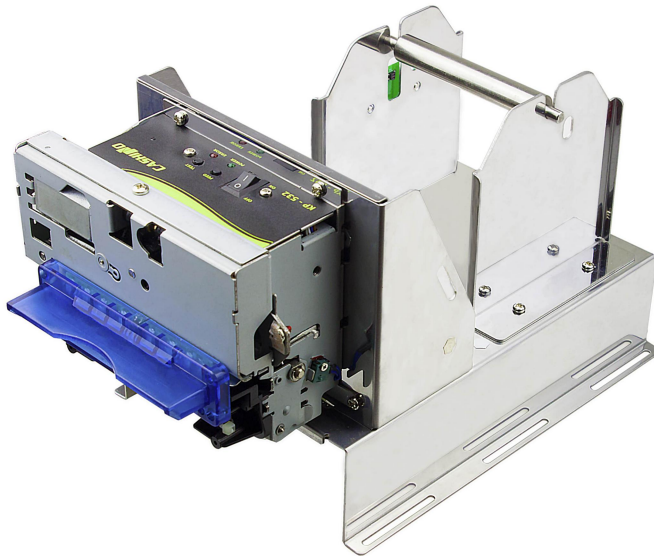


# 80mm Kiosk printer module

## KP-532 User manual



Draw up: Lin Xiaopeng 2016.01.14

Audit: Huang Zhongze 2016.04.10

Standardization: Hu Riyu 2016.04.11

Approved: Wang Huanyong 2016.04.12

Tel:0592-5517253 Fax:0592-5231815

Supply Company: Xiamen Cashino Technology Co., Ltd.

Add: 4/F, No.318, Tongji South Road, Jimei District, Xiamen, China. 361021

If there is any change in this specification and will not be further notice. Please kindly contact with Xiamen Cashino Electronic Technology Co., Ltd. for the the latest version.

## Revised records

No.	Date	Modify the content	Change the Page number	Draw up	Review
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2	20180820	Correct product parameter	5	Zhu Chunyan	Huang Zhongze
3	20180820	Add to print 2D command	54	Zhu Chunyan	Huang Zhongze

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## 1.Overview

KP-532 is the kiosk thermal printer module,with high durability and long time printing lasting

### 1.1 Product feature

- ※Beauty appearance
- ※Low noise thermal printing
- ※Multiple interface
- ※Support for graphic&text printing
- ※Support for full cut or partial cut
- ※Easy to embedded all kinds of equipments

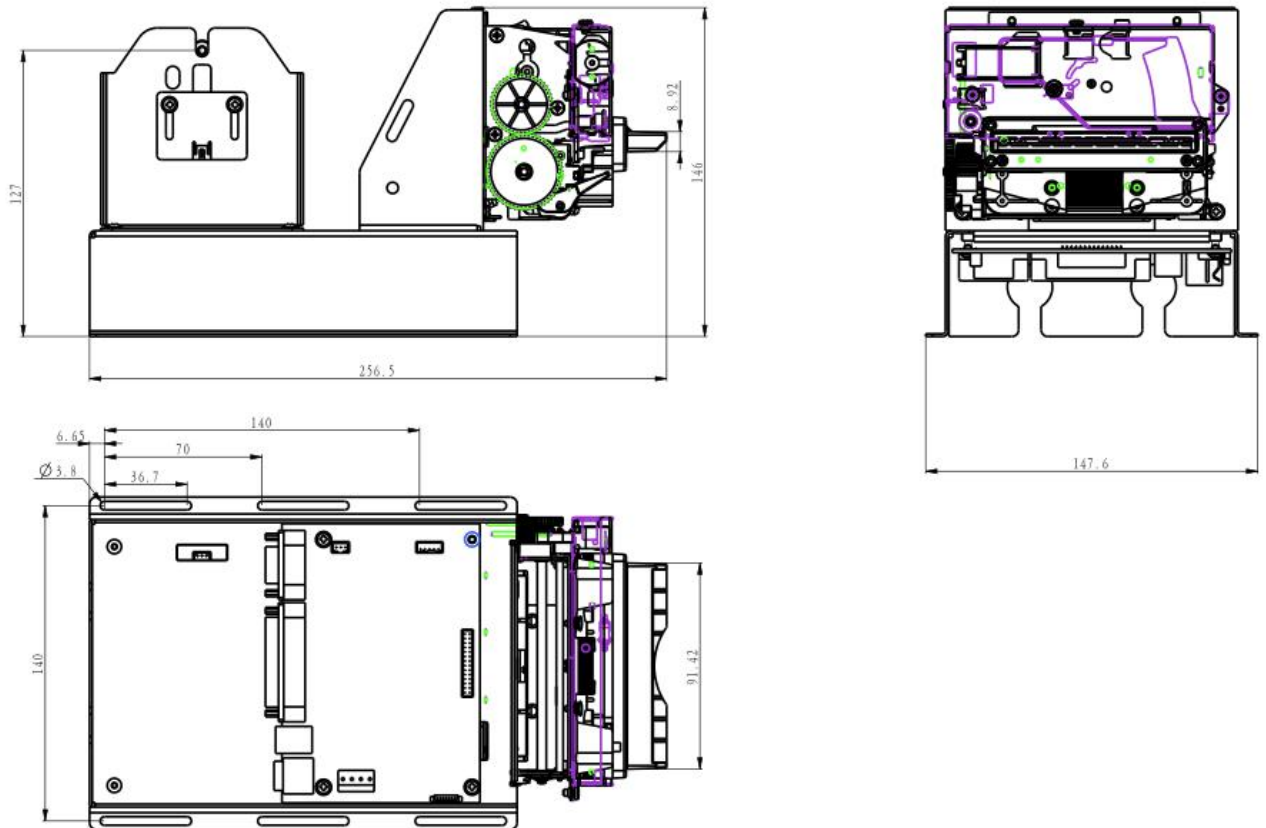
### 1.2 Product parameters

Model		KP-532P	KP-532F
Printing	Print method	Thermal-line dot method	
	Print speed	150mm/s	
	Print Density	203dpi(8dots/mm)	
	Effective printing area	72mm	
Character	Character set	ASCII,GB2312-80 (Chinese)	
	Print font	ANK: 9×17, 12×24; Chinese: 24×24	
Paper Roll specification	Paper type	Thermal paper roll	
	Paper width	80mm	
	Paper thickness	MAX: 150mm	
Interface		USB+RS232+LPT	
Detection		Paper out,Paper near end, paper taken	
Power (Adapter)		DC24V	
Command		Compatible with EPSON ESC/PO	
Driver		Windows Driver;Linux Driver	
Barcode	1D	UPCA、UPC-E、JAN13(EAN13)、JAN8(EAN8)、CODE39、ITF、CODABAR、CODE128、CODE93;	
	2D	QR CODE	
Reliability	Print Life	≥100Km	

	Cutter Life	>100000cuts (When cutting paper with thickness greater than 0.1mm, 500000cuts)
Cutter	Auto cutter	Partial cutter or Full cutter
Outline size	W*D*H(mm)	147.6mm*256.5mm*146
Environmental conditions	Operating temperature	5°C~50°C
	Operating humidity	20%~85%
	Storage temperature	-20°C~60°C
	Storage humidity	5%~90%

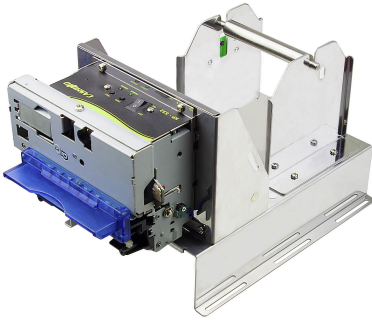
### 1.3 Structure size

#### 1.3.1 Structure

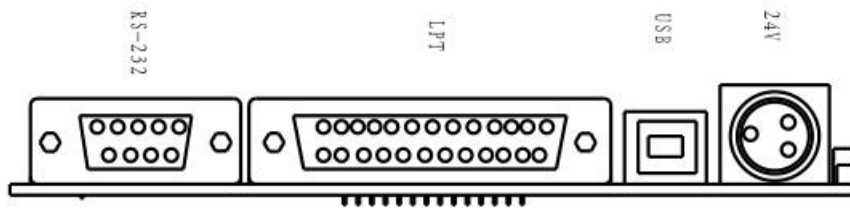


## 1.5 Paper roll installation

- 1.Put the paper roll coating side upward and take into the feeder
- 2.The printer will auto feeding the paper

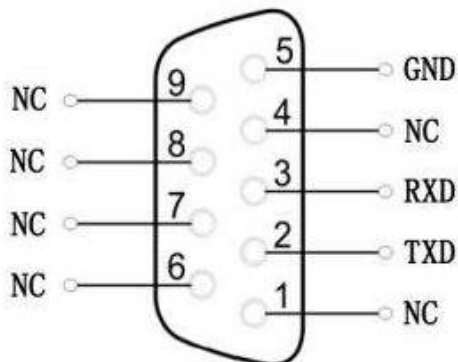


## 2.Interface and pin definition



### (1) COM Interface

Printer serial port for the standard RS232 terminal (DB9 female head) pin definition





Data transmission mode: serial

Synchronous mode: asynchronous

Handshake signal: DTR/DSR or XON/XOFF control mode

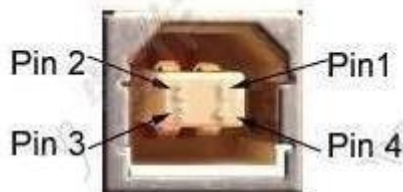
Bit rate: 9600bps - 115200bps

Word length: 8 bits

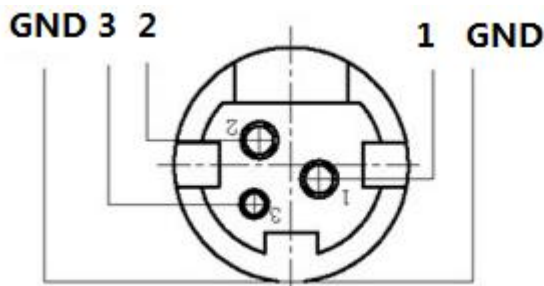
Parity check: No check.

