

zyPrtLib Micro-printer Driver Libaray

Micro-printer Serial Product

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Product Data Sheet

Document Information

TYPE	CONTENT
Key words	zyPrtLib, driver library
Abstract	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, enabling customers to complete their product development in a short time and make their products more competitive in the market. This document provides the zyPrtLib driver library which encapsulates the ECS/POS commands for application development.

Revision History

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Chapter 1: Driver Library Function

1.1 Function list

The zyPrtLib driver library functions are listed in Table 1-1.

Table 1-1: Driver library function list

Function	Explanation	See
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printerCutterOnHandler	Pinter cutter down handler entry	Table 2-48
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Chapter 2: Functions Description

The functions of zyPrtLib driver library are listed in Table 2-1 to Table 2-49.

Table 2-1: uartSendStr

Function Name	Transmit the text
Function Prototype	void uartSendStr (char *pucStr)
Parameter	pucStr: Character string (end with '\0')
Return Value	None
Model Supported	All the models
Description	It is used for text message transmission. If the buffer within the printer is full, the image data already stored in the print buffer is printed, and a line feed is executed.

Table 2-2: print

Function Name	Print and feed paper
Function Prototype	void print (void)
Parameter	None
Return Value	None
Model Supported	All the models
Description	This function prints all the content in the printer buffer, and feeds one line based on the current line spacing. After printing, the print position moves to the beginning of the next line.

Table 2-3: printAndFeedNdotLine

Function Name	Print and feed paper for n dots
Function Prototype	void printAndFeedNdotLine (unsigned char ucDotLineNum)
Parameter	ucDotLineNum: 0~255 dots
Return Value	None
Model Supported	All the models
Description	This function prints all the content in the printer buffer and feeds paper for n dots. However, when the printer buffer is empty, it only feeds paper for n lines but not print. After printing, the print position moves to the beginning of the next line.

Table 2-4: printAndBackFeedNDotLine

Function Name	Print and back feed paper for n dots
Function Prototype	void printAndBackFeedNDotLine (unsigned char ucDotLineNum)
Parameter	ucDotLineNum: 0~255 dots
Return Value	None
Model Supported	All the models
Description	This function prints all the content in the printer buffer and feeds paper back for n dots. However, when the printer buffer is empty, it only feeds paper back for n dots but not print. After printing, the print position moves to the beginning of the next line.

Table 2-5: printAndFeedNFontLine

Function Name	Print and feed paper for n lines
Function Prototype	void printAndFeedNFontLine (unsigned char ucFontLineNum)
Parameter	ucFontLineNum: 0~255 lines
Return Value	None
Model Supported	All the models
Description	This function prints all the content in the printer buffer and feeds paper for n lines. However, when the printer buffer is empty, it only feeds paper for n lines but not print. The line space is set by lineSpacingSet or lineSpacingDefault. After printing, the print position moves to the beginning of the next line.

Table 2-6: printAndBackFeedNFontLine

Function Name	Print and feed paper back for n lines
Function Prototype	void printAndBackFeedNFontLine (unsigned char ucFontLineNum)
Parameter	ucFontLineNum: 0~255 lines
Return Value	None
Model Supported	All the models
Description	This function prints all the content in the printer buffer and feeds paper back for n lines. However, when the printer buffer is empty, it only feeds paper back for n lines but not print. The line space is set by lineSpacingSet or lineSpacingDefault. After printing, the print position moves to the beginning of the line.

Table 2-7: lineSpacingSet

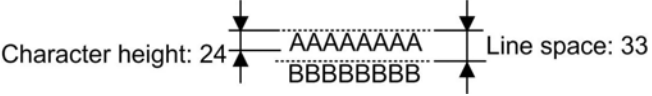
Function Name	Set the line space to n dots
Function Prototype	void lineSpacingSet (unsigned char ucDotLineNum)
Parameter	ucDotLineNum: 0~255 dots
Return Value	None
Model Supported	All the models
Description	<p>This function sets the line space to n dots, as follows:</p> <div style="text-align: center;"></div> <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>If lineSpacingDefault() is executed, printerInit() is executed, printer is reset or printer is turned off, the line space will be reset to a default value 33 dots.</p>

Table 2-8: lineSpacingDefault

Function Name	Set the line space to a default value 33 dots
Function Prototype	void lineSpacingDefault (void)
Parameter	None
Return Value	None
Model Supported	All the models
Description	<p>This function sets the line space to 33 dots. For more details in line space settings, please refer to lineSpacingSet().</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 lineSpacingSet().</p>

Table 2-9: leftMarginSet

Function Name	Set the left margin
Function Prototype	void leftMarginSet (unsigned char ucLeftMargin)
Parameter	ucLeftMargin: the left margin value (Unit: 8 dots) For ZYTP58 and MTP58: $0 \leq ucLeftMargin \leq 47$, and $0 \leq (\text{left margin} + \text{right margin}) \leq 47$ For ZYTP80 and MTP80: $0 \leq ucLeftMargin \leq 71$, and $0 \leq (\text{left margin} + \text{right margin}) \leq 71$
Return Value	None
Model Supported	All the models
Description	<p>This function sets the left margin (unit: 8 dots) to make sure the content printed not exceed the left margin position.</p> <p>The left margin position is the left edge position of the printing range.</p> <p>Following is an example of left margin setting.</p>

