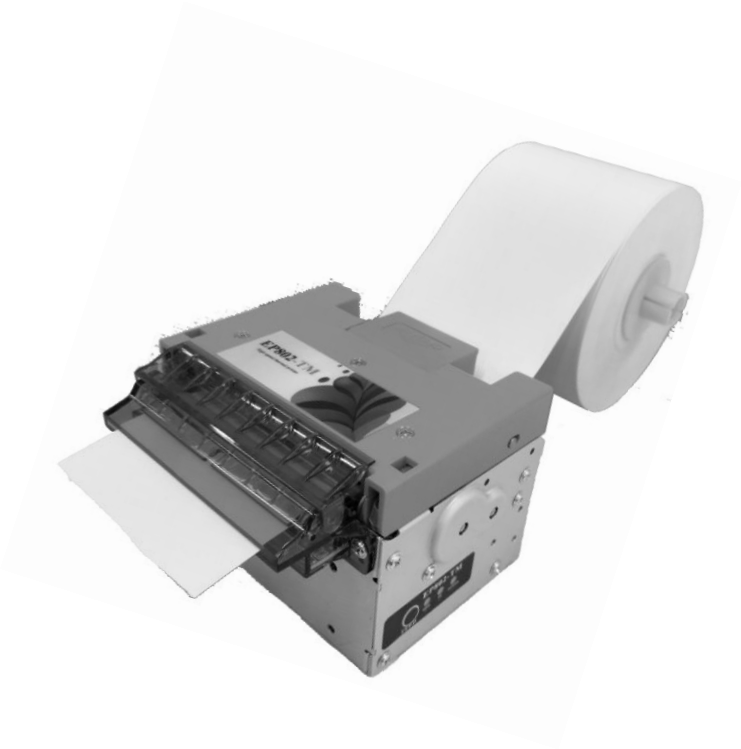
TM
User Manual
Version 2.0



Change history

Rev V1.0 Initial release	Date: 20th June 2017
Rev V2.0 printer updated version	Date: 08th December 2017
Rev V2.0 add grounding instruction	Date: 18th April 2019
Rev V2.0 add LED connector definition	Date: 5th JUL 2020

Table of contents

Introduction..... - 3 -
General Specifications..... - 5 -
Power Supply Connection..... - 8 -
Technical Specifications..... - 8 -
Printer Interfaces..... - 10 -
RS-232C connector interface..... - 11 -
USB connector interface..... - 12 -
Printer Component Diagram..... - 15 -
LED Indicators..... - 19 -
There are three indicators showing printer status:..... - 19 -
Self test..... - 20 -
Paper Width Adjustment..... - 21 -
Loading Paper Roll..... - 22 -
Printer Maintenance..... - 23 -
Mounting Requirements..... - 25 -
Horizontal Mounting..... - 31 -
45° Downward Mounting..... - 31 -
Downward Vertical Mounting..... - 32 -
Printer Sensors..... - 35 -
Electrical Connections..... - 40 -
Communication interfaces..... - 40 -
Cable Connection Locations..... - 41 -
General Safety Information :..... - 42 -
Precautions for user..... - 43 -
Transportation and Storage..... - 43 -

Introduction

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 a individual power switch for easier and safe maintenance.

Moreover, our team improved version TM.

This version is designed with short “smart” paper bezel which integrated “anti-drag” ticket system. The unique technology is aimed to improve user friendly experience. Which prevents printers from “paper jam” issue largely caused from “dragging unfinished ticket”during printing job.

Key Features

- Unique “anti-drag” ticket system
- Fully integrated printer mechanism, sensors and PCB architecture
- Varying ticket lengths – to meet Sports Betting requirements.
- Independent Full or partial cutting by adjustable.
- 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)
- Ticket with Face-up 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.

- “anti-drag” ticket system
- 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: 80mm and 82.5mm
- RoHS /CE Compliant
- Bezel assembly with LEDs (Colour Options available – subject to agreement)
- Universal paper roll spindle (80.0mm & 82.5mm.)
- Printer head easily accessed for quick and easy maintenance.
- Paper roll tensioner to handle larger paper rolls

Options:

- 80 mm paper guides
- Larger core spindle sleeve
- Front/Top Paper roll loading - kit
- Optional PSU/Serial or PSU/USB cable set (centre left or centre right direction)
- Yellow knob
- Paper roll holder
- LED bezel
- DC24V/2.5A power adaptor (with power cord)

Barcodes

The Following barcodes are available with TM 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

this printer minimum ticket length can be reached at 60 mm.

Ticket blocked detection Feature

The TM This feature can help user to monitor ticket status if there happend balefully damage to printer . some one blocked terminal ticket exit. Then this printer system

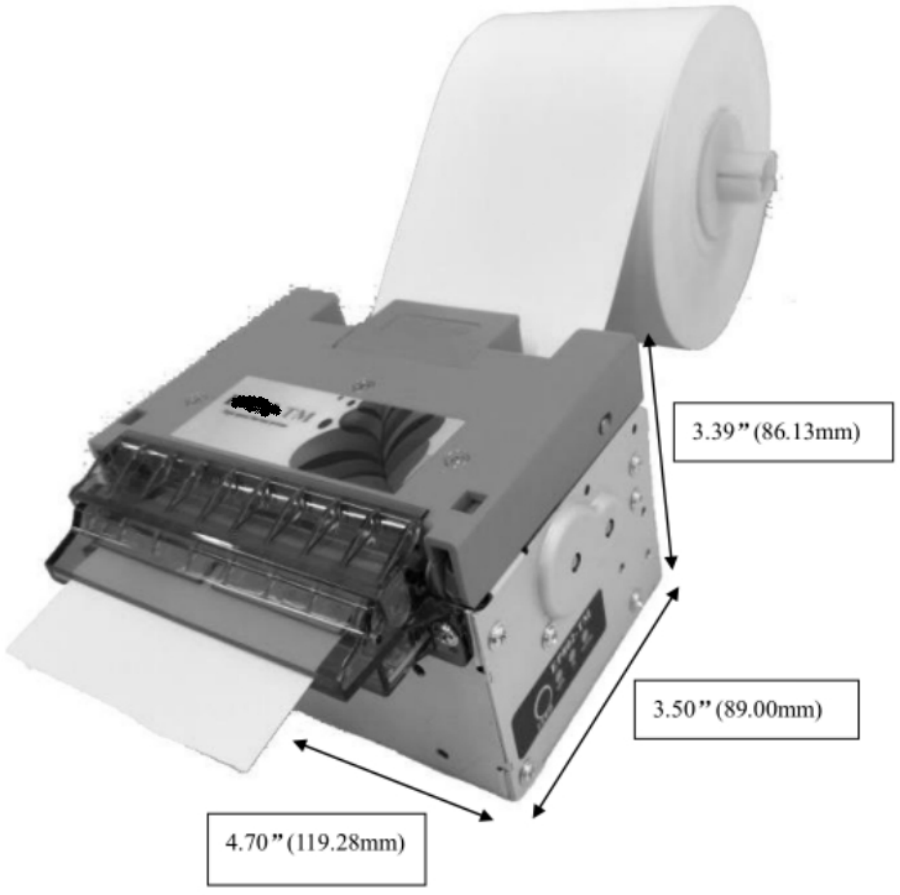
can detect it and tell terminal server.

“Anti-drag” ticket system Feature

The TM this feature can help user to prevent largely ticket jam issue if there happened people “dragging unfinished ticket” during printing job when they waited in front of self-service terminals & kiosks.
This system working theory is “detecting dragging status and auto cutting ticket”. then result is preventing printer from jam issue and people will get several medley paper which still can be composed as a complete bill.
This kind function are strongly recommended to outdoor unattended environment.

General Specifications

Dimension



	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 1.45 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

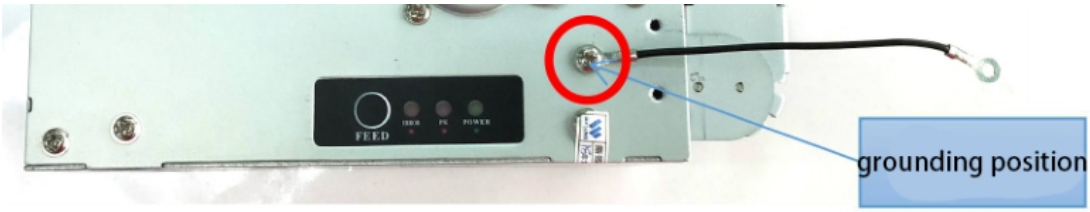
current requirement. High density printing increases peak load on the power supply. These high peak currents can cause power supplies in extreme cases to shut down. Selecting the correct power source/supply will ensure the correct operation of the printer.

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.

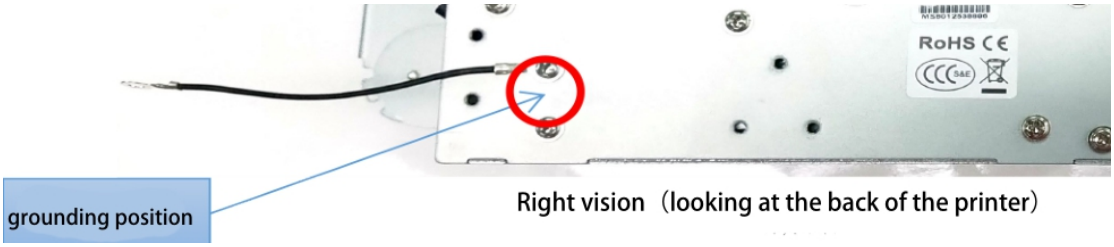
Voltage under line, load and environmental conditions	24V DC ±10%
Typical Load current	0A min 1.5A continuous 3.2 A Peak Note: this load current does not include the optional bezel drive requirement
Over voltage protection	None (standard input : DC24V±10%）

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.



left vision(looking at the back of the printer



Right vision（looking at the back of the printer）

Notice : screw depth must be not exceed 5 mm or it will damage inner circuit boards or cables of printer.

