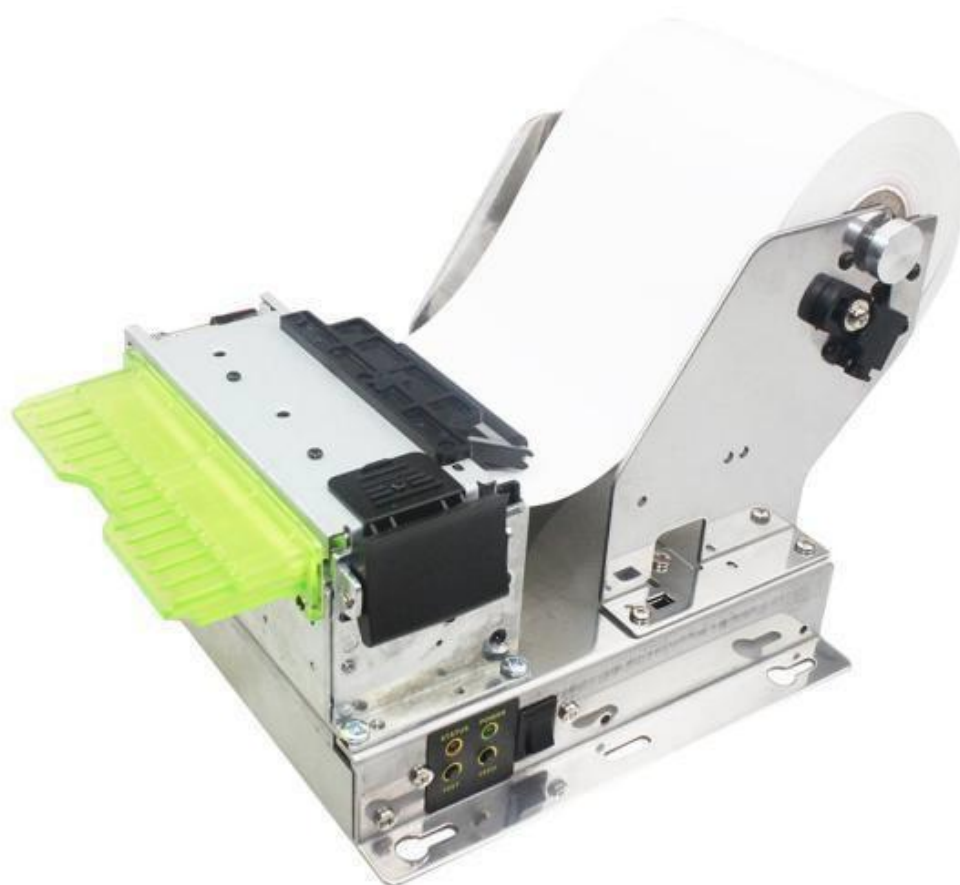


# HS-QR32-H Printer User manual

## V1.0



### Revised records

No.	Date	Modify the content	Change the Page number	Draw up	Review

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## 1.Overview

HS-QR32-h is 3inch kiosk thermal printer which is consist of thermal printer head ,cutter and control board. It is used for financial self-service terminals, communication self-service terminals, coupons self-service terminals, ticketing self-service terminals, power self-service terminals, medical self-service terminals, insurance self-service terminals,tax kiosks, self-service terminals such as kiosk terminal equipment, tanker, Queuing machines and so on.

## 2.Production featurer

### 1.large motor design and unique buffer

Stepper motor design, cutting paper thickness up to 0.2mm, support 150mm paper roll diameter, reduce supplies replacement times, and buffer device can effectively prevent printing compression.

### 2.Narrow-flat design of paper-taking channel

Paper channel narrow flat design can print 0.2mm thickness of consumables.

### 3.Fast Print speed

Depending on the different driving energy and thermal sensitivity of the use of the heat-sensitive paper can be set according to user requirements of different printing speed, up to 250mm/seconds of printing speed

### 4.Easy to load paper structure

Unique rubber roller and print head slide away from the design scheme, it is easy to clean the print head and fault removal

### 5.Penetrating photoelectric detection

Penetrating photoelectric detection can be used for label seam mark Detection

### 6.Quick Elimination Card Cutter

A variety modes of Quick Elimination Card knife

### 7.unique paper near end detection

Easy to adjust the amount of paper

### 8.Strong overall structure

With thick sheet metal design, the structure is firm and difficult to deform

### 9.Good heat dissipation of the motor

Fixed motor is metal, can quickly heat dissipation

### 3. Technical parameters

Printing	Print method	Thermal-line dot method
	Print speed	Max:250mm/s
	Resolution	203dpi (8dots/mm)
	Effective printing area	80mm
Character	Character set	ASCII, GBK, BIG5 and so on
	Print font	ASCII: (9*17,9*24, 16*18,12*24) Chinese: (24*24)
	The characters number per line	Font A (12*24) : 32 Font B (9*17) : 42    GBK: 16
Paper Roll specification	Paper type	Thermal paper roll
	Paper width	58-82mm
	Paper thickness	55-200μm
	Max paper roll diameter/paper roll inner diameter	Max:150mm/Min:18mm
	Paper Feed method	Automatic feeding (straight out)
detection	Head temperature detection	Thermistor
	No Paper detection	Photoelectric detection
	Paper near end detection	Photoelectric detection
	Black mark detection	Photoelectric detection
	Seam Mark Detection	Photoelectric detection
	platen open detection function	Mechanical switch
Baud rate		9600bps-115200bps
Instruction Set		EPSON ESC/POS Instruction Set
Driver		Windows Driver
Interface		USB、RS232、LAN
Barcode	1D code	UPCA、UPC-E、JAN13(EAN13)、JAN8(EAN8)、CODE39、ITF、CODABAR、CODE128、CODE93;

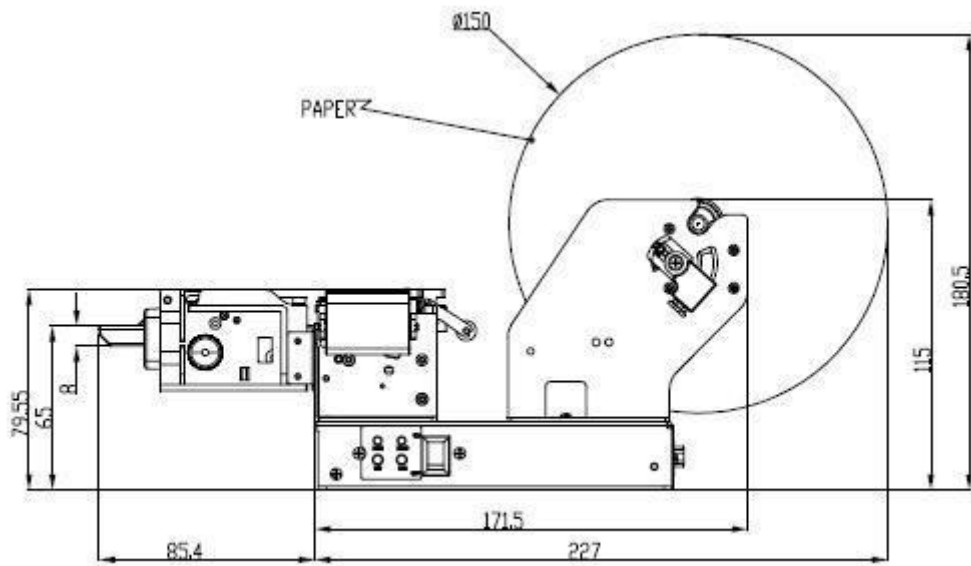
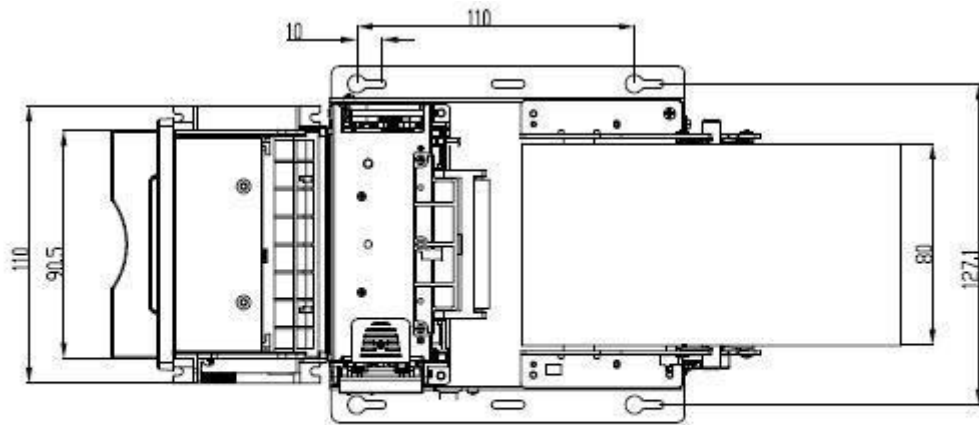




