USER'S MANUAL

Receipt Printer

BTP-R180II

Shandong New Beiyang Information Technology Co., Ltd

Declaration

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Warnings and Cautions

Warning: Items shall be strictly followed to avoid damages to body and equipment.

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

Certifications

The control system of SNBC has been approved of the following certifications:

ISO9001 quality control system certification

ISO14001 environmental control system certification

OHSAS18001 occupational health and safety control system certification

IECQ QC080000 hazardous substance process control system certification

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General Safety Information

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

1. Safety instructions

Don't touch the tear bar of printer.

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

The thermal head is an ESD-sensitive device. To prevent damage, do not touch either its printing part or connecting parts.

2. Caution

1) Install the printer on a flat and stable place.
2) Reserve adequate space around the printer so that convenient operation and maintenance can be performed.
3) Keep the printer away from water source.
4) Do not use or store the printer in a place exposed to heat of fire, moisture, serious pollution and direct sunlight.
5) Do not place the printer on a place exposed to vibration or impact.
6) No dew condensation is allowed to the printer. In case of such condensation, do not turn on the power until it has completely evaporated.
7) Connect the DC adapter to an appropriate grounding outlet. Avoid sharing a single electrical with large power motors and other devices that may cause the fluctuation in voltage.
8) Disconnect the DC adapter when the printer is not used for a long time.
9) Don't spill water or other materials on the printer. If 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 or good quality paper.
12) Shut down the printer when connecting or disconnecting interfaces connectors to avoid damage to the 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) The printer should only be disassembled or repaired by a technician, who is certified by the manufacturer.
15) Keep this manual safe and at hand for ready reference.
16) The following content about cutter only applies to printers with cutter.

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1 Introduction

1.1 Outline

BTP-R180II is a high performance thermal printer, which can be widely used for real-time printing application, such as POS system, restaurant system, ATM, etc.

BTP-R180II can be connected with other devices via parallel interface, serial interface, USB, Ethernet and is available for WINDOWS 2000/XP/Server 2003/VISTA/WIN7/WIN8/Server2008 and Linux.

1.2 Features

◇ Low noise, high printing speed
◇ Easy paper loading
◇ Easy use and maintenance
◇ Marked paper and continuous paper available
◇ Compatible with various wide paper
◇ Cutting paper automatically
◇ Cash drawer control connector
◇ ESC/POS compatible
◇ Built-in Internal Buzzer
◇ Save paper function
◇ Low consumption design(Min. lower than 1W)

2 Specifications

2.1 Main specification

Item		Specification
Color		Black or Ivory
Printing	Print Method	Direct Thermal
	Resolution	180 × 180 DPI(standard)
	Paper width	57.5/69.5/76/80/82.5mm
	Print width	Max. 72mm
	Print speed	Standard: Max 200mm/s
	Flash capability	2M / 4M (selectable, according to different font library)
	Flash LOGO	Max. 512K bytes
	Data buffer	64K bytes，4K bytes，45 bytes
Interface		Serial (RS-232, Fix on board)
		USB2.0(Full Speed, Fix on board)
		Ethernet(Fix on board)
		Parallel(IEEE1284)
Printer Status Detection		Top cover position, Paper end, Print head overheating, Print voltage, Paper near end，Marked detection，Cutter error
Barcode		1D:UPC-A,UPC-E ,JAN8 (EAN8),JAN13 (EAN13), CODE 39,CODE 93,CODE 128, ITF,CODABAR
		2D: PDF417,QR,MaxiCode
GS1		DataBar
Fonts Type		Font A 12×24,Font B 9 ×17 ,kanji 24 × 24,
Characters		95 Alphanumeric,
		13 types International characters
		Traditional/Simplified Chinese, Japanese, Korean (optional)
Command Emulation Supported		ESC/POS™
Paper	Paper type	Continuous paper, Marked paper
	Paper OD	Max 83mm
	Paper thickness	0.06mm~0.08mm
Power Supply	Input	100-240VAC, 50-60Hz
	Output	24V ± 5%V DC, 1.5A
	External Only	Power Adaptor
EMC and Safety Standards		CCC、CE、CB、FCC、UL
Human-Machine Interface	Power switch	Micro switch
	Button	FEED button
	LED	POWER LED, ERROR LED
	Buzzer	Built-in buzzer
Reliability	Lifetime of print head	150 km(standard test condition)
	Lifetime of cutter	1,500,000 cuts(standard test condition)
	MCBF	60,000,000 lines
	MTBF	360,000 hours

Operation condition		5°C to 45°C, 20% to 90%RH (40°C)
Storage condition		-40°C to 60°C, 20% to 93%RH (40°C)
Dimension		195 L x 145 W x 141 H (mm)
Weight		Approx 1.45Kg
Functions	Cash drawer	2 drives
	Feed button config	Support(config the printer without computer)
	Bi-colour printing	Support
	Right-up-side	Support
	Water mark	Support
Optional Accessories		Spill proof Cover, Herald, Power Adapter Cover
Driver	OS	Win2000(32), WinServer2003(32&64), WinServer2008(32&64), WinXP(32&64), WinVISTA(32&64), Win7(32&64),Win8(32&64), Linux CUPS,
		OPOS, JavaPOS
Software		Printer Utility(include EEPROMset, LOGO download, customized codepage)

