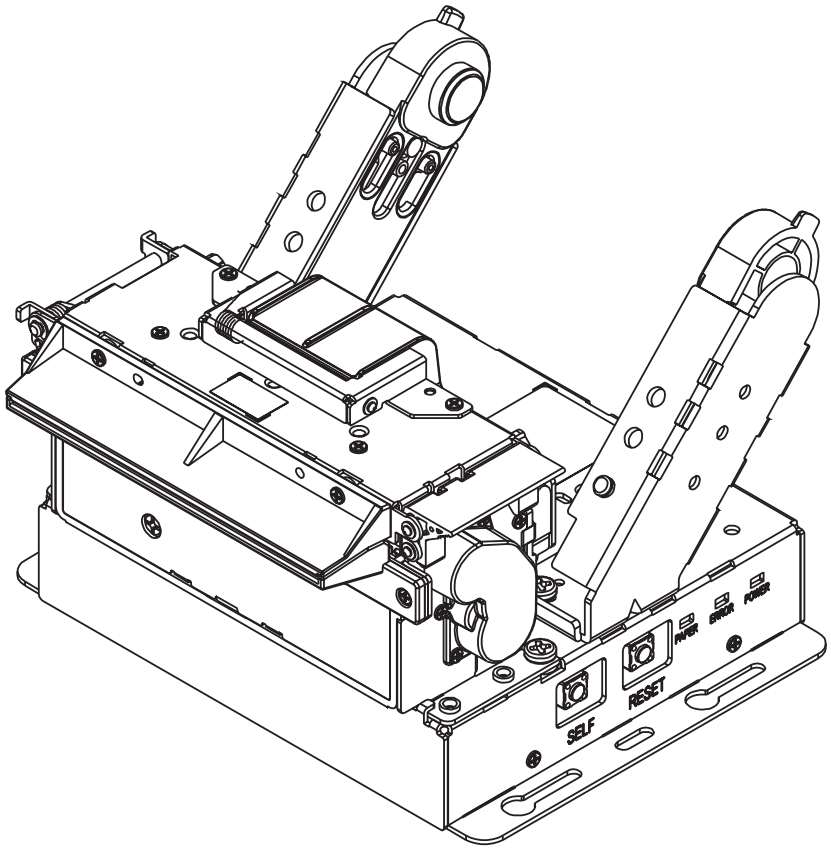
BIXOLON®

# User's Manual

# BK3-31

## KIOSK PRINTER

## Rev. 1.02




http://www.bixolon.com

# Product Approval Sheet

| | |
|---|---|
| **Product Name** | **BK3-31** |
| **Manufacturer** | **BIXOLON** |
| **Product Specifications** | **BK3-31 User's Manual Rev.1.02** |
| **Customer** | |
| **Approved Date** | |
| **Approver** | |
| **Signature** | |

**※ Be sure to read the warnings and cautions (⚠) in the instruction manual.**

# Introduction

BK3-31 printers have been designed to be connected to various types of kiosk system.

**※ The main features of the printer**

1. KIOSK PRINTER
2. Low-noise thermal transfer method printing
3. Maximum 250mm/s printing speed
4. External size
   - Diameter Φ 80: 130 x 130 x 91 (W x D x H)
   - Diameter Φ 102: 130 x 137 x 99 (W x D x H)
   - Diameter Φ 120: 130 x 144 x 105 (W x D x H)
5. Serial/USB communication
6. Equipped with data buffer (receives print data even while printing)
7. Can print a range of barcodes
8. Range of printing density selectable(controlled with virtual memory switch management)

It is advisable to read the contents of this manual carefully before using the printer for the first time.

**※ Use only authorized supplies that can be trusted!**

- We are not responsible for quality and service for damage caused by the use of unauthorized products (or recycled ones).

# Safety Information

⚠ ***Warning***: Warnings must be heeded carefully in order to prevent serious physical harm.

⚠ ***Caution***: Cautions must be heeded in order to prevent minor injuries, equipment damage, or data loss.

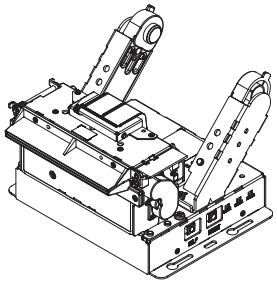
# Table of Contents

# 1. Installing Printer and Getting Started

## 1-1 Unpacking

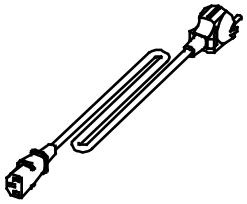
• Check the following contents list, and contact your dealer for assistance if any item is missing or incorrect.

**- Product**

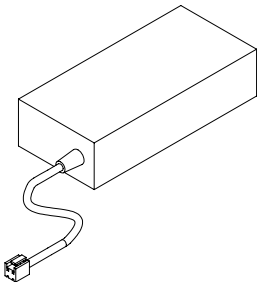


BK3-31

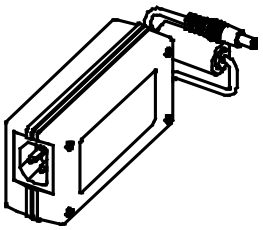
**- Optional Components**



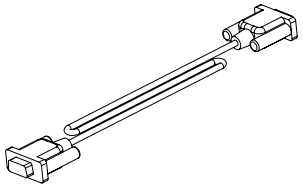
Power Cord



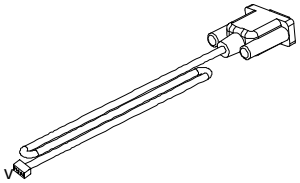
AC/DC Adaptor(2P)



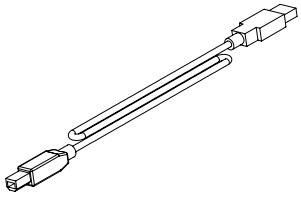
AC/DC Adaptor(DC-Jack)



Serial Cable
(9pin - 9pin)



Connecter Cable
(5pin – 9pin)

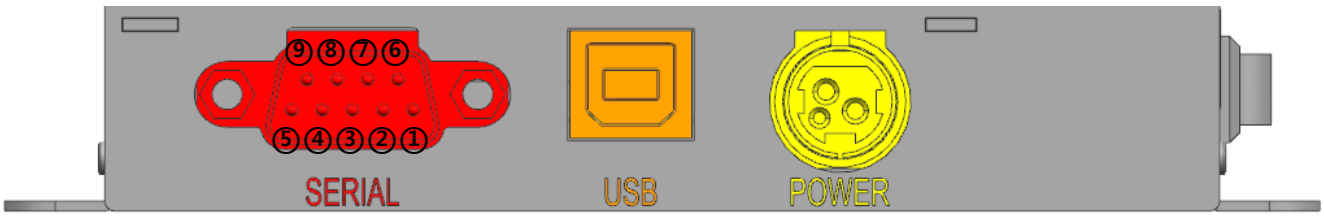


USB A-B Cable

## 1-2 Interface and Power port

• Connect the printer to the host computer using the right interface cable that complies with the specifications of the interface

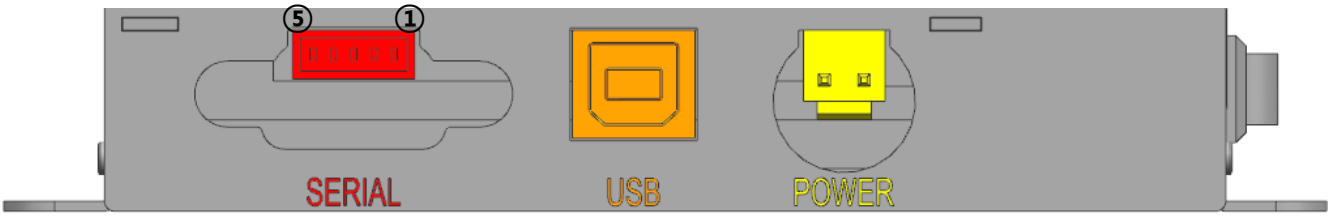
### 1-2-1 Serial Interface: Dsub 9P Type (RS-232C)




**Serial Cable Port** **USB Port** **Power Port**

| DSUB 9pin Pin No. | Signal Name | Direction | Function |
|---|---|---|---|
| 1 | NC | - | - |
| 2 | RxD | Input | Receive Data |
| 3 | TxD | Output | Transmit Data |
| 4 | DTR | Output | Data Terminal Ready |
| 5 | GND | - | Signal Ground |
| 6 | DSR | Input | Data Set Ready |
| 7 | RTS | Output | Ready To Send |
| 8 | CTS | Input | Clear To Send |
| 9 | NC | - | - |

### 1-2-2 Serial Interface: Connector 5P Type (RS-232C)



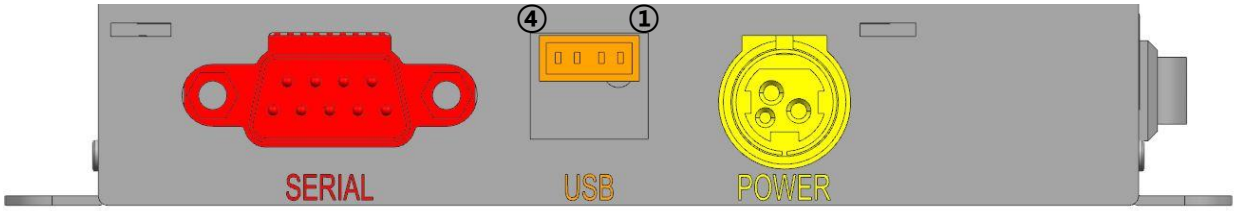

**Connector Cable Port** **USB Port** **Power Port**

| DSUB 9pin Pin No. | Signal Name | Direction | Function |
|---|---|---|---|
| 1 | CTS | Input | Clear To Send |
| 2 | RxD | Input | Receive Data |
| 3 | TxD | Output | Transmit Data |
| 4 | RTS | Output | Ready To Send |
| 5 | GND | - | Signal Ground |

| ⚠ *Caution* | **After turning off the power switch of printer, connect and disconnect the communication cable.** |
|---|---|

