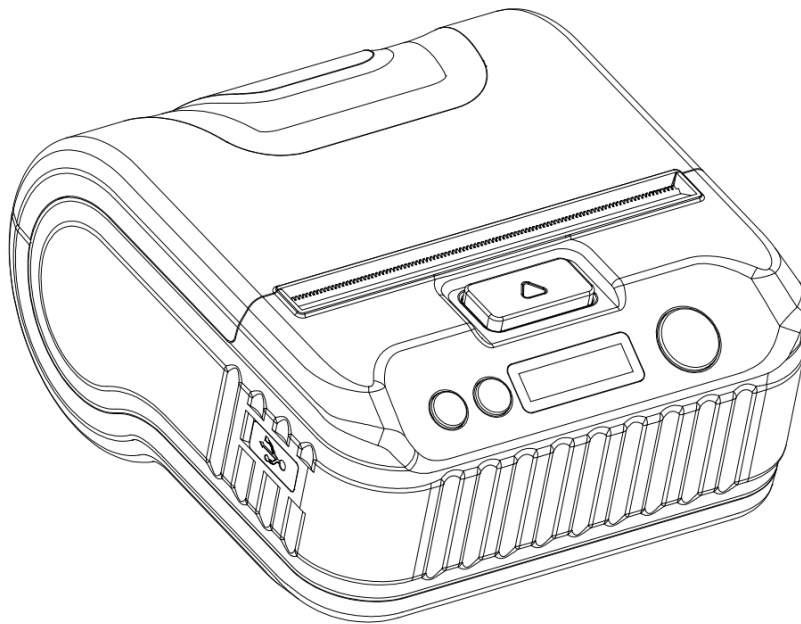


JAL-880L Label Printer

Command Manual

(VER 1.00)



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Format Specification

This section shows how to read and use the instructions of the manual. Please read it before programming.

The command instructions of the manual include:

1.ESC/POS command

- 1) Description of Name and function of the command. This is the first part of the command instruction, which provide the command of ASCII form and the function description.
- 2) Format. In this part, using three kinds of form: the ASCII, HEX and Decimal, to describe the command. The default is Decimal if have no especial description, For example: $1 \leq n \leq 4$, 1 is Decimal 1, not the ASCII code 1.
- 3) Range. Provide the scope of the Variable.
- 4) Description. Provide the detailed explanation of the command.
- 5) Notes. Provide some notes of the command. Commands under different mode, or coordinating with different commands may cause interaction, so we provide some details here.
- 6) Reference. Provide some other commands which are interrelated or similar.

--->	DLE EOT n	Real time transmission status			
---	[Format]	ASCII	DLE	EOT	n
		Hex	10	04	n
		Decimal	16	4	n
---	[Range]	$1 \leq n \leq 4$			
---	[Description]	Sending the printer state that designated by parameter n just in time			
---	[Notes]	When printer receives the command, returns to the interrelated status immediately....			
---	[Reference]				

2.CPCL command

- 1) Description of Name and function of the command. his is the first part of the command instruction, which provide the command of character form and the function description.
- 2) Format. This part uses the character encoding form to describe the instructions.

- 3) Instructions. Provide the scope of the instruct and range of variate.
- 4) Reference. Provide some other commands which are interrelated or similar.

---> PRINT

---> [Name] Print Order

---> [Format] PRINT

---> [Instruction] CPCL command, the last print command execution, receipt PRINT and ENTER, indicated a document is completed.

---> [Reference]

Note: CPCL instruct rules state:

1. Instructions are forms of characters, and all are capitalized, both ends with the ENTER、 line feeds.
2. Zebra instruct is judged by the followed conditions: starting with !, followed by a space, and then five figures.
3. Each parameter ended with Spaces or ENTER.(Several ended with ;)

Except first instruct (For Example: "! 0 200 200 210 1") "!" must be followed by a space, other parameters can follow with any space(For Example: ! 0 200 200 210 1).

4. Every number parameters for maximum of 65536.
5. If the parameter is the fixed length, content behind the last parameter will be ignored.
For Example:! 0 200 200 210 1 sdhsiadhsiahdsaudgu
6. The maximum of vertical coordinate: 400mm(3200dots), if >3200,will be 0.
7. The maximum of horizontal coordinates: 576 dots, if >3200,will be 0.
8. For the position of overlapping print content,
9. Only after received the PRINT instruction, the machine will print, otherwise it will not print at all.
10. There can be spaces in front of the instructions, but can not have other content.

ESC/POS Command

HT Horizontal tab

[Name] Horizontal tab

[Format]	ASCII	HT
	Hex	09
	Decimal	9

[Description] Moves the print position to the next horizontal tab position.

[Notice]

- This command is ignored unless the next horizontal tab position has been set.
- If the next position of horizontal tab exceeds the printing area, the current position will be set as [printing width+1].
- Horizontal tab positions are set with ESCD.
- If the current position is at [printing width+1] when receives the command, the printer will carry out the action in row buffer and move the printing position to the Zero position of next line.
- The default value of tab position is every 8 standard ASCII characters (12*24) a tab.
- When the current row buffer is full, the printer will carry out the action below:
Under standard mode, printer prints the content of current row and sets the Printing position at the zero position of next line
Under page mode, the printer begins a new line and set the printing position at the zero position of next line.

[Reference] **ESC D**

LF Printing and feeding line

[Name] Printing and feeding line

[Format]	ASCII	LF
	Hex	0A

Decimal 10

[Description] Printing the datas in the print buffer and feeds one line

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

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

CR Printing and entering

[Name] Printing and entering

[Format] ASCII CR

Hex 0D

Decimal 13

[Description] the same as LF when the command is permitted,if not , it will be ignored.

[NOTICE]

- Setting the printing position at the beginning of the line.
- The command is ignored under the serial interface mode.
- The printer allocation decides If the command is enabled under parallel mode.

[Reference] **LF**

ESC SP n Setting the right space of characters

[Name] Setting the right space of characters

[Format]

ASCII ESC SP n

Hex 1B 20 n

Decimal 27 32 n

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

[Description] Setting the right space of character for[n*units of vertical or lateral shifting]

[Note]

- When the character enlarges,the space enlarges the same times.
- The command doesn't effect the setup of Chinese characters.
- The value which is set by the command under page and standard mode is mutual independence.
- Units of vertical or lateral shifting area pointed by **GSP**.Changing units of vertical or lateral shifting does not change the current right space.

-Using lateral shifting units under standard mode.

-According to the direction of printing area and the beginning position to select vertical or lateral shifting units under page mode.

The selection modes areas below:

①Using lateral shifting when the beginning position is the top left or lower right corner of the printing area which is set by **ESC T**;

②Using vertical shifting when the beginning position is the lower left or top right corner of the printing area which is set by **ESC T**;

The maximum right space is 255/203 inches.If setting beyond this value,it will automatically change into the maximum distance.

[Default] n = 0

[Reference] **GS P**

ESC ! n selecting print mode

[Name] selecting print mode

[Format]	ASCII	ESC	!	n
	Hex	1B	21	n
	Decimal	27	33	n

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

[Description] Setting character print mode according to value of n

bit	1/0	HEX	Decimal	Function
0	0	00	0	Standard ASCII style A (12×24)
	1	01	1	Compressing ASCII style B(9×17)
1,2				Undefined
3	0	00	0	Cancel bold font
	1	08	8	Select bold font
4	0	00	0	Cancel double height mode
	1	10	16	Select double height mode

5	0	00	0	Cancel double width mode
	1	20	32	Select double width mode
6				undefined
7	0	00	0	Cancel underline mode
	1	80	128	Select underline mode

- [Notice] -When selected double height or double width mode,double size characters are printed.
- Any character can be added underline except the space set by **HT** and the characters clock wise 90 degrees.
- Underline is not related to characters but confirmed by **ESC-**.
- When some characters in a line are double or more height,all the characters on the line are aligned at the base line.
- ESC E** can also selector cancel bold font.However,the command of the setting of the last received command is effective.
- ESC-** can also turn on or off underline mode.However, the setting of the last received command is effective.
- GS !** can also set the character boundary.However,the setting of the last

[Default] n = 0

[Reference] **ESC -, ESC E, GS !**

ESC \$ nL nH Setting absolute print position

[Name] Setting absolute print position

[Format]	ASCII	ESC	\$	nL nH
	Hex	1B	24	nL nH
	Decimal	27	36	nL nH

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

$0 \leq nH \leq 255$

[Description] Setting the distance from the beginning of the line to the position at which (nL+nH×256) ×(vertical or horizontal motion unit)

[Reference]

This command is ignored if the setting position is out of the printing area.

Vertical and horizontal motion units are set by GS P.

Using horizontal motion units under standard mode.

Under page mode, selecting to use vertical or horizontal motion units according to the direction of printing area and zero position. The system of selection is as below:

- ① Using horizontal shifting when the beginning position is the top left or lower right corner of the printing area which is set by ESC T;
- ② Using vertical shifting when the beginning position is the lower left or top right corner of the printing area which is set by ESC T;

[Reference] **ESC \, GS \$, GS \, GS P**

ESC % n Selecting/Canceling self defined character

[Name] Selecting/Canceling self defined character

[Format]	ASCII	ESC	%	n
	Hex	1B	25	n
	Decimal	27	37	n

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

[Description] Selecting/Canceling self defined character

- When n(LSB)=0, cancel user defined character set.
- When n(LSB)=1, select user defined character set.

[Notice] · When cancel user defined character set, auto select built in character set.
· n only LSB is available.

[Default] n = 0

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

ESC & y c1 c2 [x1 d1...d(y × x1)]...[xk d1...d(y × xk)] Define user defined character

[Name] Define user defined character

[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

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

$0 \leq x \leq 12$ standard ASCII style A(12×24)

$0 \leq x \leq 9$ compressing ASCII style B (9 × 17)

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

[Description] Define user defined character

- y specify the vertical byte number
- c1 specify the code of initial character, c2 specify the code of terminal character.
- x specify the vertical byte number

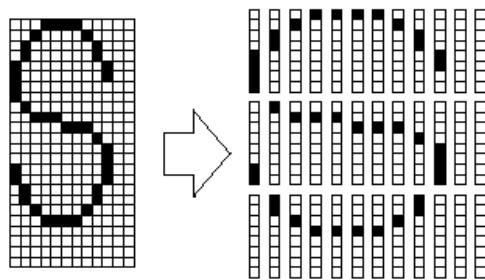
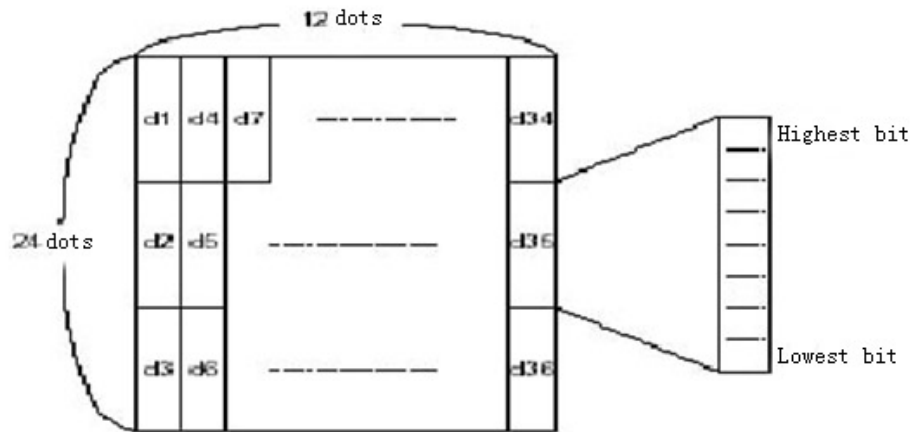
[Notice]

- The code range of defined character: from <20>H to <7E>H. (95 characters)
- Can define the continuous codes for several characters. When only one character is needed, c1=c2.
- d is the dot data of the character. Data of each dot begins from the left.
- Defining the data of user defined character is (y×x) bytes.
- Setting the printing dot's corresponding bit is 1 or nonprinting dot's one is 0.
- The user defined characters will be deleted in the following situation:
 - ① ESC @ is carried out
 - ② ESC ? is carried out
 - ③ The printer reset or power off.
- Only the MSB is valid at the vertical third byte when the self defined characters are style B(9×17).

[Default] Built in character set.

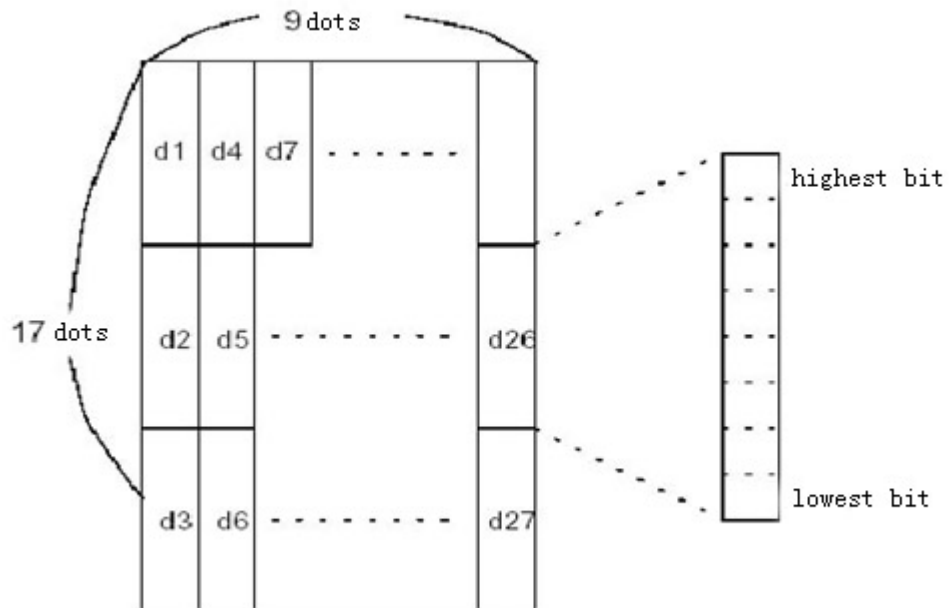
[Reference] ESC %, ESC ?

