80MM THERMAL RECEIPT PRINTER PROGRAMMER MANUAL

Format Description :

The programming manual command description includes the following sections:

1） [Name]

This is the first part of the command descriptions. ASCII code is given command of the form and the function overview of command .

2） [Format]

This section uses the ASCII coding form, Hex code form, Decimal code form of three kinds of formal description of the command. Which part of the range compared to a decimal number no special instructions, such as in the following example $1 \leq n \leq 4$, where 1 is a decimal number, rather than the ASCII code table in "1".

3） [Range]Gives the allowable ranges for the arguments.

4） [Description]Describes the command’s function.

5） [Detail]

The command notice is given. Because commands in different modes, when with different commands, will lead to mutual influence, and this section gives the details.

6） [Reference]Gives the lists of related commands.

---> ESC SP n :Transmit real-time status

---> [Format] ASCII: ESC SP n

Hex: 1B 20 n

Decimal: 27 32 n

---> [Range] $0 \leq n \leq 255$

---> [Description] Transmitted in real time specified by the parameter “n” Printer Status：

---> [Detail] •Immediatelyreturns the printer associated status after receiving the command.

---> [Reference]

HT

[Name] Horizontal tab
[Format]ASCII HT
Hex 09
Decimal 09
[Decription] Moves the print position to the next horizontal tab position.
[Details]
•This command is ignored unless the next horizontal tab position has been set.
• If the next horizontal tab position exceeds the printing area,
the printer setstheprinting position to [Printing area width + 1].
• Horizontal tab positions are set with ESC D.
• If this command is received when the printing position is at [printing area width + 1], the printer executes print buffer-full printing of the current line and horizontal tab processing from the beginning of the next line.
[Reference]ESCD

LF

[Name] Print and line feed
[Format] ASCII LF
Hex 0A
Decimal 10
[Description] Prints the data in the print buffer and feeds one line based on the current linespacing.
[Note] This command sets the print position to the beginning of the line.
[Reference] ESC2，ESC3

DLEDC4nmt

[Name] Real-time pulse generator
[Format] ASCII DLE DC4 n m t
Hex 10 14 n m t
Decimal 16 20 n m t
[Range] n=1,m=0,1
1≤t≤8

[Decription] Output pulse is specified by the parameter t connection pins, “m” show as below：

m	Connect Pins
0	Cash Drawer Connect Pin 2
1	Cash Drawer Connect Pin 5

Pulse high time for[t*100 ms]，low time for [t*100ms]。
[Details]• When the printer is executing a command to open the cash drawer (ESCp or DELDC4), the command is ignored.
• In serial mode, the printer immediately after receiving the order.
• In parallel mode, the printer is busy when the command is not executed.
• If the print data same as the command contains data, the data will be used as the command is executed. The user must take into account this situation.
• Don’t try to insert the command in two or more bytes in the command sequence.
• Even if the printer is set to disabled by the command of ESC = (select peripheral), the order is still valid.
[Reference] ESCp

ESCSPn

[Name] Setting the right side character spacing
[Format] ASCIIESC SP n
Hex1B 20 n

Decimal 27 32 n

[Range] 0≤n≤255

[Description]Setting the right side character spacing for [n¬0.125 mm].

[Note] • For the double-width mode, the right side character spacing is double than the normal mode. When the character is magnified , the right side character spacing is n times than the normalmode.

•This command does not affect the setting of Hanzi characters.

• The command to set the value of independent standard mode in each mode.

[Defaults] n=0

ESC!n

[Name] Select print mode(s)

[Format] ASCII ESC ! n

Hex 1B 21 n

Decimal 27 33 n

[Range] 0≤ n≤ 255

[Description]Selects print mode(s) ,using n as follows:

Bit	OFF/ON	Hex	Decimal	Functions
0	OFF	00	0	Character fontA(12—¬24)。
	ON	01	1	Character fontB(9—¬17)。
1	–	–	–	N/A
2	–	–	–	N/A
3	OFF	00	0	Emphasized mode not selected.
	ON	08	8	Emphasized mode selected.
4	OFF	00	0	Double-height mode not selected.
	ON	10	16	Double-height mode selected.
5	OFF	00	0	Double-width mode not selected.
	ON	20	32	Double-width mode selected.
6	–	–	–	N/A
7	OFF	00	0	Underline mode not selected.
	ON	80	128	Underline mode selected.

[Note] • When both double-height and double-width modes are selected, quadruple sizecharacters are printed.

• The printer can underline all characters, but can not underline the space set by HT or 90° clockwise rotated characters.

•The thickness of the underline is that selected by ESC˜ , regardless of the character size.

• When some characters in a line are double or more height, all the characters on the line are aligned at the baseline.

• ESC E can also turn on or off emphasized mode. However, the setting of the last received command is effective.

• ESC —can also turn on or off underline mode. However, the setting of the last received command is effective

•GS ! can also select character size. However, the setting of the last received command is effective.

• Emphasized mode is effective for alphanumeric and Hanzi. All print modes except emphasized mode is effective only for alphanumeric.

[Defaults] n=0

[Reference] ESC-,ESCE,GS !

ESC$nLnH

[Name] Set absolute print position
[Format] ASCIIESC $ nL nH
Hex1B 24 nL nH
Decimal27 36 nL nH
[Range] 0≤ nL≤ 255
0≤ nH≤ 255
[Description]Sets the distance from the beginning of the line to the position at whichsubsequent characters are to be printed.
•The distance from the beginning of the line to the print position is [(nL + nH * 256) *(vertical or horizontal motion unit)] inches.
[Note] • Settings outside the specified printable area are ignored.
• In standard mode, the horizontal motion unit (x) is used.
[Reference] ESC\, GS $, GS \

ESC%n

[Name]Select/cancel user-defined character set
[Format] ASCIIESC % n
Hex 1B 25 n
Decimal 27 37 n
[Range] 0≤ n≤ 255
[Description]Selects or cancels the user-defined character set.
• When the LSB of n is 0, the user-defined character set is canceled.
•When the LSB of n is 1, the user-defined character set is selected.
[Note]When the user-defined character set is canceled,the internal character set is automatically selected
• n is available only for the least significant bit.
[Defaults] n=0
[Reference] ESC&,ESC?

ESC&yc1c2[x1d1...d(y×x1)].. .[xkd1...d(y×xk)]

[Name] Define user-defined characters
[Format] ASCII ESC & y c1 c2[x1d1...d(y . x1)]...[xkd1...d(y xk)]
Hex 1B 26 yc1 c2[x1d1...d(y . x1)]...[xkd1...d(y xk)]
Decimal 27 38 yc1 c2[x1d1...d(y x1)]...[xkd1...d(y xk)]
[Range] y=3
32 ≤ c1≤ c2≤ 126
0≤ x≤ 12 (12×24)
0≤ x≤ 9 (9×17)
0≤ d1. . . d(y× xk) ≤ 255
[Description]Defines user-definedcharacters.
•y specifies the number of bytes in the vertical direction.
• c1 specifies the beginning character code for the definition, and c2 specifies the final code
• x specifies the number of dots in the horizontal direction.
[Note] • The allowable character code range is from ASCII code <20>H to <7E>H (95characters).
•It is possible to define multiple characters for consecutive character codes.
If only one character is desired, use c1 = c2.
• d is the dot data for the characters. The dot pattern is in the horizontal directionfrom the left side. Any remaining dots on the right side are blank.
• The data to define a user-defined character is (y×x) bytes.

• Set a corresponding bit to 1 to print a dot or 0 to not print a dot.

•This command can define different user-defined character patterns by each fonts. To select a font, use ESC !

• A user-defined character and a downloaded bit image cannot be defined simultaneously. When this command is executed, the downloaded bit image is cleared.

