USER'S MANUAL

Receipt Printer

BTP-R580Ⅱ

Shandong New Beiyang Information Technology Co., Ltd

Declaration

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Version 1.0

Trademark

Registered trademark of SNBC:

Warning and caution

⚠ Warning: Items shall be strictly followed to avoid injury or damage to body and equipment.

⚠ Caution: Items with important information and prompts for operating the printer.

SNBC has been approved by the following certifications:

ISO9001 Quality Control System

ISO14001 Environmental Management System

OHSAS18001 Occupational Health and Safety Management System

IECQ QC080000 Hazardous Substance Process Management System

BTP-R580Ⅱ has been approved by the following certifications of environmental protection:

Safety instructions

Before installing and using the printer, please read the following items carefully:

1. Safety warning

Warning Do not touch the cutter of the printer.

Warning The print head is a thermal element and it is at a high temperature during printing or just after operation, therefore do not touch it or its peripherals for reasons of safety.

Warning The print head is an ESD-sensitive device. To avoid damage, do not touch either its printing parts or connecting parts.

2. Cautions

1) Install the printer on a flat and stable surface;
2) Reserve adequate space around the printer so that convenient operation and maintenance can be performed;
3) Keep the printer far away from water source, and do not expose the printer to direct sunlight, strong light and heat;
4) Do not use or store the printer in a place exposed to high temperature, high humidity or serious pollution;
5) Do not place the printer in a place exposed to vibration or impact;
6) No condensation is allowed to the printer. In case of such condensation, do not turn on the power until it has completely gone away;
7) Connect the printer power to an appropriate grounding outlet. Avoid sharing one electrical outlet with large power motors or other devices that may cause the fluctuation of voltage;
8) Disconnect the power when the printer is deemed to idle for a long time;
9) Don't spill water or other electric materials into the printer (e.g. metal). In case this happens, turn off the power immediately;
10) Do not allow the printer to start printing when there is no recording paper installed; otherwise the print head and platen roller will be damaged;
11) To ensure quality print and normal lifetime, use recommended paper or its equivalent;
12) Shut down the printer when connecting or disconnecting interfaces to avoid damages to control board;
13) Set the print darkness to a lower grade as long as the print quality is acceptable. This will help to keep the print head durable;
14) Do not disassemble the printer without permission of a technician, even for repairing purpose;
15) Keep this manual safe and at hand for reference purpose.

Contents

1 Overview

1.1 Introduction

BTP-R580Ⅱ is a high performance thermal printer, which can be widely used for real-time printing applications, such as POS system, restaurant system, ATM, etc.

BTP-R580II can be connected with other devices via parallel, serial, USB, Ethernet or WLAN interface and can provide drivers for operating systems such as WINDOWS 2000/XP/Server2003/VISTA/ Server2008/WIN7, Linux, MAC and UPOS middleware.

1.2 Main features

- Low noise, high print speed 230mm/s;
- Easy paper loading;
- Easy use and maintenance;
- Marked paper and continuous paper available;
- Compatible with various paper width between 54.5～82.5mm;
- Cutting paper automatically;
- Cash drawer control interface;
- Communication interface optional;
- ESC/POS compatible;
- Volume of buzzer can be adjusted;
- Function of saving paper;
- Low power consumption design (Min. power consumption is lower than 1W): the default waiting time of entering sleep mode is 5 minutes.

2 Specifications

2.1 Technical specifications

Item	Parameter	
Print method	Direct thermal line	
Print resolution	203×203DPI	
Print speed	Max. 230mm/s	
Print width	Max. 80mm	
Paper type	Continuous paper, marked paper	
Barcode type	One-dimensional barcode: UPC-A, UPC-E, EAN-8, EAN-13 , Codabar, Code39, Code128, Code93, ITF Two-dimensional barcode: PDF417, QR, Maxicode GS1 barcode	
Character	Font A: 12×24 Font B: 9×17 Kanji Font A: 24×24 Optional: Simplified Chinese, Korean, Traditional Chinese, Japanese, English Codepage: 56 kinds of codepages International character sets: 14 kinds;	
Character enlargement	All characters can be enlarged 1-6 times horizontally and vertically.	
Character rotation	Rotation printing in four directions (0°, 90°, 180°, 270°)	
Paper near end detection	Photoelectric sensor	
Paper end detection	Photoelectric sensor	
Paper existence detection	Photoelectric sensor	
Top cover position detection	Micro switch	
Print head temperature detection	Thermal resistor	
Image processing	Bitmap download	Direct bitmap printing
	Download buffer size: RAM: 128KB FLASH: 256KB	Support bitmap print mode and realize fast image printing.
Communication interface	Standard parallel interface or RS232 serial interface, RS485 interface, USB interface, Ethernet interface, WLAN interface (optional)	
Cash drawer interface	Can control 2 cash drawers.	
Memory	RAM: 2MB FLASH: 2 MB /4MB	
Power supply	110-240VAC, 50/60Hz	
Print head lifetime	≥150Km (standard test sample with 12.5% duty ratio)	
Operating temperature and humidity	5～45℃, 20%～90% (40°C)	
Storage temperature and humidity	-40～60℃, 20%～93% (40℃)	
External dimensions	155.5 (W) ×205 (D) ×160 (H) mm	