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 TM printing module

Module		TM	
Control board		02_3	
Printing	Printing method	Thermal dot line	
	Dots	640dots	
	Speed	250mm/s	
	Printing width	80mm (max)	
	Paper loading	Easy loading (horizontal 180°)	
	Cutting method	Full/Partial by adjustable	
	Print head life	100KM	
	Printing format	inverse、underline、italic、bold	
	Cutter life	60μm paper	1,000,000 cuts

		200μm paper	750,000 cuts
	Baud rate	9600、19200、38400、115200	
Font	ASCII	9*17、12*24	
	Chinese	24*24dots	
Detection	TPH temperature	Temperature sensor	
	Mechanism open detection	Micro switch	
	Paper presence detection	Mechanical sensor	
	Ticket out detection		
	Paper low detection	Photo-interrupter	
	Black mark detection		
	Paper cutting detection		
	Paper blocked detection		
Conditions	Power supply	DC24±10% V	
	Load current	1.5A continuous 61mA Standby 3.2 A Peak	
	Interfaces	RS232、USB 2.0	
	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℃（no condensation）	
	operating humidity	20%~80%RH（40℃,85%RH）	
	Storage temperature	-20~70℃（no condensation）	
	Storage humidity	10%~90%RH（50℃,90%RH）	

Dimension	Paper holder 45° upward (150mm paper roll)	L*W*H=219.5*119.30*87.3mm
	Paper holder horizontal (150 mm paper roll)	L*W*H=294.5*119.30*87.5mm
	Paper roll holder vertical (150 mm paper roll)	L*W*H=154.2*119.30*258.6mm
	Weight	Approx 1.45 kg(without paper roll)

Auto cutter position

Cutter type: guillotine

Media width: 82.5 mm

Media thickness range: 0.06~0.2 mm

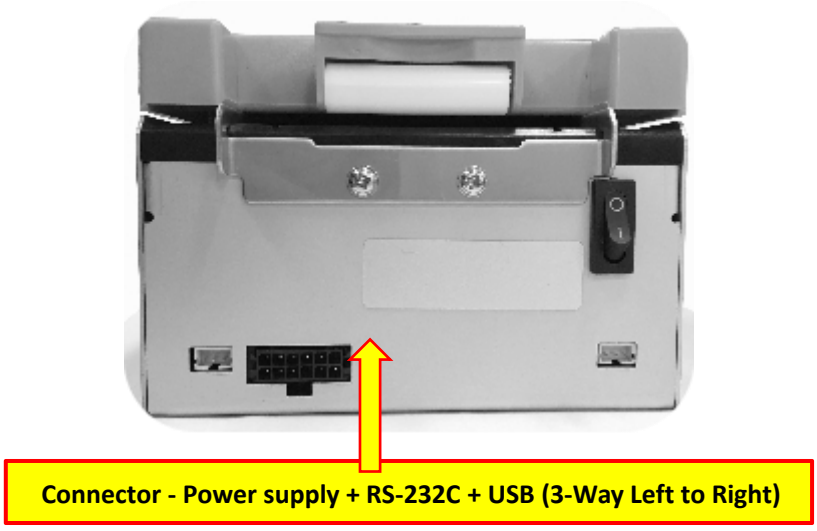
Cutter life: 1,000,000 cuts (Lower grade - 55gsm)

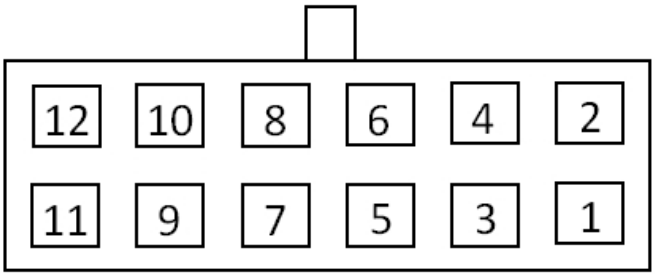
Cut time: >500 milliseconds

Paper out

A ticket out sensor is provided as a standard. Approx 5 inches length of paper is left

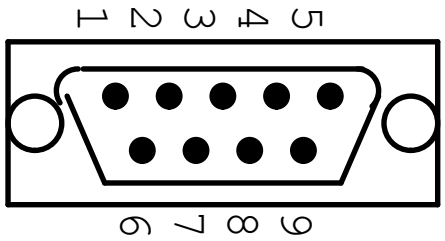
Printer Interfaces





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



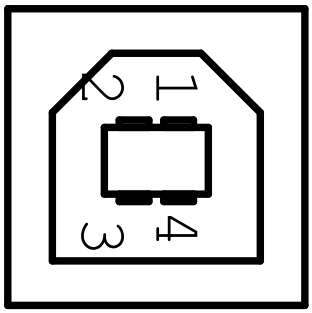
EPRINTER RS-232C cable for printer is full cross cable, pins are defined as below:

Pins	Definition
2	RXD
3	TXD

4、7	DTR
5	GND
1、6、8、9	NC

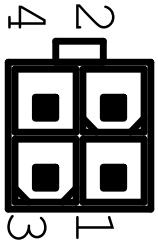
USB connector interface

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 port



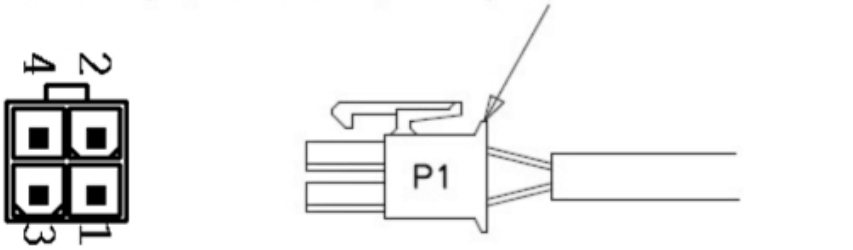
Pins	Definition
1	24V(DC)
2	GND
3	GND

4	NC

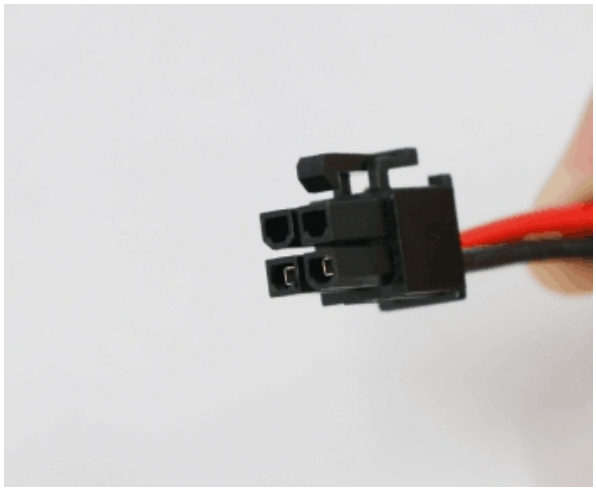
Kiosk Terminal power connector standard reference, as below

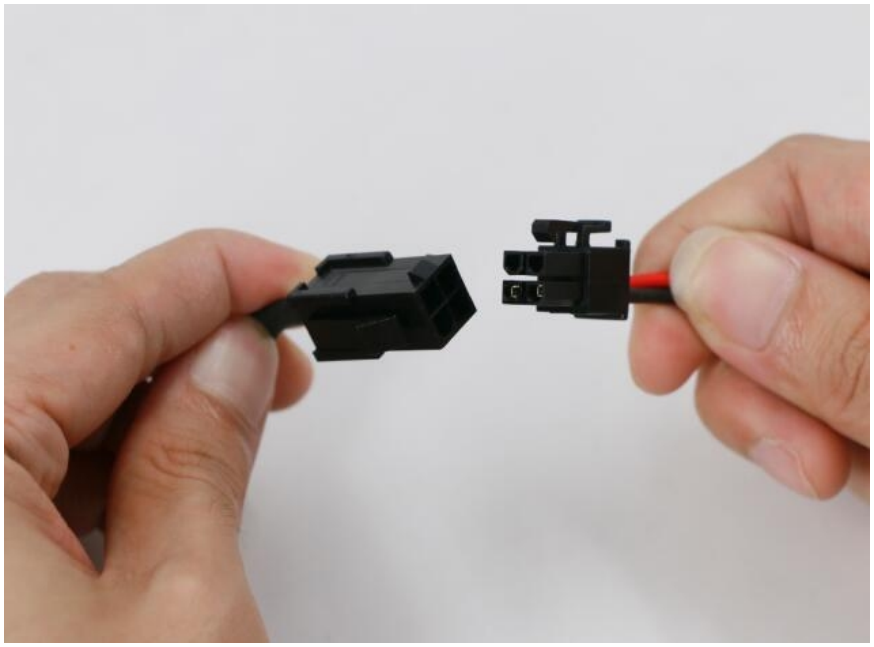
Power connector

Housing – Molex, 4 Position Mini-Fit Jr, p/n: 39-01-2040
Terminal – pin, 18-24 AWG, Molex p/n: 39-00-0059

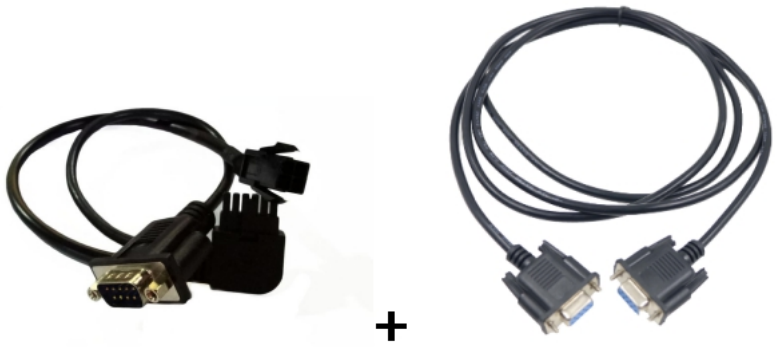


Terminal power connector picture





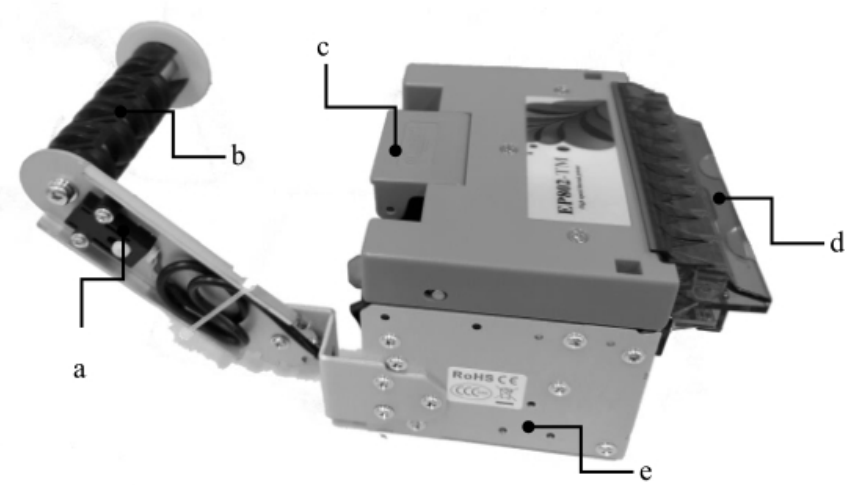
Note: Optional 2-way Connector cables available.