Stop bit: 1 bit

(2) USB Interface



(3) DC Power (DIN-3P)



Pin	Function
1	GND
2	+24VDC
3	NULL

(4) 25-pin parallel port

Pin	Function	Pin	Function	Pin	Function
1	C0	10	S6	19	G1
2	D0	11	S7	20	G2

3	D1	12	S5	21	G3
4	D2	13	S4	22	G4
5	D3	14	C1	23	G5
6	D4	15	S3	24	G6
7	D5	16	C2	25	G7
8	D6	17	C3		
9	D7	18	G0		

### 3. Basic usage



#### 3.1 Print self-test page

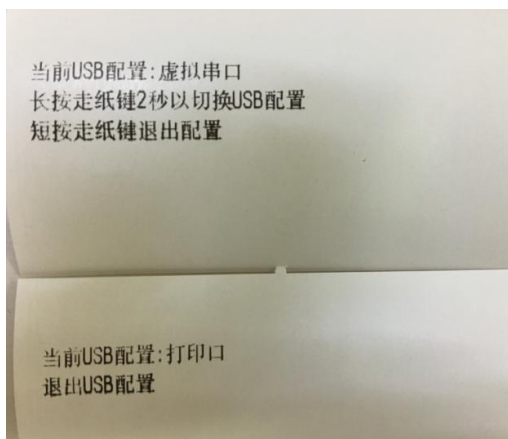
When the power is off, press and hold the FEED key and power on, a self-check page will be printed, which contains the serial transmission rate, language and other information.

#### 3.2 USB mode switch

Start printing a self-test page and press and hold the paper feed key at the same time, a mode switching prompt appears:

Long press the paper feed key for 2s to switch the USB configuration;

Short press the paper feed key to exit the configuration



### 3.3 Panel LED Tips

The printer has two LEDs to prompt the state of the user's printer, two LEDs are power supply indicator (green light), and status indicator (red light)

POWER indicator	STATUS indicator	Printer status
Keep bright	Light off	Working properly
Keep bright	Flash 2 times	Printer head is not connected or temperature is too low
Keep bright	Flash 3 times	No paper
Keep bright	Flash 4 times	Cutter error
Keep bright	Flash 5 times	Printer head over heating
Keep bright	Flash 6 times	Platen not pressed down

## 4.Command Introduction

### 4.1Command List

LF	Command List	print and paper feed commands
CR	carriage return	
ESC J	print and paper feed n dots	
ESC d	Print and paper feed n lines	
ESC 3	Set line space n dots	print set commands
ESC 2	Set default line space	
ESC \$	Set absolute print position	
GS L nL nH	Set left margin amount	
ESC !	Set character printing method	
GS ! n	Set character size	
GS B n	Set and delete white printing	
ESC - n	Set and delete underline	
ESC V n	Set and delete 90°rotate printing	

ESC a	Setting position alignment mode	
FS &	Set Chinese character mode	
FS .	Delete Chinese character mode	
ESC % n	Choose and delete customized characters	
ESC &	Define customized characters	
ESC ? n	Delete customized character	
ESC *	Bitmap vertical modulus data fillings	Graphic printing command
GS v 0	Bitmap horizontal modulus data print	
GS *	Define download bitmap	
GS / m	Print download bitmap	
FS q	Define NV bitmap	
FS p n m	Print NV bitmap	
HT	Horizontal tab	Tab Commands
ESC D	Set horizontal tabulation position	
GS H	Set 1-D barcode readable character(HRI) print position	1-D barcode printing commands
GS h	Set 1-D barcoe hight	
GS w	Set 1-D barcode width	
GS k	Printing 1-D barcode	
GS (	2-D barcode printing	2-D barcode printing
GS r n	Transmission status	Status querying Commands
DLE EOT n	Real-time transmission status	
ESC @	Printer reset	Other commands
GS V	Choose cut mode and cut	
ESC i	Full cuts	
ESC m	Partly cuts	

## 4.2 Commands details

### 4.2.1 Printing and paper feed commands

## Printing and paper feed

Name	print and paper feed
Code	ASCII : LF DEC : 10 HEX : 0A
Function	Print the buffer content, and set the paper feed as per line space, then adjust print position to initial position at the next line.
Range	None
Default	None
Notes	None
Example	None
Name	print and paper feed

## Enter

Name	Enter
Code	ASCII : CR DEC : 13 HEX : 0D
Function	Adjust print position to initial position of the same line.
Range	None
Default	None
Notes	After executing, R command, the new printing data will cover old data in the printing buffer.
Example	None
Name	Enter

## Print and paper feed n dots

Name	Print and paper feed n dots
Code	ASCII : ESC J n DEC : 27 74 n

	HEX : 1B 4A n
Function	Print the buffer content and paper feed
Range	$0 \leq n \leq 255$
Default	None
Notes	Paper feed n dots when printing buffer is empty. After executing this command,printing position is moved to initial
Example	1b 40 30 31 32 1b 4a 10

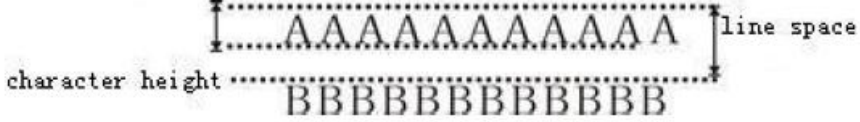
### Print and paper feed n line

Name	Print and paper feed n lines
Code	ASCII : ESC d n
	DEC : 27 100 n
	HEX: 1B 64 n
Function	Print the contents in printing buffer and paper feed n lines.
Range	$0 \leq n \leq 255$
Default	None
Notes	Print this command set as initial position of the same line
Example	1b 40 30 31 32 1b 64 01

### 4.2.2Printing set commands

#### Set line space as n dots

Name	Set line space as n dots
Code	ASCII : ESC 3 n
	DEC : 27 51 n
	HEX : 1B 33 n
Function	Set line space as n dots
Range	$0 \leq n \leq 255$
Default	n = 33
Notes	Line space as below:

	 <p>If the line space settedis less than the highest character in that line,then this line space is equal to the height of the highest character.</p> <p>If ESC2,ESC@,reset the printer, the printer blackout,and the line spaceturns to default.</p>
Example	<pre>1b 40 1b 33 30 30 31 32 0d 0a 30 31 32 0d 0a 1b 32 30 31 32 0d 0a 30 31 32 0d 0a</pre>

**Set line space to default**

Name	Set line space to default
Code	ASCII : ESC 2 DEC: 27 50 HEX : 1B 32
Function	Set line space to default 30 dots
Range	None
Default	None
Notes	Line space in details pls check ESC 3 command. If the line spacesettedis less than the height character in the line,the line space of this line is equal to the height of the highest character It can use ESC 3 to define line space.
Example	None

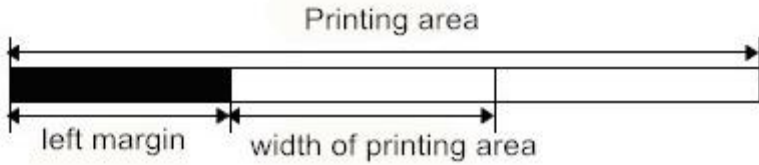
**Printing set commands**

**Set print position**

Name	Set print position
Code	ASCII : ESC \$ nL nH

	DEC : 27 36 nL nH HEX : 1B 24 nL nH
Function	Set left side blank area as (nL + nH × 256) dots
Range	0 ≤ nL ≤ 255 0 ≤ nH ≤ 255
Default	None
Notes	Set left side blank area as[(nL+nH*256)]*0.125mm] This command is only effective with the initial position of the line. This command is unavailable if it sets beyond the printing area.
Example	None

### Set the left margin

Name	Set the left margin
Code	ASCII : GS L nL nH DEC : 29 76 nL nH HEX : 1D 4C nL nH
Function	Set the left margin as (nL + nH × 256) dots
Range	0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255
Default	None
Support Model	All
Notes	This command is only effective with the initial position of the line. The illustration is as follows:  <p>Use the maximum value of the printable unit,if the setting is beyond the printable area.</p>
Example	1b 40 1d 4c 08 00 30 31 32 0d 0a



	30 31 32 0d 0a
--	----------------

## Set character printing method

Name	Set character printing method
Code	ASCII : ESC ! n DEC : 27 33 n HEX: 1B 21 n
Function	Set character printing methods(font,highlight,inversion,bold,double hight,double width and underline),parameter n bit definition as below: <p style="text-align: center;"><b>Bit Function Value</b></p> <p style="text-align: center;"><b>0 1</b></p> 0 FontNormal Small character 1 Undefined 2 Undefined 3Bold CancelSetting 4 Double hightCancel Setting 5 Double widthCancel Setting 6 Undefined 7 Underline Cancel Setting
Range	None
Default	n = 0
Notes	The command is effective with Chinese and foreign languages. The command is disabled when ESC@, printer reset or power off
Example	1B 40 1B 21 01 30 31 32 0D 0A 1B 40 1B 21 02 30 31 32 0D 0A 1B 40 1B 21 04 30 31 32 0D 0A 1B 40 1B 21 08 30 31 32 0D 0A 1B 40 1B 21 10 30 31 32 0D 0A 1B 40 1B 21 20 30 31 32 0D 0A

	1B 40 1B 21 40 30 31 32 0D 0A 1B 40 1B 21 80 30 31 32 0D 0A
--	--

## Set character size

Name	Set character size																																																						
Code	ASCII : GS ! n DEC : 29 33 n HEX : 1d 21 n																																																						
Function	<p>Set character size as 1-8 times width, 1-8 times height. Definition is as below:</p> <p>Use 0-3 set character height 4 - 7 bits set character width show as below:</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>Chart 1</b></p> <p><b>Character width setting</b></p> <table border="1" style="margin: auto;"> <thead> <tr> <th>HEX</th> <th>DEC</th> <th>width</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>0</td> <td>1(Normal)</td> </tr> <tr> <td>10</td> <td>16</td> <td>2(doublewidth)</td> </tr> <tr> <td>20</td> <td>32</td> <td>3</td> </tr> <tr> <td>30</td> <td>48</td> <td>4</td> </tr> <tr> <td>40</td> <td>64</td> <td>5</td> </tr> <tr> <td>50</td> <td>80</td> <td>6</td> </tr> <tr> <td>60</td> <td>96</td> <td>7</td> </tr> <tr> <td>70</td> <td>112</td> <td>8</td> </tr> </tbody> </table> </div> <div style="text-align: center;"> <p><b>Chart 2</b></p> <p><b>Character height setting</b></p> <table border="1" style="margin: auto;"> <thead> <tr> <th>HEX</th> <th>DEC</th> <th>height</th> </tr> </thead> <tbody> <tr> <td>00</td> <td>0</td> <td>1(Normal)</td> </tr> <tr> <td>01</td> <td>1</td> <td>2(double height)</td> </tr> <tr> <td>02</td> <td>2</td> <td>3</td> </tr> <tr> <td>03</td> <td>3</td> <td>4</td> </tr> <tr> <td>04</td> <td>4</td> <td>5</td> </tr> <tr> <td>05</td> <td>5</td> <td>6</td> </tr> <tr> <td>06</td> <td>6</td> <td>7</td> </tr> <tr> <td>07</td> <td>7</td> <td>8</td> </tr> </tbody> </table> </div> </div>	HEX	DEC	width	00	0	1(Normal)	10	16	2(doublewidth)	20	32	3	30	48	4	40	64	5	50	80	6	60	96	7	70	112	8	HEX	DEC	height	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
HEX	DEC	width																																																					
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03	3	4																																																					
04	4	5																																																					
05	5	6																																																					
06	6	7																																																					
07	7	8																																																					
Range	None																																																						
Default	n = 0																																																						
Notes	<p>This command is effective with Chinese and other foreign languages, except for HRI character.</p> <p>The command setting is disable when ESC@, printer reset or power off.</p>																																																						
Example	1b 40 1d 21 11																																																						

