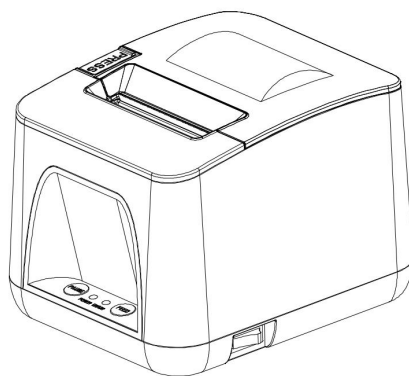
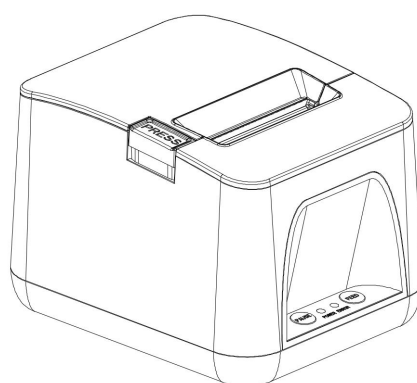


TL24/25 Technical Command Manual

(VER 0.01)



Beijing Spirit Technology Development Co., Ltd.

Version Description		
Date	Version	Revise Contents
Aug. 2018	V0.01	First Draft

CONTENT

1. ESC/POS Commands	1
2. CPCL Commands	1
3. TSPL Commands	2
ESC/POS command	3
HT	3
LF	3
FF	3
CR	4
DLE EOT n	4
ESC SP n	6
ESC ! n	6
ESC \$ nL nH	7
ESC % n	8
ESC & y c1 c2 [x1 d1...d(y × x1)]...[xk d1...d(y × xk)]	8
ESC * m nL nH d1... dk	10
ESC – n	12
ESC 2	13
ESC 3 n	13
ESC = n	13
ESC ? n	14
ESC @	14
ESC D n1...nk NUL	14
ESC E n	15
ESC G n	15
ESC J n	16
ESC M n	16
ESC R n	16
ESC V n	17
ESC \ nL nH	18
ESC a n	18
ESC c 5 n	19
ESC d n	19
ESC t n	19
ESC { n	21
FS P n	21
GS ! n	22
GS * x y d1...d(x × y × 8)	23
GS / m	24
GS B n	24
GS H n	25
GS L nL nH	25
GS P x y	26

GS W nL nH.....	26
GS f n.....	27
GS h n.....	27
①GS k m d1...dk NUL②GS k m n d1...dn.....	28
GS w n.....	30
FS ! n.....	31
FS &.....	31
FS - n.....	32
FS	32
FS 2 c1 c2 d1...dk.....	32
FS C n.....	33
FS S n1 n2.....	34
FS W n.....	34
GS Z n.....	35
ESC Z m n k dL dH d1 ...dn.....	35
①GS k m v r d1...dn NUL ②GS k m v r nL nH d1...dn.....	36
CPCL Commands.....	37
! {offset} 200 200 {height} {qty}.....	37
PRINT Commands.....	37
FORM Commands.....	38
TEXT Commands.....	38
LINE Commands.....	39
BOX Commands.....	40
INVERSE-LINE Commands.....	40
GRAPHICS Commands.....	40
BARCODE Commands.....	41
BARCOD-TEXT Commands.....	44
SETBOLD Commands.....	44
SETSP Commands.....	45
INVERSE-TEXT Commands.....	45
UNDERLINE-TEXT Commands.....	45
PAGE-ROTATE Commands.....	46
CENTER Commands.....	46
LEFT Commands.....	46
RIGHT Commands.....	46
TSPL Commands.....	47
System setting commands.....	47
SIZE Commands.....	47
CASHDRAWER Commands.....	47
GAP Commands.....	47
DIRECTION Commands.....	48
REFERENCE Commands.....	48
COUNTRY Commands.....	48
CODEPAGE Commands.....	49

CLS Commands	49
FEED Commands	49
BACKFEED&BACKUP Commands	50
FORMFEED Commands	50
HOME Commands	50
PRINT Commands	50
SOUND Commands	50
LIMITFEED Commands	51
Label Formatting Commands	51
BAR Commands	51
BARCODE Commands	52
BOX Commands	52
BITMAP Commands	53
ERASE Commands	55
REVERSE Commands	55
TEXT Commands	55
QRCODE Commands	56
Inquire printer status command	56
<ESC>! ? Commands	56
<ESC>! R Commands	57
~!@ Commands	57
~!A Commands	57
~!D Commands	57
~!F Commands	58
~!I Commands	58
~!T Commands	58
File Management Commands	58
BEEP Commands	58
SET KEY1, SET KEY2 Commands	58
SET PRINTKEY Commands	59
SET REPRINT Commands	59
Appendix A: 128 code	60
A.1 128 code summary	60
A.2 Character sets	61
Appendix B: Print mode and its conversion	65
Appendix C: Pre-print black mark description	68

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 Commands

- 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) Scope. Provide the scope of the Variable.
- 4) Description. Provide the detailed explanation of the command.
- 5) Annotation. 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 Commands

- 1) Description of Name and function of the command. This 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: 520dots
7. For SP-TL24U5 and SP-TL24UBTDM5 models, the maximum of horizontal coordinates: 448dots, if >448,will be 0)
8. For SP-TL24and SP-TL24UBTDM models, the maximum of horizontal coordinates: 348dots, if >348,will be 0)
9. For the position of overlapping print content.
10. Only after received the PRINT instruction, the machine will print, otherwise it will not print at all.
11. There can be spaces in front of the instructions, but can not have other content.

3. TSPL Commands

- 1) Description of Name and function of the command. This 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.

Notes:TSPL instruct rules state:

1. In addition to the eight instructions to ask the printer status, the other instructions are in the form of characters, and are uppercase, are the carriage return, line as the end.
2. Each parameter to a space, comma, double quotation marks or carriage return end.
3. Every number parameters for maximum of 65536.
4. The maximum of vertical coordinate: 520 dots
5. For SP-TL24U5 and SP-TL24UBTDM5 models, the maximum of horizontal coordinates: 448dots, if >448,will be 0)
6. For SP-TL24and SP-TL24UBTDM models, the maximum of horizontal coordinates: 348dots, if >348,will be 0)
7. For the position of overlapping print content,

8. Only after received the PRINT instruction, the machine will print, otherwise it will not print at all.
9. There can be spaces in front of the instructions, but can not have other content.

ESC/POS command

HT

[Name]	Horizontal tab	
[Format]	ASCII	HT
	Hex	09
	Decimal	9
[Description]	Moves the print position to the next horizontal tab position.	
[Notice]	<p>. This command is ignored unless the next horizontal tab position has been set.</p> <p>. If the next position of horizontal tab exceeds the printing area, the current position will be set as [printing width+1].</p> <p>. Horizontal tab positions are set with ESCD.</p> <p>. 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.</p> <p>. The default value of tab position is every 8 standard ASCII characters (12*24) a tab.</p> <p>. 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.</p>	
[Reference]	ESC D	

LF

[Name]	Printing and feeding line	
[Format]	ASCII	LF
	Hex	0A
	Decimal	10
[Description]	Printing the data 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	

FF

[Name]	Printing and feeding paper	
[Format]	ASCII	FF
	Hex	0C
	Decimal	12
[Description]	Printing all of the content in print buffer and returning to the standard mode, under the standard mode, if the printer establishes in the black mark paper mode, then printing the data in the buffer to feed paper to the black mark	

section, if haven't black mark, then feed the paper 30cm behind stop, the pre-print black mark specification is showed in the appendix C. the pre-print black mark instruction.If not at the black mark examining status and then only print the contents of buffer,don't feed paper.

- [Notice] .Clearing the content in print buffer after printing.
- .The printing area setup by **ESC W** returns to the default.
- .The printer don't cut paper.
- .This command sets the current position at the beginning of the line

[Reference] **ESC FF, ESC L, ESC S**

CR

[Name] Printing and entering
 [Format] ASCII CR
 Hex 0D
 Decimal 13

[Description] The same as LF when the command is permitted, if forbidden, it will be ignored.

[Notice] Setting the printing position at the beginning of the line.

[Reference] **LF**

DLE EOT n

[Name] Real time status transmission
 [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:
 n=1: Sending state of the printer
 n=2: Sending off line state
 n=3: Sending error state
 n=4: Sending state of paper sensor

- [Notice] -When printer receives the command,returns to the interrelated status immediately
- .Avoiding to put this command in the command sequence of more than2 characters.
- .This command will still valid even though the printer is set to forbid by the Command of ESC=(selecting peripheral).
- .When sending printer current state,each state is indicated by 1byte
- .Transmission state value of the printer can not confirm whether the master computer received
- .Printer will carry out the command immediately once received

n = 1: Printer state

bit	0/1	HEX	Decimal	Function
-----	-----	-----	---------	----------

0	0	00	0	Fix as 0
1	1	02	2	Fix as 1
2	0	00	0	The cash box open/close signal is low(the third of cash box plug leads foot)
	1	04	4	The cash box open/close signal is high(the third of cash box plug leads foot)
3	0	00	0	online
	1	08	8	offline
4	1	10	16	Fix as 1
5,6				undefined
7	0	00	00	Fix as 0

n = 2: off line state

bit	0/1	HEX	Decimal	Function
0	0	00	0	Fix as 0
1	1	02	2	Fix as 1
2	0	00	0	The top cover closed
	1	04	4	The top cover opened
3	0	00	0	Not holding down the feed button
	1	08	8	holding down the feed button
4	1	10	16	fix as 1
5	0	00	0	Printer is not out of paper
	1	20	32	Printer is out of paper
6	0	00	0	No error state
	1	40	64	error state
7	0	00	0	fix as 0

n = 3: error state

bit	0/1	HEX	Decimal	Function
0	0	00	0	fix as 0
1	1	02	2	fix as 1
2	-	-	-	undefined
3	0	00	0	noun cutter error
	1	08	8	cutter error
4	1	10	16	fix as 1
5	0	00	0	noun unrecoverable error
	1	20	32	Have unrecoverable error
6	0	00	0	noun auto recoverable error
	1	40	64	have auto recoverable error
7	0	00	0	fix as 0

n = 4: paper sensor state

bit	1/0	HEX	Decimal	Function
-----	-----	-----	---------	----------

0	0	00	0	fix as 0
1	1	02	2	fix as 1
2,3	0	00	0	the sensor of paper is going out: have enough paper.
	1	0C	12	the sensor of paper is going out:the paper is going out
4	1	10	16	fix as 1
5,6	0	00	0	lack of paper sensor: have paper
	1	60	96	lack of paper sensor: noun paper
7	0	00	0	fix as 0

[Reference] **DLE ENQ,GS a,GS r**

ESC SP n

[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.

