

Shanghai WIZARPOS International
Co., Ltd.

Product r&d technical documents

WIZARPOS print module

Technical manuals

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1 Performance Indicators

1.1 Introduction

WIZARPOS developed the thermal printer module to provide a high-quality, high speed printing, low-noise, high reliability thermal printing solution.

Wide application fields, especially for commercial cash registers, bank POS and all kinds of receipt printing.

Paper width is 58mm, printer area is 48mm, the maximum of paper roll outer diameter is 40mm.

1.2 Key Benefits

- Easy to operate, easy maintenance;
- High speed and low-noise printing;
- Print head with long life, reliable performance;
- Support GB18030-2000 Chinese char set;
- Support ISO8859-(1、2、3、4、5、7、9、13、15) char set;
- Real time detection mode;

1.3 Key technical indicator

1.3.1 Specification

- 1) Print method: thermal printing line after line
- 2) print dots: 384 dots/line(default)
- 3) Resolution: 203DPIx203DPI
- 4) feed paper method: one way friction into the paper
- 5) print width: 8dots/mm, 48mm(print area)
- 6) char size/line:

Foreign(12x24)	Foreign (9x17)	Chinese(24x24)	Chinese(16x16)
32chars/line	42chars/line	16chars/line	24chars/line

- 7) line space: default 24 点(3mm)

adjust by control command, the increment is 0.125mm;

If the data is out of print area, auto line wrap, and the line space is 0. The maximum line size is 2, if data is larger than 2 lines, the larger part will be discarded.

- 8) print speed: maximum 80mm/s

the print speed is relate to the data transfer speed;

feed paper speed: maximum is 80mm/s

- 9) minimum unit of feed paper: 0.125mm

- 10) Print Format: maximum 32 columns(12x24 character); maximum 42columns(9x17 characters);maximum 16 columns(24x24 Chinese); maximum 24 columns(16x16 Chinese)

11) internal receive buffer: 4K bytes

12) Print interface:

Serial interface: TTL level compatibility, support RTS/CTS handshake protocol, asynchronous communication 115200(fixed)

13) Print paper:

High-quality thermal paper, paper thick is 65-100 μ m;

Recommend the thermal paper specification: outer diameter 40mm(maximum)
paper width 57.5+/-0.5mm

14) Printer Command: EPSON ESC/POS Command list compatibility

1.3.2 Thermal paper roll technical specification

- ✓ Type: high quality sensitivity thermal paper
- ✓ Print width: 57.5+/-0.5mm
- ✓ Print paper thick: 65 μ m~100 μ m
- ✓ Paper roll outer diameter: maximum is 50 mm
- ✓ Paper curl direction: Outside the printing surface volume
- ✓ Print surface: Paper roll of the lateral

Note: If using paper do not meet above requirement, there will be the possibility of a paper jam.

1.3.3 Printing mechanism reliability

1) print movement

lift: 100kilometer, 1 billion pulse

2) mechanism

thermal module

work temperature: -5°C~45°C (No condensation)

work humidity: 20~85% (No condensation)

store temperature: -20°C~60°C (No condensation)

store humidity: 5~95% (40°C, No condensation)

Life: 50km feed paper length

Note: If using paper do not meet above requirement, the above life can not guarantee.

1.3.4 Character char set

1) character char set

Chinese: GB18030-2000 (backwards compatibility GB2312-1980);

Foreign: ISO8859-(1, 2, 3, 4, 5, 7, 9, 13, 15)

2) Character size

	normal	Double	Double	Double height
--	--------	--------	--------	---------------

		height	width	+Double width
	W*H(mm)			
Foreign(12x24)	1.5x3.0	1.5x6.0	3.0x3.0	3.0x6.0
Foreign(9x17)	1.125x2.125	1.125x4.25	2.25x2.125	2.25x4.25
Chinese(24x24)	3.0x3.0	3.0x6.0	6.0x3.0	6.0x6.0
Chinese(16x16)	2.0x2.0	2.0x3.0	3.0x2.0	3.0x3.0

1.4 other

1.4.1 Power supply

- ◆ Supply voltage: DC 6.8-8.4V
- ◆ Current consumption:

Average value: about 2A

1.4.2 Support terminal table list

Terminal type	Outer diameter
Q1	30mm
POS1v2	40mm
Q2	40mm
Q1v2	30mm

2 POS Commands

2.1 Command List

Command	Statement
HT	Horizontal tab
LF	Print and line feed
CR	Carriage return
ESC SP	Set right-side character space
ESC !	Set the font types
ESC \$	Set the absolute print position
ESC *	Select bit-image mode
ESC -	Turn underline mode on/off
ESC 2	Set the line space to a default value
ESC 3	Set the line space to n dots
ESC S0	Set character double width
ESC DC4	Set the width normal
ESC @	Initialize the printer
ESC B	Set the left margin
ESC D	Set horizontal tab positions
ESC E	Turn bold mode on/off
ESC G	Turn double-strike mode on/off
ESC J	Print and feed paper for n dots
ESC M	Set the font grayscale
ESC R	Select an international character set
ESC V	Turn 90° clockwise rotation mode on/off
ESC \	Set the relative print position
ESC a	Set the print alignment
ESC d	Print and feed paper for n lines
ESC t	Select character code page
ESC {	Turn upside-down printing mode on/off
GS !	Select character size
GS B	Turn white/black reverse printing mode on/off
GS v 0	Print raster bit image
DC2 * r	Print bitmap
DC2 V	Print MSB bitmap
DC2 v	Print LSB bitmap

DC2 T	Print test page
FS !	Set Chinese character printing mode
FS -	Turn Chinese character underline mode on/off
FS S	Set Chinese character space
FS W	Turn Chinese character printing on/off
ESC C	Check character code table
ESC F	Download character code table
ESC H	MD5 self-inspection
ESC A	Check the printer version
ESC >	Check information of character code table head
GS E	Set print density

2.2 Command Explanations

HT

[Name]	Horizontal tab
[Format]	ASCII HT Hex 09 Decimal 9
[Description]	Move the print position to the next tab position. <ul style="list-style-type: none"> • If no tab position is set (it is default setting), this command will be ignored • The tab position is set by ESC D • 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).
[Reference]	ESC D

LF

[Name]	Print and feed paper
[Format]	ASCII LF Hex 0A Decimal 10
[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.
[Reference]	ESC 2, ESC 3

CR

[Name]	Carriage return
[Format]	ASCII CR Hex 0D Decimal 13
[Description]	Adjust the print position to the starting position of this line and line feed.
[Reference]	LF

ESC SP n

[Name]	Set the right-side character space
[Format]	ASCII ESC SP n Hex 1B 20 n Decimal 27 32 n
[Parameter Range]	$0 \leq n \leq 255$
[Description]	Set the right right-side character space is $[n \times 0.125\text{mm}]$. <ul style="list-style-type: none"> • For double width mode, the character right margin is double than normal mode. • The command will not effective to Chinese character.
[Default]	n=0

ESC ! n

[Name]	Set the font type
[Format]	ASCII ESC ! n Hex 1B 21 n Decimal 27 33 n
[Parameter Range]	$0 \leq n \leq 255$
[Description]	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:

Bit	On/off	Hex	Decimal	Function
0	off	00	0	Character type A (12×24)
	on	01	1	Character type B (9×17)
1	–	–	–	Reserved
2	–	–	–	Reserved
3	–	–	–	Reserved
4	Off	00	0	Double-height mode off
	On	10	16	Double-height mode on
5	Off	00	0	Double-width mode off
	On	20	32	Double-width mode on
6	–	–	–	Reserved
7	Off	00	0	Underline mode off
	on	80	128	Underline mode on

- If set double-width and double-height at the same time, quadrupled the character size.
- Can not underline the blank generated by HT or the rotate 90 character.
- The width of under line set by **ESC -**, have not affected by the character size.
- **ESC M** also can set character type.
- **ESC -** also can turn on/off underline.
- **GS !** also can set character size.

[Default]	n=0
[Reference]	ESC - , ESC E , GS !

