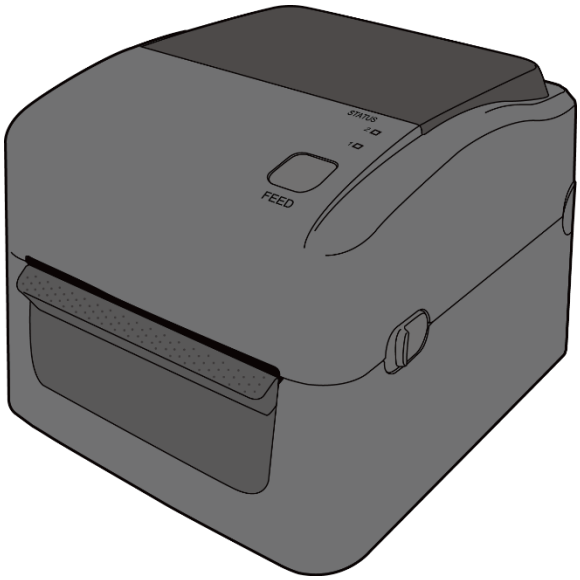
WS4 SERIES

Programming Reference

WS408DT / WS412DT
WS408TT / WS412TT



WS4-r01-27-01-17PR

Contents

1. Introduction

This document includes the command specifications of the WS4 series.

(1) WS408DT: Head density 203(dpi) / Direct thermal printer
(2) WS408TT: Head density 203(dpi) / Thermal transfer & Direct thermal printer
(3) WS412DT: Head density 300(dpi) / Direct thermal printer
(4) WS412TT: Head density 300(dpi) / Thermal transfer & Direct thermal printer

Command language used in this document is based on the SBPL(SATO Barcode Printer Language).

2. Default Settings

Default setting of the printers are listed below.

WS4 series

Item	Range	Default
Print speed	2-6 ips (203 dpi), 2-4 ips (300 dpi)	5 ips (203 dpi), 4 ips (300 dpi)
Darkness range	A, B	A (fixed)
Print darkness	1-5	3 (DT), 2 (TT)
Pitch offset	[-99, 99]	+0
Zero slash	w/ zero slash, w/o zero slash	w/o zero slash
Proportional/Fixed pitch	Propotional pitch, fixed pitch	Propotional pitch

3. Font List

Built-in fonts for the WS4 series are as follows.

Built-in fonts

Font	Font type	Command	Pitch
OCR-A (8dot/mm)	Bitmap 15×22 dots	OA	Fixed
OCR-B (8dot/mm)	Bitmap 20×24 dots	OB	Fixed
OCR-A (12dot/mm)	Bitmap 22×33 dots	OA	Fixed
OCR-B (12dot/mm)	Bitmap 30×36 dots	OB	Fixed
XU	Bitmap 5× 9 dots [Helvetica]	XU	Fixed/Proportional
XS	Bitmap 17×17 dots [Univers Condensed Bold]	XS	Fixed/Proportional
XM	Bitmap 24×24 dots [Univers Condensed Bold]	XM	Fixed/Proportional
XB	Bitmap 48×48 dots [Univers Condensed Bold]	XB	Fixed/Proportional
XL	Bitmap 48×48 dots [Sans Serif]	XL	Fixed/Proportional
U	Bitmap 5× 9 dots	U	Fixed
S	Bitmap 8×15 dots	S	Fixed
M	Bitmap 13×20 dots	M	Fixed
WB	Bitmap 18×30 dots	WB	Fixed
WL	Bitmap 28×52 dots	WL	Fixed
Outline	Outline font	$(Designation of shape) $=(Designation of print)	Fixed/Proportional
CG Times	True Type font	RD	Fixed/Proportional
CG Triumvirate	True Type font	RD	Fixed/Proportional

Expanded font

Built-in fonts can be expanded by a factor of 1 to 12.

Example: A font in a size of 5 dots in width and 9 dots in height is expanded by a factor of 3. The resulting font has a width of 15 dots and a height of 27 dots.

The following are the input methods of width and height parameters.

Width x Expansion factor = Width parameter setting value

Height x Expansion factor = Height parameter setting value

The command <L> controls the font expansion factor, and the parameter is specified by the magnification.

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 the command <L> is specified, the pitch between characters becomes wider as well.

Fixed pitch / Proportional pitch

As for XU~XL font, outline font and CG font, either fixed pitch or proportional pitch can be selected. Use the Proportional Pitch command <PS> and the Proportional Pitch Release command <PR> for the settings of proportional pitch.

Depending on the font, the width of the proportional pitch differs. On the other hand, the width of alphanumeric becomes narrow by specifying the proportional pitch.

As for the fixed pitch, the character width is according to the relevant font size selected.

Difference between outline font and bitmap font

The height and the width of bitmap font are predefined. The height of the bitmap font is a little bit larger than the width.

The bitmap font is the largest one in the font matrix.

For the font type and size, refer to the font list on the previous page.

As for the outline font, if setting the height and the width of the font properly, the smooth scaling algorithm of the printer allows you to create a well balanced font. It is also possible to select some style options such as gray scale and shadow settings.

4. Command List

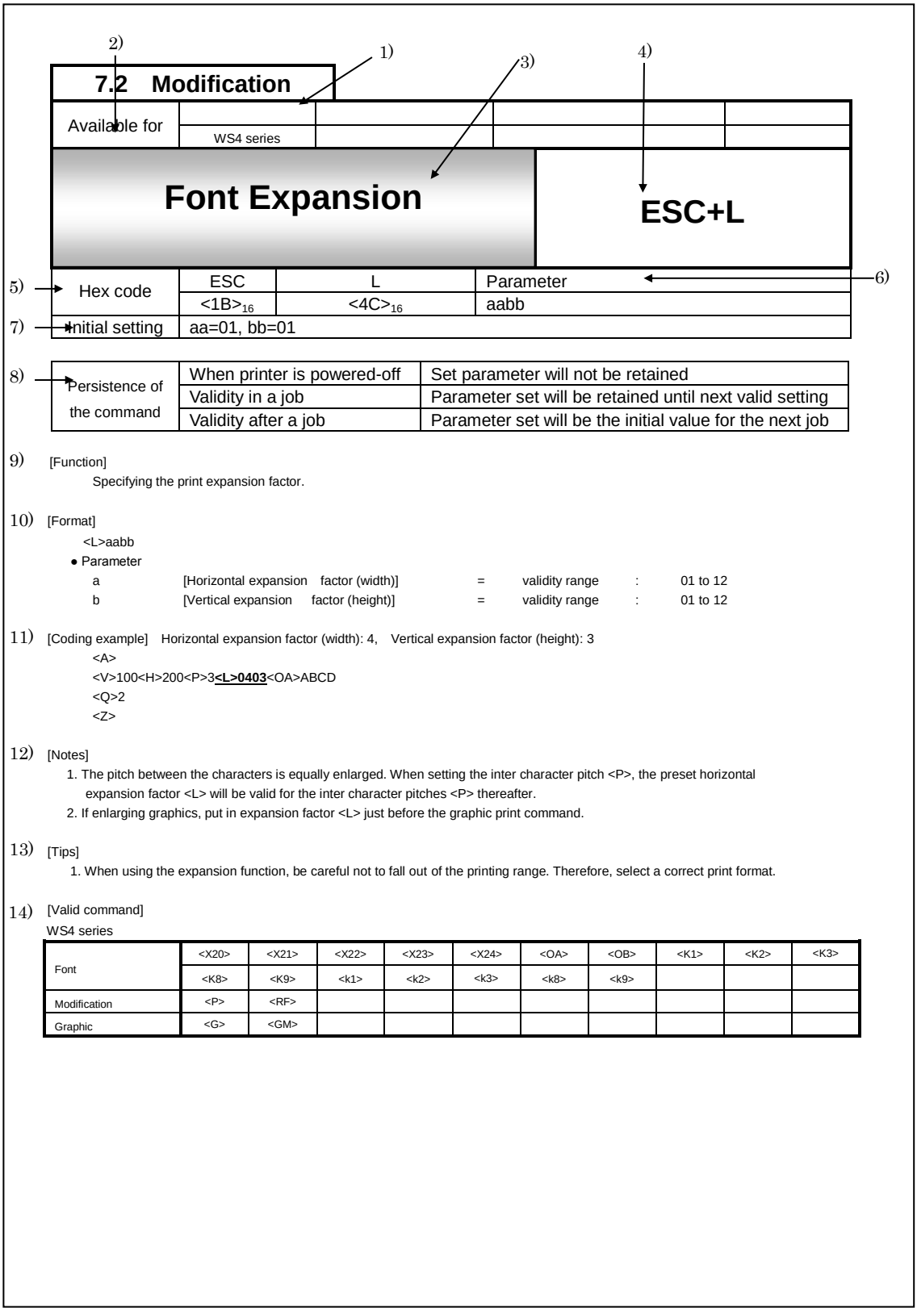
Category	Command		Restriction
Control	Start Code	<A>	
	Stop Code	<Z>	
	Print Quantity	<Q>	
	Job ID Number	<ID>	
	Job name	<WK>	
Print position	Horizontal Print Position	<H>	
	Vertical Print Position	<V>	
Modification	Character Pitch	<P>	
	Character Expansion	<L>	
	Proportional Pitch	<PS>	
	Release Proportional Pitch	<PR>	
	Rotation (Fixed Base Reference Point)	<%>	
	Sequential Numbering	<F>	
	Rule / Grid print	<FW>	
	Inversed Color Print	<(>	
	Store Form Overlay	<&>	
	Recall Form Overlay	</>	
	Partial Copy	<WD>	
	Journal Print	<J>	
Font	XU Font	<XU>	
	XS Font	<XS>	
	XM Font	<XM>	
	XB Font	<XB>	
	XL Font	<XL>	
	OCR-A Font	<OA>	
	OCR-B Font	<OB>	
	Outline Font design	<$>	
	Outline Font print	<$=>	
	CG Font	<RD>	CG Times, CG Triumvirate only
	U Font	<U>	
	S Font	<S>	
	M Font	<M>	
	WB Font	<WB>	
	WL Font	<WL>	

Category	Command		Restriction
Barcode	Barcode (Ratio 1:3)	<B>	
	Barcode (Ratio 1:2)	<D>	
	Barcode (HRI)	<D>～<d>	
	Barcode (Ratio 2:5)	<BD>	
	Barcode Ratio	<BT>	
	Barcode Ratio by Specified Ratio	<BW>	
	GS1-128 (UCC/EAN128)	<BI>	
	CODE93	<BC>	
	CODE128	<BG>	
	UPC Add-on Barcode	<BF>	
	POSTNET	<BP>	
	GS1 DataBar Composite Symbol	<EU>	
	UPC-A Barcode (No HRI)	<BL>	
	UPC-A Barcode (with HRI)	<BL> ～<d>	
	UPC-A Barcode (with HRI)	<BM>	
2D code	PDF417	<2D10>	
	Micro PDF	<2D12>	
	MAXI code	<2D20>	
	QR Code (Model 2)	<2D30>	
	QR Code (Model 1)	<2D31>	
	DataMatrix (ECC200)	<2D50>	
	GS1 DataMatrix	<2D51>	
	QR code	<BQ>	
	MAXI code	<BV>	
	PDF417	<BK>	
	DataMatrix	<BX>	
	DataMatrix (Data)	<DC>	
	DataMatrix (Sequential number)	<FX>	

Category	Command		Restriction
Graphic	Graphic print	<G>	
	BMP File print	<GM>	
	PCX File print	<GP>	
System	Print Speed	<CS>	
	Print Darkness	<#E>	
	Media Size	<A1>	
	Base Reference Point	<A3>	
	Print End Position	<EP>	
	Multi cut	<~>	
	Cut Number Unit	<CT>	
	Eject and Cut	<NC>	
	Cut Number Unit	<~A>	
	Eject and Cut	<~B>	
	Clear	<*>	
	Reprint	<C>	
	Register Printer Operation	<PG>	
	Register Printer Operation	<PC>	
	User Download	<LD>	
	Offset	<PO>	Tear-off Offset: -60 to +99 dots
	Sensor Type	<IG>	
	Print Method	<PH>	
	Print Mode	<PM>	
	Media Feed Control	<IK>	
	Serial Interface	<I2>	
	LAN Interface	<I3>	
	IP Address	<W1>	
	Subnet Mask	<W2>	
	Default Gateway	<W3>	
	IP Address	<WI>	
	Option Waiting Time	<TW>	
	Forced Tear Off	<TK>	

Category	Command		Restriction
Memory card	Card Slot	<CC>	
	Format Memory Card	<FM>	
	Store Form Overlay	<&S>	
	Recall Form Overlay	<&R>	
	Store Format	<YS>	
	Store Field	</N>	
	Recall Format	<YR>	
	Print Field	</D>	
	Store Graphic	<GI>	
	Recall Graphic	<GR>	
	Store BMP File	<GT>	
	Recall BMP File	<GC>	
	Clear (Memory card)	<*>	

5. How to Read the Command Manual



2)

1)

3)

4)

7.2 Modification

Available for				
	WS4 series			

Font Expansion

ESC+L

5) →	Hex code	ESC	L	Parameter ← 6)
		$<1B>_{16}$	$<4C>_{16}$	aabb
7) →	Initial setting	aa=01, bb=01		

8) →	Persistence of the command	When printer is powered-off	Set parameter will not be retained
		Validity in a job	Parameter set will be retained until next valid setting
		Validity after a job	Parameter set will be the initial value for the next job

9) [Function]

Specifying the print expansion factor.

10) [Format]

<L>aabb

● Parameter

a	[Horizontal expansion factor (width)]	=	validity range	:	01 to 12
b	[Vertical expansion factor (height)]	=	validity range	:	01 to 12

11) [Coding example] Horizontal expansion factor (width): 4, Vertical expansion factor (height): 3

<A>

<V>100<H>200<P>3**<L>0403**<OA>ABCD

<Q>2

<Z>

12) [Notes]

1. The pitch between the characters is equally enlarged. When setting the inter character pitch <P>, the preset horizontal expansion factor <L> will be valid for the inter character pitches <P> thereafter.
2. If enlarging graphics, put in expansion factor <L> just before the graphic print command.

13) [Tips]

1. When using the expansion function, be careful not to fall out of the printing range. Therefore, select a correct print format.

14) [Valid command]

WS4 series

Font	<X20>	<X21>	<X22>	<X23>	<X24>	<OA>	<OB>	<K1>	<K2>	<K3>
	<K8>	<K9>	<k1>	<k2>	<k3>	<k8>	<k9>			
Modification	<P>	<RF>								
Graphic	<G>	<GM>								

1) Command identification.
[Control], [Print position], [Modification], [Font], [Barcode], [2D code], [Graphic], [System], [Memory card] and [Calendar].

2) Command availability depending on printer model.
[ ] indicates unavailable commands.

Example) Commands only available for the WS4 series as shown below.

Available for	WS4DT series			
	WS4TT series			

3) Command name

4) Command code

5) Command as HEX code

6) Command describing parameters. () indicates that omission is possible

7) Default command value

8) Persistence of the Command
- When printer is powered off
  - (1) Set Parameter will be retained
  - (2) Set parameter will not be retained (Set parameter will not be retained)
  - (3) Command settings will not be retained (Command setting will not be retained)

- Validity in a job
  - (1) Retained until next valid setting
  - (2) Set parameter will be retained
  - (3) Becomes invalid after execution

- Valid after a job
  - (1) Set parameter will be the default value for the next job<a>.
  - (2) Set parameter will be retained until next valid setting
  - (3) Becomes invalid after execution
  - (4) Becomes invalid after execution

9) Command function outline

10) Command, necessary parameter
<L>aabb indicates the ESC+L ($<1B>_{16}<4C>_{16}$) command with the parameters aa and bb

11) Example for command input
If putting out a code via RS-232C to a printer connected, the programming will be done in BASIC language:

```
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$; "L0403";
60 PRINT #1, ESC$; "OAABCD";
70 PRINT #1, ESC$; "Q2";
80 PRINT #1, ESC$; "Z";
90 CLOSE #1
100 END
```

12) Explanation of commands and parameters

13) Tips when using the command

14) Other commands which will be influenced by using the specific command

6. Control Command

Control				
Available for				
	WS4 series			

Start Data Transfer	ESC+A

Hex code	ESC	A	Parameter
	$<1B>_{16}$	$<41>_{16}$	None
Default setting	None		

Persistence of the command	When printer is powered off	Command setting will not be retained.
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Start code. Data transfer defaultized.

[Format]

<A>

[Coding example]

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

[Notes]

1. Defaultizes item. Command is used always at beginning of an item.
2. Always use data transfer start <A> and data transfer end <Z> as a set.

[Important]

1. Except for some system commands, all command settings will be set to default value.
2. If not starting data transfer with <A>, the print will not be executed.

Control				
Available for				
	WS4 series			

End Data Transfer	ESC+Z

Hex code	ESC	Z	Parameter
	$<1B>_{16}$	$<5A>_{16}$	None
Default setting	None		

Persistence of the command	When printer is powered off	Command settings will not be retained.
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Stop code. Data transfer terminated.

[Format]
<Z>

[Coding example]
<A>
<V>100<H>200<P>2<L>0202<OA>ABCD
<Q>2
<Z>

[Notes]
1. Terminates item. Command is used always at the end of an item.
2. Always use data transfer start <A> and data transfer end <Z> as a set.

[Important]
1. If not ending data transfer with <Z>, the print will not be executed.

Control				
Available for				
	WS4 series			

Number of Pages	ESC+Q

Hex code	ESC	Q	Parameter
	$<1B>_{16}$	$<51>_{16}$	aaaaaa
Default setting	aaaaaa=1		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Defines number of pages to be printed.

[Format]

<Q>aaaaaa

● Parameter

a [Number of pages] = Valid range : 1 - 999999

[Coding example] 2 pages to be print

<A>

<V>100<H>200<P>2<L>0202<OA>ABCD

<Q>2

<Z>

[Notes]

1. The data between start data transfer <A> and end data transfer <Z> is regarded as one page. <Q> defines how many pages of the same content shall be printed out.
2. Command is put in before the end data transfer <Z> command.

[Important]

1. Print out of the same information will be done for pages specified. If the appearance of a serial number is set <F>, then this number will be of consecutive order.
2. If specifying with a multi-cut <~>, the defined number of pages will be multiplied by cut number.

Control				
Available for				
	WS4 series			

Job ID Number

ESC+ID

Hex code	ESC	ID	Parameter
	$<1B>_{16}$	$<49>_{16}<44>_{16}$	aa
Default setting	aa=$<20>_{16}$		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Set parameter will be retained until next valid setting
	Validity after a job	Becomes invalid after the job

[Function]

Defines job ID for status return

[Format]

<ID>aa

● Parameter

a [Job ID number] = Valid range : 00 - 99

[Coding example] Job ID number: 01

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

[Notes]

1. If using a status return in the transfer protocol, the job ID number can be set in the telegram.
2. The status can be confirmed by putting out a status request (ENQ).
3. This command is set within the item, between start data transfer <A> and end data transfer <Z>.

[Important]

1. Activates when status return transfer protocol is used and status request (ENQ) is received during printing (incl. QTY≠0, offline, error).
2. If status return transfer protocol is used, and status request is received while not printing (QTY=0, start up, no data received), space (20H) will be set and returned as status.
3. If defining a job ID number several times during one item (between start data transfer <A> and end data transfer <Z>), the last definition will be valid.
4. For more details, refer to the “Interface Specifications”.

Control				
Available for				
	WS4 series			

Job Name	ESC+WK

Hex code	ESC	WK	Parameter
	$<1B>_{16}$	$<57>_{16}<4B>_{16}$	aaaaaaaaaaaaaaaa
Default setting	aaaaaaaaaaaaaaaa=$<20>_{16}$		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Set parameter will be retained until next valid setting
	Validity after a job	Becomes invalid after the job

[Function]

Defines job name for status return

[Format]

<WK>aaaaaaaaaaaaaaaa

● Parameter

a [Job name] = ASCII-CODE 16 digits

[Coding example] Job name: SATO

<A>

<WK>SATO

<V>200<H>100<P>0<$>B,100,100,6

<$=>SATOPRINTER

<Q>2

<Z>

[Notes]

1. If using the status 4 as transfer protocol, the job name can be set in the telegram.
2. The status can be confirmed by putting out a status request (ENQ).
3. This command is set within the item, between start data transfer <A> and end data transfer <Z>.
4. This command can be used together with Define job ID number <ID>.

[Tips]

1. Activates when status return transfer protocol is used and status request (ENQ) is received during printing (incl. QTY≠0, offline, error).
2. If status return transfer protocol is used, and status request is received while not printing (QTY=0, start up, no data received), space (20H) will be set and returned as status.
3. If defining a job ID name several times during one item (between start data transfer <A> and end data transfer <Z>), the last definition will be valid.
4. For particulars, refer to the [Interface Specification].

7. Print Position Command

Print Position				
Available for				
	WS4 series			

Horizontal Print Position	ESC+H

Hex code	ESC	H	Parameter
	<1B>16	$<48>_{16}$	aaaa
Default setting	aaaa=1		

Persistence of the command	When printer is powered off	Command settings will not be retained
	Validity in a job	Set parameter will be retained until next valid setting
	Validity after a job	Set parameter will be the default value for the next job <A>.

[Function]

Specifies horizontal print position in dots from the origin position

[Format]

<H>aaaa

- Parameter

a [Horizontal print position] = Valid range : refer to table below

[Coding example] Horizontal print position: 200 dots (from origin)

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

[Notes]

1. Defines starting position of print for the following: Characters, barcodes, ruled lines, graphics, etc.

[Tips]

1. Data outside of the print range (such as characters, barcodes and graphics) will be clipped.

[Parameter default setting and validity range]

Model	Default	Range (dots)
WS408	1	1 ~ 832
WS412	1	1 ~ 1248

[Valid commands]

WS4 series

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<U>	<S>	<M>	<WB>	<WL>
	<OA>	<OB>	<RD>	<$=>						
Barcode	<B>	<BC>	<BG>	<BI>	<BF>	<BP>	<D>	<D><d>	<BD>	<BT>
	<BW>									
2D code	<BK>	<BQ>	<BV>	<BX>						
	<2D10>	<2D12>	<2D20>	<2D30>	<2D31>	<2D50>	<2D51>			
Modification	<WD>	<FW>	<(>							
Graphic	<G>	<GM>	<GP>							

Print Position

Available for				
	WS4 series			

Vertical Print Position

ESC+V

Hex code	ESC	V	Parameter
	$<1B>_{16}$	$<56>_{16}$	aaaa
Default setting	aaaa=1		

Persistence of the command	When printer is powered off	Command settings will not be retained
	Validity in a job	Set parameter will be retained until next valid setting
	Validity after a job	Set parameter will be the default value for the next job <A>

[Function]

Specifies vertical print position in dots from the origin position

[Format]

<V>aaaa

● Parameter

a [Vertical print position] = Valid range : refer to table below

[Coding example] Vertical print position: 100 dots

<A>

<V>100<H>200<P>2<L>0202<OA>ABCD

<Q>2

<Z>

[Notes]

1. Defines starting position of print for the following: Characters, barcodes, ruled lines, graphics, etc.

[Parameter, default setting and validity range]

Model	Default	Range (dots)
		Standard printable area
WS408	1	1 ~ 7992
WS412	1	1 ~ 11988

[Tips]

1. Data outside of the print range (such as characters, barcodes and graphics) will be clipped.

[Valid commands]

WS4 series

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<U>	<S>	<M>	<WB>	<WL>
	<OA>	<OB>	<RD>	<$=>						
Barcode	<B>	<BC>	<BG>	<BI>	<BF>	<BP>	<D>	<D><d>	<BD>	<BT>
	<BW>									
2D code	<BK>	<BQ>	<BV>	<BX>						
	<2D10>	<2D12>	<2D20>	<2D30>	<2D31>	<2D50>	<2D51>			
Modification	<WD>	<FW>	<(>							
Graphic	<G>	<GM>	<GP>							

8. Edit Command

Modification				
Available for				
	WS4 series			

Character Pitch — ESC+P

Hex code	ESC	P	Parameter
	$<1B>_{16}$	$<50>_{16}$	aa
Default setting	aa=02		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Set parameter will be retained until next valid setting
	Validity after a job	Set parameter will be the default value for the next job <A>

[Function]
Defines character pitch in dots

[Format]
<P>aa
● Parameter
a [Inter-character pitch] = Valid range : 00 to 99 dots

[Coding example] Inter-character pitch: 10
<A>
<V>100<H>200**<P>10**<L>0202<OA>ABCD
<Q>2
<Z>

[Notes]
1. The character pitch is the distance between characters, fonts when selecting barcode / font print.
2. The character pitch is enlarged according to the expansion factor <L>, if specified.
3. Even if automatic line feed is selected <E> and line feed code [CR] is set, the character pitch remains valid (saved) and the setting does not return to default. Only if Start data transfer <A> is selected, the setting returns to default.
4. When setting the character pitch <P> directly before specifying a barcode print, the pitch command for the barcode module becomes valid.
Applicable barcodes: CODABAR (NW-7), CODE39, Industrial 2of5, Matrix 2of5
For details, refer to the [9. Barcode settings outline (3) inter-character gap].
5. If incorrect values are specified, the settings will return to default.

[Valid commands]
WS4 series

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<U>	<S>	<M>	<WB>	<WL>
	<OA>	<OB>	<RD>	<$=>						
Modification	<L>									
Barcode	<B>	<D>	<D><d>	<BD>	<BT>	<BW>				

Modification				
Available for				
	WS4 series			

Character Expansion

ESC+L

Hex code	ESC	L	Parameter
	$<1B>_{16}$	$<4C>_{16}$	aabb
Default setting	aa=01, bb=01		

Persistence of the command	When printer is powered off	Set parameter will not be retained.
	Validity in a job	Set parameter will be retained until next valid setting.
	Validity after a job	Set parameter will be the default value for the next job<A>.

[Function]

Defines font expansion setting

[Format]

<L>aabb

● Parameter

a [Horizontal expansion factor] = Valid range : 01 to 12

b [Vertical expansion factor] = Valid range : 01 to 12

[Coding example] Horizontal expansion factor: 4 times, Vertical expansion factor: 3 times

<A>

<V>100<H>200<P>3**<L>0403**<OA>ABCD

<Q>2

<Z>

[Notes]

1. The character pitch is equally enlarged. If setting the character pitch with <P>, the horizontal expansion factor specified with <L> will affect (enlarge) the character pitch.
2. When enlarging graphics, put in the expansion factor <L> just before the graphic print command.

[Tips]

1. Select the format so that the enlarged print does not go out of the printable area.

[Valid commands]

WS4 series

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<U>	<S>	<M>	<WB>	<WL>
	<OA>	<OB>								
Modification	<P>									
Graphic	<G>	<GM>	<GP>							

.

Modification

Available for				
	WS4 series			

Proportional Pitch

ESC+PS

Hex code	ESC	PS	Parameter
	$<1B>_{16}$	$<50>_{16}<53>_{16}$	None
Default setting	None		

Persistence of the command	When printer is powered off	Command settings will not be retained
	Validity in a job	Will be retained until next valid setting
	Validity after a job	Will be retained after the job

[Function]

Defines proportional pitch

[Format]

<PS>

[Coding example]

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

[Notes]

1. When setting proportional pitch <PS>, alphanumeric will have narrower pitches among characters than if not specified.
2. If the setting is done outside of the possible range, the proportional print will not be performed.
3. The default setting is set to [Proportional pitch].

[Valid commands]

WS4 series

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<RD>	<$=>			
Modification	<RF>									

Modification

Available for				
	WS4 series			

Release Proportional Pitch

ESC+PR

Hex code	ESC	PR	Parameter
	$<1B>_{16}$	$<50>_{16}<52>_{16}$	None
Default setting	None		

Persistence of the command	When printer is powered off	Command settings will not be retained
	Validity in a job	Command set are valid until setting is changed
	Validity after a job	Will be retained after the job

[Function]
Releases proportional pitch

[Format]
<PR>

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

[Notes]
1. The default setting is set to [Proportional pitch].

[Valid commands]
WS4 series

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<RD>	<$=>			
Modification										

Modification				
Available for				
	WS4 series			

Rotation

ESC+%

Hex code	ESC	%	Parameter
	$<1B>_{16}$	$<25>_{16}$	a
Default setting	a=0		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Set parameter will be retained until next valid setting
	Validity after a job	Set parameter will be the default value for the next job<A>

[Function]

Rotates font / barcodes in a counterclockwise direction.

[Format]

<%>a

- Parameter

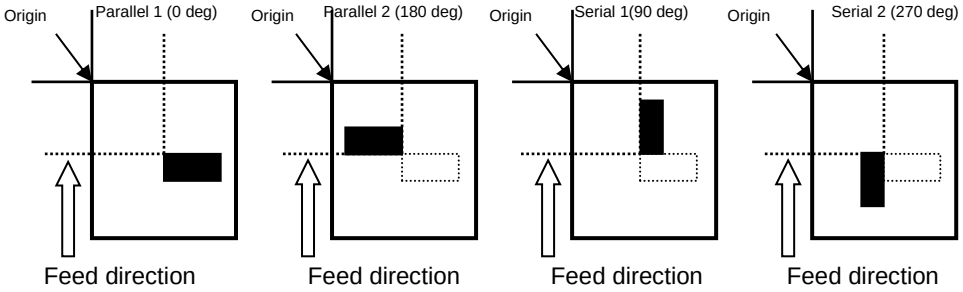
a [Rotation direction] = 0 : Parallel 1 (0 deg) 1 : Serial 1 (90 deg)
2 : Parallel 2 (180 deg) 3 : Serial 2 (270 deg)

[Coding example] Font rotation: Parallel 2, Barcode rotation: Serial 1

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

[Notes]

1. The vertical print position and the horizontal print position are absolute values from the origin.
2. If the parameter setting is outside of the specification (4 to 9), the command will get an error. If non numeric values included, the print will be executed with 0 degree rotation.
3. There is a possibility of incorrect print, when printing barcodes in serial 1 or serial 2 mode. Confirm print-out in those cases. Reduce print speed when printing in serial 1 or serial 2 mode.



[Valid commands]

WS4 series

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<U>	<S>	<M>	<WB>	<WL>
	<OA>	<OB>	<RD>	<$=>						
Barcode	<B>	<BC>	<BG>	<BI>	<BF>	<BP>	<D>	<D><d>	<BD>	<BT>
	<BW>									
2D code	<BK>	<BQ>	<BV>	<BX>						
	<2D10>	<2D12>	<2D20>	<2D30>	<2D31>	<2D50>	<2D51>			
Graphic	<G>	<GM>	<GP>							
System	<E>									
Modification										

Modification				
Available for				
	WS4 series			

Sequential Number

ESC+F

Hex code	ESC	F	Parameter
	$<1B>_{16}$	$<46>_{16}$	aaaabcccc(,dd,ee,f)
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Sets before the font / barcode data is specified. Assigns the specified data a serial number (consecutive) and adds it to the print.

[Format]

<F>aaaabcccc (,dd,ee,f)

● Parameter

a	[Print copies]	=	Valid range	:	1 to 9999		
b	[Increase/Decrease]	=	+	:	Increase		
			-	:	Decrease		
c	[Starting number]	=	Valid range	:	1 to 9999		
d	[Range of numeration (digits)]	=	Valid range	:	1 to 99	when omitted:	8
e	[Minimum downward count (digits)]	=	Valid range	:	0 to 99	when omitted:	0
f	[Decimal/ hexadecimal numeration]	=	Valid range	:	0 to 99	when omitted:	0
			0	:	Decimal	when omitted:	0
			1	:	Hexadecimal		

[Coding example] Pages of print: 1, Increase/Decrease: +, Starting number: 1,
Range of numeration: 5 digits, Minimum downward count: 0

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

[Notes]

1. Up to 8 serial numbers can be specified for one format.
2. The inverse color setting <(> is not available for this function.
3. The automatic line feed <E> is not available.
4. To use this function, you need to print font or barcode together with serial number.
5. Digit number of font or barcode command should be the same with the one of [Range of numeration]. If it exceeds the digit number of font or barcode command, serial number will not be printed.

[Valid commands]

WS4 series

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

.