※ Connector Part Number: 20017WR-05A00, Manufacturer: YEONHO Electronics

1-2-3 USB Interface: Connector 4P Type

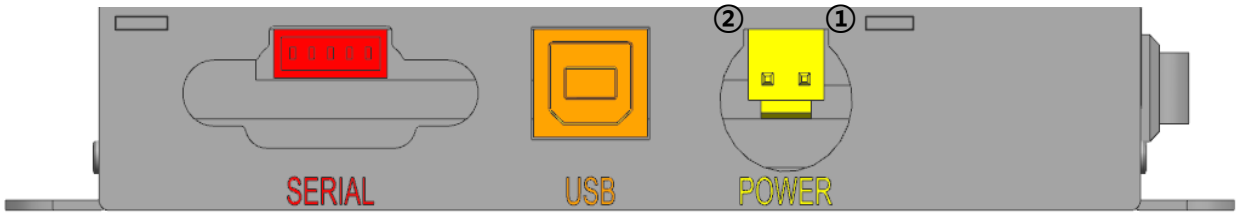



**Serial Cable Port** **USB Port** **Power Port**

| Pin No | Signal Name | Function |
|---|---|---|
| 1 | D- | Data Line |
| 2 | D+ | Data Line |
| 3 | GND | Signal Ground |
| 4 | VBUS | Host Power |

※ Connector Part Number: 20017WR-04, Manufacturer: YEONHO Electronics

1-2-4 Power Port: Connector 2P Type




**Connector Cable Port** **USB Port** **Power Port**

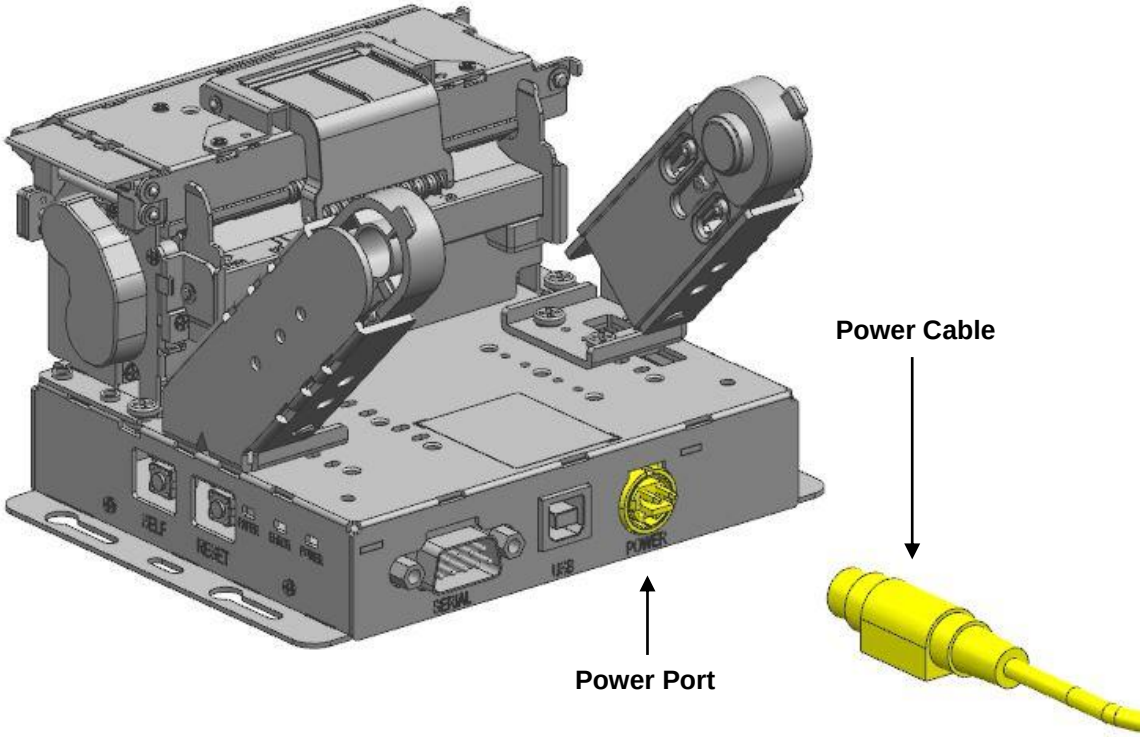
| Pin No | Signal Name | Function |
|---|---|---|
| 1 | VCC | Power(24Vdc) |
| 2 | GND | Signal Ground |

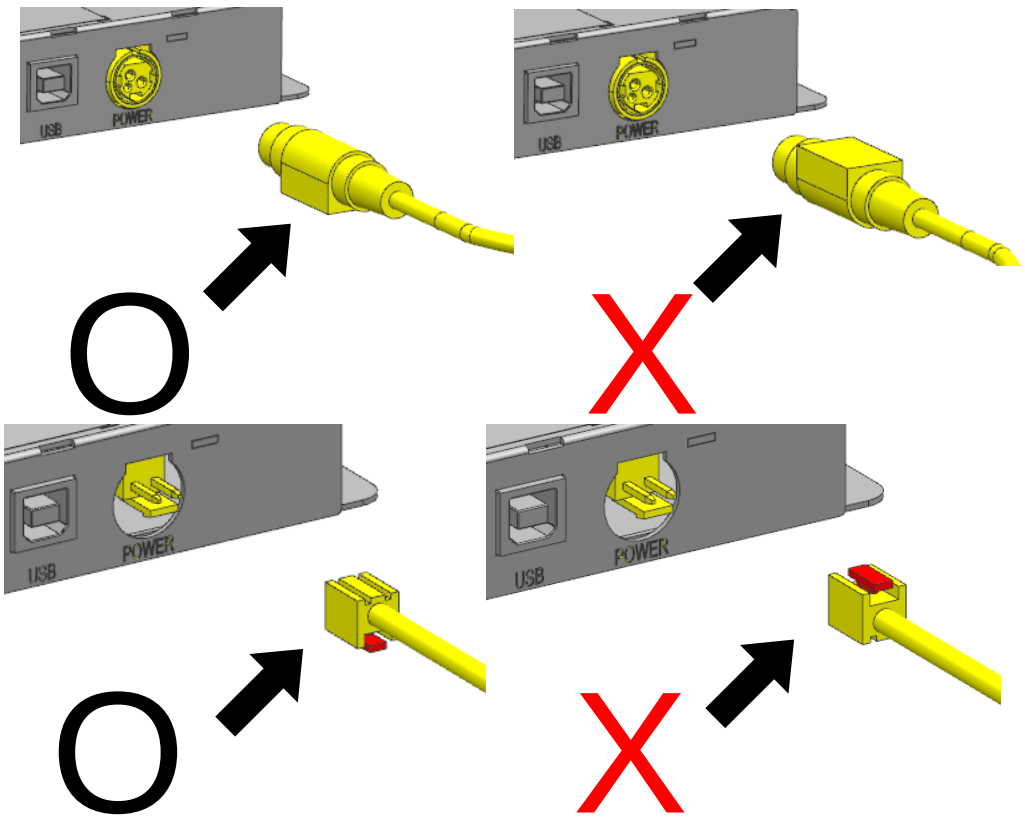
※ Connector Part Number: YH396-02, Manufacturer: YEONHO Electronics

## 1-3 Power Supply Port and Connecting Power Supply

1) Make sure the product is turned off before connecting the power supply.

2) Connect the power cable with the flat side pointing downward of the printer, as shown in the diagram below.



| | |
|---|---|
| ⚠ ***Caution*** | - Only use a power supply provided by Bixolon. Bixolon shall bear no responsibility for damage caused by using a third-party power supply.<br>- Check the power supply's label to check its electronic specs.<br>- When removing the power supply, make sure you have a firm grasp of the plug terminal of the power cable and the printer and pull horizontally.<br>- When connecting or disconnecting power, make sure to remove the power supply from the power outlet before removing.<br>- Pay attention to the direction in which you insert the power cable.<br>  |
| ⚠ ***Warning*** | **Do not connect a voltage out of the specifications of the power supply. It can cause damage to the product or a fire.** |

## 1-4 Reconfiguration of Printer

• This product supports dip switch. In order to change the product settings, change the dip switch setting or use the virtual memory switch utility. Use virtual memory switch management function for self-diagnosis.

1-4-1 DIP Switch 1

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1-1 | Baud rate selection (bps) | * Refer to following Table 1 | | OFF |
| 1-2 | | | | OFF |
| 1-3 | Ticket mode | Enable | Disable | OFF |
| 1-4 | Black mark mode | Enable | Disable | OFF |

* Table 1 – Baud rate (bps) selection

| Baud rate (bps) | 1-2 | 1-1 | Default |
|---|---|---|---|
| 115,200 | OFF | OFF | 115,200 |
| 38,400 | OFF | ON | |
| 19,200 | ON | OFF | |
| 9,600 | ON | ON | |

* Flow control, data length, and parity bits can be changed via virtual memory switch settings. (Refer to MSW 8).

