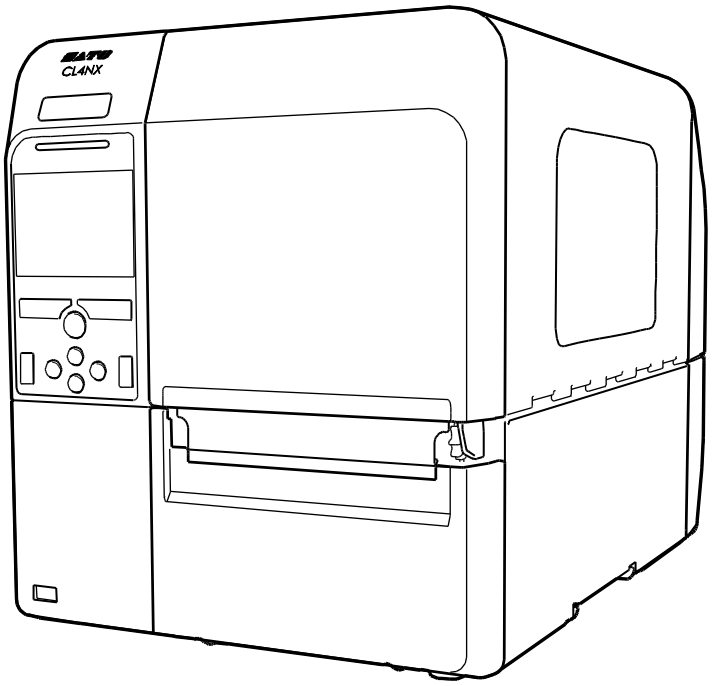
Programming Reference

For printer model:

CL4NX



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Version: CL4NX-r02-19-05-14PR

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2 Initial Value of Operation Settings

The initial values of operation setting are as follows:

Item	8 dots/mm	12 dots/mm	24dots/mm
Print speed	6 inch/s Range: 2, 3, 4, 5, 6, 7, 8, 9, 10	6 inch/s Range: 2, 3, 4, 5, 6, 7, 8	4 inch/s Range: 2, 3, 4, 5, 6
Range of print darkness	A	A	A
Print darkness	5 Range: 1, 2, 3, 4, 5,6,7,8,9,10	5 Range: 1, 2, 3, 4, 5,6,7,8,9,10	5 Range: 1, 2, 3, 4, 5,6,7,8,9,10
Start point correction	+ 0	+ 0	+0
Designation of proportional pitch	Proportional pitch	Proportional pitch	Proportional pitch

3 List of Fonts

When using internal fonts, specify [ESC + Command of Font Types].

Font name	Font Type		Pitch
OCR A(8dots/mm)	Bitmap[OCR-A font]	15x22 dots	Fixed
OCR B(8 dots/mm)	Bitmap[OCR-B font]	20x24 dots	Fixed
OCR A (12 dots/mm)	Bitmap[OCR-A font]	22x33 dots	Fixed
OCR B (12 dots/mm)	Bitmap[OCR-B font]	30x36 dots	Fixed
OCR A (24 dots/mm)	Bitmap[OCR-A font]	44x66 dots	Fixed
OCR B (24 dots/mm)	Bitmap[OCR-B font]	60x72 dots	Fixed
XU	Bitmap[Helvetica type]	5x 9 dots	Fixed / Proportional
XS	Bitmap[Univers Condensed Bold type]	17x17 dots	Fixed/Proportional
XM	Bitmap[Univers Condensed Bold type]	24x24 dots	Fixed/Proportional
XB	Bitmap[Univers Condensed Bold type]	48x48 dots	Fixed / Proportional
XL	Bitmap[Sans Serif]	48x48 dots	Fixed / Proportional
U	Bitmap[U font]	5x9 dots	Fixed
S	Bitmap[S font]	8x15 dots	Fixed
M	Bitmap[M font]	13x20 dots	Fixed
WB	Bitmap[WB font]	18x30 dots	Fixed
WL	Bitmap[WL font]	28x52 dots	Fixed
X20	Bitmap[X20 font]	5x9 dots	Fixed
X21	Bitmap[X21 font]	17x17 dots	Fixed / Proportional
X22	Bitmap[X22 font]	24x24 dots	Fixed / Proportional
X23	Bitmap[X23 font]	48x48 dots	Fixed / Proportional
X24	Bitmap[X24 font]	48x48 dots	Fixed/Proportional
K1(k1)	Bitmap[Kanji font]	16x16 dots	Fixed
K2(k2)	Bitmap[Kanji font]	24x24 dots	Fixed
K3(k3)	Bitmap[Kanji font]	22x22 dots	Fixed
K4(k4)	Bitmap[Kanji font]	32x32 dots	Fixed
K5(k5)	Bitmap[Kanji font]	40x40 dots	Fixed
K8(k8)	Bitmap[Kanji font]	16x16 dots	Fixed
K9(k9)	Bitmap[Kanji font]	24x24 dots	Fixed
KA(kA)	Bitmap[Kanji font]	22x22 dots	Fixed
KB(kB)	Bitmap[Kanji font]	32x32 dots	Fixed
KD(kD)	Bitmap[Kanji font]	40x40 dots	Fixed
$ (shape)	Outline font		Fixed / Proportional
$= (print)	Kanji Outline font		Fixed
RD	CG font[CG Times]		Fixed / Proportional
	CG font[CG Triumvirate]		Fixed / Proportional
RG	Multiple language font		Fixed / Proportional
RH	Scalable font		Fixed / Proportional

Expanded font

Font can be expanded by a factor of 1 to 36.
Internal bitmap fonts can also be expanded with a factor of 1 to 36.
Example: A font in a size of 5 dots of width and 9 dots of height is expanded by a factor of 3. The resulting font has a width of 15 dots and a height of 27 dots.
The input of expansion factors (height x expansion factor, width x expansion factor) for characters to be printed is done as described below:

Width x expansion factor= width parameter setting value
Height x expansion factor= height parameter setting value

The command <L> decides the expansion of the character. This parameter is set as factor.
Example: If setting the factor to: <L>0304, the character is expanded by a factor of 3 in horizontal direction (width) and a factor of 4 in vertical direction (height)
If an expansion factor is specified, also the pitch between the characters is automatically determined.

Fixed pitch / proportional pitch

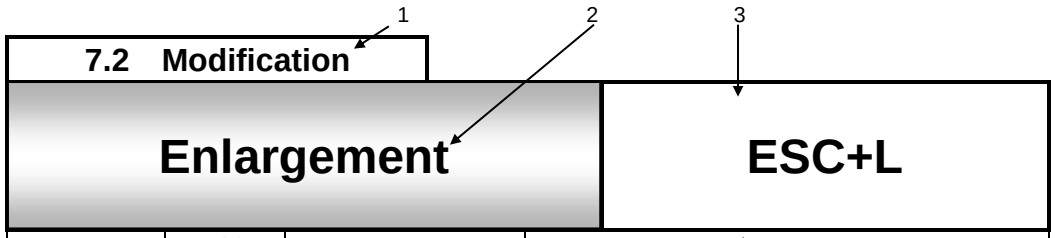
There are fonts which can select both the fixed pitch and the proportional pitch. You can set the proportional pitch by <PS> command and release it by <PR> command on the printer screen.
Depending on the font type, the width of the proportional pitch does differ. Kata-kana is not affected by the proportional pitch, but the side space of characters will be narrowed.
At the fixed pitch, the character width is according to the relevant font size selected.

Difference between outline font and bitmap font

Regarding the bitmap font, the height and the width of the font are predefined. The height of the bitmap font is a little bit larger than the width.
The bitmap font is the largest in the font matrix.
For the font type and size refer to the font list on the previous page.

Regarding the outline font, if the height and the width of the font are set properly, the smooth scaling algorithm of the printer allows a well balanced font. It is also possible to define some style options like a gray scale and a shadow setting.

4 Example of Command Reference



4				5
Hexadecimal code	ESC	L	Parameter	
	$<1B>_{16}$	$<4C>_{16}$	aabb	
6 Initial value	aa = 01, bb = 01			

7

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until next specification is made.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

8 [Function]
Specifying the enlargement ratio of print font.

9 [Format]
<L>aabb

● Parameter
aa [Horizontal enlargement ratio] = Valid range: 01 to 36
bb [Vertical enlargement ratio] = Valid range: 01 to 36

10 [Coding Example] Horizontal enlargement ratio: 4 times, Vertical enlargement ratio: 3 times
<A>
<V>100＜H＞200＜P＞3**＜L＞0403**＜XM＞ABCD
<Q>2
<Z>

11 [Supplementary Explanation]
Enlarges the character pitch as well. When Character Pitch <P> is used at the same time, the parameter value of horizontal enlargement ratio specified in Enlargement <L> will be reflected in the subsequent specification <P>.

12 [Note]
If increasing the enlargement ratio, design the print format that does not to exceed print area.

13 [Valid Commands]

Font	<XU>	<TU>	<TU>	<XB>	<XL>	<OA>	<OB>	<RD>	<K1>	<K2>
	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>	<k2>
	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	<U>	<S>
	<M>	<WB>	<WL>	<X20>	<X21>	<X22>	<X23>	<X24>		
Modification	<P>	<RF>								
Graphic	<G>	<GM>	<GP>							
Memory Card	<TU>	<GC>	<PY>							

1. Indicates the classification of commands such as:
[Control], [Print Position], [Modification], [Font], [Barcode], [2D code], [Graphic], [System], [Memory Card] and [Calendar], [RFID], [Common Commands for All Languages]

2. Indicates command name.

3. Indicates command code.

4. Indicates command in Hexadecimal code.

5. Indicates parameter to be described in command.

6. Indicates initial value for command.

7. Indicates valid range of command.
   When power switch is OFF;
   1) The set parameter is maintained.
   2) The set parameter is not maintained.
   3) The set command is not maintained.

   Valid range within item
   1) The set parameter is valid until the next specification is made.
   2) The set parameter becomes invalid.
   3) The set command becomes invalid.

   Valid range between items;
   1) The set parameter becomes initial value at the next item <A>.
   2) The set parameter is valid until the next specification is made.
   3) The set parameter becomes invalid.
   4) The set command becomes invalid.

8. Explains the function of command.

9. Explains the command and required parameter.
   <L>aabb indicates the command ESC+L(<1B>16<4C>16) and two types of parameters such as "aa" and "bb".

10. Shows the example of how the command is used.
    This is the coding example programmed in BASIC output to the printer connected with RS-232C.

```
 10  ESC$=CHR$(&H1B)
 20  OPEN  "COM1:9600,  N,  8,  1,  RS,  BIN" FOR OUTPUT AS #1
 30  PRINT  #1,  ESC$ ; "A" ;
 40  PRINT  #1,  ESC$ ; "V100" ; ESC$ ; "H200" ;
 50  PRINT  #1,  ESC$ ; "P3" ; ESC$ ; "L0403" ;
 60  PRINT  #1,  ESC$ ; "XMABCD" ;
 70  PRINT  #1,  ESC$ ; "Q2" ;
 80  PRINT  #1,  ESC$ ; "Z" ;
 90  CLOSE  #1
100  END
```

11. Provides the supplemental information of command function and parameter.

12. Provides notes and restriction for the use of command.

13. Shows the commands that come under the influence of used commands.

5 Control Command

5.1 Control

Start Code	ESC+A

Hexadecimal code	ESC	A	Parameter
	$<1B>_{16}$	$<41>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set command becomes invalid.

[Function]

Specifying the start of data transmission.

[Format]

<A>

[Coding Example]

<A>
<V>100<H>200<P>2<L>0202<XM>ABCD
<Q>2
<Z>

[Supplementary Explanation]

1. Indicates the start of item and to be placed at the head of item.
2. Use <A> and End of Data Transmission <Z> as a pair of commands.

[Notes]

1. Setting value of all commands excluding a part of system commands will be set to default.
2. If this command is not specified, printing will not be performed.

5.2 Control

Stop Code	ESC+Z

Hexadecimal code	ESC	Z	Parameter
	$<1B>_{16}$	$<5A>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set command becomes invalid.

[Function]
Specifying the end of data transmission.

[Format]
<Z>

[Coding Example]
<A>
<V>100<H>200<P>2<L>0202<XM>ABCD
<Q>2
<u><Z></u>

[Supplementary Explanation]
1. Indicates the end of item and to be placed at the tail of item.
2. Use Start of Data Transmission <A> and <Z> as a pair of commands.

[Note]
If this command is not specified, printing will not be performed.

5.3 Control

Print Quantity

ESC+Q

Hexadecimal code	ESC	Q	Parameter
	$<1B>_{16}$	$<51>_{16}$	aaaaaa
Initial value	aaaaaa=1		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying the number of labels to print.

[Format]
<Q>aaaaaa

●Parameter
a[Number of labels to print] = Valid range: 1 to 999999

[Coding Example] Number of labels: 2
<A>
<V>100<H>200<P>2<L>0202<XM>ABCD
<Q>2
<Z>

[Supplementary Explanation]
1. Print contents specified by Start of Data Transmission <A> and End of Data Transmission <Z> are regarded as 1 label, and the number of reprints can be specified.
2. Use this command prior to End of Data Transmission <Z>.

[Note]
1. Reprint will be performed based on the specified print quantity. If specifying sequential numbering command <F>, the value of sequential number that was set up for that field portion will print.
2. When this command is used in combination with Multiple Cutting <~>, the specified print quantity multiplied by specified value for cutting becomes the number of labels to print.

5.4 Control

Job ID Number

ESC+ID

Hexadecimal code	ESC	ID	Parameter
	$<1B>_{16}$	$<49>_{16}<44>_{16}$	aa aaaaa
Initial value	a=$<20>_{16}$		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set command becomes invalid.

[Function]

Specifying job ID number for status return.

[Format]

<ID>aa
<ID>aaaaa

●Parameter

a[Job ID number] = Valid range: 00 to 99 (2digits)
****** or 00000 to 99999 (5digits)

[Coding Example] Job ID number: 01

```
<A>
<ID>01
<V>200<H>100<P>0<$>B,100,100,6
<$=>SATOPRINTER
<Q>2
<Z>
```

[Supplementary Explanation]

1. When status return is used for interface protocol, the specified job ID No. can be set to the telegraphic status.
2. Status can be confirmed sending status request (ENQ).
3. Include this command within items and use between start code <A> and stop code <Z>.
4. When Status 5 is used, the valid range of job ID becomes “00000 to 99999” and “*****”. If “*****” is specified, the item will not be managed by Job ID number.

[Note]

1. In status return interface protocol, this command becomes valid when status request (ENQ) is received while printing (QTY≠0, includes at the time of Offline and Error).
2. In status return communication protocol, if status request (ENQ) is received when printing is not in progress (QTY=0, No received data when power is ON), space (20H) will be set to status and returned.
3. When Job ID Number <ID> is used more than twice within the items of <A> and <Z>, the last specified value becomes valid.

5.5 Control

Job Name	ESC+WK

Hexadecimal code	ESC	WK	Parameter
	<1B>$_{16}$	<57>$_{16}$<4B>$_{16}$	aaaaaaaaaaaaaaaa
Initial value	aaaaaaaaaaaaaaaa =<20>$_{16}$		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set command becomes invalid.

[Function]
Specifying job name for status return.

[Format]
<WK>aaaaaaaaaaaaaaaa

●Parameter
a[Job Name] = ASCII code 16-digit, Shift JIS Kanji 8-digit

[Coding Example] Job name: SATO
<A>
<ID>01
<WK>SATO
<V>200<H>100<P>0<$>B,100,100,6
<$=>SATOPRINTER
<Q>2
<Z>

[Supplementary Explanation]
1. When Status4 is used for interface protocol, specified job name can be set to the telegraphic status.
2. Status can be confirmed sending status request (ENQ).
3. Include this command within items and use between start of data transmission <A> and end of data transmission <Z>.
4. This command can be used in combination with Job ID Number <ID>.

[Note]
1. In status return interface protocol, this command becomes valid when status request (ENQ) is received while printing (QTY≠0, includes at the time of Offline and Error).
2. In status return communication protocol, if status request (ENQ) is received when printing is not in progress (QTY=0, No received data when power is ON), space (20H) will be set to status and returned.
3. When Job ID Number <ID> is used more than twice within the items of <A> and <Z>, the last specified value becomes valid.
4. For more information, refer to the “Interface Specifications”.

5.6 Control

Status 5 Reply Check setting

ESC+CR

Hexadecimal code	ESC	CR	Parameter
	$<1B>_{16}$	$<43>_{16}<52>_{16}$	a,b
Initial value	a=0		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set command becomes invalid.

[Function]

The BCC check of return and the item number check function are set up of the status 5.

[Format]

<CR>a,b

●Parameter

a[BCC check] = 0 : BCC check disable (initial value)
1 : BCC check enable

b [Item number check] = 0 : Not checked(fixed value)

[Coding Example]

<A>
<ID>*****
<CR>1,0
<Z>

[Supplementary Explanation]

1. [item number check] is a fixed value
2. This command cannot be used at the same time the print data
3. Use is possible only during status 5 protocol

6 Print Position Command

6.1 Print Position

Horizontal Print Position	ESC+H

Hexadecimal code	ESC	H	Parameter
	$<1B>_{16}$	$<48>_{16}$	aaaa
Initial value	aaaa=1		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]
Specifying horizontal print position from its start point by dot.

[Format]
<H>aaaa

●Parameter
aaaa[Horizontal Print Position] = Refer to the table below.

[Coding Example] Horizontal print position: 200 dots
<A>
<V>100**<H>200**<P>2<L>0202<XM>ABCD
<Q>2
<Z>

[Supplementary Explanation]
Specifying the start of horizontal position for the print of text, barcode, ruled line and graphic.

[Note]
Any contents such as text, barcode, graphic exceed printable area will not print.

[Initial Value and Valid Range of Parameter]

Head density	Initial value	Valid range (dots)
8dots/mm (203 dpi)	1	1 to 832
12dots/mm (305 dpi)	1	1 to 1248
24dots/mm (609 dpi)	1	1 to 2496

6.2 Print Position

Vertical Print Position — ESC+V

Hexadecimal code	ESC	V	Parameter
	$<1B>_{16}$	$<56>_{16}$	aaaaa
Initial value	aaaaa=1		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]
Specifying vertical print position from its start point by dot.

[Format]
<V>aaaaa

●Parameter
a [Vertical Print Position] = Refer to the table below.

[Coding Example] Vertical print position: 100 dots
<A>
<V>100<H>200<P>2<L>0202<XM>ABCD
<Q>2
<Z>

[Supplementary Explanation]
Specifying the start of vertical position for the print of text, barcode, ruled line and graphics.

[Note]
Any contents such as text, barcode and graphic exceed printable area will not print.

[Initial Value and Valid Range of Parameter]

Head density	Initial value	Valid range (dots)
8 dots/mm (203 dpi)	1	1 to 20000
12 dots/mm (305 dpi)	1	1 to 18000
24 dots/mm (609 dpi)	1	1 to 9600

7 Modification Command

7.1 Modification

Character Pitch	ESC+P

Hexadecimal code	ESC	P	Parameter
	$<1B>_{16}$	$<50>_{16}$	aa
Initial value	aa=02		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]
Specifying character pitch by dot.

[Format]
<P>aa

●Parameter
aa[Character pitch] = Valid range: 00 to 99 dots

[Coding Example] Character pitch: 10
<A>
<V>100<H>200**<P>10**<L>0202<XM>ABCD
<Q>2
<Z>

[Supplementary Explanation]
1. Character pitch means the character gap or font gap when selecting font or barcode.
2. Specified character pitch will be widened based on the ratio of Enlargement <L>.
3. Even if linefeed code [CR] is specified in Auto Linefeed <E>, it remains the same without returning to initial value. Start of Data Transmission <A> can be used to reset to the initial value.
4. By specifying Character Pitch <P> just before the barcode specification, pitch command becomes valid for barcode module.
   Object barcode: NW-7, CODE39, Industrial 2 of 5, Matrix 2 of 5
   For more information, see (3) Intercharacter Gap in [9. Barcode Specification].
5. Data specification except numeric value or specification of over-digit will give the initial value.

[Valid Command]

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>	<RD>	<$=>	<K1>
	<K2>	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>
	<k2>	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	<U>
	<S>	<M>	<WB>	<WL>	<X20>	<X21>	<X22>	<X23>	<X24>	
Barcode	<B>	<D>	<D><d>	<BD>	<BT>	<BW>	<BM>			
Modification	<RF>									

7.2 Modification

Enlargement	ESC+L

Hexadecimal code	ESC	L	Parameter
	$<1B>_{16}$	$<4C>_{16}$	aabb
Initial value	aa=01,bb=01		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]
Specifying the enlargement ratio of font.

[Format]
<L>aabb

●Parameter
aa[Horizontal enlargement ratio] = Valid range: 01 to 36
bb[Vertical enlargement ratio] = Valid range: 01 to 36

[Coding Example] Horizontal enlargement ratio: 4 times, Vertical enlargement ratio: 3 times
<A>
<V>100<H>200<P>3**<L>0403**<XM>ABCD
<Q>2
<Z>

[Supplementary Explanation]
Enlarges the character pitch as well. When Character Pitch <P> is used at the same time, the parameter value of horizontal enlargement ratio specified in Enlargement <L> will be reflected in the subsequent specification <P>.

[Note]
If increasing the enlargement ratio, design the print format that does not exceed print area.

[Valid Command]

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>		<K1>	<K2>
	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>	<k2>
	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	<U>	<S>
	<M>	<WB>	<WL>	<X20>	<X21>	<X22>	<X23>	<X24>		
Modification	<P>	<RF>								
Graphic	<G>	<GM>	<GP>							
Memory card	<GR>	<GC>	<PY>							

7.3 Modification

Proportional Pitch	ESC+PS

Hexadecimal code	ESC	PS	Parameter
	$<1B>_{16}$	$<50>_{16}<53>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]

Specifying the proportional pitch.

[Format]

<PS>

[Coding Example]

<A>
<PS>
<V>100<H>200<P>2<L>0202<XM>ABCD
<Q>2
<Z>

[Supplementary Explanation]

1. This command is not applicable to Kata-kana but to alphanumeric which becomes narrower than the time when <PS> was not specified.
2. If data other than specified is set, proportional print will not be performed.
3. Initial value is “Proportional pitch” enabled by <PS> command.

.

[Valid Command]

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<RD>				
	<X20>	<X21>	<X22>	<X23>	<X24>					
Modification	<RF>									

7.4 Modification

Release Proportional Pitch	ESC+PR

Hexadecimal code	ESC	PR	Parameter
	$<1B>_{16}$	$<50>_{16}<52>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]
Specifying the release of proportional pitch.

[Format]
<PR>

[Coding Example]
<A>
<PR>
<V>100<H>200<P>2<L>0202<XM>ABCD
<Q>2
<Z>

[Supplementary Explanation]
Initial value is “Proportional pitch” enabled by <PS> command.

[Valid Command]

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<RD>				
	<X21>	<X22>	<X23>	<X24>						
Modification	<RF>									

7.5 Modification

Rotation	ESC+%

Hexadecimal code	ESC	%	Parameter
	$<1B>_{16}$	$<25>_{16}$	a
Initial value	a=0		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]
Specifying the counter-clockwise rotation of font and barcode.

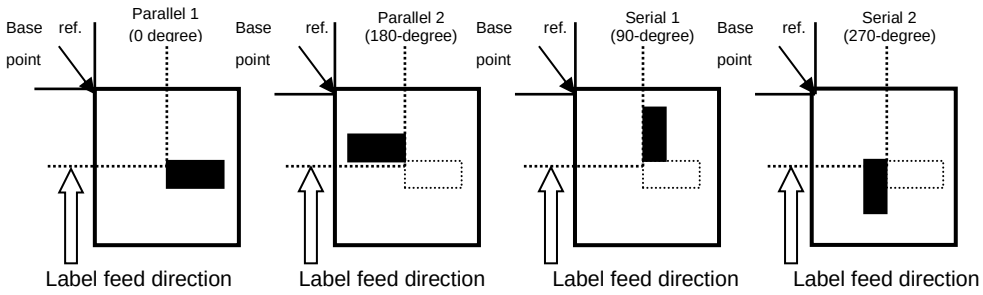
[Format]
<%>a

●Parameter
a[Rotative direction] = 0: Parallel 1 (0 degree)
1: Serial 1 (90-degree)
2: Parallel 2 (180-degree)
3: Serial 2 (270-degree)

[Coding Example] Font rotation: Parallel 2 (180-degree), Barcode rotation: 1: Serial 1 (90-degree)

```
<A>
<%>2
<V>100<H>400<P>3<L>0403<XM>ABCD
<%>1
<V>400<H>200<BD>103160*123*
<Q>2
<Z>
```

[Supplementary Explanation]
1. Position specification of Vertical Print Position <V> and Horizontal Print Position <H> are the absolute value from its base reference point.
2. When the value of parameter “a” is between 4 and 9, it will be processed as a command error and ignored. When the value other than numeric is specified, this will be ignored and printing at 0 degree.
3. Print of barcode using Serial 1 or Serial 2 may cause blur. Drop the print speed for rotation print of Serial 1 and Serial 2 for better performance.



[Valid Command]

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>	<RD>	<$=>	<K1>
	<K2>	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>
	<k2>	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	<U>
	<S>	<M>	<WB>	<WL>	<X20>	<X21>	<X22>	<X23>	<X24>	
Barcode	<B>	<BC>	<BG>	<BI>	<D>	<D><d>	<BD>	<BT>	<BW>	<BP>
	<BF>	<BS>	<BL>	<BL><d>	<BM>					
2D code	<2D10>	<BK>	<2D12>	<2D20>	<BV>	<2D30>	<2D31>	<2D32>	<BQ>	
	<2D50>	<BX>	<2D51>							
Composite Symbol	<EU>									
Graphic	<G>	<GM>	<GP>							
System	<E>									
Modification	<RF>	<FW>	<FC>	<FT>	<(>	<RM>				
Memory card	<GR>	<GC>	<PY>							
Calendar *1	<WA>									

*1 Optional

7.6 Modification

Rotation (Shift Base Reference Point)	**ESC+R**

Hexadecimal code	ESC	R	Parameter
	$<1B>_{16}$	$<52>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]

Shifts the base reference point for printing, and then rotates the print direction in the counterclockwise direction.

[Format]

<R>

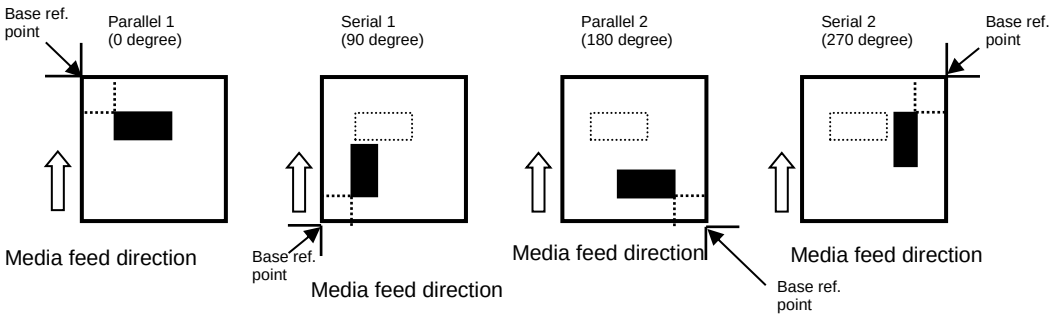
[Coding Example] Sets the character string “ABCD” to 90°CCW, “EFGH” to 180° CCW

```
<A>
<R>
<V>100<H>200<P>2<L>0202<XM>ABCD
<R>
<V>100<H>200<P>2<L>0202<X22>,EFGH
<Q>2
<Z>
```

[Supplementary Explanation]

1. Every time this command is specified, the print direction rotates 90-degree in counterclockwise direction.
2. Use the Normal Print Direction <N> command to revert to normal print direction.
3. Print of barcode using Serial 1 or Serial 2 may cause an ink blur. Widen the narrow bar width when designing the layout of barcode.

Also, drop the print speed when printing with Serial 1 or Serial 2.



[Valid Command]

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>	<RD>	<$=>	<K1>
	<K2>	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>
	<k2>	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	<U>
	<S>	<M>	<WB>	<WL>	<RD>	<RG>	<RH>	<$=>		
	<X20>	<X21>	<X22>	<X23>	<X24>					
Barcode	<B>	<BC>	<BG>	<BI>		<D>	<D><d>	<BD>	<BT>	<BW>
	<BP>	<BF>	<BS>	<BL>	<BL><d>	<BM>				
2D code	<2D10>	<BK>	<2D12>	<2D20>	<BV>	<2D30>	<2D31>	<2D32>	<BQ>	
	<2D50>	<BX>	<2D51>							
Composite symbol	<EU>									
Graphic	<G>	<GM>	<GP>							
System	<E>									
Modification	<RF>	<FW>	<FC>	<FT>	<(>	<RM>				
Memory card	<GR>	<GC>	<PY>							
Calendar *1	<WA>									

*1 Optional

7.7 Modification

Normal Print Direction	ESC+N

Hexadecimal code	ESC	N	Parameter
	$<1B>_{16}$	$<4E>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]

Reverts the print direction specified by the Rotation commands, <%> and <R>, back to normal direction.

[Format]

<N>

[Coding Example] Sets the character string “ABCD” to 90°CCW, “EFGH” to 0°(normal print direction).

<A>
<R>
<V>100<H>200<P>2<L>0202<XM>ABC
<N>
<V>100<H>200<P>2<L>0202<X22>,EFGH
<Q>2
<Z>

[Supplementary Explanation]

1. In the printer initial state, print direction is set to normal direction. There is no need to use this command unless the Rotation commands such as <%> and <R> are specified within the data to be printed.
2. The Rotation commands, <%> and <R>, can be cleared by the Stop Code <Z> command.

[Valid Command]

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>	<RD>	<$=>	<K1>
	<K2>	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>
	<k2>	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	<U>
	<S>	<M>	<WB>	<WL>	<X20>	<X21>	<X22>	<X23>	<X24>	
Barcode	<B>	<BC>	<BG>	<BI>		<D>	<D><d>	<BD>	<BT>	<BW>
	<BP>	<BF>	<BS>	<BL>	<BL><d>	<BM>				
2D code	<2D10>	<BK>	<2D12>	<2D20>	<BV>	<2D30>	<2D31>	<2D32>	<BQ>	
	<2D50>	<BX>	<2D51>							
Composite symbol	<EU>									
Graphic	<G>	<GM>	<GP>							
System	<E>									
Modification	<RF>	<FW>	<FC>	<FT>	<(>	<RM>				
Memory card	<GR>	<GC>	<PY>							

7.8 Modification

Sequential Number — ESC+F

Hexadecimal code	ESC	F	Parameter
	$<1B>_{16}$	$<46>_{16}$	aaaabcccc(,dd,ee,f)
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying prior to the data specification command of font or barcode, and printing specified data in a sequential order.

[Format]
<F>aaaabcccc(,dd,ee,f)

●Parameter

a [Print quantity specification of identical contents]	=	Valid range	: 1 to 9999		
b [Increasing and decreasing specification]	=	+	: Addition		
	=	-	: Subtraction		
c [Setting of increasing and decreasing value]	=	Valid range	: 1 to 9999		
d [Valid digit number for sequential number]	=	Valid range	: 1 to 99	When omitted	8 (omissible)
e [Low-order invalid digit number]	=	Valid range	: 0 to 99	When omitted	0 (omissible)
f [Specification of Decimal/Hex sequential number]	=	0	: Decimal number	When omitted	0 (omissible)
		1	: Hexadecimal		

[Coding Example] Print quantity specification of identical contents: 1,Increasing and decreasing specification: +
Setting of increasing and decreasing value: 1, Valid digit number for sequential number: 5
Low-order invalid digit number: 0

```
<A>
<V>100<H>100<P>2<L>0202
<F>1+1,5,0<X20>,10000
<Q>2
 <Z>
```

[Supplementary Explanation]
1. Sequential number can be specified up to 8 points per format.
2. Next print data from <F> command will be the initial value of sequential number.
3. Specify the required number of digits for sequential number to print it properly.
4. Specification of Black/White Reverse Print <(> is not valid for sequential numbered data.
5. Auto Linefeed <E> is not available.
6. Need to print font or barcode to print sequential number.
7. Digit number of sequential number should correspond to that of font/barcode data command. If the digit number of sequential number is larger, sequential number printing will not be performed.
8. If the print data immediately after the sequential number command <F> becomes the sequential number invalid command, the sequential number will be invalid.

[Valid Command]

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>	<RD>	<$=>	<U>
	<S>	<M>	<WB>	<WL>	<J>	<X20>	<X21>	<X22>	<X23>	<X24>
Barcode	<B>	<BC>	<BG>	<BI>	<D>	<D><d>	<BD>	<BT>	<BW>	<BP>
	<BF>	<BS>	<BL>	<BL><d>	<BM>					

7.9 Modification

Ruled / Grid Line Print

ESC+FW

Hexadecimal code	ESC	FW	Parameter
	$<1B>_{16}$	$<46>_{16}<57>_{16}$	Rule aabccccc Grid aabbvccccchddddd
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying the ruled / grid line.

[Format]

<FW>aabccccc Print of ruled line

●Parameter

a[Line width]	=	Valid range	:	02 to 99 dots
b[Horizontal/vertical direction]	=	H	:	Horizontal direction
	=	V	:	Vertical direction
c[Ruled line length]	=	Valid range	:	Refer to the table below.

<FW>aabbVcccccHddddd Print of grid line

●Parameter

a[Vertical line width]	=	Valid range	:	02 to 99 dots
b[Horizontal line width]	=	Valid range	:	02 to 99 dots
c[Vertical line length]	=	Valid range	:	Refer to the table below.
d[Horizontal line length]	=	Valid range	:	Refer to the table below.

[Coding Example 1] Ruled line print, Line width: 4, Horizontal direction, Ruled line length: 400
Grid line print, Vertical line width: 8, Horizontal line width: 8, Vertical line length: 300, Horizontal line length: 400

<A>
<V>100<H>200**<FW>04H400**
<V>300<H>200**<FW>0808V300H400**
<Q>2
<Z>

[Supplementary Explanation]

1. When the print start position exceeds the printable area, the printing is not executed. (It doesn't raise a command error.)
2. Set line width according to the table below so the horizontal line width is more than 0.166mm.

Head density	Line width
8 dots/mm (203 dpi)	2 dots or more
12 dots/mm (305 dpi)	2 dots or more
24 dots/mm (609 dpi)	4 dots or more

3. If setting the vertical line width wider, it will be widened to the right side against media feed direction. If setting the horizontal line width wider, it will be widened to the lower side against media feed direction.
4. If setting the glid line wider, it will be widened inward.

[Valid Range]

Head density	Valid range (dots)	
	Horizontal line length	Vertical line length
8 dots/mm (203 dpi)	1 to 832	1 to 20000
12 dots/mm (305 dpi)	1 to 1248	1 to 18000
24 dots/mm (609 dpi)	1 to 2496	1 to 9600

7.10 Modification

Print Circle	ESC+FC

Hexadecimal code	ESC	FC	Parameter
	$<1B>_{16}$	$<46>_{16}<43>_{16}$	,aaa,bbb(,c,d)
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying the print of circle.

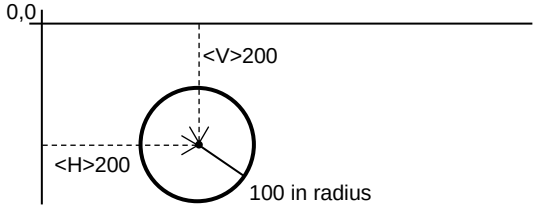
[Format]
<FC>,aaa,bbb(,c,d)

●Parameter
a[Radius] = Valid range: 5 to 999 dots
b[Line width] = Valid range: 1 to 999 dots
c[Sectional number] = Valid range: 0 to 8 When omitted: 0 (omissible)
See the details listed below.
d[Pattern] = Valid range: 0 to 3 When omitted: 0 (omissible)
0: Solid line (black)
1: Gray 1
2: Gray 2
3: ray 3

●Sectional number

[Coding Example] Solid line circle of 100 dots in radius, 8 dots in line width
<A>
<V>200<H>200
<FC>,100,8,0,0
<Q>1
<Z>

[Supplementary Explanation]
1. When the value outside of the range is specified for sectional number, it will be processed as “0”. In this case, this will not be a command error.
2. When the value outside of the range is specified for the designation of pattern, it will be processed as “0”. In this case, this will not be a command error.
3. When the print start position exceeds the printable area, the printing is executed. (This raises a command error.)
4. This command sets the base reference point to the center of a circle.



5. This command can be registered to the format.
6. If setting the glid line wider, it will be widened inward.

[Valid Range]

Head density	Valid range (dot)	
	Radius	Line width
8 dots/mm (203 dpi)	5 to 999	1 to 999
12 dots/mm (305 dpi)	5 to 999	1 to 999
24 dots/mm (609 dpi)	5 to 999	1 to 999

7.11 Modification

Print Triangle	ESC+FT

Hexadecimal code	ESC	FT	Parameter
	$<1B>_{16}$	$<46>_{16}<54>_{16}$	,aaaa,bbbb(,cccc,d)
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

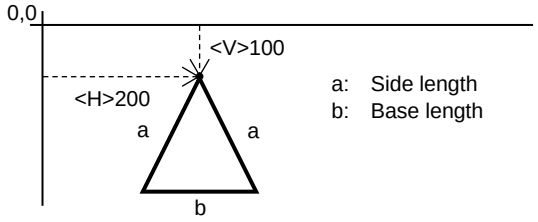
[Function]
Specifying the print of triangle.

[Format]
<FT>,aaaa,bbbb(,cccc,d)

●Parameter
a [Length of sides] = Valid range: 10 to 2000 dots
b [Line width] = Valid range: 1 to 1000 dots
c [Length of base] = Valid range: 10 to 2000 dots (omissible)
When omitted, its value will be equal to the length of sides.
d [Pattern] = Valid range: 0 to 3 When omitted: 0 (omissible)
0: Solid line (black)
1: Gray 1
2: Gray 2
3: Gray 3

[Coding Example] Length of sides: 100 dots, Line width: 8 dots, Length of base: 100 dots
<A>
<V>100<H>200
<FT>,100,8,100,0
<Q>1
<Z>

[Supplementary Explanation]
1. When the value outside of the range is specified for pattern, it will be processed as “0”. In this case, this will not be a command error.
2. When the print start position exceeds the printable area, the printing is executed. (This raises a command error.) (When the print start position exceeds the printable area in the vertical direction, the label will be fed.)
3. When the side length is not equal to the base length, printing will not be performed due to command error.
4. This command sets the base reference point to the apex of a triangle.



5. This command can be registered to the format.
6. If setting the line wider, it will be widened inward.
7. If the base length is odd number, +1 will be added automatically to make even number.

[Valid number]

Head density	Valid range (dots)		
	Side length	Line width	Base length
8 dots/mm (203 dpi)	10 to 2000	1 to 1000	10 to 2000
12 dots/mm (305 dpi)	10 to 2000	1 to 1000	10 to 2000
24 dots/mm (609 dpi)	10 to 2000	1 to 1000	10 to 2000

7.12 Modification

Reverse Color Print	ESC+(

Hexadecimal code	ESC	(	Parameter
	$<1B>_{16}$	$<28>_{16}$	aaaa,bbbbb
Initial value	Nil		

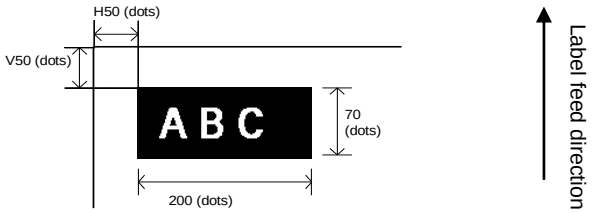
Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying black and white reverse print.

[Format]
<(>aaaa, bbbbb

●Parameter
a[Specification of reverse area in horizontal direction] = Valid range: Refer to the table below
b[Specification of reverse area in vertical direction] = Valid range: Refer to the table below

[Coding Example] Reverse area in horizontal direction: 200, Reverse area in vertical direction: 70
<A>
<V>50<H>50<P>2<L>0202<X22>,ABC
<V>50<H>50**<(>200,70**
<Q>2
<Z>



[Supplementary Explanation]
1. Set this command next after the firm data string to be inversed. If it is set prior to the firm data the data will be printed in black without inverse.
2. To set print start position, specify Horizontal Print Position <H> and Vertical Print Position <V> prior to this command.
3. When the print start position is outside of printable area, printing will not be performed due to command error.
4. Do not check the range of parameters.

[Note]
For setting, keep the black print area under 30% of overall label.

[Valid Range]

Head density	Valid range (dots)	
	Reverse area in horizontal direction	Reverse area in vertical direction
8 dots/mm (203 dpi)	8 to 832	8 to 20000
12 dots/mm (305 dpi)	8 to 1248	8 to 18000
24 dots/mm (609 dpi)	8 to 2496	8 to 9600

7.13 Modification

Kanji Code	ESC+KC

Hexadecimal code	ESC	KC	Parameter
	$<1B>_{16}$	$<4B>_{16}<43>_{16}$	a
Initial value	a=0		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]

This command allows temporary switch-over between Kanji codes. Normally it is specified by User mode of printer LCD settings.

[Format]

<KC>a

●Parameter

a[Kanji code] = 0: JIS code
1: Shift JIS code
2: Unicode

[Coding Example 1] For Shift JIS

<A>
<KC>1
<V>100<H>200<P>2<L>0202
<K1>H81698A94816A83548367815B
<Q>2
<Z>

[Coding Example 2] For JIS

<A>
<KC>0
<V>100<H>200<P>2<L>0202
<K1>H214A3374214B25352548213C
<Q>2
<Z>

[Coding Example 3] For Unicode

<A>
<KC>2
<V>100<H>200<P>2<L>0202
<K1>HFF08682AFF0930B530C830FC
<Q>2
<Z>

[Supplementary Explanation]

1. There is no necessity to specify this command in the normal label printing.
2. To set Shift JIS as initial value, use User mode of printer LCD setting.
3. It is possible to specify multiple Kanji codes within 1 item.

7.14 Modification

Store Form Overlay

ESC+&

Hexadecimal code	ESC	&	Parameter
	$<1B>_{16}$	$<26>_{16}$	(aab~b)
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set command is not maintained.
	Valid range within item	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifying the registration of form overlay.

[Format]
<&>(aab~b)

●Parameter
a [Registration key] = Valid range: 01 to 99 (Omissible)
b [Comment] = Max. 16 bytes (Omissible)

[Coding Example]
<A>
<V>100<H>50<FW>1010V800H750
<V>100<H>50<FW>0505V760H710
<V>150<H>100<XB>0MODEL
<&>01DATA1
<Z>

[Supplementary Explanation]
1. This command saves fixed print contents to the printer and then, Form Overlay Call </> combines the contents with drawing of general data to print out.
2. Specify this command at the end of data string that is to be stored. Drawing valid range in form overlay registration is same as printable area.
3. This command can register only one format. Use any code from 01 to 99 as a registration key.
4. To change contents, specify Form Overlay Clear <*>&, and then register new storage data.
5. Invoke registered contents by Form Overlay Call</>.
6. When specifying Label Size <A1>, it will be extracted in the specified area.

[Valid Commands]

Print position	<V>	<H>								
Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>	<RD>	<$=>	<K1>
	<K2>	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>
	<k2>	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	<U>
	<S>	<M>	<WB>	<WL>	<X20>	<X21>	<X22>	<X23>	<X24>	
Barcode	<B>	<BC>	<BG>	<BI>	<D>	<D><d>	<BD>	<BT>	<BW>	<BP>
	<BF>	<BS>	<BL>	<BL><d>	<BM>					
2D code	<2D10>	<BK>	<2D12>	<2D20>	<BV>	<2D30>	<2D31>	<2D32>	<BQ>	
	<2D50>	<BX>	<2D51>							
Composite Symbol	<EU>									
Modification	<WD>	<FW>	<(>	<RF>			<RM>			
Graphic	<G>	<GM>	<GP>							

7.15 Modification

Recall Form Overlay

ESC+/

Hexadecimal code	ESC	/	Parameter
	$<1B>_{16}$	$<2F>_{16}$	(aa)
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Invoking form overlay.

[Format]
</>(aa)

●Parameter
a [Registration key] = Valid Range : 01 to 99 (Omissible)

[Coding Example]
<A>
</>01
<V>200<H>100<P>0<$>B,100,100,6
<$=>SATOPRINTER
<V>720<H>150<B>102100*95000012345*
<Q>2
<Z>

[Supplementary Explanation]
1. This command invokes the contents registered by Registration of Form Overlay <&> to print.
2. When detecting this command in normal print data, it will be combined with drawing stored in form overlay and printed.
3. The registration key is not checked, so that specifying wrong registration key doesn't raise an error.

7.16 Modification

Partial Edit

ESC+0

Hexadecimal code	ESC	0	Parameter
	$<1B>_{16}$	$<30>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set command becomes invalid.

[Function]
Editing the portion in the previous print data.

[Format]
<0>

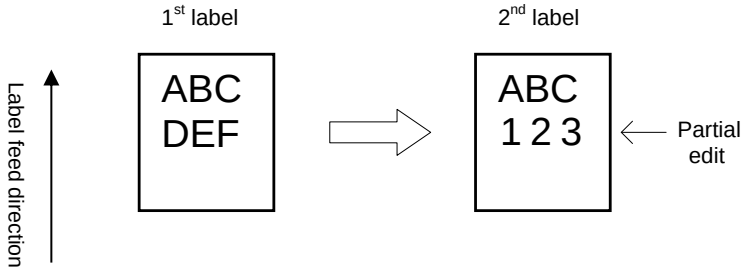
[Coding Example] [DEF], a part of print data, is changed to [123].

```
<A>
<V>100<H>200<P>2<L>0202<XM>,ABC
<V>200<H>200<P>2<L>0202<XM>,DEF
<Q>1
<Z>
```

} First label

```
<A>
<0>
<V>200<H>200<P>2<L>0202<XM>,123
<Q>1
<Z>
```

} Second label



[Supplementary Explanation]

1. Use this command to edit only one part of previous print data.
2. Invoke the previous print data with this command to edit and print out. In this case, specify the part of previous data to edit, and send change data to it.
3. Specified portion in the previous data will be cleared.
4. If Rotation <%> is included in the specified editing portion, keep it for partial editing.
5. Use this command with fixed pitch, same font or same digit number.

7.17 Modification

Partial Copy

ESC+WD

Hexadecimal code	ESC	WD	Parameter
	<1B>16	<57>16<44>16	VaaaaaHbbbbYcccccXdddd
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set parameter becomes invalid.

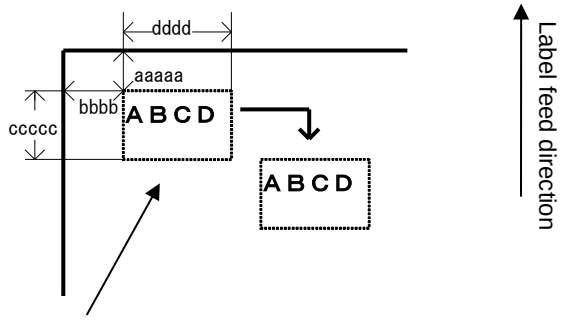
[Function]
Copying specified area to another place.

[Format]
<WD>VaaaaaHbbbbYcccccXdddd

●Parameter
a[Vertical start point of original data] = Valid range: See the table below.
b[Horizontal start point of original data] = Valid range: See the table below.
c[Vertical dot size of original data] = Valid range: See the table below.
d[Horizontal dot size of original data] = Valid range: See the table below.

[Coding Example] Vertical start point of original data: 50 Horizontal start point of original data: 50
Vertical dot size of original data: 200 Horizontal dot size of original data: 400

<A>
<V>50<H>50<P>2<L>0202<XM>ABCD
<V>300<H>100**<WD>V50H50Y200X400**
<Q>2
<Z>



Dotted line part indicates the copied area.
Actual print portion is “ABCD”.

[Supplementary Explanation]
1. To locate the destination of copy, specify Vertical Print Position <V> and Horizontal Print Position <H> prior to this command.
2. Destination of copy has to be outside of specified original data.
3. When the print start position of the copied area is outside of printable area, printing will not be performed due to command error.

[Valid Range]

Head density	Valid range (dots)	
	Horizontal start point of original data Horizontal dot size of original data	Vertical start point of original data Vertical dot size of original data
8 dots/mm (203 dpi)	1 to 832	1 to 20000
12 dots/mm (305 dpi)	1 to 1248	1 to 18000
24 dots/mm (609 dpi)	1 to 2496	1 to 9600

* Even if the specified parameter is within a valid range, it may get out of the valid range depending on its print start position, base position of copy or dot size. In that case, command error will occur.

7.18 Modification

Journal Print	ESC+J

Hexadecimal code	ESC	J	Parameter
	$<1B>_{16}$	$<4A>_{16}$	a~a+CR$<0D>_{16}$
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying the print of journal

[Format]
<J>a~a + CR

●Parameter
a [Journal print column] = Print data
CR[Control code (0DH)]

[Coding Example]
<A>
<J>
ABCD+CR
EFGH+CR
<Z>

[Supplementary Explanation]
1. Starts journal print from vertical position of 2 dots and horizontal position of 2 dots.
2. Character pitch is set to 2 dots and line pitch is set to 16 dots.
3. Prints in 2 x 2 times of XS font.
4. Use of this command in combination with other commands excluding Reprint <C> and Black and White Reverse Print <(> is invalid.
5. This command performs the line feed regardless of setting of CR/LF deletion.

7.19 Modification

Recall Font & Logo

ESC+RF

Hexadecimal code	ESC	RF	Parameter
	$<1B>_{16}$	$<52>_{16}<46>_{16}$	aabbbb,n~n
Initial value	aa=01, bbbb=1		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Invoking and printing the font and logo downloaded with exclusive tool.

[Format]
<RF>aabbbb, n~n

●Parameter
a[Font ID number] = Valid range: 01 to 99
b[Print digit] = Valid range: 1 to 9999
n[Print data] = data

[Coding Example 1] To print [AB] in half size character with this command [Font ID No.: 01, Print digit: 4]
(Unicode A: $<0041>_{16}$ B: $<0042>_{16}$)

```
<A>
<PS>
<V>100<H>100<L>0101
<RF>010004,<0041>16<0042>16
<Z>
```

[Coding Example 2] When calling and printing logo [Font ID No.: 02 Print digit: 2]

```
<A>
<V>100<H>100<L>0101<RF>020002, <826B>16
<Z>
```

[Supplementary Explanation]
1. Specify the value of print data putting Unicode(UTF-16BE).
2. When calling and printing logo, specify [Print digit: 0002], [Print data: <6B82>16].
Note that <826B>16 is the value of Shift JIS code of L.

7.20 Modification

Mirror Image	ESC+RM

Hexadecimal code	ESC	RM	Parameter
	<1B>16	<52>16<4D>16	aaaa,bbbbb
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Performing mirror rotation of print data.

[Format]
<H>hhhh<V>vvvvv<RM>aaaa, bbbbb

●Parameter
h[Horizontal start position of mirror rotation specification] = Valid range: Refer to the table below.
v[Vertical start position of mirror rotation specification] = Valid range: Refer to the table below.
a[Horizontal range of mirror rotation specification] = Valid range: Refer to the table below.
b[Vertical range of mirror rotation specification] = Valid range: Refer to the table below.

[Coding Example 1] When the range of mirror rotation is specified:
<A>
<H>100<V>200<XS>12345
<H>100<V>200<RM>0200,0080
<Q>1
<Z>

[Coding Example 2] When the range of mirror rotation is not specified:
<A>
<H>100<V>200<XS>12345
<RM>
<Z>

[Supplementary Explanation]
1. When the parameter “aaaa” and “bbbbb” are not specified, all print data specified prior to this command will be rotated.
2. Data outside of print area will not rotate.
3. If specifying this command for the item that does not contain print data, the command error will occur.
4. This command cannot be used in combination with the commands that associated with reedition of print data. Refer to the invalid command for the list below. When invalid commands are specified, printing may not be correct.
5. This command cannot be used in combination with some registration commands. Refer to the invalid command for the list below. When the command that cannot use in combination with is specified, print result is not guaranteed.
6. This command cannot be used together with some of the modification commands. Refer to the invalid command for the list below. When the command that cannot use in combination with is specified, print result is not guaranteed.
7. This command print the mirror image of the print data put before the mirror rotation command is specified. The data after the command don't rotate. Note that specifying this command several times results rotating the data several times.
8. When the mirror image is applied for the barcode, reading of the barcode and the head damage check are not guaranteed.
9. When executing the mirror image, the head damage check will be performed for all the areas where rotated.

[Valid Range for start position of mirroring]

Head density	Valid Range (dots)	
	Horizontal start position of mirror rotation specification	Vertical start position of mirror rotation specification
8 dots/mm (203 dpi)	1 to 832	1 to 20000
12 dots/mm (305 dpi)	1 to 1248	1 to 18000
24 dots/mm (609 dpi)	1 to 2498	1 to 9600

[Valid Range for mirror rotation]

Head density	Valid Range (dots)	
	Horizontal range of mirror rotation	Vertical range of mirror rotation
8 dots/mm (203 dpi)	8 to 832	8 to 20000
12 dots/mm (305 dpi)	8 to 1248	8 to 18000
24 dots/mm (609 dpi)	8 to 2498	8 to 9600

[Command that cannot use in combination with]

Command that associated with reediting.	<WD>	<F>	<(>	<0>	<WA>					
Registration	<GI>	<GT>	<PI>							
Modification	<%>	<R>								

7.21 Modification

Kanji Set

ESC+KS

Hexadecimal code	ESC	KS	Parameter
	$<1B>_{16}$	$<4B>_{16}<53>_{16}$	a
Initial value	a=3		

Valid range and term of command	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is in effect until a new specification is made.
	Valid range between items	The set parameter is in effect until a new specification is made.

[Function]

Setting the kanji set.

[Format]

<KS>a

●Parameter

Symbol	Parameter name	Valid range
a	Kanji set	0: Japan, Compatible Kanji (JISX208) 1: Japan, JIS208 Kanji (JISX208) 2: Japan, JIS213 Kanji (JISX213) 3: China, Simplified Chinese characters (GB18030) 4. Reserved 5: China, Traditional Chinese characters (BIG5) 6: Korean (KSX1001)

[Coding Example] Specifying GB18030

<A>

<KS>3

<Z>

[Supplementary Explanation]

1. Select the kanji set to be printed by using <K1>16 x 16 dots horizontal writing kanji command, <K2>24 x 24 dots horizontal writing command, <k1>16 x 16 dots vertical writing kanji command and <k2>24 x 24 dots vertical dots command.

8 Font Command

8.1 Font

X20 Font (Basic size 5x9 dots)	ESC+X20

Hexadecimal code	ESC	X20	Parameter
	$<1B>_{16}$	$<58>_{16}<32>_{16}<30>_{16}$	,n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Font with the basic size of : width 5 dots, height 9 dots is specified.

[Format]
<X20>,n - n

● Parameter
n[Print data] = Data

[Coding example]
<A>
<V>100<H>200<P>2<L>0304**<u><X20>,ABCDE</u>**
<Q>2
<Z>

[Notes]
The X20 font only allows the setting of a fixed pitch.

[Valid Command]

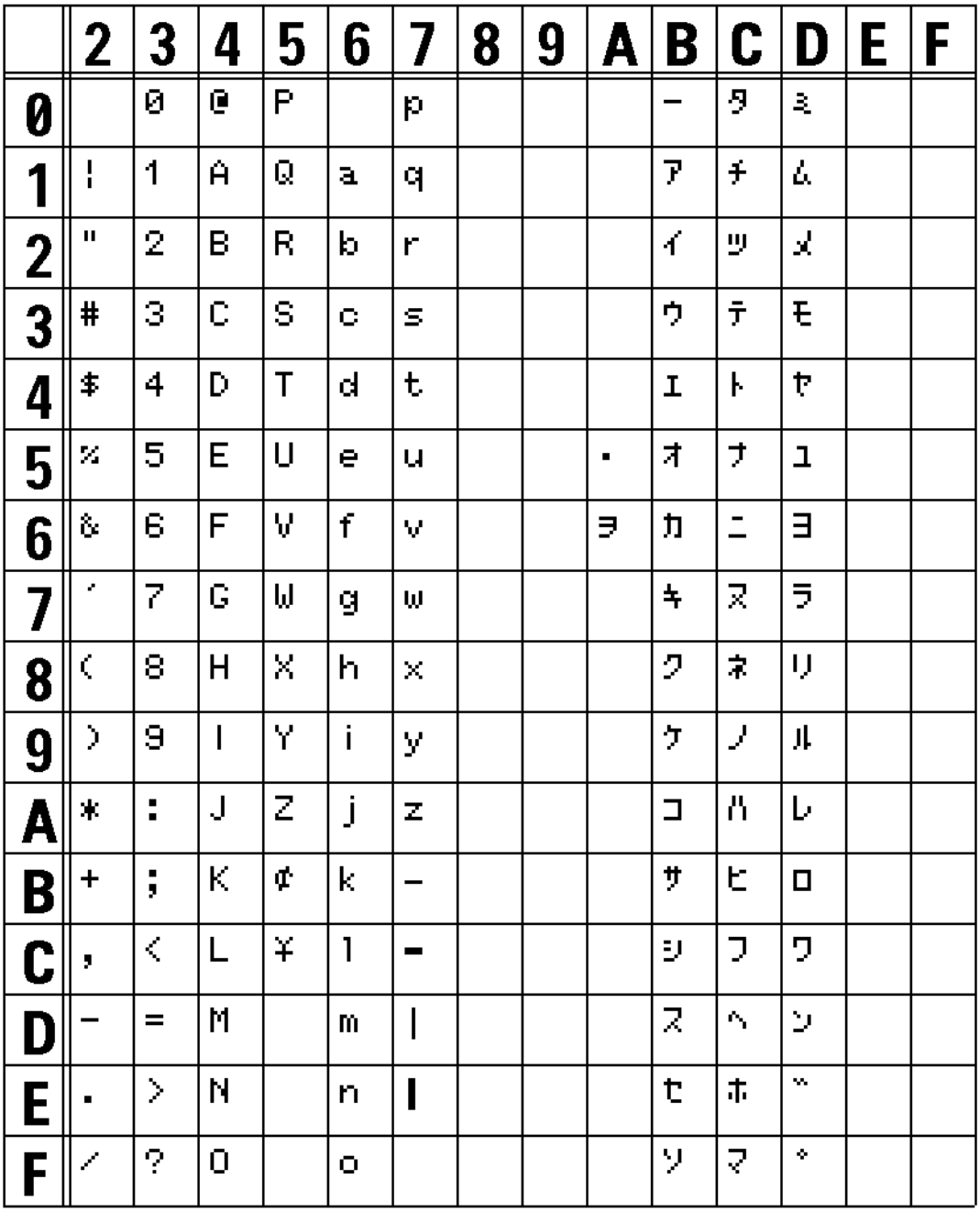
Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<F>	<&>	</>	<0>	<WD>		
Barcode	<D><d>	<BL><d>								
Calendar*1	<WA>									

*1 Optional

X20 font character set

Basic size is 5 x 9 dots (width x height)

X20 FONT(L0303) 203DPI



The print sample shown above is issued with a head density of 8dots/mm and an expansion factor of 3 (vertical/horizontal).
The data from 00 (H) to 1F (H) are control codes and you cannot use them.

8.2 Font

X21 Font (Basic size 17x17 dots)

ESC+X21

Hexadecimal code	ESC	X21	Parameter
	$<1B>_{16}$	$<58>_{16}<32>_{16}<31>_{16}$	,n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Font with the basic size of : width 17 dots, height 17 dots is specified.

[Format]
<X21>,n - n

● Parameter
n [Print data] = Data

[Coding example]
<A>
<V>100<H>200<P>2<L>0304**<u><X21>,ABCDE</u>**
<Q>2
<Z>

[Supplementary Explanation]
1. The X21 font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. Font pitch (fixed/proportional) can be selected via command or LCD settings.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<PS>	<PR>	<F>	<&>	</>	<0>	<WD>
Barcode	<D><d>	<BL><d>								
Calendar[*1]	<WA>									

*1 Optional

X21 font character set

Basic size is 17 x 17 dots (width x height)

X21 FONT(L0202) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	'	p				ー	タ	ミ		
1	!	1	A	Q	a	q			。	ア	チ	ム		
2	''	2	B	R	b	r			「	イ	ツ	メ		
3	#	3	C	S	c	s			」	ウ	テ	モ		
4	$	4	D	T	d	t			、	エ	ト	ヤ		
5	%	5	E	U	e	u			・	オ	ナ	ユ		
6	&	6	F	V	f	v			ヲ	カ	ニ	ヨ		
7	'	7	G	W	g	w			ァ	キ	ヌ	ラ		
8	(	8	H	X	h	x			ィ	ク	ネ	リ		
9	)	9	I	Y	i	y			ゥ	ケ	ノ	ル		
A	*	:	J	Z	j	z			ェ	コ	ハ	レ		
B	+	;	K	[	k	{			ォ	サ	ヒ	ロ		
C	,	<	L	¥	l	¦			ャ	シ	フ	ワ		
D	−	=	M	]	m	}			ュ	ス	ヘ	ン		
E	.	>	N	^	n	~			ョ	セ	ホ	゛		
F	/	?	O	_	o				ッ	ソ	マ	゜		

The print sample shown above is issued with a head density of 8 dots/mm and an expansion factor of 2 (vertical/horizontal).
The data from 00 (H) to 1F (H) are control codes and you cannot use them.

8.3 Font

X22 Font (Basic size 24x24 dots)

ESC+X22

Hexadecimal code	ESC	X22	Parameter
	$<1B>_{16}$	$<58>_{16}<32>_{16}<32>_{16}$	,n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Font with the basic size of : width 24 dots, height 24 dots is specified.

[Format]
<X22>,n - n

● Parameter
n [Print data] = Data

[Coding example]
<A>
<V>100<H>200<P>2<L>0304**<X22>,ABCDE**
<Q>2
<Z>

[Supplementary Explanation]
1. The X22 font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. Font pitch (fixed/proportional) can be selected via command or LCD settings.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<PS>	<PR>	<F>	<&>	</>	<0>	<WD>
Barcode	<D><d>	<BL><d>								
Calendar[*1]	<WA>									

*1 Optional

X22 font character set

Basic size is 24 x 24 dots (width x height)

X22 FONT(L0202) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	`	p				—	タ	ミ		
1	!	1	A	Q	a	q			。	ア	チ	ム		
2	”	2	B	R	b	r			「	イ	ツ	メ		
3	#	3	C	S	c	s			」	ウ	テ	モ		
4	$	4	D	T	d	t			、	エ	ト	ヤ		
5	%	5	E	U	e	u			・	オ	ナ	ユ		
6	&	6	F	V	f	v			ヲ	カ	ニ	ヨ		
7	’	7	G	W	g	w			ァ	キ	ヌ	ラ		
8	(	8	H	X	h	x			ィ	ク	ネ	リ		
9	)	9	I	Y	i	y			ゥ	ケ	ノ	ル		
A	*	:	J	Z	j	z			ェ	コ	ハ	レ		
B	+	;	K	[	k	{			ォ	サ	ヒ	ロ		
C	,	<	L	¥	l	¦			ャ	シ	フ	ワ		
D	—	=	M	]	m	}			ュ	ス	ヘ	ン		
E	.	>	N	^	n	~			ョ	セ	ホ	゛		
F	/	?	O	_	o				ッ	ソ	マ	°		

The print sample shown above is issued with a head density of 8 dots/mm and an expansion factor of 2 (vertical/horizontal).
The data from 00 (H) to 1F (H) are control codes and you cannot use them.

8.4 Font

X23 Font (Basic size 48x48 dots)

ESC+X23

Hexadecimal code	ESC	X23	Parameter
	$<1B>_{16}$	$<58>_{16}<32>_{16}<33>_{16}$	,an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of : width 48 dots, height 48 dots is specified.

[Format]

<X23>,an~n

● Parameter

a[Smoothing] = 0 : Smoothing disabled
= 1 : Smoothing ON
(Only available if expansion factor is between 3 and 12)

n[Print data] = Data

[Coding example]

<A>
<V>100<H>200<P>2<L>0304**<X23>,0ABCDE**
<Q>2
<Z>

[Supplementary Explanation]

1. The X23 font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. Font pitch (fixed/proportional) can be selected via command or LCD settings.
3. When the smoothing is enabled, and the expansion <L> command is set to 1 or 2 or from 13 to 36, the smoothing function will be ignored.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<PS>	<PR>	<F>	<&>	</>	<0>	<WD>
Barcode	<D><d>	<BL><d>								
Calendar	<WA>									

*1 Optional

X23 font character set

Basic size is 48 x 48 dots (width x height)

X23 FONT(L0101) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	`	p				ー	タ	ミ		
1	!	1	A	Q	a	q			。	ア	チ	ム		
2	”	2	B	R	b	r			「	イ	ツ	メ		
3	#	3	C	S	c	s			」	ウ	テ	モ		
4	$	4	D	T	d	t			、	エ	ト	ヤ		
5	%	5	E	U	e	u			・	オ	ナ	ユ		
6	&	6	F	V	f	v			ヲ	カ	ニ	ヨ		
7	’	7	G	W	g	w			ァ	キ	ヌ	ラ		
8	(	8	H	X	h	x			ィ	ク	ネ	リ		
9	)	9	I	Y	i	y			ゥ	ケ	ノ	ル		
A	*	:	J	Z	j	z			ェ	コ	ハ	レ		
B	+	;	K	[	k	{			ォ	サ	ヒ	ロ		
C	,	<	L	¥	l	¦			ャ	シ	フ	ワ		
D	−	=	M	]	m	}			ュ	ス	ヘ	ン		
E	.	>	N	^	n	~			ョ	セ	ホ	゛		
F	/	?	O	_	o				ッ	ソ	マ	°		

The print sample shown above is issued with a head density of 8 dots/mm and an expansion factor of 1 (vertical/horizontal).
The data from 00 (H) to 1F (H) are control codes and you cannot use them.

8.5 Font

X24 Font (Basic size 48x48 dots)

ESC+X24

Hexadecimal code	ESC	X24	Parameter
	$<1B>_{16}$	$<58>_{16}<32>_{16}<34>_{16}$	,an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of : width 48 dots, height 48 dots is specified.

[Format]

<X24>,an~n

● Parameter

a [Smoothing] = 0 : Smoothing OFF
1 : Smoothing ON
(Only available if expansion factor is between 3 and 12)

n [Print data] = Data

[Coding example]

<A>
<V>100<H>200<P>2<L>0304**<X24>,0ABCDE**
<Q>2
<Z>

[Supplementary Explanation]

1. The X24 font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. Font pitch (fixed/proportional) can be selected via command or LCD settings.
3. When the smoothing is enabled, and the expansion <L> command is set to 1 or 2 or from 13 to 36, the smoothing function will be ignored.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<PS>	<PR>	<F>	<&>	</>	<0>	<WD>
Barcode	<D><d>	<BL><d>								
Calendar*1	<WA>									

*1 Optional

X24 font character set

Basic size is 48 x 48 dots (width x height)

X24 FONT(L0101) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	‘	p				ー	タ	ミ		
1	!	1	A	Q	a	q			。	ア	チ	ム		
2	”	2	B	R	b	r			「	イ	ツ	メ		
3	#	3	C	S	c	s			」	ウ	テ	モ		
4	$	4	D	T	d	t			、	エ	ト	ヤ		
5	%	5	E	U	e	u			・	オ	ナ	ユ		
6	&	6	F	V	f	v			ヲ	カ	ニ	ヨ		
7	’	7	G	W	g	w			ァ	キ	ヌ	ラ		
8	(	8	H	X	h	x			ィ	ク	ネ	リ		
9	)	9	I	Y	i	y			ゥ	ケ	ノ	ル		
A	*	:	J	Z	j	z			ェ	コ	ハ	レ		
B	+	;	K	[	k	{			ォ	サ	ヒ	ロ		
C	,	<	L	¥	l	¦			ャ	シ	フ	ワ		
D	−	=	M	]	m	}			ュ	ス	ヘ	ン		
E	.	>	N	^	n	~			ョ	セ	ホ	゛		
F	/	?	O	_	o				ッ	ソ	マ	゜		

The print sample shown above is issued with a head density of 8 dots/mm and an expansion factor of 1 (vertical/horizontal).
The data from 00 (H) to 1F (H) are control codes and you cannot use them.

8.6 Font

XU Font (Basic size 5x9 dots)

ESC+XU

Hexadecimal code	ESC	XU	Parameter
	$<1B>_{16}$	$<58>_{16}<55>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of : width 5 dots, height 9 dots is specified.

[Format]

<XU> n~n

● Parameter

n [Print data] = Data

[Coding example]

```
<A>
<V>100<H>200<P>2<L>0304<XU>ABCDE
<Q>2
<Z>
```

[Supplementary Explanation]

1. The XU font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. Font pitch (fixed/proportional) can be selected via command or LCD settings.
3. The character set varies according to setting of <CE> command.

[Valid Command]

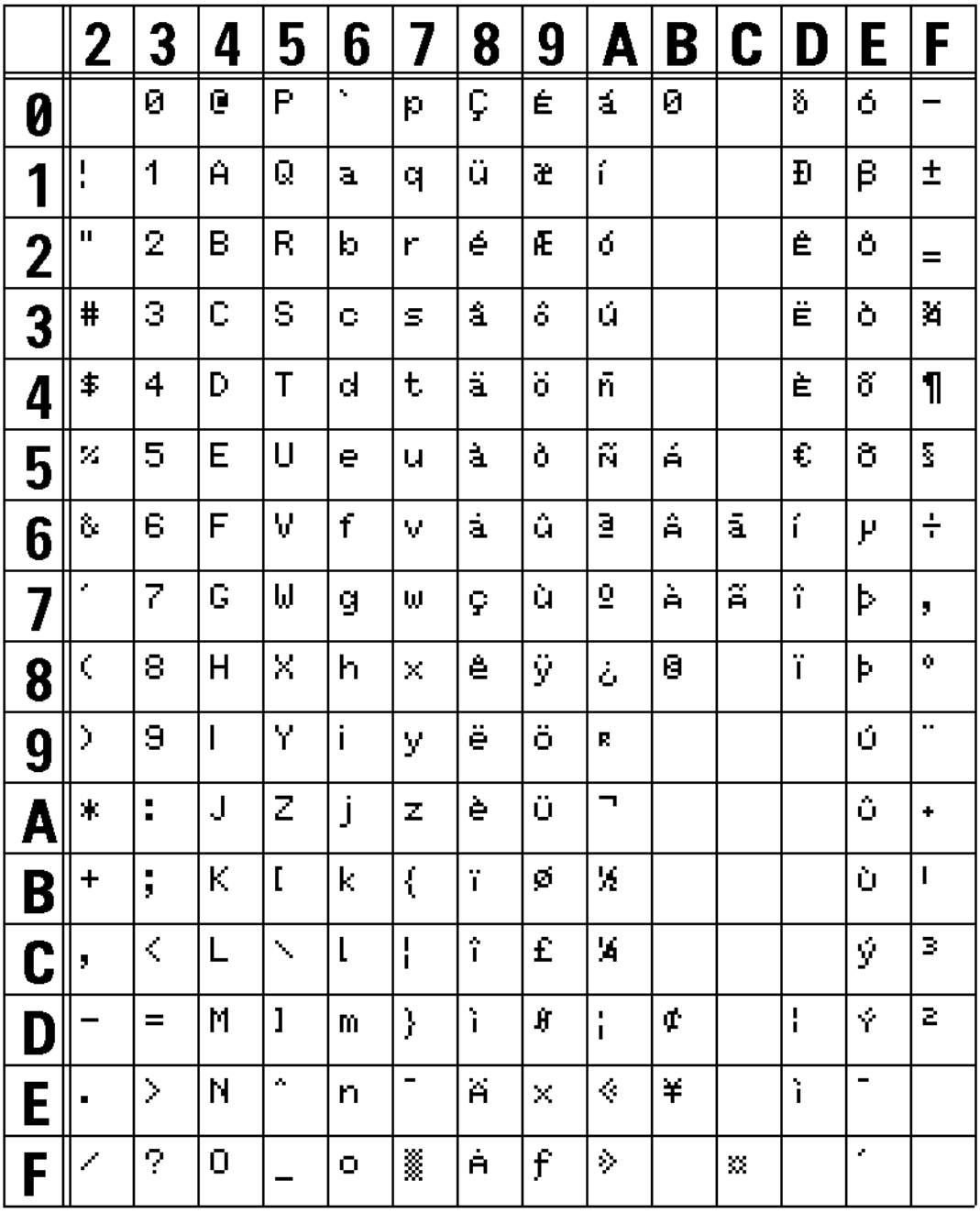
Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<PS>	<PR>	<F>	<&>	</>	<0>	<WD>
Barcode	<D><d>	<BL><d>								
Calendar*1	<WA>									

*1 Optional

XU font character set

Basic size is 5 x 9 dots (width x height)

XU FONT(L0303) 203DPI



The print sample shown above is issued with width 5 x height 9, magnification factor of 3 (vertical/horizontal) and DOS 858.

8.7 Font

XS Font (Basic size 17x17 dots)

ESC+XS

Hexadecimal code	ESC	XS	Parameter
	$<1B>_{16}$	$<58>_{16}<53>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of : width 17 dots, height 17 dots is specified.

[Format]

<XS>n~n

● Parameter

n[Print data]= Data

[Coding example]

<A>
<V>100<H>200<P>2<L>0304**<XS>ABCDE**
<Q>2
<Z>

[Supplementary Explanation]

1. The XS font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. Font pitch (fixed/proportional) can be selected via command or LCD settings.
3. The character set varies according to setting of <CE> command.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<PS>	<PR>	<F>	<&>	</>	<0>	<WD>
Barcode	<D><d>	<BL><d>								
Calendar[*1]	<WA>									

*1 Optional

XS font character set

Basic size is 17 x 17 dots (width x height)

XS FONT(L0202) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	'	p	Ç	É	á	0		ð	Ó	-
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	''	2	B	R	b	r	é	Æ	ó			Ê	Ô	‗
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	ı	µ	÷
7	'	7	G	W	g	w	ç	ù	º	À	Ã	Í	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Î	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	•
B	+	;	K	[	k	{	ï	ø	½				Ù	¹
C	,	<	L	\	l	¦	î	£	¼				ý	³
D	−	=	M	]	m	}	ì	Ø	¡	ø		¦	Ý	²
E	.	>	N	^	n	~	Ä	×	«	¥		Ì	¯	
F	/	?	O	_	o	▒	Å	ƒ	»		¤		´	

The print sample shown above is issued with width 17 x height 17, magnification factor of 2 (vertical/horizontal) and DOS 858.

8.8 Font

XM Font (Basic size 24x24 dots)

ESC+XM

Hexadecimal code	ESC	XM	Parameter
	$<1B>_{16}$	$<58>_{16}<4D>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of : width 24 dots, height 24 dots is specified.

[Format]

<XM>n~n

● Parameter

n[Print data] = Data

[Coding example]

<A>
<V>100<H>200<P>2<L>0304**<u><XM>ABCDE</u>**
<Q>2
<Z>

[Supplementary Explanation]

1. The XM font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. Font pitch (fixed/proportional) can be selected via command or LCD settings.
3. The character set varies according to setting of <CE> command.

[Valid Command]

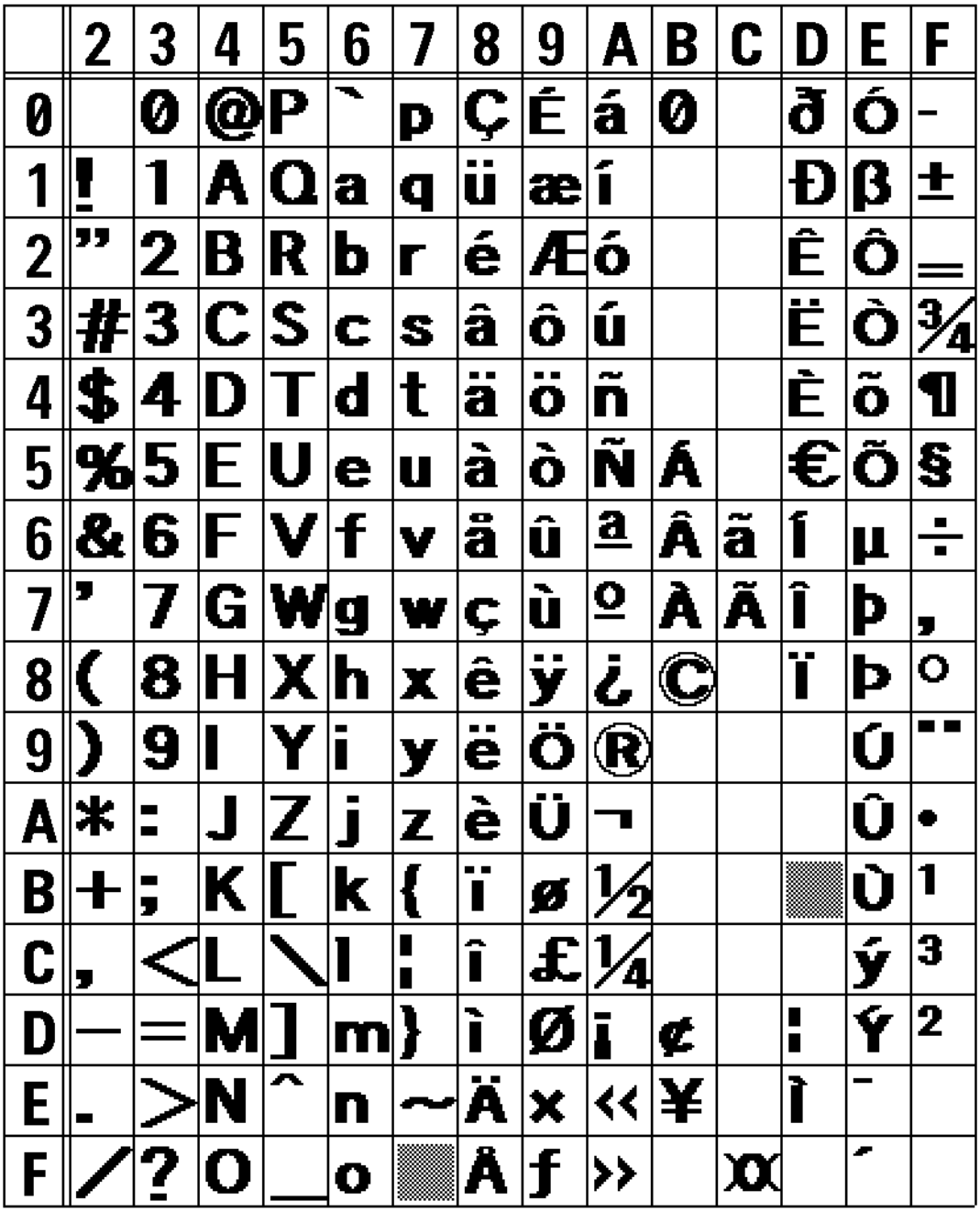
Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<PS>	<PR>	<F>	<&>	</>	<0>	<WD>
Barcode	<D><d>	<BL><d>								
Calendar[*1]	<WA>									

*1 Optional

XM font character set

Basic size is 24 x 24 dots (width x height)

XM FONT(L0202) 203DPI



The print sample shown above is issued with width 24 x height 24, magnification factor of 2 (vertical/horizontal) and DOS 858.

8.9 Font

XB Font (Basic size 48x48 dots)

ESC+XB

Hexadecimal code	ESC	XB	Parameter
	$<1B>_{16}$	$<58>_{16}<42>_{16}$	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of: width 48 dots, height 48 dots is specified.

[Format]

<XB>an – n

● Parameter

a[Smoothing] = 0: Smoothing OFF
1: Smoothing ON
(Valid for expansion factors <L> between 3 and 9)

n[Print data] = Data

[Coding example]

<A>
<V>100<H>200<P>2<L>0304**<XB>0ABCDE**
<Q>2
<Z>

[Supplementary Explanation]

1. XB font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. Font pitch (fixed/proportional) can be selected via command or LCD settings.
3. When the smoothing is enabled, and the expansion <L> command is set to 1 or 2 or from 10 to 36, the smoothing function will be ignored.
4. The character set varies according to setting of <CE> command.