Modification				
Available for				
	WS4 series			

Rule / Grid Print

ESC+FW

Hex code	ESC	FW	Parameter
	$<1B>_{16}$	$<46>_{16}<57>_{16}$	Rule aabcccc Grid aabbVccccHdddd
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Prints rule / grid

[Format]

<FW>aabcccc Rule print

● Parameter

a	[Line width]	=	Valid range	:	02 to 99 dots
b	[Horizontal / vertical setting]	=	H	:	Horizontal
			V	:	Vertical
c	[Length]	=	Valid range	:	Refer to table below

<FW>aabbVccccHdddd Grid print

● 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 table below
d	[Horizontal line length]	=	Valid range	:	Refer to table below

[Coding example] Ruled line: Line width: 4, Horizontal setting, Length: 400
Grid: V. line width: 8, H. line width: 8, V. line length: 300, H. line length: 400

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

[Notes]

1. If the print start position is outside of the printable area, it will not print due to a command error.

[Valid range]

Model	Horizontal line length in dots	Vertical line length in dots
WS408DT/TT	1 to 832	1 to 7992
WS412DT/TT	1 to 1248	1 to 11988

Modification				
Available for				
	WS4 series			

Inversed Color Print

ESC+(

Hex code	ESC	(	Parameter
	$<1B>_{16}$	$<28>_{16}$	aaaa,bbbb
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Sets reversed color print (black/white)

[Format]

<(>aaaa,bbbb

● Parameter

a [Valid range in horizontal direction] = Valid range : Refer to table below

b [Valid range in vertical direction] = Valid range : Refer to table below

[Coding example] Valid range in horizontal direction: 200, Valid range in vertical direction: 70

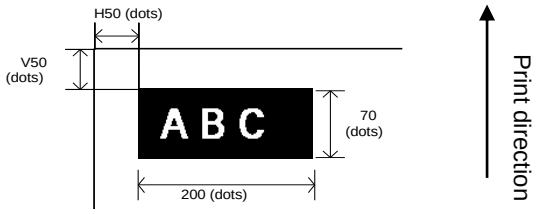
<A>

<V>50<H>50<P>2<L>0202<OA>ABC

<V>50<H>50**<(>200,70**

<Q>2

<Z>



[Notes]

1. The horizontal and vertical print positions <H>, <V> are set before the inversed printing color setting <(>.
2. If the print start position is outside of the printable area, it will not print due to a command error.

[Tips]

1. Make sure the black print does not exceed 30% of the entire label.

[Valid range]

Model	Horizontal line length in dots	Vertical line length in dots
WS408DT/TT	1 to 832	1 to 7992
WS412DT/TT	1 to 1248	1 to 11988

Modification				
Available for				
	WS4 series			

Store Form Overlay

ESC+&

Hex code	ESC	&	Parameter
	$<1B>_{16}$	$<26>_{16}$	None
Default setting	None		

Persistence of the command	When printer is powered off	Command settings will not be retained
	Valid range	Will be retained until next valid setting
	Validity after a job	Will be retained until next valid setting

[Function]

Registers form-overlay

[Format]

<&>

[Coding example]

<A>
<V>100<H>50<FW>1010V800H750
<V>100<H>50<FW>0505V760H710
<V>150<H>100<OA>MODEL
<&>
<Z>

[Notes]

1. After having registered a specific form overlay <&>, this format can be loaded by </> and applied to any print data.
2. The form overlay register function is set at the end of a format specification. The form overlay is valid over the entire print range.
3. Only one format can be registered.
4. If willing to change the format, first clear the form overlay with <*&> before setting the form overlay another time.
5. The registered format can be loaded with </>.
6. If selecting a label size according to <A1> the registered form overlay will be expanded.

[Valid commands]

WS4 series

Print position	<V>	<H>								
Modification	<WD>	<FW>	<(>							
Font	<XU>	<XS>	<XM>	<XB>	<XL>	<U>	<S>	<M>	<WB>	<WL>
	<OA>	<OB>	<RD>	<$=>						
Barcode	<B>	<BC>	<BG>	<BI>	<BF>	<BP>	<D>	<D><d>	<BD>	<BT>
	<BW>									
2D code	<BK>	<BQ>	<BV>	<BX>						
	<2D10>	<2D12>	<2D20>	<2D30>	<2D31>	<2D50>	<2D51>			
Graphic	<G>	<GM>	<GP>							

Modification				
Available for				
	WS4 series			

Recall Form Overlay

ESC+/

Hex code	ESC	/	Parameter
	$<1B>_{16}$	$<2F>_{16}$	None
Default setting	None		

Persistence of the command	When printer is powered off	Command settings will not be retained
	Validity in a job	Will be retained until next valid setting
	Validity after a job	Will be retained until next valid setting

[Function]

Specifies to invoke form overlay

[Format]

</>

[Coding example]

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

[Notes]

1. This command invokes the form-overlay, saved by the form-overlay registration <&> command.
2. If detecting this command in a normal print data, this data will be combined with a graphic saved in the form overlay for printing out.

Modification				
Available for				
	WS4 series			

Partial Copy

ESC+WD

Hex code	ESC	WD	Parameter
	$<1B>_{16}$	$<57>_{16}<44>_{16}$	VaaaaHbbbbYccccXdddd
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Copies data from one place to another destination.

[Format]

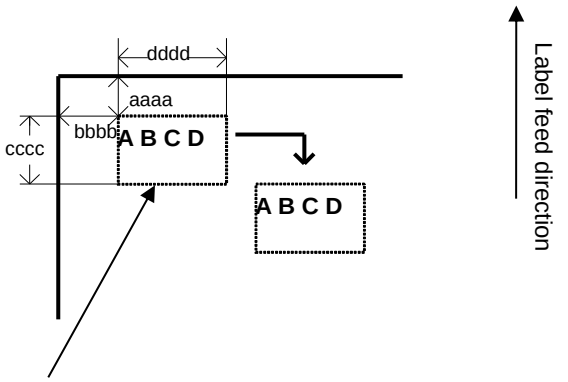
<WD>VaaaaHbbbbYccccXdddd

● Parameter

a	[Vertical position of origin]	=	Valid range	:	Refer to the below
b	[Horizontal position of origin]	=	Valid range	:	Refer to the below
c	[Vertical dot number of origin]	=	Valid range	:	Refer to the below
d	[Horizontal dot number of origin]	=	Valid range	:	Refer to the below

[Coding example] Vertical position of origin: 50, Horizontal position of origin: 50, Vertical dot number of origin: 200, Horizontal dot number of origin: 400

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



The dotted line indicates the copy range.
The actual print is limited to ABCD.

[Notes]

1. Specify the print position by vertical position <V> and horizontal position <H> before performing data copy <WD>.
2. Do not place the print position within the range of the origin.
3. If the print start position of copy area is outside of the printable area, it will not print due to a command error.

[Valid range]

Model	Valid range in dots	
	Horizontal position of origin Horizontal dot number	Vertical position of origin Vertical dot number
WS408DT/TT	1 to 832	1 to 7992
WS412DT/TT	1 to 1248	1 to 11988

Modification				
Available for				
	WS4 series			

Journal Print

ESC+J

Hex code	ESC	J	Parameter
	$<1B>_{16}$	$<4A>_{16}$	a~a+CR$<0D>_{16}$
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies journal print

[Format]

<J>a~a+CR

● Parameter

a	[Column of journal print]	=	Print data
CR	[Control code (0DH)]		

[Coding example]

<A>
<J>
ABCD+CR
EFGH+CR
<Z>

[Notes]

1. Journal print is executed from 2 dots vertical position and 2 dots horizontal position.
2. Inter character pitch is fixed to 2 dots. The inter-line pitch is fixed to 16 dots.
3. The data will be printed in XS font, factor 2 x 2.
4. Setting the journal print command cancels all other commands, except from the re-issuing command <C> and the inversed color printing command <(>.

9. Font Command

Font				
Available for				
	WS4 series			

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

Hex code	ESC	XU	Parameter
	$<1B>_{16}$	$<58>_{16}<55>_{16}$	n~n
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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>

[Notes]

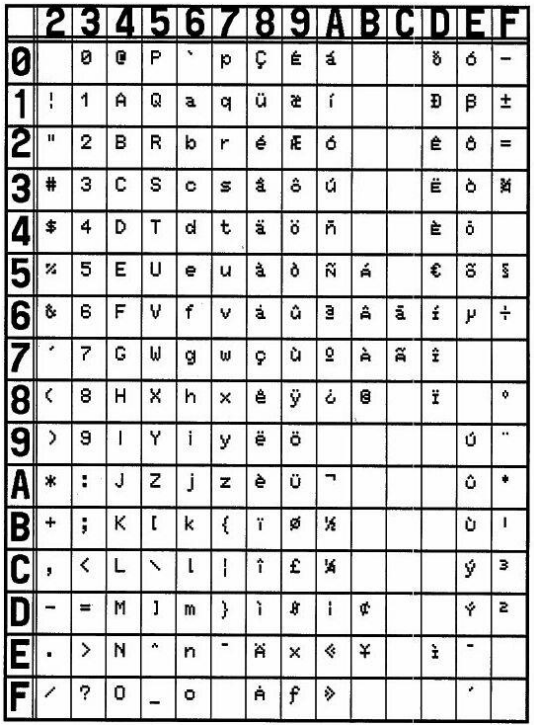
1. The XU font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. The setting of the fixed / proportional pitch is done in the command settings.

[Valid commands]

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

XU Font Character Set

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



The print sample shown above is issued with a head density of 12 dots/mm and a expansion factor of 3 (vertical/horizontal).

Font				
Available for				
	WS4 series			

XS Font (Basic size 17x17 dots)

ESC+XS

Hex code	ESC	XS	Parameter
	$<1B>_{16}$	$<58>_{16}<53>_{16}$	n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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>

[Notes]

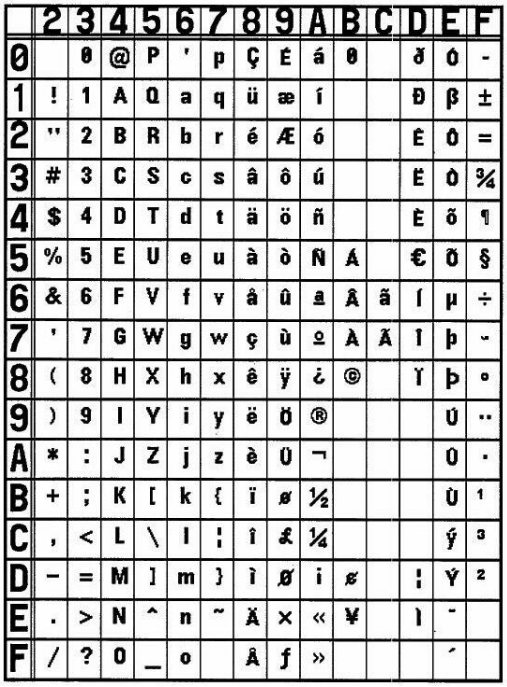
1. The XS font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. The setting of the fixed / proportional pitch is done in the command settings.

[Valid commands]

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

XS Font Character Set

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



	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 12 dots/mm and a expansion factor of 2 (vertical/horizontal).

Font				
Available for				
	WS4 series			

XM Font (Basic size 24x24 dots)

ESC+XM

Hex code	ESC	XM	Parameter
	$<1B>_{16}$	$<58>_{16}<4D>_{16}$	n~n
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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**<XM>ABCDE**
<Q>2
<Z>

[Notes]

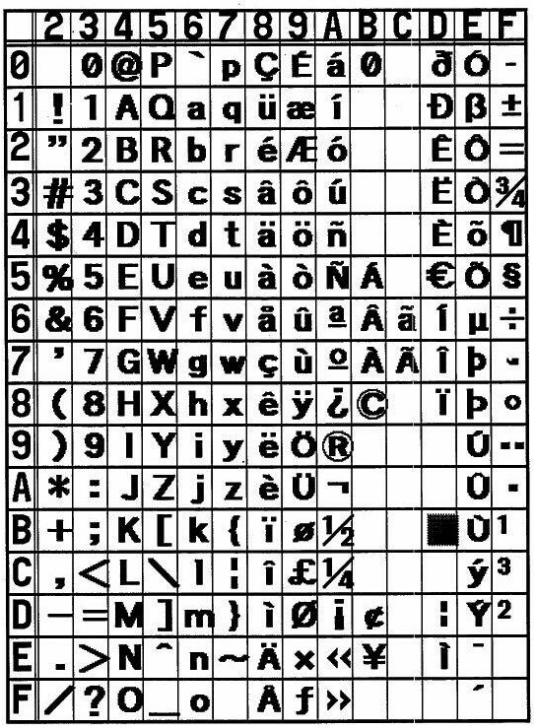
1. The XM font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. The setting of the fixed / proportional pitch is done in the command settings.

[Valid commands]

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

XM Font Character Set

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



The print sample shown above is issued with a head density of 12 dots/mm and a expansion factor of 2 (vertical/horizontal).

Font				
Available for				
	WS4 series			

XB Font (Basic size 48x48 dots)

ESC+XB

Hex code	ESC	XB	Parameter
	$<1B>_{16}$	$<58>_{16}<42>_{16}$	an~n
Default setting	a=0		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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

n [Print data] = Data

[Coding example]

<A>

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

<Q>2

<Z>

[Notes]

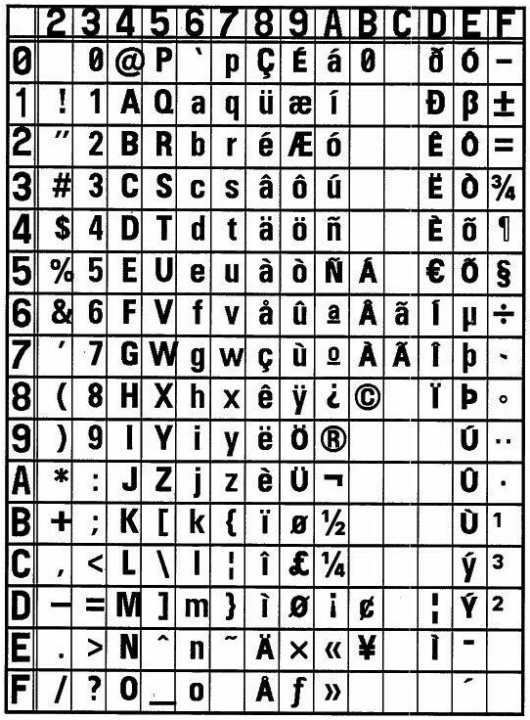
1. The XB font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. The setting of the fixed / proportional pitch is done in the command settings.
3. If setting the smoothing option, and the expansion <L> command is set to 1 or 2, the smoothing function will be ignored.

[Valid commands]

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

XB Font Character Set

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



	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 12 dots/mm and a expansion factor of 1 (vertical/horizontal).

Font				
Available for				
	WS4 series			

XL Font (Basic size 48x48 dots)

ESC+XL

Hex code	ESC	XL	Parameter
	$<1B>_{16}$	$<58>_{16}<4C>_{16}$	an~n
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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
n	[Print data]	=	Data

[Coding example]

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

[Notes]

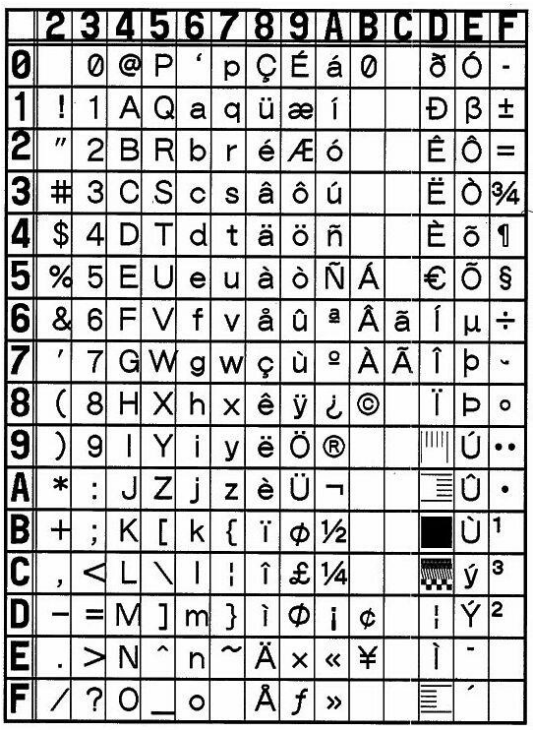
1. The XL font allows the setting of a fixed pitch or the setting of a proportional pitch.
2. The setting of the fixed / proportional pitch is done in the command settings.
3. If setting the smoothing option, and the expansion <L> command is set to 1 or 2, the smoothing function will be ignored.

[Valid commands]

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

XL Font Character Set

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



The print sample shown above is issued with a head density of 12 dots/mm and a expansion factor of 1 (vertical/horizontal).

Font

Available for				
	WS4 series			

OCR-A Font

ESC+OA

Hex code	ESC	OA	Parameter
	$<1B>_{16}$	$<4F>_{16}<41>_{16}$	n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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**<OA>ABC**
<Q>2
<Z>

[Font size table]

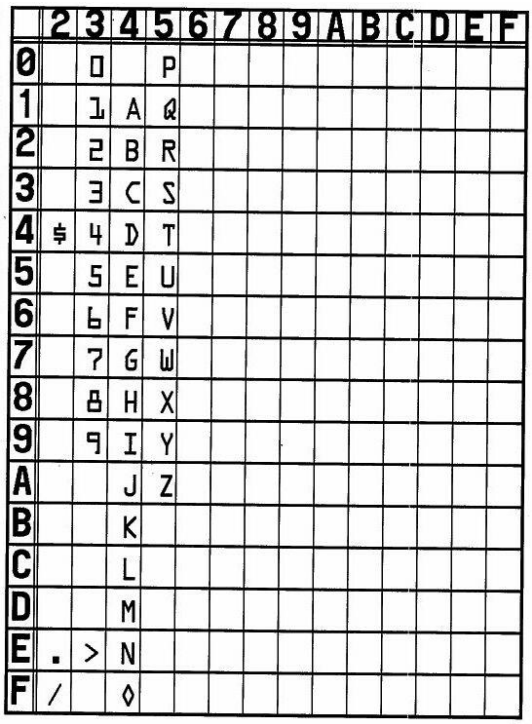
Model	Font size in dots
WS408DT/TT	W15 x H22
WS412DT/TT	W22 x H33

[Valid commands]

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

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	/		◊											

The print sample shown above is issued with a head density of 12 dots/mm, a font size of 22x33, and a expansion factor of 1 (vertical/horizontal).

Font

Available for				
	WS4 series			

OCR-B Font

ESC+OB

Hex code	ESC	OB	Parameter
	$<1B>_{16}$	$<4F>_{16}<42>_{16}$	n~n
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Specifies OCR-B font.

[Format]
<OB>n~n
● Parameter
n [Print data] = Data

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

[Font size table]

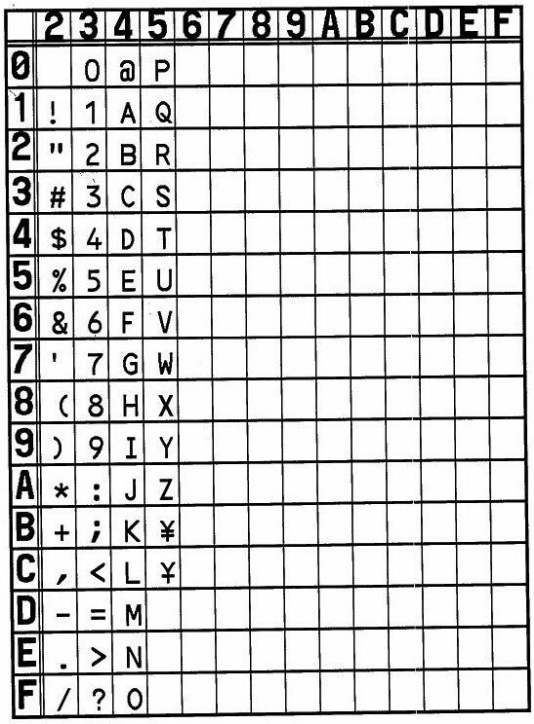
Model	Font size in dots
WS408DT/TT	W20 x H24
WS412DT/TT	W30 x H36

[Valid commands]

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

OCR-B Font Character Set

OCR-B 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	/	?	O											

The print sample shown above is issued with a head density of 12 dots/mm, a font size of 30x36, and a expansion factor of 1 (vertical/horizontal).

Font				
Available for				
	WS4 series			

Outline Font Design

ESC+$

Hex code	ESC	$	Parameter
	$<1B>_{16}$	$<24>_{16}$	a,bbb,ccc,d
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained.
	Validity in a job	Set parameter will be retained until next valid setting.
	Validity after a job	Set parameter will be the default value for the next job <A>.

[Function]

Specifies type, design, size of outline font

[Format]

<$>a,bbb,ccc,d

● Parameter

a	[Font type selection]	=	A	:	Helvetia Bold (Proportional)
			B	:	Helvetia Bold (Inter-character pitch fixed)
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

[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>

[Notes]

1. The outline font printing command <$=> shall be executed after the outline font design selection <$>.
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 can not be identified.
6. If the font width / height are very small, there can be cases that the font is squeezed.

[Valid commands]

Modification	<$=>									

Font				
Available for				
	WS4 series			

Outline Font Print	ESC+$=

Hex code	ESC	$=	Parameter
	$<1B>_{16}$	$<24>_{16}<3D>_{16}$	n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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>

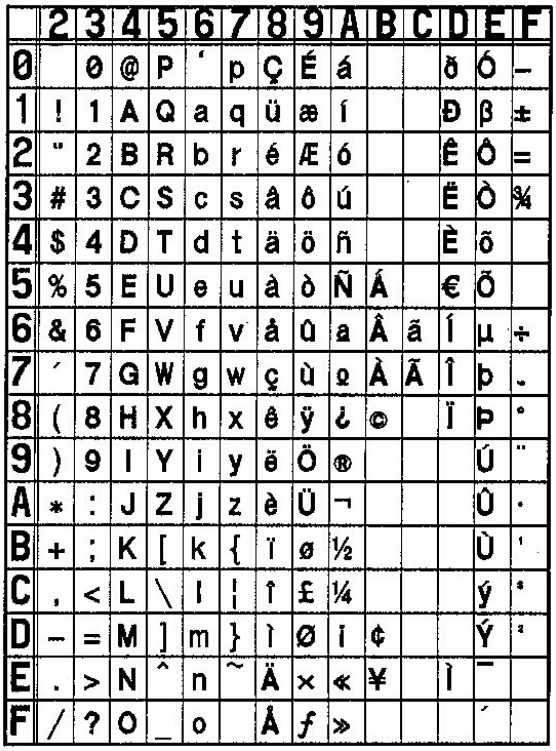
[Notes]
1. The outline font printing commando <$=> shall be executed after the outline font design selection <$>.

[Valid commands]

Print position	<V>	<H>								
Modification	<P>	<%>	<$>	<F>						

Outline Font Character Set

Outline font settings

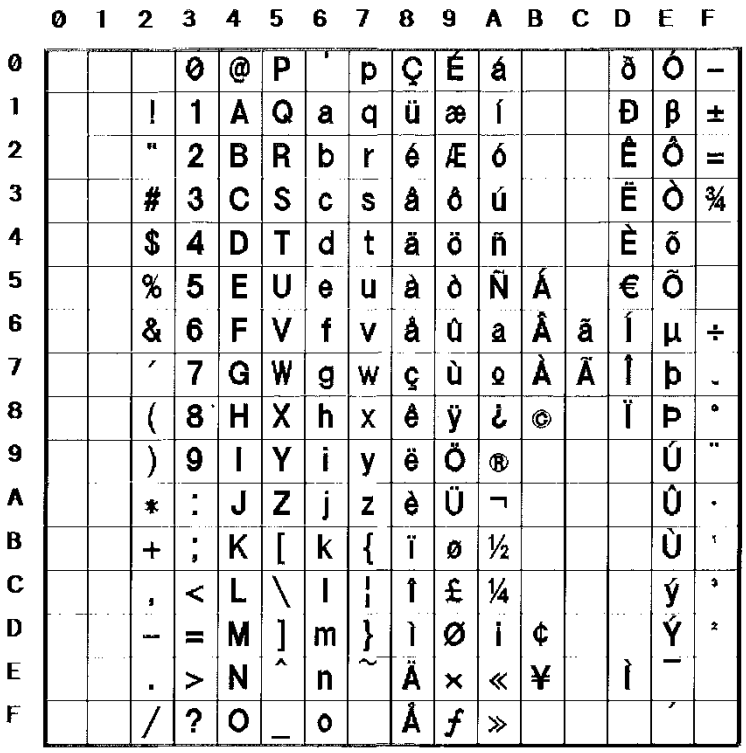


	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	'	p	Ç	É	á			ð	Ó	–
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	"	2	B	R	b	r	é	Æ	ó			Ê	Ô	=
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	
5	%	5	E	U	e	u	à	ò	Ñ	Á		€	Õ	
6	&	6	F	V	f	v	å	û	a	Â	ã	Í	µ	÷
7	´	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	Ö	®				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	ï	¢			Ý	²
E	.	>	N	^	n	~	Ä	×	«	¥		Ì	¯	
F	/	?	O	_	o		Å	ƒ	»				´	

The print sample shown above is issued with a head density of 12 dots/mm, normal font, and a font size of 50x50 (vertical/horizontal).

Outline Font Character Set

Characters consists of Helvetia Bold (Inter-character pitch fixed), 40×40 dots, Normal font (Black)



	0	1	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.

Font

Available for				
	WS4 series			

CG Font

ESC+RD

Hex code	ESC	RD	Parameter
	$<1B>_{16}$	$<52>_{16}<44>_{16}$	abb,ccc,ddd,n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies CG font type, font style, font size and print data

[Format]

<RD>abb,ccc,ddd,n~n

● Parameter

a	[Font type]	=	A	[CG Times]
			B	[CG Triumvirate]
b	[Font style]	=	00	Fixed
c	[Horizontal size (width)]	=	Valid range :	004 to 999 dots. Refer to the table below
			Valid range :	P02 to P99 points
d	[Vertical size (height)]	=	Valid range :	004 to 999 dots. Refer to the table below
			Valid range :	P02 to P99 points
n	[Print data]	=	Data	

[Coding example]

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

[Notes]

1. The font size is set by [dot number] or [point number].
2. The dot size does vary with printer type. (Refer to the table below)
3. 1 point is 0.35mm.

[Dot size]

Printer	1 dot size (mm)
WS408DT/TT	0.125
WS412DT/TT	0.083

[Range of font size]

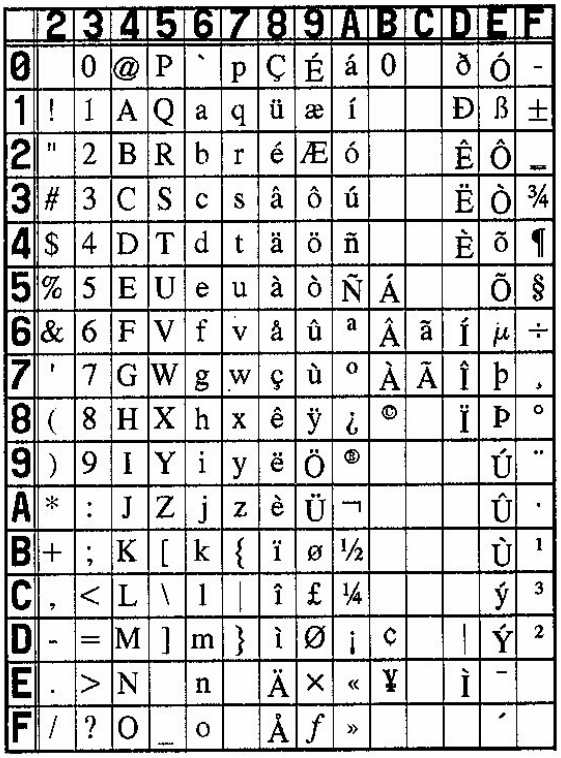
Printer	Valid range: Horizontal (dots)	Valid range: Vertical (dots)
WS408DT/TT	4 to 832	4 to 999
WS412DT/TT	4 to 1248	4 to 999

[Valid commands]

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

CG Times Font Character Set

CG Times font settings

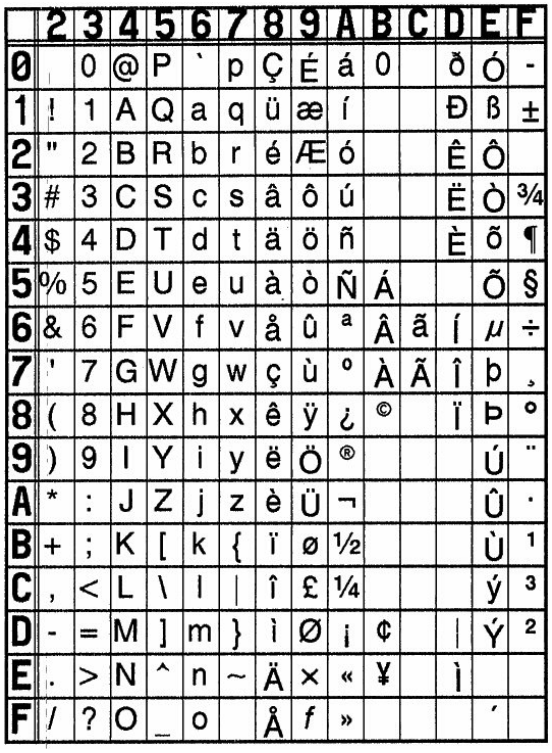


	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		0	@	P	`	p	Ç	É	á	0		ð	Ó	-
1	!	1	A	Q	a	q	ü	æ	í			Ð	ß	±
2	"	2	B	R	b	r	é	Æ	ó			Ê	Ô	‗
3	#	3	C	S	c	s	â	ô	ú			Ë	Ò	¾
4	$	4	D	T	d	t	ä	ö	ñ			È	õ	¶
5	%	5	E	U	e	u	à	ò	Ñ	Á			Õ	§
6	&	6	F	V	f	v	å	û	ª	Â	ã	Í	µ	÷
7	'	7	G	W	g	w	ç	ù	º	À	Ã	Î	þ	¸
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï	Þ	°
9	)	9	I	Y	i	y	ë	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	¡	ç		¦	Ý	²
E	.	>	N		n		Ä	×	«	¥		Ì	¯	
F	/	?	O	_	o		Å	*f*	»				´	

The print sample shown above is issued with a head density of 12 dots/mm, and a font size of 48x48 (vertical/horizontal).

CG Triumvirate Font Character Set

CG Triumvirate font settings



	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 12 dots/mm, and a font size of 48x48 (vertical/horizontal).

Font				
Available for				
	WS4 series			

U Font (Basic size 5x9 dots)

ESC+U

Hex code	ESC	U	Parameter
	$<1B>_{16}$	$<55>_{16}$	n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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>ABCDE**
<Q>2
<Z>

[Notes]

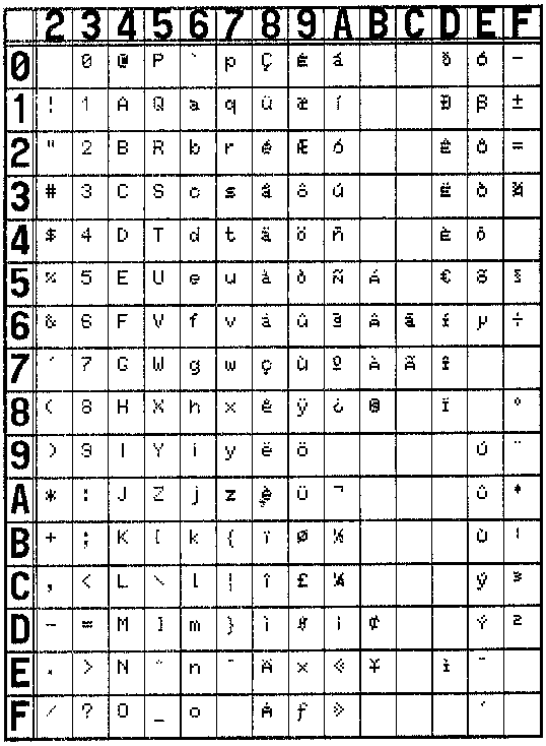
1. The U font only allows the setting of a fixed pitch.
2. This font is to obtain compatibility with old printer models and shall not disclose to end users.

[Valid commands]

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

U font character set

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



The print sample shown above is issued with a head density of 12 dots/mm and a expansion factor of 3 (vertical/horizontal).

Font				
Available for				
	WS4 series			

S Font (Basic size 8x15 dots)

ESC+S

Hex code	ESC	S	Parameter
	$<1B>_{16}$	$<53>_{16}$	n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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**<S>ABCDE**
<Q>2
<Z>

[Notes]

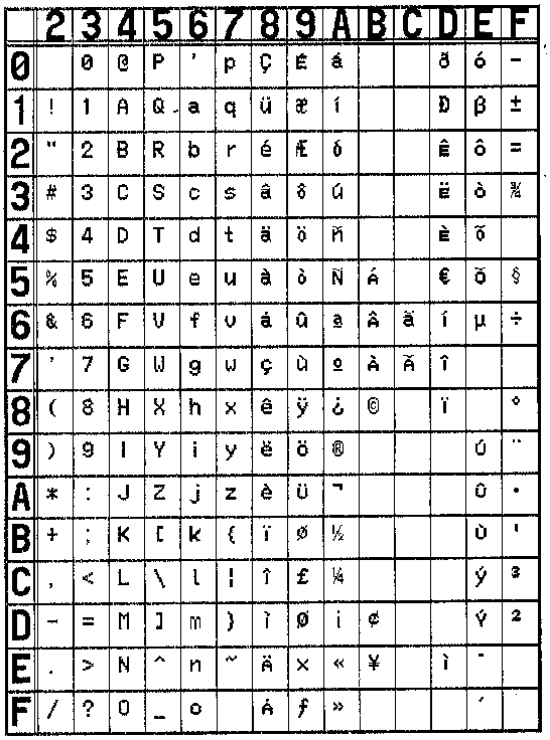
1. The S font only allows the setting of a fixed pitch.
2. This font is to obtain compatibility with old printer models and shall not disclose to the users.