• The user-defined character definition is cleared when:：

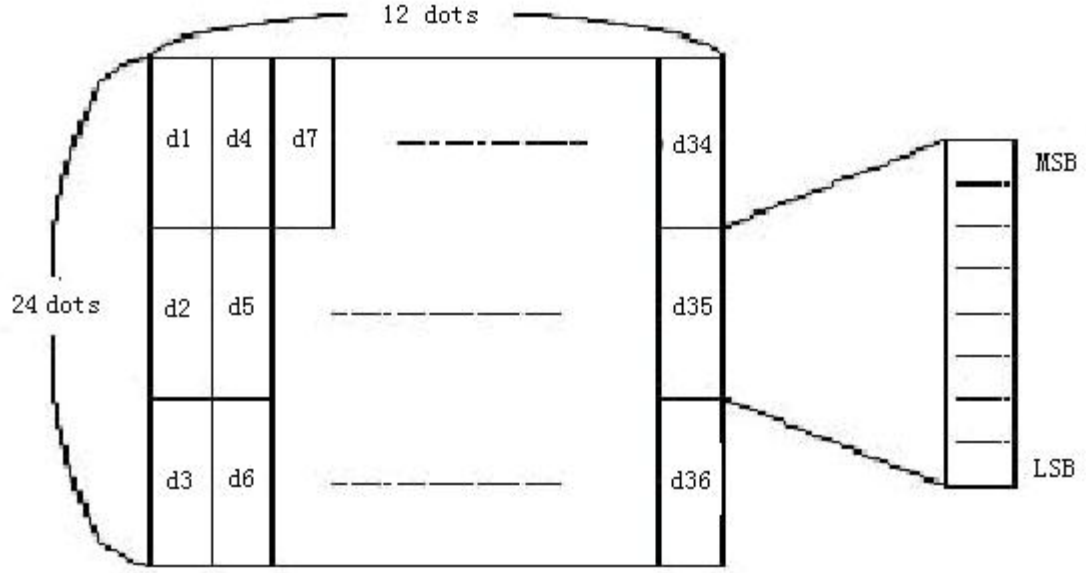
1) ESC @ is executed.
2) ESC ? is executed.
3) ESC? is executed
4) The printer is reset or the power is turned off.

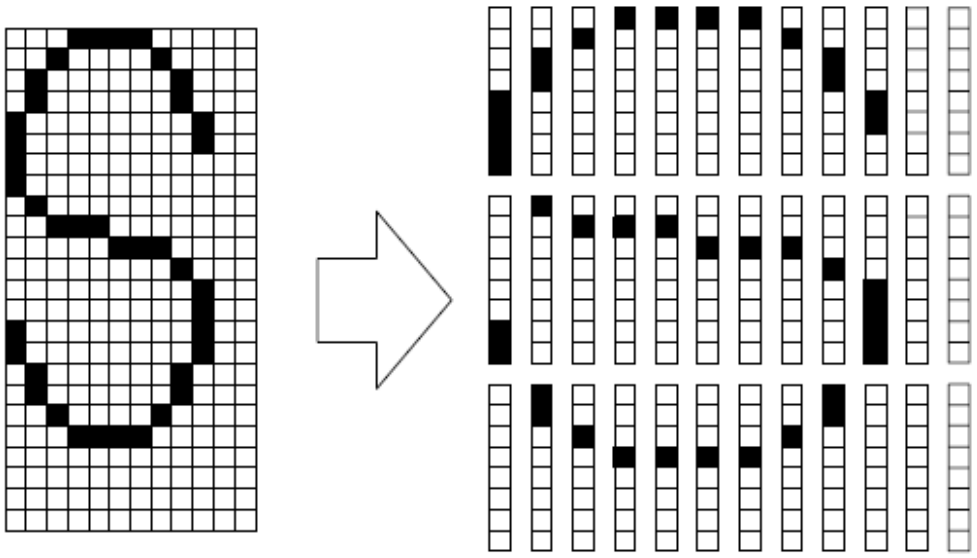
• When the user-defined characters are defined in font B (9 ×17), only the mostsignificant bit of the 3rd byte of data in vertical direction is effective.

[Defaults] The internal character set

[Reference] ESC%,ESC?

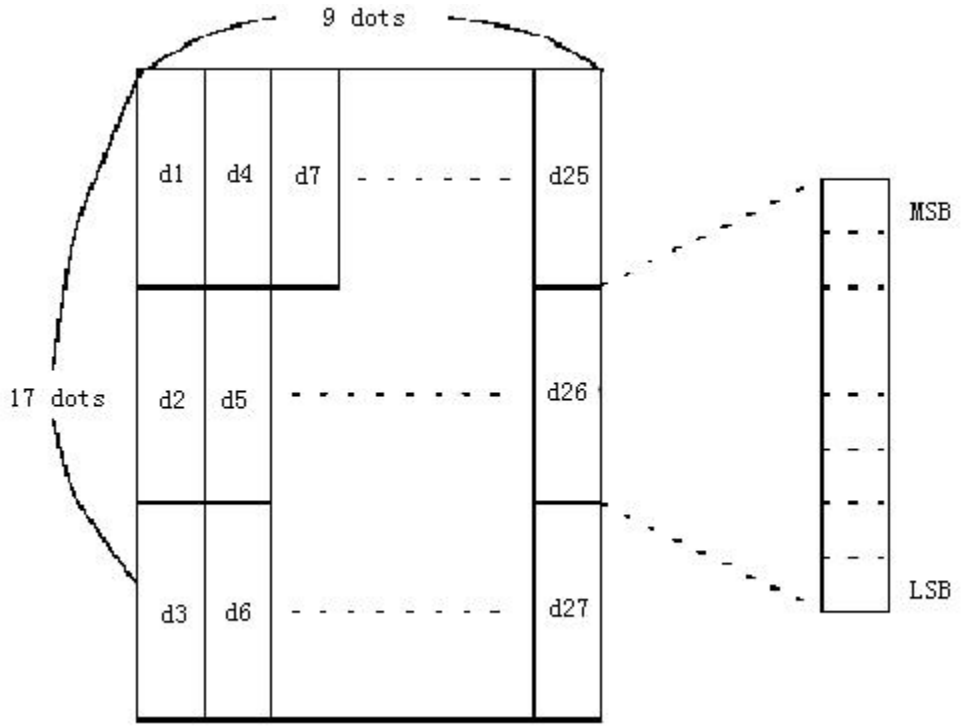
[Example] • When font A(12*24)is selected.

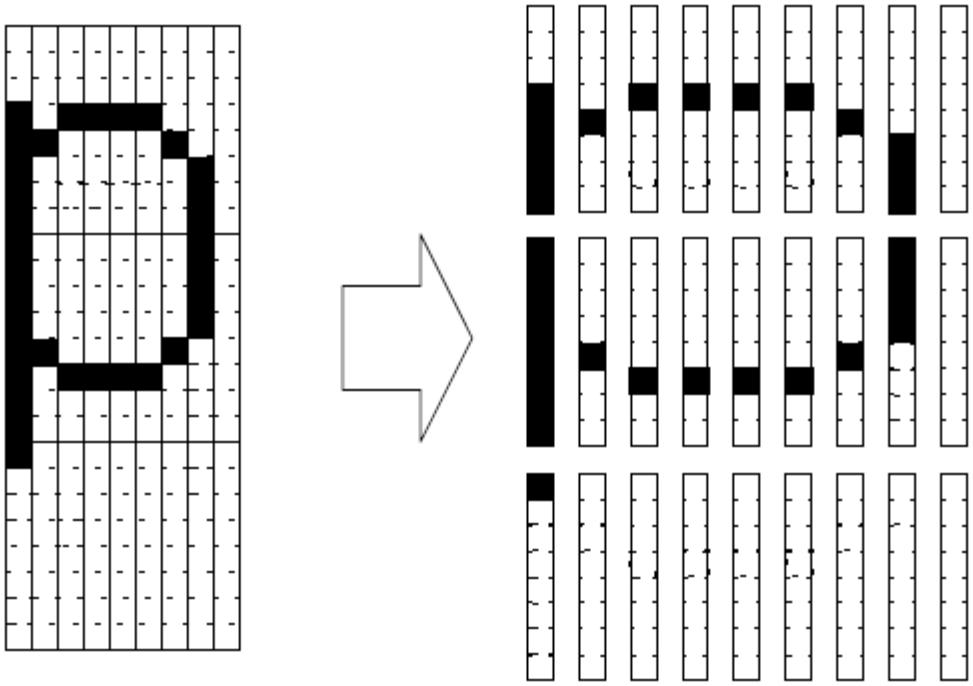




d1=<0F>Hd4=<30>Hd7=<40>H....
d2=<03>Hd5=<80>Hd8=<40>H....
d3=<00>Hd6=<00>Hd9=<20>H....

• When font B(9*17)is selected.





d1=<1F>Hd4= <08>Hd7=<10>H...
d2=<FF>Hd5= <08>Hd8=<04>H...
d3=<80>Hd6=<00>Hd9 =<00>H...

ESC*mnLnHd1...dk

[Name] Select bit-image mode

[Format]

ASCII	ESC	*	m	nL	nH	d1...dk
Hex	1B	2A	m	nL	nH	d1...dk
Decima	127	42	m	nL	nH	d1...dk

[Range] m=0, 1, 32, 33

0≤ nL≤ 255

0≤nH≤ 3

0≤ d≤ 255

[Description] Selects a bit-image mode using m for the number of dots specified by nL and nH,as follows:

m	Mode	Vertical Direction		Horizontal Direction	
		Number of Dots	DotDensity	DotDensity	Number of Data(K)
0	8-dot single-density	8	67.7dpi	101.6dpi	nL +nH*256
1	8-dot double-density	8	67.7dpi	203.2dpi	nL +nH*256
32	24-dot single-density	24	203.2dpi	101.6dpi	(nL+nH*256)*3
33	24-dot double-density	24	203.2dpi	203.2dpi	(nL+nH* 256) *3

dpi:Print dots per 25.4 mm (1inch)

[Note] • If the values of m is out of the specified range, nL and data following are processed as normal data.

nL and nH represents the horizontal upper figure points, calculated by nL + nH256 points.