1-4-2 MSW (Memory Switch)

1) MSW 1

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1-1 | Select print speed | * Refer to following Table 2 | | OFF |
| 1-2 | | | | OFF |
| 1-3 | | | | OFF |
| 1-4 | - | - | - | OFF |
| 1-5 | - | - | - | OFF |
| 1-6 | Select print density | * Refer to following Table 3 | | OFF |
| 1-7 | | | | OFF |
| 1-8 | | | | OFF |

* Table 2 – Print speed selection

| Print speed | | 1-3 | 1-2 | 1-1 | Default |
|---|---|---|---|---|---|
| Receipt mode | Ticket mode | | | | |
| 250mm/s | 130mm/s | OFF | OFF | OFF | Receipt : 250mm/s<br>Ticket : 130mm/s |
| 230mm/s | | OFF | OFF | ON | |
| 200mm/s | | OFF | ON | OFF | |
| 170mm/s | | OFF | ON | ON | |
| 150mm/s | | ON | OFF | OFF | |
| 130mm/s | | ON | OFF | ON | |
| 120mm/s | 120mm/s | ON | ON | OFF | |
| 100mm/s | 100mm/s | ON | ON | ON | |

* Table 3 – Print Density Selection

| Print Density | | 1-8 | 1-7 | 1-6 | Default |
|---|---|---|---|---|---|
| Receipt mode | Ticket mode | | | | |
| - | Density Level 6 (Darkest) | ON | OFF | ON | Density Level 4 |
| - | Density Level 5 | ON | OFF | OFF | |
| Density Level 4 (Darkest) | Density Level 4 | OFF | OFF | OFF | |
| Density Level 3 | Density Level 3 | OFF | OFF | ON | |
| Density Level 2 | Density Level 2 | OFF | ON | OFF | |
| Density Level 1 | Density Level 1 | OFF | ON | ON | |

2) MSW 2

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 2-1 | Specification for destination | Double byte country | Single byte country | OFF |
| 2-2 | - | - | - | OFF |
| 2-3 | Code page selection | * Refer to following Table 4 | | OFF |
| 2-4 | | | | OFF |
| 2-5 | | | | OFF |
| 2-6 | | | | OFF |
| 2-7 | | | | OFF |
| 2-8 | | | | OFF |

* Table 4 – Code page selection

| 2-8 | 2-7 | 2-6 | 2-5 | 2-4 | 2-3 | Character Table | |
|---|---|---|---|---|---|---|---|
| OFF | OFF | OFF | OFF | OFF | OFF | Page 0 | 437 (USA, Standard Europe) |
| OFF | OFF | OFF | OFF | ON | OFF | Page 1 | Katakana |
| OFF | OFF | OFF | ON | OFF | OFF | Page 2 | 850 (Multilingual) |
| OFF | OFF | OFF | ON | ON | OFF | Page 3 | 860 (Portuguese) |
| OFF | OFF | ON | OFF | OFF | OFF | Page 4 | 863 (Canadian-French) |
| OFF | OFF | ON | OFF | ON | OFF | Page 5 | 865 (Nordic) |
| OFF | OFF | ON | ON | OFF | OFF | Page 16 | 1252 (Latin I) |
| OFF | OFF | ON | ON | ON | OFF | Page 17 | 866 (Cyrillic #2) |
| OFF | ON | OFF | OFF | OFF | OFF | Page 18 | 852 (Latin 2) |
| OFF | ON | OFF | OFF | ON | OFF | Page 19 | 858 (Euro) |
| OFF | ON | OFF | ON | OFF | OFF | Page 21 | 862 (Hebrew DOS code) |
| OFF | ON | OFF | ON | ON | OFF | Page 22 | 864 (Arabic) |
| OFF | ON | ON | OFF | OFF | OFF | Page 23 | Thai42 |
| OFF | ON | ON | OFF | ON | OFF | Page 24 | 1253 (Greek) |
| OFF | ON | ON | ON | OFF | OFF | Page 25 | 1254 (Turkish) |
| OFF | ON | ON | ON | ON | OFF | Page 26 | 1257 (Baltic) |
| ON | OFF | OFF | OFF | OFF | OFF | Page 27 | Farsi |
| ON | OFF | OFF | OFF | ON | OFF | Page 28 | 1251 (Cyrillic) |
| ON | OFF | OFF | ON | OFF | OFF | Page 29 | 737 (Greek) |
| ON | OFF | OFF | ON | ON | OFF | Page 30 | 775 (Baltic) |
| ON | OFF | ON | OFF | OFF | OFF | Page 31 | Thai14 |
| ON | OFF | ON | OFF | ON | OFF | Page 32 | Hebrew Old code |
| ON | OFF | ON | ON | OFF | OFF | Page 33 | 1255 (Hebrew New code) |
| ON | OFF | ON | ON | ON | OFF | Page 34 | Thai11 |
| ON | ON | OFF | OFF | OFF | OFF | Page 35 | Thai18 |
| ON | ON | OFF | OFF | ON | OFF | Page 36 | 855 (Cyrillic) |
| ON | ON | OFF | ON | OFF | OFF | Page 37 | 857 (Turkish) |
| ON | ON | OFF | ON | ON | OFF | Page 38 | 928 (Greek) |
| ON | ON | ON | OFF | OFF | OFF | Page 39 | Thai16 |
| ON | ON | ON | OFF | ON | OFF | Page 40 | 1256 (Arabic) |
| ON | ON | ON | ON | OFF | OFF | Page 41 | 1258 (Vietnam) |
| ON | ON | ON | ON | ON | OFF | Page 42 | Khmer (Cambodia) |
| OFF | OFF | ON | OFF | OFF | ON | Page 47 | 1250 (Czech) |
| OFF | OFF | ON | ON | ON | ON | Page 49 | TCVN-3 |
| OFF | ON | OFF | OFF | OFF | ON | Page 50 | TCVN-3 (Capital) |
| OFF | ON | OFF | OFF | ON | ON | Page 51 | VISCII |

3) MSW 3

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1 | Select emulation | * Refer to following Table 5 | | OFF |
| 2 | | | | OFF |
| 3 | | | | OFF |
| 4 | - | - | - | OFF |
| 5 | Printing mode for Thai character | 3 PASS | 1 PASS | OFF |
| 6~8 | - | - | - | OFF |

* Table 5 – Emulation selection

| Emulation | 3-3 | 3-2 | 3-1 | Remark |
|---|---|---|---|---|
| Emulation 1 | OFF | OFF | OFF | |
| Emulation 2 | OFF | OFF | ON | BXL / POS |
| Emulation 3 | OFF | ON | OFF | |
| Emulation 4 | OFF | ON | ON | |
| Emulation 5 | ON | OFF | OFF | |

* Supports all Bixollon software only when set to Emulation 2 (BXL / POS).

4) MSW 4

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1 | Swap font B and C | Enable | Disable | OFF |
| 2 | Printer buffer initialization | Enable | Disable | OFF |
| 3 | Single byte font selection (Default font) | * Refer to following Table 6 | | OFF |
| 4 | | | | OFF |
| 5~8 | - | - | - | OFF |

* Table 6 – Single byte Font Selection

| Single byte font selection | 4-4 | 4-3 | Default |
|---|---|---|---|
| Font A (12 x 24) | OFF | OFF | Font A |
| Font B (9 x 17) | OFF | ON | |
| Font C (9 x 24) | ON | OFF | |
| - | ON | ON | |

* The printer buffer initialization function works when the printer cover is opened and closed.

5) MSW 5

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1 | Auto cutter selection | * Refer to following Table 7 | | OFF |
| 2 | | | | OFF |
| 3 | Paper save mode | * Refer to following Table 8 | | OFF |
| 4 | | | | OFF |
| 5 | Paper save mode cutting correction | Enable | Disable | OFF |
| 6 | Auto line feed (CR mode) | Enable (LF) | Disable (Ignore) | OFF |
| 7 | - | - | - | OFF |
| 8 | Near-end sensor | Disable | Enable | OFF |

* Table 7 – Auto Cutter Selection

| Auto Cutter Selection | 5-2 | 5-1 | Remark |
|---|---|---|---|
| Full cut | OFF | OFF | Default |
| Partial cut | OFF | ON | |
| Programmable cut | ON | OFF | |
| No cut | ON | ON | |

* Programmable cut is operated according to the parameters of GS V command, while others operate as partial cut.
* Regardless of settings, only Full-Cut is supported for Ticket-mode.

* Table 8 – Paper save mode

| Paper save mode | 5-4 | 5-3 | Remark |
|---|---|---|---|
| Disable | OFF | OFF | Default |
| Level 1 | OFF | ON | |
| Level 2 | ON | OFF | |
| Level 3 | ON | ON | |

6) MSW 6

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1~8 | - | - | - | OFF |

7) MSW 7

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1 | Print width selection | * Refer to following Table 9 | | OFF |
| 2 | | | | OFF |
| 3 | - | - | - | OFF |
| 4 | - | - | - | OFF |
| 5 | - | - | - | OFF |
| 6 | - | - | - | OFF |
| 7 | black mark sensor selection | Right | Left | OFF |
| 8 | - | - | - | OFF |

* Black mark sensor selection applies only when DIP switches 1-4 are ON.
* Select sensor from paper exit as standard.

* Table 9 – Print width selection

| Print width | 7-2 | 7-1 | Default |
|---|---|---|---|
| 72mm (576dot) | OFF | OFF | 72mm |
| 54mm (432dot) | OFF | ON | |
| 48mm (384dot) | ON | OFF | |
| 12mm (96dot) | ON | ON | |

* Regardless of settings, only 54mm width is supported for Ticket-mode.

8) MSW 8

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1 | Data length | 7 bit | 8 bit | OFF |
| 2 | Parity check | YES | NO | OFF |
| 3 | Parity selection | EVEN | ODD | OFF |
| 4 | Data receive error | Ignore | Print “?” | OFF |
| 5 | Baud rate selection | * Refer to following Table 10 | | OFF |
| 6 | | | | OFF |
| 7 | | | | OFF |
| 8 | Serial interface selection | Memory Switch | DIP Switch | OFF |

* The memory switch setting for 8-5 to 7 (Baud rate selection) applies only when memory switch 8-8 is ON.
* The setting for DIP switch is not considered when memory switch 8-8 is ON.