ESC \$ nL nH

[Name]	Set the absolute print position
[Format]	ASCII ESC \$ nL nH Hex 1B 24 nL nH Decimal 27 36 nL nH
[Parameter Range]	$0 \leq nL \leq 255$ $0 \leq nH \leq 255$
[Description]	Moves the print position to a location in a distance of $(nL + nH \times 256)$ dots from the starting position for printing.
[Reference]	ESC \

ESC * m nL nH d1...dk

[Name]	Select bit-image mode
--------	-----------------------

[Format]	ASCII	ESC	*	m	nL	nH	d1...dk
	Hex	1B	2A	m	nL	nH	d1...dk
	Decimal	27	42	m	nL	nH	d1...dk

[Parameter Range] m = 0, 1, 32, 33

$0 \leq nL \leq 255$

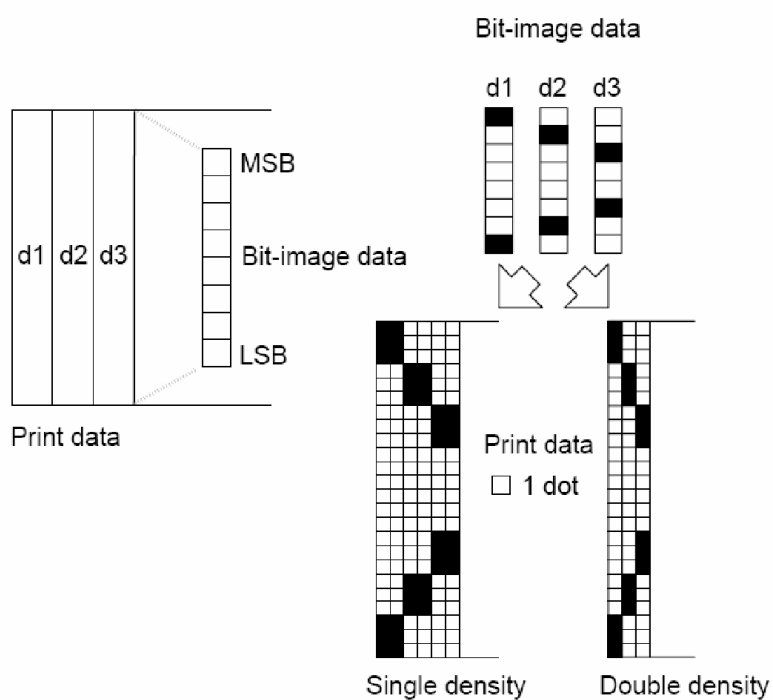
$0 \leq nH \leq 3$

$0 \leq d \leq 255$

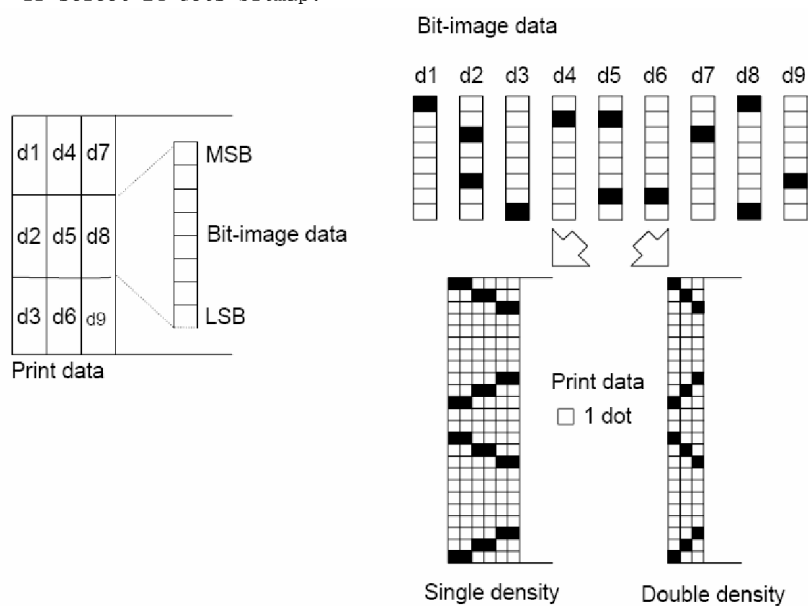
[Description] Stores the bit image data in the print buffer using the mode specified by bit image mode m, nL and nH specifies a bit image in the horizontal direction as $(nL+256 \times nH)$ dots, [d]k specifies the bit image data (column format) k indicates the amount of bit image data, but it does not need to be transmitted.

