

CSN-A2L Micro panel printer's User Manual



Draw up: Lin Xiaopeng 2017.04.06

Audit: Hu Riyu 2017.04.08

standardization: Liu Zhonghua 2017.04.09

Approved: Wang Huanyong 2017.04.11

Tel: 0592-5517253

Fax: 0592-5231815

Supply Company: Xiamen Cashino Technology Co., Ltd.

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

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technology Co.,Ltd. for the latest version

REVISION RECORD

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2	20180416	Add settings, cancel characters upside down	14	Zhu Chunyan	Hu Riyu
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1.Product Description



Name: Micro panel thermal printer

Model: A2L

Installation Port Size: 103.3(W)*57.3(H)mm

Insert Depth: 50mm

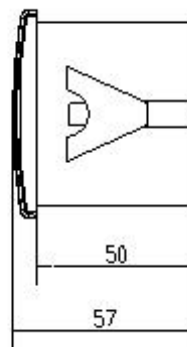
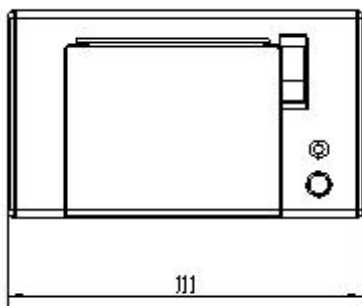
Application: Medical equipment, Measuring equipment, Security equipment, Analyzing Instrument & Meter

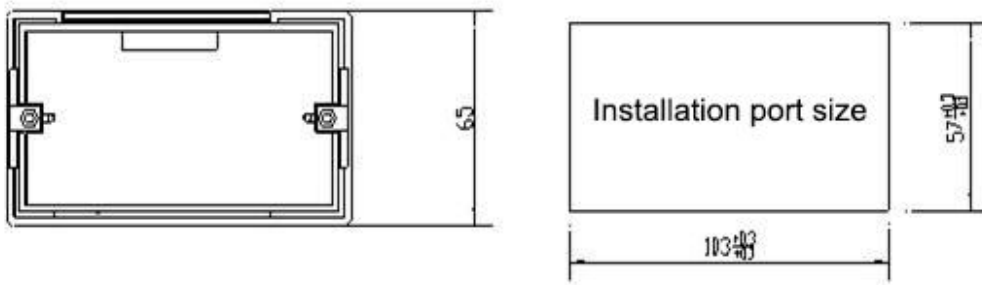
2.Feature

- ① Elegant style
- ② Support for ESC/POS print command
- ③ Easy paper loading
- ④ Low noise, thermal printing
- ⑤ Multi-interface optional
- ⑥ Easy to embed in all kinds of instruments

3.Product specification

3.1 Printer dimension

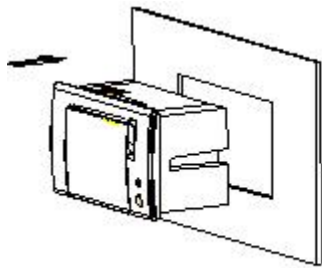




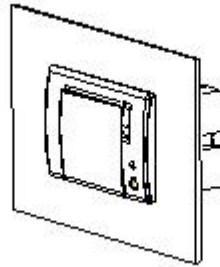
3.2 Installation method

Put the printer into the front of device as the picture 1 and picture 2 , Install the fixed block from the back, lock the screw as the picture 3

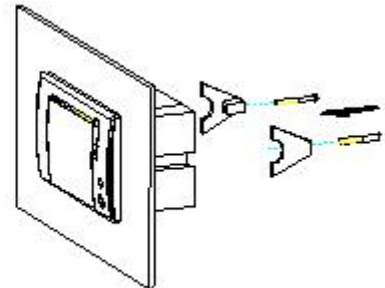
Note: the machine panel could be adjusted the thickness range from 1 to 6CM



Picture 1



Picture 2



Picture 3

4.Printer Parameter

Print	Printing Method	Thermal line	
	Printing speed	Max:90mm/s	
	Resolution	203dpo(8dot/mm)	
	Effective printing width	48mm	
Character	Character set	ASCII,GB2312-80(Chinese)	
	Print font	ANK: (8*16,9*17,9*24,12*24) Chinese: (16*16, 24*24)	
Paper specification	Paper type	Thermal paper	
	Paper width	57.5±0.5mm	
	Paper roll diameter	Max: 38mm	
	Paper thickness	60-85µm	
Reliablility	Mean Time Between Failures (MCBF)	>500 million line	
Interface		Serial (RS232, TTL) /Parallel/USB	
Insert depth		50mm	
Power supply		DC 5V-9V ≥2A	DC 12V ≥2A
Outline dimension(W*L*H)		111*65*56.5mm	

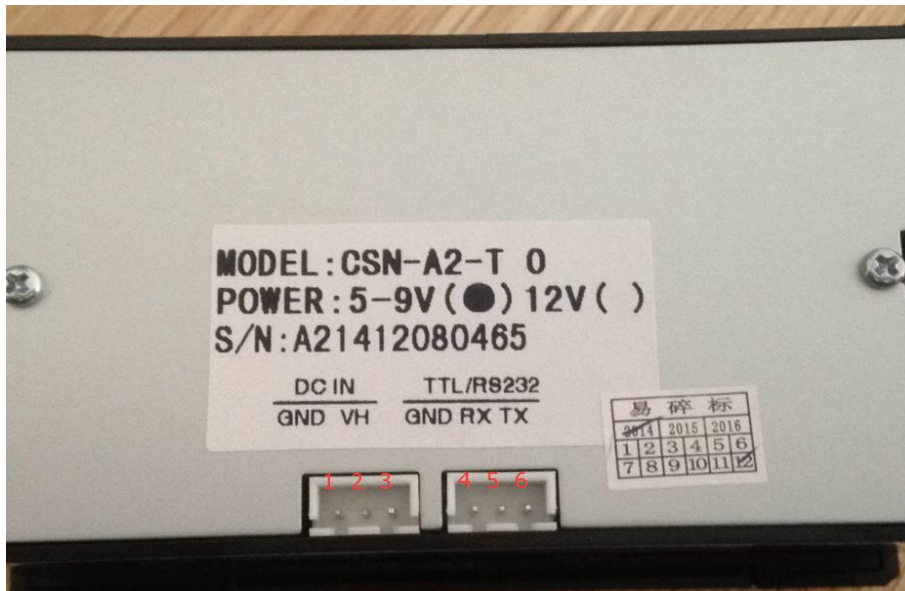
Physical	Installation port size	103.3*57.3mm
	Color	Beige/Black
Environment	Operating temperature	0°C ~ 50°C
	Operating humidity	20% ~ 85%RH
	Storage temperature	-20°C ~ 60°C
	Storage humidity	5% ~ 90%RH

5.Paper roll placement

- 1.Open the top cover of the printer;
- 2.The paper roll is placed on the reverse side
- 3.Cover the top lid of the printer so that the paper is slightly exposed

Note: Before installing the paper, please tear off the adhesive tape attached to the paper roll, and do not leave any foreign matter to protect the print head.