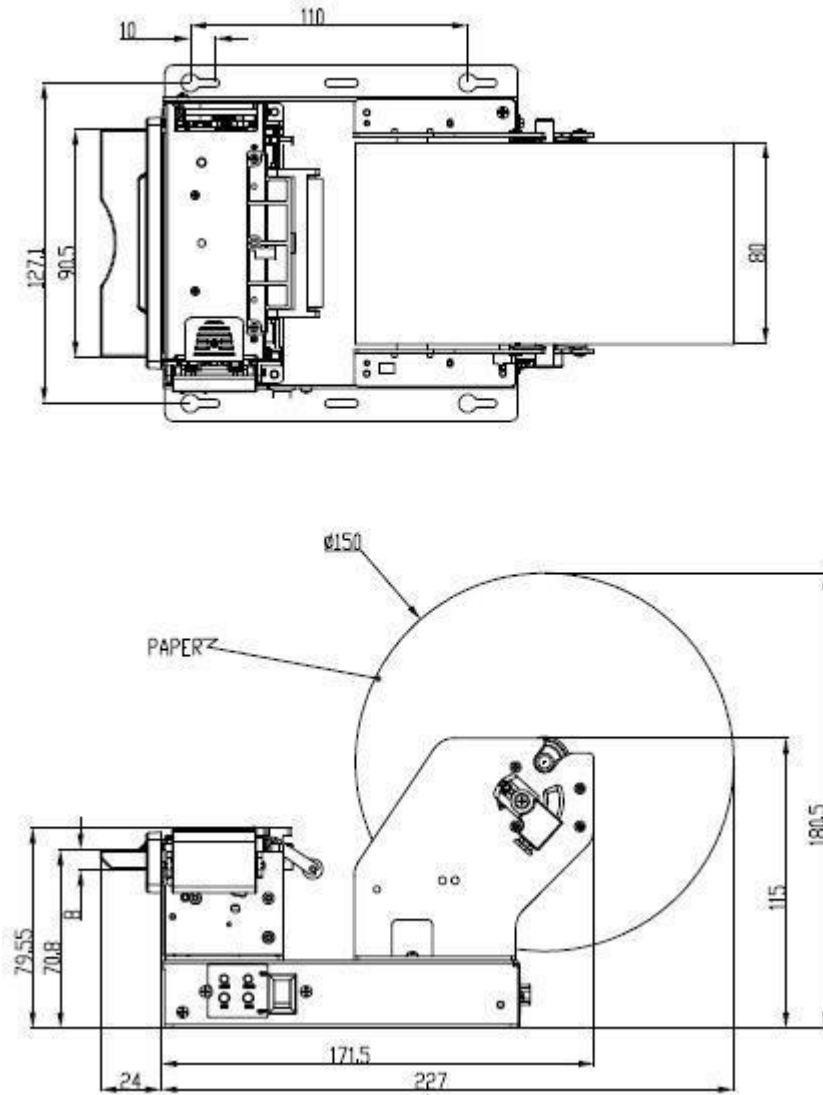
	2D code	QR code
Reliability	Print Life	100Km
	Cutter life	>1000000cuts (When cutting paper with thickness greater than 0.1mm, 500000cuts)
Cutter	Auto cutter	Support full cutter and half cutter simultaneously
Power	input	DC24V±10%, ≥2A
Environmental conditions	Operating temperature	0°C~50°C
	Operating humidity	20%RH ~85% RH
	Storage temperature	-20°C~60°C
	Storage humidity	5% ~90%RH
Overall dimension (wide * deep * high)	With presenter (paper roll diameter 150mm)	114.8*157*234.3mm(without paper bezel)
	Without presenter (paper roll diameter 150mm)	114.8*157*233.8(without paper bezel)
	Without presenter (paper roll diameter 80mm)	114.8*83*170.3mm (without paper)

## 4. Structure size

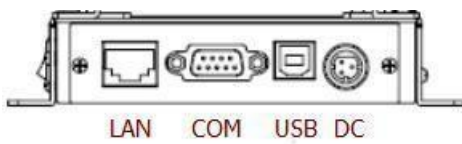
### (1).dimensional drawing with presenter(paper roll diameter 150mm)



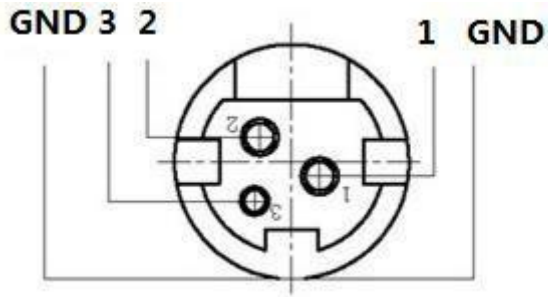
(2) dimensional drawing without presenter(paper roll diameter 150mm)



## 5. Interface Description

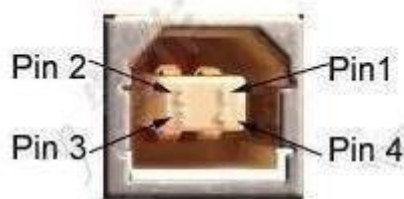


### (1) Power



## (2) USB interface

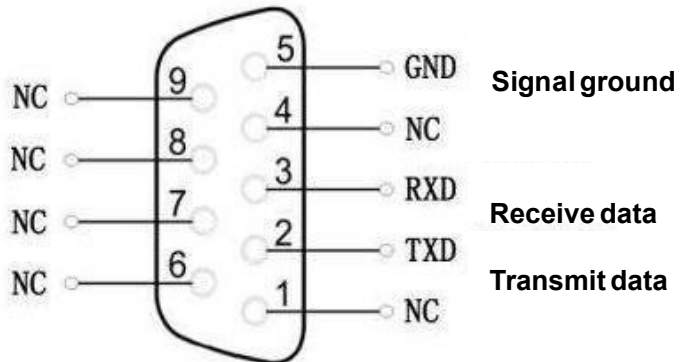
The Printer USB port is the standard B type.



**B型 USB接口 (母口)**

## (3) COM Interface

The printer serial port is defined as the standard RS232 terminal pin (DB9 header).



Data transfer mode: serial

Sync Mode: Asynchronous

Handshake signal: DTR/DSR or Xon/xoff control mode

Bit rate: 9600, 38400, 57600, 115200bps (default) optional.

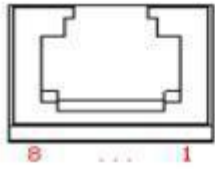
Word Length: 8 bits

Parity: no checksum.

Stop bit: 1 bits

#### (4) LANPORT

Printer Ethernet interface socket is standard RJ45-8P



Pin	Description	Introduction
1	TX+	Transmit differential line+
2	TX-	Transmit differential line-
3	RX+	Receive differential line+
4	NC	NO Function
5	NC	NO Function
6	RX-	Receive differential line-
7	NC	NO Function
8	NC	NO Function

## 6.Basic usage



### 6.1 Print self-test page

Method 1: under the shutdown state, hold down the FEED key, boot up, and print out a self-test

page, which contains serial transmission rate, language and other information.

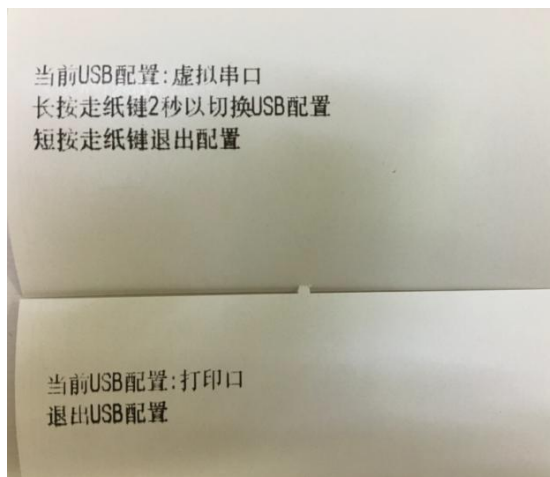
Method two: under the open state, press the TEST key, you can print the self-test page.

## 6.2 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



## 6.3 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

## 6.4 paper feeding

Under the normal working conditions, please press the paper key [FEED], and the printer starts to move the paper.

## 6.5 The printer cutter resume work and exclude paper jam

Owing to the paper jammed, if the cutter has been locked during paper cutting

Method one: Switch off the printer and turn the printer on again, and the cutter will return to its normal position.

Method Two: press the open-cover button and the cutter will return to its normal position.

Exclude paper Jam: Firstly the printer cutter resume work , and then exclude the paper jam, and finally clear the paper channel residual scraps.

## 7.Command Introduction

### 7.1 Command List

LF	Line feed	Print, paper feed Command
CR	Enter	
ESC J n	Print and paper feed n dots	
ESC d n	Print and paper feed n lines	
ESC 3 n	Set line space as n dots	Printing-set Command
ESC 2	Set default line space	
ESC \$	Set printing position	
GS L nL nH	Set the amount of left margin	
ESC !	Set character printing method	
GS ! n	Set character printing method	
GS B n	Set、remove white printing	
ESC - n	Set、remove underline	
ESC V n	Set remove 90°revolving printing	
ESC a n	Setting position alignment mode	
ESC c 5 n	Allow and disable keystroke switches	
FS &	Set Chinese character mode	
FS .	Cancel Chinese character mode	
ESC % n	Select Cancel user customized character	
ESC & y c1 c2	Define user customized character	
ESC ? n	Cancel user customized character	
ESC R n	Select International character	
ESC t n	Select the character code page	



ESC * m HI Hh [d]k	Bitmap vertical modulus data fillings	
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GS v 0	Bitmap horizontal modulus data print	
--------	--------------------------------------	--

GS * x y	Define Downstream bitma	
GS / m	Print Downstream bitmap	
FS q n	Define NV bitmap	
FS p n m	Print NV bitmap	
HT	Horizontal tab	Tab Command
ESC D [d]k NUL	Set horizontal tabulation position	
GS H n	Set 1-D barcode readable character(HRI) print position	1-D barcode Command
GS h n	Set 1-D barcoe hight	
GS w n	Set 1-D barcode width	
GS k m	Print 1-D barcode	
GS ( k pL pH cn fn m	Print QR CODE	QR CODE Command
GS k m v r nL nH d1...dk	Printing QR CODE	
US Q m n	Print double QR CODE	
GS r n	Transmission status	Status Inquire Command
DLE EOT n	Real-time transmission status	
ESC @	Printer reset	Other Commands
DC2 T	Printing self-test page	
GS V m n	Choose cut mode and cut	
ESC i	Full cuts	
ESC m	Partly cuts	

