

# CH421 User's manual



| Date                         | Version | Remark                |
|------------------------------|---------|-----------------------|
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|                              |         |                       |
|                              |         |                       |

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# 1 Summary

## ① CH421 Instruction

CH421 is a 4-inch adjustable width POS thermal transfer / thermal printer, support for label paper, with high print quality, high stability and other characteristics, can be widely used in commercial POS systems, food and beverage industry, supermarkets and convenience stores and other occasions that require real-time on-site printing labels.

CH421 can be connected with other devices through USB, Ethernet, Bluetooth, WIFI, and provide drivers for WINDOWS and LINUX operating systems and mobile Andriod system.

List of supported operating systems :

WINDOWS XP

WINDOWS 7 32/64

WINDOWS 8

UBUNTU 12.04 32/64

UBUNTU 14.04 32/64

Andriod 2.0 or above

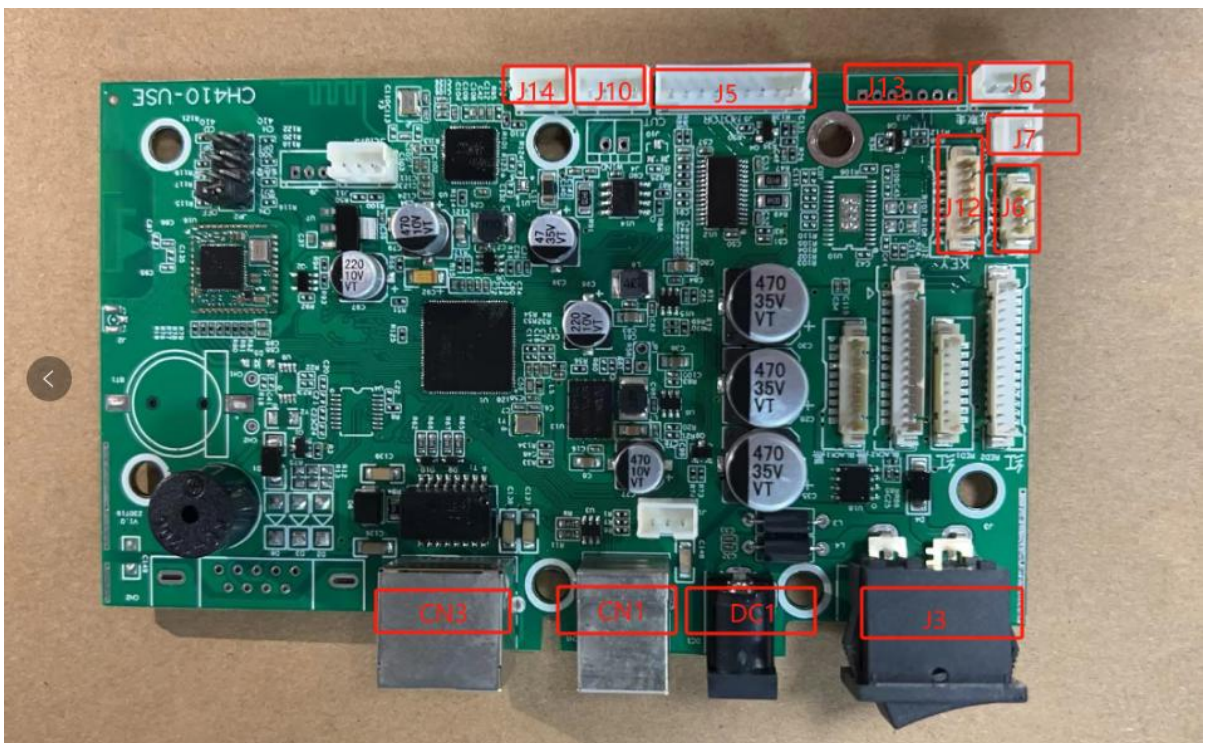
## ② Main features:

- 1) Adjustable width
- 2) Low noise, high speed printing
- 3) Convenient paper loading method
- 4) Easy to use and maintain
- 5) Support label paper and continuous paper printing
- 6) With a clock chip, easy to print date information
- 7) Compatible with a variety of widths of paper
- 8) Bluetooth communication Optional
- 9) USB, Ethernet, Bluetooth, WiFi multi interfaces optional

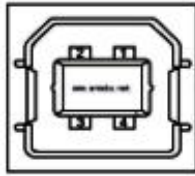
## 2 Technical specification

|                     |   |
|---------------------|---|
| Printing method     | Linear thermal printing/ Labeling   |
| Maximum paper width | 110mm   |
| Print width         | 108mm   |
| Resolution          | 203DPI/300DPI   |
| Points per line     | 864 dot/1248 dot  |
| Print speed         | 100mm/s   |
| Printable content   | GBK Chinese characters library, ASCII characters, 1D barcode, Support different density dot plot and downloadable bitmap printing. Extendable 2D barcode. |
| Default font        | 9X17(ASCII),24x24(Chinese)  |

### Board interface



**CN1 USB Interface Pin Definition (Standard B Female)**



| Pin No. | Signal name | Typical wire colours |
|---------|-------------|----------------------|
| 1       | VBUS        | Red                  |
| 2       | D-          | White                |
| 3       | D+          | Green                |
| 4       | GND         | Black                |

### DC1 Power connector (DC24V-2A)

| Pin No. | Signal name | Instruction |
|---------|-------------|-------------|
| 1       | VH          | DC24V, 2A   |
| 2       | GND         | Earth       |
| 3       | GND         | Earth       |

**J12/J6 Keypad**

**J7 Paper Seam**

**Detection**

**J8 Paper Removal Optocoupler J13 Ribbon**

**J5 Paper-feed Motor**

**J10 Auto Cutter**

**J14 Paper Jam Detection**

**CN3 Ethernet Port**

### 3 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 the line spacing to default                                     |                                  |
| ESC \$               | Set the print position  |                                  |
| GS L nL nH           | Set the amount of left-hand margin                                  |                                  |
| ESC !                | Set the character printing method                                   |                                  |
| ESC M n              | Select font   |                                  |
| GS ! n               | Set the character size  |                                  |
| GS B n               | Set and unset anti-white printing                                   |                                  |
| ESC - n              | Set and unset underlines  |                                  |
| ESC V n              | Set and unset 90°rotation printing                                  |                                  |
| ESC a                | Set print Alignment   |                                  |
| FS &                 | Set the Chinese character mode                                      |                                  |
| FS .                 | Cancel the 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 international character sets                                 |                                  |
| ESC t n              | Select character code page  |                                  |
| ESC *                | Graphic vertical modelling data filling                             | Graphic printing instructions    |
| GS v 0               | Print image of horizontal take-off data                             |                                  |
| GS *                 | Define the downlinked bitmap  |                                  |
| GS / m               | Print the downlinked bitmap   |                                  |
| FS q                 | Define NV bitmap  |                                  |
| FS p n m             | Print NV bitmap   |                                  |
| GS v 0 m             | Print raster bitmap   |                                  |
| GS ' n<br>x1sL ..... | Horizontal position printing of line segments (Curve Print command) |                                  |
| HT                   | Horizontal tabulation   | Tabulation instruction           |
| ESC D                | Set the horizontal tabulation position                              | 1D barcode printing instructions |
| GS H                 | Set the 1D barcode readable character (HRI) print position          |                                  |
| GS h                 | Set the height of a 1D Barcode                                      |                                  |

|                            |   |                               |  |                       |
|----------------------------|---|-------------------------------|--|-----------------------|
| GS w                       | Set the width of a 1D Barcode                   | QR Code Printing Instructions |  |                       |
| GS k                       | Print a 1D Barcode                              |                               |  |                       |
| GS (                       | Print a QR code                                 |                               |  |                       |
| GS (k pL pH cn fn n        | Set the module type of QR code                  |                               |  |                       |
| GS (k pL pH cn fn n        | Set the error correction level error of QR code |                               |  |                       |
| GS(k pL pH cn fn m d1...dk | Store QR code data to the QR code buffer        |                               |  |                       |
| GS(k pL pH cn fn m         | Print the QR code                               |                               |  |                       |
| GS(k pL pH cn fn m         | Set the graphical information of the QR code    | Status commands               |  |                       |
| GS r n                     | Transmission status                             |                               |  |                       |
| DLE EOT n                  | Real-time transmission status                   |                               |  |                       |
| DLE ENQ n                  | Real-time printer requests                      |                               |  |                       |
| GS a n                     | Allow & disallow automatic status reply (ASB)   | Other instructions            |  |                       |
| ESC @                      | Initialise the printer                          |                               |  |                       |
| DC2 T                      | Print self-test page                            |                               |  |                       |
| ESC 7                      | Set the printing density                        | Label instructions            |  |                       |
|                            | Stipulation                                     |                               |  | Stipulation           |
|                            | Start-page command                              |                               |  | Page control commands |
|                            | End-of-page command                             |                               |  |                       |
|                            | Print-page command                              |                               |  |                       |
|                            | Feed command                                    |                               |  |                       |
|                            | Text drawing command                            |                               |  | Page drawing commands |
|                            | Line drawing command                            |                               |  |                       |
|                            | Rectangular box drawing command                 |                               |  |                       |
|                            | Draw rectangular block command                  |                               |  |                       |
|                            | 1D bar code command                             |                               |  |                       |
|                            | QR code bar code command                        |                               |  |                       |
|                            | PDF417 bar code command                         |                               |  |                       |
|                            | Bitmap command                                  |                               |  |                       |

## 4 Command details

### ① Print and feed commands

#### Print and feed

|               |   |
|---------------|---|
| Name          | Print and feed  |
| Command code  | ASCII: LF<br>Decimal system: 10<br>Hexadecimal system: 0A   |
| Description   | Prints the contents of the print buffer, then sets a feed line according to the current line spacing and adjusts the print position to the beginning of the next line |
| Range         | None  |
| Default       | None  |
| Support model | All Models  |
| Note          | None  |
| For example   | None  |

#### Enter

|               |  |
|---------------|--|
| Name          | Enter  |
| Command code  | ASCII: CR<br>Decimal system: 13<br>Hexadecimal system: 0D      |
| Description   | Same as LF when print cache is not empty, otherwise no effect. |
| Range         | None   |
| Default       | None   |
| Support model | All Models   |
| Note          | None   |
| For example   | None   |

#### Print and feed n dots

|              |  |
|--------------|--|
| Name         | Print and feed n dots.   |
| Command code | ASCII: ESC J n<br>Decimal system: 27 74 n<br>Hexadecimal system: 1B 4A n |
| Description  | Prints and feeds the contents of the print buffer n points               |
| Range        | $0 \leq n \leq 255$  |


|               |  |
|---------------|--|
| Default       | None   |
| Support model | All Models   |
| Note          | 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. |
| For example   | 1b 40 30 31 32 1b 4a 10  |

## Print and feed n lines

|               |   |
|---------------|---|
| Name          | Print and feed n lines.   |
| Command code  | ASCII: ESC d n<br>Decimal system: 27 100 n<br>Hexadecimal system: 1B 64 n |
| Description   | Prints and feeds the contents of the print buffer n lines                 |
| Range         | $0 \leq n \leq 255$   |
| Default       | None  |
| Support model | All Models  |
| Note          | This command sets the print start position to the beginning of the line.  |
| For example   | 1b 40 30 31 32 1b 64 01   |

## ② Print setup command

### Set the line spacing to n dots

|               |  |
|---------------|--|
| Name          | Set the line spacing to n dots   |
| Command code  | ASCII: ESC 3 n<br>Decimal system: 27 51 n<br>Hexadecimal system: 1B 33 n   |
| Description   | Set the line spacing to n dots   |
| Range         | $0 \leq n \leq 255$  |
| Default       | n = 33   |
| Support model | All models   |
| Note          | <p>The line spacing is illustrated below:</p>  <p>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.</p> |

|             |  |
|-------------|--|
|             | If ESC 2, ESC @, printer reset, or printer power off, the line spacing returns to the default value. |
| For 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 spacing to default

|               |  |
|---------------|--|
| Name          | Set line spacing to default  |
| Command code  | ASCII: ESC 2<br>Decimal system: 27 50<br>Hexadecimal system: 1B 32   |
| Description   | Set the line spacing to the default of 33 dots   |
| Range         | None   |
| Default       | None   |
| Support model | All models   |
| Note          | See the ESC 3 command for details on line spacing.<br>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.<br>You can use ESC 3 to customise the line spacing. |
| For example   | None   |

## Set the print position

|               |  |
|---------------|--|
| Name          | Set the print position   |
| Command code  | ASCII: ESC \$ nL nH<br>Decimal system: 27 36 nL nH<br>Hexadecimal system: 1B 24 nL nH                        |
| Description   | Adjust the print position to (nL + nH × 256) points from the print start position                            |
| Range         | $0 \leq nL \leq 255$ , $0 \leq nH \leq 255$  |
| Default       | None   |
| Support model | All models   |
| Note          | 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. |
| For example | 1b 40 1b 24 08 00<br>30 31 32 0d 0a<br>30 31 32 0d 0a                         |

## Set the amount of left-hand margin

|               |   |
|---------------|---|
| Name          | Set the print position  |
| Command code  | ASCII: GS L nL nH<br>Decimal system: 29 76 nL nH<br>Hexadecimal system: 1D 4C nL nH   |
| Description   | Set the amount of left-hand side blanking to (nL + nH × 256) points.  |
| Range         | 0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255  |
| Default       | None  |
| Support model | All models  |
| Note          | <p>This command is valid only when processing at the start of a line. The illustration is shown below:</p> <p>If the setting is outside the printable range, the maximum value of the printable unit is used.</p> |
| For example   | 1b 40 1d 4c 08 00<br>30 31 32 0d 0a<br>30 31 32 0d 0a   |

## Select a font

| Name         | Select a font  |   |          |       |                                 |       |                                |       |                              |
|--------------|--|---|----------|-------|---------------------------------|-------|--------------------------------|-------|------------------------------|
| Command code | ASCII: ESC M n<br>Decimal system: 27 77 n<br>Hexadecimal system: 1b 4d n   |   |          |       |                                 |       |                                |       |                              |
| Description  | <p>Selecting a character font</p> <table border="1"> <thead> <tr> <th>n</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>0, 48</td> <td>Selecting character A (12×24) 。</td> </tr> <tr> <td>1, 49</td> <td>Selecting character B (9×24) 。</td> </tr> <tr> <td>2, 50</td> <td>Selecting character C (9×17)</td> </tr> </tbody> </table> | n | Function | 0, 48 | Selecting character A (12×24) 。 | 1, 49 | Selecting character B (9×24) 。 | 2, 50 | Selecting character C (9×17) |
| n            | Function   |   |          |       |                                 |       |                                |       |                              |
| 0, 48        | Selecting character A (12×24) 。  |   |          |       |                                 |       |                                |       |                              |
| 1, 49        | Selecting character B (9×24) 。   |   |          |       |                                 |       |                                |       |                              |
| 2, 50        | Selecting character C (9×17)   |   |          |       |                                 |       |                                |       |                              |

|               |   |       |                               |  |
|---------------|---|-------|-------------------------------|--|
|               |   | 3, 51 | Selecting character D (8×16)  |  |
|               |   | 4, 52 | Selecting character E (16×18) |  |
| Range         | n = 0, 1,2,3,4, 48, 49, 50,51,52  |       |                               |  |
| Default       | n = 0   |       |                               |  |
| Support model | Part of the models  |       |                               |  |
| Note          | <b>ESC !</b> The font type can also be selected. But the setting made by the last received command is valid.  |       |                               |  |
| For example   | 1b 40<br>1b 4d 00<br>30 31 32 0d 0a<br>1b 4d 01<br>30 31 32 0d 0a<br>1b 4d 02<br>30 31 32 0d 0a<br>1b 4d 03<br>30 31 32 0d 0a<br>1b 4d 04<br>30 31 32 0d 0a |       |                               |  |

## Set the horizontal and vertical movement units

|               |  |
|---------------|--|
| Name          | Set the horizontal and vertical movement units.  |
| Command code  | ASCII: GS P x y<br>Decimal system: 29 80 x y<br>Hexadecimal system: 1D 50 x y  |
| Description   | <ul style="list-style-type: none"> <li>• Approximate lateral movement units to 25.4/ x mm (1/ x inch)</li> <li>Vertical movement units to 25.4/ y mm (1/ y inch), respectively.</li> <li>•When x and y are 0, x and y are set to their default values.</li> </ul>  |
| Range         | $0 \leq x \leq 255, 0 \leq y \leq 255$   |
| Default       | x = 200, y = 380, at which point a unit of movement is a print point. The horizontal distance is about 1/8mm and the vertical distance is about 1/15mm.  |
| Support model | 80XXX  |
| Note          | - Moving unit can be set in standard mode, not in page mode<br><br>- Perpendicular to the feed direction is landscape, and the feed direction is portrait.<br><br>- In the standard mode, the following commands with x or y do not change even if the character is rotated (inverted or rotated 90° clockwise);<br>① Commands in x: ESC SP, ESC \$, ESC \, FS S, GS L, GS W<br>Commands in x: ESC SP, ESC \$, ESC \, FS S, GS L, GS W ② |

|             |   |
|-------------|---|
|             | <p>Commands in y: ESC 3, ESC J, GS V</p> <ul style="list-style-type: none"> <li>- In the page mode, the use of x or y depends on the direction of the area and the print start position:</li> </ul> <p>(1) When the print start position is set to the upper-left corner (the print direction is from left to right) or the lower-right corner (the print direction is from right to left) with the ESC T command:<br/>         Commands for x: ESC SP, ESC \$, ESC W, ESC \, FS S<br/>         Commands for y: ESC 3, ESC J, ESC W, GS \$, GS \, GS V</p> <p>② When the print start position is set to the upper right corner (the print direction is from top to bottom) or the lower left corner (the print direction is from bottom to top) with the ESC T command:<br/>         Commands for x: ESC 3, ESC J, ESC W, GS \$, GS \<br/>         Commands in y: ESC SP, ESC \$, ESC W, ESC \, FS S, GS V</p> <ul style="list-style-type: none"> <li>- This command does not affect other settings previously set.</li> <li>- The minimum movement unit is the result of the combination of this command and other commands.</li> <li>- One inch is equal to 25.4 mm.</li> </ul> |
| For example | <pre>1d 50 c8 c8 1B 4C 1B 57 30 00 00 00 78 00 30 00 1B 33 18 1B 57 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 30 31 32 0C</pre>   |