[Valid commands]

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

S Font Character Set

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



The print sample shown above is issued with a head density of 12 dots/mm and a expansion factor of 2 (vertical/horizontal).

Font				
Available for				
	WS4 series			

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

Hex code	ESC	M	Parameter
	<1B>16	<4D>16	n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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**<M>ABCDE**
<Q>2
<Z>

[Notes]

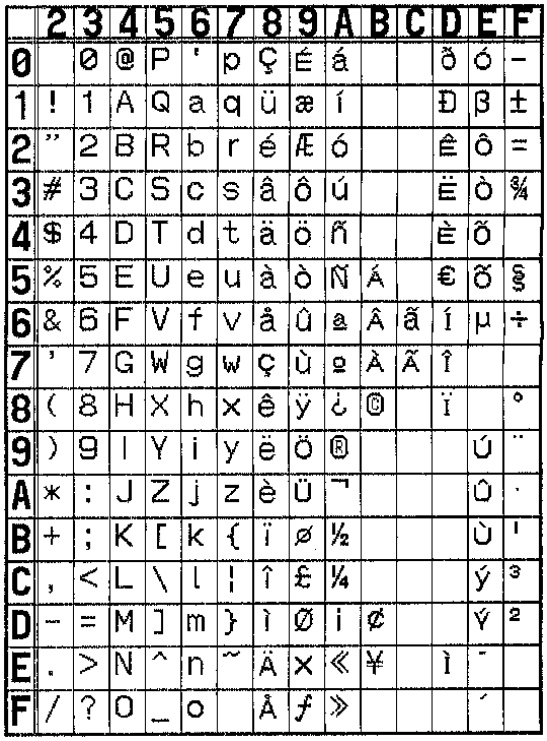
1. The M font only allows the setting of a fixed pitch.
2. This font is to obtain compatibility with old printer models and shall not disclose to the users.

[Valid commands]

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

M Font Character Set

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



	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		
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï		°
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 12 dots/mm and a expansion factor of 2 (vertical/horizontal).

Font				
Available for				
	WS4 series			

WB Font (Basic size 18x30 dots)

ESC+WB

Hex code	ESC	WB	Parameter
	<1B>16	<57>16<42>16	an~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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

n [Print data] = Data

[Coding example]

<A>

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

<Q>2

<Z>

[Notes]

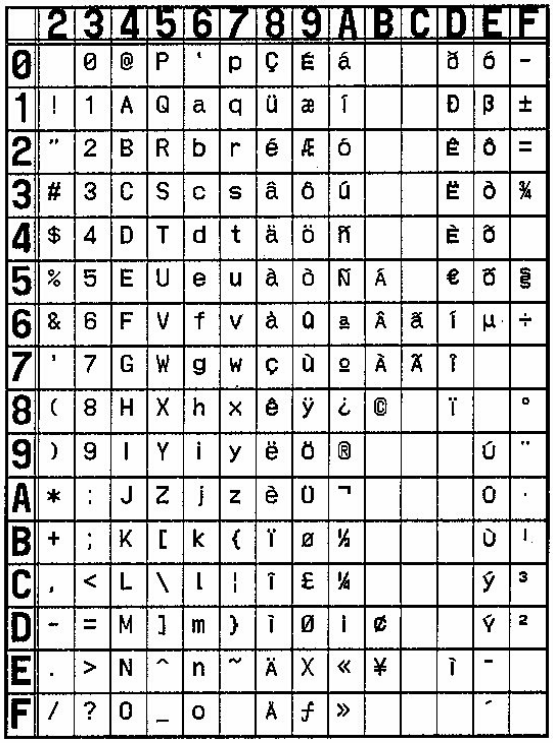
1. The WB font only allows the setting of a fixed pitch.
2. If setting the smoothing option, and the expansion <L> command is set to 1 or 2, the smoothing function will be ignored.
3. This font is to obtain compatibility with old printer models and shall not disclose to the users.

[Valid commands]

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

WB Font Character Set

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



	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	Î			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	à	û	ª	Â	ã	í	µ	÷
7	’	7	G	W	g	w	ç	ù	º	À	Ã	Î		
8	(	8	H	X	h	x	ê	ÿ	¿	©		Ï		°
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	X	«	¥		Ì	¯	
F	/	?	O	_	o		Å	ƒ	»				´	

The print sample shown above is issued with a head density of 12 dots/mm and a expansion factor of 1 (vertical/horizontal).

Font				
Available for				
	WS4 series			

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

Hex code	ESC	WL	Parameter
	$<1B>_{16}$	$<57>_{16}<4C>_{16}$	an~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

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

[format]
<WL>an~n
● Parameter
a [Smoothing] = 0: Smoothing OFF
n [Print data] = Data

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

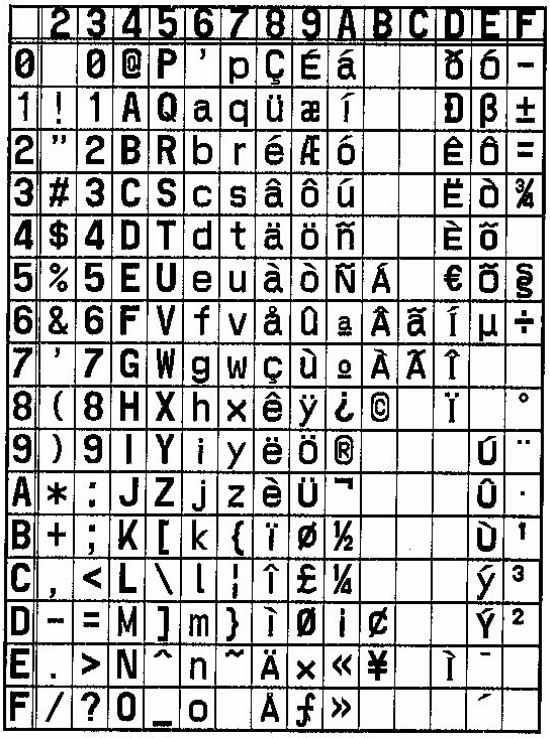
[Notes]
1. The WL font only allows the setting of a fixed pitch.
2. If setting the smoothing option, and the expansion <L> command is set to 1 or 2, the smoothing function will be ignored.
3. This font is to obtain compatibility with old printer models and shall not disclose to the users.

[Valid commands]

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

WL Font Character Set

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



The print sample shown above is issued with a head density of 12 dots/mm and a expansion factor of 1 (vertical/horizontal).

10. Barcode Command

The barcode setting is done by inputting the relevant parameter for B, D, BD after ESC. This enables the selection of the barcode type, the barcode ratio and the print out of guard bars or Human-readable characters, and etc.
Please carefully study the following pages for barcode setting specifications.
Please find the description of parameters B, D, BD below.

[Barcode ratio]

Parameter	Barcode	<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 2of5	1 : 3	1 : 2	2 : 5
6	Matrix 2of5	1 : 3	1 : 2	2 : 5

（1）Barcode ratio

Barcodes consist of narrow bars, wide bars, narrow spaces and wide spaces. The barcode ratio is specified as the ratio between one wide bar and one narrow bar.

Barcode ratio: Parameter <B>, Ratio: 1:3
Narrow bar width [1] stands against wide bar width [3]
Barcode ratio: Parameter <D>, Ratio: 1:2
Narrow bar width [1] stands against wide bar width [2]
Barcode ratio: Parameter <BD>, Ratio: 2:5
Narrow bar width [2] stands against wide bar width [5]

If an other barcode ratio shall be chosen, this can be done by specifying an user-defined ratio, using command <BT> and printing that registered ratio by command <BW>.

（2）Narrow bar width and barcode height

The width of the narrow bar is set through the thickness of the bar. The barcode height is set by the height of the bar.
For example, if printing a narrow bar with a width of 1 dot with a print head of 12 dots/mm (305dpi) the width of the narrow bar will be 0.083 mm, which could cause problems when reading the barcode with a scanner. Setting the narrow bar width to 2 dots (0.166 mm) will enable a trouble free reading by the barcode scanner.
When specifying the narrow bar it is necessary to consider the print head density and the ability of the barcode scanner.
The barcode ratio and the width of the narrow bar specify the actual thickness of the bar.
For example: Barcode ratio 1:3. Narrow bar width: 3 dots. The actual barcode ratio (in dots) will be 3:9.
The Barcode height shall be adjusted to the specifications of the barcode scanner.

（3）Inter-character gap

The inter-character gap is the space between each barcode characters.
The inter-character gap shall be put in directly in front of the barcode ratio parameters <B>, <D>, <BD> or in front of the printing command for user specified ratios <BW>. The inter-character gap is set by command <P>. If no gap is specified, the default value of 2 dots is chosen.

Barcodes which allow the specification of an inter-character gap are as follows:
1) CODABAR (NW-7)
2) CODE39
3) Industrial 2of5
4) Matrix 2of5

The actual inter-character gap is specified by the multiplication of the character pitch <P> and the width of the narrow bar.
For example: Inter-character pitch <P>: 3, Narrow bar width: 2 dots
Inter-character gap = 3 x 2 = 6 dots

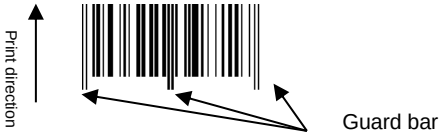
(4) Human Readable Interpretation and Guard bars

For UPC-A, JAN/EAN-8/13 column barcodes it is possible to specify the print of guard bars or human-readable interpretation.

Parameter	Barcode	<B>	<D>	<BD>	<BM>	<BL>
3	JAN/EAN-13	HRI OFF Guard bar OFF	HRI OFF Guard bar ON	HRI ON Guard bar ON		
4	JAN/EAN-8	HRI OFF Guard bar OFF	HRI OFF Guard bar ON	HRI ON Guard bar ON		
H	UPC-A	HRI OFF Guard bar OFF	HRI OFF Guard bar ON	HRI ON Guard bar ON	HRI ON The 1st and last guard bars are long	HRI OFF The 1st and last guard bars are long

1) When selecting <B> (Human-readable interpretation: OFF, Guard bars: OFF)

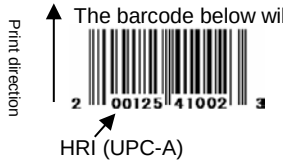
2) When selecting <D> (Human-readable interpretation: OFF, Guard bars: ON)



[Notes] By specifying font data after having set the guard bars <D>, it is possible to print human readable interpretation. Refer to barcode specifications (Selecting Human-readable interpretation) <D>~<d>.

3) When selecting <BD> (Human-readable interpretation: ON, Guard bars: ON)

4) When selecting <BM> (Human-readable interpretation: ON, The first and the last guard bars are long.)



5) When selecting <BL> (Human-readable interpretation: OFF, The first and the last guard bars are long.)

[Specifying barcode only]

Parameter	Barcode	Parameter <B>
C	CODE93	Barcode only
E	UPC-E	Barcode only
G	CODE128 (128A, 128B, 128C)	Barcode only
I	GS1-128 (UCC/EAN128) for standard carton ID	Barcode only
Z	Customer barcode	Barcode only

[Important]

1. Above are barcodes with no specified barcode ratio or human-readable interpretation.

(5) Check digits

Check digits available for each type of barcode are listed below.

[C/D]

Parameter	Barcode	Input digits	Digits printed, information included
3	JAN/EAN13	12	13 digits (barcode input+C/D) Calculation of C/D is done in modulus 10 (automatic)
		13	13 digits (Complying to barcode input. C/D is not executed/printed)
4	JAN/EAN8	7	8 digits (barcode input+C/D) Calculation of C/D is done in modulus 10 (automatic)
		8	8 digits (Complying to barcode input. C/D is not executed/printed)
C	CODE93	Max. 99	Calculation of C/D is done in modulus 47 (automatic)
E	UPC-E	6 (fixed)	Calculation of C/D is done in modulus 10 (automatic)
G	CODE128 (128A,128B, 128C)	-	Calculation of C/D is done in modulus 103 (automatic)
H	UPC-A	11 (fixed)	12 digits (barcode data + C/D) Calculation of C/D is done in modulus 10 (automatic)
I	GS1-128 (UCC/EAN128) for standard carton ID	17 (fixed)	Calculation of C/D is done in modulus 103 (automatic)

* C/D stands for check digits

Barcode rotation

Print direction of barcodes can be changed. However, if having selected serial 1 or serial 2, depending on the expansion factor, the barcode print might be blurred.

Parallel 1 : Forward printing
Parallel 2 : Rotating 180° in respect to parallel 1
Serial 1 : Rotating 90° in respect to parallel 1
Serial 2 : Rotating 270° in respect to parallel 1

*** Forward printing: picket fence barcode**

1) If printing in parallel 1 or parallel 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 2 dots.
(L shows the applicable expansion factor in relevance to the bar ratio)

	Head density	
	8 dots/mm	12 dots/mm
Bar ratio 1:2	More than 2L	More than 2L
Bar ratio 1:3	More than 2L	More than 2L
Bar ratio 2:5	More than 1L	More than 1L
UPC-A/JAN/EAN	More than 2L	More than 2L

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.

3) If printing in serial 1 or serial 2 mode, reduce the print speed

	Head density	
	8 dots/mm	12 dots/mm
Bar ratio 1:2	More than 3L	More than 3L
Bar ratio 1:3	More than 3L	More than 3L
Bar ratio 2:5	More than 2L	More than 2L
UPC-A/JAN/EAN	More than 3L	More than 3L

Barcode				
Available for				
	WS4 series			

Barcode (Ratio 1:3)

ESC+B

Hex code	ESC	B	Parameter
	$<1B>_{16}$	$<42>_{16}$	abbcccn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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 12 dots
c	[Barcode height]	=	Valid range : 001 to 999 dots
n	[Print data]	=	Data

Barcode type (Depending on the barcode type, there might be the case that there is no ratio specified for the module draw up)

a	Barcode type	Information	Ratio
0	CODABAR (NW-7)	Always include start and stop characters in print data. Start/stop characters are [A, B, C, D, E, N, T, a, b, c, d, e, n, t] Example) In case of barcode data [123]: [A123A] Inter-character pitch of barcode is valid. For print data specifications, refer to table of CODABAR (NW-7) code	1:3
1	CODE39	Always include start and stop characters in print data. Start/stop characters are [*] Example) In case of barcode data [12345]: [*12345*] Inter-character pitch of barcode is valid. For print data specifications, refer to table of CODE39 code	1:3
2	ITF	Put the print data in even digit numbers If putting the print data in odd digit numbers “0” will be added on the head of the print data. For print data specifications, refer to table of ITF code	1:3
3	JAN/EAN-13	This barcode does not include guard bars or human-readable characters For print data specifications, refer to table of JAN/EAN13 code	Fixed
4	JAN/EAN-8	This barcode does not include guard bars or human-readable characters For print data specifications, refer to table of JAN/EAN8 code	Fixed
5	Industrial 2of5	Inter-character pitch of the barcode is valid For print data specifications, refer to table of Industrial 2of5 code	1:3
6	Matrix 2of5	Print data can be specified up to 13 digits For print data specifications refer to table of Matrix 2of5 code	1:3
A	MSI	Print data input is possible for up to 13 characters For print data specifications, refer to table of MSI code	Fixed
C	CODE93	Refer to CODE93 <BC>	Fixed
E	UPC-E	Specify 6-digit numbers for print data For print data specifications, refer to table of UPC-E code	Fixed
F	BOOKLAND	Refer to BOOKLAND specifications <BF>	Fixed
G	CODE128 (128A, 128B, 128C)	Refer to CODE128 (128A, 128B, 128C) <BG>	Fixed
H	UPC-A	This barcode does not include guard bars or translation For print data specifications, refer to table of Interleaved UPC-A code	Fixed
I	GS1-128（UCC/EAN128）	Refer to GS1-128 (UCC/EAN128) <BI>	Fixed
P	POSTNET	Refer to POSTNET <BP>	Fixed

[Coding example 1] Barcode type: CODE39, Narrow bar width: 03, Barcode height: 120, Print data: *1234AB*

```
<A>
<V>100<H>100<B>103120*1234AB*
<Q>2
<Z>
```

[Coding example 2] Barcode type: JAN8, Narrow bar width: 02, Barcode height: 080, Print data: 4912345

```
<A>
<V>100<H>100<B>4020804912345
<Q>2
<Z>
```

[Notes]

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.
   Example) Inter-letter pitch (Not specified / 0 / 1) x Narrow bar width (2 dots) = Inter-character pitch (2 dots)
   Inter-letter pitch (2) x Narrow bar width (3 dots) = Inter-character pitch (6 dots)

[Tips]

1. If a value outside of the valid range is set, a command error occurs and the print out is not executed.
2. Widening the narrow bar width, can result in falling out of the printing range.
3. When using a barcode that allows the inter-character pitch, and specifying a large character pitch <P>, it might happen that the barcode scanner is unable to read the information properly. Enlarging the narrow bar width can result in reduced readability of the barcode. Please refer to Specifications of scanner for more information.
4. Adjust the narrow bar so that the barcode is easily readable by the barcode scanner.
5. If the barcode is still not readable, lower the print speed <CS> or adjust the print darkness <#E>.
6. When using codes like the CODABAR (NW-7), CODE39, include a start / stop character otherwise, the print can be executed, but the scanner will not be able to read the data.
7. When using JAN/EAN13, JAN/EAN8 codes with C/D in the print data, be sure to calculate the right value. If the C/D value is not right, the print can be executed, but the scanner will not be able to read the data.

Barcode				
Available for				
	WS4 series			

Barcode (Ratio 1:2)

ESC+D

Hex code	ESC	D	Parameter
	$<1B>_{16}$	$<44>_{16}$	abbcccn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[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]	=	01 to 12 dots
c	[Barcode height]	=	001 to 999 dots
n	[Print data]	=	Data

Barcode type (Depending on the barcode type, there might be the case that there is no ratio specified for the module draw up)

a	Barcode type	Information	Ratio
0	CODABAR (NW-7)	Always include start and stop characters in print data. Start/stop characters are [A, B, C, D, E, N, T, a, b, c, d, e, n, t] Example) In case of barcode data [123]: [A123A] Inter-character pitch of barcode becomes valid. For print data specifications, refer to table of CODABAR (NW-7) code	1:2
1	CODE39	Always include start and stop characters in print data. Start/stop character is [*] Example) In case of barcode data [12345]: [*12345*] Inter-character pitch of barcode is valid. For print data specifications, refer to table of CODE39 code	1:2
2	ITF	Put the print data in even-number digits If putting the print data in odd-number digits “0” will be added on the head of the print data. For print data specifications, refer to table of ITF code	1:2
3	JAN/EAN-13	Guard bars: On, Human-readable interpretation: Off For print data specifications, refer to table of JAN/EAN13 code	Fixed
4	JAN/EAN-8	Guard bars: On, Human-readable interpretation: Off For print data specifications, refer to table of JAN/EAN-8 code	Fixed
5	Industrial 2of5	Inter-character pitch of the barcode is valid For print data specifications, refer to table of Industrial 2of5 code	1:2
6	Matrix 2of5	Inter-character pitch of the barcode is valid For print data specifications, refer to table of Matrix 2of5 code	1:2
H	UPC-A	Guard bars: On, Human-readable interpretation: Off For print data specifications, refer to table of UPC-A code	Fixed

[Coding example 1] Barcode type: CODABAR (NW-7), Narrow bar width: 03, Barcode height: 120, Print data: A1234A

<A>

<V>100<H>100**<D>003120A1234A**

<Q>2

<Z>

[Coding example 2] Barcode type: ITF, Narrow bar width: 04, Barcode height: 240, Print data: 98002345678163

<A>
<V>100<H>100**<D>20424098002345678163**
<Q>2
<Z>

[Coding example 3] Barcode type: UPC-A, Narrow bar width: 02, Barcode height: 120, Print data: 20123948573

<A>
<V>240<H>100**<D>H0212020123948573**
<Q>2
<Z>

[Notes]

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.
   Example) Inter-letter pitch (Not specified / 0 / 1) x Narrow bar width (2 dots) = Inter-character pitch (2 dots)
   Inter-letter pitch (2) x Narrow bar width (3 dots) = Inter-character pitch (6 dots)

[Tips]

1. If a value outside of the valid range is set, a command error occurs and the print out is not executed.
2. Widening the narrow bar width, can result in falling out of the printing range.
3. When using a barcode that allows the specification of the inter-character pitch, and specifying a large character pitch <P>, it might happen that the barcode scanner is unable to read the information properly. Enlarging the narrow bar width can result in reduced readability of the barcode. Refer to the specifications of scanner for more information.
4. Adjust the narrow bar so that the barcode is easily readable by the barcode scanner (refer to the specifications of the scanner).
5. If the barcode is still not readable, lower the print speed <CS> or adjust the print darkness <#E>.
6. When using codes like the CODABAR (NW-7) or CODE39, include a start / stop character otherwise the print is executed, but the scanner will not be able to read the data.
7. When using JAN/EAN13, JAN/EAN8 codes, and including a C/D in the print data, be sure to calculate the right value. If the C/D value is not right, the print is executed, but the scanner will not be able to read the data.

Barcode				
Available for				
	WS4 series			

Barcode (HRI Font)

ESC+D ~ ESC+d

Hex code	ESC	D~+ ESC+d	Parameter
	$<1B>_{16}$	$<44>_{16}$~$<1B>_{16}$ char. type	abbcccn~n+<d>n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies character type of human readable interpretation (HRI) for barcode.

[Format]

<D>abbcccn~n + <d>n~n

● Parameter

a	[Barcode type]	=	3	:	JAN/EAN13
			4	:	JAN/EAN8
			H	:	UPC-A
b	[Narrow bar width]	=	Valid range	:	01 to 12 dots
c	[Barcode height]	=	Valid range	:	001 to 999 dots
n	[Print data]	=	Barcode data		
d	[Character type]	=	XU XS XM XB XL OA OB U S M WB WL		
n	[Print data]	=	HRI data		

[Coding example] Barcode type: JAN/EAN-13, Narrow bar width: 02, Barcode height: 120,
Barcode data: 4902471006795, Character type: XS, HRI data: 4902471006795

<A>
<V>100<H>200**<D>30212049024710067 95**
<XS>4902471006795
<Q>2
<Z>

[Notes]

1. Adds HRI characters in 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. 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) : Appropriate Narrow bar width is [02], [03]
   In case of 12 dots/mm (305dpi) : Appropriate Narrow bar width is [03], [04]

Barcode				
Available for				
	WS4 series			

Barcode (Ratio 2:5)

ESC+BD

Hex code	ESC	BD	Parameter
	$<1B>_{16}$	$<42>_{16}<44>_{16}$	abbcccn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies a barcode with a ratio of 2:5 between narrow bar and wide bar.

[Format]

<BD>abbcccn~n

● Parameter

a	[Barcode type]	=	Refer to table below
b	[Narrow bar width]	=	01 to 12 dots
c	[Barcode height]	=	001 to 999 dots
n	[Print data]	=	Data

Barcode type (Depending on the barcode type, there might be the case that there is no ratio specified for the module draw up)

a	Barcode type	Information	Ratio
0	CODABAR (NW-7)	Always include start and stop characters in print data. Start/stop characters are [A, B, C, D, E, N, T, a, b, c, d, e, n, t] Example) In case of barcode data [123]: [A123A] Inter-character pitch of barcode becomes valid. For print data specifications, refer to table of CODABAR (NW-7) code	2:5
1	CODE39	Always include start and stop characters in print data. Start/stop character is [*] Example) In case of barcode data [12345]: [*12345*] Inter-character pitch of barcode is valid. For print data specifications, refer to table of CODE39 code	2:5
2	ITF	Put the print data in even-number digits If putting the print data in odd-number digits “0” will be added on the head of the print data. For print data specifications, refer to table of ITF code	2:5
3	JAN/EAN-13	Guard bars: On, Human-readable interpretation: On For print data specifications, refer to table of JAN/EAN13 code	Fixed
4	JAN/EAN-8	Guard bars: On, Human-readable interpretation: On For print data specifications, refer to table of JAN/EAN8 code	Fixed
5	Industrial 2of5	Inter-character pitch of the barcode is valid For print data specifications, refer to table of Industrial 2of5 code	2:5
6	Matrix 2of5	Inter-character pitch of the barcode is valid For print data specifications, refer to table of Matrix 2of5 code	2:5
H	UPC-A	Guard bars: On, Human-readable interpretation: On For print data specifications, refer to table of UPC-A code	Fixed

[Coding example1] Barcode type: CODABAR (NW-7), Narrow bar width: 03, Barcode height: 120, Print data: A1234A

<A>

<V>100<H>100**<BD>003120A1234A**

<Q>2

<Z>

[Coding example 2] Barcode type: ITF, Narrow bar width: 04, Barcode height: 240, Print data: 98002345678163

<A>
<V>100<H>100**<BD>20424098002345678163**
<Q>2
<Z>

[Coding example 3] Barcode type: UPC-A, Narrow bar width: 02, Barcode height: 120, Print data: 20123948573

<A>
<V>240<H>100**<BD>H0212020123948573**
<Q>2
<Z>

[Notes]

1. For CODABAR (NW-7), CODE39, Industrial 2of5 and Matrix 2of5, the inter-character pitch of the barcode can be specified.
   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.

Example) Inter-letter pitch (Not specified / 0 / 2)	x	Narrow bar width (2 dots) =	Inter-character pitch (4 dots)
Inter-letter pitch (1)	x	Narrow bar width (3 dots) =	Inter-character pitch (3 dots)
Inter-letter pitch (3)	x	Narrow bar width (3 dots) =	Inter-character pitch (9 dots)

2. HRI text of JAN/EAN8, JAN/EAN13, UPC-A will be printed properly in following conditions.
   8 dots/mm (203dpi) - Narrow bar width: [02], [03]
   12 dots/mm (305dpi) - Narrow bar width: [03], [04]

[Tips]

1. When the value other than valid range is set, command error will occur and barcode will not be printed.
2. Increasing narrow bar width may exceed the print area.
3. Scanner may not read the barcode with valid character pitch when the Character Pitch <P> command 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.
4. For specifying the narrow bar width, consider the reading compatibility of scanner beforehand.
5. Adjust the Print Speed <CS> or Print Darkness <#E> commands in case of scanner reading problem.
6. If Start/Stop characters are not included in print data in the specification of CODABAR(NW-7) or CODE39, barcode will be printed; however, scanner can not read it.
7. If sending the print data including check digit in the specification of JAN/EAN-13 or JAN/EAN-8, set the correct calculated value. Barcode will be printed even when the data includes improper check digit; however, scanner can not read it.

Barcode				
Available for				
	WS4 series			

Barcode Ratio	ESC+BT

Hex code	ESC	BT	Parameter
	$<1B>_{16}$	$<42>_{16}<54>_{16}$	abbccddee
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies the ratio of the narrow gap in regard to the wide gap.

[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 1] Barcode type: CODE39, Narrow space: 03, Wide space: 06, Narrow bar: 03, Wide bar: 06

<A>
<BT>103060306
<V>100<H>200<BW>01233*ABCD*
<Q>2
<Z>

[Notes]

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.

Barcode

Available for				
	WS4 series			

Barcode Print by Specified

ESC+BW

Hex code	ESC	BW	Parameter
	$<1B>_{16}$	$<42>_{16}<57>_{16}$	aabbbn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies barcode ratio, saved by <BT>

[Format]

<BW>aabbbn~n

● Parameter

a	[Narrow bar width]	=	Valid range	:	01 to 12 dots
b	[Barcode height]	=	Valid range	:	001 to 999 dots
n	[Print data]	=	Barcode data		

[Coding example] Narrow bar width: 02, Barcode height: 120

<A>
<BT>103060306
<V>100<H>200**<BW>02120*ABCD***
<Q>2
<Z>

[Notes]

1. Barcode character pitch is available for CODABAR(NW-7), CODE39, Industrial 2of5 and Matrix 2of5. To specify barcode character pitch, insert the Character Pitch <P> command right before barcode symbology.
   When <P> is omitted, character pitch will be equal to narrow space width.

   e.g.1) When the narrow space value that was specified at <BT> is [3]:
   Character pitch specification (None or 0, 3) x Narrow bar width (2dots) = Character pitch (6dots)
   e.g.2) When the character pitch is specified:
   Character pitch specification (2) x Narrow bar width (3dots) = Character pitch (6dots)
2. If there is no registration of Bar width ratio <BT> command, 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 of barcode symbology, refer to the code table of each barcode.

[Tips]

1. If the value other than valid range is set, command error will occur and barcode will not to be printed.
2. Increasing narrow bar width may exceed the print area.
3. Scanner may not read the barcode with valid character pitch when the Character Pitch <P> command 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.
4. For specifying the narrow bar width, consider the reading compatibility of scanner beforehand.
5. Adjust the Print Speed <CS> or Print Darkness <#E> commands in case of scanner reading problem.
6. If Start/Stop characters are not included in print data in the specification of CODABAR(NW-7) or CODE39, the print of barcode will be performed; however, scanner cannot read it.

CODABAR (NW-7) Code Table

					S			I					S				0			
				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				0			
				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											

Barcode				
Available for				
	WS4 series			

GS1-128 (UCC/EAN128) <For Standard Carton ID>

ESC+BI

Hex code	ESC	BI	Parameter
	<1B>16	<42>16<49>16	aabbbcn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies GS1-128 (UCC/EAN128) for standard carton ID.

[Format]

<BI>aabbbcn~n

●Parameter

a Narrow bar width = Valid range : 01 to 12 dots

b Barcode height = Valid range : 001 to 999 dots

c Font of barcode interpretation = 0 : No interpretation
1 : Above barcode
2 : Below barcode

n Print data = Barcode data (17 digits fixed)

See code table GS-1128 (UCC/EAN128).

EAN128 (for standard carton ID)18 digits fixed

- Identifier of a continuous code for freight packaging
- Type of packaging
- Country, manufacturer code
- Serial number for shipping container
- C/D

* Check digit is automatically added, therefore, specify data in 17 digits excluding check digit.

[Coding Example] Narrow bar width: 03, Barcode height: 150, HRI characters: Below barcode,
Print data: 12345678901234567

<A>
<V>100<H>200**<BI>03150012345678901234567**
<Q>2
<Z>

[Notes]

1. This command is used only for UCC128 standard carton ID. If EAN128 used for other applications, such as pharmaceutical, horticultural application, use the command <BG> with appropriate application identifier and delimiters.
2. Start character code /Function character/ End character code, and identifier “00” will be automatically added.
3. Check digit Modulus 10 and Modulus 103 will be automatically generated.
4. Sequential numbering by barcode data is possible.
5. Both character pitch of Barcode and HR interpretation is fixed at 10 dots.
6. In case HR interpretation is longer than the barcode’s width, the translation will be left-aligned to the start of barcode.
7. In case HR interpretation is shorter than the barcode’s width, the translation will be center-aligned.
8. HR interpretation will be printed in OCR-B font.
9. If HR interpretation is out of the printable area, it will not be printed. Consider the output image when determining the vertical<V> and horizontal<H> print position.

ITF
Matrix2of5
Industrial2of5
UPC-A,JAN/EAN-8
JAN/EAN-13,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																

Barcode

Available for				
	WS4 series			

CODE93

ESC+BC

Hex code	ESC	BC	Parameter
	<1B>16	<42>16<43>16	aabbbccn~n
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies CODE93 Barcode.

[Format]

<BC>aabbbccn~n

●Parameter

a	Narrow bar width	=	Valid range : 01 to 12 dots
b	Barcode height	=	Valid range : 001 to 999 dots
c	Data length (digits)	=	Valid range : 01 to 99
n	Print data	=	Barcode data (See CODE93 code table)

[Coding Example] Narrow bar width: 02, Barcode height: 120, Data length: 12, Print data: ABCD123456xy

<A>

<V>100<H>200**<BC>0212012ABCD123456xy**

<Q>2

<Z>

[Notes]

1. Check digit is automatically generated and added.
2. The maximum data length is 99 digits.
3. Data length (number of digits) and quantity of actual input data shall be the same.
4. If the input data is not consistent with the specified data length, a command error will occur.

CODE93 Code Table

					S				I				S					0		
				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								

Selectable range is 00H thru 7FH for CODE93.