## 7.2 Commands details

### ①Printing and paper feed commands

#### Printing and paper feed

Name	print and paper feed
Code	ASCII : LF DEC : 10 HEX : 0A
Function	Print the buffer contest,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
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## 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

## Print and paper feed 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

## ②Printing set commands

### Set print position

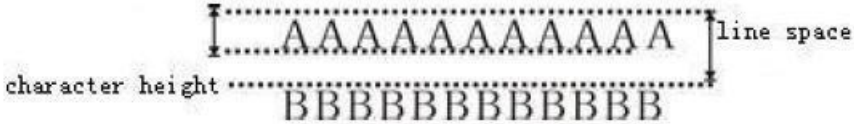
Name	Set print position
Code	ASCII : ESC \$ nL nH DEC : 27 36 nL nH HEX : 1B 24 nL nH
Function	Set left side blank area as (nL + nH × 256) dots
Range	$0 \leq nL \leq 255$ $0 \leq nH \leq 255$
Default	None
Notes	Set left side blank area as [(nL+nH*256)]*0.125mm] This command is only effective with the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

### Character right space setting

Name	Character right space setting
Code	ASCII : ESC SP n DEC : 27 32 n HEX : 1B 20 n
Function	Character right space setting as (n*0.125mm)
Range	$0 \leq n \leq 255$
Default	n = 0
Notes	When characters double width,Character right space is twice of normal.When characters amplified,Character right space is n times of normal. This command doesn't affect the setting of Chinese characters. This command sets the standard values independently in each mode.
Example	None

### 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	<p>Line space as below:</p>  <p>If the line space setted is 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 space turns to default.</p>
Example	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

## Set horizontal and vertical movement units

Name	Set horizontal and vertical movement units
Code	ASCII : GS P x y DEC : 29 80 x y HEX : 1D 50 x y
Function	Horizontal movement unit = $25.4/x$ mm ( $1/x$ inch) Vertical movement unit = $25.4/y$ mm ( $1/y$ inch) When set X=0, Y=0, X and Y will display default value.
Range	$0 \leq x \leq 255, 0 \leq y \leq 255$
Default	x=180, y=360
Notes	None
Example	None

## 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 space setted is 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

## Set character print font

Name	set character print font
Code	ASCII : ESC M n DEC : 27 77 n HEX : 1B 4D n
Function	set character print font parameter n bit definition as below n = 0, font 12*24 n = 1, font 9*17
Range	None
Default	n = 0
Notes	The command is effective with character. The command is disabled when ESC@, printer reset or blackout.
Example	1B 40 1B 4D 00 30 31 32 0D 0A 1B 40 1B 4D 01 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:		
	Bit Function	Value	
		0	1
	0 Font	Normal	Small character
	1 Undefined		
	2 Undefined		
	3 Bold	Cancel	Setting
	4 Double hight	Cancel	Setting

	5 Double width      Cancel      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	Set character size as 1-8 times width,1-8 times height. Definition is as below: Use 0-3 set character height 4 - 7 bits set character width show as below:					
	Chart 1 Character width setting			Chart 2 Character height setting		
	HEX	DEC	width	HEX	DEC	height
	00	0	1(Normal)	00	0	1(Normal)
	10	16	2(double width)	01	1	2(double height)
	20	32	3	02	2	3
	30	48	4	03	3	4
	40	64	5	04	4	5
	50	80	6	05	5	6
	60	96	7	06	6	7
	70	112	8	07	7	8
Range	None					
Default	n = 0					
Notes	This command is effective with Chinese and other foreign languages, except for HRI character. The command setting is disable when ESC@, printer reset or power off.					



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 set 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 is white printing mode, even underline mode is open, 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"> <tr> <th>n</th><th>Functions</th></tr> <tr> <td>0, 48</td><td>Remove underline mode</td></tr> </table>	n	Functions	0, 48	Remove underline mode
n	Functions				
0, 48	Remove underline mode				

	1, 49	Set underline mode(1 dot coarse)	
	2, 50	Set underline mode(2 dot coarse)	
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.  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 removing underline mode.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.However be aware that the last received command must be effective.</p>		
Example	<pre>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</pre>		

### Set、remove bold print

Name	Set 、 remove bold print
Code	ASCII : ESC E n DEC : 27 69 n HEX : 1B 45 n
Function	Set and remove bold print set and remove bold print When LSB of n is 0, remove bold print mode When MSB of n is 1, set bold print mode
Range	$0 \leq n \leq 255$
Default	$n = 0$
Notes	Only allow to use when LSB of n
Example	None

### Set、remove overlapping

Name	Set 、 remove overlapping
------	--------------------------

Code	ASCII : ESC G n DEC : 27 71n HEX : 1B 47 n
Function	Set and remove overlapping print mode When LSB of n is 0,remove overlapping print mode When MSB of n is 1,set overlapping print mode
Range	$0 \leq n \leq 255$
Default	n = 0
Notes	Only allow to use when LSB of n The printer output is the same in overlapping mode and bold mode
Example	None

### Set, cancel characters upside down

Name	Set, cancel characters upside down
Code	ASCII : ESC { n DEC : 27 123 n HEX : 1B 7B n
Function	n=1: set character upside down n=0: cancel character upside down
Default	n=0
Notes	None
Example	None

### Set, remove 90°revolving printing

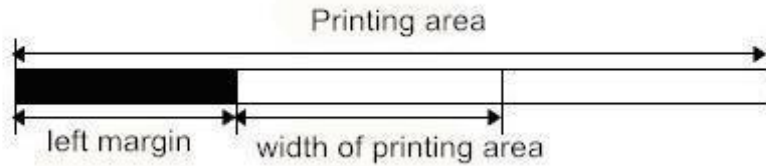
Name	Set , remove 90°revolving printing
Code	ASCII : ESC V n DEC : 27 86 n HEX : 1B 56 n
Function	Set or remove 90° revolving printing When n is equal to 0 or 48,remove 90°revolving printing. When n is equal to 1 or 49,set 90°revolving printing.
Range	$0 \leq n \leq 1, 48 \leq n \leq 49$
Default	n = 0
Support Model	All
Notes	When it is setted 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

## Allow、orbid key switch

Name	Allow and forbid key switch
Code	ASCII : ESC c 5 n DEC : 27 99 53 n HEX : 1B 63 35 n
Function	n=1, Forbid key switch n=0, Allow key switch
Default	n = 0
Notes	None
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	$0 \leq nL \leq 255$ , $0 \leq nH \leq 255$
Default	None
Support Model	All
Notes	<p>This command is only effective with the initial position of the line. The illustration is as follows:</p>  <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 relative printing position

Name	Set relative printing position
Code	ASCII : ESC \ nL nH DEC : 27 92 nL nH HEX : 1B 5c nL nH
Function	Based on the current position, using horizontal or vertical motion unit, set the printing start position This command sets the printing position from the current position to the distance of $[(nL+nH*256)]*0.125 \text{ mm}$
Range	$0 \leq nL \leq 255$ $0 \leq nH \leq 255$
Default	None
Notes	Any out of the printable area of the Settings are ignored When distance N point to right: $nL+nH*256=N$ When distance N point to left: (reverse direction) $nL+nH*256=65536-N$ In standard mode, use level of motor unit
Example	None

## 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 value 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
--	----------------------------------

## 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	Definable character code range:from<20>H to <7E>H ASCII code(95 characters). It can define continuous characters encoding for several characters.When it need one character only,make c1=c2. d 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.

Defined user defines characters data is (y\*x) byte.

Set corresponding bit of printing dots as 1, or corresponding bit of no printing dots as 0.

This command defines different customized characters for each type of font. Set font with ESC !.

Customized characters and downlink bitmaps cannot be defined at the same time. When the command is executed, the downlink bitmap is cleared.

User Customized characters will be cleared in these situations:  
Execute ESC @.

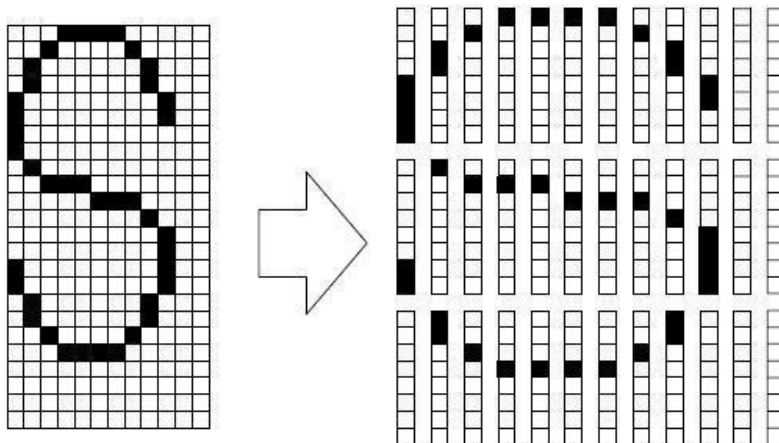
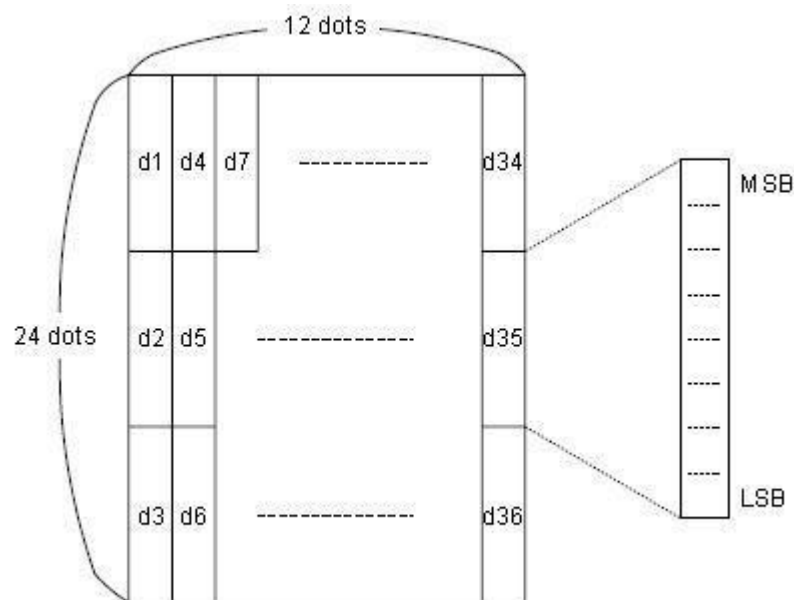
Execute GS \*.

