

80mm POS Thermal Printer

User Manual

- 351005: with USB, Serial, Ethernet connection
- 351006: with USB, Bluetooth, WiFi connection



MENU

1. Summary	1
① CN811	1
② Main features	1
2. Interface Definitions	1
① POWER	1
② USB Interface Pin Definition (Standard Type B Female Chassis)	1
③ Serial Interface Pin Definitions (DB9F)	1
④ Pin Definitions for the Chambers Interface	1
4. Command List	3
5. Commands in detail	4
① Print and feed commands	4
Print and feed	4
Enter	5
Print and feed n dots	5
Print and feed n lines	6
② Print Setup Command	6
Set the line spacing to n dots	6
Set the line spacing to the default value	7
Set the print position	7
Setting the amount of left-hand margin	8
Setting the Right Spacing of Characters	8
Selecting a font	9
Setting the Character Printing Method	9
Setting the character size	10
Setting and unsetting highlight printing	11
Setting and un-underlining	12
Setting and unsetting 90° rotation printing	12
Setting and unsetting bold printing	13
Setting and unsetting overlapping printing	14
Setting and Unsetting Upside Down Printing	14
Setting Print Alignment	15
Setting Chinese character mode	16
Setting Chinese Character Print Mode Combination	16
Cancel Chinese character mode	18
Selecting and canceling user-defined character sets	18
Defining user-defined character sets	19
Canceling user-defined characters	21
Select International Character Set	21
Selecting the Character Code Page	22
Switching double-byte encoding	24
③ Graphic Printing Instructions	24

Graphic Vertical Fetch Data Filling	24
Horizontal mold data printing	26
Define the downcast bitmap	27
Print the downcast bitmap	28
Defining NV Bitmaps	29
Printing NV Bitmaps	32
Printing raster bitmaps	33
Horizontal position printing of line segments (Curve Print command)	34
④ Tabulation instruction	40
Horizontal Tabulation	40
Setting the Horizontal Tab Position	40
⑤ 1D Barcode Printing Instructions	41
Setting the 1D Barcode Readable Character (HRI) Print Position	41
Setting the height of a 1D barcode	42
Setting the width of a 1D barcode	42
Printing 1D barcodes	43
⑥ QR Code Printing Instructions	49
Setting the module type for QR codes	49
Setting the error correction level error of QR code	49
Storing QR code data to the QR code buffer	50
Printing QR Code	51
Setting the graphic information of the QR code	51
Printing the QR code	52
⑦ Status instruction	53
Transmission state	53
Real-time transmission status	54
Real-time printer requests	56
Allow, disallow automatic status reply (ASB)	57
⑧ Other commands	59
Initializing the printer	59
Printing the self-test page	60
Setting the print density	60

1. Summary

① CN811

CN811 is a lightweight and delicate printer that meets the bill and cash register printing in many industries. Low power consumption and high quality, stable performance, motor and thermal print head after countless tests to meet high standards, the printer supports USB, serial, network interface, can be connected to external money box control interface, convenient and practical wide.

List of supported operating systems:

WINDOWS XP

WINDOWS 7 32/64

WINDOWS 8

WINDOWS 10

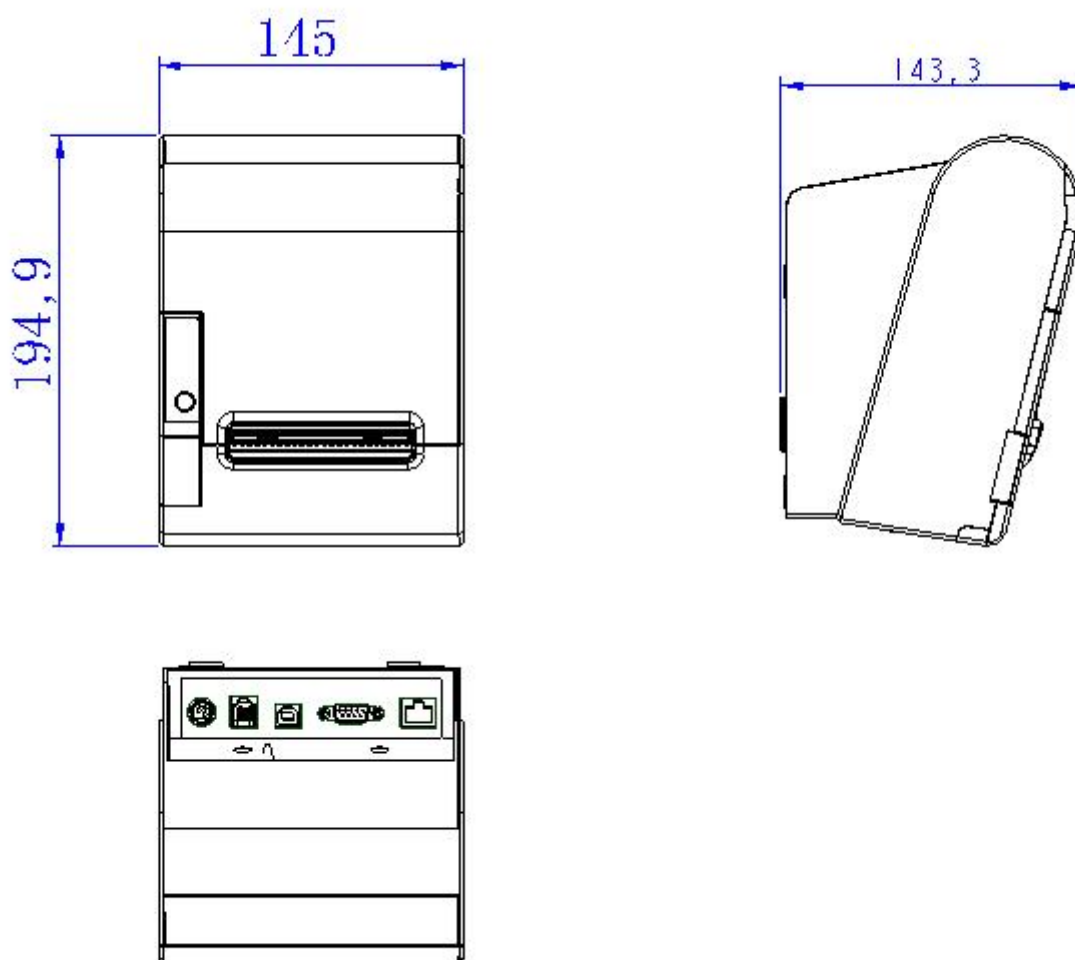
UBUNTU 12.04 32/64

UBUNTU 14.04 32/64

② Main features

- 1)Exquisite and beautiful
- 2)Support USB, serial port, network port
- 3)Money box control interface
- 4)Low noise, high quality printing
- 5)Convenient and quick way of paper loading
- 6)Easy to use and maintain
- 7)Support continuous paper printing

2.Appearance



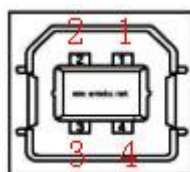
2. Interface Definitions

① POWER

Power Pin Definitions (24v models).

Pin number	Signal name
1	VIN(+24V)
2	GND

② USB Interface Pin Definition (Standard Type B Female Chassis)



③ Serial Interface Pin Definitions (DB9F)

The printer serial interface is compatible with the RS-232 standard and its interface socket is a 9PIN hole type D socket.

Pin number	Signal name	Direction
1	VBUS	+5V
2	D-	Data Line (D-)
3	D+	Data Line (D+)
4	GND	Ground

The user can check the status of the interface settings by printing a configuration sample; the printer's default serial interface settings are: baud rate 9600bps, 8 data bits, no parity, 1 stop bit, and DTR/DSR handshake.

Pin Number	Signal Definition
1	CD
2	TD
3	RD
4	DSR
5	GND
6	DTR
7	CTS
8	RTS
9	RI

④ Pin Definitions for the Chambers Interface

Pin number	Signal name	Direction
1	FG	Shell of machine
2	DRAWER 1	Cashdrawer 1 drive signal
3	DRSW	Cashdrawer condition monitoring signals
4	VDR	Cashdrawer drive power supply
5	DRAWER 2	Cashdrawer 2 drive signal
6	GND	common ground for electric circuits



3. Technical specifications

Print Method	line matrix thermal printing
Paper Width	80mm
Print Width	72mm
Resolution	203DPI
Dots per line	576 dots
Print speed	250mm/s
Printable content	GBK Chinese characters library, ASCII characters, 1D barcode, support different density dot map, raster bitmap and download bitmap printing. Extendable 2D barcode.

Default Fonts	9X17(ASCII),24x24(中文)
Barcode Type	UPC-A, UPC-E, EAN13,EAN8,Code 39, Codebar,Code 93, ITF, CODAB, Code 128, UCC/EAN128
Working voltage	24V

4. Command List

LF	Print and feed	Print and feed commands
CR	Enter	
ESC J	Print and feed n dots	
ESC d	Print and feed n lines	
ESC 3	Set the line spacing to n dots	Print Setup Command
ESC 2	Set line spacing to default	
ESC \$	Set the print position	
GS L nL nH	Set the amount of left-hand margin	
ESC SP n	Set the right spacing of characters	
ESC !	Set the character print method	
ESC M n	Select font	
GS ! n	Set the character size	
GS B n	Set and unset highlight printing	
ESC - n	Set and unsetting underlining	
ESC V n	Setting and unsetting 90° rotation printing	
ESC E n	Setting and unsetting bold printing	
ESC G n	Setting and unsetting overlapping printing	
ESC { n	Setting and Unsetting Upside Down Printing	
ESC a	Setting the print alignment	
FS &	Setting Chinese character mode	
FS ! n	Setting Chinese character Print Mode Combination	
FS .	Cancel Chinese character mode	
ESC % n	Selection and cancellation of user-defined character sets	
ESC &	Define user-defined character sets	
ESC ? n	Cancel user-defined characters	
ESC R n	Select an international character set	
ESC t n	Select character code page	
ESC 9 n	Switching double-byte encoding	
ESC *	Graphic Vertical Modelling Data Filling	Graphic Printing Instructions
GS v 0	Printing of image level take-off data	
GS *	Define the downcast bitmap	
GS / m	Print the downlinked bitmap	
FS q	Define NV Bitmaps	

FS p n m	Print NV Bitmap	
GS v 0 m	Print raster bitmap	
GS n	Horizontal position printing of line segments (curve printing command)	
HT	Horizontal tabulation	Tabulation instruction
ESC D	Setting the horizontal tab position	
GS H	Setting the 1D barcode readable character (HRI) print position	1D Barcode Printing Instructions
GS h	Setting the height of a 1D barcode	
GS w	Setting the width of a 1D barcode	
GS k	Print 1D barcode	
GS k	Print QR code	QR Code Printing Instructions
GS (k pL pH cn fn n	Setting the module type for QR codes	
GS (k pL pH cn fn n	Setting the error correction level error of QR code	
GS(k pL pH cn fn m d1...dk	Storing QR code data to the QR code buffer	
GS(k pL pH cn fn m	Print QR code	
GS(k pL pH cn fn m	Setting the graphical information of the QR code	
GS r n	Transmission state	Status Commands
DLE EOT n	Real-time transmission status	
DLE ENQ n	Real-time printer requests	
GS a n	Allow, disallow automatic status reply (ASB)	
ESC @	Initialising the printer	Other commands
DC2 T	Print self-test page	
ESC 7	Setting the print density	

5. Commands in detail

①Print and feed commands

Print and feed

Command name	Print and feed
Command code	ASCII: LF Decimal system: 10 Hexadecimal system: 0A
Function Description	Prints the contents of the print buffer, then sets a feed line based on the current line spacing and adjusts the print position to the start of the next line
Parameter	None

range	
Default value	None
Supported Models	All models
Precaution	None
Example of use	None

Enter

Command name	Enter
Command code	ASCII: CR Decimal system: 13 Hexadecimal system: 0D
Function Description	Same as LF when print cache is not empty, otherwise no effect.
Parameter range	None
Default value	None
Supported Models	All models
Precaution	
Example of use	None

Print and feed n dots

Command name	Print and feed n dots
Command code	ASCII: ESC J n Decimal system: 27 74 n Hexadecimal system: 1B 4A n
Function Description	Prints and feeds the contents of the print buffer n points
Parameter range	$0 \leq n \leq 255$
Default value	None
Supported Models	All models
Precaution	When the print buffer is empty, only n dots are fed. After this instruction is executed, the print position moves to the start of the next line
Example of use	1b 40 30 31 32 1b 4a 10

Print and feed n lines

Command name	Print and feed n lines
Command code	ASCII: ESC d n Decimal system: 27 100 n Hexadecimal system: 1B 64 n
Function Description	Prints and feeds the contents of the print cache n lines
Parameter range	$0 \leq n \leq 255$
Default value	None
Supported Models	All models
Precaution	This command sets the print start position to the beginning of the line
Example of use	1b 40 30 31 32 1b 64 01

