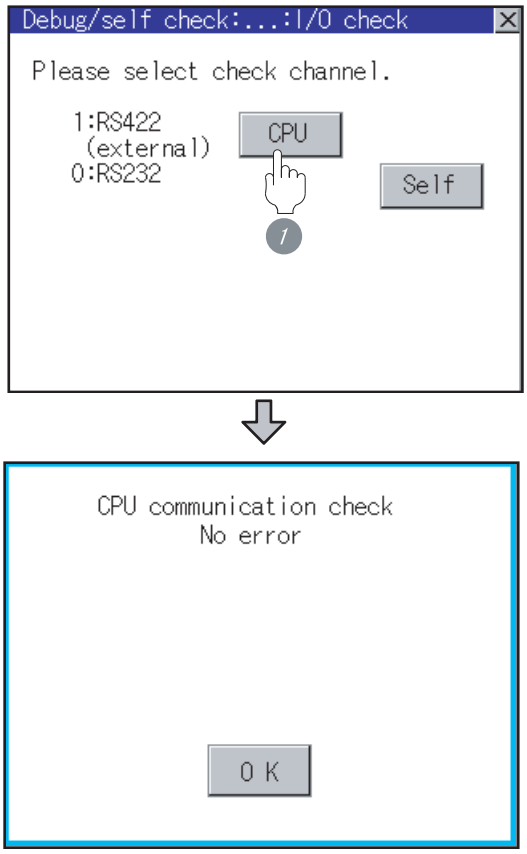


2 Perform an I/O check.

Whether the PLC can communicate with the GOT or not can be checked by the I/O check function. If this check ends successfully, it means correct communication interface settings and proper cable connection.

Display the I/O check screen by [Main Menu] → [Debug & self check] → [Self check] → [I/O check]. For details on the I/O check, refer to the following manual:

☞ GT□ User's Manual



1 Touch [CPU] on the I/O check screen. Touching [CPU] executes the communication check with the connected PLC

2 When the communication screen ends successfully, the screen on the left is displayed.

57.4 Precautions

1 GOT's communication timing

(1) GOT's communication timing

Adjust the communication timing so that, after applying the power to the system, the communication with the connected device (MITSUBISHI PLC) is performed in order starting from the first GOT (from the 1st GOT to the 2nd, and so on).
When the communication is failed, retries are performed. And if the predetermined time has elapsed, a communication error occurs.
*1 *2

(2) Adjusting communication timing

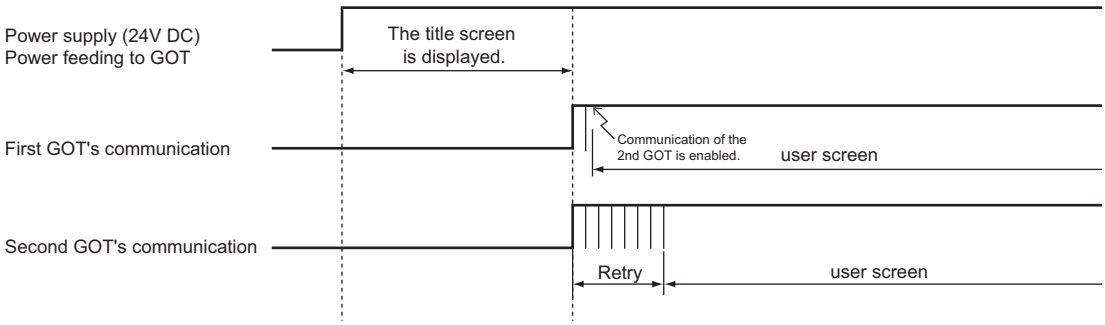
(a) When powering up the system simultaneously
Using the utility or selecting [GOT setup] - [Opening Screen Time] from drawing software, set the opening screen time adding a delay to each setting for the GOTs. During the opening process, communication with the connected device does not start.

Example: Set value of "Opening Screen Time" (Inside (): set value)
First module (5s) → Second module (10s)

(b) When powering on devices individually
Turn on the connected device first, and then the first GOT, the second GOT, and so on.

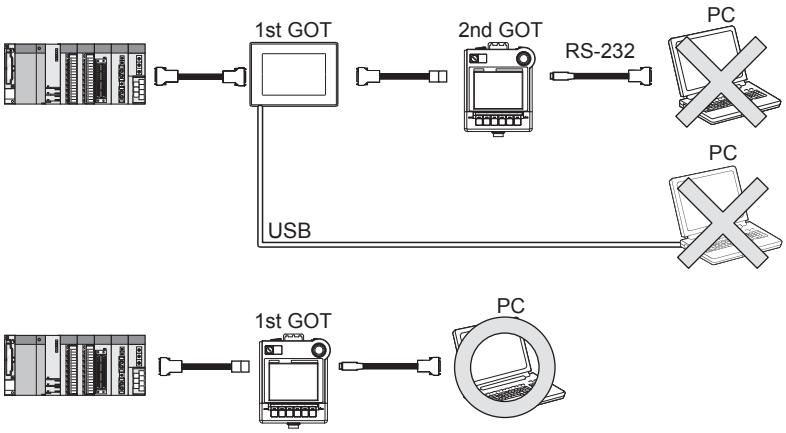
*1 If the first GOT is turned on after a while the second GOT is turned on, because the communication start of the second GOT is delayed, a communication error may be detected at the second GOT.

*2 If the system power is turned on simultaneously and it takes time to start the communication of the second GOT, a communication error may be developed.



2 Using the FA transparent function

When multiple GOTs are connected, using the FA transparent function through connection via the RS-232 interface or USB interface of the GOT is not allowed.



3 Monitoring stop condition for the GOT in the multiple-GT11 connection

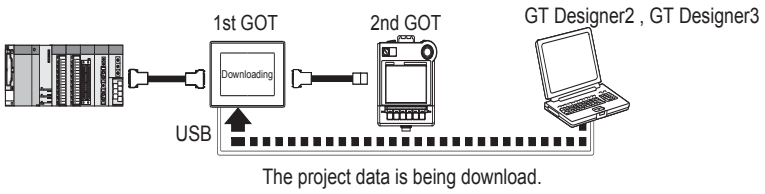
In the system where multiple GOTs are connected, performing either of the following monitoring stop operations on the preceding stage (the first GOT) also stops monitoring of the GOT on the next stage (the second GOT).

When the GOT on the preceding stage resumes monitoring, the GOT on the next stage also resumes it.

(1) When project data is downloaded/uploaded by drawing software , or when the OS is installed*1

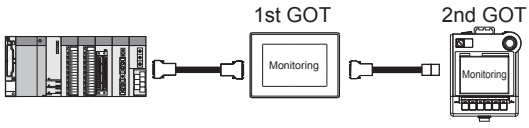
(2) When the GOT is set up*1

*1 A timeout error occurs in GX Developer.



4 When PLC power disconnection occurs in the multiple-GOT connection

In the system where multiple GOTs are connected, when the communication between the PLC and the first GOT is stopped due to PLC power disconnection and a disconnection of the communication cable between the PLC and the first GOT, the GOT waits for timeout against the communication request from the peripheral devices (GX Developer, etc.), and recovery of monitoring between the PLC and the GOT is delayed.



58. FA TRANSPARENT FUNCTION

58.1 FA Transparent Function

The FA transparent function allows the sequence programs of the Mitsubishi PLC to be read, written and monitored from a PC connected via a GOT.

58.1.1 Compatible Software

1 Connecting the GOT and PC with RS-232

(1) Direct CPU connection

PLC, Inverter	Software
QCPU (Q mode)	GX Developer, PX Developer[*1] GX Configurator[*2] -AD/DA/SC/CT/TI/TC/AS/FL/PT GX Configurator-QP (Ver. 2.32J or later) MX Component (Version3.14Q or later), MX Sheet[*4]
QCPU (A mode), QnA/ACPU	GX Developer MX Component (Version3.14Q or later), MX Sheet[*4]
LCPU[*3]	GX Developer (Ver.8.88S or later), GX LogViewer MX Component (Version3.14Q or later), MX Sheet[*4], QnUDVCPU & LCPU Logging Configuration Tool[*6]
FXCPU	GX Developer, FX Configurator-FP (Ver.1.30 or later) FX3U-ENET-L Configuration tool MX Component (Version3.14Q or later), MX Sheet[*4]
Motion controller CPU (Q Series)	MT Developer SW6RN-GSV13P, SW6RN-GSV22P, SW6RN-GSV43P, SW6RN-GSV54P, SW6RN-DOSCP, SW6RN-GSVSNETP(for user API) MT Works2 (Ver.1.00A or later) MR Configurator (MRZJW3-SETUP221 Version B4 or later), MR Configurator2[*5] MX Component[*11], MX Sheet[*12]
Motion controller CPU (A Series)	GX Developer SW3RN-GSV13P, SW3RN-GSV22P, SW3RN-GSV43P, SW3RN-GSV51P MX Component (Version4.03D or later), MX Sheet[*4]
FREQROL A700/F700 Series	FR Configurator (FR-SW2-SETUP-WJ) (Ver.1.02 or later)
FREQROL E700 Series	FR Configurator (FR-SW3-SETUP-WJ) (Ver.2.00 or later)
FREQROL D700 Series	FR Configurator (FR-SW3-SETUP-WJ) (Ver.3.10 or later)
MELSERVO(MR-J3-B)[*7]	MR Configurator[*8], CMR Configurator2[*9]
MELSERVO(MR-J4-B)[*7]	MR Configurator2[*10]
Sensorless Servo (FREQROL E700EX)	FR Configurator[*13]

*1 PX Developer Version 1.09K or later is required to use the FA transparent function.
PX Developer Version 1.18U or later is required to use the FA transparent function when connecting the Q02PHCPU or Q06PHCPU to the GOT.

