

SNBC

USER MANUAL

KIOSK Series Printers (BK-S216)



Shandong New Beiyang Info-Tech Co., Ltd.

Declaration

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- **Trademarks:** Our registered trademark is **BEIYANG**® and **SNBC**®

- **Marks means**



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.



Heating: Calorific parts, please don't touch.



Warning: Don't touch and avoid damage due to static electricity.

- The quality control system of SNBC has been approved by the following certification.



DNV ISO9001: 2000

- The environmental management system of SNBC has been approved by the following certification:



DNVISO14001:2004

Safety Instructions

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

- Install the printer at a flat and stable place.
- Reserve adequate space around the printer so that the operation and maintenance can be performed conveniently.
- Keep the printer far away from water source.
- Do not use or store the printer in a place exposed to heat of fire, moisture and serious pollution and do not expose the printer to direct sunlight, strong light and heater.
- Do not place the printer in a place exposed to vibration and impact.
- No dew condensation is allowed to the printer. In case of such condensation, do not turn on the power until it has completely gone away.
- Connect the DC adapter to an appropriate grounding outlet. Avoid sharing one electrical outlet with large power motors and other devices that may cause the fluctuation of voltage.
- Disconnect the DC adapter when the printer is deemed to idle for a long time.
- Don't spill water or other electric materials into the printer. In case this happens, turn off the power immediately.
- Do not allow the printer to start printing when there is no paper installed, otherwise the print head and platen roller will be damaged.
- To ensure quality print and normal lifetime, use recommended paper or its equivalent.
- Shut down the printer when connecting or disconnecting interfaces connectors to avoid damages to control board.
- 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.
- Do not disassemble the printer without permission of a technician, even for repairing purpose.
- Keep this manual carefully in hand for usage and reference.

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1. General description

1.1 Introduction

BK-S216 is a high performance thermal printer with cutter and presenter as optional and can accept up to 203mm (Outer diameter) paper rolls. The maximum print width is 216mm. It can be widely used in Kiosk applications like data communication terminal, test instrument terminal and information consulting terminal etc.

1.2 Main features

- Printing
 - High-speed
 - Thermal print with low noise
 - High reliability
- BUNDLER
 - Accommodation
 - Paper retraction
 - Holding paper

Note: BUNDLER is an accommodating organ which is at the front end of the printer. It's Max. accommodating amount is 10 pages;
- Applications
 - The command set is compatible with ESC/POS standard;
 - Characters handling: zoom 1 to 6 times horizontally or vertically, rotation print (0°, 90°, 180°, 270°), black/white reverse, underline, upside-down print;
 - Barcode print: print barcode by commands in horizon and vertical;
 - Character size (Font 0 or Font 1) can be set by commands;
- Printer maintenance
 - Replace paper roll easily;
 - Clean the print head conveniently
 - Characteristics and parameters can be set by softwares;
 - Auto-cut paper;
 - Semi-auto paper load;
 - Mark identification and checkout;
 - Updating printer firmware on-line.

2. Specification

2.1 Technical Specification

Items		Parameter	
		203DPI	300DPI
Printing	Print method	Direct thermal line	
	Resolution	203DPI×203DPI	300DPI×305DPI
	Paper Length	210mm-216mm	210mm-216mm
	Print Width	Max.216mm (8.5 ")	Max.216mm (8.5 ")
		Max.1728 点	Max.2560 点
	Print breadth	Max.305mm; Min.82.5mm	
	Print speed	100mm/s	75mm/s
	RAM memory	SDRAM: 8MB	
	Flash memory	1MB/2MB/4MB	
	Print head temperature detecting	Thermal resistor	
	Print head position detecting	Micro switch	
	Paper / mark detecting	Optical sensor	
	Paper near end detecting	Optical Sensor	
Interface	RS-232, Centronics (optional), USB (optional)		
Barcodes	Barcode	UPC-A, UPC-E, EAN 13 , EAN 8, CODE 39, CODE 93, ITF, CODABAR, CODE128, PDF417	
	Character set	English font 0: 12×24	English font 0: 18×34
English font 1: 9×17		English font 1: 13×24	
Fonts	Asia character set: 24X24	Asia character set: 36 X36	
		For Asia character set, Simplified Chinese (GB2312), GB18030, Traditional Chinese, Korean, Kanji or Japanese is optional	
Graphics	Fonts Process	All fonts can be enlarged 1 to 6 times vertically and horizontally respectively ;Rotation Print (0°, 90°, 180°, 270°) Bold, white/black reverse, Underline.	
	Graphics	Support BMP bit Image download to RAM or FLASH Support direct BMP Print	
Medium	Paper type	Continuous paper / marked paper / folded Paper	
	Paper roll OD	Max.203mm	
	Paper roll ID	25.4mm or≥50mm	
	Thickness	0.06~0.1mm	
	Thermal surface	Outer side	
Power	Input voltage	AC 220V±5%, 50/60Hz	
	Output voltage	DC 24V, 2.5A	

Items		Parameter	
		203DPI	300DPI
BUNDLER	Paper out speed	≥200mm/s	
	Paper retracting speed	≥200mm/s	
	Presenting amount each time	Max. 10 pieces	
	Function modes	Retraction/Ejection/Hold/Command control/close	
Reliability	Print head lifetime	≥100Km	
	Cutter lifetime	≥500,000	
Environment	Operation Environment	+5~45°C, 20-90%RH (40°C)	
	Storage Environment	-40~60°C, 20 - 93% RH (40°C)	
Physics Character	Dimensions	350(W)×157(D)×295(H)mm	
	Weight	About 10Kg	

Table 2.1 .1 Technical specifications

Note:

- DPI: dots printed for each inch. (One inch is about 25.4mm)
- Character spaces can be adjusted by ESC SP;
- The real print speed is related with data transmission speed, speed darkness, print duty, control commands and input voltage, which may be lower than 100mm/s (203DPI) or 75mm/s (300DPI)..

2.2 Paper Specifications

- Paper type : Continuous paper /marked paper
- Paper supply Method : Paper roll/ Folded paper
- Paper width : 210mm –216mm
- Paper thickness : 60μm-100μm
- Thermal layer : Outer side of the roll
- Paper roll specification
 - : 50mm (inner dimension of standard core)
 - : 25.4mm or ≥50mm (inner dimension of optional core)
 - :203mm (maximum paper outer dimension)
- Recommended paper:

➤ Continuous paper specification

Paper type	Manufacturer
TF50KS –E2C	Nippon Paper Industries Co., Ltd
F240AC/F220-VP	Mitsubishi Paper Mill Co., Ltd

KF060-FEAH	New OJI Paper Co., Ltd.
F70NA	FUJI PHOTO FILM CO., LTD
FV230A1	mitsubishi paper mill co., ltd.

Table 2.2 Printer recommended paper

➤ **Marked paper specification**

In marked paper mode, the printer determines cut position by referencing black mark position. Detailed paper should meet the following requirement besides that of standard paper:

Mark length L1: $20\text{mm} \leq L1$

Mark height L2: $4\text{mm} \leq L2 \leq 8\text{mm}$

Space between two near Marks L3: $99\text{mm} \leq L3 \leq 305\text{mm}$

Mark position on paper: Right, middle or left side on non-thermal sensitive surface of paper.

Reflectivity: The reflectivity of black mark which should be on non-sensitive side is less than 15% while the paper itself reflectivity shall exceeds 85%. There shall be no any patterns or add items on the area between black marks, such as advertisement, figure and so on.

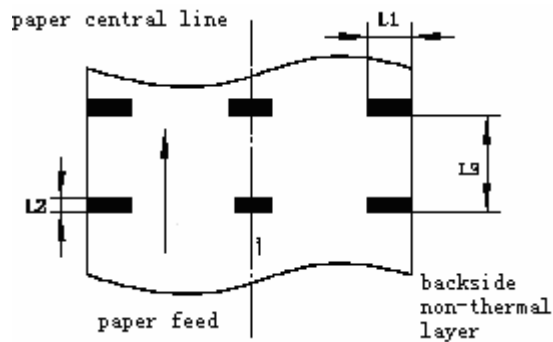


Figure 2.1 Mark position sketch map

Notes:

- Mark height can be set by adjusting printer configuration.
- The paper path has three positions selectable for black mark sensor installation. Only one sensor is mounted on the right side of the paper path(default) when the printer is delivered (Paper feeding direction) .
- When the printer is in motionless status, it does not detect any black marks. Therefore, if the paper is pulled away from it compulsorily, the printer gives no alarm of paper end. This feature design assures that the printer does not alarm paper end errors when a black mark stops on paper near end sensor of the printer.

➤ **Folded paper specification**

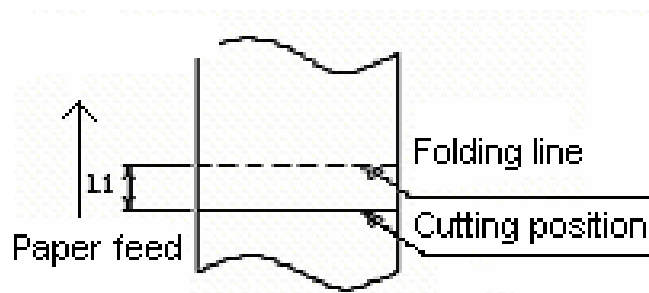


Figure 2.2 Relations between folding line position and cutting position

- When using folded paper, make sure to keep the folding line outside of the printing area to avoid paper jammed.
- It is recommended to set the cutting position 0.5 to 2mm below the folding line (reverse to feeding paper direction) to prevent paper jam.
- Refer to continuous and marked paper specification to decide the position relation between folding line and black mark.

⚠ Caution:

- Please use the recommended paper or its equivalents. Using other types of paper may affect print quality and reduce the print head lifetime.
- Do not paste the paper to the shaft core.
- If the paper comes in contact with chemical or oil, it may discolour or be less heat sensitive, which will greatly affect the print quality.
- Do not rub the paper surface with a nail or hard metal. Otherwise it may discolour.
- When the temperature goes up to 70°C, paper will discolour. So please be careful to the effect of temperature, humidity and sunlight in environment.