* Table 10 - Baud rate selection

| Baud rate | 8-7 | 8-6 | 8-5 | Default |
|---|---|---|---|---|
| 115,200bps | OFF | OFF | OFF | 115,200bps |
| 57,600bps | OFF | OFF | ON | |
| 38,400bps | OFF | ON | OFF | |
| 19,200bps | OFF | ON | ON | |
| 9,600bps | ON | OFF | OFF | |
| 4,800bps | ON | OFF | ON | |
| 2,400bps | ON | ON | OFF | |
| 115,200bps | ON | ON | ON | |

9) MSW 9

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1 | Serial communication flow control | * Refer to following Table 11 | | OFF |
| 2 | | | | OFF |
| 3~8 | - | - | - | OFF |

* Table 11 - Serial communication flow control

| Serial communication flow control | 9-2 | 9-1 | Default |
|---|---|---|---|
| Hardware(DTR/DSR) | OFF | OFF | Hardware (DTR/DSR) |
| Software(XON/XOFF) | OFF | ON | |
| None | ON | OFF | |
| Hardware(DTR/DSR) | ON | ON | |

10) MSW 10

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1~8 | - | - | - | OFF |

11) MSW 11

| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1~8 | - | - | - | OFF |

12) MSW 12

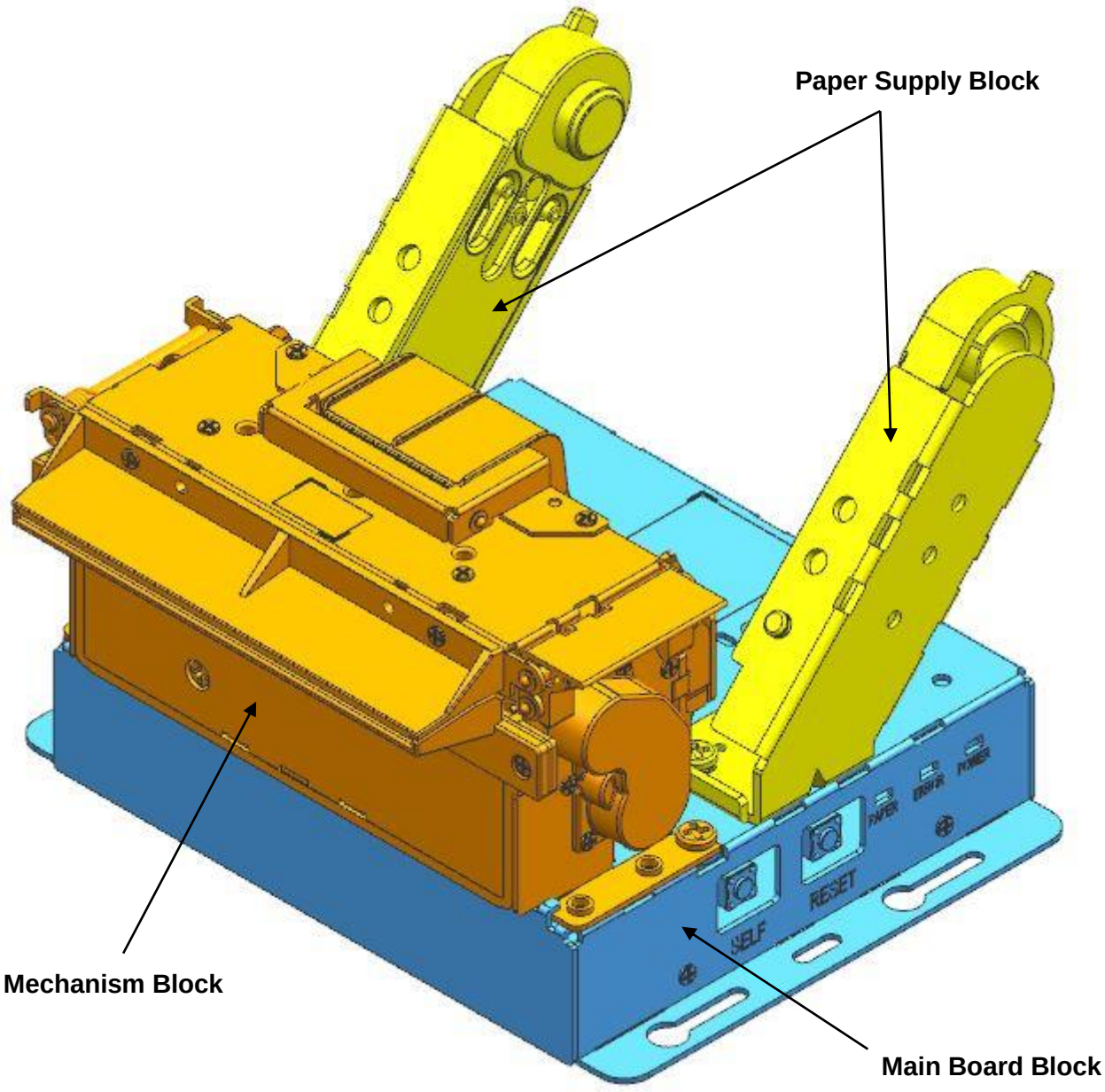
| Switch | Function | ON | OFF | Default |
|---|---|---|---|---|
| 1 | Select double byte country | * Refer to following Table 12 | | OFF |
| 2 | | | | OFF |
| 3 | | | | OFF |
| 4~8 | - | - | - | OFF |

* Table 12 - Select double byte country

| Select double byte country | 12-3 | 12-2 | 12-1 | Remark |
|---|---|---|---|---|
| STD | OFF | OFF | OFF | Single byte font |
| KOR | OFF | OFF | ON | KS5601 |
| CHN | OFF | ON | OFF | BIG5 or GB2312 |
| JPN | OFF | ON | ON | SHIFT-JIG |

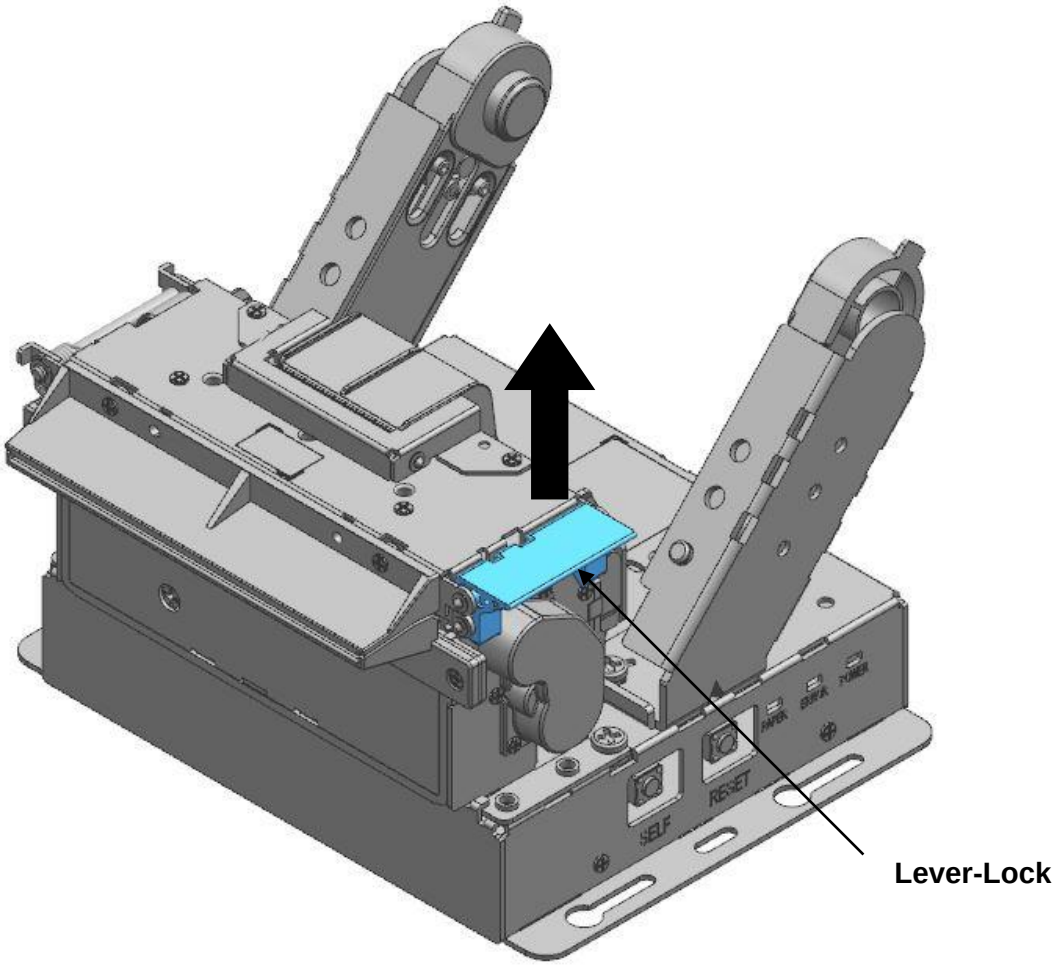
| | |
|---|---|
| ⚠ ***Note*** | - Use unified utility or self-test mode to change the virtual memory switch setting.<br>- Refer to the utility and service manual for more information. |
| ⚠ ***Caution*** | Make sure to turn the printer off and on again after using the virtual memory switch utility to adjust the settings of the product. To change the DIP switch setting, turn off the printer power. Changing the DIP switch setting while the power is on may cause a short circuit and result in printer malfunction.<br>* Supports all Bixollon software only when set to Emulation 2 (BXL / POS). |