Execute ESC ?.

Printer reset or power off

Graphic:

When set font A(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 . . . .
Example	①y = 2 1B 40 1b 26 02 20 20 06 FF FF FF FF FF FF FF FF FF FF FF 1b 25 01 20 20 0D 0A 1b 3f 20 30 20 30 20 0d 0a ②y = 3 1B 40 1b 26 03 20 20 06 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF 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	<p>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.</p> <p>In the font selected with ESC !, the command removes the style defined for the specified encoding.</p> <p>If a user customized character is not defined, the printer ignores the command.</p>
Example	None

## Set / remove quadruple angle of Chinese print

Name	Set / remove quadruple angle of Chinese print
------	---



Code	ASCII : FS W n DEC : 28 87 n HEX : 1C 57 n
Function	Set or remove quadruple angle of Chinese print When LSB of n is 0, Remove quadruple angle of character mode When LSB of n is 1, Set quadruple angle of character mode
Range	$0 \leq n \leq 255$
Default	n=0
Notes	Only the lowest bit of n is valid; In quadruple angle mode, printing character size is the same as set double width and double height mode to print character size at the same time When the quadruple angle mode is canceled with this command, the characters are printed according to the size of the pass-through character; When the height of some characters in a line is different, all the characters in the line are aligned on the basis of the baseline; When the character is enlarged in the horizontal direction, the character is enlarged to the right with the left side of the character as the reference.
Example	None

### Set the Angle of Chinese character word space

Name	Set the Angle of Chinese character word space
Code	ASCII : FS S n1 n2 DEC : 28 83 n1 n2 HEX : 1C 53 n1 n2
Function	Set the left and right Chinese character space to n1 and n2 respectively. The left character space is $[n1 \times 0.125 \text{ mm}]$ , and the right character space is $[n2 \times 0.125 \text{ mm}]$
Range	$0 \leq n1 \leq 255$ $0 \leq n2 \leq 255$
Default	n1=0, n2=0
Notes	This command sets the left and right character space of the variable size characters. When set to double width mode, the left and right character space is twice of the normal mode. You can set the space separately in standard mode. In standard mode, use horizontal motion units
Example	None

## Set up the Chinese characters to print mode combination

Name	Set up the Chinese characters to print mode combination				
Code	ASCII : FS ! n DEC : 28 33 n HEX : 1C 21 n				
Function	Set up Chinese characters print mode, the setting of n as follows:				
	Bit	OFF/ON	HEX	DEC	ASB status
	0	--	--	--	None
	1	--	--	--	None
	2	OFF	00	0	Double-width mode is forbidden
		ON	04	4	Allow Double-height mode
	3	OFF	00	0	Double-height mode is forbidden
		ON	08	8	Allow Double-height mode
	4	--	--	--	None
	5	--	--	--	None
	6	--	--	--	None
	7	OFF	00	0	Underline mode is forbidden
		ON	80	128	Allow the underline mode
Range	$0 \leq n \leq 255$				
Default	n=0				
Notes	<p>Setting both double width mode and double height mode ,(including the right and left character space),it will print out character in four times of the size.</p> <p>The printer can underline all characters (including the right and left character space), but not the spaces set by the HT command, and clockwise 90°rotation characters underlined;</p> <p>When some characters in a line are double height or higher, all characters in the line will be aligned along the baseline;</p> <p>The width of the underline is specified by FS – regardless of the character size;</p>				
Example	None				

## 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

### Set and cancel under line of Chinese character mode

Name	Set and cancel under line of Chinese character mode									
Code	ASCII : FS – n DEC : 28 45 n HEX: 1C 2D n									
Function	Set/cancel under line mode,based on n value as below: <table><tr><td>n</td><td>Function</td></tr><tr><td>0,48</td><td>Cancel underline mode</td></tr><tr><td>1,49</td><td>Set underline mode(1 dot coarse)</td></tr><tr><td>2,50</td><td>Set underline mode(2 dot coarse)</td></tr></table>		n	Function	0,48	Cancel underline mode	1,49	Set underline mode(1 dot coarse)	2,50	Set underline mode(2 dot coarse)
n	Function									
0,48	Cancel underline mode									
1,49	Set underline mode(1 dot coarse)									
2,50	Set underline mode(2 dot coarse)									
Range	0 ≤ n ≤2, 48≤ n ≤ 50									
Default	n=0									
Notes	Printer can print underline for all characters(including characters space in left and right),but expect for setted blank by HT and									

	<p>Clockwise 90° rotation character underlined;          Setting n to 0, after cancel under line of Chinese character, the underline printing will not be performed, but the previously specified underline width remains unchanged. The default underline width is 1 dot.t          The specified slip line width remains the same even if the character size had changed</p>
Example	None

## Selecting international character set

Name	<b>Selecting international character set</b>																																		
Code	ASCII : ESC R n DEC : 27 82 n HEX: 1B 52 n																																		
Function	<p>Selecting international character set n from the following table:</p> <table> <tr> <th>n</th><th>Character</th></tr> <tr><td>0</td><td>U.S.A</td></tr> <tr><td>1</td><td>France</td></tr> <tr><td>2</td><td>Germany</td></tr> <tr><td>3</td><td>U.K</td></tr> <tr><td>4</td><td>Denmark I</td></tr> <tr><td>5</td><td>Sweden</td></tr> <tr><td>6</td><td>Italy</td></tr> <tr><td>7</td><td>Spain I</td></tr> <tr><td>8</td><td>Japan</td></tr> <tr><td>9</td><td>Norway</td></tr> <tr><td>10</td><td>Denmark II</td></tr> <tr><td>11</td><td>Spain II</td></tr> <tr><td>12</td><td>Latin America</td></tr> <tr><td>13</td><td>Korea</td></tr> <tr><td>14</td><td>Slovenia</td></tr> <tr><td>15</td><td>China</td></tr> </table>	n	Character	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 America	13	Korea	14	Slovenia	15	China
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13	Korea																																		
14	Slovenia																																		
15	China																																		
Range	$0 \leq n \leq 15$																																		
Default	0																																		
Notes	None																																		
Example	1B 40 1B 52 00 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 60 6A 6B 6C 6D 6E 6F 70 71 72 73 74 75 76 78 79 7A 7B 7C 7D 7E 0D 0A																																		

## Select character code

Name	Select character code																																																																						
Code	ASCII : ESC t n DEC : 27 116 n HEX : 1B 74 n																																																																						
Function	Selects n from character code <table> <thead> <tr> <th>N</th><th>Code Page</th></tr> </thead> <tbody> <tr><td>0</td><td>CP437 [U.S.A., Standard Europe]</td></tr> <tr><td>1</td><td>KataKana</td></tr> <tr><td>2</td><td>CP850 [Multilingual]</td></tr> <tr><td>3</td><td>CP860 [Portuguese]</td></tr> <tr><td>4</td><td>CP863 [Canadian-French]</td></tr> <tr><td>5</td><td>CP865 [Nordic]</td></tr> <tr><td>6</td><td>WCP1251 [Cyrillic]</td></tr> <tr><td>7</td><td>CP866 Cyrillic #2</td></tr> <tr><td>8</td><td>MIK [Cyrillic /Bulgarian]</td></tr> <tr><td>9</td><td>CP755 [East Europe, Latvian 2]</td></tr> <tr><td>10</td><td>Iran</td></tr> <tr><td>11</td><td>Reserve</td></tr> <tr><td>12</td><td>Reserve</td></tr> <tr><td>13</td><td>Reserve</td></tr> <tr><td>14</td><td>Reserve</td></tr> <tr><td>15</td><td>CP862 [Hebrew]</td></tr> <tr><td>16</td><td>WCP1252 Latin I</td></tr> <tr><td>17</td><td>WCP1253 [Greek]</td></tr> <tr><td>18</td><td>CP852 [Latina 2]</td></tr> <tr><td>19</td><td>CP858 Multilingual Latin I +Euro)</td></tr> <tr><td>20</td><td>Iran II</td></tr> <tr><td>21</td><td>Latvian</td></tr> <tr><td>22</td><td>CP864 [Arabic]</td></tr> <tr><td>23</td><td>ISO-8859-1 [West Europe]</td></tr> <tr><td>24</td><td>CP737 [Greek]</td></tr> <tr><td>25</td><td>WCP1257 [Baltic]</td></tr> <tr><td>26</td><td>Thai</td></tr> <tr><td>27</td><td>CP720 [Arabic]</td></tr> <tr><td>28</td><td>CP855</td></tr> <tr><td>29</td><td>CP857 [Turkish]</td></tr> <tr><td>30</td><td>WCP1250 [Central Europe]</td></tr> <tr><td>31</td><td>CP775</td></tr> <tr><td>32</td><td>WCP1254 [Turkish]</td></tr> <tr><td>33</td><td>WCP1255 [Hebrew]</td></tr> </tbody> </table>	N	Code Page	0	CP437 [U.S.A., Standard Europe]	1	KataKana	2	CP850 [Multilingual]	3	CP860 [Portuguese]	4	CP863 [Canadian-French]	5	CP865 [Nordic]	6	WCP1251 [Cyrillic]	7	CP866 Cyrillic #2	8	MIK [Cyrillic /Bulgarian]	9	CP755 [East Europe, Latvian 2]	10	Iran	11	Reserve	12	Reserve	13	Reserve	14	Reserve	15	CP862 [Hebrew]	16	WCP1252 Latin I	17	WCP1253 [Greek]	18	CP852 [Latina 2]	19	CP858 Multilingual Latin I +Euro)	20	Iran II	21	Latvian	22	CP864 [Arabic]	23	ISO-8859-1 [West Europe]	24	CP737 [Greek]	25	WCP1257 [Baltic]	26	Thai	27	CP720 [Arabic]	28	CP855	29	CP857 [Turkish]	30	WCP1250 [Central Europe]	31	CP775	32	WCP1254 [Turkish]	33	WCP1255 [Hebrew]
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Range	$0 \leq n \leq 255$
Default	0
Notes	None
Example	1B 40 1C 2E 1B 74 00 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95 96 97 98 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5 D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF 0D 0A