3. Structure and functions

3.1 Appearance and modules

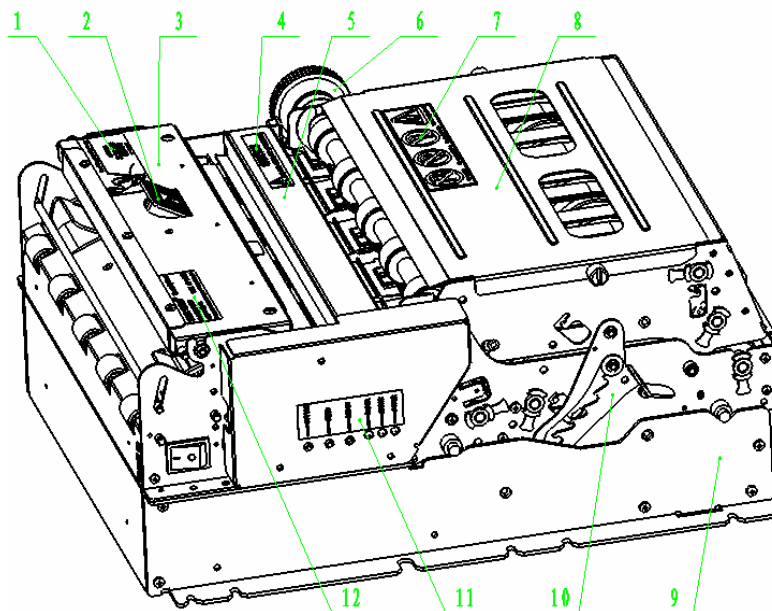


Fig.3.1.1 BK-S216 structure

- | | | |
|---------------------|------------------------|---------------------|
| 1 —Paper feed label | 2 —Cover opening latch | 3 —Printing unit |
| 4 —Cutter label | 5 —Auto. cutter | 6 —Hand wheel |
| 7 —Warning label | 8 —Bundler | 9 —Printer pedestal |

3.2 External Dimension (without paper roll)

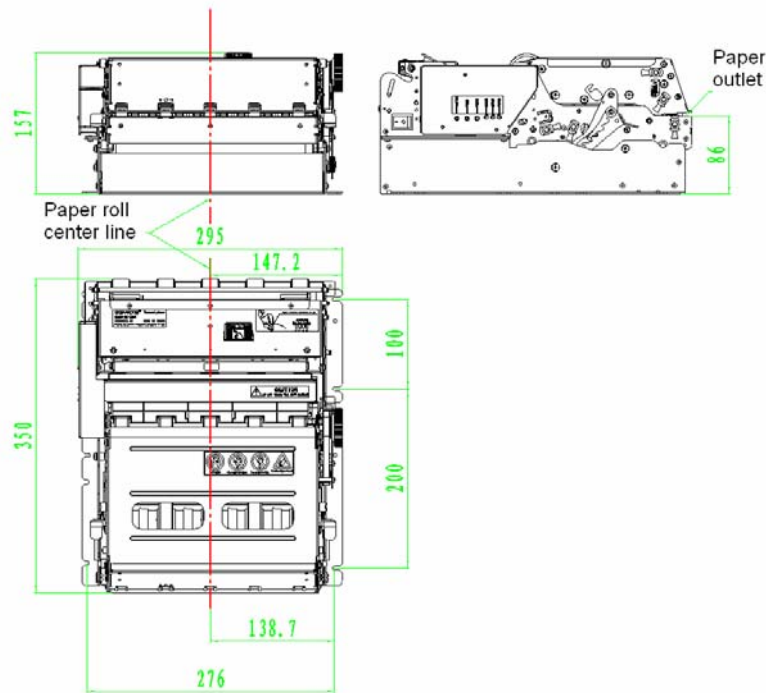


Fig.3.2.1 Structure size (350*295*157mm)

3.3 Printer mechanism

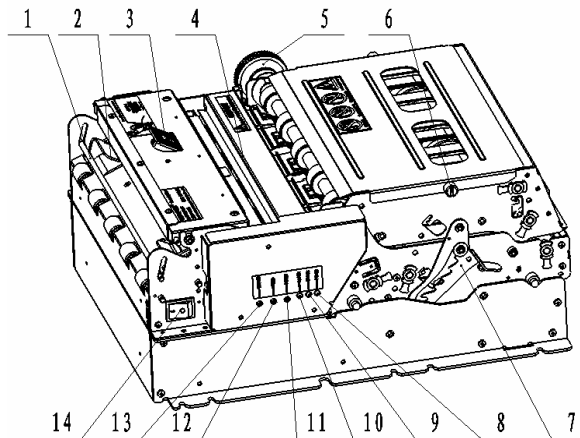


Fig. 3.3.1 Printing unit parts

- **Buffering shaft**—Follow the direction shown on the paper feed label and feed paper. During the print, this shaft can buffer papers action;
- **Paper guide module** –It is the paper forward path before the print shown as Fig.3.3.1 and Fig.3.3.2. The module with two parts which move to right or left can center paper relative to the print head for adapting different paper width from 210mm to 216mm.

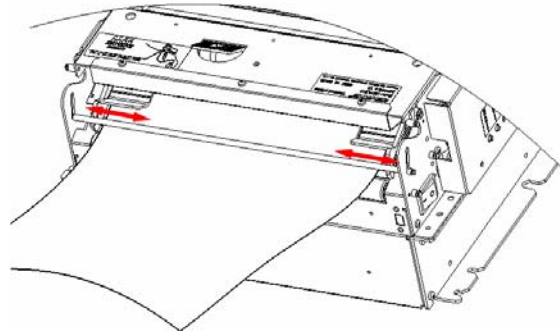


Fig.3.3.2 Paper guide module

- **Cover open plate** –When customers press it, the print head could lift up automatically;
- **Cutter** –Execute Auto-cutter functions;
- **Handwheel** –When paper jam happens in Presenter, customers can turn this wheel to feed paper out of paper outlet or retract paper after turning off the printer;
- **Lock screw** –Through loosening two lock screws at right and left, top cover of Presenter could be taken off so that paper jam can be removed on time;
- **Lock hook** –Lift up two lock hooks at right and left with hands so that upper path of Presenter could be separated;
- **Power LED** –Show power on/off and it shall light always when turning on the printer;
- **Alarm LED** –Indicate the printer status. Normally the alarm LED is off. When the printer has errors, it shall flash;
- **Paper end LED** –When the printer has no paper, paper end LED flashes. If paper is available, this LED shall be off;
- **Reset button** –When pressing down this button, the printer shall reset automatically and the data in the printer shall be cleared;
- **Feed button** –When the printer doesn't alarm, press this button to feed paper; If feeding paper for a long distance, you can press down this button constantly;
After pressing down feed button for 1s while turning on the printer, the printer shall output a self-test page of which the content could change with the printer configuration;
Note: Before printing a self-test page, you must affirm that paper is available and the print head doesn't lift up (Self-test page refers to Appendix 1 Printer self-test page);
- **Cut button** –Press it to cut paper under any circumstances (even the printer has errors)
- **Power switch** –Press down “O” to turn off the power or press down “—” to turn on the power.

3.4 Sensor

3.4.1 Sensors of print mechanism

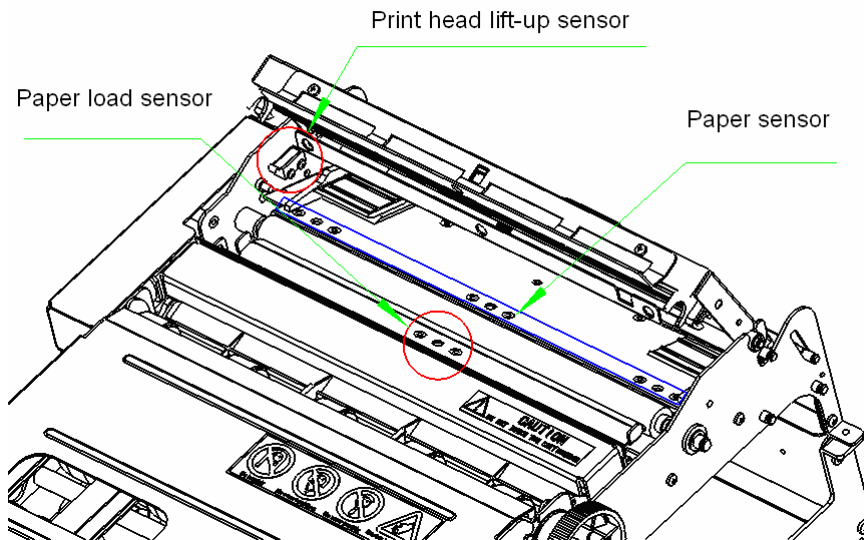


Fig.3.4.1 Sensors of print mechanism

- ✧ Paper sensor: Shown as in Fig. 3.4.1 Sensors of print mechanism, it is a reflection optical sensor used for detecting paper status and mark status. When finding paper end, the printer stop working and warn. Paper sensor can be adjusted at left, middle and right where could be set when out of factory according paper type.
- ✧ Paper load sensor: It is a reflection optical sensor used to position paper when semi-loading paper in the printer. This sensor can be set only in the middle shown as Fig. 3.4.1.
- ✧ Print head lift-up sensor: It is a microswitch used to detect print head status. When finding the print head lift up, the printer stops working and alarm shown as Fig. 3.4.1.

3.4.2 Sensors of bundler

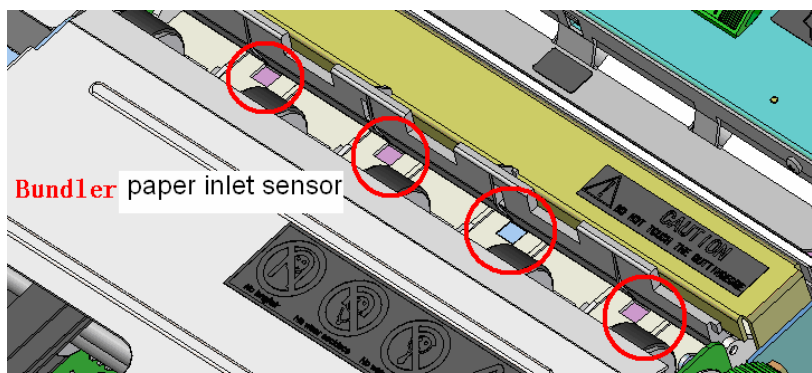


Fig.3.4.2 Bundler sensors 1

- ✧ Bundler inlet sensor: The reflection optical sensor is used to confirm if paper is available at Bundler. Four positions of Bundler are set shown as Fig.3.4.2 and also according to users' requirement.

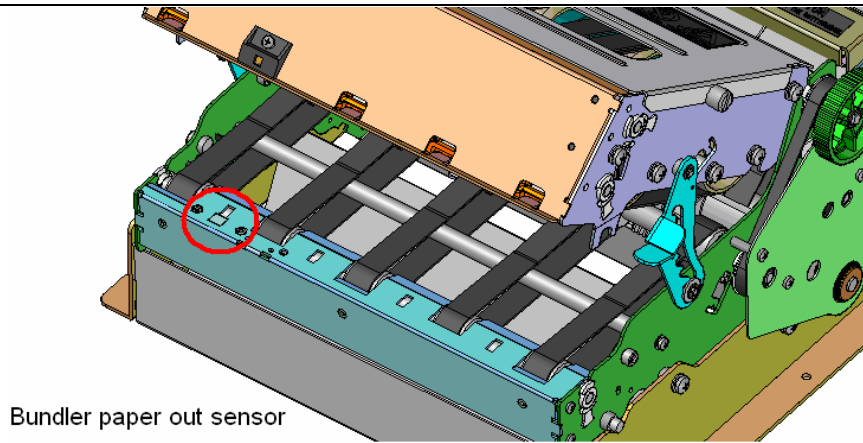


Fig.3.4.3 Bundler sensor 2

- ✧ Bundler paper out sensor: The reflection optical sensor is used to confirm if users take away paper at the outlet when paper fed out of Bundler as shown in Fig.3.4.3.