2.2 Cutter specifications

Item	Parameter	Remarks
Cutting mode	Sliding blade	
Cutting time	600ms	The time that one cut takes
Cutting interval	2s	30 cuts/min (Max.)
Applicable paper type	0.06～0.1mm	Thermal paper or paper with the same thickness
Operating voltage	24VDC	
Max. operating current	1.2A	24VDC
Cutter lifetime	2 million cuts	*Including full cut and partial cut

* Full cut: Paper is cut off completely;
* Partial cut: A small part in the middle of paper is left uncut. It is forbidden to feed paper backward in case the uncut part causes paper jam.

2.3 Paper specifications

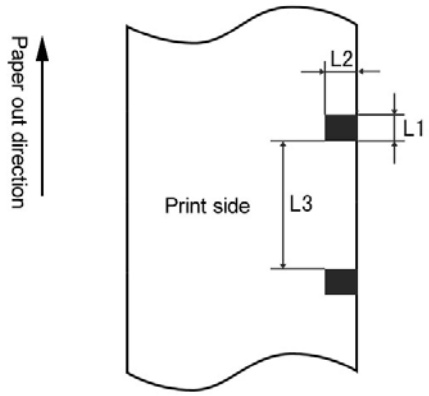
2.3.1 Parameters of thermal continuous paper

- Paper type: Thermal continuous paper
- Paper supply method: Paper roll
- Paper width: 54.5±0.5 mm~82.5±0.5 mm
- Paper thickness: 0.06mm-0.1mm
- Thermal layer: Outward
- Paper roll specifications: OD(MAX): ф100 mm
- Recommended paper:

Paper model	Manufacturer
F240AC,F220-VP,FV230A1 PA220AG,HP220A	Mitsubishi Paper Mill CO., LTD
FD210,PD150R,PD160R	OJI Paper CO., LTD.
F70NA	FUJI PHOTO FILM CO., LTD

2.3.2 Parameters of marked paper

BTP-R580Ⅱ can support marked paper printing and set the cutting and initial printing position accurately. Marked paper not only should meet the parameters of thermal paper roll, but also should meet the following requirements:



L1 mark height: 3mm≤L1≤13mm

L2 mark length: L2≥12mm

L3 mark spacing: 20mm≤L3<500mm

Mark position: The mark can be set on the left, middle or right, and when it is on the left or right, only 80mm paper is available.

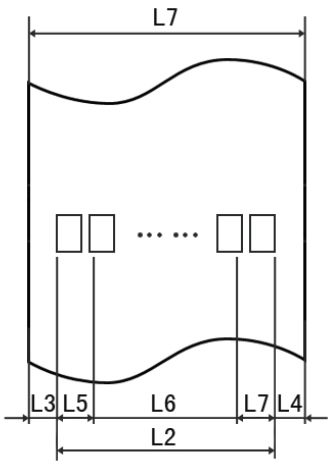
Reflectivity: The reflectivity of the marked part must be no more than 15% while the reflectivity of the rest part should be higher than 85%. There should be no patterns like advertisement or poster between two marks.

Caution:

- ✧ To ensure quality print and normal lifetime, use recommended paper or its equivalent;
- ✧ Paper cannot be stuck on the paper roll core;
- ✧ If the paper is contaminated by chemical substances or grease, the contaminated part may fade or be printed unclearly;
- ✧ To ensure print effect, do not let hard objects scratch the thermal layer;
- ✧ When the temperature exceeds 70°C, the thermal layer will fade. Thus, do not use or store the paper in a place exposed to high temperature, high humidity, strong light, etc.;
- ✧ The mark is measured when printing or feeding paper. If the sensor detects the mark is higher than the default setting (default setting is 13mm), the printer will enter paper end error status.

