



# EP802-TM Thermal Printer



User Manual



## **Change history**

Rev V1.0 Initial release  
Rev V2.0 Updated

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# Introduction

EP802-TM is a fully integrated Kiosk Printer suitable for all your Kiosk, Gaming, Sports Betting & Parking terminal printing requirements. With a high maximum print speed of 250 mm per second, it has the benefit of fitting in smaller cabinet spaces where it provides an Easy paper roll replacement and rear paper feed with auto load and cut feature. A clean paper path ensuring reliable ticket presentation and delivery. Serial and USB Communication options standard in every printer, with an individual power switch for easier and safe maintenance.

## Key Features

- Fully integrated printer mechanism, presenter and PCB architecture
- Varying ticket lengths – to meet Sports Betting requirements.
- Advanced Ticket Manipulation Detection.
- Independent Full or partial cutting option.
- Maximum Print Speed of 250mm per second.
- Resolution 203 dpi - 8 dots/mm.
- Special print scalable to 8x with reverse, underscore, *italic*, and **bold print**
- 48/64 characters per line for 80 mm paper width (12\*24/9\*17)
- Face Up Ticket printing
- ASCII character encoding
- Ladder and fence barcode printing supporting UPC-A, UPC-E, EAN13, EAN8, Code39, ITF, CODABAR, Code93, Code 128, Code31
- Serial RS232C and USB interfaces built into main controller PCB
- Selectable baud rates
- Windows & Linux Driver Support
- 4 MB minimum flash memory and 64KB RAM (extensible 256kB RAM)
  
- EPSON emulation
- Power: 24 VDC
- Paper Out, Paper Cover-Open, Paper Low, Top-Of-Form, Jam Detection, Transport Ticket Taken, Head Temperature.
- Ticket blocked detection system

- Power and error LED(s)
- Paper feed button
- Easy paper feed/loading with auto-cut
- Portrait or landscape mode
- Paper width Options: 60mm, 80mm and 82.5mm
- RoHS /CE Compliant
- Bezel assembly with LEDs (Colour Options available – subject to agreement)
- Universal paper roll spindle (60mm, 80.0mm & 82.5mm.)
- Printer head easily accessed for quick and easy maintenance.
- Paper roll tensioner to handle larger paper rolls

## Options:

- 60mm and 80mm paper guides
- Larger core spindle sleeve
- Front/Top Paper roll loading - kit
- Standard 3 way PSU/Serial/USB cable set
- Optional PSU/Serial or PSU/USB cable set (left or right)

## Barcodes

The Following barcodes are available with the EP802 printer.

Barcodes supported are as follows:

UPC-A

UPC-E

EAN-8

EAN-13

CODE39

INTERLEAVED 25/(ITF)

CODEBAR

CODE93

CODE128

PDF417

QR CODE



## **Minimum Ticket length**

Minimum ticket length is 80 mm.

## **Ticket Blocked - Detection Feature**

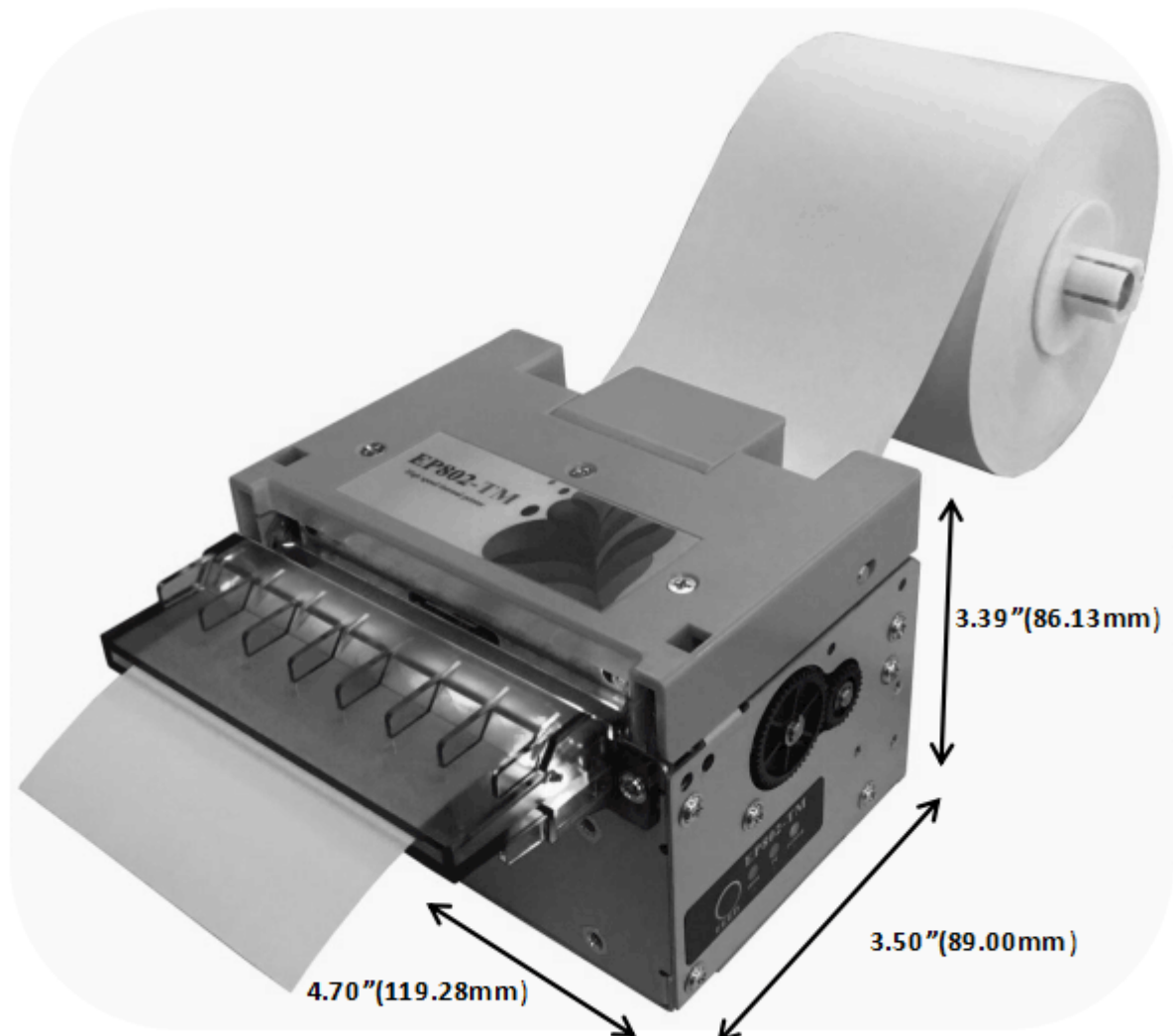
The EP802-TM can monitor the ticket status if a ticket blockage occurs in the bezel. If a ticket is prevented from exiting the bezel, the mechanism will detect this and stop the print. Once the blockage is removed the print will continue from where it was stopped.

## **Ticket Drag - Detection Feature**

The EP802-TM can monitor ticket status if ticket drag occurs in the bezel. If the ticket is pulled during the print process, the mechanism will detect the movement and stop the print process, the ticket will be cut, then will recommence to complete ticket print process from where it was stopped, providing a ticket in two parts but with complete information. This is more common where long tickets are printed where users remove tickets before completion.

# General Specifications

## Dimensions



	Width	Depth	Height
General Dimensions	119.28mm	89.00mm	86.13mm
Drawings Available On request	2-D and 3-D		



## **Fully assembled as single unit**

Design Envelope: Ticket Clearance

A minimum paper clearance distance of 2.36" (60mm) is required about the printer. Dimensions of the paper support depend on the specific configuration and are not included here.

## **Weight**

Approximate 1 kg (without paper roll)

## **Interface type**

Bi-directional serial RS-232 and USB standard

## **Printer type**

80 mm Thermal dot line

## **Printer Environmental Conditions**

Operating Temperature Range: -10° - 60°C (14°F - 140°F)

Shipping/Storage Temperature Range: -20° - 70°C (-4°F - 158°F)

Operating Humidity Range: 20% - 80% non-condensing

Shipping/Storage Humidity Range: 10% - 90% non-condensing

## **Reliability**

Printer Life: 15,000,000 print lines

Print Head Life: Minimum 100Km.

Cutter Life: 1,000,000 cuts (Lower Grade 55gsm)

## **AC Power Requirements**

90-264VAC at 47-63 Hz.

## **DC Power Requirements**

Thermal Head printers require higher peak currents determined by the number of print elements are used and how often. Generally, the higher the print density the higher the current requirement. High density printing increases peak load on the power supply. These high peak currents can cause power supplies in extreme cases to shut down. Selecting the correct power source/supply will ensure the correct operation of the printer.



A suitable power supply for the EP802 could have a wattage rating of 48 watts but unless it can provide peak currents of 3.2 amps (76.8 watts) and maintain 24VDC output, it will not function as expected.