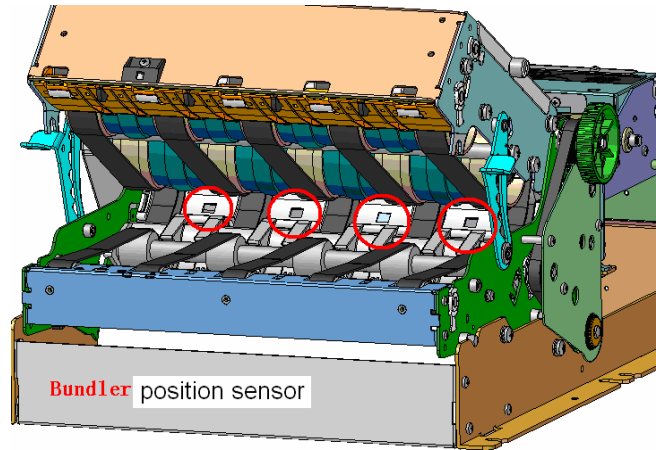


Fig.3.4.4 Bundler sensor 3

- ✧ Bundler position sensor: The reflection optical sensor is used to detect paper position in Bundler when Bundler presenting and holding paper. Four installation positions are set as shown in Fig.3.4.4 and also according to users' requirement.

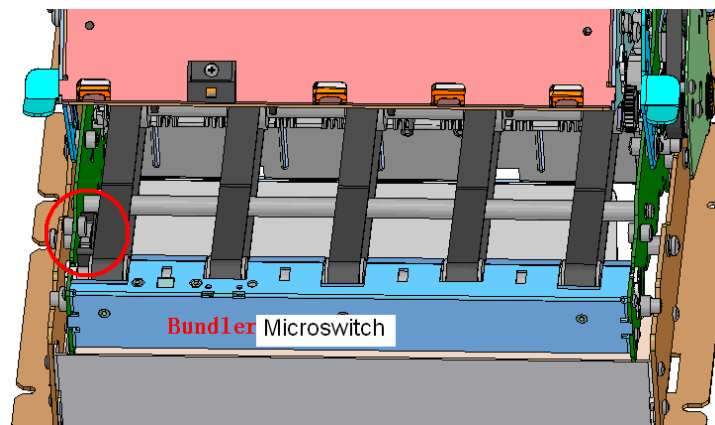


Fig.3.4.5 Bundler sensor 4

- ✧ Bundler open sensor: A microswitch is used to detect Bundler status. When detecting upper path of Bundle lifting, the printer stops working and alarm as shown in Fig. 3.4.5.

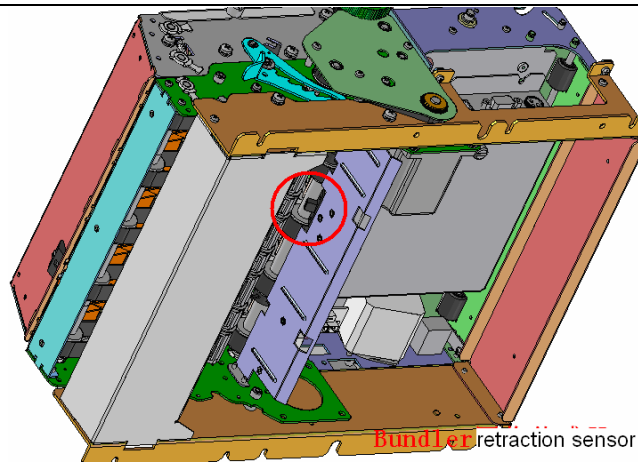


Fig.3.4.6 Bundler sensor 5

✧ Bundler retraction sensor: A reflection sensor is used to check if paper is retracted successfully and paper is away from paper retraction outlet during Bundler retraction as shown in Fig.3.4.6.

⚠ Caution

✧ Direct sunlight, strong light and hot source may cause sensor failure.

3.5 Interface

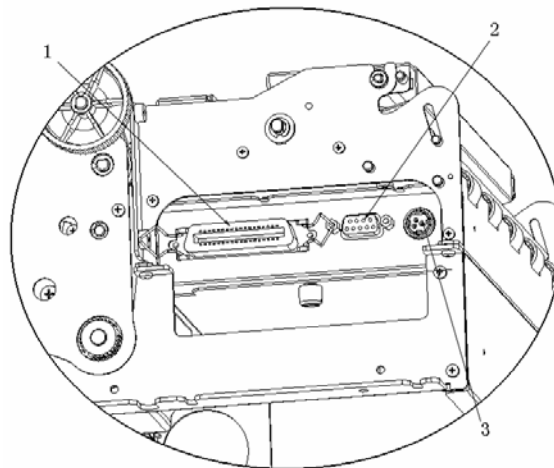


Fig.3.5.1 Parallel printer

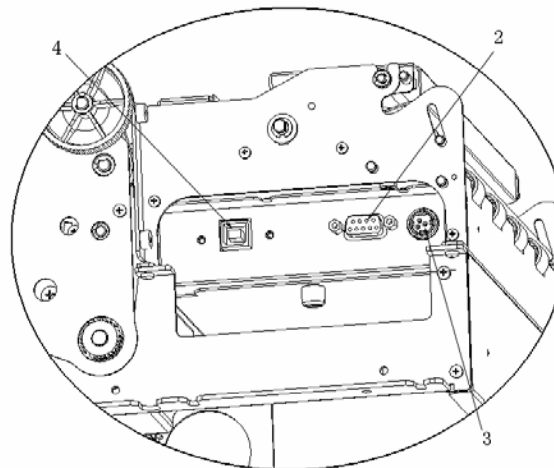


Fig.3.5.2 USB printer

- 1.--- Centronics (parallel interface)
- 2.--- RS-232
- 3.--- Power socket
- 4.--- USB interface



Caution:

Only one kind of interface between parallel and USB can be configured in one printer.

4. Installation and suggestion

4.1 Unpacking

Open the carton and all packing materials, and check whether all items in the packing list are short or damaged. In case of damages or missing items, please contact local distributor or manufacturer for assistance.

After unpacking,

4.2 Connecting the grounding wire

To ensure that the printer has a nice grounding status, please follow figures below to connect the grounding wire.

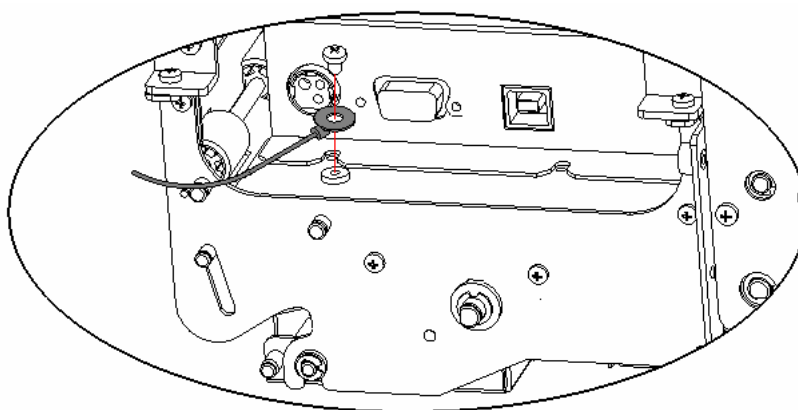


Fig.4.2.1 Ground line connection

4.3 Connecting the AC power adapter

- 1) Make sure the printer is turned off.
- 2) With the flat side of cable pin of AC adapter facing downward, plug the cable pin into the power interface on the bottom of the printer.
- 3) Connect the AC power cable to a nearby electrical outlet.

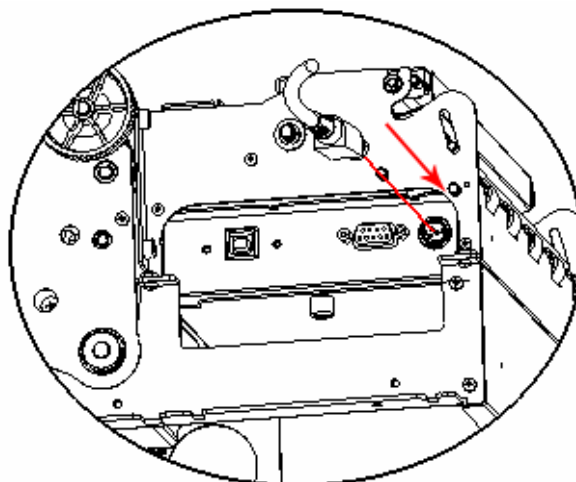


Fig.4.3.1 Connection with power adapter

**Caution**

- ◇ Use recommended power adapter or the one with the same quality.
- ◇ Connect power adapter connector at right angle between pin and socket.
- ◇ When connecting or disconnecting the cable connector of the AC adapter, always hold the connector shell and don't pull the cable forcibly.
- ◇ Avoid dragging or pulling the cable of AC adapter, otherwise the cable may be damaged or broken and a fire and electric shock may be caused accordingly.
- ◇ Avoid placing the AC adapter near an overheating device; otherwise the cover of the cable may melt and cause a fire or electric shock.
- ◇ If leaving the printer idle for a long time, please disconnect the power of AC adapter of printer.

4.4 Connecting interface cable

- 1) Make sure that the printer has been shut down, that is, sign "O" in power switch is pressed down.
- 2) Connect one end of the interface cable into a relevant interface of the printer and fix them with screws or latch springs as Fig.4.4.1, Fig.4.4.2 and Fig.4.4.3.
- 3) Connect the other end of the interface cable to the computer.

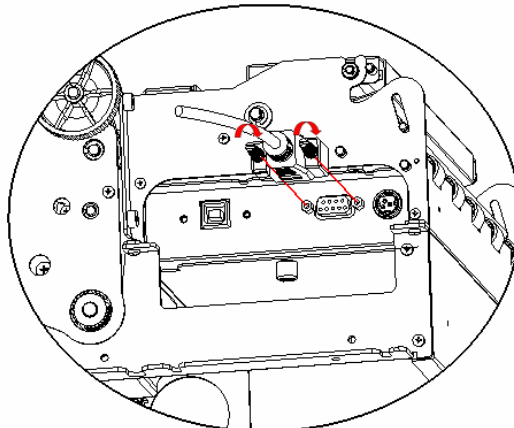


Fig.4.4.1 Serial interface layout

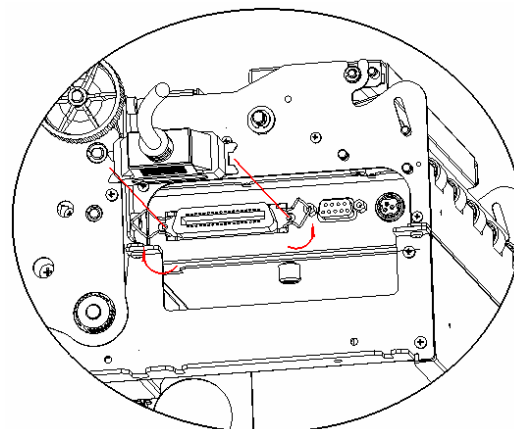


Fig.4.4.2 Parallel interface layout

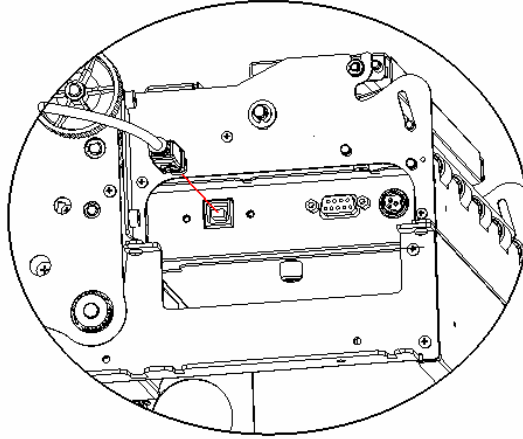


Fig.4.4.3 USB interface layout

**Caution:**

- ◆ Make sure the interface cable is connected in correct direction.
- ◆ When connecting serial interface cable, do not forget to tighten the fixing screws. For parallel interface cable, make sure to close the clips.
- ◆ When connect or disconnect the interface cable, make sure to hold the plug shell instead of the dragging the cable forcibly.