2.4 Print and tear-off position

2.4.1 Print position



L1 paper cabinet width: 83.5+0/-0.5mm

L2 effective print width: 80mm

L3 distance from print head to left edge of paper cabinet (fixed width): 1.75±1mm

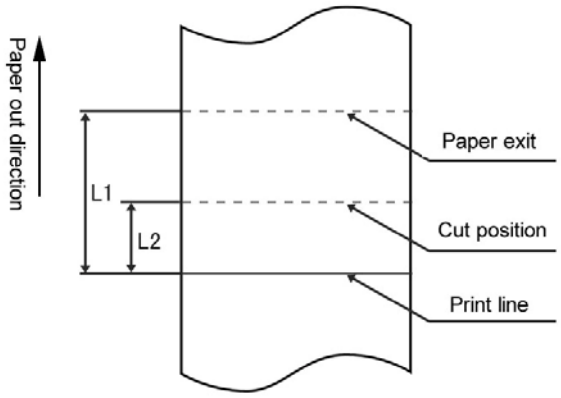
L4 distance from print head to right edge of paper cabinet (fixed width): 1.75±1mm

L5 left margin: The default value is 8mm.

L6 width of print area: Set by command (refer to Programming Manual), default value: 64mm

L7 right margin: The default value is 8mm.

2.4.2 Tear-off position



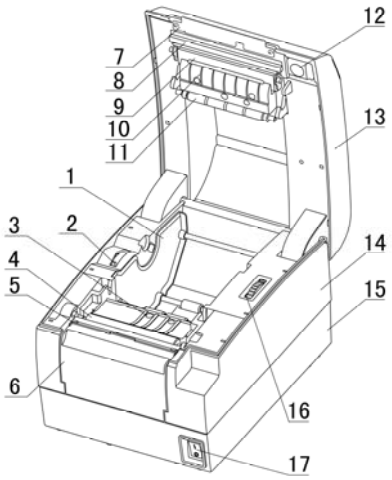
L1: about 30mm

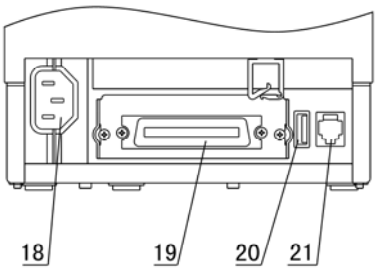
L2: about 13mm

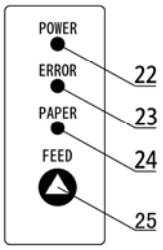
3 Appearance and modules

3.1 Appearance and modules

1—paper guide
2—paper near end sensor lever
3—mark sensor
4—platen roller
5—cutter
6—cutter cover board
7—tear-off bar
8—fixed blade
9—print head
10—guard board for print head
11—roller
12—cover open lever
13—top cover
14—middle cover
15—bottom cover
16—thumb wheel
17—power switch
18—power interface
19—communication interface
20—USB interface
21—cash drawer interface
22－POWER LED
23－ERROR LED
24－PAPER LED
25－FEED button







Functions of some modules:

a) Paper guide

Move the paper guide in paper cabinet continuously by turning the thumb wheel so as to adapt to various paper width 54.5±0.5 mm~82.5±0.5 mm.

b) Power switch

Press down "O" to turn off the printer and press down "—" to turn on the printer.

c) FEED button

✧ Feed paper:

Printer will feed paper when the FEED button is pressed down in normal status. Printer will feed paper continuously if holding the button.

✧ Print configuration sample:

Pressing down the FEED button while turning on the printer, the printer will print out configuration sample, including print length, print width, print speed, etc.

✧ Enter button configuration mode:

Pressing down FEED button while turning on the printer, the printer will print out configuration sample, then cut paper and enter waiting status (ERROR LED flashes). The printer will enter button configuration mode if pressing down the FEED button for a long time at this time. Refer to Appendix Button Configuration Table for detailed function and operation methods of button configuration mode.

d) POWER LED

Indicate power status (ON/OFF).

e) ERROR LED

Indicate error status of printer: in normal status, ERROR LED is off; in error status (e.g. print head lift-up, abnormal voltage, print head overheating, cutter error, mark location failure), ERROR LED flashes.

f) PAPER LED

Indicate paper status: in normal status, PAPER LED is off; PAPER LED flashes when paper status changes (paper end or paper near end).

g) Paper end sensor

Used to detect whether there is paper or not.