## 1-5 Product Part Names



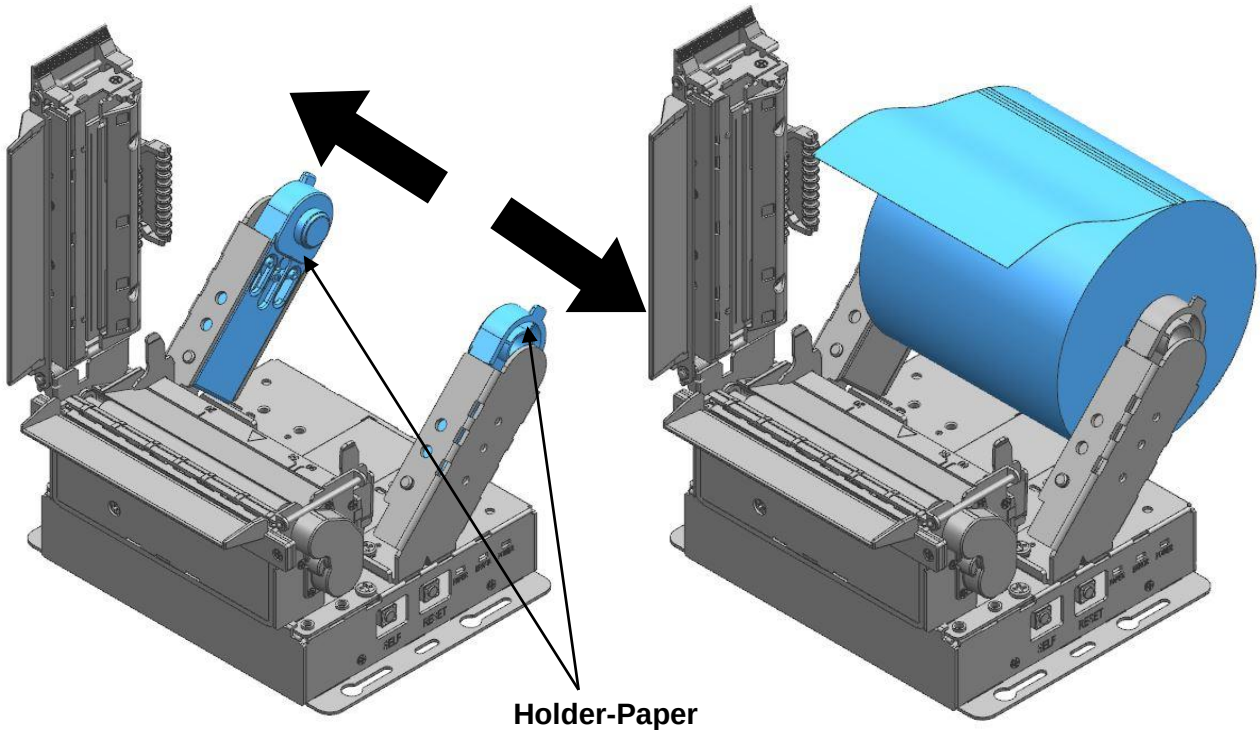
## 1-6 Installing & Replacing Paper

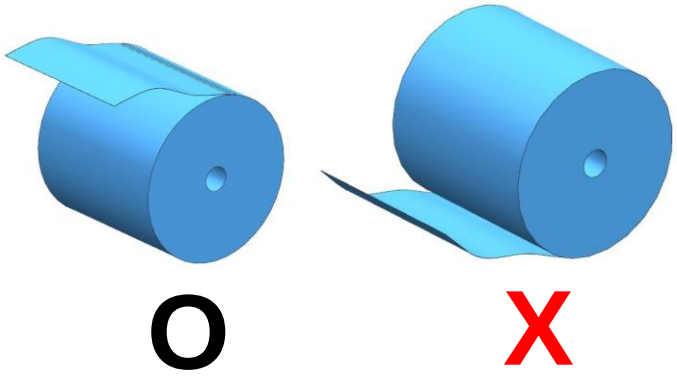
1) Open the print cover by pulling the Lever-Lock.



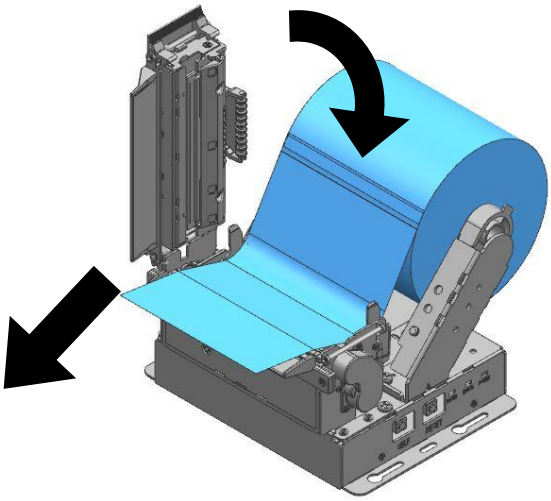

| | |
|---|---|
| ⚠ ***Caution*** | Do not open the print cover while the printer is operating, otherwise the printer may be damaged. |

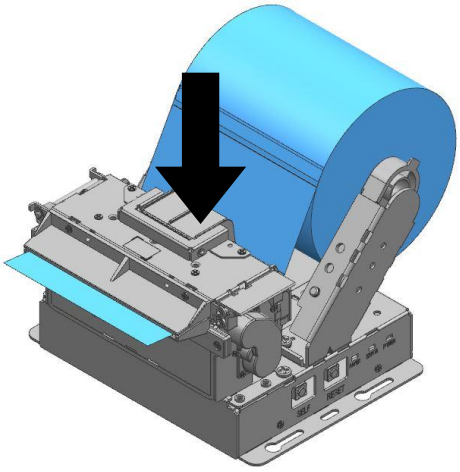
2) Install and change paper by adjusting the holder-paper as shown below.




| | |
|---|---|
| ⚠ ***Caution*** | Check the orientation of the roll paper when inserting it into the printer.   |

3) Pull out a small amount of paper as shown in the picture, and close the cover.

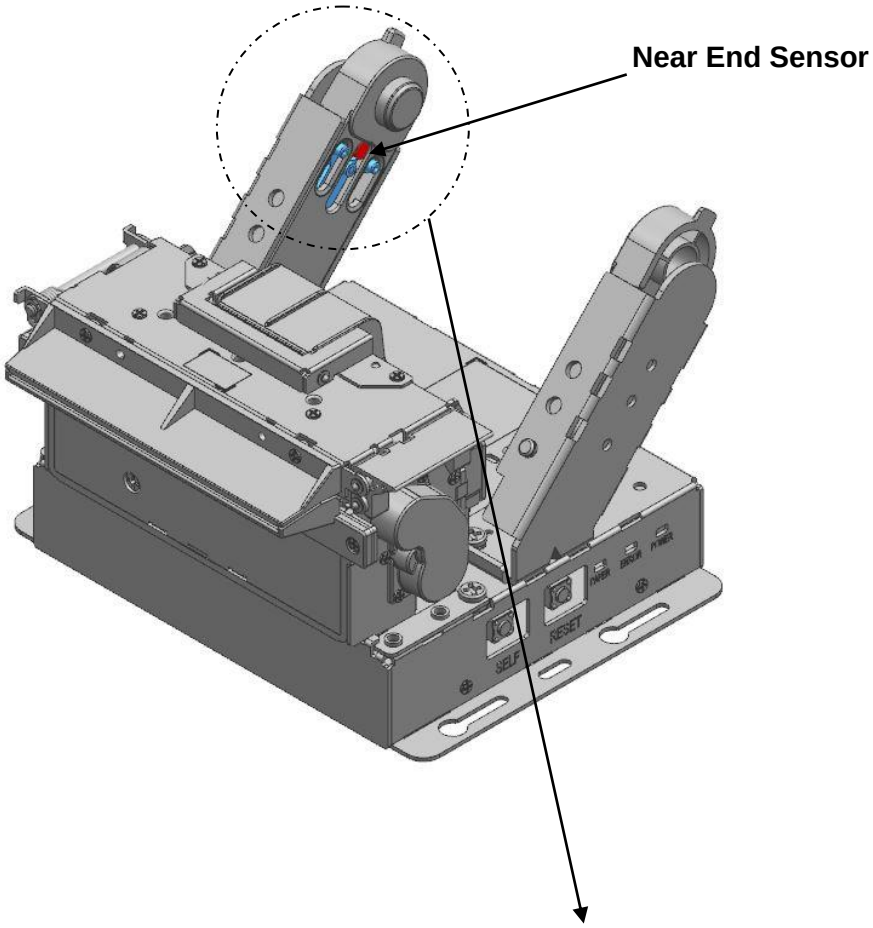


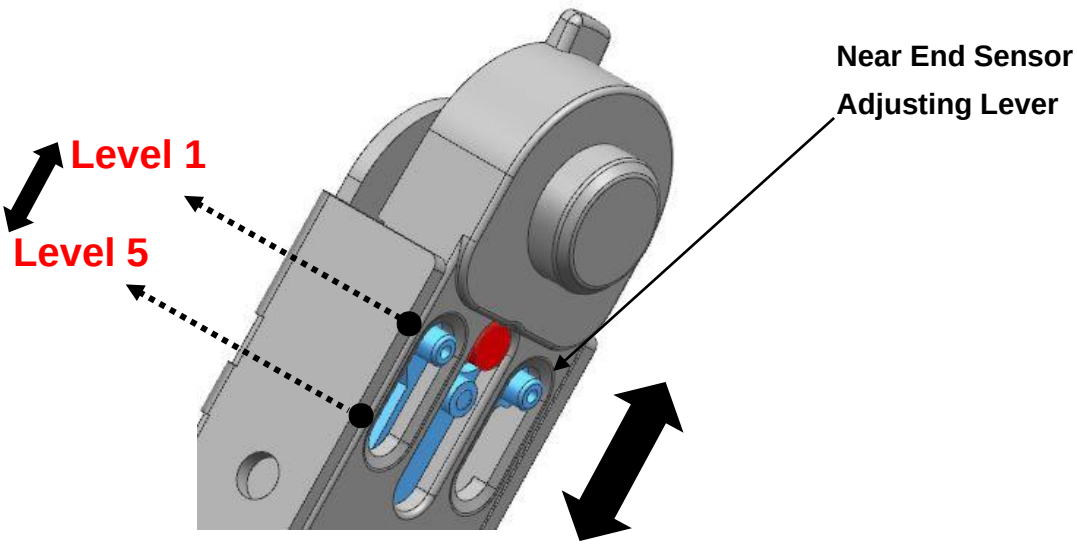


| | |
|---|---|
| ⚠ ***Caution*** | - When closing the cover, hold down the center of printer cover firmly so that paper roll is loaded correctly.<br>- Use paper suitable for the standards.<br>- Change paper when the printer does not receive data. Otherwise, data loss can be caused. |

## 1-7 Adjusting Near End Sensor

As each paper tube has a different point of detecting near end sensor, use the printer by adjusting the near end level. When adjusting the position of near end sensor, move the lever in the direction of the arrow. The adjustment level is composed of five levels; adjust the level to level 5 for a bigger outer diameter, while moving to level 1 for a smaller outer diameter (Refer to the figure below).



## 1-8 Removing Paper Jam

1) When a paper jam occurs, turn the printer off and then back on, open the cover, and remove the jammed paper.
Follow the steps shown below if the operating blade does not return to the original position after power cycling.

