

#### 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	<i>n</i>
	Hex	1B	20	<i>n</i>
	Decimal	27	32	<i>n</i>

[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	!	<i>n</i>
	Hex	1B	21	<i>n</i>
	Decimal	27	33	<i>n</i>

[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

$[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]$  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]  $0 \leq nL \leq 255$

[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

$32 \leq c1 \leq c2 \leq 126$

$0 \leq x \leq 12$  Font A (9 x 9)

$0 \leq x \leq 9$  Font B (7 x 9)

$0 \leq d1 \dots d(y \times xk) \leq 255$

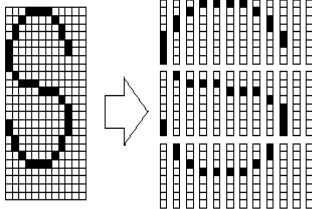
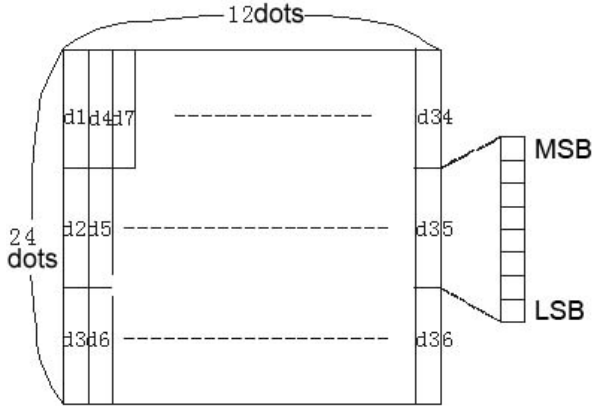
[Description] Defines user-defined characters.

- *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					

$$0 \leq nL \leq 255;$$

$$0 \leq nH \leq 3;$$

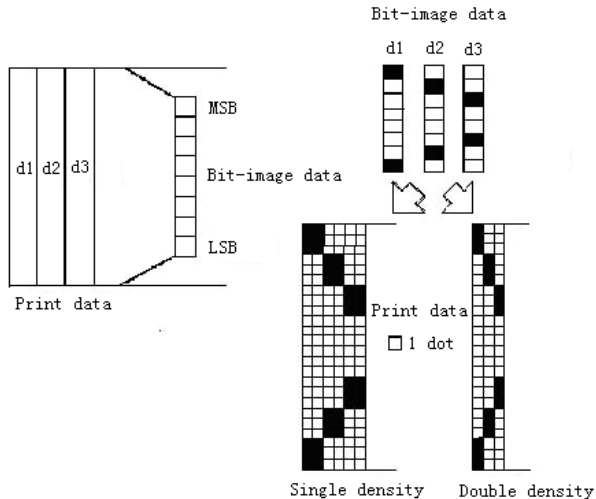
$$0 \leq d \leq 255;$$

$$k = nL + nH \times 256 \quad (m=0, 1); \quad k = (nL + nH \times 256) \times 3 \quad (m=32, 33)$$

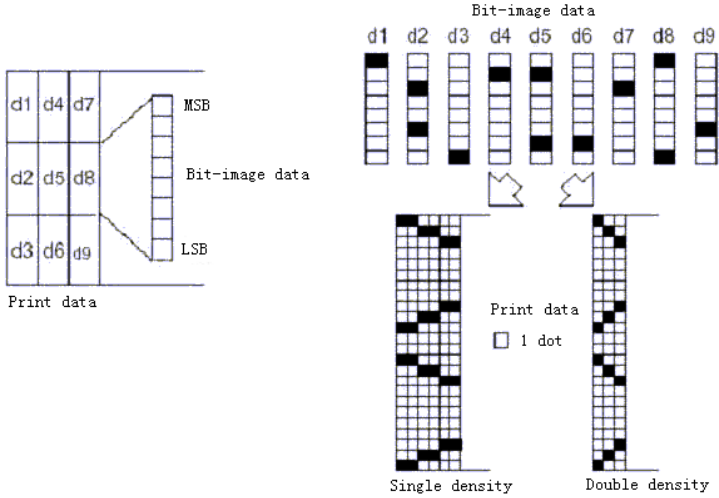
- [Description]
- Selects a bit-image mode using  $m$  for the number of dots specified by  $nL$  and  $nH$ .
  - The  $nL$  and  $nH$  indicate the number of dots of the bit image in the horizontal direction. The number of dots is calculated by  $nL + nH \times 256$ .
  - If the bit-image data input 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	$nL + nH \times 256$
1	8-dot double-density	8	67 DPI	200 DPI	$nL + nH \times 256$
32	24-dot single-density	24	200 DPI	100 DPI	$(nL + nH \times 256) \times 3$
33	24-dot double-density	24	200 DPI	200 DPI	$(nL + nH \times 256) \times 3$

