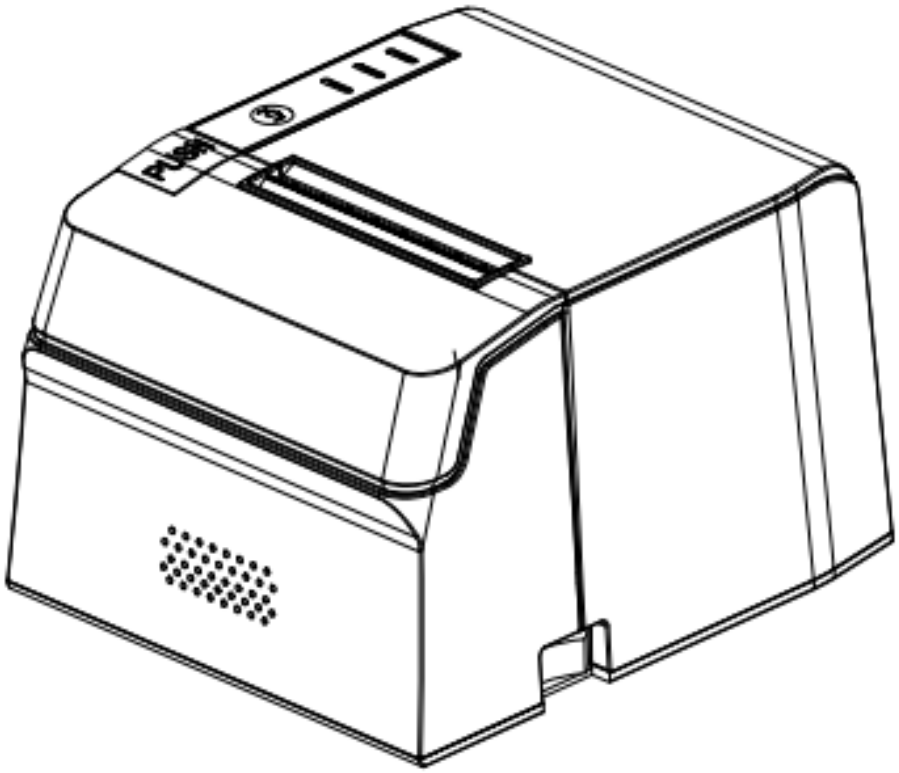
VOLCORA

Thermal Receipt Printer

Commands Manual



Contents

Format specification

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

This commands manual includes the below parts:

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 special description, For example: 1 ≤ n ≤ 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) Notice. 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 ≤ n ≤ 4

---> [Description] Sending the printer state that designated by parameter n just in time

---> [Notice] When printer receives the command, returns to the interrelated status immediately….

---> [Reference]

Character control command

HT

[Name] Horizontal tab

[Format]

ASCII	HT
Hex	09
Decimal	9

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

[Notice]
- This command is ignored unless the next horizontal tab position has been set.
- If the next position of horizontal tab exceeds the printing area, the current position will be set as [printing width+1].
- Horizontal tab positions are set with ESCD.
- If the current position is at [printing width+1] when receives the command, the printer will carry out the action in row buffer and move the printing position to the Zero position

of next line.

•The default value of tab position is every 8 standard ASCII characters (12*24) a tab.

•When the current row buffer is full, the printer will carry out the action below:

Under standard mode, printer prints the content of current row and sets the Printing position at the zero position of next line

[Reference] **ESC D**

LF

[Name] Printing and feeding one 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

CR

[Name] Printing and entering

[Format] ASCII CR

Hex 0D

Decimal 13

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

[NOTICE] ·Setting the printing position at the beginning of the line.

· The Command is ignored in Serial interface mode

In parallel mode, That If the command is valid or not is decided by the configuration decisions of Printer.

[Reference] **LF**

DLE EOT n

[Name] Real time status transmission

[Format] ASCII DLE EOT n

Hex 10 04 n

Decimal 16 4 n

[Range] $1 \le n \le 4$

[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 be valid even though the printer is set to be forbidden by the Command of ESC=(selecting Peripherals).

· When sending printer current state, each state is indicated by 1byte

·Transmission state value of the printer cannot confirm whether the master Computer received or not.

·Printer will carry out the command immediately once received

·This command is unavailable to the parallel printer. The printer will carry out the command immediately under any state

n = 1: Printer status

Bit	0/1	HEX	Decimal	Function
0	0	00	0	Fix as 0
1	1	02	2	Fix as 1
2	0	00	0	Cash drawer output socket pin 3 is low level
	1	04	4	Cash drawer output socket pin 3 is high level
3	0	00	0	online
	1	08	8	offline
4	1	10	16	fix as 1
5,6	-	-	-	Reserved
7	0	00	00	fix as 0

n = 2: offline status

Bit	0/1	HEX	Decimal	Function
0	0	00	0	fix as 0
1	1	02	2	fix as 1
2	0	00	0	Paper house cover not opened
	1	04	4	Paper house 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	-	-	-	Reserved
3	0	00	0	No cutter error
	1	08	8	With cutter error

4	1	10	16	fix as 1
5	0	00	0	Noun irreversible error
	1	20	32	Have irreversible 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 status

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	Paper near end sensor: Paper enough
	1	0C	12	Paper near end sensor: Paper near end
4	1	10	16	fix as 1
5,6	0	00	0	Paper out sensor: have paper
	1	60	96	Paper out sensor: paper out
7	0	00	0	fix as 0

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

DLE ENQ n

[Name] Send real-time request to printer

[Format] ASCII DLE ENQ n

Hex 10 05 n

Decimal 16 5 n

[Range] 1 ≤n ≤ 2

[Description] Responds to a request in real-time from the host computer.

n	Request content
1	Recovers from a recoverable error and restarts printing from the line where the error occurred. • This command is ignored unless a recoverable error has occurred.
2	Recovers from a recoverable error after clearing the receive and print buffers. • This command is ignored unless a recoverable error has occurred.

[Notices]

The command is valid only when the cutter have error.

In serial mode, it perform immediately after the printer receives the instruction.

In parallel mode, instruction is not executed when the printer is busy.

· Avoiding to put this command in the command sequence of more than2 characters.

·This command will still be valid even though the printer is set to be forbidden by the Command of ESC=(selecting Peripherals).

[Reference] **DLE EOT**

DLE DC4 fn m t (fn=1)

[Name] Generate pulse in real-time

[Format]

ASCII	DLE	DC4	fn	m	t
Hex	10	14	fn	m	t
Decimal	16	20	fn	m	t

[Range] fn = 1
m = 0, 1
1 ≤ t≤ 8

[Description] Outputs the pulse specified by t in real-time to connector pin m.

m	Connector pin
0	Drawer kick-out connector pin 2.
1	Drawer kick-out connector pin 5

t specifies the pulse on time or off time as [t × 100 ms].

[Description]

·the command is ignored when itis processed while the printer is in an error state.

· the command is ignored when the printer is performing cash drawer opening command (ESC p or DEL DC4),

In serial mode, it perform immediately after the printer receives the instruction.

In parallel mode, instruction is not executed when the printer is busy.

If the received data includes a data string with this command, the printer performs the command. Users must consider this.

·Avoiding to put this command in the command sequence of more than 2 characters.

·This command will be so valid even though the printer is set to be forbidden by the Command of ESC=(selecting Peripherals)

[Reference] **ESC p**

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 ≤ n ≤255

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

[Note] -When the character enlarges, the space enlarges the same times.

· This command does not influence Chinese characters setting.

· The value set by the page mode and standard model is relatively independent.

· Units of vertical or lateral shifting area pointed by GSP. Changing units of vertical or lateral shifting does not change the current right space.

· Using horizontal shifting unit under standard mode.

· Under page mode, depending on the direction and the start position of the area to

choose the horizontal motion unit or vertical motion unit, as follows:

① When the starting position is set by ESC T to the upper left or bottom right of the printing area, then use horizontal motion unit;
② When the starting position is set by ESC T to the upper right or lower left of the printing area, then use a vertical motion unit;
The maximum right space is 255/203 inches. If setting beyond this value, it will automatically change into the maximum distance.
[Default] n = 0
[Reference] **GS P**

ESC ! n

[Name] selecting print mode
[Format] ASCII ESC ! n
Hex 1B 21 n
Decimal 27 33 n
[Range] 0 ≤ n ≤ 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	0	00	0	Reserved
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	0	00	0	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 width 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 select or 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 received command is effective.

- All effects are valid to both Characters and Chinese.

[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)

[Notice] ·This command is ignored if the setting position is out of the printing area.

·Vertical and horizontal motion units are set by GS P.

· Use the horizontal motion unit in standard mode.

· In page mode, depending on the direction and the start position of the area to choose the horizontal motion unit or vertical motion unit, as follows:

① When the starting position is set by ESC T to the upper left or bottom right of the printing area, then use horizontal motion unit;

② When the starting position is set by ESC T to the upper right or lower left of the printing area, then use a vertical motion unit;

[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 ≤ n ≤ 255

[Description] Selecting/Canceling self-defined character

·When n(LSB)=0,cancel user defined character set.

·When n(LSB)=1,select user defined character set.

[Notice] ·When cancel user defined character set, auto select built in character set.

· only n in 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 ≤ c1 ≤ c2 ≤ 126

0 ≤ x ≤ 12 standard ASCII style A (12× 24)

0 ≤ x ≤ 9 compressing ASCII style B (9 × 17)

0 ≤ d ≤ 255

k = c2 – c1 +1

[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 horizon byte number

[Remark] 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 downloaded character. Data of each dot begins from the left.

