

Thermal Printer Specs

Features:

Low-noise direct thermal printing method; fast printing speed.
Support max. 40mm (diameter) paper roll, around 16-20 meter; serial interface (RS-232C,TTL) and USB interface.
Rich of grasphics / curves / characters print function.
Easy paper loading structure.
Support 5V-9V wide power voltage.
BT module is reserved, which provides more possibilities.

Specifications:

Print Method: thermal direct line printing
Paper Loading Method: easy paper loading
Paper Width: 57mm
Print Width: 48mm
Resolution Ration: 8 dots/mm (384 dots/line)
Life of Printing Head: 50km
Printing Speed: 50mm/sec.; max.: 80mm/sec. (voltage 8.5V)
Character Size: ANK: 9*17, 12*24; GBK: 24*24
Chinese Character Fonts: GB18030: 12*24 or 24*24dots
Outline Dimension (W*D*H): 76.8 * 77.4 * 47.6mm
Installation (W*D): 72.8 * 73.4mm
Embedded Depth: 34.65mm
Paper Roll Specification: width: 58mm, max. diameter: 40mm
Interface: serial (RS232, TTL), USB
Baud Rate: 9600
Input Power: DC5-9V, 2A
Operation Temperature: 0°C~55°C
Storage Temperature: -25°C~70°C
Operating Humidity: 10°C~80°C
Storage Humidity: 10°C~90°C
Package Size: 12 * 8 * 5cm / 4.72 * 3.15 * 1.97cm
Package Weight: 120g / 4.23oz

Package List:

1 * printer module
1 * serial line
1 * power line
1 * thermal paper roll
OS2429

<https://forum.arduino.cc/t/communication-and-programming-of-aps-em205-thermal-printer-with-arduino/480860>

2. Appearance and PIN definition



J5 POWER

PIN	number	direction	type	explain
GND	1	input		GND
GND	2			
GND	3			
GND	4			
GND	5			
V bat	6			+5V~9V(+12V)
V bat	7			
V bat	8			
V bat	9			

J3 TTL

PIN	number	direction	type	explain
GND	1	output		GND
Transmit data	2	output		TXD, printer output
Receive data	3	input		RXD, printer input
CTS/DSR	4	input		Flow Control
RTS/DTR	5	output		Flow Control

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J4 RS232

PIN	number	direction	type	explain
GND	1	output		GND
Transmit data	2	output		TXD, printer output
Receive data	3	input		RXD, printer input
CTS/DSR	4	input		Flow Control
RTS/DTR	5	output		Flow Control



SE-20 Specification

3 Specifications

Printing Method	Thermal printing
Paper Width	58mm
Printing Width	48mm
Resolution	203DPI
Each row of points	384dots
Printing speed	50mm/s
Support printing content	GBK, ASCII character, Bar code, Support for different density point bitmap and download the bitmap print, QR code.
Default font	9X17,ASCII,24x24(GBK)

4 Command list

LF	Print and line feed	Print and feed command
CR	Print and carriage return	
ESC J	Print and feed n points	
ESC d	Print and feed n lines	
ESC 3	Set n points line spacing	character command
ESC 2	Select default line spacing	
ESC \$ nL nH	Set absolute print position	
ESC M n	Select font type	
GS L nL nH	Set left space	
GS P	Set horizontal and vertical movement unit	
ESC ! n	Select print mode(s)	
GS ! n	Select character size	
GS B n	Turn white/black reverse printing mode	
ESC ~ n	Turn underline mode on/off	
ESC V n	Turn 90 clockwise rotation mode on/off	
ESC a n	Select justification	
PS &	Select Chinese character mode	
PS _	Cancel Chinese character mode	
ESC A n	Select/cancel user-defined character set	
ESC B n	Select an international character set	
ESC i n	Select character code table	
ESC *	Select bit-image mode	bit image command
GS *	Define downloaded bit image	
GS / a	Print downloaded bit image	
PS c	Define NV bit image	
PS p a	Print NV bit image	Tab command
HT	Horizontal tab	
ESC D	Set horizontal tab positions	Bar code command
GS H	Select printing position for HRI characters	
GS h	Select bar code height	
GS w	Select bar code width	
GS L	Print bar code	STATUS command
GS r n	Transmit status	
DTF POT n	Real-time transmission status	
GS a n	Enable/Disable Automatic Status Back (ASB)	
FF	Print and return to standard mode (in page mode)	Other command
ESC @	Initialize printer	
DC1 T	Printing test paper	

