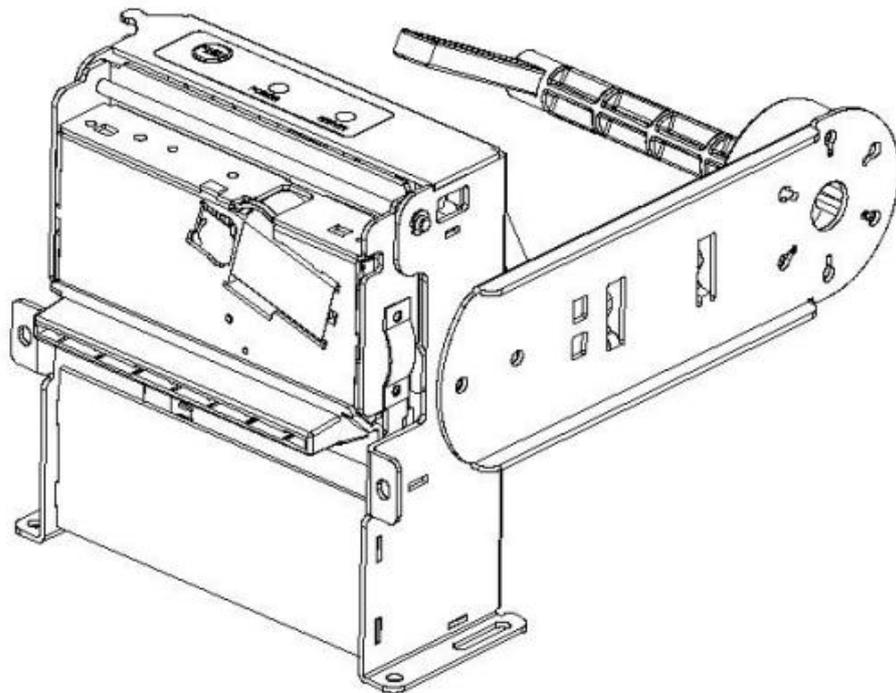


# SPRT®

## SP-EU586 PRINTING UNIT USER'S MANUAL (SP-EU586)



**Version 1.05**

Beijing Spirit Technology Development Co.,Ltd

[www.sprt-printer.com](http://www.sprt-printer.com)

# Safety Instruction

## Safety warning

- 1) The print head is heating parts, during printing and end printing, do not touch the print head and surrounding parts.
- 2) Do not touch the surface of the print head and connection socket, avoid the electrostatic damage the print head.

## Notice

- 1) Printing units should be installed in a flat, stable place;
- 2) Keeping enough space around the printing units to be convenient for operation and maintenance;
- 3) Far away from water for all printing units;
- 4) Do not use and store printing units in high temperature, damp and polluted places. Avoid sunlight, strong light and heat direct sources;
- 5) Avoid the printing units in the vibration and impact;
- 6) Avoid the damp air condensation on the surface of the printing units. If condensation has been formed, do not open the power of the printing units before the dew disappear;
- 7) Keep the printing units power adapter connected to a properly grounded outlet; avoid using the same socket with large motor or other devices which can lead to the power supply voltage fluctuation;
- 8) If long time will not use the printing units, please disconnect the power of the power adapter;
- 9) To avoid water or conductive material into the printing units interior, once occurred, should immediately shut off the power;
- 10) Printing units shall not be print under the conditions of no paper, otherwise will seriously damage the printing roller and the thermal print head;
- 11) In order to guarantee the print quality and the product life, suggest to use same quality paper as recommended;
- 12) In the case of print effect meets the requirement, suggest users to set lower level concentration of print as much as possible, to avoid affect the life of the print head;
- 13) The user shall not be removed printing units for maintenance.

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# Brief Introduction

SP-EU586 printer is a new thermal line panel printer, with drop-in paper easy loading, auto cutter, Black label detection, faster and more reliable characters.

SP-EU586 printer is easy operated, applied widely, especially to queue machine, POS for bank and the business of all kinds of needed docs to print.

## Statement

This product is belong to class A. In the living environment, this product may cause radio Interference. In that case, the user need to take practical measures to interference.

# Chapter 1 Characteristics and performance

## 1.1 Print performance

- Printing method: direct line thermal;
- Printing paper width:  $57.5 \pm 0.5$ mm
- Resolution: 8 dots/mm, 384 dots/line
- Printing speed: 60mm/s(max) (25%printing dots)
- MCBF: (1)Printing head life:50km  
Operating conditions:
  - \* Print font 12 × 24 ASCII, print 50 lines per time, Intermittent reprint.
  - \* Thermal paper(2)Auto cutter life:1,000,000 cuts.
- Effective printing width:48mm
- Working environment/humidity: 0-50°C/10-90%
- Storage environment/humidity: -20-60°C/10-90%

## 1.2 Print paper

- Thermal paper roll: width -----  $57.5 \pm 0.5$ mm  
thickness ----- 0.06mm~0.08mm  
Paper roll inner diameter-----  $\phi$  13mm  
Paper Type----- $57.5 \times \phi$  100mm(MAX)

## 1.3 Character set

- ASCII character set:  
12×24 dot, 1.5(width)×3.00(high)mm  
9×17 dot, 1.125(width)×2.125(high)mm
- Chinese:  
24×24 dot, 3.00(width)×3.00(high)mm

## 1.4 Interface

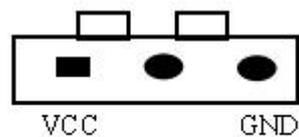
- PDK-5PIN RS—232C serial port:  
PDK-5PIN, support XON/XOFF and DTR/DSR.  
Baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200bps adjustable.  
Data structure: One start bit + (7 or 8) data + one stop bit.  
Verify: No validation or odd and even check is optional.
- USB port:  
Standard mini USB port.

