

80mm POS Thermal Printer

User Manual

- 351002: with USB connection
- 351003: with USB, Serial, Ethernet connection
- 351004: with USB, Bluetooth, WiFi connection



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1 Introduction

1.1 Brief introduction

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

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 direct thermal printing
- Printing density: 8 dots/mm (203DPI)
- Printing width: 72mm; Paper width: 80mm
- Auto cutter with long lifespan
- With cash drawer interface
- 351002: USB connection
- 351003: USB, Serial, Ethernet connection
- 351004: USB, Bluetooth, WiFi connection
- Metal through shaft, quality more stable
- Metal paper cover, good texture

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	351002: 150 mm/s , 351003: 150 mm/s , 351004: 250 mm/s
	Interfaces	351002: USB, cash drawer 351003: USB, Serial, Ethernet, cash drawer 351004: USB, Bluetooth, WiFi, cash drawer
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
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	195mm×145mm×143.3mm (L×W×H)
	Weight	2Kg
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

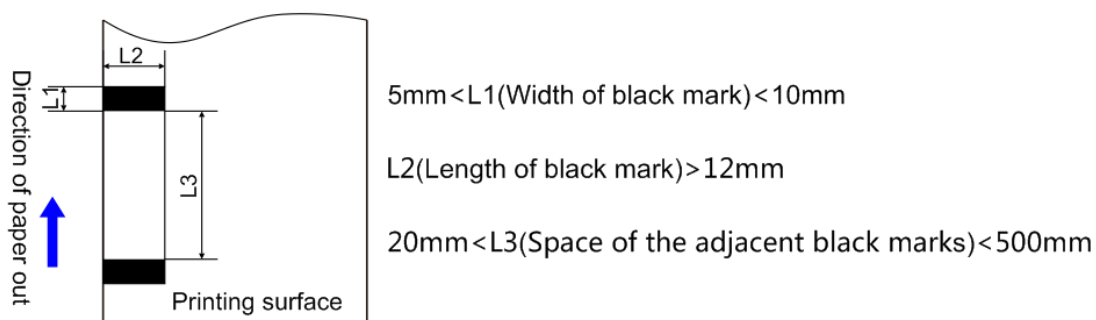
2.2 Printing material requirements

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:



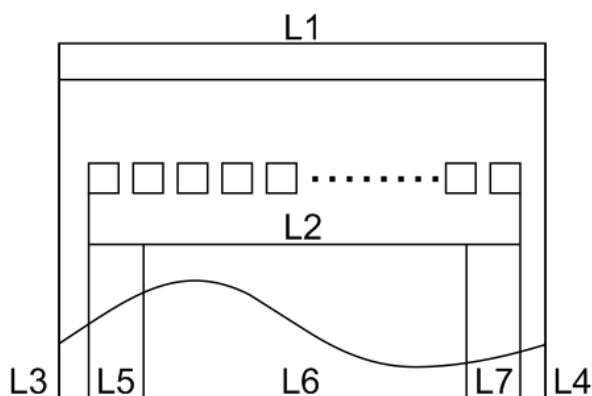
2.2.3 Paper using attention

⚠ 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: $82\pm0.5\text{mm}$

L2-Effective printing width: 80mm

L3-Distance between print head to paper storehouse's left edge (fixed width): $3\pm0.3\text{mm}$

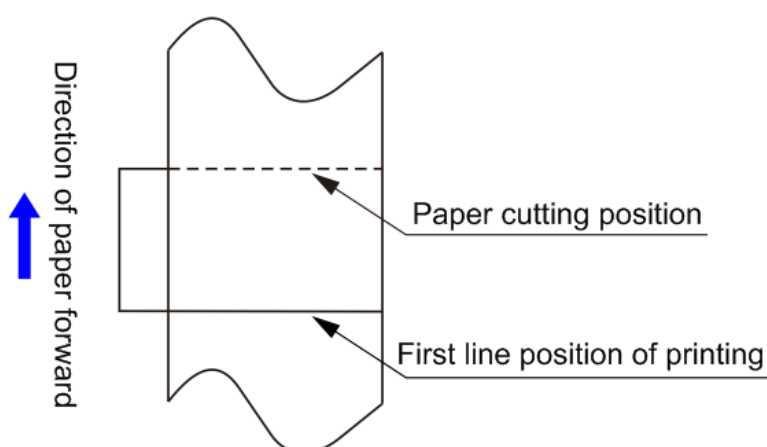
L4-Distance between print head to paper storehouse's right edge (fixed width): $3\pm0.3\text{mm}$

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.