2.2 Cutter Specification

Item	Parameter	Note
Cutter type	Slide cutter	
Cutting time	500ms	The time that one cut takes
Cutting interval	3s	20 times/min. (Max.)
Paper type	0.06～0.08mm	Thermal paper or paper with the same thickness
Operation voltage	24VDC	
Max. dynamic current	1.5A	24VDC
Cutter lifetime	1500,000 cuts (reference paper with thickness of 0.06 mm)	Full or partial cuts

- Full cut: Cut off the paper completely
- Partial cut: 2 mm paper left in middle

2.3 Paper Specification

2.3.1 Continuous paper

- Paper type: Continuous thermal paper
- Paper supply method: Paper roll
- Paper width: 82.5±0.5mm,80±0.5mm, 76±0.5 mm,69.5±0.5mm 57±0.5mm
- Paper thickness: 0.06mm-0.08mm
- Thermal senstive layer: Outside
- Paper roll specifications OD(MAX):φ83mm
- Recommended reference paper:

Paper type	Manufacturer
TF50KS-E2C,TF50KS-E	Nippon Paper Industries Co., Ltd.
F70NA	FUJI PHOTO FILM Co., Ltd.
F240AC/F220-VP,	Mitsubishi Paper Mill Co., Ltd.

FV230A1,PA220AG, HP220A	
PD150R, PD160R	OJI Paper Co., Ltd.
F5041, F5051, P5045, P5055	Mitsubishi HitTec Paper Flensburg GmbH
KF50, KP440	Kanzan Spezialpapiere GmbH
KT55F20, KT58F20, KT55HS	Papier-fabrik August Koehler AG
P300, P350, P530	Kanzaki Specialty Paper

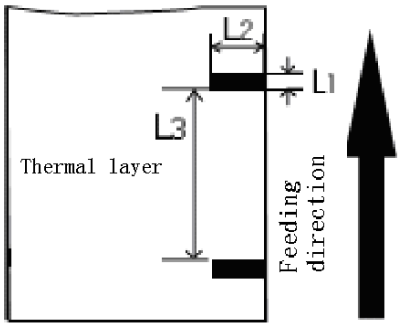
Caution:

- ✧ Please use the recommended reference paper type or its equivalents. Using the lower quality paper types might affect the print quality and shorten print-head life.
- ✧ If the paper is contaminated by chemical or oil, it may discolor or lose heat sensitivity at the polluted spot.
- ✧ Do not rub the paper surface strongly against hard objects, otherwise it may discolor.
- ✧ When the temperature goes up to 70 degrees centigrade, paper will discolor.
- ✧ Don't use or store paper under high temperature, high humidity and strong light conditions.

2.3.2 Mark paper

In mark paper mode, BTP-R180II determines the cut position and the initial printing position by referencing the position of the black mark. Black marked paper should meet the following requirement besides that of standard paper.

- 3mm≤L_1(mark width)≤13mm.
- L_2 (mark length) ≥10mm.
- 20mm≤L_3 (distance between two marks) <500mm.
- Mark position: left side (only 80mm paper available) or middle of paper.
- Reflectivity: The reflectivity of the black mark must be less than 15% while the reflectivity of the paper itself exceeds 85%. There shall be no printed objects like text and images in the area between the black marks.

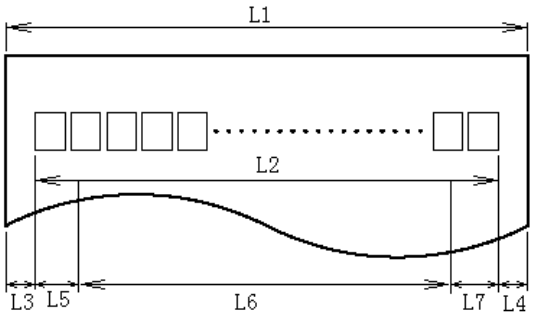


Caution:

- ✧ The printer will measure the marks during the printing or feeding process. If the lengths of the mark (L1) is larger than the default value (default: 13mm), the printer will give a paper-end alarm.

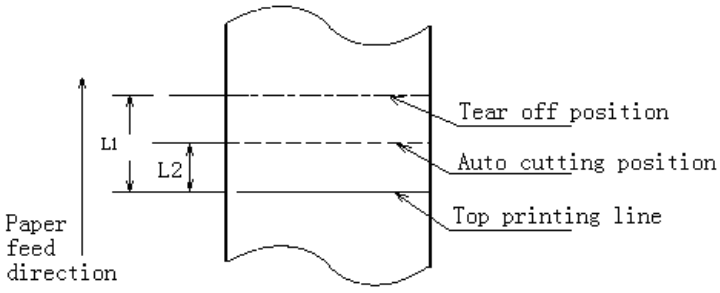
2.4 Print and tear off position

2.4.1 Print position



- L1: Paper holder width: 83.5±0.5mm
- L2: Max Print width: 72mm
- L3: Distance between left end of print-head and left side of paper house (Fixed) 1.75±1mm
- L4: Distance between right end of print-head and right side of paper house(Fixed) 1.75±1mm
- L5: Left margin (default:0mm)
- L6: Print area width. Can set by command (See Programming Manual)
- L7: Right margin (default: 0mm)

