

Thermal Printer

User's Manual



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1 Introduction

1.1 Brief introduction

CB821 is a thermal POS printer with auto-cutter. It has good printing quality, high printing speed and high stability, which is widely used in POS system, food service industry and many other fields.

CB821 connects other devices via USB, Serial, Ethernet port. It offers drivers for WINDOWS and LINUX operating systems.

The supported operating systems are as below:

WINDOWS XP

WINDOWS 7 32/64

WINDOWS 8

WINDOWS 10

UBUNTU 12.04 32/64

UBUNTU 14.04 32/64

MAC OS

1.2 Main features

Low noise, high-speed printing, 250mm/s

With auto-cutter

With cash drawer interface

USB, Serial, Ethernet port communication, Bluetooth optional

.Long-life, high print quality, durable performance

.Support mark paper and continuous paper printing

.Easy paper loading design, widely used in various industries

2 Specification

2.1 Specification

Item		Parameter
Printing parameter	Printing method	Thermal printing
	Resolution	203DPI,8 dots/mm
	Printing width	72mm(576 dots)
	Printing speed	About 250 mm/s
	Interfaces	Standard: cash drawer / USB/ serial/ Ethernet Optional Wireless Communication: Bluetooth
Page mode	/	Support
Command set	/	ESC/POS compatible commands
Storage	RAM	RAM 8M bytes, receive buffer area 1M bytes
	FLASH	FLASH 4M bytes, NV bitmap 256K bytes
characters	Chinese	GB18030 24×24
	Words, figures	ASCII 9×17,12×24
	User-defined	Support
	Code pages	Optional international character sets 45 TRADITIONAL CHINESE CHINESE CP437 [U.S.A., Standard Europe] Katakana CP850 [Multilingual] CP860 [Portuguese] CP863 [Canadian-French] CP865 [Nordic] WCP1251 [Cyrillic] CP866 Cyrillic #2 MIK[Cyrillic /Bulgarian] CP755 [East Europe, Latvian 2] Iran CP862 [Hebrew] WCP1252 Latin I WCP1253 [Greek] CP852 [Latina 2] CP858 Multilingual Latin I +Euro) Iran II Latvian CP864 [Arabic] ISO-8859-1 [West Europe] CP737 [Greek] WCP1257 [Baltic] Thai CP720[Arabic]

		CP855 CP857[Turkish] WCP1250[Central Europe] CP775 WCP1254[Turkish] WCP1255[Hebrew] WCP1256[Arabic] WCP1258[Vietnam] ISO-8859-2[Latin 2] ISO-8859-3[Latin 3] ISO-8859-4[Baltic] ISO-8859-5[Cyrillic] ISO-8859-6[Arabic] ISO-8859-7[Greek] ISO-8859-8[Hebrew] ISO-8859-9[Turkish] ISO-8859-15 [Latin 3] Thai2 CP856
Chart	/	Supports different density dots and images printings
		Supports grating bitmap printing
		Supports download bitmap printing, every bitmap size should less than 256K, and the total capacity of download bitmap is 256K.
Bar codes	1D	UPC-A、UPC-E、EAN-8、EAN13、CODE39、ITF、CODEBAR、CODE128、CODE93
	2D	PDF417、QR Code
Detection function	Sensor	Paper out, cover opened, un-take out printed paper(optional)
LED indicator	Power indicator	Green
	Paper out indicator	Red
	Error indicator	Red
Paper Requirement	Type	Standard thermal receipt paper
	Width	79.5±0.5mm
	Thickness	0.056~0.1mm
	Diameter	80mm(Max.)
Physical characteristics	Paper loading	Easy paper loading
	Paper cutting	Manual or automatically cut paper
	Operating condition	-10℃ ~ 50℃, 25% ~ 80%RH
	Storage condition	~40℃ ~ 70℃, ≤93%RH (40℃)
	Outline dimension	145mm×195mm×144mm (W×L×H)
	Weight	1.8Kg
Reliability	TPH life	100km
	Cutter life	1,000,000 times
	Motor life	360,000 hours
Software function	Driver procedure	Windows (WIN7/WIN8/WIN10/Vista/XP/2000) Ubuntu 12.04 32/64, Ubuntu 14.04 32/64 MAC OS