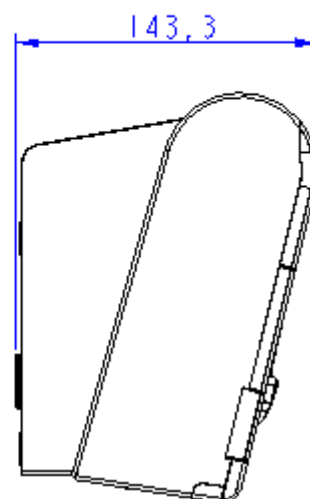
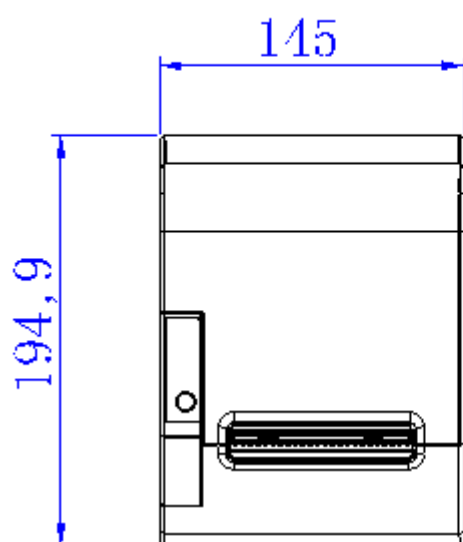
2.3.2 Paper cutting position

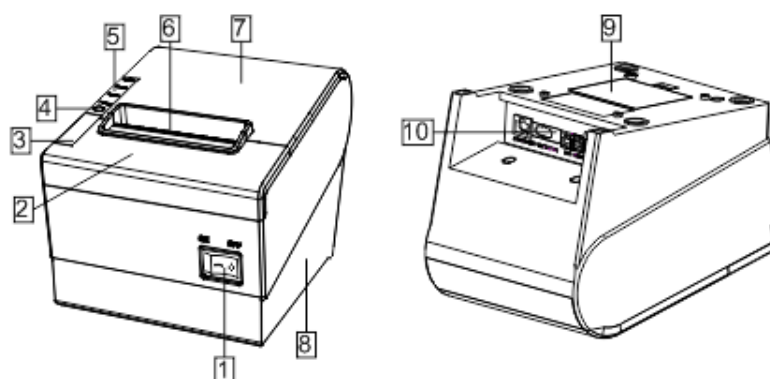


The distance between print head to cutter: 12.5mm

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 Bottom cover(Optional) |
| 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.)