·Defining the data of user defined character is (y×x)bytes.

· Each dot of data is 1 to print this dot; or 0 to not print.

· The user defined characters will be deleted in the following situation:

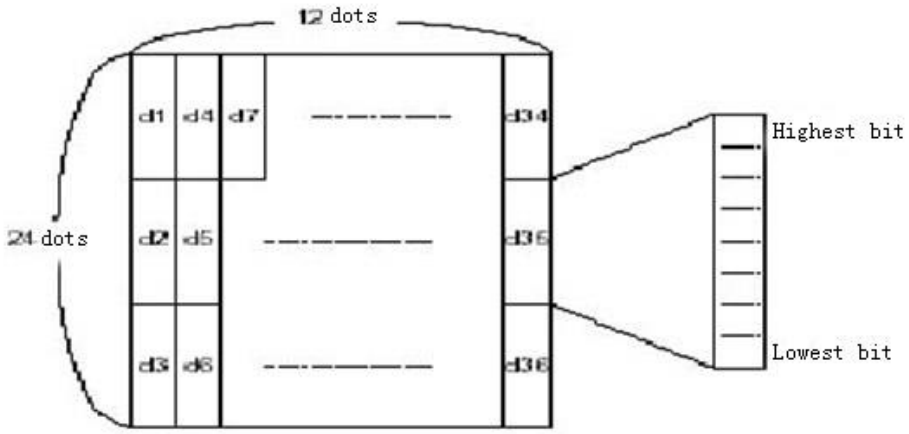
① ESC @ is carried out
② ESC ？ is carried out
③ FS q is Carried out
④ GS * is carried out
⑤ Carry out 2D barcode
⑥ The printer reset or power off.
⑦ Only the MSB is valid at the vertical third byte when the set defined characters are style B (9*17).

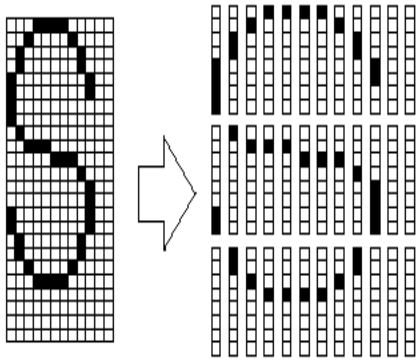
[Default] Built-in character set.

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

[Example]

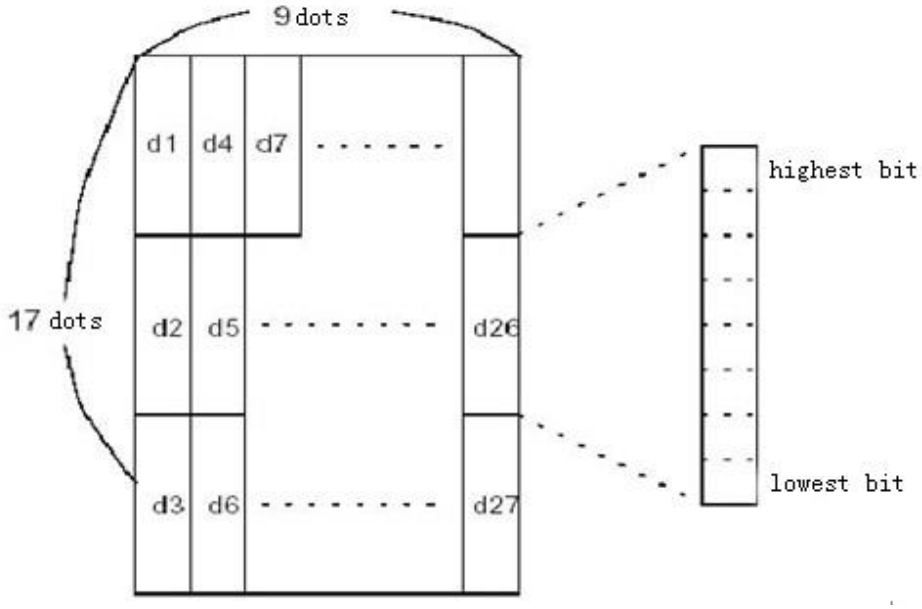
··When select the standard ASCII style(12×24)

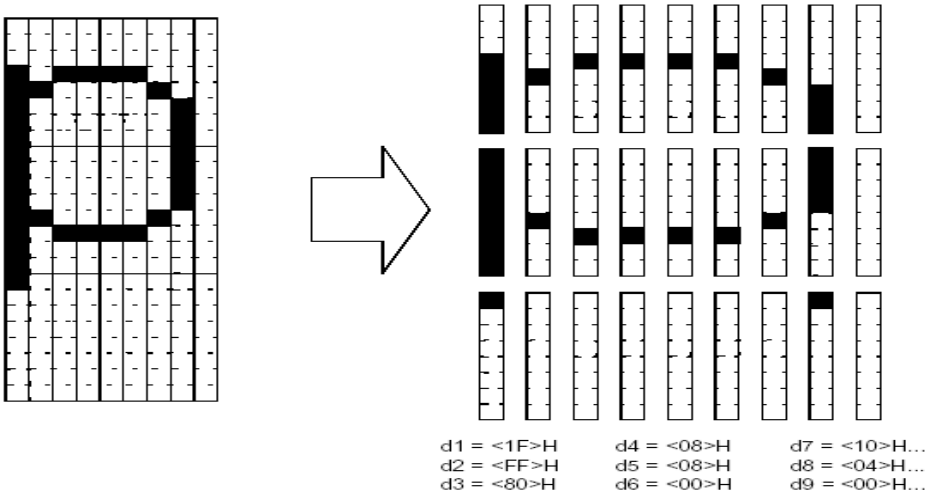




d1= <0F>H d4 = <30>H d7 = <40>H . . . .
d2 = <03>H d5 = <80>H d8 = <40>H . . . .
d3 = <00>H d6 = <00>H d9 = <20>H . . . .

·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	8SD	8	68 DPI	101 DPI	nL + nH × 256
1	8DD	8	68 DPI	203 DPI	nL + nH × 256
32	24SD	24	203 DPI	101 DPI	(nL + nH × 256) × 3
33	24DD	24	203 DP	203 DPI	(nL + nH × 256) × 3

[Remark] ··If the value of m goes beyond the range,nl and the datas later will be regarded as normal datas to deal with.

· The dots number of horizontal printing depends on nL and nH,total number is nL+nH×256.

·The part of the bit map that goes beyond the current area will be cut off

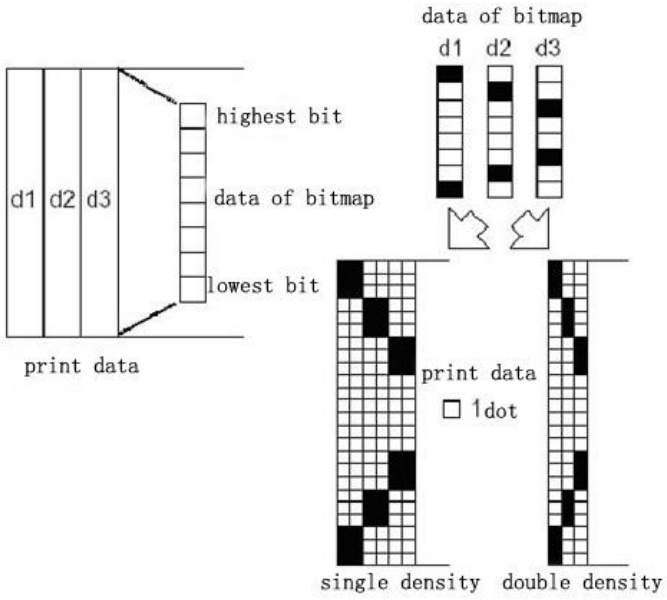
·d is the data of bit map. Printing when the relevant position of every byte is1, and when it is 0,will not print this point.

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

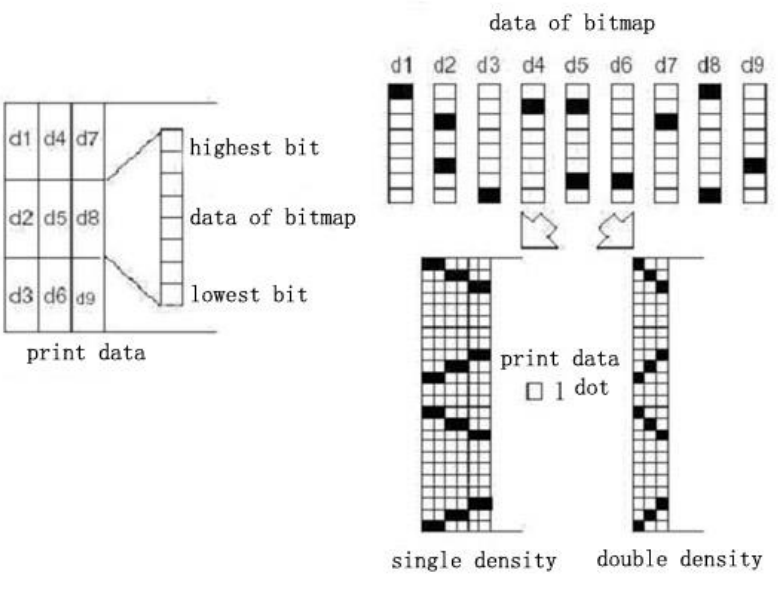
·Except inversion mode, this command will not be influenced by other modes.(black、double print、underline、enlarge character and invert)

·Relationship between data and printing point is as below:

·chosing 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 ≤ n ≤2, 48 ≤ n ≤ 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)

[Remark] ·Underline can be added under all characters (including right spacing),but not including the space set by HT

·The underline cannot act on the characters of clockwise 90 degrees and inverting

·The width of the underline will not be changed, and the character rest will not be underlined when cancel the underline mode. The default width is 1dot width.