•If the bit-image data input exceeds the number of dots to be printed on a line,the excess data is ignored.

•d indicates the bit-image data. Set a corresponding bit to 1 to print a dot or to 0to not print a dot.

•If the width of the printing area set by GS L and GS W less than the widthrequired by the data sent with the ESC * command, the following will beperformed on the line in question (but the printing cannot exceed the maximumprintable area):

①The width of the printing area is extended to the right to accommodate theamount of data.

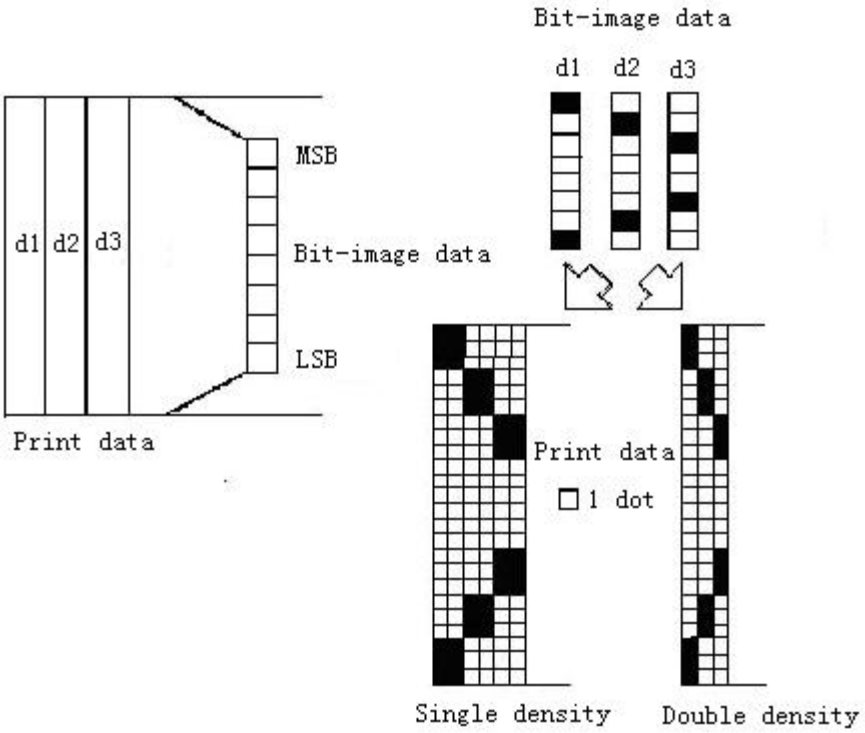
②If step ① does not provide sufficient width for the data, the left margin isreduced to accommodate the data.For each bit in the single density mode (m = 0, 32) of the data, the printer prints two points: For double density mode (m = 1,33) of each bit of data, the printer prints a dot . When calculating the amount of data that can be printed on one line, they must be considered.

• After printing a bit image, the printer returns to normal data processing mode.

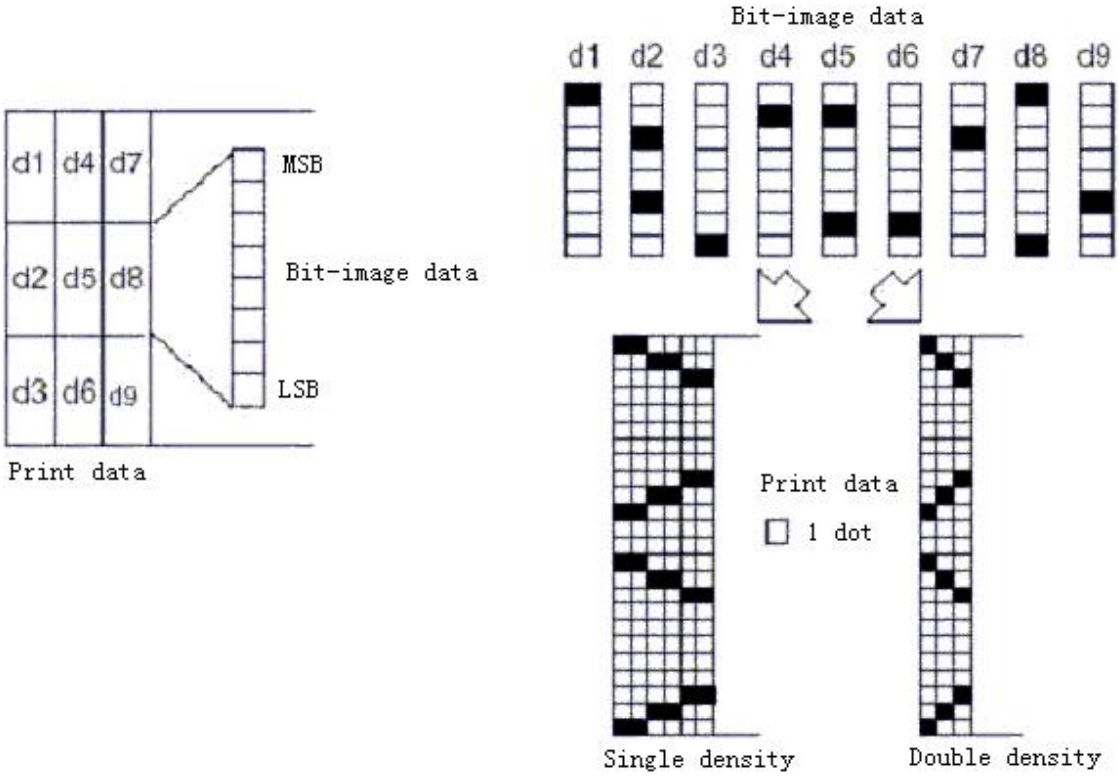
• This command is not affected by print modes (emphasized, double-strike,underline, character size or white/black reverse printing), except upside-downprinting mode.

•The relationship between the image data and the dots to be printed is as follows:

• When 8-dot bit image is selected:



•When 24-dot bit image is selected:



ESC- n

[Name] Turn underline mode on/off

[Format]

ASCII	ESC	-	n
Hex	1B	2D	n
Decimal	27	45	n

[Range] 0≤ n≤ 2, 48≤ n≤ 50

[Description]Turns underline mode on or off, based on the following values of n:

n	Function
0, 48	Turns off underline mode
1, 49	Turns on underline mode (1-dot thick)
2, 50	Turns on underline mode (2-dots thick)

[Note] • The printer can underline all characters (including right-side character spacing), but cannot underline the space set by HT.

- The printer cannot underline 90° clockwise rotated characters and white/blackinverted characters.
- When underline mode id turned off by setting the value of n to 0 or 48, thefollowing data is not underlined, and the underline thickness set before themode is turned off does not change. The default underline thickness is 1 dot.
- Changing the character size does not affect the current underline thickness.
- Underline mode can also be turned on or off by using ESC !. Note, however,that the last received command is effective.

[Defaults] n=0

[Reference] ESC!

ESC2

[Name] Select default line spacing

[Format] ASCII ESC 2

Hex 1B 32

Decimal 27 50

[Description] Select default line spacing for3.75mm(30→0.125mm).

[Note] • The line spacing can be set independently in standard mode and in page mode.

[Reference] ESC3

ESC3n

[Name] Set line spacing

[Format] ASCII ESC 3 n

Hex 1B 33 n

Decimal 27 51 n

[Range] 0≤ n≤ 255

[Description]Set line spacing for[n × 0.125mm].

[Note] • The line spacing can be set independently in standard mode and in page mode.

• In standard mode, the vertical motion unit (y) is used.

[Defaults] n=30

[Reference] ESC2

ESC?n

[Name] Cancel user-defined characters

[Format]ASCIIESC ? n

Hex 1B 3F n

Decimal27 63 n

[Range] 32≤ n≤ 126

[Description] Cancel user-defined characters

[Note] •This command cancels the pattern defined for the character code specified byn. After the user-defined characters is canceled, the corresponding pattern forthe internal character is printed.

• This command deletes the pattern defined for the specified code in the fontselected by ESC !.

• If a user-defined character has not been defined for the specified charactercode, the printer ignores this command.

[Reference] ESC&,ESC%

ESC@

[Name] Initialize printer

[Format] ASCII ESC @

Hex 1B 40

Decimal 27 64

[Description] Clears the data in the print buffer and resets the printer mode to the mode thatwas in effect when the power was turned on.

[Note] • The DIP switch settings are not checked again.

• The data in the receive buffer is not cleared.

• The macro definition is not cleared.