## 1.5 Printing control command

- Characters print command: support the double width and height printing of ANK characters, self-defined characters and Chinese; characters lines spacing can be adjusted.
- Bitmap print command: Support printing bitmaps with different density and downloaded graphics.
- GS bar code print command : support UPC-A、UPC-E、EAN-13、EAN-8、CODE39、ITF25、CODABAR、CODE93、CODE128 bar code print.

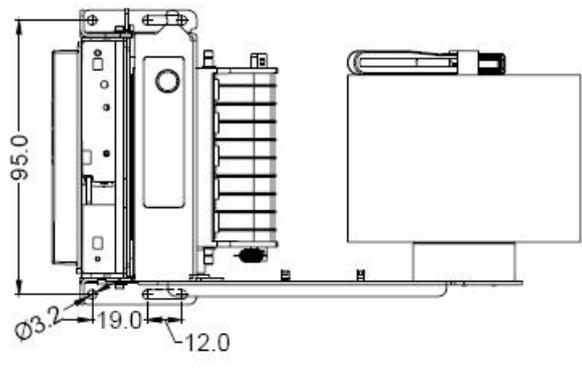
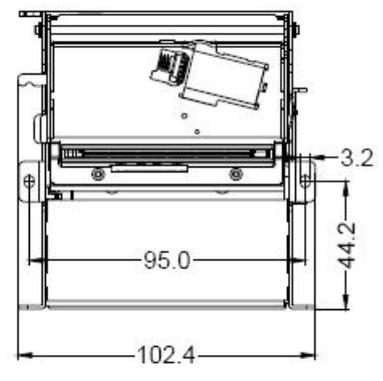
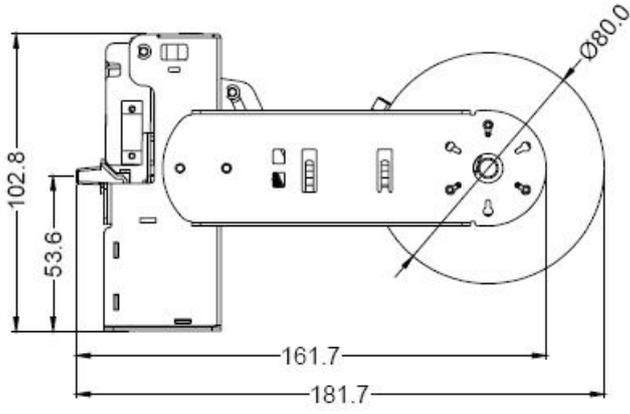
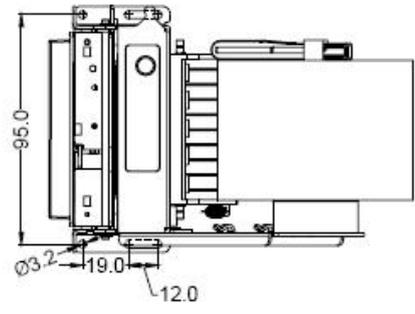
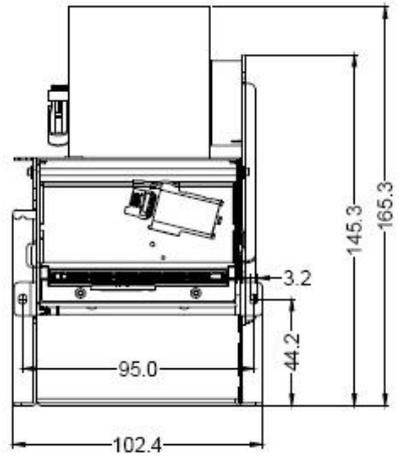
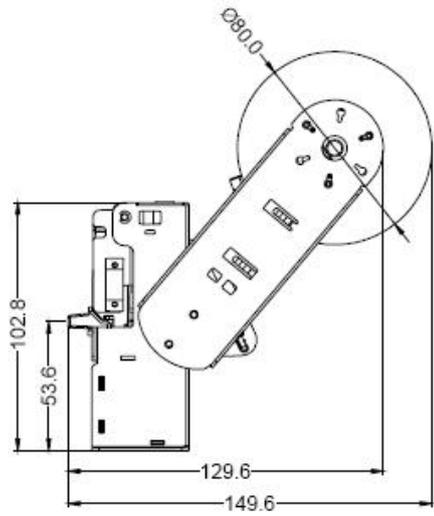
## 1.6 Power supply