4.5 Loading paper roll

Before starting to load the paper roll, confirm whether the paper specifications are in conformity with printer requirements (refer to [2.2 paper specification](#))

4.5.1 Semi-automatic paper loading or manual paper loading

1. Semi-automatic paper loading

- 1) Turn on the power. The buzzer will beep for paper end.
- 2) See Fig.4.5.1, inset the front end of the paper roll smoothly through the paper feeding path and loose hands when platen roller starts running and holds the paper.
- 3) The printer starts to load paper. After paper loading is finished, paper head halts at normal printing position, and then printing task can be performed.

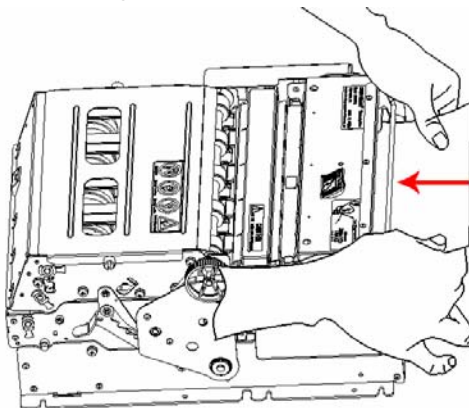


Fig.4.5.1 Semi-Auto paper load

2. Manual paper loading

- 1) Turn on the power and the buzzer will alarm paper end.
- 2) Press down the button on the print upper cover, and lift the print head.
- 3) Manually load paper as following figure, and make sure that the printing platen roller is fully covered by paper.
- 4) Close the print head. The printer will automatically feed paper to right position.

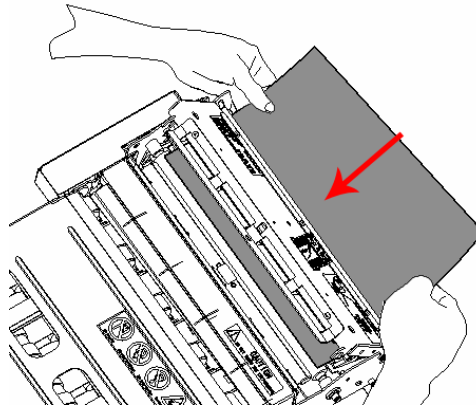


Fig.4.5.2 Manual paper load

 **Caution**

- ◆ The paper head shall go through the horizontal positioning shaft (vertical structure doesn't have this shaft).
- ◆ The paper shall go through between the up and down sliding plates of paper guide.

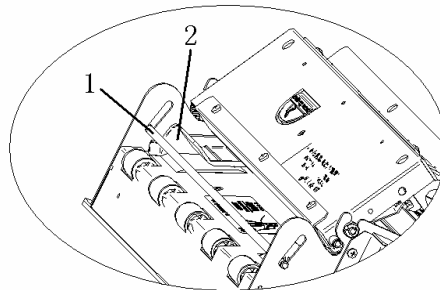


Fig.4.5.3 Paper load

1—positioning shaft (for horizontal structure only)

2—sliding plates

- ◆ Before feeding the paper according to the instruction of Fig.4.5.4, cut the paper head trimly.

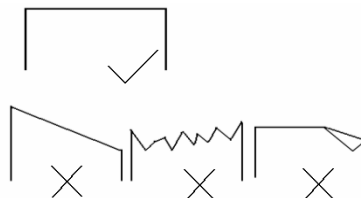


Fig.4.5.4 Paper head description

- ◆ Adjust the paper guide according to paper roll width before feeding paper. Put the side of paper guide on the digit in paper path that indicates the paper roll width.

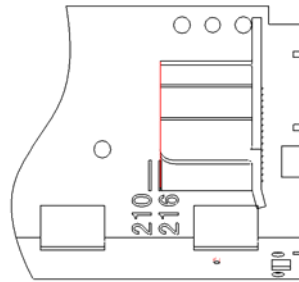


Fig.4.5.5 Paper guide adjustment

4.6 Installing the printer

4.6.1 Installation notes:

- Install the printer on a flat and stable place. Recommend to use horizontal installation. The inclination shouldn't exceed $\pm 15^\circ$ (paper feeding direction) when inclination installation is done. Inclination in other directions is strictly forbidden.
- Keep the printer far away from water source
- Do not place the printer in the place exposed to vibration and impact.
- while operating and doing routine maintenance, we suggest reserving the space as follows (Fig.4.6.1) in order to guarantee printer working reliability and easy operation efficiently.

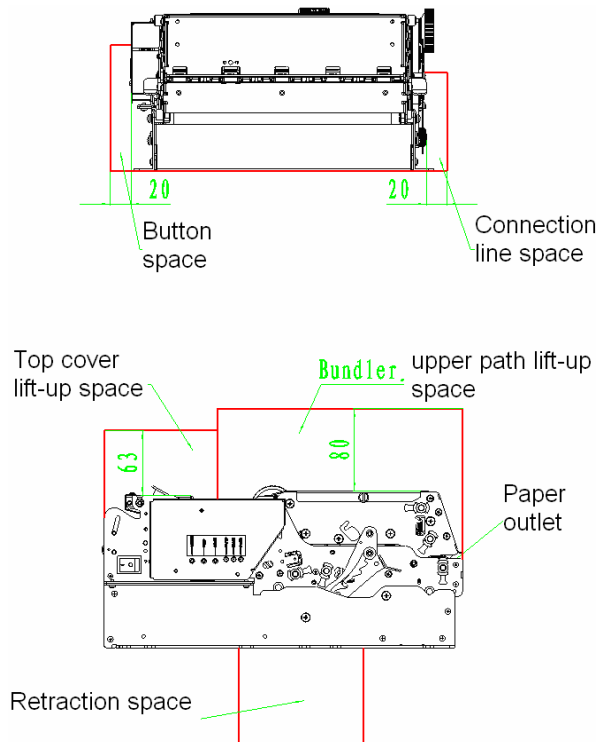


Fig. 4.6.1 Structure spaces



Caution:

- ◆ Spaces in above figure are as follows: printer work space, printer routine maintenance space and printer operating space. Printer work space include paper accommodating space and paper backing space; Printer routine maintenance space include PRE's upper cover opening space, upper cover

opening space and cutter routine maintenance space; Printer operating space include paper roll loading space, paper loading space, button space and connection wire space.

- ◆ The dimension given in above figures is only for references.
- ◆ To ensure reliable paper accommodating, enough space should be left. There shall be no sharp edges, corners or edges around the space to avoid the printout damaged.

Spaces explanation

- ◆ Upper cover uplifting space. Make sure to reserve enough space to enable the upper cover open.

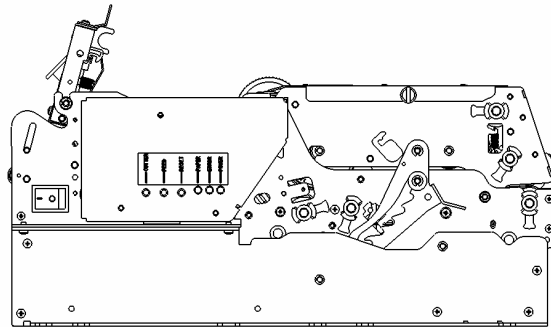


Fig. 4.6.2 Top cover lift-up

- ◆ Bundler upper cover uplifting space. Make sure to reserve enough space for Pre upper cover to lift up and loose.

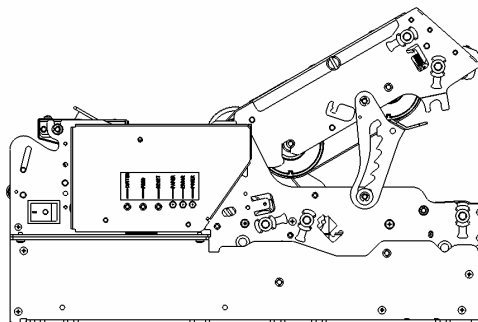


Fig.4.6.3 Bundler upper path lift-up

- ◆ Paper outlet: After Bundler executes the accommodation, the accommodating paper could be sent out of Bundler. A external paper out path should be set at Bundler paper outlet of which the position, dimension and fixing position are referred to Fig.4.6.4. User can design his own corresponding external paper outlet.

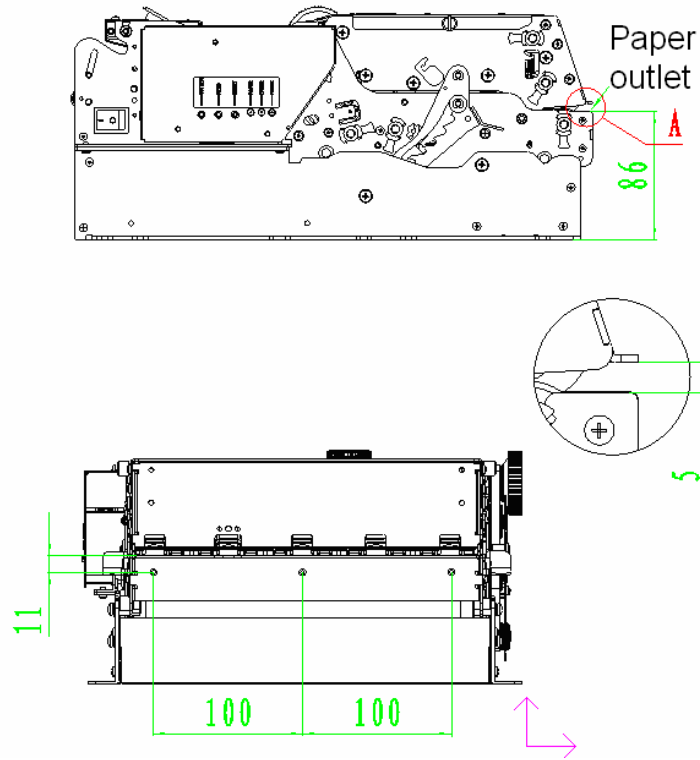


Fig.4.6.4 Paper outlet

- ◆ Connection wire space. make sure there are enough space to connect and disconnect power cable and communication cable of print mechanism;
- ◆ Button space. make sure there are enough space to finish the operation of the CUT button, FEED button and power switch;
- ◆ Retraction space: After Bundler executes the accommodation; the accommodating paper can be retracted out of Bundler. There should be a certain space under Bundler retraction outlet so that paper could retract smoothly. Furthermore, an enough space under retraction space should be reserved to keep waste paper.

