

ESC/POS Application Guide

Micro-thermal printer series product

AN01010101 V1.01 Date: 2011/05/04

ESC/POS Instruction Set

Document Information

TYPE	CONTENT
Key words	ESC/POS, micro-thermal printer, application guide
Abstract	<p>Guangzhou ZLGMCU Technology Co., Ltd. developed several types of Micro-Thermal Printer. They are fully functional, and can support more than thirty common ESC/POS instructions. And the corresponding evaluation boards are also provided for evaluation test, enabling customers to complete their product development in a short time and make their products more competitive in the market.</p> <p>This document introduces the ESC/ POS command set in details</p>

Revision History

Version	Rev. Date	Modifications
V1.00	2011-05-04	Original version
V1.01	2011-07-27	Add label paper/black mark paper commands

Sales Information

Guangzhou ZLGMCU Technology Co., Ltd.

Address: F4 Room, 12 Floor, Everbright BANK Building, 689 Tianhe Northern Road,
Guangzhou, CHINA

TEL: +86-20-38732494 38730972 38730976 38730916 38730917 38730977

FAX: +86-20-38730925

Website: www.zlgmcu.com



Guangzhou Sales Office

Address: Room 203 & 204, XinSaiGE Electronic Building,
Tianhe District, Guangzhou, CHINA

TEL: +86-20-87578634, 87578842, 87569917

FAX: +86-20-87578842

Guangzhou Sales Office

Address: Room 203 & 204, XinSaiGE Electronic Building,
Tianhe District, Guangzhou, CHINA

TEL: +86-20-87578634, 87578842, 87569917

FAX: +86-20-87578842

Beijing Sales Office

Address: Room 1207 & 1208, Yingwang Centre, 113
Zhichun Road, Haiding District, Beijing, CHINA

TEL: +86-10-62635033, 62635573, 62635884,
62536178, 62536179, 82628073

FAX: +86-10-82614433

Beijing Sales Office

Address: Room 1207 & 1208, Yingwang Centre, 113
Zhichun Road, Haiding District, Beijing, CHINA

TEL: +86-10-62635033, 62635573, 62635884,
62536178, 62536179, 82628073

FAX: +86-10-82614433

Hangzhou Sales Office

Address: Room 502, Jiangnan Electronics Building, 217
Tianmu Road, Hangzhou, CHINA

TEL: +86-571-89719480, 89719481, 89719482,
89719483, 89719484, 89719485

FAX: +86-571-89719494

Hangzhou Sales Office

Address: Room 502, Jiangnan Electronics Building, 217
Tianmu Road, Hangzhou, CHINA

TEL: +86-571-89719480, 89719481, 89719482,
89719483, 89719484, 89719485

FAX: +86-571-89719494

Shenzhen Sales Office

Address: Room D, Floor 4, C Side, Dianzikeji Building, 2070
ShenNanZhong Road, Shenzhen, CHINA

TEL: +86-755-83781768, 83781788,
83782922, 82941683

FAX: +86-755-83793285

Shenzhen Sales Office

Address: Room D, Floor 4, C Side, Dianzikeji Building, 2070
ShenNanZhong Road, Shenzhen, CHINA

TEL: +86-755-83781768, 83781788,
83782922, 82941683

FAX: +86-755-83793285

Shanghai Sales Office

Address: Room 7E, Eastern side, Kejjingcheng Building,
668 Beijingdong Road, Shanghai, CHINA

TEL: +86-21-53083452, 53083453,
53083496, 53083497

FAX: +86-21-53083491

Shanghai Sales Office

Address: Room 7E, Eastern side, Kejjingcheng Building,
668 Beijingdong Road, Shanghai, CHINA

TEL: +86-21-53083452, 53083453,
53083496, 53083497

FAX: +86-21-53083491

Technical Supports

Guangzhou ZHIYUAN Electronics Stock Co., Ltd.



Address: Floor 2, Building No.7 Huangzhou Industrial Estate, Chebei Road,
Tianhe District, Guangzhou, CHINA, Post code: 510660

TEL: +86-20-22644249, 28872524, 22644399, 28872342, 28872349, 28872569, 28872573

FAX: +86-20 38601859

Website: www.embedtools.com www.embedcontrol.com www.ecardsys.com

Technical Supports

CAN-bus

TEL: +86-20-22644381, 22644382, 22644253

E-mail: can.support@embedcontrol.com

iCAN & Data collection

TEL: +86-20-28872344, 22644373

E-mail: ican@embedcontrol.com

MiniARM

TEL: +86-20-28872684, 28267813

E-mail: miniarm.support@embedtools.com

Ethernet

TEL: +86-20-22644380, 22644385

E-mail: ethernet.support@embedcontrol.com

Wireless Communication

TEL: +86-20-22644386

E-mail: wireless@embedcontrol.com

Serial Communication

TEL: +86-20-28267800, 22644385

E-mail: serial@embedcontrol.com

Programmer

TEL: +86-20-22644371

E-mail: programmer@embedtools.com

Analyze Tools & Instrument

TEL: +86-20-22644375, 28872624, 28872345

E-mail: tools@embedtools.com

ARM Embedded System Application

TEL: +86-20-28872347, 28872377,
22644383, 22644384

E-mail: arm.support@zlgmcu.com

Building Automation

TEL: +86-20-22644376, 22644389, 28267806

E-mail: mjs.support@ecardsys.com

Sales Contact

TEL: +86-20-22644249, 22644399, 22644372, 22644261, 28872524,
+86-20-28872342, 28872349, 28872569, 28872573, 38601786

Repair and rework

TEL: +86-20-22644245

Content

Chapter 1: ESC/POS Commands	1
1.1 Commands List	1
1.2 Detailed description of Commands	2
1.2.1 Print and feed paper commands	2
1.2.2 Print Setting Commands	4
1.2.3 Image print commands	13
1.2.4 Tab commands.....	16
1.2.5 Bar code print commands.....	20
1.2.6 Label paper / black mark paper commands.....	33
1.2.7 States query commands.....	39
1.2.8 Miscellaneous commands	40
Chapter 2: Rights & Statements	46

Chapter 1: ESC/POS Commands

1.1 Commands List

ESC/POS commands list supported by Micro-thermal printer series products are listed in Table 1-1.

Table 1-1: ESC/POS commands list

Command	Function	Command type	See
LF	Print and feed paper	Print and feed commands	Table 1-2
CR	Carriage return		Table 1-3
ESC J	Print and feed paper for n dots		Table 1-4
ESC K	Print and feed paper back for n dots		Table 1-5
ESC d	Print and feed paper for n lines		Table 1-6
ESC e	Print and feed paper back for n lines		Table 1-7
ESC 3	Set the line space to n dots		Print setting commands
ESC 2	Set the line space to a default value	Table 1-9	
ESC 1	Set the left margin	Table 1-10	
ESC Q	Set the right margin	Table 1-11	
ESC \$	Set the absolute print position	Table 1-12	
ESC !	Set the font types	Table 1-13	
ESC a	Set the print alignment	Table 1-14	
ESC m	Set the font grayscale	Table 1-15	
FS s	Set the print speed	Table 1-16	
ESC M	Set the font size	Table 1-17	
FS !	Select print mode(s) for Kanji characters	Table 1-18	
FS .	Cancel Kanji character mode	Table 1-19	
ESC R	Select an international character set	Table 1-20	
ESC t	Select character code page	Table 1-21	
ESC*	Select bit-image mode	Image print commands	
GS v 0	Print raster bit image		Table 1-23
HT	Horizontal tab	Tabulation commands	Table 1-24
ESC D	Set horizontal tab positions		Table 1-25
FS V	Print the vertical table		Table 1-26
GS H	select print position of one-dimension HRI	One-dimension /two-dimension bar code print commands	Table 1-27
GS h	Set the height of one-dimension bar code		Table 1-28
GS w	Set the width of one-dimension bar code		Table 1-29
GS f	Select font size for one-dimension bar code		Table 1-30
GS k	Print one-dimension bar code		Table 1-31

Command	Function	Command type	See
GS (k	Set/Print two-dimension bar code		Table 1-32
FS(L	Label paper/Black mark paper commands	Label paper/black mark paper commands	Table 1-45
DLE EOT	Query the states of printer (real-time)	States commands	Table 1-51
GS a	Set/cancel the printer states automatic back		Table 1-52
ESC @	Initialize the printer	Miscellaneous commands	Table 1-53
DLE DC4 8	Clear the printer buffer (real-time)		Table 1-54
GS V	Feed paper and cut paper		Table 1-55
GS (E	Set the configuration item for the serial interface		Table 1-56
DLE DC4 2	Enter/Exit low power mode (real-time)		Table 1-57

1.2 Detailed description of Commands

1.2.1 Print and feed paper commands

Print and feed paper commands are listed in Table 1-2 to Table 1-7.

Table 1-2: Print and feed paper

Command name	Print and feed paper
Command code	ASCII: LF Decimal: 10 Hexadecimal: 0A
Function description	Print the data in the printer buffer, then feed paper for one line according to the current line space settings. After printing, the print position moves to the beginning of the line.
Parameter range	None
Default value	None
Model supported	All the models
Notes	None
Example	None

Table 1-3: Carriage return

Command name	Carriage return
Command code	ASCII: CR Decimal: 13 Hexadecimal: 0D
Function description	Adjust the print position to the starting position of this line without line feed
Parameter range	None
Default value	None
Model supported	All the models
Notes	The new printed data will override the old in the printer buffer by bitwise inclusive OR operation if the carriage return command is executed
Example	None

Table 1-4: Print and feed paper for n dots

Command name	Print and feed paper for n dots
Command code	ASCII: ESC J n Decimal: 27 74 n Hexadecimal: 1B 4A n
Function description	Print the data in the printer buffer and feed paper for n dots
Parameter range	$0 \leq n \leq 255$
Default value	None
Model supported	All the models
Notes	When printer buffer is empty, only feed paper for n dots (0.125mm per dot) but not print. After printing, the print position moves to the beginning of the line.
Example	None

Table 1-5: Print and feed paper back for n dots

Command name	Print and feed paper back for n dots
Command code	ASCII: ESC K n Decimal: 27 75 n Hexadecimal: 1B 4B n
Function description	Print the data in the printer buffer and feed paper back for n dots
Parameter range	$0 \leq n \leq 255$
Default value	None
Model supported	All the models
Notes	When printer buffer is empty, only feed paper back for n dots (0.125mm per dot) but not print. After printing, the print position moves to the beginning of the line.
Example	None

Table 1-6 Print and feed paper for n lines

Command name	Print and feed paper for n lines
Command code	ASCII: ESC d n Decimal: 27 100 n Hexadecimal: 1B 64 n
Function description	Print the data in the printer buffer and feed paper for n lines
Parameter range	$0 \leq n \leq 255$
Default value	No
Model supported	All the models
Notes	When the printer buffer is empty, only feed paper for n lines but not print. The line space is set by ESC 2 or ESC 3. After printing, the print position moves to the beginning of the line.
Example	None

Table 1-7 Print and feed paper back for n lines

Command name	Print and feed paper back for n lines
Command code	ASCII: ESC e n Decimal: 27 101 n Hexadecimal: 1B 65 n
Function description	Print the data in the printer buffer and feed paper back for n lines
Parameter range	$0 \leq n \leq 255$
Default value	None
Model supported	All the models
Notes	When the printer buffer is empty, only feed paper back for n lines. The line space is set by ESC 2 or ESC 3. After printing, the print position moves to the beginning of the line.
Example	None

1.2.2 Print Setting Commands

The print setting commands are listed in Table 1-8 to Table 1-21.