### ③Graphic 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 Hl Hh [d]k
Function	Print vertical module graphic data,the parameters are as below: m is bit map format: m mode horizontal scalevertical scale 0 8dots single density ×2 ×3

	<p>1 8dots double density    ×1 ×3  32 24dots single density   ×2 ×1  33 24dots double density   ×1 ×1  Hl、Hh is horizontal direction dots(<math>Hl + 256 \times Hh</math>)  [d]k is bit map data  K used for indicating bit map data bytes,not for transfer.</p>
Parameter range	<p>XX58:  <math>m = 0、1、32、33</math>  <math>1 \leq Hl + Hh \times 256 \leq 384</math>  <math>0 \leq d \leq 255</math>  <math>k = Hl + Hh \times 256</math> (when <math>m = 0、1</math>)  <math>k = (Hl + Hh \times 256) \times 3</math> (when <math>m = 32、33</math>)  XX80:  <math>m = 0、1、32、33</math>  <math>1 \leq Hl + Hh \times 256 \leq 576</math>  <math>0 \leq d \leq 255</math>  <math>k = Hl + Hh \times 256</math> (when <math>m = 0、1</math>)  <math>k = (Hl + Hh \times 256) \times 3</math> (when <math>m = 32、33</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.  The part of graphics horizontal direction which exceeds the printing area will be ignored.  The relations between Bit map data and printing effects is as below:</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> <p>8 dot</p> </div> <div style="text-align: center;"> <p>24 dot</p> </div> </div> <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.</p> <p>If you need to print higher graphics,you can divide it into several sections which has 8 (m = 0、1) or 24 (m = 32、33) dots graphics to print.</p> <p>After filling graphic data,you can continue to fill other information to make graphic and other information print simultaneously.</p>

	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 avoid feeding too much.(Dot matrix printer may drift when it starts,pls send data continuously if occurs line broken.
Example	1B 40 1b 2a 00 0C 00 FF FF FF FF FF FF FF FF FF FF FF 1B 33 00 0A

## Print Graphics horizontal module data

Name	Print Graphics horizontal module data																				
Code	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																				
Function	Print horizontal module graphic data,the parameters are as below: m as bitmap method: <table><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> xL 、 xH were selected as the data bytes (xL+xH×256) in the horizontal direction for the bitmap. yL, yH were selected as the data bytes (yL+yH×256) in the vertical direction for the bitmap. [d]k for bitmap data k for bitmap data bytes, k used for indicating, not for transfer.	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	XX58: 0 ≤ m ≤ 3; 48 ≤ m ≤ 51 1 ≤ xL + xH×256 ≤ 48 0 ≤ yL ≤255, 0 ≤ yH ≤255 0 ≤ d ≤ 255 k = (Hl + Hh×256)×(yL + yH×256) XX80: 0 ≤ m ≤ 3; 48 ≤ m ≤ 51																				



	$1 \leq xL + xH \times 256 \leq 72$ $0 \leq yL \leq 255, \quad 0 \leq yH \leq 255$ $0 \leq d \leq 255$ $k = (Hl + Hh \times 256) \times (yL + yH \times 256)$																
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 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><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></table> <p>MSB    LSB   MSB    LSB   MSB    LSB   MSB    LSB</p> <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
d1	d2	.....	dx														
d(x+1)	d(x+2)	.....	d(x+2)														
		.....															
.....	d(k-2)	d(k-1)	dk														
Example	1B 40 1d 76 30 00 03 00 09 00 FF																

## Define downloaded bitmap

Name	Define downloaded bitmap
Code	ASCII : GS * x y d1...d(x*y*8) DEC : 29 42 x y d1 ...d(x*y*8) HEX : 1D 2A x y d1...d(x*y*8)
Function	using x and y to appoint dots to define the downloaded bitmap x appoints that the horizontal dots as 8*x. y appoints that the vertical dots as 8*y.
Parameter range	$1 \leq x \leq 255$ $1 \leq y \leq 48$ $x*y \leq 1536$

	$0 \leq d \leq 255$
Default	None
Notes	<p>If <math>x \times y</math> is out of the specified range, this command will be forbidden.</p> <p>The <math>d</math> indicates bitmap data. Data (<math>d</math>) specifies the printing bit as 1 and the not printing bit as 0.</p> <p>The downloaded bitmap definition will be cleared when:  ESC @ is executed.  ESC &amp; is executed.  Printer is reset or the power is turned off.</p> <p>The following figure shows the relationship between the downloaded bitmap and the printed data</p>
Example	<pre> 1B 40 1D 2A 03 03 FF 1D 2F 00 </pre>

## 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"> <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	<p>this command will be ignored if the bitmap data has not been defined.</p> <p>In standard mode, this command is effective only when there is no data in the buffer area.</p> <p>This command has no effect in the print modes (emphasized, double-strike, downloadedline, character size, or white/black reverse printing), except for upsidedown printing mode.</p> <p>If the downloaded bitmap which will be printed exceeds the printing area, then the excess data will not be printed.</p>										
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 $(yL + yH * 256) * 8$
Parameter range	$1 \leq n \leq 255$ $0 \leq xL \leq 255$ $0 \leq xH \leq 3$ $(1 \leq (xL + xH * 256) \leq 1023)$

	$0 \leq yL \leq 255$ $0 \leq yH \leq 1$ $(1 \leq (yL+yH*256) \leq 288)$ $0 \leq d \leq 255$ $k = (xL+xH*256)*(yL+yH*256)*8$ 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 the beginning of the line.</p> <p>This command is valid when 7 bytes &lt;FS yH&gt; of the command are processed normally.</p> <p>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.</p> <p>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.</p> <p>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</p>

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  $((\text{data: } (xL \quad xH \times 256) \times (yL \quad yH \times 256) \times 8) [\text{header :4}])$  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 pcommand.

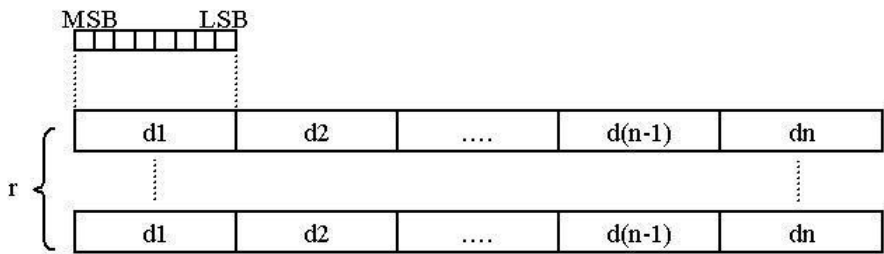
Diagram: when  $xL = 64, xH = 0, yL = 96, yH = 0$

Example	<pre> 1B 40 1C 71 01 03 00 03 00 FF 1C 70 01 00 </pre>

## Print NV bitmap

Name	Print NV bitmap										
Code	ASCII : FS p n m DEC : 28 112 n m HEX : 1C 70 n m										
Function	<p>Print NV bitmap n using the mode specified by m.</p> <table border="1"> <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 double height 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										

## Print bitmap

Name	Print bitmap
Code	ASCII : DC2 * r n [d1...dn] DEC : 18 41 r n [d1...dn] HEX : 12 2A r n [d1...dn]
Function	<p>r:Stands for height of bitmap            n:Stands for width of bitmap            Bitmap format</p> 
Parameter range	None
Default	None
Support	All
Notes	None
Example	None

## Print MSB bitmap

Name	Print MSB bitmap
Code	ASCII : DC2 V nL nH [d1...dn] DEC : 18 86 nL nH [d1...dn] HEX : 12 56 nL nH [d1...dn]
Function	<p>The width of the bitmap must be the same as that of the printer            Bitmap Height: <math>nL + nH * 256</math>            Bitmap format</p>



Parameter range	$0 \leq m \leq 3$ $48 \leq m \leq 51$ $1 \leq n \leq 255$
Default	None
Support	All
Notes	None
Example	None

## Print LSB bitmap

Name	Print LSB bitmap
Code	ASCII : DC2 v nL nH [d1...dn] DEC : 18 118 nL nH [d1...dn] HEX : 12 76 nL nH [d1...dn]
Function	<p>The width of the bitmap must be the same as that of the printer            Bitmap Height: <math>nL + nH * 256</math>            Bitmap format</p>
Parameter range	None
Default	None
Support	All
Notes	None
Example	None