2.4.2 Tear off position

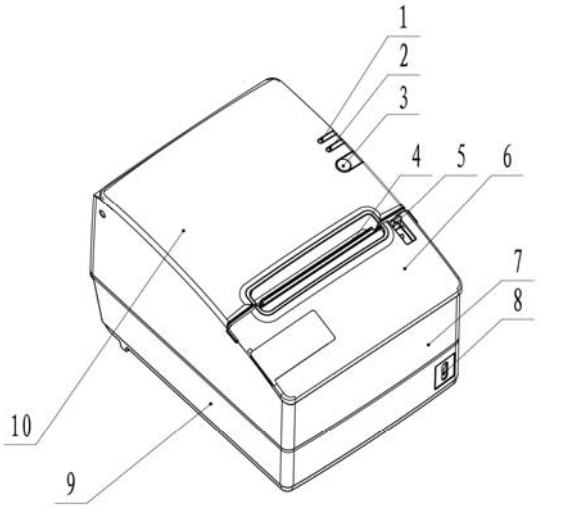


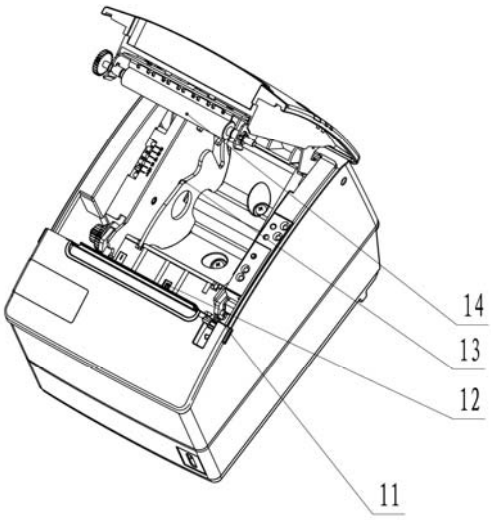
L1 (Distance between Top printing line and Tear off position): about 28mm

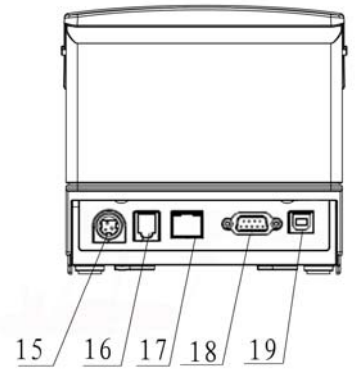
L2 (Distance between Top printing line and Auto cutting position): about 11.6mm

3 Outline and components

3.1 Outline and Parts







1—Power LED

2—Error LED

3—Feed button

4—Tear bar

5—Top cover latch

6—Cutter cover

7—Middle cover

8—Power switch

9— Bottom cover

10—Top cover

11—Top-cover-open sensor

12—Paper sensor

13—Paper guide

14—Printer platen

15—Power connector

16—Cash drawer connector

17—Ethernet interface

18—Serial interface

19—USB interface

Functions of parts:

a- Power Indicator (1)

Indicating power status (ON/OFF).

b- Error indicator (2)

Indicating some error status. Under normal conditions, ERROR LED is always off. Under some error conditions (e.g. paper end), ERROR LED will flash.

c- Feed button (3)

- Feed paper function

  Printer will feed paper when the FEED BUTTON is pressed down under normal condition. Printer will feed long length paper if keeps pressing down the button.

- Print self-test page

  Press down FEED button while turn on the power, the printer will print out self-test page, including print length, print width, print speed and so on.

- Enter button config function

  Press down FEED button while turn on the power, the printer will print out self-test page.

Printer will stay in pause state after cutting paper (ERROR LED flashes).Then keep pressing FEED button, the printer will enter button config mode.

d- Power switch (8)

"O" power is to turn off printer. "—" power is to turn on printer.

e- Top cover uplifting alarm sensor (11)

Monitor top cover status: open/close.

f- Paper end sensor (12)

To detect if paper is existing or not when using continuous paper; To detect the paper mark when using black mark paper.

g- Paper guide (13)

There are 4 long slots in paper house bottom. Paper house width can be adjusted to below different value by inserting paper guide into different slots:82.5 ±0.5mm ,, 80±0.5 mm,76±0.5 mm,69.5±0.5 mm, 57±0.5 mm. the paper house width is 82.5 ±0.5mm if take out the paper guide

Caution:

✧ The paper guide is an indispensable part of the printer and should be kept with the printer.