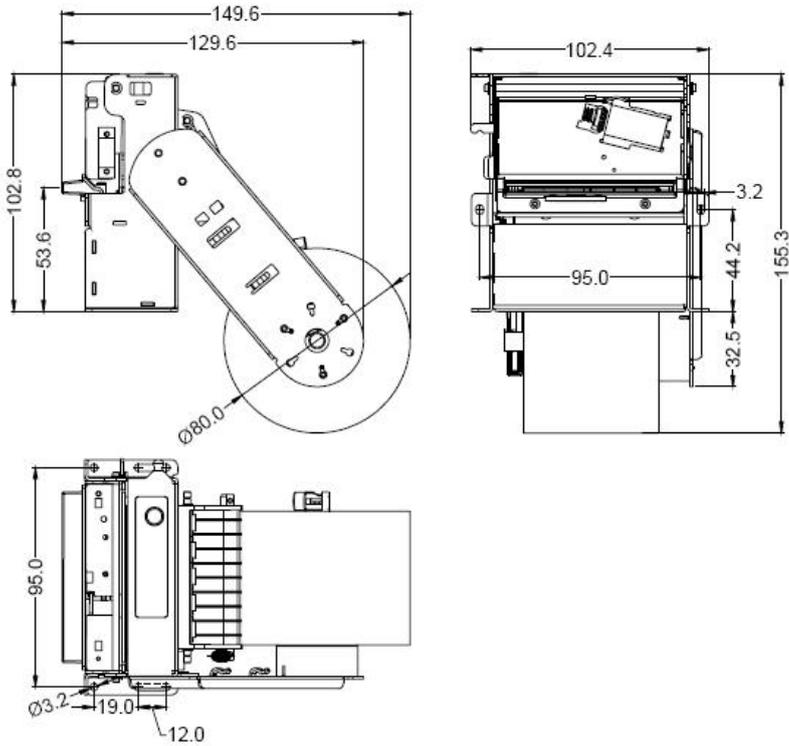
- DC9~24V wide voltage, 2A, PDK-3PIN



Pic 1.1 Power interface definition

## 1.7 Boundary dimension

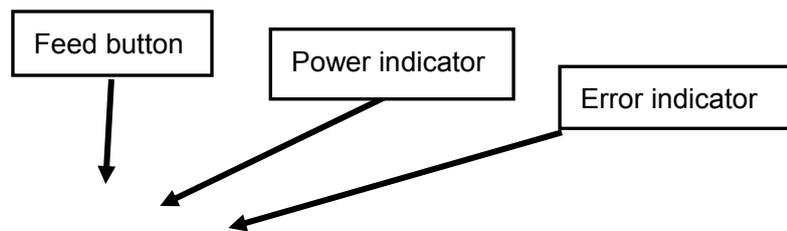


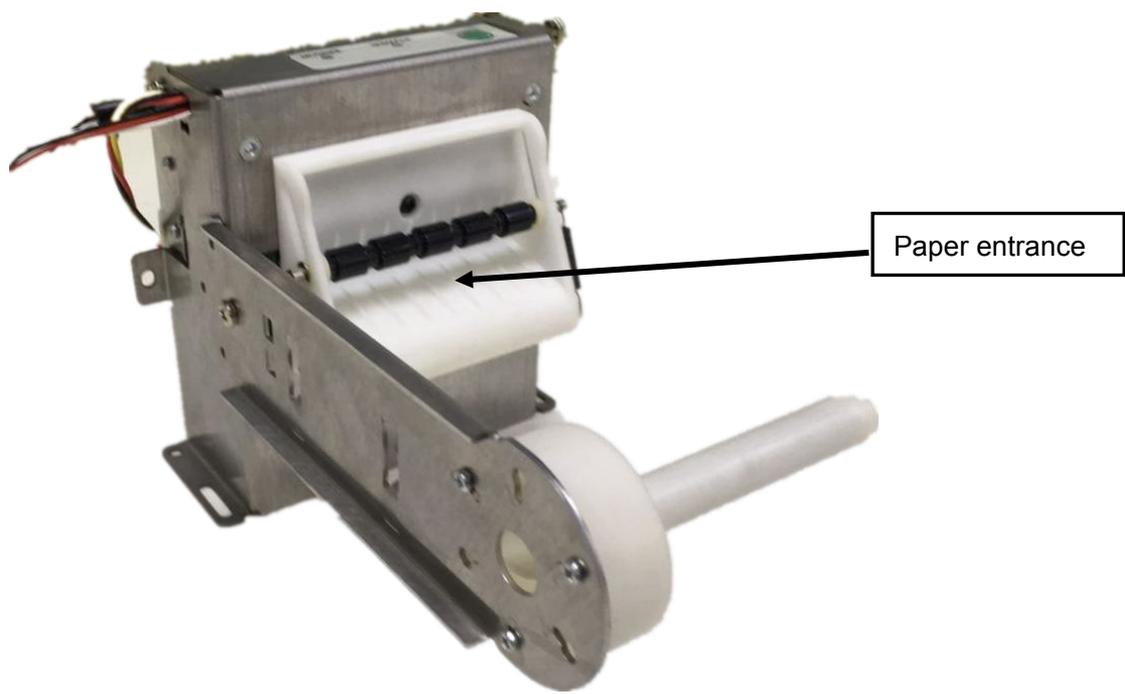
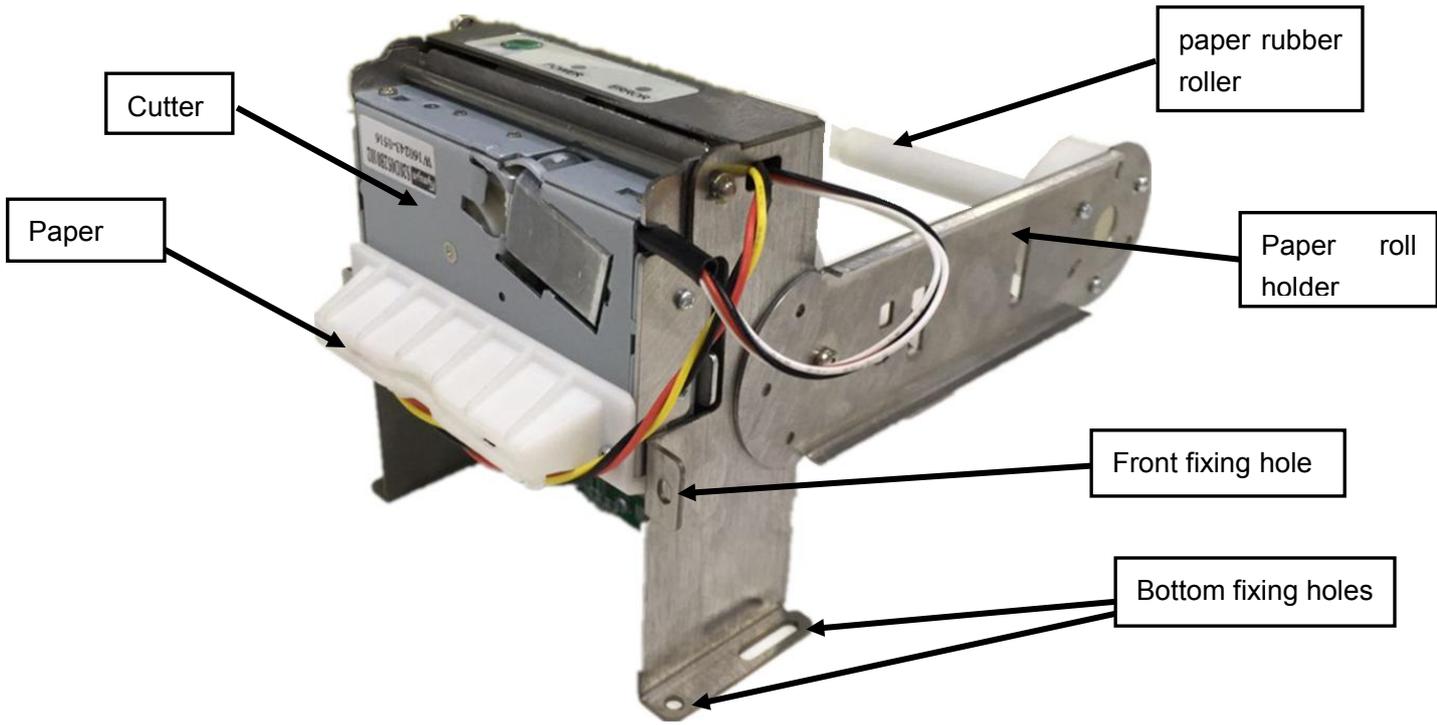