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]  $0 \leq n \leq 2, 48 \leq n \leq 50$

[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 I**.
- 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]  $0 \leq n \leq 255$

[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]  $32 \leq n \leq 126$

[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 I**.

- 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]      $1 \leq n \leq 255, 0 \leq k \leq 32$

[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]     $0 \leq n \leq 255$

[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 I** 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 I, 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]     $0 \leq n \leq 255$

[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]  $0 \leq n \leq 255$

[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]  $0 \leq n \leq 15$

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

n	Character Set
<b>0</b>	U.S.A.
<b>1</b>	France

<b>2</b>	Germany
<b>3</b>	U.K.
<b>4</b>	Denmark
<b>5</b>	Sweden
<b>6</b>	Italy
<b>7</b>	Spain I
<b>8</b>	Japan
<b>9</b>	Norway
<b>10</b>	Denmark II
<b>11</b>	Spain II
<b>12</b>	Latin America
<b>13</b>	Korea
<b>14</b>	Slovenia/Croatia
<b>15</b>	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]  $0 \leq nL \leq 255$ ,  $0 \leq nH \leq 255$

[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]  $0 \leq n \leq 2$ ,  $48 \leq n \leq 50$

[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]  $0 \leq n \leq 255$

[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]  $0 \leq n \leq 255$

[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]  $m=0,1,48,49$ ;  $0 \leq t1 \leq 255$ ;  $0 \leq t2 \leq 255$

- [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 [t1 x 2 ms].

## ESC t n

---

[Name] Select character code table

[Format] ASCII ESC t n

Hex 1B 74 n

Decimal 27 116 n

[Range]  $0 \leq n \leq 10, 16 \leq n \leq 19$

[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]  $0 \leq n \leq 255$

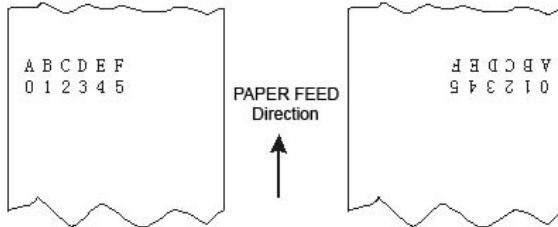
[Description] Turns upside-down printing mode on or off.

- 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]

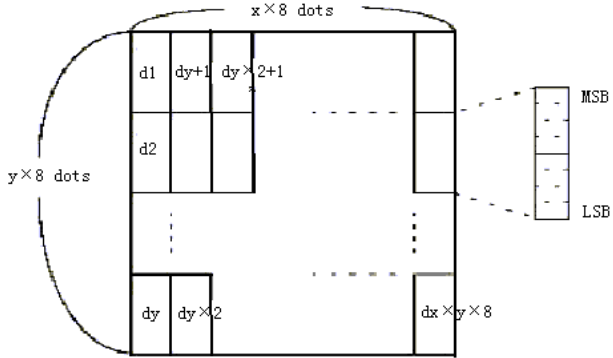
ASCII	GS	*	x	y	d1...dk
Hex	1D	2A	x	y	d1...dk
Decimal	29	42	x	y	d1...dk

[Range]  $1 \leq x \leq 48$ ,  $1 \leq y \leq 48$ ,  $x \times y \leq 1500$ ,  $k = x \times y \times 8$

[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]  $0 \leq m \leq 3, 48 \leq m \leq 51$

[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:

<b>m</b>	<b>Mode</b>	<b>Vertical Dot Density</b>	<b>Horizontal Dot Density</b>
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]  $0 \leq n \leq 3, 48 \leq n \leq 51$

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

$n$  selects the printing position as follows:

<b>n</b>	<b>Printing position</b>
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

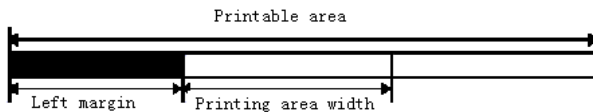
[Range]  $0 \leq nL \leq 255; 0 \leq nH \leq 255$