Voltage under line, load and environmental conditions	24V DC $\pm 10\%$
Typical Load current	0A min 1.5A continuous 3.2 A Peak Note: this load current does not include the optional bezel drive requirement
Over voltage protection	None (standard input: DC24V $\pm 10\%$ )

## Printer Ground Requirements

Adequate frame ground is expected to be used for this printer to meet ESD immunity standards. Printer installation mounting is normal to a metal chassis with the system “frame” or “safety” ground. In other cases, a sufficient separate ground strap is expected to be provided and connected to the printer main metal using a suitable low impedance, this is the responsibility of the integrator.

## Power Supply Connection

- ① Ensure that the printer power switch is in the “off” position before connecting or disconnecting the power supply. (Please verify the input voltage and make sure it is within the specified range).
- ② If the power supply is correct, you can connect the printer to the power supply.
- ③ Turn printer power switch (back of printer) on.
- ④ Printer will initialize and Green LED light will be Steady “On”
- ⑤ If this fails please switch power off immediately and check all connections and power supply unit.

**Note :** Always turn off printer power switch when connecting the printer to the power supply.

## Technical Specifications

These technical specifications are reference to EP802-TM printing module

<b>Module</b>		<b>EP802-TM</b>		
<b>Control board</b>		<b>EP802_3</b>		
<b>Printing</b>	<b>Printing method</b>	<b>Thermal dot line</b>		
	<b>Dots</b>	<b>640dots</b>		
	<b>Speed</b>	<b>250mm/s</b>		
	<b>Printing width</b>	<b>80mm (max)</b>		
	<b>Paper loading</b>	<b>Easy loading (horizontal 180°)</b>		
	<b>Cutting method</b>	<b>Full/Partial by adjustable</b>		
	<b>Print head life</b>	<b>100KM</b>		
	<b>Printing format</b>	<b>inverse、underline、italic、bold</b>		
	<b>Cutter life</b>	<b>60µm paper</b>	<b>1,000,000 cuts</b>	
		<b>200µm paper</b>	<b>750,000 cuts</b>	
	<b>Baud rate</b>	<b>9600、19200、38400、115200</b>		
<b>Font</b>	<b>ASCII</b>	<b>9*17、12*24</b>		
	<b>Chinese</b>	<b>24*24dots</b>		
<b>Detection</b>	<b>TPH temperature</b>	<b>Temperature sensor</b>		
	<b>Mechanism open detection</b>	<b>Micro switch</b>		
	<b>Paper presence detection</b>	<b>Mechanical sensor</b>		
	<b>Ticket out detection</b>			
	<b>Paper low detection</b>	<b>Photo-interrupter</b>		
	<b>Black mark detection</b>			
	<b>Paper cutting detection</b>			
<b>Paper blocked detection</b>				
<b>Conditions</b>	<b>Power supply</b>	<b>DC24±10% V</b>		
	<b>Load current</b>	<b>1.5A continuous 61mA Standby 3.2 A Peak</b>		
	<b>Interfaces</b>	<b>RS232、USB 2.0</b>		

	Paper roll	Paper type	Thermal paper roll
		Paper width	79.5±0.5 mm (3.13±0.02 inches) Or 82.0±0.5 mm (3.23±0.02 inches)
		Roll diameter	160 mm (6.2 “)
		Paper thickness	0.06~0.2 mm (0.002 ~0.007 inches)
		Recommended paper type	KANZAN KF50 KP460 MITSUBISHIPG5075 TL4000
Environment	operating temperature	-10~60°C (no condensation)	
	operating humidity	20%~80%RH (40°C,85%RH)	
	Storage temperature	-20~70°C (no condensation)	
	Storage humidity	10%~90%RH (50°C,90%RH)	
Dimension	Paper holder 45° upward (150mm paper roll)	L*W*H=306.6*119.30*163.70mm	
	Paper holder horizontal (150 mm paper roll)	L*W*H=333.55*119.30*150mm	
	Paper roll vertical (150 mm paper roll)	L*W*H=139.30*119.30*285.55mm	
	Weight	Approx. 1 kg (without paper roll)	

### Auto cutter position

Cutter type: guillotine

Media width: 82.5 mm

Media thickness range: 0.06~0.2 mm

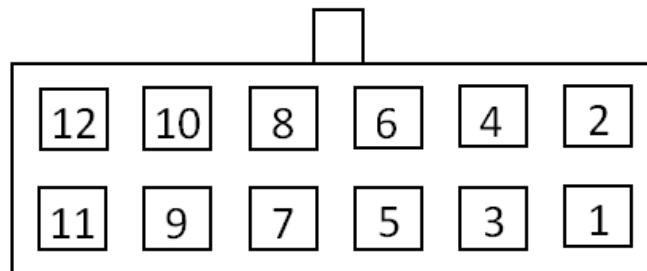
Cutter life: 1,000,000 cuts (Lower grade - 55gsm)

Cut time: >500 milliseconds

## Printer Interfaces

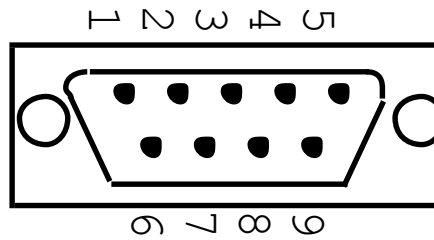


**Power/Comms Connector – 24v PSU + RS-232C/USB (2-Way Left/Right or Right/Left)**



Pin Out (Power Supply+RS-232C)	Definition
1, 2	+24V(DC)
3, 7	GND
5	TXD
6	RXD
8	DTR
4	NC
Pins (power supply +USB)	Definition
1, 2	+24V(DC)
3, 11	GND
9	DATA-
10	DATA+
12	VCC(USB)
4	NC

## RS-232C connector interface

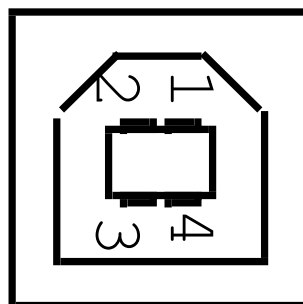


MASUNG RS-232C cable for printer is full cross cable, pins are defined as below:

Pins	Definition
2	RXD
3	TXD
4、 7	DTR
5	GND
1、 6、 8、 9	NC

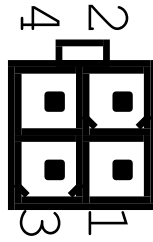
## USB connector interface

Standard USB port support USB2.0. Printer cannot be powered through USB port.



USB interfaces	Definition
1	VCC(+5V)
2	DATA-
3	DATA+
4	GND

## Power Supply Connector



Pins	Definition
1	24V(DC)
2	GND
3	GND
4	NC

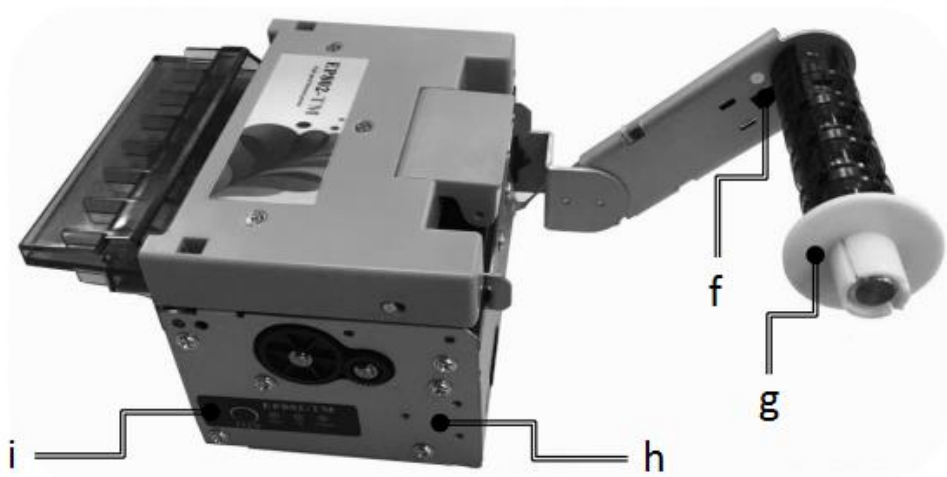
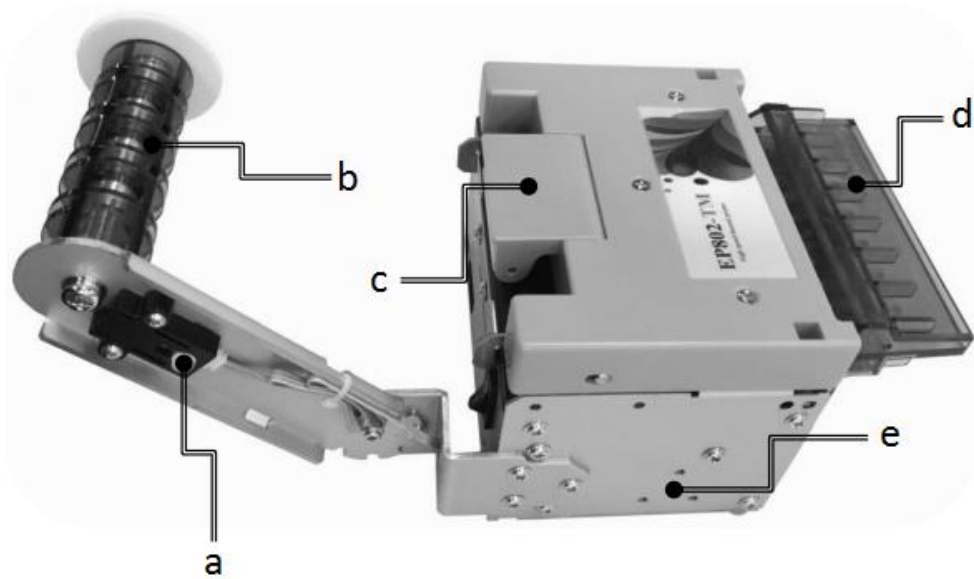
Note: Optional 2-Way Connector cables are available.