Table 1-8 Set the line space to n dots

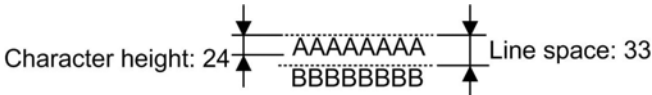
Command name	Set the line space to n dots
Command code	ASCII: ESC 3 n Decimal: 27 51 n Hexadecimal: 1B 33 n
Function description	Set the line space to n dots
Parameter range	$0 \leq n \leq 255$
Default value	n=33
Model supported	All the models
Notes	<p>Line space is shown as follows:</p>  <p>If the maximum character height exceeds the specified line space in a line, the line spacing will be automatically set to that maximum height.</p> <p>The line space will be reset to the default value 33 dots, if ESC 2 is executed, ESC @ command is executed, printer is reset or printer is turned off</p>
Example	None

Table 1-9 Set the line space to a default value

Command name	Set the line space to a default value 33 dots
Command code	ASCII: ESC 2 Decimal: 27 50 Hexadecimal: 1B 32
Function description	Set the line space to a default value 33 dots
Parameter range	None
Default value	None
Model supported	All the models
Notes	<p>For more details in line space settings, please refer to ESC 3 command.</p> <p>If the maximum character height exceeds the specified line space in a line, the line spacing will be automatically set to that maximum height.</p> <p>The line space can be set by ESC 3 command.</p>
Example	None

Table 1-10 Set the left margin

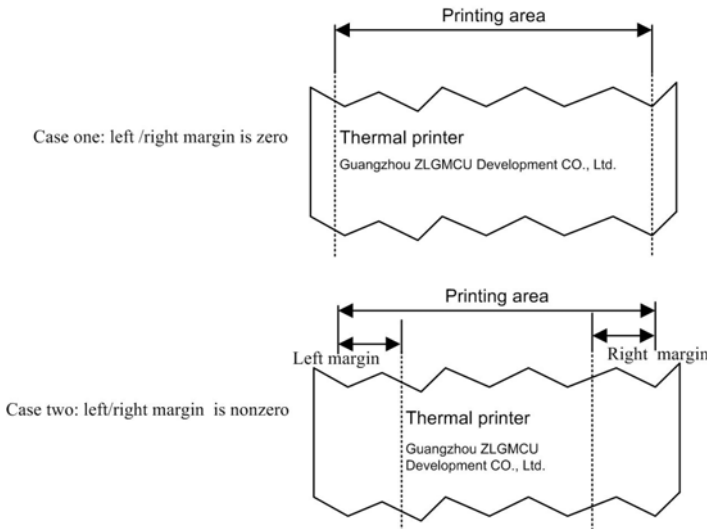
Command name	Set the left margin
Command code	ASCII: ESC 1 n Decimal: 27 108 n Hexadecimal: 1B 6C n
Function description	Set the left margin (Unit: 8 dots) to make the data printed not exceed the left margin position
Parameter range	For ZYTP58 and MTP58: $0 \leq n \leq 47$, and $0 \leq (\text{left margin} + \text{right margin}) \leq 47$ For ZYTP80 and MTP80: $0 \leq n \leq 71$, and $0 \leq (\text{left margin} + \text{right margin}) \leq 71$
Default value	n=0
Model supported	All the models
Notes	<p>The left margin position indicates the left edge position of the printing range. Following is an example of left margin setting.</p>  <p>Case one: left/right margin is zero</p> <p>Case two: left/right margin is nonzero</p> <p>The left margin settings are effective until ESC @ command is executed, printer is reset or printer is turned off.</p>
Example	None

Table 1-11 Set the right margin

Command name	Set the right margin
Command code	ASCII: ESC Q n Decimal: 27 81 n Hexadecimal: 1B 51 n
Function description	Set the right margin (Unit: 8 dots) to make the data printed not exceed the right margin position
Parameter range	For ZYTP58 and MTP58: $0 \leq n \leq 47$, and $0 \leq (\text{left margin} + \text{right margin}) \leq 47$ For ZYTP80 and MTP80: $0 \leq n \leq 71$, and $0 \leq (\text{left margin} + \text{right margin}) \leq 71$
Default value	n=0
Model supported	All the models
Notes	The right margin position indicates the right edge position of the printing range. For more details in margin setting, please refer to ESC 1 command. The right margin settings are effective until ESC @ command is executed, printer is reset or printer is turned off.
Example	None

Table 1-12 Set the absolute print position

Command name	Set the absolute print position
Command code	ASCII: ESC \$ nL nH Decimal: 27 36 nL nH Hexadecimal: 1B 24 nL nH
Function description	Moves the print position to a location in a distance of (nL + nH × 256) dots from the starting position for printing
Parameter range	0 ≤ nL ≤ 255, 0 ≤ nH ≤ 255
Default value	None
Model supported	All the models
Notes	<p>The print positions are shown as follows:</p> <p>Case one: without the print position set</p> <p>Case two: with the print position set (the print position will become zero after line feed)</p> <p>The starting position for printing will be the left margin position if the left margin is set.</p> <p>This command only affects one line. The print position is the starting position of printing again after line feed.</p>
Example	None

Table 1-13 Set the font type

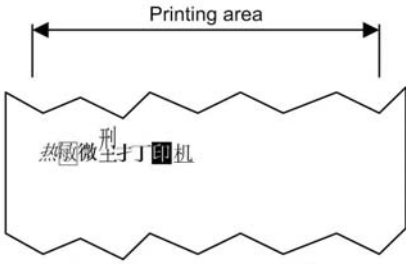
Command name	Set the font type																														
Command code	ASCII: ESC ! n Decimal: 27 33 n Hexadecimal: 1B 21 n																														
Function description	<p>Set the font type (italic, border, bold, double width, double height, inverse or underline). And the bit definitions of parameter n are shown as follows:</p> <table border="1"> <thead> <tr> <th>bit</th> <th>function</th> <th>value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>0 1</td> </tr> <tr> <td>0</td> <td>reserved</td> <td>must clear to 0</td> </tr> <tr> <td>1</td> <td>italic</td> <td>cancel set</td> </tr> <tr> <td>2</td> <td>border</td> <td>cancel set</td> </tr> <tr> <td>3</td> <td>bold</td> <td>cancel set</td> </tr> <tr> <td>4</td> <td>double height</td> <td>cancel set</td> </tr> <tr> <td>5</td> <td>double width</td> <td>cancel set</td> </tr> <tr> <td>6</td> <td>inverse</td> <td>cancel set</td> </tr> <tr> <td>7</td> <td>underline</td> <td>cancel set</td> </tr> </tbody> </table>	bit	function	value			0 1	0	reserved	must clear to 0	1	italic	cancel set	2	border	cancel set	3	bold	cancel set	4	double height	cancel set	5	double width	cancel set	6	inverse	cancel set	7	underline	cancel set
bit	function	value																													
		0 1																													
0	reserved	must clear to 0																													
1	italic	cancel set																													
2	border	cancel set																													
3	bold	cancel set																													
4	double height	cancel set																													
5	double width	cancel set																													
6	inverse	cancel set																													
7	underline	cancel set																													
Parameter range	None																														
Default value	n=0																														
Model supported	All the models																														
Notes	<p>This command is applicable for both Chinese fonts and English fonts.</p> <p>The font types are shown as follows (from left to right):</p>  <p><i>Italic, border, bold, double height, double width, inverse, underline</i></p> <p>And all the font types can be used in combination.</p> <p>The settings by this command are effective until ESC @ command is executed, printer is reset or printer is turned off.</p>																														
Example	None																														

Table 1-14 Set the print alignment

Command name	Set the print alignment mode(left, center or right)
Command code	ASCII: ESC a n Decimal: 27 97 n Hexadecimal: 1B 61 n
Function description	Align all data in a line, the meanings of n value are as follows: n mode 0,48 left 1,49 center 2,50 right
Parameter range	$0 \leq n \leq 2$ or $48 \leq n \leq 50$
Default value	n=0
Model supported	All the models
Notes	The settings by this command are effective until ESC @ command is executed, printer is reset or printer is turned off.
Example	None

Table 1-15 Set the font grayscale

Command name	Set the font grayscale
Command code	ASCII: ESC m n Decimal: 27 109 n Hexadecimal: 1B 6D n
Function description	Set the font grayscale. There are 8 levels supported (1 to 8) to satisfy different colors depth requirements for different thermal paper, where "1" is the lightest and "8" is the darkest.
Parameter range	$1 \leq n \leq 8$
Default value	n=4
Model supported	All the models
Notes	For ZYTPxx-xx4xx and MTPxx-xx4xx, the smaller the gray value is, the faster print speed is. However, since the low gray value may cause the step motor out of step, user should adjust the gray value based on the actual situation. For ZYTPxx -xx5xx and MTPxx -xx5xx, the gray value doesn't affect the print speed. The settings by this command are effective until ESC @ command is executed, printer is reset or printer is turned off.
Example	None

Table 1-16 Set the print speed

Command name	Set the print speed
Command code	ASCII: FS s n Decimal: 28 115 n Hexadecimal: 1C 73 n
Function description	Set the print speed ,the meanings of parameter n are as follows: n speed 0 low speed 1 moderate speed 2 high speed
Parameter range	0≤n≤2
Default value	n=1
Model supported	ZYTP80, MTP80, ZYTP58-xx5xx and MTP58-xx5xx
Notes	For ZYTP80/MTP80, the maximum speed can only reach the moderate speed (n≤1) when the serial communication baud rate is below 9600bps. The settings by this command are effective until ESC @ command is executed, printer is reset or printer is turned off.
Example	None

Table 1-17 Set the font size

Command name	Set the font size
Command code	ASCII: ESC M n Decimal: 27 77 n Hexadecimal: 1B 4D n
Function description	Set the font size, he meanings of parameter n are as follows: n type 0 Chinese: 24×24, foreign language: 12×24 1 Chinese: 16×16, foreign language: 8×16 2 Chinese: 12×12, foreign language: 6×12
Parameter range	0≤n≤2
Default value	n=0
Model supported	ZYTP58-xx5xx, MTP58-xx5xx, ZYTP80-xx5xx and MTP80-xx5xx
Notes	This command is valid for both Chinese and foreign langue, but only available for the products with multiple fonts supported. The settings by this command are effective until ESC @ command is executed, printer is reset or printer is turned off.
Example	None

Table 1-18 Select Kanji character mode

Command name	Select Kanji character mode
Command code	ASCII: FS & Decimal: 28 38

	Hexadecimal: 1C 26
Function description	Selects Kanji character mode
Model supported	ZYTP58-xx5xx, MTP58-xx5xx, ZYTP80-xx5xx and MTP80-xx5xx
Notes	This command can be used only for the Japanese, Simplified Chinese, and Traditional Chinese models.
Example	None

Table 1-19 Cancel Kanji character mode

Command name	Cancel Kanji character mode
Command code	ASCII: FS Decimal: 28 46 Hexadecimal: 1C 2E
Function description	Cancel Kanji character mode
Model supported	ZYTP58-xx5xx, MTP58-xx5xx, ZYTP80-xx5xx and MTP80-xx5xx
Notes	This command can be used only for the Japanese, Simplified Chinese, and Traditional Chinese models.
Example	None