[Valid Command]

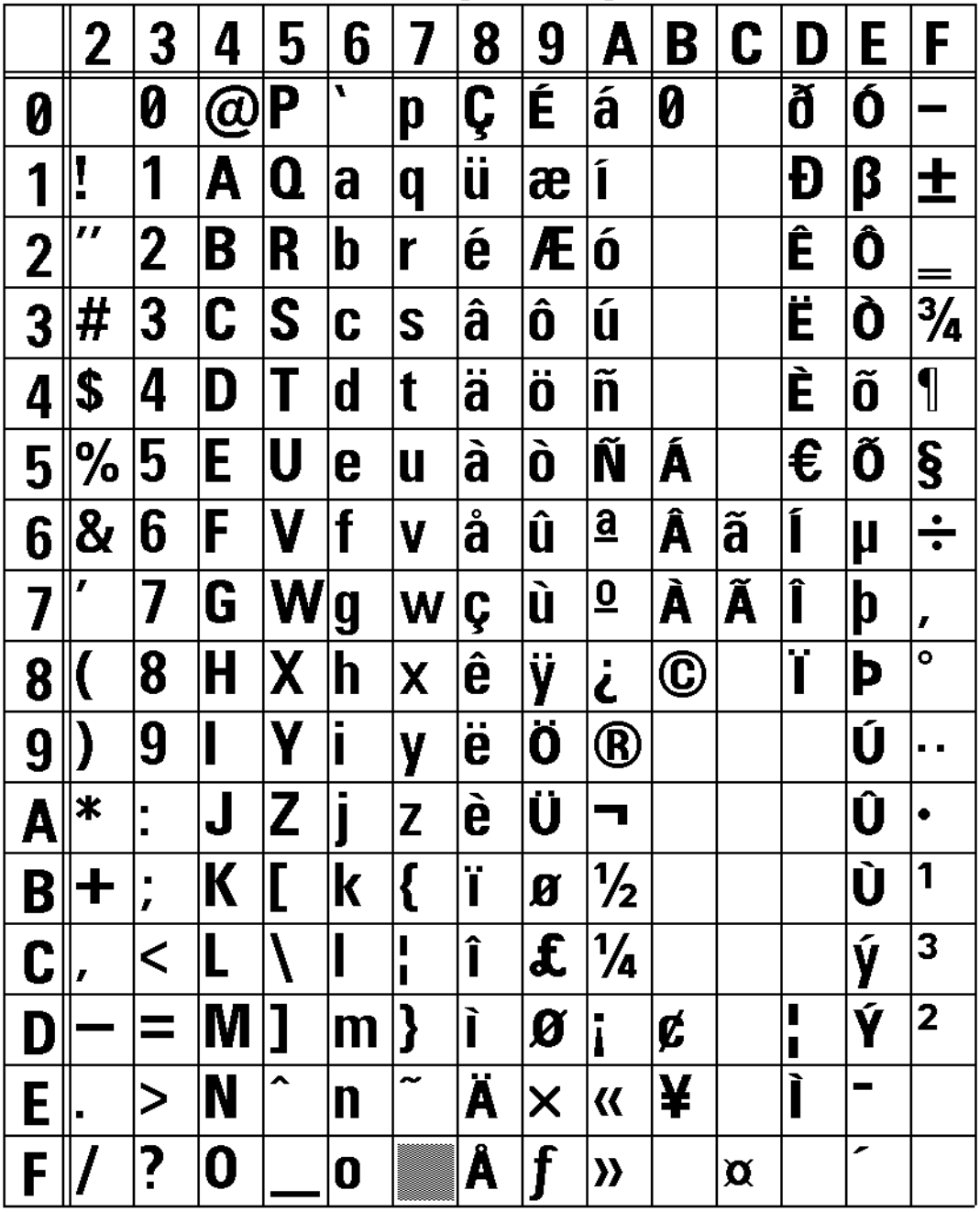
Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<PS>	<PR>	<F>	<&>	</>	<0>	<WD>
Barcode	<D><d>	<BL><d>								
Calendar*1	<WA>									

*1 Optional

XB font character set

Basic size is 48 x 48 dots (width x height)

XB FONT(L0101) 203DPI



	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	`	p	Ç	É	á	0		ð	Ó	-
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	”	2	B	R	b	r	é	Æ	ó			Ê	Ô	‗
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	’	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	•
B	+	;	K	[	k	{	ï	ø	½				Ù	1
C	,	<	L	\	l	¦	î	£	¼				ý	3
D	-	=	M	]	m	}	ì	Ø	¡	¢		¦	Ý	2
E	.	>	N	^	n	~	Ä	×	«	¥		Ì	¯	
F	/	?	O	_	o	▒	Å	ƒ	»		¤		´	

The print sample shown above is issued with width 48 x height 48, magnification factor of 1 (vertical/horizontal) and DOS 858.

8.10 Font

XL Font (Basic size 48x48 dots)

ESC+XL

Hexadecimal code	ESC	XL	Parameter
	$<1B>_{16}$	$<58>_{16}<4C>_{16}$	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of: width 48 dots, height 48 dots is specified.

[Format]

<XL>an~n

- Parameter

a[Smoothing] = 0: Smoothing OFF
1: Smoothing ON (Valid for expansion factors <L> between 3 and 9)

n[Print data] = Data

[Coding example]

<A>
<V>100<H>200<P>2<L>0304**<XL>0ABCDE**
<Q>2
<Z>

[Supplementary Explanation]

1. XL font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. Font pitch (fixed/proportional) can be selected via command or LCD settings.
3. When the smoothing is enabled, and the expansion <L> command is set to 1 or 2 or from 10 to 36, the smoothing function will be ignored.
4. The character set varies according to setting of <CE> command.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<PS>	<PR>	<F>	<&>	</>	<0>	<WD>
Barcode	<D><d>	<BL><d>								
Calendar*1	<WA>									

*1 Optional

XL font character set

Basic size is 48 x 48 dots (width x height)

XL FONT(L0101) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	‘	p	Ç	É	á	0		ð	Ó	-
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	″	2	B	R	b	r	é	Æ	ó			Ê	Ô	‗
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	′	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	••
A	*	:	J	Z	j	z	è	Ü	¬				Û	•
B	+	;	K	[	k	{	ï	ϕ	½				Ù	¹
C	,	<	L	\	l	¦	î	£	¼				ý	³
D	−	=	M	]	m	}	ì	Ø	¡	¢		¦	Ý	²
E	.	>	N	^	n	~	Ä	×	«	¥		Ì	¯	
F	⁄	?	O	_	o		Å	ƒ	»		¤		´	

The print sample shown above is issued with width 48 x height 48, magnification factor of 1 (vertical/horizontal) and DOS 858.

8.11 Font

OCR-A Font	ESC+OA

Hexadecimal code	ESC	OA	Parameter
	$<1B>_{16}$	$<4F>_{16}<41>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies OCR-A font.

[Format]
<OA>n~n

● Parameter
n[Print data] = Data

[Coding example]
<A>
<V>100<H>100<P>2<L>0202**<u><OA></u>ABC**
<Q>2
<Z>

[Supplementary Explanation]
Refer to the table below for font size of each head density.

[Font size table]

Head density	Font size (dots)
8 dots/mm (203 dpi)	W15 x H22
12 dots/mm (305 dpi)	W22 x H33
24 dots/mm (609 dpi)	W44 x H66

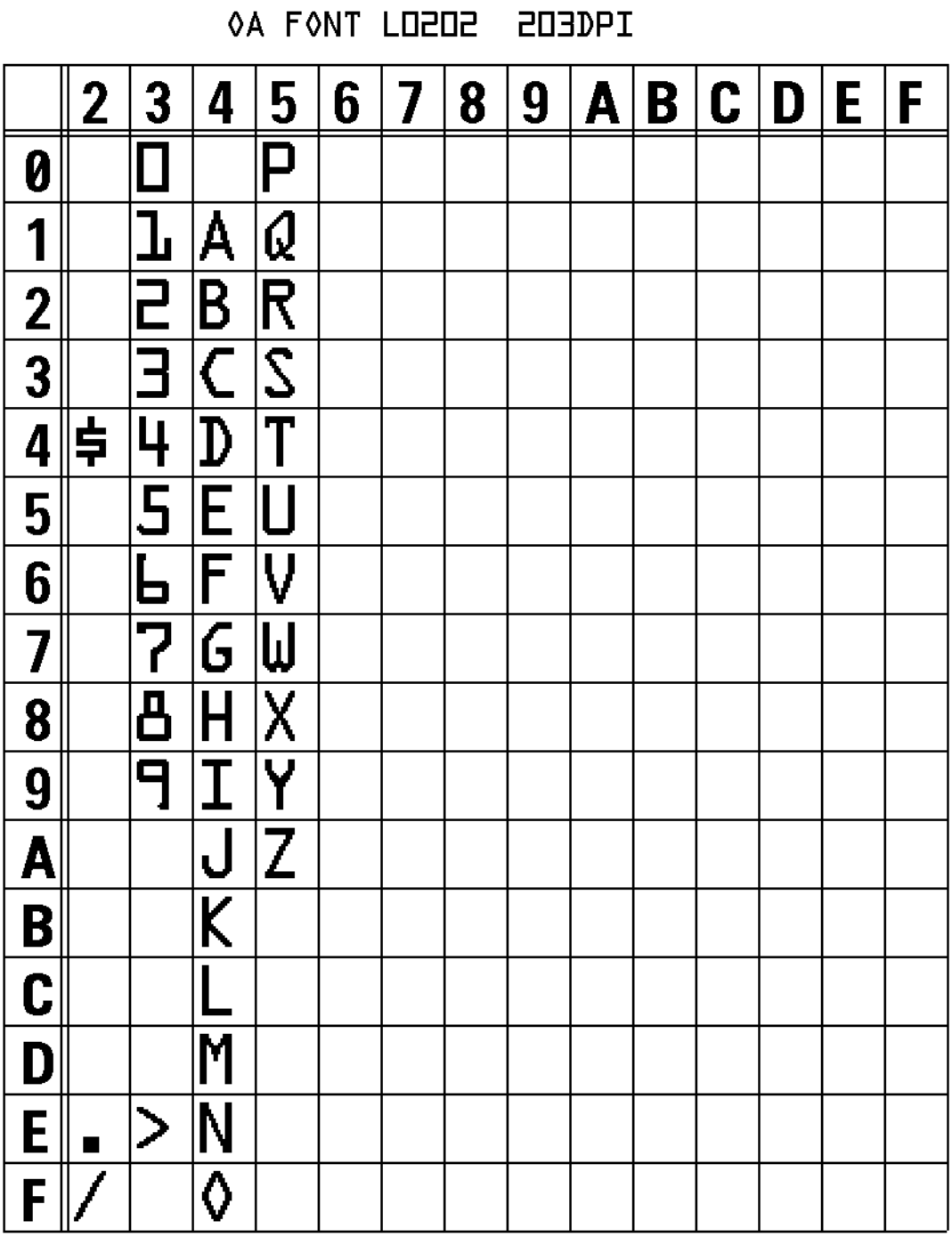
[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<F>	<&>	</>	<0>	<WD>		
Barcode	<D><d>	<BL><d>								
Calendar*1	<WA>									

*1 Optional

OCR-A font character set

OCR-A font settings.



	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0		P										
1		1	A	Q										
2		2	B	R										
3		3	C	S										
4	$	4	D	T										
5		5	E	U										
6		6	F	V										
7		7	G	W										
8		8	H	X										
9		9	I	Y										
A			J	Z										
B			K											
C			L											
D			M											
E	.	>	N											
F	/		0											

The print sample shown above is issued with a head density of 8 dots/mm, a font size of 15x22, and an expansion factor of 2 (vertical/horizontal).

8.12 Font

OCR-B Font

ESC+OB

Hexadecimal code	ESC	OB	Parameter
	$<1B>_{16}$	$<4F>_{16}<42>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying OCR-B font.

[Format]
<OB>n~n

●Parameter
n [Print data] = Data

[Coding Example]
<A>
<V>100<H>100<P>2<L>0202**<OB>ABC**
<Q>2
<Z>

[Supplementary Explanation]
Refer to the table below for font size of each head density.

[Font Size]

Head density	Font seize(dots)
8 dots/mm (203 dpi)	W20xH24
12 dots/mm (305 dpi)	W30xH36
24 dots/mm (609 dpi)	W60xH72

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<F>	<&>	</>	<0>	<WD>		
Barcode	<D><d>	<BL><d>								
Calendar*1	<WA>									

*1 Optional

OCR-B font Character Set

OCR-B font specification.

OB FONT(LO202) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P										
1	!	1	A	Q										
2	"	2	B	R										
3	#	3	C	S										
4	$	4	D	T										
5	%	5	E	U										
6	&	6	F	V										
7	'	7	G	W										
8	(	8	H	X										
9	)	9	I	Y										
A	*	:	J	Z										
B	+	;	K	¥										
C	,	<	L	¥										
D	−	=	M											
E	.	>	N											
F	/	?	O											

The print sample shown above is issued with a head density of 8 dots/mm, a font size of 20x24, and an expansion factor of 2 (vertical/horizontal).

8.13 Font

U Font (Basic size 5x9 dots)

ESC+U

Hexadecimal code	ESC	U	Parameter
	$<1B>_{16}$	$<55>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of: width 5 dots, height 9 dots is specified.

[Format]

<U>n~n

● Parameter

n [Print data] = data

[Coding Example]

<A>
<V>100<H>200<P>2<L>0304**<u><U>ABCDE</u>**
<Q>2
<Z>

[Supplementary Explanation]

1. The U font only allows the setting of a fixed pitch.
2. The character set varies according to setting of <CE> command.

[Valid Command]

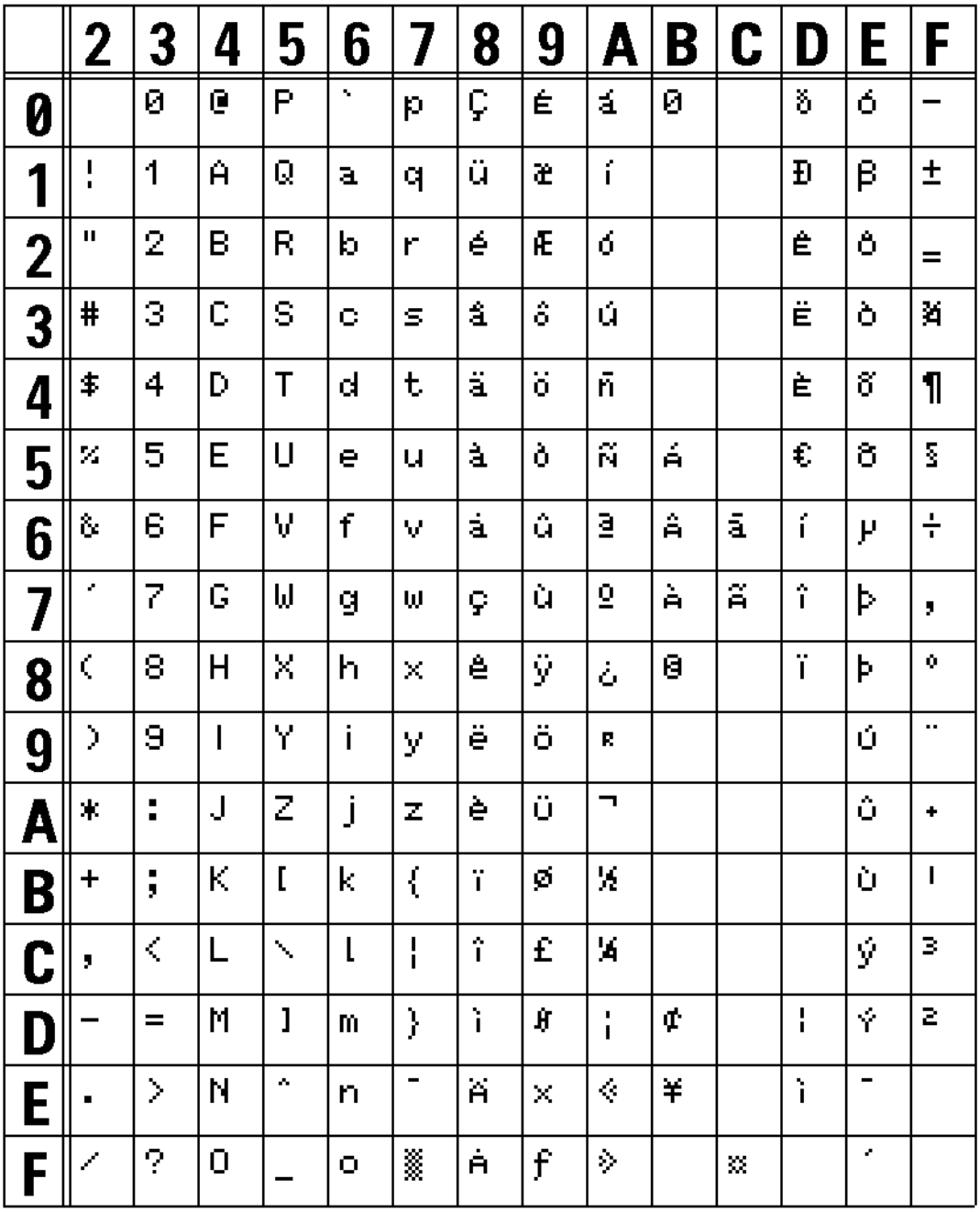
Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<F>	<&>	</>	<0>	<WD>		
Barcode	<D><d>	<BL><d>								
Calendar[*1]	<WA>									

*1 Optional

U font character set

Basic size is 5 x 9 dots (width x height)

U FONT(L0303) 203DPI



	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	`	p	Ç	É	á	0		ð	ó	−
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	"	2	B	R	b	r	é	Æ	ó			Ê	ô	=
3	#	3	C	S	c	s	â	ô	ú			Ë	ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	Ã	í	µ	÷
7	'	7	G	W	g	w	ç	ù	º	À	ã	Î	Þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	·
B	+	;	K	[	k	{	ï	ø	½				Ù	¹
C	,	<	L	\	l	¦	î	£	¼				ý	³
D	−	=	M	]	m	}	ì	Ø	¡	¢		¦	Ý	²
E	.	>	N	^	n	¯	Ä	×	«	¥		ì	¯	
F	/	?	O	_	o	▒	Å	ƒ	»		※		´	

The print sample shown above is issued with a head density of 8 dots/mm, magnification factor of 3 (vertical/horizontal) and DOS 858.

8.14 Font

S Font (Basic size 8x15 dots) — ESC+S

Hexadecimal code	ESC	S	Parameter
	$<1B>_{16}$	$<53>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Font with the basic size of: width 8 dots, height 15 dots is specified.

[Format]
<S>n~n

● Parameter
n [Print data] = data

[Coding Example]
<A>
<V>100<H>200<P>2<L>0304**<u><S>ABCDE</u>**
<Q>2
<Z>

[Supplementary Explanation]
1. The U font only allows the setting of a fixed pitch.
2. The character set varies according to setting of <CE> command.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<F>	<&>	</>	<0>	<WD>		
Barcode	<D><d>	<BL><d>								
Calendar *1	<WA>									

*1 Optional

S font character set

Basic size is 8 x 15 dots (width x height)

S FONT(L0303) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	'	p	Ç	é	á	0		ð	ó	−
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	"	2	B	R	b	r	é	Æ	ó			ê	ô	‗
3	#	3	C	S	c	s	â	ô	ú			ë	ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			è	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	í	µ	÷
7	'	7	G	W	g	w	ç	ù	º	À	Ã	î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	•
B	+	;	K	[	k	{	ï	ø	½				Ù	¹
C	,	<	L	\	l	¦	î	£	¼				ý	³
D	−	=	M	]	m	}	ì	Ø	¡	¢		¦	Ý	²
E	.	>	N	^	n	~	Ä	×	«	¥		ì	¯	
F	/	?	O	_	o	▒	Å	ƒ	»		☼		´	

The print sample shown above is issued with a head density of 8 dots/mm, magnification factor of 3 (vertical/horizontal) and DOS 858.

8.15 Font

M Font (Basic size 13x20 dots) — ESC+M

Hexadecimal code	ESC	M	Parameter
	$<1B>_{16}$	$<4D>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within item	The set command becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Font with the basic size of: width 13 dots, height 20 dots is specified.

[Format]
<M>n~n

● Parameter
n [Print data] = data

[Coding Example]
<A>
<V>100<H>200<P>2<L>0304**<u><M>ABCDE</u>**
<Q>2
<Z>

[Supplementary Explanation]
1. The M font only allows the setting of a fixed pitch.
2. The character set varies according to setting of <CE> command.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<F>	<&>	</>	<0>	<WD>		
Barcode	<D><d>	<BL><d>								
Calendar *1	<WA>									

*1 Optional

M font character set

Basic size is 13 x 20 dots (width x height)

M FONT(L0202) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	'	p	Ç	É	á	0		ð	ó	−
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	”	2	B	R	b	r	é	Æ	ó			Ê	Ô	‗
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	’	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	•
B	+	;	K	[	k	{	ï	ø	½				Ù	¹
C	,	<	L	\	l	¦	î	£	¼				ý	³
D	−	=	M	]	m	}	ì	Ø	¡	¢		¦	Ý	²
E	.	>	N	^	n	~	Ä	×	«	¥		Ì	¯	
F	/	?	O	_	o	▒	Å	ƒ	»		¤		´	

The print sample shown above is issued with a head density of 8dots/mm, magnification factor of 2 (vertical/horizontal) and DOS 858.

8.16 Font

WB Font (Basic size 18x30 dots)

ESC+WB

Hexadecimal code	ESC	WB	Parameter
	$<1B>_{16}$	$<57>_{16}<42>_{16}$	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within item	The set command becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of: width 18 dots, height 30 dots is specified.

[Format]

<WB>an~n

● Parameter

a [Smoothing] = 0: Smoothing OFF
1: Smoothing ON (Valid for expansion factors <L> between 3 and 12)

n [Print data] = Data

[Coding Example]

<A>
<V>100<H>200<P>2<L>0304**<WB>0ABCDE**
<Q>2
<Z>

[Supplementary Explanation]

1. The WB font only allows the setting of a fixed pitch.
2. When the smoothing is enabled, and the expansion <L> command is set to 1 or 2 or from 10 to 36, the smoothing function will be ignored.
3. The character set varies according to setting of <CE> command.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<F>	<&>	</>	<0>	<WD>		
Barcode	<D><d>	<BL><d>								
Calendar *1	<WA>									

*1 Optional

WB font character set

Basic size is 18 x 30 dots (width x height)

WB FONT(L0101) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	‘	p	Ç	É	á	0		ð	ó	-
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	”	2	B	R	b	r	é	Æ	ó			Ê	Ô	‗
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	’	7	G	W	g	w	ç	ù	º	À	Ã	Î	Þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	•
B	+	;	K	[	k	{	ï	ø	½				Ù	¹
C	,	<	L	\	l	¦	î	£	¼				ý	³
D	-	=	M	]	m	}	ì	Ø	¡	¢		¦	Ý	²
E	.	>	N	^	n	~	Ä	×	«	¥		Ì	¯	
F	/	?	O	_	o	▒	Å	ƒ	»		¤		’	

The print sample shown above is issued with a head density of 8 dots/mm, magnification factor of 1 (vertical/horizontal) and DOS 858.

8.17 Font

WL Font (Basic size 28x52 dots) — ESC+WL

Hexadecimal code	ESC	WB	Parameter
	$<1B>_{16}$	$<57>_{16}<4C>_{16}$	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Font with the basic size of: W28 x H52 dots is specified.

[Format]

<WL>an~n

●Parameter

a [Smoothing] = 0: Smoothing OFF
1: Smoothing ON (Valid for expansion factors <L> between 3 and 12)

n [Print data] = Data

[Coding Example]

<A>
<V>100<H>200<P>2<L>0304**<WL>0ABCDE**
<Q>2
<Z>

[Supplementary Explanation]

1. The WL font only allows the setting of a fixed pitch.
2. When the smoothing is enabled, and the expansion <L> command is set to 1 or 2 or from 10 to 36, the smoothing function will be ignored.
3. The character set varies according to setting of <CE> command.

[Valid Commands]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<F>	<&>	</>	<0>	<WD>		
Barcode	<D><d>	<BL><d>								
Calendar *1	<WA>									

WL font character set

Basic size is 28 x 52 dots (width x height)

WL FONT(L0101) 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	’	p	Ç	É	á	0		ð	ó	−
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	”	2	B	R	b	r	é	Æ	ó			Ê	Ô	‗
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	’	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	•
B	+	;	K	[	k	{	ï	ø	½				Ù	¹
C	,	<	L	\	l	¦	î	£	¼				ý	³
D	−	=	M	]	m	}	ì	Ø	¡	Ø		¦	Ý	²
E	.	>	N	^	n	~	Ä	×	«	¥		Ì	¯	
F	/	?	O	_	o	▒	Å	ƒ	»		¤		´	

The print sample shown above is issued with a head density of 8 dots/mm, magnification factor of 1 (vertical/horizontal) and DOS 858.

8.18 Font

Outline Font Design

ESC+$

Hexadecimal code	ESC	$	Parameter
	<1B>$_{16}$	<24>$_{16}$	a,bbb,ccc,d
Initial value	a=A,bbb=50,ccc=50,d=0		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]
Specifying the type, size, and shape of font.

[Format]
<$>a,bbb,ccc,d

●Parameter

a [Font type]」 = A: Helvetica bold (Proportional)
B: Helvetica bold (Inter-character pitch fixed)
K: Kanji specified by hexadecimal number *1
L: Kanji specified by binary number *1
k: Kanji (vertical) specified by hexadecimal number *1
l: Kanji(horizontal) specified by hexadecimal number*1

b[Font width] = Valid range: 24 to 999 dots

c[Font height] = Valid range: 24 to 999 dots

d[Font design] = 0: Normal font (Black)
1: White characters on black background
2: Grey font (Pattern 1)
3: Grey font (Pattern 2)
4: Grey font (Pattern 3)
5: Font with shadow
6: White characters with shadow on black background
7: Mirrored font
8: Normal italic font
9: White italic characters with shadow on black background

*1 Will specify Kanji outline font

[Coding example] Font type: A, font width: 100 dots, font height: 100 dots, font design: 1

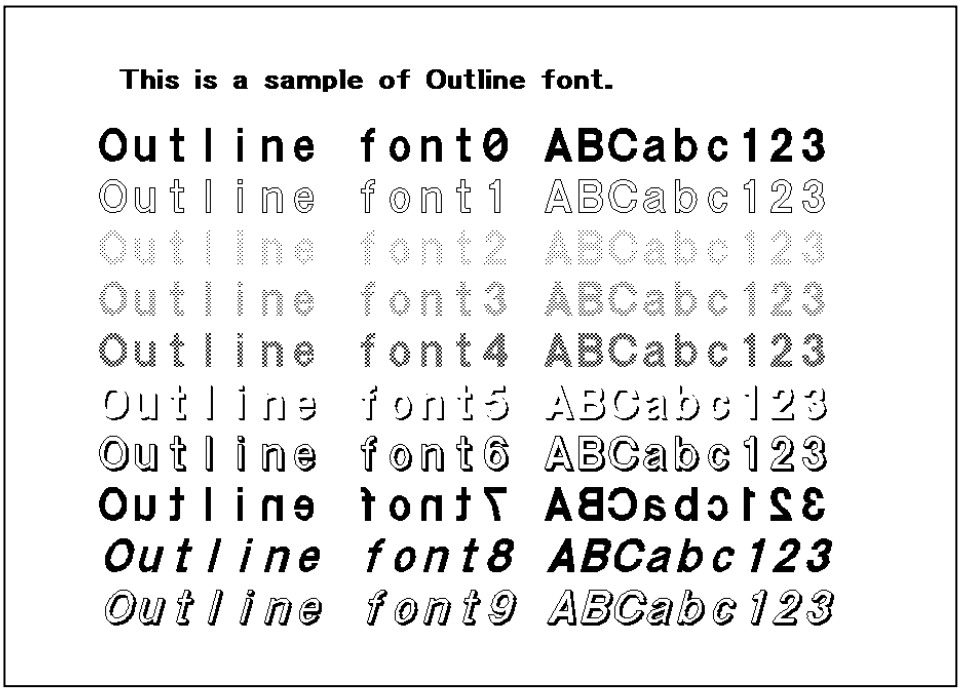
```
<A>
<V>100<H>100<P>2
<$>A,100,100,1<$=>SATO
<Q>2
<Z>
```

[Supplementary Explanation]
1. Italic characters are tilt in an angle of 15-degree, within their specified width.
2. The outline font printing command <$=> shall be executed after the outline font design selection <$>.
3. For the font design 1 thru 9, if the specified dot setting is irregularly small, the font cannot be identified.
4. If the font width / height are very small, there can be cases that the font is squeezed.

[Valid Command]

Font	<$=>									

Outline Font Design



The print sample shown above is issued with a head density of 8 dots/mm

8.19 Font

Outline Font Print

ESC+$=

Hexadecimal code	ESC	$=	Parameter
	$<1B>_{16}$	$<24>_{16}<3D>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies printing command of outline font

[Format]
<$=>n~n

●Parameter
n[Print data] = Data

[Coding example] Print data: SATO
<A>
<V>100<H>100<P>2
<$>A,100,100,1**<u><$=>SATO</u>**
<Q>2
<Z>

[Supplementary Explanation]
1. The outline font printing commando <$=> shall be executed after the outline font design selection <$>.
2. Font height includes both ascender and descender area. For proportional pitch, the character width of outline font differs depending on the font to be used.
3. Use character pitch command <P> to specify font pitch.
4. Italic characters are tilt in an angle of 15-degree, within their specified width. As for the height specification, both ascender and descender area are included.
5. For the font design 1 thru 9, if the specified dot setting is irregularly small, the font cannot be identified.
6. If the font width / height are very small, there can be cases that the font is squeezed.
7. JIS or Shift JIS can be used for Kanji outline font, which should correspond with the printer settings to proper printing. Specify Kanji code by <KC> command or LCD setting.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<%>	<$>	<F>						
Calendar *1	<WA>									

*1 Optional

Outline Font Character Set

Characters consists of Helvetica bold (character pitch fixed), 50x50 dots, Standard font (Black)

OUTLINE FONT0 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	‘	p	Ç	É	á			ð	Ó	–
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	"	2	B	R	b	r	é	Æ	ó			Ê	Ô	=
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	
6	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	´	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	·
B	+	;	K	[	k	{	ï	ø	½				Ù	¹
C	,	<	L	\	l	¦	î	£	¼				ý	³
D	–	=	M	]	m	}	ì	Ø	¡	¢			Ý	²
E	.	>	N	^	n	~	Ä	×	«	¥		Ì	¯	
F	/	?	O	_	o		Å	ƒ	»				´	

The print sample shown above is issued with a head density of 8 dots/mm

8.20 Font

CG Font

ESC+RD

Hexadecimal code	ESC	RD	Parameter
	$<1B>_{16}$	$<52>_{16}<44>_{16}$	abc,ddd,eee,n~n
Initial value	b=0		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying CG font type, font style, font size, and print data.

[Format]
<RD>abc,ddd,eee,n~n

●Parameter
a [Font type] = A [CG Times]
B [CG Triumvirate]

Symbol	Parameter name	Setting value	Character set
b	Character encoding selection	-	Character set specified by <CE>
		0	858 (default)
		1	ISO 8859/1 Latin1
		2	ISO 8859/2 Latin 2
		3	ISO 8859/9 Latin 5
		4	CP737 DOS Greek
		5	CP855 DOS Cyrillic
		6	-
		7	-
		8	PC-850 Multilingual
		9	CP852 DOS Central European
		A	CP857 DOS Turkish
		B	CP866 DOS Cyrillic II
		C	CP1250 Windows Central European
		D	CP1251 Windows Cyrillic
		E	CP1252 Windows Western Latin 1
		F	CP1253 Windows Greek
		G	CP1254 Windows Turkish
		H	-
		I	-
		J	CP1257 Windows Baltic
		K	CP869 IBM Greek
		L	-
		M	Japanese X0201 *1
		@	Unicode UTF-8

*1: Specifying X0208 prints ISO 8859-1 Latin 1 character set.

c [Font style] = 0 Standard
1 Bold
2 Italic
3 Bold+Italic

d[Width] = Valid Range: 004 to 999(dots)
Valid Range: P02 to P99 (points)

e[Height] = Valid Range: 004 to 999(dots)
Valid Range: P02 to P99(points)

n[Print data] = Data

[Coding Example1] Font type: CG Times, Width: 10 pts, Height: 10 pts

<A>
<V>100<H>100<P>2
<RD>A00,P10,P10,SATO
<Q>2
<Z>

[Supplementary Explanation]

1. The font size is set by [dot number] or [point number].
2. The dot size does vary with printer type. (Refer top table below)

Head density	Size of 1 dot (mm)
8 dots/mm (203 dpi)	0.125
12 dots/mm (305 dpi)	0.083
24 dots/mm (609 dpi)	0.042

3. 1 point is 0.35mm.

[Font size range]

Head density	Valid range: Width range (dots)	Valid range: Height range (dots)
8 dots/mm (203 dpi)	4 to 832	4 to 999
12 dots/mm (305 dpi)	5 to 999	5 to 999
24 dots/mm (609 dpi)	9 to 999	9 to 999

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<%>	<F>	<PS>	<PR>					

CG Times font character set

CG Times font settings

CG TIMES FONT 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	`	p	Ç	É	á			ð	Ó	-
1	!	1	A	Q	a	q	ü	æ	í			Đ	ß	±
2	"	2	B	R	b	r	é	Æ	ó			Ê	Ô	‗
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á			Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	'	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	·
B	+	;	K	[	k	{	ï	ø	½				Ù	¹
C	,	<	L	\	l	|	î	£	¼			ý	³
D	-	=	M	]	m	}	ì	Ø	¡	ç		¦	Ý	²
E	.	>	N		n		Ä	×	«	¥		Ì	¯	
F	/	?	O	_	o		Å	*f*	»		¤		´	

Print sample in following condition: Head density: 8 dots/mm, 40x40 point, DOS 858.

CG Triumvirate font character set

CG Triumvirate Font settings

CG TRIUMVIRATE FONT 203DPI

	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	`	p	Ç	É	á			ð	Ó	-
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	"	2	B	R	b	r	é	Æ	ó			Ê	Ô	
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á			Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	'	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				Ú	¨
A	*	:	J	Z	j	z	è	Ü	¬				Û	·
B	+	;	K	[	k	{	ï	ø	½				Ù	1
C	,	<	L	\	l	|	î	£	¼			ý	3
D	-	=	M	]	m	}	ì	Ø	¡	¢		¦	Ý	2
E	.	>	N	^	n	~	Ä	×	«	¥		Ì		
F	/	?	O	_	o		Å	ƒ	»		¤		´	

Print sample in following condition: Head density: 8 dots/mm, 40x40 point, DOS 858.

8.21 Font

Multiple Language

ESC+RG

Hexadecimal code	ESC	<RG>	Parameter
	$<1B>_{16}$	$<52>_{16}<47>_{16}$	a,b,c,ddd,eee,ffff…fff
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Print multiple language fonts.

[Format]
<RG> a,b,c,ddd,eee,ffff…fff

● Parameter

a : [Character code] Character code of print data to be specified to a parameter f. See the table below.
b : [Font set] Font type for printing See the table below
c : [Modification] 0: Standard
1: BOLD
2: Italic
3: BOLD+Italic
d : [Width] Valid range: 20 to 999 (dots)
Valid range: P09 to P99 (points)
e : [Height] Valid range: 20 to 999 (dots)
Valid range: P09 to P99 (points)
*One point is 0.35 mm.
f [Print data] (character code)

[Character code list]

Parameter a	Character code
0	UNICODE (UTF-8)
1	UNICODE (UTF-16BE) ***Recommended**
2	S-JIS
3	BIG5
4	GB18030
5	KSX 1001(EUC-KR)

[Font set list]

Parameter b	Font name	Font set	Font type	Character code range (UTF-16BE)
0	AR Hebe Sans	WGL4	Hebe Serif	0020-FB02
1	AR Hebe Sans Farsi	Farsi (Arabic) +ISO8859-1	Hebe Serif	0600-06FF FE70-FEFC
2	AR Hebe Sans Thai	Thai +ISO8859-1	Hebe Serif	0E01-0E5B
3	AR Hebe Sans Hindi	Hindi +ISO8859-1	Hebe Serif	0901-097F
4	AR Gothic Tradional Chinese	WGL4	Hebe Serif	0020-FFE6
		Big5	MobileGothic	
		GB-18030	Crystalzhonghei	
		JISx0208(+NEC) JISx0201	MobileGothic	
		KSX 1001	MobileGothic	
5	AR Gothic Japanese	WGL4	Hebe Serif	0020-FFE6
		JISx0208(+NEC) JISx0201	MobileGothic	
		KSX 1001	MobileGothic	
		GB-18030	Crystalzhonghei	
		Big5	MobileGothic	
6	AR Gothic Simplified Chinese	WGL4	Hebe Serif	0020-FFE5
		GB-18030	Crystalzhonghei	
7	AR Gothic Korean	WGL4	Hebe Serif	0020-FFE6
		KSX 1001	MobileGothic	
		JISx0208(+NEC) JISx0201	MobileGothic	
		GB-18030	Crystalzhonghei	
		Big5	MobileGothic	
8	AR Silver Serif	WGL4	Silver Serif	0020-FB02
9	AR Mincho Tradional Chinese	WGL4	Silver Serif	0020-FFE6
		Big5	Mincho	
		GB-18030	Shusong2M	
		JISx0208(+NEC) JISx0201	CrystalMincho	
		KSX 1001	Mincho	
10	AR Mincho Japanese	WGL4	Silver Serif	0020-FFE6
		JISx0208(+NEC) JISx0201	CrystalMincho	
		KSX 1001	Mincho	
		GB-18030	Shusong2M	
		Big5	Mincho	
11	AR Mincho Simplified Chinese	WGL4	Silver Serif	0020-FFE5
		GB-18030	Shusong2M	
12	AR Mincho Korean	WGL4	Silver Serif	0020-FFE6
		KSX 1001	Mincho	
		JISx0208(+NEC) JISx0201	CrystalMincho	
		GB-18030	Shusong2M	
		Big5	Mincho	

[Coding example] Character code = UTF16, Font set = SJIS, Modification = Standard, Width = 20 dots, Height = 20 dots
Print data = SATO

<A>
<V>100<H>100<P>2
<RG>1,5,0,20,20,<FF33>$_{16}$<FF21>$_{16}$<FF34>$_{16}$<FF2F>$_{16}$
<Q>2
<Z>

[Notes]

1. When a character code other than UTF-16 is specified, the character code will be converted into UTF-16. If there were codes that cannot be converted, they are replaced by single spaces.
2. When UTF-16BE is specified as a character code or character codes don't exist in the font set after UTF-16BE conversion, these character codes are not printed. When a space or a square are filled in the font set for the character code, these images are printed.
3. The size of one dot is 0.125 mm for 203 dpi, 0.083 mm for 305 dpi and 0.042 mm for 609 dpi.
4. Character size may be smaller than parameter, because it takes into account the multi-language
5. UTF-8 supports up to four byte character code. 5 bytes UTF-8 and 6 bytes UTF-8 are not supported.
6. UTF-16BE supports up to two byte character code. 3 bytes UTF-8 and 4 bytes UTF-16BE are not supported.
7. Complex script languages (Arabic, Hindi, Thai) are printed with proportional fonts, regardless of setting of font type in order to use the formatter function and the combined font function.
8. The linefeed code cannot be inserted among one word or one character code forming one character for the complex script languages (Arabic, Hindi, Thai). If the linefeed is inserted, the rendering result is not guaranteed.
9. Comply with Unicode 2.1 (note that if the first byte is 0x1b when UTF-16BE is specified, it is judged as a ESC code).
10. When executing sequential number printing in Arabic, Hindi and Thai, the character codes are rendered as a character string and it may not function properly.
11. This command doesn't support partial editing because the complex script languages (Arabic, Hindi, Thai) extract the character string for using the formatter function and the combined font function.
12. Complex script languages (Arabic, Hindi, Thai) render character codes as character strings in order to use the formatter function and the combined font function. Other languages render character codes in character units, so that a gap between fonts is different from that of the complex script languages.
13. Note that when a combination of character codes and font sets is other than below table, the expected character may not be printed.

Font set	Character code
WGL4, Arabic, Thai, Hindi	UNICODE(UTF-16BE),UNICODE(UTF-8)
Big5	UNICODE(UTF-16BE),Big5,UNICODE(UTF-8)
SJIS	UNICODE(UTF-16BE),SJIS ,UNICODE(UTF-8)
GB18030	UNICODE(UTF-16BE),GB18030,UNICODE(UTF-8)
KSX1001(EUC-KR)	UNICODE(UTF-16BE),KSX1001(EUC-KR), UNICODE (UTF-16)

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<%>	<F>	<PS>	<PR>					

Multiple language sample

b	Fontname	Sample
0	AR Hebe Sans	This is a fontsample.
8	AR Silver Serif	This is a fontsample.
1	AR Hebe Sans Farsi	هذا هو عينة من الخط.
2	AR Hebe Sans Thai	นี้คือตัวอย่างของตัวอักษร
3	AR Hebe Sans Hindi	इस फॉन्ट का एक नमूना है.
4	AR Gothic Tradional Chinese	這是字體的樣本。
9	AR Mincho Tradional Chinese	這是字體的樣本。
6	AR Gothic Simplified Chinese	这是字体的样本。
11	AR Mincho Simplified Chinese	这是字体的样本。
5	AR Gothic Japanese	これはフォントのサンプルです。
10	AR Mincho Japanese	これはフォントのサンプルです。
7	AR Gothic Korean	이것은 글꼴의 샘플입니다.
12	AR Mincho Korean	이것은 글꼴의 샘플입니다.

Print sample in following condition: Head density: 8 dots/mm, 28x28 point

8.22 Font

Scalable Font

ESC+RH

Hexadecimal code	ESC	RH	Parameter
	$<1B>_{16}$	$<52>_{16}<47>_{16}$	a,b…b,c,ddd,eee,f…f
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Built-in scalable font and the TTF font downloaded using file download [DC2]DE of a common command are printed.

[Format]

<RH>a,b・・・b,c,ddd,eee, ffff…fff

● Parameter

a:[Character code] = 0:UNICODE (UTF-8)
1: UNICODE (UTF-16BE)

b:[Font set] = Valid range: See the table below

c:[Modification] = 0: Standard
1: Bold
2: Italic
3: Bold + Italic

d : [Width] = Valid range: 020 to 999 (dots)
Valid range: P09 to P99 (points)

e : [Height] = Valid range: 020 to 999 (dots)
Valid range: P09 to P99 (points)

*One point is 0.35 mm.

*The valid range of height and width is 832 dots for 203 dpi.

f : [Print Data] = Data

[Built-in font set list]

Paramete b	Font name
CGTIMES.ttf	CG Times
CGTRIUMVIRATE.ttf	CG Triumvirate
HGMINCHOL.ttf	HGMLAG
SATO0.ttf	SATO 0
SATOALPHABC.ttf	Sato Alpha Bold Condensed
SATOBETABI.ttf	Sato Beta Bold Italic
SATOFOLIOB.ttf	Sato Folio Bold
SATOFUTURAMC.ttf	Sato Futura Medium Condensed
SATOGAMMA.ttf	Sato Gamma
SATOOCRB.ttf	Sato OCR-B
SATOSANS.ttf	Sato Sans
SATOSERIF.ttf	Sato Serif
SATOSYM.ttf	Sato Symbol Set
SATOVICA.ttf	Sato Vica
SATOWING.ttf	Sato WingBats

[Coding example1] Printing of the built-in (scalable) font
Character code=UTF16BE,Font set=HGMINCHOL,
Modification=Standard, Width=20 dots, Height=20 dots, Print data=SATO

```
<A>
<V>100<H>100<P>2
<RG>1, HGMINCHOL.ttf,0,20,20,<FF33>16<FF21>16<FF34>16<FF2F>16
<Q>2
<Z>
```

[Coding example2] Printing of the downloaded True Type font
Character code=UTF16BE,Font set(The downloaded file name)=sample.ttf,
Modification=Standard, Width=40 dots, Height=40 dots, Print data=SATO

```
<A>
<V>100<H>100<P>2
<RH>1,sample.ttf,0,40,40,<FF33>16<FF21>16<FF34>16<FF2F>16
<Q>2
<Z>
```

[Coding example3] Printing of the downloaded True Type font
Character code=UTF16BE,Font set(The downloaded file name)=Sample.TTF,
Modification=Standard, Width=40 dots, Height=40 dots, Print data=SATO

```
<A>
<V>100<H>100<P>2
<RH>1,Sample.TTF,0,40,40,<FF33>16<FF21>16<FF34>16<FF2F>16
<Q>2
<Z>
```

[Notes]

1. When a character code other than UTF-16 is specified, the character code will be converted into UTF-16. If there are character codes that cannot be converted, all character strings specified as a parameter error will be printed.
2. If the font corresponding to specified character code doesn't exist, an invalid image defined in the font set will be printed.

Scalable font sample

Fontname	Sample
CGTIMES.ttf	ABCXYZabcxyz123
CGTRIUMVIRATE.ttf	ABCXYZabcxyz123
HGMINCHOL.ttf	ABCXYZabcxyz123
SATO0.ttf	ABCXYZabcxyz123
SATOALPHABC.ttf	ABCXYZabcxyz123
SATOBETABI.ttf	*ABCXYZabcxyz123*
SATOFOLIOB.ttf	**ABCXYZabcxyz123**
SATOFUTURAMC.ttf	ABCXYZabcxyz123
SATOGAMMA.ttf	ABCXYZabcxyz123
SATOOCRB.ttf	ABCXYZabcxyz123
SATOSANS.ttf	ABCXYZabcxyz123
SATOSERIF.ttf	ABCXYZabcxyz123
SATOSYM.ttf	ΔΕΖγδζνξο ∋⊕←→↑
SATOVICA.ttf	ABCXYZabcxyz123
SATOWING.ttf	♈♉♊◆❖⬥”⓪①

Print sample in following condition: Head density: 8 dots/mm, 30x30 point.

8.23 Font

16x16 dots Kanji in Horizontal Line

ESC+K1

Hexadecimal code	ESC	K1	Parameter
	$<1B>_{16}$	$<4B>_{16}<31>_{16}$	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 16x16 (width x height) dot horizontal written Kanji character print

[Format]

<K1>an~n
<C1>an~n

● Parameter

a [Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1] Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5

<A>
<V>100<H>200<P>2<L>0305
<K1>H81698A94816A83548367815B
<Q>2
<Z>

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3

<A>
<V>100<H>200<P>2<L>0203
<K1>B ! J3T ! K%5%H ! <
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = Kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. When the language setting of the printer is Japanese or Simplified Chinese or Traditional Chinese or Korean, printing follows the language setting.

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.24 Font

24x24 dots Kanji in Horizontal Line

ESC+K2

Hexadecimal code	ESC	K2	Parameter
	$<1B>_{16}$	$<4B>_{16}<32>_{16}$	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 24x24 (width x height) dot horizontal written Kanji character print

[Format]

<K2>an~n

● Parameter

a [Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1] Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5

<A>
<V>100<H>200<P>2<L>0305
<K2>H81698A94816A83548367815B
<Q>2
<Z>

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3

<A>
<V>100<H>200<P>2<L>0203
<K2>B ! J3T ! K%5%H ! <
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = Kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. When the language setting of the printer is Japanese or Simplified Chinese or Traditional Chinese or Korean, printing follows the language setting.

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.25 Font

22x22 dots Kanji in Horizontal Line

ESC+K3

Hexadecimal code	ESC	K3	Parameter
	$<1B>_{16}$	$<4B>_{16}<33>_{16}$	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 22x22 (width x height) dot horizontal written Kanji character print

[Format]

<K3>an~n

● Parameter

a [Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1]Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5

<A>
<V>100<H>200<P>2<L>0305
<K3>H81698A94816A83548367815B
<Q>2
<Z>

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3

<A>
<V>100<H>200<P>2<L>0203
<K3>B ! J3T ! K%5%H ! <
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = Kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.26 Font

32x32 dots Kanji in Horizontal Line

ESC+K4

Hexadecimal code	ESC	K4	Parameter
	$<1B>_{16}$	$<4B>_{16}<34>_{16}$	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 32x32 (width x height) dot horizontal written Kanji character print

[Format]

<K4>an~n

● Parameter

a [Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1]Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5

<A>
<V>100<H>200<P>2<L>0305
<K4>H81698A94816A83548367815B
<Q>2
<Z>

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3

<A>
<V>100<H>200<P>2<L>0203
<K4>B ! J3T ! K%5%H ! <
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = Kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.27 Font

40x40 dots Kanji in Horizontal Line

ESC+K5

Hexadecimal code	ESC	K5	Parameter
	$<1B>_{16}$	$<4B>_{16}<35>_{16}$	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 40x40 (width x height) dot horizontal written Kanji character print

[Format]

<K5>an~n

● Parameter

a [Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1]Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5

<A>
<V>100<H>200<P>2<L>0305
<K5>H81698A94816A83548367815B
<Q>2
<Z>

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3

<A>
<V>100<H>200<P>2<L>0203
<K5>B ! J3T ! K%5%H ! <
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = Kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.28 Font

16x16 dots Kanji in Horizontal Line with 1-byte Character

ESC+K8

Hexadecimal code	ESC	K8	Parameter
	$<1B>_{16}$	$<4B>_{16}<38>_{16}$	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 16x16 (width x height) dot horizontal written Kanji character print and W8 x H16 dots half size character in horizontal line.

[Format]

<K8>an~n

● Parameter

a [Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄｰ

<A>
<V>100<H>200<P>2<L>0305
<K8>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = Kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. This command is only available for Shift JIS kanji code and Unicode.
4. For the half size character (one byte character code), printing will be performed in W8 x H16 dots.
5. For the full size character (two byte character code), printing will be performed in W16 x H16 dots.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.29 Font

24x24 dots Kanji in Horizontal Line with 1-byte Character

ESC+K9

Hexadecimal code	ESC	K9	Parameter
	<1B>16	<4B>16<39>16	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 24x24 (width x height) dot horizontal written kanji character print and W12 x H24 dots half size character in horizontal line.

[Format]

<K9>an~n

● Parameter

a [Chinese selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄｰ

<A>
<V>100<H>200<P>2<L>0305
<K9>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4 bytes ASCII / 1 Kanji character
2. Binary code = Kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. This command is only available for Shift JIS kanji code and Unicode.
4. For the half size character (one byte character code), printing will be performed in W12 x H24 dots.
5. For the full size character (two byte character code), printing will be performed in W24 x H24 dots.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.30 Font

22x22 dots Kanji in Horizontal Line with 1-byte Character

ESC+KA

Hexadecimal code	ESC	KA	Parameter
	$<1B>_{16}$	$<4B>_{16}<41>_{16}$	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 22x22 (width x height) dot horizontal written kanji character print and W11 x H22 dots half size character in horizontal line.

[Format]

<KA>an~n

● Parameter

a [Chinese selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄｰ

<A>
<V>100<H>200<P>2<L>0305
<KA>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = Kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. This command is only available for Shift JIS kanji code and Unicode.
4. For the half size character (one byte character code), printing will be performed in W11 x H22 dots.
5. For the full size character (two byte character code), printing will be performed in W22 x H22 dots.
6. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.31 Font

32x32 dots Kanji in Horizontal Line with 1-byte Character

ESC+KB

Hexadecimal code	ESC	KB	Parameter
	<1B>16	<4B>16<42>16	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 32x32 (width x height) dot horizontal written kanji character print and W16 x H32 dots half size character in horizontal line.

[Format]

<KB>an~n

● Parameter

a[Chinese selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n[Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄ-

<A>
<V>100<H>200<P>2<L>0305
<KB>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. For the half size character (one byte character code), printing will be performed in W16 x H32 dots.
4. For the full size character (two byte character code), printing will be performed in W32 x H32 dots.
5. This command is only available for Shift JIS kanji code and Unicode.
6. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.32 Font

40x40 dots Kanji in Horizontal Line with 1-byte Character

ESC+KD

Hexadecimal code	ESC	KD	Parameter
	<1B>16	<4B>16<44>16	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies 40x40 (width x height) dot horizontal written kanji character print and W20 x H40 dots half size character in horizontal line.

[Format]

<KD>an~n

● Parameter

a[Chinese selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄｰ

<A>
<V>100<H>200<P>2<L>0305
<KD>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. For the half size character (one byte character code), printing will be performed in W20 x H40 dots.
4. For the full size character (two byte character code), printing will be performed in W40 x H40 dots.
5. This command is only available for Shift JIS kanji code and Unicode.
6. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.33 Font

16x16 dots Kanji in Vertical Line

ESC+k1

Hexadecimal code	ESC	k1	Parameter
	<1B>16	<6B>16<31>16	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies 16x16 (width x height) dot vertical written Kanji character print

[Format]
<k1>an~n

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n[Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1] Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5
<A>
<V>100<H>200<P>2<L>0305
<k1>H81698A94816A83548367815B
<Q>2
<Z>

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3
<A>
<V>100<H>200<P>2<L>0203
<k1>B!J3T!K%5%H!<
<Q>2
<Z>

[Supplementary Explanation]
1. HEX characters = Kanji Code 4bytes ASCII / 1 Kanji character
2. Binary code = Kanji Code 2bytes / 1 Kanji character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line. (Excluding when the kanji mode is [Japan, Compatible kanji])
7. When the language setting of the printer is Japanese or Simplified Chinese or Traditional Chinese or Korean, printing follows the language setting.

[Notes]
1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.34 Font

24x24 dots Kanji in Vertical Line

ESC+k2

Hexadecimal code	ESC	k2	Parameter
	<1B>16	<6B>16<32>16	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies 24x24 (width x height) dot vertical written Kanji character print

[Format]
<k2>an~n

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1] Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5

```
<A>
<V>100<H>200<P>2<L>0305
<k2>H81698A94816A83548367815B
<Q>2
<Z>
```

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3

```
<A>
<V>100<H>200<P>2<L>0203
<k2>B ! J3T ! K%5%H ! <
<Q>2
<Z>
```

[Supplementary Explanation]

1. HEX characters = Chinese Code 4bytes ASCII / 1 Chinese character
2. Binary code = Chinese Code 2bytes / 1 Chinese character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line. (Excluding when the kanji mode is [Japan, Compatible kanji])
7. When the language setting of the printer is Japanese or Simplified Chinese or Traditional Chinese or Korean, printing follows the language setting.

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.35 Font

22x22 dots Kanji in Vertical Line

ESC+k3

Hexadecimal code	ESC	k3	Parameter
	<1B>16	<6B>16<33>16	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies 22x22 (width x height) dot vertical written Kanji character print

[Format]
<k3>an~n

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1] Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5

```
<A>
<V>100<H>200<P>2<L>0305
<k3>H81698A94816A83548367815B
<Q>2
<Z>
```

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3

```
<A>
<V>100<H>200<P>2<L>0203
<k3>B！ J3T！ K%5%H！ <
<Q>2
<Z>
```

[Supplementary Explanation]

1. HEX characters = Chinese Code 4bytes ASCII / 1 Chinese character
2. Binary code = Chinese Code 2bytes / 1 Chinese character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line.

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.36 Font

32x32 dots Kanji in Vertical Line

ESC+k4

Hexadecimal code	ESC	k4	Parameter
	<1B>16	<6B>16<34>16	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies 32x32 (width x height) dot vertical written Kanji character print

[Format]
<k4>an~n

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1] Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5

```
<A>
<V>100<H>200<P>2<L>0305
<k4>H81698A94816A83548367815B
<Q>2
<Z>
```

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3

```
<A>
<V>100<H>200<P>2<L>0203
<k4>B ! J3T ! K%5%H ! <
<Q>2
<Z>
```

[Supplementary Explanation]

1. HEX characters = Chinese Code 4bytes ASCII / 1 Chinese character
2. Binary code = Chinese Code 2bytes / 1 Chinese character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line.

[Notes]

1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.37 Font

40x40 dots Kanji in Vertical Line

ESC+k5

Hexadecimal code	ESC	k5	Parameter
	<1B>16	<6B>16<35>16	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies 40x40 (width x height) dot vertical written Kanji character print

[Format]
<k5>an~n

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (JIS, Shift JIS, Unicode).

[Coding example 1] Shift JIS HEX code characters, Horizontal magnification: 3, Vertical magnification: 5
<A>
<V>100<H>200<P>2<L>0305
<k5>H81698A94816A83548367815B
<Q>2
<Z>

[Coding example 2] JIS binary code, Horizontal magnification: 2, Vertical magnification: 3
<A>
<V>100<H>200<P>2<L>0203
<k5>B ! J3T ! K%5%H ! <
<Q>2
<Z>

[Supplementary Explanation]
1. HEX characters = Chinese Code 4bytes ASCII / 1 Chinese character
2. Binary code = Chinese Code 2bytes / 1 Chinese character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line.

[Notes]
1. With the highlighting function the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.38 font

16x16 dots Kanji in Vertical Line with 1-byte Character

ESC+k8

Hexadecimal code	ESC	k8	Parameter
	<1B>16	<6B>16<38>16	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying to print the mixture text of W16 x H16 dots Kanji and W8 x H16 dots half size character in vertical line.

[Format]

<k8>an~n

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n [Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄ-

```
<A>
<V>100<H>200<P>2<L>0305
<k8>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>
```

[Supplementary Explanation]

1. HEX characters = Chinese Code 4bytes ASCII / 1 Chinese character
2. Binary code = Chinese Code 2bytes / 1 Chinese character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line. (Excluding when the kanji mode is [Japan, Compatible kanji])

[Notes]

1. With the highlighting function, the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. This command is valid for Shift JIS Kanji code or Unicode.
4. For the half size character specification (1-byte character code), printing will be performed in W8 x H16 dots.
5. For the full size character specification (2-byte character code), printing will be performed in W16 x H16 dots.

[Attention]

1. When half-sized character with voiced/P-sound consonant mark is specified, each part of character appears as a single character.
   e.g.) When the word "ﾊﾞｰ" is specified, it will be written separately such as " ﾊ ", " ﾞ ", " ｰ ".

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.39 Font

24x24 dots Kanji in Vertical Line with 1-byte Character

ESC+k9

Hexadecimal code	ESC	k9	Parameter
	<1B>16	<6B>16<39>16	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying to print the mixture text of W24 x H24 dots Kanji and W12 x H24 dots half size character in vertical line.

[Format]

<k9>an~n

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n[Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄ-

<A>
<V>100<H>200<P>2<L>0305
<k9>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Chinese Code 4 bytes ASCII / 1 Chinese character
2. Binary code = Chinese Code 2 bytes / 1 Chinese character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line. (Excluding when the kanji mode is [Japan, Compatible kanji])

[Notes]

1. With the highlighting function, the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. This command is valid for Shift JIS Kanji code or Unicode.
4. For the half size character specification (1-byte character code), printing will be performed in W12 x H24 dots.
5. For the full size character specification (2-byte character code), printing will be performed in W24 x H24 dots.

[Attention]

1. When half-sized character with voiced/P-sound consonant mark is specified, each part of character appears as a single character.
   e.g.) When the word "ﾊﾞｰ" is specified, it will be written separately such as " ﾊ ", " ﾞ ", " ｰ ".

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.40 Font

22x22 dots Kanji in Vertical Line with 1-byte Character

ESC+kA

Hexadecimal code	ESC	kA	Parameter
	<1B>16	<6B>16<41>16	an~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying to print the mixture text of W22 x H22 dots Kanji and W11 x H22 dots half size character in vertical line.

[Format]

<kA>an~n

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n[Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄ-

<A>
<V>100<H>200<P>2<L>0305
<kA>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>

[Supplementary Explanation]

1. HEX characters = Chinese Code 4 bytes ASCII / 1 Chinese character
2. Binary code = Chinese Code 2 bytes / 1 Chinese character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line.

[Notes]

1. With the highlighting function, the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. This command is valid for Shift JIS Kanji code or Unicode.
4. For the half size character specification (1-byte character code), printing will be performed in W11 x H22 dots.
5. For the full size character specification (2-byte character code), printing will be performed in W22 x H22 dots.
6. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Attention]

1. When half-sized character with voiced/P-sound consonant mark is specified, each part of character appears as a single character.
   e.g.) When the word "ﾊﾞｰ" is specified, it will be written separately such as "ﾊ", "ﾞ", "ｰ".

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.41 Font

32x32 dots Kanji in Vertical Line with 1-byte Character

ESC+kB

Hexadecimal code	ESC	kB	Parameter
	<1B>16	<6B>16<42>16	an~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying to print the mixture text of W32 x H32 dots Kanji and W16 x H32 dots half size character in vertical line.

[Format]
<kB>an~n

● Parameter
a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function
n[Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄ-
<A>
<V>100<H>200<P>2<L>0305
<kB>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>

[Supplementary Explanation]
1. HEX characters = Chinese Code 4 bytes ASCII / 1 Chinese character
2. Binary code = Chinese Code 2 bytes / 1 Chinese character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line.

[Notes]
1. With the highlighting function, the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. This command is valid for Shift JIS Kanji code or Unicode.
4. For the half size character specification (1-byte character code), printing will be performed in W16 x H32 dots.
5. For the full size character specification (2-byte character code), printing will be performed in W32 x H32 dots.
6. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Attention]
1. When half-sized character with voiced/P-sound consonant mark is specified, each part of character appears as a single character.
e.g.) When the word "ﾊﾞｰ" is specified, it will be written separately such as "ﾊ", "ﾞ", "ｰ".

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.42 Font

40x40 dots Kanji in Vertical Line with 1-byte Character

ESC+kD

Hexadecimal code	ESC	kD	Parameter
	<1B>16	<6B>16<44>16	abbn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying to print the mixture text of W40 x H40 dots Kanji and W20 x H40 dots half size character in vertical line.

[Format]

<kD>abbn~n

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

n[Data] = Refer to the code table (Shift JIS, Unicode).

[Coding example] Shift JIS HEX code characters, Data: 株式会社ｻﾄ-

```
<A>
<V>100<H>200<P>2<L>0305
<kD>H8A948EAE89EF8ED0BBC4B0
<Q>2
<Z>
```

[Supplementary Explanation]

1. HEX characters = Chinese Code 4 bytes ASCII / 1 Chinese character
2. Binary code = Chinese Code 2 bytes / 1 Chinese character
3. Smoothing function validity range = Horizontal/vertical valid range: factor 3 to 12
4. Highlighting function validity range = Horizontal/vertical valid range: factor 1 to 5
5. Unicode data contains control codes. Be sure to specify the HEX character fonts in Kanji mode to print the correct code.
6. Print result of two bytes under bar "_" is vertical line.

[Notes]

1. With the highlighting function, the character width enlarges proportional with the expansion factor.
2. Using the highlighting function, in some cases, depending on the type of font, characters become squeezed.
3. This command is valid for Shift JIS Kanji code or Unicode.
4. For the half size character specification (1-byte character code), printing will be performed in W20 x H40 dots.
5. For the full size character specification (2-byte character code), printing will be performed in W40 x H40 dots
6. When the Kanji mode setting is [Japan, Compatible Kanji] or [China, Simplified Chinese (GB18030)] or [China, Traditional Chinese (BIG5)] or [Korean (KSX1001)], it will be a command error.

[Attention]

1. When half-sized character with voiced/P-sound consonant mark is specified, each part of character appears as a single character.
   e.g.) When the word "ﾊﾞｰ" is specified, it will be written separately such as "ﾊ", "ﾞ", "ｰ".

[Valid Command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<&>	</>	<0>	<WD>			

8.43 Font

16x16 dots External Font Registration

ESC+T1

Hexadecimal code	ESC	T1	Parameter
	<1B>16	<54>16<31>16	abbn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Registering 16x16 dots external fonts.

[Format]
<T1>abbn~n

●Parameter

a [Registration data selection] = H: Registration code in HEX character
B: Registration code in binary code.

b [Registration font code address]

Using Kanji set <KS> command to set Japanese (01,2)
JIS code
H: Up to 95 registrations from "21" to "7F" is available.
B: Up to 95 registrations from 21H to 7FH is available.
Shift JIS code
H: Up to 95 registrations from "40" to "9E" is available.
B: Up to 95 registrations from 40H to 9EH is available.
Unicode
H: Up to 95 registrations from "00" to "5E" is available.
B: Up to 95 registrations from 00H to 5EH is available.

Using Kanji set <KS> command to set other than Japanese
(3 (China Simplified Chinese),
5 (China Traditional Chinese), 6 (Korean))
H: Up to 95 registrations from 21H to 7FH is available.
B: Up to 95 registrations from "21" to "7F" is available.

n [Registered external font data] = Data

[Coding Example 1] Registration data in JIS HEX character

```
<A>
<RU>0
<CC>0
<T1>H21
00FF ・・・・・・・・・・FF00
<Z>

<A>
<CC>0
<V>100<H>200<K1>H9021
<Q>2
<Z>
```

[Coding Example 2] Registration code in Shift JIS binary code.

```
<A>
<KS>0
<CC>0
<T1>B<40>16
<00FF ・・・・・・・・・・FF00>16
<Z>

<A>
<CC>0
<V>100<H>200<K1>B<90>16<40>16
<Q>2
<Z>
```

[Coding Example 3] Registration code in Unicode binary code.

```
<A>
<KS>0
<CC>0
<T1>B<00>16
<00FF ・・・・・・・・・・FF00>16
<Z>

<A>
<CC>0
<V>100<H>200<K1>B<E0>16<00>16
<Q>2
<Z>
```

[Coding Example 4] Register in the user registration memory

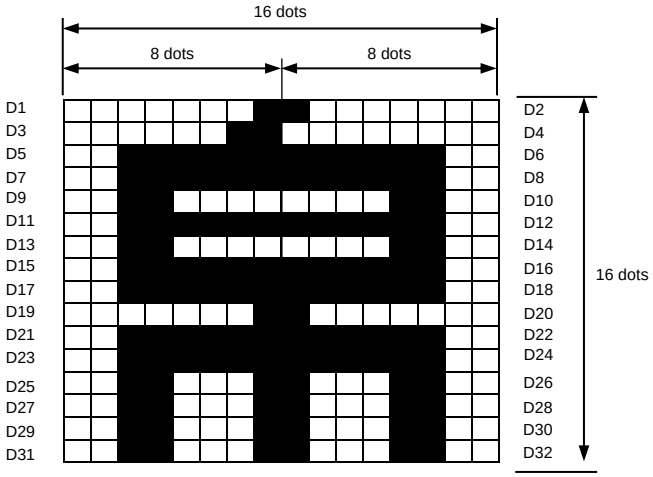
```
<A>
<KS>0
<CC>1
<T1>B<40>16
<00FF ・・・・・・・・・・FF00>16
<Z>
```

[Supplemental explanation]

1. Registering 16x16 dots external fonts in the internal memory or user registration memory.
2. The code to specify in the registration font code address needs to match the Kanji set (<KS>) and Kanji code (<KC>).
3. Overwriting registration data is available.
4. The order of data registration is as follows.
5. The data registered in the printer memory will be deleted at the power off. In this case, you need to register the data again.

External character file [16 x 16]

D1	D2
D3	D4
D5	D6
｜	｜
D31	D32



When registering the external characters described above, D1 data becomes <01>16 and D2 data becomes <80>16 because D1 consists of [00000001], D2 consists of [10000000].

In the same manner,D3 is $<03>_{16}$, D4 is $<00>_{16}$, D5 is $<3F>_{16}$, D6 is $<FC>_{16}$, and the external registration data will be $<018003003FFC.....>_{16}$ up to D32.

[Point]

1. The data registered in the user registration memory will be maintained after the printer's power is off.
2. You cannot use the internal memory in combination with the user registration memory.
3. Specify the slot to register.
   If <CC> command is not sent after the power on, the data are registered in the internal memory.

8.44 Font

24x24 dots External Font Registration

ESC+T2

Hexadecimal code	ESC	T2	Parameter
	<1B>16	<54>16<32>16	abbn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Invokes vertical external characters saved in the printer memory to print out

[Format]

<T2>abbn~n

●Parameter

a [Registration data selection] = H: Registration code in HEX character
B: Registration code in binary code.

b [Registration font code address]

Using Kanji set <KS> command to set Japanese (01,2)

JIS code

H: Up to 95 registrations from "21" to "7F" is available.

B: Up to 95 registrations from 21H to 7FH is available.

Shift JIS code

H: Up to 95 registrations from "40" to "9E" is available.

B: Up to 95 registrations from 40H to 9EH is available.

Unicode

H: Up to 95 registrations from "00" to "5E" is available.

B: Up to 95 registrations from 00H to 5EH is available.

Using Kanji set <KS> command to set other than Japanese

(3 (China Simplified Chinese), 5 (China Traditional Chinese), 6 (Korean))

H: Up to 95 registrations from "21" to "7F" is available.

B: Up to 95 registrations from 21H to 7FH is available.

n [Registered external font data] = Data

[Coding Example 1] Registration data in JIS HEX character

```
<A>
<RU>0
<CC>0
<T2>H21
00FF ・・・・・・・・・・FF00
<Z>

<A>
<CC>0
<V>100<H>200<K1>H9021
<Q>2
<Z>
```

[Coding Example 2] Registration code in Shift JIS binary code.

```
<A>
<KS>0
<CC>0
<T2>B<40>16
<00FF ・・・・・・・・・・FF00>16
<Z>

<A>
<CC>0
<V>100<H>200<K1>B<90>16<40>16
<Q>2
<Z>
```

[Coding Example 3] Registration code in Unicode binary code.

```
<A>
<CC>0
<T2>B<00>16
<00FF ・・・・・・・・・・FF00>16
<Z>

<A>
<CC>0
<V>100<H>200<K1>B<E0>16<00>16
<Q>2
<Z>
```

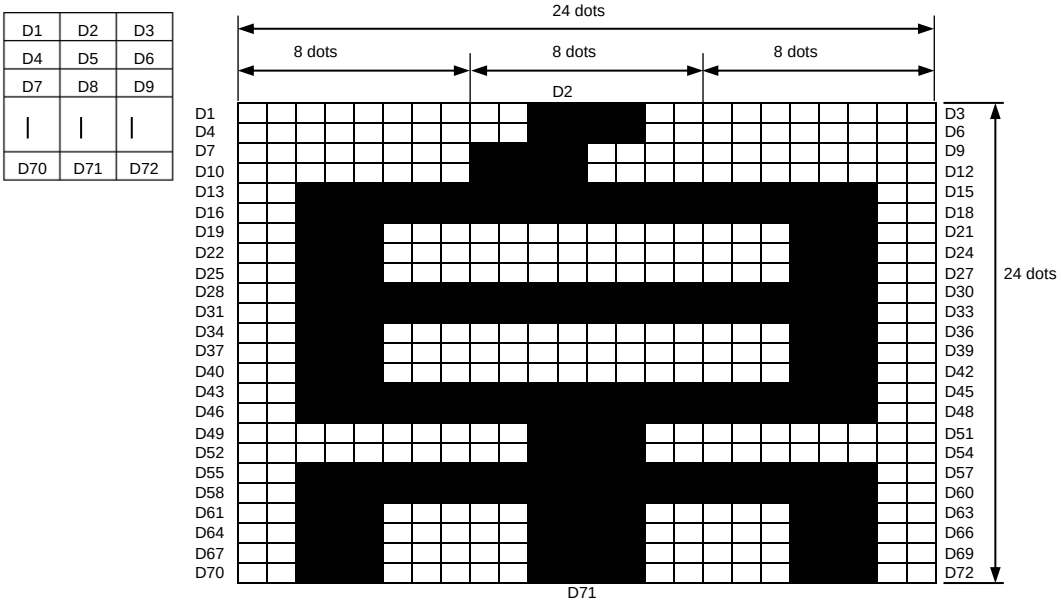
[Coding Example 4] Register in the user registration memory

```
<A>
<KS>0
<CC>1
<T2>B<40>16
<00FF ・・・・・・・・・・FF00>16
<Z>
```

[Supplemental explanation]

1. Registering 24 x 24dots external fonts in the internal memory or user registration memory.
2. The code to specify in the registration font code address needs to match the Kanji set (<KS>) and Kanji code <KC>).
3. Overwriting registration data is available.
4. The order of data output is as follows.
5. The data registered in the printer memory will be deleted at the power off. In this case, you need to register the data again.

External file [24×24]



When registering the external characters described above, D1 data becomes $<00>_{16}$, D2 data becomes $<3C>_{16}$ and D3 data becomes $<00>_{16}$ because D1 consists of [00000000], D2 consists of [00111100] and D3 consists of [00000000].

In the same manner, D4 becomes $<00>_{16}$, D5 becomes $<3C>_{16}$ and D6 becomes $<00>_{16}$, and the external registration data are specified to $<003C00003C00...>_{16}$ and up to D72.

[Point]

1. The data registered in the user registration memory will be maintained after the printer's power is off.
2. You cannot use the internal memory in combination with the user registration memory.
3. Specify the slot to register.
   If <CC> command is not sent after the power on, the data are registered in the internal memory.

8.45 Font

Recall Horizontal Writing External Character

ESC+K1(K2)

Hexadecimal code	ESC	K1(K2)	Parameter
	<1B>16	<4B>16<31>16(<4B>16<32>16)	ab~b
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Invoking horizontal external characters saved in the printer memory to print out.

[Format]
<K1>ab~b
<k2>ab~b

● Parameter
a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

b [Registration code]

Using Kanji set <KS> command to set Japanese (01,2)
JIS code
H, I, J, K: "9021" to "907F"
B, C, D, E: 9021H to 907FH
Shift JIS code
H, I, J, K: "F040" to "F09E"
B, C, D, E: F040H to F09EH
Unicode
H, I, J, K: "E000" to "E05E"
B, C, D, E: E000H to E05EH

Using Kanji set <KS> command to set other than Japanese
(3 (China Simplified Chinese), 5 (China Traditional Chinese), 6 (Korean))
H, I, J, K: "8021" to "807F"
B, C, D, E: 8021H to 807FH

[Coding example 1] Invokes 16x16 dots external character, Registration data in JIS HEX character

```
<A>
<KS>0
<T1>H21
00FF ・・・・・・・・・・FF00
<Z>

<A>
<V>100<H>200<K1>H9021
<Q>2
<Z>
```

[Coding example 2] Invokes 24 x 24 dots external character, Registration data in Shift JIS binary code

<A>
<KS>0
<T2>B<40>$_{16}$
<00FF ・・・・・・・・・・・FF00>$_{16}$
<Z>

<A>
<V>100<H>200**<K2>B<F0>$_{16}$<40>$_{16}$**
<Q>2
<Z>

[Coding example 3] Invokes 16x16 dots external character, Registration data in Unicode character

<A>
<KS>0
<T1>H01
00FF ・・・・・・・・・・FF00
<Z>

<A>
<V>100<H>200**<K1>HE001**
<Q>2
<Z>

[Supplemental explanation]

1. If the print out is not executed properly, register the data again.
2. You cannot call the external characters registered as JIS/Shift JIS character as Unicode, and vice versa.
3. Valid data of registration code vary according to the Kanji set command<KS>.

8.46 Font

Recall Vertical Writing External Character

ESC+k1(k2)

Hexadecimal code	ESC	k1(k2)	Parameter
	<1B>16	<6B>16<31>16(<6B>16<32>16)	ab~b
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Invoking horizontal external characters registered in the printer memory to print out.

[Format]

<k1>ab~b

<k2>ab~b

● Parameter

a[Kanji selection mode] = H: HEX character
B: Binary code
I: HEX character letters, smoothing function
C: Binary code, smoothing function
J: HEX character letters, highlight function
D: Binary code, highlight function
K: HEX character letters, smoothing and highlight function
E: Binary character letters, smoothing and highlight function

b[Registration code]

Using Kanji set <KS> command to set Japanese (0,1,2)

JIS code

H, I, J, K: "9021" to "907F"

B, C, D, E: 9021H to 907FH

Shift JIS code

H, I, J, K: "F040" to "F09E"

B, C, D, E: F040H to F09EH

Unicode

H, I, J, K: "E000" to "E05E"

B, C, D, E: E000H to E05EH

Using Kanji set <KS> command to set other than Japanese

(3 (China Simplified Chinese), 5 (China Traditional Chinese), 6 (Korean))

H, I, J, K: "8021" to "807F"

B, C, D, E: 8021H to 807FH

[Coding example 1] Invokes 16x16 dots external character, Registration data in JIS HEX character

```
<A>
<RU>0
<T1>H21
00FF ・・・・・・・・・・FF00
<Z>

<A>
<V>100<H>200<k1>H9021
<Q>2
<Z>
```

[Coding example 2] Invokes 24x24 dots external character, Registration data in Shift JIS binary code

<A>
<KS>0
<T2>B<40>$_{16}$
<00FF ・・・・・・・・・・・FF00>$_{16}$
<Z>

<A>
<V>100<H>200**<k2>B<F0>$_{16}$<40>$_{16}$**
<Q>2
<Z>

[Coding example 3] Invokes 16x16 dots external character, Registration data in Unicode character

<A>
<KS>0
<T1>H01
00FF ・・・・・・・・・・FF00
<Z>

<A>
<V>100<H>200**<k1>HE001**
<Q>2
<Z>

[Supplemental explanation]

1. If the print out is not executed properly, register the data again.
2. You cannot call the external characters registered as JIS/Shift JIS character as Unicode, and vice versa.
3. Valid data of registration code vary according to the Kanji set command<KS>.

9 Barcode Command

In barcode specification, print of various barcodes, change of bar width ratio, and print of guard bar or human-readable information can be performed by the specification (B, D, BD) after ESC.

The contents may vary depending on the specification. This and next page should be read closely and followed.

Refer to the table below for the specification of B, D, and BD.

[Specification of Bar width ratio]

Barcode specification parameter	Barcode specification	<B>	<D>	<BD>
0	CODABAR (NW-7)	1:3	1:2	2:5
1	CODE39	1:3	1:2	2:5
2	ITF	1:3	1:2	2:5
5	Industrial 2 of 5	1:3	1:2	2:5
6	Matrix 2 of 5	1:3	1:2	2:5

(1) Bar width ratio

Barcode is composed of Narrow Bar, Wide Bar, Narrow Space and Wide Space. Bar width ratio is the proportion of Narrow Bar and Wide Bar.

Bar width ratio (Ratio 1 : 3) <B>
This barcode is composed of Narrow Bar [1] and Wide Bar [3].
Bar width ratio (Ratio 1 : 2) <D>
This barcode is composed of Narrow Bar [1] and Wide Bar [2].
Bar width ratio (Ratio 2 : 5) <BD>
This barcode is composed of Narrow Bar [2] and Wide Bar [5].

If specifying bar width ratio for your own convenience, register the ratio with Bar Width Ratio <BT> and print labels with Print of Specified Bar Width Ratio <BW>.

(2) Width of narrow bar and height of barcode

Narrow bar indicates the narrow bar width, and bar height indicates the height of barcode.
For instance, printing narrow bar for 1 dot in head density of 8 dots/mm (203dpi), the narrow bar width will be 0.125mm and barcode scanner may have a reading problem. To avoid this problem, set the narrow bar to 2 dots so that the narrow bar width will be 0.25mm and this will improve the scanner reading condition.
There is a necessity to set the narrow bar width based on the printer head density or performance of barcode scanner.
In bar width ratio, [Narrow bar width] specification sets the width of bar.

e.g.) When bar width ratio = 1 : 3 and narrow bar width is 3 dots, bar width ratio becomes 3 : 9.
Bar height is to specify the height of barcode, and proper height based on the scanner type can be set.

(3) Intercharacter gap

Intercharacter gap is the space between two adjacent barcode characters in a discrete barcode.
To specify and enable intercharacter gap, insert Character Pitch <P> right before barcode specification such as <B>,<D> and <BD> or Print of Barcode with Registered Ratio <BW>. If not, initial value (2 dots) will be set.

Intercharacter gap is designable for the following barcodes.
1) CODABAR(NW-7)
2) CODE 39
3) Industrial 2 of 5
4) Matrix 2 of 5

Intercharacter gap is the multiplier of values specified with Character Pitch <P> and narrow bar width.
e.g.) When Character Pitch <P> is 3 and narrow bar width is 2 dots:
Intercharacter gap = 3 x 2 = 6 (dots)

(4) Designation of human readable information (HRI) and guard bar

For UPC-A and JAN/EAN 8 and13 digits barcode, availability of human-readable information (hereinafter HRI) and guard bar can be specified.

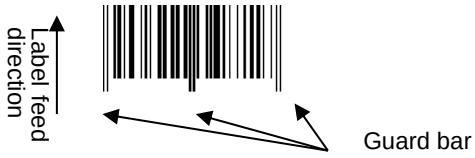
Barcode specification parameter	Barcode specification	<B>	<D>	<BD>
3	JAN/EAN 13	HRI : Nil Guard bar : Nil	HRI : Nil Guard bar : Available	HRI : Available Guard bar : Available
4	JAN/EAN 8	HRI : Nil Guard bar : Nil	HRI : Nil Guard bar : Available	HRI : Available Guard bar : Available
H	UPC-A	HRI : Nil Guard bar : Nil	HRI : Nil Guard bar : Available	HRI : Available Guard bar : Available

1) Specification of <B> (No HRI, No guard bar)

If specifying <B>, following barcode will be printed.

2) Specification of <D> (No HRI, Guard bar available)

If specifying <D>, following barcode will be printed.