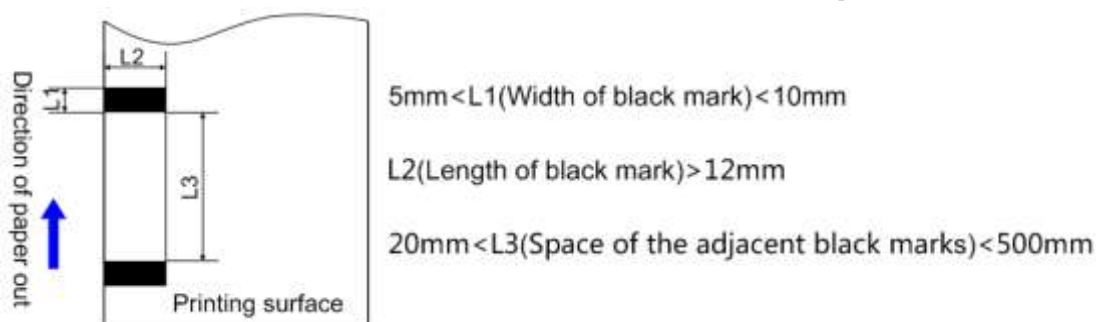
2.2 Printing material requirements

2.2.1 Paper parameters

- 1) Paper type: thermal receipt paper/thermal black mark paper
- 2) Paper width: 80 ± 0.5 mm
- 3) Paper roll diameter: 80 mm (Max.)
- 4) Paper thickness: $0.065 \sim 0.10$ mm

2.2.2 Mark paper parameters

Black mark imprint position is on the front side of the receipt when using mark paper. The black mark reflectivity is no more than 15%, the other parts of paper reflectivity should be more than 85%. There are not any patterns in black mark area, such as ad, and the mark size shall be satisfied with requirements as below:



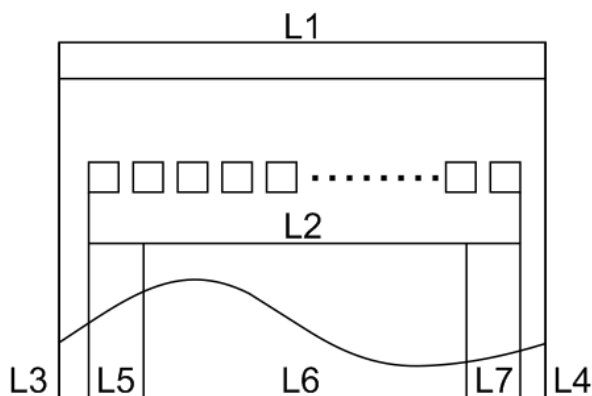
2.2.3 Paper using attention

 Note:

- 1) Please use good quality paper, otherwise, it will effect printing quality and even reduce printer head life.
- 2) Don't make the paper stick on axis.
- 3) Paper will be fading out or reduced thermal sensitivity if it is polluted by chemical or oil, which will affect printing effects.
- 4) Don't use nail or hard things to clash printing paper, otherwise, it will be fade out.
- 5) Paper will be fading out if the environment temperature exceeds 70 °C. So please take note the temperature, humidity and illumination effects.

2.3 Printing and paper cutting position

2.3.1 Printing position



L1-Paper storehouse's width: $82 \pm 0.5\text{mm}$

L2-Effective printing width: 80mm

L3-Distance between print head to paper storehouse's left edge (fixed width): $3 \pm 0.3\text{mm}$

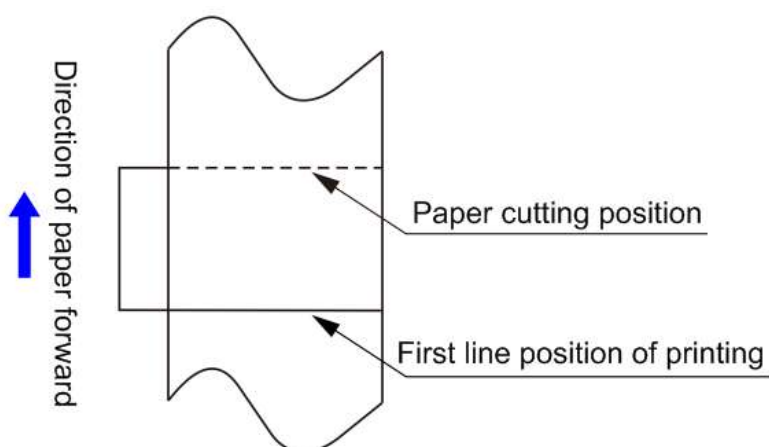
L4-Distance between print head to paper storehouse's right edge (fixed width): $3 \pm 0.3\text{mm}$

L5-Left margin: Default is 4mm

L6-Printing area width: it is set by commands (refer to programming manual). Default is 72mm.