[Notice] -When the character enlarges,the space enlarges the same times.
 -The command does not 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 **GS P**.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 change into the maximum distance automatically.

[Default] n= 0

[Reference] **GS P**

ESC ! n

[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

[Name] Setting absolute print position

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

[Range] 0≤nL ≤ 255
 0 ≤nH≤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**;
 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**;

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

ESC % n

[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.			
[Reference]	When cancel user defined character set, auto select built in character set. · n only LSB is available.			
[Default]	n = 0			
[Reference]	ESC &, ESC ?			

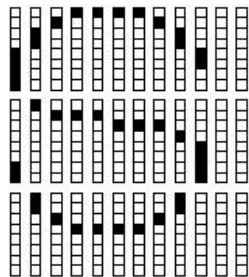
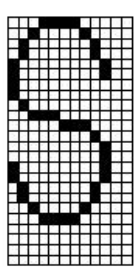
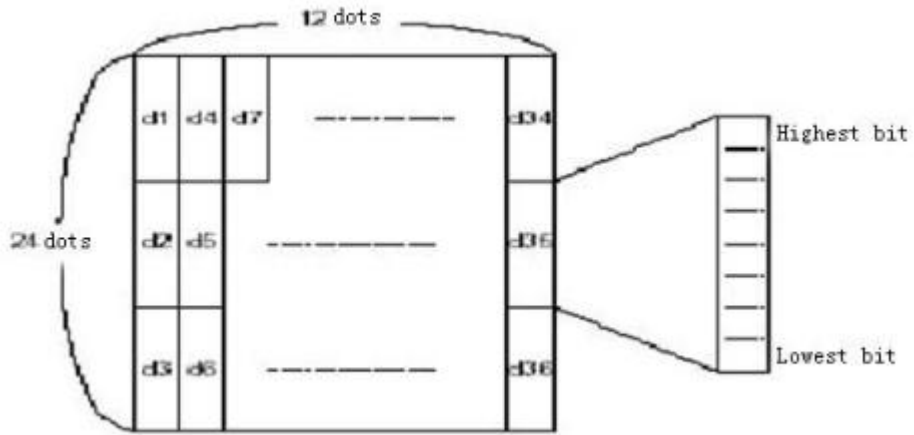
ESC & y c1 c2 [x1 d1...d(y × x1)]...[xk d1...d(y × xk)]

[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(12x24) $0 \leq x \leq 9$ compressing ASCII style B (9 x 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 do not corresponding bit is 1 or non printing do not 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 ?

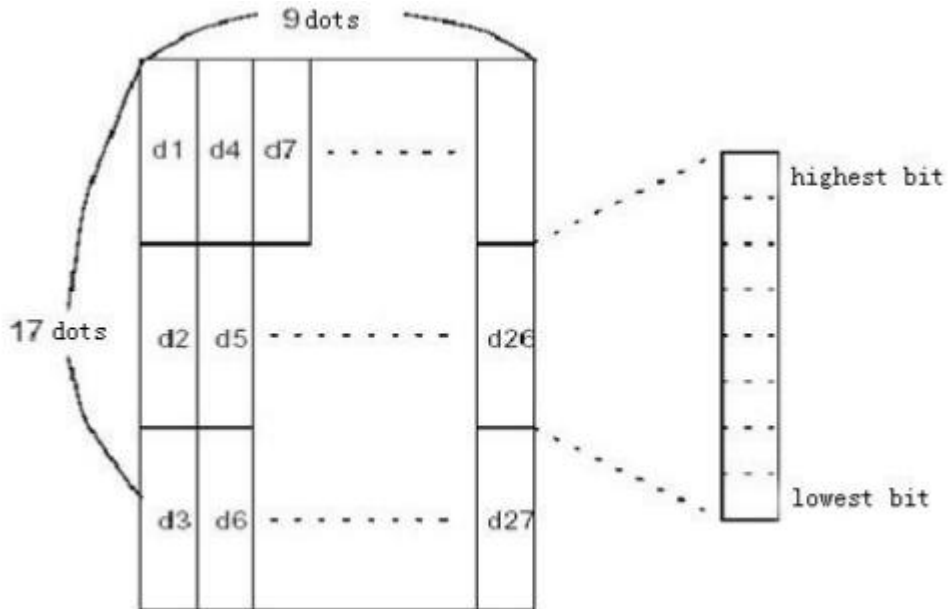
[Example]

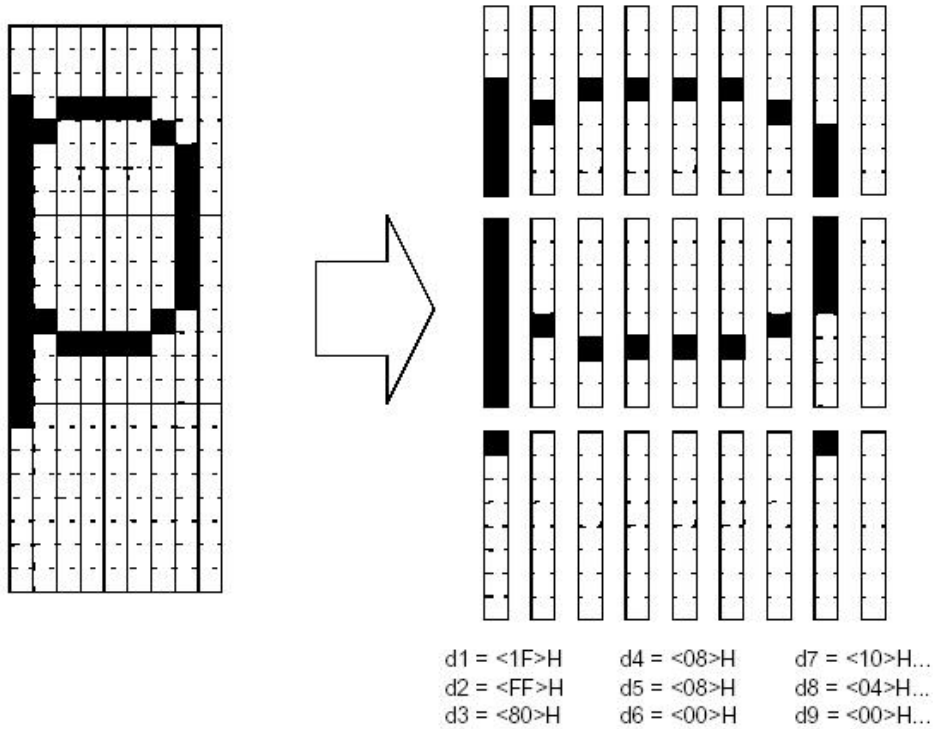
When select the standard ASCII style(12×24)



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

[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 ≤ nL ≤ 255
 0 ≤ nH ≤ 3
 0 ≤ d ≤ 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	8 dots single density	8	68 DPI	101 DPI	nL + nH × 256
1	8 dots double density	8	68 DPI	203 DPI	nL + nH × 256
32	24dots single density	24	203 DPI	101 DPI	(nL + nH × 256) × 3
33	24dots double density	24	203 DP	203 DPI	(nL + nH × 256) × 3

[Notice] -If the value of m goes beyond the range,nl and the data later will be regarded as normal data to deal with.

-The dots number of horizontal printing depends on nL and nH,total number is

nL+nHx256.

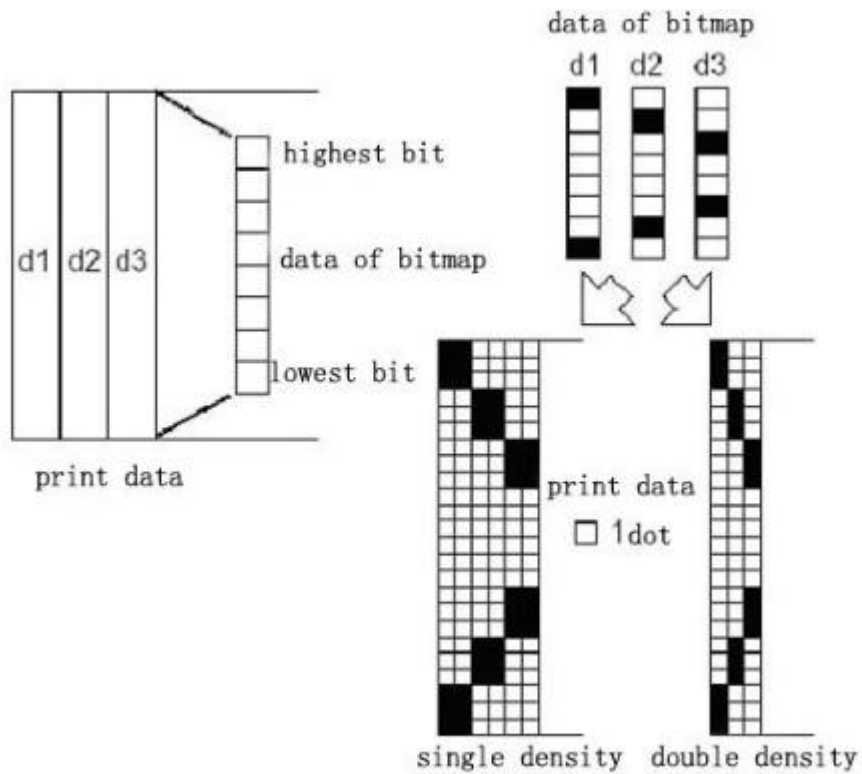
- The part of the bit map that goes beyond the current area will be cut off.
- d is the data of bit map.Printing when the relevant position of every byte is 1,and when it is 0,will not print this point.