[Note] HRI is printable specifying <Character Type> data subsequently to <D>.
For more information, refer to Barcode Specification (Selection of HRI) <D>~<d>.

3) Specification of <BD> (HRI and guard bar available)

If specifying <BD>, following barcode will be printed.

[Barcode Specification Only]

Barcode specification parameter	Barcode specification	<B>
C	CODE 93	Barcode only
E	UPC-E	Barcode only
G	CODE 128	Barcode only
I	UCC/EAN 128 for standard carton ID	Barcode only

[Important]

1. In this case, barcode will not have specification such as Bar Width Ratio and HRI.
2. HRI will not be printed when barcode is error for barcode with HRI.

(5) Composition of check digit

Refer to the table below for check digit in each barcode.

[Composition of C/D]

Barcode specification parameter	Barcode specification	Input digit No.	Print digit number and contents
3	JAN/EAN 13	12-digit	13-digit (Input data of barcode + C/D) C/D is calculated by modulus10.
		13-digit	13-digit (Input data of barcode) C/D is not checked.
4	JAN/EAN 8	7-digit	8-digit (Input data of barcode + C/D) C/D is calculated by modulus10.
		8-digit	8-digit (Input data of barcode) C/D is not checked.
C	CODE 93	Max. 99- digit	C/D is calculated by modulus47.
E	UPC-E	6-digit only	C/D is calculated by modulus10.
G	CODE 128	-	C/D is calculated by modulus103.
H	UPC-A	11-digit only *1	12-digit (Input data of barcode + C/D) C/D is calculated by modulus10.
I	UCC/EAN128 for standard carton ID	17-digit only	C/D is calculated by modulus103.

[Note]

C/D stands for “Check Digit”.

(6)Barcode Rotation Print

Print direction of barcode can be rotated. Note that when specifying Serial 1 and Serial 2 for barcode rotation, it may cause blurring due to barcode enlargement ratio.

Avoid printing of 1-dot narrow bar since 1 dot becomes 0.125 / 0.083 / 0.042 mm when head density is 8dot/mm (203dpi) or 12dot/mm (305dpi) or 24dot/mm (609dpi).

Parallel 1 : Forward feed print
Parallel 2 : Backfeed print at 180-degree rotation

Serial 1 : Forward feed print at 90-degree rotation
Serial 2 : Forward feed print at 270-degree rotation

[Note] Forward feed:
Prints horizontally to label feed direction

1) To print with Parallel1 and Parallel2, specify enlargement ratio of bar width so that narrow bar gets at least 2 dots. (“L” indicates the enlargement ratio to the bar width ratio.)

	Head density		
	8dots/mm(203dpi)	12dots/mm(305dpi)	24dots/mm(609dpi)
Bar width ratio 1:2	2L or more	2L or more	4L or more
Bar width ratio 1:3	2L or more	2L or more	4L or more
Bar width ratio 2 : 5	1L or more	1L or more	2L or more
UPC-A/EAN/JAN	2L or more	2L or more	4L or more

2) If printing in serial 1 or serial 2 mode, specify the bar width expansion factor so that when using a 8 dots/mm or 12 dots/mm head the width of the narrow bar is at least 3 dots.

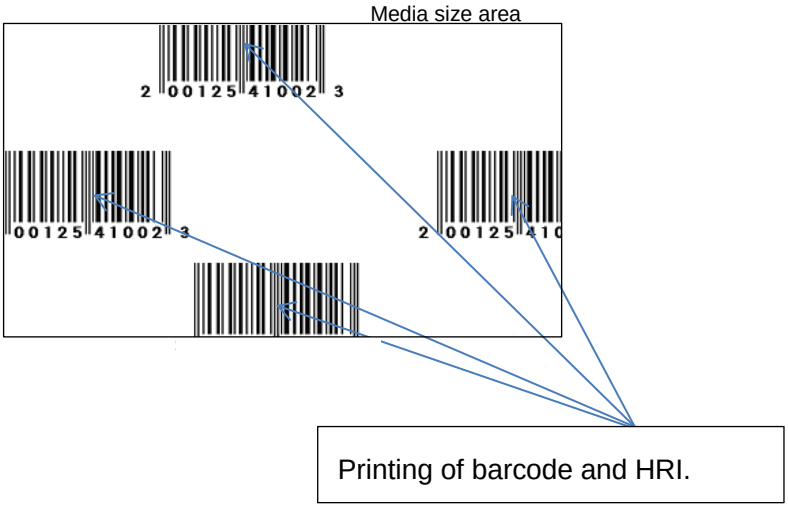
	Head density		
	8dots/mm(203dpi)	12dots/mm(305dpi)	24dots/mm(609dpi)
Bar ratio 1:2	3L or more	3L or more	6L or more
Bar ratio 1:3	3L or more	3L or more	6L or more
Bar ratio 2:5	2L or more	2L or more	4L or more
UPC-A/JAN/EAN	3L or more	3L or more	6L or more

3) If printing in serial 1 or serial 2, reduce the print speed

(7) Printing barcode exceeding the area of media size (<A1>).

When printing barcode or HRI exceeding the area of media size (<A1>), the barcode and HRI inside the media will be printed.

Example of printing UPC-A (with HRI) exceeding the area of media size.



9.1 Barcode

Barcode (Ratio 1:3) — ESC+B

Hexadecimal code	ESC	B	Parameter
	$<1B>_{16}$	$<42>_{16}$	abbcccn ~ n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies a barcode with a ratio of 1:3 between narrow bar and wide bar.

[Format]
<B>abbcccn~n

● Parameter
a [Barcode type] = Refer to table below
b [Narrow bar width] = Valid range : 01 to 36 dots
c [Barcode height] = Valid range : 001 to 999 dots
n [Print data] = Data

Barcode symbology (Ratio of module composition may not be available depending on the barcode symbology.)

a	Barcode symbol	Description	Ratio
0	CODABAR (NW-7)	Set print data including Start/Stop character. Start/Stop characters are [A,B,C,D,E,N,T,a,b,c,d,e,n,t]. Note that scan result of the characters [E,N,T,a,b,c,d,e,n,t] is [D, B, A, A, B, C, D, D, B, A]. e.g.) When barcode print data is [123], specify [A123A]. Barcode character pitch becomes enabled. For print data, refer to the CODABAR (NW-7) code table.	1:3
1	CODE39	Set print data including Start/Stop character. Start/Stop Character is [*]. e.g.) When barcode print data is [12345], specify [*12345*]. Barcode character pitch becomes enabled. For print data, refer to the CODE39 code table.	1:3
2	ITF	Specify print data in even-numbered digit. If specifying in odd-numbered digit, add “0” to the head of print data. For print data, refer to the ITF code table.	1:3
3	JAN/EAN13	This barcode has no guard bars and no human-readable characters For print data specifications, refer to table of JAN/EAN13 code	Fixed (11,12,13 digit)
4	JAN/EAN8	This barcode has no guard bars and no human-readable characters For print data specifications, refer to table of JAN/EAN8 code	Fixed (7,8 digit)
5	Industrial 2of5	Barcode character pitch is enabled. For print data specifications, refer to table of Industrial 2of5 code	1:3
6	Matrix 2of5	Barcode character pitch is enabled. For print data specifications, refer to table of Matrix 2of5 code	1:3
A	MSI	Specify 13-digit number for print data. For print data specifications, refer to table of MSI code.	Fixed
C	CODE93	Refer to CODE93 <BC>.	Fixed
E	UPC-E	Specify 6-digit number for print data. For print data specifications, refer to table of UPC-E code.	Fixed
F	UPC add-on code Bookland	Refer to UPC add-on code/Bookland <BF>.	Fixed
G	CODE128	Refer to CODE128 <BG>.	Fixed
H	UPC-A	This barcode has no guard bars and no human-readable characters For print data specifications, refer to table of UPC-A code.	Fixed
I	GS1-128 (UCC/EAN128)	Refer to GS1-128(UCC/EAN128)<BI>.	Fixed
P	Postnet	Refer to Postnet <BP>.	Fixed
S	USPS code	Refer to USPS code <BS>.	Fixed

[Coding Example 1] Barcode symbology: CODE39 Narrow bar width: 03 Height of barcode: 120
Print data: *1234AB*

```
<A>
<V>100<H>100<B>103120*1234AB*
<Q>2
<Z>
```

[Coding Example 2] Barcode symbology: JAN-8 Narrow bar width: 02 Height of barcode: 080
Print data: 4912345

```
<A>
<V>100<H>100<B>4020804912345
<Q>2
<Z>
```

[Supplementary Explanation]

1. The inter-character pitch of the barcode is valid at CODABAR (NW-7), CODE39, Industrial 2of5 and Matrix 2of5.
   The barcode inter-character pitch is set by specifying the character pitch <P> immediately before.
   If not set, the inter-character pitch will be of the same size as a narrow space and will become multiples of a narrow bar.

Command	Ratio	Narrow space width	<P> specification	Character pitch	
				Narrow bar width is [1]	Narrow bar width is [2]
<B>	1:3	1	None	1	2
			<P>0	1	2
			<P>1	1	2
			<P>2	2	4
			<P>3	3	6
			<P>4	4	8

2. For print data of each barcode type, refer to the code tables of barcode.

[Notes]

1. If the value other than valid range is set, command error will occur and barcode will not be printed.
2. Barcode will be printed even if the data exceed the printable area.
3. Increasing narrow bar width may exceed the print area.
4. Scanner may not read the barcode with valid character pitch when Character Pitch <P> is increased.
   Also, increasing the narrow bar width may cause the same type of problem. For more information, refer to the documentation of your scanner.
5. For specifying the narrow bar width, consider the reading compatibility of scanner and head density beforehand.
   - 203dpi: 2dots or more
   - 305dpi: 2dots or more
   - 609dpi: 4dots or more
6. Adjust Print Speed <CS> or Print Darkness <#F> in case of scanner reading problem.
7. Matrix 2of5 will be expressed as Coop2of5/NEC2of5.
8. If Start/Stop character is not included in print data at the time of CODABAR (NW-7) or CODE39 specified, barcode will be printed; however, scanner cannot read it.
9. If sending the print data including check digit at the time of JAN/EAN-13 or JAN/EAN-8 specified, set the correct calculated value. Barcode will be printed even when the data includes improper check digit; however, scanner cannot read it.

9.2 Barcode

Barcode (Ratio 1:2) — ESC+D

Hexadecimal code	ESC	D	Parameter
	$<1B>_{16}$	$<44>_{16}$	abbcccn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies a barcode with a ratio of 1:2 between narrow bar and wide bar.

[Format]

<D>abbcccn~n

●Parameter

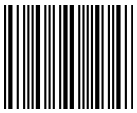
a [Barcode type] = Refer to table below
b [Narrow bar width] = Valid range : 01 to 36 dots
c [Barcode height] = Valid range : 001 to 999 dots
n [Print data] = Data

Barcode symbology (Ratio of module composition may not be available depending on the barcode symbology.)

A	Barcode symbol	Description	Ratio
0	CODABAR (NW-7)	Set print data including Start/Stop character. Start/Stop characters are [A,B,C,D,E,N,T,a,b,c,d,e,n,t]. Note that scan result of the characters [E,N,T,a,b,c,d,e,n,t] is [D, B, A, A, B, C, D, D, B, A]. e.g.) When barcode print data is [123], specify [A123A]. Barcode character pitch becomes enabled. For print data, refer to the CODABAR (NW-7) code table.	1:2
1	CODE39	Set print data including Start/Stop character. Start/Stop Character is [*]. e.g.) When barcode print data is [12345], specify [*12345*]. Barcode character pitch becomes enabled. For print data, refer to the CODE39 code table.	1:2
2	ITF	Specify print data in even-numbered digit. If specifying in odd-numbered digit, add “0” to the head of print data. For print data, refer to the ITF code table.	1:2
3	JAN/EAN13	This barcode has no guard bars and no human-readable characters For print data specifications, refer to table of JAN/EAN13 code	Fixed
4	JAN/EAN8	This barcode has no guard bars and no human-readable characters For print data specifications, refer to table of JAN/EAN8 code	Fixed
5	Industrial 2of5	Barcode character pitch is enabled. For print data specifications, refer to table of Industrial 2of5 code	1:2
6	Matrix 2of5	Barcode character pitch is enabled. For print data specifications, refer to table of Matrix 2of5 code	1:2
H	UPC-A	This barcode has no human-readable characters but guard bar. For print data specifications, refer to table of UPC-A code	Fixed

[Coding Example 1] Barcode symbology: CODABAR (NW-7), Narrow bar width: 03, Height of barcode: 120,
Print data: A1234A

<A>
<V>100<H>100**<D>003120A1234A**
<Q>2
<Z>



[Coding Example 2] Barcode symbology: ITF, Narrow bar width: 02, Height of barcode: 080
Print data: 98002345678163

<A>
<V>100<H>100**<D>202080980023456781 63**
<Q>2
<Z>

[Coding Example 3] Barcode symbology: UPC-A, Narrow bar width: 03, Height of barcode: 120
Print data: 20123948573

<A>
<V>240<H>100**<D>H0312020123948573**
<Q>2
<Z>

[Supplementary Explanation]

1. The inter-character pitch of the barcode is valid at CODABAR (NW-7), CODE39, Industrial 2of5 and Matrix 2of5. If not set, the inter-character pitch will be of the same size as a narrow space and will become multiples of a narrow bar.
   e.g.)

Command	Ratio	Narrow space width	<P> specification	Gap between characters	
				Narrow bar width is [1]	Narrow bar width is [2]
<D>	1:2	1	None	1	2
			<P>0	1	2
			<P>1	1	2
			<P>2	2	4
			<P>3	3	6
			<P>4	4	8

2. For print data of each barcode type, refer to the code tables of barcode.

[Notes]

1. If the value other than valid range is set, command error will occur and barcode will not be printed.
2. Barcode will be printed even if the data exceed the printable area.
3. Increasing narrow bar width may exceed the print area.
4. Scanner may not read the barcode with valid character pitch when Character Pitch <P> is increased. Also, increasing the narrow bar width may cause the same type of problem. For more information, refer to the documentation of your scanner.
5. For specifying the narrow bar width, consider the reading compatibility of scanner and head density beforehand.
   203dpi: 2dots or more
   305dpi: 2dots or more
   609dpi: 4dots or more
6. Adjust Print Speed <CS> or Print Darkness <#F> in case of scanner reading problem.
7. Matrix 2of5 will be expressed as Coop2of5/NEC2of5.
8. If Start/Stop character is not included in print data at the time of CODABAR (NW-7) or CODE39 specified, barcode will be printed; however, scanner cannot read it.
9. If sending the print data including check digit at the time of JAN/EAN-13 or JAN/EAN-8 specified, set the correct calculated value. Barcode will be printed even when the data includes improper check digit; however, scanner cannot read it.

9.3 Barcode

Barcode (with HRI)

ESC+D ~ ESC+d

Hexadecimal code	ESC	D ~ d	Parameter
	$<1B>_{16}$	$<44>_{16}$ ~ Character type	abbcccn~n ~ <d>n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies character type of human readable interpretation (HRI) for barcode.

[Format]

<D>abbcccn~n ~ <d>n~n

●Parameter

a [Barcode symbology] = 3: JAN/EAN13
4: JAN/EAN8
H: UPC-A

b [Narrow bar width] = Valid range: 01 to 36 dots

c [Height of barcode] = Valid range: 001 to 999 dots

n [Print data] = Barcode data

d [Character type] = OA,
OB,
XU,
XS,
XM,
XB,
XL,
U
S
M
WB
WL
X20,
X21,
X22,
X23,
X24

n [Print data] = HRI data

[Coding Example] Barcode type: JAN/EAN13, Narrow bar width: 03, Barcode height: 120
Barcode data: 4902471000793, Character type: XU
HRI data: 4902471000793

<A>
<V>100<H>200**<D>3031204902471000793**
<XU>4902471000793
<Q>2
<Z>

[Supplementary Explanation]

1. Adds HRI characters to specified font.
2. When the data other than specified value is set, printing will not be performed. When barcode enlargement ratio is small and character type is large, HRI text may be overlapped with each other.
3. Printer will lay out HRI properly.
4. HRI for JAN/EAN8, JAN/EAN13, UPC-A will be printed properly in the conditions below.
   In case of 8 dots/mm (203dpi) : Appropriate Narrow bar width is [02], [03]
   In case of 12 dots/mm (305dpi) : Appropriate Narrow bar width is [03], [04]
   In case of 24 dots/mm (609dpi) : Appropriate Narrow bar width is [06], [07], [08]
5. HRI will not be printed when barcode is error for barcode with HRI.
6. When specifying <P> and <L>, (<P>02<d>n~n,<L><d>n~n) and HRI are not printed.

9.4 Barcode

Barcode (Ratio 2:5) — ESC+BD

Hexadecimal code	ESC	BD	Parameter
	$<1B>_{16}$	$<42>_{16}<44>_{16}$	abbcccn~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies a barcode with a ratio of 2:5 between narrow bar and wide bar.

[Format]
<BD>abbcccn~n

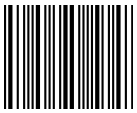
●Parameter
a [Barcode symbology] = Refer to the table below
b [Narrow bar width] = Valid Range : 01 to 36 dots
c [Height of barcode] = Valid Range : 001 to 999 dots
n [Print data] = data

Barcode symbology (Ratio of module composition may not be available depending on the barcode symbology)

A	Barcode symbology	Descriptions	Ratio
0	CODABAR (NW-7)	Set print data including Start/Stop character. Start/Stop characters are [A,B,C,D,E,N,T,a,b,c,d,e,n,t]. Note that scan result of the characters [E,N,T,a,b,c,d,e,n,t] is [D, B, A, A, B, C, D, D, B, A]. e.g.) When barcode print data is [123], specify [A123A]. Barcode character pitch becomes enabled. For print data, refer to the CODABAR (NW-7) code table.	2:5
1	CODE39	Set print data including Start/Stop character. Start/Stop Character is [*]. e.g.) When barcode print data is [12345], specify [*12345*]. Barcode character pitch becomes enabled. For print data, refer to the CODE39 code table.	2:5
2	ITF	Specify print data in even-numbered digit. If specifying in odd-numbered digit, add “0” to the head of print data. For print data, refer to the ITF code table.	2:5
3	JAN/EAN13	This barcode has guard bars and human-readable characters For print data specifications, refer to table of JAN/EAN13 code	Fixed
4	JAN/EAN8	This barcode has guard bars and human-readable characters For print data specifications, refer to table of JAN/EAN8 code	Fixed
5	Industrial 2of5	Barcode character pitch is enabled. For print data specifications, refer to table of Industrial 2of5 code	2:5
6	Matrix 2of5	Barcode character pitch is enabled. For print data specifications, refer to table of Matrix 2of5 code	2:5
H	UPC-A	This barcode has human-readable characters but guard bar. For print data specifications, refer to table of UPC-A code	Fixed

[Coding Example 1] Barcode symbology: CODABAR (NW-7), Narrow bar width: 03, Height of barcode: 120,
Print data: A1234A

<A>
<V>100<H>100**<BD>003120A1234A**
<Q>2
<Z>



[Coding Example 2] Barcode symbology: ITF, Narrow bar width: 03, Height of barcode: 120,
Print data: 98002345678163

<A>
<V>100<H>100**<BD>202120980023456781 63**
<Q>2
<Z>

[Coding Example 3] Barcode symbology: UPC-A, Narrow bar width: 03, Height of barcode: 120
Print data: 20123948573

<A>
<V>240<H>100**<BD>H0312020123948573**
<Q>2
<Z>

[Supplementary Explanation]

1. The inter-character pitch of the barcode is valid at CODABAR (NW-7), CODE39, Industrial 2of5 and Matrix 2of5.
   The barcode inter-character pitch is set by specifying the character pitch <P> immediately before.
   If not set, the inter-character pitch will be of the same size as a space command.

Command	Ratio	Narrow space width	<P>	Inter-character gap	
				Narrow bar width is [1]	Narrow bar width is [2]
<BD>	2:5	2	Nil	2	4
			<P>0	2	4
			<P>1	1	2
			<P>2	2	4
			<P>3	3	6
			<P>4	4	8

2. For print data of each barcode type, refer to the code tables of barcode.
3. The barcode translation of following codes will be restricted to conditions below: JAN/EAN8, JAN/EAN13, UPC-A
   In case of 8 dots/mm (203dpi) : Narrow bar width must be [02], [03]
   In case of 12 dots/mm (305dpi) : Narrow bar width must be [03], [04]
   In case of 24 dots/mm (609dpi) : Narrow bar width must be [06], [07], [08]
   HRI will not be printed if the value other than the listed above is specified.

[Notes]

1. If the value other than valid range is set, command error will occur and barcode will not be printed.
2. Barcode will be printed even if the data exceed the printable area.
3. Increasing narrow bar width may exceed the print area.
4. Scanner may not read the barcode with valid character pitch when Character Pitch <P> is increased.
   Also, increasing the narrow bar width may cause the same type of problem. For more information, refer to the documentation of your scanner.
5. For specifying the narrow bar width, consider the reading compatibility of scanner and head density beforehand.
6. Adjust Print Speed <CS> or Print Darkness <#F> in case of scanner reading problem.
7. Matrix 2of5 will be expressed as Coop2of5/NEC2of5.
8. If Start/Stop character is not included in print data at the time of CODABAR (NW-7) or CODE39 specified, barcode will be printed; however, scanner cannot read it.
9. If sending the print data including check digit at the time of JAN/EAN-13 or JAN/EAN-8 specified, set the correct calculated value. Barcode will be printed even when the data includes improper check digit; however, scanner cannot read it.

9.5 Barcode

Barcode Ratio Registration — ESC+BT

Hexadecimal code	ESC	BT	Parameter
	$<1B>_{16}$	$<42>_{16}<54>_{16}$	abbccddee
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies the ratio of the narrow bar in regard to the wide bar

[Format]
<BT>abbccddee

● Parameter

a [Barcode type] = 0 : CODABAR (NW-7)
1 : CODE39
2 : ITF
5 : Industrial 2of5
6 : Matrix 2of5

b [Narrow space] = Valid range : 01 to 99 dots

c [Wide space] = Valid range : 01 to 99 dots

d [Narrow bar] = Valid range : 01 to 99 dots

e [Wide bar] = Valid range : 01 to 99 dots

[Coding Example] Barcode type: CODE39, Narrow space: 03, Wide space: 05, Narrow bar: 03, Wide bar: 05

```
<A>
<BT>103050305
<V>100<H>200<BW>01233*ABCD*
<Q>2
<Z>
```

[Supplementary Explanation]

1. To print barcode with specified ratio, insert “Barcode print by specified ratio” command <BW> after this command.
2. When <BW> and the Print Quantity <Q> command are not specified, only the registration of bar width ratio of narrow and wide bars will be performed.
3. Only one ratio can be registered.
4. If the data other than specified is set, this will not be registered due to command error.
5. Matrix 2of5 is expressed as Coop2of5/NEC2of5.

9.6 Barcode

Barcode Print by Specified Ratio

ESC+BW

Hexadecimal code	ESC	BW	Parameter
	$<1B>_{16}$	$<42>_{16}<57>_{16}$	aabbbn~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies barcode ratio, saved by <BT>

[Format]

<BW>aabbbn - n

●Parameter

a [Narrow bar] = Valid Range : 01 – 36 dots
b [Height of Barcode] = Valid Range : 001 – 999 dots
n [Print data] = Barcode data

[Coding Example] Narrow bar: 02, Height of Barcode:120

<A>
<BT>103060306
<V>100<H>200**<BW>02120*ABCD***
<Q>2
<Z>

[Supplementary Explanation]

1. Barcode character pitch is available for CODABAR(NW-7), CODE39, Industrial 2of5, Matrix 2of5. To specify barcode character pitch, insert Character Pitch <P> right before Barcode symbology. When <P> is omitted, character pitch will be as same as narrow space width set by Barcode ratio.
2. If there is no Registration of Bar Width Ratio <BT>, barcode based on pre-registered bar width ratio of narrow and wide bars will be printed. Note that specification of <BT> is required beforehand to print.
3. For print data for Barcode type, refer to Code table for each Barcode.

Command	Ratio	Narrow space width	<P> specification	Gap between characters	
				Narrow bar width is [1]	Narrow bar width is [2]
<BT>	3:5	3	None	3	6
			<P>0	3	6
			<P>1	1	2
			<P>2	2	4
			<P>3	3	6
			<P>4	4	8

[Notes]

1. If the value other than valid range is set, command error will occur and barcode will not be printed.
2. Barcode will be printed even if the data exceed the printable area.
3. Increasing narrow bar width may exceed the print area and not be printed.
4. Scanner may not read the barcode with valid character pitch when Character Pitch <P> is increased. Also, increasing the narrow bar width may cause the same type of problem. For more information, refer to the documentation of your scanner.
5. For specifying the narrow bar width, consider the reading compatibility of scanner beforehand.
6. Adjust Print Speed <CS> or Print Darkness <#F> in case of scanner reading problem.
7. Matrix 2of5 is expressed as Coop2of5/NEC2of5.
8. When CODABAR(NW-7) and CODE39 is specified and Start/Stop character is not included in it, Barcode is printed but Scanner cannot read it.

CODABAR(NW-7) Code table

					S			I					S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**				0												
0	0	0	1	**1**				1	A		a									
0	0	1	0	**2**				2	B		b									
0	0	1	1	**3**				3	C		c									
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**				5	E		e									
0	1	1	0	**6**				6												
0	1	1	1	**7**				7												
1	0	0	0	**8**				8												
1	0	0	1	**9**				9												
1	0	1	0	**A**			*	:												
1	0	1	1	**B**			+													
1	1	0	0	**C**																
1	1	0	1	**D**			-													
1	1	1	0	**E**			.		N		n									
1	1	1	1	**F**			/													

CODE39 Code table

					S				I				S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0		P										
0	0	0	1	**1**				1	A	Q										
0	0	1	0	**2**				2	B	R										
0	0	1	1	**3**				3	C	S										
0	1	0	0	**4**			$	4	D	T										
0	1	0	1	**5**			%	5	E	U										
0	1	1	0	**6**				6	F	V										
0	1	1	1	**7**				7	G	W										
1	0	0	0	**8**				8	H	X										
1	0	0	1	**9**				9	I	Y										
1	0	1	0	**A**			*		J	Z										
1	0	1	1	**B**			+		K											
1	1	0	0	**C**					L											
1	1	0	1	**D**			-		M											
1	1	1	0	**E**			.		N											
1	1	1	1	**F**			/		O											

9.7 Barcode

CODE 93 Barcode

ESC+BC

Hexadecimal code	ESC	BC	Parameter
	$<1B>_{16}$	$<42>_{16}<43>_{16}$	aabbbccn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying CODE93 barcode.

[Format]
<BC>aabbbccn~n

●Parameter

a	[Narrow bar]	=	Valid Range :	01 ~ 36 dots
b	[Height of Barcode]	=	Valid Range :	001 ~ 999 dots
c	[Digit No. of data]	=	Valid Range :	01 ~ 99
n	[Print data]	=	Barcode data(Refer to the CODE93 - Code Table.)	

[Coding Example] Narrow bar width: 02, Barcode height: 120, Number of digit: 12, Print data: ABCD123456xy

```
<A>
<V>100<H>200<BC>0212012ABCD123456xy
<Q>2
<Z>
```

[Supplementary Explanation]
1. C/D is an auto-generation.
2. Start code and stop code will be automatically added.
3. Maximum entry digit number of data is 99.
4. [Digit No. of data] and No. of input data have to be equal.
5. Command error will occur when No. of input data and [Digit No. of data] are not matched.

CODE93　Code table

					S				I				S					O		
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			”	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			’	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	\	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	-								
1	1	1	1	**F**			/	?	O	_	o	DEL								

You can specify from 00H to 7FH for Code93.

9.8 Barcode

UPC Add-on (Bookland)

ESC+BF

Hexadecimal code	ESC	BF	Parameter
	$<1B>_{16}$	$<42>_{16}<46>_{16}$	aabbbn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying UPC Add-on code (Bookland).

[Format]
<BF>aabbn~n

●Parameter

a	[Narrow bar width]	= Valid range:	01 to 36 dots
b	[Height of barcode]	= Valid range:	001 to 999 dots
n	[Print data]	= Numeric (0 to 9)	2, 5 digits

[Coding Example] Narrow bar width: 03, Barcode height: 120

```
<A>
<H>325<V>725<BD>H0315009827721123
<H>640<V>760<BF>0312021826
<H>655<V>730<OB>21826
<Q>1
<Z>
```

[Supplementary Explanation]
1. If specifying the value other than 2 and 5 digits, barcode will be not printed.
2. Only numeric can be specified as print data. (Refer to code table)
3. No HRI
4. When printed only UPC add-on <BF>, it cannot be scanned.
   Scan is available only when it is printed with UPS code.

UPC Add-on Barcode Code table

					S					I				S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**				0												
0	0	0	1	**1**				1												
0	0	1	0	**2**				2												
0	0	1	1	**3**				3												
0	1	0	0	**4**				4												
0	1	0	1	**5**				5												
0	1	1	0	**6**				6												
0	1	1	1	**7**				7												
1	0	0	0	**8**				8												
1	0	0	1	**9**				9												
1	0	1	0	**A**																
1	0	1	1	**B**																
1	1	0	0	**C**																
1	1	0	1	**D**																
1	1	1	0	**E**																
1	1	1	1	**F**																

9.9 Barcode

Code 128 Barcode

ESC+BG

Hexadecimal code	ESC	BG	Parameter
	$<1B>_{16}$	$<42>_{16}<47>_{16}$	aabbbn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying CODE128 barcode.

[Format]
<BG>aabbbn~n

●Parameter
a [Narrow bar] = Valid Range : 01 ~ 36 dots
b [Height of Barcode] = Valid Range : 001 ~ 999 dots
n [Print data] = Barcode data (Refer to the CODE128 - Code Table)

[Coding Example] Narrow bar width: 02, Barcode height: 120, Print data: ABCD123456 (Start character A)

<A>
<V>100<H>200**<BG>02120>GABCD123456**
<Q>2
<Z>

[Supplementary Explanation]
1. Specify [START CODE] at the head of print data.
   (1) START CODE A = [>G]
   (2) START CODE B = [>H]
   (3) START CODE C = [>I]
2. C/D is an auto-generation.
3. (1) When using “START CODE C”, specify print data in even-numbered digit.
   (2) When “START CODE C” is set to print data in odd-number digit, specify “START CODE A” or “B” to change the first one character of print data. And then specify the rest of data with “Code Set Character C” to change it to even-numbered digit.
      e.g.1) 15 digits [123456789012345] <B>1<C>23456789012345
      e.g.2) 9 digits / Alphanumeric 6 digits [123456789ABC123] <C>12345678<B>9ABC123.
   (3) If using “START CODE C” to specify odd-numbered digit, command error occurs and barcode is not printed.
   (4) Note that if using “START CODE C” to specify odd-numbered digit, and compatible mode is ON, “0” will be added to the tail of print data before printing.
   (5)When start character is omitted, data will be printed with “START CODE B”.

CODE128 - Code Table

VALUE	Code A	Code B	Code C
0	SP	SP	00
1	!	!	01
2	”	”	02
3	#	#	03
4	$	$	04
5	%	%	05
6	&	&	06
7	’	’	07
8	(	(	08
9	)	)	09
10	*	*	10
11	+	+	11
12	,	,	12
13	-	-	13
14	.	.	14
15	/	/	15
16	0	0	16
17	1	1	17
18	2	2	18
19	3	3	19
20	4	4	20
21	5	5	21
22	6	6	22
23	7	7	23
24	8	8	24
25	9	9	25
26	:	:	26
27	;	;	27
28	<	<	28
29	=	=	29
30	>(Note 4.)	>(Note 4.)	30
31	?	?	31
32	@	@	32
33	A	A	33
34	B	B	34
35	C	C	35
36	D	D	36
37	E	E	37
38	F	F	38
39	G	G	39
40	H	H	40
41	I	I	41
42	J	J	42
43	K	K	43
44	L	L	44
45	M	M	45
46	N	N	46
47	O	O	47
48	P	P	48

VALUE	Code A	Code B	Code C
49	Q	Q	49
50	R	R	50
51	S	S	51
52	T	T	52
53	U	U	53
54	V	V	54
55	W	W	55
56	X	X	56
57	Y	Y	57
58	Z	Z	58
59	[	[	59
60	\	\	60
61	]	]	61
62	^	^	62
63	_	_	63
64	NUL >SP	` >SP	64
65	SOH > !	a > !	65
66	STX >”	b >”	66
67	ETX >#	c >#	67
68	EOT >$	d >$	68
69	ENQ >%	e >%	69
70	ACK >&	f >&	70
71	BEL >’	g >’	71
72	BS >(	h >(	72
73	HT >)	i >)	73
74	LF >*	j >*	74
75	VT >+	k >+	75
76	FF >,	l >,	76
77	CR >-	m >-	77
78	SO >.	n >.	78
79	SI >/	o >/	79
80	DLE >0	p >0	80
81	DC1 >1	q >1	81
82	DC2 >2	r >2	82
83	DC3 >3	s >3	83
84	DC4 >4	t >4	84
85	NAK >5	u >5	85
86	SYN >6	v >6	86
87	ETB >7	w >7	87
88	CAN >8	x >8	88
89	EM >9	y >9	89
90	SUB >:	z >:	90
91	ESC > ;	{ > ;	91
92	FS ><	| ><	92
93	GS >=	} >=	93
94	RS >>	~ >>	94
95	US > ?	DEL > ?	95
96	FNC3 >@	FNC3 >@	96
97	FNC2 >A	FNC2 >A	97

VALUE	Code A	Code B	Code C
98	SHIFT >B	SHIFT >B	98
99	Code-C >C	Code-C >C	99
100	Code-B >D	FNC4 >D	Code-B >D
101	FNC4 >E	Code-A >E	Code-A >E
102	FNC1 >F	FNC1 >F	FNC1 >F
103	START CODE A >G		
104	B >H		
105	C >I		

[Notes]

1. START code must be sent.
2. STOP code is added in the printer automatically.
3. Code after VALUE64 in Code A and Code B should be specified as 2 character code with “>” attached.
4. Specification code for “>” is “>J”.

9.10 Barcode

GS1-128 (UCC/EAN128) (Standard Carton ID Only)

ESC+BI

Hexadecimal code	ESC	BI	Parameter
	$<1B>_{16}$	$<42>_{16}<49>_{16}$	aabbbcn~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying GS1-128(UCC/EAN128) barcode for Standard Carton ID.

[Format]
<BI>aabbbcn~n

●Parameter

a [Narrow bar]	=	Valid Range	:	01 to 36 dots
b [Height of Barcode]	=	Valid Range	:	001 to 999 dots
c [Barcode expository font specification]	=	0	:	No HRI
		1	:	HRI is available (Upper part of barcode)
		2	:	HRI is available (Under part of barcode)
n [Print data]	=	Barcode data (Fixed 17 digits)		

For barcode data, refer to the GS1-128 (UCC/EAN128) code table.
EAN128 (Barcode for Standard Carton ID)
- Identifier of a continuous code for freight packaging
- Type of packaging
- Country/manufacturer code
- Serial No. for shipping container
- Check digit

Note that check digit is automatically added; therefore, specify data in 17 digits excluding check digit.

[Coding Example] Narrow bar width: 05, Height of barcode: 080, HRI: Available (Under part of barcode)
Print data: 12345678901234567

```
<A>
<V>100<H>200<BI>0508021234567890123456 7
<Q>2
<Z>
```

[Supplementary Explanation]
1. UCC128 code is exclusive to Standard Carton ID. When printing in EAN128, designed for the markets in the medical, fresh food, or flowers and plants, use CODE128 Barcode <BG> to specify print data with application identification or separator that matches each specification.
2. Start character code, function character, end character code, and identification code (corresponds to [00] only) are added automatically.
3. Modulus 10 check character and modulus 103 check character are automatically generated.
4. Sequential number of barcode data is available.
5. Line pitch between barcode and expository font is fixed at 10 dots.
6. If the width of expository font is wider than that of barcode, it starts printing from the print start position of barcode.
7. If the width of expository font is narrower than that of barcode, expository font will be aligned to the center of barcode for printing.
8. Prints expository font in OCR-B.
9. If expository font is outside of print area, it will not be printed. When selecting [HRI is available], specify Vertical Print Position <V> and Horizontal Print Position <H> in consideration of print of expository font.

ITF
Matrix 2of5
Industrial 2of5
UPC-A, JAN/EAN8
JAN/EAN13, UPC-E
GS1-128 (UCC/EAN128)
MSI Code table

					S				I				S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**				0												
0	0	0	1	**1**				1												
0	0	1	0	**2**				2												
0	0	1	1	**3**				3												
0	1	0	0	**4**				4												
0	1	0	1	**5**				5												
0	1	1	0	**6**				6												
0	1	1	1	**7**				7												
1	0	0	0	**8**				8												
1	0	0	1	**9**				9												
1	0	1	0	**A**																
1	0	1	1	**B**																
1	1	0	0	**C**																
1	1	0	1	**D**																
1	1	1	0	**E**																
1	1	1	1	**F**																

9.11 Barcode

Postnet	ESC+BP

Hexadecimal code	ESC	BP	Parameter
	$<1B>_{16}$	$<42>_{16}<50>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying customer barcode.

[Format]
<BP>n~n

●Parameter

n = Print data (Refer to the POSTNET Code Table)
Note that the digits other than specified below are not allowed.
- 5 digits (POSTNET-32 format)
- 6 digits (POSTNET -37 format)
- 9 digits (POSTNET -52 format)
- 11 digits (POSTNET -62 Delivery Point format)

[Coding Example] Postal code: 11 digits: 01234567890

<A>
<V>100<H>200**<BP>01234567890**
<Q>2
<Z>

[Supplementary Explanation]
1. If specifying the value other than 5, 6, 9, and 11 digits for print data, it will be ignored.
2. Only numeric can be specified as print data.

POSTNET Code table

					S					I				S				O			
				b8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				b7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				b6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				b5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
b4	**b3**	**b2**	**b1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**				0												
0	0	0	1	**1**				1												
0	0	1	0	**2**				2												
0	0	1	1	**3**				3												
0	1	0	0	**4**				4												
0	1	0	1	**5**				5												
0	1	1	0	**6**				6												
0	1	1	1	**7**				7												
1	0	0	0	**8**				8												
1	0	0	1	**9**				9												
1	0	1	0	**A**																
1	0	1	1	**B**																
1	1	0	0	**C**																
1	1	0	1	**D**																
1	1	1	0	**E**																
1	1	1	1	**F**																

9.12 Barcode

USPS Barcode

ESC+BS

Hexadecimal code	ESC	BS	Parameter
	$<1B>_{16}$	$<42>_{16}<53>_{16}$	aabbbccccccddddddddd(e~e)
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Print USPS code.

[Format]
<BS>aabbbccccccddddddddd(e~e)

● Parameter

a[Barcode ID] = Fixed 2 digits
note: 0~4 should be specified for the 2nd digit.
b[Service Type ID] = Fixed 3 digits
c[Mailer ID] = Fixed 6 digits
d[Serial Number] = Fixed 9 digits
e[Routing Code] = Fixed 5 digits or fixed 9 digits or fixed 11 digits(can be omitted)

[Coding Example] Barcode ID: 53, Service Type ID: 379, Customer Identifier: 777234
Serial Number: 994544928, Routing Code: 51135759461

<A>
<V>100<H>200**<BS>53379777234994544928511357594 61**
<Q>1
<Z>

[Supplementary note]
For available parameter, refer to USPS code table in next page.

USPS Code table

					S			I					S				O			
				b8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				b7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				b6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				b5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
b4	**b3**	**b2**	**b1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**				0												
0	0	0	1	**1**				1												
0	0	1	0	**2**				2												
0	0	1	1	**3**				3												
0	1	0	0	**4**				4												
0	1	0	1	**5**				5												
0	1	1	0	**6**				6												
0	1	1	1	**7**				7												
1	0	0	0	**8**				8												
1	0	0	1	**9**				9												
1	0	1	0	**A**																
1	0	1	1	**B**																
1	1	0	0	**C**																
1	1	0	1	**D**																
1	1	1	0	**E**																
1	1	1	1	**F**																

9.13 Barcode

Composite Symbol

ESC+EU

Hexadecimal code	ESC	EU	Parameter
	$<1B>_{16}$	$<45>_{16}<55>_{16}$	aaabbn~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying the composite symbol of EAN/UCC.

[Format 1]
<EU>aabbccn~n

●Parameter

a [Type of composite symbol] = 01 : GS1 DataBar Composite (CC-A/CC-B)
02 :GS1 DataBar Truncated Composite (CC-A/CC-B)
03 :GS1 DataBar Stacked Composite (CC-A/CC-B)
04 :GS1 DataBar Stacked Omni-Directional (CC-A/CC-B)
05 :GS1 DataBar Limited Composite (CC-A/CC-B)
06 :GS1 DataBar Expanded Composite (CC-A/CC/B)
/ GS1 DataBar Expanded Stacked (CC-A/CC-B)
07 :UPC-A Composite (CC-A/CC-B)
08 :UPC-E Composite (CC-A/CC-B)
09 :EAN13 Composite (CC-A/CC-B)
10 :EAN8 Composite (CC-A/CC-B)

b [Narrow bar] = 01 ~ 12 dots

c [Segment width = 02 ~ 22 (Even number only)
* Only GS1 DataBar Expanded Composite (CC-A/CC-B) are supported

n [Print data] = Data

Maximum number of digit for 1D barcode data

GS1 DataBar Composite (CC-A/CC-B)	13 digits
GS1 DataBar Truncated Composite (CC-A/CC-B)	13 digits
GS1 DataBar Stacked Composite (CC-A/CC-B)	13 digits
GS1 DataBar Stacked Omni-Directional (CC-A/CC-B)	13 digits
GS1 DataBar Limited Composite (CC-A/CC-B)	13 digits
GS1 DataBar Expanded Composite (CC-A/CC-B) / GS1 DataBar Expanded Stacked (CC-A/CC-B)	74 digits
UPC-A Composite (CC-A/CC-B)	11 digits
UPC-E Composite (CC-A/CC-B) Specify with ”XX00000XXX” (X: variable) format.	Fixed 10 digits
EAN13 Composite (CC-A/CC-B)	12 digits
EAN8 Composite (CC-A/CC-B)	7 digits

- Check digit is automatically calculated and added.
- To specify the print of composite symbol, delimit one-dimensional data and two-dimensional data with ‘|’(7Ch).
  Data = One-dimensional data | Two-dimensional data
-Data of GS1 DataBar Composite (CC-A/CC-B) are needed to be specified between the 1st and 16th digit of GS1 DataBar Expanded Composite (CC-A/CC-B) data.
-GS1 DataBar Expanded Composite (CC-A/CC-B) can contain GS1 DataBar Composite (CC-A/CC-B) data and 74 digit of numeric character and 41 digits of alphabet.
(When numeric characters and alphabets are mixed, GS1 DataBar Composite (CC-A/CC-B) data and 41 digit characters can be specified.
-When specified data don’t reach the maximum digits, blank is filled by zero.
-2D data can contain up to 338 digits, but it varies by the type of Barcode.
-Barcode may stick out of the label depending on data and the number of digit, and scanner cannot read it. Adjust print data beforehand so that the barcode can fit to the label.

[Format 2]
<EU>aabbcccn~n

●Parameter

a [Type of composite symbol] = 11 : GS1-128 Composite (CC-A/CC-B)
12 : GS1-128 Composite (CC-C)

b [Narrow bar width] = 01 ~ 12 dots

c [Barcode height] = 001 ~ 500 dots

*Specify barcode height when narrow bar width is “01”.

*When specifying narrow bar width “03”, Barcode height “100”, Barcode height become 300 dots.

n [Print data] = Data (Up to 120 digits including 1D and 2D barcode)

Maximum number of digit for the 2D barcode *There is a limit for the barcode.

GS1-128(UCC/EAN128) with CC-A/B	338 digits
GS1-128(UCC/EAN128) with CC-C	2324 digits

Maximum number of digit for the barcode

GS1-128(UCC/EAN128) with CC-A/B	48 digits
GS1-128(UCC/EAN128) with CC-C	48 digits

-To specify the print of composite symbol, delimit one-dimensional data and two-dimensional data with‘|’(7Ch).
Data = One-dimensional data | Two-dimensional data

- Use ‘#’(23h) to specify CC-A/B (Micro RDF), FNC1 (GS) of CC-C (for PDF417) as data.
- 2D data for GS1-128(UCC/EAN128) With CC-A/B can contain up to 338 digits.
- When 2D data of GS1-128(UCC/EAN128) with CC-A/B are less than 56 digits, it is identified as CC-A, and identified as CC-B when data size is between 57 digits and 338 digits automatically.

* The number of digits varies depending on the width of the barcode in GS1-128(UCC/EAN128) With CC-C, and the maximum number of digits of combination of the 1D and 2D is 2372 digits.

[Coding Example1] GS1 DataBar Composite (CC-A/CC-B)

<A>
<V>100<H>100
<RU>01040361234567890 *11990102
<Q>1
<Z>

[Coding Example2] GS1 DataBar Truncated Composite (CC-A/CC-B)

<A>
<V>100<H>100
<EU>02040361234567890|11990102
<Q>1
<Z>

[Coding Example3] GS1 DataBar Stacked Composite (CC-A/CC-B)

<A>
<V>100<H>100
<EU>03040341234567890|17010200
<Q>1
<Z>

GS1 DataBar Stacked Omni-Directional (CC-A/CC-B)

<A>
<V>100<H>100
<EU>04040341234567890|17010200
<Q>1
<Z>

[Coding Example5] GS1 DataBar Limited Composite (CC-A/CC-B)

<A>
<V>100<H>100
<EU>05040351234567890|21ABCDEFGHIJKLMNOPQRSTUV
<Q>1
<Z>

[Coding Example6] GS1 DataBar Expanded Composite(CC-A/CC-B)

<A>
<V>100<H>100
<EU>060522104912345678904
<Q>1
<Z>

[Coding Example7] GS1 DataBar Expanded Stacked(CC-A/CC-B)

<A>
<V>100<H>100
<EU>060502104912345678904
<Q>1
<Z>

[Coding Example8] UPC-A Composite (CC-A/CC-B)

<A>
<V>100<H>100
<EU>070433123456789|991234-abcd
<Q>1
<Z>

[Coding Example9] UPC-E Composite (CC-A/CC-B)

<A>
<V>100<H>100
<EU>08041200000123|15021231
<Q>1
<Z>

[Coding Example10] EAN13 Composite (CC-A/CC-B)

<A>
<V>100<H>100
<EU>090433123456789|991234-abcd
<Q>1
<Z>

[Coding Example11] EAN8 Composite (CC-A/CC-B)

<A>
<V>100<H>100
<EU>10041234567|21A12345678
<Q>1
<Z>

[Coding Example12] GS1-128 Composite (CC-A/CC-B)

<A>
<V>100<H>100
<EU>1104026010321234567890 6|21A1B2C3D4E5F6G7H8
<Q>1
<Z>

[Coding Example13] GS1-128 Composite (CC-C)

<A>
<V>100<H>100
<EU>120402600030123456789012340|02130123456789
093724#101234567ABCDEFG
<Q>1
<Z>

[Supplementary Explanation]

1. Parameter varies depending on one-dimensional barcode type.
   Segment width can be specified only for DataBar Expanded Composite(CC-A/CC-B) (EU06). Barcode height can be specified only for GS1-128(UCC/EAN-128) (EU11, EU12).
2. If the value is not set to the data portion, composite symbol will not be printed.
3. Parameter for print data is available up to 2361digits including 1D barcode data and 2D barcode data as a specification for this command. Available number for 2D barcode data varies depending on the type of 1D barcode and/or mixture of alphabets and numerics. When specified data exceed the maximum digits, barcode may not be printed properly.
4. Entire size of composite symbol changes depending on the specification of narrow bar width.
5. If composite symbol exceeds the printable area, only the portion located within the area will be printed, and a scanner might read the value of such composite symbol occasionally.
6. Height and width of 2D barcode of the composite symbol is adjusted by 1D barcode data size. When the width of 1D barcode is narrow, it cannot be printed even the size of data is less than the maximum number of digit.
7. Print of HRI cannot be designated with this command.
8. Rotation <%> is available, and Enlargement <L> is invalid.
9. When specifying 11(production date), 12(term of payment), 13 (packing date), 15(sales period), 17(warranty period) for application identifier, set correct data YYMMDD. When the incorrect date is set, print result is not guaranteed.
10. When specifying GS1 Databar as a barcode type, specify 2D Barcode data with the format based on application identifier.
11. GS1 DataBar Expanded Composite (CC-A/CC-B) is stacked automatically by segment width and data size and printed as GS1 DataBar Expanded Stacked (CC-A/CC-B).

Code table for Composite Symbol 2D Barcode

					S			I					S				O			
				b8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				b7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				b6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				b5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
b4	**b3**	**b2**	**b1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0		P		p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			”	2	B	R	b	r								
0	0	1	1	**3**				3	C	S	c	s								
0	1	0	0	**4**				4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			’	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K		k									
1	1	0	0	**C**			,	<	L		l									
1	1	0	1	**D**			-	=	M		m									
1	1	1	0	**E**			.	>	N		n									
1	1	1	1	**F**			/	?	O	_	o									

* Use '#'(23H) for specifying FNC1.

9.14 Barcode

UPC-A Barcode (Without HRI)	ESC+BL

Hexadecimal code	ESC	BL	Parameter
	<1B>16	<42>16<4C>16	aabbcccn~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Set the height of character barcode of the first digit and the last digit to the same height of the guard bar.

[Format]
<BL>abbcccn~n

●Parameter

a[Barcode type]	=	H	:	UPC-A(Fixed 'H')
b[Narrow bar]	=	Valid Range	:	01~36 dots
c[Height of Barcode]	=	Valid Range	:	001~999 dots
n[Print data]	=	Data	:	11 fixed digits

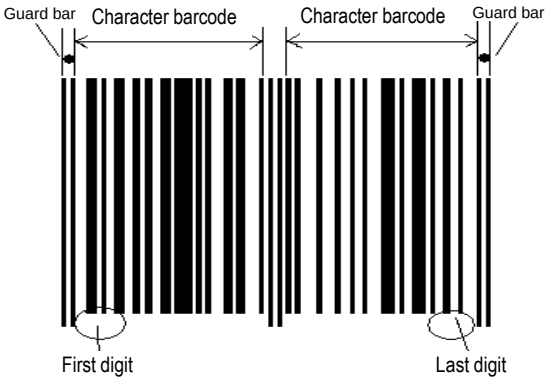
[Coding Example] Font type: UPC-A, Narrow bar width：03, Barcode height：120, Print data： 01234567890

```
<A>
<H>100<V>100<BL>H0312001234567890
<Q>2
<Z>
```

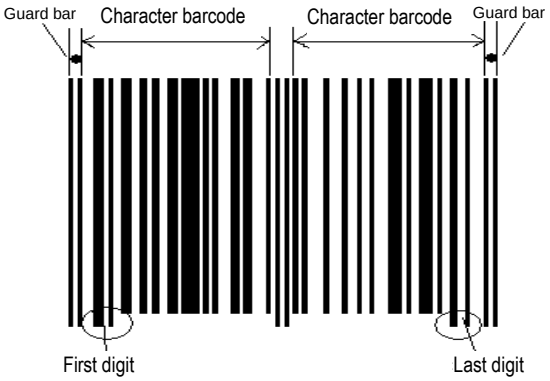
[Supplementary Explanation]
1. This command supports UPC-A only. When barcode type is specified other than “H”, command error occurs.
2. Setting of Guard bar, HRI and ratio is described as follows.

Guard bar	HRI	Ratio
Available	Nil	Fix

3. When the parameter value exceeds the range, operation is not supported.
4. When printing UPC-A with <D>, all character barcodes have the same height. When <BL> is uses, the height of the character barcode of the start digit and the last digit have the same height of the guard bar.



UPC-A specifying <D>



UPC-A specifying <BL>

9.15 Barcode

UPC-A Barcode (Without HRI)	ESC+BL ~ ESC+d

Hexadecimal code	ESC	BL~d	Parameter
	$<1B>_{16}$	$<42>_{16}<4C>_{16}$~character type	abbcccn~n~<d>n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Set the height of character barcode of the first digit and the last digit to the same height of the guard bar.

[Format]
<BL>abbcccn~n~<d>n~n

●Parameter

a [Barcode type]	=	H	:	UPC-A (Fixed 'H)
b [Narrow bar]	=	Valid Range	:	01~36 dots
c [Height of barcode]	=	Valid range	:	001 ~ 999 dots
n [Print data]	=	Data	:	Fixed 11 digit
d [Font type]	=	OA		
		OB		
		XU		
		XS		
		XM		
		XB		
		XL		
		U		
		S		
		M		
		WB		
		WB		
n [Print data]	=	HRI data	:	fixed 12 digits

[Coding Example] Font type: UPC-A, Narrow bar width: 02. Barcode height: 120, Print data: 01234567890
Font type: XS, HRI data: 01234567890

<A>
<H>100<V>100<BL>H0212001234567890
<XS>,01234567890
<Q>2
<Z>

[Supplementary Explanation]
1. This command supports UPC-A only. When barcode type is specified other than “H”, command error occurs.
2. Recommended to specify [02] or [03] for the narrow bar width.
3. Check digit (12th digit) for HRI data should be set the calculation result of modulus 10.
4. Setting of Guard bar, HRI and Ratio is following.

Guard bar	HRI	Ratio
Available	Available	Fix

5. When the parameter value exceeds the range, operation is not supported.
6. HRI will not be printed when barcode is error for barcode with HRI.

7. All character barcode have the same height when printing UPC-A specifying <D> and then <font>. The first and the last character barcode have the same height to the guard bar when printing UPC-A specifying <BL> and then <font>.

When printing UPC-A specifying <D> and <font>, HRI can be printed under the first digit and the last digit because the height of the first digit and the last digit of the barcode is low. When printing UPC-A specifying <BL> and <font>, the height of the first digit and the last digit of the barcode is high, and the font interval is narrower than previous case.

UPC-A specifying <D> + <font>

UPC-A specifying <BL> + <font>

9.16 Barcode

UPC-A Barcode (With HRI)

ESC+BM

Hexadecimal code	ESC	BM	Parameter
	$<1B>_{16}$	$<42>_{16}<4D>_{16}$	abbcccn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Set the character barcode height of the first and the last digit to the same height of the guard bar.

[Format 1]
<BM>abbcccn~n

●Parameter

a [barcode type]	=	H	: UPC-A(fixed 'H')
b [Narrow bar]	=	Valid Range	: 01~36 dots
c [Height of Barcode]	=	Valid Range	: 001~999 dots
n [Print data]	=	Data	: fixed 11 digits

[Coding Example] Barcode type:UPC-A, Narrow bar width:02, Barcode height :120, Print data: 20123948573
<A>
<H>100<V>100**<BM>H0212020123948573**
<Q>2
<Z>

[Supplementary Explanation]
1. This command supports UPC-A only. When barcode type is specified other than “H”, command error occurs.
2. HRI needs following conditions;
   8dots /mm (203dpi) : Set Narrow bar width to [02] or [03]
   12dots/mm (305dpi) : Set Narrow bar width to [03] or [04]
   24dots/mm (609dpi) : Set Narrow bar width to [06] or [07]or [08]
   When the value other than above is specified, HRI is not printed.
3. Setting of Guard bar, HRI and Ratio is following.

Guard bar	HRI	Ratio
Available	Available	Fix

4. When the parameter value exceeds the range, operation is not supported.
5. All character barcode have the same height when printing UPC-A specifying <D> and then <font>. The first and the last character barcode have the same height to the guard bar when printing UPC-A specifying <BL> and then <font>.
   When printing UPC-A specifying <D> and <font>, HRI can be printed under the first digit and the last digit because the height of the first digit and the last digit of the barcode is low. When printing UPC-A specifying <BL> and <font>, the height of the first digit and the last digit of the barcode is high, and the font interval is narrower than previous case.

UPC-A specifying <BD>

UPC-A specifying <BM>

9.17 Barcode

Customer Barcode

ESC+BZ

Hexadecimal code	ESC	BZ	Parameter
	$<1B>_{16}$	$<42>_{16}<5A>_{16}$	aaaaaaan~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Printing a customer barcode.

[Format]
<BZ>aaaaaaa,n~n

●Parameter
a [Postal code] = Numeral : 0000000 to 9999999 [7 digits, fixed]
n [Print data] = Data (Block number) [Maximum 13 digits]
(Refer to the customer barcode code table for details.)

[Coding example] Postal code: 3310043, Print data: 1-207
<A>
<V>100<H>200**<BZ>3310043,1-207**
<Q>2
<Z>

[Supplemental explanation]
1. Only Alphanumeric and a hyphen can be specified as print data. (See the code table.)
2. When alphabet is specified for print data, data is recognized as 2 digits (Control code and Alphabet font code), and be sure the print data not to exceed 13 digits.
3. When alphabet is specified for the print data, one alphabet is handled as 2 digits data (Control code + Numeric code). When ten alphabet characters [ABCDEFGHIJ] are specified as print data, first 6 characters of [ABCDEF] become 12 digits data (control code + numeric code: 2 digits x 6 characters). For the seventh character [G], the control code of "control code + numeric code" stays in 13 digits and is valid, but numeric code is the 14th digits and invalid. The 8th character and later [HIJ] exceed 13 digits and become invalid.
   e.g. [ABCDEFGHIJ]
   (1) [ABCDEF]: Six characters x 2 digits (Control code + numeric code), total 12 digits
   All six data are valid.
   (2) [G]: One character x 2 digits (Control code + numeric code), total 2 digits
   The control code is valid because it is within 13 digits, and the numeric code is invalid because it is the 14th digits.
   (3) [HIJ]: Three characters x 2 digits (Control code + numeric code), total 6 digits
   All invalid because of exceeding 14 digits.
4. Start/Stop character and C/D will be added automatically.
5. When the number of print data is less than 13 digits, the control code (CC4) will be added automatically. When the number of print data exceeds 13 digits, the data from the 14th digits become invalid.
6. When specifying parameter other than above or the number of print data is not matched, the barcode may not be printed properly or the scanner cannot read it.

Code table for Customer Barcode

					S					I			S				O			
				b8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				b7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				b6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				b5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
b4	**b3**	**b2**	**b1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**				0		P										
0	0	0	1	**1**				1	A	Q										
0	0	1	0	**2**				2	B	R										
0	0	1	1	**3**				3	C	S										
0	1	0	0	**4**				4	D	T										
0	1	0	1	**5**				5	E	U										
0	1	1	0	**6**				6	F	V										
0	1	1	1	**7**				7	G	W										
1	0	0	0	**8**				8	H	X										
1	0	0	1	**9**				9	I	Y										
1	0	1	0	**A**					J	Z										
1	0	1	1	**B**					K											
1	1	0	0	**C**					L											
1	1	0	1	**D**			-		M											
1	1	1	0	**E**					N											
1	1	1	1	**F**					O											

10 2D Barcode

10.1 2D Barcode

PDF417	ESC+2D10

Hexadecimal code	ESC	2D10	Parameter
	<1B>$_{16}$	<32>$_{16}$<44>$_{16}$<31>$_{16}$<30>$_{16}$	,aa,bb,c,dd,ee(,f)
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying PDF417

[Format](Setting part)
<2D10>,aa,bb,c,dd,ee(,f)

●Parameter

a [Minimum module width]	=	Valid Range	: 01 to 27 dots
b [Minimum module height]	=	Valid Range	: 01 to 72 dots
c [Security level]	=	Valid Range	: 0 to 8
d [Number of data code words per one line]	=	Valid Range	: 01 to 30
		00	: Automatic (Width varies depending on number of data)
e [Number of line per symbol]	=	Valid Range	: 03 to 90
		00	: Automatic (Height varies depending on number of data)
f [Code type]	=	0	: Normal, When omitted 0(can be omitted)
		1	: Truncated

[Format](Data part)
<DN>mmmm,n~n

●Parameter

m[Number of data]	=	Valid Range	: 1 to 2681 bytes
n [Print data]	=	Data	

[Coding Example1] Minimum module width: 03 dots, Minimum module height: 09 dots
Security level: 3, Number of data code words per line: 03, Number of line per symbol: 18

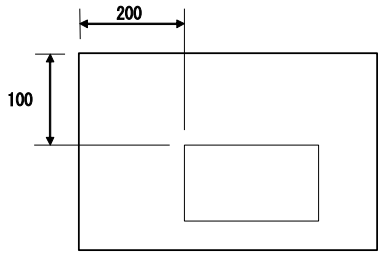
<A>
<V>100<H>200**<2D10>,03,09,3,03,18**
<DN>0010,0123456789
<Q>2
<Z>

[Coding Example 2] Minimum module width: 03 dots, Minimum module height: 09 dots
Security level: 3, Number of data code words per line: 03, Number of line per symbol: 18
Code type: Truncated

<A>
<V>100<H>200**<2D10>,03,09,3,03,18,1**
<DN>0010,0123456789
<Q>2
<Z>

[Supplementary Explanation]

1. Base print position of PDF417 is specified by vertical print position<V> and horizontal print position<H>
   <V>100<H>200<2D10>*** ・・・・・・**



2. When d=e=00, aspect ratio will be at 1:2 based on the number of print data.
3. When parameter d and e doesn't match number of data, print may not be performed properly.
4. When specifying security level height, parameter d or e should have large number.
5. Recommended to specify more than 2 dots for 8 dots/mm and 12 dots/mm printhead, and 4 dots for 24 dots/mm printhead because the minimum module width and minimum module height of QR code may not be read by the scanner.

[Point]

1. Sequential number is not available.
2. Specifying print position by automatic line feed is not available.
3. Print 00H toFFH is available.
4. Format registration is available.
5. Enlarging minimum module size improves print quality.
6. Increasing security level improves read rate.
7. Print height varies depending on the character such as numeric only, alphabet only or mixture of numeric and alphabets.

PDF417 Code table

					S					I			S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			"	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			'	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	\	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

[00HtoFFH] can be available for PDF417.

10.2 2D Barcode

Micro PDF417

ESC+2D12

Hexadecimal code	ESC	2D12	Parameter
	$<1B>_{16}$	$<32>_{16}<44>_{16}<31>_{16}<32>_{16}$	,aa,bb,c,dd(,e)
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying Micro PDF417.

[Format](Setting part)
<2D12>,aa,bb,c,dd(,e)

●Parameter

a [Minimum module width]	=	Valid Range: 01 to 27 dots
b [Minimum module height]	=	Valid Range: 01 to 72 dots
c [Number of data code words per rows] (Cols)	=	Valid Range: 1 to 4
d [Number of rows per symbol]	=	Valid Range: 2 rows
e [Binary mode]	=	0: Normal, When omitted 0 (Can be omitted) 1: Binary mode

[Format](Data part)
<DN>mmmm,n ~ n : Binary mode is Binary mode
<DS>n ~ n : Binary mode is Normal

●Parameter

m[Number of data]	=	Valid Range: 0001 to 0366 bytes
n [Print data]	=	Data

[Coding Example] Module width: 02 dots, Minimum module height: 04 dots
Data code word per rows: 1, Rows per symbol: 14

<A>
<V>100<H>200**<2D12>,02,04,1,14**
<DN>0010,0123456789
<Q>2
<Z>

[Supplementary Explanation]
1. Number of row per symbol is decided by number of data code words per row.
   For details, refer to “Symbol size and number of data for Micro PDF417” in next page.
2. Recommended to specify more than 2 dots for 8 dots/mm and 12 dots/mm printhead, and 4 dots for 24 dots/mm printhead because the minimum module width and minimum module height of QR code may not be read by the scanner.
3. Created module was modified to improve the quality. The module may be different from the previous one, but the read result is the same.

[Note]

Symbol size of Micro PDF417 has 34 types and shown in the table below.

Micro PDF417 - symbol size and number of data

Symbol size		Maximum number of data		
Cols (c)	Rows (d)	Alphabet (A-Z)	Numeric	Binary mode
1	11	6	8	3
	14	12	17	7
	17	18	26	10
	20	22	32	13
	24	30	44	18
	28	38	55	22
2	8	14	20	8
	11	24	35	14
	14	36	52	21
	17	46	67	27
	20	56	82	33
	23	64	93	38
	26	72	105	43
3	6	10	14	6
	8	18	26	10
	10	26	38	15
	12	34	49	20
	15	46	67	27
	20	66	96	39
	26	90	132	54
	32	114	167	68
	38	138	202	82
	44	162	237	97
4	4	14	20	8
	6	22	32	13
	8	34	49	20
	10	46	67	27
	12	58	85	34
	15	76	111	45
	20	106	155	63
	26	142	208	85
	32	178	261	106
	38	214	313	128
	44	250	366	150

* Way of mixing alphabets (Capital, lower case), numeric characters and control codes differs by combination of number of characters.

Micro PDF417 Code table

					S								S							
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			"	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			'	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	\	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

Micro PDF417 can specify 00H to FFH.

10.3 2D Barcode

MAXI Code

ESC+2D20

Hexadecimal code	ESC	2D20	Parameter
	$<1B>_{16}$	$<32>_{16}<44>_{16}<32>_{16}<30>_{16}$	,a(,bbb,ccc,d~d)
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying MaxiCode.

[Format](Setting part)
<2D20>,a(,bbb,ccc,d ~ d)

●Parameter

a [Mode] = 2 : Transportation (Numeric)
3 : Transportation (Alphanumeric)
4 : Standard symbol
6 : Reader programing

* Following parameter must be specified when specifying mode 2 or mode 3.
When specifying mode 4 or mode 6, the parameter should be omitted.

b [Service class] = Valid Range : 001 to 999 (Numeric)
c [Country code] = Valid Range : 001 to 999 (Numeric)
d [Postal code] = Valid Range : 0 to 999999999 (Mode 2)
000000 to 999999 (Mode 3)
* Mode 2: Max 9 digits (Numeric only)
Mode 3: Fixed 6 digits (Capital alphabet)

[Format](Data part)
<DN>mmmm,n~n

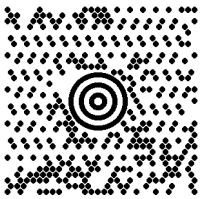
●Parameter

m[Number of Data] = Valid Range : 1 to 138
n [Print data] = Data
*00H cannot be specified.

Mode	Service class	Country code	Postal code	Maximum print data	
				Numeric only	Alphanumericl
2	Fixed 3 digits (Numeric only)	Fixed 3 digits (Numericl only)	Max. 9 digits	123	84
3			Fixed 6 digits (Alphanumeric)		
4	Omission			138	93
6					

[Coding Example] Mode: Transportation (Numericl only), Service class: 003, Country code: 081
Postal code: 123456789

<A>
<V>100<H>200**<2D20>,2,003,081,123456789**
<DN>0010,0123456789
<Q>2
<Z>



[Supplementary Explanation]

1. Size of MaxiCode are not changed by number of data for printing.
2. If parameter that is not described above is used, or print data doesn't match, symbol is not printed.
3. When specifying mode 4 and mode 6, number of print data must be specified over 12. When number of print data is specified less than 11, scanner cannot read printed MaxiCode.
4. The maximum number of print data varies depending on the print data combination when using the print data other than alphanumeric code.
5. Created module was modified to improve the quality. The module may be different from the previous one, but the read result is the same.

MaxiCode Code table

					S								S							
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			”	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			’	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	¥	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

MaxiCode can specify from 1H to FFH.

10.4 2D Barcode

QR Code (Model 2)

ESC+2D30

Hexadecimal code	ESC	2D30	Parameter
	$<1B>_{16}$	$<32>_{16}<44>_{16}<33>_{16}<30>_{16}$	,a,bb,c,d(,ee,ff,gg)
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying QR Code (Model 2)

[Format] (Setup part)
<2D30>,a, bb, c, d(,ee, ff, gg)

●Parameter

a [Error Correction Level] = L : 7%
M : 15%
Q : 25%
H : 30%

b [Size of one side of cell] = Valid Range : 01 to 99 dots
*Specify more than 02 dots when head density is 12dot/mm, otherwise scanner may have reading problem

c [Data setup mode = 0 : Manual setup
1 : Automatic setup
* Note: You need to change the method of specifying print data with this setting.

d [Concatenation mode] = 0 : Normal mode
1 : Concatenation mode
Following parameter must be specified when specifying 1 (Concatenation mode) in Concatenation mode.
Omit following parameter in normal mode.

e[Number of partitions of concatenation mode] = Valid Range : 01 to 16
* Number of partitions: Specifying how many QR code are to be concatenated devided by Concatenation mode.

f[Sequential number partitioned by concatenation mode] = Valid Range : 01 to 16
* Sequential number: Specifying what number is it of devided QR code.

g[Concatenation mode parity data] = Valid Range : 00 to FF
* Parity data: Specifying exclusive OR of all the print data in devided QR code with HEX characters.

[Format] (Data part)

Manual setup (Data setup mod)
<DS>k,n~n * Use when input mode specification is Numeric mode, Alphanumeric mode and Kanji mode.
<DN>mmmm, n~n* Use when specifying by binary.

Automatic setup(Data setup mode)
<DN>mmmm, n~n* Change input mode automatically according to input data.

[Format] (Version)
<DV>pp * Use when specifying the version.

●Parameter

k [Input mode] = 1 : Numeric mode
2 : Alphanumeric mode
3 : Kanji mode (Shift JIS Kanji)
* Specify only when specifying Manual setup in Data setting mode.
* There is binary specification other than above, but data specification command is different.

m[Number of data] = Valid Range : 1 to 2953
* Specify when specifying Automatic setup in Data setting mode or specifying binary specification in Manual setup.

n [Print data] = Data

pp[Version] = 00 to 40 (MODEL2)
* Use when fix the size of QR symbol by specifying the version. When not specified, it will be specified automatically. It will be Auto when specifying 00. The parameter error doesn't arise in the range from 00 to 40.
* Refer to [QR code version command] for details.

[Supplementary Explanation1]
1. When specifying Kanji in <DN>, specify size that is 2 X number of Kanji characters.
2. For <DN> in Automatic setup, when 80H to 9FH and E0H to FFH are specified as data, it is handed as Kanji mode, and cannot specify them as binary.

[Coding Example1] Error correction level: 7%, Size of one side of cell: 05
Data setup mode: Manual setup, Concatenation mode: Normal

<A>
<V>100<H>200**<2D30>,L,05,0,0**
<DS>1,012345
<Q>2
<Z>

[Supplementary Explanation2]

1. If the parameter other than the description is specified or number of print data is not match, print is not executed.
2. Data specification command in data part varies according to parameter setup or specified data.

[Coding Example2] Error correction level: 7%, Size of one side of cell: 04
Mixed specification of Manual setup (Data setup mode)
In Manual setup, you can proceed specifying data in specified input mode (Numeric, Alphanumeric, Kanji, Binary).

<A>
<V>100<H>200
<2D30>,L,04,0,0
<DS>3,サトー
<DN>0010,0123456789
<DS>1,123
<Q>1
<Z>

[Supplementary Explanation3]

1. Parameter part to be followed by Data part. Data part and data part should be specified in a row. When don't specify in a row, print result may not be secured.
2. Total number of data (n) need to be less than 7000 bytes. Maximum number of blocks in data part specified in a row is 200.

[Coding Example 3] Error correction level: 7%, Size of one side of cell: 05, Data setup mode: Manual setup,
Concatenation mode: Normal, Version 5

<A>
<V>100<H>200<2D30>,L,05,0,0
<QV>5
<DS>1,012345
<DN>0004,6789
<Q>1
<Z>

[Notes]

1. Specify <QV> command between <2Dxx> and <DN>/<DS>.
2. When resulted in a parameter error, it will be handled in the same manner of no specification.
3. It doesn't become a parameter error from 00 to 40. (Set the value within the range corresponding to each model)
   For MODEL2, the setting range is from 00 to 40.
4. Sending the data exceeding the data size of specified version will result in error and QR code is not printed.

QR Code data size list (Model 2)

Version	Error Correction	Numeric	Alpha-numeric	Kanji	Binary
1 21X21	L	41	25	10	17
	M	34	20	8	14
	Q	27	16	7	11
	H	17	10	4	7
2 25X25	L	77	47	20	32
	M	63	38	16	26
	Q	48	29	12	20
	H	34	20	8	14
3 29X29	L	127	77	32	53
	M	101	61	26	42
	Q	77	47	20	32
	H	58	35	15	24
4 33X33	L	187	114	48	78
	M	149	90	38	62
	Q	111	67	28	46
	H	82	50	21	34
5 37X37	L	255	154	65	106
	M	202	122	52	84
	Q	144	87	37	60
	H	106	64	27	44
6 41X41	L	322	195	82	134
	M	255	154	65	106
	Q	178	108	45	74
	H	139	84	36	58
7 45X45	L	370	224	95	154
	M	293	178	75	122
	Q	207	125	53	86
	H	154	93	39	64
8 49X49	L	461	279	118	192
	M	365	221	93	152
	Q	259	157	66	108
	H	202	122	52	84
9 53X53	L	552	335	141	230
	M	432	262	111	180
	Q	312	189	80	130
	H	235	143	60	98
10 57X57	L	652	395	167	271
	M	513	311	131	213
	Q	364	221	93	151
	H	288	174	74	119

Version	Error Correction	Numeric	Alpha-numeric	Kanji	Binary
11 61X61	L	772	468	198	321
	M	604	366	155	251
	Q	427	259	109	177
	H	331	200	85	137
12 65X65	L	883	535	226	367
	M	691	419	177	287
	Q	489	296	125	203
	H	374	227	96	155
13 69X69	L	1022	619	262	425
	M	796	483	204	331
	Q	580	352	149	241
	H	427	259	109	177
14 73X73	L	1101	667	282	458
	M	871	528	223	362
	Q	621	376	159	258
	H	468	283	120	194
15 77X77	L	1250	758	320	520
	M	991	600	254	412
	Q	703	426	180	292
	H	530	321	136	220
16 81X81	L	1408	854	361	586
	M	1082	656	277	450
	Q	775	470	198	322
	H	602	365	154	250
17 85X85	L	1548	938	397	664
	M	1212	734	310	504
	Q	876	531	224	364
	H	674	408	173	280
18 89X89	L	1725	1046	442	718
	M	1346	816	345	560
	Q	948	574	243	394
	H	746	452	191	310
19 93X93	L	1903	1153	488	792
	M	1500	909	384	624
	Q	1063	644	272	442
	H	813	493	208	338
20 97X97	L	2061	1249	528	858
	M	1600	970	410	666
	Q	1159	702	297	482
	H	919	557	235	382

Version	Error Correction	Numeric	Alpha-numeric	Kanji	Binary
	L	2232	1352	572	929
21	M	1708	1035	438	711
101X101	Q	1224	742	314	509
	H	969	587	248	403
	L	2409	1460	618	1003
22	M	1872	1134	480	779
105X105	Q	1358	823	348	565
	H	1056	640	270	439
	L	2620	1158	672	1091
23	M	2059	1248	528	857
109X109	Q	1468	890	376	611
	H	1108	672	284	461
	L	2812	1704	721	1171
24	M	2188	1326	561	911
113X113	Q	1588	963	407	661
	H	1228	744	315	511
	L	3057	1853	784	1273
25	M	2395	1451	614	997
117X117	Q	1718	1041	440	715
	H	1286	779	330	535
	L	3283	1990	842	1367
26	M	2544	1542	652	1059
121X121	Q	1804	1094	462	751
	H	1425	864	365	593
	L	3517	2132	902	1465
27	M	2701	1637	692	1125
125X125	Q	1933	1172	496	805
	H	1501	910	385	625
	L	3669	2223	940	1528
28	M	2857	1732	732	1190
129X129	Q	2085	1263	534	868
	H	1581	958	405	658
	L	3909	2369	1002	1628
29	M	3035	1839	778	1264
133X133	Q	2181	1322	559	908
	H	1677	1016	430	698
	L	4158	2520	1066	1732
30	M	3289	1994	843	1370
137X137	Q	2358	1429	604	982
	H	1782	1080	457	742

Version	Error Correction	Numeric	Alpha-numeric	Kanji	Binary
	L	4417	2677	1132	1840
31	M	3486	2113	894	1452
141X141	Q	2473	1499	634	1030
	H	1897	1150	486	790
	L	4686	2840	1201	1952
32	M	3693	2238	947	1538
145X145	Q	2670	1618	684	1112
	H	2022	1226	518	842
	L	4965	3009	1273	2068
33	M	3909	2369	1002	1628
149X149	Q	2805	1700	719	1168
	H	2157	1307	553	898
	L	5253	3183	1347	2188
34	M	4134	2506	1060	1722
153X153	Q	2949	1787	756	1228
	H	2301	1394	590	958
	L	5529	3351	1417	2303
35	M	4343	2632	1113	1809
157X157	Q	3081	1867	790	1283
	H	2361	1431	605	983
	L	5836	3537	1496	2431
36	M	4588	2780	1176	1911
161X161	Q	3244	1966	832	1351
	H	2524	1530	647	1051
	L	6153	3729	1577	2563
37	M	4775	2894	1224	1989
165X165	Q	3417	2071	876	1423
	H	2625	1591	673	1093
	L	6479	3927	1661	2699
38	M	5039	3054	1292	2099
169X169	Q	3599	2181	923	1499
	H	2735	1658	701	1139
	L	6743	4087	1729	2809
39	M	5313	3220	1362	2213
173X173	Q	3791	2298	972	1579
	H	2927	1774	750	1219
	L	7089	4296	1817	2953
40	M	5596	3391	1435	2331
177X177	Q	3993	2420	1024	1663
	H	3057	1852	784	1273

10.5 2D Barcode

QR Code (Model 1)

ESC+2D31

Hexadecimal code	ESC	2D31	Parameter
	$<1B>_{16}$	$<32>_{16}<44>_{16}<33>_{16}<31>_{16}$	,a,bb,c,d(,ee,ff,gg)
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within item	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying QR Code (Model 1)

[Format] (Setup part)
<2D31>,a, bb, c, d(,ee, ff, gg)
●Parameter
a [Error Correction Level] = L : 7%
M : 15%
Q : 25%
H : 30%
b [Size of one side of cell] = Valid Range : 01 to 99 dots
* Specify more than 02 dots when head density is 12dot/mm, otherwise scanner may have reading problem
c [Data setup mode = 0 : Manual setup
1 : Automatic setup
* Note: You need to change the method of specifying print data with this setting.
d [Concatenation mode] = 0 : Normal mode
1 : Concatenation mode
Following parameter must be specified when specifying 1 (Concatenation mode) in Concatenation mode.
Omit following parameter in normal mode.
e [Number of partitions of concatenation mode] = Valid Range : 01 to 16
* Number of partitions: Specifying how many QR code are to be concatenated divided by Concatenation mode.
f [Sequential number partitioned by concatenation mode] = Valid Range : 01 to 16
* Sequential number: Specifying what number is it of divided QR code.
g [Concatenation mode parity data] = Valid Range : 00 to FF
* Parity data: Specifying exclusive OR of all the print data in divided QR code with HEX characters.

[Format] (Data part)
Manual setup (Data setup mod)
<DS>k,n~n * Use when input mode specification is Numeric mode, Alphanumeric mode and Kanji mode.
<DN>mmmm, n~n * Use when specifying by binary.
Automatic setup (Data setup mode)
<DN>mmmm, n~n * Change input mode automatically according to input data.

●Parameter
k [Input mode] = 1 : Numeric mode
2 : Alphanumeric mode
3 : Kanji mode (Shift JIS Kanji)
* Specify only when specifying Manual setup in Data setting mode.
* There is binary specification other than above, but data specification command is different.
m[Number of data] = Valid Range : 1 to 486
* Specify when specifying Automatic setup in Data setting mode or specifying binary specification in Manual setup.
n [Print data] = Data

[Format] (version)
<QV>pp * Specify when specifying the version.

●Parameter
pp [Version] = 00 to 14 (MODEL1)

* This setting is used when fixing the size of QR symbol with the version command. When not specified, it becomes Auto.
Specifying 00 also becomes Auto. It doesn't become a parameter error from 00 to 40.
* See [QR code version command] for details.

[Supplementary Explanation1]

1. When specifying Kanji in <DN>, specify size that is 2 X number of Kanji characters.
2. For <DN> in Automatic setup, when 80H to 9FH and E0H to FFH is specified as data, it is handed as Kanji mode, and cannot specify them as binary

[Coding Example1] Error correction level: 7%, Size of one side of cell: 05
Data setup mode: Manual setup, Concatenation mode: Normal

<A>
<V>100<H>200**<2D31>,L,05,0,0**
<DS>1,012345
<Q>2
<Z>

[Supplementary Explanation2]

1. If the parameter other than the description is specified or number of print data is not match, print is not executed.
2. Data specification command in data part varies according to parameter setup or specified data.

[Coding Example 2] Error correction level: 7%, Size of one side of cell: 04
Mixed specification of Manual setup (Data setup mode)

In Manual setup, you can proceed specifying data in specified input mode (Numeric, Alphanumeric, Kanji, Binary).