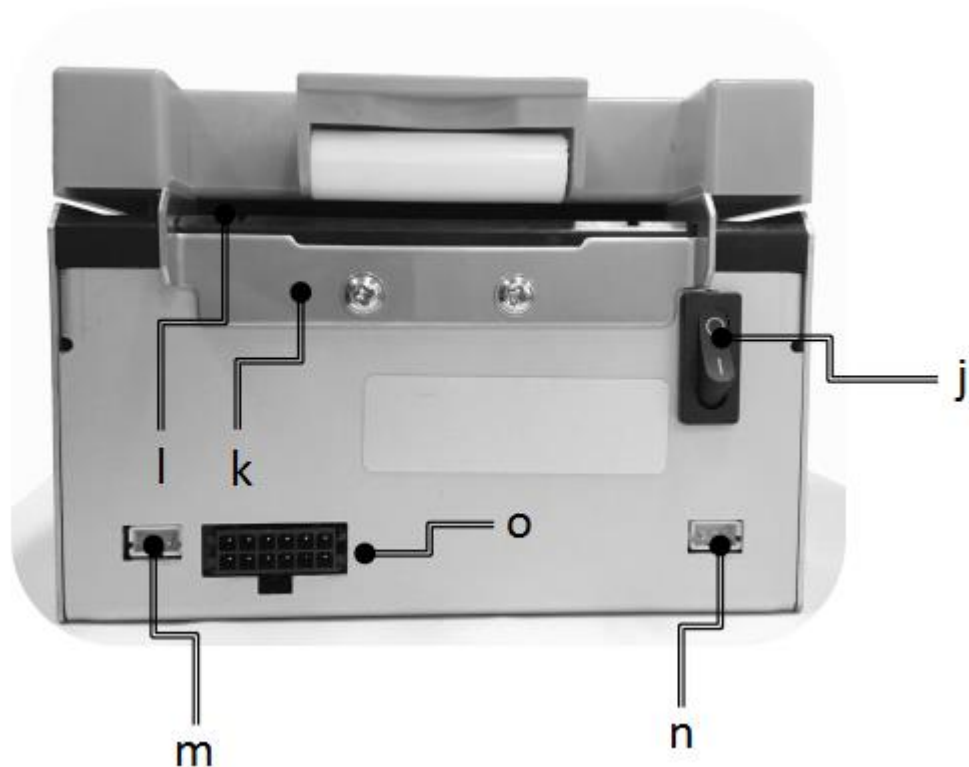


**Option 1:** Connector Cable – PSU/RS-232C Left/Right

**Option 2:** Connector Cable – PSU/USB Left/Right

# Printer Component Diagram





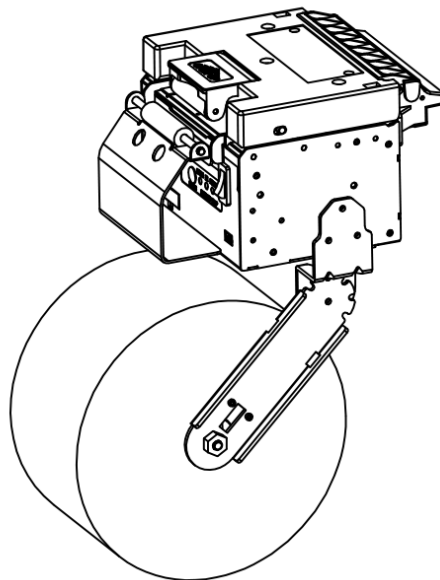
- a: paper low sensor position - adjustment screw
- b: blue paper roll sleeve
- c: printer head open wrench
- d: paper bezel (with LED bar and paper blocked sensor inside)
- e: screw holes for vertically mounting paper holder
- f: paper low sensor
- g: yellow knob
- h: screw holes for right side mounting paper holder
- i: paper feed button
- j: power switch
- k: paper width limit frame
- l: paper entry channel
- m: paper low sensor cable port (left)
- n: paper low sensor cable port (right)
- o: power + USB + RS-232 "all-in-one" port



## Optional Rear Paper Guide



**Notice:** This part is designed for paper rolls positioned vertically underneath. It provides a clear and supported paper path to the print mechanism.



## LED Indicators

There are three indicators showing printer status:

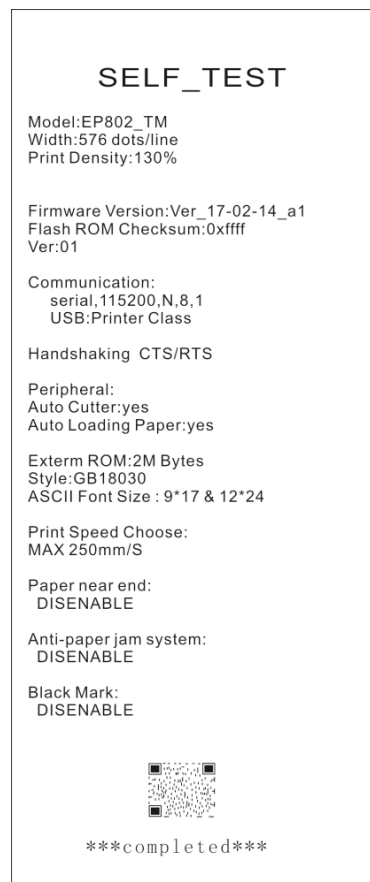
<b>ERROR</b>	<b>PE</b>	<b>Status</b>
off	off	Normal
off	on	Paper near end; Paper at the ticket out position; Paper jam
off	flash	Paper end
on	off	Printer mechanism open
flash	off	Black mark error; Cutter error
flash	flash	Power supply voltage incorrect
on	on	Off-line; Mechanism is over temperature; Mechanism is not connected well.

## Self-Test

### Printing a Self-Test Ticket:

- ① Load paper into printer and turn power off. Press paper feed button and hold for 5 seconds and turn on printer power again. Printer will go with “self-test page” as below picture. (notice: please press button with suitable force)
- ② Please send command “1D 28 41 02 00 00 02” for self-test. Set the next line as a starting position after the printing.

Self-Test page is as below :

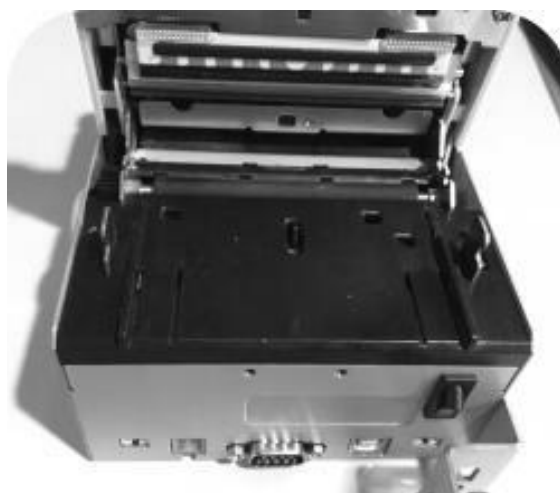
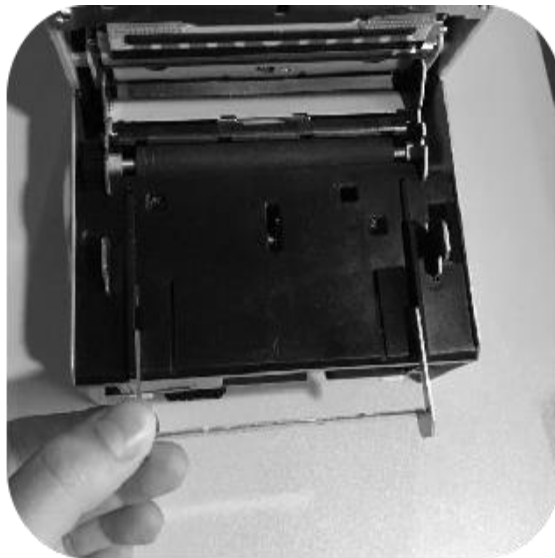


## Paper Width Adjustment

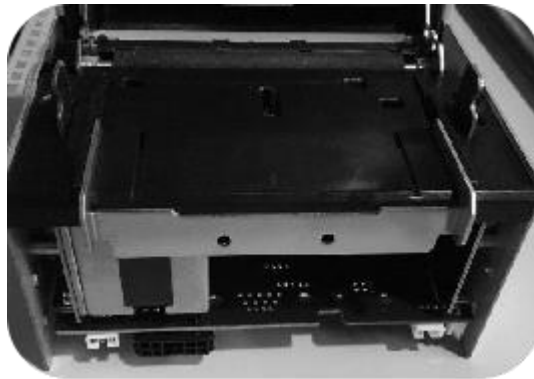
Paper width can be adjusted to accommodate different paper roll widths. (60 mm, 80 mm and 82.5 mm) by using “paper guide slide”.