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

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

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

[Default] n = 0

[Reference] **ESC !**

ESC 2

[Name]] Setting default height of line

[Format] ASCII ESC 2

Hex 1B 32

Decimal 27 50

[Description] Selecting32 dots(4mm,about 1/7)line height

[Reamark] Undering the standard mode and page mode, it is independent.

[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 ≤ n ≤ 255

[Description] Setting[n*units of vertial or lateral shifting]inches as the height of the line

[Notice] · Height setting is mutually independent under standard mode and page mode.

·Vertical and horizontal units are set by GSP. Its changing will not affect current height.

·Undering standard mode , use vertical shifting unit .

·In page mode, depending on the direction and the start position of the area to choose the horizontal motion unit or vertical motion unit, as follows:

①When the starting position is set by ESC T to the upper left or bottom right of the printing area, then use vertical motion unit;

②When the starting position is set by ESC T to the upper right or lower left of the printing area, then use a horizontal motion unit;

· Maximum feeding paper distance is 1016 mm (40 inches). If you exceed this distance, take the maximum one.

[Default] The default height of line is 4mm(about1/6inch)

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

ESC = n

[Name] Selecting Outer Equipment

[Format]

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

[Range] 0≤ n ≤ 255

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

n	Function
1, 3	Allowed
2	Forbid

[Remark] ·When the printer is forbidden(n=2), the printer ignores all the commands except the real time command (DLEEOT, DLEENQ,DLEDC4) 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 ≤ n ≤127

[Description] Cancel user self-defined character

[Remark] · Cancel the character code n of user self-defined character. The character use built-in characters set after cancelling.

·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

[Remark] ·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 ≤ n1 ≤n2 ≤…≤nk≤ 255
0 ≤ k ≤ 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.

[Remark] ·Horizontal tab positions can be gotten by the following formula:
·[characterwidth×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 32tab positions is processed as normal data
··Tab position is ordered by as sending 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.
·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 positions are at intervals of 8 characters for font A(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 ≤ n ≤ 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 is1,select bold font print

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

·Selecting/canceling bold font print can also be set by ESC!.

[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 ≤ n ≤ 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

[Remark] ·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 ≤ n ≤ 255

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

[Remark] ·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

·Under standard mode, use the vertical motion unit.

· In page mode, depending on the direction of printing area and the print starting position to select the vertical motion units or horizontal motion unit, the choice as follows:

① When the starting position is set to the upper left or bottom right by ESC T , then using the vertical motion unit;

②When the starting position is set to the upper right or lower left by ESC T , then

using horizontal motion unit;

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

[Reference] **GS P**

ESC M n

[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 characters set

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

[Range] 0 ≤ n ≤ 15

[Description] Selecting an international character set n 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［Simplified Chinese ］
n = 0 ［Other Types Except Simplified Chinese］

ESC V n

[Name] Turn 90° clockwise rotation mode on/off
[Format] ASCII ESC V n
Hex 1B 56 n
Decimal 27 86 n
[Range] 0 ≤ n ≤ 2, 48 ≤ n ≤ 50
[Description] In standard mode, turns 90° clockwise rotation mode on or off for n's value

n	Function
0,48	**Turns off 90° clockwise rotation mode.**
1,49 2,50	**Turns on 90° clockwise rotation mode.**

[Remark] ·The command is only available in standard mode.
· When choosing the underline mode, underscores can not rotate 90 degrees clockwise.
The double-height and double-width Uder mode of rotating 90degrees clockwise is opposite to the normal mode.
[Default] n = 0
[Reference] **ESC !, ESC -**

ESC \ nL nH

[Name] Set relative print position
[Format] ASCII ESC \ nL nH
Hex 1B 5C nL nH
Decimal 27 92 nL nH
[Range] 0 ≤ nL ≤ 255
0 ≤ nH ≤ 255
[Description] Based on vertical or horizontal shifting unit, set horizontal relatively shifting distance.
·This command sets the print position from the current position to [(nL + nH × 256)
· horizontal or vertical motion unit] place.
[Remark] •When exceeding the printable area settings will be ignored.
• When the print position moves to the right: nL + nH × 256 = N.
•Adopting complement print position when the printing position moves to the left: nL + nH × 256 = 65536 - N.

· Printing starting position move from the current position to [N × horizontal motion unit or vertical motion units].
· Horizontal and vertical motion units are set by GS P command.
· In standard mode, use the horizontal motion unit.
· In page mode, depending on the direction of printing area and the print starting position to select the vertical motion units or horizontal motion unit, the choice as follows:
① When the starting position is set to the upper left or bottom right by ESC T ,then using the horizontal motion unit;
②When the starting position is set to the upper right or lower left by ESC T , then using horizontal motion unit;

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

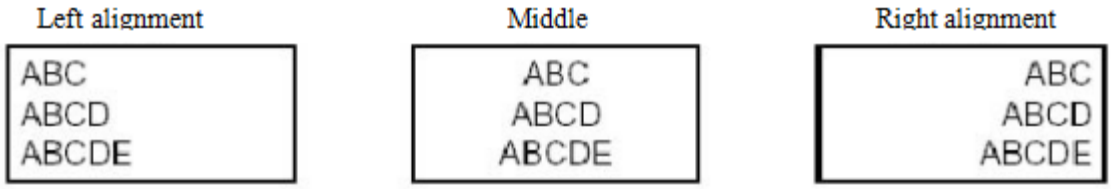
ESC a n

[Name] Set relative print position
[Format] ASCII ESC a n
Hex 1B 61 n
Decimal 27 97 n
[Range] 0 ≤ n ≤ 2, 48 ≤ n ≤ 50
[Description] In standard mode, aligns all the data in one line to the selected layout.
n **Justification**

n	Alignment
0, 48	Align Left
1, 49	Center Align
2, 50	Align Right

[Remark] The command is only effective in the first line under the standard mode.
The command in the page mode only change the internal flag bit.
·The command adjust the blank area according to HT, ESC $ Or ESC \

[Default] n = 0
[Examples]



ESC c 3 n

[Name] Select paper sensor(s) to output paper-end signals
[Format] ASCII ESC c 3 n
Hex 1B 63 33 n

Decimal 27 99 51 n

[Range] 0 ≤ n ≤ 255

[Description] Selects wether the paper sensor(s) to output paper end signals or not when a paper end is detected. n definition:

Bit	1/0	HEX	Decimal	Function
0	0	00	0	Disables roll paper near-end sensor.
	1	01	1	Enables roll paper near-end sensor.
1	0	00	0	Disables roll paper near-end sensor
	1	02	2	Enables roll paper near-end sensor.
2	0	00	0	Disables roll paper end sensor (paper sensor).
	1	04	4	Enables roll paper end sensor (paper sensor).
3	0	00	0	Disables roll paper end sensor (paper sensor).
	1	08	8	Enables roll paper end sensor (paper sensor).
4~7	0	00	0	Reserved.

[Remark] ·This command can select multi sensors to output the end-paper signal.
If any of the sensors detected the end-paper then it output end-paper signal.
·This command is enabled only with a parallel interface model.
If n=1 for bit 0 or bit1, then the paper end sensor output end-paper signal.
If n=1 for bit2 or bit3,then the paper end sensor output end-paper signal.
·When both sensors are disabled, parallel interface signals always output paper states.

[Default] n = 15

ESC c 4 n

[Name] Select paper sensor(s) to stop printing

[Format] ASCII ESC c 4 n
Hex 1B 63 34 n
Decimal 27 99 52 n

[Range] 0 ≤ n ≤ 255

[Description] Selects the paper sensor(s) whether to use to stop printing or not when a paper end is detected· n

Bit	1/0	HEX	Decimal	Function
0	0	00	0	Roll paper near-end sensor disabled.
	1	01	1	Roll paper near-end sensor enabled.
1	0	00	0	Roll paper near-end sensor disabled.
	1	02	2	Roll paper near-end sensor enabled.
4~7	0	00	0	Reserved.

[Remark] · when n=0 or n=1,the near-end sensor is effective. When detecting the paper will end, after printing the current job, the printer will stop printing, and then the printer enters offline.

[Default] n = 0

ESC c 5 n

[Name] Enable/disable panel buttons

[Format] ASCII ESC c 5 n

Hex 1B 63 35 n

Decimal 27 99 53 n

[Range] 0 ≤ n ≤ 255

[Description] • Enables or disables the panel buttons.

• When the LSB of n is 0, the panel buttons are enabled.

• When the LSB of n is 1, the panel buttons are disabled.

[Remark] ·Only the lowest of n work

·When the panel button is forbidden , the button does not work.

· When a macro command is executed, the keys are always available, but can't feed by button.

[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 ≤ n ≤ 255

[Description] Printing the datas in print buffer and feeding paper forward for n(character line) .

[Remark] ·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 p m t1 t2

[Name] Generate pulse

[Format] ASCII ESC p m t1 t2

Hex 1B 70 m t1 t2

Decimal 27 112 m t1 t2

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

0 ≤ t1 ≤ 255, 0 ≤ t2 ≤ 255

[Description] Outputs the pulse specified by t1 and t2 to connector pin m.

m	Connector Pin
0, 48	Drawer kick-out connector pin 2
1, 49	Drawer kick-out connector pin 5.