<A>
<V>100<H>200
<2D31>,L,04,0,0
<DS>3,サトー
<DN>0010,0123456789
<DS>1,123
<Q>1
<Z>

[Supplementary Explanation3]

1. Parameter part to be followed by Data part. Data part and data part should be specified in a row. When don't specify in a row, print result may not be secured.

[Coding Example 3] Error correction level: 7%, Size of one side of cell: 05, Data setup mode: Manual setup, Concatenation mode: Normal, Version 5 data setting mode: manual setting, combine mode: normal, printed in version 5

<A>
<V>100<H>200**<2D31>,L,05,0,0**
<RU>5
<DS>1,012345
<DN>0004,6789
<Q>1
<Z>

[Notes]

1. Specify <QV> command between <2Dxx> and <DN>/<DS>.
2. When resulted in a parameter error, it will be handled in the same manner of no specification.
3. It doesn't become a parameter error from 00 to 40. (Set the value within the range corresponding to each model)
   Setting range(MODEL1): 00 to 14
4. Sending the data exceeding the data size of specified version will result in error and QR code is not printed.

QR Code data size list (Model 1)

Version	Error Correction	Numeric	Alpha-numeric	Kanji	Binary
1 21X21	L	40	24	10	17
	M	33	20	8	14
	Q	25	15	6	11
	H	16	10	4	7
2 25X25	L	81	49	20	34
	M	66	40	17	28
	Q	52	31	13	22
	H	33	20	8	14
3 29X29	L	131	79	33	55
	M	100	60	25	42
	Q	81	49	20	34
	H	52	31	13	22
4 33X33	L	186	113	48	78
	M	138	84	35	58
	Q	114	69	29	48
	H	76	46	19	32
5 37X37	L	253	154	65	106
	M	191	116	49	80
	Q	157	95	40	66
	H	105	63	27	44
6 41X41	L	321	194	82	134
	M	249	151	64	104
	Q	201	122	51	84
	H	133	81	34	56
7 45X45	L	402	244	103	168
	M	311	188	80	130
	Q	253	154	65	106
	H	167	101	43	70
8 49X49	L	493	299	126	206
	M	378	229	97	158
	Q	301	183	77	126
	H	203	123	52	85
9 53X53	L	585	354	150	244
	M	441	267	113	184
	Q	369	223	94	154
	H	239	145	61	100
10 57X57	L	690	418	177	287
	M	526	319	135	219
	Q	433	262	111	180
	H	291	176	74	121

Version	Error Correction	Numeric	Alpha-numeric	Kanji	Binary
11 61X61	L	800	485	205	333
	M	608	368	156	253
	Q	493	299	126	205
	H	342	207	87	142
12 65X65	L	915	555	234	381
	M	694	421	178	289
	Q	579	351	148	241
	H	390	236	100	162
13 69X69	L	1030	624	264	429
	M	790	479	202	329
	Q	656	398	168	273
	H	454	275	116	189
14 73X73	L	1167	707	299	486
	M	877	531	225	365
	Q	738	447	189	307
	H	498	302	127	207

10.6 2D Barcode

Micro QR Code

ESC+2D32

Hexadecimal code	ESC	2D32	Parameter
	$<1B>_{16}$	$<32>_{16}<44>_{16}<33>_{16}<32>_{16}$	,a,bb,c
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying QR Code (Micro QR Code)

[Format] (Setup part)
<2D32>,a,bb,c

●Parameter
a [Error Correction Level] = L : 7%
M : 15%
Q : 25%
b [Size of one side of cell] = Valid Range : 01 to 99 dots
*Specify more than 02 dots when head density is 12dot/mm, otherwise scanner may have reading problem
c [Data setup mode = 0 : Manual setup
1 : Automatic setup

[Format] (Dat part)
Manual setup (Data setup mode)
<DS>k,n~n * Use when input mode specification is Numeric mode, Alphanumeric mode and Kanji mode.
<DN>mmmm, n~n * Use when specifying by binary.
Automatic setup (Data setup mode)
<DN>mmmm, n~n * Change input mode automatically according to input data.

●Parameter
k [Input mode] = 1 : Numeric mode
2 : Alphanumeric mode
3 : Kanji mode (Shift JIS Kanji)
* There is binary specification other than above, but data specification command is different.
m[Number of data」 = Valid Range : 1 to 15
* Specify when specifying Automatic setup in Data setting mode.
n [Print data] = Data
pp [Version] = 00 to 04 (MicroQR M1 to M4)

[Format] (version)
<QV>pp * Specify when specifying the version.

●Parameter
pp [Version] = 00 to 04 (MicroQR M1 to M4)

* This setting is used when fixing the size of QR symbol with the version command. When not specified, it becomes Auto.
Specifying 00 also becomes Auto. It doesn't become a parameter error from 00 to 40.
* See [QR code version command] for details.

[Supplementary Explanation1]
1. When specifying Kanji in <DN>, specify size that is 2 X number of Kanji characters.
2. For <DN> in Automatic setup, when 80H to 9FH and E0H to FFH are specified as data, it is handed as Kanji mode, and cannot specify them as binary.

[Coding Example1] Error correction level :7%, Size of one side of cell:04
<A>
<V>100<H>200**<2D32>,L,04**
<DS>1,012345
<Q>2
<Z>

[Supplementary Explanation2]
1. If the parameter other than the description is specified or number of print data is not match, print is not executed.
2. Data specification command in data part varies according to parameter setup or specified data.

[Coding Example2] Error correction level: 7%, Size of one side of cell: 04
Mixed specification of Manual setup (Data setup mode)

In Manual setup, you can proceed specifying data in specified input mode (Numeric, Alphanumeric, Kanji, Binary) in a row.

<A>
<V>100<H>200
<2D32>,L,04,0
<DS>3,サトー
<DN>0010,0123456789
<DS>1,123
<Q>1
<Z>

[Supplementary Explanation3]

1. Parameter part to be followed by Data part. Data part and data part should be specified in a row. When don't specify in a row, print result may not be secured.

Micro QR Code Data size list

Version	Error correction	Numeric	Alphanumeric	Kanji	Binary
M1 (11x11)	L (Error detection only)	5	-	-	-
M2 (13x13)	L M	10 8	6 5	- -	- -
M3 (15x15)	L M	23 18	14 11	6 4	9 7
M4 (17x17)	L M Q	35 30 21	21 18 13	9 8 5	15 13 9

[Coding Example 3] Error correction level: 7%, Size of one side of cell: 05, Data setup mode: Manual setup, Concatenation mode: Normal, Version M4, Data setting mode: manual setting, Combine mode: normal, Printed in version M4

<A>
<V>100<H>200<2D32>,L,05,0,0
<QV>4
<DS>1,012345
<DN>0004,6789
<Q>1
<Z>

[Notes]

1. Specify <QV> command between <2Dxx> and <DN>/<DS>.
2. When resulted in a parameter error, it will be handled in the same manner of no specification.
3. It doesn't become a parameter error from 3.00 to 40. (Set the value within the range corresponding to each model) For MicroQR, the setting range is from 00 to 04.
4. Sending the data exceeding the data size of specified version will result in error and QR code is not printed.

QR Code (Numeric mode) Code table

					S					I			S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**				0												
0	0	0	1	**1**				1												
0	0	1	0	**2**				2												
0	0	1	1	**3**				3												
0	1	0	0	**4**				4												
0	1	0	1	**5**				5												
0	1	1	0	**6**				6												
0	1	1	1	**7**				7												
1	0	0	0	**8**				8												
1	0	0	1	**9**				9												
1	0	1	0	**A**																
1	0	1	1	**B**																
1	1	0	0	**C**																
1	1	0	1	**D**																
1	1	1	0	**E**																
1	1	1	1	**F**																

QR Code (Alphanumeric mode) Code table

					S					I			S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0		P										
0	0	0	1	**1**				1	A	Q										
0	0	1	0	**2**				2	B	R										
0	0	1	1	**3**				3	C	S										
0	1	0	0	**4**			$	4	D	T										
0	1	0	1	**5**			%	5	E	U										
0	1	1	0	**6**				6	F	V										
0	1	1	1	**7**				7	G	W										
1	0	0	0	**8**				8	H	X										
1	0	0	1	**9**				9	I	Y										
1	0	1	0	**A**			*	:	J	Z										
1	0	1	1	**B**			+		K											
1	1	0	0	**C**					L											
1	1	0	1	**D**			-		M											
1	1	1	0	**E**			.		N											
1	1	1	1	**F**			/		O											

QR Code (Binary mode) Code table

					S								S							
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			"	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	c	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			'	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	\	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

QR Code can specify from 00H to 7FH, and from A0H to DFH.

QR Code (Kanji mode) Code table

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	813F		SP	、	。	,	.	・	:	;	?	!	゛	°	´	`	¨
	814F	^	￣	_	ヽ	ヾ	ゝ	ゞ	〃	仝	々	〆	〇	―	―	-	/
記	815F	＼	～	∥	｜	…	‥	‘	’	“	”	（	）	〔	〕	［	］
	816F	｛	｝	〈	〉	《	》	「	」	『	』	【	】	＋	－	±	×
号	8180	÷	＝	≠	＜	＞	≦	≧	∞	∴	♂	♀	°	′	″	℃	￥
	8190	＄	￠	￡	％	＃	＆	＊	＠	§	☆	★	○	●	◎	◇	
	819E		◆	□	■	△	▲	▽	▼	※	〒	→	←	↑	↓	＝	
英	824F	0	1	2	3	4	5	6	7	8	9						
・	825F		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
数	826F	P	Q	R	S	T	U	V	W	X	Y	Z					
字	8280		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	8290	p	q	r	s	t	u	v	w	x	y	z					
	829E		ぁ	あ	ぃ	い	ぅ	う	ぇ	え	ぉ	お	か	が	き	ぎ	く
ひ	82AE	ぐ	け	げ	こ	ご	さ	ざ	し	じ	す	ず	せ	ぜ	そ	ぞ	た
ら	82BE	だ	ち	ぢ	っ	つ	づ	て	で	と	ど	な	に	ぬ	ね	の	は
が	82CE	ば	ぱ	ひ	び	ぴ	ふ	ぶ	ぷ	へ	べ	ぺ	ほ	ぼ	ぽ	ま	み
な	82DE	む	め	も	ゃ	や	ゅ	ゆ	ょ	よ	ら	り	る	れ	ろ	ゎ	わ
	82EE	ゐ	ゑ	を	ん												
	833F		ァ	ア	ィ	イ	ゥ	ウ	ェ	エ	ォ	オ	カ	ガ	キ	ギ	ク
カ	834F	グ	ケ	ゲ	コ	ゴ	サ	ザ	シ	ジ	ス	ズ	セ	ゼ	ソ	ゾ	タ
タ	835F	ダ	チ	ヂ	ッ	ツ	ヅ	テ	デ	ト	ド	ナ	ニ	ヌ	ネ	ノ	ハ
カ	836F	バ	パ	ヒ	ビ	ピ	フ	ブ	プ	ヘ	ベ	ペ	ホ	ボ	ポ	マ	ミ
ナ	8380	ム	メ	モ	ャ	ヤ	ュ	ユ	ョ	ヨ	ラ	リ	ル	レ	ロ	ヮ	ワ
	8390	ヰ	ヱ	ヲ	ン	ヴ	ヵ	ヶ									
ギ	839E		A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O
リ	83AE	Π	P	Σ	T	Y	Φ	X	Ψ	Ω							
シ	83BE		α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
ア	83CE	π	ρ	σ	τ	υ	φ	χ	ψ	ω							
ロ	843F		A	Б	B	Г	Д	E	Ё	Ж	З	И	Й	К	Л	M	H
シ	844F	O	П	P	C	T	У	Ф	X	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э
ア	845F	Ю	Я														
文	846F		a	б	в	г	д	e	ё	ж	з	и	й	к	л	м	н
字	8480	o	п	p	c	т	у	ф	x	ц	ч	ш	щ	ъ	ы	ь	э
	8490	ю	я														

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
ア	889E		亜	唖	娃	阿	哀	愛	挨	姶	逢	葵	茜	穐	悪	握	渥
	88AE	旭	葦	芦	鯵	梓	圧	斡	扱	宛	姐	虻	飴	絢	綾	鮎	或
	88BE	粟	袷	安	庵	按	暗	案	闇	鞍	杏						
イ	88BE											以	伊	位	依	偉	囲
	88CE	夷	委	威	尉	惟	意	慰	易	椅	為	畏	異	移	維	緯	胃
	88DE	萎	衣	謂	違	遺	医	井	亥	域	育	郁	磯	一	壱	溢	逸
	88EE	稲	茨	芋	鰯	允	印	咽	員	因	姻	引	飲	淫	胤	蔭	
	893F		院	陰	隠	韻	吋										
ウ	893F							右	宇	烏	羽	迂	雨	卯	鵜	窺	丑
	894F	碓	臼	渦	嘘	唄	欝	蔚	鰻	姥	厩	浦	瓜	閏	噂	云	運
	895F	雲															
エ	895F		荏	餌	叡	営	嬰	影	映	曳	栄	永	泳	洩	瑛	盈	穎
	896F	頴	英	衛	詠	鋭	液	疫	益	駅	悦	謁	越	閲	榎	厭	円
	8980	園	堰	奄	宴	延	怨	掩	援	沿	演	炎	焔	煙	燕	猿	縁
	8990	艶	苑	薗	遠	鉛	鴛	塩									
オ	8990								於	汚	甥	凹	央	奥	往	応	
	899E		押	旺	横	欧	殴	王	翁	襖	鴬	鴎	黄	岡	沖	荻	億
	89AE	屋	憶	臆	桶	牡	乙	俺	卸	恩	温	穏	音				
カ	89AE													下	化	仮	何
	89BE	伽	価	佳	加	可	嘉	夏	嫁	家	寡	科	暇	果	架	歌	河
	89CE	火	珂	禍	禾	稼	箇	花	苛	茄	荷	華	菓	蝦	課	嘩	貨
	89DE	迦	過	霞	蚊	俄	峨	我	牙	画	臥	芽	蛾	賀	雅	餓	駕
	89EE	介	会	解	回	塊	壊	廻	快	怪	悔	恢	懐	戒	拐	改	
	8A3F		魁	晦	械	海	灰	界	皆	絵	芥	蟹	開	階	貝	凱	劾
	8A4F	外	咳	害	崖	慨	概	涯	碍	蓋	街	該	鎧	骸	浬	馨	蛙
	8A5F	垣	柿	蛎	鈎	劃	嚇	各	廓	拡	撹	格	核	殻	獲	確	穫
	8A6F	覚	角	赫	較	郭	閣	隔	革	学	岳	楽	額	顎	掛	笠	樫
	8A80	橿	梶	鰍	潟	割	喝	恰	括	活	渇	滑	葛	褐	轄	且	鰹
	8A90	叶	椛	樺	鞄	株	兜	竃	蒲	釜	鎌	噛	鴨	栢	茅	萱	
	8A9E		粥	刈	苅	瓦	乾	侃	冠	寒	刊	勘	勧	巻	喚	堪	姦
	8AAE	完	官	寛	干	幹	患	感	慣	憾	換	敢	柑	桓	棺	款	歓
	8ABE	汗	漢	澗	潅	環	甘	監	看	竿	管	簡	緩	缶	翰	肝	艦
	8ACE	莞	観	諌	貫	還	鑑	間	閑	関	陥	韓	館	舘	丸	含	岸
	8ADE	巌	玩	癌	眼	岩	翫	贋	雁	頑	顔	願					

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
キ	8ADE												企	伎	危	喜	器
	8AEE	基	奇	嬉	寄	岐	希	幾	忌	揮	机	旗	既	期	棋	棄	
	8B3F		機	帰	毅	気	汽	畿	祈	季	稀	紀	徽	規	記	貴	起
	8B4F	軌	輝	飢	騎	鬼	亀	偽	儀	妓	宜	戯	技	擬	欺	犠	疑
	8B5F	祇	義	蟻	誼	議	掬	菊	鞠	吉	吃	喫	桔	橘	詰	砧	杵
	8B6F	黍	却	客	脚	虐	逆	丘	久	仇	休	及	吸	宮	弓	急	救
	8B80	朽	求	汲	泣	灸	球	究	窮	笈	級	糾	給	旧	牛	去	居
	8B90	巨	拒	拠	挙	渠	虚	許	距	鋸	漁	禦	魚	亨	享	京	
	8B9E		供	侠	僑	兇	競	共	凶	協	匡	卿	叫	喬	境	峡	強
	8BAE	彊	怯	恐	恭	挟	教	橋	況	狂	狭	矯	胸	脅	興	蕎	郷
	8BBE	鏡	響	饗	驚	仰	凝	尭	暁	業	局	曲	極	玉	桐	粁	僅
	8BCE	勤	均	巾	錦	斤	欣	欽	琴	禁	禽	筋	緊	芹	菌	衿	襟
	8BDE	謹	近	金	吟	銀											
ク	8BDE						九	倶	句	区	狗	玖	矩	苦	躯	駆	駈
	8BEE	駒	具	愚	虞	喰	空	偶	寓	遇	隅	串	櫛	釧	屑	屈	
	8C3F		掘	窟	沓	靴	轡	窪	熊	隈	粂	栗	繰	桑	鍬	勲	君
	8C4F	薫	訓	群	軍	郡											
ケ	8C4F						卦	袈	祁	係	傾	刑	兄	啓	圭	珪	型
	8C5F	契	形	径	恵	慶	慧	憩	掲	携	敬	景	桂	渓	畦	稽	系
	8C6F	経	継	繋	罫	茎	荊	蛍	計	詣	警	軽	頚	鶏	芸	迎	鯨
	8C80	劇	戟	撃	激	隙	桁	傑	欠	決	潔	穴	結	血	訣	月	件
	8C90	倹	倦	健	兼	券	剣	喧	圏	堅	嫌	建	憲	懸	拳	捲	
	8C9E		検	権	牽	犬	献	研	硯	絹	県	肩	見	謙	賢	軒	遣
	8CAE	鍵	険	顕	験	鹸	元	原	厳	幻	弦	減	源	玄	現	絃	舷
	8CBE	言	諺	限													
コ	8CBE				乎	個	古	呼	固	姑	孤	己	庫	弧	戸	故	枯
	8CCE	湖	狐	糊	袴	股	胡	菰	虎	誇	跨	鈷	雇	顧	鼓	五	互
	8CDE	伍	午	呉	吾	娯	後	御	悟	梧	檎	瑚	碁	語	誤	護	醐
	8DEE	乞	鯉	交	佼	侯	候	倖	光	公	功	効	勾	厚	口	向	
	8D3F		后	喉	坑	垢	好	孔	孝	宏	工	巧	巷	幸	広	庚	康
	8D4F	弘	恒	慌	抗	拘	控	攻	昂	晃	更	杭	校	梗	構	江	洪
	8D5F	浩	港	溝	甲	皇	硬	稿	糠	紅	紘	絞	綱	耕	考	肯	肱
	8D6F	腔	膏	航	荒	行	衡	講	貢	購	郊	酵	鉱	砿	鋼	閤	降
	8D80	項	香	高	鴻	剛	劫	号	合	壕	拷	濠	豪	轟	麹	克	刻

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コ	8D90	告	国	穀	酷	鵠	黒	獄	漉	腰	甑	忽	惚	骨	狛	込	
	8D9E		此	頃	今	困	坤	墾	婚	恨	懇	昏	昆	根	梱	混	痕
	8DAE	紺	艮	魂													
サ	8DAE				些	佐	叉	唆	嵯	左	差	査	沙	瑳	砂	詐	鎖
	8DBE	裟	坐	座	挫	債	催	再	最	哉	塞	妻	宰	彩	才	採	栽
	8DCE	歳	済	災	采	犀	砕	砦	祭	斎	細	菜	裁	載	際	剤	在
	8DDE	材	罪	財	冴	坂	阪	堺	榊	肴	咲	崎	埼	碕	鷺	作	削
	8DEE	咋	搾	昨	朔	柵	窄	策	索	錯	桜	鮭	笹	匙	冊	刷	
	8E3F		察	拶	撮	擦	札	殺	薩	雑	皐	鯖	捌	錆	鮫	皿	晒
	8E4F	三	傘	参	山	惨	撒	散	桟	燦	珊	産	算	纂	蚕	讃	賛
	8E5F	酸	餐	斬	暫	残											
シ	8E5F						仕	仔	伺	使	刺	司	史	嗣	四	士	始
	8E6F	姉	姿	子	屍	市	師	志	思	指	支	孜	斯	施	旨	枝	止
	8E80	死	氏	獅	祉	私	糸	紙	紫	肢	脂	至	視	詞	詩	試	誌
	8E90	諮	資	賜	雌	飼	歯	事	似	侍	児	字	寺	慈	持	時	
	8E9E		次	滋	治	爾	璽	痔	磁	示	而	耳	自	蒔	辞	汐	鹿
	8EAE	式	識	鴫	竺	軸	宍	雫	七	叱	執	失	嫉	室	悉	湿	漆
	8EBE	疾	質	実	蔀	篠	偲	柴	芝	屡	蕊	縞	舎	写	射	捨	赦
	8ECE	斜	煮	社	紗	者	謝	車	遮	蛇	邪	借	勺	尺	杓	灼	爵
	8EDE	酌	釈	錫	若	寂	弱	惹	主	取	守	手	朱	殊	狩	珠	種
	8EEE	腫	趣	酒	首	儒	受	呪	寿	授	樹	綬	需	囚	収	周	
	8F3F		宗	就	州	修	愁	拾	洲	秀	秋	終	繍	習	臭	舟	蒐
	8F4F	衆	襲	讐	蹴	輯	週	酋	酬	集	醜	什	住	充	十	従	戎
	8F5F	柔	汁	渋	獣	縦	重	銃	叔	夙	宿	淑	祝	縮	粛	塾	熟
	8F6F	出	術	述	俊	峻	春	瞬	竣	舜	駿	准	循	旬	楯	殉	淳
	8F80	準	潤	盾	純	巡	遵	醇	順	処	初	所	暑	曙	渚	庶	緒
	8F90	署	書	薯	藷	諸	助	叙	女	序	徐	恕	鋤	除	傷	償	
	8F9E		勝	匠	升	召	哨	商	唱	嘗	奨	妾	娼	宵	将	小	少
	8FAE	尚	庄	床	廠	彰	承	抄	招	掌	捷	昇	昌	昭	晶	松	梢
	8FBE	樟	樵	沼	消	渉	湘	焼	焦	照	症	省	硝	礁	祥	称	章
	8FCE	笑	粧	紹	肖	菖	蒋	蕉	衝	裳	訟	証	詔	詳	象	賞	醤
	8FDE	鉦	鍾	鐘	障	鞘	上	丈	丞	乗	冗	剰	城	場	壌	嬢	常
	8FEE	情	擾	条	杖	浄	状	畳	穣	蒸	譲	醸	錠	嘱	埴	飾	
	903F		拭	植	殖	燭	織	職	色	触	食	蝕	辱	尻	伸	信	侵

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シ	904F	唇	娠	寝	審	心	慎	振	新	晋	森	榛	浸	深	申	疹	真
	905F	神	秦	紳	臣	芯	薪	親	診	身	辛	進	針	震	人	仁	刃
	906F	塵	壬	尋	甚	尽	腎	訊	迅	陣	靭						
ス	906F											笥	諏	須	酢	図	厨
	9080	逗	吹	垂	帥	推	水	炊	睡	粋	翠	衰	遂	酔	錐	錘	随
	9090	瑞	髄	崇	嵩	数	枢	趨	雛	据	杉	椙	菅	頗	雀	裾	
	909E		澄	摺	寸												
セ	909E					世	瀬	畝	是	凄	制	勢	姓	征	性	成	政
	90AE	整	星	晴	棲	栖	正	清	牲	生	盛	精	聖	声	製	西	誠
	90BE	誓	請	逝	醒	青	静	斉	税	脆	隻	席	惜	戚	斥	昔	析
	90CE	石	積	籍	績	脊	責	赤	跡	蹟	碩	切	拙	接	摂	折	設
	90DE	窃	節	説	雪	絶	舌	蝉	仙	先	千	占	宣	専	尖	川	戦
	90EE	扇	撰	栓	栴	泉	浅	洗	染	潜	煎	煽	旋	穿	箭	線	
	913F		繊	羨	腺	舛	船	薦	詮	賤	践	選	遷	銭	銑	閃	鮮
	914F	前	善	漸	然	全	禅	繕	膳	糎							
ソ	914F										噌	塑	岨	措	曾	曽	楚
	915F	狙	疏	疎	礎	祖	租	粗	素	組	蘇	訴	阻	遡	鼠	僧	創
	916F	双	叢	倉	喪	壮	奏	爽	宋	層	匝	惣	想	捜	掃	挿	掻
	9180	操	早	曹	巣	槍	槽	漕	燥	争	痩	相	窓	糟	総	綜	聡
	9190	草	荘	葬	蒼	藻	装	走	送	遭	鎗	霜	騒	像	増	憎	
	919E		臓	蔵	贈	造	促	側	則	即	息	捉	束	測	足	速	俗
	91AE	属	賊	族	続	卒	袖	其	揃	存	孫	尊	損	村	遜		
タ	91AE															他	多
	91BE	太	汰	詑	唾	堕	妥	惰	打	柁	舵	楕	陀	駄	騨	体	堆
	91CE	対	耐	岱	帯	待	怠	態	戴	替	泰	滞	胎	腿	苔	袋	貸
	91DE	退	逮	隊	黛	鯛	代	台	大	第	醍	題	鷹	滝	瀧	卓	啄
	91EE	宅	托	択	拓	沢	濯	琢	託	鐸	濁	諾	茸	凧	蛸	只	
	923F		叩	但	達	辰	奪	脱	巽	竪	辿	棚	谷	狸	鱈	樽	誰
	924F	丹	単	嘆	坦	担	探	旦	歎	淡	湛	炭	短	端	箪	綻	耽
	925F	胆	蛋	誕	鍛	団	壇	弾	断	暖	檀	段	男	談			
チ	925F														値	知	地
	926F	弛	恥	智	池	痴	稚	置	致	蜘	遅	馳	築	畜	竹	筑	蓄
	9280	逐	秩	窒	茶	嫡	着	中	仲	宙	忠	抽	昼	柱	注	虫	衷
	9290	註	酎	鋳	駐	樗	瀦	猪	苧	著	貯	丁	兆	凋	喋	寵	

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チ	929E		帖	帳	庁	弔	張	彫	徴	懲	挑	暢	朝	潮	牒	町	眺
	92AE	聴	脹	腸	蝶	調	諜	超	跳	銚	長	頂	鳥	勅	捗	直	朕
	92BE	沈	珍	賃	鎮	陳											
ツ	92BE						津	墜	椎	槌	追	鎚	痛	通	塚	栂	掴
	92CE	槻	佃	漬	柘	辻	蔦	綴	鍔	椿	潰	坪	壷	嬬	紬	爪	吊
	92DE	釣	鶴														
テ	92DE			亭	低	停	偵	剃	貞	呈	堤	定	帝	底	庭	廷	弟
	92EE	悌	抵	挺	提	梯	汀	碇	禎	程	締	艇	訂	諦	蹄	逓	
	933F		邸	鄭	釘	鼎	泥	摘	擢	敵	滴	的	笛	適	鏑	溺	哲
	934F	徹	撤	轍	迭	鉄	典	填	天	展	店	添	纏	甜	貼	転	顛
	935F	点	伝	殿	澱	田	電										
ト	935F							兎	吐	堵	塗	妬	屠	徒	斗	杜	渡
	936F	登	菟	賭	途	都	鍍	砥	砺	努	度	土	奴	怒	倒	党	冬
	9380	凍	刀	唐	塔	塘	套	宕	島	嶋	悼	投	搭	東	桃	梼	棟
	9390	盗	淘	湯	涛	灯	燈	当	痘	祷	等	答	筒	糖	統	到	
	939E		董	蕩	藤	討	謄	豆	踏	逃	透	鐙	陶	頭	騰	闘	働
	93AE	動	同	堂	導	憧	撞	洞	瞳	童	胴	萄	道	銅	峠	鴇	匿
	93BE	得	徳	涜	特	督	禿	篤	毒	独	読	栃	橡	凸	突	椴	届
	93CE	鳶	苫	寅	酉	瀞	噸	屯	惇	敦	沌	豚	遁	頓	呑	曇	鈍
ナ	93DE	奈	那	内	乍	凪	薙	謎	灘	捺	鍋	楢	馴	縄	畷	南	楠
	93EE	軟	難	汝													
ニ	93EE				二	尼	弐	迩	匂	賑	肉	虹	廿	日	乳	入	
	943F		如	尿	韮	任	妊	忍	認								
ヌ	943F									濡							
ネ	943F										禰	祢	寧	葱	猫	熱	年
	944F	念	捻	撚	燃	粘											
ノ	944F						乃	廼	之	埜	嚢	悩	濃	納	能	脳	膿
	945F	農	覗	蚤													
ハ	945F				巴	把	播	覇	杷	波	派	琶	破	婆	罵	芭	馬
	946F	俳	廃	拝	排	敗	杯	盃	牌	背	肺	輩	配	倍	培	媒	梅
	9480	楳	煤	狽	買	売	賠	陪	這	蝿	秤	矧	萩	伯	剥	博	拍
	9490	柏	泊	白	箔	粕	舶	薄	迫	曝	漠	爆	縛	莫	駁	麦	
	949E		函	箱	硲	箸	肇	筈	櫨	幡	肌	畑	畠	八	鉢	溌	発
	94AE	醗	髪	伐	罰	抜	筏	閥	鳩	噺	塙	蛤	隼	伴	判	半	反

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ハ	94BE	叛	帆	搬	斑	板	氾	汎	版	犯	班	畔	繁	般	藩	販	範
	94CE	釆	煩	頒	飯	挽	晩	番	盤	磐	蕃	蛮					
ヒ	94CE												匪	卑	否	妃	庇
	94DE	彼	悲	扉	批	披	斐	比	泌	疲	皮	碑	秘	緋	罷	肥	被
	94EE	誹	費	避	非	飛	樋	簸	備	尾	微	枇	毘	琵	眉	美	
	953F		鼻	柊	稗	匹	疋	髭	彦	膝	菱	肘	弼	必	畢	筆	逼
	954F	桧	姫	媛	紐	百	謬	俵	彪	標	氷	漂	瓢	票	表	評	豹
	955F	廟	描	病	秒	苗	錨	鋲	蒜	蛭	鰭	品	彬	斌	浜	瀕	貧
	956F	賓	頻	敏	瓶												
フ	956F					不	付	埠	夫	婦	富	冨	布	府	怖	扶	敷
	9580	斧	普	浮	父	符	腐	膚	芙	譜	負	賦	赴	阜	附	侮	撫
	9590	武	舞	葡	蕪	部	封	楓	風	葺	蕗	伏	副	復	幅	服	
	959E		福	腹	複	覆	淵	弗	払	沸	仏	物	鮒	分	吻	噴	墳
	95AE	憤	扮	焚	奮	粉	糞	紛	雰	文	聞						
ヘ	95AE											丙	併	兵	塀	幣	平
	95BE	弊	柄	並	蔽	閉	陛	米	頁	僻	壁	癖	碧	別	瞥	蔑	箆
	95CE	偏	変	片	篇	編	辺	返	遍	便	勉	娩	弁	鞭			
ホ	95CE														保	舗	鋪
	95DE	圃	捕	歩	甫	補	輔	穂	募	墓	慕	戊	暮	母	簿	菩	倣
	95EE	俸	包	呆	報	奉	宝	峰	峯	崩	庖	抱	捧	放	方	朋	
	963F		法	泡	烹	砲	縫	胞	芳	萌	蓬	蜂	褒	訪	豊	邦	鋒
	964F	飽	鳳	鵬	乏	亡	傍	剖	坊	妨	帽	忘	忙	房	暴	望	某
	965F	棒	冒	紡	肪	膨	謀	貌	貿	鉾	防	吠	頬	北	僕	卜	墨
	966F	撲	朴	牧	睦	穆	釦	勃	没	殆	堀	幌	奔	本	翻	凡	盆
マ	9680	摩	磨	魔	麻	埋	妹	昧	枚	毎	哩	槙	幕	膜	枕	鮪	柾
	9690	鱒	桝	亦	俣	又	抹	末	沫	迄	侭	繭	麿	万	慢	満	
	969E		漫	蔓													
ミ	969E				味	未	魅	巳	箕	岬	密	蜜	湊	蓑	稔	脈	妙
	96AE	粍	民	眠													
ム	96AE				務	夢	無	牟	矛	霧	鵡	椋	婿	娘			
メ	96AE														冥	名	命
	96BE	明	盟	迷	銘	鳴	姪	牝	滅	免	棉	綿	緬	面	麺		
モ	96BE															摸	模
	96CE	茂	妄	孟	毛	猛	盲	網	耗	蒙	儲	木	黙	目	杢	勿	餅

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モ	96DE	尤	戻	籾	貰	問	悶	紋	門	匁							
ヤ	96DE										也	冶	夜	爺	耶	野	弥
	96EE	矢	厄	役	約	薬	訳	躍	靖	柳	薮	鑓					
ユ	96EE												愉	愈	油	癒	
	973F		諭	輸	唯	佑	優	勇	友	宥	幽	悠	憂	揖	有	柚	湧
	974F	涌	猶	猷	由	祐	裕	誘	遊	邑	郵	雄	融	夕			
ヨ	974F														予	余	与
	975F	誉	輿	預	傭	幼	妖	容	庸	揚	揺	擁	曜	楊	様	洋	溶
	976F	熔	用	窯	羊	耀	葉	蓉	要	謡	踊	遥	陽	養	慾	抑	欲
	9780	沃	浴	翌	翼	淀											
ラ	9780						羅	螺	裸	来	莱	頼	雷	洛	絡	落	酪
	9790	乱	卵	嵐	欄	濫	藍	蘭	覧								
リ	9790									利	吏	履	李	梨	理	璃	
	979E		痢	裏	裡	里	離	陸	律	率	立	葎	掠	略	劉	流	溜
	97AE	琉	留	硫	粒	隆	竜	龍	侶	慮	旅	虜	了	亮	僚	両	凌
	97BE	寮	料	梁	涼	猟	療	瞭	稜	糧	良	諒	遼	量	陵	領	力
	97CE	緑	倫	厘	林	淋	燐	琳	臨	輪	隣	鱗	麟				
ル	97CE													瑠	塁	涙	累
	97DE	類															
レ	97DE		令	伶	例	冷	励	嶺	怜	玲	礼	苓	鈴	隷	零	霊	麗
	97EE	齢	暦	歴	列	劣	烈	裂	廉	恋	憐	漣	煉	簾	練	聯	
	983F		蓮	連	錬												
ロ	983F					呂	魯	櫓	炉	賂	路	露	労	婁	廊	弄	朗
	984F	楼	榔	浪	漏	牢	狼	篭	老	聾	蝋	郎	六	麓	禄	肋	録
	985F	論															
ワ	985F		倭	和	話	歪	賄	脇	惑	枠	鷲	亙	亘	鰐	詫	藁	蕨
	986F	椀	湾	碗	腕												

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
一	989E			弋	丐	丕											
丨	989E					个	丱										
丶	989E							丶	丼								
丿	989E									丿	乂	乖	乘				
乙	989E													亂			
亅	989E														亅	豫	事
	98AE	舒															
二	98AE			弍	于	亞	亟										
亠	98AE						亠	亢	亰	亳	亶						
人	98AE											从	仍	仄	仆	仂	仗
	98BE	仞	仭	仟	价	伉	佚	估	佛	佝	佗	佇	佶	侈	侏	侘	佻
	98CE	佩	佰	侑	佯	來	侖	儘	俔	俟	俎	俘	俛	俑	俚	俐	俤
	98DE	俥	倚	倨	倔	倪	倥	倯	倅	俶	倡	倩	倬	俾	俯	們	倆
	98EE	偃	假	會	偕	偬	偈	做	偖	傯	傴	傀	傚	傅	傴	傲	
	993F		僉	僊	傳	僂	僖	僞	僥	僭	僣	僮	價	僵	儉	儁	儂
	994F	儖	儕	儔	儚	儡	儺	儷	儼	儻							
儿	994F										儿	兀	兒	兌	兔	兢	競
入	995F	兩	俞														
八	995F				兮	冀											
冂	995F					冂	冏	冊	冉	冏	冑	冓	冕				
冖	995F													冖	冤	冠	冢
	996F	冩	冪														
冫	996F				冫	决	冱	冲	冰	况	冽	凅	凉	凜			
几	996F													几	處	凩	凭
	9980	凰															
凵	9980			凵	函												
刀	9980				刃	刋	刈	刎	刧	刪	刮	刳	刹	刱	刼	刺	
	9990	刳	剔	剪	剴	剩	剳	剿	剽	劍	劒	劔	劔	劈	劑	辨	
	999E		辦														
力	999E				劬	劭	劼	劵	勁	勍	勗	勞	勣	勦	飭	勠	勳
	99AE	勸															
勹	99AE			勹	匆	匈	匐	匍	匐	匏							
匕	99AE									匕							
匚	99AE										匚	匣	匯	匱	匳		

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
匸	99AE															匸	區
十	99BE	卆	卅	丗	卉	卍	凖										
ト	99BE							卞									
卩	99BE								卩	卮	夘	卻	卷				
厂	99BE													厂	厖	厠	厦
	99CE	厥	厮	厰													
厶	99CE				厶	參	簒										
又	99CE							雙	叟	曼	燮						
口	99CE											叮	叨	叭	叺	吁	吽
	99DE	呀	听	吭	吼	吮	吶	吩	吝	呎	咏	呵	咎	呟	呱	呷	呰
	99EE	咒	呻	咀	呶	咄	咐	咆	哇	咢	咸	咥	咬	哄	哈	咨	
	9A3F		咫	哂	咤	咾	咼	哘	哥	哦	唏	唔	哽	哮	哭	哺	哢
	9A4F	唹	啀	啣	啌	售	啜	啅	啖	啗	唸	唳	啝	喙	喀	咯	喊
	9A5F	喟	啻	啾	喘	喞	單	啼	喃	喩	喇	喨	嗚	嗅	嗟	嗄	嗜
	9A6F	嗤	嗔	嘔	嗷	嘖	嗾	嗽	嘛	嗹	噎	噐	營	嘴	嘶	嘲	嘸
	9A80	噫	噤	嘯	噬	噪	嚆	嚀	嚊	嚠	嚔	嚏	嚥	嚮	嚶	嚴	囂
	9A90	嚼	囁	囃	囀	囈	囎	囑	囓								
囗	9A90									囗	囮	囹	圀	囿	圄	圉	
	9A9E		圈	國	圍	圓	團	圖	嗇	圜							
土	9A9E										圦	圷	圸	坎	圻	址	坏
	9AAE	坩	埀	垈	坡	坿	垉	垓	垠	垳	垤	垪	垰	埃	埆	埔	埒
	9ABE	埓	堊	埖	埣	堋	堙	堝	塲	堡	塢	塋	塰	毀	塒	堽	塹
	9ACE	墅	墹	墟	墫	墺	壞	墻	墸	墮	壅	壓	壑	壗	壙	壘	壥
	9ADE	壜	壤	壟													
士	9ADE				壯	壺	壹	壻	壼	壽							
夂	9ADE										夂						
夊	9ADE											夊	夐				
夕	9ADE													夛	梦	夥	
大	9ADE																夬
	9AEE	夭	夲	夸	夾	竒	奕	奐	奎	奚	奘	奢	奠	奧	奬	奩	
女	9B3F		奸	妁	妝	佞	侫	妣	妲	姆	姨	姜	妍	姙	姚	娥	娟
	9B4F	娑	娜	娉	娚	婀	婬	婉	娵	娶	婢	婪	媚	媼	媾	嫋	嫂
	9B5F	媽	嫣	嫗	嫦	嫩	嫖	嫺	嫻	嬌	嬋	嬖	嬲	嫐	嬪	嬶	嬾
	9B6F	孃	孅	孀													

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
子	9B6F				孑	孕	孚	孛	孥	孩	孰	孳	孵	學	孝	孺	
宀	9B6F																宀
	9B80	它	宦	宸	寃	寇	寉	寔	寐	寤	實	寢	寞	寥	寫	寰	寶
	9B90	寳															
寸	9B90		尅	將	專	對											
小	9B90						尒	尠									
尤	9B90								尢	尷							
尸	9B90										尸	尹	屁	屆	屎	屓	
	9B9E		屐	屏	孱	屬											
屮	9B9E						屮										
山	9B9E							屺	岁	屹	岌	岑	岔	妛	岫	岻	岼
	9BAE	岾	岨	岷	岵	峇	峙	峩	峽	峺	峭	嶌	峪	崋	崕	崗	崇
	9BBE	崟	崛	崑	崔	崢	崚	崙	崘	嵌	嵒	嵎	嵋	嵬	嵳	嵷	嶇
	9BCE	嶄	嶂	嶢	嶝	嶬	嶮	嶽	嶾	嶷	嶼	嶲	嶺	巔	巒	巖	
巛	9BCE																巛
工	9BDE	巫															
已	9BDE		已	巵													
巾	9BDE				帋	帚	帙	帑	帛	帶	帷	幄	幃	幀	幎	幗	幔
	9BEE	幟	幢	幣	幇												
干	9BEE					幵	并										
幺	9BEE							幺	麼								
广	9BEE									广	庠	廁	廂	廈	廏	廖	
	9C3F		廖	廣	廝	廚	廬	廢	廡	廨	廩	廬	廱	廳	廱		
廴	9C3F															廴	廸
廾	9C4F	廾	弃	弉	彝	彝											
弋	9C4F						弋	弒									
弓	9C4F								弖	弩	弭	弸	弼	彈	彌	彎	弯
彑	9C5F	彑	彖	彗	彙												
彡	9C5F					彡	彭										
彳	9C5F							彳	彷	徃	徂	彿	徊	很	徑	徇	從
	9C6F	徙	徘	徠	徨	徭	徼										
心	9C6F							忖	忻	忤	忸	忱	忝	悳	忿	怡	恠
	9C80	怙	怐	怩	怎	怱	怛	怕	怫	怦	怏	怺	恚	恁	恪	恣	恧
	9C90	恊	恆	恍	恣	恃	恤	恂	恬	恫	恙	悁	悍	惧	悃	悚	

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
心	9C9E		悄	悛	悖	悗	悃	悒	悋	悪	悸	悳	悵	悴	悻	悽	惆
	9CAE	悵	惘	慍	愕	愆	惶	惷	愀	惴	惺	愃	愡	惻	惱	愍	愎
	9CBE	慇	愾	慨	愧	慊	愿	愼	愬	愴	愽	慂	慄	慳	慷	慘	慙
	9CCE	慚	慫	慴	慯	慥	慱	慟	慝	慓	慵	慕	憀	憇	憬	憔	憮
	9CDE	憊	憑	憫	憮	懌	懊	應	懷	懈	懃	懆	憺	懋	罹	懍	懦
	9CEE	懣	懶	懺	懴	懿	懽	懼	懾	戀							
戈	9CEE										戈	戉	戍	戌	戔	戛	
	9D3F		戞	戡	截	戮	戰	戲	戳								
戸	9D3F									扁							
手	9D3F										扎	扞	扣	扛	扠	扨	扼
	9D4F	抂	抉	找	抒	抓	抖	拔	抃	抔	拗	拑	抻	拏	拿	拆	擔
	9D5F	拈	拜	拌	拊	拂	拇	抛	拉	挌	拮	拱	挧	挂	挈	拯	拵
	9D6F	捐	挾	捍	搜	捏	掖	掎	掀	掫	捶	掣	掏	掉	掟	掵	捫
	9D80	捩	掾	揩	揀	揆	揣	揉	插	揶	揄	搖	搴	搆	搓	搦	搶
	9D90	攝	搗	搦	搏	搧	搴	搏	摎	攪	撕	撓	撥	撩	撈	撼	
	9D9E		據	擒	擅	擇	撻	擘	擂	擱	擧	舉	擠	擡	抬	擣	擯
	9DAE	攬	擶	擴	擲	擺	攀	攙	攘	攜	攅	攤	攣	攫			
攴	9DAE														攴	攵	攷
	9DBE	收	攸	畋	效	敖	敕	敍	敘	敞	敝	敲	數	斂	斃	變	
斗	9DBE																斛
	9DCE	斟															
斤	9DCE		斫	斷													
方	9DCE				旆	旆	旁	旄	旌	旒	旛	旙					
无	9DCE												无	旡			
日	9DCE														旱	杲	旻
	9DDE	昃	昊	昔	昵	昶	昴	昜	晏	晄	晉	晁	晞	晝	晤	晧	晨
	9DEE	晟	晢	晰	晡	晪	晧	晖	暄	暘	暝	暠	暹	曉	曖	曙	
	9E3F		曄	暸	曖	曚	曠	昿	曦	曩							
曰	9E3F										曰	曳	曷				
月	9E3F													朏	朖	朞	朦
	9E4F	朧	霸														
木	9E4F			朮	朿	朵	杁	杣	杤	杆	杞	杠	杙	杣	杤	枉	杰
	9E5F	杼	杼	杪	枌	枋	枦	枡	枡	枷	柯	枴	柬	枳	枢	枸	柤
	9E6F	柞	柝	柢	柮	枹	柮	柆	柧	檜	栞	框	栩	桀	桍	栲	桎

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
木	9E80	梳	栫	桙	档	桷	桿	梟	梏	梭	梔	條	梛	梃	檮	梹	桴
	9E90	梵	梠	梺	椏	梍	桾	椁	棊	椈	棘	椢	椦	棡	椌	棍	
	9E9E		棔	棧	棕	椶	椒	椄	棗	棣	椥	棹	棠	棯	椨	椪	椚
	9EAE	椣	椡	棆	楹	楷	楜	楸	楫	楔	楾	楮	椹	楴	椽	楙	椰
	9EBE	楡	楞	楝	榁	楪	榲	榮	槐	榿	槁	槓	榾	槎	寨	槊	槝
	9ECE	榻	槃	榧	樮	榑	榠	榜	榕	榴	槞	槨	樂	樛	槿	權	槹
	9EDE	槲	槧	樅	榱	樞	槭	樔	槫	樊	樒	櫁	樣	樓	橄	樌	橲
	9EEE	樶	橸	橇	橢	橙	橦	橈	樸	樢	檐	檍	檠	檄	檢	檣	
	9F3F		檗	蘗	檻	櫃	櫂	檸	檳	檬	櫞	櫑	櫟	檪	櫚	櫪	櫻
	9F4F	欅	蘖	櫺	欒	欖	鬱	欟									
欠	9F4F								欸	欷	盜	欹	飮	歇	歃	歉	歐
	9F5F	歙	歔	歛	歟	歡											
止	9F5F						歸										
歹	9F5F							歹	歿	殀	殄	殃	殍	殘	殕	殞	殤
	9F6F	殪	殫	殯	殲	殱											
殳	9F6F						殳	殷	殼	毆							
毋	9F6F										毋	毓					
毛	9F6F												毟	毬	毫	毳	毯
	9F80	麾	氈														
氏	9F80			氓													
气	9F80				气	氛	氤	氣									
水	9F80								汞	汕	汢	汪	沂	沍	沚	沁	沛
	9F90	汾	汨	汳	沒	沐	泄	泱	泓	沽	泗	泅	泝	沮	沱	沾	
	9F9E		沺	泛	泯	泙	泪	洟	衍	洶	洫	洽	洸	洙	洵	洳	洒
	9FAE	洌	浣	涓	浤	浚	浹	浙	涎	涕	濤	涅	淹	渕	渊	涵	淇
	9FBE	淦	涸	淆	淬	淞	淌	淨	淒	淅	淺	淙	淤	淕	淪	淮	渭
	9FCE	湮	渮	渙	湲	湟	渾	渣	湫	渫	湶	湍	渟	湃	渺	湎	渤
	9FDE	滿	渝	游	溂	溪	溘	滉	溷	滓	溽	溯	滄	溲	滔	滕	溏
	9FEE	溥	滂	溟	潁	漑	灌	滬	滸	滾	漿	滲	漱	滯	漲	滌	
	E03F		漾	漓	滷	澆	潺	潸	澁	澀	潯	潛	濳	潭	澂	潼	潘
	E04F	澎	澑	濂	潦	澳	澣	澡	澤	澹	濆	澪	濟	濕	濬	濔	濘
	E05F	濱	濮	濛	瀉	瀋	濺	瀑	瀁	瀏	濾	瀛	瀚	潴	瀝	瀘	瀟
	E06F	瀰	瀾	瀲	灑	灣											
火	E06F						炙	炒	炯	烱	炬	炸	炳	炮	烟	烋	烝

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
火	E080	烙	焉	烽	焜	焙	煥	熙	熈	煦	煢	煌	煖	煬	熏	燻	熄
	E090	熕	熨	熬	燗	熹	熾	燒	燉	燔	燎	燠	燬	燧	燵	燼	
	E09E		燹	燿	爍	爐	爛	爨									
爪	E09E								爭	爬	爰	爲					
爻	E09E												爻	爼			
爿	E09E														爿	牀	牆
	E0AE	牋	牘														
牛	E0AE			牴	牾	犂	犁	犇	犒	犖	犢	犧					
犬	E0AE												犹	犲	狃	狆	狄
	E0BE	狎	狒	狢	狠	狡	狹	狷	倏	猗	猊	猜	猖	猝	猴	猯	猩
	E0CE	猥	猾	獎	獏	默	獗	獪	獨	獰	獸	獵	獻	獺			
王	E0CE														珈	玳	珎
	E0DE	玻	珀	珥	珮	珞	璢	琅	瑯	琥	珸	琲	琺	瑕	琿	瑟	瑙
	E0EE	瑁	瑜	瑩	瑰	瑣	瑪	瑶	瑾	璋	璞	璧	瓊	瓏	瓔	珱	
瓜	E13F		瓠	瓣													
瓦	E13F				瓧	瓩	瓮	瓲	瓰	瓱	瓸	瓷	甄	甃	甅	甌	甎
	E14F	甍	甕	甓													
甘	E14F				甞												
生	E14F					甦											
用	E14F						甬										
田	E14F							甼	畄	畍	畊	畉	畛	畆	畚	畩	畤
	E15F	畧	畫	畭	畸	當	疆	疇	畴	疊	疉	疂					
疒	E15F												疔	疚	疝	疥	疣
	E16F	痂	疳	痃	疵	疽	疸	疼	疱	痍	痊	痒	痙	痣	痞	痾	痿
	E180	痼	瘁	痰	痺	痲	痳	瘋	瘍	瘉	瘟	瘧	瘠	瘡	瘢	瘤	瘴
	E190	瘰	瘻	癇	癈	癆	癜	癘	癡	癢	癨	癩	癪	癧	癬	癰	
	E19E		癲														
癶	E19E			癶	癸	發											
白	E19E						皀	皃	皈	皋	皎	皖	皓	皙	皚		
皮	E19E															皰	皴
	E1AE	皸	皹	皺													
皿	E1AE				盂	盍	盖	盒	盞	盡	盥	盧	盪	蘯			
目	E1AE														盻	眈	眇
	E1BE	眄	眩	眤	眞	眥	眦	眛	眷	眸	睇	睚	睨	睫	睛	睥	睿

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
目	E1CE	睾	睹	瞎	瞋	瞑	瞠	瞞	瞰	瞶	瞹	瞿	瞼	瞽	瞻	矇	矍
	E1DE	矗	矚														
矛	E1DE			矜													
矢	E1DE				矣	矮											
石	E1DE						矼	砌	砒	礦	砠	礪	硅	碎	硴	碆	硼
	E1EE	碚	碌	碣	碵	碪	碯	磑	磆	磋	磔	碾	碼	磅	磊	磬	
	E23F		磧	磚	磽	磴	礇	礒	礑	礙	礬	礫					
示	E23F												祀	祠	祗	祟	祚
	E24F	祕	祓	祺	祿	禊	禝	禧	齋	禪	禮	禳					
禺	E24F												禹	禺			
禾	E24F														秉	秕	秧
	E25F	秬	秡	秣	稈	稍	稘	稙	稠	稟	禀	稱	稻	稾	稷	穃	穗
	E26F	穉	穡	穢	穩	龝	穰										
穴	E26F							穹	穽	窈	窗	窕	窘	窖	窩	竈	窰
	E280	窶	竅	竄	窿	邃	竇	竊									
立	E280								竍	竏	竕	竓	站	竚	竝	竡	竢
	E290	竦	竭	竰													
竹	E290				笂	笏	笊	笆	笳	笘	笙	笞	笵	笨	笶	筐	
	E29E		筺	笄	筍	笋	筌	筅	筵	筥	筴	筧	筰	筱	筬	筮	箝
	E2AE	箘	箟	箍	箜	箚	箋	箒	箏	筝	箙	篋	篁	篌	篏	箴	篆
	E2BE	篝	篩	簑	簔	篦	篥	籠	簀	簇	簓	篳	篷	簗	簍	篶	簣
	E2CE	簧	簪	簟	簷	簫	簽	籌	籃	籔	籏	籀	籐	籘	籟	籤	籖
	E2DE	籥	籬														
米	E2DE			籵	粃	粐	粤	粭	粢	粫	粡	粨	粳	粲	粱	粮	粹
	E2EE	粽	糀	糅	糂	糘	糒	糜	糢	鬻	糯	糲	糴	糶			
糸	E2EE														糺	紆	
	E33F		紂	紜	紕	紊	絅	絋	紮	紲	紿	紵	絆	絳	絖	絎	絲
	E34F	絨	絮	絏	絣	經	綉	絛	綏	絽	綛	綺	綮	綣	綵	緇	綽
	E35F	綫	總	綢	綯	緜	綸	綟	綰	緘	緝	緤	緞	緻	緲	緡	縅
	E36F	縊	縣	縡	縒	縱	縟	縉	縋	縢	繆	繦	縻	縵	縹	繃	縷
	E380	縲	縺	繧	繝	繖	繞	繙	繚	繹	繪	繩	繼	繻	纃	緕	繽
	E390	辮	繿	纈	纉	續	纒	纐	纓	纔	纖	纎	纛	纜			
缶	E390														缸	缺	
	E39E		罅	罌	罍	罎	罐										

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
网	E39E							网	罕	罔	罘	罟	罠	罨	罩	罸	罰
	E3AE	羈	羆	羃	羈	羇											
羊	E3AE						羌	羔	羞	羝	羚	羣	羯	羲	羹	羹	羶
	E3BE	羸	譱														
羽	E3BE			翅	翠	翊	翕	翔	翡	翦	翩	翳	翹	翻			
老	E3BE														耆	耄	耋
耒	E3CE	耒	耘	耙	耜	耡	耨										
耳	E3CE							耻	耻	聊	聆	聒	聘	聚	聟	聢	聯
	E3DE	聳	聲	聰	聶	聹	聽										
聿	E3DE							聿	肄	肆	肅						
肉	E3DE											肛	肓	肚	肭	冐	肬
	E3EE	胛	胥	胙	胝	胄	胚	胖	脉	胯	胱	脛	脩	脣	脯	脹	
	E43F		脩	脁	脾	脯	腑	腓	腱	腮	腥	腦	腴	膃	膈	膊	膀
	E44F	膂	膠	膕	膤	膣	膟	膓	膩	膰	膵	膾	膸	膽	臀	臂	膺
	E45F	臉	臍	臑	臙	臘	臈	臚	臟	臠							
臣	E45F										臧						
至	E45F											臺	臻				
臼	E45F													與	舁	舂	舅
	E46F	與	舊														
舌	E46F			舎	舐	舗											
舟	E46F						舩	舫	舸	舳	艀	艙	艘	艝	艚	艟	艤
	E480	艢	艨	艩	艫	艮											
艮	E480						艱										
色	E480							艶									
艸	E480								艸	艾	芍	芒	芫	芟	芻	芬	苡
	E490	苣	苟	苒	苴	苳	苺	莓	范	苻	苹	苞	茆	苔	茉	苙	
	E49E		茵	茴	茖	茲	茱	荀	茹	荐	荅	茯	茫	茗	荔	莅	莚
	E4AE	莪	莟	莢	莖	莫	莎	莇	荘	荼	莵	荳	荵	莠	莉	莨	菴
	E4BE	萓	董	萓	菽	萃	菘	萋	菁	萹	萇	菠	菲	萍	菟	萠	莽
	E4CE	萸	蔆	萩	葭	葎	葤	葦	葸	葷	葫	蒡	葭	蒂	葩	葆	萬
	E4DE	葯	葹	萵	蓊	葢	蒹	蒿	蒟	蓙	蓍	蓊	蓚	蓴	蓼	蓆	蓖
	E4EE	蔕	蔡	蓿	蓴	蔗	蔘	蔬	蔟	蔕	蔔	蔘	蔭	蘚	蘆	蕈	
	E53F		蕁	藥	蓯	蕕	藴	薙	薈	薑	薑	薊	薨	蕭	薔	薛	藪	薇
	E54F	薜	蘋	蕾	藜	藉	薺	藏	薹	藐	藕	藝	藥	藜	藹	蘊	蘓

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
艸	E55F	蘋	藾	藺	蘆	蘢	蘇	蘰	蘿								
虍	E55F									虎	虏	虔	號	虧			
虫	E55F														虱	蚓	蚣
	E56F	蚩	蚪	蚋	蚌	蚶	蚯	蛄	蛆	蛐	蛉	蠣	蛹	蛔	蛞	蛩	蛬
	E580	蛟	蛛	蛯	蜒	蜆	蜈	蜀	蜃	蜕	蜑	蜉	蜍	蜩	蜊	蜴	蜿
	E590	蜷	蜻	蜥	蜩	蜚	蝠	蝟	蝸	蝌	蝎	蝴	蝗	蝨	蝮	蝙	
	E59E		蝓	蝣	蝪	蠅	螢	螟	螂	螯	螋	螽	蟀	蟐	雖	螫	蟄
	E5AE	螳	蟇	蟆	螻	蟯	蟲	蟠	蠏	蠍	蟾	蟶	蟷	蠑	蠖	蠍	蠖
	E5BE	蠕	蠢	蠡	蠱	蠶	蠹	蠧	蠻								
血	E5BE									衄	衂						
行	E5BE											衒	衙	衛	衢		
衣	E5BE															衫	袁
	E5CE	衾	衰	衵	衽	衿	袋	袂	袗	袒	袮	袙	袢	袍	袤	袈	袿
	E5DE	袱	袴	袵	裔	裘	裙	裝	裹	褂	褐	裴	裨	裲	褄	褌	褊
	E5EE	褓	褒	褫	褥	褪	褶	褸	襃	襞	褰	褶	褸	襌	襠	襤	
	E63F		襦	襤	襁	襪	襖	襴	襷								
西	E63F									覀	覃	覈	覊				
見	E63F													覓	覗	覡	覦
	E64F	覩	覬	覲	覿	覺	覽	覿	觀								
角	E64F									觚	觜	觝	觧	觴	觸		
言	E64F															訃	訖
	E65F	訐	訌	訛	訝	訥	訶	詁	詛	詒	詆	詈	詼	詭	詬	詢	詆
	E66F	誂	誄	誨	誡	誑	誥	誦	誚	誣	諄	諍	諂	諚	諜	諳	諧
	E680	諤	諱	謔	諠	諢	諷	諞	諛	謌	謇	謚	謦	謫	謾	謗	謠
	E690	謳	鞫	謦	謫	謾	謨	譁	譌	譏	譎	證	譖	譛	譚	譫	
	E69E		譟	譬	譯	譴	譽	讀	讌	讎	讒	讓	讖	讙	讃		
谷	E69E															豸	豁
	E6AE	谿															
豆	E6AE		豈	豌	豎	豐											
豕	E6AE						豕	豢	豬								
豸	E6AE									豸	豺	貂	貉	貊	貍	貎	
	E6BE	貔	貘	貘													
貝	E6BE				賊	賃	貪	貽	貲	貳	貳	貶	賈	賁	賤	賣	賚
	E6CE	賽	賺	賻	贄	贅	贊	贇	贏	贍	贖	齎	贓	賍	贔	贖	

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
赤	E6CE																赧
	E6DE	赭															
走	E6DE		赱	赳	趁	趙											
足	E6DE						跂	趾	趺	跏	跚	跖	跌	跛	跋	跪	跫
	E6EE	跟	跣	跼	踈	踉	跿	踝	踞	踐	踟	蹂	踵	踰	踴	蹊	
	E73F		蹇	蹉	蹌	蹐	蹈	蹙	蹤	蹠	踪	蹣	蹕	蹶	蹲	蹼	躁
	E74F	躇	躅	躄	躋	躊	躓	躑	躔	躙	躪	躡					
身	E74F												躬	躰	軆	躱	躾
	E75F	軅	軈														
車	E75F			軋	軛	軣	軼	軻	軫	軾	輊	輅	輕	輒	輙	輓	輜
	E76F	輟	輛	輌	輦	輳	輻	輹	轅	轂	輾	轌	轉	轆	轎	轗	轜
	E780	轢	轣	轤													
辛	E780				辜	辟	辣	辭	辯								
辶	E780									辷	迚	迥	迢	迪	迯	邇	迴
	E790	逅	迹	迺	逑	逕	逡	逍	逞	逖	逋	逧	逶	逵	逹	迸	
	E79E		遏	遐	遑	遒	逎	遉	逾	遖	遘	遞	遨	遯	遶	隨	遲
	E7AE	邂	遽	邁	邀	邊	邉	邏									
邑	E7AE								邨	邯	邱	邵	郢	郤	扈	郛	鄂
	E7BE	鄒	鄙	鄲	鄰												
酉	E7BE					酊	酖	酘	酣	酥	酩	酳	酲	醋	醉	醂	醢
	E7CE	醫	醯	醪	醵	醴	醺	釀	釁								
采	E7CE									釉	釋						
里	E7CE											釐					
金	E7CE												釖	釟	釡	釛	釼
	E7DE	釵	釶	鈞	釿	鈔	鈬	鈕	鈑	鉞	鉗	鉅	鉉	鉤	鉈	銕	鈿
	E7EE	鉋	鉐	銜	銖	銓	銛	鉚	鋏	銹	銷	鋩	錏	鋺	鍄	錮	
	E83F		錙	錢	錚	錣	錺	錵	錻	鍜	鍠	鍼	鍮	鍖	鎰	鎬	鎭
	E84F	鎔	鎹	鏖	鏗	鏨	鏥	鏘	鏃	鏝	鏐	鏈	鏤	鐚	鐔	鐓	鐃
	E85F	鐇	鐐	鐶	鐫	鐵	鐡	鐺	鑁	鑒	鑄	鑛	鑠	鑢	鑞	鑪	鈩
	E86F	鑰	鑵	鑷	鑽	鑚	鑼	鑾	钁	鑿							
門	E86F										閂	閇	閊	閔	閖	閘	閙
	E880	閠	閨	閧	閭	閼	閻	閹	閾	闊	濶	闃	闍	闌	闕	闔	闖
	E890	關	闡	闥	闢												
阜	E890					阡	阨	阮	阯	陂	陌	陏	陋	陷	陜	陞	

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
阜	E89E		陝	陟	陦	陲	陬	隍	隘	隕	隗	險	隧	隱	隲	隰	隴
隶	E8AE	隶	隸														
隹	E8AE			隹	雎	雋	雉	雍	襍	雜	霍	雕					
雨	E8AE												雹	霄	霆	霈	霓
	E8BE	霎	霑	霏	霖	霙	霤	霪	霰	霹	霽	霾	靄	靆	靈	靂	靉
青	E8CE	靜															
非	E8CE		靠														
面	E8CE			靤	靦	靨											
革	E8CE						勒	靫	靱	靹	鞅	靼	鞁	靺	鞆	鞋	鞏
	E8DE	鞐	鞜	鞨	鞦	鞣	鞳	鞴	韃	韆	韈						
韋	E8DE											韋	韜				
韭	E8DE													韭	齏	韲	
音	E8DE																竟
	E8EE	韶	韵														
頁	E8EE			頏	頌	頸	頤	頡	頷	頽	顆	顏	顋	顫	顯	顰	
	E93F		顱	顴	顳												
風	E93F					颪	颯	颱	颶	飄	飃	飆					
食	E93F												飩	飫	餃	餉	餒
	E94F	餔	餘	餡	餝	餞	餤	餠	餬	餮	餽	餾	饂	饉	饅	饐	饋
	E95F	饑	饒	饌	饕												
首	E95F					馗	馘										
香	E95F							馥									
馬	E95F								馭	馮	馼	駟	駛	駝	駘	駑	駭
	E96F	駮	駱	駲	駻	駸	騁	騏	騅	駢	騙	騫	騷	驅	驂	驀	驃
	E980	騾	驕	驍	驛	驗	驟	驢	驥	驤	驩	驫	驪				
骨	E980													骭	骰	骼	髀
	E990	髏	髑	髓	體												
高	E990					髞											
髟	E990						髟	髢	髣	髦	髯	髫	髮	髴	髱	髷	
	E99E		髻	鬆	鬘	鬚	鬟	鬢	鬣								
鬥	E99E									鬥	鬧	鬨	鬩	鬪	鬮		
鬯	E99E															鬯	
鬲	E99E																鬲
鬼	E9AE	魄	魃	魏	魍	魎	魑	魘									

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
魚	E9AE								魴	鮓	鮃	鮑	鮖	鮗	鮟	鮠	鮨
	E9BE	鮴	鮹	鯊	鯏	鯑	鯒	鯓	鯔	鯣	鯢	鯤	鯱	鯵	鯷	鯺	鯻
	E9CE	鯰	鯱	鯵	鯷	鰓	鰌	鰆	鰈	鰒	鰕	鰔	鰛	鰡	鰤	鰥	鰧
	E9DE	鰩	鰮	鰲	鰳	鰾	鱚	鱠	鱧	鱶	鱸						
鳥	E9DE											鳧	鳬	鳰			
	E9EE	鳫	鳬	鳩	鳶	鳶	鴣	鴟	鴪	鴕	鴒	鴛	鴿	鵁	鵆	鵈	
	EA3F		鵝	鵞	鵩	鵑	鵐	鵙	鵲	鶉	鶇	鶫	鶺	鶯	鶲	鶴	鶺
	EA4F	鶲	鶏	鶴	鶻	鶸	鶺	鷁	鷆	鷂	鷙	鷓	鷏	鷦	鷭	鷯	鷺
	EA5F	鸚	鸛	鸞													
鹵	EA5F				鹵	鹹	鹽										
鹿	EA5F							麁	塵	麋	麕	麒	麕	麗	麝		
麥	EA5F															麥	麩
	EA6F	麸	麺	麭													
麻	EA6F				靡												
黄	EA6F					黌											
黍	EA6F						黎	黏	黝								
黒	EA6F									黔	黜	點	黝	黠	黟	黨	黯
	EA80	黴	黶	黷													
黹	EA80				黹	黻	黼										
黽	EA80							黽	鼇	鼈							
皷	EA80										皷	鼕					
鼠	EA80												鼬	鼬			
鼻	EA80														鼾		
齊	EA80															齊	
齒	EA80																齒
	EA90	齔	齣	齟	齠	齢	齦	齧	齬	齪	齷	齲	齶				
龍	EA90													龕			
龜	EA90														龜		
龠	EA90															龠	

10.7 2D Barcode

DataMatrix (ECC200)

ESC+2D50

Hexadecimal code	ESC	2D50	Parameter
	$<1B>_{16}$	$<32>_{16}<44>_{16}<35>_{16}<30>_{16}$	,aa,bb,ccc,ddd
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying DataMatrix Code (ECC200).

[Format] (Setup part)
<2D50>,aa,bb,ccc,ddd

●Parameter

a [Horizontal cell size]	=	Valid Range	:	01 to 99 dots
b [Vertical cell size]	=	Valid Range	:	01 to 99 dots
c [Number of cell in one line]	=	Valid Range	:	010 to 144
		000	:	(Auto-setting)
d [Number of cell lines]	=	Valid Range	:	008 to 144
		000	:	(Auto-setting)

[Format] (Data part)
<DN>mmmm,n～n

●Parameter

m[Number of data]	=	Valid Range	:	1 to 3116
n [Print data]	=	Data		

*When print 7EH, specify"7EH, 7EH"
*If Parameter other than above is specified or print data don't match, print is not secured.

[Coding Example] Horizontal cell size: 3 dots, Vertical cell size: 3 dots
<A>
<V>100<H>200**<2D50>,03,03,000,000**
<DN>0010, 0123456789
<Z>

[Supplementary Explanation]
1. If Parameter other than above is specified or print data don't match, print is not executed
2. When specifying print format, secure more than 2mm blank space in for sides of the DataMatrix for read margin for the scanner.
3. When print data is 7EH, specify"7EH, 7EH"Number of data will be "0002".
4. When Auto setup (000) is applied for [Number of cell in one row] and [Number of cell lines] , square DataMatrix is printed

	Data format	Number of data
Data format	Numeric	3116
	Alphanumeric	2335
	Binary (00H to FFH)	1556

*Symbol size of DataMatrix (ECC200) is following 30 types.

Symbol size and number of data of DataMatrix (ECC200)

Symbol size			Maximum data digits		
Number of cell in one line(c)	Number of cell line(d)	Number of block	Numeric	Alphanumeric	Briary
10	10	1	6	3	1
12	12	1	10	6	3
14	14	1	16	10	6
16	16	1	24	16	10
18	18	1	36	25	16
20	20	1	44	31	20
22	22	1	60	43	28
24	24	1	72	52	34
26	26	1	88	64	42
32	32	4	124	91	60
36	36	4	172	127	84
40	40	4	228	169	112
44	44	4	288	214	142
48	48	4	348	259	172
52	52	4	408	304	202
64	64	16	560	418	278
72	72	16	736	550	366
80	80	16	912	682	454
88	88	16	1152	862	574
96	96	16	1392	1042	694
104	104	16	1632	1222	814
120	120	36	2100	1573	1048
132	132	36	2608	1954	1302
144	144	36	3116	2335	1556
18	8	1	10	6	3
32	8	2	20	13	8
26	12	1	32	22	14
36	12	2	44	31	20
36	16	2	64	46	30
48	16	2	98	72	47

* Mixture of Numeric, Alphanumeric and Control code varies according to number of characters.

DataMatrix Code table

					S								S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			”	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			’	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	¥	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

* DataMatrix can specify from 00H to ～FFH.
When print 7EH, specify”7EH, 7EH”.

10.8 2D Barcode

GS1 DataMatrix

ESC+2D51

Hexadecimal code	ESC	2D51	Parameter
	$<1B>_{16}$	$<32>_{16}<44>_{16}<35>_{16}<31>_{16}$	,aa,bb,ccc,ddd
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying GS1 DataMatrix Code.

[Format] (Setup part)
<2D51>,aa,bb,ccc,ddd

●Parameter

a [Horizontal cell size]	=	Valid Range	:	01 to 99 dots	
b [Vertical cell size]	=	Valid Range	:	01 to 99 dots	
c [Number of cell in one line]	=	Valid Range	:	010 to 144	
				000 :	(Auto-setting)
d [Number of cell lines]	=	Valid Range	:	008 to 144	
				000 :	(Auto-setting)

[Format] (Data part)
<DN>mmmm,n～n

●Parameter

m[Number of data]	=	Valid Range	:	1 to 3116
n [Print data]	=	Data		

* When print 7EH, specify [7EH, 7EH]
* When print 1BH, specify [1BH, 1BH].
* When print FNC1, specify [“1BH, 31H].
* If Parameter other than above is specified or print data don’t match, print is not secured.

[Coding Example] Horizontal cell size: 3 dots, Vertical cell size: 3 dots

<A>
<V>100<H>200**<2D51>,03,03,000,000**
<DN>0014, $<1B>_{16}$1100123456789
<Z>

* $<1B>_{16}$ specify character code “1BH”.

[Supplementary Explanation]

1. If Parameter other than above is specified or print data don’t match, print is not executed.
2. When specifying print format, secure more than 2 mm blank space in for sides of the DataMatrix for read margin for the scanner.
3. When print data is 7EH, specify [7EH, 7EH]. Number of data will be “0002”.
4. When [7EH] is specified solely, the command error occurs and the code will not be printed.
5. When print data is 1BH, specify [1BH, 1BH]. Number of data will be “0002”.
6. When print data is FNC1, specify [1BH, 31H]. Number of data will be “0002”.
7. When [7EH] is specified solely, the command error occurs and the code will not be printed.
8. When Auto setup (000) is applied for [Number of cell in one row] and [Number of cell lines], square DataMatrix is printed
9. When the same value other than 000 is specified (manual setting) in the "number of cell per 1 line" and "cell lines", square DataMatrix will be printed.
10. When different value other than 000 is specified (manual setting) in the "number of cell per 1 line" and "cell lines", rectangle DataMatrix will be printed.

11. The number of data can be specified in the data part depends on the data format. Available data number is as follows. (Number of cell is auto setting or the maximum cell number is specified):

	Data format	Number of data
Data format	Numeric	3116
	Alphanumeric	2335
	Binary (00H to FFH)	1556

12. The symbol may not be read by a scanner when the cell size is smaller. In the above case, specify enough cell size for the scanner.
13. The symbol size available in the GS1 DataMatrix is limited to the 30 types in the below table. Also, the maximum number of data is limited depending on the symbol size. Refer to the "The maximum digit of the number of data" table.
14. Make sure to specify 1BH and 31H at the beginning of the data.

Symbol size and number of data of GS1 DataMatrix.

Symbol size			Maximum data digits		
Number of cell in one line(c)	Number of cell line(d)	Number of block	Numeric	Alphanumeric	Briary
10	10	1	6	3	1
12	12	1	10	6	3
14	14	1	16	10	6
16	16	1	24	16	10
18	18	1	36	25	16
20	20	1	44	31	20
22	22	1	60	43	28
24	24	1	72	52	34
26	26	1	88	64	42
32	32	4	124	91	60
36	36	4	172	127	84
40	40	4	228	169	112
44	44	4	288	214	142
48	48	4	348	259	172
52	52	4	408	304	202
64	64	16	560	418	278
72	72	16	736	550	366
80	80	16	912	682	454
88	88	16	1152	862	574
96	96	16	1392	1042	694
104	104	16	1632	1222	814
120	120	36	2100	1573	1048
132	132	36	2608	1954	1302
144	144	36	3116	2335	1556
18	8	1	10	6	3
32	8	2	20	13	8
26	12	1	32	22	14
36	12	2	44	31	20
36	16	2	64	46	30
48	16	2	98	72	47

* Mixture of Numeric, Alphanumeric and Control code varies according to number of characters.

GS1 DataMatrix Code table

					S								S							
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			”	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			’	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	¥	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

	Data n	**Data n+1**
FNC1	1BH	31H

GS1 DataMatrix can specify from 00H to FFH.
When print data is 7EH, specify [7EH, 7EH].
When print data is 1BH, specify [1BH, 1BH].
When specifying FNC1, specify [1BH, 31H].

10.9 2D Barcode

QR Code

ESC+BQ

Hexadecimal code	ESC	BQ	Parameter
	$<1B>_{16}$	$<42>_{16}<51>_{16}$	Manual setup abcc,(ddeeff,)g(hhhh)n Auto setup abcc,(ddeeff,)n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying QR code.

[Format]
[Manual setup] <BQ>abcc,(ddeeff)g(hhh)n
[Auto setup] <BQ>abcc,(ddeeff) n

●Parameter

a [Error correction level] = 1 : 7% High density level (L)
2 : 15% Standard level (M)
3 : 30% High reliability level (H)
4 : 15% High reliability level (Q)

b [Concatenation mode] = 0 : Normal mode
1 : Concatenation mode

c [Size of one side of cell] = Valid Range : 01 to 99 (dot)
e.g.) cc=04

D[No. of partitions by concatenation mode] = Valid range : 01 to 16
e[Sequential number partitioned by concatenation mode] = Valid range : 01 to 16
f[Concatenation mode parity data] = Valid range : 00 to FF
g [Character mode] = 1 : Number mode
2 : Alphanumeric mode
3 : Binary mode
4 : Kanji mode
h [No. of data] = Valid range : 0001 to 7366 (dot)
n [Print data] = Data

[Coding Example] Error correction level: 30%, Concatenation mode: Normal, Size of one side of cell: 10
<A>
<V>100<H>200**<BQ>3010,112345**
<Q>2
<Z>

[Supplementary Explanation]
1. Carry out XOR logic operation of all the partitioned print data of the QR code and then, specify this operation data in hexadecimal character. This is what we call [Parity data].
2. When character mode is set to other than binary mode, it is not necessary to set data number parameter.

QR Code data size list (Model 1)

Version	Error Correction	Numeric	Alpha-Numeric	Kanji	Binary
1 21X21	L	40	24	10	17
	M	33	20	8	14
	Q	25	15	6	11
	H	16	10	4	7
2 25X25	L	81	49	20	34
	M	66	40	17	28
	Q	52	31	13	22
	H	33	20	8	14
3 29X29	L	131	79	33	55
	M	100	60	25	42
	Q	81	49	20	34
	H	52	31	13	22
4 33X33	L	186	113	48	78
	M	138	84	35	58
	Q	114	69	29	48
	H	76	46	19	32
5 37X37	L	253	154	65	106
	M	191	116	49	80
	Q	157	95	40	66
	H	105	63	27	44
6 41X41	L	321	194	82	134
	M	249	151	64	104
	Q	201	122	51	84
	H	133	81	34	56
7 45X45	L	402	244	103	168
	M	311	188	80	130
	Q	253	154	65	106
	H	167	101	43	70
8 49X49	L	493	299	126	206
	M	378	229	97	158
	Q	301	183	77	126
	H	203	123	52	85
9 53X53	L	585	354	150	244
	M	441	267	113	184
	Q	369	223	94	154
	H	239	145	61	100
10 57X57	L	690	418	177	287
	M	526	319	135	219
	Q	433	262	111	180
	H	291	176	74	121

Version	Error Correction	Numeric	Alpha-Numeric	Kanji	Binary
11 61X61	L	800	485	205	333
	M	608	368	156	253
	Q	493	299	126	205
	H	342	207	87	142
12 65X65	L	915	555	234	381
	M	694	421	178	289
	Q	579	351	148	241
	H	390	236	100	162
13 69X69	L	1030	624	264	429
	M	790	479	202	329
	Q	656	398	168	273
	H	454	275	116	189
14 73X73	L	1167	707	299	486
	M	877	531	225	365
	Q	738	447	189	307
	H	498	302	127	207

QR Code (Numeric mode) Code table

					S					I			S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**				0												
0	0	0	1	**1**				1												
0	0	1	0	**2**				2												
0	0	1	1	**3**				3												
0	1	0	0	**4**				4												
0	1	0	1	**5**				5												
0	1	1	0	**6**				6												
0	1	1	1	**7**				7												
1	0	0	0	**8**				8												
1	0	0	1	**9**				9												
1	0	1	0	**A**																
1	0	1	1	**B**																
1	1	0	0	**C**																
1	1	0	1	**D**																
1	1	1	0	**E**																
1	1	1	1	**F**																

QR Code (Alphanumeric mode) Code table

					S					I			S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0		P										
0	0	0	1	**1**				1	A	Q										
0	0	1	0	**2**				2	B	R										
0	0	1	1	**3**				3	C	S										
0	1	0	0	**4**			$	4	D	T										
0	1	0	1	**5**			%	5	E	U										
0	1	1	0	**6**				6	F	V										
0	1	1	1	**7**				7	G	W										
1	0	0	0	**8**				8	H	X										
1	0	0	1	**9**				9	I	Y										
1	0	1	0	**A**			*	:	J	Z										
1	0	1	1	**B**			+		K											
1	1	0	0	**C**					L											
1	1	0	1	**D**			-		M											
1	1	1	0	**E**			.		N											
1	1	1	1	**F**			/		O											

QR Code (Binary mode) Code table

					S								S							
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			"	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			'	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	\	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

QR Code can specify from 00H to 7FH, and from A0H to DFH.