Lift cover upward and put the paper guide slides into the channel.

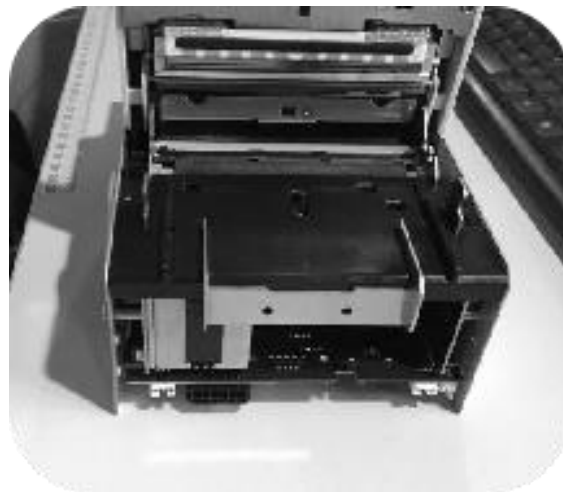
Please ensure correct fit when inserting the guide. There maybe a different firmware required for the variants.



**Without paper guide: 82.5mm width paper**



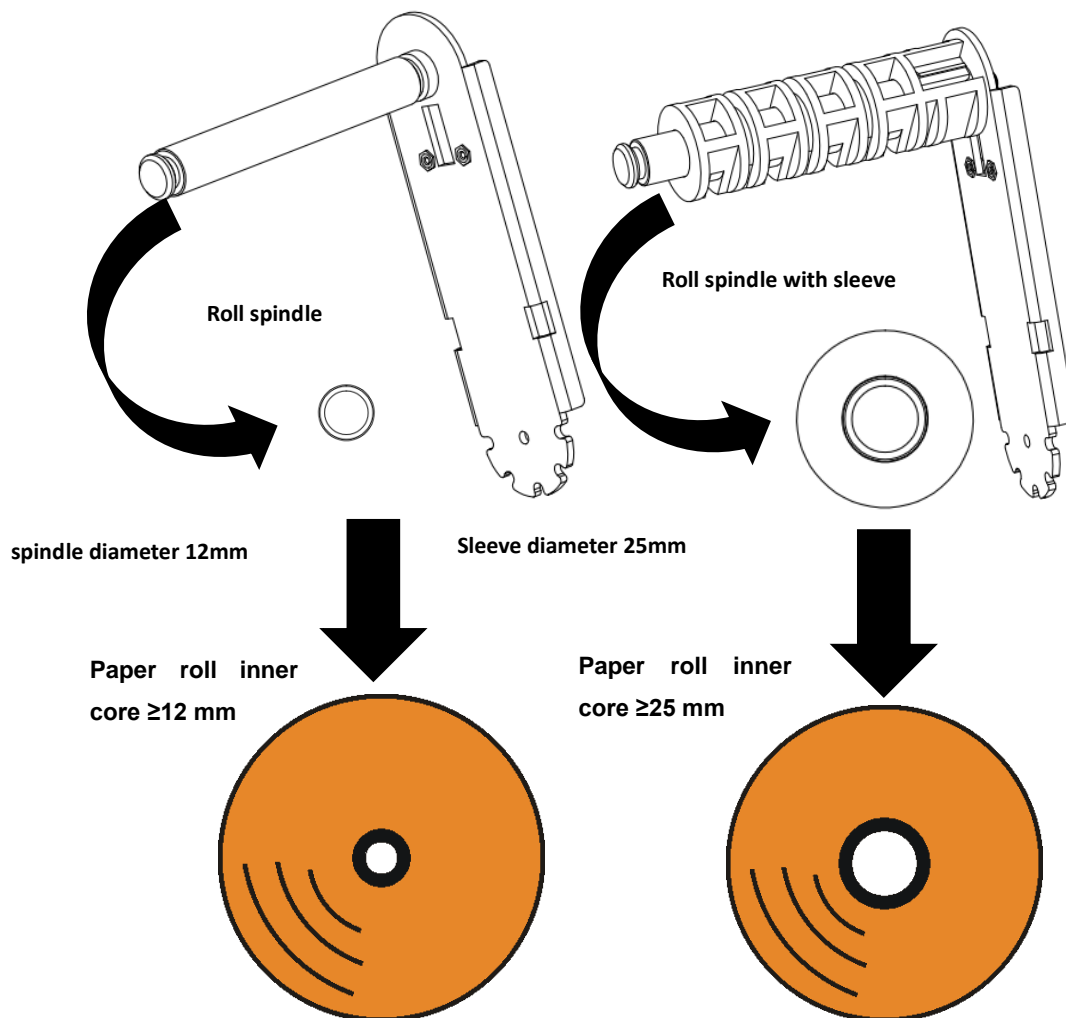
**With 80mm paper guide: 80mm width paper**



**With 60mm paper guide: 60mm width paper**

## Loading Paper Roll

EP802-TM printer uses thermal paper rolls, the internal diameter of the rolls may differ, please verify if you require using standard spindle or require the sleeve. This is determined by the paper roll core dimensions.

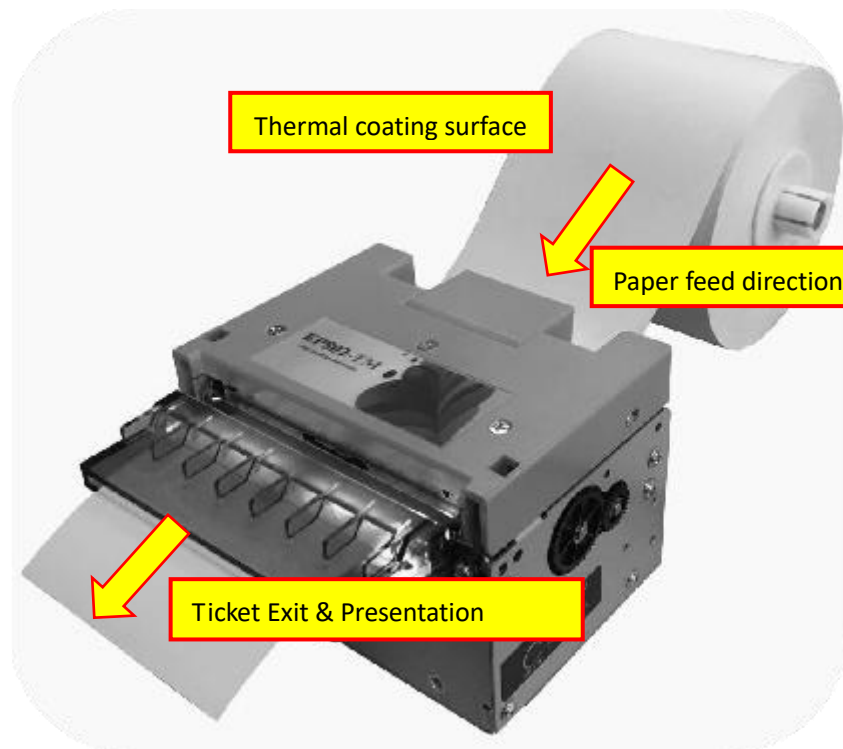


## Paper loading

(1) Before inserting paper, make sure its edge is clean, as below:



(2) Insert thermal paper into the paper entry channel until paper feeds and printer starts automatically to load and cut the paper.



### (3) Ticket Exits Bezel

## NOTE:

The paper low sensor is used to determine when the paper roll is near end and prevents excessive paper curl being used in the printer path. The larger core size in the paper roll can prevent excessive paper curl preventing possible errors. If the roll is left to run to end of the roll, the tickets may show the pre-printed red lines.