ESCBnt

[Name] Set buzzer
[Format] ASCII ESC B n t
Hex 1B 42 n t
Decimal 27 66 n t
[Description] 1<=n<=9，1<=t<=9
[Details] The buzzer ring when print the order.
•nRefers to the number of buzzer times
•tRefers to the buzzer beeps every few hours (t * 100) milliseconds.

ESCDn1...nk NUL

[Name] Set horizontal tab positions
[Format] ASCIIESC D n1...nk NUL
Hex 1B 44 n1...nk 00
Decimal 27 68 n1...nk 0
[Range] 1≤ n≤ 255
0≤ k≤ 32
[Description] Set horizontal tab positions。
• nspecifies the column number for setting a horizontal tab position from thebeginning of the line.
• k indicates the total number of horizontal tab positions to be set.
[Note] • The horizontal tab position is stored as a value of [character width * n]measured from the beginning of the line. The character width includes theright-side character spacing, and double-width characters are set with twice thewidth of normal characters
• This command cancels the previous horizontal tab settings.
• When setting n = 8, the print position is moved to column 9 by sending HT.
• Up to 32 tab positions (k = 32) can be set. Data exceeding 32 tab positions isprocessed as normal data.
• When [n] k is less than or equal to the preceding value [n] k-1, tab setting isfinished and the following data is processed as normal data.
• ESC D NUL cancels all horizontal tab positions.
•The previously specified horizontal tab positions do not change, even if thecharacter width changes.
• The character width is memorized for each standard and page mode.
[Defaults]The default tab positions are at intervals of 8 characters (columns 9, 17, 25,...) forfont A (12 ×24).
[Reference] HT

ESCEn

[Name] Turn emphasized mode on/off
[Format] ASCII ESC E n
Hex 1B 45 n
Decimal 27 69 n
[Range] 0≤ n≤ 255
[Description] Turn emphasized mode on/off。
- When the LSB of n is 0, emphasized mode is turnedoff.
- When the LSB of n is1, emphasized mode is turned on.

[Note]• Only the least significant bit of n is enabled.
•This command and ESC ! turn on and off emphasized mode in the same way.
Be careful when this command is used with ESC !.
[Defaults] n=0
[Reference] ESC!

ESCGn

[Name] Turn on/off double-strike mode
[Format] ASCIIESCG n
Hex 1B 47 n
Decimal27 71 n
[Range] 0≤ n≤ 255
[Description]Turn on/off double-strike mode
• When the LSB of n is 0, double-strike mode is turned off.
• When the LSB of n is 1, double-strike mode is turned on.
[Note] Only the lowest bit of n is enabled.
•Printer output is the same in double-strike mode and in emphasized mode.
[Defaults] n=0
[Reference]ESCE

ESCJn

[Name] Print and feedpaper

[Format]	ASCII	ESC	J	n
	Hex	1	4A	n
	Decimal	2	74	n

[Range] 0≤ n≤ 255

[Description]Prints the data in the print buffer and feeds the paper [n * vertical or horizontalmotion unit] inches.

[Note] • After printing is completed, this command sets the print starting position to thebeginning of the line.
• The paper feed amount set by this command does not affect the values set byESC 2 or ESC 3.
•In standard mode, the printer uses the vertical motion unit (y).

ESCMn

[Name] Select character font

[Format]	ASCII 码	ESC	M	n
	十六进制码	1B	4D	n
	十进制码	27	77	n

[Range] n=0, 1, 48, 49
[Description] Select character font

n	Function
0, 48	Character font A (12 * 24) selected.
1, 49	Character font B (9 * 17) selected.

[Note]• ESC! can also select the font type. But last received command settings made effective.
[Reference]ESC!

ESCVn

[Name] Turn 90° clockwise rotation mode on/off

[Format]

ASCII	ESC	V	n
Hex	1B	56	n
Decimal	27	86	n

[Range] 0≤ n≤ 1, 48≤ n≤ 49

[Description] Turn 90° clockwise rotation mode on/off

n is used as below:

n	Function
0, 48	Turns off 90° clockwise rotation mode
1, 49	Turns on 90° clockwise rotation mode

[Note] • This command affects printing in standard mode. However, the setting isalways effective.

• When underline mode is turned on, the printer does not underline 90° clockwise-rotated.

• Double-width and double-height commands in 90° rotation mode enlargecharacters in the opposite directions from double-height and double-widthcommands in normal mode.

[Defaults] n=0

[Reference] ESC!, ESC-

ESC\nLnH

[Name] Set relative print position

[Format] ASCII ESC \ nLnH

Hex 1B 5C nLnH

Decimal 27 92nLnH

[Range] 0≤ nL≤ 255

0≤ nH≤ 255

[Description]Sets the print starting position based on the current position by using thehorizontal or vertical motion unit.

• This command sets the distance from the current position to [(nL + nH * 256) * horizontal or vertical motion unit]

[Note] • Any setting that exceeds the printable area is ignored.

•When pitch N is specified to the right:

nL+ nH * 256 = N

When pitch N is specified to the left (the negative direction), use the complement of 65536.

• In standard mode, the horizontal motion unit is used.

[Reference] ESC$

ESCan

[Name] Select justification

[Format]

ASCII	ESC	a	n
Hex	1B	61	n
Decimal	27	97	n

[Range] 0≤ n≤ 2, 48≤ n≤ 50

[Description]Aligns all the data in one line to the specified position

n select the justification as follow:

n	Justification

0, 48	Left justification
1, 49	Centering
2, 50	Right justification

[Note] • The command is enabled only when processed at the beginning of the line instandard mode.
• This command executes justification in the printing area.
• This command justifies the space area according to HT, ESC $ or ESC \.

[Defaults] n=0

ESCc5n

[Name] Enable/disable panel buttons
[Format] ASCIIESC c 5 n
Hex 1B 63 35 n
Decimal27 99 53 n
[Range] 0≤ n≤ 255
[Description] Enable/disable panel buttons。
• When the LSB of n is 0, the panel buttons are enabled.
• When the LSB of n is 1, the panel buttons are disabled.
[Note] •Only the lowest bit of n is valid.
• When the panel buttons are disabled, none of them are usable when the printercover is closed.
• In this printer, the panel buttons are the FEED button.
• In the macro ready mode, the FEED button are enabled regardless of thesettings of this command; however, the paper cannot be fed by using thesebuttons.
[Defaults] n=0

ESCdn

[Name] Print and feed n lines
[Format] ASCIIESC d n
Hex 1B 64 n
Decimal 27 100 n
[Range] 0≤ n≤ 255
[Description] Prints the data in the print buffer and feeds n lines.
[Note] • This command sets the print starting position to the beginning of the line.
•This command does not affect the line spacing set by ESC 2 or ESC 3.
•The maximum paper feed amount is 1016 mm (40 inches).
If the paper feedamount (nx line spacing) of more than 1016 mm (40 inches) isspecified,Theprinter feeds the paper only 1016 mm (40 inches).
[Reference] ESC2, ESC3

ESCpmt1t2

[Name] Generate pulse
[Format] ASCIIESC p m t1t2
Hex1B 70 m t1t2
Decimal 27 112 m t1t2
[Range] m=0, 1, 48, 49
0≤ t1≤ 255
0≤ t2≤ 255
[Description]Sends a pulse to the specifiedconnection pins.
On time=t1x2millisecond
Off time=t2x2millisecond

m =0/48 Drawer kick-out connector pin 2.
M=1/49 Drawer kick-out connector pin 5.

ESCtn

[Name] Select character code table

[Format]	ASCII	ESC	t	n
	Hex	1B	74	n
	Decimal	27	116	n

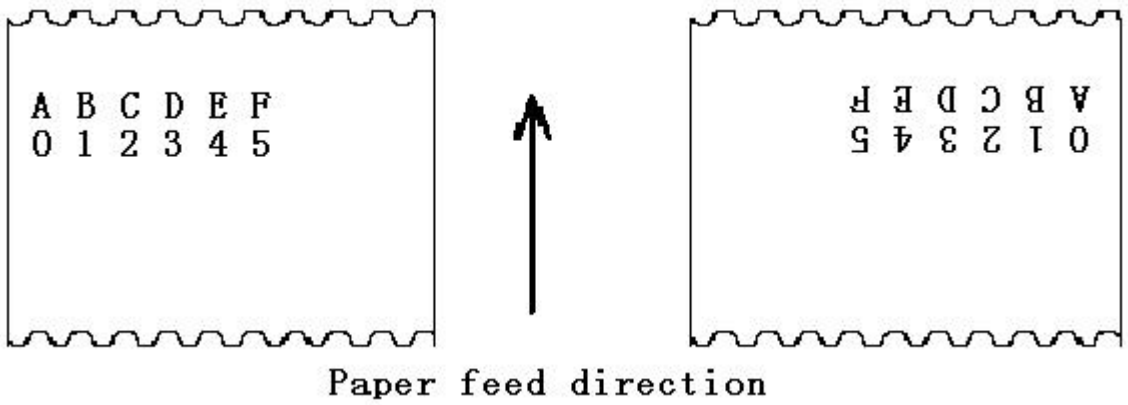
[Range] 0≤ n≤ 5, 16≤ n≤ 19, n=255
[Description]Selects a page n from the character code table.
[Defaults]n=0
[Reference]Character Code Table

ESC{n

[Name] Turns on/off upside-down printing mode
[Format] ASCIIESC{ n
Hex1B 7Bn
Decimal27 123n
[Range] 0≤ n≤ 255
[Description]Turns on/off upside-down printing mode
- When the LSB of n is 0, upside-down printing mode is turned off.
- When the LSB of n is 1, upside-down printing mode is turned on.