*2 GX Configurator-AD : Version 2.03D or later, GX Configurator-DA : Version 2.04E or later
GX Configurator-SC : Version 2.10L or later, GX Configurator-CT : Version 1.23Z or later
GX Configurator-TI : Version 1.22Y or later, GX Configurator-TC : Version 1.21X or later
GX Configurator-AS : Version 1.20W or later, GX Configurator-FL : Version 1.21X or later
GX Configurator-PT : Version 1.20W or later

*3 The adapter (L6ADP-R2 or L6ADP-R4) is required to use the FA transparent function.

*4 For MX Sheet, use MX Component Version 3.14Q.

*5 Start MR Configurator2 with MT Developer2 Version 1.10L or later.

*6 QnUDVCPU & LCPU Logging Configuration Tool Version 1.04E or later is required to use the FA transparent function.

*7 A motion controller is required between the GOT and PLC in direct CPU connection.

*8 MR Configurator(MRZJW3-SETUP221) Version B4 or later is required to use the FA transparent function.

*9 Use the QnUDVCPU & LCPU Logging Configuration Tool Version 1.04E or later.

*10 MR Configurator2 Version 1.09K or later is required to use the FA transparent function.

*11 To use the FA transparent function, MX Component Version 4.00A or later version is required.

*12 For MX Sheet, use MX Component Version 4.00A or later.

*13 FR Configurator Version5.21 or later is required to use the FA transparent function.

(2) Computer link connection

PLC	Software
QCPU (Q mode)	GX Developer (Ver.8.62Q or later), PX Developer (Ver.1.18U or later), GX Configurator-QP (Ver. 2.32J or later) MX Component (Version3.14Q or later), MX Sheet*1
LCPU	GX Developer (Ver.8.88S or later), GX LogViewer MX Component (Version4.03D or later), MX Sheet*1, QnUDVCPU & LCPU Logging Configuration Tool*2
Motion controller CPU (Q Series)	MX Component*3, MX Sheet*4

*1 For MX Sheet, use MX Component Version 3.14Q.

*2 QnUDVCPU & LCPU Logging Configuration Tool Version 1.04E or later is required to use the FA transparent function.

*3 To use the FA transparent function, MX Component Version 4.00A or later version is required.

*4 For MX Sheet, use MX Component Version 4.00A or later.

2 Connecting the GOT and PC with USB

(1) Direct CPU connection

PLC	Software
QCPU (Q mode)	GX Developer (Version 8.22Y or later) PX Developer *1 GX Configurator *2 -AD/DA/SC/CT/TI/TC/AS/FL/PT GX Configurator-QP (Ver. 2.32J or later) MX Component (Version3.14Q or later), MX Sheet*4
QCPU (A mode), QnA/ACPU, FXCPU Motion controller CPU (A Series)	GX Developer (Version 8.22Y or later) MX Component (Version3.14Q or later), MX Sheet*4
LCPU*3	GX Developer (Ver.8.88S or later) MX Component (Version4.03D or later), MX Sheet*4, QnUDVCPU & LCPU Logging Configuration Tool*6
FX Series	GX Developer (Version 8.22 or later), FX Configurator-FP (Version 1.30 or later), FX3U-ENET-L Configuration tool MX Component (Version3.14Q or later), MX Sheet*4
Motion controller CPU (Q Series)	MT Developer (SW6RNC-GSV Version 0AD or later) SW6RN-GSV13P, SW6RN-GSV22P, SW6RN-GSV43P, SW6RN-GSV54P, SW6RN-GSVDOSCP, SW6RN-GSVSNETP (for user API) MR Configurator (MRZJW3-SETUP221 Version B4 or later) MR Configurator2*5, MX Component*11, MX Sheet*12
FREQROL A700/F700 Series	FR Configurator (FR-SW2-SETUP-WJ) (Ver.1.02 or later)
FREQROL E700 Series	FR Configurator (FR-SW3-SETUP-WJ) (Ver.2.00 or later)
FREQROL D700 Series	FR Configurator (FR-SW3-SETUP-WJ) (Ver.3.10 or later)
MELSERVO(MR-J3-B)*7	MR Configurator*8, CMR Configurator2*9
MELSERVO(MR-J4-B)*7	MR Configurator2*10
Sensorless Servo (FREQROL E700EX)	FR Configurator*13

*1 PX Developer Version 1.09K or later is required to use the FA transparent function.
PX Developer Version 1.18U or later is required to use the FA transparent function when connecting the Q02PHCPU or Q06PHCPU to the GOT.

*2 GX Configurator-AD : Version 2.03D or later, GX Configurator-DA : Version 2.04E or later
GX Configurator-SC : Version 2.10L or later, GX Configurator-CT : Version 1.23Z or later
GX Configurator-TI : Version 1.22Y or later, GX Configurator-TC : Version 1.21X or later
GX Configurator-AS : Version 1.20W or later, GX Configurator-FL : Version 1.21X or later
GX Configurator-PT : Version 1.20W or later

*3 The adapter (L6ADP-R2 or L6ADP-R4) is required to use the FA transparent function.

*4 For MX Sheet, use MX Component Version 3.14Q.

*5 Start MR Configurator2 with MT Developer2 Version 1.10L or later.

*6 QnUDVCPU & LCPU Logging Configuration Tool Version 1.04E or later is required to use the FA transparent function.

*7 A motion controller is required between the GOT and PLC in direct CPU connection.

*8 MR Configurator(MRZJW3-SETUP221) Version B4 or later is required to use the FA transparent function.

*9 Use the QnUDVCPU & LCPU Logging Configuration Tool Version 1.04E or later.

*10 MR Configurator2 Version 1.09K or later is required to use the FA transparent function.

*11 To use the FA transparent function, MX Component Version 4.00A or later version is required.

*12 For MX Sheet, use MX Component Version 4.00A or later.

*13 FR Configurator Version5.21 or later is required to use the FA transparent function.

(2) Computer link connection

PLC	Software
QCPU (Q mode)	GX Developer (Ver.8.62Q or later), PX Developer (Ver.1.18U or later), GX Configurator-QP (Ver. 2.32J or later) MX Component (Version3.14Q or later), MX Sheet*1
LCPU	GX Developer (Ver.8.88S or later), GX LogViewer MX Component (Version4.03D or later), MX Sheet*1, QnUDVCPU & LCPU Logging Configuration Tool*2
Motion controller CPU (Q Series)	MX Component*3, MX Sheet*4

*1 For MX Sheet, use MX Component Version 3.14Q.
*2 QnUDVCPU & LCPU Logging Configuration Tool Version 1.04E or later is required to use the FA transparent function.
*3 To use the FA transparent function, MX Component Version 4.00A or later version is required.
*4 For MX Sheet, use MX Component Version 4.00A or later.

3 Connecting the GOT and PC with Modem

(1) Direct CPU connection

PLC	Software
QCPU (Q mode) FXCPU	GX Developer (Version 8.78G or later)

(2) Computer link connection

PLC	Software
QCPU (Q mode)	GX Developer (Version.8.78G or later)

Point

(1) The range accessible by software when FA transparent function is used
Use of the FA transparent function does not affect the range accessible by the software.
For details on accessible range, refer to the manual for the respective software.

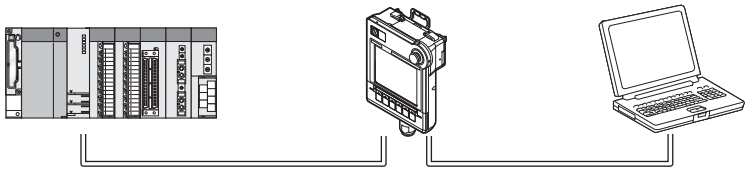
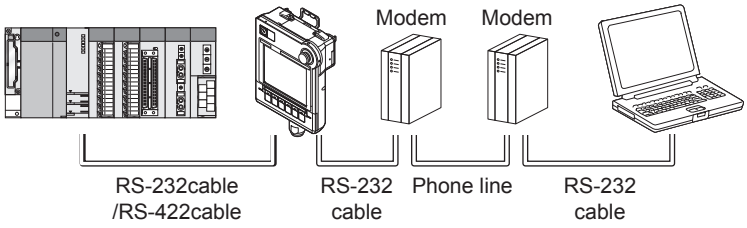
(2) The software settings when using FA transparent function
For the software settings, refer to the following when using FA transparent function.

☞ Section 58.3.4 Accessing the PLC by the GX Developer, PX Developer, GX Configurator
☞ Section 58.3.5 Accessing the PLC by the GX Configurator-QP
☞ Section 58.3.6 Accessing by the MT Developer
☞ Section 58.3.7 Accessing the PLC by the MT Works2
☞ Section 58.3.8 Accessing the servo amplifier by the MR Configurator, MR Configurator2
☞ Section 58.3.9 Accessing the inverter by the FR Configurator
☞ Section 58.3.10 Accessing the inverter by the FX Configurator-FP
☞ Section 58.3.11 Accessing the inverter by the FX3U-ENET-L Configuration tool
☞ Section 58.3.12 Accessing the inverter by the QnUDVCPU & LCPU Logging Configuration Tool

58.2 System Configuration and System Equipment

58.2.1 System configuration

1 GX Developer, GX LogViewer, MX Component, MX Sheet, QnUDVCPU & LCPU Logging Configuration Tool

between controller and GOT	between GOT and PC	System configuration
Direct CPU connection Computer link connection*1	RS-232 or USB	
	Modem*2*3	

*1 When connected to the Computer link, the FA transparent function supports only QCPU (Q mode).