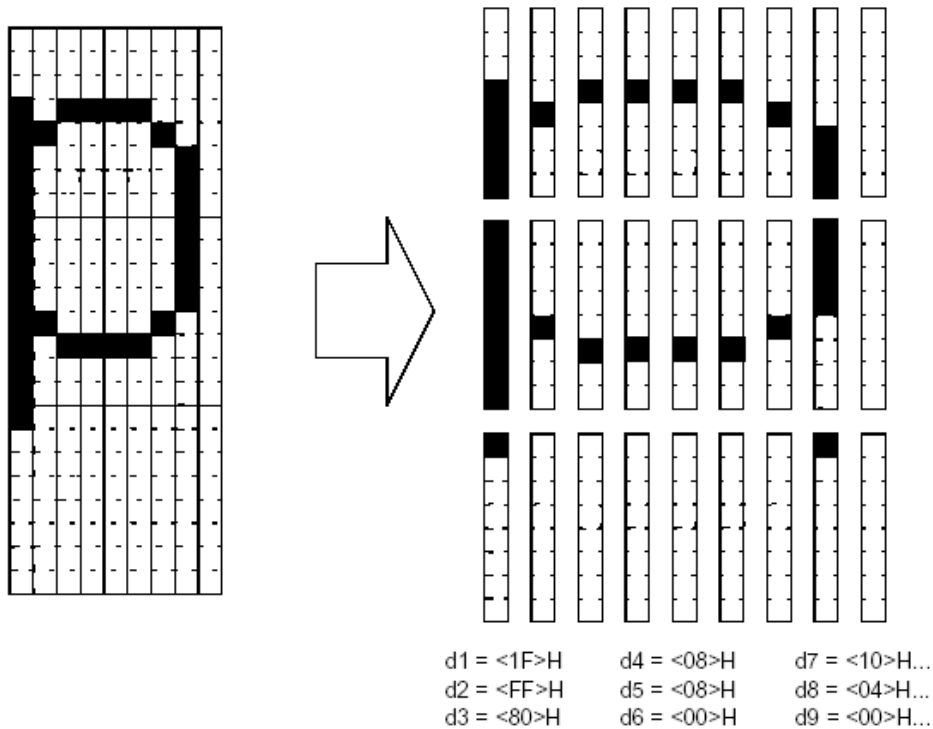
[Example] · When select the standard ASCII style(12×24)



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

- When select the compressing ASCII style (9×17)





ESC * m nL nH d1... dk Selecting bit map mode

[Name] Selecting bit map 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

$0 \leq nL \leq 255$

$0 \leq nH \leq 3$

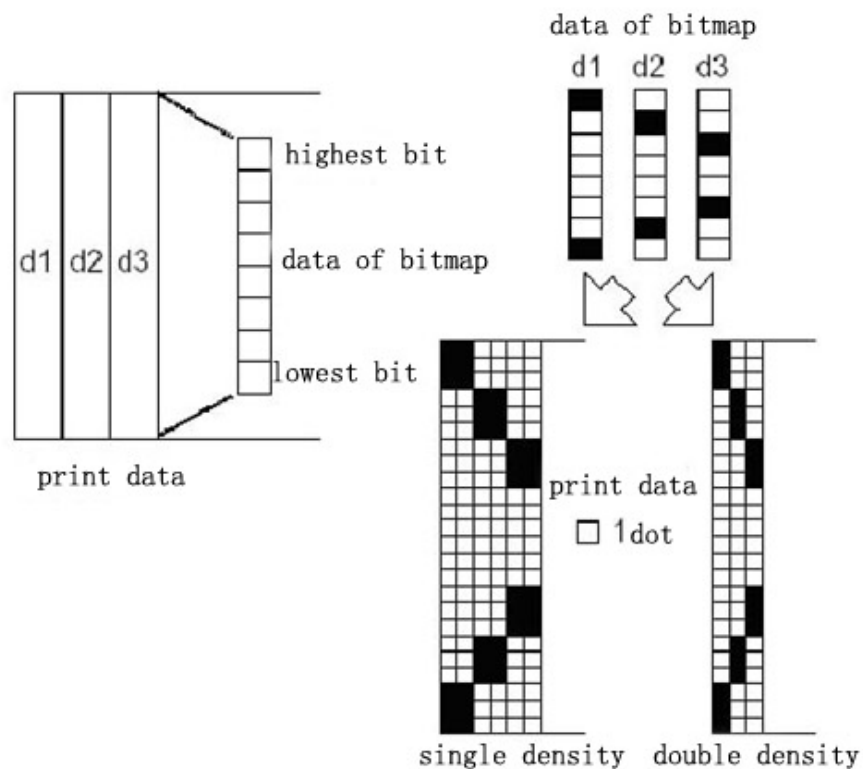
$0 \leq d \leq 255$

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

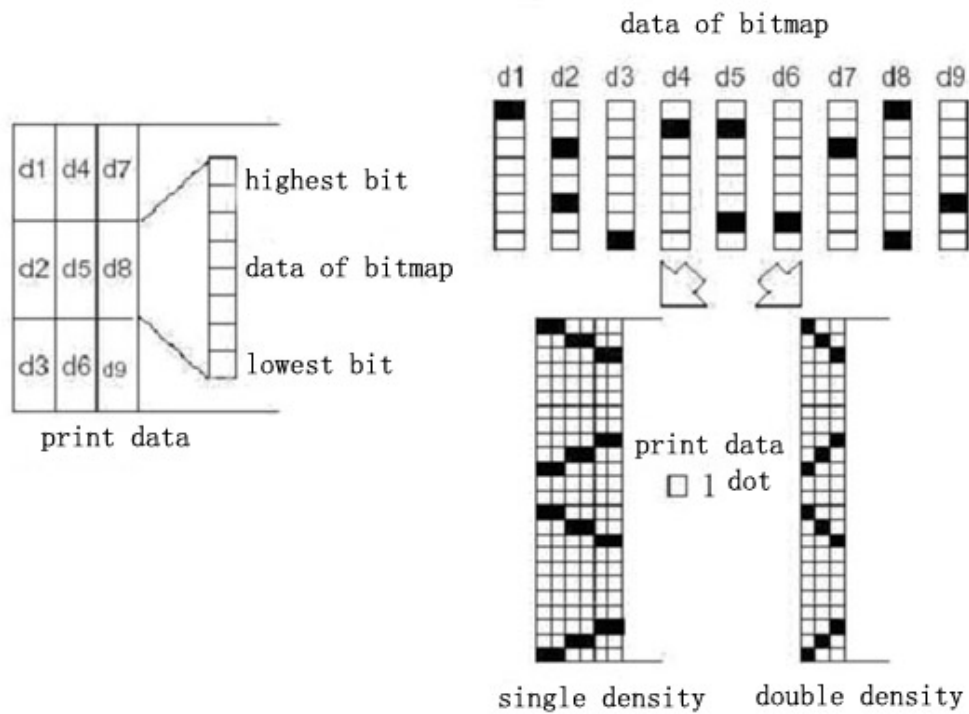
m	Mode	Vertical		Horizontal	
		dots	Dpi	Dpi	No.of datas (k)
0	8SD	8	68 DPI	101 DPI	$nL + nH \times 256$

1	8DD	8	68 DPI	203 DPI	$nL + nH \times 256$
32	24SD	24	203 DPI	101 DPI	$(nL + nH \times 256) \times 3$
33	24DD	24	203 DP	203 DPI	$(nL + nH \times 256) \times 3$

- [Note]
- If the value of m goes beyond the range, nL and the datas later will be regarded as normal datas to deal with.
 - The dots number of horizontal printing depends on nL and nH, total number is $nL + nH \times 256$.
 - The part of the bit map that goes beyond the current area will be cut off
 - d is the data of bit map. Printing when the relevant position of every byte is 1, and when it is 0, will not print this point.
 - The printer will return to the mode of normal data processing after send the data of bit map.
 - Except inversion mode, this command will not be influenced by other modes.
(black、double print、underline、enlarge character and invert)
 - Relationship between data and printing point is as below:
 - choosing 8 dots density:



- choosing 24 dots density:



ESC – n **Select / cancel underline**

[Name] Select / cancel underline

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

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

[Description] Selecting or canceling the underline mode according to the value of n

n	Function
0, 48	Cancel underline mode
1, 49	Select underline mode(1dot width)
2, 50	Select underline mode(2dots width)

- [Notice]
- Underline can be added under all characters(including right spacing),but not including the space set by HT
 - The underline can not act on the characters of clockwise 90 degrees and inverting
 - The width of the underline will not be changed,and the character rest will not be

Underlined when cancel the underline mode. The default width is 1 dot width.

· Changing the character boundary will not influence the current underline width

· Selecting/canceling the underline can also be set by ESC!. However, the setting of the last received command is effective.

· The command doesn't affect the Chinese character setting.

[Default] n = 0

[Reference] ESC !

ESC 2 Setting default height of line

[Name] Setting default height of line

[Format]	ASCII	ESC	2
	Hex	1B	32
	Decimal	27	50

[Description] Selecting 32 dots (4mm, about 1/6 inch) line height

[Notice] · Line height is independent under standard and page mode

[Reference] ESC 3

ESC 3 n Setting the height of the line

[Name] Setting the height of the line

[Format]	ASCII	ESC	3	n
	Hex	1B	33	n
	Decimal	27	51	n

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

[Notice] Setting [n*units of vertical or lateral shifting] inches as the height of the line

[Notice] · Setting the height of the line is mutual independence under standard and page mode.

· Units of vertical or lateral shifting are set by GSP, changing this setting will not influence current height of line

· Using vertical shifting units under standard mode

· According to the direction of printing area and the beginning position to select lateral or vertical shifting units under page mode. The selection modes are as below:

- ① Using vertical shifting when the beginning position is the top left or lower right corner of the printing area which is set by ESC T;
- ② Using lateral shifting when the beginning position is the lower left or top right corner of the printing area which is set by ESC T;

· The maximum distance of feeding paper is 1016mm(40inches). If it is beyond this distance, taking the maximum distance.

[Default value] The default height of line is 4mm(about 1/6 inch)

[Reference] ESC 2, GS P

ESC = n Selecting printer

[Name] Selecting printer

[Format] ASCII ESC = n
 Hex 1B 3D n
 Decimal 27 61 n

[Range] $0 \leq n \leq 1$

[Description] Selecting printer, the printer selected can receive the data sent by main computer:

Bit	1/0	Hex	Decimal	Function
0	0	00	0	Forbidding printer
	1	01	1	Permitting printer
1-7				Undefined

[Notice] · When the printer is forbidden, the printer ignores all the commands (DLEEOT, DLEENQ, DLEDC4) except real time command until the command is allowed.

[Default value] n = 1

EEESC ? n Cancel user self-defined character

[Name] Cancel user self-defined character

[Format] ASCII ESC ? n

	Hex	1B	3F	n
	Decimal	27	63	n
[Range]	$32 \leq n \leq 127$			
[Description]	Cancel user self-defined character			
[Note]	<ul style="list-style-type: none"> · Cancel the character code n of user self-defined character. The character use in character after canceling. · The command deletes from the matrix which is selected by the mould concentrates to the specified code of the selective ESC ! · The command is ignored if the self-defined characters have no the character. 			
[Reference]	ESC &, ESC %			

ESC @ Initializing the printer

[Name]	Initializing the printer			
[Format]	ASCII	ESC	@	
	Hex	1B	40	
	Decimal	27	64	
[Description]	Clearing the data in the printing buffer;The printing mode is set to the default			
[Notice]	<ul style="list-style-type: none"> · The DIP switch set does not test again. · Retaining the content in command buffer · Retaining the macro definition · Flash bit map is not erased · Flash user data is not erased · Servicing counter value is not erased · The set value specified by GS(E is not erased. 			

ESC D n1...nk NUL Setting horizontal tab positions

[Name]	Setting horizontal tab positions			
[Format]	ASCII	ESC	D	n1...nk NUL
	Hex	1B	44	n1...nk 00
	Decimal	27	68	n1...nk 0

[Range] $1 \leq n_1 \leq n_2 \leq \dots \leq n_k \leq 255$

$0 \leq k \leq 32$

[Description] Setting horizontal tab positions

- N specifies the column number for setting a horizontal tab position from the beginning of the line.
- There are k tab positions.

[Notice] ·Horizontal tab positions can be gotten by the following formula:

The horizontal tab position is stored as a value of [character width×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
- Up to 32 tab positions(k=32) can be set.Data exceeding 32 tab positions is processed as normal data
- Tab position is ordered by ascending order and the end mark is NUL
- 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
- The character width is independence under standard and page mode

[Default] The default tab setting is one tab position for every 8 standard ASCII characters (12 x 24).

[Reference] HT

ESC E n Select / Cancel bold font print

[Name] Select / Cancel bold font print

[Format] ASCII ESC E n

	Hex	1B	45	n
	Decimal	27	69	n
[Range]	$0 \leq n \leq 255$			
[Description]	Select / Cancel bold font print			
	When the lowest bit of n is 0, cancel bold font print			
	When the lowest bit of n is 1, select bold font print			
[Notice]	<ul style="list-style-type: none"> · Only the lowest bit of n is effective. · Selecting/canceling bold font print can also be set by ESC!. However, the setting of the last received command is effective. 			
[Default value]	n = 0			
[Reference]	ESC !			