[Remark] ·specifies the pulse on time as [t1 × 2 ms] ,t2 specifies the pulse off time as [t2 × 2 ms].

· If t2 < t1, the off time is [t1 × 2 ms].

[Reference] **DLE DC4**

ESC t n

[Name] Selecting character codepage

[Format]

ASCII	ESC	t	n
Hex	1B	74	n
Decimal	27	116	n

[Range] 0 ≤n ≤ 255

[Description] Selecting code page n from character code table.Selection of n are as below:

n	代码页	Code Page
0	CP437 [美国,欧洲标准]	CP437 [U.S.A., Standard Europe]
1	KataKana [片假名]	Katakana
2	PC850 [多语言]	PC850 [Multilingual]
3	PC860 [葡萄牙]	PC860 [Portuguese]
4	PC863 [加拿大-法语]	PC863 [Canadian-French]
5	PC865 [北欧]	PC865 [Nordic]
6	WCP1251 [斯拉夫语]	WCP1251 [Cyrillic]
7	CP866 斯拉夫 2	CP866 Cyrilliec #2
8	MIK[斯拉夫/保加利亚]	MIK[Cyrillic /Bulgarian]
9	CP755 [东欧,拉脱维亚 2]	CP755 [East Europe,Latvian 2]
10	[伊朗,波斯]	Iran
11	保留	reserve
12	保留	reserve
13	保留	reserve
14	保留	reserve
15	CP862 [希伯来]	CP862 [Hebrew]
16	₩CP1252 [拉丁语 1]	₩CP1252 Latin I
17	WCP1253 [希腊]	WCP1253 [Greek]
18	CP852 [拉丁语 2]	CP852 [Latina 2]
19	CP858 [多种语言拉丁语 1+欧元符]	CP858 Multilingual Latin Ⅰ+Euro)
20	伊朗Ⅱ[波斯语]	Iran II
21	拉脱维亚	Latvian
22	CP864 [阿拉伯语]	CP864 [Arabic]
23	ISO-8859-1 [西欧]	ISO-8859-1 [West Europe]
24	CP737 [希腊]	CP737 [Greek]
25	WCP1257 [波罗的海]	WCP1257 [Baltic]
26	[泰文 1]	Thai 1
27	CP720[阿拉伯语]	CP720[Arabic]
28	CP855	CP855

29	CP857[土耳其语]	CP857[Turkish]
30	WCP1250[中欧]	WCP1250[Central Eurpoe]
31	CP775	CP775
32	WCP1254[土耳其语]	WCP1254[Turkish]
33	WCP1255[希伯来语]	WCP1255[Hebrew]
34	WCP1256[阿拉伯语]	WCP1256[Arabic]
35	WCP1258[越南语]	WCP1258[Vietnam]
36	ISO-8859-2[拉丁语 2]	ISO-8859-2[Latin 2]
37	ISO-8859-3[拉丁语 3]	ISO-8859-3[Latin 3]
38	ISO-8859-4[波罗的语]	ISO-8859-4[Baltic]
39	ISO-8859-5[斯拉夫语]	ISO-8859-5[Cyrillic]
40	ISO-8859-6[阿拉伯语]	ISO-8859-6[Arabic]
41	ISO-8859-7[希腊语]	ISO-8859-7[Greek]
42	ISO-8859-8[希伯来语]	ISO-8859-8[Hebrew]
43	ISO-8859-9[土耳其语]	ISO-8859-9[Turkish]
44	ISO-8859-15[拉丁语 9]	ISO-8859-15 [Latin 3]
45	[泰文 2]	Thai2
46	CP856	CP856

[Default] n = 0

ESC { n

[Name] Selecting/canceling invert printing mode

[Format] ASCII ESC { n

Hex 1B 7B n

Decimal 27 123 n

[Range] 0 ≤ n ≤ 255

[Description] Selecting/canceling invert printing mode

·When the lowest bit of n is 0, canceling invert printing mode

·When the lowest bit of n is 1, selecting invert printing mode.

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

· The command is only valid under firstl line in standard mode

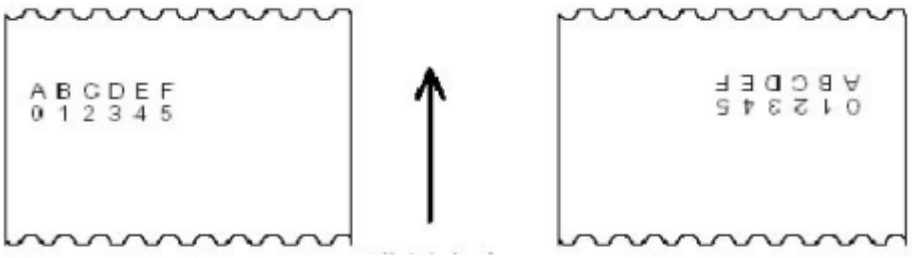
· The command in page mode, only change internal flag.

· This command does not affect printing on the page mode.

· Under invert printing mode, the printer will rotate the line of being printed for 180 degree firstly before printing.

[Default] n = 0

[Example]



FS P n

[Name] Print pre-stored bitmaps

[Format]

ASCII	FS	P	n
Hex	1B	50	n
Decimal	27	80	n

[Range] 0 ≤ n ≤ 7

[Description] · The command print binary bitmap specified by the n stored in the printer nonvolatile memory.

· The bitmap in the printer nonvolatile memory can be generated and written through a dedicated tool on a PC . The width of bitmap can be up to 576 points, the maximum size of the bitmap is 64KB.

[Remark] · When the specified number of bitmap has not been defined, this command is invalid.

· Bitmap must be a binary bitmap.

·This command is not affected by the printing mode (bold, overlapping, underline, character size, or anti-white print) . In page mode, the command only change internal flag.

· If the Width of bitmap to print is more than one line, the excess part is not printed.

· Specialized tools is required to download and printing bitmap, please see the printer setup tool software. In this way the downloaded bitmap will not be lost unless it is overwritten by re-downloading the other bitmap.

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 to7 bits to select character width.As follows:

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

Table 1

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

Table 2

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

[Remark] · 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, lengthways is the direction of feeding paper,landscape is perpendicular to the direction of feeding paper. But when the character rotates 90 degree clockwise, lengthways and landscape are reversed.

· Under page mode, vertical and horizontal determined by the area direction.

· 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 (A pL pH n m

[Name] Carry out test printing

[Format]

ASCII	GS	(	A	pL	pH	n	m
Hex	1D	28	41	pL	pH	n	m
Decimal	29	40	65	pL	pH	n	m

[Range] (pL+ pH × 256)=2 (pL=2, pH=0)

$0 \le n \le 2, 48 \le n \le 50$

$1 \le m \le 3, 49 \le m \le 51$

[Description] · Carry out test printing. The printing method is decided by n, m.

· pL, pH(pL+pH×256) means the number of bytes of parameter (n,m) after pH.
n means the tested paper type

n	Paper type
0, 48	Basic type (roll paper)
1, 49	Roll paper
2, 50	

m decides the printed content

m	Printed content
1, 49	Hex unloading printing
2, 50	Inner configuration information printing
3, 51	Circulation characters printing

[Remark] ·This command is only valid at the beginning of line
· The command is not valid in the page mode
·If receiving the command in the process of Macro definition, then end macro definition and excute the command.
· After excuting the command, the printer automatically reset and read the DIP switch settings
· When this command ends, the printer will cut paper.
· When carrying this command, the printer is in busy status, so can't receive other commands.

GS (D pL pH m [a1 b1] … [ak bk]

[Name] Permit/Forbid Real time command

[Format]

ASCII	GS	(	D	pL	pH	m	[a1 b1] … [ak bk]
Hex	1D	28	44	pL	pH	m	[a1 b1] … [ak bk]
Decimal	29	40	68	pL	pH	m	[a1 b1] … [ak bk]

[Range] 3 ≤ (pL + pH × 256) ≤ 65535 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 255)
m = 20
a = 1, 2
b = 0, 1, 48, 49

[Description] Confirm to permit or forbid real time command through a
· pL,pH(pL+pH×256) means the bytes number of parameter (m,[a1 b1]…[ak bk]) after pH.

a	b	Function
1	0, 48	**DLE DC4 fn m t** (fn = 1): no processing(forbid)
	1, 49	**DLE DC4 fn m t** (fn = 1): processing(Permit)
2	0, 48	**DLE DC4 fn a b** (fn = 2): no processing(forbid)
	1, 49	**DLE DC4 fn a b** (fn = 2): processing(Permit)

[Remark] · If the graphic data includes the same data with **DLE DC4** (fn = 1 or 2), it suggests to forbid real time command by this command in advance.