*2 For connectable modems, system equipment and connection cables, refer to the following Technical News.

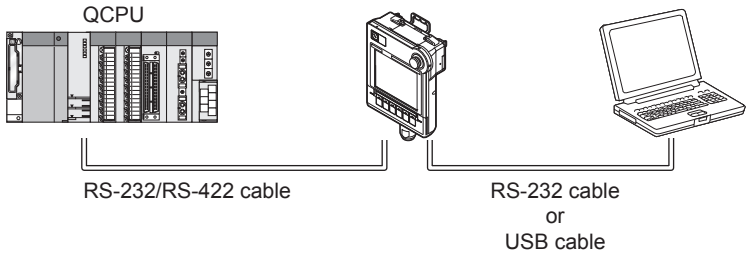
☞ List of valid devices applicable for GOT1000 series (T10-0039)

*3 Installation of the GOT modem connection tool to the personal computer is required to connect the GOT to a modem.

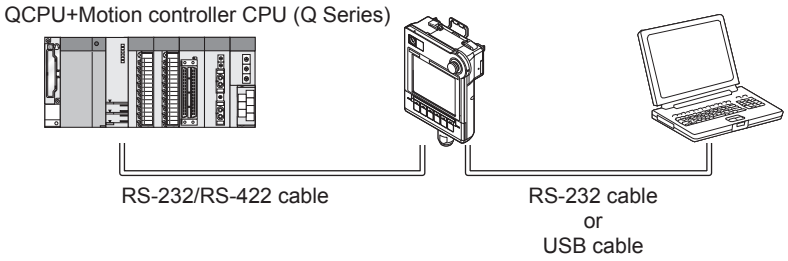
For details, refer to the following manual.

☞ GT Designer3 Version1 Screen Design Manual (Fundamentals)

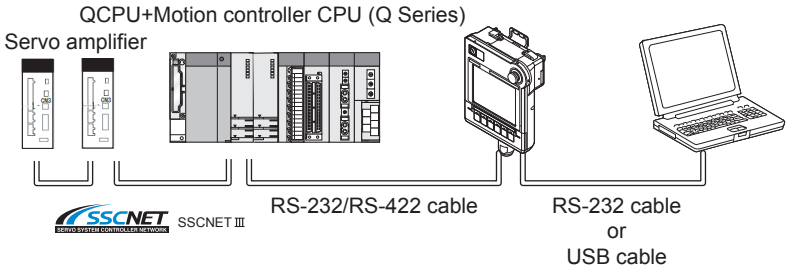
2 PX Developer, GX Configurator

between controller and GOT	between GOT and PC	System configuration
Direct CPU connection	RS-232 or USB	

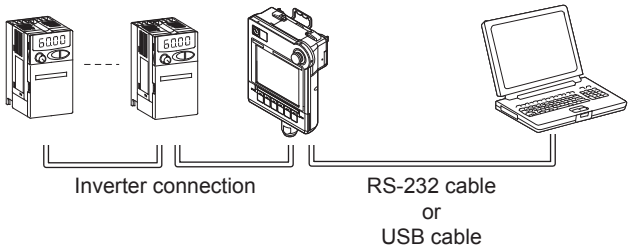
3 MT Developer, MT Works2

between controller and GOT	between GOT and PC	System configuration
Direct CPU connection	RS-232 or USB	

4 MR Configurator, MR Configurator2

between controller and GOT	between GOT and PC	System configuration
Direct CPU connection	RS-232 or USB	

5 FR Configurator

between controller and GOT	between GOT and PC	System configuration
RS-422 or RS-485	RS-232 or USB	

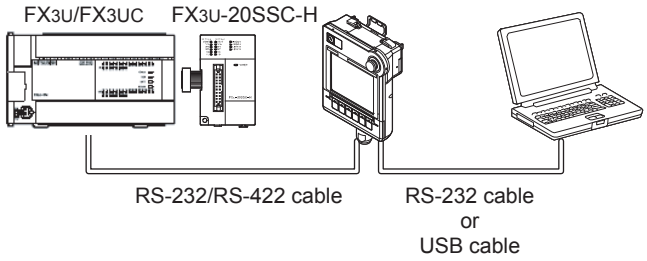
Point

System configuration between GOT and Mitsubishi inverter

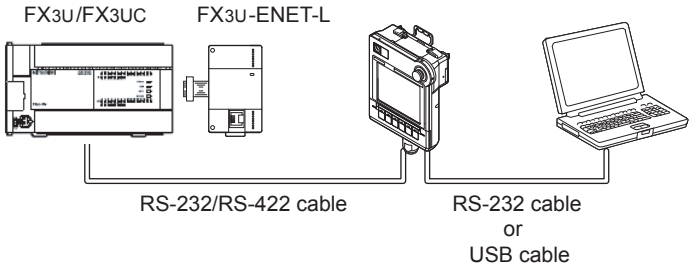
For details on the system configuration between GOT and Mitsubishi inverter, refer to the following.

☞ Chapter 54 CONNECTION TO INVERTER

6 FR Configurator-FP

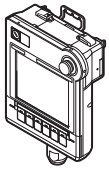
between controller and GOT	between GOT and PC	System configuration
Direct CPU connection	RS-232 or USB	

7 FX3U-ENET-L Configuration tool

between controller and GOT	between GOT and PC	System configuration
Direct CPU connection	RS-232 or USB	

58.2.2 System equipment

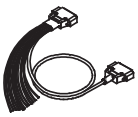
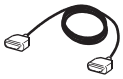
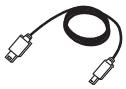
1 GOT

Name	Image	Model name	Remark
Handy GOT		GT1155HS-QSBD	STN color
		GT1150HS-QLBD	STN monochrome

2 Controller

Software	Controller	
GX Developer, MX Component, MX Sheet	QCPU, LCPU, QnACPU, ACPU, FXCPU, Motion controller CPU (A Series)	
GX Works2	QCPU, LCPU, FX Series	
GX LogViewer QnUDVCPU & LCPU Logging Configuration Tool	LCPU	
PX Developer GX Configurator	QCPU	
MT Developer, MT Works2	Motion controller CPU (Q Series)	
MR Configurator, MR Configurator2	Motion controller CPU (Q Series)	Q173HCPU, Q172HCPU, Q173HCPU-T, Q172HCPU-T
	MELSERVO-J3 Series	MR-J3-□B
FR Configurator	FREQROL A700/F700/E700/D700 Series	
FX Configurator-FP	FX Series	FX3U, FX3UC (FX3U-20SSC-H)
FX3U-ENET-L Configuration tool	FX Series	FX3U, FX3UC

3 Cable

Name		Image	Model name
External cable			Section 22.1 Direct CPU Connection Section 22.2 Computer Link Connection Chapter 54 CONNECTION TO INVERTER
			Section 22.1 Direct CPU Connection Section 22.2 Computer Link Connection Chapter 54 CONNECTION TO INVERTER
Relay cable			Section 22.1 Direct CPU Connection Section 22.2 Computer Link Connection Chapter 54 CONNECTION TO INVERTER
PLC connection cable			Section 22.1 Direct CPU Connection Section 22.2 Computer Link Connection Chapter 54 CONNECTION TO INVERTER
Handy GOT⇔PC connection cable	RS-232 cable		GT01-C30R2-6P (3m) GT11H-C30R2-6P (3m)
	USB cable		GT09-C20USB-5P (2m) GT09-C30USB-5P (3m)

4 PC

Image	Name	Model name
	PC	For compatible softwares, refer to the following. (☞ Section 58.1.1 Compatible Software)

Point

System configuration between GOT and Mitsubishi PLC

For details on the system configuration between GOT and Mitsubishi PLC, refer to the following.

☞ Section 22.1 Direct CPU Connection

☞ Section 22.2 Computer Link Connection

58.3 Setting communication interface

58.3.1 Communication settings

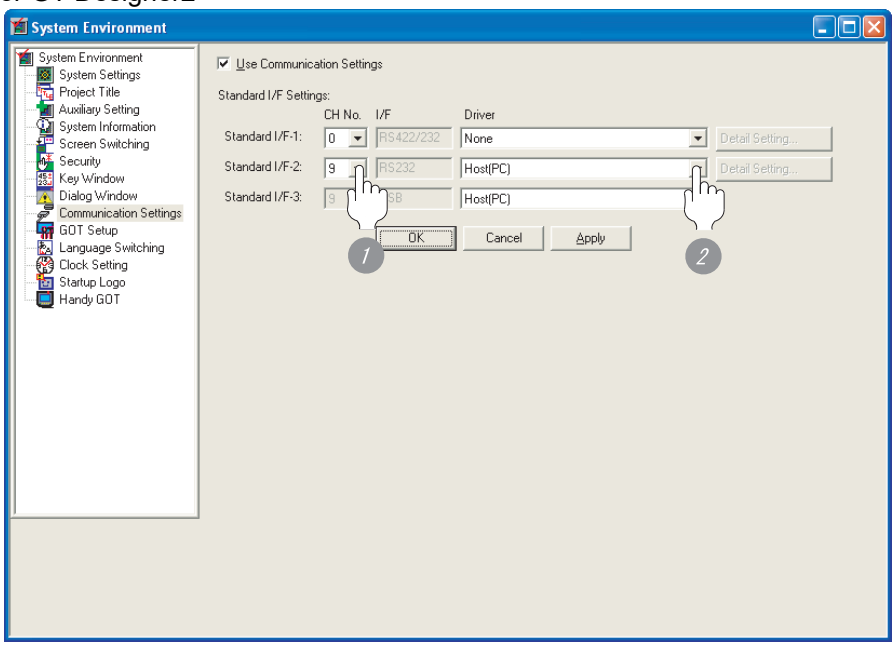
Set the communication interface of the GOT at [Communication settings] in GT Designer2 or [Controller Setting...] in GT Designer3.
For details on [Communication settings] of drawing software, refer to the following manual:

☞ GT Designer2 Version□ Screen Design Manual

GT Designer3 Version1 Screen Design Manual (Fundamentals)

1 Communication settings

- For GT Designer2



1 Set "9" to the No. of the to be used.

2 Set the driver to "Host(PC)".

Point

(1) Communication interface setting by Utility
The communication interface setting can be changed on the Utility's "Communication setting" after downloading "Communication setting" of project data.
For details on the Utility, refer to the following manual.