ESC G n Selecting/canceling double print mode

[Name]	Selecting/canceling double print mode			
[Format]	ASCII	ESC	G	n
	Hex	1B	47	n
	Decimal	27	71	n
[Range]	$0 \leq n \leq 255$			
[Description]	Selecting/canceling double print mode			
	<ul style="list-style-type: none"> · When the lowest bit of n is 0, canceling double print mode · When the lowest bit of n is 1, selecting double print mode 			
[Note]	<ul style="list-style-type: none"> · Only the lowest bit of n is effective. · The effect of this command is the same as bold font printing. 			
[Default value]	n = 0			
[Reference]	ESC E			

ESC J n Printing and feeding paper

[Name]	Printing and feeding paper			
[Format]	ASCII	ESC	J	n
	Hex	1B	4A	n

Decimal 27 74 n

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

[Description] Printing datas in print buffer and feeding paper for [n*units of vertical or lateral shifting]inches

[Notice] ·The current print position will be set to the beginning of the line after printing.
·The ESC 2 and ESC 3 commands set does affect the feeding distance.
·Units of vertical or lateral shifting are set by GSP
·Using vertical shifting units under standard mode
·According to the direction of printing area and the beginning position to select vertical or lateral shifting units under page mode.The selection modes are as below:
① Usingverticalshiftingwhenthebeginningpositionisthetopleftorlowerright Corner of the printing area which is set by ESC T;
② Using lateral shifting when the beginning position is the lower left or top right corner of the printing area which is set by ESC T;
· The maximum distance of feeding paper is 1016mm(40inches).If it is beyond this distance,taking the maximum distance.

[Reference] **GS P**

ESC M n Select font

[Name] Select font

[Format] ASCII ESC M n

Hex 1B 4D n

Decimal 27 77 n

[Range] n = 0, 1,48, 49

[Description] select font

n	Function
0,48	select standard ASCII style (12*24)
1,49	select compressing ASCII style (9*17)

[Default value] n = 0

ESC R n Selecting international character set

[Name] Selecting international character set

[Format] ASCII ESC R n
 Hex 1B 52 n
 Decimal 27 82 n

[Range] $0 \leq n \leq 15$

[Description] Selecting an international character set from the table below

n	Character Set
0	U.S.A.
1	France
2	Germany
3	U.K.
4	Denmark I
5	Sweden
6	Italy
7	Spain I
8	Japan
9	Norway
10	Denmark II
11	Spain II
12	Latin
13	Korea
14	Slovenia/Croatia
15	China

[Default] n = 15 [GBK]

 n = 0 [the model except GBK]

[Reference]

ESC V n Selecting/canceling character 90 clockwise

[Name] Selecting/canceling character 90 clockwise.

[Format] ASCII ESC V n
 Hex 1B 56 n
 Decimal 27 86 n

[Range] $0 \leq n \leq 1, 48 \leq n \leq 49$

[Description] Selecting/canceling character 90 clockwise

Value of n:

n	Function
0,48	canceling character 90clockwise
1,49	selecting character 90clockwise

[Notice] ·This command is just effective under standard mode.

 ·The underline will be not 90 clockwise when select the underline mode.

 ·The double height and double width in clockwise rotation of 90 degrees mode are opposite to the direction in normal mode.

[Default value] n = 0

[Reference] **ESC !, ESC -**

ESC \ nL nH Setting relative horizontal printing position

[Name] Set relative horizontal printing 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] Sets the lateral relative position based on the current position by using the Horizontal or vertical motion unit

· This command sets the distance from the current position to $n[(nL+nH \times 256) \text{horizontal motion unit}]$

[Notice]

- Any setting that exceeds the printable area is ignored.
- When printing position moves to the right: $nL+nH \times 256=N$ 。
- When printing position moves to the left, using radix complement: $nL+nH \times 256=65536-N$ 。
- The print starting position moves from the current position to $[N \times \text{horizontal motion unit}]$
- Vertical and horizontal motion units are set by GSP command.
- Horizontal motion units are used under standard mode.
- Under page mode, selecting to use horizontal or vertical motion units according to the direction of printing area and zero position.

The system of selection is as below:

- ① Using horizontal shifting when the beginning position is the top left or lower right corner of the printing area which is set by ESC T;
- ② Using vertical shifting when the beginning position is the lower left or top right corner of the printing area which is set by ESC T

[Reference] **ESC \$, GS P**

ESC a n

[Name] Selecting alignment mode

[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] Making all the printing data array in appointed alignment

Relationship between value of n and alignment are as below:

n	Alignment
0,48	Align left

1, 49 Align center

2, 50 Align right

[Notice] ·This command is just available at the zero position of the line and under

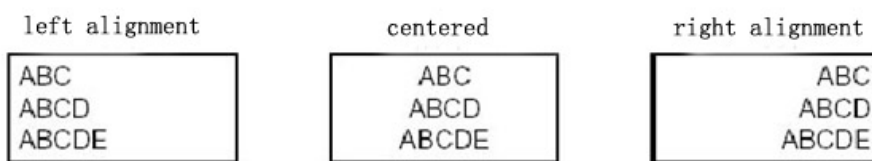
Standard mode.

·This command just changes the internal mark position under page mode.

·This command revises the blank area according to HT,ESC\$ or ESC\.

[Default value] n = 0

[Example]



ESC c 5 n

[Name] Permitting/Forbidding key

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

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

[Description] Permitting/Forbidding key.

·When the lowest bit of n is 0, key works

·When the lowest bit of n is 1, key is forbidden.

[Notice] ·Only the lowest bit of n is effective.

·When the key is forbidden,it does not work

·When carrying out the macro command, key works all the time,but can not feed paper by it

[Default value] n = 0

ESC d n

[Name]	Printing and feeding paper forward for n lines			
[Format]	ASCII	ESC	d	n
	Hex	1B	64	n
	Decimal	27	100	n
[Range]	$0 \leq n \leq 255$			
[Description]	Printing the data in print buffer and feeding paper forward for n lines(character row)			
[Notice]	·This command sets the loading position at the beginning of the row			
	·This command does not influence the line space which is set by ESC 2 or ESC 3			
	·The maximum distance of feeding paper is 1016mm.If it is beyond this distance,taking the maximum distance.			
[Reference]	ESC 2, ESC 3			

ESC t n

[Name]	Selecting character code table			
[Format]	ASCII	ESC	t	n
	Hex	1B	74	n
	Decimal	27	116	n
[Range]	$0 \leq n \leq 255$			
[Description]	Selecting code page n from character code table.Selection of n are as below:			
N	Code Page			
0	CP437 [U.S.A., Standard Europe]			
1	Katakana			
2	PC850 [Multilingual]			
3	PC860 [Portuguese]			
4	PC863 [Canadian-French]			
5	PC865 [Nordic]			
6	WCP1251 [Cyrillic]			

7	CP866 Cyrillic #2
8	MIK[Cyrillic /Bulgarian]
9	CP755 [East Europe, Latvian 2]
10	Iran
11	reserve
12	reserve
13	reserve
14	reserve
15	CP862 [Hebrew]
16	WCP1252 Latin I
17	WCP1253 [Greek]
18	CP852 [Latina 2]
19	CP858 Multilingual Latin I +Euro)
20	Iran II
21	Latvian
22	CP864 [Arabic]
23	ISO-8859-1 [West Europe]
24	CP737 [Greek]
25	WCP1257 [Baltic]
26	Thai 1
27	CP720[Arabic]
28	CP855
29	CP857[Turkish]
30	WCP1250[Central Eurpoe]
31	CP775
32	WCP1254[Turkish]
33	WCP1255[Hebrew]
34	WCP1256[Arabic]
35	WCP1258[Vietnam]

36	ISO-8859-2[Latin 2]
37	ISO-8859-3[Latin 3]
38	ISO-8859-4[Baltic]
39	ISO-8859-5[Cyrillic]
40	ISO-8859-6[Arabic]
41	ISO-8859-7[Greek]
42	ISO-8859-8[Hebrew]
43	ISO-8859-9[Turkish]
44	ISO-8859-15 [Latin 3]
45	Thai2
46	CP856

[Default value] $n = 0$

[Reference]

ESC { n

[Name] Selecting/canceling invert printing mode

[Format]	ASCII	ESC	{	n
	Hex	1B	7B	n
	Decimal	27	123	n

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

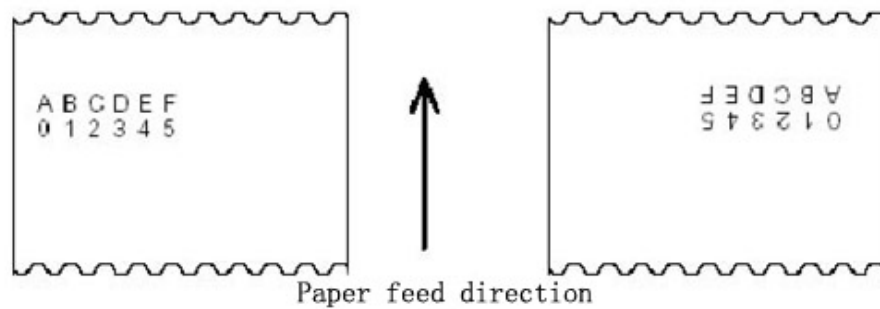
[Description] Selecting/canceling invert printing mode

- When the lowest bit of n is 0,canceling invert printing mode
- When the lowest bit of n is 1,selecting invert printing mode.

- [Notice]
- Only the lowest bit of n is effective.
 - The command is just effective on the beginning of the line under standard mode.
 - The command just changes internal marker bit under page mode.
 - The command has no effect on the printing of page mode.
 - Under invert printing mode,the printer will whirl the line of being printed for 180 degree.

[Default value] $n = 0$

[Example]



FS P n

[Name] Printing the prestored bit map

[Format]	ASCII	FS	P	n
	Hex	1C	50	n
	Decimal	28	80	n

[Range] $0 \leq n \leq 7$

[Description] This command prints the 2 value bit map which is pre-stored in the printer and not easily lost. The bit map in memory which is not easily lost can be produced and written by the special tool in PC. The max width is 576 dots, and max height is 910 dots.

N is the destination bit map code.

[Notice]

- . Before the destination bit map code has not been defined, this command is not available.
- . The bit map must be the 2 value bit map
- . This command will not be influenced by printing mode. (bold、overlap、underline、character dimension or inverse print).
- . If the width of printed bitmap is beyond one line, the out part will not be printed.
- . It needs special tool to download bit map. Please see (SP-L31 setting tool software). The bit map downloaded by this mode will not lose unless downloading other bitmap to cover it .

GS ! n

[Name]	Selecting character boundary			
[Format]	ASCII	GS	!	n
	Hex	1D	21	n
	Decimal	29	33	n
[Range]	$0 \leq n \leq 255$			

($1 \leq \text{longitudinal magnification multiple} \leq 8$, $1 \leq \text{lateral magnification multiple} \leq 8$)

[Description] Using 0 to 2 bits to select character height, 4 to 7 bits to select character width
As follows:

Bit	0/1	Hex	Decimal	Function
0-3				Selecting character height, see table1
4-7				Selecting character width, see table2

Table 1

Selecting character height

Hex	Decimal	longitudinal magnification
00	0	1 (normal)
01	1	2 (double height)
02	2	3
03	3	4
04	4	5
05	5	6
06	6	7
07	7	8

Table 2

Selecting character width

Hex	Decimal	lateral magnification;
00	0	1 (normal)
10	16	2 (double width)
20	32	3
30	48	4
40	64	5
50	80	6
60	96	7
70	112	8

[Notice] · This command is effective to all the characters(ASCII and Chinese characters) except HRI characters

- If n is out of the range, this command will be neglected.
- Under standard mode, length ways is the direction of feeding paper, landscape is perpendicular to the direction of feeding paper. But when the character rotates 90 degree clockwise, portrait and landscape are reversed
- Portrait and landscape under page mode depend on the direction of the area.
- All the character are aligned baseline when the character of the same line enlarge different times.

Selecting/canceling the double width and double height of the character can also be set by ESC ! command. However, the setting of the last received command is effective.

GS * x y d1...d(x × y × 8)

[Name] Defining downloaded bit map

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

[Range] $1 \leq x \leq 255, 1 \leq y \leq 48$

$x \times y \leq 1536$

$0 \leq d \leq 255$

$k = x \times y \times 8$

[Description] Use appointed bit number by x and y to define the downloaded bit map

- x is the horizontal dot number of defined bitmap
- y is the vertical dot number of defined bitmap
- d is data of the defined bit map

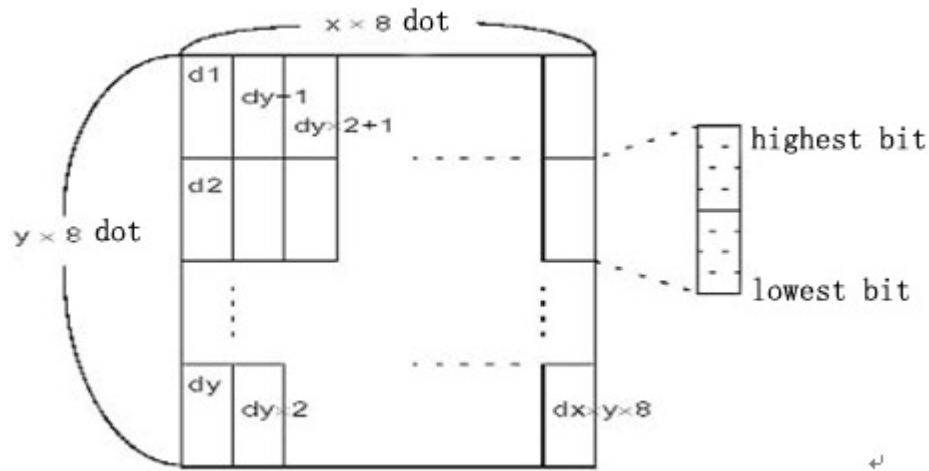
[Notice] · $x \times 8$ is the horizontal dot number; $y \times 8$ is the vertical dot number.

- If $x \times y$ is out of limit, then the command is forbidden.
- d means the bitmap data. 1 means print, 0 means not print
- In the following circumstances, delete the downloaded bitmap.:

- ① carry out ESC@ command
- ② Power off or reset

③ Relationship between print data and download bit map is as below:

[Reference] **GS /**



GS / m

[Name] Printing downloaded bitmap

[Format] ASCII GS / m
Hex 1D 2F m
Decimal 29 47 m

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

[Description] Printing mode is appointed by m when print a bit map

m printing mode selections are as below:

m	mode	vertical (DPI)	horizontal (DPI)
0, 48	normal	203	203
1, 49	Double width	203	101
2, 50	Double height	101	203
3, 51	Double width	101	101

and height

[Notice] · This command will be ignored if the downloaded bit map is not defined.
· The command is effective only when there is no data in the printing buffer under standard mode

- Except inversion mode, other modes have no effect on this command (include bold、double print、underline、enlarge font and invert printing, etc.
- The out profile will not be printed if the bit map is out of the range.
- This command prints the bit map downloaded in RAM but not in Flash.