6.Description for interface pin definition



Pin	Direction	Description
1.GND		Ground
2.NULL		
3.VH	Input	Voltage 5-9V or 12V

4.GND		Ground
5 .RXD	Input	Receive data
6 .TXD	Output	Transfer data

7. Panel LED indication

After power off, the indicator will be on and off twice, with an interval of one second, indicating that the startup is good, then the indicator is as following:

Flash one: self-test work

Flash twice: Pinter not detected

Flash three times: The printer is out of paper

Flash five times: The heater core of printer mechanism is overheated

Flash ten times: Chinese character font not detected

8.Command instruction

8.1Command list

LF	Pint and feed	Printing and feeding commands
CR	Enter	
ESC J	Print and paper feed n dots	
ESC d	Print and paper feed n lines	
ESC 3	Set line space n dots	Print setting commands
ESC 2	Set default line space	
ESC \$	Set the print position	
GS L nL nH	set left margin amount	
ESC !	set character printing method	
GS ! n	Set character size	
GS B n	Set and delete white printing	
ESC - n	Set and delete underline	
ESC V n	Set and delete 90°rotate printing	
ESC a	Setting position alignment mode	
FS &	Set Chinese character mode	
FS .	Delete Chinese character mode	
ESC % n	Choose and delete customized characters	
ESC &	Define customized characters	
ESC ? n	Delete customized character	

ESC R n	Select International character	
ESC t n	Select the character code page	
ESC *	Bitmap vertical modulus data fillings	Graphic print commands
GS v 0	Bitmap horizontal modulus data print	
GS *	Define download bitmap	
GS / m	Print download bitmap	
FS q	Define NV bitmap	
FS p n m	Print NV bitmap	
HT	Horizontal tab	Tabulation commands
ESC D	Set horizontal tabulation position	
GS H	Set 1-D barcode readable character(HRI) print position	1-D print commands
GS h	Set 1-D barcode height	
GS w	Set 1-D barcode width	
GS k	Print 1-D barcode	
GS (k	Print QR code	QR code print commands
	Print line segment	Curve print commands
GS r n	Transmission status	Status query commands
DLE EOT n	Real-time transmission status	
ESC @	Printer reset	Other commands
DC2 T	Printing self-test page	

8.2 Command details

① Printing and paper feed commands

Printing and paper feed

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

Support model	All
Notes	None
Example	None

Enter

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

Print and paper feed dots

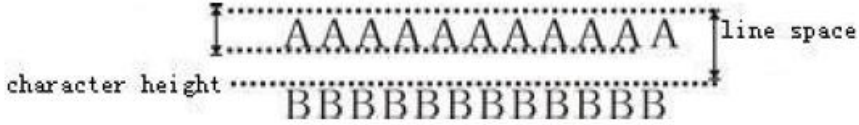
Name	Print and paper feed n dots
Code	ASCII : ESC J n DEC : 27 74 n HEX : 1B 4A n
Function	Print the buffer content and paper feed
Range	$0 \leq n \leq 255$
Defaults	None
Support Model	All
Notes	Paper feed n dots when printing buffer is empty. After executing this command,printing position is moved to 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	$0 \leq n \leq 255$
Defaults	None
Support Model	All
Notes	Print this command set as initial position of the same line
Example	1b 40 30 31 32 1b 64 01

② Printing set commands

Set line space as n dots

Name	Set line space as n dots
Code	ASCII : ESC 3 n DEC : 27 51 n HEX : 1B 33 n
Function	Set line space as n dots
Range	$0 \leq n \leq 255$
Defaults	n = 33
Support Model	All
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. If ESC2,ESC@,reset the printer, the printer blackout,and the line space turns to default.</p>
Example	<pre>1b 40 1b 33 30 30 31 32 0d 0a 30 31 32 0d 0a 1b 32 30 31 32 0d 0a 30 31 32 0d 0a</pre>

Set line space to defaults

Name	Set line space to default
Code	ASCII : ESC 2 DEC : 27 50 HEX : 1B 32
Function	Set line space to default 33 dots
Range	None
Defaults	None
Support Model	All
Notes	<p>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.</p>
Example	None

Set print position

Name	Set print position
Code	ASCII : ESC \$ nL nH DEC : 27 36 nL nH HEX : 1B 24 nL nH
Function	Set left side blank area as (nL + nH × 256) dots
Range	0 ≤ nL ≤ 255 0 ≤ nH ≤ 255
Defaults	None
Support Model	All
Notes	This command is only effective with the initial position of the line. This command is unavailable if it sets beyond the printing area.
Example	1b 40 1b 24 08 00 30 31 32 0d 0a 30 31 32 0d 0a

Set left margin

Name	Set the left margin
Code	ASCII : GS L nL nH DEC : 29 76 nL nH HEX : 1D 4C nL nH
Function	Set the left margin as (nL + nH × 256) dots
Range	0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255
Defaults	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 character printing method