## Set the character printing method

|              |   |       |          |       |   |   |  |   |                   |  |   |           |  |   |           |  |
|--------------|---|-------|----------|-------|---|---|--|---|-------------------|--|---|-----------|--|---|-----------|--|
| Name         | Set the character printing method   |       |          |       |   |   |  |   |                   |  |   |           |  |   |           |  |
| Command code | ASCII: ESC ! n<br>Decimal system: 27 33 n<br>Hexadecimal system: 1B 21 n  |       |          |       |   |   |  |   |                   |  |   |           |  |   |           |  |
| Description  | Set the character printing method (font, highlight, invert, bold, height, width, and underline), with the bits of the parameter n<br>The bits of parameter n are defined as follows:<br><table data-bbox="523 1809 794 2002"> <tr> <td>Bit</td> <td>Function</td> <td>Value</td> </tr> <tr> <td>0</td> <td>1</td> <td></td> </tr> <tr> <td>0</td> <td>Font Normal Small</td> <td></td> </tr> <tr> <td>1</td> <td>Undefined</td> <td></td> </tr> <tr> <td>2</td> <td>Undefined</td> <td></td> </tr> </table> | Bit   | Function | Value | 0 | 1 |  | 0 | Font Normal Small |  | 1 | Undefined |  | 2 | Undefined |  |
| Bit          | Function  | Value |          |       |   |   |  |   |                   |  |   |           |  |   |           |  |
| 0            | 1   |       |          |       |   |   |  |   |                   |  |   |           |  |   |           |  |
| 0            | Font Normal Small   |       |          |       |   |   |  |   |                   |  |   |           |  |   |           |  |
| 1            | Undefined   |       |          |       |   |   |  |   |                   |  |   |           |  |   |           |  |
| 2            | Undefined   |       |          |       |   |   |  |   |                   |  |   |           |  |   |           |  |

|               |   |
|---------------|---|
|               | <p>3 Bold Cancel Setting<br/>         4 Height Cancel Set<br/>         5 Width Cancel Set<br/>         6 Undefined<br/>         7 Underline Cancel Setting</p>  |
| Range         | None  |
| Default       | n = 0   |
| Support model | All models  |
| Note          | This command is valid for both Chinese fonts and foreign fonts. The setting of this command is invalid when ESC @, printer reset, or power off.   |
| For example   | <p>1B 40 1B 21 01 30 31 32 0D 0A<br/>         1B 40 1B 21 02 30 31 32 0D 0A<br/>         1B 40 1B 21 04 30 31 32 0D 0A<br/>         1B 40 1B 21 08 30 31 32 0D 0A<br/>         1B 40 1B 21 10 30 31 32 0D 0A<br/>         1B 40 1B 21 20 30 31 32 0D 0A<br/>         1B 40 1B 21 40 30 31 32 0D 0A<br/>         1B 40 1B 21 80 30 31 32 0D 0A</p> |

## Set the character size

|              |  |
|--------------|--|
| Name         | Set the character size   |
| Command code | <p>ASCII: GS ! n<br/>         Decimal system: 29 33 n<br/>         Hexadecimal system: 1d 21 n</p> |

|               |   |                |                     |                                |                |                      |
|---------------|---|----------------|---------------------|--------------------------------|----------------|----------------------|
| Description   | Set the character size to 1-8 times the width, 1-8 times the height<br>Definitions are as follows:<br>Use bits 0 to 3 to set the character height bits 4 to 7 to set the character width as follows |                |                     |                                |                |                      |
|               | <b>Table 1</b>  |                |                     | <b>Table 2</b>                 |                |                      |
|               | <b>Character width setting</b>  |                |                     | <b>Character width setting</b> |                |                      |
|               | Hexadecimal system  | Decimal system | Width               | Hexadecimal system             | Decimal system | Width                |
|               | 00  | 0              | 1(Normal)           | 00                             | 0              | 1(Normal)            |
|               | 10  | 16             | 2(double the width) | 01                             | 1              | 2(double the height) |
|               | 20  | 32             | 3                   | 02                             | 2              | 3                    |
|               | 30  | 48             | 4                   | 03                             | 3              | 4                    |
|               | 40  | 64             | 5                   | 04                             | 4              | 5                    |
|               | 50  | 80             | 6                   | 05                             | 5              | 6                    |
| 60            | 96  | 7              | 06                  | 6                              | 7              |                      |
| 70            | 112   | 8              | 07                  | 7                              | 8              |                      |
| Range         | None  |                |                     |                                |                |                      |
| Default       | n = 0   |                |                     |                                |                |                      |
| Support model | All models  |                |                     |                                |                |                      |
| Note          | This command is valid for Chinese fonts and foreign fonts except HRI characters.<br>The setting of this command is invalid when ESC @, printer reset, or power failure occurs.                      |                |                     |                                |                |                      |
| For example   | 1b 40 1d 21 11<br>30 31 32 0d 0a<br>30 31 32 0d 0a  |                |                     |                                |                |                      |

## Set and unset anti-white printing

|              |  |
|--------------|--|
| Name         | Set and unset anti-white printing  |
| Command code | ASCII: GS B n<br>Decimal system: 29 66 n<br>Hexadecimal system: 1d 42 n  |
| Description  | Set or unset the anti-white printing mode.<br>When the lowest valid bit of n is 0, the anti-white mode is off. |

|               |   |
|---------------|---|
|               | When the lowest valid bit of n is 1, anti-white mode is on.   |
| Range         | None  |
| Default       | n = 0   |
| Support model | All models  |
| Note          | <p>Only the lowest bit of n is valid.</p> <p>This command is valid for both built-in characters and user-defined characters.</p> <p>It is also valid for blanks set by ESC SP when anti-white mode is on.</p> <p>This command does not affect bitmaps, user-defined bitmaps, bar codes, HRI characters, and spaces skipped by HT, ESC \$.</p> <p>This command does not affect line spacing.</p> <p>Anti-white mode takes precedence over underline mode. When the anti-white mode is set, it is disabled (but not cancelled) even if the underline mode is on.</p> <p>The setting of this command is invalidated when ESC @, printer reset, power failure</p> |
| For example   | <pre>1b 40 1d 42 01 30 31 32 0d 0a 30 31 32 0d 0a</pre>   |

## Set and unset underlining

| Name          | Set and unset underlining   |   |          |       |                   |       |                                  |       |                                   |
|---------------|---|---|----------|-------|-------------------|-------|----------------------------------|-------|-----------------------------------|
| Command code  | <p>ASCII: ESC - n</p> <p>Decimal system: 27 45 n</p> <p>Hexadecimal system: 1B 2D n</p>   |   |          |       |                   |       |                                  |       |                                   |
| Description   | <p>Set or unset the underline mode based on the following n values:</p> <table border="1" style="margin-left: 40px;"> <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 dot thick)</td> </tr> <tr> <td>2, 50</td> <td>Set underline mode (2 dots thick)</td> </tr> </tbody> </table>  | n | Function | 0, 48 | Un-underline mode | 1, 49 | Set underline mode (1 dot thick) | 2, 50 | Set underline mode (2 dots thick) |
| n             | Function  |   |          |       |                   |       |                                  |       |                                   |
| 0, 48         | Un-underline mode   |   |          |       |                   |       |                                  |       |                                   |
| 1, 49         | Set underline mode (1 dot thick)  |   |          |       |                   |       |                                  |       |                                   |
| 2, 50         | Set underline mode (2 dots thick)   |   |          |       |                   |       |                                  |       |                                   |
| Range         | $0 \leq n \leq 2, 48 \leq n \leq 50$  |   |          |       |                   |       |                                  |       |                                   |
| Default       | n = 0   |   |          |       |                   |       |                                  |       |                                   |
| Support model | All models  |   |          |       |                   |       |                                  |       |                                   |
| Note          | <p>The printer can underline all characters (including the space to the right of the character), except spaces set by HT.</p> <p>The printer cannot underline characters that are rotated 90° clockwise, or underlined characters.</p> <p>When the underline mode is deactivated by setting 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</p> |   |          |       |                   |       |                                  |       |                                   |

|             |   |
|-------------|---|
|             | <p>underline thickness is 1 point.</p> <p>Changing the character size does not affect the current underline coarseness.</p> <p>Using ESC ! You can also set or unset the underline mode. However, note that the last command received is valid.</p> |
| For example | <pre>1b 40 1b 2d 01 30 31 32 0d 0a 1b 40 1b 2d 02 30 31 32 0d 0a 1b 40 1b 2d 00 30 31 32 0d 0a</pre>  |

## Set and unset 90°clockwise rotation printing

|               |  |
|---------------|--|
| Name          | Set and unset 90°clockwise rotation printing   |
| Command code  | <p>ASCII: ESC V n</p> <p>Decimal system: 27 86 n</p> <p>Hexadecimal system: 1B 56 n</p>  |
| Description   | <p>Set or unset 90°rotary printing.</p> <p>Unset 90°rotary printing when n equals 0 or 48.</p> <p>When n is equal to 1 or 49, 90°rotary printing is set.</p>   |
| Range         | $0 \leq n \leq 1, \quad 48 \leq n \leq 49$   |
| Default       | n = 0  |
| Support model | All models   |
| Note          | <p>When the Underline mode is set, the printer does not underline characters that are rotated 90°clockwise.</p> <p>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.</p> <p>The setting of this command is invalidated when ESC @, printer reset, or power failure occurs.</p> |
| For example   | <pre>1b 40 1b 56 01 30 31 32 0d 0a 30 31 32 0d 0a</pre>  |

## Set print alignment (left, centre, right)

|              |   |
|--------------|---|
| Name         | Set print alignment (left, centre, right)   |
| Command code | <p>ASCII: ESC a n</p> <p>Decimal system: 27 97 n</p> <p>Hexadecimal system: 1B 61 n</p> |
| Description  | Aligns all data in a row with the following meaning of the n value:                     |

|               |  |
|---------------|--|
|               | n Mode<br>0, 48 Left<br>1, 49 centre<br>2, 50 Right  |
| Range         | $0 \leq n \leq 2$ 或 $48 \leq n \leq 50$  |
| Default       | n = 0  |
| Support model | All models   |
| Note          | The setting of this command is invalidated when ESC @, the printer is reset, or power is cut off.        |
| For example   | 1B 40 1B 61 02<br>30 31 32 0D 0A<br>1B 40 1B 61 01<br>30 31 32 0D 0A<br>1B 40 1B 61 00<br>30 31 32 0D 0A |

## Set Chinese character mode

|               |  |
|---------------|--|
| Name          | Set Chinese character mode   |
| Command code  | ASCII: FS &<br>Decimal system: 28 38<br>Hexadecimal system: 1C 26  |
| Description   | Choose Chinese character mode  |
| Range         | None   |
| Default       | None   |
| Support model | All models   |
| Note          | When the Chinese character mode is chosen, the printer processes all Chinese character codes, two bytes at a time.<br>Chinese character codes are processed in the order of first byte, second byte. |
| For example   | 1b 40 1C 26 B0 AE C9 CF D7 D4 BC BA 0d 0a<br>1C 2E B0 AE C9 CF D7 D4 BC BA 0d 0a   |

## Cancel Chinese character mode

|              |   |
|--------------|---|
| Name         | Cancel Chinese character mode                                     |
| Command code | ASCII: FS .<br>Decimal system: 28 46<br>Hexadecimal system: 1C 2E |
| Description  | Cancel Chinese character mode                                     |
| Range        | None  |
| Default      | None  |

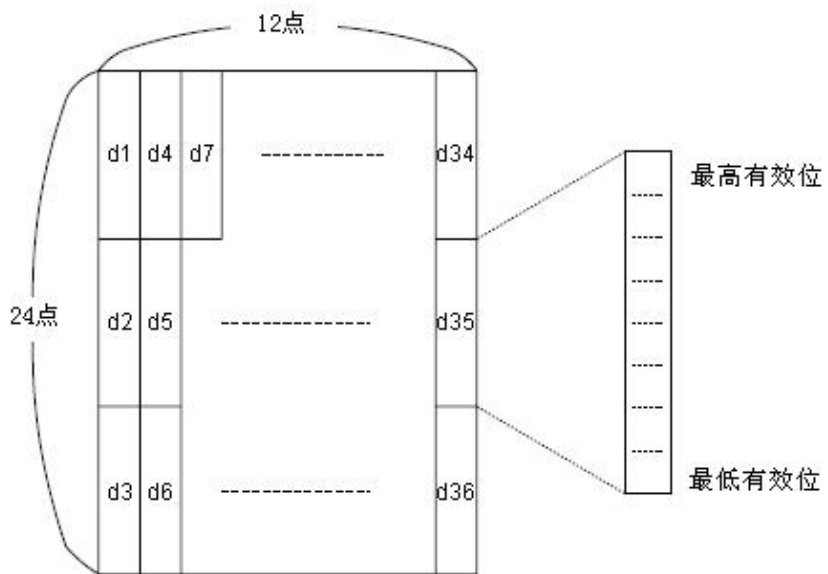
|               |   |
|---------------|---|
| Support model | All models  |
| Note          | When the Chinese character mode is not chosen, all character codes are processed as ASCII codes, one character at a time. |
| For example   | None  |

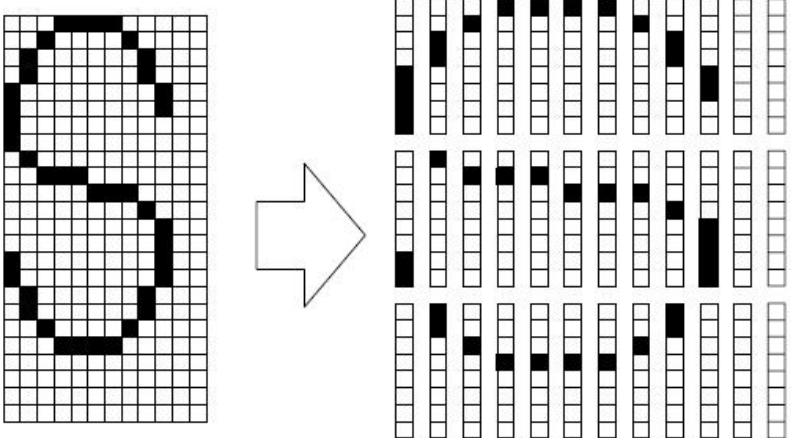
## Select or cancel user-defined character sets

|               |  |
|---------------|--|
| Name          | Select or cancel user-defined character sets   |
| Command code  | ASCII: ESC % n<br>Decimal system: 27 37 n<br>Hexadecimal system: 1B 25 n   |
| Description   | Select or cancel user-defined character sets.<br>When the lowest valid bit of n is 0, the user-defined character set is cancelled.<br>When the lowest valid bit of n is 1, the user-defined character set is selected. |
| Range         | $0 \leq n \leq 255$  |
| Default       | 0  |
| Support model | All models   |
| Note          | When user-defined character sets are cancelled, the internal character set is automatically selected.  |
| For example   | None   |

## Define user-defined character sets

|              |   |
|--------------|---|
| Name         | Define user-defined character sets  |
| Command code | ASCII : ESC & y c1 c2 [x1 d1 ... d (yx1)] ... [xk d1 ... d(y x k)]<br>Decimal system: 27 38 y c1 c2 [x1 d1 ... d(yx1)] ...[xk d1 ... d(yxk)]<br>Hexadecimal system : 1B 26 y c1 c2 [x1 d1...d(y x1)]...[xk d1...d(yxk)]                     |
| Description  | Define user-defined characters.<br>y Specifies the number of vertical bytes.<br>c1 Specifies the start character code and c2 Specifies the end character code.<br>xk Specifies the number of horizontal direction points.                   |
| Range        | The range of x y corresponds to the internal font.<br>If a 6*12 font is selected, y = 2, $0 \leq x \leq 6$<br>If a 12*24 font is selected, y = 3, $0 \leq x \leq 12$<br>$32 \leq c1 \leq c2 \leq 126$<br>$0 \leq d1 \dots d(y*xk) \leq 255$ |
| Default      | None  |
| Support      | All models  |

|       |  |
|-------|--|
| model |  |
| Note  | <p>Definable character encoding range: ASCII from &lt;20&gt;H to &lt;7E&gt;H (95 characters) defines the consecutive character encoding of multiple characters. When only one character is required, let c1 = c2.</p> <p>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, define that the data for user-defined characters is (y*x) bytes. It sets the corresponding bit to 1 for printing dots or 0 for not printing dots.</p> <p>This command defines a different user-defined character pattern for each font. Use ESC ! to set the font.</p> <p>User-defined characters and downcast bitmap cannot be defined at the same time. When this command is executed, the downcast bitmap is cleared.</p> <p>User-defined characters are cleared in the following cases:</p> <ul style="list-style-type: none"> <li>ESC @ is executed.</li> <li>Execute GS *.</li> <li>ESC ? is executed.</li> <li>The printer is reset or powered off.</li> </ul> <p>Illustration: When setting font A (12 24)</p>  |

|             |  |
|-------------|--|
|             |  <p>d1= &lt;0F&gt;H   d4 = &lt;30&gt;H   d7 = &lt;40&gt;H . . . .<br/> d2 = &lt;03&gt;H   d5 = &lt;80&gt;H   d8 = &lt;40&gt;H . . . .<br/> d3 = &lt;00&gt;H   d6 = &lt;00&gt;H   d9 = &lt;20&gt;H . . . .</p>                                  |
| For example | <p>①y = 2<br/> 1B 40<br/> 1b 26 02 20 20 06 FF FF FF FF FF FF FF FF FF FF FF<br/> 1b 25 01<br/> 20 20 0D 0A<br/> 1b 3f 20<br/> 30 20 30 20 0d 0a</p> <p>②y = 3<br/> 1B 40<br/> 1b 26 03 20 20 06 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF<br/> FF FF<br/> 1b 25 01<br/> 20 20 0D 0A<br/> 1b 3f 20<br/> 30 20 30 20 0d 0a</p> |