GS * x y d1...d(x × y × 8)

[Name] Defining downloaded bit map

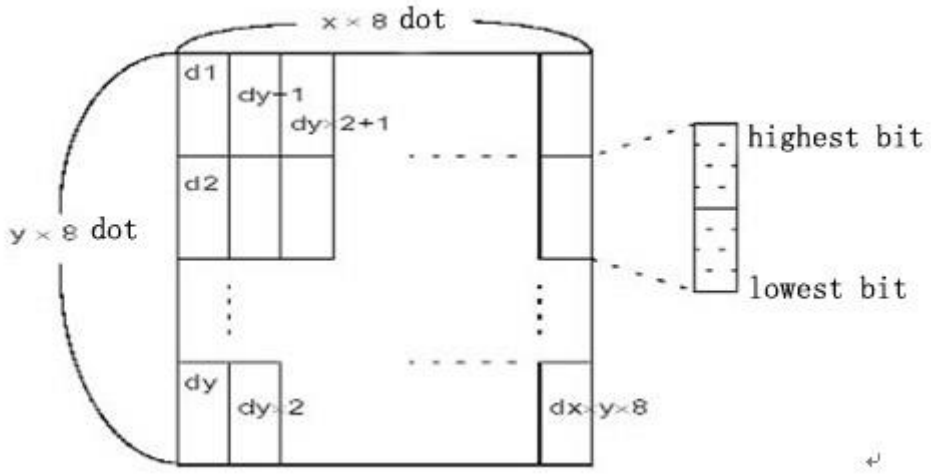
[Format]

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

[Range] 1 ≤ x ≤ 255
1 ≤ y ≤ 48
x × y ≤ 800
0 ≤ d ≤ 255
k=x× y× 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

[Remark] x*8 is the dot number of horizontal.； y*8 is the dot number of vertical.
· If x*y is of flimit,then the command is unvalid.
· d means the image data.1 print, 0 not print
·In the following circumstances,clear the downloaded bit image.:
① carry out ESC@ command
② carry out ESC & command
③ carry out FS q command
④ carry out two-dimension barcode printing
⑤ Turn off the printer power or restoration..
Relationship between print data and download bit map is as below:



[Reference] **GS /**

GS / m

[Name] Printing downloaded bitmap

[Format] ASCII GS / m

Hex 1D 2F m

Decimal 29 47 m

[Range] 0 ≤ m ≤ 3, 48 ≤ m ≤ 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 and height	101	101

[Remark] ·This command will be ignored if the downloaded bit map is not defined.

·The command is effective only when the reisno 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 :

[Name] Start/end macro definition

[Format] ASCII GS :

Hex 1D 3A

Decimal 29 58

[Description] Starts or ends macro definition.

[Remark] · when it's normal operation, the printer receives the command to start the macro definition. When the macro definition, the printer receives the command to end macro definition.

• When the printer receives GS ^ when definite macro instruction, then end the macro definition and clear macro definitions.

• When the printer is on power, no macro definition.

·ESC @ does not clear the macro definition, therefore macro definition content may include ESC @ command.

·If you are printing to just finish receiving GS: command,but then immediately receiving GS:, the printer still no macro definition.

·The contents of the macro can be defined up to 2048 bytes . If the contents of the macro definition exceeds 2048 bytes, then excessed data is treated as normal data.

[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 ≤ n ≤ 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.

[Remark] · 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 I n

[Name] Query the ID number of Printer

[Format] ASCII GS I n
Hex 1D 49 n
Decimal 29 73 n

[Range] 1 ≤ n ≤ 3, 49 ≤ n ≤ 51, 65 ≤ n ≤ 69

[Description] Query the ID number of Printer,ID number type is decided by n:

n	Pirnter ID number	Return parameter	ID (hexadecimal)
1, 49	Printer Mode ID	SP-POS88series	20
2, 50	Printer type ID	The table as below	
3, 51	ROM version.ID	Printer model and batch related	
65	Firmware version ID	Printer model and batch related	
66	Vendors	Related to the actual manufacturer	
67	Printer name	Related to the actual name of the printer	
68	Printer Serial Number	Printer model and batch related	
69	Support Character	Simplified Chinese: Chinese	

	Types	Traditional Chinese: Chinese-BIG5

n = 2, Printer Type ID

Bit	1/0	Hex	Decimal	Function
0	0	00	0	It does not support double-byte character encodings
	1	01	1	Support double-byte character encodings
1	0	00	0	No cutter
	1	02	2	Cutter
2	0	00	0	No use
3	0	00	0	No use
4	0	00	0	Fixed as 0
5	-	-	-	Reserved
6	-	-	-	Reserved
7	0	00	0	Fixed as 0

[Remark] ·When 1 ≤ n ≤ 3 or 49 ≤ n ≤ 51, the printer returns to single-byte ID

·• When 65 ≤ n ≤ 69, returned format as folllows:

Header: Hexadecimal = 5FH / Decimal = 95 (1 byte)

Data: Printer Information

NUL: Hexadecimal = 00H / Decimal = 0 (1 byte)

GS L nL nH

[Name] Setting left margin

[Format] ASCII GS L nL nH

Hex 1D 4C nL nH

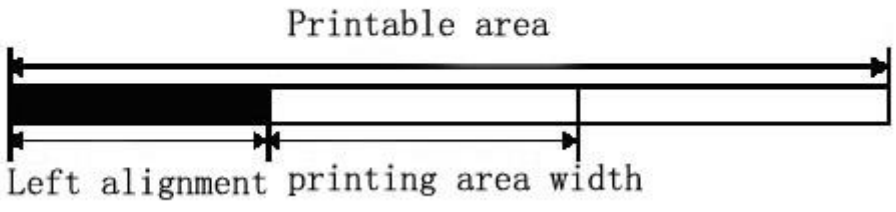
Decimal 29 76 nL nH

[Range] 0 ≤ nL ≤ 255

0 ≤ nH ≤ 255

[Description] ·Setting left margin by nL and nH

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



[Remark] ·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 datas

·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 ≤ x ≤ 255

0 ≤ y ≤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

[Remark] ·Direction is perpendicular to the feeding is horizontal, the feeding direction is vertical.

·No matter x or y is used for the below command, it will not be changed even though rotating characters, inversion or rotating 90° clockwise.

①□ Using x command:**ESC SP, ESC $, ESC \, FS S, GS L, GS W**

② □ Using y command:ESC 3, ESC J, GS V

·in the Page mode, it is decided based on the region and setting the starting position with the x or y direction:

①When the starting position is set to the upper left (print direction from left to right) or lower right (printing direction from right to left) with the ESC T command:

x instruction: ESC SP, ESC $, ESC W, ESC \, FS S

y instruction: ESC 3, ESC J, ESC W, GS $, GS \, GS V

③ When the starting position is set to the upper right (print direction from top to bottom) or lower left (Print direction from bottom to top)with the ESC T command :

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

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

· This command doesn't affect the set position previously.

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

·a inch=25.4mm

[Default] 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 **

①GS V m ②GS V m n

[Name] Select cut mode and cut paper

[Format] ①ASCII GS V m

Hex 1D 56 m

Decimal 29 86 m

②.ASCII GS V m n

Hex 1D 56 m n

Decimal 29 86 m n

[Range] ①□m = 0, 48, 1, 49

②□m = 65, 66, 0 ≤ n ≤ 255

[Description] Select cut mode and cut paper.

Executes paper cutting specified by m.:

m		Function
①	0, 48	Execute Full Cut
	1, 49	Execute Partial Cut
②	65	Feeds paper to (cutting position + [n × (vertical motion unit)]) and cuts the paper fully .
	66	Feeds paper to (cutting position + [n × (vertical motion unit)]) and cuts the paper partially

[Remark① And ②]

· This command is only effective at the beginning of the line.

· Some printers don't support full cut , so the result is same executing full cut or partial cut.

· For the printers without cutter, executing this order paper will arrive only at the position paper torn by hand.

[Remark①] · m = 0, 48, 1, 49,the printer directly cut paper.

[Remark②] the printer feeds paper [the distance between the printing position and the cutter + n × (vertical motion unit)] then cut paper.

· Lateral movement unit and vertical motion units are set by GS P command.

· Feed amount calculate by vertical motion unit.

GS W nL nH

[Name] Setting the width of printing area

[Format] ASCII GS W nL nH

Hex 1D 57 nL nH

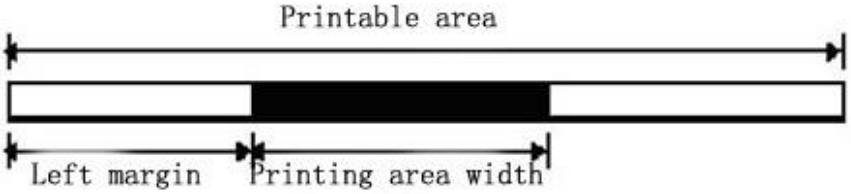
Decimal 29 87 nL nH

[Range] 0 ≤ nL ≤ 255

0 ≤ nH ≤ 255

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

··Setting width of printing area to [(nL + nH × 256) × horizontal motion unit)]



[Remark] ·This command is just available at the zero position of the line and under standard mode.

· Under page mode, the order is ineffective, instruction data will be regarded as normal character

·Thi order does not affect 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 + nH × 256) = 576 ［80mm 80mm paper width, 72mm printing width］

(nL + nH × 256) = 512 ［80mm 80mm paper width, 64mm printing width］

(nL + nH × 256) = 384 ［58mm 80mm paper width］

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

GS ^ r t m

[Name] Execute macro

[Format]	ASCII	GS	^	r	t	m
	Hex	1D	5E	r	t	m
	Decimal	29	94	r	t	m

[Range] 0 ≤ r ≤ 255

0 ≤ t ≤ 255

m = 0, 1

[Description] Execute the macro command.

· r specifies number of times to execute the macro.

· t specifies the waiting time of executing the macro.

· M specifies macro executing mode.

When the LSB of m is 0:

Macro executes r times continuously with t × 100 ms for the interval time.

When the LSB of m is 1:

When the printer waiting for t × 100 ms time and the indicator flashing until the user presses the FEED button, the printer just excute the macro command and then cycle 1 times.

[Remark] • Each time for executing macro, the waiting time is t × 100 ms.

• If this command is received during macro definition, the macro definition is aborted, the macro being defined is cleared.

• If the macro is not defined or r is 0, then the command has no effect.

• When the macro is executed (m = 1), you cannot use feed button to feed paper.