QR Code (Kanji mode) Code table

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	813F		SP	、	。	,	.	・	:	;	?	!	゛	°	´	`	¨
	814F	^	￣	_	ヽ	ヾ	ゝ	ゞ	〃	仝	々	〆	〇	―	—	-	/
記	815F	＼	～	∥	｜	…	‥	‘	’	“	”	(	)	〔	〕	[	]
	816F	{	}	〈	〉	《	》	「	」	『	』	【	】	+	−	±	×
号	8180	÷	=	≠	<	>	≦	≧	∞	∴	♂	♀	°	′	″	℃	¥
	8190	$	¢	£	%	#	&	*	@	§	☆	★	○	●	◎	◇	
	819E		◆	□	■	△	▲	▽	▼	※	〒	→	←	↑	↓	=	
英	824F	0	1	2	3	4	5	6	7	8	9						
・	825F		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
数	826F	P	Q	R	S	T	U	V	W	X	Y	Z					
字	8280		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
	8290	p	q	r	s	t	u	v	w	x	y	z					
	829E		ぁ	あ	ぃ	い	ぅ	う	ぇ	え	ぉ	お	か	が	き	ぎ	く
ひ	82AE	ぐ	け	げ	こ	ご	さ	ざ	し	じ	す	ず	せ	ぜ	そ	ぞ	た
ら	82BE	だ	ち	ぢ	っ	つ	づ	て	で	と	ど	な	に	ぬ	ね	の	は
が	82CE	ば	ぱ	ひ	び	ぴ	ふ	ぶ	ぷ	へ	べ	ぺ	ほ	ぼ	ぽ	ま	み
な	82DE	む	め	も	ゃ	や	ゅ	ゆ	ょ	よ	ら	り	る	れ	ろ	ゎ	わ
	82EE	ゐ	ゑ	を	ん												
	833F		ァ	ア	ィ	イ	ゥ	ウ	ェ	エ	ォ	オ	カ	ガ	キ	ギ	ク
カ	834F	グ	ケ	ゲ	コ	ゴ	サ	ザ	シ	ジ	ス	ズ	セ	ゼ	ソ	ゾ	タ
タ	835F	ダ	チ	ヂ	ッ	ツ	ヅ	テ	デ	ト	ド	ナ	ニ	ヌ	ネ	ノ	ハ
カ	836F	バ	パ	ヒ	ビ	ピ	フ	ブ	プ	ヘ	ベ	ペ	ホ	ボ	ポ	マ	ミ
ナ	8380	ム	メ	モ	ャ	ヤ	ュ	ユ	ョ	ヨ	ラ	リ	ル	レ	ロ	ヮ	ワ
	8390	ヰ	ヱ	ヲ	ン	ヴ	ヵ	ヶ									
ギ	839E		A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O
リ	83AE	Π	P	Σ	T	Y	Φ	X	Ψ	Ω							
シ	83BE		α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	o
ア	83CE	π	ρ	σ	τ	υ	φ	χ	ψ	ω							
ロ	843F		А	Б	В	Г	Д	Е	Ё	Ж	З	И	Й	К	Л	М	Н
シ	844F	О	П	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э
ア	845F	Ю	Я														
文	846F		а	б	в	г	д	е	ё	ж	з	и	й	к	л	м	н
字	8480	о	п	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э
	8490	ю	я														

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
ア	889E		亜	唖	娃	阿	哀	愛	挨	姶	逢	葵	茜	穐	悪	握	渥
	88AE	旭	葦	芦	鯵	梓	圧	斡	扱	宛	姐	虻	飴	絢	綾	鮎	或
	88BE	粟	袷	安	庵	按	暗	案	闇	鞍	杏						
イ	88BE											以	伊	位	依	偉	囲
	88CE	夷	委	威	尉	惟	意	慰	易	椅	為	畏	異	移	維	緯	胃
	88DE	萎	衣	謂	違	遺	医	井	亥	域	育	郁	磯	一	壱	溢	逸
	88EE	稲	茨	芋	鰯	允	印	咽	員	因	姻	引	飲	淫	胤	蔭	
	893F		院	陰	隠	韻	吋										
ウ	893F							右	宇	烏	羽	迂	雨	卯	鵜	窺	丑
	894F	碓	臼	渦	嘘	唄	欝	蔚	鰻	姥	厩	浦	瓜	閏	噂	云	運
	895F	雲															
エ	895F		荏	餌	叡	営	嬰	影	映	曳	栄	永	泳	洩	瑛	盈	穎
	896F	頴	英	衛	詠	鋭	液	疫	益	駅	悦	謁	越	閲	榎	厭	円
	8980	園	堰	奄	宴	延	怨	掩	援	沿	演	炎	焔	煙	燕	猿	縁
	8990	艶	苑	薗	遠	鉛	鴛	塩									
オ	8990								於	汚	甥	凹	央	奥	往	応	
	899E		押	旺	横	欧	殴	王	翁	襖	鴬	鴎	黄	岡	沖	荻	億
	89AE	屋	憶	臆	桶	牡	乙	俺	卸	恩	温	穏	音				
カ	89AE													下	化	仮	何
	89BE	伽	価	佳	加	可	嘉	夏	嫁	家	寡	科	暇	果	架	歌	河
	89CE	火	珂	禍	禾	稼	箇	花	苛	茄	荷	華	菓	蝦	課	嘩	貨
	89DE	迦	過	霞	蚊	俄	峨	我	牙	画	臥	芽	蛾	賀	雅	餓	駕
	89EE	介	会	解	回	塊	壊	廻	快	怪	悔	恢	懐	戒	拐	改	
	8A3F		魁	晦	械	海	灰	界	皆	絵	芥	蟹	開	階	貝	凱	劾
	8A4F	外	咳	害	崖	慨	概	涯	碍	蓋	街	該	鎧	骸	浬	馨	蛙
	8A5F	垣	柿	蛎	鈎	劃	嚇	各	廓	拡	撹	格	核	殻	獲	確	穫
	8A6F	覚	角	赫	較	郭	閣	隔	革	学	岳	楽	額	顎	掛	笠	樫
	8A80	橿	梶	鰍	潟	割	喝	恰	括	活	渇	滑	葛	褐	轄	且	鰹
	8A90	叶	椛	樺	鞄	株	兜	竃	蒲	釜	鎌	噛	鴨	栢	茅	萱	
	8A9E		粥	刈	苅	瓦	乾	侃	冠	寒	刊	勘	勧	巻	喚	堪	姦
	8AAE	完	官	寛	干	幹	患	感	慣	憾	換	敢	柑	桓	棺	款	歓
	8ABE	汗	漢	澗	潅	環	甘	監	看	竿	管	簡	緩	缶	翰	肝	艦
	8ACE	莞	観	諌	貫	還	鑑	間	閑	関	陥	韓	館	舘	丸	含	岸
	8ADE	巌	玩	癌	眼	岩	翫	贋	雁	頑	顔	願					

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キ	8ADE												企	伎	危	喜	器
	8AEE	基	奇	嬉	寄	岐	希	幾	忌	揮	机	旗	既	期	棋	棄	
	8B3F		機	帰	毅	気	汽	畿	祈	季	稀	紀	徽	規	記	貴	起
	8B4F	軌	輝	飢	騎	鬼	亀	偽	儀	妓	宜	戯	技	擬	欺	犠	疑
	8B5F	祇	義	蟻	誼	議	掬	菊	鞠	吉	吃	喫	桔	橘	詰	砧	杵
	8B6F	黍	却	客	脚	虐	逆	丘	久	仇	休	及	吸	宮	弓	急	救
	8B80	朽	求	汲	泣	灸	球	究	窮	笈	級	糾	給	旧	牛	去	居
	8B90	巨	拒	拠	挙	渠	虚	許	距	鋸	漁	禦	魚	亨	享	京	
	8B9E		供	侠	僑	兇	競	共	凶	協	匡	卿	叫	喬	境	峡	強
	8BAE	彊	怯	恐	恭	挟	教	橋	況	狂	狭	矯	胸	脅	興	蕎	郷
	8BBE	鏡	響	饗	驚	仰	凝	尭	暁	業	局	曲	極	玉	桐	粁	僅
	8BCE	勤	均	巾	錦	斤	欣	欽	琴	禁	禽	筋	緊	芹	菌	衿	襟
	8BDE	謹	近	金	吟	銀											
ク	8BDE						九	倶	句	区	狗	玖	矩	苦	躯	駆	駈
	8BEE	駒	具	愚	虞	喰	空	偶	寓	遇	隅	串	櫛	釧	屑	屈	
	8C3F		掘	窟	沓	靴	轡	窪	熊	隈	粂	栗	繰	桑	鍬	勲	君
	8C4F	薫	訓	群	軍	郡											
ケ	8C4F						卦	袈	祁	係	傾	刑	兄	啓	圭	珪	型
	8C5F	契	形	径	恵	慶	慧	憩	掲	携	敬	景	桂	渓	畦	稽	系
	8C6F	経	継	繋	罫	茎	荊	蛍	計	詣	警	軽	頚	鶏	芸	迎	鯨
	8C80	劇	戟	撃	激	隙	桁	傑	欠	決	潔	穴	結	血	訣	月	件
	8C90	倹	倦	健	兼	券	剣	喧	圏	堅	嫌	建	憲	懸	拳	捲	
	8C9E		検	権	牽	犬	献	研	硯	絹	県	肩	見	謙	賢	軒	遣
	8CAE	鍵	険	顕	験	鹸	元	原	厳	幻	弦	減	源	玄	現	絃	舷
	8CBE	言	諺	限													
コ	8CBE				乎	個	古	呼	固	姑	孤	己	庫	弧	戸	故	枯
	8CCE	湖	狐	糊	袴	股	胡	菰	虎	誇	跨	鈷	雇	顧	鼓	五	互
	8CDE	伍	午	呉	吾	娯	後	御	悟	梧	檎	瑚	碁	語	誤	護	醐
	8DEE	乞	鯉	交	佼	侯	候	倖	光	公	功	効	勾	厚	口	向	
	8D3F		后	喉	坑	垢	好	孔	孝	宏	工	巧	巷	幸	広	庚	康
	8D4F	弘	恒	慌	抗	拘	控	攻	昂	晃	更	杭	校	梗	構	江	洪
	8D5F	浩	港	溝	甲	皇	硬	稿	糠	紅	紘	絞	綱	耕	考	肯	肱
	8D6F	腔	膏	航	荒	行	衡	講	貢	購	郊	酵	鉱	砿	鋼	閤	降
	8D80	項	香	高	鴻	剛	劫	号	合	壕	拷	濠	豪	轟	麹	克	刻

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コ	8D90	告	国	穀	酷	鵠	黒	獄	漉	腰	甑	忽	惚	骨	狛	込	
	8D9E		此	頃	今	困	坤	墾	婚	恨	懇	昏	昆	根	梱	混	痕
	8DAE	紺	艮	魂													
サ	8DAE				些	佐	叉	唆	嵯	左	差	査	沙	瑳	砂	詐	鎖
	8DBE	裟	坐	座	挫	債	催	再	最	哉	塞	妻	宰	彩	才	採	栽
	8DCE	歳	済	災	采	犀	砕	砦	祭	斎	細	菜	裁	載	際	剤	在
	8DDE	材	罪	財	冴	坂	阪	堺	榊	肴	咲	崎	埼	碕	鷺	作	削
	8DEE	咋	搾	昨	朔	柵	窄	策	索	錯	桜	鮭	笹	匙	冊	刷	
	8E3F		察	拶	撮	擦	札	殺	薩	雑	皐	鯖	捌	錆	鮫	皿	晒
	8E4F	三	傘	参	山	惨	撒	散	桟	燦	珊	産	算	纂	蚕	讃	賛
	8E5F	酸	餐	斬	暫	残											
シ	8E5F						仕	仔	伺	使	刺	司	史	嗣	四	士	始
	8E6F	姉	姿	子	屍	市	師	志	思	指	支	孜	斯	施	旨	枝	止
	8E80	死	氏	獅	祉	私	糸	紙	紫	肢	脂	至	視	詞	詩	試	誌
	8E90	諮	資	賜	雌	飼	歯	事	似	侍	児	字	寺	慈	持	時	
	8E9E		次	滋	治	爾	璽	痔	磁	示	而	耳	自	蒔	辞	汐	鹿
	8EAE	式	識	鴫	竺	軸	宍	雫	七	叱	執	失	嫉	室	悉	湿	漆
	8EBE	疾	質	実	蔀	篠	偲	柴	芝	屡	蕊	縞	舎	写	射	捨	赦
	8ECE	斜	煮	社	紗	者	謝	車	遮	蛇	邪	借	勺	尺	杓	灼	爵
	8EDE	酌	釈	錫	若	寂	弱	惹	主	取	守	手	朱	殊	狩	珠	種
	8EEE	腫	趣	酒	首	儒	受	呪	寿	授	樹	綬	需	囚	収	周	
	8F3F		宗	就	州	修	愁	拾	洲	秀	秋	終	繍	習	臭	舟	蒐
	8F4F	衆	襲	讐	蹴	輯	週	酋	酬	集	醜	什	住	充	十	従	戎
	8F5F	柔	汁	渋	獣	縦	重	銃	叔	夙	宿	淑	祝	縮	粛	塾	熟
	8F6F	出	術	述	俊	峻	春	瞬	竣	舜	駿	准	循	旬	楯	殉	淳
	8F80	準	潤	盾	純	巡	遵	醇	順	処	初	所	暑	曙	渚	庶	緒
	8F90	署	書	薯	藷	諸	助	叙	女	序	徐	恕	鋤	除	傷	償	
	8F9E		勝	匠	升	召	哨	商	唱	嘗	奨	妾	娼	宵	将	小	少
	8FAE	尚	庄	床	廠	彰	承	抄	招	掌	捷	昇	昌	昭	晶	松	梢
	8FBE	樟	樵	沼	消	渉	湘	焼	焦	照	症	省	硝	礁	祥	称	章
	8FCE	笑	粧	紹	肖	菖	蒋	蕉	衝	裳	訟	証	詔	詳	象	賞	醤
	8FDE	鉦	鍾	鐘	障	鞘	上	丈	丞	乗	冗	剰	城	場	壌	嬢	常
	8FEE	情	擾	条	杖	浄	状	畳	穣	蒸	譲	醸	錠	嘱	埴	飾	
	903F		拭	植	殖	燭	織	職	色	触	食	蝕	辱	尻	伸	信	侵

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シ	904F	唇	娠	寝	審	心	慎	振	新	晋	森	榛	浸	深	申	疹	真
	905F	神	秦	紳	臣	芯	薪	親	診	身	辛	進	針	震	人	仁	刃
	906F	塵	壬	尋	甚	尽	腎	訊	迅	陣	靭						
ス	906F											笥	諏	須	酢	図	厨
	9080	逗	吹	垂	帥	推	水	炊	睡	粋	翠	衰	遂	酔	錐	錘	随
	9090	瑞	髄	崇	嵩	数	枢	趨	雛	据	杉	椙	菅	頗	雀	裾	
	909E		澄	摺	寸												
セ	909E					世	瀬	畝	是	凄	制	勢	姓	征	性	成	政
	90AE	整	星	晴	棲	栖	正	清	牲	生	盛	精	聖	声	製	西	誠
	90BE	誓	請	逝	醒	青	静	斉	税	脆	隻	席	惜	戚	斥	昔	析
	90CE	石	積	籍	績	脊	責	赤	跡	蹟	碩	切	拙	接	摂	折	設
	90DE	窃	節	説	雪	絶	舌	蝉	仙	先	千	占	宣	専	尖	川	戦
	90EE	扇	撰	栓	栴	泉	浅	洗	染	潜	煎	煽	旋	穿	箭	線	
	913F		繊	羨	腺	舛	船	薦	詮	賤	践	選	遷	銭	銑	閃	鮮
	914F	前	善	漸	然	全	禅	繕	膳	糎							
ソ	914F										噌	塑	岨	措	曾	曽	楚
	915F	狙	疏	疎	礎	祖	租	粗	素	組	蘇	訴	阻	遡	鼠	僧	創
	916F	双	叢	倉	喪	壮	奏	爽	宋	層	匝	惣	想	捜	掃	挿	掻
	9180	操	早	曹	巣	槍	槽	漕	燥	争	痩	相	窓	糟	総	綜	聡
	9190	草	荘	葬	蒼	藻	装	走	送	遭	鎗	霜	騒	像	増	憎	
	919E		臓	蔵	贈	造	促	側	則	即	息	捉	束	測	足	速	俗
	91AE	属	賊	族	続	卒	袖	其	揃	存	孫	尊	損	村	遜		
タ	91AE															他	多
	91BE	太	汰	詑	唾	堕	妥	惰	打	柁	舵	楕	陀	駄	騨	体	堆
	91CE	対	耐	岱	帯	待	怠	態	戴	替	泰	滞	胎	腿	苔	袋	貸
	91DE	退	逮	隊	黛	鯛	代	台	大	第	醍	題	鷹	滝	瀧	卓	啄
	91EE	宅	托	択	拓	沢	濯	琢	託	鐸	濁	諾	茸	凧	蛸	只	
	923F		叩	但	達	辰	奪	脱	巽	竪	辿	棚	谷	狸	鱈	樽	誰
	924F	丹	単	嘆	坦	担	探	旦	歎	淡	湛	炭	短	端	箪	綻	耽
	925F	胆	蛋	誕	鍛	団	壇	弾	断	暖	檀	段	男	談			
チ	925F														値	知	地
	926F	弛	恥	智	池	痴	稚	置	致	蜘	遅	馳	築	畜	竹	筑	蓄
	9280	逐	秩	窒	茶	嫡	着	中	仲	宙	忠	抽	昼	柱	注	虫	衷
	9290	註	酎	鋳	駐	樗	瀦	猪	苧	著	貯	丁	兆	凋	喋	寵	

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チ	929E		帖	帳	庁	弔	張	彫	徴	懲	挑	暢	朝	潮	牒	町	眺
	92AE	聴	脹	腸	蝶	調	諜	超	跳	銚	長	頂	鳥	勅	捗	直	朕
	92BE	沈	珍	賃	鎮	陳											
ツ	92BE						津	墜	椎	槌	追	鎚	痛	通	塚	栂	掴
	92CE	槻	佃	漬	柘	辻	蔦	綴	鍔	椿	潰	坪	壷	嬬	紬	爪	吊
	92DE	釣	鶴														
テ	92DE			亭	低	停	偵	剃	貞	呈	堤	定	帝	底	庭	廷	弟
	92EE	悌	抵	挺	提	梯	汀	碇	禎	程	締	艇	訂	諦	蹄	逓	
	933F		邸	鄭	釘	鼎	泥	摘	擢	敵	滴	的	笛	適	鏑	溺	哲
	934F	徹	撤	轍	迭	鉄	典	填	天	展	店	添	纏	甜	貼	転	顛
	935F	点	伝	殿	澱	田	電										
ト	935F							兎	吐	堵	塗	妬	屠	徒	斗	杜	渡
	936F	登	菟	賭	途	都	鍍	砥	砺	努	度	土	奴	怒	倒	党	冬
	9380	凍	刀	唐	塔	塘	套	宕	島	嶋	悼	投	搭	東	桃	梼	棟
	9390	盗	淘	湯	涛	灯	燈	当	痘	祷	等	答	筒	糖	統	到	
	939E		董	蕩	藤	討	謄	豆	踏	逃	透	鐙	陶	頭	騰	闘	働
	93AE	動	同	堂	導	憧	撞	洞	瞳	童	胴	萄	道	銅	峠	鴇	匿
	93BE	得	徳	涜	特	督	禿	篤	毒	独	読	栃	橡	凸	突	椴	届
	93CE	鳶	苫	寅	酉	瀞	噸	屯	惇	敦	沌	豚	遁	頓	呑	曇	鈍
ナ	93DE	奈	那	内	乍	凪	薙	謎	灘	捺	鍋	楢	馴	縄	畷	南	楠
	93EE	軟	難	汝													
ニ	93EE				二	尼	弐	迩	匂	賑	肉	虹	廿	日	乳	入	
	943F		如	尿	韮	任	妊	忍	認								
ヌ	943F									濡							
ネ	943F										禰	祢	寧	葱	猫	熱	年
	944F	念	捻	撚	燃	粘											
ノ	944F						乃	廼	之	埜	嚢	悩	濃	納	能	脳	膿
	945F	農	覗	蚤													
ハ	945F				巴	把	播	覇	杷	波	派	琶	破	婆	罵	芭	馬
	946F	俳	廃	拝	排	敗	杯	盃	牌	背	肺	輩	配	倍	培	媒	梅
	9480	楳	煤	狽	買	売	賠	陪	這	蝿	秤	矧	萩	伯	剥	博	拍
	9490	柏	泊	白	箔	粕	舶	薄	迫	曝	漠	爆	縛	莫	駁	麦	
	949E		函	箱	硲	箸	肇	筈	櫨	幡	肌	畑	畠	八	鉢	溌	発
	94AE	醗	髪	伐	罰	抜	筏	閥	鳩	噺	塙	蛤	隼	伴	判	半	反

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ハ	94BE	叛	帆	搬	斑	板	氾	汎	版	犯	班	畔	繁	般	藩	販	範
	94CE	釆	煩	頒	飯	挽	晩	番	盤	磐	蕃	蛮					
ヒ	94CE												匪	卑	否	妃	庇
	94DE	彼	悲	扉	批	披	斐	比	泌	疲	皮	碑	秘	緋	罷	肥	被
	94EE	誹	費	避	非	飛	樋	簸	備	尾	微	枇	毘	琵	眉	美	
	953F		鼻	柊	稗	匹	疋	髭	彦	膝	菱	肘	弼	必	畢	筆	逼
	954F	桧	姫	媛	紐	百	謬	俵	彪	標	氷	漂	瓢	票	表	評	豹
	955F	廟	描	病	秒	苗	錨	鋲	蒜	蛭	鰭	品	彬	斌	浜	瀕	貧
	956F	賓	頻	敏	瓶												
フ	956F					不	付	埠	夫	婦	富	冨	布	府	怖	扶	敷
	9580	斧	普	浮	父	符	腐	膚	芙	譜	負	賦	赴	阜	附	侮	撫
	9590	武	舞	葡	蕪	部	封	楓	風	葺	蕗	伏	副	復	幅	服	
	959E		福	腹	複	覆	淵	弗	払	沸	仏	物	鮒	分	吻	噴	墳
	95AE	憤	扮	焚	奮	粉	糞	紛	雰	文	聞						
ヘ	95AE											丙	併	兵	塀	幣	平
	95BE	弊	柄	並	蔽	閉	陛	米	頁	僻	壁	癖	碧	別	瞥	蔑	箆
	95CE	偏	変	片	篇	編	辺	返	遍	便	勉	娩	弁	鞭			
ホ	95CE														保	舗	鋪
	95DE	圃	捕	歩	甫	補	輔	穂	募	墓	慕	戊	暮	母	簿	菩	倣
	95EE	俸	包	呆	報	奉	宝	峰	峯	崩	庖	抱	捧	放	方	朋	
	963F		法	泡	烹	砲	縫	胞	芳	萌	蓬	蜂	褒	訪	豊	邦	鋒
	964F	飽	鳳	鵬	乏	亡	傍	剖	坊	妨	帽	忘	忙	房	暴	望	某
	965F	棒	冒	紡	肪	膨	謀	貌	貿	鉾	防	吠	頬	北	僕	卜	墨
	966F	撲	朴	牧	睦	穆	釦	勃	没	殆	堀	幌	奔	本	翻	凡	盆
マ	9680	摩	磨	魔	麻	埋	妹	昧	枚	毎	哩	槙	幕	膜	枕	鮪	柾
	9690	鱒	桝	亦	俣	又	抹	末	沫	迄	侭	繭	麿	万	慢	満	
	969E		漫	蔓													
ミ	969E				味	未	魅	巳	箕	岬	密	蜜	湊	蓑	稔	脈	妙
	96AE	粍	民	眠													
ム	96AE				務	夢	無	牟	矛	霧	鵡	椋	婿	娘			
メ	96AE														冥	名	命
	96BE	明	盟	迷	銘	鳴	姪	牝	滅	免	棉	綿	緬	面	麺		
モ	96BE															摸	模
	96CE	茂	妄	孟	毛	猛	盲	網	耗	蒙	儲	木	黙	目	杢	勿	餅

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モ	96DE	尤	戻	籾	貰	問	悶	紋	門	匁							
ヤ	96DE										也	冶	夜	爺	耶	野	弥
	96EE	矢	厄	役	約	薬	訳	躍	靖	柳	薮	鑓					
ユ	96EE												愉	愈	油	癒	
	973F		諭	輸	唯	佑	優	勇	友	宥	幽	悠	憂	揖	有	柚	湧
	974F	涌	猶	猷	由	祐	裕	誘	遊	邑	郵	雄	融	夕			
ヨ	974F														予	余	与
	975F	誉	輿	預	傭	幼	妖	容	庸	揚	揺	擁	曜	楊	様	洋	溶
	976F	熔	用	窯	羊	耀	葉	蓉	要	謡	踊	遥	陽	養	慾	抑	欲
	9780	沃	浴	翌	翼	淀											
ラ	9780						羅	螺	裸	来	莱	頼	雷	洛	絡	落	酪
	9790	乱	卵	嵐	欄	濫	藍	蘭	覧								
リ	9790									利	吏	履	李	梨	理	璃	
	979E		痢	裏	裡	里	離	陸	律	率	立	葎	掠	略	劉	流	溜
	97AE	琉	留	硫	粒	隆	竜	龍	侶	慮	旅	虜	了	亮	僚	両	凌
	97BE	寮	料	梁	涼	猟	療	瞭	稜	糧	良	諒	遼	量	陵	領	力
	97CE	緑	倫	厘	林	淋	燐	琳	臨	輪	隣	鱗	麟				
ル	97CE													瑠	塁	涙	累
	97DE	類															
レ	97DE		令	伶	例	冷	励	嶺	怜	玲	礼	苓	鈴	隷	零	霊	麗
	97EE	齢	暦	歴	列	劣	烈	裂	廉	恋	憐	漣	煉	簾	練	聯	
	983F		蓮	連	錬												
ロ	983F					呂	魯	櫓	炉	賂	路	露	労	婁	廊	弄	朗
	984F	楼	榔	浪	漏	牢	狼	篭	老	聾	蝋	郎	六	麓	禄	肋	録
	985F	論															
ワ	985F		倭	和	話	歪	賄	脇	惑	枠	鷲	亙	亘	鰐	詫	藁	蕨
	986F	椀	湾	碗	腕												

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
一	989E			弋	丐	丕											
丨	989E					个	丱										
丶	989E							丶	丼								
丿	989E									丿	乂	乖	乘				
乙	989E													亂			
亅	989E														亅	豫	事
	98AE	舒															
二	98AE			弍	于	亞	亟										
亠	98AE						亠	亢	亰	亳	亶						
人	98AE											从	仍	仄	仆	仂	仗
	98BE	仞	仭	仟	价	伉	佚	估	佛	佝	佗	佇	佶	侈	侏	侘	佻
	98CE	佩	佰	侑	佯	來	侖	儘	俔	俟	俎	俘	俛	俑	俚	俐	俤
	98DE	俥	倚	倨	倔	倪	倥	倅	伜	俶	倡	倩	倬	俾	俯	們	倆
	98EE	偃	假	會	偕	偐	偈	做	俵	偬	偸	傀	傚	傅	傴	傲	
	993F		僉	僊	傳	僂	僖	僞	僥	僭	僣	僮	價	僵	儉	儁	儂
	994F	儖	儕	儔	儚	儡	儺	儷	儼	儻							
儿	994F										儿	兀	兒	兌	兔	兢	競
入	995F	兩	俞														
八	995F				兮	冀											
冂	995F					冂	冏	冊	冉	冏	冑	冓	冕				
冖	995F													冖	冤	冠	冢
	996F	冩	冪														
冫	996F				冫	决	冱	冲	冰	况	冽	凅	凉	凜			
几	996F													几	處	凩	凭
	9980	凰															
凵	9980			凵	函												
刀	9980				刃	刋	刈	刎	刧	刪	刮	刳	刹	刱	刼	刺	
	9990	刮	剔	剪	剴	剩	剳	剿	剽	劍	劒	劒	劒	劈	劑	辨	
	999E		辦														
力	999E				劬	劭	劼	劵	勁	勍	勗	勞	勣	勦	飭	勠	勳
	99AE	勸															
勹	99AE			勹	匆	匈	匐	匍	匐	匏							
匕	99AE									匕							
匚	99AE										匚	匣	匯	匱	匳		

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
匸	99AE															匸	區
十	99BE	卆	卅	丗	卉	卍	凖										
卜	99BE							卞									
卩	99BE								卩	卮	夘	卻	卷				
厂	99BE													厂	厖	厠	厦
	99CE	厥	厮	厰													
厶	99CE				厶	參	簒										
又	99CE							雙	叟	曼	燮						
口	99CE											叮	叨	叭	叺	吁	吽
	99DE	呀	听	吭	吼	吮	吶	吩	吝	呎	咏	呵	咎	呟	呱	呷	呰
	99EE	咒	呻	咀	呶	咄	咐	咆	哇	咢	咸	咥	咬	哄	哈	咨	
	9A3F		咫	哂	咤	咾	咼	哘	哥	哦	唏	唔	哽	哮	哭	哺	哢
	9A4F	唹	啀	啣	啌	售	啜	啅	啖	啗	唸	唳	啝	喙	喀	咯	喊
	9A5F	喟	啻	啾	喘	喞	單	啼	喃	喩	喇	喨	嗚	嗅	嗟	嗄	嗜
	9A6F	嗤	嗔	嘔	嗷	嘖	嗾	嗽	嘛	嗹	噎	噐	營	嘴	嘶	嘲	嘸
	9A80	噫	噤	嘯	噬	噪	嚆	嚀	嚊	嚠	嚔	嚏	嚥	嚮	嚶	嚴	囂
	9A90	嚼	囁	囃	囀	囈	囎	囑	囓								
囗	9A90									囗	囮	囹	圀	囿	圄	圉	
	9A9E		圈	國	圍	圓	團	圖	嗇	圜							
土	9A9E										圦	圷	圸	坎	圻	址	坏
	9AAE	坩	埀	垈	坡	坿	垉	垓	垠	垳	垤	垪	垰	埃	埆	埔	埒
	9ABE	埓	堊	埖	埣	堋	堙	堝	塲	堡	塢	塋	塰	毀	塒	堽	塹
	9ACE	墅	墹	墟	墫	墺	壞	墻	墸	墮	壅	壓	壑	壗	壙	壘	壥
	9ADE	壜	壤	壟													
士	9ADE				壯	壺	壹	壻	壼	壽							
夂	9ADE										夂						
夊	9ADE											夊	夐				
夕	9ADE													夛	梦	夥	
大	9ADE																夬
	9AEE	夭	夲	夸	夾	竒	奕	奐	奎	奚	奘	奢	奠	奧	奬	奩	
女	9B3F		奸	妁	妝	佞	侫	妣	妲	姆	姨	姜	妍	姙	姚	娥	娟
	9B4F	娑	娜	娉	娚	婀	婬	婉	娵	娶	婢	婪	媚	媼	媾	嫋	嫂
	9B5F	媽	嫣	嫗	嫦	嫩	嫖	嫺	嫻	嬌	嬋	嬖	嬲	嫐	嬪	嬶	嬾
	9B6F	孃	孅	孀													

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子	9B6F				孑	孕	孚	孛	孥	孩	孰	孳	孵	學	孝	孺	
宀	9B6F																宀
	9B80	它	宦	宸	寃	寇	寉	寔	寐	寤	實	寢	寞	寥	寫	寰	寶
	9B90	寳															
寸	9B90		尅	將	專	對											
小	9B90						尒	尠									
尤	9B90								尢	尷							
尸	9B90										尸	尹	屁	屆	屎	屓	
	9B9E		屐	屏	孱	屬											
屮	9B9E						屮										
山	9B9E							屺	岁	屹	岌	岑	岔	妛	岫	岻	岼
	9BAE	岾	岨	岷	岵	峇	峙	峩	峽	峺	峭	嶌	峪	崋	崕	崗	崙
	9BBE	崟	崛	崑	崔	崢	崚	崙	崘	嵌	嵒	嵎	嵋	嵬	嵳	嵷	嶇
	9BCE	嶄	嶂	嶢	嶝	嶬	嶮	嶽	嶾	嶷	嶼	嶲	嶺	巔	巒	巖	
巛	9BCE																巛
工	9BDE	巫															
已	9BDE		已	巵													
巾	9BDE				帋	帚	帙	帑	帛	帶	帷	幄	幃	幀	幎	幗	幔
	9BEE	幟	幢	幣	幇												
干	9BEE					幵	并										
幺	9BEE							幺	麼								
广	9BEE									广	庠	廁	廂	廈	廏	廖	
	9C3F		廖	廣	廝	廚	廬	廢	廡	廨	廩	廬	廱	廳	廱		
廴	9C3F															廴	廸
廾	9C4F	廾	弃	弉	彝	彝											
弋	9C4F						弋	弒									
弓	9C4F								弖	弩	弭	弸	弼	彈	彌	彎	弯
彑	9C5F	彑	彖	彗	彙												
彡	9C5F					彡	彭										
彳	9C5F							彳	彷	徃	徂	彿	徊	很	徑	徇	從
	9C6F	徙	徘	徠	徨	徭	徼										
心	9C6F							忖	忻	忤	忸	忱	忝	悳	忿	怡	恠
	9C80	怙	怐	怩	怎	怱	怛	怕	怫	怦	怏	怵	恚	恁	恪	恣	恧
	9C90	恊	恆	恍	恣	恃	恤	恂	恬	恫	恙	悁	悍	惧	悃	悚	

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
心	9C9E		悄	悛	悖	悗	悃	悒	悋	悪	悸	悳	悵	悴	悻	悽	惆
	9CAE	悵	惘	慍	愕	愆	惶	惷	愀	惴	惺	愃	愡	惻	惱	愍	愎
	9CBE	慇	愾	慨	愧	慊	愿	愼	愬	愴	愽	慂	慄	慳	慷	慘	慙
	9CCE	慚	慫	慴	慯	慥	慱	慟	慝	慓	慵	慠	慱	慼	慽	慿	憀
	9CDE	憊	憑	憫	憮	懌	懊	應	懷	懈	懃	懆	憺	懋	罹	懍	憺
	9CEE	懣	懶	懺	懴	懿	懽	懼	懾	戀							
戈	9CEE										戈	戉	戍	戌	戔	戛	
	9D3F		戞	戡	截	戮	戰	戲	戳								
戸	9D3F									扁							
手	9D3F										扎	扞	扣	扛	扠	扨	扼
	9D4F	抂	抉	找	抒	抓	抖	拔	抃	抔	拗	拑	抻	挲	拿	拆	擔
	9D5F	拈	拜	拌	拊	拂	拇	抛	拉	挌	拮	拱	挧	挂	挈	拯	拵
	9D6F	捐	挾	捍	搜	捏	掖	掎	掀	掫	捶	掣	掏	掉	掟	掵	捫
	9D80	捩	掾	揩	揀	揆	揣	揉	插	揶	揄	搖	搴	搆	搓	搦	搶
	9D90	攝	搗	搦	搏	搧	搴	搏	摎	攪	撕	撓	撥	撩	撈	撼	
	9D9E		據	擒	擅	擇	撻	擘	擂	擱	擧	舉	擠	擡	抬	擣	擯
	9DAE	攬	擶	擴	擲	擺	攀	攙	攘	攜	攅	攤	攣	攫			
攴	9DAE														攴	攵	攷
	9DBE	收	攸	畋	效	敖	敕	敍	敘	敞	敝	敲	數	斂	斃	變	
斗	9DBE																斛
	9DCE	斟															
斤	9DCE		斫	斷													
方	9DCE				旆	旆	旁	旄	旌	旒	旛	旙					
无	9DCE												无	旡			
日	9DCE														旱	杲	旻
	9DDE	昃	昊	昔	昵	昶	昴	昜	晏	晄	晉	晁	晞	晝	晤	晧	晨
	9DEE	晟	晢	晰	暃	暈	暎	暉	暄	暘	暝	暨	暹	曉	暸	暫	
	9E3F		曄	暸	曖	曚	曠	昿	曦	曩							
曰	9E3F										曰	曳	曷				
月	9E3F													朏	朖	朞	朦
	9E4F	朧	霸														
木	9E4F			朮	朿	朵	杁	杣	杤	杆	杞	杠	杙	杣	杤	枉	杰
	9E5F	杼	杼	杪	枌	枋	枦	枡	枡	枷	柯	枴	柬	枳	枢	枸	柤
	9E6F	柞	柝	柢	柮	枹	柮	柆	柧	檜	栞	框	栩	桀	桍	栲	桎

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
木	9E80	梳	栫	桙	档	桷	桿	梟	梏	梭	梔	條	梛	梃	檮	梹	桴
	9E90	梵	梠	梺	椏	梍	桾	椁	棊	椈	棘	椢	椦	棡	椌	棍	
	9E9E		棔	棧	棕	椶	椒	椄	棗	棣	椥	棹	棠	棯	椨	椪	椚
	9EAE	椣	椡	棆	楹	楷	楜	楸	楫	楔	楾	楮	椹	楴	椽	楙	椰
	9EBE	楡	楞	楝	榁	楪	榲	榮	槐	榿	槁	槓	榾	槎	寨	槊	槝
	9ECE	榻	槃	榧	樮	榑	榠	榜	榕	榴	槞	槨	樂	樛	槿	權	槹
	9EDE	槲	槧	樅	榱	樞	槭	樔	槫	樊	樒	櫁	樣	樓	橄	樌	橲
	9EEE	樶	橸	橇	橢	橙	橦	橈	樸	樢	檐	檍	檠	檄	檢	檣	
	9F3F		檗	蘗	檻	櫃	櫂	檸	檳	檬	櫞	櫑	櫟	檪	櫚	櫪	櫻
	9F4F	欅	蘖	櫺	欒	欖	鬱	欟									
欠	9F4F								欸	欷	盜	欹	飮	歇	歃	歉	歐
	9F5F	歙	歔	歛	歟	歡											
止	9F5F						歸										
歹	9F5F							歹	歿	殀	殄	殃	殍	殘	殕	殞	殤
	9F6F	殪	殫	殯	殲	殱											
殳	9F6F						殳	殷	殼	毆							
毋	9F6F										毋	毓					
毛	9F6F												毟	毬	毫	毳	毯
	9F80	麾	氈														
氏	9F80			氓													
气	9F80				气	氛	氤	氣									
水	9F80								汞	汕	汢	汪	沂	沍	沚	沁	沛
	9F90	汾	汨	汳	沒	沐	泄	泱	泓	沽	泗	泅	泝	沮	沱	沾	
	9F9E		沺	泛	泯	泙	泪	洟	衍	洶	洫	洽	洸	洙	洵	洳	洒
	9FAE	洌	浣	涓	浤	浚	浹	浙	涎	涕	濤	涅	淹	渕	渊	涵	淇
	9FBE	淦	涸	淆	淬	淞	淌	淨	淒	淅	淺	淙	淤	淕	淪	淮	渭
	9FCE	湮	渮	渙	湲	湟	渾	渣	湫	渫	湶	湍	渟	湃	渺	湎	渤
	9FDE	滿	渝	游	溂	溪	溘	滉	溷	滓	溽	溯	滄	溲	滔	滕	溏
	9FEE	溥	滂	溟	潁	漑	灌	滬	滸	滾	漿	滲	漱	滯	漲	滌	
	E03F		漾	漓	滷	澆	潺	潸	澁	澀	潯	潛	濳	潭	澂	潼	潘
	E04F	澎	澑	濂	潦	澳	澣	澡	澤	澹	濆	澪	濟	濕	濬	濔	濘
	E05F	濱	濮	濛	瀉	瀋	濺	瀑	瀁	瀏	濾	瀛	瀚	潴	瀝	瀘	瀟
	E06F	瀰	瀾	瀲	灑	灣											
火	E06F						炙	炒	炯	烱	炬	炸	炳	炮	烟	烋	烝

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
火	E080	烙	焉	烽	焜	焙	煥	煕	熙	煦	煢	煌	煖	煬	熏	燻	熄
	E090	燠	燹	爇	燗	熹	熾	燒	燉	燔	燎	燠	燬	燧	燵	燼	
	E09E		燹	燿	爍	爐	爛	爨									
爪	E09E								爭	爬	爰	爲					
爻	E09E												爻	爼			
爿	E09E														爿	牀	牆
	E0AE	牋	牘														
牛	E0AE				牴	牾	犂	犁	犇	犒	犖	犢	犠				
犬	E0AE												犹	狄	狃	狆	狄
	E0BE	狎	狒	狢	狠	狡	狹	狷	倏	猗	猊	猜	猖	猝	猴	猯	猩
	E0CE	猥	猾	獎	獏	默	獗	獪	獨	獰	獣	獵	獻	獺			
王	E0CE														珈	玳	珎
	E0DE	玻	珀	珥	珮	珞	璢	琅	瑯	琥	琣	琲	琺	瑕	瑾	瑟	瑙
	E0EE	瑁	瑜	瑩	瑰	瑣	瑪	瑶	瑾	璋	璞	璧	瓊	瓏	瓔	珱	
瓜	E13F		瓠	瓣													
瓦	E13F				瓧	瓩	甕	甦	甫	甬	甸	瓷	甄	甕	甎	甌	甎
	E14F	甍	甕	甓													
甘	E14F				甞												
生	E14F					甦											
用	E14F						甬										
田	E14F							甲	甶	畋	畊	畉	畛	畝	畚	畎	畤
疒	E15F												疔	疚	疝	疥	疣
	E16F	痂	疳	痃	疵	疽	疸	疼	疱	痍	痊	痒	痙	痣	痞	痾	痿
	E180	痼	痺	痰	痺	痲	痳	瘋	瘍	瘉	瘟	瘧	瘠	瘡	瘢	瘤	瘴
	E190	瘰	瘻	癇	癈	癆	癌	癘	癡	癢	癨	癩	癪	癰	癬	癲	
	E19E		癲														
癶	E19E			癶	癸	發											
白	E19E						皀	皃	皈	皋	皎	皖	皓	皙	皚		
皮	E19E															皰	皺
	E1AE	皹	皹	皺													
皿	E1AE				盂	盍	盖	盒	盞	盡	盥	盧	盪	蘯			
目	E1AE														盼	盱	盻
	E1BE	眄	眩	眤	眞	眥	眦	眛	眷	眸	睇	睚	睨	睫	睛	睥	睿

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
目	E1CE	睾	睹	瞎	瞋	瞑	瞠	瞞	瞰	瞶	瞹	瞿	瞼	瞽	瞻	瞳	瞿
	E1DE	矗	矚														
矛	E1DE			矜													
矢	E1DE				矣	矮											
石	E1DE						矼	砌	砒	礦	砠	礪	硅	碎	硼	碆	硼
	E1EE	碚	碌	碣	碵	碪	磑	磆	磋	磋	磔	碾	碼	磅	磊	磬	
	E23F		磧	磚	磽	磴	礫	礒	礑	礙	礬	礫					
示	E23F												祀	祠	祇	祟	祚
	E24F	祕	祓	祺	祿	禊	禝	禧	齋	禪	禮	禳					
禺	E24F												禹	禺			
禾	E24F														秉	秕	秧
	E25F	秬	秡	秣	稈	稍	稘	稙	稠	稟	禀	稱	稻	稾	稷	稼	穂
	E26F	穉	穡	穢	穩	龝	穣										
穴	E26F							窮	窪	窈	窗	窕	窘	窖	窩	竈	窯
	E280	窶	窳	窪	窿	竦	竇	竊									
立	E280								竗	竚	竗	竰	竕	竚	竝	竡	竢
	E290	竦	竭	竰													
竹	E290				笂	笏	笊	笆	笳	笘	笙	笞	笵	笨	笶	筐	
	E29E		筺	笄	筍	笋	筌	筅	筵	筥	筴	筧	筰	筱	筬	筮	箝
	E2AE	箘	箟	箍	箜	箚	箋	箒	箏	筝	箙	箘	箕	箴	箑	箙	篆
	E2BE	篝	篩	簑	簔	篦	篥	籠	簀	簇	簎	篳	篷	簗	簍	篶	簀
	E2CE	簧	簪	簟	簷	簫	簸	簫	籃	籔	簇	籀	籐	籘	籟	籤	籖
	E2DE	籥	籬														
米	E2DE			粁	粗	粕	粤	粭	粂	粨	粡	粨	粳	粲	粱	粮	粹
	E2EE	粽	糀	糅	糘	糘	糒	糜	糢	鬻	糯	糲	糶	糶			
糸	E2EE														糺	紆	
	E33F		紂	紜	紕	紊	絅	紘	紮	絏	紿	紂	絆	絳	絖	絎	絲
	E34F	絨	絮	絏	絣	經	綉	絛	綏	絽	綛	綺	綮	綯	綵	綳	綽
	E35F	綫	總	綢	綯	綣	綸	綟	綰	緘	緝	緤	緞	緻	緲	緡	緘
	E36F	縊	縣	縡	縒	縦	縟	縉	縋	縢	繆	繩	縻	縵	縹	繃	縷
	E380	繧	繝	繧	繝	繖	繞	繙	繚	繹	繪	繩	繼	繻	繻	繙	繽
	E390	辮	繿	纈	纉	續	纒	纈	纓	纔	纖	纎	纛	纜			
缶	E390														缸	缺	
	E39E		罅	罌	罍	罐	罐										

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
网	E39E							网	罕	罔	罘	罟	罠	罨	罩	罧	罸
	E3AE	羂	羆	羃	羈	羇											
羊	E3AE						羌	羔	羞	羝	羚	羣	羯	羲	羹	羮	羶
	E3BE	羸	譱														
羽	E3BE			翅	翆	翊	翕	翔	翡	翦	翩	翳	翹	飜			
老	E3BE														耆	耄	耋
耒	E3CE	耒	耘	耙	耜	耡	耨										
耳	E3CE							耿	耻	聊	聆	聒	聘	聚	聟	聢	聨
	E3DE	聳	聲	聰	聶	聹	聽										
聿	E3DE							聿	肄	肆	肅						
肉	E3DE											肛	肓	肚	肭	冐	肬
	E3EE	胛	胥	胙	胝	胄	胚	胖	脉	胯	胱	脛	脩	脣	脯	腋	
	E43F		隋	腆	脾	腓	腑	胼	腱	腮	腥	腦	腴	膃	膈	膊	膀
	E44F	膂	膠	膕	膤	膣	腟	膓	膩	膰	膵	膾	膸	膽	臀	臂	膺
	E45F	臉	臍	臑	臙	臘	臈	臚	臟	臠							
臣	E45F										臧						
至	E45F											臺	臻				
臼	E45F													臾	舁	舂	舅
	E46F	與	舊														
舌	E46F			舍	舐	舖											
舟	E46F						舩	舫	舸	舳	艀	艙	艘	艝	艚	艟	艤
	E480	艢	艨	艪	艫	舮											
艮	E480						艱										
色	E480							艷									
艸	E480								艸	艾	芍	芒	芫	芟	芻	芬	苡
	E490	苣	苟	苒	苴	苳	苺	莓	范	苻	苹	苞	茆	苜	茉	苙	
	E49E		茵	茴	茖	茲	茱	荀	茹	荐	荅	茯	茫	茗	茘	莅	莚
	E4AE	莪	莟	莢	莖	茣	莎	莇	莊	荼	莵	荳	荵	莠	莉	莨	菴
	E4BE	萓	菫	菎	菽	萃	菘	萋	菁	菷	萇	菠	菲	萍	萢	萠	莽
	E4CE	萸	蔆	菻	葭	萪	萼	蕚	蒄	葷	葫	蒭	葮	蒂	葩	葆	萬
	E4DE	葯	葹	萵	蓊	葢	蒹	蒿	蒟	蓙	蓍	蒻	蓚	蓐	蓁	蓆	蓖
	E4EE	蒡	蔡	蓿	蓴	蔗	蔘	蔬	蔟	蔕	蔔	蓼	蕀	蕣	蕘	蕈	
	E53F		蕁	蘂	蕋	蕕	薀	薤	薈	薑	薊	薨	蕭	薔	薛	藪	薇
	E54F	薜	蕷	蕾	薐	藉	薺	藏	薹	藐	藕	藝	藥	藜	藹	蘊	蘓

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
艸	E55F	蘋	藾	藺	蘆	蘢	蘇	蘰	蘿								
虍	E55F									虎	虏	虔	號	虧			
虫	E55F														虱	蚓	蚣
	E56F	蚩	蚪	蚋	蚌	蚶	蚯	蛄	蛆	蛐	蛉	蠣	蛹	蛔	蛞	蛩	蛬
	E580	蛟	蛛	蛯	蛭	蜆	蜈	蜀	蜃	蜕	蜑	蜉	蜍	蛹	蜊	蜴	蜿
	E590	蜷	蜻	蜥	蜩	蜚	蝠	蝟	蝸	蝌	蝎	蝴	蝗	蝨	蝮	蝙	
	E59E		蝓	蝣	蝪	蠅	螢	螟	螂	螯	蟋	蟲	蟀	蟐	雖	螫	蟄
	E5AE	螳	蟇	蟆	螻	蟯	蟲	蟠	蠏	蠍	蟾	蟶	蟷	蠑	蠖	蠍	蠖
	E5BE	蠕	蠢	蠡	蠱	蠶	蠹	蠧	蠻								
血	E5BE									衄	衂						
行	E5BE											衒	衙	衛	衢		
衣	E5BE															衫	袁
	E5CE	衾	衰	衵	衽	衿	袋	袂	袗	袒	袮	袙	袢	袍	袤	袈	袿
	E5DE	袱	袴	袵	裔	裘	裙	裝	裹	褂	褐	裴	裨	裲	褄	褌	褊
	E5EE	褓	褒	褫	褥	褪	褶	褸	襄	褻	褶	褸	褌	褝	襃		
	E63F		襦	襤	襁	襪	襖	襴	襷								
西	E63F									覀	覃	覈	覊				
見	E63F													覓	覗	覡	覦
	E64F	覦	覬	覲	覿	覺	覽	覿	觀								
角	E64F									觚	觜	觝	觧	觴	觸		
言	E64F															訃	訖
	E65F	訐	訌	訛	訝	訥	訶	詁	詛	詒	詆	詈	詼	詭	詬	詢	詆
	E66F	誂	誄	誨	誡	誑	誥	誦	誚	誣	諄	諍	諂	諚	諫	諳	諧
	E680	諤	諱	謔	諠	諢	諷	諞	諛	謌	謇	謚	謦	謨	謫	謳	謠
	E690	謐	謗	謦	謫	謾	謨	譁	譌	譏	譎	證	譖	譖	譚	譫	
	E69E		譟	譬	譯	譴	譽	讀	讌	讎	讒	讓	讖	讙	讃		
谷	E69E															豸	豁
	E6AE	谿															
豆	E6AE		豈	豌	豎	豐											
豕	E6AE						豕	豢	豬								
豸	E6AE									豸	豺	貂	貉	貊	貍	貎	
	E6BE	貔	貘	貘													
貝	E6BE				賊	賃	貪	貽	貲	貳	貳	貶	賈	賁	賤	賣	賚
	E6CE	賽	賺	賻	贄	贅	贊	贇	贏	贍	贖	贔	贓	賍	贔	贖	

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
赤	E6CE																赧
	E6DE	赭															
走	E6DE		赱	赳	趁	趙											
足	E6DE						跂	趾	趺	跏	跚	跖	跌	跛	跋	跪	跫
	E6EE	跟	跣	跼	踈	踉	跿	踝	踞	踐	踟	蹂	踵	踰	踴	蹊	
	E73F		蹇	蹉	蹌	蹐	蹈	蹙	蹤	蹠	踪	蹣	蹕	蹶	蹲	蹼	躁
	E74F	躇	躅	躄	躋	躊	躓	躑	躔	躙	躪	躡					
身	E74F												躬	躰	軆	躱	躾
	E75F	軅	軈														
車	E75F			軋	軛	軣	軼	軻	軫	軾	輊	輅	輕	輒	輙	輓	輜
	E76F	輟	輛	輌	輦	輳	輻	輹	轅	轂	輾	轌	轉	轆	轎	轗	轜
	E780	轢	轣	轤													
辛	E780				辜	辟	辣	辭	辯								
辶	E780									辷	迚	迥	迢	迪	迯	邇	迴
	E790	逅	迹	迺	逑	逕	逡	逍	逞	逖	逋	逧	逶	逵	逹	迸	
	E79E		遏	遐	遑	遒	逎	遉	逾	遖	遘	遞	遨	遯	遶	隨	遲
	E7AE	邂	遽	邁	邀	邊	邉	邏									
邑	E7AE								邨	邯	邱	邵	郢	郤	扈	郛	鄂
	E7BE	鄒	鄙	鄲	鄰												
酉	E7BE					酊	酖	酘	酣	酥	酩	酳	酲	醋	醉	醂	醢
	E7CE	醫	醯	醪	醵	醴	醺	釀	釁								
采	E7CE									釉	釋						
里	E7CE											釐					
金	E7CE												釖	釟	釡	釛	釼
	E7DE	釵	釶	鈞	釿	鈔	鈬	鈕	鈑	鉞	鉗	鉅	鉉	鉤	鉈	銕	鈿
	E7EE	鉋	鉐	銜	銖	銓	銛	鉚	鋏	銹	銷	鋩	錏	鋺	鍄	錮	
	E83F		錙	錢	錚	錣	錺	錵	錻	鍜	鍠	鍼	鍮	鍖	鎰	鎬	鎭
	E84F	鎔	鎹	鏖	鏗	鏨	鏥	鏘	鏃	鏝	鏐	鏈	鏤	鐚	鐔	鐓	鐃
	E85F	鐇	鐐	鐶	鐫	鐵	鐡	鐺	鑁	鑒	鑄	鑛	鑠	鑢	鑞	鑪	鈩
	E86F	鑰	鑵	鑷	鑽	鑚	鑼	鑾	钁	鑿							
門	E86F										閂	閇	閊	閔	閖	閘	閙
	E880	閠	閨	閧	閭	閼	閻	閹	閾	闊	濶	闃	闍	闌	闕	闔	闖
	E890	關	闡	闥	闢												
阜	E890					阡	阨	阮	阯	陂	陌	陏	陋	陷	陜	陞	

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
阜	E89E		陜	陟	陦	陲	陬	隍	隘	隕	隗	險	隧	隱	隲	隰	隴
隶	E8AE	隶	隸														
隹	E8AE			隹	雎	雋	雉	雍	襍	雜	霍	雕					
雨	E8AE												雹	霄	霆	霈	霓
	E8BE	霎	霑	霏	霖	霙	霤	霪	霰	霹	霽	霾	靄	靆	靈	靂	靉
青	E8CE	靜															
非	E8CE		靠														
面	E8CE			靤	靦	靨											
革	E8CE						勒	靫	靱	靹	鞅	靼	鞁	靺	鞆	鞋	鞏
	E8DE	鞐	鞜	鞨	鞦	鞣	鞳	鞴	韃	韆	韈						
韋	E8DE											韋	韜				
韭	E8DE													韭	齏	韲	
音	E8DE																竟
	E8EE	韶	韵														
頁	E8EE			頏	頌	頸	頤	頡	頷	頽	顆	顏	顋	顫	顯	顰	
	E93F		顱	顴	顳												
風	E93F					颪	颯	颱	颶	飄	飃	飆					
食	E93F												飩	飫	餃	餉	餒
	E94F	餔	餘	餡	餝	餞	餤	餠	餬	餮	餽	餾	饂	饉	饅	饐	饋
	E95F	饑	饒	饌	饕												
首	E95F					馗	馘										
香	E95F							馥									
馬	E95F								馭	馮	馼	駟	駛	駝	駘	駑	駭
	E96F	駮	駱	駲	駻	駸	騁	騏	騅	駢	騙	騫	騷	驅	驂	驀	驃
	E980	騾	驕	驍	驛	驗	驟	驢	驥	驤	驩	驫	驪				
骨	E980													骭	骰	骼	髀
	E990	髏	髑	髓	體												
高	E990					髞											
髟	E990						髟	髢	髣	髦	髯	髫	髮	髴	髱	髷	
	E99E		髻	鬆	鬘	鬚	鬟	鬢	鬣								
鬥	E99E									鬥	鬧	鬨	鬩	鬪	鬮		
鬯	E99E															鬯	
鬲	E99E																鬲
鬼	E9AE	魄	魃	魏	魍	魎	魑	魘									

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
魚	E9AE								魴	鮓	鮃	鮑	鮖	鮗	鮟	鮠	鮨
	E9BE	鮴	鯀	鯊	鮹	鯆	鯏	鯑	鯒	鯣	鯢	鯤	鯔	鯡	鰺	鯲	鯱
	E9CE	鯰	鰕	鰔	鰉	鰓	鰌	鰆	鰈	鰒	鰊	鰄	鰮	鰛	鰥	鰤	鰡
	E9DE	鰰	鱇	鰲	鱆	鰾	鱚	鱠	鱧	鱶	鱸						
鳥	E9DE											鳧	鳬	鳰	鴉	鴈	
	E9EE	鳫	鴃	鴆	鴦	鶯	鴣	鴟	鵄	鴕	鴒	鵁	鴿	鴾	鵆	鵈	
	EA3F		鵝	鵞	鵤	鵑	鵐	鵙	鵲	鶉	鶇	鶫	鵯	鵺	鶚	鶤	鶩
	EA4F	鶲	鷄	鷁	鶻	鶸	鶺	鷆	鷏	鷂	鷙	鷓	鷸	鷦	鷭	鷯	鷽
	EA5F	鸚	鸛	鸞													
鹵	EA5F				鹵	鹹	鹽										
鹿	EA5F							麁	麈	麋	麌	麒	麕	麑	麝		
麥	EA5F															麥	麩
	EA6F	麸	麪	麭													
麻	EA6F				靡												
黄	EA6F					黌											
黍	EA6F						黎	黏	黐								
黒	EA6F									黔	黜	點	黝	黠	黥	黨	黯
	EA80	黴	黶	黷													
黹	EA80				黹	黻	黼										
黽	EA80							黽	鼇	鼈							
鼓	EA80										皷	鼕					
鼠	EA80												鼡	鼬			
鼻	EA80														鼾		
齊	EA80															齊	
齒	EA80																齒
	EA90	齔	齣	齟	齠	齡	齦	齧	齬	齪	齷	齲	齶				
龍	EA90													龕			
龜	EA90														龜		
龠	EA90															龠	

10.10 2D Barcode

MaxiCode	ESC+BV

Hexadecimal code	ESC	BV	Parameter
	$<1B>_{16}$	$<42>_{16}<56>_{16}$	a,b,c,ddddddddd,eee,fff,n～n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying MaxiCode.

[Format]
<BV>a,b,c,ddddddddd,eee,fff,n～n

●Parameter

a [Symbol number] = Valid Range : 1 to 8
b [Number of symbol digit] = Valid Range : 1 to 8
c [Mode] = 2 : Transportation only
3 : Transportation only
4 : Standard symbol
6 : Reader programing
d [Postal code] = Valid Range : 0 to 999999999 (Mode 2)
000000 to 999999 (Mode 3)
* Mode 2: Max 9 digits (Numeric only)
* Mode 3: Fixed 6 digits (Capital alphabet)
e [Country code] = Valid Range : 001 to 999
f [Service class] = Valid Range : 001 to 999
n [Low priority message] = Alphanumeric / Symbol

Mode	Service class	Country code	Postal code	Maximum print data	
				Numeric only	Alphanumeric
2	Fixed 3 digits (Numeric only)	Fixed 3 digits (Numeric only)	Max. 9 digits	123	84
3			Fixed 6 digits (Alphanumeric)		
4	Omission			138	93
6					

[Coding Example]
<A>
<V>100<H>200**<BV>1,1,2,123456789,001,002,SAHTHA**
<Q>2
<Z>

[Supplementary Explanation]
1. Size of MaxiCode is not changed by number of data for printing.
2. If parameter that is not described above is used, or print data doesn't match, symbol is not printed.
3. When specifying mode 4 and mode 6, number of print data must be specified over 12. When number of print data is specified less than 11, scanner cannot read printed MaxiCode.

MaxiCode Code table

					S					I			S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			”	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			’	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	¥	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

MaxiCode can specify from 1H to FFH.

10.11 2D Barcode

PDF417

ESC+BK

Hexadecimal code	ESC	BK	Parameter
	$<1B>_{16}$	$<42>_{16}<4B>_{16}$	Aabbcddeeffffg~g(,h)
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying PDF417.

[Format]

<BK>aabbcddeeffffg~g(,h)

●Parameter

a [Minimum module width]	=	Valid range	: 01 to 27 dots
b [Minimum module height]	=	Valid range	: 01 to 72 dots
c [Security level]	=	Valid range	: 0 to 8
d [No. of data code words per digit]	=	Valid range	: 01 to 30
		00	: Automatic (Width varies depending on the No. of data specified)
e [Digit No. per symbol]	=	Valid range	: 03 to 90
		00	: Automatic (Height varies depending on the No. of data specified)
f [Digit No. of data]	=	Valid data	: 0001 to 2681
g [Print data]	=	Data	
h [PDF code type]	=	When omitted	: PDF 417
		T	: Truncated scale
		M	: Micro PDF

[Coding Example] Minimum module width: 03 dots, Minimum module height: 09 dots
Security level: 3, Number of data codewords per line: 03, Digit Number of line per symbol: 18

<A>
<V>100<H>200**<BK>0309303180010PDF1234567**
<Q>2
<Z>

[Supplementary Explanation]

1. Minimum module width can be set to 01 and 02; however, this may not be read properly.
2. 01, 02, and 03 are designable for Minimum module height however; it may cause a reading problem.
3. When d=e=00, aspect ratio will be at 1:2 based on the number of print data.
4. When specifying security level height, parameter d or e should have large number.
5. Maximum number of digit of data is 2,681, but it varies depending on Minimum module size, Security level and type of print data.
6. When parameter d and e doesn't match number of data, print may not be performed properly.
7. When Micro PDF is specified by PDF type, number per symbol is specified by number of data codeword per line, and accordingly maximum number of data digit is specified. For details, refer to "Symbol size and number of data" in next page.
8. When specifying Micro PDF by PDF code type, security level is disabled.

[Point]

1. Sequential number is not available.
2. Specifying print position by automatic line feed is not available.
3. Print 00H to FFH is available.
4. Format registration is available.
5. Enlarging minimum module size improves print quality.
6. Increasing security level improves read rate.
7. Print height varies depending on the character such as numeric only, alphabet only or mixture of numeric and alphabets.

* Symbol size of Micro PDF417 is following 34 types in the table below.

[Symbol size and number of data of MicroPDF417]

Symbol size		Maximum number of data		
Cols(c)	Rows(d)	Alphabet (A to Z)	Numeric	Binary mode
1	11	6	8	3
	14	12	17	7
	17	18	26	10
	20	22	32	13
	24	30	44	18
	28	38	55	22
2	8	14	20	8
	11	24	35	14
	14	36	52	21
	17	46	67	27
	20	56	82	33
	23	64	93	38
	26	72	105	43
3	6	10	14	6
	8	18	26	10
	10	26	38	15
	12	34	49	20
	15	46	67	27
	20	66	96	39
	26	90	132	54
	32	114	167	68
	38	138	202	82
	44	162	237	97
4	4	14	20	8
	6	22	32	13
	8	34	49	20
	10	46	67	27
	12	58	85	34
	15	76	111	45
	20	106	155	63
	26	142	208	85
	32	178	261	106
	38	214	313	128
	44	250	366	150

* Mix of Alphabet (Capital letter, small letter), Numeric and Control code varies depending on number of combined characters.

PDF417 Code table

					S					I			S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			"	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			'	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	\	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

PDF417 can specify from 00H to FFH.

10.12 2D Barcode

DataMatrix (ECC200)

ESC+BX

Hexadecimal code	ESC	BX	Parameter
	$<1B>_{16}$	$<42>_{16}<58>_{16}$	aabbccddeefffghh
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying DataMatrix (ECC200).

[Format] (Setup part)

<BX>aabbccddeefffghh

●Parameter

a	[Format ID]	=	Valid Range	:	01 (Fixed)
b	[Error correction level]	=	Valid Range	:	20 (Fixed)
c	[Cell width]	=	Valid Range	:	01 to 16 (dot cell)
d	[Cell pitch]	=	Valid Range	:	01 to 16 (dot cell)
e	[Number of cells per line]	=	Valid Range	:	010 to 144
			000	:	(Auto setup)
f	[Number of cell lines]	=	Valid Range	:	008 to 414
			000	:	(Auto setup)
g	[Mirror image]	=	Valid Range	:	0 (Fixed)
h	[Size of guide cell]	=	Valid Range	:	01 (Fixed)

[Supplementary Explanation]

1. 01 and 02 are designable for [Cell width] and [Cell Pitch]; however, they may not be read properly. In this case, 00 will be an error.
2. If 000 is specified for both [No. of cells per line] and [Number of cell lines], optimum matrix size is set automatically based on the Number of data.

10.13 2D Barcode

DataMatrix (ECC200) Data Specify

ESC+DC

Hexadecimal code	ESC	DC	Parameter
	$<1B>_{16}$	$<44>_{16}<43>_{16}$	n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying data for DataMatrix (ECC200).

[Format] (Data specification part)
<DC>n~n

●Parameter
n [Print data] = Data

[Coding Example] Cell width: 02, Cell pitch: 02, Number of cells per line: 000 (Auto setup),
Number of cell lines: 000 (Auto setup), Print data: 1234567890

```
<A>
<V>100<H>200
<BX>01200202000000001
<DC>1234567890
<Q>2
<Z>
```

[Supplementary Explanation]
DataMatrix (ECC200) can specify from 00H to FFH except for printer control code of 05H, 10H, 11H, 18H, 1BH.
When specifying control code for data, use DataMatrix<2D50>.

	Data format	Number of data
Data format	Numeric	3116
	Alphanumeric	2335
	Binary (00H to FFH)	1556

* Value in above table shows the maximum number of data that can be specified as barcode data.

10.14 2D Barcode

DataMatrix (ECC200)
Sequential Number

ESC+FX

Hexadecimal code	ESC	FX	Parameter
	$<1B>_{16}$	$<46>_{16}<58>_{16}$	aaabcccdddeee
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying sequential number for DataMatrix.

[Format] (Sequential number part)
<FX>aaabcccdddeee

●Parameter

a [Number of duplication to print]	=	Valid Range	:	001 to 999
b [Flag of increase and decrease]	=	+	:	Increment
		-	:	Decrement
c [Number of increase and decrease]	=	Valid Range	:	001 to 999
d [Specification of digit position]	=	Valid Range	:	001 to 999
e [Number of digit]	=	Valid Range	:	001 to 999

[Coding Example] Number of duplication to print: 001, Flag of increase and decrease: +
Number of increase and decrease: 001, Digit position: 005, Number of digit: 003

<A>
<V>100<H＞200
<u><FX>001+001005003</u>
<BX>01100202000000001
<DC>00006000
<Q>2
<Z>

GS1 DataMatirx (ECC200)　Code table (<DC>)

					S				I				S				O			
				B8	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
				B7	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
				B6	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
				B5	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
B4	**B3**	**B2**	**B1**		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0	0	0	0	**0**			SP	0	@	P	`	p								
0	0	0	1	**1**			!	1	A	Q	a	q								
0	0	1	0	**2**			”	2	B	R	b	r								
0	0	1	1	**3**			#	3	C	S	c	s								
0	1	0	0	**4**			$	4	D	T	d	t								
0	1	0	1	**5**			%	5	E	U	e	u								
0	1	1	0	**6**			&	6	F	V	f	v								
0	1	1	1	**7**			’	7	G	W	g	w								
1	0	0	0	**8**			(	8	H	X	h	x								
1	0	0	1	**9**			)	9	I	Y	i	y								
1	0	1	0	**A**			*	:	J	Z	j	z								
1	0	1	1	**B**			+	;	K	[	k	{								
1	1	0	0	**C**			,	<	L	¥	l	|								
1	1	0	1	**D**			-	=	M	]	m	}								
1	1	1	0	**E**			.	>	N	^	n	~								
1	1	1	1	**F**			/	?	O	_	o	DEL								

GS1 DataMatrix (ECC200) can specify from 00H to FFH except for printer control code of 05H, 10H, 11H, 18H, 1BH.
When specifying 7EH, specify [7EH, 7EH].

10.15 2D Barcode

QR Code Version — ESC+QV

Hexadecimal code	ESC	QV	Parameter
	$<1B>_{16}$	$<51>_{16}<56>_{16}$	aa
Initial value	aa=00		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is in effect until a new specification is made.
	Valid range between items	The set parameter becomes a default value in the next item <A>.

[Function]

Specifying any QR code version can print the code with fixed cell size.
When not specified, it becomes the auto setting.

[Format]

<QV>aa

●Parameter

aa[Version number] = Valid range : 00 to 40 (Specifying this range doesn't become a parameter error. An error may arise for some QR code types, while analyzing the image.)

Print valid MODE1 : 00 to 14 (00: Auto setting)
MODE2 : 00 to 40 (00: Auto setting)
MicroQR : 00 to 04 (M1 to M4) (00: Auto setting)

[Coding example 1] MODEL 1, Error correction: H, Cell size font: 05, Manual setting, Normal mode, Version 14

```
<A>
<V100><H100><2D31>,H,05,0,0
<QV>14
<DN0011>,0123456789X
<Z>
```

[Coding example 2] MODEL 2, Error correction: H, Cell size font: 05, Manual setting, Normal mode, Version 35

```
<A>
<V100><H100><2D30>,H,05,0,0
<QV>35
<DN0011>,0123456789X
<Z>
```

[Coding example 3] MicroQR, Error correction: L, Cell size font: 05, Manual setting, Version M3

```
<A>
<V100><H100><2D32>,H,05,0
<QV>3
<DN005>,01234
<Z>
```

[Supplemental explanation]

1. MODEL 1: up to 17, MODEL 2 up to 40, MicroQR: up to 4
   The valid parameter range is from 0 to 40 and it varies depending on the QR code type.
2. For MicroQR, 1 to 4 correspond with M1 to M4.
3. Specifying <QV> 0 becomes Auto. (Default: Compatible with the existing code)
4. Sending the data exceeding the data size of specified version will result in error and QR code will be not printed.
5. Specify the <QV> command in between <2Dxx> and <DN>/<DS>.
6. It doesn't affect other than QR code.
7. When resulted in a parameter error, it will be handled in the same manner of no specification.

[About the version]

Refer to the QR code specification for details.
Version 1: 21 x 21 cell, Version 2: 25 x 25 cell, ..., Version 40: 177 x 177 cell.
For MicorQR, M1 to M4 = 11 x 11 to 17 x 17 cell, smaller than MODEL 1/2.

11 Graphic Command

11.1 Graphic

Graphic Print	ESC+G

Hexadecimal code	ESC	G	Parameter
	<1B>$_{16}$	<47>$_{16}$	abbbcccn~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying the print of graphic.

[Format]
<G>abbbcccn～n

●Parameter
a [Data specification by HEX and BIN]
H: Hex data Divide 8 bits data into 4 bits and output it as hex code corresponding to ASCII.
B: Binary data Output 8 bits data as one font of data all at once.
b [Specification of crosswise graphic area per byte] = Valid range: Refer to the table below
c [Specification of lengthwise graphic area per byte] = Valid range: Refer to the table below
n [Graphic data]

[Coding Example 1] [H: HEX data] is specified for [Data specification by HEX and BIN]
[□] is printed with the below specification.

<A>
<V>50<H>50
<G>H001001<4646383138313831383138313831383146 46>16
<Q>1
<Z>

[Coding Example 2] [B: Binary data] is specified as Data specification by HEX and BIN]
[□] is printed with the below specification.

<A>
<V>50<H>50
<G>B001001<FF8181818181FF>16
<Q>1
<Z>

[Supplementary Explanation]
1. Specification of [B] has longer program description than that of specification [H]; however, transfer data length is 50 percent shorter. This could be advantage in data capacity.
2. Specification of Rotation <%> and Enlargement <L> are available.
3. <L> command should be placed just before <G> command.
4. When using rotation <%> and enlargement <L> commands at the same time, specify <%> command before <L>.
5. The crosswise maximum byte and lengthwise maximum byte are specified in the table below, however, it is possible to specify up to 999 bytes to have compatibility with the old model.
The graphic data less than 2,937,600 bytes can be printed.
6. The calculation of graphic data size is [crosswise maximum byte x lengthwise maximum byte x 8].

[Valid Range]

Head density	Crosswise max. bytes	Lengthwise max. bytes
8dots/mm (203 dpi)	104	400
12dots/mm (305 dpi)	156	600
24dots/mm (609 dpi)	312	999

11.2 Graphic

BMP File Print

ESC+GM

Hexadecimal code	ESC	GM	Parameter
	$<1B>_{16}$	$<47>_{16}<4D>_{16}$	aaaaa,n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying the print or BMP file created by such as Paint Brush of Windows.

[Format]

<GM>aaaaa,n~n

●Parameter

a [Total bytes of BMP file]

n [Data]

[Coding Example]

<A>

<V>50<H>50**<GM>04500, <424D00~00>$_{16}$**

<Q>2

<Z>

[Supplementary Explanation]

1. Data is sent in binary data (Outputs 8-bit data as 1 font data all at once) (Total byte size corresponds to file size BMP file and BMP file data corresponds to data).
2. When [Total bytes of BMP file] is not matching the transfer data, this may become the cause of malfunction.
3. Total bytes are the file size displayed at [Property] and such.
4. BMP file is available in Black/White mode only. In color mode, printing is not guaranteed. Also, this command is not valid for BMP compressed file.
   Make sure that the file extension is set to [BMP] before printing.
5. Rotation <%> and Enlargement <L> are available.
6. Enlarge command <L> should be placed just before this command.
7. When using rotation <%> and enlargement <L> commands at the same time, specify <%> command before <L>.

11.3 Graphic

PCX File Print

ESC+GP

Hexadecimal code	ESC	GP	Parameter
	$<1B>_{16}$	$<47>_{16}<50>_{16}$	aaaaa,n~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying the print of PCX file created by such as Paint Brush of Windows.

[Format]

<GP>aaaaa,n~n

●Parameter

a [Total bytes of PCX file]

n [Data]

[Coding Example]

<A>

<V>50<H>50**<GP>04500,XXXXXXXXXXXX**

<Q>2

<Z>

[Supplementary Explanation]

1. Data is sent in binary data (Outputs 8-bit data as 1 font data all at once) (Total byte size corresponds to file size PCX file and PCX file data corresponds to data).
2. If [Total bytes of PCX file] is not matching the transfer data, this may become the cause of malfunction.
3. Total bytes are the file size displayed at [Property] and such.
4. PCX file is available in Black/White mode only. In color mode, printing will not be performed due to command error. Also, this command is not valid for PCX compressed file.
   Make sure that the file extension is set to [PCX] before printing.
5. Rotation <%> and Enlargement <L> are available.
6. Enlarge command <L> should be placed just before this command.
7. When using rotation <%> and enlargement <L> commands at the same time, specify <%> command before <L>.

12 System Command

12.1 System

Print Speed	ESC+CS

Hexadecimal code	ESC	CS	Parameter
	$<1B>_{16}$	$<43>_{16}<53>_{16}$	aa
Initial value	Refer to the table below.		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifying the speed of printing.

[Format]
<CS>aa

●Parameter
a [Print speed] = Refer to the table below

[Coding Example]
<A>
<CS>4
<Z>

[Supplementary Explanation]
Print darkness value specified by the command or LCD is maintained.

[Notes]
1. If the value over valid range is specified, command error will occur and print speed will not be changed.
2. Use default set operation of the printer to set back the value to the initial one.

[Parameter Initial Value and Specified Range]

Head density	Initial value [aa]	Parameter Valid Range	Print speed corresponding to parameter
8dots/mm (203dpi)	6	2, 3, 4, 5, 6, 7, 8, 9, 10	2: 2(inch/s) 50.8 (mm/s) 3: 3(inch/s) 76.2 (mm/s) 4: 4(inch/s) 101.6 (mm/s) 5: 5(inch/s) 127.0 (mm/s) 6: 6(inch/s) 152.4 (mm/s) 7: 7(inch/s) 177.8 (mm/s) 8: 8(inch/s) 203.2 (mm/s) 9: 9(inch/s) 228.6 (mm/s) 10: 10(inch/s) 254.0 (mm/s)
12dots/mm (305dpi)	6	2, 3, 4, 5, 6, 7, 8	
24dots/mm (609dpi)	4	2, 3, 4, 5, 6	

12.2 System

Print Darkness

ESC+#F

Hexadecimal code	ESC	#F	Parameter
	$<1B>_{16}$	$<23>_{16}<46>_{16}$	ab or aab
Initial value	Refer to the table below.		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifies print darkness.

[Format]
<#F>ab
<#F>aab

●Parameter
a [Print darkness level specification] = 1 Lightest
2
3
4
5
6
7
8
9
10 Darkest

b [Print darkness specification] = A to F (omissible)
This parameter is usually "A".
The parameter valid range differs depending on the model. (See the table below)

[Coding Example]
<A>
<#F>5A
<Z>

[Supplementary Explanation]
Print darkness value specified by the command or LCD is maintained.

[Notes]
1. If the value over valid range is specified, command error will occur and print darkness will not be changed.
2. Initial value is settable by default setting operation of the printer.

[Print darkness level range]

Head density	Default	Parameter valid range	When setting outside of valid range
8dots/mm (203dpi)	5	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	Command error will occur
12dots/mm (305dpi)	5	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	Command error will occur
24dots/mm (609dpi)	5	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	Command error will occur

[Print darkness range]

Head density	Default	Parameter valid range	When setting outside of valid range
8dots/mm (203dpi)	A	A	From B to F are reserved. The same darkness as A. Print darkness other than from A to F will be replaced with A. (It doesn't become a command error.)
12dots/mm (305dpi)	A	A	
24dots/mm (609dpi)	A	A	

12.3 System

Print Darkness(Compatible command)	ESC+#E

Hexadecimal code	ESC	#E	Parameter
	$<1B>_{16}$	$<23>_{16}<45>_{16}$	ab
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifies print darkness.

[Format]
<#E>ab

●Parameter
a [Print darkness level specification] = 1 Lightest
2 ↕
3
4
5 Darkest

b [Print darkness specification] = A to F (omissible)
This parameter is usually "A".
The parameter valid range differs depending on the model. (See the table below)

[Coding Example]
<A>
<#E>3A
<Z>

[Supplementary Explanation]
Print darkness value specified by the command or LCD is maintained.

[Note]
This command is for the compatibility with previous one. The print darkness level obtained by DC2+PB, and the print darkness level on the display screen becomes twice the value set by this command.

[Print darkness level range]

Head density	Parameter valid range	When setting outside of valid range
8dots/mm (203dpi)	1, 2, 3, 4, 5	Command error will occur
12dots/mm (305dpi)	1, 2, 3, 4, 5	Command error will occur
24dots/mm (609dpi)	1, 2, 3, 4, 5	Command error will occur

[Print darkness range]

Head density	Default	Parameter valid range	When setting outside of valid range
8dots/mm (203dpi)	A	A	From B to F are reserved. The same darkness as A. Print darkness other than from A to F will be replaced with A. (It doesn't become a command error.)
12dots/mm (305dpi)	A	A	
24dots/mm (609dpi)	A	A	

12.4 System

Media Size

ESC+A1

Hexadecimal code	ESC	A1	Parameter
	$<1B>_{16}$	$<41>_{16}<31>_{16}$	aaaabbbb VaaaaaHbbbb
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifying media size.

[Format]
<A1>aaaabbbb (A, B fixed) *Label size is less than 9999
<A1>VaaaaaHbbbb (A, B variable)

●Parameter
a [Height of label] = Valid range: Refer to the table below
b [Width of label] = Valid range: Refer to the table below

[Valid Range]

Head density	Width of label (dots)	Height of label (dots)
8dots/mm (203 dpi)	1 to 832	1 to 20000
12dots/mm (305 dpi)	1 to 1248	1 to 18000
24dots/mm (609 dpi)	1 to 2496	1 to 9600

[Coding example 1] Label length: 800 dots, label width: 640 dots
<A>
<A1>08000640
<Z>

[Coding example 2] Label length: 800 dots, label width: 640 dots
<A>
<A1>V800H640
<Z>

[Coding example 3] Label length: 1200 dots, label width: 40 dots
<A>
<A1>12000040
<Z>

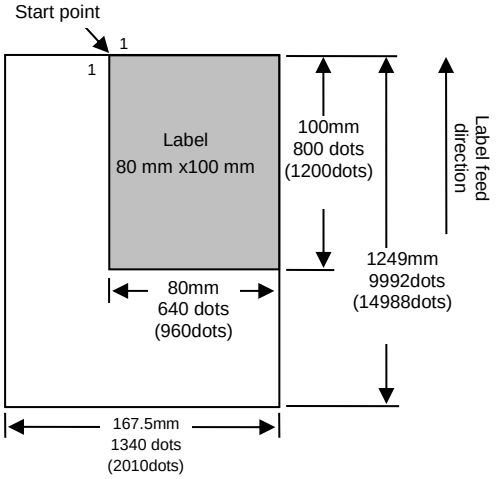
[Coding example 4] Label length: 1200 dots, label width: 40 dots
<A>
<A1>V1200H40
<Z>

[Coding example 5] Label length: 11200 dots, label width: 240 dots
<A>
<A1>V11200H240
<Z>

[Supplementary Explanation]

1. If using the label smaller than the head width, use this command for specifying the label size and adjust the start point position corresponding to the label size.
2. For specifying the label size, include the size of backing paper.

(Side alignment, 8dots/mm)



Value inside ( ) is 12 dots/mm

12.5 System

Base Reference Point

ESC+A3

Hexadecimal code	ESC	A3	Parameter
	$<1B>_{16}$	$<41>_{16}<33>_{16}$	VabbbHcddd
Initial value	a=+,b=000,c=+,d=000		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.(with the start point correction)
		The set parameter is maintained. (without the start point correction)
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]

Changing the start point coordinate in User mode of the printer (normally).