☞ Chapter 9 COMMUNICATION INTERFACE SETTING (COMMUNICATION SETTING)

(2) Precedence in communication settings
When settings are made by drawing software or the Utility, the latest setting is effective.

(3) Transmission speed between PC and GOT
Match the transmission speed setting between the PC and the GOT with the transmission speed set on the PC side.

58.3.2 Connecting cable

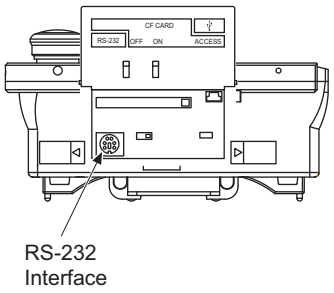
Point

Cautions when connecting the cable

Shut off all phases of the GOT power supply before connecting the cable.

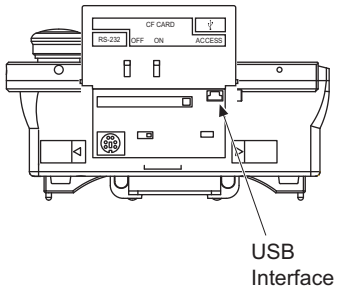
1 How to connect the cable

(1) The RS-232 cable connection



1 Connect the RS-232 cable to the RS-232 interface on the GOT.

(2) The USB cable connection



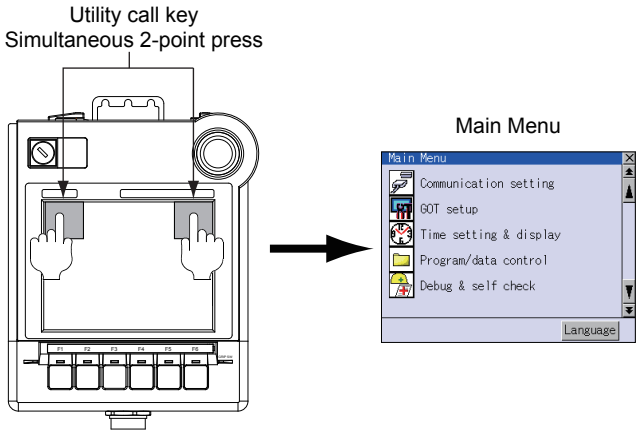
2 Connect the USB cable to the USB interface on the GOT.

58.3.3 Verifying GOT recognizes connected equipment

Verify the GOT recognizes connected equipments on [Communication setting] of the Utility.

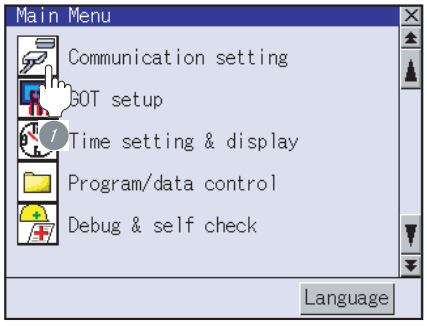
- Channel number of communication interface, communication drivers allocation status
- Communication unit installation status

Remark How to display Utility (at default)

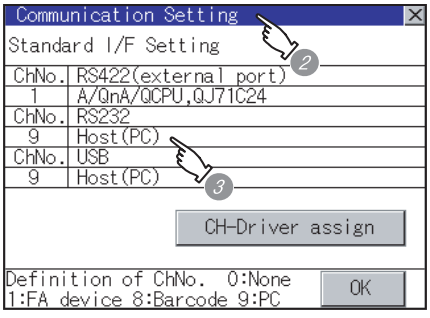


Point When setting the utility call key to 1-point

When setting "Pressing Time" to other than 0 second on the setting screen of the utility call key, press and hold the utility call key until the buzzer sounds.



1 After powering up the GOT, touch [Main Menu] → [Communication setting] from the Utility.



2 The [Communication setting] appears.

3 Verify that the following communication driver name is displayed in the box for the communication interface to be used.

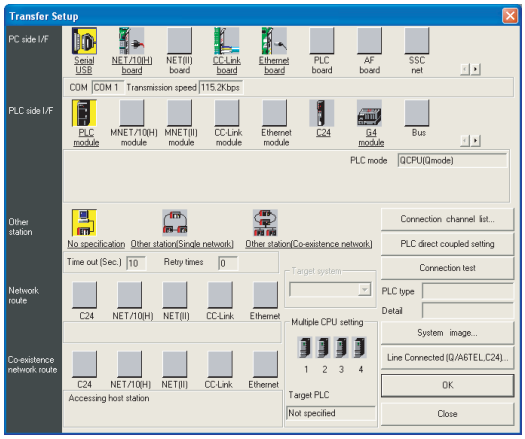
- Host (PC)

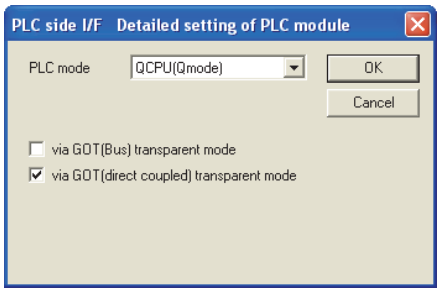
4 When the communication driver name is not displayed normally, carry out the procedure again from the step of installing the communication driver.

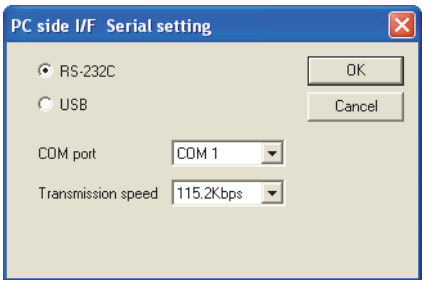
58.3.4 Accessing the PLC by the GX Developer, PX Developer, GX Configurator

The setting method for the FA transparent function of GX Developer is used as an example.
GX Configurator is an add-on software of GX Developer.
(Except for GX Configurator-QP)

1 Connecting the GOT and PLC in direct CPU connection(when connecting to QCPU (Q mode))







1. Click [Online] → [Read from PLC] in GX Developer.
2. Set the [PLC Series] to [QCPU (Q mode)].
3. The [Connection Setup] is displayed.
4. Set the [Connection Setup]:
   PC side I/F : Serial USB (COM)
   PLC side I/F : PLC module
   Other station : No specification
5. Double-click [PLC module] of the PLC side I/F to display [PLC side IF Detailed setting of PLC module].
6. For direct CPU connection,mark the [via GOT (direct coupled) transparent mode] checkbox.
   (This is operation required in the case of using GX Developer of which version is 8.22Y and above.)
7. Return to [Transfer Setup] and double-click [Serial] of the PC side I/F to display [PC side I/F Serial setting].
8. Check-mark either of the following in [PC side I/F Serial setting].

When connecting the GOT and PC with serial
When connecting the GOT to PC via modem

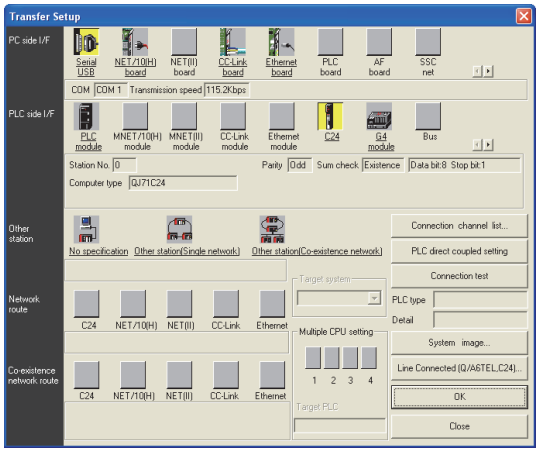
Mark the [RS-232C] checkbox.

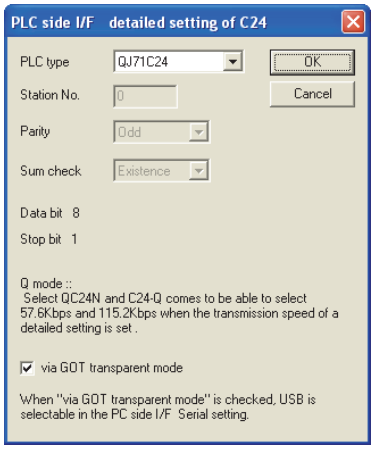
When connecting the GOT and PC with USB

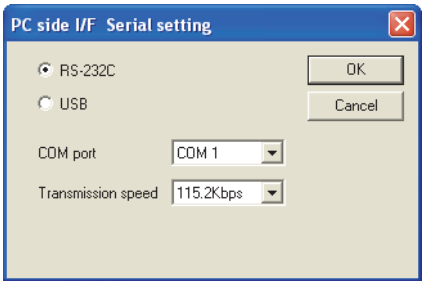
Mark the [USB] checkbox.