[Note]
- Only the lowest bit of n is valid.
- This command is enabled only when processed at the beginning of a line instandard mode.
- In upside-down printing mode, the printer rotates the line to be printed by 180°and then prints it.

[Defaults]n=0
[Example]



ESCi

[Name] Part Cutter
[Format] ASCII ESCi
Hex 1B 69
Decimal 27 105
[Description]Select Cut mode and half cut

ESCm

[Name] Partial Cut

[Format] ASCII ESC m
Hex 1B 6D
Decimal 27 109
[Description]Select Cut mode and half cut

FSpnm

[Name] Print NV bit image

[Format] ASCII FS p n m
Hex 1C 70 n m
Decimal 28 11 n m

[Range] 1≤ n≤ 255
0≤ m≤ 3, 48≤ m≤ 51

[Description] Prints a NV bit image n using the mode specified by m.

m	Mode	Vertical DotDensity	Horizontal Dot Density
0，48	Normal	203.2dpi	203.2dpi
1，49	Double-width	203.2dpi	101.6dpi
2，50	Double-height	101.6dpi	203.2dpi
3，51	Quadruple	101.6dpi	101.6dpi

dpi: dots per 25.4 mm {1"}

- n is the number of the NV bit image (defined using the FS q command).
- m specifies the bit image mode.

[Note] • NV bit image means a bit image which is defined in a non-volatile memory byFS q and printed by FS p.

- This command is not effective when the specified NV bit image has not been defined.
- In standard mode, this command is effective only when there is no data in the print buffer.
- Thiscommand is not affected by print modes (emphasized, double-strike,underline,character size, white/black reverse printing, or 90° rotated characters, etc.),except upside-down printing mode.
- If the printing area width set by GS L and GS W for the NV bit image is less than onevertical line, the following processing is performed only on the line in question. However,in NV bit image mode, one vertical line means 1 dot in normal mode (m=0, 48) and indouble-height mode (m=2, 50), and it means 2 dots in double-width mode (m=1, 49) andin quadruple mode(m=3, 51).

①The printing area width is extended to the right in NV bit image mode up to one linevertically. In this case, printing does not exceed the printable area.

②If the printing area width cannot be extended by one line vertically, the left margin isreduced to accommodate one line vertically.

- If the downloaded bit-image to be printed exceeds one line, the excess data is notprinted.
- This command feeds dots (for the height n of the NV bit-image) in normal anddouble-widthmodes, and (for the height n × 2 of the NV bit-image) in double-height andquadruple modes,regardless of the line spacing specified by ESC 2 or ESC 3.
- After printing the bit image, this command sets the print position to the beginning of thelineand processes the data that follows as normal data.

[Reference] ESC*, FS q, GS /, GS v0

FSqn[xLxHyL yHd1...dk]$_1$... [xLxHyLyHd1...dk]$_n$

[Name] Define NV bit image

[Format] ASCII FS q n [xL xH yL yHd1...dk]1...[xLxH yLyH d1...dk]n

Hex 1C 71n [xLxHyLyHd1...dk]1...[xLxHyLyH d1...dk]n

Decimal 28 113n [xLxHyLyHd1...dk]1...[xLxHyLyH d1...dk]n

[Range] 1≤ n≤ 255

0≤ xL≤ 255

0≤ xH≤ 3 (当 1≤ (xL+ xH× 256) ≤ 1023

0≤ yL≤ 255

0≤ yH≤ 1 (当 1≤ (yL+ yH× 256) ≤ 288

0≤ d≤ 255

k=(xL+ xH× 256) × (yL+ yH× 256) × 8

Total defined data area =192K bytes

[Description]Define the NV bit image specified by n .

- n specifies the number of the defined NV bit image.
- xL, xH specifies (xL + xH × 256) × 8 dots in bitimage you are defining.
- yL, yH specifies (yL + yH × 256) × 8 dots in imageyou are defining.

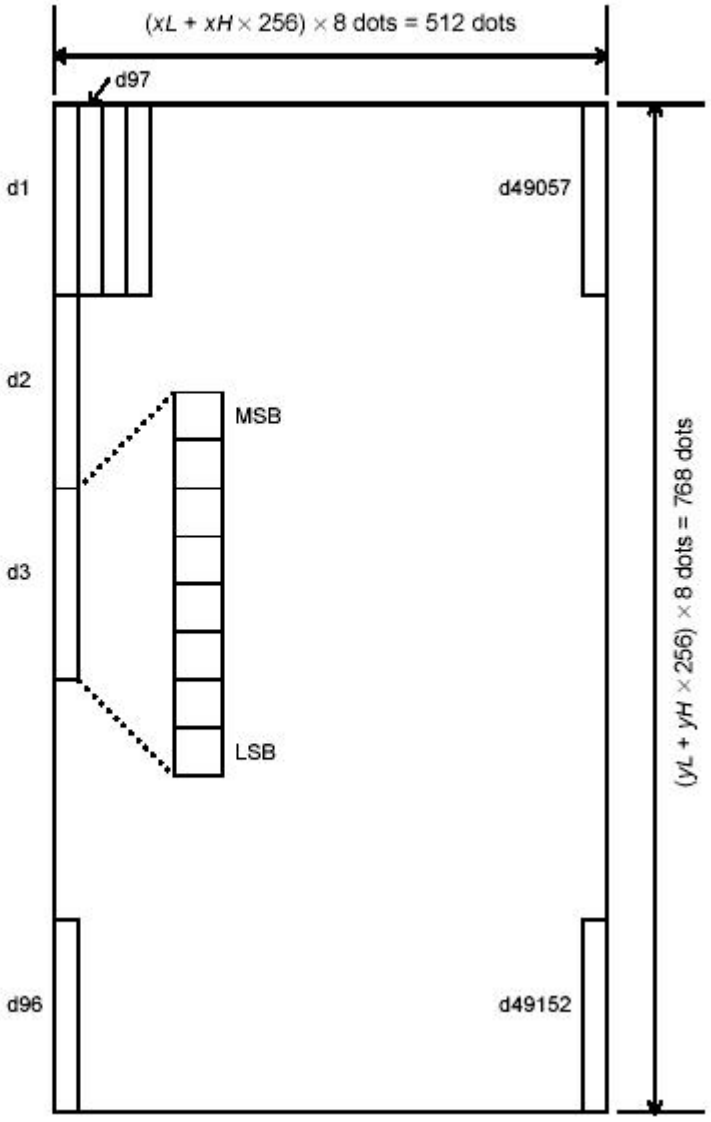
[Note]

- Frequently write command may be damaged NV memory. Therefore, it is recommended to perform no more than 10 times a day, write the NV memory.
- After put an image into NV memory process, the printer performs a hardware reset the user-defined characters, download bitmap and macros should be defined after the completion of the command. Printer Clear receive and print buffer and resets when power efficient model. At this time switch is DIP check again. (Does not support hardware reset interface)
- This command cancels all been defined with this command NV bitmap.
- From the beginning of the processing of this command till the finish of hardwarereset,mechanical operations (including initializing the position of the printer head whenthe cover is open, paper feeding by using the FEED button, etc.) cannot be performed.
- During processing this command, the printer is in BUSY when writing the data to the NV user memory and stops receiving data. Therefore it is prohibit ted to transmit the data including the real-time commands during the execution of this command。
- NV bit image means a bit image which is defined in a non-volatile memory by FS q andprinted by FS p.
- In standard mode, this command is effective only when processed at the beginning ofthe line.
- This command is effective when 7 bytes <FS yH> is processed as a normal value.
- When the amount of data exceeds the capacity left in the range defined by xL, xH, yL,yH, the printer processes xL, xH, yL, yH out of the defined range.
- In the first group of NV bit images, when any of the parameters xL, xH, yL, yH is out of thedefinition range, this command is disabled.
- In groups of NV bit images other than the first one, when the printer processes xL, xH, yL,yH out of the defined range, it stops processing this command and starts writing into theNV images. At this time, NV bit images that haven¡¯t been defined are disabled(undefined), but any NV bit images before that are enabled.
- The d indicates the definition data. In data (d) a 1 bit specifies a dot to be printed and a 0bit specifies a dot not to be printed.
- This command defines n as the number of a NV bit image. Numbers rise in order from NVbit image 01H. Therefore, the first data group [xL xH yL yH d1...dk] is NV bit image 01H,and the last data group [xL xH yL yH d1...dk] is NV bit image n. The total agrees with thenumber of NV bit images specified by command FS p.