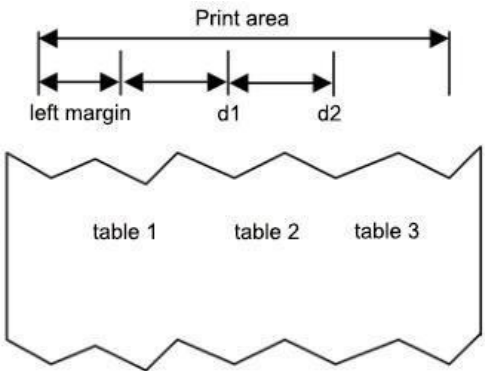
## ④ Tab Commands

### 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	Tab position as below:

	 <p>TAB position d1 and d2 setting</p> <p>Maximum support for the setting of 16 tab position          Using this command,the setting of previous tab position will be canceled          k is for indication purpose,no transmission          When transport [d]k,and come across NULL,should be considered over          If dk less than or equal to dk-1,should be considered over,and balance data is treated as normal data processing          TAB position could be changed by HT command          When the left margin changes, the TAB position changes simultaneously          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

## ⑤ One-dimension bar code command

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


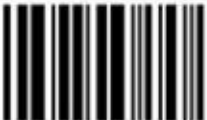
Name	1D bar code readable character(HRI)print position setting
Code	ASCII : GS H n DEC : 29 72 n HEX : 1D 48 n
Function	Set 1D bar code readable character(HRI)print position,n parameter meaning as below: n            print position 0, 48       don't print 1, 49       above the bar code 2, 50       below 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 readable character(HRI)font type selection


Name	1D bar code readable character(HRI)font type selection							
Code	ASCII : GS f n DEC : 29 102 n HEX : 1D 66 n							
Function	Select a font for the HRI character to be used when print the bar code The relationship between n and selection contents as below <table><tr><td>n</td><td>Font</td></tr><tr><td>0,48</td><td>Font A ( 12*24 )</td></tr><tr><td>1,49</td><td>Font B ( 9*17 )</td></tr></table>		n	Font	0,48	Font A ( 12*24 )	1,49	Font B ( 9*17 )
n	Font							
0,48	Font A ( 12*24 )							
1,49	Font B ( 9*17 )							
Parameter range	n =0,1,48,49							
Defaults	n = 0							
Notes	None							
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="display: flex; justify-content: space-around; align-items: center;">  <div>Height 50</div> </div> <div style="display: flex; justify-content: space-around; align-items: center;">  <div>Height 100</div> </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 \$, +, -, ., /,: 58 (65≤d1≤68, 65≤dk≤68, 97≤d1≤100, 97≤dk≤100)	

**(Command B)**

m	Coding system	Bar code length (SP show space)			
		Data length	n	Character set	Data (d)

	6 5	UPC-A	fixed	$n = 11, 12$	0~9	$48 \leq d \leq 57$
	6 6	UPC-E	fixed	$6 \leq n \leq 8, n = 11, 12$	0~9	$48 \leq d \leq 57$ [when $n = 7, 8, 11, 12, d_1 = 48$ ]
	6 7	JAN13 (EAN13)	fixed	$n = 12, 13$	0~9	$48 \leq d \leq 57$
	6 8	JAN8 (EAN8)	fixed	$n = 7, 8$	0~9	$48 \leq d \leq 57$
	6 9	CODE 39	changeable	$1 \leq n$	0~9, A~Z SP, \$, %, *, +, -, ., /	$48 \leq d \leq 57, 65 \leq d \leq 90,$ $d = 32, 36, 37, 42, 43, 45, 46, 47$
	7 0	ITF (Interleaved 2 of 5)	changeable	$2 \leq n \leq 255$ (even numbers)	0~9	$48 \leq d \leq 57$
	7 1	CODABAR (NW-7)	changeable	$1 \leq n$	0~9, A~D, a~d \$, +, -, ., /,:	$48 \leq d \leq 57, 65 \leq d \leq 68, 97 \leq d \leq 100,$ $d = 36, 43, 45, 46, 47, 58$ ( $65 \leq d_1 \leq 68, 65 \leq d_k \leq 68,$ $97 \leq d_1 \leq 100, 97 \leq d_k \leq 100$ )
	7 2	CODE 93	changeable	$1 \leq n \leq 255$	00H~7FH	$0 \leq d \leq 127$
	7 3	CODE 128	changeable	$1 \leq n \leq 255$	00H~7FH C1H~C4H(FNC)	$0 \leq d \leq 127$ $d = 193, 194, 195, 196$
	7 4	UCC/EAN128	changeable	$1 \leq n \leq 255$	00H~7FH C1H~C4H(FNC)	$0 \leq d \leq 127$ $d = 193, 194, 195, 196$
Parameter	(A) $0 \leq m \leq 6$					

range	(B) $65 \leq m \leq 74$
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 K is for sign,no transmission</p> <p>When print UPCA ( m = 0 or 65 ) ,Please pay attention for the following points:</p> <p>    Whatever the input data length is 11 or 12,the check bit is automatically inserted or corrected</p> <p>    Initial character,central split character,and terminator are inserted automatically</p> <p>When print UPCE ( m = 1 or 66 ) ,Please pay attention as following:</p> <p>    The system character (NSC) 0 will be inserted automatically when data length is 6</p> <p>    The first system character (NSC) d1 must be 0 when the data length is 7,8,11 and 12.</p> <p>    Whatever the data length is 6,7,8,11 and 12,the check bit inserted or corrected automatically</p> <p>    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;</p> <p>    The transition relation between transmission and printing data as below:</p>



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	FNC 1	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

Userinput 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

## ⑥ Printing QR code

### Mode type of 2-D bar code

Name	Mode type of 2-D bar 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 two-dimension bar code to [n dot × n dot].
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
Name	Mode type of 2-D bar code

### Setting error correction level of 2-D bar code

Name	Setting error correction level of 2-D bar 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 two-dimension bar 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 two-dimension bar code			
		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			
Name	Setting error correction level of 2-D bar code			

## Store 2-D bar code data to data buffer

Name	Store two-dimension bar code data to 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 two-dimension bar code data to 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-dimension bar 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

Name	Store two-dimension bar code data to data buffer
------	--

## Printing two-dimension bar code

Name	Printing two-dimension bar 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 two-dimension bar code. Users must consider two-dimension bar code graph space. (The space of up and down, left and right of two-dimension bar 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
Name	Printing two-dimension bar code

## Setting two-dimension bar code graph information

Name	Setting two-dimension bar 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 two-dimension bar 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
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 two-dimension bar code graph. Users must consider two-dimension bar code graph space.			
Example	None			
Name	Setting two-dimension bar code graph information			

## 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

	<b>r: describes</b> error correction rank <b>nL nH: describes</b> data length <b>d1...dk: describes</b> 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
Name	Printing two dimensional code

## Printing two dimensional code

Name	Printing two dimensional code																																
Code	ASCII : ESC Z m n k dL dH d1...dn DEC : 27 90 m n k dL dH d1...dn HEX : 1B 5A m n k dL dH d1...dn																																
Function	<p>①PDF417: bar code type 0</p> <p>m specify the number of columns of two dimensional code. (<math>1 \leq m \leq 30</math>)</p> <p>When the bar code image is damaged, n specify a safety and stable recovery. (<math>1 \leq n \leq 8</math>)</p> <p>K defines horizontal and vertical ratios. (<math>2 \leq K \leq 5</math>)</p> <p>d is the data length and contains 2 bytes.</p> <p>dL: the first byte is the low-order byte.</p> <p>dH: the second byte is the high-order byte.</p> <p>d1...dn is bar code data</p> <p>affect PDF417 type by the bar code width command.</p> <p>②QR-CODE: bar code type 2</p> <p>m specify version flag. (1~40, 0: auto size)</p> <p>N specify EC level. (L: 7%, M: 15%, Q: 25%, H:30%)</p> <p>K specify component type. (1~8)</p> <p>d is the data length and contains 2 bytes.</p> <p>dL: the first byte is the low-order byte.</p> <p>dH: the second byte is the high-order byte. QR-CODE model form is as follows:</p> <table border="1"> <thead> <tr> <th rowspan="2">Version</th><th colspan="4">Capacity (encoding) via EC level</th></tr> <tr> <th>L: 7%</th><th>M: 15%</th><th>Q: 25%</th><th>H: 30%</th></tr> </thead> <tbody> <tr> <td>1</td><td>19</td><td>16</td><td>13</td><td>9</td></tr> <tr> <td>2</td><td>34</td><td>28</td><td>22</td><td>16</td></tr> <tr> <td>3</td><td>55</td><td>44</td><td>34</td><td>26</td></tr> <tr> <td>4</td><td>80</td><td>64</td><td>48</td><td>36</td></tr> </tbody> </table>				Version	Capacity (encoding) via EC level				L: 7%	M: 15%	Q: 25%	H: 30%	1	19	16	13	9	2	34	28	22	16	3	55	44	34	26	4	80	64	48	36
Version	Capacity (encoding) via EC level																																
	L: 7%	M: 15%	Q: 25%	H: 30%																													
1	19	16	13	9																													
2	34	28	22	16																													
3	55	44	34	26																													
4	80	64	48	36																													

	5	108	86	62	46
	6	136	108	76	60
	7	156	124	88	66
	8	194	154	110	86
	9	232	182	132	100
	10	274	216	154	122
	11	324	254	180	140
	12	370	290	206	158
	13	428	334	244	180
	14	461	365	261	197
	15	523	415	195	223
	16	589	453	325	253
	17	647	507	367	283
	18	721	563	397	313
	19	795	627	445	341
Range	None				
Default	None				
Notes	None				
Example	None				
Name	Printing two dimensional code				

