4. Printer Commands List

NO.	Command	Function Description
01	HT	Horizontal tab(#)
02	LF	Print and line feed
03	CR	Print and carriage return (#)
04	ESC SO	Set all characters times width print
05	ESC DC4	Cancel all characters times width print
06	ESC SP n	Set right-side character spacing (#)
07	ESC ! n	Select print mode
08	ESC $ nL nH	Select absolute print position (#)
09	ESC % n	Select/cancel user-defined character set
10	ESC &	Defined user-defined characters
11	ESC *	Select bit-image mode
12	ESC - n	Turn underline mode on/off (#)
13	ESC 2	Select default line spacing
14	ESC 3 n	Set line spacing
15	ESC ? n	Cancel user-defined characters
16	ESC @	Initialize printer
17	ESC D	Set horizontal tab position (#)
18	ESC E n	Turn emphasized mode on/off (#)
19	ESC G n	Turn double-strike mode on/off (#)
20	ESC J n	Print and feed paper
21	ESC R n	Select international characters list (#)
22	ESC \ nL nH	Set relative horizontal position (#)
23	ESC a n	Set justification (#)
24	ESC c 5 n	Enable/disable panel buttons
25	ESC d n	Print and feed n lines
26	ESC p m t1 t2	General pulse for cash drawer
27	ESC t n	Select characters code list (#)
28	ESC { n	Turns on/off upside-down printing mode (#)
29	GS * x y d1…dk	Define downloaded bit image
30	GS / m	Print downloaded bit image
31	GS H n	Select printing position for HRI characters
32	GS L nL nH	Set left margin (#)
33	GS W nL nH	Set printing area width (#)
34	GS h n	Select barcode height
35	①GS k m d…dk NUL ②GS k m n d1…dn	Print barcode
36	GS v 0 m	Print raster bit image
37	GS w n	Set barcode width
38	FS ! n	Set print mode(s) for Kanji characters (#)
39	FS &	Select Kanji character mode
40	FS - n	Turn underline mode on/off for Kanji characters (#)
41	FS .	Cancel Kanji character mode
42	FS 2 c1 c2 d1...dk	Define user-defined Kanji characters

(#)Note: this command is available for POS58 model.

5. Printer Commands List

5.1 Command Conception

POS58 series printers support ESC/POS print commands.

Descriptions as following:

Print Command Functions

Format: ASCII: Showing as standard ASCII characters

Decimal: Showing as Decimal figure list

Hex: Showing as hex figure list

Description: This command function and instruction.

For example: Give some examples to understand this command clearly

5.2 Command Description

HT

[Name]	Horizontal tab	
[Format]	ASCII	HT
	Hex	09
	Decimal	9
[Description]	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 sets the printing 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. • The default setting of the horizontal tab position for the paper roll is font A (12 × 24) every 8th character (9th, 17th, 25th, ... column).	
[Reference]	**ESC D**	

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 line spacing.

[Note] This command sets the print position to the beginning of the line.

[Reference] **ESC 2, ESC 3**

CR

[Name] Print and carriage return

[Format] ASCII CR

Decimal 13

Hex 0DH

[Description] When automatic line feed is enabled, this command functions the same as **LF**; when automatic line feed is disabled, this command is ignored.

[Details]
- Sets the print starting position to the beginning of the line.
- The automatic line feed is ignored with a serial interface model.
- This command is set according to the DIP switch 1-1 setting with a parallel interface model.

[Reference] **LF**

ESC SO

[Name] Set all character times width print

[Format] ASCII ESC SO

Hex 1B 0E

Decimal 27 14

[Description] Printing characters with two times width in one line after this command; Cancel this command by "ENTER" or ESC DC4 command.

ESC DC4

[Name] Cancel all the characters times width print

[Format] ASCII ESC DC4

Hex 1B 14

Decimal 27 20

[Description] Printing characters as normal width.

ESC SP n

[Name] Set right-side character spacing (#)

[Format]

ASCII	ESC	SP	*n*
Hex	1B	20	*n*
Decimal	27	32	*n*

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

[Description] Sets the character spacing for the right side of the character to inches [n x horizontal motion units].

[Details]
- When characters are enlarged n times, the right-side character spacing is n times normal value.
- The maximum right-side spacing is 255/203 inches. Any setting exceeding the maximum is converted to the maximum automatically.