Table 1-20 Select international character

Command name	Select international character																																		
Command code	ASCII: ESC .R n Decimal: 27 82 n Hexadecimal: 1B 52 n																																		
Function description	Selects an international character set n as follows: <table style="margin-left: 40px; border: none;"> <tr><td>n</td><td>Character</td></tr> <tr><td>0</td><td>U.S.A</td></tr> <tr><td>1</td><td>France</td></tr> <tr><td>2</td><td>Germany</td></tr> <tr><td>3</td><td>U.K.</td></tr> <tr><td>4</td><td>Denmark I</td></tr> <tr><td>5</td><td>Sweden</td></tr> <tr><td>6</td><td>Italy</td></tr> <tr><td>7</td><td>Spain</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>Korean</td></tr> <tr><td>14</td><td>Slovenia / Croatia</td></tr> <tr><td>15</td><td>Chinese</td></tr> </table>	n	Character	0	U.S.A	1	France	2	Germany	3	U.K.	4	Denmark I	5	Sweden	6	Italy	7	Spain	8	Japan	9	Norway	10	Denmark II	11	Spain II	12	Latin America	13	Korean	14	Slovenia / Croatia	15	Chinese
n	Character																																		
0	U.S.A																																		
1	France																																		
2	Germany																																		
3	U.K.																																		
4	Denmark I																																		
5	Sweden																																		
6	Italy																																		
7	Spain																																		
8	Japan																																		
9	Norway																																		
10	Denmark II																																		
11	Spain II																																		
12	Latin America																																		
13	Korean																																		
14	Slovenia / Croatia																																		
15	Chinese																																		
Parameter range	0≤n≤15																																		
Default value	n=0																																		

Model supported	ZYTP58-xx5xx, MTP58-xx5xx, ZYTP80-xx5xx and MTP80-xx5xx
Notes	The selected international character set is effective until ESC @ is executed, the printer is reset, or the power is turned off.
Example	None

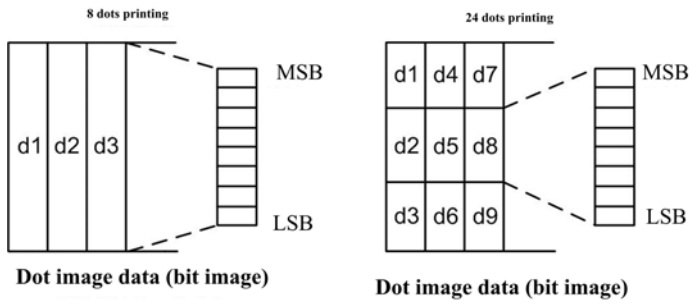
Table 1-21 Select character code page

Command name	Select character code page
Command code	ASCII: ESC .t n Decimal: 27 116 n Hexadecimal: 1B 74 n
Function description	Selects an page n from the character code page as follows: n Character code page 0 PC437(U.S.A.,Standard Europe) 1 Katakana 2 PC850(Multilingual) 3 PC860(Portuguese) 4 PC863(Canadian-French) 5 PC865(Nordic) 6 Simplified Kanji, Hirakana 7 Simplified Kanji 8 Simplified Kanji 16 WPC1252 17 PC866(Cyrillic #2) 18 PC852(Latin 2) 19 PC858(Euro) 254 Page 254 255 Page 255
Parameter range	0≤n≤15
Default value	n=0
Model supported	ZYTP58-xx5xx, MTP58-xx5xx, ZYTP80-xx5xx and MTP80-xx5xx
Notes	The characters of each page are the same for alphanumeric parts (ASCII code: Hexadecimal = 20H to 7FH / Decimal = 32 to 127 20H to 7FH), and different for the escape character parts (ASCII code: Hexadecimal = 80H to FFH / Decimal = 128 to 255 80H to FFH).
Example	None

1.2.3 Image print commands

The image print commands are listed in Table 1-22 to Table 1-23.

Table 1-22 Select bit-image mode

Command name	Select bit-image mode																				
Command code	ASCII: ESC * m HI Hh [d]k Decimal: 27 42 m HI Hh [d]k Hexadecimal: 1B 2A m HI Hh [d]k																				
Function description	Stores the bit image data in the print buffer using the mode specified by bit image mode n are as follows: <table border="1"> <thead> <tr> <th>m</th> <th>mode</th> <th>horizontal scale</th> <th>vertical scale</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>8 dots single density</td> <td>×2</td> <td>×3</td> </tr> <tr> <td>1</td> <td>8 dots double density</td> <td>×1</td> <td>×3</td> </tr> <tr> <td>32</td> <td>24 dots single density</td> <td>×2</td> <td>×1</td> </tr> <tr> <td>33</td> <td>24 dots double density</td> <td>×1</td> <td>×1</td> </tr> </tbody> </table> <p>For the following, HI and Hh specifies a bit image in the horizontal direction as (HI+256×Hh) dots [d]k specifies the bit image data (column format) k indicates the amount of bit image data, but it does not need to be transmitted.</p>	m	mode	horizontal scale	vertical scale	0	8 dots single density	×2	×3	1	8 dots double density	×1	×3	32	24 dots single density	×2	×1	33	24 dots double density	×1	×1
m	mode	horizontal scale	vertical scale																		
0	8 dots single density	×2	×3																		
1	8 dots double density	×1	×3																		
32	24 dots single density	×2	×1																		
33	24 dots double density	×1	×1																		
Parameter range	For ZYTP58, MTP58: m=0,1,32,33 $1 \leq H1 + Hh \times 256 \leq 384$ $0 \leq d \leq 255$ $k = H1 + Hh \times 256$ (m=0,1) $k = (H1 + Hh \times 256) \times 3$ (m=32,33) For ZYTP80, MTP80: m=0,1,32,33 $1 \leq H1 + Hh \times 256 \leq 576$ $0 \leq d \leq 255$ $k = H1 + Hh \times 256$ (m=0,1) $k = (H1 + Hh \times 256) \times 3$ (m=32,33)																				
Default value	None																				
Model supported	All the models																				
Notes	data [d]k specifies a bit printed to 1 and not printed to 0. If the bit image exceeds one line of print area, the excess part will be ignored. The print result is as follows. 																				

	<p>The bit image is only stored in the print buffer and is not printed.</p> <p>When the print command is received, the printing starts. The printer buffer will be clear when the printing is complete.</p> <p>If the image to be printed is too high, please split it into several images that the height is 8(m=0,1) or 24 dots (m=32,33) and print them respectively.</p> <p>After filling up the image data, additional information can also be filled in the print buffer to print with the image.</p> <p>Both ESC J(n=24) and LF commands can be applied for printing, but LF command would cause the line feeding, making the image for several lines discontinuously.</p>
Example	

Table 1-23 Print raster bit image

Command name	Print raster bit image																				
Command code	ASCII: Gs v 0 Decimal: 29 118 48 m xL xH yL yH [d]k Hexadecimal: 1D 76 30 m xL xH yL yH [d]k																				
Function description	<p>Print raster bit image, the meanings of parameter m are as follows:</p> <table border="1"> <thead> <tr> <th>m</th> <th>mode</th> <th>horizontal scale</th> <th>vertical scale</th> </tr> </thead> <tbody> <tr> <td>0,48</td> <td>normal</td> <td>×1</td> <td>×1</td> </tr> <tr> <td>1,49</td> <td>double-width</td> <td>×2</td> <td>×1</td> </tr> <tr> <td>2,50</td> <td>double-height</td> <td>×1</td> <td>×2</td> </tr> <tr> <td>3,51</td> <td>double-width + double-height</td> <td>×2</td> <td>×2</td> </tr> </tbody> </table> <p>xL, xH specifies (xL + xH × 256) bytes in horizontal direction for the bit image.</p> <p>yL, yH specifies (yL + yH × 256) dots in vertical direction for the bit image.</p> <p>[d]k specifies the bit image data (raster format).</p> <p>k indicates the number of bit image data. k is an explanation parameter; therefore, it does not need to be transmitted.</p>	m	mode	horizontal scale	vertical scale	0,48	normal	×1	×1	1,49	double-width	×2	×1	2,50	double-height	×1	×2	3,51	double-width + double-height	×2	×2
m	mode	horizontal scale	vertical scale																		
0,48	normal	×1	×1																		
1,49	double-width	×2	×1																		
2,50	double-height	×1	×2																		
3,51	double-width + double-height	×2	×2																		
Parameter range	<p>For ZYTP58, MTP58:</p> <p>0≤m≤3; 48≤m≤51</p> <p>1≤xL+xH×256≤48</p> <p>0≤yL≤255, 0≤yH≤255</p> <p>0≤d≤255</p> <p>k=(H1+Hh×256)×(yL+yH×256)</p> <p>For ZYTP80, MTP80:</p> <p>0≤m≤3; 48≤m≤51</p> <p>1≤xL+xH×256≤72</p> <p>0≤yL≤255, 0≤yH≤255</p> <p>0≤d≤255</p> <p>k=(H1+Hh×256)×(yL+yH×256)</p>																				

Default value	None																
Model supported	All the models																
Notes	<p>When data [d]k is 1 specifies a bit printed to 1 and not printed to 0.</p> <p>If a raster bit image exceeds one line of print area, the excess data is not printed.</p> <p>This command executes paper feed for amount needed for printing the bit image regardless of the settings by ESC 2 or ESC 3.</p> <p>After printing the bit image, this command sets the print position to the beginning of the line, and clears up the buffer.</p> <p>The printing result is as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>d1</td> <td>d2</td> <td>.....</td> <td>dx</td> </tr> <tr> <td>d(x+1)</td> <td>d(x+2)</td> <td>.....</td> <td>d(x+2)</td> </tr> <tr> <td> </td> <td> </td> <td>.....</td> <td> </td> </tr> <tr> <td>.....</td> <td>d(k-2)</td> <td>d(k-1)</td> <td>dk</td> </tr> </table> <p style="text-align: center;">MSB LSB MSB LSB MSB LSB MSB LSB</p> <p>When this command is executed, the data is transmitted and printed synchronously. So no other printing command is required.</p>	d1	d2	dx	d(x+1)	d(x+2)	d(x+2)			d(k-2)	d(k-1)	dk
d1	d2	dx														
d(x+1)	d(x+2)	d(x+2)														
																
.....	d(k-2)	d(k-1)	dk														
Example																	

1.2.4 Tab commands

Tab commands are listed in Table 1-24 to Table 1-26.

Table 1-24 Horizontal tab

Command name	Horizontal tab
Command code	ASCII: HT Decimal: 9 Hexadecimal: 09
Function description	Move the print position to the next tab position
Parameter range	None
Default value	None
Model supported	All the models
Notes	<p>The tab position is set by ESC D.</p> <p>If no tab position is set (it is default setting), this command will be used as LF command.</p> <p>If the tab position exceeds the print area, printing position will be moved to the starting position of next line (Considering as a line is full, print the data and feed one line).</p>
Examples	None