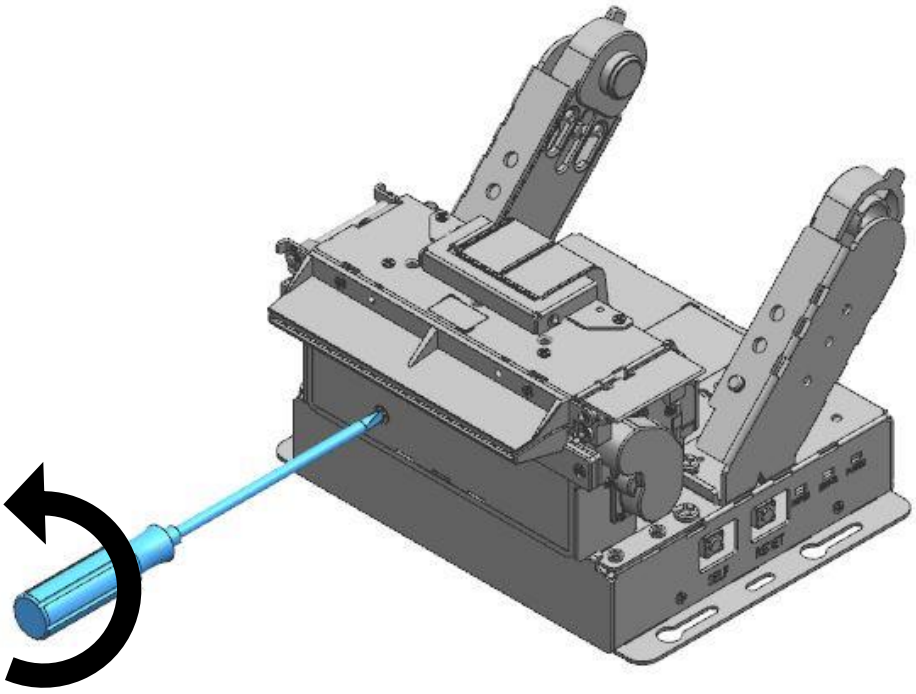
2) Turn the printer off.

3) As shown in the figure below, turn the gear part by using a screwdriver and add a projected blade.

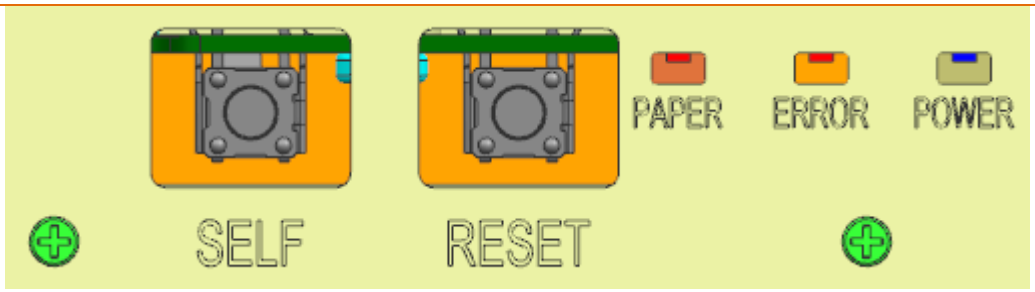
4) Pull the Lever-Lock, open the cover, remove the jammed paper.

5) Turn the printer on and use it.

| | |
|---|---|
| ⚠ ***Caution*** | - Placing your hand above the printer outlet may cause a paper jam.<br>- If the cover will not open due to a minor paper jam, turning the power OFF → ON will automatically return the blade to its original position. |
| ⚠ ***Warning*** | **If the cover does not open, do not forcibly open it. It may result in poor paper cutting or printer damage.** |



## 1-9 Using Printer Functions




○ POWER
Green light will be on when the power is supplied to printer.

○ ERROR
Red light will be on in various error conditions (e.g. no paper, cover open, etc.)

○ PAPER
Red LED will be lit when the paper roll is running low. The LED keeps blinking when the printer is in self-test standby mode or macro execution standby mode.

○ RESET
Press the RESET button once to restart the printer.

○ SELF
Press the SELF button once to conduct self-test printing.
If necessary, press the SELF button and conduct setting virtual memory or hexadecimal dump mode after checking the printed contents for self-testing.

# 2. Self-Test

• The self-test checks whether the printer has any problems. If the printer does not function properly, contact your dealer. The self-test procedure is as follows:

1) Make sure paper roll has been installed properly.

2) Turn on the power while holding down the SELF button and the self-test begins.

3) The self-test prints the current status of the printer including control ROM version.

4) After printing the current printer status, the printer wait for the next step after printing the following lines. (The paper signal light keeps blinking.)

**Press the button continuously with below number,**
**You can enter the mode what you want.**
**(Procedure off If no touching over 2 sec)**

**1: Memory switch configuration mode**
**2: Hexadecimal dump mode**
**3 or more: End**

5) Press the SELF button once for the memory switch configuration mode and twice for the hexadecimal dump mode.
   - The self-test ends by pressing the SELF button three times.
   - The self-test automatically ends two seconds after self-test printing without the need for pressing the SELF button

(1) If you select “VMSM Selection”

① When entering the memory switch configuration mode, the following message is printed.

**** VMSM Selection ****
**0: Exit and reboot printer**
**1: Print current settings**
**2: Set Serial Interface**
**3: Set Print Density**
**4: Set Print Speed**
**5: Set Cutting mode**
**6: Set Print width**
**7: Factory Reset**
**8 or more: None**

② To execute the above function, operate the SELF button as follows.
   - Step 1 (selecting desired item): Press the button as many times as the number displayed before each menu to select the desired setting menu.
   - Step 2 (entering setting item): Press and hold the button for 1 second to apply the selected item.

③ Execute the "0: Save settings and exit" function to apply the changed settings. When “Save settings and exit” mode is active, the above message will be displayed and the printer will reboot.

***** COMPLETED *****

(2) If you select “hexadecimal dump mode”

① When entering the hexadecimal dump mode, the following message is printed.

**Hexadecimal dumping**
**To terminate hexadecimal dump**
**press SELF button three times**

② Execute the program to send data to the printer.
Printing is conducted by dividing all data into two rows.
The first row indicates hexadecimal code.
The second row indicates ASCII characters corresponding to the hexadecimal code.

```
1B 21 00 1B 26 02 40 40 40 40    . ! . . & . @ @ @ @
02 0D 1B 44 0A 14 1E 28 28 28    . . . D . . . . ( ( (
00 01 0A 41 0D 42 0A 43 43 43    . . . A . B . C C C
```

- When there is no corresponding ASCII code, a period (.) is printed.
- All commands cannot be used in the state of hexadecimal printing mode.

③ When the hexadecimal dump completes, press SELF button three times.

④ As the hexadecimal dump code ends, the following message is printed.

**Hexadecimal Dump Completed.**

| | |
|---|---|
| ⚠ ***Note*** | With self-test, you can check that the printer is operating normally, the print quality, ROM version, and memory switch setting. |
| ⚠ ***Caution*** | The self-test automatically ends two seconds after self-test printing without the need for pressing the SELF button.<br>When the “0: Save settings and exit” function is not executed in the memory switch configuration mode, setting information is not saved in the printer. When it is impossible to enter the hexadecimal dump mode, please contact the customer center. |

# 3. Automatic calibration of Black-mark sensor

A printer is designed to detect most of Black-mark types. However it might fail to detect few special cases. In the event of such a failure, we would like you to do as follows

1) Turn off the printer and remove a paper roll.

2) Press ‘Self button ‘, while turning on the printer.

- Hold down ‘Self button’ till both Paper LED and Error LED are blinking.
- Both LED blinking indicates that ‘Automatic Black-mark recognition mode’ is on.

3) Open the cover and load a paper roll then close the cover.

4) Black-mark calibration commences.

- A printer begins with recognizing the gap of each black-mark.

5) A printer will be rebooted, after the calibration is successfully done.

* Necessary conditions for Automatic Black-mark recognition.
  - Initial Installation
  - Changing with new paper rolls
  - In the event, a printer does not stop at the point of a black-mark

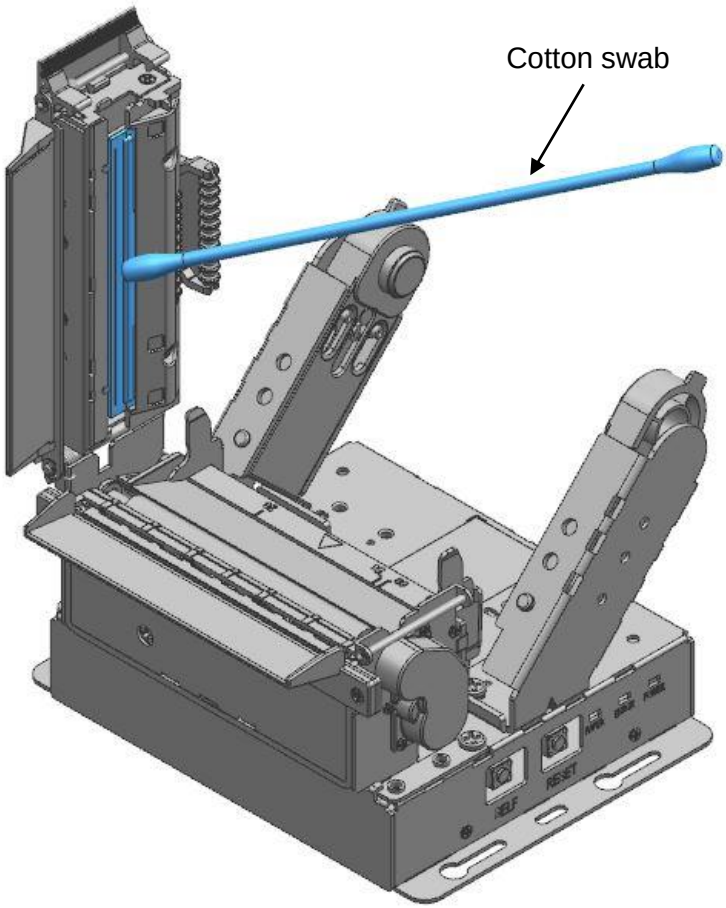
| ⚠ ***Remark*** | Automatic calibration mode works, provided that Black-mark mode is on. |
|---|---|

# 4. Cleaning Printer

Paper dust inside the printer may lower the print quality.
In this case clean the printer as follows:

1) Open the printer cover and remove the paper currently in use.

2) Residue or contamination of printer head should be wiped out by ethanol or IPA.




3) Clean the paper sensor and paper roller with a cotton swab or a dry cloth.