	30 31 32 0d 0a
	30 31 32 0d 0a

### Set remove white printing

Name	Set、 remove white printing
Code	ASCII : GS B n DEC : 29 66 n HEX : 1d 42 n
Function	Set and remove white printing When the LSB of n is 0,white printing mode is off. When the LSB of n is 1,white printing mode is on.
Range	None
Default	n = 0
Notes	It is only effective for LSB of n. This command is all effective with built-in characters and user-defined characters. It is effective with blank,which is setted by ESC CP,when white printing mode is on. This command is not effective with bitmap, user-defined bitmap, barcode, HRI character and vaulting space of HT,ESC \$. This command is not effective with line space. The white printing mode is prior to underline mode. When it iswhite printing mode, even underline mode isopen, which can also be forbidden.(But it not be canceled). This command is disabled when ESC@, printer reset or power off.
Example	1b 40 1d 42 01 30 31 32 0d 0a 30 31 32 0d 0a

### Set remove underline

Name	Set、 remove underline
Code	ASCII : ESC - n DEC : 27 45 n

	HEX : 1B 2D n								
Function	Set/ remove underline mode,based on the value of n as follow: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>n</th> <th>Functions</th> </tr> </thead> <tbody> <tr> <td>0, 48</td> <td>Removeunderlinemode</td> </tr> <tr> <td>1, 49</td> <td>Setunderlinemode(1dotcoarse)</td> </tr> <tr> <td>2, 50</td> <td>Setunderlinemode(2dotcoarse)</td> </tr> </tbody> </table>	n	Functions	0, 48	Removeunderlinemode	1, 49	Setunderlinemode(1dotcoarse)	2, 50	Setunderlinemode(2dotcoarse)
n	Functions								
0, 48	Removeunderlinemode								
1, 49	Setunderlinemode(1dotcoarse)								
2, 50	Setunderlinemode(2dotcoarse)								
Range	$0 \leq n \leq 2, 48 \leq n \leq 50$								
Default	n = 0								
Notes	<p>Printer can print underline for all characters(including the space to the right of the character), except for the space set by HT.</p> <p>Printer can not print underline for clockwise rotated 90 ° characters and white printing characters.</p> <p>When n is setted as 0 or 48,remove underline mode.Other data is not printed as underline,and the setted underline coarseness does not change before removingunderlinemode.The default underline coarseness is 1 dot.</p> <p>It is not effective with underline coarseness to change character size.</p> <p>Using ESC! can also set and remove underline mode.Howeverbe aware that the last received command must be effective.</p>								
Example	1b 40 1b 2d 01 30 31 32 0d 0a 1b 40 1b 2d 02 30 31 32 0d 0a 1b 40 1b 2d 00 30 31 32 0d 0a								

### Set remove 90°revolving printing

Name	Set 、 remove 90°revolving printing
Code	ASCII : ESC V n DEC : 27 86 n HEX : 1B 56 n

Function	Set or remove 90° revolving printing When n is equal to 0 or 48, remove 90° revolving printing. When n is equal to 1 or 49, set 90° revolving printing.
Range	$0 \leq n \leq 1, 48 \leq n \leq 49$
Default	n = 0
Support Model	All
Notes	When it is set to underline mode, the printer is not underlined for characters rotated 90°.  In the 90° rotation mode, the multiplier and double width commands magnify the character in the opposite direction to the multiplier command in the normal mode.  When ESC @, printer reset, power off, the setting of this instruction is invalid.
Example	1b 40 1b 56 01 30 31 32 0d 0a 30 31 32 0d 0a

### Set printing alignment

Name	Set print alignment (Left, middle, right)
Code	ASCII : ESC a n DEC : 27 97 n HEX : 1B 61 n
Function	Align all data in one line, the meaning of n values as below: n mode 0, 48 left 1, 49 middle 2, 50 right
Range	$0 \leq n \leq 2$ or $48 \leq n \leq 50$
Default	n = 0
Notes	This command setting is disabled when ESC @, printer resets or power off.
Example	1B 40 1B 61 02

	30 31 32 0D 0A
	1B 40 1B 61 01
	30 31 32 0D 0A
	1B 40 1B 61 00
	30 31 32 0D 0A

### Set Chinese mode

Name	Set Chinese mode
Code	ASCII : FS & DEC : 28 38 HEX: 1C 26
Function	Set Chinese mode
Range	None
Default	None
Notes	When the Chinese character mode is selected, the printer processes all Chinese character codes(ASCII code) , two bytes at a time.  The Chinese character code(ASCII code) is processed in the order of the first byte and the second byte.
Example	1b 40 1C 26 B0 AE C9 CF D7 D4 BC BA 0d 0a  1C 2E B0 AE C9 CF D7 D4 BC BA 0d 0a

### Exit Chinese character mode

Name	Exit Chinese character mode
Code	ASCII: FS . DEC : 28 46 HEX: 1C 2E
Function	Exit Chinese character mode, cancel Chinese character mode
Range	None
Default	None
Notes	None
Example	None

### Select, cancel user customized characters

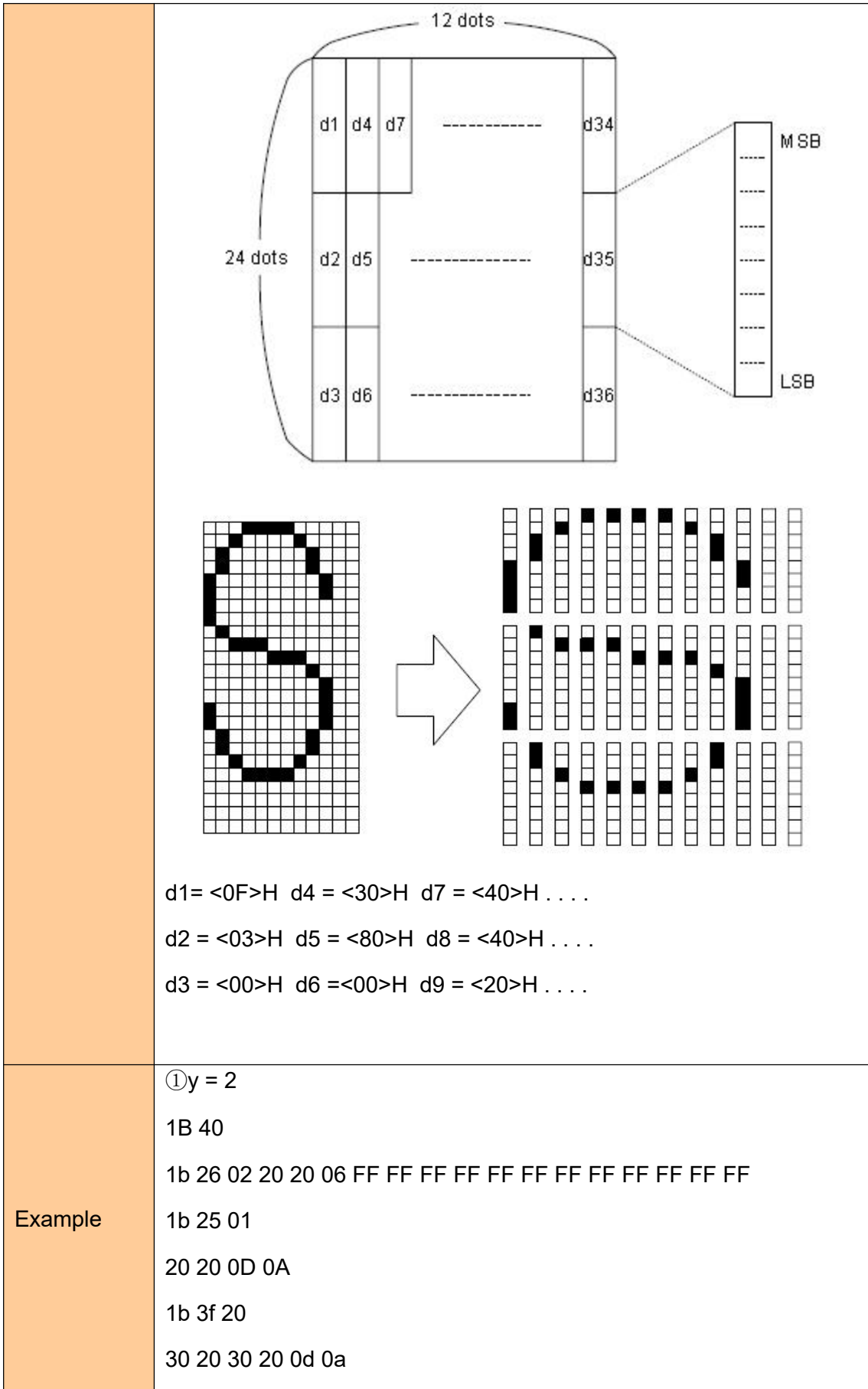
Name	Select 、 cancel user customized characters
Code	ASCII : ESC % n DEC : 27 37 n HEX : 1B 25 n
Function	Select 、 cancel user customized characters When n LSB is 0, delete customized characters When n LSB is 1, select customized characters
Range	$0 \leq n \leq 255$
Default	0
Notes	When cancel customized characters, automatically select the internal character set.
Example	None

### Define user customized characters

Name	Define user customized characters
Code	ASCII : ESC & y c1 c2 [x1 d1 ... d (yx1)] ... [xk d1 ... d(y x k)] DEC : 27 38 y c1 c2 [x1 d1 ... d(yx1)] ...[xk d1 ... d(yxk)] HEX : 1B 26 y c1 c2 [x1 d1...d(y x1)]...[xk d1...d(yxk)]
Function	Define user customized characters. y specifies vertical direction bytes. c1 specifies the starting character encoding, c2 specifies the ending character encoding xk specifies horizontal direction dots.
Range	The range of x 、 y, are correspond with internal fonts. If choosing Font 6*12, y = 2, $0 \leq x \leq 6$ If choosing Font 12*24, y= 3, $0 \leq x \leq 12$ $32 \leq c1 \leq c2 \leq 126$ $0 \leq d1 \dots d(y*xk) \leq 255$
Default	None