m	Mode	Vertical		Horizontal	
		point	density	density	Data count (K)
0	8 dots single density	8	67.7 dpi	101.6 dpi	$nL+nH \times 256$
1	8 dots double density	8	67.7 dpi	203.2 dpi	$nL+nH \times 256$
3 2	24 dots single density	24	203.2 dpi	101.6 dpi	$(nL+nH \times 256) \times 3$
3 3	24 dots double density	24	203.2 dpi	203.2 dpi	$(nL+nH \times 256) \times 3$

- [Note]
- If m is out of Parameter Range, the nL and the other data will regard as the normal data.
 - If the bit image exceeds one line of print area, the excess part will be Ignored.
 - data [d]k specifies a bit printed to 1 and not printed to 0.
 - Bold, double-strike, underline, character size, upside-down, black/white command will not affect to the command.
 - The print result as follows:
If select 8-dots bitmap:



If select 24 dots bitmap:



ESC - n

[Name] Turn underline mode on/off

[Format] ASCII ESC - n

Hex 1B 2D n

Decimal 27 45 n

[Parameter Range] $0 \leq n \leq 2$

$48 \leq n \leq 50$

[Description] Turns underline mode on or off using n as follows:

n	Function
0, 48	Turns off underline mode
1, 49	Turns on underline mode (1-dot thick)
2, 50	Turns on underline mode (2-dots thick)

[Note]	<ul style="list-style-type: none"> • Can not underline the blank generated by HT or the rotate 90 character. • Default width is 1-dot thick. • The thick is not affected by the character size. • ESC ! can also turn on/off underline.
[Default]	n=0
[Reference]	ESC !

ESC 2

[Name]	Set the line space to a default value 3mm
[Format]	ASCII ESC 2 Hex 1B 32 Decimal 27 50
[Description]	Set the line space to a default value 3mm(24×0.125mm)。
[Reference]	ESC 3

ESC 3 n

[Name]	Set the line space to n dots
[Format]	ASCII ESC 3 n Hex 1B 33 n Decimal 27 51 n
[Description]	Set the line space to n dots.
[Default]	n=24
[Reference]	ESC 2

ESC S0 n

[Name]	Turn on double width mode
[Format]	ASCII ESC S0 n Hex 1B 0E n Decimal 27 14 n
[Parameter Range]	0≤n≤255
[Description]	Turn on double width mode.
[Note]	• Use LF or ESC DC4 to turn off.
[Default]	n=2

ESC DC4 n

[Name]	Turn off double width mode
[Format]	ASCII ESC DC4 n Hex 1B 14 n Decimal 27 20 n
[Parameter Range]	0≤n≤255
[Description]	Turn off double width mode.
[Note]	• The value of n is same with the n in turn on command.
[Default]	n=2

ESC @

[Name]	Initialize the printer		
[Format]	ASCII	ESC	@
	Hex	1B	40
	Decimal	27	64
[Description]	Reset the printer, the print mode reset to the default setting.		
[Note]	• Can not clear the data in receive buffer.		

ESC B n

[Name]	Set the left margin			
[Format]	ASCII	ESC	B	n
	Hex	1B	42	n
	Decimal	27	66	n
[Parameter Range]	$0 \leq n \leq 47$			
[Description]	Set the left margin.			
[Note]	• This command just affects the character, doesn't affect the Chinese .			
[Default]	n=0			

ESC D n1...nk NUL

[Name]	Set horizontal tab positions				
[Format]	ASCII	ESC	D	n1...nk	NUL
	Hex	1B	44	n1...nk	00
	Decimal	27	68	n1...nk	0
[Parameter Range]	$1 \leq n \leq 255$ $0 \leq k \leq 32$				
[Description]	Set the horizontal tab positions, the meanings of parameters are as follows: n1...nk are horizontal tab position (Unit: 8 dots), NULL is a stop character				
[Note]	<ul style="list-style-type: none"> • Horizontal tab position stored as a data, the data value is [character width $\times n$] measured from the line begin. • When this command is used, any previous horizontal tab settings will be canceled. • The tab position can be switched by HT command • The max set value is 32($k=32$), larger than 32, the larger data will regard as normal data. • 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. • ESC D NUL will cancel the horizontal tab position. • Even the character width change, the set tab position will not change. 				
[Default]	Default tab position is character type A(12×24), the eight character space (column 9, 17, 25 ...).				
[Reference]	HT				