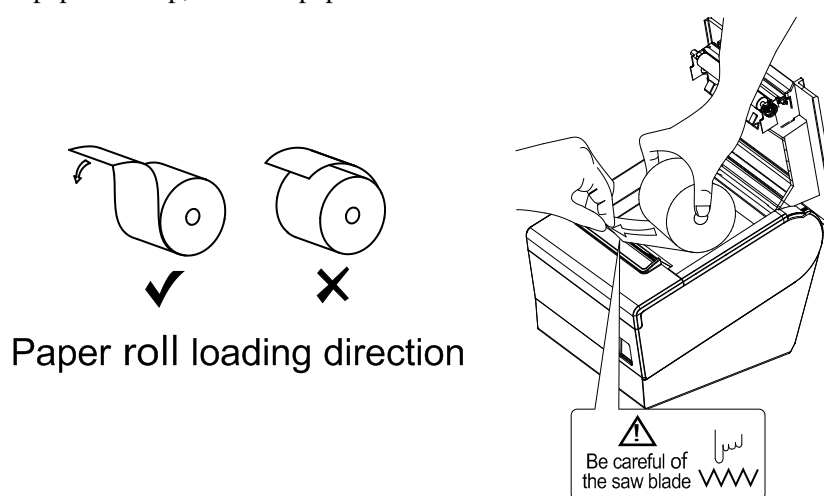
4.6 Paper roll loading

4.6.1 Printing paper type confirmation

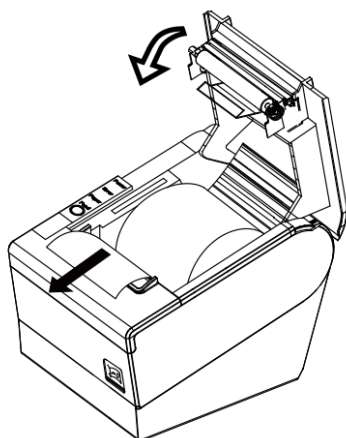
You can load paper roll to print after connecting power adapter and communication cables. Please make sure the printing paper type before printing. The default paper type is continuous thermal receipt paper.

4.6.2 Loading or change paper roll

- 1) Power off the printer.
- 2) Press paper roll storehouse button, and then open storehouse cover.
- 3) Draw out paper roll tap, and load paper roll as below.

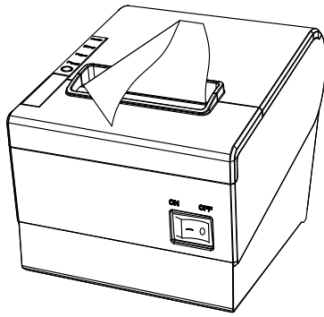


- 4) Draw out a printing paper, and leave some on the paper out month, then close the storehouse cover.



⚠ 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 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.

4.8 CD execute: Tools -> Windows -> PrinterSetting

Printer setting tool

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Contents	1
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4.8.1 Communication port

Communication port: driver, serial port, network port, USB、parallel port;

1. Select Communication Port

☐ DRIVER 导出为WPS PDF

☐ COM COM4 9600 NOPARITY No FlowControl

☐ NET 192.168.1.114 9100 SEARCH

☒ USB

☐ LPT

☐ FILE C:/Users/caysn/Desktop/data.bin Select

Driver: click on the drop box shows all installed printers.

Serial port: point drop box shows all COM ports that have been assigned to the device.

Network port: click on the right side bottom of the search, can detect the printer connected to all printers IP host through the network port, appears in the drop-down box .

USB: click the drop-down box to shows all the printers that are connected via the USB printer.

Parallel port: click the drop-down box shows all the equipment has been assigned the LPT parallel port .

NOTE: Below will prompt the currently selected port, click on the button of Check Port will command the printer to print a string of text, please check printer output to determine is OK. After OK, enter para setting.

4.8.2 select module

4.8.2.1 Basic

The screenshot shows the 'Basic Parameters' configuration screen. At the top, there is a navigation bar with tabs: Basic, System, Label, BlackMarker, Firmware, Hardware, WiFi, Network, Bluetooth, USB, Cutter, MQTT, GPRS, and DIP. The 'Basic' tab is selected. Below the tabs, the 'Basic Parameters' section contains the following settings:

- Language: CP437[U.S.A., Standard Europe](0)
- Com Baudrate: 9600
- Com Parity: NONE
- Font Type: FONT-A (12x24)
- Density: Normal
- Chars per line: 48
- Line feed: LF (0x0A)
- Idle time(s): 0
- Power off time(s): 0
- Max feed length(mm): 200
- Page length(mm): 200

On the right side, there are three checkboxes: Buzzer (checked), Cutter (checked), and Drawer (checked). At the bottom, there is a button labeled 'Set Basic Parameters'.