Notes	<p>Definable character code range: from &lt;20&gt;H to &lt;7E&gt;H ASCII code (95 characters).</p> <p>It can define continuous characters encoding for several characters. When it needs one character only, make <math>c1=c2</math>.</p> <p><math>d</math> is character's dot data, dot mode starts from left side in the horizontal direction. It is blank for the rest dots in the right side.</p> <p>Defined user defines characters data is <math>(y*x)</math> byte.</p> <p>Set corresponding bit of printing dots as 1, or corresponding bit of no printing dots as 0.</p> <p>This command defines different customized characters for each type of font. Set font with ESC !.</p> <p>Customized characters and downlink bitmaps cannot be defined at the same time. When the command is executed, the downlink bitmap is cleared.</p> <p>User Customized characters will be cleared in these situations:</p> <ul style="list-style-type: none"><li>Execute ESC @.</li><li>Execute GS *.</li><li>Execute ESC ?.</li><li>Printer reset or power off</li></ul> <p>Graphic:</p> <p>When set font A(12 24).</p>
-------	---





	②y = 3  1B 40  1b 26 03 20 20 06 FF  1b 25 01  20 20 0D 0A  1b 3f 20  30 20 30 20 0d 0a
--	---

### Cancel user customized characters

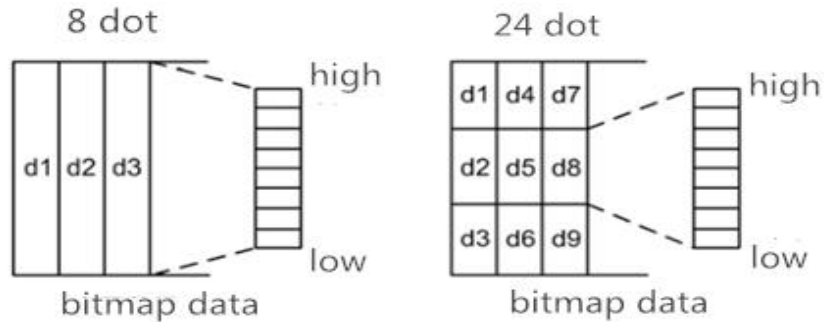
Name	Cancel user customized characters
Code	ASCII : ESC ? n  DEC : 27 63 n  HEX : 1B 3F n
Function	Cancel user customized characters of specified code by n
Range	$32 \leq n \leq 126$
Default	None
Notes	This command terminates the use of styles defined for character encoding, which is specified by n. After the user customized character is canceled, it is printed in the corresponding mode of the internal character.  In the font selected with ESC !, the command removes the style defined for the specified encoding.  If a user customized character is not defined, the printer ignores the command.
Example	None

### 4.2.3 Graphic printing command

#### Fill Graphics vertical module data

Name	Fill Graphics vertical module data
Code	ASCII : ESC * m Hl Hh [d]k  DEC : 27 42 m Hl Hh [d]k

	HEX : 1B 2A m HI Hh [d]k																				
Function	<p>Print vertical module graphic data,the parameters are as below:</p> <p>m is bit map format:</p> <table border="1"> <thead> <tr> <th>m</th> <th>mode</th> <th>horizontal scale</th> <th>vertical scale</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>8dots single density</td> <td>×2</td> <td>×3</td> </tr> <tr> <td>1</td> <td>8dots double density</td> <td>×1</td> <td>×3</td> </tr> <tr> <td>32</td> <td>24dots single density</td> <td>×2</td> <td>×1</td> </tr> <tr> <td>33</td> <td>24dots double density</td> <td>×1</td> <td>×1</td> </tr> </tbody> </table> <p>HI、Hh is horizontal direction dots(HI+256×Hh)</p> <p>[d]k is bit map data</p> <p>K used for indicating bit map data bytes,not for transfer.</p>	m	mode	horizontal scale	vertical scale	0	8dots single density	×2	×3	1	8dots double density	×1	×3	32	24dots single density	×2	×1	33	24dots double density	×1	×1
m	mode	horizontal scale	vertical scale																		
0	8dots single density	×2	×3																		
1	8dots double density	×1	×3																		
32	24dots single density	×2	×1																		
33	24dots double density	×1	×1																		
Parameter range	<p>XX58:</p> <p>m=0、1、32、33</p> <p><math>1 \leq HI + Hh \times 256 \leq 384</math></p> <p><math>0 \leq d \leq 255</math></p> <p>k=HI+Hh×256 (when m=0、1)</p> <p>k=(HI +Hh×256) ×3 (when m=32、33)</p> <p>XX80:</p> <p>m=0、1、32、33</p> <p><math>1 \leq HI + Hh \times 256 \leq 576</math></p> <p><math>0 \leq d \leq 255</math></p> <p>k=HI+Hh×256 (when m=0、1)</p> <p>k=(HI +Hh×256) ×3 (when m=32、33)</p>																				
Default	None																				
Notes	<p>[d]k corresponding bit is 1,which means that this bit can print.While it is 0,it means that this bit can not print.</p> <p>The part of graphics horizontal direction which exceeds the printing area will be ignored.</p> <p>The relations between Bit map data and printing effects is as below:</p>																				



The command fills only the printing buffer,graphics printing can start only after receiving the printing commands.Printing buffer will be cleared after graphic printing.

If you need to print higher graphics,you can divide it into several sectionswhich has 8 (m =

0、1) or 24 (m = 32、33) dots graphics to print.

After filling graphic data,you can continue to fill other information to make graphic and other information print simultaneously.

After filling bitmap,you can use ESC J(n=24)command to print,and also can use LF command to print.But using LF command will cause paper feeding(feeding paper according to the line space),and make graphic continuous between different lines.And can set line space as 0 to avoidfeeding too much.(Dot matrix printer may drift when it starts,pls send data continuously if occurs line broken.

Example	<pre>1B 40 1b 2a 00 0C 00 FF FF FF FF FF FF FF FF FF FF FF 1B 33 00 0A</pre>
---------	--

**Print Graphics horizontal module data**

Name	Print Graphics horizontal module data
Code	<pre>ASCII : GS v 0 DEC : 29 118 48 m xL xH yL yH [d]k HEX : 1D 76 30 m xL xH yL yH [d]k</pre>

Function	<p>Print horizontal module graphic data,the parameters are as below:</p> <p>m as bitmap method:</p> <table border="0" style="margin-left: 40px;"> <tr> <td>m</td> <td>Model</td> <td>Horizontal scale</td> <td>Vertical scale</td> </tr> <tr> <td>0,48</td> <td>Normal</td> <td>× 1</td> <td>× 1</td> </tr> <tr> <td>1,49</td> <td>Double-width</td> <td>× 2</td> <td>× 1</td> </tr> <tr> <td>2,50</td> <td>Double-height</td> <td>× 1</td> <td>× 2</td> </tr> <tr> <td>3,51</td> <td>Quadruple</td> <td>× 2</td> <td>× 2</td> </tr> </table> <p>xL、xH were selected as the data bytes (xL+xH×256) in the horizontal direction for the bitmap.</p> <p>yL, yH were selected as the data bytes(yL+yH×256) in the vertical direction for the bitmap.</p> <p>[d]k for bitmap data</p> <p>k for bitmap data bytes, k used for indicating, not for transfer.</p>	m	Model	Horizontal scale	Vertical scale	0,48	Normal	× 1	× 1	1,49	Double-width	× 2	× 1	2,50	Double-height	× 1	× 2	3,51	Quadruple	× 2	× 2
m	Model	Horizontal scale	Vertical scale																		
0,48	Normal	× 1	× 1																		
1,49	Double-width	× 2	× 1																		
2,50	Double-height	× 1	× 2																		
3,51	Quadruple	× 2	× 2																		
Parameter range	<p>XX58:</p> <p><math>0 \leq m \leq 3; 48 \leq m \leq 51</math></p> <p><math>1 \leq xL + xH \times 256 \leq 48</math></p> <p><math>0 \leq yL \leq 255, 0 \leq yH \leq 255</math></p> <p><math>0 \leq d \leq 255</math></p> <p><math>k = (Hl + Hh \times 256) \times (yL + yH \times 256)</math></p> <p>XX80:</p> <p><math>0 \leq m \leq 3; 48 \leq m \leq 51</math></p> <p><math>1 \leq xL + xH \times 256 \leq 72</math></p> <p><math>0 \leq yL \leq 255, 0 \leq yH \leq 255</math></p> <p><math>0 \leq d \leq 255</math></p> <p><math>k = (Hl + Hh \times 256) \times (yL + yH \times 256)</math></p>																				
Default	None																				
Notes	<p>[d] k corresponding bit is 1, which means that this bit can print. While it is 0, it means that this bit can not print.</p> <p>If the horizontal bytes exceed printing area, then the exceeding part will be ignored.</p> <p>The paper feeds accordingly to the image size when this commanding</p>																				

	<p>is using, not influenced by the setting of ESC 2, ESC 3 line space.</p> <p>After this command, the printing coordinates will be reset to the left margin and the image content will be cleared.</p> <p>the relationship between bitmap data and the printing effect is as below:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>d1</td> <td>d2</td> <td>.....</td> <td>dx</td> </tr> <tr> <td>d(x+1)</td> <td>d(x+2)</td> <td>.....</td> <td>d(x+2)</td> </tr> <tr> <td> </td> <td> </td> <td>.....</td> <td> </td> </tr> <tr> <td>.....</td> <td>d(k-2)</td> <td>d(k-1)</td> <td>dk</td> </tr> <tr> <td>MSB</td> <td>LSB</td> <td>MSB</td> <td>LSB</td> </tr> </table> <p>This command has the printing function, data will be transferred while printing, no need to use the printing command again</p>	d1	d2	.....	dx	d(x+1)	d(x+2)	.....	d(x+2)			.....		.....	d(k-2)	d(k-1)	dk	MSB	LSB	MSB	LSB
d1	d2	.....	dx																		
d(x+1)	d(x+2)	.....	d(x+2)																		
		.....																			
.....	d(k-2)	d(k-1)	dk																		
MSB	LSB	MSB	LSB																		
Example	<p>1B 40</p> <p>1d 76 30 00 03 00 09 00</p> <p>FF FF</p> <p>FF FF FF FF FF FF FF</p>																				

### Define downloaded bitmap

Name	Define downloaded bitmap
Code	<p>ASCII : GS * x y d1...d(x*y*8)</p> <p>DEC : 29 42 x y d1 ...d(x*y*8)</p> <p>HEX : 1D 2A x y d1...d(x*y*8)</p>
Function	<p>using x and y to appoint dots to define the downloaded bitmap</p> <p>x appoints that the horizontal dots as 8*x.</p> <p>y appoints that the vertical dots as 8*y.</p>
Parameter range	<p>1 ≤ x ≤ 255</p> <p>1 ≤ y ≤ 48</p> <p>x*y ≤ 1536</p> <p>0 ≤ d ≤ 255</p>
Default	None
Notes	<p>If x*y is out of the specified range, this command will be forbidden.</p> <p>The d indicates bitmap data. Data (d) specifies the printing bit as</p>

1 and the not printing bit as 0.