ESC ! n

[Name] Set print mode

[Format]

ASCII	ESC	!	*n*
Hex	1B	21	n
Decimal	27	33	n

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

[Description] Set characters print mode, to select to print characters times width and times height. Default n=0, characters normal size printing; n=16, characters times height printing; n=32, characters times width printing; n=48, characters times width and times height printing.

ESC $ nL nH

[Name] Set absolute print position

[Format]

ASCII	ESC	$	nL	nH
Hex	1B	24	nL	nH
Decimal	27	36	nL	nH

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

[Description]
- Sets the distance from the beginning of the line to the position at which subsequent characters are to be printed.
- The distance from the beginning of the line to the print position is

[(*nL* + *nH* x 256) x (vertical or horizontal motion unit)] inches.

• Settings outside the specified printable area are ignored.

ESC % n

[Name] Select/cancel user-defined character set

[Format]

ASCII	ESC	%	*n*
Decimal	27	37	n
Hex	1B	25	n

[Range] 0 ≤ *nL* ≤ 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.

[Details] • When the user-defined character set is canceled, the internal character set is automatically selected.

- *n* is available only for the least significant bit.

[Default] n = 0

[Reference] **ESC &**, **ESC ?**

ESC & y c1 c2

[Name] Define user-defined characters

[Format]

ASCII	ESC	&	y	c1	c2	[x1 d1...d(y×x1)]...[xk d1... d(y×xk)]
Hex	1B	26	y	c1	c2	[x1 d1...d(y×x1)]...[xk d1... d(y×xk)]
Decimal	27	38	y	c1	c2	[x1 d1...d(y×x1)]...[xk d1... d(y×xk)]

[Range] y = 3

32 ≤c1 ≤c2≤ 126

0 ≤x ≤12 Font A (9 x 9)

0 ≤x≤ 9 Font B(7 x 9)

0≤d1…d(y×xk)≤255

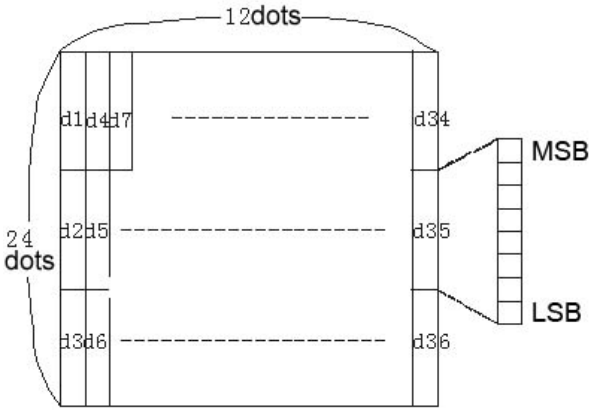
[Description] Defines user-defined characters.

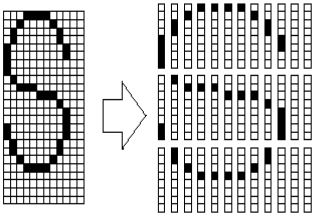
- *y* specifies the number of bytes in the vertical direction.
- *c1* specifies the beginning character code for the definition, and *c2* specifies the final code. Only when c1=c2, up to 96 user-defined characters can be defined.
- *x* specifies the number of dots in the horizontal direction.

[Details] • d is the dot data for the characters. The data to define a user-defined character is (x×y) bytes and total is (c2-c1+1) characters.

• The defined user-defined characters will be valid till redefinition or reset or printer power off.

Example: using the standard ASCII code Font (12 x 24)





d1= <0F>H d4 = <30>H d7 = <40>H . . . .
d2 = <03>H d5 = <80>H d8 = <40>H . . . .
d3 = <00>H d6 = <00>H d9 = <20>H . . . .

[Default] The internal character set

[Reference] **ESC %**, **ESC ?**

ESC * m nL nH d1...dk

[Name] Select bit-image mode

[Format]

ASCII	ESC	*	m	nL	nH	d1...dk
Hex	1B	2A	m	nL	nH	d1...dk
Decimal	27	42	m	nL	nH	d1...dk

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

1≤ (nL+nH x 256) ≤ 1023

0≤nL≤255;

0≤nH≤3;

0≤d≤255;

k=nL+ nH×256 (m=0, 1); k=(nL+ nH×256)×3 (m=32, 33)

[Description] • Selects a bit-image mode using *m* for the number of dots specified by *nL* and *nH*.