### Cancel user-defined characters

|               |  |
|---------------|--|
| Name          | Cancel user-defined characters   |
| Command code  | ASCII: ESC ? n<br>Decimal system: 27 63 n<br>Hexadecimal system: 1B 3F n |
| Function      | Cancel user-defined characters encoded by n                              |
| Range         | 32 ≤ n ≤ 126   |
| Default       | None   |
| Support model | All models   |
| Note          | This command terminates the use of the pattern defined for the           |

|             |  |
|-------------|--|
|             | <p>character encoding, which is specified by n. The command terminates the use of the pattern defined for the character encoding. After user-defined characters are cancelled, printing is done in the internal character corresponding mode.</p> <p>This command deletes the style defined for the specified encoding in the font selected with ESC ! selected font, this command deletes the style defined for the specified encoding.</p> <p>If a user-defined character is not defined, the printer ignores the command.</p> |
| For example | None   |

## Select international character set

|               |   |   |               |   |     |   |        |   |         |   |    |   |           |   |        |   |       |   |         |   |       |   |        |    |            |    |          |    |               |    |             |    |          |    |       |
|---------------|---|---|---------------|---|-----|---|--------|---|---------|---|----|---|-----------|---|--------|---|-------|---|---------|---|-------|---|--------|----|------------|----|----------|----|---------------|----|-------------|----|----------|----|-------|
| Name          | Select international character set  |   |               |   |     |   |        |   |         |   |    |   |           |   |        |   |       |   |         |   |       |   |        |    |            |    |          |    |               |    |             |    |          |    |       |
| Command code  | <p>ASCII: ESC R n</p> <p>Decimal system: 27 82 n</p> <p>Hexadecimal system: 1B 52 n</p>   |   |               |   |     |   |        |   |         |   |    |   |           |   |        |   |       |   |         |   |       |   |        |    |            |    |          |    |               |    |             |    |          |    |       |
| Function      | <p>Set the international character set by selecting the value of n according to the following table.</p> <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> <tr> <td>4</td> <td>Denmark I</td> </tr> <tr> <td>5</td> <td>Sweden</td> </tr> <tr> <td>6</td> <td>Italy</td> </tr> <tr> <td>7</td> <td>Spain I</td> </tr> <tr> <td>8</td> <td>Japan</td> </tr> <tr> <td>9</td> <td>Norway</td> </tr> <tr> <td>10</td> <td>Denmark II</td> </tr> <tr> <td>11</td> <td>Spain II</td> </tr> <tr> <td>12</td> <td>Latin America</td> </tr> <tr> <td>13</td> <td>South Korea</td> </tr> <tr> <td>14</td> <td>Slovenia</td> </tr> <tr> <td>15</td> <td>China</td> </tr> </table> | 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 |
| 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   |   |               |   |     |   |        |   |         |   |    |   |           |   |        |   |       |   |         |   |       |   |        |    |            |    |          |    |               |    |             |    |          |    |       |
| Range         | $0 \leq n \leq 15$  |   |               |   |     |   |        |   |         |   |    |   |           |   |        |   |       |   |         |   |       |   |        |    |            |    |          |    |               |    |             |    |          |    |       |
| Default       | 0   |   |               |   |     |   |        |   |         |   |    |   |           |   |        |   |       |   |         |   |       |   |        |    |            |    |          |    |               |    |             |    |          |    |       |
| Support model | All models  |   |               |   |     |   |        |   |         |   |    |   |           |   |        |   |       |   |         |   |       |   |        |    |            |    |          |    |               |    |             |    |          |    |       |
| Note          |   |   |               |   |     |   |        |   |         |   |    |   |           |   |        |   |       |   |         |   |       |   |        |    |            |    |          |    |               |    |             |    |          |    |       |
| For example   | <p>1B 40 1B 52 00</p> <p>20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F 30 31 32 33 34 35</p> <p>36 37 38 39 3A 3B 3C 3D 3E 3F 40 41 42 43 44 45 46 47 48 49 4A 4B</p>   |   |               |   |     |   |        |   |         |   |    |   |           |   |        |   |       |   |         |   |       |   |        |    |            |    |          |    |               |    |             |    |          |    |       |

|  |   |
|--|---|
|  | 4C 4D 4E 4F 50 51 52 53 54 55 56 57 58 59 60 6A 6B 6C 6D 6E 6F 70<br>71 72 73 74 75 76 78 79 7A 7B 7C 7D 7E 0D 0A |
|--|---|

## Select character code page

|              |   |
|--------------|---|
| Name         | Select character code page  |
| Command code | ASCII: ESC t n<br>Decimal system: 27 116 n<br>Hexadecimal system: 1B 74 n   |
| Function     | <p>Select n from the character code page.</p> <p>N Code page</p> <p>0 CP437 [US, EU Standard]</p> <p>1 KataKana[Japanese script]</p> <p>2 CP850 [multilanguage]</p> <p>3 CP860 [Portugal]</p> <p>4 CP863[Canada-French]</p> <p>5 CP865 [Scandinavia]</p> <p>6 WCP1251 [Slavic language]</p> <p>7 CP866 Slavic2</p> <p>8 MIK[Slavic/Bulgaria]</p> <p>9 CP755 [Eastern Europe ,<br/>Latvia 2]</p> <p>10 [Iran, Persia]</p> <p>11 Remain</p> <p>12 Remain</p> <p>13 Remain</p> <p>14 Remain</p> <p>15 CP862 [Hebrew]</p> <p>16 WCP1252 [Latin 1]</p> <p>17 WCP1253 [Greece]</p> <p>18 CP852 [Latin 2]</p> <p>19 CP858 [Multilingual Latin<br/>1+European symbol]</p> <p>20 Iran II [Persian]</p> <p>21 Latvia</p> <p>22 CP864 [Arabic]</p> <p>23 ISO-8859-1 [Western Europe]</p> <p>24 CP737 [Greece]</p> <p>25 WCP1257 [Baltic Sea]</p> <p>26 Thai</p> <p>27 CP720[Arabic]</p> <p>28 CP855</p> <p>29 CP857[Turkish]</p> |

|               |  |
|---------------|--|
|               | <p>30 WCP1250[central Europe]<br/> 31 CP775<br/> 32 WCP1254[Turkish]<br/> 33 WCP1255[Hebrew]<br/> 34 WCP1256[Arabic]<br/> 35 WCP1258[Vietnamese]<br/> 36 ISO-8859-2[Latin 2]<br/> 37 ISO-8859-3[Latin3]<br/> 38 ISO-8859-4[Baltic]<br/> 39 ISO-8859-5[Slavic]<br/> 40 ISO-8859-6[Arabic]<br/> 41 ISO-8859-7[Greek]<br/> 42 ISO-8859-8[Hebrew]<br/> 43 ISO-8859-9[Turkish]<br/> 44 ISO-8859-15[Latin 9]<br/> 45 [Thai 2]<br/> 46 CP856<br/> 47 Cp874</p> <p>255 GBK2312</p> |
| Range         | $0 \leq n \leq 255$  |
| Default       | 0  |
| Support model | All models   |
| Note          |  |
| For example   | <p>1B 40 1C 2E 1B 74 00<br/> 80 81 82 83 84 85 86 87 88 89 8A 8B 8C 8D 8E 8F 90 91 92 93 94 95<br/> 96 97 98 9A 9B 9C 9D 9E 9F A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 AA AB<br/> AC AD AE AF B0 B1 B2 B3 B4 B5 B6 B7 B8 B9 BA BB BC BD BE BF C0<br/> C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF D0 D1 D2 D3 D4 D5<br/> D6 D7 D8 D9 DA DB DC DD DE DF E0 E1 E2 E3 E4 E5 E6 E7 E8 E9 EA<br/> EB EC ED EE EF F0 F1 F2 F3 F4 F5 F6 F7 F8 F9 FA FB FC FD FE FF 0D<br/> 0A</p>          |

### ③ Graphic printing instructions

#### Graphic Vertical Modelling Data Filling

|               |  |
|---------------|--|
| Name          | Graphic Vertical Modelling Data Filling  |
| Command code  | ASCII: ESC * m Hl Hh [d]k<br>Decimal system: 27 42 m Hl Hh [d]k<br>Hexadecimal system: 1B 2A m Hl Hh [d]k  |
| Function      | Print the longitudinal mode-taking image data with the following parameter meanings:<br>m is the dot map format:<br>m Mode Horizontal scale Vertical scale<br>0 8-dot single density $\times 2 \times 3$<br>1 8-dot double density $\times 1 \times 3$<br>32 24-dot single density $\times 2 \times 1$<br>33 24-point double density $\times 1 \times 1$<br>Hl, Hh are the number of points in the horizontal direction (Hl + 256 $\times$ Hh)<br>[d]k is the point map data<br>k is the number of bytes of point map data and is not transmitted. |
| Range         | XX58:<br>m = 0、1、32、33<br>$1 \leq Hl + Hh \times 256 \leq 384$<br>$0 \leq d \leq 255$<br>k = Hl + Hh $\times$ 256 (当 m = 0、1)<br>k = (Hl + Hh $\times$ 256) $\times$ 3 (当 m = 32、33)<br>XX80:<br>m = 0、1、32、33<br>$1 \leq Hl + Hh \times 256 \leq 576$<br>$0 \leq d \leq 255$<br>k = Hl + Hh $\times$ 256 (当 m = 0、1)<br>k = (Hl + Hh $\times$ 256) $\times$ 3 (当 m = 32、33)   |
| Default       | None   |
| Support model | All models   |
| Note          | [d]k A corresponding bit of 1 means that the point is printed, and a corresponding bit of 0 means that the point is not printed.<br>The portion of the image horizontally exceeding the print area is ignored.<br>The relationship between the dot map data and the printing effect  |

|             |  |
|-------------|--|
|             | <p>is follows: <span style="float: right;">as</span></p> <div style="text-align: center;"> </div> <p>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.</p> <p>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 (<math>m = 0, 1</math>) or 24 (<math>m = 32, 33</math>) points to be printed separately.</p> <p>After filling the graphic data, you can continue to fill in other information so that the graphic is printed along with the other information.</p> <p>After filling the dot map, generally use the ESC J (<math>n = 24</math>) 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)</p> |
| For 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>  |

## Printing of image level take-off data

|              |   |
|--------------|---|
| Name         | Printing of image level take-off data   |
| Command code | ASCII: GS v 0<br>Decimal system: 29 118 48 m xL xH yL yH [d]k<br>Hexadecimal system: 1D 76 30 m xL xH yL yH [d]k  |
| Function     | Prints the image data of horizontal mode taking with the meaning of the parameters as follows:<br>m For bitmap mode:<br>m Mode Horizontal scale Vertical scale<br>0,48 Normal $\times 1 \times 1$ |

|               |  |        |        |       |    |        |        |       |        |  |  |       |  |       |        |        |    |
|---------------|--|--------|--------|-------|----|--------|--------|-------|--------|--|--|-------|--|-------|--------|--------|----|
|               | <p>1,49 times wide × 2 × 1<br/>                 2,50 times height × 1 × 2<br/>                 3,51xWxH × 2 × 2<br/>                 xL, xH are horizontal byte numbers (xL + xH × 256)<br/>                 yL, yH are the number of points in the vertical direction (yL + yH × 256)<br/>                 [d]k is the point map data.<br/>                 k is the number of bytes of point map data, k is used for illustration and is not transmitted.</p>  |        |        |       |    |        |        |       |        |  |  |       |  |       |        |        |    |
| Range         | <p>XX58:<br/> <math>0 \leq m \leq 3; 48 \leq m \leq 51</math><br/> <math>1 \leq xL + xH \times 256 \leq 48</math><br/> <math>0 \leq yL \leq 255, 0 \leq yH \leq 255</math><br/> <math>0 \leq d \leq 255</math><br/> <math>k = (Hl + Hh \times 256) \times (yL + yH \times 256)</math></p> <p>XX80:<br/> <math>0 \leq m \leq 3; 48 \leq m \leq 51</math><br/> <math>1 \leq xL + xH \times 256 \leq 72</math><br/> <math>0 \leq yL \leq 255, 0 \leq yH \leq 255</math><br/> <math>0 \leq d \leq 255</math><br/> <math>k = (Hl + Hh \times 256) \times (yL + yH \times 256)</math></p>  |        |        |       |    |        |        |       |        |  |  |       |  |       |        |        |    |
| Default       | None   |        |        |       |    |        |        |       |        |  |  |       |  |       |        |        |    |
| Support model | All models   |        |        |       |    |        |        |       |        |  |  |       |  |       |        |        |    |
| Note          | <p>[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.<br/>                 If the number of horizontal bytes of the image exceeds the print area, the exceeding part will be ignored.<br/>                 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.<br/>                 When this command is executed, the print coordinates are reset to the left margin position and the image content is cleared.<br/>                 The relationship between bitmap data and printing effect is as follows:</p> <table border="1" data-bbox="534 1686 1222 1917"> <tr> <td>d1</td> <td>d2</td> <td>.....</td> <td>dx</td> </tr> <tr> <td>d(x+1)</td> <td>d(x+2)</td> <td>.....</td> <td>d(x+2)</td> </tr> <tr> <td> </td> <td> </td> <td>.....</td> <td> </td> </tr> <tr> <td>.....</td> <td>d(k-2)</td> <td>d(k-1)</td> <td>dk</td> </tr> </table> <p>MSB    LSB    MSB    LSB    MSB    LSB    MSB    LSB</p> <p>This command comes with a print function, which prints the data as</p> | d1     | d2     | ..... | dx | d(x+1) | d(x+2) | ..... | d(x+2) |  |  | ..... |  | ..... | d(k-2) | d(k-1) | dk |
| d1            | d2   | .....  | dx     |       |    |        |        |       |        |  |  |       |  |       |        |        |    |
| d(x+1)        | d(x+2)   | .....  | d(x+2) |       |    |        |        |       |        |  |  |       |  |       |        |        |    |
|               |  | .....  |        |       |    |        |        |       |        |  |  |       |  |       |        |        |    |
| .....         | d(k-2)   | d(k-1) | dk     |       |    |        |        |       |        |  |  |       |  |       |        |        |    |

|             |   |
|-------------|---|
|             | it is transferred, eliminating the need to use the print command again.   |
| For example | <pre> 1B 40 1d 76 30 00 03 00 09 00 FF                     </pre> |

## Define the downlink bitmap

|               |  |
|---------------|--|
| Name          | Define the downlink bitmap   |
| Command code  | ASCII: GS * x y d1...d(x*y*8)<br>Decimal system: 29 42 x y d1 ...d(x*y*8)<br>Hexadecimal system: 1D 2A x y d1...d(x*y*8)   |
| Function      | Specify the number of points with x and y to define the downlink bitmap.<br>x specifies the number of points in the horizontal direction as 8*x.<br>y Specifies the number of points in the vertical direction as 8*y.   |
| Range         | $1 \leq x \leq 255$<br>$1 \leq y \leq 48$<br>$x*y \leq 1536$<br>$0 \leq d \leq 255$  |
| Default       | None   |
| Support model | All models   |
| Note          | If x*y exceeds the specified range, the command is disabled.<br>d Indicates bitmap data. Data(d) specifies that the print bit is 1 and the no print bit is 0.<br>Clears the downstream bitmap definition in the following cases:<br>Execute ESC @.<br>ESC & is executed.<br>The printer is reset or powered off.<br>The relationship between the downlink bitmap and print data is shown below |

|             |  |
|-------------|--|
|             | <p style="text-align: center;"><math>x \times 8</math> 点</p> <p style="text-align: center;"><math>y \times 8</math> 点</p> <p style="text-align: right;">最高有效位</p> <p style="text-align: right;">最低有效位</p>  |
| For example | <pre> 1B 40 1D 2A 03 03 FF 1D 2F 00                     </pre> |