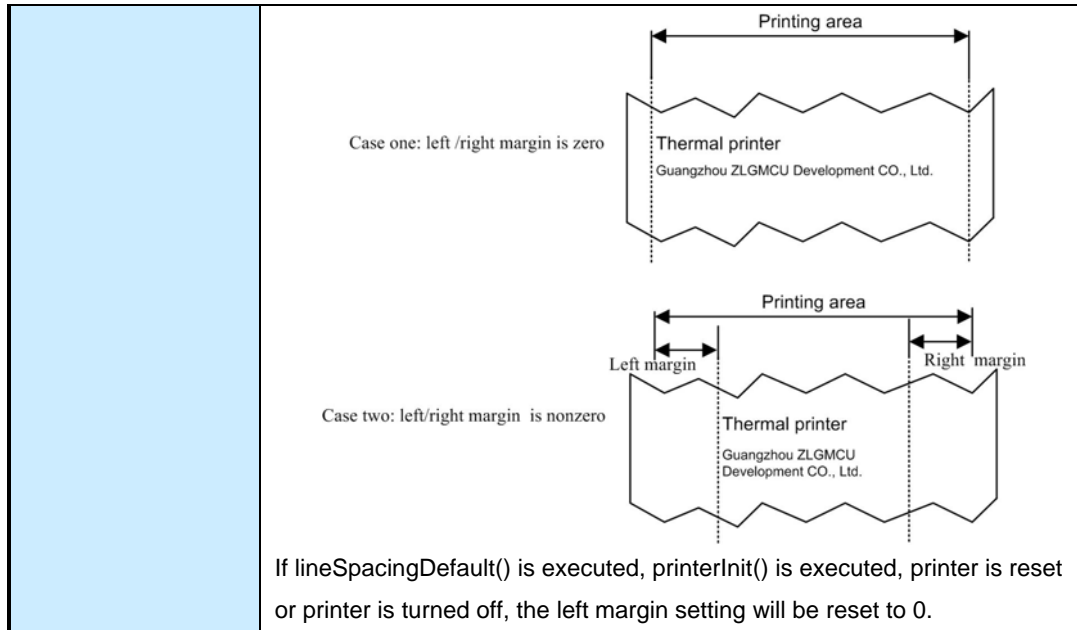


Table 2-10: rightMarginSet

Function Name	Set the right margin
Function Prototype	void rightMarginSet (unsigned char ucRightMargin)
Parameter	ucRightMargin: the right margin value (Unit: 8 dots) For ZYTP58 and MTP58: $0 \leq ucRightMargin \leq 47$, and $0 \leq (\text{left margin} + \text{right margin}) \leq 47$ For ZYTP80 and MTP80: $0 \leq ucRightMargin \leq 71$, and $0 \leq (\text{left margin} + \text{right margin}) \leq 71$
Return Value	None
Model Supported	All the models
Description	This function sets the right margin (unit: 8 dots) to make sure the content printed not exceed the right margin position. The right margin position is the right edge position of the printing range. For more details in margin setting, please refer to leftMarginSet(). If lineSpacingDefault() is executed, printerInit() is executed, printer is reset or printer is turned off, the right margin setting will be reset to 0.

Table 2-11: abscissaSet

Function Name	Set the absolute print position
Function Prototype	void abscissaSet (unsigned short ucXNum)
Parameter	ucXNum: absolute print position, 0~65535 dots
Return Value	None
Model Supported	All the models
Description	This function shifts the print position to a location in a distance of (ucXNum) dots from the starting position for printing, as following shows:

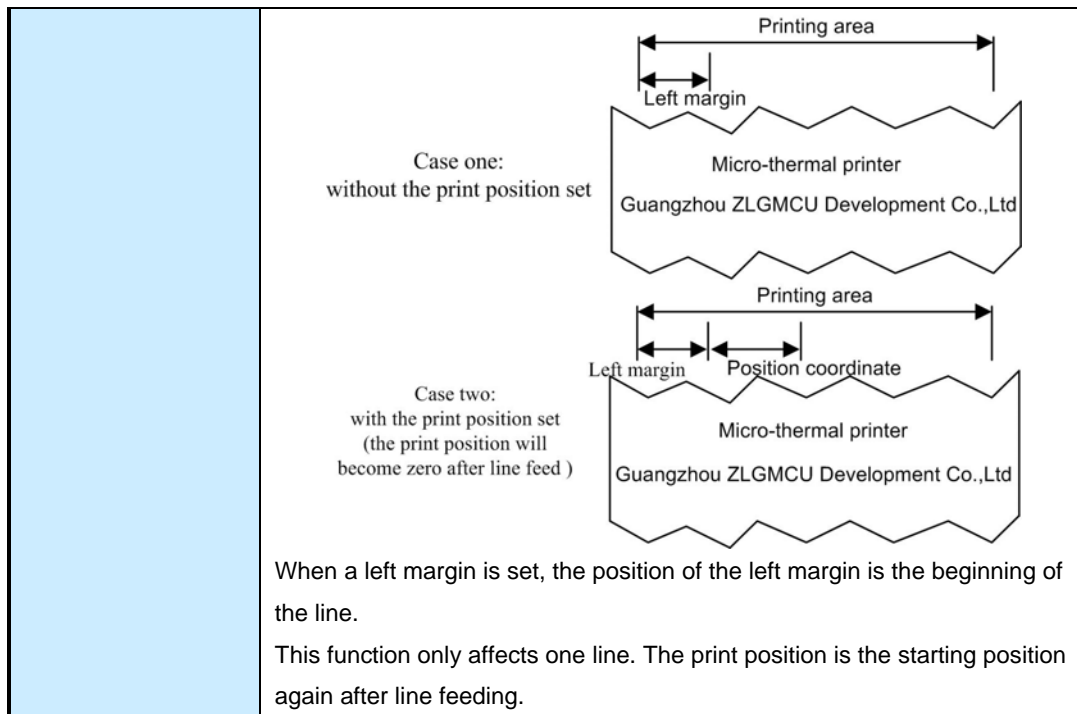
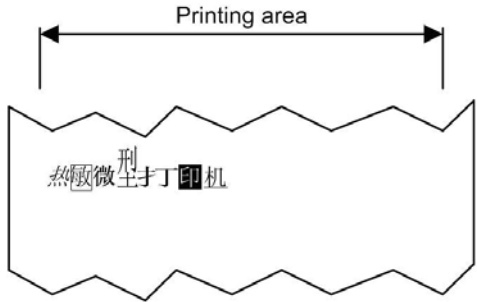