3.2 Error LED and Buzzers

3.2.1 Error LED

LED	Status	Description
Power Indicator (Green) (POWER)	On	Printer is powered on
	Off	Printer is powered off
Error Indicator (Red) (ERROR)	Off	Printer is in normal status
	Flash	Printer is in error status or Paper near end

3.2.2 Description of LED and Error Status

Error information	ERROR LED	Buzzer
Print head is overheating	Six times	Six times
Input voltage is abnormal	Five times	Five times
Cutter Error	Four times	Four times
Cover Is Open	Three times	Three times
Paper End	Twice	Twice
Paper near end	One times	-
Calibration error or can not find the marks	One times	-

Caution:

✧ The temperature of the print-head is detected by means of a thermistor sensor. If the temperature of the print head becomes higher than 65℃, the protection circuit of the printer will force the printer to stop printing.

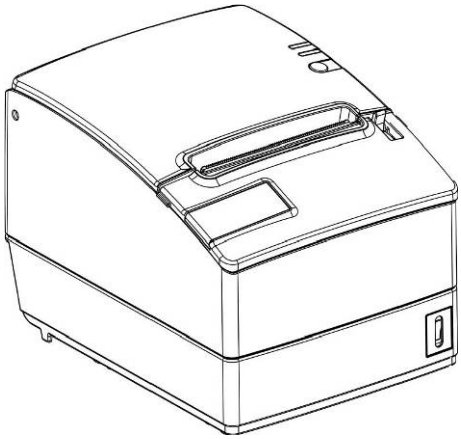
4 Installation

4.1 Unpacking

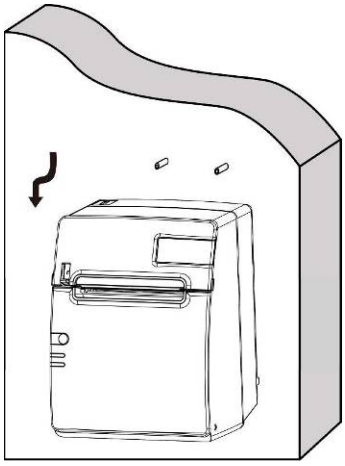
Check whether all items, which are listed on the packing list, are present and in a good condition. If any item is damaged or missing, please contact your dealer.

4.2 Printer installation

The BTP-R180II can be installed in two positions: horizontally on a table or vertically on a wall.



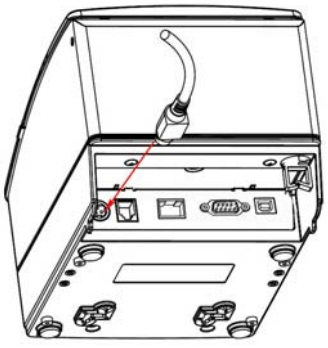
1. Horizontally on a table



2. Vertically on a wall

4.3 Connecting the Power Adapter

1) Confirm the power switch is turned off.
2) Insert the power cord into the power socket on the back of the printer.



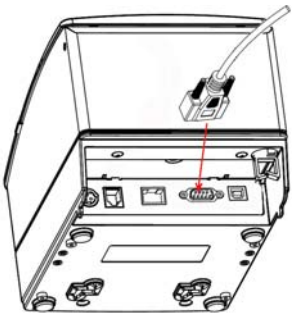
Caution:

- ✧ Use only the manufacturers supplied power adapter or other equal model.
- ✧ When connecting or disconnecting the cable connector of the power adapter, always hold the connector but not the cable.
- ✧ Do not pull on the power adapter cord, otherwise the cord may be damaged or broken, causing a risk of fire or electric shock.
- ✧ Do not place the Power adapter cord near a heating device; otherwise, the cover of the cord may melt,

causing a risk of fire or electric shock.

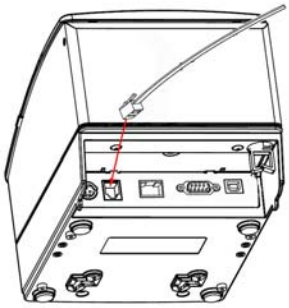
✧ When the printer is not in use for a long period of time, disconnect the Power adapter from the wall outlet for safety.

4.4 Connecting interface cable



1) Confirm the power switch is turned off.
2) Connect the suitable interface cable with the correct connector to the connector of the interface board of the printer plug screws (Serial interface) or clip springs (Parallel interface).
3) Connect the other end of the interface cable to the host.

4.5 Connecting the Cash Drawer



1. Confirm the printer power is turned off.
2. Insert the cash drawer cable into the cash drawer connector on the back of the printer.

Caution:

✧ Cash drawer interface can be connected only with a cash drawer device (Do not connect a telephone line and so on).