3.2 LED & buzzer

1） Functions of LED & buzzer

Name	Status	Explanation
POWER LED (green)	Always on	Printer is in power-on status.
	Off	Printer is in power-off status.
ERROR LED (red)	Flash	Printer is in error status.
	Off	Printer is in normal status (except for paper near end).
PAPER LED (red)	Always on	Paper status is abnormal.
	Flash	Printer is executing macro definition or in waiting status.
	Off	Printer is in normal status.
Buzzer	Beep	Printer is in error status.

2） Error type indicated by LED & buzzer

Error type	ERROR LED	PAPER LED	Buzzer
Print head overheating	Cycle flash 6 times	Off	Cycle beep 6 times
Input voltage abnormal	Cycle flash 5 times	Off	Cycle beep 5 times
Cutter error	Cycle flash 4 times	Off	Cycle beep 4 times
Print head lift-up	Cycle flash 3 times	Off	Cycle beep 3 times
Paper end	Cycle flash 2 times	Off	Cycle beep 2 times
Paper near end	Off	Always on	None
Mark location failure or calibration error	Cycle flash 1 time	Off	Cycle beep 1 time

Caution:

✧ The temperature of the print head is detected by a thermal resistor. If the print head is overheating, the protective circuit will shut off the power and force the printer to stop printing; the temperature of print head when printing is stopped is 65℃.

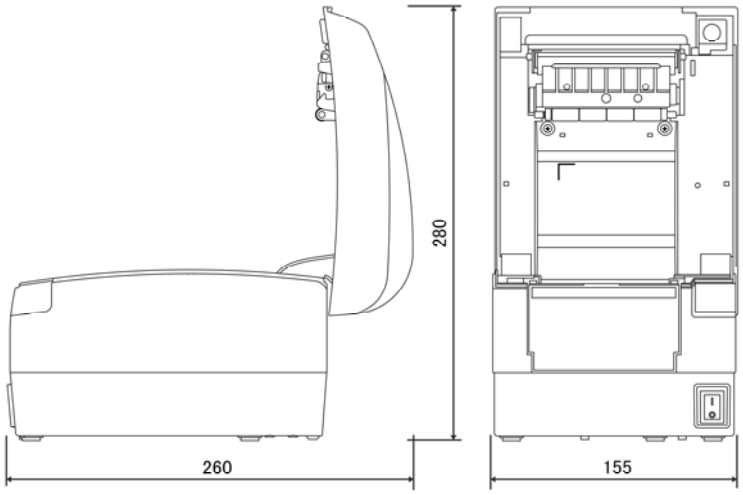
4 Printer installation

4.1 Unpacking

Check if all the articles listed in the packing list are here and in good condition. If any problem, please contact SNBC or the dealer.

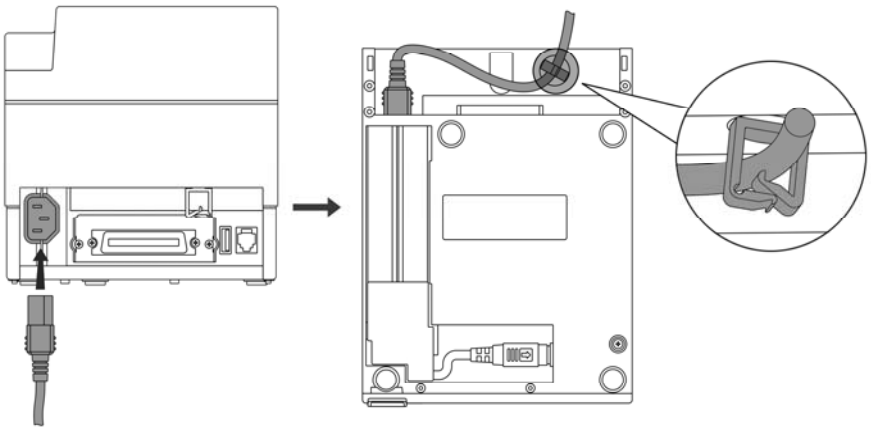
4.2 Printer installation

1) Printer should be installed on a flat and stable place; horizontal installation is recommended and the inclination angle should not exceed ±10° in inclination installation (in paper feed direction), no inclination in other directions;
2) Printer should be far away from water source;
3) Avoid putting the printer in a place exposed to vibration and impact;
4) Printer should be grounded securely;
5) To ensure the operation reliability and easy operation of printer, it is recommended to reserve proper space during operation and maintenance.



