PS-20 Thermal Printer

User Manual

Chapter One: Features

External dimensions: 130mm (l) x115mm (w) x77mm (h).

1.1 Specifications

▲ Technology: thermal
▲ Print speed: 30-62mm/sec
▲ Resolution: thermal: 8 points/mm
▲ Print width: thermal: 48mm
▲ Number of characters/line: 32
▲ Characters: 448 characters and icons, including 96 characters of ASCII, 352 Greece, German, Russian, French, alphabet, katakana, text in the section, the number sign, print character, block diagram breaks; 32 user defined characters
▲ Character size: Latin: 5x7 dot matrix block image: 6x8 dot matrix; user-defined characters: 6x8 dot matrix, Chinese characters: 24x24 dot matrix, 16x16 dot matrix, 12x12 dot matrix.
▲ Control command: General ESC/P print command. Supporting characters, Chinese characters, forward, reverse, left and right rotation printing graphics, anti-white, about dashes, marking up and down as well as any taller, wider, adjust line spacing, word spacing, horizontal tab, vertical tab, curve, printing, barcode printing, and these features mix of print, also according to customers' needs to increase or decrease the related command.
▲ Paper type: 57mm ± ⌀ 45mm thermal paper
▲ Paper out detection: yes
▲ Print cache: 32K
▲ External interfaces: standard serial interface, 485 interface, optional infrared wireless interface.
▲ Power: DC7.5V/3A
▲ Weight: about 500 g
▲ Operating environment: temperature 14-140F relative humidity: 0~80%.

Chapter Two: System Installation

2.1 Installing the paper roll

Unwrap the paper roll then place the whole roll in the paper compartment with the thermal side facing outside. The thermal side is the glossy side of the paper.

2.2 power connection

PS-20 printer comes with 5V DC power supply. To avoid damage, please ONLY use the original power supply coming with the printer.
After plug in the power, turn on the printer by pressing the switch on the side of the printer.

2.3 Buttons and indication

There're two buttons SEL & LF and two indication lights on the printer. If the printer is correctly powered, the red light is on. Vice versa. If the printer is online, the green light is on. Vice versa. If the paper is not installed, the green light will be blinking.

Self-check:
When the printer is powered, press the SEL button to go offline. Press and hold LF then press the SEL key. Release both buttons then the printer will print its self-testing sheet. Check the print-out see if it is readable.

Pause printing:

When the printer is printing, press SEL then release, the printer will pause printing. You can feed the paper and when you are ready, hit SEL again and the printer will continue printing.
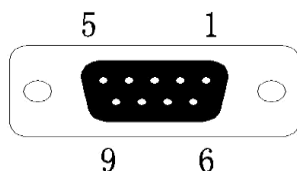
Feed paper:

When the printer is offline, press LF button to feed paper. Press again to stop feeding.   Press SEL to go back online.

Chapter Three: Serial Interface

4.1 RS-232

PS-20 is using female DB-9 RS-232 connector. The pin numbers are shown in 4-1

5   1

9   6

4-1

■ The printer can be directly controlled by the computer serial port or microcontroller through RS-232 port.

■ The baud rate, parity and handshaking can be set by the 6 DIP switches.

The factory DIP Switch default setting is: the baud rate: 9600 BPS, the parity : 8 none, handshake choose: X ON - XOFF. The default printer setting will be printed on the self-checking sheet.

Serial connector pin definitions:

Pin Number	Signal	Signal Sources	Direction	Descriptions	Indicator DB-9 pin
3	TXD	Indicator	Input	Printer to receive data from the host (weighing indicator)	3
2	RXD	Printer	Output	When use X-ON / X-OFF handshaking, the printer sends out X-ON / X-OFF controlling codes.	2
8	CTS	Printer	Output	When the signal is on MARK status, it indicates that the printer is busy and it cannot accept the data, When the signal is on SPACE status, it indicates that the printer is ready to receive new data.	8
6	DSR	Printer	Output	The signal is on SPACE status, ready to receive new data.	6
5	GND	——	——	Signal ground.	5
1	DCD	Printer	Output	The same signal CTS.	1

When the signal connection is using asynchronous transfer formats:

Start bit	Data bits	Parity bit	Stop Bits 1
1	7 / 8	1	1

Starting and stop bits are 1 Bit. Data bit is 7 Bit or 8 Bit. Parity bits 1 Bit. When 7 bit is selected, only even parities are allowed. Check DIP Switch K5 and K6 to set up. The factory default set is no parity, with K5, K6 = ON, ON.

DIP Switches:

Baud Rates	Baud Rate	150	300	600	1200	2400	4800	9600	19200
	DIP	on ■■■□□□ □□□□□□ 1 2 3 4 5 6	on □■■□□□ ■□□□□□ 1 2 3 4 5 6	on ■□■□□□ □■□□□□ 1 2 3 4 5 6	on □□■□□□ ■■□□□□ 1 2 3 4 5 6	on ■■□□□□ □□■□□□ 1 2 3 4 5 6	on □■□□□□ ■□■□□□ 1 2 3 4 5 6	on ■□□□□□ □■■□□□ 1 2 3 4 5 6	on □□□□□□ ■■■□□□ 1 2 3 4 5 6
Odd Even Verification	Verify	8-None	8-Odd	8-Even	7- Even	Handshake selection	Hand-shake way	Sign	XON–XOFF	Factory settings
	DIP	on □□□□■■ □□□□□□ 1 2 3 4 5 6	on □□□□■□ □□□□□■ 1 2 3 4 5 6	on □□□□□■ □□□□■□ 1 2 3 4 5 6	on □□□□□□ □□□□■■ 1 2 3 4 5 6		DIP	on □□□■□□ □□□□□□ 1 2 3 4 5 6	on □□□□□□ □□□■□□ 1 2 3 4 5 6	on ■□□■■■ □■■□□□ 1 2 3 4 5 6