[Format]

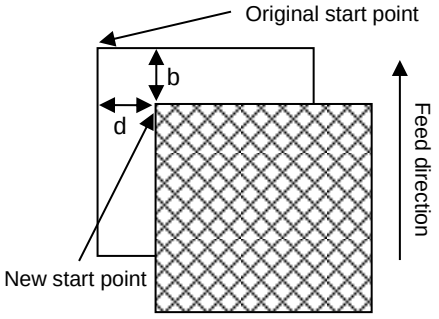
<A3>VabbbHcddd

●Parameter

a [Vertical start point correction sign] = +, -
b [Vertical start point correction (No. of dots)] = Refer to the table below
c [Horizontal start point correction sign] = +, -
d [Horizontal start point correction (No. of dots)] = Refer to the table below

[Coding Example]

<A>
<A3>V10H10
<Z>



[Supplementary Explanation]

1. If changing start point correction and being located outside of printable area, printing may not be performed.
2. When changing start point correction through multiple label formats, correction will affect all of the formats.

[Notes]

1. This command is effective prior to the User mode settings of printer LCD.
2. The offset value specified by the start point correction <A3> with the start point correction sign is not saved. Thus, the offset value specified by the <A3> command is maintained until the change is made by the next <A3> or the printer's power is off.
3. The offset value specified by the <A3> command is registered also in the user mode of the printer LCD. Thus, the offset value specified by the <A3> command is maintained even the printer power is off.

[Valid range]

Head density	Horizontal start point correction (dots)	Vertical start point correction (dots)
8dots/mm (203dpi)	0 to 792	0 to 792
12dots/mm (305dpi)	0 to 792	0 to 792
24dots/mm (609dpi)	0 to 792	0 to 792

12.6 System

Print End Position

ESC+EP

Hexadecimal code	ESC	EP	Parameter
	$<1B>_{16}$	$<45>_{16}<50>_{16}$	Nil
Initial value	Nil		

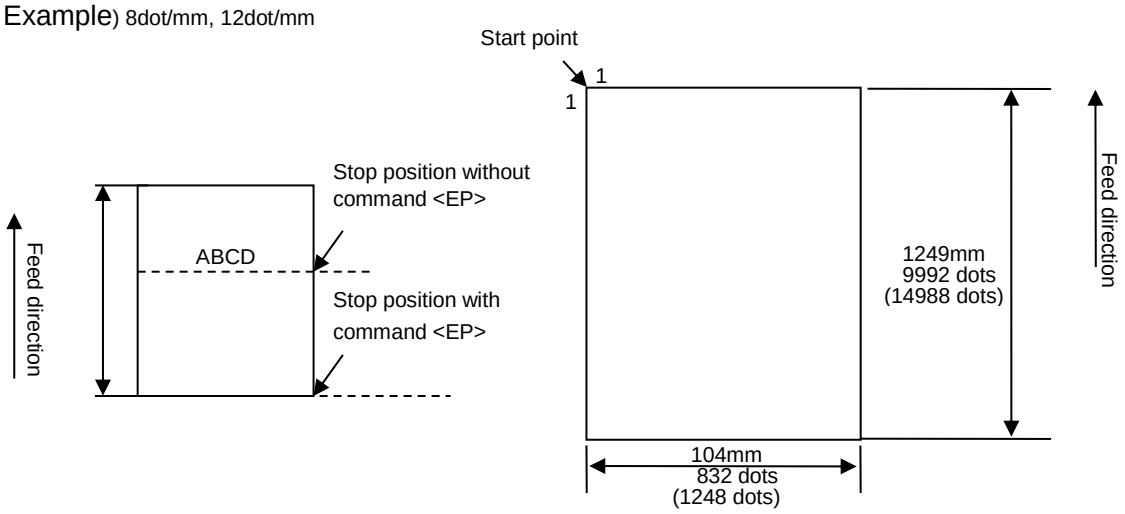
Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set command becomes invalid.

[Function]
Specifying the label stop position in the sensor ignored mode.

[Format]
<EP>

[Coding Example]
```
<A>
<A1>014240832
<Z>
<A>
<V>100<H>200<P>2<L>0202<XS>ABCD
<Q>2
<EP>
<Z>
```

Example) 8dot/mm, 12dot/mm



Value inside ( ) is 12 dots/mm

[Supplementary Explanation]
1. Use this command in the sensor invalid mode.
2. Use this command in combination with Label Size <A1>.
3. After using <A1> command for <YS> and <&S> command, it needs to use <EP> command when specifying <YR> and <&R>.

12.7 System

Multiple Cut

ESC+~

Hexadecimal code	ESC	~	Parameter
	$<1B>_{16}$	$<7E>_{16}$	aaaa
Initial value	aaaa=1		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]

Specifies the number of labels to print between each cut

[Format]

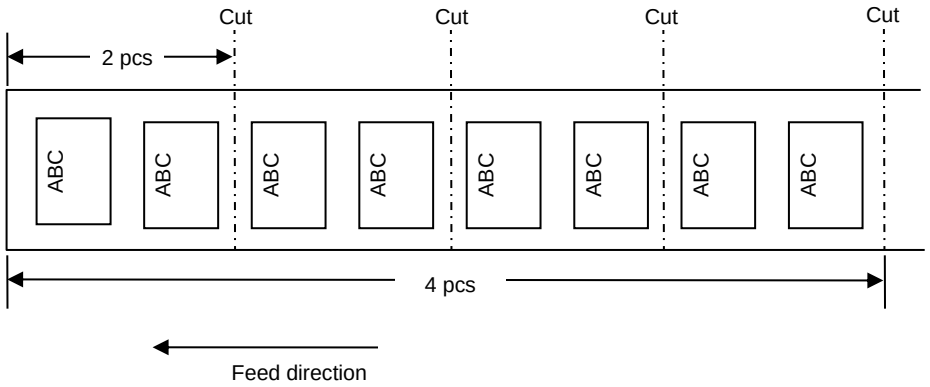
<~>aaaa

●Parameter

a [Number of prints before cutting] = Valid Range : 0 to 9999

[Coding Example]

<A>
<V>100<H>200<P>2<L>0202<XM>ABC
<Q>4
<~>2
<Z>



[Supplementary Explanation]

1. Valid only for Cutter models.
2. If this command is not specified in Cutter mode, each label will be cut off after printed.
3. In case the parameter “a” is set to 0, no label will be cut.
4. The product of Qty and value of “aaaa” shall not exceed the maximum number “999999”.
5. This command <~> shall be put after Qty<Q>. <Q>, in this case, is to specify number of sheets to be cut.

12.8 System

Cut Number Unit

ESC+CT

Hexadecimal code	ESC	CT	Parameter
	$<1B>_{16}$	$<43>_{16}<54>_{16}$	aaaa
Initial value	aaaa=1		

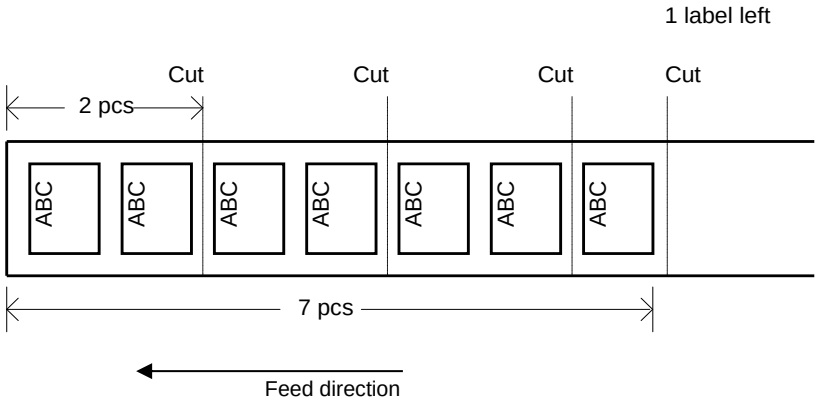
Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]
Cuts labels at a specified interval in a print job.

[Format]
<CT>aaaa

●Parameter
a [Number of labels between each cut] = Qty range : 0 to 9999

[Coding Example]
<A>
<V>100<H>200<P>2<L>0202<XM>ABC
<u><CT>2</u>
<Q>7
<Z>



[Supplementary Explanation]
1. Valid only for cutter models.
2. If the parameter is not specified by this command <CT>, each label will be cut after being printed.
3. In case the parameter “a” is set to 0, no label will be cut.
4. Set this command before <Q> command.
5. This command may not be used in combination with other cut commands<~>.

12.9 System

Eject and Cut

ESC+NC

Hexadecimal code	ESC	NC	Parameter
	$<1B>_{16}$	$<4E>_{16}<43>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set command becomes invalid.

[Function]

Specifies eject and cut operation

[Format]

<NC>

[Coding Example]

<A>
<NC>
<Z>

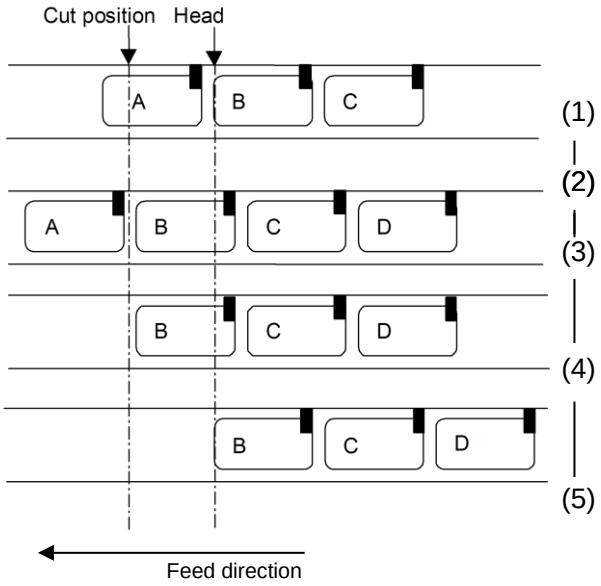
(1) Label stop position
A: Printed
B: Not printed
C: Not printed
D: Not printed

(2) Command received

(3) Label is fed to the cut position.

(4) Label is cut off.

(5) Label is back fed to the print position.



[Supplementary Explanation]

1. Valid only for cutter models.
2. This command is used to cut the last label remaining in the printer.
3. This command <NC> should be used by differentiating between Start code<A> and Stop code<Z>.
4. This command <NC> may not be used in combination with other commands.
5. This command <NC> is valid when the printer still holds the label which is not cut after being printed.

[Note]

This command is used to cut remaining label in printer after the commands <CT>0 or <~>0 is executed.

12.10 System

Cut Number Unit

ESC+~A

Hexadecimal code	ESC	~A	Parameter
	$<1B>_{16}$	$<7E>_{16}<41>_{16}$	aaaa
Initial value	aaaa=1		

Valid range and term of command	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes initial value at the next item <A>.

[Function]

Cuts labels at a specified interval in a print job.

[Format]

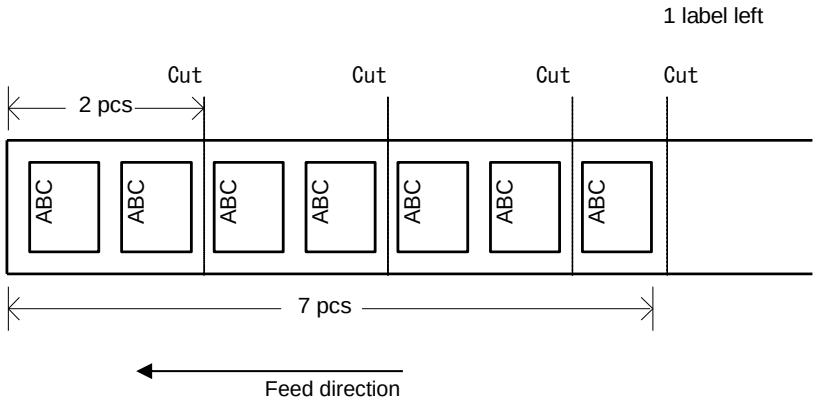
<~A>aaaa

●Parameter

a [Number of labels between each cut] = Valid range : 0 to 9999

[Coding Example]

<A>
<V>100<H>200<P>2<L>0202<XM>ABC
<~A>2
<Q>7
<Z>



[Supplementary Explanation]

1. Valid only for cutter models.
2. If the parameter is not specified by this command <~A>, each label will be cut after being printed.
3. In case the parameter “a” is set to 0, no label will be cut.
4. Set this command before <Q> command.
5. This command may not be used in combination with other cut commands<~>.

12.11 System

Eject and Cut

ESC+~B

Hexadecimal code	ESC	~B	Parameter
	$<1B>_{16}$	$<7E>_{16}<42>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set command becomes invalid.

[Function]

Specifies eject and cut operation

[Format]

<~B>

[Coding Example]

<A>
<~B>
<Z>

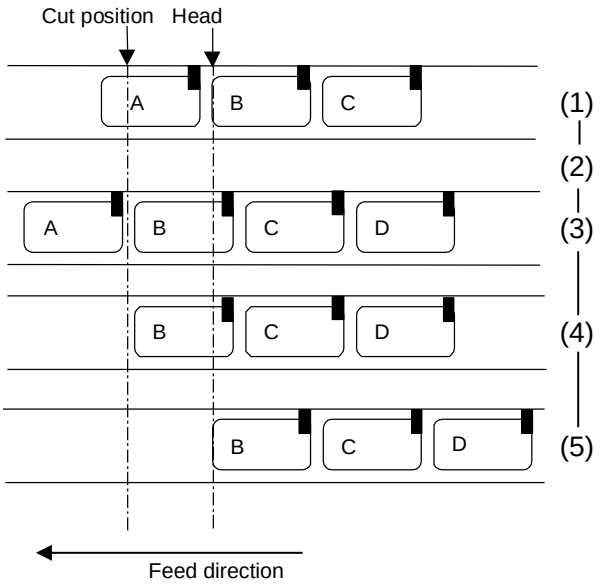
(1) Label stop position
A: Printed
B: Not printed
C: Not printed
D: Not printed

(2) Command received

(3) Label is fed to the cut position.

(4) Label is cut off.

(5) Label is back fed to the print position.



[Supplementary Explanation]

1. Valid only for cutter models.
2. This command is used to cut the last label remaining in the printer.
3. This command <~B> should be used by differentiating between Start code<A> and Stop code<Z>.
4. This command <~B> may not be used in combination with other commands.
5. This command <~B> is valid when the printer still holds the label which is not cut after being printed.

[Note]

This command is used to cut remaining label in printer after the commands <~A>0 or <~>0 is executed.

12.12 System

Memory Clear

ESC+*

Hexadecimal code	ESC	*	Parameter
	$<1B>_{16}$	$<2A>_{16}$	a
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Clears print jobs and specific item in memory.

[Format]

<*>a

●Parameter

a [Item to be cleared] = Not specified: Single item buffer, Receive buffer, Edit buffer (reprint is not possible)
Multi item buffer, Receive buffer, Edit buffer (Clears job in parsing)
T : User defined characters
& : Form overlay
X : All clear
(Receive buffer, Edit buffer, User defined characters, form overlay)

Note the job, which is currently in progress, will not be cleared

[Coding Example1] Clear receive and edit buffer

<A>
<*>
<Z>

[Coding Example2] All clear

<A>
<*>X
<Z>

[Coding Example3] Clear user-defined characters <A>

<*>T
<Z>

[Supplementary Explanation]

1. Set this command between Start code<A> and Stop code<Z>.
2. This command<*>(a=X) will clear all the data sent before the command. However, the data which is completely parsed before the command will not be cleared. X will also clear user-defined characters and form overlay.

[Notes]

1. After the command <*> is executed, have an interval of more than 100ms before sending next print data.
2. The job in printing will not be terminated by the command <*>.

12.13 System

Offline	ESC+@

Hexadecimal code	ESC	@	Parameter
	$<1B>_{16}$	$<40>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set command becomes invalid.

[Function]
Set printer offline

[Format]
<@>

[Coding Example]
<A>
<@>
<Z>

[Supplementary Explanation]
1. Set this command between Start code<A> and Stop code<Z>
2. Select single-item-buffer for data transmission mode
3. When this command is used at offline state, the printer goes offline when the printer status becomes online next time.

12.14 System

Reprint

ESC+C

Hexadecimal code	ESC	C	Parameter
	$<1B>_{16}$	$<43>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set command is not maintained.
	Valid range within items	The set command becomes invalid.
	Valid range between items	The set command becomes invalid.

[Function]
Specifies to reprint the last label

[Format]
<C>

[Coding Example]
<A>
<C>
<Z>

[Supplementary Explanation]
1. Since the last print data will be cleared by powering off, reprint operation will not be available after the printer booted.
2. The forced tear-off command <TK> and eject cut command <~B> doesn't execute reprinting.

[Note]
In case the print data contains sequential numbering by command <F>, the same number will be printed.

12.15 System

Auto Line Feed — ESC+E

Hexadecimal code	ESC	E	Parameter
	$<1B>_{16}$	$<45>_{16}$	aaa
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifies amount of line spacing and CR (Line feed)

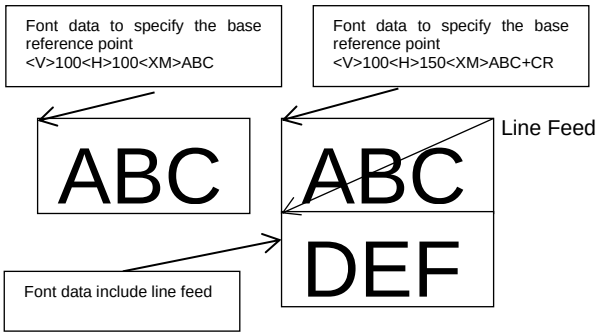
[Format]
<E>aaa

●Parameter
a [line spacing] = valid rang : 0 to 999 dots

[Coding Example]
<A>
<E>10
<V>100<H>200<P>2<L>0304<XM>ABCDE+CR
FGHIJ+CR
<Q>2
<Z>

[Supplementary Explanation]
1. When CR (0DH) is specified, linefeed based on line pitch will be performed.
2. Rotation command <%> can be used in combination with this command.
3. The command <E> may be used in a job and change the line spacing as necessary.
4. Specify this command before designating the consecutive print of 1-line.
5. Specifying this command executes the line feed regardless of CR/LF deletion setting.
6. Performing auto linefeed by the designation of CR (0DH), print start position of linefeed will be determined based on the pitch specified with <E> and the value specified with Horizontal Print Position <H> designated after <E>.
In case that <H> is specified several times after <E>, return position by CR (0DH) will be at the end of <H>.

[Print sample]
<A><E>0
<V>100<H>100
<XM>ABC
<V>100<H>150
<XM>ABC+CR
DEF
<Z>



12.16 System

Offset

ESC+PO

Hexadecimal code	ESC	PO	Parameter
	$<1B>_{16}$	$<50>_{16}<4F>_{16}$	abcc
Initial value	a=0, b=+, cc=00		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]

Gives offset to media's stop position on the fly.

[Format]

<PO>>abcc

●Parameter

a [Offset]	=	0	:	Cutter
		1	:	Dispenser
		2	:	Tear-off
		3	:	Continuous
b [Offset direction]	=	+	:	Feed forward
		-	:	Backward
c [Amount of offset]	=	Valid range	:	00 to 99 (dot)

[Coding Example]

<A>
<PO>3+08
<Z>

[Supplementary Explanation]

1. This command does not need to be set in normal printing.
2. Please specify an appropriate value when the printing is off, which is unique for each printer. Printer will not work properly if you don't specify appropriate value.

12.17 System

Sensor Type

ESC+IG

Hexadecimal code	ESC	IG	Parameter
	$<1B>_{16}$	$<49>_{16}<47>_{16}$	a
Initial value	a=1		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifies the sensor type.

[Format]
<IG>a

●Parameter

a [Sensor type]	=	0	:	Reflective (I-mark)
		1	:	Transmissible (Gap)
		2	:	Sensor disabled

[Coding Example]
<A>
<IG>1
<Z>

[Supplementary Explanation]
1. The setting by this command is normally not needed.
2. The set parameter is maintained after turning off the printer.
3. Do not use this command while printing operation as sensor may not work properly.
4. Receiving print command after changing the sensor type executes printing after backfeed except specifying the "ignore sensor" to the sensor type.
   Feed motion is not performed after turning the printer's power off and then power on.
5. Specifying printer mode to [Tear-off] and [Dispenser], and specifying sensor type to [2] (Ignore sensor) results in command error.

12.18 System

Print Method — ESC+PH

Hexadecimal code	ESC	PH	Parameter
	$<1B>_{16}$	$<50>_{16}<48>_{16}$	a
Initial value	a=0		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifies print method.

[Format]
<PH>a

●Parameter

a Print method	=	0	:	Thermal transfer
		1	:	Direct Thermal

[Coding Example]
<A>
<PH>0
<Z>

[Supplementary Explanation]
1. The setting by this command is normally not needed.
2. The set parameter is maintained after turning off the printer.

12.19 System

Print Mode — ESC+PM

Hexadecimal code	ESC	PM	Parameter
	$<1B>_{16}$	$<50>_{16}<4D>_{16}$	a
Initial value	a=0		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifies print mode.

[Format]
<PM>a

●Parameter

a Print mode	=	0	:	Continuous
		1	:	Tear-off
		2	:	Cutter (Head position)
		3	:	Cutter (Cutter position)
		4	:	Cutter (No back feed)
		5	:	Linerless cutter motion (Cutter position)
		6	:	Linerless cutter motion (No backfeed)
		7	:	Dispenser (Head position)
		8	:	Dispenser (Dispense position)
		B	:	Cutter (Cut position + Cut while printing)

[Coding Example]
<A>
<PM>0
<Z>

[Supplementary Explanation]
1. Settable operation modes are different depending on the installed options.

Options	Operation mode
None	Continuous, Tear-off
Dispenser	Continuous, Tear off, Dispense (Head position), Dispense (Dispense position)
Cutter	Continuous, Cutter (Head position), Cutter (Cut position), Cutter (No backfeed)
Linerless cutter	Continuous, Linerless cutter (Cut position), Linerless cutter (No backfeed)

Setting other than above operation modes doesn't go to the specified mode and doesn't arise command errors.

2. Specified mode is valid until turning the printer's power off. When restart the printer, the value register in the printer will be valid.
3. General description of each mode :
   (0) Continuous
   The printer stays still after printing.
   (1) Tear-off
   The media will be fed up to the tear-off edge after printed. Then the printer, after receiving next print data, will back feed the next label to the print head position.
   (2) Cutter (Head position)
   The printer back feed the label up to the print head position immediately after the last label is cut.
   (3) Cutter (Cutter position)
   The printer, after receiving the next print data, will back feed the media to the print head position.
   (4) Cutter (No back feed)
   No back feed.
   (5) Linerless cutter operation (cutting position)
   The mode performing following operation that receive print data, then backfeed to the printhead position, after that print and cut the label after completing printing.
   (6) Linerless cutter operation (no backfeed)
   No back feed.
   (7) Dispense (Head position)
   Back feeds the labels to head position after dispensing.
   (8) Dispense (Dispense position)
   The media will be fed up to the head position after data receiving and the label will be fed to the dispense position after printing.
   (9) Cut (Cut position + Cut during print)
   When receiving print data, the printer cuts the last label while printing a label.

12.20 System

Mincho (Kanji)

ESC+KM

Hexadecimal code	ESC	KM	Parameter
	$<1B>_{16}$	$<4B>_{16}<4D>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Sets Kanji font style to Mincho.

[Format]
<KM>

[Coding Example]
```
<A>
<KM>
<V>100<H>200<P>2<L>0304
<K1>H82508A94816A83548367815B
<KG>
<V>200<H>200<P>2<L>0304
<K1>H82508A94816A83548367815B
<Q>2
<Z>
```

[Supplementary Explanation]
This command can be used more than once in single item.

12.21 System

Gothic (Kanji)

ESC+KG

Hexadecimal code	ESC	KG	Parameter
	$<1B>_{16}$	$<4B>_{16}<47>_{16}$	Nil
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Sets Kanji font style to Gothic.

[Format]
<KG>

[Coding Example]
<A>
<KG>
<V>100<H>200<P>2<L>0304
<K1>H82508A94816A83548367815B
<KG>
<V>200<H>200<P>2<L>0304
<K1>H82508A94816A83548367815B
<Q>2
<Z>

[Supplementary Explanation]
This command can be used more than once in single item.

12.22 System

European Code Page

ESC+CE

Hexadecimal code	ESC	CE	Parameter
	$<1B>_{16}$	$<43>_{16}<45>_{16}$	a~a(,b)
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specify the European code page to be used.

[Format]
<CE>a~a(,b)

●Parameter
a [Code page name] = Valid range : refer to the [Code page parameter].
b [Code page setting maintain] = Valid range : P (fixed)
Specify [P] to retain selected code page. (omissible)
When omitted, the selected code page is not retained.

[Coding Example1] Win 1253 setting
<A>
<V>100<H>200<P>2<L>0304**<CE>1253**<XU>ABCDE
<Q>2
<Z>

[Coding Example2] DOS 855 setting
<A>
<V>100<H>200<P>2<L>0304**<CE>855**<XU>ABCDE
<Q>2
<Z>

[Code page parameter]

Parameter a	Official name	[Supplemental explanation]
858	DOS 858	Multilingual Latin 1 + Euro character Default Code page proprietary to SATO.
88591	ISO 8859/1	ISO 8859-1 Latin 1
88592	ISO 8859/2	ISO 8859-2 Latin 2
88599	ISO 8859/9	ISO 8859-9 Latin 5
850	DOS 850	Latin 1 Multilingual
852	DOS 852	Latin 2
855	DOS 855	Cyrillic
857	DOS 857	Turkish
737	DOS 737	Greek
866	DOS 866	Cyrillic II
1250	Win 1250	Central Europe
1251	Win 1251	Cyrillic
1252	Win 1252	Western Latin 1
1253	Win 1253	Greek
1254	Win 1254	Turkish
1257	Win 1257	Baltic
869	IBM 869	IBM 869 Greek
201	X0201	Japanese X0201 *1
UTF-8	UTF-8	Unicode encoding in UTF-8

*1: Specifying X0201 to perform following operation.
Bitmap font (for U font, S font, M font, WB font and WL font): Print with X0201 character set. XU font, XS font, XM font, XB font and XL font: Print with default -858 (DOS 858) character set.
CG font: Print with 88591 (ISO 8859-1 Latin 1) character set.

[Code page support font]

Following bitmap fonts are extended for supporting European code page.

Font name	Size	Font type
U	5x9	Helvetica
S	8x15	Universal Condensed
M	13x20	Universal Condensed
WB	18x30	Universal
WL	28x52	Sans Serif Bold
XU	5x9	Helvetica
XS	17x17	Universal Condensed Bold
XM	24x24	Universal Condensed Bold
XB	48x48	Universal Condensed Bold
XL	48x48	Universal

Refer to the European code page specification for the print character set.

12.23 System

Forced Tear Off

ESC+TK

Hexadecimal code	ESC	TK	Parameter
	$<1B>_{16}$	$<54>_{16}<4B>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Executes Tear off compulsory.

[Format]
<TK>

[Coding Example]
<A>
<TK>
<Z>

[Supplementary Explanation]
1. This command can be specified only in Tear off mode.
2. With this command, the printer executes Tear off motion without waiting the time set by command <TW>. If the next data is received before Tear off motion, Tear off is executed compulsory.
3. This command cannot be used in combination with other commands.

[Note]
This command can be used to save the time set by command <TW>, if it is sure that there is no following item.

12.24 System

Option Waiting Time

ESC+TW

Hexadecimal code	ESC	TW	Parameter
	$<1B>_{16}$	$<54>_{16}<57>_{16}$	aaa
Initial value	aaa = 010(1000ms)		

Valid range and term of command	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifies waiting time for optional device

[Format]

<TW>aaa

●Parameter

aaa [Waiting time] = Valid range: 005 to 200 (unit: 100ms)

[Coding Example] (waiting time = 1.5 seconds)

<A>
<TW>015
<Z>

[Supplementary Explanation]

1. This command specifies, in Tear-off mode, the waiting time between print completion and Tear-off motion.
2. The set parameter becomes valid soon after receiving the command and will be retained after power off.

12.25 System

Delete CR/LF

ESC+CL

Hexadecimal code	ESC	CL	Parameter
	$<1B>_{16}$	$<50>_{16}<4D>_{16}$	a
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Deletes CR/LF included in print commands.

[Format]
<CL>a

●Parameter

a [Delete CR/LF]	=	0	:	Do not delete CR/LF
		1	:	Deletes CR/LF

[Coding Example]
<A>
<CL>1
<Z>

[Supplementary Explanation]
1. Delimit Start of Data Transmission <A> and End of Data Transmission <Z> with this command for use.
2. This command cannot be used in combination with other commands.

13 Calendar Command

13.1 Calendar

Calendar Setup	ESC+WT

Hexadecimal code	ESC	WT	Parameter
	$<1B>_{16}$	$<57>_{16}<54>_{16}$	aabbccddee
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifying the calendar.

[Format]
<WT>aabbccddee

●Parameter

a [Year]	=	Valid Range	:	00 to 35
b [Month]	=	Valid Range	:	01 to 12
c [Day]	=	Valid Range	:	01 to 31
d [Hour]	=	Valid Range	:	00 to 23
e [Minutes]	=	Valid Range	:	00 to 59

[Coding Example] 2020.1.1 13:13
<A>
<WT>2001011313
<Z>

[Supplementary Explanation]
1. This command requires optional calendar IC and it is no usable without IC.
2. Valid calendar setting value is from year: 2000, month: 1, day: 1, hour: 00, minutes: 00 to year: 2035, month: 12, day: 31, hour: 23, minutes: 59.

13.2 Calendar

Calendar Arithmetic (Add) — ESC+WP

Hexadecimal code	ESC	WP	Parameter
	$<1B>_{16}$	$<57>_{16}<50>_{16}$	abbb
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying addition of calendar date.

[Format]
<WP>abbb

●Parameter

a [Specification of Year-Month-Day]	=	Y	:	Year	
		M	:	Month	
		D	:	Day	
		h	:	Time	
		W	:	Week	
b [Specification of additional value for Y-M-D-h]	=	Valid Range of Y	:	0 to 9	
		Valid Range of M	:	00 to 99	
		Valid Range of D	:	000 to 999	
		Valid Range of h	:	000 to 999	
		Valid Range of W	:	00 to 99	

[Coding Example] Specifying and printing out the date that is three months from today.

```
<A>
<WP>M03
<V>100<H>200
<OB><WA>DD/MM/YY
<Q>2
<Z>
```

[Supplementary Explanation]

1. This command requires optional calendar IC and it is no usable without IC.
2. This command adds specified value to specified data (Year, Month, Day, Hour and Week). It can specify the date three months from current date.
3. When there are more than one <WP> in one item, the last one is available.

13.3 Calendar

Calendar Print — ESC+WA

Hexadecimal code	ESC	WA	Parameter
	$<1B>_{16}$	$<57>_{16}<41>_{16}$	a
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying the print of calendar.

[Format]
<WA>Parameter

●Parameter

a [Specification of print contents]	=	YYYY (Year)	Valid Range	:	2000 to 2035
		YY (Year)	Valid Range	:	00 to 35
		MM (Month)	Valid Range	:	01 to 12
		DD (Day)	Valid Range	:	01 to 31
		HH (Hour)	Valid Range	:	00 to 11
		hh (Hour)	Valid Range	:	00 to 23
		mm (Minutes)	Valid Range	:	00 to 59
		ss (Second)	Valid Range	:	00 to 59
		TT (AM/PM)	Valid Range	:	AM/PM
		JJJ (Julian date)	Valid Range	:	001 to 366
		WW (Week)	Valid Range	:	00 to 53
		ww (Week)	Valid Range	:	01 to 54

[Coding Example] Specifying and printing out the date that is three months from today.

```
<A>
<WP>M03
<V>100<H>200
<OB><WA>DD/MM/YYhh:mm
<Q>2
<Z>
```

[Supplementary Explanation]

1. This command requires optional calendar IC and it is no usable without IC.
2. When specifying QTY>2, real-time printing will be performed per label.
3. This command specification is available up to 6 locations within one form.
4. Up to 16 characters are available for calendar print data.
5. In the [Parameter] above, count the initiation of WW (Week) as [0], and ww (Week) as 1.
6. Specify the font type for calendar printing by font command (refer to the available command below) before this command.

WW/ww command example
Ex.1) January in 2008, The year of Jan 1 begins with Mon, Tue, Wed, and Thu.

M	T	W	T	F	S	S	WW	ww
31	**1**	**2**	**3**	**4**	**5**	**6**	wk0	wk1
7	**8**	**9**	**10**	**11**	**12**	**13**	wk1	wk2
14	**15**	**16**	**17**	**18**	**19**	**20**	wk2	wk3
21	**22**	**23**	**24**	**25**	**26**	**27**	wk3	wk4
28	**29**	**30**	**31**	1	2	3	wk4	wk5

・2007/12/31: WW (week) prints week 0. (ww (week) prints week 1.)
・2008/01/25: WW (week) prints week 3. (ww (week) prints week 4.)
・2008/01/28: WW (week) prints week 4. (ww (week) prints week 5.)
・2008/02/03: WW (week) prints week 4. (ww (week) prints week 5.)

Ex.2) January in 2010, the year of Jan 1 begins with Fri, Sat, and Sun.

M	T	W	T	F	S	S	WW	ww
28	29	30	31	**1**	**2**	**3**	wk52	wk53
4	**5**	**6**	**7**	**8**	**9**	**10**	wk 0	wk 1
11	**12**	**13**	**14**	**15**	**16**	**17**	wk 1	wk 2
18	**19**	**20**	**21**	**22**	**23**	**24**	wk 2	wk 3
25	**26**	**27**	**28**	**29**	**30**	**31**	wk 3	wk 4

・2010/1/1: WW (week) prints week 52. (ww (week) prints week 53.)
・2010/1/4: WW (week) prints week 0. (ww(week) prints week1.)

Note: The yeas Jan 1 begins with Fri, Sat and Sun, the second week of January is set as week 0 (ww(week): week1).

7. Correct calendar is not printed in following condition.

The time data will be edited firstly when the host cannot send whole print data of one item to the printer (e.g. printer's buffer is full) and also received data included the calendar print command. The printer will print the calendar when receiving one item data after taking a long time and completing editing all data, and the printed calendar is not the time of printing but the time of editing time data.

[Valid command]

Print position	<V>	<H>								
Modification	<P>	<L>	<%>	<R>						
font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>			
	<U>	<S>	<M>	<WB>	<WL>					
	<X20>	<X21>	<X22>	<X23>	<X24>					

14 Memory Card Command

14.1 Memory Card

Card Slot for Use	ESC+CC

Hexadecimal code	ESC	CC	Parameter
	$<1B>_{16}$	$<43>_{16}<43>_{16}$	a
Initial value	a=1		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Specifying the slot number for use.

[Format]
<CC>a

●Parameter
a [Slot number] = 0 : Slot 0 (Default: Printer memory)
1 : Slot 1 (Default: FROM)

[Coding Example]
<A>
<CC>1
<GI>H003003001FF000000～000000FF
<Z>

[Supplementary Explanation]
1. The allocation of the slot number can be changed from the above default in the memory card mode.
2. It is necessary to specify when accessing to "Printer's memory" and "FROM".
3. Specifying the unused slot becomes command error.
4. When specifying slot number 0 (printer's memory), registration other than using the external character registration command is not available.

[Note]
Don't power off while accessing memory.

14.2 Memory Card

Memory Card Initialization — ESC+FM

Hexadecimal code	ESC	FM	Parameter
	$<1B>_{16}$	$<46>_{16}<4D>_{16}$	aaaaaaaa
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying the format (initialization) of memory card.

[Format]

<FM>aaaaaaaa

●Parameter

a [User ID] = Specifying up to 8 bytes in alphanumeric and symbols

[Coding Example]

<A>
<CC>1
<FM>satocard
<Z>

[Supplementary Explanation]

1. Specify slot number registered with Card Slot for Use <CC> prior to this command <BFJ> by all means.
2. This command <FM> is for formatting a memory card; therefore, it cannot be used in combination with other commands.
3. Initialization takes sometime. Do not send any command until the initialization finishes.
4. The error occurs when specifying the slot allocated to the printer's memory.

[Note]

Do not turn off the printer when accessing to the memory. When the printer power is off while memory accessing, the data in the accessed media may be corrupted.

14.3 Memory Card

Memory Card Initialization

ESC+BJF

Hexadecimal code	ESC	BJF	Parameter
	$<1B>_{16}$	$<42>_{16}<4A>_{16}<46>_{16}$	aaaaaaaa
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying the format (initialization) of memory card.

[Format]

<BJF>aaaaaaaa

●Parameter

a [User ID] = Specify up to 8 bytes in alphanumeric and symbols

[Coding Example]

<A>
<CC>1
<BJF>satocard
<Z>

[Supplementary Explanation]

1. Specify slot number registered with Card Slot for Use <CC> prior to this command <BFJ> by all means.
2. This command <BFJ> is for formatting a memory card; therefore, it cannot be used in combination with other commands.
3. Initialization takes sometime. Do not send any command until the initialization finishes.
4. The error occurs when specifying the slot allocated to the printer's memory.

[Note]

Do not turn off the printer when accessing to the memory. When the printer power is off while memory accessing, the data in the accessed media may be corrupted.

14.4 Memory Card

Memory Card Status Print

ESC+FP

Hexadecimal code	ESC	FP	Parameter
	$<1B>_{16}$	$<46>_{16}<50>_{16}$	Nil
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Printing status of memory card.

[Format]
<FP>

[Coding Example]
<A>
<CC>1
<FP>
<Z>

[Supplementary Explanation]
1. Be sure to specify the slot number used for the Card Slot for Use <CC> before <FP>.
2. This command is for printing status of memory card; therefore, it cannot be used in combination with other commands.
3. Status can be checked with the label of 68mm width and 90mm length.

[Note]
Do not turn off the printer while accessing the memory.

14.5 Memory Card

Memory Card Status Print

ESC+BJS

Hexadecimal code	ESC	BJS	Parameter
	$<1B>_{16}$	$<42>_{16}<4A>_{16}<53>_{16}$	Nil
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Printing status of memory card.

[Format]
<BJS>

[Coding Example]
<A>
<CC>1
<BJS>
<Z>

[Supplementary Explanation]
1. This command is for printing status of memory card; therefore, it cannot be used in combination with other commands.
2. Status can be checked with the label of 68mm width and 90mm length.

[Note]
Do not turn off the printer while accessing the memory.

14.6 Memory Card

Form Overlay Registration

ESC+&S

Hexadecimal code	ESC	&S	Parameter
	$<1B>_{16}$	$<26>_{16}<53>_{16}$	,aa(,bbbb,ccccc)
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The registered data becomes valid.
	Valid range within items	The registered data is valid until the next specification is made.
	Valid range between items	The registered data is valid until the next specification is made.

[Function]
Specifying the registration of fixed print contents to a memory card.

[Format]
<&S>,aa(,bbbb,ccccc)

●Parameter

a [Registration No.]	=	Valid range:	1 to 99
b [Size specification of window width]	=	Valid range:	Refer to the table below (Omissible)
c [Size specification of window height]	=	Valid range:	Refer to the table below (Omissible)

[Coding Example]
<A>
<V>100<H>100<X21>,MODEL
<CC>1
<&S>,1
<Z>

[Supplementary Explanation]
1. Specify slot No. with Card Slot for Use <CC> prior to this command.
2. Delimit Start of Data Transmission <A> and End of Data Transmission <Z> with the format to be registered.
3. Registration of identical registration No. is invalid.
4. Both Print of Graphic <G> and Print of BMP File <GM> can be registered.
5. This command<&S> allows up to 99 registries. Note that the capacity of registry may vary depending on the memory card to be used.
6. Data registered with this command<&S> can be cleared with Clear <*>R.
7. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Note]
Do not turn off the printer while accessing the memory.

[Valid Range]

Head density	Valid Range (dot)	
	Horizontal size of the window	Vertical size of the window
8dots/mm (203 dpi)	50 to 832	50 to 20000
12dots/mm (305 dpi)	50 to 1248	50 to 18000
24dots/mm (609 dpi)	50 to 2498	50 to 9600

[Valid Command]

Print position	<V>	<H>								
Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>	<RD>	<$=>	<K1>
	<K2>	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>
	<k2>	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	<U>
	<S>	<M>	<WB>	<WL>	<X20>	<X21>	<X22>	<X23>	<X24>	
Barcode	<B>	<BC>	<BG>	<BI>		<D>	<D><d>	<BD>	<BT>	<BW>
	<BP>	<BF>	<BS>	<BL>	<BL><d>	<BM>				
2D Code	<2D10>	<BK>	<2D12>	<2D20>	<BV>	<2D30>	<2D31>	<2D32>	<BQ>	
	<2D50>	<BX>	<2D51>							
Composite symbol	<EU>									
Modification	<WD>	<FW>	<(>	<RF>	<FC>	<FT>	<RM>			
Graphic	<G>	<GM>	<GP>							

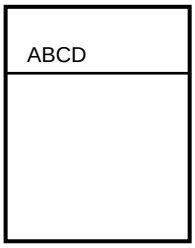
In general, this command is used for [Registration number] only. Specification of window height and width will control the movement with Vertical Print Position <V> and Horizontal Print Position <H> at the time of calling. For the movement at the time of calling, if registered area is exceeding print area, the portion outside of print area will not be printed.

The following are the brief operation.

(1)Normal (To register)

```
<A>
<V>100<H>100<P>2<L>0202
<X23>,0ABCD
<V>60<H>60
<FW>0808V800H400
<V>320<H>60
<FW>04H400
<CC>1
<&S>,1
<Z>
```

Registered image



(2) When print is specified after the command <&S>

```
<A>
<V>100<H>100<P>2<L>0202
<X23>,0ABCD
<V>60<H>60
<FW>0808V800H400
<V>320<H>60
<FW>04H400
<CC>1
<&S>,1
<V>200<H>100<OB>12345
<Z>
```

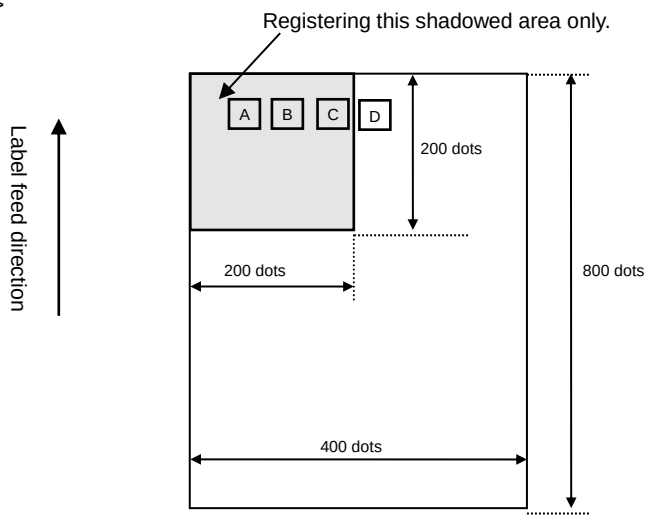
Anything specified prior to the command <&S> will be registered as form overlay.

← Printing out this part

(3) When window size is specified

Label Size <A1>08000400, Window width [200], Window height[200]

```
<A>
<A1>08000400
<V>100<H>00<P>2<L>0202
<X23>,0ABCD
<CC>1
<&S>,1,200,200
<Z>
```



14.7 Memory Card

Form Overlay Call

ESC+&R

Hexadecimal code	ESC	&R	Parameter
	$<1B>_{16}$	$<26>_{16}<52>_{16}$	,aa
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Invoking the contents in memory card with Registration of Form Overlay <&S>.

[Format]

<&R>,aa

●Parameter

a [Registration Number] = Valid Range : 1 to 99

[Coding Example]

<A>
<CC>1
<&R>,1
<Z>

[Supplementary Explanation]

1. Specify slot number of Card Slot for Use <CC> prior to this command when using.
2. This command can be combined with different registration No. and printed.
3. When registration No. is not specified, this command will be ignored.
4. If specifying unregistered No., Read/Write error will occur.
5. When registering without specifying window, Vertical Print Position <V> and Horizontal Print Position <H> will be ignored and V1 and H1 (Start position of drawing area) will be determined.
6. When specifying and registering window, movement with <V> and <H> will be enabled.
   Note that when exceeding print area, the portion outside of print area will not be printed.
7. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Note]

Do not turn off the printer while accessing the memory.

[Valid Command]

Print position	<V>	<H>								

14.8 Memory Card

Format Registration

ESC+YS

Hexadecimal code	ESC	YS	Parameter
	$<1B>_{16}$	$<59>_{16}<53>_{16}$	,aaa
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Registering print format.

[Format]
<YS>,aaa

●Parameter
a [Format registration number] = Valid Range : 1 to 999

[Coding Example]
<A>
<CC>1
<YS>,1
</N>,3,3
<%>0<V>100<H>200<P>2<L>0101<XM>ABC
<Z>

[Supplementary Explanation]
1. When registering multiple formats, Delimit Start of Data Transmission <A> and End of Data Transmission <Z> with one format.
2. Specify Card Slot for Use <CC> prior to this command when using.
3. Use this command and Registration of Field </N> as a pair.
4. Attempts to re-register with registered No., error will occur, and the targeted content will be printed.
5. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Notes]
1. Do not turn off the printer while accessing the memory.
2. The maximum registration with </N> is 99 fields. (Refer to the customizable print command of the field registration (ESC+/N) for the commands can be registered.)
3. The maximum registration with other than </N> is 50 fields. Refer to the customizable print command for the commands can be registered.)

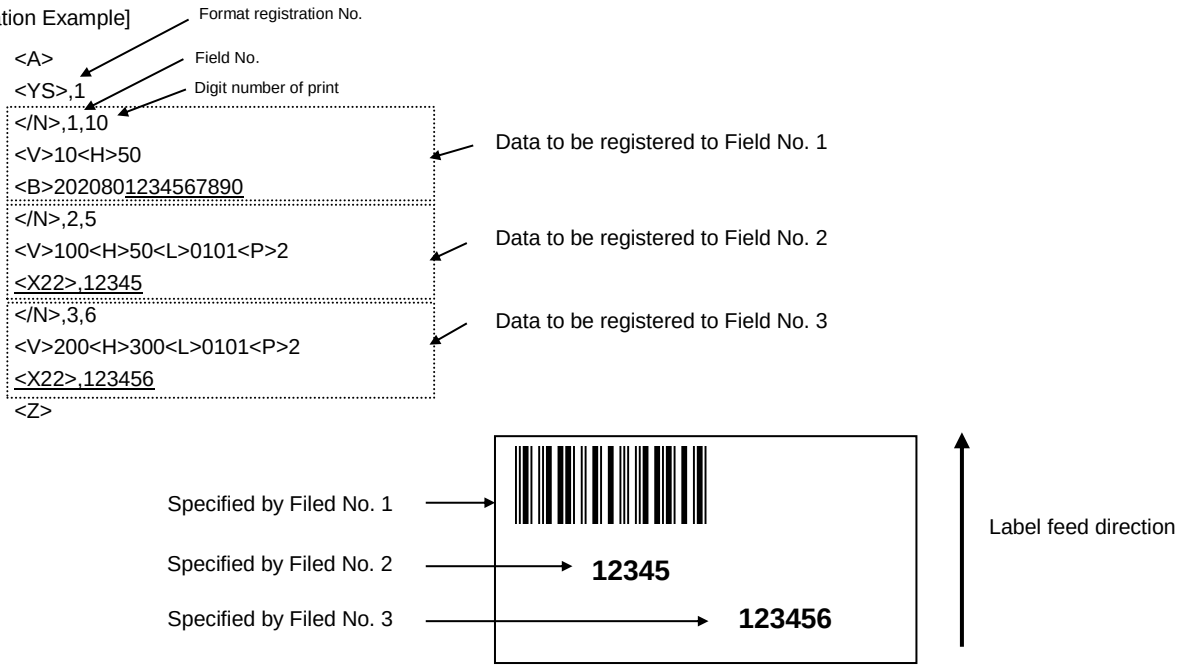
[Point]

Details of Format Registration

A group of commands can be registered to a memory card (option). Once registered, it saves time to specify the identical command group. The registration also allows a change of print data when invoking the format. Such function is called “Format Registration”.
One item consists of different command groups necessary for printing, and such groups are called “Field”. Note that multiple fields make format.

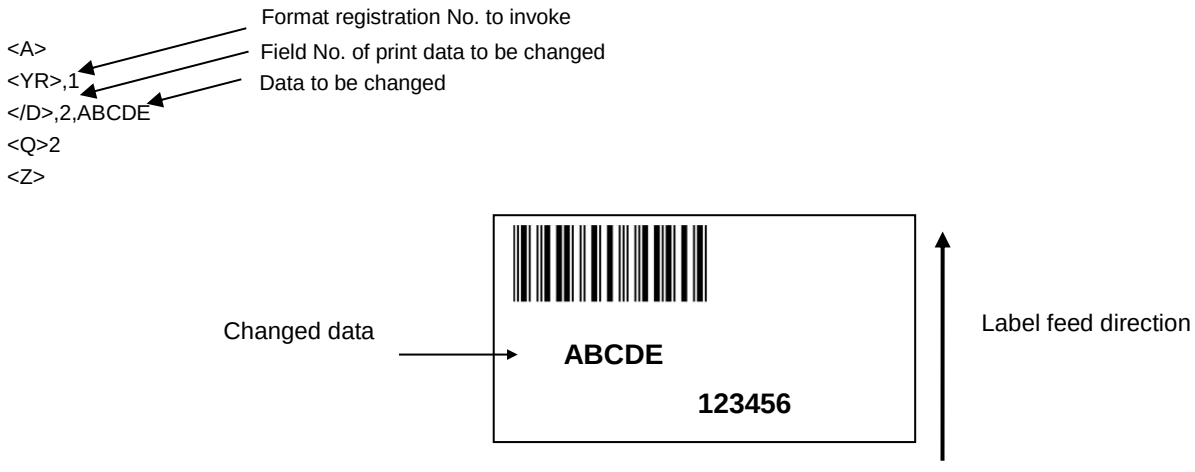
Commands for format registration:
One format consists of a pair of commands from Start of Data Transmission <A> to End of Data Transmission <Z>, and specify Registration of Format <YS> right after <A>. For <YS>, specify [Format registration No.] between 1 and 999. And then, insert Registration of Field </N> after <YS> to specify [Field No.] and [Digit No. of print quantity].
After [Field No.] and [Digit No. of print quantity] are entered, specify print position, character type, barcode, and so on.

[Registration Example]



Invoking the registered print contents
Specify saved [Format registration No.] between 1 and 999 with Format Call <YR>.
To change print data, use Print of Field <D> to specify [Field No.] to be changed, and continuously specify the changed print data.
Note that the underlined parts in the [Registration Example] are changeable.

Calling Example



Available registration command is as follows.

[Available registration command]

Print position	<V>	<H>								
Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>	<RD>	<$=>	<K1>
	<K2>	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>
	<k2>	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	
	<U>	<S>	<M>	<WB>	<WL>	<X20>	<X21>	<X22>	<X24>	
Barcode	<B>	<BC>	<BG>	<BI>		<D>	<D><d>	<BD>	<BT>	<BW>
Modification	<P>	<L>	<PS>	<PR>	<%>	<FW>	<(>	<WD>		
system	<A1>	<A3>	<AX>	<AR>						
Memory card	<&R>	</N>	<GR>	<GC>						

(Caution) The operation when registering a command other than available command is not guaranteed.

14.9 Memory Card

Registration of Field

ESC+/N

Hexadecimal code	ESC	/N	Parameter
	$<1B>_{16}$	$<2F>_{16}<4E>^{16}$	,aa,bb
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within item	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Registering items within the field of Registration of Format <YS>.

[Format]
</N>,aa,bb

●Parameter
a [Field number] = Valid Range : 1 to 99
b [Digit number of print] = Valid Range : 1 to 99

[Coding Example]
<A>
<CC>1
<YS>, 1
</N>,1,3
<%>0<V>100<H>200<P>2<L>0101<XM>ABC
</N>,2,5
<%>0<V>200<H>200<P>2<L>0101<OA>12345
</N>,3,8
<%>0<V>300<H>40<B>40208049123456
<Z>

[Supplementary Explanation]
1. Specify the value of [Field number] in ascending order.
2. Specify Vertical Print Position <V> and Horizontal Print Position <H> for each field. If not, default value will be set.
3. Specification of digit number when printing external character.
   External code H, one external character has 4 digits; thus, three external characters make 12 digits for printing.
   External code B, one external character has 2 digits; thus, three external characters make 6 digits for printing.
4. Use this command and Registration of Format <YS> as a pair.
5. Due to the memory capacity limit, it may not save up to 99 registries.
6. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Note]
Do not turn off the printer while accessing the memory.

[Designable Commands for the Change of Print]

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<OA>	<OB>	<RD>	<$=>	<K1>
	<K2>	<K3>	<K4>	<K5>	<K8>	<K9>	<KA>	<KB>	<KD>	<k1>
	<k2>	<k3>	<k4>	<k5>	<k8>	<k9>	<kA>	<kB>	<kD>	
	<X20>	<X21>	<X22>	<X23>	<X24>					
Modification	<P>	<L>	<PS>	<PR>	<%>					
Barcode	<B>	<BC>	<BG>	<BI>		<D>	<D><d>	<BD>	<BT>	<BW>
	<BL>									

14.10 Memory Card

Format Call	ESC+YR

Hexadecimal code	ESC	YR	Parameter
	$<1B>_{16}$	$<59>_{16}<52>_{16}$	,aaa
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Invoking and printing out the format registered with Registration of Format <YS>.

[Format]
<YR>,aaa

●Parameter
a [Format registration Number] = Valid Range : 1 to 999

[Coding Example]
<A>
<CC>1
<YR>,1
</D>,1,DEF
</D>,2,78901
</D>,3,49000238
<Q>2
<Z>

[Supplementary Explanation]
1. This command cannot invoke multiple formats between Start of Data Transmission <A> and End of Data Transmission <Z>.
2. Use this command and Print of Field </D> as a pair.
3. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Note]
Do not turn off the printer while accessing the memory.

14.11 Memory Card

Print of Field

ESC+/D

Hexadecimal code	ESC	/D	Parameter
	$<1B>_{16}$	$<2F>_{16}<44>_{16}$	,aa,n～n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter is valid until the next valid setting.
	Valid range between items	The set parameter is valid until the next valid setting.

[Function]
Invoking the items registered with Registration of Field and specifying data.

[Format]
</D>,aa,n~n

●Parameter
a [Field number] = Valid Range : 1 to 99
n [Data] = Data to be changed

[Coding Example]
<A>
<CC>1
<YR>,1
</D>,1,DEF
</D>,2,78901
</D>,3,49000238
<Q>2
<Z>

[Supplementary Explanation]
1. Digit number of print is valid within the range specified with Registration of Field </N>.
2. When digit number of this command is larger than the one specified with Registration of Field </N>, only the defined digit No. will be available for printing.
3. Use this command and Format Call <YR> as a pair.
4. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Note]
Do not turn off the printer while accessing the memory.

14.12 Memory Card

Registration of Graphic

ESC+GI

Hexadecimal code	ESC	GI	Parameter
	$<1B>_{16}$	$<47>_{16}<49>_{16}$	abbbcccdddn~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying the registration of graphic pattern data.

[Format]

<GI>abbbcccdddn~n

●Parameter

a [Selection of data transfer in HEX or BIN] = H : Hex data
B : Binary data

Hex data (Divide 8 bits data into 4 bits and outputs it as hex code corresponding to ASCII)
Binary data (Output 8 bits data as one character data all at once)

b [Specification of crosswise graphic area per byte] = Refer to the table below
c [Specification of lengthwise graphic area per byte] = Refer to the table below
d [Registration number] (Identification number when invoking) = Valid range: 1 to 999
n [Data] = Graphic data

[Coding Example 1] [H: HEX data] is specified for [Data specification by HEX and BIN]

[□] is registered to the 999th of the slot 1 by the below.

<A>
<CC>1
<GI>H001001999<4646383138313831383138313831383138314646>$_{16}$
<Z>

[Coding Example 2] [B: Binary data] is specified as Data specification by HEX and BIN]

[□] is registered to the 999th of the slot 1 by the below.

<A>
<CC>1
<GI>B001001999<FF8181818181818181FF>$_{16}$
<Z>

[Supplementary Explanation]

1. Specify the card slot number used for Card Slot <CC> prior to this command.
2. Specify registered data only.
3. To change the registered content, clear it with Clear <*> to re-register.
4. Graphic Call <GR> is for printing out the data registered with Registration of Graphic <GI>.
5. When data is not registered properly, print error may occur. For details of data format, refer to Print of Graphic <G>.
6. Attempts to re-register with registered No., error will occur, and the targeted content will be printed.
7. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Note]

Don't power off while accessing the memory.

[Specified Range]

Head density	Maximum byte in horizontal direction	Maximum byte in vertical direction
8dots/mm (203dpi)	104	400
12dots/mm (305dpi)	156	600
24dots/mm (609dpi)	312	999

14.13 Memory Card

Graphic Call — ESC+GR

Hexadecimal code	ESC	GR	Parameter
	$<1B>_{16}$	$<47>_{16}<52>_{16}$	aaa
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Invoking and printing out the data registered with Registration of Graphic <GI>.

[Format]
<GR>aaa

●Parameter
a [Registration number] = Valid Range : 1 to 999

[Coding Example]
<A>
<V>100<H>100
<CC>1
<GR>1
<Q>1
<Z>

[Supplementary Explanation]
1. Specify Card Slot for Use <CC> prior to this command when using.
2. Ignoring Start Point Correction <A3> and making no correction.
3. Rotation <%> and Enlargement <L> are available for the invoked graphic.
4. The error occurs when unused or the slot which the printer is allocated is specified.

[Note]
Do not turn off the printer while accessing the memory.

14.14 Memory Card

BMP File Registration

ESC+GT

Hexadecimal code	ESC	GT	Parameter
	$<1B>_{16}$	$<47>_{16}<54>_{16}$	aaa,bbbbb,n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within item	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying the registration of BMP file created by such as Paint Brush of Windows.

[Format]

<GT> aaa,bbbbb,n~n

●Parameter

a [Registration number] = Valid Range : 1 to 999

b [Total bytes of BMP file] = Valid Range : 1 to 99999
Specify the file size of BMP file for total bytes.

n [Data] = BMP file data
Data is sent as binary data (Outputs 8 bits as one character data all at once)

[Coding Example]

<A>
<CC>1
<GT>1,12345,<424D00～00>$_{16}$
<Z>

[Supplementary Explanation]

1. Data is sent as binary data (Outputs 8 bits as one character data all at once). In this case, file size of BMP file becomes the total bytes, and BMP file data becomes data.
2. When [Total bytes of BMP file] is not matching the transfer data, this may cause malfunction.
3. Total bytes are the file size displayed at [Property] and such.
4. BMP file is available in Black/White mode only. In color mode, printing will not be performed due to command error. Also, this command is not valid for BMP compressed file. Make sure that the file extension is set to [BMP] before printing.
5. Specify Card Slot for use <CC> prior to <GT> command.
6. The error occurs when unused or the slot which the printer is allocated is specified.

[Note]

Do not turn off the printer while accessing the memory.

14.15 Memory Card

BMP File Call

ESC+GC

Hexadecimal code	ESC	GC	Parameter
	$<1B>_{16}$	$<47>_{16}<43>_{16}$	aaa
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Invoking and printing out the data registered with Registration of BMP File<GT>.

[Format]
<GC>aaa

●Parameter
a [Registration number] = Valid Range : 1 to 999

[Coding Example]
<A>
<V>100<H>100
<CC>1
<GC>1
<Q>2
<Z>

[Supplementary Explanation]
1. Rotation <%> and Enlargement <L> are available for the invoked data.
2. Specify Card Slot for Use <CC> prior to this command when using.
3. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Note]
Do not turn off the printer while accessing the memory.

14.16 Memory Card

PCX File Registration

ESC+PI

Hexadecimal code	ESC	PI	Parameter
	$<1B>_{16}$	$<50>_{16}<49>_{16}$	aaa,bbbbb,n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying the registration of PCX file created by such as Paint Brush of Windows.

[Format]

<PI>aaa,bbbbb,n~n

●Parameter

a [Registration number] = Valid Range : 1 to 999

b [Total bytes of PCX file] = Valid Range : 1 to 99999

* Specify the file size of PCX file for total bytes.

n [Data] = PCX file data

* Data is sent as binary data (Outputs 8 bits as one character data all at once)

[Coding Example]

<A>
<CC>1
<PI>001,12345,n~n
<Z>

[Supplementary Explanation]

1. Data is sent as binary data (Outputs 8 bits as one font data all at once) (Total bytes are PCX file size and Data are PCX file data)
2. In PCX file, 128 bytes of data is for the header part and the rest of data is for the image data.
3. When [Total bytes of PCX file] is not matching the transfer data, this may become the cause of malfunction.
4. Total bytes are the file size displayed at [Property] and such.
5. PCX file is available in Black/White mode only. In color mode, printing will not be performed due to command error. Also, this command is not valid for PCX compressed file. Make sure that the file extension is set to [PCX] before printing.
6. Specify Card Slot for Use <CC> prior to this command<PI> when using.
7. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Note]

Do not turn off the printer while accessing the memory.

14.17 Memory Card

PCX File Call

ESC+PY

Hexadecimal code	ESC	PY	Parameter
	$<1B>_{16}$	$<50>_{16}<59>_{16}$	aaa
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set command becomes invalid.

[Function]
Invoking and printing out the data registered with Registration of PCX File <PI>.

[Format]
<PY>aaa

●Parameter
a [Registration number] = Valid Range : 1 to 999

[Coding Example]
<A>
<V>100<H>100
<CC>1
<PY>001
<Q>2
<Z>

[Supplementary Explanation]
1. Rotation <%> and Enlargement <L> are available for the invoked data.
2. Specify Card Slot for Use <CC> prior to this command <PY> when using.
3. The error occurs when specifying unused or specifying the slot which the printer is allocated.

[Note]
Do not turn off the printer while accessing the memory.

14.18 Memory Card

Memory Card Clear

ESC+*

Hexadecimal code	ESC	*	Parameter
	$<1B>_{16}$	$<2A>_{16}$	a(,bbb)
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within item	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Clearing the entire contents in memory card (option).

[Format]
<*>a(,bbb)

●Parameter
a [Item to be cleared] = G: SATO Graphic
(Clearing graphic registered with Registration of Graphic <GI>)
P: PCX file
(Clearing PCX file registered with Registration of PCX File <PI>)
M: BMP file
(Clearing BMP file registered with Registration of BMP File <GT>)
F: Format
(Clearing format registered with Registration of Format <YS>)
O: True Type font
(Clearing True Type font registered with Registration of True Type Font <BJ>)
R: Form Overlay
(Clearing form overlay registered with Registration of Form Overlay <&S>)

b [Registration No.] = Valid range: 000 to 999 (Omissible) True Type font
001 to 999 (Omissible) Except True Type font
(When omitting Registration No., all the registered data will be cleared.)

[Coding Example1] Clearing 001 of SATO graphic
<A>
<CC1>
<*>G,001
<Z>

[Coding Example2] Clearing 002 of PCX file
<A>
<CC1>
<*>P,002
<Z>

[Coding Example3] Clearing Form Overlay entirely
<A>
<CC1>
<*>R
<Z>

[Supplementary Explanation]
1. Delimit Start of Data Transmission <A> and End of Data Transmission <Z> with this command <*> for use.
2. Specify slot number of Card Slot for Use <CC> prior to this command<*> when using.

[Point]
To clear all data of memory card, use Format <BJF>.

[Note]
Do not turn off the printer while accessing the memory.

14.19 Memory Card

Memory Card 16x16 dots External Font Registration

ESC+T1

Hexadecimal code	ESC	T1	Parameter
	$<1B>_{16}$	$<54>_{16}<31>_{16}$	abbn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Registering 16x16 dots external fonts in the memory card.

[Format]
<T1>abbn~n

●Parameter
a [Registration data selection] = H: HEX character
B: Binary code

b [Registration font code address]

Using Kanji set <KS> command to set Japanese (01,2)
JIS code
H: Up to 95 registrations from 21H to 7FH is available.
B: Up to 95 registrations from "21" to "7F" is available.
Shift JIS code
H: Up to 95 registrations from 40H to 9EH is available.
B: Up to 95 registrations from "40" to "9E" is available.
Unicode
H: Up to 95 registrations from 00H to 5EH is available.
B: Up to 95 registrations from "00" to "5E" is available.

Using Kanji set <KS> command to set other than Japanese
(3 (China Simplified Chinese), 5 (China Traditional Chinese), 6 (Korean))
H: Up to 95 registrations from 21H to 7FH is available.
B: Up to 95 registrations from "21" to "7F" is available.

n [Registered external font data]

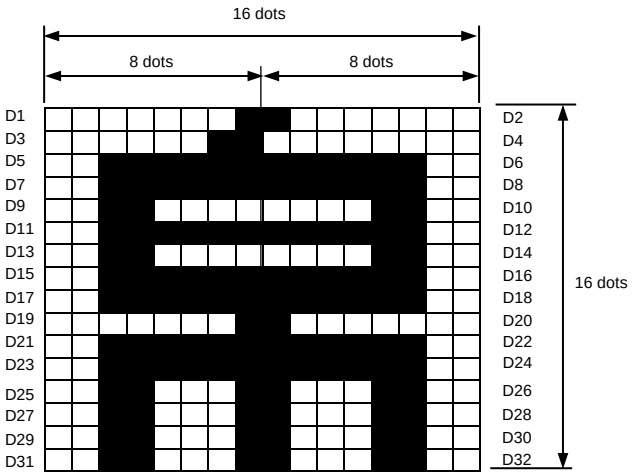
[Coding Example]
<A>
<CC>1
<T1>H2100FF00FF~3C0000FF
<Z>

[Supplementary Explanation]
1. Overwriting registration data is available.
2. Specify slot registered with Card Slot for Use <CC> prior to this command<T1> by all means.
3. The code to specify in the registration font code address needs to match the Kanji set (<KS>) and Kanji code (<KC>).
4. When use <T1> with another registration command, it may occur error because of capacity shortage of the memory card.
In this case, register another command in another memory card, or use a memory card having bigger capacity.

5. Data output is as follows.

External file [16x16]

D1	D2
D3	D4
D5	D6
D31	D32



When registering the external characters described above, D1 data becomes $<01>_{16}$ and D2 data becomes $<80>_{16}$ because D1 consists of [00000001], D2 consists of [10000000].
In the same manner, D3 is $<03>_{16}$, D4 is $<00>_{16}$, D5 is $<3F>_{16}$, D6 is $<FC>_{16}$, and the external registration data will be $<018003003FFC.....>_{16}$ up to D32.

[Note]

Do not turn off the printer while accessing the memory.

14.20 Memory Card

Memory Card 24x24 dots External Font Registration

ESC+T2

Hexadecimal code	ESC	T2	Parameter
	$<1B>_{16}$	$<54>_{16}<32>_{16}$	abbn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is maintained.
	Valid range within item	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Registering 24x24 dots external fonts in the memory card.

[Format]
<T2>abbn~n

●Parameter
a [Registration data selection] = H: HEX character
B: Binary code

b [Registration font code address]

Using Kanji set <KS> command to set Japanese (0,1, 2)
JIS code
H: Up to 95 registrations from 21H to 7FH is available.
B: Up to 95 registrations from "21" to "7F" is available.
Shift JIS code
H: Up to 95 registrations from 40H to 9EH is available.
B: Up to 95 registrations from "40" to "9E" is available.
Unicode
H: Up to 95 registrations from 00H to 5EH is available.
B: Up to 95 registrations from "00" to "5E" is available.

Using Kanji set <KS> command to set other than Japanese
(3 (China Simplified Chinese), 5 (China Traditional Chinese), 6 (Korean))
H: Up to 95 registrations from 21H to 7FH is available.
B: Up to 95 registrations from "21" to "7F" is available.

n [Registered external font data]

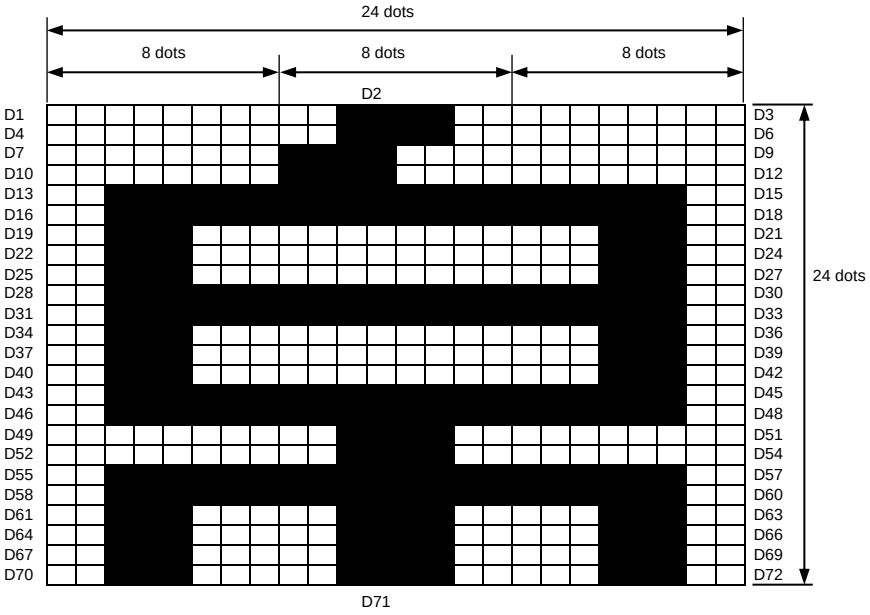
[Coding Example]
<A>
<CC>1
<u><T2>H2100FF00FF~3C0000FF</u>
<Q>2
<Z>

[Supplementary Explanation]
1. Overwriting registration data is available.
2. Specify slot registered with Card Slot for Use <CC> prior to this command<T2> by all means.
3. The code to specify in the registration font code address needs to match the Kanji set (<KS>) and Kanji code (<KC>).
4. When use <T2> with other registration command, error may occur because of capacity shortage of the memory card.
In this case, register another command in another memory card, or use a memory card having bigger capacity.

5. Data output is as follows.

External file [24x24]

D1	D2	D3
D4	D5	D6
D7	D8	D9
|	|	|
D70	D71	D72



When registering the external characters described above, D1 data becomes <00>16, D2 data becomes <3C>16 and D3 data becomes <00>16 because D1 consists of [00000000], D2 consists of [00111100] and D3 consists of [00000000].
In the same manner, D4 becomes $<00>_{16}$, D5 becomes $<3C>_{16}$ and D6 becomes $<00>_{16}$, and the external registration data are specified to <003C00003C00...> and up to D72.

[Note]

Do not turn off the printer while accessing the memory.

14.21 Memory Card

Horizontal Writing External Font Call	ESC+K1(K2)

Hexadecimal code	ESC	K1(K2)	Parameter
	$<1B>_{16}$	$<4B>_{16}<31>_{16}(<4B>_{16}<32>_{16})$	abbn~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying call of external fonts registered in memory card.

[Format]
<K1>an~n
<K2>an~n

●Parameter
a [External font registration] = H : HEX character
B : Binary code
I : HEX character with smoothing
C : Binary code with smoothing
J : HEX character with highlighting
D : Binary code with highlighting
K : HEX character with smoothing and highlighting
E : Binary code with smoothing and highlighting

n~n [Registration code] = Specifying Kanji (0,1, 2) with Kanji set command <KS>(0,1, 2)
JIS code
H, I, J, K: "9021" to "907F"
B, C, D, E: 9021H to 907FH
Shift JIS code
H, I, J, K: "F040" to "F09E"
B, C, D, E: F040H to F09EH
Unicode
H, I, J, K: "E000" to "E05E"
B, C, D, E: E000H to E05EH
Using Kanji set <KS> command to set other than Japanese
(3 (China Simplified Chinese), 5 (China Traditional Chinese), 6 (Korean))
H, I, J, K: "8021" to "807F"
B, C, D, E: 8021H to 807FH

[Coding Example]
<A>
<KS>0
<CC>1
<V>100<H>100
<K1>H9021
<Q>2
<Z>

[Supplementary Explanation]
1. Specify slot No. registered with Card Slot for Use <CC> prior to this command<K1> by all means.
2. Valid range of registration code varies according to the Kanji set command <KS>.

[Note]
Do not turn off the printer while accessing the memory.

14.22 Memory Card

Vertical Writing External Font Call

ESC+k1(k2)

Hexadecimal code	ESC	k1(k2)	Parameter
	$<1B>_{16}$	$<6B>_{16}<31>_{16}(<6B>_{16}<32>_{16})$	abbn~n
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

Specifying call of external fonts registered in memory card.

[Format]

<k1>an~n
<k2>an~n

●Parameter

a [External font registration] = H : HEX character
B : Binary code
I : HEX character with smoothing
C : Binary code with smoothing
J : HEX character with highlighting
D : Binary code with highlighting
K : HEX character with smoothing and highlighting
E : Binary code with smoothing and highlighting

n~n[Registration code] = Using Kanji set <KS> command to set Japanese (01,2)
JIS code
H, I, J, K: "9021" to "907F"
B, C, D, E: 9021H to 907FH
Shift JIS code
H, I, J, K: "F040" to "F09E"
B, C, D, E: F040H to F09EH
Unicode
H, I, J, K: "E000" to "E05E"
B, C, D, E: E000H to E05EH
Using Kanji set <KS> command to set other than Japanese
(3 (China Simplified Chinese), 5 (China Traditional Chinese), 6 (Korean))
H, I, J, K: "8021" to "807F"
B, C, D, E: 8021H to 807FH

[Coding Example]

<A>
<V>100<H>100
<RU>1
<k1>H9021
<Q>2
<Z>

[Supplementary Explanation]

1. Specify slot No. registered with Card Slot for Use <CC> prior to this command<k1> by all means.
2. Valid range of registration code varies according to the Kanji set command <KS>.

[Note]

Do not turn off the printer while accessing the memory.

14.23 Memory Card

True Type Font Registration

ESC+BJ ESC+BJD

	ESC	BJ BJD	Parameter
Hexadecimal code	$<1B>_{16}$	$<42>_{16}<4A>_{16}$ $<42>_{16}<4A>_{16}<44>_{16}$ $<42>_{16}<4A>_{16}$	(a・・・ab・・b c・・・cdddde・・・e)
Initial value	Nil		

Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying registration of True Type Font.

[Format]
<BJ>(a・・・ab・・・b
<BJD>c・・・cdddde・・・e
<BJ>)

●Parameter
a [Font description] 40 byte font
b [Date] 10 bytes date data
c [Memory offset] 5 bytes memory offset (HEX)
d [Number of data bytes] Valid Range = 0001 to 9999
e [Font data to download]

[Coding Example] Font= 'abcdefghijabcdefghijabcdefghijabcdefghij' ,Date data=29-08-2010,
Memory offset=0000000220_{16}, Number of data bytes=3001, Font data= 'A00490020....00000000'

<A>
<RU>1
<BJ>(abcdefghijkabcdefghijkabcdefghijkabcdefghij29-08-2010
<BJD>00000002203001A00490020・・・・・・・・・・0000000
<BJ>)
<Z>

[Supplementary Explanation]
Specify slot number of Card Slot for Use <CC> prior to this command when using.

[Note]
Do not turn off the printer while accessing the memory.

14.24 Memory Card

True Type Font Call

ESC+BJT

Hexadecimal code	ESC	BJT	Parameter
	$<1B>_{16}$	$<42>_{16}<4A>_{16}<54>_{16}$	,aa,bb,cc,dd,ee,ffff,n~n
Initial value	Nil		

Valid range and term of command		
	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Specifying True Type Font call.

[Format]
<BJT>,aa,bb,cc,dd,ee,ffff,n~n

●Parameter

a	[Font ID]	Valid Range	:	00 to 99
b	[Horizontal scale factor]	Valid Range	:	01 to 12
c	[Vertical scale factor]	Valid Range	:	01 to 12
d	[Word Pitch]	Valid Range	:	01 to 99
e	[Reserve]	Valid Range	:	00 (Fixed)
f	[Number of print characters]	Valid Range	:	0000 to 9999
n	[Data]			

[Coding Example]
<A>
<V>100<H>200<CC>1
<BJT>,01,02,02,01,00,0004SATO
<Q>
<Z>

[Supplementary Explanation]
Specify slot number of Card Slot for Use <CC> prior to this command when using.

[Note]
Do not turn off the printer while accessing the memory.

15 Intelligent Command

15.1 Intelligent Command

Label Feed Control	ESC+IK

Hexadecimal code	ESC	IK	Parameter
	$<1B>_{16}$	$<49>_{16}<4B>_{16}$	a(,bbbb)
Initial value	Nil		

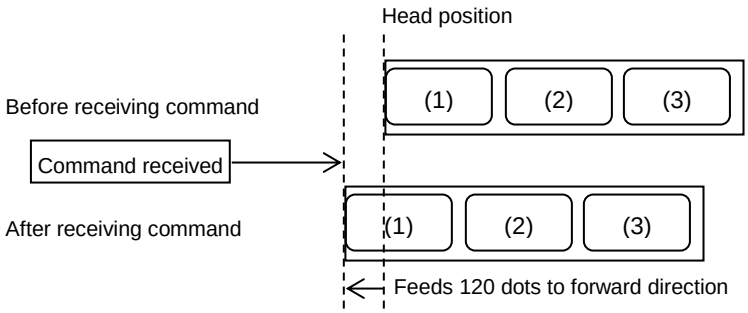
Valid range and term of command	When the power switch is OFF	The set parameter is not maintained.
	Valid range within items	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
Feeding forward or backward for the specified number of labels.

[Format]
<IK>a(,bbbb)

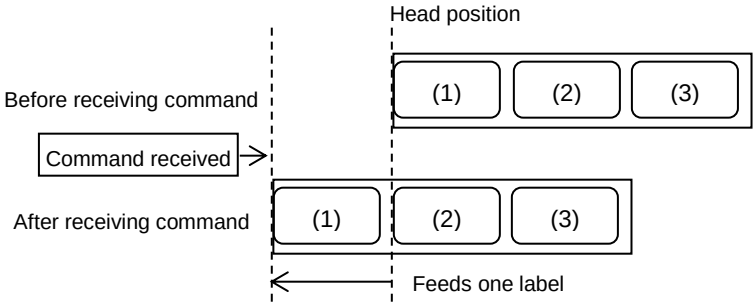
●Parameter
a [Feed direction] = 0 : Forward reed
1 : Backfeed
b [Number of label feed] = Valid Range : Refer to the table in the next page (Omissible only for forward feed)
Feeds one label when omitting this parameter.

[Coding Example1]
<A>
<IK>0,120
<Z>



When print data is received without returning to the original position with <IK>1,120, printing will start from the current stop position.

[Coding Example2] When feeding one label
<A>
<IK>0
<Z>



[Supplementary Explanation]

1. Delimit Start of Data Transmission <A> and End of Data Transmission <Z> with this command. When specifying this command with the same item as print data, the command will be ignored.
2. When setting [Label feed direction] to [1: Backfeed], length of label feed needs to be checked. If this length is very long, it may cause overlapped prints or label may fall off the platen and result in detection error as paper-end.
3. When setting [Thermal transfer] to [Print method], length of label backfeed needs to be under 30mm. Failure to do so may result in detection error as ribbon end. And also, avoid consecutive specification of label feed command for backfeed.
4. In cutter and dispenser mode, do not attempt to backfeed right after cutting and dispensing label.
5. When omitting [No. of label feed] in forward feed, printer motion will be similar to label feed motion when pressing the FEED key in offline state.
6. Label feed motion with this command will be activated at the time of online.
7. Control of feed motion by external signal is not available.
8. When omitting [No. of label feed] in backfeed, label feed will not be performed due to command error.
9. When the sensor is disabled in continuous mode, <IK>0 (omission of [No. of label feed]) will not feed labels.
10. When the print start position is outside of printable area, printing will not be performed due to command error.
11. The valid feeding range in the backward direction is from 6 mm to 60 mm. The command error occurs when the feeding length is out of range and the media is not fed.
12. Actual feed distance may be different from the set value according to the individual difference of each printer, supplies and operating environment. Recommend to adjust the feed value before operation.

[Valid Range]

Head density	Media feed direction = Forward direction feed length (dot)	Media feed direction = Backward direction feed length (dot)
8dots/mm (203 dpi)	48 to 1600	48 to 480
12dots/mm (305 dpi)	72 to 2400	72 to 720
24dots/mm (609 dpi)	144 to 4800	144 to 1440

16 RFID Command

RFID commands can be used only in printers equipped with the RFID option. A command error occurs if the RFID option is not provided.
The continuous mode, cutter mode, dispense mode and tear-off mode are available when the printer is operated in the RFID mode.
Reading and return of data cannot be performed with other than <RU> and [DC2]PK when backfeed is selected before printing in the cutter mode and dispense mode, when the tear-off mode is specified, and when the tag offset is set to other than default. Refer to the table below for the relationship between the print mode and the RFID read/write command.