## Printer Maintenance

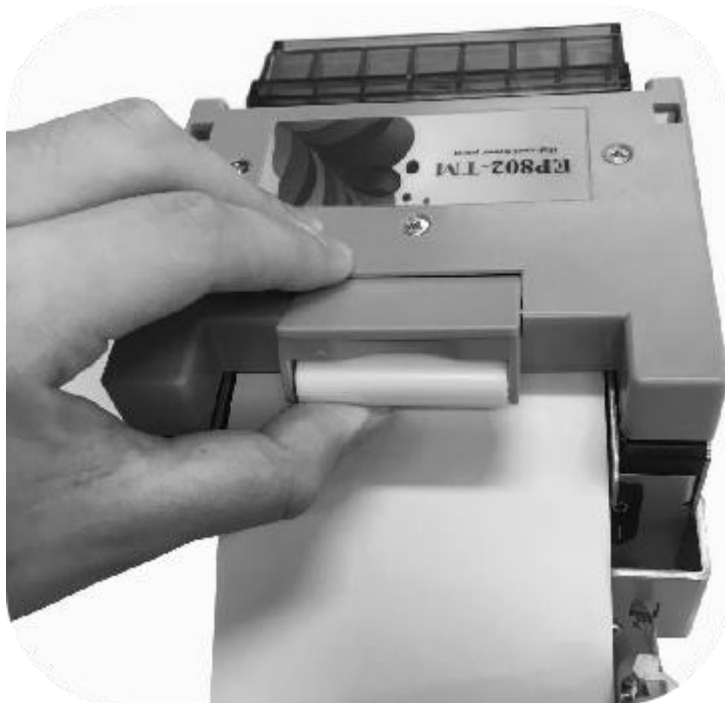
Open the main cover and blow out all the paper dust on a regular basis, based on usage at least every 6 months.

Clean the print head with an approved alcohol or solution using a soft cloth.

Avoid touching the head with fingers or any hard item likely to scratch.

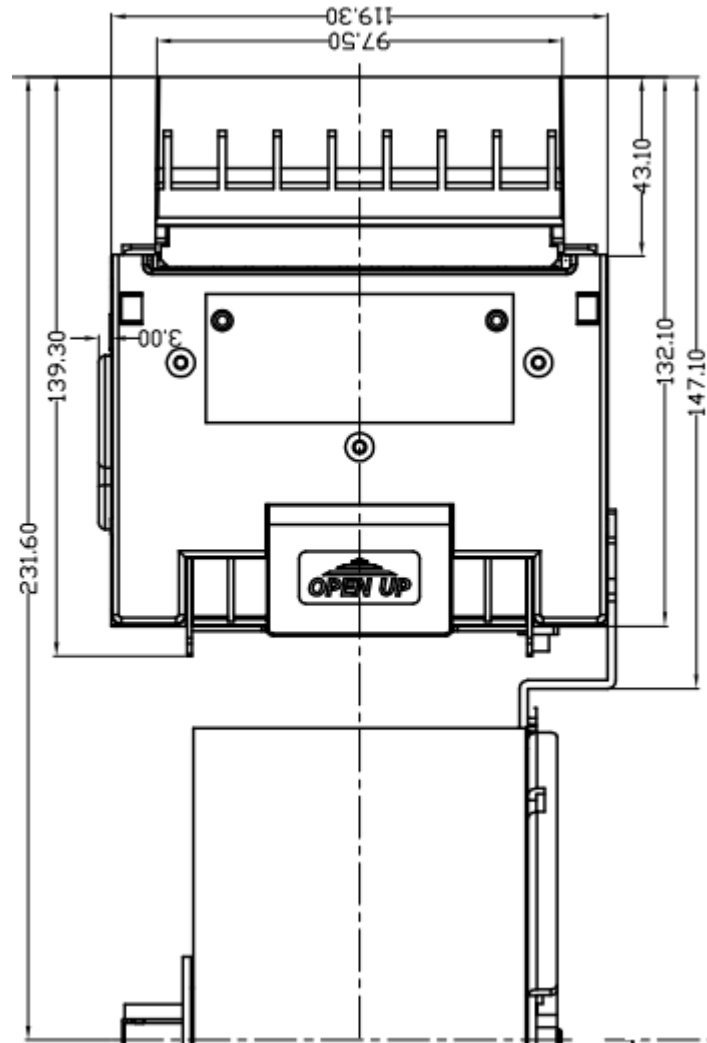
All paper debris should be removed carefully without the use of a screw driver.

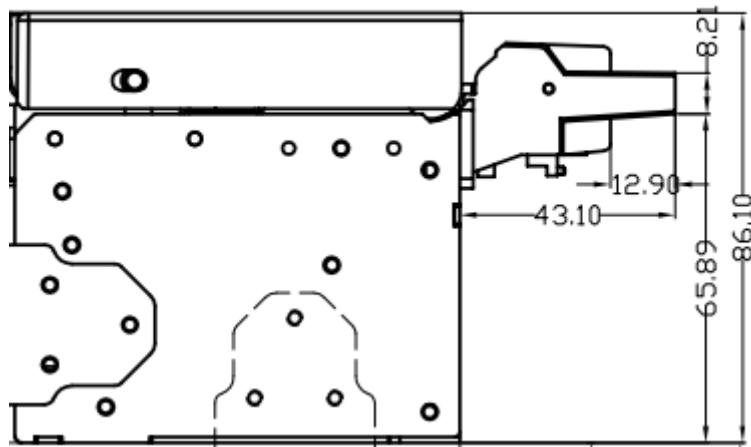
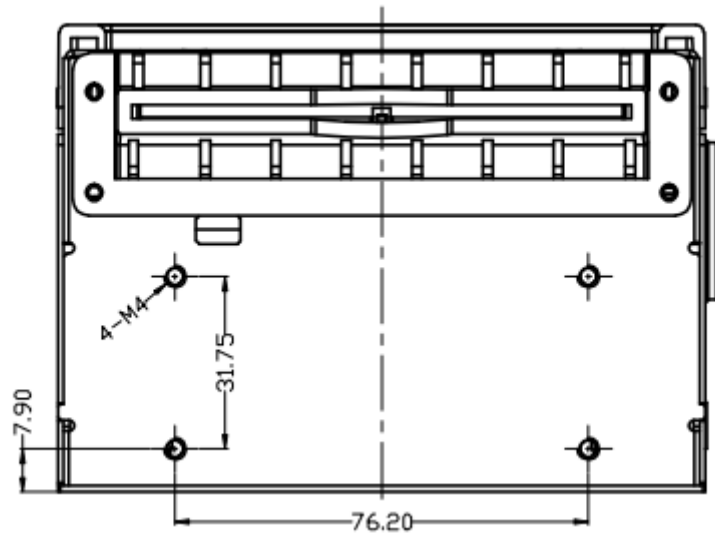
Operator can open printer head using the latch dampner shown as below.





# Printer Mounting & Dimensions





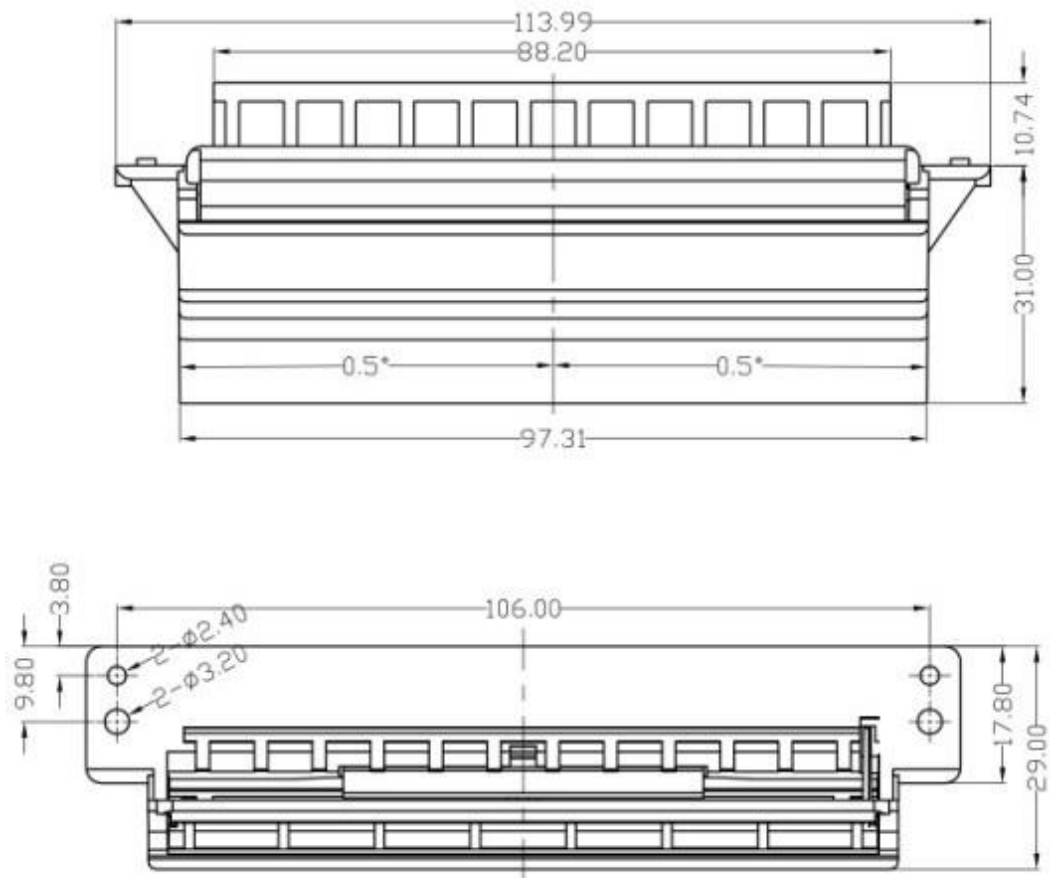
## Bezel Mounting

EP802 printers are designed to accommodate a bezel assembly that is mounted following the hardware and mounting dimensions shown. Drawings show the positioning and dimensions of the EP802 bezel's mounting points.