Name	Set character printing method
Code	ASCII : ESC ! n

	DEC : 27 33 n HEX : 1B 21 n																													
Function	<p>Set character printing methods (font,highlight,inversion,bold,double hight,double width and underline),parameter n bit definition as below:</p> <table border="1"> <thead> <tr> <th rowspan="2">Bit Function</th> <th colspan="2">Value</th> </tr> <tr> <th>0</th> <th>1</th> </tr> </thead> <tbody> <tr> <td>0 Font</td> <td>Normal</td> <td>Small character</td> </tr> <tr> <td>1 Undefined</td> <td></td> <td></td> </tr> <tr> <td>2 Undefined</td> <td></td> <td></td> </tr> <tr> <td>3 Bold</td> <td>Cancel</td> <td>Setting</td> </tr> <tr> <td>4 Double hight</td> <td>Cancel</td> <td>Setting</td> </tr> <tr> <td>5 Double width</td> <td>Cancel</td> <td>Setting</td> </tr> <tr> <td>6 Undefined</td> <td></td> <td></td> </tr> <tr> <td>7 Underline</td> <td>Cancel</td> <td>Setting</td> </tr> </tbody> </table>	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
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																													
Defaults	n = 0																													
Support Model	All																													
Notes	<p>The command is effective with Chinese and foreign languages. The command is disabled when ESC@, printer reset or power off</p>																													
Example	<p>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</p>																													

Set character size

Name	Set character size				
Code	ASCII : GS ! n DEC : 29 33 n HEX : 1d 21 n				
Function	<p>Set character size as 1-8 times width,1-8 times height. Definition is as below: Use 0-3 set character height 4 - 7 bits set character width show as below:</p> <table border="1"> <thead> <tr> <th>Chart 1</th> <th>Chart 2</th> </tr> </thead> <tbody> <tr> <td>Character width setting</td> <td>Character height setting</td> </tr> </tbody> </table>	Chart 1	Chart 2	Character width setting	Character height setting
Chart 1	Chart 2				
Character width setting	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
Defaults	n = 0
Support Model	All
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
Defaults	n = 0
Support Model	All
Notes	It is only effective for LSB of n. This command is all effective with built-in characters and user-defined characters. It is effective with blank,which is setted by ESC CP,when white printing mode is on. This command is not effective with bitmap, user-defined bitmap, barcode, HRI character and vaulting space of HT,ESC \$. This command is not effective with line space. The white printing mode is prior to underline mode. When it 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" style="margin-left: 20px;"> <thead> <tr> <th>n</th> <th>Functions</th> </tr> </thead> <tbody> <tr> <td>0, 48</td> <td>Remove 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> </tbody> </table>	n	Functions	0, 48	Remove underline mode	1, 49	Set underline mode(1 dot coarse)	2, 50	Set underline mode(2 dot coarse)
n	Functions								
0, 48	Remove underline mode								
1, 49	Set underline mode(1 dot coarse)								
2, 50	Set underline mode(2 dot coarse)								
Range	$0 \leq n \leq 2, 48 \leq n \leq 50$								
Defaults	n = 0								
Support Model	All								
Notes	<p>Printer can print underline for all characters(including the space to the right of the character), except for the space set by HT.</p> <p>Printer can not print underline for clockwise rotated 90 ° characters and white printing characters.</p> <p>When n is setted as 0 or 48,remove underline mode.Other data is not printed as underline,and the setted underline coarseness does not change before 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	1b 40 1b 2d 01 30 31 32 0d 0a 1b 40 1b 2d 02 30 31 32 0d 0a 1b 40 1b 2d 00 30 31 32 0d 0a								

Set、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
Defaults	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	$0 \leq n \leq 1$, $48 \leq n \leq 49$
Defaults	n = 0
Support Model	All
Notes	<p>When it is setted to underline mode, the printer is not underlined for characters rotated 90°.</p> <p>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.</p> <p>When ESC @, printer reset, power off, the setting of this instruction is invalid.</p>
Example	1b 40 1b 56 01 30 31 32 0d 0a 30 31 32 0d 0a

Set printing alignment

Name	Set print alignment (Left, middle, right)
Code	ASCII : ESC a n DEC : 27 97 n HEX : 1B 61 n
Function	Align all data in one line,the meaning of n value as below: n mode 0, 48 left 1, 49 middle 2, 50 right
Range	$0 \leq n \leq 2$ or $48 \leq n \leq 50$
Defaults	n = 0
Support Model	All
Notes	This command setting is disabled when ESC@,printer resets or power off.
Example	1B 40 1B 61 02 30 31 32 0D 0A

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

Set Chinese mode

Name	Set Chinese mode
Code	ASCII : FS & DEC : 28 38 HEX : 1C 26
Function	Set Chinese mode
Range	None
Defaults	None
Support Model	All
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

Cancel Chinese character mode

Name	Exit Chinese character mode
Code	ASCII : FS . DEC : 28 46 HEX : 1C 2E
Function	cancel Chinese character mode
Range	None
Defaults	None
Support Model	All
Notes	When the Chinese character mode is not selected, all character codes are treated as ASCII codes, one character at a time.
Example	None

Select、cancel user customized characters

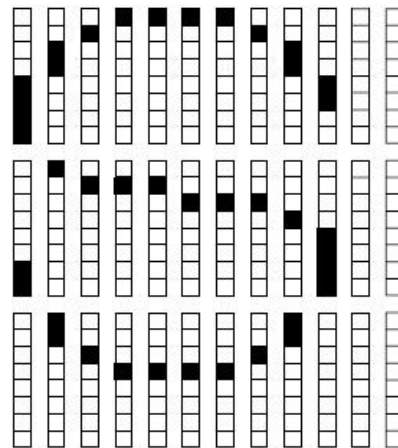
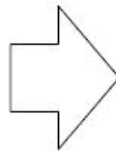
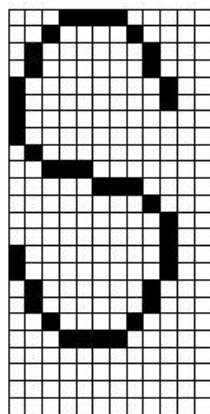
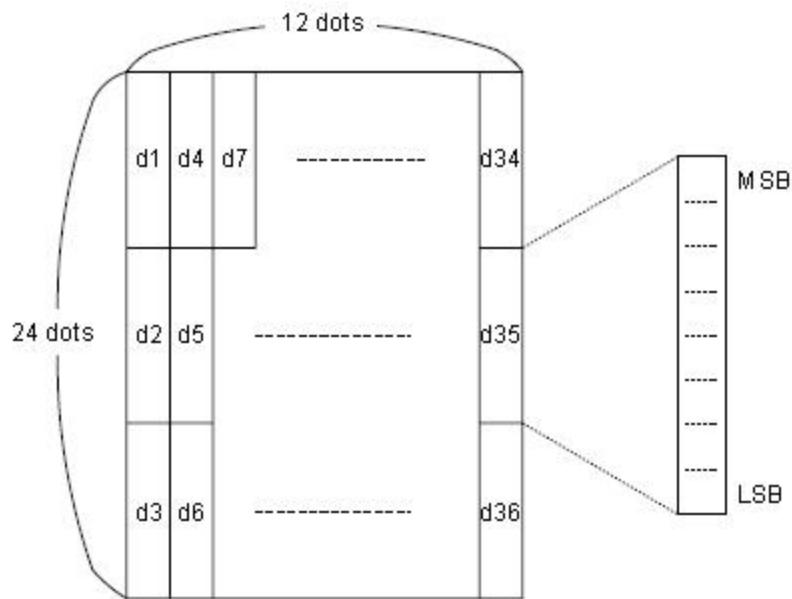
Name	Select 、cancel user customized characters
Code	ASCII : ESC % n DEC : 27 37 n HEX : 1B 25 n
Function	Select 、cancel user customized characters When n LSB is 0, delete customized characters When n LSB is 1, select customized characters
Range	$0 \leq n \leq 255$

