

## PROGRAMMER'S MANUAL – 58mm Printer

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 0 9

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 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 x 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 0D H

[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  $[(nL + nH \times 256) \times (\text{vertical or horizontal motion unit})]$  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 × 9)

$0 \leq x \leq 9$  Font B (7 × 9)

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

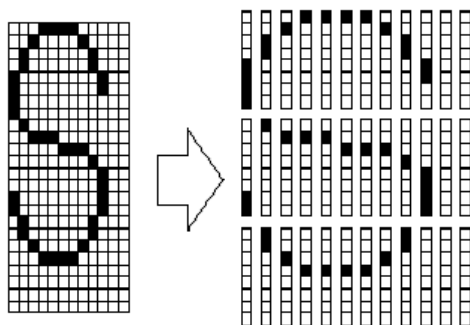
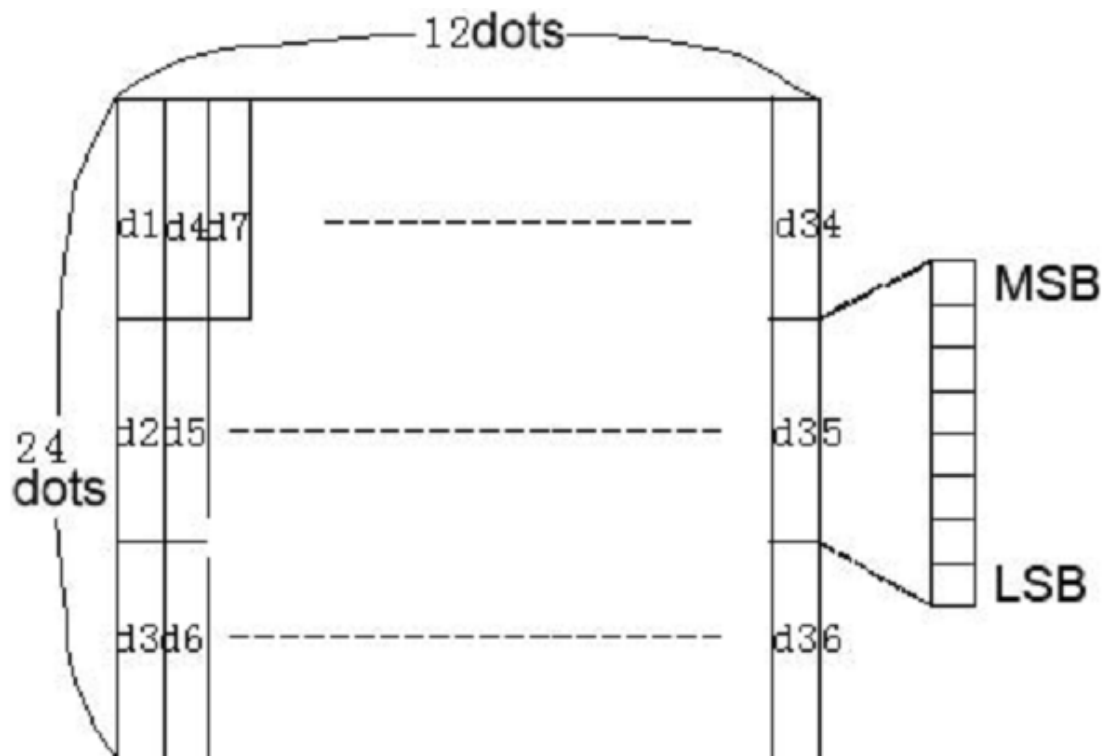
[Description] Defines user-defined characters.