## Printing double Two-dimension bar code

Name	Printing double two-dimension bar code
Code	<p>ASCII : US Q m n p1H p1L l1H l1L ecc1 v1 d1...dn p2H p2L l2H l2L ecc2 v2 dk...dm</p> <p>DEC : 27 81 m n p1H p1L l1H l1L ecc1 v1 d1...dn p2H p2L l2H l2L ecc2 v2 dk...dm</p> <p>HEX : 1F 51 m n p1H p1L l1H l1L ecc1 v1 d1...dn p2H p2L l2H l2L ecc2 v2 dk...dm</p>
Function	Printing double two-dimension bar code
Range	<p>QR code numbers: 0&lt;m&gt;3 QR code size: n(1~8) P1H,p1L specify the location of QR1: (p1H*256+p1L) L1H,l1L specify the data length of QR1: (l1H*256+l1L) Ecc1 specify error correction level about QR1 : ( 0:7%, 1:15%,2:25%,3:30%) V1 specify QR1 version of the symbol.(1~40, 0:auto size) D1...d2 as the data of QR1; P2H,p2L specify the location of QR2: (p2H*256+p2L) L2H,l2L specify the data length of QR2: (l2H*256+l2L) Ecc2 specify error correction level about QR2 : ( 0:7%, 1:15%,2:25%,3:30%) V2 specify QR2 version of the symbol.(1~40, 0:auto size)</p>



	Dk...dm as the data of QR2
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>

## ⑦ Status querying Commands

### Transmission status

Name	Transmission status					
Code	ASCII : GS r n DEC : 29 114 n HEX : 1D 72 n					
Function	Transmits the status specified by n as follows: <table><tr><td>n</td><td>Function</td></tr><tr><td>1, 49</td><td>Transmits paper sensor status</td></tr></table>		n	Function	1, 49	Transmits paper sensor status
n	Function					
1, 49	Transmits paper sensor status					
Range	n = 1, 49					
Default	None					
Notes	<p>When using a serial interface</p> <p>When DTR/DSR control is selected, the printer transmits only 1 byte after confirming the host is ready to receive data (DSR signal is SPACE). If the host computer is not ready to receive data (DSR signal is MARK), the printer will wait until the host is ready.</p> <p>When XON/XOFF control is selected, the printer transmits only 1 byte without confirming the status of the DSR signal.</p> <p>This command is executed when data is generated in the print buffer. Therefore, there may be a time interval between receiving the command and sending status, depending on the status of</p>					

the receiving buffer.

When Auto Status Back (ASB) is enabled using GS a, the status transmitted by GS r and the ASB status must be differentiated using.

The status types to be transmitted are shown as below:

Bit	Off/On	Hex	Decimal	Status for ASB
0, 1	-	-	-	Undefined.
2, 3	Off	00	0	Paperend sensor: paper adequate.
	On	(0C)	(12)	Paperend sensor: paper near end.
4	Off	00	0	unused. fixed to be Off.
5, 6	-	-	-	Undefined.
7	Off	00	0	unused. fixed to be Off.

Paper sensor status (n = 1, 49):

Bits 2 and 3: When the paper end sensor detects the paper end, the printer goes offline and does not execute this command. Therefore, bits 2 and 3 do not transmit the status of paper end.

Example None

## Transit the printer status to host

Name	Transit the printer status to host		
Code	ASCII : GS v		
	DEC : 27 118		
	HEX : 1B 76		
Function	transit a byte printer status to host.		
	Only works in serial printer.		
	Send bytes are defined as follows:		
	byte	function	number
	0		
	1		

	2	No paper	1	
	3	Printer failure	1	
	4	0	0	
	5			
	6	The heating plate is overheated	1	
	7			
Default	None			
Notes	None			
Example	None			

## Transit printer ID

Name	Transit printer ID				
Code	ASCII : GS I n DEC : 29 73 n HEX : 1D 49 n				
Function	Transit printer ID or the information that specified by printer Send bytes are defined as follows:				
	n		ID type of printer		ID
	1,49		ID of printer type		HEX: 20/DEC: 32
	2,50		ID type		Check below
	Bites	Off/on	HEX	DEC	Content
	0	off	00	0	Double-byte character code is not supported
		on	01	1	Double-byte character code can be supported
	1	on	02	2	Automatic paper cutter has been installed
	2, 3	--	--	--	unused
	4	off	00	0	fixed
	5	--	--	--	retain
	6	--	--	--	unused
	7	off	00	0	fixed
	Information B can be specified				
	n	Printer type		Content	
	65	Fixed version		Depends on software version	
	66	manufacturer		"Cashino"	
	67	Printing name		"LPM260" or "PTP-II"	

	68	Printing ID	Seiral No.
	69	Chinese characters	Simplified Chinese mode: GBK
			Traditional Chinese mode : BIG-5
Range	n=1,2,49,50 [printer ID] $65 \leq n \leq 69$ [printer information B]		
Default	None		
Notes	None		
Example	None		

## Select peripherals

Name	Select peripherals								
Code	ASCII : ESC=N DEC : 27 61 n HEX : 1B 3D n								
Function	Select host device to transit the data <table><tr><td>n</td><td>function</td></tr><tr><td>1,3</td><td>Enable printer</td></tr><tr><td>2</td><td>Forbid printer</td></tr></table>			n	function	1,3	Enable printer	2	Forbid printer
n	function								
1,3	Enable printer								
2	Forbid printer								
Range	0 ≤ n ≤ 255								
Default	N=1								
Notes	None								
Example	None								

## Transit the status of peripherals to host

Name	Transit the status of peripherals to host		
Code	ASCII : ESC u DEC: 27 117 HEX :1B 75		
Function	Transit the status of peripherals to host, only works in serial printer. Senddefinition of bytes byte 0: drawer kick (0) /close electrical level (1) byte 4: constant to be0		
Default	None		
Notes	None		

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

### Allow, forbid status uploading automatically

Name	Allow, forbid status uploading automatically				
Code	ASCII : GS a n DEC : 27 97 n HEX : 1D 61 n				
Function	Only works in serial printer n are defined as follows:				
	byte	Function	Number		
			0	1	
	0	fixed to be 0			
	1				
	2	Forbid, allow status uploading automatically	Forbid	Allow	
	3-4				
	5	Forbid,allowERROR set BUSY RTS=BUSY	Forbid	Allow	
	6-7				
Default	None				
Notes	When effective, printer found status changed, the status will be automatically sent to the host				
Example	None				

### Real-time transmission status

Name	Real-time transmission status				
Code	ASCII : DLE EOT n DEC : 16 4 n HEX : 10 04 n				
Function	According to below parameters, transit the real-time status of printer,n stands for printer status: N=1:transmit printer status N=2:transmit off-line status N=3:transmit error status N=4:transmit paper sensor status				
Range	$1 \leq n \leq 4$				
Default	None				
Support	All				

- Printer return to the relative status immediately after receiving the command
- this command try not to put in command list between 2 or more bite .  
Though printer being forbid by ESC=,this command still effective.  
Printer transmit current situation ,each situation show by 1 bite data.  
It is not sure host computer will receive printer transmit situation.  
Printer executed immediately after received the command.  
The command only effective for serial printer.Printer start to work immediately after receiving this command at any situation.

n=1: printer status

Bit	0/ 1	Hexadecim al	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	Hexadecim	decimalis	Function
		/	al	m	
		1			
	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	Unrecoverable error
	6	0	00	00	Printer head temp and voltage are normal
		1	40	64	Printer head temp. and voltage are exceed
	7	0	00	0	Fixed to be 0
	Unrecoverable error: abnormal input voltage				
	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.				
	n=4: paper sensor status				
	bite	0	Hexadecim	decimalis	Function
		/	al	m	
		1			
	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	10 04 01				
	10 04 02				
	10 04 03				
	10 04 04				

## Real-time request

Name	Real-time request		
Code	ASCII : DLE ENQ n		
	DEC : 16 5 n		
	HEX : 10 05 n		
Function	The printer responds to the request n of the host by specifying the following request		
	n	Request	
	1	Restart printing from the error recovery and from the line where the error occurred This command is ignored unless a recoverable error occurs	
	2	Restore the printer from the error status and empty	



		the command receiving buffer and printing buffer, which is ignored unless a failure is too lazy to occur	
Range	N=1,2		
Default	None		
Notes	<p>This command valids only when the cutter goes wrong Consider the following:</p> <ol style="list-style-type: none"> <li>1. If the printer data contains the same data as the command, the data will be executed as the command. Users need to consider this situation. Example: the graphic data may contain strings that matchs it</li> <li>2. Do not embed this command into another command Example: the graphical data may contain this command</li> </ol>		
Example	None		

## Real-time pulse

Name	Real-time pulse							
Code	ASCII : DLE DC4 fn m t DEC : 16 20 fn m t HEX : 10 14 fn m t							
Function	<p>T stands for the real-time output pulse, and m is the connection pin</p> <table><tr><td>m</td><td>Connection pin</td></tr><tr><td>0</td><td>drawer socket pin 2</td></tr><tr><td>1</td><td>drawer socket pin 2</td></tr></table> <p>T specifies that the starting/closing time of the pulse is (t*100ms)</p>		m	Connection pin	0	drawer socket pin 2	1	drawer socket pin 2
m	Connection pin							
0	drawer socket pin 2							
1	drawer socket pin 2							
Range	Fn=1, m=0,1,10≤ t≤ 8							
Default	None							
Notes	<p>Consider the following:</p> <p>1. If the printer data contains the same data as the command, the data will be executed as the command. Users need to consider this situation.</p> <p>Example: the graphic data may contain strings that matchs it</p> <p>2. Do not embed this command into another command</p> <p>Example: the graphical data may contain this command</p>							
Example	None							

## ⑧ Commands in page print mode

### Forms feed

Name	Forms feed
Code	ASCII : FF Decimal : 12 Hex : 0C
Function	The FF command prints the data already contained in the print buffer, then sets the next-data receive position at the leftmost column on the next page.
Range	None
Default value	None
Notes	Valid only when this command is input in page print mode. Remove data from print buffers after printing This command sets the print location as the starting point for the line
Example	None