Default	0
Support Model	All
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 ≤ x ≤ 6 If choosing Font 12*24, y= 3, 0 ≤ x ≤ 12 32 ≤ c1 ≤ c2 ≤ 126 0 ≤ d1 ... d(y*xk) ≤ 255
Defaults	None
Support Model	All
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 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 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	$32 \leq n \leq 126$
Defaults	None
Support Model	All
Notes	This command terminates the use of styles defined for character encoding, which is specified by n. After the user customized character is canceled, it is printed in the corresponding mode of the internal character. In the font selected with ESC !, the command removes the style defined for the specified encoding. If a user customized character is not defined, the printer ignores the command.
Example	None

Selecting international character set

Name	Selecting international character set																										
Code	ASCII : ESC R n DEC : 27 82 n HEX: 1B 52 n																										
Function	Selecting international character set n from the following table: <table style="margin-left: 40px;"> <tr> <td>n</td> <td>Character</td> </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> </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
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
Range	$0 \leq n \leq 15$
Defaults	0
Support Model	All
Notes	
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

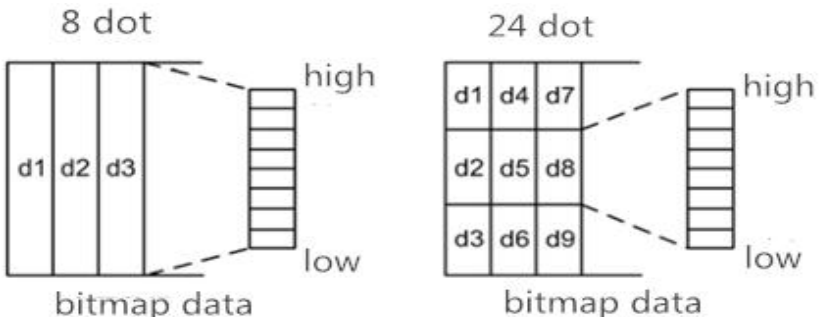
Select character code

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> </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
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	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] 34 WCP1256[Arabic] 35 WCP1258[Vietnam] 36 ISO-8859-2[Latin 2] 37 ISO-8859-3[Latin 3] 38 ISO-8859-4[Baltic] 39 ISO-8859-5[Cyrillic] 40 ISO-8859-6[Arabic] 41 ISO-8859-7[Greek] 42 ISO-8859-8[Hebrew] 43 ISO-8859-9[Turkish] 44 ISO-8859-15 [Latin 9] 45 Thai2 46 CP856 47 Cp874 252 CP932 SHIFT_JIS 253 UNICODE UCS-2 254 BIG5 255 GBK
Range	$0 \leq n \leq 255$
Defaults	0
Support Model	All
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 HI Hh [d]k DEC : 27 42 m HI Hh [d]k HEX : 1B 2A m HI Hh [d]k
Function	Print vertical module graphic data,the parameters are as below: m is bit map format: m mode horizontal scale vertical scale 0 8dots single density x2 x3 1 8dots double density x1 x3 32 24dots single density x2 x1 33 24dots double density x1 x1 HI、Hh is horizontal direction dots(HI+256xHh) [d]k is bit map data K used for indicating bit map data bytes,not for transfer.
Range	XX58: m = 0、1、32、33 $1 \leq HI + Hh \times 256 \leq 384$ $0 \leq d \leq 255$ k = HI + Hh x 256 (when m = 0、1) k = (HI + Hh x 256) x 3 (when m = 32、33) XX80: m = 0、1、32、33 $1 \leq HI + Hh \times 256 \leq 576$ $0 \leq d \leq 255$ k = HI + Hh x 256 (when m = 0、1) k = (HI + Hh x 256) x 3 (when m = 32、33)
Defaults	None
Support Model	All
Notes	[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>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> <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.</p>
Example	<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>

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	<p>Print horizontal module graphic data, the parameters are as below: m as bitmap method:</p> <table border="1"> <thead> <tr> <th>m</th> <th>Model</th> <th>Horizontal scale</th> <th>Vertical scale</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>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.</p>	m	Model	Horizontal scale	Vertical scale	0,48	Normal	× 1	× 1	1,49	Double-width	× 2	× 1	2,50	Double-height	× 1	× 2	3,51	Quadruple	× 2	× 2
m	Model	Horizontal scale	Vertical scale																		
0,48	Normal	× 1	× 1																		
1,49	Double-width	× 2	× 1																		
2,50	Double-height	× 1	× 2																		
3,51	Quadruple	× 2	× 2																		
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: $0 \leq m \leq 3; 48 \leq m \leq 51$ $1 \leq xL + xH \times 256 \leq 72$ $0 \leq yL \leq 255, 0 \leq yH \leq 255$ $0 \leq d \leq 255$ $k = (Hl + Hh \times 256) \times (yL + yH \times 256)$																				
Defaults	None																				
Support Model	All																				
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 border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>d1</td> <td>d2</td> <td>.....</td> <td>dx</td> </tr> <tr> <td>d(x+1)</td> <td>d(x+2)</td> <td>.....</td> <td>d(x+2)</td> </tr> <tr> <td> </td> <td> </td> <td>.....</td> <td> </td> </tr> <tr> <td>.....</td> <td>d(k-2)</td> <td>d(k-1)</td> <td>dk</td> </tr> <tr> <td>MSB</td> <td>LSB</td> <td>MSB</td> <td>LSB</td> </tr> </table> <p>This command has the printing function, data will be transferred while printing, no need to use the printing command again</p>	d1	d2	dx	d(x+1)	d(x+2)	d(x+2)			d(k-2)	d(k-1)	dk	MSB	LSB	MSB	LSB
d1	d2	dx																		
d(x+1)	d(x+2)	d(x+2)																		
																				