L7-Right margin: Default is 4mm.

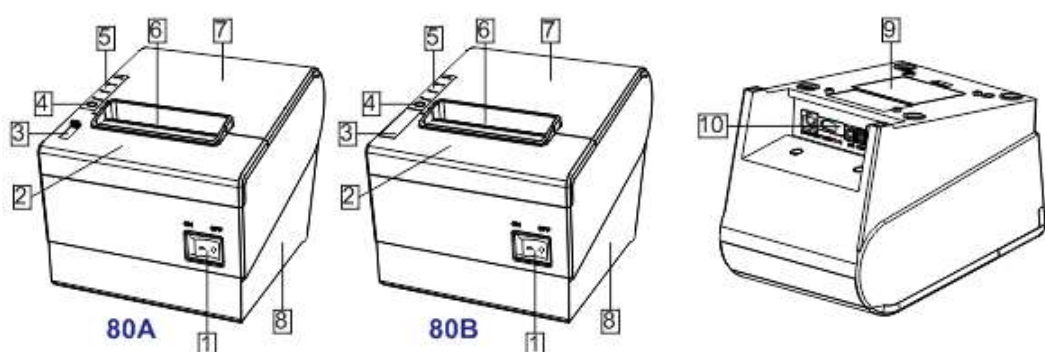
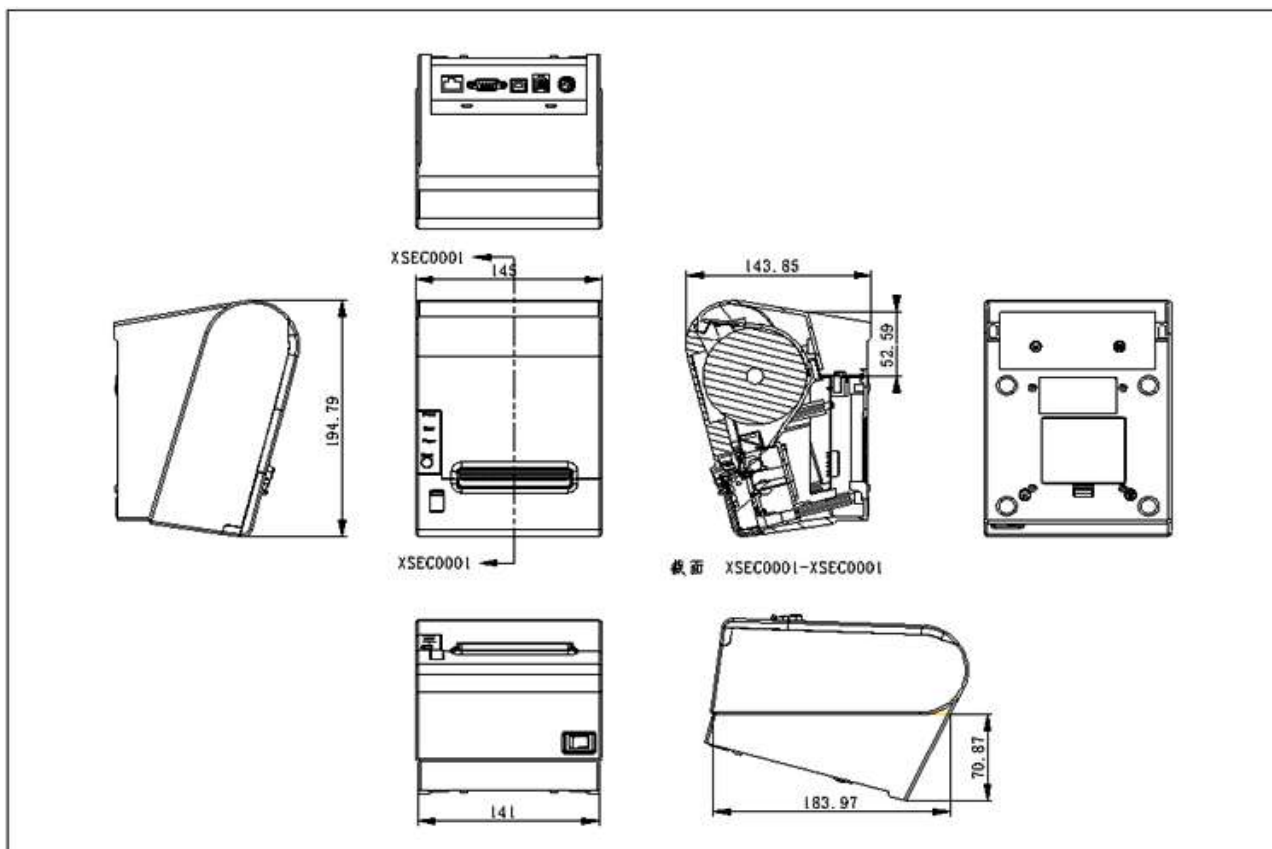
2.3.2 Paper cutting position