-The printer will return to the mode of normal data processing after send the data of bit map.

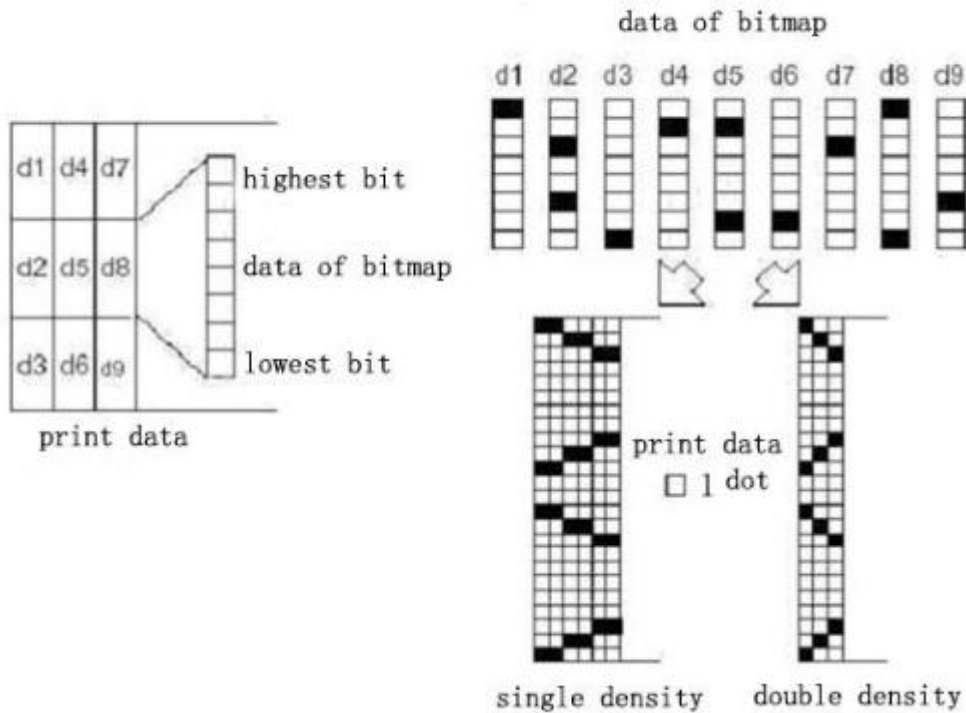
-Except inversion mode,this command will not be influenced by other modes.
(black, double print, underline, enlarge character and invert)

-Relationship between data and printing point is as below:

- choosing 8 dots density:



· choosing 24 dots density:



ESC – n

[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 is1dot 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 does not affect the Chinese character setting.

[Default] n = 0

[Reference] **ESC !**

ESC 2

[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.

[Notes] Line height is independent under standard and page mode.

[reference] **ESC 3**

ESC 3 n

[Name] Setting the height of the line

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

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

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

[Reference] **ESC 2, GS P**

ESC = n

[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] n = 1

ESC ? n

[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

[Notice]

- 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 @

[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]

- 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

[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] $1 \leq n1 \leq n2 \leq \dots \leq nk \leq 255$
 $0 \leq k \leq 32$

[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 acceding 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 per 8 standard ASCII characters (12 × 24).
- [Reference] **HT**

ESC E n

- [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] -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] n = 0
- [Reference] **ESC !**

ESC G n

- [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
- When the lowest bit of n is 0, canceling double print mode.

- When the lowest bit of n is 1,selecting double print mode.
- [Notice] -Only the lowest bit of n is effective.
- The effect of this command is the same as bold font printing.
- [Default] n = 0
- [Reference] **ESC E**

ESC J n

- [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 data 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. 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.
- [Reference] **GS P**

ESC M n

- [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] n = 0

ESC R n

- [Name] Selecting international character set
- [Format]

ASCII	ESC	R	n
Hex	1B	52	n

	Decimal	27	82	n
[Range]	0 ≤ n ≤ 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

[Name]	Selecting/canceling character 90 clockwise.			
[Format]	ASCII	ESC	V	n
	Hex	1B	56	n
	Decimal	27	86	n
[Range]	0 ≤ n ≤ 1, 48 ≤ n ≤ 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 under 90 clockwise are in opposite direction with the normal mode.
[Default]	n = 0
[Reference]	ESC !, ESC -

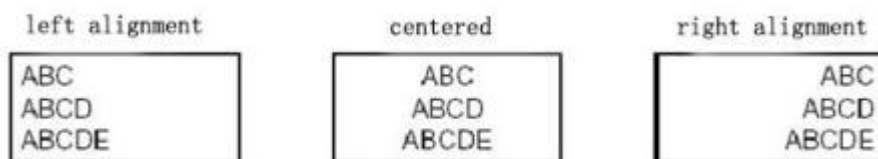
ESC \ nL nH

[Name]	Setting relative printing position				
[Format]	ASCII	ESC	\	nL	nH
	Hex	1B	5C	nL	nH
	Decimal	27	92	nL	nH
[Range]	0 ≤ nL ≤ 255		0 ≤ nH ≤ 255		
[Description]	<p>Sets the lateral relative position based on the current position by using the Horizontal or vertical motion unit</p> <p>-This command sets the distance from the current position to n[(nL+nH × 256)horizontal motion unit]</p>				
[Notice]	<p>-Any setting that exceeds the printable area is ignored.</p> <p>-When printing position moves to the right:nL+nHx256=N.</p> <p>-When printing position moves to the left,using radix complement:nL+nHx256=65536-N.</p> <p>-The print starting position moves from the current position to [N x horizontal motion unit]</p> <p>-Vertical and horizontal motion units are set by GSP command.</p> <p>-Horizontal motion units are used under standard mode.</p> <p>-Under page mode,selecting to use horizontal or vertical motion units according to the direction of printing area and zero position.</p> <p>The system of selection is as below:</p> <p>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;</p> <p>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</p>				
[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 ≤ n ≤ 2, 48 ≤ n ≤ 50											
[Description]	<p>Making all the printing datas array in appointed alignment</p> <p>Relationship between value of n and alignment are as below:</p> <table border="1"> <tr> <td>n</td> <td>Alignment</td> </tr> <tr> <td>0,48</td> <td>Align left</td> </tr> <tr> <td>1,49</td> <td>Align center</td> </tr> <tr> <td>2,50</td> <td>Align right</td> </tr> </table>				n	Alignment	0,48	Align left	1,49	Align center	2,50	Align right
n	Alignment											
0,48	Align left											
1,49	Align center											
2,50	Align right											
[Notice]	<p>-This command is just available at the zero position of the line and under Standard mode.</p> <p>-This command just changes the internal mark position under page mode.</p> <p>-This command revises the blank area according to HT,ESC\$ or ESC\.</p>											
[Default]	n = 0											

[Example]

**ESC c 5 n**

[Name] Permitting/Forbidding key stroke

[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 stroke.

- When the lowest bit of n is 0, key stroke works
- When the lowest bit of n is 1, key stroke is forbidden.

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

-When the key stroke is forbidden, it does not work.

-When carrying out the macro command, key stroke works all the time, but can

[Default] 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

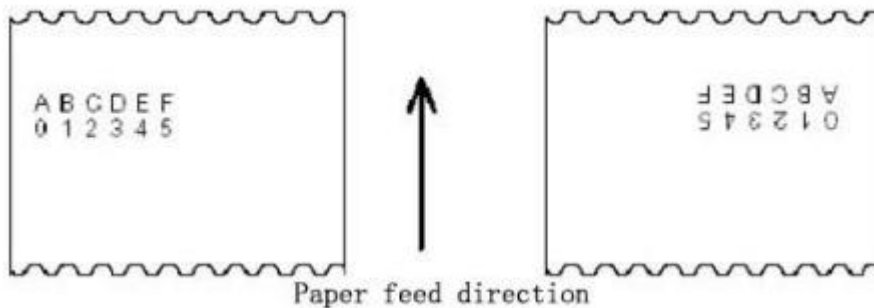
0 CP437 [U.S.A., Standard Europe]

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 Europe]
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] 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 is1,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] n = 0
 [Example]



FS P n

[Name] Printing the pre-stored 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 a 2-value bitmap previously stored in the printer's non-volatile memory. The bitmap in the printer's non-volatile memory can be generated and written by special tool software on the PC. The SP-TL24U5 and SP-TL24UBTDM5 bitmaps have a maximum width of 448 points and a maximum height of 1170 points. The SP-TL24U and SP-TL24UBTDM bitmaps have a maximum width of 384 points and a maximum height of 1344 points. n is the specified bitmap number.
 [Notice]

- The command is invalid when the bitmap of the specified number has not been defined.
- The bitmap must be a 2-value bitmap.
- This command is not affected by the print mode (bold, overlap, underline, character size, or reverse print).
- If the bitmap to be printed is wider than one line, the excess is not printed.
- You need to download the print bitmap with a dedicated tool, see (Setup Tool Software). Bitmaps uploaded in this way are not lost unless you re-download other bitmaps to overwrite them.
- The .2-7 bitmap shares a non-volatile memory with the upgrade firmware. If downloaded to the 2-7 bitmap area, the bitmap data will interact with the upgrade firmware.