- A definition data of a NV bit image consists of [xL xH yL yH d1...dk]. Therefore, when onlyone NV bit image is defined n=1, the printer processes a data group [xL xH yL yHd1...dk] once. The printer uses ([data: (xL + xH × 256) × (yL + yH × 256) × 8]+ [header:4])bytes of NV memory.
- The definition area in this printer is a maximum of 192K bytes. This commandcan define several NV bit images, but cannot define a bit image data whose totalcapacity [bit image data + header] exceeds 192K bytes.
- Even setting the ASB, during the processing of the commandthe printer is not transmitted ASB status or execution status detection.
- When this command is received during macro definition, the printer ends macrodefinition,and begins performing this command.
- Once a NV bit image is defined, it is not erased by performing ESC @, reset, and poweroff.
- This command performs only definition of a NV bit image and does not performprinting.Printing of the NV bit image is performed by the FS p command.

[Reference] FS p

[Example] When *xL* = 64, *xH* = 0, *yL* = 96, *yH* = 0



GS!n

[Name] Set character size

[Format] ASCII GS ! n
Hex 1D 21 n
Decimal 29 33 n

[Range] 0≤n≤ 255

(1≤vertical number of times≤8, 1 ≤horizontal number of times ≤8)

[Description] Selects the character height using bits 0 to 2 and selects the character width usingbits 4 to 7, as follows:

Bit	OFF/ON	Hex	Decimal	Function
0	Character height selection. See Table 2.			
1				
2				
3				
4	Character width selection. See Table 1.			
5				
6				
7				

Table1:Character width selection

Hex	Decimal	Width
00	0	1(Normal)
10	16	2(Double-width)
20	32	3
30	48	4
40	64	5
50	80	6
60	96	7
70	112	8

Table 2:Character height selection

Hex	Decimal	Height
00	0	1(Normal)
01	01	2(Double-height)
02	02	3
03	03	4
04	04	5
05	05	6
06	06	7
07	07	8

[Note] • This command is all characters (alphanumeric and Kanji) effective except for HRI characters.

- If n is outside of the defined range, this command is ignored.
- In standard mode, the vertical direction is the paper feed direction, and thehorizontal direction is perpendicular to the paper feed direction. However,when character orientation changes in 90° clockwise-rotation mode, therelationship between vertical and horizontal directions is reversed.
- When characters are enlarged with different sizes on one line, all the characters on the line are aligned at the baseline.
- The ESC ! command can also turn double-width and double-height modes onor off. However, the setting of the last received command is effective.

[Defaults] n=0

[Reference] ESC!

GSBn

[Name] Turn white/black reverse printing mode

[Format] ASCIIGS B n
Hex 1D 42 n
Decimal 2966 n

[Range] 0≤ n≤ 255

[Description] Turn white/black reverse printing mode。

- When the LSB of n is 0, white/black reverse mode is turned off.
- When the LSB of n is 1, white/black reverse mode is turned on.

[Note]
- Only the lowest bit of n is valid.
- This command is available for built-in characters and user-defined characters.
- When white/black reverse printing mode is on, it also applied to characterspacing set by ESC SP.
- This command does not affect bit image, user-defined bit image, bar code, HRIcharacters, and spacing skipped by HT, ESC $, and ESC \.
- This command does not affect the space between lines.
- White/black reverse mode has a higher priority than underline mode. Even ifunderline mode is on, it is disabled (but not canceled) when white/black reversemode is selected

[Defaults] n=0

GSHn

[Name] Select printing position for HRI characters

[Format] ASCIIGS H n

Hex 1D48n

Decimal 29 72 n

[Range] 0≤ n≤ 3, 48≤ n≤ 51

[Description]Selects the printing position of HRI characters when printing a bar code.

n select printing position as follow:

n	Printing position
0, 48	Not printed
1, 49	Above the bar code
2, 50	Below the bar code
3, 51	Both above and below the bar code

- HRI indicates Human Readable Interpretation.

[Note]
- HRI characters are printed using the font specified by GS f.

[Defaults] n=0

[Reference] GS f,GS k

GSLnLnH

[Name] Set left margin

[Format] ASCIIGS L nLnH

Hex1D 4C nLnH

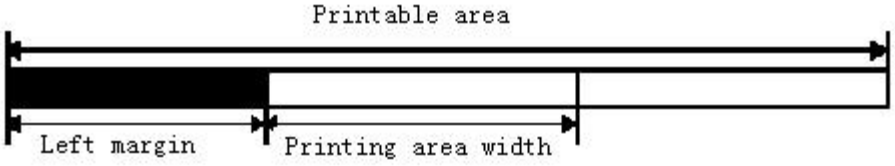
Decimal 29 76 nLnH

[Range] 0≤ nL≤ 255

0≤ nH≤ 255

[Description] Sets the left margin using nL and nH.

- The left margin is set to[(nL+nH—256)—0.125mm]。



[Note]
- This command is effective only processed at the beginning of the line instandard mode.
- If the setting exceeds the printable area, the maximum value of the printablearea is used.

[Defaults] nL=0,nH=0
[Reference] GS W

①GSVm②GSVm n

[Name] Select cut mode and cut paper
[Format] ①ASCIIGS V m
Hex 1D56 m
Decimal 29 86 m
②ASCIIGS V mn
Hex1D 56 m n
Decimal29 86 m n
[Range] ①m=1, 49
②m=66, 0≤ n≤ 255
[Description]Selects a mode for cutting paper and executes paper cutting. The value of m，
Select the mode as follow：

m	Print Mode
1，49	Partial cut (one point left uncut)
66	Feeds paper (cutting position + [n *(vertical motion unit)]), and cuts the paper partially(one point left uncut).

[Notice for ①and②]
•Cutting state are different depending on automatically loaded cutter types.
• This command is effective only processed at the beginning of a line.
[Notice for①]•Only the partial cut is available; there is no full cut.
[Notice for②]
•When n = 0, the printer feeds the paper to thecutting position and cuts it.
•When n = 0, the printer feeds the paper to (cutting position + [n *verticalmotion unit]) and cuts it.

GSfn

[Name] Select font for Human Readable Interpretation (HRI) characters
[Format] ASCIIGSf n
Hex1D66 n
Decimal 29 102n
[Range] n□ 0,1,48,49
[Description]Selects a font for the HRI characters used when printing a bar code.
n selects a font from the following table:

n	Font
0, 48	Font A(12*24)
1, 49	Font B(9*17)

[Note] • HRI indicates Human Readable Interpretation.
• HRI characters are printed at the position specified by GS H.
[Defaults] n=0
[Reference] GS H,GS k

GShn

[Name] Setting the bar code height

[Format]

ASCII	GS	h	n
Hex	1D	68	n
Decimal	29	104	n

[Range] 1≤ n≤ 255

[Description]Selects the height of the bar code.
n specifies the number of dots in the vertical direction.

[Defaults] n=162
[Reference] GS k

①GSkmd1...dkNUL②GSkmn d1...dn

[Name] Print barcode

[Format]

①ASCII	GS	k	m	d1...dk	NUL
Hex	1D	6B	m	d1...dk	00
Decimal	29	107	m	d1...dk	0
②ASCII	GS	k	m	n	d1...dn
Hex	1D	6B	m	n	d1...dn
Decimal	29	107	m	n	d1...dn

[Range]①0≤ m≤ 6 (k and d depends on the bar code system used)
②65 ≤ m≤ 73(n and d depends on the bar code system used)
[Description] Selects a bar code system and prints the bar code.
m select a bar code system as below:

m		Bar code system	Number of Characters	Remarks
①	0	UPC-A	11≤k≤ 12	48≤ d≤ 57
	1	UPC-E	11≤ k≤ 12	48≤ d≤ 57
	2	JAN13(EAN13)	12≤ k≤ 13	48≤ d≤ 57
	3	JAN8(EAN8)	7≤ k≤ 8	48≤ d≤57
	4	CODE39	1≤ k′	48≤ d≤ 57, 65≤ d≤ 90, 32, 36, 37, 43, 45, 46, 47
	5	ITF	1≤ k(even-number)	48≤ d≤ 57
	6	CODABAR	1≤ k′	48≤ d≤ 57, 65≤ d≤ 68, 36, 43, 45, 46, 47, 58
②	65	UPC-A	11≤ n≤ 12	48≤ d≤ 57
	66	UPC-E	11≤n≤ 12	48≤ d≤ 57
	67	JAN13(EAN13)	12≤n ≤ 13	48≤ d≤ 57
	68	JAN8(EAN8)	7≤ n≤ 8	48≤ d≤ 57
	69	CODE39	1≤ n≤ 255	48≤ d≤ 57, 65≤ d≤ 90, 32, 36, 37, 43, 45, 46, 47
	70	ITF	1≤ n≤ 255(even number)	48≤ d≤ 57
	71	CODABAR	1≤ n≤ 255	48≤ d≤ 57, 65≤ d≤ 68, 36, 43, 45, 46, 47, 58
	72	CODE93	1≤ n≤ 255	0≤ d≤ 127
	73	CODE128	2≤ n≤ 255	0≤ d≤ 127