ESC 7	Set the print concentration	

5 command detail

① print and feed command

Print and line feed

Name	Print and line feed
Format	ASCII : LF Decimal : 10 Hex : 0A
Description	Prints the data in the print buffer and feeds one line, based on the current line spacing.
Range	
Default	
Support model	All the printers
Note	
For Example	1D 40 1C 2E 30 31 32 41 42 43 CFC3C3C5DFAAD4CFE5E7D7D3 0d 0a 1b 4a 10 1B 40 1C 2E 30 31 32 41 42 43 CFC3C3C6BFAB4CFB5E7D7D3 0d 0a 1b 4a 20 1B 40 1C 2E 30 31 32 41 42 43 CFC3C3C6FAAB4CFB5E7D7D3 0d 0a

Print and carriage return

Name	Print and carriage return
Format	ASCII : CR Decimal : 13 Hex : 0D
Description	When automatic line feed is enabled, this command functions the same as LF. When automatic line feed is disabled, this command is ignored.
Range	
Default	
Support model	All the printers
Note	This command line feed is ignored with a serial interface model.
For Example	Sets the print starting position to the beginning of the line.

Print and feed paper

Name	Print and feed paper
Format	ASCII : ESC J n

	Decimal : 27 74 n
	Hex : 1B 4A n

32 09 C7 D1 D7 D3 09 32 0D 0A
 1D 44 1D 13 00
 13 09 B5 B9 D1 BF 09 31 0D 0A

⑤ bar code command

Select printing position for HRI characters



Name	Select printing position for HRI characters
Format	ASCII : GS H n Decimal : 29 72 n

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GE-20 Specification


	HEX : 1D 48 n										
Description	<p>Selects the printing position of HRI characters when printing a bar code. n selects the printing position as follows:</p> <table border="1"> <thead> <tr> <th>n</th><th>Printing position</th></tr> </thead> <tbody> <tr> <td>0, 48</td><td>Not printed</td></tr> <tr> <td>1, 49</td><td>Above the bar code</td></tr> <tr> <td>2, 50</td><td>Below the bar code</td></tr> <tr> <td>3, 51</td><td>Both above and below the bar code</td></tr> </tbody> </table>	n	Printing position	0, 48	Not printed	1, 49	Above the bar code	2, 50	Below the bar code	3, 51	Both above and below the bar code
n	Printing position										
0, 48	Not printed										
1, 49	Above the bar code										
2, 50	Below the bar code										
3, 51	Both above and below the bar code										
Range	0 ≤ n ≤ 3 or 48 ≤ n ≤ 51										
Default	n = 0										
Support model	All the printers										
Note	ESC @, dump and restart, Reset the printer. This command setting failure.										
For example											

Select bar code height

Name	Select bar code height
Format	ASCII : GS h n Decimal : 29 104 n HEX : 1D 68 n
Description	<p>Selects the height of the bar code. n specifies the number of dots in the vertical direction.</p> <div style="display: flex; justify-content: space-around; align-items: center;">  height: 50 </div> <div style="display: flex; justify-content: space-around; align-items: center;">  height: 100 </div>
Range	1 ≤ n ≤ 255
Default	n = 64
Support model	All the printers
Note	ESC @, dump and restart, Reset the printer. This command setting failure.
For example	

Set bar code width

Name	Set bar code width
Format	ASCII : GS w n Decimal : 29 119 n HEX : 1D 77 n
Description	Set bar code width unit to n. Parameters n meaning as follow:

	 width:3  width:4
Range	1 ≤ n ≤ 5
Default	n = 2
Support model	All the printers
Note	ESC @, dump and restart, Reset the printer. This command setting failure.
For example	