The distance between print head to cutter: 12.5mm

3 Appearance and components

3.1 Appearance and components



- | | |
|---------------------------------|-------------------------------|
| ① Power switch | ⑥ Mouth of paper out |
| ② Cover of Cutter | ⑦ Cover of paper warehouse |
| ③ Paper cover's opening button | ⑧ Bottom of printer |
| ④ Paper feeding button | ⑨ Cover of DIP switch |
| ⑤ Indicators(Power/Error/Paper) | ⑩ Power & Communication ports |

Function instruction of components

1) Power switch

Press “O” side to power off, press “I” side to power on.

2) Power indicator(green)

The indicator is on when power on, and it is off when power off.

3) Error indicator (Red)

Error indicator is on when it detects error. Such as: paper out, upper cover is open and cutter is stocked.

4) Paper indicator(red)

Paper out indicator is on when it detects the paper is out. Please put a new paper roll to printer inside then.

3.2 Indicator and buzzer instruction

1) Function instruction of indicators and buzzer

Name	Status	Instruction
Power indicator (Power)	On	Printer is power on
	Off	Printer is power off
Error indicator (Error)	On	Printer is in error status
	Off	Printer is in normal status
Paper out indicator (Paper)	On	Printer is in paper out status
	Off	Printer is in normal status

Description	Power Indicator	Error Indicator	Paper Indicator	Buzzer
Open printer cover	On	On	On	It rings 6 times by 1.5s.
Paper is enough	On	Off	Off	Silent
Paper out	On	On	On	It rings 3 times by 1.5s.



Note: Printer detects printer head temperature via thermal resistance. It will cut off print head power and stop printing if print head is overheat. The print head protection temperature is 80℃.

4 Printer installation

4.1 Open the package

Please make sure everything is in good status when you open the package. Otherwise, please contact to distributor in time.

4.2 Requirements of installation position

- 1) Put the printer on a stably place.
- 2) Let the printer far away from water, fire, and sunlight.
- 3) Avoid to put it on oscillatory and impassive place.
- 4) Make sure to connect printer with ground safety

4.3 Connect to power adapter

- 1) Make sure the printer is power off.
- 2) Connect power adapter's DC output plug to the printer.
- 3) Connect power adapter's AC input plug to a power outlet.
- 4) Please be careful to operate correctly when plug out the plug of power cord to avoid damage.



4.4 Connect Communication cables

- 1) Make sure the printer is power off.
- 2) Connect communication cable to the printer's port, and fix it as plug lag spike (or snap spring).
- 3) Connect communication cable to the other side host.

4.5 Connect to cash drawer

- 1) Make sure the printer is power off.
- 2) Connect cash drawer to cash drawer port behind the printer.



Warning: The Voltage of cash drawer port is 24V. (It cannot connect to telephone cable.)