4) Insert a paper roll and close the printer cover.

| | |
|---|---|
| ⚠ ***Caution*** | When cleaning the printer head, make sure that cleaning solutions such as ethanol or IPA do not penetrate the printer. |
| ⚠ ***Warning*** | **While the printer is operating, the print-head gets very hot, so turn off the power and let it cool down completely.<br>The hot print-head can cause serious burns.** |

# 5. Specifications

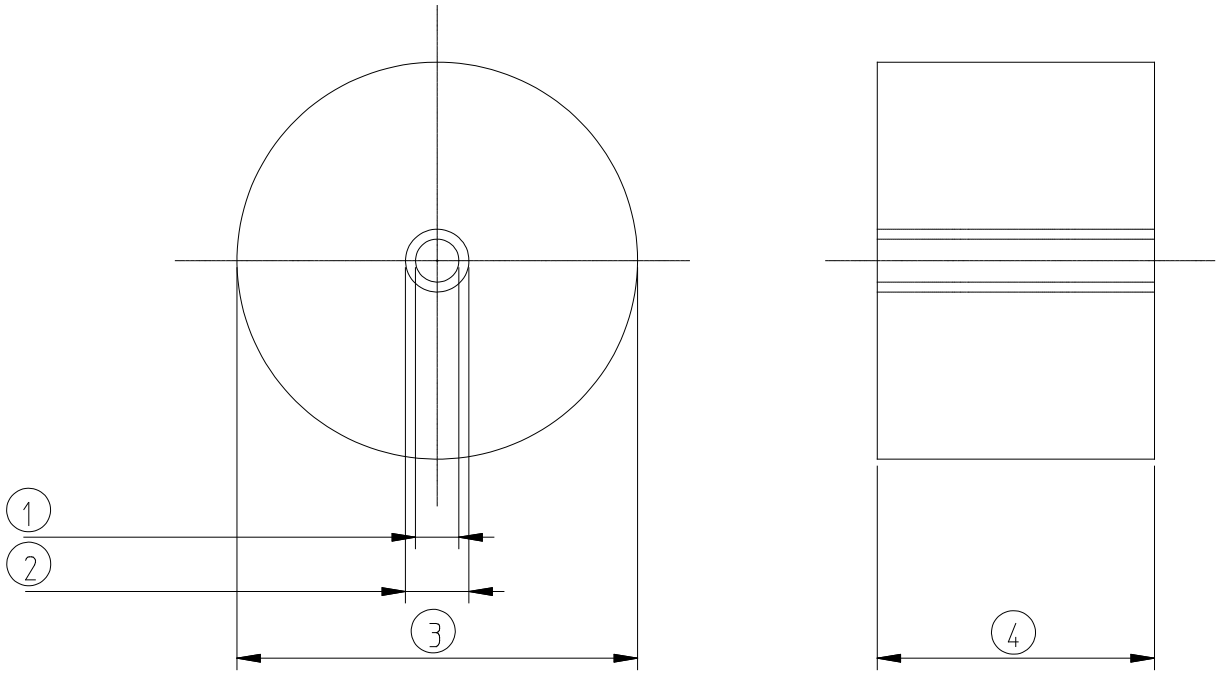
1) Normal Spacifications

| | | | | | | |
|---|---|---|---|---|---|---|
| Printing Method | | Thermal printing | | | | |
| Dot Density | | 203 dpi (8dots/mm) | | | | |
| Printing Width | | 83mm | 80mm | 60mm | 58mm | 20mm |
| Paper Width | | 72mm | | 54mm | 48mm | 12mm |
| No. of Characters per Line (Default Value) | Font A (12x24) | 48characters | | 36characters | 32characters | 8characters |
| | Font B (9x17) | 64characters | | 48characters | 42characters | 10characters |
| | Font C (9x24) | 64characters | | 48characters | 42characters | 10characters |
| Printing Speed (Max) | Receipt | 250mm/s | | | | 100mm/s |
| | Ticket | - | | 130mm/s | - | - |
| Font Size | Font A(12x24) | 1.50 x 3.00mm | | | | |
| | Font A (9x17) | 1.13 x 2.13mm | | | | |
| | Font A (9x24) | 1.13 x 3.00mm | | | | |
| Number of Character | | Alphanumeric Characters: 95 | | | | |
| | | Extended Characters: 128 x 37 Page (Including one space page) | | | | |
| | | International Characters: 32 | | | | |
| Barcode | 1 Dimension | UPC-A, UPC-E, JAN13(EAN), JAN8(EAN), CODE39, ITF, CODABAR, CODE93, CODE128, GS1-128, GS1 DataBar Omni-direction, Truncated, Limited | | | | |
| | 2 Dimension | PDF417, QR code(model 1/2), Data Matrix , GS1 Databar Stacked, Stacked Omni-directional | | | | |
| Auto cutter | | Full / Partial cut<br>* selectable by command | | | | |
| Interface | SERIAL | RS232C compliance | | | | |
| | USB | V2.0 Full speed compliance | | | | |
| Receiving Buffer Size | | 64K bytes | | | | |
| SMPS Specification | Input Voltage | 100~240 VAC | | | | |
| | Frequency | 50/60 Hz | | | | |
| | Output Voltage | 24 VDC | | | | |
| | Output Current | Continuous: 2.5A, Peak: 11A(@ Min. 0.1ms) | | | | |
| Environment Condition | Temperature | Operating: 0 ~ 40 ℃<br>Storage: -20 ~ 60 ℃ | | | | |
| | Humidity | Operating: 10 ~ 80 % RH<br>Storage: 10 ~ 90 % RH<br>Paper excluded | | | | |
| Life Span | Printer Head *) | 100 Km | | | | |
| | Auto Cutter | 1,500,000 cuts | | | | |

*) The specifications were determined based on operation at normal temperature using designated paper on default settings. They are subject to change depending on temperature or printing level.

| | |
|---|---|
| ⚠ ***Caution*** | Printing speed may become slightly slower depending on the data transmission speed and the combination of commands. |
| ⚠ ***Caution*** | If you do not use an SMPS that meets the above ratings, problems may occur with the product and quality, and we are not responsible for any problems that occur. |

2) Paper Specifications



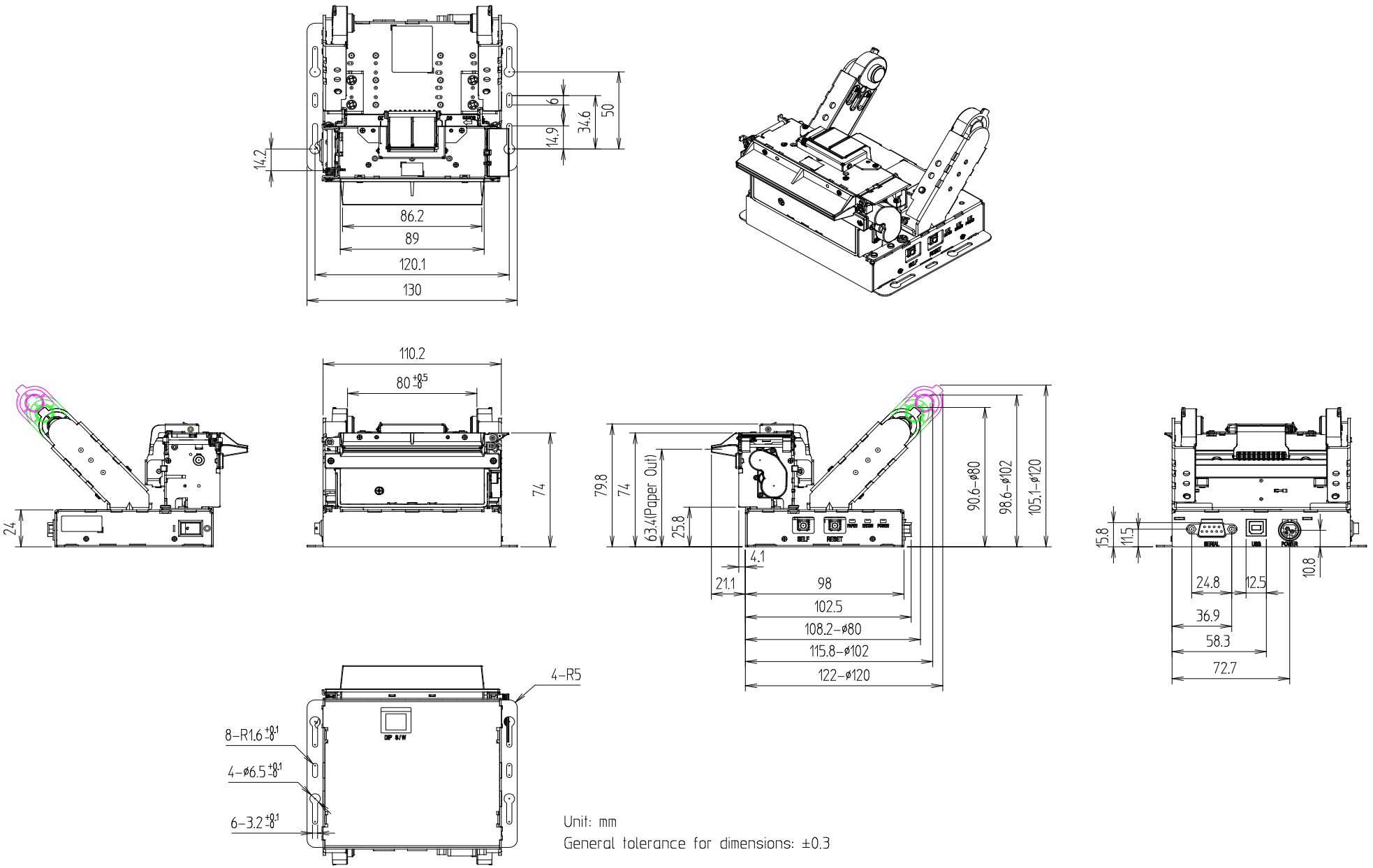

| | |
|---|---|
| 1. Roll Core Inside Diameter (mm) | Φ13 (Min) |
| 2. Roll Core Outside Diameter (mm) | Φ19 (Min) |
| 3. Outer Diameter (mm) | Φ120 (Max) |
| 4. Width (mm) | $83^{+0,-1}$ / $80^{+0,-1}$ / $60^{+0,-1}$ / $58^{+0,-1}$ / $20^{+0,-1}$ |
| 5. Thickness (mm) | 0.06 ~ 0.12 |