②Print Setup Command

Set the line spacing to n dots

Command name	Set the line spacing to n dots
Command code	ASCII: ESC 3 n Decimal system: 27 51 n Hexadecimal system: 1B 33 n
Function Description	Set the line spacing to n dots
Parameter range	$0 \leq n \leq 255$
Default value	n = 33
Supported Models	All models
Precaution	The line spacing is illustrated below: If the set line spacing is less than the maximum character height in a line, then the line spacing is equal to the maximum character height. If ESC 2, ESC @, printer reset, or printer power failure occurs, the line spacing returns to the default value.
Example of use	1b 40 1b 33 60 30 31 32 0d 0a

	30 31 32 0d 0a 1b 32 30 31 32 0d 0a 30 31 32 0d 0a
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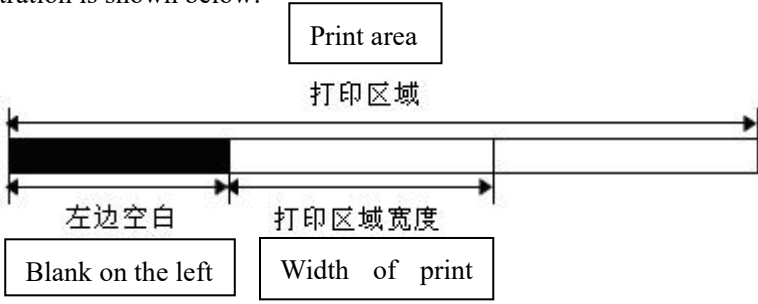
Set the line spacing to the default value

Command name	Set the line spacing to the default value
Command code	ASCII: ESC 2 Decimal system: 27 50 Hexadecimal system: 1B 32
Function Description	Set the line spacing to the default of 33 dots
Parameter range	None
Default value	None
Supported Models	All models
Precaution	See the ESC 3 command for details on line spacing. If the set line spacing is less than the maximum character height in a line, then the line spacing is equal to the maximum character height. You can use ESC 3 to customize the line spacing.
Example of use	None

Set the print position

Command name	Set the print position
Command code	ASCII: ESC \$ nL nH Decimal system: 27 36 nL nH Hexadecimal system: 1B 24 nL nH
Function Description	Adjust the print position to (nL + nH × 256) points from the print start position.
Parameter range	$0 \leq nL \leq 255$, $0 \leq nH \leq 255$
Default value	None
Supported Models	All models
Precaution	This command is only valid for this line, the print position is reset to the start position after line feed. If the print range is exceeded, the print position is moved to the next line.
Example of use	1b 40 1b 24 08 00 30 31 32 0d 0a 30 31 32 0d 0a

Setting the amount of left-hand margin

Command name	Setting the print position
Command code	ASCII: GS L nL nH Decimal system: 29 76 nL nH Hexadecimal system: 1D 4C nL nH
Function Description	Set the amount of left-hand side blanking to $(nL + nH \times 256)$ points
Parameter range	$0 \leq nL \leq 255$, $0 \leq nH \leq 255$
Default value	None
Supported Models	All models
Precaution	This command is valid only when processing at the start of a line. The illustration is shown below:  If the setting is outside the printable range, the maximum value in printable units is used
Example of use	<pre>1b 40 1d 4c 30 00 30 31 32 0d 0a 30 31 32 0d 0a</pre>

Setting the Right Spacing of Characters

Command name	Setting the Right Spacing of Characters
Command code	ASCII: ESC SP n Decimal system: 27 32 n Hexadecimal system: 1B 20 n
Function Description	Set the spacing to the right of the characters to $[n \times 0.125 \text{ mm}]$.
Parameter range	$0 \leq n \leq 255$
Default value	0
Supported Models	All models
Precaution	For double-width mode, the right-hand character spacing is twice that in normal mode. When characters are enlarged, the right-hand character spacing is n times

	that in normal mode. This command does not affect the setting of Hanzi characters.
Example of use	1B 40 1B 20 18 30 31 32 0D 0A

Selecting a font

Command name	Selecting a font						
Command code	ASCII: ESC M n Decimal system: 27 77 n Hexadecimal system: 1b 4d n						
Function Description	Selecting a character font <table border="1"> <thead> <tr> <th>n</th><th>Function</th></tr> </thead> <tbody> <tr> <td>0, 48</td><td>Select Font A (12×24) 。</td></tr> <tr> <td>1, 49</td><td>Select Font (9×24) 。</td></tr> </tbody> </table>	n	Function	0, 48	Select Font A (12×24) 。	1, 49	Select Font (9×24) 。
n	Function						
0, 48	Select Font A (12×24) 。						
1, 49	Select Font (9×24) 。						
Parameter range	n = 0, 1						
Default value	n = 0						
Supported Models	Part of the model						
Precaution	ESC ! The font type can also be selected. But the settings made by the last received command are valid.						
Example of use	1b 40 1b 4d 00 30 31 32 0d 0a 1b 4d 01 30 31 32 0d 0a						

Setting the Character Printing Method

Command name	Setting the Character Printing Method
Command code	ASCII: ESC ! n Decimal system: 27 33 n Hexadecimal system: 1B 21 n
Function Description	Sets the character printing method (font, highlight, invert, bold, height, width, and underline), with the bits of the parameter n is defined as follows: Bit Function Value 0 1 0 Font Normal Small letters 1 Undefined 2 Undefined

	3 Bold Cancel Setting 4 Height Cancel Set 5 Width Cancel Set 6 Undefined 7 Underline Cancel Setting
Parameter range	None
Default value	n = 0
Supported Models	All models
Precaution	This command is valid for both Chinese fonts and foreign fonts. When ESC @, printer reset, or power failure, the setting of this command is invalidated.
Example of use	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

Setting the character size

Command name	Setting the character size					
Command code	ASCII: GS ! n Decimal system: 29 33 n Hexadecimal system: 1d 21 n					
Function Description	Set the character size to 1-8 times the width, 1-8 times the height Definitions are as follows: Use bits 0 through 3 to set the character height bits 4 through 7 to set the character width as follows					
	Table 1		Table 2			
	Character width setting		Character height setting			
	Hexadecimal system	Decimal system	Width	Hexadecimal system	Decimal system	Width
	00	0	1(Normal)	00	0	1(Normal)
10	16	2(Multiple widths)	01	1	2(Multiple heights)	

	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
Parameter range	None						
Default value	n = 0						
Supported Models	All models						
Precaution	This command is valid for Chinese fonts and foreign fonts except HRI characters. The setting of this command is invalid when ESC @, printer reset, or power failure occurs.						
Example of use	<pre>1b 40 1d 21 11 30 31 32 0d 0a 30 31 32 0d 0a</pre>						

Setting and unsetting highlight printing

Command name	Setting and unsetting highlight printing
Command code	ASCII: GS B n Decimal system: 29 66 n Hexadecimal system: 1d 42 n
Function Description	Sets or disables the anti-whiteout print mode. When the lowest valid bit of n is 0, the anti-whiteout mode is off. When the lowest valid bit of n is 1, the highlight mode is on.
Parameter range	None
Default value	n = 0
Supported Models	All models
Precaution	Only the lowest bit of n is valid. This command is valid for both built-in characters and user-defined characters. It is also valid for blanks set by ESC SP when highlight mode is on. This command does not affect bitmaps, user-defined bitmaps, bar codes, HRI characters, and spaces skipped by HT, ESC \$. This command does not affect line spacing. Highlight mode takes precedence over underline mode. When the anti-whiteout mode is set, it is disabled (but not canceled) even if the underline mode is on. The setting of this command is invalidated when ESC @, the printer is reset, or

	power is lost
Example of use	1b 40 1d 42 01 30 31 32 0d 0a 30 31 32 0d 0a

Setting and un-underlining

Command name	Setting and un-underlining								
Command code	ASCII: ESC - n Decimal system: 27 45 n Hexadecimal system: 1B 2D n								
Function Description	Set/unset the underline mode based on the following n values: <table border="1"> <thead> <tr> <th>n</th><th>Function</th></tr> </thead> <tbody> <tr> <td>0, 48</td><td>Un-underline mode</td></tr> <tr> <td>1, 49</td><td>Set underline mode (1 point bold)</td></tr> <tr> <td>2, 50</td><td>Set underline mode (2-point bold)</td></tr> </tbody> </table>	n	Function	0, 48	Un-underline mode	1, 49	Set underline mode (1 point bold)	2, 50	Set underline mode (2-point bold)
n	Function								
0, 48	Un-underline mode								
1, 49	Set underline mode (1 point bold)								
2, 50	Set underline mode (2-point bold)								
Parameter range	$0 \leq n \leq 2, 48 \leq n \leq 50$								
Default value	n = 0								
Supported Models	All models								
Precaution	The printer can underline all characters (including the space to the right of the character), except white space set by HT. The printer cannot underline characters that are rotated 90° clockwise, or characters that are highlighted. When the underline mode is deactivated by setting the value of n to 0 or 48, subsequent data is not underlined, and the underline thickness set before deactivating the underline mode is not changed. The default underline thickness is 1 point. Changing the character size does not affect the current underline coarseness. Using ESC ! to set or unset the underline mode as well. However, note that the last command received is valid.								
Example of use	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								

Setting and unsetting 90° rotation printing

Command name	Setting, unsetting 90° clockwise rotation printing
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Command code	ASCII: ESC V n Decimal system: 27 86 n Hexadecimal system: 1B 56 n
Function Description	Sets or releases 90° rotary printing. When n equals 0 or 48, releases 90° rotary printing. When n is equal to 1 or 49, 90° rotary printing is set.
Parameter range	$0 \leq n \leq 1, \quad 48 \leq n \leq 49$
Default value	n = 0
Supported Models	All models
Precaution	When the Underline mode is set, the printer does not underline characters that are rotated 90° clockwise. In the 90° clockwise rotation mode, the direction in which the Multiply Height and Multiply Width commands magnify the character is the opposite of the direction in which the Multiply Height and Multiply Width commands magnify the character in the normal mode. The setting of this command is invalidated when ESC @, printer reset, or power failure occurs.
Example of use	1b 40 1b 56 01 30 31 32 0d 0a 30 31 32 0d 0a

Setting and unsetting bold printing

Command name	Setting and unsetting bold printing
Command code	ASCII: ESC E n Decimal system: 27 69 n Hexadecimal system: 1B 45 n
Function Description	Sets or releases the bold print mode. When the lowest valid bit of n is 0, the bold print mode is released. When the least significant bit of n is 1, the bold print mode is set.
Parameter range	$0 \leq n \leq 255$
Default value	n = 0
Supported Models	All models
Precaution	Only the least significant bit of n is allowed This command and ESC ! to set and unset the bold print mode in the same way. Be careful when this command and ESC ! are used together, be careful. The setting of this command is invalidated when ESC @, the printer is reset, or power is lost
Example of use	1b 40 1b 45 01 30 31 32 0d 0a

	1b 40 1b 45 00 30 31 32 0d 0a 1b 40 1b 45 01 B0 AE C9 CF D7 D4 BC BA 0D 0A 1b 40 1b 45 00 B0 AE C9 CF D7 D4 BC BA 0D 0A
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Setting and unsetting overlapping printing

Command name	Setting and unsetting overlapping printing
Command code	ASCII: ESC G n Decimal system: 27 71 n Hexadecimal system: 1B 47 n
Function Description	Sets or releases the overlap print mode. When the lowest valid bit of n is 0, overlay print mode is released. When the lowest valid bit of n is 1, the overprint mode is set.
Parameter range	$0 \leq n \leq 255$
Default value	n = 0
Supported Models	All models
Precaution	Only the least significant bit of n is allowed. The printer output is the same in Overlay and Bold modes. The setting of this command is invalidated when ESC @, printer reset, power failure
Example of use	1b 40 1b 47 00 30 31 32 0d 0a 1b 40 1b 47 01 30 31 32 0d 0a 1b 40 1b 47 01 B0 AE C9 CF D7 D4 BC BA 0D 0A

Setting and Unsetting Upside Down Printing

Command name	Setting and Unsetting Upside Down Printing
Command code	ASCII: ESC { n Decimal system: 27 123 n Hexadecimal system: 1B 7B n
Function Description	Sets or disables the upside-down printing mode. When the lowest valid bit of n is 0, turns off the upside-down printing mode. When the lowest valid bit of n is 1, the reverse print mode is turned on.