[Reference] **GS :**

GS a n

[Name] Enable/disable Automatic Status Back (ASB)

[Format] ASCII GS a n

Hex 1D 61 n

Decimal 29 97 n

[Range] 0 ≤ n ≤ 255

[Description] Enables or disables basic ASB (Automatic Status Back). The meaning of n is as below,

Bit	1/0	Hex	Decimal	ASB related status
0	0	00	0	Cash Register Output Socket Pin 3 Status Forbidden
	1	01	1	Cash Register Output Socket Pin 3 Status Allowed
1	0	00	0	Online/Offline Status Forbidden
	1	02	2	Online/Offline Status Allowed
2	0	00	0	Fault Status Forbidden
	1	04	4	Fault Status Allowed
3	0	00	0	Paper Sensor Status Forbidden
	1	08	8	Paper Sensor Status Allowed
4~7	-	-	-	Reserved

[Remark] · If any item in the above table is permitted, when this status is changed, the printer will return four bytes status automatically.

· If all items are forbidden, ASB is also forbidden.

· Whether the host is ready or not cannot be confirmed from whether the printer return the status bytes.

· This command is carried out in sequential execution with other commands together. So there is some period delay when receiving returned status after sending this command.

· Although printer is set to be invalid status by command ESC =, the printer will still return the status automatically as setting.

· Auto returned status is as below:

The first byte (Printer information)

Bit	1/0	Hex	Decimal	Printer status
0	0	00	0	Fix as 0
1	0	00	0	Fix as 0
2	0	00	0	Cash Register Output Socket Pin 3 is low level
	1	04	4	Cash Register Output Socket Pin 3 is high level

3	0	00	0	Printer Online
	1	08	8	Printer offline
4	1	10	16	Fix as 1
5	0	00	0	Upper Cover Closed
	1	20	32	Upper Cover Opened
6	0	00	0	Not use feed button to feed paper
	1	40	64	Use feed button to feed paper
7	0	00	0	Fix as 0

The second byte (Printer information)

Bit	1/0	Hex	Decimal	Printer status
0	-	-	-	Reserved
1	-	-	-	Reserved
2	-	-	-	Reserved
3	0	00	0	No Cutter Fault
	1	08	8	Cutter Fault
4	0	00	0	Fix as 0
5	0	00	0	No unrecovered error
	1	20	32	Unrecovered error
6	0	00	0	No auto-recovered error
	1	40	64	Auto-recovered error
7	0	00	0	Fix as 0

Bit 5: Such as paper jam, etc, which are recovered errors. These errors can be recovered by command DLE ENQ n (1 ≤ n ≤ 2) after the error reasons are found. Such as control board damage, etc, which are unrecovered errors.

Bit 6: Such as over-heat of printing head is auto-recovered error. After a short period, printer will recover

The third byte (Paper sensor information)

Bit	1/0	Hex	Decimal	Printer status
0, 1	0	00	0	Paper out sensor: paper exists
	1	03	3	Paper out sensor: paper out
2, 3	0	00	0	Paper Out Sensor: Exit
	1	0C	12	Paper Out Sensor: Out
4	0	00	0	Fix as 0
5, 6	-	-	-	Reserved
7	0	00	0	Fix as 0

The forth byte (Paper sensor information)

Bit	1/0	Hex	Decimal	Printer information
0~ 3	-	-	-	Reserved
4	0	00	0	Fix as 0
5,	-	-	-	Reserved

6				
7	0	00	0	Fix as 0

[Default] n = 0

GS g 0 m nL nH

[Name] Initialize maintenance counter

[Format] ASCII GS g 0 m nL nH

Hex 1D 67 30 m nL nH

Decimal 29 103 48 m nL nH

[Range] m =0

(nL + nH × 256) = 20, 21, 50, 70 (nL = 20, 21, 50, 70, nH = 0)

[Description] Sets the resettable maintenance counter specified by (nL + nH × 256) to 0.

nL + nH × 256		Maintenance counter [Units]
Hex	**Decimal**	
14	20	Number of line fed. [Lines]
15	21	Number of head energization. [Times]
32	50	Number of autocutter operations. [Times].
46	70	Printer operation time. [Hours].

[Remark] ·Frequent write command executions by an NV memory write command may damage the NV memory. Therefore, it is recommended to write to the NV memory less than 10 times a day.

· If the power is turned off or the printer is reset via an interface while this command is being executed, the printer may go into an abnormal condition. Do not turn the power off or do not reset the printer via an interface while this command is being executed.

· While processing this command, the printer may become BUSY while writing the data to the NV memory and stops receiving data. Therefore, do not transmit data from thehost computer while the printer is BUSY.

[Reference] **GS g 2**

GS g 2 m nL nH

[Name] Transmit maintenance counter

[Format] ASCII GS g 2 m nL nH

Hex 1D 67 32 m nL nH

Decimal 29 103 50 m nL nH

[Range] m =0

(nL + nH × 256) = 20, 21, 50, 70, 148, 149, 178, 98

(nL = 20, 21, 50, 70, 148, 149, 178, 198 , nH = 0)

[Description] Transmits the value of the maintenance counter specified by (nL + nH × 256).

nL + nH × 256		

Hex	Decimal	Maintenance counter [Units]	Kind of counter
14	20	Number of line feeds. [Lines]	Resettable(can be reset)
15	21	Number of times head is energized. [Times]	
32	50	Number of autocutter operations. [Times].	
46	70	Printer operation time. [Hours].	
94	148	Number of line feeds. [Lines]	Cumulative
95	149	Number of times head is energized. [Times]	
B2	178	Number of autocutter operations. [Times].	
C6	198	Printer operation time. [Hours].	

[Remark] · The maintenance counter values are measurements; therefore, their values will be affected by the timing of errors and how and when the power is turned off.
·When this command is transmitted, the data following must not be transmitted until the status is received.

[Reference] **GS g 0**

GS r n

[Name] Transmit status

[Format] ASCII GS r n
Hex 1D 72 n
Decimal 29 144 n

[Range] n = 1, 2, 49, 50

[Description] Transmits the status instructed by n

n	Function
1, 49	**Transmits paper sensor status.**
2, 50	**Transmits drawer kick-out connector status.**

·Paper sensor status ((n = 1, 49)

Bit	1/0	Hex	Decimal	State
0, 1	0	00	0	Roll paper near-end sensor: paper adequate.
	1	03	3	Roll paper near-end sensor: paper near end.
2,. 3	0	00	0	Roll paper end sensor (Paper sensor): paper present.
	1	0C	12	Roll paper end sensor (Paper sensor): paper not present.
4	0	00	0	Fixed 0
5, 6	-	-	-	Reserved.

7	0	00	0	Fixed 0

· Bit2, 3: Paper out sensor inspect paper out, the printer enter in offline state, cannot carryout this command, so Bit2,3 cannot transfer paper out states. When outer cover opened, it shows states of upper case closed, cannot carry out this command.

· Cash drawer socket state(n = 2, 50)

Bit	1/0	Hex	Decimal	State
0	0	00	0	Cash drawer output socket pin 3 is high level
	1	01	1	Cash drawer output socket pin 3 is high level
1~3	-	-	**-**	**Reserved**
4	0	00	0	Not used, fix as 0
5, 6	-	-	**-**	**Reserved**
7	0	00	0	Not used, fix as 0

[Remark] ·This command is invalid for parallel interface.

· In the receive buffer, this command is carried out after data in front of this command is handled, so it has some time delay between sending this command and receiving returned states.

· After sending this command, before receiving the returned state, do not send other data.

Chinese Characters Control Commands

FS ! n

[Name] Setting Chinese characters mode

[Format] ASCII FS ! n

Hex 1C 21 n

Decimal 28 33 n

[Range] 0 ≤ n ≤ 255

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

位	0/1	Hex	Decimal	Function
0, 1				Reserved
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

[Remark] ·When double width and double height are set together,portrait and landscape will

been 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(horizontaltab),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 and 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 value] n = 0

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

FS &

[Name] Selecting Chinese character mode

[Format]

ASCII	FS	&
Hex	1C	26
Decimal	28	38

[Description] Selecting Chinese character mode

[Notice] ·When select Chinese character mode,printer will judge whether the character is Hanzi interal code,if it is,dealing with the first byte in advance.Then the second one.

[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)

[Note] ·Printer can add underline to all the characters,including left and right space.But Can not add underline to the space caused by HT command(horizontaltab),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 value] n = 0

[Reference] F**S !**

FS .

[Name] canceling chinese mode

[Format]

ASCII	FS	.
Hex	1C	2E
Decimal	28	46

[Description] canceling chinese mode

[Notice] ·When the Chinese mode is canceled,all the characters are the same as ASCII style,and deal with one byte once

[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.

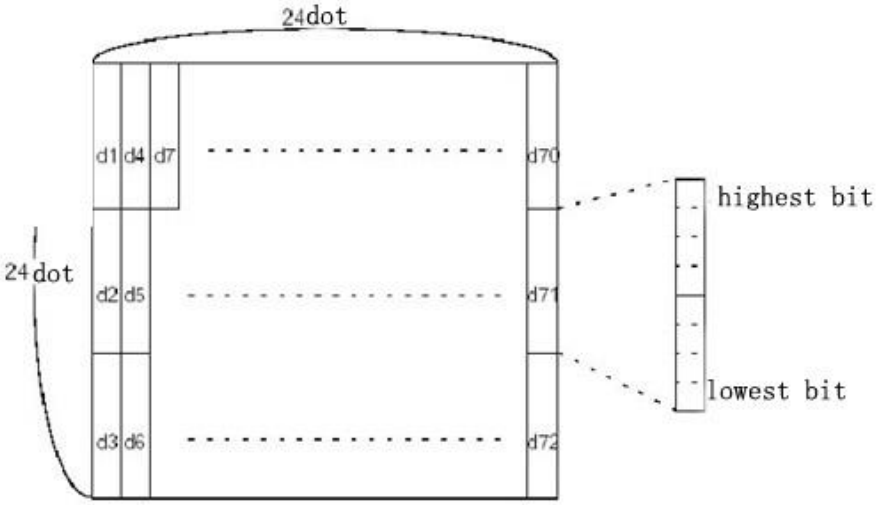
[Notice] · C1,c2 represent user self-defined Chinese code,c1 specifies the first byte,c2 specifies the second byte.