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

• The left margin is set to  $[(nL + nH \times 256) \times \text{horizontal motion unit}]$  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

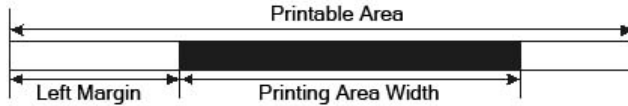
[Format] ASCII GS W nL nH

Hex	1D	57	nL	nH
Decimal	29	87	nL	nH

[Range]  $0 \leq nL \leq 255; 0 \leq nH \leq 255$

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

- The printing area width is set to  $[(nL + nH \times 256) \times \text{horizontal motion unit}]$  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]  $0 \leq n \leq 255$

[Description] Selects the height of the bar code. ( $n \times 0.125\text{mm}$ )  
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  $0 \leq m \leq 6$  ( $k$  and  $d$  depends on the bar code system used)

②  $65 \leq m \leq 73$  ( $n$  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:

<b>m</b>	<b>Bar Code System</b>	<b>Number of Characters</b>	<b>Characters</b>	<b>Remarks</b>	
①	0	UPC-A	$11 \leq k \leq 12$	0~9 48 ≤ d ≤ 57	
	1	UPC-E	$11 \leq k \leq 12$	0~9 48 ≤ d ≤ 57	
	2	JAN13 (EAN13)	$12 \leq k \leq 13$	0~9 48 ≤ d ≤ 57	
	3	JAN8 (EAN8)	$7 \leq k \leq 8$	0~9 48 ≤ d ≤ 57	
	4	CODE39	$1 \leq k \leq 255$	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	$1 \leq k \leq 255$ (even number)	0~9 48 ≤ d ≤ 57	
②	6	CODABAR	$1 \leq k \leq 255$	0~9, A~D \$, +, -, ., /, : 48 ≤ d ≤ 57, 65 ≤ d ≤ 68, d = 36, 43, 45, 46, 47, 58	
	65	UPC-A	$11 \leq n \leq 12$	0~9 48 ≤ d ≤ 57	
	66	UPC-E	$11 \leq n \leq 12$	0~9 48 ≤ d ≤ 57	
	67	JAN13 (EAN13)	$12 \leq n \leq 13$	0~9 48 ≤ d ≤ 57	
	68	JAN8 (EAN8)	$7 \leq n \leq 8$	0~9 48 ≤ d ≤ 57	
	69	CODE39	$1 \leq n \leq 255$	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	$1 \leq n \leq 255$ (even number)	0~9 48 ≤ d ≤ 57	
	71	CODABAR	$1 \leq n \leq 255$	0~9, A~D \$, +, -, ., /, : 48 ≤ d ≤ 57, 65 ≤ d ≤ 68, d = 36, 43, 45, 46, 47, 58	
	72	CODE93	$1 \leq n \leq 255$	NUL ~ SP(7FH)	0 ≤ d ≤ 127
	73	CODE128	$2 \leq n \leq 255$	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]  $0 \leq xL \leq 48, xH=0; 0 \leq yL \leq 255, yH=0; 0 \leq d \leq 255$

$$k=(xL+xH \times 256) \times (yL+yH \times 256) (k \neq 0)$$

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

<b>m</b>	<b>MODE</b>	<b>Vertical Dot Density</b>	<b>Horizontal Dot density</b>
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 (  $xL + xH \times 256$  ) in the horizontal direction for the bit image.
- yL, yH, select the number of data bits (  $yL + yH \times 256$  ) 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]  $2 \leq n \leq 5$

[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]  $0 \leq n \leq 255$

[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 I**

## 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]  $0 \leq n \leq 2, 48 \leq n \leq 50$

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

<b>n</b>	<b>Function</b>
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 I**, and the last received command is effective.

[Reference] **FS I**

## **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

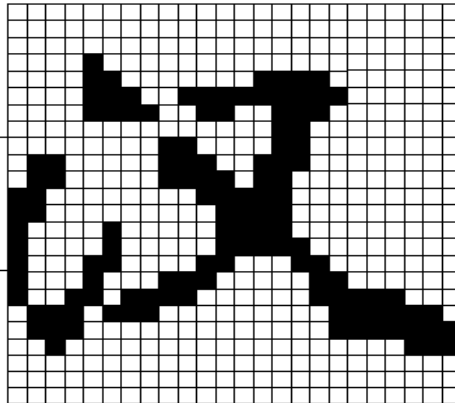
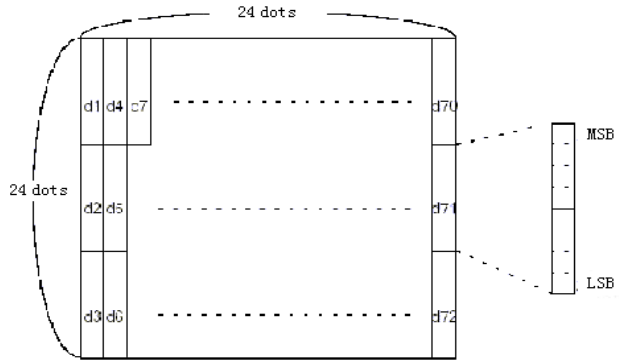
[Range] c1=[FEH], [A1H]≤c2≤[FEH], k=72, 0≤d≤255

[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. . . . .

## FS S n1 n2

---

[Name] Set left- and right-side Kanji character spacing

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

[Range]  $0 \leq n1 \leq 255$   
 $0 \leq n2 \leq 255$

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

. When the printer model used supports GS P, the left-side character spacing is [n1 \* horizontal or vertical motion units], and the right-side character spacing is [n2 \* horizontal or vertical motion units].

[Details] . When double-width mode is set, the left- and right-side character spacing is twice the normal value.

. The horizontal and vertical motion units are set by GS P. The previously specified character spacing does not change, even if the horizontal or vertical motion unit is changed using GS P.

. The value cannot be less than the minimum horizontal movement amount, and must be in even units of the minimum horizontal movement amount.

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

. In page mode, the horizontal or vertical motion unit differs in page mode, depending on starting position of the printable area as follows:

1. When the starting position is set to the upper left or lower right of the printable area using ESC T, the horizontal motion unit ( x ) is used.
2. When the starting position is set to the upper right or lower left of the printable area using ESC T, the vertical motion unit ( y ) is used.
3. The maximum right-side spacing is 255/180 inches for the paper roll and is approximately 35.983 mm (255/150 inches). Any setting exceeding the maximum is converted to the maximum automatically.

[Default] n1 = 0, n2 = 0

[Reference] GS P

## FS W n

---

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

[Format] ASCII      FS W n  
          Hex        1C 57 n  
          Decimal    28 87 n

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

[Description] .Turns quadruple-size mode on or off for Kanji characters.

.When the LSB of n is 0, quadruple-size mode for Kanji characters is turned off.

.When the LSB of n is 1, quadruple-size mode for Kanji 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 when double-width and double-height modes are both turned on.

.When quadruple-size mode is turned off using this command, the following characters are printed in normal size.

.When some of the characters on a line are different in height, all the characters on the line are aligned at the baseline.

.FS ! or GS ! can also select and cancel quadruple-size mode by selecting double-height and double-width modes, and the setting of the last received command is effective.

[Default] n = 0

[Reference] FS !, GS !

## ESC B n t

---

[Name] Printer to print single Beeper

[Format] ASCII ESC B n t

Hex 1B 42 n t

Decimal 27 66 n t

[Range] 1 <= n <= 9, 1 <= t <= 9

[Description] .printer to print single Beeper.

.n is the number of times the buzzer.

.t is the number of tweets buzzer each time (t \*50) ms

## ESC C m t n

---

[Name] Printer to print single Beeper and alarm light flashes

[Format] ASCII ESC C m t n

Hex 1B 43 m t n

Decimal 27 67 m t n

Range] 1 <= m <= 20, 1 <= t <= 20, 0 <= n <= 3,

[Description] Ÿprinter to print single Beeper and alarm lights blinking.

.m: 1 <= m <= 20, refers to the warning light flashes the number of times or buzzer.

.t: 1 <= t <= 20, refers to the warning lights flashing at intervals of t \* 50 ms or buzzer interval of (t \*50) ms.

.When n = 0, the buzzer does not beep while warning light does not blink;

.When n = 1, the buzzer sounds; when n = 2, warning lights flashing;

.When n = 3, the buzzer sounds, while warning lights flashing;