Barcode

Available for				
	WS4 series			

CODE128 (128A, 128B, 128C)

ESC+BG

Hex code	ESC	BG	Parameter
	<1B>16	<42>16<47>16	aabbbn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies CODE128 (128A, 128B, 128C) barcode.

[Format]

<BG>aabbbn~n

●Parameter

a	Narrow bar width	=	Valid range : 01 to 12 dots
b	Barcode height	=	Valid range : 001 to 999 dots
n	Print data	=	Barcode data (see code table on the next page)

[Coding Example] Narrow bar width: 02, Barcode height: 120, Print data: ABCD123456 (START CODE A)

<A>
<V>100<H>200**<BG>02120>GABCD123456**
<Q>2
<Z>

[Notes]

1. Add valid start code respectively for Type(A,B,C).
   (1)START CODE A = [>G]
   (2)START CODE B = [>H]
   (3)START CODE C = [>I]
2. C/D will be automatically added.
3. To use CODE128 (128A, 128B, 128C) START CODE C, length of the print data (number of digits) shall be even.
4. In case data length(number of digits) is only an odd number for START CODE C, you may first select START CODE A or B, and add one digit, then switch to code set character C to make the total data length even. (Example below)
   e.g.1) 15 digits [123456789012345] : <B>1<C>23456789012345
   e.g.2) 9 numeric/6 alphanumeric 123456789ABC123 : <C>12345678<B>9ABC123
5. If data length is an odd number for START CODE C, “0”will be automatically added to the end of the data.
6. If START CODE is omitted, the data will be printed with START CODE B.

GS1-128 (128A, 128B, 128C) 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	> (See Note 4)	> (See 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. If START CODE is not specified, the data will be printed by START CODE B.
2. STOP CODE is automatically added inside the printer.
3. In Code A and B, specify the codes more than Value64 as a two-digit code with “>”.
4. The code “>” is described as “>J”.

Barcode

Available for				
	WS4 series			

BOOKLAND

ESC+BF

Hex code	ESC	BF	Parameter
	<1B>16	<42>16<46>16	aabbbn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies BOOKLAND barcode.

[Format]

<BF>aabbbn~n

●Parameter

a	Narrow bar width	=	Valid range : 01 to 03 dots
b	Barcode height	=	Valid range : 001 to 999 dots
n	Print data	=	Barcode data (See BOOKLAND code table)

[Coding Example] Narrow bar width: 03, Barcode height: 130, Print data: 21826

<A>
<V>725<H>325<BD>3031504902471000739
<V>760<H>640**<BF>0313021826**
<Q>2
<Z>

[Notes]

1. Only numeric can be specified for print data.
2. Valid data length is 2 and 5 digits.

BOOKLAND 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**																

Barcode

Available for				
	WS4 series			

POSTNET

ESC+BP

Hex code	ESC	BP	Parameter
	<1B>16	<42>16<50>16	n~n
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies POSTNET barcode.

[Format]

<BP>n~n

●Parameter

n = Print data (See POSTNET Code table in next page)

* Follow the rule of the data length for each format.
  - 5 digits (for Postnet-32 format)
  - 6 digits (for Postnet-37 format)
  - 9 digits (for Postnet-52 format)
  - 11 digits (for Postnet-62 Delivery Point format)

[Coding Example] Postal code 11 digits : 01234567890

<A>

<V>100<H>200**<BP>01234567890**

<Q>2

<Z>

[Notes]

1. Data length other than 5, 6, 9, and 11digits will be invalid.
2. Only numeric can be specified for 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**																

Barcode

Available for				
	WS4 series			

Composite Symbol

ESC+EU

Hex code	ESC	EU	Parameter
	<1B>16	<45>16<55>16	aabb(ccc)n~n
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Specifies composite symbol.

[Format 1]
<EU>aabbccn~n
●Parameter

a Barcode type = 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 Composite(CC-A/CC-B)
05: GS1 DataBar Limited Composite (CC-A/CC-B)
06: GS1 DataBar Expanded & Expanded Stacked (CC-A/CC-B)
07: UPC-A Composite (CC-A/CC-B)
08: UPC-E Composite (CC-A/CC-B)
09: EAN-13 Composite (CC-A/CC-B)
10: EAN-8 Composite (CC-A/CC-B)

b Narrow bar width = 01 to 12 (dots)

c Segment width = 02 to 22 (even number only)
* Supporting GS1 DataBar Expanded Composite (CC-A/CC-B) only

n Print data = Barcode data

Max. number of digit for linear barcode

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 Composite(CC-A/CC-B)	13 digits
GS1 DataBar Limited Composite (CC-A/CC-B)	13 digits
GS1 DataBar Expanded Composite(CC-A/CC-B)	74 digits
UPC-A Composite(CC-A/CC-B)	11 digits
UPC-E Composite(CC-A/CC-B) Specify linear data in the form of ”XX00000XXX”(X is variable)	10 digits (fixed)
EAN-13 Composite(CC-A/CC-B)	12 digits
EAN-8 Composite(CC-A/CC-B)	7 digits

* Check digit will be automatically calculated and added.
* To specify the print of composite symbol, delimit 1D data and 2D data with '｜'(7CH).
Data = 1D data ｜ 2D data
* Specify GS1 DataBar Composite(CC-A/CC-B) data between 1st - 16th digit of GS1 DataBar Expanded Composite(CC-A/CC-B).
* For GS1 DataBar Expanded Composite(CC-A/CC-B), up to 74-digit of numeric / 41-digit of alphabet can be entered, including GS1 DataBar Composite(CC-A/CC-B) data. (Up to 41-digit of alphanumeric can be entered including GS1 DataBar Composite(CC-A/CC-B) data)
* If a specified digit number is smaller than the maximum one of 1D data, this value will be zero filled at the front end.
* In 2D data, up to 338-digit can be entered. Maximum digit number may vary depending on barcode symbologies.

[Format 2]

<EU>aabbcccn~n

● Parameter

a	[1D code type]	=	11:GS1-128 (UCC/EAN128) with CC-A/B 12:GS1-128 (UCC/EAN128) with CC-C
b	[Narrow bar width]	=	01 to 12 (dots)
c	[Barcode height]	=	001 to 500 (dots)
	* Specify barcode height supposing narrow bar width is 01. When narrow bar width is 03, and bar height is 100, the barcode height becomes 300 dots.		
n	[Print data]	=	Barcode data

Maximum number of digits for 1 and 2D data (Restriction on the max. number of digits for 1D data)

GS1-128 (UCC/EAN128) with CC-A/B	338 digits
GS1-128 (UCC/EAN128) with CC-C	2361 digits

Maximum number of digits for 1D data

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 1D data and 2D data with '｜'(7CH).
  Data = 1D data ｜ 2D data
* To specify FNC1(GS) of CC-A/B(Micro PDF) and CC-C(PDF41) as data, make sure to use '#'(23H).
* In 2D data of GS1-128(UCC/EAN128) with CC-A/B, up to 338-digit can be entered.

[Coding example 1] GS1 DataBar Composite(CC-A/CC-B)

<A>
<V>100<H>100
<EU>01040361234567890｜11990102
<Q>1
<Z>

[Coding example 2] GS1 DataBar Truncated Composite(CC-A/CC-B)

<A>
<V>100<H>100
<EU>02040361234567890｜11990102
<Q> 1
<Z>

[Coding example 3] DataBar Stacked Composite(CC-A/CC-B)

<A>
<V>100<H>100
<EU>03040341234567890｜17010200
<Q>1
<Z>

[Coding example 4] DataBar Stacked Omni-Directional Composite(CC-A/CC-B)

<A>
<V>100<H>100
<EU>04040341234567890｜17010200
<Q>1
<Z>

[Coding example 5] DataBar Limited Composite (CC-A/CC-B)

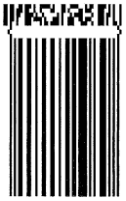
<A>
<V>100<H>100
<EU>05040351234567890｜21abcdefghijklmnopqrstuv
<Q>1
<Z>

[Coding example 6] UPC-A Composite(CC-A/CC-B)

<A>
<V>100<H>100
<EU>0704331234567890｜991234-abcd
<Q>1
<Z>

[Coding example 7] UPC-E Composite(CC-A/CC-B)

<A>
<V>100<H>100
<EU>08041200000123|15021231
<Q>1
<Z>



[Coding example 8] EAN-13 Composite(CC-A/CC-B)

<A>
<V>100<H>100
<EU>0904331234567890|991234-abcd
<Q>1
<Z>

[Coding example 9] EAN-8 Composite(CC-A/CC-B)

<A>
<V>100<H>100
<EU>10041234567|21A12345678
<Q>1
<Z>

[Coding example 10] GS1-128 (UCC/EAN128) with CC-A/B

<A>
<V>100<H>100
<EU>1104026010321234567890 6|21A1B2C3D4E5F6G7H8
<Q>1
<Z>

[Coding example 11] GS1-128 (UCC/EAN128) with CC-C

<A>
<V>100<H>100
<EU>12040260003012345678901234 0|02130123456789
093724#101234567ABCDEFG
<Q>1
<Z>

[Note]

1. Parameter feature varies depending on 1D barcode symbologies.
   Only GS1 DataBar Expanded Composite(CC-A/CC-B)(EU06) is designable for segment width.
   Parameter for height of barcode can be specified for GS1-128 (UCC/EAN128)(EU11,EU12) only.
2. If the invalid value for 1D barcode symbology is set in the data portion, composite symbol will not be printed.
3. The sum of 1D and 2D data up to 2361-digit can be set for the print data parameter. As for 2D data, when 1D barcode symbology and alphanumeric are mixed, the number of designable data may vary.
   If specifying the data exceeding the maximum digit number, barcodes 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 within the area will be printed; however, a scanner might read the value of such composite symbol occasionally.
6. In the specification of composite symbol, 1D barcode data affects the width and height of 2D barcode. When the 1D barcode width is very small, specifying the data with the valid digit number will not print anything.
7. Print of HRI cannot be designated with this command.
8. The Rotate <%> command is available, but not the Character Expansion <L> command.
9. When specifying 11 (production date), 12 (due date for payment), 13 (packaging date), 15 (sell by date), or 17 (expiration date) for Application Identifier (AI), specify the valid values to the date (YYMMDD). There is no guarantee for print result if invalid values are specified.
10. When barcode type is GS1 DataBar, the 2D code data of it should be based on the format of Application Identifier.

Barcode				
Available for				
	WS4 series			

UPC-A Barcode (No HRI)	ESC+BL

Hex code	ESC	BL	Parameter
	<1B>16	<42>16<4C>16	abbcccn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies UPC-A Barcode with start/end bar in the same length with guard bar.

[Format]

<BL>abbcccn~n

●Parameter

a	Barcode type	=	H	:	UPC-A(“H”Fixed)
b	Narrow bar width	=	Valid range	:	01 to 12 dots
c	Barcode height	=	Valid range	:	001 to 999 dots
n	Print data	=	Data	:	11 digits fixed

[Coding Example] Barcode type: UPC-A, Narrow bar width: 03, Barcode height: 120, Print data: 01234567890

<A>

<V>100<H>100**<BL>H0312001234567890**

<Q>2

<Z>

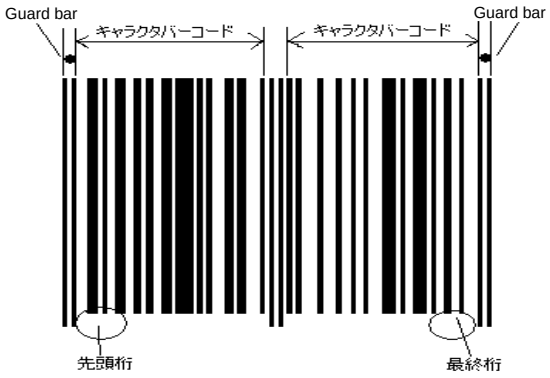
[Notes]

1. This command supports UPC-A. Selecting barcode type other than “H” will result in a command error.
2. Refer to the following settings.

Barcode setting

Guard bar	HRI	Ratio
Yes	No	Fixed

3. If a parameter is specified out of the range, its behavior will not be supported.
4. When using command <D> to print UPC-A, the character bars will be all in the same length. The command <BL> will print the start bar and end bar in the same length as that of guard bars



Print result of UPC-A by command <D>

Print result of UPC-A by command <BL>

Barcode				
Available for				
	WS4 series			

UPC-A Barcode (HRI Font Designation)	ESC+BL ~ ESC+d

Hex code	ESC	BL~d	Parameter
	<1B>16	<42>16<4C>16 ~Font type	abbcccn~n~< d >n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies font type of UPC-A (with HRI characters)

[Format]

<BL>abbcccn~n ~ <d>n~n

●Parameter

a	Barcode type	=	H	:	UPC-A (“H” fixed)
b	Narrow bar width	=	Valid range	:	01 to 12 dots
c	Barcode height	=	Valid range	:	001 to 999 dots
n	Print data	=	Barcode data	:	11 digits fixed
d	Font	=	XU		
			XS		
			XM		
			XB		
			XL		
			OA		
			OB		
			U		
			S		
			M		
			WB		
			WL		
n	Print data	=	HRI data	:	12 digits fixed

[Coding Example] Barcode type : UPC-A, Narrow bar width : 02, Barcode height : 120
Barcode data : 01234567890, Font type : XS, Translation data : 012345678905

<A>
<V>100<H>200**<BL>H0212001234567890**
<XS>012345678905
<Q>2
<Z>

[Notes]

1. This command supports UPC-A only. Selecting barcode type other than “H” will be a command error.
2. Recommended narrow bar width for UPC-A with HRI:
   8 dot/mm resolution [02], [03]
   12 dot/mm resolution [03], [04]
3. Calculate the 12th check digit of HRI data by using Modulus 10.
4. Refer to the following settings.

Barcode setting

Guard bar	HRI	Ratio
Yes	Yes	Fixed

5. If a parameter is specified out of the range, its behavior will not be supported.
6. The command <D> with specifying font type to print UPC-A will print the character bars all in the same length. On the other hand, the command <BL> with font type selection will print the start bar and end bar in the same length as that of guard bars. When printing UPC-A with command<D> followed by <font type> data, its HRI can be printed from under the start/end bar, because the length of them is short. When printing UPC-A with command <BL> followed by <font type> data, character spacing of the HRI will be smaller than command <BL> because the length of start and end bars is longer.

UPC-A with command <D>

UPC-A with command <BL>

Barcode				
Available for				
	WS4 series			

UPC-A Barcode (with HRI)	ESC+BM

Hex code	ESC	BM	Parameter
	<1B>16	<42>16<4D>16	abbcccn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies UPC-A barcode with HRI characters. The start and end bar height will be the same length as that of guard bars.

[Format]

<BM>abbcccn~n

●Parameter

a	Barcode type	=	H	:	UPC-A (“H” fixed)
b	Narrow bar width	=	Valid range	:	01 to 12 dots
c	Barcode height	=	Valid range	:	001 to 999 dots
n	Print data	=	Data	:	11 digits fixed

[Coding Example] Barcode type : UPC-A, Narrow bar width : 02, Barcode height : 120, Print data : 20123948573

<A>

<V>240<H>100**<BM>H0212020123948573**

<Q>2

<Z>

[Notes]

1. This command supports UPC-A only. Selecting barcode type other than “H” will be a command error.
2. Recommended narrow bar width for UPC-A with HRI characters:
   8 dots/mm resolution [02], [03]
   12 dots/mm resolution [03], [04]
3. Refer to the following settings.

Barcode setting

Guard bar	HRI	Ratio
Yes	Yes	Fixed

4. If a parameter is specified out of the range, its behavior will not be supported.
5. The command <BD> with specifying font type to print UPC-A will print the character bars all in the same length. On the other hand, the command <BM> will print the start bar and end bar in the same length as that of guard bars.
   When printing UPC-A with command<BD>, its HRI can be printed from under the start/end bar, because the length of them is short. When printing UPC-A with command <BM>, character spacing of the HRI will be smaller than command <BD> because

UPC-A with command <BD>

UPC-A with command <BM>

11. 2D Code Command

11.1 2D Code

Available for				
	WS4 series			

PDF417	ESC+2D10

Hex code	ESC	2D10	Parameter
	<1B>16	<32>16<44>16<31>16<30>16	,aa,bb,c,dd,ee(,f)
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Specifies 2D Code PDF417.

[Format]
<2D10>,aa,bb,c,dd,ee(,f)

●Parameter

a	Minimum module width	=	Valid range	:	01 to 09 dots
b	Minimum module height	=	Valid range	:	01 to 24 dots
c	Security level	=	Valid range	:	0 to 8
d	Code words per line	=	Valid range	:	01 to 30
			00	:	Auto (Module width auto-justified according to data quantity)
e	Rows per symbol	=	Valid range	:	03 to 90
			00	:	Auto (Module height auto-justified according to data quantity)
f	Code type (Omissible)	=	0	:	Normal (when omitted)
			1	:	Truncated

[Format](Data part)
<DN>mmmm,n~n

●Parameter

m	Quantity of data	=	Valid range	:	1 to 2681 bytes
n	Print data	=	Data		

[Coding Example1] Min.module width : 03 dots, Min. module height : 09 dots
Security level : 3, Data code words per line : 03
Rows per symbol : 18

<A>
<V>100<H>200**<2D10>,03,09,3,03,18**
<DN>0010,0123456789
<Q>2
<Z>

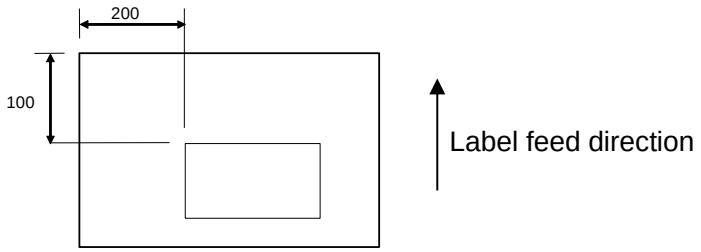
[Coding Example2] Min.module width : 03 dots, Min. module height : 09 dots
Security Level : 3, Data code words per line : 03
Rows per symbol : 18, Code type : Truncated

<A>
<V>100<H>200**<2D10>,03,09,3,03,18,1**
<DN>0010,0123456789
<Q>2
<Z>

[Notes]

1. By command <V>(Vertical print position) and <H>(Horizontal print position) print start position can be specified.

   <V>100<H>200<2D10>*** ・・・・・・**



2. In case the both parameter d=e=00, aspect ration will be 1:2.
3. Parameters and data size being inconsistent may not be printed properly.
4. Higher Security Level will require larger numbers for parameter “d” or “e”.
5. Min. module width 01,02dot are not recommendable with a risk of lower scanner-readability.
6. Min. module height 01,02,03 dots are not recommendable with a risk of lower scanner-readability.

[Tips]

1. No sequential numbering is possible for PDF417.
2. No print position setting is possible by auto-CR.
3. 00H - FFH can be specified as print data.
4. Increase minimum module dimensions for better quality, as necessary.
5. Increase Security Level for better scanner-readability, as necessary.
6. Height of print image will differ for alphabet, numeric, and alpha-numeric data.

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								

Selectable range is 00H thru FFH for PDF417

2D Code

Available for				
	WS4 series			

Micro PDF

ESC+2D12

Hex code	ESC	2D12	Parameter
	<1B>16	<32>16<44>16<31>16<32>16	,aa,bb,c,dd(,e)
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies Micro PDF.

[Format] (Setting portion)

<2D12>,aa,bb,c,dd(,e)

●Parameter

a	Minimum module width	=	Valid range :	01 to 09 (dots)
b	Minimum module height	=	Valid range :	01 to 24 (dots)
c	Code words per line (Cols)	=	Valid range :	1 to 4
d	Rows per symbol (Rows)	=	Valid range :	2 digits
e	Binary mode (Omissible)	=	0 :	Normal (when omitted)
			1 :	Binary mode

[Format] (Data portion)

<DN>mmmm,n~n : When Binary mode is set to [1]

<DS>n~n : When Binary mode is set to [0]

●Parameter

m	Quantity of data	=	Valid range :	0001 to 0366 (bytes)
n	Print data	=	Data	

[Coding Example] Module width: 02 dots, Module height: 04 dots
Code words per line: 1, Rows per symbol: 14

```
<A>
<V>100<H>200<2D12>,02,04,1,14
<DN>0010,0123456789
<Q>2
<Z>
```

[Note]

1. Rows per symbol is subject to the number of data code word per line. See table in next page for symbol size and data quantity.

* Symbol size and Max. data quantity (Byte) of Micro PDF (Only the following 34 types are available)

Micro PDF Symbol size and data quantity

Symbol size		Max. Data quantity (Byte)		
Cols(c)	Rows(d)	Numeric (A to Z)only	Numeric	Binary
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

* Combination of alphabet (Upper/Lower case), numeric and control code varies depending on the number of characters.

Micro PDF 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								

Selectable range is 00H thru FFH for Micro PDF Code.

2D Code

Available for				
	WS4 series			

MAXI Code

ESC+2D20

Hex code	ESC	2D20	Parameter
	<1B>16	<32>16<44>16<32>16<30>16	,a(,bbb,ccc,d~d)
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Specifies MAXI Code.

[Format] (Setting portion)
<2D20>,a(,bbb,ccc,d~d)
●Parameter

a	Mode	=	2	:	Delivery (Numeric only)
			3	:	Delivery (Alphanumeric)
			4	:	Standard symbol
			6	:	for Reader device only

The following parameters shall be specified when mode [2] or [3] is selected. Omit the following if selection is [4] or [6].

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 (Mode2)
					000000 to 999999 (Mode3)

Mode 2 accepts max. 9digits numeric only
Mode 3 accepts 6digits only (Upper case only for alphabet)

[Format] (Data portion)
<DN>mmmm,n~n
●Parameter

m	Quantity of data	=	Valid range	:	1 to 138
n	Print data	=	Data		

* 00H cannot be specified

Mode	Service class	Country code	Postal code	Max. data quantity	
				Numeric	Alphanumeric.
2	3digits Fixed (Numeric only)	3digits Fixed (Numeric only)	Max. 9 digits	123	84
3			6 digits fixed (Alphanumeric)		
4	Omitted			138	93
6					

[Coding Example] Mode: Delivery (Numeric only), Service Class: 003, Country code: 081
Postal code: 123456789

<A>
<V>100<H>200**<2D20>,2,012,840,122290196**
<DN>0057,[)>[RS]01[GS]961Z00000333[GS]UPSN[GS]1W74V3[GS]318[GS][GS]1/1[GS]2[GS]N[GS][GS]ALBANY[GS]NY[RS][EOT]
<Q>2
<Z>

[Notes]
1. The size of the symbol printed is not subject to data volume. (Quantity of data)
2. Any other parameters specified or settings being inconsistent with each other will result in no printing.
3. In case mode [4] or [6] is selected, be sure to have data size (in byte) larger than 12 (bytes), smaller data volume will result in failure of scanner-reading.
4. In mode2 and 3, data has following definition. See "**MAXI Code data format (Mode2 and 3)**".

MAXI code 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								

Selectable range is 01H thru FFH for MAXI Code.

MAXI Code data format (Mode2 and 3)

No.	Title	Example
1	Message Header	]>[RS]
2	Transportation Data Format Header	01[GS]96
3	Tracking Number	1Z00000333[GS]
4	SCAC	UPSN[GS]
5	UPS Account Number	1W74V3[GS]
6	Julian Day of Pickup	318[GS]
7	Place Holder for Shipment ID Number	[GS]
8	Package n/x	1/1[GS]
9	Package Weight	2[GS]
10	Address Validation	N[GS]
11	Place Holder for Ship to Street Address	[GS]
12	Ship to City	ALBANY[GS]
13	Ship to State	NY[RS]
14	End of Transmission	[EOT]

NOTE: [GS] is 1DH, and [RS] is 1EH in binary expression.

2D Code				
Available for				
	WS4 series			

QR Code (Model 2)

ESC+2D30

Hex code	ESC	2D30	Parameter
	<1B>16	<32>16<44>16<33>16<30>16	,a,bb,c,d(,ee,ff,gg)
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies QR code (Model2).

[Format] (Setting portion)

<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 32 dots
c	Data setting mode	=	0	:	Manual
			1	:	Auto

* Note that the way of print data setting is different in each setting mode.

d	Concatenation mode	=	0	:	Normal mode
			1	:	Concatenation mode

In case [concatenation mode] is selected, the following settings are mandatory. If normal mode is selected, omit the settings below.

e	Quantity of partitions by concatenation mode (How many partitioned QR codes are concatenated.)	=	Valid range	:	01 to 16
f	Sequential number partitioned by concatenation (Sequential numbering to each partitioned symbol)	=	Valid range	:	01 to 16
g	Concatenation parity data	=	Valid range	:	00 to FF

(Parity data is a result of XOR calculation of entire data of QR Code expressed in Hexadecimal character

[Format] (Data portion)

<DS>k,n~n

<DN>mmmm,n~n

●Parameter

k	Input character mode	=	1	:	Numeric mode
			2	:	Alphanumeric mode
			3	:	Kanji (Shift JIS Kanji code)

This setting is only required when manual data setting is selected.
Use command <DN> for binary data input.

m	Quantity of data	=	Valid range	:	1 to 2953

When auto data setting is selected, or binary data input is selected, Quantity of data shall be specified.

n	Print data	=	Data

[Coding Example] Error correction level: 7%, Size of one side of cell: 05
Data setting mode: manual, Concatenation mode: Normal

<A>
<V>100<H>200**<2D30>,L,05,0,0**
<DS>1,012345
<Q>2
<Z>

[Notes]

1. In case any other parameters than above are specified, or parameters and quantity of data are not consistent with each other, the symbol will not be printed correctly.
2. Note that data part use two different commands <DS> and <DN> according to input mode.

Auto setting (Data setting mode)

<DN>mmmm,n~n

[Tips 1]

1. When Kanji is to be specified, quantity of data shall be twice as many as number of total Kanji characters.
2. The address 80H~9FH, E0H~FFH cannot be used for binary data input, since these characters are only handled in Kanji mode.

Binary input in manual data setting mode

<DN>mmmm,n~n

Other input mode

<DS>1,n~n (Numeric)
<DS>2,n~n (Alphanumeric)
<DS>3,n~n (Kanji)

Mixture of different data input mode

Different data input mode can be used in the same command string. See example below.

<A>
<V>100<H>100
<2D30>,a,bb,c,d
<DS>3,n~n
<DN>mmmm,n~n
<DS>1,n~n
<Q>1
<Z>

[Tips 2]

1. Data part shall follow directly symbol format part , or a data part and other data part shall follow successively without interval. Otherwise printed result may be incorrect.

2. Quantity of data shall no exceed the maximum 7000 bytes. Also the maximum number of data block, which can be used in one symbol is 200.

QR data size table (Model 2)

Version	Error correction	Numeric	Alphanum	Kanji	Binary
1	L	41	25	10	17
	M	34	20	8	14
21x21	Q	27	16	7	11
	H	17	10	4	7
2	L	77	47	20	32
	M	63	38	16	26
25x25	Q	48	29	12	20
	H	34	20	8	14
3	L	127	77	32	53
	M	101	61	26	42
29x29	Q	77	47	20	32
	H	58	35	15	24
4	L	187	114	48	78
	M	149	90	38	62
33x33	Q	111	67	28	46
	H	82	50	21	34
5	L	255	154	65	106
	M	202	122	52	84
37x37	Q	144	87	37	60
	H	106	64	27	44
6	L	322	195	82	134
	M	255	154	65	106
41x41	Q	178	108	45	74
	H	139	84	36	58
7	L	370	224	95	154
	M	293	178	75	122
45x45	Q	207	125	53	86
	H	154	93	39	64
8	L	461	279	118	192
	M	365	221	93	152
49x49	Q	259	157	66	108
	H	202	122	52	84
9	L	552	335	141	230
	M	432	262	111	180
53x53	Q	312	189	80	130
	H	235	143	60	98
10	L	652	395	167	271
	M	513	311	131	213
57x57	Q	364	221	93	151
	H	288	174	74	119

Version	Error correction	Numeric	Alphanum	Kanji	Binary
11	L	772	468	198	321
	M	604	366	155	251
61x61	Q	427	259	109	177
	H	331	200	85	137
12	L	883	535	226	367
	M	691	419	177	287
65x65	Q	489	296	125	203
	H	374	227	96	155
13	L	1022	619	262	425
	M	796	483	204	331
69x69	Q	580	352	149	241
	H	427	259	109	177
14	L	1101	667	282	458
	M	871	528	223	362
73x73	Q	621	376	159	258
	H	468	283	120	194
15	L	1250	758	320	520
	M	991	600	254	412
77x77	Q	703	426	180	292
	H	530	321	136	220
16	L	1408	854	361	586
	M	1082	656	277	450
81x81	Q	775	470	198	322
	H	602	365	154	250
17	L	1548	938	397	644
	M	1212	734	310	504
85x85	Q	876	531	224	364
	H	674	408	173	280
18	L	1725	1046	442	718
	M	1346	816	345	560
89x89	Q	948	574	243	394
	H	746	452	191	310
19	L	1903	1153	488	792
	M	1500	909	384	624
93x93	Q	1063	644	272	442
	H	813	493	208	338
20	L	2061	1249	528	858
	M	1600	970	410	666
97x97	Q	1159	702	297	482
	H	919	557	235	382

Version	Error correction	Numeric	Alphanum	Kanji	Binary
21	L	2232	1352	572	929
	M	1708	1035	438	711
101x101	Q	1224	742	314	509
	H	969	587	248	403
22	L	2409	1460	618	1003
	M	1872	1134	480	779
105x105	Q	1358	823	348	565
	H	1056	640	270	439
23	L	2620	1588	672	1091
	M	2059	1248	528	857
109x109	Q	1468	890	376	611
	H	1108	672	284	461
24	L	2812	1704	721	1171
	M	2188	1326	561	911
113x113	Q	1588	963	407	661
	H	1228	744	315	511
25	L	3057	1853	784	1273
	M	2395	1451	614	997
117x117	Q	1718	1041	440	715
	H	1286	779	330	535
26	L	3283	1990	842	1367
	M	2544	1542	652	1059
121x121	Q	1804	1094	462	751
	H	1425	864	365	593
27	L	3517	2132	902	1465
	M	2701	1637	692	1125
125x125	Q	1933	1172	496	805
	H	1501	910	385	625
28	L	3669	2223	940	1528
	M	2857	1732	732	1190
129x129	Q	2085	1263	534	868
	H	1581	958	405	658
29	L	3909	2369	1002	1628
	M	3035	1839	778	1264
133x133	Q	2181	1322	559	908
	H	1677	1016	430	698
30	L	4158	2520	1066	1732
	M	3289	1994	843	1370
137x137	Q	2358	1429	604	982
	H	1782	1080	457	742

Version	Error correction	Numeric	Alphanum	Kanji	Binary
31	L	4417	2677	1132	1840
	M	3486	2113	894	1452
141x141	Q	2473	1499	634	1030
	H	1897	1150	486	790
32	L	4686	2840	1201	1952
	M	3693	2238	947	1538
145x145	Q	2670	1618	684	1112
	H	2022	1226	518	842
33	L	4965	3009	1273	2068
	M	3909	2369	1002	1628
149x149	Q	2805	1700	719	1168
	H	2157	1307	553	898
34	L	5253	3183	1347	2188
	M	4134	2506	1060	1722
153x153	Q	2949	1787	756	1228
	H	2301	1394	590	958
35	L	5529	3351	1417	2303
	M	4343	2632	1113	1809
157x157	Q	3081	1867	790	1283
	H	2361	1431	605	983
36	L	5836	3537	1496	2431
	M	4588	2780	1176	1911
161x161	Q	3244	1966	832	1351
	H	2524	1530	647	1051
37	L	6153	3729	1577	2563
	M	4775	2894	1224	1989
165x165	Q	3417	2071	876	1423
	H	2625	1591	673	1093
38	L	6479	3927	1661	2699
	M	5039	3054	1292	2099
169x169	Q	3599	2181	923	1499
	H	2735	1658	701	1139
39	L	6743	4087	1729	2809
	M	5313	3220	1362	2213
173x173	Q	3791	2298	972	1579
	H	2927	1774	750	1219
40	L	7089	4296	1817	2953
	M	5596	3391	1435	2331
177x177	Q	3993	2420	1024	1663
	H	3057	1852	784	1273

2D Code

Available for				
	WS4 series			

QR Code (Model 1)

ESC+2D31

Hex code	ESC	2D31	Parameter
	<1B>16	<32>16<44>16<33>16<31>16	,a,bb,c,d(,ee,ff,gg)
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Specifies QR code (Model1)

[Format]
<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 32 dots

c Data setting mode = 0 : Manual
1 : Auto
Note that two different data setting modes above are available.

d Concatenation mode = 0 : Normal mode
1 : Concatenation mode

In case concatenation mode is selected, the following settings are mandatory. If normal mode is selected, omit the settings below.

e Quantity of partitions by concatenation mode = Valid range : 01 to 16
(How many partitioned QR codes are concatenated.)

f Sequential number partitioned by concatenation = Valid range : 01 to 16
(Sequential numbering to each partitioned symbol)

g Concatenation parity data = Valid range : 00 to FF
(Parity data is a result of XOR calculation of entire data of QR Code expressed in Hexadecimal character.)