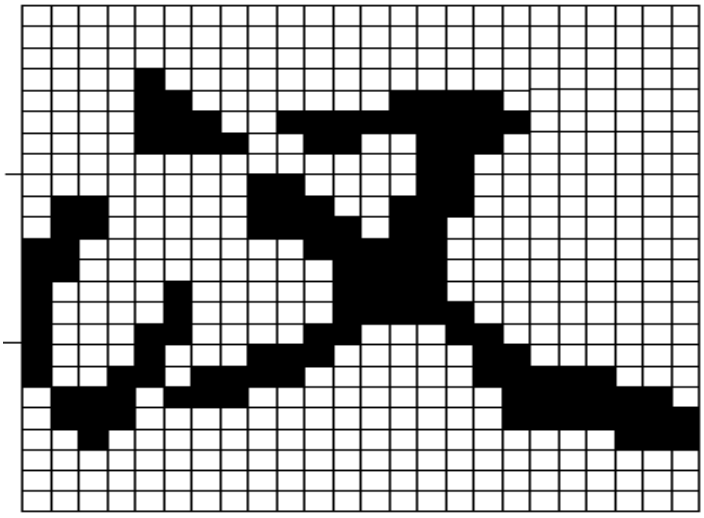
· d represent data.Every bit of byte is 1 represents to print the dot,0 means does not print.

·It can define 4 chinese the most

[Default value] no self-defined Chinese

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





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

FS C n

[Name] selecting Chinese code system

[Format]

ASCII	FS	C	n1	n2
Hex	1C	43	n1	n2
Decimal	28	67	n1	n2

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

[Description] selecting Chinese code system

n	selecting Chinese code system
0, 48	Simplified Chinese(GB2312 or GB18030)
1, 49	Traditional Chinese(BIG5)

[Remark] ·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
n = 1 Traditional Chinese

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.

[Remark] · The left and right space will be doubled after setting the double width mode.
·The shifting unit is setted by the command GS P.The former character space does not change even if the lateral and vertical units are changed.
·Using the laterial shifting unit under the standard mode.
·Selecting to use the laterial 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 !**

1D Barcode Printing Command

GS H n

[Name] Selecting the printing position of HRI character

[Format] ASCII GS H n

Hex 1D 48 n

Decimal 29 72 n

[Range] 0 ≤ n ≤ 3, 48 ≤ n ≤ 51

[Description] When printing the barcode,selecting the printing position for HRI character

N appoints the printing position of HRI

n	Printing position
0, 48	No printing
1, 49	Above the barcode
2, 50	Below the barcode
3, 51	Both above and below the barcode

·HRI is the character of content note of barcode

[Note] ·The style of HRI character is appointed by GS f.

[Default value] n = 0

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

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 character(12×24)
1, 49	Compressed ASCII character(9 × 17)

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

·HRI character printing position is set by GS H command

[Default value] n = 0
[Reference] **GS H, GS k**

GS h n

[Name] Selecting height of barcode
[Format] ASCII GS h n
Hex 1D 68 n
Decimal 29 104 n
[Range] 1 ≤ n ≤ 255
[Description] Selecting height of barcode
The height of barcode is n dots
[Default value] n = 162
[Reference] **GS k**

①GS k m d1...dk NUL②GS k m n d1...dn

[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

[Remark 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 aeven number.If entering code data of odd number,the last data will be ignored

[Remark ②]

·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

[Remark (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

[Remark (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):

·Refering 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 Character	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	Single basis module width**(mm)**	Biradical module width	
		Narrow-based module**(mm)**	Wide-based module **(mm)**
2	0.25	0.25	0.625
3	0.375	0.375	1.0
4	0.5	0.5	1.25
5	0.625	0.625	1.625
6	0.75	0.75	1.875

·Barcode of mono basis module is as below:

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

·Barcode of biradical module is as below:

CODE39, ITF, CODABAR

[Default value] n = 2

[Reference] **GS k**

2D Barcode Printing Command

GS Z n

[Name] Selecting 2D Barcode type

[Format]

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

[Range] 0 ≤n ≤ 2

[Description] Selecting 2D Barcode type

· n = 0 Select PDF417

· n = 1 Select DATA MATRIX

· n = 2 Select QR CODE

[Reference] **ESC Z**

ESC Z m n k dL dH d1 …dn

[Name] Printing 2D Barcode

[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] Meaning and range of parameter is different due to different 2D Barcode type chosen by GSZ.

· Barcode with different v, r parameter, their parameter meaning is different.

① PDF417 2D Barcode

1 ≤ v ≤ 30 Means number of characters per line. Because different model

supports different paper width, maximum value of v is within the maximum value allowed by this model.

0 ≤ r ≤ 8 Means error correction level

② DATA MATRIX 2D Barcode

0 ≤v ≤ 144 Means height of image(0: automatic selection)

8 ≤ r ≤ 144 Means width of image(when v=0, invalid)

③ QR CODE 2D Barcode

0 ≤ v ≤ 40 Means image version(0: automatic selection)

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

· Parameter k, n(nL, nH), d parameter meaning

1 ≤ k ≤ 6 Means the longitudinal magnification

1 ≤ n ≤ 65535 Means that length of printed barcode data is n, nL, nH is low position and high position of n(n= dL + dH × 256).

0 ≤ dn ≤ 255 Means barcode data

[Description] Print 2D Barcode image according to 2D barcode type chosen by **GS Z.**

[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 × 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	32	QR Code	1 ≤ n ≤ 65535	0 ≤ v ≤ 40	1 ≤ r ≤ 4	0 ≤ dn ≤ 255
	33	Data Matrix	1 ≤ n ≤ 65535	0 ≤v ≤ 144	8 ≤ r ≤ 144	0 ≤ dn ≤ 255
	34	PDF417	1 ≤ n ≤ 65535	1 ≤ v ≤ 30	0 ≤ r ≤ 8	0 ≤ dn ≤ 255
②	97	QR Code	1 ≤ n ≤ 65535	0 ≤ v ≤ 40	1 ≤ r ≤ 4	0 ≤ dn ≤ 255
	98	Data Matrix	1 ≤ n ≤ 65535	0 ≤v ≤ 144	8 ≤ r ≤ 144	0 ≤ dn ≤ 255
	99	PDF417	1 ≤ n ≤ 65535	1 ≤ v ≤ 30	0 ≤ r ≤ 8	0 ≤ dn ≤ 255

[Remark] · 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**

Antiquated Command

ESC i

GS V command is recommended because it is upwardly compatibly instead of ESC i Command, and ESC i is the old command of ESC / POS.

[Name] Partial Cut

[Format] ASCII ESC i

Hex 1B 69

Decimal 27 105

[Description] Perform a half-cutter, do not feed the paper.

[Notes] · The printer will be partial cutting

ESC m

GS V command is recommended because it is upwardly compatibly instead of ESC m Command, and ESC m is the old command of ESC / POS.

[Name] Partial cut

[Format] ASCII ESC m

Hex 1B 6D

Decimal 27 109

[Description] Perform a half-cutter, do not feed the paper.

[Notes] · The printer will be partial cutting

ESC u n

GS r command is recommended because it is upwardly compatibly instead of ESC u Command, and ESC u is the old command of ESC / POS.

[Name] Transfer peripheral status

[Format] ASCII ESC u n

Hex 1B 75 n

Decimal 27 117 n

[Description] peripheral device status that1-byte data transferred, the following data as below:

Bit	1/0	Hex	Decimal	Printer type
0	0	00	0	Cash drawer output socket pin 3 is high level
	1	01	1	Cash drawer output socket pin 3 is high level
1~3	-	-	-	reserved
4	0	00	0	Fixed as 0
5,	-	-	-	reserved

6				
7	0	00	0	Fixed as 0

[Notes] · After sending the command and before receiving the returned status word, do not send other data.

ESC v

GS r command is recommended because it is upwardly compatibly instead of ESC v Command, and ESC v is the old command of ESC / POS.

[Name] Transfer paper sensor status

[Format] ASCII ESC v

Hex 1B 76

Decimal 27 118 n

[Description] The paper sensor status of transfering1 byte of data , data in the following table:

Bit	1/0	Hex	Decimal	Printer status
0,	0	00	0	Paper end sensor: adequate paper
	1	03	3	Paper end sensor: ended paper
2,.	0	00	0	Paper end sensor: adequate
	1	0C	12	Paper end sensor: ended paper
4	0	00	0	Fixed as 0
5,	-	-	-	Reserved
7	0	00	0	Fixed as 0

• Bit2, 3: When the paper end sensor detects the absence of paper, the printer is offline, and then you cannot execute the command. So Bit2, 3 cannot be transferred end paper command. When the cover is open, the status displays the status of the cover closed, you ca not execute the command.

[Notes] • After sending the command and before receiving the returned status word, do not send other data.

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

GS (L <Function 112 and 50>, which is the upward-compatible command replacing GS v 0, is recommended to use, since GS v 0 is an obsolete command in the ESC/POS command system.