• The nL and nH indicate the number of dots of the bit image in the horizontal direction. The number of dots is calculated by nL + nH × 256.

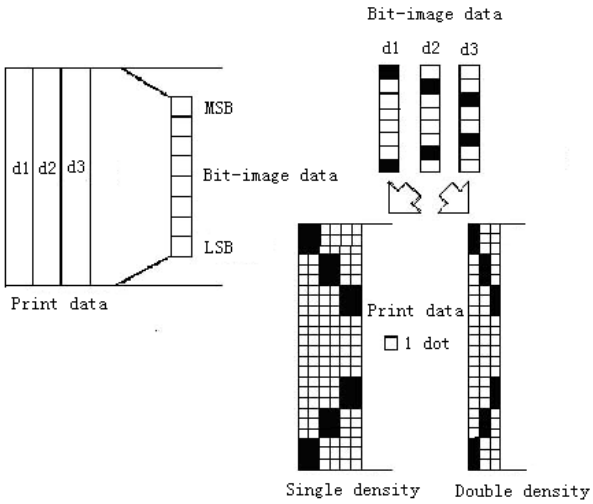
• If the bit-image data input exceeds the number of dots to be printed on a line, the excess data is ignored.

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

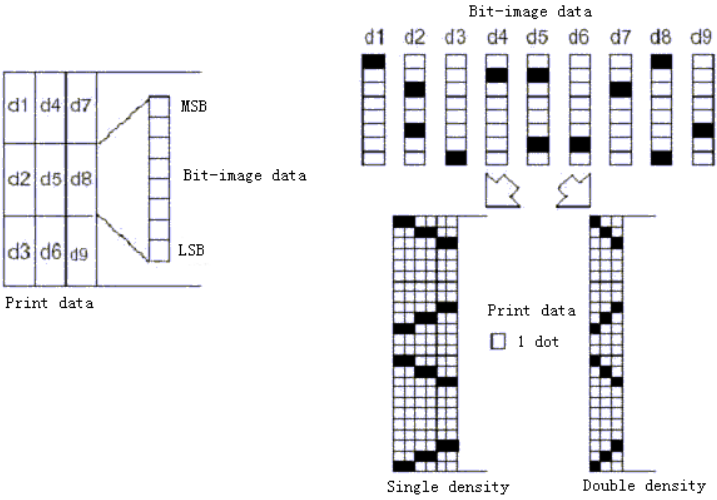
• Selects a bit-image mode using *m* for the number of dots specified by *nL* and *nH*, as follows:

m	Mode	Vertical Direction		Horizontal Direction	
		Dots	Density	Density	Data（k）
0	8-dot single-density	8	67 DPI	100 DPI	nL + nH × 256
1	8-dot double-density	8	67 DPI	200 DPI	nL + nH × 256
32	24-dot single-density	24	200 DPI	100 DPI	(nL + nH × 256)×3
33	24-dot double-density	24	200 DPI	200 DPI	(nL + nH × 256)×3

Example: 8-dot density selected



24-dot density 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	Turn off underline mode
1, 49	Turn on underline mode (1 dot width)
2, 50	Turn on underline mode (2 dot width)

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

• Underline mode can also be turned on or off by using **ESC !**.

• This command is ignored when *n* exceeds the specified range.

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

[Default] n = 0

ESC 2

[Name] Select default line spacing

[Format] ASCII ESC 2

Hex 1B 32

Decimal 27 50

[Description] Selects 3.75mm line spacing.

ESC 3 n

[Name] Set line spacing

[Format] ASCII ESC 3 n

Hex 1B 33 n

Decimal 27 51 n

[Range] 0 ≤ n ≤ 255

[Description] Sets the line spacing to *n* dots

[Default] n = 30

[Reference] **ESC 2**

ESC ? n

[Name] Cancel user-defined characters

[Format] ASCII ESC ? n

Hex 1B 3F n

Decimal 27 63 n

[Range] 32 ≤n ≤126

[Description] Cancels user-defined characters.

[Details] • This command cancels the pattern defined for the character code specified by *n*. After the user-defined characters are canceled, the corresponding pattern of the internal character is printed.