[Reference] **GS ***

GS B n

[Name] Selecting/canceling black white revert printing mode

[Format]	ASCII	GS	B	n
	Hex	1D	42	n
	Decimal	29	66	n

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

[Description] Selecting/canceling black white revert printing mode

- When the lowest bit of n is 0, canceling black white reverse printing mode.
- When the lowest bit of n is 1, selecting black white reverse printing mode.

[Notice]

- Only the lowest bit of n is effective
- This command is available to all the characters (except HRI characters)
- After selecting black white reverse printing, the space between characters which is set by ESC SP command is also reversing.
- This command does not influence bit map, user defined bit map, barcode, HRI characters and blank space which is set by HT, ESC \$ and ESC\
- This command does not influence the blank space between lines.
- Priority of black white reverse printing mode is higher than it of underline mode. When selecting black white reverse printing mode, underline mode is not effective. It will be effective after canceling black white reverse printing mode.

[Default value] n = 0

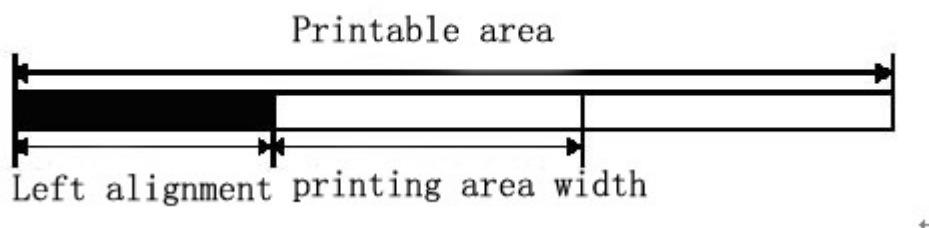
GS H n

[Name]	Selecting the printing position of HRI character			
[Format]	ASCII	GS	H	n
	Hex	1D	48	n
	Decimal	29	72	n
[Range]	0 ≤ n ≤ 3, 48 ≤ n ≤ 51			
[Description]	When printing the barcode, selecting the printing position for HRI character			
	N appoints the printing position of HRI			
	n	Printing position		
	0, 48	No printing		
	1, 49	Above the barcode		
	2, 50	Under the barcode		
	3, 51	Both above and under the barcode		
·HRI is the character of content for the note of barcode				
[Note]	·The style of HRI character is appointed by GSf.			
[Default value]	n = 0			

[Reference] GS f, GS k

GS L nL nH

[Name]	Setting 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]	·Setting left margin by nL and nH			
	·Setting left margin at[(nL+nH×256)×horizontal motion unit)]inches.			



- [Notice]
- This command is just available at the zero position of the line and under standard mode.
 - It is not available under page mode, the printer will handle it as normal data
 - This command does not influence the printing under page mode
 - Taking the max printable width if it goes beyond the max printing width.
 - Vertical and horizontal motion units are set by command GS P. Changing the motion will not influence the current left margin.

[Default value] nL = 0, nH = 0

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

GS P x y

[Name] Setting horizontal and vertical motion units

[Format]	ASCII	GS	P	x	y
	Hex	1D	50	x	y
	Decimal	29	80	x	y

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

$0 \leq y \leq 255$

[Description]

- Setting horizontal motion units as near 25.4/xmm (1/x inch) Setting vertical motion units as near 25.4/ymm (1/y inch) .

- When x and y are all 0, x and y are setting as default value.

[Notice]

- Direction is perpendicular to the feeding is horizontal, the feeding direction is vertical

- Under standard mode, the below commands use x or y, even if the character whir (if invert or clockwise rotates 90API) does not change.

① Using x command: ESC SP, ESC \$, ESC \, GS L, GS W

②Using y command: ESC 3, ESC J, GS V

·Under page mode, according to the direction of printing and the starting position to use x or y

① When the starting position is set as top left corner (printing direction is from left to right) or lower right (printing direction is from right to left) by ESC T:

Using x command: **ESC SP, ESC \$, ESC W, ESC \, FS S**

Using y command: **ESC 3, ESC J, ESC W, GS \$, GS \, GS V**

② When the starting position is set as top right corner (printing direction is from top to down) or lower left (printing direction is down to top) by ESC T:

Using x command: **ESC 3, ESC J, ESC W, GS \$, GS **

Using y command: **ESC SP, ESC \$, ESC W, ESC \,FS S, GS V**

·This command does not influence other settings set before

·The minimum motion distance is the result of combined action of this and other commands

·one inch=25.4mm

[Default value] x=203, y=203, now a motion unit is a printing dot. Horizontal motion distance is 1/8mm, and vertical motion distance is 1/8mm.

[Reference] **ESC SP, ESC \$, ESC 3, ESC J, ESC W, ESC \, GS \$, GS L, GS V, GS W, GS **

GS W nL nH

[Name] Setting the width of printing area

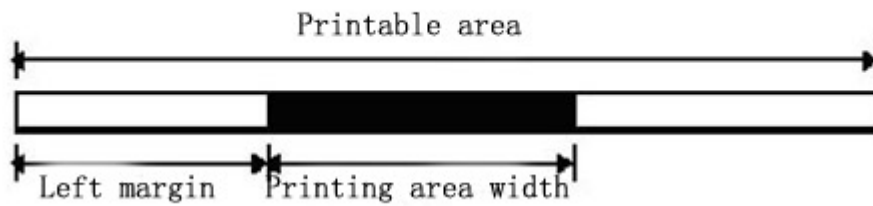
[Format]	ASCII	GS	W	nL	nH
	Hex	1D	57	nL	nH
	Decimal	29	87	nL	nH

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

$0 \leq nH \leq 255$

[Description] Setting the width of printing area by nL and nH

·Setting width of printing area to $[(nL + nH \times 256) \times \text{horizontal motion unit}]$



- [Notice]
- This command is just available at the zero position of the line and under standard mode.
 - It is not available under page mode, the printer will handle it as normal data.
 - This command does not influence the printing under page mode.
 - If [left margin+width of printing area] goes beyond the printable area, the width of printing is that of [printable area width-left margin]
 - Vertical and horizontal motion units are set by GS P. Changing them will not influence the current left margin and area width.
 - Using horizontal motion units to count the width of printing area

[Default value] nL = 64, nH = 2

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

GS f n

[Name] Selecting font of HRI used

[Format]	ASCII	GS	f	n
	Hex	1D	66	n
	Decimal	29	102	n

[Range] n = 0, 1, 48, 49

[Description] When printing barcode, selecting a style for HRI character

Selecting style by n is as below:

n	Style
0,48	Standard ASCII (12 × 24) character(12×24)
1,49	Compressed ASCII character(9 × 17)

[Notice] ·HRI character is the note of barcode content

·HRI character printing position is set by GS H command

[Default value] n = 0

[Reference] **GS H, GS k**

GS h n

[Name] Selecting height of barcode

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

[Range] $1 \leq n \leq 255$

[Description] Selecting height of barcode

The height of barcode is n dots

[Default value] n = 162

[Reference] **GS k**

①GS k m d1...dk NUL②GS k m n d1...dn Printing barcode

[Name] Printing barcode

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

[Range] ① $0 \leq m \leq 6$ (Value range of k and d is decided by its type)

② $65 \leq m \leq 73$ (Value range of k and d is decided by its type)

[Description] Selecting a kind of barcode and printing

m is used to select type of barcode, as follows:

m	Barcode	Number of character	d
		type	

①	0	UPC-A	$11 \leq k \leq 12$	$48 \leq d \leq 57$
	1	UPC-E	$11 \leq k \leq 12$	$48 \leq d \leq 57$
	2	JAN13 (EAN13)	$12 \leq k \leq 13$	$48 \leq d \leq 57$
	3	JAN 8 (EAN8)	$7 \leq k \leq 8$	$48 \leq d \leq 57$
	4	CODE39	$1 \leq k \leq 255$	$45 \leq d \leq 57, 65 \leq d \leq 90, 32, 36, 37, 43$
	5	ITF	$1 \leq k \leq 255$	$48 \leq d \leq 57$
	6	CODABAR	$1 \leq k \leq 255$	$48 \leq d \leq 57, 65 \leq d \leq 68, 36, 43, 45, 46, 47, 58$
②	65	UPC-A	$11 \leq n \leq 12$	$48 \leq d \leq 57$
	66	UPC-E	$11 \leq n \leq 12$	$48 \leq d \leq 57$
	67	JAN13 (EAN13)	$12 \leq n \leq 13$	$48 \leq d \leq 57$
	68	JAN 8 (EAN8)	$7 \leq n \leq 8$	$48 \leq d \leq 57$
	69	CODE39	$1 \leq n \leq 255$	$45 \leq d \leq 57, 65 \leq d \leq 90, 32, 36, 37, 43$ $d1 = dk = 42$
	70	ITF	$1 \leq n \leq 255$	$48 \leq d \leq 57$
	71	CODABAR	$1 \leq n \leq 255$	$48 \leq d \leq 57, 65 \leq d \leq 68, 36, 43, 45, 46, 47, 58$
	72	CODE93	$1 \leq n \leq 255$	$0 \leq d \leq 127$
	73	CODE128	$2 \leq n \leq 255$	$0 \leq d \leq 127$

[Notice ①]

- This command is ended by NULL under this format
- When selecting code of UPC-A or UPC-E, after receiving 12 bytes data, printer will handle the rest as normal character.
- When selecting type of JAN13(EAN13), after receiving 13 bytes data, printer will handle the rest as normal character.
- When selecting type of JAN8(EAN8), after receiving 8 bytes data, printer will

handle the rest as normal character.

- Number of ITF code data must be an even number. If entering code data of odd number, the last data will be ignored.

[Notice②]

- N is used to appoint the number of pointing barcode data. The printer will handle n byte data following as barcode data.

- If n goes beyond the specified range,the printer will not handle this command, and handle the data following as normal data.

[Notice(Standard mode)]

- If the barcode d goes beyond the specified range, this command is invalid.

- If the cross width of barcode goes beyond printing area,invalid

- No matter what is the height set by ESC 2 or ESC 3, the distance of feeding paper is the same as the height of barcode.

- This command is only available when there is no data in printing buffer; if there is data in buffer, the command will be ignored.

- The printing position will be set at the beginning of the line after printing the barcode.

- Other mode setting(bold、double printing、underline、character dimension、inverse and character clockwise rotates 90 degree) can not influence this command except inversion mode.

[Notice(page mode)]

- This command just produces the barcode figure in printing buffer, but not print.

Moving the printing position to the right of the barcode after handling the barcode data.

- If the d goes beyond the specified range, this command will be ignored.

- If the width of the barcode goes beyond the printing area, this command will be ignored.

When selecting CODE128(m=73):

- Referring appendix A, related information of CODE128 and character set

- When using CODE128, encoding according to the description following

① Selecting character set before barcode data (One of CODE A、CODE B or

CODE C)

- ② Selecting character set according to sending character "{" and combine with another character; ASCII character "{" is finished by sending character "{" for twice.

Appointing	Sending data		
Character	ASCII	Hex	Decimal
SHIFT	{S	7B, 53	123, 83
CODE A	{A	7B, 41	123, 65
CODE B	{B	7B, 42	123, 66
CODE C	{C	7B, 43	123, 67
FNC1	{1	7B, 31	123, 49
FNC2	{2	7B, 32	123, 50
FNC3	{3	7B, 33	123, 51
FNC4	{4	7B, 34	123, 52
"{"	{{	7B, 7B	123, 123

[Example] Printing "No.123456"

In the below example, using CODE B to print "No.", and then using CODE C to print the digital rest

GS k 73 10 123 66 78 111 46 123 67 12 34 56



- If it is not character set selection at the beginning of barcode data, the printer will stop handling this command, and handling the rest data as normal data
- If "{" and the characters closing it is not the combination as above, the printer will stop handling this command, and handling the rest data as normal data.
- If the received character is not the data of barcode character set, the printer will stop handling this command, and handling the rest data as normal data.
- When printing HRI characters, do not print shift characters and characters set

selection data.

·HRI character of function character is not printed

·HRI character of control character (<00>Hto<1F>Hand<7F>H) is not printed

<Others> Ensure the left and right space of barcode. Space is different due to the different barcode style.

[Reference] **GS H, GS f, GS h, GS w, appendix A**

GS w n

[Name] Setting the width of barcode

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

[Range] $2 \leq n \leq 6$

[Description] Setting width of barcode horizontal module

Appointing the barcode horizontal module by n

n	Mono basis		Bi-radical module width	
	module width		Narrow-based	Wide-based
	(mm)		module (mm)	module (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
6	0.75		0.75	1.875

·Barcode of mono basis module is as below:

UPC-A, UPC-E, JAN13 (EAN13), JAN8 (EAN8), CODE93, CODE128

·Barcode of bi-radical module is as below:

CODE39, ITF, CODABAR

[Defaultvalue] n = 2

The Chinese characters controlling commands

FS ! n

[Name]	Setting Chinese characters mode			
[Format]	ASCII	FS	!	n
	Hex	1C	21	n
	Decimal	28	33	n
[Range]	$0 \leq n \leq 255$			

[Description] Using value of n to set the printing mode of Chinese characters

Bit	0/1	Hex	Decimal	Function
0, 1				Undefined
2	0	00	0	Canceling double width
	1	04	4	Selecting double width
3	0	00	0	Canceling double height
	1	08	8	Selecting double height
4-6				Undefined
7	0	00	0	Canceling underline
	1	80	128	Selecting underline

- [Notice]
- When double width and double height are set together, portrait and landscape will be enlarged two times together (including left and right space).
 - Printer can add underline to all the characters, including left and right space. But can not add underline to the space caused by HT command (horizontal tab), either to the 90 degree clockwise characters.
 - The width of underline is set by FS-, with no relation to the character boundary.
 - When the height of the characters in one line is not the same, all the characters align the base line.
 - Using FS W or GS ! to make the characters bold, the setting of the last received command is effective.