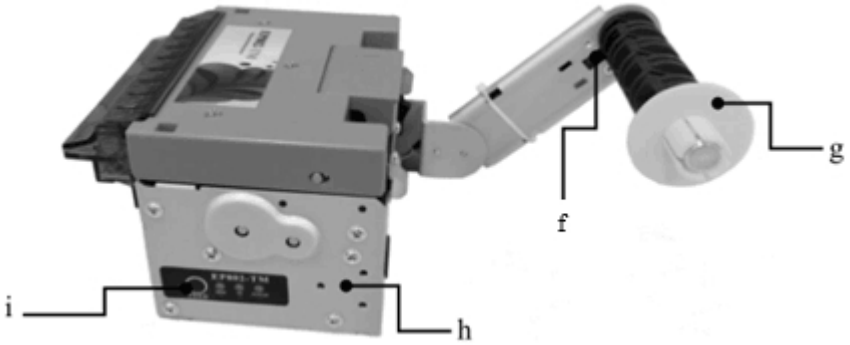


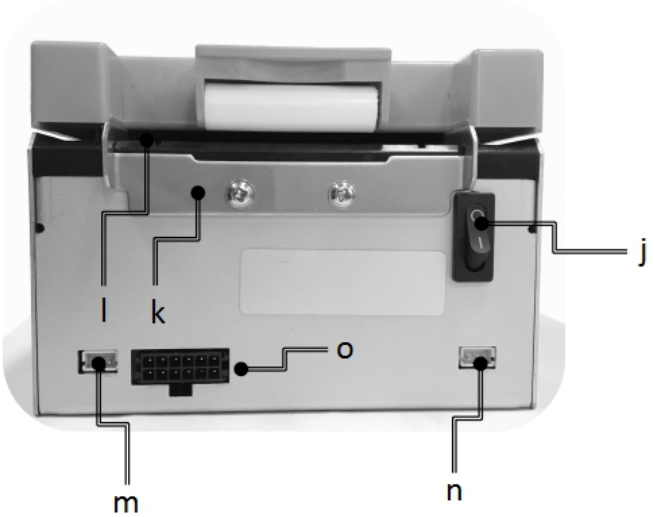
Option 1: 2-Way Connector Cable – Power & RS-232C

Option 2: 2-Way Connector Cable – Power & USB

Printer Component Diagram

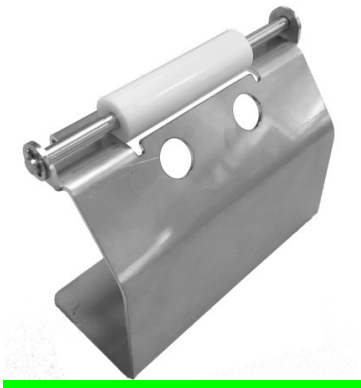




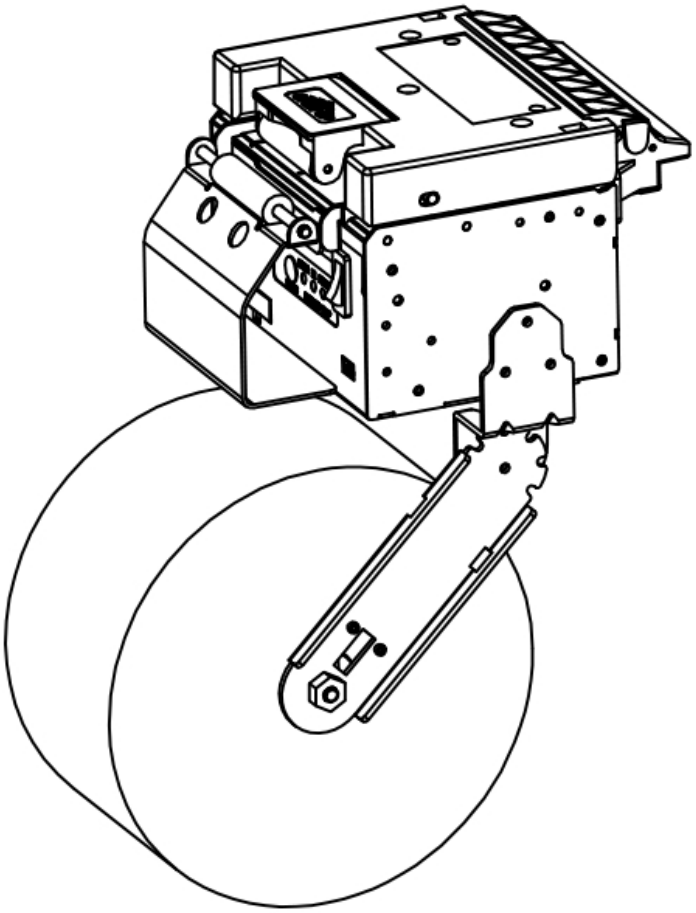


a: paper low sensor position adjust plastic screw
b: blue paper roll sleeve
c: printer head open wrench
d: paper bezel (with LED bar and paper blocked sensor inside)
e: screw holes for vertically mounting paper holder
f: paper low sensor
g: yellow knob
h: screw holes for right side mounting paper holder
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 part: paper guide



Notice: this part is designed for that user installed printer paper roll holder on vertically . it can help paper feeding more smoothly . as below

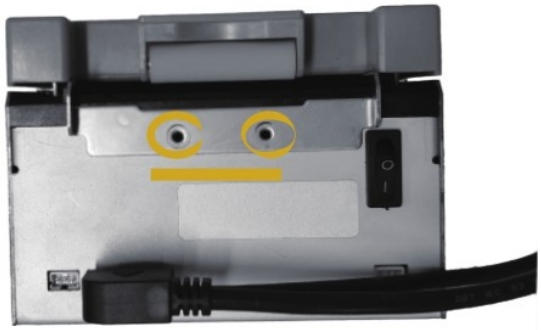


Brief steps about how to install “ paper guide “

Notice: please ensure connector cables installed on printer before you start to install”paper guide part”

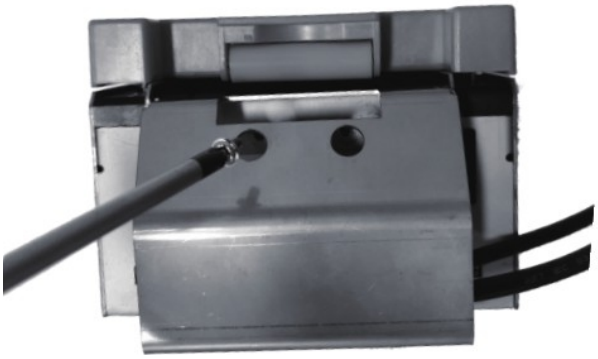
Step 1

Remove the two screws and plug in the integrated cable as below

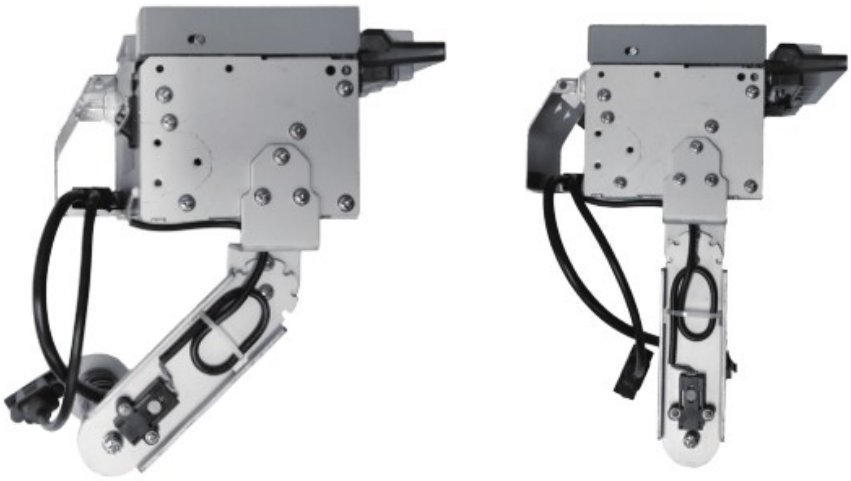


Step2

Install the paper guide part and use the two screws to lock the paper guide part as below



Final effect :



LED Indicators

There are three indicators showing printer status:

ERROR	PE	Status
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 .

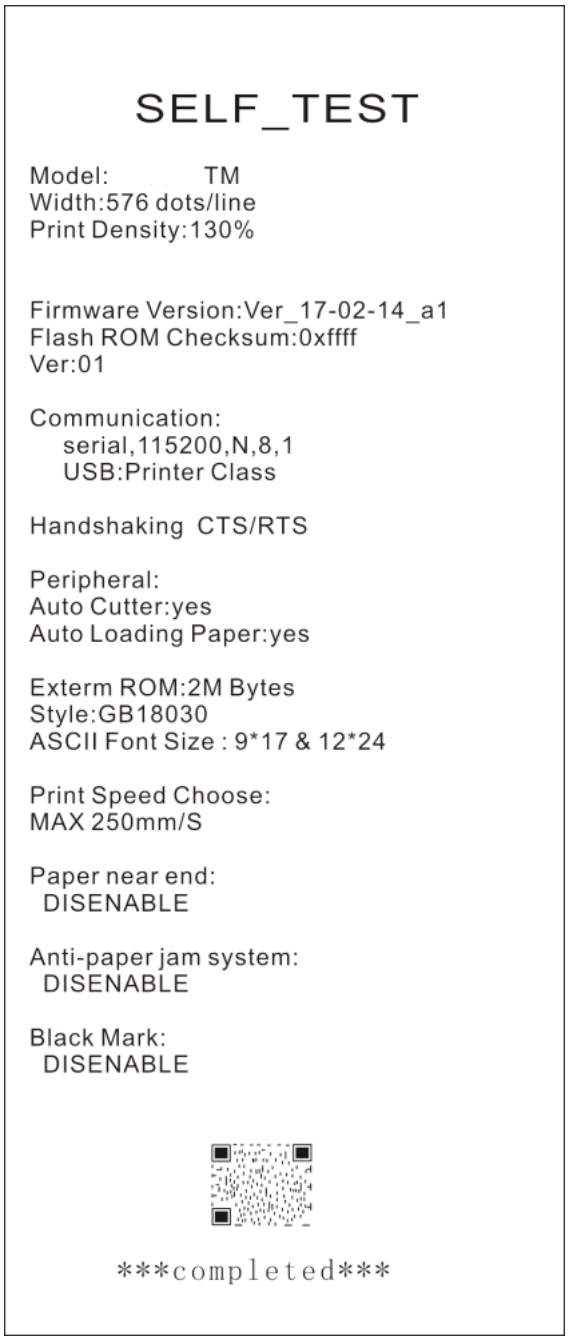
Self test

Printing 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)**

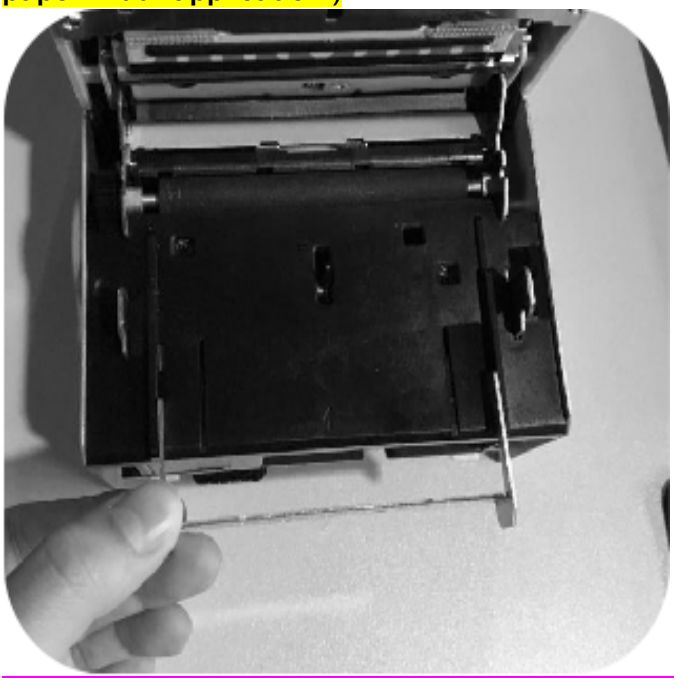
② **Please send command "1D 28 41 02 00 00 02" for self-test. Set the next line as a starting position after the printing.**