	When the reverse print mode is off When the reverse print mode is on 当颠倒打印模式关闭时。 当颠倒打印模式打开时。 Paper feed direction
Parameter range	$0 \leq n \leq 255$
Default value	$n = 0$
Supported Models	All models
Precaution	Only the lowest bit of n is valid. This command is valid only when entered at the beginning of a line in standard mode. In reverse print mode, the printer rotates the line to be printed 180° before printing. The setting of this command is invalidated when ESC @, the printer is reset, or power is lost.
Example of use	<pre>1b 40 1b 7b 00 30 31 32 0d 0a 1b 40 1b 7b 01 30 31 32 0d 0a 1b 40 1b 7b 01 B0 AE C9 CF D7 D4 BC BA 0D 0A</pre>

Setting Print Alignment

Command name	Set print alignment (left, center, right)
Command code	ASCII: ESC a n Decimal system: 27 97 n Hexadecimal system: 1B 61 n
Function Description	Aligns all data in a row with the following meaning of the n value: n Mode 0, 48 Left 1, 49 Center 2, 50 Right
Parameter range	$0 \leq n \leq 2$ 或 $48 \leq n \leq 50$
Default value	$n = 0$
Supported Models	All models
Precaution	The setting of this command is invalidated when ESC @, the printer is

	reset, or power is lost
Example of use	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

Setting Chinese character mode

Command name	Setting Chinese character mode
Command code	ASCII: FS & Decimal system: 28 38 Hexadecimal system: 1C 26
Function Description	Selecting Chinese character mode
Parameter range	None
Default value	None
Supported Models	All models
Precaution	When the Chinese character mode is selected, the printer processes all Chinese character codes, two bytes at a time. Chinese character codes are processed in the order of first byte, second byte.
Example of use	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

Setting Chinese Character Print Mode Combination

Command name	Setting Chinese Character Print Mode Combination									
Command code	ASCII: FS ! n Decimal system: 28 33 n Hexadecimal system: 1C 21 n									
Function Description	Setting the Print Mode for Chinese Characters									
Parameter range	0 ≤ n ≤ 255									
Default value	0									
Supported Models	All models									
Precaution	<table><tr><td>Bit</td><td>OFF/ON</td><td>Hexadecimal system</td><td>Decimal system</td><td>ASB Status</td></tr></table>					Bit	OFF/ON	Hexadecimal system	Decimal system	ASB Status
Bit	OFF/ON	Hexadecimal system	Decimal system	ASB Status						

	0	—	—	—	Undefined
	1	—	—	—	Undefined
	2	OFF	00	0	Multiple-width mode is prohibited.
		ON	04	4	Multiple-width mode is allowed
	3	OFF	00	0	Multiple-height mode is prohibited.
		ON	08	8	Multiple-height mode is allowed
	4	—	—	—	Undefined
	5	—	—	—	Undefined
	6	—	—	—	Undefined
	7	OFF	00	0	Prohibit underline mode
		ON	80	128	Allow underline mode.
	When the Chinese character mode is not selected, all character codes are processed as ASCII codes, one character at a time. It will print four times the size of the character when both the Multiple Width mode and Multiple Height mode are set (including right and left hand side spacing). The printer can underline all characters (including right and left hand spacing), but cannot underline spaces set by the HT command, or 90° clockwise rotated characters. When some characters in a line are times higher or higher, all characters in the line will be aligned along the baseline. You can use the GS ! command to coarsely write Chinese characters, and the setting of the last command received is valid.				
	Example of use	1b 40			
		1C 26			
		B0 AE C9 CF D7 D4 BC BA 0D 0A			
		1C 21 00			
		B0 AE C9 CF D7 D4 BC BA 0D 0A			
		1C 21 01			
		B0 AE C9 CF D7 D4 BC BA 0D 0A			

	1C 21 02
	B0 AE C9 CF D7 D4 BC BA 0D 0A
	1C 21 04
	B0 AE C9 CF D7 D4 BC BA 0D 0A
	1C 21 08
	B0 AE C9 CF D7 D4 BC BA 0D 0A
	1C 21 10
	B0 AE C9 CF D7 D4 BC BA 0D 0A
	1C 21 20
	B0 AE C9 CF D7 D4 BC BA 0D 0A
	1C 21 40
	B0 AE C9 CF D7 D4 BC BA 0D 0A
	1C 21 80
	B0 AE C9 CF D7 D4 BC BA 0D 0A
	1C 2E
	B0 AE C9 CF D7 D4 BC BA 0D 0A

Cancel Chinese character mode

Command name	Cancel Chinese character mode
Command code	ASCII: FS . Decimal system: 28 46 Hexadecimal system: 1C 2E
Function Description	Cancel Chinese character mode
Parameter range	None
Default value	None
Supported Models	All models
Precaution	When the Chinese character mode is not selected, all character codes are processed as ASCII codes, one character at a time.
Example of use	None

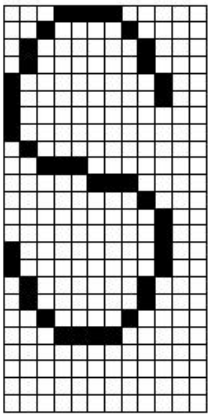
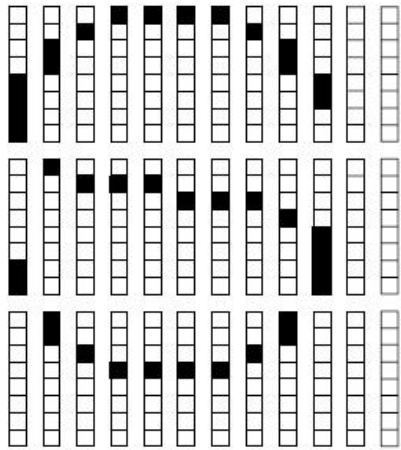
Selecting and canceling user-defined character sets

Command name	Selecting and canceling user-defined character sets
Command code	ASCII: ESC % n Decimal system: 27 37 n Hexadecimal system: 1B 25 n
Function Description	Selecting or canceling a user-defined character set When the lowest valid bit of n is 0, the user-defined character set is canceled. When the lowest valid bit of n is 1, the user-defined character set is selected.

Parameter range	$0 \leq n \leq 255$
Default value	0
Supported Models	All models
Precaution	When the user-defined character set is canceled, the internal character set is automatically selected.
Example of use	None

Defining user-defined character sets

Command name	Defining user-defined character sets
Command code	ASCII: ESC & y c1 c2 [x1 d1 ... d(yx1)] ... [xk d1 ... d(y x k)] Decimal system: 27 38 y c1 c2 [x1 d1 ... d(yx1)] ... [xk d1 ... d(yxk)] Hexadecimal system: 1B 26 y c1 c2 [x1 d1...d(y x1)]...[xk d1...d(yxk)]
Function Description	Defines user-defined characters. y Specifies the number of vertical bytes. c1 Specifies the starting character encoding and c2 Specifies the ending character encoding. xk Specifies the number of horizontal direction points.
Parameter range	The range of x y corresponds to the internal font If a 6*12 font is selected, $y = 2, 0 \leq x \leq 6$ If a 12*24 font is selected, $y = 3, 0 \leq x \leq 12$ $32 \leq c1 \leq c2 \leq 126$ $0 \leq d1 \dots d(y*xk) \leq 255$
Default value	None
Supported Models	All models
Precaution	Definable character encoding range: ASCII from <20>H to <7E>H (95 characters). defines the consecutive character encoding of multiple characters. When only one character is required, let $c1 = c2$. d is the dot data for the character. The dot pattern is horizontal starting from the left. The remaining dots on the right are blank. defines the data for user-defined characters as $(y*x)$ bytes. sets the corresponding bit to 1 for printing dots or 0 for not printing dots. This command defines a different user-defined character pattern for each font. Use ESC ! to set the font. User-defined characters and downcast bitmaps cannot be defined at the same time. When this command is executed, the downcast bitmap is cleared. User-defined characters are cleared in the following cases: ESC @ is executed. Execute GS *.

	ESC ? is executed. The printer is reset or powered off. Illustration: When setting font A (12 24). 12 dots 12点 24 dots 24点 d1 d4 d7 d2 d5 d3 d6 d34 d35 d36 highest valid bit 最高有效位 最低有效位 lowest valid bit   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 of use	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 0C 0F 03 00 30 80 00 40 40 20 80 40 10 80 40 10 80 20 10 80 20 10 40 20 20 30 10 C0 0C 00 00 00 00 00 00 00 00 1b 25 01 20 20 0D 0A 1b 3f 20 30 20 30 20 0d 0a
--	--

Canceling user-defined characters

Command name	Canceling user-defined characters
Command code	ASCII: ESC ? n Decimal system: 27 63 n Hexadecimal system: 1B 3F n
Function Description	Cancel user-defined characters encoded by n
Parameter range	$32 \leq n \leq 126$
Default value	None
Supported Models	All models
Precaution	This command terminates the use of the pattern defined for the character encoding, which is specified by n. The command terminates the use of the pattern defined for the character encoding. After the user-defined character is canceled, printing is done in the internal character corresponding mode. This command deletes the style defined for the specified encoding in the font selected with ESC ! selected with ESC ! This command deletes the style defined for the specified encoding. If a user-defined character is not defined, the printer ignores the command.
Example of use	None

Select International Character Set

Command name	Select International Character Set										
Command code	ASCII: ESC R n Decimal system: 27 82 n Hexadecimal system: 1B 52 n										
Function Description	Set the international character set by selecting the value of n according to the following table <table> <tr> <td>n</td><td>character set</td></tr> <tr> <td>0</td><td>USA</td></tr> <tr> <td>1</td><td>France</td></tr> <tr> <td>2</td><td>Germany</td></tr> <tr> <td>3</td><td>UK</td></tr> </table>	n	character set	0	USA	1	France	2	Germany	3	UK
n	character set										
0	USA										
1	France										
2	Germany										
3	UK										

	4 Denmark I 5 Sweden 6 Italy 7 Spain I 8 Japan 9 Norway 10 Denmark II 11 Spain II 12 Latin America 13 South Korea 14 Slovenia 15 China
Parameter range	$0 \leq n \leq 15$
Default value	0
Supported Models	All models
Precaution	
Example of use	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

Selecting the Character Code Page

Command name	Selecting the Character Code Page
Command code	ASCII: ESC t n Decimal system: 27 116 n Hexadecimal system: 1B 74 n
Function Description	Select n from the character code page N Code page 0 CP437 [US, EU Standard] 1 KataKana [Japanese script] 2 CP850 [Multi-languages] 3 CP860 [Portuguese] 4 CP863 [French(Canada)] 5 CP865 [Scandinavia] 6 WCP1251 [Slavic language] 7 CP866 Slavic 2 8 MIK[Slavia/Bulgaria] 9 CP755 [Eastern Europe, Latvia 2] 10 [Iran, Persia]

	11	Reserved
	12	Reserved
	13	Reserved
	14	Reserved
	15	CP862 [Hebrew language]
	16	WCP1252 [Latin 1]
	17	WCP1253 [Greece]
	18	CP852 [Latin 2]
	19	CP858 [Multilingual Latin 1 + European characters]
	20	Iran II[Persian]
	21	Latvia
	22	CP864 [Arabic]
	23	ISO-8859-1 [East Europe]
	24	CP737 [Greece]
	25	WCP1257 [Baltic Sea]
	26	Thai
	27	CP720[Arabic]
	28	CP855
	29	CP857[Turkish]
	30	WCP1250[Central Europe]
	31	CP775
	32	WCP1254[Turkish]
	33	WCP1255[Hebrew]
	34	WCP1256[Arabic]
	35	WCP1258[Vietnamese]
	36	ISO-8859-2[Latin 2]
	37	ISO-8859-3[Latin 3]
	38	ISO-8859-4[Baltic]
	39	ISO-8859-5[Slavic]
	40	ISO-8859-6[Arabic]
	41	ISO-8859-7[Greek]
	42	ISO-8859-8[Hebrew]
	43	ISO-8859-9[Turkish]
	44	ISO-8859-15[Latin 9]
	45	[Thai 2]
	46	CP856
	47	Cp874
	255	GBK2312
Parameter range	$0 \leq n \leq 255$	

Default value	0
Supported Models	All models
Precaution	
Example of use	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

Switching double-byte encoding

Command name	Switching double-byte encoding														
Command code	ASCII: ESC 9 n Decimal system: 27 56 n Hexadecimal system: 1B 39 n														
Function Description	The codes corresponding to n are listed in the table below: <table> <tr> <th>n</th><th>Encodings</th></tr> <tr> <td>0</td><td>GBK</td></tr> <tr> <td>1</td><td>UTF8</td></tr> <tr> <td>2</td><td>Reserved</td></tr> <tr> <td>3</td><td>BIG5</td></tr> <tr> <td>4</td><td>SHIFT-JIS</td></tr> <tr> <td>5</td><td>EUC-KR</td></tr> </table>	n	Encodings	0	GBK	1	UTF8	2	Reserved	3	BIG5	4	SHIFT-JIS	5	EUC-KR
n	Encodings														
0	GBK														
1	UTF8														
2	Reserved														
3	BIG5														
4	SHIFT-JIS														
5	EUC-KR														
Parameter range	$0 \leq n \leq 5$														
Default value	0														
Supported Models	Part of the model														
Precaution	The Chinese mode needs to be enabled before use (can be enabled by the 1C 26 command)														
Example of use	1B 40 1C 26 1B 39 01														