ESC E n

[Name]	Turn bold mode on/off			
[Format]	ASCII	ESC	E	n

	Hex	1B	45	n
	Decimal	27	69	n
[Parameter Range]	$0 \leq n \leq 255$			
[Description]	Turns bold mode on or off using n as follows: If n = 0, turn off the bold, if n = 1, turn on the bold.			
[Default]	n=0			
[Reference]	ESC !			

ESC G n

[Name]	Turn double-strike mode on/off			
[Format]	ASCII	ESC	G	n
	Hex	1B	47	n
	Decimal	27	71	n
[Parameter Range]	$0 \leq n \leq 255$			
[Description]	Turn double-strike mode on/off: 0 turn off double-strike 1 turn on double-strike.			
[Note]	• The double-strike has the same print with bold print.			
[Default]	n=0			
[Reference]	ESC E			

ESC J n

[Name]	Print and feed paper for n dots			
[Format]	ASCII	ESC	J	n
	Hex	1B	4A	n
	Decimal	27	74	n
[Parameter Range]	$0 \leq n \leq 255$			
[Description]	Print the data in the printer buffer and feed paper for n dots(0.125mm per dot).			
[Note]	<ul style="list-style-type: none"> • After printing, the print position moves to the beginning of the line. • This has not affected the set value by ESC 2 or ESC 3. 			

ESC M n

[Name]	Select the character type			
[Format]	ASCII	ESC	M	n
	Hex	1B	4D	n
	Decimal	27	77	n
[Parameter Range]	n = 0, 1, 48, 49			
[Description]	Select character type:			
	n	Function		
	0, 48	Character type A (12×24)		
	1, 49	Character type B (9×17)		
[Reference]	ESC !			

ESC R n

[Name] Select international character

[Format] ASCII ESC R n
 Hex 1B 52 n
 Decimal 27 82 n

[Parameter Range] $0 \leq n \leq 255$

[Description] Selects an international character set n as follows::

n	international character
0	U. S. A
1	France
2	Germany
3	U. K.
4	Denmark I
5	Sweden
6	Italy
7	Spain I
8	Japan
9	Norway
10	Denmark II
11	Spain II
12	Latin America
13	Korea
14	Slovenia/Croatia
15	China
16	Vietnam
17	Arabia
101	ISO-8859-1
102	ISO-8859-2
103	ISO-8859-3
104	ISO-8859-4
105	ISO-8859-5
107	ISO-8859-7
109	ISO-8859-9
113	ISO-8859-13
115	ISO-8859-15
130	GB13030-2000

[Default] n=0

Suggest to use n >100

ESC V n

[Name] Turn 90° clockwise rotation mode on/off

[Format] ASCII ESC V n
 Hex 1B 56 n
 Decimal 27 86 n

[Parameter Range] n = 0, 1, 48, 49

[Description] Turn 90° clockwise rotation mode on/off using n as follows:

n	Function
0, 48	Turns off 90° clockwise rotation mode
1, 49	Turns on 90° clockwise rotation mode

[Note] • Underline is not effective for the rotation characters.

[Default] n=0

[Reference] ESC !, ESC -

ESC \ nL nH

[Name] Set the relative print position

Format	ASCII	ESC \	nL	nH
	Hex	1B 5C	nL	nH
	Decimal	27 92	nL	nH

[Parameter Range] $0 \leq nL \leq 255$

$0 \leq nH \leq 255$

[Description] Moves the print position to a location in a distance of $(nL + nH \times 256)$ dots from the current position.

[Note] • If the position is not in print area, the set will be ignored.
 • If the set position is in right of the current position, the distance N is $nL+nH \times 256=N$
 • If the set position is in left of the current position, the distance N is: $nL+nH \times 256=65536-N$

[Reference] ESC \$

ESC a n

[Name] Set the print alignment mode(left, center or right)

Format	ASCII	ESC a	n
	Hex	1B 61	n
	Decimal	27 97	n

[Parameter Range] $0 \leq n \leq 2$

$48 \leq n \leq 50$

[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

[Note] • The settings by this command are effective at the line begin.