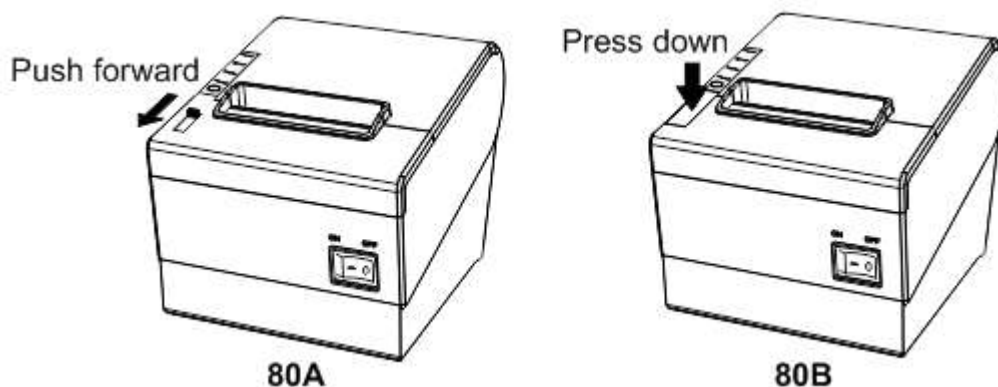
4.6 Paper roll loading

4.6.1 Printing paper type confirmation

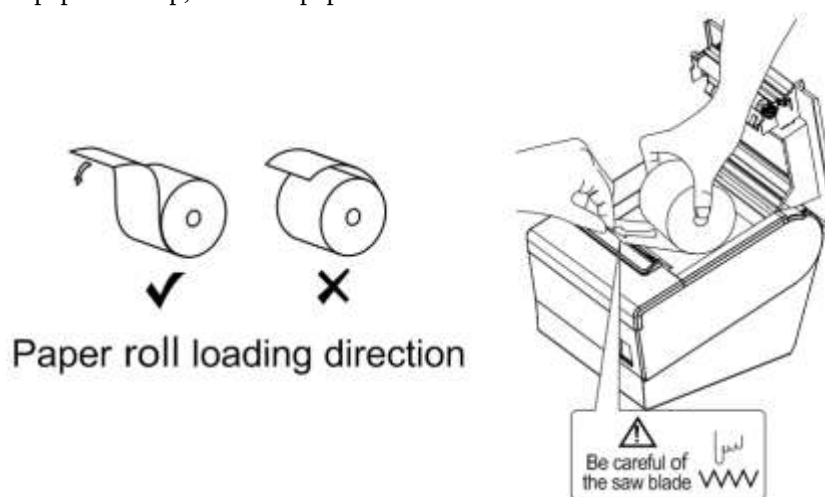
You can load paper roll to print after connecting power adapter and communication cables. Please make sure the printing paper type before printing. The default paper type is continuous thermal receipt paper.

4.6.2 Loading or change paper roll

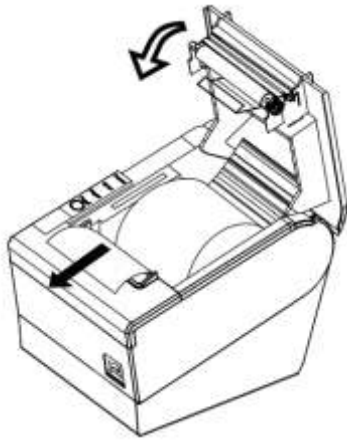
- 1) Power off the printer.
- 2) Slide or press paper roll storehouse button, and then open storehouse cover.



- 3) Draw out paper roll tap, and load paper roll as below.



- 4) Draw out a printing paper, and leave some on the paper out month, then close the storehouse cover.



⚠ Warning: Please make sure the paper roll in tense status, if not, it maybe cause paper jam or other problems.

5) The status after paper loading



4.7 DIP switch setting

DIP switch

Switch	Function	On	Off	Default
1	Cutter	Forbidden	Enable	Off
2	Buzzer	Enable	Forbidden	On
3	Printing density	Dark	Light	Off
4	Multi-byte encoding	Single-byte encoding	multi-byte encoding	Off
5	Max. number of Printing characters in each line	42	48	Off
6	Cash drawer	Enable	Forbidden	On
7	Baud rate options (bps)	Ref. Chart 1		Off
8				Off

Chart 1: Baud rate options

Baud rate	Switch 7	Switch 8	Default
9600	On	Off	19200
19200	Off	Off	
38400	On	On	
115200	Off	on	

4.8 Printing self-test page

- 1) Make sure the printer loaded paper roll correctly.
- 2) Press down [FEED] button and hold on, then power on the printer, the printer will print a self-test page.