Table 1-25 set horizontal tab positions

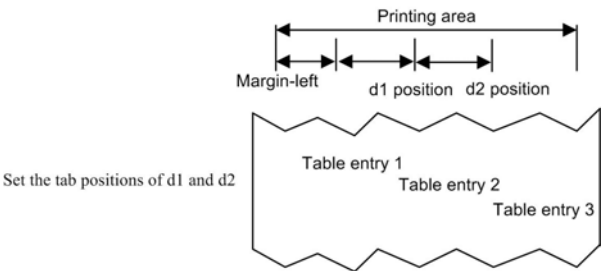
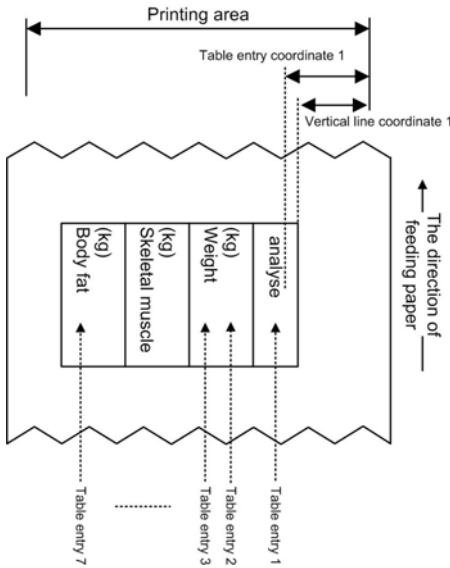
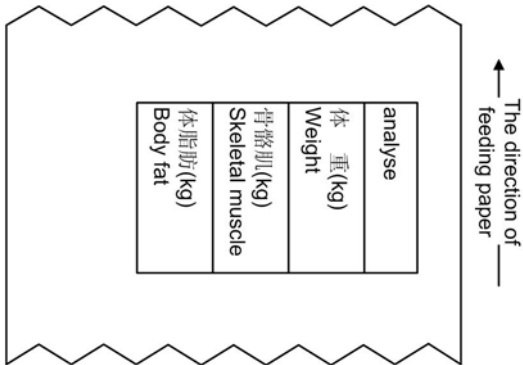
Command name	Set horizontal tab positions
Command code	ASCII: ESC D [d]k NUL Decimal: 27 68 [d]k 0 Hexadecimal: 1B 44 [d]k 00
Function description	Set the horizontal tab positions, the meanings of parameters are as follows: d1..dk are horizontal tab position (Unit: 8 dots), NULL is a stop character
Parameter range	For ZYTP58 and MTP58: $1 \leq d \leq 46 (d_1 < d_2 < \dots < d_k, 1 \leq k \leq 16)$ For ZYTP58 and MTP58: $1 \leq d \leq 70 (d_1 < d_2 < \dots < d_k, 1 \leq k \leq 16)$
Default value	[d]k=0(no horizontal tab position by default)
Model supported	All the models
Notes	<p>The tab position is shown as follows:</p>  <p>Set the tab positions of d1 and d2</p> <p>A maximum of 16 tab positions can be set. When this command is used, any previous horizontal tab settings will be canceled. k is not transmission data to the printer. Transmit [d]k in ascending order and place a NULL code at the end. When dk is less than or equal to dk-1, horizontal tab setting is finished, and the following data will be processed as normal data. The tab position can be switched by HT command. When the left margin is changed, the tab position is also changed. Horizontal tab position settings are effective until ESC @ is executed, the printer is reset, or the power is turned off.</p>
Examples	None

Table 1-26 Print the vertical table

Command name	Print the vertical table																					
Command code	<p>ASCII: FS V</p> <p>Decimal: 28 86 m LP1...LPm n IP1...IPn FT1 D11...D1k 0...FTn Dn1...Dnk 0</p> <p>Hexadecimal: 1C 56 m LP1...LPm n IP1...IPn FT1 D11...D1k 0...FTn Dn1...Dnk 0</p>																					
Function description	<p>Print the vertical table, the meanings of each parameters are as follows: M is the number of the vertical line of table LP1...LPm are the coordinates of the vertical line of table (Unit: 8dots), from right to left in the direction of the paper feed n is the number of table entry (one line of text for one entry) IP1...IPn are the coordinates of table entry FT1 is the font type of the text in the first table entry: (Font is multiple selected)</p> <table border="0"> <thead> <tr> <th>Bit</th> <th>function</th> <th>value</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>0 1</td> </tr> <tr> <td>0</td> <td>fixed bit</td> <td>must be 1</td> </tr> <tr> <td>1</td> <td>bold</td> <td>cancel set</td> </tr> <tr> <td>2</td> <td>underline</td> <td>cancel set</td> </tr> <tr> <td>3</td> <td>reversed</td> <td>cancel set</td> </tr> <tr> <td>4-7</td> <td>reserved</td> <td></td> </tr> </tbody> </table> <p>D11...D1K 0x00 are the content of the first table entry, ending by a NULL ... FTn is the font type of the nth table entry, it is the same as FT1 Dn1...Dnk 0x00 is the content of the nth table entry, ending by a NULL</p>	Bit	function	value			0 1	0	fixed bit	must be 1	1	bold	cancel set	2	underline	cancel set	3	reversed	cancel set	4-7	reserved	
Bit	function	value																				
		0 1																				
0	fixed bit	must be 1																				
1	bold	cancel set																				
2	underline	cancel set																				
3	reversed	cancel set																				
4-7	reserved																					
Parameter range	<p>For ZYTP58-xxxCx, MTP58-xxxCx:</p> <p>0≤m≤17 0≤LPm≤48 0≤n≤16 0≤IPn≤45 0≤FTn≤255 0≤Dnk≤255 0≤k≤20</p> <p>For ZYTP80-xxxCx, MTP80-xxxCx:</p> <p>0≤m≤17 0≤LPm≤72 0≤n≤16 0≤IPn≤69 0≤FTn≤255 0≤Dnk≤255 0≤k≤20</p>																					
Default value	None																					

<p>Part number supported</p>	<p>ZYTPxx-xxxCx, MTPxx-xxxCx</p>
<p>Notes</p>	<p>The parameters related to the vertical table are shown as follows:</p>  <p>The reference 0 is located at the right side of the paper in the direction of paper feeding.</p> <p>Each table entry contains maximum 10 Chinese characters or 20 English characters</p> <p>If no table border is required, m will be zero.</p>
<p>Example</p>	<p>Test data (hexadecimal): 1C 56 05 00 05 0F 19 23 07 01 07 0B 11 15 1B 1F 01 B7 D6 20 20 CE F6 00 01 CC E5 20 20 D6 D8 28 6B 67 29 00 01 57 65 69 67 68 74 00 01 B9 C7 F7 C0 BC A1 28 6B 67 29 00 01 53 6B 65 6C 65 74 61 6C 20 6D 75 73 63 6C 65 00 01 CC E5 D6 AC B7 BE 28 6B 67 29 00 01 42 6F 64 79 20 66 61 74 00</p> <p>The printing output is shown as follows:</p>  <p>The parameters settings of the table are as follows: The number of vertical lines in the table is 5 The coordinates of the vertical lines in the table are respectively. 00H,05H,0FH,19H,23H (from right to left) The number of the table entry is 7. The coordinates of the table entry are respectively.</p>

	<p>01H,07H,0BH,11H,15H,1BH,1FH (from right to left)</p> <p>The font type of the first table entry: no</p> <p>Table entry 1 is “分析”</p> <p>The font type of the second table entry: no</p> <p>Table entry 2 is “体重(kg)”</p> <p>The font type of the third table entry: no</p> <p>Table entry 3 is “Weight”</p> <p>...</p> <p>The font type of the seventh table entry: no</p> <p>Table entry 7 is “Body fat”</p>
--	---

1.2.5 Bar code print commands

Bar code print commands are listed in Table 1-27 to Table 1-32

Table 1-27 select print position of one-dimension HRI

Command name	Select print position of one-dimension HRI
Command code	ASCII: GS H n Decimal: 29 72 n Hexadecimal: 1D 48 n
Function description	Set the print position of one-dimension HRI, the meanings of parameter n are as follows: n print position 0,48 not print 1,49 above the bar code 2,50 below the bar code 3,51 above and below the bar code
Parameter range	$0 \leq n \leq 3$ or $48 \leq n \leq 51$
Default value	n=0
Part number supported	ZYTPxx-xxxBx, ZYTPxx-xxxEx, MTPxx-xxxBx, MTPxx-xxxEx
Notes	HRI characters of xxTPxx-xx5Bxx are printed using the font specified by GS f This command setting is effective until performing of ESC @, reset or power-off
Example	None

Table 1-28 Set the height of one-dimension bar code


Command name	Set the height of one-dimension bar code
Command code	ASCII: GS h n Decimal: 29 104 n Hexadecimal: 1D 68 n
Function description	Set the height of the bar code to n dots, the meaning of parameter n is as follows: 
Parameter range	0≤n≤255
Default value	n=64
Part number supported	ZYTPxx-xxxBx, ZYTPxx-xxxEx, MTPxx-xxxBx, MTPxx-xxxEx
Notes	This command setting is effective until performing of ESC @, reset or power-off.
Example	None

Table 1-29 Set the width of one dimension bar code


Command name	Set the width of one dimension bar code
Command code	ASCII: GS w n Decimal: 29 119 n Hexadecimal: 1D 77 n
Function description	Set the width of a bar in the bar code to n dots, the meaning of parameter n is as follows: 
Parameter range	1≤n≤6
Default value	n=2
Part number supported	ZYTPxx-xxxBx, ZYTPxx-xxxEx, MTPxx-xxxBx, MTPxx-xxxEx
Notes	This command setting is effective until performing of ESC @, reset or power-off.
Example	None

Table 1-30 Select font size for one dimension bar code

Command name	Select font size for one dimension bar code
Command code	ASCII: GS f n Decimal: 29 102 n Hexadecimal: 1D 66 n
Function description	Select font size for bar code HRI, the meaning of parameter n is as follows: n font 0 12×24 1 8×16 2 6×12
Parameter range	0≤n≤2
Default value	n=0
Part number supported	ZYTPxx-xx5Bx,ZYTPxx-xx5Ex,MTPxx-xx5Bx,MTPxx-xx5Ex
Notes	This command setting is effective until performing of ESC @, reset or power-off.
Example	None

Table 1-31 Print one dimension bar code

Command name	Print one dimension bar code
Command code	(A) ASCII: GS k m [d]k NUL Decimal: 29 107 m [d]k NUL Hexadecimal: 1D 6B m [d]k NUL (B) ASCII: GS k m n [d]k Decimal: 29 107 m n [d]k Hexadecimal: 1D 6B m n [d]k
Function description	Print one dimension bar code, the meanings of parameters are as follows: m is the encoding method n is the encoding data length. It is only suitable for (B), the differences between (A) and (B) are the data segment of (A) ends with a NULL and (B) is used to indicate the length of data [d]k is bar code data k indicates the length of bar code data, but it does not need to be transmitted. The relationships between parameters are as follows: (Command A): see Table 1-58 (Command B): see Table 1-59
Parameter range	(A) 0≤m≤6 (B) 65≤m≤74
Default value	None
Part number supported	ZYTPxx-xxxBx, ZYTPxx-xxxEx, MTPxx-xxxBx, MTPxx-xxxEx

Notes

If the width of bar code exceeds the printing area, then the printer will not print.

This command is not affected by the line space setting of ESC2 or ESC3, and it doesn't affect the line space setting.

This command is not affected by the character font setting of ESC!

The print position will be reset to the starting position for printing after this command is executed.

The values of m from 0 to 6 in (A) and from 65 to 71 in (B) select the same bar code system, respectively. The printing results are the same.

This command specifies m = 0 to 6 and ends with a NULL code.

The printer processes n bytes from the next data as bar code data by this command specifying m = 65 to 78.

K does not need to be transmitted.

Notes for UPC-A (m = 0, 65) process:

If the length of input data is any of 11 or 12 bytes, the parity bit will be added automatically for error correcting.

The start character, central separating character and stop character will also be added automatically.

Notes for UPC-E (m = 1, 66) process

If the data length is 6 bytes, the system character (NSC) 0 will be added automatically.

If the data length is any of 7,8,11 or 12 bytes, the first data (d1) is processed as number system character (NSC) so 0 must be specified.

If the length of input data is any of 6, 7, 8, 11 or 12 bytes, the parity bit will be added automatically for error correcting.

If the length of input data is any of 6, 7, 8, 11 or 12 bytes, only the shortened 6 bits of bar code HRI will be printed, in which the system character (NSC) and parity code is not included.

Following is the relationship between data transferred and data printed:

Data transferred										Data printed					
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 $1 \leq d6 \leq 9$, be sure to specify ($5 \leq d11 \leq 9$).

The start character and stop character are added automatically.

Notes for JAN13/EAN13 (m = 2, 67) process

If the length of input data is any of 11 or 12 bytes, the parity bit will be added automatically for error correcting.