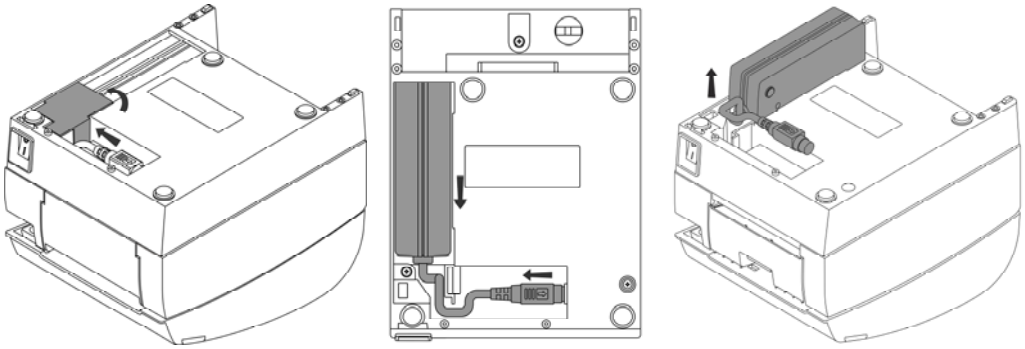
4.3 Power connection

1) Ensure the printer is turned off;
2) Insert the power cord into the power socket on the back of printer;
3) Fit the power cord into the cable hook.



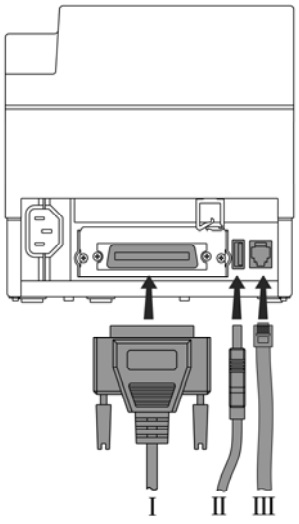
Caution:

- ✧ When the printer is bound to idle for a long period of time, disconnect the power cord.
- ✧ When the power is burned out or cannot be used for other reasons, replace it according to the following steps:
  1) Press the power cover board and take it off in the direction indicated by the arrow;
  2) Pull the plug out of the printer and move the power in the direction indicated by the arrow until it cannot be moved;
  3) Take the power out;
  4) Replace the power with a new one in reverse order.



4.4 Connect interface cable

1) Ensure the power switch is turned off;
2) Insert the interface cable (Ⅰ in the figure) into the suitable interface and fix the plug (screw or latch spring);
3) Connect the other end of the interface cable to the host.



4.5 Connect USB cable

1) Ensure the power switch is turned off;
2) Insert the USB cable (Ⅱ in the figure) into the USB interface;
3) Connect the other end of the interface cable to the host.

4.6 Connecting cash drawer cable

1) Ensure the printer power is turned off.
2) Insert the cash drawer cable (Ⅲ in the figure) into the cash drawer interface on the back of the printer.

Caution:

- ✧ Cash drawer interface can be connected only with a cash drawer device (cannot be connected with a telephone line, etc.).

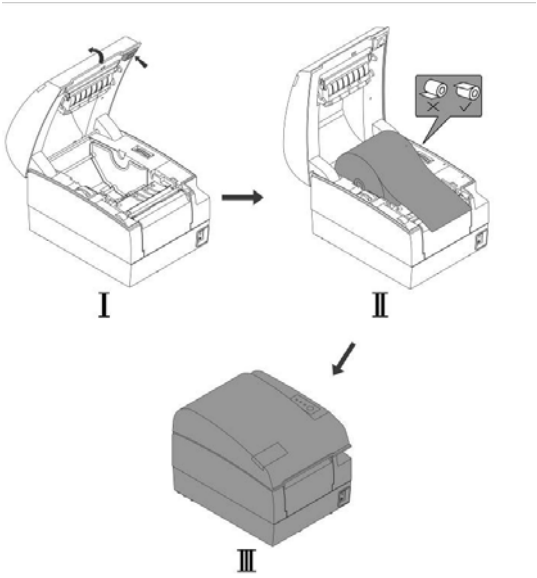
4.7 Install paper roll

4.7.1 Confirm paper type

Paper can be installed after the connection of power cable and interface cable. But before starting printing, the paper type must be confirmed first.