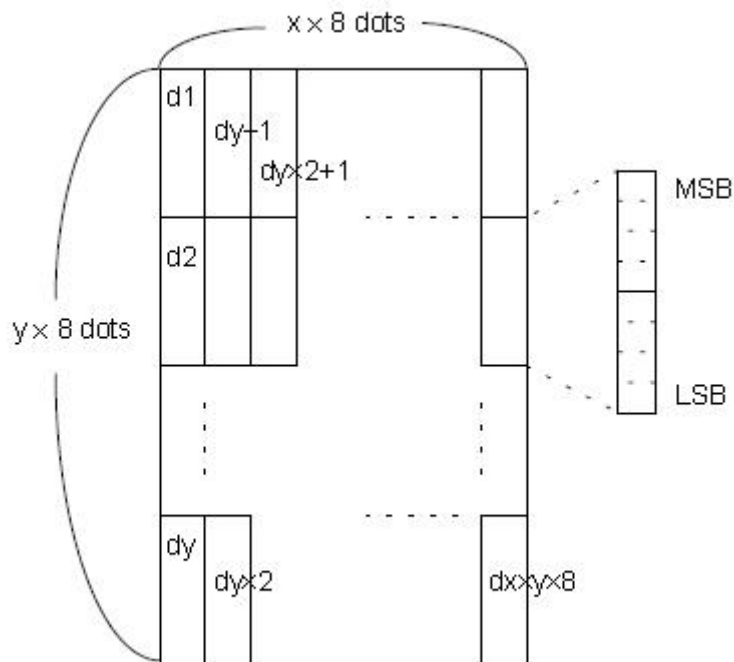
The downloaded bitmap definition will be cleared when:

ESC @ is executed.

ESC & is executed.

Printer is reset or the power is turned off.

The following figure shows the relationship between the downloaded bitmap and the printed data



Example

```

1B 40
1D 2A 03 03
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF
1D 2F 00
    
```

**Print downloaded bitmap**

Name	Print downloaded bitmap
Code	ASCII : GS / m

	DEC : 29 47 m HEX : 1D 2F m										
Function	Prints a downloaded bitmap using the mode specified by m. Using the mode that m appointed to print downloaded bitmap <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>m</th> <th>Model</th> </tr> </thead> <tbody> <tr> <td>0, 48</td> <td>Normal</td> </tr> <tr> <td>1, 49</td> <td>Double-width</td> </tr> <tr> <td>2, 50</td> <td>Double-height</td> </tr> <tr> <td>3, 51</td> <td>Quadruple</td> </tr> </tbody> </table>	m	Model	0, 48	Normal	1, 49	Double-width	2, 50	Double-height	3, 51	Quadruple
m	Model										
0, 48	Normal										
1, 49	Double-width										
2, 50	Double-height										
3, 51	Quadruple										
Parameter range	$0 \leq m \leq 3$ $48 \leq m \leq 51$										
Default	None										
Notes	This command will be ignored if the bitmap data has not been defined. In standard mode, this command is effective only when there is no data in the buffer area. This command has no effect in the print modes (emphasized, double-strike, downloaded line, character size, or white/black reverse printing), except for upsidedown printing mode. If the downloaded bitmap which will be printed exceeds the printing area, then the excess data will not be printed.										
Example	No										

### Define NV bitmap

Name	Define NV bitmap
Code	ASCII : FS q n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n DEC : 28 113 n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n HEX : 1C 71 n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n
Function	Define the NV bitmap using the specified n. n specifies the number of the defined NV bitmap. xL, xH means that the defined NV bitmap specifies the horizontal dots as $(xL+xH*256)*8$ yL, yH means that the defined NV bitmap specifies the vertical dots as



	$(yL + yH \times 256) \times 8$
Parameter range	$1 \leq n \leq 255$ $0 \leq xL \leq 255$ $0 \leq xH \leq 3$ $(1 \leq (xL + xH \times 256) \leq 1023)$ $0 \leq yL \leq 255$ $0 \leq yH \leq 1$ $(1 \leq (yL + yH \times 256) \leq 288)$ $0 \leq d \leq 255$ $k = (xL + xH \times 256) \times (yL + yH \times 256) \times 8$ Totalled the defined data Area = 64 k bytes
Default	None
Support Model	All
Notes	<p>Frequent writing command executions may damage the NV memory. Therefore, it is recommended to write the NV memory no more than 10 times per day.</p> <p>The printer performs a hardware reset operation after the procedure of placing the image into the NV memory. Therefore, user-defined characters, downloaded bitmaps should be defined only after completing this command. The printer clears the receiving and printing buffers and resets the printer to the mode that workable when power on. (hardware reset interface is not supported)</p> <p>This command cancels all NV bitmaps that have already been defined by this command.</p> <p>From the beginning of the processing of this command till the accomplishment of hardware reset, mechanical operations (including initializing the position of the print head when the cover is open, paper feeding using the FEED button, etc.) cannot be performed.</p> <p>During this command processing, the printer is busy and stops receiving data when writing data to the user's NV memory. Therefore, data transmission, including real-time commands, is prohibited during the execution of this command.</p> <p>NV bitmap is a bitmap defined in non-volatile memory, Define FS p printing with FS q.</p> <p>In standard mode, this command is valid only when processed at</p>

the beginning of the line.

This command is valid when 7 bytes <FS yH> of the command are processed normally.

When the data volume exceeds the left capacity of the range defined by xL, xH, yL, and yH, the printer will process the range defined by xL, xH, yL, and yH outside the defined range.

In the first group of NV bitmaps, when any one of xL, xH, yL, yH is out of the definition range, this command is disabled.

In groups of NV bitmaps other than the first group, when xL, xH, yL, yH out of the defined range, it stops processing this command and starts writing into the NV images. At this time, NV bitmaps that haven't been defined are disabled (undefined), but any NV bitmaps before that are enabled.

The d indicates the definition data. In data (d) a 1 bit specifies a dot to be printed and a 0 bit specifies a dot not to be printed.

This command defines n as the number of a NV bitmap. Numbers rise in order from NV bitmap 01H. Therefore, the first data group [xL xH yL yH d1...dk] is NV bitmap 01H, and the last data group [xL xH yL yH d1...dk] is NV bitmap n. The total agrees with the number of NV bitmaps specified by the command FS p.

The definition data for an NV bitmap consists of [xL xH yL yH d1...dk]. Therefore, when only one NV bitmap is defined n=1, the printer processes a data group [xL xH yL yH d1...dk] once. The printer uses [(data: (xL xH × 256) × (yL yH × 256) × 8) [header :4)] bytes of NV memory.

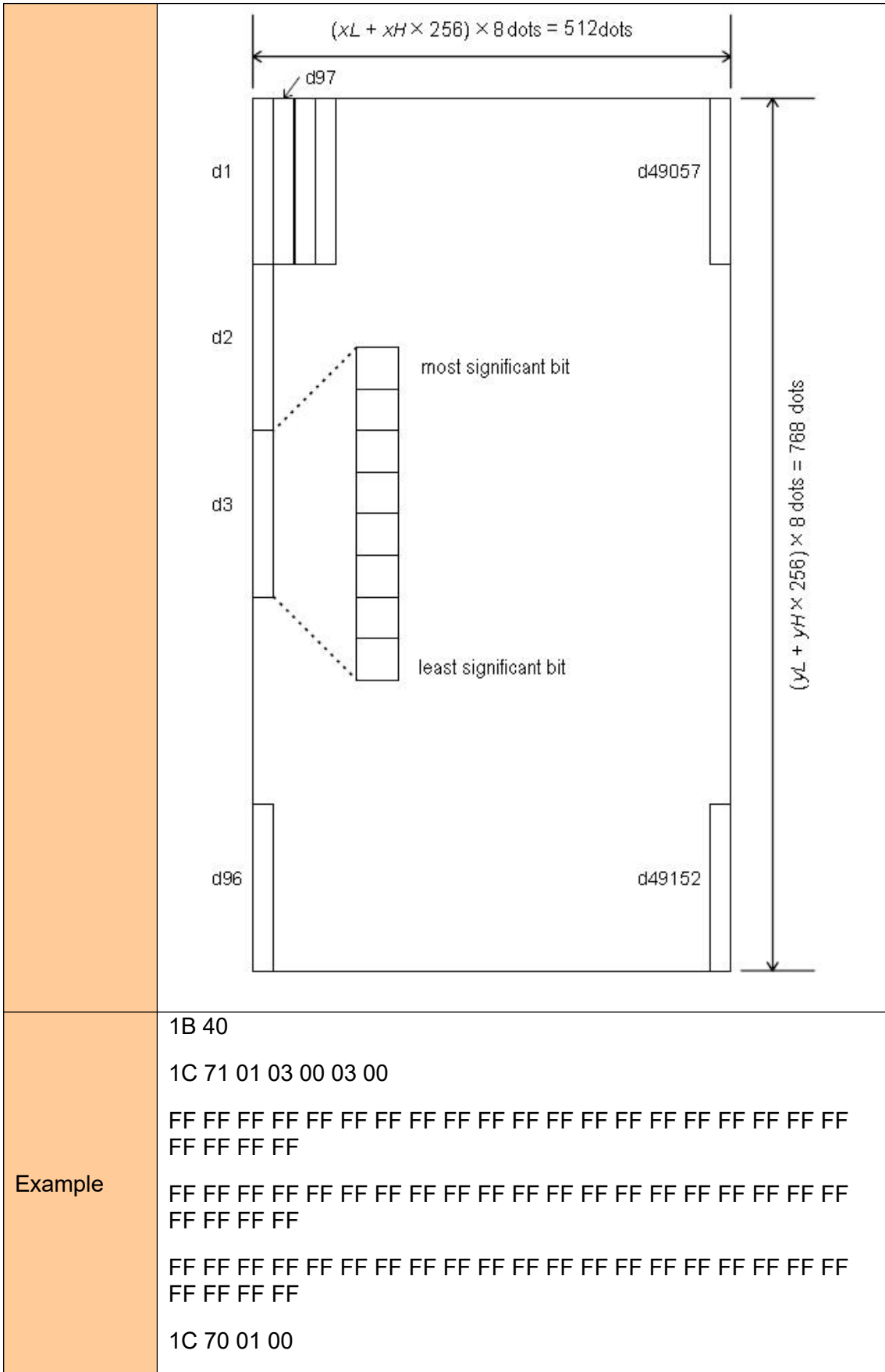
The definition area in this printer is a maximum of 192K bytes. This command can define several NV bitmaps, but cannot define bitmap data whose total capacity [bitmap data header] exceeds 192K bytes.