GS ! n

[Name]	Selecting character boundary				
[Format]	ASCII	GS	!	n	
	Hex	1D	21	n	
	Decimal	29	33	n	
[Range]	0 ≤ n ≤ 255 (1 ≤ longitudinal magnification multiple ≤ 8, 1 ≤ lateral magnification multiple ≤ 8)				
[Description]	Using 0 to 2 bits to select character height, 4 to 7 bits to select character width As below:				
	bit	0/1	Hex	Decimal	Function
	0-3				Selecting character height, see table1
	4-7				Selecting character width, see table2

See table1

Selecting character height

Hex	Decimal	longitudinal
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

See table2

Selecting character width

Hex	Decimal	lateral
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

[Default] n = 0

[Reference] ESC !

GS * x y d1...d(x × y × 8)

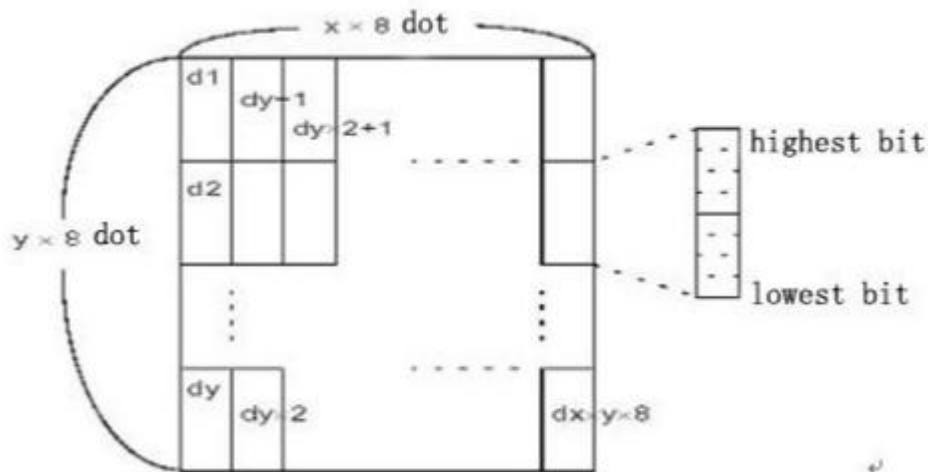
[Name] Defining downloaded bit map

[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 dot number of horizontal
 · y is the dot number of vertical
 · d is data of specified bit map

[Notice] · $x \times 8$ is the dot number of horizontal, $y \times 8$ is the dot number of vertical.
 · If $x \times y$ is off limit, then the command is forbidden.
 · d means the image data. 1 print, 0 not print
 · In the following circumstances, clear the definition of downloaded bit image:
 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 bit map			
[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 the Renoir data in the printing buffer under standard mode
 - Except inversion mode, other modes have no effect on it (include bold, double print, underline, enlarge font and invert printing, etc).
 - The out profile will not be printed if the bit map out of the range.
 - This command prints the bit map downloaded in RAM but not 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 character 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.

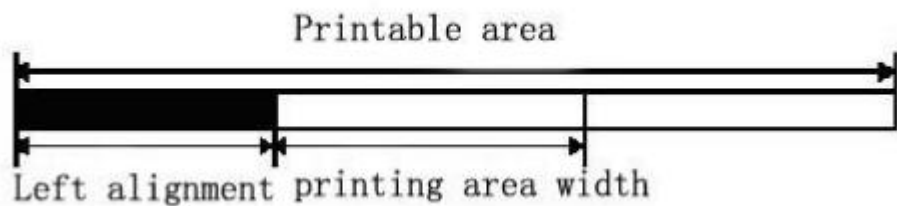
[Default] n = 0

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]	$0 \leq n \leq 3, 48 \leq n \leq 51$													
[Description]	When printing the barcode, selecting the printing position for HRI character N appoints the printing position of HRI: <table border="0" style="margin-left: 20px;"> <thead> <tr> <th>n</th> <th>Printing position</th> </tr> </thead> <tbody> <tr> <td>0, 48</td> <td>No printing</td> </tr> <tr> <td>1, 49</td> <td>Above the barcode</td> </tr> <tr> <td>2, 50</td> <td>Below the barcode</td> </tr> <tr> <td>3, 51</td> <td>Both above and below the barcode</td> </tr> </tbody> </table> ·HRI is the character of content note of barcode				n	Printing position	0, 48	No printing	1, 49	Above the barcode	2, 50	Below the barcode	3, 51	Both above and below the barcode
n	Printing position													
0, 48	No printing													
1, 49	Above the barcode													
2, 50	Below the barcode													
3, 51	Both above and below the barcode													
[Notice]	·The style of HRI character is appointed by GSf .													
[Default]	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 $[(nL+nH \times 256) \times \text{horizontal motion unit}]$ inches.				



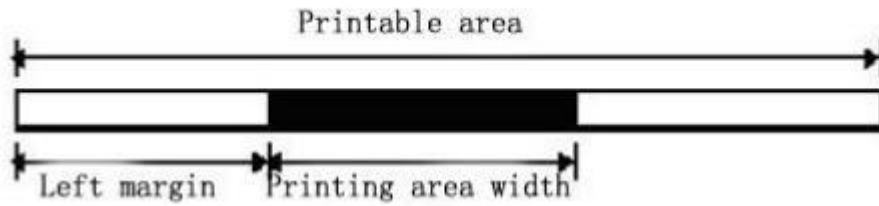
[Notice]	·This command is just available at the zero position of the line and under standard ·It is not available under page mode, the printer will handle it as normal data ·This command does not influence the printing under page mode ·Taking the Max-width is it goes beyond the max printing width ·Vertical and horizontal motion units are set by GSP. Changing the motion will not influence the current left margin.
[Default]	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,making the character whirl by x or y(does not change if invert or clockwise rotates 90°) ①Using x command: ESC SP,ESC \$, ESC \, FS S, 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 ①When the starting position is set as top left corner or lower right 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 or lower left 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 ·a 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 x 256) x 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.
- If [left margin+width of printing area] goes beyond the print able area, the width of printing is it of [printable area width - left margin]
- Vertical and horizontal motion units are set by GSP. Changing them will not influence the current left margin and area width
- Using horizontal motion units to count the width of printing area

[Default] 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
1, 49	Compressed ASCII character (9×17)

- [Notice] · HRI character is the note of barcode content
- HRI character printing position is set by GSH command

[Default] 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 ≤ n ≤ 255

[Description] Selecting height of barcode
 The height of barcode is n dots

[Default] n = 162

[Reference] **GS k**

①GS k m d1...dk NUL②GS k m n d1...dn

[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] ①0 ≤ m ≤ 6 (Value range of k and d is decided by its type)

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

[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 receiving13 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 a 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 then byte data follow 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 wise 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 only available when there is no data in printing buffer, if not, 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):

- Refereeing 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 (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		
	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”

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 character close behind is not the combination as above, the printer will stop handling this command, and handling the rest data as normal data.
- If the 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 character, not printing shift character and character 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 because of 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 ≤ n ≤ 6		
[Description]	setting width of barcode horizontal module		
	Appointing the barcode horizontal module by n		
	n	Mono basis module width (mm)	Biradical module width Narrow-based (mm) Wide-based(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 biradical module is as below: CODE39, ITF, CODABAR	
[Default]	n = 2		
[Reference]	GS k		

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 larged 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 the 90 degree clockwise characters.
- The width of underline is set by FS,has no relation to the character boundary
- When the height of the character in one line is not the same,all the characters Align the base line
- Using **FS W** or **GS !** can 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] 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 Hanzi interal code,if it is,dealing with the first byte in advance.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 ≤ n ≤ 2, 48 ≤ n ≤ 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)		
[Notice]	<ul style="list-style-type: none"> ·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 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]	n = 0			
[Reference]	FS !			