Table 2-12: fontTypeSet

Function Name	Set the font types
Function Prototype	void fontTypeSet (unsigned char ucFontType)
Parameter	ucFontType: font types with combination applicable (use "OR") FONT_TYPE_NORMAL normal FONT_TYPE_ITALIC italic FONT_TYPE_BORDER border FONT_TYPE_EMPHASIZE bold FONT_TYPE_DOUBLE_HEIGHT double height FONT_TYPE_DOUBLE_WIDTH double width FONT_TYPE_REVERSE_VEDIO inverse FONT_TYPE_UNDERLINE underline
Return Value	None
Model Supported	All the models
Description	This function sets the font types, including italic, border, bold, double width, double height, inverse or underline, as following shows. It is valid for both Chinese font and English font.  <p><i>Italic, border, bold, double height, double width, inverse, underline</i></p>

	<p>All the font types can be used in combination.</p> <p>The font types settings are effective until printerInit() is executed, printer is reset or printer is turned off</p>
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Table 2-13: horizontalAlign

Function Name	Set the print alignment						
Function Prototype	void horizontalAlign(unsigned char align)						
Parameter	<p>Align: print alignment for printing</p> <table> <tr> <td>ALIGN_LEFT</td> <td>left</td> </tr> <tr> <td>ALIGN_CENTER</td> <td>center</td> </tr> <tr> <td>ALIGN_RIGHT</td> <td>right</td> </tr> </table>	ALIGN_LEFT	left	ALIGN_CENTER	center	ALIGN_RIGHT	right
ALIGN_LEFT	left						
ALIGN_CENTER	center						
ALIGN_RIGHT	right						
Return Value	None						
Model Supported	All the models						
Description	<p>This function aligns all the content in a line.</p> <p>The settings by horizontalAlign() are effective until printerInit() is executed, printer is reset or printer is turned off.</p>						

Table 2-14: fontGrayscaleSet

Function Name	Set the font grayscale
Function Prototype	void fontGrayscaleSet (unsigned char ucGrayscale)
Parameter	ucGrayscale: font grayscale, range: 1~8
Return Value	None
Model Supported	All the models
Description	<p>This function sets the font grayscale. And there are 8 levels of grayscale to satisfy different colors depth requirements for different thermal paper, in which "1" is the lightest and "8" is the darkest.</p> <p>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 according to the actual situation.</p> <p>For ZYTPxx -xx5xx and MTPxx -xx5xx, the gray value doesn't affect the print speed.</p> <p>The settings by fontGrayscaleSet() are effective until printerInit() is executed, printer is reset or printer is turned off.</p>

Table 2-15: printSpeedSet

Function Name	Set the print speed						
Function Prototype	void printSpeedSet (unsigned char ucPrintSpeed)						
Parameter	<p>ucPrintSpeed: print speed</p> <table> <tr> <td>PRINT_SPEED_LOW</td> <td>low speed</td> </tr> <tr> <td>PRINT_SPEED_MIDIUM</td> <td>moderate speed</td> </tr> <tr> <td>PRINT_SPEED_HIGHT</td> <td>high speed</td> </tr> </table>	PRINT_SPEED_LOW	low speed	PRINT_SPEED_MIDIUM	moderate speed	PRINT_SPEED_HIGHT	high speed
PRINT_SPEED_LOW	low speed						
PRINT_SPEED_MIDIUM	moderate speed						
PRINT_SPEED_HIGHT	high speed						
Return Value	None						
Model Supported	ZYTP80, MTP80, ZYTP58-xx5xx and MTP58-xx5xx						

Description	This function sets the print speed. For ZYTP80/MTP80, the maximum speed can only reach the moderate speed ($n \leq 1$) when the serial communication baud rate is below 9600bps. The settings by fontGrayscaleSet() are effective until printerInit() is executed, printer is reset or printer is turned off
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Table 2-16: fontSizeSet