Print bar code

Name	Print bar code																																						
Format	(A) ASCII : GS k m [d]k NUL Decimal: 28 107 m [d]k NUL HEX : 1D 6D m [d]k NUL (B) ASCII : GS k m n [d]k Decimal: 29 107 m n [d]k HEX : 1D 6D m n [d]k																																						
Description	Selects a bar code system and prints the bar code. m selects a bar code system as follows: <table border="1"> <thead> <tr> <th>m</th><th>Bar Code System</th><th>Number of Characters</th><th>Remarks</th></tr> </thead> <tbody> <tr> <td rowspan="7">①</td><td>0 UPC-A</td><td>11 ≤ k ≤ 12</td><td>48 ≤ d ≤ 57</td></tr> <tr> <td>1 UPC-E</td><td>11 ≤ k ≤ 12</td><td>48 ≤ d ≤ 57</td></tr> <tr> <td>2 JAN13 (FAN13)</td><td>12 ≤ k ≤ 13</td><td>48 ≤ d ≤ 57</td></tr> <tr> <td>3 JAN 8 (EAN8)</td><td>7 ≤ k ≤ 8</td><td>48 ≤ d ≤ 57</td></tr> <tr> <td>4 CODE39</td><td>1 ≤ k'</td><td>48 ≤ d ≤ 57, 85 ≤ d ≤ 90, 32, 36, 37, 43, 45, 46, 47</td></tr> <tr> <td>5 ITF</td><td>1 ≤ k (even number)</td><td>48 ≤ d ≤ 57</td></tr> <tr> <td>6 CODABAR</td><td>1 ≤ k'</td><td>48 ≤ d ≤ 57, 85 ≤ d ≤ 88, 36, 43, 45, 46, 47, 50</td></tr> <tr> <td rowspan="3">②</td><td>65 UPC-A</td><td>11 ≤ n ≤ 12</td><td>48 ≤ d ≤ 57</td></tr> <tr> <td>66 UPC-E</td><td>11 ≤ n ≤ 12</td><td>48 ≤ d ≤ 57</td></tr> <tr> <td>67 JAN13</td><td>12 ≤ n ≤ 13</td><td>48 ≤ d ≤ 57</td></tr> </tbody> </table>			m	Bar Code System	Number of Characters	Remarks	①	0 UPC-A	11 ≤ k ≤ 12	48 ≤ d ≤ 57	1 UPC-E	11 ≤ k ≤ 12	48 ≤ d ≤ 57	2 JAN13 (FAN13)	12 ≤ k ≤ 13	48 ≤ d ≤ 57	3 JAN 8 (EAN8)	7 ≤ k ≤ 8	48 ≤ d ≤ 57	4 CODE39	1 ≤ k'	48 ≤ d ≤ 57, 85 ≤ d ≤ 90, 32, 36, 37, 43, 45, 46, 47	5 ITF	1 ≤ k (even number)	48 ≤ d ≤ 57	6 CODABAR	1 ≤ k'	48 ≤ d ≤ 57, 85 ≤ d ≤ 88, 36, 43, 45, 46, 47, 50	②	65 UPC-A	11 ≤ n ≤ 12	48 ≤ d ≤ 57	66 UPC-E	11 ≤ n ≤ 12	48 ≤ d ≤ 57	67 JAN13	12 ≤ n ≤ 13	48 ≤ d ≤ 57
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		(EAN13)		
68	JAN 8 (EAN8)	7 ≤ n ≤ 8	48 ≤ d ≤ 57	
69	CODE39	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 85 ≤ d ≤ 90, 32, 36, 37, 43, 45, 46, 47	
70	ITF	1 ≤ n ≤ 255 (even number)	48 ≤ d ≤ 57	
71	CODABAR	1 ≤ n ≤ 255	48 ≤ d ≤ 57, 85 ≤ d ≤ 88, 36, 43, 45	

buffer. When data exists in the print buffer, the printer processes the data following n as normal data.

By using the bar code, this command sets the print position to the beginning of the line.

This command is not affected by print modes (emphasized, double strike, underline, character size, white/black reverse printing, or upside-down printing mode).