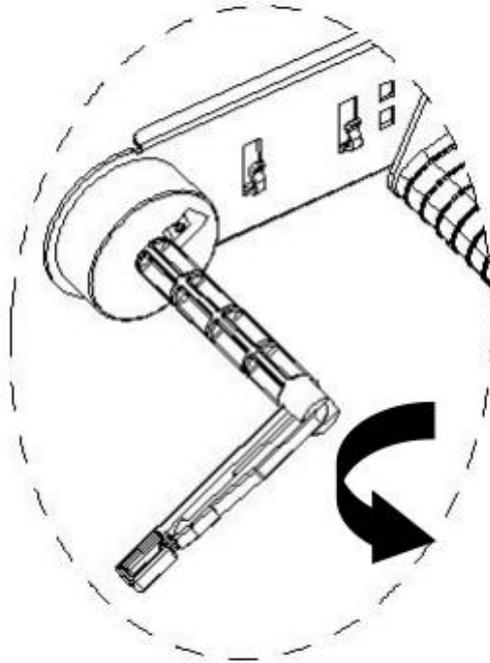
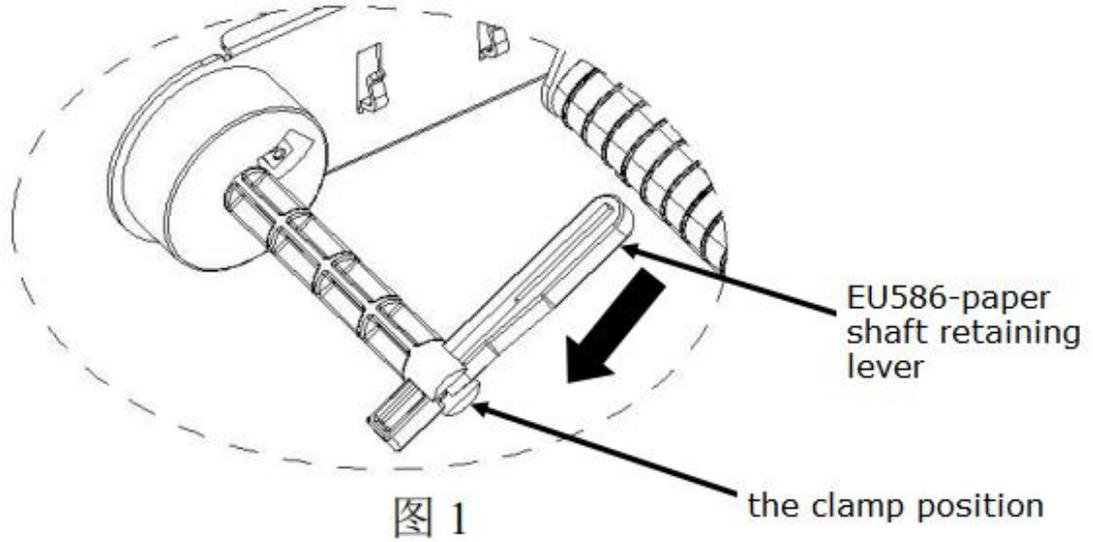
- Outer Dimension: 162mm×103mm×103mm(L×W×H)

## Chapter 2 Operating instructions

### 2.1 Printing Unit components







## 2.2 Instructions for paper install

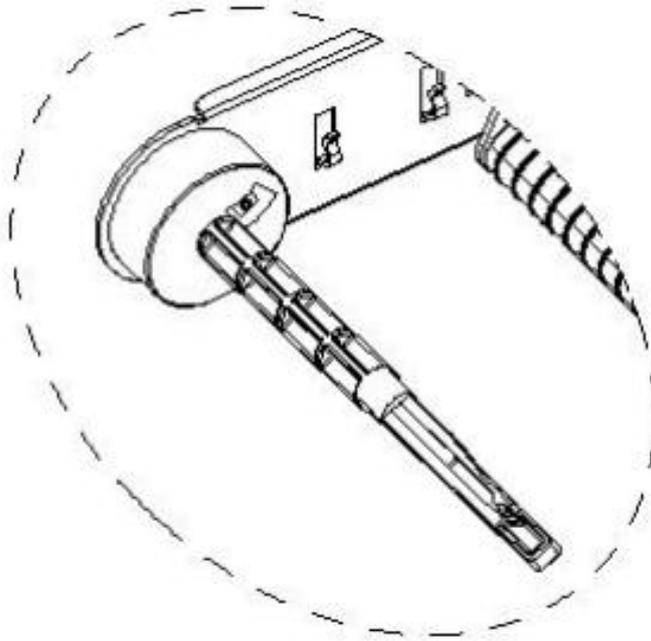
### 2.2.1 Paper Loading

SP-EU586 printer needs  $57.5\pm 0.5$ mm thermal paper roll.