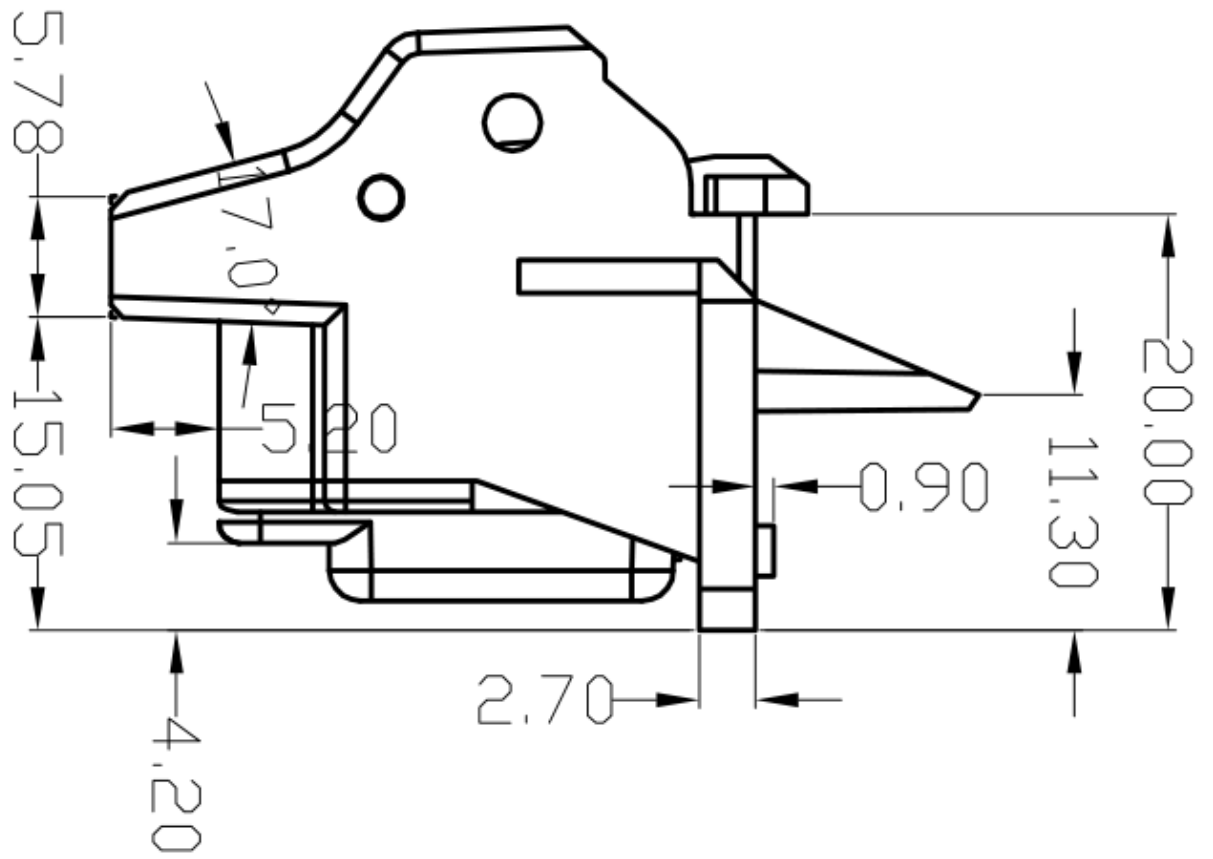
Front:

2 x M3 x 0.5 screws and interface with custom bezel.

(bezel view as below)



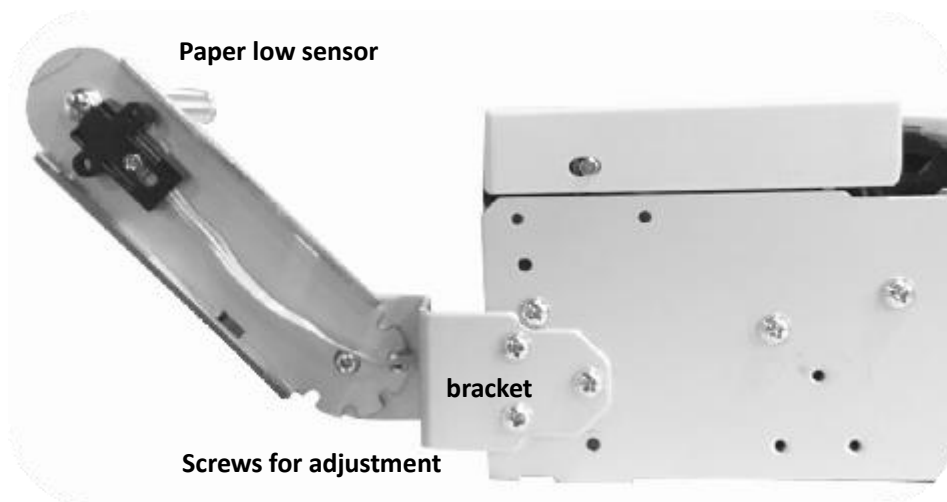
Bezel Mounting cont..



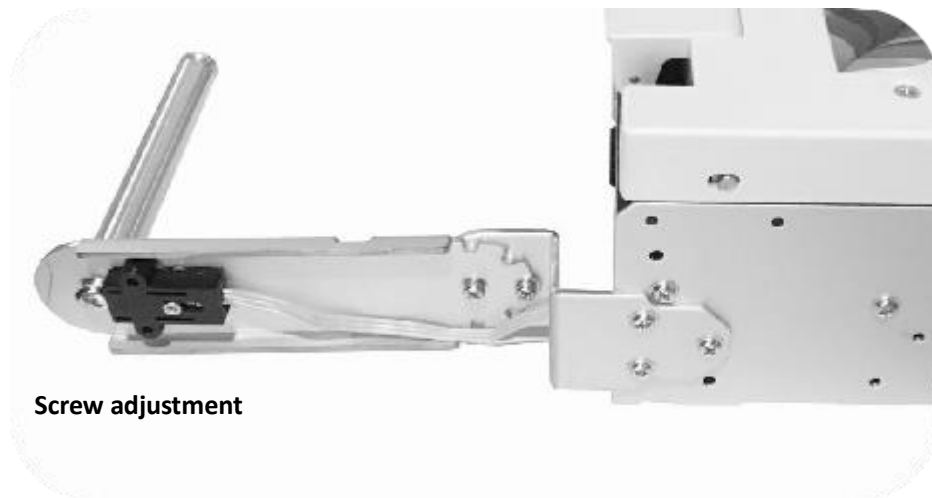
## Paper Roll holder installation

The EP802 spindle assembly can be mounted in one of five locations on the left side of the printer or one of four locations on the control panel side. The following figures show typical mounting locations and cable dressing options.