Corresponding table between the print mode and the RFID read/write command

RFID Command		Printer Type					
		Continuous mode	Tear-off mode	Cutter mode Backfeed after printing (Motion 1)	Cutter mode Backfeed before printing (Motion 2)	Dispense mode Backfeed after printing (Motion 1)	Dispense mode Backfeed before printing (Motion 2)
Write	<IP0>	○	○	○	○	○	○
Read/ Return Data	[DC2]PJ	○	×	○	×	○	×
	<TU>	○	×	○	×	○	×
	<RU2> [DC2]PK	○	○	○	○	○	○

○: Available x: Not available

Note 1: RFID read/write command and return command other than <RU2>-[DC2]PK are not available when the tag offset is adjusted other than default, even if it is "o" marked commands in the operation mode.
Note 2: RFID commands cannot be used when "Ignore sensor" setting is made.
Note 3: RFID is not available in the linerless mode and the cutter with no backfeed mode.
Note 4: In addition to the commands described in the table above, external signal modes 1, 2, 3, 4 are available.

Both single item reception and multiple item reception are available in the receive mode. Make sure to receive the data returned from the printer after sending [DC2]PJ command, and then send the next item data when using multiple receptions.

Print restraint function at the time of command error

You can select whether or not to print by the command error restraint (COMMAND_ERROR_BEHAVIOR) in [RFID] section in RFID mode [DC2]PA command when command error occurred in the item containing RFID print command (<IP0>, <TU>).
The default setting after downloading the program and after default clear is "Do not print".
When "Do not print" is selected and a command error occurs in the item containing the RFID print command, the printer discards the item, halts printing, and then goes OFFLINE, displays the error, and stops.

If the printer shows this screen and stops after sending the item containing the RFID print command, there is a section where the command error occurs in the item.

RFID command classification

RFID print command		RFID setting command		RFID auxiliary command
Write	Read Data	Setting	Return Setting	Read/Return Data
<IP0>	<TU>	<IP5> [DC2]PA <RU>2	[DC2]PB	[DC2]PJ [DC2]PK

16.1 RFID

EPC Code Write

ESC+IP0

Command	ESC	IP0	Parameter
HEX code	$<1B>_{16}$	$<49>_{16}<50>_{16}<30>_{16}$	See under "Parameters".
Default Value	Nil		

Valid range and term of command	When turning off the power switch	The set command is not maintained.
	Valid range within item	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

This command writes the EPC code and other data to the EPC corresponding RFID tag. The standard format (three-character parameter identifier) is used when using the memory area extended for each IC chip manufacturer.

[Format]

[Standard format]

<IP0>e:h(,pcw:xxx)(,epc:xxxx...xxxx)(,usr:xxxx...xxxx)|(,usa:dddd,aaaaa...aaaa)(,lck:bbbbb);

[Conventional format]

<IP0>e:a,c:d,s:d,d:ddddddddddddd(,o:xxx)(,m:bbbbb)(,k:xxxxxxxx)(,a:xxxxxxxx)(,p:xxxxxxxx);

[SSCC96 code conversion]

<IP0>e:c,f:d,c:d,t:d,d:ddddddddddddddddd,n:ddddddddddd(,o:xxx)(,m:bbbbb)(,k:xxxxxxxx)(,a:xxxxxxxx)(,p:xxxxxxxx);

<IP0>e:z(,d:xxxxxxxxxxxxxxxxxxxxxxxx)(,u:xxxxxxxxxxxxxxxx)(,k:xxxxxxxx)(,a:xxxxxxxx)(,p:xxxxxxxx)(,o:xxx)(,m:bbbbb)(,k:xxxxxxxx)(,a:xxxxxxxx)(,p:xxxxxxxx);

[Free mapping]

Note: Typical parameters are shown in the format examples above. Refer to the next item for details on the parameters.

●Parameter

EPC encode type parameter			
e:	EPC encode Type Specify the parameter right after <IP0>. The parameter cannot be omitted.	h	[Standard format] Use the three-character parameter identifier after the declaration. The memory area extended for each IC chip manufacturer can be extended for other than the standard Gen 2 tag.
		a	[Conventional format] SSCC96 code conversion Use the "one-character parameter identifier". When the Company prefix/Serial reference/Filter value is received, and then converted to an SSCC96 compliant code, and written to the tag.
		c	〔Conventional format〕 SGTIN96 code conversion Use the "one-character parameter identifier". When the Company prefix/Serial reference/Filter value is received, and then converted to an GTIN96 compliant code, and written to the tag.
		z	[Conventional format] Free mapping Use the "one-character parameter identifier". When data is written as is without performing code conversion

Standard format

This is the extended format for the tag from IC chip manufacturer having over 96 bits EPC area. <IP0>e: Write these parameters after specifying h.
<IP0>e: The order of the parameters after specifying h doesn't matter.

Three-character parameter identifier

Gen 2 basic operation parameters (can be omitted)		
pcw:	PC rewrite	The PC area contains length information for controlling the number of digits of data to be recorded to the EPC. You can change the number of digits of the EPC data by specifying multiples of four from 4 to 124 in decimal code to this parameter. Specifying this parameter is not necessary in most cases because the length information is written to the PC automatically by judging from the data length specified by epc:, if this parameter is not specified. (Maximum value of the length information of PC is 124 digits.)
afi:	AFI write data	Specify the number from 000 to 1FF in HEX code. Synthesize data together with current PC length information and write.
epc:	EPC write data	Specify 4 to 124 digit number in HEX code corresponding to the traditionally written data in the EPC area. Digits can be varied in multiples of four. When the character string is longer than the digits specified by pcw:, a parameter error occurs, and when the character string is shorter, the blanks are filled with zeros.
usr:	USER memory write	Specify 4 to 128 digit number in HEX code for the batch write to the USER memory. Number of digits should be specified in multiples of four. Note that the maximum number of digits for writing to the USER memory varies depending on the tag to be used.
usa:	USER memory ASCII write	You can specify 2 to 64 digit number in ASCII code for the batch write to the USER memory. Be sure to specify the number in multiples of two. You can also write data containing the control code (00H to 1FH)e. The data that would follow next and the data size information delimited by a comma must be displayed at the beginning of the data. For example, if a character string having a maximum of 64 digits is to be specified, **usa:64,abcde...** must be displayed. Note that the maximum number of digits for writing to the USER memory varies depending on the tag to be used.

Operation parameters in standard format (can be omitted)		
lck:	Lock	Specify the area to be locked by five bits in binary code such as lck:10101. The display order is USER, TID, ACCESS, KILL, EPC, from the top. If the access password is specified, it results in a password lock, and if the access password is not specified, it results in a permanent lock.
apw:	Access password	To perform locking or read protecting with a password, specify an eight-character HEX code.
psw:	Unlocking password	To access an area on which a password lock or password read lock is applied, specify the same number sequence as that used when locking.
kpw:	Kill code	Specify the kill code with eight-character HEX code. You cannot execute the kill by writing the code only.

NXP G2XM/G2XL dedicated secure parameters (can be omitted) (Cannot be used in a Gen2 chip other than NXP G2XM/G2XL.)		
rlk:	Read protection	Specify 0 or 1 to indicate whether read protection is to be set or canceled. 1 for set and 0 for reset. When read protection is set, the reading of all areas becomes restricted. You must concurrently use an access password other than "00000000", and for reset, specify the same number sequence as the access password used during setting, in the cancellation password. (dedicated for NXP G2XM/G2XL)
eas:	EAS bit data	Specify 0 or 1 as the value of the EAS bit. 1 for set and 0 for reset. [00] You must concurrently use an access password other than [01] (dedicated for NXP G2XM/G2XL)

NXP G2XL dedicated secure parameters (can be omitted) (Cannot be used in a Gen2 chip other than NXP G2XL.)		
rlk: G2X,	Read protection	Specify 0 or 1 to indicate whether read protection is to be set or canceled. 1 for set and 0 for reset. When read protection is set, the reading of all areas becomes restricted. You must concurrently use an access password other than "00000000", and for reset, specify the same number sequence as the access password used during setting, in the cancellation password. (dedicated for NXP G2XL)
eas: G2X,	EAS bit data	Specify 0 or 1 as the value of the EAS bit. 1 for set and 0 for reset. You must concurrently use an access password other than "00000000", and for reset, specify the same number sequence as the access password used during setting, in the cancellation password.(dedicated for NXP G2XL)

NXP G2iM/G2iL dedicated secure parameters (can be omitted) (Cannot be used in a Gen2 chip other than NXP G2iM/G2iL.)		
rlk: G2I,	Read protection	Specify 0 or 1 to indicate whether read protection is to be set or canceled. 1 for set and 0 for reset. When read protection is set, the reading of all areas becomes restricted. You must concurrently use an access password other than "00000000", and for reset, specify the same number sequence as the access password used during setting, in the cancellation password. (dedicated for NXP G2im/G2iL)
eas: G2I,	EAS bit data	Specify 0 or 1 as the value of the EAS bit. 1 for set and 0 for reset. You must concurrently use an access password other than "00000000", and for reset, specify the same number sequence as the access password used during setting, in the cancellation password.(dedicated for NXP G2im/G2iL)

Feed control parameters (can be omitted)		
fsw:	Feed without printing	Usually, for RFID write item without print data, only writing of RFID data is performed, and the label is not fed. (Except for cases where the tag offset is set to other than default.) When "1" is specified in this parameter, the label is fed even if the item does not contain print data. When "0" is specified for this parameter, the label is not fed for the item without print data, and the operation is the same as when fsw: is not specified. Valid range: 0 to 1

SSCC96/SGTIN96 standard code conversion parameters		
enc:	Declaration of code standard conversion	Declare when executing conversion according to the code standard. SSCC96 and SGTIN96 can be specified. If you specify 'a', it indicates SSCC96, and if you specify 'c', it indicates SGTIN96. The converted data is written in the EPC area. Therefore, you can no longer use the epc: parameter identifier Valid range: a, c
flt:	Filter value	Specify the filter value with the number from 0 to 7. Refer to the filter value standard table described later.
com:	Company prefix Specified	Specify the company prefix with a 6 to 12-digit decimal number.
srl:	Serial reference	In the case of SSCC96, specify the serial reference with a 5 to 11-digit decimal number together with the number sequence specified in com:, so that the value is 17 digits or less. Even if the value does not reach 17 digits, leave it as is since the upper digits are filled with a zero inside the printer. In the case of SGTIN96, specify the serial number with a 12-digit fixed decimal number. Specify 274877906943 or a smaller number.
itm:	Item reference (Only for SGTIN96)	Specify the item reference with a 1 to 7-digit decimal number together with the number sequence specified in com:, so that the value is 13 digits or less. Even if the value does not reach 13 digits, leave it as is since the upper digits are filled with a zero inside the printer.

Write position control parameters (can be omitted)		
tof:	Temporary tag offset setting	When this parameter is specified, the tag offset is changed temporarily from other than the settings made from the RFID user mode menu and the [DC2]PA command. The valid period of the specified value is only once of all the times the <IP0> command is issued. The write stop position of items for which this parameter is not specified conforms to the tag offset set in the printer. The setting range is from 0 to 240 mm.

Module control parameters (can be omitted)		
pow:	Temporary radio output power	When this parameter is specified, the radio output power is changed temporarily from other than the settings made from the RFID user mode menu and the [DC2]PA command. The value that can be specified is 10 times of the dBm value, and is in the range of 0 to 240 (0.0 dBm to 24.0 dBm). However, the units place is rounded off during transmission to the module. The valid period of the specified value is only once of all the times the command is issued. When this parameter is not specified, the write radio output power conforms to the radio output power value set in the printer. This parameter cannot be used when the EPC/TID return function is enabled by using EPC/TID return <RU>. For details on the setup value, refer to the antenna output table of antenna output <IP5>.

Coding examples of the standard format (three-character parameter identifier)

[Coding example 1]

When data is written in an arbitrary length in the EPC region in the IC chip manufacturer extension specifications tag

<A>
<V>50<H>50<XM>SECURE RFID EPC DATA WRITE
<IP0>e:h,epc:012345678901234567890123456789012345678901; (in digits that are multiples of 4)
<Q>1
<Z>

[Coding example 2]

When EPC and user memory are written in a batch in the IC chip manufacturer extension specifications tag, and permanent locking is performed

<A>
<V>50<H>50<XM>SECURE RFID EPC & USER DATA WRITE
<IP0>e:h,epc:012345678901234567890123456789012345678901,usr:012345678.....5676789012345678901,lck:10001;
<Q>1
<Z>

[Coding example 3]

When data is written in EPC by specifying the SSCC96 standard code conversion in the Gen2 tag, and permanent locking is performed

<A>
<V>50<H>50<XM>SECURE RFID SSCC96 DATA WRITE
<IP0>e:h,enc:a,flt:0,com:12345678,srl:012345678,lck:00001;
<Q>1
<Z>

[Coding example 4]

When data is written in EPC by specifying the SGTIN96 standard code conversion in the Gen2 tag

<A>
<V>50<H>50<XM>SECURE RFID SGTIN96 DATA WRITE
<IP0>e:h,enc:c,flt:0,com:123456,itm:0123456,srl:012345678901;
<Q>1
<Z>

Conventional format

The format for Gen2 (Class1Generation2) tag only.
Use the standard format for the tag from the IC chip manufacturer having an EPC area of more than 96 bits.
<IP0>e: Write these parameters after specifying *.

Conventional format: One-character parameter identifier (SSCC96 code conversion / SGTIN96 code conversion / free mapping)

EPC data parameter			
d:	EPC data	Specify the EPC data. The restrictions on the number of digits based on each EPC encoding type are as follows:	
		When SSCC96 code conversion is specified <IP0>e:a,..	A 17-digit decimal number sequence in which the company prefix and serial reference are joined together
		When SGTIN96 code conversion is specified <IP0>e:c,..	A 13-digit decimal number sequence in which the company prefix and item reference are joined together
		When free mapping is specified <IP0>e:z,..	A hexadecimal string containing 24 or less number of digits in multiples of four, which is written without conversion in the EPC area. Use the standard format in an application exceeding 24 digits (96 bits).

SSCC96/SGTIN96 conversion parameter		
f:	filter value	Refer to the filter value and the filter value standard table described later.
c:	company prefix	Number of digits of the company prefix A number from 6 to 12. Number of digits of the company prefix in the first half of the data specified in the d parameter.
s:	serial reference	Number of digits of Serial reference (only when selecting SSCC96) Number of digits of the serial reference in the latter half of the data specified in the d parameter. Specify a number from 5 to 11, so that when combined with c, the resultant value is 17.
t:	item reference	Number of digits of Item reference (only when selecting SGTIN96) Specify a number from 1 to 7, so that when combined with c, the resultant value is 13.
n:	serial number	Serial number 12 digits (fixed) (only when selecting SGTIN96) Specify 274877906943 or a smaller number.

Feed control parameters (can be omitted)		
g:	Feed without printing	Usually, for RFID write item without print data, only writing of RFID data is performed, and the label is not fed. (Except for cases where the tag offset is set to other than default) When "1" is specified in this parameter, the label is fed even if the item does not contain print data. When "0" is specified for this parameter, the label is not fed for the item without print data, and the operation is the same as when g: is not specified.

<table>
<tr><td colspan="3">Gen 2 memory bank operation parameters (can be omitted)</td></tr>
<tr><td>u:</td><td>User Memory HEX</td><td>Specify the number sequence to be written in the USER area as HEX data. Maximum number of digits depends on the tag to be used. Specify the number of digits in the multiples of four.</td></tr>
<tr><td>v:</td><td>User Memory Ascii</td><td>Specify the number sequence to be written in the USER area as ASCII data. The data size information delimited by a comma must be displayed before the data. For example, if the data size is 16, v:16,abcd... is displayed. Maximum number of digits depends on the tag to be used. Specify the digits in multiples of two.</td></tr>
<tr><td>o:</td><td>AFI code</td><td>Application Family Identifier. Specify a hexadecimal number from 0H to 1FFH. To write as AFI, specify the ninth bit (MSB) as 1.</td></tr>
<tr><td>m:</td><td>Locking</td><td>5-digit binary number Set the bit of the bank to be locked as 1.
If you specify the access code, it results in a "password lock", and if you omit the access code, it results in a "permanent lock".
<table>
<tr><th>Bit</th><th>Section to be locked</th></tr>
<tr><td>bit0 (LSB)</td><td>EPCdata</td></tr>
<tr><td>bit1</td><td>KillCode</td></tr>
<tr><td>bit2</td><td>AccessCode</td></tr>
<tr><td>bit3</td><td>TIDdata</td></tr>
<tr><td>bit4 (MSB)</td><td>UserMemory</td></tr>
</table>
Example: If only the EPCdata area is locked "m: 00001"</td></tr>
<tr><td>k:</td><td>kill code</td><td>8-digit HEX code Used when writing the kill code.
Specify other than "00000000" in an eight-digit HEX number sequence configured by numbers from 0 to 9, and alphabets from A to F. The purpose of this parameter is only to write the kill code. You cannot kill the tag actually.</td></tr>
<tr><td>a:</td><td>access code</td><td>This is an eight-digit number sequence specified when applying the password lock.
You can use an eight-digit HEX number sequence configured by numbers from 0 to 9, and alphabets from A to F. To apply the password lock, specify other than "00000000". If you omit this parameter, and specify m: Locking, a permanent lock is applied on the specified area.</td></tr>
<tr><td>p:</td><td>password code</td><td>This is an eight-digit number sequence used for rewriting the tags on which a password lock has already been applied.
It is an eight-digit HEX number sequence configured by numbers from 0 to 9, and alphabets from A to F that is used when writing in a tag on which a password lock has been applied. Specify the same number sequence as the access code used at the time of locking.
By specifying a number sequence same as the access code specified at the time of password lock in the "password code", and specifying "00000000" in the "access code", the tag on which a password lock has been applied can be returned to an open state.</td></tr>
</table>

Coding examples of one-character parameter identifiers
(SSCC96 code conversion / SGTIN96 code conversion / free mapping)

[Coding example 1] Country code 49 /Company code 12345 / Serial no. 789
When SSCC 96 data is written to a Gen2 corresponding tag
<A>
<V>50<H>50<XM>49123450000000789
<IP0>e:a,c:7,s:10,f:1,d:49123450000000789;
<Q>1
<Z>

[Coding example 2] Country code 49 /Company code 12345 / Item 67890 / Serial no. 789
When SGTIN96 data is written to a Gen2 corresponding tag
<A>
<V>50<H>50<XM>491234506789000000000789
<IP0>e:c,c:7,t:6,f:1,d:4912345067890,n:000000000789;
<Q>1
<Z>

[Coding example 3]
When free mapping data is written in the EPC area of a Gen2 corresponding tag
<A>
<V>50<H>50<BD>101080*301803CB4F48B38000000001*
<IP0>e:z,d:301803CB4F48B38000000001;
<Q>1
<Z>

[Coding example 4]
When data is written in free mapping in the EPC area of a Gen2 corresponding tag, data is written in the user area, and at the same time, a permanent lock is applied to both the EPC and USER areas
<A>
<V>50<H>50<BD>101080*0123456789ABCDEF01234567*
<IP0>e:z,d:0123456789ABCDEF01234567,u:0123456789ABCDEF0123456789ABCDEF0123456789ABCDEF,m:10001;
<Q>1
<Z>

[Coding example 5]
When data is written in free mapping in the EPC area of a Gen2 corresponding tag, and a password lock is applied to the EPC area. When the password is set as 12345678
<A>
<V>50<H>50<BD>101080*0123456789ABCDEF01234567*
<IP0>e:z,d:0123456789ABCDEF01234567,a:12345678,m:00101;
<Q>1
<Z>

[Supplemental explanation]

1. This command can be used only once between the data transmit start <A> to the data transmit end <Z>.
2. When print data is to be included beside EPC code write, multiple labels can be specified. If there is no print data as in Example 2, media is not fed. If a blank media is to be fed after EPC code write, specify feeding without print as in Example 3.

[Example 1] If print data is included, the QTY can be specified.

<A>
<V>50<H>50<XM>0123456789ABCDEF01234567
<IP0>e:z,d:0123456789ABCDEF01234567;
<Q>1
<Z>

[Example 2] If you specify EPC code write without print data, the media is not fed, and QTY cannot be specified.

<A>
<IP0>e:z,d:0123456789ABCDEF01234567;
<Z>

[Example 3] If there is no print data, but you have specified feeding without print in EPC code write, the media is fed, and QTY can be specified.

<A>**<IP0>e:z,d:0123456789ABCDEF01234567,g:1;** <Q>2<Z>
or
<A>**<IP0>e:h,epc:0123456789ABCDEF01234567,fsw:1;**<Q>2<Z> (for the standard format)

	Example 1	Example 2	Example 3
When EPC code write is successful	Print, feed	Don't feed	Feed a blank label
When EPC code write has failed	Print tag error Retry operation	Six short beeps	Print tag error Retry operation

* If you have set TAG OFFSET to other tan the default value, or if you have specified temporary tag offset, feeding is performed in Example 2 as well.

3. Unused parameters can be omitted.
4. For details on the filter value to be used with SSCC96/SGTIN96, refer to the table below according to the purpose of use.

Filter value standard table

Filter value	SSCC96	SGTIN96
0	All Others	All Others
1	Undefined	Retail Consumer Trade Item
2	Logistical Shipping Unit	Standard Trade item Grouping
3	Reserved	Single Shipping/Consumer Trade Item
4	Reserved	Reserved
5	Reserved	Reserved
6	Reserved	Reserved
7	Reserved	Reserved

5. SSCC96 code conversion

This function is used to generate a code according to the SSCC96 standard when a company prefix, serial reference, and filter value are applied. For the time being, the usage method is explained by using an example in which the following numbers have been applied. All numbers are in decimals.

Company prefix: 4011661

Serial reference: 3000000001

Filter value: 0 (Select the filter value from the filter value standard table described earlier according to the purpose of use. In this example, the filter value is 0 from "All Others")

According to the standard, the company prefix and serial reference are combined together to result in 17 digits. Of these 17 digits, the proportion of the company prefix and the serial reference can be selected from the seven combinations described in the table below.

Partition value	Number of digit of the company prefix	Number of digits of the serial reference
0	12	5
1	11	6
2	10	7
3	9	8
4	8	9
5	7	10
6	6	11

In the case shown in this example, the following combination is assumed:

Number of digits of the company prefix: 7

Number of digits of serial reference: 10

The partition value is 5, but since this value is generated within the PC, it need not be specified.

Under this condition, if the format of EPC code write <IP0> is applied, it results in the following:

When the standard format is used

<IP0>e:h,enc:a,com:4011661,srl: 3000000001,flt:0;

Description of each parameter

e:h,---------- Specifies the standard format

enc:a---------- Specifies SSCC96 code conversion

com:4011661,----- The company prefix is **4011661**

slr:3000000001,-- The serial reference is **3000000001** 17 digits when combined with com:

flt:0 ---------- The filter value is All Others

;---------- End terminal

When the one-character parameter identifier in the conventional format is used

<IP0>e:a,c:7,s:10,f:0,d:40116613000000001;

Description of each parameter

e:a,---------- Specifies SSCC96 code conversion

c:7,---------- The company prefix is 7 digits

s:10,---------- The serial reference is 10 digits 17 digits when combined with c:

f:0,---------- The filter value is All Others

d:40116613000000001 –Number in which the company prefix and serial reference are joined together It is 17 digits.

;---------- End terminal

When these commands are executed, the above parameters are converted to SSCC96 code 3114F4DA34B2D05E01000000 and 24 characters (18 characters in actuality), and are written in a tag.

6. SGTIN96 code conversion

This function is used to generate a code according to the SGTIN96 standard when a company prefix, item reference, filter value, and serial number are applied. For the time being, the usage method is explained by using an example in which the following numbers have been applied. All numbers below are in decimals.

Company prefix: 003885

Item reference: 4006606

Filter value: 0 (Select the filter value from the filter value standard table described earlier according to the purpose of use. In this example, the filter value is 0 from "All Others")

Serial number: 000000000001 (fixed as 12 digits)

According to the standard, the company prefix and item reference are combined together to result in 13 digits. Of these 13 digits, the proportion of the company prefix and the item reference can be selected from the seven combinations described in the table below.

Partition value	Number of digit of the company prefix	Number of digit of the item reference
0	12	1
1	11	2
2	10	3
3	9	4
4	8	5
5	7	6
6	6	7

In the case shown in this example, the following combination is assumed:

Number of digits of the company prefix: 6

Number of digits of item reference: 7 If both items combined together do not form 13 digits, 0 is entered before the number to fill up the lacking number of digits.

The partition value is 6, but since this value is generated within the PC, it need not be specified.

Under this condition, if the format of <IP0> EPC code write is applied, it results in the following:

When the standard format is used

<IP0>e:h,enc:c,com:003885,itm:4006606,flt:0,slr:000000000001;

Description of each parameter

e:h,---------- Specifies the standard format

enc:c,---------- Specifies SGTIN96 code conversion

com:003885,---------- The company prefix is 6 digits

itm:4006606,---------- The item reference is 7 digits 13 digits when combined with com:

flt:0 ---------- The filter value is All Others

slr:000000000001--- Serial number, fixed at 12 digits 274877906943 or a smaller number.

;---------- End terminal

When the one-character parameter identifier in the conventional format is used

<IP0>e:c,c:6,t:7,f:0,d:0038854006606,n:000000000001;

Description of each parameter

e:c,---------- Specifies SGTIN96 code conversion

c:6,---------- The company prefix is 6 digits

t:7,---------- The item reference is 7 digits 13 digits when combined with c:

f:0,---------- The filter value is All Others

d:0038854006606, –Number in which the company prefix and item reference are joined together It is 13 digits.

n:000000000001--- Serial number, fixed at 12 digits 274877906943 or a smaller number.

;---------- End terminal

When these commands are executed, the above parameters are converted to SGTIN96 code 301803CB4F48B38000000001 and 24 characters, and are written in a tag.

16.2 RFID

EPC Sequential Number

ESC+F

Command	ESC	F	Parameter
HEX code	$<1B>_{16}$	$<46>_{16}$	aaaabccc(,dd,ee,f)
Default Value	Nil		

Valid range and term of command	When turning off the power switch	The set command is not maintained.
	Valid range within item	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]

This command is set before EPC code write (<IP0> command), and is used to write the sequential number of the specified data.

[Format]

<F>aaaabcccc(,dd,ee,f)

●Parameter

aaaa	"Number of printing for the same contents"	=	Valid range	:	1 to 9999	
b	"Increment/decrement setting"	=	+	:	Addition	
			-	:	Subtraction	
cccc	"Increment/decrement value setting"	=	Valid range	:	1 to 9999	
dd	"Sequential numbering digits"	=	Valid range	:	1 to 24	24 if omitted (can be omitted)
ee	"Lower disabled digits"	=	Valid range	:	0 to 99	0 if omitted (can be omitted)
f	"Decimal or HEX serial number"	=	0	:	Decimal	0 if omitted (can be omitted)
			1	:	HEX	

[Coding Example]

Number of printing for the same contents: 1, Increment/Decrement: +, Increment/decrement value: 1, Sequential numbering digits: 5
Lower disabled digits: 0

<A>
<V>100<H>100<P>2<L>0202
<F>1+1, 5, 0<IP0>0123456789ABCDEF01234567
<Q>2
<Z>

[Supplemental explanation]

1. The EPC sequential number location in one item is one location.
2. Inverse printing <(> of the sequential number data cannot be used.
3. Automatic line feed <E> cannot be used.
4. EPC sequential numbering is enabled only if specified immediately before EPC code write (<IP0> command).
5. This command cannot be used in items that include the <TU> command.

16.3 RFID

Antenna Output Power

ESC+IP5

Command	ESC	IP5	Parameter
HEX code	$<1B>_{16}$	$<49>_{16}<50>_{16}<35>_{16}$	aaa
Default Value	Nil		

Valid range and term of command	When turning off the power switch	The set command is maintained.
	Valid range within item	The set parameter becomes valid.
	Valid range between items	The set parameter becomes valid.

[Function]

This command specifies the antenna output power.

The antenna output power for the write command and the antenna output power for the read command can be set to separate values.

[Format]

<IP5>aaa(,bbb)

●Parameters

aaa = 0 - 240 (When a ThingMagic module is loaded)

bbb = 000 - 240. Antenna output power of the read command. Three-digit number with 10 times the dBm value (can be omitted)

If you specify only aaa, the antenna output power is set with both the write command and read command having the same value.

When both aaa and bbb are specified, the antenna output power setting is made by using the value of aaa for the write command and the value of bbb for the read command.

For details on the actual antenna output power, refer to the antenna output power setting table.

[Coding Example 1]

<A>

<IP5>170

<Z>

The antenna output power is changed to 17.0 dBm without restarting the printer, and this value is maintained even when the printer is turned OFF.

<A>

<IP5>120,090

<Z>

The antenna output power of the write command is changed to 12.0 dBm, and the antenna output power of the write command is changed to 9.0 dBm without restarting the printer. These settings are maintained after turning off the printer.

[Supplemental explanation]

1. This command cannot be used in combination with other than <A> and <Z>.
2. This command is not processed when receiving during printing. Will be processed after printing is completed.
3. Since the antenna output power changes, it may not be possible to read or write some tags depending on their type.
4. If you specify a value outside the range of parameters, a command error occurs.
5. The default factory setting is 100.
6. While the same setting can be performed with the [DC2] PA command, this command can instantaneously change the radio output power without having to restart the printer.
7. While a value from 0 to 240 can be recorded in the nonvolatile memory of the printer, the units place is rounded off to 0 during transmission to the reader/writer module.
8. A number that is less than 100 is set to three digits by supplementing with a zero in the high order digit.

Antenna output power table

Parameter aaa	Antenna output power		Parameter aaa	Antenna output power	
	(dBm)	(mW)		(dBm)	(mW)
0 to 9	0	1.0	130 to 139	13.0	19.9
10 to 19	1.0	1.2	140 to 149	14.0	25.1
20 to 29	2.0	1.5	150 to 159	15.0	31.6
30 to 39	3.0	1.9	160 to 169	16.0	39.8
40 to 49	4.0	2.5	170 to 179	17.0	50.1
50 to 59	5.0	3.1	180 to 189	18.0	63.0
60 to 69	6.0	3.9	190 to 199	19.0	79.4
70 to 79	7.0	5.0	200 to 209	20.0	100.0
80 to 89	8.0	6.3	210 to 219	21.0	125.8
90 to 99	9.0	7.9	220 to 229	22.0	158.4
100 to 109	10.0	10.0	230 to 239	23.0	199.5
110 to 119	11.0	12.5	240	24.0	250.0
120 to 129	12.0	15.8			

Note: While a value from 0 to 240 can be recorded in the nonvolatile memory of the printer, the units place is rounded off to 0 during transmission to the reader/writer module.
Example: Even when 199 is specified, actually, 19.0 dBm is set.

16.4 RFID

Trademark Print

ESC+TM

Command	ESC	TM	Parameter
HEX code	<1B>16	<54>16<4D>16	a
Default Value	Nil		

Valid range and term of command	When turning off the power switch	The set parameter is maintained.
	Valid range within item	The set parameter becomes invalid.
	Valid range between items	The set parameter becomes invalid.

[Function]
This command specifies the printing of the trade mark in the tag label.

[Format]
<TM>a

●Parameter
a = [Logo number]

1: 

2: 

[Coding example 1]
<A>
<V>50<H>50<**TM>1**
<Z>

[Coding example 2]
<A>
<V>50<H>50<**TM>2**
<Z>

[Valid command]

Modification command	<V>	<H>	<L>	<%>						

[Supplemental explanation]
1. The specification of coordinates <V><H>, rotation <%>, and magnification <L> is enabled.
2. To perform magnification <L>, the command must be specified immediately before the trade mark print command <TM>.
3. The image size of trade mark is (Image 1: W143XH101 dots, Image 2: 202 XH101 dots). (when magnification is not specified)

16.5 RFID

UID Print

ESC+TU

Command	ESC	TU	Parameter
HEX code	$<1B>_{16}$	$<54>_{16}<55>_{16}$	a (,bb,ccc,ddd, n～n)
Default Value	Nil		

Valid range and term of command	When turning off the power switch	The set command is not maintained.
	Valid range within item	The set parameter is in effect until a new specification is made.
	Valid range between items	The set parameter becomes invalid.

[Function]

Reads data from RFID tag and develops to specified direction to make it possible to print on label.

[Format]

<TU>a (,bbcccdddn～n)

●Parameters

a = To use this functionality or not
1: Read data and start using
0: Cancel use

bb = Block number
01： EPC area
02： TID area
03： USER area

ccc = Start address of memory

ddd = End address of memory

The amount of information per one address is 2 bytes (4 characters) in case of Gen2.
An RFID tag error occurs if you specify an address that exceeds tag capacity.
The difference between “Start address of memory” and “End address of memory” shall be kept within 7 because the maximum amount of read data is 32 characters.

n = Specify ID. Specify any string within 4 to 16 characters to be used for assigning data.
(All parameters should be in the ASCII format)

[Coding Sample1]

A sample specifying 32 digits from start address 00 to end address 07 in EPC area of Gen2 tag, using SATO as ID. (Amount of information per 1 address: 4 characters)

```
<A>
<TU>1,01000007SATO
<%>0
<V>0410
<H>0090
<P>00
<L>0101
<X22>,SATO
<%>0
<V>0060
<H>0040
<D>102120*SATO*
<%>0
<V>0195
<H>0055
<P>00
<L>0101
<X22>,*SATO*
<%>1
<V>0595
<H>0520
<D>102060*SATO*
<TU>0
<Q>00001
<Z>
```

[Coding Sample2]

sample specifying 16 digits from start address 02h to end address 05h in the USER area (03) on Gen2 tag, using SATO as ID. (Amount of information per 1 address: 4 characters)

```
<A>
<TU>1, 03002005SATO
<%>0
<V>0410
<H>0090
<P>00
<L>0101
<X22>,SATO
<%>0
<V>0060
<H>0040
<D>102120*SATO*
<%>0
<V>0195
<H>0055
<P>00
<L>0101
<X22>,*SATO*
<%>1
<V>0595
<H>0520
<D>102060*SATO*
<TU>0
<Q>00001
<Z>
```

[Valid command]

font	<X20>	<X21>	<X22>	<X23>	<X24>					
Barcode	<B>	<BC>	<BG>	<BI>	<BZ>	<D>	<D><d>	<BD>	<BT>	<BW>
	<2D10>	<2D12>	<2D20>	<2D30>	<2D31>	<2D32>	<2D40>	<2D50>	<DN>	<DS>

[Supplemental explanation]

1. If you specify reading data and start use (<TU>1), specify cancel use (<TU>0) within the same print job if.
2. Only one pair of this command (<TU>1, <TU>0) can be specified in one print job.
3. This command cannot be specified together with sequential printing or registering formats.
4. You cannot specify multiple labels for print jobs that include this command. Even if you specify 2 or more labels with <Q> command, it will be interpreted as 1.
5. This command cannot be used in combination with other RFID commands.
6. This command can be used for <B>, <D>, <BD>, and also <DN> and <DS> during the use of 2D codes. Regarding the barcode, CODE39, CODE93, CODE128 and QR code can be specified.
   - ・QR code : Cannot be specified in the numeric mode and Kanji mode for data specification.
   - ・Micro QR code: Cannot be used due to restrictions on the number of data items.
   - ・CODE39 : The data of the CODE39 digits is used from the ID.
7. When you specify the user ID by using <DN> in the data part during the use of 2D codes, specify the number of characters of the user ID in the number of data items.
   Example: <TU>1,SATO
   <DN>0004,SATO
8. This command will not be executed while the printer is printing. It will be executed after the print is complete.
9. This command is enabled in sequential printing, cutter (behavior 1), dispenser (behavior 2). It cannot be used in tear-off mode, cutter (behavior 2) and dispenser (behavior 2).
10. This command will not work correctly if the tag offset is set anywhere other than default position.
11. In case if tag data could not be read, error message will be printed and will retry with the next label or discard depending on the retry/release setting.
12. This command does not support reprinting with reprint command<C>, external reprint signal or reprint key.
13. In case of a command error due to erroneous format of print job that includes this command, printer will not print label (so as not to waste label) but will ring the buzzer once short to go to OFFLINE. The label will not be printed as long as the reason of command error is not removed.
14. In case if the settings are made to ignore the sensor, this command will have command error.

16.6 RFID

EPC/TID Return

ESC+RU

Command	ESC	RU	Parameter
HEX code	$<1B>_{16}$	$<52>_{16}<55>_{16}$	,aa
Default Value	0		

Valid range and term of command	When turning off the power switch	The set command is not maintained.
	Valid range within item	The set parameter is in effect until a new specification is made.
	Valid range between items	The set parameter is in effect until a new specification is made.

[Function]

This command is used to return EPC/TID together with the result when data is written to the RFID tag by the <IP0> command.

[Format]

<RU>,aa

●Parameters

aa = IDm usage 00: Not returned (default setting)

01: The writing result status and EPC/TID are returned based on [DC2]PK reception

(All parameters should be in the ASCII format)

[DC2]PK return data format (normal)]

[STX]a…a,bb,c…c,d…d [ETX]

[Return data]

Symbol	Parameter name	Valid range
a	Total number of data byte *** This is the total number of bytes after parameter b. The delimiting comma between parameters a and b, and the ETX are not included.**	Data size from the first write result status until before [ETX] Maximum 5 digits
b	Write result status	0: Write failure 1: Write success Note: Specified in text format
c	Error symbol	N：No error E：EPC write error T：TID read error M：MCS error (Chip inconsistent or not supported) A：All errors Note: Specified in text format
d	EPC/TID return data	Refer to "EPC/TID return data" below. Specified in text format

[Format of EPC/TID return data]
"Specify memory"＋":"＋"Data" ＋"Line feed(0DH、0AH)"

ee:f…f(,gg:h…h)[CR][LF]

Specifying the memory to be record
[DC2]PA-printer setting IF:RFID setting section parameter
DATA_TO_RECODE : read data depends on RFID data record as below.
"0": BOTH (EPC and TID are returned)
"1": EPC (only EPC is returned)
"2": TID (only TID is returned)
Below is the sample of [DC2]PA setting.
<A>
[DC2]PA,24,IF,18,DATA_TO_RECODE:0[CR][LF]
<Z>

To set the above from settings menu, you can do the same from "Interface"->"RFID"->"Data to Record"

[EPC/TID return data]

Symbol	Parameter name	Valid range
e(g…)	Memory	EP: EPC TI: TID
f(h…)	Data	Maximum 256 digits

Data Example)
EP:E0123456789ABCDEF0123456,ID:E200680612345678

[Return data format (when a command error occurs)]
[NAK]<15>16

[Exception processing]

Parameter name	Exception condition	
	A value outside the range is specified	The specified size and received size are different
Identifier	Command error	Invalid receive data

Terminology	Description
Command error	The data received after a command error is determined is not considered as a parameter of this command.
Invalid receive data	The data corresponding to Byte 2 and thereafter of the identifier is ignored.

[Coding example]
<A>
<RU>01
＜IP0>e:h,epc:E0123456789ABCDEF0123456;
<X22>,E0123456789ABCDEF0123456
<Z>

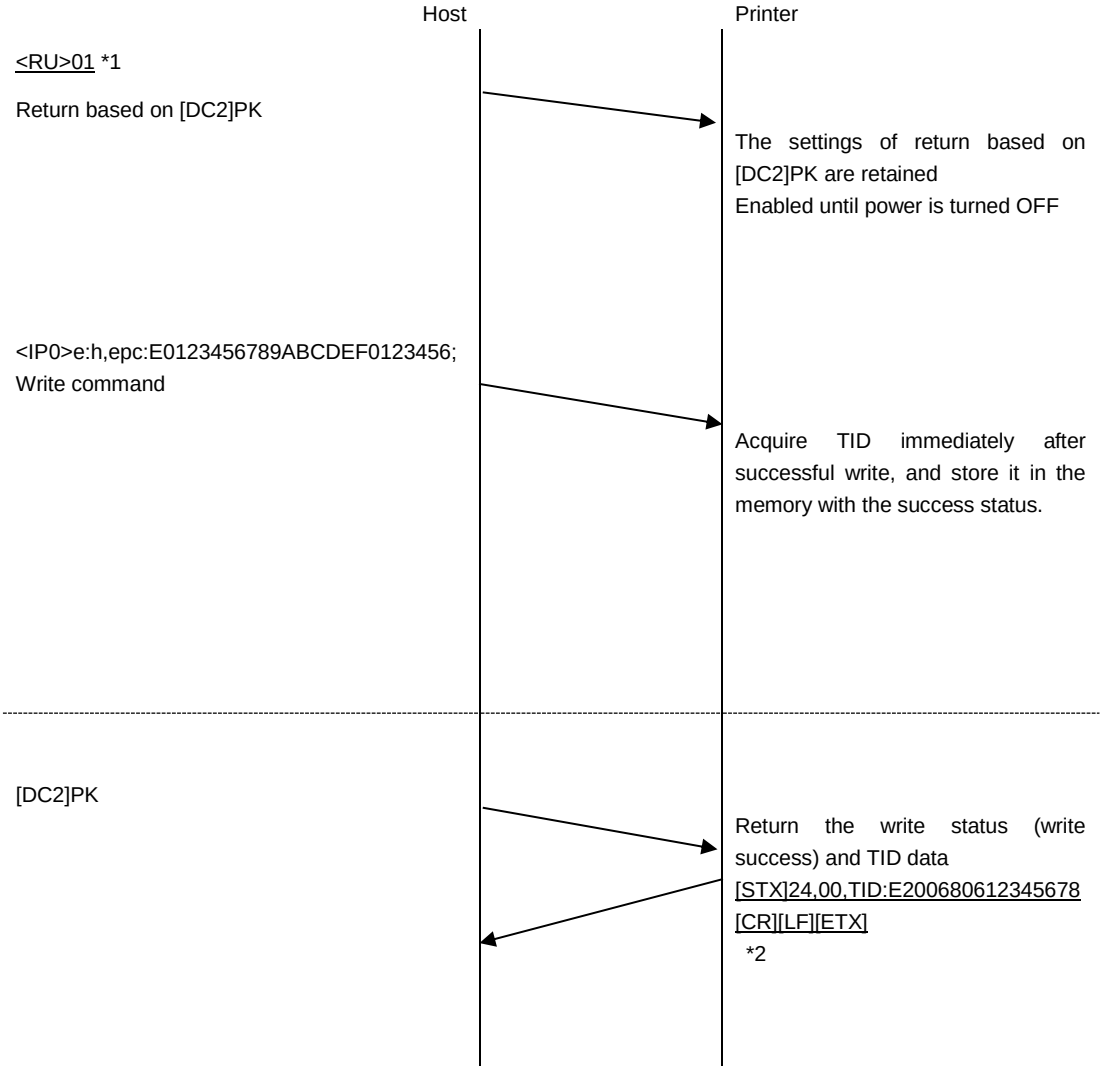
[Return status example]
When only the return of TID is specified, the E200680612345678 tag is used in the TID, and [DC2]PK is received
■Write success (TID read success)
[STX]25,1,N,ID:E200680612345678[CR][LF][ETX]

■Write success (TID read failure)
[STX]9,1,T,ID:[CR][LF][ETX]

■Write failure
[STX]9,0,E,ID:[CR][LF][ETX]

[Supplemental explanation]
1. The result of writing and EPC/TID is returned when [DC2]PK is received after RFID writing has been performed.
2. Although write is successful status will be returned without data if you fail to read EPC/TID since EPC/TIC read will be done separately from write.

<RU>01 return sequence (for a Gen2 tag having the TID of E0123456789ABCDEF0123456)



*1 Most common commands such as <A>, <Z> are not described in the above diagram.

*2 The content of the return EPC/TID is an example. The actual value varies depending on the tag.

[Supplemental explanation]

1. Keep the EPC/TID data to be returned within 256 characters.
2. The printer operation corresponding to the <IP0> command is performed in the order of writing the data to the tag, and then performing EPC/TID reading.

17 Common Commands for All Languages

The common commands are the commands independent from the applications such as SBPL, SZPL, SIPL.
The common specifications of the common command for all languages will be described as follows.

1. The structure begins from [DC2]<12>16 and two characters follow it.
2. When the two characters follow [DC2] are not the common commands, nothing will be returned and the data after that will be ignored.
3. The command to specify the data size will wait the data until the data size satisfies the specified size and no data will be returned.
4. When initializing the printer, turning the printer's power off and updating the printer, [NAK]<15><16> will be returned.
5. When the printer is in the power saving mode or returning from the power saving mode, [NAK]<15><16> will be returned also. However, the reset command and the power off command can be received.
6. The common commands cannot be used when the printer is set to the non-standard mode.

17.1 Common Commands for All Languages

Printer Setting Command — DC2+PA

Command	DC2	PA	Parameter
HEX code	$<12>_{16}$	$<50>_{16}<41>_{16}$	a…a,bb,c…c,d…d,(,ee,f…f,g…g,h…h,i…i)…
Default Value	None		

Valid range and term of command	When turning off the power switch	The set parameter is maintained.
	Valid range	The set parameter is valid until the next setting.
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands cannot be received even if an error is occurring. ([NAK] return)

[Function]

These are commands to save printer settings.

[Format]

DC2(12H) + PA,a…a,bb,c…c,d…d,(,ee,f…f,g…g,h…h)…

[Parameters]

Symbol	Parameter name	Valid range	Acquisition method
a	Total number of data in bytes *Total number of data in bytes after parameter “b”. Does not include the comma in between parameter “a” and “b”.	0 to 524277	Acquire until ","
b(e…)	Identifier	CA: Common settings CB: Notification system II: IEEE1284 settings IR: RS-232C settings IL: LAN settings IU: USB settings IW: WLAN settings IB: Bluetooth settings IE: EXT settings IF: RFID settings SB: SBPL setting SZ: SZPL settings SI: SIPL settings SD: SDPL settings ST: STPL settings	Acquire fixed two-character
c(f…)	Data size of settings in bytes **The size of setting information is equivalent to the bytes by section from parameter d. The comma in between the sections is not included.**	0 to 524277	Acquire until ","
d(g…)	Setting data *text format *Items that need to be encrypted to perform encryption	Refer to the following the format.	Data sized of setting information

[Setting data format]

“Name of setting item” +”:” + “Setting data” + “Line feed(0DH, 0AH)”

h…h:i…i[CR][LF](j…j:k…k[CR][LF])…

[Setting data]

Symbol	Parameter name	Valid range	Acquisition method
h(j…)	Setting item	See Settings Table	Valid until ":"
i(k…)	Setting data	See Settings Table	Valid until "[CR][LF]"

Data sample)

SPEED: 4

LEVEL: 5

[Return data format (normal)]
[ACK]<06>$_{16}$

[Return data format (when a command error occurs)]
[NAK]<15>$_{16}$

[Exception processing]

Parameter name	Exception condition	
	A value outside the range is specified	The specified size and received size are different
Total number of data in bytes	Command Error	Command Error (*1) (*2)
Identifier	Invalid identifier (skip)	Command Error
Data size of settings in bytes	Command Error	Command Error (*3)
Setting item	Invalid setting item (skip)	
Setting data	Invalid setting item (skip)	

(*1) If the data size from the first identifier (bb) to the last data item doesn't match the data size of setting information, and the data size calculated from the format, a command error will occur.
(*2) However, nothing will be returned until receiving the number of data equals to the total number of data bytes.
(*3) If the data during the receipt of the setting information data size from the beginning of the setting information data is not ",", a command error occurs.

Terminology	Description
Command Error	All items are not set. The data received after a command error is determined is not considered as a parameter of this command.
Invalid identifier	The corresponding setting information data (data equivalent to the succeeding setting information data size) is ignored.
Invalid item	The data of one item (data up to [CR] [LF]) is ignored.

[Supplementary information]
1. If the total data size and actual data size do not match, an error will occur and they will not be set.
2. If the data size of settings and data size of actual settings do not match, an error will occur and the value will not be set.
3. Setting for each identifier and setting item can be omitted.
4. Setting for each identifier and setting item can be in random order.
5. When re-setting a setting with same identifier, the last value that was set will be enabled.
6. If the value in setting was out of range, then the setting item will have an error and will be skipped.
7. No malfunction will occur when a character string with the same name as the setting item was set.
   e.g.) When you set “DeviceName” as setting value for the setting item named “DeviceName”.
8. Do not send this command when the printer is printing. Use this command in the standby status.

[Setting saving function]

This command proceeds the setting when the item name and the setting value were specified basically. However, the problem may occur when the setting data are set in order of receiving the data because the setting item can be omitted and set in random order. These items will be saved firstly and set after all the received data were analyzed.

The target items and their setting process are described as follows.

<table>
<tr><th>Target item</th><th>Setting process</th></tr>
<tr><td>[PRINTER]Time zone
[PRINTER]Date
[PRINTER]Time</td><td>The time zone must be set firstly because the time difference calculated from the local time is necessary for setting the date and time.</td></tr>
<tr><td>[PRINTER]Main port
[PRINTER]Sub port</td><td>Settings of the main port and sub-port cannot be duplicated, and the duplicated code will be ignored.</td></tr>
<tr><td>[BLUETOOTH]ISI
[BLUETOOTH]ISW
[BLUETOOTH]PSI
[BLUETOOTH]PSW</td><td>When "ISI" is smaller than "ISW", it is not set.
There is a function that when "0" is set to both "ISI" and "ISW", Bluetooth module doesn't respond to the search. Regarding this function, to avoid conflicting settings, setting it under following condition.
<table>
<tr><th>ISI</th><th>ISW</th><th>Process</th></tr>
<tr><td rowspan="2">＝"0"</td><td>＝"0"</td><td>Set</td></tr>
<tr><td>≠"0"</td><td>Don’t set</td></tr>
<tr><td rowspan="2">≠"0"</td><td>＝"0"</td><td>Don’t set</td></tr>
<tr><td>≠"0"</td><td>Set</td></tr>
</table>
When "PSI" is smaller than "PSW", it is not set.</td></tr>
<tr><td>[BLUETOOTH]Delete pairing information</td><td>There are 10 paring information and they are arrayed. You cannot delete them one by one because the deleted area is filled with next data and the number will be inconsistent. You can delete the data when you know all the paring information to be deleted.</td></tr>
<tr><td>[SBPL]STX
[SBPL]ETX
[SBPL]ESC
[SBPL]ENQ
[SBPL]CAN
[SBPL]NULL
[SBPL]OFFLINE
[SBPL]EURO</td><td>Each control code cannot be duplicated, and the duplicated code will be ignored.</td></tr>
<tr><td>[SZPL] Command Head
[SZPL] Control head
[SZPL] Delimiter</td><td>Each control code cannot be duplicated, and the duplicated code will be ignored.</td></tr>
<tr><td>[SDPL]SOH
[SDPL]STX
[SDPL]CR
[SDPL]CNT</td><td>Each control code cannot be duplicated, and the duplicated code will be ignored.</td></tr>
<tr><td>[STCL]Command Head1 ~3</td><td>Each control code cannot be duplicated, and the duplicated code will be ignored.</td></tr>
</table>

[Encryption of data]

The method for encryption shall be bit inversion plus conversion of binary to ASCII. Therefore there will be twice as much data after encryption.

Table of encryption code

Original		Encrypted		Original		Encrypted		Original		Encrypted	
Character	code [HEX]	Character (SJIS)	code [HEX]	Character	code [HEX]	Character (SJIS)	code [HEX]	Character	code [HEX]	Character (SJIS)	code [HEX]
Space	20	df	64 66	@	40	bf	62 66	`	60	9f	39 66
!	21	de	64 65	A	41	be	62 65	a	61	9e	39 65
"	22	dd	64 64	B	42	bd	62 64	b	62	9d	39 64
#	23	dc	64 63	C	43	bc	62 63	c	63	9c	39 63
$	24	db	64 62	D	44	bb	62 62	d	64	9b	39 62
%	25	da	64 61	E	45	ba	62 61	e	65	9a	39 61
&	26	d9	64 39	F	46	b9	62 39	f	66	99	39 39
'	27	d8	64 38	G	47	b8	62 38	g	67	98	39 38
(	28	d7	64 37	H	48	b7	62 37	h	68	97	39 37
)	29	d6	64 36	I	49	b6	62 36	i	69	96	39 36
*	2A	d5	64 35	J	4A	b5	62 35	j	6A	95	39 35
+	2B	d4	64 34	K	4B	b4	62 34	k	6B	94	39 34
,	2C	d3	64 33	L	4C	b3	62 33	l	6C	93	39 33
-	2D	d2	64 32	M	4D	b2	62 32	m	6D	92	39 32
.	2E	d1	64 31	N	4E	b1	62 31	n	6E	91	39 31
/	2F	d0	64 30	O	4F	b0	62 30	o	6F	90	39 30
0	30	cf	63 66	P	50	af	61 66	p	70	8f	38 66
1	31	ce	63 65	Q	51	ae	61 65	q	71	8e	38 65
2	32	cd	63 64	R	52	ad	61 64	r	72	8d	38 64
3	33	cc	63 63	S	53	ac	61 63	s	73	8c	38 63
4	34	cb	63 62	T	54	ab	61 62	t	74	8b	38 62
5	35	ca	63 61	U	55	aa	61 61	u	75	8a	38 61
6	36	c9	63 39	V	56	a9	61 39	v	76	89	38 39
7	37	c8	63 38	W	57	a8	61 38	w	77	88	38 38
8	38	c7	63 37	X	58	a7	61 37	x	78	87	38 37
9	39	c6	63 36	Y	59	a6	61 36	y	79	86	38 36
:	3A	c5	63 35	Z	5A	a5	61 35	z	7A	85	38 35
;	3B	c4	63 34	[	5B	a4	61 34	{	7B	84	38 34
<	3C	c3	63 33	\	5C	a3	61 33	|	7C	83	38 33
=	3D	c2	63 32	]	5D	a2	61 32	}	7D	82	38 32
>	3E	c1	63 31	^	5E	a1	61 31	~	7E	81	38 31
?	3F	c0	63 30	_	5F	a0	61 30				

[PRINTER] section

Name of Setting item	Setting value	Default Vale.	R/W	initial CA	Contents of Setting item
SPEED	“2”: 2 inches/sec “3”: 3 inches/sec “4”: 4 inches/sec “5”: 5 inches/sec “6”: 6 inches/sec “7”: 7 inches/sec “8”: 8 inches/sec “9”: 9 inches/sec “10”: 10 inches/sec 203dpi : 2-10 inches/sec 305dpi : 2-8 inches/sec 609dpi : 2-6 inches/sec	203/305dpi 6 609dpi 4	R/W	○	Print speed <CS>
LEVEL	“1”: Darkness 1 “2”: Darkness 2 “3”: Darkness 3 “4”: Darkness 4 “5”: Darkness 5 “6”: Darkness 6 “7”: Darkness 7 “8”: Darkness 8 “9”: Darkness 9 “10”: Darkness 10	5	R/W	○	Print darkness level <#F>
CONCENTRATION	"A" "B" "C" "D" "E" "F"	A	R/W	○	Print darkness <#F>
LABELV	609dpi:"1" to "9600" (dot) 305dpi:"1" to "18000" (dot) 203dpi:"1" to "20000" (dot)	609dpi: 9600 305dpi:18000 203dpi: 20000	R/W	○	Vertical size of label
LABELH	609dpi:"1" to "2496" (dot) 305dpi:"1" to "1248" (dot) 203dpi:"1" to "832" (dot)	609dpi: 2496 305dpi: 1248 203dpi: 832	R/W	○	Horizontal size of label
PITCHOFFSET	"-99" to "99"(dot)	0	R/W	○	Pitch offset
BASEV	"-792" to "792"(dot)	0	R/W	○	Offset of vertical base reference point <A3>
BASEH	"-792" to "792"(dot)	0	R/W	○	Offset of horizontal base reference point <A3>
PRINT_AUTO	"0": disable "1": Enable	1	R/W	○	Automatic selection of behavior mode
PRINT	"0": Continuous "1": Tear-off "2": Dispenser "3": Cutter "4": Linerless "5": Cut while printing	1 Standard:1, With cutter:3, With dispenser:2	R/W	○	Print motion
PEEL	"0": Motion 3 (No backfeed) "1": Motion 1 (Thermal head position) "2": Motion 2 (Dispenser position)	1	R/W	○	Dispenser motion (backfeed motion) <PM>
CUTTER	"0": Motion 3 (No backfeed) "1": Motion 1(Thermal head position) "2": Motion 2 (Cutter position)	1	R/W	○	Cutter motion <PM>
NONSEPA	"0": Motion 3 (No backfeed) "2": Motion 2 (Dispenser position)	2	R/W	○	Linerless motion (Backfeed motion) <PM>
TEAR_OFFSET	"-99" to "99" (dot)	0	R/W	○	Tear-off Offset adjust <PO>
CUT_OFFSET	"-99" to "99" (dot)	0	R/W	○	Cutter Offset adjust <PO>
DISP_OFFSET	"-99" to "99" (dot)	0	R/W	○	Dispenser Offset adjust <PO>

Name of Setting item	Setting value	Default Vale.	R/W	initial CA	Contents of Setting item
TYPE	"0": Thermal transfer "1": Direct thermal	0	R/W	○	Print method <PH>
SENSOR	"0": Disable sensor "1": GAP "2": I-MARK	1	R/W	○	Sensor type <IG>
PEND_TYPE	"0": I-MARK "1": GAP	0	R/W	○	Type of paper end sensor
EJECT_CUT	"0" to "5"(sec)	0	R/W	○	Eject cut settings
MEDIA_CHECK	"0": Disable "1": Enable	0	R/W	○	Media check
HEADCHECK	"0": Disable "1": Normal range "2": Barcode range	0	R/W	○	Head check
HEADCHECK_ MODE	"0": Check one page "1": Specify start and end "2": Specify number of pages	0	R/W	○	Head check mode
HEADCHECK_ PAGE	"1" to "999999"	1	R/W	○	Number of headcheck pages
LANGUAGE	"0" : English "1" : German "2" : French "3" : Spanish "4" : Italian "5" : Portuguese (Europe) "6" : Czech "7" : Danish "8" : Dutch "9" : Finnish "10": Greek "11": Hungarian "12": Norwegian "13": Polish "14": Romanian "15": Russian "16": Slovakian "17": Swedish "18": Turkish "19": Chinese (Simplified) "20": Chinese (Traditional) "21": Korean "22": Japanese "23": Arabic "24": Thai "25": Vietnamese "26": Farsi "27": Indonesian "28": Hindi "29": Portuguese (Brazil)	0	R/W	○	Language settings
TIMEZONE	Refer to a table of the timezone	Europe/London	R/W	○	Time zone
DATE_SET	" YYYY/MM/DD " Y: Year M: Month D: Date Min:2000/01/01 00:00:00 Max:2035/12/31 23:59:00	2013/01/01	R/W	○	Set calendar (date)
TIME_SET	"HH:NN:SS" H: Hour N: Minute S: Second	00:00:00	R/W	○	Set calendar (time)
POWER_SAVE	0:Disable 1 to 3600sec *Setup in minutes	3600	R/W	○	Power saving setting
BUZZER	"0": Buzzer off "1": Volume low "2": Volume medium "3": Volume large	2	R/W	○	Buzzer volume
LCDVOLUME	"0"～"9"	7	R/W	-	LCD Brightness

Name of Setting item	Setting value	Default Vale.	R/W	initial CA	Contents of Setting item
ADJUSTPITCH	609dpi:"-90" to "90" (dot) 305dpi:"-45" to "45" (dot) 203dpi:"-30" to "30" (dot)	0	R/W	-	Adjust print position
ADJUSTOFFSET	609dpi:"-90" to "90" (dot) 305dpi:"-45" to "45" (dot) 203dpi:"-30" to "30" (dot)	0	R/W	-	Offset adjust
OPTIONTIME	"0", "5" to "200" (x100ms)	0	R/W	○	Waiting time in tear off mode for next data <TW>
AUTO_MEASURE	"0": Disable "1": Enable	0	R/W	○	Automatic measurement of label length
AUTO_ONLINE	"0": Disable "1": Enable	1	R/W	○	Auto online <AO>, <LD>
FEED	"0": Disable "1": Enable	0	R/W	○	Initial feed
ONLINE_FEED	"0": Disable "1": Enable	0	R/W	○	Online feed <LF>
IGNORE_CRLF	"0": Do not remove CR/LF "1": Remove CR/LF	0	R/W	○	Ignore CR/LF <CL>
BYTECOMMAND	"0": Disable "1": Enable	0	R/W	○	Remove CAN/DLE <1B>
IMLVL_RL	"0" to "127": reflective sensor level(Receiving light)	95	R/W	-	Adjust reflective sensor level (Receiving light)
IMLVL_LE	"0" to "7": reflective sensor level (Light emission)	1	R/W	-	Adjust reflective sensor level (Light emission)
IM_SL	"0.0": Automatic setting "0.1" to "3.3": Manual setting	0.0	R/W	-	Reflective sensor slice level
GAPLVL_RL	"0" to "127": transmissive sensor level(Receiving light)	63	R/W	-	Adjust transmissive sensor level (Receiving light)
GAPLVL_LE	"0" to "7": transmissive sensor level (Light emission)	1	R/W	-	Adjust transmissive sensor level (Light emission)
GAP_SL	"0.0": Automatic setting "0.1" to "3.3": Manual setting	0.0	R/W	-	Transmissive sensor slice level
RB_NEND	"0": Disable "1": Enable	1	R/W	○	Detect ribbon near end
PRIORITY	"0": Prioritize command "1": Prioritize LCD setting	0	R/W	○	Priority setting
PRINT_AREA	"0": Normal "1": Move (3 mm to the back of thermal head)	0	R/W	○	Move printable area
ADJUSTDARK	"0" to "99"	50	R/W	○	Adjust darkness
OP_FEED	609dpi:"0" to "6120" (dot) 305dpi:"0" to "3060" (dot) 203dpi:"0" to "2040" (dot)	0	R/W	○	Optional feed volume
PASS_SET	"0": Disable "1": Enable	0	R/W	-	Input password
ALL_QTY	"0": Disable "1": Enable	0	R/W	○	Display total number of labels to print
HEX_DUMP_ MODE	"0": Disable "1": Enable	0	R/W	○	HEX DUMP MODE of Enable/Disable
APP_MODE	"00": AUTO "SB": SBPL "SZ": SZPL "SI": SIPL "SD": SDPL "ST": STCL	-	R	-	Application mode
APP_MODE_ AUTO	"00": AUTO "SB": SBPL "SZ": SZPL "SI": SIPL "SD": SDPL "ST": STCL	-	R	-	Application mode of AUTO mode
CALENDAR_ CHECK	"0": Disable "1": Enable	1	R/W	○	Calendar check
REPRINT	"0": Disable "1": Enable	0	R/W	○	Reprint

[COUNT] section

Name of Setting item	Setting value	Default Value	R/W	initial CB	Contents of Setting item
PRTCLN	"0": Disable "1": Enable	0	R/W	○	Notification for printer cleanup
PRTCLN_ITV_ COUNT	"10" to "1000" (m)	400	R/W	○	Distance to display notification for printer cleanup
PRTCLN_ COUNT	"XXXX" *Unit: 1 / 24 mm	-	R	-	Cleaning distance
HDCHG	"0": Disable "1": Enable	0	R/W	○	Notification for replacing thermal head
HDCHG_ITV_ COUNT	"10" to "100" (km)	100	R/W	○	Distance to display notification for replacing thermal head
HDCHG_ COUNT	"XXX" *Unit: 1 / 24 mm	-	R	-	Print distance of a thermal head
CUTUNT	"0": Disable "1": Enable	0	R/W	○	Notification for replacing cutter unit
CUTUNT_ITV_ COUNT	"10" to "1000" (k cuts)	1000	R/W	○	Distance to display notification for replacing cutter unit
CUTUNT_ COUNT	"XX"	-	R	-	Cut count
ROLLER	"0": Disable "1": Enable	0	R/W	○	Notification for replacing platen roller
ROLLER_ITV_ COUNT	"10" to "100" (km)	100	R/W	○	Distance to display notification for replacing platen roller
ROLLER_ COUNT	"XXX" *Unit: 1 / 24 mm	-	R	-	Distance of the platen roller

[IEEE1284] section

Name of Setting item	Setting value	Default Value	R/W	initial II	Contents of Setting item
PROTOCOL	"0": Status 4 MULTI "2": Status 5 "3": NONE	0	R/W	○	Communication protocol (for SBPL)
STATUS5_BCC	"0": Disable "1": Enable	0	R/W	○	BCC check <CR>
P&P_1284	"0": Disable "1": Enable	0	R/W	○	Plug and play (* Disable is not available)

[RS-232C] section

Name of Setting item	Setting value	Default Value	R/W	initial IR	Contents of Setting item
BOURATE	"0": 2400 bps "1": 4800 bps "2": 9600 bps "3": 19200 bps "4": 38400 bps "5": 57600 bps "6": 115200 bps	6	R/W	○	Baud rate
DATABIT	"0": 8bit "1": 7bit	0	R/W	○	Data bit
PARITYBIT	"0": None "1": Odd number "2": Even number	0	R/W	○	Parity bit
STOPBIT	"0": 1bit "1": 2bit	0	R/W	○	Stop bit
CONTROL	"1": READY/BUSY MULTI "3": XON/XOFF MULTI "4": Status 4 "5": Status 3 "6": Status 5 "7": NONE	4	R/W	○	Communication protocol (for SBPL)
STATUS5_BCC	"0": Disable "1": Enable	0	R/W	○	BCC check <CR>

[LAN] section

Name of Setting item	Setting value	Default Value	R/W	initial IL	Contents of Setting item
DHCPv4	"0": Disable "1": Enable	1	R/W	○	DHCPv4 setting
IPv4_ADDRESS	AAA.BBB.CCC.DDD Allow "0" to "255" for A - D	0.0.0.0	R/W	○	Ipv4 Address
IPv4_SUBNET MASK	AAA.BBB.CCC.DDD Allow "0" to "255" for A - D	255.255.255.0	R/W	○	IPv4 Subnet mask
IPv4_DEFGATE WAY	AAA.BBB.CCC.DDD Allow "0" to "255" for A - D	0.0.0.0	R/W	○	IPv4 Default gateway
IPv4_DNSPrimary IPAddress	AAA.BBB.CCC.DDD Allow "0" to "255" for A - D	0.0.0.0	R/W	○	IPv4 DNS primary address
IPv4_DNS Secondary IPAddress	AAA.BBB.CCC.DDD Allow "0" to "255" for A - D	0.0.0.0	R/W	○	IPv4 DNS secondary address
IPv6_ADDSET	"0": AUTO "1": DHCP "2": Manual Setting	0	R/W	○	IPv6 address setting
IPv6_ADDRESS	AAAA:BBBB:CCCC:DDDD: EEEE:FFFF:GGGG:HHHH Specified in the ASCII of 128bit A to H is "0" to "FFFF" A to H is Omissible.	0:0:0:0:0:0:0:0	R/W	○	IPv6 address
IPv6_ROUTER	AAAA:BBBB:CCCC:DDDD: EEEE:FFFF:GGGG:HHHH Specified in the ASCII of 128bit A to H is "0" to "FFFF" A to H is Omissible.	0:0:0:0:0:0:0:0	R/W	○	Ipv6 Default Router
IPv6_PREFIX	1 to 128	64	R/W	○	Ipv6 Subnet prefix
IPv6_DNSPrimary IPAddress	AAAA:BBBB:CCCC:DDDD: EEEE:FFFF:GGGG:HHHH Specified in the ASCII of 128bit A to H is “0” to “FFFF” A to H is Omissible.	0:0:0:0:0:0:0:0	R/W	○	IPv6 DNS primary address
KEEPALIVETIME	“30” to “300” (seconds)	180	R/W	○	Keep alive time
KEEPALIVE COUNT	"1" to "99" (times)	17	R/W	○	Keep alive count
SOCKET_ CANCEL	"0": Normal mode "1": Compatible mode	0	R/W	○	Socket compatibility
PROTOCOL	"0": Status 4 (Periodic) "1": Status 4 (ENQ) "2": Status 3 "3": Status 5 "4": NONE	1	R/W	○	Communication protocol (For SBPL)
STATUS5_BCC	"0": Disable "1": Enable	0	R/W	○	BCC check <CR>
PORT1	"1" to "65535"	1024	R/W	○	Port 1
PORT2	"1" to "65535"	1025	R/W	○	Port 2
PORT3	"1" to "65535"	9100	R/W	○	Port 3
MACADDRESS	"AA:BB:CC:DD:EE:FF"	-	R	-	MAC address
SNTP_ENABLED	"0": Disable "1": Enable	0	R/W	○	SNTP function
NTP_IPv4_ADD	AAA.BBB.CCC.DDD Allow "0" to "255" for A - D	0.0.0.0	R/W	○	NTP IPv4 server address
SNTP_ERROR	"0": Disable "1": Enable	0	R/W	○	SNTP error notification
SNMP	"0": Disable "1": Enable	0	R/W	○	SNMP settings
SNMP_R_COM MUNITY_NAME	Max 32 digit character ***Encrypted data**	public (empty string to disable)	R/W	○	Read-only community name
SNMP_R_USER _NAME	Max 32 digit character ***Encrypted data**	rouser (empty string to disable)	R/W	○	Read-only user name
SNMP_R_ SECURITY	"0":none "1":Authentication "2":Privacy	none	R/W	○	Read-only security
SNMP_R_AUTH PROTCOL	"0":MD5 "1":SHA	0	R/W	○	Read-only Authentication protocol

Name of Setting item	Setting value	Default Value	R/W	initial IL	Contents of Setting item
SNMP_R_AUTHPASS	String of 8 to 32 digits **∗Encrypted data**	mypassword	R/W	○	Read-only Authentication password
SNMP_R_PRIVPROTCOL	"0":DES "1":AES	0	R/W	○	Read-only Encryption protocol
SNMP_R_PRIVPASS	String of 8 to 32 digits **∗Encrypted data**	mypassword	R/W	○	Read-only Encryption password
SNMP_RW_COMMUNITY_NAME	Max 32 digit character **∗Encrypted data**	private (empty string to disable)	R/W	○	Read Write community name
SNMP_RW_USER_NAME	Max 32 digit character **∗Encrypted data**	rwuser (empty string to disable)	R/W	○	Read Write user name
SNMP_RW_SECURITY	"0":none "1": Authentication "2": Privacy	none	R/W	○	Read Write security
SNMP_RW_AUTHPROTCOL	"0":MD5 "1":SHA	0	R/W	○	Read Write Authentication protocol
SNMP_RW_AUTHPASS	String of 8 to 32 digits **∗Encrypted data**	mypassword	R/W	○	Read Write Authentication password
SNMP_RW_PRIVPROTCOL	"0":DES "1":AES	DES	R/W	○	Read Write Encryption protocol
SNMP_RW_PRIVPASS	String of 8 to 32 digits **∗Encrypted data**	mypassword	R/W	○	Read Write Encryption password
SNMP_TRAP	"0": Disable "1": Enable	0	R/W	○	Trap
SNMP_TRAP_VERSION	"0": SNMPv1 "1": SNMPv2c "2": SNMPv3	0	R/W	○	Trap version
SNMP_TRAP_DESTINATIONS	"1": Destination1 "2": Destination2 "3": Destination3	1	R/W	○	Trap Destinations
SNMP_TRAP_IPVERSION	"4":IPv4 "6":IPv6	4	R/W	○	Trap IP Version
SNMP_TRAP_DESTINATION1v4	AAA.BBB.CCC.DDD Allow "0" to "255" for A - D	0.0.0.0	R/W	○	IPv4 Trap Destination1
SNMP_TRAP_DESTINATION1v6	AAAA:BBBB:CCCC:DDDD: EEEE:FFFF:GGGG:HHHH Specified in the ASCII of 128bit A to H is "0" to "FFFF" A to H is Omissible.	0:0:0:0:0:0:0:0	R/W	○	IPv6 Trap Destination1
SNMP_TRAP_DESTINATION2v4	AAA.BBB.CCC.DDD Allow "0" to "255" for A - D	0.0.0.0	R/W	○	IPv4 Trap Destination2
SNMP_TRAP_DESTINATION2v6	AAAA:BBBB:CCCC:DDDD: EEEE:FFFF:GGGG:HHHH Specified in the ASCII of 128bit A to H is "0" to "FFFF" A to H is Omissible.	0:0:0:0:0:0:0:0	R/W	○	IPv6 Trap Destination2
SNMP_TRAP_DESTINATION3v4	AAA.BBB.CCC.DDD A to D は"0" to "255" Allow "0" to "255" for A - D	0.0.0.0	R/W	○	IPv4 Trap Destination3
SNMP_TRAP_DESTINATION3v6	AAAA:BBBB:CCCC:DDDD: EEEE:FFFF:GGGG:HHHH Specified in the ASCII of 128bit A to H is "0" to "FFFF" A to H is Omissible.	0:0:0:0:0:0:0:0	R/W	○	IPv6 Trap Destination3
SNMP_TRAP_COMMUNITY	Max 32 digit character **∗ Encrypted data**	trapcom	R/W	○	Trap community name
SNMP_TRAP_USER	Max 32 digit character **∗Encrypted data**	trapuser	R/W	○	Trap user name
SNMP_TRAP_ENGINEID	Even number 10 to 64 digits	Number generated from MAC address	R/W	○	Trap Engine ID
SNMP_TRAP_SECURITY	"0":none "1":Authentication "2":Privacy	none	R/W	○	Trap Security
SNMP_TRAP_AUTHPROTCOL	"0":MD5 "1":SHA	0	R/W	○	Trap Authentication protocol

Name of Setting item	Setting value	Default Value	R/W	initial IL	Contents of Setting item
SNMP_TRAP_ AUTHPASS	String of 8 to 32 digits **∗Encrypted data**	mypassword	R/W	○	Trap Authentication password
SNMP_TRAP_ PRIVPROTCOL	"0":DES "1":AES	DES	R/W	○	Trap Encryption protocol
SNMP_TRAP_ PRIVPASS	String of 8 to 32 digits **∗Encrypted data**	mypassword	R/W	○	Trap Encryption password
LPD	"0": Disable "1": Enable	0	R/W	○	LPD
FTP	"0": Disable "1": Enable	0	R/W	○	FTP

[USB] section

Name of Setting item	Setting value	Default Value	R/W	initial IU	Contents of Setting item
PROTOCOL	"0": Status4 "1": Status5 "2": NONE	0	R/W	○	Communication protocol (for SBPL)
STATUS5_BCC	"0": Disable "1": Enable	0	R/W	○	BCC check <CR>

[WLAN] section

Name of Setting item	Setting value	Default Value	R/W	initial IW	Contents of Setting item
WLANMODE	"0": Infrastructure mode "1": Adhoc mode	1	R/W	○	Select WLAN Mode
ESSID	1 to 32 digit long character	SATO_PRINTER	R/W	○	SSID
HIDEESSID	"0": Disable "1": Enable	0	R/W	○	Hidden SSID
CHANNEL	"1" to "11" "1" to "13" ∗The range follows Region.	6	R/W	○	Channel number
WLANNETWORKSECINF	"0": None "1": WEP "2": WPA+WPA2 "3": WPA2 "4": Dynamic WEP	0	R/W	○	Infrastructure mode Network security
WLANNETWORKSECAD	"0": None "1": WEP	0	R/W	○	Adhoc mode Network security
WEPAUTH	"0": Open System "1": Shared Key	0	R/W	○	WEP key
WEPKEY1	5 or 13 digit character 10 or 26 digit hexadecimal **∗Encrypted data**	String of empty	W	○	Wep key 1
WEPKEY2	5 or 13 digit character 10 or 26 digit hexadecimal **∗Encrypted data**	String of empty	W	○	Wep key 2
WEPKEY3	5 or 13 digit character 10 or 26 digit hexadecimal **∗Encrypted data**	String of empty	W	○	Wep key 3
WEPKEY4	5 or 13 digit character 10 or 26 digit hexadecimal **∗Encrypted data**	String of empty	W	○	Wep key 4
WEPKEYINDEX	"1" to "4"	1	R/W	○	Wep key index
WPAAUTH	"0": Personal (PSK), "1": Enterprise (802.1x) "2": CCKM	0	R/W	○	WPA authentication
PSK	8-63 ASCII or 64 HEX digits **∗Encrypted data**	String of empty	W	○	PSK *WPA Auth is PSK
EAPMODE	"0": FAST "1": LEAP "2": PEAP "3": TLS "4": TTLS	0	R/W	○	EAP Mode *WPA Auth is not PSK
INNER_FAST	"0":MSCHAPv2 "1":GTC "2":TLS	"0":MSCHAPv2	R/W	○	Inner Method if EAP Mode=FAST
INNER_PEAP	"0":MSCHAPv2 "1":GTC "2":MD5 "3":OTP "4":TLS	"0":MSCHAPv2	R/W	○	Inner Method if EAP Mode=PEAP
INNER_TTLS	"0":MSCHAPv2 "1":MSCHAP "2":CHAP "3":PAP "4":EAP-GTC "5":EAP-MD5 "6":EAP-MSCHAPv2 "7":EAP-OTP "8":EAP-TLS	"0":MSCHAPv2	R/W	○	Inner Method if EAP Mode=TTLS
EAP_USERNAME	0-63 digit long characters	NULL	R/W	○	EAP authentication user name
EAP_PASSWORD	0-32 digit long characters **∗Encrypted data**	String of empty	W	○	EAP authentication password
EAP_ANON	0-63 digit long characters	NULL	R/W	○	Anon. Outer ID If EAP Mode=FASE,PEAP,TTLS
EAP_VERIFY	"0":Disable "1":Enable	1	R/W	○	Verify Server Cert. Not for LEAP
EAP_PRIVATEKEY	0-64 digit long characters **∗Encrypted data**	String of empty	W	○	Private Key P/W

Name of Setting item	Setting value	Default Value	R/W	initial IW	Contents of Setting item
EAP_AUTO_PAC	"0":Disable "1":Enable	0	R/W	○	PAC Auto Provisioning If EAP Mode=FAST
EAP_PAC_PASS	0-64bytes *** Encrypted data**	String of empty	W	○	PAC Password If EAP=FAST & Auto prov.=off
SignalLevel1	-85 dBm	-	R	-	Threshold for electrical field strength 1
SignalLevel2	-74 dBm	-	R	-	Threshold for electrical field strength 2
SignalLevel3	-64 dBm	-	R	-	Threshold for electrical field strength 3
FWversion	x.x.x.	-	R	-	Firmware version for WLAN module

[BLUETOOTH] section

Name of Setting item	Setting value	Default Value	R/W	initial IB	Contents of Setting item
BLUETOOTH	"0": Disable "1": Enable	1	R/W	○	Bluetooth
PROTOCOL	"0": status 3 "1": status 4 "2": NONE	1	R/W	○	Communication protocol (for SBPL)
BLUELEVEL	"0": No authentication "1": Auth. level 2-1 "2": Auth. level 2-2 "3": Auth. level 3 "4": Auth. level 4	0	R/W	○	Authentication level
PINCODE	0-16 digit characters (except "") **∗Encrypted data**	0000	R/W	○	PIN code
DEVICENAME	0-53 digit characters	SATO PRINTER	R/W	○	Device name
ISI	"0", "12" to "1000"(hexadecimal)	800	R/W	○	ISI
ISW	"0", "11" to "1000"(hexadecimal)	12	R/W	○	ISW
PSI	"12" to "1000"(hexadecimal)	800	R/W	○	PSI
PSW	"11" to "1000"(hexadecimal)	12	R/W	○	PSW
BLUEADDRESS	"aabbccddeeff"	-	R	-	BD address
BLUEVERSION	"spp3_vX.YY"	-	R	-	Bluetooth firmware version
CRC	"0": Disabled "1": Enabled	0	R/W	○	CRC mode
PAIRING1	"0": Do not remove "1": Remove	0	W	-	Remove paring information1 or not
PAIRING2	"0": Do not remove "1": Remove	0	W	-	Remove paring information2 or not
PAIRING3	"0": Do not remove "1": Remove	0	W	-	Remove paring information3 or not
PAIRING4	"0": Do not remove "1": Remove	0	W	-	Remove paring information4 or not
PAIRING5	"0": Do not remove "1": Remove	0	W	-	Remove paring information5 or not
PAIRING6	"0": Do not remove "1": Remove	0	W	-	Remove paring information6 or not
PAIRING7	"0": Do not remove "1": Remove	0	W	-	Remove paring information7 or not
PAIRING8	"0": Do not remove "1": Remove	0	W	-	Remove paring information8 or not
PAIRING9	"0": Do not remove "1": Remove	0	W	-	Remove paring information9 or not
PAIRING10	"0": Do not remove "1": Remove	0	W	-	Remove paring information10 or not
SPP_TIME	"0" to "10" (Unit:seconds)	0	R/W	○	Time to timeout for disconnection (SPP layer)
LMP_TIME	"0" to "999" (Unit:0.1 seconds)	100	R/W	○	Time to timeout for disconnection (LMP layer)
PAIRING_INFO1	"aabbccddeeff" (BD address only)	-	R	-	Paring information 1
PAIRING_INFO2	"aabbccddeeff" (BD address only)	-	R	-	Paring information 2
PAIRING_INFO3	"aabbccddeeff" (BD address only)	-	R	-	Paring information 3
PAIRING_INFO4	"aabbccddeeff" (BD address only)	-	R	-	Paring information 4
PAIRING_INFO5	"aabbccddeeff" (BD address only)	-	R	-	Paring information 5
PAIRING_INFO6	"aabbccddeeff" (BD address only)	-	R	-	Paring information 6
PAIRING_INFO7	"aabbccddeeff" (BD address only)	-	R	-	Paring information 7
PAIRING_INFO8	"aabbccddeeff" (BD address only)	-	R	-	Paring information 8
PAIRING_INFO9	"aabbccddeeff" (BD address only)	-	R	-	Paring information 9