	<p>Start character, central separating character and stop character will be added automatically.</p> <p>Notes for JAN8/EAN8 (m = 3, 68) process</p> <p>If the length of input data is any of 7 or 8 bytes, the parity bit will be added automatically for error correcting.</p> <p>Start character, central separating character and stop character will be added automatically.</p> <p>Notes for CODE39 (m = 4, 69) process</p> <p>When the first bar code d1 is not "*", the printer adds a first character (*) automatically.</p> <p>When the last bar code dn is not "*", the printer adds a last character (*) automatically.</p> <p>When "*" is processed during bar code data processing, the printer processes "*" as a stop character. The printer prints data preceding "*" and finishes command processing. Therefore, data following "*" are processed as normal data.</p> <p>Parity bit are not calculated and added.</p> <p>Notes for ITF 25 (m = 5, 70) process</p> <p>The start character and stop character are added automatically.</p> <p>Parity bit are not calculated and added.</p> <p>Notes for CODABAR (NW-7) (m = 6, 71) process</p> <p>Since the start character and stop character are not added automatically, user should add them manually. Its valid range is "A" ~ "D" or "a" ~ "d".</p> <p>Parity bit is not calculated and added.</p> <p>Notes for CODE93 (m = 72) process</p> <p>Start character and stop character are added automatically.</p> <p>Parity codes (2 bits) are calculated and added automatically.</p> <p>For the bar code HRI printing, no HRI character will be used as start character or stop character.</p> <p>For the bar code HRI printing, space character will be used as the control character.</p> <p>Notes for CODE128 (m = 73) process</p> <p>Bar code system can identify data intelligently and perform the minimum length encoding without setting the character set (including the start character set) or switching the character set.</p> <p>The function characters FNC1 to FNC4 can be inputted by using C1H to C4H.</p> <p>Parity bit is calculated and added automatically.</p> <p>For bar code HRI printing, space character will be used as control character or FNC1 ~ FNC4.</p>
--	--

	Notes for EAN128 (m = 74) process																																											
	<p>Basic structure:</p> <table border="1"> <tr> <td>Start character set</td> <td>FNC1</td> <td>AI</td> <td>Data part</td> <td>Parity bit A</td> <td>Parity bit B</td> <td>Stop character</td> </tr> <tr> <td colspan="2">Added automatically</td> <td colspan="3">(d1 ... dk)</td> <td colspan="2">Added automatically</td> </tr> </table> <p>Connect structure:</p> <table border="1"> <tr> <td>Start character set</td> <td>FNC1</td> <td>AI</td> <td>Data part</td> <td>Parity bit A</td> <td>FNC1</td> <td>AI</td> <td>Data part</td> <td>Parity bit A</td> <td>Parity bit B</td> <td>Stop character</td> </tr> <tr> <td colspan="2">Added automatically</td> <td colspan="5">(d1 ... dk)</td> <td colspan="2">Added automatically</td> </tr> </table> <p>Bar code system can identify data intelligently and perform the minimum length encoding without setting the character set (including the start character set) or switching the character set.</p> <p>The function characters FNC1 to FNC4 can be inputted by using C1H to C4H.</p> <p>When inputting data, AI should not be added in "()", since the bar code system will do it automatically. Otherwise error may occur. For example: GS k 74 18 "019501234567890*" is correct, in which 01 is AI. While GS k 74 18 "(01)9501234567890*" is wrong.</p> <p>When linking two data together, FNC1 (C1H "Decimal = 193") should be inserted between them. For example: GS k 74 18 "019501234567890*" 193 "029501234567890*."</p> <p>For bar code HRI printing, the space character is used as control character, but FNC1 ~ FNC4 are removed.</p>											Start character set	FNC1	AI	Data part	Parity bit A	Parity bit B	Stop character	Added automatically		(d1 ... dk)			Added automatically		Start character set	FNC1	AI	Data part	Parity bit A	FNC1	AI	Data part	Parity bit A	Parity bit B	Stop character	Added automatically		(d1 ... dk)					Added automatically
Start character set	FNC1	AI	Data part	Parity bit A	Parity bit B	Stop character																																						
Added automatically		(d1 ... dk)			Added automatically																																							
Start character set	FNC1	AI	Data part	Parity bit A	FNC1	AI	Data part	Parity bit A	Parity bit B	Stop character																																		
Added automatically		(d1 ... dk)					Added automatically																																					
Example	None																																											

Table 1-32 Set/print two-dimension code

Command name	Set/print two- dimension bar code
Command code	None
Function description	Set/print two-dimension code(PDF417,QRCODE), cn is the encode system, fn is the function code, see Table 1-60
Parameter range	None
Default value	None
Part number supported	ZYTPxx-xxEx, MTPxx-xxxEx
Notes	None
Examples	None

Table 1-33 <function 065>PDF417: Set the number of columns in the data area

Command name	PDF417: set the number of columns in the data area
Command code	ASCII: GS (k pL pH cn fn n Decimal: 29 40 107 pL pH 48 65 n Hexadecimal: 1D 28 6B pL pH 30 41 n
Function description	Set the number of columns in the data area, the meanings of parameter n are as follows: When n is 0, specifies automatic processing When n is not 0, sets the number of columns in the data region to n codeword
Parameter range	$(pL+pH \times 256) = 3$ (pL=3, pH=0) cn=48 fn=65 $0 \leq n \leq 30$
Default value	n=0
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx
Notes	This command affects the processing of <function 081> When auto processing (n = 0) is specified, the maximum number of columns in the data area is 30 columns. When automatic processing (n = 0) is specified, the number of columns is calculated by the print area, when processing module width (Function 067), and option setting (Function 070). The number of columns in the data area doesn't include start character, stop character, indicator codeword of left and right in a sense. Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
Example	None

Table 1-34 <function 066>PDF417: Set the number of rows

Command name	PDF417: set the number of rows
Command code	ASCII: GS (k pL pH cn fn n Decimal: 29 40 107 pL pH 48 66 n Hexadecimal: 1D 28 6B pL pH 30 42 n
Function description	Set the number of rows for PDF417 ,the meanings of parameter n are as follows: When n=0, specifies automatic processing When n is not 0, set the number of rows to n rows
Parameter range	$(pL+pH \times 256) = 3$ (pL=3,pH=0) cn=48 fn=66 $n=0, 3 \leq n \leq 90$
Default value	n=0

Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx
Notes	This command affects the processing of <function 081> When automatic processing (n = 0) is specified, the maximum number of rows is 90 When automatic processing (n = 0) is specified, the number of rows is calculated by the print area, line height<function 68> Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
Example	None

Table 1-35 <function 067>PDF417: Set the unit width

Command name	PDF417: Set the width of the module
Command code	ASCII: GS (k pL pH cn fn n Decimal: 29 40 107 pL pH 48 67 n Hexadecimal: 1D 28 6B pL pH 30 43 n
Function description	Set the module width for PDF417 to n dots
Parameter range	$(pL+pH \times 256) = 3(pL=3, pH=0)$ cn=48 fn=67 $2 \leq n \leq 8$
Default value	n=3
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx
Notes	This command affects the processing of <function 081> Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
Example	None

Table 1-36 <function 068>PDF417: Set the row height

Command name	PDF417: set the row height
Command code	ASCII: GS (k pL pH cn fn n Decimal: 29 40 107 pL pH 48 68 n Hexadecimal: 1D 28 6B pL pH 30 44 n
Function description	Set the row height for PDF417 to $n \times 2$ dots
Parameter range	$(pL+pH \times 256) = 3(pL=3, pH=0)$ cn=48 fn=68 $2 \leq n \leq 8$
Default value	n=3
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx
Notes	This command affects the processing of <function 081> Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
Example	None

Table 1-37 <function 069>PDF417: Set the error correction level

Command name	PDF417: set the error correction level																																																									
Command code	ASCII: GS (k pL pH cn fn m n Decimal: 29 40 107 pL pH 48 69 m n Hexadecimal: 1D 28 6B pL pH 30 45 m n																																																									
Function description	Set the error correction level for PDF417 <table border="1"> <thead> <tr> <th>m</th> <th>Explain</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>The error correction level is set by "level", 0 to 8 levels</td> </tr> <tr> <td>49</td> <td>The error correction level is set by "ratio", which is $n \times 10\%$</td> </tr> </tbody> </table>	m	Explain	48	The error correction level is set by "level", 0 to 8 levels	49	The error correction level is set by "ratio", which is $n \times 10\%$																																																			
m	Explain																																																									
48	The error correction level is set by "level", 0 to 8 levels																																																									
49	The error correction level is set by "ratio", which is $n \times 10\%$																																																									
Parameter range	$(pL+pH \times 256) = 4(pL=4, pH=0)$ cn=48 fn=69 $48 \leq n \leq 56 (m=48), 1 \leq n \leq 40 (m=49)$																																																									
Default value	m=48, n=48 (level: 0)																																																									
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx																																																									
Notes	<p>This command affects the processing of <function 081> Error correction level specified by "level" (m = 48) is as follows. The number of the error correction codeword is fixed regardless of the number of codewords in the data area.</p> <table border="1"> <thead> <tr> <th>n</th> <th>Function</th> <th>Number of correction codeword</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>Error correction level 0</td> <td>2</td> </tr> <tr> <td>49</td> <td>Error correction level 1</td> <td>4</td> </tr> <tr> <td>50</td> <td>Error correction level 2</td> <td>8</td> </tr> <tr> <td>51</td> <td>Error correction level 3</td> <td>16</td> </tr> <tr> <td>52</td> <td>Error correction level 4</td> <td>32</td> </tr> <tr> <td>53</td> <td>Error correction level 5</td> <td>64</td> </tr> <tr> <td>54</td> <td>Error correction level 6</td> <td>128</td> </tr> <tr> <td>55</td> <td>Error correction level 7</td> <td>256</td> </tr> <tr> <td>56</td> <td>Error correction level 8</td> <td>512</td> </tr> </tbody> </table> <p>Error correction level specified by "ratio" (m = 49) is as follows. The number of the error correction codeword is changeable in proportion to the number of the codeword in the data area.</p> <table border="1"> <thead> <tr> <th>n</th> <th>Correction level</th> <th>Number of error correction codeword</th> </tr> </thead> <tbody> <tr> <td>0~3</td> <td>Error correction scale 0</td> <td>4</td> </tr> <tr> <td>4~10</td> <td>Error correction scale 1</td> <td>8</td> </tr> <tr> <td>11~20</td> <td>Error correction scale 2</td> <td>16</td> </tr> <tr> <td>21~45</td> <td>Error correction scale 3</td> <td>32</td> </tr> <tr> <td>46~100</td> <td>Error correction scale 4</td> <td>64</td> </tr> <tr> <td>101~200</td> <td>Error correction scale 5</td> <td>128</td> </tr> <tr> <td>201~400</td> <td>Error correction scale 6</td> <td>256</td> </tr> <tr> <td>401 or more</td> <td>Error correction scale 7</td> <td>512</td> </tr> </tbody> </table>	n	Function	Number of correction codeword	48	Error correction level 0	2	49	Error correction level 1	4	50	Error correction level 2	8	51	Error correction level 3	16	52	Error correction level 4	32	53	Error correction level 5	64	54	Error correction level 6	128	55	Error correction level 7	256	56	Error correction level 8	512	n	Correction level	Number of error correction codeword	0~3	Error correction scale 0	4	4~10	Error correction scale 1	8	11~20	Error correction scale 2	16	21~45	Error correction scale 3	32	46~100	Error correction scale 4	64	101~200	Error correction scale 5	128	201~400	Error correction scale 6	256	401 or more	Error correction scale 7	512
n	Function	Number of correction codeword																																																								
48	Error correction level 0	2																																																								
49	Error correction level 1	4																																																								
50	Error correction level 2	8																																																								
51	Error correction level 3	16																																																								
52	Error correction level 4	32																																																								
53	Error correction level 5	64																																																								
54	Error correction level 6	128																																																								
55	Error correction level 7	256																																																								
56	Error correction level 8	512																																																								
n	Correction level	Number of error correction codeword																																																								
0~3	Error correction scale 0	4																																																								
4~10	Error correction scale 1	8																																																								
11~20	Error correction scale 2	16																																																								
21~45	Error correction scale 3	32																																																								
46~100	Error correction scale 4	64																																																								
101~200	Error correction scale 5	128																																																								
201~400	Error correction scale 6	256																																																								
401 or more	Error correction scale 7	512																																																								