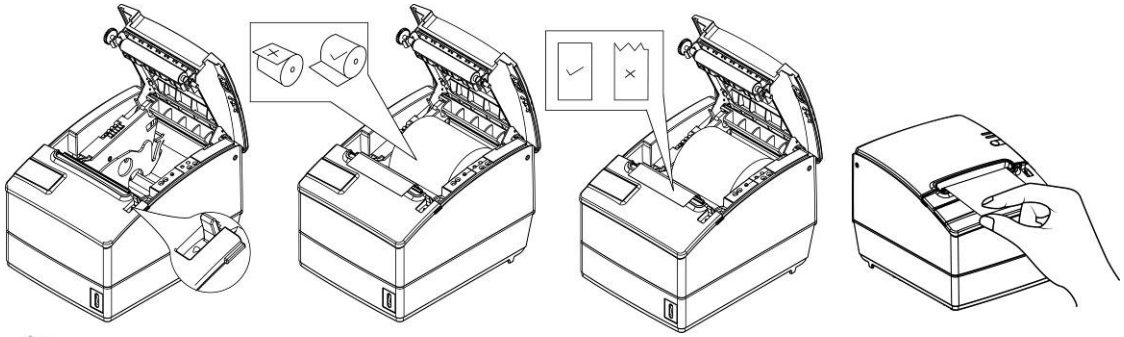
4.6 Paper roll loading

4.6.1 Confirm the paper type

After connecting of the printer to the mains voltage, with the host and, if applicable, to the cash drawer, the paper can be loaded and printed.

4.6.2 Load/replace a paper roll

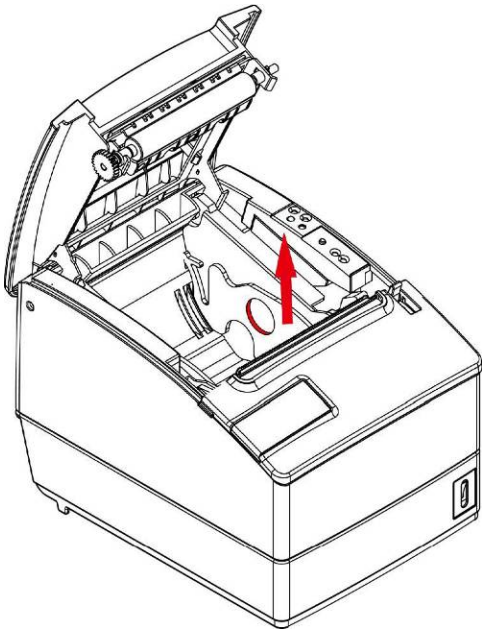
1) Turn off the printer.
2) Open the printer top cover, as in the following figure.
3) Drop in a paper roll in the paper house.
4) Pull the paper roll into the paper holder, and close the printer top cover.
5) Tear off the surplus portion of the paper by using the tear bar.



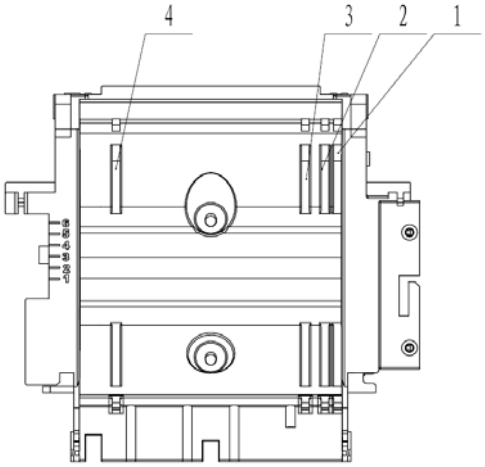
Caution:

✧ User can adjust the paper guide position according to the paper roll width as following steps: hold the hole on back of paper guide and rotate it upwards , then take out the guide; insert it downwards into the right slot as the paper width; Be sure that the paper rolling direction to be correct as shown in

above picture.



Without paper guide:	82.5±0.5mm.
Paper guide in the slot 1:	80±0.5mm
Paper guide in the slot 2:	76±0.5mm
Paper guide in the slot 3:	69.5±0.5mm
Paper guide in the slot 3&4:	57 ±0.5mm



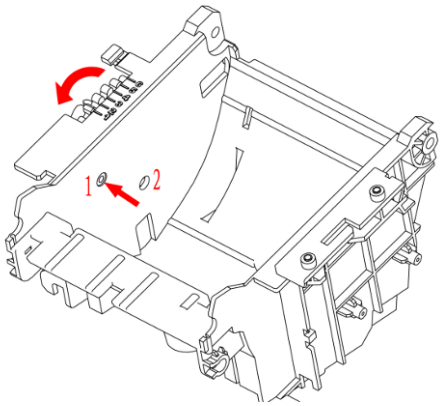
- ✧ Confirm that the paper is rolled tightly on the paper roll, otherwise, paper jam or other fault may occur.
- ✧ The paper roll should be placed straight in the paper compartment and not at an angle. The paper roll should be able to move freely.

4.7 Paper near end adjustment

4.7.1 Paper near end position adjustment

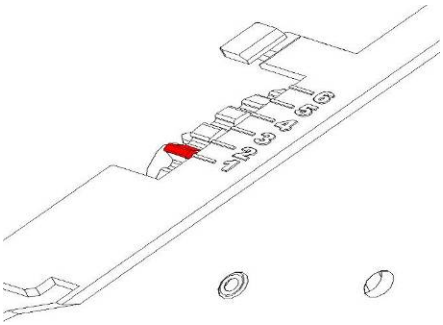
BTP-R180II supports printing both in horizontal and vertical positions. Users can detect the remaining paper in the horizontal and vertical position by adjusting the paper near end sensor. The default printer setting is for horizontal printing and the paper near end sensor is at the bottom of the paper compartment. To change the paper near end sensor position from horizontal to vertical: First, press the plastic release

button in position 1 along the direction of the arrow. Then rotate thumbwheel in the direction shown. The paper near end sensor will start to rotate. When the release button rotates to position 2, the change from horizontal to vertical is complete.