## Print the downlink bitmap

| Name          | Print the downlink bitmap  |   |      |       |        |       |             |       |              |       |                          |
|---------------|--|---|------|-------|--------|-------|-------------|-------|--------------|-------|--------------------------|
| Command code  | ASCII: GS / m<br>Decimal system: 29 47 m<br>Hexadecimal system: 1D 2F m  |   |      |       |        |       |             |       |              |       |                          |
| Function      | Print the downlink bitmap in the mode specified by m <table border="1" style="margin-left: 20px;"> <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>Times width</td> </tr> <tr> <td>2, 50</td> <td>Times height</td> </tr> <tr> <td>3, 51</td> <td>Times widths and heights</td> </tr> </tbody> </table> | m | Mode | 0, 48 | Normal | 1, 49 | Times width | 2, 50 | Times height | 3, 51 | Times widths and heights |
| m             | Mode   |   |      |       |        |       |             |       |              |       |                          |
| 0, 48         | Normal   |   |      |       |        |       |             |       |              |       |                          |
| 1, 49         | Times width  |   |      |       |        |       |             |       |              |       |                          |
| 2, 50         | Times height   |   |      |       |        |       |             |       |              |       |                          |
| 3, 51         | Times widths and heights   |   |      |       |        |       |             |       |              |       |                          |
| Range         | $0 \leq m \leq 3$<br>$48 \leq m \leq 51$   |   |      |       |        |       |             |       |              |       |                          |
| Default       | None   |   |      |       |        |       |             |       |              |       |                          |
| Support model | All models   |   |      |       |        |       |             |       |              |       |                          |

|             |  |
|-------------|--|
| Note        | <p>This command is ignored if the bitmap data is not defined.</p> <p>In standard mode, this command is valid only when there is no data in the print buffer.</p> <p>This command is not valid in print modes (bold, overlay, underline, character size, or reverse white print), except for inverted print mode.</p> <p>If the downlink bitmap to be printed exceeds the print area, the excess data is not printed.</p> |
| For example | None   |

## Define NV Bitmaps

|               |  |
|---------------|--|
| Name          | Define NV Bitmaps  |
| Command code  | <p>ASCII: FS q n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n</p> <p>Decimal system: 28 113 n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n</p> <p>Hexadecimal system: 1C 71 n [xL xH yL yH d1...dk]1...[xL xH yL yH d1...dk]n</p>  |
| Function      | <p>Define the NV bitmap with a specific n value.</p> <p>n Specifies the number of NV bitmaps in the definition.</p> <p>xL, xH Specify the number of points in horizontal direction as <math>(xL+xH*256)*8</math> for the NV bitmap in the definition.</p> <p>yL, yH Specifies the number of points in vertical direction as <math>(yL+yH*256)*8</math> for the NV bitmap in the definition.</p>  |
| Range         | <p><math>1 \leq n \leq 255</math></p> <p><math>0 \leq xL \leq 255</math></p> <p><math>0 \leq xH \leq 3</math></p> <p><math>(1 \leq (xL+xH*256) \leq 1023)</math></p> <p><math>0 \leq yL \leq 255</math></p> <p><math>0 \leq yH \leq 1</math></p> <p><math>(1 \leq (yL+yH*256) \leq 288)</math></p> <p><math>0 \leq d \leq 255</math></p> <p><math>k = (xL+xH*256)*(yL+yH*256)*8</math></p> <p>Data area defined by the sum total = 64K bytes</p> |
| Default       | None   |
| Support model | All models   |
| Note          | <p>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.</p> <p>After the process of placing an image into the NV memory, the printer performs a hardware reset operation. Therefore user-defined characters, downloaded bitmaps should be defined after completing this command. The printer clears the</p>                 |

the receive and print buffers and resets to the mode that was in effect when power was applied. (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 beginning of a line's processing.

The command is valid only 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, xH, 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

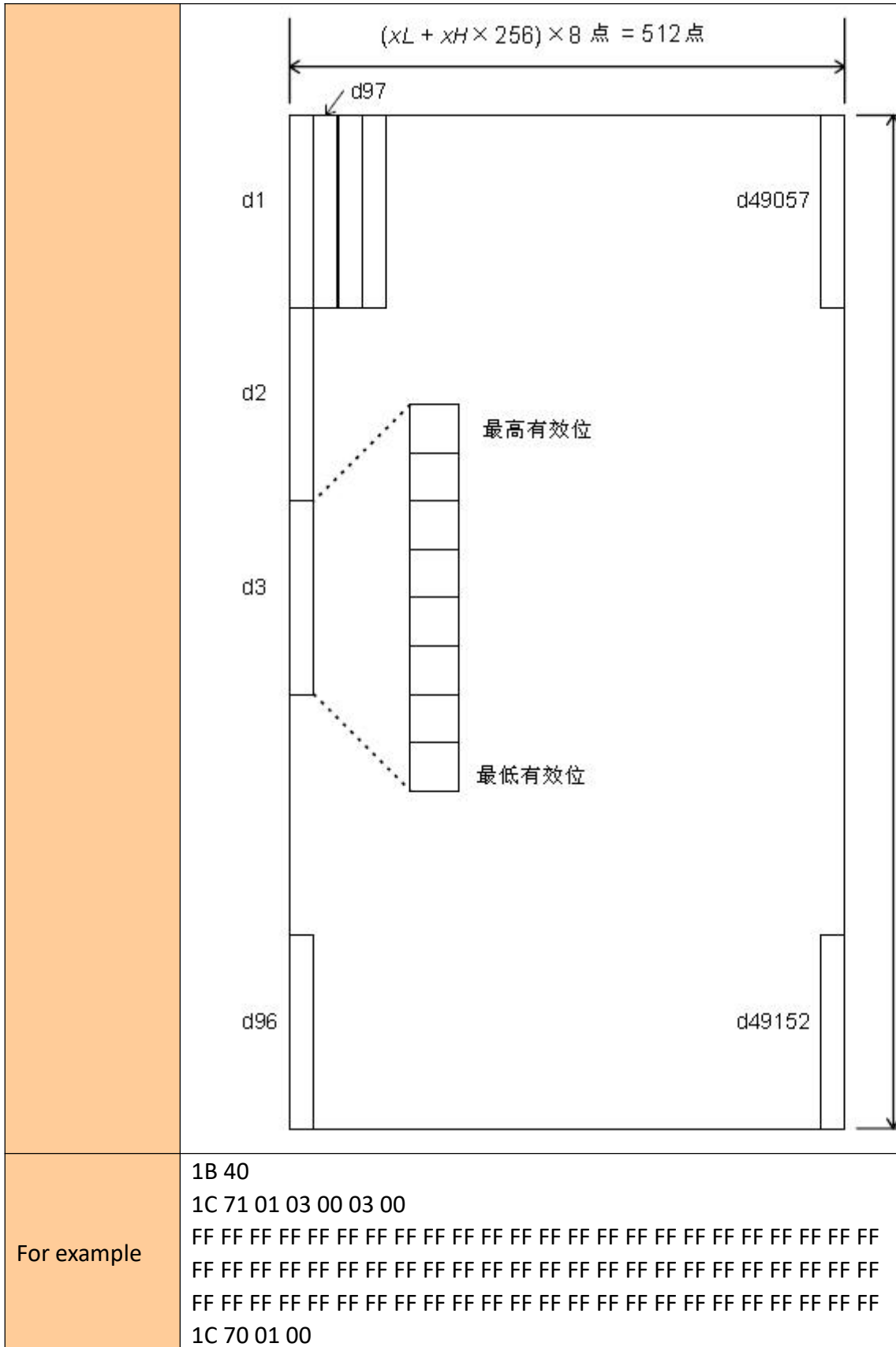
command can define several bitmaps, but it cannot define a bitmap whose total data capacity [bitmap data + header] exceeds 192K bytes.

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.

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




## Print NV bitmap

| Name          | Print NV bitmap  |   |      |       |        |       |             |       |              |       |                        |
|---------------|--|---|------|-------|--------|-------|-------------|-------|--------------|-------|------------------------|
| Command code  | ASCII: FS p n m<br>Decimal system: 28 112 n m<br>Hexadecimal system: 1C 70 n m   |   |      |       |        |       |             |       |              |       |                        |
| Function      | Prints the NV bitmap in the mode specified by m.<br><table border="1" data-bbox="486 510 892 775"> <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>Times width</td> </tr> <tr> <td>2, 50</td> <td>Times height</td> </tr> <tr> <td>3, 51</td> <td>Times width and height</td> </tr> </tbody> </table>   | m | Mode | 0, 48 | Normal | 1, 49 | Times width | 2, 50 | Times height | 3, 51 | Times width and height |
| m             | Mode   |   |      |       |        |       |             |       |              |       |                        |
| 0, 48         | Normal   |   |      |       |        |       |             |       |              |       |                        |
| 1, 49         | Times width  |   |      |       |        |       |             |       |              |       |                        |
| 2, 50         | Times height   |   |      |       |        |       |             |       |              |       |                        |
| 3, 51         | Times width and height   |   |      |       |        |       |             |       |              |       |                        |
| Range         | $0 \leq m \leq 3$<br>$48 \leq m \leq 51$<br>$1 \leq n \leq 255$  |   |      |       |        |       |             |       |              |       |                        |
| Default       | None   |   |      |       |        |       |             |       |              |       |                        |
| Support model | All models   |   |      |       |        |       |             |       |              |       |                        |
| Note          | <p>n is the number of NV bitmaps (defined with the FS q command). m specifies the bitmap mode.</p> <p>An NV bitmap is a bitmap defined in non-volatile memory. Defined with FS q FS p Printing</p> <p>This command is invalid when the specified NV bitmap does not exist.</p> <p>In standard mode, this command is valid only when there is no data in the print buffer.</p> <p>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.</p> <p>If the downcast bitmap to be printed exceeds one line, the excess data is not printed.</p> <p>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.</p> <p>After prints the bitmap, the command sets the print position at the beginning of a line and treats the subsequent data as normal data.</p> |   |      |       |        |       |             |       |              |       |                        |
| For example   | None   |   |      |       |        |       |             |       |              |       |                        |

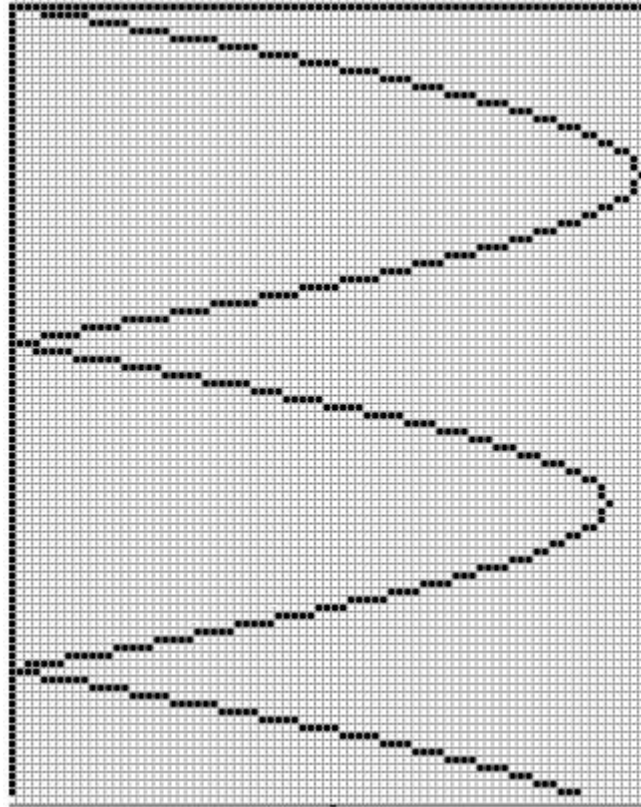
## Print raster bitmap

|               |   |                        |               |                 |
|---------------|---|------------------------|---------------|-----------------|
| Name          | Print raster bitmap   |                        |               |                 |
| Command code  | ASCII: GS v 0 m xL xH yL yH d1...dk<br>Decimal system: 29 118 48 m xL xH yL yH d1...dk<br>Hexadecimal system: 1D 76 30 m xL xH yL yH d1...dk  |                        |               |                 |
| Function      | Prints a raster bitmap and selects the raster bitmap mode from the m value:   |                        |               |                 |
|               | m   | Mode                   | DPI(Vertical) | DPI(Horizontal) |
|               | 0,48  | Normal                 | 200           | 200             |
|               | 1,49  | Times width            | 200           | 100             |
|               | 2,50  | Times height           | 100           | 200             |
|               | 3,51  | Times width and height | 100           | 100             |
| Range         | $0 \leq m \leq 3$ or $48 \leq m \leq 51$<br>$0 \leq xL \leq 255$<br>$0 \leq xH \leq 255$<br>$0 \leq yL \leq 255$<br>$0 \leq d \leq 255$<br><br>$k = (xL + xH * 256) * (yL + yH * 256) (k \neq 0)$   |                        |               |                 |
| Default       | None  |                        |               |                 |
| Support model | All models  |                        |               |                 |
| Note          | <p>xL, xH indicates the number of horizontal direction bitmap bytes (xL+xH*256)</p> <p>yL, yH indicates the number of vertical direction bitmap points (yL+yH*256)</p> <p>In standard mode, this command is valid only when there is no data in the printer buffer.</p> <p>The print modes such as character enlargement, bolding, double printing, inverted printing, underlining, and black and white reversal are not valid for this command.</p> <p>The portion of the bitmap that exceeds the print area is not printed.</p> |                        |               |                 |

|             |  |
|-------------|--|
|             | <p>ESC is valid for raster bitmap.</p> <p>During macro definition, this command stops the macro definition and executes the command. This command is not part of the macro definition.</p> <p>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.</p> |
| For example | <p>When <math>xL+xH \times 256=64</math></p>   |

## Horizontal position printing of line segments (curve printing command)

|              |   |
|--------------|---|
| Name         | Horizontal position printing of line segments (curve printing command)  |
| Command code | <p>ASCII: GS 'n x1sL x1eH x1eL x1eH ...xnsL xnsH xneL xneH</p> <p>Decimal system: 1D 27 n x1sL x1eH x1eL x1eH ...xnsL xnsH xneL xneH</p> <p>Hexadecimal system: 29 39 n x1sL x1eH x1eL x1eH ...xnsL xnsH xneL xneH</p>                            |
| Function     | Print an enlarged view as follows: Each horizontal curve segment can be considered to consist of these points with a segment length of 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 low 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 may be out of order within the specified range;

```
Char SendStr[8];
Char SendStr2[16];
Float i;
Short y1,y2,y1s,y2s;
//Print Y-axis (one line)
SendStr[0]=0x1D;
SendStr[1]=0x27;
SendStr[2]=1; // One line
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
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); //cos function at the beginning of the
line
        PreSendData(&y2,2); //cos function at the end of the line
    }
    Else
    {
        PreSendData(&y2,2); //cos function at the beginning of the
line
        PreSendData(&y2s,2); //cos function at the end of the line
    }
    y1s=y1; // When the print goes to the next line, the

```

|               |   |
|---------------|---|
|               | <pre> horizontal coordinate of the starting point of the sin function curve y2s=y2;      //when the print goes to the next line, the horizontal coordinate of the starting point of the cos function curve }                 </pre>   |
| Range         | $0 \leq n \leq 8$   |
| Default       | None  |
| Support model | Portable printers   |
| Note          | When printing a point, then $x_{kL} = x_{ksL}$ , $x_{kH} = x_{ksH}$   |
| For example   | <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 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                 </pre> |

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                      |

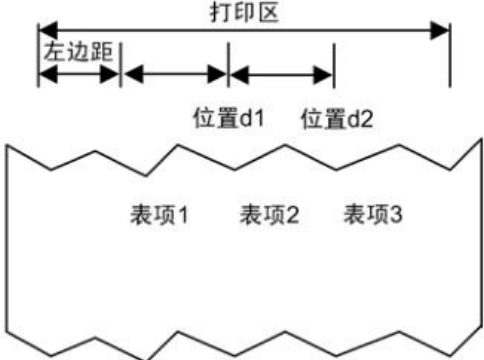
## ④ Tabulation instruction

### Horizontal tabulation

|      |                       |
|------|-----------------------|
| Name | Horizontal tabulation |
|------|-----------------------|

|               |  |
|---------------|--|
| Command code  | ASCII: HT<br>Decimal system: 9<br>Hexadecimal system: 09   |
| Function      | Move the print position to the next tab position.  |
| Range         | None   |
| Default       | None   |
| Support model | All models   |
| Note          | Tab position is set by ESC D<br>If the tab position is not set (no horizontal tab position by default), this command is treated as an LF command.<br>If the tab position is outside the print area, the coordinates will be moved to the start of the next line (printing and line feed as if the line is full). |
| For example   | None   |

## Set the horizontal tab position

|               |   |
|---------------|---|
| Name          | Set the horizontal tab position   |
| Command code  | ASCII: ESC D [d]k NUL<br>Decimal system: 27 68 [d]k 0<br>Hexadecimal system: 1B 44 [d]k 00  |
| Function      | Set the horizontal tab position with the following parameter meanings:<br>d1 ... dk: Horizontal tab position, in units of 8 dots, NULL is the terminator.   |
| Range         | XX58: $1 \leq d \leq 46$ ( $d_1 < d_2 < \dots < d_k$ , $1 \leq k \leq 16$ )<br>XX80: $1 \leq d \leq 70$ ( $d_1 < d_2 < \dots < d_k$ , $1 \leq k \leq 16$ )  |
| Default       | [d]k = 0 (no horizontal tab position by default)  |
| Support model | All models  |
| Note          | <p>The tabulation positions are illustrated below:</p>  <p>设置制表位置d1和d2</p> <p>Support setting up to 16 tab positions.<br/>This command cancels the previous tab position setting.</p> |

|             |   |
|-------------|---|
|             | <p>k is used for indication and is not transmitted.</p> <p>Transferring [d]k is considered to be finished when it encounters NULL.</p> <p>If dk is less than or equal to dk-1, it is regarded as the end, and the remaining data is regarded as normal data.</p> <p>Tab position can be switched by HT.</p> <p>When the left margin is changed, the tab position is changed at the same time.</p> <p>The setting of this instruction is invalidated when ESC @, printer reset, or power failure occurs.</p> |
| For example | None  |