• This command deletes the pattern defined for the specified code in the font selected by **ESC !**.

• If a user-defined character has not been defined for the specified character code, 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 that is in effect when the power is turned on.

ESC D n1...nk NUL

[Name] Set horizontal tab positions

[Format]

ASCII	ESC	D	n1…nk	NUL
Hex	1B	44	n1…nk	00
Decimal	27	68	n1…nk	0

[Range] $1 \le n \le 255$, $0 \le k \le 32$

[Description] Sets horizontal tab positions.

• *n* specifies the column number for setting a horizontal tab position from the beginning of the line.

• *k* indicates the total number of horizontal tab positions to be set.

[Details] • The horizontal tab position is stored as a value of [character width x *n*] measured from the beginning of the line. The character width includes the right-side character spacing, and double-width characters are set with twice the width 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 is processed as normal data.

• Transmit *[n]k* in ascending order and place a NUL code 0 at the end. When *[n]k* is less than or equal to the preceding value *[n]k-1*, tab setting is finished 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 the character width changes.

[Reference] **HT**

ESC E n

[Name] Turn emphasized mode on/off

[Format]

ASCII	ESC	E	n
Hex	1B	45	n
Decimal	27	69	n

[Range] 0 ≤ n ≤ 255

[Description] Turns emphasized mode on or off.

• When the LSB of n is 0, emphasized mode is turned off.

• When the LSB of n is 1, emphasized mode is turned on.

[Details] • Only the least significant bit of n is enabled.

• Bit image is not to be emphasized.

• This command and **ESC !** turn on and off emphasized mode in the same way.

• Printer output is the same in double-strike mode (**ESC G**) and in emphasized mode.

• Alphanumeric characters and Kanji characters are affected by this command.

[Default] n = 0

[Reference] **ESC !**, **ESC G**

ESC G n

[Name] Turn on/off double-strike mode

[Format]

ASCII	ESC	G	n
Hex	1B	47	n
Decimal	27	71	n

[Range] 0 ≤ n ≤ 255

[Description] Turn double-strike mode on or off.

• When the LSB of n is 0, emphasized mode is turned off.

• When the LSB of n is 1, emphasized mode is turned on.

[Details] • Only the least significant bit of n is enabled.

• Bit image is not to be double-strike.

• Printer output is the same in double-strike mode and in emphasized mode (ESC E).

• Alphanumeric characters and Kanji characters are affected by this command.

[Note] • Bi-direction print is with a lower speed in the double-strike mode.

[Default] n = 0

[Reference] **ESC E**

ESC J n

[Name] Print and feed paper

[Format]

ASCII	ESC	J	n
Hex	1B	4A	n
Decimal	27	74	n

[Range] 0 ≤ n ≤ 255

[Description] Print the data in the print buffer and feeds the paper [n x 0.176mm (1/44inches)].

[Details] • After printing is completed, this command sets the print starting position to the beginning of a line.

• The paper feed amount set by this command does not affect the values set by **ESC 2** or **ESC 3**.

ESC R n

[Name] Select international characters list

[Format]

ASCII	ESC	R	n
Hex	1B	52	n
Decimal	27	82	n

[Range] 0 ≤n ≤ 15

[Description] Select an international character set by setting n to the following values:

n	Character Set
0	U.S.A.
1	France

2	Germany
3	U.K.
4	Denmark
5	Sweden
6	Italy
7	Spain I
8	Japan
9	Norway
10	Denmark II
11	Spain II
12	Latin America
13	Korea
14	Slovenia/Croatia
15	China

[Default] n = 0

ESC \ nL nH

[Name] Set relative horizontal position

[Format] ASCII ESC \ nL nH

Hex 1B 5C nL nH

Decimal 27 92 nL nH

[Range] 0 ≤ nl ≤ 255，0 ≤ nH ≤ 255

[Description] • This command sets the print starting position to where that [(nL + nH × 256) × horizontal move unit] away.

• The printer ignores the settings that out of the printable area.

ESC a n

[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 data in one line to the specified position.

n selects the justification as follows:

n	**Justification**
0,48	Left justification
1, 49	Center
2, 50	Right justification

[Details] • The command is enabled only when processed at the beginning of a line.

• This command justifies the space area of the data skipped by command **HT**, **ESC $** and **ESC **.