Self-Test page is as below ：



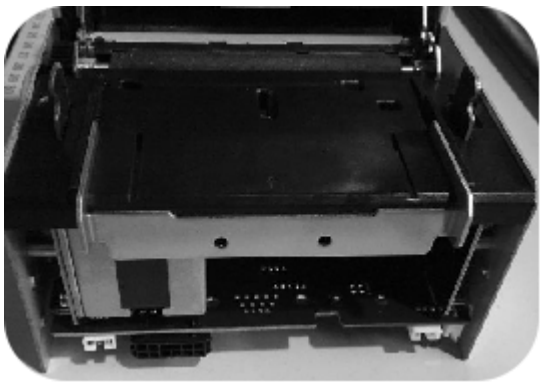
Paper Width Adjustment

Paper width can be adjusted to accommodate different paper roll widths.
(80 mm and 82.5 mm) by using “paper guide”.
Opening wrench upward and put the paper guide slides into the channel.
Please ensure correct fit when inserting the guide.
(notice: please contact manufacturer to get different kit for suiting different paper width application)



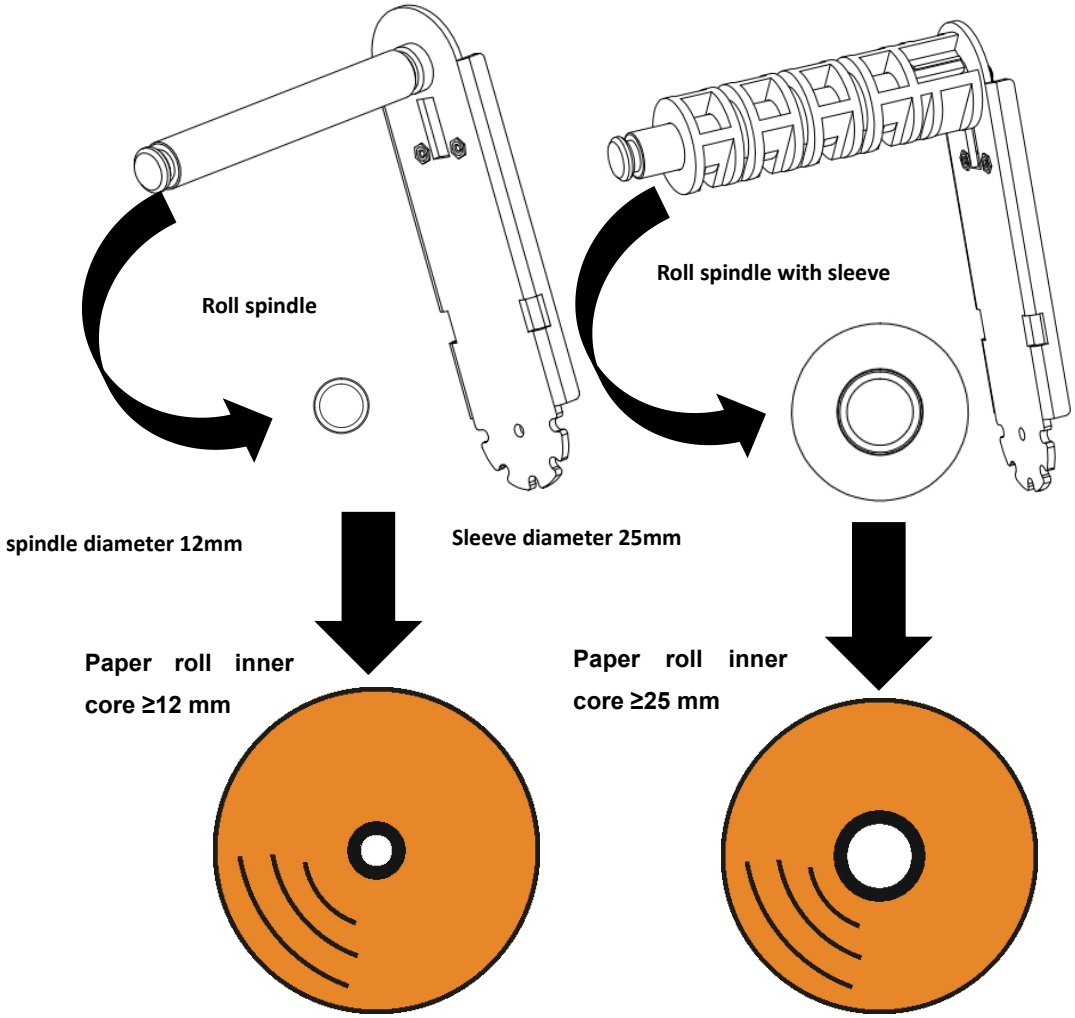
1. Without paper guide : user can use 82.5mm width paper

2.with 80mm paper guide: user can use 80mm width paper



Loading Paper Roll

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

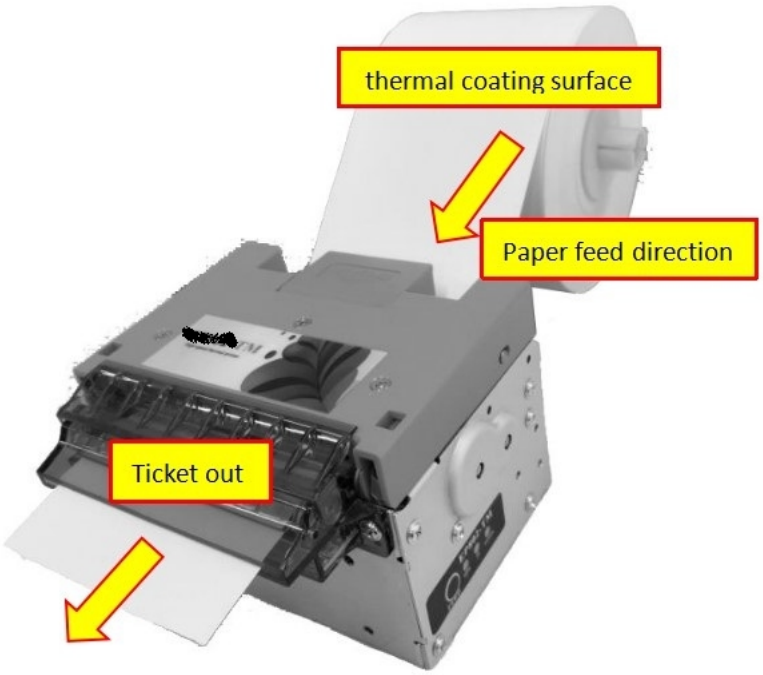
(1) Before inserting paper, make sure its edge is clean, as below:

(2) Insert thermal paper into the paper entry channel until paper printer starts automatically to load/feed the paper.

Notice: if user loaded paper not enough ; then printer error LED lights on

then user just plugs out paper and adjusts longer paper to feed in until it reaches at rubber shaft.

finally paper be loaded correctly.