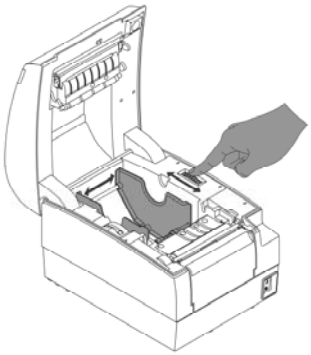
4.7.2 Install/replace paper roll

1) Turn off the printer;
2) Press the cover open lever to lift up and open the top cover;
3) Place a paper roll into the paper cabinet;
4) Pull the paper head out, close top cover and tear off the surplus portion of the paper.



Caution:

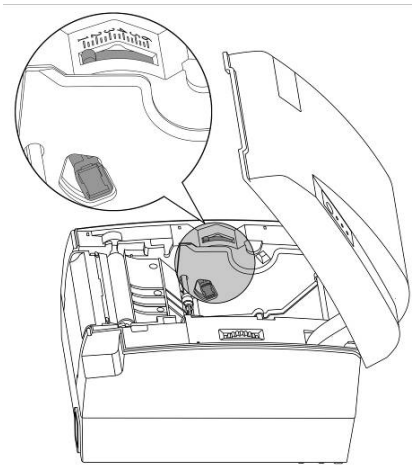
- ✧ Adjust the paper guide according to the paper specification as follows: adjust paper guide to the maximum width and place paper roll into paper cabinet; move paper guide to the proper position by turning thumb wheel according to paper width (1mm gap must be reserved between paper guide and paper roll in case paper roll is jammed); the paper roll should be rolled according to the requirements of the printer;



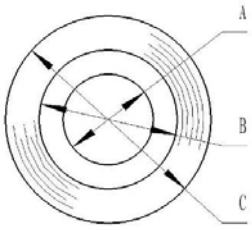
- ✧ Ensure that the paper roll is rolled tightly; otherwise paper jam or other error may occur.
- ✧ The paper roll should be placed in the paper cabinet stably without inclination; otherwise it may affect the printing.

4.8 Paper near end position adjustment

Paper roll with different core can be used by adjusting paper near end sensor lever to the corresponding level with the minimal remaining amount of paper at level 1.



Level	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Core diameter A (mm)	15	18	21	24	27	30



A: core ID
B: core OD
C: paper roll OD

⚠ Caution:

- ✧ The factory default position of paper near end sensor lever is at level 1. The requirement for the core with big diameter can be met by adjusting paper near end sensor lever;
- ✧ When using core with different diameter, the remaining amount of paper may be different at the same level.

4.9 Power-on and self-test

4.9.1 Power on the printer

1) Ensure the printer is connected with power supply;
2) Turn on the power switch to power on the printer.

4.9.2 Print self-test page

1) Ensure that the printer is connected with power supply and that paper roll is installed;
2) Ensure the printer is turned off;
3) Press down the FEED button while turning on the printer, then release the button. The printer will print out the configuration information and the prompt characters "Press and Release FEED key to print characters" and "Press and Hold FEED key to config the printer". Then the printer enters waiting status while the PAPER LED is flashing.
4) Pressing down the FEED button for a short time, the printer will print a character test sample to end self-test page printing.
5) To continue with step 3, pressing down the FEED button for a long time, the printer will enter button configuration mode. Refer to Appendix Button Configuration Table for detailed function and operation method of button configuration mode.

5 Routine maintenance

⚠ Caution:

- ✧ Before starting routine maintenance, ensure that the printer power is turned off;
- ✧ Do not use solvents like gasoline or acetone;
- ✧ When cleaning sensors, the printer should not be powered on until the pure alcohol has completely evaporated.
- ✧ It is recommended that the maintenance cycle should be no longer than one month.

5.1 Clean print head and platen roller

Follow the steps below to clean print head and platen roller:

1) Turn off the printer power and open the top cover;
2) If the printer has just finished printing, please wait until the print head has completely cooled down;
3) Use alcohol cotton (wrung out) to wipe off the dust and stains on the surface of print head and platen roller;
4) Wait until the alcohol has completely evaporated, then close the top cover.