## ⑤ 1D bar code printing instructions

### Set the bar code readable character (HRI) print position



|               |  |
|---------------|--|
| Name          | Set the bar code readable character (HRI) print position   |
| Command code  | <p>ASCII: GS H n</p> <p>Decimal system: 29 72 n</p> <p>Hexadecimal system: 1D 48 n</p>   |
| Function      | <p>Set the bar code readable character (HRI) print position, and the meaning of the n parameter is as follows:</p> <p>n Print position</p> <p>0, 48 Do not print</p> <p>1, 49 Above bar code</p> <p>2, 50 Below the bar code</p> <p>3, 51 above and below the bar code</p> |
| Range         | $0 \leq n \leq 3$ 或 $48 \leq n \leq 51$  |
| Default       | n = 0  |
| Support model | All models   |
| Note          | The setting of this command is invalidated when ESC @, the printer is reset, or power is cut off.  |
| For example   | None   |

### Set the height of a 1D bar code

|              |   |
|--------------|---|
| Name         | Set the height of a 1D bar code   |
| Command code | <p>ASCII: GS h n</p> <p>Decimal system: 29 104 n</p> <p>Hexadecimal system: 1D 68 n</p> |
| Function     | Set the height of the bar code to n dots, the meaning of the parameter n is as          |

|               |   |
|---------------|---|
|               | follows: <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;">  <p>高度为 50</p> </div> <div style="text-align: center;">  <p>高度为 100</p> </div> </div> |
| Range         | $1 \leq n \leq 255$   |
| Default       | $n = 64$  |
| Support model | All models  |
| Note          | The setting of this command is invalidated when ESC @, the printer is reset, or power is cut off.   |
| For example   | None  |

## Set the width of a 1D bar code

|               |   |
|---------------|---|
| Name          | Set the width of a 1D bar code  |
| Command code  | ASCII: GS w n<br>Decimal system: 29 119 n<br>Hexadecimal system: 1D 77 n  |
| Function      | Set the bar code unit to n dots, the meaning of the parameter n is as follows: <div style="display: flex; justify-content: space-around; align-items: center; margin-top: 10px;"> <div style="text-align: center;">  <p>宽度为 3</p> </div> <div style="text-align: center;">  <p>宽度为 4</p> </div> </div> |
| Range         | $1 \leq n \leq 6$   |
| Default       | $n = 2$   |
| Support model | All models  |
| Note          | The setting of this command is invalidated when ESC @, the printer is reset, or power is cut off.   |
| For example   | None  |

## Print a 1D bar code

|         |                            |
|---------|----------------------------|
| Name    | Print a 1D bar code        |
| Command | (A) ASCII: GS k m [d]k NUL |

| code     | <p>Decimal system: 29 107 m [d]k NUL<br/>         Hexadecimal system: 1D 6B m [d]k NUL<br/> <b>(B)</b> ASCII: GS k m n [d]k<br/>         Decimal system: 29 107 m n [d]k<br/>         Hexadecimal system: 1D 6B m n [d]k</p>  |             |                      |                                    |   |  |  |             |   |               |          |   |       |       |            |     |         |   |       |       |                      |     |   |   |               |       |            |     |         |   |             |       |          |     |         |   |        |          |         |                                   |  |   |                          |          |                |     |         |   |                |          |     |                                    |   |
|----------|---|-------------|----------------------|------------------------------------|---|--|--|-------------|---|---------------|----------|---|-------|-------|------------|-----|---------|---|-------|-------|----------------------|-----|---|---|---------------|-------|------------|-----|---------|---|-------------|-------|----------|-----|---------|---|--------|----------|---------|-----------------------------------|--|---|--------------------------|----------|----------------|-----|---------|---|----------------|----------|-----|------------------------------------|---|
| Function | <p>To print 1D barcode, the meaning of each parameter is as follows:<br/>         m is the encoding mode<br/>         n is the length of encoded data, only used in (B) mode, the difference between (A) and (B) instruction is that the data segment of (A) ends with NULL character, while (B) indicates the length of data.<br/>         [d]k is the barcode data<br/>         k is the length of the barcode data, which is used for indication and is not transmitted.<br/>         The relationship between each parameter is shown in the table below:<br/> <b>(Instruction A)</b></p> <table border="1" data-bbox="459 898 1347 2022"> <thead> <tr> <th rowspan="2">m</th> <th rowspan="2">Coding system</th> <th colspan="4">Bar code 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≤d≤57</td> </tr> <tr> <td>1</td> <td>UPC-E</td> <td>Fixed</td> <td>6≤k≤8,<br/>k = 11, 12</td> <td>0~9</td> <td>48≤d≤57<br/>[When k = 7,8,11,12, d1 = 48 ]</td> </tr> <tr> <td>2</td> <td>JAN13 (EAN13)</td> <td>Fixed</td> <td>k = 12, 13</td> <td>0~9</td> <td>48≤d≤57</td> </tr> <tr> <td>3</td> <td>JAN8 (EAN8)</td> <td>Fixed</td> <td>k = 7, 8</td> <td>0~9</td> <td>48≤d≤57</td> </tr> <tr> <td>4</td> <td>CODE39</td> <td>Variable</td> <td>1≤k≤255</td> <td>0~9, A~Z<br/>SP, \$, %, +, -, ., /</td> <td>48≤d≤57,<br/>65≤d≤90,<br/>d = 32, 36, 37, 42, 43, 45, 46, 47</td> </tr> <tr> <td>5</td> <td>ITF (Interleaved 2 of 5)</td> <td>Variable</td> <td>2≤k≤255 (Even)</td> <td>0~9</td> <td>48≤d≤57</td> </tr> <tr> <td>6</td> <td>CODABAR (NW-7)</td> <td>Variable</td> <td>1≤k</td> <td>0~9, A~D, a~d<br/>\$, +, -, ., /, :</td> <td>48≤d≤57,<br/>65≤d≤68,<br/>97≤d≤100,<br/>d = 36, 43, 45, 46, 47, 58</td> </tr> </tbody> </table> | m           | Coding system        | Bar code data (SP for space)       |   |  |  | Data length | k | Character set | Data (d) | 0 | UPC-A | Fixed | k = 11, 12 | 0~9 | 48≤d≤57 | 1 | UPC-E | Fixed | 6≤k≤8,<br>k = 11, 12 | 0~9 | 48≤d≤57<br>[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<br>SP, \$, %, +, -, ., / | 48≤d≤57,<br>65≤d≤90,<br>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 | CODABAR (NW-7) | Variable | 1≤k | 0~9, A~D, a~d<br>\$, +, -, ., /, : | 48≤d≤57,<br>65≤d≤68,<br>97≤d≤100,<br>d = 36, 43, 45, 46, 47, 58 |
| m        | Coding system   |             |                      | Bar code data (SP for space)       |   |  |  |             |   |               |          |   |       |       |            |     |         |   |       |       |                      |     |   |   |               |       |            |     |         |   |             |       |          |     |         |   |        |          |         |                                   |  |   |                          |          |                |     |         |   |                |          |     |                                    |   |
|          |   | Data length | k                    | Character set                      | Data (d)  |  |  |             |   |               |          |   |       |       |            |     |         |   |       |       |                      |     |   |   |               |       |            |     |         |   |             |       |          |     |         |   |        |          |         |                                   |  |   |                          |          |                |     |         |   |                |          |     |                                    |   |
| 0        | UPC-A   | Fixed       | k = 11, 12           | 0~9                                | 48≤d≤57   |  |  |             |   |               |          |   |       |       |            |     |         |   |       |       |                      |     |   |   |               |       |            |     |         |   |             |       |          |     |         |   |        |          |         |                                   |  |   |                          |          |                |     |         |   |                |          |     |                                    |   |
| 1        | UPC-E   | Fixed       | 6≤k≤8,<br>k = 11, 12 | 0~9                                | 48≤d≤57<br>[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<br>SP, \$, %, +, -, ., /  | 48≤d≤57,<br>65≤d≤90,<br>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        | CODABAR (NW-7)  | Variable    | 1≤k                  | 0~9, A~D, a~d<br>\$, +, -, ., /, : | 48≤d≤57,<br>65≤d≤68,<br>97≤d≤100,<br>d = 36, 43, 45, 46, 47, 58 |  |  |             |   |               |          |   |       |       |            |     |         |   |       |       |                      |     |   |   |               |       |            |     |         |   |             |       |          |     |         |   |        |          |         |                                   |  |   |                          |          |                |     |         |   |                |          |     |                                    |   |

|                        |                                |                              |                         |                                      |  |
|------------------------|--------------------------------|------------------------------|-------------------------|--------------------------------------|--|
|                        |                                |                              |                         |                                      | (65≤d1≤68,<br>65≤dk≤68,<br>97≤d1≤100,<br>97≤dk≤100)  |
| <b>(Instruction B)</b> |                                |                              |                         |                                      |  |
| m                      | Coding system                  | Bar code data (SP for space) |                         |                                      |  |
|                        |                                | Data length                  | n                       | Character set                        | Data (d)   |
| 65                     | UPC-A                          | Fixed                        | n = 11,<br>12           | 0~9                                  | 48≤d≤57  |
| 66                     | UPC-E                          | Fixed                        | 6≤n≤8,<br>n = 11,<br>12 | 0~9                                  | 48≤d≤57<br>[当 n =<br>7,8,11,12,<br>d1 = 48 ]   |
| 67                     | JAN13<br>(EAN13)               | Fixed                        | n = 12,<br>13           | 0~9                                  | 48≤d≤57  |
| 68                     | JAN8<br>(EAN8)                 | Fixed                        | n = 7, 8                | 0~9                                  | 48≤d≤57  |
| 69                     | CODE39                         | Variabl<br>e                 | 1≤n≤255                 | 0~9, A~Z<br>SP, \$, %, +,<br>-, ., / | 48≤d≤57,<br>65≤d≤90,<br>d = 32, 36,<br>37, 42, 43,<br>45, 46, 47   |
| 70                     | ITF<br>(Interleaved 2<br>of 5) | Variabl<br>e                 | 1≤n≤255<br>(Even)       | 0~9                                  | 48≤d≤57  |
| 71                     | CODAB<br>AR<br>(NW-7)          | Variabl<br>e                 | 1≤n≤255                 | 0~9, A~D, a~d<br>\$, +, -, ., /, :   | 48≤d≤57,<br>65≤d≤68,<br>97≤d≤100,<br>d = 36, 43,<br>45, 46, 47,<br>58<br>(65≤d1≤68,<br>65≤dk≤68,<br>97≤d1≤100,<br>97≤dk≤100) |
| 72                     | CODE93                         | Variabl<br>e                 | 1≤n≤255                 | 00H~7FH                              | 0≤d≤127  |
| 73                     | CODE12<br>8                    | Variabl<br>e                 | 2≤n≤255                 | 00H~7FH                              | 0≤d≤127  |
| 74                     | UCC/EA<br>N128                 | Variabl<br>e                 | 2≤n≤255                 | 00H~7FH<br>C1H~C4H(FNC               | 0≤d≤127<br>d = 193,  |

|               |  |  |  |   |             |
|---------------|--|--|--|---|-------------|
|               |  |  |  | ) | 194,195,196 |
| Range         | (A) $0 \leq m \leq 6$<br>(B) $65 \leq m \leq 74$   |  |  |   |             |
| Default       | None   |  |  |   |             |
| Support model | All models   |  |  |   |             |
| Note          | <p>If the bar code width exceeds the printable area, the printer does not print the bar code.</p> <p>This command feeds as needed and is not affected by the ESC 2, ESC 3 line spacing settings or the line spacing settings.</p> <p>This command is not affected by the ESC! character style setting</p> <p>After this command is executed, the print position is restored to the print start position.</p> <p>m Parameter 0 ~ 6 (A) and 65 ~ 71 (B) select the same coding system, the printing effect is the same.</p> <p>m When parameter 0 ~ 6(A), the bar code data will be terminated with NULL.</p> <p>m For parameter 0 ~ 6(A), the bar code data will end with NULL. m For parameter 65 ~ 74(B), the bar code data will be indicated by n for the data length.</p> <p>k is used for indication, no transmission is required</p> <p>Note when printing UPCA (m = 0 or 65):</p> <p>Check digits are automatically inserted or corrected regardless of whether the input data length is 11 or 12</p> <p>Start, middle and end characters are automatically inserted.</p> <p>Note when printing UPCE (m = 1 or 66):</p> <p>When the data length is 6, the system character (NSC) 0 is automatically inserted.</p> <p>When the data length is 7, 8, 11, and 12, the first system character (NSC) d1 must be 0.</p> <p>Check digit is automatically inserted or error corrected regardless of the input data length of 6, 7, 8, 11 or 12.</p> <p>Regardless of the input data length of 6, 7, 8, 11 or 12, the bar code readable character (HRI) only displays 6 bits of data without the system character (NSC) and check digit;</p> <p>The relationship between transmission data and print data conversion is as follows:</p> |  |  |   |             |

| 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, it should be ensured that 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 first, middle and last 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 end characters are inserted automatically.

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

When d1 or dn is not a start/end "\*", the encoder automatically inserts a "\*".

When a "\*" is encountered in the middle of the data, the encoder treats it as a terminator and the rest of the data 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 bar code readable characters (HRI) are set for printing, no start/end HRI characters are set

When bar code 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 done by sending the character "{" in combination with another character; the ASCII character "{" is sent by sending successive characters. "{" is done 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 rest of the 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 the 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 process 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

|                    |   |
|--------------------|---|
|                    | <p>combination specified above, the printer stops processing this command and processes the remaining data as normal data.</p> <ul style="list-style-type: none"> <li>- If the characters received by the printer are not bar code character set data, the printer stops processing this command and processes the remaining data as normal data.</li> </ul> <p>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.</p> <ul style="list-style-type: none"> <li>- When the printer prints HRI characters, shift characters and character set selection data are not printed.</li> <li>- HRI characters for function characters are not printed.</li> <li>- HRI characters for control characters (&lt;00&gt;H to &lt;1F&gt;H and &lt;7F&gt;H) are also not printed;</li> </ul> <p>&lt;Other&gt; Be sure to ensure the left and right gaps of the bar code. The gap varies depending on the bar code type.</p> |
| <p>For example</p> | <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 0D0A 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 37 30 20 20 20 30 32 33 34 35 36 30 30 C5 BC CA FD 0D 0A         </pre>   |

|  |  |
|--|--|
|  | <pre>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</pre> <p><b>Code 128 :</b></p> <pre>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</pre> |
|--|--|

## ⑥ QR Code Printing Instructions

### Set the module type for QR codes

|               |  |
|---------------|--|
| Name          | Set the module type for QR codes   |
| Command code  | ASCII: GS k pL pH cn fn n<br>Decimal system: 29 40 107 pL pH cn fn n<br>Hexadecimal system: 1D 28 6b pL pH cn fn n |
| Function      | Set the module type for QR codes   |
| Range         | pL=3, pH=0<br>cn=49<br>fn=67<br>$0 \leq n \leq 16$   |
| Default       | n=3  |
| Support model | All models   |
| Note          | Set the type of the QR code graphics module to [n dots × n dots].  |
| For example   | None   |

### Set the error correction level error of QR code

|              |  |
|--------------|--|
| Name         | Set the error correction level error of QR code  |
| Command code | ASCII: GS ( k pL pH cn fn n<br>Decimal system: 29 40 107 pL pH cn fn n<br>Hexadecimal system: 1D 28 6b pL pH cn fn n |
| Function     | Set the error correction level error of QR code  |
| Range        | pL=3, pH=0<br>cn=49  |

|               | fn=69<br>48 ≤ n ≤ 51  |                                  |  |  |    |                                  |   |    |                                  |    |    |                                  |    |    |                                  |    |
|---------------|---|----------------------------------|--|--|----|----------------------------------|---|----|----------------------------------|----|----|----------------------------------|----|----|----------------------------------|----|
| Default       | n=48  |                                  |  |  |    |                                  |   |    |                                  |    |    |                                  |    |    |                                  |    |
| Support model | All models  |                                  |  |  |    |                                  |   |    |                                  |    |    |                                  |    |    |                                  |    |
| Note          | Set the error correction level error of QR code   |                                  |  |  |    |                                  |   |    |                                  |    |    |                                  |    |    |                                  |    |
|               | <table border="1"> <thead> <tr> <th>n</th> <th>Function</th> <th>Reference.<br/>Approximate representation of recovery (%)</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>Mis-corrected horizontal error L</td> <td>7</td> </tr> <tr> <td>49</td> <td>Mis-corrected horizontal error m</td> <td>15</td> </tr> <tr> <td>50</td> <td>Mis-corrected horizontal error q</td> <td>25</td> </tr> <tr> <td>51</td> <td>Mis-corrected horizontal error h</td> <td>30</td> </tr> </tbody> </table> | n                                | Function   | Reference.<br>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 |
|               | n   | Function                         | Reference.<br>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                               |  |  |    |                                  |   |    |                                  |    |    |                                  |    |    |                                  |    |
|               |   |                                  |  |  |    |                                  |   |    |                                  |    |    |                                  |    |    |                                  |    |
| For example   | None  |                                  |  |  |    |                                  |   |    |                                  |    |    |                                  |    |    |                                  |    |