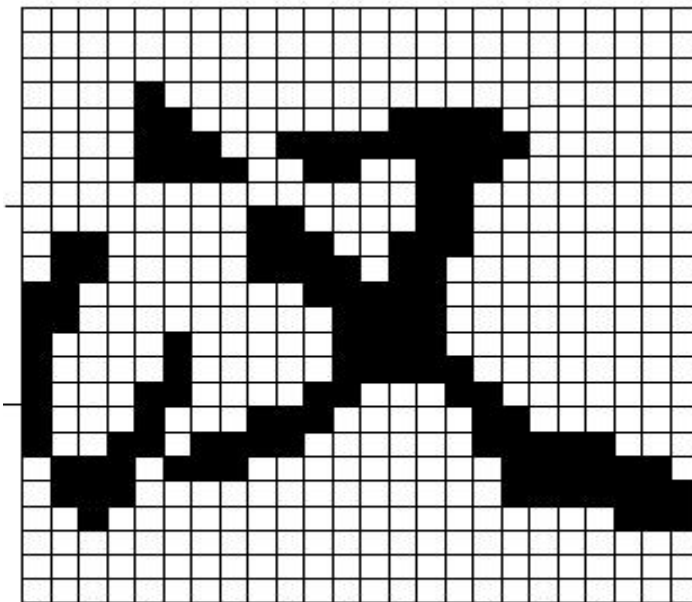
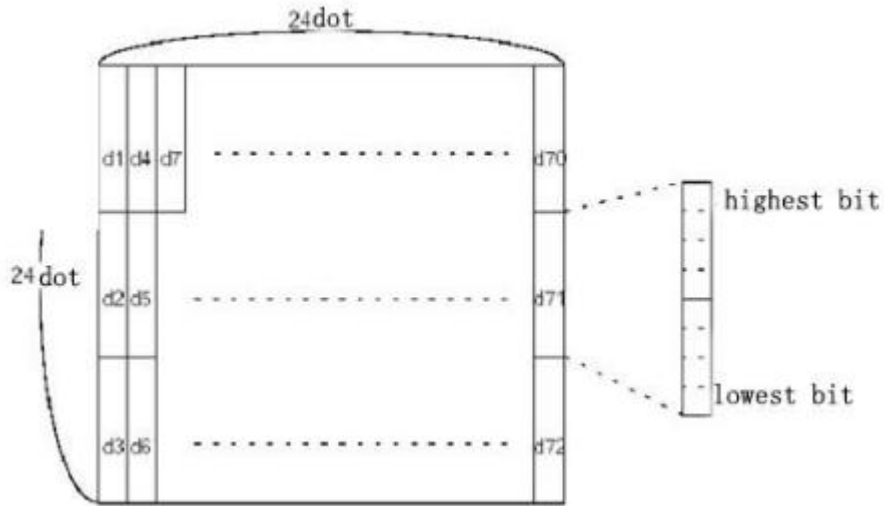
FS .

[Name]	canceling Chinese mode			
[Format]	ASCII	FS	.	
	Hex	1C	2E	
	Decimal	28	46	
[Description]	canceling Chinese mode			
[Notes]	<ul style="list-style-type: none"> ·When the Chinese mode is canceled,all the characters are the same as ASCII Style,and deal with one byte once. ·Selecting Chinese mode 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 code of defined characters					
	c1 = FEH					
	A1H ≤ c2 ≤ FEH					
	0 ≤ d ≤ 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 10 Chinese the most.
- [Default] 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-TC (BIG5)			
[Notice]	The command does not change the parameter set of flash				
	· It returns to default after carried out ESC @ command、 power off or reset.				
[Default]	n = 0 Simplified Chinese model.				
	n = 1 Traditional Chinese-TC 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 ≤ n1 ≤ 255				
	0 ≤ n2 ≤ 255				
[Description]	Setting the space of left and right are n1,n2.				
	·When the printer have GSP command,the left space is[n1*lateral or vertical motion unit]inch,the right space is[n2*lateral or vertical motion unit]inch.				
[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 distance of Chinese is36mm.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 ≤ n ≤ 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 character 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 ≤ n ≤ 2			
[Description]	Select 2D code type			
	· n = 0 selectPDF417			
	· 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 ≤ v ≤ 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 ≤ r ≤ 8 means the level of error correction.						
	② DATA MATRIX code						
	0 ≤ v ≤ 144 means the height of graph.(0: auto select).						
	8 ≤ r ≤ 144 means the width of graph (when v=0, void).						

③ QR CODE

0 ≤ v ≤ 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 ≤ k ≤ 6 means the times of lateral Magnification.

1 ≤ n ≤ 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 × 256)dH × 256).

0 ≤ dn ≤ 255 means data of barcode.

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

[Reference] **GS Z**

①GS k m v r d1...dn NUL ②GS 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] ①32 ≤ m ≤ 34

②97 ≤ m ≤ 99

· The meaning is different when the barcode with different parameter v, r.

① PDF417 code

1 ≤ v ≤ 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 ≤ r ≤ 8 means the level of error correction.

② DATA MATRIX Code

0 ≤ v ≤ 144 means the height of graph.(0: auto select).

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

③ QR CODE Code

0 ≤ v ≤ 40 means graph version (0: auto select).

1 ≤ r ≤ 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 ≤ n ≤ 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 x 256).

0 ≤ dn ≤ 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	3	QR Code	1 ≤ n ≤	0 ≤ v ≤ 40	1 ≤ r ≤ 4	0 ≤ dn ≤ 255

	2		65535			
	3	Data	$1 \leq n \leq$	$0 \leq v \leq 144$	$8 \leq r \leq 144$	$0 \leq dn \leq 255$
	3	Matrix	65535			
	3	PDF417	$1 \leq n \leq$	$1 \leq v \leq 30$	$0 \leq r \leq 8$	$0 \leq dn \leq 255$
	4		65535			
②	9	QR Code	$1 \leq n \leq$	$0 \leq v \leq 40$	$1 \leq r \leq 4$	$0 \leq dn \leq 255$
	7		65535			
	9	Data	$1 \leq n \leq$	$0 \leq v \leq 144$	$8 \leq r \leq 144$	$0 \leq dn \leq 255$
	8	Matrix	65535			
	9	PDF417	$1 \leq n \leq$	$1 \leq v \leq 30$	$0 \leq r \leq 8$	$0 \leq dn \leq 255$
	9		65535			

[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

The instructions are all take ! {offset} 200 200 {height} {qty} as the start instruction, with PRINT as the end instruction, the printer will start the print operation after receiving the PRINT instruction.

Each instruction must end with a carriage return and a line feed.

There must be a space between the parameters in the instruction.

! {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} :Select the instruction you want to use from the following table

Commands	Effect
TEXT (or T)	Print the Horizontal text
VTEXT (or VT)	Print the Vertical text, Rotate counterclockwise 90 °
TEXT90 (or T90)	The meaning is the same as the VTEXT instruction
TEXT180 (or T180)	Prints the text (reverse) and rotates 180 ° counterclockwise
TEXT270 (or T270)	Print text (portrait) and rotate counterclockwise 270°

{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		Choose character width	
size	Enlarge vertically	size	Enlarge 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:** **Output:**

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

Hello World

Input : **Output:**

```
! 0 200 200 210 1
TEXT 4 0 200 100 TEXT
TEXT90 4 0 200 100 T90
TEXT180 4 0 200 100 T180
TEXT270 4 0 200 100 T270
FORM
PRINT
```



LINE Commands

[Name] Line printing command

[Format] {command}LINE (L) {x0} {y0} {x1} {y1} {width}

[Description] {command}:LINE (or L)

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

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

 {x1}: X-coordinate of:

 -top right corner for horizontal

 -bottom left corner for vertical

 {y1}: Y-coordinate of:

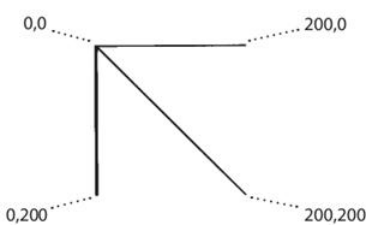
 -top right corner for horizontal

 -bottom left corner for vertical

 { width}: Line width

[Example] **Input:** **Output:**

```
! 0 200 200 210 1
LINE 0 0 200 0 1
LINE 0 0 200 200 2
LINE 0 0 0 200 3
PRINT
```



BOX Commands

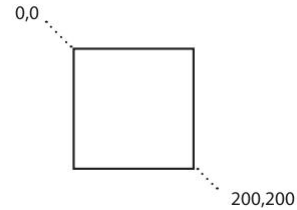
[Name] Box command

[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:
 -top right corner for horizontal
 -bottom left corner for vertical
 {y1}: Y-coordinate of:
 -top right corner for horizontal
 -bottom left corner for vertical
 {width}: Width of the inverse-line

Note: In the area selected by the inverse, the contents generated in the area, the black area is depicted as white, and the white area is depicted as black.

[Example] **Input:**
 ! 0 200 200 210 1
 TEXT 24 11 30 45 SAVE
 TEXT 24 11 30 95 MORE
 INVERSE-LINE 0 45 145 45 45
 INVERSE-LINE 0 95 145 95 45
 PRINT

Output:



GRAPHICS Commands

[Name] Graphics Command

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

[Description] {command}:Choose from the following

EXPANDED-GRAPHICS (or EG): Prints expanded graphics

COMPRESSED-GRAPHICS (or CG): Prints compressed graphics

{ width }: Byte-width of image

{ height }:Dot-height of image


{x}: Horizontal starting position

{y}: Vertical starting position

{data}: Graphics data

Bit-mapped graphics can be printed by using graphics commands. ASCII hex (hexadecimal) is used for expanded graphics data (see example). Data size can be reduced to one-half by utilizing the COMPRESSED-GRAPHICS commands with the equivalent binary characters(s) of the hex data. When using CG, a single 8 bit

character is sent for every 8bits of graphics data. When using EG two characters (16bits) are used to transmit 8bits of graphics data, making EG only half as efficient. Since this data is character data, however, it can be easier to handle and transmit than binary data.