4.7.2 Remaining paper amount adjustment of Paper near end sensor

Remaining paper amount can be adjusted by adjusting the position of paper near end sensor Paper near end sensor has six levels, the red mark (actual color on printer is white) shows the current level and it can be adjusted to a different position by moving the click-wheel.



4.8 Power on printer and print self-test page

4.8.1 Power on printer

Confirm that the printer is connected to power.

4.8.2 Print self-test page

1) Confirm that the printer is connected to power and paper roll is loaded.
2) Confirm that the printer is switched off.
3) Press down the FEED button while turning on the printer power. The configuration page. At the end of the configuration page the followings text will appear: "Press and Release FEED to continue SELF-TEST printing" and "Press and Hold FEED to configure the printer" The printer is holding and waiting for the input while the PAPER LED is flashing.
4) Press down the FEED button momentarily, the printer will print a character test page which is a part of the self-test.

5 Printer maintenance

Caution:

- ✧ Before starting routine maintenance, confirm that the printer power is turned off.
- ✧ Do not use solvents like gasoline or acetone.
- ✧ When cleaning sensors, the printer should not be switched on until the pure alcohol has totally evaporated.
- ✧ It is recommended that the maintenance cycle should not be longer than one month.

5.1 Print head and roller cleaning

Steps for TPH and roller cleaning are as follows:

1) Turn off the printer power and open the top cover.
2) If printing is just finished, please wait until the print head is completely cooled.
3) Use cotton moistened with alcohol (wringed out) to wipe away the dust on the surface of print head and roller.
4) Wait until the alcohol is completely evaporated, then close the top cover.

5.2 Mark sensor cleaning

If the printer does not identify the mark effectively, you should clean the mark sensor.

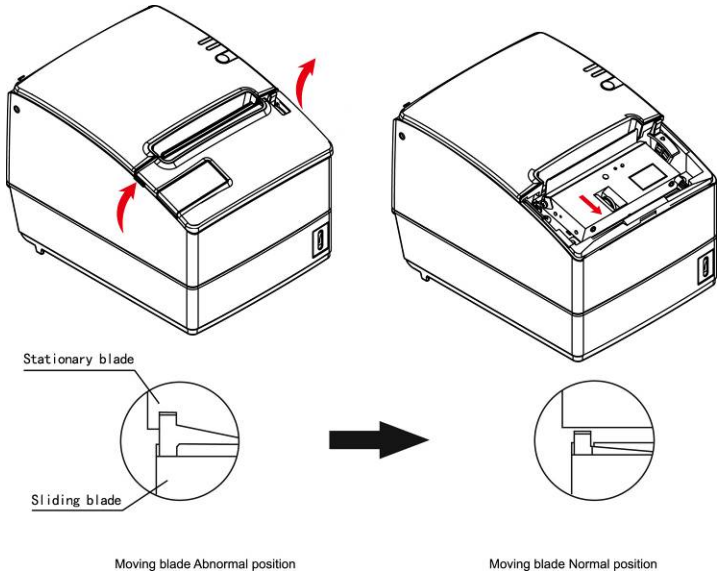
Steps for mark sensor cleaning are as follows:

1) Turn off the printer.
2) Pull the latch to open the back cover of the printer.
3) Keep the back cover open, clean the dust and dirt off the mark sensor using a soft cotton cloth with a little alcohol.
4) Wait until the alcohol completely evaporated then close the back cover and finish mark sensor cleaning.

5.3 Clear paper jam

Steps for clearing a paper jam are as follows:

1) Turn off the printer power, and open top cover.
2) Clear paper jam and close the top cover.
3) If top cover cannot be opened with paper jammed into the cutter, push up both right and left sides of top cover together with two hands according to the arrow direction in below figure, pull out the front cover and expose the white thumb wheel on the cutter sliding blade.
4) Revolve the white thumb wheel on the front end of the cutter by hand; observe the action of the cutter from the paper path the top cover can not be opened until the cutter sliding blade deviates from the stationary blade completely, then clear paper jam.



Caution:

- ✧ The cutter sliding blade acts slowly during revolving the thumb wheel. Go on revolving and observe carefully;
- ✧ If the thumb wheel cannot be turned, do not force the wheel, instead turn it the opposite direction.

6 Interface Signal

6.1 Parallel interface

Parallel interface can work in IEEE 1284 compatible mode or half-byte mode. The interface is 36PIN CENTRONICS.

The Interface is defined as below:

PIN	Source	Function
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 RS-232 serial interface

The serial interface of the printer is compatible with RS-232, its connector is 9PIN female D type.