Function Name	Set the font size						
Function Prototype	void fontSizeSet (unsigned char ucFontSize)						
Parameter	ucFontSize: font size <table style="margin-left: 40px;"> <tr> <td>FONT_SIZE_24</td> <td>24×24</td> </tr> <tr> <td>FONT_SIZE_16</td> <td>16×16</td> </tr> <tr> <td>FONT_SIZE_12</td> <td>12×12</td> </tr> </table>	FONT_SIZE_24	24×24	FONT_SIZE_16	16×16	FONT_SIZE_12	12×12
FONT_SIZE_24	24×24						
FONT_SIZE_16	16×16						
FONT_SIZE_12	12×12						
Return Value	None						
Model Supported	ZYTP80, MTP80, ZYTP58-xx5xx and MTP58-xx5xx						
Description	This function is valid for both Chinese and English fonts, but only available for the products with multiple fonts supported. The settings by fontSizeSet() are effective until printerInit() is executed, printer is reset or printer is turned off						

Table 2-17 selectKanjiMode

Function Name	Select Kanji character mode
Function Prototype	void selectKanjiMode (void)
Parameter	None
Return Value	None
Model Supported	ZYTP80, MTP80, ZYTP58-xx5xx and MTP58-xx5xx
Description	This function can be used only for the Japanese, Simplified Chinese, And Traditional Chinese Models.

Table 2-18 cancelKanjiMode

Function Name	Cancel Kanji character mode
Function Prototype	void cancelKanjiMode (void)
Parameter	None
Return Value	None
Model Supported	ZYTP80, MTP80, ZYTP58-xx5xx and MTP58-xx5xx
Description	This function can be used only for the Japanese, Simplified Chinese, And Traditional Chinese Models.

Table 2-19 selectInternationalChar

Function Name	Select an international character set		
Function Prototype	void selectInternationalChar (unsigned char ucCountry)		
Parameter	ucCountry: Country <table style="margin-left: 40px;"> <tr> <td>0</td> <td>U.S.A</td> </tr> </table>	0	U.S.A
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
Return Value	None	
Model Supported	ZYTP80, MTP80, ZYTP58-xx5xx and MTP58-xx5xx	
Description	Select an international character set	

Table 2-20 selectCharCodePage

Function Name	Select character code table
Function Prototype	void selectCharCodePage (unsigned char ucPageNum)
Parameter	ucPageNum: 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
Return Value	None
Model Supported	ZYTP80, MTP80, ZYTP58-xx5xx and MTP58-xx5xx
Description	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).
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Table 2-21: picturePrintV

Function Name	Select bit-image mode
Function Prototype	void picturePrintV (unsigned char ucType, unsigned short usHSize, unsigned char * pucDataBuf)
Parameter	cType: bit-image modes as follows: DOT_8_SINGLE_DENSITY 8 dots single density DOT_8_DOUBLE_DENSITY 8 dots double density DOT_24_SINGLE_DENSITY 24 dots single density DOT_24_DOUBLE_DENSITY 24 dots double density usHSize: horizontal dots For ZYTP58 and MTP58: $0 \leq usHSize \leq 384$ For ZYTP80 and MTP80: $0 \leq usHSize \leq 576$ pucDataBuf: starting address of the image buffer
Return Value	None
Model Supported	All the models
Description	<p>pucDataBuf 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> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>8 dots printing</p> <p>Dot image data (bit image)</p> </div> <div style="text-align: center;"> <p>24 dots printing</p> <p>Dot image data (bit image)</p> </div> </div> <p>The bit image is only stored in the print buffer and is not printed. Only when the print function is received, the printing starts. After printing, no data exists in the print buffer. If the image printed is too high, it should be divided into smaller images with a height of 8 dots (DOT_8_SINGLE_DENSITY or DOT_8_DOUBLE_DENSITY) or 24 dots (DOT_24_SINGLE_DENSITY or DOT_24_DOUBLE_DENSITY) and printed respectively. After storing the image data, additional information can also be filled into the print buffer to print with the image. Both function printAndFeedNdotLine(24) and function print() can be applied for printing, but print() would cause the line feeding, making the image for several lines discontinuously.</p>

Table 2-22: picturePrintH

Function Name	Print raster bit image																
Function Prototype	void picturePrintH (unsigned char ucType, unsigned short usHSize, unsigned short usVSize, unsigned char * pucDataBuf)																
Parameter	cType: raster bit image modes as follows: PICTURE_TYPE_NORMAL normal PICTURE_TYPE_DOUBLE_WIDTH double width PICTURE_TYPE_DOUBLE_HEIGHT double height PICTURE_TYPE_QUADRUPLE double width & double height usHSize: horizontal bytes For ZYTP58 and MTP58: $0 \leq usHSize \leq 384$ For ZYTP80 and MTP80: $0 \leq usHSize \leq 576$ usVSize: vertical dots, range: 0~65535 pucDataBuf: starting address of the image buffer																
Return Value	None																
Model Supported	All the models																
Description	pucDataBuf 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 bit image is only stored in the print buffer and is not printed. This function executes paper feed for amount needed for printing the bit image regardless of the setting by lineSpaceSet() or lineSpaceSetDefault(). After printing the bit image, this function sets the print position to the beginning of the line, and clears up the buffer. The printing result is as follows: <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> When this function is executed, the data is transmitted and printed synchronously. So no other printing function is required.	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														