Thermal paper installation is as below:

Step 1: Pull EU586-paper shaft retaining lever out of the clamp position and move the arrow in the direction of FIG. 1 to FIG. 2.

Step 2: to push EU586 paper axle gear lever figure 2 90 ° direction arrow to figure 3.



In  
Ste

p 3: put the paper roll in and move the paper shaft retaining rod back to the clamp position in reverse order. After placing the paper roll, pull a section out of the paper roll. Then put the paper end into the feeding port of the paper making mechanism, and the printing mechanism will automatically feed the paper.

### △Attention

1. Pay attention to the direction of the paper roll, keep the print surface towards the head.
2. Please do not move the paper forward or back by hands.
3. Keep clean for the printer head or will effect the quality of the Printing

## 2.2.2 Solution for paper jam of cutter

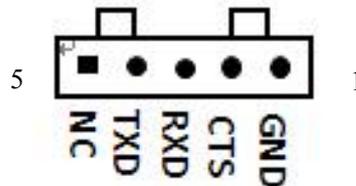
If the cutter is jammed, turn off the power and turn on the printer again, the cutter will recover. If the paper is jammed, please open the printer cutter unit and take out the paper. If the cutter does not recover after reset, you can move the plastic gears on the cutter to recover the cutter.

If you want to keep the data when the cutter is jammed, please do not turn off the power and use the manual method to recover the cutter. Then open the rubber roll and take out the jammed paper, now turn off the rubber roll. The printer will recover from the paper cutting errors.

## 2.3 Interface connection

### 2.3.1 Serial interface connection

SP-EU586 printer serial interface is compatible with RS-232C, support DTR/DSR and XON/XOFF handshaking protocol. Its interface is PDK-5PIN type socket outlet. The pin number of serial interface socket as shown in figure 2-5:



Pic2.2 Serial interface socket Pin No.

Each pin signal is defined as shown in figure 2-5:

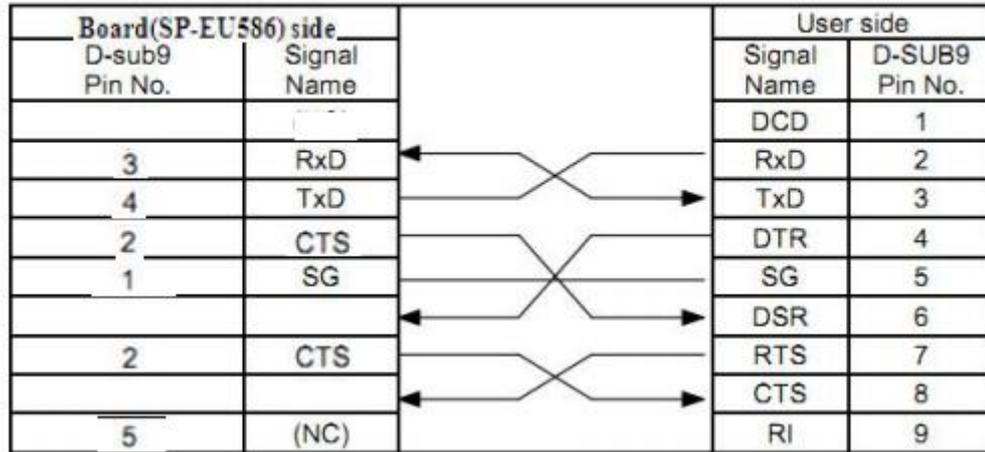
Pin No.	Signal name	Signal direction	Source	Explain
1	GND	----	----	Signal ground
2	CTS	input	host	When the signal show "MARK", it is means the printer is busy and can not receive data, when the signal show "SPACE", it is mean the printer get ready and can receive data.
3	RXD	input	Host	Printer receive data from computer
4	TXD	output	printer	Printer send control code XON/XOFF and data to computer.
5	NC	----	----	Reserved printer power interface, DC9V~24V input

Pic 2.3 Serial interface pin definition

Mark: ① "Source" means the place of the signal from

② Signal logic level is EIA by default, while the TTL is optional and the line sequence keep the same.

The baud rate and data structure have been set as 9600bps/8 data bits/no calibration and 1stop bit under connected as serial. SP-EU586 printer's serial interface can be connected to the standard of RS-232C interface, the right connect way as figure 2-6.



Pic 2.4 Printer serial interface and users connecting methods

## 2.3.2 MINIUSB Interface (Only models with this interface are allowed )

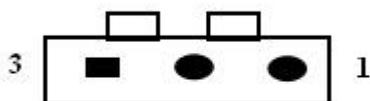
The standard configuration of the SP-EU586 embedded printing unit includes a standard MINI USB cable for connecting the printer and the main equipment. The USB of the printer belongs to the DEVICE type; Shape and pin definition are shown as follows:



Pin No.	Function	Mark
1	V Bus	Power supply 5V
2	Data-	Data-
3	Data+	Data+
4		Null
5	GND	GND

## 2.3.3 Power supply connection

For SP-EU586 printer, the power supply is external DC9V~24V、2A, socket is PDK-3PIN type, pin definition as shown in figure 2-5.



Pin No.	Function
1	GND
2	NC
3	DC9~24V

Pic2-5 Power interface socket and pin definition

## 2.4 Lights and buttons operation

SP-EU586 printer has one button and two lights.

【FEED】 is paper feeding button, in the condition of allow button control, press 【FEED】 button printer feeding paper, loosen 【FEED】 button, stop feeding paper.

Yellow power indicator light is for power light. POWER indicator lighting means printer has been switched on .