	The error correction codeword calculated by modulus 929. Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
Example	None

Table 1-38 <function 070>PDF417: Set/cancel the truncated mode

Command name	PDF417: set/cancel the truncated mode
Command code	ASCII: GS (k pL pH cn fn n Decimal: 29 40 107 pL pH 48 70 n Hexadecimal: 1D 28 6B pL pH 30 46 n
Function description	Set/cancel the truncated mode for PDF417. n=0 for standard mode, n=1 for truncated mode
Parameter range	$(pL+pH \times 256) = 3(pL=3, pH=0)$ cn=48 fn=70 n=0,1
Default value	n=0
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx
Notes	This command affects the processing of <function 081> Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
Example	None

Table 1-39 <function 080>PDF417: Transfer the data to the encode buffer

Command name	PDF417: transfer the data to the encode buffer
Command code	ASCII: GS (k pL pH cn fn m dl...dk Decimal: 29 40 107 pL pH 48 70 48 dl...dk Hexadecimal: 1D 28 6B pL pH 30 46 30 dl...dk
Function description	Transfer the data for PDF417 (d1.. dk) to the encode buffer
Parameter range	$4 \leq (pL+pH \times 256) \leq 2710$ cn=48 fn=80 m=48 $0 \leq d \leq 255$ $k = (pL+pH \times 256) - 3$
Default value	None
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx
Notes	This command affects the processing of <function 081> After the <function 081> is executed, data is kept until next setting k bytes of d1...dk are processed as encode data Be sure not to include the following data in the data d1...dk, because they are added automatically by encode system: start character, stop character, indicator codeword of left and right,

	descriptor of symbol length and error correction codeword. Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
Example	None

Table 1-40 <function 081>PDF417: Print the two-dimension bar code in encode buffer

Command name	PDF417: print the two-dimension bar code in encode buffer
Command code	ASCII: GS (k pL pH cn fn m Decimal: 29 40 107 pL pH 48 81 m Hexadecimal: 1D 28 6B pL pH 30 51 m
Function description	Encode and print the data in encode buffer with PDF417
Parameter range	$(pL+pH \times 256) = 3(pL=3, pH=0)$ cn=48 fn=81 m=48
Default value	None
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx
Notes	If the size of the two-dimension exceeds the printing area, then the print task will be canceled. If the encode buffer is empty, then the print task will be canceled If (the number of columns \times the number of rows) is less than the number of codeword, then the print task will be canceled. If the number of codeword exceeds 928, then the print task will be canceled. The start character, stop character, indicator codeword of left and right, descriptor of length and error correction code are added by encode system automatically. The error correction code is calculated by modulus 929.
Example	None

Table 1-41 <function 167>QR Code: Set the size of module

Command name	QR Code: set the size of module
Command code	ASCII: GS (k pL pH cn fn n Decimal: 29 40 107 pL pH 49 67 n Hexadecimal: 1D 28 6B pL pH 31 43 n
Function description	Sets the size of the module for QR Code to n dots.
Parameter range	$(pL+pH \times 256) = 3(pL=3, pH=0)$ cn=49 fn=67 $1 \leq n \leq 16$
Default value	n=3
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx
Notes	This commands affects the processing of <function 181> n = width of a module = height of a module. Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.
Example	None

Table 1-42 <function 169>QR Code: Select the error correction level

Command name	QR Code: Select the error correction level															
Command code	ASCII: GS (k pL pH cn fn n Decimal: 29 40 107 pL pH 49 69 n Hexadecimal: 1D 28 6B pL pH 31 45 n															
Function description	Select the error correction level for QR Code, the meaning of parameter n is as follows: <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>n</th> <th>function</th> <th>Recovery capacity(%)</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>Level L</td> <td>7</td> </tr> <tr> <td>49</td> <td>Level M</td> <td>15</td> </tr> <tr> <td>50</td> <td>Level Q</td> <td>25</td> </tr> <tr> <td>51</td> <td>Level H</td> <td>30</td> </tr> </tbody> </table>	n	function	Recovery capacity(%)	48	Level L	7	49	Level M	15	50	Level Q	25	51	Level H	30
n	function	Recovery capacity(%)														
48	Level L	7														
49	Level M	15														
50	Level Q	25														
51	Level H	30														
Parameter range	$(pL+pH \times 256) = 3(pL = 3, pH = 0)$ cn=49 fn=69 $48 \leq n \leq 51$															
Default value	n=48															
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx															
Notes	This commands affects the processing of <function 181> QR Code employs Reed-Solomon error correction to generate a series of error correction codewords. Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.															
Example	None															

Table 1-43 <function 180>QR Code: Transfer the data to encode buffer

Command name	QR Code: transfer the data to encode buffer										
Command code	ASCII: GS (k pL pH cn fn m d1...dk Decimal: 29 40 107 pL pH 49 80 48 dl...dk Hexadecimal: 1D 28 6B pL pH 31 50 30 d1...dk										
Function description	Transfer the data for PDF417 (d1...dk) to encode buffer										
Parameter range	$4 \leq (Pl+pH \times 256) \leq 2710$ cn=49 fn=80 m=48 $0 \leq d \leq 255$ $K = (pL + pH \times 256) - 3$										
Default value	None										
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx										
Notes	<p>This commands affects the processing of <function 181> After the <function 081> is executed, data is kept until next setting k bytes of d1...dk are processed as encode data Be sure not to include the following data in the data d1...dk:</p> <table border="1"> <thead> <tr> <th>Character set</th> <th>Included character</th> </tr> </thead> <tbody> <tr> <td>Numerical data</td> <td>"0" ~ "9"</td> </tr> <tr> <td>Alphanumeric data</td> <td>"0" ~ "9", "A" ~ "Z", SP, \$, %, *, +, -, ., /, :</td> </tr> <tr> <td>Chinese</td> <td>Shift-JIS(JISX0208 standard)</td> </tr> <tr> <td>8 bit data</td> <td>00H ~ FFH</td> </tr> </tbody> </table> <p>Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.</p>	Character set	Included character	Numerical data	"0" ~ "9"	Alphanumeric data	"0" ~ "9", "A" ~ "Z", SP, \$, %, *, +, -, ., /, :	Chinese	Shift-JIS(JISX0208 standard)	8 bit data	00H ~ FFH
Character set	Included character										
Numerical data	"0" ~ "9"										
Alphanumeric data	"0" ~ "9", "A" ~ "Z", SP, \$, %, *, +, -, ., /, :										
Chinese	Shift-JIS(JISX0208 standard)										
8 bit data	00H ~ FFH										
Example	None										

Table 1-44 <function 181>QR Code: Print two-dimension bar code in encode buffer

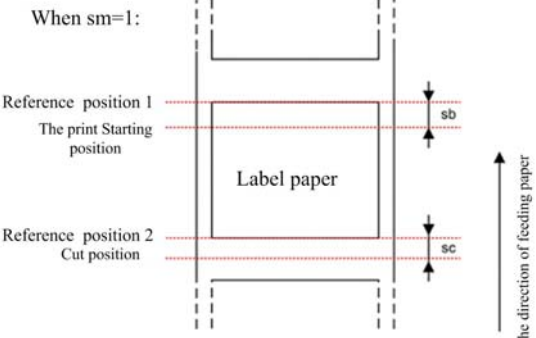
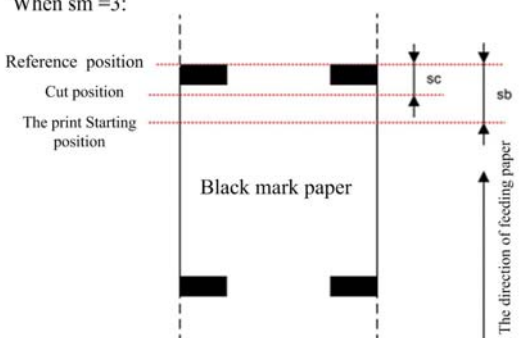
Command name	QR Code: print two-dimension bar code in encode buffer
Command code	ASCII: GS (k pL pH cn fn m Decimal: 29 40 107 pL pH 49 81 48 Hexadecimal: 1D 28 6B pL pH 31 51 30
Function description	Encode and print the data of QR Code in encode buffer
Parameter range	$4 \leq (Pl+pH \times 256) \leq 2710$ cn=49 fn=81 m=48
Default value	None
Part number supported	ZYTPxx-xxxEx, MTPxx-xxxEx
Notes	If the size of two-dimension bar code exceeds the printing area, then the print task will be canceled If the encode buffer is empty, then the print task will be canceled
Example	None

1.2.6 Label paper / black mark paper commands

Table 1-45 Label paper/ black mark paper commands

Command name	Label paper/ black mark paper command			
Command code	None			
Function description	Label paper / black mark paper commands, fn means function code			
	fn	Function code	Function description	see
	33	Function 33	Paper layout setting	Table 1.42
	65	Function 65	Feed paper to the label peeling position	Table 1.43
	66	Function 66	Feed paper to the cutting position	Table 1.44
	67	Function 67	Feed paper to the print starting position	Table 1.45
	102	Function 102	Set the machinery parameter of printer	Table 1.46
Parameter range	None			
Default value	None			
Part number supported	ZYTP58-Lxxx-L, MTP58-Lxxx-L, ZYTP80-CxxxC, MTP80-CxxxC			
Notes	None			
Example	None			

Table 1-46 <function 33> Set the paper layout

Command name	Set the paper layout
Command code	ASCII: FS (L pL pH fn sm [sa] ; [sb] ; [sc] ; [sd] ; [se] ; [sf] ; Decimal: 28 40 76 pL pH 33 sm [sa] 59 [sb] 59 [sc] 59 [sd] 59 [se] 59 [sf] 59 Hex: 1C 28 4C pL pH 21 sm [sa] 3B [sb] 3B [sc] 3B [sd] 3B [se] 3B [sf] 3B
Function description	Set the paper layout parameters: sa ~sf
Parameter range	pH=0,8≤pL≤26 fn=33 ZYTP58-Lxxx-L,MTP58-Lxxx-L sm=1 0≤sb<the distance from the top edge to the button edge of the label paper, 0≤sc<the distance between two label papers, other parameters are reserved ZYTP80-Cxxx-C, MTP80-Cxxx-C: sm =3 24≤sb< the distance from the top edge to the button edge of black mark paper, 0≤sc< the distance from the top edge to the button edge of black mark paper, other parameters are reserved sc + 24≤sb
Default value	ZYTP58-Lxxx-L, MTP58-Lxxx-L: sm = 1, sa~sf are respectively 0,0,0,0,0,0 ZYTP80-Cxxx-C, MTP80-Cxxx-C: sm = 3, sa~sf are respectively 0,24,0,0,0,0
Part number supported	ZYTP58-Lxxx-L, MTP58-Lxxx-L, ZYTP80-Cxxx-C, MTP80-Cxxx-C
Notes	<p>The meaning of parameter sm is as follows: When sm=1:</p>  <p>When sm=3:</p> 