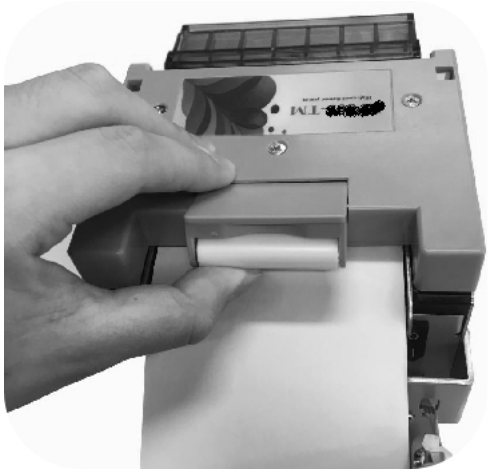


(3) Ticket will be out

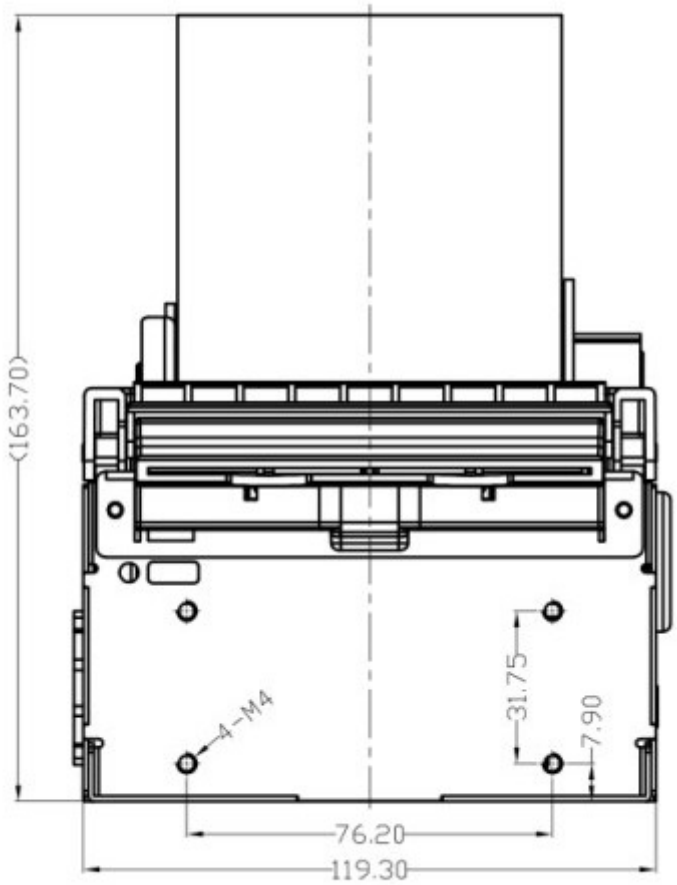
Printer Maintenance

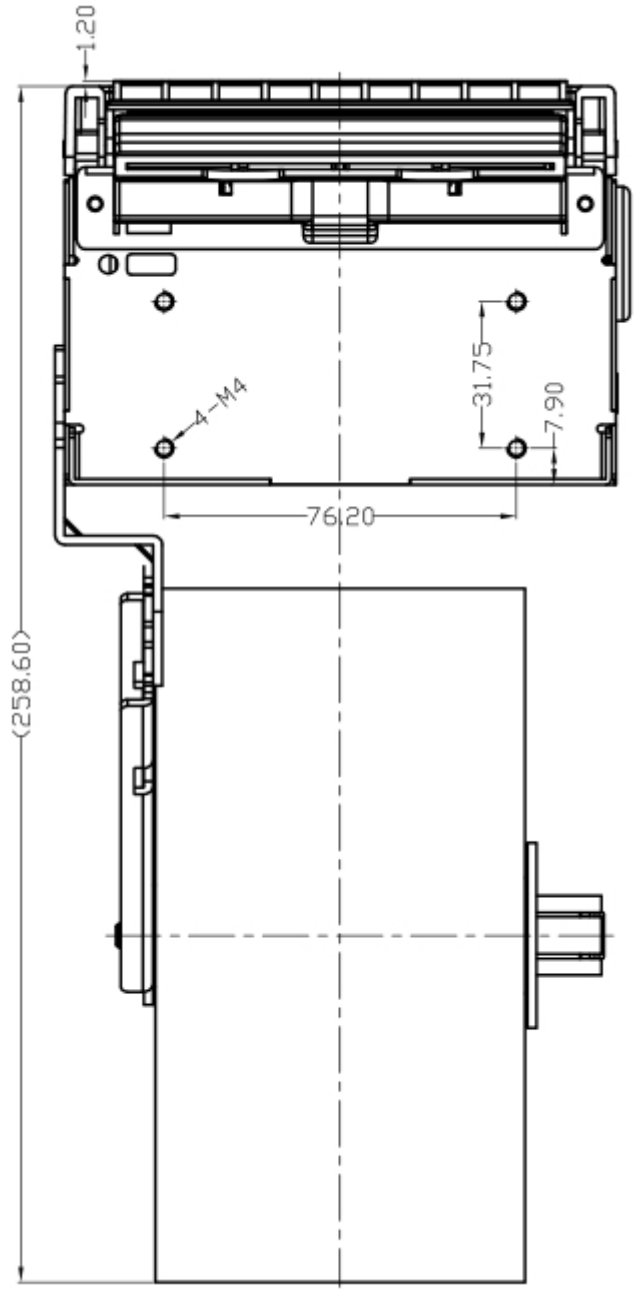
Open the main cover and blow out all the paper dust on a regular basis, based

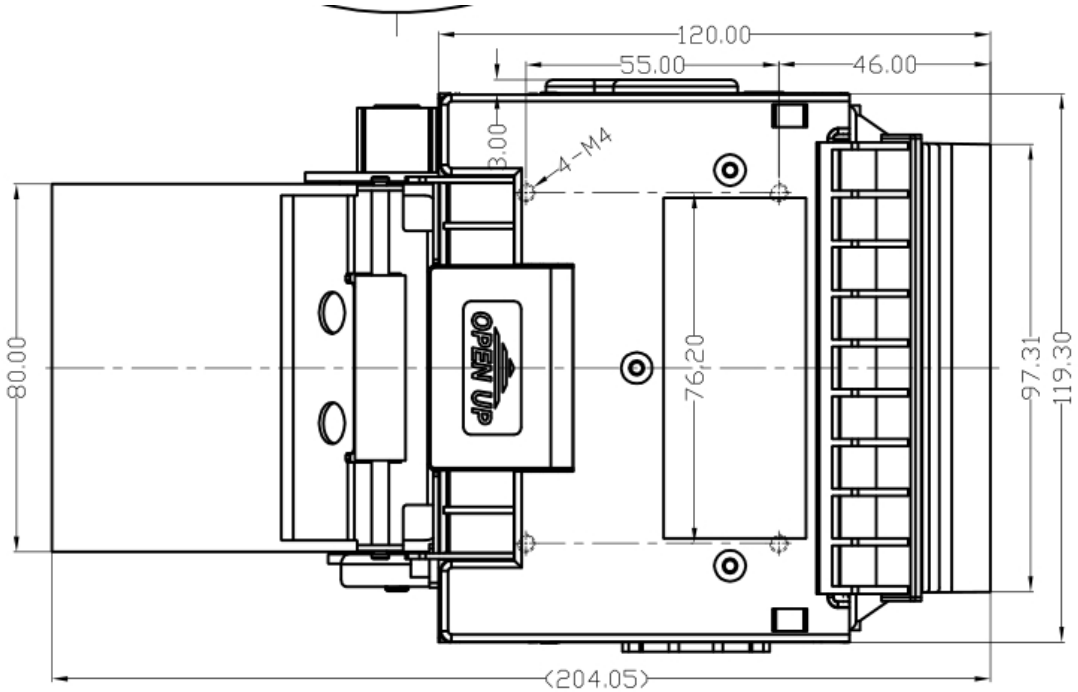
on usage at least every 6 months.
Clean the print head with an approved alcohol or solution using a soft cloth.
Avoid touching the head with fingers or any hard item likely to scratch.
All paper debris should be removed carefully without the use of a screw driver.
Maintainer can open printer head via open wrench, as below

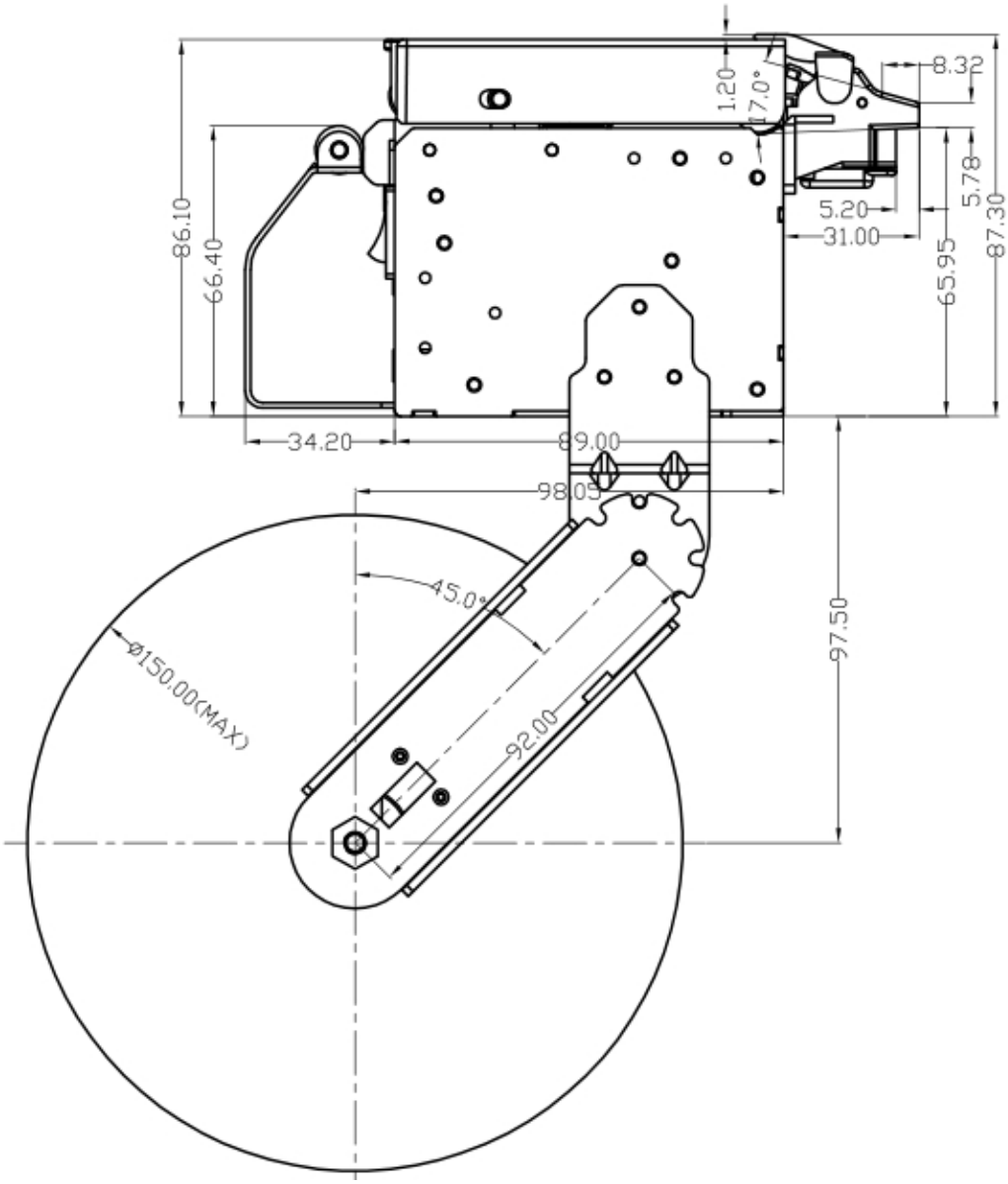


Mounting Requirements




1.20
4-M4
31.75
7.90
76.20
(258.60)