③Graphic Printing Instructions

Graphic Vertical Fetch Data Filling

Command	Graphic Vertical Fetch Data Filling
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name	
Command code	ASCII: ESC * m Hl Hh [d]k Decimal system: 27 42 m Hl Hh [d]k Hexadecimal system: 1B 2A m Hl Hh [d]k
Function Description	Prints the longitudinal mode-taking image data with the following parameter meanings: m is the dot map format: m Mode Horizontal scale Vertical scale 0 8-dot single density ×2 ×3 1 8-dot double density ×1 ×3 32 24-dot single density ×2 ×1 33 24-point double density ×1 ×1 Hl, Hh are the number of points in the horizontal direction ($Hl + 256 \times Hh$) [d]k is the point map data k is the number of bytes of point map data and is not transmitted.
Parameter range	XX58: $m = 0, 1, 32, 33$ $1 \leq Hl + Hh \times 256 \leq 384$ $0 \leq d \leq 255$ $k = Hl + Hh \times 256$ (当 $m = 0, 1$) $k = (Hl + Hh \times 256) \times 3$ (当 $m = 32, 33$) XX80: $m = 0, 1, 32, 33$ $1 \leq Hl + Hh \times 256 \leq 576$ $0 \leq d \leq 255$ $k = Hl + Hh \times 256$ (当 $m = 0, 1$) $k = (Hl + Hh \times 256) \times 3$ (当 $m = 32, 33$)
Default value	None
Supported Models	All models
Precaution	[d]k A corresponding bit of 1 indicates that the point is printed, and a corresponding bit of 0 indicates that the point is not printed. The portion of the image horizontally exceeding the print area is ignored. The relationship between the dot map data and the printing effect is as follows: The diagram shows two data structures for '点图数据 (位图)' (Bitmap data). On the left, the '8点方式' (8-dot approach) shows a 3x3 grid of bits labeled d1 through d9. A callout labeled '8-dots approach' points to this grid. On the right, the '24点方式' (24-dots approach) shows a 3x3 grid of bits labeled d1 through d9. A callout labeled '24-dots approach' points to this grid. Both grids have a vertical stack of bits to their right, labeled '高位' (high bit) and '低位' (low bit). The 8-dot approach has a 'high bit' and 'low point' (labeled '低位') stack, while the 24-dot approach has a 'high bit' and 'low bit' stack. A central label 'Bitmap data' is positioned between the two grids.

	This command only fills the print buffer, image printing starts only after the print command is received, and the print buffer is cleared after the image is printed. If the height of the image to be printed is large, it can be split into a number of images with a height of 8 ($m = 0, 1$) or 24 ($m = 32, 33$) points to be printed separately. After filling the graphic data, you can continue to fill in other information so that the graphic is printed along with the other information. After filling the dot map, generally use the ESC J ($n = 24$) instruction to print, you can also use the LF instruction to print, but the LF instruction will trigger the paper feed operation (according to the line spacing feed), so that multiple lines of the image discontinuous discontinuity, you can set the line spacing to 0, it will not be too much paper feed. (Needle printers will be offset at the beginning, if there is a line break in the middle, please send data continuously.)
Example of use	<pre>1B 40 1b 2a 00 0C 00 FF FF FF FF FF FF FF FF FF FF FF FF 1B 33 00 0A</pre>

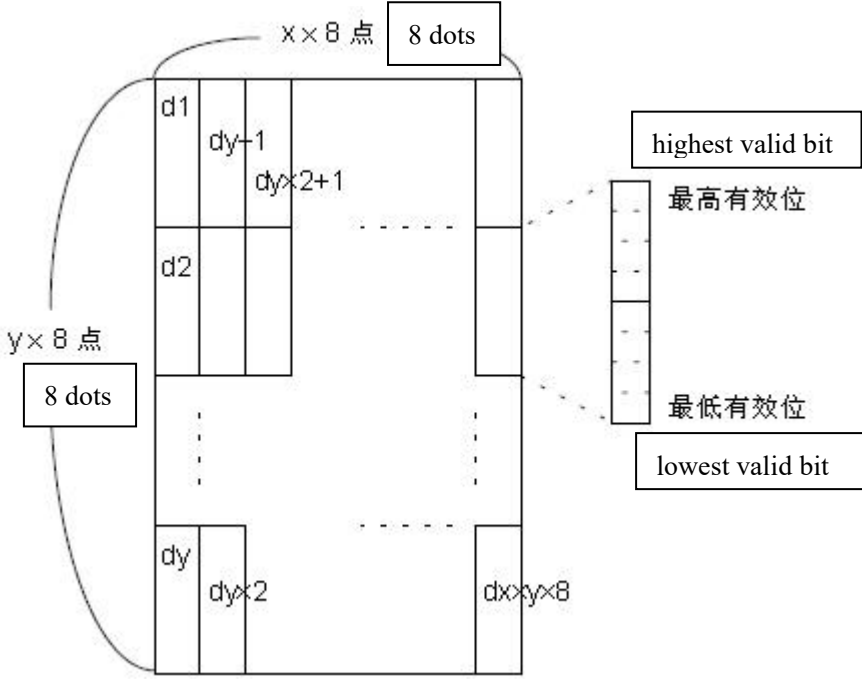
Horizontal mold data printing

Command name	Horizontal mold data printing
Command code	ASCII: GS v 0 Decimal system: 29 118 48 m xL xH yL yH [d]k Hexadecimal system: 1D 76 30 m xL xH yL yH [d]k
Function Description	Prints the image data for horizontal mode taking with the following parameter meanings: m For bitmap mode: m Mode Horizontal ratio Vertical ratio 0,48 Normal $\times 1 \times 1$ 1,49 times wide $\times 2 \times 1$ 2,50 times height $\times 1 \times 2$ 3,51 W x H x 2 x 2 xL, xH are the number of horizontal bytes ($xL + xH \times 256$) yL, yH are the number of points in the vertical direction ($yL + yH \times 256$) [d]k is the point map data k is the number of bytes of point map data. k is used for illustration and is not transmitted.
Parameter range	XX58: $0 \leq m \leq 3; 48 \leq m \leq 51$ $1 \leq xL + xH \times 256 \leq 48$ $0 \leq yL \leq 255, 0 \leq yH \leq 255$ $0 \leq d \leq 255$

	$k = (Hl + Hh \times 256) \times (yL + yH \times 256)$ XX80: $0 \leq m \leq 3; 48 \leq m \leq 51$ $1 \leq xL + xH \times 256 \leq 72$ $0 \leq yL \leq 255, 0 \leq yH \leq 255$ $0 \leq d \leq 255$ $k = (Hl + Hh \times 256) \times (yL + yH \times 256)$																
Default value	None																
Supported Models	All models																
Precaution	[d]k A corresponding bit of 1 indicates that the point is printed, a corresponding bit of 0 indicates that the point is not printed If the number of horizontal bytes of the image exceeds the print area, the exceeding portion is ignored. When this instruction is executed, the paper is fed according to the image size, and is not affected by the line spacing setting of ESC 2 and ESC 3. When this command is executed, the print coordinates are reset to the left margin position and the image content is cleared. The relationship between bitmap data and printing effect is as follows: <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> MSB LSB MSB LSB MSB LSB MSB LSB This command comes with a print function, which prints the data as it is transferred, eliminating the need to use the print command again.	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 of use	1B 40 1d 76 30 00 03 00 09 00 FF																

Define the downcast bitmap

Command name	Define the downcast bitmap
Command code	ASCII: GS * x y d1...d(x×y×8) Decimal system: 29 42 x y d1 ...d(x×y×8) Hexadecimal system: 1D 2A x y d1...d(x×y×8)
Function Description	Specify the number of points with x and y to define the downcast bitmap. x specifies the number of points in the horizontal direction as 8*x. y Specifies the number of points in the vertical direction as 8*y.
Parameter	$1 \leq x \leq 255$

range	$1 \leq y \leq 48$ $x*y \leq 1536$ $0 \leq d \leq 255$
Default value	None
Supported Models	All models
Precaution	This command is disabled if $x*y$ exceeds the specified range. d Indicates bitmap data. Data(d) specifies that the print bit is 1 and the no print bit is 0. It clears the downcast bitmap definition in the following cases: - Execute ESC @. - ESC & is executed. - The printer is reset or powered off. The relationship between the downcast bitmap and print data is shown below: 
Example of use	<pre>1B 40 1D 2A 03 03 FF 1D 2F 00</pre>

Print the downcast bitmap

Command name	Print the downcast bitmap
Command code	ASCII: GS / m Decimal system: 29 47 m

	Hexadecimal system: 1D 2F m										
Function Description	Print the downlinked bitmap in the mode specified by m <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>Multiple Width</td></tr> <tr> <td>2, 50</td><td>Multiple Height</td></tr> <tr> <td>3, 51</td><td>Multiple Width, Multiple Height</td></tr> </tbody> </table>	m	Mode	0, 48	Normal	1, 49	Multiple Width	2, 50	Multiple Height	3, 51	Multiple Width, Multiple Height
m	Mode										
0, 48	Normal										
1, 49	Multiple Width										
2, 50	Multiple Height										
3, 51	Multiple Width, Multiple Height										
Parameter range	$0 \leq m \leq 3$ $48 \leq m \leq 51$										
Default value	None										
Supported Models	All models										
Precaution	This command is ignored if the bitmap data is not defined. Under the standard mode, this command is valid only when there is no data in the print buffer. This command is not valid in print modes (bold, overlay, underline, character size, or reverse white print), except for inverted print mode. If the downstream bitmap to be printed exceeds the print area, the excess data is not printed.										
Example of use	None										

Defining NV Bitmaps

Command name	Defining NV Bitmaps
Command code	ASCII : FS q n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n Decimal system: 28 113 n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n Hexadecimal system: 1C 71 n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n
Function Description	Define the NV bitmap with a specific n value. n Specifies the number of NV bitmaps in the definition. xL, xH Specify the number of points in the horizontal direction as (xL+xH*256)*8 for the NV bitmap in the definition. yL, yH Specifies the number of points in vertical direction as (yL+yH*256)*8 for the NV bitmap in the definition.
Parameter range	$1 \leq n \leq 255$ $0 \leq xL \leq 255$ $0 \leq xH \leq 3$ $(1 \leq (xL+xH*256) \leq 1023)$ $0 \leq yL \leq 255$ $0 \leq yH \leq 1$

	$(1 \leq (yL+yH*256) \leq 288)$ $0 \leq d \leq 255)$ $k = (xL+xH*256)*(yL+yH*256)*8$ Data area defined by the sum total = 64K bytes
Default value	None
Supported Models	All models
Precaution	Frequent execution of write commands may damage the NV memory. Therefore, it is recommended that no more than 10 write operations be performed on the NV memory in a day. After the process of placing an image into the NV memory, the printer performs a hardware reset operation. Therefore user-defined characters, downstream bitmaps should be defined after completing this command. The printer clears the the receive and print buffers and resets to the mode that was in effect when power was turned on. (Hardware reset interface not supported) This command cancels all NV bitmaps that have been defined with this command. Mechanical operations (including initializing the print head position when the cover is open feeding the paper with the paper feed button, etc.) cannot be performed during the period between the start of processing of this command and the completion of the hardware reset. During the processing of this command, the printer is busy and stops receiving data when writing data to the user NV memory. Therefore, data transmission, including real-time commands, is prohibited during the execution of this command. A NV bitmap is a bitmap defined in nonvolatile memory. Define FS p print with FS q. In standard mode, this command is valid only at the start of processing on a line. The command is valid after the 7 bytes <FS yH> of this command have been processed normally. When the amount of data exceeds the left-hand side capacity of the range defined by xL, x H, yL, yH, the printer will process the range defined by xL, xH, yL, yH outside the defined range. It is disabled in Group I bitmaps when any parameter in xL, xH, yL, yH is outside the defined range. In a group of bitmaps other than the first group, when the printer encounters a situation in which xL, xH, yL, yH is outside the defined range, processing of this command is stopped and writing of the NV image begins. At this point, NV bitmaps that have not yet been defined are disabled (undefined,) but any previously defined NV bitmaps remain valid. d indicates definition data. In data(d), a 1 bit specifies a point to be printed and a 0 bit specifies a point not to be printed. This command defines n as the number of NV bitmaps. The number goes up

from bitmap 01H. Thus the first data set [xL xH yL yH d1.... .dk] is NV bitmap 01H and the last data group [xL xH yL yH d1.... .dk] is the NV bitmap n . The total number is the same as the number of NV bitmaps set by the FS p command.

The definition data of an NV bitmap consists of [xL xH yL yH d1.... .dk]. Therefore, when there is only one NV bitmap with n=1, the printer processes the data set [xL xH yL yH d1.... .dk] once. The printer uses $([data: (xL+xH*256)*(yL+yH*256)*8]+[header:4])$ bytes of NV memory.