[Example]	Input:	Output:
	! 0 200 200 210 1	
	EG 2 16 90 45 F0F0F0F0F0F0F00F0F0F0F0F0F0F0F	
	F0F0F0F0F0F0F00F0F0F0F0F0F0F0F0F	
	PRINT	

BARCODE Commands

[Name] Barcode Command

1D Barcode

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

[Description] {command}: Choose from the following

ARCOCODE(or B):Print horizontal bar code

VBARCODE(or VB)Prints a vertical bar code

{type}:1D Barcode type:

Type Value	Barcode type
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 HORIZ.
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>

[Description] {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 9:

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:

Output:

```
! 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
```



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
```

Output:

This text is in bold but this text is normal.


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

SETSP Commands

[Name] Change spacing between text characters

[Format] {command} {spacing}

[Description] {command}:SETSP
{spacing}:Spacing between characters, default is 0.

[Example]

Input:

```
! 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
```

Output:

```
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:



```
Normal Display
Inverse Display
Normal Display
```

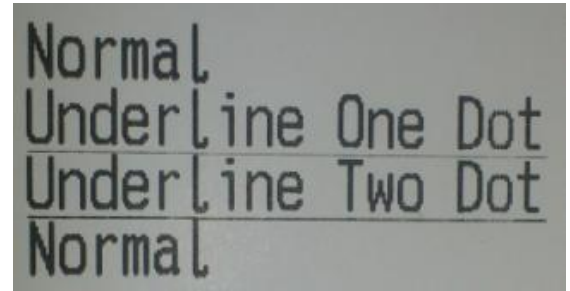
UNDERLINE-TEXT Commands

[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
 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

Output:



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 Commands

System setting commands

SIZE Commands

[Name] Set the width and length of the label paper

[Format] (1)The imperial system(inch):

{command} {m},{n}

(2) The metric system(mm):

{command} {m} mm,{n} mm

[Description] Maximum label area: 56X45mm

m Label width (Without backing paper)

n Label length (Without backing paper)

Note: 200DPI:1mm=8dots

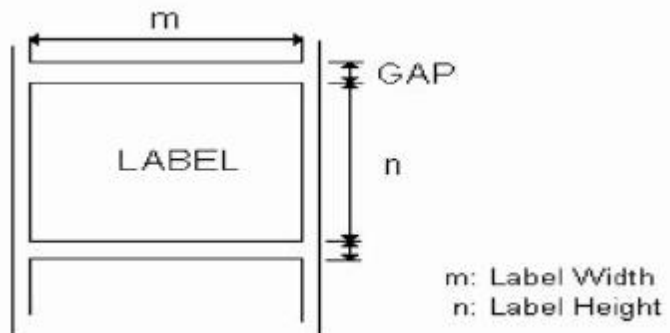
Example:

(1)The imperial system(inch)

SIZE 3.5,3.00

(2) The metric system(mm)

SIZE 56 mm,30 mm



CASHDRAWER Commands

[Name] Generate cash drawer control pulse command

[Format] {command} {m},{t1},{t2}

[Description] m 0,48 pin 2 of cash drawer socket

t1 $0 \leq t1 \leq 255$

t2 $0 \leq t2 \leq 255$

Output the pulse opened by cash drawer specified by t1 and t2 to the pin named by

m.

Note:

1) High time of cash drawer opening pulse is $[t1 \times 2 \text{ ms}]$, low time is $[t2 \times 2 \text{ ms}]$.

2) If $t2 < t1$, low time is $[t1 \times 2 \text{ ms}]$.

GAP Commands

[Name] Vertical spacing setting command between label paper

[Format] (1)The imperial system(inch):

{command} {m}

(2) The 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

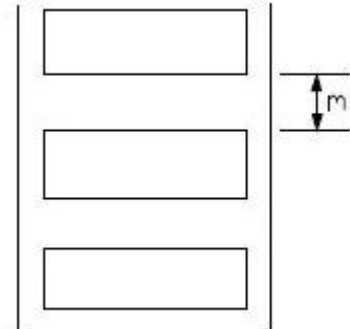
General vertical spacing settings

(1) The imperial system (inch)

GAP 0.12

(2) The metric system (mm)

GAP 3 mm



DIRECTION Commands

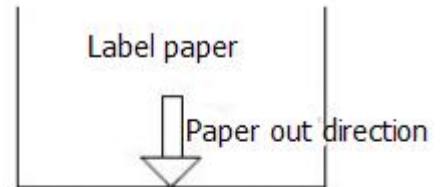
[Name] Printed font direction set command

[Format] {command} {m}

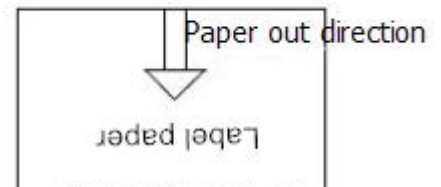
[Description] m 0 or 1, please refer to picture.

Note:

Default by 0



(DIRECTION 1)



(DIRECTION 0)

REFERENCE Commands

[Name] Defines the reference origin coordinate of label

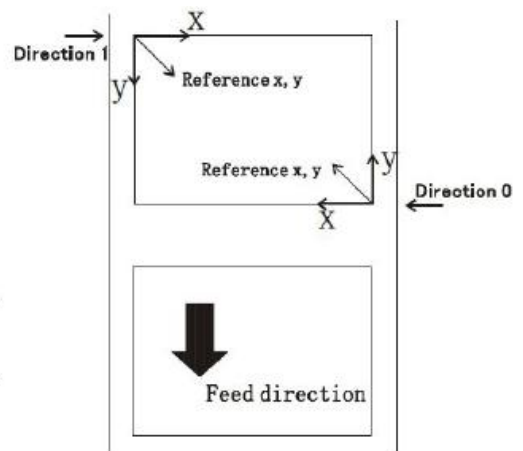
[Format] {command} {x},{y}

[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)

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

Example:

CODEPAGE 437

CLS Commands

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

FEED Commands

[Name] Feeds label with the specified length
 [Format] {command} {n}
 [Description] n Unit: dot

1≤n≤1000

Example: FEED 40

Note: 200DPI: 1mm=8dot

BACKFEED&BACKUP Commands

[Name] Control length of paper backfeed

[Format] {command} {n}

[Description] n Unit: dot

1≤n≤1000

Example :BACKUP 40

BACKFEED 40

Note:200DPI::1mm=8dots

FORMFEED Commands

[Name] feeds label to the beginning of next label

[Format] {command}

[Description] Example:FORMFEED

HOME Commands

[Name] Search the beginning position

[Format] {command}

[Description] Such as: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}

[Description] m Specifies how many sets of labels will be printed (set)

1≤m≤65535

Example:

TEXT 5,5," TSS24.BF2",0,1,1,"SPRT"

PRINT 3

SOUND Commands

[Name] Control the beeper

[Format] {command} { Level },{ interval }

[Description] Level

1≤m≤9

interval (ms)

1≤m≤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)The imperial 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.*

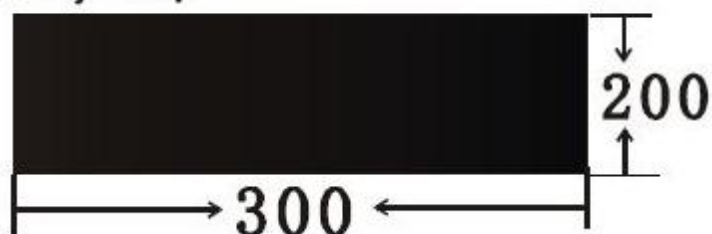
(2) *The default value is 4 inches when printer initializes.*

Label Formatting Commands

BAR 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

(100, 100)



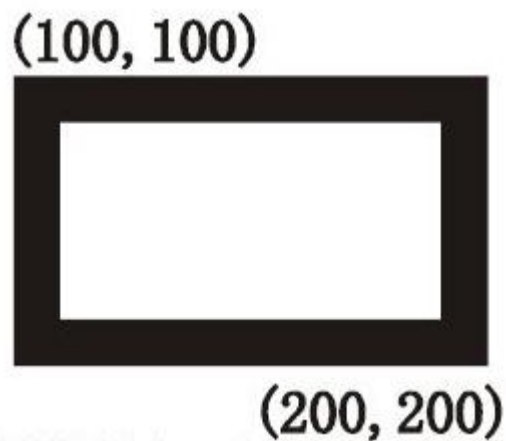
BARCODE Commands

[Name]	Print 1D barcode
[Format]	{command} {x},{y}, "{code type}", {height}, {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]	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

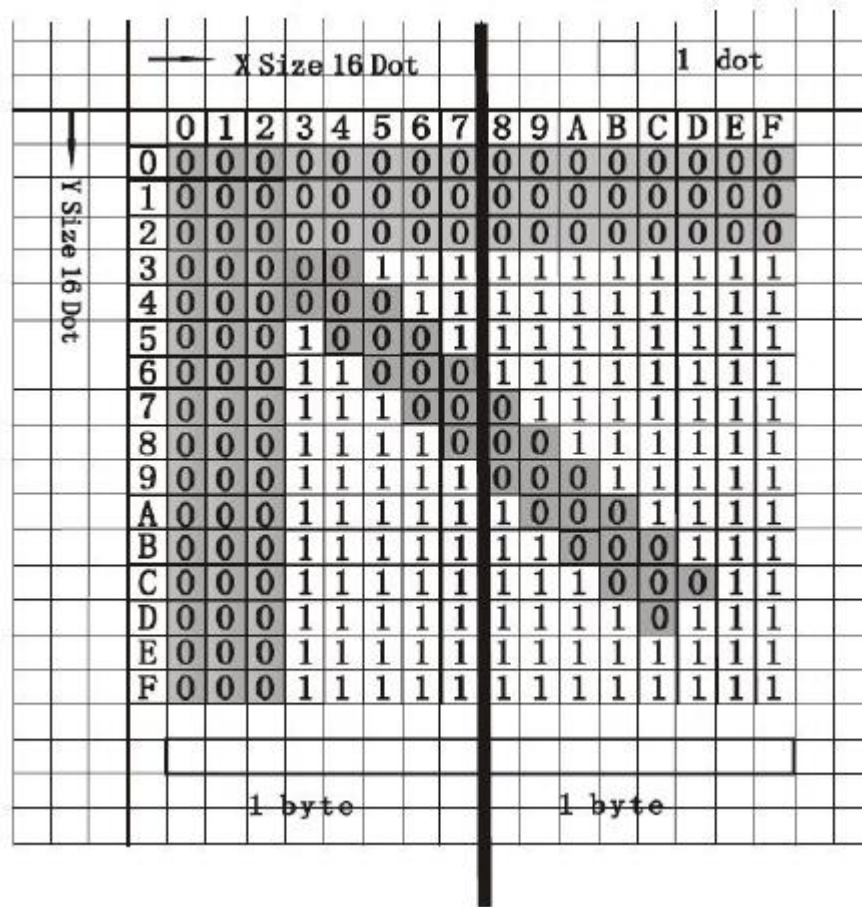


BITMAP Commands

[Name]	Draw bitmap commands
[Format]	{command} {X},{Y},{width},{ height },{mode},{bitmap data }
[Description]	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