## Store QR code data to the QR code buffer

|               |  |
|---------------|--|
| Name          | Store QR code data to the QR code buffer   |
| Command code  | ASCII: GS ( k pL pH cn fn m d1...dk<br>Decimal system: 29 40 107 pL pH cn fn m d1...dk<br>Hexadecimal system: 1D 28 6b pL pH cn fn m d1...dk |
| Function      | Store QR code data to the QR code buffer   |
| Range         | 4 ≤ (pL + pH×256) ≤ 7092 (0 ≤ pL ≤ 255, 0 ≤ pH ≤ 28)<br>cn=49<br>fn=80<br>m=48<br>0 ≤ d ≤ 255<br>k = (pL + pH×256) - 3                       |
| Default       | None   |
| Support model | All models   |
| Note          | Store the data of the QR code (d1.... .dk) to the QR code buffer.  |

|             |  |
|-------------|--|
|             | (The bytes of ((pL + pH × 256 )-3) are processed after m(d1.... .dk) are processed as data for the graph after m(d1...dk). |
| For example | None   |

## Print QR code

|               |   |
|---------------|---|
| Name          | Print QR code   |
| Command code  | ASCII: GS ( k pL pH cn fn m<br>Decimal system: 29 40 107 pL pH cn fn m<br>Hexadecimal system: 1D 28 6b pL pH cn fn m  |
| Function      | Print QR code   |
| Range         | pL=3, pH=0<br>cn=49<br>fn=81<br>m=48  |
| Default       | None  |
| Support model | All models  |
| Note          | Printing QR codes.<br>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). |
| For example   | 1b 40<br>1d 28 6b 03 00 31 43 03<br>1d 28 6b 03 00 31 45 30<br>1d 28 6b 06 00 31 50 30 41 42 43<br>1b 61 01<br>1d 28 6b 03 00 31 52 30<br>1d 28 6b 03 00 31 51 30   |

## Set the graphical information of the QR code

|              |  |                    |                |           |
|--------------|--|--------------------|----------------|-----------|
| Name         | Set the graphical information of the QR code   |                    |                |           |
| Command code | ASCII: GS ( k pL pH cn fn m<br>Decimal system: 29 40 107 pL pH cn fn m<br>Hexadecimal system: 1D 28 6b pL pH cn fn m |                    |                |           |
| Function     | Set the graphical information for the QR code.<br>Here are the specific details of the graphical information:        |                    |                |           |
|              | Send data  | Hexadecimal system | Decimal system | 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   |
|               | <p>Width and height data is sent:<br/>                     Height and width values for graphic data are in dots.<br/>                     Other information data sent:<br/>                     "Hex = 30H/Dec = 48" indicates that the data is not being printed.<br/>                     "Hex=31H/Decimal=49" means the data is not printed.</p> |            |          |         |
| Range         | pL=3, pH=0<br>cn=49<br>fn=82<br>m=48  |            |          |         |
| Default       | None  |            |          |         |
| Support model | All models  |            |          |         |
| Note          | This command does not print QR code graphics.<br>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 of the QR code graphic is specified in the specifications).  |            |          |         |
| For example   | None  |            |          |         |

## Print QR code

|              |   |
|--------------|---|
| Name         | Print QR code   |
| Command code | ASCII: GS k m v r nL nH d1...dk<br>Decimal system: 29 107 97 v r nL nH d1...dk<br>Hexadecimal system: 1D 6B 61 v r nL nH d1...dk  |
| Function     | Printing QR code<br>v indicates the specification of the QR code, v=0 means the specification of the QR code is selected automatically.<br>r denotes the error correction level.<br>nL nH denotes the data length.<br>d1...dk denotes the QR code data to be printed. |
| Range        | $0 \leq v \leq 17$  |

|               |   |
|---------------|---|
|               | $1 \leq r \leq 4$<br>$k = nL + 256 * nH$              |
| Default       | None  |
| Support model | Portable printers                                     |
| Note          | Print QR code   |
| For example   | 1b 40<br>1D 6B 61 08 02 08 00 30 31 32 33 34 35 36 37 |

## ⑦ 状态指令

### Transmission state

|               |   |                              |
|---------------|---|------------------------------|
| Name          | Transmission state  |                              |
| Command code  | ASCII: GS r n<br>Decimal system: 29 114 n<br>Hexadecimal system: 1D 72 n  |                              |
| Function      | Transmit the state specified by n, as follows.  |                              |
|               | n   | State                        |
|               | 1.49  | Paper transfer sensor status |
|               |   |                              |
| Range         | n = 1, 49   |                              |
| Default       | None  |                              |
| Support model | All models  |                              |
| Note          | <p>When using the serial interface:</p> <p>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.</p> <p>If XON/XOFF control is set, the printer transmits only one byte and does not acknowledge the DSR signal status.</p> <p>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.</p> <p>When activating the automatic status reply ASB with GS a, the status transmitted with GS r and the ASB status must be distinguished.</p> <p>The types of status transmitted by xx are shown below.</p> |                              |

|             | Bit  | Off/On | Hexadecimal system | Decimal system | State of ASB                                     |
|-------------|--|--------|--------------------|----------------|--|
|             | 0,1  | -      | -                  | -              | meaningless                                      |
|             | 2,3  | Off    | 00                 | 0              | Paper Exhaustion Sensor: Sufficient print 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).<br>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. |        |                    |                |  |
| For example | None   |        |                    |                |  |

## Real-time transmission status

|               |  |
|---------------|--|
| Name          | Real-time transmission status  |
| Command code  | ASCII: DLE EOT n<br>Decimal system: 16 4 n<br>Hexadecimal system: 10 04 n  |
| Function      | The printer status is transmitted in real time according to the following parameters. n is used to specify the printer status to be transmitted:<br>n = 1: the printer status is transmitted<br>n = 2: offline status is transmitted<br>n = 3: transmission of the error status<br>n = 4: Transmit paper sensor status |
| Range         | $1 \leq n \leq 4$  |
| Default       | None   |
| Support model | All models   |

Note

- 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 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 system | Decimal system | Function  |
|-----|-----|--------------------|----------------|---|
| 0   | 0   | 00                 | 0              | Fixed to 0  |
| 1   | 1   | 02                 | 2              | Fixed to 1  |
| 2   | 0   | 00                 | 0              | One or both money boxes open (This bit is fixed to zero for machines without a money box) |
|     | 1   | 04                 | 4              | Both money boxes are closed.  |
| 3   | 0   | 00                 | 0              | Online  |
|     | 1   | 08                 | 8              | Disconnect  |
| 4   | 1   | 10                 | 16             | Fixed to 1  |
| 5,6 |     | --                 | --             | Undefined   |
| 7   | 0   | 00                 | 00             | The paper has been torn away  |
|     | 1   | 80                 | 96             | The paper hasn't been torn away   |

n=2: Transfer offline status

| Bit | 0/1 | Hexadecimal system | Decimal system | Function                         |
|-----|-----|--------------------|----------------|----------------------------------|
| 0   | 0   | 00                 | 0              | Fixed to 0                       |
| 1   | 1   | 02                 | 2              | Fixed to 1                       |
| 2   | 0   | 00                 | 0              | Cover off                        |
|     | 1   | 04                 | 4              | Cover on                         |
| 3   | 0   | 00                 | 0              | Failure to press the feed button |
|     | 1   | 08                 | 8              | Press the feed button            |

|             |                                   |     |                    |                              |  |  |
|-------------|-----------------------------------|-----|--------------------|------------------------------|--|--|
|             | 4                                 | 1   | 10                 | 16                           | Fixed to 1                                     |  |
|             | 5                                 | 0   | 00                 | 0                            | Printer does not run out of paper              |  |
|             |                                   | 1   | 20                 | 32                           | Printer is out of paper                        |  |
|             | 6                                 | 0   | 00                 | 00                           | No error                                       |  |
|             |                                   | 1   | 40                 | 64                           | There is an error                              |  |
|             | 7                                 | 0   | 00                 | 0                            | Fixed to 0                                     |  |
|             | n=3: Transmission error status    |     |                    |                              |  |  |
|             | Bit                               | 0/1 | Hexadecimal system | Decimal system               | Function                                       |  |
|             | 0                                 | 0   | 00                 | 0                            | Fixed to 0                                     |  |
|             | 1                                 | 1   | 02                 | 2                            | Fixed to 1                                     |  |
|             | 2                                 |     | --                 | --                           | Undefined                                      |  |
|             | 3                                 | 0   | 00                 | 0                            | No error in cutter                             |  |
|             |                                   | 1   | 08                 | 8                            | There's an error in the cutter                 |  |
|             | 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                           | Print head temperature and voltage are normal  |  |
|             |                                   | 1   | 40                 | 64                           | Print head temperature or voltage out of range |  |
|             | 7                                 | 0   | 00                 | 0                            | Fixed to 0                                     |  |
|             | n=4: Paper transfer sensor status |     |                    |                              |  |  |
|             | Bit                               | 0/1 | Hexadecimal system | Decimal system               | Function                                       |  |
| 0           | 0                                 | 00  | 0                  | Fixed to 0                   |  |  |
| 1           | 1                                 | 02  | 2                  | Fixed to 1                   |  |  |
| 2, 3        | 0                                 | 00  | 0                  | Having paper                 |  |  |
|             | 1                                 | 0C  | 12                 | Be about to run out of paper |  |  |
| 4           | 1                                 | 10  | 16                 | Fixed to 1                   |  |  |
| 5, 6        | 0                                 | 00  | 0                  | Having paper                 |  |  |
|             | 1                                 | 60  | 96                 | Run out of paper             |  |  |
| 7           | 0                                 | 00  | 0                  | Fixed to 0                   |  |  |
| For example | 10 04 01                          |     |                    |                              |  |  |
|             | 10 04 02                          |     |                    |                              |  |  |
|             | 10 04 03                          |     |                    |                              |  |  |
|             | 10 04 04                          |     |                    |                              |  |  |

## Real-time printer requests

|               |  |   |
|---------------|--|---|
| Name          | Real-time printer requests   |   |
| Command code  | ASCII: DLE ENQ n<br>Decimal system: 16 5 n<br>Hexadecimal system: 10 05 n  |   |
| Function      | The printer responds to requests from the host. n Specifies the following requests:  |   |
|               | n  | Requests  |
|               | 1  | Recover from the error and restart printing from the line where the error occurred. |
|               | 2  | Recover from the error after clearing the receive and print buffers.                |
| Range         | n = 1, 2   |   |
| Default       | None   |   |
| Support model | All models   |   |
| Note          | <p>This command is valid only when an auto cutter error, cover open error occurs.</p> <p>The printer starts processing data as soon as this command is received.</p> <p>This command is executed even if the printer is offline, the print buffer is full, or a serial interface mode error occurs.</p> <p>In parallel interface mode, this command cannot be executed when the printer is busy.</p> <p>Status is sent whenever a &lt;10&gt;H&lt;05&gt;H&lt;n&gt; (1≤n≤2) data sequence is received.</p> <p>Example:<br/>                 ESC * m nL nH dk , d1 = &lt;10&gt;H, d2 = &lt;05&gt;H, d3 = &lt;01&gt;H</p> <p>It can not be used in a data containing a command of 2 or more bytes.</p> <p>Example:<br/>                 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.</p> <p>The code &lt;10&gt;H for DLE ENQ 2 is treated as the code &lt;10&gt;H for ESC 3.</p> <p>The code &lt;10&gt;H of DLE ENQ 2 is treated as the code &lt;10&gt;H 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</p> |   |

|             |  |
|-------------|--|
|             | (e.g., ESC ! , ESC3, etc.). The printer can be fully initialised with this command and ESC @. This command is only valid for errors from which recovery is possible, except for print head temperature errors. |
| For example | 10 05 01   |

## Allow, disable automatic status replies (ASB)

|  |   |                    |                    |  |  |
|--|---|--------------------|--------------------|--|--|
| Name                                   | Allow, disable automatic status replies (ASB)                                     |                    |                    |  |  |
| Command code                           | ASCII: GS a n<br>Decimal system: 29 97 n<br>Hexadecimal system: 1d 61 n           |                    |                    |  |  |
| Function                               | Allows or disables ASB and specifies the included status items with n as follows: |                    |                    |  |  |
|  | Bit   | Off/On             | Hexadecimal system | Decimal system   | State of ASB                           |
|  | 0   | -                  | -                  | -  | Undefined                              |
|  | 1   | -                  | -                  | -  | Undefined                              |
|  | 2   | Off                | 00                 | 0  | Error state prohibition                |
|  |   | On                 | 04                 | 4  | Error status allowed                   |
|  | 3   | Off                | 00                 | 0  | Print paper roll sensor status disable |
|  |   | On                 | 08                 | 8  | Print paper roll sensor status allows  |
|  | 4-7   | -                  | -                  | -  | Undefined                              |
|  | The first byte (printer information):   |                    |                    |  |  |
|  | Bit   | Off/On             | Hexadecimal system | Decimal system   | State of ASB                           |
|  | 0,1   | Off                | 00                 | 0  | Undefined, fixed to 0                  |
|  | 2   | On                 | 04                 | 0  | Undefined, fixed to 1                  |
|  | 3   | Off                | 00                 | 0  | Undefined, fixed to 0                  |
|  | 4   | On                 | 10                 | 16   | Undefined, fixed to 1                  |
| 5                                      | Off   | 00                 | 0                  | Undefined, fixed to 0                                      |  |
| 6                                      | Off   | 00                 | 0                  | Paper not feeding by pressing the paper feed button        |  |
|  | On  | 40                 | 64                 | Paper is being fed by pressing the paper feed paper button |  |
| 7                                      |   | 00                 | 0                  | Undefined, fixed to 0                                      |  |
| The second byte (printer information): |   |                    |                    |  |  |
| Bit                                    | Off/On  | Hexadecimal system | Decimal system     | State of ASB   |  |

|               |   |        |                    |                       |   |  |
|---------------|---|--------|--------------------|-----------------------|---|--|
|               |   |        |                    | system                |   |  |
|               | 0-4   | Off    | 00                 | 0                     | Undefined, 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                     | Undefined, fixed to 0                         |  |
|               | The third byte (printer information):   |        |                    |                       |   |  |
|               | Bit   | Off/On | Hexadecimal system | Decimal system        | State of ASB                                  |  |
|               | 0,1   | Off    | 00                 | 0                     | Undefined, fixed to 0                         |  |
|               | 2,3   | Off    | 00                 | 0                     | Printer has paper                             |  |
|               |   | On     | 0c                 | 12                    | Printer is out of paper                       |  |
|               | 4-7   | Off    | 00                 | 0                     | Undefined, fixed to 0                         |  |
|               | The fourth byte (paper sensor information):   |        |                    |                       |   |  |
|               | 位   | Off/On | Hexadecimal system | Decimal system        | State of ASB                                  |  |
| 0-3           | -   | -      | -                  | Undefined             |   |  |
| 4-7           | Off   | 00     | 0                  | Undefined, fixed to 0 |   |  |
| Range         | 0≤n≤255   |        |                    |                       |   |  |
| Default       | None  |        |                    |                       |   |  |
| Support model | All models  |        |                    |                       |   |  |
| Note          | <p>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 status once the "allowed" status item has changed. Because each status transfer represents the current state, prohibited status entries can be changed.</p> <p>If all status items are disabled, then the ASB function is also disabled.</p> <p>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.</p> <p>Transmit 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.</p> <p>Because command data is processed in the receive buffer and then executed, there may be a lag time between data reception and</p> |        |                    |                       |   |  |

|             |   |
|-------------|---|
|             | status transmission.<br>When using DLE EOT, a distinction must be made between the status transmitted by these commands and the ASB status. |
| For example | 1D 61 08  |

## ⑧ Other instructions

### Initialising the printer

|               |  |
|---------------|--|
| Name          | Initialising the printer   |
| Command code  | ASCII: ESC @<br>Decimal system: 27 64<br>Hexadecimal system: 1B 40   |
| Function      | Initialise the printer the following:<br>Clearing the print cache<br>Restore default values for each parameter |
| Range         | None   |
| Default       | None   |
| Support model | All models   |
| Note          | None   |
| For example   | None   |

### Print self-test page

|               |   |
|---------------|---|
| Name          | Print self-test page  |
| Command code  | ASCII: DC2 T<br>Decimal system: 18 94<br>Hexadecimal system: 12 54  |
| Function      | The printer prints a self-test page containing the printer's programme version, the type of communication interface, a code page and some other data. |
| Range         | None  |
| Default       | None  |
| Support model | All models  |
| Note          | None  |
| For example   | 1B 40 12 54   |

### Set printing density

|      |                      |
|------|----------------------|
| Name | Set printing density |
|------|----------------------|

|               |   |
|---------------|---|
| Command code  | ASCII: ESC 7 n1 n2 n3<br>Decimal system: 27 55 n1 n2 n3<br>Hexadecimal system: 1B 37 n1 n2 n3   |
| Function      | Set the maximum number of heating points to be printed, the heating time, and the interval:<br>n1 = 0-255 maximum number of heated points, unit (8dots), default value 9 (80 dots);<br>n2 = 0-255 Heating time, unit (10us), default value 80;<br>n3 = 0-255 heating interval time, unit (10us), default value 2;<br>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 x (n1+1);<br>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;<br>The longer the interval time, the clearer the printing and the slower the printing speed; |
| Range         |   |
| Default       | None  |
| Support model | All models  |
| Note          | The "Heating Time" and "Heating Interval" control panels are automatically adjusted according to the input voltage.   |
| For example   | Heating points: 80 points, heating time: 800us, interval time 200us.<br>1B 40<br>1B 37 09 50 02<br>12 54<br><br>Heating points: 80 points, heating time: 1600us, interval time 200us.<br>1B 40<br>1B 37 09 A0 02<br>12 54<br><br>As you can see, the print consistency darkened significantly after the heating time was stretched.   |