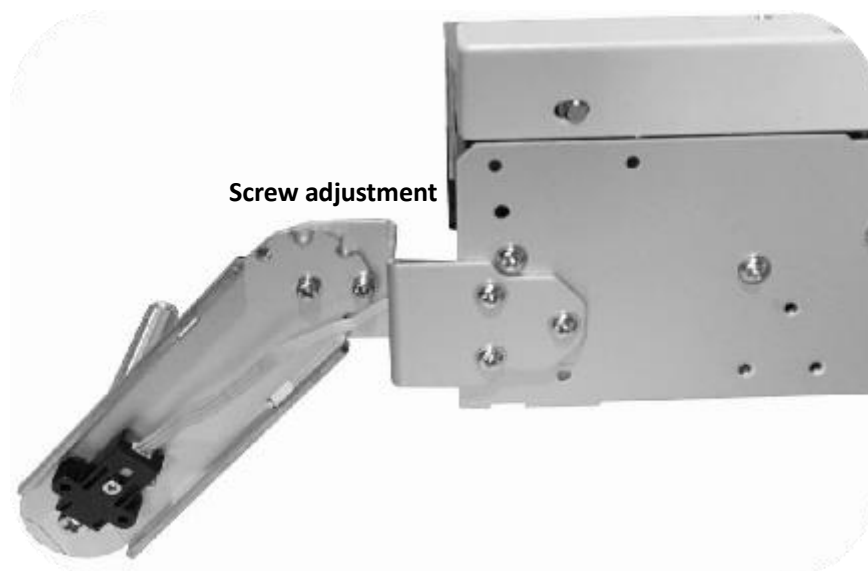
### 45° Upward Mounting



## Horizontal Mounting



## 45° Downward Mounting

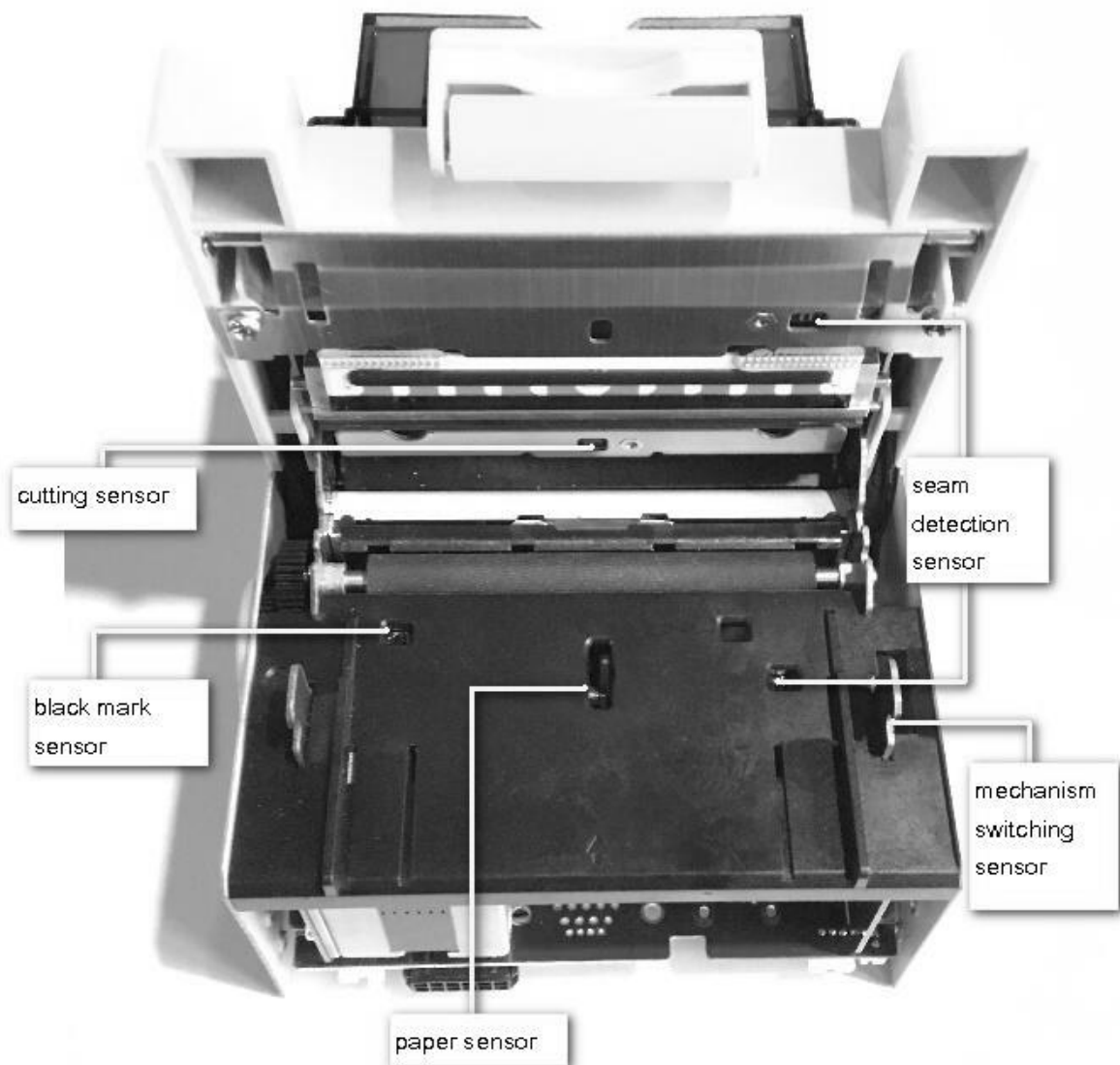


## Downward Vertical Mounting



## Printer Sensors

EP802-TM comes with a full range of sensors to get printer status and send status information to host. The sensors' positions are shown as following:





- **Paper entry sensor:**

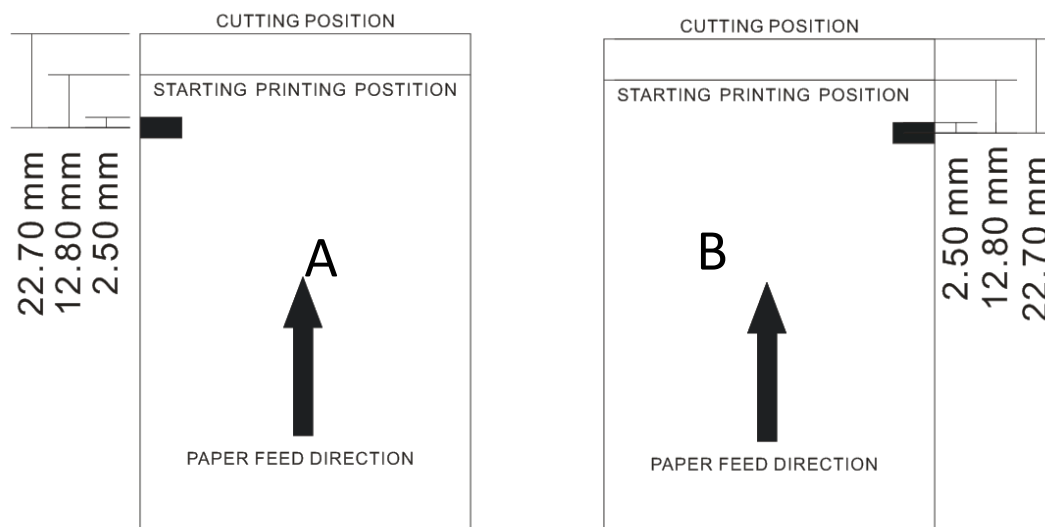
Paper entry sensor is used to detect whether there is paper in printer mechanism

- **Mechanism switch:**

When printer mechanism is closed well, the sensor is activated. When mechanism is open, the printer goes off-line.

- **Black mark sensor:**

Black-mark sensing has a black mark on thermal paper, and the printer searches for the black bar to determine when to stop feeding paper, printing and cutting. The position of black bar just as following A&B shown. (A is for 80 mm or 82.5 mm paper width; B is for 60 mm paper width.(note: black mark can't be printed on thermal coating side)



- **Seam Detection sensors:**

Seam detection sensors are inserted feed path and can detect the paper gap to decide when to stop printing. (those sensors will be used for label paper and fan-fold ticket, below are paper sample)

**Label paper:**

**Fan-fold ticket:**



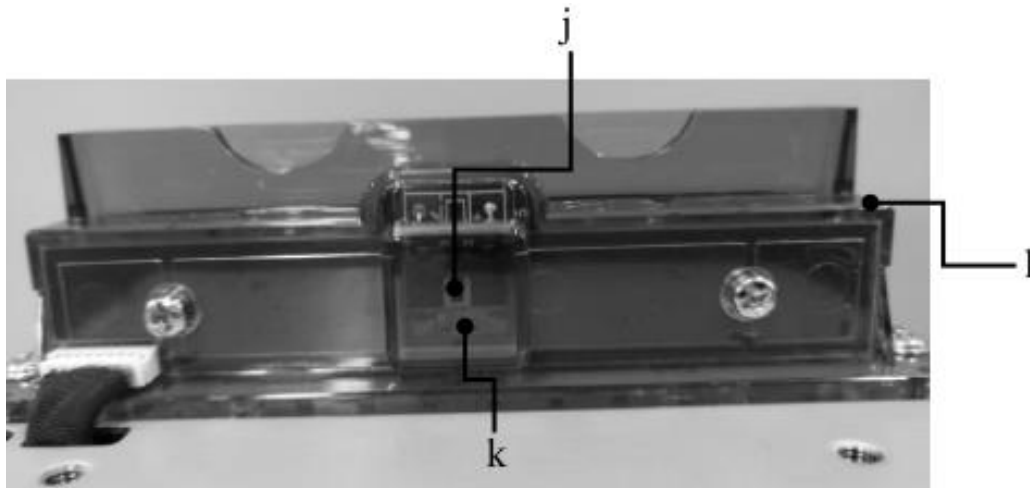
- **Cutting sensor**

Cutting sensor is used to detect paper status before and after cutting. Normally, the receipt goes forward and out of the bezel after cutting. If there is a paper jam or other errors, the sensor can detect the wrong status sending to host and printer stops printing.