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

Such as: SIZE 56 mm,30 mm
 GAP 0,0
 CLS
 BITMAP 10,10,2,16,0, 【data】
 PRINT 1,1

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,"SPRT TEXT"

QRCODE Commands

[Name]	Print QR Code																		
[Format]	{command} {X},{Y},{ ECC LEVEL},{cell width},{mode} ,{rotation} , "{data string}"																		
[Description]	<p>X The starting point coordinate on X direction of QR code</p> <p>Y The starting point coordinate on Y direction of QR code</p> <p>ECC LEVEL Select QRCODE error correction recovery level</p> <table> <tr> <td>L</td> <td>7%</td> </tr> <tr> <td>M</td> <td>15%</td> </tr> <tr> <td>Q</td> <td>25%</td> </tr> <tr> <td>H</td> <td>30%</td> </tr> </table> <p>cell width Width of QR code cell 1~6</p> <p>mode</p> <table> <tr> <td>A</td> <td>Auto</td> </tr> </table> <p>rotation</p> <table> <tr> <td>0</td> <td>No rotation</td> </tr> <tr> <td>90</td> <td>Rotate 90 degree and print</td> </tr> <tr> <td>180</td> <td>Rotate 180 degree and print</td> </tr> <tr> <td>270</td> <td>Rotate 270 degree and print</td> </tr> </table> <p>data string Encoded string</p> <p>Such as:SIZE 56 mm,30 mm</p> <p>GAP 2 mm</p> <p>CLS</p> <p>QRCODE 20,20,L,4,A,0,"www.sprinter.com.cn"</p> <p>PRINT 1</p>	L	7%	M	15%	Q	25%	H	30%	A	Auto	0	No rotation	90	Rotate 90 degree and print	180	Rotate 180 degree and print	270	Rotate 270 degree and print
L	7%																		
M	15%																		
Q	25%																		
H	30%																		
A	Auto																		
0	No rotation																		
90	Rotate 90 degree and print																		
180	Rotate 180 degree and print																		
270	Rotate 270 degree and print																		

Inquire printer status command

<ESC>!? Commands

[Name]	Inquire the printer status																		
[Format]	{command}																		
[Description]	<p>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.</p> <table> <thead> <tr> <th>Bit</th> <th>state</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>printer not powered off</td> </tr> <tr> <td>1</td> <td>reserved</td> </tr> <tr> <td>2</td> <td>paper out</td> </tr> <tr> <td>3</td> <td>reserved</td> </tr> <tr> <td>4</td> <td>reserved</td> </tr> <tr> <td>5</td> <td>printing</td> </tr> <tr> <td>6</td> <td>paper house on</td> </tr> <tr> <td>7</td> <td>error</td> </tr> </tbody> </table>	Bit	state	0	printer not powered off	1	reserved	2	paper out	3	reserved	4	reserved	5	printing	6	paper house on	7	error
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>!?
 Hex: 1B 21 3F
 Decimal: 27 33 63

<ESC>! R Commands

[Name] Force printer to restart
 [Format] {command}
 [Description] The printer will response this printer immediately, no need to follow ENTER to RETURN.

Example:
 <ESC>!R
 Hex: 1B 21 52
 Decimal: 27 33 82

~!@ Commands

[Name] Check the printer printing mileage
 [Format] {command}
 [Description] The printer will response this printer immediately, no need to follow ENTER to RETURN. This command responses how many mileage the printer has printed, and only response integer number(in miles) as reference, decimal number will be ignored. Returned value will be returned as ASCII format, and end in 0x0d.

Example:
 ~!@

~!A Commands

[Name] Inquires memory of printer
 [Format] {command}
 [Description] The printer will response this printer immediately, no need to follow ENTER to RETURN. The value is in decimal characters, and end in 0x0d.

Example:
 ~!A

~!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

~!F Commands

[Name] Inquires file information

[Format] {command}

[Description] No need to ENTER to return, this command is to inquire the filename on printer memory, printer responses ASCII filename, each file name separated by 0x0D, the ending filename is ended by 0x0d,0x1A.

Example:

~!F

~!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] TL24/25 model returned: TL24/25, 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

SET KEY1, SET KEY2 Commands

[Name] Enable button preset function

[Format] {command} {status}

[Description] This command is used to enable/disable the KEY1/KEY2 function, the default function of KEY1 is "PAUSE" key and KEY2 is "FEED" key.

status

ON	Enable KEY1 as PAUSE function Enable KEY2 as FEED function
OFF	Disable KEY1 as PAUSE function Disable KEY2 as FEED function

Note: The setting will remain resident in the printer memory even when the printer is powered off.

Example:

```
SET KEY1 OFF
SET KEY2 OFF
```

SET PRINTKEY Commands

[Name] Set press button to print

[Format] {command} {status}

[Description] Disables by default.

status

OFF: Disable function of pressing button to print

ON: Enable function of pressing button to print

Note:

(1) The set value will be stored in the printer memory when the power is turned off.

(2) Effective immediately after setting

(3) After setting this function, you need to disable the preset function of KEY2 to be effective.

Example:

```
SET PRINTKEY ON
```

SET REPRINT Commands

[Name] Enable reprinting when error

[Format] {command} {status}

[Description] After error of "no paper", "case open", load paper and close the case cover, then reprint an image memory. Disables by default.

status

OFF: Disable this function

ON: Enable this function

Example:

```
SET PRINTKEY ON
```

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 27	38 39	N O	4E 4F	78 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: Print mode and its conversion

B.1 Review

The printer has two modes of operation: standard mode and page mode. In standard mode, the printer prints and feeds as long as the printer line buffer is full or a print or feed command is received. In page mode, all print data and paper feed commands are stored in the specified memory space, and the printer does nothing. Until an ESC FF or FF command is received, the printer will print out all the contents of the print area.

For example, when the printer receives "ABCDEF" <LF> in standard mode, it immediately prints "ABCDEF" and feeds one line. In page mode, the printer writes "ABCDEF" to the print area in memory, and the next print data is placed on the next line of the print area. The ESC L instruction switches the printer to page mode, after which all data is processed in page mode. This execution of the ESC FF command prints out all the received data, and executing the FF command not only prints all the received data, but also switches the printer to standard mode. Executing the ESC S command also switches the printer to standard mode, but it does not print the data received in page mode and clears the data.

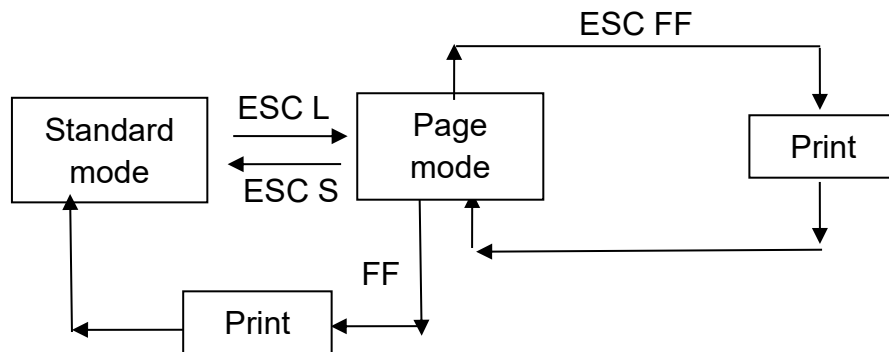


Figure B.1 Switching between standard mode and page mode

B. 2 Set various values in standard mode and page mode

1) Some commands (such as ESC SP, ESC 2, ESC 3, and FS S) can be used in both standard mode and page mode, and their parameters are the same. But the settings in the two modes are independent and they are stored separately.

B. 3 Print area setting

1) The print area is set by the ESC W command. If all the printing and feeding operations have been completed before the ESC W command is received, the printer is on the left (when you face the printer) as the coordinate origin (x0, y0) of the print area. The width (dx point) of the rectangular print area is expanded to the right from the coordinate origin (x0, y0) in the x direction (perpendicular to the paper feed direction), and the height (dy point) is in the y direction (feed direction). If the print area is not set with ESC W, the print area uses the default value.

2) After the printer is set in the print area and print area direction (set by the ESC T command), the received print data will be arranged in the print area as shown

in Figure B.2, point A is the start position of the print area. This is a default value.

(When a character is printed, point A is used as the baseline)

The downloaded bitmap or bar code data in the print data is aligned with the baseline with the current position as its lower left corner (point B in Figure B.3).

3) Before receiving a command containing a paper feed (eg LF or ESC J), if the print data (including the character spacing) has exceeded the print area, the printer automatically feeds one line (how much paper is fed, depending on the ESC) 2 and ESC 3 set the line height), while the print position moves to the beginning of the next line.

4) The default line height is 4mm (about 1/6 inch), which is equivalent to 32 points in the vertical direction. If the print data in the next line contains characters that are more than 2 times magnified in the vertical direction, or the bitmap occupies 2 lines or more, and the bar code is higher than the normal characters, the amount of paper fed from the printer cannot satisfy the need, resulting in printed characters and The character overlay printed on the previous line. To avoid this, you can increase the row height. [unit: point]

E.g

When printing a 6-byte height download bitmap, use the following formula:

{Vertical points (8 × 6) - Number of paper feed points at the start of the print area (24)} × Vertical movement unit (203/203) = 24, that is, to print out the complete bitmap, you need to move the print position down 24 points from the start of the print area.