[Default] n=0

ESC d n

[Name] Print and feed paper for n lines

Format	ASCII	ESC d	n
	Hex	1B 64	n
	Decimal	27 100	n

[Parameter Range] $0 \leq n \leq 255$

[Description]	Print the data in the printer buffer and feed paper for n lines.
[Note]	<ul style="list-style-type: none"> • After printing, the print position moves to the beginning of the line. • The line space is set by ESC 2 or ESC 3.
[Reference]	ESC 2, ESC 3

ESC t n

[Name]	Select character code table
[Format]	ASCII ESC t n Hex 1B 74 n Decimal 27 116 n
[Parameter Range]	$0 \leq n \leq 255$
[Description]	Selects an code n from the character code table as follows:

n	Character code table
0	PC437: USA, Standard Europe
1	Katakana
2	PC850: Multilingual
3	PC860: Portuguese
4	PC863: Canadian-French
5	PC865: Nordic
11	PC851: Greek
12	PC853: Turkish
13	PC857: Turkish
14	PC737: Greek
15	IS08859-7: Greek
16	WPC1252
17	PC866: Cyrillic #2
18	PC852: Latin2
19	PC858: Euro
20	KU42: Thai
21	TIS11: Thai
26	TIS18: Thai
30	TCVN-3: Vietnamese I
31	TCVN-3: Vietnamese II
32	PC720: Arabic
33	WPC775: Baltic Rim
34	PC855: Cyrillic
35	PC861: Icelandic
36	PC862: Hebrew
37	PC864: Arabic
38	PC869: Greek
39	IS08859-2: Latin2
40	IS08859-15: Latin9
41	PC1098: Farsi
42	PC1118: Lithuanian

43	PC1119: Lithuanian
44	PC1125: Ukrainian
45	WPC1250: Latin 2
46	WPC1251: Cyrillic
47	WPC1253: Greek
48	WPC1254: Turkish
49	WPC1255: Hebrew
50	WPC1256: Arabic
51	WPC1257: Baltic Rim
52	WPC1258: Vietnamese
53	KZ1048: Kazakhstan

[Default] n=0

Suggest to use ESC R command to replace this command.

ESC { n

[Name] Turn upside-down printing mode on/off

[Format]

ASCII	ESC	{	n
Hex	1B	7B	n
Decimal	27	123	n

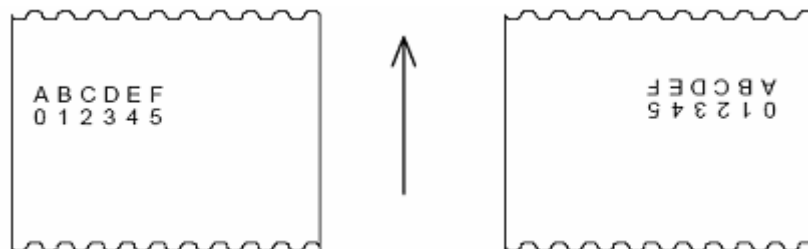
[Parameter Range] $0 \leq n \leq 255$

[Description] turns upside-down print mode on or off:
 0 Upside-down print mode is turned off
 1 Upside-down print mode is turned on

[Note] • The settings by this command are effective at the line begin.

[Default] n=0

[Sample]



GS ! n

[Name] Select character size

[Format]

ASCII	GS	!	n
Hex	1D	21	n
Decimal	29	33	n

[Parameter Range] $0 \leq n \leq 255$

[Description] Function description Character height is set by the bit0~bit3 of n, and character width is set by bit4~bit7 of n.

Bit	On/off	Hex	Decimal	Function
0	Table2			
1				

2	Table1
3	
4	
5	
6	
7	

Table1 Set Character width

Hex	Decimal	Width
00	00	1 (normal)
10	16	2 (double-width)
20	32	3
30	48	4
40	64	5
50	80	6
60	96	7
70	112	8

Table2 Set character height

Hex	Decimal	Height
00	00	1 (normal)
01	1	2 (double-height)
02	2	3
03	3	4
04	4	5
05	5	6
06	6	7
07	7	8

- [Note] • If n is out of range, the command will be ignored.
 • Use **ESC !** also can turn on/off double-width and double height.