PIN No.	Signal definition
PIN1	Not connected
PIN2	RXD
PIN 3	TXD
PIN 4	DTR
PIN 5	Signal Ground
PIN6	DSR
PIN 7	DTR
PIN 8	DSR
PIN 9	Not connected

User can query interface settings status via printing self-test page. The default setting is as follows:

Baud rate: 19200bps, Data bit: 8, Parity bit: none, stop bit: 1

Handshake: DTR/DSR

6.3 USB interface

Parameters

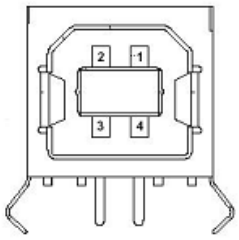
Data transmission: Support USB2.0 Full-speed protocol

Connector (Printer side): USB B type socket. Support and pass USB HUB

1) Interface signal definition and functions

PIN	Signal Name	Description
1	VBUS	+5V
2	DATA-	data transmit line minus
3	DATA+	data transmit line plus
4	GND	Ground

2) Interface Connector



6.4 Ethernet interface

1) Interface features

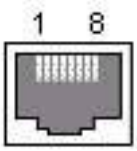
- Support of 10/100M BASE-T communication
- Compatible with Ethernet II standard frame type
- Indicator shows network connecting status and data transmission status
- Supports 9100 port print
- Supports status back
- Supports parameter configuration

- Supports firmware update on-line
- Supports printer status query and interface module maintenance based on HTTP(only JK-E02 interface supports)

2) Interface signal definition

Interface adopts 10/100M BASE-T standard in accordance with IEEE802.3. The interface signal is defined as below:

PIN	Signal Name	Instruction
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

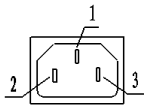


Socket figure of Interface module

6.5 Power interface definition

Power supply interface signal definition

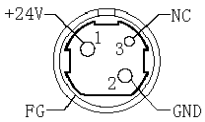
PIN	Signal Name
1	E
2	L
3	N



Power socket

24V power interface definition

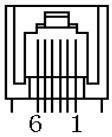
PIN	Signal Name
1	E
2	L
3	N



6.6 Cash drawer interface signal definition

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

2) Cash drawer interface outlet uses RJ-11 6P connector.



3) Interface signal definition

PIN	Signal Name	Functions
1	FG	Frame Ground
2	DRAWER 1	Cash drawer 1 driving signal
3	DRSW	Cash drawer status test signal
4	VDR	Cash drawer driving power
5	DRAWER 2	Cash drawer 2 driving signal
6	GND	Circuit share ground

Caution:

- ✧ Do not connect or disconnect signal cable when printer power is on.
- ✧ Signal cable should be far away from strong current.
- ✧ Signal cable should be far away from strong current sources.

7 Troubleshooting

In case of printer fault, consult this section for solutions and advice.

If you do not find a solution in this section, please contact your local dealer for assistance.

7.1 Printer doesn't work

Problems	Possible causes	Solution
LED is off and the printer doesn't work	Printer has no power supply	Connect the printer power
	Printer power is off	Turn on the printer power
	Circuit is damaged	Contact your local dealer. or manufacturer

7.2 Error LED and Buzzer

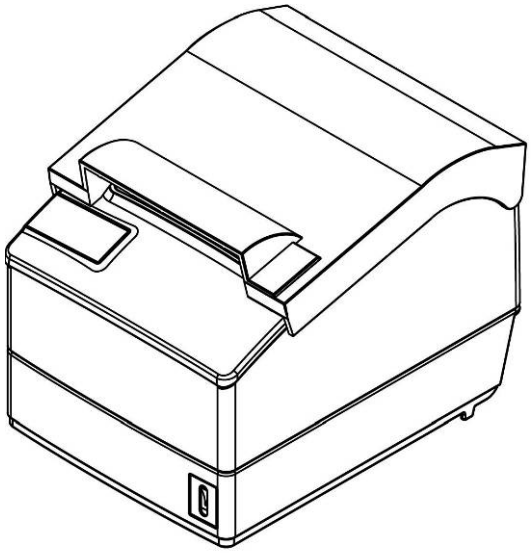
Problems	Possible Causes	Solution
Error LED flashes and buzzer beeps	Paper end	Replace roll paper
	Cutter error	Refer to 7.4 Cutter error troubleshooting
	Top cover up	Close top cover
	Print head overheated	Turn off printer power and wait until the print head turn to normal temperature.
Buzzer beeps and error LED on	These indicate a serious problem	Contact your local distributor or a technician of manufacturer for assistance.