Table 2-23: horizontalTabSet

Function Name	Set horizontal tab positions
Function Prototype	void horizontalTabSet (unsigned char * pucNBuf, unsigned char ucDataNum)
Parameter	pucNBuf: horizontal tab positions, unit: 8 dots For ZYTP58 and MTP58: $0 \leq pucNBuf[k] \leq 48$ For ZYTP80 and MTP80: $0 \leq pucNBuf[k] \leq 72$ <pucnbuf[k] <math="">\geq pucNBuf[k-1] ucDataNum: the number of data, range: 0~16</pucnbuf[k]>
Return Value	None

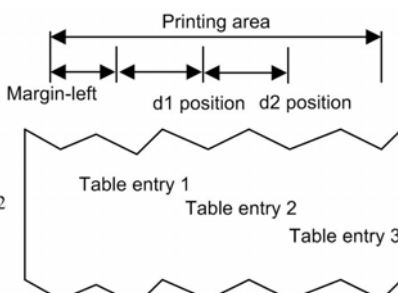
<p>Model Supported</p>	<p>All the models</p>
<p>Description</p>	<p>The tab position is shown as follows:</p> <div style="text-align: center;">  <p>The diagram illustrates the horizontal tab settings. At the top, a horizontal line represents the 'Printing area'. Below it, a 'Margin-left' is indicated by a double-headed arrow. Two vertical lines mark the 'd1 position' and 'd2 position'. Below this, a wavy-edged box represents a table containing three entries: 'Table entry 1', 'Table entry 2', and 'Table entry 3'. The text 'Set the tab positions of d1 and d2' is placed to the left of the table.</p> </div> <p>Set the tab positions of d1 and d2</p> <p>A maximum of 16 tab positions can be set.</p> <p>When this function is used, any previous horizontal tab settings will be canceled.</p> <p>When pucNBut[k] is less than or equal to pucNBut[k-1], horizontal tab setting is finished, and the following data will be processed as normal data.</p> <p>The tab position can be switched by horizontalTab() function.</p> <p>When the left margin is changed, the tab position is also changed.</p> <p>Horizontal tab position settings are effective until printerInit() is executed, the printer is reset, or the power is turned off.</p>

Table 2-24: horizontalTab

Function Name	Horizontal tab
Function Prototype	void horizontalTab (void)
Parameter	None
Return Value	None
Model Supported	All the models
Description	Horizontal tab position is set by horizontalTab(). If no horizontal tab position is set (it is default setting), this function will be used as print(). If the horizontal 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).

Table 2-25: formPrintV

Function Name	Print the vertical table
Function Prototype	void formPrintV (unsigned char ucVLineNum, unsigned char *pucVLinePos, unsigned char ucItemNum, formItem *psItem)
Parameter	ucVLineNum: the number of vertical line, range: 0~17 pucVLinePos: the positions of vertical lines, unit: 8 dots For ZYTP58 and MTP58: $0 \leq \text{pucVLinePos}[k] \leq 48$ For ZYTP80 and MTP80: $0 \leq \text{pucVLinePos}[k] \leq 72$ $\text{pucVLinePos}[k] \geq \text{pucVLinePos}[k-1]$ ucItemNum: the number of table item, range: 0~16 psItem: the setting of item, including position, font type and text. The structure is defined as following: typedef struct __formItem { unsigned char ucPos; /* Set the position of table item */ /* The valid range is the same with pucVLinePos */ unsigned char ucFontType; /* Set the font type */ unsigned char ucDataLen; /* Set the data length of the table item, range: 0~20 */ unsigned char *pucDataBuf; /* Set the data in the table item */ }formItem; The followings are the font types available in the table item: VF_FONT_TYPE_NORMAL normal VF_FONT_TYPE_EMPHASIZE bold VF_FONT_TYPE_UNDERLINE underline VF_FONT_TYPE_REVERSE_VEDIO inverse
Return Value	None
Model Supported	ZYTPxx-xxxCx and MTPxx-xxxCx

Description	<p>The following diagram is an example for explaining how to print the vertical table:</p> <div style="text-align: center;"> </div> <p>The reference 0 is located at the right side of the paper in the direction of paper feeding.</p> <p>Each table item contains maximum 10 Chinese characters or 20 English characters</p> <p>If no table border is required, m will be zero.</p>
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Table 2-26: barcodeHeightSet

Function Name	Set the height of one-dimension bar code
Function Prototype	void barcodeHeightSet(unsigned char ucHeight)
Parameter	UcHeigh: the height of one-dimension bar code, range: 0~255 dots
Return Value	None
Model Supported	ZYTPxx-xxxBx, ZYTPxx-xxxEx, MTPxx-xxxBx and MTPxx-xxxEx
Description	<p>barcodeHeightSet() sets the height of one-dimension bar code to ucHeight dots, as following shows:</p> <div style="text-align: center;"> </div> <p>The settings by barcodeHeightSet() are effective until printerInit() is executed, printer is reset or printer is turned off.</p>

Table 2-27: barcodeWidthSet

Function Name	Set the width of one-dimension bar code
Function Prototype	void barcodeWidthSet(unsigned char ucWidth)
Parameter	ucWidth: the width of a bar in one-dimension bar code, range: 1~6 dots
Return Value	None
Model Supported	ZYTPxx-xxxBx, ZYTPxx-xxxEx, MTPxx-xxxBx and MTPxx-xxxEx



Description	<p>barcodeWidthSet() sets the width of a bar in one-dimension bar code to ucWidth dots, as following shows:</p> <div style="text-align: center;">  The width is 3 dots </div> <div style="text-align: center;">  The width is 4 dots </div> <p>The settings by this function are effective until printerInit() is executed, printer is reset or printer is turned off.</p>
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Table 2-28: barcodeHriPosSet