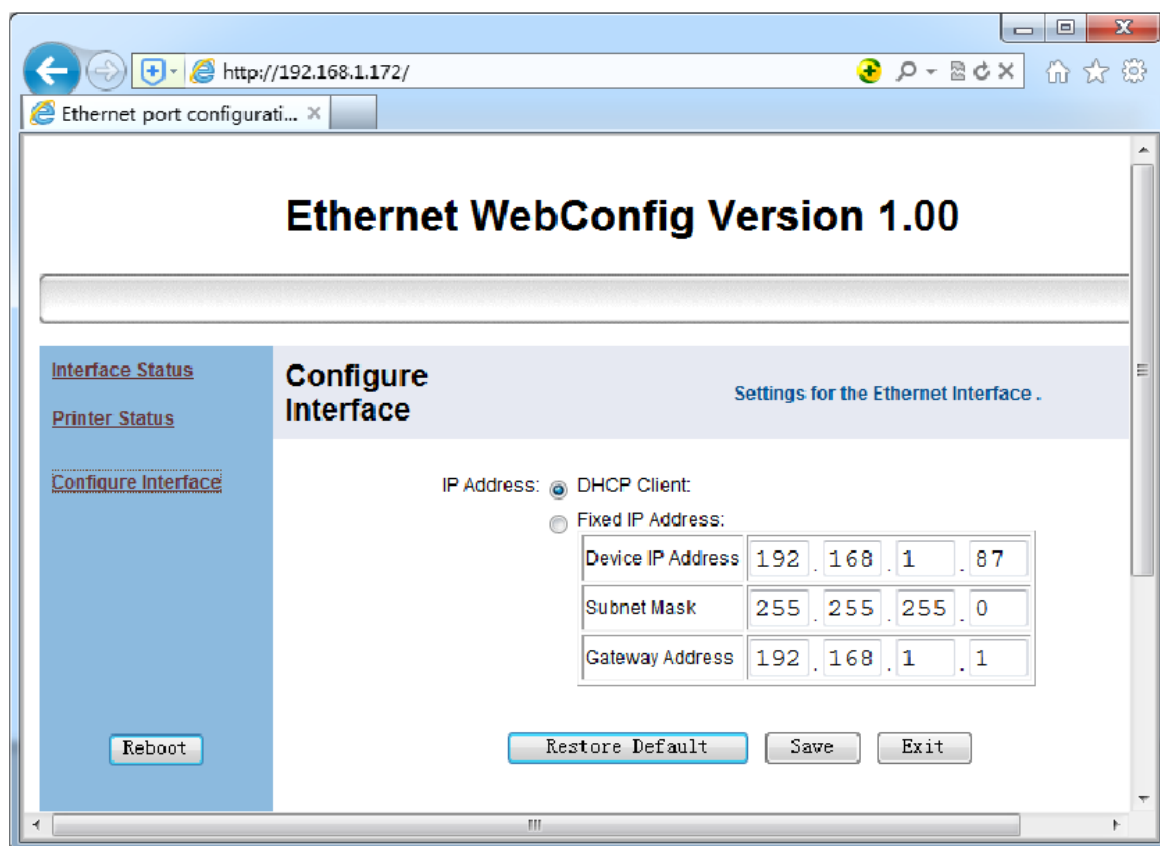
4.9 Set Ethernet port IP Address.

The printer's Ethernet IP address can be set directly via printer inserted web setting page. The operation steps are as below:

1. Connect printer and PC in a same Ethernet LAN.
2. Print a printer self-test page to get printer recent IP address (self-test page printing operation method refers to "4.8 printer self-test" instruction):

You can find the printer's IP address is same as 192.168.1.87 in self-test page "IP address: 192.168.1.87"

3. Set network card IP address in PC and printer IP address as different IP address in the same network segment.(Such as 192.168.1.xxx, xxx is a number among 1 to 254);
4. Please enter address "**http://printer IP address**" in browse of PC after making sure that printer connects with Ethernet.(e.g.: If printer IP address is "**192.168.1.87**", please enter "**http://192.168.1.87**"), then press Enter key,open Ethernet port setting page in browser as below:

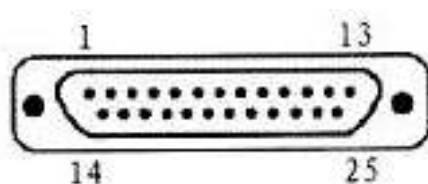


5. Click “Configure Interface” link in the left side, then enter the modified target IP and click “save” button to save setting. Click “Reboot” button to reset printer if you want the setting to take effect.
6. Enter the new IP address as the above step 4 procedure, and re-open printer Ethernet port setting web page, then click “Printer Status” link in the left side. And click “Printer Test Page” button to print self-test page, and check the IP Address contents in the self-test page is right or not.