	<p>(sa - sf) can be omitted. Omitted settings are not changed. However, when omitting parameters “;” cannot be omitted. Example: (When omitting sc and se) FS (L pL pH fn sm sa ; sb ; ; sd ; ; sf ;</p> <p>The setting values of (sa - sf) expressed as decimals are converted to text data and the high-order values are specified first. When specifying a negative number, add “-” at the beginning.</p> <p>Example: When specifying 120, the data is the 3 bytes “120” [Hexadecimal = 31H, 32H, 30H / Decimal = 49, 50, 48].</p> <p>When specifying -10, the data is the 3 bytes “-10” [Hexadecimal = 2DH, 31H, 30H / Decimal = 45, 49, 48].</p> <p>Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.</p>
Example	None

Table 1-47 <function 65> Feed paper to the label peeling position

Command name	Feed paper to the label peeling position						
Command code	ASCII: FS (L pL pH fn m Decimal: 28 40 76 02 00 65 m Hexadecimal: 1C 28 4C 02 00 41 m						
Function description	Feed paper to the label peeling position						
Parameter range	pH=0, pL=2 fn=65 m=48 49						
Default value	no						
Part number supported	ZYTP58-Lxxx-L, MTP58-Lxxx-L						
Notes	The meanings of m are as follows: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>m</th> <th>description</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>Feeds paper to the label peeling position, however, if the paper is already at the label peeling position, the printer does not feed</td> </tr> <tr> <td>49</td> <td>Feeds paper to the label peeling position, however, if the paper is already at the label peeling position, the printer feeds paper to the next label peeling position</td> </tr> </tbody> </table> <p>This command is only used with label paper(sm=1, 2) The paper feed operation ends when no paper is detected in the process of feeding paper Label peeling position is the position where the label that just printing can be peeled off by hand This commands needs to set the machinery parameter of the printer, please see FS(L<function 102> detailed in Table 1-50)</p>	m	description	48	Feeds paper to the label peeling position, however, if the paper is already at the label peeling position, the printer does not feed	49	Feeds paper to the label peeling position, however, if the paper is already at the label peeling position, the printer feeds paper to the next label peeling position
m	description						
48	Feeds paper to the label peeling position, however, if the paper is already at the label peeling position, the printer does not feed						
49	Feeds paper to the label peeling position, however, if the paper is already at the label peeling position, the printer feeds paper to the next label peeling position						
Example	None						

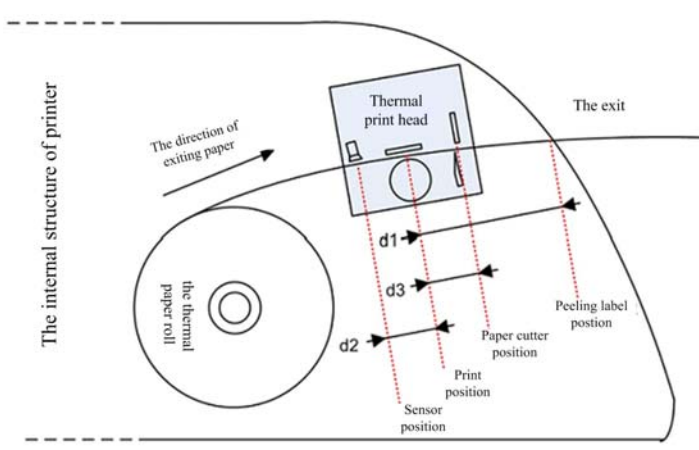
Table 1-48 <function 66> Feed paper to the cutting position

Command name	Feed paper to the cutting position of label paper black mark paper						
Command code	ASCII: FS (L pL pH fn m Decimal: 28 40 76 02 00 66 m Hexadecimal: 1C 28 4C 02 00 42 m						
Function description	Feed paper to the cutting position of label paper black mark paper						
Parameter range	pH=0, pL=2 fn=66 m=48, 49						
Default value	no						
Part number supported	ZYTP58-Lxxx-L, MTP58-Lxxx-L, ZYTP80-CxxxC, MTP80-CxxxC						
Notes	<p>The meanings of m are as follows:</p> <table border="1"> <thead> <tr> <th>m</th> <th>description</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>Feeds paper to the cutting position, however, if the paper is already at the cutting position, the printer does not feed</td> </tr> <tr> <td>49</td> <td>Feeds paper to the cutting position, however, if the paper is already at the cutting position, the printer feeds paper to the next cutting position</td> </tr> </tbody> </table> <p>This command is used for label paper/ black mark paper (sm=1, 2,3) The paper feed operation ends when no paper is detected in the process of feeding paper This commands needs to set the cutting position parameter and the machinery parameter of the printer, please see FS(L<function 33> (detailed in Table 1-46) and <function 102> (detailed in Table 1-50)</p>	m	description	48	Feeds paper to the cutting position, however, if the paper is already at the cutting position, the printer does not feed	49	Feeds paper to the cutting position, however, if the paper is already at the cutting position, the printer feeds paper to the next cutting position
m	description						
48	Feeds paper to the cutting position, however, if the paper is already at the cutting position, the printer does not feed						
49	Feeds paper to the cutting position, however, if the paper is already at the cutting position, the printer feeds paper to the next cutting position						
Example	None						

Table 1-49 <function 67> Feed paper to the print starting position

Command name	Feed paper to the print starting position								
Command code	ASCII: FS (L pL pH fn m Decimal: 28 40 76 02 00 67 m Hexadecimal: 1C 28 4C 02 00 43 m								
Function description	Feed paper to the print starting position								
Parameter range	pH=0, pL=2 fn=67 m=48, 49, 50								
Default value	None								
Part number supported	ZYTP58-Lxxx-L, MTP58-Lxxx-L, ZYTP80-Cxxx-C, MTP80-Cxxx-C								
Notes	<p>The meanings of m are as follows:</p> <table border="1"> <thead> <tr> <th>m</th> <th>explain</th> </tr> </thead> <tbody> <tr> <td>48</td> <td>Feed paper to the print starting position of label paper / black mark paper, but if it is already at the print starting position, the printer does not feed</td> </tr> <tr> <td>49</td> <td>Feed paper to the print starting position of label paper / black mark paper, but if it is already at the print starting position, the printer feeds paper to the next print starting position</td> </tr> <tr> <td>50</td> <td>Feeds paper to the label peeling position. However, if the paper is already at the label peeling position, the printer feeds paper to the next label peeling position. Feeds paper to the print starting position, however, if the paper is already at the print starting position, the printer does not feed</td> </tr> </tbody> </table> <p>This command is used for label paper/ black mark paper (sm=1, 2,3)</p> <p>This command is valid when sm=1, 2, 3 and m=48, 49, or sm=1, 2 and m=50</p> <p>The paper feed operation ends when no paper is detected in the process of feeding paper</p> <p>This command needs to set the parameters of the print starting position and the machinery parameter of the printer, please see FS(L<function 33> detailed in Table 1-46) and <function 102>(detailed in Table 1-50)</p>	m	explain	48	Feed paper to the print starting position of label paper / black mark paper, but if it is already at the print starting position, the printer does not feed	49	Feed paper to the print starting position of label paper / black mark paper, but if it is already at the print starting position, the printer feeds paper to the next print starting position	50	Feeds paper to the label peeling position. However, if the paper is already at the label peeling position, the printer feeds paper to the next label peeling position. Feeds paper to the print starting position, however, if the paper is already at the print starting position, the printer does not feed
m	explain								
48	Feed paper to the print starting position of label paper / black mark paper, but if it is already at the print starting position, the printer does not feed								
49	Feed paper to the print starting position of label paper / black mark paper, but if it is already at the print starting position, the printer feeds paper to the next print starting position								
50	Feeds paper to the label peeling position. However, if the paper is already at the label peeling position, the printer feeds paper to the next label peeling position. Feeds paper to the print starting position, however, if the paper is already at the print starting position, the printer does not feed								
Example	None								

Table 1-50 <function 102> Set the machinery parameters of printer

Command name	Set the machinery parameters of printer
Command code	ASCII: FS (L pL pH fn m [d1]; [d2]; [d3]; Decimal: 28 40 76 02 00 102 m [d1] 59 [d2] 59 [d3] 59 Hexadecimal: 1C 28 4C 02 00 66 m [d1] 3B [d2] 3B [d3] 3B
Function description	Set the machinery parameters of printer
Parameter range	pH=0, 5≤pL≤17 fn=102 m=48 0≤d1~d3≤999
Default value	None
Part number supported	ZYTP58-Lxxx-L、MTP58-Lxxx-L、ZYTP80-CxxxC、MTP80-CxxxC
Notes	<p>The meanings of d1~d3 are shown as follows:</p>  <p>The values of parameters d1~d3 will affect the size of label paper and black mark paper, the requirements are as follows: The height of label paper must be more than d1+d2(sm=1) The height of black mark paper must be more than d2+d3(sm=3) If the size of label paper / black mark paper can't meet those requirements above, then executing FS(L<function 65, 66, 67> command will fail, parameters d1~d3 can be omitted in the process of transferring this commands. Omitted settings are not changed. However, when omitting parameters “;” cannot be omitted. For example: (d1 not changed) FS(L pL pH fn sm; d2; d3; d1~d3 expressed as decimals are converted to text data and the high-order values are specified first For example: setting value is 120, then the text mode is three bytes”120”[31H,32H,30H / decimal =49,80,48] Settings of this function are effective until ESC @ is executed, the printer is reset, or the power is turned off.</p>
Example	None

1.2.7 States query commands

The states query commands are listed in Table 1-51 to Table 1-52.

Table 1-51 Query the states of printer (real time)

Command name	Query the states of the printer																											
Command code	ASCII: DLE EOT n Decimal: 16 4 n Hexadecimal: 10 04 n																											
Function description	Query the current states of printer, the printer will return a state byte after receiving the command , the meanings of bits are as follows: <table border="1"> <thead> <tr> <th>Bit</th> <th>description</th> <th>active bit</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>over voltage</td> <td>1</td> </tr> <tr> <td>1</td> <td>platen open</td> <td>1</td> </tr> <tr> <td>2</td> <td>paper end</td> <td>1</td> </tr> <tr> <td>3</td> <td>overheat</td> <td>1</td> </tr> <tr> <td>4</td> <td>fixed bit</td> <td>0</td> </tr> <tr> <td>5</td> <td>cutter down</td> <td>1</td> </tr> <tr> <td>6</td> <td>reserved</td> <td>X</td> </tr> <tr> <td>7</td> <td>reserved</td> <td>X</td> </tr> </tbody> </table>	Bit	description	active bit	0	over voltage	1	1	platen open	1	2	paper end	1	3	overheat	1	4	fixed bit	0	5	cutter down	1	6	reserved	X	7	reserved	X
Bit	description	active bit																										
0	over voltage	1																										
1	platen open	1																										
2	paper end	1																										
3	overheat	1																										
4	fixed bit	0																										
5	cutter down	1																										
6	reserved	X																										
7	reserved	X																										
Parameter range	n=5																											
Default value	None																											
Part number supported	All																											
Notes	The printer would return the current state of printer when receiving this command, regardless of the master is ready or not. This is a real-time command that the printer return the current state of printer upon receiving it, regardless of the printer is working properly or not (paper end, over heat protection etc), that is real time response																											
Example	Query the statues of the printer (hex): Sent (master - >printer):10 04 05 Receive(printer - >master): 06// platen open and paper end																											

Table 1-52 Set/cancel the printer states automatic back

Command name	Set / cancel the printer states automatic back																																				
Command code	ASCII: GS a n Decimal: 29 97 n Hexadecimal: 1D 61 n																																				
Function description	Set / cancel the printer states back automatically, the meanings of bits are as follows: <table border="1"> <thead> <tr> <th>Bit</th> <th>description</th> <th>enable</th> <th>disable</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>over voltage</td> <td>1</td> <td>0</td> </tr> <tr> <td>1</td> <td>platen open</td> <td>1</td> <td>0</td> </tr> <tr> <td>2</td> <td>paper end</td> <td>1</td> <td>0</td> </tr> <tr> <td>3</td> <td>overheat</td> <td>1</td> <td>0</td> </tr> <tr> <td>4</td> <td>fixed bit</td> <td>0</td> <td>0</td> </tr> <tr> <td>5</td> <td>cutter down</td> <td>1</td> <td>0</td> </tr> <tr> <td>6</td> <td>reserved</td> <td>X</td> <td>X</td> </tr> <tr> <td>7</td> <td>reserved</td> <td>X</td> <td>X</td> </tr> </tbody> </table>	Bit	description	enable	disable	0	over voltage	1	0	1	platen open	1	0	2	paper end	1	0	3	overheat	1	0	4	fixed bit	0	0	5	cutter down	1	0	6	reserved	X	X	7	reserved	X	X
Bit	description	enable	disable																																		
0	over voltage	1	0																																		
1	platen open	1	0																																		
2	paper end	1	0																																		
3	overheat	1	0																																		
4	fixed bit	0	0																																		
5	cutter down	1	0																																		
6	reserved	X	X																																		
7	reserved	X	X																																		
Parameter range	None																																				
Default value	n=0																																				
Part number supported	All																																				
Notes	None																																				
Example	None																																				

1.2.8 Miscellaneous commands

Miscellaneous commands are listed in Table 1-53~Table 1-57.