Function Name	Select print position of one-dimension HRI								
Function Prototype	void barcodeHriPosSet (unsigned char ucHriPos)								
Parameter	<p>ucHriPos: position of one-dimension HRI</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;">BARCODE_HRI_POS_NONE</td> <td style="padding-left: 40px;">none</td> </tr> <tr> <td style="padding-left: 40px;">BARCODE_HRI_POS_TOP</td> <td style="padding-left: 40px;">top</td> </tr> <tr> <td style="padding-left: 40px;">BARCODE_HRI_POS_BOTTOM</td> <td style="padding-left: 40px;">bottom</td> </tr> <tr> <td style="padding-left: 40px;">BARCODE_HRI_POS_TOP_BOTTOM</td> <td style="padding-left: 40px;">top+bottom</td> </tr> </table>	BARCODE_HRI_POS_NONE	none	BARCODE_HRI_POS_TOP	top	BARCODE_HRI_POS_BOTTOM	bottom	BARCODE_HRI_POS_TOP_BOTTOM	top+bottom
BARCODE_HRI_POS_NONE	none								
BARCODE_HRI_POS_TOP	top								
BARCODE_HRI_POS_BOTTOM	bottom								
BARCODE_HRI_POS_TOP_BOTTOM	top+bottom								
Return Value	None								
Model Supported	ZYTPxx-xxxBx, ZYTPxx-xxxEx, MTPxx-xxxBx and MTPxx-xxxEx								
Description	<p>The font size of HRI to a module with multiple fonts supported, such as xxTPxx-xx5Bx, can be set by barcodeHriFontSet().</p> <p>The settings by this function are effective until printerInit() is executed, printer is reset or printer is turned off.</p>								

Table 2-29: barcodeHriFontSet

Function Name	Select the font size of one-dimension HRI						
Function Prototype	void barcodeHriFontSet(unsigned char ucHriFont)						
Parameter	<p>ucHriFont: one-dimension HRI</p> <table style="width: 100%; border: none;"> <tr> <td style="padding-left: 40px;">BARCODE_HRI_FONT_24</td> <td style="padding-left: 40px;">12×24</td> </tr> <tr> <td style="padding-left: 40px;">BARCODE_HRI_FONT_16</td> <td style="padding-left: 40px;">8×16</td> </tr> <tr> <td style="padding-left: 40px;">BARCODE_HRI_FONT_12</td> <td style="padding-left: 40px;">6×12</td> </tr> </table>	BARCODE_HRI_FONT_24	12×24	BARCODE_HRI_FONT_16	8×16	BARCODE_HRI_FONT_12	6×12
BARCODE_HRI_FONT_24	12×24						
BARCODE_HRI_FONT_16	8×16						
BARCODE_HRI_FONT_12	6×12						
Return Value	None						
Model Supported	ZYTPxx-xxxBx, ZYTPxx-xxxEx, MTPxx-xxxBx and MTPxx-xxxEx						
Description	<p>The settings by this function are effective until printerInit() is executed, printer is reset or printer is turned off.</p>						

Table 2-30: barcodePrint

Function Name	Select the font size of one-dimension HRI																						
Function Prototype	void barcodeHriFontSet(unsigned char ucHriFont)																						
Parameter	<p>void barcodePrint(unsigned char ucBarcodeSys, unsigned char *pucCodeBuf, unsigned char ucCodeLen);</p> <p>ucBarcodeSys: Bar code system</p> <table border="1"> <thead> <tr> <th>Bar Code System</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>BARCODE_SYS_UPCA</td> <td>0</td> </tr> <tr> <td>BARCODE_SYS_UPCE</td> <td>1</td> </tr> <tr> <td>BARCODE_SYS_EAN13</td> <td>2</td> </tr> <tr> <td>BARCODE_SYS_EAN8</td> <td>3</td> </tr> <tr> <td>BARCODE_SYS_CODE39</td> <td>4</td> </tr> <tr> <td>BARCODE_SYS_ITF25</td> <td>5</td> </tr> <tr> <td>BARCODE_SYS_CODABAR</td> <td>6</td> </tr> <tr> <td>BARCODE_SYS_CODE93</td> <td>7</td> </tr> <tr> <td>BARCODE_SYS_CODE128</td> <td>8</td> </tr> <tr> <td>BARCODE_SYS_EAN128</td> <td>9</td> </tr> </tbody> </table> <p>pucCodeBuf: the starting address of bar code data ucCodeLen: the length of bar code data</p>	Bar Code System	Number	BARCODE_SYS_UPCA	0	BARCODE_SYS_UPCE	1	BARCODE_SYS_EAN13	2	BARCODE_SYS_EAN8	3	BARCODE_SYS_CODE39	4	BARCODE_SYS_ITF25	5	BARCODE_SYS_CODABAR	6	BARCODE_SYS_CODE93	7	BARCODE_SYS_CODE128	8	BARCODE_SYS_EAN128	9
Bar Code System	Number																						
BARCODE_SYS_UPCA	0																						
BARCODE_SYS_UPCE	1																						
BARCODE_SYS_EAN13	2																						
BARCODE_SYS_EAN8	3																						
BARCODE_SYS_CODE39	4																						
BARCODE_SYS_ITF25	5																						
BARCODE_SYS_CODABAR	6																						
BARCODE_SYS_CODE93	7																						
BARCODE_SYS_CODE128	8																						
BARCODE_SYS_EAN128	9																						
Return Value	None																						
Model Supported	ZYTPxx-xxxBx, ZYTPxx-xxxEx, MTPxx-xxxBx and MTPxx-xxxEx																						
Description	<p>The relationship among the bar code system, bar code data and bar code length is shown is Table 2-50.</p> <p>Notes for UPCA (Number = 0) 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.</p> <p>Notes for UPCE (Number = 1) 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.</p>																						

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 (Number = 2) process

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

Start character, central separating character and stop character will be added automatically.