.....	d(k-2)	d(k-1)	dk																		
MSB	LSB	MSB	LSB																		
Example	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.
Range	$1 \leq x \leq 255$ $1 \leq y \leq 48$

	$x*y \leq 1536$ $0 \leq d \leq 255$
Default	None
Support Model	All
Notes	<p>If $x*y$ is out of the specified range, this command will be forbidden.</p> <p>The d indicates bitmap data. Data (d) specifies the printing bit as 1 and the not printing bit as 0.</p> <p>The downloaded bitmap definition will be cleared when: ESC @ is executed. ESC & 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	<p>Prints a downloaded bitmap using the mode specified by m. Using the mode that m appointed to print downloaded bitmap</p> <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										
Range	$0 \leq m \leq 3$ $48 \leq m \leq 51$										
Defaults	None										
Support Model	All										
Notes	<p>this command will be ignored if the bitmap data has not been defined. In standard mode, this command is effective only when there is no data in the buffer area.</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	<p>Define the NV bitmap using the specified n. n specifies the number of the defined NV bitmap.</p> <p>xL, xH means that the defined NV bitmap specifies the horizontal dots as $(xL+xH*256)*8$</p> <p>yL, yH means that the defined NV bitmap specifies the vertical dots as $(yL + yH*256)*8$</p>
Range	$1 \leq n \leq 255$ $0 \leq xL \leq 255$ $0 \leq xH \leq 3$ $(1 \leq (xL+xH*256) \leq 1023)$ $0 \leq yL \leq 255$ $0 \leq yH \leq 1$ $(1 \leq (yL+yH*256) \leq 288)$ $0 \leq d \leq 255$

	$k = (xL+xH*256)*(yL+yH*256)*8$ Totaled 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 <FS yH> 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 are enabled.</p> <p>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.</p> <p>This command defines n as the number of a NV bitmap. Numbers rise in order from NV bitmap 01H. Therefore, the first data</p>

group [xL xH yL yH d1...dk] is NV bitmap 01H, and the last data group [xL xH yL yH d1...dk] is NV bitmap n. The total agrees with the number of NV bitmaps specified by the command FS p.

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

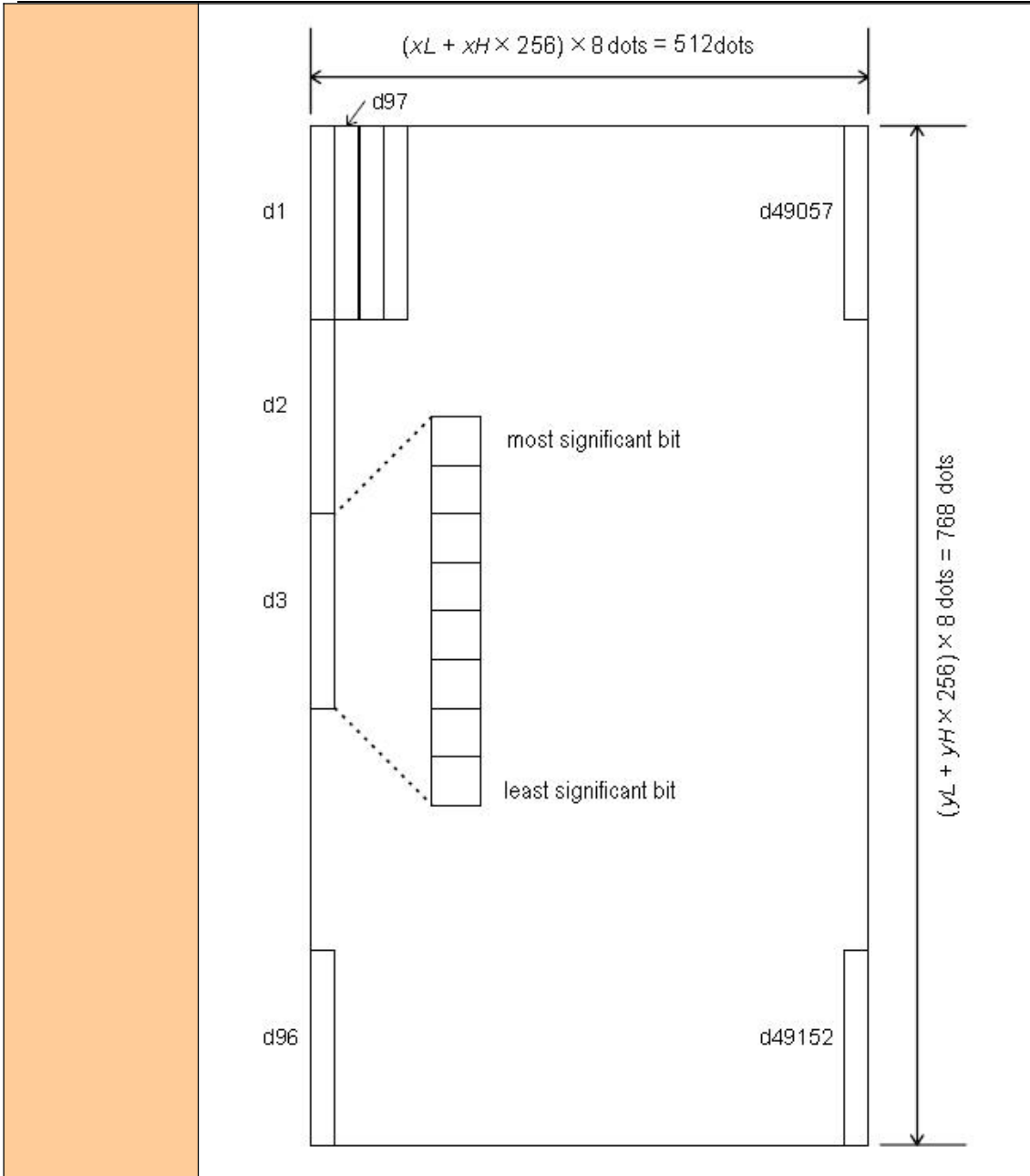
The definition area in this printer is a maximum of 192K bytes. This command can define several NV bitmaps, but cannot define bitmap data whose total capacity [bitmap data header] exceeds 192K bytes.