Language :

CP437 [USA,standard Europe]	CP852 [Latina 2]	ISO-8859-2[Latin2]
KataKana	CP858 [Multilingual	ISO-8859-3[Latin3]
	Latin I +Europe]	
CP850 [Multi-language]	Iran II	ISO-8859-4[Baltic]
CP860 [Portuguese]	Latvian	ISO-8859-5[Cyrillic]
CP863 [Canadian-French]	CP864 [Arabic]	ISO-8859-6[Arabic]
CP865 [Nordic]	ISO-8859-1 [West	ISO-8859-7[Greek]
	Europe]	
WCP1251 [Cyrillic]	CP737 [Greek]	ISO-8859-8[Hebrew]
CP866 Cyrilliec #2	WCP1257 [Baltic]	ISO-8859-9[Turkish]
MIK[Cyrillic/Bulgarian]	Thai	ISO-8859-15[Latin 9]
CP755 [East Europe, Latvian	CP720[Arabic]	Thai 2
2]		
Iran	CP855	CP856
Reserve	CP857[Turkish]	Cp874
Reserve	WCP1250[Central	
	Europe]	
Reserve	CP775	GBK2312
Reserve	WCP1254[Turkish]	UTF-8
CP862 [Hebrew]	WCP1255[Hebrew]	SHIFT-JIS(Japanese)
WCP1252 [Latin 1]	WCP1256[Arabic]	EUC-KR (Korean)
WCP1253 [Greek]	WCP1258[Vietnam]	

Baud rate : 4800;9600;19200;38400;57600;115200;1200(The corresponding selection according to the self testing page)

Verify: NONE;ODD;EVEN

Font: FONT-A/FONT-B

Density : Normal/Dark

Line code: 48/40 (Bytes)

The last one will automatically print: when out of paper, printer automatic reprint the last one.

NOTE: Set common properties of the printer,dial the code switch model,will be subject to dial the code switch settings.

4.8.2.2 Ethernet

The screenshot shows the 'Network' configuration page. The 'Ethernet IP' section is on the left, and the 'WiFi IP' section is on the right. Both sections have 'DHCP' selected. The 'Ethernet IP' section has a red circle around the IP Address, NetMask, Gateway, Main DNS, and Second DNS fields. The 'WiFi IP' section has a red circle around the 'Set WiFi IP' button. The 'Printer Network Name' field is set to 'Printer'.

Ethernet to modify the corresponding parameters according to requirements.

NOTE: If you do not know the MAC address,please do not arbitrarily set this property,otherwise could force through the network printer for printing.

4.8.2.3 WIFI

The screenshot shows the 'WiFi' configuration page. The 'SSID' field is set to 'equip' and the 'Password' field is set to '88888888'. The 'Set' button is circled in red. The 'Airkiss' section has 'Enable Airkiss' and 'Disable Airkiss' buttons.

WiFi module PCB of the printer, according to the router set the wireless mode to click on the corresponding model, and fill in the network name, key password, authentication type, encryption algorithm.

Set wireless IP

NOTE: Set up WIFI printer's wireless connection parameters,the settings should be consistent with the parameters of the wireless router.

4.8.2.4 Bluetooth

Basic	System	Label	BlackMarker	Firmware	Hardware	WiFi	Network	Bluetooth	USB	Cutter	MQTT	GPRS	DIP
-------	--------	-------	-------------	----------	----------	------	---------	------------------	-----	--------	------	------	-----

Set Bluetooth Name And Password

Bluetooth Name

Bluetooth Password

Set Bluetooth Device Class

Set Bluetooth Address

After set, print a self-test page to check the setting determine is OK.

4.8.2.5 Black label

Basic	System	Label	BlackMarker	Firmware	Hardware	WiFi	Network	Bluetooth	USB	Cutter	MQTT	GPRS	DIP
-------	--------	-------	--------------------	----------	----------	------	---------	-----------	-----	--------	------	------	-----

Black marker search distance(mm)

Black marker width(mm)

Cut position offset to black marker(mm)