9. The screen returns to the [Connection Setup]. Click the connection test to check if GX Developer has been connected to the QCPU (Q mode)

2 Connecting the GOT and PLC in computer link connection(when connected to the QJ71C24(N))(GX Configurator is not supported.)







1 Click [Online] → [Read from PLC] in GX Developer.

2 Set the [PLC Series] to [QCPU].

3 The [Connection Setup] is displayed.

4 Set the [Connection Setup]:

PC side I/F : Serial USB
PLC side I/F : C24
Other station : No specification

5 Double-click [C24] of the PLC side I/F to display [PLC side IF Detailed setting of C24].

6 Check-mark the [via GOT (direct coupled) transparent mode] checkbox.

7 Return to [Transfer Setup] and double-click [Serial] of the PC side I/F to display [PC side I/F Serial setting].

8 Check-mark either of the following in [PC side I/F Serial setting].

When connecting the GOT and PC with serial
When connecting the GOT to PC via modem

Mark the [RS-232C] checkbox.

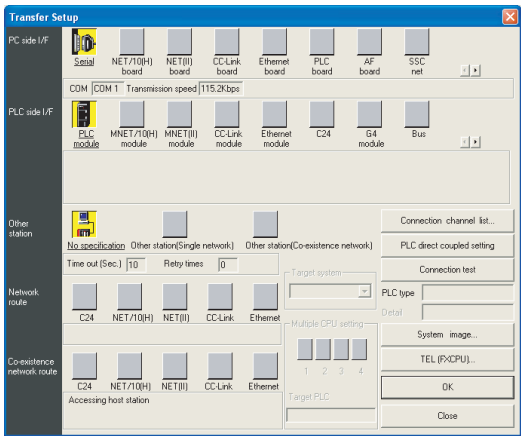
When connecting the GOT and PC with USB

Mark the [USB] checkbox.

9 The screen returns to the [Connection Setup]. Click the connection test to check if GX Developer has been connected to the QCPU (Q mode)

3 When the FXCPU is connected

The following shows an access example by GX Developer when the GOT and PC are connected by USB.

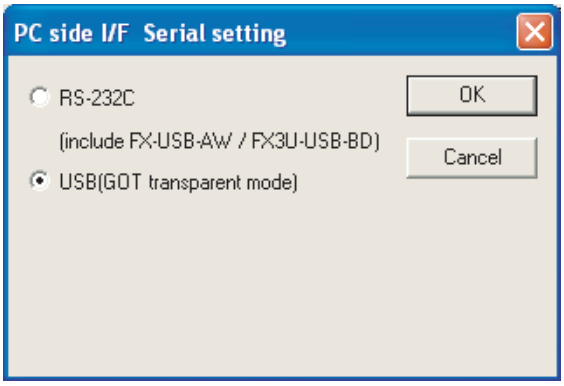


1 Click [Online] → [Read from PLC] in GX Developer.

2 Set the [PLC Series] to [FXCPU].

3 The [Connection Setup] is displayed.

4 Set the [Connection Setup]:
PC side I/F : Serial
PLC side I/F : PLC module
Other station : No specification



5 Double-click [Serial] of the PC side I/F to display [PC side I/F Serial setting].

6 Check-mark either of the following in [PC side I/F Serial setting].

When connecting the GOT and PC with serial
When connecting the GOT to PC via modem

Mark the [RS-232C] checkbox.

When connecting the GOT and PC with USB

Mark the [USB] checkbox.

7 The screen returns to the [Connection Setup]. Click the connection test to check if GX Developer has been connected to the FXCPU.

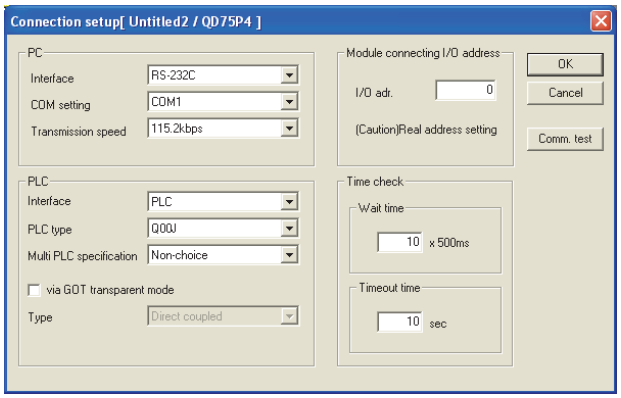
How to operate GX Developer

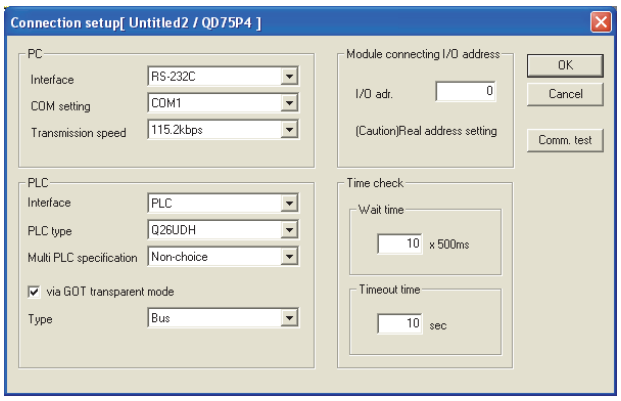
For details on GX Developer operations, refer to the following manual:

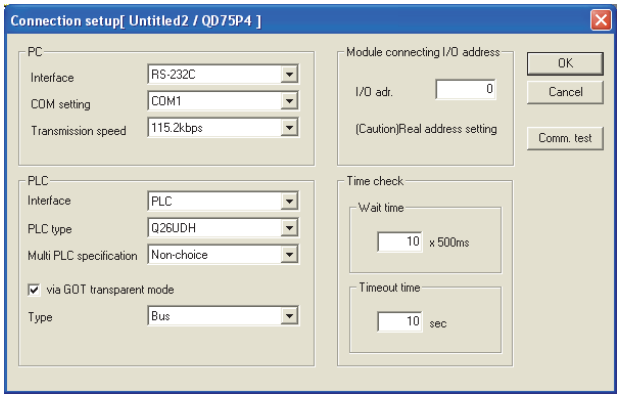
☞ GX Developer Version Operating Manual

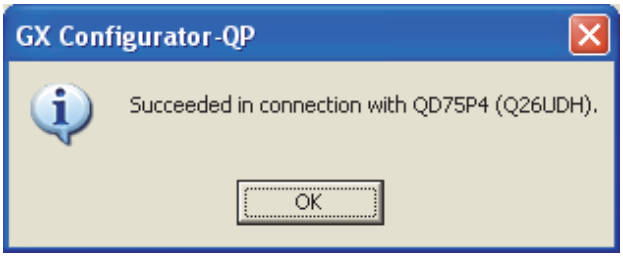
58.3.5 Accessing the PLC by the GX Configurator-QP

The following shows the procedure to set the FA transparent function of GX Configurator-QP.









1 Click [Connection setup] for [Online] on GX Configurator-QP.

2 The [Connection setup] is displayed..

3 Set the [PC side] in [Connection setup].

When connecting the GOT and PC with serial

Interface: RS-232C
COM setting: COM1 to COM10
Transmission speed: 9.6kbps to 115.2kbps

When connecting the GOT and PC with USB

Interface: USB

4 Set the [PLC side] in [Connection setup].
PLC type: Q series PLC type
Multi PLC specification: None/No.1 to 4
Direct CPU connection, mark the [via GOT transparent mode] checkbox.

Direct CPU connection

Interface: PLC
Type: Direct coupled

Computer link connection

Interface: C24

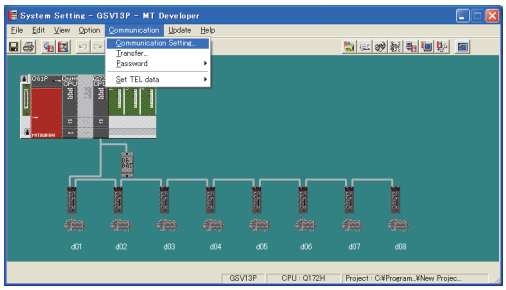
5 Check-mark the [via GOT transparent mode] checkbox.

6 Set the [Module connecting I/O address] in [Connection setup].
Specify the actual I/O address of the module.

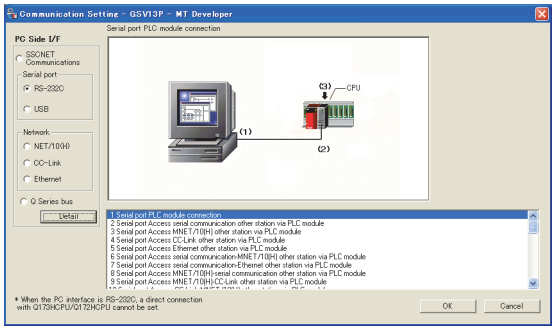
7 The screen returns to the [Connection Setup]. Click the connection test to check if GX Developer has been connected to the QD75*** (QnCPU)

58.3.6 Accessing by the MT Developer

This section explains the procedure to set the FA transparent function of MT Developer with an example of connecting to motion controller CPU (Q series).



1 Click [Communication] → [Communication Setting] in MT Developer.



2 Check-mark either of the following in [Serial port].

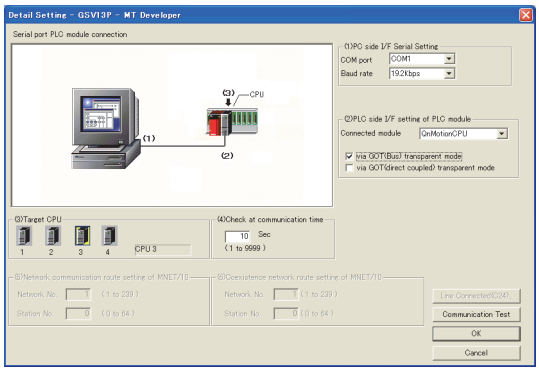
When connecting the GOT and PC with serial

Mark the [RS-232C] checkbox.