Red light for the ERROR is Error status indicator, When the print working with normally, the red Error light is off, the light is flashing as abnormal alarm status. Each kind of error status is below:

Light status	Buzzer	Abnormal alarm	Remark
Constant on lighting	Alarm twice and stop for a second	Out of paper	
shine once and stop for a second	Alarm once and stop for a second	Paper will be out	The error will not influence the normal use
shine twice and stop for a second	Alarm twice and stop for a second	Have not take out paper	
shine three times and stop for a second	Alarm three times and stop for a second	Paper jam	
shine four times and stop for a second	Alarm four times and stop for a second	Unrecoverable error	Including the internal memory error、over-voltage error、under-voltage error、CPU error
shine five times and stop for a second	Alarm five times and stop for a second	Recoverable error	Including front case error and print head temperature error
shine six times and stop for a second	Alarm six times and stop for a second	Recoverable error	Cutter error

Pic 2.6 Error status check and comparison table

## 2.5 Normal working mode

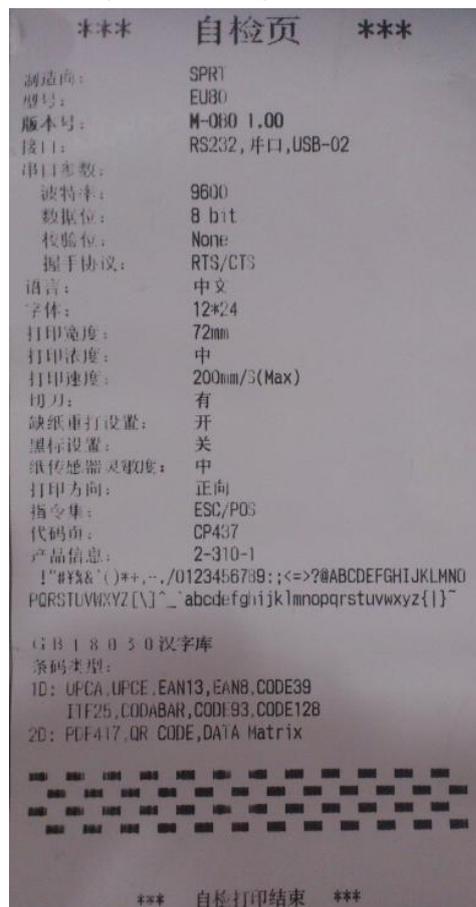
When printer is off, open the power button, Status indicators shine and printer enter into the normal working mode.

## 2.6 Self-test

Self-test can detect the printer is working correctly or not, if it can print out self-test receipt correctly, it is mean everything is normal except the port connection with PCB board, or will be need repaired.

Self-test print out in sequence: name of manufacture、printer mode、software version、interface type、parameter default value of printer's、96 characters in the ASCII code、default code page content(set the language as English)or Chinese character name(if language set as Chinese)、bar code type.

The self-test method is press the button of **【FEED】** to open the power supply, then the printer will print out the self-test receipt. The receipt is as below 2-10:



## 2.7 HEX Printing mode

According to below steps, make the printer enter into the HEX printing mode.

1. Open the printer cutter unit;
2. Press the button of **【FEED】** to open the power supply;
3. Close the rubber roller printing agencies, then print out the three lines content as below:

Hexadecimal Dump

To terminate hexadecimal dump,

Press FEED button three times.

It means the printer has entered into HEX printing mode, under this mode all the input content will be printed out as HEX DUMP, the paper will online after press the 【FEED】 button once, totally three times, print out “\*\*\* Completed \*\*\*”, quit HEX DUMP mode.

## 2.8 The printer parameters setting

This function is to set up some simple parameters for the printer.

Enter into parameter setting method:

In shutdown mode, open the 【printer cutter unit】 first, press the button of 【FEED】, then open the power supply, after the power status indicators flashing, press the button of 【FEED】 twice again, then close the 【printer cutter unit】. The printer enters into parameter setting mode. And print out the first item of parameters and its current value which can be set. The details for setting method reference appendix A.

The method to quit the parameter setting

Open the 【printer cutter unit】 first, press the button of 【FEED】, then close the 【printer cutter unit】 and release the button of 【FEED】, save the setting values of the parameters and exit. Enter into the normal working mode.

If the printer's power supply is closed directly, the setting parameters will lose.

## 2.9 Enter into the program upgrading mode

When printer is off, open the 【printer cutter unit】 first, press the button of 【FEED】, then open the power supply, after the status indicators and lack of paper lights flashing alternant release the button of 【FEED】. Press the button of 【FEED】 five times, then close the 【printing rubber roller】. The printer enters into the program upgrade mode. Then the status indicator light will flash as 1s speed.

**Quickly access method:** In shutdown mode, open the 【printing rubber roller】 first, press the button of 【FEED】, then open the power supply, then release the button of 【FEED】 quickly. The printer enters into the program upgrade mode. Then the status indicator light will flash as 1s speed.

**Attention:** After entering into the program upgrade mode. If the paper out indicator lights, it means the program of this interface can not be upgraded. Serial port、parallel and USB port support upgrade online.

## 2.10 Paper near end instruction

Paper end function can be set by setting tool. When the paper end function is enable, printer error indicator will remind users that paper will be run out and printer need paper roll with enough paper when it is. This error will not influence the normal use of printer.