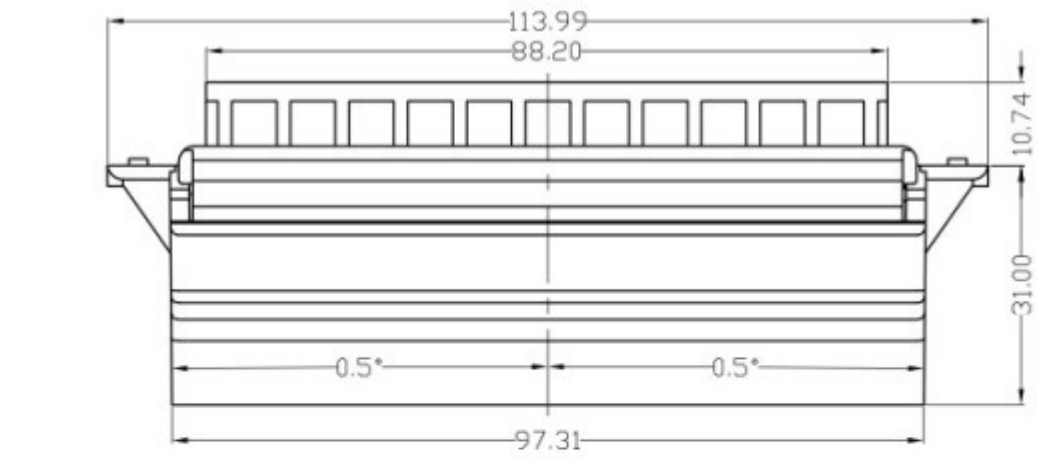

120.00
55.00
46.00
3.00
4-M4
80.00
76.20
97.31
119.30
(204.05)
OPEN UP

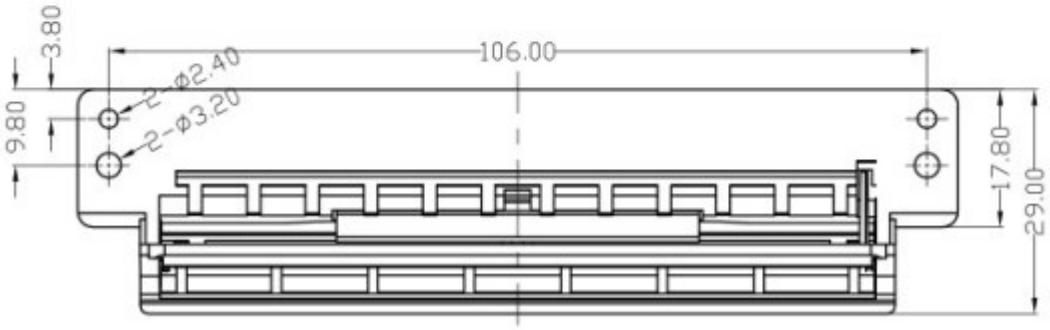


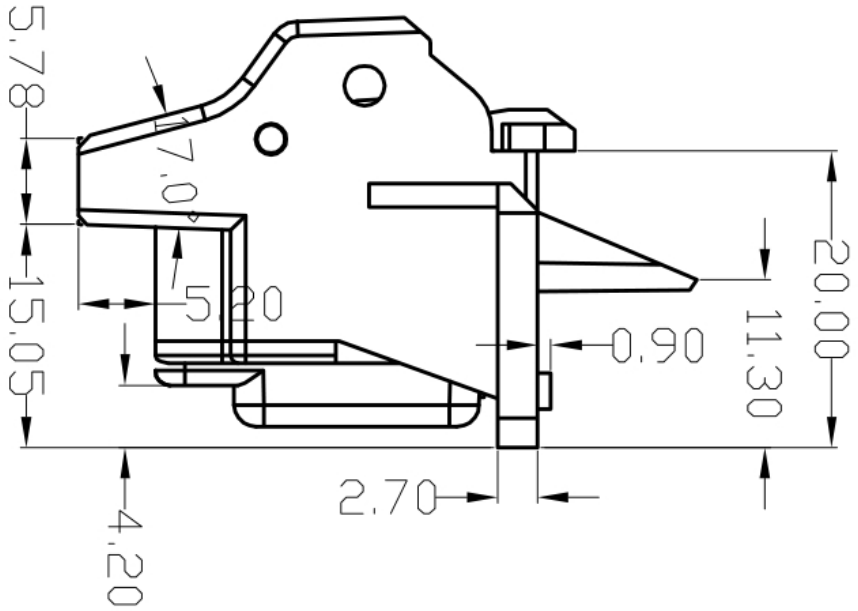
Bezel Mounting

TM 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 TM bezel's mounting points.

Front:
2 x M3 x 0.5 screws and interface with custom bezel.
(bezel view as below)







Note: there are two color type bezels by user option

Transparent blue : it can show LED light to attract user attention.

The bezel LED working mode :

Printer is power off	LED off
Printer is ready	illuminating

Ticket is held on bezel or ticket taken sensor broken	Slow flashing
Ticket is blocked in bezel	Fast flashing

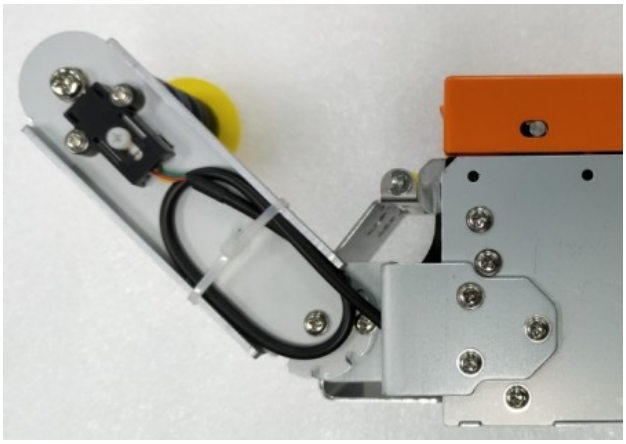
Dark black : it can't show LED light out

Note: some users didn't like LED function, so dark black bezel can meet their personal need. Moreover, if the kiosk usage environment has strong light exposuring. It's better to choose this dark black bezel. Because strong light directly radiates to printer bezel. It will influence the sensors normal functions in bezel.

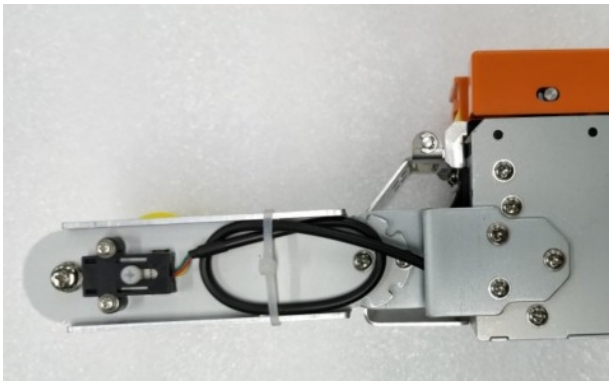
Paper roll holder installation

The TM 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.

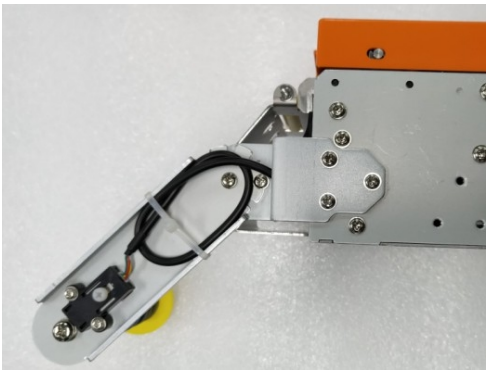
45˚ Upward Mounting



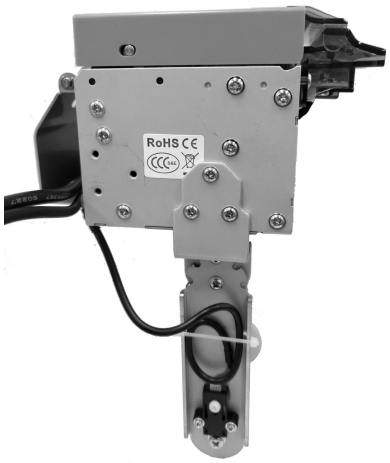
Horizontal Mounting



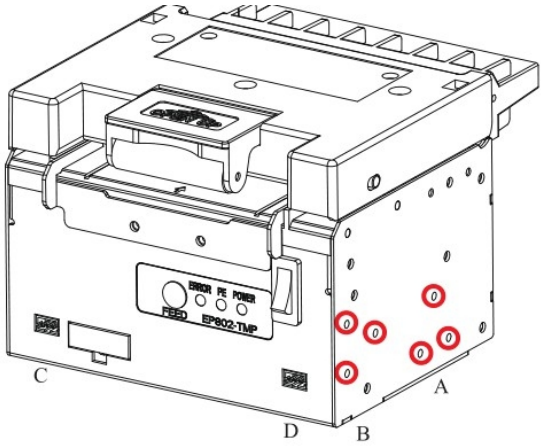
45° Downward Mounting



Downward Vertical Mounting



Brief steps for installing paper roll holder.



A:The location holes for vertical installation

B:The location holes for horizontal installation

C:The location holes for right-horizontal installation

D:The location holes for left-horizontal installation

Choose a direction for the paper roll holder

There are five necks for different installation direction.
Figure 1 below shows the position of the necks, figure 2 shows the installation position.

Paper roll holder installation procedures:

1.Loosen screw 1 and remove screw 2.
2.Choose an installation direction as you want.
3.Tighten the two screws, which have been done in step 1, and step2.
4.Tighten the screws.

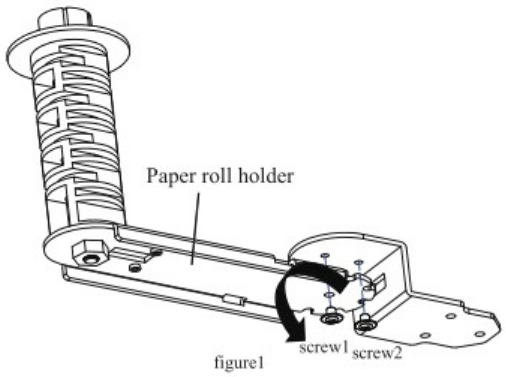


figure1

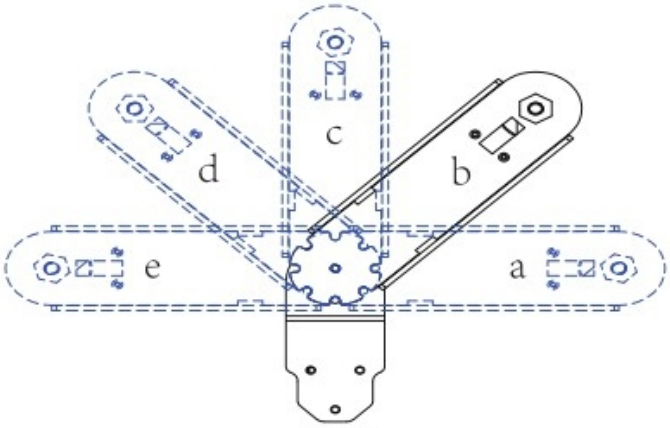
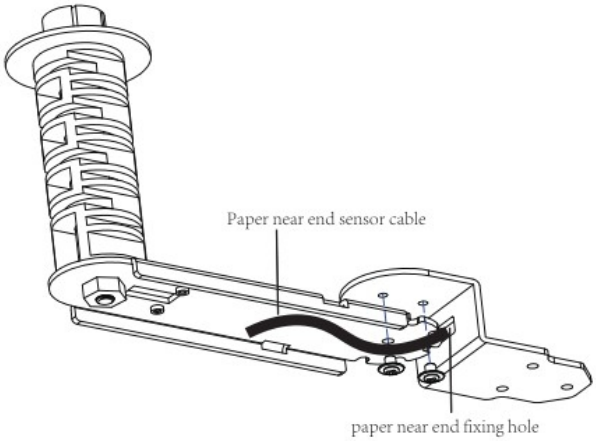
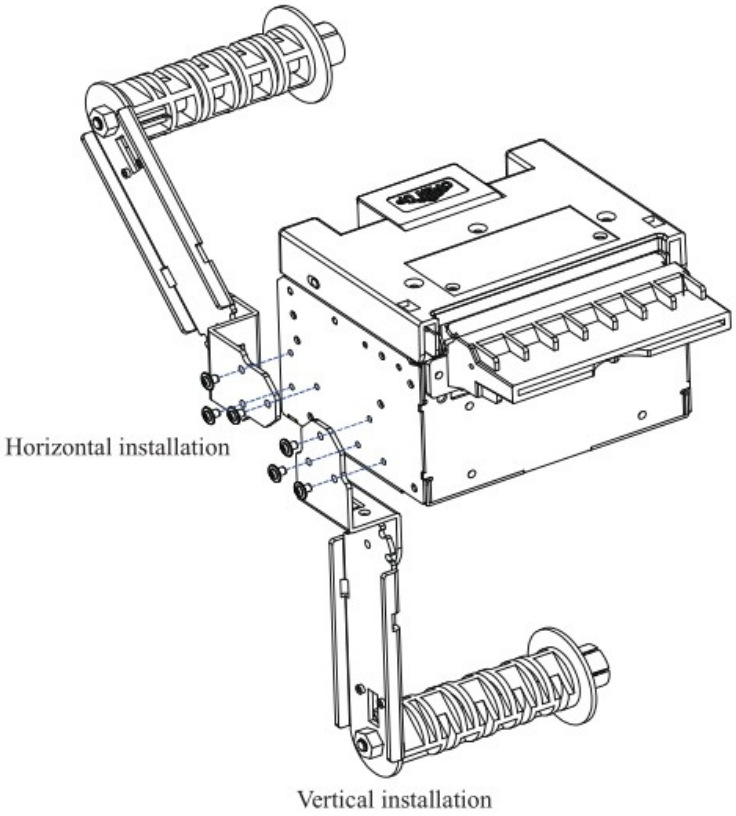