·Also can use FS to select or cancel the underline, the setting of the last received command is effective.

[Default value] n = 0

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

FS &

[Name] Selecting Chinese character mode

[Format]	ASCII	FS	&
	Hex	1C	26
	Decimal	28	38

[Description] Selecting Chinese character mode

[Notice] ·When select Chinese character mode, printer will judge whether the character is Chinese internal-code, if it is ,deal with the first byte in advance and then the second one.

·After powering up, the printer will select Chinese character mode by itself.

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

FS – n

[Name] selecting/canceling Chinese underline mode

[Format]	ASCII	FS	-	n
	Hex	1C	2D	n
	Decimal	28	45	n

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

[Description] selecting or canceling Chinese underline according to value of n

n	Function
0, 48	canceling Chinese underline
1, 49	selecting Chinese underline (1dot width)
2, 50	selecting Chinese underline (2dots width)

[Note] ·Printer can add underline to all the characters, including left and right space.But

can not add underline to the space caused by HT command(horizontal tab), either to the 90 degree clockwise characters.

- It does not carry out the underline printing after canceling underline mode, but the previous set does not change. The default underline width is 1dot.
- The underline width does not change even if changing the character dimension.
- Can use FS ! to select or cancel the underline, the setting of the last received command is effective.

[Default value] n = 0

[Reference] **FS !**

FS .

[Name] canceling Chinese mode

[Format] ASCII FS .
 Hex 1C 2E
 Decimal 28 46

[Description] canceling Chinese mode

- [Notice] ·When the Chinese mode is canceled, all the characters are the same as ASCII style, and deal with one byte once.
- Selecting Chinese mode automatically when power on.

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

FS 2 c1 c2 d1...dk

[Name] defining user self-defined Chinese

[Format] ASCII FS 2 c1 c2 d1...dk
 Hex 1C 32 c1 c2 d1...dk
 Decimal 28 50 c1 c2 d1...dk

[Range] c1,c2 represent the codes of defined characters.
 c1 = FEH
 A1H ≤ c2 ≤ FEH

$$0 \leq d \leq 255$$

$$k = 72$$

[Description] Defining the Chinese specified by c1,c2.

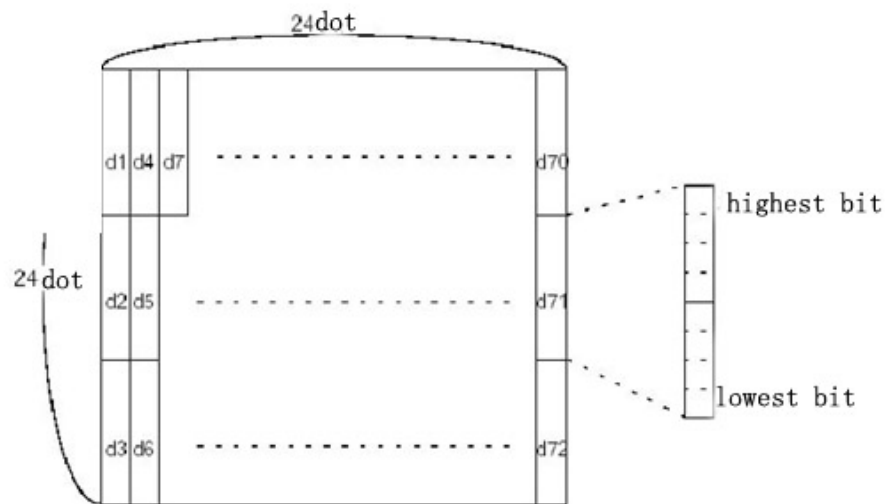
[Notice] · C1, c2 represent user self-defined Chinese code, c1 specifies the first byte, c2 specifies the second byte.

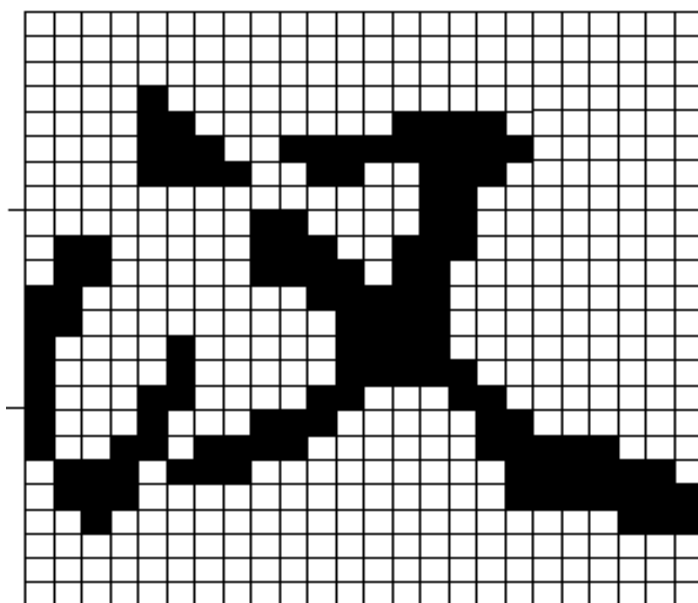
· D represent data. Every bit of byte is 1 represents to print the dot, 0 means does not print.

· It can define most 10 Chinese characters.

[Default value] no self-defined Chinese

The relation between self-defined Chinese font and data as follows:





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 C n

[Name] selecting Chinese code system

[Format]	ASCII	FS	C	n1	n2
	Hex	1C	43	n1	n2
	Decimal	28	67	n1	n2

[Range] n=0, 1, 48, 49

[Description] selecting Chinese code system

n selecting Chinese code system

0, 48 Simplified Chinese (GB2312 or GB18030)

1, 49 Traditional Chinese (BIG5)

[Notice] · The command does not change the parameter set in flash.

· It returns to default after carrying out ESC @ command, power off or reset.

[Default value] n = 0 Simplified Chinese model

n = 1 Traditional Chinese model

FS S n1 n2

[Name] Setting the left and right space of Chinese character

[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] Setting the space of left and right to be n1 and n2.

·When the printer have GS P command, the left space is [n1*lateral or vertical motion unit], the right space is [n2*lateral or vertical motion unit].

[Notice] · The left and right space will be doubled after setting the double width mode.

·The shifting unit is set by the command GS P. The former character space does not change even if the lateral and vertical units are changed.

·Using the lateral shifting unit under the standard mode.

·Selecting to use the lateral or vertical shifting unit according to the printing area under page mode.

① Using horizontal shifting when the beginning position is the top left or lower right corner of the printing area

② Using vertical shifting when the beginning position is the lower left or top right corner of the printing area

③ The maximum right distance of Chinese is 36mm. If it is beyond this distance, taking the maximum distance.

[Default] $n1 = 0, n2 = 0$

[Reference] **GS P**

FS W n

[Name] selecting/canceling Chinese double height or width

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

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

[Description] Selecting/canceling Chinese double width mode

- Cancel Chinese double width mode when the lowest bit is 0
- Select Chinese double width mode when the lowest bit is 1.

[Notice] · only the lowest bit of n is effective.

· To print Chinese dimension under double width mode is the same as to select both double width and double height.

· The Chinese dimension is printed normally after canceling the Chinese double width mode.

· When the height of the characters in one line is not the same, all the characters align the baseline.

· Also using FS! or GS! can select or cancel Chinese double height and width mode, the setting of the last received command is effective.

[Default] n = 0

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

GS Z n

[Name] Select 2D code type

[Format]	ASCII	GS	Z	n
	Hex	1D	5A	n
	Decimal	29	90	n

[Range] $0 \leq n \leq 2$

[Description] Select 2D code type

- n = 0 select PDF417
- n = 1 select DATA MATRIX
- n = 2 select QR CODE

[Reference] **ESC Z**

ESC Z m n k dL dH d1 ...dn

[Name] Print 2D code

[Format]	ASCII	ESC	Z	v	r	k	nL	nH	d1 ...dn
	Hex	1B	5A	v	r	k	nL	nH	d1 ...dn
	Decimal	27	90	v	r	k	nL	nH	d1 ...dn
[Range]	The meaning and range of parameter depends on the 2D code type of GS Z selection.								

- The parameters will be different due to the barcode with different Parameter v, r

① PDF417 code

$1 \leq v \leq 30$ means characters numbers per line. The max value of v should be within the range of the allowable max value for the model due to the different model with different paper width.

$0 \leq r \leq 8$ means the level of error correction.

② DATA MATRIX code

$0 \leq v \leq 144$ means the height of graph. (0: auto select).

$8 \leq r \leq 144$ means the width of graph (when v=0, void).

③ QR CODE

$0 \leq v \leq 40$ means graph version (0: auto select).

$r = 76, 77, 81, 72$ means the level of error correction. (L:7%, M:15%, Q:25%, H:30%).

- The Parameter meaning of Parameter k, n(nL, nH), d .

$1 \leq k \leq 6$ means the times of lateral Magnification.

$1 \leq n \leq 65535$ means the data length of printing code is parameter n, nL and nH is the low level and high level of value n ($n = dL + dH \times 256$).

$0 \leq dn \leq 255$ means data of barcode.

[Description] Print the 2D code according to **GS Z** selection.

[Reference] **GS Z**

① **GS k m v r d1...dn NUL** ② **GS k m v r nL nH d1...dn**

[Name]	Print 2D code								
[Format]	①ASCII	GS	k	m	v	r	d1...dn	NUL	
	Hex	1D	6B	m	v	r	d1...dn	00	
	Decimal	29	107	m	v	r	d1...dn	0	

Hex 1D 6B m v r nL nH d1... dn
 Decimal 29 107 m v r nL nH d1... dn
 [Range] ① $32 \leq m \leq 34$
 ② $97 \leq m \leq 99$
 Barcodes with different v or r parameters have different meanings

① PDF417 code

$1 \leq v \leq 30$ means characters number per line. The max value of v should be within the range of the allowable max value for the model due to the different model with different paper width.

$0 \leq r \leq 8$ means the level of error correction.

② DATA MATRIX code

$0 \leq v \leq 144$ means the height of graph.(0: auto select).

$8 \leq r \leq 144$ means the width of graph (when v=0, void).

③ QR CODE code

$0 \leq v \leq 40$ means graph version (0: auto select).

$1 \leq r \leq 4$ means the level of error correction. (L:7%,M:15%,Q:25%,H:30%).

· The Parameter meaning of Parameter n(nL, nH), d .

$1 \leq n \leq 65535$ means the data length of printing code is parameter n, nL and nH is the low level and high level of value n ($n = dL + dH \times 256$).

$0 \leq dn \leq 255$ means data of barcode.

[Description] Select a type of 2D code and print code.

· When use the first format, command is end by 00, d1...dn are barcode data. When use the second format, all the n of d1...dn after nH are code data.

Parameter “m” is to select the code type, please refer to below graphic:

m		Code Type	Data Length	v	r	d
①	32	QR Code	$1 \leq n \leq 65535$	$0 \leq v \leq 40$	$1 \leq r \leq 4$	$0 \leq dn \leq 255$
	33	Data Matrix	$1 \leq n \leq 65535$	$0 \leq v \leq 144$	$8 \leq r \leq 144$	$0 \leq dn \leq 255$
	34	PDF417	$1 \leq n \leq 65535$	$1 \leq v \leq 30$	$0 \leq r \leq 8$	$0 \leq dn \leq 255$
②	97	QR Code	$1 \leq n \leq 65535$	$0 \leq v \leq 40$	$1 \leq r \leq 4$	$0 \leq dn \leq 255$
	98	Data Matrix	$1 \leq n \leq 65535$	$0 \leq v \leq 144$	$8 \leq r \leq 144$	$0 \leq dn \leq 255$

	99	PDF417	$1 \leq n \leq 65535$	$1 \leq v \leq 30$	$0 \leq r \leq 8$	$0 \leq dn \leq 255$
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[Notice] · When use the command to print 2D code, the magnification times of barcode depends on the “n” of **GS w** set.

[Reference] **ESC Z, GS w**

CPCL Commands

! {offset} 200 200 {height} {qty}

[Name] Start command

[Format] ! {offset} 200 200 {height} {qty}

[Description] {offset}: offset of the whole barcode in horizontal direction

200: horizontal resolution, 203dots/inch (8dots/mm)

200: vertical resolution, 203dots/inch (8dots/mm)

{height}: the max height of barcode, the unit is dot

{qty}: the quantity of printed barcode, the most is 1024pcs.

[Example]	Input: ! 0 200 200 210 1 TEXT 4 0 30 40 Hello World FORM PRINT	Output: Hello World
-----------	---	--

PRINT Commands

[Name] Print command

[Format] {command}

[Description] {command}:PRINT

Under CPCL command mode, this is the last command to stop print command or to print file; After carrying out the print command, the printer exits the control range.

One “Enter” must be needed after the print commands.

If error happened during printing, print again after recovery from error.

[Example] **Input:**

! 0 200 200 210 1

.....

PRINT

FORM Commands

[Name] Print command

[Format] {command}

[Description] {command}: FORM

After using FORM command, the printer will feed paper to the beginning of next barcode. The printer finds the beginning of next barcode according to the gap between two barcodes.

TEXT Commands

[Name] Text command

[Format] {command} {font} {size} {x} {y} {data}

[Description] {command}: choose the commands from below list

Commands	Effect
TEXT (or T)	Print horizontal text
VTEXT (or VT)	Print text (vertical), rotate 90°counterclockwise
TEXT90 (or T90)	The meaning is the same with VTEXT command
TEXT180 (or T180)	Print text (inverted), rotate 180°counterclockwise
TEXT270 (or T270)	Print text (vertical), rotate 270°counterclockwise

{font}: choose font

{size}: choose font size

{x}: the beginning of horizontal printing

{y}: the beginning of vertical printing

{data}: printed text content

font	Font dot
24	Character (12*24), Chinese character (24*24)
55	Character (8*16), Chinese character (16*16)

Choose character height

size Enlarge

Choose character width

size Enlarge

	vertically		horizontally
0	1 (normal)	0	1 (normal)
1	2 (twice height)	10	2 (twice width)
2	3	20	3
3	4	30	4
4	5	40	5
5	6	50	6
6	7	60	7
7	8	70	8

[Example]

Input:

```
! 0 200 200 210 1
TEXT 24 11 30 40 Hello World
PRINT
```

Output:

Hello World

BOX Commands

[Name] Box command

[Format] {command} {x0} {y0} {x1} {y1} {width}

[Description] {command}:BOX

{x0}: X-coordinate of the top left corner

{y0}: Y-coordinate of the top left corner.