### Data print in page print mode

Name	Data print in page print mode
Code	ASCII : ESC FF Decimal : 27 12 Hex : 1B 0C
Function	Performs the batch printing of data developed in the entire print area in page print mode.
Range	None
Default value	None
Notes	Valid only when this command is input in page print mode.
Example	None

### Page print mode select

Name	Page print mode select
------	------------------------

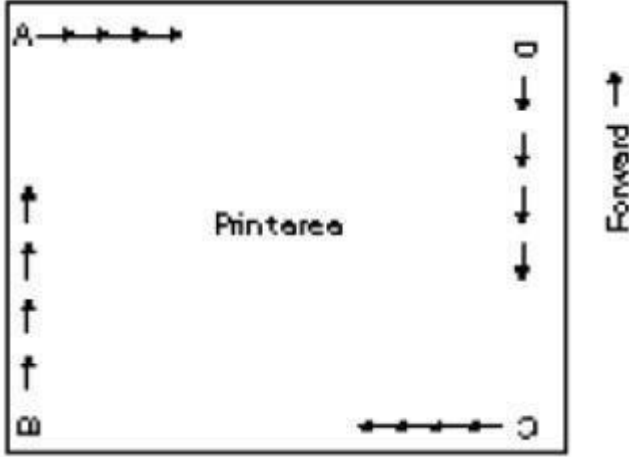
Code	ASCII : ESC L Decimal : 27 76 Hex : 1B 4C
Function	Switches from standard mode to page mode.
Range	None
Default value	None
Notes	Valid only when this command is input in page print mode. In the line print mode, this function is valid only when this command is input in the beginning of the line After turning on power , or resetting printer printing by ESC@ ,page print mode is returned to line print mode.
Example	None

### Line print mode select.

Name	Line print mode select.
Code	ASCII : ESC S Decimal : 27 83 Hex : 1B 53
Function	The ESC S command selects line print mode.
Range	None
Default value	None
Notes	Valid only when this command is input in page print mode. Data developed in page print mode is erased. This command sets the print location as the starting point for the line. The print locale set by ESC W is initialized
Example	None

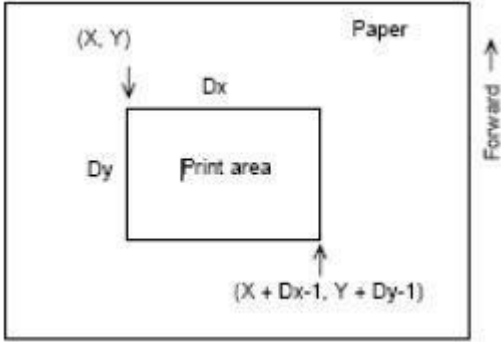
### Character development angle select in page print mode.

Name	Character development angle select in page print mode.
Code	ASCII : ESC T n Decimal : 27 84 n Hex : 1B 54 n
Function	This command sets the print direction of characters in the page print mode and the start position of data development.

	The relationship of n, print direction and start position of data		
	a	Development direction	Development start position
	0,48	Left → right	Upper left [(a) in drawing at right]
	1,49	Bottom → top	Lower left [(b) in drawing at right]
	2,50	Right → left	Lower right [(c) in drawing at right]
	3,51	Top→bottom	Upper right [(d) in drawing at right]
development is as follows.:			
			
Range	$0 \leq n \leq 3, 48 \leq n \leq 51$		
Default value	n=0		
Notes	<p>When line mode is specified, only the internal set values are changed, and printing in line mode is not influenced by this command.</p> <p>If page area is changed by ESC W, the start point of character development is changed according to the area size</p>		
Example	None		

## Page print mode print area setting

Name	Page print mode print area setting.
Code	ASCII : ESC W xL XH yL yH dxL dxH dyL dyH Decimal : 27 87 xL XH yL yH dxL dxH dyL dyH Hex : 1B 57 xL XH yL yH dxL dxH dyL dyH
Function	X0,y0,dx,dy define respectively Horizontal start point, Vertical start point,Horizontal length,Vertical length

	<p>Each parameter sets the following functions:</p> $X0 = [(xL + xH * 256) * 0.125\text{mm}]$ $y0 = [(yL + yH * 256) * 0.125\text{mm}]$ $dx = [(dxL + dxH * 256) * 0.125\text{mm}]$ $dy = [(dyL + dyH * 256) * 0.125\text{mm}]$
Range	$0 \leq xL, xH, yL, yH, dxL, dxH, dyL, dyH \leq 255$ (Except $dxL = dxH = 0$ or $dyL = dyH = 0$ )
Default value	None
Notes	<p>When line mode is specified, only the internal set values are changed, and printing in line mode is not influenced by this command;</p> <p>If the horizontal start point or the vertical start point is not in a printable area, printer stops the command processing and follows the following data to normal processing;</p> <p>If the print area width and height are set to 0, printer stops the command processing and follows the following data to normal processing;</p> <p>This command sets the area of the data buffer, which is the area specified by the ESC T in the Print area range ;</p> <p>If the (horizontal start point+width of print area) exceed the print area, then the print area width is automatically set to (horizontal printable area-horizontal start point);</p> <p>If the (vertical start point+height of print area) exceed the print area, then the print area width is automatically set to (vertical printable area-vertical start point);</p> <p>Use 0.125mm space to set the horizontal start position and print area width, and use 0.125mm space to set the vertical start position and print area height;</p> <p>If the horizontal start point is X, the vertical start point is Y, the horizontal length is dX and the vertical length is dY, then the printable area is as follows.:</p> 
Example	None

## Vertical absolute position setting in page print mode

Name	Vertical absolute position setting in page print mode
Code	ASCII : GS \$ nL nH Decimal : 29 36 nL nH Hex : 1D 24 nL nH
Function	The GS \$ command sets vertical absolute position in page print mode. The absolute position is at $[(nL+nH*256)*0.125\text{mm}]$
Range	$0 \leq nL \leq 255, 0 \leq nH \leq 255$
Default value	None
Notes	Valid only when this command is input in page print mode. If $[(nL+nH*256)*(\text{vertical or horizontal movement unit})]$ this command is ignored Does not move at the horizontal starting area of the buffer The command operates as follows, depending on the starting area of the print area set by the ESC T If start area is set to upper left or lower right, then this command sets absolute area in vertical direction If start area is set to upper right or lower left, then this command sets absolute area in horizontal direction
Example	None

## Vertical relative position setting in page print mode

Name	Vertical relative position setting in page print mode
Code	ASCII : GS \ nL nH Decimal : 29 92 nL nH Hex : 1D 5C nL nH
Function	Page mode setting starts at the current position and prints the start position relatively vertically This command sets the distance from the current position to $[(nL+nH*256)*0.125\text{mm}]$
Range	$0 \leq nL \leq 255, 0 \leq nH \leq 255$
Default value	None
Notes	When the specified n is a downward motion: $nL+nH*256=N$ When you specify N as the upward motion (negative direction), use the 65536 complement

	<p>When the specified n is up motion:  <math>nL+nH*256=65536-N</math></p> <p>Any settings that exceed the specified print area are ignored</p> <p>Use vertical motion units(y) when you set the start position to the upper-left or lower-right of the print area</p> <p>Use horizontal Motion unit (x) when you set the start position to the upper right or lower left of the print area</p>
Example	None

## ⑨Other commands

### Printer reset

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

### Print self-test page

Name	Print self-test page
Code	ASCII : DC2 T Decimal : 18 84 Hex : 12 54
Function	Printing a self-test page which including firmware version,interface,codepage and other some information
Range	None
Default value	None
Notes	None
Example	1B 40 12 54

## paper cut

Name	paper cut	
Code	①	
	ASCII	: GS V m
	Decimal	: 29 86 m
	Hex	: 1D 56 m
	②	
	ASCII	: GS V m n
Function	This command executes paper cutting The relationship between parameter m and the cut mode is as follows:	
	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	<p>This command is valid only at the beginning of the line</p> <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	<pre>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</pre>	

## Full cut

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

## Partial cut

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

## Specified pulse generation

Name	Specified pulse generation
Code	ASCII : ESC p m t1 t2 Decimal : 27 112 m t1 t2 Hex : 1B 70 m t1 t2
Function	Outputs the signal specified by t1 and t2 to the connector pin m.
Range	m=0,1,48,49 $0 \leq t1 \leq 255$ $0 \leq t2 \leq 255$
Default value	无
Notes	1、The pulse signal which is set by t1 and t2 is out from indicated drawer kick connector pin by parameter m.

	<table><tr><td>m</td><td>Function</td></tr><tr><td>0,48</td><td>Drawer kick/Turn off the signal. (No.2pin)</td></tr><tr><td>1,49</td><td>Drawer kick/Turn off the signal. (No.5pin)</td></tr></table>	m	Function	0,48	Drawer kick/Turn off the signal. (No.2pin)	1,49	Drawer kick/Turn off the signal. (No.5pin)
	m	Function					
	0,48	Drawer kick/Turn off the signal. (No.2pin)					
	1,49	Drawer kick/Turn off the signal. (No.5pin)					
2、On-time is t1x2ms. Off time is t2x2ms							
3、Printer does not process this command when T2 <= T1							
Example	1B 40 1B 70 00 10 32 1B 70 01 10 32						

## Setting up paper type

Name	Setting up paper type
Code	ASCII : US A n Decimal : 31 65 n Hex : 1F 41 n
Function	Setting up paper type n=0, Thermal paper n=1, label paper
Range	None
Default value	None
Notes	None
Example	None

## Feed to the beginning of the next label

Name	Feed to the beginning of the next label
Code	ASCII : SO Decimal : 14 Hex : 0E
Function	Feed to the beginning of the next label
Range	None
Default value	None
Notes	Only feed to the next label
Example	None