Pic 2.8 Setting page

**Notice:**

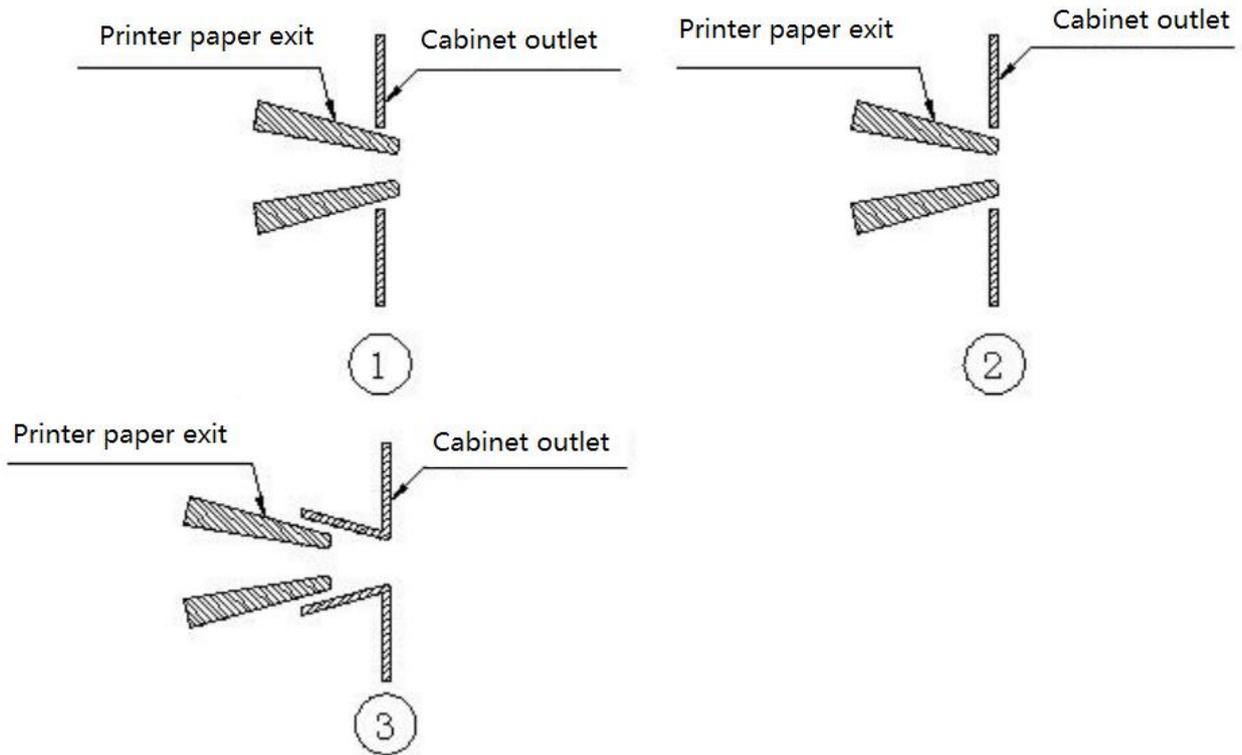
1. Currently, paper end, paper taken out and paper jam function will be set at EU80/801 model parameter setting by setting tool.
2. When the related functions are unstable, users can adjust the sensitivity of related sensors to calibrate.

## 2.11 Receipt-not-taken instruction

Receipt-not-taken function can be set by setting tool. When the receipt-not-taken function is enable, printer will alarm if paper have not been taken out on the exit. Next data will not been print unless the alarm relived.

## 2.12 Paper jam instruction

Paper jam function can be set by setting tool. Paper jam function use the same sensor with receipt-not-taken function, and the function switch is the same as receipt-not-taken function. When sensor detect that is receipt have not been taken out on the exit after printer feed paper for a while, printer will alarm paper jam and will not print until the alarm relived.

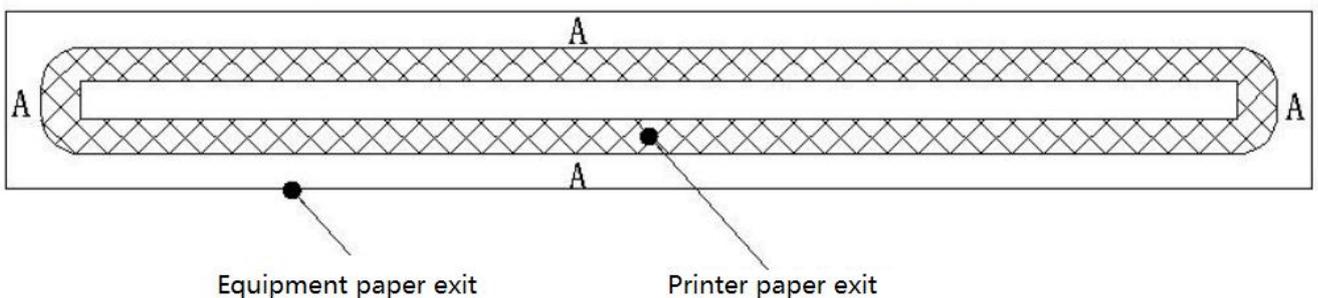


## 2.13 Installation and use notes

1. The connection between the paper exit and the paper exit position of the device suggested to be one of the following figures.

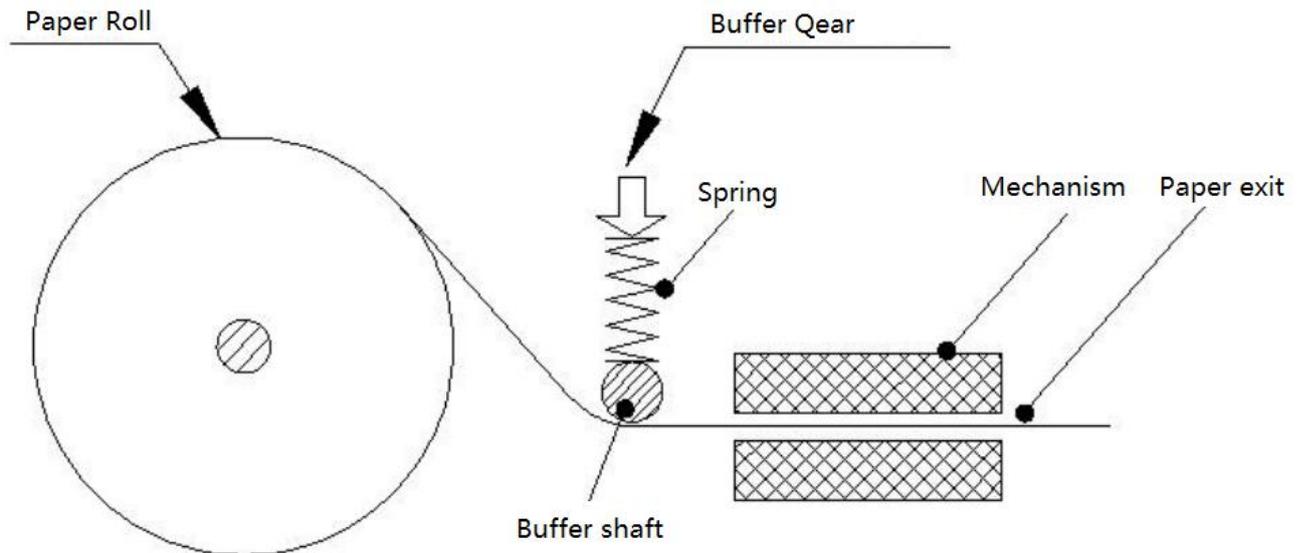
2. When the paper exit port and Cabinet outlet are connected in the above figure, in the structure of Figure 1 and Figure 2, there should be a gap between the paper exit of the printer and the paper exit of the device. See the figure below.