[Default] n=0

[Reference] **ESC !**

GS B n

[Name] Turn black/white inverse printing mode on/off

[Format]

ASCII	GS	B	n
Hex	1D	42	n
Decimal	29	66	n

[Parameter Range] $0 \leq n \leq 255$

[Description] turns upside-down print mode on or off.
 0 Black/white inverse printing mode is turned off
 1 Black/white inverse printing mode is turned on

- [Note] • Also effective the blank set by **ESC SP**.
 • Not effective the blank set by **HT**, **ESC \$** and **ESC **.
 • Not effective the line space.
 • This command prior to the underline mode, but can not cancel the underline mode.

[Default] n=0

GS v 0 xL xH yL yH d1...dk

[Name] Print raster bit image

[Format]

ASCII	GS	v	0	m	xL	xH	yL	yH	d1...dk
Hex	1D	76	30	m	xL	xH	yL	yH	d1...dk
Decimal	29	118	48	m	xL	xH	yL	yH	d1...dk

[Parameter Range] $0 \leq m \leq 3$

$$48 \leq m \leq 51$$

$$0 \leq xL \leq 255$$

$$0 \leq xH \leq 255, 1 \leq (xL + xH \times 256) \leq 128$$

$$0 \leq yL \leq 255$$

$$0 \leq yH \leq 8, 1 \leq (yL + yH \times 256) \leq 4095$$

$$0 \leq d \leq 255$$

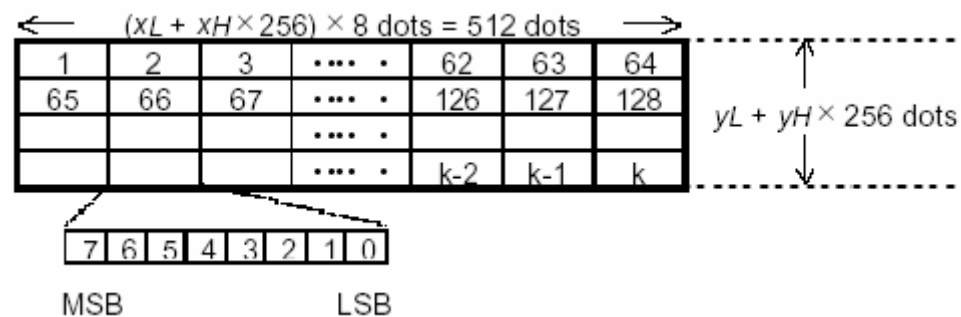
$$k = (xL + xH \times 256) \times (yL + yH \times 256) \quad (k > 0)$$

[Description] Print raster bit image, the meanings of parameter m are as follows:

m	Mode	Vertical dot density	Horizontal dot density
0, 48	Normal	203.2 dpi	203.2 dpi
1, 49	Double width	203.2 dpi	101.6 dpi
2, 50	Double height	101.6 dpi	203.2 dpi
3, 51	Double width +double height	101.6 dpi	101.6 dpi

- [Note]
- xL, xH specifies (xL + xH × 256) bytes in horizontal direction for the bit image.
 - yL, yH specifies (yL + yH × 256) dots in vertical direction for the bit image.
 - [d]k specifies the bit image data (raster format). k indicates the number of bit image data. k is an explanation parameter; therefore, it does not need to be transmitted
 - The print mode command will not affect the command.
 - The data out print are will be ignored.
 - The print position can be set by HT, ESC \$, ESC \, GS L.
 - ESC a can affect the raster image.