5 Interface pin definitions

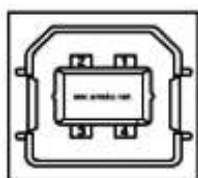
The printer has a cash drawer driver interface and many kinds of communication interfaces: parallel, serial (RS-232), USB and Ethernet ports. USB port and cash drawer interfaces are standard interfaces, and it has Ethernet, serial and parallel ports as optional.

5.1 Parallel interface pin definition (DB25M)



Number	Signal	Function	Number	Signal	Function
1	/STROBE	Gate. Low level is effective	10	/ACK	Confirm. Low level is effective
2	DATA0	Data bit is 0	11	BUSY	Busy
3	DATA1	Data bit is 1	12	PE	Paper out
4	DATA2	Data bit is 2	13	SEL	Choose
5	DATA3	Data bit is 3	14	/AUTOFEED	Change line automatically. Low level is effective
6	DATA4	Data bit is 4	15	/ERROR	Error. Low level is effective
7	DATA5	Data bit is 5	16	/INIT	Initialize. Low level is effective
8	DATA6	Data bit is 6	17	/SELIN	Choose input. Low level is effective
9	DATA7	Data bit is 7	18-25	GND	Ground wire

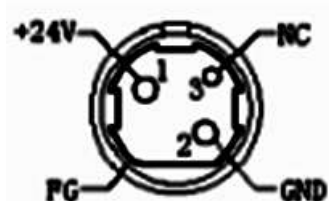
5.2 USB interface pin definition (standard B type female base)



1) Pin definition

Pin Number	Signal name	Typical wire color
1	VBUS	Red
2	D-	White
3	D+	Green
4	GND	Black

5.3 Power interface pin definition (MPC-3-001B)



1) Pin definition

Pin number	Signal name
1	+24V
2	GND
3	N.C
SHELL	F.G

5.4 Cash drawer interface pin definition (RJ11-6P6C)



1) Electrical specification

Driver voltage: DC24V

Driver current: Max. 0.8A (within 510ms)

Cash drawer status tests signal: "L" = 0~0.5 V ; "H" = 3~5 V

2) Cash drawer interface socket uses RJ-11 6P type connector;

3) Interface signal definition

Pin number	Signal	function
1	FG	Printer cover
2	DRAWER 1	Cash drawer 1 driver signal
3	DRSW	Cash drawer status detection signal
4	VDR	Cash drawer driver power
5	DRAWER 2	Cash drawer 2 driver signal
6	GND	Common ground circuit



Notes:

1) Prohibit socket with power to pull out communication wire plug.

2) Please avoid to parallel with strong power when wiring communication cables as 通讯线布线时应避免和强电并行;

3) Communication cables use with shielded cables.

5.5 Serial port pin definition (DB9F)

Printer serial port is compatible with RS-232, the interface socket is DB9 female socket.

User can check interface setting status via printing setting self-test page. Printer default serial interface is set as: baud rate 19200bps, 8 bit data bits, no parity, 1 bit stop bit, and the handshakes method is DTR/DSR.

Pin number	Definition
1	CD
2	TD
3	RD
4	DSR
5	GND
6	DTR
7	CTS
8	RTS
9	RI

5.6 Ethernet interface pin definition (RJ45)

Pin number	Definition
1	TX+
2	TX-
3	RX+
4	n/c
5	n/c
6	RX-
7	n/c
8	n/c

6 Faults handling

Please refer to the methods as below when printer can't work normally. Please contact your supplier directly if it still can't work normally.