Name of Setting item	Setting value	Default Value	R/W	initial	Contents of Setting item
				IB	
PAIRING_INFO10	"aabbccddeeff" (BD address only)	-	R	-	Paring information 10

[EXT] section

Name of Setting item	Setting value	Default Value	R/W	initial IE	Contents of Setting item
EXTSIG	"0": Disable "1": Enable	0	R/W	○	External signal
EXTMODE	"0": TYPE1 "1": TYPE2 "2": TYPE3 "3": TYPE4	3	R/W	○	External signal switch
EXTRETRY	"0": Disable "1": Enable	0	R/W	○	Signal for reprint
EXTPRTSTAT	"2": 5 pins "4": 7 pins	2	R/W	○	Start print signal
EXTREISUU	"2": 5 pins "4": 7 pins	4	R/W	○	Reprint signal
EXTPAPEREND	"8": 1 pin "2": 3 pins "4": 4 pins "16": 6 pins "64": 9 pins "32": 10 pins "0": Do not specify	8	R/W	○	Paper end signal
EXTRBNEND	"8": 1 pin "2": 3 pins "4": 4 pins "16": 6 pins "64": 9 pins "32": 10 pins "0": Do not specify	2	R/W	○	Ribbon end signal
EXTMCNERR	"8": 1 pin "2": 3 pins "4": 4 pins "16": 6 pins "64": 9 pins "32": 10 pins "0": Do not specify	4	R/W	○	Machine error signal
EXTPRNCOMP	"8": 1 pin "2": 3 pins "4": 4 pins "16": 6 pins "64": 9 pins "32": 10 pins "0": Do not specify	16	R/W	○	Print complete signal
EXTOFFLINE	"8": 1 pin "2": 3 pins "4": 4 pins "16": 6 pins "64": 9 pins "32": 10 pins "0": Do not specify	64	R/W	○	Offline signal
EXTRBNNEAR	"8": 1 pin "2": 3 pins "4": 4 pins "16": 6 pins "64": 9 pins "32": 10 pins "0": Do not specify	32	R/W	○	Ribbon near end signal
EXTRDISPCOMP	"8": 1 pin "2": 3 pins "4": 4 pins "16": 6 pins "64": 9 pins "32": 10 pins "0": Do not specify	0	R/W	○	Dispenser completion signal
EXT_9PIN	"0": MODE1 (With or not remaining items to print) "1": MODE2 (Online / offline status)	0	R/W	○	Output mode of 9-pin external signal

[RFID] section

Name of Setting item	Setting value	Default Value	R/W	initial IF	Contents of Setting item
RFID_LIFE_ COUNT_SUCCESS	"0" to "999999"	0	R	-	RFID success count of life SOH+RB
RFID_LIFE_ COUNT_FAILURE	"0" to "999999"	0	R	-	RFID failure count of life SOH+RB
RFID_LIFE_ COUNT_TOTAL	"0" to "999999"	0	R	-	RFID print count of life SOH+RB
RFID_COUNT_ SUCCESS	"0" to "999999"	0	R	○	RFID success count SOH+RB
RFID_COUNT_ FAILURE	"0" to "999999"	0	R	○	RFID failure count SOH+RB
RFID_COUNT_ TOTAL	"0" to "999999"	0	R	○	RFID print count SOH+RB
CLEAR_RFID_ COUNT	"0": Disable "1": Enable	0	W	○	RFID counter clear <RA>2,Rc:
READER_MODEL	"XXXXXXXXXXXXXXXX"	-	R	-	Model of reader
READER_ VERSION	"XXXXXXXXXXXXXXXX"	-	R	-	Version of reader
RFID_PITCH	"0": STANDARD "1": SMALL	0	R/W	○	RFID antenna pitch
RFID_LABEL_ DATA	"0": RETRY "1": RELEASE	0	R/W	○	RFID Retry mode <RA>2,Ed:
MAX_RETRY_ LABEL	"0" to "9"	1	R/W	○	RFID Retry print <RA>2,Ec:
MAX_RETRY_ COUNT	"0" to "9"	4	R/W	○	RFID Retry count <RA>2,Rt:
RFID_VERIFY	"0": Disable "1": Enable	1	R/W	○	RFID verify
RFID_ERROR_ SLASH	"0": Disable "1": Enable	1	R/W	○	RFID Error slanted line printing <RA>2,Es:
RFID_TAG_ OFFSET	"0" to "240" mm	0	R/W	○	RFID Offset of a tag <RA>2,To:
ANTENNA_ POWER(WRITE)	"0" to "240": Unit x0.1 dBm	100 (x0.1 dBm)	R/W	○	Antenna output (WRITE) <RA>2,Pw:
ANTENNA_ POWER(READ)	"0" to "240": Unit x0.1 dBm	100 (x0.1 dBm)	R/W	○	Antenna output (READ)
RFID_ERROR_ OUTPUT	"0": PULSE "1": LEVEL	1	R/W	○	RFID error output type <RA>2,Pm:
LENGTH_OF_ PULSE	"0": 100 ms "1": 200 ms "2": 300 ms "3": 400 ms "4": 500 ms	0	R/W	○	RFID Error pulse time <RA>2,Pl:
MCS_SERIALIZE	"0": Disable "1": Enable	0	R/W	○	MCS Serialization
TAG_CHIP_ MAKER	"0": IMPNJ "1": ALIEN "2": NXP	0	R/W	○	Tag chip manufacturers
PRE-ENCODED _TAG	"0": Disable "1": Enable	0	R/W	○	Pre-encoding tag
MCS_PREFIX_ DIGIT	"3": 3 "2": 2 "1": 1 "0": NONE	3	R/W	○	MCS prefix digit
ASSIGN_PREFIX	"0": AUTO "1": MANUAL	0	R/W	○	Prefix insertion setting
INPUT_PREFIX	"0": 000 "1": 001 "2": 010 "3": 011 "4": 100 "5": 101 "6": 110 "7": 111	0	R/W	○	Prefix input data
LOG_RFID_DATA	"0": Disable "1": Enable	0	R/W	○	RFID data log record
DATA_TO_ RECORD	"0": BOTH "1": EPC "2": TID	0	R/W	○	RFID record data type

[SBPL] section

Name of Setting item	Setting value	Default Value		R/W	initial SB	Contents of Setting item
ZEROSLASH	"0": Disable "1": Enable	1		R/W	○	Zero slash <LH>,<LD>
SHOTAI	"0": Gothic "1": Mincho	0		R/W	○	Type face <KG>, <KM>
PROPORTIONAL	"0": Fixed pitch "1": Proportional pitch	1		R/W	○	Proportional pitch <PS>, <PR>
STDCODE	"0": Standard code "1": Non-standard code	0		R/W	○	Protocol code
CMDERR	"0": Disable "1": Enable	0		R/W	○	Command error
STXCODE	"0" to "255"	standard 2(0x02)	non-standard 123(0x7B)	R/W	○	STX <LD>
ETXCODE	"0" to "255"	3(0x03)	125(0x7D)	R/W	○	ETX <LD>
ESCCODE	"0" to "255"	27(0x1B)	94(0x5E)	R/W	○	ESC <LD>
ENQCODE	"0" to "255"	5(0x05)	64(0x40)	R/W	○	ENQ <LD>
CANCODE	"0" to "255"	24(0x18)	33(0x21)	R/W	○	CAN <LD>
NULLCODE	"0" to "255"	0(0x00)	126(0x7E)	R/W	○	NULL <LD>
OFFLINECODE	"0" to "255"	64(0x40)	93(0x5D)	R/W	○	OFFLINE <LD>
EUROCODE	"0" to "255"	213(0xD5)	213(0xD5)	R/W	○	EURO <LD>
KANJI	"0": JIS code "1": SJIS code "2": Unicode (UTF16) "3": GB18030 "4": BIG5 "5": KCS5601	3		R/W	○	Kanji code <KC>
KNJ_MODE	"0": JIS X0208 compatible "1": JIS X0208 "2": JIS X0213 "3": GB18030 "4": BIG5 "5": KSC5601	3		R/W	○	Kanji mode
CODE_PAGE	"0": UTF8 "1": CP858 "2": ISO8859-1 "3": ISO8859-2 "4": ISO8859-9 "5": CP737 "6": CP855 "7": CP850 "8": CP852 "9": CP857 "10": CP866 "11": CP1250 "12": CP1251 "13": CP1252 "14": CP1253 "15": CP1254 "16": CP1257 "17": CP869 "18": JIS X0201	1		R/W	○	Code page

[SZPL] section

Name of Setting item	Setting value	Default Value	R/W	initial SZ	Contents of Setting item
PITCH_OFFSET	"-120" to "120"(dot)	0	R/W	○	Pitch offset at top of label
SHIFT_OFFSET	609dpi:"-2496" to "2496"(dot) 305dpi:"-1248" to "1248"(dot) 205dpi:"-832" to "832"(dot)	0	R/W	○	Label shift offset
PROTOCOL	"0": None "1": ACK/NAK	0	R/W	○	Protocol
CMD_HEAD	"0" to "255"	94	R/W	○	Command head
CTR_HEAD	"0" to "255"	126	R/W	○	Control head
DELIMITER	"0" to "255"	44	R/W	○	Delimiter
DATE_FORM	"0": Normal "1": MM/DD/YY(24 hours) "2": MM/DD/YY(12 hours) "3": DD/MM/YY(24 hours) "4": DD/MM/YY(12 ours)	0	R/W	○	Date and time format

[SIPL] section

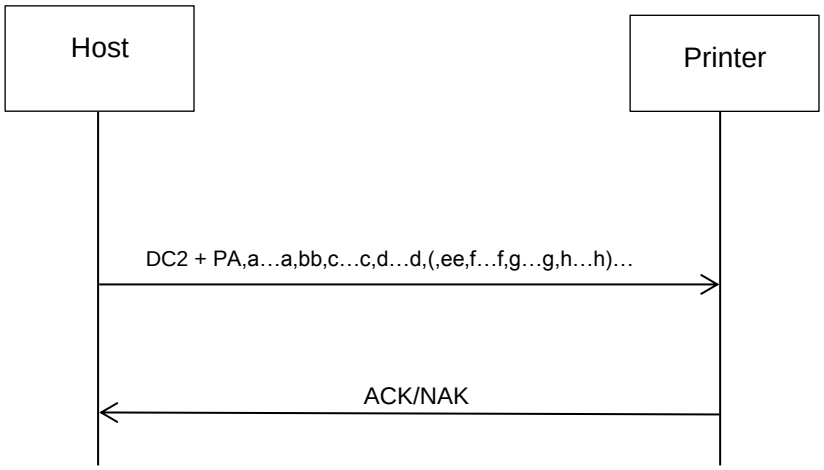
Name of Setting item	Setting value	Default Value	R/W	initial SI	Contents of Setting item
ZEROSLASH	"0": Disable "1": Enable	0	R/W	○	Zero slash
EUROCODE	"0" to "255"	213(0xD5)	R/W	○	EURO

[SDPL] section

Name of Setting item	Setting value	Default Value	R/W	initial SD	Contents of Setting item
CONTROL_CODE	"0": Standard code "1": Alternate code 1 "2": Alternate code 2 "3": User code	0	R/W	○	Protocol code
SOHCODE	"0" to "255"	1 (0x01)	R/W	○	SOH
STXCODE	"0" to "255"	2 (0x02)	R/W	○	STX
CRCODE	"0" to "255"	13 (0x0D)	R/W	○	CR
CNTCODE	"0" to "255"	94 (0x5E)	R/W	○	CNT

[STCL] section

Name of Setting item	Setting value	Default Value	R/W	initial ST	Contents of Setting item
CONTROL_CODE	"0": AUTO "1": ESC|LF|NUL "2": 7B|7C|7D "3": CUSTOM	0	R/W	○	Control Code
CMD_HEAD1	"0" to "255"	27 (0x1B)	R/W	○	Command Head1
CMD_HEAD2	"0" to "255"	10 (0x0A)	R/W	○	Command Head2
CMD_HEAD3	"0" to "255"	0 (0x00)	R/W	○	Command Head3
EUROCODE	"0" to "255"	213(0xD5)	R/W	○	EURO
ZEROSLASH	"0": Disable "1": Enable	- (The same value as the ZEROSLASH of [SBPL]section)	R/W		Zero slash


Host
Printer
DC2 + PA,a…a,bb,c…c,d…d,(,ee,f…f,g…g,h…h)…
ACK/NAK

Printer Setting Information Acquisition

DC2+PB

Command	DC2	PB	Parameter
HEX code	$<12>_{16}$	$<50>_{16}<42>_{16}$	(,aa(,b…b))+ EOT(04h)
Default Value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command can be received even during the printer operation.
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	The command can be received even if an error is occurring.

[Function]
This command is used to acquire the printer information.

[Format]
[DC2]PB(,aa(,b･･･b))[EOT]

[Parameters]

Symbol	Parameter name	Valid range	Note
a	Identifier	CA: Common settings CB: Warning function II: IEEE1284 settings IR: RS-232C settings IL: LAN settings IU: USB settings IW: WLAN settings IB: Bluetooth settings IE: EXT settings IF: RFID settings SB: SBPL settings SZ: SZPL settings SI: SIPL settings SD: SDPL settings ST: STPL settings	* When omitted, all items will be returned.
b	Setting Item name	Refer to 17.1 [DC2] + PA command	Acquire up to [EOT]

[Return data format (normal)]
[STX]a…a,bb,c…c,d…d(,ee,f…f,g…g)…[ETX]

[Return data]

Symbol	Parameter name	Valid range
a	Total number of data byte *This is the total number of bytes after parameter b. The delimiting comma between parameters a and b, and the ETX are not included.	Data size from the first identifier until before [ETX]
b(e)	Identifier	CA: Common settings CB: Warning function II: IEEE1284 settings IR: RS-232C settings IL: LAN settings IU: USB settings IW: WLAN settings IB: Bluetooth settings IE: EXT settings IF: RFID settings SB: SBPL settings SZ: SZPL settings SI: SIPL settings SD: SDPL settings ST: STPL settings
c(f)	Setting information data size *Number of bytes of the section unit after parameter d. The delimiting comma between sections is not included.	Size of the corresponding setting information data
d(g)	Setting information data *Text format	Refer to "Setup information data" below.

[Setting information data format]

"Setting item name" + ":" + "Setting data" + "Line feed (0DH, 0AH)"

h…h:i…i[CR][LF](j…j:k…k[CR][LF])…

[Setting information data]

Symbol	Parameter name	Valid range
h(j…)	Setting Item name	Refer to the printer status information list
i(k…)	Setting data	Refer to the printer status information list

Data Example)

```
CA,12345,SPEED:4
LEVEL:5
CONCENTRATION:A
      :
```

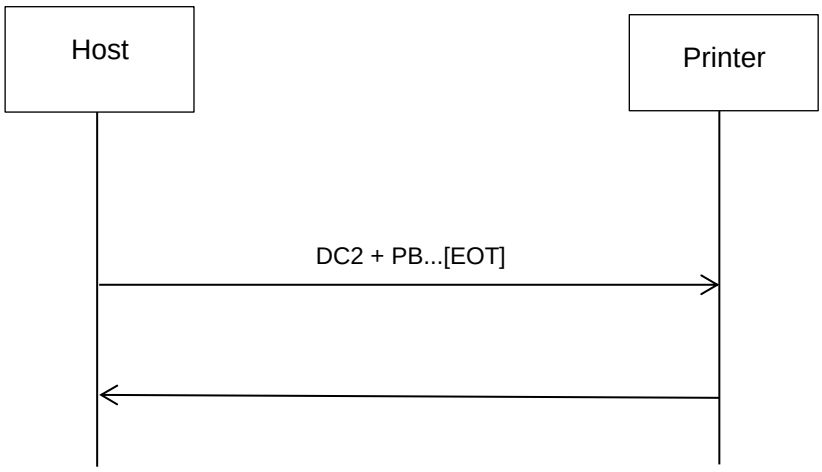
[Return data format (when a command error occurs)]

[NAK]<15>$_{16}$

[Exception processing]

Parameter name	Exception condition	
	A value outside the range is specified	The specified size and received size are different
Identifier	Command error	Invalid receive data

Terminology	Description
Command error	The data received after a command error is determined is not considered as a parameter of this command.



[Note]

1. When identifiers are omitted, all data will be returned.
2. When setting item names are specified, setting information of the item which was set will be returned.

17.3 Common Commands for All Languages

Printer Device Information Acquisition

DC2+PC

Command	DC2	PC	Parameter
HEX code	$<12>_{16}$	$<50>_{16}<43>^{16}$	None
Default value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command can be received even during the printer operation.
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands can be received even if an error is occurring.

[Function]
This command returns the printer device information.

[Format]
DC2 (12H) + PC

[Return data format (normal)]
[STX]a…a,b…b:c…c[CR][LF](d…d:e…e[CR][LF]) … [ETX]

Symbol	Parameter name	Valid range
a	Total number of data byte *This is the total number of bytes after parameter b. The delimiting comma between parameters a and b, and the ETX are not included.	Data size from the first device information name up to before [ETX]
b(d)	Device information name *Text format	Refer to the printer device information list
c(e)	Device information data *Text format	Refer to the printer device information list

Data Example)
[STX]12345,MODEL: Model name[CR][LF]FW Ver:1.0.0[CR][LF]…[CR][LF] [ETX]

[Printer device information list]

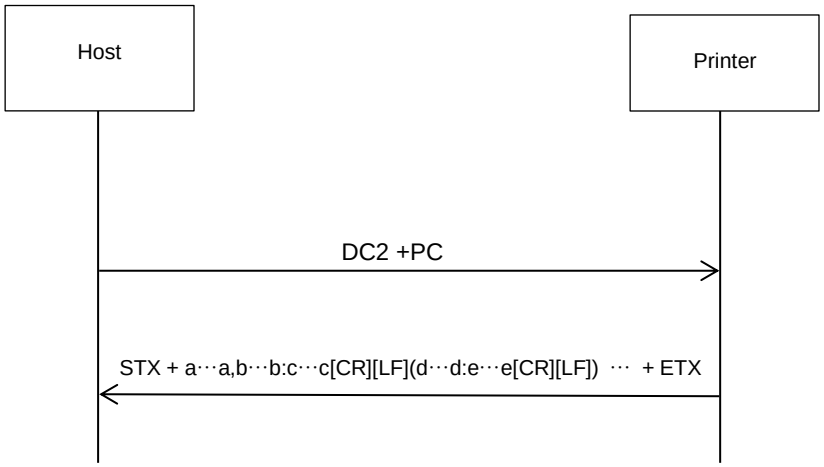
No	Description	Device information name	Device information data
1	Model name	MODEL	M…M M: Model name
2	Kernel version	KERNEL Ver	R…R R: OS release number
3	Main firmware version	MAIN FW Ver	V…VS V: Version
4	Main firmware Creation date	MAIN FW Date	YYYYMMDD_HHMMSS TTT T: Time zone
5	Printer module Boot firmware Version	MODULE BOOT FW Ver	P…P.boot-V.V.V-S…S P: Platform name V: Version S: Release = Release version Alpha/Beta = Test version xxxuser = Custom version urgent = Urgent version
5	LAN MAC Address	LAN MAC	XX:XX:XX:XX:XX:XX X: Alphanumeric
6	Printer module Boot firmware Creation date	MODULE BOOT FW Date	YY.MM.DD
7	Printer module Boot firmware Check sum	MODULE BOOT FW CHECKSUM	CCCC C: Check sum
8	Printer module Main firmware Version	MODULE MAIN FW Ver	P…P.main-V.V.V-S…S P: Platform name V: Version S: Release = Release version Alpha/Beta = Test version xxxuser = Custom version urgent = Urgent version

No	Description	Device information name	Device information data
9	Printer module Main firmware Creation date	MODULE MAIN FW Date	YY.MM.DD
10	Printer module Main firmware Check sum	MODULE MAIN FW CHECKSUM	CCCC C: Check sum
11	LAN MAC Address	LAN MAC	XX:XX:XX:XX:XX:XX X: Alphanumeric
12	WLAN MAC address	WLAN MAC	XX:XX:XX:XX:XX:XX X: Alphanumeric
13	BD Address	BD	xxxxxxxxxxxx x: Alphanumeric
14	Head counter 1	Head Count1	Numeric value (unit: mm)
15	Head counter 2	Head Count2	Numeric value (unit: mm)
16	Head counter 3	Head Count3	Numeric value (unit: mm)
17	Life counter	Life Count	Numeric value (unit: mm)
18	Cutter counter	Cut Count	Numeric value (unit: count)
19	Dispense counter	Disp Count	Numeric value (unit: (unit: 1/24mm))
20	Free space size in user area	MEM_FROM	Numeric value (unit: byte)
21	USB memory available size (Printer front port connection)	MEM_USB1	Numeric value (unit: byte)
22	USB memory available size (Printer rear port connection)	MEM_USB2	Numeric value (unit: byte)
23	SBPL form overlay SLOT1 Number of registered counts, number of registered bytes	SBPL_FOL_SLOT1	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
24	SBPL form overlay SLOT1 Registration number	SBPL_FOL_SLOT1_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers *If the registration count is zero, the value is ignored.
25	SBPL format SLOT1 Number of registered counts, number of registered bytes	SBPL_FMT_SLOT1	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
26	SBPL format SLOT1 Registration number	SBPL_FMT_SLOT1_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers *If the registration count is zero, the value is ignored.
27	SBPL graphic SLOT1 Number of registered counts, number of registered bytes	SBPL_GRA_SLOT1	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
28	SBPL graphic SLOT1 Registration number	SBPL_GRA_SLOT1_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers *If the registration count is zero, the value is ignored.
29	SBPL BMP file SLOT1 Number of registered counts, number of registered bytes	SBPL_BMP_SLOT1	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
30	SBPL BMP file SLOT1 Registration number	SBPL_BMP_SLOT1_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.
31	SBPL PCX file SLOT1 Number of registered counts, number of registered bytes	SBPL_PCX_SLOT1	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
32	SBPL PCX file SLOT1 Registration number	SBPL_PCX_SLOT1_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.
33	SBPL external character SLOT1 Number of registered counts, number of registered bytes	SBPL_EXC_SLOT1	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
34	SBPL external character SLOT1 Registration number	SBPL_EXC_SLOT1_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.

No	Description	Device information name	Device information data
35	SBPL TrueType font SLOT1 Number of registered counts, number of registered bytes	SBPL_TTF_SLOT1	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
36	SBPL TrueType font SLOT1 Registration number	SBPL_TTF_SLOT1_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.
37	SBPL form overlay SLOT2 Number of registered counts, number of registered bytes	SBPL_FOL_SLOT2	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
38	SBPL form overlay SLOT2 Registration number	SBPL_FOL_SLOT2_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.
39	SBPL format SLOT2 Number of registered counts, number of registered bytes	SBPL_FMT_SLOT2	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
40	SBPL format SLOT2 Registration number	SBPL_FMT_SLOT2_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.
41	SBPL graphic SLOT2 Number of registered counts, number of registered bytes	SBPL_GRA_SLOT2	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
42	SBPL graphic SLOT2 Registration number	SBPL_GRA_SLOT2_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.
43	SBPL BMP file SLOT2 Number of registered counts, number of registered bytes	SBPL_BMP_SLOT2	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
44	SBPL BMP file SLOT2 Registration number	SBPL_BMP_SLOT2_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.
45	SBPL PCX file SLOT2 Number of registered counts, number of registered bytes	SBPL_PCX_SLOT2	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
46	SBPL PCX file SLOT2 Registration number	SBPL_PCX_SLOT2_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.
47	SBPL external character SLOT2 Number of registered counts, number of registered bytes	SBPL_EXC_SLOT2	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
48	SBPL external character SLOT2 Registration number	SBPL_EXC_SLOT2_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.
49	SBPL TrueType font SLOT2 Number of registered counts , number of registered bytes	SBPL_TTF_SLOT2	XXXX,YYYYYYYYYY X: Registration count Y: Number of registered bytes
50	SBPL TrueType font SLOT2 Registration number	SBPL_TTF_SLOT2_No	XXX (,XXX,XXX･･･) X: Registration No., *Repeated as many times as the registration numbers. *If the registration count is zero, the value is ignored.

[Precautions during use]

1. The printer device information update cycle must be five seconds or longer. When sending this command in continuation, be sure to set an interval of five seconds or more.
2. When a USB memory is used, only the available space of the memory connected first is returned even when a connection is established via the HUB.
3. It takes more than one second to create the return data immediately after the startup in order to obtain the checksum of the module.
4. It takes more time to create the return data when there are a lot of registrations by SBCL command.
   (It takes approx. 1.5 seconds to register 10,000 data.)



17.4 Common Commands for All Languages

Each Sensor Information Acquisition

DC2+PD

Command	DC2	PD	Parameter
HEX code	<12>$_{16}$	<50>$_{16}$<44>$_{16}$	None
Default value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command can be received even during the printer operation.
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands can be received even if an error is occurring.

[Function]

This command is used to acquire the information of each sensor. The sensor information corresponds to the information immediately after the reception of the command.

[Format]

DC2 (12H) + PD

[Return data format (normal)]

[STX]a…a,b…b:c…c,(d…d:e…e) … [ETX]

Symbol	Parameter name	Valid range
a	Total number of data byte *This is the total number of bytes after parameter b. The delimiting comma between parameters a and b, and the ETX are not included.	Data size from the first identifier until before [ETX]
b(d)	Sensor information name *Text format	Refer to the sensor information data list
c(e)	Sensor information data *Text format	Refer to the sensor information data list

Data Example)

[STX]xx,IM:0.2/SL1.5,GAP:0.9/SL1.0…[ETX]

[Return data format (when a command error occurs)]

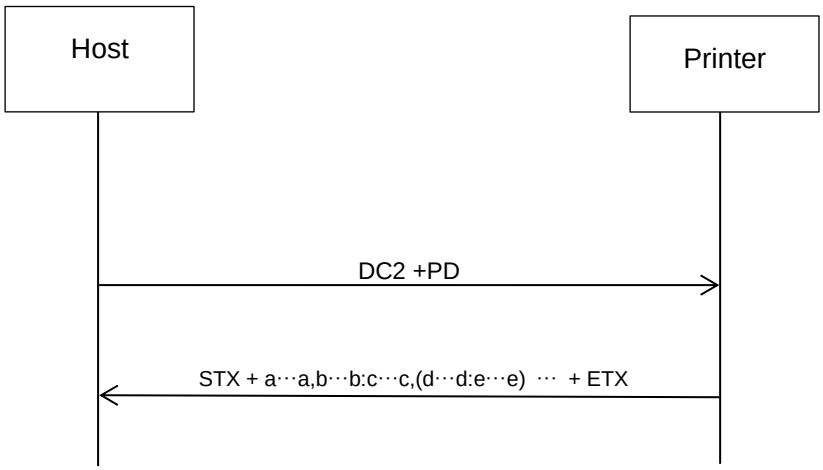
[NAK]<15>$_{16}$

[Sensor information data list]

No	Sensor information name	Description	Sensor information data
1	IM	I-Mark sensor	X.X/SLY.Y X.X = 0.0 to 3.3 : Sensor level Y.Y = 0.0 to 3.3 : Slice level
2	GAP	Gap sensor	X.X/SLY.Y X.X = 0.0 to 3.3 : Sensor level Y.Y = 0.0 to 3.3 : Slice level
3	HEAD OPEN	Head Open	0: Close, 1: Open
4	CUTTER OPEN	Cutter open	0: Close, 1: Open
5	DISPENSER	Dispense sensor	0: Without label, 1: With label
6	HEAD TEMP	Head thermistor	-XX to XX: Thermistor temperature
7	RIBBON	Ribbon slit sensor	0: Slit ON, 1: Slit OFF

[Notes]

1. When sending this command in continuation, be sure to set a fixed interval (100 msec or more).
2. If the sensor information acquisition processing for each sensor does not finish within 100 msec, a timeout is thought to have occurred, and [NAK] is returned. A timeout may occur during the printer operation.


Host
Printer
DC2 +PD
STX + a···a,b···b:c···c,(d···d:e···e) ··· + ETX

17.5 Common Commands for All Languages

Printer Status Information Acquisition

DC2+PG

Command	DC2	PG	Parameter
HEX code	$<12>_{16}$	$<50>_{16}<47>_{16}$	None
Default value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command can be received even during the printer operation.
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands can be received even if an error is occurring.

[Function]
This command returns the printer status.

[Format]
DC2 (12H) + PG

[Return data format (normal)]
[STX]a…a,b…bc,d…de,…[ETX] *There is no ", (comma)" before ETX

Symbol	Parameter name	Valid range
a	Total number of data byte *This is the total number of bytes after parameter b. The delimiting comma between parameters a and b, and the ETX are not included.	Data size from the first identifier until before [ETX]
b(d)	Printer status information name *Text format	Refer to the printer status information list
c(e)	Printer status information data *Text format	Refer to the printer status information list

Data Example)
[STX]32,PS0,RS0,RE0,PE0,EN00,BT0,Q000000[ETX]

[Printer status information data list]

No	Description	Printer status information name	Printer status information data
1	Printer status	PS	0: Standby (waiting for receiving data) 1: Waiting for dispensing 2: Analyzing 3: Printing 4: Offline 5: Error
2	Receive buffer status	RS	0: Buffer available 1: Buffer near full 2: Buffer full
3	Ribbon status *Monitoring can be performed during printing and feeding The correct value cannot be acquired when the operation has stopped	RE	0: Ribbon present 1: Ribbon near end 2: No ribbon 3: Direct thermal model
4	Media status *Monitoring can be performed during printing and feeding The correct value cannot be acquired when the operation has stopped	PE	0: Media present (including during startup) 2: No media

No	Description	Printer status information name	Printer status information data
5	Error No. *1	EN	00: Online *Not an error. Return is performed 01: Offline *Not an error. Return is performed 02: Machine error 03: Memory error 04: Program error 05: Setting information error (FLASH-ROM error) 06: Setting information error (EE-PROM error) 07: Download error 08: Parity error 09: Over run 10: Framing error 11: LAN timeout error 12: Buffer over 13: Head open 14: Paper end 15: Ribbon end 16: Media error 17: Sensor error 18: Printhead error 19: Cover open error 20: Memory/Card type error 21: Memory/Card read/write error 22: Memory/Card full error 23: Memory/Card no battery error 24: Ribbon saver error 25: Cutter error 26: Cutter sensor error 27: Stacker full error 28: Command error 29: Sensor error at Power-On 30: RFID error 31: Interface card error 32: Rewinder error 33: Other error 34: RFID error 35: Head density error 36: Kanji data error 37: Calendar error 38: Item No error 39: BCC error 40: Cutter cover open error 41: Ribbon rewind non-lock error 42: Communication timeout error 43: Lid latch open error 44: No media error at Power-On 45: SD card access error 46: SD card full error 47: Head lift error 48: Head overheat error 49: SNTP time correction error 50: CRC error 51: Cutter motor error 52: WLAN module error 53: Scanner reading error 54: Scanner checking error 55: Scanner connection error 56: Bluetooth Module error 57: EAP authentication error(EAP failed) 58: EAP authentication error(Time out)
6	Battery status	BT	0: Normal 1: Battery near end 2: Battery error
7	Remaining number of print	Q	000000 to 999999: 6-digit remaining number of print

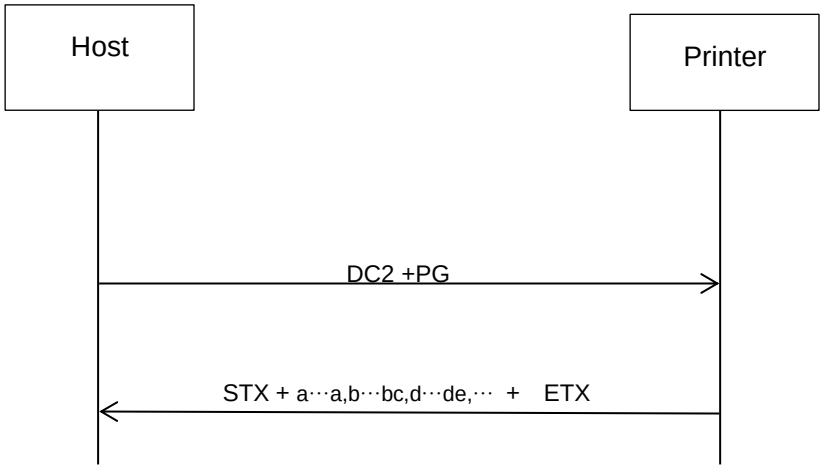
*1) Described error numbers contain errors which will never occur on this printer.

[Return data format (when a command error occurs)]

[NAK]<15>$_{16}$

[Supplemental explanation]

1. In the case of power supply, the battery status is always returned as 0: Normal.
2. The media status is returned as "Media present" unless paper end has reached during printing.
3. The correct value will be returned for receive buffer, ribbon end, media status, and battery when the error is updated.



17.6 Common Commands for All Languages

Cancel Request — DC2+PH

Command	DC2	PH	Parameter
HEX code	$<12>_{16}$	$<50>_{16}<48>_{16}$	None
Default value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command can be received even during the printer operation.
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	The command cannot be received while an error is occurring. ([NAK] return)

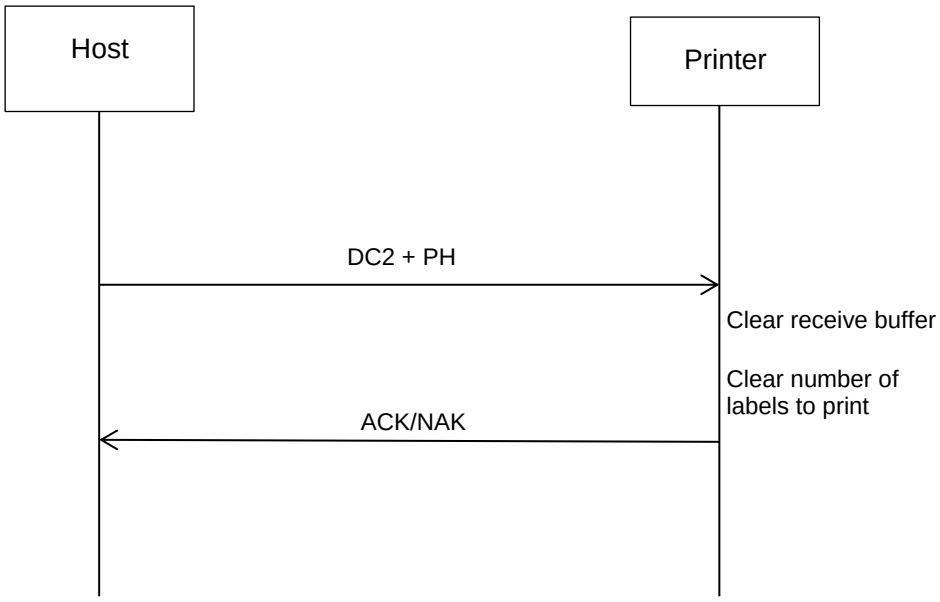
[Function]
This command cancels print jobs and clears the entire contents of receive buffer.

[Format]
[DC2] PH

[Return data format (normal)]
[ACK]$<06>_{16}$

[Return data format (when a command error occurs)]
[NAK]$<15>_{16}$

[Supplemental explanation]
1. The response data is returned after the cancel processing ends.
2. After sending the cancel request command, wait for more than 100 ms before sending the next data.



17.7 Common Commands for All Languages

Application Change

DC2+PI

Command	DC2	PI	Parameter
HEX code	<12>16	<50>16<49>16	,aa
Default Value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	The command cannot be received while an error is occurring. ([NAK] return)
	Others	Commands cannot be received other than when the screen is Online or Offline. ([NAK] return.)

[Function]

This command is used to switch applications such as SBPL and SZPL.

[Format]

DC2（12H) + PI,aa

[Parameters]

Symbol	Parameter name	Valid range	Acquisition method
aa	Identifier	00:AUTO SB: SBPL SZ: SZPL SI: SIPL SD: SDPL ST: STPL	Two characters fixed acquisition

[Return data format (normal)]

[ACK]<06>16

[Return data format (when a command error occurs)]

[NAK]<15>16

[Exception processing]

Parameter name	Exception condition	
	A value outside the range is specified	The specified size and received size are different
Identifier	Command error	Invalid receive data

Terminology	Description
Command error	The data received after a command error is determined is not considered as a parameter of this command.
Invalid receive data	The data corresponding to Byte 2 and thereafter of the identifier is ignored.

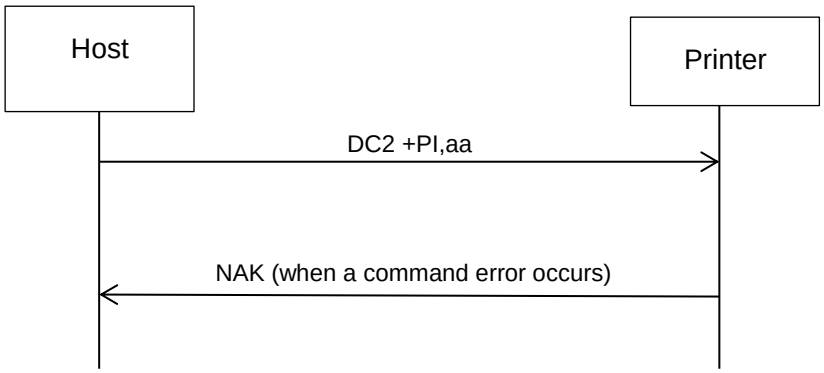
[Supplemental explanation]

1. Setting value of the printer will be switched when switching the application. So, obtaining and saving the setting of the application before switching, then switching it, and then put it back to the original application, after that set it by previously saved settings, and it performs the operation before switching it.

   e.g.) When switching the application such as SBPL - STCL - SBPL
   1) Obtain and save the setting value of SBPL state (obtain the setting value by AIOT, [DC2]PB[EOT] and so on)
   2) Switch the application to STCL.
   3) Switch the application to SBPL.
   4) Set the setting value obtained and saved in the step 1).

2. Please send this command in a state which the printer is not working anything in Offline or Online standby state waiting state.
   The result of this command sent in pause status during cancellation is not guaranteed. In such case, restart the printer.

3. AUTO mode will not be available unless you reboot after switching to AUTO mode.
   The printer works with the application before the change until it reboots.



17.8 Common Commands for All Languages

EPC Code Read

DC2+PJ

Command	DC2	PJ	Parameter
HEX code	$<12>_{16}$	$<50>_{16}<4A>_{16}$	,aa,bb
Default Value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands can be received even if an error is occurring.

[Function]

Read the information of Gen2 (Class1Generation2) corresponding tags and IC chip manufacturer extended specifications tag (UHF).

[Format]

[DC2]PJ,aa,bb

[Parameters]

Symbol	Parameter name	Valid range	Acquisition method
a	Identifier	U1: EPC area U2: TID area U3: USER area U4: PC/AFI area	Two characters fixed acquisition
b	Options identifier	NO: No option identifier RS:RSSI/ RSSI(Received Signal Strength Indicator) MT: Module temperature	Two characters fixed acquisition

[Return data format (normal)]

[STX]a…a,b…b(,c…c)[ETX]

[Return data]

Symbol	Parameter name	Valid range
a	Total number of data byte ***This is the total number of bytes after parameter b. The delimiting comma between parameters a and b, and the ETX are not included.**	Data size from the first memory data item until before [ETX] Maximum 3 digits
b (d)	Memory data *Text format	During a tag error, "EPC_Tag_Err" is set. Maximum 256 digits
c	Option data ("Option identifier" + ":" + "Data") *Text format	Options identifier RS: RSSI (Received Signal Strength Indicator) MT: Module temperature Data Maximum 3 digits

Data Example)

[STX]22,E200680612345678,RS:10[ETX]

[Return data format (when a command error occurs)]

[NAK]$<15>_{16}$

[Exception processing]

Parameter name	Exception condition
	A value outside the range is specified
Identifier	Command error

Terminology	Description
Command error	The data received after a command error is determined is not considered as a parameter of this command.

[Coding sample1]

<A>
[DC2]PJ,U1,NO
<Z> (Specify EPC area)

[Coding sample2]

<A>
[DC2]PJ,U2,RS
<Z> (Specify RSSI to TID area readout and option)

[Sample of status reply1]

■When EPC data“E0123456789ABCDEF0123456” is on Gen2 supported tag
[STX]24,E0123456789ABCDEF0123456[ETX]

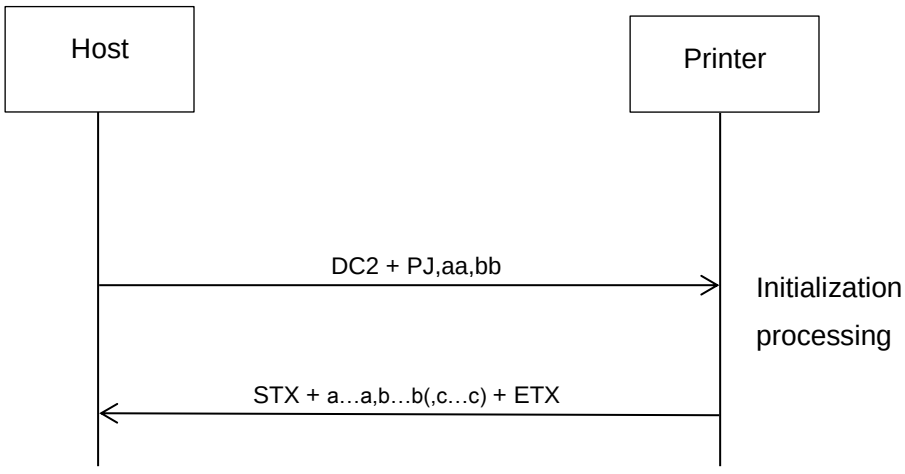
■ When Gen2 supported tag fails to read EPC data
[STX]11,EPC_Tag_Err[ETX]

[Sample of status reply 2]

When TID data “E200680612345678”is on Gen2 supported tag and RSSI is 10dBm
[STX]22,E200680612345678,RS:10[ETX]

[Supplemental explanation]

1. This command cannot be used in combination with commands other than <A> and <Z>.
2. When this command is received during printing, it will not be processed. It will be processed after printing is complete.
3. It takes about 5 seconds to return all return status to the host after sending this command. If the port is disconnected before all statuses are returned to the host, RFID tag information will not be correctly returned and the data other than return status format is returned.
4. After sending this command, do not send the next command or data until all status replies are returned to host.
5. When this command turns into an error, it will return “EPC_Tag_Err” in Ascii.
6. When the communication protocol is used only for driver or set to Status 3, ACK/NAK is returned before status reply after this command is sent.



17.9 Common Commands for All Languages

EPC/TID Return Request

DC2+PK

Command	DC2	PK	Parameter
HEX code	$<12>_{16}$	$<50>_{16}<4B>_{16}$	None
Default value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands can be received even if an error is occurring.

[Function]

Returns the status of RFID tag write by <IP0> command and EPC/TID.

[Format]

[DC2]PK

[[DC2]PK return data format (normal)]

[STX]a…a,b,c,d…d[CR][LF] [ETX]

[Return data]

Symbol	Parameter name	Valid range
a	Total number of data byte *** This is the total number of bytes after parameter b. The delimiting comma between parameters a and b, and the ETX are not included.**	Data size from the first write result status until before [ETX] Maximum 5 digits
b	Write result status *Text format	0: Write failure 1: Write success Note: Specified in text format.
c	Error symbol	N：No error E：EPC write error T：TID read error M：MCS error (Chip inconsistent or not supported) A：All errors Note: Specified in text format
d	EPC/TID return data	Refer to 【EPC/TID return data】 as below Note: Specified in text format

[Format of EPC/TID return data]

"Specify memory"＋":"＋"Data" ＋"Line feed(0DH、0AH)"

ee:f…f(,gg:h…h)[CR][LF]

Specifying the memory to be record

Parameters of the IF: RFID settings section of the [DC2]PA-Printer settings

DATA_TO_RECODE: The data to be read differs according to the settings of the RFID data record.

"0": BOTH (EPC and TID are returned)

"1": EPC (only EPC is returned)

"2": TID (only TID is returned)

A setup example of [DC2]PA is shown below.

<A>

[DC2]PA,24,IF,18, DATA_TO_RECODE:0[CR][LF]

<Z>

To set the above from settings menu, you can do the same from "Interface"->"RFID"->"Data to Record"

[EPC/TID return data]

Symbol	Parameter name	Valid range
e(g...)	Specify memory	EP:EPC ID:TID
f(h...)	Data *Text format	Maximum 256 digits

Data sample)
EP:E0123456789ABCDEF0123456,ID:E200680612345678

[Return data format (when a command error occurs)]
[NAK]<15>$_{16}$

[Exception processing]

Parameter name	Exception condition	
	A value outside the range is specified	The specified size and received size are different
Identifier	Command error	Invalid receive data

Terminology	Description
Command error	The data received after a command error is determined is not considered as a parameter of this command.
Invalid receive data	The data corresponding to Byte 2 and thereafter of the identifier is ignored.

[Coding sample]
<A>
<RU>01
<IP0>e:h,epc:E0123456789ABCDEF0123456;
<X22>,E0123456789ABCDEF0123456
<Z>

[Sample of status reply]
When [DC2]PK is received using a tag with E200680612345678 for TID specified to return TID only.
■ Write successful (TID read successful)
[STX]25,1,N,ID:E200680612345678[CR][LF][ETX]

■ Write successful (TID read fail)
[STX]9,1,T,ID:[CR][LF][ETX]

■ Write fail (EPC write failed)
[STX]9,0,E,ID:[CR][LF][ETX]

[Supplemental explanation]
1. The write status and EPC/TID is returned when [DC2]PK is received after RFID write.
2. Although write is successful status will be returned without data if you fail to read EPC/TID since EPC/TIC read will be done separately from write.
3. For details on the return sequence, refer to 16.6 ESC+RU EPC/TID return.

17.10 Common Commands for All Languages

Initialization	DC2+DB

Command	DC2	DB	Parameter
HEX code	<12>16	<44>16<42>16	,aa
Default Value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	The command cannot be received while an error is occurring. ([NAK] return)

[Function]
This command initializes the printer setting.

[Format]
[DC2] DB,aa

[Parameters]

Symbol	Parameter name	Valid range	Initialization target		Acquisition method
a	Identifier	CA: Common settings initialization	[PRINTER] section		Two characters fixed acquisition
		CB: Warning function initialization	[COUNT] section		
		II: IEEE1284 settings initialization	[IEEE1284] section		
		IR: RS-232C settings initialization	[RS-232C] section		
		IL: LAN settings initialization	[LAN] section		
		IU: USB settings initialization	[USB] section		
		IW: WLAN settings initialization	[WLAN] section		
		IB: Bluetooth settings initialization	[BLUETOOTH] section		
		IE: EXT settings initialization	[EXT] section		
		IF: RFID settings initialization	[RFID] section		
		SB: SBPL settings initialization	[SBPL] section		
		SZ: SZPL settings initialization	[SZPL] section		
		SI: SIPL settings initialization	[SIPL] section		
		SD: SDPL settings initialization	[SDPL] section		
		ST: STPL settings initialization	[STPL] section		
		CX: Registration information initialization	SBPL, SZPL, SIPL, SDPL, STPL,	Donw font	
				TrueType	
			Log	Image	
				Hex Dump	
				Error	
				Key	
				Date	
				Head	
				Buffer	
			SBPL	BMP	
				Overlay	
				Format	
				PCX	
				Graphic	
				External character	
				TrueType	
				BJD	

[Return data format (normal)]
[ACK]<06>$_{16}$

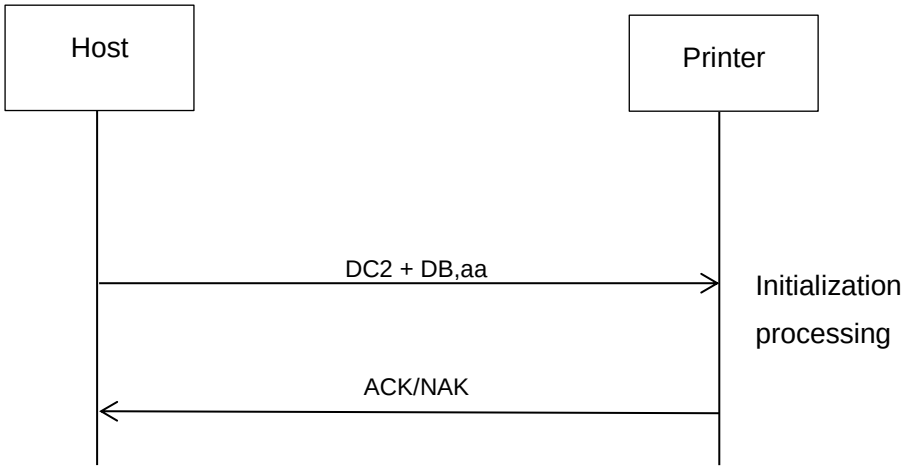
[Return data format (when a command error occurs)]
[NAK]<15>$_{16}$

[Exception processing]

Parameter name	Exception condition	
	A value outside the range is specified	The specified size and received size are different
Identifier	Command error	Invalid receive data

Terminology	Description
Command error	Initialization not performed. The data received after a command error is determined is not considered as a parameter of this command.
Invalid receive data	The data corresponding to Byte 2 and thereafter is ignored.

[Supplemental explanation]
1. Refer to 17.1 DC2+PA Printer setting command for the items to be initialized in each identifier.
2. If you initialize the interface settings, a response may not be returned.



17.11 Common Commands for All Languages

Reset	DC2+DC

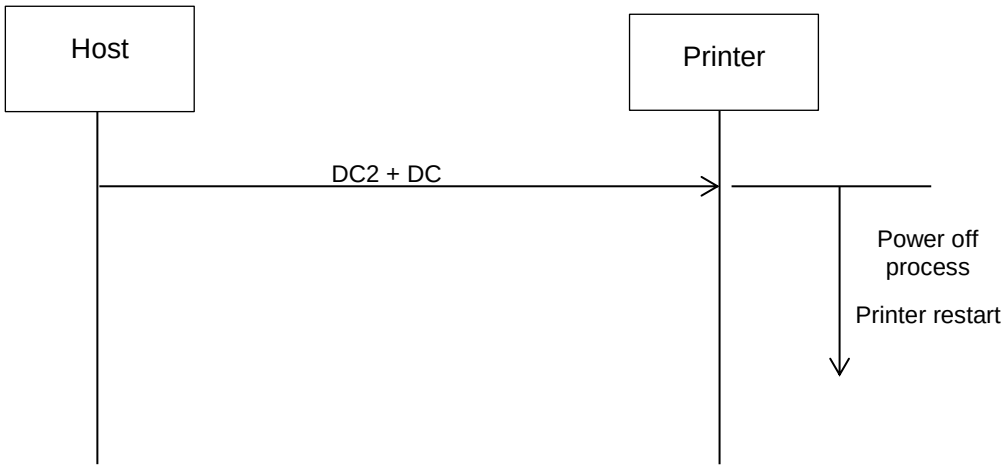
Command	DC2	DC	Parameter
HEX code	$<12>_{16}$	$<44>_{16}<43>_{16}$	None
Default value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command can be received while sensor information is being acquired.
	Error	Commands can be received even if an error is occurring.

[Function]
This command is used to restart the printer.

[Format]
[DC2] DC

[Response (only during printing)]
[NAK]$<15>_{16}$



17.12 Common Commands for All Languages

Power Off	DC2+DD

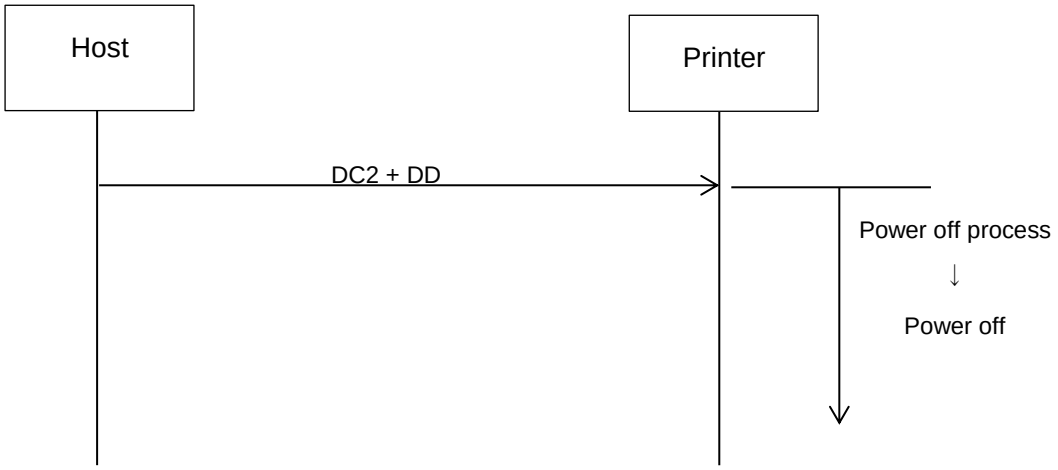
Command	DC2	DD	Parameter
HEX code	$<12>_{16}$	$<44>_{16}<44>_{16}$	None
Default value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command can be received while sensor information is being acquired.
	Error	Commands can be received even if an error is occurring.

[Function]
This command is used to turn OFF the printer.

[Format]
[DC2] DD

[Response (only during printing)]
[NAK]$<15>_{16}$



17.13 Common Commands for All Languages

File Download

DC2+DE

Command	DC2	DE	Parameter
HEX code	<12>$_{16}$	<44>$_{16}$<45>$_{16}$	,aa,b,c･･･c,d･･･d,e･･･e
Default Value	None		

Valid range and term of command	When turning off the power switch	The file is maintained.
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands can be received even if an error is occurring.

[Function]
This command is used to download the specified file.

[Format]
[DC2]DE,aa,b,c･･･c,d･･･d,e･･･e

[Parameters]

Symbol	Parameter name	Valid range	Acquisition method
a	Identifier	SB: SBPL settings SZ: SZPL settings SI: SIPL settings SD: SDPL settings ST: STPL settings CA: Common settings (specified during radio LAN certification)	Two characters fixed acquisition
b	File type	0: Font/logo 1: True Type font 2: Wireless LAN certificate (W-iFi Root CA) 3: Wireless LAN certificate (Wi-Fi Private Key) 4: Wireless LAN certificate (Wi-Fi Private Key) 5: Wireless LAN certificate (Wi-Fi EAP_FAST PAC_file) 6: HTTPS certificate	One character fixed acquisition
c	File name	Data within 255 characters including the following character groups Alphabet Numeral Hyphen ("-") Underscore ("_") Period (".")	Acquired up to ","
d	File size	0 to 999999999 (byte)	Acquired up to ","
e	File data		Equivalent to file size

[Return data format (normal)]
[ACK]<06>$_{16}$

[Return data format (when a command error occurs)]
[NAK]<15>$_{16}$

[Return data format (when the same file name error occurs)]
1<31>$_{16}$

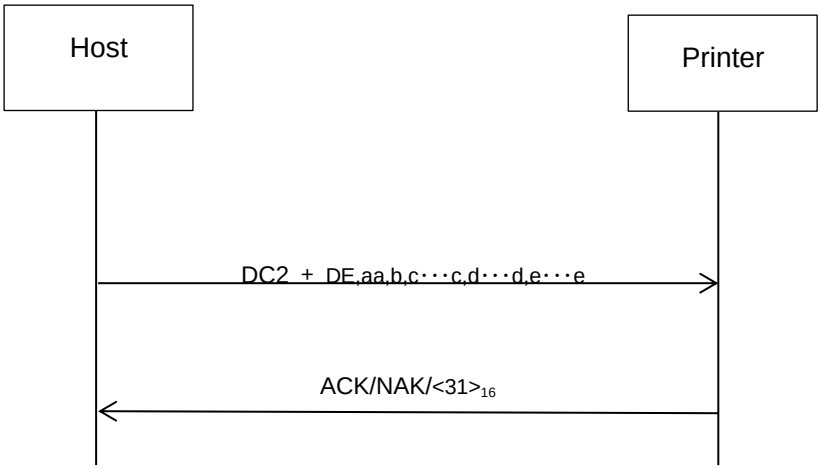
[Exception processing]

Parameter name	Exception condition		
	A value outside the range is specified	The specified size and received size are different	When the same file name
Identifier	Command error	Command error	
File type	Command error	Command error	
File name	Command error		Same file name error
File size	Command error		
File data		Invalid receive data (*1)	

Terminology	Description
Command error	Downloading not performed. The data received after a command error is determined is not considered as a parameter of this command.
Same file name error	The file is not saved.
Invalid receive data	The data exceeding the file size is ignored.

[Supplemental explanation]

Send this command when printing has stopped. The content of the response data is not guaranteed even when this command is received during printing.



17.14 Common Commands for All Languages

File Name Information Acquisition

DC2+DF

Command	DC2	DF	Parameter
HEX code	$<12>_{16}$	$<44>_{16}<46>_{16}$	,aa,b
Default Value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands can be received even if an error is occurring.

[Function]
This command returns a list of file names of the specified folder.

[Format]
[DC2]DF,aa,b

[Parameters]

Symbol	Parameter name	Valid range	Acquisition method
a	Language	SB: SBPL settings SZ: SZPL settings SI: SIPL settings SD: SDPL settings ST: STCL settings CA: Common settings (specified during radio LAN certification)	Two characters fixed acquisition
b	File type	0: Font/logo 1: True Type font 2: Wireless LAN certificate (Wi-Fi Root CA) 3: Wireless LAN certificate (Wi-Fi Private Key) 4: Wireless LAN certificate (Wi-Fi Private Key) 5: Wireless LAN certificate (Wi-Fi EAP_FAST PAC_file) 6: HTTPS certificate	One character fixed acquisition

[Return data format (normal, data exists)]
[STX]a…a,b…b(,c…c)[ETX]
Data example) [STX]xxxx,SBPL_001.dfl, SBPL_002.dfl[ETX]

Symbol	Parameter name	Valid range
a	Total number of data byte * This is the total number of bytes after parameter b. The delimiting comma between parameters a and b, and the ETX are not included.	Data size from the first identifier until before [ETX]
b(c)	File name	

[Return data format (normal, no file)]
[STX]0[ETX]

[Return data format (when a command error occurs)]
[NAK]$<15>_{16}$

[Exception processing]

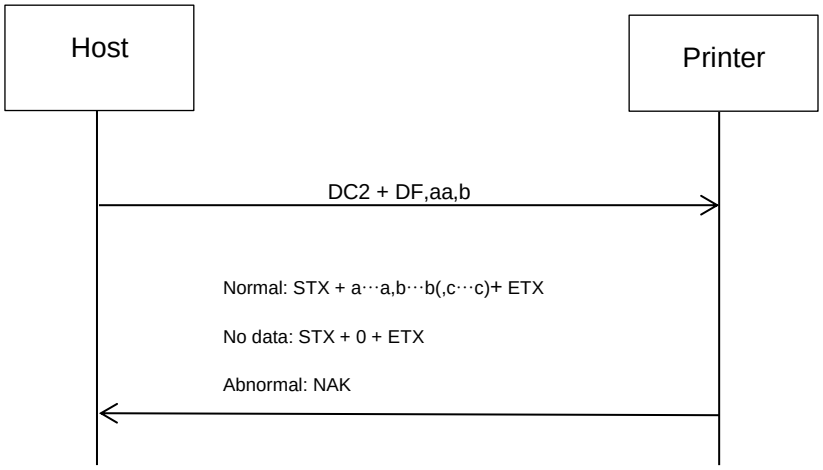
Parameter name	Exception condition	
	A value outside the range is specified	The specified size and received size are different
Language	Command error	Command error
File type	Command error	Invalid receive data

Conditions	Exception condition
When directory of the specified parameter doesn't exist. (Condition: Never registered in the past and so on.)	Command error

Terminology	Description
Command error	The file name list is not returned. The data received after a command error is determined is not considered as a parameter of this command.
Invalid receive data	The subsequent data is ignored.

[Supplemental explanation]

Send this command when printing has stopped. The content of the response data is not guaranteed even when this command is received during printing.



17.15Common Commands for All Languages

File Information Acquisition

DC2+DG

Command	DC2	DG	Parameter
HEX code	<12>$_{16}$	<44>$_{16}$<47>$_{16}$	,aa,b,cccccc,ddddddd
Default Value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands can be received even if an error is occurring.

[Function]
This command returns the specified file data information.

[Format]
[DC2]DG,aa,b,cccccc,ddddddd

[Parameters]

Symbol	Parameter name	Valid range	Acquisition method
a	Language	SB: SBPL settings SZ: SZPL settings SI: SIPL settings SD: SDPL settings ST: STPL settings	Two characters fixed acquisition
b	File type	0: Font/logo 1: True Type font	One character fixed acquisition
c	File name size (byte)	1 to 255	Acquired up to ","
d	File name *1 Only the file name is specified	Data including the following character groups Alphabet Numeral Hyphen ("-") Underscore ("_") Period (".")	Acquired up to the file name size

[Return data format (normal, data exists)]
[STX]a…a,b…b[ETX]

Symbol	Parameter name	Valid range
a	Total number of data byte * This is the total number of bytes after parameter b. The delimiting comma between parameters a and b, and the ETX are not included.	Data size from the first identifier until before [ETX]
d	File data	

[Return data format (normal, no data)]
[STX]0[ETX]

[Return data format (when a command error occurs)]
[NAK]<15>$_{16}$

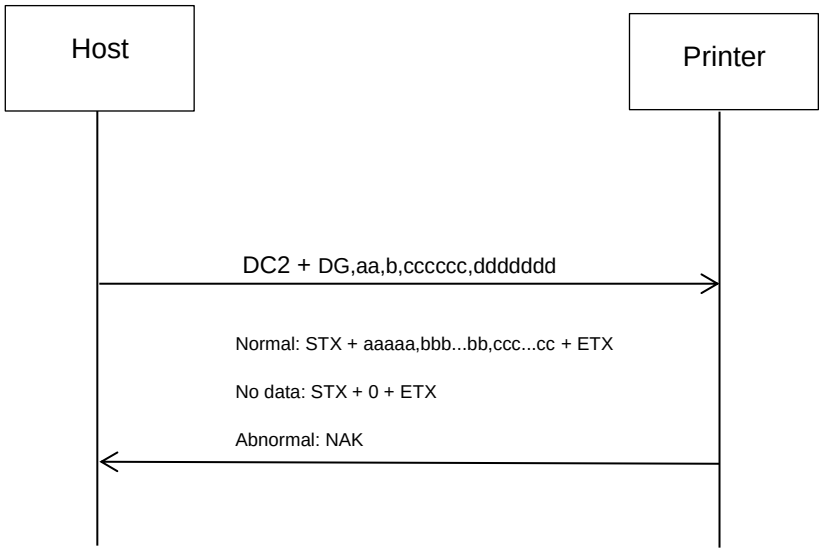
[Exception processing]

Parameter name	Exception condition	
	A value outside the range is specified	The specified size and received size are different
Language	Command error	Invalid receive data
File type	Command error	Command error
File name size	Command error	Excessively small: Command error, Excessively large: Remaining data standby
File name	Command error	Excessively small: Remaining data standby, Excessively large: Command error

Terminology	Description
Command error	The file data is not returned. The data received after a command error is determined is not considered as a parameter of this command.
Invalid receive data	The subsequent data is ignored.

[Supplemental explanation]

When a file name is bigger than the size of the file name and still the file name is valid, it operates and finishes normally.



17.16 Common Commands for All Languages

File Deletion

DC2+DH

Command	DC2	DH	Parameter
HEX code	$<12>_{16}$	$<44>_{16}<48>_{16}$	aa,b,c(,ddddd,eeeee)
Default Value	None		

Valid range and term of command	When turning off the power switch	
	Valid range	
	Printer operation in progress	The command cannot be received during the printer operation. ([NAK] return)
	Media sensor information acquisition in progress	The command cannot be received while sensor information is being acquired. ([NAK] return)
	Error	Commands can be received even if an error is occurring.

[Function]
This command is used to delete the registered files.

[Format]
[DC2]DH,aa,b,c(,ddddd,eeeee)

[Parameters]

Symbol	Parameter name	Valid range	Acquisition method
a	Language	SB: SBPL settings SZ: SZPL settings SI: SIPL settings SD: SDPL settings ST: STPL settings	Two characters fixed acquisition
b	File type	0: Font/logo 1: True Type font	One character fixed acquisition
c	Deletion type	0: File specification 1: All files	One character fixed acquisition
d	File name size (byte)	1 to 255	Acquired up to ","
e	File name *1 Only the file name is specified	Data including the following character groups Alphabet Numeral Hyphen ("-") Underscore ("_") Period (".")	Acquired up to the file name size

[Return data format (normal)]
[ACK]$<06>_{16}$

[Return data format (when a command error occurs)]
[NAK]$<15>_{16}$

[Exception processing]

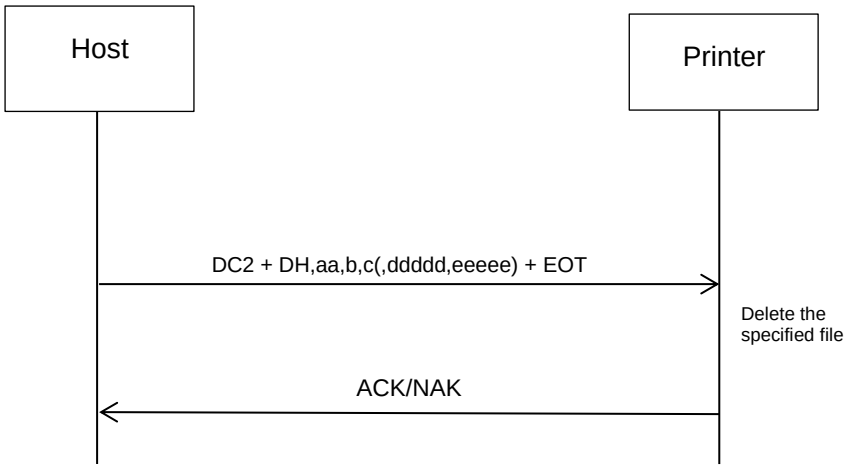
Parameter name	Exception condition	
	A value outside the range is specified	The specified size and received size are different
Language	Command error	Command error
File type	Command error	Command error
Deletion type	Command error	0: Command error 1: Invalid receive data *1
File name size	Command error	Command error
File name	Command error	

*1 Note that all data will be deleted even though subsequent data is not appropriate when specifying deleting all the files.

Terminology	Description
Command error	The file is not deleted. The data received after a command error is determined is not considered as a parameter of this command.
Invalid receive data	The subsequent data is ignored.

[Supplemental explanation]

1. Don't specify the parameter d and e when the parameter c specifies 1 (delete all files). When specified, the parameter d and e are not handled as data of this command.
2. When a file name is bigger than the size of the file name and still the file name is valid, it operates and finishes normally.

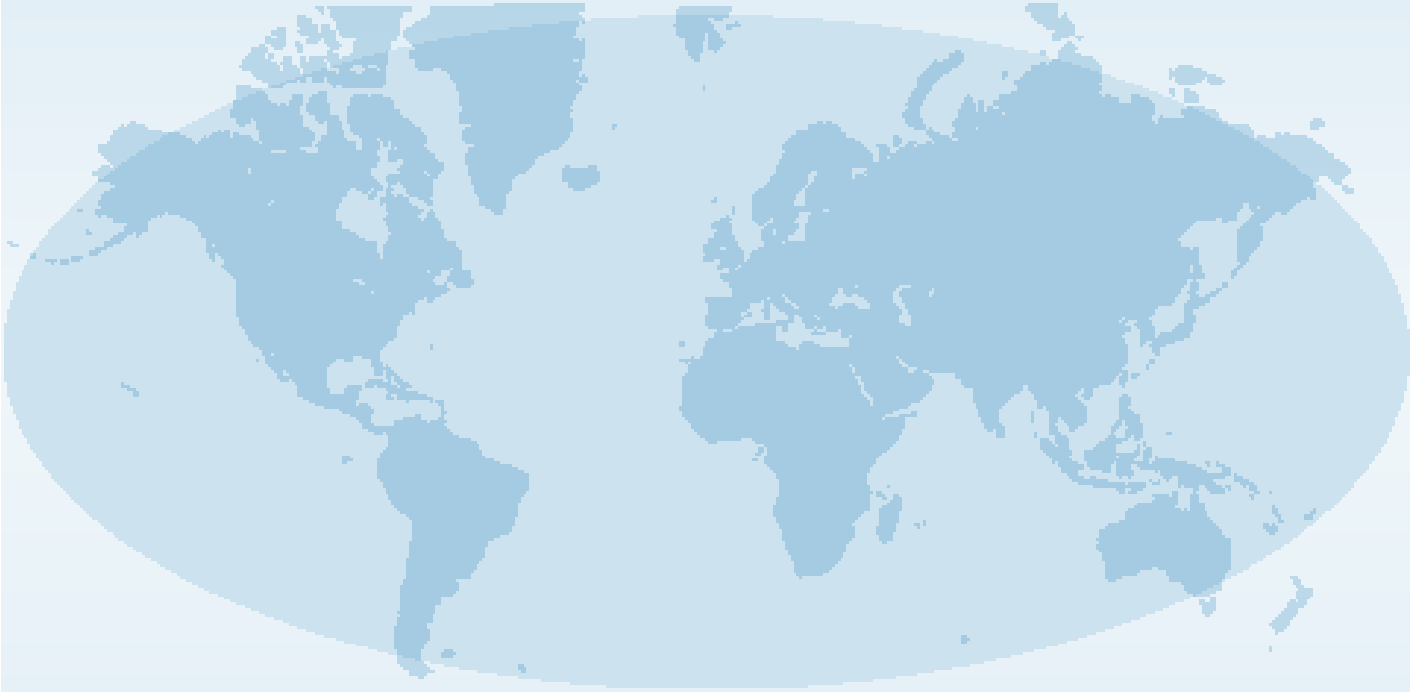


17.17 Time Zone List

Time zone name	UTC offset	Cover area
Africa		
Africa/Addis Ababa	+03:00	Addis Ababa (Ethiopia)
Africa/Algiers	+01:00	Alger (Algeria)
Africa/Cairo	+02:00	Egypt
Africa/Cape Town	+02:00	South Africa
Africa/Casablanca	+00:00	Morocco
Africa/Khartoum	+03:00	Sudan
Africa/Lagos	+01:00	Nigeria
Africa/Tripoli	+02:00	Libya
Africa/Tunis	+01:00	Tunisia
Asia		
Asia/Baghdad	+03:00	Iraq
Asia/Bangkok	+07:00	Thai
Asia/Beirut	+02:00	Lebanon
Asia/Brunei	+08:00	Brunei
Asia/Calcutta	+05:30	India
Asia/Dhaka	+06:00	Bangladesh
Asia/Dubai	+04:00	Dubai
Asia/Hong Kong	+08:00	Hong Kong
Asia/Hovd	+07:00	Ubs, Khovd (Mongol)
Asia/Irkutsk	+09:00	Irkutsk Oblast (Russia)
Asia/Jakarta	+07:00	Java, Sumatra (Indonesia)
Asia/Jerusalem	+02:00	Israel
Asia/Kabul	+04:30	Afghanistan
Asia/Karachi	+05:00	Pakistan
Asia/Krasnoyarsk	+08:00	Krasnoyarsk (Russia)
Asia/Kuala Lumpur	+08:00	Malaysia
Asia/Kuwait	+03:00	Kuwait
Asia/Magadan	+12:00	Magadan (Russia), Chisima islands
Asia/Makassar	+08:00	Borneo, Sulawesi, Bali Lesser Sunda, West Timor (Indonesian)
Asia/Manila	+08:00	Philippines
Asia/Novosibirsk	+07:00	Novosibirsk Novosibirsk Oblast (Russia)
Asia/Oral	+05:00	West Kazakhstan Province (Kazakhstan)
Asia/Phnom Penh	+07:00	Cambodia
Asia/Pontianak	+07:00	Borneo (Indonesia)
Asia/Rangoon	+06:30	Myanmar
Asia/Riyadh	+03:00	Saudi Arabia
Asia/Saigon	+07:00	Vietnam
Asia/Seoul	+09:00	Korea
Asia/Shanghai	+08:00	Shanhai
Asia/Singapore	+08:00	Singapore
Asia/Taipei	+08:00	Taiwan
Asia/Tehran	+03:30	Iran
Asia/Tokyo	+09:00	Japan
Asia/Ulaanbaatar	+08:00	Mongol (excluding Ubs, Khovd and Bayan Ologey)
Asia/Vientiane	+07:00	Laos
Asia/Vladivostok	+11:00	Jewish Autonomous Oblast, Khabarovsk region, maritime region Central part of Sakha Republic (Russia)
Asia/Yakutsk	+10:00	Amurskaya oblast, Zabaykal'skiy Kray East part of Sakha Republic (Russia)
Asia/Yekaterinburg	+06:00	Respublika Bashkortostan, Chelyabinsk Oblast, Khantia-Mansia, Kurgan Oblast, Orenburg Oblast, Perm Krai, Sverdlovsk Oblast, Tyumen Oblast, Yamalo-Nenets Autonomous Okrug (Russia)
Australia		
Australia/Adelaide	+09:30	South Australia
Australia/Brisbane	+10:00	Queensland (Australia)
Australia/Canberra	+10:00	New South Wales (Australia)
Australia/Darwin	+09:30	Darwin (Australia)
Australia/Eucla	+08:45	Eucla (Australia)
Australia/Hobart	+10:00	Hobart (Australia)
Australia/Melbourne	+10:00	Melbourne (Australia)
Australia/Perth	+08:00	Perth (Australia)
Australia/Sydney	+10:00	New South Wales (Australia)

Time zone name	UTC offset	Cover area
Caribbean		
Caribbean/Havana	-05:00	Cuba
Caribbean/Kingston	-05:00	Jamaica
Caribbean/Nassau	-05:00	Bahamas
Caribbean/Port-au-Prince	-05:00	Haiti
Caribbean/San Juan	-04:00	San Juan (Argentina)
Caribbean/Santo Domingo	-04:00	Dominica
Central America		
Central America/Belmopan	-06:00	Belize
Central America/Guatemala	-06:00	Guatemala
Central America/Managua	-06:00	Nicaragua
Central America/Panama	-05:00	Panama
Central America/San Jose	-06:00	San Jose (America)
Central America/San Salvador	-06:00	El Salvador
Central America/Tegucigalpa	-06:00	Honduras
EUROPE		
Europe/Amsterdam	+01:00	Holland
Europe/Andorra	+01:00	Andorra
Europe/Athens	+02:00	Greek
Europe/Belfast	+00:00	The United Kingdom
Europe/Belgrade	+01:00	Serbia
Europe/Berlin	+01:00	Germany
Europe/Bratislava	+01:00	Czech
Europe/Brussels	+01:00	Belgium
Europe/Bucharest	+02:00	Rumania
Europe/Budapest	+01:00	Hungary
Europe/Busingen	+01:00	Busingen (Germany)
Europe/Chisinau	+02:00	Moldova
Europe/Copenhagen	+01:00	Denmark
Europe/Dublin	+00:00	Ireland
Europe/Gibraltar	+01:00	Gibraltar (The United Kingdom)
Europe/Guernsey	+00:00	The United Kingdom
Europe/Helsinki	+02:00	Finland
Europe/Isle_of_Man	+00:00	The United Kingdom
Europe/Istanbul	+02:00	Turkey
Europe/Jersey	+00:00	The United Kingdom
Europe/Kaliningrad	+03:00	Kaliningrad (Russia)
Europe/Kiev	+02:00	Ukrayina
Europe/Lisbon	+00:00	Portugal
Europe/Luxembourg	+01:00	Luxembourg
Europe/Madrid	+01:00	Spain
Europe/Malta	+01:00	Malta
Europe/Mariehamn	+02:00	Finland
Europe/Minsk	+03:00	Belarus
Europe/Monaco	+01:00	Monaco
Europe/Moscow	+04:00	European Russia (Russia)
Europe/Nicosia	+02:00	Cyprus
Europe/Oslo	+01:00	Norway
Europe/Paris	+01:00	France
Europe/Podgorica	+01:00	Serbia
Europe/Prague	+01:00	Czech
Europe/Reykjavik	+00:00	Iceland
Europe/Riga	+02:00	Latvia
Europe/Rome	+01:00	Italy
Europe/Samara	+04:00	Samara, Udmurtskaya (Russia)
Europe/San_Marino	+01:00	Italy
Europe/Sarajevo	+01:00	Serbia
Europe/Simferopol	+02:00	Ukrayina
Europe/Skopje	+01:00	Serbia
Europe/Sofia	+02:00	Bulgaria
Europe/Stockholm	+01:00	Sweden
Europe/Tallinn	+02:00	Estonia
Europe/Tirane	+01:00	Albania
Europe/Tiraspol	+02:00	Moldova
Europe/Torshavn	+00:00	Torshavn (Denmark)
Europe/Uzhgorod	+02:00	Ukrayina
Europe/Vaduz	+01:00	Liechtenstein
Europe/Vatican	+01:00	Italy
Europe/Vienna	+01:00	Austria
Europe/Vilnius	+02:00	Lithuania

Time zone name	UTC offset	Cover area
Europe/Volgograd	+04:00	Kirov, Saratov Volgograd Oblast, Astrakhan Oblast (Russia)
Europe/Warsaw	+01:00	Poland
Europe/Zagreb	+01:00	Serbia
Europe/Zaporozhye	+02:00	Ukrayina
Europe/Zurich	+01:00	Swiss
North America		
North America/Alaska	-09:00	Alaska (America)
North America/Aleutian	-10:00	Aleutian Islands (America)
North America/Arizona	-07:00	Arizona (America)
North America/Central	-06:00	Canada, America, Mexico
North America/Danmarkshavn	+00:00	Greenland (Denmark)
North America/East-Indiana	-05:00	Indiana (America)
North America/Eastern	-05:00	Canada, America, Mexico
North America/Edmonton	-07:00	Alberta (Canada)
North America/Halifax	-04:00	Nova Scotia (Canada)
North America/Hawaii	-10:00	Hawaii (America)
North America/Indiana-Starke	-06:00	Stark county (America)
North America/Ittoqqortoormiit	-01:00	Ittoqqortoormiit (Denmark)
North America/Mexico City	-06:00	Mexico
North America/Michigan	-05:00	Michigan (America)
North America/Montreal	-05:00	Quebec (Canada)
North America/Mountain	-07:00	Canada, America, Mexico
North America/Nuuk	-03:00	(Denmark)
North America/Pacific	-08:00	Canada, America, Mexico
North America/Qaanaaq	-04:00	(Denmark)
North America/Samoa	-11:00	Samoa
North America/St Johns	-03:30	Newfoundland, Labrador (Canada)
North America/Toronto	-05:00	Ontario (Canada)
North America/Vancouver	-08:00	British Columbia (Canada)
North America/Winnipeg	-06:00	Manitoba (Canada)
Pacific		
Pacific/Auckland	+12:00	New Zealand
Pacific/Port Moresby	+10:00	Papua New Guinea
South America		
South America/Asuncion	-04:00	Paraguay
South America/Bogota	-05:00	Colombia
South America/Buenos Aires	-03:00	Argentine
South America/Caracas	-04:30	Venezuela
South America/Guayaquil	-05:00	Ecuador
South America/La Paz	-04:00	Bolivia
South America/Lima	-05:00	Peru
South America/Manaus	-04:00	Amazon (Brazil)
South America/Montevideo	-03:00	Uruguay
South America/Port of Spain	-04:00	Trinidad, Tobago
South America/Santiago	-04:00	Chile
South America/Sao_Paulo	-03:00	Brazil



Extensive contact information for worldwide SATO operations can be found on the Internet at **www.satoworldwide.com**

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