figure2

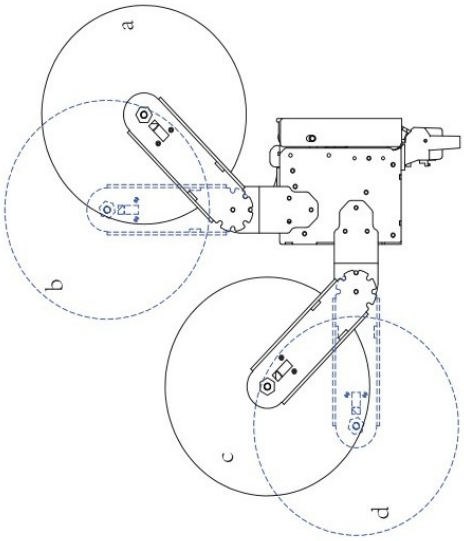
Attention:
Each time you change paper roll holder installation position, you need to replug in “paper near end sensor cable”.



- Choose a group of location holes to fix the paper holder.
- According to your installation condition to choose a direction for installing the paper roll holder.

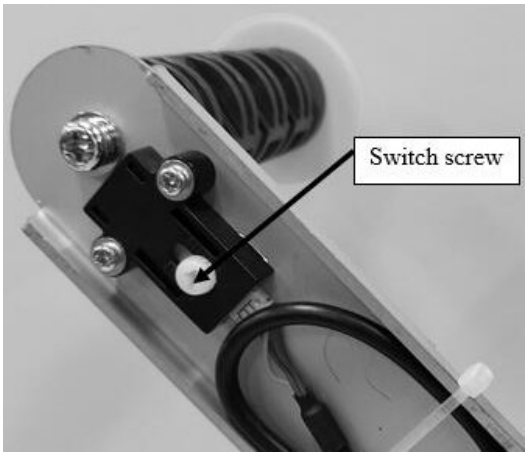


Steps for paper holder fixing:
1.Match the screws holes of printer and paper holder.
2.Tighten the three screws.
3.Fasten the paper near end cable.



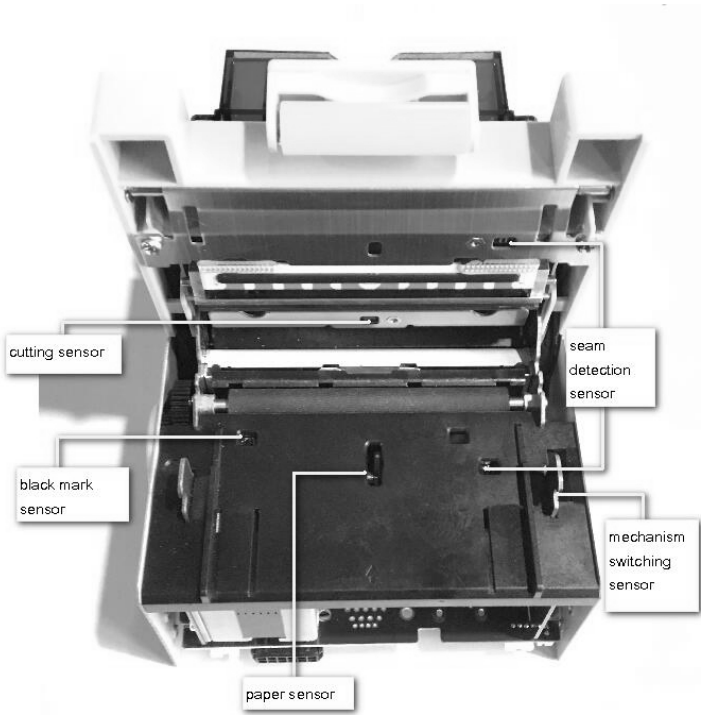
Paper low adjustment

To adjust the paper low switch, loosen the switch screw and slide the switch to the desired position and then tighten the screw



Printer Sensors

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:**

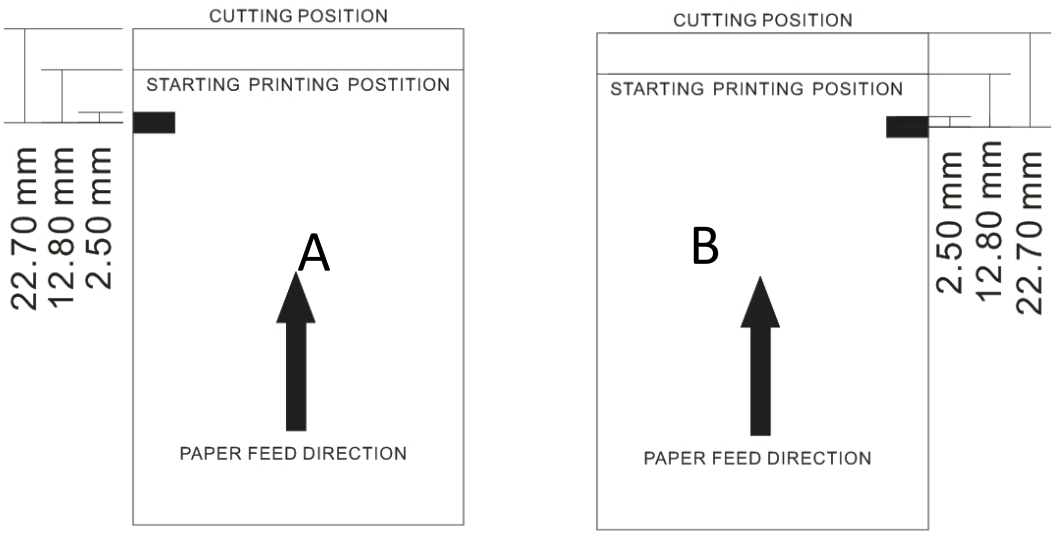
  Paper entry sensor is used to detect whether there is paper in printer mechanism

- **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. On normally, the receipt goes forward and out of paper bezel after cutting .But if there is paper jam or other errors ,the sensor can detect the wrong status sending to host and printer stops printing .

- **Ticket taken sensor** :

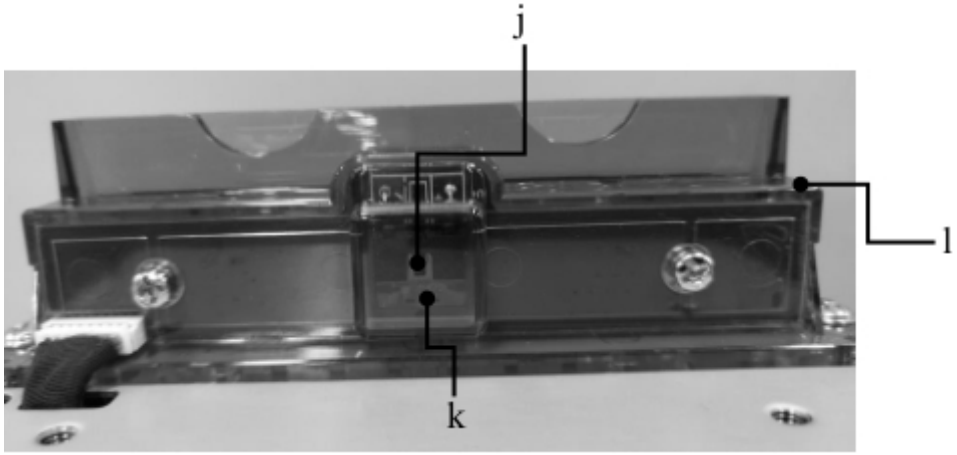
The sensor detects whether ticket is taken away or not by terminal user

- **Paper blocked detection sensor** :

Paper blocked detection sensor can detect paper blocked status and remind terminal user to check kiosks ticket exit outside environment.