Use the following command:

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

ESC T n

ESC 3 24 ←Set new line height

LF ←feeding one line

GS / 1

ESC 2 ←restores row height to default

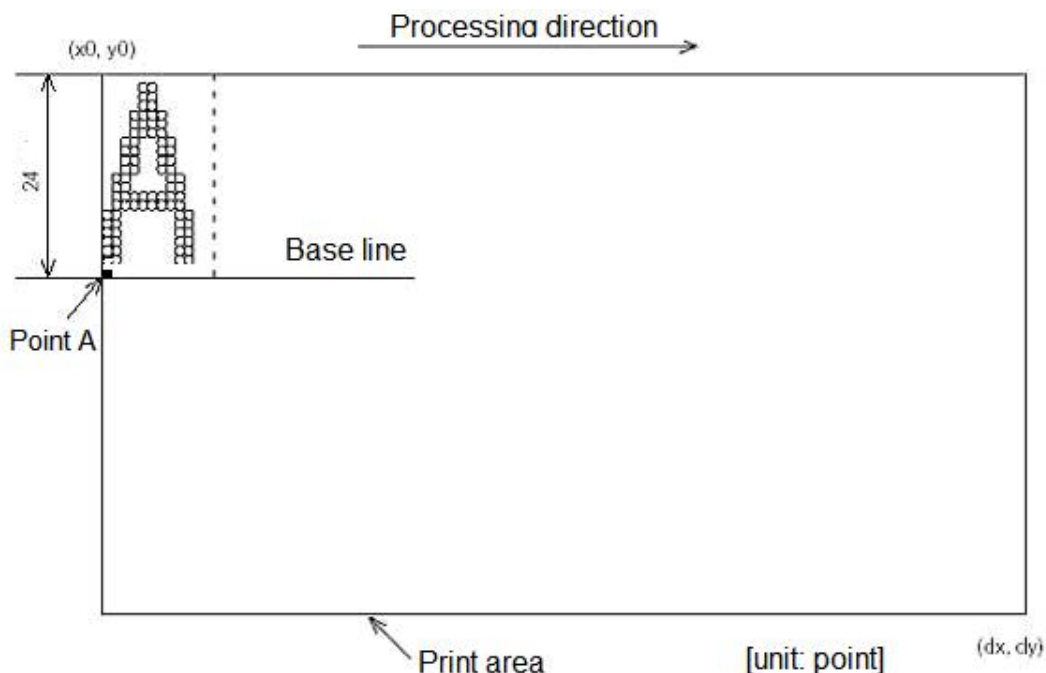


Figure B.2 Storage location of character data

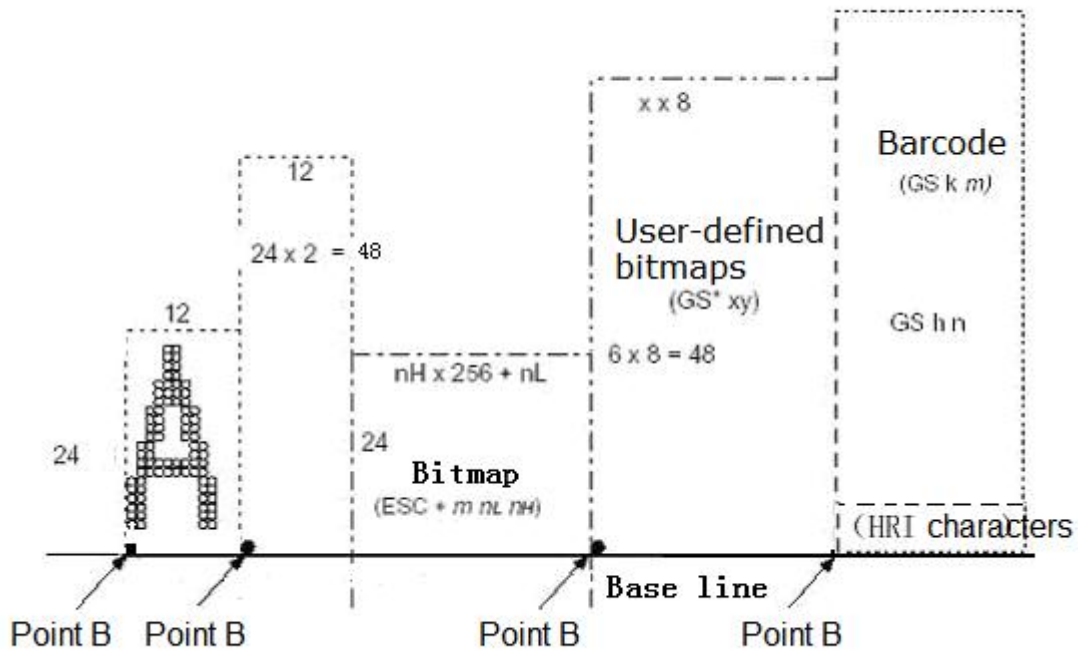


Figure B.3 Storage location of print data

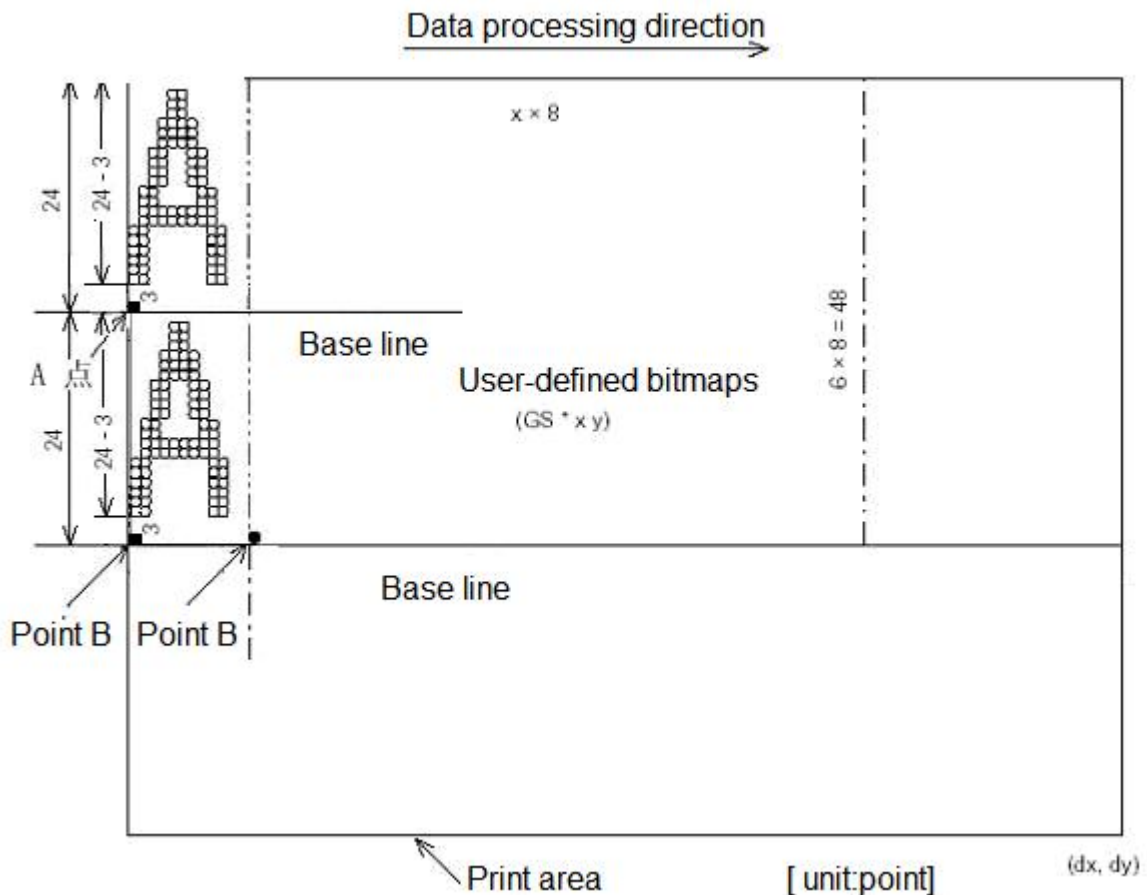
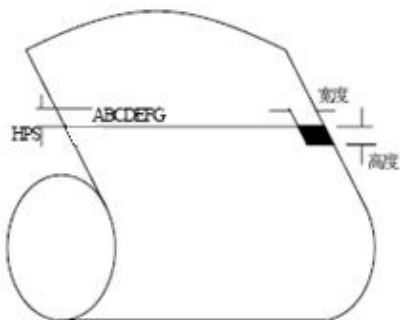


Figure B.3 Downloading the storage location of the bitmap

Appendix C: Pre-print black mark description

If the user uses the pre-printed black mark for ticket positioning, the following black mark pre-printing specifications must be observed when printing the black mark, otherwise the black mark may not be recognized by the printer. Black label pre-printing specification:



Printed location: is shown as chart above, the black mark should be printed to character surface of right side rim. (Both the front and the back of the printing paper can be used)

Width range: $\text{width} \geq 7\text{mm}$

Height range: $4\text{mm} \leq \text{Height} \leq 6\text{mm}$

Vs the reflectivity of infrared: $< 10\%$ (the paper black mark width other fractions for the reflectivity of infrared $> 65\%$)

HPS: HPS marks the last rim to be apart from the distance of printing the origin top rim for printer black. $4.5\text{mm} \leq \text{HPS} \leq 6.5\text{mm}$