Mark = logic "1" (EIA -3 V to - 27 V low level)

Space = logic "0" (EIA + 3 V to + 27 V high level)

The handshake modes:

Handshake	Data direction	RS-232 Interface signals
Signal control	Data can enter	Pin 8 As Space State
	Data can enter	Pin 8 as Mark State
X - ON / X - OFF Control	Data can enter	Send X - ON Code 11H on Pin 2
	Data can enter	Send X - OFF Code 13H on Pin 2

⑴ Use DIP switch K1 to K3 to select the baud rate;

⑵ Use DIP switch K5, K6 to select the parity;

⑶ Use DIP switch K4 to select the signal control or X - ON / X-OFF control handshake;

⑷ When the data buffer has 32 Bytes or less, the signal line DCD (Pin 1) and CTS (Pin 8) send Mark Status. Otherwise send Space Status.

⑸ In X - ON / X - OFF control, in the busy status, the printer sends X - OFF (13H) code. When in the ready status, it sends X - ON (11H) code.

⑹ In signal control, the host computer (or indicator) decides to send or not to send data based on the signal received through DCD or CTS.

Appendix 1: Character set 1, 2, and GB the ASC. Code table

Character set 1	Character Set 2	International standard ASC.Code

Appendix 2: Print command code table

Decimal	Hexadecimal	ASCII	Power
0	00	NUL	Marks the end of
9	09	HT	The level of implementation-made
10	0A	LF	Wrap
13	0D	CR	Enter
14	0E	SO	Double-wide print line
20	14	DC4	Removal of SO
27 32	1B 20	ESC SP n	Set word spacing
27 37	1B 25	ESC m Low m High n1 Low n1 High……nk	Print curves
27 38	1B 26	ESC & m n1 n2…n6	User-defined characters
27 39	1B 27	ESC % m1 n1 m2 n2…mk nk NUL	Replace the user-defined characters
27 43	1B 2B	ESC + n	Allow / standard only on the crossed Print
27 45	1B 2D	ESC - n	Allow / standard only underline print
27 49	1B 31	ESC 1 n	Set line spacing to n-point line
27 54	1B 36	ESC 6	Select the character set
27 55	1B 37	ESC 7	Select the character set
27 56	1B 38	ESC 8 n	Choose a different lattice Chinese printing
27 58	1B 3A	ESC :	Restore the character set
27 64	1B 40	ESC @	Initialize the printer

Decimal	Hexadecimal	ASCII	Function
27 68	1B 44	ESC D n1 n2 n3…NUL	Set the level of making the table
27 69	1B 45	ESC E nq nc n1 n2 n3 …nk NUL	Print bar code
27 74	1B 4A	ESC J n	The implementation
27 75	1B 4B	ESC K n1 n2…data…	Print n1 × 8 dot matrix graphic
27 81	1B 51	ESC Q n	Set the right limit the
27 85	1B 55	ESC U n	Horizontal zoom n
27 86	1B 56	ESC V n	Vertical zoom n times
27 87	1B 57	ESC W n	Horizontal and
27 88	1B 58	ESC X n1 n2	Horizontal and
27 99	1B 63	ESC C n	Enable / disable
27 102	1B 66	ESC f M n	Print a space or a
27 105	1B 69	ESC i n	Allow / ban anti-white
27 108	1B 6C	ESC l n	Set the left limit width
27 114	1B 72	ESC r n	Thermal printing
28 73	1C 49	FS 2 n	Set the character
28 74	1C 4A	FS J	Set vertical print
28 75	1C 4B	FS K	Setting landscape
28 114	1C 72	FS r n	Select the upper and
28 118	1C 76	FS L	LOG print command

Decimal	Hexadecimal	ASCII	Function
27 68	1B 44	ESC D n1 n2 n3…NUL	Set the level of making the table value
27 69	1B 45	ESC E nq nc n1 n2 n3 …nk NUL	Print bar code
27 74	1B 4A	ESC J n	The implementation of n-
27 75	1B 4B	ESC K n1 n2…data…	Print n1 × 8 dot matrix graphic
27 81	1B 51	ESC Q n	Set the right limit the width of
27 85	1B 55	ESC U n	Horizontal zoom n times
27 86	1B 56	ESC V n	Vertical zoom n times
27 87	1B 57	ESC W n	Horizontal and vertical zoom n times
27 88	1B 58	ESC X n1 n2	Horizontal and vertical amplification of different
27 99	1B 63	ESC C n	Enable / disable reverse
27 102	1B 66	ESC f M n	Print a space or a newline
27 105	1B 69	ESC i n	Allow / ban anti-white print
27 108	1B 6C	ESC l n	Set the left limit width
27 114	1B 72	ESC r n	Thermal printing depth
28 73	1C 49	FS 2 n	Set the character rotation
28 74	1C 4A	FS J	Set vertical print
28 75	1C 4B	FS K	Setting landscape print
28 114	1C 72	FS r n	Select the upper and lower
28 118	1C 76	FS L	LOG print command