- **Paper Out sensor**

A ticket out sensor is provided as a standard. Approx. 12cm length of paper is left

- **Smart Bezel Sensors**



**Ticket Taken Sensor ( j ) :**

The sensor detects whether ticket is taken away or not by the user

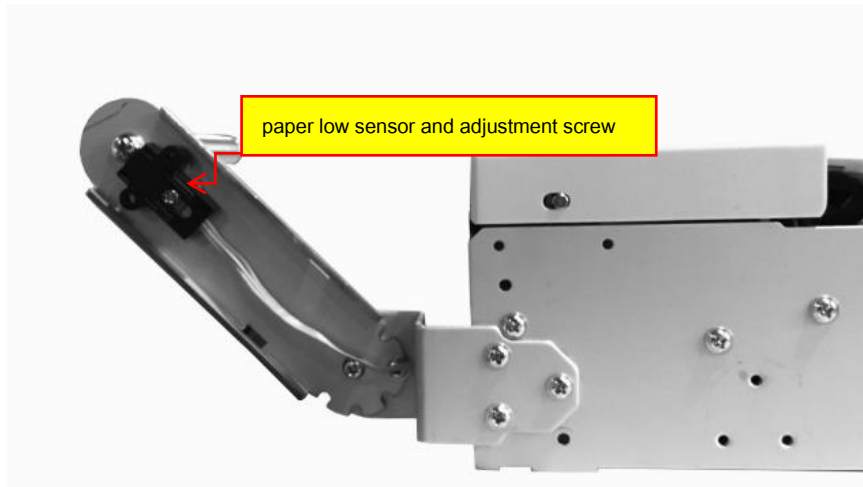
**“Drag detection” system sensor ( k )**

Paper drag detection sensor detects when the ticket/paper roll is being pulled or manipulated prior to ticket completion.

**“Block detection” system sensor ( l ) :**

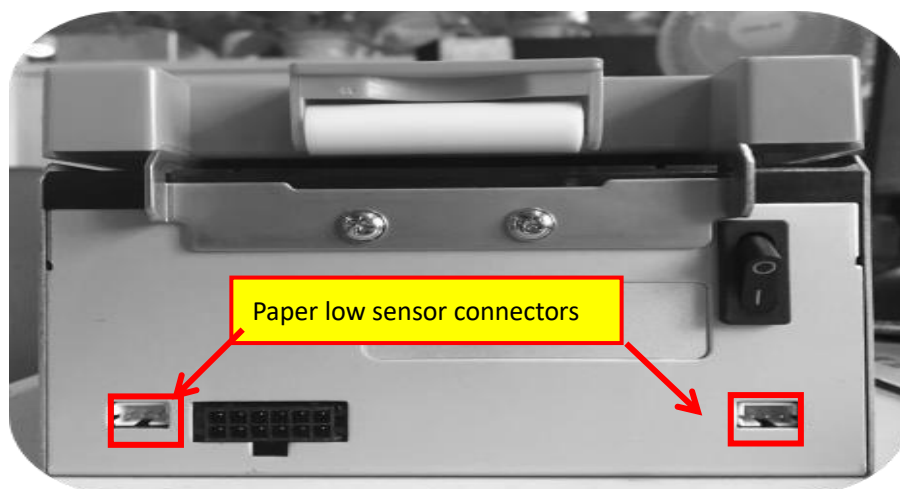
Paper blocked sensor can detect paper been blocked in the bezel exit

- Paper low sensor



Paper low sensor is used for detecting whether the paper roll is sufficient or not. The PE red indicator will light on if the paper is near end. (note: this sensor can be adjusted for adapting different size paper roll). There are also two paper low sensor cable connection ports ,left one and right one ,which brings more options for paper roll installation. To adjust the paper low switch, loosen the switch screw and slide the switch to the desired position and then tighten the screw

- Paper low sensor connectors



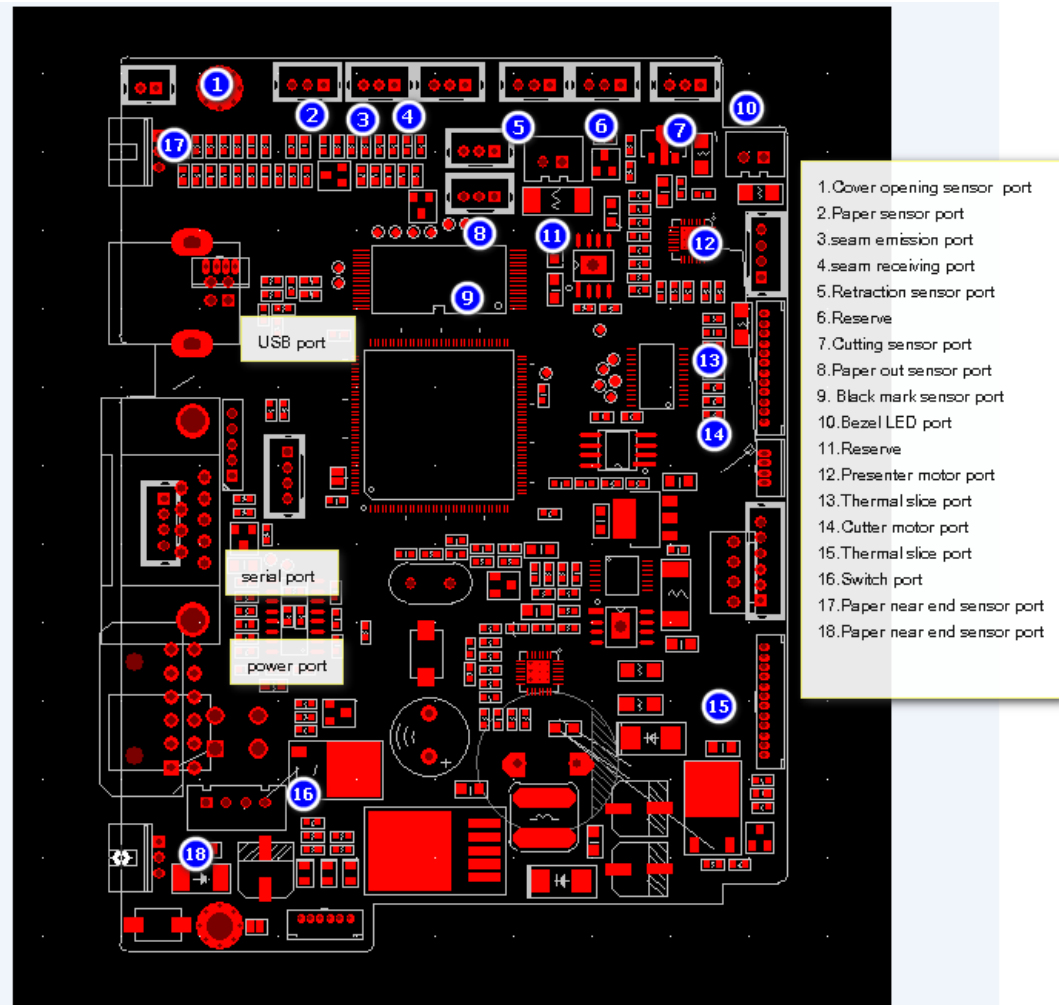
# Electrical Connections

## Communication interfaces

USB and RS-232 are supplied through interface connections at the rear of the printer, as illustrated below. The two-way Serial RS-232 + USB+ power interface connector are integrated as a locking Molex connector.



# Printer Schematic Diagram



## General Safety Information:

- ❖ Before cleaning the printer, user should disconnect the power supply.
- ❖ Clean the printer with a damp cloth. Do not use liquid or spray products.
- ❖ Do not operate the printer near water.
- ❖ During the integration of printer, we strongly warn to keep adequate paper loop outlet underneath the presenter, in order to allow the receipt being properly printed out.
- ❖ Only use the printer on flat surface and in environments that guarantee proper ventilation.
- ❖ Make sure the printer is placed in such a way as to avoid damage to its wiring.
- ❖ Do not spill liquids onto the printer.
- ❖ Do not input voltage incorrect.
- ❖ Use the specific type of electrical power supply. Please contact your retailer if there is any doubt.
- ❖ Do not disassemble or modify printers.

## Precautions for user

- ❖ Use of thermal paper supplied or recommended by manufacturer, or it will affect the printing quality and the printer mechanism using life, even damage the printer head TPH.
- ❖ Ensure all sizes (width, ID, OD) of thermal paper roll within the allowable limitation of range. Or paper cannot go smoothly and straightly.
- ❖ Do not use tough materials to clean the printer head or cutter.
- ❖ Do not touch the printer mechanism or motor as soon as the printer just finishes printing work.
- ❖ The friction between the paper and roller is big. Do not feed paper when no paper in printer mechanism.
- ❖ Clean the printer mechanism with pure alcohol regularly.
- ❖ Clean the dust on printer regularly if the printer used outdoor environment. So that we can get the accurate and valid status of printer.

## Transportation and Storage

- ❖ Do not use printer on unstable platform that might cause it to fall and seriously damaged. The printer may be damaged if falling.
- ❖ Keep its storage environments in dry and clean.
- ❖ Do not put heavy products on it.
- ❖ Do not stand on it.
  - ❖ Please disconnected power if the printer is not used for some time.