[Name] Print raster bit image

[Format] ASCII GS v 0 m xL xH yL yH d1...dk

Hex 1D 76 30 m xL xH yL yH d1...dk

Decimal 29 118 48 m xL xH yL yH d1...dk

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

$0 \le xL \le 255$

$0 \le xH \le 255$

$0 \le yL \le 255$

$0 \le d \le 255$

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

[Description] Prints a raster bit image using the mode specified by m.

m	Mode	Vertical (DPI)	Horizontal(DPI)
0, 48	Normal	203 DPI	203 DPI
1, 49	Double-Width	203 DPI	101 DPI
2, 50	Double-Height	101 DPI	203 DPI
3, 51	Quadruple	101 DPI	101 DPI

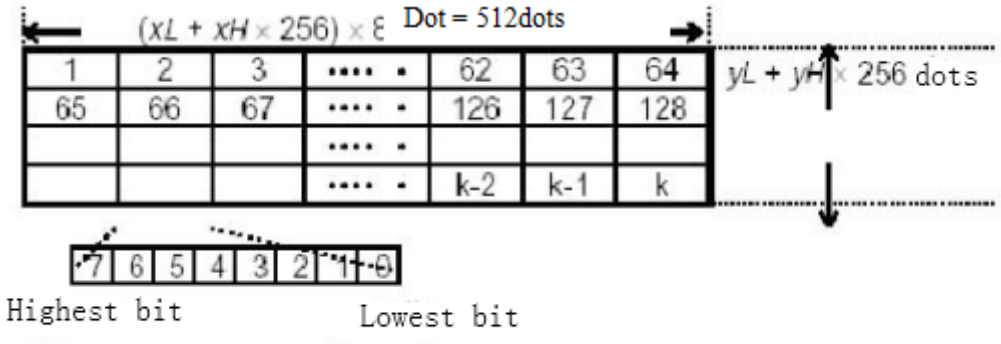
· xL, xH specify the number of bytes in the horizontal direction as (xL + xH × 256).

· yL, yH specify the number of dots in the vertical direction as (yL + yH × 256).

[Notes] In standard mode, only there is no data in the printer buffer, the instruction is effective.

- when printing mode is Character size, bold, double print, upside-down printing, underline, black and white reverse display and others, the command is invalid.
- Bitmap section exceeded the printable area is not printed.
- ESC a (select Align mode) is valid for raster bitmap.
- Macro definition processing, this command will stop the macro definition and execute the command. This command is not a section as a macro definition.
- D specifies the defined data (raster format). Corresponding bits of each byte is 1 to print a dot and is 0 to not print a dot.

[Example] When xL+ xH × 256 = 64



Appendix A: 128 code

A.1 128 code summary

128code can code128ASCII characters and 100 numbers from00~99and 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 transform 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	&	26	38	L	4C	76
SOH	01	1	'	27	39	M	4D	77
STX	02	2	(	28	40	N	4E	78
ETX	03	3	)	29	41	O	4F	49
EOT	04	4	*	2A	42	P	50	80
ENQ	05	5	+	2B	43	Q	51	81
ACK	06	6	,	2C	44	R	52	82
BEL	07	7	-	2D	45	S	53	83
BS	08	8	.	2E	46	T	54	84
HT	09	9	/	2F	47	U	55	85
LF	0A	10	0	30	48	V	56	86
VT	0B	11	1	31	49	W	57	87
FF	0C	12	2	32	50	X	58	88
CR	0D	13	3	33	51	Y	59	89
SO	0E	14	4	34	52	Z	5A	90
SI	0F	15	5	35	53	[	5B	91
DLE	10	16	6	36	54	\	5C	92
DC1	11	17	7	37	55	]	5D	93
DC2	12	18	8	38	56	^	5E	94
DC3	13	19	9	39	57	_	5F	95
DC4	14	20	:	3A	58	FNC1	7B,3	123,49
NAK	15	21	;	3B	59	FNC2	1	123,50
SYN	16	22	<	3C	60	FNC3	7B,3	123,51
ETB	17	23	=	3D	61	FNC4	2	123,52
CAN	18	24	>	3E	62	SHIFT	7B,3	123,83
EM	19	25	?	3F	63	CODEB	3	123,66
SUB	1A	26	@	40	64	CODEC	7B,3	123,67
ESC	1B	27	A	41	65		4	
FS	1C	28	B	42	66		7B,5	
GS	1D	29	C	43	67		3	
RS	1E	30	D	44	68		7B,4	
US	1F	31	E	45	69		2	
SP	20	32	F	46	70		7B,4	
!	21	33	G	47	71		3	
"	22	34	H	48	72			
#	23	35	I	49	73			
$	24	36	J	4A	74			
%	25	37	K	4B	75			

Character in set B

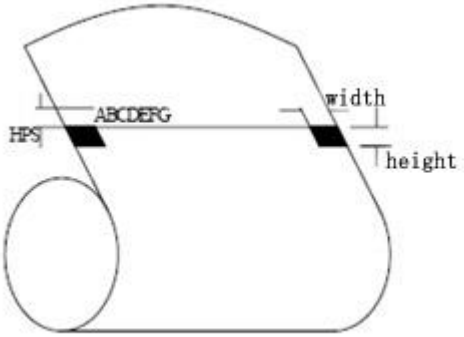
Character	Sending data		character	Sending data		character	Sending data	
	Hex	**Decimal**		**Hex**	**Decimal**		**Hex**	**Decimal**
SP	20	32	F	46	70	l	6C	108
!	21	33	G	47	71	m	6D	109
"	22	34	H	48	72	n	6E	110
#	23	35	I	49	73	o	6F	111
$	24	36	J	4A	74	p	70	112
%	25	37	K	4B	75	q	71	113
&	26	38	L	4C	76	r	72	114
'	27	39	M	4D	77	s	73	115
(	28	40	N	4E	78	t	74	116
)	29	41	O	4F	79	u	75	117
*	2A	42	P	50	80	v	76	118
+	2B	43	Q	51	81	w	77	119
,	2C	44	R	52	82	x	78	120
-	2D	45	S	53	83	y	79	121
.	2E	46	T	54	84	z	7A	122
/	2F	47	U	55	85	{	7B,7	123,123
0	30	48	V	56	86	|	B	124
1	31	49	W	57	87	}	7C	125
2	32	50	X	58	88	—	7D	126
3	33	51	Y	59	89	DEL	7E	127
4	34	52	Z	5A	90	FNC1	7F	123,49
5	35	53	[	5B	91	FNC2	7B,3	123,50
6	36	54	\	5C	92	FNC3	1	123,51
7	37	55	]	5D	93	FNC4	7B,3	123,52
8	38	56	^	5E	94	SHIFT	2	123,83
9	39	57	_	5F	95	CODEA	7B,3	123,65
:	3A	58	`	60	96	CODEC	3	123,67
;	3B	59	a	61	97		7B,3	
<	3C	60	b	62	98		4	
=	3D	61	c	63	99		7B,5	
>	3E	62	d	64	100		3	
?	3F	63	e	65	101		7B,4	
@	40	64	f	66	102		1	
A	41	65	g	67	103		7B,4	
B	42	66	h	68	104		3	
C	43	67	i	69	105			
D	44	68	j	6A	106			
E	45	69	k	6B	107			

Character in set C

Character	Sending data		Character	Sending data		Character	Sending data	
	Hex	**Decimal**		**Hex**	**Decimal**		**Hex**	**Decimal**
0	00	0	38	26	38	76	4C	76
1	01	1	39	27	39	77	4D	77
2	02	2	40	28	40	78	4E	78
3	03	3	41	29	41	79	4F	79
4	04	4	42	2A	42	80	50	80
5	05	5	43	2B	43	81	51	81
6	06	6	44	2C	44	82	52	82
7	07	7	45	2D	45	83	53	83
8	08	8	46	2E	46	84	54	84
9	09	9	47	2F	47	85	55	85
10	0A	10	48	30	48	86	56	86
11	0B	11	49	31	49	87	57	87
12	0C	12	50	32	50	88	58	88
13	0D	13	51	33	51	89	59	89
14	0E	14	52	34	52	90	5A	90
15	0F	15	53	35	53	91	5B	91
16	10	16	54	36	54	92	5C	92
17	11	17	55	37	55	93	5D	93
18	12	18	56	38	56	94	5E	94
19	13	19	57	39	57	95	5F	95
20	14	20	58	3A	58	96	60	96
21	15	21	59	3B	59	97	61	97
22	16	22	60	3C	60	98	62	98
23	17	23	61	3D	61	99	63	99
24	18	24	62	3E	62	FNC1	7B,3	123,49
25	19	25	63	3F	63	CODEA	1	123,65
26	1A	26	64	40	64	CODEB	7B,4	123,66
27	1B	27	65	41	65		1	
28	1C	28	66	42	66		7B,4	
29	1D	29	67	43	67		2	
30	1E	30	68	44	68			
31	1F	31	69	45	69			
32	20	32	70	46	70			
33	21	33	71	47	71			
34	22	34	72	48	72			
35	23	35	73	49	73			
36	24	36	74	4A	74			
37	25	37	75	4B	75			

Appendix B: the pre-print black mark description

User must obey the specification as follows when printing the black mark if wants to use pre-print black mark to progress note clamping,
Otherwise may cause printer cannot identify a black mark. The black mark pre-print specification:



Printed location is shown as chart above, the black mark should be printed to character surface of right or left side rim.

Width range:width≥7mm

Height range:4mm≤Height≤6mm

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. 10mm≤HPS≤12mm