Recommended Papers
- TF50KS-E (Paper Thickness: 65μm): Nippon Paper Industries Co., Ltd.
- PD 150R (Paper Thickness: 75μm): New Oji Paper Mfg, Co., Ltd.
- PD 160R (Paper Thickness: 75μm): New Oji Paper Mfg, Co., Ltd.
- P350 (Paper Thickness: 62μm): Kansaki Specialty Paper, Inc. (USA)
- P220AG (Paper Thickness: 65μm): Mitsubishi Paper Mills Limited
- P220A (Paper Thickness: 65μm): Mitsubishi Paper Mills Limited
- F5041 (Paper Thickness: 65μm): Mitsubishi HitecPaper Flensburg Gmbh
- P5047 (Paper Thickness: 60μm): Mitsubishi Paper Mills Limited

| | |
|---|---|
| ⚠ ***Caution*** | - Use of papers other than those recommended above may damage TPH or degrade the printing quality and our company Is not responsible for the damage caused by non-recommended papers.<br>- If you have to use other products, we recommend that you use papers with a similar level of quality to the recommended ones.<br>**- If a sticking phenomenon (a phenomenon where feeding with TPH and paper does not occur) occurs due to the characteristics of the paper, be sure to adjust the printing density and speed.** |

3) External Size

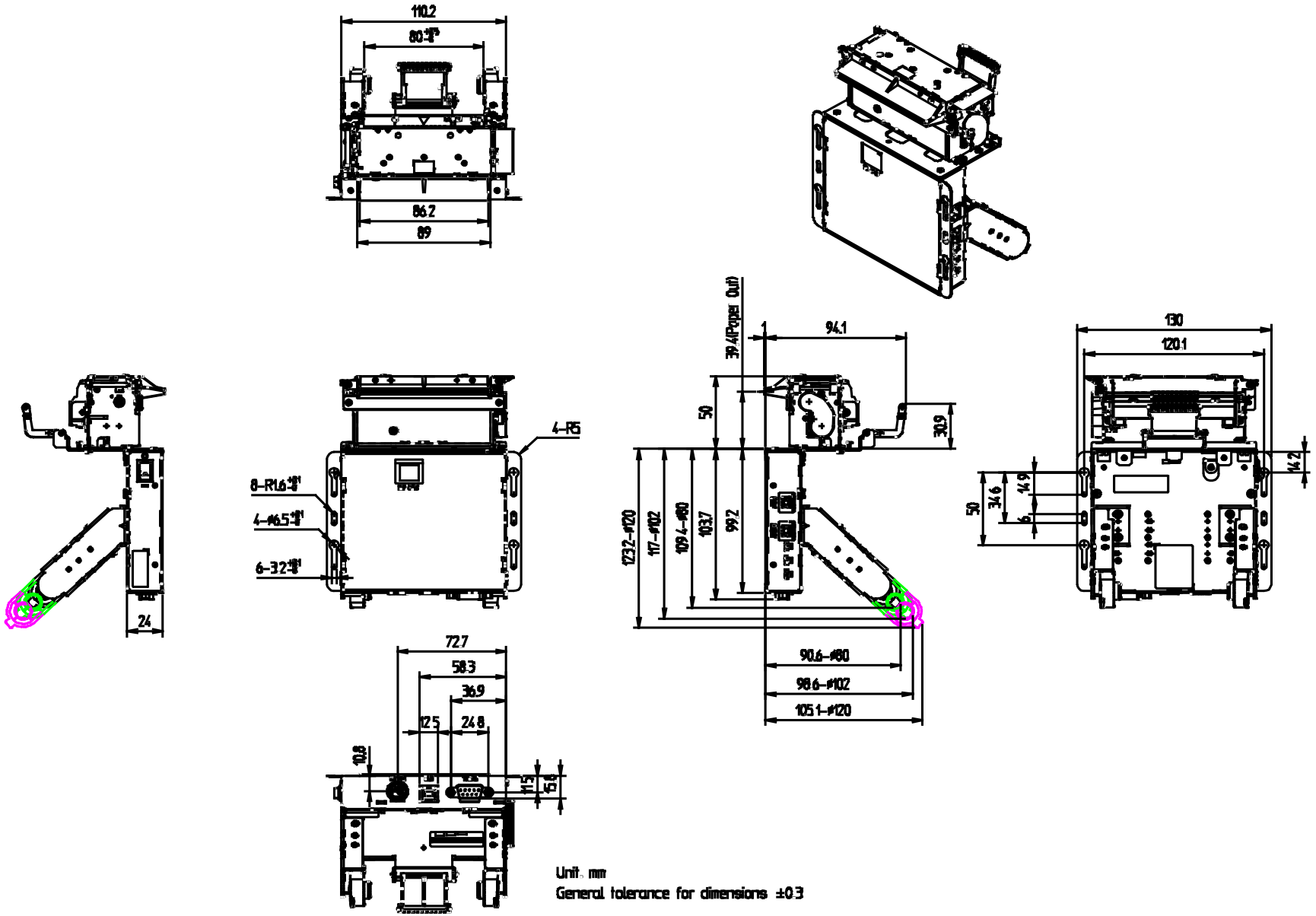
(1) BK3-31 (Horizontal Standard Type)



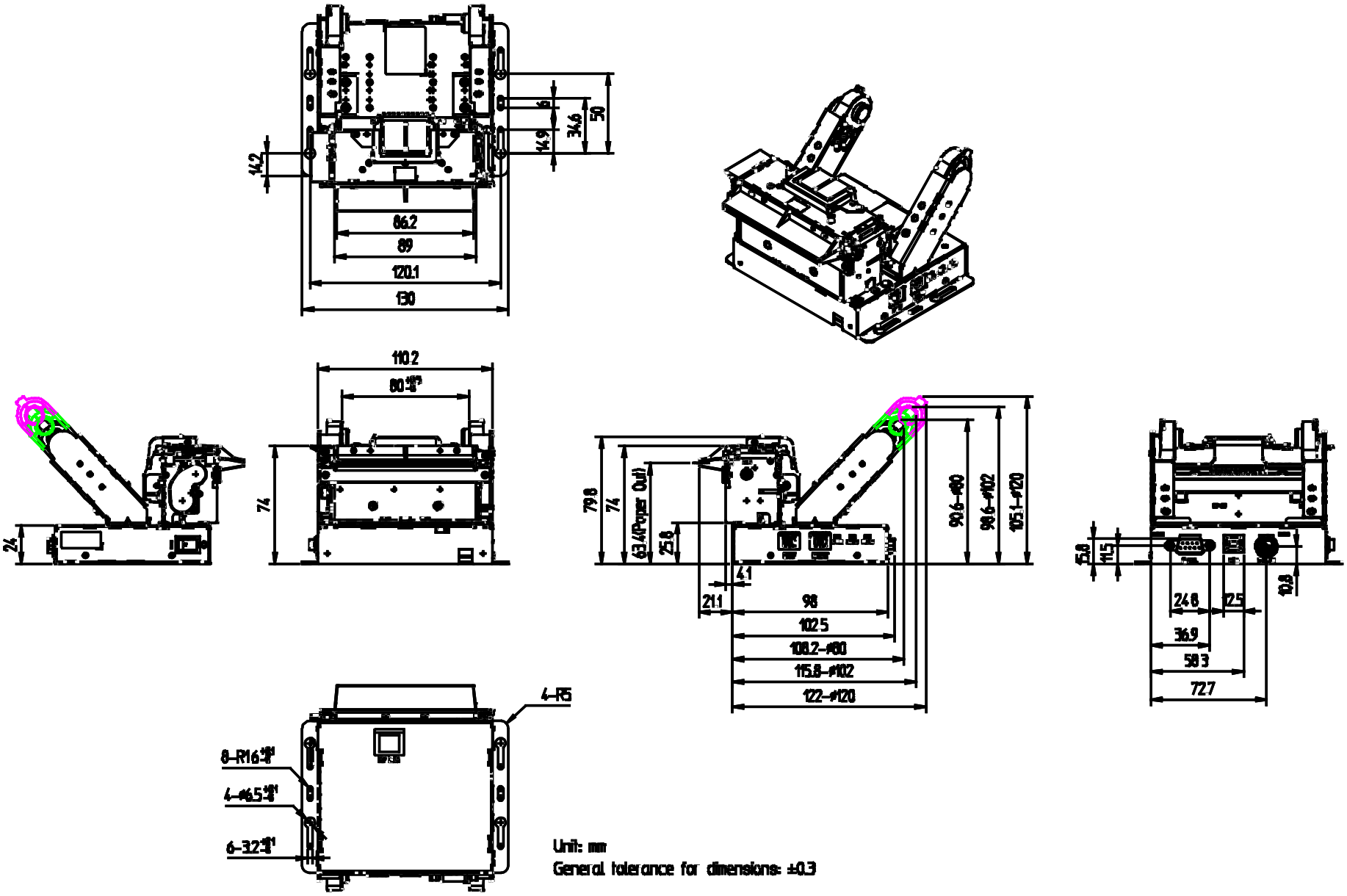

Unit: mm

General tolerance for dimensions: ±0.3

(2) BK3-31V (Vertical Standard Type)



(3) BK3-L31 (Horizontal Lever-Open Left Type)



# Copyright



BIXOLON maintains ongoing efforts to enhance and upgrade the functions and quality of all our products.
In the following, product specifications and/or user manual content may be changed without prior notice.

# Caution

Some semiconductor devices are easily damaged by static electricity. You should turn the printer “OFF”, before you connect or remove the cables on the rear side, in order to guard the printer against the static electricity. If the printer is damaged by the static electricity, you should turn the printer “OFF”.

# Revision history

| Rev. | Date | Page | Description |
|---|---|---|---|
| 1.00 | 12.03.19 | - | New |
| 1.01 | 24.06.19 | 9,10,13,14, 28 26, | 1. Added ticket model.<br>2. Added black mark sensor auto calibration function. |
| 1.02 | 19.11.06 | 2,6,7,13,16,29,30, 31,32,33 | 1. Added customer approved signature line.<br>2. Added part number of interface and power connector.<br>3. Added SMPS rating modifications and caution statements.<br>4. Added paper caution statement.<br>5. Added BK3-31V and BK3-L31 outline dimensions.<br>6. Added emulation 5 and caution statement. |
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