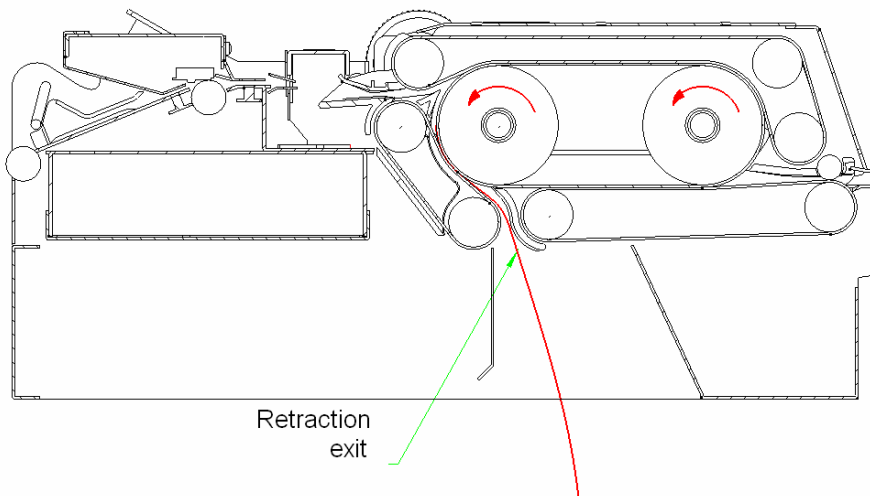


Fig.4.6.5 Retraction entrance

4.6.2 Paper holder design and installation

- Notes for paper holder separate installation
 - It is recommended to ensure the designed paper holder angle at the range from 11° and 39°;

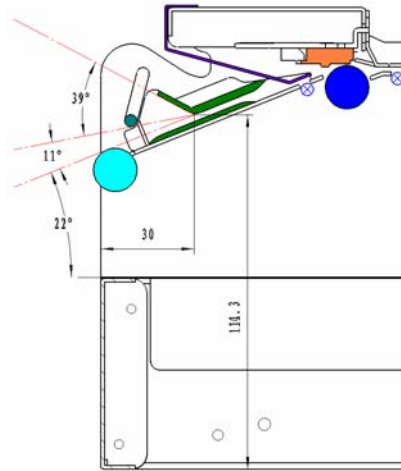


Fig.4.6.6 Paper inlet

- When the paper roll O/D is over 100mm, the buffer organ should be used;

If the inlet angle of your designed paper holder is less than 11° as shown above, we suggest that you should design the buffer organ and also ensure the moving area of the buffer shaft over 16mm. When the buffer shaft reaches the limit position of 16mm, the unit spring force is from 1N to 2N or about 0.5N at the primary position. If it is within 39° or above, the printer buffer organ can be used. However ensure paper moving scope within 39° shown as above in feeding paper, otherwise paper could be scratched.

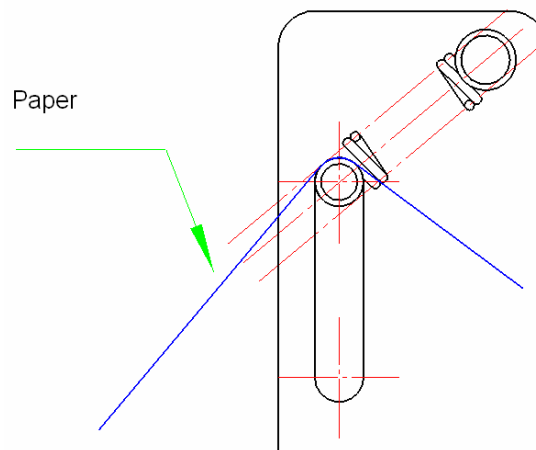


Fig.4.6.7 Buffer structure

- Caution in paper holder installation

The paper holder is installed on the printer separately. In order to ensure reliable paper feed, you should pay attention to the followings in paper installation:

 - Keep paper path smooth, avoid sharp folder to cause overload;
 - Avoid that paper rubs with sharp object, in order to prevent paper thermal layer damaged;
 - Make sure that paper center is in consistent with the center of the paper-feeding path, in order to prevent paper from slant during printing. (For position dimension, please see shape

dimension in section 3.2.1)

- Ensure the paper holder intensity;
- Ensure paper shaft should be parallel with printer head, cutter etc.
- Paper width: If you use 210mm paper width, the paper holder should be from 212mm to 214mm. As for 216mm paper width, ensure that paper holder width from 218mm to 220mm.

4.6.3 Caution for printer external outlet design

In your printer structure, an external paper outlet is needed to work with the printer. In order to ensure smooth paper feed. We suggest that a design should be used at the joint of the external paper outlet and the printer as shown in Fig.4.6.8.

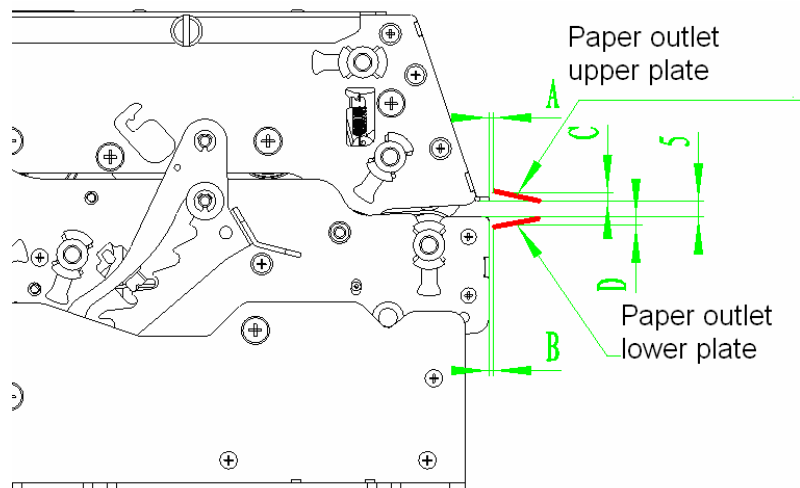


Fig.4.6.8 External paper outlet

- The upper plate A size of paper exit path should be controlled between 1 to 2mm and C size shall be from 1 to 3mm in order to prevent paper jam in Bundler paper feed.
- The lower plate B size of paper exit path should be controlled within 1mm and D size shall be from 1-2mm.

Caution:

- The external paper outlet should be smooth without burr, sharp corner or extrusion;
- Paper outlet design should not be against Bundler upper path turn up;
- Paper outlet cannot bend so that paper feed could be smooth;
- The bundler has the fixing holders for external paper outlet as shown in Fig. 4.6.9.

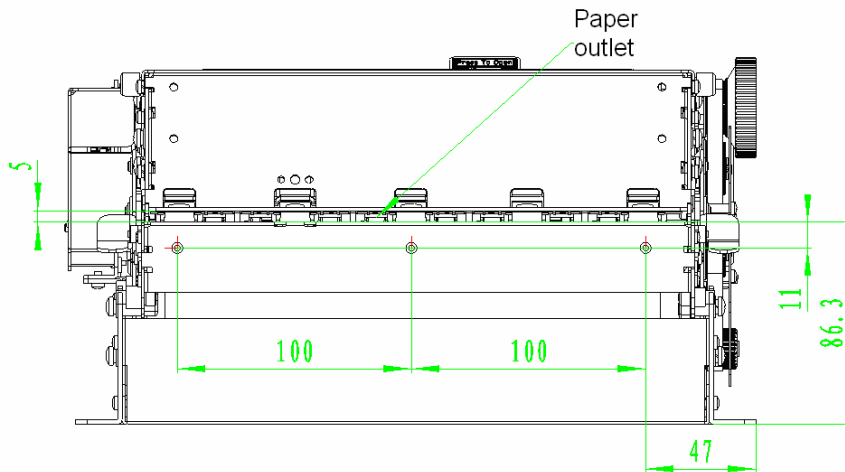


Fig.4.6.9 Fixing holes for external outlet

- The bundler has an organ preventing foreign matter into the printer and users don't need to design it. If you design this organ at the external paper outlet, the paper outlet could be designed as shown in Fig.4.6.10.

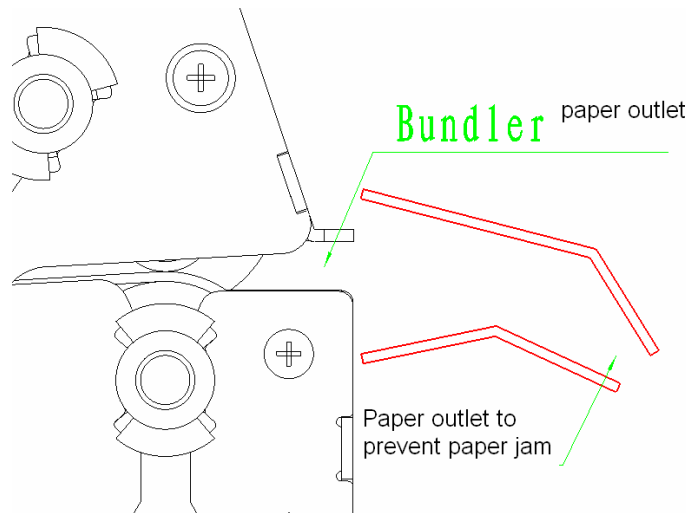


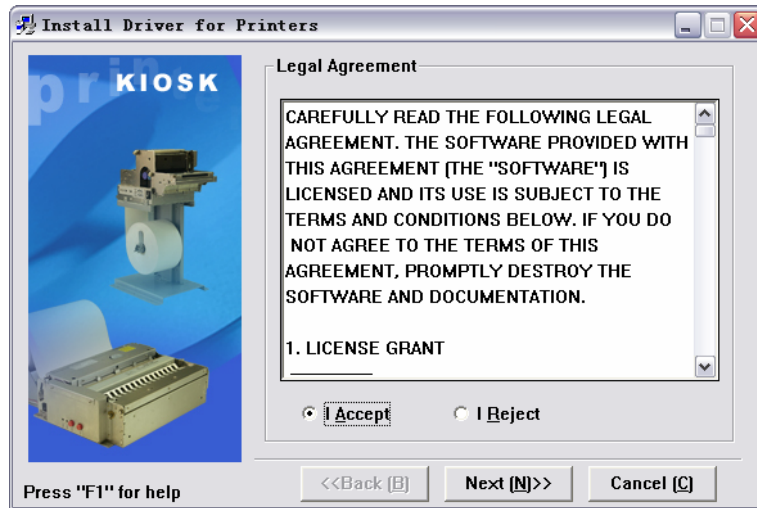
Fig.4.6.10 External paper outlet for foreign matters

4.7 Installing printer driver

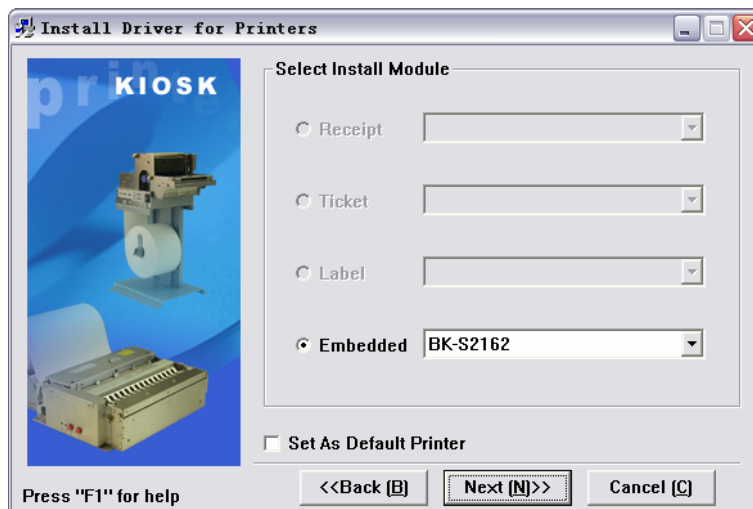
The printer supports standard Windows driver. Serial interface and parallel interface driver both support system platforms such as Windows 98/NT4.0/2000/XP/Server 2003.USB driver supports system platforms such as Windows 98/2000/XP/ Server 2003. The latest version of Windows driver is V1.10.