The printer does not transmit ASB status or perform status detection during processing of this command even when ASB is specified.

Once an NV bitmap is defined, it is not erased by performing ESC @, reset, and power off.

This command performs only definition of an NV bitmap and does not perform printing. Printing of the NV bitmap is performed by the FS p command.

Diagram: when xL = 64, xH = 0, yL = 96, yH = 0



Example

```

1B 40
1C 71 01 03 00 03 00
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
FF FF FF FF
1C 70 01 00
    
```

**Print NV bitmap**

Name	Print NV bitmap										
Code	ASCII : FS p n m DEC : 28 112 n m HEX : 1C 70 n m										
Function	Print NV bitmap n using the mode specified by m. <table border="1" data-bbox="461 542 828 994"> <thead> <tr> <th>m</th> <th>Mode</th> </tr> </thead> <tbody> <tr> <td>0, 48</td> <td>Normal</td> </tr> <tr> <td>1, 49</td> <td>Double-width</td> </tr> <tr> <td>2, 50</td> <td>Double-height</td> </tr> <tr> <td>3, 51</td> <td>Quadruple</td> </tr> </tbody> </table>	m	Mode	0, 48	Normal	1, 49	Double-width	2, 50	Double-height	3, 51	Quadruple
m	Mode										
0, 48	Normal										
1, 49	Double-width										
2, 50	Double-height										
3, 51	Quadruple										
Parameter range	$0 \leq m \leq 3$ $48 \leq m \leq 51$ $1 \leq n \leq 255$										
Default	None										
Support	All										
Notes	<p>n is the number of the NV bitmap (defined using the FS q command).</p> <p>m specifies the bitmap mode.</p> <p>NV bitmap is a bitmap defined in non-volatile memory by FS q and printed by FS p.</p> <p>This command is not effective when the specified NV bitmap has not been defined.</p> <p>In standard mode, this command is effective only when there is no data in the print buffer.</p> <p>This command is not affected by print modes (Bold printing, overlapping, underline, character size, white/black reverse printing, or 90°rotated characters, etc.), except upside-down printing mode.</p> <p>If the downloaded bit-image to be printed exceeds one line, the excess data is not printed.</p>										

	<p>This command feeds dots (for the height n of the NV bitmap) in normal and double-width modes, and (for the height n = 2 of the NV bitmap) in doubleheight and quadruple modes, regardless of the line space specified by ESC 2 or ESC 3.</p> <p>After printing the bitmap, this command sets the print position to the beginning of the line and processes the data that follows as normal data.</p>
Example	None

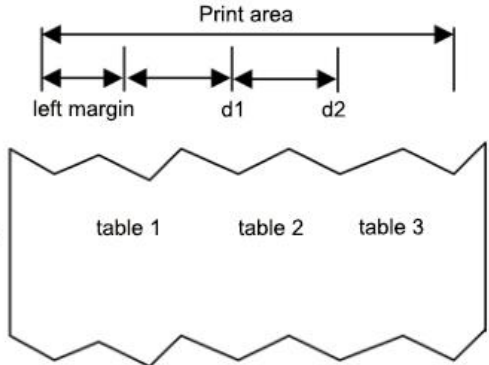
## 4.2.4 Tab Commands

### Horizontal tab

Name	Horizontal tab
Code	ASCII : HT DEC : 9 HEX : 09
FUNCTION	Move the print position to the next tab position
Parameter range	None
Defaults	None
Notes	Tab position set by ESC D If the tab position is not set(the default is no horizontal position),this command will be treated as an LF command If the tab position exceeds the print area,the coordinates will move to the star position of the next line(as the data is full,print and wrap)
Example	none

### Horizontal tab position setting

Name	horizontal tab position setting
Code	ASCII : ESC D [d]k NUL DEC : 27 68 [d]k 0 HEX : 1B 44 [d]k 00
Function	Set horizontal tab position, parameter meaning as below: d1 ... dk: horizontal position,in 8 as unit,null as the terminator

Parameter range	XX58: $1 \leq d \leq 46$ ( $d_1 < d_2 < \dots < d_k$ , $1 \leq k \leq 16$ ) XX80: $1 \leq d \leq 70$ ( $d_1 < d_2 < \dots < d_k$ , $1 \leq k \leq 16$ )
Defaults	The default positioning position is the 8-character interval(Column 9 17 25...) of the font A(12-24)
Support model	All
Notes	<p>Tab position as below:</p>  <p>TAB position d1 and d2 setting</p> <p>Maximum support for the setting of 16 tab position</p> <p>Using this command,the setting of previous tab position will be canceled k is for indication purpose,no transmission</p> <p>When transport [d]k,and come across NULL,should be considered over</p> <p>If dk less than or equal to dk-1,should be considered over,and balance data is treated as normal data processing</p> <p>TAB position could be changed by HT command</p> <p>When the left margin changes, the TAB position changes simultaneously</p> <p>The command setting will be valid after ESC @、 printer reset、 power off</p>
Example	1B 44 04 06 08 0A 00 09 30 09 31 09 32 09 33 0D 0A



### 4.2.5One-dimension bar code command

#### 1D bar code readable character(HRI) print position setting

Name	1D bar code readable character(HRI)print position setting
------	---


Code	ASCII : GS H n DEC : 29 72 n HEX : 1D 48 n
Function	Set 1D bar code readable character(HRI)print position,n parameter meaning as below: n print position 0, 48 don't print 1, 49 above the bar code 2, 50 below the bar code 3, 51 above and below the bar code
Parameter range	$0 \leq n \leq 3$ or $48 \leq n \leq 51$
Defaults	n = 0
Notes	The command setting will be valid after ESC @、 printer reset、 power off
Example	None

### 1D bar code height setting

Name	1D bar code height setting
Code	ASCII : GS h n DEC : 29 104 n DEX : 1D 68 n
Function	Parameter n specifies the height of a bar code in dots: <div style="text-align: center;">  <span style="margin-left: 20px;">Height 50</span> </div> <div style="text-align: center; margin-top: 20px;">  <span style="margin-left: 20px;">Height 100</span> </div>
Parameter range	$1 \leq n \leq 255$
Defaults	n = 64
Notes	The command setting will be valid after ESC @、 printer reset、 power

	off
Example	None

### 1D bar code width setting

Name	1D bar code width setting
Code	ASCII : GS w n DEC : 29 119 n HEX : 1D 77 n
Function	Parameter n specifies the unit of a bar code in dots: 
Parameter range	$1 \leq n \leq 6$
Defaults	$n = 2$
Noted	The command setting will be valid after ESC @、 printer reset、 power off
Example	None

### 1D bar code printing

Name	1D bar code printing
Code	<b>(A)</b> ASCII : GS k m [d]k NUL DEC : 29 107 m [d]k NUL Hex : 1D 6B m [d]k NUL <b>(B)</b> ASCII : GS k m n [d]k DEC : 29 107 m n [d]k Hex : 1D 6B m n [d]k
Function	1D bar code printing,the parameters meaning as below: m is encoding



n is code data length, only for (command B), the difference between (A) and (B) is that the data (A) end with NULL, but (B) indicates the data length

[d]k is bar code data

K is the length of the bar code data, for sign, no transmission

Parameters relationship as below:

**(Command A)**

m	Coding system	Bar code length (SP show space)			
		Data length	k	Character set	Data (d)
0	UPC-A	fixed	k = 11, 12	0~9	48≤d≤57
1	UPC-E	fixed	6≤k≤8, k = 11, 12	0~9	48≤d≤57 [when k = 7, 8, 11, 12, d1 = 48]
2	JAN13 (EAN13)	fixed	k = 12, 13	0~9	48≤d≤57
3	JAN8 (EAN8)	fixed	k = 7, 8	0~9	48≤d≤57
4	CODE39	changeable	1≤k	0~9, A~Z SP, \$, %, *, +, -, ., /	48≤d≤57, 65≤d≤90, d = 32, 36, 37, 42, 43, 45, 46, 47
5	ITF (Interleaved 2 of 5)	changeable	2≤k≤255 (even numbers)	0~9	48≤d≤57
6	CODABAR (NW-7)	changeable	1≤k	0~9, A~D, a~d \$, +, -, ., /, :	48≤d≤57, 65≤d≤68, 97≤d≤100, d = 36, 43, 45, 46, 47,

					58 (65≤d1≤68, 65≤dk≤68, 97≤d1≤100, 97≤dk≤100)
<b>(Command B)</b>					
m	Coding system	Bar code length (SP show space)			
		Data length	n	Character set	Data (d)
65	UPC-A	fixed	n = 11, 12	0~9	48≤d≤57
66	UPC-E	fixed	6≤n≤8, n = 11, 12	0~9	48≤d≤57 [when n = 7,8,11,12, d1 = 48]
67	JAN13 (EAN13)	fixed	n = 12, 13	0~9	48≤d≤57
68	JAN8 (EAN8)	fixed	n = 7, 8	0~9	48≤d≤57
69	CODE39	changeable	1≤n	0~9, A~Z SP, \$, %, *, +, -, ., /	48≤d≤57, 65≤d≤90, d = 32, 36, 37, 42, 43, 45, 46, 47
70	ITF (Interleaved 2 of 5)	changeable	2≤n≤255 (even numbers)	0~9	48≤d≤57
71	CODABAR	change	1≤n	0~9, A~D, a~d	48≤d≤57,

		(NW-7)	able		\$, +, -, .., /, :	65≤d≤68, 97≤d≤100, d = 36, 43, 45, 46, 47, 58 (65≤d1≤68, 65≤dk≤68, 97≤d1≤100, 97≤dk≤100)
	72	CODE9 3	cha nge able	1≤n≤255	00H~7FH	0≤d≤127
	73	CODE1 28	cha nge able	1≤n≤255	00H~7FH C1H~C4H(FN C)	0≤d≤127 d = 193, 194,195,196
	74	UCC/E AN128	cha nge able	1≤n≤255	00H~7FH C1H~C4H(FN C)	0≤d≤127 d = 193, 194,195,196
Parameter range	(A) 0 ≤ m ≤ 6 (B) 65 ≤ m ≤ 74					
Defaults	None					
Notes	<p>If the bar code width exceed the printable area,the printer does not perform barcode printing</p> <p>Paper feed as needed when the command is carried out,that not affected by ESC2,ESC3 line space settings,and do not influence line space settings The command is not affected by ESC ! character style setting</p> <p>The print position is resorted to the print start location after the command is executed</p> <p>m parameter 0 ~ 6(A) and 65 ~ 71(B) select the same coding system,the same printing effect</p> <p>m parameter is 0 ~ 6(A),barcode data end with NULL</p> <p>m parameter is 65 ~ 74(B),barcode data n stand for data length</p> <p>K is for sign,no transmission</p> <p>When print UPCA (m = 0 or 65) ,Please pay attention for the</p>					

following points:

Whatever the input data length is 11 or 12,the check bit is automatically inserted or corrected

Initial character,central split character,and terminator are inserted automatically

When print UPCE ( m = 1 or 66 ) ,Please pay attention as following:

The system character (NSC) 0 will be inserted automatically when data

length is 6

The first system character (NSC) d1 must be 0 when the data length is 7,8,11 and 12.