Notes for JAN8/EAN8 (Number = 3) process

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

Start character, central separating character and stop character will be added automatically.

Notes for CODE39 (Number = 4) process

When the first bar code d1 is not "*", the printer adds a first character (*) automatically.

When the last bar code dn is not "*", the printer adds a last character (*) automatically.

When "*" is processed during bar code data processing, the printer processes "*" as a stop character. The printer prints data preceding "*" and finishes function processing. Therefore, data following "*" are processed as normal data.

Parity bit are not calculated and added.

Notes for ITF 25 (Number = 5) process

The start character and stop character will be added automatically

Parity bit are not calculated and added.

Notes for CODABAR (NW-7) (Number = 6) process

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".

Parity bit is not calculated and added.

Notes for CODE93 (Number = 7) process

Start character and stop character are added automatically.

Parity codes (2 bits) are calculated and added automatically.

For the bar code HRI printing, no HRI character will be used as start character or stop character.

For the bar code HRI printing, space character will be used as the control character.

Notes for CODE128 (Number = 8) process

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.

The function characters FNC1 to FNC4 can be inputted by using C1H to C4H.

Parity bit is calculated and added automatically.

For bar code HRI printing, space character will be used as control character or FNC1 ~ FNC4.

Notes for EAN128 (Number =9) process

Basic structure:

Start character set	FNC1	AI	Data part	Parity bit A	Parity bit B	Stop character
Added automatically		(d1 ... dk)			Added automatically	

Connect structure:

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		

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.

The function characters FNC1 to FNC4 can be inputted by using C1H to C4H.

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.

When linking two data together, FNC1 (C1H “Decimal = 193”) should be inserted between them. For example: GS k 74 18 "019501234567890*" 193 "029501234567890*.”

For bar code HRI printing, the space character is used as control character, but FNC1 ~ FNC4 are removed.

Table 2-31: printerInit

Function Name	Initialize the printer
Function Prototype	void printerInit (void)
Parameter	None
Return Value	None
Model Supported	All the models
Description	This function 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.

Table 2-32: printerClearBuffer

Function Name	Clear up the printer buffer (real time)
Function Prototype	void printerClearBuffer (void)
Parameter	None
Return Value	None
Model Supported	All the models
Description	When receiving this command, the printer clears up the buffer immediately.

Table 2-33: printerCutPaper

Function Name	Feed paper and cut paper
Function Prototype	void printerCutPaper(unsigned char ucDotLineNum, unsigned char type)
Parameter	ucDotLineNum: the number of lines for paper feeding before cut Type: cutting mode CUT_TYPE_HALF half cut CUT_TYPE_ALL full cut
Return Value	None
Model Supported	ZYTPxx-xxxxC and MTPxx-xxxxC
Description	This function feeds paper for n lines, and then cuts paper.

Table 2-34: printerStateRT

Function Name	Query printer state (real time)
Function Prototype	unsigned char printerStateRT(unsigned char *pucState, unsigned short usTimeOut)
Parameter	pucState: the state value returned by printer, each bit is independent. RINTER_STATE_NORMAL normal PRINTER_STATE_OVERVOLATGE over voltage PRINTER_STATE_AXOOPEN platen open PRINTER_STATE_OFPAPER paper end PRINTER_STATE_OVERHEAT over heat PRINTER_STATE_CUTTERON cutter down usTimeOut: response is over time (unit: 1ms).
Return Value	FAIL or SUCCESS
Model Supported	All the models

Description	This function queries the state of the printer. Notice that zyPrtLib may process the state value returned automatically, such as calling the entry functions for overheat or paper end.
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Table 2-35: printerStateAutoUpload

Function Name	Set/Cancel the printer states automatic back
Function Prototype	void printerStateAutoUpload(unsigned char key)
Parameter	Key: options for state returned, it is multiple selected. RINTER_STATE_NORMAL normal PRINTER_STATE_OVERVOLATGE over voltage PRINTER_STATE_AXOOPEN platen open PRINTER_STATE_OFFPAPER paper end PRINTER_STATE_OVERHEAT over heat PRINTER_STATE_CUTTERON cutter down
Return Value	None
Model Supported	All the models
Description	This function sets/cancels printer state automatic back. Notice that all the options are disabled by default, so user should configure them before the first printing after printer was power on or exited from low power mode. Otherwise unpredicted result may occur. The settings by this function are effective until printerInit() is executed, printer is reset or printer is turned off.