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

Even if the ASB is set, the printer does not transmit the ASB status or perform status detection during the processing of this command.

Once an NV bitmap is defined, it cannot be deleted by executing the ESC @ command, reset, or power down.

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

illustrations: When xL = 64, xH = 0, yL = 96, yH = 0

	The diagram illustrates the layout of an NV Bitmap. It shows a grid of bit planes labeled d1, d2, d3, ..., d96. The horizontal dimension is defined by the formula $(xL + xH \times 256) \times 8 \text{ 点} = 512 \text{ 点}$, and the vertical dimension is $(yL + yH \times 256) \times 8 \text{ 点} = 768 \text{ 点}$. Bit ranges are indicated as d97 to d49057 and d49152 to d49152. A central section shows a vertical stack of bits with labels for 'highest valid bit' (最高有效位) and 'lowest valid bit' (最低有效位).
Example of use	<pre>1B 40 1C 71 01 03 00 03 00 FF 1C 70 01 00</pre>

Printing NV Bitmaps

Command	Printing NV Bitmaps
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name											
Command code	ASCII: FS p n m Decimal system: 28 112 n m Hexadecimal system: 1C 70 n m										
Function Description	Prints the NV bitmap in the mode specified by m n <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>Multiple Width</td></tr> <tr> <td>2, 50</td><td>Multiple Height</td></tr> <tr> <td>3, 51</td><td>Multiple Width, Multiple Height</td></tr> </tbody> </table>	m	Mode	0, 48	Normal	1, 49	Multiple Width	2, 50	Multiple Height	3, 51	Multiple Width, Multiple Height
m	Mode										
0, 48	Normal										
1, 49	Multiple Width										
2, 50	Multiple Height										
3, 51	Multiple Width, Multiple Height										
Parameter range	$0 \leq m \leq 3$ $48 \leq m \leq 51$ $1 \leq n \leq 255$										
Default value	None										
Supported Models	All models										
Precaution	n is the number of NV bitmaps (defined with the FS q command). m specifies the bitmap mode. An NV bitmap is a bitmap defined in nonvolatile memory. Defined with FS q FS p Printing This command is invalid when the specified NV bitmap does not exist. In standard mode, this command is valid only when there is no data in the print buffer. This command is not affected by print modes (bold print, overlap, underline, character size, highlight print, or character 90), except for inverted print modes such as rotate. If the downcast bitmap to be printed exceeds one line, the excess data is not printed. This command feeds n dots (n is the NV bitmap height) in Normal and Multiple Width modes, and 2n dots in Multiple Height and Quadruple Size modes (this command feeds 2n dots, and n is the NV bitmap height), independent of the line spacing set by ESC 2 or ESC 3. After prints the bitmap, the command sets the print position at the beginning of a line and treats the subsequent data as normal data.										
Example of use	None										

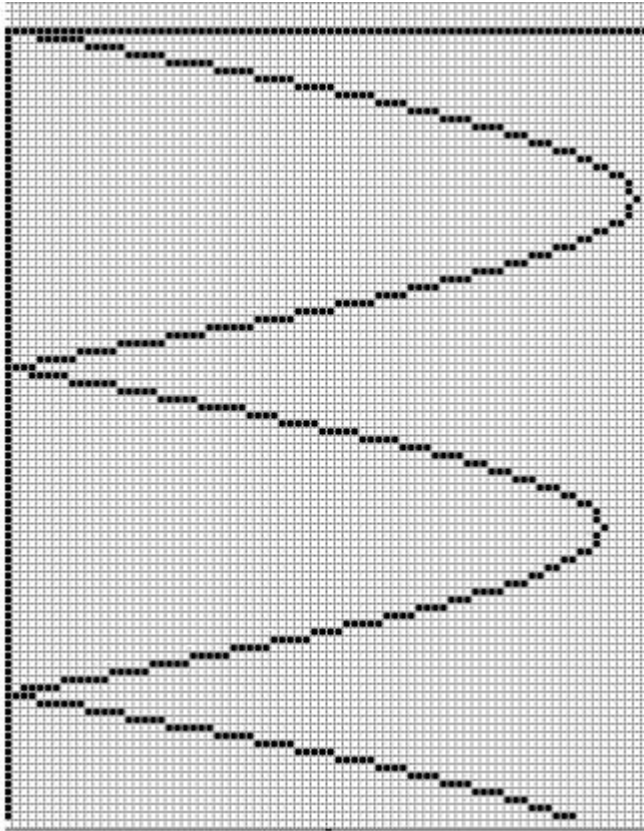
Printing raster bitmaps

Command name	Printing raster bitmaps
Command code	ASCII: GS v 0 m xL xH yL yH d1...dk Decimal system: 29 118 48 m xL xH yL yH d1...dk Hexadecimal system: 1D 76 30 m xL xH yL yH d1...dk

Function Description	Prints a raster bitmap, with the raster bitmap mode selected by the m value:			
	m	Mode	DPI(Vertical)	DPI(Horizontal)
	0,48	Normal	200	200
	1,49	Multiple Width	200	100
	2,50	Multiple Height	100	200
	3,51	Multiple Width, Multiple Height	100	100
Parameter range	$0 \leq m \leq 3$ or $48 \leq m \leq 51$ $0 \leq xL \leq 255$ $0 \leq xH \leq 255$ $0 \leq yL \leq 255$ $0 \leq d \leq 255$ $k = (xL + xH * 256) * (yL + yH * 256) \quad (k \neq 0)$			
Default value	None			
Supported Models	All models			
Precaution	xL, xH indicates the number of horizontal direction bitmap bytes ($xL+xH*256$) yL, yH indicates the number of vertical direction bitmap points ($yL+yH*256$) In standard mode, this command is valid only when there is no data in the printer buffer. The print modes such as character enlargement, bolding, double printing, inverted printing, underlining, and black and white reversal are not valid for this command. The portion of the bitmap that exceeds the print area is not printed. ESC is valid for raster bitmap. During macro definition, this command stops the macro definition and executes the command. This command is not included as part of the macro definition. d represents the bitmap data. A 1 in the corresponding bit of each byte indicates that the point is printed, and a 0 does not print the point.			
Example of use	When $xL+xH*256=64$ dots dots $(xL+xH \times 256) \times 8 \text{点} = 512 \text{点}$ 1 2 3 62 63 64 65 66 67 126 127 128 K-2 K-1 K $(yL+yH \times 256) \text{点}$ dots 7 6 5 4 3 2 1 0 Highest bit 最高位 最低位 Lowest bit			

Horizontal position printing of line segments (Curve Print command)

Command name	Horizontal position printing of line segments (Curve Print command)
Command	ASCII: GS ' n x1sL x1eH x1eL x1eH ...xnsL xnsH xneL xneH

code	Decimal system: 1D 27 n xlsL xleH xleL xleH ...xnsL xnsH xneL xneH Hexadecimal system: 29 39 n xlsL xleH xleL xleH ...xnsL xnsH xneL xneH
Function Description	Print an enlarged view as follows: Each horizontal curve segment can be considered to consist of these points with segment length 1. To print n lines of horizontal line segments, use this command continuously to print the desired curve.  xksL : the horizontal coordinate of the low order of the starting point of the K-line; xksH : the horizontal coordinate of the high order of the starting point of the K-line; xkeL : the horizontal coordinate of the lower order of the end point of the K-line; xkeH : the high-order horizontal coordinate of the end point of the K-line; The coordinate start position is usually to the left of the print area. The minimum coordinates coordinate is (0,0) and the maximum horizontal coordinate value is 383, xkeL+xkeH*256 Row data can be out of order within the specified range; <pre>Char SendStr[8]; Char SendStr2[16]; Float i; Short y1,y2,y1s,y2s;</pre>

```

//Print Y-axis (one line)
SendStr[0]=0x1D;
SendStr[1]=0x27;
SendStr[2]=1;    // One row
SendStr[3]=30
SendStr[4]=0;    //Starting point
SendStr[5]=104;
SendStr[6]=1;    //End point
PreSendData(SendStr,7);

//Print curve
SendStr[0]=0x1D;
SendStr[1]=0x27;
SendStr[2]=3;    //Three lines:X-axis,sin and cos function curve 3 rows:
X-axis, sin & cos
                        function (math.)
SendStr[3]=180;  SendStr[4]=0;    // X-axis position
SendStr[5]=180;  SendStr[6]=0;
for(i=1;i<1200;i++)
{
    y1=sin(i/180*3.1416)*(380-30)/2+180;    //Calculate the coordinates
of the sin function
    y2=cos(i/180*3.1416)*(380-30)/2+180;    // Calculate the coordinates
of the cos function
    If(i==1){y1s=y1;y2s=y2;}
    PreSendData(SendStr,7);

    If(y1s<y1)
    {
        PreSendData(&y1s,2);    //sin function at the beginning of the line
        PreSendData(&y1,2);    //sin function at the end of the line
    }
    Else
    {
        PreSendData(&y1,2);    //sin function at the beginning of the line
        PreSendData(&y1s,2);    //sin function at the end of the line
    }
    If(y2s<y2)
    {
        PreSendData(&y2s,2);    The start of the //cos function on the line
        PreSendData(&y2,2);    //cos function at the end of the line
    }
    Else
    {

```

	<pre> PreSendData(&y2,2); //The start of the cos function on the line PreSendData(&y2s,2); //cos function at the end of the line } y1s=y1; // When the printout goes to the next line, the horizontal coordinate of the starting point of the sin function curve y2s=y2; //when printing into the next line, cos function curve starting point horizontal coordinate } </pre>
Parameter range	$0 \leq n \leq 8$
Default value	None
Supported Models	Portable printers
Precaution	When it prints 1 dot, then $x_{keL}=x_{ksL}$, $x_{keH}=x_{ksH}$
Example of use	<pre> 1d 27 01 00 00 00 00 1d 27 01 01 00 0f 00 1d 27 01 10 00 1f 00 1d 27 01 20 00 2c 00 1d 27 01 2d 00 3a 00 1d 27 01 3b 00 44 00 1d 27 01 45 00 4c 00 1d 27 01 4d 00 54 00 1d 27 01 55 00 5c 00 1d 27 01 5d 00 63 00 1d 27 01 64 00 6a 00 1d 27 01 6b 00 71 00 1d 27 01 72 00 77 00 1d 27 01 78 00 7d 00 1d 27 01 7e 00 84 00 1d 27 01 85 00 8a 00 1d 27 01 8b 00 91 00 1d 27 01 92 00 97 00 1d 27 01 98 00 9d 00 1d 27 01 9e 00 a3 00 1d 27 01 a4 00 a9 00 1d 27 01 aa 00 af 00 1d 27 01 b0 00 b4 00 1d 27 01 b5 00 b9 00 1d 27 01 ba 00 bf 00 1d 27 01 c0 00 c4 00 1d 27 01 c5 00 c9 00 1d 27 01 ca 00 cf 00 1d 27 01 d0 00 d4 00 1d 27 01 d5 00 d8 00 1d 27 01 d9 00 dc 00 1d 27 01 dd 00 df 00 1d 27 01 e0 00 e3 00 1d 27 01 e4 00 e6 00 1d 27 01 e7 00 e9 00 1d 27 01 ea 00 ec 00 1d 27 01 ed 00 ef 00 1d 27 01 f0 00 f1 00 1d 27 01 f2 00 f3 00 1d 27 01 f4 00 f5 00 1d 27 01 f6 00 f7 00 1d 27 01 f8 00 f8 00 1d 27 01 f9 00 fa 00 1d 27 01 fb 00 fb 00 1d 27 01 fc 00 fd 00 1d 27 01 fe 00 fe 00 1d 27 01 ff 00 ff 00 1d 27 01 00 01 00 01 1d 27 01 01 01 01 01 1d 27 01 02 01 02 01 1d 27 01 03 01 03 01 1d 27 01 04 01 04 01 1d 27 01 05 01 05 01 1d 27 01 06 01 06 01 1d 27 01 06 01 06 01 1d 27 01 07 01 07 01 1d 27 01 07 01 07 01 </pre>