[Note①]

[Note②]

- This command ends with a NUL code.
- When the bar code system used is UPC-A or UPC-E, the printer prints the bar code data afterreceiving 12 bytes bar code data and processes the following data as normal data.
- When the bar code system used is JAN13 (EAN13), the printer prints the bar code afterreceiving 13 bytes bar code data and processes the following data as normal data.
- When the bar code system used is JAN8 (EAN8), the printer prints the bar code afterreceiving 8 bytes bar code data and processes the following data as normal data.
- The number of data for ITF bar code must be even numbers. When an odd number of datais input, the printer ignores the last received data.

- n indicates the number of bar code data, and the printer processes n bytes from the nextcharacter data as bar code data.
- If n is outside of the specified range, the printer stops command processing and processesthe following data as normal data.

［Notice for standard mode］

- If d is outside of the specified range, the printer only feeds paper and processes the followingdata as normal data.
- If the horizontal size exceeds printing area, the printer only feeds the paper.
- This command feeds as much paper as is required to print the bar code, regardless of theline spacing specified by ESC 2 or ESC 3.
- This command is enabled only when no data exists in the print buffer. When data exists inthe print buffer, the printer processes the data following m as normal data.
- After printing bar code, this command sets the print position to the beginning of the line.

•This command is not affected by print modes (emphasized, double-strike, underline,character size, white/black reverse printing, or 90° rotated character, etc.), except forupside-down printing mode.。

When using a thermal label:

- If the bar code height is not suitable for the current label, the excess part of the printing on the next label.

When using CODE93 (m = 72):

- The printer prints an HRI character (□) at the beginning of a string of HRI, as the starting HRI character string.
- The printer prints an HRI character (□) at the end of the HRI character string as a string termination character HRI.
- The printer prints HRI characters （■ + a literal character) as acontrol character (<00> H to <1F> HAnd <7F> H):

- When this printer uses CODE128, please consider the following factors regarding data transfer:

①Barcode data string head shall be required to select the character set encoding (CODEA, CODEB, orCODEC), is used to select the code set used first.

②Combining characters "{" and a character to define the special characters. By continuously transferred twice, "{" is defined ASCII character "{."

Special characters	Transmission of data		
	ASCII	Hex	Decimal
SHIFT	{S	7B, 53	123, 83
CODEA	{A	7B, 41	123, 65
CODEB	{B	7B, 42	123, 66
CODEC	{C	7B, 43	123, 67
FNC1	{1	7B, 31	123, 49
FNC2	{2	7B, 32	123, 50
FNC3	{3	7B, 33	123, 51
FNC4	{4	7B, 34	123, 52
″{″	{{	7B, 7B	123, 123

[Sample] Print "No.123456" instance data

In this example, the printer Print "No."with CODEB first, then printing with CODEC following figures.

GS k73 09781114631 32 33 34 35 36

- If the head of the bar code data string is not coded character set selection, the

printer stops command processing,and subsequent data processing as normal data.

- If the combination "{" and subsequent characters do not apply to any special characters, the printer stops command processing, and subsequent data as normal data.
- If the printer receives a specially coded character set can not be used, the printer stops command processing, and subsequent data as normal data.
- The printer does not print and shift characters or code set to select the appropriate character HRI characters.
- HRI character is the character of the functional spaces.
- Control characters (<00> H to <1F> H and <7F> H) of HRI characters are spaces.

〈Others〉 Confirm reservations about barcode spacing. (Depending on the type of pitch is also different barcode)

[Reference] GS H、GSf、GS h、GSw

GSv0mxLxHyLyHd1....dk

[Name] Print raster bitmap

[Format]

ASCII	GS	v	0	m	xL	xH	yL	yH	d1...dk
Hex	1D	76	30	m	xL	xH	yL	yH	d1...dk
Decimal	29	118	48	m	xL	xH	yL	yH	d1...dk

[Range] 0≤ m≤ 3, 48 ≤ m≤ 51

0≤ xL≤ 255

0≤ xH≤ 255 =>when 1≤ (xL+xH—256)≤ 128

0≤ yL≤ 255

0≤ yH≤ 8 =>when 1≤ (yL+yH—256)≤ 4095

0≤ d≤255

k=(xL+xH—256)—(yL+yH—256) (k≠ 0)

[Description]Setting raster bitmap mode. m value setting mode as follows:

m	Mode	Vertical DotDensity	Horizontal Dot Density
0，48	Normal	203.2dpi	203.2dpi
1，49	Double-width	203.2dpi	101.6dpi
2，50	Double-height	101.6dpi	203.2dpi
3，51	Quadruple	101.6dpi	101.6dpi

(dpi: dots per 25.4 mm {1"})

[Note]• xL, xH, select the number of data bits (xL+ xH´256) in the horizontal direction for the bitimage.

- yL, yH, select the number of data bits (yL+ yH´256) in the vertical direction for the bitimage.
- In standard mode, this command is effective only when there is no data in theprint buffer.
- This command has no effect in all print modes (character size, emphasized,double-strike, upside-down, underline, white/black reverse printing, etc.) forraster bit image
- If the printing area width set by GS L and GS W is less than the minimum width,the printing area is extended to the minimum width only on the line in question.The minimum width means 1 dot in normal (m=0, 48) and double-height (m=2,50), 2 dots in double-width (m=1, 49) and quadruple (m=3, 51) modes.
- Data outside the printing area is read in and discarded on a dot-by-dot basis.
- The position at which subsequent characters are to be printed for raster bit image is specified by HT (Horizontal Tab), ESC $ (Set absolute print position),ESC \ (Set relative print position), and GS L (Set left margin). If the position atwhich subsequent characters are to be printed is not a multiple of 8, print speedmay decline.
- The ESC a (Select justification) setting is also effective on raster bit images.

- When this command is received during macro definition, the printer ends macrodefinition, and begins performing this command. The definition of thiscommand should be cleared.
- d indicates the bit-image data. Set time a bit to 1 prints a dot and setting it to 0does not print a dot.

GSwn

[Name] Set bar code width

[Format] ASCII GS w n
Hex 1D 77 n
Decimal 29 119 n

[Range] 2≤ n≤ 6

[Description] Set the horizontal size of the bar code.
n set the bar code width as below:

n	Module Width (mm) for Multi-level Bar Code	Binary-level bar codes	
		Thin element width (mm)	Thick element width(mm)
2	0.250	0.250	0.625
3	0.375	0.375	1.000
4	0.560	0.500	1.250
5	0.625	0.625	1.625
6	0.750	0.750	2.000

- Multi-level bar codes are as follows:
  UPC-A, UPC-E, JAN13(EAN13), JAN8(EAN8), CODE93, CODE128
- Binary-level bar codes are as follows:
  CODE39, ITF, CODABAR

[Defaults] n=3
[Reference] GS k

GSxn

[Name] Setting the left pitch of Bar Code Printing
[Format] ASCII GS xn
Hex1D 78 n
Decimal29 120 n
[Description]Print barcodes starting position is:0→255

FS!n

[Name] Set print mode(s) for Hanzi characters
[Format] ASCIIFS!n
Hex 1C 21 n
Decimal 28 33 n
[Range] 0≤ n≤ 255
[Description] Sets the print mode for Hanzi characters, using n as follows:

Bit	OFF/ON	Hex	Decimal	ASB Status
0	—	—	—	N/A
1	—	—	—	N/A
2	OFF	00	0	Double-width mode is OFF.
	ON	04	4	Double-width mode is ON.
3	OFF	00	0	Double-height mode is OFF.

	ON	08	8	Double-height mode is ON.
4	—	—	—	N/A
5	—	—	—	N/A
6	—	—	—	N/A
7	OFF	00	0	Underline mode is OFF.
	ON	80	128	Underline mode is ON.

[Note]• When both double-width and double-height modes are set (including right- andleft-side character spacing), quadruple-size characters are printed.