7.3 Problems during printing

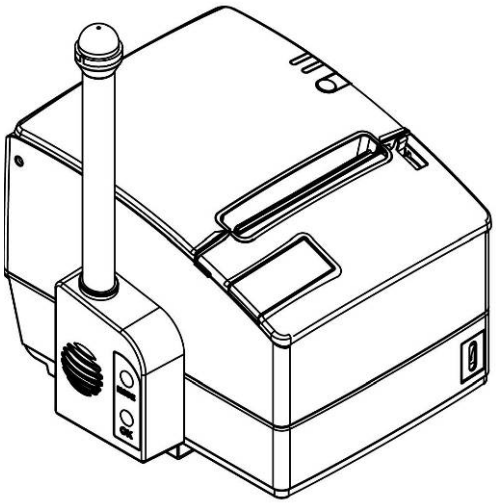
Problems	Possible Causes	Solution
Paper cannot be fed normally	Paper jam	Open top cover to check paper path and cutter and remove paper jam
Printer starts printing but stops suddenly	Paper jam	Open top cover to check the cutter and remove paper jam
Paper is not cut	Paper jam	Open top cover to check the cutter and remove paper jam
Printout is not clear or dirty	Paper roll is not installed correctly	Make sure that the paper roll has been installed correctly
	Paper is out of specification	Use recommended thermal paper
	Dirty print head or platen roller	Clean the print head or the platen roller
	Print darkness is too low	Increase the print darkness as needed
Vertical column of print is missing	Dirty print head or platen roller	Clean the print head or the platen roller
	Print head error	Contact your local dealer.

8 Accessories

8.1 Spill proof cover

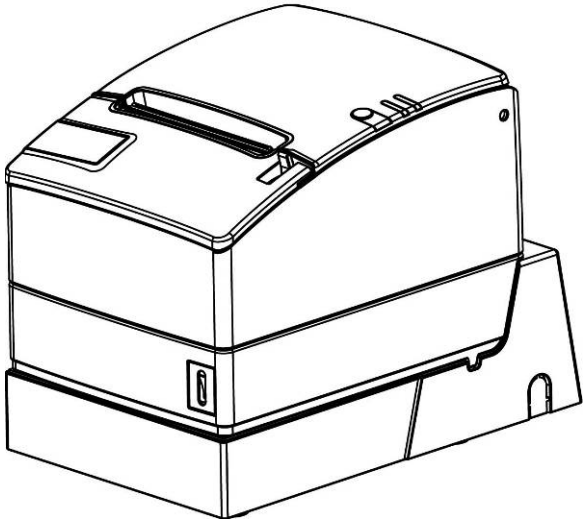


8.2 HERALD – kitchen alarm system



8.3 Power Supply CASE

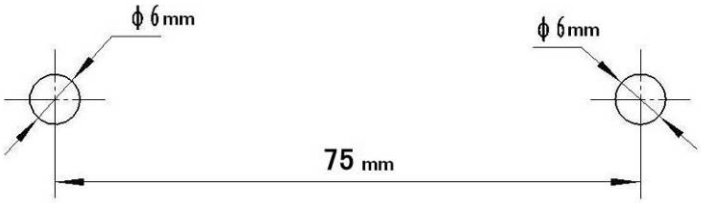
This cover is used to install the AC power adapter under the printer; so that the power adapter would become an internal part of the printer (the power adapter will be inside of the printer).



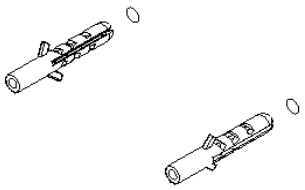
8.4 Wall Mounting

The printer can be mounted vertically on the wall according to below instructions:

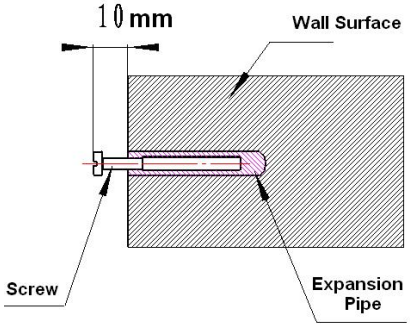
1) Drill two holes (holes (OD: 6mm: 6mm, depth: 50mm: 50mm, space of two hole: 75mm) on the wall as in below figure:



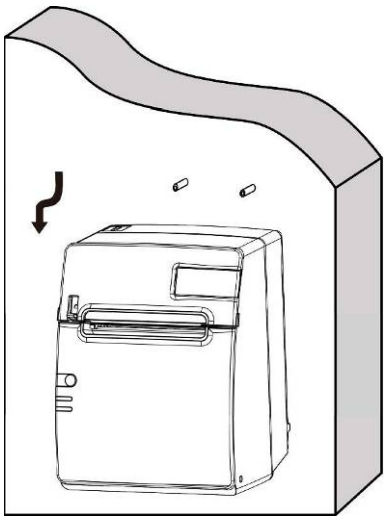
2) Insert the plastic plugs in the holes and make sure that the plugs are fully inside the holes and do not stick out.



3) Screw the two screws in the plastic plugs and keep10mm space between the screw head and the wall surface.



4) Regulate the paper near end sensor (Please refer to 3.4.1), and mount the printer as figure.



9 Power Management

The power management of BTP-R180II has four operation modes: Ready, Active, Sleep, Off.

1. Printer will enter into Ready mode after powering on printer or completing printing job.
2. Printer will enter into Sleep mode if there is not any printing job for 5 minutes in Ready mode.
3. Printer will awake automatically and enter into Active mode when printing job comes, and will enter into Ready mode again after completing printing job.

Relating Parameter of power management is as below: Maximum Default Delay Times < 5min

Because the Maximum Default Delay Times is less than 5 minutes, BTP-R180II does not open the port of changing this time to end user.