[Format] (Data portion)
<DS>k,n~n
<DN>mmmm,n~n

●Parameter

k Input character mode = 1 : Numeric mode
2 : Alphanumeric mode
3 : Kanji mode (ShiftJIS Kanji code)

This setting is only required when manual data setting is selected.
Use command <DN> for binary data input.

m Quantity of data = Valid range : 1 to 486
When auto data setting is selected, or binary data input is selected, Quantity of data shall be specified.

n Print data = Data

[Coding Example] Error correction level: 7%, Size of one side of cell: 05
Data setting mode: manual, Concatenation mode: Normal

<A>
<V>100<H>200
<2D31>,L,05,0,0
<DS>1,012345
<Q>2
<Z>

[Notes]

1. In case any other parameters than above are specified, or parameters and quantity of data are not consistent with each other, the symbol will not be printed correctly.
2. Note that data part use two different commands <DS> and <DN> according to input mode.

Auto setting (Data setting mode)

<DN>mmmm,n~n

[Tips 1]

1. When Kanji is to be specified, quantity of data shall be twice as many number as total Kanji characters.
2. The address 80H~9FH and E0H~FFH cannot be used for binary data input, since these characters are only handled in Kanji mode.

Binary input in manual data setting mode

<DN>mmmm,n~n

Other input mode

<DS>1,n~n (Numeric)
<DS>2,n~n (Alphanumeric)
<DS>3,n~n (Kanji)

Mixture of different data input mode

Different data input mode can be used in the same command string. See example below.

<A>
<V>100<H>100
<2D31>,a,bb,c,d
<DS>3,n~n
<DN>mmmm,n~n
<DS>1,n~n
<Q>1
<Z>

[Tips 2]

1. Data part shall follow directly symbol format part , or a data part and other data part shall follow successively without interval. Otherwise printed result may be incorrect.

QR data size table (Model 1)

Version	Error correction	Numeric	Alphanum	Kanji	Binary
1	L	40	24	10	17
	M	33	20	8	14
21x21	Q	25	15	6	11
	H	16	10	4	7
2	L	81	49	20	34
	M	66	40	17	28
25x25	Q	52	31	13	22
	H	33	20	8	14
3	L	131	79	33	55
	M	100	60	25	42
29x29	Q	81	49	20	34
	H	52	31	13	22
4	L	186	113	48	78
	M	138	84	35	58
33x33	Q	114	69	29	48
	H	76	46	19	32
5	L	253	154	65	106
	M	191	116	49	80
37x37	Q	157	95	40	66
	H	105	63	27	44
6	L	321	194	82	134
	M	249	151	64	104
41x41	Q	201	122	51	84
	H	133	81	34	56
7	L	402	244	103	168
	M	311	188	80	130
45x45	Q	253	154	65	106
	H	167	101	43	70
8	L	493	299	126	206
	M	378	229	97	158
49x49	Q	301	183	77	126
	H	203	123	52	85
9	L	585	354	150	244
	M	441	267	113	184
53x53	Q	369	223	94	154
	H	239	145	61	100
10	L	690	418	177	287
	M	526	319	135	219
57x57	Q	433	262	111	180
	H	291	176	74	121

Version	Error correction	Numeric	Alphanum.	Kanji	Binary
11	L	800	485	205	333
	M	608	368	156	253
61x61	Q	493	299	126	205
	H	342	207	87	142
12	L	915	555	234	381
	M	694	421	178	289
65x65	Q	579	351	148	241
	H	390	236	100	162
13	L	1030	624	264	429
	M	790	479	202	329
69x69	Q	656	398	168	273
	H	454	275	116	189
14	L	1167	707	299	486
	M	877	531	225	365
73x73	Q	738	447	189	307
	H	498	302	127	207

QR Code (Numeric mode) 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) 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) 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								

The address can be specified in the range [00H~7FH] and [A0H~DFH] for QR Code (Binary mode).

QR Code (Kanji mode) Table

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Symbol	813F		SP	、	。	,	.	・	:	;	?	!	゛	゜	´	`	¨
	814F	^	￣		ヽ	ヾ	ゝ	ゞ	〃	仝	々	〆	〇	―	―	‐	／
	815F	＼	～	∥	｜	…	‥	‘	’	“	”	（	）	〔	〕	［	］
	816F	｛	｝	〈	〉	《	》	「	」	『	』	【	】	＋	－	±	×
	8180	÷	＝	≠	＜	＞	≦	≧	∞	∴	♂	♀	°	′	″	℃	￥
	8190	＄	¢	£	%	＃	＆	＊	＠	§	☆	★	○	●	◎	◇	
	819E		◆	□	■	△	▲	▽	▼	※	〒	→	←	↑	↓	＝	
Alphanumeric	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
	826F	P	Q	R	S	T	U	V	W	X	Y	Z					
	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					
Hiragana	829E		ぁ	あ	ぃ	い	ぅ	う	ぇ	え	ぉ	お	か	が	き	ぎ	く
	82AE	ぐ	け	げ	こ	ご	さ	ざ	し	じ	す	ず	せ	ぜ	そ	ぞ	た
	82BE	だ	ち	ぢ	っ	つ	づ	て	で	と	ど	な	に	ぬ	ね	の	は
	82CE	ば	ぱ	ひ	び	ぴ	ふ	ぶ	ぷ	へ	べ	ぺ	ほ	ぼ	ぽ	ま	み
	82DE	む	め	も	ゃ	や	ゅ	ゆ	ょ	よ	ら	り	る	れ	ろ	ゎ	わ
	82EE	ゐ	ゑ	を	ん												
Katakana	833F		ァ	ア	ィ	イ	ゥ	ウ	ェ	エ	ォ	オ	カ	ガ	キ	ギ	ク
	834F	グ	ケ	ゲ	コ	ゴ	サ	ザ	シ	ジ	ス	ズ	セ	ゼ	ソ	ゾ	タ
	835F	ダ	チ	ヂ	ッ	ツ	ヅ	テ	デ	ト	ド	ナ	ニ	ヌ	ネ	ノ	ハ
	836F	バ	パ	ヒ	ビ	ピ	フ	ブ	プ	ヘ	ベ	ペ	ホ	ボ	ポ	マ	ミ
	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									
Greek	839E		Α	Β	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο
	83AE	Π	Ρ	Σ	Τ	Υ	Φ	Χ	Ψ	Ω							
	83BE		α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
	83CE	π	ρ	σ	τ	υ	φ	χ	ψ	ω							
Russian	843F		А	Б	В	Г	Д	Е	Ё	Ж	З	И	Й	К	Л	М	Н
	844F	О	П	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э
	845F	Ю	Я														
	846F		а	б	в	г	д	е	ё	ж	з	и	й	к	л	м	н
	8480	о	п	р	с	т	у	ф	х	ц	ч	ш	щ	ъ	ы	ь	э
	8490	ю	я														

	ShiftJIS	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	鬱	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					

	ShiftJIS	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

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
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

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
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	

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
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

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
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

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
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												

	ShiftJIS	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											
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	偖	僉	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	冋	册	冉	冏	冑	冓	冕				
冖	995F													冖	冤	冦	冢
	996F	冩	冪														
冫	996F				冫	决	冱	冲	冰	况	冽	凅	凉	凛			
几	996F													几	處	凩	凭
	9980	凰															
凵	9980			凵	函												
刀	9980				刃	刋	刈	刎	刧	刪	刮	刳	刹	拂	刭	剋	剌
	9990	剞	剔	剪	剴	剩	剳	剿	剽	劍	劒	劒	劒	劈	劑	辨	
	999E		瓣														
力	999E			劬	劭	劼	劵	勁	勍	勗	勞	勣	勦	飭	勠	勳	勵
	99AE	勸															
勹	99AE			勹	匆	匈	甸	匍	匐	匏							
匕	99AE										匕						
匚	99AE											匚	匣	匯	匱	匳	

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
亡	99AE															亡	區
十	99BE	卆	卅	丗	卉	卍	準										
卜	99BE							卞									
卩	99BE								卩	卮	卯	卻	卷				
厂	99BE													厂	厖	厠	厦
	99CE	厥	厮	厰													
厶	99CE				厶	參	篡										
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	呪	咄	咐	咆	哇	咢	咸	咥	咬	哄	哈	咨	
	9A3F		咫	哂	咤	哢	哿	哳	哥	哦	唏	唔	哽	唂	哭	哺	唷
	9A4F	唘	唯	唧	唗	售	啜	啅	啖	啗	唸	唳	唲	喙	喀	咯	喊
	9A5F	喟	啻	啾	喘	喞	單	啼	喃	喻	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	噦	噬	噪	噭	噲	噂	噰	噓	噓	噞	嚮	嚶	嚴	囂
	9A90	嚼	嚇	嚥	囀	囈	囎	囑	囓								
口	9A90									口	囘	圄	圀	囿	圃	圉	
	9A9E		圈	國	圍	圓	團	圖	嗇	圜							
土	9A9E										圠	坏	坩	坎	坼	址	坏
	9AAE	坩	垂	垒	坡	垹	垉	垓	垠	垳	垵	垾	垞	埃	埆	埔	埒
	9ABE	埒	埜	垅	埣	堋	堙	堝	塲	堡	塢	塋	塗	毀	塒	堲	塹
	9ACE	墅	墹	墟	墫	墺	壞	墻	墸	墮	壅	壓	壑	壗	壙	壘	壢
	9ADE	壩	壤	壟													
士	9ADE				壯	壺	壹	壻	壼	壽							
夂	9ADE										夂						
夊	9ADE											夊	夐				
夕	9ADE													彡	梦	夥	
大	9ADE																夬
	9AEE	夭	本	夸	夾	奇	奕	奐	奎	奚	奘	奢	奠	奧	奬	奩	
女	9B3F		奸	妁	妝	佞	佞	妣	妲	姆	姨	姜	妍	姸	姚	娥	娟
	9B4F	娑	娜	娉	娚	婀	娙	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													

	ShiftJIS	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	尨							
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	岼	岶
	9BAE	岾	岷	峁	峇	峇	峙	峩	峡	峺	峭	嶌	峪	崋	崕	崗	嵜
	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	嶽	巔	巒	巖
巛	9BCE																巛
工	9BDE	巫															
巳	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	廐	廏	
	9C3F		廖	廣	廝	廚	廬	廢	廡	廨	廩	廬	廱	廳	廰		
廴	9C3F															廴	廸
廾	9C4F	廾	弃	弊	彝	彜											
弋	9C4F						弋	弍									
弓	9C4F								弖	弩	弭	弸	弼	彈	彌	彎	彑
彐	9C5F	彐	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	怱	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	

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
心	9C9E		悄	悛	悖	悗	悃	悚	悋	惡	悸	惠	悁	悴	悴	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	愒	愴	愽	慝	慄	慳	慷	慘	慙
	9CCE	慚	慫	慴	慯	慥	慱	慟	慝	慓	慵	慠	慱	慥	慬	憬	憔	憚
	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	戞	
	9D3F		戛	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	挙	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	掄	捫
	9D80	捩	掾	揩	揀	揆	揣	揉	插	揶	揄	搖	搴	搆	搓	搦	搶
	9D90	攝	搗	搦	搏	摧	摯	摶	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	攅	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					
旡	9DCE												无	旡			
日	9DCE														旱	杲	昊
	9DDE	昃	昊	杳	昵	昶	昴	昜	晏	晄	晉	晁	晞	晝	晤	晧	晨
	9DEE	晟	晢	晰	晡	晪	晧	晖	晅	暘	暝	暨	暹	曉	暾	曆	
	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	杪	杆	杞	杠	杙	杣	杤	枉	杰
	9E5F	杼	杼	杪	杤	枋	枦	枡	枡	枷	柯	枴	柬	枳	柩	枸	柤
	9E6F	柞	柝	柢	柮	枹	柮	柆	柧	檜	栞	框	栩	桀	桍	栲	桎

	ShiftJIS	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	棚	梃	檮	栃	桴
	9E90	梵	梧	梹	桎	桍	桾	椁	棊	椥	棘	椢	棯	棡	棍		
	9E9E		棔	棧	棕	椶	椒	椄	棗	棣	椥	棹	棠	棯	椦	椪	椚
	9EAE	椀	椥	棆	楹	楷	椥	楸	楫	楔	楾	楮	椹	楴	椽	楙	椰
	9EBE	榆	楞	棟	椄	楪	榲	榮	槐	榿	槁	槓	楯	槎	棗	槳	楊
	9ECE	榻	槃	棰	梲	槫	榠	榜	榕	榴	槞	槨	樂	樛	槿	權	槔
	9EDE	槲	槧	樅	榱	樞	槭	樔	槫	樊	槠	櫁	様	樓	橄	樌	橲
	9EEE	樶	橸	橇	橢	橙	橦	橈	樸	樢	檐	橲	檠	櫹	檢	檣	
	9F3F		檗	蘗	檻	櫃	櫂	檸	檳	檬	櫺	櫑	櫟	櫟	櫛	櫪	櫻
	9F4F	欅	蘗	櫺	欒	欖	鬱	欟									
欠	9F4F								欸	欷	盜	欹	飮	歇	歃	歉	歐
	9F5F	欵	歔	欸	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												毳	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		泔	泛	泯	泙	泪	洟	衍	洶	洫	洽	洸	洙	洵	洳	洒
	9FAE	洌	浣	涓	淙	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	淦	淪	淮	渭
	9FCE	湮	湍	渙	湲	湟	渾	渣	湫	溼	溆	湍	湞	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	濻	濘
	E05F	濱	濮	濛	瀉	瀋	濺	瀑	瀁	瀏	濾	瀛	瀚	瀦	瀝	瀘	瀟
	E06F	瀰	瀾	瀲	灑	灣											
火	E06F						炙	炒	炯	烟	炬	炸	炳	炮	烟	烋	烝

	ShiftJIS	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	煩	燹	熬	燗	熹	熾	燒	燉	燔	燎	燠	燬	燧	燵	燼	
	E09E		燚	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												狁	犴	犲	狃	狆
	E0BE	狄	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	珙	珠
	E0DE	玻	珀	珥	珮	珞	珊	琅	琊	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				瓩	瓧	瓮	瓲	瓰	瓱	瓸	瓷	甄	甕	甗	甌	甎
	E14F	甍	甕	甓													
甘	E14F				甞												
生	E14F					甦											
用	E14F						甬										
田	E14F							畚	畄	畋	畊	畉	畛	畝	畚	畎	畤
	E15F	畧	畫	畛	畸	當	疆	疇	畴	疊	疊	疊					
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	皴
	E1AE	皸	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

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
目	E1CE	睾	睹	睹	瞋	瞑	瞠	瞞	瞰	瞶	瞹	瞿	瞼	瞽	瞻	瞹	矍
	E1DE	矗	矚														
矛	E1DE			矜													
矢	E1DE				矣	矮											
石	E1DE						矼	砌	砒	礦	砠	礪	硅	碎	硼	磽	硼
	E1EE	碚	碌	碣	碵	碪	磕	磆	磆	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	禊	禧	齋	禪	禮	禳					
禺	E24F												禹	禺			
禾	E24F														秉	秕	秧
	E25F	秬	秋	秣	稈	稍	稘	稙	稠	稟	稟	稱	稻	稾	稷	稼	穂
	E26F	穉	穡	穢	穩	龝	穰										
穴	E26F							穹	窄	窈	窗	窕	窘	窖	窩	竈	窯
	E280	窶	窺	竄	窿	邃	竇	竊									
立	E280								竗	竚	竚	竰	竕	竚	竝	竡	竢
	E290	竦	竭	竰													
竹	E290				笂	笏	笊	笆	笳	笘	笙	笞	笵	笨	笑	筐	
	E29E		筺	笋	筍	箏	筌	筽	筵	筥	筴	筧	筰	筱	筑	筮	箝
	E2AE	箘	箙	箍	箜	箚	箋	箒	箏	箏	箙	箑	箘	箴	箴	箸	篆
	E2BE	篝	篩	簑	簔	篦	篥	籠	簀	簇	簀	篳	篷	簗	簍	篶	篋
	E2CE	簧	簪	簟	簷	簫	簽	籌	籃	籔	簇	籀	籐	籘	籟	籤	籖
	E2DE	籥	籬														
米	E2DE			粁	粃	粐	粤	粭	粢	粨	粡	粨	粳	粲	粱	粮	粹
	E2EE	粽	糀	糅	糘	糘	糒	糜	糢	糲	糯	糲	糶	糲			
糸	E2EE														糾	紆	
	E33F		紂	紜	紕	紊	紬	紘	紮	紲	紿	紂	絆	絳	絖	絎	絲
	E34F	絨	絮	絏	絣	經	綉	條	綏	絽	綛	綺	綮	綯	綵	綸	綽
	E35F	綫	總	綢	綯	縣	綸	綟	綰	緘	緝	緤	緞	緻	緲	緕	緘
	E36F	縊	縣	縋	縒	縱	縟	縉	縋	縢	繆	繩	縻	縵	縹	繃	縷
	E380	繆	繾	繧	繝	繖	繞	繙	繚	繹	繪	繩	繼	繻	繿	繕	繽
	E390	辮	繿	纈	纉	續	纏	纈	纓	纔	纖	纖	纛	纜			
缶	E390														缸	缺	
	E39E		罅	罌	罍	罐	罐										

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
网	E39E							网	罕	罔	罕	罟	罠	罨	罩	罸	罰
	E3AE	羂	羆	羃	羈	羇											
羊	E3AE						羌	羔	羞	羝	羚	羣	羯	羲	羹	羹	羶
	E3BE	羸	譱														
羽	E3BE			翅	翌	翊	翕	翔	翡	翦	翩	翳	翹	翻			
老	E3BE														耆	耄	耋
耒	E3CE	耒	耘	耙	耜	耡	耨										
耳	E3CE							耿	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	膤	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			舍	舐	舗											
舟	E46F						舩	舫	舸	舳	舮	舶	艘	艝	艚	艟	艤
	E480	艨	艩	艪	艫	艸											
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	莊	荼	莵	荳	荵	荸	莉	莨	菴
	E4BE	萓	菫	菎	萩	萃	萩	萋	菁	菷	萇	菠	菲	萍	菟	萠	莽
	E4CE	萸	蔆	萪	萼	莉	萼	萼	葭	葷	葫	葛	葭	蒂	葩	葆	萬
	E4DE	葯	葹	萵	蓊	葢	蒹	蒿	蒟	蓙	蓍	蓊	蓧	蓴	蓁	蓆	蓖
	E4EE	蒭	蔡	蓿	蓴	蔗	蔘	蔬	蔟	蔕	蔔	蔘	蘇	蘚	蘢	蕈	
	E53F		蕁	藥	蔮	蘂	藴	薙	薈	薑	薊	薨	蕭	薔	薛	藪	薇
	E54F	薜	蘋	蕾	蘂	藉	薺	藏	薹	藐	藕	藝	藥	藜	藹	蘊	蘇

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
艸	E55F	蘋	藾	藺	蘆	蘢	蘚	蘰	蘿								
虍	E55F									虍	虎	虔	號	虧			
虫	E55F														虱	蚓	蚣
	E56F	蚩	蚪	蚋	蚌	蚶	蚯	蛄	蛆	蛔	蛉	蠣	蛹	蛔	蛞	蛩	蛬
	E580	蛟	蛛	蛯	蛭	蜆	蜈	蜀	蜑	蜕	蜜	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	螋	螽	蟀	蟐	雖	螯	蟄
	E5AE	蟶	蟇	蟆	螻	蟯	蟲	蟠	蠏	蠍	蟾	蟶	蟷	蠑	蠖	蠑	蠖
	E5BE	蠕	蠢	蠡	蠱	蠶	蠹	蠻	蠟								
血	E5BE									衄	衂						
行	E5BE											衒	衙	衛	衢		
衣	E5BE															衫	袁
	E5CE	衾	衰	衵	衽	衿	衲	袂	袗	袒	袮	袖	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	褝	禪	襠	襞	
	E63F		襦	襤	襁	襪	襴	襷	襾								
西	E63F									西	覃	覈	覊				
見	E63F													覓	覗	覘	覩
	E64F	覦	覬	覲	覯	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	誅
	E66F	誂	誄	誨	誡	誑	誥	誦	誚	誣	諄	諍	諂	諚	諫	諧	
	E680	諤	諱	謔	諠	諢	諷	諞	諛	諮	謇	諡	諡	謾	謫	謗	謠
	E690	謳	鞫	謦	謫	謾	謨	譁	譌	譏	譎	證	譖	譖	譚	譫	
	E69E		譟	譬	譯	譴	譱	讀	讌	讎	讒	讓	讖	讙	讚		
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	貅	貎
	E6BE	貔	貘	貘													
貝	E6BE				貶	貭	貪	貽	貲	貳	貳	貶	賈	賁	賤	賣	賚
	E6CE	賽	賺	賻	贄	贅	贊	贇	贏	贍	贐	齎	贓	賍	贔	贖	

	ShiftJIS	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	踉	踵	踰	踴	蹊	
	E73F		蹇	蹉	蹌	踶	蹈	蹙	蹤	蹠	蹤	蹣	蹕	躔	躓	躙	躁
	E74F	躇	躅	躄	躋	躊	躓	躑	躔	躙	躪	躡					
身	E74F												躬	躰	體	躱	躾
	E75F	軀	軈														
車	E75F			軋	軛	軦	軼	軻	軫	軾	軽	軺	軽	軏	轍	軼	轛
	E76F	較	輌	輌	輦	轅	轄	轍	轅	轂	轣	轌	轉	轆	轎	轗	轜
	E780	轢	轢	轤													
辛	E780				辜	辟	辣	辭	辯								
辶	E780									辶	迚	迥	迢	迪	迩	邇	迴
	E790	逅	迹	逎	逑	逕	逡	逍	逞	逖	逋	逵	逶	逵	達	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	鄢	鄰												
酉	E7BE					酊	酔	酘	酣	酥	酩	酳	酲	醋	醉	醂	醢
	E7CE	醫	醢	醪	醸	醴	醺	醸	釁								
采	E7CE									釉	釋						
里	E7CE											釐					
金	E7CE												釦	釈	釜	釣	釵
	E7DE	釵	釶	鈎	釿	鈔	鈬	鈕	鈑	鉞	鉗	鉅	鉉	鉤	鉈	銕	鈿
	E7EE	鉋	鉑	鋤	鉾	銓	銛	銚	鋏	銹	銷	鋩	鋺	鋺	錙		
	E83F		錙	銭	錚	錣	錆	錵	錻	鍜	鍠	鍼	鍮	鍖	鎰	鎬	鎮
	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	鑚	鑚	鑼	鑾	钁	鑿							
門	E86F										閂	閇	閊	閔	閖	閘	閙
	E880	閏	閨	閧	閭	閖	閻	閹	閾	閼	濶	関	閣	関	闕	闔	闖
	E890	關	闡	闥	闢												
阜	E890					阡	阨	阮	阯	陂	陌	陏	陋	陷	陜	陞	

	ShiftJIS	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	隹	隰	隴
隶	E8AE	隶	隷														
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	靱	靭	靹	鞅	靼	鞁	靺	鞆	鞋	鞏
	E8DE	靴	鞜	鞨	鞦	鞳	鞴	鞹	韃	韈	韋						
韋	E8DE											韋	韜				
韭	E8DE													韭	韲	韮	
音	E8DE																竟
	E8EE	韶	韵														
頁	E8EE			頇	頌	頸	頤	頡	頷	頽	顆	顏	顋	顫	顯	顰	
	E93F		顱	顳	顬												
風	E93F					颪	颯	颱	颶	飄	飃	飆					
食	E93F												飩	飫	飭	飴	飼
	E94F	餔	餘	餡	餉	餞	餤	餅	餬	餮	餽	餾	饂	饉	饅	饐	饋
	E95F	饑	饒	饌	饗												
首	E95F					馗	馘										
香	E95F							馥									
馬	E95F								馭	馮	馼	駟	駛	駝	駘	駑	駭
	E96F	駮	駱	駲	駸	駻	駾	騏	騅	騒	騙	騫	騒	驅	驂	驀	驃
	E980	驟	驕	驍	驛	驗	驟	驢	驤	驤	驩	驫	驪				
骨	E980													骭	骰	骼	髀
	E990	髏	髑	髓	體												
高	E990					鬟											
髟	E990						髟	髫	髣	髴	髷	髻	髪	鬟	鬯	鬮	
	E99E		髯	髪	鬘	鬚	鬟	鬢	鬣								
鬥	E99E									鬥	鬧	鬨	鬩	鬪	鬮		
鬯	E99E															鬯	
鬲	E99E																鬲
鬼	E9AE	魄	魅	魏	魍	魎	魑	魘									

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
魚	E9AE								魴	鮓	鮃	鮑	鮖	鮟	鮱	鮫	鮭
	E9BE	鮴	鮹	鯊	鯏	鯑	鯒	鯑	鯒	鯣	鯢	鯱	鯰	鯡	鯵	鯲	鯱
	E9CE	鯰	鰕	鰔	鰉	鰓	鰌	鰆	鰈	鰒	鰊	鰔	鰛	鰛	鰥	鰤	鰡
	E9DE	鰌	鰱	鰲	鰳	鰾	鱚	鱠	鱧	鱶	鱸						
鳥	E9DE											鳧	鳬	鳰	鳩	鳲	鳰
	E9EE	鳫	鴃	鴆	鴦	鶯	鴣	鴟	鵄	鴕	鴒	鵁	鵠	鵜	鵞	鵈	
	EA3F		鵝	鵞	鵆	鵑	鵐	鵙	鵲	鶉	鶇	鶫	鶫	鶺	鶻	鶸	鷙
	EA4F	鷁	鷄	鷂	鶻	鶸	鶺	鷁	鷆	鷂	鷙	鷗	鷭	鷦	鷯	鷦	鷺
	EA5F	鸚	鸛	鸞													
鹵	EA5F				鹵	鹹	鹽										
鹿	EA5F							麁	塵	麋	麕	麒	麕	麕	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	黙	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	齟	齠	齙	齠	齢	齦	齧	齬	齪	齷	齲	齶				
龍	EA90													龕			
龜	EA90														龜		
龠	EA90															龠	

2D Code

Available for				
	WS4 series			

Datamatrix (ECC200)

ESC+2D50

Hex code	ESC	2D50	Parameter
	<1B>16	<32>16<44>16<35>16<30>16	,aa,bb,ccc,ddd
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Prints DataMatrix code (ECC200).

[Format] (Setting portion)
<2D50>,aa,bb,ccc,ddd
●Parameter

a	[Cell width]	=	Valid range	:	01 to 16 dots
b	[Cell height]	=	Valid range	:	01 to 16 dots
c	[Number of cell per line]	=	Valid range	:	000 (fixed)
d	[Number of line per symbol]	=	Valid range	:	000 (fixed)

[Format] (Data portion)
<DN>mmmm,n~n
●Parameter

m	Quantity of data	=	Valid range :	1 to 3116
n	Print data	=	Data	

[Coding Example] Cell width : 3 dots Cell height : 3 dots
<A>
<V>100<H>200**<2D50>,03,03,000,000**
<DN>0010,0123456789
<Z>

[Notes]
1. In case any other parameters than above are specified, or parameters and quantity of data are not consistent with each other, the symbol will not be printed correctly.
2. Make sure to leave 2mm margin of each side of the symbol for good scanner-readability.
3. To specify the code address [7EH], write [7EH, 7EH]. Quantity of data is [0002].

	Data format	Quantity of data
Data format	Numeric	3116
	Alphanumeric	2335
	Binary (01H to FFH)	1556

DataMatrix (ECC200) 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								

Address can be selected in the range 01H thru FFH for Data Matrix (ECC200).
To specify 7EH, write [7EH, 7EH].

2D Code

Available for				
	WS4 series			

GS1 Datamatrix

ESC+2D51

Hex code	ESC	2D51	Parameter
	<1B>16	<32>16<44>16<35>16<31>16	,aa,bb,ccc,ddd
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Prints GS1 DataMatrix code.

[Format] (Setting portion)
<2D51>,aa,bb,ccc,ddd

●Parameter

a	[Cell width]	=	Valid range	:	01 to 16 dots
b	[Cell height]	=	Valid range	:	01 to 16 dots
c	[Number of cell per line]	=	Valid range	:	010 to 144
				:	000 (Auto-setting)
d	[Number of line per symbol]	=	Valid range	:	008 to 144
				:	000 (Auto-setting)

[Format] (Data portion)
<DN>mmmm,n~n

●Parameter

m	Quantity of data	=	Valid range : 1 to 3116
n	Print data	=	Data which consists of FNC1, AIs (Application Identifiers), and alphanemeric.

[Coding Example] Cell width : 3 dots Cell height : 3 dots

<A>
<V>100<H>200**<2D51>,03,03,000,000**
<DN>0024,<1B>$_{16}$1(01)04977766654302(21)42345B
<Z>

[Notes]
1. In case any other parameters than GS1 specified, or parameters and quantity of data are not consistent with each other, the symbol will not be printed correctly.
2. Make sure to leave 2mm margin of each side of the symbol for good scanner-readability.
3. The AIs (Application Identifiers) should be surrounded by blankets, for example “(01)”.
4. To check further GS1 rules, the GS1 org website is available: www.gs1.org/docs/barcodes/GS1_DataMatrix_Guideline.pdf

2D Code

Available for				
	WS4 series			

QR Code

ESC+BQ

Hex code	ESC	BQ	Parameter
	<1B>16	<42>16<51>16	Manual setup abcc,(ddeeff,)g(hhhh)n Auto-setup abcc,(ddeeff,)n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies QR code

[Format]

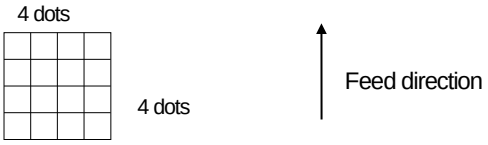
Manual setup <BQ>abcc,(ddeeff,)g(hhhh)n

Auto-setup <BQ>abcc,(ddeeff,)n

●Parameter

a	Error correction level	=	1	:	7% High density (L)
			2	:	15% Standard (M)
			3	:	30% Ultrahigh reliability (H)
			4	:	25% High reliability (Q)
b	Concatenation mode	=	0	:	Normal mode
			1	:	Concatenation mode
c	Size of one side of cell	=	Valid range	:	01 to 32 dots

Example) cc=04



d	Quantity of partitions by concatenation mode	=	Valid range	:	01 to 16
e	Sequential number partitioned by concatenation	=	Valid range	:	01 to 16
f	Concatenation mode parity data	=	Valid range	:	00 to FF
g	Input character mode	=	1	:	Numeric
			2	:	Alphanumeric
			3	:	Binary
			4	:	Kanji
h	Quantity of data	=	Valid range	:	0001 to 7366
n	Print data	=	Data		

[Coding Example] Error correction level: 30%, concatenation mode: standard, size of one side of cell: 10

<A>

<V>100<H>200**<BQ>3010,112345**

<Q>2

<Z>

[Notes]

1. Parity data is a result of XOR calculation of entire data of QR Code expressed in Hexadecimal character.
2. Quantity of data is not required to specify unless character mode is set to binary.

QR code data size table (Model1)

Version	Error correction	Numeric	Alpha-Num	Kanji	Binary
1	L	40	24	10	17
	M	33	20	8	14
21x21	Q	25	15	6	11
	H	16	10	4	7
2	L	81	49	20	34
	M	66	40	17	28
25x25	Q	52	31	13	22
	H	33	20	8	14
3	L	131	79	33	55
	M	100	60	25	42
29x29	Q	81	49	20	34
	H	52	31	13	22
4	L	186	113	48	78
	M	138	84	35	58
33x33	Q	114	69	29	48
	H	76	46	19	32
5	L	253	154	65	106
	M	191	116	49	80
37x37	Q	157	95	40	66
	H	105	63	27	44
6	L	321	194	82	134
	M	249	151	64	104
41x41	Q	201	122	51	84
	H	133	81	34	56
7	L	402	244	103	168
	M	311	188	80	130
45x45	Q	253	154	65	106
	H	167	101	43	70
8	L	493	299	126	206
	M	378	229	97	158
49x49	Q	301	183	77	126
	H	203	123	52	85
9	L	585	354	150	244
	M	441	267	113	184
53x53	Q	369	223	94	154
	H	239	145	61	100
10	L	690	418	177	287
	M	526	319	135	219
57x57	Q	433	262	111	180
	H	291	176	74	121

Version	Error correction	Numeric	Alpha-Num	Kanji	Binary
11	L	800	485	205	333
	M	608	368	156	253
61x61	Q	493	299	126	205
	H	342	207	87	142
12	L	915	555	234	381
	M	694	421	178	289
65x65	Q	579	351	148	241
	H	390	236	100	162
13	L	1030	624	264	429
	M	790	479	202	329
69x69	Q	656	398	168	273
	H	454	275	116	189
14	L	1167	707	299	486
	M	877	531	225	365
73x73	Q	738	447	189	307
	H	498	302	127	207

QR Code (Numeric mode) 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) 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) 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								

The address can be selectable in the range 00H thru 7FH, A0H thru DFH for QR Code (Binary mode).