[Default] n = 0

ESC c 5 n

[Name] Enable/disable panel buttons

[Format]

ASCII	ESC	c	5	n
Hex	1B	63	35	n
Decimal	27	99	53	n

[Range] 0≤n≤255

[Description] Enable or disable the 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.

[Details] Only the least significant bit of n is enabled.

[Default] n = 0

ESC d n

[Name] Print and feed *n* lines

[Format]

ASCII	ESC	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.

ESC p m t1 t2

[Name] Generate pulse

[Format]

ASCII	ESC	p	m	t1	t2
Hex	1B	70	m	t1	t2
Decimal	27	112	m	t1	t2

[Range] m=0,1,48,49; 0≤t1≤255; 0≤t2≤255

[Description] • The pulse ON time is [t1 x 2 ms] and the OFF time is [t2 x 2 ms].

• If t2 < t1, the OFF time is [t1x 2 ms].

ESC t n

[Name] Select character code table

[Format] ASCII ESC t n

Hex 1B 74 n

Decimal 27 116 n

[Range] 0 ≤n ≤ 10, 16 ≤n ≤ 19

[Description] Selects a page n from the character code table:

n	**Page**
0	PC437 [U.S.A. & Europe Standard]
1	Katakana
2	PC850 [Multilingual]
3	PC860 [Portuguese]
4	PC863 [Canadian & French]
5	PC865 [Nordic]
6	West Europe
7	Greek
8	Hebrew
9	PC755: East Europe
10	Iran
16	WPC1252
17	PC866: Cyrillice#2
18	PC852: Latin2
19	PC858

[Default] n = 0

ESC { n

[Name] Turn upside-down printing mode on/off

[Format] ASCII ESC { n

Hex 1B 7B n

Decimal 27 123 n

[Range] 0 ≤ n ≤ 255

[Description] Turns upside-down printing mode on or off.

• 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.

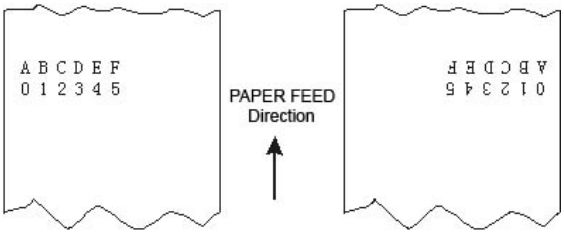
[Details] • Only the least significant bit of n is enabled.

• This command is enabled only when processed at the beginning of a line.

• In upside-down printing mode, the printer rotates the line to be printed by 180° and then prints it.

[Default] n = 0

[Example]



GS * x y d1…dk

[Name] Define download bit image

[Format]

ASCII	GS	*	x	y	d1…dk
Hex	1D	2A	x	y	d1…dk
Decimal	29	42	x	y	d1…dk

[Range] 1≤x≤48, 1≤y≤48, x×y≤1500, k=x×y×8

[Description] Defines download bit image.

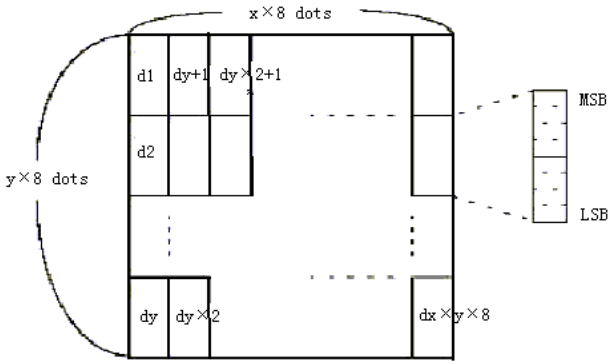
[Details] • Only the least significant bit of n is enabled.

• *d* indicates the bit image data, that is, *d*=1 for printing the corresponding dot and *d*=0 for not printing the corresponding dot.

• There are (x×8) dots on horizontal direction and (y×8) dots on vertical direction.

• Once the download bit image has been defined, it is valid till executes redefine, printer reset or printer power-off.

• Relation between print data and download bit image:



GS / m

[Name] Print downloaded bit image

[Format] ASCII GS / m

Hex 1D 2F m

Decimal 29 47 m

[Range] $0 \leqslant m \leqslant 3, 48 \leqslant m \leqslant 51$

[Description] Prints downloaded bit image using the mode specified by *m*.

[Details] • *m* is for selecting bit image mode.

• GS * command can be use to define bit image.

• Selects bit image mode using *m* as follows:

m	Mode	Vertical Dot Density	Horizontal Dot Density
0, 48	Normal	200 DPI	200 DPI
1, 49	Double-width	200 DPI	100 DPI
2, 50	Double-height	100 DPI	200 DPI
3, 51	Double-width & Double-height	100 DPI	100 DPI

[Reference] **GS ***

GS H n

[Name] Select printing position for HRI characters

[Format] ASCII GS H n

Hex 1D 48 n

Decimal 29 72 n

[Range] $0 \leqslant n \leqslant 3, 48 \leqslant n \leqslant 51$

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

n selects the printing position as follows:

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.

[Details] • HRI characters are printed using the font specified by **GS f**.

[Default] n = 0

[Reference] **GS f**, **GS k**

GS L nL nH

[Name] Set left margin

[Format]

ASCII	GS	L	nL	nH
Hex	1D	4C	nL	nH
Decimal	29	76	nL	nH

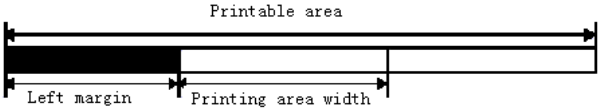
[Range] $0 \leqslant nL \leqslant 255; 0 \leqslant nL \leqslant 255$

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

• The left margin is set to [(*nL* + *nH* x 256) x horizontal motion unit]] inches.

[Details] • This command is effective only processed at the beginning of the line.

• If the setting exceeds the printable area, the maximum value of the printable area is used.



[Default] *nL* = 0, *nH* = 0

[Reference] **GS P**, **GS W**

GS W nL nH

[Name] Set printing area width

[Format]

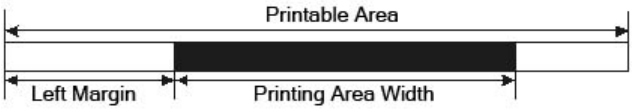
ASCII	GS	W	nL	nH

Hex	1D	57	nL	nH
Decimal	29	87	nL	nH

[Range] $0 \leqslant nL \leqslant 255; 0 \leqslant nL \leqslant 255$

[Description] Sets the printing area width to the area specified by nL and nH.

• The printing area width is set to [($nL + nH$ x 256) x horizontal motion unit]] inches.



[Details] • This command is effective only processed at the beginning of the line.

• If the [left margin + printing area width] exceeds the printable area, [printable area width - left margin) is used.

[Default] nL = 128, nH = 1

[Reference] **GS L**, **GS P**

GS h n

[Name] Select bar code height

[Format] ASCII	GS	h	n	
Hex	1D	68	n	
Decimal	29	104	n	

[Range] $0 \leqslant n \leqslant 255$

[Description] Selects the height of the bar code. (n × 0.125mm)

n specifies the number of dots in the vertical direction.

[Default] n = 162

[Reference] **GS k**

① GS k m d1…dk NUL ② GS k m n d1…dn

[Name] Print bar code

[Format]	①	ASCII	GS	k	m	d1…dk	NUL
		Hex	1D	6B	m	d1…dk	NUL
		Decimal	29	107	m	d1…dk	NUL

①	ASCII	GS	k	m	n	d1…dn
	Hex	1D	6B	m	n	d1…dn
	Decimal	29	107	m	n	d1…dn

[Range] ① 0 ≤ *m* ≤ 6 (*k* and *d* depends on the bar code system used)

② 65 ≤ *m* ≤73 (*n* and *d* depends on the bar code system used)

[Description] Selects a bar code system and prints the bar code.

m selects a bar code system as follows:

m		Bar Code System	Number of Characters	Characters	Remarks
①	0	UPC-A	11 ≤ k ≤ 12	0～9	48 ≤ d ≤ 57
	1	UPC-E	11 ≤ k ≤ 12	0～9	48 ≤ d ≤ 57
	2	JAN13 (EAN13)	12 ≤ k ≤ 13	0～9	48 ≤ d ≤ 57
	3	JAN8 (EAN8)	7 ≤ k ≤ 8	0～9	48 ≤ d ≤ 57
	4	CODE39	1 ≤ k ≤ 255	0～9， A～Z， SP，$，%，+， -，.，/ * (Start/End character)	45 ≤ d ≤ 57， 65 ≤ d ≤ 90， d = 32, 36, 37, 43, 45, 46, 47 d = 42(Start/End character)
	5	ITF	1 ≤ k ≤255（even number）	0～9	48 ≤ d ≤ 57
	6	CODABAR	1 ≤ k ≤ 255	0～9, A～D $, +, -, ., /,:	48 ≤ d ≤ 57, 65 ≤ d ≤ 68, d = 36, 43, 45, 46, 47, 58
②	65	UPC-A	11 ≤ n ≤ 12	0～9	48 ≤ d ≤ 57
	66	UPC-E	11 ≤ n ≤ 12	0～9	48 ≤ d ≤ 57
	67	JAN13 (EAN13)	12 ≤ n ≤ 13	0～9	48 ≤ d ≤ 57
	68	JAN8 (EAN8)	7 ≤ n ≤ 8	0～9	48 ≤ d ≤ 57
	69	CODE39	1 ≤ n ≤ 255	0～9， A～Z， SP，$，%，+， -，.，/ * (Start/End character)	45 ≤ d ≤ 57， 65 ≤ d ≤ 90， d = 32, 36, 37, 43,45, 46, 47 d = 42 (Start/End character)
	70	ITF	1 ≤ n ≤ 255（even number）	0～9	48 ≤ d ≤ 57
	71	CODABAR	1 ≤ n ≤ 255	0～9, A～D $, +, -, ., /,:	48 ≤ d ≤ 57, 65 ≤ d ≤ 68, d = 36, 43, 45, 46, 47, 58
	72	CODE93	1 ≤ n ≤ 255	NUL～SP(7FH)	0 ≤ d ≤ 127
	73	CODE128	2 ≤ n ≤ 255	NUL～SP(7FH)	0 ≤ d ≤ 127

[Details] • If *dk* or *dn* is outside of the specified range, the printer only feeds paper and processes the following data 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 the line spacing specified by ESC 2 or ESC 3.

• This command is enabled only when print position is at the beginning of the line.

• After printing bar code, this command sets the print position to the beginning of the line.

GS v 0 m xL xH yL yH d1....dk

[Name] Print raster bit image

[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≤xL≤48, xH=0; 0≤yL≤255, yH=0; 0≤d≤255

k=(xL+xH×256)×(yL+yH×256)(k≠0)

[Description] Selects Raster bit-image mode. The value of m selects the mode, as follows:

m	MODE	Vertical Dot Density	Horizontal Dot ensity
0, 48	Normal	200 DPI	200 DPI
1, 49	Double-width	200 DPI	100 DPI
2, 50	Double-height	100 DPI	200 DPI
3, 51	Quadruple	100 DPI	100 DPI

• xL, xH, select the number of data bits (xL+ xH × 256) in the horizontal direction for the bit image.

• yL, yH, select the number of data bits (yL+ yH × 256) in the vertical direction for the bit image.

[Details] • In standard mode, this command is effective only when there is no data in the print buffer.

• This command has no effect in all print modes (character size, emphasized, double-strike, upside-down, underline, white/black reverse printing, etc.) for raster bit image.

• The part of bit image that exceeds the printable area will not be printed.

• d indicates the bit-image data. Set time a bit to 1 prints a dot and setting it to 0 does not print a dot.

GS w n

[Name] Set bar code width

[Format] ASCII GS w n

Hex 1D 77 n

Decimal 29 119 n

[Range] $2 \leqslant n \leqslant 5$

[Description] Sets the horizontal size of the bar code.

n specifies the bar code width as follows:

n	Module Width (mm) for Multi-level Bar Code	Binary-level bar codes	
		Thin element width (mm)	Thick element width (mm)
2	0.25	0.25	0.625
3	0.375	0.375	1.0
4	0.5	0.5	1.25
5	0.625	0.625	1.625

• Multi-level bar codes: JAN13 (EAN13), JAN8 (EAN8)

• Binary-level bar codes: CODE39

[Default] n = 3

[Reference] **GS k**

FS ! n

[Name] Set print mode(s) for Kanji characters

[Format] ASCII FS ! n

Hex 1C 21 n

Decimal 28 33 n

[Range] $0 \leqslant n \leqslant 255$

[Description] Sets the print mode for Kanji characters, using n as follows:

Bit	0/1	Hexadecimal	Decimal	Function
0, 1		---	---	Undefined.
2	0	00	0	Double-width mode is OFF.
	1	04	4	Double-width mode is ON.
3	0	00	0	Double-height mode is OFF.

	1	08	8	Double-height mode is ON.
4-6		--	--	Undefined.
7	0	00	0	Underline mode is OFF.
	1	80	128	Underline mode is ON.

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

• The printer can underline all characters (including right- and left-side character spacing), but cannot underline the space set by **HT** and 90° clockwise-rotated characters.

• The thickness of the underline is that specified by **FS -**, regardless of the character size.

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

• It is possible to turn under line mode on or off using **FS -**, and the setting of the last received command is effective.

[Default] n = 0

[Reference] **FS -**, **FS W**, **GS !**

FS &

[Name] Select Kanji character mode

[Format] ASCII FS &

Hex 1C 26

Decimal 28 38

[Description] Selects Kanji character mode.

[Reference] **FS .** , **FS C**

FS - n

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

[Format] ASCII FS - n

Hex 1C 2D n

Decimal 28 45 n

[Range] 0 ≤ n ≤ 2, 48 ≤ n ≤ 50

[Description] Turns underline mode for Kanji characters on or off, based on the following values of *n*.

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

[Details] • The printer can underline all characters (including right- and left-side character spacing), but cannot underline the space set by **HT** and 90° clockwise-rotated characters.

• After the underline mode for Kanji characters is turned off, underline printing is no longer performed, but the previously specified underline thickness is not changed. The default underline thickness is 1 dot.

• The specified line thickness does not change even when the character size changes.

• It is possible to turn underline mode on or off using **FS !**, and the last received command is effective.

[Reference] **FS !**

FS .

[Name] Cancel Kanji character mode

[Format] ASCII FS .

Hex 1C 2E

Decimal 28 46

[Description] Cancels Kanji character mode.

[Details] • Every character is processed as ASCII code and 1byte is processed every time.

• Kanji character mode is selected while printer is power on.

[Reference] **FS &**, **FS C**

FS 2 c1 c2 d1...dk

[Name] Define user-defined Kanji characters

[Format] ASCII FS 2 c1 c2 d1…dk

Hex 1C 32 c1 c2 d1…dk

Decimal 28 50 c1 c2 d1…dk

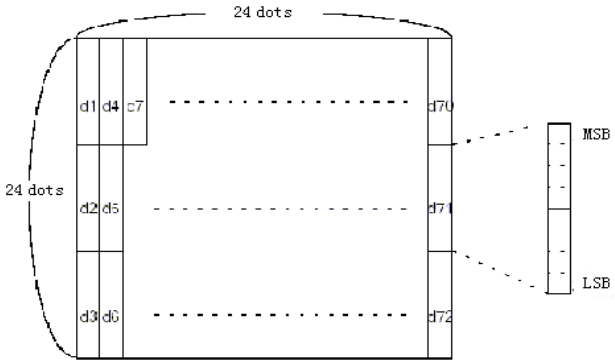
[Range] c1=[FEH]、[A1H]≤c2≤[FEH]、k=72、0≤d≤255

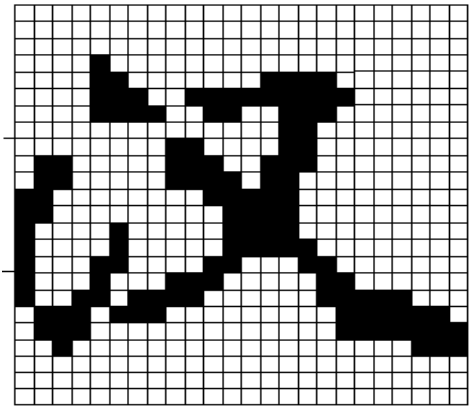
[Description] Defines user-defined Kanji characters for the character codes specified by c1 and c2.

[Details] • *c1* and *c2* indicate character codes for the defined characters. *c1* specifies for the first byte, and *c2* for the second byte.

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

[Example]





D1=00H, D4=00H, D7=00H, D10=00H. . . . . .
D2=1FH, D5=78H, D8=60H, D11=00H. . . . . .
D3=C0H, D6=30H, D9=38H, D12=70H. . . . . .