- The printer can underline all characters (including right- and left-side characterspacing), but cannot underline the space set by HT and 90° clockwise-rotatedcharacters.
- The thickness of the underline is that specified by FS ~, regardless of thecharacter size.
- When some of the characters in a line are double or more height, all thecharacters on the line are aligned at the baseline.
- It is possible to emphasize the Hanzi character usingGS !, the settingof the last received command is effective.
- It is possible to turn under line mode on or off using FS ~, and the setting of thelast received command is effective.

[Defaults] n=0

[Reference]FS -,GS !

FS&

[Name] Select Hanzi character mode

[Format] ASCIIFS &

Hex1C26

Decimal 28 38

[Description] Select Hanzi character mode

[Note]ForHanzi character:

- When select Chinese character mode, the printer handles all the Hanzi code, every two bytes.
- In the first byte, the second byte of the sequential processing Hanzi code.
- When the power is turned on, the printer does not select Chinese character mode.

[Reference] FS .

FS-n

[Name] Turn underline mode on/off for Hanzi characters

[Format] ASCIIFS - n

Hex1C 2D n

Decimal 28 45 n

[Range] 0≤ n≤ 2, 48≤ n≤ 50

[Description] Turns underline mode for Hanzi characters on or off, based on the following valuesof n.

n	Function
0, 48	Turns off underline mode for Hanzi characters
1, 49	Turns on underline mode for Hanzi characters (1-dot thick)
2, 50	Turns on underline mode for Hanzi characters (2-dot thick)

[Note]

- The printer can underline all characters (including right- and left-side characterspacing), but cannot underline the space set by HT and 90° clockwise-rotated characters.
- After the underline mode for Hanzi characters is turned off by setting n to

0,underline printing is no longer performed, but the previously specified underlinethickness is not changed. The default underline thickness is 1 dot.

- The specified line thickness does not change even when the character sizechanges.
- It is possible to turn underline mode on or off using FS !, and the last receivedcommand is effective.

[Defaults]n=0

[Reference] FS !

FS.

[Name] Cancel Hanzi character mode

[Format] ASCIIFS .

Hex 1C 2E

Decimal 28 46

[Description] Cancel Hanzi character mode

[Note] Hanzi character mode:

- When the Chinese character mode is not selected, all the ASCII character codes are used as a time for processing a character.
- When the power is turned on, the printer is not selected Hanzi mode.

[Reference] FS &

FSSn1n2

[Name] Set full-width Hanzi character spacing

[Format]	ASCII	FS	S	n1	n2
	Hex	1C	53	n1	n2
	Decimal	28	83	n1	n2

[Range] 0≤ n1≤ 255

0≤ n2≤ 255

[Description] Sets left- and right-side Kanji character spacing n1 and n2,

•Left side spacing is[n1—0.125mm],right side spacing is[n2—0.125mm].

[Note]

- When double-width mode is set, the left- and right-side character spacing istwice the normal value.
- In standard mode, this command sets the spacing respectively.
- In standard mode, the horizontal motion unit is used.

[Defaults] n1=0,n2 =0

ESCZmn kdLdHd1…dn

[Name] Print QR- CODE

[Format]	ASC II	ESC	Z	m	n	k	dL	dH	d1. . . dn
	Hex	1B	5A	m	n	k	dL	dH	d1. . . dn
	Decimal	27	90	m	n	k	dL	dH	d1. . . dn

[Note] m means specified version.(1~40,0:Auto size)

n specifies the EC level.(L:7%,M:15%,Q:25%,H:30%)

kspecified component type.(1~8)

d the length of the data, and it contains two bytes.

dL:The first byte is the low order number.

dH:The second byte is the upper number.

d1. . . dnis the bar code data.

When m is 0, the printer automatically selects the bar code type.

- This type of automatic method is proposed.
- 《QR-CODE Model Form (version)》

Version	Capacity (coding) the level by EC			
	L(7%)	M(15%)	Q(25%)	H(30%)
1	19	16	13	9
2	34	28	22	16
3	55	44	34	26
4	80	64	48	36
5	108	86	62	46
6	136	108	76	60
7	156	124	88	66
8	194	154	110	86
9	232	182	132	100
10	274	216	154	122
11	324	254	180	140
12	370	290	206	158
13	428	334	244	180
14	461	365	261	197
15	523	415	195	223
16	589	453	325	253
17	647	507	367	283
18	721	563	397	313
19	795	627	445	341

FSWn

[Name]Turn quadruple-size mode on/off for Hanzi characters

[Format] ASCIIFS W n

Hex 1C 57 n

Decimal 2887n

[Range] 0≤ n≤ 255

[Description]Turn quadruple-size mode on/off for Hanzi characters

- When the LSB of n is 0, quadruple-size mode for Hanzi characters is turned off.
- When the LSB of n is 1, quadruple-size mode for Hazji characters is turned on.

[Details]
- Only the lowest bit of n is valid.
- In quadruple-size mode, the printer prints the same size characters as whendouble-width and double-height modes are both turned on.
- When quadruple-size mode is turned off using this command, the followingcharacters are printed in normal size.
- When some of the characters on a line are different in height, all the characterson the line are aligned at the baseline.
- When a character in the horizontal direction to enlarge, zoom in to the left of the character to the right character as a reference.
- FS ! or GS ! can also select and cancel quadruple-size mode by selectingdouble-height and double-width modes, and the setting of the last receivedcommand is effective.

[Defaults] n=0

[Reference] FS !,GS !

DLE EOT n

[Name] Real-time status transmission

[Format] ASCII DLE EOT n

Hex 10 04 n

Decimal 16 4 n

[Range] 1 ≤ n ≤ 4

[Description] Transmits the selected printer status specified by n in real-time, according to the following parameters:

n = 1: Transmit printer status

n = 2: Transmit off-line status

n = 3: Transmit error status

n = 4: Transmit paper roll sensor status

[Details] • In sending status, printer sends a byte without validation of DSR signal.

• This command is executed even when the printer is off-line, the receive buffer is full, or there is an error status with a serial interface model.

• With a parallel interface model, this command can not be executed when the printer is busy.

• When use GS a to enable Automatic Status Back (ASB), the status transmitted by DLE EOT and the ASB status must be differentiated by using the table in Appendix D.

• This command is valid even when the printer is disabled with ESC = (Select peripheral device).

• This command is being processed as soon as received by the printer.

[Note] • The status is transmitted whenever the data sequence of <10>H<04>H<n>(1 n 4) is received.

Example:

In ESC m nL nH d1…dk, d1=<10>H, d2=<04>H, d3=<01>H

• This command should not be used within the data sequence of another command that consists of 2 or more bytes.

Example:

If you attempt to transmit ESC 3 n to the printer, but DTR (DSR for the host computer) goes to MARK before n is transmitted and then DLE EOT 3 interrupts before n is received, the code <10>H for DLE EOT 3 is processed as the code for ESC 3 <10>H.

n = 1: Printer Status

Bit	0/1	Hex	Decimal	Function

0	0	00	0	Fixed to Off.
1	1	02	2	Fixed to On.
2	0	00	0	Drawer open
	1	04	4	Drawer close
3	0	00	0	On-line
	1	08	8	Off-line
4	1	10	16	Fixed to On.
5	0	00	00	Recover until on-line
	1	20	32	Wait for on-line recover
6	--	--	--	Undefined.
7	0	00	00	Fixed to Off.

n = 2: Off-line Status

Bit	0/1	Hex	Decimal	Function
0	0	00	0	Fixed to Off.
1	1	02	2	Fixed to On.
2	0	00	0	Top cover close
	1	04	4	Top cover open
3	0	00	0	Paper is not being fed by using the FEED button.
	1	08	8	Paper is beging fed by the FEED button.
4	1	10	16	Fixed to On.
5	0	00	0	No shortage of paper
	1	20	32	Shortage of paper
6	0	00	0	No error
	1	40	64	Error occurs
7	0	00	0	Fixed to Off.

n = 3: Error Status

Bit	0/1	Hex	Decimal	Function
0	0	00	0	Fixed to Off.
1	1	02	2	Fixed to On.
2		---	---	Undefined.
3	0	00	0	No auto-cutter error.
	1	08	8	Auto-cutter error occurs.
4	1	10	16	Fixed to On.
5	0	00	0	No unrecoverable error.
	1	20	32	Unrecoverable error

6	0	00	0	Temperature and voltage of print head is normal
	1	40	64	Temperature and voltage of print head is over range
7	0	00	0	Fixed to Off.

n = 4: Feed Status

Bit	1/0	Hex	Decimal	Function
0	0	00	0	Fixed to Off.
1	1	02	2	Fixed to On.
2,3	0	00	0	Roll paper near-end sensor:
	1	0C	12	Roll paper near-end sensor:
4	1	10	16	Fixed to On.
5,6	0	00	0	Paper present.
	1	60	96	Paper not present.
7	0	00	0	Fixed to Off.