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

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

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

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



Example

```

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

Print NV bitmap

Name	Print NV bitmap
Code	ASCII : FS p n m

	DEC : 28 112 n m HEX : 1C 70 n m										
Function	Print NV bitmap n using the mode specified by m. <table border="1" style="margin-left: 40px;"> <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										
Range	$0 \leq m \leq 3$ $48 \leq m \leq 51$ $1 \leq n \leq 255$										
Default	None										
Support model	All										
Notes	<p>n is the number of the NV bitmap (defined using the FS q command). m specifies the bitmap mode. NV bitmap is a bitmap defined in non-volatile memory by FS q and printed by FS 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										

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
Range	None
Defaults	None
Support model	All
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
Range	XX58: $1 \leq d \leq 46$ ($d_1 < d_2 < \dots < d_k$, $1 \leq k \leq 16$) XX80: $1 \leq d \leq 70$ ($d_1 < d_2 < \dots < d_k$, $1 \leq k \leq 16$)
Defaults	The default positioning position is the 8-character interval(Column 9 17 25...) of the font A(12-24)
Support model	All
Notes	<p>Tab position as below:</p> <p>TAB position d1 and d2 setting</p> <p>Maximum support for the setting of 16 tab position 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: <table style="margin-left: 40px;"> <tr> <td>n</td> <td>print position</td> </tr> <tr> <td>0, 48</td> <td>don't print</td> </tr> <tr> <td>1, 49</td> <td>above the bar code</td> </tr> <tr> <td>2, 50</td> <td>below the bar code</td> </tr> <tr> <td>3, 51</td> <td>above and below the bar code</td> </tr> </table>	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
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										
Range	$0 \leq n \leq 3$ or $48 \leq n \leq 51$										
Defaults	n = 0										
Support model	All										
Notes	The command setting will be valid after ESC @、printer reset、power off										
Example	None										

1D bar code height setting

Name	1D bar code height setting				
Code	ASCII : GS h n DEC : 29 104 n DEX : 1D 68 n				
Function	Parameter n specifies the height of a bar code in dots: <table style="margin-left: 40px;"> <tr> <td style="text-align: center;"></td> <td>Height 50</td> </tr> <tr> <td style="text-align: center;"></td> <td>Height 100</td> </tr> </table>		Height 50		Height 100
	Height 50				
	Height 100				
Range	$1 \leq n \leq 255$				
Defaults	n = 64				
Support model	All				
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: 
Range	1 ≤ n ≤ 6
Defaults	n = 2
Support model	All
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	(A) ASCII : GS k m [d]k NUL DEC : 29 107 m [d]k NUL Hex : 1D 6B m [d]k NUL (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)																						
	<table border="1"> <thead> <tr> <th rowspan="2">m</th> <th rowspan="2">Coding system</th> <th colspan="4">Bar code length (SP show space)</th> </tr> <tr> <th>Data length h</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≤d≤57</td> </tr> <tr> <td>1</td> <td>UPC-E</td> <td>fixed</td> <td>6≤k≤8,</td> <td>0~9</td> <td>48≤d≤57</td> </tr> </tbody> </table>	m	Coding system	Bar code length (SP show space)				Data length h	k	Character set	Data (d)	0	UPC-A	fixed	k = 11, 12	0~9	48≤d≤57	1	UPC-E	fixed	6≤k≤8,	0~9	48≤d≤57
m	Coding system			Bar code length (SP show space)																			
		Data length h	k	Character set	Data (d)																		
0	UPC-A	fixed	k = 11, 12	0~9	48≤d≤57																		
1	UPC-E	fixed	6≤k≤8,	0~9	48≤d≤57																		

				$k = 11, 12$		[when $k = 7, 8, 11, 12, d1 = 48$]
2	JAN13 (EAN13)	fixed		$k = 12, 13$	0~9	$48 \leq d \leq 57$
3	JAN8 (EAN8)	fixed		$k = 7, 8$	0~9	$48 \leq d \leq 57$
4	CODE39	changeable		$1 \leq k$	0~9, A~Z SP, \$, %, *, +, -, ., /	$48 \leq d \leq 57,$ $65 \leq d \leq 90,$ $d = 32, 36, 37,$ $42, 43, 45,$ $46, 47$
5	ITF (Interleaved 2 of 5)	changeable		$2 \leq k \leq 255$ (even numbers)	0~9	$48 \leq d \leq 57$
6	CODABAR (NW-7)	changeable		$1 \leq k$	0~9, A~D, a~d \$, +, -, ., /, :	$48 \leq d \leq 57,$ $65 \leq d \leq 68,$ $97 \leq d \leq 100,$ $d = 36, 43, 45,$ $46, 47, 58$ ($65 \leq d1 \leq 68,$ $65 \leq dk \leq 68,$ $97 \leq d1 \leq 100,$ $97 \leq dk \leq 100$)

(Command B)

m	Coding system	Bar code length (SP show space)			
		Data length	n	Character set	Data (d)
65	UPC-A	fixed	$n = 11, 12$	0~9	$48 \leq d \leq 57$
66	UPC-E	fixed	$6 \leq n \leq 8,$ $n = 11, 12$	0~9	$48 \leq d \leq 57$ [when $n = 7, 8, 11, 12, d1 = 48$]
67	JAN13 (EAN13)	fixed	$n = 12, 13$	0~9	$48 \leq d \leq 57$
68	JAN8 (EAN8)	fixed	$n = 7, 8$	0~9	$48 \leq d \leq 57$
69	CODE39	change	$1 \leq n$	0~9, A~Z SP, \$, %, *,	$48 \leq d \leq 57,$ $65 \leq d \leq 90,$

		able			+, -, ., /	d = 32, 36, 37, 42, 43, 45, 46, 47
70	ITF (Interleaved 2 of 5)	changeable	$2 \leq n \leq 255$ (even numbers)		0~9	$48 \leq d \leq 57$
71	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 ($65 \leq d_1 \leq 68$, $65 \leq dk \leq 68$, $97 \leq d_1 \leq 100$, $97 \leq dk \leq 100$)
72	CODE93	changeable	$1 \leq n \leq 255$		00H~7FH	$0 \leq d \leq 127$
73	CODE128	changeable	$1 \leq n \leq 255$		00H~7FH C1H~C4H(FNC)	$0 \leq d \leq 127$ d = 193, 194, 195, 196
74	UCC/EAN128	changeable	$1 \leq n \leq 255$		00H~7FH C1H~C4H(FNC)	$0 \leq d \leq 127$ d = 193, 194, 195, 196
Range	(A) $0 \leq m \leq 6$ (B) $65 \leq m \leq 74$					
Defaults	None					
Support model	All					
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</p> <p>The command is not affected by ESC ! character style setting</p> <p>The print position is resorted to the print start location after the command is executed</p> <p>m parameter 0 ~ 6(A) and 65 ~ 71(B) select the same coding system, the same printing effect</p> <p>m parameter is 0 ~ 6(A), barcode data end with NULL</p> <p>m parameter is 65 ~ 74(B), barcode data n stand for data length</p> <p>K is for sign, no transmission</p> <p>When print UPCA (m = 0 or 65) , Please pay attention for the following points:</p>					

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

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

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

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

length is 6

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

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

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