- 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 × 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

$0 \leq nL \leq 255$  ;

$0 \leq nH \leq 3$  ;

$0 \leq d \leq 255$  ;

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

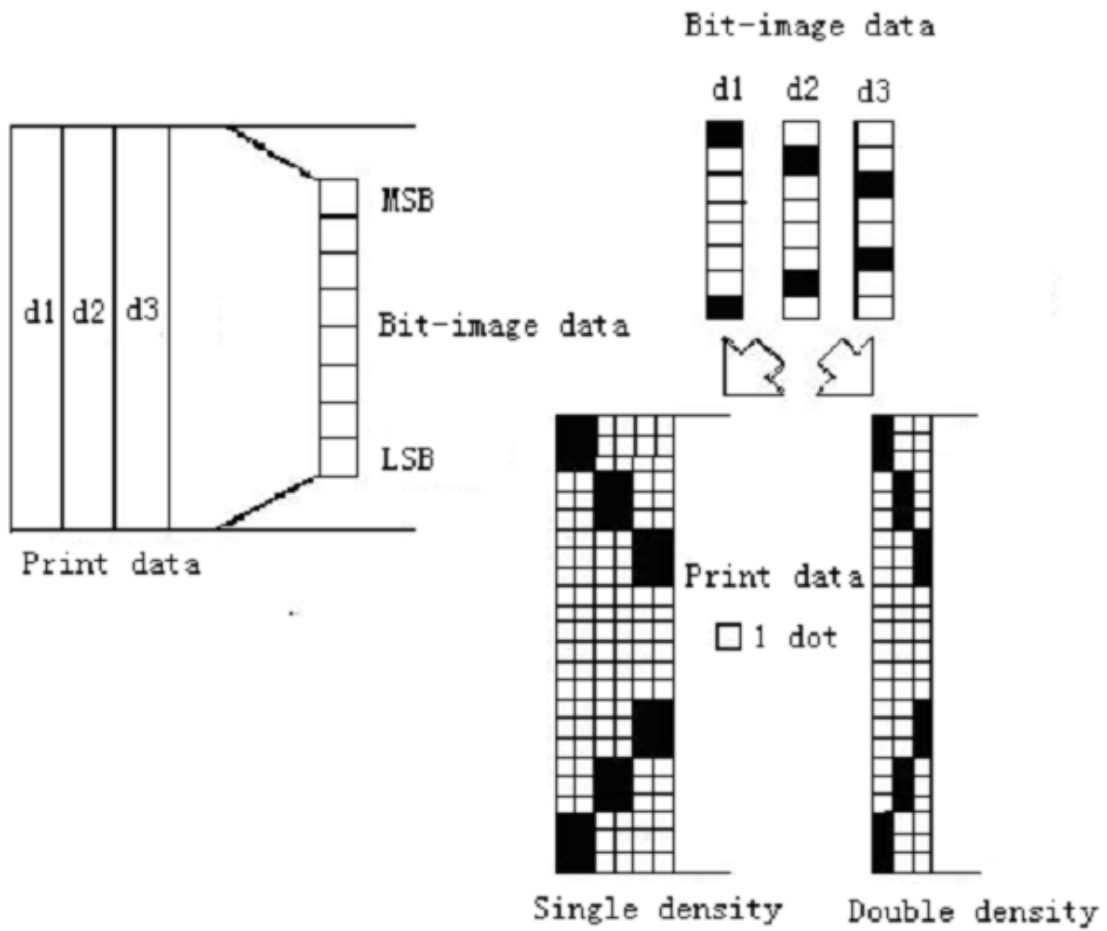
[Description] • Selects a bit-image mode using  $m$  for the number of dots specified by  $nL$  and  $nH$  .