- **“Anti-drag” system sensor**

this feature can help user to prevent largely ticket jam issue if there happened people “dragging unfinished ticket” during printing job



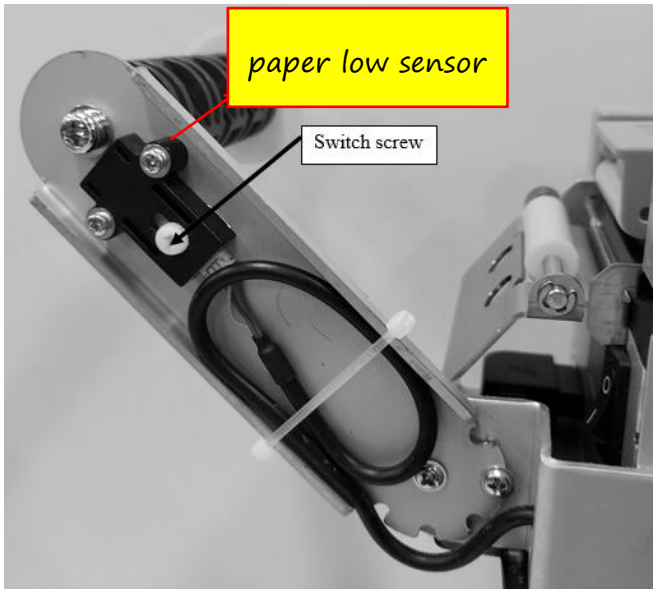
Note: ticket taken sensor located at position “j”

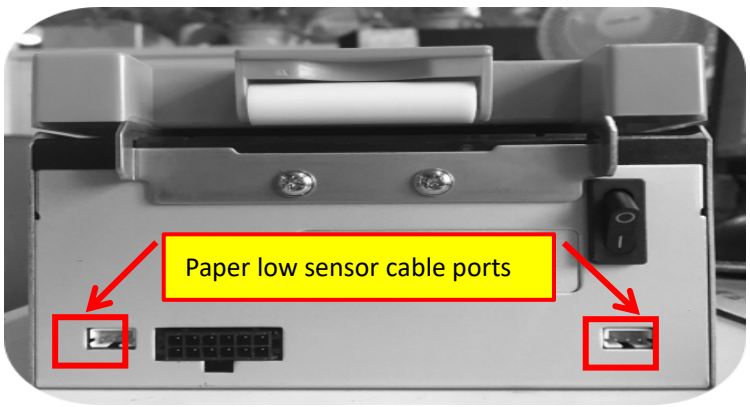
Paper blocked detection sensor located at position “l”

“anti-drag” system sensor located at position “k”

- **Paper low sensor**

Paper low sensor is used for detecting whether the paper roll is sufficient or not. The PE red indicator will lighten on if the paper is near end. (note: this sensor can be adjusted for adapting different size paper roll)
moreover, there are two paper low sensor cable connection ports by user option ,left one and right one ,which brings more options for paper roll installation.

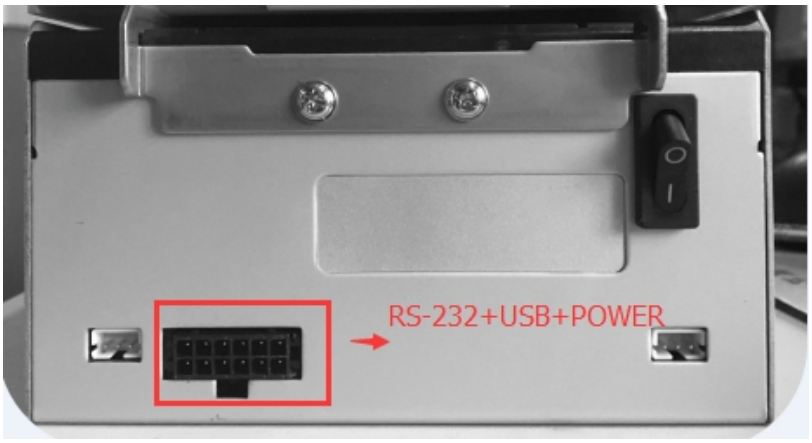




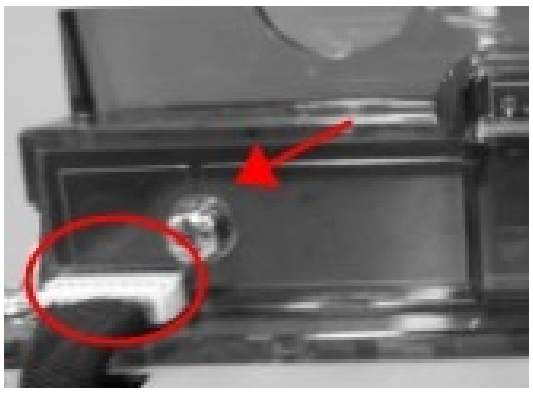
Electrical Connections

Communication interfaces

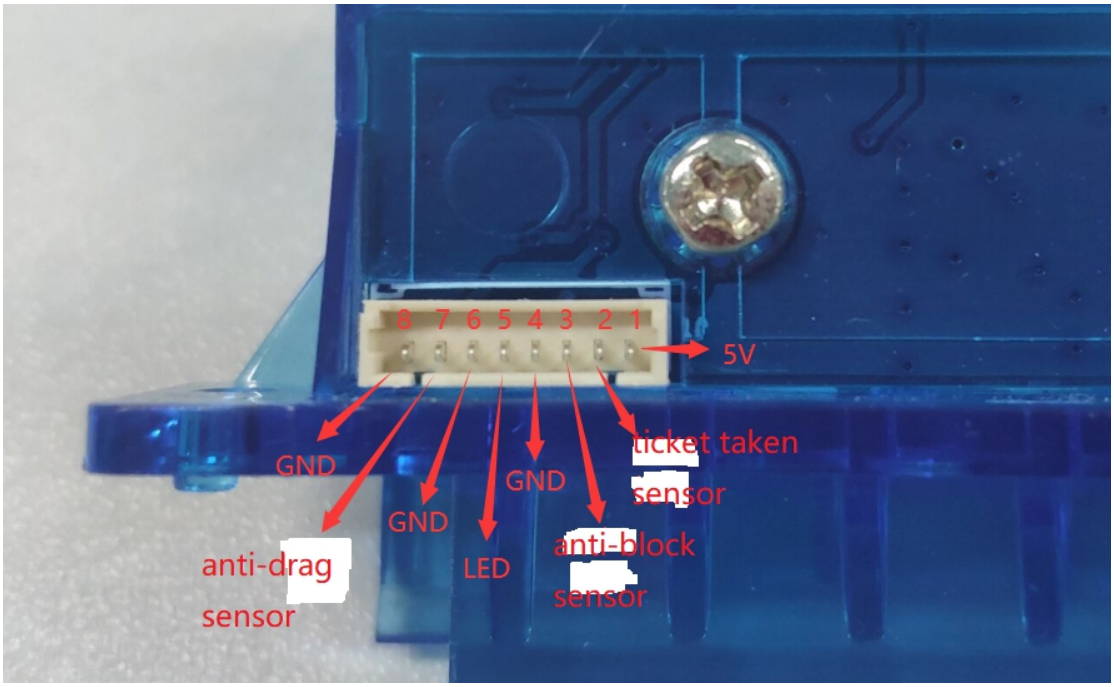
USB and RS-232 are supplied through interface connections at the rear of the printer, as illustrated in below. The Serial RS-232 + USB+ power interface connector are integrated as a locking Molex connector ,as shown.



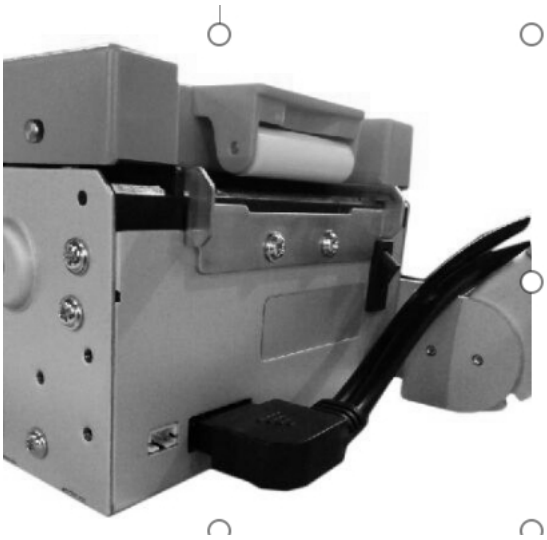
Bezel connector



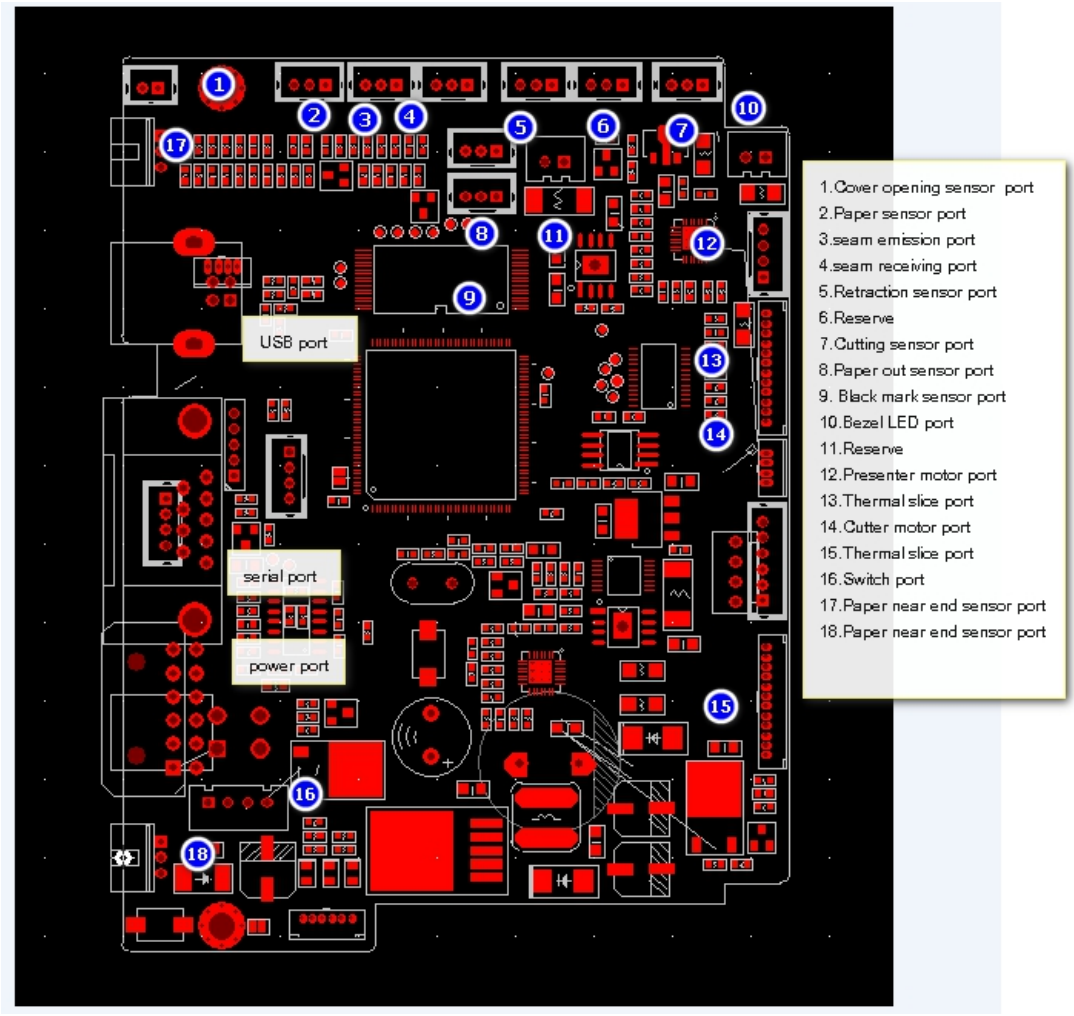
LED connector pin definition, as below



Cable Connection Locations



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 .