QR code (Kanji mode) Table

	Shift JIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Symbol	813F		SP	、	。	,	.	・	:	;	?	!	゛	°	´	`	¨
	814F	^	￣	￣	ヽ	ヾ	ゝ	ゞ	〃	仝	々	〆	〇	―	―	-	／
	815F	＼	～	∥	｜	…	‥	‘	’	“	”	（	）	〔	〕	［	］
	816F	｛	｝	〈	〉	《	》	「	」	『	』	【	】	＋	－	±	×
	8180	÷	＝	≠	＜	＞	≦	≧	∞	∴	♂	♀	°	′	″	℃	￥
	8190	＄	¢	£	％	＃	＆	＊	＠	§	☆	★	○	●	◎	◇	
	819E		◆	□	■	△	▲	▽	▼	※	〒	→	←	↑	↓	＝	
Alphanumeric	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
	826F	P	Q	R	S	T	U	V	W	X	Y	Z					
	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					
Hiragana	829E		ぁ	あ	ぃ	い	ぅ	う	ぇ	え	ぉ	お	か	が	き	ぎ	く
	82AE	ぐ	け	げ	こ	ご	さ	ざ	し	じ	す	ず	せ	ぜ	そ	ぞ	た
	82BE	だ	ち	ぢ	っ	つ	づ	て	で	と	ど	な	に	ぬ	ね	の	は
	82CE	ば	ぱ	ひ	び	ぴ	ふ	ぶ	ぷ	へ	べ	ぺ	ほ	ぼ	ぽ	ま	み
	82DE	む	め	も	ゃ	や	ゅ	ゆ	ょ	よ	ら	り	る	れ	ろ	ゎ	わ
	82EE	ゐ	ゑ	を	ん												
Katakana	833F		ァ	ア	ィ	イ	ゥ	ウ	ェ	エ	ォ	オ	カ	ガ	キ	ギ	ク
	834F	グ	ケ	ゲ	コ	ゴ	サ	ザ	シ	ジ	ス	ズ	セ	ゼ	ソ	ゾ	タ
	835F	ダ	チ	ヂ	ッ	ツ	ヅ	テ	デ	ト	ド	ナ	ニ	ヌ	ネ	ノ	ハ
	836F	バ	パ	ヒ	ビ	ピ	フ	ブ	プ	ヘ	ベ	ペ	ホ	ボ	ポ	マ	ミ
	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									
Greek	839E		A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O
	83AE	Π	P	Σ	T	Y	Φ	X	Ψ	Ω							
	83BE		α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	ο
	83CE	π	ρ	σ	τ	υ	φ	χ	ψ	ω							
Russian	843F		А	Б	В	Г	Д	Е	Ё	Ж	З	И	Й	К	Л	М	Н
	844F	О	П	Р	С	Т	У	Ф	Х	Ц	Ч	Ш	Щ	Ъ	Ы	Ь	Э
	845F	Ю	Я														
	846F		а	б	в	г	д	е	ё	ж	з	и	й	к	л	м	н
	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					

	ShiftJIS	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

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
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	壺	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												

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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			弐	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	兪														
八	995F				兮	冀											
冂	995F					冂	冏	冊	冉	冏	冑	冓	冕				
冖	995F													冖	冤	冦	冢
	996F	冩	冪														
冫	996F				冫	决	冱	冲	冰	况	冽	凅	凉	凛			
几	996F													几	處	凩	凭
	9980	凰															
凵	9980			凵	函												
刀	9980				刃	刋	刦	刎	刧	刪	刮	刳	刹	剏	剄	剋	剌
	9990	剞	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	勵
	99AE	勸															
勹	99AE			勹	匆	匈	甸	匍	匐	匏							
匕	99AE									匕							
匚	99AE										匚	匣	匯	匱	匳		

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亡	99AE															亡	區
十	99BE	夲	卅	丗	卉	卍	準										
卜	99BE							卞									
卩	99BE								卩	卮	卯	卻	卷				
厂	99BE													厂	厖	厠	厦
	99CE	厥	厮	厰													
厶	99CE				厶	參	篡										
又	99CE							雙	叟	曼	燮						
口	99CE											叮	叨	叭	叺	吁	吽
	99DE	呀	听	吭	吼	吮	呐	吩	吝	呎	咏	呵	咎	呟	呱	呷	呰
	99EE	咒	呻	咀	呪	咄	咐	咆	哇	咢	咸	咥	咬	哄	哈	咨	
	9A3F		咫	哂	咤	咾	哂	哳	哥	哦	唏	唔	哽	唂	哭	哺	哢
	9A4F	唘	唯	唧	唗	售	啜	啅	啖	啗	唸	唳	唧	喙	喀	咯	喊
	9A5F	喟	啻	啾	喘	喞	單	啼	喃	喻	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	噭	噬	噪	噙	噂	噴	噮	噓	噓	噤	嚮	嚶	嚴	囂
	9A90	嚼	嚇	嚥	囀	囈	囎	囑	囓								
口	9A90									口	囘	圄	圀	囿	圃	圉	
	9A9E		圈	國	圍	圓	團	圖	嗇	圜							
土	9A9E										圠	坏	坩	坎	坼	址	坏
	9AAE	坩	垂	垜	坡	垳	垉	垓	垠	垳	垤	垾	垞	埃	垉	埔	埒
	9ABE	埒	埜	垉	埣	堋	堙	堝	塲	堡	塢	塋	塗	毀	塒	堙	塹
	9ACE	墅	墹	墟	墫	墺	壞	墻	墦	墮	壅	壓	壑	壘	壙	壘	壢
	9ADE	壜	壤	壟													
士	9ADE				壯	壺	壹	壻	壼	壽							
夂	9ADE										夂						
夊	9ADE											夂	夐				
夕	9ADE													尹	梦	夥	
大	9ADE																夬
	9AEE	夭	本	夸	夾	奇	奕	奐	奎	奚	奘	奢	奠	奧	奬	奩	
女	9B3F		奸	妁	妝	佞	佞	妣	妲	姆	姨	姜	妍	姐	姚	娥	娟
	9B4F	娑	娜	娉	娚	婀	娙	婉	娵	娶	婢	婪	媚	媼	媾	嫋	嫂
	9B5F	媽	嫣	嫗	嫦	嫩	嫖	嫺	嫻	嬌	嬋	嬖	嬲	嬾	嬪	嬶	嬾
	9B6F	孃	孅	孀													

	ShiftJIS	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	斈	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	尨							
尸	9B90										尸	尹	屁	屆	屎	屓	
	9B9E		屐	屏	孱	屬											
屮	9B9E						屮										
山	9B9E							屺	岑	屹	崋	岑	岔	崟	岫	岼	岶
	9BAE	岩	岷	峅	岾	峇	峙	峩	峡	峺	峭	嶌	峪	崋	崕	崗	嵜
	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															
巳	9BDE		巳	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	廰		
廴	9C3F															廴	廸
廾	9C4F	廾	弃	弉	彝	彝											
弋	9C4F						弋	弍									
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	悁
	9C90	悒	悧	悩	悳	悖	悚	悝	悃	悤	悪	悁	悍	惧	惘	悚	

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
心	9C9E		悄	悛	悖	悗	悃	悚	悋	惡	悸	惠	悵	惴	悴	悽	惆
	9CAE	悵	惘	慍	愕	愆	惶	愈	愀	慊	惺	愃	愡	慴	慍	愫	愎
	9CBE	慇	愾	慤	愧	慊	愿	愼	愒	愴	愽	慆	慄	慳	慷	慘	慙
	9CCE	慚	慫	慴	慯	慥	慱	慟	慝	慓	慵	慧	慽	慼	慬	憔	憚
	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	戍	戛	戞	
	9D3F		戞	戡	截	戮	戰	戲	戳								
戸	9D3F									扁							
手	9D3F										扎	扞	扣	扛	扠	扨	扼
	9D4F	扛	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	搨	搏	搉	摯	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	昊
	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	晅	暘	暝	暨	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	杪	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

	ShiftJIS	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	栃	桴
	9E90	梵	梠	梹	桾	梱	梯	梼	棊	椥	棘	椢	梮	棡	椌	椌	棍
	9E9E		棔	棧	棕	椶	椒	椄	棗	棣	椥	棹	棠	棯	椦	椪	椚
	9EAE	椀	梹	棆	椢	楷	椥	楸	楫	楔	楾	楮	椹	楴	椽	楙	椰
	9EBE	楡	楞	棟	椁	楪	榲	榮	槐	榿	槁	槓	棔	槎	棗	槳	槝
	9ECE	槟	槃	棰	榠	槫	榠	榜	榕	榴	槞	槨	樂	樛	槿	權	槔
	9EDE	槲	槧	樅	榱	樞	槭	樔	槫	樊	榕	槼	樣	樓	橄	樌	橲
	9EEE	橿	橸	橇	橢	橙	橦	橈	樸	檎	檐	橾	檠	檄	檢	檣	
	9F3F		檗	蘗	檻	櫃	櫂	檸	檳	檬	櫺	櫑	橾	櫟	櫪	櫻	
	9F4F	欅	蘖	櫺	欒	欖	鬱	欟									
欠	9F4F								欸	欷	盜	欹	飮	歇	歃	歉	歐
	9F5F	欵	歔	欽	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	渐	淺	淙	淤	淦	淪	淮	渭
	9FCE	湮	湍	渙	湲	湟	渾	渣	湫	湛	渌	湍	湟	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	瀦	瀝	瀘	瀟
	E06F	瀰	瀾	瀲	灑	灣											
火	E06F						炙	炒	炯	烱	炬	炸	炳	炮	烟	烋	烝

	ShiftJIS	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	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	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	珙	珎
	E0DE	玻	珀	珥	珮	珞	珊	琅	琊	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	瓮	瓲	瓰	瓱	瓸	瓷	甄	甕	甗	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
	E15F	畧	畫	畛	畸	當	疆	疇	畴	疊	疊	疊					
疒	E15F												疔	疚	疝	疥	疣
	E16F	痂	疳	疾	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						皂	皃	皈	皋	皎	皖	皓	皙	皚		
皮	E19E															皰	皺
	E1AE	皸	皹	皺													
皿	E1AE				盂	盍	盖	盒	盞	盡	盥	盧	盪	蘯			
目	E1AE														盼	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	瞳	瞿
	E1DE	矗	矚														
矛	E1DE			矜													
矢	E1DE				矣	矮											
石	E1DE						砿	砌	砒	礦	砠	礪	硅	碎	砺	碆	硼
	E1EE	碚	碌	碣	碵	碪	磕	磑	磆	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	穰										
穴	E26F							穹	窄	窈	窗	窕	窘	窖	窩	竈	窰
	E280	窶	窺	竄	窿	邃	竇	竊									
立	E280								竚	竡	竢	竦	站	竧	竝	竡	竢
	E290	竦	竭	竰													
竹	E290				笂	笏	笊	笆	笳	笘	笙	答	笵	笨	笑	筐	
	E29E		筺	笄	筍	箏	筌	筅	筵	筥	筴	筧	箐	筱	箚	箟	箘
	E2AE	箘	箙	箍	箜	箒	箋	箒	箏	箏	箙	箧	篁	篌	篏	箴	篋
	E2BE	篝	篩	簔	簔	篦	篥	籠	簀	簇	簀	篳	篷	簗	簍	篶	篋
	E2CE	簧	簪	簟	簷	簫	簸	簀	籃	籔	簇	籀	籘	籘	籟	籤	籤
	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	糲	糯	糲	糴	糶			
糸	E2EE														糺	紆	
	E33F		紂	紜	紕	紊	紬	紘	紮	紲	紿	紂	絆	絳	絖	絎	絲
	E34F	絨	絮	絏	絣	經	綉	絛	綬	絽	綛	綺	綮	綣	綵	緇	綽
	E35F	綫	總	綢	綯	綣	綸	綟	綰	緘	緝	緤	緞	緻	緲	緡	縅
	E36F	縊	縣	縡	縒	縱	縟	縉	縋	縢	繆	繩	縻	縵	縹	繃	縷
	E380	縲	縺	繧	繝	繖	繞	繙	繚	繹	繪	繩	繼	繻	繿	繽	繿
	E390	辮	繿	纈	纉	續	纒	纈	纔	纔	纖	纖	纛	纜			
缶	E390														缸	缺	
	E39E		罅	罌	罍	罐	罐										

	ShiftJIS	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
网	E39E							网	罕	罔	罕	罟	罠	罨	罩	罸	罸
	E3AE	羂	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	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	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	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													與	舁	舂	舅
	E46F	與	舊														
舌	E46F			舍	舐	舗											
舟	E46F						舩	舫	舸	舳	艀	艙	艘	艝	艚	艟	艤
	E480	艨	艩	艫	艪	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	苜	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	莊	荼	莵	荳	荵	荸	莉	莨	菴
	E4BE	萓	菫	菎	菽	萃	菘	萋	菁	萫	萇	萍	菲	萍	菢	萠	莽
	E4CE	萸	蔆	萩	葭	葎	葤	葬	葖	葷	葫	蒡	葭	蒂	葩	葆	萬
	E4DE	葯	葹	萵	蓊	葢	蒹	蒿	蒟	蓙	蓍	蓊	蓧	蓴	蓁	蓆	蓖
	E4EE	蒭	蔡	蓿	蓴	蔗	蔘	蔬	蔟	蔕	蔔	蓼	蔴	蓀	蓉	蓱	蓮
	E53F		蓙	蘂	蓋	蘩	蘊	蘋	薈	薑	薊	薨	蕭	薔	薛	藪	薇
	E54F	薜	蘋	蕾	蕘	藉	薺	藏	薹	藐	藕	藝	藥	藜	藹	蘊	蘇

	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	蘚	蘰	蘿								
虍	E55F									虍	虒	虔	號	虧			
虫	E55F														虱	蚓	蚣
	E56F	蚩	蚪	蚋	蚌	蚶	蚯	蛄	蛆	蚰	蛉	蠣	蚫	蛔	蛞	蛩	蛮
	E580	蛟	蛛	蛯	蜒	蜆	蜈	蜀	蜃	蛻	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	螯	螯
	E5AE	螳	螽	蟆	螻	蟯	蟲	蟠	蠏	蠍	蟾	蟶	蟷	蠑	蠖	蠑	蠖
	E5BE	蠕	蠢	蠡	蟲	蠶	蠹	蠹	蠻								
血	E5BE									衄	衂						
行	E5BE											銜	衙	衛	衢		
衣	E5BE															衫	袁
	E5CE	衾	衰	袒	衽	袮	袖	袂	袗	袒	袮	袖	袢	袍	衷	裏	裄
	E5DE	袱	裃	裄	裔	裘	裙	裝	裹	褂	褐	裴	裨	裲	褄	褌	褊
	E5EE	褓	褒	褞	褥	褪	褫	褶	襄	褻	褶	褸	褌	褌	襠	襞	
	E63F		襦	襤	襁	襪	襴	襴	襷								
覀	E63F									覀	覃	覈	覊				
見	E63F													覓	覗	覗	覦
	E64F	覦	覬	覿	覲	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	諧	諧
	E680	諤	諱	謔	諠	諢	諷	諞	諛	謌	謇	謚	謚	謾	謐	謗	謠
	E690	謳	鞫	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	讚		
谷	E69E															豺	豁
	E6AE	谿															
豆	E6AE		豈	豌	豎	豐											
豕	E6AE						豕	豢	豬								
豸	E6AE									豸	豺	貂	貉	貊	貊	貍	貎
	E6BE	貔	貘	貘													
貝	E6BE				戝	貭	貪	貽	貲	貳	貳	貶	賈	賁	賤	賣	賚
	E6CE	賽	賺	賻	贄	贅	贊	贇	贏	贍	贐	齎	贓	賍	贔	贖	

	ShiftJIS	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	踉	踵	踰	踴	蹊	
	E73F		踏	踓	踔	踖	踊	踧	踪	踈	踪	踹	踟	蹶	蹲	蹼	躁
	E74F	躇	躅	躄	躋	躊	躓	躑	躔	躙	躪	躡					
身	E74F												躬	躰	體	躱	躾
	E75F	軀	軈														
車	E75F			軋	軛	軦	軼	軻	軫	軾	軽	軺	軽	軏	轍	軼	軫
	E76F	軹	軺	軫	軫	轂	轄	轅	轅	轂	轤	轌	轉	轆	轎	轗	轜
	E780	轢	轢	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	逵	逶	逵	達	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	鄢	鄰												
酉	E7BE					酊	酔	酘	酣	酥	酩	酳	酲	醋	醉	醂	醢
	E7CE	醫	醢	醪	醸	醴	醺	醸	釁								
采	E7CE									釉	釋						
里	E7CE											釐					
金	E7CE												釦	釈	釜	釣	釵
	E7DE	釵	釶	鈎	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	鋺	鋺	錙		
	E83F		錙	銭	錚	錣	錆	錵	錻	鍜	鍠	鍼	鍮	鍖	鎰	鎬	鎭
	E84F	鎔	鍱	鏖	鏗	鏨	鏥	鏘	鏃	鏝	鏐	鏈	鏤	鐚	鐔	鐓	鐃
	E85F	鐫	鐐	鐶	鐫	鐵	鐡	鐺	鑁	鑒	鑄	鑛	鑠	鑢	鑞	鑪	鈩
	E86F	鑰	鑵	鑷	鑚	鑚	鑼	鑾	钁	鑿							
門	E86F						閂	閇	閊	閔	閖	閘	閙				
	E880	閏	閨	閧	閭	閖	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	雰	雱	雰	霓
	E8BE	霎	霑	霏	霖	霙	霤	霪	霰	霹	霽	霾	靄	靆	靈	靂	靆
青	E8CE	靜															
非	E8CE		靠														
面	E8CE			靤	靦	靨											
革	E8CE						勒	靱	靭	靹	鞅	靼	鞁	靺	鞆	鞋	鞏
	E8DE	靠	鞜	鞨	鞦	鞣	鞳	鞴	韃	韈	韈						
韋	E8DE											韋	韜				
韭	E8DE													韭	韲	韮	
音	E8DE																竟
	E8EE	韶	韵														
頁	E8EE			頇	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	飭	飴	飼
	E94F	餔	餘	餡	餉	餞	餤	餅	餬	餮	餽	餾	饂	饉	饅	饐	饋
	E95F	饑	饒	饌	饗												
首	E95F					馗	馘										
香	E95F							馥									
馬	E95F								馭	馮	馼	駟	駛	駝	駘	駑	駭
	E96F	駮	駱	駲	駸	駻	駾	騏	騅	騈	騙	騫	騒	驅	驂	驀	驃
	E980	驟	驕	驍	驛	驗	驟	驢	驥	驤	驩	驫	驪				
骨	E980													骭	骰	骼	髀
	E990	髏	髑	髓	體												
高	E990					髙											
髟	E990						髟	髫	髣	髦	髯	髫	髪	髴	髱	髷	
	E99E		髻	鬆	鬘	鬚	鬟	鬢	鬣								
鬥	E99E									鬥	鬧	鬨	鬩	鬮	鬻		
鬯	E99E															鬯	
鬲	E99E																鬲
鬼	E9AE	魄	魅	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								魡	魦	魷	魴	魯	魳	魵	魶	魸
	E9BE	魺	魼	魾	鮀	鮅	鮓	鮚	鮞	鮦	鮪	鮫	鮭	鮯	鮰	鮱	鮲
	E9CE	鮻	鮿	鯀	鯇	鯒	鯔	鯖	鯜	鯡	鯵	鯺	鯱	鯲	鯳	鯴	鯵
	E9DE	鰌	鰍	鰲	鰳	鰾	鰹	鰺	鱈	鱶	鱸						
鳥	E9DE											鳧	鳬	鳰	鳱	鳲	
	E9EE	鳳	鳬	鳩	鳶	鳶	鴇	鴎	鴉	鴕	鴿	鵁	鴿	鵜	鵆	鵈	
	EA3F		鵝	鵞	鵙	鵑	鵐	鵙	鵲	鶉	鶫	鶫	鵜	鵺	鶚	鶤	鷲
	EA4F	鶲	鶏	鷁	鶻	鶸	鶺	鷆	鷏	鷂	鷙	鷓	鷆	鷦	鷭	鷯	鷺
	EA5F	鸚	鸛	鸞													
鹵	EA5F				鹵	鹹	鹽										
鹿	EA5F							麁	塵	麈	麋	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	黙	黨	黯
	EA80	黴	黶	黷													
鼏	EA80				鼏	鼇	鼬										
黽	EA80							黽	鼈	鼈							
皷	EA80										皷	鼕					
鼠	EA80												鼬	鼬			
鼻	EA80														鼾		
齊	EA80															齊	
齒	EA80																齒
	EA90	齟	齣	齟	齠	齢	齦	齧	齬	齪	齷	齲	齶				
龍	EA90													龕			
龜	EA90														龜		
龠	EA90															龠	

2D Code

Available for				
	WS4 series			

MAXI Code

ESC+BV

Hex code	ESC	BV	Parameter
	<1B>16	<42>16<56>16	a,b,c,ddddddddd,eee,fff,n~n
Default setting	None		

Persistence of the command		
	When printer is powered off	Set Parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies to print MAXI code.

[Format]

<BV>a,b,c,ddddddddd,eee,fff,n~n

●Parameter

a	[Symbol number]	=	Valid range	:	1 to 8
b	[Digit of symbol]	=	Valid range	:	1 to 8
c	[Mode]	=	2	:	Delivery
			3	:	Delivery
			4	:	Standard symbol
			6	:	for reader device only
d	Postal code	=	Valid range	:	0 to 999999999 (Mode 2)
					000000 to 999999 (Mode 3)
					* Mode 2 accepts max. 9 digits (numeric only)
					* Mode 3 accepts 6digits fixed (only upper case for alphabet)
e	Country code	=	Valid range	:	001 to 999
f	Service class	=	Valid range	:	001 to 999
n	Low priority message	=	Alphanumeric + symbols		

Mode	Service class	Country code	Postal code	Max. data size	
				Numeric	Alphanum.
2	3 digits Fixed (Numeric only)	3 digits Fixed (Numeric only)	Max.9digits	123	84
3			6 digits fixed(Alpha-num.)		
4	Omitted			138	93
6					

[Coding Example]

<A>
<V>100<H>200**<BV>1,1,2,123456789,001,002,SAHTHA**
<Q>2
<Z>

[Notes]

1. The size of the symbol printed is not subject to data volume. (Quantity of data)
2. Any other parameters specified or settings being inconsistent with each other will result in no printing.
3. In case mode [4] or [6] is selected, the data size shall be larger than 12 (bytes), otherwise the symbol can not be read by scanners.
4. Data will be received until next command header, 1BH, or maximum data size.
5. In mode2 and 3, data has following definition. See "**MAXI Code data format (Mode2 and 3)**" written on the page about <2D20>.

MAXI 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								

Selectable range is 01H thru FFH for MAXI code.

2D Code

Available for				
	WS4 series			

PDF417

ESC+BK

Hex code	ESC	BK	Parameter
	<1B>16	<42>16<4B>16	aabbcddeeffffg~g(,h)
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies to print PDF417.

[Format]

<BK>aabbcddeeffffg~g(,h)

●Parameter

a	[Minimum module width]	=	Valid range	:	01 to 09 dots
b	[Minimum module height]	=	Valid range	:	01 to 24 dots
c	[Security level]	=	Valid range	:	0 to 8
d	[Code words per line] (cols)	=	Valid range	:	01 to 30
			00	:	Auto (Width auto-justified according to data quantity)
e	[Rows per symbol](rows)	=	Valid range	:	03 to 90
			00	:	Auto (Height auto-justified according to data quantity)
f	[Number of data digits to encode]	=	Valid range	:	0001 to 2681
g	[Data to be printed]	=	Data		
h	[PDF code type]	=	Not specified	:	PDF417
			T	:	Truncated PDF417
			M	:	Micro PDF417

[Coding Example] Min. Module width: 03(dot), Min.Module height: 09(dot), Security level: 3,
Code words per line: 03, Rows per symbol : 18

```
<A>
<V>100<H>200<BK>0309303180010PDF1234567
<Q>2
<Z>
```

[Notes]

1. Min. module width 01, 02 dot are not recommendable with a risk of lower scanner-readability.
2. Min. module height 01, 02, 03dot are not recommendable with a risk of lower scanner-readability.
3. When both “data codeword per line” and “number of data digit” are set to 00, aspect ratio (V x H) will be set automatically to 1:2.
4. Higher Security Level will require larger numbers for “rows per symbol” or “data codeword per line”.
5. Maximum number of data digit is 2681. However, the number of data digit is also restricted by and subject to minimum module size, security code level and type of print data.
6. Parameters and data size being inconsistent will not print.
7. When Micro PDF is specified, “line per symbol” is subject to “data codeword per line” , and thus, maximum number of data digit will be automatically defined. Consult the table in next page for details.
8. Security level setup is disabled for Micro PDF.

[Tips]

1. No sequential numbering is possible for PDF417.
2. No print position setting is possible by auto-CR.
3. 00H~FFH can be specified as print data.
4. Increase minimum module dimensions for better quality, as necessary.
5. Increase Security Level for better scanner-readability, as necessary.
6. Height of print image will differ for alphabet, numeric, and alpha-numeric data.

Symbol size and Max. data digits of Micro PDF (Only the following 34 types are available)

Symbol size		Max. Data digits	
cols(d)	rows(e)	Alphabet (A to Z) only	Numeric only
1	11	6	8
	14	12	17
	17	18	26
	20	22	32
	24	30	44
	28	38	55
2	8	14	20
	11	24	35
	14	36	52
	17	46	67
	20	56	82
	23	64	93
	26	72	105
3	6	10	14
	8	18	26
	10	26	38
	12	34	49
	15	46	67
	20	66	96
	26	90	132
	32	114	167
	38	138	202
	44	162	237
4	4	14	20
	6	22	32
	8	34	49
	10	46	67
	12	58	85
	15	76	111
	20	106	155
	26	142	208
	32	178	261
	38	214	313
	44	250	366

* Alphabet (Upper/Lower case), Numeric, Control code may be mixed for valid combination.

PDF417 Code Table (including Micro PDF)

					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								

Selectable range is 00H thru FFH for PDF417 (including Micro PDF).

2D Code

Available for				
	WS4 series			

DataMatrix

ESC+BX

Hex code	ESC	BX	Parameter
	<1B>16	<42>16<58>16	aabbccddeefffghh
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies to print DataMatrix

[Format]

<BX>aabbccddeefffghh

●Parameter

a	[Format ID]	=	Valid range	:	01 to 06
b	[Error correction level]	=	00	:	(ECC000)
			05	:	(ECC050)
			08	:	(ECC080)
			10	:	(ECC100)
			14	:	(ECC140)
			20	:	(ECC200)
c	[Cell width]	=	Valid range	:	01 to 16 (dot/Cell)
d	[Cell height]	=	Valid range	:	01 to 16 (dot/Cell)
e	[Number of cells per line]	=	Valid range	:	008 to 148
			000	:	(auto-setup)
f	[Number of cell lines]	=	Valid range	:	008 to 148
			000	:	(auto-setting)
g	[Mirror image]	=	0	:	Normal image (Normal print)
			1	:	Mirror image
h	[Guide cell thickness]	=	Valid range	:	01 to 15

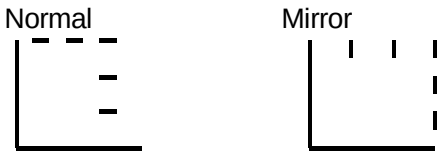


Table of Format ID

Error correction	Format ID					
	01	02	03	04	05	06
00（ECC000）	500	452	394	413	310	271
05（ECC050）	457	333	291	305	228	200
08（ECC080）	402	293	256	268	201	176
10（ECC100）	300	218	190	200	150	131
14（ECC140）	144	105	91	96	72	63

20 (ECC200)	Numeric	3116
	Alphanumeric	2335
	Binary (01H~FFH)	1556

* The above values are the maximum data volume which the 2D code can handle for a valid coding.

[Notes]

1. When error correction level is set to 20, other three settings : Format ID, Mirror image, Guide cell thickness will be ignored.
2. Cell width, Cell height can be set to 01, 02, however may result in low scanner-read rate. 00 will cause an error.
3. When 000 is specified for “the number of cells per line”, or “number of cell lines”, the size of the code is auto-justified according to the data to accommodate.
4. Guide cell thickness for normal type code is 01.

2D Code

Available for				
	WS4 series			

Datamatrix (Data)

ESC+DC

Hex code	ESC	DC	Parameter
	<1B>16	<44>16<43>16	n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies data for DataMatrix

[Format] (Data portion)

<DC>n~n

●Parameter

n [Print data] = Data

[Coding Example] Format ID: 01, Error correction level: 10 (ECC100), Cell width: 02, Cell height: 02, Number of the cell in one line: 000, Number of lines: 000, Mirror image: 0 (Normal), Thickness of the guide-cell: 01, Print data: 1234567890

<A>
<V>100<H>200
<BX>01100202000000001
<DC>1234567890
<Q>2
<Z>

2D Code

Available for				
	WS4 series			

Sequential Number for Datamatrix

ESC+FX

Hex code	ESC	FX	Parameter
	<1B>16	<46>16<58>16	aaabcccdddeee
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies sequential numbering for DataMatrix

[Format] (sequential numbering)

<FX>aaabcccdddeee

●Parameter

a	[Number of duplicate labels]	=	Valid range : 001 to 999
b	[Increment / decrement]	= +	: Increment
		-	: Decrement
c	[Increment/decrement steps]	=	Valid range : 001 to 999
d	[Sequential numbering start position (digit)]	=	Valid range : 001 to 999 from left side.
e	[Incremented data length (digit number)]	=	Valid range : 001 - 999

[Coding Example] Number of duplicate labels: 001, Increment/decrement: + , Increment/decrement steps: 001, Sequential number start position: 005, Digit number: 003

<A>
<V>100<H>200
<u><FX>001+001005003</u>
<BX>01100202000000001
<DC>00006000
<Q>2
<Z>

Datamatrix 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								

DataMatrix can be specified in the range 20H thru FFH.
To specify 7EH, write [7EH,7EH].

12. Graphic Command

Graphic				
Available for				
	WS4 series			

Graphic Print	ESC+G

Hex code	ESC	G	Parameter
	<1B>16	<47>16	abbbcccn~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies graphic printing.

[Format]

<G>abbbcccn~n

●Parameter

a [Specifies data in hexadecimal/binary]
H: Hexadecimal 8bit data divided into 2 blocks of 4bit and output in a ASCII-based Hexadecimal code.
B: *Binary 8bit data is handled as 1font data and output in a chunk.

b [Width of the graphic area] = see table below for valid range

c [Height of the graphic area] = see table below for valid range

n [Graphic data]

[Coding Example]

<A>
<V>50<H>50**<G>H02000288888888…8888**
<Q>2
<Z>

[Notes]

1. “B” Binary format is advantageous to“H” in terms of total data length being 1/2, though it needs prolix programming.
2. The rotation command<%>, expansion command<L> can be used in combination with this command.

[Valid range]

Model	Max. width (byte)	Max. height (byte)
WS408DT/TT	104	600
WS412DT/TT	156	400

Graphic

Available for				
	WS4 series			

BMP File Print

ESC+GM

Hex code	ESC	GM	Parameter
	<1B>16	<47>16<4D>16	aaaaa,n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies to print BMP File (Created on Windows Paint, for example).

[Format]

<GM>aaaaa,n~n

●Parameter

a [Total number of bytes of BMP file]

n [Data]

[Coding Example]

<A>

<V>50<H>50**<GM>04500,2000288888888…8888**

<Q>2

<Z>

[Notes]

1. The data is transmitted in binary (8bit/1font data). Actual size of BMP file is the value to parameter “a”.
2. BMP file consists of the header part (the first 62 byte) and compressed graphic data.
3. If the total number of bytes of a BMP file is not consistent with actual send data, it may result in an operation failure.
4. The total number of bytes is displayed in the property of the file.
5. BMP file can be used only in black/white mode. A BMP file in color mode will result in a command error and no printing. The command does not support compressed type of the BMP file. Make sure that file extension is BMP before printing.
6. Rotation<%>, Expansion<L> can be used in combination with this command.
7. Expansion command <L> shall be specified just before command<GM>.

Graphic

Available for				
	WS4 series			

PCX File Print

ESC+GP

Hex code	ESC	GP	Parameter
	<1B>16	<47>16<50>16	aaaaa,n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies to print PCX file (Created on Windows Paint, for example).