4.7.1 Typical Installation

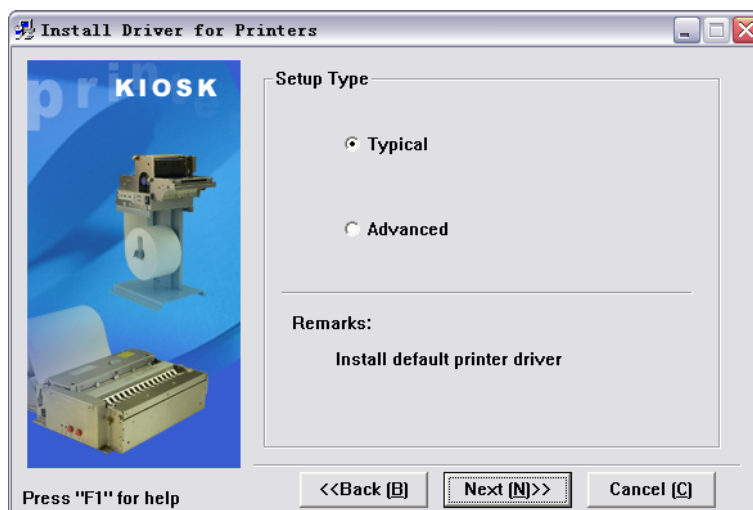
- Run "Setup_BK-S216_EN V1.10\Setup.exe". Please read the software protocols carefully. If you agree all the terms of those protocols, click on the "I Accept" button, and then click on "Next" button.



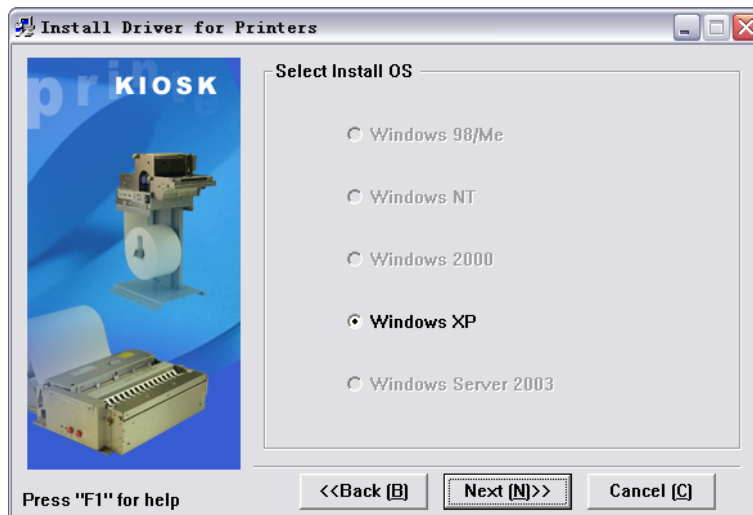
- Select the printer type and name for installation. If need set this printer as system default printer, please select “Set as Default Printer” and then click “Next” button.



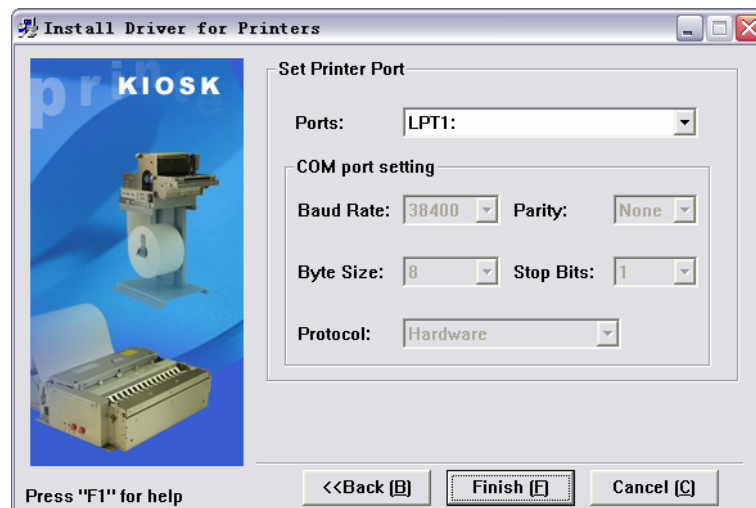
- Select the setup mode: "Typical", click on "Next" button.



- Driver automatically recognizes the current operating system type, click “Next” button.



- Set printer port, Default option is “LPT1” as printer port. User can select setup printer port according to actual condition, For Windows NT4.0 and above operating system, please select “BYCOMx” (x means 1,2,3,4,5,6,7,or 8) for serial interface, click “Finish” button to end the installation.



- For Windows 98/Me operating system, please click “Yes” in the dialogue box and restart the computer.

4.7.2 Advanced Installation

Advanced installation supports multi-USB printers compared with typical installation. When connecting multi-USB printers to one computer, please select “Advanced installation” during the installation.

4.7.3 USB port printer driver

The installation for USB port printer driver requires two steps: Step 1 the installation of the USB device driver, and step 2 the installation of the printer driver.

Step 1: Install USB device driver

- **Windows 98/Me**
 - Connect USB interface printer to a PC and plug USB cable in an idle USB port. The operating system will automatically recognize the USB device and pop-up "Add New Hardware Wizard". Click

on "Next" to start the installation.

- Select "Search for the best driver for your device", click on "Next".
- Select "Specify a location", click on "Browse" button, Search the device driver by browser. Default directory is "Setup_BK-S216_EN V1.10\USBDriver2.20". Click on "Next".
- Wizard will display the device driver name. Click on "Next".
- Click on "Finish" to complete the installation.

- **Windows 2000**

- Connect USB interface printer to a PC and plug USB cable in an idle USB port. The operating system will automatically recognize the USB device and pop-up "Add New Hardware Wizard". Click on "Next" to start the installation.
- Select "Search for the best driver for your device", click on "Next".
- Select "Specify a location", click on "Browse" button, Search the device driver by browser. Default directory is "Setup_BK-S216_EN V1.10\USBDriver2.20". Click on "Next".
- Wizard will display the device driver name. Click on "Next".
- The digital signature page will pop-up. Click "Yes" button.
- Click on "Finish" to complete the installation.

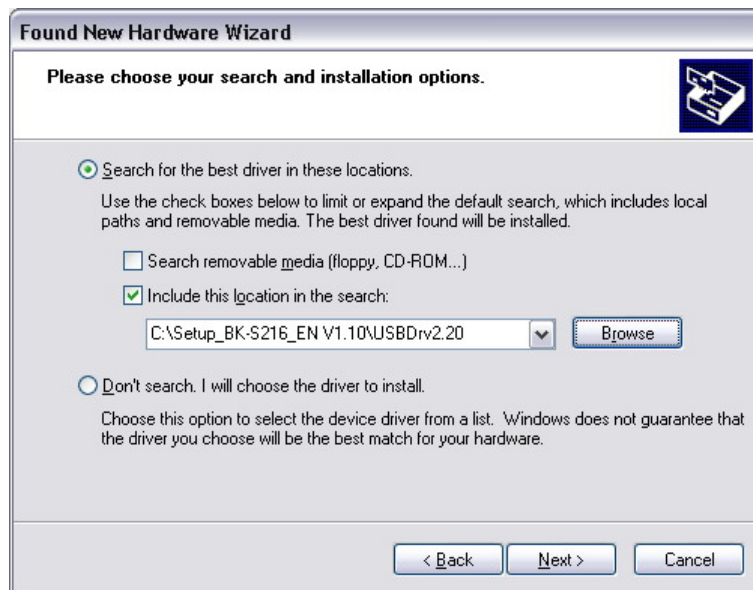
- **Windows XP**

- Connect USB interface printer to PC and plug the USB cable in the idle USB port. The operating system will automatically recognize the USB device and pop-up "Add New Hardware Wizard". Click on "Next" button. Select "Install from a list or specific location", click on "Next".





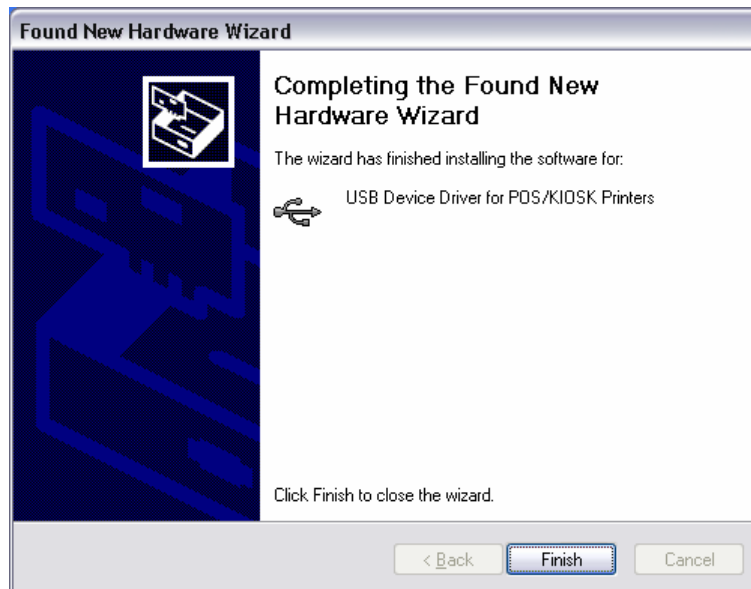
- Select "Search for the best driver in these locations", Click on "Include this location in the search", then Click on "Browse", Search the USB device driver by browser. Default directory is "Setup_BK-S216_EN V1.10\USBDrv2.20". Click on "Next".



- The digital signature page will pop-up. Click "Continue Anyway" button.



- Click on "Finish" to complete the installation.



- **Windows Server 2003**

- Connect USB interface printer to a PC and plug USB cable in an idle USB port. The operating system will automatically recognize the USB device and pop-up "Add New Hardware Wizard". Click on "Next" button. Select "Install from a list or specific location", click on "Next".
- Select "Search for the best driver in these locations", Click on "Include this location in the search", then Click on "Browse", Search the USB device driver by browser. Default directory is "Setup_BK-S216_EN V1.10\USBDriver2.20". Click on "Next".
- The digital signature page will pop-up. Click "Continue Anyway" button.
- Click on "Finish" to complete the installation.

Under Windows XP and Windows Server 2003 operating system, when you connect the USB printer to another USB port of PC for the first time, the system will again recognize the USB device and Pop-up "Add New Hardware Wizard". If you already installed USB device driver under the operating system according to above steps before, Select "Automatic installation" and click on "Next", the wizard will

search driver automatically, pop-up signature page after the wizard has searched the driver, click on "Continue Anyway", and click "Finish" to end the installation.

Step 2: Install USB printer driver

Connect USB interface printer to PC, and then install the printer driver. Please refer to above "Typical Installation" and "Advanced Installation".

5. Routine maintenances

Caution:

1. Before starting routine maintenance for the printer, make sure the power is turned off.
2. Do not touch the surface of print head with hands or metal. Do not use forceps so as to prevent print head, platen roller and sensors being scratched.
3. Do not use organic solvent like gasoline, acetone and etc.
4. When cleaning print head or sensors, please wait for pure alcohol to evaporate totally before starting printing
5. It is recommended to do routine maintenance per month

5.1 Cleaning print head

When the following cases occur, the print head should be cleaned:

- 1) Printout is not clear.
- 2) Some columns on the page are not clear.
- 3) Paper feeds or retracts with big noises.