5.2 Clean sensors

When the printer cannot identify the paper or mark effectively, the sensor should be cleaned, with cleaning steps as follows:

1) Turn off the printer;
2) Press the cover open lever to open the top cover of the printer;
3) Use soft cotton cloth dipped with pure alcohol (wrung out) to wipe off the dust and stains on the surface of the sensor;
4) Wait until the pure alcohol has completely evaporated, then close the top cover to end sensor cleaning.

5.3 Clear paper jam

When any of the following cases occurs, clear paper jam:

- ➢ Paper cannot be sent out normally;
- ➢ Abnormal noise occurs when feeding paper.

Follow the steps below to clear paper jam:

1) Turn off the printer power;
2) Press the top cover open lever to open the top cover of printer;
3) Check the paper path. If paper is jammed in paper path, take the crinkled paper away and trim the paper head;
4) Close top cover to end paper jam clearing.

6 Interface signal

6.1 Parallel interface

Parallel interface can work in IEEE 1284 compatible mode or nibble mode. The interface is 36-pin socket.

The Interface is defined as below:

Pin #	Signal source	Signal definition
1	H	nStrobe
2	H	Data 0 (Least Significant Bit)
3	H	Data 1
4	H	Data 2
5	H	Data 3
6	H	Data 4
7	H	Data 5
8	H	Data 6
9	H	Data 7 (Most Significant Bit)
10	P	nAck
11	P	Busy
12	P	Perror
13	P	Select
14	H	nAutoFd
15		Not defined
16		Logic Gnd
17		Chassis Gnd
18	P	Peripheral Logic High
19		Signal Ground (nStrobe)
20		Signal Ground (Data 1)
21		Signal Ground (Data 2)
22		Signal Ground (Data 3)
23		Signal Ground (Data 4)
24		Signal Ground (Data 5)
25		Signal Ground (Data 6)
26		Signal Ground (Data 7)
27		Signal Ground (Data 8)
28		Signal Ground (PError, Select, and nAck)
29		Signal Ground (Busy and nFault)
30		Signal Ground (nAutoFd, nSelctIn, and nInit)
31	H	nInit
32	P	nFault
33		Not defined

34		Not defined
35		Not defined
36	H	nSelectIn

6.2 Serial interface

The serial interface of the printer is compatible with RS-232, and the interface socket is DB25 female.

PIN No.	Signal definition
PIN1	Frame ground
PIN2	TXD
PIN 3	RXD
PIN 4	RTS
PIN 5	Not connected
PIN6	DSR
PIN 7	Signal ground
PIN 8~19	Not connected
PIN 20	DTR
PIN 21~25	Not connected

User can query interface setting status via printing configuration sample; the default settings of serial interface are as follows:

Baud rate: 19200bps, data bit: 8 bits, parity: none, stop bit: 1, handshake: DTR/DSR

6.3 USB interface

1) Parameters

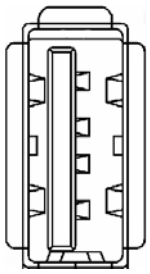
Data transmission: Support USB2.0 protocol.

Connector (Printer side): USB A series socket, support USB HUB.

2) Definition and functions of interface signals

PIN No.	Signal name	Description
1	VBUS	+5V
2	DATA-	Printer data transmit line minus
3	DATA+	Printer data transmit line plus
4	GND	Ground

3) Interface connector



6.4 Ethernet interface

1) Interface features

- Support 10BASE-T communication
- Compatible with Ethernet II standard

- LED displays network connecting status and data transmission status
- Support 9100 port print
- Support status back
- Support parameter configuration
- Support firmware online update
- Support printer status query and interface module maintenance based on HTTP (only supported by JK-E02 interface, not supported by JK-E04 interface).