[Format]

<GP>aaaaa,n~n

●Parameter

a [Total number of bytes of PCX file]

n [Data]

[Coding Example]

<A>

<V>50<H>50**<GP>04500,XXXXXXXXXXXX…XXXX**

<Q>2

<Z>

[Notes]

1. The data is transmitted in binary (8bit/1font data). Actual size of PCX file is the value to parameter “a”.
2. PCX file consists of the header part (the first 128 byte) and compressed graphic data.
3. If the total number of bytes of a PCX file is not consistent with actual send data, it may result in an operation failure.
4. The total number of bytes is displayed in the property of the file.
5. PCX file can be used only in black/white mode. A PCX file in color mode will result in a command error and no printing. The command does not support compressed type of the PCX file. Make sure that file extension is PCX before printing.
6. Rotation<%>, Expansion<L> can be used in combination with this command.

13. System Command

System				
Available for				
	WS4 series			

Print Speed	ESC+CS

Hex code	ESC	CS	Parameter
	<1B>16	<43>16<53>16	a
Default setting	See table below		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Specifies print speed.

[Format]

<CS>a

●Parameter

a [Print speed] = see table below.

[Coding Example]

<A>

<CS>3

<Z>

[Note]

1. The setting by this command will not persist after powering off the printer. When the printer restarted, either the printer' default value, or original values set by the command <PG> will be valid.

[Tips]

1. Invalid range being selected will result in a command error and the setting will not be changed.
2. The default values are available by the operation of the printer side.

[Parameter default value and valid range]

Model	Default value	Parameter range	Parameter: Printer speed
WS408DT/TT	5	2, 3, 4, 5, 6	2 : 2 inch/sec (50mm/sec)
WS412DT/TT	4	2, 3, 4	3 : 3 inch/sec (75mm/sec)
			4 : 4 inch/sec (100mm/sec)
			5 : 5 inch/sec (125mm/sec)
			6 : 6 inch/sec (150mm/sec)

System				
Available for				
	WS4 series			

Print Darkness

ESC+#E

Hex code	ESC	#E	Parameter
	<1B>16	<23>16<45>16	a(b)
Default setting	See table below		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Specifies print darkness.

[Format]

<#E>a(b)

●Parameter

a	[Darkness level]	=	See table below.
b	[Darkness range]	=	A (Omissible) Use [A] for darkness range under normal conditions

[Coding Example]

<A>

<#E>3

<Z>

[Note]

1. The setting by this command will not persist after powering off the printer. When the printer restarted, either the printer' default value, or original values set by the command <PG> will be valid.

[Tips]

1. Invalid range being selected will result in a command error and the setting will not be changed.
2. The default values are available by the operation of the printer side.

[Default value and valid range]

Model	Parameter	Default	Range
WS408DT/TT WS412DT/TT	a	3 : Normal	1: Light 2: Slightly light 3: Normal 4: Slightly dark 5: Dark
	b	A	A

System				
Available for				
	WS4 series			

Media Size

ESC+A1

Hex code	ESC	A1	Parameter
	<1B>16	<41>16<31>16	aaaabbbb
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Specifies media size.

[Format]

<A1>aaaabbbb (a, b: Fixed number of digits)

<A1>VaaaaaHbbbb (a, b: Variable number of digits)

●Parameter

a [Label height] = see table in next page

b [Label width] = see table in next page

[Coding Example 1]

<A>

<A1>08000240

<Z>

[Coding Example 2]

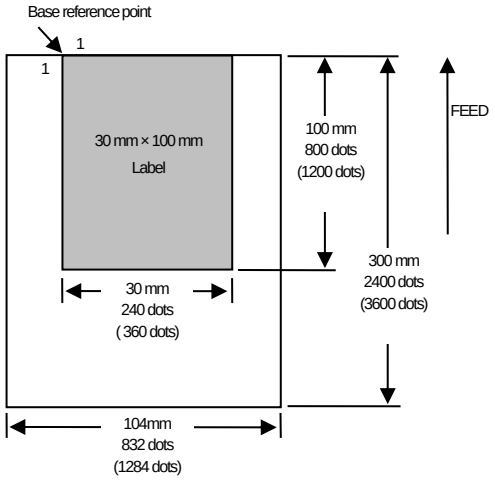
<A>

<A1>V800H240

<Z>

[Notes]

1. This command is useful when you use a label in a smaller size than the print head width, and need to optimize the base reference point accordingly.
2. Backing paper should be included in the label size.



The values in ( ) are for 12 dots/mm

[Valid range]

Model	Label width (dot)	Label height (dot)
WS408DT/TT	1 to 832	1 to 7992
WS412DT/TT	1 to 1248	1 to 11988

System				
Available for				
	WS4 series			

Base Reference Point

ESC+A3

Hex code	ESC	A3	Parameter
	<1B>16	<41>16<33>16	VabbbbHcdddd
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Specifies a new base reference point

[Format]

<A3>VabbbbHcdddd

●Parameter

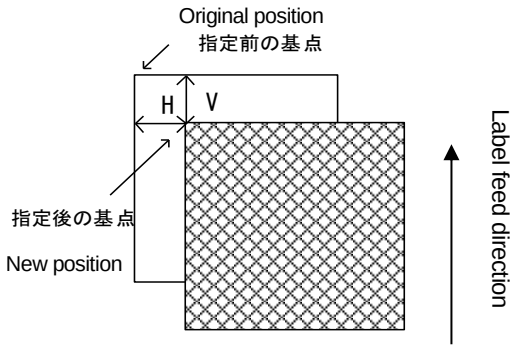
a	Plus / Minus sign for vertical position correction	= +, - (Omissible)
b	Vertical position shift (dots)	= 0 to 792 (dots)
c	Plus / Minus sign for horizontal position correction (omissible)	= +, - (Omissible)
d	Horizontal position shift (dots)	= 0 to 792 (dots)

[Coding Example]

<A>

<A3>V10H10

<Z>



[Notes]

1. The new position set outside printable area, will result in no printing.
2. The new position will be applied to all the label formats. Pay attention to it when you run multiple formats.

[Tips]

1. The values set by this command <A3> is not persistent after powering off the printer.

[Valid range]

Model	Horizontal offset (dots)	Vertical offset (dots)
WS408DT/TT	-792 to 792	-792 to 792
WS412DT/TT	-792 to 792	-792 to 792

System				
Available for				
	WS4 series			

Print End Position

ESC+EP

Hex code	ESC	EP	Parameter
	<1B>16	<45>16<50>16	None
Default setting	None		

Persistence of the command	When printer is powered off	Set Parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies the label stop position in the sensor-disabled mode.

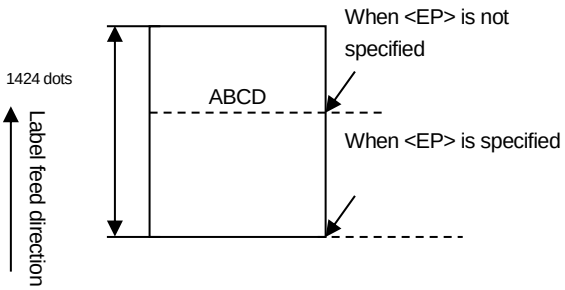
[Format]

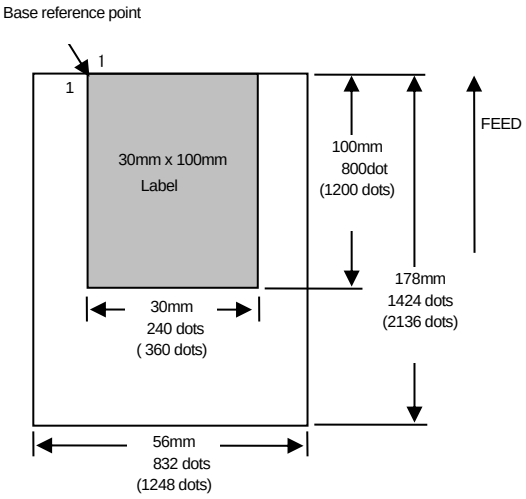
<EP>

[Coding Example]

<A>
<A1>14240832
<Z>
<A>
<V>100<H>200<P>2<L>0202<OA>ABCD
<Q>2
<EP>
<Z>

Example)





The values in ( ) are for 12 dots/mm

[Notes]

1. This command is valid when sensor is disabled.
2. Use this command in combination with size setting command <A1>.

System				
Available for				
	WS4 series			

Multi Cut

ESC+~(NULL)

Hex code	ESC	~ (NULL)	Parameter
	<1B>16	$<7E>_{16}$ ($<00>_{16}$)	aaaa
Default setting	aaaa=1		

Persistence of the command	When printer is powered off	Set Parameter will not be retained
	Validity in a job	Set Parameter will be retained until next valid setting
	Validity after a job	Set parameter will be the default value for the next job<A>.

[Function]

Specifies the number of labels to print between each cut.

[Format]

<~(NULL)>aaaa

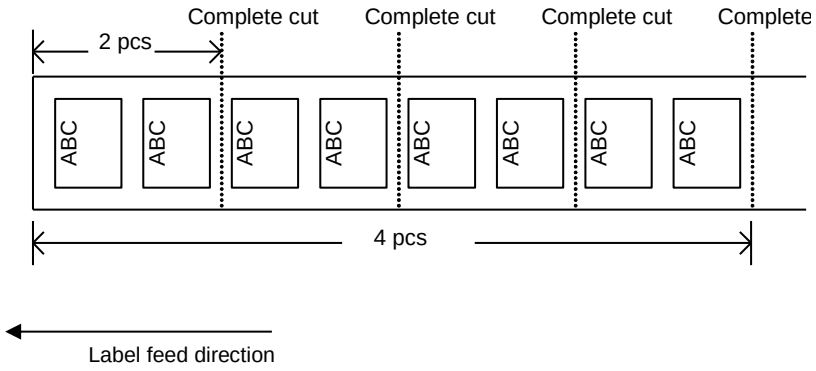
●Parameter

a [Number of prints before cutting] = Valid range : 0 to 9999

[Coding Example]

<A>
<V>100<H>200<P>2<L>0202<OA>ABC
<Q>4
<~>2
<Z>

(1) Normal cut mode



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.
6. This command may not be used in combination with other cut commands, <CT> or <~A>.

System				
Available for				
	WS4 series			

Cut Number Unit

ESC+CT

Hex code	ESC	CT	Parameter
	<1B>16	<43>16<54>16	aaaa
Default setting	aaaa=1		

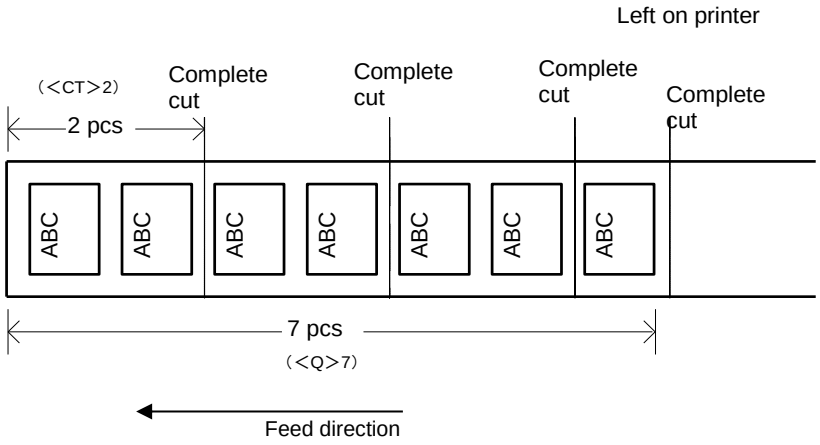
Persistence of the command	When printer is powered off	Set Parameter will not be retained.
	Validity in a job	Retained until next valid setting.
	Validity after a job	Set Parameter will be an default value for the next job<A>.

[Function]
Cuts label 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<X22>,ABC
<u><CT>2</u>
<Q>7
<Z>

(1) Normal (complete) cut mode



[Notes]
1. Valid only for cutter-mounted models.
2. If the parameter is not specified by this command <CT>, each label will be cut after 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 can not be used in combination with other cut commands <~> or <~A>.

System				
Available for				
	WS4 series			

Eject and Cut	ESC+NC

Hex code	ESC	NC (EJ)	Parameter
	<1B>16	<4E>16<43>16	None
Default setting	None		

Persistence of the command	When printer is powered off	Set Parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Cuts any printed labels that remain in the printer.

[Format]
<NC>

[Coding example]
<A>
<NC>
<Z>

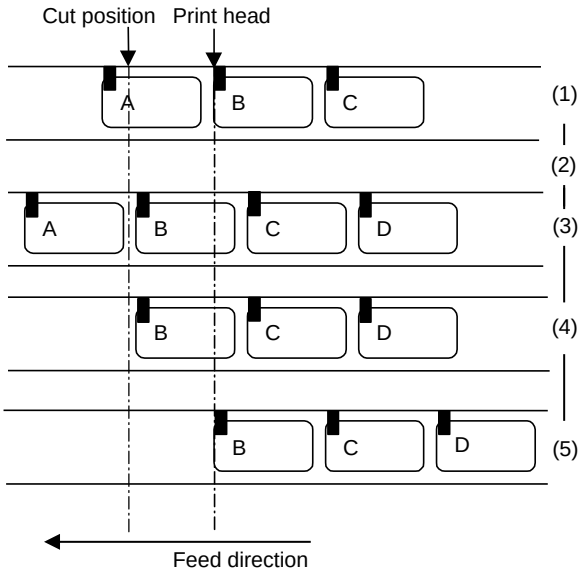
(1) Label stop position
A: Printed
B: Not printed
C: Not printed
D: Not printed

(2) Command received

(3) Label is fed to the cut position.

(4) Label is cut off.

(5) Label is back fed to the head position.



[Notes]
1. Valid only for cutter models.
2. This command is used to cut the last label remaining in the printer.
3. This command 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 while the printer is not working after printed and finished cutting operation.

[Tips]
1. This command is used to cut remaining label in printer after the commands <CT>0 or <~>0 is executed.

System				
Available for				
	WS4 series			

Cut Number Unit

ESC+~A

Hex code	ESC	~A	Parameter
	<1B>16	<7E>16<41>16	aaaa
Default setting	aaaa=1		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Set Parameter will be an default value for the next job<A>.

[Function]

Cuts labels at a specified interval in a print job.

[Format]

<~A>aaaa

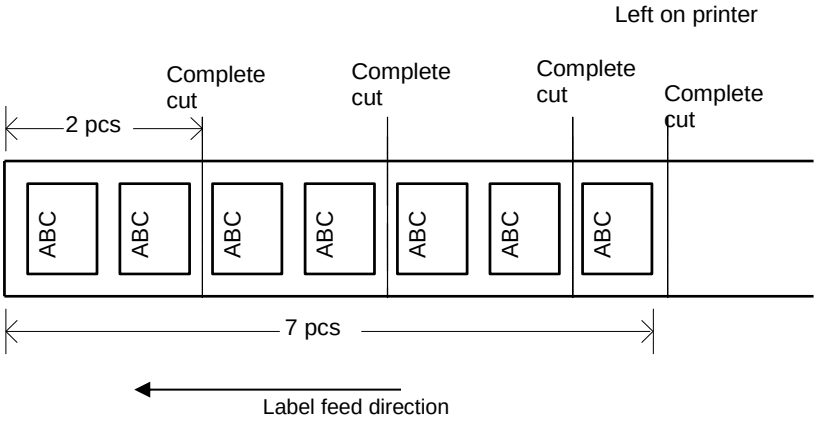
●Parameter

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><~A>2</u>
<Q>7
<Z>

(1) Normal (complete) cut mode



[Notes]

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>.
5. This command may not be used in combination with other cut commands<~>.

System				
Available for				
	WS4 series			

Eject and Cut

ESC+~B

Hex code	ESC	~B	Parameter
	<1B>16	$<7E>_{16}<42>_{16}$	None
Default setting	None		

Persistence of the command	When printer is powered off	Set command will not be retained.
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]
Specifies eject and cut operation

[Format]
<~B>

[Coding Example]
<A>
<~B>
<Z>

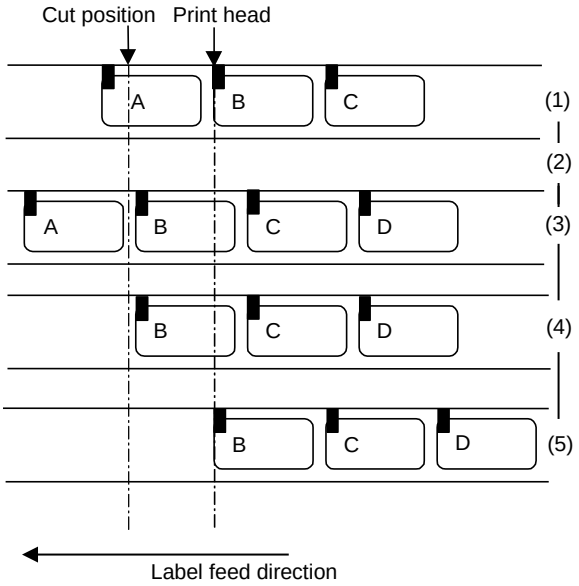
(1) Label stop position
A: Printed
B: Not printed
C: Not printed
D: Not printed

(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.



[Notes]
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 has not been cut after being printed.

[Tips]
1. This command is used to cut remaining label in the printer after the commands <~A>0 or <~>0 is executed.

System				
Available for				
	WS4 series			

Clear Memory

ESC+*

Hex code	ESC	*	Parameter
	<1B>16	<2A>16	a
Default setting	None		

Persistence of the command	When printer is powered off	Set Parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Clears print jobs and specific item in memory.

[Format]

<*>a

●Parameter

a [Item to be cleared] = Not specified : Single item buffer, Edit buffer (reprint is not possible)

: Multi item buffer, Edit buffer (Clears job which is in parsing)

T : User defined characters

& : Form overlay

X : All clear

(Receive buffer, Edit buffer, User defined characters, form overlay)

* 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>

[Notes]

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.

[Tips]

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 <*>.

System				
Available for				
	WS4 series			

Reprint	ESC+C

Hex code	ESC	C	Parameter
	<1B>16	<43>16	None
Default setting	None		

Persistence of the command	When printer is powered off	Set Parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies to reprint the last label.

[Format]

<C>

[Coding Example]

<A>

<C>

<Z>

[Note]

1. Since the last print data will be cleared by powering off, reprint operation will not be available after the printer rebooted.

[Tips]

1. In case the print data contains sequential numbering by command <F>, the same number will be printed.

System				
Available for				
	WS4 series			

Register Printer Operation

ESC+PG

Hex code	ESC	PG	Parameter
	<1B>16	<50>16<47>16	abcdefghhijklmnooppqqrrstuvwxyz
Default setting	See table in next page		

Persistence of the command	When printer is powered off	Set parameter will be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Registers printer settings in EEPROM.

[Format]

<PG>abcdefghhijklmnooppqqrrstuvwxyz

●Parameter

See table in next page for parameter details.

[Coding Example]

<A>

<PG><00 00 02 00 00 00 00 41 01 00 00 00 00 00 00 0C 80 03 40 00 00 00 00 00 00 00 00 00 00 00>16

<Z>

Parameter shall be given in HEX <00H>16<00H>16<02H>16・・・・・・<00H>16

[Notes]

1. This command is not necessary to be specified in normal use.
2. The settings by this command will persist after turning off the printer .

No	Item	Valid selection	
a	Print method (WS408TT/WS412TT only) Default value: 01H	00H Direct thermal 01H Thermal transfer	
b	Reserved	00H Fixed	
c	Print speed 203dpi Default value: 02H 305dpi Default value: 02H	00H 2ips 01H 3ips 02H 4ips	
d	Print mode (Default value: 01H)	00H Continuous 01H Tear off 02H Cutter 03H Dispenser 04H Nonesepa (Linerless)	
e	Cutter mode (Default value: 00H)	00H Motion 1 (Head position) 01H Motion 2 (Cut position) 02H Motion 3 (No backfeed)	
f	Dispenser mode (Default value: 00H)	00H Motion 1 (Head position) 01H Motion 2 (Dispense position)	
g	Nonesepa mode (Default value: 00H)	00H Motion 2 (Tear off position) 01H Motion 3 (No backfeed)	
h	Print darkness: (Default value: 41H)	41H A	
h	Print darkness level (Default value: 03H)	01H Level 1 02H Level 2 03H Level 3 04H Level 4 05H Level 5	
i	Sensor type (Default value: 01H)	00H Reflective 01H Transmissive 02H Sensor off 04H Transmissive sensor (CX compatible)	
j	0 Slash (Default value: 01H)	00H Disabled 01H Enabled	
k	Kanji code (Default value: 00H)	00H JIS Code 01H Shift JIS code	
l	Reserved	00H Fixed	
m	Initial feed (Default value: 00H)	00H Disabled 01H Enabled	
n	Character pitch (Default value: 01H)	00H Fixed 01H Proportional	
o	Label height (dot) 203dpi Default value: 0960H 305dPi Default value: 0E10H	WS408	[0001H ~ 0960H] (1 to 2400)
		WS412	[0001H ~ 0E10H] (1 to 3600)
p	Label width (dot) 203dpi Default value: 0340H 305dPi Default value: 04E0H	WS408	[0001H ~ 0340H] (1 to 832)
		WS412	[0001H ~ 04E0H] (1 to 1248)
q	Vertical base point correction (dot) (specifying in 2 bytes) (Default value: 000H)	[0000H - 012CH] (0 to 300) [FFFFH - FED4H] (-1 to -300)	
r	Horizontal base point correction (dot) (specifying in 2 bytes) (Default value: 000H)	[0000H - 012CH] (0 to 300) [FFFFH - FED4H] (-1 to -300)	
s	Vertical pitch offset (dot) (Default value: 00H)	[00H - 63H] (0 to 99) [FFH - 9DH] (-1 to -99)	
t	TearOff position offset(dot) (Default value: 00H)	[00H - 63H] (0 to 99) [FFH - 9DH] (-1 to -99)	
u	Cut position offset (dot) (Default value: 00H)	[00H - 63H] (0 to 99) [FFH - 9DH] (-1 to -99)	
v	Dispensing position offset (dot) (Default value: 00H)	[00H - 63H] (0 to 99) [FFH - 9DH] (-1 to -99)	
w	Control code (Default value: 00H)	00H Standard code 01H Non-standard code	
x	Gap between labels (dot) 203dpi Default value: 18H 305dpi Default value: 24H	[08H - 40H] (8 to 64) 203dpi [0CH - 60H] (12 to 96) 305dpi	

(continued from previous page)

No.	Item	Valid selection
y	Buzzer (Default value : 00H)	00H Enabled 01H Disabled
z	Reserved	00H Fixed

System				
Available for				
	WS4 series			

Register Printer Operation

ESC+PC

Hex code	ESC	PC	Parameter
	<1B>16	<50>16<43>16	1) [a, b, c, d, …y, z, a1], 2) [aa, b]
Default setting	See the next page		

Persistence of the command		
	When printer is powered off	Set Parameter will be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Registers printer settings in EEPROM

[Format1]When all settings are newly registered

<PC>a,b,c,d,e,f,g,h,i1,i2,j,k,l,m,n,o,pppp,qqqq,rrrr,ssss,t,u,v,w,x,y,z,a1

●Parameter

a	[Item No.]	=	F : All items
b・・・a1	[Setting details]	=	See table in next page for individual parameters

[Format2] When specific item are needed to be registered

<PC>aa,b

●Parameter

a	[Item No.]	=	1 to 27
b	[Setting details]	=	See table in next page for individual Parameters

[Coding Example1] all items

<A>

<PC>F,,,2,,,,,A,4,,1,0,,1,1,3000,2400,,,,,,,,1

<Z>

[Coding Example2] specific item

<A>

<PC>26,1

<Z>

[Notes]

1. The settings done by the command <PC> will persist after turning off the printer.
2. The entire or partial parameter entities is omissible by using commas. However, commas are not omissible.
   Current valid setting will be applied to comma "," position.

No	Item No.	Item	Valid selection	
b	1	Print method (WS408TT/WS412TT only)	0 Thermal Transfer 1 Direct Thermal	
c	2	Reserved	0 Fixed	
d	3	Print speed 203dpi Default value: 2 305dpi Default value: 2	0 2ips 1 3ips 2 4ips	
e	4	Print mode (Default value: 1)	0 Continuous 1 Tear Off 2 Cutter 3 Dispenser 4 Nonesepa (Linerless)	
f	5	Cutter mode	00 Motion 1 (Head position) 01 Motion 2 (Cut position) 02 Motion 3 (No backfeed)	
g	6	Dispenser mode	00 Motion 1 (Head position) 01 Motion 2 (Dispense position)	
h	7	Nonesepa mode	00 Motion 2 (Tear off position) 01 Motion 3 (No backfeed)	
i1	8	Print darkness (Default value: A)	A	
i2	9	Print darkness level (Default value: 3)	1 Level 1 2 Level 2 3 Level 3 4 Level 4 5 Level 5	
j	10	Sensor type (Default value: 1)	0 Reflective 1 Transmissive 2 Sensor off 4 Transmissive sensor (CX compatible)	
k	11	0 Slash (Default value: 1)	0 Disabled 1 Enabled	
l	12	Kanji code (Default value: 0)	0 JIS Code 1 Shift JIS code	
m	13	Reserved	0 Fixed	
n	14	Initial feed (Default value: 0)	0 Disabled 1 Enabled	
o	15	Character pitch (Default value: 1)	0 Fixed pitch 1 Proportional pitch	
p	16	Label height (dot) 203dpi Default value: 2400(Decimal number) 305dpI Default value: 3600(Decimal number)	WS408DT/TT WS412DT/TT	1 to 2400 1 to 3600
q	17	Label width (dot) 203dpi Default value: 832(Decimal number) 305dpi Default value: 1248(Decimal number)	WS408DT/TT WS412DT/TT	1 to 832 1 to 1248
r	18	Vertical base point correction (dot) (Default: 0)	-300 to 300	
s	19	Horizontal base point correction (dot) (Default: 0)	-300 to 300	
t	20	Vertical pitch offset (dot) (Default: 0)	-99 to 99	
u	21	Tear Off position offset(dot) (Default: 0)	-99 to 99	
v	22	Cut position offset (dot) (Default: 0)	-99 to 99	
w	23	Dispense position offset (dot) (Default: 0)	-99 to 99	
x	24	Control code (Default value: 0)	0 Standard code 1 Non-standard code	
y	25	Gap between labels (dot) 203dpi Default value: 24 305dpi Default value: 36	8 to 64 203dpi 12 to 96 305dpi	
z	26	Buzzer (Default value: 0)	0 On 1 Off	
a1	27	Reserved	0 Fixed	

System				
Available for				
	WS4 series			

User Download

ESC+LD

Hex code	ESC	LD	Parameter
	<1B>16	<4C>16<44>16	, a, b, c, d, e, f, g, h, i, j
Default setting	See table below		

Persistence of the command	When printer is powered off	Set Parameter will be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Settings of : Auto-online, zero slash(Enable/Disable), protocol code, Euro code

[Format]

<LD>,a,b,c,d,e,f,g,h,i,j

● Parameter

See the table below.

Function	Parameter	Description	Default	
			Standard	Non-standard
Protocol code	a(HEX)	STX	02H	{(7BH)
	b(HEX)	ETX	03H	}(7DH)
	c(HEX)	ESC	1BH	^(5EH)
	d(HEX)	ENQ	05H	@(40H)
	e(HEX)	CAN	18H	!(21H)
	f(HEX)	NULL	00H	~(7EH)
	g(HEX)	Offline	@(40H)	](5DH)
Auto-online	h(ASCII)	0: YES 1: NO	0(30H)	0(30H)
Zero slash	i(ASCII)	0: YES 1: NO	0(30H)	0(30H)
Euro code	j(HEX)	D5H	D5H	D5H

[Coding Example]

<A>

<LD>,{,},%,#,&,=, - ,0,0,<FF>16

<Z>

[Notes]

1. Place this command between Start code<A> and Stop code<Z>.
2. The command <LD> may be received while printer is in online mode.
3. Certain parameters may be omitted by giving "," as place holder. Current valid setting will be applied to "," position.
4. If more or less than 10 commas "," is used, or specified code is used in other commands or in print data, the result may not be guaranteed.
5. After the setting by this command <LD> is successfully completed, setting information will be printed.
   After the printing is completed, press the FEED/LINE key once and repower the printer to make the new settings valid. If the printer is powered off without FEED/LINE key pressed, the setting information will not be saved.
6. Non-standard code set by this command <LD> will be enabled by the command <PG> or <PC>.

System

Available for				
	WS4 series			

Offset

ESC+PO

Hex code	ESC	PO	Parameter
	<1B>16	<50>16<4F>16	abcc
Default setting	a=0,b=+,cc=00		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until 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 (dots)

[Coding Example]

<A>

<PO>3+08

<Z>

[Notes]

1. This command does not need to be specified in normal use.
2. The command is to fine-tune media position when it is required by specific application.

System

Available for				
	WS4 series			

Sensor Type

ESC+IG

Hex code	ESC	IG	Parameter
	<1B>16	<49>16<47>16	a
Default setting	a=0		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Changes sensor type temporarily

[Format]

<IG>a

●Parameter

a	Sensor type	=	0	:	Reflective (I-Mark)
			1	:	Transmissive (Gap)
			2	:	Sensor off

[Coding Example]

<A>

<IG>0

<Z>

[Notes]

1. The setting by this command is normally not needed.
2. The setting is valid until the printer is powered off and printer's internal setting becomes valid after rebooting.

System

Available for				
	WS4 series			

Print Method — ESC+PH

Hex code	ESC	PH	Parameter
	<1B>16	<50>16<48>16	a
Default setting	a=0		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Changes print method temporarily.

[Format]

<PH>a

●Parameter

a	[Print method]	=	0	:	Thermal transfer
			1	:	Direct Thermal

[Coding Example]

<A>

<PH>0

<Z>

[Notes]

1. The setting by this command is normally not needed.
2. The setting is valid until the printer is powered off and printer's internal setting becomes valid after rebooting.

System

Available for				
	WS4 series			

Print Mode

ESC+PM

Hex code	ESC	PM	Parameter
	<1B>16	<50>16<4D>16	a
Default setting	a=0		

Persistence of the command	When printer is powered off	Set parameter will be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Specifies print mode temporarily.

[Format]

<PM>a

●Parameter

a	Print mode	=	0	:	Continuous
			1	:	Tear-off
			2	:	Cutter (Motion 1: Head position)
			3	:	Cutter (Motion 2: Cutter position)
			4	:	Cutter (Motion 3: No backfeed)
			5	:	Nonesepa (Motion 2: Tear off position)
			6	:	Nonesepa (Motion 3: No backfeed)
			7	:	Dispenser (Motion 1: Head position)
			8	:	Dispenser (Motion 2:Dispense position)

[Coding Example]

<A>

<PM>0

<Z>

[Notes]

1. The selection by this command is valid until printer is powered off. Printer's internal setting becomes valid after rebooting.
2. The selection shall be consistent with the print mode specified by command<PM>.
   e.g.) In case of cutter mode: print mode (2), (3) and (4) are valid, while other modes are invalid.

General description of each mode :

(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 (Motion 1: Head position)
The printer back feed the label up to the print head position immediately after the last label is cut.

(3) Cutter (Motion 2: Cutter position)
The printer, after receiving the next print data, will back feed the media to the print head position. The label is cut after printing.

(4) Cutter (Motion 3: No back feed)
No backfeed.

(5) Nonesepa (Motion 2: Tear off position)
The printer back feeds the label to the print head position immediately after receiving next print data. Then the printer feeds the label to the tear off position after print job is completed.

(6) Nonesepa (Motion 3: No backfeed)
No backfeed.

(7) Dispenser (Motion 1: Head position)
The printer back feeds the label up to the print head position immediately after the last label is dispensed.

(8) Dispenser (Motion 2: Dispense position)
The printer, after receiving the next print data, will back feed the media to the print head position.

System				
Available for	WS4 series			

Media Feed Control

ESC+IK

HEX code	ESC	IK	parameter
	<1B>16	<49>16<4B>16	a(,bbbb)
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained.
	Validity in a job	Set parameter becomes invalid.
	Validity after a job	Set parameter becomes invalid.

[Function]

Feeds the label forward or backward according to the specified feed length.