{x1}: X-coordinate of the bottom right corner.

{y1}: Y-coordinate of bottom right corner

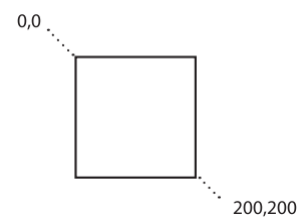
{width}: Unit-width of the lines forming the box

[Example]

Input:

```
! 0 200 200 210 1
BOX 0 0 200 200 1
PRINT
```

Output:



INVERSE-LINE Commands

[Name] Inverse-line Command

[Format] {command} {x0} {y0} {x1} {y1} {width}

[Description] {command}: INVERSE-LINE (or IL)

{x0}: X-coordinate of the top left corner

{y0}: Y-coordinate of the top left corner.

{x1}: X-coordinate of:

BARCODE Commands

[Name] Barcode Command

1D Barcode

[Format] {command} {type} {width} {ratio} {height} {x} {y} {data}

[Description] {command}: choose from below commands

 BARCODE(or B): print horizontal barcode

 VBARCODE(or VB): print vertical barcode

 {type}: {type}: Barcode type

 1D Barcode types

Type	Barcode types
UPCA	UPC-A
UPCE	UPC-E
EAN13	JAN13 (EAN13)
EAN8	JAN 8 (EAN8)
39	CODE39
CODABAR	CODABAR
93	CODE93
128	CODE128(Auto)

 {width}: width of the narrow barcode.

 {ratio}: Ratio of the wide barcode to the narrow barcode

0 = 1.5 : 1	20 = 2.0:1	26 = 2.6:1
1 = 2.0 : 1	21 = 2.1:1	27 = 2.7:1
2 = 2.5 : 1	22 = 2.2:1	28 = 2.8:1
3 = 3.0 : 1	23 = 2.3:1	29 = 2.9:1
4 = 3.5 : 1	24 = 2.4:1	30 = 3.0:1
	25 = 2.5:1	

 {height}: height of the barcode

 {x}:Horizontal starting position

 {y}:Vertical starting position

 {data}:Barcode data

[Example] **Input:**

Output:

! 0 200 200 210 1
BARCODE 128 1 1 50 150 10



ORIZ.

```
TEXT 24 0 210 65 HORIZ.  
VBARCODE 128 1 1 50 10 200 VERT.  
VTEXT 24 0 65 140 VERT.  
PRINT
```

2D Barcode

PDF417

[Format] {command} {type} {x} {y} {XD n} {YD n} {C n} {S n}

{data}

<ENDPDF>

[Example] {command}: BARCODE(or B)

{type}: PDF-417

{x}: Horizontal starting position

{y}: Vertical starting position

{XD n}: Width of the narrowest element. Range is 1 to 32, default is 2.

{YD n}: Height of the narrowest element. Range is 1 to 32, default is 6.

{C n}: Character numbers of each line. Range is 1 to 30, default is 3.

{S n}: Security level indicates maximum amount of errors to be detected and/or corrected. Range is 0 to 8; default is 1.

{data}: Barcode data

<ENDPDF>: Terminates PDF-417

[Example]

Input:

```
! 0 200 200 210 1  
B PDF-417 10 20 XD 3 YD 12 C 3 S 2  
PDF Data  
ABCDE12345  
ENDPDF  
T 24 11 10 100 PDF Data  
T 24 11 10 150 ABCDE12345  
PRINT
```

Output:



**PDF Data
ABCDE12345**

QR Code

[Format] {command} {type} {x} {y} [M n] [U n]

{data}

<ENDQR>

[Description] {command}: BARCODE(or B)

{type}: QR

{x}: Horizontal starting position

{y}: Vertical starting position

[M n]: QR code model number Range is 1 or 2. Default is 2

[U n]: Width/Height of the module. Range is 1 to 6, default is 6.

{data}: QR barcode data, See the following examples, {data} includes some mode selection symbols in addition to actual input data character string. The type of the input data could be recognized automatically by printer software or set "manually". There is a separator (comma) between mode selection symbols and the actual data.

{data}format:

<Error Correction Level><Mask No.><Data Input Mode (should be "A")>,<Data character String>

Error Correction Level should be one of the following symbols:

H-Ultra high reliability level(Level H)

Q-High reliability level (Level Q)

M-Standard level(Level M)

L-High density level(Level L)

Mask Number may be omitted or have a value from 0 to 8::

None – Automatic selection of the mask by software;

From 0 to 9 – use mask with corresponding number (0 to 9)

<ENDQR>:Terminates QR code.

[Example]

Input:

```
! 0 200 200 500 1
B QR 10 100 M 2 U 6
MA,QR code ABC123
ENDQR
T 24 11 10 300 code ABC123
PRINT
```

Output:



QR code ABC123

BARCOD-TEXT Commands

[Name] HRI character command

[Format] {command} {font number} {font size} {offset}

[Description] {command}: BARCODE-TEXT(or BT)

{font number}: HRI character font (Fixed to 12*24)

{font size}: HRI character size (Fixed to original size)

{offset}: Offset between HRI character and barcode.

[Example] **Input:**

```
! 0 200 200 210 1
BARCODE-TEXT 24 0 50
BARCODE 128 1 1 50 0 20 123456789
BARCODE-TEXT OFF
PRINT
```

Output:



SETBOLD Commands

[Name] Set bold command

[Format] {command} {value}

[Description] {command}: SETBOLD

{value} to mean setting bold or not

1: set bold

0: cancel bold

[Example] **Input:**

```
! 0 200 200 210 1
SETBOLD 1
TEXT 24 0 0 0 This text is in bold
SETBOLD 0
TEXT 24 0 252 0 But this text is normal.
PRINT
```

Output:

This text is in bold but this text is normal.

SETSP Commands

[Name] Change spacing between text characters

[Format] {command} {spacing}

[Description] {command}: SETSP

{spacing}: Spacing between characters, default is 0.

[Example] **Input:**

Output:

```

! 0 200 200 210 1
T 24 11 0 10 Normal Spacing
SETSP 5
T 24 11 0 60 Spread Spacing
SETSP 0
T 24 11 0 110 Normal Spacing
PRINT

```

Normal Spacing
Spread Spacing
Normal Spacing

INVERSE-TEXT Commands

[Name] Inverse-Text Command

[Format] {command} {value}

[Description] {command}: INVERSE-TEXT (or IT)
{value} means Invert the image or not
1: Inverse-text
0: Cancel Inverse-text

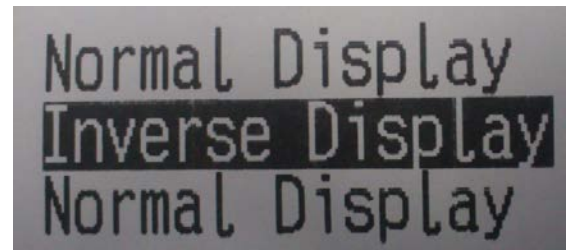
[Example] **Input:**

```

! 0 200 200 210 1
T 24 11 0 10 Normal Display
INVERSE-TEXT 1
T 24 11 0 60 Inverse Display
INVERSE-TEXT 0
T 24 11 0 110 Normal Display
PRINT

```

Output:



UNDERLINE-TEXT Commands

[Name] Underline-Text Command

[Format] {command} {value}

[Description] {command}: UNDERLINE -TEXT(or UT)
{value} means to print underline or not
1: Print Underline One Dot
2: Print Underline Two Dot
0: Cancel printing underline

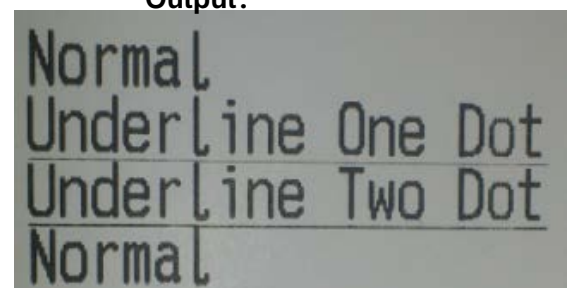
[Example] **Input:**

```

! 0 200 200 210 1
T 24 11 0 10 Normal
UNDERLINE-TEXT 1

```

Output:



T 24 11 0 60 Underline One Dot
UNDERLINE-TEXT 2
T 24 11 0 110 Underline Two Dot
UNDERLINE-TEXT 0
T 24 11 0 160 Normal
PRINT

PAGE-ROTATE Commands

[Name] Page-Rotate 90°Command
[Format] {command} {value}
[Description] {command}: PAGE-ROTATE (or PR)
 {value} means to rotate page 90°clockwise or not
 1: Rotate
 0: Not rotate

CENTER Commands

[Name] Center Command
[Format] {command}
[Description] The content in current line to be showed in center

LEFT Commands

[Name] Left Command
[Format] {command}
[Description] The content in current line to be showed on the left

RIGHT Commands

[Name] Right Command
[Format] {command}
[Description] The content in current line to be showed on the right

TSPL command

System Set command

SIZE Commands

- [Name] To set width and length of label paper
- [Format] (1)English system(inch):
{command} {m},{n}
(2) Metric system(mm):
{command} {m} mm,{n} mm
- [Description] Max label area is L*W= 225X100mm
m Label Width (back paper not included)
n Label Length (back paper not included)

Note: 200DPI:1mm=8dots

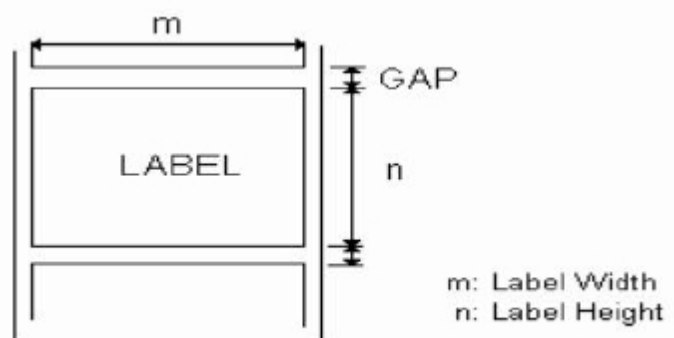
Example:

(1)Imperial system(inch)

SIZE 3.5,3.00

(2)Metric system(mm)

SIZE 56 mm,30 mm



GAP Commands

- [Name] Vertical spacing setting command between label paper
- [Format] (1)English system(inch):
{command} {m}
(2) Metric system(mm):
{command} {m} mm
- [Description] m Vertical distance between two label papers.
 $0 \leq m \leq 1(\text{inch}), 0 \leq m \leq 25.4(\text{mm})$

Note:

200DPI:1mm=8dots

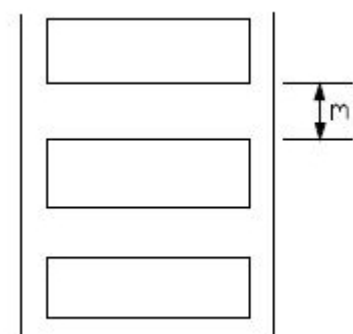
General vertical spacing settings

(1)Imperial system(inch):

GAP 0.12

(2) Metric system(mm):

GAP 3 mm

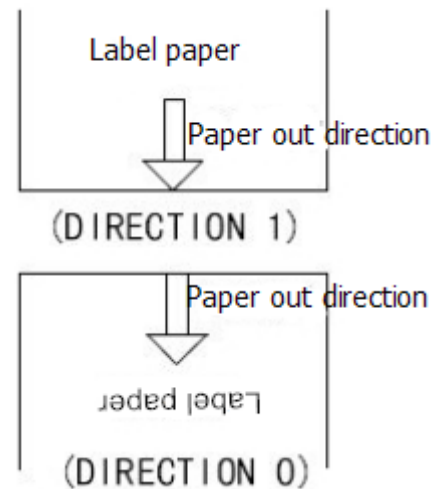


DIRECTION Commands

[Name]	Printed font direction set command
[Format]	{command} {m}
[Description]	m 0 or 1, please refer to picture.

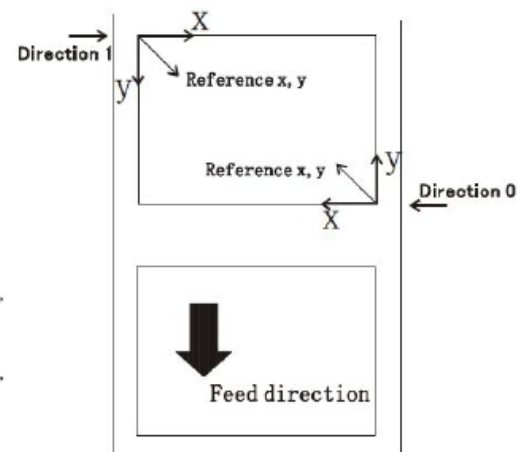
Note:

Default by 0



REFERENCE Commands

[Name]	Defines the reference origin coordinate of label	
[Format]	{command} {x},{y}	
[Description]	x	horizontal coordinate position Use (dot) as unit
	y	Vertical coordinate position Use (dot) as unit



COUNTRY Commands

[Name]	Select International characters
[Format]	{command} {n}
[Description]	n 001: USA 002: Canadian-French 003: Spanish (Latin America) 033: French (France) 034: Spanish (Spain) 039: Italian 042: Slovak 044: United Kingdom 045: Danish 046: Swedish 047: Norwegian

049: German
061: English (International)
For example:
COUNTRY 001

CODEPAGE Commands

[Name] Select International codepage
[Format] {command} {n}
[Description] n 437: United States
 850: Multilingual
 852: Slavic
 860: Portuguese
 863: Canadian/French
 865: Nordic
 857: Turkish
 1250: Central Europe
 1252: Latin I
 1253: Greek
 1254: Turkish

For example:
CODEPAGE 437

CLS Commands

[Name] Clears the image buffer
[Format] {command}
[Description] Example: CLS

HOME Commands

[Name] Search the beginning position
[Format] {command}
[Description] Example: HOME

Note: When using this command, the paper height is above 30mm.