Table 1-53 Initialize the printer

Command name	Initialize the printer
Command code	ASCII: ESC @ Decimal: 27 64 Hexadecimal: 1B 40
Function description	Initializes the printer: 1. Clears the data in the print buffer; 2. Resets the printer modes to the modes that were in effect when the power was turned on.
Parameter range	None
Default value	None
Part number supported	All
Notes	None
Example	None

Table 1-54 Clear the printer buffer (real time)

Command name	Clear up the printer buffer (real time)
Command code	ASCII: DLE DC4 fn d1...d7 Decimal: 16 28 8 d1...d7 Hexadecimal: 10 14 08 d1...d7
Function description	Clears all data stored in the receive buffer and the print buffer and transmits Clear response.
Parameter range	fn = 8, d1 = 1, d2 = 3, d3 = 20, d4 = 1, d5 = 6, d6 = 2, d7 = 8
Default value	None
Part number supported	All
Notes	When receiving this command, the printer clears up the buffer immediately.
Example	None

Table 1-55 Feed paper and cut paper

Command name	Feed paper and cut paper
Command code	ASCII: GS V m n Decimal: 29 86 m n Hexadecimal: 1D 56 m n
Function description	Feed paper and cut paper, the meanings of parameters are as follows: m: the type of cut paper n: feed paper to n ×dots and execute a full cut
Parameter range	m = 0x41or 0x42, 0≤n≤255
Default value	None
Part number supported	ZYTPxx-xxxxC、MTPxx-xxxxC
Notes	None
Example	None

Table 1-56 Set the configuration item for the serial interface

Command name	Set the configuration item for the serial interface
Command code	ASCII: GS (E pL pH fn a d1...dk Decimal: 29 40 69 pL pH 11 a d1...dk hexadecimal: 1D 28 45 pL pH 0B a d1...dk
Function description	Set the serial communication configuration item, including the baud rate and flow control. The meanings of each parameters are as follows: pL, pH are the number of byte= 1 bit function type(fn)+1 bit function definition(a) + k bits active data(d1...dk), that is: pL + pH×256=k+2 Fn is the function type, hereby it is 11 indicating the serial communication setting The followings are the function definitions of a:

	<p>1 baud rate supported</p> <p>2 parity reserve</p> <p>3 flow control supported</p> <p>4 data length reserve</p> <p>d1...dk(a=1) are baud rate data in character type, for example,"9600" is corresponding to hexadecimal 39 36 30 30</p> <p>d(a=3) is flow control type (hardware steam control by default):</p> <p>48 select the hardware flow control (RTS/CTS)</p> <p>49 select the software flow control (Xon/Xoff)</p>
Parameter range	<p>Fn=11</p> <p>When a=1,</p> $3 \leq (pL + pH \times 256) \leq 8, (3 \leq pL \leq 8, pH = 0)$ $48 \leq d \leq 57 (1 \leq k \leq 6)$ <p>When a = 3,</p> $pL + pH \times 256 = 3, (pL = 3, pH = 0)$ $48 \leq d \leq 49 (k = 1)$
Default value	<p>Baud rate: 9600</p> <p>Flow control: hardware flow control</p>
Part number supported	All the module
Notes	<p>TTL baud rate range: 110 ~ 999999 Hz; RS232 baud rate range: 110 ~ 115200 Hz;</p> <p>The changed baud rate will not be affected by ESC @ command</p> <p>The baud rate will be reset to the default value 9600 on power up</p> <p>Hardware flow control (RTS/CTS) will be reset to the default setting on power up or executing ESC @ command</p> <p>Illegal commands do nothing.</p> <p>Currently only baud rate settings (a=1,3) are supported, but other function can be added as requires.</p>
Example	<p>Set 9600 baud rate(hexadecimal):</p> <p>Sent (master ->printer): 1D 28 45 06 00 0B 01 39 36 30 30</p> <p>Set the software flow control(hexadecimal):</p> <p>Sent (master ->printer): 1D 28 45 03 00 0B 03 31</p>

Table 1-57 Enter/exit the low power mode (real time)

Command name	Enter /exit the low power mode (real time)
Command code	<p>ASCII: DLE DC4 fn a b</p> <p>Decimal: 16 20 2 a b</p> <p>Hexadecimal: 10 14 2 a b</p>
Function description	<p>Enter /exit low power mode, the meanings of parameters are as follows:</p> <p>Fn is function type, hereby it is 2 indicating power control</p> <p>a for function definition:</p> <p>1: enter the low power mode</p> <p>2: exit the low power mode</p>

	b for reserve parameter, it must be 8
Parameter range	fn = 2, a = 1 or 2, b = 8
Default value	None
Part number supported	All supported except ZYTPxx-xxxxC、MTPxx-xxxxC
Notes	<p>The printer replies the Ack (0x30) when receiving “enter low power mode” command (0x10 0x14 0x02 0x01 0x08), and enters low power mode (the printer does not run, including the button and LED);</p> <p>Under low power mode, when receiving “exit low power mode”, the printer recover to normal working mode, and replies the Ack (0x31).</p> <p>Under low power mode, no serial port operation is allowed.</p> <p>The printer would return the Ack when receiving this command, regardless of the master is ready or not.</p> <p>This is a real-time command that the printer executes upon receiving it, regardless of the printer is working properly or not (paper end, over heat protection etc).</p>
Example	<p>Enter the low power mode (hexadecimal):</p> <p>Sent (master ->printer): 10 14 2 1 8</p> <p>Receive(printer->master): 30</p> <p>Exit the low power mode(hexadecimal):</p> <p>Sent (master ->printer): 10 14 2 2 8</p> <p>Receive(printer->master): 31</p>

Table 1-58 Command A

m	Encode system	Bar code data (sp indicates 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≤d≤8 K=11,12	0~9	48≤d≤57 (d1=48 when k=7,8,11,12)
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	0~9, A~Z SP,\$,%,* ,+,-,.,	48≤d≤57 65≤d≤90 D=32,36,37,42,43,45,46,47
5	ITF (Interleaved 2 of 5)	variable	2≤k≤255 (even)	0~9	48≤d≤57
6	CODABAR (NW-7)	variable	1≤K	0~9, A~D, a~d \$,+ , - , . , / , ;	48≤d≤57 65≤d≤68 97≤d≤100 d=36,43,45,46,47,58

Bar code data (sp indicates space)					
					(65≤d1≤68 65≤dk≤68 97≤d1≤100 97≤dk≤100)

Table 1-59 Command B

m	Encode system	Bar code data (sp indicates space)			
		Data length	n	Character set	Data(d)
65	UPC-A	fixed	n=11,12	0~9	48≤d≤57
66	UPC-E	fixed	6≤d≤8 n=11,12	0~9	48≤d≤57 (d1=48 when k=7,8,11,12)
67	JAN13(EAN13)	fixed	n=12,13	0~9	48≤d≤57
68	JAN8(EAN8)	fixed	n=7,8	0~9	48≤d≤57
69	CODE39	variable	1≤n≤255	0~9, A~Z SP,\$,%,*,+,-,.,/	48≤d≤57 65≤d≤90 d=32,36,37,42,43,45,46,47
70	ITF (Interleaved 2 of 5)	variable	2≤n≤255 (even)	0~9	48≤d≤57
71	CODABAR (NW-7)	variable	1≤n≤255	0~9, A~D, a~d \$,+,-,.,/,:	48≤d≤57 65≤d≤68 97≤d≤100 d=36,43,45,46,47,58 (65≤d1≤68 65≤dk≤68 97≤d1≤100 97≤dk≤100)
72	CODE93	variable	1≤n≤255	00H~7FH	0≤d≤127
73	CODE128	variable	1≤n≤255	00H~7FH C1H~C4H(FNC)	0≤d≤127 D=193,194,195,196
74	UCC/EAN128	variable	1≤n≤255	00H~7FH C1H~C4H(FNC)	0≤d≤127 D=193,194,195,196

Table 1-60 Function explanation of two-dimension bar code printing

cn	fn	Function code	Function description	See
48	65	Function 065	PDF417: Set the number of columns of the data area	Table 1.29
	66	Function 066	PDF417: Set the number of rows	Table 1.30
	67	Function 067	PDF417: Unit width	Table 1.31
	68	Function 068	PDF417: Set line height	Table 1.32
	69	Function 069	PDF417: Set the levels of error correction	Table 1.33
	70	Function 070	PDF417: Set/cancel the truncation mode	Table 1.34
	80	Function 080	PDF417: Transfer data to encode buffer	Table 1.35
	81	Function 081	PDF417: Print the two-dimension code in encode buffer	Table 1.36
49	67	Function 167	QR code: Select the unit size	Table 1.37
	69	Function 169	QR code: Select the error correction levels	Table 1.38
	80	Function 180	QR code: Transfer data to encode buffer	Table 1.39
	81	Function 181	QR code: Print the two-dimension code in encode buffer	Table 1.40

Chapter 2: Rights & Statements

The software or document provided by Guangzhou ZLGMCU Technology Co., Ltd (ZLGMCU hereafter) is intended to provide for you (Customer), and is limited and only for the Product licensed or sale by ZLGMCU.

This software or document is owned by ZLGMCU and/or its suppliers, and protected by applicable copyright law. All rights reserved. Anyone who performs any material breach may face relevant criminal sanction according to applicable law, and should bear corresponding civil liabilities caused by the infringement of the terms and conditions specified in this License. ZLGMCU reserves the right of modifying the document or software without notice the Customer, and has no liability for any affects occurring in use.

This software or document is provided in “as is”. No warranty is made (explicitly, implicitly or legally). Such warranties are including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose to use this document. In no event shall ZLGMCU be liable for any direct, indirect, incidental, special, exemplary, or consequential damages arising in any way out of the use of this software or document.

Company name: Guangzhou ZLGMCU Technology Co., Ltd.
Address: Floor 2, No.7 Building,
Huangzhou Industrial Estate
Guangzhou, CHINA
Post code: 510660
Website: www.zlgmcu.com
Sales: +86-20-2264-4249
Tech. Support: +86-20-2264-4361
Facsimile: +86-20-3860-1859
Sales Email: 80c51mcu@zlgmcu.com
Tech. Sup. Email: printer@zlgmcu.com