The transition relation between transmission and printing data as below:

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

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

Initial character,terminator automatically inserted

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

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

Initial character,central split character and terminator inserted automatically

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

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

Initial character,central split character and terminator inserted automatically

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

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

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

The check bit could not calculate and add automatically

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

Initial character and terminator inserted automatically

The check bit could not calculate and add automatically

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

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

Check bit could not calculate and add automatically

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

Initial character and terminator inserted automatically

The two check code are automatically calculated and then inserted

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

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

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

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

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

The check bit could calculate and add automatically

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

When print EAN128(m = 74), please pay attention as following:

Basic construction as below:

Initial character set	FNC1	AI	Data part	Check bit A	Check bit B	Terminator
Inserted automatically		(d1...dk)			Inserted automatically	

Connection structure as below:

Initial character set	FN C1	AI	Data part	Check bit A	FN C1	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

	<p>character set) or switch character</p> <p>Function character FNC1~FNC4 use C1H~C4H and input it</p> <p>User input data AI,which do not need (“”) for indication,encoding system inserted automatically,otherwise it will be wrong.For example,GS k 74 18 "019501234567890*", 01 is AI,the following will be wrong:GS k 74 18 "(01)9501234567890**</p> <p>When user use the connection structure, need to insert FNC1(C1H"Decimal=193") in the middle.</p> <p>The input example as following: GS k 74 18 "019501234567890*" 193 "029501234567890**</p> <p>When barcode readable character(HRI) is set to print,the control character will be replaced with space,then cancel FNC1~FNC4</p>
Example	<pre>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</pre>

⑥Status 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 border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%; text-align: center;">n</th> <th style="text-align: center;">Function</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1, 49</td> <td>Transmits paper sensor status</td> </tr> </tbody> </table>		n	Function	1, 49	Transmits paper sensor status
n	Function					
1, 49	Transmits paper sensor status					
Range	n = 1, 49					
Defaults	None					
Support model	All					
Notes	When using a serial interface 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.

When XON/XOFF control is selected, the printer transmits only 1 byte without confirming the status of the DSR signal.

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 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	Decima l	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

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	$1 \leq n \leq 4$																																																				
Defaults	None																																																				
Support model	All																																																				
Notes	<p>•Printer return to the relative status immediately after receiving the command</p> <p>• this command try not to put in command list between 2 or more bite .</p> <p>Though printer being forbid by ESC=,this command still effective.</p> <p>Printer transmit current situation ,each situation show by 1 bite data.</p> <p>It is not sure host computer will receive printer transmit situation.</p> <p>Printer executed immediately after received the command.</p> <p>The command only effective for serial printer.Printer start to work immediately after receiving this command at any situation.</p> <p>n=1: printer status</p> <table border="1"> <thead> <tr> <th>Bit</th> <th>0/1</th> <th>Hexadecimal</th> <th>decimalis</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>00</td> <td>0</td> <td>Fixed to be 0</td> </tr> <tr> <td>1</td> <td>1</td> <td>02</td> <td>2</td> <td>Fixed to be 1</td> </tr> <tr> <td rowspan="2">2</td> <td>0</td> <td>00</td> <td>0</td> <td>Two drawers kick(no drawer, fixed to be 0)</td> </tr> <tr> <td>1</td> <td>04</td> <td>4</td> <td>Turn off two cashbox</td> </tr> <tr> <td rowspan="2">3</td> <td>0</td> <td>00</td> <td>0</td> <td>On-line</td> </tr> <tr> <td>1</td> <td>08</td> <td>8</td> <td>Off-line</td> </tr> <tr> <td>4</td> <td>1</td> <td>10</td> <td>16</td> <td>Fixed to be 1</td> </tr> <tr> <td>5,6</td> <td></td> <td>--</td> <td>--</td> <td>undefined</td> </tr> <tr> <td rowspan="2">7</td> <td>0</td> <td>00</td> <td>00</td> <td>The paper has been torn away</td> </tr> <tr> <td>1</td> <td>80</td> <td>96</td> <td>The paper hasn't been torn away</td> </tr> </tbody> </table> <p>n=2: transit off-line status</p>	Bit	0/1	Hexadecimal	decimalis	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
Bit	0/1	Hexadecimal	decimalis	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)																																																	
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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																																																	

bite	0 / 1	Hexadecim al	decimalism	Function
0	0	00	0	Fixed to be 0
1	1	02	2	Fixed to be 1
2	0	00	0	Turn off upper cover
	1	04	4	Open upper cover
3	0	00	0	Not press feed key
	1	08	8	press feed key
4	1	10	16	Fixed to be 1
5	0	00	0	Paper adequate
	1	20	32	Paper shortage
6	0	00	00	No error
	1	40	64	Error
7	0	00	0	Fixed to be 0

n=3: transmit error status

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

	7	0	00	0	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				

⑦ Two-dimensional bar code commands