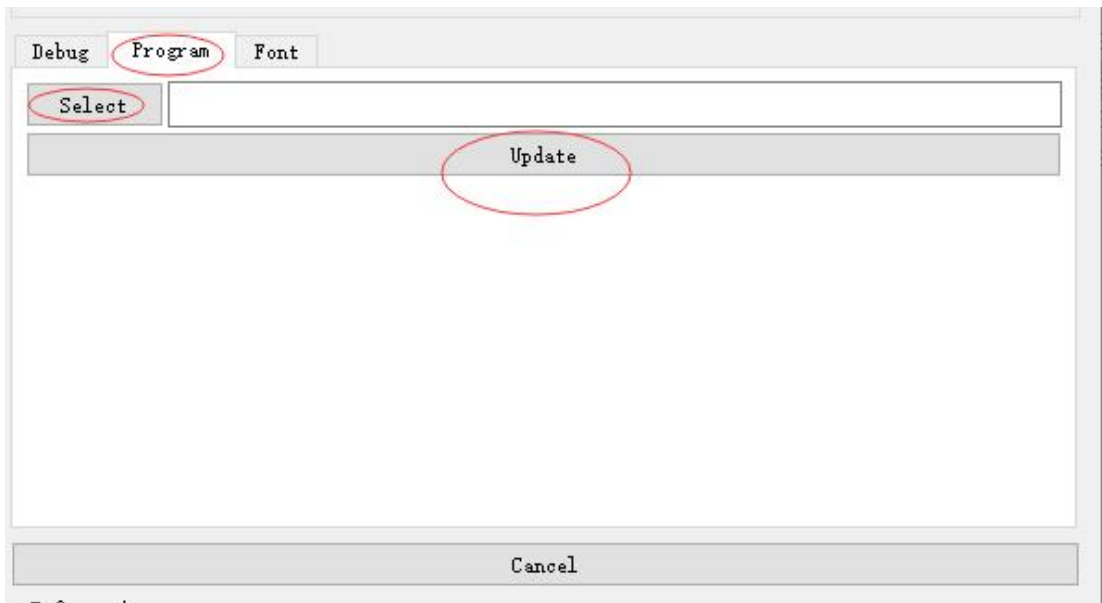
Print position offset to black marker(mm)

NOTE:

Enable the black label pattern and disable the black label pattern are both settings take effect the need to restart the printer.

The button of test cut and test print can adjust the cutting and printing position, find a suitable location to set.

4.8.2.6 Download

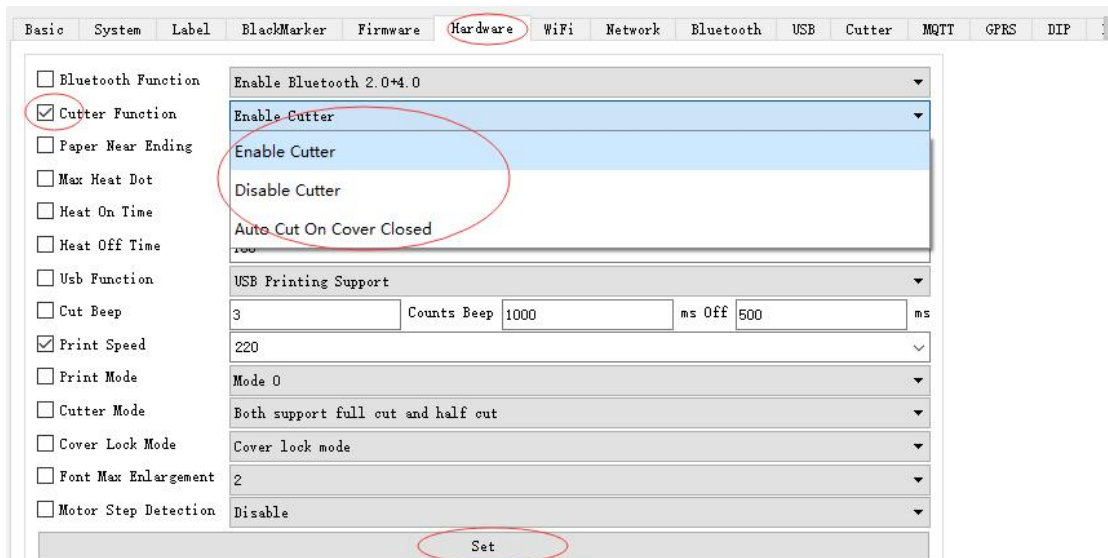


Update the printer firmware

1. Select the file
2. Update (please don't change the firmware if not necessary)

4.8.2.7 Hardware

For example: As the picture show ,setting cutter available.