6.1 Printer does not work

Problems	Probably reasons	Solutions
The Power indicator is not light. Printer does not work	Printer is not power on.	Power on printer
	Printer switch is not on.	Press down the “O” side of printer button
	PCB is damaged	Contact with agents or factory directly

6.2 Indicator error and buzzer warning

Problems	Probably reasons	Solutions
Paper indicator is on constantly Buzzer warns	Paper maybe out	Load a new paper roll
Paper out indicator light is on constantly Error indicator is on constantly Buzzer warns	Paper roll warehouse cover maybe lit up	Close paper roll warehouse cover correctly
Error indicator is blinking Buzzer warns	Print head is overheated	Power off printer power, and wait that print head temperature returns normal.
	Voltage is too high	Use assigned voltage to print
	Voltage is too low	Use assigned voltage to print

6.3 Problems when it is printing

Problems	Probably reasons	Solutions
Color strips occur on the paper	Paper maybe out	Load a new paper roll.
Printing is not clear or have dirty spots	Paper roll loading incorrectly	Check paper roll loading correctly or not
	Paper can't meet the requirements	Use the recommended thermal paper
	Print head or printer rubber roller is dirty	Clean print head or printer rubber roller
	Printing density sets too light	Increase printing density to satisfy the requirements.
Paper can output normally	Paper jam	Open upper cover or check paper feed channel to get to know paper jam.
Vertical printing contents get lost	Print head or printer rubber roller is dirty	Clean print head or printer rubber roller
	Print head error	Contact supplier or factory directly

6.4 Problems when cutting paper

Problems	Probably reasons	Solutions
Cutter blocked or cutter does not returned back.	Cutter is worn or cannot cut paper completely	Change cutter
	Turbine and worm are worn	Change turbine and worm
	Motor is burned-out	Change motor
	Too many paper scraps	Eliminate scraps between all the spare parts.
Cutting paper is not so good.	Cutter month is worn or paper is too thick	Change cutter
Paper jam	The head piece is overheated	Reduce driver head piece heating power
	Driver moves too fast	Adjust the printing speed to allowable specification of TPH.
	Paper feeds position is not right	Put in the paper channel between rubber covered roller and TPH to Make paper parallel with it

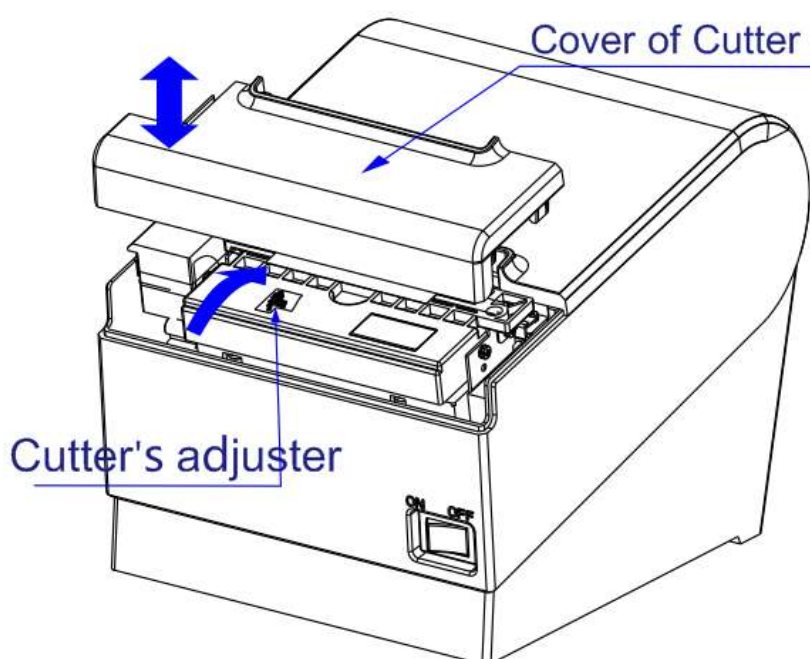
6.5 Paper jam and cutter retraction troubles removal

Please power off if it is paper jam, and eliminate paper jam in correct method.

1. Press the paper cover and open it to eliminate paper jam. Then re-install paper roll to power on.
2. Please use the method as below if step 1 cannot open paper cover:

⚠ Warning: Do not open the paper roll warehouse cover forcibly when you cannot open it normally if it is paper jam, which to avoid damaging the printer.

- 1) Make sure the printer power is off.
- 2) Take off the cutter adjusting cover in vertical direction as photo.
- 3) Adjust paper-cutter to make the cutter set back to print mechanism completely as photo direction
- 4) Open paper cover and eliminate paper jam.
- 5) Install cutter adjusting cover vertically down.
- 6) Re-loading paper, close the paper cover and then power on.



6.6 FCC Warning

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment . This transmitter must not be co - located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with minimum distance 20cm between the radiator &you body.