- The  $nL$  and  $nH$  indicate the number of dots of the bit image in the horizontal direction. The number of dots is calculated by  $nL + nH \times 256$ .
- 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:

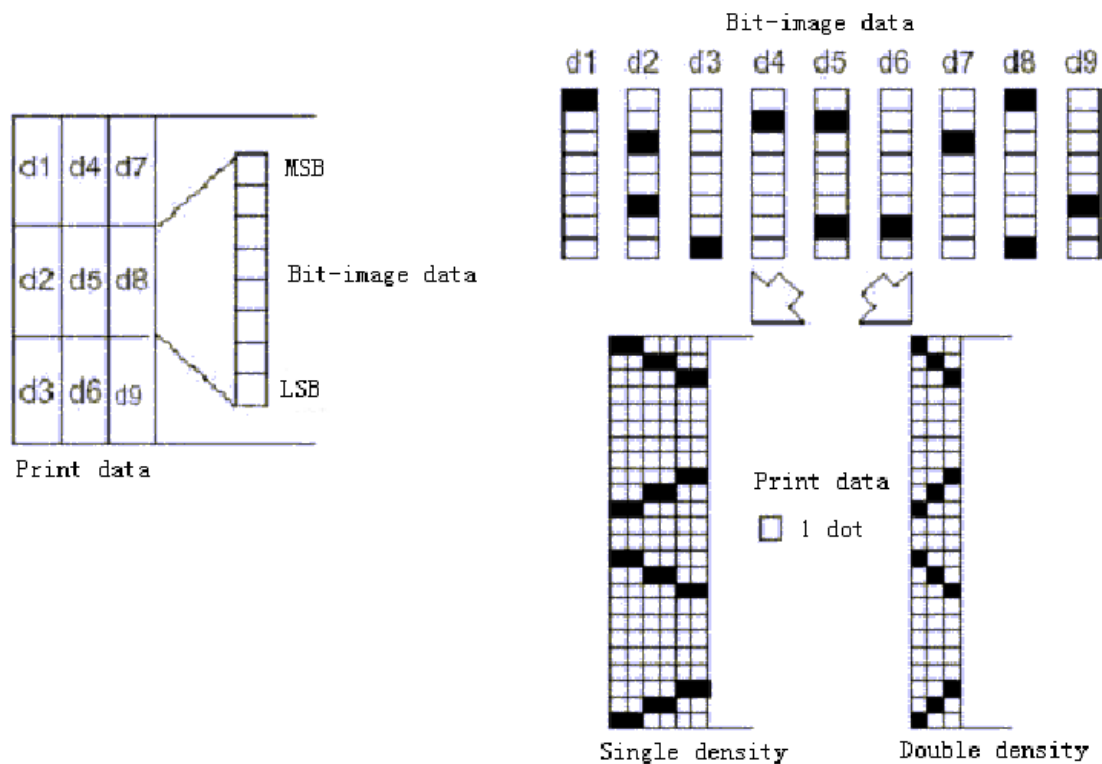
m	Mode	Vertical Direction		Horizontal Direction	
		Dots	Density	Density	Data (k)
0	8-dot single-density	8	67 DPI	100 DPI	$nL + nH \times 256$
1	8-dot double-density	8	67 DPI	200 DPI	$nL + nH \times 256$
32	24-dot single-density	24	200 DPI	100 DPI	$(nL + nH \times 256) \times 3$
33	24-dot double-density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

- Underline mode can also be turned on or off by using ESC ESC ESC ESC ! ! ! ! .
- This command is ignored when n exceeds the specified range.

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

2, 50 Turn on underline mode (2 dot width)

[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 ! .
- 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 4 4 n1 ... nk 00

Decimal 27 6 8 n1 ... nk 0

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

[Description] Set s 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 HTHHTHTHT .
- 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 4 5 n

Decimal 27 6 9 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 ! 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 character s 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 4 7 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 4 A 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:

<b>n</b>	<b>Character Set</b>
<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 \ n L 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  $[(nL + nH \times 256) \times \text{horizontal move unit}]$  away.

• The printer ignores the settings that out of the p rintable 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:

<b>n</b>	<b>Justification</b>
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 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 [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]  $0 \leq n \leq 10$  ,  $16 \leq n \leq 19$

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

<b><i>n</i></b>	<b>Page</b>
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.

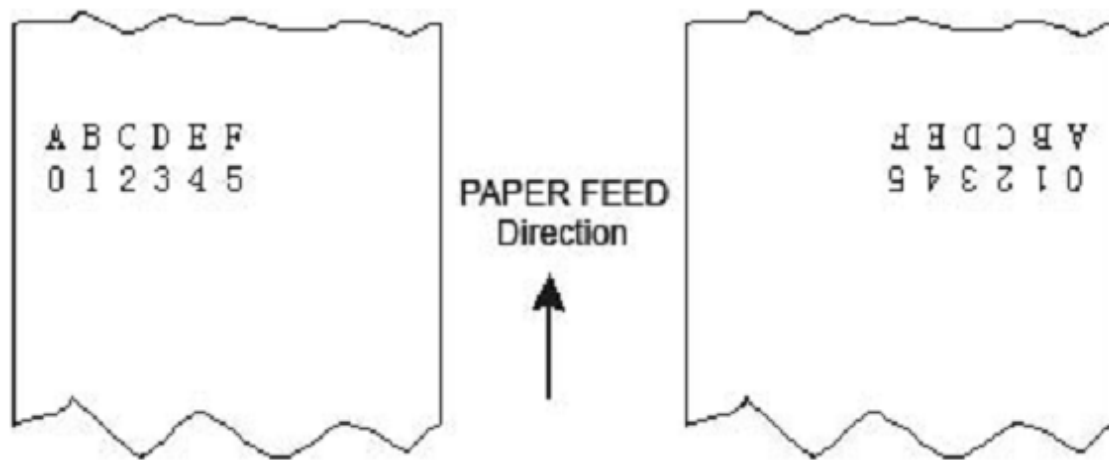
- When the LSB of n is 0, upside-down printing mode is turned off.
- When the LSB of n is 1, upside-down printing mode is turned on.

[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 1 D 2A x y d1 ... dk

Decimal 2 9 42 x y d1 ... dk

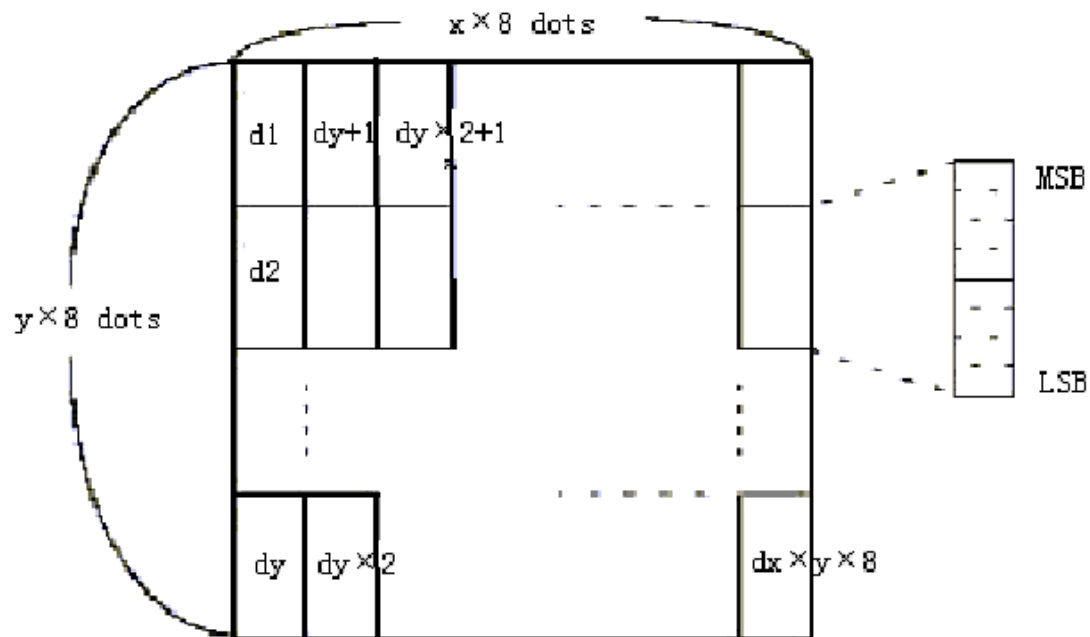
[Range]  $1 \leq x \leq 48$  ,  $1 \leq y \leq 48$  ,  $x \times y \leq 1500$  ,  $k = x \times y \times 8$

[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 1 D 2F m

Decimal 2 9 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 1 D 48 n

Decimal 2 9 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

3, 51 Both above and below the bar code

GS L nL nH

[Name] Set left margin

[Format] ASCII GS L nL nH

Hex 1 D 4C nL nH

Decimal 2 9 76 nL nH

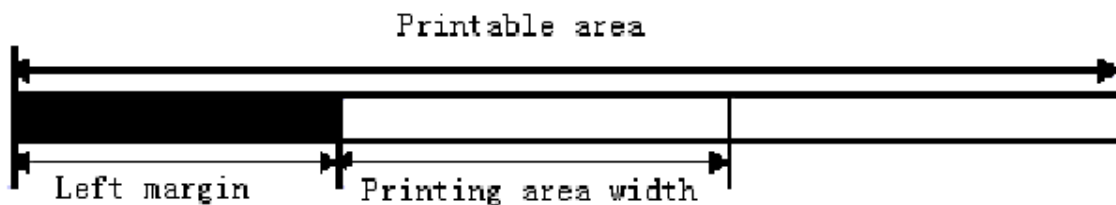
[Range]  $0 \leq nL \leq 255$ ;  $0 \leq nH \leq 255$

[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

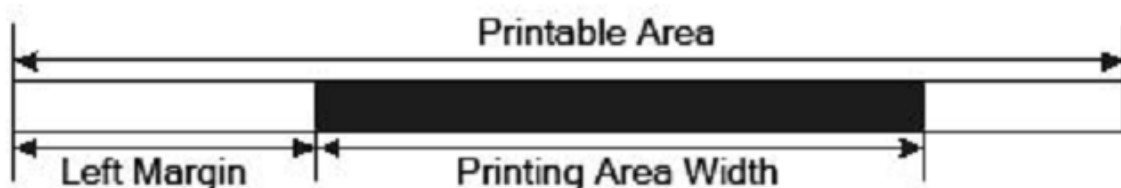
Hex 1 D 57 nL nH

Decimal 2 9 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 1 D 68 n

Decimal 2 9 104 n

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

[Description] Selects the height of the bar code. ( $n \times 0.125$  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 1 D 6B m d1 ... dk NUL

Decimal 2 9 107 m d1 ... dk NUL

① ASCII GS k m n d1 ... d n

Hex 1 D 6B m n d1 ... d n

Decimal 2 9 107 m n d1 ... d n

[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:

m	Bar Code System	Number of Characters	Characters	Remarks
①	0	UPC-A	$11 \leq k \leq 12$	0~9 $48 \leq d \leq 57$
	1	UPC-E	$11 \leq k \leq 12$	0~9 $48 \leq d \leq 57$
	2	JAN13 (EAN13)	$12 \leq k \leq 13$	0~9 $48 \leq d \leq 57$
	3	JAN8 (EAN8)	$7 \leq k \leq 8$	0~9 $48 \leq d \leq 57$
	4	CODE39	$1 \leq k \leq 255$	0~9, A~Z, SP, \$, %, +, -, .., / * (Start/End character) $45 \leq d \leq 57$ , $65 \leq d \leq 90$ , $d = 32, 36, 37, 43,$ $45, 46, 47$ $d = 42$ (Start/End character)
	5	ITF	$1 \leq k \leq 255$ (even number)	0~9 $48 \leq d \leq 57$
	6	CODABAR	$1 \leq k \leq 255$	0~9, A~D \$, +, -, .., /, ; $48 \leq d \leq 57$ , $65 \leq d \leq 68$ , $d = 36, 43, 45, 46,$ $47, 58$

②	65	UPC-A	$11 \leq n \leq 12$	0~9	$48 \leq d \leq 57$
	66	UPC-E	$11 \leq n \leq 12$	0~9	$48 \leq d \leq 57$
	67	JAN13 (EAN13)	$12 \leq n \leq 13$	0~9	$48 \leq d \leq 57$
	68	JAN8 (EAN8)	$7 \leq n \leq 8$	0~9	$48 \leq d \leq 57$
	69	CODE39	$1 \leq n \leq 255$	0~9, A~Z, SP, \$, %, +, -, ., / * (Start/End character)	$45 \leq d \leq 57$ , $65 \leq d \leq 90$ , d = 32, 36, 37, 43, 45, 46, 47 d = 42 (Start/End character)
	70	ITF	$1 \leq n \leq 255$ (even number)	0~9	$48 \leq d \leq 57$
	71	CODABAR	$1 \leq n \leq 255$	0~9, A~D \$, +, -, ., /, ;	$48 \leq d \leq 57$ , $65 \leq d \leq 68$ , d = 36, 43, 45, 46, 47, 58
	72	CODE93	$1 \leq n \leq 255$	NUL ~ SP(7FH)	$0 \leq d \leq 127$
	73	CODE128	$2 \leq n \leq 255$	NUL ~ SP(7FH)	$0 \leq d \leq 127$

[Details] • If d k 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 1 D 76 30 m xL xH yL yH d1....dk

Decimal 2 9 118 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 ensity</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.

3, 51 Quadruple 100 DPI 100 DPI

- 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 1 D 77 n

Decimal 2 9 119 n

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

[Description] Set s 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

5 0.625 0.625 1.62

FS ! n

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

[Format] ASCII FS ! n

Hex 1 C 21 n

Decimal 2 8 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 !

1 80 128 Underline mode is ON.

FS &

[Name] Select Kanji character mode

[Format] ASCII FS &

Hex 1 C 26

Decimal 2 8 38

[Description] Select s Kanji character mode .

[Reference] FS . , FS C

FS - n

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

[Format] ASCII FS - n

Hex 1 C 2D n

Decimal 2 8 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 .

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-rotate 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 receive command is effective.

[Reference] FS !

FS .

[Name] Cancel Kanji character mode

[Format] ASCII FS .

Hex 1 C 2E

Decimal 2 8 46

[Description] Cancel s 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 1 C 3 2 c1 c2 d1 ... dk

Decimal 2 8 50 c1 c2 d1 ... dk

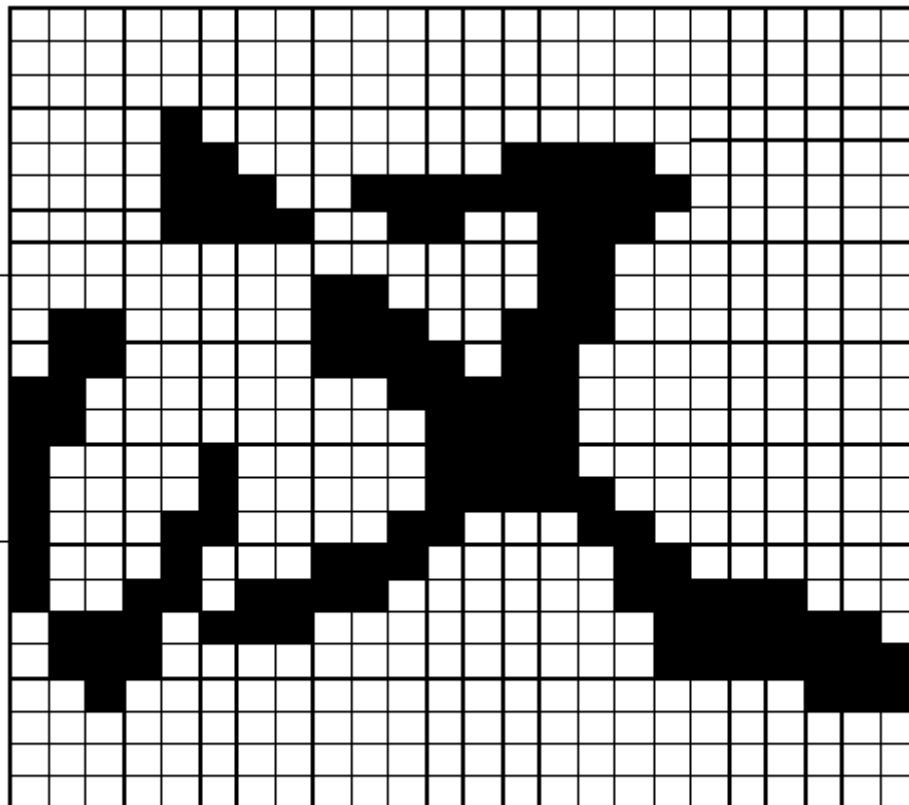
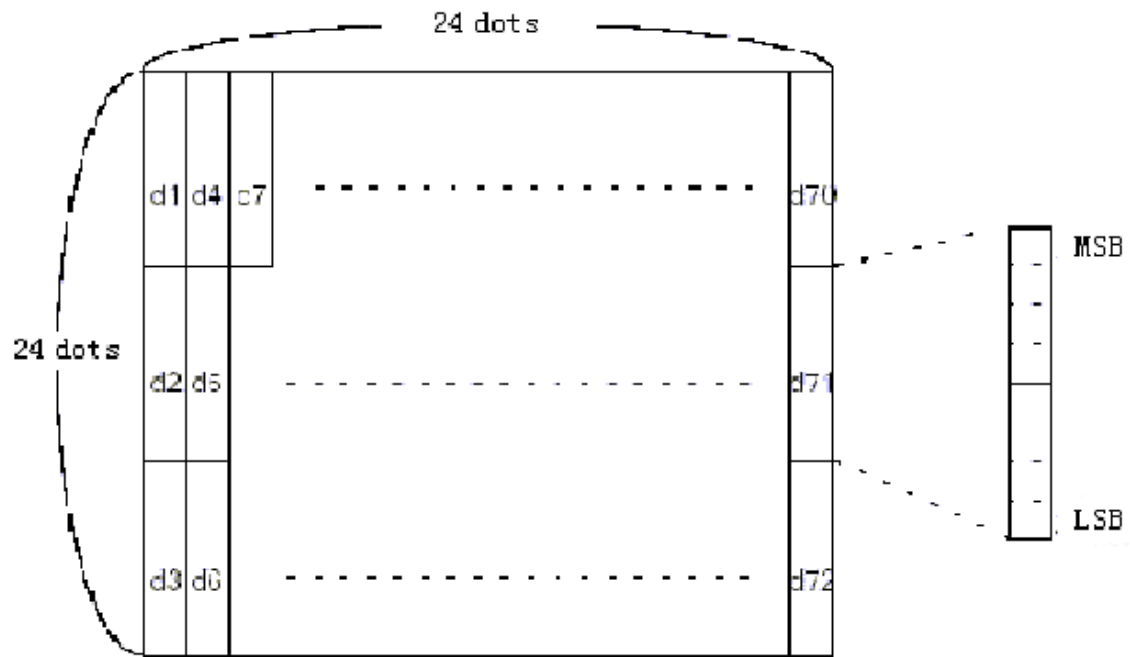
[Range]  $c1=[FEH]$  、  $[A1H] \leq c2 \leq [FEH]$  、  $k=72$  、  $0 \leq d \leq 255$

[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=COH, D6=30H, D9=38H, D12=70H. ....