[Example] Printing GS k 72 7 67 111 100 101 13 57 51

Control character			HRJ	Control character			HRJ
ASCII	Hex	Decimal	character	ASCII	Hex	Decimal	character
NUL	00	0	␣	DEL	10	16	␣
SOH	01	1	␣	DC1	11	17	␣
STX	02	2	␣	DC2	12	18	␣
ETX	03	3	␣	DC3	13	19	␣
EOF	04	4	␣	DC4	14	20	␣
ENQ	05	5	␣	NAK	15	21	␣
ACK	06	6	␣	SYN	16	22	␣
BEL	07	7	␣	ETB	17	23	␣
BS	08	8	␣	CAN	18	24	␣
HT	09	9	␣	EM	19	25	␣
LF	0A	10	␣	SUB	1A	26	␣
VT	0B	11	␣	ESC	1B	27	␣
FF	0C	12	␣	FS	1C	28	␣
CR	0D	13	␣	RS	1D	29	␣
SC	0E	14	␣	KS	1E	30	␣
S	0F	15	␣	US	1F	31	␣
				DEL	7F	127	␣



When CODE128 (n = 73) is used:

account for data transmission:

① The top of the bar code data string must be the code set selection character (CODE A, CODE B, or CODE C), which selects the first code set.

② Special characters are defined by combining two characters "f" and one character. The ASCII character "f" is defined by transmitting "f" twice consecutively.

Specific character	Transmit data		
	ASCII	Hex	Decimal
SHIFT	{S	7B, 53	123, 83

	<p>If the combination of "f" and the following character does not apply any special character, the printer stops command processing and processes the following data as normal data.</p> <p>If the printer receives characters that cannot be used in the special code set, the printer stops command processing and processes the following data as normal data.</p> <p>The printer does not print HRI characters that correspond to the shift characters or code set selection characters.</p> <p>HRI character for the function character is space. </p> <p>HRI characters for the control character (<00>H to <1F>H and <7F>H) are space.</p>
Range	<p>(A) 0: 5 to 56</p> <p>(B) 65: 5 to 574</p>
Default	
Support model	All the printers
Note	
For example	<p>1B 40 1d 48 02 1d 68 6d 1d 31 00</p> <p>30 00 0A</p>

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	<p>1d 6b 00 30 31 32 33 34 35 36 37 38 39 31 00</p> <p>31 00 0A</p> <p>1d 6b 01 30 31 32 33 34 35 36 37 38 39 31</p> <p>00 32 00 0A</p> <p>1d 6b 02 30 31 32 33 34 35 36 37 38 39 31 32 00</p> <p>33 00 0A</p> <p>1d 6b 03 30 31 32 33 34 35 36 37 00</p> <p>34 00 0A</p> <p>1d 6b 04 30 31 32 41 42 20 24 25 2B 2D 2E 2F 00</p> <p>35 00 0A</p> <p>1d 6b 05 30 31 32 33 34 35 36 37 38 39 31 32 00</p> <p>36 00 0A</p> <p>1d 6b 06 2D 31 32 42 24 2B 2D 2E 00</p> <p>1d 6b 06 43 31 32 33 34 35 36 34 38 39 00</p> <p>36 35 0D 0A</p> <p>1d 6b 41 0c 31 32 33 34 35 36 37 38 39 30 31 32</p> <p>36 36 0D 0A</p> <p>1d 6b 42 0c 30 32 33 34 35 36 30 30 30 30 38 39</p> <p>36 37 0D 0A</p> <p>1d 6b 43 0c 30 32 33 34 35 36 30 30 30 30 38 39</p> <p>36 38 0D 0A</p> <p>1d 6b 44 08 30 32 33 34 35 36 30 30</p> <p>36 39 20 20 4e 4f 20 24 25 2b 2d 2e 2f 31 32 33 34 35 36 30 30 0D 0A</p> <p>1d 6b 45 11 4e 1f 20 21 25 2b 2d 2e 2f 31 32 33 34 35 36 30</p> <p>30 37 30 20 20 20 30 32 33 34 35 36 30 30 c5 Bc Ca Fd 0D</p> <p>0A 1d 5b 46 09 30 31 32 33 34 35 36 30 30</p> <p>37 31 0d 0a</p> <p>1d 6b 47 05 32 33 34 35 36</p> <p>37 32 0d 0a</p> <p>1d 6b 48 0b 32 33 34 35 36 41 42 2b 2f 2b</p> <p>7c 37 33 0d 0a</p> <p>1d 6b 49 0A 7B 42 4B 6F 2E 7B 43 0C 22 38</p>
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⑤ QR CODE COMMAND

Set the model type