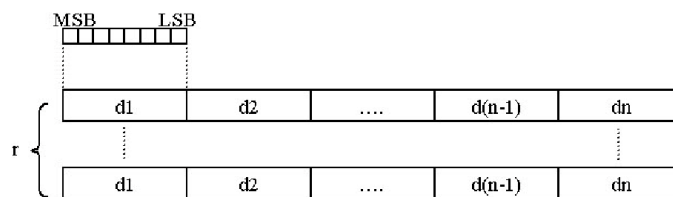
[Sample] If $xL + xH \times 256 = 64$



DC2 * r n d1...dn

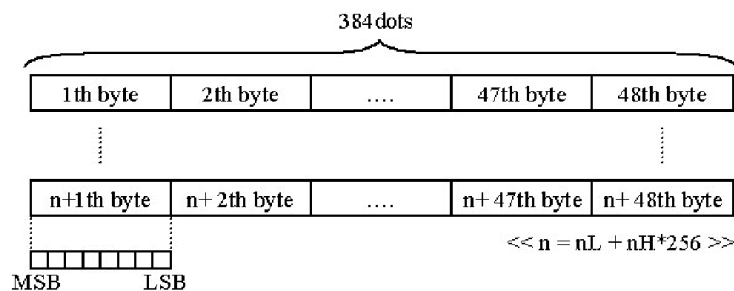
[Name]	Bitmap print					
[Format]	ASCII	DC2	*	r	n	d1...dn
	Hex	12	2A	r	n	d1...dn
	Decimal	18	42	r	n	d1...dn
[Parameter Range]	$0 < n \leq 255$ $0 < r \leq 255$					
[Description]	<ul style="list-style-type: none"> • Print the assigned height bitmap. • r:height • n:width 					

- only effective when no data in print buffer
- the print mode command will not affect this bitmap.
- The data out of print area will be decrypted.
- Dn is the print data, 1 will print, 0 will not print.
- Bitmap Format as follows:



DC2 V nL nH d1...d48

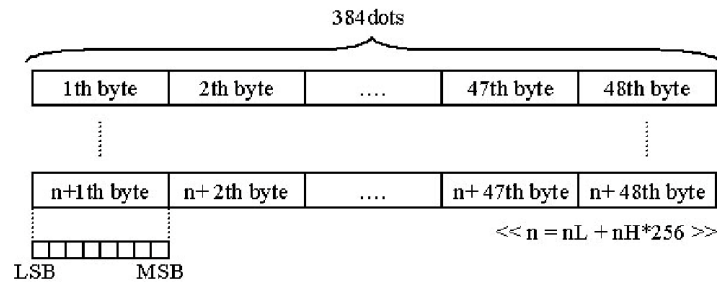
[Name]	MSB Bitmap print						
[Format]	ASCII	DC2	V	nL	nH	d1...d48	
	Hex	12	56	nL	nH	d1...d48	
	Decimal		18	86	nL	nH	d1...d48
[Parameter Range]	0<nL+nH×256						
[Description]	•Print the MSB bitmap, the width is 384.						



DC2 v nL nH d1...d48

[Name]	LSB Bitmap print						
[Format]	ASCII	DC2	v	nL	nH	d1... d48	
	Hex	12	76	nL	nH	d1... d48	
	Decimal		18	118	nL	nH	d1... d48
[Parameter Range]	0<nL+nH×256						
[Description]	•Print the LSB bitmap, the width is 384.						

- LSB bitmap Format as follows:



DC2 T

[Name]	Print test page		
[Format]	ASCII	DC2	T
	Hex	12	54
	Decimal	18	84
[Description]	• Print test page.		

ESC A

[Name]	Check print module version		
[Format]	ASCII	ESC	A
	Hex	1B	41
	Decimal	27	65
[Description]	Send the check command, then read the return value. The return value is 32 bytes. • char[32]		

ESC >

[Name]	Check the font library head info		
[Format]	ASCII	ESC	>
	Hex	1B	3E
	Decimal	27	62
[Description]	Send the check command, then read the return value. The return value is 128 bytes. • char magic[8]; • int version; • int size; • int offset; • char md5[16] • char time[24]; • char reserve[2]; • char describe[64]; • char unuse; • char checksum		

GS E n

[Name]	Set print density			
[Format]	ASCII	GS	E	n
	Hex	1D	45	n
	Decimal	29	69	n

[Parameter Range] $0 \leq n \leq 3$

[Description]

n	description
0	lighter
1	light
2	dark
3	darker

[Notice] • This setting will effect all the time until power off the printer or reset the command;

[Default] n=1