There is a certain gap between the paper exit and the equipment  
(recommended one side 1-3mm, as shown in Figure A)



3. The printer must be firmly installed to prevent the printer from shifting due to external force and causing paper blockage. If installed on the sliding rail, it is necessary to make the sliding rail limit mechanism.

4. If the paper bin and support need to be designed separately, the paper bin (paper rack) and movement are prohibited to be placed in the center continuously. The width of the paper bin (paper rack) is paper width +1mm. If the diameter of the paper roll installed is greater than 80mm, buffer mechanism should be added,, the common buffer mechanism is shown in the figure below



5. In the process of use, it is necessary to wait for the printer to finish cutting paper before tearing/taking paper, so as to avoid paper blocking and deviation caused by paper tearing.

6. In the process of use, do not cover the paper nozzle with your hands, and make sure there is no foreign body covering before the paper nozzle to avoid paper jam.

7. Ensure the paper head is flat and free from debris when loading the paper, so as to avoid slanting the paper or getting stuck in the machine head.

8. the printer is not suitable for working in the vibration environment, if you use the vibration environment, you must add damping design.

9. Printer in dust, oil, moisture, high temperature and other harsh environments, must do effective protection measures, so as not to affect the normal use of the printer.

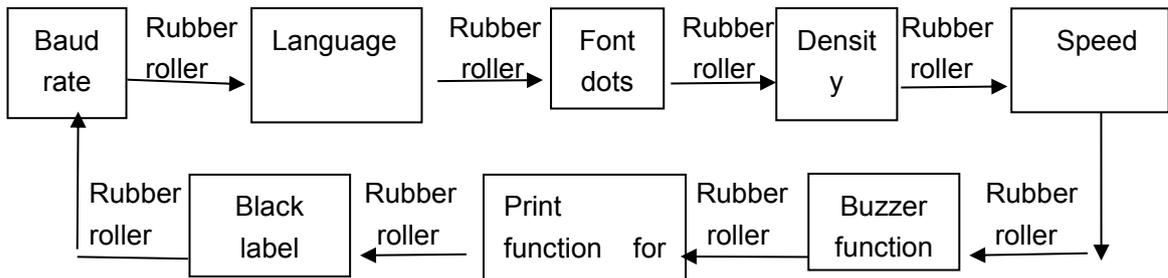
After the printer cots are opened for maintenance, check whether they are closed in place when they are closed, and ensure that the card buckle is completely locked, as shown in the figure below

# Appendix A: Parameters setting

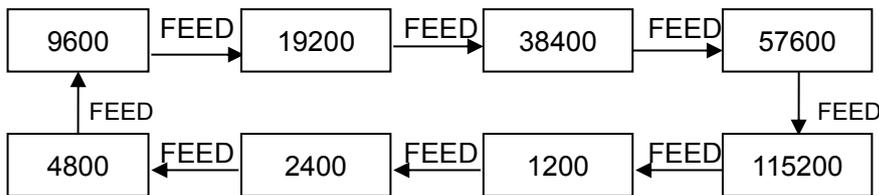
This appendix shows the way, through which printer's parameters are set through the button.

Setup instruction: use the button of【printer cutter unit】 to choose the setting items,each time change the item by press the button 【printer cutter unit】 , then print out the current value. Use the button of 【FEED】 to set the parameter, the parameter will be changed by press the 【FEED】 button.

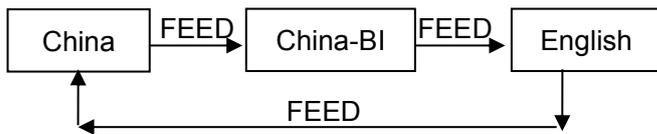
Full setting:



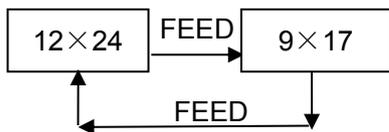
Baud rate:



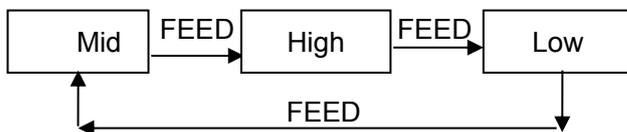
Language:



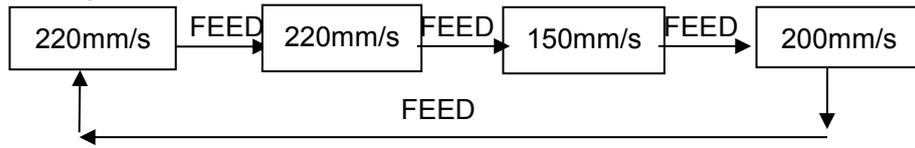
Font dots:



Print density:



Print speed:



Black label mode:

