Electronic Relays, easyRelay, easyHMI, easyControl, PLCs, HMI Devices

The electronic devices of Moeller simplify the implementation of automation tasks. The products range from easy to configure control relays to IEC 61131-compliant compact or modular PLCs and matching HMI systems.

Electronic relays

- Time accurate control
- Measuring and monitoring
- Reliable protection for man and machine

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easyRelay

- Controlling, operating, regulating, and display
- Parameter setting via software or directly on the device
- Communication via Ethernet and standard bus systems

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easyControl

- Compact PLC
- Programming with easySoft-CoDeSys to IEC 61131
- CANopen/easy-NET, Ethernet on board

Page 4/40

XC 100/200

- Modular PLC
- Programming with easySoft-CoDeSys to IEC 61131
- CANopen, Ethernet, Web-Server

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easyHMI

- Controlling, operating, regulating and display
- Displaying texts, values and graphics
- Value entry

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Power unit SN3

- Wide range input AC/DC
- Power reserves up to 50%
- Overload and short-circuit protected

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MI4 HMI devices

- Text and touch operator panels
- Simple screen designing
- Wide range of communication options

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http://trainingscenter.moeller.net
Online Training Center – Everything about the easy product family just a click away:

- Comprehensive information on easy and easyHMI
- Many application examples
- Ready-to-use programs for download

Visit us also at: http://www.easy-forum.net and http://www.easy-forum.net/
The first official forum for the easy control relay.

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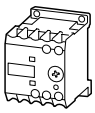
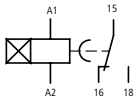
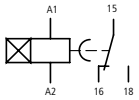
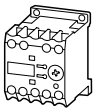
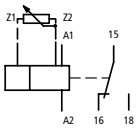
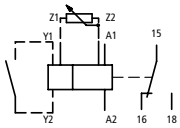
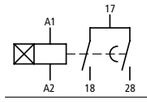
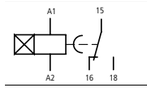
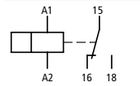
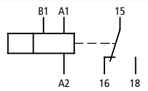
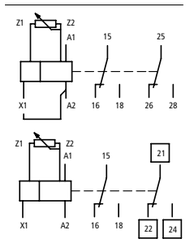
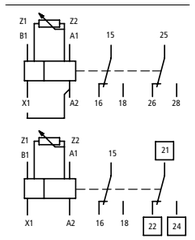
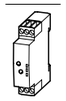
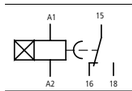
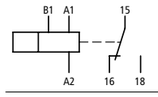
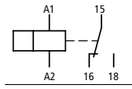
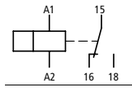
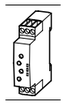
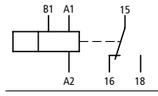
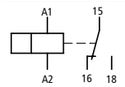
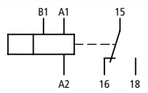
Rated operational current AC-11 220 V 230 V 240 V I_e A	Rated operational current AC-11 380 V 400 V 440 V I_e A	Conventional thermal current I_{th} A	Time range	Part no. Article no.	Price see price list	Std. pack	Function Terminal marking according to EN 50042
Timing relays, On-delayed							
 3	3	6	1.5 – 30 s	**DILET11-30-A** 048878		1 off	fixed 11, On-delayed 
3	3	6	1.5 – 30 s	**DILET11-30-W** 048904			
3	3	6	0.05 – 1 s 0.15 – 3 s 0.5 – 10 s 3 – 60 s 0.15 – 3 min 0.5 – 10 min 3 – 60 min 0.15 – 3 h 0.5 – 10 h 3 – 60 h	**DILET11-M-A** 048886			fixed 11, On-delayed 
3	3	6		**DILET11-M-W** 048891			
Multi-function relay with connection for remote potentiometer							
 3	3	6	0.05 – 1s 0.15 – 3 s 0.5 – 10 s 3 – 60 s 0,15 – 3 min 0.5 – 10 min 3 – 60 min 0.15 – 3 h 0.5 – 10 h 3 – 60 h	**DILET70-A** 048893		1 off	Adjustable 11, On-delayed 21, Fleeting contact on energization 42, Flashing 81, Pulse generating ON-OFF 
3	3	6		**DILET70-W** 048899		1 off	Adjustable 12, Off-delayed 16, On- and Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF 

Notes

Part no. suffix	Actuating voltage V DC	V AC
-A	24 – 240	24 – 240, 50/60 Hz
-W	–	400, 50/60 Hz

Permissible cable length	Connection to
Cable unscreened, with cable cross-section 0.5 – 1.5 mm	Y1/Y2, Z1/Z2
Two-core cable	250 m
Two-core cable in the same cable duct with mains cable, 50/60 Hz	50 m

Accessories	**Page**
Time functions	→ Engineering
Sealable shroud	→ 5/6
Potentiometer	→ 2/19
Screw adapter	→ 4/10
Blade terminals	→ 2/39

		Rated operational current AC-15		Conventional thermal current	Time range	24 – 240 V AC, 50/60 Hz, 24 – 240 V DC		400 V AC, 50/60 Hz		Std. pack	Function	Terminal marking according to EN 50042	Function	Terminal marking according to EN 50042
		230 V I_e A	400 V I_e A	I_{th} A		**Part no.** Article no.	**Price** see price list	**Part no.** Article no.	**Price** see price list					
ETR4 electronic timing relays, 22.5 mm wide														
	Star-delta timing relays	3	3	6	3 – 60 s	**ETR4-51-A** 031884		**ETR4-51-W** 031885		1 off	Fixed 51, star-delta			
	On-delayed	3	3	6	0.05 – 1 s 0.15 – 3 s 0.5 – 10 s 1.5 – 30 s 5 – 100 s 15 – 300 s 1.5 – 30 min 15 – 300 min 1.5 – 30 h 5 – 100 h	**ETR4-11-A** 031882		**ETR4-11-W** 031883			Fixed 11, On-delayed			
	Multi-function relay	3	3	6		**ETR4-69-A** 031891		**ETR4-69-W** 031887			Adjustable 11, on-delayed 21, Fleeting contact on energization 42, Flashing, pulse generating 81, Pulse generating ON-OFF		Adjustable 12, Off-delayed 16, On- and Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF	
	Multi-function relay with two changeover contacts and connection for potentiometer. Can be converted to two timed contacts or one non-delayed contact and one timed contact.	3	3	6		**ETR4-70-A** 031888					A2/X1 linked 11, on-delayed 21, Fleeting contact on energization 42, Flashing, pulse generating 81, Pulse generating ON-OFF A2/X1 not linked 11, on-delayed 21, Fleeting contact on energization 42, Flashing, pulse generating 81, Pulse generating ON-OFF		A2/X1 linked 12, Off-delayed 16, On- and Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF A2/X1 not linked 12, Off-delayed 16, On- and Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF	
ETR2 electronic timing relays, 17.5 mm wide														
	On-delay	3		6	0.05 – 1 s 1.5 – 30 s 5 – 100 s 1.5 – 30 min 5 – 100 min 0.5 – 10 h 5 – 100 h	**ETR2-11** 262684				1 off	Fixed 11, on-delayed			
	Off-delay	3		6		**ETR2-12** 262686					Fixed 12, Off-delayed			
	Fleeting contact on energization	3		6		**ETR2-21** 262687					Fixed 21, Fleeting contact on energization			
	Flashing, pulse generating	3		6		**ETR2-42** 262688					fixed 42, Flashing, pulse generating			
	flashing, 2 times (ON/OFF-time variable)	3		6		**ETR2-44** 262730					fixed 44, Flashing, 2 speeds can be set to either pulse or pause starting			
	Multi-function relay	3		6		**ETR2-69** 262689					Adjustable 11, On-delayed 12, Off-delayed 21, Fleeting contact on energization 42, Flashing, pulse generating		Adjustable 22, Fleeting contact on de-energization 82, Pulse shaping 82, Pulse shaping	

Notes

Permissible cable length	Connection to
Cable unscreened, with cable cross-section 0.5 – 1.5 mm²	B1, Z1/Z2
Two-core cable	250 m
Two-core cable in the same cable duct with mains cable, 50/60 Hz	50 m

Accessories **Page**

Time functions	→ Engineering
Sealable shroud	→ 5/6
Potentiometer	→ 2/19
Screw adapter	→ 4/10

Time functions → Engineering

Applications

Electronic safety relays are used for monitoring safety-related control systems. The requirements for the electrical equipment of machines are specified in IEC/EN 60204. The machine operator must assess the risk on his machine according to EN 954-1 and then manufacture the controls accordingly for the corresponding safety category 1, 2, 3 or 4.

Construction

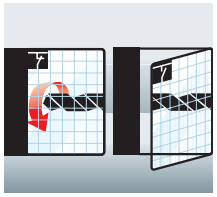
The electronic safety relay consists of a supply unit, the electronics and 2 redundant relays with position operating contacts for the enabling and message circuits.

Product range overview

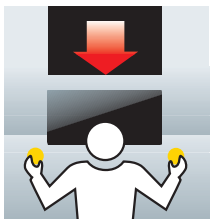
The range includes relays for:

Emergency-Stop circuits

Protective guard monitoring



Monitoring of two-hand controls



Contact expansion modules with and without delay are also available.

Category according to EN 954-1

The electronic safety relays are approved by employer´s liability insurance association or Technical Monitoring Service (TUV) and their internal assembly corresponds to the requirements for category 4 according to EN 954-1. Combined with external wiring, which is the responsibility of the machine operator, the safety relay can be used for categories 2 to 4.
The electronic safety relays are single-fault proof, i. e. one fault in the safety circuit (e.g. a short-circuit in the emergency-stop circuit)does not cause hazardous conditions.
EN 954-1 excludes the possibility of two independent faults occurring at the same time.

Stop category

IEC/EN 60204-1 defines two relevant stop categories for stopping in the event of an emergency:

- Stop category 0: shut-down by means of immediate removal of the power supply to the machine actuators.
- Stop category 1: controlled stopping with power available to the machine actuators to achieve the stop. Power is not removed until the stop is achieved.

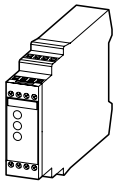
Basic devices and expansion modules are available for both categories.

Function

In fault-free operation, following the starting command, the safety circuits are monitored by the electronics, and the enabling paths are activated via the relays. Following the switch OFF command, and also in the event of a fault (earth fault, faulty insulation, wire breakage, etc.), the enabling paths are blocked immediately (Stop category 0) or with a time delay (Stop category 1) and the motor is disconnected from the power supply. Since a short circuit in a redundant safety circuit does not cause a hazardous condition, the fault is not detected until the system is reset, when switching on is prevented.

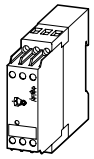
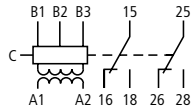
Single/dual channel construction

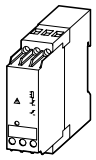
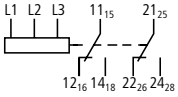
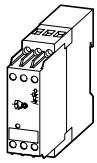
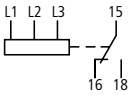
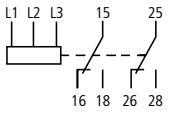
Safety relays for stopping in the event of an emergency and for monitoring of protective guards are available for single-channel and dual-channel applications. The single-channel construction enables earth fault monitoring to be implemented for the safety circuit. The dual-channel application provides a redundant Emergency-Stop or protective guard monitoring circuit. This allows monitoring for short circuits and cable insulation faults to be implemented as well. The device can also be used with or without reset monitoring. Here, the device is not started and enabling paths switched until the falling edge of the reset pushbutton has been detected. An application for the device without reset monitoring is for example, for monitoring of protective doors for an automatic restart.

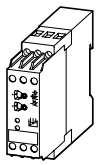
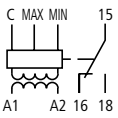
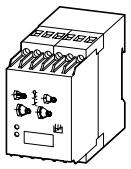
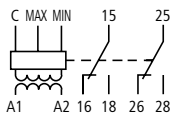
	Actuating voltage		Approval	Category to EN 954-1	Number of enabling paths to IEC/EN 60204 Stop category		Signalling contacts	**Part no.** Article no.	**Price** see price list
	U_c				0	1			
Safety relays for Emergency-Stop and protective door monitoring									
	24 V DC, 24 V AC, 50/60 Hz	Dual-channel	BG-PRÜFZERT ET 97030 GS	4	3	–	–	**ESR4-NO-30-24VAC-DC** 279368	
	115 V AC, 50/60 Hz	Dual-channel	BG-PRÜFZERT ET 97030 GS	4	3	–	–	**ESR4-NO-30-115VAC** 279410	
	230 V AC, 50/60 Hz	Dual-channel	BG-PRÜFZERT ET 97030 GS	4	3	–	–	**ESR4-NO-30-230VAC** 279369	
	24 V DC, 24 V AC, 50/60 Hz	Single-channel	BG-PRÜFZERT ET 97284 GS	2	3	–	1	**ESR4-NO-31** 214612	
	115 V AC, 50/60 Hz	Single-channel	BG-PRÜFZERT ET 97284 GS	2	3	–	1	**ESR4-NO-31-115VAC** 279367	
	230 V AC, 50/60 Hz	Single-channel	BG-PRÜFZERT ET 97284 GS	2	3	–	1	**ESR4-NO-31-230VAC** 279365	
	24 V DC, 24 V AC, 50/60 Hz	Dual-channel	BG-PRÜFZERT ET 98002 GS	4	2	–	1	**ESR4-NO-21** 214613	
	24V DC	Dual-channel, Off-delayed, 0.15 – 3 s	BG-PRÜFZERT ET 00004 GS	4 (non-delayed) 3 (delayed)	2	1	–	**ESR4-NV3-30** 214616	
	24V DC	Dual-channel, Off-delayed, 1.5 – 30 s	BG-PRÜFZERT ET 00004 GS	4 (non-delayed) 3 (delayed)	2	1	–	**ESR4-NV30-30**[1] 214617	
Can be used up to: prEN ISO 13849-1 PL e (PL = Performancy level) EN 61508 SIL 3 (SIL = Safety integrity level) EN 62061 SILCL 3 (SILCL = Safety integrity level claim limit)	24 V DC, 24 V AC, 50/60 Hz	Dual-channel	TÜV Functional Safety FS Type Approved	4	3	–	1	**ESR4-NOE-31-24VAC-DC**[2] 106843	
	230 V AC, 50/60 Hz	Dual-channel	TÜV Functional Safety FS Type Approved	4	3	–	1	**ESR4-NOE-31-230VAC**[2] 106844	
	24 V DC, 24 V AC, 50/60 Hz	Dual-channel	TÜV Functional Safety FS Type Approved	4	4	–	–	**ESR4-NOE-40-24VAC-DC**[2] 106845	
	230 V AC, 50/60 Hz	Dual-channel	TÜV Functional Safety FS Type Approved	4	4	–	–	**ESR4-NOE-40-230VAC**[2] 106846	
Safety relay									
Two-hand relay									
	24 V DC, 24 V AC 50/60 Hz	Dual-channel	BG-PRÜFZERT ET 98044 GS	4	2	–	1	**ESR4-NZ-21**[3] 214620	
Contact expansion modules									
	24 V DC, 24 V AC 50/60 Hz	Non-delayed	BG-PRÜFZERT ET 98109 GS	4	4	–	2	**ESR4-NE-42**[4] 214614	
	24V DC	Off-delayed, t_A = 3 s	BG-PRÜFZERT ET 98109 GS	4	–	4	2	**ESR4-VE3-42**[4] 214618	

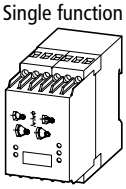
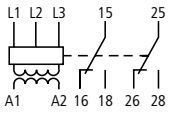
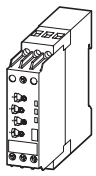
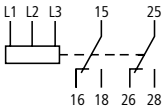
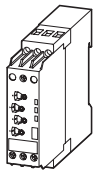
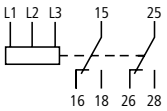
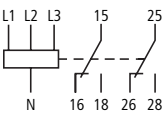
Notes

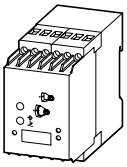
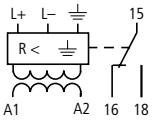
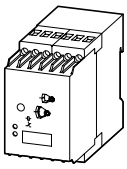
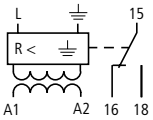
[1] Suitable for LS-S-…MT-ZBZ safety position switch with interlocking option.
[2] Approved for lifts according to EN 81-1 and furnaces according to EN 50156-1 (Safety-level step 3).
[3] Safety category to EN 954-1: The base unit determines the maximum safety category.
[4] Stop category to EN 60204: The base unit determines the maximum safety category.

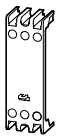
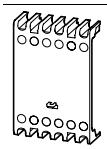
	Description	Current measuring range $I\sim/I=$ A	Contact sequence	Supply voltage	**Part no.** Article no.	**Price** see price list	Std. pack
EMR4-I...current monitoring relays, single-phase							
	• Switching hysteresis adjustable from 3 – 30 % • Response delay 0.1 – 30 s • Monitoring of one upper or lower limit • Extension of the measurement range possible with current transformers	3 – 30 mA 10 – 100 mA 0.1 – 1 A		24 – 240 V AC/DC	**EMR4-I1-1-A** 106942		1 off
		0.3 – 1.5 A 1 – 5 A 3 – 15 A		24 – 240 V AC/DC	**EMR4-I15-1-A** 106943		1 off
		0.3 – 1.5 A 1 – 5 A 3 – 15 A		220 – 240 V AC	**EMR4-I15-1-B** 106944		1 off

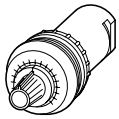
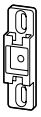
	Description	Monitoring voltage	Contact sequence	Supply voltage	**Part no.** Article no.	**Price** see price list	Std. pack
EMR4-F... phase sequence relays							
	• Monitors three-phase systems for phase sequence and phase failure ($< 0.6 \times U_e$) • Supply voltage = voltage being monitored	200 – 500 V AC		200 – 500 V AC	**EMR4-F500-2** 221784		1 off
EMR4-A... phase imbalance monitoring relays							
	• Monitors three-phase systems for phase imbalance • Detects phase failure even at 95% regeneration of the failed phase • Response delay: 0.5 s • Switching threshold adjustable from 5 – 15 % imbalance • Phase sequence detection • Supply voltage = voltage being monitored	380 – 415 V 50 Hz		380 – 415 V 50 Hz	**EMR4-A400-1** 221788		1 off
		160 – 300 V 50 Hz		160 – 300 V 50 Hz	**EMR4-A300-1-C** 290180		
		300 – 500 V 50 Hz		300 – 500 V 50 Hz	**EMR4-A500-1-D** 290181		

	Description	Response sensitivity range Ω	Contact sequence	Supply voltage	**Part no.** Article no.	**Price** see price list	Std. pack
EMR4-N... liquid level monitoring relays							
	• Monitors the level of conductive liquids • Monitors the ratio of mixtures of conductive liquids • Dual-voltage protection against running dry or overflow	5 kΩ – 100 kΩ		220 – 240 V AC	**EMR4-N100-1-B** 221789		1 off
	• Monitors the level of conductive liquids • Monitors the ratio of mixtures of conductive liquids • Selectable On-delay or Off-delay between 0.5 – 10 s	250 Ω – 500 kΩ		220 – 240 V AC	**EMR4-N500-2-B** 221790		
		250 Ω – 500 kΩ		24 – 240 V AC/DC	**EMR4-N500-2-A** 221791		

		Monitoring voltage	Threshold value	Contact sequence	Supply voltage	**Part no.** Article no.	**Price** see price list	Std. pack
Phase monitoring relay EMR4-(A)... RMQ-Titan								
Single function 	• Three-phase monitoring – Phase sequence – Phase failure – Overvoltage – Undervoltage – Asymmetry 2…15 % • ON-delay or OFF-delay 0.1 – 10 s	300 – 500 V 50/60 Hz	U_{min} 350 – 430 V AC U_{max} 500 – 580 V AC		300 – 500 V AC	**EMR4-W580-2-D** 221787		1 off
		160 – 300 V 50/60 Hz	U_{min} 160 – 220 V AC U_{max} 220 – 300 V AC		160 – 300 V 50/60 Hz	**EMR4-W300-1-C** 290182		
		300 – 500 V 50/60 Hz	U_{min} 300 – 380 V AC U_{max} 420 – 500 V AC		300 – 500 V 50/60 Hz	**EMR4-W500-1-D** 290183		
		380V 50/60Hz	U_{min} 342 V AC, fixed U_{max} 418 V AC, fixed		380V 50/60Hz	**EMR4-W380-1** 290184		
		400V 50/60Hz	U_{min} 360 V AC, fixed U_{max} 440 V AC, fixed		400V 50/60Hz	**EMR4-W400-1** 290185		
multi-functional 	• Three-phase monitoring – Phase sequence – Phase failure – Overvoltage – Undervoltage – Asymmetry 2…15 % • ON-delay or OFF-delay 0.1 – 10 s • Power supply from the measuring circuit • EMR4-AWN... with neutral monitoring	160 – 300 V 50/60 Hz	U_{min} 160 – 220 V AC U_{max} 220 – 300 V AC		160 – 300 V 50/60 Hz	**EMR4-AW300-1-C** 290243		1 off
		300 – 500 V 50/60 Hz	U_{min} 300 – 380 V AC U_{max} 420 – 500 V AC		300 – 500 V 50/60 Hz	**EMR4-AW500-1-D** 290244		
		90 – 170 V 50/60 Hz	U_{min} 90 – 120 V AC U_{max} 120 – 170 V AC		90 – 170 V 50/60 Hz	**EMR4-AWN170-1-E** 290245		
		180 – 280 V 50/60 Hz	U_{min} 180 – 220 V AC U_{max} 240 – 280 V AC		180 – 280 V 50/60 Hz	**EMR4-AWN280-1-F** 290246		

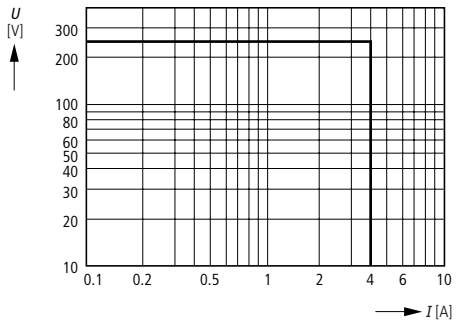
	Description	Insulation resistance range Ω	Contact sequence	Supply voltage	**Part no.** Article no.	**Price** see price list	Std. pack
EMR-4R... insulation monitoring relays							
	• Monitors the insulation resistance in non-earthed DC suppy systems • Selector switch between open-circuit or closed-circuit principle • With test and reset facilities • Status indication via LEDs	10 – 110 kΩ		24 – 240 V AC/DC	**EMR4-RDC-1-A** 221792		1 off
	• Monitors the insulation resistance between non-earthed AC suppy systems and protective conductor/earth • Tripping function memory • Insulation monitoring in 1- and 3-phase AC supply systems • Test via local test button or remote test/ operation • Status indication via LEDs to VDE 0413 / Part 2	1 – 110 kΩ		24 – 240 V AC/DC	**EMR4-RAC-1-A** 221793		

	Mounting width mm	**Part no.** Article no.	**Price** see price list	Std. pack
EMR4-PH... sealable shroud				
	22.5	**EMR4-PH22** 221795		1 off
	45	**EMR4-PH45** 221794		

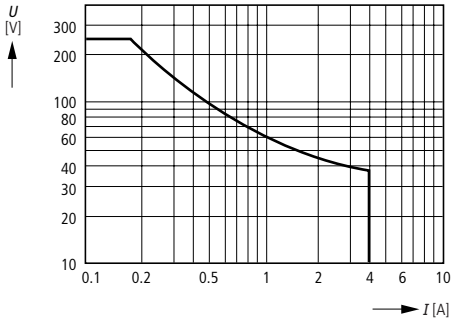
	For use with	**Part no.** Article no.	**Price** see price list	Std. pack
Remote potentiometer, IP66				
10 kΩ; 0.5 W max.				
	DILET...ETR4-70	**M22-R10K** 229491		1 off
	DILET...ETR4-70	**M22S-R10K** 232233		1 off
Screw adapter				
For screw fixing				
	EWDILETS4-VS3ETR4	**CS-TE** 095853		10 off

Load limit curves, 22.5 mm range

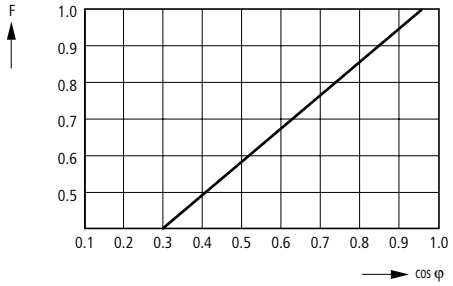
AC load (resistive)



DC load (resistive)

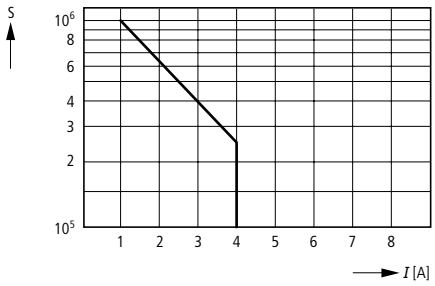


Derating factor with inductive AC load



Derating factor F with inductive load

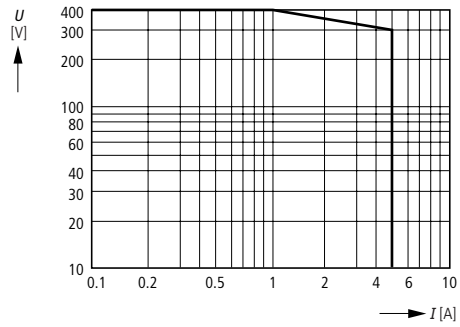
Contact life



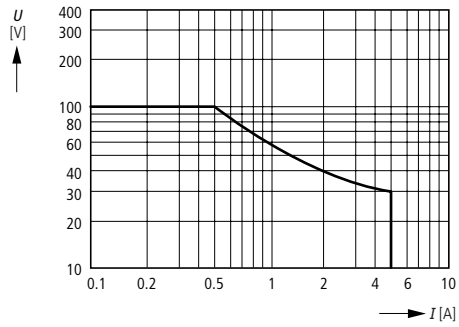
Contact life
Operations S
220 V 50 Hz AC-1
360 operations/h

Load limit curves, 45 mm range

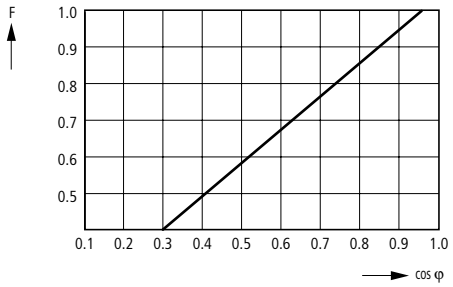
AC load (resistive)



DC load (resistive)

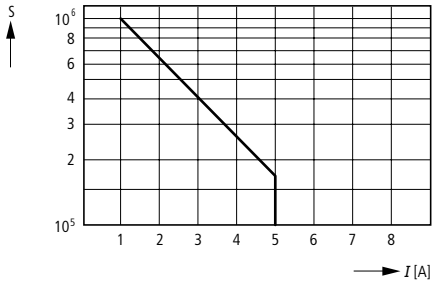


Derating factor with inductive AC load



Derating factor F with inductive load

Contact life



Contact life
Operations S
220 V 50 Hz AC-1
360 operations/h

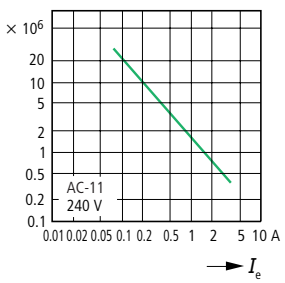
Overload capacity of EMR4-I…

	Current measuring ranges	Input resistance R_i	Terminal configuration, measuring input	Long-term overload	Overload for t < 1 s
EMR4-I1...	3...30 mA 10...100 mA 0.1...1 A	3.3 Ω 1 Ω 0.1 Ω	B1-C B2-C B3-C	50 mA 150 mA 1.5 A	500 mA 1 A 10 A
EMR4-I15...	0.3...1.5 A 1...5 A 3...15 A	0.05 Ω 0.01 Ω 0.0025 Ω	B1-C B2-C B3-C	2A 7 A 17 A[1)]	15 A 50 A 100 A

[1)] keep a side clearance of min. 10 mm when mounting

DILET (AC-11)

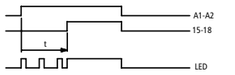
Component lifespan (operations)
I_e = Rated operational current



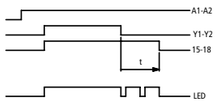
Electronic timing relays **Flow diagram**

DILET

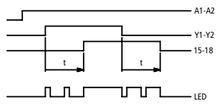
11 On-delayed



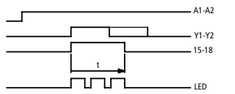
12 Off-delayed



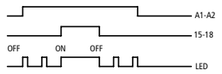
16 On- and Off-delayed



82 Pulse shaping

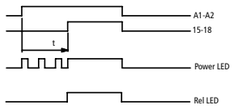


On-Off function

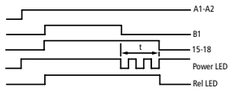


ETR2..., ETR4...

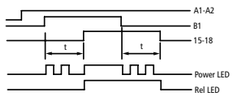
11 On-delayed



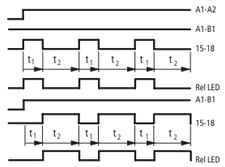
12 Off-delayed



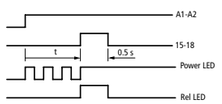
16 On and off delayed



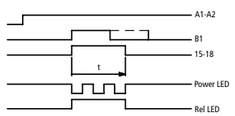
44 Flashing, 2 speeds



81 Pulse generating

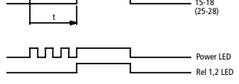


82 Pulse shaping

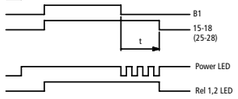


ETR4-70...
A2/X1 linked

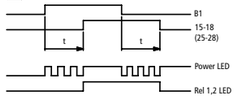
11 On-delayed



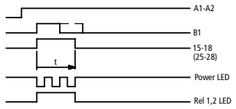
12 Off-delayed



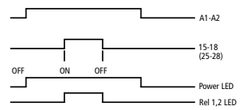
16 On- and Off-delayed



82 Pulse shaping

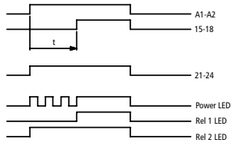


On-Off function

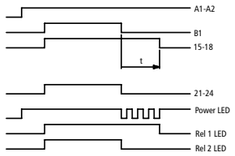


ETR4-70...
A2/X1 not linked

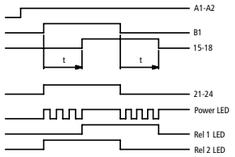
11 On-delayed



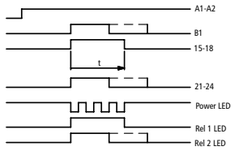
12 Off-delayed



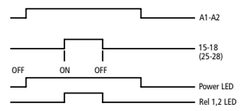
16 On- and Off-delayed



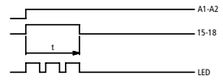
82 Pulse shaping



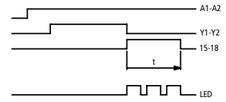
On-Off function



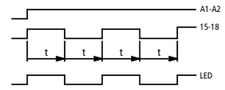
21 Fleeting contact on energization



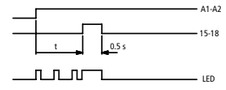
22 Fleeting contact on de-energization



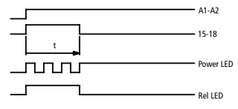
42 Flashing, pulse initiating



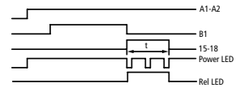
81 Pulse generating



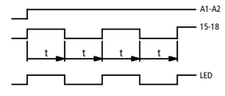
21 Fleeting contact on energization



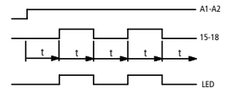
22 Fleeting contact on de-energization



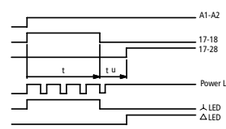
42 Flashing, pulse initiating



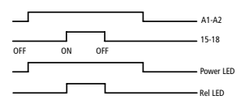
43 Flashing, pause initiating



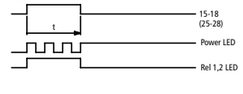
51 Star-delta



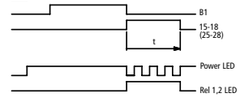
On-Off function



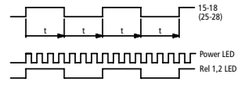
21 Fleeting contact on energization



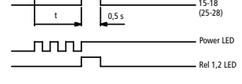
22 Fleeting contact on de-energization



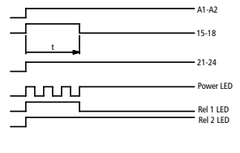
42 Flashing



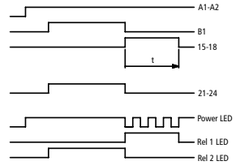
81 Pulse generating



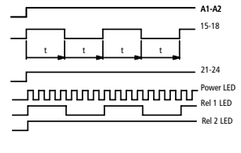
21 Fleeting contact on energization



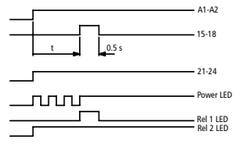
22 Fleeting contact on de-energization



42 Flashing



81 Pulse generating



Circuitry and contact sequence diagrams for EMR4 and ESR → Installation instructions (AWA) under www.moeller.net/support.
Search term
"EMR4" for Measuring and Monitoring Relays
"ESR4" for Safety relays

Flow diagrams, explanations

LED display

Time not running,
Contact 15-18 closed

Time running,
Contact 15-18 closed

Time running,
Contact 15-18 not closed

				DILET-A	DILET-W	ETR4-A	ETR4-W	ETR2
General								
Standards				IEC/EN 60947, VDE 0660, UL, CSA IEC/EN 60255, VDE 0435				IEC/EN 61812, VDE 0435
Lifespan, mechanical								
AC operated		Operations	× 10^6	30	30	30	30	30
DC operated		Operations	× 10^6	30	30	30	30	30
Climatic proofing				Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclical, to IEC 60068-2-30				
Ambient temperature								
Storage			°C	–	–	45…60	45…60	40…85
Open			°C	–20…60	–20…60	–25…60	–25…60	–20…60
Enclosed			°C	–20…45	–20…45	–25…45	–25…45	–20…60
Mounting position				As required	As required	As required	As required	As required
Mechanical shock resistance (IEC/EN 60068-2-27)								
Half-sinusoidal shock, 20 ms								
Make contact			g	4	4	4	4	4
Degree of protection								
Terminals				IP 20	IP 20	IP 20	IP 20	IP 20
Weight			kg	0.09	0.09	0.1	0.1	0.05
Terminal capacities								
Solid			mm^2	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)
Flexible with ferrule			mm^2	1 × (0.75 – 1.5) 2 × (0.75 – 1.5)	1 × (0.75 – 1.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)
Solid or stranded			AWG	1 × (18 – 14)	1 × (18 – 14)	1 × (20 – 14)	1 × (20 – 14)	1 × (20 – 14)
Contacts								
Rated impulse withstand voltage		U_{imp}	V AC	6000	6000	6000	6000	4000
Overvoltage category/pollution degree				III/2	III/2	III/3	III/3	III/3
Rated insulation voltage		U_i	V AC	600	600	600	600	300
Rated operational voltage		U_e	V AC	440	440	440	440	250
Safe isolation to VDE 0106 Part 101 and Part 101/A1								
between coil and auxiliary contacts			V AC	250	250	250	250	–
between the auxiliary contacts			V AC	250	250	250	250	–
Making capacity								
AC-14 $\cos\varphi$ = 0.3 440 V			A	48	48	48	48	–
AC-15 $\cos\varphi$ = 0.3 220 V			A	50	50	50	50	30
DC-11 L/R – 40 ms			× I_e	1.1	1.1	1.1	1.1	–
Breaking capacity								
AC-14 $\cos\varphi$ = 0.3 440 V			A	3	3	3	3	–
AC-15 $\cos\varphi$ = 0.3 220 V			A	3	3	3	3	–
DC-11 L/R – 40 ms			× I_e	1.1	1.1	1.1	1.1	1.1
Rated operational current								
AC–14	440 V	I_e	A	3	3	3	3	–
AC-15	220 V	I_e	A	3	3	3	3	3
AC12	AC-12 at 230 V	I_e	A	–	–	–	–	4
DC12		I_e	A	–	–	–	–	6
DC-13	24 V	I_e	A	–	–	–	–	2
DC–11[1]	L/R max. 15 ms							
	24 V	I_e	A	1.5	1.5	1.5	1.5	–
	L/R max. 50 ms		A	1.2	1.2	1.2	1.2	–
Conv. thermal current		I_{th}	A	6	6	6	6	6
Short-circuit rating without welding[2]								
Max. fuse, make contacts			A gG/gL	6	6	6	6	10
Max. fuse, break contacts			A gG/gL	6	6	6	6	6
max. overcurrent protective device, 220/230 V			Type	–	–	FAZ-B4/1-HI	FAZ-B4/1-HI	–

Notes

[1] Making and breaking conditions to DC-13, time constant as stated
[2] When supplied directly from mains or transformer > 1000 VA

				DILET-A	DILET-W	ETR4-A	ETR4-W	ETR2
Magnet systems								
Voltage tolerance								
Pick-up voltage								
AC operated	Pick-up	× U		0.85…1.1	0.85…1.1	0.85…1.1	0.85…1.1	0.85…1.1
DC operated	Pick-up	× U_c		0.7…1.1	–	0.7…1.1	–	0.85…1.1
Power consumption								
Pick-up AC		VA		2	0.5	2	0.5	–
Sealing AC		VA		2	0.5	2	0.5	–
Pick-up DC		W		1.8	–	1.8	–	–
Sealing DC		W		1.8	–	1.8	–	–
Duty factor		% DF		100	100	100	100	100
Maximum operating frequency								
Max. operating frequency		Ops/h		4000	4000	4000	4000	360: 8 A/250 V 7200: 120 mA/12 V
Electrical	Operations/h			–	–	–	–	–
	Operations/h			–	–	–	–	–
Minimum command time								
AC		ms		50	50	50	50	20
DC		ms		30	–	30	–	20
Repetition accuracy (deviation)		%		≦ 0.5	≦ 0.5	≦ 0.5	≦ 0.5	≦ 0.5
Recovery time (after 100% time delay)		ms		70	70	70	70	50
Contact changeover time	t_u	ms		–	–	4	4	10

Notes

[1] Not DILET...-W
[2] ETR4-51: 50 ms

			ESR4-NO-30	ESR4-NO-31	ESR4-NO-21	ESR4-NV3(30)-30	ESR4-NZ-21	ESR4-NE-42	ESR4-VE3-42
General									
Standards			IEC/EN 60947, VDE 0660, IEC/EN 60255, UL, CSA, EN 954-1						
Lifespan, mechanical	Operations	× 10^6	1	10	10	10	10	10	10
Maximum operating frequency									
Max. operating frequency		Ops/h	3600	3600	3600	3600	3600	3600	3600
Climatic proofing			Cold to: EN 60068-2-1, dry heat to: EN 60068-2-2, temperature change to: EN 60068-2-14, Damp heat to: EN 60068-2-30						
Ambient temperature		°C	–25…55	–25…55	–25…55	–25…55	–25…55	–25…55	–25…55
Ambient temperature, storage		°C	–25…75	–25…75	–25…75	–25…75	–25…75	–25…75	–25…75
Mounting position			As required	As required	As required	As required	As required	As required	As required
Vibration resistance		g	5, to IEC/EN 60068-2-6; frequency: 10 – 55 Hz, amplitude: 0.35 mm						
Degree of protection									
Enclosures			IP40	IP40	IP40	IP40	IP40	IP40	IP40
Terminals			IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Protection against direct contact when actuated from front (IEC 536)			Finger- and back-of-hand proof						
Weight		kg	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Terminal capacities									
Solid core or stranded		mm^2	1 × (0.14 – 2.5) 2 × (0.14 – 0.75)						
Flexible with ferrule		mm^2	1 × (0.25 – 2.5) 2 × (0.25 – 0.5)						
Solid or stranded		AWG	18…16	18…16	18…16	18…16	18…16	18…16	18…16
Terminal screw									
Pozidriv screwdriver		Size	2	2	2	2	2	2	2
Standard screwdriver		mm	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5
Max. tightening torque		Nm	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Main conducting paths									
Rated impulse withstand voltage	U_{imp}	V AC	4000	4000	4000	4000	4000	4000	4000
Overvoltage category/pollution degree									
outside			III/3	III/3	III/3	III/3	III/3	III/3	III/3
inside			III/2	III/2	III/2	III/2	III/2	III/2	III/2
Rated insulation voltage	U_i	V AC	300	300	300	300	300	300	300
Rated operational voltage	U_e	V AC	230	230	230	230	230	230	230
Rated operational current									
AC–15									
230 V (360 ops./h)	I_e	A	4	4	4	–	4	–	–
230 V (3600 ops./h)	Ie	A	3	3	3	4	3	6	6
DC-13									
24 V (360 Ops./h)	I_e	A	4	4	4	5	4	6	6
24 V (3600 Ops./h)	I_e	A	2.5	2.5	2.5	–	2.5	3	3
Max. summation current of all poles									
24 V AC/DC devices		A	12	12	12	12	12	12	12
115 … 120 V AC devices		A	–	8	–	–	–	–	–
230 V AC devices		A	8	–	–	–	–	–	–
Short-circuit protection									
max. fuse		A gG/gL	6	6	6	6	6	6	6

			ESR4-NO-30	ESR4-NO-31	ESR4-NO-21	ESR4-NV3(30)-30	ESR4-NZ-21	ESR4-NE-42	ESR4-VE3-42
Magnet systems									
Actuating voltage 50/60 Hz		V AC	24 115 230	24 115 230	24	24	24	24	–
Actuating voltage	U_s	V DC	24	24	24	24	24	24	24
Voltage tolerance, Pick-up		× U_e	0.85…1.1	0.85…1.1	0.85…1.1	0.85…1.1	0.85…1.1	0.85…1.1	0.85…1.1
Power consumption									
AC operated 50/60 Hz 24 V/230 V		VA	4.4/4.4/4.4	3.2/2.3/2.3	4.4		3.1	2.7	2.7
AC operated 50/60 Hz 24 V/230 V		W	2.4/2.4	1.8/2.0/2.0	2.4		1.9	1.5	1.5
DC operated		W	2.0	1.3	2.0	2.6	2.4	1	1
Control circuit									
Rated output voltage		V DC	≦24	≦24	≦24	≦24	≦24	–	–
No-load voltage		V DC	≦40	–	–	–	–	–	–
Rated current		mA	40	40	50	50	60	–	–
Max. resistive load of the cable	R	Ω	70	70	70	70	70	–	–
Short-circuit current		A	1	1.4	2.2	2.2	1	–	–
Fuse		W	Short-circuit protected	24 V: PTC resistance 230 V: short-circuit proof transformer	PTC resistor	PTC resistor	PTC resistor		
Inputs									
Rated current		mA	S12, 31, 32, 33: 40, S34, 35: 5	Y2: 90, Y3: 1500	S12: S22 S31: 40 S34, S35: 5	S12, S22, S31: 25; S34, S35: 40	Y2: 60; Y11, Y21: 60	65	65
Response time with reset monitoring	t_{A1}	ms	20 – 40	40 (DC) 180 (AC)	20 – 40	30	–	–	–
Response time without reset monitoring	tA2	ms	200 – 600	40	200 – 500	700	40	20	20
Reset time	t_R/t_{R1}	ms	< 2	> 60	< 25	25/adjustable	< 50	40	500, 1000, 2000, 3000
Minimum contact closing time	t_M	ms	> 80	> 60	> 50	200	–	–	75
Recovery time	t_W	ms	≧ 100	< 200	≧ 40	500	≦ 250	–	–
Synchronous monitoring time	t_S	ms	200	–	200	> 100, < 500	≦ 500	–	–
Electromagnetic compatibility (EMC)									
Emitted interference			to EN 50081-1 and EN 50081-2						
Interference immunity			EN 50082-2						

			ESR4-NOE-31	ESR4-NOE-40
General				
Standards			IEC/EN 60947, VDE 0660, IEC/EN 60255, UL, CSA, EN 81-1 EN 954-1: category 4 prEN ISO 13849-1: PL e IEC/EN 62061: SILCL 3 IEC/EN 61508: SIL 3 EN 50156-1: Safety level 3	
Lifespan, mechanical	Operations	× 10^6	10	10
Maximum operating frequency				
Max. operating frequency		Ops/h	3600	3600
Climatic proofing			Cold to: EN 60068-2-1, dry heat to: EN 60068-2-2, temperature change to: EN 60068-2-14, Damp heat to: EN 60068-2-30	
Ambient temperature		°C	–25…65	–25…65
Ambient temperature, storage		°C	–25…70	–25…70
Mounting position			As required	As required
Vibrations (IEC/EN 60068-2-6)			5 … 9 Hz: 1 g 9 … 150 Hz: 10	5 … 9 Hz: 1 g 9 … 150 Hz: 10
Mechanical shock resistance (IEC 60068-2-27)			15 g, 11 ms	15 g, 11 ms
Degree of protection				
Enclosures			IP40	IP40
Terminals			IP 20	IP 20
Protection against direct contact when actuated from front (IEC 536)			Finger- and back-of-hand proof	Finger- and back-of-hand proof
Weight		kg	DC-device: 0.21 AC-device: 0.25	DC-device: 0.21 AC-device: 0.25
Terminal capacities				
Solid core or stranded		mm^2	1 × (0.14 – 2.5) 2 × (0.14 – 0.75)	1 × (0.14 – 2.5) 2 × (0.14 – 0.75)
Flexible with ferrule		mm^2	1 × (0.25 – 2.5) 2 × (0.25 – 0.5)	1 × (0.25 – 2.5) 2 × (0.25 – 0.5)
Solid or stranded		AWG	18…16	18…16
Terminal screw				
Pozidriv screwdriver		Size	2	2
Standard screwdriver		mm	0.6 × 3.5	0.6 × 3.5
Max. tightening torque		Nm	0.6	0.6
Main conducting paths				
Rated impulse withstand voltage	U_{imp}	V AC	4000	4000
Overvoltage category/pollution degree				
outside			III/3	III/3
inside			III/2	III/2
Rated insulation voltage	U_i	V AC	300	300
Rated operational voltage	U_e	V AC	230	230
Rated operational current				
AC–15				
230 V (3600 ops./h)	Ie	A	5	5
DC-13				
24 V (3600 Ops./h)	I_e	A	5	5
Max. summation current of all poles				
24 V AC/DC devices		A	12	12
230 V AC devices		A	8	8
Short-circuit protection				
max. fuse		A gG/gL	8	8

			ESR4-NOE-31	ESR4-NOE-40
Power supply circuit				
Actuating voltage 50/60 Hz		V AC	24 230	24 230
Actuating voltage	U_s	V DC	24	24
Voltage tolerance, Pick-up		× U_e	0.85…1.1	0.85…1.1
Power consumption				
AC operated 50/60 Hz 24 V/230 V		VA	2.9/2.4	2.9/2.4
AC operated 50/60 Hz 24 V/230 V		W	1.6/2.1	1.6/2.1
DC operated		W	1.6/-	1.6/-
Control circuit				
Rated output voltage		V DC	≦24	≦24
No-load voltage		V DC	≦40	≦40
Rated current		mA	S12, S52, S22: 25 S34: 5	S12, S52, S22: 25S34: 5
Peak current		mA	S12, S52, S22, S34: 100	S12, S52, S22, S34: 100
Max. resistive load of the cable	R	Ω	≦25	≦25
Short-circuit current		A	1	1
Fuse				
24 V			Electronic fuse	Electronic fuse
115 V/230 V			Transformer	Transformer
Synchronous monitoring time	t_S	ms		
Response time		ms	350	350
Recovery time		ms		
Response time with reset monitoring	t_{A1}	ms	150…350	150…350
Response time without reset monitoring	tA2	ms	50…100	50…100
Reset time	t_R/t_{R1}	ms		
Minimum contact closing time	t_M	ms	<100	<100
Inputs				
Response time with reset monitoring	t_{A1}	ms	150…350	150…350
Response time without reset monitoring	tA2	ms	50…100	50…100
Permissible test pulse duration	t_{TP}	ms	≦1	≦1
Minimum contact closing time	t_M	ms	<100	<100
Recovery time	t_W	ms	Approx.≦ 750	Approx.≦ 750
Synchronous monitoring time	t_S	ms		
Reset time	t_R		10	10
Electromagnetic compatibility (EMC)				
Emitted interference			to EN 50081-1 and EN 50081-2	to EN 50081-1 and EN 50081-2
Interference immunity			EN 50082-2	EN 50082-2
Notes			For additional technical data see installation instructions	

			EMR4-I1-1-A	EMR4-I15-1-A	EMR4-I15-1-B
General					
Standards			IEC/EN 60255-6, UL, CSA, GL		
Lifespan, mechanical	Operations	× 10⁶	30	30	30
Climatic proofing			Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h		
Ambient temperature					
Open		°C	–20…60	–20…60	–20…60
Storage		°C	–20…85	–20…85	–20…85
Mounting position			As required	As required	As required
Shock resistance			10 g		
Degree of protection			IP 20	IP 20	IP 20
Weight		kg	0.3	0.3	0.3
Terminal capacities					
Solid		mm²	2 × 2.5	2 × 2.5	2 × 2.5
Flexible with ferrule		mm²	2 × 2.5/2 × AWG14	2 × 2.5/2 × AWG14	2 × 2.5/2 × AWG14
Standard screwdriver		mm	5.5 × 0.8	5.5 × 0.8	5.5 × 0.8
Tightening torque		Nm	0.8	0.8	0.8
Fixing			Snap fixing, top-hat rail IEC/EN 60715		
Contacts					
Rated impulse withstand voltage		V AC	2500/2000	2500/2000	2500/2000
Overvoltage category/pollution degree			III/3	III/3	III/3
Rated insulation voltage	U_i	V AC	600/250	600/250	600/250
Power supply					
Supply voltage AC/DC		V AC/DC	24240	24240	220…240
Voltage tolerance		× U_c	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1
Power consumption		VA	2.6	2.6	2.6
Rated frequency		Hz	50 – 60	50 – 60	50 – 60
Duty factor		% DF	100	100	100
Timing cycle					
Response delay time		s	Adjustable from 0.1 – 30	Adjustable from 0.1 – 30	Adjustable from 0.1 – 30
Time error within supply voltage		%	≦0.5	≦0.5	≦0.5
Time error within temperature range		%/°C	≦0.06	≦0.06	≦0.06
Measuring circuits					
Inputs					
B1-C		A	0.003 – 0.03	0.3 – 1.5	0.3 – 1.5
B2-C		A	0.01 – 0.1	1 – 5	1 – 5
B3-C		A	0.1 – 1	3 – 15	3 – 15
Hysteresis		%	3…30	3…30	3…30
Measuring cycle		ms	80	80	80
Temperature error		%/°C	0.06	0.06	0.06
Error within supply voltage		%	0.5	0.5	0.5
Status indication					
Supply voltage			LED, green	LED, green	LED, green
Output relay energized			LED, yellow	LED, yellow	LED, yellow
Measured value			LED, red	LED, red	LED, red
Relay output contacts					
Rated operational voltage	U_e	V AC	250	250	250
Rated operational current					
AC-12 at 230 V	I_e	A	4	4	4
AC-15 with 230 V	I_e	A	3	3	3
DC-12 at 24 V	I_e	A	4	4	4
DC-13 at 24 V	I_e	A	2	2	2
Lifespan, electrical (AC-12/230 V/4 A)	Operations	× 10⁶	0.1	0.1	0.1
Short-circuit rating					
max. fuse	Fast/gL	A	10	10	10
Load limit curves			→ Engineering	→ Engineering	→ Engineering
Electromagnetic compatibility (EMC)					
Electromagnetic compatibility			IEC/EN 60947-6-2	IEC/EN 60947-6-2	IEC/EN 60947-6-2
ESD			IEC/EN 61000-4-2 level 3	IEC/EN 61000-4-2 level 3	IEC/EN 61000-4-2 level 3
HF-immunity to radiation			IEC/EN 61000-4-3 level 3	IEC/EN 61000-4-3 level 3	IEC/EN 61000-4-3 level 3
Burst			IEC/EN 61000-4-4 level 3	IEC/EN 61000-4-4 level 3	IEC/EN 61000-4-4 level 3
Surge			IEC/EN 61000-4-9 Level 3	IEC/EN 61000-4-9 Level 3	IEC/EN 61000-4-9 Level 3
HF-immunity to line-conducted interference			IEC/EN 61000-4-6 level 3	IEC/EN 61000-4-6 level 3	IEC/EN 61000-4-6 level 3

				EMR4-F500-2
General				
Standards				IEC/EN 60255-6, EN 61 557, UL, CSA, GL
Lifespan, mechanical		Operations	× 10^6	30
Climatic proofing				Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h
Ambient temperature		Open	°C	–20…60
		Storage	°C	–40…80
Mounting position				As required
Mechanical shock resistance			g	10
Degree of protection		Terminals		IP 20
Weight			kg	0.15
Terminal capacities	Solid		mm^2	2 × 2.5
	Flexible with ferrule		mm^2	2 × 2.5/2 × AWG14
Standard screwdriver			mm	5.5 × 0.8
Tightening torque			Nm	0.5 – 0.8
Fixing				Snap fixing, top-hat rail IEC/EN 60715
Contacts				
Rated impulse withstand voltage		U_{imp}	V AC	4000
Overvoltage category/pollution degree				III/3
Rated insulation voltage		U_i	V AC	400
Power supply				
Supply voltage AC			V AC	200…500
Voltage tolerance			× U_c	0.85 – 1.1
Power consumption			VA	15
Rated frequency			Hz	50 – 60
Duty factor			% DF	100
Measuring circuits				
Monitoring voltage		U_n	V AC	200 – 500
Frequency			Hz	50 – 60
Measuring cycle			ms	500
Temperature error			%/°C	0.06
Error within supply voltage			%	0.5
Status indication				
Output relay energized				LED, yellow
Relay output contacts				
Rated operational voltage		U_e	V AC	500
Rated operational current	AC-12 at 230 V	I_e	A	4
	AC-15 with 230 V	I_e	A	3
	DC-12 at 24 V	I_e	A	4
	DC-13 at 24 V	I_e	A	2
Lifespan, electrical (AC-12/230 V/4 A)		Operations	× 10^6	0.3
Short-circuit rating				
max. fuse		Fast/gL	A	10
Load limit curves				→ Engineering
Electromagnetic compatibility (EMC)				
Electromagnetic compatibility				IEC/EN 60947-6-2
ESD				IEC/EN 61000-4-2 level 3
HF-immunity to radiation				IEC/EN 61000-4-3 level 3
Burst				IEC/EN 61000-4-4 level 3
Surge				IEC/EN 61000-4-5 Level 4
HF-immunity to line-conducted interference				IEC/EN 61000-4-6 level 3

			EMR4-W300-1-C EMR-W380-1 EMR4-W400-1	EMR4-W500-1-D	EMR-W580-2-D	EMR-AW(N)...
General						
Standards			IEC/EN 60255-6, IEC255-6, UL, CE	IEC/EN 60255-6, IEC255-6, UL, CE	IEC/EN 60255-6, EN 61557, UL, CSA, GL	IEC/EN 60255-6, IEC255-6, UL, CE
Lifespan, mechanical	Operations	× 10^6	30	30	30	30
Climatic proofing			Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h	Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h	Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h	Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h
Ambient temperature						
Open		°C	–20…60	–20…60	–25…65	–20…60
Storage		°C	–20…60	–20…60	–40…85	–20…60
Mounting position			As required	As required	As required	As required
Shock resistance			10 g	10 g	10 g	IEC/EN 60255-21-12, Class 2
Degree of protection						
Terminals			IP 20	IP 20	IP 20	IP 20
Enclosures			IP 50	IP 50	IP 50	IP 50
Weight		kg	0.13	0.13	0.3	0.14
Terminal capacities						
Solid		mm^2	2 × 2.5	2 × 2.5	2 × 2.5	2 × 2.5
Flexible with ferrule		mm^2	2 × 2.5/2 × AWG14	2 × 2.5/2 × AWG14	2 × 2.5	2 × 2.5/2 × AWG14
Standard screwdriver		mm	5.5 × 0.8	5.5 × 0.8	5.5 × 0.8	5.5 × 0.8
Tightening torque		Nm	0.5 – 0.8	0.5 – 0.8	0.5 – 0.8	0.5 – 0.8
Fixing			Snap fixing, top-hat rail IEC/EN 60715	Snap fixing, top-hat rail IEC/EN 60715	Snap fixing, top-hat rail IEC/EN 60715	Snap fixing, top-hat rail IEC/EN 60715
Contacts						
Rated impulse withstand voltage	U_{imp}	V AC	4000	4000	4000	4000
Overvoltage category/pollution degree			III/3	III/3	III/3	III/3
Rated insulation voltage	U_i	V AC	600	600	400	600
Power supply						
Supply voltage		V AC	160 … 300380400	300 … 500	300 … 500	160 … 300300 … 500 90 … 170180 … 280
Voltage tolerance		× U_c	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1
Power consumption		VA	3	3	3	20
Rated frequency		Hz	50 – 60	50 – 60	50 – 60	50 – 60
Duty factor		% DF	100	100	100	100
Timing cycle						
Response delay time		s	Adjustable 0.1 – 10	Adjustable 0.1 – 10	Adjustable 0.1 – 10	Adjustable 0.1 – 10
Reset delay/Off-delay time		s	Adjustable 0.1 – 10	Adjustable 0.1 – 10	Adjustable 0.1 – 10	Adjustable 0.1 – 10
Time error within supply voltage		%	0.5	0.5	0.5	0.5
Time error within temperature range		%/°C	0.06	0.06	0.06	0.06
Measuring circuits						
Response range for undervoltage	U_{min}	V AC	160…220 342 360	300…380	350…430	160…220 300…380 90…120 180…220
Response range for overvoltage	U_{max}	V AC	220…300 418 440	420…500	500…580	220…300 420…500 120…170 240…280
Hysteresis		%	0…5	0…5	0…5	0…5
Frequency		Hz	50/60 ± 10 %	50/60 ± 10 %	50/60 ± 10 %	50/60 ± 10 %
Phase imbalance level adjustable		%				2 – 15, from mean value of the phase voltage
Measuring cycle		ms	50	50	50	50
Temperature error		%/°C	0.06	0.06	0.06	0.06
Error within supply voltage		%	0.5	0.5	0.5	0.5

			EMR4-W300-1-C EMR-W380-1 EMR4-W400-1	EMR4-W500-1-D	EMR-W580-2-D	EMR-AW(N)…
Status indication						
Supply voltage			LED green: R on	LED green: R on	LED, green	LED green: R on
Output relay energized			LED green: R flashes	LED green: R flashes	LED, yellow	LED green: R flashes
Overvoltage			LED red: F1 on	LED red: F1 on	LED >U, red	LED red: F1 on
Undervoltage			LED red: F2 on	LED red: F2 on	LED <U, red	LED red: F2 on
Phase failure			LED red: F1 on, F2 flashes	LED red: F1 on, F2 flashes	LED P, red	LED red: F1 on, F2 flashes
Phase sequence error			LED red: F1, F2 flashing	LED red: F1, F2 flashing	LED P, red	LED red: F1, F2 flashing
Relay output contacts						
Rated operational voltage	U_e	V AC	250	250	500	250
Rated operational current						
AC-12 at 230 V	I_e	A	4	4	5	4
AC-15 with 230 V	I_e	A	3	3	3	3
DC-12 at 24 V	I_e	A	4	4	5	4
DC-13 at 24 V	I_e	A	2	2	2.5	2
Lifespan, electrical (AC-12/230 V/5 A)	Operations	× 10^6	0.1	0.1	0.1	0.1
Short-circuit rating						
max. fuse	Fast/gL	A	5	5	5	10
Load limit curves			→ Engineering	→ Engineering	→ Engineering	→ Engineering
Electromagnetic compatibility (EMC)						
Electromagnetic compatibility			IEC/EN 60947-6-2			
ESD			IEC/EN 61000-4-2 level 3			
HF-immunity to radiation			IEC/EN 61000-4-3 level 3			
Burst			IEC/EN 61000-4-4 level 3			
Surge			IEC/EN 61000-4-5 Level 4			
HF-immunity to line-conducted interference			IEC/EN 61000-4-6 level 3			

xControl **EMR4-A**

			EMR4-A400-1	EMR-A300-1-C, EMR4-A500-1-D
General				
Standards			IEC/EN 60255-6, EN 61557, UL, CSA, GL	IEC/EN 60255-6, IEC255-6, UL, CE
Lifespan, mechanical	Operations	× 10^6	30	30
Climatic proofing			Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h	
Ambient temperature				
Open		°C	–20…60	–20…60
Storage		°C	–40…80	–20…60
Mounting position			As required	As required
Shock resistance			10 g	IEC/EN 60255-21-12, Class 12
Degree of protection				
Terminals			IP 20	IP 20
Enclosures			IP 50	IP 50
Weight		kg	0.3	0.13
Terminal capacities				
Solid		mm^2	2 × 2.5	
Flexible with ferrule		mm^2	2 × 2.5	2 × 2.5/2 × AWG14
Standard screwdriver		mm	5.5 × 0.8	5.5 × 0.8
Tightening torque		Nm	0.5 – 0.8	0.5 – 0.8
Fixing			Snap fixing, top-hat rail IEC/EN 60715	
Contacts				
Rated impulse withstand voltage	U_{imp}	V AC	4000	4000
Overvoltage category/pollution degree			III/3	III/3
Rated insulation voltage	U_i	V AC	600	600
Power supply				
Supply voltage AC		V AC	380…415	160…300…500
Voltage tolerance		× U_c	0.8 – 1.2	0.8 – 1.2
Power consumption		VA	15	20
Rated frequency	f	Hz	50	50
Duty factor		% DF	100	100
Timing cycle				
Response delay time		s	0.5 indication of phase balance	Adjustable from 0.1 – 10 s
Time error within supply voltage		%	0.5	0.5
Time error within temperature range		%/°C	0.06	0.06

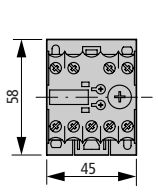
			EMR4-A400-1	EMR-A300-1-C, EMR4-A500-1-D
Measuring circuits				
Monitoring voltage	U_n	V AC	380 – 415	
Frequency		Hz	50	50/60 ± 10 %
Phase imbalance level adjustable		%	5 – 15	2 – 15, from mean value of phase voltage
Switching hysteresis		%	20	20
Temperature error		%/°C	0.06	0.06
Error within supply voltage		%	0.5	0.5
Status indication				
Output relay energized			LED, yellow	LED green: R flashes
Supply voltage				LED green: R on
Phase failure				LED red: F1 on, F2 flashes
Phase sequence error				LED red: F1, F2 flashes
Relay output contacts				
Rated operational voltage	U_e	V AC	500	500
Rated operational current				
AC-12 at 230 V	I_e	A	4	4
AC-15 with 230 V	I_e	A	3	3
DC-12 at 24 V	I_e	A	4	4
DC-13 at 24 V	I_e	A	2	2
Lifespan, electrical (AC-12/230 V/4 A)	Operations	× 10^6	0.3	0.1
Short-circuit rating				
max. fuse	Fast/gL	A	10	10
Load limit curves			→ Engineering	
Electromagnetic compatibility (EMC)				
Electromagnetic compatibility			IEC/EN 60947-6-2	
ESD			IEC/EN 61000-4-2 level 3	
HF-immunity to radiation			IEC/EN 61000-4-3 level 3	
Burst			IEC/EN 61000-4-4 level 3	
Surge			IEC/EN 61000-4-5 Level 4	
HF-immunity to line-conducted interference			IEC/EN 61000-4-6 level 3	

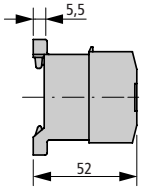
				EMR4-N100-1-B	EMR4-N500-2-B	EMR4-N500-2-A
General						
Standards				IEC/EN 60255-6, EN 61557, UL, CSA, GL		
Lifespan, mechanical		Operations	× 10^6	30	30	30
Climatic proofing				Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h		
Ambient temperature		Open	°C	–20…60	–25…65	–25…65
		Storage	°C	–20…80	–20…85	–20…85
Mounting position				As required	As required	As required
Mechanical shock resistance			g	10	10	10
Degree of protection		Terminals		IP 20	IP 20	IP 20
Weight			kg	0.15	0.3	0.3
Terminal capacities	Solid		mm^2	2 × 2.5	2 × 2.5	2 × 2.5
	Flexible with ferrule		mm^2	2 × 2.5/2 × AWG14	2 × 2.5/2 × AWG14	2 × 2.5/2 × AWG14
Standard screwdriver			mm	5.5 × 0.8	5.5 × 0.8	5.5 × 0.8
Tightening torque			Nm	0.5 – 0.8	0.5 – 0.8	0.5 – 0.8
Fixing				Snap fixing, top-hat rail IEC/EN 60715		
Contacts						
Rated impulse withstand voltage		U_{imp}	V AC	4000	4000	4000
Overvoltage category/pollution degree				III/3	III/3	III/3
Rated insulation voltage		U_i	V AC	400	400	400
Power supply						
Supply voltage AC/DC			V AC/DC			24240
Supply voltage AC			V AC	220…240	220…240	
Voltage tolerance			× U_c	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1
Power consumption			VA	2.5	3	2
Rated frequency			Hz	50 – 60	50 – 60	50 – 60
Duty factor			% DF	100	100	100
Timing cycle						
Response delay time			s		Adjustable, 0.1 – 10	
Reset delay/Off-delay time			s		Adjustable, 0.1 – 10	
Measuring circuits						
Sensor inputs		B1		Earth reference sensor		
		B2		Maximum level		
		B3		Minimum level		
Response range			kΩ	5 – 100	5 – 100	5 – 100
Sensor voltage			V AC	30	20	20
Reset range			kΩ	1.32.3		
Sensor current			mA	1		
Cable capacity			nF	10		
Cable length			m	100		
Response delay/On-delay			ms	250		
Status indication						
Supply voltage				LED, green	LED, green	LED, green
Output relay energized				LED, yellow	LED, yellow	LED, yellow
Relay output contacts						
Rated operational voltage		U_e	V AC	250	400	400
Rated operational current	AC-12 at 230 V	I_e	A	4	5	5
	AC-15 with 230 V	I_e	A	3	3	3
	DC-12 at 24 V	I_e	A	4	5	5
	DC-13 at 24 V	I_e	A	2	2.5	2.5
Lifespan, electrical (AC-12/230 V/5 A)		Operations	× 10^6	0.3	0.1	0.1
Short-circuit rating						
max. fuse		Fast/gL	A	10	5	5
Load limit curves				→ Engineering		
Electromagnetic compatibility (EMC)						
Electromagnetic compatibility				IEC/EN 60947-6-2		
ESD				IEC/EN 61000-4-2 level 3		
HF-immunity to radiation				IEC/EN 61000-4-3 level 3		
Burst				IEC/EN 61000-4-4 level 3		
Surge				IEC/EN 61000-4-5 Level 4		
HF-immunity to line-conducted interference				IEC/EN 61000-4-6 level 3		

				EMR4-RDC-1-A	EMR4-RAC-1-A
General					
Standards				IEC/EN 60255-6, EN 61557, UL, CSA, GL	
Lifespan, mechanical		Operations	× 10⁶	30	30
Climatic proofing				Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h	
Ambient temperature		Open	°C	–25…65	–25…65
		Storage	°C	–20…85	–20…85
Mounting position				As required	As required
Mechanical shock resistance			g	10	10
Degree of protection		Terminals		IP 20	IP 20
Weight			kg	0.3	0.3
Terminal capacities	Solid		mm²	2 × 2.5	2 × 2.5
	Flexible with ferrule		mm²	2 × 2.5/2 × AWG14	2 × 2.5/2 × AWG14
Standard screwdriver			mm	5.5 × 0.8	5.5 × 0.8
Tightening torque			Nm	0.5 – 0.8	0.5 – 0.8
Fixing				Snap fixing, top-hat rail IEC/EN 60715	
Contacts					
Rated impulse withstand voltage		U_{imp}	V AC	4000	4000
Overvoltage category/pollution degree				III/3	III/3
Rated insulation voltage		U_i	V AC	400	400
Power supply					
Supply voltage AC/DC			V AC/DC	24240	24240
Voltage tolerance			× U_c	0.85 – 1.1	0.85 – 1.1
Power consumption			VA	5.5	4.5
Rated frequency			Hz	50 – 60	50 – 60
Duty factor			% DF	100	100
Timing cycle					
Time delay/Delay time	At $R_{isolation}$		s	1	1
	× response value		s	0.9	0.9
Measuring circuits					
Input				L+, L-, PE	L, PE
Response range			kΩ	10 – 110	1 – 11
Min. internal resistance of alternating current			kΩ		100
Min. internal resistance of direct current			kΩ		100
Minimum internal resistance			kΩ	57	
Test resistance			kΩ		0.82
Insulation voltage		AC	V AC		415
		DC	V DC	300	
Voltage being monitored/test voltage			V	24 – 240	≦ 30
Cable length for cancellation- and test button			m	10	10
Status indication					
Supply voltage				LED, green	LED, green
Error				LED, yellow	LED, red
Fault at L+				LED, red	LED, red
Fault at L-				LED, red	LED, red
Relay output contacts					
Rated operational voltage		U_e	V AC	400	320
Rated operational current	AC-12 at 230 V	I_e	A	5	5
	AC-15 with 230 V	I_e	A	3	3
	DC-12 at 24 V	I_e	A	5	3
	DC-13 at 24 V	I_e	A	2.5	2.5
Lifespan, electrical (AC-12/230 V/5 A)		Operations	× 10⁶	0.1	0.1
Short-circuit rating	max. fuse	Fast/gL	A	5	5
Load limit curves				→ Engineering	
Electromagnetic compatibility (EMC)					
Electromagnetic compatibility				IEC/EN 60947-6-2	
ESD				IEC/EN 61000-4-2 level 3	
HF-immunity to radiation				IEC/EN 61000-4-3 level 3	
Burst				IEC/EN 61000-4-4 level 3	
Surge				IEC/EN 61000-4-5 Level 4	
HF-immunity to line-conducted interference				IEC/EN 61000-4-6 level 3	

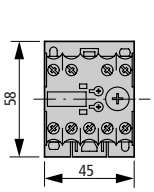
Electronic timing relays

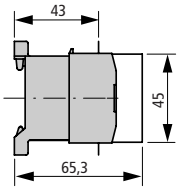
DILET...

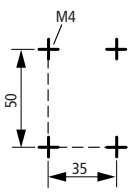




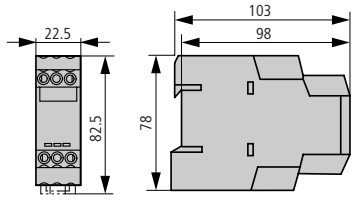
DILET... + HDILE



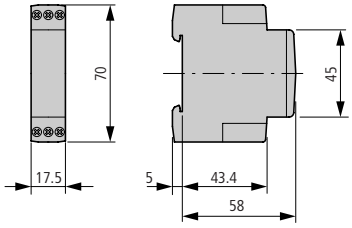




ETR4-...

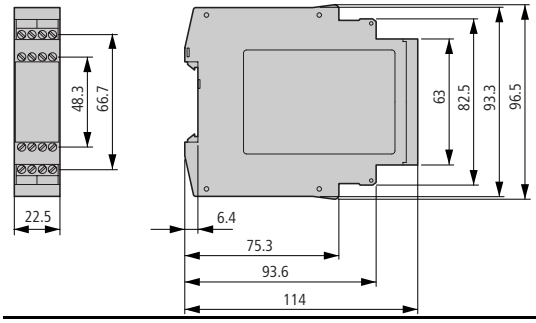


ETR2-...



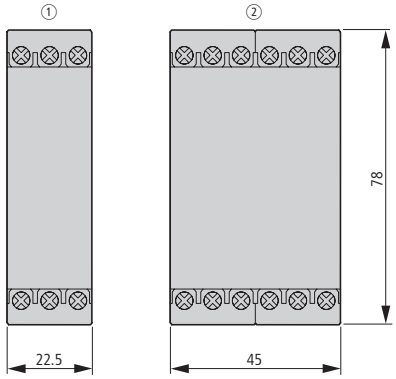
Electronic Safety Relays

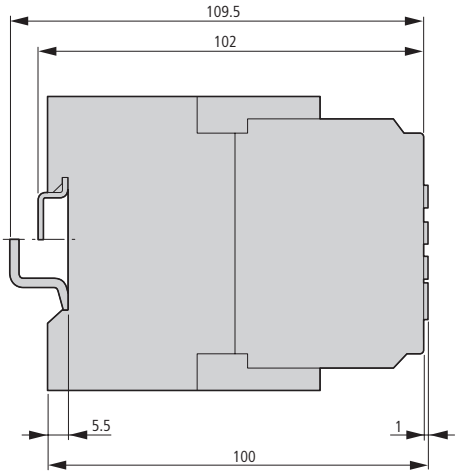
ESR4-...



Measuring and monitoring relays

EMR4-...

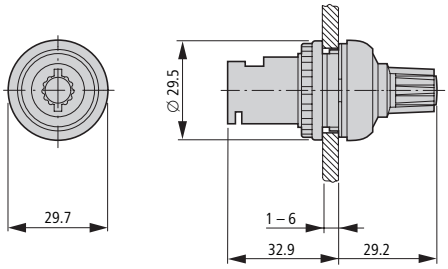




	①	②
EMR4-F500-2	●	
EMR4-W...1...	●	
EMR4-W...2...		●
EMR4-A...1...	●	
EMR4-N100-1-B	●	
EMR4-N500...		●
EMR4-R...		●
EMR4-AW...	●	

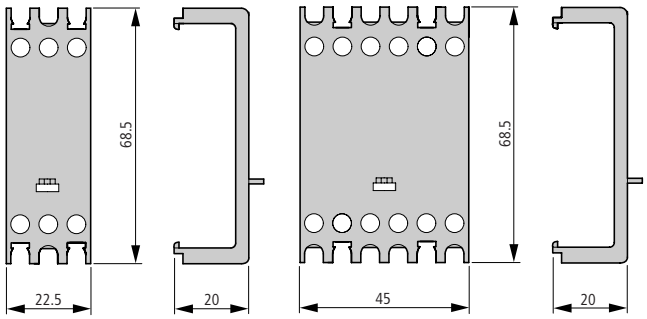
Potentiometer

M22-R...K...



Sealable shrouds

EMR4-PH...



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	Page
SmartWire	
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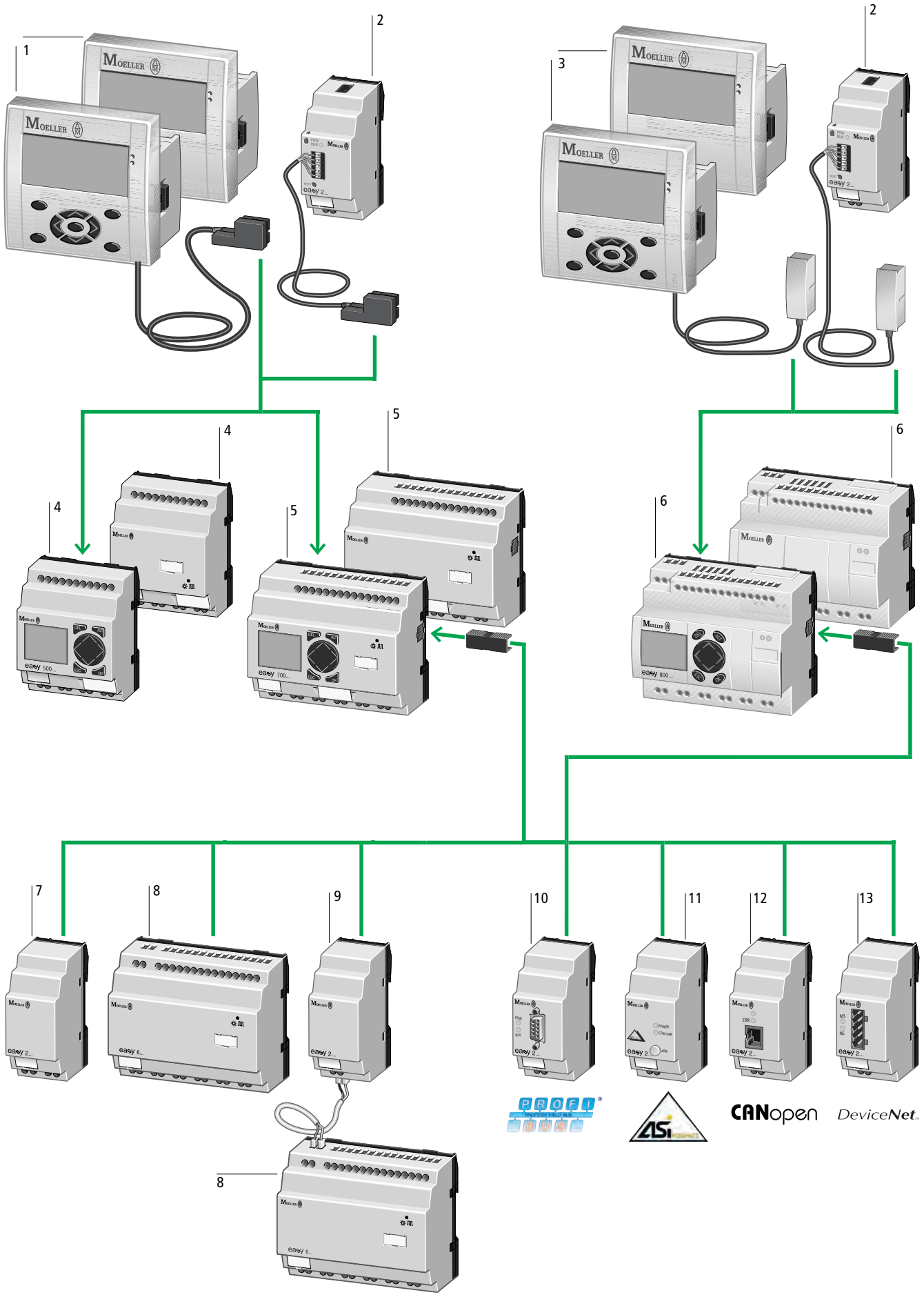
Technical data	4/71
Dimensions	4/75

Functions		easy500/700	easy800	MFD-...CP8...
Counter functions	Counter relay (up, down counting)	16 (0 … 32,000, max. 1 kHz)	32 ($\pm 2^{31}$)	32 ($\pm 2^{31}$)
	Frequency counter	–	4 (max. 5 kHz)	4 (max. 3 kHz)
	High-speed counter	–	4 (max. 5 kHz)	4 (max. 3 kHz)
	Incremental counter	–	2 (max. 3 kHz)	2 (max. 3 kHz)
	Operating hours counter	4 (operating hours value is stored super-retentively (e.g also with program change)		
Timing functions	Weekly timer (4 channels per timer, each channel offers one On/Off time)	8	32	32
	Year time switch	8	32	
	Set cycle time	–	1	1
	Timing relay	16 (0.01 s … 99 h 59 min)	32 (0.005 s … 2^{32} min), On-delayed and/or off-delayed (optionally: random switching), single pulse, flashing	
Program sequencing functions	Jump	8	32	32
	Conditional jump	–	32	32
	Master reset	3	32	32
Maths functions	Analog value comparator	16	32	32
	Arithmetic	–	32 (ADD, SUB, MUL, DIV)	32 (ADD, SUB, MUL, DIV)
	PID controller	–	32	32
	PT1 signal smoothing filter	–	32	32
	Value scaling	–	32	32
	Numerical converter	–	32	32
	Pulse output	–	2	–
	Pulse width modulation	–	2	2
	Value limitation	–	32	32
Memory functions	Block comparison	–	32	32
	Block transfer	–	32	32
	Boolean sequence	–	32 (AND, OR, NOT)	32 (AND, SUB, MUL, DIV)
	Comparators	16	32	32
	Data function block	–	32	32
	Data multiplexer	–	32	–
	Shift register	–	32	32
	Table function	–	32	32
Communication functions	Get value from NET	–	32	32
	Put value on NET	–	32	32
	Bit output via NET	–	32	32
	Bit input via NET	–	32	32
	Diagnostic alarm	–	9	9
	Serial protocol	–	32	–
	Synchronize clock via NET	–	1	1
Text functions	Text display (can be edited via software)	16 × (4 × 12 characters)	32 × (4 × 16 characters)	Yes
	Static text			Yes
	Message text			Yes
	Screen menu			Yes
	Running text			Yes
	Rolling text			Yes
Value entry functions	Date and time information			Yes
	Year time switch entry			Yes
	Latching button			Yes
	Button field			Yes
	Timing relay value entry	Yes	Yes	Yes
	Value entry			Yes
	7-day time switch entry			Yes
	Enter counter value/reference value/ OT	Yes	Yes	Yes
Value display functions	Bit display			Yes
	Message bitmap			Yes
	Bar graph			Yes
	Numerical value			Yes
	Timing relay value display			Yes
	Actual values	Yes	Yes	Yes
	Date and time	Yes	Yes	Yes



Detachable display

MFD(-AC)-CP4-500	1
24 V DC 100/240 V AC	
Serial interface	
Spring-loaded terminals	
Text display for MFD-80-(B) for easy500/ easy700	
Intgrated connection cable (5 m, can be cut to length)	
→ page 4/45	

MFD(-AC)-CP4-800	3
24 V DC 100/240 V AC	
Serial interface	
Spring-loaded terminals	
Text display MFD-80(-B) for easy800/ MFD-…-CP8-…	
Intgrated connection cable (5 m, can be cut to length)	
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Ethernet gateway

EASY209-SE	2
24 V DC	
Serial interface	
Protocols: ARP, Auto-IP, DHCP, HTTP, ICMP, SNMP, TCP, Telnet, TFTP, UDP	
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Basic devices

easy500	4
Stand alone	
12 V DC = EASY…-DA-… 24 V DC = EASY…-DC-… 24 V AC = EASY…-AB-… 100/240 V AC = EASY…-AC…	
8 digital inputs	
2 usable as analog inputs (all AB, DA or DC versions)	
4 relay outputs (max. 10 A) or	
4 transistor outputs	
LCD display, X versions without LCD	
Bolt-on and top-hat rail mounting	
Screw terminals	
Range of functions → page 4/29	
→ page 4/32	

easy700	5
Expandable: Inputs/outputs and bus systems	
12 V DC = EASY…-DA-… 24 V DC = EASY…-DC-… 24 V AC = EASY…-AB-… 100/240 V AC = EASY…-AC…	
12 digital inputs	
4 usable as analog inputs (all AB, DA or DC versions)	
6 relay outputs (max. 10 A) or	
8 transistor outputs	
LCD display, X versions without LCD	
Bolt-on and top-hat rail mounting	
Screw terminals	
Range of functions → page 4/29	
→ page 4/33	

easy800	6
Expandable: Inputs/outputs and Bus systems easy-NET on board	
12 V DC = EASY…-DA-… 24 V DC = EASY…-DC-… 24 V AC = EASY…-AB-… 100/240 V AC = EASY…-AC…	
12 digital inputs	
4 usable as analog inputs (all DC versions)	
6 relay outputs (max. 10 A) or	
8 transistor outputs	
1 analog output, optional on DC versions	
LCD display, X versions without LCD	
Bolt-on and top-hat rail mounting	
Screw terminals	
Range of functions → page 4/29	
→ page 4/34	

Output expansion

EASY202-RE	7
2 relay outputs (max. 10 A)	
Bolt-on and top-hat rail mounting	
Screw terminals	
→ page 4/45	

Input/output expansion

easy6…	8
24 V DC 100/240 V AC, 50/60 Hz	
12 digital inputs	
6 relay outputs (max. 10 A) or	
8 transistor outputs	
Bolt-on and top-hat rail mounting	
Screw terminals	
→ page 4/45	

Coupling unit

EASY200-EASY	9
For the remote connection of an easy6… I/O expansion module via 2-pole connection cable (max. 30 m), e.g. NYM 3 x 1.5 mm²	
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Bus modules

EASY204-DP	10
PROFIBUS DP connection as slave	
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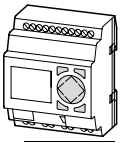
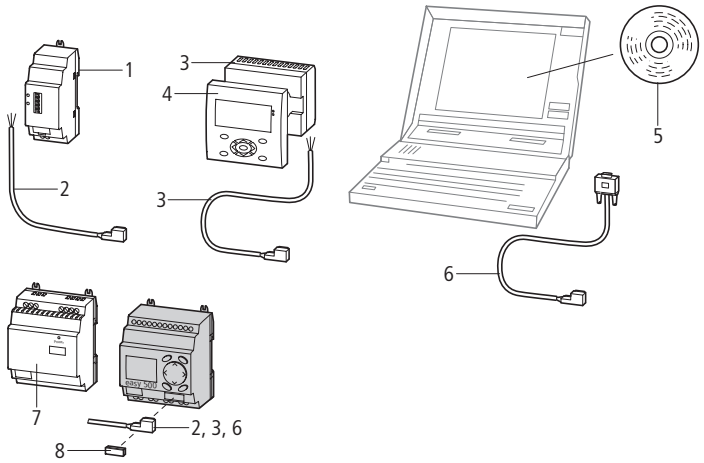
EASY205-ASI	11
AS-Interface connection as slave	
→ page 4/45	

EASY221-CO	12
CANopen interface	
→ page 4/45	

EASY222-DN	13
DeviceNet interface	
→ page 4/45	

Inputs		Outputs			Additional features		Supply voltage	**Part no.** Article no.	**Price** see price list	Std. pack
Digital	of which can be used as analog	Relay 10 A (UL)	Transistor	Analog	Display & keypad	Real time clock				
easy500										
Individual laser inscription possible with EASY-COMBINATION-* → page 4/48										
										
8	2	4			✔	✔	24 V AC	**EASY512-AB-RC** 274101		1 off
8	2	4				✔	24 V AC	**EASY512-AB-RCX** 274102		
8		4			✔		100/240 V AC	**EASY512-AC-R** 274103		
8		4			✔	✔	100/240 V AC	**EASY512-AC-RC** 274104		
8		4				✔	100/240 V AC	**EASY512-AC-RCX** 274105		
8	2	4			✔	✔	12 V DC	**EASY512-DA-RC** 274106		
8	2	4				✔	12 V DC	**EASY512-DA-RCX** 274107		
8	2	4			✔		24 V DC	**EASY512-DC-R** 274108		
8	2	4			✔	✔	24 V DC	**EASY512-DC-RC** 274109		
8	2	4				✔	24 V DC	**EASY512-DC-RCX** 274110		
8	2		4		✔	✔	24 V DC	**EASY512-DC-TC** 274111		
8	2		4			✔	24 V DC	**EASY512-DC-TCX** 274112		

Notes



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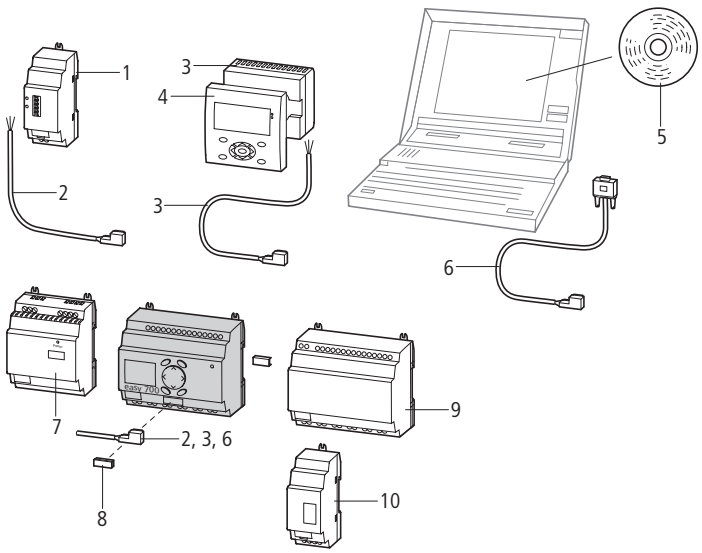
2 Connection cable	→ 4/46
3 Power supply unit/communication module	→ 4/35
4 Display/keypad	→ 4/38
5 Programming software	→ 4/45
6 PC programming cable	→ 4/45
7 Switched-mode power supply unit	→ 4/46
8 Memory card	→ 4/45

Inputs		Outputs			Additional features		Supply voltage	**Part no.** Article no.	**Price** see price list	Std. pack
Digital	of which can be used as analog	Relay 10 A (UL)	Transistor	Analog	Display & keypad	Real time clock				
easy700										
Expandable: Inputs/outputs and bus systems Individual laser inscription possible with EASY-COMBINATION-* → page 4/48										
12	4	6			✔	✔	24 V AC	**EASY719-AB-RC** 274113		1 off
12	4	6				✔	24 V AC	**EASY719-AB-RCX** 274114		
12		6			✔	✔	100/240 V AC	**EASY719-AC-RC** 274115		
12		6				✔	100/240 V AC	**EASY719-AC-RCX** 274116		
12	4	6			✔	✔	12 V DC	**EASY719-DA-RC** 274117		
12	4	6				✔	12 V DC	**EASY719-DA-RCX** 274118		
12	4	6			✔	✔	24 V DC	**EASY719-DC-RC** 274119		
12	4	6				✔	24 V DC	**EASY719-DC-RCX** 274120		
12	4		8		✔	✔	24 V DC	**EASY721-DC-TC** 274121		
12	4		8			✔	24 V DC	**EASY721-DC-TCX** 274122		

Notes



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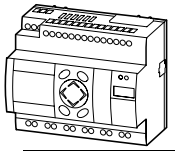
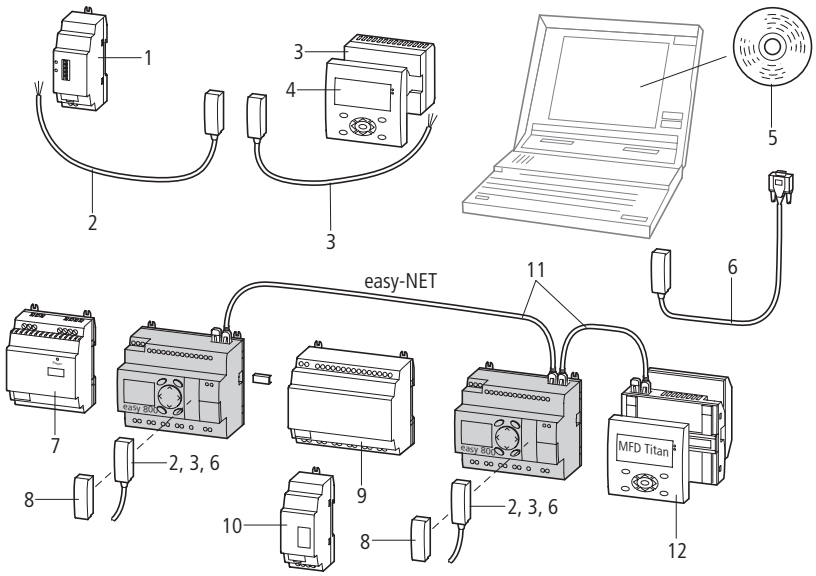
9 I/O expansion	→ 4/35
10 Output expansion, bus module, coupling module	→ 4/35

easy relay

Inputs		Outputs			Additional features		Supply voltage	**Part no.** Article no.	**Price** see price list	Std. pack
Digital	of which can be used as analog	Relay 10 A (UL)	Transistor	Analog	Display & keypad	Real time clock				
easy800										
Expandable: Inputs/outputs and bus systems Individual laser inscription possible with EASY-COMBINATION-* → page 4/48										
										
easy-NET on board										
12		6			✔	✔	100/240 V AC	**EASY819-AC-RC** 256267		1 off
12		6				✔	100/240 V AC	**EASY819-AC-RCX** 256268		
12	4	6			✔	✔	24 V DC	**EASY819-DC-RC** 256269		
12	4	6				✔	24 V DC	**EASY819-DC-RCX** 256270		
12	4	6		1	✔	✔	24 V DC	**EASY820-DC-RC** 256271		
12	4	6		1		✔	24 V DC	**EASY820-DC-RCX** 256272		
12	4		8		✔	✔	24 V DC	**EASY821-DC-TC** 256273		
12	4		8			✔	24 V DC	**EASY821-DC-TCX** 256274		
12	4		8	1	✔	✔	24 V DC	**EASY822-DC-TC** 256275		
12	4		8	1		✔	24 V DC	**EASY822-DC-TCX** 256276		

Notes



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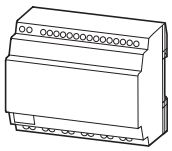
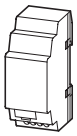
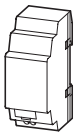
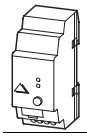
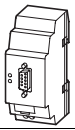
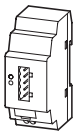
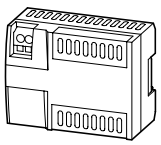
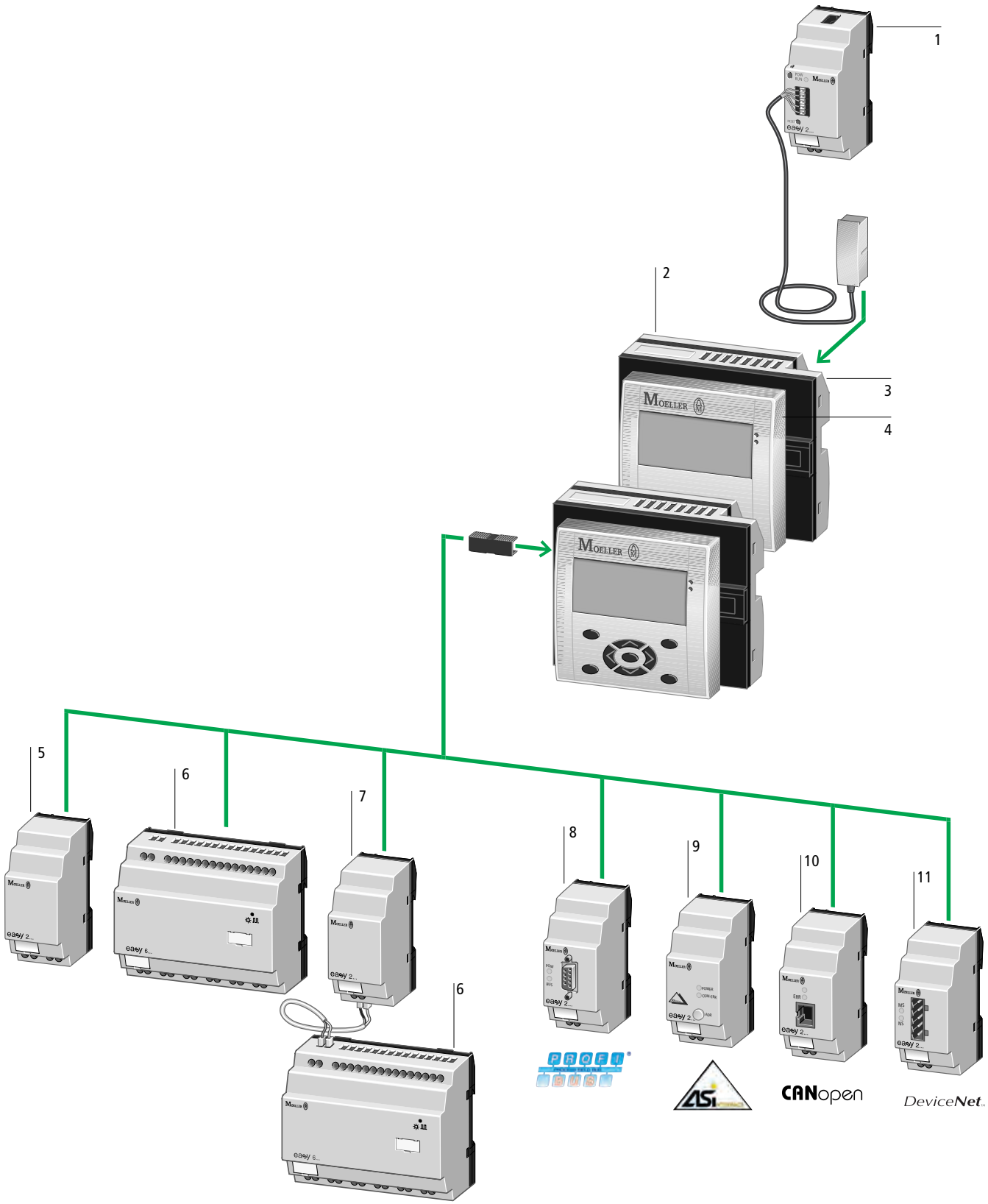
6 PC programming cable	→ 4/105
7 Switched-mode power supply unit	→ 4/46
8 Memory card	→ 4/45
9 I/O expansion	→ 4/35
10 Output expansion, bus module, coupling module	→ 4/35
11 easy-NET	→ 4/45
12 MFD-Titan	→ 4/38

		Description	Inputs	Outputs		Supply voltage	For use with	Part no. Article no.	Price see price list	Std. pack
			Digital	Relay 10 A (UL)	Transistor					
I/O expansions										
			12	6		100/240 V AC	easy700 easy800 EC4P MFD-CP8..	**EASY618-AC-RE** 212314		1 off
			12	6		24 V DC		**EASY618-DC-RE** 232112		
			12		8	24 V DC		**EASY620-DC-TE** 212313		
				2				**EASY202-RE**[1] 232186		
Coupling module										
		For the connection of remote I/O modules up to 30 m.					easy700 easy800 EC4P MFD-CP8..	**EASY200-EASY** 212315		1 off
Expansion units for networking										
	AS-interface	AS-Interface connection Slave 4 inputs, 4 outputs, 4 parameter bits Addresses available: 0 to 31					easy700 easy800 EC4P MFD-CP8..	**EASY205-ASI** 221598		1 off
	PROFIBUS-DP slave	PROFIBUS DP slave Addresses available: 1 to 126						**EASY204-DP** 212316		
	Fieldbus connection to CANopen	CANopen interface Addresses available: 1 to 127						**EASY221-CO** 233539		
	Fieldbus connection to DeviceNet	DeviceNet interface Addresses available: 0 to 63						**EASY222-DN** 233540		
Ethernet gateway										
	Protocols:ARP AutoIPDHCP HTTPICMP SNMPTCP TelnetTFTPUDP	Serial interface easy to Ethernet					easy500 easy700 easy800 MFD-CP8..	**EASY209-SE** 101520		1 off
Power supply unit/communication modules										
	24 V DC						easy500 easy700	**MFD-CP4-500** 274094		1 off
	24 V DC						easy800 MFD-CP8..	**MFD-CP4-800** 274095		
	100/240 V AC						easy500 easy700	**MFD-AC-CP4-500** 286823		
	100/240 V AC						easy800 MFD-CP8..	**MFD-AC-CP4-800** 286824		

Notes [1] Not for use in combination with EASY719-DA-… basic device



Ethernet gateway

EASY209-SE	1
24 V DC	
Serial interface	
Protocols: ARP, Auto-IP, DHCP, HTTP, ICMP, SNMP, TCP, Telnet, TFTP, UDP	
→ Page 4/35	

MFD-Titan
The MFD-Titan multi-function display can be run in the following combinations:
Power supply unit/CPU
Power supply unit/CPU + I/O modules
Power supply unit/CPU + display and operating unit
Power supply unit/CPU + display and operating unit + I/O modules
Range of functions → page 4/29

I/O modules	2
24 V DC 100/240 V AC	
12 digital inputs	
4 of which can be used as analog inputs (DC types)	
4 relay outputs (max. 10 A) or	
4 transistor outputs	
1 Analog output, optional (with DC types)	
→ Page 4/39	

I/O module with temperature measuring	2
24 V DC	
12 digital inputs	
2 of which can be used as analog inputs	
2 Pt 100 or 2 Ni 1000 inputs	
4 transistor outputs	
1 analog output, optional	
→ Page 4/39	

Power supply unit/CPU	3
24 V DC 100/240 V AC	
easy-NET integrated, optional	
→ Page 4/38	

Display/keypad	4
Full graphic display 132 × 64 Pixel LCD display, monochrome	
With or without keypad	
Individual laser inscription possible	
IP 65, NEMA 4x	
→ Page 4/38	

Output expansion

EASY202-RE	5
2 relay outputs (max. 10 A)	
Bolt-on and top-hat rail mounting	
Screw terminals	
→ Page 4/35	

Input/output expansion

easy6…	6
24 V DC 100/240 V AC, 50/60 Hz	
12 digital inputs	
6 relay outputs (max. 10 A) or	
8 transistor outputs	
Bolt-on and top-hat rail mounting	
Screw terminals	
→ Page 4/35	

Coupling unit

EASY200-EASY	7
For the remote connection of an easy6… I/O expansion module via 2-pole connection cable (max. 30 m), e.g. NYM 3 × 1.5 mm²	
→ Page 4/35	

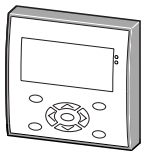
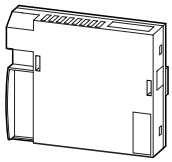
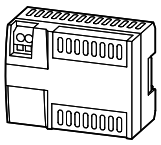
Bus modules

EASY204-DP	8
PROFIBUS DP connection as slave	
→ Page 4/35	

EASY205-ASI	9
AS-Interface connection as slave	
→ Page 4/35	

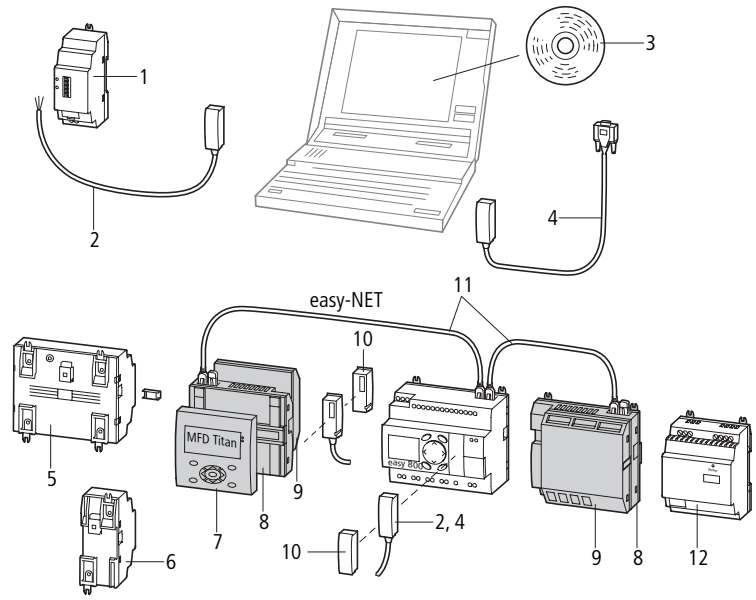
EASY221-CO	10
CANopen interface	
→ Page 4/35	

EASY222-DN	11
DeviceNet interface	
→ Page 4/35	

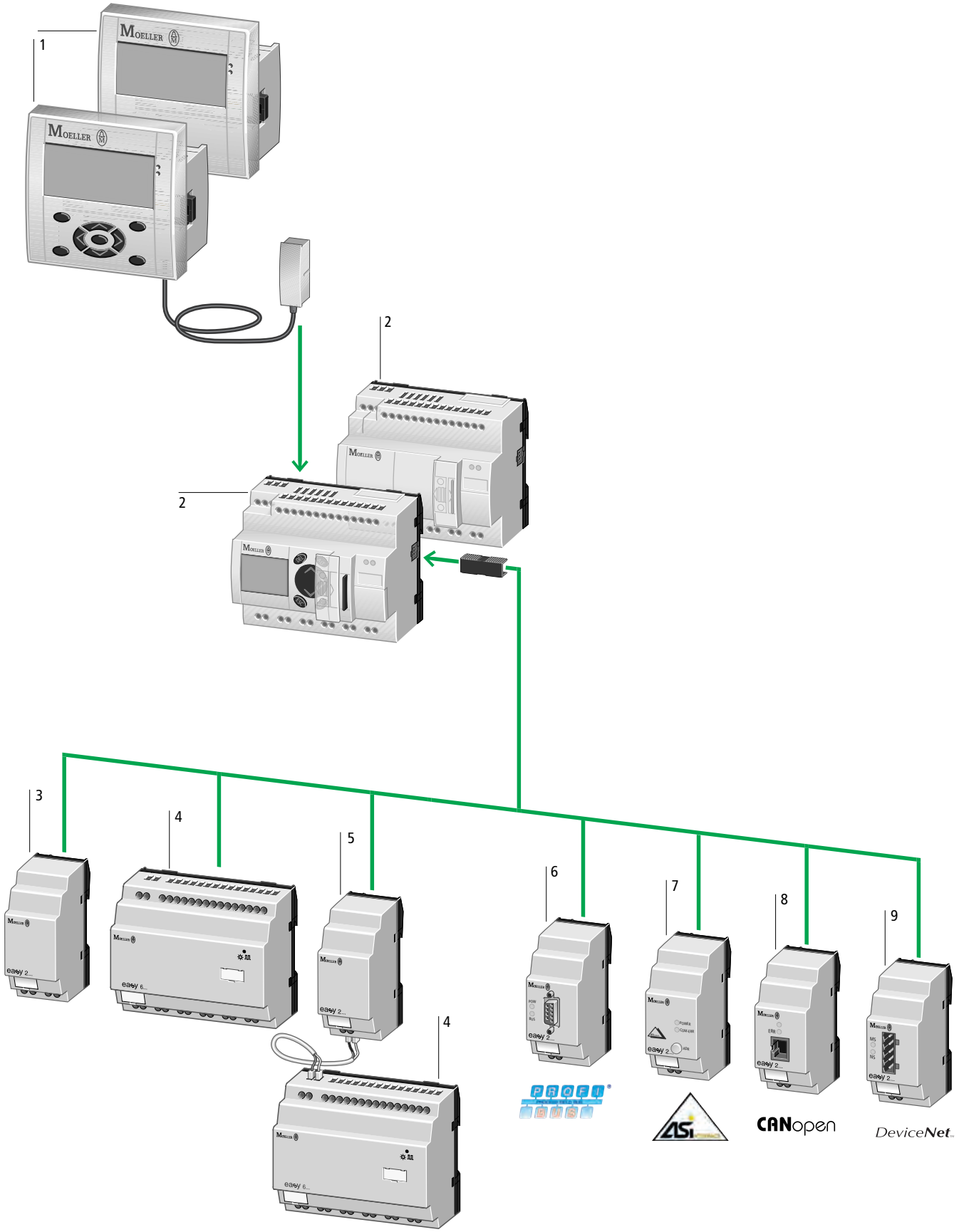
		Description	Part no. Article no.	Price see price list	Std. pack
Display/operating unit					
Graphics display: 132 × 64 pixels with switchable backlight Customized laser inscription, MFD-Combination-* possible → page 4/48 Switched Status-LED IP65, removable titanium front frame					
		With keypad and Moeller logotype NEMA 4x in connection with MFD-XM-80 protective membrane → Accessories	**MFD-80-B** 265251		1 off
		With keypad, without Moeller logotype NEMA 4x in connection with MFD-XM-80 protective membrane → Accessories	**MFD-80-B-X** 284905		
		Without keypad, with Moeller logotype NEMA 4x	**MFD-80** 265250		
		Without keypad, without Moeller logotype NEMA 4x	**MFD-80-X** 284904		
Power supply unit/CPU module					
Expandable with MFD-80-.. and I/O module, easy expansions can be connected Serial interface IP20, springloaded terminals					
	100/240 V AC	without easy-NET	**MFD-AC-CP8-ME** 274091		1 off
	100/240 V AC	with easy-Net	**MFD-AC-CP8-NT** 274092		
	24 V DC	without easy-NET	**MFD-CP8-ME** 267164		
	24 V DC	with easy-NET	**MFD-CP8-NT** 265253		
Power supply unit/communication modules					
Serial interface, detachachable display for easy/MFD Intgrated connection cable (5 m, can be cut to length)					
	24 V DC	easy500 easy700	**MFD-CP4-500** 274094		1 off
	24 V DC	easy800 MFD-CP8..	**MFD-CP4-800** 274095		
	100/240 V AC	easy500 easy700	**MFD-AC-CP4-500** 286823		
	100/240 V AC	easy800 MFD-CP8..	**MFD-AC-CP4-800** 286824		

	Inputs			Outputs			Temperature range	Part no. Article no.	Price see price list	Std. pack
	Digital	of which can be used as analog	Upper value of setting range	Relay 10 A (UL)	Transistor	Analog				
I/O modules										
IP20, cage clamp terminals										
24 V DC for MFD-CP8..	12	4		4				**MFD-R16** 265254		1 off
	12	4			4			**MFD-T16** 265255		
	12	4		4		1		**MFD-RA17** 265364		
	12	4			4	1		**MFD-TA17** 265256		
100/240 V AC for MFD-AC-CP8…	12			4				**MFD-AC-R16** 274093		
I/O modules with temperature measuring										
IP20, springloaded terminals										
24 V DC for MFD-CP8… (from device version 08), temperature range can be set.	6	2	2		4		-40…+90 °C 0…+250 °C 0…+400 °C	**MFD-TP12-PT-A** 106042		1 off
	6	2	2		4		-200…+200 °C 0…+850 °C	**MFD-TP12-PT-B** 106043		
	6	2	2		4		-40…+90 °C 0…+250 °C	**MFD-TP12-NI-A** 106044		
	6	2	2		4	1	-40…+90 °C 0…+250 °C 0…+400 °C	**MFD-TAP13-PT-A** 106045		
	6	2	2		4	1	-200…+200 °C 0…+850 °C	**MFD-TAP13-PT-B** 106046		
	6	2	2		4	1	-40…+90 °C 0…+250 °C	**MFD-TAP13-NI-A** 106047		

Notes



Accessories	Page
1 Ethernet gateway	→ 4/35
2 Connection cable	→ 4/46
3 Programming software	→ 4/45
4 PC programming cable	→ 4/45
5 I/O expansion	→ 4/35
6 Output expansion, bus module, coupling module	→ 4/35
7 Display/keypad	→ 4/38
8 Power supply unit/CPU	→ 4/38
9 I/O module	→ 4/39
10 Memory card	→ 4/45
11 easy-NET	→ 4/45
12 Switched-mode power supply unit	→ 4/46



Detachable display

MFD(-AC)-CP4-800	1
24 V DC 100/240 V AC	
Serial interface	
Spring-loaded terminals	
Text display MFD-80(-B) for EC4P	
Integrated connection cable (5 m, can be cut to length)	
→ page 4/35	

Basic devices

EC4P	2
Expandable: inputs/outputs and Bus systems, easy-NET/CANopen on board, Ethernet optional	
24 V DC	
12 digital inputs	
4 of which can be used as analog inputs	
6 relay outputs (max. 10 A) or	
8 transistor outputs	
1 analog output, optional	
LCD display, optional	
Bolt-on and top-hat rail mounting	
Screw terminals	
→ page 4/42	

Output expansion

EASY202-RE	3
2 relay outputs (max. 10 A)	
Bolt-on and top-hat rail mounting	
Screw terminals	
→ page 4/35	

Input/output expansion

easy6…	4
24 V DC 100/240 V AC, 50/60 Hz	
12 digital inputs	
6 relay outputs (max. 10 A) or	
8 transistor outputs	
Bolt-on and top-hat rail mounting	
Screw terminals	
→ page 4/35	

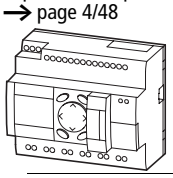
Coupling unit

EASY200-EASY	5
For the remote connection of an easy6… I/O expansion module via 2-pole connection cable (max. 30 m), e.g. NYM 3 × 1.5 mm²	
→ page 4/35	

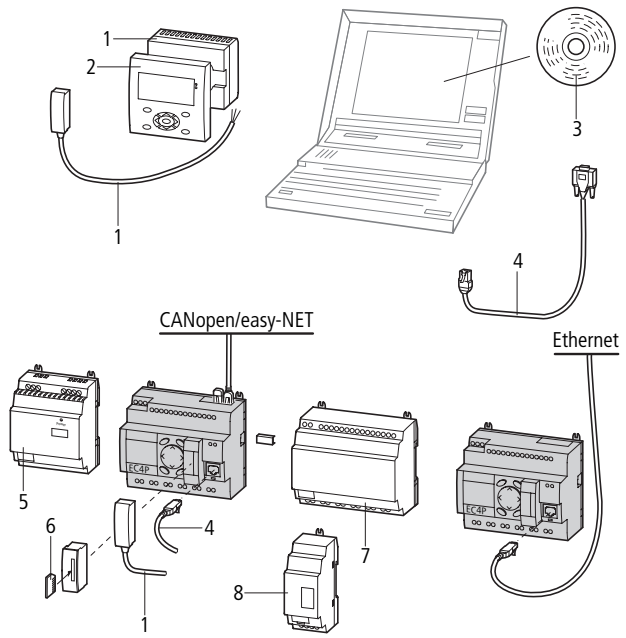
Bus modules

EASY204-DP	6
PROFIBUS DP connection as slave	
→ page 4/35	
EASY205-ASI	7
AS-Interface connection as slave	
→ page 4/35	

EASY221-CO	8
CANopen interface	
→ page 4/35	
EASY222-DN	9
DeviceNet interface	
→ page 4/35	

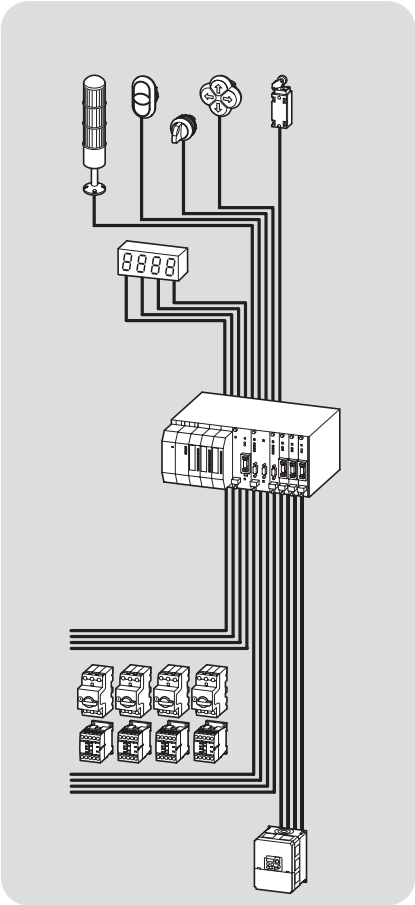
Inputs		Outputs			Additional features	Supply voltage	**Part no.** Article no.	**Price** see price list	Std. pack
Digital	of which can be used as analog	Relay 10 A (UL)	Transistor	Analog	Display & keypad				
easy Control									
Expandable: Inputs/outputs and bus systemsIndividual laser inscription possible with EC4-COMBINATION-* → page 4/48									
									
easy-NET/CANopen on board									
12	4		8		✔	24 V DC	**EC4P-221-MTXD1** 106391		1 off
12	4		8				**EC4P-221-MTXX1** 106392		
12	4	6			✔		**EC4P-221-MRXD1** 106393		
12	4	6					**EC4P-221-MRXX1** 106394		
12	4		8	1	✔		**EC4P-221-MTAD1** 106395		
12	4		8	1			**EC4P-221-MTAX1** 106396		
12	4	6		1	✔		**EC4P-221-MRAD1** 106397		
12	4	6		1			**EC4P-221-MRAX1** 106398		
easy-NET/CANopen and Ethernet on board									
12	4		8		✔	24 V DC	**EC4P-222-MTXD1** 106399		1 off
12	4		8				**EC4P-222-MTXX1** 106400		
12	4	6			✔		**EC4P-222-MRXD1** 106401		
12	4	6					**EC4P-222-MRXX1** 106402		
12	4		8	1	✔		**EC4P-222-MTAD1** 106403		
12	4		8	1			**EC4P-222-MTAX1** 106404		
12	4	6		1	✔		**EC4P-222-MRAD1** 106405		
12	4	6		1			**EC4P-222-MRAX1** 106406		

Notes

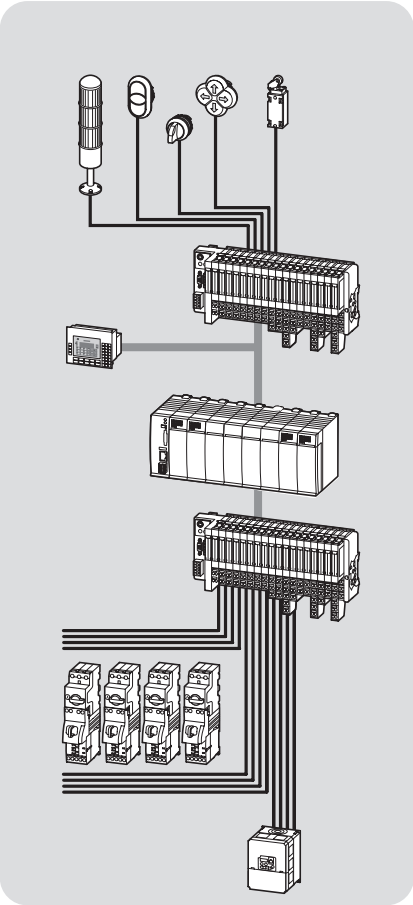


Accessories	**Page**
1 Power supply unit/communication module	→ 4/35
2 Display/keypad	→ 4/38
3 Programming software	→ 4/45
4 PC programming cable	→ 4/45
5 Switched-mode power supply unit	→ 10/96
6 Memory card	→ 4/45
7 I/O expansion	→ 4/35
8 output expansion, bus module, coupling module	→ 4/35

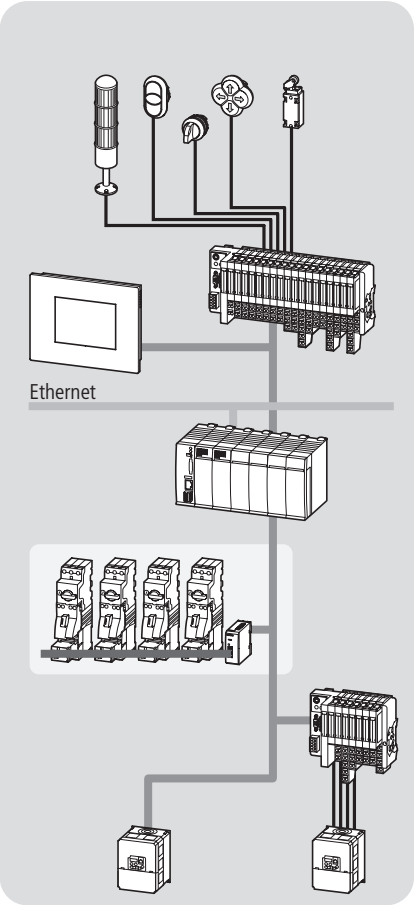
Earlier



Today



Today with easy Connect SmartWire



Evolution in the switchboard

Earlier every sensor and actuator must be wired to an input and output of the central PLC. The result was a high wiring complexity, larger switchboards and many possibilities to make errors.
Today the sensors and actuators are wired to a decentral preprocessing point and from there to the central PLC via a field Bus. The result: Reduced wiring coplexity due to decentalised inputs/outputs (I/Os) and field bus technology. The controls are distributed over the machine in several small switchboards. The number of wired inputs and outputs remains however the same. The distances between switchboards is simply bridged using field buses.
Today - with easy Connect SmartWire - for example motor starters can be directly connected to the PLC and save as intelligent wiring aids not only wiring complexity but also central and decentral I/Os. Wiring errors are impossible. The inputs and outputs are placed exactly where they are required - directly on the switchgear.

What is easy Connect SmartWire?

SmartWire means "connect instead of wiring" and allows the connection from the switchgear (e.g. motor starter) to a PLC without the conventional control wiring. The control wiring between the PLC and the switchgear is replaced by the plug-in SmartWire modules and a pre-manufactured connection cable. The wiring complexity is drastically reduced and wiring errors are impossible. There are further savings also with the engineering, the commissioning and the search for faults on the machine or system. SmartWire modules can be plugged onto standard motor starter combinations that transmit the state of the contactors and the motor protection to a connected PLC and that transmit the control commands from the PLC to the contactor coils.

- PROFIBUS-DP-SmartWire → page 9/29
- CANopen-SmartWire → page 4/44
- easy-NET-SmartWire → page 4/44

Further SmartWire components, accessories and descriptions can be found in Section "Motor starter, easy Connect SmartWire".

easy Connect SmartWire gateway

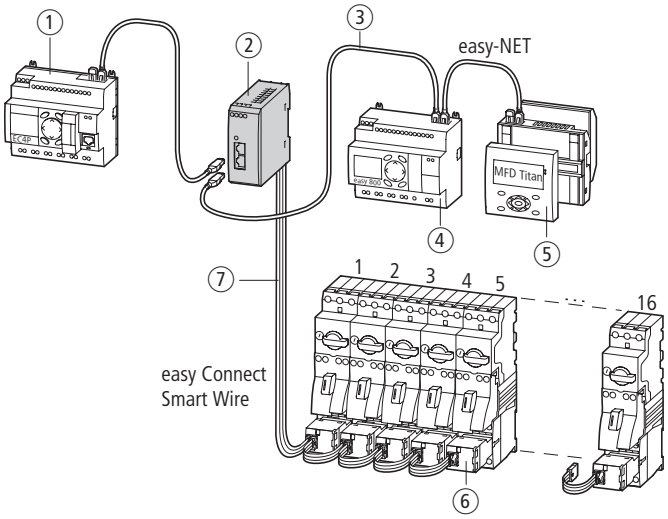
The gateway allows the communication between 16 SmartWire modules and easy-NET compatible or CANopen compatible PLCs. It has a pre-select switch to decide the type of operation, easy-NET or CANopen. The Gateway delivers the supply voltage for the electronic supply of the SmartWire module and for the power element of the switchgear, e.g. the contactor coil actuation. The voltage is supplied to the modules via the SmartWire connection cable.

Description	Part no. Article no.	Price see price list	Std. pack
easy Connect SmartWire Gateway			
 Gateway for connecting up to 16 SmartWire modules to easy-NET or CANopen	**EASY223-SWIRE** 106950		1 off

Notes

Mode of operation, easy-NET

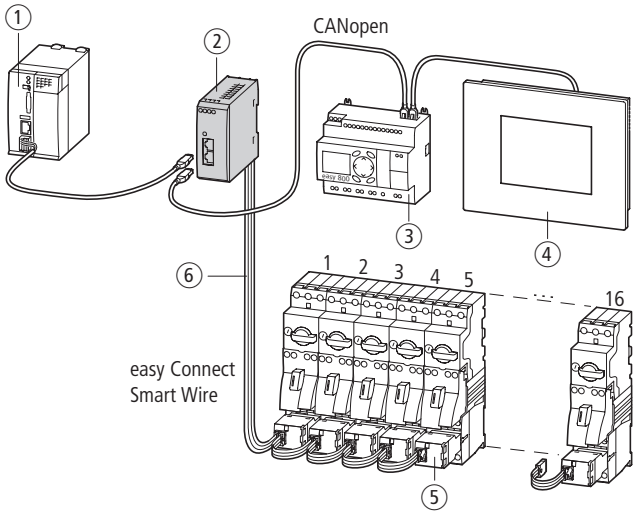
In easy-NET mode the gateway acts as a station on easy-NET and the SmartWire master at the same time. Up to 8 stations on the easy-NET can be intelligently connected with each other.



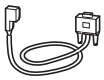
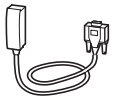
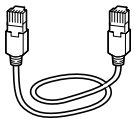
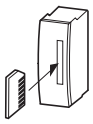
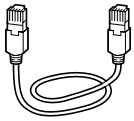
① Head-end controller (EASY8…, MFD-CP8-NT, EC4P…, XC201)
② easy Connect SmartWire gateway → page 4/44
③ easy-NET → page 4/45
④ easy-NET station, e.g. easy800 → page 4/34
⑤ easy-NET station, e.g. MFD-CP8-NT → page 4/38
⑥ SmartWire module, e.g. for XStart → page 9/29
⑦ SmartWire connection cable → page 9/29

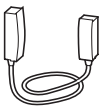
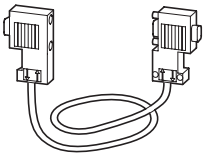
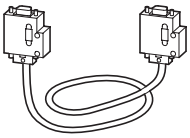
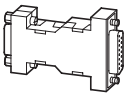
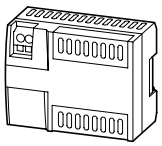
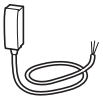
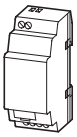
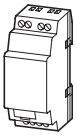
CANopen operating mode

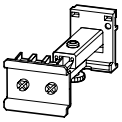
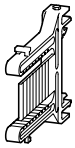
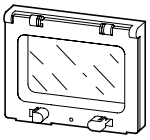
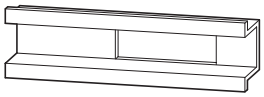
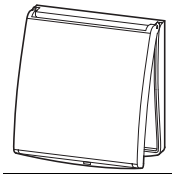
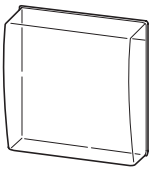
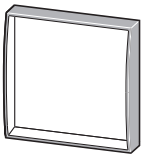
CANopen mode allows communication between SmartWire modules and controllers with CANopen interface such as EC4-200 or XC100/200. In addition to standard fieldbus modules such as remote I/O systems or visualisation devices, this allows a number of switchgear devices to be networked directly with the PLC. Up to 126 stations can be connected to a CANopen network, depending on the performance level of the CANopen fieldbus master.

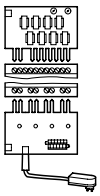


① CANopen PLC e.g. EC4P, XC100/XC200 → page 4/82
② easy Connect SmartWire gateway → page 4/44
③ CANopen PLC e.g.: EC4P-200 → page 4/42
④ CANopen station, e.g. MI4 → page 4/103
⑤ SmartWire module, e.g.: for XStart → page 9/29
⑥ SmartWire connection cable → page 9/29

	Description	For use with	Part no. Article no.	Price see price list	Std. pack
Programming software					
	Menu selection in 13 languages Operating systems: Windows 2000 SP4, Windows XP SP1	easy400/500/600/700	**EASY-SOFT-BASIC** 284545		1 off
	Menu selection in 13 languages Operating systems: Windows 2000 SP4, Windows XP SP1	easy400/500/600/700/800/ MFD-..-CP8	**EASY-SOFT-PRO** 266040		
	Menu selection in 3 languages Operating systems: WIN NT 4.0 SP6, WIN 2000 SP3, WIN XP SP2	EC4P	**ECP-SOFT** 106407		
Programming cable					
	SUB-D 9-pole, serial, 2 m	easy500 easy700	**EASY-PC-CAB** 202409		1 off
	SUB-D 9-pole, serial, 2 m	easy800 MFD-..-CP8	**EASY800-PC-CAB** 256277		
	SUB-D 9-pole, serial, 2 m	EC4P	**EU4A-RJ45-CAB1** 106726		
	Ethernet cross, 2 m	EC4P	**XT-CAT5-X-2** 256487		
	Ethernet cross, 5 m	EC4P	**XT-CAT5-X-5** 256488		
Memory cards					
	32-kB module	easy500 easy700	**EASY-M-32K** 270884		1 off
	256-kB module	easy800 MFD-..-CP8	**EASY-M-256K** 256279		
	Adapter with at least 64 MByte memory card	EC4P	**EU4A-MEM-CARD1** 106409		
Coupling piece					
	Spare link between base unit and expansion units	easy700/800/MFD-..-CP8/ EC4P	**EASY-LINK-DS** 221607		1 off
Network connection cable (remote coupling)					
Completely prepared for EASY8... NET					
	Length: 0.3 m	easy-NET	**EASY-NT-30** 256283		1 off
	Length: 0.8 m		**EASY-NT-80** 256284		
	Length: 1.5 m		**EASY-NT-150** 256285		
Bus termination resistor					
	8 pole, RJ45, 124 Ω Connection to PIN 1 and PIN 2	easy-NET	**EASY-NT-R** 256281		2 off
Data cable					
	4-core 4 × 0.14 mm², twisted pair, AWG 26	easy-NET	**EASY-NT-CAB** 256286		1 off
Bus connector plug					
	8 pole, RJ45	easy-NET	**EASY-NT-RJ45** 256280		10 off
Crimping tool					
	For RJ-45 plug	EASY-NT-CAB EASY-NT-RJ45	**EASY-RJ45-TOOL** 256282		1 off

	Description	For use with	Part no. Article no.	Price see price list	Std. pack
Point-to-point connection cable					
	Serial interface for connecting MFD-..-CP8 to easy800 or MFD-..-CP8, can be configured as required with separate plug, 5 m can be cut as required	easy800 MFD-..-CP8	**MFD-800-CAB5** 266041		1 off
PROFIBUS DP data cable					
	Length: 100 m Twisted pair, without plug, 2-core, 2 × 0.64 mm² 100 m	EASY204-DP	**ZB4-900-KB1** 206983		100 m
PROFIBUS-DP bus connector plug					
	Pins, 9-pin Cable entry, angled 90°	PROFIBUS-DP	**ZB4-209-DS2** 206982		1 off
	Metallised insulated housing Maximum transfer rate 12 MBit/s Integrated switch (accessible from the outside) for the bus terminating resistors Terminal block for two cable entries, with straight or 90° angled cable entry, as required	EASY204-DP	**ZB4-209-DS3** 217820		1 off
Adapter for the connection between easy800 and MI4					
	Connection of MI4 operator panel to easy800 or MFD-..-CP8 in conjunction with programming cable EASY800-PC-CAB	easy800 MFD-..-CP8 EASY800-PC-CAB	**ZB4-03B-AD1** 257176		1 off
Reserve power supply/communications module					
For MFD-80… separately mounted display (only ASCII characters) on easy500/700/800/EC4P/MFD-…-CP8, without connection cable, serial interface.					
	24 V DC, IP20	MFD-80..	**MFD-CP4** 280888		1 off
	100/240 V AC, IP20	MFD-80..	**MFD-AC-CP4** 286822		1 off
Spare connection cables					
	For the connection of MFD-CP4-500 to easy500/easy700 5 m, can be cut to length	easy500 easy700	**MFD-CP4-500-CAB5** 280886		1 off
	For the connection of MFD-CP4-800 to easy800/MFD-…-CP8 5 m, can be cut to length	easy800 MFD-..-CP8	**MFD-CP4-800-CAB5** 280887		1 off
Switched-mode power supply unit					
Primary-switched mode, stabilized					
	Rated input voltage: 50/60 HZ: 100/240 V AC Rated output voltage (residual ripple): 24 V DC (± 3 %) Rated output current: 1.25 A	easy500 easy700 easy800 MFD-CP8 EC4P	**EASY400-POW** 212319		1 off
	Rated input voltage: 50/60 Hz: 100/240 V Rated output voltage: 24 V/12 V DC Rated output current: 0.35 A/20 A	easy500 easy700 easy800 MFD-CP8 EC4P	**EASY200-POW** 229424		1 off
Upstream device					
To increase the AC input current					
	6 channels	easy…-AC… MFD…-AC…	**EASY256-HCI** 231168		1 off

	Description	For use with	Part no. Article no.	Price see price list	Std. pack
Mounting accessories					
Fixing bracket					
	For screw fixing to mounting plate	easy200 easy500 easy700 easy800 MFD-CP8 EC4P	**ZB4-101-GF1** 061360		9 off
Telescopic clip					
	With 35 mm top-hat rail to IEC/EN 60715 for compensation of the mounting depth of rear mounted devices in CI-K... enclosures and cabinets. Stepless adjustment via scale from 75 – 115 mm. Screw and snap fixing (also suitable for PKZM0, FAZ, FIP, ETR, EMR4 etc.)	easy200 easy500 easy700 easy800 MFD-CP8 EC4P	**M22-TA** 226161		1 off
Top-hat rail adapter for hinged inspection window					
	12 mm × 66 mm × 82 mm Installation on hinged inspection window, for front fitting of devices. Complete set, consisting of 2 brackets and 4 screws	easy200 easy500 easy700 easy800 MFD-CP8 EC4P	**SKF-HA** 233782		1 off
Hinged inspection window					
	94 mm × 77 mm × 25 mm (4 space units)	easy500	**SKF-FF4** 233780		1 off
	130 mm × 77 mm × 25 mm (6 space units)	easy700 easy800 EC4P	**SKF-FF6** 233781		1 off
Mounting rail to IEC/EN 60715					
	Mounting rail with cutout specifically for MFD-AC-CP8.../MFD-CP8... for fixing easy expansion units (2 space units) Length: 142.5 mm	easy200	**MFD-TS-144** 274090		1 off
Protective cover					
	Transparent Protection against accidental actuation Can be sealed Application without front frame	MFD-80..	**MFD-XS-80** 265259		
Protective diaphragm					
	Transparent version for harsh environmental conditions and application in the food industry Increased protection rating to NEMA 4x for MFD-80-B	MFD-80..	**MFD-XM-80** 265258		1 off
Front frame					
	Gold frame for MFD-80…		**MFD-FR-80-AU** 267165		1 off

	Description	For use with	Part no. Article no.	Price see price list	Std. pack
Input/output simulator					
	Simulator with 100/240 V AC plug-in power supply unit/24 V DC output, suitable for easy500-DC.	easy500	**EASY412-DC-SIM** 212318		1 off
	As EASY412-DC-SIM with 120 V AC plug-in power supply unit/ 24 V DC output,plug suitable for North America	easy500	**EASY412-DC-SIM-NA** 222566		
Manuals					
	User manual, German	easy500/700	**AWB2528-1508D** 278499		1 off
	User Manual, English	easy500/700	**AWB2528-1508GB** 278500		
	User manual, German	easy800	**AWB2528-1423D** 261371		
	User Manual, English	easy800	**AWB2528-1423GB** 262671		
	User manual, German	MFD-Titan	**AWB2528-1480D** 267187		
	User Manual, English	MFD-Titan	**AWB2528-1480GB** 267188		
Customized inscription With the Moeller Labeleditor inscription software, Procedure and ordering examples → Note					
	Customized inscription of easy control relay or programming with user program	easy500/700/800	**EASY-COMBINATION-*** 257823		1 off
	Customised inscription of MFD or programming with user program	MFD-80-X MFD-80-B-X	**MFD-COMBINATION-*** 265260		
	Individual laser inscription of the easy Control	EC4P	**EC4-COMBINATION-*** 107600		

Notes

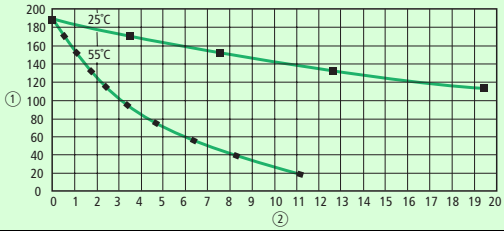
Individually inscribe your device in 4 stages:
- Download the inscription software: www.moeller.net/support, keyword: "Labeleditor".
- Creation of label template (menu-guided in the software)
- Send the label template to the factory by e-mail. The e-mail address is automatically set for the selected product by the program. When your template is sent, the Labeleditor issues a file name such as "EASY_12345.zip". This file name is part of the article to be ordered (see Ordering examples).
- Send order to the Moeller sales office or the electrical wholesalers.

Ordering example easy
EASY719-DC-RC with "Company logo":
1 x EASY-COMBINATION-*
1 x EASY719-DC-RC
1 x the file name "EASY_xxxxx.zip" issued by the Labeleditor

Ordering example: MFD-Titan
MFD-80-B multi-function display with "company name":
1 x MFD-COMBINATION-*
1 x MFD-80-B
1 x the file name "MFD_xxxxx.zip" issued by the Labeleditor

Ordering example: EC4P
EC4P-221-MTXD1 with "company logo":
1 x EC4-COMBINATION-*
1 x EC4P-221-MTXD1
1 x the file name "EC4P_xxxxx.zip" issued by the Labeleditor

			EASY200-EASY EASY202-RE	EASY512-...
General				
Standards			EN 55011, EN 55022, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27	
Dimensions (W × H × D)		mm	35.5 × 90 × 58 (2 space units)	71.5 × 90 × 58 (4 PE)
Weight		kg	0.07	0.2
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)	
Terminal capacities				
Solid		mm²	0.2/4 (AWG 22 – 12)	0.2/4 (AWG 22 – 12)
Flexible with ferrule		mm²	0.2/2.5 (AWG 22 – 12)	0.2/2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6
Climatic environmental conditions				
Operating ambient temperature		°C	–25 … 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Take appropriate measures to prevent condensation	
LCD display (clearly legible)		°C	0…55	0…55
Storage		°C	–40…70	–40…70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5…95	5…95
Air pressure (operation)		hPa	795…1080	795…1080
Ambient conditions, mechanical				
Degree of protection IEC/EN 60529			IP 20	IP 20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10…57	10…57
Constant acceleration 2 g		Hz	57…150	57…150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal/vertical	Horizontal/vertical
Electromagnetic compatibility (EMC)				
Overvoltage category/pollution degree			II/2	II/2
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)				
Supply cables		kV	2	2
Signal lines		kV	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical, EASY...AC)	
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (supply cables, symmetrical, EASY...DC)	
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10	10
Insulation resistance				
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, no. 142	
Insulation resistance			EN 50178	EN 50178
Back-up/Accuracy of the real-time clock				
Backup time				→Page 5
Accuracy of the real-time clock		s/day		typ. ± 5 (± 0.5 h / annually)
Repetition accuracy of timing relays				
Accuracy of timing relays (of values)		%		± 1
Resolution				
Range "S"		ms		10
Range "M:S"		s		1
Range "H:M"		min		1
Retentive memory				
Write cycles of the retentive memory				1000000 (10^6)
Notes			For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423D	

			EASY6... /EASY7...	EASY8...-...
General				
Standards			EN 55011, EN 55022, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27	
Dimensions (W × H × D)		mm	107.5 × 90 × 58 (6 PE)	107.5 × 90 × 72 (6 PE)
Weight		kg	0.3	0.3
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)	
Terminal capacities				
Solid		mm^2	0.2/4 (AWG 22 – 12)	0.2/4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2/2.5 (AWG 22 – 12)	0.2/2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6
Climatic environmental conditions				
Operating ambient temperature		°C	–25 … 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Take appropriate measures to prevent condensation	
LCD display (clearly legible)		°C	0…55	0…55
Storage		°C	–40…70	–40…70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5…95	5…95
Air pressure (operation)		hPa	795…1080	795…1080
Ambient conditions, mechanical				
Degree of protection IEC/EN 60529			IP 20	IP 20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10…57	10…57
Constant acceleration 2 g		Hz	57…150	57…150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal/vertical	Horizontal/vertical
Electromagnetic compatibility (EMC)				
Overvoltage category/pollution degree			II/2	II/2
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)				
Supply cables		kV	2	2
Signal lines		kV	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical, EASY...AC)	
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (supply cables, symmetrical, EASY...DC)	
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10	10
Insulation resistance				
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, no. 142	
Insulation resistance			EN 50178	EN 50178
Back-up accuracy of the real-time clock (not easy600)				
Back-up of the real-time clock				
			① Back-up time (hours) ② Service life (years)	
Accuracy of the real-time clock		s/day	Normally ± 5 (± 0.5 h / year)	typ. ± 5 (± 0.5 h / year)
Repetition accuracy of the timing relays (not easy600)				
Accuracy of timing relays (of values)		%	± 0.02	± 0.02
Resolution				
Range "S"		ms	10	5
Range "M:S"		s	1	1
Range "H:M"		min	1	1
Retentive memory				
Write cycles of the retentive memory			1000000 (10^6)	10000000 (10^{10}) (read / write cycles)

			EASY512-DA-...	EASY719-DA-...
Power supply				
Rated operational voltage	U_e	V	12 DC (-15/+30%)	12 DC (-15/+30%)
Admissible range		V DC	10.2…15.6	10.2…15.6
Residual ripple		%	≦ 5	≦ 5
Input current				
Input current 115/230 V AC		mA	Normally 140	Normally 200
Voltage dips (IEC/EN 61131-2)		ms	10	10
Heat dissipation		W	Normally 2	Normally 3.5
Digital inputs 12 V DC				
Number			8	12
Inputs can be used as analog inputs			2 (I7, I8)	4 (I7, I8, I11, I12)
Status indication			LCD display (if provided)	LCD display (if provided)
Potential isolation				
From power supply			No	No
Between digital inputs			No	No
From the outputs			Yes	Yes
Rated operational voltage	U_e	V DC	12	12
On 0 signal	U_e	V DC	4 (I1 – I8)	4 (I1 – I12)
On 1 signal	U_e	V DC	8 (I1 – I8)	8 (I1 – I12)
Input current on 1 signal				
I1 to I6		mA	3.3 (at 12 V DC)	3.3 (at 12 V DC)
I7, I8		mA	1.1 (at 12 V DC)	1.1 (at 12 V DC)
I9 to I12		mA		3.3 (at 12 V DC)
Delay time from 0 to 1				
Debounce ON		ms	20	20
Debounce OFF		ms	Normally 0.3 (I1 – I6), 0.35 (I7, I8)	Normally 0.3 (I1 – I6, I9, I10), 0.35 (I7, I8, I11, I12)
Delay time from 1 to 0				
Debounce ON		ms	20	20
Debounce OFF		ms	Normally 0.3 (I1 – I6), 0.15 (I7, I8)	Normally 0.4 (I1 – I6, I9, I10), 0.35 (I7, I8, I11, I12)
Cable length (unscreened)		m	100	100
Frequency counter			2 (I3, I4)	2 (I3, I4)
Fast counter inputs			2 (I1, I2)	2 (I1, I2)
Max. counter frequency		kHz	<1	<1
Pulse shape			Square	Square
Cable length screened		m	< 30	< 30
Analog inputs				
Quantity			2 (I7, I8)	4 (I7, I8, I11, I12)
Potential isolation				
From power supply			No	No
From the digital inputs			No	No
From the outputs			Yes	Yes
From the PC interface, memory card NET network, EASY-Link			No	No
Input type			DC voltage	DC voltage
Signal range		V DC	0 – 10	0 – 10
Resolution, analog		V	0.01	0.01
Resolution, digital		V	0.01	0.01
Resolution, digital		Bit	10 (value 1 – 1023)	10 (value 0 – 1023)
Input impedance		kΩ	11.2	11.2
Accuracy of actual value				
Two EASY devices		%	± 3	± 3
Within a single device		%	± 2, (I7, I8, I11, I12) ± 0.12 V	± 2, (I7, I8, I11, I12) ± 0.12 V
Conversion time, analog/digital		ms	Debounce ON: 20; Debounce OFF: every cycle time	Debounce ON: 20; Debounce OFF: every cycle time
Input current		mA	< 1	< 1
Cable length screened		m	< 30	< 30
Relay outputs			→ Page 4/62	

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423D

			EASY512-AB-...	EASY719-AB-...
Power supply				
Rated operational voltage	U_e	V	24 V AC	24 V AC
Admissible range		V AC	20.4…26.4	20.4…26.4
Frequency		Hz	50/60 (± 5%)	50/60 (± 5%)
Input current				
At 24 V AC 50/60 Hz		mA	200	300
Voltage dips (IEC/EN 61131-2)		ms	20	20
Power loss				
At 24 V AC		VA	5	7
Digital inputs 24 V DC				
Number			8	12
Inputs can be used as analog inputs			2 (I7, I8)	4 (I7, I8, I11, I12)
Status indication			LCD-display (if present)	LCD-display (if present)
Potential isolation				
From power supply			No	No
Between digital inputs			No	No
From the outputs			Yes	Yes
Rated operational voltage	U_e	V	24 V AC	24 V AC
Rated voltage L (sinusoidal)				
On 0 signal		V AC	0 – 6	0 – 6
On 1 signal	U_e	V	(I7, I8) > 7 AC, > 9.5 DC (I1 - I6) 14 – 26.4 AC	(I7, I8, I11, I12) > 7 AC, > 9.5 DC (I1 - I6, I9, I10) 14 – 26.4 AC
Rated frequency		Hz	50 – 60	50 – 60
Input current on 1 signal				
I1 to I6		mA	4 (at 24 V AC, 50 Hz)	4 (at 24 V AC, 50 Hz)
I7, I8		mA	2 (at 24 V AC, 50 Hz) 2 (at 24 V DC)	2 (at 24 V AC, 50 Hz) 2 (at 24 V DC)
I9, I10		mA		4 (at 24 V AC, 50 Hz)
I11, I12		mA		2 (at 24 V AC, 50 Hz) 2 (at 24 V DC)
Delay time (0 – 1/1 – 0) I1 - I12				
Debounce ON 50/60 Hz		ms	80 / 66⅔	80 / 66⅔
Debounce OFF 50/60 Hz		ms	20 / 16⅔	20 / 16⅔
Max. admissible cable length (per input)				
Maximum cable length between stripped ends		m	40	40
I9, I10		m	Normally	Normally 40
Analog inputs				
Quantity			2 (I7, I8)	4 (I7, I8, I11, I12)
Potential isolation				
From power supply			No	No
From the digital inputs			No	No
From the outputs			Yes	Yes
From the PC interface, memory card NET network, EASY-Link			No	No
Input type			DC voltage	DC voltage
Signal range		V DC	0 – 10	0 – 10
Resolution, analog		V	0.01	0.01
Resolution, digital		V	0.01	0.01
Resolution, digital		Bit	10 (value 1 – 1023)	10 (value 0 – 1023)
Input impedance		kΩ	11.2	11.2
Accuracy of actual value				
Two EASY devices		%	± 3	± 3
Within a single device		%	± 2, (I7, I8) ± 0.12 V	± 2, (I7, I8, I11, I12) ± 0.12 V
Conversion time, analog/digital		ms	Debounce ON: 20; Debounce OFF: every cycle time	Debounce ON: 20; Debounce OFF: every cycle time
Input current		mA	< 1	< 1
Cable length screened		m	< 3	< 3
Relay outputs			→ Page 4/62	

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423D

			EASY512-DC-…	EASY6…-DC-…E	EASY7..-DC-...	EASY8..-DC-...
Power supply						
Rated operational voltage	U_e	V	24 DC (-15/+20%)	24 DC (-15/+20%)	24 DC (-15/+20%)	24 DC (-15/+20%)
Admissible range		V DC	20.4…28.8	20.4…28.8	20.4…28.8	20.4…28.8
Residual ripple		%	≦ 5	≦ 5	≦ 5	≦ 5
Input current						
Input current 115/230 V AC		mA	Normally 80	Normally 140	Normally 140	Normally 140
Voltage dips (IEC/EN 61131-2)		ms	10	10	10	10
Heat dissipation		W	Normally 2	Normally 3.4	Normally 3.5	Normally 3.4
Digital inputs 24 V DC						
Number			8	12	12	12
Inputs can be used as analog inputs			2 (I7, I8)		4 (I7, I8, I11, I12)	4 (I7, I8, I11, I12)
Status indication			LCD display (if provided)	LCD display (if provided)	LCD display (if provided)	LCD display (if provided)
Potential isolation						
From power supply			No	No	No	No
Between digital inputs			No	No	No	No
From the outputs			Yes	Yes	Yes	Yes
From the PC interface, memory card NET network, EASY-Link						Yes
Rated operational voltage	U_e	V DC	24	24	24	24
On 0 signal	U_e	V DC	< 5 (I1 – I8)	< 5 (I1 – I12, R1 – R12)	< 5 (I1 – I12, R1 – R12)	< 5 (I1 – I6, I9, I10) < 8 (I7, I8, I11, I12)
On 1 signal	U_e	V DC	> 15 (I1 – I6), > 8 (I7, I8)		> 15.0 (I1 – I6, I9, I10), > 8.0 (I7, I8, I11, I12)	> 15.0 (I1 – I6, I9, I10), > 8.0 (I7, I8, I11, I12)
Input current on 1 signal						
R1 to R12		mA		3.3 (at 24 V DC)		
I1 to I6		mA	3.3 (at 24 V DC)		3.3 (at 24 V DC)	3.3 (at 24 V DC)
I7, I8		mA	2.2 (at 24 V DC)		2.2 (at 24 V DC)	2.2 (at 24 V DC)
I9, I10		mA			3.3 (at 24 V DC)	3.3 (at 24 V DC)
I11, I12		mA			2.2 (at 24 V DC)	2.2 (at 24 V DC)
Delay time from 0 to 1						
Debounce ON		ms	20	20	20	20
Debounce OFF		ms	Normally 0.25 (I1 – I8)	Normally 0.25 (R1 – R12)	Normally 0.25 (I1 – I12)	Normally 0.1 (I1 – I4), Normally 0.25 (I5 – I12)
Delay time from 1 to 0						
Debounce ON		ms	20	20	20	20
Debounce OFF		ms				Normally 0.1 (I1 – I4), Normally 0.4 (I5, I6, I9, I12), normally 0.2 (I7, I8, I11, I12)
Cable length (unscreened)		m	100	100	100	100
Frequency counter						
Quantity			2 (I3, I4)		2 (I3, I4)	2 (I1, I2, I3, I4)
Counter frequency		kHz	< 1		< 1	< 5
Pulse shape			Square		Square	Square wave
Incremental counter						
Quantity						2 (I1 + I2, I3 + I4)
Counter frequency		kHz	≦ 1		≦ 1	≦ 3
Pulse shape						Square wave
Counter inputs I1 and I2, I3 and I4						2
Signal offset						90°
Pulse pause ratio						1:1
Rapid counter inputs						
Number			2 (I1, I2)		2 (I1, I2)	4 (I1, I2, I3, I4)
Counter frequency		kHz	< 1		< 1	< 5
Pulse shape			Square		Square	Square wave
Cable length, screened		m	< 20		< 20	< 20
Relay outputs			→ Page 4/62			
Transistor outputs			→ Page 4/64			

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423D

		EASY512-DC-…	EASY7..-DC-...	EASY8..-DC-...
Analog inputs				
Quantity		2 (I7, I8)	4 (I7, I8, I11, I12)	4 (I7, I8, I11, I12)
Potential isolation				
From power supply		No	No	No
From the digital inputs		No	No	No
From the outputs		Yes	Yes	Yes
From the PC interface, memory card NET network, EASY-Link		No	No	Yes
Input type		DC voltage	DC voltage	DC voltage
Signal range	V DC	0 – 10	0 – 10	0 – 10
Resolution, analog	V	0.01	0.01	0.01
Resolution, digital	V	0.01	0.01	0.01
Resolution, digital	Bit	10 (value 1 – 1023)	10 (value 0 – 1023)	10 (value 0 – 1023)
Input impedance	kΩ	11.2	11.2	11.2
Accuracy of actual value				
Two EASY devices	%	± 3	± 3	± 3
Within a single device	%	± 2, (I7, I8, I11, I12) ± 0.12 V	± 2, (I7, I8, I11, I12) ± 0.12 V	± 2, (I7, I8, I11, I12) ± 0.12 V
Conversion time, analog/digital	ms	Debounce ON: 20; Debounce OFF: every cycle time	Debounce ON: 20; Debounce OFF: every cycle time	Every CPU cycle
Input current	mA	< 1	< 1	< 1
Cable length screened	m	< 3	< 3	< 3

		EASY820-DC-RC(X) EASY822-DC-TC(X)
Analog outputs		
Number		1
Potential isolation		
From power supply		No
From the digital inputs		No
From the digital outputs		Yes
From the PC interface, memory card NET network, EASY-Link		Yes
Output type		DC voltage
Signal range	V DC	0 – 10
Max. output current	A	0.01
Load resistance		1 kΩ
Overload and short-circuit protection		Yes
Resolution, analog	V DC	0.01
Resolution, digital	Bit	10, (value: 0 – 1023)
Recovery time	µs	100
Accuracy		
-25 °C – 55 °C	%	2
25°C	%	1
Conversion time, analog/digital	ms	Every CPU cycle

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB,
EASY8... → AWB2528-1423D

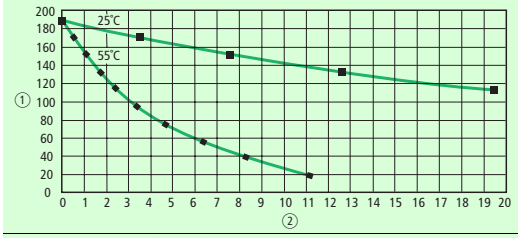
			EASY8…-…-…
NET network			
Stations		Number	max. 8
Data transfer rate/distance			1000 KBit/s, 6 m 500 KBit/s, 25 m 250 KBit/s, 60 m 125 KBit/s, 125 m 50 KBit/s, 300 m 20 KBit/s, 700 m 10 KBit/s, 1000 m
Potential isolation			
From power supply			Yes
From the inputs			Yes
From the outputs			Yes
From the PC interface, memory card NET network, EASY-Link			Yes
Bus termination (first and last station)			Yes
Connection technique			RJ45, 8-pole

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB,
EASY8... → AWB2528-1423D
Data transfer rate in the NET network: bus lengths of 40 m and over only attainable with cables with additional cross-section and connection adapter.

			EASY512-AC-R…	EASY618-AC-RE	EASY719-AC-RC.	EASY819-AC-RC.
Power supply						
Rated operational voltage	U_e	V	100/110/115/120/230/240 AC (+10/-15 %)	100/110/115/120/230/240 AC (+10/-15 %)	100/110/115/120/230/240 AC (+10/-15 %)	100/110/115/120/230/240 AC (+10/-15 %)
Admissible range		V AC	85…264	85…264	85…264	85…264
Frequency		Hz	50/60 (± 5%)	50/60 (± 5%)	50/60 (± 5%)	50/60 (± 5%)
Input current						
at 115/120 V AC 60 Hz		mA	Normally 40	Normally 70	Normally 70	Normally 70
at 230/240 V AC 50 Hz		mA	Normally 20	Normally 35	Normally 35	Normally 35
Voltage dips (IEC/EN 61131-2)		ms	20	20	20	20
Power loss						
at 115/120 V AC		VA	Normally 5	Normally 10	Normally 10	Normally 10
at 115/230 V AC		VA	Normally 5	Normally 10	Normally 10	Normally 10
Digital inputs 115/230 V AC						
Number			8	12	12	12
Status indication			LCD-display (if present)	LCD-display (if present)	LCD-display (if present)	LCD-display (if present)
Potential isolation						
From power supply			No	No	No	No
Between digital inputs			No	No	No	No
From the outputs			Yes	Yes	Yes	Yes
From the PC interface, memory card NET network, EASY-Link						Yes
Rated voltage L (sinusoidal)						
On 0 signal		V AC	0 – 40	0 – 40	0 – 40	0 – 40
On 1 signal		V AC	79 – 264	79 – 264	79 – 264	79 – 264
Rated frequency		Hz	50 – 60	50 – 60	50 – 60	50 – 60
Input current on 1 signal						
R1 to R12		mA		12 × 0.25 (at 115 V AC, 60 Hz)12 × 0.5 (at 230 V AC, 50 Hz)		
I1 to I6		mA	6 × 0.25 (at 115 V AC, 60 Hz)6 × 0.5 (at 230 V AC, 50 Hz)		6 × 0.25 (at 115 V AC, 60 Hz)6 × 0.5 (at 230 V AC, 50 Hz)	6 × 0.25 (at 115 V AC, 60 Hz)6 × 0.5 (at 230 V AC, 50 Hz)
I7 to I8		mA	2 × 4 (at 115 V AC, 60 Hz)2 × 6 (at 230 V AC, 50 Hz)		2 × 4 (at 115 V AC, 60 Hz)2 × 6 (at 230 V AC, 50 Hz)	2 × 4 (at 115 V AC, 60 Hz)2 × 6 (at 230 V AC, 50 Hz)
I9 to I12		mA			4 × 0.25 (at 115 V AC, 60 Hz)4 × 0.5 (at 230 V AC, 50 Hz)	4 × 0.25 (at 115 V AC, 60 Hz)4 × 0.5 (at 230 V AC, 50 Hz)
Delay time						
Delay time (0 – 1/1 – 0) I1 to I6, I9 to I12, R1 to R12						
Debounce ON 50/60 Hz		ms	80 / 66⅔	80 / 66⅔	80 / 66⅔	80 / 66⅔
Debounce OFF 50/60 Hz		ms	20 / 16⅔	20 / 16⅔	20 / 16⅔	20 / 16⅔
Delay time I7, I8 (1 – 0)						
Debounce ON 50/60 Hz		ms	160 / 150	80 / 66⅔	80 / 66⅔	120 / 100
Debounce OFF 50/60 Hz		ms	100 / 100	20 / 16⅔	20 / 16⅔	40 / 33⅓
Delay time I7, I8 (0 – 1)						
Debounce ON 50/60 Hz		ms	80 / 66⅔	80 / 66⅔	80 / 66⅔	80 / 66⅔
Debounce OFF 50/60 Hz		ms	20 / 16⅔	20 / 16⅔	20 / 16⅔	20 / 16⅔
Max. admissible cable length (per input)						
R1 to R12		m		40		
I1 to I6		m	40	40	40	60
I7, I8		m	Normally 100	Normally 100	Normally 100	Normally 100
I9 to I12		m	Type	Type 40	Type 40	Type 60
Digital inputs 115/230 V AC			→ Page 4/62			

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423D

		MFD-80..	MFD-CP4...	MFD-CP8..	MFD-AC-CP8..
General					
Standards		EN 61000-6-1/-2/-3/-4, IEC 60068-2-6, IEC 60068-2-27			
Dimensions (W × H × D)	mm	86.5 × 86.5 × 21.5 (with actuators) 86.5 × 86.5 × 20 (without actuators)	75 × 58 × 36.2	107.5 × 90 × 30	107.5 × 90 × 30
Weight	kg	0.13	0.164	0.145	0.145
Mounting		2 × 22.5 mm, display fixed with 2 fixing rings. Wall thickness: without top-hat rail (CPU) 1 – 6 mm with top-hat rail 1 – 4 mm	Fitted onto the fixing shaft of the display	Fitted on the fixing shaft of the display or on top-hat rail according to IEC/EN 60715, 35 mm deep (without display)	
Terminal capacities					
Solid	mm^2			0.2 / 4 (AWG 24 – 12)	
Flexible with ferrule	mm^2			0.2 / 2.5 (AWG 24 – 12)	
Standard screwdriver	mm			3.5 × 0.6	3.5 × 0.6
Power supply					
Solid	mm^2		0.2/4 (AWG 24 – 12)		
flexible with ferrules	mm^2		0.2/2.5 (AWG 24 – 12)		
Standard screwdriver	mm		3.5 × 0.6		
Data cable					
Solid	mm^2		0.08 / 2.5 (AWG 28 – 12)		
Flexible with ferrule	mm^2		0.08 / 1.5 (AWG 28 – 12)		
Climatic environmental conditions					
Operating ambient temperature	°C	-25 to 55, cold as per IEC 60068-2-1, heat as per IEC 60068-2-2			
Condensation		Take appropriate measures to prevent condensation			
LCD display (clearly legible)	°C	-5…50…(-10 to 0 when background lighting is switched on (continuous operation))			
Storage	°C	–40…70	–40…70	–40…70	–40…70
Relative humidity, non-condensing (IEC/EN 60068-2-30)	%	5…95	5…95	5…95	5…95
Air pressure (operation)	hPa	795…1080	795…1080	795…1080	795…1080
Ambient conditions, mechanical					
Pollution degree		3	2	2	2
Degree of protection IEC/EN 60529		IP65	IP 20	IP 20	IP 20
Vibrations (IEC/EN 60068-2-6)					
Constant amplitude 0.15 mm	Hz	10…57	10…57	10…57	10…57
Constant acceleration 2 g	Hz	57…150	57…150	57…150	57…150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms	Impacts	18	18	18	18
Drop to IEC/EN 60068-2-31 Drop height	mm	50	50	50	50
Free fall, packaged (IEC/EN 60068-2-32)	m	1	1	1	1
Mounting position		horizontal, vertical			

		MFD-80..	MFD-CP4...	MFD-CP8..	MFD-AC-CP8..
Electromagnetic compatibility (EMC)					
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)					
Air discharge	kV	8	8	8	8
Contact discharge	kV	6	6	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)	V/m	10	10	10	10
Radio interference suppression (EN 55011)		EN 55011 Class B, EN 55022 Class B			
Burst pulses (IEC/EN 61000-4-4, level 3)					
Supply cables	kV	2	2	2	2
Signal lines	kV	2	2	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)	kV	2 (supply cables, symmetrical)			
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)	kV	0.5 (supply cables, symmetrical)	1 (supply cables, symmetrical)	2 (supply cables symmetrical, MFD-AC-CP8..)	2 (supply cables symmetrical, MFD-AC-CP8..)
Immunity to line-conducted interference to (IEC/EN 61000-4-6)	V	10	10	10	10
Insulation resistance					
Clearance in air and creepage distances		EN 50178, UL 508, CSA C22.2, no. 142			
Insulation resistance		EN 50178	EN 50178	EN 50178	EN 50178
Back-up/Accuracy of the real-time clock					
Backup time					
				① Back-up time (hours) ② Service life (years)	
Accuracy of the real-time clock	s/day			Normally ±5 s/day (±0.5 h /year)	
Repetition accuracy of timing relays					
Accuracy of timing relays (of values)	%			± 0.02	± 0.02
Resolution					
Range "S"	ms			5	5
Range "M:S"	s			1	1
Range "H:M"	min			1	1
Retentive memory					
Write cycles of the retentive memory				10^{10} (read/write cycles)	

			MFD-CP4...	MFD-CP8..	MFD-AC-CP8..
Power supply					
Rated operational voltage	U_e	V	24 DC (-15 / +20 %)	24 DC (-15 / +20 %)	100/110/115/120//230/ 240 AC (+10/-15 %)
Admissible range		V AC			85…264
Admissible range		V DC	20.4…28.8	20.4…28.8	
Residual ripple		%	≦ 5	≦ 5	
Frequency		Hz			50 / 60 (± 5%)
Input current					
at 115/120 V AC 60 Hz		mA	Normally	Normally	Normally 90
at 230/240 V AC 50 Hz		mA	Normally	Normally	Normally 60
at 24 V DC		mA	Normally 185	Normally 200	Normally
Voltage dips (IEC/EN 61131-2)		ms	10	10	10
Power loss					
at 115/120 V AC		VA	Normally	Normally	Normally 11
at 230 / 240 V AC		VA	Normally	Normally	Normally 15
Peak current		W	1.5	3.4	
Point-to-point connection					
Stations			1		
Data transfer rate					
easy500, easy700		MBit/s	9.6 kBaud		
easy800, MFD, EC4P			19.2 kBaud		
Distance		m	5	5	5
Potential isolation					
From power supply			Yes		
From the connected device			Yes		
Connection technique			Spring-loaded terminals		

			MFD-CP4...	MFD-CP8-NT	MFD-AC-CP8-NT
NET network					
Stations		Number	max. 1	max. 8	max. 8
Data transfer rate/distance				1000 Kbit/s, 6 m 500 Kbit/s, 25 m 250 Kbit/s, 40 m 125 Kbit/s, 125 m 50 Kbit/s, 300 m 20 Kbit/s, 700 m 10 Kbit/s, 1000 m	1000 Kbit/s, 6 m 500 Kbit/s, 25 m 250 Kbit/s, 40 m 125 Kbit/s, 125 m 50 Kbit/s, 300 m 20 Kbit/s, 700 m 10 Kbit/s, 1000 m
Potential isolation					
From power supply				Yes	Yes
From the inputs				Yes	Yes
From the outputs				Yes	Yes
From the PC interface, memory card NET network, EASY-Link				Yes	Yes
Bus termination (first and last station)				Yes	Yes
Connection technique				RJ45, 8-pole	RJ45, 8-pole

			MFD-R16 MFD-RA17	MFD-T16, MFD-TA17, MFD-T(A)P...	MFD-AC-R16
General					
Standards			EN 61000-6-1/-2/-3/-4, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27		
Dimensions (W × H × D)		mm	89 × 90 × 44	89 × 90 × 25 (installed)	89 × 90 × 44
Weight		kg	0.15	0.14	0.15
Mounting			Fitted into the power supply unit.		
Terminal capacities					
Solid		mm^2	0.2 /4 (AWG 24 – 12)		
Flexible with ferrule		mm^2	0.2 /2.5 (AWG 24 – 12)		
Standard screwdriver		mm	3.5 × 0.6	3.5 × 0.6	3.5 × 0.6
Data cable					
Solid		mm^2	0.08 /2.5 (AWG 28 – 12)		
Flexible with ferrule		mm^2	0.08 /1.5 (AWG 28 – 12)		
Climatic environmental conditions					
Operating ambient temperature		°C	-25 to 55, cold as per IEC 60068-2-1, heat as per IEC 60068-2-2		
Condensation			Take appropriate measures to prevent condensation		
Storage		°C	–40…70	–40…70	–40…70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5…95	5…95	5…95
Air pressure (operation)		hPa	795…1080	795…1080	795…1080
Ambient conditions, mechanical					
Pollution degree			2	2	2
Degree of protection IEC/EN 60529			IP 20	IP 20	IP 20
Vibrations (IEC/EN 60068-2-6)					
Constant amplitude 0.15 mm		Hz	10…57	10…57	10…57
Constant acceleration 2 g		Hz	57…150	57…150	57…150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1	1
Mounting position			horizontal, vertical		
Electromagnetic compatibility (EMC)					
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)					
Air discharge		kV	8	8	8
Contact discharge		kV	6	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B		
Burst pulses (IEC/EN 61000-4-4, level 3)					
Supply cables		kV	2	2	2
Signal lines		kV	2	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical)		
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (symmetrical power lines)		
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10	10	10
Insulation resistance					
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, no. 142		
Insulation resistance			EN 50178		

			MFD-R16 MFD-RA17	MFD-T16 MFD-TA17	MFD-T.P..	MFD-AC-R16
Digital inputs 24 V DC						
Number			12	12	6	
Inputs can be used as analog inputs			4 (I7, I8, I11, I12)	4 (I7, I8, I11, I12)	2 (I11, I12)	
Potential isolation						
From power supply			No	No	No	
Between digital inputs			No	No	No	
From the outputs			Yes	Yes	Yes	
From the PC interface, memory card NET network, EASY-Link			Yes	Yes	Yes	
Rated operational voltage	*Ue*	V DC	24	24	24	
On 0 signal	*Ue*	V DC	< 5.0 (I1 – I6, I9 – I10), < 8 (I7, I8, I11, I12)	< 5.0 (I1 – I6, I9 – I10), < 8 (I7, I8, I11, I12)	< 5.0 (I1 – I4), < 8.0 (I11, I12)	
On 1 signal	*Ue*	V DC	> 15.0 (I1 – I6, I9 – I10), > 8.0 (I7, I8, I11, I12)	> 15.0 (I1 – I6, I9 – I10), > 8.0 (I7, I8, I11, I12)	>15.0 (I1 – I4), > 8.0 (I11, I12)	
Input current on 1 signal						
I1 to I6		mA	3.3 (at 24 V DC)	3.3 (at 24 V DC)		
I1 to I4		mA			3.3 (at 24 V DC)	
I7, I8		mA	2.2 (at 24 V DC)	2.2 (at 24 V DC)		
I9, I10		mA	3.3 (at 24 V DC)	3.3 (at 24 V DC)		
I11, I12		mA	2.2 (at 24 V DC)	2.2 (at 24 V DC)	2.2 (at 24 V DC)	
Delay time from 0 to 1						
Debounce ON		ms	20	20	20	
Debounce OFF		ms	Normally 0.025 (I1 – I4), normally 0.25 (I5, I6, I9, I10), normally 0.15 (I7, I8, I11,	Normally 0.025 (I1 – I4), normally 0.25 (I5, I6, I9, I10), normally 0.15 (I7, I8, I11,	Normally 0.1 (I1 – I4), normally 0.25 (I11 – I12)	
Delay time from 1 to 0						
Debounce ON		ms	20	20	20	
Debounce OFF		ms	Normally 0.025 (I1 – I4), normally 0.25 (I5, I6, I9, I10), normally 0.15 (I7, I8, I11,	Normally 0.025 (I1 – I4), normally 0.25 (I5, I6, I9, I10), normally 0.15 (I7, I8, I11,	Normally 0.1 (I1 – I4), normally 0.2 (I11, I12)	
Cable length (unscreened)		m	100	100	100	
Frequency counter						
Quantity			4 (I1, I2, I3, I4)	4 (I1, I2, I3, I4)	4 (I1, I2, I3, I4)	
Counter frequency		kHz	< 3	< 3	< 3	
Pulse shape			Square	Square	Square	
Incremental counter						
Quantity			2 (I1 + I2, I3 + I4)	2 (I1 + I2, I3 + I4)	2 (I1 + I2, I3 + I4)	
Counter frequency		kHz	≦ 3	≦ 3	≦ 3	
Pulse shape			Square	Square	Square	
Signal offset			90°	90°	90°	
Rapid counter inputs						
Number			4 (I1, I2, I3, I4)	4 (I1, I2, I3, I4)	4 (I1, I2, I3, I4)	
Counter frequency		kHz	< 3	< 3	< 3	
Pulse shape			Square	Square	Square	
Cable length, screened		m	< 20	< 20	< 20	
Digital inputs 115/230 V AC						
Number						12
Status indication						LCD-display (if present)
Potential isolation						
From power supply						No
Between digital inputs						No
From the outputs						Yes
From the PC interface, memory card NET network, EASY-Link						Yes
Rated voltage L (sinusoidal)						
On 0 signal		V AC				0 – 40
On 1 signal		V AC				79 – 264
Rated frequency		Hz				50 – 60
Input current on 1 signal						
I1 - I12		mA				12 × 0.2 (at 115 V AC, 60 Hz), 12 × 0.5 (at 230 V AC, 50 Hz)
Delay time						
Delay time (0 – 1 /1 – 0) I1 – I12, 50 /60 Hz						10 /100
Max. admissible cable length (per input)						
I1 - I12		m				Normally 60

		MFD-R16 MFD-T16 MFD-R… MFD-T… MFD-T(A)P
Analog inputs		
Number		4 (I7, I8, I11, I12) 2 (I11, I12) for MFD-T(A)P
Electrical isolation		
To power supply		No
From the digital inputs		No
To the outputs		Yes
From the PC interface, memory card, NET network, EASY-Link		Yes
Input type		DC voltage
Signal range	V DC	0 – 10
Resolution, analog	V	0.01
Resolution, digital	V	0.01
Resolution	Bit	10 (value 0 – 1023)
Input impedance	kΩ	11.2
Accuracy of actual value		
2 MFD devices	%	± 3
Within a single device	%	± 2
Conversion time, analog/digital	ms	Every CPU cycle
Input current	mA	< 1
Cable length screened	m	< 30

		MFD-RA17 MFD-TA17	MFD-TAP
Analog outputs			
Number		1	1
Electrical isolation			
To power supply		No	No
From the digital inputs		No	No
From the digital outputs		Yes	Yes
From the PC interface, memory card, NET network, EASY-Link		Yes	Yes
Output type		DC voltage	DC voltage
Signal range	V DC	0 – 10	0 – 10
Max. output current	A	0.01	0.01
Load resistance		1 kΩ	1 kΩ
Overload and short-circuit protection		Yes	Yes
Resolution, analog	V DC	0.01	0.01
Resolution, digital	Bit	10, (value: 0 – 1023)	12 (value 0…4095) at QA01, MD
Resolution, digital	V DC	–	0.1, 0.01, 0.001 at MD
Recovery time	µs	100	100
Accuracy			
-25 °C – 55 °C	%	2	2
25°C	%	1	1
Conversion time		Every CPU cycle	Every CPU cycle

		MFD-TP, MFD-TAP
Analog input temperature resistance Pt100 or Ni1000 sensors		
Number		2 x Pt100 or 2 x Nt1000 (jaccording to type)
Input type resistance sensor		
Platinum sensor Pt100 according to DIN EN 60751, IEC 751		
Nickel sensor Ni1000 according to DIN 43760		
Temperature range		
Pt100, Range A, selectable	°C , (°F)	–40 to +90, (-40 to 194); 0 to 250, (32 to 482); 0 to 400, (32 to 752)
Ni1000, Range A, selectable	°C , (°F)	–40 to +90, (-40 to 194); 0 to 250, (32 to 482)
Pt100, Range B	°C , (°F)	0 to 850, (32 to 1562); - 200 to 200, (–328 to 392)
Electrical isolation		
To power supply		No
From the digital inputs		No
To the outputs		Yes
From the PC interface, memory card, NET network, EASY-Link		Yes
Resolution digital, scaling per sensor		
With operands "IA" and "MD", selectable under scaling	Bit	12 (0 to 4095)
With operand "MD", selectable under scaling	°C, (°F)	1, 0.1, (1), (0.1)
Measuement value resolution analog/digital	Bit	Depending upon the scaling
Measuring current	mA	< 1.6
Damage limit (in the case of a wiring error)		Apply external voltage
Measurement method		Two or three wire per sensor, selectable by connection of sensor
Accuracy (without EMC interference)		
Two MFD devices one above the other	%	Typically 1; maximal 1.6 (Pt); 1.2 (Ni)
Pt100-sensor (Offset error, linearity error, repetition accuracy, temperature dependency of the device included)	%	±0.8 of measurement range
Ni1000-sensor (Offsetf error, linearity error, repetition accuracy, temperature dependency of the device include)	%	±0.6 of measurement range
Conversion time, analog/digital		
Without sampling time setting, selectable per sensor	ms	200
With sampling time (adjustable), selectable per sensor	ms	200 to 65535
Additional measurement aids		
Filterung (Software), smoothing of analog input signals (PT1 behaviour), only with set sampling time, selectable per sensor		Yes
. Filter for the suppression of certain frequencies and their multiples	Hz	50, 60, 250, 500
Diagnostics		
Card diagnostic		Yes
Wire break diagnostic per sensor		Yes
Wire break diagnostic per sensor		Yes
Below lower measurement range		Yes
Above upper measurement range		Yes
Cable length screened	m	< 10

			EASY202-RE	EASY512-…-R…	EASY618/719-..-R..	EASY8…-…-R…	MFD-R.. MFD-AC-R..	EC4P-...-MR...
Relay outputs								
Number			2	4	6	6	4	6
Outputs in groups of			2	1	1	1		1
Parallel switching of outputs for increased output			Not permissible	Not permissible	Not permissible	Not permissible	Not permissible	Not permissible
Protection of an output relay			Miniature circuit-breaker B16 or fuse 8 A (slow)	Miniature circuit-breaker B16 or fuse 8 A (slow)	Miniature circuit-breaker B16 or fuse 8 A (slow)	Miniature circuit-breaker B16 or fuse 8 A (slow)	Miniature circuit-breaker B16 or fuse 8 A (slow)	Miniature circuit-breaker B16 or fuse 8 A (slow)
Potential isolation								
From power supply			Yes	Yes	Yes	Yes	Yes	Yes
From the inputs			Yes	Yes	Yes	Yes	Yes	Yes
From the PC interface, memory card NET network, EASY-Link			Yes	Yes	Yes	Yes	Yes	Yes
Safe isolation		V AC	300	300	300	300	300	300
Basic insulation		V AC	600	600	600	600	600	600
Lifespan, mechanical	Operations	× 10^6	10	10	10	10	10	10
Contacts								
Conventional thermal current (10 A UL)		A	8	8	8	8	8	8
Recommended for load: 12 V AC/DC		mA	> 500	> 500	> 500	> 500	> 500	> 500
Short-circuit-proof cos φ = 1, characteristic B16 at 600 A		A	16	16	16	16	16	16
Short-circuit-proof cos φ = 0.5 to 0.7, characteristic B16 at 900 A		A	16	16	16	16	16	16
Rated impulse withstand voltage U_{imp} of contact coil		kV	6	6	6	6	6	6
Rated operational voltage	U_e	V AC	250	250	250	250	250	250
Rated insulation voltage	U_i	V AC	250	250	250	250	250	250
Safe isolation to EN 50178 between coil and contact		V AC	300	300	300	300	300	300
Safe isolation to EN 50178 between 2 contacts		V AC	300	300	300	300	300	300
Making capacity								
AC-15, 250 V AC, 3 A (600 Ops./h)	Operations		300000	300000	300000	300000	300000	300000
DC-13 L/R ≦ 150 ms 24 V DC, 1 A (500 Ops./h)	Operations		200000	200000	200000	200000	200000	200000
Breaking capacity								
AC-15, 250 V AC, 3 A (600 Ops./h)	Operations		300000	300000	300000	300000	300000	300000
DC-13 L/R ≦ 150 ms 24 V DC, 1 A (500 Ops./h)	Operations		200000	200000	200000	200000	200000	200000
Filament bulb load								
1000 W at 230/240 V AC	Operations		25000	25000	25000	25000	25000	25000
500 W at 115/120 V AC	Operations		25000	25000	25000	25000	25000	25000
Fluorescent lamp load								
Fluorescent lamp load 10 × 58 W at 230/240 V AC								
With upstream electrical device	Operations		25000	25000	25000	25000	25000	25000
Uncompensated	Operations		25000	25000	25000	25000	25000	25000
Fluorescent lamp load 1 × 58 W at 230/240 V AC, conventional, compensated	Operations		25000	25000	25000	25000	25000	25000
Switching frequency								
Mechanical operations		× 10^6	10	10	10	10	10	10
Switching frequency		Hz	10	10	10	10	10	10
Resistive load/lamp load		Hz	2	2	2	2	2	2
Inductive load		Hz	0.5	0.5	0.5	0.5	0.5	0.5
UL/CSA								
Uninterrupted current at 240 V AC		A	10	10	10	10	10	10
Uninterrupted current at 24 V DC		A	8	8	8	8	8	8
AC								
Control Circuit Rating Codes (utilization category)			B 300 Light Pilot Duty	B 300 Light Pilot Duty	B 300 Light Pilot Duty	B 300 Light Pilot Duty	B 300 Light Pilot Duty	B 300 Light Pilot Duty
Max. rated operational voltage		V AC	300	300	300	300	300	300
Max. thermal uninterrupted current cos φ = 1 at B 300		A	5	5	5	5	5	5
Max. make/break capacity cos φ ≠ 1 at B 300		VA	3600/360	3600/360	3600/360	3600/360	3600 /360	3600/360
DC								
Control Circuit Rating Codes (utilization category)			R 300 Light Pilot Duty	R 300 Light Pilot Duty	R 300 Light Pilot Duty	R 300 Light Pilot Duty	R 300 Light Pilot Duty	R 300 Light Pilot Duty
Max. rated operational voltage		V DC	300	300	300	300	300	300
Max. thermal uninterrupted current at R 300		A	1	1	1	1	1	1
Max. make/break capacity at R 300		VA	28/28	28/28	28/28	28/28	28 /28	28/28

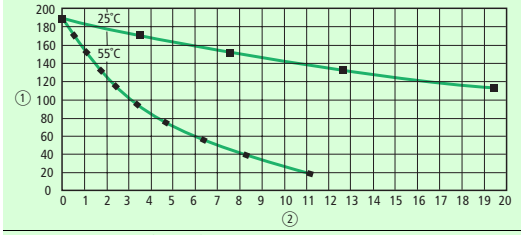
Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423D

			EASY512-DC-T…
Transistor outputs			
Number			4
Rated operational voltage	U_e	V DC	24
Admissible range	U_e	V DC	20.4 – 28.8
Residual ripple		%	5
Supply current			
On 0 signal	Normally / max.	mA	9/16
On 1 signal	Normally / max.	mA	12/22
Protection against polarity reversal			Yes (Attention: A short-circuit will occur if voltage is applied to the outputs on account of reverse polarity.)
Potential isolation			
From power supply			Yes
From the inputs			Yes
From the PC interface, memory card NET network, EASY-Link			
Rated operational current on 1 signal DC	I_e	A	Max. 0.5
Lamp load without R_v		W	5
Residual current on 0 signal per channel		mA	< 0.1
Max. output voltage			
On 0 signal with external load < 10 MΩ		V	2.5
On 1 signal with I_e = 0.5 A		V	$U = U_e$ -1 V
Short-circuit protection			Yes, thermal (analysis via diagnostics input I16, I15; R15, R16)
Short-circuit tripping current for $R_a \leqq 10$ mΩ		A	$0.7 \leqq I_e \leqq 2$ per output
Total short-circuit current		A	8
Peak short-circuit current		A	16
Thermal cutout			Yes
Max. operating frequency with constant resistive load R_L < 100 kΩ (depending on number of active channels and their load)		Ops./h	40000
Parallel connection of outputs			
With resistive load, inductive load with external suppressor circuit, combination within a group			Group 1: Q1 to Q4
Number of outputs	max.		4
Max. total current		A	2 (Caution! Outputs must be actuated simultaneously and for the same length of time.)
Output status indication			LCD-display (if present)
Inductive load			
Without external suppressor circuit			
$T_{0.95}$ = 1 ms, R = 48 Ω, L = 16 mH			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. switching frequency f = 0.5 Hz (max. DF = 50 %)	Operations		1500
DC-13, $T_{0.95}$ = 72 ms, R = 48 Ω, L = 1.15 H			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. switching frequency f = 0.5 Hz (max. DF = 50 %)	Operations		1500
$T_{0.95}$ = 15 ms, R = 48 Ω, L = 0.24 H			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. switching frequency f = 0.5 Hz (max. DF = 50 %)	Operations		1500
With external suppressor circuit			
Utilization factor		g	1
Duty factor		% DF	100
Max. switching frequency, max. duty factor	Operations		Depending on the suppressor circuit

Notes [1] For inductive loading, without external suppression of the transistor outputs, the following applies: $T_{0.95}$ = time in ms, until 95 % of the steady-state current is achieved. $T_{0.95} \approx 3 \times T_{0.65} = 3 \times L/R$.
Data transfer rate in the NET network: bus lengths of 40 m and over only attainable with cables with additional cross-section and connection adapter.

For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423D

EASY620-DC-TE	EASY721-DC-T…	EASY8..-DC-T..	EC4P-…-MT…	MFD-T..
8	8	8	8	4
24	24	24	24	24
20.4 – 28.8	20.4 – 28.8	20.4 – 28.8	20.4 – 28.8	20.4 – 28.8
5	5	5	5	
18/32	18/32	18/32	18/32	18/32
24/44	24/44	24/44	24/44	24 /44
Yes (Attention: A short-circuit will occur if voltage is applied to the outputs on account of reverse polarity.)				
Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	
		Yes	Yes	Yes
Max. 0.5	Max. 0.5	Max. 0.5	Max. 0.5	max. 0.5
5	5	3 (Q1 – Q4) 5 (Q5 – Q8)	5	5 (Q1 – Q4)
< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2.5	2.5	2.5	2.5	2.5
$U = U_e$ -1 V	$U = U_e$ -1 V	$U = U_e$ -1 V	$U = U_e$ -1 V	$U = U_e$ -1 V
Yes, thermal (analysis via diagnostics input I16, I15; R15, R16)		Yes, electronic (Q1 – Q4), thermal (Q5 – Q8), (analysis via diagnostics input I16, I15)		Thermal (Q1 – Q4), (evaluation with diagnostics input I16)
$0.7 \leqq I_e \leqq 2$ per output	$0.7 \leqq I_e \leqq 2$ per output	$0.7 \leqq I_e \leqq 2$ per output	$0.7 \leqq I_e \leqq 2$ per output	$0.7 \leqq I_e \leqq 2$ per output
16	16	16	16	8
32	32	32	32	16
Yes	Yes	Yes	Yes	Yes
40000	40000	40000	40000	40000
Group 1: S1 - S4 Group 2: S5 - S8	Group 1: Q1 to Q4 Group 2: Q5 - Q8	Group 1: Q1 to Q4 Group 2: Q5 - Q8	Group 1: Q1 to Q4 Group 2: Q5 - Q8	Group 1: Q1 to Q4
4	4	4	4	4
2 (Caution! Outputs must be actuated simultaneously and for the same length of time.)				
LCD-display (if present)				
0.25	0.25	0.25	0.25	0.25
100	100	100	100	100
1500	1500	1500	1500	1500
0.25	0.25	0.25	0.25	0.25
100	100	100	100	100
1500	1500	1500	1500	1500
0.25	0.25	0.25	0.25	0.25
100	100	100	100	100
1500	1500	1500	1500	1500
1	1	1	1	1
100	100	100	100	100
Depending on the suppressor circuit				

			EC4P...
General			
Standards			EN 55011, EN 55022, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27
Dimensions (W × H × D)		mm	107.5 × 90 × 72 without/79 with adapter for MCC (6 SU)
Weight		kg	0.32
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using 3 fixing brackets ZB4-101-GF1 (accessories)
Terminal capacities			
Solid		mm^2	0.2/4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2/2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8
Max. tightening torque		Nm	0.6
Climatic environmental conditions			
Operating ambient temperature		°C	–25 … 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2
Condensation			Take appropriate measures to prevent condensation
LCD display (clearly legible)		°C	0…55
Storage		°C	–40…70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5…95
Air pressure (operation)		hPa	795…1080
Corrosion resistance			
IEC/EN 60068-2-42	4 days SO_2	cm^3/m^3	10
IEC/EN 60068-2-43	4 days H_2S	cm^3/m^3	1
Ambient conditions, mechanical			
Pollution degree			2
Degree of protection IEC/EN 60529			IP 20
Vibrations (IEC/EN 60068-2-6)			
Constant amplitude 3.5 mm		Hz	5…9
Constant acceleration, 1 g		Hz	8…150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1
Mounting position			Horizontal/vertical
Electromagnetic compatibility (EMC)			
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)			
Air discharge		kV	8
Contact discharge		kV	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B
Burst pulses (IEC/EN 61000-4-4, level 3)			
Supply cables		kV	2
Signal lines		kV	2
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 symmetrical, 1 asymmetrical
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10
Insulation resistance			
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, no. 142
Insulation resistance			EN 50178
Back-up/Accuracy of the real-time clock			
Durée de sauvegarde			 ① Back-up time (hours) ② Service life (years)
Accuracy of the real-time clock		s/day	Normally ± 5 (± 0.5 h / year)
Retentive memory			
Write cycles of the retentive memory			10000000000 (10^{10}) (Read-write cycles)

				EC4P-...
Power supply				
Rated operational voltage		U_e	V	24 DC (-15/+20%)
Admissible range			V DC	20.4…28.8
Residual ripple			%	≦ 5
Input current				
Input current 115/230 V AC			mA	Normally 140
Voltage dips (IEC/EN 61131-2)			ms	10
Heat dissipation			W	typ.*A*3.4*C*
CPU				
Microprocessor				Infineon XC161
Memory				
Program code/data			kByte	256/14 segments of 16 KB each
Marker/Input/Output/Retain data			KByte	16/4/4/8
Cycle time for 1 k of instructions (Bit, Byte)			ms	<0.3
Interfaces				
COM1 (RS 232) without control lines				
Data transfer rate for programming			kBit/s	4.8, 9.6, 19.2, 38.4, 57.6, 115.2 (character format: 8 bit data, no parity, 1 stop bit)
Connection types				RJ-45 socket
Potential isolation				none
In the transparent mode				
	Data transfer rate		kbit/s	0.3, 0.6, 1.2, 2.4, 4.8, 9.6, 19.2, 38.4, 57.6
	Character formats			8E1, 8O1, 8N1, 8N2, 7E2, 7O2, 7N2, 7E1
	Number of transmission bytes in a block			190 bytes
	Number of received bytes in a block			190 bytes
CANopen				
Data transfer rate/distance				500 kBit/s, 25 m 250 kBit/s, 60m 125 kBit/s, 125 m 50 kBit/s, 300 m 20 kBit/s, 700 m 10 kBit/s, 1000 m
Potential isolation				
	From power supply			Yes
	From the inputs			Yes
	From the outputs			Yes
Bus termination (first and last station)				EASY-NT-R plug (incl. bus terminating resistor 120 Ω)
Connection types				2 × RJ45, 8 pole
easy-NET operating mode				
Number of users				8
CANopen operating mode				
Stations			Number	8
PDO type				Asynchronous, cyclic, acyclic
Control contact rated current				to DS301V4
Analog outputs				
Number				1
Potential isolation				
From power supply				No
From the digital inputs				No
From the digital outputs				Yes
To neworks NET and EASY-Link				Yes
Output type				DC voltage
Signal range			V DC	0 – 10
Max. output current			A	0.01
Load resistance				1 kΩ
Overload and short-circuit protection				Yes
Resolution, analog			V DC	0.01
Resolution, digital			Bit	10, (value: 0 – 1023)
Recovery time			µs	100
Accuracy				
-25 °C – 55 °C			%	2
25°C			%	1
Conversion time, analog/digital			ms	Every CPU cycle

			EC4P-...
Digital inputs 24 V DC			
Number			12
Inputs can be used as analog inputs			4 (I7, I8, I11, I12)
Status indication			LCD display (if provided)
Potential isolation			
From power supply			No
Between digital inputs			No
From the outputs			Yes
To neworks NET and EASY-Link			Yes
Rated operational voltage	*U*e	V DC	24
On 0 signal	*U*e	V DC	< 5 (I1 – I6, I9, I10) < 8 (I7, I8, I11, I12)
On 1 signal	*U*e	V DC	> 15.0 (I1 – I6, I9, I10), > 8.0 (I7, I8, I11, I12)
Input current on 1 signal			
I1 to I6		mA	3.3 (at 24 V DC)
I7, I8		mA	2.2 (at 24 V DC)
I9, I10		mA	3.3 (at 24 V DC)
I11, I12		mA	2.2 (at 24 V DC)
Delay time from 0 to 1		ms	Normally 0.02 (I1 – I4), Normally 0.25 (I5 – I12)
Delay time from 1 to 0		ms	Normally 0.02 (I1 – I4), Normally 0.25 (I5 – I12)
Cable length (unscreened)		m	100
Incremental counter			
Quantity			1 (I1, I2, I3, I4)
Value range			32 Bit
Counter frequency		kHz	≦ 40
Pulse shape			Square
Counter inputs			I1, I2
Reference input			I3
Input for reference switch			I4
Signal offset			90°
Rapid counter inputs			
Number			2 (I1, I2) at 16 Bit or 1 (I1) at 32 Bit
Value range			16/32 Bit
Cable length, screened		m	< 20
Counter frequency		kHz	< 50
Pulse shape			Square
Analog inputs			
Quantity			4 (I7, I8, I11, I12)
Potential isolation			
From power supply			No
From the digital inputs			No
From the outputs			Yes
To neworks NET and EASY-Link			Yes
Input type			DC voltage
Signal range		V DC	0 – 10
Resolution, analog		V	0.01
Resolution, digital		V	0.01
Resolution, digital		Bit	10 (value 0 – 1023)
Input impedance		kΩ	11.2
Accuracy of actual value			
Two EASY devices		%	± 3
Within a single device		%	± 2, (I7, I8, I11, I12) ± 0.12 V
Conversion time, analog/digital		ms	Every CPU cycle
Input current		mA	< 1
Cable length screened		m	< 30
Relay outputs			→ Page 4/62
Transistor outputs			→ Page 4/64

			EASY205-ASI EASY204-DP	EASY221-CO EASY222-DN
General				
Standards			EN 55011, EN 55022, IEC/EN 61000-4, IEC 62026	EN 55011, EN 55022, IEC/EN 61000-4, EN 50325
			EN 55011, EN 55022, IEC/EN 61000-4, IEC 61158	EN 55011, EN 55022, IEC/EN 61000-4, IEC 62026
Dimensions (W × H × D)		mm	35.5 × 90 × 58 (2 SU)	35.5 × 90 × 58 (2 TE)
Weight		kg	0.12 0.15	0.15
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)	
Terminal capacities				
Solid		mm^2	0.2/4 (AWG 22 – 12)	0.2/4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2/2.5 (AWG 22 – 12)	0.2/2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6
Climatic environmental conditions				
Operating ambient temperature		°C	–25 … 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Take appropriate measures to prevent condensation	
Storage		°C	–40…70	–40…70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5…95	5…95
Air pressure (operation)		hPa	795…1080	795…1080
Ambient conditions, mechanical				
Degree of protection IEC/EN 60529			IP 20	IP 20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10…57	10…57
Constant acceleration 2 g		Hz	57…150	57…150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal/vertical	Horizontal/vertical
Electromagnetic compatibility (EMC)				
Overvoltage category/pollution degree			II/2	II/2
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)				
AS-Interface cables		kV	2	
Supply cables		kV		2
Signal lines		kV		2
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (supply cables, symmetrical)	0.5 (supply cables, symmetrical)
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10	10
Insulation resistance				
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, no. 142	
Insulation resistance			EN 50178	EN 50178

			EASY205-ASI	EASY204-DP	EASY221-CO	EASY222-DN
Power supply						
Rated operational voltage	U_e	V	26.5 – 31.6	24 (-15/+20 %)	24 (-15/+20 %)	24 (-15/+20 %)
Admissible range		V DC		20.4…28.8	20.4…28.8	20.4…28.8
Total power consumption of the AS-Interface		mA	≦ 30	–	–	–
Residual ripple		%	–	< 5	< 5	< 5
max. current consumption (at 24 V DC)		mA	–	Normally 200	Normally 200	Normally 200
Voltage dips (IEC/EN 61131-2)		ms	–	10	10	10
Heat dissipation at 24 V DC		W	–	4.8	4.8	4.8
Protection against polarity reversal						
AS-Interface interface protection against polarity reversal			Yes	–	–	–
AS-Interface profile cable			7F (hex)	–	–	–
Slave address			0–31			
Addressing unit interface			3.5 mm socket	–	–	–
AS-I power supply			–	Yes	Yes	Yes
LEDs						
Supply			Power: green	Power LED (POW): green	RUN LED (RUN): green	Module Status LED (MS): green
LED display			Com Error: red	LED-PROFIBUS-DP (BUS): rot	LED ERROR (ERR): red	LED network status (NS): red/green
Reset			–	–	–	–
			Control relays	Control relays	Control relays	Control relays
Logic links						
easy700/easy800 contact and coil ↔ AS-Interface			S1 → input 0 S1 → input 1 S3 → input 2 S4 → input 3 R1 ← output 0 R2 ← output 1 R3 ← output 2 R4 ← output 3 R5 ← PARAMETER OUTPUT 0 R6 ← PARAMETER OUTPUT 1 R7 ← PARAMETER OUTPUT 2 R8 ← PARAMETER OUTPUT 3	–	–	–
Network						
Connection technique			–	SUB-D 9-pole, socket	RJ45	5-pole, pluggable screw terminal
Potential isolation			–	Between bus and power supply (simple), between bus and power supply and easy base unit (safe isolation)		
Function			–	PROFIBUS-DP slave	CANopen slave	DeviceNet slave
Interface			–	RS485	CAN	CAN
Bus protocol			–	PROFIBUS DP	CANopen	DeviceNet
Baud rates			–	Automatic search up to 12 MBit / s	Automatic search up to 1 MBit / s	Automatic search up to 500 Kbit / s
Bus terminating resistors			–	Can be connected via plug	Separate, external bus termination required (120 Ω)	Separate, external bus termination required (120 Ω)
Bus addresses			–	1 – 126, can be addressed via EASY basic unit with display or via EASY-SOFT	1 – 127, can be addressed via EASY basic unit with display or via EASY-SOFT	0 – 63, can be addressed via EASY basic unit with display or via EASY-SOFT
Services			–			
Cyclical			–	All data R1 – R16, S1 – S8		
Acyclical			–	Read/write, real-time, day, summer/winter time, all the parameters of the EASY function relay		

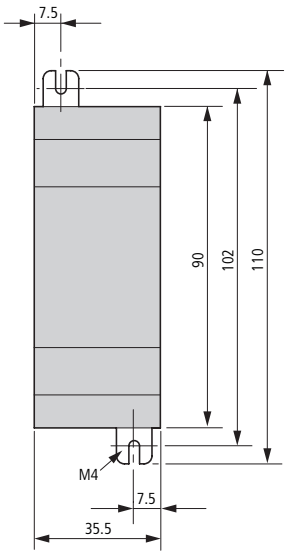
			EASY209-SE	EASY223-SWIRE	EASY256-HCI
General					
Standards			EN 55011, EN 55022, IEC/EN 61000-4, EN 50178	EN 55011, EN 55022, IEC/EN 61000-4, IEC/EN 60068-2-27, EN 50325	EN 55011, EN 55022, IEC/EN 61000-4
Dimensions (W × H × D)		mm	35.5 × 90 × 58 (2 SU)	35.5 × 90 × 101.2 (2 space units)	35.5 × 90 × 58 (2 space units)
Weight		kg	0.15	0.15	0.15
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)		
Channels		Qty.			6
Voltage range at U_e					0 – 264
Higher current 115/230 V AC		mA			4/6
Delay time		ms			40/37
Cable length		m			100
Parallel switching of outputs for increased output					Multiple possibilities (the switch-off delay extends accordingly with the respective number of parallel channels)
Type or resistance					Capitative
Terminal capacities					
Solid		mm^2	0.2/4 (AWG 22 – 12)	0.34 – 1.5 (AWG 22 – 16)	0.2/4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2/2.5 (AWG 22 – 12)	0.34 – 1.5 (AWG 22 – 16)	0.2/2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6	0.6
Data cable					
Solid		mm^2	0.25/1.5 (AWG 24/16)		
Flexible with ferrule		mm^2	0.14/ 1 (AWG 26/17)		
Climatic environmental conditions					
Operating ambient temperature		°C	–25...+55	–25 … 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Take appropriate measures to prevent condensation		
Storage		°C	–40…70	–25…70	–40…70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5…95	5…95	5…95
Air pressure (operation)		hPa	795…1080	795…1080	795…1080
Ambient conditions, mechanical					
Degree of protection IEC/EN 60529			IP 20	IP 20	IP 20
Vibrations (IEC/EN 60068-2-6)					
Constant amplitude 0.15 mm		Hz	10…57	10…57	10…57
Constant acceleration 2 g		Hz	57…150	57…150	57…150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1	1
Mounting position			Horizontal/vertical	Vertical (on horizontal top-hat rail)	Horizontal/vertical
Electromagnetic compatibility (EMC)					
Overvoltage category/pollution degree			II/2	II/2	II/2
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)					
Air discharge		kV	8	8	8
Contact discharge		kV	6	4	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)	V/m		RS-232 line without screen: 3, with screen: 10	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B		
Burst pulses (IEC/EN 61000-4-4, level 3)					
AS-Interface cables		kV			
Supply cables		kV	2	2	
Signal lines		kV		2	
Ethernet interface cable		kV	2		
COM interface cable		kV	2		
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	1 (supply cables, symmetrical)	0.5 (supply cables, symmetrical)	2 (supply cables, symmetrical, EASY…DC)
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	RS-232 line without screen: 3, with screen: 10	10	10
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, no. 142		
Insulation resistance			EN 50178	EN 50178	EN 50178

			EASY209-SE	EASY223-SWIRE
Power supply				
Rated operational voltage	U_e	V	24 (-15/+20 %)	24 (-15/+20 %)
Admissible range		V DC	20.4…28.8	20.4…28.8
Residual ripple		%	5	5
max. current consumption (at 24 V DC)		mA	Normally 65	Normally 100 + n × 30 n = Number of stations
Voltage dips (IEC/EN 61131-2)		ms		10
Heat dissipation at 24 V DC		W	1.7W	
Supply voltage U_{AUX} (power supply for switching SmartWire elements, e.g. contactor coils)				
Rated operational voltage U_{Aux}		V DC		24, –15 %, +20 % (Derating above > 40 °C)
Admissible range				20.4…28.8 at 45 °C: 21.0…28.8 at 50 °C: 21.6…28.8 at 55 °C: 22.2…27.6
Max. current consumption (at 24 V DC)		mA		Normally 3
Residual ripple		%		< 5
Voltage dips (IEC/EN 61131-2)		ms		10
Short-circuit on the SmartWire end				No. 3 A external protection necessary. MCB FAZ-Z3
Supply voltage $U_{Gateway}$ (supply voltage Gateway Electronic and SmartWire element electronics)				
Rated operating voltage UGateway		V DC		24 (-15/+20 %)
Admissible range		V DC		20.4 … 28.8
Max. current consumption (at 24 V DC)		A		Normally 500 (normally 100 gateways + normally 25 per controller wiring module)
Residual ripple		%		≦ 5
Voltage dips (IEC/EN 61131-2)		ms		10
Heat dissipation at 24 V DC		W		Normally 14 (normally 4 gateways + normally 0.6 per controller wiring module)
Short-circuit on the SmartWire end				Yes
Protection against polarity reversal				
AS-I power supply			Yes	Yes
LEDs				
Supply			Front power LED: ON	
LED display			Front-LED COM active: flashing	
RJ 45 socket, top			No Activity: OFF, Amber: Half Duplex, Green: Full Duplex	
RJ 45 socket, bottom			No Link: OFF, Amber: 10 MBit/s, Green: 100 MBit/s	
Gateway ready for operation				Ready: green
Power supply SmartWire (contactor)				U_{AUX}: green
Network Status (easyNET/CANopen)				Bus: green/red
Status SmartWire				SmartWire: green
Reset			Front: via buttons > 2s	
Strain relief			Via cable binders in retaining nipples	
Network				
Connection technique				RJ45, 8-pole
Potential isolation				Yes, for U_{AUX}, $U_{GATEWAY}$, SmartWire
Bus protocol			→ page 4/35	
Bus terminating resistors				External, first and last station
Bus addresses			Factory settings Ethernet: IP address 0.0.0.0 SUBNET mask: 255.255.0.0 Gateway address 0.0.0.0 Remote address 0.0.0.0	easy-NET: 2 … 8, adjustable via easyNet configutarion (station 1) or terminal mode CANopen: 1 … 126, adjustable via DIP switches
SmartWire				
Connection types				Plug, 6 pole
Data/power cable				6 core flat-band cable
Maximum cable length (gateway to last station)		m		4
Bus termination (last station)				Termination connector
Slave address allocation				via SmartWire gateway
Potential isolation				none
Station				Max. 16, via SmartWire gateway

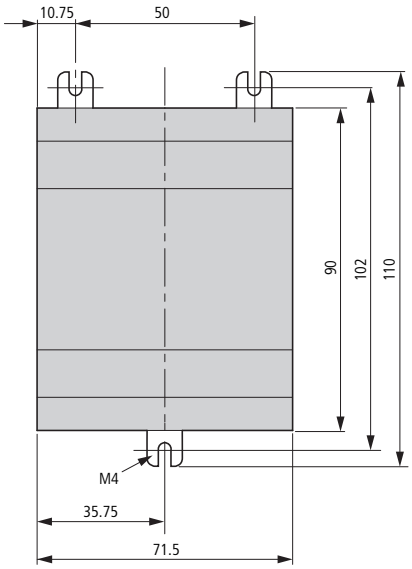
			EASY200-POW	EASY400-POW
General				
Standards			EN 55011, EN 55022, IEC/EN 61000-4, IEC/EN 60068-2-27	
Dimensions (W × H × D)		mm	35.5 × 90 × 58 (2 space units)	71.5 × 90 × 58 (4 TE)
Weight		kg	0.1	0.25
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)	
Terminal capacities				
Solid		mm^2	0.2/4 (AWG 22 – 12)	0.2/4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2/2.5 (AWG 22 – 12)	0.2/2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6
Climatic environmental conditions				
Operating ambient temperature		°C	–25 … 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Take appropriate measures to prevent condensation	
Storage		°C	–40…70	–40…70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5…95	5…95
Air pressure (operation)		hPa	795…1080	795…1080
Max. installation altitude above sea level, observe derating with higher altitudes		m	2000	2000
Ambient conditions, mechanical				
Pollution degree			2	2
Degree of protection IEC/EN 60529			IP 20	IP 20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10…57	10…57
Constant acceleration 2 g		Hz	57…150	57…150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal/vertical	Horizontal/vertical
Electromagnetic compatibility (EMC)				
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 50011 Class B; EN 60715 Class B, EN 50081-2 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)		kV	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical)	
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2), 24 V		kV	0.5 (outgoer cables symmetrical, EASY...DC)	
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10	10
Surge voltage (EN 50178), 24 V		kV	6	6
Insulation resistance				
Clearance in air and creepage distances			EN 50178	EN 50178
Insulation resistance			EN 50178	EN 50178
Protection class U_{out} to U_{in}			Class II to IEC 60536	Class II to IEC 60536
Potential isolation primary/secondary			yes, SELV (VDE 0100 part 410; IEC 60364-4-41, HD 384.4.41 S2) EN 60950	
Input voltage				
Rated input voltage AC		V	100/120/230/240 (–15/+10 %)	100/120/230/240 (–15/+10 %)
Protective switches AC			FAZ-C1/1 or FAZ-B6/1	FAZ-C2/1 or FAZ-B6/1
Rated input voltage DC		V	85 – 265	85 – 265
DC protective switches			FAZ-C2/1-DC	FAZ-C2/1-DC
Voltage range		V AC	85 – 264	85 – 264
Frequency range		Hz	47 – 63	47 – 63
Power failure bridging 115/230 V		ms	> 10/> 20	> 10/> 20
Fuse 115/230 V		A	1.5 slow	2/1 slow

		EASY200-POW	EASY400-POW
Rating data			
Efficiency	%	> 81	> 87
Power consumption	W	Normally 7	Normally 35
Power loss	W	Normally 1	Normally 5
Input current			
Input current rated value 115/230 V AC	A	Approx. 0.17/0.05	Approx. 0.3/0.15
Inrush current at 25 °C 230 V	A	< 5	< 5
Output voltage			
12 V DC (reference voltage)			
Rated value	V DC	12	
Tolerance	%	± 4	
Switching peaks	mV_{PP}	< 7	
Effect of input voltage	%	± 1	
Effect with 25 – 100 % load change	%	± 1	
24 V DC			
Rated value	V DC	24	24
Tolerance	%	± 3	± 5
Switching peaks 115/230	mV_{PP}	< 50/30	< 5
Effect of input voltage	%	± 1	± 1
Effect with 25 – 100 % load change	%	± 1	± 2
Output current			
12 V DC (reference voltage)			
Output current	mA	0 – 20	
Effectiveness of current limitation	mA	20	
Reduction of output voltage after current limitation	V	< 12	
Overload proof		Yes, by current limitationpermanently short-circuit proof	
Proof against sustained short circuit		Yes	
24 V DC			
Output current	A	0 – 0.35	0 – 1.25
Effectiveness of current limitation	A	> 0.4	> 1.25
Reduction of output voltage after current limitation	V		< 18
Overload proof		Yes, by current limitation	Yes, by current limitation
Proof against sustained short circuit		Yes, hickup-mode	Yes, hickup mode, approx. 10 Hz
Special load conditions			
Lamp load, cold, 24 V DC	W	2	10
Base load present	W	2	5
Behaviour on emergency-stop in 24 V circuit, disconnection with contactor (contactor load, no damage)	W	6	30
Displays			
Indication of output voltage (LED, continuous green light = OK)	V DC	24	24

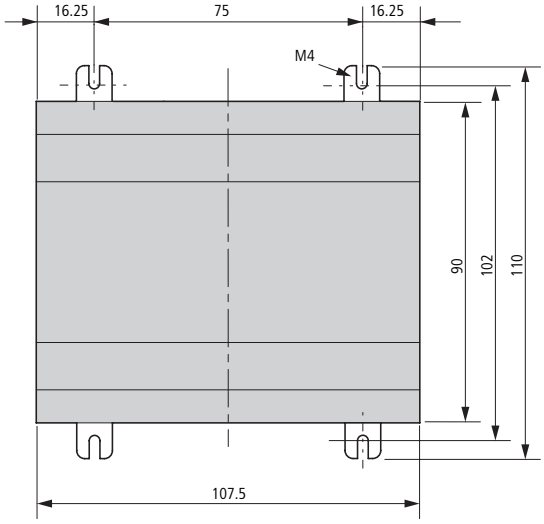
easy200
easy223-SWIRE



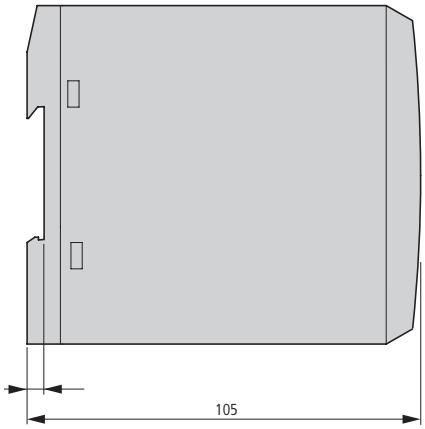
easy500



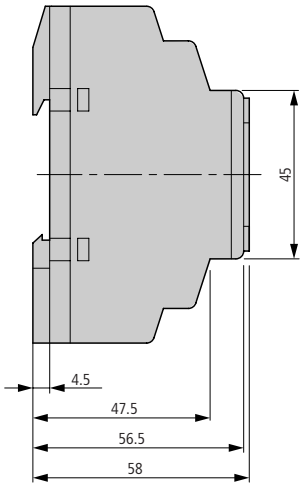
easy700



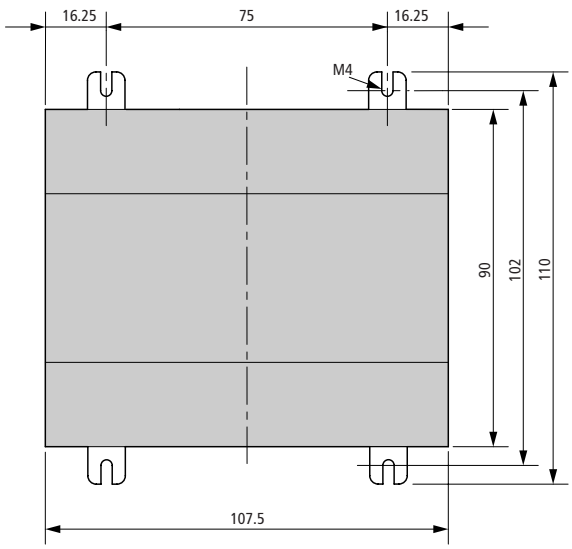
easy223-SWIRE

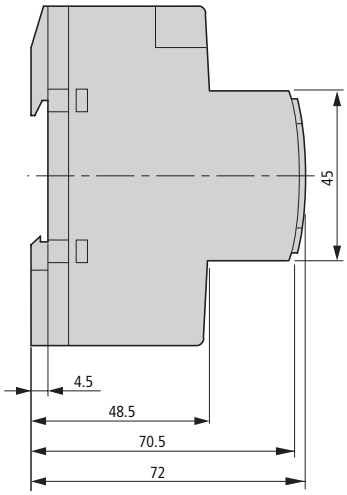


easy200
easy500
easy700

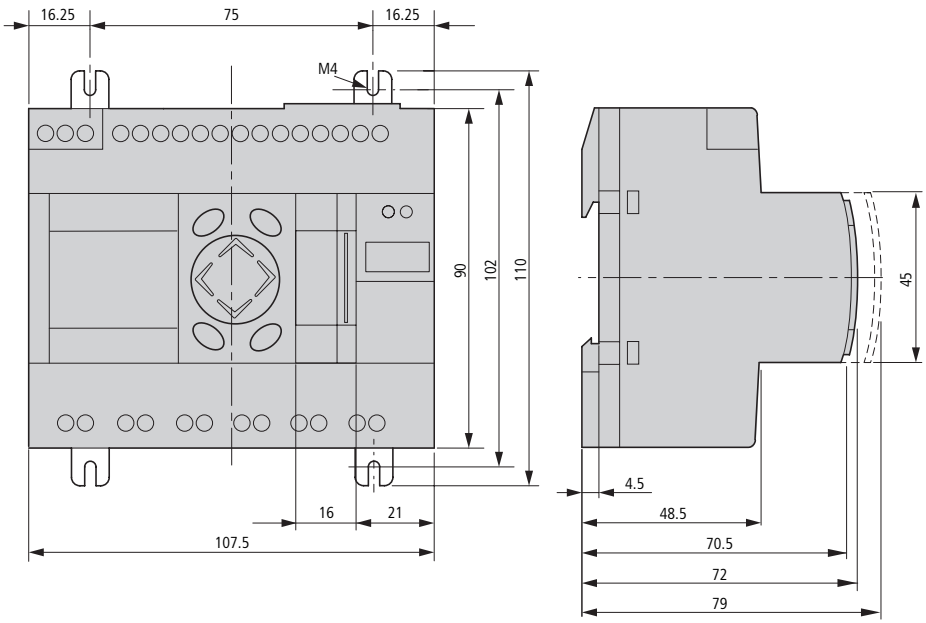


easy800

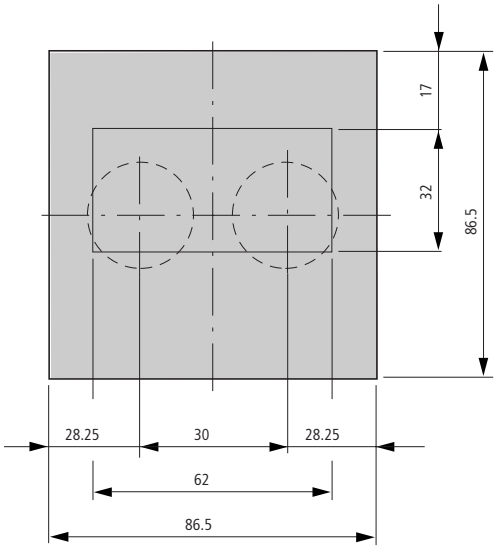




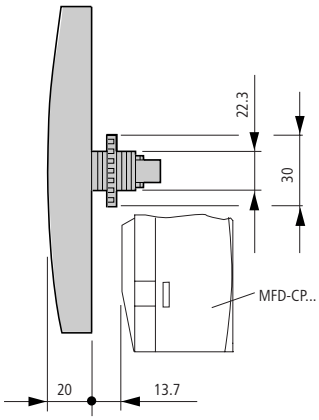
EC4P...



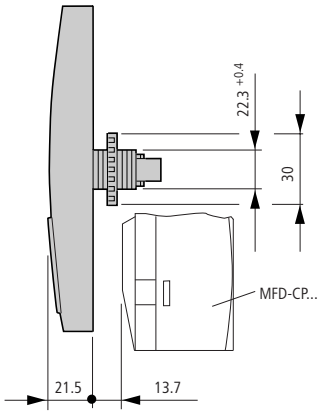
MFD-80..



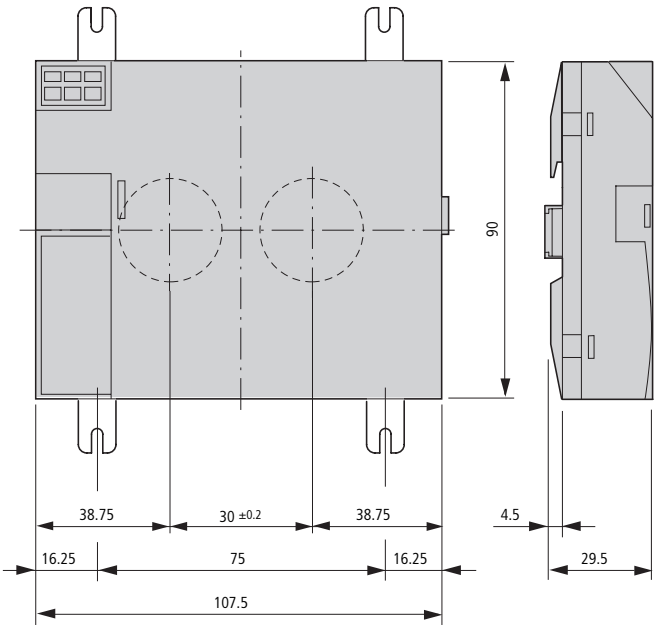
MFD-80



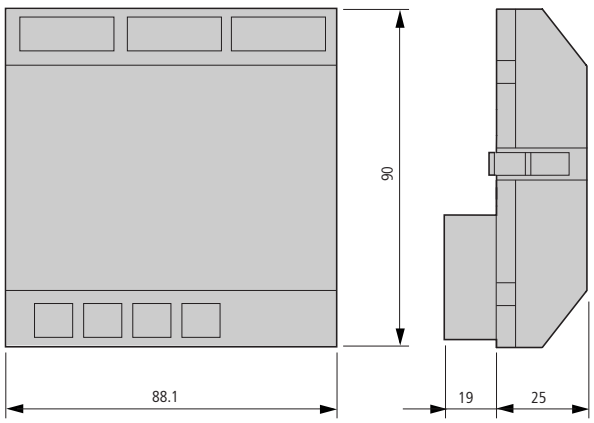
MFD-80-B



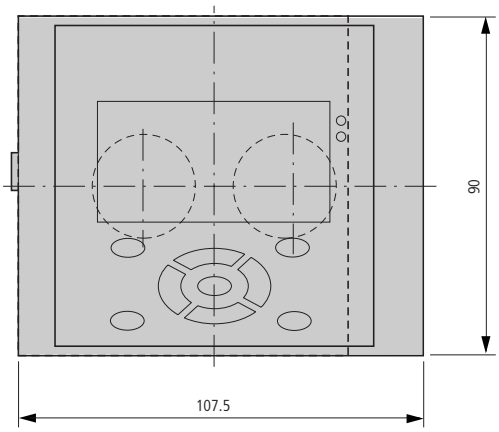
MFD-CP...



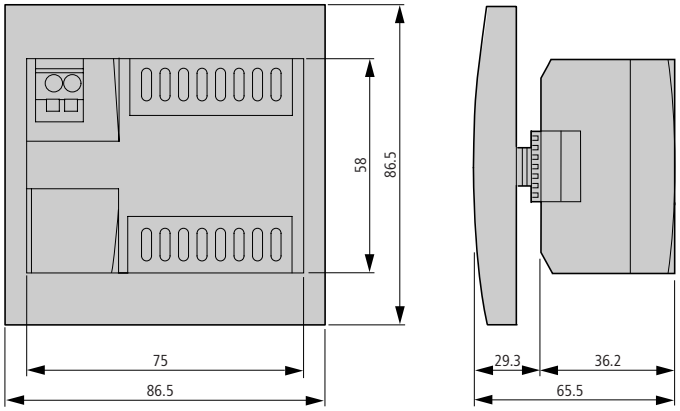
MFD-R...

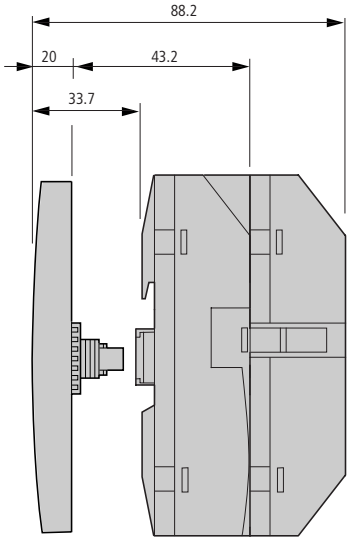


MFD-80... + MFD-CP... + MFD-R.../MFD-T...
MFD-80... + MFD-AC-CP... + MFD-AC-R16



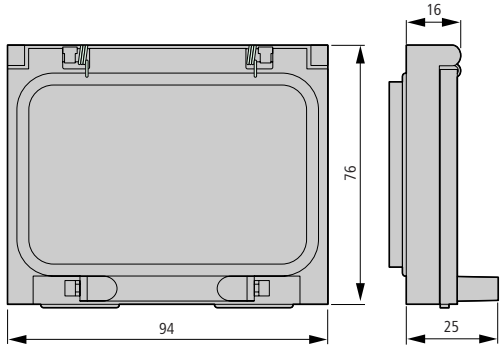
MFD-80... + MFD-CP4...



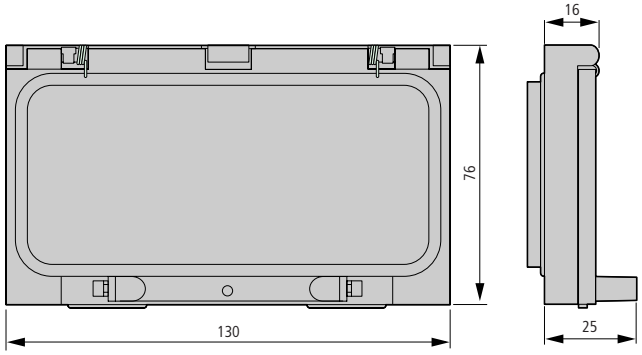


Mounting accessories

SKF-FF4

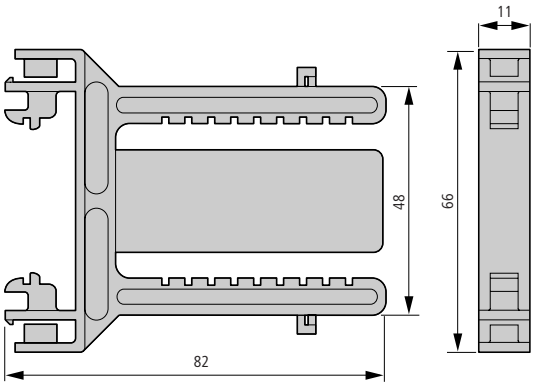


SKF-FF6



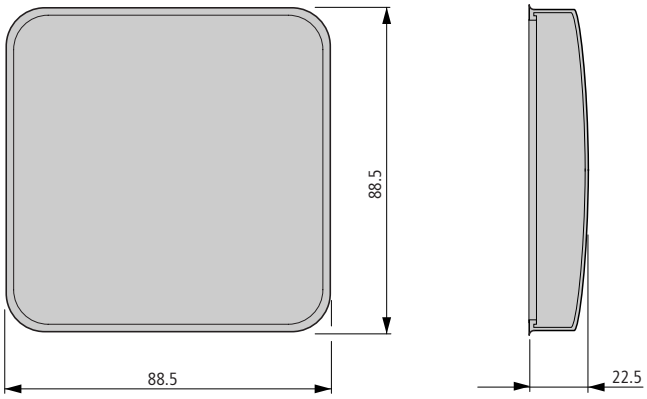
Top-hat rail adapter for hinged inspection window

SKF-HA



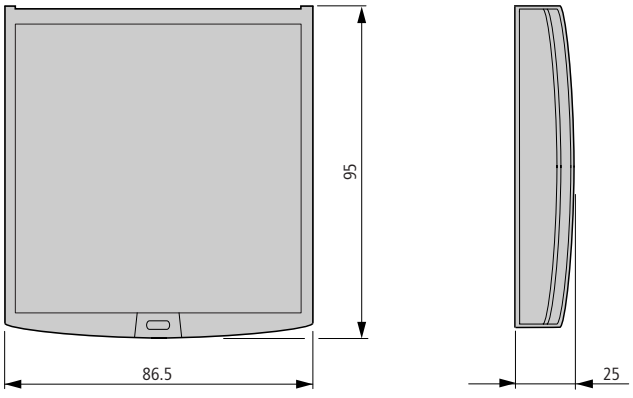
Protective diaphragm

MFD-XM-80



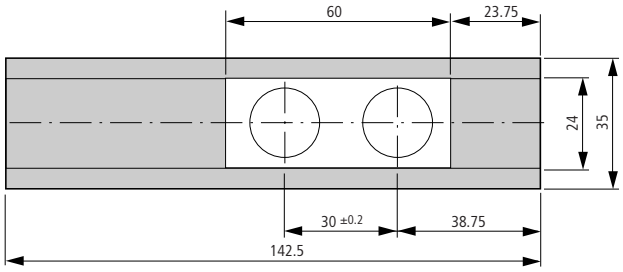
Protective cover

MFD-XS-80



Mounting rails

MFD-TS-144



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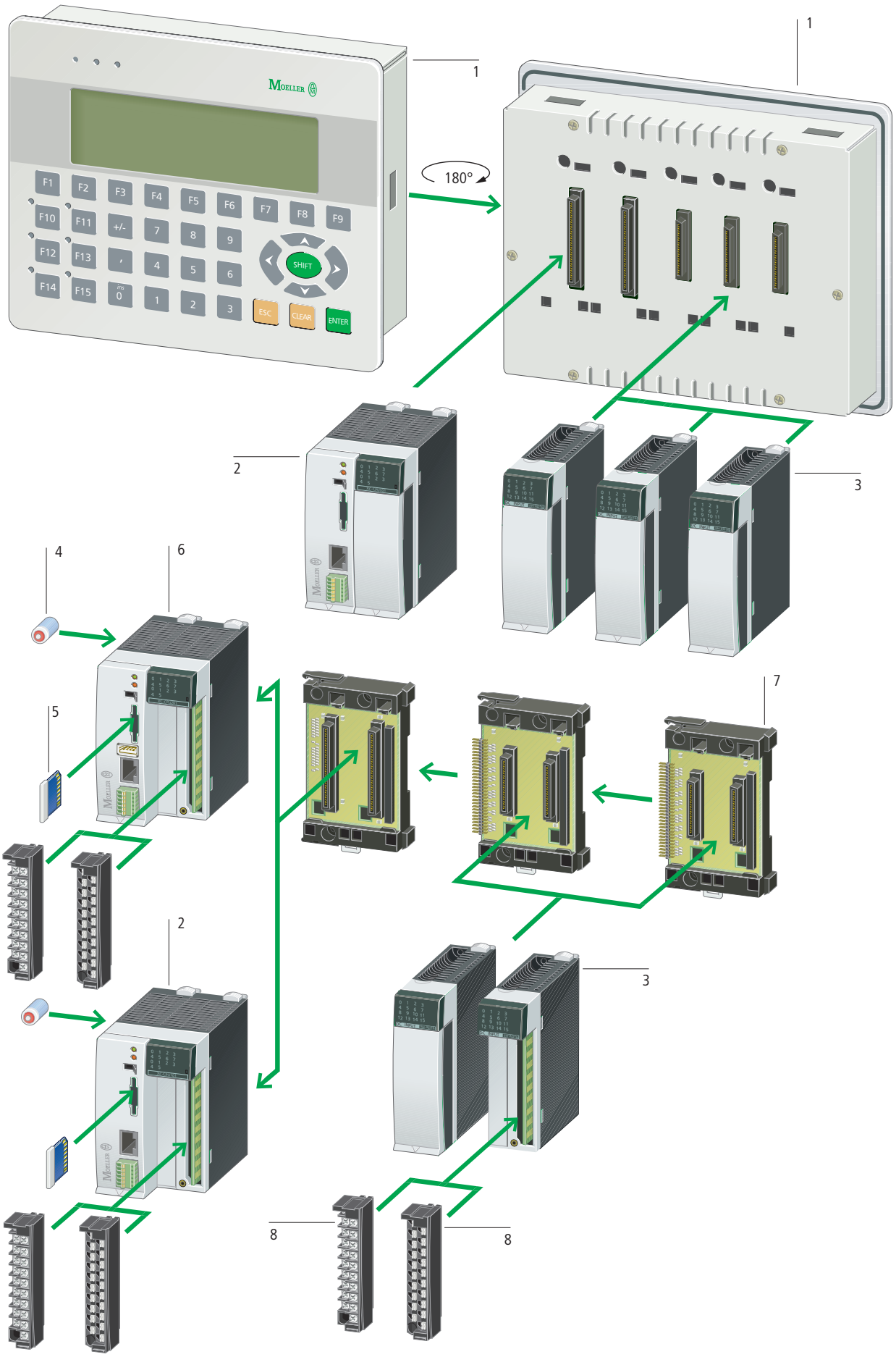


XV100 text display 1

Always in conjunction with XControl XC100 and XI/OC (MMI PLC)

Displays: 4 lines × 20 characters (or 8 × 40)

LCD display with STN technology

9 (or 15) function keys with insert strips

Numerical key block and arrow keys

Controller status LED

→ page 4/82

XC100 2

Modular PLC

8 digital inputs

6 digital outputs

4 interrupt inputs

CANopen fieldbus interface

RS 232 interface

Locally expandable with XI/OC

Can be combined with XV text displays.

→ page 4/82

XI/OC I/O modules 3

Space-optimized input/output modules

Local extension on XC100/200

Digital, analog, technology, counter and communication modules

XI/OC modules can be exchanged without disconnecting any wiring

→ page 4/83

Battery 4

→ page 4/85

Memory card (multimedia card) 5

Memory for program, operating system, recipes, and visualization texts

→ page 4/85

XC200 6

Modular PLC with Ethernet interface

8 digital inputs

6 digital outputs

2 counters

2 interrupt inputs

1 incremental input

CANopen fieldbus interface

Web server

RS 232 interface

Locally expandable with XI/OC

→ page 4/82

Module rack 7

XI/OC backplane

For connecting the XC100 controller and the XI/OC modules with the top-hat rail

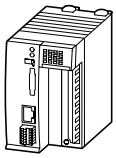
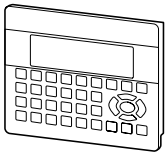
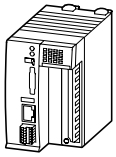
→ page 4/84

XI/OC terminal block 8

Connection options via spring-loaded or screw terminals

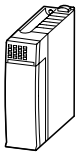
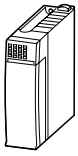
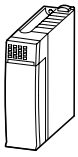
Exchange/remove without disconnecting wiring

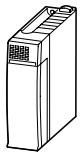
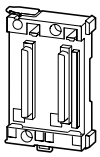
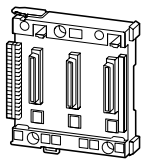
→ page 4/84

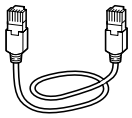
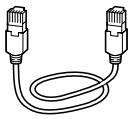
		Description	Part no. Article no.	Price see price list	Std. pack
XC100/XC200					
• Controller with digital inputs/outputs, locally and remotely expandable • CANopen interface, 24V power supply • Locally expandable by up to 15 XI/OC modules • The following accessory equipment is required: terminal clamps, module rack, battery					
XC100 Controller with 8 digital inputs (4 interrupt inputs), 6 digital outputs; RS232 interface for programming and communication, CANopen interface; slot for memory card, optional expansion with text display, RUN/STOP switch and LED indicators. 					
		64 kByte user memory	**XC-CPU101-C64K-8DI-6DO** 262152		1 off
		128 kByte user memory	**XC-CPU101-C128K-8DI-6DO** 262146		
		256 kByte user memory	**XC-CPU101-C256K-8DI-6DO** 274399		
	Optical CAN interface:	128 kByte user memory	**XC-CPU101-FC128K-8DI-6DO** 289169		
	Can be operated only using XV-101-... display	64 kByte user memory	**XC-CPU101-C64K-8DI-6DO-XV** 262247		
		128 kByte user memory	**XC-CPU101-C128K-8DI-6DO-XV** 262150		
		256 kByte user memory	**XC-CPU101-C256K-8DI-6DO-XV** 279280		
Text Display HMI-PLC XV100 for XC100 LCD technology with back-lighting, membrane keypad, 1 slot for XC100, 3 spare slots for XI/OC modules, numerical keypad, arrow keys, contrast setting adjustable via software 					
	Operation with XC-CPU101-…-XV	4 lines × 20 characters, resolution 122 × 32 dpi, 9 function keys	**XV-101-K42** 262403		1 off
		8 lines × 40 characters, resolution 240 × 64 dpi, 15 function keys	**XV-101-K84** 262404		
XC200 Controller with 8 digital inputs (2 counters, 2 interrupt inputs, 1 incremental input) and 6 digital outputs; Ethernet and RS232 interface for programming and communication; CANopen interface; slot for memory card; USB interface; RUN/STOP switch and LED indicators. 					
		256 kByte user memory	**XC-CPU201-EC256K-8DI-6DO** 262155		1 off
		512 kByte user memory	**XC-CPU201-EC512K-8DI-6DO** 262157		
		256 kByte user memory Integrated Web server	**XC-CPU201-EC256K-8DI-6DO-XV** 262156		
		512 kByte user memory built-in Web server	**XC-CPU201-EC512K-8DI-6DO-XV** 262158		

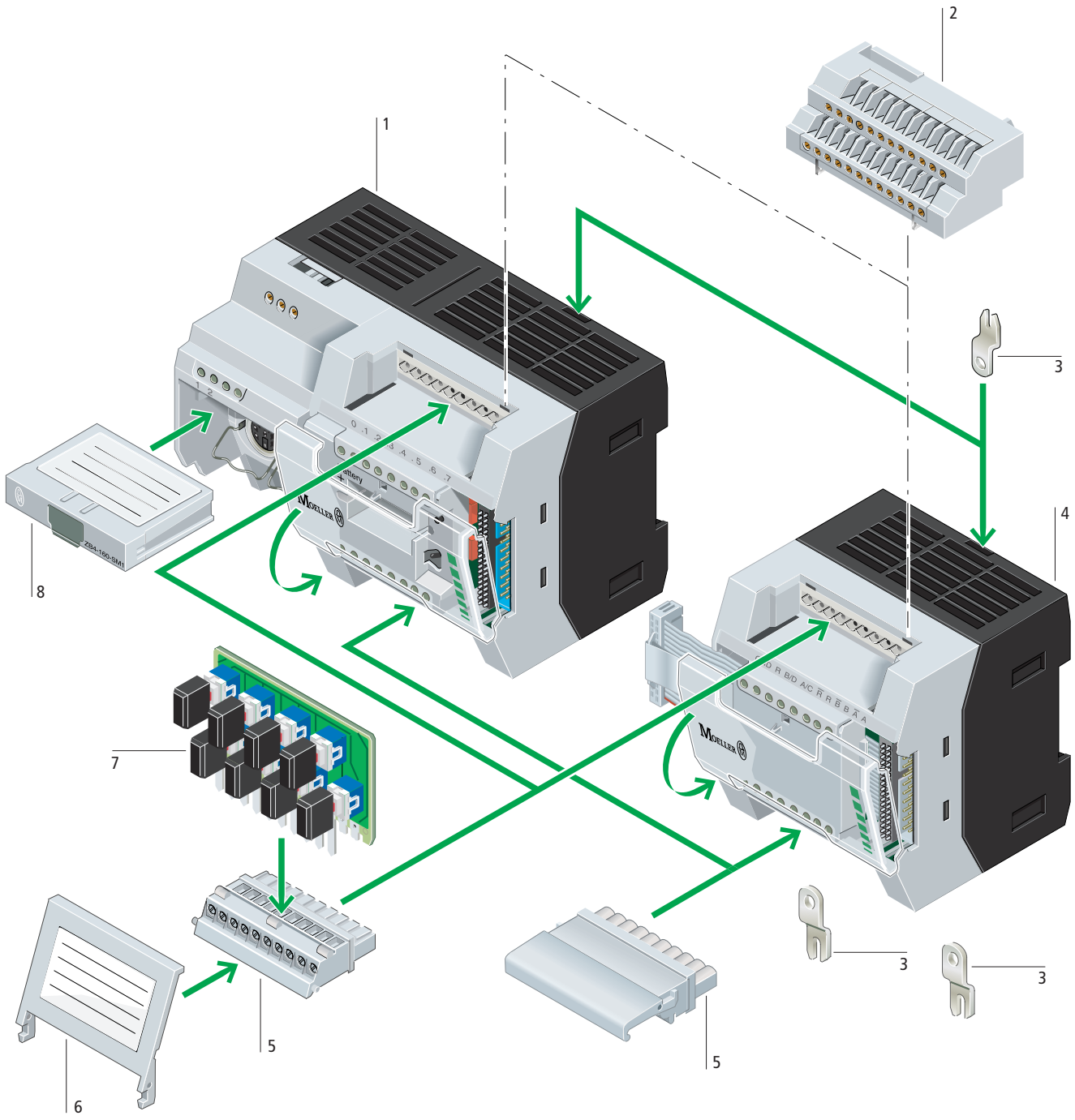
XI/OC

- Compact I/O system for connection to XC100/200 Modular PLCs
- XC100/200 expandable with up to 15 XI/OC modules
- Optionally, screw terminals or spring-loaded terminals for digital/analog modules

		Description	Part no. Article no.	Price see price list	Std. pack
Digital modules 		8 inputs, 24 V DC	**XIOC-8DI** 257891		1 off
		16 inputs, 24 V DC	**XIOC-16DI** 257892		
		16 inputs, 240 V AC	**XIOC-16DI-AC** 257893		
		32 inputs, 24 V DC	**XIOC-32DI** 267411		
		8 outputs, 24 V DC, 0.3 A	**XIOC-8DO** 257894		
		12 relay outputs	**XIOC-12DO-R** 257897		
		16 outputs, 24 V DC, 0.3 A	**XIOC-16DO** 257896		
		16 outputs, 24 V DC, 0.8 A, short-circuit proof	**XIOC-16DO-S** 257895		
		32 outputs, 24 V DC, 0.2 A	**XIOC-32DO** 267413		
		16 connections, 4 inputs, 12 freely parameterizable as inputs/outputs, 24 V DC Outputs 0.5 A	**XIOC-16DX** 262322		
Analog modules 	Inputs	8 inputs, 4 – 20 mA	**XIOC-8AI-I2** 262549		1 off
		8 voltage inputs, 0 – 10 V	**XIOC-8AI-U1** 257899		
		8 voltage inputs, ±10 V	**XIOC-8AI-U2** 257900		
		4 inputs for temperature monitoring, Pt100/1000	**XIOC-4T-PT** 257901		
		4 inputs for thermocouples Type K, J, L, B, N, E, R, S, T	**XIOC-4AI-T** 289933		
	Outputs	2 outputs, ±10 V	**XIOC-2AO-U2** 257904		
		2 outputs, 0 – 10 V, 2 outputs, 4 – 20 mA	**XIOC-2AO-U1-2AO-I2** 257902		
		4 outputs, 0 – 10 V	**XIOC-4AO-U1** 257903		
	Combination modules	2 inputs and 1 output, 0 – 10 V 1 ms conversion time	**XIOC-2AI-1AO-U1** 262409		
		2 inputs and 1 output, 0 – 10 V, 0 – 20 mA 1 ms conversion time, individual changeover	**XIOC-2AI-1AO-U1-I1** 281545		
		4 inputs and 2 outputs, 0 – 10 V 1 ms conversion time	**XIOC-4AI-2AO-U1** 262405		
		4 inputs and 2 outputs 0 – 10 V, 0 – 20 mA 1 ms conversion time, individual changeover	**XIOC-4AI-2AO-U1-I1** 281544		
Counter modules 		1 input up to 100 kHz, 24 V DC, 5 V DC, 2 digital transistor outputs, opto-isolated, 24 V DC 30-pole connector required for counter module	**XIOC-1CNT-100KHZ** 257906		1 off
		2 inputs up to 100 kHz, (24 V DC or 5 V diff), 4 digital transistor outputs, opto-coupled, 24 V DC 30-pole connector required for counter module	**XIOC-2CNT-100KHZ** 257907		
		2 incremental encoders up to 400 kHz, 5 V DC, 2 analog outputs, +10 V	**XIOC-2CNT-2AO-INC** 262417		

		Description	Part no. Article no.	Price see price list	Std. pack
Communication modules					
		PROFIBUS DP master module	**XIOC-NET-DP-M** 257908		1 off
		PROFIBUS DP slave module	**XIOC-NET-DP-S** 286419		
		Suconet K master module	**XIOC-NET-SK-M** 289982		
		Serial interface RS 232C, RS 485, RS 422 Operating modes: Transparent mode Modbus master, slave SUCOM A Suconet-K slave	**XIOC-SER** 267191		
Accessories					
Terminals One 18-pole terminal plug is required for each digital and analog module.					
		18-pole plug with spring-loaded terminal	**XIOC-TERM-18T** 258104		10 off
		18-pole plug with screw terminal	**XIOC-TERM-18S** 258102		10 off
		30-pole connector for counter module, with 4 m cable XIOC-1CNT-100KHZ XIOC-2CNT-100KHZ	**XIOC-TERM30-CNT4** 262248		10 off
		40-pole connector for digital module, with 4 m cable XIOC-32DI XIOC-32DO	**XIOC-TERM32** 267414		10 off
Racks					
	Basic rack for mounting XC100/200 on top-hat rail, expandable	Width: 2 slots for controller	**XIOC-BP-XC** 260792		1 off
	Basic rack for mounting XC100/200 on top-hat rail, expandable	Width: 3 slots for controller and one XI/OC module	**XIOC-BP-XC1** 260793		
	Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 2 slots for XI/OC modules	**XIOC-BP-2** 260794		
	Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 3 slots for XI/OC modules	**XIOC-BP-3** 260795		
	Expander rack for mounting XI/OC modules on top-hat rail, expandable	Width: 3 slots for XI/OC modules Note: module carriers for expansion to maximum 15 modules must be plugged into the 5th slot (see also: XI/OC project engineering)	**XIOC-BP-EXT** 274291		

		Description	Part no. Article no.	Price see price list	Std. pack
Accessories					
Multi-media card For storage of programs, data, recipes					
		32 MByte	**XT-MEM-MM32M** 262731		1 off
Battery					
		For back-up of real-time clock and retentive data	**XT-CPU-BAT1** 256209		1 off
Programming cable RS232					
	2 m length		**XT-SUB-D/RJ45** 262186		1 off
	2 m length	Ethernet cross, 2 m	**XT-CAT5-X-2** 256487		
	5 m length	Ethernet cross, 5 m	**XT-CAT5-X-5** 256488		
Connection cable					
	Connecting cable for interface switch XC200	Length: 0.3 m	**EASY-NT-30** 256283		
	Connecting cable for interface switch XC200	Length: 0.8 m	**EASY-NT-80** 256284		
	Connecting cable for interface switch XC200	Length: 1.5 m	**EASY-NT-150** 256285		
CAN cable to ISO 11898					
		Recommendation: UNITRONIC bus LD, Messrs. LAPPKABEL 2 × 2 × 0.22 mm² Surge impedance: 100 – 120 Ω Effective capacitance: 800 Hz, max. 60 nF/km			
Empty module					
		Empty module to cover free XI/OC slots	**XIOC-NOP** 288894		1 off
Interface switch					
		Interface adapter to split the combined RS232/ Ethernet interface of the XC200 into RJ45 sockets Connection cable EASY-NT-30/80/150 usable for connection to XC200.	**XT-RJ45-ETH-RS232** 289170		1 off
Filter					
		Interference suppression of the external 24 V DC supply of the XC100/200 Max. current drawn: 2.2 A	**XT-FIL-1** 285316		1 off
Insert labels					
		Insert labels for free user inscription For 3 devices: XV-101-K42 For 3 devices: XV-101-K84	**XT-BS1** 265365		1 off
Programming software					
	CoDeSys-Programming system according to IEC 61131-1 with Instruction list, ST, KOP, FBS, AS, CFC Bus configuration CANopen, PROFIBUS-DP, XI/OC creation of visualisation for simulation and WEB-visualisation OPC configurator, many online- and help functions Supports XC100, XC200, EC4-200 Documentation as PDF file	Menu selection in 3 languages Operating systems: WIN NT 4.0 SP6, WIN 2000 SP3, WIN XP SP2	**ECP-SOFT** 106407		1 off



Compact PLC

PS4-150 1
24 V DC, 115 – 230 V AC
16 digital /2 analog inputs
14 digital outputs or 8 relay outputs
1 analog output
Not locally expandable
Suconet K, 8 stations
→ page 4/88

PS4-200 1
24 V DC
8 digital /2 analog inputs
6 digital outputs
1 analog output
Locally expandable (max. 6 LE)
Suconet K, 8 stations (24 with two LE4-501-BS1)
→ page 4/88

PS4-270 1
120/240V DC
12 digital /4 analog inputs
8 digital-(relay)/4 analog outputs
Locally expandable (max. 5 LE)
Suconet K, 8 stations (24 with two LE4-501-BS1)
→ page 4/88

PS4-300 1
24 V DC
16 digital /2 analog inputs
14 digital outputs, 1 analog output
Locally expandable (max. 5 LE)
Suconet K, 30 stations (46 with two LE4-501-BS1)
→ page 4/88

Expansions

EM4-100 remote expansion modules 1
Not locally expandable
Suconet K
Digital input/output
Digital output (relay)
Analog input/output
→ page 4/89

EM4-200 remote expansion modules 1
Max. 6 local expansion modules
Suconet K
PROFIBUS-DP
Digital input (24 V DC)
→ page 4/89

LE4-... local expansion modules 4
Digital input/output (24 V DC/230 V AC/115 V AC)
Digital output (relay, pneumatic, transistor, triac)
Counter, analog, network modules
→ page 4/91

Accessories

Two-level terminal block 2
For direct connection of proximity switches and actuators (2 × 11 pole)
→ page 4/92

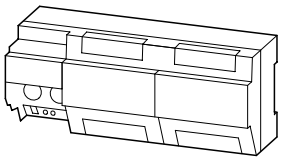
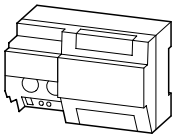
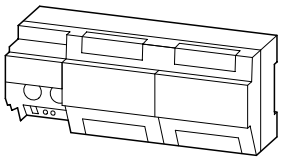
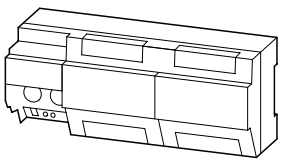
Mounting feet 3
For screw fixing on mounting plate, 3 mounting feet per device
→ page 4/47

Plug-in screw terminal 5
With replaceable cover
10 pole, for connecting input/output signals
→ page 4/92

Hinged cover with large area for labelling 6
For plug-in screw terminal, for labelling of inputs/outputs, 20 characters/terminal
→ page 4/92

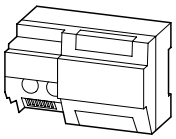
Digital input simulator 7
For the simulation of 8 digital inputs
→ page 4/92

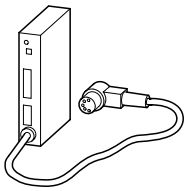
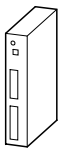
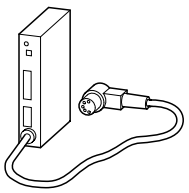
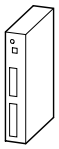
Memory modules 8
For expanding the program and recipe memory
→ page 4/92

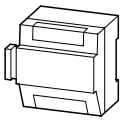
Rated voltage	Inputs			Outputs			Expandable by		Digital I/O	**Part no.** Article no.	**Price** see price list	Std. pack
U_e	Digital 24 V DC	Digital 120/240 V AC	Analog	Digital 24 V DC	Digital 120/240 V AC	Analog	Suconet K/K1 slaves	LE4				
V	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount			
Compact PLC PS4 • Integrated setpoint potentiometer • 3 kHz counter • Ambient temperature 0 to +55 °C • Networking via Suconet K • RS 232 C programming interface												
PS4-150												
												
24 V DC	16		2 10-bit	14		1 12-bit	8		Total of 680 I/O	**PS4-141-MM1** 081871		1 off
115 – 230 V AC	16		2 10-bit	8		1 12-bit	8		Total of 680 I/O	**PS4-151-MM1** 081870		1 off
PS4-200												
												
24 V DC	8		2 10-bit	6		1 12-bit	8 24	6	Total of 790 I/O	**PS4-201-MM1**[1] 051296		1 off
PS4-271												
												
120 - 240 V AC		12	4 10-bit		8	4 12-bit	8 24	5	Total of 790 I/O	**PS4-271-MM1**[1] 209602		1 off
PS4-341												
												
24 DC	16		2 10-bit	14		1 12-bit	30 46	5	Total of 8500 I/O	**PS4-341-MM1**[1] 202380		1 off

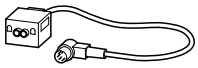
Notes [1] Expandability max. number of Suconet K/K1 stations: with 2 in additional network modules

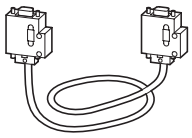
Device for world markets, IEC/EN ≙ UL/CSA

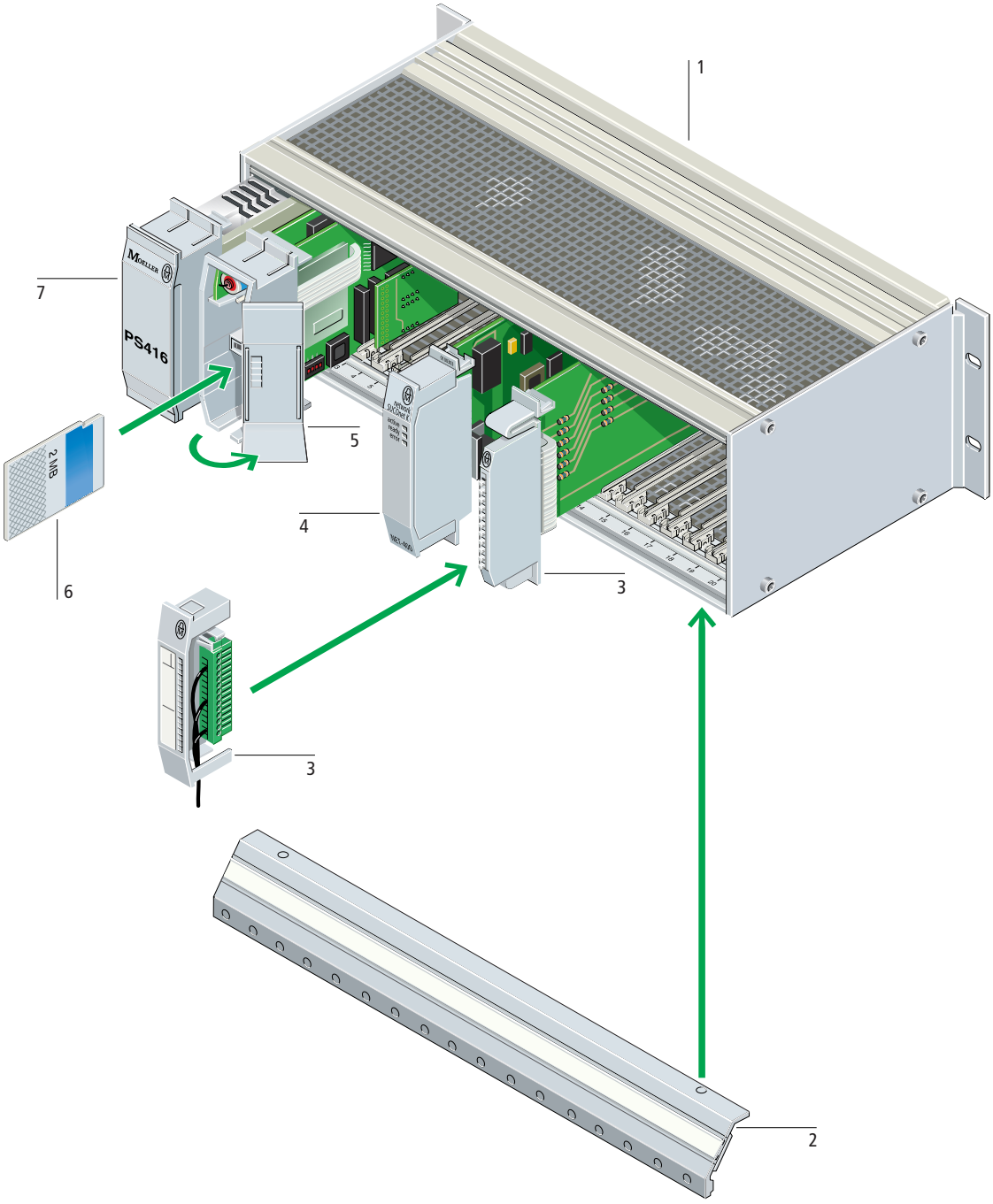
		Description	Part no. Article no.	Price see price list	Std. pack
EM4 remote expansion modules					
					
EM4-100 Not locally expandable					
Digital modules Not locally expandable					
	Networking through Suconet K1/K	• Supply voltage 24 V DC • 8 inputs 24 V DC (10 inputs optional) • 8 outputs 24 V DC/0.5 A (6 outputs with 10 inputs) Note: EM4-101-DD2 replaces ...DD1	**EM4-101-DD2** 206950		1 off
	Networking through Suconet K1/K	• Supply voltage 115 – 230 V AC • 8 inputs (24 V DC) • 6 relay outputs 230 V AC or 24 V DC max. Note: EM4-111-DR2 replaces ...DR1	**EM4-111-DR2** 206951		1 off
Analog modules Not locally expandable					
	Networking through Suconet K1/K	• Supply voltage 24 V DC, configurable inputs/outputs • 6/8 analog inputs, 8/12-bit resolution • 4 analog outputs, 8/12-bit resolution	**EM4-101-AA2** 046202		1 off
Temperature measuring modules Not locally expandable					
	Networking through Suconet K	• Supply voltage 24 V DC • 6 inputs for Pt100/Ni1000 resistance thermometers – Pt100: –100 °C to +300 °C – Ni1000: –50 °C to +150 °C • 2 inputs 0 – 10 V, 12-bit resolution	**EM4-101-TX1** 087437		1 off
	Networking through Suconet K	• Supply voltage 24 V DC • 6 inputs for thermocouple types – J: 0 °C to 1200 °C – K: 0 °C to 1300 °C – L: 0 °C to 900 °C	**EM4-101-TX2** 205103		1 off
EM4-200 locally expandable with LE4-... expansion modules					
Digital modules • Expansion module records signal states and digital values • Supply voltage 24 V DC • 16 inputs (24 V DC)					
	Networking through Suconet K1/K	(EM4-201-DX2 replaces ...DX1)	**EM4-201-DX2** 046990		1 off
	Networking through PROFIBUS-DP	Accompanying configuration file (*.GSD) available by download from: • Internet address: www.moeller.net/automation • Internet address: www.profibus.com	**EM4-204-DX1** 088985		1 off

	Description	Part no. Article no.	Price see price list	Std. pack
Interface converter for PS4				
	Suconet K to RS 232C • 1 RS 485 interface with 5-pole DIN plug connector for connection to master PLC • 1 RS 485 interface for outgoing Suconet K bus (plug-in screw terminal) • 1 RS 232C interface for connecting the partner device (9-pin SUB-D plug) • Power supply 9 V DC through PLC (PS4, except PS4-100/400) • Address 2 (fixed)	**ZB4-501-UM3** 215355		1 off
Interface converter for PS4/PS416				
	Suconet K to RS 232C • 1 RS 485 interface for the Suconet K bus (plug-in screw terminal) • 1 RS 232C interface for connecting the partner device (9-pin SUB-D plug) • Supply voltage 24 V DC • Address variable	**ZB4-501-UM4** 225350		1 off
Telecontrol module for PS4				
	• 1 RS 485 interface with 5-pole DIN plug for connecting a master PLC (cable length 20 cm) • 1 RS 485 interface for outgoing Suconet K bus (plug-in screw terminal) • 1 RS 232C interface with 9-pole SUB-D plug for connecting a modem • Power supply 9 V DC via PLC (PS4, except PS4-100/-400) • Address 2 (fixed)	**ZB4-501-TC1** 201778		1 off
Telecontrol module for PS4/PS416				
	• 1 RS 485 interface for the Suconet K bus (plug-in screw terminal) • 1 RS 232C interface with 9-pole SUB-D plug for connecting a modem • Power supply 24 V DC (plug-in screw terminal) • Address variable	**ZB4-501-TC2** 225353		1 off

Description	Part no. Article no.	Price see price list	Std. pack
LE4-... local expansion modules			
			
Digital modules			
• 8 inputs, 24 V DC • 8 outputs (transistor) 24 V DC/0.5 A	**LE4-116-DD1** 049326		1 off
• 16 inputs (24 V DC)	**LE4-116-DX1** 061213		
• 16 output (transistor) 24 V DC/0.5 A	**LE4-116-XD1** 061215		
• 8 outputs (relays) 24 V DC/2.0 A or 230 V AC/2.0 A	**LE4-108-XR1** 051324		
• 8 outputs (transistor) 24 V DC/2.0 A	**LE4-108-XD1** 049325		
• 8 inputs (120/240 V AC)	**LE4-308-HX1** 200210		
• 8 (Triac) outputs, 120 – 240 V AC	**LE4-308-XH1** 200211		
Counter module			
• 2 channels (24-bit counter range) • 3 selectable operating modes per channel: Positioning system for 5 V and 24 V incremental encoders. High-speed counter for 24 V encoder • Incremental positioning	**LE4-622-CX1** 081940		1 off
Absolute encoder			
• 3 channels (25-bit) • SSI interface/protocol • Transfer rate 125/250 kHz	**LE4-633-CX1** 203533		1 off
Analog modules			
• 4 analog inputs, –10 to +10 V • 2 analog outputs –10 to +10 V, 10/12-bit resolution	**LE4-206-AA1** 081939		1 off
• 4 analog inputs, 0(4) to 20 mA, 12-bit resolution • 2 analog outputs, 0(4) to 20 mA, 12-bit resolution	**LE4-206-AA2** 203958		1 off
Network modules Suconet K, PROFIBUS-DP			
For Suconet K	**LE4-501-BS1** 045608		1 off
For PROFIBUS-DP, master function	**LE4-504-BS1** 214817		
For PROFIBUS-DP, slave function	**LE4-504-BT1** 214818		

	Memory type	Memory size KByte	Description	For use with	Part no. Article no.	Price see price list	Std. pack
Accessories							
Digital input simulator 			Simulation of 8 digital inputs	PS4-... EM4-... LE4-...	**ZB4-108-ES1** 071605		1 off
T connector for bus connection 			5-pole DIN plug	PS4-... EM4-...	**TBA3.1** 012470		1 off
Plug-in screw terminals 			10-pole, for connection of signal cables	PS4-... EM4-... LE4-...	**ZB4-110-KL1** 071606		2 off
Twin-level terminal block 			snap-on voltage terminal, 2 × 11-pole for the direct connection of initiators and actuators	PS4-... EM4-... LE4-...	**ZB4-122-KL1** 052101		2 off
Hinged cover with large area for labelling 			for plug-in screw terminals, for labelling the inputs/outputs 20 characters/terminal	PS4-... EM4-... LE4-...	**ZB4-101-GZ1** 052108		10 off
Memory modules 	Flash	64	● Program memory backup ● Recipe memory	PS4-150 PS4-200	**ZB4-128-SF1** 050189		1 off
	RAM	32	● Expansion of the program memory from 24 kByte to 56 kByte	PS4-150 PS4-200	**ZB4-032-SR1** 050190		
	Flash Flash RAM	64 32	● Program memory backup ● Recipe memory ● Expansion of the program memory from 24 kByte to 56 kByte	PS4-150 PS4-200	**ZB4-160-SM1** 050188		
	Flash EEPROM	1000	● Memory for backing up the user programs ● Recipe memory ● Usable from HW Version 2	PS4-300	**ZB4-901-SF2** 227883		
Battery			● For buffering the RAM and the real-time clock ● Typical storage life 5 years	PS4-150 PS4-200 PS4-300	**ZB4-600-BT1** 049822		1 off
Fixing bracket 			For screw fixing to mounting plate	ZEV ZEV-XSW-25 ZEV-XSW-65 ZEV-XSW-145 easy..., MFD... PS4..., EM4... LE4...	**ZB4-101-GF1** 061360		9 off

	Description	For use with	Part no. Article no.	Price see price list	Std. pack
Accessories					
Programming cable					
Coupling for PC and PLC					
	● 1 × 8-pole pin connector (ZB4-108-DS1), right angle version ● 1 × 9-pole socket connector ● Cable length 2 m	PS4-150 PS4-200 PS4-300	**ZB4-303-KB1** 025392		1 off
Suconet K/K1 data cable					
	● 2 × 5-pole pin connector (S1-PS3), right-angle version ● Cable length 0.5 m	PS4-... EM4-...	**KPG1-PS3** 085640		1 off
	● 1 × 5-pole plug connector (S1-PS3), angled ● 1 × 9-pole plug connector ● Cable length 2 m	PS4-... EM4-...	**KPG3-PS3** 014487		1 off
	For customer assembly of Suconet cables 2 × 0.5 mm² shielded and twisted, cable length (as ring) 100 m	PS416-CPU-... PS416-NET-4.. PS4	**LT309.096** 019233		100 m
Screen earth kit					
	● For EMC-compliant connection of cable shielding	PS4-... EM4-... LE4-...	**ZB4-102-KS1** 081038		1 off
PROFIBUS-DP bus connector plug					
	Metallised insulated housing Maximum transfer rate 12 MBit/s Integrated switch (accessible from the outside) for the bus terminating resistors Terminal block for two cable entries, with straight or 90° angled cable entry, as required Suitable for: LE4-504-BS1/-BT1 PS416-NET-440/-441 EM4-204-DX1 via adapter ZB-014-AD1		**ZB4-209-DS3** 217820		1 off
Data plug					
	For automation devices with a Suconet K/K1 connection ● 5-pole pin connnector, right-angle version	PS4-... EM4-...	**S1-PS3** 095132		2 off
	9-pole SUB-D pin connector, right-angled, kit without cable for connecting data cables	PS416-CPU-... PS416-NET-2.. PS416-NET-4.. PS416-COM-... PS416-MOD-... EM4-...	**PS416-ZBS-410** 051752		1 off
	For expansion modules EM4-102-AA1 and EM4-102-DX1 ● 8 pole pin connnector, angled version	EM4-...	**ZB4-108-DS1** 060385		1 off
PROFIBUS-DP adapter cable					
	For expansion module EM4-204-DX1 ● for 9 pole SUB-D socket to 5 pole DIN plug ● Cable length 0.20 m		**ZB4-014-AD1** 206981		1 off



Basic elements

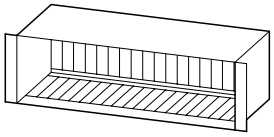
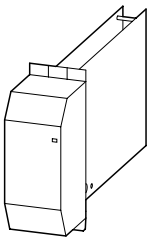
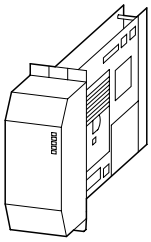
Module rack	1
→ page 4/95	
Power supply card	7
→ page 4/95	
CPU card	5
→ page 4/95	

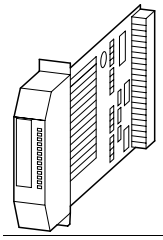
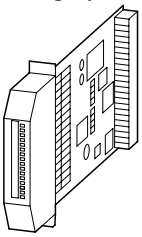
Modules

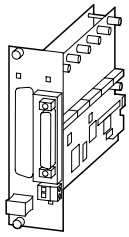
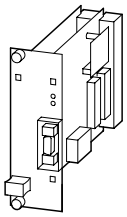
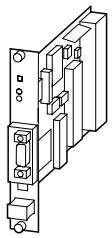
Standard cards	3
→ page 4/96	
Communication cards	4
→ page 4/98	

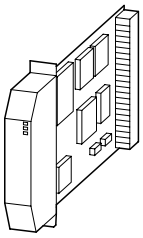
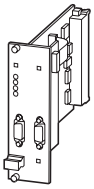
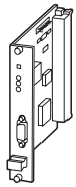
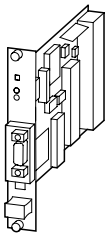
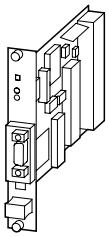
Accessories

Potential equalization bar	2
→ page 4/99	
Memory card	6
→ page 4/99	

	Description		Part no. Article no.	Price see price list	Std. pack
Racks					
					
For mounting on mounting plate with fixing screws (can be adapted for front mounting)					
	9 free slots		**PS416-BGT-400** 040891		1 off
	13 free slots		**PS416-BGT-410** 040892		1 off
	19 free slots		**PS416-BGT-420** 040889		1 off
for flush mounting with fixing screws (can be adapted for mounting on mounting plate)					
	19 free slots		**PS416-BGT-421** 040890		1 off
Power supply cards					
With isolation of primary and secondary circuits					
	230 V AC	Primary 230 V AC Secondary 5 V DC/1.5 – 8 A	**PS416-POW-400** 054127		1 off
	24V DC	Primary 24 V DC Secondary 5 V DC/1.5 – 10 A	**PS416-POW-410** 032750		1 off
	115 V AC	Primary 115 V AC Secondary 5 V DC/1.5 – 8 A	**PS416-POW-420** 082247		1 off
Central processing units					
For saving and processing PLC programs with the S40 programming software					
	256 KByte user memory	• Suconet K interface (PS416-CPU-300/-400) • Programming interface • PCMIA interface for memory card • PS416-ZBB-410 battery modules not supplied with central unit, order 2 battery modules separately	**PS416-CPU-200** 202381		1 off
	512 KByte user memory		**PS416-CPU-300** 202382		1 off
	1 MByte user memory		**PS416-CPU-400** 051747		1 off

Description	Part no. Article no.	Price see price list	Std. pack
Digital input/output cards			
			
Digital input cards • 24 V DC input • 16 inputs with optocoupler			
Switch-on delay: 3.0 ms Switch-off delay: 3.0 ms	**PS416-INP-400** 051339		1 off
Switch-on delay: 0.2 ms Switch-off delay: 0.3 ms	**PS416-INP-401** 051340		1 off
Digital output cards 24 V DC output			
16 outputs of 500 mA each with optocoupler	**PS416-OUT-400** 051337		1 off
8 outputs of 2 A each with optocoupler	**PS416-OUT-410** 051338		1 off
Analog input/output cards			
			
Analog input card			
• 8 analog inputs, resolution up to 12-bit • Input ranges, voltage: channel 0 – 3: 0 – 1 V, ± 5 V, ± 10 V, 0 – 5 V, 0 – 10 V, channel 4 – 7: 0 – 1 V • Input ranges, current: channel 0 – 7: 0 – 20 mA, 4 – 20 mA	**PS416-AIN-400** 030166		1 off
Analog input/output card			
• 4 analog inputs, resolution up to 12-bit • 4 analog inputs, resolution up to 12-bit • Input/output ranges, voltage: 0 – 5 V, ± 5 V, ± 10 V, 0 – 10 V • Input ranges, current: 0 – 20 mA, 4 – 20 mA	**PS416-AIO-400** 030165		1 off

	Description	Part no. Article no.	Price see price list	Std. pack
Digital counter card				
• Monitoring of high-speed counter pulses: • For signals 5 V/24 V • Up/down and/or down counter function • Up to 6 channels depending on the mode of operation: – Control mode 1: 6 × reverse – Control mode 2: 3 × forward/reverse – Control mode 3: 2 × forward/reverse and 2 × reverse • For up/down counting function, either with or without antivalent signals				
	The counter function up/down as well as signal level are determined by the counter modules fitted to the card.	**PS416-CNT-200** 053874		1 off
Counter module, plug-in, with fixing screws				
Down counter module				
	Input signal 24 V DC Space requirement: 1 slot	**CM61.1** 069299		1 off
	Input signal 5 V DC Space requirement: 1 slot	**CM61.2** 071672		1 off
Up/down counter module				
	Input signal 24 V DC Space requirement: 2 slots	**CM62.1** 074045		1 off
	Input signal 5 V DC Space requirement: 2 slots	**CM62.2** 076418		1 off
PROFIBUS FMS card				
	Interface for organising and controlling data exchange between PS416 and PROFIBUS-FMS networks	**PS416-NET-230** 053877		1 off
Telecontrol module				
	for coupling to the PS416 in remote networks via remote networking protocol as per DIN/EN 60870-5 With serial interface module IFM 232.2	**PS416-TCS-200** 201627		1 off

	Description	For use with	Part no. Article no.	Price see price list	Std. pack
Suconet K card					
	Interface for connecting PS416 expansion rack and for organizing and controlling data exchange between PS416 and Suconet K networks. For use in connection with the PS416-CPU-200/300/400 CPU cards.	–	**PS416-NET-400** 037090		1 off
PROFIBUS-DP card-master					
	Interface for organising and controlling data exchange between PS416 and PROFIBUS-DP networks The required CFG-DP Configurator is included with the Sucosoft S40 software from version 2.1. Accompanying configuration file (*.GSD) available by download from: • Internet address: www.moeller.net/automation • Internet address: www.profibus.com	–	**PS416-NET-440** 206742		1 off
PROFIBUS-DP card - slave					
	Interface for data transfer between PS416 and PROFIBUS-DP standard networks up to 12 Mbit/s. Up to of 244 bytes each for input and output data (total of up to 400 bytes) Required configuration file (*.GSD) available by download: • Internet address: www.moeller.net/automation • Internet address: www.profibus.com	–	**PS416-NET-441** 214816		1 off
Serial communication card					
	Interface for serial, asynchronous point-to-point communication between PS416 and data terminal. To be fitted with one of the interface modules listed under Accessories.	–	**PS416-COM-200** 053875		1 off
MODBUS/JBUS communication card					
	Bus connection or point-to-point connection between PS416 (as slave) and devices, communicating in accordance with the MODBUS/JBUS protocol. To be fitted with one of the interface modules listed under Accessories. Possible applications include: • Control rooms • Building services management • Process control	–	**PS416-MOD-200** 082190		1 off
Interface module					
	RS 232 C without control cable	PS416-COM-... PS416-MOD-...	**IFM232.1** 083537		1 off
	RS 232 C with control cable	PS416-COM-...	**IFM232.2** 085910		
	RS485	PS416-COM-...	**IFM485.1** 078791		
	RS422	PS416-COM-... PS416-MOD-...	**IFM422.1** 081164		

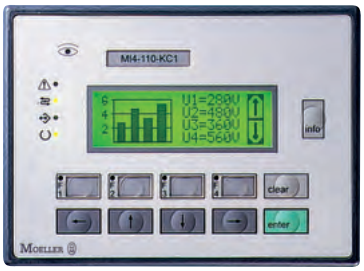
	Description	For use with	Part no. Article no.	Price see price list	Std. pack
Potential equalization bar					
With 5 contact clamps ∅ 3.5 mm and 4 contact clamps ∅ 4.8 mm					
	For PS416-BGT-400	PS416-BGT-400 PS416-BGT-410 PS416-BGT-420/-421	**PS416-ZBX-403** 054126		1 off
	For PS416-BGT-410	PS416-BGT-400 PS416-BGT-410 PS416-BGT-420/-421	**PS416-ZBX-402** 054125		1 off
	For PS416-BGT-420/-421	PS416-BGT-400 PS416-BGT-410 PS416-BGT-420/-421	**PS416-ZBX-401** 054124		1 off
Spare contact clamps					
	With 5 contact clamps ∅ 3.4 mm and 3 contact clamps ∅ 4.8 mm	PS416-BGT-...	**PS416-ZBX-404** 030533		1 off
Front blanking plate					
	For PS416-BGT-... racks	PS416-BGT-...	**PS416-NOP-200** 030538		5 off
Ferrite ring					
	For damping of high-frequency interference signals affecting data and supply lines	PS416-POW-... PS416-OUT-... PS416-CNT-... PS416-NET-2.. PS416-COM-... PS416-MOD-...	**PS416-ZBX-405** 025519		2 off
Memory card					
Memory card, for use with Sucosoft S40 version: PS416-MEM-432 ≧ V1.12 PS416-MEM-442 ≧ V4.10 PS416-MEM-443 ≧ V4.10					
	2 MByte SRAM	PS416-CPU-...	**PS416-MEM-432** 221131		1 off
	2 MByte SRAM	PS416-CPU-...	**PS416-MEM-442** 221133		1 off
	4 MByte SRAM	PS416-CPU-...	**PS416-MEM-443** 221134		1 off
Spare battery for SRAM memory card					
	For PS416-MEM-430/-431	PS416-MEM-430/-431	**PS416-ZBB-300** 037055		1 off
	For PS416-MEM-432/-433	PS416-MEM-432/-433	**PS416-ZBB-301** 222433		1 off
Battery module					
	For PS416-CPU-200/-300/-400 CPUs	PS416-CPU-200/-300/-400	**PS416-ZBB-410** 051748		1 off
Programming cable					
	For connecting the programming PC to the CPU card through the RS 232C interface	PS416-CPU-...	**PS416-ZBK-210** 051751		1 off
Suconet K/K1 data cable					
For coupling all devices with Suconet-K/K1 interface For customer assembly of Suconet cables 2 × 0.5 mm² shielded and twisted, cable length (as ring) 100 m.					
		PS416-CPU-... PS416-NET-4.. PS4	**LT309.096** 019233		100 m

	Description	For use with	Part no. Article no.	Price see price list	Std. pack
Data plug					
	9-pin SUB-D connector (male), angled	PS416-CPU-... PS416-NET-2.. PS416-NET-4.. PS416-COM-... PS416-MOD-... EM4-...	**PS416-ZBS-410** 051752		1 off
	Pin connectors, 9-pin, 90° angled cable entry	PROFIBUS-DP	**ZB4-209-DS2** 206982		1 off
T connector					
	For a bus node (e.g. Suconet K) with connecting cable to CPU card/network card for Suconet K	PS416-CPU-... PS416-NET-4.. PS416-COM-...	**PS416-ZBX-410** 030532		1 off
Interface converter					
	RS 232 C to RS 485	PS416-CPU-...	**UM1.5** 055722		1 off
PROFIBUS-DP data cable					
	without plug 2-wire, 2 × 0.64 mm² twisted	EASY204-DP PS416-NET...	**ZB4-900-KB1** 206983		100 m
Memory module					
	for communication and bus parameters; EEPROM 32 KByte; one module per card, for PS416-NET-230, PS416-COM-200, PS416-MOD-200	PS416-NET-2.. PS416-COM-... PS416-MOD-...	**SM3-EE32** 009590		1 off
S40 software package (WINDOWS)					
	• CD-ROM • Documentation in German, English and French on CD ROM • Programming languages to IEC/EN 61131-3 – Instruction list (IL) – Ladder diagram (LD) – Function block diagram (FBD) – Structured text (ST) • User interface in German, English, French, Italian, Spanish. • Graphical topology configurator for PLCs, Suconet K and PROFIBUS-DP networks.				
		PS4-150 PS4-200 PS4-300 PS416	**S40-CD** 235237		1 off
S40 upgrade					
	Sucosoft S40 V4.x must be installed. Observe ordering conditions.				
		PS4-150 PS4-200 PS4-300 PS416	**S40-CD-U**[1] 258663		1 off
PROFIBUS-FMS Configurator (WINDOWS 3.1, WINDOWS 95)					
	Software tool for setting parameters for the card PS416-NET-230				
	English		**CFG-SUCONET-P-GB** 070856		1 off

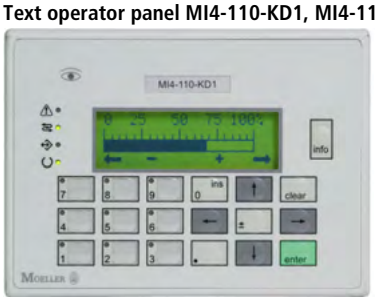
Notes

[1] **Ordering conditions for upgrades:**
To use an upgrade a previous version must be installed. When the upgrade is installed, the system searches for a previous version. The upgrade is the same as the standard version.
Information on updates, software standards (application modules) for closed-loop control, open-loop control, data processing etc. can be obtained from: www.moeller.net/automation

Text operator panel MI4-110-KC1, MI4-117-KC1

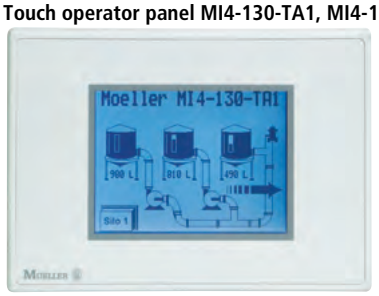


Text operator panel MI4-110-KD1, MI4-117-KD1



Text operator panel MI4-110-KG1/-KG2

Touch operator panel MI4-130-TA1, MI4-137-TA1



Product description

The MI4 spectrum ranges from a graphics-capable text operator panel with a 4 × 20 character LCD display and 11 keys up to a touch operator panel with a 3.8" TFT display and a resolution of 320 × 240 pixels. All these devices can be programmed with the MI4 configurator MI4-CFG.

Application

The graphic text and touch operator panels are designed for simple and economical machine operation.

Features

- Display of system states and process variables via numeric data fields, bar graphs or text messages.
- Setpoint entry via numeric data fields
- Object and symbol library
- Display and storage of alarms with date and time
- History memory
- Recipe management
- Recipe memory, battery-buffered (not with MI4-110-KC1/-KG2)
- Real-time clock, battery-buffered (not with MI4-110-KC1/-KG2)
- Time synchronisation (with PLC and/or other MI4 units)
- Language selection via MI4 and/or PLC
- Password protection (issue of up to 8 different access rights)
- Serial printer connection for MI4-110-KG1 for message, alarm lists and history memory printout.
- 24 V DC connection, protected against reverse polarity
- IP65 degree of protection at front
- Backlit LCD display
- Display contrast setting
- Freely configurable keys
- Insert labels for free user inscription of function keys and logos
- Function key LEDs actuated by the MI4 and/or the PLC

Additional features for touch operator panels:

- Display brightness setting
- Automatic temperature compensation of display contrast
- Screen saver
- Resistive-Touch technology

Engineering/programming

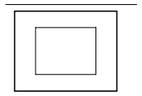
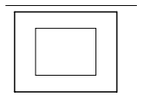
Project planning for all MI4 operator panels is carried out with the MI4 configurator MI4-CFG-1. The software runs under Windows 95 (2nd), 98, ME, NT, 2000 and XP. A user-friendly panel setup dialog is used at first to select the unit for which the project is designed, as well as its particular properties. The PLC connection can also then be configured by means of simple dialogs. The contents displayed on the MI4 screen pages can be created page by page using drag and drop operations.

Communication/networking

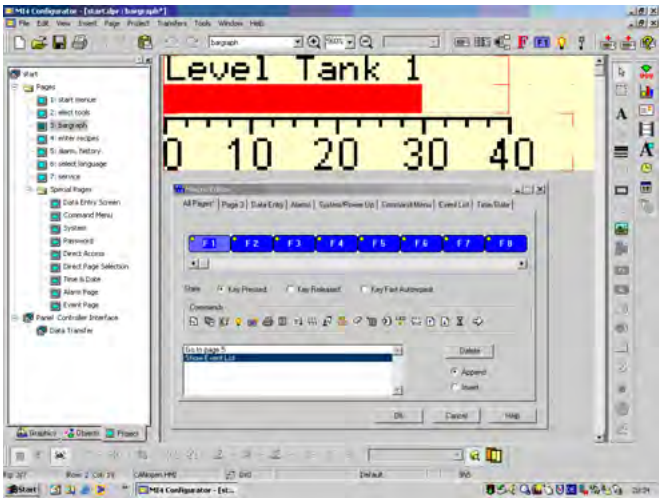
All MI4 units are provided with an interface for connection to a fieldbus. Different fieldbus interfaces are possible thanks to the different interface module accessories that are available. These are simply fitted on a socket in the MI4 unit. The MI4-117-KC1, MI4-117-KD1 and MI4-137-TA1 are fitted with an integrated CAN interface. Additional interface modules can be plugged into these devices.
Furthermore, all MI4 units can also be connected to Moeller PLC systems directly via SUCOM-A without the use of an interface module. Connection to easy800 and the DF51/6 and DV51/6 frequency inverters is also possible, without an additional interface module.

Documentation

Documentation in the form of PDF files in English and German is included in the MI4 configurator MI4-CFG.

	Display				Operation				Memory		History memory messages	Alarm messages	Device features	Part no. Article no.	Price see price list	Std. pack	Notes
	LCD	Lines × characters	Resolution	Display area	Number block	Function keys, suitable for user inscription	Freely programmable keys	User LED	Recipe memory	Project memory expansion							
			Pixel	mm					KByte	KByte	Quantity	Quantity					
Text operator panel • LCD monochrome • LED backlight • Project memory, 512 KByte • Graphic • Scalable font • Password protection																	
	Monochrome	4 × 20	120 × 32	70 × 21	–	4	11	4	–	–	–	256	Interface for SUCOM-A, interface fieldbus, contrast setting in software	**MI4-110-KC1** 229794		1 off	Alphanumerical entries can be made with the cursor keys.
	Monochrome	4 × 20	120 × 32	70 × 21	–	4	11	4	–	–	–	256	Integrated CAN interface, SUCOM-A interface, downloadable fonts	**MI4-117-KC1** 283397		1 off	Alphanumerical entries can be made with the cursor keys. No addition fieldbus modules can be plugged in.
	Monochrome	4 × 20	120 × 32	70 × 21	✔	9	19	10	16	–	256	1024	Interface for SUCOM-A, fieldbus interface, battery, buffered real-time clock, downloadable fonts	**MI4-110-KD1** 274308		1 off	–
	Monochrome	4 × 20	120 × 32	70 × 21	✔	9	19	9	16	–	256	1024	Integrated CAN interface, SUCOM-A interface, battery, buffered real-time clock, downloadable fonts	**MI4-117-KD1** 283398		1 off	No addition fieldbus modules can be plugged in.
	Monochrome	4 × 20	120 × 32	70 × 21	✔	12	35	12	–	512	–	256	Interface for SUCOM-A, interface fieldbus, contrast setting in software	**MI4-110-KG2** 229795		1 off	–
	Monochrome	4 × 20	120 × 32	70 × 21	✔	12	35	12	16	512	256	1024	Battery, battery-backed real-time clock, interface for serial printer, interface for SUCOM-A, interface for fieldbus, contrast setting in the software	**MI4-110-KG1** 229796		1 off	–
	Monochrome	16 × 40	320 × 240	77 × 58	Can be implemented with touch fields	–	–	–	32	–	256	1024	Buffered real-time clock, screen saver, SUCOM-A interface, fieldbus interface, LED background lighting	**MI4-130-TA1** 274330		1 off	–
	Monochrome	16 × 40	320 × 240	77 × 58	Can be implemented with touch fields	–	–	–	32	–	256	1024	Buffered real-time clock, screen saver, SUCOM-A interface, integrated CAN interface, no additional fieldbus modules can be plugged in, LED background lighting	**MI4-137-TA1** 283399		1 off	No addition fieldbus modules can be plugged in.

Notes Device feature: fieldbus interface. The modules for fieldbus connection must be ordered seperately.



Application

The configuration software MI4-CFG-1 is used for the creation of application forms for all MI4 devices, and runs under Windows 98, ME, NT, 2000, XP. The software is supplied on CD-ROM together with German and English documentation in PDF format.

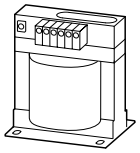
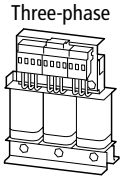
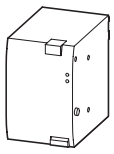
Features

- Import and editing of graphics
- Object levels
- Object grouping and object libraries
- Variables management (Variables Editor)
- Export/import of all project texts (CSV format)
- Context-sensitive Help – 100% identical to documentation
- Recipe management
- Synchronize the PLC clock
- User-defined report printouts
- Download and upload of projects
- Upload protection of projects
- Scaling and limit value scan of variables in MI4
- Initiation of functions via the PLC (e.g. language selection, print functions, clock setting, recipe loading)
- Password protection (issue of up to 8 different access rights)
- Scaling of variable tags

System requirements

- Windows 98, ME, NT, 2000, XP
- 70 MByte hard disk memory
- VGA graphics card
- Pentium processor
- 32 MB RAM working memory
- CD-ROM drive

	Description	For use with	Part no. Article no.	Price see price list	Std. pack
MI4 accessories					
Memory module	512 kB Flash-RAM memory expansion	MI4-110-KG1/-KG2	**ZB4-512-SF1** 200857		1 off
Bus terminating resistor (Suconet K)	Bus termination for the last station on line Plug design	Suconet K interface	**ZB4-043-AD1** 203512		1 off
Battery	Spare battery for data memory backup 3 V lithium Non-rechargeable Lifespan, min. 1 year Exchangeable	MI4-110-KD1 MI4-117-KD1 MI4-110-KG1 MI4-130-TA1 MI4-137-TA1	**ZB4-280-BT1** 203513		2 off
Insert labels	Insert labels for free user inscription 5 off (special labelling software available from the Moeller website)	All MI4 devices, except touch operator panels MI4-130-TA1, MI4-137-TA1	**ZB4-301-BS2** 230610		1 off
Software package MI4-CFG Windows 98, ME, NT, 2000, XP Software for configuration of all MI4 devices. Delivery package: one CD incl. electr. documentation for the configurator, and manuals for the devices, plus short-form instructions.					
English and German			**MI4-CFG** 101915		1 off
Feildbus connections Plug-in interface modules					
Suconet K		All MI4 devices	**ZB4-501-IF1** 229813		1 off
PROFIBUS-DP	9600 baud - 12 Mbaud	All MI4 devices	**ZB4-504-IF1** 206858		
PROFIBUS-DP	9600 baud - 1.5 Mbaud	All MI4 devices	**ZB4-504-IF2** 232146		
MPI	Isolated; 1.5 Mbaud	All MI4 devices	**ZB4-505-IF1** 224461		
MPI	Non-isolated; 1.5 Mbaud	All MI4 devices	**ZB4-505-IF2** 229816		
CANopen		All MI4 devices	**ZB4-507-IF1** 229815		
Data plug Assembly kit without cable					
	Pins, 9-pole Straight cable entry	Suconet K interface	**ZB4-209-DS1** 203507		1 off
	Pins, 9-pin Cable entry, angled 90°	PROFIBUS-DP	**ZB4-209-DS2** 206982		
Connection cable, 2 m For MI4					
With PC		For configuration	**ZB4-24A-KP1** 200625		1 off
with XC100/200, EC4		SUCOM-A protocol	**XT-SUB-D15/RJ45** 283450		
With PS4-300 PS4-200 PS4-150		SUCOM-A protocol (RS 232C)	**ZB4-2B7-KB1** 200627		
With PS4-300, PS4-200, PS4-150		Suconet-K protocol (RS485)	**ZB4-231-KB1** 200630		
With PS416		Suconet-K protocol (RS485) and SUCOM-A protocol (RS485)	**ZB4-233-KB2** 200631		
With easy	SUB-D 9-pole, serial, 2 m	easy800 MFD-..-CP8	**EASY800-PC-CAB** 256277		
Adapter	Connection of MI4 operator panel to easy800 or MFD-..-CP8 in conjunction with programming cable EASY800-PC-CAB	easy800 MFD-..-CP8 EASY800-PC-CAB	**ZB4-03B-AD1** 257176		

	Rated input voltage 50/60 Hz	Input voltage range	Rated output voltage (residual ripple)	Rated output current	**Part no.** Article no.	**Price** see price list	Std. pack
	V AC	V	V DC	A			
GW4 and GD4 power supply units							
Unregulated, smoothed							
Single-phase 	230	–	24 (± 5 %)	3	**GW4-030-BA3** 200016		1 off
	230	–	24 (± 5 %)	5	**GW4-050-BA3** 200017		
	230	–	24 (± 5 %)	8	**GW4-080-BA3** 200018		
	230	–	24 (± 5 %)	10	**GW4-100-BA3** 200019		
Three-phase 	400 (± 5%)	–	24 (± 3%)	5	**GD4-050-BD3** 200007		1 off
	400 (± 5%)	–	24 (± 3%)	10	**GD4-100-BD3** 200009		
	400 (± 5%)	–	24 (± 3%)	15	**GD4-150-BD3** 200011		
	400 (± 5%)	–	24 (± 3%)	20	**GD4-200-BD3** 200012		
	400 (± 5%)	–	24 (± 3%)	30	**GD4-300-BD3** 200014		
SN3 switched-mode power supply units							
Primary pulsed power supply, power reserve from up to 50 %, Up to 5 devices can be paralleled to increase power and for redundancy							
	110…240 AC	85…264 AC 100…350 DC 1)	24 V DC (fixed) (20 MHz typically < 50 mV_{ss})	5	**SN3-050-BU8** 100640		1 off
	110…120 AC 220…240 AC	85…132 AC 184…264 AC 220…350 DC 1)	24 V DC (fixed) (20 MHz typically < 50 mV_{ss})	10	**SN3-100-BV8** 100641		
	110…120 AC 220…240 AC	85…132 AC 184…264 AC 220…350 DC 1)	24 V DC (fixed) (20 MHz typically < 50 mV_{ss})	20	**SN3-200-BV8** 100642		
	110…240 AC/DC	85…264 AC 100…350 DC 1)	22…28 V DC (adjustable) (20 MHz typically < 50 mV_{ss})	5	**SN3-050-EU8** 100643		
	110…240 AC/DC	85…264 AC 100…350 DC 1)	22…28 V DC (adjustable) (20 MHz typically < 50 mV_{ss})	10	**SN3-100-EU8** 100644		
	110…240 AC/DC	85…264 AC 100…350 DC 1)	22…28 V DC (adjustable) (20 MHz typically < 50 mV_{ss})	20	**SN3-200-EU8** 100645		

	Description	For use with	**Part no.** Article no.	**Price** see price list	Std. pack
Signal module for SN3-...-EU8 power supply unit					
	LED: Input OK LED: Output OK LED: Remote off Relay output 1 changeover contact: input OK Relay output 1 changeover contact: output OK Remote ON/OFF function for external on/off switching	SN3-50-EU8 SN3-100-EU8 SN3-200-EU8	**SN3-000-MMEU8** 100646		1 off

Notes 1) At $U \geqq 264$ V DC additionally suitable, use external fuse.

			XC-CPU101- C64K-8DI-6DO(-XV)	XC-CPU101- C128K-8DI-6DO(-XV)	XC-CPU101-FC128K-8DI-6DO(-XV)	XC-CPU101- C256K-8DI-6DO(-XV)
General						
Standards			IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0 to +55	0 to +55	0 to +55	0 to +55
Storage		°C	-25 to +70	-25 to +70	-25 to +70	-25 to +70
Mounting position			Horizontal	Horizontal	Horizontal	Horizontal
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	10…95	10…95	10…95	10…95
Air pressure (operation)		hPa	795…1080	795…1080	795…1080	795…1080
Vibration resistance			10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g	10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g	10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g	10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g
Shock resistance			15 g/11 ms	15 g/11 ms	15 g/11 ms	15 g/11 ms
Overvoltage category			II	II	II	II
Pollution degree			2	2	2	2
Protection type			IP 20	IP 20	IP 20	IP 20
Rated insulation voltage	U_i	V	500	500	500	500
Emitted interference			EN 50081-2, Class A	EN 50081-2, Class A	EN 50081-2, Class A	EN 50081-2, Class A
Interference immunity			EN 50081-2	EN 50081-2	EN 50081-2	EN 50081-2
Battery (service life)			normally 5 years	normally 5 years	normally 5 years	normally 5 years
Weight		kg	0.23	0.23	0.23	0.23
Terminations			Plug-in terminal block	Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Terminal capacities						
Screw terminals						
Flexible with ferrule		mm^2	0.5 … 1.5	0.5 … 1.5	0.5 … 1.5	0.5 … 1.5
Solid		mm^2	0.5 … 2.5	0.5 … 2.5	0.5 … 2.5	0.5 … 2.5
Spring-loaded terminals						
flexible		mm^2	0.34 … 1.0	0.34 … 1.0	0.34 … 1.0	0.34 … 1.0
Solid		mm^2	0.14 … 1.0	0.14 … 1.0	0.14 … 1.0	0.14 … 1.0
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143	→ Page 4/143	→ Page 4/143
Power supply						
Duration of mains dip		ms	10	10	10	10
Repetition rate		s	1	1	1	1
Input voltage		V DC	24	24	24	24
Admissible range		V DC	20.4…28.8	20.4…28.8	20.4…28.8	20.4…28.8
Input rating		W	Max. 26	Max. 26	Max. 26	Max. 26
Residual ripple		%	≦ 5	≦ 5	≦ 5	≦ 5
Maximum power loss (without local I/O)	P_v	W	6	6	6	6
Overvoltage protection			Yes	Yes	Yes	Yes
Protection against polarity reversal			Yes	Yes	Yes	Yes
Mains filter (external)			Yes	Yes	Yes	Yes
Inrush current		× I_n	No limitation (limited only by upstream 24 V DC power supply unit)			
Signal module output voltage						
Rated value		V DC	5	5	5	5
Output current		A	3.2	3.2	3.2	3.2
Short-circuit rating			Yes	Yes	Yes	Yes
Electrically isolated from the supply voltage			No	No	No	No
CPU						
Microprocessor			Infineon C164	Infineon C164	Infineon C164	Infineon C164
Memory						
Program code and program data		kByte	64/64	128/128	128/128	256/256
Marker/retentive data		KByte	4/4	8/8	8/8	8/8
Cycle time for 1 k of instructions (Bit, Byte)		ms	<0.5	<0.5	<0.5	<0.5

		XC-CPU101- C64K-8DI-6DO(-XV)	XC-CPU101- C128K-8DI-6DO(-XV)	XC-CPU101-FC128K-8DI-6DO(-XV)	XC-CPU101- C256K-8DI-6DO(-XV)
Interfaces					
Serial interface (RS 232) without handshake lines					
Data transfer rate	kbit/s	max. 57.6	max. 57.6	max. 57.6	max. 57.6
Connection technique		RJ45	RJ45	RJ45	RJ45
Potential isolation		No	No	No	No
CANopen					
Maximum data transfer rate	Bits/s	500000	500000	500000	500000
Potential isolation		Yes	Yes	Yes	Yes
Device profile		To DS 301 V4	To DS 301 V4	To DS 301 V4	To DS 301 V4
PDO type		Asyn., cyc., acyc.	Asyn., cyc., acyc.	Asyn., cyc., acyc.	Asyn., cyc., acyc.
Connection		Plug-in terminal block	Plug-in terminal block	Optical interface plastic fibre with 660 mm wave length, plug e.g. HFBR-4516 Agilent Technologies	Plug-in terminal block
Bus terminating resistors		External	External	External	External
Stations	Number	max. 126	max. 126	max. 126	max. 126
Watch-dog		Yes	Yes	Yes	Yes
RTC (real-time clock)		Yes	Yes	Yes	Yes
Power supply of local inputs/outputs (24 V_Q/0 V_Q)					
Input voltage	V DC	24	24	24	24
Voltage range	V DC	19.2 – 30, note polarity	19.2 – 30, note polarity	19.2 – 30, note polarity	19.2 – 30, note polarity
Potential isolation					
Power supply against CPU voltage		Yes	Yes	Yes	Yes
Overvoltage protection		Yes	Yes	Yes	Yes
Protection against polarity reversal		Yes	Yes	Yes	Yes
Digital inputs					
Input current per channel at nominal voltage	mA	Normally 3.5	Normally 3.5	Normally 3.5	Normally 3.5
Power loss per channel		Normally 85 mW	Normally 85 mW	Normally 85 mW	Normally 85 mW
Voltage level to IEC/EN 61131-2					
Limit value type 1		Low < 5 V DC, high > 15 V DC	Low < 5 V DC, high > 15 V DC	Low < 5 V DC, high > 15 V DC	Low < 5 V DC, high > 15 V DC
Input delay					
Off → On	ms	Normally 0.1	Normally 0.1	Normally 0.1	Normally 0.1
On → Off	ms	Normally 0.1	Normally 0.1	Normally 0.1	Normally 0.1
Inputs	Number	8 (4 of which are interrupt inputs)	8 (4 of which are interrupt inputs)	8 (4 of which are interrupt inputs)	8 (4 of which are interrupt inputs)
Channels with the same reference potential	Qty.	8	8	8	8
Status indication		LED	LED	LED	LED
Digital outputs					
Channels	Number	6	6	6	6
Power loss per channel	W	0.08	0.08	0.08	0.08
QX0.0 to QX0.3	A	0.5	0.5	0.5	0.5
Output delay					
Off → On		Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms
On → Off		Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms	Normally 0.1 ms
Channels with the same reference potential	Qty.	6	6	6	6
Status indication		LED	LED	LED	LED
Switching capacity		IEC/EN 60947-5-1, utilization category DC-13	IEC/EN 60947-5-1, utilization category DC-13	IEC/EN 60947-5-1, utilization category DC-13	IEC/EN 60947-5-1, utilization category DC-13
Duty factor	% DF	100	100	100	100
Utilization factor	g	1	1	1	1

			XC-CPU201-EC256K-8DI-6DO(-XV)	XC-CPU201-EC512K-8DI-6DO(-XV)
General				
Standards			IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0 to +55	0 to +55
Storage		°C	-25 to +70	-25 to +70
Mounting position			Horizontal	Horizontal
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	10…95	10…95
Air pressure (operation)		hPa	795…1080	795…1080
Vibration resistance			10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g	10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g
Shock resistance			15 g/11 ms	15 g/11 ms
Overvoltage category			II	II
Pollution degree			2	2
Protection type			IP 20	IP 20
Rated impulse withstand voltage	U_{imp}	V	850	850
Emitted interference			EN 50081-2, Class A	EN 50081-2, Class A
Interference immunity			EN 50081-2	EN 50081-2
Battery (service life)			normally 5 years	normally 5 years
Weight		kg	0.23	0.23
Terminations			Plug-in terminal block	Plug-in terminal block
Terminal capacities				
Screw terminals				
Flexible with ferrule		mm^2	0.5 … 1.5	0.5 … 1.5
Solid		mm^2	0.5 … 2.5	0.5 … 2.5
Spring-loaded terminals				
flexible		mm^2	0.34 … 1.0	0.34 … 1.0
Solid		mm^2	0.14 … 1.0	0.14 … 1.0
Electromagnetic compatibility (EMC)				
			→ Page 4/143	→ Page 4/143
Power supply				
Duration of mains dip		ms	10	10
Repetition rate		s	1	1
Input voltage		V DC	24	24
Admissible range		V DC	20.4…28.8	20.4…28.8
Input rating		W	Max. 33	Max. 33
Residual ripple		%	≦ 5	≦ 5
Maximum power loss	P_v	W	6	6
Overvoltage protection			Yes	Yes
Protection against polarity reversal			Yes	Yes
Mains filter			Yes	Yes
Inrush current		× I_n	No limitation (limited only by upstream 24 V DC power supply unit)	
Signal module output voltage				
Rated value		V DC	5	5
Output current		A	3.2	3.2
Short-circuit rating			Yes	Yes
Electrically isolated from the supply voltage			No	No
CPU				
Microprocessor			NEC VR4181 A MIPS	NEC VR4181 A MIPS
Memory				
Program code and program data		kByte	256/256	512/512
Marker/retentive data		KByte	16/32	16/32
Cycle time for 1 k of instructions (Bit, Byte)		ms	<0.05	<0.05

			XC-CPU201-EC256K-8DI-6DO(-XV)	XC-CPU201-EC512K-8DI-6DO(-XV)
Interfaces				
Ethernet				
Data transfer rate		MBit/s	10/100 Autodetect	10/100 Autodetect
Connection type			RJ45	RJ45
Potential isolation			No	No
Serial interface (RS 232) without handshake lines				
Data transfer rate		kbit/s	max. 115.2	max. 115.2
Connection technique			RJ45	RJ45
Potential isolation			No	No
USB interface			1.0	1.0
CANopen				
Maximum data transfer rate		MBit/s	1	1
Potential isolation			Yes	Yes
Device profile			To DS 301 V4	To DS 301 V4
PDO type			Asyn., cyc., acyc.	Asyn., cyc., acyc.
Connection			Plug-in terminal block	Plug-in terminal block
Bus terminating resistors			External	External
Stations		Number	max. 126	max. 126
Watch-dog			Yes	Yes
RTC (real-time clock)			Yes	Yes
Power supply of local inputs/outputs (24 V_Q/0 V_Q)				
Input voltage		V DC	24	24
Voltage range		V DC	19.2 – 30, note polarity	19.2 – 30, note polarity
Potential isolation				
Power supply against CPU voltage			Yes	Yes
Power supply against inputs/outputs			No	No
Status indication			LED	LED
Terminations			Plug-in terminal block	Plug-in terminal block
Overvoltage protection			Yes	Yes
Protection against polarity reversal			Yes	Yes
Digital inputs				
Input current per channel at nominal voltage		mA	Normally 3.5	Normally 3.5
Power loss per channel			Normally 85 mW	Normally 85 mW
Voltage level to IEC/EN 61131-2				
Limit value type 1			Low < 5 V DC, high > 15 V DC	Low < 5 V DC, high > 15 V DC
Input delay				
Off → On		ms	Normally 0.1	Normally 0.1
On → Off		ms	Normally 0.1	Normally 0.1
Inputs		Number	8, 2 of which programmable as 50 kHz counters, 2 as interrupt inputs, 1 as incremental input	
Channels with the same reference potential		Qty.	8	8
Status indication			LED	LED
Digital outputs				
Channels		Number	6	6
Power loss per channel		W	0.08	0.08
QX0.0 to QX0.3		A	0.5	0.5
Output delay				
Off → On			Normally 0.1 ms	Normally 0.1 ms
On → Off			Normally 0.1 ms	Normally 0.1 ms
Channels with the same reference potential		Qty.	6	6
Status indication			LED	LED
Switching capacity			IEC/EN 60947-5-1, utilization category DC-13	
Duty factor		% DF	100	100
Utilization factor		g	1	1

			XV-101-K42	XV-101-K84
General				
Standards			IEC/EN 60131-2 EN 50178	IEC/EN 60131-2 EN 50178
Ambient temperature				
Operation				
When mounted vertically, up to 45° fitting angle		°C	0…50	0…50
Storage		°C	–20…70	–20…70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	10…95	10…95
Degree of protection				
Front			IP 65	IP 65
Enclosures			IP 20	IP 20
Vibration resistance			10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1 g	10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1 g
Shock resistance			15 g/11 ms	15 g/11 ms
Rated impulse withstand voltage	U_{imp}	V	850	850
Overvoltage category			II	II
Pollution degree			2	2
Interference immunity			EN 61000-6-2	EN 61000-6-2
Emitted interference			EN 50081-2, Class A	EN 50081-2, Class A
Weight		kg	0.9	0.9
Power supply				
Rated voltage	U_e	V DC	24	24
Admissible range		V DC	18…30	18…30
Display				
Back-lighting			LED	LED
Service life of back-lighting		Hours of op.	100000	100000
Character height			5 mm/10 mm	5 mm/10 mm
User-definable characters			256	256
Keys				
Total number of keys			29	35
Key pad service life		Ops.	>3000000	>3000000
Features				
Memory type			SRAM, 32 kB	SRAM, 32 kB
Status			LED (RUN, STOP, SF)	LED (RUN, STOP, SF)
Expansions			3 XI/OC signal modules	3 XI/OC signal modules
Real time clock			Yes	Yes

			24 V DC filter XT-FIL-1
General			
Standards			IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0 – +55
Storage		°C	-25 – +70
Mounting position			Horizontal/vertical
Vibration resistance			10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 g
Shock resistance			15 g/11 ms
Impact resistance			500 g/∅ 50 mm ±25 g
Overvoltage category			II
Pollution degree			2
Protection type			IP20
Rated impulse withstand voltage	U_{imp}	V	850
Emitted interference			EN 50081-2, Class A
Interference immunity			EN 50081-2
Weight		kg	0.095
Dimensions (W × H × D)		mm	35 × 90 × 30
Terminations			Screw terminals
Terminal capacities			
Screw terminals			
Flexible with ferrule		mm^2	0.2 – 2.5 (AWG22 – 12)
Solid		mm^2	0.2 – 2.5 (AWG22 – 12)
Power supply			
Input voltage		V DC	24
Admissible range		V DC	20.4…28.8
Residual ripple		%	≦ 5
Mains overvoltage protection			Yes
Potential isolation			
Input voltage against PE			Yes
Input voltage agaisnt output voltage			No
Output voltage against PE			Yes
Rated value		V DC	24
Output current		A	2.2

General			
Standards			IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0 to +55
Storage		°C	-25 to +70
Vibration resistance			10 – 57 Hz ±0.075 mm 57 – 150 Hz ±1.0 mm
Shock resistance			15 g/11 ms
Impact resistance			500 g/∅ 50 mm ±25 g
Overvoltage category			II
Pollution degree			2
Protection class			1
Protection type			IP 20
Emitted interference			DIN / EN 55011 / 22, Class A
Electromagnetic compatibility (EMC)			
			→ Page 4/143
External power supply			
Rated voltage	U_e	V DC	24 (12)
Admissible range			20.4 – 28.8 (11.8 – 14.4)
Residual ripple		%	≦ 5
Neutral poles			
Duration of dip		ms	10
Repetition rate		s	1

		XIOC-8DI	XIOC-16DI	XIOC-32DI	XIOC-16DI-AC
Modules					
Input type		DC input	DC input	DC input	AC input
Input voltage	V DC	24	24	24	
Admissible range	V DC	20.4…28.8	20.4…28.8	20.4…28.8	
Input voltage	V AC				200 to 240
Admissible range	V AC	–	–	–	170…264
Input impedance		Normally 3.5 kΩ	Normally 5.9 kΩ	Normally 5.6 kΩ	Normally 32 kΩ (50 Hz), normally 27 kΩ (60 Hz)
Input current	mA	Normally 6.9	Normally 4.0	Normally 4.3	4.3 to 8.0 (220 V AC/50 Hz)
Voltage level to IEC 61131-2, limit value type 1					
ON	V	≦ 15 DC	≦ 15 DC	≧ 15 DC	≦ 164 AC
OFF	V	≦ 5 DC	≦ 5 DC	≦ 5 DC	≦ 40 AC
Input delay					
Off → On	ms	≦ 5 (normally 4)	≦ 5 (normally 4)	≦ 5 (normally 4)	15
On → Off	ms	≦ 5 (normally 4)	≦ 5 (normally 4)	≦ 5 (normally 4)	25
Input channels	Qty.	8	16	32	16
Channels with the same reference potential	Number	8	16	32	16
Potential isolation		Opto-isolated			
Indicating elements		LED (green)	LED (green)	16 LED (green), switchable: 0 – 15, 16 – 31	LED (green)
Terminals		Plug-in terminal block		XIOC-TERM32 (connector and cable)	Plug-in terminal block
Internal current consumption (5 V DC)	mA	26	51	100	51
Weight	kg	0.16	0.16	0.16	0.18

		XIOC-8DO	XIOC-16DO	XIOC-16DO-S	XIOC-32DO
Modules					
Output type		Transistor (source type)			
Output voltage	V DC	12/24 (-15/+20%)			
Minumum switching current	mA	1	1	1	1
Leakage current	mA	0.1	0.1	0.1	0.1
Maximum load current					
Per circuit	A	0.3	0.3	0.8	0.2
Per common potential terminal	A	2.4	4	5	3.2
Output delay					
Off → On	ms	0.3	0.3	0.3	0.3
On → Off	ms	1	1	1	1
Output channels	Qty.	8	16	16	32
Channels with the same reference potential	Qty.	8	16	16	32
Overvoltage protection		Diode	Diode	Built-in	Diode
Fuse	A	4	8	None	8
Potential isolation		Opto-isolated			
Indication elements		LED (green)	LED (green)	LED (green)	16 LED (green), switchable: 0 – 15, 16 – 31
Terminations		Plug-in terminal block			XIOC-TERM32 (connector and cable)
Internal current consumption (5 V DC)	mA	30	50	50	250
External voltage for outputs/module (30 mA for module supply)	V	24 DC (-15/+20%)	24 DC (-15/+20%)	24 DC (-15/+20%)	24 DC (-15/+20%)
External voltage for operating the relay		12/24V DC	12/24V DC	12/24V DC	12/24V DC
Short-circuit protection				Yes	
Weight	kg	0.16	0.16	0.16	0.16

		XIOC-12DO-R
Modules		
Output type		Relay
Output voltage	V DC	24
Output voltage	V AC	100/240
Minumum switching current	mA	1
Maximum load current		
Per circuit	A	2
Per common potential terminal	A	5
Output delay		
Off → On	ms	10
On → Off	ms	10
Output channels	Qty.	12
Channels with the same reference potential	Qty.	12
Overvoltage protection		External
Fuse	A	External
Potential isolation		Opto-isolated
Indication elements		LED (green)
Terminations		Plug-in terminal block
Internal current consumption (5 V DC)	mA	40
External voltage for operating the relay		24 DC (-15/+20%, max. 70 mA)
Weight	kg	0.2

		XIOC-16DX
Power supply		
Supply voltage		24 V DC (-15/+20%)
Residual ripple	%	≦ 5
Overvoltage protection		Yes
Protection against polarity reversal		Yes
Potential isolation		
Power supply against I/O bus		Yes
Power supply against I/O		No
Internal current consumption (5 V DC)	mA	80
Channels	Number	16
Terminations		Plug-in terminal block
Status indication		LED
Inputs		
Input type		DC input
Input voltage	V DC	24 V DC
Inputs	Number	4, 12, configurable
Input current	mA	Normally 4
Voltage level to IEC 61131-2, limit value type 1		
ON	V	≦ 15 DC
OFF	V	≦ 5 DC
Input delay		
Off → On	ms	Normally 0.1
On → Off	ms	Normally 0.1
Outputs		
Output type		Transistor (source type)
Output voltage	V DC	24 (-15/+20%)
Output current	A	Normally 0.5
Outputs	Number	Max. 12, configurable
Short-circuit tripping current	A	max. 1.2 over 3 ms per output
Lamp load	W	Max. 3
Off-delay (High → Low)	µs	100
Switching capacity		IEC/EN 60947-5-1, utilization category DC-13
Short-circuit proof		Yes
Parallel connection of outputs		in groups 0 – 3, 4 – 7, 8 – 11; Actuation of the outputs within a group only in the same program cycle
Number of outputs that can be switched in parallel		3 max.
Total max. current	A	2 per group
Weight	kg	0.16

			XIOC-8AI-I2	XIOC-8AI-U1	XIOC-8AI-U2	XIOC-4T-PT
Modules						
Input voltage		V DC		0 to 10	-10 to +10	
Input current		mA	4 – 20			
Resolution, digital		Bit	12	12	12	15 Bit signed
Conversion time			≦ 5 ms	≦ 5 ms	≦ 5 ms	
Total error		%	≦ ±1 (of the full-scale value)			
Input impedance		kΩ	–	100	100	–
Potential isolation						
Circuit within each channel			Opto-isolated			
Between the input channels			No	No	No	No
Input channels		Qty.	8	8	8	4
Terminations			Plug-in terminal block			
External power supply			24 V DC (-15/+20 %), approx. 150 mA			24 V DC (–15/+20 %), 100 mA
External resistance	*R*	kΩ				Max. 0.4 (4 channels)
Connection type			2-core screened cable (≦20 m)			Screened cable
Platinum temperature resistance						Pt100 (IEC 751), Pt1000
Accuracy						
-20 to 40 °C (Pt100)		°C	–	–	–	0.5
-50 to 400 °C (Pt100)		°C	–	–	–	3
-50 to 400 °C (Pt100)		°C	–	–	–	6
Temperature measuring range						–20 to +40 °C/–50 to +400 °C (uninterrupted current: 2 mA)
Internal current consumption (5 V DC)		mA	Normally 100	Normally 100	Normally 100	Max. 200
Additional function						Linearization
Error detection						
-20 to 40 °C						≦ -25 °C or ≧ +45 °C = resistance value 7FFFFhex
-50 to 400 °C						≦ -60 °C or ≧ +410 °C = resistance value 7FFFFhex
Behaviour in the event of wire breakage or where inputs are not used						In these cases, the resistance value is 7FFFhex
Weight		kg	0.18	0.18	0.18	0.18

			XIOC-4AI-T
Channels			
Number			4
Temperature measuring range			K type: –270 … 1370 J type: –210 … 1200 B type: 100 … 1800 N type: -270 … 1300 E type: –270 … 1000 R type: –50 … 1760 T type: –200 … 400
Voltage measurement			– 50 mV…50 mV –100 mV…100 mV –500 mV…500 mV –1000 mV…1000 mV
Cold junction compensation			Yes, integrated
Interference voltage suppression			50 Hz, 60 Hz
Unit			0.1 °C, 0.1 F
Resolution		Bit	16
Total error		%	±0.5 of measurement range
Conversion time			< 1 s
Temperature coefficient			< 200 ppm/°C of measurement range

		XIOC-2AO-U1-2AO-I2	XIOC-4AO-U1	XIOC-2AO-U2
Modules				
Output voltage	V DC	0 to 10	0 to 10	0 to 10
Output current	A	0.004 to 0.020		
Resolution	Bit	12	12	12
Conversion time		≦ 5 ms	≦ 5 ms	≦ 5 ms
Total error	%	≦ ±1 (of the full-scale value)		
External load resistance				
Voltage output		≦ 10 kΩ	≦ 10 kΩ	≦ 10 kΩ
Current output	Ω	0 to 500 Ω		
Potential isolation				
Circuit within each channel		Opto-isolated		
between channels		No	No	No
Quantity of outputs				
Output voltage		2 (channels 0 and 1)	4	2
Output current		2 (channels 2 and 3)		
Terminations		Plug-in terminal block		
Internal current consumption (5 V DC)	mA	100	100	100
External power supply		24 V DC (-15/+20 %), approx. 150 mA		
Connection type		2-core screened cable (≦20 m)		

		XIOC-2AI-1AO-U1	XIOC-2AI-1AO-U1-I1	XIOC-4AI-2AO-U1	XIOC-4AI-2AO-U1-I1
Inputs					
Input voltage	V DC	0 – 10	0 – 10	0 – 10	0 – 10
Input current	mA		0 – 20		0 – 20
Resolution	Bit	14	14	14	14
Conversion time		< 1 ms	< 1 ms	< 1 ms	< 1 ms
Total error	%	Normally 0.4	Normally 0.4	Normally 0.4	Normally 0.4
Potential isolation					
Circuit within each channel		No	No	No	No
Between the input channels		No	No	No	No
Between input/output channels		No	No	No	No
Channels	Qty.	2	2	4	4
Input impedance	kΩ	40	40	40	40
Outputs					
Output voltage	V DC	0 – 10	0 – 10	0 – 10	0 – 10
Output current	mA		0 – 20		0 – 20
Resolution	Bit	12	12	12	12
Error		Normally 0.4	Normally 0.4	Normally 0.4	Normally 0.4
Potential isolation					
Circuit within each channel		No	No	No	No
Between the output channels		No	No	No	No
Quantity of channels		1	1	2	2
External load resistance		≦ 2 kΩ	≦ 2 kΩ	≦ 2 kΩ	≦ 2 kΩ
Short-circuit proof		Yes	Yes	Yes	Yes
Terminals					
Terminations		Plug-in terminal block	Plug-in terminal block	Plug-in terminal block	Plug-in terminal block
Internal current consumption (5 V DC)	mA	200	200	200	200
Weight	kg	0.16	0.16	0.16	0.16

			XIOC-NET-DP-M	XIOC-NET-DP-S	XIOC-NET-SK-M	XIOC-SER
Interfaces						
Interfaces			PROFIBUS DP, RS 485, EN 50170	PROFIBUS DP, RS 485, EN 50170	RS485	RS232(C), RS422, RS485
Protocol			PROFIBUS-DP master (class 1)	PROFIBUS-DP slave	Suconet K, K1	Tranparent mode, Modbus master/dSlave, SUCOM A, Suconet-K slave
Character formats						8E1, 8O1, 8N1, 8N2, 7E2, 7O2, 7N2, 7E1
Control and signal cables						RTS, CTS, DTR, DSR, DCD
Data transfer rate		kBit/s	9.6 to 12000	9.6 to 12000	187.5, 375	0.3 …57.6 187.5, 375 (Suconet)
Potential isolation			Yes	Yes	Yes	Yes (RS485, RS422)
Number of slaves			124		16	
Transmit/receive data			3500 Byte each	Max. 244 Byte	250 bytes per COM	250 Byte per slave 120 Byte per slave (Suconet-K slave)
Bus terminating resistors			Switchable	Switchable	Switchable	Switchable for RS485, RS422
Plug arrangement			9-pole SUB-D socket connector	9-pole Sub-D socket	Plug-in terminal block	RS232: 9 pole SUB-D plug RS485, 422: plug terminal block
Current consumption		mA	300	300	275	275
Weight		kg	0.2	0.2	0.2	0.2
Number of modules			XC100: 1 XC200:3	XC100: 1 XC200: 3	XC100: 2 XC200: 4	XC100: 2 XC200: 4
Slots			1, 2, 3	1, 2, 3	As required	As required

Compact PLC PS4			PS4-271-MM1
General			
Standards			IEC/EN 61131-2, EN 50178
Ambient temperature		°C	0…55
Ambient temperature, storage		°C	-25…70
Vibration resistance		g	Constant 1 g, f = 10 to 150 Hz
Mechanical shock resistance, shock duration 11 ms		g	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143
Programming interface			RS 232C, programming cable length < 3 m
Interface			RS485
Bus			Suconet K
Data cable length		m	600/300
Data transfer rate		kbit/s	187.5/375
Control mode			Master/slave
Protection type			IP20
Rated insulation voltage	U_i	V AC	1800
Real time clock			Yes
Accuracy of the real-time clock			6.1 min/year (battery-backed)
Battery (service life)			Normally 5 years
Expandable (locally)			Max. 5 LEs
Expandable (remotely)			Max. 8 stations
User and data memory (internal)			32 Kbytes
Memory modules (external)			32 KByte RAM 128 Kbyte FLASH 32 Kbyte RAM + 128 Kbyte flash
Cycle time for 1 k of instructions (Bit, Byte)		ms	<5
Max. number of inputs (local)			12
Max. number of outputs (local)			8 (relay)
Weight		kg	0.95
Power supply			
Terminals			Screw terminals
Terminal capacities			
Solid		mm^2	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 2.5
Inputs/outputs			
Terminals			Plug-in screw terminals
Terminal capacity			
Solid		mm^2	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 1.5
Power supply			
Rated voltage	U_e	V	120 - 240 V AC
Admissible range		V	98 – 264 AC
Rated frequency		Hz	4763
Rated current	I_e	mA	300 (120 V AC) 150 (240 V AC) with LE
Inrush current and duration		A	4 < 5 ms
Heat dissipation (total for device)		W	Approx. 9.5 (120 V AC) Approx. 12.5 (240 V AC)
Bridging of voltage dips			
Duration of dip		ms	10
Repetition rate		s	1
Fault indication			Yes (LED)
Protection class			1
Potential isolation			Yes
Max. current carrying capacity for LE bus (5 V)		A	1.2

Compact PLC PS4			PS4-271-MM1
Digital inputs			
Number			12
Rated voltage	U_e	V AC	120 at 47 – 63 Hz 240 at 47 – 55 Hz
Rated current at state "1"			
120 V AC/50 Hz	I_e	mA	Normally 6
240 V AC/50 Hz	I_e	mA	Normally 12
Potential isolation			
between the inputs			No
Input to LE bus/Suconet K			Yes
Overvoltage category/pollution degree			II, basic insulation
Different phases at adjacent inputs			Only permissible between groups, input can be switched only with phase
Voltage level to IEC/EN 61131-2			
Limit value type 1			Un = 120 V AC/240 V AC
Min. switching level, high		V	79/164
max. low level		V	20/40
On-delay, 120/240 V AC		ms	Normally 10 at 50 Hz
Off-delay, 120/240 V AC		ms	Normally 30 at 50 Hz
Status indication of inputs			Yes (LED)
Setpoint potentiometers			
Quantity			2
Value range			10-bit (1024 units)
Setting			With screwdriver
Analog inputs			
Quantity			4; 2 × Current/voltage, 2 × impedance
Voltage		V	0 – 10
Input impedance		kΩ	220
Total error		%	Normally 0.8 of full scale
Max. current		mA	0 to 20 (4 to 20 through software)
Input impedance		Ω	250
Total error		%	Normally 0.8 of full scale
Resistance	R	kΩ	0 to 1.5
Temperature detector			Pt1000 Ni1000
Measuring current		mA	ca. 0.4
Total error		%	Normally 0.8 of full scale
Connection type of signal encoder			Two-wire connection to transducer
Resolution		Bit	10-bit max. (1024 units)

Compact PLC PS4			PS4-271-MM1
Digital outputs			
Number			8
Contacts			Make
Potential isolation			Yes, in groups
Rated voltage	U_e	V	250 V AC
Conventional thermal current	I_{th}	A	Max. 8 (UL/CSA: 10)
Short-circuit proof p.f. = 1			16 A characteristic B (FAZ-B16/1) at 600 A
Short-circuit proof cos φ = 0.5 to 0.7			16 A characteristic B (FAZ-B16/1) at 900 A
Contact material			AgSnO2
Response time		ms	Normally 6
Reset time		ms	Normally 10
Bounce duration		ms	Normally 0.5
Min. contact voltage		V	12
Min. contact current		mA	500
Minimum load		W	6
Max. switching duty			
AC		VA	2000 (250 V/8 A/10 A UL/CSA)
DC		W	240 (30 V DC/8 A/10 A UL/CSA)
Lifespan			
Mechanical			
Lifespan, mechanical	Operations		10000000
Mechanical operating frequency		Hz	10
Resistive lamp load		Hz	2
Inductive load		Hz	0.5
Electrical			
Electrical lifespan at 8 A/230 V AC/70 °C	Operations		100000
Operation at AC -15, 230 V, 3 A p.f. = 0.4, 600 Ops/h	Operations		300000
Operation at DC-13, 24 V DC, 1 A L/R = 150 ms, 500 Ops/h	Operations		200000
Filament bulb load			
1000 W at 230/240 V AC	Operations		25000
500 W at 115/120 V AC	Operations		25000
Fluorescent lamp load 10 × 58 W at 230/240 V AC			
With upstream electrical device	Operations		25000
Uncompensated	Operations		25000
Fluorescent lamp load 1 × 58 W at 230/240 V AC, conventional, compensated	Operations		25000
Parallel switching of outputs for increased output			Not permissible
Protection of an output relay			Miniature circuit-breaker FAZ-B16/1 or fuse 8 A (T)
Contact protection			None
Overload and short-circuit protection			No
Insulation			IEC/EN 60664/VDE 0110 (01/89)
Pollution degree			2
Overvoltage category			II
Creepage distance coil/contact		mm	8
Air clearance coil/contact		mm	8
Test/alternating voltage at the open contact		kV	1
Test/alternating voltage at coil/contact		kV	4
Status indication of outputs			Yes
Analog outputs			
Max. current			
Current output, number			2
Signal range		mA	0 to 20 4 to 20
Resolution		Bit	12-bit (4096 units)
Total error		%	Normally 0.4 of full scale
Load on current outputs		Ω	≧ 500
Connection type			Two-wire connection
Voltage			
Voltage output, number			2
Signal range		V	0 – 10
Resolution		Bit	12 (4096 units)
Total error		%	Normally 0.4 of full scale
Output load		kΩ	≧ 2
Connection type			Two-wire connection

Compact PLC PS4			PS4-141-MM1	PS4-151-MM1
General				
Standards			IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178
Ambient temperature		°C	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70
Vibration resistance		g	Constant 1 g, f = 10 to 150 Hz	Constant 1 g, f = 10 to 150 Hz
Mechanical shock resistance, shock duration 11 ms		g	> 15	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143
Control mode			Master/slave	Master/slave
Protection type			IP20	IP20
Rated insulation voltage	U_i	V AC	600	1500
Real time clock			Yes	Yes
Accuracy of the real-time clock			6.1 min/year (battery-backed)	6.1 min/year (battery-backed)
Battery (service life)			Normally 5 years	Normally 5 years
Programming interface			RS 232 C	RS 232 C
Memory				
Program and data memory (internal)/back-up memory			32 KByte RAM (battery-backed)	32 KByte RAM (battery-backed)
Memory expansion (external)			32 KByte RAM	32 KByte RAM
Memory for backup and recipe data			128 Kbyte Flash	128 Kbyte Flash
Memory expansion and memory for backup and recipe data (external)			32 KByte RAM and 128 KByte Flash	32 KByte RAM and 128 KByte Flash
Write cycles (flash memory)			10000	10000
Cycle time for 1 k of instructions (Bit, Byte)		ms	< 5	< 5
Max. number of inputs (local)			16 digital/2 analog inputs	16 digital/2 analog inputs
Max. number of outputs (local)			14 digital outputs/1 analog output	8 digital outputs/1 analog output
Max. number of inputs/outputs (local)			30	24
Max. number of inputs/outputs (remote)			680 can be addressed through Suconet K line	680 can be addressed through Suconet K line
Weight		kg	0.7	0.7
Power supply				
Terminals			Screw terminals	Screw terminals
Terminal capacities				
Solid		mm^2	0.22 – 2.5	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 2.5	0.22 – 2.5
Inputs/outputs				
Terminals			Plug-in screw terminals	Plug-in screw terminals
Terminal capacity				
Solid		mm^2	0.22 – 2.5	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 1.5	0.22 – 1.5
Networking				
Expandable (remotely)			Max. 8 stations	Max. 8 stations
Programming with Suconet K network			RS485	RS485
Interface			RS485	RS485
Bus			Suconet K	Suconet K
Data cable length		m	600/300	600/300
Data transfer rate		kbit/s	187.5/375	187.5/375

PS4-201-MM1	PS4-341-MM1
IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178
0…55	0…55
–25…70	–25…70
Constant 1 g, f = 10 to 150 Hz	Constant 1 g, f = 10 to 150 Hz
> 15	> 15
→ Page 4/143	→ Page 4/143
Master/slave	Master/slave
IP20	IP20
600	1500
Yes	Yes
6.1 min/year (battery-backed)	6.1 min/year (battery-backed)
Normally 5 years	Normally 5 years
RS 232 C	RS 232 C
32 KByte RAM (battery-backed)	512 Kbyte RAM (battery-backed)
32 KByte RAM	
128 Kbyte Flash	
32 KByte RAM and 128 KByte Flash	
10000	–
< 5	< 0.5
104 (with 6 LE4-116-DX1) digital/2 analog inputs	96 (with 5 LE4-116-DX1)
102 (with 6 LE-116-XD1) digital outputs/1 analog output	94 (with 5 LE 4-116-XD1)
110 (with 6 LE4-116-DD1)	110 (with 5 LE4-116-DX1/XD1)
680 can be addressed through Suconet K line	8500 can be addressed through Suconet K line
0.54	0.7
Screw terminals	Screw terminals
0.22 – 2.5	0.22 – 2.5
0.22 – 2.5	0.22 – 2.5
Plug-in screw terminals	Plug-in screw terminals
0.22 – 2.5	0.22 – 2.5
0.22 – 1.5	0.22 – 1.5
Max. 8 stations, max. 24 with 2 additional network modules	Max. 30 stations, max. 46 with 2 × LE4-501-BS1
RS485	RS485
RS485	RS485
Suconet K	Suconet K
600/300	600/300
187.5/375	187.5/375

Compact PLC PS4			PS4-141-MM1	PS4-151-MM1
Power supply				
Rated voltage	U_e	V	24 V DC	115 – 230 V AC
Admissible range		V	20.4 – 28.8 DC	98 – 264 AC
Rated frequency		Hz		4763
Residual ripple on the input voltage		%	≦ 5	
Protection against polarity reversal			Yes	
Rated current	I_e	mA	Normally 300	Normally 90
Inrush current and duration		A	4 < 5 ms	12 at 230 V
Power consumption		W	Approx. 6.5	Approx. 20
Bridging of voltage dips				
Duration of dip		ms	10	10
Repetition rate		s	1	1
Fault indication			LED	LED
Protection class			1	1
Potential isolation			Yes	Yes
Max. current carrying capacity for LE bus (5 V)		A	–	–
Digital inputs				
Quantity			16	16
Rated operational voltage				
Rated voltage	U_e	V DC	24	24
On 0 signal	U_e	V DC	≦ 5, limit value type 1	≦ 5, limit value type 1
On 1 signal	U_e	V DC	≧ 15, limit value type 1	≧ 15, limit value type 1
Max. ripple		%	≦ 5	≦ 5
Rated current				
At state "1"	I_e	mA	Normally 6 at 24 V DC	Normally 6 at 24 V DC
Delay time				
for "0" to "1"		ms	max.0.1	max.0.1
for "1" to "0"		ms	max.0.1	max.0.1
Potential isolation				
Potential isolation			Yes	Yes
between the inputs			No	No
Status indication of inputs			LED	LED
Integrated power supply for inputs				Yes
"High-speed counter"input				
Input			I 0.0	I 0.0
Number			1 up counter	1 up counter
Switching frequency		kHz	3	3
Pulse shape			Square	Square
Pulse duration		%	50	50
Edge duration		%	≦ 3	≦ 3
Alarm input			I1.0	I1.0
Setpoint potentiometers				
Quantity			2	2
Value range			10-bit (1024 units)	10-bit (1024 units)
Setting			With screwdriver	With screwdriver
Analog inputs				
Number			2	2
Signal range		V DC	0 – 10	0 – 10
Total error		%	Typically 0.8 % of full scale	Typically 0.8 % of full scale
Conversions			1 × per cycle	1 × per cycle
Input impedance		kΩ	20	20
Connection type of signal encoder			Two-wire connection to transducer	Two-wire connection to transducer
Resolution		Bit	10 (1024 increments)	10 (1024 increments)

PS4-201-MM1	PS4-341-MM1
24 V DC	24 DC
20.4 – 28.8 DC	20.4 – 28.8 DC
≦ 5	≦ 5
Yes	Yes
200	Approx. 1 A
4 < 5 ms	4 < 5 ms
Approx. 6	Approx. 6.5
10	10
1	1
LED	LED
1	1
Yes	Yes
1.2	1.2
8	16
24	24
≦ 5, limit value type 1	≦ 5, limit value type 1
≧ 15, limit value type 1	≧ 15, limit value type 1
≦ 5	≦ 5
Normally 6 at 24 V DC	Normally 6 at 24 V DC
max.0.1	max.0.1
max.0.1	max.0.1
Yes	Yes
No	No
LED	LED
I 0.0	I 0.0, I 0.1 (up, down)
1 up counter	1 up or down counter
3	50
Square	Square
50	50
≦ 3	≦ 3
I1.0	I 1.0, I 1.1
2	2
10-bit (1024 units)	10-bit (1024 units)
With screwdriver	With screwdriver
2	2
0 – 10	0 – 10
Typically 0.8 % of full scale	Typically 0.8 % of full scale
1 × per cycle	1 × per cycle
20	20
Two-wire connection to transducer	Two-wire connection to transducer
10 (1024 increments)	10 (1024 increments)

Compact PLC PS4			PS4-141-MM1	PS4-151-MM1
Digital outputs				
Quantity			14	8
Contacts			Semiconductor	Relay (make contact)
Rated operational voltage				
Rated voltage	U_e	V DC	24	See switching current (resistive/ inductive load)
Admissible range		V DC	20.4 – 28.8	See switching current (resistive/ inductive load)
Max. ripple		%	≦ 5	
Protection against polarity reversal			Yes	
Potential isolation			Yes	
Potential isolation in groups				4 isolated outputs, 4 outputs, each with 2 groups of 2
Min. contact voltage		V	–	12
Min. contact current		mA	–	100
Minimum load		W	–	1.2
Rated current				
at state "1"	I_e	A	0.5 at 24 V DC	
Lamp load	R_{LL}	W	4 W without series resistor	
Utilization factor	g	%	1	1
Duty factor		% DF	100	100
Parallel connection of outputs				
Parallel switching of outputs for increased output			Max. 4	
Total max. current		A	2	–
Total minimum current		mA	250	–
Residual current at state "0"		µA	Approx. 140	
Response time		ms		10
Reset time		ms		10
Lifespan, mechanical	Operations			20000000
Switching current (resistive load)				
2 A/230 V AC	Operations		–	300000
2 A/24 V DC	Operations		–	900000
Switching current (inductive load)				
1 A/230 V AC-11	Operations		–	300000
1 A/24 V DC-11	Operations		–	100000
Short-circuit protection			Yes, without manual reset	No, external protection of relay contacts with fuse, 4 A fast
Short-circuit tripping current		A	max. 2.5 over 3 ms per output	
Off-delay		µs	100	
Limitation of disconnect voltage with inductive loads			Yes, 21 V (at U_N = 24 V DC)	
Maximum operating frequency				
With time constant L/R max. 72 ms		Ops./h	4800	
With time constant L/R max. 15 ms		Ops./h	18000	–
Creepage and clearance distances				8 mm between coil and contact
Status indication of outputs			LED	LED
Analog outputs				
Number			1	1
Total error		%	Normally 0.4 of full scale	Normally 0.4 of full scale
Output voltage		V DC	0 – 10/2 mA	0 – 10/2 mA
Connection type			Two-wire connection	Two-wire connection
Resolution		Bit	12 (4096 units)	12 (4096 units)

PS4-201-MM1	PS4-341-MM1
6	14
Semiconductor	Semiconductor
24	24
20.4 – 28.8	20.4 – 28.8
≦ 5	≦ 5
Yes	Yes
Yes	Yes
–	–
–	–
–	–
0.5 at 24 V DC	0.5 at 24 V DC
4 W without series resistor	4 W without series resistor
1	1
100	100
Max. 4	Max. 4
2	2
250	250
Approx. 140	Approx. 140
–	–
–	–
–	–
–	–
Yes, without manual reset	Yes, without manual reset
max. 1.2 over 3 ms per output	max. 1.2 over 3 ms per output
100	100
Yes, –21 V (at U_N = 24 V DC)	Yes, 21 V (at U_N = 24 V DC)
4800	4800 (g=1) 7500 (g=0.5)
18000	18000
LED	LED
1	1
Normally 0.4 of full scale	Normally 0.4 of full scale
0 – 10/2 mA	0 – 10/2 mA
Two-wire connection	Two-wire connection
12 (4096 units)	12 (4096 units)

Digital EM4			EM4-101-DD2	EM4-111-DR2	EM4-201-DX2	EM4-204-DX1
General						
Standards			IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178
Ambient temperature		°C	0…55	0…55	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70	–25…70	–25…70
Vibration resistance		g	Constant 1 g, f = 10 to 150 Hz			
Mechanical shock resistance, shock duration 11 ms		g	> 15	> 15	> 15	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143	→ Page 4/143	→ Page 4/143
Protection type			IP20	IP20	IP20	IP20
Rated insulation voltage	U_i	V AC	600	1800	600	600
Expandable (locally)			No	No	Yes	Yes
Weight		kg	0.44	0.44	0.455	0.46
Power supply						
Terminals			Screw terminals	Screw terminals	Screw terminals	Screw terminals
Terminal capacities						
Solid		mm^2	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5
Inputs/outputs						
Terminals			Plug-in screw terminals			
Terminal capacity						
Solid		mm^2	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 1.5	0.22 – 1.5	0.22 – 1.5	0.22 – 1.5
Power supply						
Rated voltage	U_e	V	24 DC	115 – 230 V AC	24 DC	24 DC
Admissible range		V	20.4 – 28.8 DC	98 – 264 AC	20.4 – 28.8 DC	20.4 – 28.8 DC
Rated frequency		Hz		47 – 68		
Residual ripple on the input voltage		%	5	–	5	5
Protection against polarity reversal			Yes			
Rated current	I_e	mA	100	40	400	Max. 500
Inrush current and duration		A	3 for max. 5 ms	< 12 at 253 V AC	10 for max. 1.3 ms	10 for max. 1.3 ms
Heat dissipation (total for device)		W	Approx. 5	Approx. 9	Approx. 7	Approx. 7
Bridging of voltage dips						
Duration of dip		ms	10	10	10	10
Repetition rate		s	1	1	1	1
Protection class			1	1	1	1
Potential isolation between inputs and internal power supply			Yes	Yes	Yes	Yes
Networking						
Bus			Suconet K1/K	Suconet K1/K	Suconet K1/K	PROFIBUS-DP
Data transfer rate		kbit/s	187.5/375	187.5/375	187.5/375	9.6 to 12000
Interface			RS485	RS485	RS485	RS485
Addressing			Through coding switch	Through coding switch	Through coding switch	Through coding switch
Slave address			231	231	231	1126
EM4 in loop		Number				125 (30 without repeater)
Digital inputs						
Number			8 or 10	8	16	16
Outputs configurable as additional inputs		Number	2			
Rated operational voltage						
Rated voltage	U_e	V DC	24	24	24	24
On 0 signal	U_e	V DC	5, limit value type 1	5, limit value type 1	5, limit value type 1	5, limit value type 1
On 1 signal	U_e	V DC	15, limit value type 1	15, limit value type 1	15, limit value type 1	15, limit value type 1
Rated current at state "1"			Normally 6 mA at 24 V DC			
Delay time						
for "0" to "1"		ms	0.2	0.2	0.2	0.2
for "1" to "0"		ms	0.2	0.2	0.2	0.2
Potential isolation						
Potential isolation			Yes	Yes	Yes	Yes
between the inputs			No	No	No	No
of the 2 additional inputs			Yes			
Status indication of inputs			Yes (LED)	Yes (LED)	Yes (LED)	Yes (LED)

Digital EM4			EM4-101-DD2	EM4-111-DR2	EM4-201-DX2	EM4-204-DX1
Digital outputs						
Number			8 or 6 at 10 inputs	6 (Relay)		
Contacts				Make		
Rated operational voltage						
Rated voltage	U_e	V	24 DC	See switching current		
Admissible range		V DC	20.4 – 28.8			
Max. ripple		%	≦ 5			
Protection against polarity reversal			Yes			
Potential isolation			Yes	Yes		
Potential isolation in groups			No	2 isolated outputs, 4 outputs, each with 2 groups of 2		
Contact protection				None		
Minimum load						
Minimum load		W	–	10	–	–
at contact voltage		V	–	12	–	–
at contact current		mA	–	> 100	–	–
Rated current						
at state "1"	I_e	A	0.5 A at 24 V DC			
Lamp load	R_{LL}	W	4 without series resistor			
Utilization factor	g	%	1	1	–	–
Duty factor		% DF	100	100	–	–
Residual current at state "0"		µA	Max. 300			
Response time		ms	–	10	–	–
Reset time		ms	–	15	–	–
Lifespan, mechanical	Operations		–	20000000	–	–
Switching current (resistive load)						
2 A/230 V AC	Operations		–	300000	–	–
2 A/24 V DC	Operations		–	900000	–	–
Switching current (inductive load)						
1 A/230 V AC-11	Operations		–	300000	–	–
1 A/24 V DC-11	Operations		–	100000	–	–
Short-circuit protection			Yes, without manual reset	No, external protection of relay contacts, max. 4 A fast fuse required		
Limitation of disconnect voltage with inductive loads			Yes			
Maximum operating frequency						
With time constant L/R max. 72 ms		Ops./h	4000	–	–	–
With time constant L/R max. 15 ms		Ops./h	10000	–	–	–
Creepage and clearance distances				Group C, 250 V AC to VDE 0110		
Insulation test voltage, contact/coil		kV	–	4	–	–
Status indication of outputs			Yes (LED)	Yes (LED)		
Rated insulation voltage	U_i	V AC	–	2800	–	–

Analog EM4			EM4-101-AA2	EM4-101-TX1	EM4-101-TX2
General					
Standards			IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178
Ambient temperature		°C	0…55	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70	–25…70
Vibration resistance		g	Constant 1 g, f = 10 to 150 Hz		
Mechanical shock resistance, shock duration 11 ms		g	> 15	> 15	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143	→ Page 4/143
Protection type			IP20	IP20	IP20
Rated insulation voltage	U_i	V AC	600	600	600
Expandable (locally)			No	No	No
Weight		kg	0.455	0.44	0.44
Power supply					
Terminals			Screw terminals	Screw terminals	Screw terminals
Terminal capacities					
Solid		mm^2	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5
Inputs/outputs					
Terminals			Plug-in screw terminals	Plug-in screw terminals	Plug-in screw terminals
Terminal capacity					
Solid		mm^2	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 1.5	0.22 – 1.5	0.22 – 1.5
Power supply					
Rated voltage	U_e	V DC	24	24	24
Admissible range	U_e	V DC	20.4 – 28.8	20.4 – 28.8	20.4 – 28.8
Residual ripple on the input voltage		%	5	5	5
Protection against polarity reversal			Yes	Yes	Yes
Rated current	I_e	mA	150	150	150
Inrush current and duration		A	5 for max. 5 ms	5 for max. 5 ms	5 for max. 5 ms
Heat dissipation (total for device)		W	Approx. 3	Approx. 3	Approx. 3
Bridging of voltage dips					
Duration of dip		ms	10	10	10
Repetition rate		s	1	1	1
Protection class			1	1	1
Potential isolation between inputs and internal power supply			Yes	Yes	Yes
Networking					
Bus			Suconet K1/K	Suconet K	Suconet K
Data transfer rate		kbit/s	187.5/375	187.5/375	187.5/375
Interface			RS485	RS485	RS485
Addressing			Through coding switch	Through coding switch	Through coding switch
Slave address			231	231	231

Analog EM4		EM4-101-AA2	EM4-101-TX1	EM4-101-TX2
Analog inputs				
Number		8 (4V/4I)	2 V	
Signal ranges		0 – 5 V 0 – 10 V ± 5V ± 10 V 0 – 20 mA	0 – 10 V	
Potential isolation		Yes, inputs from earthing point, 24 V DC supply voltage, and bus, not inputs from each other (nor outputs in the case of AA2/AA1)		
Connection type of signal encoder		Two-wire connection to transducer		
Resolution	Bit	8/12	12	
Permissible potential difference				
Between inputs		Not permissible		
Between inputs and central earth point		See Rated insulation voltage		
Input current				
Range 0 to 20 mA	mA	30	–	–
Permissible input voltage	V	max. ± 15	+20 (destruction limit)	
Error indication on overrange		Yes		
Total error	%	Normally 0.4 of full scale	Normally 0.5 of full scale	
Cable length screened	m	< 50 for cable cross-section ≧ 0.14 mm²	< 20	–
Input impedance				
0 to 5 V	kΩ	> 100 kΩ per input		
0 to 10 V	kΩ	> 100 kΩ per input	20 kΩ	
-5 to 5 V	kΩ	> 100 kΩ per input		
-10 to 10 V	kΩ	> 100 kΩ per input		
0 to 20 mA	Ω	50 Ω per input		
Analog inputs				
Quantity			6 temperature inputs for Pt 100/Ni 1000	6 for thermocouple types J, K, L
Connection type			3 or 4-wire connection	
Temperature range	°C		Pt 100: -100 to +300 °C Ni 1000: -50 to +150 °C	J: 0 to 1200 °C K: 0 to 1300 °C L: 0 to 900 °C
Deviation			Pt 100: max. ± 0.4 %; typically ± 0.2 % Ni 1000: max. ± 0.2 %; typically ± 0.1 %	Converter: max. 0.5 % of preset final value Cold junction: max. 4 °C
Linearity factor			Pt 100: max. ± 0.15 % Ni 1000: max. ± 0.1 %	max. 0.4 °C
Reproducibility (with steady state at 25 °C)			Pt 100: max. ± 0.3 °C Ni 1000: max. ± 0.2 °C Pt 100: max. ± 0.3 °C Ni 1000: max. ± 0.2 °C	
Error indication			Detection of cable break and short-circuit	Wire-break and overrange/ underrange detection
R0 to R5 short-circuit-proof			Yes	
Analog outputs				
Number		4	–	–
Signal ranges		0 – 10 V ± 10 V		
Potential isolation		Yes, of inputs from earthing point 24 V DC supply and bus, not between inputs and outputs		
Resolution	Bit	8/12		
Total error	%	Normally 0.4 of full scale		
Connection type		Two-wire connection		
Short-circuit proof		Yes		
Short-circuit current	mA	32		
Permissible potential difference between earthing point and between outputs		See Rated insulation voltage		
Cable length, screened	m	< 50 for cable cross-section ≧ 0.14 mm²	–	–
Rated insulation voltage	Ω	2000	–	–

			ZB4-501-UM3	ZB4-501-UM4
General				
Ambient temperature		°C	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70
Weight		kg	0.18	0.18
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143
Protection type			IP20	IP20
Mounting			Top-hat rail mounting	Top-hat rail mounting
Supply voltage		V DC	9 V DC through PLC (PS4, except PS4-100/400)	
Power supply				
Rated voltage	U_e	V DC	–	24
Admissible range		V DC	–	20.4…28.8
Residual ripple		%	–	≦ 5
Protection against polarity reversal				Yes
Rated current	I_e	mA	–	100
Inrush current and duration		A		1/ 5 ms
Heat dissipation		W	–	2.4
Protection class			–	1
Potential isolation between power supply and interfaces				Yes
Terminals				Plug-in screw terminals
Terminal capacity		mm^2	–	1.5
Operating data				
Quantity of modules			1 module per PS4 master PLC	14 modules per PS416/PS4 master PLC
Network address			2, fixed	2 to 15, adjustable
Suconet K send data			36 bytes (30 bytes user data)	36 bytes (30 bytes user data)
Suconet K receive data			36 bytes (30 bytes user data)	36 bytes (30 bytes user data)
Message format			Transparent	Transparent
Max. no of user data bytes in frame		Byte	250	250
Interfaces				
RS485			2, with 5-pole DIN plug for connecting master PLC (cable length 20 cm), with plug-in screw terminal for connecting outgoing Suconet K bus	1, with plug-in screw terminal for connecting to the Suconet K bus, adjustable bus terminating resistors
RS 232 C			1, with 9-pole SUB-D connector for the terminal device	
Cable recommendation				
RS485			Cable 2 × 0.5 mm^2, shielded and twisted, for fabrication of Suconet cables. The connecting cable to the master control is part of the module assembly.	Cable, 2 × 0.5 mm^2, screened and twisted for self-assembly of Suconet cables.
Data transfer rate		kbit/s	0.6, 1.2, 2.4, 4.8, 9.6	0.6, 1.2, 2.4, 4.8, 9.6
Handshake lines			RTS, CTS, DTR, DSR, DCD	RTS, CTS, DTR, DSR, DCD
Potential isolation			No	No

			ZB4-501-TC1	ZB4-501-TC2
General				
Ambient temperature		°C	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70
Weight		kg	0.18	0.18
Protection type			IP20	IP20
Mounting			Mounting on top-hat rail	Mounting on top-hat rail
Supply voltage		V DC	9 V DC through PLC (PS4, except PS4-100/400)	
Power supply				
Rated voltage	U_e	V DC	–	24
Admissible range		V DC	–	20.4…28.8
Residual ripple		%	–	≦ 5
Protection against polarity reversal				Yes
Rated current	I_e	mA	–	100
Inrush current and duration		A		1/5 ms
Heat dissipation		W	–	2.4
Protection class			–	1
Potential isolation between power supply and interfaces				Yes
Terminals				Plug-in screw terminals
Terminal capacity		mm^2	–	1.5
Operating data				
Quantity of modules			1 module per PS4 master PLC	14 modules per PS416/PS4 master PLC
Network address			2, fixed	2 to 15, adjustable
Suconet K send data			36 bytes (30 bytes user data)	36 bytes (30 bytes user data)
Suconet K receive data			36 bytes (30 bytes user data)	36 bytes (30 bytes user data)
Data transfer protocols			FT 1.2, FT 3 asynchronous (IEC/EN 60870-5)	FT 1.2, FT 3 asynchronous (IEC/EN 60870-5)
Max. no of user data bytes in the telecontrol frame		Byte	220	220
Interfaces				
RS485			2, with 5-pole DIN plug for connecting master PLC (cable length 20 cm), with plug-in screw terminal for connecting outgoing Suconet K bus	1, with plug-in screw terminal for connecting to the Suconet K bus
RS 232 C			1, with 9-pole SUB-D connector for the modem connection	1, with 9-pole SUB-D connector for the modem connection
Cable recommendation				
RS485			Cable 2 × 0.5 mm^2, shielded and twisted, for fabrication of Suconet cables. The connecting cable to the master control is part of the telecontrol module.	Cable 2 × 0.5 mm^2, shielded and twisted, for fabrication of Suconet cables.
RS 232 C			Shielded modem cable ZB4-254-KB1, Cable length max. 2 m	Shielded modem cable ZB4-254-KB1, Cable length max. 2 m
Data transfer rate		kbit/s	0.6, 1.2, 2.4, 4.8, 9.6, 19.2	0.6, 1.2, 2.4, 4.8, 9.6, 19.2
Handshake lines			RTS, CTS, DTR, DSR, DCD	RTS, CTS, DTR, DSR, DCD
Potential isolation			No	No

Digital LE4			LE4-116-DD1	LE4-116-DX1	LE4-116-XD1
General					
Standards			IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0…55	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70	–25…70
Vibration resistance		g	Constant 1 g/*f*= 10 to 150 Hz		
Mechanical shock resistance, shock duration 11 ms		g	> 15	> 15	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143	→ Page 4/143
Rated insulation voltage	U_i	V AC	–	–	–
Terminals			Plug-in screw terminals		
Terminal capacities					
Solid		mm^2	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 1.5	0.22 – 1.5	0.22 – 1.5
Protection type			IP20	IP20	IP20
Weight		kg	0.265	0.23	0.275
Protection class			1	1	1
Overvoltage category					
Power supply					
Rated voltage	U_e	V DC	24	24	24
Admissible range		V DC	20.428.8	20.428.8	20.428.8
Residual ripple		%	≦ 5	≦ 5	≦ 5
Potential isolation			Yes	Yes	Yes
Digital inputs					
Quantity			8	16	–
Rated operational voltage					
Rated voltage	U_e	V	24 DC	24 DC	
On 0 signal	U_e	V	5 V DC, limit value type 1	5 V DC, limit value type 1	
On 1 signal	U_e	V	15 V DC, limit value type 1	15 V DC, limit value type 1	
Rated current					
At state "1"	I_e	mA	Normally 6 at 24 V DC	Normally 6 at 24 V DC	
Delay time					
for "0" to "1"		ms	0.2	0.2	–
for "1" to "0"		ms	0.2	0.2	–
Potential isolation					
between the inputs			No	No	
Status indication of inputs			LED	LED	
Permissible voltage ranges					
Different phases at adjacent inputs					

LE4-108-XD1	LE4-108-XR1	LE4-308-HX1	LE4-308-XH1
IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178
0…55	0…55	0…55	0…55
–25…70	–25…70	–25…70	–25…70
Constant 1 g/*f*= 10 to 150 Hz			
> 15	> 15	> 15	> 15
→ Page 4/143	→ Page 4/143	→ Page 4/143	→ Page 4/143
–	1800	1800	1800
Plug-in screw terminals			
0.22 – 2.5	0.22 – 2.5	0.22 – 2.5	0.22 – 2.5
0.22 – 1.5	0.22 – 1.5	0.22 – 1.5	0.22 – 1.5
IP20	IP20	IP20	IP20
0.275	0.305	0.25	0.275
1	1	1	1
		II, basic insulation	II, basic insulation
–	24	–	–
–	20.428.8	–	–
–	≦ 5	–	–
	Yes		
–	–	8	–
		120/240 AC	
		40 V AC, limit value type 1	
		79 V AC, limit value type 1	
		Normally 6 at 120 V AC/50 Hz; normally 12 at 240 V AC/50 Hz	
–	–	10	–
–	–	30	–
		No	
		LED	
		120 V AC at 47 – 63 Hz 240 V AC at 47 – 63 Hz	
		Not permissible	

Digital LE4			LE4-116-DD1	LE4-116-DX1	LE4-116-XD1	LE4-108-XD1	LE4-108-XR1	LE4-308-HX1	LE4-308-XH1
Digital outputs									
Quantity			8	–	16	8	8	–	8
Power supply									
Rated voltage	U_e	V	24 DC		24 DC	24 DC	24 V DC/230 V AC		240 AC
Admissible range		V	20.4 – 28.8 DC		20.4 – 28.8 DC		20.4 – 28.8 DC		
Max. ripple		%	5 %		5 %	5 %			
Protection against polarity reversal			Yes		Yes	Yes			
Max. supply current		mA	100	–	130	160	–	–	–
Potential isolation			Yes		In 2 groups of 8 outputs each	No	Yes		Yes, between outputs 0 to 3 and outputs 4 to 7 and between outputs and bus
Rated current									
at state "1"	I_e	A	0.5 at 24 V DC		0.5 at 24 V DC	2 A at 24 V DC	1 (2 A at 24 V DC/230 V AC		0.5
Utilization factor	g	%	1	–	1	1	1	–	1
Duty factor		% DF	100	–	100	100	100	–	100
Response time		ms	–	–	–	–	10	–	–
Reset time		ms	–	–	–	–	15	–	–
Lifespan, mechanical	Operations		–	–	–	–	20000000	–	–
Switching current (resistive load)									
2 A/230 V AC	Operations		–	–	–	–	800000	–	–
2 A/24 V DC	Operations		–	–	–	–	2000000	–	–
Switching current (inductive load)									
1 A/230 V AC-11	Operations		–	–	–	–	1000000	–	–
1 A/24 V DC-11	Operations		–	–	–	–	300000	–	–
Short-circuit protection			Yes, without manual reset		Yes, without manual reset	Yes, without manual reset	No, external protection of relay contacts, max. 4 A fast fuse required		No, external protection through fuse, 0.63 A slow fuse required.
Limitation of disconnect voltage with inductive loads			Yes		Yes	Yes			
Maximum operating frequency									
With time constant L/R max. 15 ms		Ops./h	–	–	10000	–	–	–	–
With time constant L/R max. 60 ms		Ops./h	–	–	–	2500	–	–	–
With time constant L/R max. 72 ms		Ops./h	4000	–	3000	–	–	–	–
With time constant L/R max. 300 ms		Ops./h	–	–	–	360	–	–	–
Creepage and clearance distances							8 mm		
Insulation group							Group C, 250 V AC to VDE 0110		
Insulation test voltage, contact/coil		kV	–	–	–	–	4	–	–
Status indication of outputs			LED		LED	LED	LED		LED
Frequency range		Hz	–	–	–	–	–	–	47 – 63
Min. load current	I_e	mA	–	–	–	–	–	–	10
Residual current		mA	–	–	–	–	–	–	Normally 2
Make/break delay									Normally 1/2 line period
Making and breaking capacity to IEC/EN 60947-5-1									AC-15 normal conditions

Analog LE4			LE4-206-AA1	LE4-206-AA2
General				
Standards			IEC/EN 61131-2 EN 50178	IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70
Vibration resistance		g	Constant 1 g/*f*= 10 to 150 Hz	Constant 1 g/*f*= 10 to 150 Hz
Mechanical shock resistance, shock duration 11 ms		g	> 15	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143
Terminals			Plug-in screw terminals	Plug-in screw terminals
Terminal capacities				
Solid		mm^2	0.22 – 2.5	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 1.5	0.22 – 1.5
Rated insulation voltage	U_i	V AC	600	600
Protection type			IP20	IP20
Weight		kg	0.265	0.3
Protection class			1	1
Configuration			Max. 2 LE in conjunction with PS 4-2xx-MM1, PS 4-341-MM1 or EM 4-204-DX1	Max. 2 LE in conjunction with PS 4-2xx-MM1, PS 4-341-MM1 or EM 4-204-DX1
Analog inputs				
Number			4	4
Input ranges			± 10 V	0 to 20 mA, 4 to 20 mA
Potential isolation			Yes, between inputs and bus, not between inputs and outputs	
Connection type of signal encoder			Two-wire connection to transducer	
Resolution		Bit	Possible setting; 12-bit (4096 units)/10-bit (1024 units)	12-bit (4096 units)
Permissible potential difference				
Between inputs and central earth point			See Rated insulation voltage	
Permissible input voltage		V	max. ± 15	
Error indication on overrange			Yes	Yes
Error indication on open-circuit detection			No	Yes, at 4 to 20 mA
Total error		%	Typically 0.8 % of full scale	Normally 0.4 % of full-scale (0 to 55 °C)
Cable length screened		m	< 50 for cable cross-section ≧ 0.14 mm^2	
Input impedance			40 per input	0.05 per input
Analog outputs				
Number			2	2
Output range			± 10 V	0 to 20 mA, 4 to 20 mA
Potential isolation			Yes, between outputs and bus, not between inputs and outputs	
Load impedance per output		Ω	2000	500
Connection type			Two-wire connection	
Resolution		Bit	Possible setting; 12-bit (4096 units)/10-bit (1024 units)	12-bit (4096 units)
Short-circuit proof			Yes	
Short-circuit current		mA	32	
Permissible potential difference between earthing point and between outputs			See Rated insulation voltage	600 V AC
Total error		%	Typically 0.8 % of full scale	Normally 0.4 % of full-scale (0 to 55 °C)
Cable length screened		m	< 50 for cable cross-section ≧ 0.14 mm^2	

Counter LE4			LE4-622-CX1
General			
Standards			IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0…55
Ambient temperature, storage		°C	–25…70
Vibration resistance		g	Constant 1 g/*f*= 10 to 150 Hz
Mechanical shock resistance, shock duration 11 ms		g	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143
Terminals			Plug-in screw terminals
Terminal capacities			
Solid		mm^2	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 1.5
Rated insulation voltage	U_i	V AC	600
Protection type			IP20
Weight		kg	0.27
Protection class			1
Configuration			Max. 2 LEs in conjunction with PS 4-201-MM1 or PS 4-341-MM1
Counter signals			
Phase shift deviation (mode 1+2; 5 V and 24 V incremental encoder)		%	max. ±50
Minimum pulse width		µs	16 (Mode 3; 24 V incremental encoder)
Counting inputs 5 V			
Level			To RS 422
Differential input voltage		V	U_{max}= 5.25 U_{min} = 2
Input current		mA	I_{max} = 20 at U < 5.25 V I_{min} = 2.5 at U > 2 V
Max. counter frequency		kHz	<300
Pulse quadrature			Yes
90° offset signals			Yes
Antivalent signals			Yes
Counter range		Bit	24
Potential isolation			Yes
Counter inputs 24 V			
Input voltage			U_{max} = 30 V, U_{min} = 18 V
Input current			I_{min} = 2.5 mA at U = 18 V
Max. counter frequency		Hz	30000
Pulse quadrature			Yes (for incremental encoder)
90° offset signals			Yes (for incremental encoder)
Counter range		Bit	24
Potential isolation			Yes
Notes			For 5 V and 24 V encoders, always use screened cables. Observe the notes from the encoder manufacturers.