PRINT Commands

[Name] Print the label format currently stored in the image buffer
[Format] {command} {m},{n}
[Description] m Specifies how many
 sets of labels will be
 printed (set)
 1≤m≤65535

Example:
TEXT 5,5,"TSS24.BF2",0,1,1,"XXXX"

PRINT 3,1

SOUND Commands

[Name] Control the beeper
[Format] {command} { Level }, { interval }
[Description] Level
 $1 \leq m \leq 9$
 interval interval Unit: ms
 $1 \leq m \leq 4095$
Example:
SOUND 5, 200
SOUND 3, 200
SOUND 3, 200
SOUND 4, 200
SOUND 2, 200
SOUND 2, 200
SOUND 1, 200
SOUND 2, 200
SOUND 3, 200
SOUND 4, 200

LIMITFEED Commands

[Name] Set feeding paper limitation
[Format] (1) English System (inch):
 {command} {m}
 (2) Metric System (mm):
 {command} {m} mm
[Description] m inch or mm could be used
 $1 \leq m \leq 2580$ inch
 $1 \leq m \leq 65535$ mm
Example:
LIMITFEED 4
Note:
(1) The setting will remain resident in memory.
(2) The default value is 10 inches when printer initializes.

Label Formatting Commands

[Name] Draws a bar
[Format] {command} {x}, {y}, { width }, { height }
[Description] x The upper left corner x-coordinate (in dots) (not exceed bar length)
 y The upper left corner y-coordinate (in dots) (not exceed bar width)

Width Bar width (in dots)
 Height Bar height (in dots)
 Example:
 BAR 100, 100, 300, 200



BARCODE Commands

[Name]	Print 1D barcode		
[Format]	{command} {x},{y},"{code type}",{human readable},{rotation}, {narrow}, {wide},"{code}"		
[Description]	x	draw left up corner starting point on horizontal coordinates of barcode, in dots.	
	Y	draw left up corner starting point on vertical coordinates of barcode, in dots.	
	code type		
	128	Code 128, switching code subset automatically A,B,C	
	EAN128	EAN 128	
	39	Auto switch full ASCII and Standard code 39 for plus models.	
	93	Code 93	
	EAN13	EAN13	
	EAN8	EAN 8	
	CODA	Codabar	
	UPCA	UPCA	
	UPCE+5	UPC-E with 5 digits add-on	
	height	height of barcode, in dots	
	human readable	0, cannot be seen by naked eye	
		1, can be seen by naked eye	
	rotation	Bar code rotation angle, clockwise direction	
		0	no rotation
		90	clockwise rotate 90 degrees
		180	clockwise rotate 180 degrees
		270	clockwise rotate 270 degrees
	Narrow	width of narrow strip, in dots	
	Wide	width of wide strip, in dots	
	Example:		
	BARCODE 10,10,"128",30,1,0,2,4,"123456"		

BOX Commands

[Name]	draws rectangles on the label								
[Format]	{command} {X_start},{Y_start},{X_end},{Y_end},{Line thickness}								
[Description]	<table><tr><td>x_start</td><td>Specify starting point x-coordinate of upper left corner on horizontal direction of rectangles(in dots)</td></tr><tr><td>y_start</td><td>Specify starting point y-coordinate of upper left corner on vertical direction of rectangles(in dots)</td></tr><tr><td>x_end</td><td>Specify end point x-coordinate of lower right corner on horizontal direction of rectangles(in dots)</td></tr><tr><td>y_end</td><td>Specify end point x-coordinate of lower right corner on vertical direction of rectangles(in dots)</td></tr></table>	x_start	Specify starting point x-coordinate of upper left corner on horizontal direction of rectangles(in dots)	y_start	Specify starting point y-coordinate of upper left corner on vertical direction of rectangles(in dots)	x_end	Specify end point x-coordinate of lower right corner on horizontal direction of rectangles(in dots)	y_end	Specify end point x-coordinate of lower right corner on vertical direction of rectangles(in dots)
x_start	Specify starting point x-coordinate of upper left corner on horizontal direction of rectangles(in dots)								
y_start	Specify starting point y-coordinate of upper left corner on vertical direction of rectangles(in dots)								
x_end	Specify end point x-coordinate of lower right corner on horizontal direction of rectangles(in dots)								
y_end	Specify end point x-coordinate of lower right corner on vertical direction of rectangles(in dots)								

Line thickness Line thickness of rectangles(in dots)

Example:

CLS

BOX 10,10,200,200,5

PRINT 1,1

(100, 100)



(200, 200)

BITMAP Commands

[Name]	Draw bitmap commands																
[Format]	{command} {X},{Y},{width},{ height },{mode},{bitmap data }																
[Description]	<table><tr><td>x</td><td>The horizontal starting position of the bitmap</td></tr><tr><td>y</td><td>The vertical starting position of the bitmap</td></tr><tr><td>Width</td><td>Width of bitmap, in dots</td></tr><tr><td>Height</td><td>Height of bitmap, in dots</td></tr><tr><td>Mode</td><td>Bitmap drawing mode</td></tr><tr><td>0</td><td>OVERWRITE</td></tr><tr><td>1</td><td>OR</td></tr><tr><td>2</td><td>XOR</td></tr></table>	x	The horizontal starting position of the bitmap	y	The vertical starting position of the bitmap	Width	Width of bitmap, in dots	Height	Height of bitmap, in dots	Mode	Bitmap drawing mode	0	OVERWRITE	1	OR	2	XOR
x	The horizontal starting position of the bitmap																
y	The vertical starting position of the bitmap																
Width	Width of bitmap, in dots																
Height	Height of bitmap, in dots																
Mode	Bitmap drawing mode																
0	OVERWRITE																
1	OR																
2	XOR																

bitmap data

Bitmap data

		X Size 16 Dot								1 dot							
Y Size 16 Dot		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	4	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	5	0	0	0	1	0	0	0	1	1	1	1	1	1	1	1	1
	6	0	0	0	1	1	0	0	0	1	1	1	1	1	1	1	1
	7	0	0	0	1	1	1	0	0	0	1	1	1	1	1	1	1
	8	0	0	0	1	1	1	1	0	0	0	1	1	1	1	1	1
	9	0	0	0	1	1	1	1	1	0	0	0	1	1	1	1	1
	A	0	0	0	1	1	1	1	1	1	0	0	0	1	1	1	1
	B	0	0	0	1	1	1	1	1	1	1	0	0	0	1	1	1
	C	0	0	0	1	1	1	1	1	1	1	1	0	0	0	1	1
	D	0	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1
	E	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
	F	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1
		1 byte								1 byte							

ROW (Y-axis)	L-Byte		R-Byte	
	Binary	Hexadecimal	Binary	Hexadecimal
0	0000 0000	00	0000 0000	00
1	0000 0000	00	0000 0000	00
2	0000 0000	00	0000 0000	00
3	0000 0111	07	1111 1111	00
4	0000 0011	03	11111111	FF
5	00010001	11	11111111	FF
6	00011000	18	11111111	FF
7	00011100	1C	01111111	7F
8	00011110	1E	00111111	3F
9	00011111	1F	00011111	1F
A	00011111	1F	10001111	8F
B	00011111	1F	11000111	C7
C	00011111	1F	11100011	E3
D	00011111	1F	11110111	F7
E	00011111	1F	11111111	FF
F	00011111	1F	11111111	FF

Example:

SIZE 56 mm,30 mm

GAP 0,0

ERASE Commands

[Name] Clears a specified region in the image buffer

[Format] {command} {X_start},{Y_start},{ X_width},{ Y_height }

[Description] X_start Clears starting point of upper left corner on horizontal direction (in dots)

Y_start Clears starting point of upper left corner on vertical direction (in dots)

X_width Clears the width on horizontal direction (in dots)

Y_height Clears the width on horizontal direction (in dots)

Example:

ERASE 100,100,200,200

REVERSE Commands

[Name]	Reverse printing command in specified area
[Format]	{command} {X_start},{Y_start},{ X_width},{ Y_height }
[Description]	X_start Clears starting point of horizontal direction on left corner, in dots. Y_start Clears starting point of vertical direction on left corner, in dots X_width Clears the width on horizontal direction (in dots) Y_height Clears the width on horizontal direction (in dots) Example: REVERSE 100,100,200,200

TEXT Commands

[Name]	Print text by printer built-in font
[Format]	{command} {X},{Y},{font},{rotation},{x-multiplication},{y-multiplication}, “{content}”
[Description]	X The starting point x-coordinate of the text Y The starting point y-coordinate of the text font Font Name TST24.BF2 Traditional Chinese 24X24Font(BIG5) TSS24.BF2 Simplified Chinese 24X24Font(GB) rotation Rotation angle of the text(clockwise) 0 0 degree 90 90 degree 180 180 degree 270 270 degree x-multiplication X direction horizontal multiplication 1--4 y-multiplication Y direction horizontal multiplication 1—4 content To print double quotation marks ("), please use \["] to print double quotation marks. Example: TEXT 100,100,"TSS24.BF2",0,1,1,"XXXX TEXT"

QRCODE Commands

[Name]	Print QR Code
[Format]	{command} {X},{Y},{ ECC LEVEL},{cell width},{mode},{rotation}, “{data string }”
[Description]	X The starting point coordinate on X direction of QR code Y The starting point coordinate on Y direction of QR code ECC LEVEL Select QRCODE error correction recovery level L 7% M 15% Q 25% H 30% cell width Width of QR code cell 1~6

mode
 A Auto
 rotation
 0 No rotation
 90 Rotate 90 degree and print
 180 Rotate 180 degree and print
 270 Rotate 270 degree and print
 data string Encoded string
 Example:
 SIZE 56 mm,30 mm
 GAP 2 mm
 CLS
 QRCODE 20,20,L,4,A,0,"www.sprinter.com.cn"
 PRINT 1

Inquire printer status command

<ESC>!? Commands

[Name] Inquire the printer status
 [Format] {command}
 [Description] The command to inquire printer status is immediate response command, and do not need ENTER to RETURN, the control characters of this command is <ESC> (ASCII 27, escape characters). The printer could return byte information to show printer state by RS-232 even in error state. Printer is normal if return 0.

Bit	state
0	printer not powered off
1	reserved
2	paper out
3	reserved
4	reserved
5	printing
6	paper house on
7	error

Example:
 <ESC>!?

~!D Commands

[Name] Enters into Hexadecimal mode
 [Format] {command}
 [Description] No need to follow ENTER to return. The printer will enter HEX mode once received this command, and print data and characters in hex model, could be used to debug program.
 Example:

~!D

~!I Commands

[Name] Inquires the code page

[Format] {command}

[Description] This command is to inquire codepage printer has set, return format as below:

Codepage:code

Example:

~!I

Returned: CodePage:CP437

About returned information, please refer to CODEPAGE command.

~!T Commands

[Name] Inquire printer model number.

[Format] {command}

[Description] TL5X model returned: TL5X, ended by ENTER and RETURN.

Example:

~!T

File Management Commands

BEEP Commands

[Name] Active the beep

[Format] {command}

[Description] Control buzzer beep one sound, keep 200ms.

Example:

BEEP

Appendix A: 128 code

A.1 128 code summary

128code can code 128 ASCII characters and 100 numbers from 00~99 and some special character by crossing using of character set A, B and C. Character of every character set code is as below:

Character set A: ASCII character from 00H to 5FH

Character set B: ASCII character from 20H to 7FH

Character set C: 100 numbers from 00~99

128 code can also code to the special character below:

SHIFT character

“SHIFT” can make barcode character the first character after SHIFT character transfer from character set A to B, or B to A, back to the character set used before SHIFT. “SHIFT”

Character can only be used to transform between character set A and B, it can not make the current code character enter or quit state of character set C.

Selecting character of character set (CODEA、CODEB、 CODEC)

These characters can transform the coding character followed to character set A, B or C.

Function character (FNC1、 FNC2、 FNC3、 FNC4)

Usage of these function character is determined by application software. Only FNC1 can be used in character set C.