Mode type of QR code

Name	Mode type of QR code
Code	ASCII : GS (k pL pH cn fn n Decimal : 29 40 107 pL pH cn fn n Hexadecimal : 1D 28 6b pL pH cn fn n
Function	Setting mode type of QR code to [n dot × n dot].
Range	pL=3, pH=0 cn=49 fn=67 0 ≤ n ≤ 16
Defaults	n=3

Support model	All
Notes	Setting mode type of QR code to [n dot × n dot].
Example	None
Name	Mode type of QR code

Setting error correction level of QR code

Name	Setting error correction level of QR code																	
Code	ASCII : GS (k pL pH cn fn n DEC : 29 40 107 pL pH cn fn n HEX : 1D 28 6b pL pH cn fn n																	
Function	Setting error correction level of QR code																	
Range	pL=3, pH=0 cn=49 fn=69 $48 \leq n \leq 51$																	
Defaults	n=48																	
Support model	All																	
Notes	Setting error correction level of QR code <table border="1" data-bbox="432 976 1197 1543" style="margin-left: 20px;"> <thead> <tr> <th>n</th> <th>Function</th> <th>Approximate Amount of correction</th> </tr> </thead> <tbody> <tr> <td>4 8</td> <td>Error correction level (L)</td> <td>7%</td> </tr> <tr> <td>4 9</td> <td>Error correction level (M)</td> <td>15%</td> </tr> <tr> <td>5 0</td> <td>Error correction level(Q)</td> <td>25%</td> </tr> <tr> <td>5 1</td> <td>Error correction level (H)</td> <td>30%</td> </tr> </tbody> </table>			n	Function	Approximate Amount of correction	4 8	Error correction level (L)	7%	4 9	Error correction level (M)	15%	5 0	Error correction level(Q)	25%	5 1	Error correction level (H)	30%
n	Function	Approximate Amount of correction																
4 8	Error correction level (L)	7%																
4 9	Error correction level (M)	15%																
5 0	Error correction level(Q)	25%																
5 1	Error correction level (H)	30%																
Example	None																	
Name	Setting error correction level of 2-D bar code																	

Store QR code data to data buffer

Name	Store QR 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 QR code data to data buffer
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 $0 \leq d \leq 255$ $k = (pL + pH \times 256) - 3$
Defaults	No
Support model	All
Notes	Store QR 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 QR code data to data buffer

Printing QR code

Name	Printing QR code
Code	ASCII : GS (k pL pH cn fn m DEC : 29 40 107 pL pH cn fn m HEX : 1D 28 6b pL pH cn fn m
Function	Printing QR code
Range	pL=3, pH=0 cn=49 fn=81 m=48
Defaults	None
Support model	All
Notes	Printing QR code. Users must consider QR 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 QR code

Setting QR code graph information

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

Function	Setting QR code graph information The detailed graph information is as follows:																																												
	<table border="1"> <thead> <tr> <th>Transmit data</th> <th>Hexadecimal</th> <th>Decimal</th> <th>Data type</th> </tr> </thead> <tbody> <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> <tr> <td>Fixed Value</td> <td>31H</td> <td>49</td> <td>1byte</td> </tr> <tr> <td>Separator</td> <td>1FH</td> <td>31</td> <td>1byte</td> </tr> <tr> <td>Other Information</td> <td>30H or 31H</td> <td>48 or 49</td> <td>1byte</td> </tr> <tr> <td>NUL</td> <td>00H</td> <td>0</td> <td>1byte</td> </tr> </tbody> </table>	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
	Transmit data	Hexadecimal	Decimal	Data type																																									
	Header	37H	55	1byte																																									
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	Width	30H-39H	48-57	1-5byte																																									
	Separator	1FH	31	1byte																																									
	Height	30H-39H	48-57	1-5byte																																									
	Separator	1FH	31	1byte																																									
	Fixed Value	31H	49	1byte																																									
Separator	1FH	31	1byte																																										
Other Information	30H or 31H	48 or 49	1byte																																										
NUL	00H	0	1byte																																										
L and H data transmit graph: use dot for unit.																																													
Other information data transmit:																																													
“Hexadecimal=30H/Decimal=48”: Data is not printed.																																													
“Hexadecimal=31H/Decimal=49”: Data is not printed.																																													
Range	pL=3, pH=0 cn=49 fn=82 m=48																																												
Defaults	None																																												
Support model	All																																												
Notes	This command do not print two-dimension bar code graph. Users must consider two-dimension bar code graph space.																																												
Example	None																																												
Name	Setting QR 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

	r: describes error correction rank nL nH: describes data length d1...dk: describes two dimensional code to be printed
Range	$0 \leq v \leq 17$ $1 \leq r \leq 4$ $k = nL + 256 * nH$
Defaults	None
Support model	All
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 double QR code

Name	Printing double QR code
Code	ASCII : US Q m n p1H p1L l1H l1L ecc1 v1 d1...dn p2H p2L l2H l2L ecc2 v2 dk...dm DEC : 27 81 m n p1H p1L l1H l1L ecc1 v1 d1...dn p2H p2L l2H l2L ecc2 v2 dk...dm HEX : 1F 51 m n p1H p1L l1H l1L ecc1 v1 d1...dn p2H p2L l2H l2L ecc2 v2 dk...dm
Function	Printing double QR code
Range	QR code numbers: 0<m>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) Dk...dm as the data of QR2
Defaults	None
Support model	All
Notes	If module size is bigger than printing width, the QR data will be treated as normal data
Example	To Print string "0123456789" in QR Code at position 32 with ecc 1and Print string "987654321" in QR Code at position 192 with ecc 2, and module size 3, you should send command as follow。 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
--	--

⑧Other commands

Printer reset

Name	Printer reset
Code	ASCII : ESC @ Decimal : 27 64 Hex : 1B 40
Function	The ESC @ command initializes the printer as following: This command prints the data contained in the print buffer, and initializes various setup items. Restore default values for each parameter
Range	None
Default value	None
Support model	All
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, code page and other some information
Range	None
Default value	None
Support model	All
Notes	None
Example	1B 40 12 54