To clean the print head, follow steps given below.

- 1) Turn off the power and open the upper cover.
- 2) Lift print head module and wait for print head to cool down totally when it has just finished printing;
- 3) Wipe off dust and stains on the surface of the print head with soft cotton cloth dipped with pure alcohol. The cotton cloth shall be wrung before using.
- 4) Wait for 5 to 10 minutes until pure alcohol evaporates totally, press down the print head module and close upper cover.

5.2 Cleaning sensors

5.2.1 Cleaning paper sensor

When any of following cases occurs, the sensors should be cleaned.

- 1) During printing, the printer sometimes stops printing and alarms paper end when there is paper in fact.
- 2) The printer doesn't alarm paper end when paper is out
- 3) The printer doesn't identify marks correctly

To clean paper sensor, follow the steps given below:

- 1) Turn off the power, open upper cover.
- 2) Lift the print head and find out paper sensor according to the printer figure **3.4.1 Printing part Sensor**.
- 3) With soft cotton cloth dipped with pure alcohol (should be wrung), carefully wipe off stains on the surfaces of sensors.

- 4) Wait for 5 to 10 minutes until pure alcohol evaporates totally, press down the print head and close upper cover.

5.2.2 Cleaning paper load sensor

When any of the following case occurs, paper load sensor should be cleaned.

- 1) The paper can't back to normal printing position during semi-automatic paper loading.
- 2) Print motor reverse backward for long time during semi-automatic paper loading.
- 3) After printing is finished, the paper can't return to normal printing position.

To clean paper load sensor, following the steps given below:

- 1) Turn off the power and open upper cover.
- 2) lift the print head and find out paper load sensor according to the printer figure **3.4.1 Printing part Sensor**.
- 3) With soft cotton cloth dipped with pure alcohol (should be wrung), carefully wipe off stains on the surfaces of sensors.
- 4) Wait for 5 to 10 minutes until pure alcohol evaporates totally, press down print head and close printer upper cover.

5.2.3 Cleaning Bundler paper inlet sensor

When any of the following case occurs, Bundler paper inlet sensor should be cleaned.

- 1) Bundler doesn't start and alarm paper jam when the paper reaches the Bundler paper in position.

To clean Bundler paper inlet sensor, following the steps given below:

- 1) Turn off the power and find out Bundler paper inlet sensor according to the printer figure **3.4.2 Bundler sensor 1**.
- 2) With soft cotton cloth dipped with pure alcohol (should be wrung), carefully wipe off stains on the surfaces of sensors.
- 3) Wait for 5 to 10 minutes, the printer can be used until pure alcohol evaporates totally.

5.2.4 Cleaning Bundler position sensor

When any of the following case occurs, Bundler position sensor should be cleaned.

- 1) It is difficult to align the front margin of the paper in Bundler path.
- 2) The printer can not detect the paper in Bundler path and alarm error.

To clean Bundler position sensor, following the steps given below:

- 1) Turn off the power and lift the Bundler upper path.
- 2) Find out Bundler position sensor according to the printer figure **3.4.4 Bundler sensor 3**.
- 3) With soft cotton cloth dipped with pure alcohol (should be wrung), carefully wipe off stains on the surfaces of sensors.
- 4) Wait for 5 to 10 minutes until pure alcohol evaporates totally, press down the Bundler upper path.

5.2.5 Cleaning Bundler paper out sensor

When any of the following case occurs, Bundler paper out sensor should be cleaned.

- 1) If the paper at the Bundler paper out exit is not taken away, Bundler doesn't retract the paper but continue to print next page.

2) If the paper at the Bundler paper out exit is taken away, but Bundler does retracting operation.

To clean Bundler paper out sensor, following the steps given below:

- 1) Turn off the power and lift the Bundler upper path.
- 2) Find out Bundler paper out sensor according to the printer figure **3.4.3 Bundler sensor 2**.
- 3) With soft cotton cloth dipped with pure alcohol (should be wrung), carefully wipe off stains on the surfaces of sensors.
- 4) Wait for 5 to 10 minutes until pure alcohol evaporates totally, press down the Bundler upper path.

5.2.6 Cleaning Bundler paper retraction sensor

When any of the following case occurs, Bundler paper back sensor should be cleaned.

- 1) If the paper at the Bundler paper back exit is not taken off, but the printer returns normal status.
- 2) If the paper at the Bundler paper exit is taken off, but the printer returns recycle paper container full status.

To clean Bundler paper back sensor, following the steps given below:

- 1) Turn off the power and have the printer turned.
- 2) Find out Bundler paper back sensor according to the printer figure **3.4.6 Bundler sensor 5**.
- 3) With soft cotton cloth dipped with pure alcohol (should be wrung), carefully wipe off stains on the surfaces of sensors.
- 4) Wait for 5 to 10 minutes until pure alcohol evaporates totally, press down the Bundler upper path.

5.3 Cleaning printing platen roller

When any of the following case occurs, the printing platen roller should be cleaned.

- 1) Print out is not clear.
- 2) Some columns on the page are not clear.
- 3) Paper feeds or retracts with big noises.

To clean the printing platen roller, follow the steps given below:

- 1) Turn off the power.
- 2) Wait for a few minutes until print head cools down if the printer has just finished printing.
- 3) With soft cotton cloth dipped with pure alcohol (should be wrung), carefully wipe off stains on the surfaces of printing platen roller.

5.4 Cutter manual-resetting

When one of the following cases occurs, cutter manual-resetting should be done.

- 1) The cutter can't cut off the paper and fails to reset; cutter doesn't act when pressing CUT button.
- 2) Paper jams due to reset failure of cutter. Press CUT button, but cutter doesn't act.

Reset cutter manually in the following steps:

- 1) Turn off printer power.
- 2) Use cross screwdriver to remove the three M3 screws according to the printer figure **5.4.1 Cutter manual-resetting** as below, remove motor gear protective board cover.
- 3) Use cross screwdriver to rotate motor shaft according to the printer figure 5.4.1 as below, push cutter

guider forward (or there is big gap between upper and lower blade) .

- 4) Check whether the cutting operation is normal or not after adjustment. If not so, redo the adjustment according to the previous step.
- 5) Install the motor gear protective board cover when the cutting operation is normal.

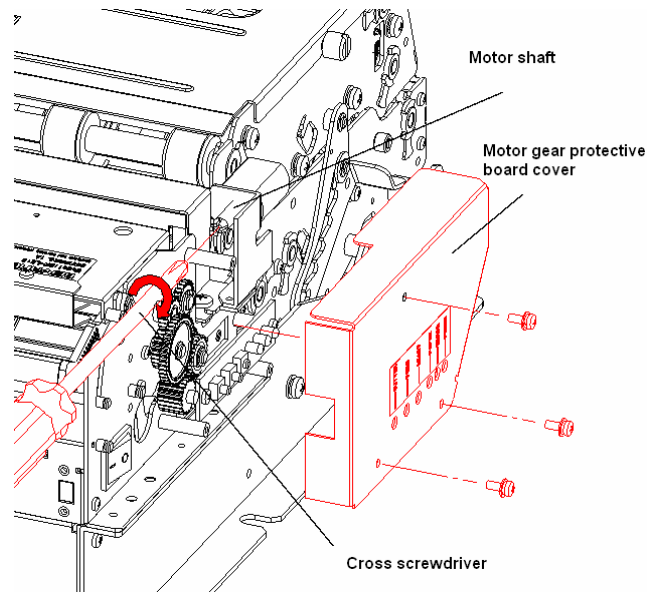


Figure 5.4.1 Cutter manual-resetting

5.5 Manual removal of the jammed paper (Bundler part)

When any of the following errors of Bundler part occurs, please remove jammed paper manually.

- 1) Paper is folded inside the Bundler and can not continue to forward.
- 2) Paper out operation is abnormal at the Bundler paper out exit.
- 3) Paper back operation is abnormal at the Bundler paper back exit.

Remove jammed paper in the following steps:

- 1) Open Bundler upper path, open the Bundler upper cover if necessary.
- 2) Rotate the hand-wheel on the right side of the Bundler, clear the jammed paper or manually take out the paper by hand.
- 3) Close the Bundler upper path and Bundler upper cover.

5.6 Manual removal of the jammed paper (Printing part)

When any of the following errors occurs, please remove jammed paper manually.

- 1) Paper is jammed between platen roller and cutter holder.
- 2) Paper accumulates at paper inlet of the cutter in the front of print head.
- 3) The cutter can't cut off paper.

Remove jammed paper in the following steps:

- 1) Open printer upper cover.
- 2) Pull out the jammed part of paper; if the cutter couldn't be reset, please refer to figure **5.4.1 Cutter manual-resetting** to reset the cutter.
- 3) Cut off the folded part of paper.

4) Reload the paper.

6. Interface signal

6.1 RS-232 Interface

6.1.1 Parameters

- Data transmission mode : Asynchronous serial communication
- Handshaking: RTS/ CTS,DTR/DSR
- Level: MARK = -3 to -15 V: Logic "1"/ OFF
SPACE = +3 to +15 V: Logic "0"/ ON
- Baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600,115200 bps
- Data bit: 8 bit or 7bit
- Parity bit: None, even, or odd
- Stop bit: 1bit
- connector : 9 pins serial connector(Female)



Caution: Baud rate, data bit and parity bit are set by EEPROM.

6.1.2 Interface signal assignment and function

Signal function is described as the following table:

PIN NO	Signal name	Signal direction	function
1	NO		
2	RXD	input	Data input terminal
3	TXD	output	Data output terminal
4	DTR	output	Data terminal is ready
5	SG	—	Signal ground
6	DSR	hang	Data device is ready
7	RTS	output	Request to send
8	CTS	input	Allow to send
9	FG	—	Printer cover grounding

Table 6.1.1 Signal function

6.2 IEEE1284 Parallel interface (optional)

RS-232 serial interface is the standard interface of the printer, and IEEE 1284 Parallel interface is the optional one, and works in compatible mode (For interface position, please refer to figure [3.5.1 Parallel interface configuration model](#)).

6.2.1 Parameters

- Data transmission: 8 bits Parallel
- Synchronization mode: nStrobe signal is provided by exterior
- Handshaking: Busy signal

Signal level: TTL compatible

Connector: 36 pins Centronics connector (IEEE1284 compliant)

6.2.2 The influence of printer status to parallel interface (/FAULT pin and PE pin)

Status	/FAULT	PE
Normal	high	low
Paper end	low	high
Print head Overheated	low	low
Upper cover open	low	low
Cutter error	low	low

Table 6.2.1 /FAULT pin and PE pin explanation

When above errors occur, information can be obtained by reading the status of correlative pins of parallel interface.

6.2.3 Parallel interface signal

Pin No.	Source	Compatible mode
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 Ground
17		Chassis Ground
18	P	Peripheral Logic High
19		Signal Ground (nStrobe)
20		Signal Ground (Data 0)
21		Signal Ground (Data 1)
22		Signal Ground (Data 2)
23		Signal Ground (Data 3)
24		Signal Ground (Data 4)
25		Signal Ground (Data 5)
26		Signal Ground (Data 6)
27		Signal Ground (Data 7)

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

Table 6.2.2 Parallel interface signal definition

Note: (1) H stands for host computer terminal, and P stands for printer terminal.