## ⑨ Label instructions

### Stipulation

|      |             |
|------|-------------|
| Name | Stipulation |
|------|-------------|

|               |  |
|---------------|--|
| Command code  | [COMMAND]+[Parameter]  |
| Function      | <p>COMMAND: Command header, identifies the function of the command, hexadecimal number, blue bold, such as: 1A 54 00.<br/>                     Parameter: Command input parameter.<br/>                     Parameter definition:<br/>                     Single byte parameter: specific character represents a single byte, such as Rotate means rotate, occupies one byte bit.<br/>                     Double Byte Parameter: Specific character combined with _L and _H, indicating the low byte and high byte of the parameter in turn.<br/>                     For example, x_L , x_H indicates the low byte and high byte of the 2-byte parameter X in turn.<br/>                     Unit: dot. 1 dot = 0.125mm.<br/>                     Range definition:<br/>                     Range of x values:<br/>                     {a, b} : x = a or x = b;<br/>                     [a, b] : a≤x≤b;<br/>                     (a, b) : a &lt; x &lt; b;</p> |
| Range         |  |
| Default       |  |
| Support model |  |
| Note          |  |
| For example   |  |

## Page page Control Command

### Page page start command

|              |  |
|--------------|--|
| Name         | Page page start command  |
| Command code | <p>Hexadecimal system: a: 1A 5B 00<br/>                     b: 1A 5B 01 x_L x_H<br/>                     y_L y_H<br/>                     Width_L width_H<br/>                     Height_L Height_H<br/>                     Rotate</p>   |
| Function     | <p>Indicates the start of a Page page and sets the Page page size, reference point coordinates, and page rotation angle.<br/>                     a: Input Parameter: None Return Value: None<br/>                     Remarks: This instruction sets the page to 576 points wide and 1200 points high, the reference point coordinates are at the upper left corner of the current position, and the page is not rotated.<br/>                     b: Input parameter:<br/>                     x</p> |

|               |  |
|---------------|--|
|               | <p>The x-axis offset of the reference origin of the Page relative to the upper left corner of the current position of the label sheet.</p> <p>x</p> <p>The y-axis offset of the page reference origin from the upper-left corner of the current position of the label.</p> <p>y</p> <p>Width</p> <p>The width of the page. x+Width is in the range of [1,576].</p> <p>Height</p> <p>The height of the page, the range of Height is: [1, 1200].</p> <p>Rotate</p> <p>The rotation angle of the page, Rotate is in the range of {0,1}. When Rotate is 0, the page is not rotated. When Rotate is 1, the page is rotated 90° for printing.</p> <p>Return value: none.</p> |
| Range         |  |
| Default       |  |
| Support model |  |
| Note          |  |
| For example   | 1A 5B 01 00 00 00 00 80 01 40 01 00  |

## End-of-Page Command

|               |   |
|---------------|---|
| Name          | End-of-Page Command   |
| Command code  | Hexadecimal system: 1A 5D 00  |
| Function      | <p>Marks the end of a Page page data.</p> <p>Input Parameters:</p> <p>None.</p> <p>Return Value:</p> <p>None.</p> |
| Range         |   |
| Default       |   |
| Support model |   |
| Note          |   |
| For example   |   |

## Page page print command

|         |                                 |
|---------|---------------------------------|
| Name    | Page page print command         |
| Command | Hexadecimal system: a: 1A 4F 00 |

|               |   |
|---------------|---|
| code          | b: 1A 4F 01 Print Num   |
| Function      | <p>Print the contents of the Page page onto a label sheet.</p> <p>a:<br/>Enter the parameters:<br/>None<br/>Return Value: None</p> <p>Note: This command will only print the contents of the Page 1 time.</p> <p>b:<br/>Input parameter:<br/>Print Num<br/>Page page content will be printed Print Num times.<br/>Return Value:<br/>None.</p> |
| Range         |   |
| Default       |   |
| Support model |   |
| Note          |   |
| For example   |   |

## Feeding command

|              |  |
|--------------|--|
| Name         | Feeding command  |
| Command code | <p>Hexadecimal system: a:</p> <p style="text-align: center;">1A 0C 00</p> <p>b:</p> <p style="text-align: center;">1A 0C 01 StopPosition<br/>Offset_L Offset_H</p> |
| Function     | <p>a: Input parameters:<br/>None.<br/>Return Value:<br/>None.<br/>Remarks:<br/>When this command is accepted, the printer runs the paper and</p>                   |

|               |   |
|---------------|---|
|               | <p>stops running the paper when the label seam is flush with the cutter. At this time, the printer<br/>The current cursor position is 8mm below the label head.</p> <p>b: Input parameter:</p> <p>Stop Position</p> <p>Stop Position = 0, stops the paper at the point where the cutter is flush with the label seam; Stop Type = 0, stops the paper at the point where the cutter is flush with the label seam.</p> <p>Stop Type = 0, the paper stops when the cutter is flush with the label seam;</p> <p>Stop Type = 1, the cursor stops paper travelling flush with the label head;</p> <p>Stop Type = 2, the paper stops running where the cutter is flush with the bottom of the black label;</p> <p>Stop Type = 3, the cursor and the black label below the flush flush stop paper;</p> <p>Offset</p> <p>Marks the stop position offset. When the printer detects the label head or label for after, continue to go paper Offset the length of each point.</p> <p>Return Value:</p> <p>None.</p> |
| Range         |   |
| Default       |   |
| Support model |   |
| Note          |   |
| For example   | 1A 0C 01 00 00 01   |

### Page Drawing Instructions

The reference origin of all the coordinate points in the following instructions is the reference point defined in the Page page start instruction. Instruction Description Page\_Width and Page\_Height represent the width and height of the page defined in the Page\_Start instruction, respectively.

### Text drawing commands

|              |                       |
|--------------|-----------------------|
| Name         | Text drawing commands |
| Command code | Hexadecimal system:   |

|                 | <p>a:</p> <p>1A 54 00 x_L x_H<br/>y_L y_H<br/>String00</p> <p>b:</p> <p>1A 54 01 x_L x_H<br/>y_L y_H<br/>FontHeight_L FontHeight_H<br/>FontType_L FontType_H<br/>String00</p>   |      |            |  |  |
|-----------------|---|------|------------|--|--|
| <p>Function</p> | <p>a.</p> <p>Enter the parameters:</p> <p>x<br/>Define the x coordinate of the text start position, value range: [0, Page_Width-1];</p> <p>y<br/>Define the y coordinate of the start position of the text, value range: [0, Page_Height-1];</p> <p>String00<br/>The text string data stream to be printed, terminated by 0x00.</p> <p>Return value:<br/>None</p> <p>Remarks: When the sum of the text width and the text start coordinate x is greater than the page width, the text is truncated for printing.</p> <p>b.</p> <p>Input Parameters:</p> <p>X<br/>Define the x coordinate of the text start position, range: [0, Page_Width-1];</p> <p>y<br/>Define the y coordinate of the start position of the text, value range: [0, Page_Height-1];</p> <p>Font Height<br/>Height of the text character font, valid values are {16, 24, 32, 48, 64, 80, 96}({16,17,18,24} for individual models).</p> <p>Font Type<br/>Text character special effects, each defined as follows:</p> <table border="1" data-bbox="446 1966 1361 2004"> <thead> <tr> <th data-bbox="446 1966 574 2004">Data</th> <th data-bbox="574 1966 1361 2004">Definition</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table> | Data | Definition |  |  |
| Data            | Definition  |      |            |  |  |
|                 |   |      |            |  |  |

|               |   |   |
|---------------|---|---|
|               | bit   |   |
|               | 0   | Bold Flag Bit: Set to 1 to make the font bold, clear to 0 to make the font not bold.  |
|               | 1   | Underline flag bit: set to 1 for text with underline, clear to 0 for no underline.  |
|               | 2   | Anti-white bit: Set 1 to anti-white the text (white characters on black background), clear 0 to not anti-white the text.  |
|               | 3   | Deletion line flag bit: set to 1 for text with deletion line, clear to 0 for no deletion line.  |
|               | [5,4]   | Rotation flag bits: 00 rotation 0°; 01 rotation 90°; 10 rotation 180°; 11 rotation 270°. (When rotation is required, it is necessary to pay attention to the coordinates of the starting point)   |
|               | [11,8]  | Font width magnification  |
|               | [15,12]   | Font height magnification   |
|               |   | The text string data stream to be printed, terminated with 0x00.<br>Return value: none.<br>Remarks.<br>When the sum of the text width and the text start coordinate x is greater than the page width, the text is truncated for printing. |
| Range         |   |   |
| Default       |   |   |
| Support model |   |   |
| Note          |   |   |
| For example   | <p><b>A:</b></p> <pre>1B 40 1a 5B 01 00 00 00 00 80 01 40 01 00 1A 54 00 00 00 00 00 B0 AE CE D2 D6 D0 BB AA 00 1a 5d 00 1a 4f 00</pre> <p><b>B:</b></p> <pre>1a 5B 01 00 00 00 00 80 01 00 01 00 1A 54 01 00 00 00 00 60 00 00 00 C4E3BAC3 00 1A 54 01 18 00</pre> |   |

|  |  |
|--|--|
|  | <p>00 00<br/>         60 00 00 00<br/>         C4E3BAC3 00<br/>         1A 54 01<br/>         a0 00<br/>         00 00<br/>         60 00 10 33<br/>         C4E3BAC3 00<br/>         1a 5d 00<br/>         1a 4f 00</p> |
|--|--|

## Line drawing commands

| Name         | Line drawing commands  |
|--------------|--|
| Command code | <p>Hexadecimal system:</p> <p>a.</p> <p>1A 5C 00 StartX_L StartX_H<br/>           StartY_L StartY_H<br/>           EndX_L EndX_H<br/>           EndY_L EndY_L</p> <p>b.</p> <p>1A 5C 01 StartX_L StartX_H<br/>           StartY_L StartY_H<br/>           EndX_L EndX_H<br/>           EndY_L EndY_H<br/>           Width_L Width_H<br/>           Color</p> |
| Function     | <p>Draw a straight line segment between the two points specified on the Page page.</p> <p>a.</p> <p>Enter the parameters:<br/>           Start X<br/>           The x coordinate value of the start point of the straight line segment, in the range [0, Page_Width-1].<br/>           Start Y</p>   |

|               |  |
|---------------|--|
|               | <p>The y coordinate of the start point of the linear segment, range: [0, Page_Height-1].</p> <p>End X</p> <p>The x coordinate of the end point of the linear segment, range: [0, Page_Width-1].</p> <p>End Y</p> <p>The y coordinate of the end point of the linear segment, range: [0, Page_Height-1].</p> <p>Return Value:</p> <p>None.</p> <p>b.</p> <p>Input parameters:</p> <p>Start X</p> <p>The x coordinate of the start point of the linear segment, range: [0, Page_Width-1].</p> <p>Start Y</p> <p>The y coordinate of the start point of the linear segment, range: [0, Page_Height-1].</p> <p>End X</p> <p>The x coordinate of the end point of the linear segment, range: [0, Page_Width-1].</p> <p>End Y</p> <p>The y coordinate of the end point of the linear segment, range: [0, Page_Height-1].</p> <p>Width</p> <p>The width of the line, range: [1, Page_Height-1].</p> <p>Color</p> <p>The colour of the line, value range: {0, 1}. When Color is 1, the line segment is black. When Color is 0, the line segment is white.</p> <p>Output Parameters:</p> <p>None.</p> |
| Range         |  |
| Default       |  |
| Support model |  |
| Note          |  |
| For example   | <pre>1B 40 1a 5B 01 00 00 00 00 80 01 40 01 00 1A 5C 01 00 00 00 00 00 01 00 00 30 00 01 1a 4f 00</pre>  |

Drawing Rectangular Boxes with the Line Segment Command

```
1B 40 1a 5B 01 00 00 00 00 80 01 00 01 00
1A 5C 01 10 00 10 00 00 01 10 00 04 00 01
1A 5C 01 10 00 10 00 10 00 c0 00 04 00 01
```

1A 5C 01 10 00 c0 00 00 01 c0 00 04 00 01  
 1A 5C 01 00 01 10 00 00 01 c0 00 04 00 01  
 1a 4f 00

## Rectangular box drawing commands

|              |   |
|--------------|---|
| Name         | Rectangular box drawing commands  |
| Command code | <p>Hexadecimal system:</p> <p>a.</p> <p>1A 26 00 Left_L Left_H<br/>             Top_L Top_H<br/>             Right_L Right_H<br/>             Bottom_L Bottom_H</p> <p>b.</p> <p>1A 26 01 Left_L Left_H<br/>             Top_L Top_H<br/>             Right_L Right_H<br/>             Bottom_L Bottom_H<br/>             Width_L Width_H<br/>             Color</p>  |
| Function     | <p>Draw a rectangular box of the specified size at the specified location on the Page page.</p> <p>a.</p> <p>Enter the parameters:</p> <p>Left<br/>             The x-coordinate of the upper-left corner of the rectangle, in the range of [0, Page_Width-1].</p> <p>Top<br/>             The y-coordinate of the upper-left corner of the rectangle. Range: [0, Page_Height-1].</p> <p>Right<br/>             The x coordinate of the bottom right corner of the rectangle. Range: [0, Page_Width-1].</p> <p>Bottom<br/>             The y coordinate of the bottom right corner of the rectangle. Range: [0, Page_Height-1].</p> <p>Return Value:<br/>             None.</p> <p>b.</p> |

|               |  |
|---------------|--|
|               | <p>Input Parameters:</p> <p>Left<br/>The x-coordinate of the upper-left corner of the rectangle, range: [0, Page_Width-1].</p> <p>Top<br/>The y-coordinate of the upper-left corner of the rectangle. Range: [0, Page_Height-1].</p> <p>Right<br/>The x coordinate of the bottom right corner of the rectangle. Range: [0, Page_Width-1].</p> <p>Bottom<br/>The y coordinate of the bottom right corner of the rectangle. Range: [0, Page_Height-1].</p> <p>Width<br/>The width of the line of the rectangle.</p> <p>Color<br/>The color of the rectangle line, in the range {0, 1}. When Color = 1, draw black rectangle width, when Color = 0, draw white rectangle.</p> <p>Return parameter: none</p> |
| Range         |  |
| Default       |  |
| Support model |  |
| Note          |  |
| For example   | <pre>1a 5B 01 00 00 00 00 80 01 40 01 00 1a 26 01 10 00 10 00 00 01 00 01 10 00 01 1a 4f 00</pre>  |

```
1B 40 1a 5B 01 00 00 00 00 80 01 40 01 00
1a 26 01 10 00 10 00 00 01 00 01 10 00 01
1A 54 00 50 00 50 00 B0 AE CE D2 D6 D0 BB AA 0X00
1a 4f 00
```

(Tabulation)

```
1B 40 1a 5B 01 00 00 00 00 80 01 40 01 00
1a 26 01 10 00 10 00 00 01 C0 00 04 00 01
1A 5C 01 10 00 40 00 00 01 40 00 04 00 01
1A 5C 01 10 00 80 00 00 01 80 00 04 00 01
1A 5C 01 40 00 10 00 40 00 c0 00 04 00 01
1A 54 00 50 00 50 00 B0 AE CE D2 D6 D0 BB AA 00
1a 4f 00
```

## Draw rectangular block command

|               |   |
|---------------|---|
| Name          | Draw rectangular block command  |
| Command code  | Hexadecimal system:<br>1A 2A 00 Left_L Left_H<br>Top_L Top_H<br>Right_L Right_H<br>Bottom_L Bottom_H<br>Color   |
| Function      | Draw a rectangular block at the specified position on the Page page.<br>Enter the parameters:<br>Left<br>The x-coordinate of the upper-left corner of the rectangle, range: [0, Page_Width-1].<br>Top<br>The y-coordinate of the upper-left corner of the rectangle. Range: [0, Page_Height-1].<br>Right<br>The x coordinate of the lower right corner of the rectangle. Range: [0, Page_Width-1].<br>Bottom<br>The y coordinate of the bottom right corner of the rectangle. Range: [0, Page_Height-1].<br>Color<br>The color of the rectangle, value range: {0, 1}. When Color is 1, the rectangle is black. When Color is 0, the rectangle is white.<br>when Color is 0, the rectangle is white.<br>Return Value:<br>None. |
| Range         |   |
| Default       |   |
| Support model |   |
| Note          |   |
| For example   | 1B 40 1a 5B 01 00 00 00 00 80 01 40 01 00<br>1A 2A 00 00 00 00 00 60 00 60 00 01<br>1a 4f 00  |