When connecting the GOT and PC with USB

Mark the [USB] checkbox.

3 Click [Detail].



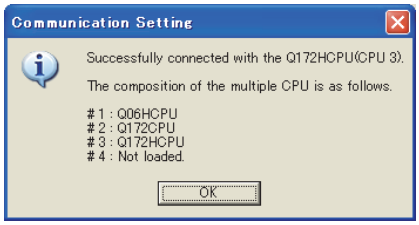
4 Check-mark either of the following in [PLC side I/F setting of PLC module].

Direct CPU connection

[via GOT(direct coupled) transparent mode]

5 As necessary, select a CPU that is targeted by using the transparent function in [Target CPU].

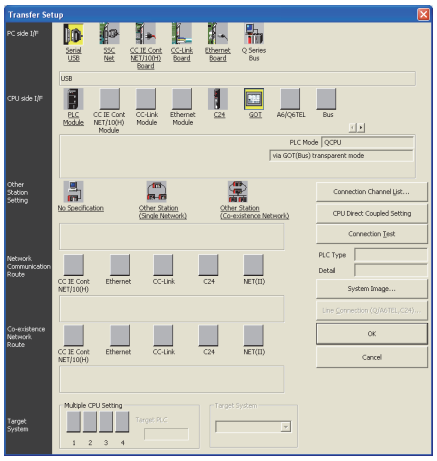
6 Click Communication Test.



7 Confirm that the PC is connected to the motion controller CPU (Q series).

58.3.7 Accessing the PLC by the MT Works2

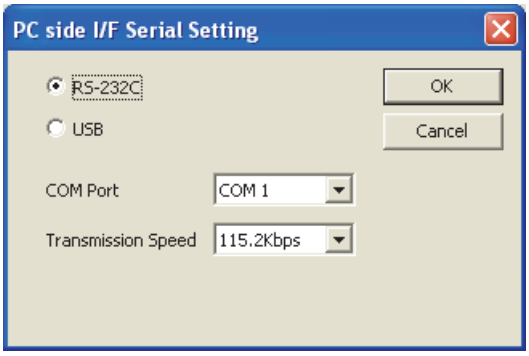
This section explains the procedure to set the FA transparent function of MT Works2 with an example of connecting to motion controller CPU (Q series).



1 Click [Transfer setup] → [Online].

2 The [Transfer setup] is displayed.

3 Set the [Transfer setup]:
PC side I/F : Serial USB
CPU side I/F : GOT
Other station : No specification



4 Double-click [Serial] of the PC side I/F to display [PC side I/F Serial setting].

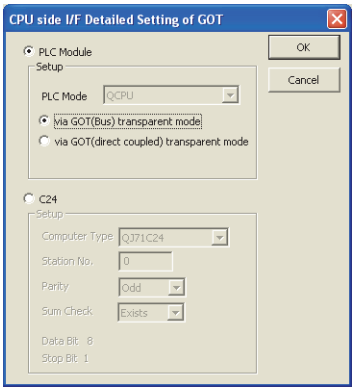
5 Check-mark either of the following in [PC side I/F Serial setting].

When connecting the GOT and PC with serial

Mark the [RS-232C] checkbox.

When connecting the GOT and PC with USB

Mark the [USB] checkbox.

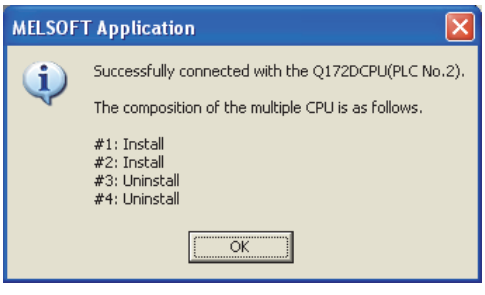


6 Double-click [GOT] of the CPU side I/F to display [CPU side I/F Detailed Setting of GOT].

7 Check-mark either of the following in [CPU side I/F Detailed Setting of GOT].

Direct CPU connection

Mark the [via GOT (direct coupled) transparent mode]checkbox.



8 The screen returns to [Transfer setup].Click the Communication Test to check if MT Works2 has been connected to the motion controller (Q mode).

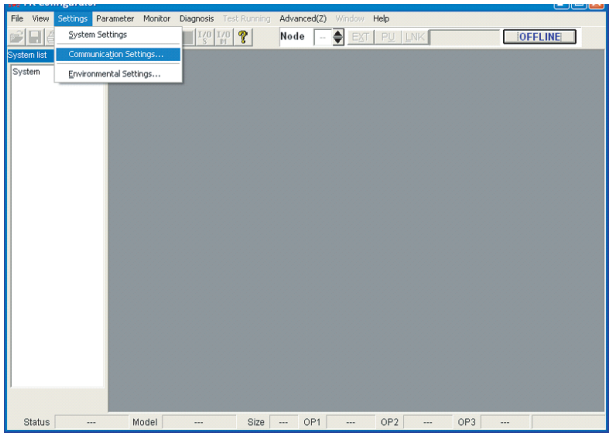
58.3.8 Accessing the servo amplifier by the MR Configurator, MR Configurator2

Set the FA transparent function of the MR Configurator in [Communication Setting] of the MT Developer.
Set the FA transparent function of the MR Configurator2 in [Communication Setting] of the MT Works2.

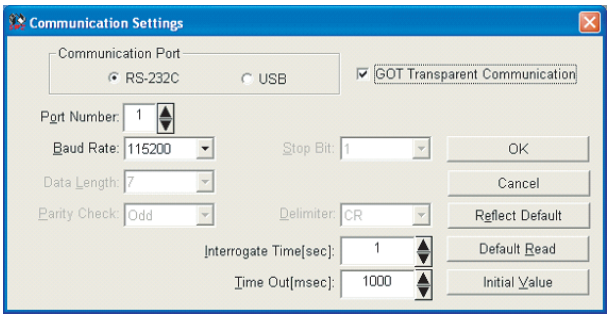
☞ Section 58.3.6 Accessing by the MT Developer
☞ Section 58.3.7 Accessing the PLC by the MT Works2

58.3.9 Accessing the inverter by the FR Configurator

This section explains the setting method of the FA transparent function of FR Configurator with an example of connecting to FREQROL A700/F700 series.



1 Click [Settings] → [Communication Settings...] in FR Configurator.



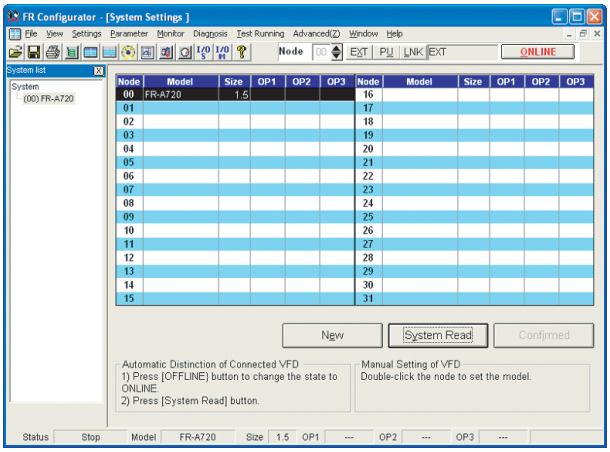
2 Check-mark either of the following in [Communication port].

When connecting the GOT and PC with serial
Mark the [RS-232C] checkbox.

When connecting the GOT and PC with USB
Mark the [USB] checkbox.

3 Click the [GOT Transparent Communication].

4 Click the [OK].

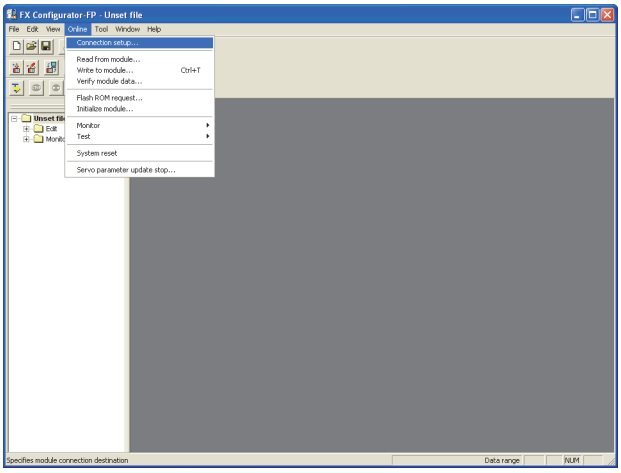


5 Click [OFFLINE] to make it [ONLINE].

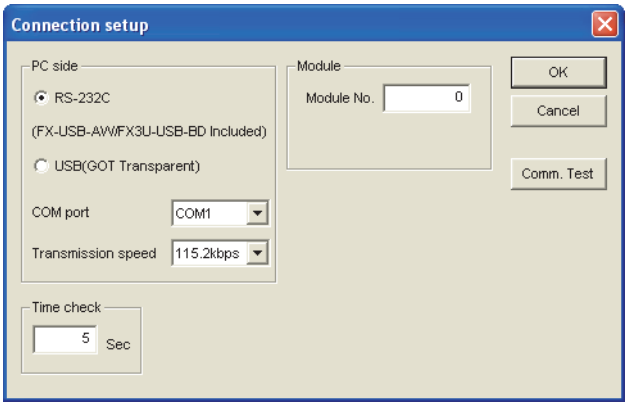
6 Click the [System Read], then check if GOT has been connected to FREQROL A700/F700 series normally.