[Format]

<IK>a,bbbb

● Parameter

a	[Feed motion]	=	0	: Feeds the label forward
			1	: Feeds the label backward
b	[Feed length]	=	Valid range	: Refer to [Notes]

<IK>a

● Parameter

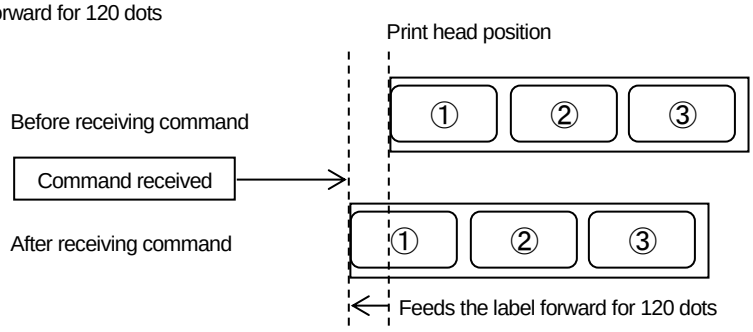
a	[Feed motion]	=	0	: Feeds the single label forward
			2	: Feeds the label forward from print head position to tear off position
			3	: Feeds the label backward from tear off position to print head position
			4	: Feeds the label backward from print head position to cutter position
			5	: Feeds the label backward from cutter position to print head position

[Coding example 1] Feeds the label forward for 120 dots

<A>

<IK>0,120

<Z>



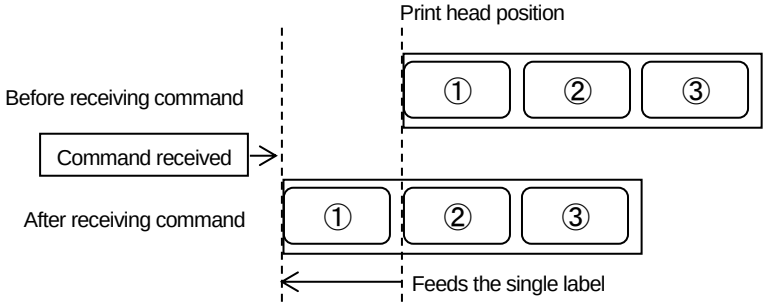
If receiving the print data without returning the label to the original position by <IK>1,120, the print job will start from the current stop position.

[Coding example 2] Feeds the single label

<A>

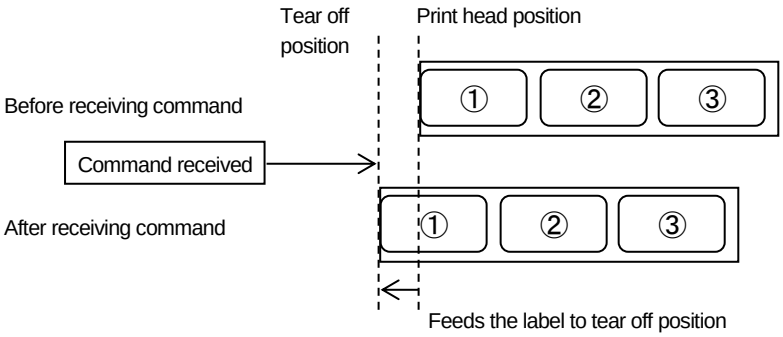
<IK>0

<Z>



[Coding example 3] Feeds the label forward to tear off position

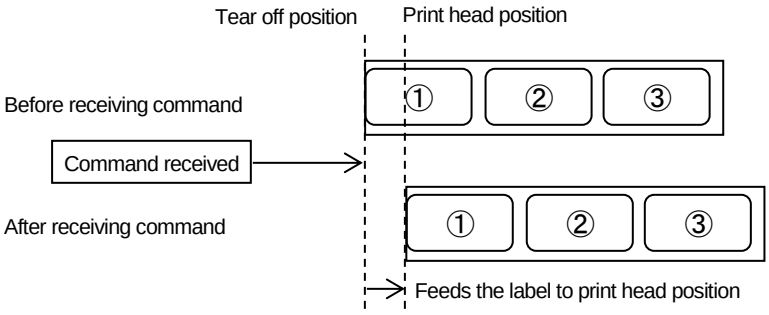
<A>
<IK>2
<Z>



If receiving the print data without returning the label to the original position by <IK>3, the print job will start from the current stop position.

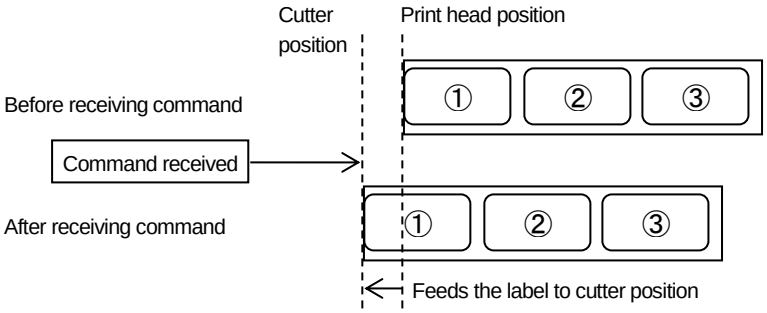
[Coding example 4] Feeds the label backward from tear off position to print head position

<A>
<IK>3
<Z>



[Coding example 5] Feeds the label forward to cutter position

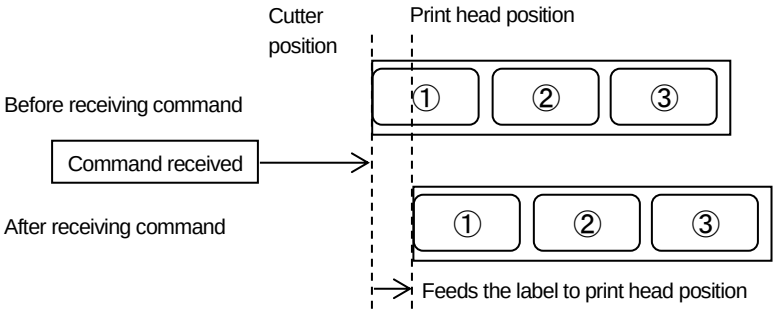
<A>
<IK>4
<Z>



If receiving the print data without returning the label to the original position by <IK>5, the print job will start from the current stop position.

[Coding example 6] Feeds the label backward from cutter position to print head position

<A>
<IK>5
<Z>



[Notes]

1. Place this command between start code <A> and stop code <Z>. If specifying this command in the item with print data, this command will be ignored.
2. When setting the label feed direction in the reverse direction, make sure the label feed length does not become too long. The print data may appear overlapped with each other or the printer may wrongly detect a paper end error because of the label coming off the platen. Also, there is a possibility that the label would come off the platen in the same way if feeding the label to the tear off position or to the cutter position in the reverse direction.
3. Do not feed the label backward right after cutting the label in cutter mode or dispensing the label in dispenser mode.
4. When omitting the feed distance in the forward direction, label feeding motion will be exactly the same as when pressing the key in offline state.
5. Label feeding motion specified with this command will be performed in online state.
6. Omitting the feed distance in the reverse direction may result in command error and the label will not be fed.
7. When the sensor is disabled in continuous mode, the label cannot be fed by <IK>0 (feed distance omitted).
8. Specifying the feed length outside the valid range may result in command error and the label will not be fed.

[Valid range]

Head density	Valid range (dot)
8 dot/mm	48 to 1600
12 dot/mm	72 to 2400

System				
Available for				
	WS4 series			

Serial Interface

ESC+I2

Hex code	ESC	I2	Parameter
	<1B>16	<49>16<32>16	abcde
Default setting	a=1,b=0,c=0,d=0,e=1		

Persistence of the command		
	When printer is powered off	Set parameter will be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies the setting of serial Interface.

[Format]

<I2>abcde

●Parameter

a	[Baud rate]	:	0 = 9600bps
			1 = 19200bps
			2 = 38400bps
b	[Data bit]	:	0 = 8bit
			1 = 7bit
c	[Parity]	:	0 = No parity
			1 = Odd
			2 = Even
d	[Stop bit]	:	0 = 1bit
			1 = 2bit
e	[Control]	:	0 = READY/BUSY control (Single item buffer)
			1 = READY/BUSY control (Multi item buffer)
			2 = XON/XOFF
			3 = Driver protocol (STATUS4)
			4 = STATUS3

[Coding Example]

<A>

<I2>10003

<Z>

[Notes]

1. The set parameter by this command will become valid after rebooting.

System				
Available for				
	WS4 series			

LAN Interface

ESC+I3

Hex code	ESC	I3	Parameter
	<1B>16	<49>16<33>16	a
Default setting	a=0		

Persistence of the command	When printer is powered off	Set parameter will be retained.
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies the setting of LAN Interface.

[Format]

<I3>a

●Parameter

a [LAN mode] = 0 : 2 port connection/unsolicited (for driver protocol (STATUS4))
1 : 2 port connection /solicited by ENQ (for driver protocol (STATUS4))
2 : 1 port connection /solicited by ENQ (STATUS3)

[Coding Example]

<A>
<I3>0
<Z>

[Notes]

1. The set parameter by this command will become valid after rebooting.

System				
Available for				
	WS4 series			

IP Address

ESC+W1

Hex code	ESC	W1	Parameter
	<1B>16	<57>16<31>16	a~a
Default setting	a~a=000000000000		

Persistence of the command	When printer is powered off	Set Parameter will be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Sets IP address.

[Format]

<W1>a~a

●Parameter

a~a [IP address] = 12 digit fixed

[Coding Example]

<A>

<W1>123220000040

<Z>

[Notes]

1. Place this command between start code<A> and stop code<Z>.
2. This command may not be used in combination with other commands.
3. Setting can be printed on the factory test print.
4. The set parameter will become valid after rebooting.
5. Default setting of IP address is as follows:

IP address	000000000000

System				
Available for				
	WS4 series			

Subnet Mask

ESC+W2

Hex code	ESC	W2	Parameter
	<1B>16	<57>16<32>16	a~a
Default setting	a~a=000000000000		

Persistence of the command	When printer is powered off	Set Parameter will be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Sets Subnet mask

[Format]

<W2>a~a

●Parameter

a~a [Subnet mask] = 12 digits fixed

[Coding Example]

<A>

<W2>255255255000

<Z>

[Notes]

1. Place this command between <A>start code and <Z> stop code.
2. This command may not be used in combination with other commands.
3. Setting can be printed on the factory test print.
4. The set parameter will become valid after rebooting.
5. Default setting of Subnet mask is as follows:

Subnet mask	000000000000

System				
Available for				
	WS4 series			

Default Gateway

ESC+W3

Hex code	ESC	W3	Parameter
	<1B>16	<57>16<33>16	a~a
Default setting	a~a=000000000000		

Persistence of the command	When printer is powered off	Set Parameter will be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Sets Default gateway.

[Format]

<W3>a~a

●Parameter

a~a [Default gateway] = 12 digits fixed

[Coding Example]

<A>

<W3>128220001001

<Z>

[Notes]

1. Place this command between <A>start code and <Z> stop code.
2. This command may not be used in combination with other commands.
3. Setting can be printed on the factory test print.
4. The set parameter will become valid after rebooting.
5. Default setting of Default gateway is as follows:

Default gateway	000000000000

[Important]

Use the valid subnet address (=consistent to the IP address currently used) for the default gateway.

System				
Available for				
	WS4 series			

IP Address Setup

ESC+WI

Hex code	ESC	WI	Parameter
	<1B>16	<57>16<49>16	a
Default setting	a=1		

Persistence of the command	When printer is powered off	Set Parameter will be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies IP address setup method.

[Format]

<WI>a

●Parameter

a [IP address setup] = 0 : Manual setup
1 : DHCP

[Coding Example]

<A>
<WI>1
<Z>

[Notes]

1. Place this command between start code<A> and stop code<Z>.
2. This command may not be used in combination with other commands.
3. Setting can be printed on the factory test print.
4. The set parameter will become valid after rebooting.
5. Default setting of IP address is as follows:

IP address setup	1 (DHCP)

System				
Applicable for				
	WS4 series			

Option Waiting Time

ESC+TW

Hex code	ESC	TW	Parameter
	<1B>16	<54>16<57>16	aaa
Default setting	aaa = 010(1000ms)		

Persistence of the command	When printer is powered off	Set parameter will be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Specifies waiting time for options.

[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>

[Notes]

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 in effect after power off.

System				
Applicable for				
	WS4 series			

Forced Tear off	ESC+TK

Hex code	ESC	TK	Parameter
	<1B>16	<54>16<4B>16	None
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Executes Tear off compulsory.

[Format]

<TK>

[Coding example]

<A>
<u><TK></u>
<Z>

[Notes]

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 can not be used in combination with other commands.

[Tips]

1. This command can be used to save the time set by command <TW>, if it is sure that there is no following item.

14. Memory Card Commands

Memory Card				
Available for				
	WS4 series			
Card Slot			**ESC+CC**	

HEX code	ESC	CC	Parameter
	<1B>16	<43>16<43>16	a
Default setting	a=0		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Specifies the card slot number to be used.

[Format]

<CC>a

●Parameter

a [Slot number] = 0: RAM
1: Flash ROM
2: USB host

[Example]

<A>
<CC>1
<GI>H003003001FF000000~000000FF
<Z>

[Note]

1. This command must be used when command specification is need for a memory card.

Memory Card

Available for				
	WS4 series			

Format Memory Card

ESC+FM

HEX code	ESC	FM	Parameter
	<1B>16	<46>16<4D>16	aaaaaaaa
Default setting	None		

Persistence of the command		
	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Specifies the format (initialization) of memory card.

[Format]

<FM>aaaaaaaa

● Parameter

a [User ID] = Up to 8 bytes in alphanumeric and symbols

[Coding example]

<A>
<CC>1
<FM>SATO
<Z>

[Note]

1. Make sure to specify the card slot number to be used for the <CC> command before the <FM> command.
2. The <FM> command is used for initializing a memory card and this command cannot be used in combination with other commands.
3. Care should be exercised when using this command as it destroys any data previously written to the card. SATO is not liable for any data loss.

Memory Card

Available for				
	WS4 series			

Store Form Overlay

ESC+&S

HEX code	ESC	&S	Parameter
	<1B>16	<26>16<53>16	,aa(,bbbb,ccccc)
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]
Stores fixed print contents to memory card.

[Format]
<&S>,aa(,bbbb,ccccc)
- Parameter

a [Registration number] = Valid range: 1 to 99

[Coding example]
<A>
<V>100<H>100<XM>OMODEL
<CC>1
<&S>,1
<Z>

[Note]
1. The Card Slot <CC> command must be sent prior to this command.
2. Place the format to be stored between the Start Code <A> and the Stop Code <Z> commands.
3. Registration of identical store number is invalid.
4. The data of Graphics<G> and BMP File <GM> can be also stored.
5. This command allows up to 99 registries. Note that the capacity of registry may vary depending on the memory card to be used.
6. The data stored by this command are cleared by the Clear <*>R command.

[Valid Commands]
WS4 series

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<U>	<S>	<M>	<WB>	<WL>
	<OA>	<OB>	<RD>	<$=>						
Barcode	<B>	<BC>	<BG>	<BI>	<BF>	<BP>	<D>	<D><d>	<BD>	<BT>
	<BW>									
2D code	<BK>	<BQ>	<BV>	<BX>						
	<2D10>	<2D12>	<2D20>	<2D30>	<2D31>	<2D50>	<2D51>			
Modification	<WD>	<FW>	<(>	<RF>						
Graphic	<G>	<GM>	<GP>							

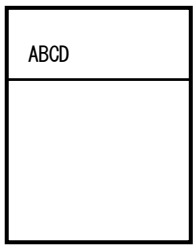
In general, this command is used for registration number only. By specifying the horizontal and vertical window sizes, the label image can be moved by using the <V> and <H> position commands when recalling the label image. If the repositioned label image exceeds the printable area, the image will be truncated.

See the following examples.

(1) Normal operation

```
<A>
<V>100<H>100<P>2<L>0202
<XM>0ABCD
<V>60<H>60
<FW>0808V800H400
<V>320<H>60
<FW>04H400
<CC>1
<&S>,1
<Z>
```

Stored label image



(2) When print is specified after the <&S> command.

```
<A>
<V>100<H>100<P>2<L>0202
<XM>0ABCD
<V>60<H>60
<FW>0808V800H400
<V>320<H>60
<FW>04H400
<CC>1
<&S>,1
<V>200<H>100<OB>12345
<Z>
```

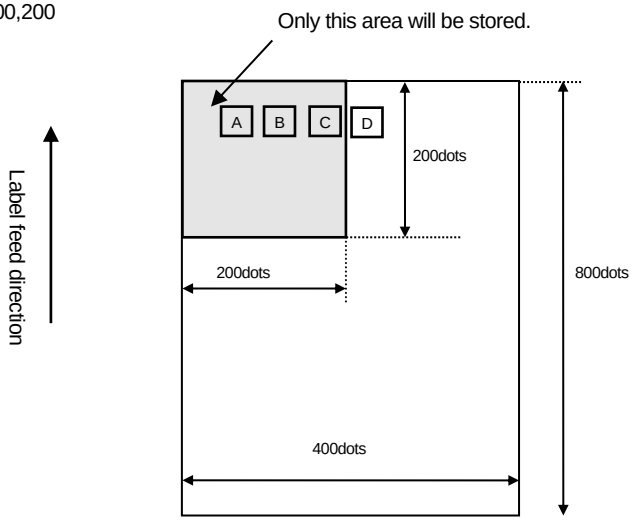
Anything specified prior to the <&S> command will be stored as form overlay

← Will be printed.

(3) When window size is specified.

Media size specification <A1>08000400, Horizontal size of window: 200, Vertical size of window: 200

```
<A>
<A1>08000400
<V>100<H>00<P>2<L>0202
<XM>0ABCD
<CC>1
<&S>,1,200,200
<Z>
```



[Range for horizontal size of window]

Resolution	Valid range (dots)
8 dots/mm	1 to 832
12 dots/mm	1 to 1248

[Range for vertical size of window]

Resolution	Valid range (dots)
8 dots/mm	1 to 2400
12 dots/mm	1 to 3600

Memory Card

Available for				
	WS4 series			

Recall Form Overlay

ESC+&R

HEX code	ESC	&R	Parameter
	<1B>16	<26>16<52>16	,aa
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Recalls the tag or label image from memory card saved by command <&S>.

[Format]

<&R>,aa

- Parameter

a [Registration number] = 1 to 99

[Example]

<A>
<CC>1
<&R>,1
<Z>

[Note]

1. The Card Slot <CC> command must be sent prior to this command.
2. Several images stored under different registration numbers can be printed with this command.
3. If no registration number is specified, this command will be ignored.
4. A read/write error will occur if an unused registration number is specified.
5. If a tag or label image is stored without specifying a window size, the <V> and <H> position commands will be ignored, and the image will be expanded from V1 and H1 (start position of drawing area).
6. The tag or label image can be moved by using the <V> and <H> position commands when it is stored along with a window size. If it exceeds the printable area by being moved, the tag or label image will be truncated.

[Valid commands]

Print position	<V>	<H>								

Memory Card

Available for				
	WS4 series			

Store Format

ESC+YS

HEX code	ESC	YS	Parameter
	<1B>16	<59>16<53>16	,aaa
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Stores a format field description.

[Format]

<YS>,aaa

- Parameter

a [Format number to be stored] = 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>

[Notes]

1. When storing multiple formats, each format shall be placed between enter the Start Code <A> and the Stop Code <Z> commands.
2. The Card Slot <CC> command must be sent prior to this command.
3. Use this command in conjunction with the Store Field command </N>.
4. Attempts to store using a predefined field number will result in an error and the target content will be printed.

[Valid commands]

WS4 series

Print position	<V>	<H>								
Font	<XU>	<XS>	<XM>	<XB>	<XL>	<U>	<S>	<M>	<WB>	<WL>
	<OA>	<OB>	<K1>	<K2>	<k1>	<k2>	<C2>	<C4>	<c2>	<c4>
Barcode	<B>	<BC>	<BG>	<BI>	<BZ>	<D>	<D><d>	<BD>	<BT>	<BW>
Modification	<P>	<L>	<PS>	<PR>	<%>	<FW>	<(>	<WD>		
System	<A1>	<A3>								
Memory card	<&R>	</N>	<GR>	<GC>						

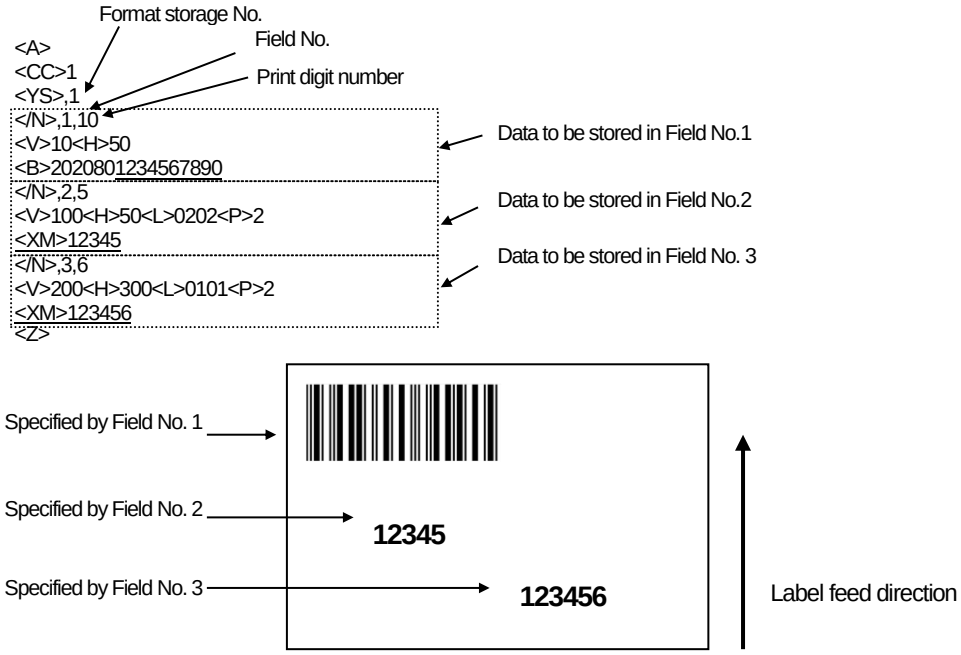
[Tip]

1. Details on the registration of format

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 recalling the format. Such function is called “Registration of Format”.
One item consists of different command groups necessary for printing, and such groups are called “Field”. Note that multiple fields make a format.

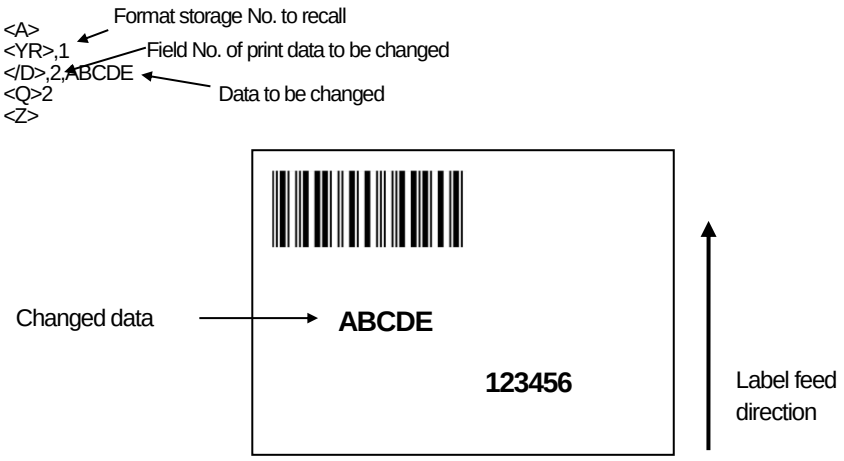
Commands for the registration of format:
One format consists of a set of commands from the Start Code <A> command to the Stop Code command <Z>, and specify the Store Format <YS> command right after the <A> command. For the <YS> command, specify [Format number to be stored] between 1 and 999. And then, insert the Store Field </N> command after the <YS> command to specify [Field number] and [Print digit number].
After [Field number] and [Print digit number] are entered, specify print position, character type, barcode, and so on.

[Registration Example]



Recalling the stored print contents:
Up to 999 stored formats can be specified by the Recall Format <YR> command.
To change print data, use the Print Field </D> command 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.

[Example of recalling]



The followings are the invalid commands for storing formats.

Category	Command	Command name
Control	<Q>	Print Quantity
	<ID>	Job Store ID
	<WK>	Job Name
Modification	<&>	Store Form Overlay
	<F>	Sequential Numbering
	<0>	Replace Data (Partial Edit)
Barcode	<BT>	Variable Ratio Barcodes
2D code	<BK>, <2D10>	PDF417
	<2D12>	MicroPDF
	<BV>, <2D20>	MAXI code
	<2D30>	QR code (model 2)
	<BQ>, <2D31>	QR code (model 1)
	<2D32>	MicroQR
	<BX>, <2D50>	GS1 DataMatrix (ECC200)
Graphic	<G>	Custom Graphics
	<GM>	BMP File
System	<CS>	Print Speed
	<#E>	Print Darkness
	<~>	Multiple Cuts
	<C>	Repeat Label
	<*>	Clear
Memory card	<FM>	Format Memory Card
	<GI>	Store Graphic
	<GT>	Store BMP File
	</D>	Print Field
	<FP>	Print Memory card status

Memory Card

Available for				
	WS4 series			

Store Field

ESC+/N

HEX code	ESC	/N	Parameter
	<1B>16	<2F>16<4E>16	,aa,bb
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Stores a format field description in the Store Format <YS> command.

[Format]

</N>,aa,bb

●Parameter

a [Field number] = 1 to 99

b [Print digit number] = 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>

[Notes]

1. Specify the field number in ascending order.
2. Specify the <V> and <H> position commands for each field. If not, default value will be set.
3. Specification of digit number when printing external characters.
   For an external character code “H”,1 external character has 4 digits; thus, the print of 3 characters will be 12 digits.
   For an external character code “B”, 1 external character has 2 digits; thus, the print of 3 characters will be 6 digits.
4. Use this command in conjunction with the Store Format <YS> command.
5. Due to the memory capacity limit, it may not save up to 99 registries.

[Valid Commands for the Change of Print]

WS4 series

Font	<XU>	<XS>	<XM>	<XB>	<XL>	<U>	<S>	<M>	<WB>	<WL>
	<OA>	<OB>	<K1>	<K2>	<k1>	<k2>	<C2>	<C4>	<c2>	<c4>
Barcode	<B>	<BC>	<BG>	<BI>	<BZ>	<D>	<D><d>	<BD>	<BT>	<BW>

Memory Card

Available for				
	WS4 series			

Recall Format — ESC+YR

HEX code	ESC	YR	Parameter
	<1B>16	<59>16<52>16	,aaa
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Recalls and prints the format stored by the Store Format <YS> command.

[Format]

<YR>,aaa

●Parameter

a [Format registration number] = 1 to 999

[Coding example]

```
<A>
<CC>1
<YR>,01
</D>,1,DEF
</D>,2,78901
</D>,3,49000238
<Q>2
<Z>
```

[Notes]

1. The Recall Format <YR> command cannot recall multiple formats between the Start Code <A> and the Stop Code <Z> commands.
2. Use this command in conjunction with the Print Field </D> command.

Memory Card

Available for				
	WS4 series			

Print Field

ESC+/D

HEX code	ESC	/D	Parameter
	<1B>16	<2F>16<44>16	,aa,n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Retained until next valid setting
	Validity after a job	Retained until next valid setting

[Function]

Recalls the field specified by the Store Field </N> command and selects the data.

[Format]

</D>,aa,n~n

●Parameter

a [Field No.] = 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>

[Note]

1. Print digit number is valid within the Store Field </N> command.
2. When digit number of this command is longer than the one specified with the Store Field </N> command, only the defined digit number will be available for printing.
3. Use this command in conjunction with the Recall Format <YR> command.

Memory Card

Available for				
	WS4 series			

Store Graphic

ESC+GI

HEX code	ESC	GI	Parameter
	<1B>16	<47>16<49>16	abbbcccdddn~n
Default setting	None		

Persistence of the command	When printer is powered off	Stored data will be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Stores the graphic pattern data.

[Format]

<GI>abbbcccdddn~n

● Parameter

a [Selects and sends Hexadecimal or Binary data] = H : HEX data
B : BIN data

HEX data (8 bits data is divided into 4 bits, and outputs as a HEX code corresponding to ASCII.)
Binary data (Outputs 8 bits as 1 character data is all at once)

b [Specifies the horizontal graphic area in byte] = See the table below

c [Specifies the vertical graphic area in byte] = See the table below

d [Registration number] (identification number to recall) = Valid range: 1 to 999

n [Data] = Graphic data

[Coding example]

<A>
<CC>1
<GI>H003003001n~n
<Z>

[Note]

1. Specify the storage data only.
2. To change the stored content, clear it with the Clear <*> command and store it again.
3. The data stored with this command can be printed with the Recall Graphic <GR> command.
4. If the graphic data is not stored properly, a print error may occur. Refer to the Custom Graphics <G> command for the data form.
5. Attempts to store using a predefined storage number will result in an error and the targeted content will be printed.
6. The Card Slot <CC> command must be sent prior to this command.

[Validity]

Model	Max. bytes in horizontal direction	Max. bytes in vertical direction
WS408DT/TT	104	400
WS412DT/TT	156	600

Memory Card

Available for				
	WS4 series			

Recall Graphic

ESC+GR

HEX code	ESC	GR	Parameter
	<1B>16	<47>16<52>16	aaa
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Recalls and prints the graphic image stored by the Store Graphic <GI> command.

[Format]

<GR>aaa

● Parameter

a [Registration number] = 1 to 999

[Example]

<A>
<V>100<H>100
<CC>1
<u><GR>1</u>
<Q>1
<Z>

[Note]

1. The Start Point Correction <A3> command will be ignored.
2. The Rotate <%> and the Character Expansion <L> commands can be used for the recalled graphic image.
3. The Card Slot <CC> command must be sent prior to this command.

Memory Card

Available for				
	WS4 series			

Store BMP file

ESC+GT

HEX code	ESC	GT	Parameter
	<1B>16	<47>16<54>16	aaa,bbbbb,n~n
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Stores a graphic file of BMP format.

[Format]

<GT>aaa,bbbbb,n~n

● Parameter

a [Registration number] = 1 to 999

b [Size of BMP file in bytes] = 1 to 99999

Specify the BMP file size for total number of bytes.

n [Data] = BMP file data

Send Binary data (outputs 8 bits as 1 font data).

[Coding example]

<A>

<CC>1

<GT>1,12345,n～n

<Z>

[Note]

1. Data must be sent in binary format (outputs 8 bits as 1 font data). (BMP file size is “total bytes”, BMP file data is “data”)
2. The first 62 bytes of the BMP file is used for the header and the remainder is the BMP image data.
3. If the total bytes of BMP file does not match the transfer data, an error may occur.
4. Total bytes is the file size indicated in the properties.
5. Only black and white non-compressed BMP files can be stored. Color BMP files will cause an error. Make sure to check the file extension is [BMP] before printing.
6. The Card Slot <CC> command must be sent prior to this command.

Memory Card

Available for				
	WS4 series			

Recall BMP file

ESC+GC

HEX code	ESC	GC	Parameter
	<1B>16	<47>16<43>16	aaa
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Recalls and prints a graphic file previously stored by the Store BMP File <GT> command.

[Format]

<GC>aaa

- Parameter

a [Registration number] = 1 to 999

[Coding example]

```
<A>
<V>100<H>100
<CC>1
<GC>1
<Q>2
<Z>
```

[Note]

1. The Rotate <%> and the Character Expansion <L> commands can be used for the recalled graphic file.
2. The Card Slot <CC> command must be sent prior to this command.

Memory Card

Available for				
	WS4 series			

Clear (Memory card)

ESC+*

HEX code	ESC	*	Parameter
	<1B>16	<2A>16	a(,bbb)
Default setting	None		

Persistence of the command	When printer is powered off	Set parameter will not be retained
	Validity in a job	Becomes invalid after execution
	Validity after a job	Becomes invalid after the job

[Function]

Clears the entire contents in a memory card (option).

[Format]

<*>a

● Parameter

a [Item to be cleared] = T : External characters
(Clears all data of external characters stored with command <T1>, <T2>.

[Format]

<*>a,bbb

● Parameter

a [Item to be cleared] = G : SATO Graphic
(Clears graphic registered with Store Graphic <GI>)
M : BMP file
(Clears BMP file registered with Store BMP File <GT>)
F : Format
(Clears format registered with Store Format <YS>)
R : Form Overlay
(Clears form overlay registered with Store Form Overlay <&S>)

b [Registration number] = Valid range : 000 to 999 (Omissible)
(When omitting Registration number, all the registered data will be cleared.)

[Coding example 1] Clearing external character

<A>
<CC>1
<*>T
<Z>

[Coding example 2] Clearing SATO graphic 001

<A>
<CC>1
<*>G,001
<Z>

[Coding example 3] Clearing all BMP files

<A>
<CC>1
<*>M
<Z>

[Coding example 4] Clearing format 001

<A>
<CC>1
<*>F,001
<Z>

[Coding example 5] Clearing all form overlay

<A>
<CC>1
<*>R
<Z>

[Note]

1. Place this command between the Start Code <A> and the Stop Code <Z> commands.
2. Make sure to specify the slot number with the command <CC> prior to this command.

[Tip]

1. To clear all data of memory card, use the Format Memory Card <FM> command.