1d 27 01 07 01 07 01	1d 27 01 07 01 07 01
1d 27 01 07 01 07 01	1d 27 01 06 01 06 01
1d 27 01 06 01 06 01	1d 27 01 05 01 05 01
1d 27 01 04 01 04 01	1d 27 01 04 01 04 01
1d 27 01 03 01 03 01	1d 27 01 02 01 02 01
1d 27 01 00 01 00 01	1d 27 01 ff 00 ff 00
1d 27 01 fe 00 fe 00	1d 27 01 fc 00 fd 00
1d 27 01 f9 00 fa 00	1d 27 01 f8 00 f8 00
1d 27 01 f6 00 f7 00	1d 27 01 f4 00 f5 00
1d 27 01 f2 00 f3 00	1d 27 01 f0 00 f1 00
1d 27 01 ed 00 ef 00	1d 27 01 ea 00 ec 00
1d 27 01 e7 00 e9 00	1d 27 01 e4 00 e6 00
1d 27 01 e0 00 e3 00	1d 27 01 dd 00 df 00
1d 27 01 d9 00 dc 00	1d 27 01 d5 00 d8 00
1d 27 01 d0 00 d4 00	1d 27 01 ca 00 cf 00
1d 27 01 c5 00 c9 00	1d 27 01 c0 00 c4 00
1d 27 01 ba 00 bf 00	1d 27 01 b5 00 b9 00
1d 27 01 b0 00 b4 00	1d 27 01 aa 00 af 00
1d 27 01 a4 00 a9 00	1d 27 01 9e 00 a3 00
1d 27 01 98 00 9d 00	1d 27 01 92 00 97 00
1d 27 01 8b 00 91 00	1d 27 01 85 00 8a 00
1d 27 01 7e 00 84 00	1d 27 01 78 00 7d 00
1d 27 01 72 00 77 00	1d 27 01 6b 00 71 00
1d 27 01 64 00 6a 00	1d 27 01 5d 00 63 00
1d 27 01 55 00 5c 00	1d 27 01 4d 00 54 00
1d 27 01 45 00 4c 00	1d 27 01 3b 00 44 00
1d 27 01 2d 00 3a 00	1d 27 01 20 00 2c 00
1d 27 01 10 00 1f 00	1d 27 01 01 00 0f 00
1d 27 01 00 00 00 00	1d 27 01 00 00 00 00
1d 27 01 01 00 0f 00	1d 27 01 10 00 1f 00
1d 27 01 20 00 2c 00	1d 27 01 2d 00 3a 00
1d 27 01 3b 00 44 00	1d 27 01 45 00 4c 00
1d 27 01 4d 00 54 00	1d 27 01 55 00 5c 00
1d 27 01 5d 00 63 00	1d 27 01 64 00 6a 00
1d 27 01 6b 00 71 00	1d 27 01 72 00 77 00
1d 27 01 78 00 7d 00	1d 27 01 7e 00 84 00
1d 27 01 85 00 8a 00	1d 27 01 8b 00 91 00
1d 27 01 92 00 97 00	1d 27 01 98 00 9d 00
1d 27 01 9e 00 a3 00	1d 27 01 a4 00 a9 00
1d 27 01 aa 00 af 00	1d 27 01 b0 00 b4 00
1d 27 01 b5 00 b9 00	1d 27 01 ba 00 bf 00
1d 27 01 c0 00 c4 00	1d 27 01 c5 00 c9 00
1d 27 01 ca 00 cf 00	1d 27 01 d0 00 d4 00
1d 27 01 d5 00 d8 00	1d 27 01 d9 00 dc 00

	1d 27 01 dd 00 df 00 1d 27 01 e0 00 e3 00
	1d 27 01 e4 00 e6 00 1d 27 01 e7 00 e9 00
	1d 27 01 ea 00 ec 00 1d 27 01 ed 00 ef 00
	1d 27 01 f0 00 f1 00 1d 27 01 f2 00 f3 00
	1d 27 01 f4 00 f5 00 1d 27 01 f6 00 f7 00
	1d 27 01 f8 00 f8 00 1d 27 01 f9 00 fa 00
	1d 27 01 fb 00 fb 00 1d 27 01 fc 00 fd 00
	1d 27 01 fe 00 fe 00 1d 27 01 ff 00 ff 00
	1d 27 01 00 01 00 01 1d 27 01 01 01 01 01
	1d 27 01 02 01 02 01 1d 27 01 03 01 03 01
	1d 27 01 04 01 04 01 1d 27 01 05 01 05 01
	1d 27 01 06 01 06 01 1d 27 01 06 01 06 01
	1d 27 01 07 01 07 01 1d 27 01 07 01 07 01
	1d 27 01 07 01 07 01 1d 27 01 07 01 07 01
	1d 27 01 07 01 07 01 1d 27 01 06 01 06 01
	1d 27 01 06 01 06 01 1d 27 01 05 01 05 01
	1d 27 01 04 01 04 01 1d 27 01 04 01 04 01
	1d 27 01 03 01 03 01 1d 27 01 02 01 02 01
	1d 27 01 00 01 00 01 1d 27 01 ff 00 ff 00
	1d 27 01 fe 00 fe 00 1d 27 01 fc 00 fd 00
	1d 27 01 f9 00 fa 00 1d 27 01 f8 00 f8 00
	1d 27 01 f6 00 f7 00 1d 27 01 f4 00 f5 00
	1d 27 01 f2 00 f3 00 1d 27 01 f0 00 f1 00
	1d 27 01 ed 00 ef 00 1d 27 01 ea 00 ec 00
	1d 27 01 e7 00 e9 00 1d 27 01 e4 00 e6 00
	1d 27 01 e0 00 e3 00 1d 27 01 dd 00 df 00
	1d 27 01 d9 00 dc 00 1d 27 01 d5 00 d8 00
	1d 27 01 d0 00 d4 00 1d 27 01 ca 00 cf 00
	1d 27 01 c5 00 c9 00 1d 27 01 c0 00 c4 00
	1d 27 01 ba 00 bf 00 1d 27 01 b5 00 b9 00
	1d 27 01 b0 00 b4 00 1d 27 01 aa 00 af 00
	1d 27 01 a4 00 a9 00 1d 27 01 9e 00 a3 00
	1d 27 01 98 00 9d 00 1d 27 01 92 00 97 00
	1d 27 01 8b 00 91 00 1d 27 01 85 00 8a 00
	1d 27 01 7e 00 84 00 1d 27 01 78 00 7d 00
	1d 27 01 72 00 77 00 1d 27 01 6b 00 71 00
	1d 27 01 64 00 6a 00 1d 27 01 5d 00 63 00
	1d 27 01 55 00 5c 00 1d 27 01 4d 00 54 00
	1d 27 01 45 00 4c 00 1d 27 01 3b 00 44 00
	1d 27 01 2d 00 3a 00 1d 27 01 20 00 2c 00
	1d 27 01 10 00 1f 00 1d 27 01 01 00 0f 00
	1d 27 01 00 00 00 00

④ Tabulation instruction

Horizontal Tabulation

Command name	Horizontal tabulation
Command code	ASCII: HT Decimal system: 9 Hexadecimal system: 09
Function Description	Move the print position to the next tab position
Parameter range	None
Default value	None
Supported Models	All models
Precaution	Tab position is set by ESC D If the tab position is not set (no horizontal tab position by default), this command is treated as an LF command. If the tab position is outside the print area, the coordinates will be moved to the start of the next line (as if the line is full, prints and line feed)
Example of use	None

Setting the Horizontal Tab Position

Command name	Setting the Horizontal Tab Position	
Command code	ASCII: ESC D [d]k NUL Decimal system: 27 68 [d]k 0 Hexadecimal system: 1B 44 [d]k 00	
Function Description	Sets the horizontal tab position with the following parameter meanings: d1 ... dk: horizontal tab position, in units of 8 dots, NULL is the terminating character	
Parameter range	XX58: $1 \leq d \leq 46$ ($d_1 < d_2 < \dots < d_k$, $1 \leq k \leq 16$) XX80: $1 \leq d \leq 70$ ($d_1 < d_2 < \dots < d_k$, $1 \leq k \leq 16$)	
Default value	[d]k = 0 (no horizontal tab position by default)	
Supported Models	All models	
Precaution	The tabulation positions are shown below:	

	设置制表位置d1和d2 Setting the tab positions d1 and d2 Supports setting up to 16 tab positions Use this command to cancel the previous tab position setting. k is used for signaling purposes and is not transmitted. If transfer [d]k encounters NULL, it is considered to be finished. If dk is less than or equal to dk-1, it is considered to be terminated, and the remaining data is treated as normal data. Tab position can be switched by HT When the left margin is changed, the tab position is changed at the same time. When ESC @, printer reset, or power failure occurs, the setting of this instruction is invalidated.
Example of use	<pre>1B 44 18 1E 00 46 4F 4F 44 09 50 52 49 43 45 09 49 44 0D0A0D0A 1B 44 18 1E 00 44 45 43 41 46 31 36 09 33 30 09 31 0D0A</pre>

⑤ 1D Barcode Printing Instructions

Setting the 1D Barcode Readable Character (HRI) Print Position

Command name	Setting the barcode readable character (HRI) print position
Command code	ASCII: GS H n Decimal system: 29 72 n Hexadecimal system: 1D 48 n
Function Description	Sets the barcode readable character (HRI) print position, and the meaning of the n parameter is as follows: n Print position 0, 48 Do not print 1, 49 Above the bar code 2, 50 Below the barcode 3, 51 above and below the barcode
Parameter range	$0 \leq n \leq 3$ 或 $48 \leq n \leq 51$
Default value	n = 0
Supported	All models

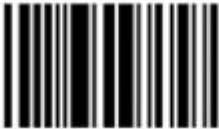
Models	
Precaution	The setting of this command is invalidated when ESC @, the printer is reset, or power is lost
Example of use	None

Setting the height of a 1D barcode

Command name	Setting the height of a 1D barcode
Command code	ASCII: GS h n Decimal system: 29 104 n Hexadecimal system: 1D 68 n
Function Description	Set the height of the barcode to n dots, the meaning of the parameter n is as follows:  高度为 50 Height 50  高度为 100 Height 100
Parameter range	$1 \leq n \leq 255$
Default value	n = 64
Supported Models	All models
Precaution	The setting of this command is invalidated when ESC @, the printer is reset, or power is lost
Example of use	None

Setting the width of a 1D barcode

Command name	Setting the width of a 1D barcode
Command code	ASCII: GS w n Decimal system: 29 119 n Hexadecimal system: 1D 77 n
Function Description	Set the bar code unit to n dots with the following meaning of the parameter n:

	 宽度为 3 Width 3  宽度为 4 Width 4
Parameter range	$1 \leq n \leq 6$
Default value	$n = 2$
Supported Models	All models
Precaution	The setting of this command is invalidated when ESC @, the printer is reset, or power is lost
Example of use	None

Printing 1D barcodes

Command name	Printing 1D barcodes																										
Command code	(A) ASCII: GS k m [d]k NUL Decimal system: 29 107 m [d]k NUL Hexadecimal system: 1D 6B m [d]k NUL (B) ASCII : GS k m n [d]k Decimal system: 29 107 m n [d]k Hexadecimal system: 1D 6B m n [d]k																										
Function Description	Prints a one-dimensional bar code, the meaning of each parameter is as follows: m is the encoding mode n is the length of encoded data, only used in (B) mode, the difference between (A) and (B) instruction is that (A) data segment ends with NULL character, while (B) indicates the length of data. [d]k is the barcode data k is the length of the barcode data, which is used for indication and is not transmitted. The relationship between the parameters is shown in the table below: (Command A) <table border="1"> <thead> <tr> <th rowspan="2">m</th><th rowspan="2">Coding system</th><th colspan="4">Barcode data (SP for space)</th></tr> <tr> <th>Data length</th><th>k</th><th>Character set</th><th>Data (d)</th></tr> </thead> <tbody> <tr> <td>0</td><td>UPC-A</td><td>Fixed</td><td>k = 11, 12</td><td>0~9</td><td>$48 \leq d \leq 57$</td></tr> <tr> <td>1</td><td>UPC-E</td><td>Fixed</td><td>$6 \leq k \leq 8$, k = 11, 12</td><td>0~9</td><td>$48 \leq d \leq 57$ [when k = 7, 8, 11, 12,</td></tr> </tbody> </table>					m	Coding system	Barcode data (SP for space)				Data length	k	Character set	Data (d)	0	UPC-A	Fixed	k = 11, 12	0~9	$48 \leq d \leq 57$	1	UPC-E	Fixed	$6 \leq k \leq 8$, k = 11, 12	0~9	$48 \leq d \leq 57$ [when k = 7, 8, 11, 12,
m	Coding system	Barcode data (SP for space)																									
		Data length	k	Character set	Data (d)																						
0	UPC-A	Fixed	k = 11, 12	0~9	$48 \leq d \leq 57$																						
1	UPC-E	Fixed	$6 \leq k \leq 8$, k = 11, 12	0~9	$48 \leq d \leq 57$ [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	Variable	1 ≤ k ≤ 255	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)	Variable	2 ≤ k ≤ 255 (even)	0~9	48 ≤ d ≤ 57
6	CODAB AR (NW-7)	Variable	1 ≤ k	0~9, A~D, a~d \$, +, -, ., /, :	48 ≤ d ≤ 57, 65 ≤ d ≤ 68, 97 ≤ d ≤ 100, d = 36, 43, 45, 46, 47, 58 (65 ≤ d1 ≤ 68, 65 ≤ dk ≤ 68, 97 ≤ d1 ≤ 100, 97 ≤ dk ≤ 100)

(Command B)

m	Coding system	Barcode data (SP for space)			
		Data length	n	Character set	Data (d)
65	UPC-A	Fixed	n = 11, 12	0~9	48 ≤ d ≤ 57
66	UPC-E	Fixed	6 ≤ n ≤ 8, n = 11, 12	0~9	48 ≤ d ≤ 57 [当 n = 7,8,11,12, d1 = 48]
67	JAN13 (EAN13)	Fixed	n = 12, 13	0~9	48 ≤ d ≤ 57
68	JAN8 (EAN8)	Fixed	n = 7, 8	0~9	48 ≤ d ≤ 57
69	CODE39	Variable	1 ≤ n ≤ 255	0~9, A~Z SP, \$, %, +, -, ., /	48 ≤ d ≤ 57, 65 ≤ d ≤ 90, d = 32, 36, 37, 42, 43, 45, 46, 47
70	ITF (Interleaved 2 of 5)	Variable	1 ≤ n ≤ 255 (Even)	0~9	48 ≤ d ≤ 57

	5)					
	71	CODAB AR (NW-7)	Variable	$1 \leq n \leq 255$	0~9, A~D, a~d \$, +, -, ., /,:	$48 \leq d \leq 57$, $65 \leq d \leq 68$, $97 \leq d \leq 100$, $d = 36, 43, 45$, $46, 47, 58$ $(65 \leq d1 \leq 68$, $65 \leq dk \leq 68$, $97 \leq d1 \leq 100$, $97 \leq dk \leq 100)$
	72	CODE93	Variable	$1 \leq n \leq 255$	00H~7FH	$0 \leq d \leq 127$
	73	CODE12 8	Variable	$2 \leq n \leq 255$	00H~7FH	$0 \leq d \leq 127$
	74	UCC/EA N128	Variable	$2 \leq n \leq 255$	00H~7FH C1H~C4H(F NC)	$0 \leq d \leq 127$ $d = 193$, $194, 195, 196$
Parameter range	(A) $0 \leq m \leq 6$ (B) $65 \leq m \leq 74$					
Default value	None					
Supported Models	All models					
Precaution	If the bar code width exceeds the printable area, the printer does not print the bar code. This command feeds as needed and is not affected by the ESC 2, ESC 3 line spacing settings or the line spacing settings. This command is not affected by ESC! character style setting After this command is executed, the print position is restored to the print start position. m Parameter 0 ~ 6 (A) and 65 ~ 71 (B) select the same coding system, the printing effect is the same. m When parameter 0 ~ 6(A), the barcode data will be terminated with NULL. m For parameter 0 ~ 6(A), the barcode data will end with NULL. m For parameter 65 ~ 74(B), the barcode data will be indicated by n for the data length. k is used for indication, no transmission is required Note when printing UPCA (m = 0 or 65): Check digits are automatically inserted or error corrected regardless of the input data length 11 or 12 The start, separator and end characters are automatically inserted. Note when printing UPCE (m = 1 or 66): When the data length is 6, the system character (NSC) 0 is automatically inserted. When the data length is 7, 8, 11, and 12, the first system character (NSC) d1 must be 0.					

Check digit is automatically inserted or error corrected regardless of the input data length of 6, 7, 8, 11, or 12.

Regardless of the input data length of 6, 7, 8, 11 or 12, the barcode readable character (HRI) only displays 6 bits of data without the system character (NSC) and check digit;

The relationship between transmission data and print data conversion is as follows:

Transmitted data											Printed data					
传输的数据											打印的数据					
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, make sure d7,d8,d9,d10 is 0 and d11 is 5~9.

Automatic insertion of start and end characters

Note when printing EAN13 (m = 2 or 67):

Check digits are automatically inserted or corrected regardless of whether the input data length is 12 or 13.

Automatic insertion of the start, separator, and end characters

Note when printing EAN8 (m = 3 or 68):

Check digits are automatically inserted or error corrected regardless of whether the input data length is 7 or 8.

Start, separator, and terminator characters are automatically inserted.

Note when printing CODE39 (m = 4 or 69):

When d1 or dn is not the start/end “*”, the encoder automatically inserts the “*”.

When a “*” is encountered in the middle of the data, the encoder treats it as a terminator and the rest of the data is treated as normal data;

Check digits are not automatically calculated and added

Note when printing ITF25 (m = 5 or 70):

Start and end characters are inserted automatically

Check digits are not automatically calculated and added

Caution is required when printing CODABAR (NW-7) (m = 6 or 71):

The start and end characters are not inserted automatically and need to be added manually by the user, in the range “A” to “D” or “a” to “d”

Check digits are not automatically calculated and added

Note when printing CODE93 (m = 72):

The start and end characters are automatically inserted

Two check digits are automatically calculated and inserted

When barcode readable characters (HRI) are set for printing, no start/end HRI

characters are set

When barcode readable character (HRI) printing is set, the control character is replaced with a space.

When CODE128 (m = 73) is selected:

- Refer to Appendix A, CODE 128 for information and character sets.

- When using CODE 128, follow the instructions below to encode:

① The character set (one of CODE A, CODE B and CODE C) must be selected before bar code data.

② Selection of the character set is accomplished by sending the character “{” in combination with another character; the ASCII character “{” is sent by sending successive characters.

“{” is accomplished by sending the character ‘{’ twice in succession.

Special characters Send data

ASCII code Hexadecimal code Decimal code

Special characters	Sending data		
	ASCII code	Hexadecimal code	Decimal code
SHIFT	{S	7B,53	123, 83
CODEA	{A	7B,41	123, 65
CODEB	{B	7B,42	123, 66
CODEC	{C	7B,43	123, 67
FNC1	{1	7B,31	123, 49
FNC2	{2	7B,32	123, 50
FNC3	{3	7B,33	123, 51
FNC4	{4	7B,34	123, 52
“{”	{{	7B,7B	123, 123

[Example] e.g. print “No. 123456”.

In this example, the printer first prints “No.” with CODE B, and then prints the remaining digits with CODE C. The printer prints “No.” with CODE B, and then prints the remaining digits with CODE C:

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



CODE 128:

1b 40 1d 48 02 1d 68 64 1d 77 03

1d 6b 49 0A 7B 42 4E 6F 2E 7B 43 0C 22 38

- If character set selection is not at the top of the bar code data, the printer stops processing this command and treats the remaining

The printer will stop processing this command and treat the rest of the data as normal data.

- If “{” and the character immediately following it are not the combination specified above, the printer stops processing this command and treats the

	remaining data as normal data. If “ { ” and the character immediately following it are not the combination specified above, the printer stops processing this command and treats the remaining data as normal data. - If the characters received by the printer are not barcode character set data, the printer stops processing this command and processes the remaining data as normal data. If the characters received by the printer are not bar code character set data, the printer stops processing this command and treats the remaining data as normal data. - When the printer prints HRI characters, shift characters and character set selection data are not printed. - HRI characters for function characters are not printed. - HRI characters for control characters (<00>H to <1F>H and <7F>H) are also not printed; <Other> Be sure to ensure the left and right gaps of the barcode. The gap varies depending on the barcode type.
Example of use	<pre> 1b 40 1d 48 02 1d 68 64 1d 77 01 30 0D 0A 1d 6b 00 30 31 32 33 34 35 36 37 38 39 31 00 31 0D 0A 1d 6b 01 30 31 32 33 34 35 36 37 38 39 31 00 32 0D 0A 1d 6b 02 30 31 32 33 34 35 36 37 38 39 31 32 00 33 0D 0A 1d 6b 03 30 31 32 33 34 35 36 37 00 34 0D 0A 1D 6B 04 30 31 32 41 42 20 24 25 2B 2D 2E 2F 00 35 0D 0A 1d 6b 05 30 31 32 33 34 35 36 37 38 39 31 32 00 36 0D 0A 1d 6b 06 2D 31 32 42 24 2B 2D 2E 00 1d 6b 06 43 31 32 33 34 35 36 34 38 39 00 36 35 0D 0A 1d 6b 41 0c 31 32 33 34 35 36 37 38 39 30 31 32 36 36 0D 0A 1d 6b 42 0c 30 32 33 34 35 36 30 30 30 30 38 39 36 37 0D 0A 1d 6b 43 0c 30 32 33 34 35 36 30 30 30 30 38 39 36 38 0D 0A 1d 6b 44 08 30 32 33 34 35 36 30 30 36 39 20 20 4e 4f 20 24 25 2b 2d 2e 2f 31 32 33 34 35 36 30 30 0D 0A 1d 6b 45 11 4e 4f 20 24 25 2b 2d 2e 2f 31 32 33 34 35 36 30 30 </pre>

	37 30 20 20 20 30 32 33 34 35 36 30 30 C5 BC CA FD 0D 0A 1d 6b 46 09 30 31 32 33 34 35 36 30 30 37 31 0d 0a 1d 6b 47 05 32 33 34 35 36 37 32 0d 0a 1d 6b 48 0b 32 33 34 35 36 41 42 2e 2f 2b 2c 37 33 0d0a 1d 6b 49 0A 7B 42 4E 6F 2E 7B 43 0C 22 38 Code 128 : 1b 40 1d 48 02 1d 68 64 1d 77 03 37 33 0d0a 1d 6b 49 0A 7B 42 4E 6F 2E 7B 43 0C 22 38
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⑥QR Code Printing Instructions

Setting the module type for QR codes

Command name	Setting the module type for QR codes
Command code	ASCII: GS (k pL pH cn fn n Decimal system: 29 40 107 pL pH cn fn n Hexadecimal system: 1D 28 6b pL pH cn fn n
Function Description	Setting the module type for QR codes
Parameter range	pL=3, pH=0 cn=49 fn=67 $0 \leq n \leq 16$
Default value	n=3
Supported Models	All models
Precaution	Set the type of the QR code graphic module to [n dots × n dots].
Example of use	None

Setting the error correction level error of QR code

Command name	Setting the error correction level error of QR code
Command code	ASCII: GS (k pL pH cn fn n Decimal system: 29 40 107 pL pH cn fn n Hexadecimal system: 1D 28 6b pL pH cn fn n
Function	Setting the error correction level error of QR code

Description			
Parameter range	pL=3, pH=0 cn=49 fn=69 $48 \leq n \leq 51$		
Default value	n=48		
Supported Models	All models		
Precaution	Setting the error correction level error of QR code		
	n	Functions	Reference. Approximate representation of recovery (%)
	48	Mis-corrected horizontal error L	7
	49	Mis-corrected horizontal error m	15
	50	Mis-corrected horizontal error q	25
	51	Mis-corrected horizontal error h	30
Example of use	None		

Storing QR code data to the QR code buffer

Command name	Storing QR code data to the QR code buffer
Command code	ASCII: GS (k pL pH cn fn m d1...dk Decimal system: 29 40 107 pL pH cn fn m d1...dk Hexadecimal system: 1D 28 6b pL pH cn fn m d1...dk
Function Description	Storing QR code data to the QR code 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 value	None
Supported Models	All models
Precaution	Stores the data of the QR code (d1.... .dk) to the QR code buffer. (The bytes of $((pL + pH \times 256) - 3)$ are processed as data of the graph after m(d1.... .dk) are processed as the data of the graph after m(d1...dk).
Example of use	None

Printing QR Code

Command name	Printing QR Code
Command code	ASCII: GS (k pL pH cn fn m Decimal system: 29 40 107 pL pH cn fn m Hexadecimal system: 1D 28 6b pL pH cn fn m
Function Description	Printing QR Code
Parameter range	pL=3, pH=0 cn=49 fn=81 m=48
Default value	None
Supported Models	All models
Precaution	Printing QR codes. The user must consider the space of the QR code graphic (the spacing between the top and bottom of the QR code graphic and the spacing between the left and right are specified in the specifications).
Example of use	1b 40 1d 28 6b 03 00 31 43 03 1d 28 6b 03 00 31 45 30 1d 28 6b 06 00 31 50 30 41 42 43 1b 61 01 1d 28 6b 03 00 31 52 30 1d 28 6b 03 00 31 51 30

Setting the graphic information of the QR code

Command name	Setting the graphic information of the QR code																															
Command code	ASCII: GS (k pL pH cn fn m Decimal system: 29 40 107 pL pH cn fn m Hexadecimal system: 1D 28 6b pL pH cn fn m																															
Function Description	Set the graphical information for the QR code. Here are the specific details of the graphic message:																															
	<table><tr><td>Sending data</td><td>Hexadecimal</td><td>Decimal</td><td>Data type</td></tr><tr><td>Header</td><td>37H</td><td>55</td><td>1byte</td></tr><tr><td>Flag</td><td>36H</td><td>54</td><td>1byte</td></tr><tr><td>Width</td><td>30H-39H</td><td>48-57</td><td>1-5byte</td></tr><tr><td>Separator</td><td>1FH</td><td>31</td><td>1byte</td></tr><tr><td>Height</td><td>30H-39H</td><td>48-57</td><td>1-5byte</td></tr><tr><td>Separator</td><td>1FH</td><td>31</td><td>1byte</td></tr></table>				Sending 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
	Sending 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
	Width and height data is sent: Height and width values for graphic data are in dots. Other information data sent: “Hex = 30H/Dec = 48” indicates that the data is not printed. “Hex = 31H/decimal = 49” means the data is not printed.			
Parameter range	pL=3, pH=0 cn=49 fn=82 m=48			
Default value	None			
Supported Models	All models			
Precaution	This command does not print QR code graphics. The user must consider the space of the QR code graphic (the spacing between the top and bottom of the QR code graphic and the spacing between the left and right are specified in the specifications).			
Example of use	None			

Printing the QR code

Command name	Printing the QR code
Command code	ASCII: GS k m v r nL nH d1...dk Decimal system: 29 107 97 v r nL nH d1...dk Hexadecimal system: 1D 6B 61 v r nL nH d1...dk
Function Description	Printing QR code v indicates the specification of the QR code, v=0 indicates that the specification of the QR code is selected automatically. r denotes the error correction level nL nH denotes the data length d1...dk denotes the QR code data to be printed
Parameter range	$0 \leq v \leq 17$ $1 \leq r \leq 4$ $k = nL + 256 * nH$
Default value	None
Supported Models	Portable printers
Precaution	Printing the QR code

Example of use	1b 40 1D 6B 61 08 02 08 00 30 31 32 33 34 35 36 37
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⑦Status instruction

Transmission state

Command name	Transmission state				
Command code	ASCII: GS r n Decimal system: 29 114 n Hexadecimal system: 1D 72 n				
Function Description	Transmit the state specified by n as follows.				
	n		Status		
	1,49		Paper Transfer Sensor Status		
Parameter range	n = 1, 49				
Default value	None				
Supported Models	All models				
Precaution	When using the serial interface: If DTR/DSR control is set, the printer transmits only one byte after confirming that the host computer 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 waits until the host computer is ready. If XON/XOFF control is set, the printer transmits only one byte and does not acknowledge the DSR signal status. This command is executed when data is generated in the print buffer. Therefore there may be a time interval between the reception of this command and the transmission status, depending on the status of the receive buffer. When the automatic status reply ASB is activated with GS a, the status transmitted with GS r and the ASB status must be distinguished. The types of status transmitted by are shown below.				
	Bit	OFF /ON	Hexadecimal	Decimal	ASB status
	0,1	-	-	-	Meaningless
	2,3	OFF	00	0	Paper Exhaustion Sensor: Sufficient Printed Paper.
		ON	(0C)	(12)	Paper out sensor is out of paper
	4	OFF	00	0	Unused, fixed to off
	5,6	-	-	-	Undefined
	7	OFF	00	0	Unused, fixed to off

	Print paper sensor status (n = 1, 49). Bits 2 and 3: When the paper out sensor detects a paper out, the printer goes offline and the command is not executed. Therefore, bits 2 and 3 do not transmit the out-of-paper state.
Example of use	None

Real-time transmission status

Command name	Real-time transmission status
Command code	ASCII: DLE EOT n Decimal system: 16 4 n Hexadecimal system: 10 04 n
Function Description	The printer status is transmitted in real time according to the following parameter. n is used to specify the printer status to be transmitted: n = 1: the printer status is transmitted n = 2: offline status is transmitted n = 3: Transmit error status n = 4: Transmit paper sensor status
Parameter range	$1 \leq n \leq 4$
Default value	None
Supported Models	All models

Precaution

- The printer returns to the relevant status as soon as it receives this command
- Try not to insert this command in a command sequence of 2 or more bytes.
- This command is valid even if the printer is set to disabled by the ESC = (Select Peripheral) command.
- The printer transmits the current status, with each status represented by 1 byte of data.
- The printer transmits the status without acknowledging receipt by the host.
- This command is valid only for serial printers.
- This command is valid only for serial printers. This command is valid only for serial printers. The printer executes the command immediately when it receives it in any state.

n=1: printer status

Bit	0/ 1	Hexadecimal code	Decimal code	Functions
0	0	00	0	Fixed to 0
1	1	02	2	Fixed to 1
2	0	00	0	One or both cashdrawers open (This bit is fixed to zero for machines without a money box)
	1	04	4	Both cashdrawers are closed
3	0	00	0	Online
	1	08	8	Unplugged
4	1	10	16	Fixed to 1
5,6		--	--	Undefined
7	0	00	00	Paper has been torn away
	1	80	96	Paper hasn't been torn away

n=2: Transmission offline status

Bit	0/ 1	Hexadecimal code	Decimal code	Functions
0	0	00	0	Fixed to 0
1	1	02	2	Fixed to 1
2	0	00	0	Top cover closed
	1	04	4	Top cover opened
3	0	00	0	Failure to press the feeding button
	1	08	8	Press the feeding button
4	1	10	16	Fixed to 1
5	0	00	0	Printer does not run out of paper
	1	20	32	Printer out of paper
6	0	00	00	No error conditions
	1	40	64	Error condition
7	0	00	0	Fixed to 0

Example of use	n=3: Transmission Error Status				
	Bit	0/1	Hexadecimal code	Decimal code	Functions
	0	0	00	0	Fixed to 0
	1	1	02	2	Fixed to 1
	2		--	--	Undefined
	3	0	00	0	No error in auto-cutter
		1	08	8	The auto-cutter is wrong.
	4	1	10	16	Fixed to 1
	5	0	00	0	No unrecoverable errors
		1	20	32	There is an unrecoverable error
	6	0	00	00	Printer head temperature and voltage are normal
		1	40	64	Printer head temperature or voltage out of range
	7	0	00	0	Fixed to 0
	n=4: Paper Transfer Sensor Status				
	Bit	0/1	Hexadecimal code	Decimal code	Functions
	0	0	00	0	Fixed to 0
	1	1	02	2	Fixed to 1
	2,3	0	00	0	Papery
		1	0C	12	Paper is close
	4	1	10	16	Fixed to 1
	5,6	0	00	0	Papery
		1	60	96	Run out of paper
	7	0	00	0	Fixed to 0
	10 04 01				
	10 04 02				
	10 04 03				
	10 04 04				

Real-time printer requests

Command name	Real-time printer requests
Command code	ASCII: DLE ENQ n Decimal system: 16 5 n Hexadecimal system: 10 05 n
Function	The printer responds to requests from the host. n Specifies the following

Description	requests:	
	n	Requests
	1	Recovers from the error and restarts printing from the line where the error occurred.
	2	Recover from an error after clearing the receive and print buffers.
Parameter range	n = 1, 2	
Default value	None	
Supported Models	All models	
Precaution	This command is valid only when an auto cutter error, cover open error occurs. The printer starts processing data as soon as this command is received. This command is executed even if the printer is offline, the print buffer is full, or a serial interface mode error occurs. In parallel interface mode, this command cannot be executed when the printer is busy. Status is sent whenever a <code><10>H<05>H<n></code> ($1 \leq n \leq 2$) data sequence is received. Example: ESC * m nL nH dk , d1 = <code><10>H</code>, d2 = <code><05>H</code>, d3 = <code><01>H</code> cannot be used in a data containing a command of 2 or more bytes. Example: If you want to send ESC 3n to the printer, but before n is sent, DTR (for the host is DSR) changes to MARK before n is sent, a DLE ENQ 2 interrupt occurs before n is received. The code <code><10>H</code> for DLE ENQ 2 is treated as the code <code><10>H</code> for ESC 3. The code <code><10>H</code> of DLE ENQ 2 is treated as the code <code><10>H</code> of ESC 3. DLE ENQ 2 allows the printer to recover from an error state after clearing the data in the receive buffer and print buffer. The printer retains the settings that were in effect when the error occurred (e.g., ESC ! , ESC3, etc.). The printer can be fully initialized with this command and ESC @. This command is only valid for errors from which recovery is possible, except for printhead temperature errors.	
Example of use	10 05 01	

Allow, disallow automatic status reply (ASB)

Command name	Allow, disallow automatic status reply (ASB)
Command code	ASCII: GS a n Decimal system: 29 97 n

Function Description	Hexadecimal system: 1d 61 n				
	Allows or disables ASB and specifies the included status items with n as follows:				
	Bit	OFF/ON	Hexadecimal	Decimal	ASB status
	0	-	-	-	Undefined
	1	-	-	-	Undefined
	2	OFF	00	0	Error state inhibit
		ON	04	4	Error state allowed
	3	OFF	00	0	Print Paper Roll Sensor Status Inhibit
		ON	08	8	Print Paper Roll Sensor Status Allowed
	4-7	-	-	-	Undefined
	First byte (printer information):				
	Bit	OFF/ON	Hexadecimal	Decimal	ASB status
	0,1	OFF	00	0	Not defined. Fixed to 0
	2	ON	04	0	Not defined. Fixed to 1
	3	OFF	00	0	Not defined. Fixed to 0
	4	ON	10	16	Not defined. Fixed to 1
	5	OFF	00	0	Not defined. Fixed to 0
	6	OFF	00	0	Paper not traveling by pressing the feeding button
		ON	40	64	Paper is being traveled by pressing the feeding button
	7		00	0	Not defined. Fixed to 0
	Second byte (printer information):				
	Bit	OFF/ON	Hexadecimal	Decimal	ASB status
	0-4	OFF	00	0	Not defined. Fixed to 0
	5	OFF	00	0	No unrecoverable errors occurred
		ON	20	32	An unrecoverable error has occurred
	6	OFF	00	0	No auto-recoverable errors have occurred
		ON	40	64	There are auto-recoverable errors that occur
	7	OFF	00	0	Not defined. Fixed to 0
	Third byte (paper sensor information):				
	Bit	OFF/ON	Hexadecimal	Decimal	ASB status
	0,1	OFF	00	0	Not defined. Fixed to 0
	2,3	OFF	00	0	Printer has paper
		ON	0c	12	Printer is out of paper
	4-7	OFF	00	0	Not defined. Fixed to 0
	Fourth byte (paper sensor information):				

	Bit	OFF/ON	Hexadecimal	Decimal	ASB status
	0-3	-	-	-	Not defined
	4-7	OFF	00	0	Not defined. Fixed to 0
Parameter range	0≤n≤255				
Default value	None				
Supported Models	All models				
Precaution	If any of the status items in the above table are allowed, the printer transmits the status when the command is executed. The printer automatically transmits the status once the “allowed” status item is changed. Because each status transfer represents the current state, prohibited status entries can be changed. If all status items are disabled, then the ASB function is also disabled. If ASB Allowed is set as the default setting, then the printer transmits status from the first time the printer can receive and transmit printer data when the printer is turned on. transmits the following four status bytes without determining if the host is ready to receive data. The four status bytes must be consecutive, except for the XOFF code. Because command data is processed in the receive buffer and then executed, there may be a lag time between data reception and status transmission. When using DLE EOT, a distinction must be made between the status transmitted by these commands and the ASB status.				
Example of use	1D 61 08				

⑧Other commands

Initializing the printer

Command name	Initializing the printer
Command code	ASCII: ESC @ Decimal system: 27 64 Hexadecimal system: 1B 40
Function Description	Initialize the printer the following: Clears the print cache Restore default values for each parameter
Parameter range	None
Default value	None
Supported Models	All models
Precaution	None
Example of	None

use	
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Printing the self-test page

Command name	Printing the self-test page
Command code	ASCII: DC2 T Decimal system: 18 94 Hexadecimal system: 12 54
Function Description	The printer prints a self-test page containing the printer's program version, communication interface type, code page and some other data
Parameter range	None
Default value	None
Supported Models	All models
Precaution	None
Example of use	1B 40 12 54

Setting the print density

Command name	Setting the print density
Command code	ASCII: ESC 7 n1 n2 n3 Decimal system: 27 55 n1 n2 n3 Hexadecimal system: 1B 37 n1 n2 n3
Function Description	Sets the maximum number of heating points to be printed, the heating time, and the interval: n1 = 0-255 maximum number of heated points, unit (8dots), default value 9 (80 dots); n2 = 0-255 heating time, unit (10us), default value 80; n3 = 0-255 heating interval time, unit (10us), default value 2; If the number of heating points is large, the maximum current consumption of the control board is large and the printing speed is fast. The maximum number of heating points is $8 \times (n1+1)$; The longer the heating time, the higher the print blackness and the slower the print speed. If the heating time is too short, printing blanks may occur; The longer the interval time, the clearer the printing and the slower the printing speed;
Parameter range	
Default value	None
Supported Models	All models
Precaution	The “Heating Time” and “Heating Interval” control panels are automatically

	adjusted according to the input voltage.
Example of use	Number of heating points: 80 points, heating time: 800us, interval time 200us. 1B 40 1B 37 09 50 02 12 54 Number of heating points: 80 points, heating time: 1600us, interval time 200us. 1B 40 1B 37 09 A0 02 12 54 It can be seen that the print concentration is obviously darkened after the heating time is elongated.