Counter LE4			LE4-633-CX1
General			
Standards			IEC/EN 61131-2 EN 50178
Ambient temperature		°C	0…55
Ambient temperature, storage		°C	–25…70
Vibration resistance		g	Constant 1 g/*f*= 10 to 150 Hz
Mechanical shock resistance, shock duration 11 ms		g	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143
Protection type			IP20
Humidity class			RH 1
Rated insulation voltage	U_i	V AC	600
Weight		kg	0.27
Terminals			Plug-in screw terminals
Terminal capacities			
Solid		mm²	0.22 – 2.5
Flexible with ferrule		mm²	0.22 – 1.5
Transducer power supply			Separate through ZB 4-122-KL1 twin-level terminal block
Data cable to encoder			According to encoder manufacturer specifications (normally: screened cable)
Number of SSI interfaces			3
Data code			Gray or binary (suitable conversion required in PS 4)
Data format			Multi-turn 25-bit (single-turn 13-bit or multi-turn 21-bit must be evaluated accordingly)
Potential isolation			
Between LE bus and SSI interfaces			Yes
Between SSI interfaces			No
Clock output for SSI interface			RS 422 isolated, T+, T–
SSI interface data input			RS 422 isolated, D+, D-
Detection of wire break			Yes (RS422, only data input D+, D-)
Data transfer rate		kHz	125 or 250 for all 3 SSI interfaces
Max. cable length to absolute encoder			Depends on the transfer rate of the absolute encoder and is specified by the manufacturer in the technical data of the encoder. With the following limit: baud rate/cable length: 250 kHz/<150 m 125 kHz/< 350 m
Current consumption		mA	Max. 180 mA Normally 150 mA

Network modules			Suconet K LE4-501-BS1
General			
Standards			IEC/EN 61131-2 EN 50 178
Ambient temperature		°C	0…55
Ambient temperature, storage		°C	–25…70
Vibration resistance		g	Constant 1 g/f= 10 to 150 Hz
Mechanical shock resistance, shock duration 11 ms		g	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143
Terminals			Plug-in screw terminals
Terminal capacities			
Solid		mm^2	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 1.5
Protection type			IP20
Weight		kg	0.25
Protection class			1
Operating data			
Configuration			Max. 2 LE in conjunction with PS4-2xx-MM1, PS4-341-MM1
Function			Suconet K interface master/slave
Bus protocol			Suconet K1/K
Interface			RS485
Potential isolation			Yes, for internal supply voltage
Bus terminating resistors			Can be switched on/off
Bus diagnostics			LED
Master mode			
Stations		Number	8
Send and receive data			128 max.
Mode slave			
Addresses			2 to 31 can be set with software
Send and receive data			78 max.
Mode slave			

Network modules			PROFIBUS DP LE4-504-BS1	PROFIBUS DP LE4-504-BT1
General				
Standards			IEC/EN 61131-2 EN 50 178	IEC/EN 61131-2 EN 50 178
Ambient temperature		°C	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70
Vibration resistance		g	Constant 1 g/*f*= 10 to 150 Hz	Constant 1 g/*f*= 10 to 150 Hz
Mechanical shock resistance, shock duration 11 ms		g	> 15	> 15
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143
Terminals			9-pin SUB-D bus connector	9-pin SUB-D bus connector
Terminal capacities				
Solid		mm^2	0.22 – 2.5	0.22 – 2.5
Flexible with ferrule		mm^2	0.22 – 1.5	0.22 – 1.5
Rated insulation voltage	U_i	V DC	850	850
Protection type			IP20	IP20
Weight		kg	0.3	0.3
Protection class			1	1
Power supply				
Current consumption		mA	Max. 800 (internal LE bus/5 V DC)	Max. 500 (internal LE bus/5 V DC)
Heat dissipation		W	4	2.5
Operating data				
Configuration			1 LE in conjunction with PS4-341-MM1	Max. 1 LE in conjunction with PS4-201-MM1, PS4-271-MM1, PS4-341-MM1
Function			PROFIBUS-DP interface, master (Class 1)	PROFIBUS-DP interface, slave
Bus protocol			PROFIBUS-DP, EN 50 170 Vol 2	PROFIBUS-DP, EN 50 170 Vol 2
Interface			RS485	RS485
Potential isolation			Yes, for internal supply voltage	Yes, for internal supply voltage
Bus terminating resistors			Can be switched on/off	Can be switched on/off
Bus diagnostics			LED and software	LED
Master mode				
Stations		Number	124 (30 without repeater)	
Send and receive data			3.5 kBytes each for I and Q	
Mode slave				
Addresses				0 to 125, adjustable through software
Send and receive data				244I/244Q, 400 total max.
Bus addresses				0 to 126
Data transfer rate		MBits/s	12	12
Max. bus length		m	1200 (depending on data transfer rate)	1200 (depending on data transfer rate)
Cable			PROFIBUS-DP twisted-pair cable ZB4-900-KB1	PROFIBUS-DP twisted-pair cable ZB4-900-KB1

Verification of the rated switching and disconnecting capability
Conditions for switch-on and switch-off according to utilization categories

Current type	Utilization category	Normale utilization category					
		Switch on			Switch off		
Alternating current	AC-11	II_e	U/U_e	cos φ	I_c/I_e	U_r/U_e	cos φ
		10	1	0.7[1]	1	1	0.4[1]
Direct current	DC -11	II_e	U/U_e	$t_{0,95}$	II_e	U_r/U_e	$t_{0,95}$
		1	1	$6 \times P$[2]	1	1	$6 \times P$[2]

[1] The power factors that are quoted (cos φ) are conventional values, and apply to circuits that simulate the electrical characteristics of inductive circuits. For circuits with a p.f. (cos v) = 0.4 (normal conditions of usage), parallel resistors are applied (see Figs. 1 and 2), to simulate the damping effect of the eddy-current losses of the actual electromagnets.

[2] The value "$6 \times P$" is derived from an empirical relationship that corresponds to most DC magnet loads up to the upper limit of $P = 50$ W, whereby 6 [ms]/[W] = 300 [ms]. This requires that no individual loads occur that have a rated power greater than 50 W, and that, for higher power ratings, the load is composed of several smaller loads connected in parallel. For this reason, 300 ms represents an upper limit.

I	Inrush current
I_c	Switch-off current
I_e	Rated operating current
U	Voltage before switch-on
U_e	Rated circuit operation
U_r	Repeated voltage
$t_{0,95}$	Time (in milliseconds) taken to reach 95 % of the stationary current value
$P = U_e \times I_e$	Rated power, in watts

General information on electromagnetic compatibility (EMC) of automation systems				
Emitted interference	EN 55011/22 Class A (VDE 0875, Part 11)			
Noise immunity				
ESD	IEC/EN 60947-4-2	contact discharge air discharge		4 kV 8 kV
RFI	IEC/EN 61000-4-3	AM (80 %)	80 – 1000 MHz	10 V/m
Mobile phone	IEC/EN 61000-4-3	PM	800 – 960 MHz	10 V/m
Burst	IEC/EN 60947-4-4	Mains/Digital I/O (direct) Analog I/O, Field bus (capacitive coupling)		2 kV 1 kV
Surge	IEC/EN 61000-4-5	Digital I/O, asymmetrical Analog I/O, unsymmetrical, coupling on the screen Supply DC, asymmetrical Supply DC, symmetrical Supply AC, asymmetrical Supply AC, symmetrical		0.5 kV 1 kV 1 kV 0.5 kV 2 kV 1 kV
Cable dependant interference, induced by high frequency fields	IEC/EN 61000-4-6; 2003	AM (80 %)	150 kHz – 80 MHz	3 V

CPU card		PS416-CPU-200	PS416-CPU-300	PS416-CPU-400
General				
Standards		EN 61131-2, EN 50178	EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature	°C	0…55	0…55	0…55
Ambient temperature, storage	°C	–25…70	–25…70	–25…70
Weight	kg	0.38	0.38	0.38
Space requirement		8 space units = 2 slots	8 space units = 2 slots	8 space units = 2 slots
Electromagnetic compatibility (EMC)		→ Page 4/143	→ Page 4/143	→ Page 4/143
Current consumption	A	1.5	1.5	1.5
Supply voltage	V DC	5	5	5
Heat dissipation	W	7.5	7.5	7.5
Memory				
Free main memory	kByte	256	512	1000
For operating system		permanently reserved	permanently reserved	permanently reserved
Flash memory card -EEPROM	MByte	0.512/1/2/4	0.512/1/2/4	0.512/1/2/4
Memory card SRAM	MByte	0.512/1/2/4	0.512/1/2/4	0.512/1/2/4
Backup time		At least 1 year	At least 0.5 year	At least 0.5 year
PRG interface (RS 232C/RS 485)				
Data transfer rate	kbit/s	max. 2.4 max. 4.8 max. 9.6 max. 19.2 max. 38.4 max. 57.6	max. 2.4 max. 4.8 max. 9.6 max. 19.2 max. 38.4 max. 57.6	max. 2.4 max. 4.8 max. 9.6 max. 19.2 max. 38.4 max. 57.6
Cable length RS 485	m	600	600	600
Cable length RS 232C	m	10	10	10
Station RS 485	Number	30	30	30
Station RS 232C	Number	≦ 1	≦ 1	≦ 1
Connection technique		SUB-D 9-pole, socket	SUB-D 9-pole, socket	SUB-D 9-pole, socket
SBI interface RS 485				
Connection technique			SUB-D 9-pole, socket	SUB-D 9-pole, socket
Suconet K mode				
Data transfer rate	kbit/s	–	187.5 375	187.5 375
Cable length with 187.5 kBit/s	m	–	600	600
Cable length at 375 Kbit/s	m	–	300	300
Stations	Number	–	30	30
Connection technique			SUB-D 9-pole, socket	SUB-D 9-pole, socket
Transparent mode				
Data transfer rate	kbit/s	–	0.3 0.6 1.2 2.4 4.8 9.6 19.2	0.3 0.6 1.2 2.4 4.8 9.6 19.2
Cable lengths	m	–	1200	1200
Stations	Number	–	1	1

Racks		PS416-BGT-400	PS416-BGT-410	PS416-BGT-420	PS416-BGT-421
General					
Weight	kg	1.7	2.3	3.05	3.05
Current consumption (of rack)	A	0.5	0.5	0.5	0.5
Heat dissipation	W	2.5	2.5	2.5	2.5

Power supply card			PS416-POW-400	PS416-POW-410	PS416-POW-420
General					
Standards			EN 61131-2, EN 50178	EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature		°C	0…55	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70	–25…70
Weight		kg	0.74	0.74	0.74
Space requirement			8 space units = 2 slots	8 space units = 2 slots	8 space units = 2 slots
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143	→ Page 4/143
Protection class			1	1	1
Humidity class			RH 1	RH 1	RH 1
Idle proof			Yes	Yes	Yes
Test voltage		kV	2.5	0.85	2.5
Mains overvoltage protection			Yes	Yes	Yes
Rated voltage	U_e	V	230 V AC	24 V DC	115 V AC
Rated frequency		Hz	47440		47440
Rated current	I_e	A	Max. 0.5	3	1
Inrush current		A	up to 50 (2 ms)	up to 45 (2 ms)	up to 50 (2 ms)
Output current		A	1.5 – 8	1.5 – 10	1.5 – 8
Efficiency		%	75	75	75
Active power factor			0.8	1	0.8
Switching frequency		kHz	66	70	66
Mains failure bridging		ms	10	10	10
Repetition rate		s	1	1	1
Vibration resistance 10 – 150 Hz		g	1	1	1
Mechanical shock resistance, shock duration 11 ms		g	> 15	> 15	> 15
Insulation test	U_i	V AC	1800		

Digital input card				PS416-INP-400	PS416-INP-401
General					
Standards				EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature			°C	0…55	0…55
Ambient temperature, storage			°C	–25…70	–25…70
Weight			kg	0.15	0.15
Space requirement				4 space units = 1 slot	4 space units = 1 slot
Electromagnetic compatibility (EMC)				→ Page 4/143	→ Page 4/143
Humidity class				RH 1	RH 1
Digital inputs, 24 V DC			Number	16	16
Potential isolation between inputs and 5 V logic bus				Yes	Yes
Connection technique				Plug-in screw terminal	Plug-in screw terminal
Terminal capacity			mm^2	1.5	1.5
Indicating elements				LED	LED
Current consumption 5 V bus			mA	Normally 30	Normally 30
Power loss					
Internal 5 V bus			W	0.15	0.15
External 16 × input			W	5.8	5.8
Rated voltage		U_e	V DC	24	24
Rated current		I_e	mA	8.6 ± 0.5	8.6 ± 0.5
Input impedance			kΩ	2.8	2.8
Voltage range at U_e					
"0" signal			V	-3 – 5	-3 – 5
"1" signal			V	15 – 30.2	15 – 30.2
Current range at I_e					
"0" signal			mA	0 – 0.6	0 – 0.6
"1" signal			mA	2.5 – 12	2.5 – 12
Make/break delay				Normally 3.0/3.0 (ms)	Normally 0.2/0.3 (ms)
Utilization factor		g	%	1	1
Duty factor			% DF	100	100

Digital output card			PS416-OUT-400	PS416-OUT-410
General				
Standards			EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature		°C	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70
Weight		kg	0.15	0.15
Space requirement			4 space units = 1 slot	4 space units = 1 slot
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143
Humidity class			RH 1	RH 1
Card power supply		V DC	5 internal through bus	5 internal through bus
External output voltage supply		V DC	24	24
Tolerance			+20 %/-15 %	+20 %/-15 %
Residual ripple		%	≦ 5	≦ 5
Protection against polarity reversal			Yes	Yes
Current consumption				
Logic 5 V bus		mA	Normally 150	Normally 85
External 24 V (no-load)		mA	Normally 230	Normally 70
Power loss				
Logic 5 V bus		W	Approx. 0.74	Approx. 0.425
External 24 V		W	Approx. 5.6	Approx. 4.5
Outputs				
Number			16	8
Rated current				
per output at U_e = 24 V	I_e	A	0.5	2
Isolation between output and 5 V logic bus			Yes	Yes
Terminals			Plug-in screw terminal	Plug-in screw terminal
Terminal capacity		mm^2	1.5	1.5
Indication elements			LED	LED
Short-circuit trip				With manual reset
Short-circuit trip, control mode 1			With manual reset	
Short-circuit trip, control mode 2			With automatic reset	
Parallel connection of outputs per card (per group)			Max. 4	No
Indication of monitoring activity				
LED			Yes	Yes
ZAA			Low active	Low active
Residual current on "Off" signal		µA	300	400
Signal range at U_e				
"Off" signal		V	2.5	2
"On" signal			= rated voltage	= rated voltage
Rated current				
per output at U_e = 24 V	I_e	A	0.5	2
per output at U_{max}	I_e	A	0.6	2.4
Delay time				
On 0 V → 24 V		µs	60	60
Off 24 V → 0 V		µs	100	700
Utilization factor	g	%	1	1
Duty factor		% DF	100	100
Monitoring				
Short-circuit			Yes	Yes, with manual reset
Thermal			Yes	
Overload			Yes	
Operating frequency at inductive load			To DC-13	To DC-13

Analog input/output card		PS416-AIN-400	PS416-AIO-400
General			
Standards		EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature	°C	0…55	0…55
Ambient temperature, storage	°C	–25…70	–25…70
Weight	kg	0.2	0.2
Space requirement		4 space units = 1 slot	4 space units = 1 slot
Electromagnetic compatibility (EMC)		→ Page 4/143	→ Page 4/143
Protection class		1	1
Protection type		IP20	IP20
Cards per BGT	Number	Max. 8/11 (limited by power supply unit)	Max. 6/8 (limited by power supply unit)
Power supply for PS416 bus	V DC	5/max. 700 mA	5/max. 1 A
External power supply		Not applicable	Not applicable
Analog I/O to PS416 bus	V AC	600	600
Inputs/outputs			
Potential isolation		to PS416 internal bus	to PS416 internal bus
Input channels	Qty.	8	4
Output channels	Qty.	–	4
Input voltage range			
Channel 0 – 3	V	± 5 0 – 5 ± 10 0 – 10	
Channel 4 – 7	V	0 … 1	
Input/output voltage range	V		± 5 0 – 5 ± 10 0 – 10
Voltage range setting			
Channel 0 – 3		Via software from PLC	
Channel 4 – 7		Fixed 0 – 1 V	
All channels			Via software from PLC
Input range current	mA	0 … 20 4 … 20	
Input/output current ranges:	mA		0 … 20 4 … 20
Current range setting		Via software from PLC	Via software from PLC
Current/voltage selection per channel		Via selector switch	Via selector switch, wiring
Input channel measuring principle		Successive approximation	Successive approximation
Resolution			
±10 V, 0 – 10 V	Bit	12	12
± 5 V, 0 – 5 V	Bit	12	11 (outputs) 12 (inputs)
0 … 1 V	Bit	12	–
0 … 20 mA	Bit	12	12
4 … 20 mA	Bit	11	11
Outputs short-circuit/overload proof			Yes
Accuracy			
Differential non-linearity 0 – 55 °C	LSB	< 1 (all ranges)	< 1 (all ranges)
Total error, voltage and current outputs (0 – 55 °C)	%	Normally 0.4	Normally 0.4
Deviation due to EMC interference	%	Max. 10 (interference class 3)	Max. 10 (interference class 3)
Conversion time			
Inputs (8/12-bit)	ms	1.6 – 14	1.6 – 7.6
Outputs (12-bit)	ms	–	1.6 – 2.8
Load on voltage outputs	kΩ	–	2
Load on current outputs	Ω	–	≧ 560
Input impedance, voltage inputs		> 100 kΩ, 56 pF	> 100 kΩ, 56 pF
Input impedance, current inputs	Ω	50	50
Data output		With image register	With image register
Scan time/averaging		Adjustable through S 40 Topology Configurator	Adjustable through S 40 Topology Configurator

Notes All error specifications are in relation to the respective range.

Digital counter card			PS416-CNT-200
General			
Standards			EN 61131-2, EN 50178
Ambient temperature		°C	0…55
Ambient temperature, storage		°C	–25…70
Weight		kg	0.35
Space requirement			8 space units = 2 slots
Electromagnetic compatibility (EMC)			→ Page 4/143
Card power supply		V DC	5 internal through bus
Power consumption (bus end)		mA	Normally 350 (24 V DC external)
Power consumption (external)		mA	250
Voltage range		V DC	18 – 30
Residual ripple	U_{ss}	V	1.3
Heat dissipation with full complement of modules fitted		W	8
Short-circuit protection			1.6 A slow-blow/250 V
Inputs			
Transducer power supply		V DC	24/5 ± 1 % through card
Current consumption of encoders			
At 24 V DC		mA	250
At 5 V DC		mA	100
Counters per card		Number	≦ depending on the modules fitted
Counter frequency		kHz	0 – 50
Potential isolation			Yes, between input modules and PS416 bus
Rated insulation voltage			
Power supply to rack		V AC	1500
Counter inputs to PS416 bus		V AC	600
Cable connection			
Max. permissible cable length, single-core from encoder to the module input		m	< 10 m on external interference (screened) > 10 m for the following installation conditions (see note):

Notes Cables made up from twisted pairs, common shielding, max. cross-section for connection 0.5 mm².
The max. possible cable length is determined by the signal levels that are required. The spacing between signal cables and power cables must be as large as feasible. The requirements and specifications of the manufacturers of the signal devices must be observed.

		Reverse counter modules		Up/down counter module	
		CM61.1	CM61.2	CM62.1	CM62.2
Modules					
Inputs pulse form to DIN 19240		Square, triangular, sinusoidal		Square, triangular, sinusoidal Two pulse sequences, offset by 90°	
Max. input voltage	V DC	30	5	30	5
Min. input voltage	V DC	3	1	3	1
Input current normally	mA	1.6	0.33	1.6	0.33
1 signal detection	V	15	2	15	2
0 signal detection	V	5	1	5	1
Space requirement per module		1 socket on the card		2 sockets on the card	

PROFIBUS FMS card		PS416-NET-230
General		
Standards		EN 61131-2, EN 50178
Ambient temperature	°C	0…55
Ambient temperature, storage	°C	–25…70
Weight	kg	0.31
Space requirement		8 space units = 2 slots
Electromagnetic compatibility (EMC)		→ Page 4/143
Card power supply	V DC	5, internal through bus
Current consumption	A	Max. 1.4; normally 1.0
Heat dissipation	W	5
Interfaces		
Number		1 (RS485)
Communication links	Number	40
Data transfer rate	kbit/s	max. 9.6 max. 19.2 max. 93.75 max. 187.5 max. 500
Data transfer rate for modem operation	kBit/s	1.2 2.4 4.8
Distance (dependent on baud rate)		
Without repeater	m	200 – 1200
With double core cross-section	m	400 – 2400
Programming		
PROFIBUS function modules		Any number

Suconet K card		PS416-NET-400
General		
Standards		EN 61131-2, EN 50178
Ambient temperature	°C	0…55
Ambient temperature, storage	°C	–25…70
Weight	kg	0.16
Space requirement		4 space units = 1 slot
Electromagnetic compatibility (EMC)		→ Page 4/143
Card power supply	V DC	5, internal through bus
Current consumption	A	1
Heat dissipation	W	5
Interfaces		
Number		1 (RS485)
Data transfer rate/distance		187.5 Kbit/s, max. 600 m 375 Kbit/s, max. 300 m
Stations	Number	max. 30
Data lengths		
Send	Byte	120
Receive	Byte	120

PROFIBUS-DP card			PS416-NET-440	PS416-NET-441
General				
Standards			EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178
Ambient temperature		°C	0…55	0…55
Ambient temperature, storage		°C	–25…70	–25…70
Weight		kg	0.21	0.13
Space requirement			8 space units = 2 slots	4 space units = 1 slot
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143
Vibration resistance		g	constant, 1g/f = 10 to 150 Hz	constant, 1g/f = 10 to 150 Hz
Mechanical shock resistance, shock duration 11 ms		g	> 15	> 15
Rated insulation voltage	U_i	V DC	850	850
Protection type			IP20	IP20
Supply voltage		V DC	5/backplate bus	5/back plate bus
Current consumption		A	0.8	0.5
Heat dissipation		W	4.5	2.5
PROFIBUS-DP interface (RS 485) to EN 50170				
Data transfer rate		kbit/s	9.6/19.2/93.75/187.5/500	9.6/19.2/93.75/187.5/500
Cable length		m	1200/1200/1200/1000/400	1200/1200/1200/1000/400
Data transfer rate		MBit/s	1.5/3/6/12	1.5/3/6/12
Cable length		m	200/100/100/100	200/100/100/100
Station type			PROFIBUS-DP master	PROFIBUS-DP slave
Potential isolation			Yes	Yes
Status indication			LED	
Operating data				
Bus protocol			PROFIBUS-DP, master (EN 50170)	PROFIBUS-DP, slave (EN 50170 Vol 2)
Interface			RS485	RS485
Bus diagnostics			LED	LED
Mode slave				
Addresses				1 to 125, adjustable through software
Send and receive data				244I/244Q, 400 total max.
Max. bus length		m	1200 m (depending on data transfer rate)	1200 m (depending on data transfer rate)
Cable			PROFIBUS-DP twisted-pair cable ZB4-900-KB1	PROFIBUS-DP twisted-pair cable ZB4-900-KB1

		Serial communication card PS416-COM-200	MODBUS/JBUS communication card PS416-MOD-200
General			
Standards		EN 61131-2, EN 50178	EN 61131-2, EN 50178
Ambient temperature	°C	0…55	0…55
Ambient temperature, storage	°C	–25…70	–25…70
Weight	kg	0.18	0.18
Space requirement		4 space units = 1 slot	4 space units = 1 slot
Electromagnetic compatibility (EMC)		→ Page 4/143	→ Page 4/143
Card power supply	V DC	5, internal through bus	5, internal through bus
Current consumption with fitted modules	mA	930	930
Heat dissipation	W	4.7	4.7
Interface modules			
Number		1 can be plugged in per module: IFM 232.1, IFM 232.2, IFM TTY.1, IFM 485.1, IFM 422.1	1 can be plugged in per module: IFM 232.1, IFM 422.1
Memory requirement for the interface parameters	kByte	0.4	0.4
Memory modules			
Number		1 can be connected per card	1 can be connected per card
Memory medium		EEPROM, 32 Kbytes	EEPROM, 32 Kbytes
Memory life	years	10	10
Number of write operations	cycles	10000	10000

			PS416-TCS-200
General			
Ambient temperature		°C	0…55
Ambient temperature, storage		°C	–25…70
Weight		kg	0.18
Electromagnetic compatibility (EMC)			→ Page 4/143
Protection type			IP20
Supply voltage		V DC	5, internally via bus
Current consumption		A	0.83
Heat dissipation		W	4.2
Operating data			
Quantity of modules			max. 8 modules in the base module carrier
Data transfer protocols			FT 1.2, FT 3 asynchronous (IEC/EN 60870-5)
Max. no of user data bytes in the telecontrol frame		Byte	220
Interfaces			
RS232C			1, with 9-pole SUB-D plug for modem connection
Cable recommendation			
RS 232 C			shielded modem cable ZB4-254-KB1, max. cable length 2 m
Data transfer rate		kbit/s	0.3, 0.6, 1.2, 2.4, 4.8, 9.6, 19.2
Handshake lines			RTS, CTS, DTR, DSR, DCD
Potential isolation			Yes

			Text operator panel			
			MI4-110-KC1	MI4-117-KC1	MI4-110-KD1	MI4-117-KD1
General						
Standards			IEC/EN 61131-2, EN 50178			
Ambient temperature						
Operation		°C	0…50	0…50	0…50	0…50
Storage		°C	-20…70	-20…70	-20…70	-20…70
Electromagnetic compatibility (EMC)			→ Page 4/143	→ Page 4/143	→ Page 4/143	→ Page 4/143
Protection type			IP65, front	IP65, front	IP65, front	IP65, front
Vibration resistance		g	Constant 1 g/*f* = 0 to 150 Hz			
Mechanical shock resistance, shock duration 11 ms		g	> 15	> 15	> 15	> 15
Keypad/touch screen reliability		Ops.	>3000000	>3000000	>3000000	>3000000
Terminal capacities		mm^2	2 × 1.5	2 × 1.5	2 × 1.5	2 × 1.5
Connection type			Plug-in screw terminal			
Weights		kg	1	1	1	1
Power supply						
Rated voltage	U_e	V DC	24	24	24	24
Admissible range		V DC	18…30	18…30	18…30	18…30
Rated current	I_e	mA	250	250	250	250
Fuse		W	Electronic	Electronic	Electronic	Electronic
Display						
Back-lighting			LED	LED	LED	LED
Type			Monochrome	Monochrome	Monochrome	Monochrome
Screen diagonal		Inch	–	–	–	–
Lines × characters			4 × 20	4 × 20	4 × 20	4 × 20
Resolution		Pixel	120 × 32	120 × 32	120 × 32	120 × 32
Display area		mm	70 × 21	70 × 21	70 × 21	70 × 21
User-definable characters			256	256	256	256
Memory						
Project flash memory		KByte	512	512	512	512
Recipe memory		KByte			16	16
Project memory expansion		KByte				
Interfaces						
PLC port (RS 232C/RS 485)			SUCOM-A, Programming	SUCOM-A, Programming	SUCOM-A, Programming	SUCOM-A, Programming
PC/printer port (RS 232C)						
AUX port (fieldbus interface)			Yes, a slot is available for modules. The modules for fieldbus connection must be ordered separately.	No, CAN interface is integrated	Yes, a slot is available for modules. The modules for fieldbus connection must be ordered separately.	No, CAN interface is integrated

	Touch operator panel			
MI4-110-KG1	MI4-110-KG2	MI4-130-TA1	MI4-137-TA1
IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178	IEC/EN 61131-2, EN 50178
0…50	0…50	0…50	0…50
-20…70	-20…70	-20…70	-20…70
→ Page 4/143	→ Page 4/143	→ Page 4/143	→ Page 4/143
IP65, front	IP65, front	IP65, front	IP65, front
Constant 1 g/*f* = 0 to 150 Hz			
> 15	> 15	> 15	> 15
>3000000	>3000000	>3000000	>3000000
2 × 1.5	2 × 1.5	2 × 1.5	2 × 1.5
Plug-in screw terminal	Plug-in screw terminal	Plug-in screw terminal	Plug-in screw terminal
1.1	1.1	1	1
24	24	24	24
18…30	18…30	18…30	18…30
300	300	400	400
Electronic	Electronic	Electronic	Electronic
LED	LED	LED	LED
Monochrome	Monochrome	Monochrome	Monochrome
–	–	3.8	3.8
4 × 20	4 × 20	16 × 40	16 × 40
120 × 32	120 × 32	320 × 240	320 × 240
70 × 21	70 × 21	77 × 58	77 × 58
256	256	256	256
512	512	512	512
16		32	32
512	512		
SUCOM-A	SUCOM-A, Programming	SUCOM-A, Programming	SUCOM-A, Programming
Programming Printer connection			
Yes, a slot is available for modules. The modules for fieldbus connection must be ordered separately.	Yes, a slot is available for modules. The modules for fieldbus connection must be ordered separately.	Yes, a slot is available for modules. The modules for fieldbus connection must be ordered separately.	No, CAN interface is integrated

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		SN3-050-BU8	SN3-100-BV8	SN3-200-BV8	SN3-050-EU8	SN3-100-EU8	SN3-200-EU8
General							
Standards		EN 61204, 73/23/EWG, 89/336/EWG, EN 50178, EN 60950, UL 60950, UL 508, SELV (EN 60950)					
Degree of protection							
Enclosures		IP20	IP20	IP20	IP20	IP20	IP20
Terminals		IP20	IP20	IP20	IP20	IP20	IP20
Protection class		according to EN 61140, Class 1					
Mounting		DIN rail (IEC/EN 60715), snap fixing					
Mounting position		horizontal	horizontal	horizontal	horizontal	horizontal	horizontal
Heat dissipation	W	typically ≦ 15	typically ≦ 29	typically ≦ 58	typically ≦ 15	typically ≦ 29	typically ≦ 58
Efficiency	%	88	88	88	88	88	88
Dimensions							
Width	mm	57	90	200	57	90	200
Height	mm	130	130	130	130	130	130
Depth	mm	130	130	130	130	130	130
Weight	kg	0.96	1.07	2.83	0.96	1.07	2.83
Minimum distance to adjacent devices	mm	horizontal 10, vertical 80					
Terminal capacities		Only operate plug-in terminals off load.					
Input circuit							
Flexible with ferrule	mm^2	0.2…2.5 (22…14 AWG)		2.5…10 (14…8 AWG)	0.2…2.5 (22…14 AWG)		2.5…10 (14…8 AWG)
Flexible without ferrule	mm^2	0.2…2.5 (22…14 AWG)		0.5…10 (20…8 AWG)	0.2…2.5 (22…14 AWG)		0.5…10 (20…8 AWG)
Massive	mm^2	0.2…2.5 (22…14 AWG)		0.5…16 (22…6 AWG)	0.2…2.5 (22…14 AWG)		0.5…16 (22…6 AWG)
Output circuit							
Flexible with ferrule	mm^2	0.12…2.5 (26…14 AWG)		2.5…10 (14…8 AWG)	0.12…2.5 (26…14 AWG)		2.5…10 (14…8 AWG)
Flexible without ferrule	mm^2	0.12…2.5 (26…14 AWG)		0.5…10 (20…8 AWG)	0.12…2.5 (26…14 AWG)		0.5…10 (20…8 AWG)
Massive	mm^2	0.12…2.5 (26…14 AWG)		0.5…16 (22…6 AWG)	0.12…2.5 (26…14 AWG)		0.5…16 (22…6 AWG)
Environmental compatibility							
Ambient temperature, operation	°C	–25…+70	–25…+70	–25…+70	–25…+70	–25…+70	–25…+70
Ambient temperature, full load	°C	0…+60 (without derating)					
Ambient temperature, storage	°C	–40…+85	–40…+85	–40…+85	–40…+85	–40…+85	–40…+85
Climatic proofing		to IEC 60068-2-3, 93% at +40 °C, no condensation					
Pollution degree		according to EN 50178; 2					
Climatic class (IEC)		according EN 60721; 3K3					
Vibrations (IEC/EN 60068-2-6)		1…57 Hz, amplitude ±0.075 mm; 57…100 Hz, 5 g					
Mechanical shock resistance (IEC 60068-2-27)		30 g all directions					
Insulation voltage							
Inputs/outputs		3 kV AC (type test), 1.2 kV AC (routine test)					
Input		1.5 kV AC (type test), 1.2 kV AC (routine test)					
Output		350 V AC (routine test)					
Electromagnetic compatibility (EMC)							
Interference immunity		EN 61000-6-2					
ESD		according to EN 61000-4-2, level 4-8KV/15KV					
RFI		according to EN 61000-4-3, level 3-10 V/m					
Burst		according to EN 61000-4-4, level 4-4 KV					
Surge		according to EN 61000-4-5, level 4-2KV symmetrical, Level 3-3KV asymmetrical					
Cable-born HF		according to EN 61000-4-6, level 3-10 V					
Emitted interference		EN 61000-6-3					
Electromagnetic fields		according to EN 55022, Class B					
Cable-born HF		according to EN 55022, Class B					

		SN3-050-BU8	SN3-100-BV8	SN3-200-BV8	SN3-050-EU8	SN3-100-EU8	SN3-200-EU8
Input circuit							
Rated input voltage	V	110…240 AC			110…240 AC	110…240 AC	110…240 AC
Switch position 110	V	–	110-120 AC	110-120 AC	–	–	–
Switch position 230	V	–	220-240 AC	220-240 AC	–	–	–
Input voltage range	V	85…264 AC	–	–	85…264 AC	85…264 AC	85…264 AC
Input voltage range	V	100…350 DC	–	–	100…350 DC	100…350 DC	100…350 DC
Switch position 110 V AC	V	–	85-132 AC	85-132 AC	–	–	–
Switch position 230 V AC	V	–	184-264 AC	184-264 AC	–	–	–
Switch position 230 V DC	V	–	220-350 DC	220-350 DC	–	–	–
Supply frequency							
Rated value	Hz	50/60	50/60	50/60	50/60	50/60	50/60
Range	Hz	47…63	47…63	47…63	47…63	47…63	47…63
Current consumption							
At 110 … 240 V AC	A	Approx. 2.2…1.2	Approx. –	Approx. –	Approx. 2.2…1.2	Approx. 3.5…1.6	Approx. 5.5…2.5
Switch position 110 V AC	A	Approx. –	Approx. 4.2…4.0	Approx. 9.0…8.0	Approx. –	Approx. –	Approx. –
Switch position 230 V AC	A	Approx. –	Approx. 2.4…2.2	Approx. 4.4…4.0	Approx. –	Approx. –	Approx. –
Power consumption	W	Normally 135	Normally 269	Normally 538	Normally 135	Normally 269	Normally 538
Inrush current limiter/i^2t (cold start)		≦ 23 A / approx. 0.9 A^2s	≦ 40 A / approx. 1.8 A^2s	≦ 70 A / approx. 8 A^2s	≦ 23 A / approx. 0.9 A^2s	≦ 33 A / approx. 0.2 A^2s	≦ 40 A / approx. 1.9 A^2s
Mains failure bridging	ms	typically ≧ 100	typically ≧ 50	typically ≧ 50	typically ≧ 100	typically ≧ 40	typically ≧ 40
Run-up time after mains voltage applied	ms	Normally ≧ 100	Normally ≧ 10	Normally ≧ 20	Normally ≧ 100	Normally ≧ 5	Normally ≧ 370
Transient overvoltage protection		Varistors	Varistors	Varistors	Varistors	Varistors	Varistors
Internal input fuse (device protection, not accessible)		4 AT	6.3 AT	12 AF	4 AT	6.3 AT	12 AF
Discharge current to PE	mA	< 3.5 mA	< 3.5 mA	< 3.5 mA	< 3.5 mA	< 3.5 mA	< 3.5 mA
Output circuit							
L+, L+, L-, L-		Proof against short-circuit, no-load and overload					
Rated output voltage	V	24 DC	24 DC	24 DC	24 DC	24 DC	24 DC
Tolerance		-1…+5 %	-1…+5 %	-1…+5 %	-1…+5 %	-1…+5 %	-1…+5 %
Setting range for the output voltage		fixed 24 V DC	fixed 24 V DC	fixed 24 V DC	22…28 V DC; ex-works set to 24 V ±0.5%		
Rated output power	W	120	240	480	120	240	480
Rated output current T_u ≦ 60 °C	A	5	10	20	5	10	20
Peak output current (power reserves) Tu ≦ 40 °C	A	Normally ≦ 7.25	Normally ≦ 12.25	Normally ≦ 22.5	Normally ≦ 7.25	Normally ≦ 12.25	Normally ≦ 22.5
Derating 60 °C ≦ T_u ≦ 70 °C		2.5 % per Kelvin temperature increase					
Control deviation at							
Load change 10…90 %, static	Normally	±0.1 %	±0.1 %	±0.1 %	±0.05 %	±0.05 %	±0.05 %
Load change 10…90 %, dynamic	Normally	±3 %	±3 %	±3 %	±3 %	±3 %	±3 %
Controller acting time	ms	Normally 1	Normally 1	Normally 1	Normally 1	Normally 1	Normally 1
Input voltage deviation ±10 %		Normally ±0.05 %	Normally ±0.05 %	Normally ±0.05 %	Normally ±0.05 %	Normally ±0.05 %	Normally ±0.05 %
Rise time 10…90 %	ms	Normally ≦ 30	Normally ≦ 5	Normally ≦ 15	Normally ≦ 30	Normally ≦ 4	Normally ≦ 12
Residual ripple and switching peaks		20 MHz typically < 50 mV_{ss}					
Can be switched in parallel		yes, up to 5 devices for redundancy and for power increase, non symetrical current					
Series connection capability		yes, for voltage increase					
Resistance to reverse feed		yes, limited to approx. 35 V AC					
Power factor correction (PFC)		No			Yes		
Status indication		OUTPUT OK: LED green					
Overload characteristics		→ AWA2727-2317 (www.moeller.net/support)			→ AWA2727-2318 (www.moeller.net/support)		
Behaviour on short-circuit		continuously with current limitation					
Current limitation at short-circuit	A	Approx. 11	Approx. 19	Approx. 25	Approx. 11	Approx. 19	Approx. 25
Short-circuit protection		Proof against sustained short circuit					
Overload protection		thermal protection					
Capacitive load starting		Not restricted					

Notes [1] At U ≧ 264 V DC additionally suitable, use external fuse.

			SN3-000-MMEU8
General			
Standards			IEC 61204 73/23/EWG 89/336/EWG EN 50178, EN 60950, UL 60950, UL 508
Duty factor		%	100
Dimensions (W × H × D)		mm	56,25 × 54 × 24 (when mounted)
Weight		kg	0.065
Terminal capacities			
Flexible with ferrule		mm^2	0.2…2.5 (22…14 AWG)
Flexible without ferrule		mm^2	0.2…2.5 (22…14 AWG)
Massive		mm^2	0.2…4 (22…14 AWG)
Degree of protection			
Enclosures			IP20
Terminals			IP20
Protection class			2
Mounting			Plugged into power supply unit
Fixing			Snap fastener, tool-less
Vibrations (IEC/EN 60068-2-6)			1…57 Hz, amplitude ±0.075 mm, 57…100 Hz, 5 g
Mechanical shock resistance (IEC 60068-2-27)			5 g all directions
Environmental compatibility			
Ambient temperature			
Operation		°C	–25…+70
Storage		°C	–40…+85
Climatic proofing			93% at +40°C according to IEC 60068-2-3, no condensation
Climatic class (IEC)			3K3 according to EN 60721
Insulation voltage			
Rated insulation voltage	U_i	V AC	250 according to IEC 60974-1, EN 50178, VDE 0160
Power supply/measuring circuit/relay outputs			Safe isolation according to EN 50178, EN 60950
Rated impulse withstand voltage between all insulated circuits	U_{imp}	kV	4 according to IEC 664, VDE 0110
Test voltage between all circuits		kV	2.5 AC (routine test)
Overvoltage category/pollution degree			according to EN 60950, Class 2
Input circuit			
Rated input voltage		V	110…240 AC / 100…350 DC (supplied from the input circuit of the power supply)
Input voltage range		V	70…264 AC
Input voltage range		V	80…350 DC
Power consumption		VA	2.5
Power consumption		W	1.5
REMOTE-OFF input			
			potential-free
Switch off			R ≦ 1 kΩ
Switching on			R ≧ 10 kΩ
Input current		mA	typically 1 (200 mA for 200 µs)
Cable length		m	25
Measuring circuits			
INPUT			
Monitoring function			Undervoltage monitoring
Threshold values			85 V AC/90 V DC
Accuracy/tolerance		%	-5 % for AC and DC
Hysteresis with respect to the threshold value			typically -8 % for AC and -30 % for DC
Measuring cycle max.		ms	Normally ≦ 50
OUTPUT			
Monitoring function			Undervoltage monitoring
Threshold values			20 V DC
Accuracy/tolerance		%	1
Hysteresis with respect to the threshold value		%	Normally 5
Measuring cycle max.		ms	Normally ≦ 10

			SN3-000-MMEU8
Output circuit			
			11-12/14, 21-22/24
Contacts		Number	2 × 1 changeover contact (relay)
Operating principle			No current principle
Contact material			AgNi
Rated voltage		V	250 according to VDE 0110, IEC 60947-1
Minimum switching current		V	24
Maximum switching voltage		V	250
Minimum switching current		mA	10
Maximum switching current		A	1
Rated current			
AC-12 (resistive) 230 V			1 A
AC-15 (inductive) 230 V			1 A
DC-12 (resistive) 24 V			1 A
DC-13 (inductive) 24 V			1 A
Lifespan			
Mechanical			30 × 10^6 switching operations
Electrical			0.1 × 10^6 switching operations
Short-circuit rating			
N/C	A	gL	2
N/O	A	gL	2
Operating state display			
Input K			LED green when relay "Input OK" energised
Output OK			LED green when relay "Output OK" energised
Remote OFF			LED green when relay "Remote OFF" input R ≦ 1kΩ
Notes			Date at T_u = 25 °C, U_{IN} = 230 V AC and nominal values, when no others are given

			GD4 power supply units with transformer				
			GD4-050-BD3	GD4-100-BD3	GD4-150-BD3	GD4-200-BD3	GD4-300-BD3
General							
Protection class			1				
Potential isolation			Yes, VDE 0551, IEC/EN 60742, SELV				
Supply frequency							
Rated value		Hz	50/60				
Range		Hz	50…60				
Electromagnetic compatibility (EMC)							
Emitted interference			Class B (EN 55011, 22)				
ESD			6 kV contact (Level 3), 8 kV air (Level 3), IEC/EN 61000-4-2				
RFI			10 V/m, modulated, IEC/EN 61000 4-2				
Burst			2 kV (Level 3) IEC/EN 61000-4-4				
Surge			2 kV (Inst. Class 3), IEC/EN 61000-4-5				
Surge voltage			4.9 kV, IEC EN 60947				
Environmental compatibility							
Ambient temperature		°C	25…55				
Ambient temperature, storage		°C	-25…85				
Pollution degree			2, EN 50178				
Vibration			0.075 mm (10 – 57 Hz), 10 cycles, IEC 60068-2-6				
Shock resistance Shock duration 11 ms		g	15, IEC 60068-2-27 (3 shocks)				
Altitude		m	Up to 2000 m a.s.l.; observe drating at higher altitudes				
Protection type			IP20				
Fixing			Screw fixing				
Mounting position			As required				
Input voltage							
Rated value		V AC	400	400	400	400	400
Range		V AC	Pick-off ± 5 % 380, 400, 420				
Input currentnominal value per phase		A	0.24	0.46	0.65	0.9	1.8
No-load losses		W	5	14.2	13.9	25.5	38.2
Short-circuit losses		W	19.6	28.6	44.2	59	55.5
Output voltage							
Rated value		V DC	24	24	24	24	24
Tolerance							
Tolerance			See current/voltage characteristic	See current/voltage characteristic	See current/voltage characteristic	See current/voltage characteristic	See current/voltage characteristic
Residual ripple		%	≦ 3	≦ 3	≦ 3	≦ 3	≦ 3
Output current (nominal value)		A	5	10	15	20	30
Output current, range at 55 °C		A	0 – 5	0 – 10	0 – 15	0 – 20	0 – 30
Terminal capacities							
Solid		mm²	0.5 – 4	0.5 – 4	0.5 – 4	0.5 – 4	0.5 – 4
Flexible with ferrule		mm²	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5
Connections			Screw connection	Screw connection	Screw connection	Screw connection	Screw connection
Dimensions							
Width		mm	125	155	155	190	190
Height		mm	73	82	97	105	115
Depth		mm	140	170	170	225	240
Weight		kg		4,4	5,8	7,6	11,2

			GW4 power supply units with transformer			
			GW4-030-BA3	GW4-050-BA3	GW4-080-BA3	GW4-100-BA3
General						
Protection class			1			
Potential isolation			Yes, VDE 0551, IEC/EN 60742, SELV			
Supply frequency						
Rated value		Hz	50/60			
Range		Hz	–			
Electromagnetic compatibility (EMC)						
Emitted interference			Class B (EN 55011, 22)			
ESD			6 kV contact (Level 3), 8 kV air (Level 3), IEC/EN 61000-4-2			
RFI			10 V/m, modulated, IEC/EN 61000 4-2			
Burst			2 kV (Level 3) IEC/EN 61000-4-4			
Surge			2 kV (Inst. Class 3), IEC/EN 61000-4-5			
Surge voltage			4.9 kV, IEC EN 60947			
Environmental compatibility						
Ambient temperature		°C	25…55			
Ambient temperature, storage		°C	-25…85			
Pollution degree			2, EN 50178			
Vibration			0.075 mm (10 – 57 Hz), 10 cycles, IEC 60068-2-6			
Shock resistance Shock duration 11 ms		g	15, IEC 60068-2-27 (3 shocks)			
Altitude		m	Up to 2000 m a.s.l.; observe drating at higher altitudes			
Protection type			IP20			
Fixing			Screw fixing			
Mounting position			As required			
Input voltage						
Rated value		V AC	230	230	230	230
Range		V AC	230	230	230	230
Input currentnominal value per phase		A	0.45	0.8	1.2	1.4
No-load losses		W	7.6	9	12.8	10.2
Short-circuit losses		W	15.5	29.7	32.7	35
Output voltage						
Rated value		V DC	24	24	24	24
Tolerance						
Tolerance			See current/voltage characteristic	See current/voltage characteristic	See current/voltage characteristic	See current/voltage characteristic
Residual ripple		%	≦ 5	≦ 5	≦ 5	≦ 5
Output current (nominal value)		A	3	5	8	10
Output current, range at 55 °C		A	0 – 3	0 – 5	0 – 8	0 – 10
Terminal capacities						
Solid		mm²	0.5 – 4	0.5 – 4	0.5 – 4	0.5 – 4
Flexible with ferrule		mm²	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5	0.5 – 2.5
Connections			Screw connection	Screw connection	Screw connection	Screw connection
Dimensions						
Width		mm	85	85	106	121
Height		mm	90	98	100	105
Depth		mm	122	135	151	169
Weight		kg	2	2,5	3,65	4,45

Notes

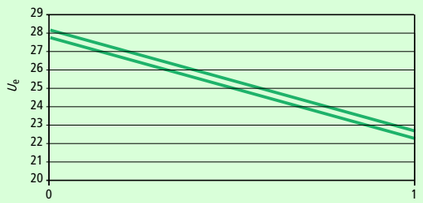
[1] Derating
From +44 to +55 °C, linear characteristic
From 100 % to 93 % output

GD4 power supply units with transformer

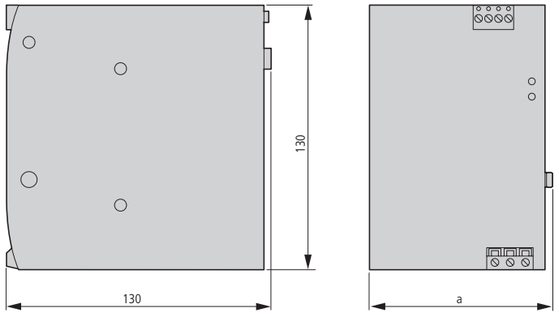
			GD4-050-BD3	GD4-100-BD3	GD4-150-BD3	GD4-200-BD3	GD4-300-BD3
Fuse specification							
Input voltage	U_1	V	3 × 400	3 × 400	3 × 400	3 × 400	3 × 400
Input current	I_1	A	0.24	0.46	0.65	0.9	1.8
Circuit-breaker							
PKZ			PKZM0-0.25	PKZM0-0.63	PKZM0-1	PKZM0-1	PKZM0-2.5
Current setting		A	0.24	0.46	0.65	0.9	1.8
Miniature circuit-breaker							
FAZ			FAZ-S1/1	FAZ-S1/1	FAZ-S1/1	FAZ-S1/1	FAZ-S2/1
Short-circuit protection only			●	●			

Current/voltage characteristics

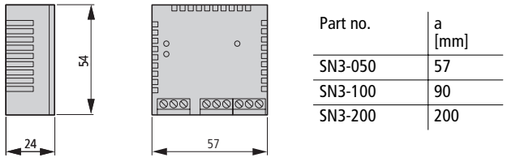
for 230 V or 400 V AC (primary side) and a load current of I = 0 A up to rated current 1 x I_e



SN3-050
SN3-100
SN3-200



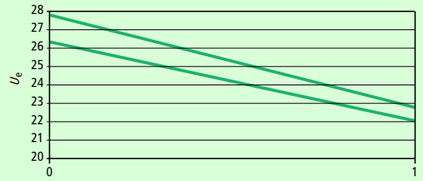
SN3-000-MMEU8



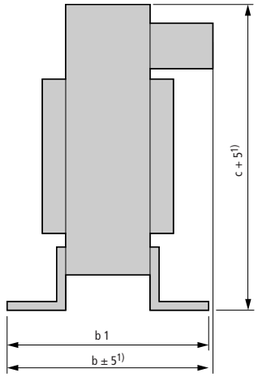
Part no.	a [mm]
SN3-050	57
SN3-100	90
SN3-200	200

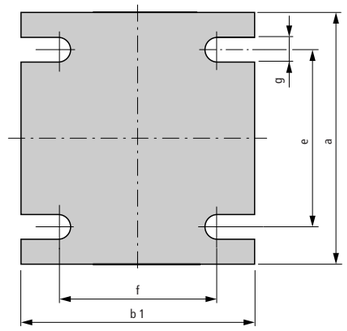
GW4 power supply units with transformer

	GW4-030-BA3	GW4-050-BA3	GW4-080-BA3	GW4-100-BA3
	230	230	230	230
	0.45	0.8	1.2	1.4
	PKZM0-0.63	PKZM0-1	PKZM0-1,6	PKZM0-1,6
	0.45	0.8	1.2	1.4
	FAZ-S1/1	FAZ-S1/1	FAZ-S2/1	FAZ-S2/1
	●			



GW4-...





Part no.	a	b	b1	c	e	f	g
GW4-							
030-BA§	85	85	74	130	64	60.5	4.8
050-BA3	85	93	83	130	64	69	4.8
080-BA3	106	95	87	146	80.5	69.5	5.8
100-BA3	121	100	86	164	90	70	5.8
GD4-							
050-BD3	125	68	61	135	100	45	5
100-BD3	155	77	77	165	130	57	8
150-BD3	155	92	92	165	130	72	8
200-BD3	190	100	83	220	170	58	8
300-BD3	190	110	103	235	170	78	8

¹⁾ Maximum space requirements

GD4-...