(2) Parallel Interface Signal use TTL voltage level. When it is used, please make sure both the rise and drop time of host computer terminal is not longer than 0.5us.

(3) When data transfers, the host computer should not ignore the busy signal, or else the print data may be lost.

(4) The length of parallel interface connection wire should be as short as possible if it meets use requirement.

6.2.4 Time sequence of data receiving

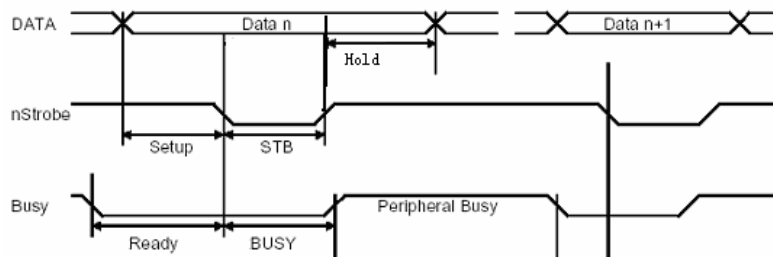


Figure 6.2.1 Time sequence of parallel interface data receiving

Signal time demands:

Signal	Min.(ns)	Max.(ns)
setup	0.75	-
ready	0	-
stb	0.75	500
busy	0	2.5
hold	0.75	-

Table 6.2.3 Demand explanation of interface signal

6.3 USB interface (optional)

RS-232 serial interface is the standard interface of the printer, and USB interface is an optional one which is compliant to USB 1.1 protocol standard, and work in full speed mode (For interface position, please refer to figure 3.12 USB interface configuration model). Data transfer bit rate is 12Mbps.USB transfers signal and power by a kind of four-line cable. D+ and D- connection wires in figure 6.3.1 are

used to send signal.

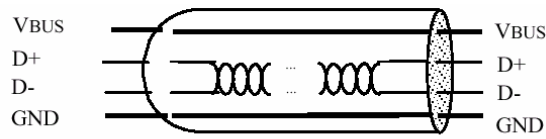


Figure 6.3.1 USB Cable

6.4 Power interface

This connector is used to connect the printer with external power supply.

The pin distribution of power connector:

PIN	Signal name
1	+24V
2	GND
3	NC
SHELL	F.G.

Table 6.5 Power pin definition explanation

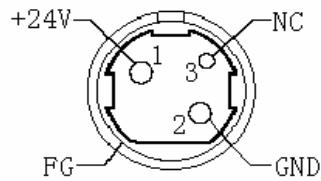


Figure 6.3 Power supply pins

7. Troubleshooting and maintenance

7.1 Frequency Problems

7.1.1 Problems during paper loading

Problem	Possible reasons	Solution
Paper roll can't be loaded into paper holder.	<ul style="list-style-type: none"> ✧ The paper roll width and diameter do not meet the requirements of the printer 	<ul style="list-style-type: none"> ✧ Replace the paper
The printer can't feed paper automatically.	<ul style="list-style-type: none"> ✧ Paper head is irregular ✧ Paper jams ✧ The paper load sensor is not covered by paper head ✧ Dust or wastepaper covers the paper load sensor 	<ul style="list-style-type: none"> ✧ Clear wastepaper according to requires ✧ Remove jammed paper; ✧ Check the front end of paper to confirm that the paper load sensor is covered fully by paper; ✧ Clean the paper load sensor.
The buzzer alarms	<ul style="list-style-type: none"> ✧ Paper is end ✧ The printer cover is not fully closed. 	<ul style="list-style-type: none"> ✧ Replace the paper roll. ✧ Close printer upper cover fully.
After auto paper feeding ,the paper can't stop in the normal printing position	<ul style="list-style-type: none"> ✧ Dust or wastepaper covers the paper load sensor 	<ul style="list-style-type: none"> ✧ Clean the paper load sensor.

Table 7.1.1 Paper feeding problem index

7.1.2 Problems during printing

Problem	Possible reasons	Solution
The receipt can't be ejected out smoothly.	<ul style="list-style-type: none"> ✧ Paper jams 	<ul style="list-style-type: none"> ✧ Open upper cover and Bundler upper cover, check paper path, remove wastepaper and reload paper automatically.
Printout is not clear.	<ul style="list-style-type: none"> ✧ The thermal paper is loaded in wrong direction or it's of poor quality. ✧ Print head needs cleaning. ✧ Printing darkness is too low. ✧ Input voltage is too low. 	<ul style="list-style-type: none"> ✧ Make sure the paper roll is loaded correctly ✧ Use recommended paper or its equivalents. ✧ Clean the print head. ✧ Adjust print darkness(*) ✧ Use the power supply which meets requires
Cutter works abnormally.	<ul style="list-style-type: none"> ✧ Paper jams in cutter. ✧ The cutter is broken. 	<ul style="list-style-type: none"> ✧ Check if there are sundries in cutter path (*). ✧ Contact with the manufacturer or your local distributor.
Printing data is lost and no printing.	<ul style="list-style-type: none"> ✧ The printer cover is closed improperly. ✧ Paper jams. 	<ul style="list-style-type: none"> ✧ Close printer upper cover properly. ✧ Remove paper jam

Table 7.1.2 Printing problem index

*To adjust print darkness, and contact with our distributors or manufacturer.

*If paper jams in cutter, please remove the jammed paper first, and then press CUT button to reset the cutter.

7.1.3 Problems during Bundler paper out

Problem	Possible reasons	Solution
The printer stops printing and warns errors during printing.	<ul style="list-style-type: none"> ◇ Paper is end. ◇ Paper jams in cutter. ◇ Paper jams in Bundler. 	<ul style="list-style-type: none"> ◇ Install a new paper roll. ◇ Check if there are sundries in cutter path. ◇ Clean jammed paper in Bundler.

Table 7.1.3 Problem of paper out index

7.1.4 Other problems

Problem	Possible reasons	Solution
LED isn't light and printer doesn't work.	<ul style="list-style-type: none"> ◇ The printer is not connected with the power supply correctly. ◇ The printer isn't turned on. 	<ul style="list-style-type: none"> ◇ Connect the printer with the power supply correctly. ◇ Turn on the printer.
The printer doesn't work after receiving commands.	<ul style="list-style-type: none"> ◇ Printer is in error status. ◇ The communication cable is not connected well. ◇ Interface setting is wrong. 	<ul style="list-style-type: none"> ◇ Remove all errors (*). ◇ Print a self-test page and set the interface again according to information on it. ◇ Make sure the communication cable is connected correctly.

Table 7.1.4 Other problems index

*Note: Paper near end alarm acts only as a prompt for users, not error status. Therefore when this alarm is given, printing task can still be sent.

Appendix

Appendix 1 Self-test page

Print self-test page in the following steps: Turn off printer power, then hold down the FEED button for at least 1 second while turning on the printer. The printer will start to print a self-test page. (Take 200 dpi and serial plus USB interface model as an example), the self test paper is shown as follows:

BK-S2162 TEST FORM

Boot Firmware	:FV1.010
Main Firmware	:FV1.000
H/W Parameters	
H/W ID	:BK-S2162(U) 1
Flash Memory Size	:1M bytes
Flash Logos Size	:64k bytes
Resolution	:300×300DPI
Print Width (Max)	:216mm
Fixed Left Margin	:0mm
Fixed Right Margin	:0mm
Print Speed (MAX)	:100mm/s
Dark Scale	:110
Cutter	:Enabled
Bundler	:Enabled
Bundelr Mode	:Command Control
Communication Interface	
Rx Buffer Size	:4096 bytes
Interface Type1	:RS232
Baud Rate	:38400bps
Data Bits	:8
Stop Bits	:1
Parity	:NONE
Flow Control	:DTR/DSR
Command CR	:Ignored
Data Receive Error	:Print '?'
Interface Type2	:USB_BK-S216_1
Resident Fonts	
Font0(12X24)	:English
Font1(9X17)	:English
Code Pages	:437,850,852
	:858,860,863
	:865,866,1252
	:Katakana

International Character	:U.S.A
:France	
:Germany	
:U.K.	
:Denmark I	
:Italy	
:Spain I	
:Japan	
:Norway	
:Denmark II	
:Spain II	
:Latin America	
Bar Code Available	:UPC-A
	:UPC-E
	:EAN-8
	:EAN-13
	:CODE 39
	:CODE 93
	:ITF
	:CODABAR
	:CODE128
	:PDF417

Explanation of self test page content:

Boot Firmware	: Printer BOOTLOADER version
Main Firmware	: Printer monitor program version
H/W Parameters	: Printer parameter setting
H/W ID	: Printer ID setting
Flash Memory Size	: Printer FLASH size
Flash Logos Size	: Flash size for bitmap downloading
Resolution	: Printer resolution
Valid Print Width (Max)	: Maximum print width
Print Speed (MAX)	: Print speed
Dark Scale	: Print darkness
Cutter	: Enable or disable auto cutter
Bundler	: Enable or disable Bundler
Bundler mode	: Bundler paper out mode
Comm. Interface	: Communication interface setting
Rx Buffer Size	: Data receiving buffer zone size
Interface Type1	: Interface type
Baud Rate	: Serial communication baud rate setting
Data Bit	: Serial communication data bit setting
Stop Bit	: Serial communication stop bit setting
Parity	: Serial communication parity bit setting
Flow Control	: Serial communication data stream mode (handshaking type)
Interface Type2	: The second interface type

Command CR	: Enable or disable CR command
Resident Fonts	: Font setting
Standard Character	: Standard Character setting
Compressed Character	: Compressed Character setting
Simplified Chinese	: Big character set setting
Bar Code Available	: Printable barcode model

Appendix 2 Tools

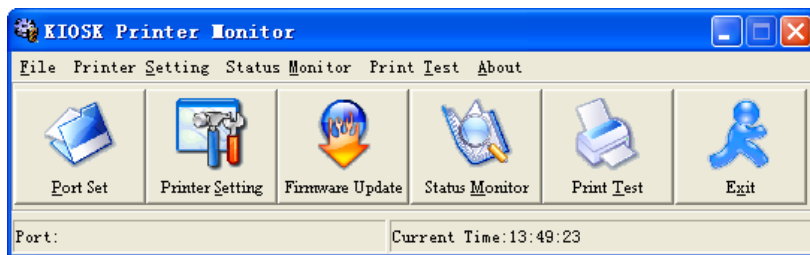
For BK-s216 printers, we provide the flowing tools: configuration software, debug software, demo software, download

/upgrade program software and LOGOKIT tool. Their brief introduction is as follows.

Appendix 2.1 Demo program

The demo program software is BKMonitor, and its main function includes:

Firmware update, Printer status monitor, Sample printing demo. It supports the following system platforms: WINDOWS2000/XP/2003. The flowing is the main interface figure of BKMonitor. (For detailed explanation, please refer to the explanation document in the tool software package)



Appendix Figure 2.1.1 BKMonitor interface

Appendix 2.2 KIOSKUtility Tool

The main function of includes:

Firmware update, Logo bitmap downloading and printing demo, Codepage editing and downloading, sample printing demo. It supports the following system platforms: WINDOWS2000/XP/2003. The flowing is the main interface figure of KIOSKUtility. (For detailed explanation, please refer to the explanation document in the tool software package)



Appendix Figure 2.1.2 KIOSKUtility interface