Table 2-36: printerBaudRateSet

Function Name	Set printer baud rate
Function Prototype	void printerBaudRateSet (unsigned long ulBaudRate)
Parameter	ulBaudRate: baud rate, such as 9600, valid range: 110~115200
Return Value	None
Model Supported	All the models
Description	This function sets the printer baud rate. Notice that user should configure the baud rate before the first printing after printer was power on or exited from low power mode. Otherwise unpredicted result may occur. The settings by this function are effective until printer is reset or printer is turned off.

Table 2-37: printerFlowCtrlSet

Function Name	Set flow control mode
Function Prototype	void printerFlowCtrlSet(unsigned char Mode)
Parameter	Mode: flow control modes FLOW_CTRL_NONE 0 /* None */ FLOW_CTRL_SOFTWARE 49 /* Software flow control */ FLOW_CTRL_HARDWARE 48 /* Hardware flow control */
Return Value	None
Model Supported	All the models

Description	This function sets the printer flow control mode. Notice that the flow control modes are disabled by default, so user should configure them before the first printing after printer was power on or exited from low power mode. Otherwise unpredicted result may occur. The settings by this function are effective until printerInit() is executed, printer is reset or printer is turned off.
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Table 2-38: printerEnterLowPowerMode

Function Name	Enter low power mode
Function Prototype	unsigned char printerEnterLowPowerMode (unsigned short usTimeOut)
Parameter	usTimeOut: response is over time (unit: 1ms).
Return Value	FAIL or SUCCESS
Model Supported	All the models except ZYTPxx-xxxxC and MTPxx-xxxxC
Description	None

Table 2-39: printerExitLowPowerMode

Function Name	Exit low power mode
Function Prototype	unsigned char printerExitLowPowerMode (unsigned short usTimeOut)
Parameter	usTimeOut: response is over time (unit: 1ms).
Return Value	FAIL or SUCCESS
Model Supported	All the models except ZYTPxx-xxxxC and MTPxx-xxxxC
Description	This function is used for exiting the low power mode. When entering the low power mode, an appropriate delay should be inserted before exiting.

Table 2-40: printerOverHeatHandler

Function Name	Printer over temperature handler entry
Function Prototype	unsigned char printerExitLowPowerMode (unsigned short usTimeOut)
Parameter	None
Return Value	None
Description	printerOverHeatHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

Table 2-41: printerOverHeatResumeHandler

Function Name	Printer over temperature resume handler entry
Function Prototype	void printerOverHeatResumeHandler (void)
Parameter	None
Return Value	None
Description	printerOverHeatResumeHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

Table 2-42: printerOfPaperHandler

Function Name	Printer paper end handler entry
Function Prototype	void printerOfPaperHandler (void)
Parameter	None
Return Value	None
Description	printerOfPaperHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

Table 2-43: printerOfPaperResumeHandler

Function Name	Printer paper end resume handler entry
Function Prototype	void printerOfPaperResumeHandler (void)
Parameter	None
Return Value	None
Description	printerOfPaperResumeHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

Table 2-44: printerOverVoltageHandler

Function Name	Printer over voltage handler entry
Function Prototype	void printerOverVoltageHandler (void)
Parameter	None
Return Value	None
Description	printerOverVoltageHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

Table 2-45: printerOverVoltageResumeHandler

Function Name	Printer over voltage resume handler entry
Function Prototype	void printerOverVoltageResumeHandler (void)
Parameter	None
Return Value	None
Description	printerOverVoltageResumeHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

Table 2-46: printerAxoOpenHandler

Function Name	Printer platen open handler entry
Function Prototype	void printerAxoOpenHandler (void)
Parameter	None
Return Value	None
Description	printerAxoOpenHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

Table 2-47: printerAxoCloseHandler

Function Name	Printer platen close handler entry
Function Prototype	void printerAxoCloseHandler (void)
Parameter	None
Return Value	None
Description	printerAxoCloseHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

Table 2-48: printerCutterOnHandler

Function Name	Pinter cutter down handler entry
Function Prototype	void printerCutterOnHandler (void)
Parameter	None
Return Value	None
Description	printerCutterOnHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

Table 2-49: printerCutterOffHandler

Function Name	Pinter cutter resume handler entry
Function Prototype	void printerCutterOffHandler (void)
Parameter	None
Return Value	None
Description	printerCutterOffHandler() is called in serial receiving interrupt function. Notice that blocking code mustn't be used in function programming and the code handler time should be less than the serial data receiving time.

**Table 2-50: The relationships among bar code system,
bar code data and bar code data length**

Number	Encode system	Bar code data (SP for space)			
		Data length	n	Character set	Data(d)
0	UPC-A	Fixed	n=11,12	0~9	48≤d≤57
1	UPC-E	Fixed	6≤d≤8 n=11,12	0~9	48≤d≤57 (d1=48 when k=7,8,11,12)
2	JAN13(EAN13)	Fixed	n=12,13	0~9	48≤d≤57
3	JAN8(EAN8)	Fixed	n=7,8	0~9	48≤d≤57
4	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
5	ITF (Interleaved 2 of 5)	Variable	2≤n≤255 (even)	0~9	48≤d≤57
6	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)
7	CODE93	Variable	1≤n≤255	00H~7FH	0≤d≤127
8	CODE128	Variable	1≤n≤255	00H~7FH C1H~C4H(FNC)	0≤d≤127 D=193,194,195,196
9	UCC/EAN128	Variable	1≤n≤255	00H~7FH C1H~C4H(FNC)	0≤d≤127 D=193,194,195,196

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