Whatever the data length is 6,7,8,11 and 12,the check bit inserted or corrected automatically

Whatever the input data length is 6,7,8,11,and 12,the barcode readable character(HRI) just show 6 as data,but excluded system character (NSC) and check code;

The transition relation between transmission and printing data as below:

Transmitted data										Printed data					
d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d1	d2	d3	d4	d5	d6
0~9	0~9	0	0	0	-	-	0~9	0~9	0~9	d2	d3	d9	d10	d11	0
0~9	0~9	1	0	0	-	-	0~9	0~9	0~9	d2	d3	d9	d10	d11	1
0~9	0~9	2	0	0	-	-	0~9	0~9	0~9	d2	d3	d9	d10	d11	2
0~9	0~9	3~9	0	0	-	-	-	0~9	0~9	d2	d3	d4	d10	d11	3
0~9	0~9	0~9	1~9	0	-	-	-	0~9	-	d2	d3	d4	d5	d11	4
0~9	0~9	0~9	0~9	1~9	-	-	-	-	5~9	d2	d3	d4	d5	d6	d11

When d6 is 1~9,be sure d7,d8,d9,d10 are 0,and d11 is 5~9

Initial character,terminator automatically inserted

When print EAN13(m = 2 or 67),Please pay attention as following:

Whatever the input data length is 12 or 13,check bit is automatically inserted or corrected

Initial character,central split character and terminator inserted automatically

When print EAN8(m = 3 or 68),please pay attention as following:

Whatever input data length is 7 or 8,the check bit is automatically

inserted or corrected

Initial character, central split character and terminator inserted automatically

When print CODE39(m = 4 or 69), please pay attention as following:

When d1 or dn are not Initial character/terminator "\*", encoder is automatically inserted "\*"

When middle of the data encounter "\*", the encoder regard it as terminator, the other data as the normal data;

The check bit could not calculate and add automatically

When print ITF25(m = 5 or 70), please pay attention as following:

Initial character and terminator inserted automatically

The check bit could not calculate and add automatically

When print CODABAR (NW-7) (m = 6 or 71), please pay attention as following:

Initial character and terminator could not inserted automatically, but manual addition by user, that the range from "A"~"D" or "a"~"d"

Check bit could not calculate and add automatically

When print CODE93(m = 72), please pay attention as following:

Initial character and terminator inserted automatically

The two check code are automatically calculated and then inserted

When barcode readable character(HRI) is set to print, there is no HRI character which indicating start/end

When barcode readable character(HRI) is set to print, the control character will be replaced with space

When print CODE128(m = 73), please pay attention as following:

The encoding system intelligently identifies data and implements minimum length encoding without the user set character (include starting character set) or switch character

Function character FNC1~FNC4 use C1H~C4H and input it

The check bit could calculate and add automatically

When barcode readable character(HRI) is set to print, the control character and FNC1~FNC4 will be replaced with space

	When print EAN128(m = 74),please pay attention as following: Basic construction as below:												
	Initial character set		FNC1		AI		Data part		Check bit A		Check bit B		Terminator
	Inserted automatically			(d1...dk)						Inserted automatically			
	Connection structure as below:												
	Initial character set	FNC1	AI	Data part	Check bit A	FNC1	AI	Data part	Check bit A	Check bit B	Terminator		
Inserted automatically		(d1...dk)								Inserted automatically			
The encoding system intelligently identifies data and implements minimum length encoding without the user set character (include starting character set) or switch character Function character FNC1~FNC4 use C1H~C4H and input it User input data AI,which do not need "("" for indication,encoding system inserted automatically,otherwise it will be wrong.For example,GS k 74 18 "019501234567890*", 01 is AI,the following will be wrong:GS k 74 18 "(01)9501234567890*"													
When user use the connection structure,need to insert FNC1(C1H"Decimal=193") in the middle.The input example as following: GS k 74 18 "019501234567890*" 193 "029501234567890*"													
When barcode readable character(HRI) is set to print,the control character will be replaced with space,then cancel FNC1~FNC4													
Example	1b 40 1d 48 02												
	1d 6b 41 0c 31 32 33 34 35 36 37 38 39 30 31 32												
	1d 6b 42 0c 30 32 33 34 35 36 30 30 30 30 38 39												
	1d 6b 43 0c 30 32 33 34 35 36 30 30 30 30 38 39												
	1d 6b 44 08 30 32 33 34 35 36 30 30												
	1d 6b 45 08 30 32 33 34 35 36 30 30												

	1d 6b 46 08 30 32 33 34 35 36 30 30
	1d 6b 47 08 41 32 33 34 35 36 30 41
	1d 6b 48 08 41 30 32 33 34 35 36 41
	1d 6b 49 08 41 30 32 33 34 35 36 41

## 4.2.6 Two-dimensional bar code commands

### Mode type of QR code

Name	Mode type of QR code
Code	ASCII : GS ( k pL pH cn fn n Decimal : 29 40 107 pL pH cn fn n Hexadecimal : 1D 28 6b pL pH cn fn n
Function	Setting mode type of QR code
Parameter range	pL=3, pH=0 cn=49 fn=67 $0 \leq n \leq 16$
Default	n=3
Notes	Setting mode type of QR code to [n dot × n dot].
Example	None

### Setting error correction level of QR code

Name	Setting error correction level of QR code
Code	ASCII : GS ( k pL pH cn fn n DEC : 29 40 107 pL pH cn fn n HEX : 1D 28 6b pL pH cn fn n
Function	Setting error correction level of QR code
Parameter range	pL=3, pH=0 cn=49 fn=69 $48 \leq n \leq 51$

Default	n=48															
Notes	Setting error correction level of QR code															
	<table border="1"> <thead> <tr> <th>n</th> <th>Function</th> <th>Approximate Amount of correction</th> </tr> </thead> <tbody> <tr> <td>4 8</td> <td>Error correction level (L)</td> <td>7%</td> </tr> <tr> <td>4 9</td> <td>Error correction level (M)</td> <td>15%</td> </tr> <tr> <td>5 0</td> <td>Error correction level(Q)</td> <td>25%</td> </tr> <tr> <td>5 1</td> <td>Error correction level (H)</td> <td>30%</td> </tr> </tbody> </table>	n	Function	Approximate Amount of correction	4 8	Error correction level (L)	7%	4 9	Error correction level (M)	15%	5 0	Error correction level(Q)	25%	5 1	Error correction level (H)	30%
	n	Function	Approximate Amount of correction													
	4 8	Error correction level (L)	7%													
	4 9	Error correction level (M)	15%													
5 0	Error correction level(Q)	25%														
5 1	Error correction level (H)	30%														
Example	None															

### Store QR code data to QR code data buffer

Name	Store QR code data to QR code data buffer
Code	ASCII : GS ( k pL pH cn fn m d1...dk DEC : 29 40 107 pL pH cn fn m d1...dk HEX : 1D 28 6b pL pH cn fn m d1...dk
Function	Store QR code data to QR code data buffer
Parameter range	$4 \leq (pL + pH \times 256) \leq 7092$ ( $0 \leq pL \leq 255, 0 \leq pH \leq 28$ ) cn=49 fn=80 m=48 $0 \leq d \leq 255$ $k = (pL + pH \times 256) - 3$
Default	No
Notes	Store two-dimensional code data (d1...dk) to data buffer. ((pL + pH×256) - 3) bytes is processed as a graphic data after the m



	(d1... dk).
Example	None

### Printing QR code

Name	Printing QR code
Code	ASCII : GS ( k pL pH cn fn m DEC : 29 40 107 pL pH cn fn m HEX : 1D 28 6b pL pH cn fn m
Function	Printing QR code
Parameter range	pL=3, pH=0 cn=49 fn=81 m=48
Default	None
Notes	Printing QR code. Users must consider QR code graph space. (The space of up and down, left and right of QR code graph is specified in the specification.)
Example	1b 40 1d 28 6b 03 00 31 43 03 1d 28 6b 03 00 31 45 30 1d 28 6b 06 00 31 50 30 41 42 43 1b 61 01 1d 28 6b 03 00 31 52 30 1d 28 6b 03 00 31 51 30

### Setting QR code graph information

Name	Setting QR code graph information
Code	ASCII : GS ( k pL pH cn fn m DEC : 29 40 107 pL pH cn fn m HEX : 1D 28 6b pL pH cn fn m

Function	Setting QR code graph information			
	The detailed graph information is as follows:			
	Transmit data	Hexadecimal	Decimal	Data type
	Header	37H	55	1byte
	Flag	36H	54	1byte
	Width	30H-39H	48-57	1-5byte
	Separator	1FH	31	1byte
	Height	30H-39H	48-57	1-5byte
	Separator	1FH	31	1byte
	Fixed Value	31H	49	1byte
	Separator	1FH	31	1byte
Other Information	30H or 31H	48 or 49	1byte	
NUL	00H	0	1byte	
	L and H data transmit graph: use dot for unit.			
	Other information data transmit:			
	“Hexadecimal=30H/Decimal=48”: Data is not printed.			
	“Hexadecimal=31H/Decimal=49”: Data is not printed.			
Parameter range	pL=3, pH=0 cn=49 fn=82 m=48			
Default	None			
Notes	This command do not print QR code graph. Users must consider QR code graph space. (The space of up and down, left and right of QR code graph is specified in the specification.)			