58.3.10 Accessing the inverter by the FX Configurator-FP

This section explains the setting method of the FA transparent function of FX Configurator-FP with an example of connecting to FXCPU.



1 Click [Online] → [Transfer Setup] in FX Configurator-FP.



2 Check-mark either of the following in [PC side].

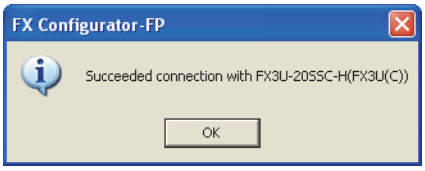
When connecting the GOT and PC with serial

Mark the [RS-232 (FX-USB-AW/FX3U-USB-BD Included)] checkbox.

When connecting the GOT and PC with USB

Mark the [USB(GOT Transparent)] checkbox.

3 Click [Communication Test].

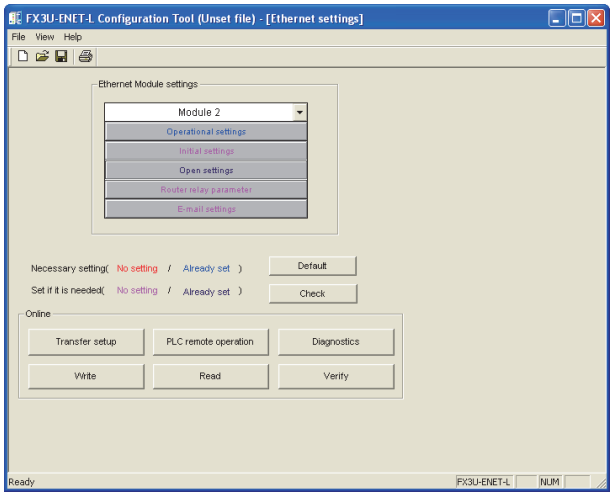


4 The communication test is executed.

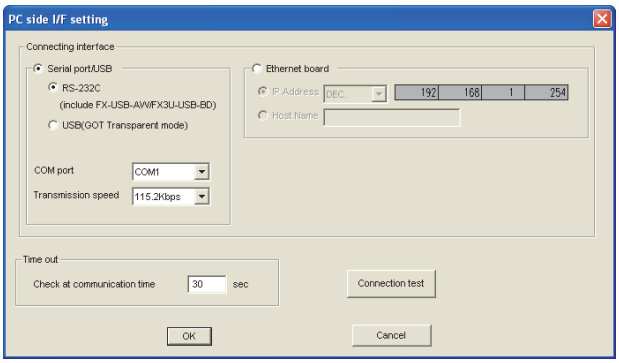
Check that the PC is connected to the FXCPU normally.

58.3.11 Accessing the inverter by the FX3U-ENET-L Configuration tool

This section explains the setting method of the FA transparent function of FX3U-ENET-L Configuration tool with an example of connecting to FXCPU.



1 Click [Transfer setup] on the FX3U-ENET-L Configuration tool.



2 Check-mark either of the following in [Serial port/USB] of [Connecting interface].

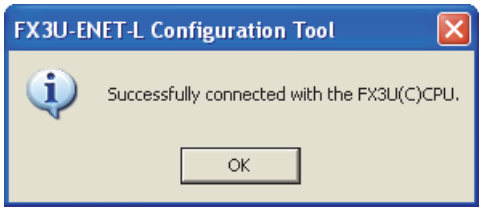
When connecting the GOT and PC with serial

Mark the [RS-232C (include FX-USB-AW/FX3U-USB-BD)]checkbox.

When connecting the GOT and PC with USB

Mark the [USB (GOT Transparent mode)] checkbox.

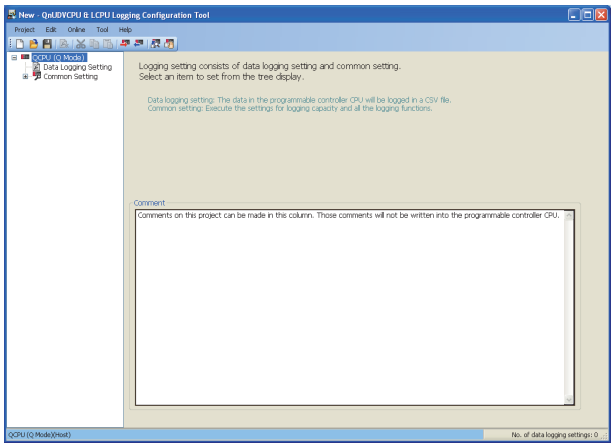
3 Click [Communication Test].



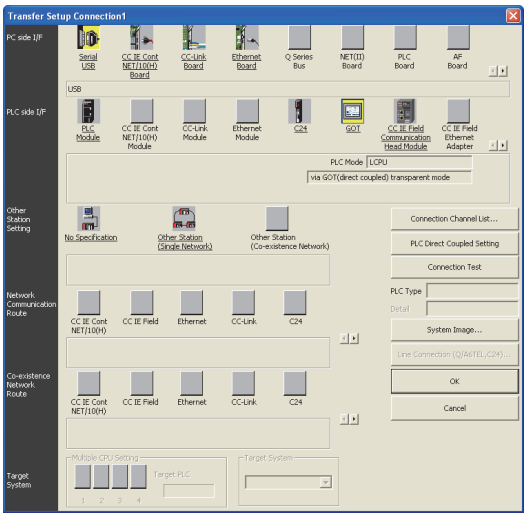
4 After the communication test is completed, check that the GOT is correctly connected to the FXCPU.

58.3.12 Accessing the inverter by the QnUDVCPU & LCPU Logging Configuration Tool

The following shows the procedure to set the FA transparent function of QnUDVCPU & LCPU Logging Configuration Tool.



1 Click [Online] → [Transfer Setup...].



2 The [Transfer Setup] is displayed.

3 Set the [Transfer Setup].
PC side I/F : Serial USB
CPU side I/F : GOT
Other station : No specification

4 Set [PC side I/F Serial Setting] and [PLC side I/F Detailed Setting of GOT] in [Transfer Setup].
Refer to the following for details.

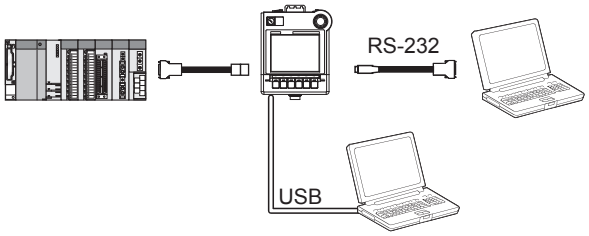
☞ Section 58.3.6 Accessing by the MT Developer

58.4 Precautions

58.4.1 Precautions common to each software

1 GOT interface required to use the FA transparent function

Connect the PC, to which GX Developer or any other relevant software has been installed, to the RS-232 interface or USB interface of the GOT.
When performing the FA transparent function, use either RS-232 interface or USB interface of the GOT. Using both of them to perform the FA transparent function concurrently is not allowed.



2 Conditions for suspending the FA transparent function

The FA transparent function is also suspended when any of the following operations, which stop the GOT monitor, is performed.
Note that the FA transparent function will not be stopped while using the optional function such as the Utility display or ladder monitor function.

(1) When project data is downloaded/uploaded by drawing software, or when the OS is installed.*1

(2) When the GOT is set up.*1

(3) When no communication request (online monitor, etc.) has been issued from GX Developer for 45 minutes.

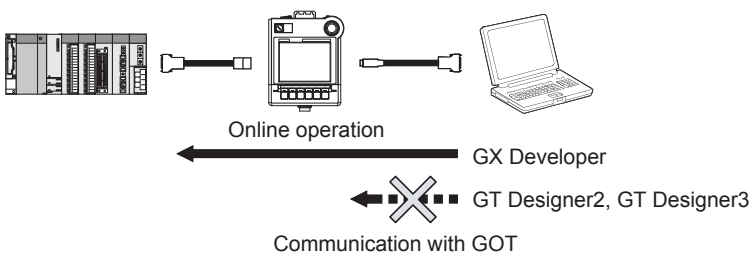
*1 A timeout error occurs in GX Developer.

3 When monitoring the PLC CPU from a PC

When monitoring the PLC CPU from a PC, the GOT and PC refresh the display slower.

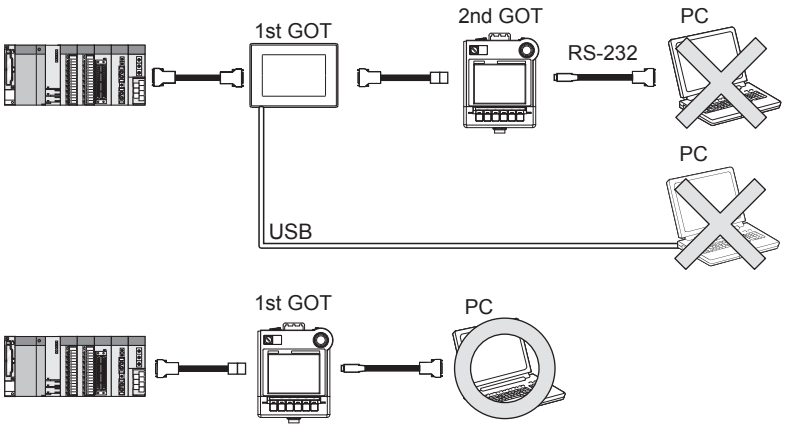
4 Software available for the FA transparent function

When multiple kinds of software are activated on one PC, only one of them is available for communications using the FA transparent function.
Do not concurrently perform any communications using the FA transparent function.
(Offline operation with each software is available.)
Also, do not perform communications with the GOT (e.g. downloading project data) from drawing software during execution of communications using the FA transparent function.