Click on the settings, the left bottom display status! Is successful, and the printer will print a short set of content; or Failed.

Select settings according to requirements.

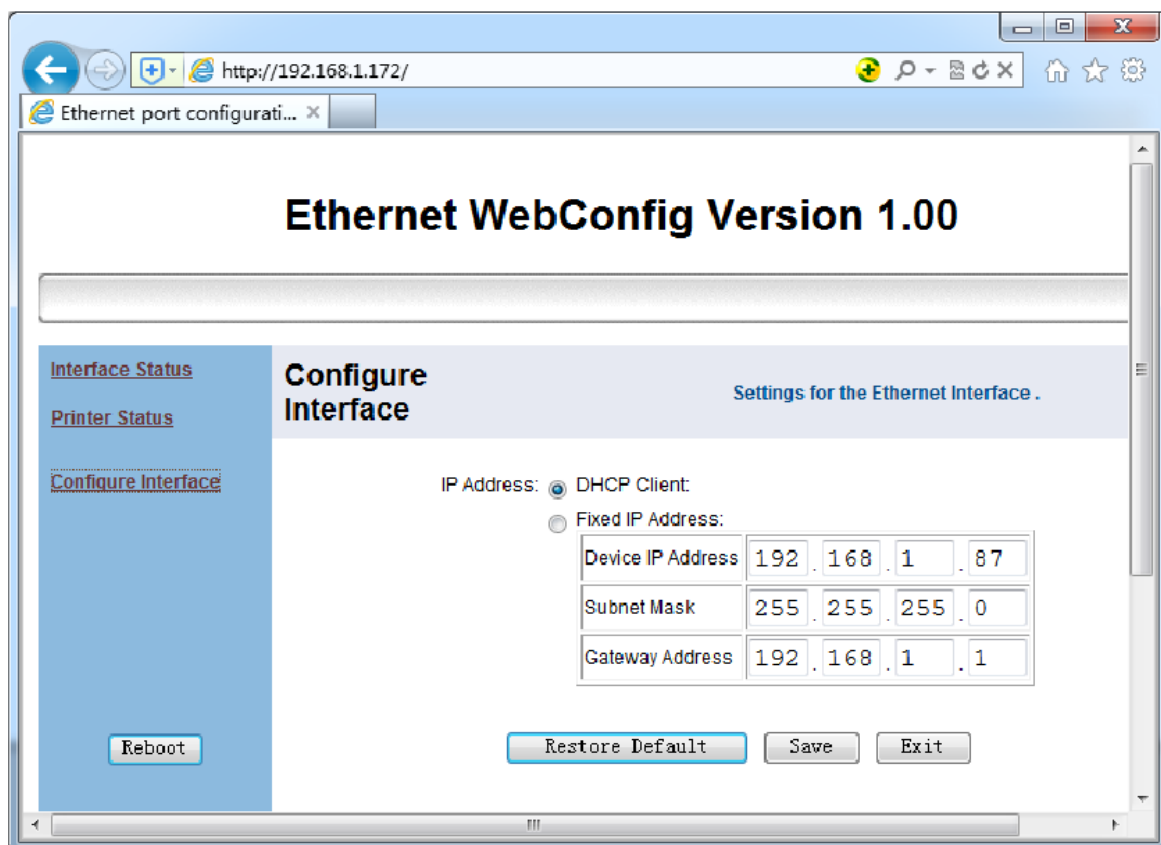
4.9 Set Ethernet port IP Address.

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:



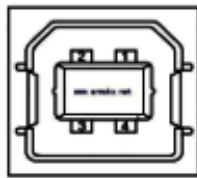
5. Click "Configure Interface" link in the left side, then enter the modified target IP and click "save" button to save setting. Click "Reboot" button to reset printer if you want the setting to take effect.

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: 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 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

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



1) Pin definition

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

5.3 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.

5.4 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
---	----

5.5 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.