A.2 Character sets

Character in set A

Character	Sending data		Character	Sending data		character	Sending data	
	Hex	Decimal		Hex	Decimal		Hex	Decimal
NULL	00	0	(	28	40	P	50	80
SOH	01	1	)	29	41	Q	51	81
STX	02	2	*	2A	42	R	52	82
ETX	03	3	+	2B	43	S	53	83
EOT	04	4	,	2C	44	T	54	84
ENQ	05	5	-	2D	45	U	55	85
ACK	06	6	.	2E	46	V	56	86
BEL	07	7	/	2F	47	W	57	87
BS	08	8	0	30	48	X	58	88
HT	09	9	1	31	49	Y	59	89
LF	0A	10	2	32	50	Z	5A	90
VT	0B	11	3	33	51	[	5B	91
FF	0C	12	4	34	52	\	5C	92
CR	0D	13	5	35	53	]	5D	93
SO	0E	14	6	36	54	^	5E	94
SI	0F	15	7	37	55	_	5F	95
DLE	10	16	8	38	56	FNC1	7B,31	123,49
DC1	11	17	9	39	57	FNC2	7B,32	123,50
DC2	12	18	:	3A	58	FNC3	7B,33	123,51
DC3	13	19	;	3B	59	FNC4	7B,34	123,52
DC4	14	20	<	3C	60	SHIFT	7B,53	123,83
NAK	15	21	=	3D	61	CODEB	7B,42	123,66
SYN	16	22	>	3E	62	CODEC	7B,43	123,67
ETB	17	23	?	3F	63			

CAN	18	24	@	40	64			
EM	19	25	A	41	65			
SUB	1A	26	B	42	66			
ESC	1B	27	C	43	67			
FS	1C	28	D	44	68			
GS	1D	29	E	45	69			
RS	1E	30	F	46	70			
US	1F	31	G	47	71			
SP	20	32	H	48	72			
!	21	33	I	49	73			
"	22	34	J	4A	74			
#	23	35	K	4B	75			
\$	24	36	L	4C	76			
%	25	37	M	4D	77			
&	26	38	N	4E	78			
'	27	39	O	4F	79			

Character in set B

character	Sending data		character	Sending data		Character	Sending data	
	Hex	Decimal		Hex	Decimal		Hex	Decimal
SP	20	32	H	48	72	p	70	112
!	21	33	I	49	73	q	71	113
"	22	34	J	4A	74	r	72	114
#	23	35	K	4B	75	s	73	115
\$	24	36	L	4C	76	t	74	116
%	25	37	M	4D	77	u	75	117
&	26	38	N	4E	78	v	76	118
'	27	39	O	4F	79	w	77	119
(	28	40	P	50	80	x	78	120

)	29	41	Q	51	81	y	79	121
*	2A	42	R	52	82	z	7A	122
+	2B	43	S	53	83	{	7B,7B	123,123
,	2C	44	T	54	84	|	7C	124
-	2D	45	U	55	85	}	7D	125
.	2E	46	V	56	86	—	7E	126
/	2F	47	W	57	87	DEL	7F	127
0	30	48	X	58	88	FNC1	7B,31	123,49
1	31	49	Y	59	89	FNC2	7B,32	123,50
2	32	50	Z	5A	90	FNC3	7B,33	123,51
3	33	51	[	5B	91	FNC4	7B,34	123,52
4	34	52	\	5C	92	SHIFT	7B,53	123,83
5	35	53	]	5D	93	CODEA	7B,41	123,65
6	36	54	^	5E	94	CODEC	7B,43	123,67
7	37	55	_	5F	95			
8	38	56	`	60	96			
9	39	57	a	61	97			
:	3A	58	b	62	98			
;	3B	59	c	63	99			
<	3C	60	d	64	100			
=	3D	61	e	65	101			
>	3E	62	f	66	102			
?	3F	63	g	67	103			
@	40	64	h	68	104			
A	41	65	i	69	105			
B	42	66	j	6A	106			
C	43	67	k	6B	107			
D	44	68	l	6C	108			
E	45	69	m	6D	109			

F	46	70	n	6E	110			
G	47	71	o	6F	111			

Character in set C

Character	Sending data		Character	Sending data		Character	Sending data	
	Hex	Decimal		Hex	Decimal		Hex	Decimal
0	00	0	40	28	40	80	50	80
1	01	1	41	29	41	81	51	81
2	02	2	42	2A	42	82	52	82
3	03	3	43	2B	43	83	53	83
4	04	4	44	2C	44	84	54	84
5	05	5	45	2D	45	85	55	85
6	06	6	46	2E	46	86	56	86
7	07	7	47	2F	47	87	57	87
8	08	8	48	30	48	88	58	88
9	09	9	49	31	49	89	59	89
10	0A	10	50	32	50	90	5A	90
11	0B	11	51	33	51	91	5B	91
12	0C	12	52	34	52	92	5C	92
13	0D	13	53	35	53	93	5D	93
14	0E	14	54	36	54	94	5E	94
15	0F	15	55	37	55	95	5F	95
16	10	16	56	38	56	96	60	96
17	11	17	57	39	57	97	61	97

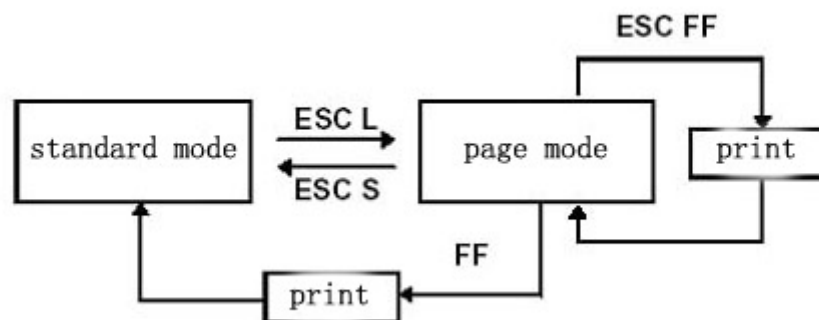
18	12	18	58	3A	58	98	62	98
19	13	19	59	3B	59	99	63	99
20	14	20	60	3C	60	FNC1	7B,31	123,49
21	15	21	61	3D	61	CODEA	7B,41	123,65
22	16	22	62	3E	62	CODEB	7B,42	123,66
23	17	23	63	3F	63			
24	18	24	64	40	64			
25	19	25	65	41	65			
26	1A	26	66	42	66			
27	1B	27	67	43	67			
28	1C	28	68	44	68			
29	1D	29	69	45	69			
30	1E	30	70	46	70			
31	1F	31	71	47	71			
32	20	32	72	48	72			
33	21	33	73	49	73			
34	22	34	74	4A	74			
35	23	35	75	4B	75			
36	24	36	76	4C	76			
37	25	37	77	4D	77			
38	26	38	78	4E	78			
39	27	39	79	4F	79			

Appendix B: Printing mode and its transformation

B.1 Summary

The printer has two kinds the printing mode: standard mode and page mode. Under standard mode, the printer will print and feed paper if only the printing buffer area is full or receiving command of printing or feeding. But under page mode, all the printing data and feeding command will be stored in the appointed memory space, the printer does not carry out an operation until

receiving command of ESC F For FF, the printer will print all of the content in printing area. For example: When the printer receiving "ABCDEF"<LF> under standard mode, it will print out "ABCDEF" immediately and feed a line of paper. But under page mode, the printer will write "ABCDEF" in printing area of memory, the printing data followed will be put in next line of printing area. ESC L command switches the printer to page mode, all the data followed will be handled under page mode. Carrying out ESC FF command like this can print out all data received. But carrying out FF command not only prints out all the data received but switches the printer to standard mode. Carrying out ESC S command can also switch the printer to standard mode, but it does not print data received under page mode, and clear these data.



Picture B.1 Switching between standard mode and page mode

B. 2 Setting various value under standard mode and page mode

- 1) Some commands (such as: ESC SP, ESC 2, ESC 3) can be used not only under Standard mode but also page mode, and their parameters are also same. But settings under the two modes are independent, they are stored separately.

B. 3 Setting printing area

- 1) Printing area is set by ESCW. If all the printing and feeding operation has been finished before receiving ESCW, then the left side of printer (when you facing it) is as the Origin of coordinate (x0, y0) of printing area. Width (dx point) of the rectangle printing area. Expands to right for margin of coordinate (x0, y0) on x direction, height (dy point) is on y direction (feeding direction). If not setting printing area by ESCW, then the printing area adopts default value.

- 2) After setting printing area and its direction(byESCT),the data received will array in printing area as the positions in picture B.2,A is the zero position of printing area,this is the default value.(Apoint is the base line when a character is printed)
The download bit map or barcode data of printing character makes the current positon as it slower left corner(B point in pictureB.3),aligning with base line
- 3) Before receiving a command(suchasLForESCJ)including feeding paper, if the printing data(including space between characters)goes beyond the printing area,then the printer feeds a line of paper automatically(how much of feeding paper lies on the line height set by ESC 2 and ESC 3),the printing position moves to the beginning of next line at the same time.
- 4) The default line height is1/7inch,equal to 30 dots on vertica ldirection.If there is a character enlarged two times in next line,or the bit map occupies 2line or even more,and the barcode is higher than normal character,feeding quantity of the printer can not meet the demand,causing super imposition of character which is being printed and character of last line.It can increase the height of line to avoid this.

Example:

When printing a 6 characters high download bit map can use the formula below:

{vertical dot number (8×6) feeding dots of printing area starting position (24) } ×

vertical motion units (203/203) =24, that is, it needs to move down 24dots on the basis of printing area starting position to print out the whole bit map.

Using the commands below:

ESC W xL,xH,yL,yH,dxL,dxH,dyL,dyH

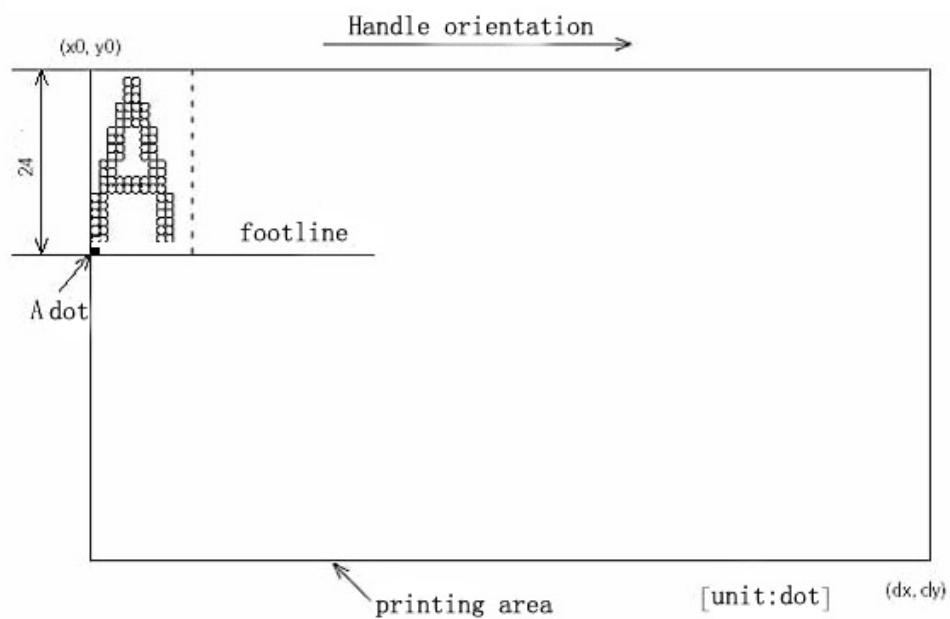
ESC T n

ESC 3 24 Setting new height of the line

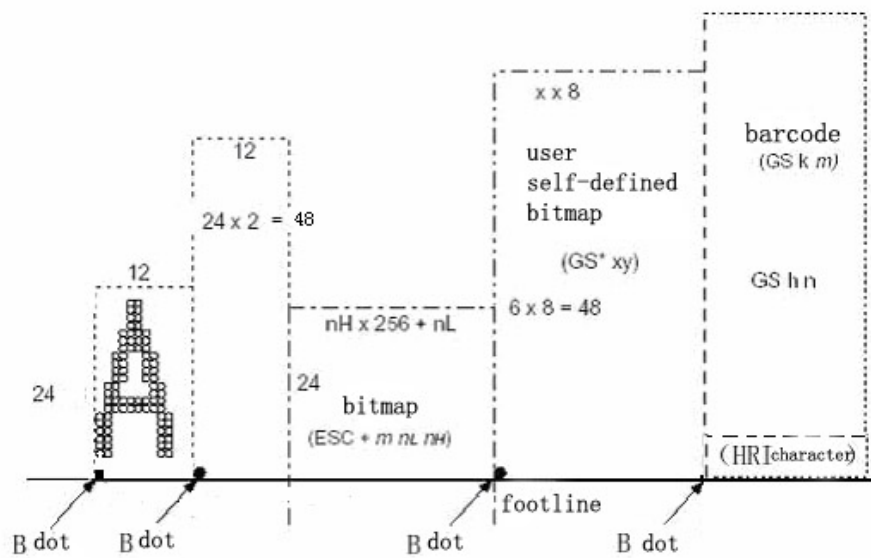
LF

GS / 1

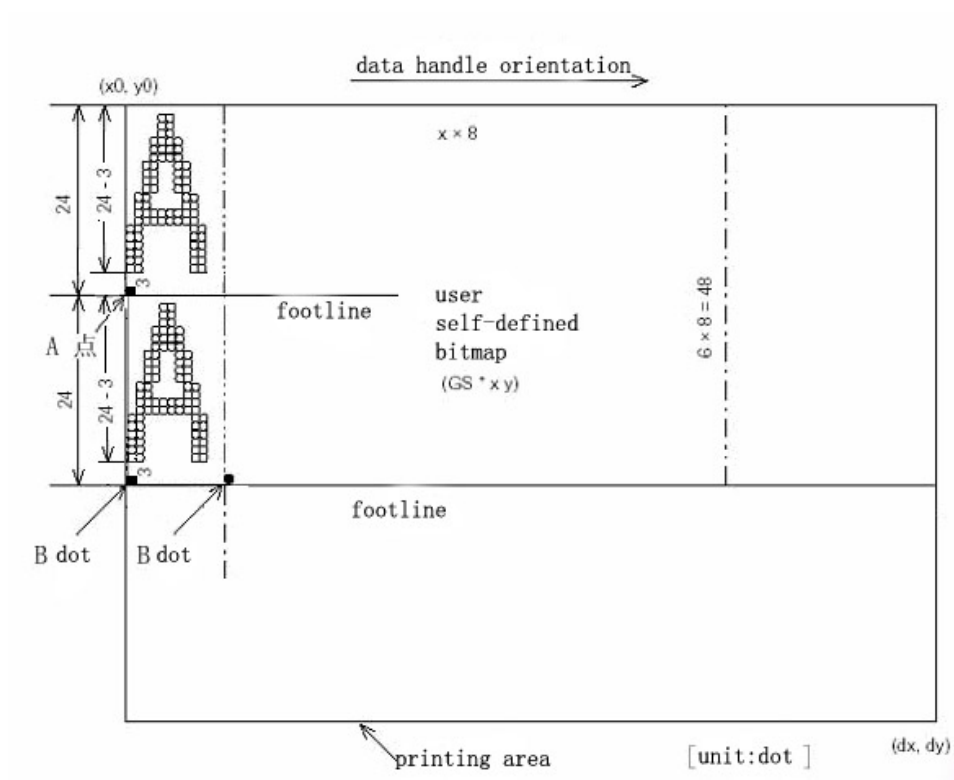
ESC 2 Recovering the line height to 1/6 inch



Picture B.2 Store location of character data



Picture B.3 Store location of printing data



Picture B.4 Store location of downloading bitmap