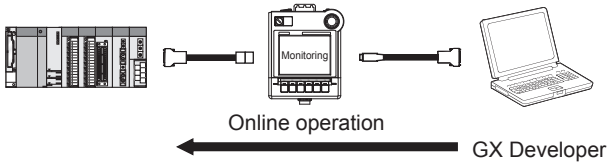
5 When using together with the Multiple-GT11 connection function

When multiple GOTs are connected, the FA transparent function is not available even if the RS-232 interface or USB interface is used for the connection.



6 When PLC power disconnection occurs with the FA transparent function being used

While the FA transparent function is being used, if the communication between the PLC and the GOT is stopped due to PLC power disconnection or a disconnection of the communication cable between the PLC and the GOT, the GOT waits for timeout against the communication request from the peripheral devices (GX Developer, etc.), and recovery of monitoring between the PLC and the GOT is delayed.



7 When connecting the GOT and personal computer with modem connection

When using the FA transparent function with a modem, the communication settings of compatible software, modem connection tool, modem and GOT must be set correctly to communicate with the GOT. If not correctly set, the communication cannot be performed.

58.4.2 When using GX Developer

1 When connecting to QCPU (A mode)

When connecting to QCPU (A mode), set the PLC type to "A4UCPU" or "QCPU (A mode)" on GX Developer.

2 Connecting the GOT and GX Developer with RS-232

The [Transmission speed] setting in [PC side I/F Serial setting] of [Transfer Setup] must be within the range supported by the connected CPU.

CPU connected	Transmission speed
QCPU, FXCPU	9600bps, 19200bps, 38400bps, 57600bps, 115200bps
QnACPU	9600bps, 19200bps, 38400bps
ACPU	9600bps, 19200bps
Motion controller CPU (A series)	9600bps

3 When [monitor conditions] have been set on GX Developer

(1) Monitoring performance of the GOT is temporarily suspended.

(2) The GOT cannot respond to the touch switch operation and numerical/ascii inputs.

(3) Writing to PLC results in a system alarm occurrence and displays the message, "315 Device writing error. Correct device.".

(4) While setting the monitor conditions, do not perform any operation which makes the GOT restart (e.g. downloading project data, changing utility data).
Doing so may display a system alarm, "402 Communication timeout. Confirm communication pathway or modules." when the GOT restarts.
When the monitor conditions setting for the PLC CPU has not been cancelled, reconnect GX Developer to cancel the setting. (An error may be output when the monitor conditions setting is cancelled.)

(5) When the time check of GX Developer is set to 30 seconds or more in the monitor condition settings, the message "402 Communication timeout. Confirm communication pathway or modules." may appear.
Set the time check time of GX Developer to 30 seconds or less.

4 When exiting GX Developer

The GOT continues monitoring at the same speed as when the FA transparent function is working, in 45 seconds after GX Developer has been exited.

5 When performing [Read to PLC], [Write to PLC] and other file operations on GX Developer

If any of the following GOT functions is executed during the file operation such as [Read to PLC], [Write to PLC], this may cause the GOT or GX Developer to develop an error.
In this case, take the following corrective action :

GOT functions	Error messages on GOT	Corrective action on GOT side	Error messages on GX Developer error message	Corrective action on GX Developer
File reading in the ladder monitor function for MELSEC-Q	The file is not found.	With no file operation being executed on GX Developer, re-execute the file reading.	File access failure. Please retry.	With no file reading being executed in the ladder monitor function for MELSEC-Q, re-execute the file operation.
Read/write of values of the file register specified for the recipe function	358 PLC file access failure. Confirm PLC drive.*1	Stop the file operation on GX Developer and turn ON the trigger device for the recipe function again.	File access failure. Please retry.	Execute the file access operation again with the recipe in-process signal in GOT system information ON.
			PLC file system error. Unable to communicate with PLC.	
Reading TC monitor set value in the system monitor function	No message is displayed. (The TC set value space is blank.)	With no file operation being executed on GX Developer, re-execute the TC monitor.	File access failure. Please retry.	With no TC set value being read, re-execute the file operation.

*1 The numerical indicates the system alarm No.

6 When PLC write is failed while using the FA transparent function

The execution of PLC write using the FA transparent function may be failed due to some reason such as cable disconnection.
When this occurs, re-execute the PLC write from the same PC, or reset the PLC CPU.

7 When connecting the GOT and personal computer with modem connection

When using the FA transparent function to FX PLC with a modem, operate with the following procedure.

1. Set the communication settings of the GOT according to GX Developer.
   Data length: 7 Parity: Even Stop bit: 1
2. Initialize the modem on the GOT side.
3. Connect between modems with the modem connection tool.
4. Send data with GX Developer.

58.4.3 When using MT Developer

1 When exiting MT Developer

For 45 seconds after GX Developer has been exited, the GOT continues monitoring at the same speed as when the FA transparent function is working.

2 When PLC write is failed while using the FA transparent function

The execution of PLC write using the FA transparent function may be failed due to some reasons such as cable disconnection.
When this occurs, re-execute the PLC write from the same PC, or reset the motion controller CPU.

3 When a cable disconnection has occurred

When the cable between the GOT and the motion CPU is disconnected, it takes time until a timeout error occurs in MT Developer.

58.4.4 When using MR Configurator

1 Unavailable functions and restrictions

For the use via the motion controller, there are unavailable functions and restrictions.
For details on the restrictions, refer to the help screen of MR Configurator.

2 Monitor speed of GOT

Since the FA transparent function is used via the motion CPU, the monitor speed of GOT is slow.

58.4.5 When using FR Configurator

1 GOT monitoring when using FA transparent function

When FA transparent function is used, GOT suspends monitoring on channels supporting FA transparent function.

Point

Cancelling the suspended GOT monitoring immediately

To cancel the suspended (45 seconds) GOT monitoring immediately after FA transparent is executed, input "1" to device GS457. Then GOT resumes monitoring.
If FA transparent is resumed even if "1" is already input to device GS457, an error will occur on FR Configurator.
For the details of the device, refer to the following manual.

☞ GT Designer2 Version□ Screen Design Manual
GT Designer3 Version1 Screen Design Manual (Fundamentals)

2 When using the oscilloscope function specified sampling

Since the monitoring of the inverter data may be not performed at the specified sampling intervals depending on the settings of oscilloscope function, adjust the communication setting, a sampling interval, etc.

3 About PU mode operation command source selection

On the setting of PU mode operation command source selection (Pr:551) of the inverter, specify the terminal (1:RS-485 terminals, 2:PU connected) connected to GOT.

MEMO

WARRANTY

Please check the following product warranty details before using this product.

■1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.
However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion.
Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing on-site that involves replacement of the failed module.

(1) Gratis Warranty Term

The gratis warranty term of the product shall be for thirty-six (36) months after the date of purchase or delivery to a designated place.
Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be forty-two (42) months.
The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

(2) Gratis Warranty Range

(a) The customer shall be responsible for the primary failure diagnosis unless otherwise specified.
If requested by the customer, Mitsubishi Electric Corporation or its representative firm may carry out the primary failure diagnosis at the customer's expense.
The primary failure diagnosis will, however, be free of charge should the cause of failure be attributable to Mitsubishi Electric Corporation.

(b) The range shall be limited to normal use within the usage state, usage methods, and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.

(c) Even within the gratis warranty term, repairs shall be charged in the following cases.
- Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
- Failure caused by unapproved modifications, etc., to the product by the user.
- When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
- Failure that could have been avoided if consumable parts designated in the instruction manual had been correctly serviced or replaced.
- Replacing consumable parts such as a battery, backlight, and fuse.
- Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
- Failure caused by reasons that could not be predicted by scientific technology standards at the time of shipment from Mitsubishi.
- Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

■2. Onerous repair term after discontinuation of production

(1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued.
Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.

(2) Mitsubishi shall not accept a request for product supply (including spare parts) after production is discontinued.

■3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center.
Note that the repair conditions at each FA Center may differ.

■4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:

(1) Damages caused by any cause found not to be the responsibility of Mitsubishi.

(2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.

(3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.

(4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

■5. Changes in product specifications

The specifications given in the catalogs, manuals, or technical documents are subject to change without prior notice.

■6. Product application

(1) In using the Mitsubishi graphic operation terminal, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the graphic operation terminal device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.

(2) The Mitsubishi graphic operation terminal has been designed and manufactured for applications in general industries, etc.
Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service shall be excluded from the graphic operation terminal applications.
In addition, applications in which human life or property could be greatly affected, such as in aircraft, medical, railway applications, incineration and fuel devices, manned transportation equipment, recreation and amusement devices, safety devices, shall also be excluded from the graphic operation terminal.
Even for the above applications, however, Mitsubishi Electric Corporation may consider the possibility of an application, provided that the customer notifies Mitsubishi Electric Corporation of the intention, the application is clearly defined and any special quality is not required, after the user consults the local Mitsubishi representative.

GRAPHIC OPERATION TERMINAL

GOT1000

GT11 Handy GOT User's Manual 2/2

(Connection)

MODEL	GT11HS-U-E
MODEL CODE	09R817
JY997D20102AF	

MITSUBISHI ELECTRIC CORPORATION

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Effective October 2022
Specifications are subject to change without notice.