Example	None
---------	------

### Printing two dimensional code

Name	Printing two dimensional code
Code	ASCII : GS k m v r nL nH d1...dk DEC : 29 107 97 v r nL nH d1...dk HEX : 1D 6B 61 v r nL nH d1...dk
Function	Printing two dimensional code. v: describes two dimensional code specification v=0: describes automatically select two dimensional code specification r: describes error correction rank nL nH: describes data length d1...dk: describes two dimensional code to be printed
Parameter range	$0 \leq v \leq 17$ $1 \leq r \leq 4$ $k = nL + 256 * nH$
Default	None
Notes	Printing QR code.
Example	1b 40 1D 6B 61 08 02 08 00 30 31 32 33 34 35 36 37

### 4.2.7 Printing double QR code

Name	Printing double QR code
Code	ASCII : US Q m n p1H p1L l1H l1L ecc1 v1 d1...dn p2H p2L l2H l2L ecc2 v2 dk...dm DEC : 27 81 m n p1H p1L l1H l1L ecc1 v1 d1...dn p2H p2L l2H l2L ecc2 v2 dk...dm HEX : 1F 51 m n p1H p1L l1H l1L ecc1 v1 d1...dn p2H p2L l2H l2L ecc2 v2 dk...dm

Function	Printing double QR code
Range	<p>QR code numbers: 0&lt;m&gt;3</p> <p>QR code size: n(1~8)</p> <p>P1H,p1L specify the location of QR1: (p1H*256+p1L)</p> <p>L1H,l1L specify the data length of QR1: (l1H*256+l1L)</p> <p>Ecc1 specify error correction level about QR1: (0:7%, 1:15%,2:25%,3:30%)</p> <p>V1 specify QR1 version of the symbol.(1~40, 0:auto size)</p> <p>D1...d2 as the data of QR1;</p> <p>P2H,p2L specify the location of QR2: (p2H*256+p2L)</p> <p>L2H,l2L specify the data length of QR2: (l2H*256+l2L)</p> <p>Ecc2 specify error correction level about QR2: (0:7%, 1:15%,2:25%,3:30%)</p> <p>V2 specify QR2 version of the symbol.(1~40, 0:auto size)</p> <p>Dk...dm as the data of QR2</p>
Default	None
Notes	If module size is bigger than printing width, the QR data will be treated as normal data
Example	<p>To Print string "0123456789" in QR Code at position 32 with ecc 1 and Print string "987654321" in QR Code at position 192 with ecc 2, and module size 3, you should send command as follow.</p> <pre>1f 51 02 03 00 20 00 0a 01 06 30 31 32 33 34 35 36 37 38 39 00 C0 00 0a 02 00 39 38 37 36 35 34 33 32 31 30</pre>

## 4.2.7 Status querying Commands

### Real-time transmission status

Name	Real-time transmission status
Code	<p>ASCII : DLE EOT n</p> <p>DEC : 16 4 n</p> <p>HEX : 10 04 n</p>

Function	<p>According to below parameters, transit the real-time status of printer,n stands for printer status:</p> <p>N=1:transmit printer status</p> <p>N=2:transmit off-line status</p> <p>N=3:transmit error status</p> <p>N=4:transmit paper sensor status</p>																				
Range	$1 \leq n \leq 4$																				
Default	None																				
Support	All																				
Notes	<ul style="list-style-type: none"> <li>•Printer return to the relative status immediately after receiving the command</li> <li>• this command try not to put in command list between 2 or more bite .</li> </ul> <p>Though printer being forbid by ESC=,this command still effective.</p> <p>Printer transmit current situation ,each situation show by 1 bite data.</p> <p>It is not sure host computer will receive printer transmit situation.</p> <p>Printer executed immediately after received the command.</p> <p>The command only effective for serial printer.Printer start to work immediately after receiving this command at any situation.</p> <p>n=1: printer status</p> <table border="1" data-bbox="453 1615 1359 2000"> <thead> <tr> <th>Bit</th> <th>0/1</th> <th>Hexadecimal</th> <th>decimalis m</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>00</td> <td>0</td> <td>Fixed to be 0</td> </tr> <tr> <td>1</td> <td>1</td> <td>02</td> <td>2</td> <td>Fixed to be 1</td> </tr> <tr> <td>2</td> <td>0</td> <td>00</td> <td>0</td> <td>Two drawers kick(no drawer,</td> </tr> </tbody> </table>	Bit	0/1	Hexadecimal	decimalis m	Function	0	0	00	0	Fixed to be 0	1	1	02	2	Fixed to be 1	2	0	00	0	Two drawers kick(no drawer,
Bit	0/1	Hexadecimal	decimalis m	Function																	
0	0	00	0	Fixed to be 0																	
1	1	02	2	Fixed to be 1																	
2	0	00	0	Two drawers kick(no drawer,																	

				fixed to be 0)
	1	04	4	Turn off two cashbox
3	0	00	0	On-line
	1	08	8	Off-line
4	1	10	16	Fixed to be 1
5, 6		--	--	undefined
7	0	00	00	The paper has been torn away
	1	80	96	The paper hasn't been torn away
n=2: transit off-line status				
bite	0 / 1	Hexadecim al	decimalism	Function
0	0	00	0	Fixed to be 0
1	1	02	2	Fixed to be 1
2	0	00	0	Turn off upper cover
	1	04	4	Open upper cover
3	0	00	0	Not press feed key
	1	08	8	press feed key
4	1	10	16	Fixed to be 1
5	0	00	0	Paper adequate

	1	20	32	Paper shortage
6	0	00	00	No error
	1	40	64	Error
7	0	00	0	Fixed to be 0

n=3: transmit error status

bite	0 / 1	Hexadecim al	decimalis m	Function
0	0	00	0	Fixed to be 0
1	1	02	2	Fixed to be 1
2		--	--	Undefined
3	0	00	0	No cutter error
	1	08	8	Cutter error
4	1	10	16	Fixed to be 1
5	0	00	0	No unrecoverable error
	1	20	32	Unrecoverableerroe
6	0	00	00	Printer head tempand voltage are normal
	1	40	64	Printer head temp.and voltage are exceed
7	0	00	0	Fexed to be 0

Unrecoverable error: abnormal input voltage

	<p>Automatic recovery error: refers to the printing head overheating error. When the printing head overheating error occurs, wait for a period of time. When the printing head temperature drops, the error will be automatically recovered.</p> <p>n=4: paper sensor status</p> <table border="1"> <thead> <tr> <th>bite</th> <th>0 / 1</th> <th>Hexadecim al</th> <th>decimalis m</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>00</td> <td>0</td> <td>Fixed to be 0</td> </tr> <tr> <td>1</td> <td>1</td> <td>02</td> <td>2</td> <td>Fixed to be 1</td> </tr> <tr> <td rowspan="2">2, 3</td> <td>0</td> <td>00</td> <td>0</td> <td>Paper</td> </tr> <tr> <td>1</td> <td>0C</td> <td>12</td> <td>Paper near-end</td> </tr> <tr> <td>4</td> <td>1</td> <td>10</td> <td>16</td> <td>Fixed to be 1</td> </tr> <tr> <td rowspan="2">5, 6</td> <td>0</td> <td>00</td> <td>0</td> <td>Paper</td> </tr> <tr> <td>1</td> <td>60</td> <td>96</td> <td>Paper end</td> </tr> <tr> <td>7</td> <td>0</td> <td>00</td> <td>0</td> <td>Fixed to be 0</td> </tr> </tbody> </table>	bite	0 / 1	Hexadecim al	decimalis m	Function	0	0	00	0	Fixed to be 0	1	1	02	2	Fixed to be 1	2, 3	0	00	0	Paper	1	0C	12	Paper near-end	4	1	10	16	Fixed to be 1	5, 6	0	00	0	Paper	1	60	96	Paper end	7	0	00	0	Fixed to be 0
bite	0 / 1	Hexadecim al	decimalis m	Function																																								
0	0	00	0	Fixed to be 0																																								
1	1	02	2	Fixed to be 1																																								
2, 3	0	00	0	Paper																																								
	1	0C	12	Paper near-end																																								
4	1	10	16	Fixed to be 1																																								
5, 6	0	00	0	Paper																																								
	1	60	96	Paper end																																								
7	0	00	0	Fixed to be 0																																								
Example	<p>10 04 01</p> <p>10 04 02</p> <p>10 04 03</p> <p>10 04 04</p>																																											

### 4.2.8 Other commands



## Printer reset

Name	Printer reset
Code	ASCII : ESC @ Decimal : 27 64 Hex : 1B 40
Function	The ESC @ command initializes the printer as following: This command prints the data contained in the print buffer, and initializes various setup items. Restore default values for each parameter
Range	None
Default value	None
Notes	None
Example	None

## Choose cut mode and cut

Name	Choose cut mode and cut						
Code	① ASCII : GS V m Decimal : 29 86 m Hex : 1D 56 m ② ASCII : GS V m n Decimal : 29 86 m n Hex : 1D 56 m n						
Function	This command executes paper cutting The relationship between parameter m and the cut mode is as follows: <table border="1" data-bbox="437 1843 1353 2020"> <thead> <tr> <th>M</th> <th>Mode</th> </tr> </thead> <tbody> <tr> <td>0, 48</td> <td>Full cut</td> </tr> <tr> <td>1, 49</td> <td>Partial cut</td> </tr> </tbody> </table>	M	Mode	0, 48	Full cut	1, 49	Partial cut
M	Mode						
0, 48	Full cut						
1, 49	Partial cut						

	65,66	Feed paper and cut
Range	① m = 0, 48, 1, 49 ② m = 66, 0 ≤ n ≤ 255	
Default value	None	
Notes	This command is valid only at the beginning of the line <ul style="list-style-type: none"> <li>• m = 0, 48, 1, 49, Printer cut paper directly.</li> <li>• m = 65,66, Feeds paper to[ The distance between the print position and the cutter + n × (vertical motion unit) ]and cuts the paper</li> <li>• Moving units horizontally and vertically are set by the GS p command</li> <li>• The feed volume is calculated by moving units vertically.</li> </ul>	
Example	1B 40 30 30 30 0D 0A 1D 56 00 30 30 30 0D 0A 1D 56 01 30 30 30 0D 0A 1D 56 42 00	
Name	paper cut	

### Full cut (OnlyForCut)

Name	Full cut
Code	ASCII : ESC i Decimal : 27 105 Hex : 1B 69
Function	Full cut mode
Range	None
Default value	None
Notes	None
Example	1B 40

	30 30 30 0D 0A 1B 69
Name	Full cut

### Partial (OnlyForCut)

Name	Partial cut
Code	ASCII : ESC m Decimal : 27 109 Hex : 1B 6D
Function	Partial cut mode
Range	None
Default value	None
Notes	None
Example	1B 40 30 30 30 0D 0A 1B 6D
Name	Partial cut

## Appendix

### A. Paper roll near-end sensor adjustment

1.Adjust sensor position,you can define the level of paper near-end



Paper near  
end sensor