2) Interface signal definition

Interface adopts 10BASE-T standard in accordance with IEEE802.3. The interface signal is defined as below:

Pin	Signal name	Explanation
1	TX+	Data transmission +
2	TX-	Data transmission -
3	RX+	Data receiving +
4	NC	Reserve
5	NC	Reserve
6	RX-	Data receiving -
7	NC	Reserve
8	NC	Reserve

Table 6.4-1 Interface module pin list

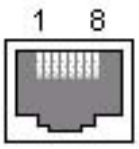


Figure 6.4-1 Interface connector

6.5 WLAN interface

1) Interface features

- Support 802.11b, 802.11g communication
- Support 9100 port printing, LPR printing
- Support status back
- Support parameter configuration
- Support firmware online update
- Support HTTP function

2) Supported protocols

- IP
- ARP
- ICMP
- TCP
- UDP

- DHCP
- TFTP
- HTTP

Wireless interface module uses wireless USB network card. For the main technical specifications, please contact your local dealer or SNBC.

6.6 Power interface definition

Power interface signal definition

Pin	Signal name
1	E
2	L
3	N

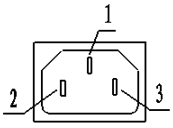


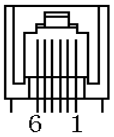
Figure 6.6-1 Power socket

6.7 Signal definition of cash drawer interface

1) Electrical features

- Driving voltage: DC 24V
- Driving current: Max. 1A
- Cash drawer status detection signal: "L" = 0～0.5 V "H" = 3.3 V

2) Cash drawer interface socket adopts RJ-11 6P connector



3) Interface signal definition

No.	Signal	Function
1	FG	Frame ground
2	DRAWER 1	Driving signal of cash drawer 1
3	DRSW	Cash drawer status detection signal
4	VDR	Cash drawer driving power
5	DRAWER 2	Driving signal of cash drawer 2
6	GND	Circuit share ground

⚠ Caution:

- ✧ Do not connect or disconnect the plug of communication cable when printer power is on;
- ✧ Communication cable should be far away from strong current;
- ✧ Always use shielded communication cables.

7 Troubleshooting

Refer to this chapter for solution when a problem occurs. If the problem still cannot be solved, please contact your local dealer or SNBC for assistance.

7.1 Printer doesn't work

Problem	Possible causes	Solution
LED is off and the printer doesn't work.	Printer is not connected with power supply.	Connect the printer with power supply.
	Printer is not turned on.	Turn on the power switch.
	Circuit board is damaged.	Contact your local dealer or SNBC.

7.2 ERROR LED and buzzer alarm

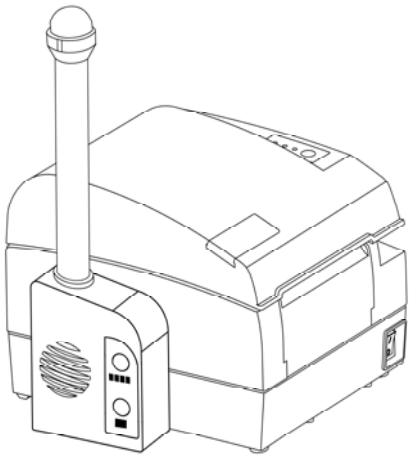
Problem	Possible causes	Solution
PAPER LED is on and buzzer beeps.	Paper end	Replace paper roll.
PAPER LED is on.	Paper near end	Replace paper roll.
ERROR LED flashes and buzzer beeps.	Input voltage abnormal	Turn off the printer and check input voltage.
	Print head overheating	Turn off the printer and wait for print head to cool down.
	Print head lift-up	Close print head top cover.
	Cutter error	Reset cutter (power on again).
	Printer is seriously damaged.	Contact your local dealer or SNBC.

7.3 Problems during printing

Problem	Possible causes	Solution
Printout is unclear.	Print head damaged	Replace print head.
Printout is unclear or dirty.	Dirty print head or feed roller	Clean print head or feed roller.
Paper cannot be outputted normally.	Paper jam	Open top cover, check paper path and clear paper jam.

8 Options

8.1 Kitchen printing prompt device



9 Power management

The power management of BTP-R580Ⅱ has four operation modes: off, ready, active, sleep.

Printer will enter ready mode after the printer is turned on or completes printing task;

Printer will enter sleep mode if there is no printing task for 5 minutes in ready mode;

Printer will awake automatically and enter active mode when printing task comes, and will enter ready mode again after completing the printing task;

Related parameters of power management are as below:

Maximum default delay time of entering sleep mode is less than 5 minutes;

Since the maximum default delay time is less than 5 minutes, BTP-R580Ⅱ does not open the interface of changing this time to user.

Appendix: Button configuration table

Refer to BTP-R580II Firmware Button Configuration Table.