## 1D bar code command

|      |                     |
|------|---------------------|
| Name | 1D bar code command |
|------|---------------------|

| <p>Command code</p> | <p>Hexadecimal system:</p> <p>1A 30 00 x_L x_H<br/>y_L y_H<br/>Bar code Type<br/>Bar code Height<br/>UnitWidth<br/>Rotate<br/>String00</p>   |        |                                  |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
|---------------------|--|--------|----------------------------------|--------|-------|------|---|-------|----|-------|--|---|-------|---|-------|--|---|-------|----|-------|--|---|------|---|-------|--|---|---------|------|----------------------------------|--|---|-----|----|------------|--|---|----------|----|-------------------------------|--|---|---------|-------|-------|--|---|----------|-------|-------|--|---|---------|--|--|--|----|-----|--|--|--|
| <p>Function</p>     | <p>Draw a 1D bar code at the specified location on the Page.<br/>Enter the parameters:</p> <p>x<br/>The x coordinate of the upper left corner of the bar code, range: [0, Page_Width-1].</p> <p>y<br/>The y coordinate of the upper-left corner of the bar code, the range is [0, Page_Height-1].</p> <p>Bar code Type<br/>The type of the bar code, the range is [0,29]. The values are defined as follows:</p> <table border="1" data-bbox="453 1104 1361 2024"> <thead> <tr> <th>Value</th> <th>Type</th> <th>Length</th> <th>Range</th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>UPC-A</td> <td>11</td> <td>48-57</td> <td></td> </tr> <tr> <td>1</td> <td>UPC-E</td> <td>6</td> <td>48-57</td> <td></td> </tr> <tr> <td>2</td> <td>EAN13</td> <td>12</td> <td>48-57</td> <td></td> </tr> <tr> <td>3</td> <td>EAN8</td> <td>7</td> <td>48-57</td> <td></td> </tr> <tr> <td>4</td> <td>CODE 39</td> <td>1-39</td> <td>48-57,65-90,32,36,37,43,45,46,47</td> <td></td> </tr> <tr> <td>5</td> <td>I25</td> <td>1-</td> <td>Even 48-57</td> <td></td> </tr> <tr> <td>6</td> <td>CODA BAR</td> <td>1-</td> <td>48-57,65-68,36,43,45,46,47,58</td> <td></td> </tr> <tr> <td>7</td> <td>CODE 93</td> <td>1-255</td> <td>0-127</td> <td></td> </tr> <tr> <td>8</td> <td>CODE 128</td> <td>2-255</td> <td>0-127</td> <td></td> </tr> <tr> <td>9</td> <td>CODE 11</td> <td></td> <td></td> <td></td> </tr> <tr> <td>10</td> <td>MSI</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | Value  | Type                             | Length | Range | Note | 0 | UPC-A | 11 | 48-57 |  | 1 | UPC-E | 6 | 48-57 |  | 2 | EAN13 | 12 | 48-57 |  | 3 | EAN8 | 7 | 48-57 |  | 4 | CODE 39 | 1-39 | 48-57,65-90,32,36,37,43,45,46,47 |  | 5 | I25 | 1- | Even 48-57 |  | 6 | CODA BAR | 1- | 48-57,65-68,36,43,45,46,47,58 |  | 7 | CODE 93 | 1-255 | 0-127 |  | 8 | CODE 128 | 2-255 | 0-127 |  | 9 | CODE 11 |  |  |  | 10 | MSI |  |  |  |
| Value               | Type   | Length | Range                            | Note   |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 0                   | UPC-A  | 11     | 48-57                            |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 1                   | UPC-E  | 6      | 48-57                            |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 2                   | EAN13  | 12     | 48-57                            |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 3                   | EAN8   | 7      | 48-57                            |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 4                   | CODE 39  | 1-39   | 48-57,65-90,32,36,37,43,45,46,47 |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 5                   | I25  | 1-     | Even 48-57                       |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 6                   | CODA BAR   | 1-     | 48-57,65-68,36,43,45,46,47,58    |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 7                   | CODE 93  | 1-255  | 0-127                            |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 8                   | CODE 128   | 2-255  | 0-127                            |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 9                   | CODE 11  |        |                                  |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |
| 10                  | MSI  |        |                                  |        |       |      |   |       |    |       |  |   |       |   |       |  |   |       |    |       |  |   |      |   |       |  |   |         |      |                                  |  |   |     |    |            |  |   |          |    |                               |  |   |         |       |       |  |   |          |       |       |  |   |         |  |  |  |    |     |  |  |  |

|  |    |             |  |  |  |
|--|----|-------------|--|--|--|
|  | 11 | 128M        |  |  | You can switch the encoding mode according to the data.<br>-> !096 - !105  |
|  | 12 | EAN1<br>28  |  |  | Automatic switching of encoding modes  |
|  | 13 | 25C         |  |  | 25C Check use mod 10-><br>Odd numbers are preceded by 0. Multiples of 10 - [(sum of odd digits < left to right) + (sum of even digits) * 3]  |
|  | 14 | 39C         |  |  | The 39-code check digit must be matched with the "Check Digit Relative Value Comparison Table", as shown in the table, add up the relative values found and divide them by 43, and then find out the remaining number of corresponding coded characters, which is the check digit character. |
|  | 15 | 39          |  |  | Full ASCII 39 Code, special characters are represented by two representable characters, 39C also contains Full ASCII, pay attention to the handling of aspect ratio.   |
|  | 16 | EAN1<br>3+2 |  |  | The additional code is spaced 7-12 units apart from the primary code, starting at 1011 and spacing at 01, ( $_{0} * 10 + _{1}$ ) Mod 4-><br>0--AA 1--AB 2--BA 3--BB  |
|  | 17 | EAN1<br>3+5 |  |  | Add-on code section as above.mode( $((_{0} + _{2} + _{4}) * 3 + (_{1} + _{3}) * 9) \text{ mod } 10$<br>->"bbaaa", "babaa",   |

|   |            |                                      |                                   |   |
|---|------------|--------------------------------------|-----------------------------------|---|
|   |            |                                      |                                   | "baaba", "baaab",<br>"abbaa", "aabba",<br>"aaabb", "ababa",<br>"abaab", "aabab"   |
| 18  | EAN8<br>+2 |                                      |                                   | Same as EAN13+2   |
| 19  | EAN8<br>+5 |                                      |                                   | Same as EAN13+5   |
| 20  | POST       |                                      |                                   | See specifications for details, it's high and low bar codes, not wide and narrow bar codes.   |
| 21  | UPCA<br>+2 |                                      |                                   | See EAN for additional codes  |
| 22  | UPCA<br>+5 |                                      |                                   | See EAN for additional codes  |
| 23  | UPCE<br>+2 |                                      |                                   | See EAN for additional codes  |
| 24  | UPCE<br>+5 |                                      |                                   | See EAN for additional codes  |
| 25  | CPOST      |                                      |                                   |   |
| 26  | MSIC       |                                      |                                   | Calculate the check digit again as data   |
| 27  | PLESSEY    |                                      |                                   |   |
| 28  | ITF14      |                                      |                                   | 25C variant, the first number is prefixed with a zero, the last number is subtracted from the check digit calculation, but it is still padded to the end. |
| 29  | EAN14      |                                      |                                   |   |
| <p>Bar code Height :</p> <p>Define the bar code height.</p> <p>Unit Width :</p> <p>Define the bar code width. Value range: [1, 4]. The values are defined as follows:</p> |            |                                      |                                   |   |
| Width   |            | Multi-level bar code unit width (mm) | Binary bar code narrow line width | Binary bar code width line width  |

|   |   |       |  |      |
|---|---|-------|--|------|
|   | 1   | 0.125 | 0.125                                    | 0.25 |
|   | 2   | 0.25  | 0.25                                     | 0.50 |
|   | 3   | 0.375 | 0.375                                    | 0.75 |
|   | 4   | 0.50  | 0.50                                     | 1.0  |
|   | Rotate indicates the rotation angle of the bar code. Value range: [0, 3]. The values are defined as follows:  |       |  |      |
|   | Rotate  |       | Definition                               |      |
|   | 0   |       | The bar code is not rotated for drawing. |      |
|   | 1   |       | The bar code is drawn rotated 90°.       |      |
|   | 2   |       | The bar code is drawn rotated 180°.      |      |
|   | 3   |       | The bar code is drawn rotated 270°.      |      |
| String 00: A stream of text character data ending in 0 x 00.<br>Return Value: None. |   |       |  |      |
| Range   |   |       |  |      |
| Default   |   |       |  |      |
| Support model   |   |       |  |      |
| Note  |   |       |  |      |
| For example   | ( 2 inch label paper )<br>1b 40<br>1a 5B 01 00 00 00 00 80 01 00 01 00<br>1a 30 00<br>20 00<br>40 00<br>0f<br>55<br>02<br>00<br>31 30 31 30 30 00<br>1a 5d 00<br>1a 4f 00 |       |  |      |

## QR code bar code instruction

|              |  |
|--------------|--|
| Name         | QR code bar code instruction               |
| Command code | Hexadecimal system:<br>1A 31 00<br>version |

|                 | <p>ECC<br/>x_L x_H<br/>y_L y_H<br/>Unit Width<br/>Rotate<br/>String00</p>   |     |                        |   |  |   |                                 |   |                              |   |  |
|-----------------|---|-----|------------------------|---|--|---|---------------------------------|---|------------------------------|---|--|
| <p>Function</p> | <p>Input parameters:<br/>version<br/>The version of the specified character. Value range: [0,20]. When version is 0, the printer automatically calculates the version number based on the length of the string.<br/>The printer automatically calculates the version number based on the length of the string.<br/>ECC<br/>Specifies the error correction level. The range of values is [1, 4]. The values are defined as follows:</p> <table border="1" data-bbox="451 857 1361 1196"> <thead> <tr> <th>ECC</th> <th>Error correction level</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>L: 7%, low error correction, lots of data.</td> </tr> <tr> <td>2</td> <td>M: 15%, medium error correction</td> </tr> <tr> <td>3</td> <td>Q: Optimize error correction</td> </tr> <tr> <td>4</td> <td>H: 30%, maximum error correction, less data.</td> </tr> </tbody> </table> <p>The value of the x-coordinate of the upper-left corner of the QR code code, in the range of [0, Page_Width-1].<br/>y<br/>The y coordinate of the upper-left corner of the QR code code, range: [0, Page_Height-1].<br/>UnitWidth<br/>QR code code code block, range of values: [1, 4]. The definition of each value is the same as the command input parameter UnitWidth.<br/>The definition of each value is the same as the command input parameter UnitWidth.<br/>Rotate<br/>The rotation angle of the QR code code, the range is [0, 3]. The definition of each value is the same as the command input parameter<br/>Rotate<br/>String00<br/>Stream of QR code text characters terminated at 0x00.<br/>Return value:</p> | ECC | Error correction level | 1 | L: 7%, low error correction, lots of data. | 2 | M: 15%, medium error correction | 3 | Q: Optimize error correction | 4 | H: 30%, maximum error correction, less data. |
| ECC             | Error correction level  |     |                        |   |  |   |                                 |   |                              |   |  |
| 1               | L: 7%, low error correction, lots of data.  |     |                        |   |  |   |                                 |   |                              |   |  |
| 2               | M: 15%, medium error correction   |     |                        |   |  |   |                                 |   |                              |   |  |
| 3               | Q: Optimize error correction  |     |                        |   |  |   |                                 |   |                              |   |  |
| 4               | H: 30%, maximum error correction, less data.  |     |                        |   |  |   |                                 |   |                              |   |  |

|               |  |
|---------------|--|
|               | None.  |
| Range         |  |
| Default       |  |
| Support model |  |
| Note          |  |
| For example   | 1B 40 1a 5B 01 00 00 00 00 80 01 40 01 00<br>1A 31 00 03 03 60 00 20 00 04 00 B0 AE CE D2 D6 D0 BB AA 00<br>1a 5d 00<br>1a 4f 00 |

## PDF417 bar code instruction

|              |  |
|--------------|--|
| Name         | PDF417 bar code instruction  |
| Command code | Hexadecimal system:<br>1A 31 01 ColNum<br>ECC<br>LWRatio<br>x_L x_H<br>y_L y_H<br>UnitWidth<br>Rotate<br>String00  |
| Function     | The word page draws PDF417 bar codes at the specified location .<br>Enter the parameters:<br>ColNum<br>ColNum is the number of columns, which expresses how many code words are accommodated in each row. A code word is 17*UnitWidth dots.<br>The number of rows is automatically generated by the printer, and the range of the number of rows is limited to 3~90. The value range of ColNum: [1,30];<br>ECC<br>Error Correction Class, the value range: [0. 8].<br>x coordinate value of the upper left corner of the PDF417 code, the range of values: [0, Page_Width-1].<br>y The y coordinate value of the upper left corner of the PDF417 code, the range of values: [0, Page_Height-1].<br>UnitWidth<br>The width of the PDF417 code, the range of values: [1, 3]. The definition of each value is the same as the command input parameter UniWidth. |

|               |   |
|---------------|---|
|               | <p>The definition of each value is the same as that of the command input parameter UniWidth.</p> <p>Rotate</p> <p>The rotation angle of PDF417 code, the range is [0, 3]. The definition of each value is the same as the command input parameter Rotate is the same as the command input parameter Rotate.</p> <p>String00</p> <p>Stream of PDF417 text characters terminated by 0x00. Return value: None.</p> |
| Range         |   |
| Default       |   |
| Support model |   |
| Note          |   |
| For example   | <p>1B 40 1a 5B 01 00 00 00 00 80 01 40 01 00</p> <p>1A 31 01 10 02 02 50 00 20 00 03 00 B0 AE CE D2 D6 D0 BB AA 0X00</p> <p>1a 4f 00</p>  |

## Bitmap instruction

| Name         | Bitmap instruction   |
|--------------|--|
| Command code | <p>Hexadecimal system:</p> <p>a: 1A 21 00</p> <p>x_L x_H</p> <p>y_L y_H</p> <p>Width_L Width_H</p> <p>Height_L Height_L</p> <p>Data</p> <p><b>b:</b></p> <p>1A 21 01</p> <p>x_L x_H</p> <p>y_L y_H</p> <p>Width_L Width_H</p> <p>Height_L Height_L</p> <p>ShowType</p> <p>Data</p> |

| Function | <p>Draw a bitmap at the specified location on the Page page.</p> <p>a :</p> <p>Input parameter:</p> <p>x<br/>The x coordinate value of the upper-left corner of the bitmap, range: [0, Page_Width].</p> <p>y<br/>The y coordinate of the upper-left corner of the bitmap, in the range [0, Page_Height].</p> <p>Width<br/>The pixel width of the bitmap.</p> <p>Height<br/>The pixel height of the bitmap.</p> <p>Data<br/>The dot matrix data of the bitmap.</p> <p>Return value: None.</p> <p>b :</p> <p>Input parameter:</p> <p>x<br/>The x coordinate value of the upper left corner of the bitmap, range: [0, Page_Width].</p> <p>y<br/>The y coordinate of the upper-left corner of the bitmap, in the range [0, Page_Height].</p> <p>Width<br/>The pixel width of the bitmap.</p> <p>Height<br/>The pixel height of the bitmap.</p> <p>ShowType<br/>The bitmap print effect, the ShowType value is defined as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Bit</th> <th style="text-align: center;">Definition</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td>The bit is set to 1 for anti-white printing, and cleared for normal printing.</td> </tr> <tr> <td style="text-align: center;">[2:1]</td> <td>Rotation flag bits: 00 rotate 0°; 01 rotate 90°; 10 rotate 180°; 11 rotate 270°</td> </tr> <tr> <td style="text-align: center;">[7:3]</td> <td>Remain</td> </tr> <tr> <td style="text-align: center;">[11:8]</td> <td>Bitmap width magnification.</td> </tr> <tr> <td style="text-align: center;">[15:16]</td> <td>Bitmap height magnification.</td> </tr> </tbody> </table> <p>Data<br/>The dot matrix data of the bitmap.</p> <p>Return value: none.</p> | Bit        | Definition | 0 | The bit is set to 1 for anti-white printing, and cleared for normal printing. | [2:1] | Rotation flag bits: 00 rotate 0°; 01 rotate 90°; 10 rotate 180°; 11 rotate 270° | [7:3] | Remain | [11:8] | Bitmap width magnification. | [15:16] | Bitmap height magnification. |
|----------|---|------------|------------|---|---|-------|---|-------|--------|--------|-----------------------------|---------|------------------------------|
|          | Bit   | Definition |            |   |   |       |   |       |        |        |                             |         |                              |
| 0        | The bit is set to 1 for anti-white printing, and cleared for normal printing.   |            |            |   |   |       |   |       |        |        |                             |         |                              |
| [2:1]    | Rotation flag bits: 00 rotate 0°; 01 rotate 90°; 10 rotate 180°; 11 rotate 270°   |            |            |   |   |       |   |       |        |        |                             |         |                              |
| [7:3]    | Remain  |            |            |   |   |       |   |       |        |        |                             |         |                              |
| [11:8]   | Bitmap width magnification.   |            |            |   |   |       |   |       |        |        |                             |         |                              |
| [15:16]  | Bitmap height magnification.  |            |            |   |   |       |   |       |        |        |                             |         |                              |
| Range    |   |            |            |   |   |       |   |       |        |        |                             |         |                              |

|               |  |
|---------------|--|
| Default       |  |
| Support model |  |
| Note          |  |
| For example   | <p>1a 5B 01 00 00 00 00 80 01 40 01 00<br/> 1a 21 01 40 00 40 00 18 00 18 00 07 22<br/> 0820800E38E00C30C80C34FC0DFF980E31102D32242DFDFE2CB58<br/> C6CB58C6CB5AC4CB5AC0CFDAC0C31AC0C71AC0C71AC0CB9AC0CB<br/> 5280D34400E30580C308C0C31060C3204082400<br/> 1A 5D 00<br/> 1a 4f 00</p> |