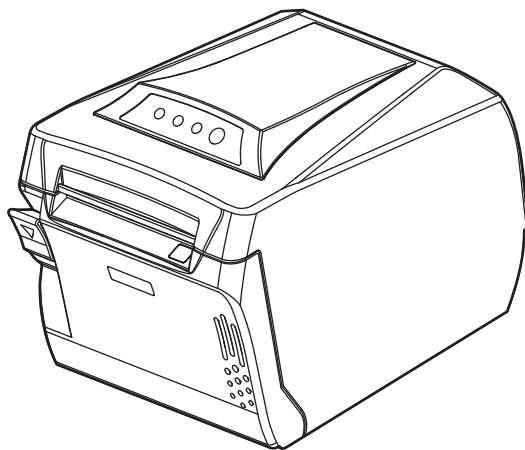




# User's Manual

## TP860 Series

### Printer



## **Declare**

### **About Trademark**

Corporation names and product names are the registered trademarks or commodity names of the corporation.

- \* Jolimark is a registered trademark of Kong Yue Electronics & Information Industry (XIN HUI) LTD.
- \* EPSON and ESC/POS are registered trademarks of Seiko Epson Corporation.
- \* Star is a registered trademark of STAR MICRONICS CO.,LTD.
- \* Windows is a registered trademark of Microsoft Corporation.

## **Warnings, Cautions, and Notes**

Pay attention to the following promises when using this manual:

**Warning:**

*Warnings must be followed carefully to avoid bodily injury.*

**Caution:**

*Cautions must be observed to avoid damage to your equipment.*

**Note:**

*Notes contain important information and useful tips on the operation of your printer.*

## Important Safety Instructions

**Read all of these instructions carefully and thoroughly and save them for later reference. The unauthorized operation would lead to malfunction or accident. Manufacturers have no responsibilities for the problems which are led by unauthorized operations.**

1. Follow all warnings and instructions in the manual as well as marked on the product.
2. Don't touch the thermal print head with your hand at any moment to avoid the thermal head damaged.
3. Be careful the manual cutter when you are installing the paper.
4. Unplug this product from the power outlet before cleaning. Do not use the chemicals like alcohol to clean the printer. Use a damp cloth for cleaning.
5. Please don't use the printer near water.
6. Slots and opening on the cabinet and the back or bottom are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, do not block or cover these openings. And do not place the printer on a bed, sofa, rug or other similar surface in case of blocking the openings. This product should not be placed in a built-in installation unless proper ventilation is provided.
7. Make sure the printer is put on a stable surface and the surrounding is wide enough for paper load and eject.
8. Avoid using the same AC socket with other high-power electric appliances or the electric appliance device which will easily cause voltage fluctuation.
9. The whole computer system should be far away from the devices which may easily cause electromagnetic interference, for example, loudspeaker or wireless component.
10. Do not locate this product where the cord will be stepped on. When the cord or the plug is mangled, please stop using and get a new one replaced. Make sure the old one is far away from the printer, so it can avoid someone who does not know the inside story getting damaged.
11. This product should never be placed near or over a radiator or heat origin, and should avoid direct sunshine.
12. Never push objects of any kind into this product though cabinet slots as they may cause electric shock or short out parts.
13. Don't remove the printer's out-cover and repair the printer. When needed, call or take it to the professional.
14. Make sure the power is off before connecting or unplugging the power cord and the cables.
15. To ensure safety, please unplug this product prior to leave it unused for an extended period. The wall outlet you plan to connect to should be nearby and unobstructed.
16. Unplug this product from the power outlet and leave servicing to qualified service personnel under the following conditions:
  - A. When the power cord or plug is damaged or frayed.
  - B. If liquid has been spilled into the product.
  - C. If the product has been exposed to rain or water.
  - D. If the product does not operate normally when the operating instructions are followed.
  - E. If the product has been dropped or the cabinet has been damaged.
  - F. If the product exhibits a distinct change in performance, it indicates a need for service.

**Caution: The contents of this manual are subject to change without notice.**

**\*All the parts of the printer can be recycled. When it is abandoned, we can call it back freely. Please contact us when you abandon it.**

**Note: In order to ensure the printer life, strictly prohibit printing full line and full black exceeding 2 CM.**

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## Chapter 1 Overview

### 1.1 Features

TP860 is a high-speed mini thermal printer. It is a high-quality, high-reliability and low-noise POS printer without ribbon. It's small, easily-operated and can be widely used in ECR, PC-POS and BANK POS for printing a variety of receipts.

TP860 has the function of Sound-light Warning. After finishing the printing task, if the printer detects that the ticket is not torn off, the printer will enter the warning mode. At this moment, the indicator light blinks with beeps to warn that the printing has been finished. The warning mode will exit after the ticket is torn off. This function can satisfy the application requirement especially when the environment space is large and user has many management items so that the printer state can not be monitored.

### 1.2 Product Model Description

In order to fulfill different requirements and operating circumstance, manufacturer develops TP860 series products which are high-speed thermal mini-printers.

According to different data ports (interfaces), TP860 series can be classified into different models: TP860, TP860U, TP860US, TP860UE, TP860USE, TP860UB, TP860W and TP860UW.

TP860 series printers are equipped with auto cutter, so that customer could select full cut or partial cut.

#### **Interface:**

TP860 series products are configured with cash drawer interface, you can choose one of the following data interfaces when purchasing this product:

- Parallel interface (TP860)
- USB interface (TP860U)
- USB + Serial interface (TP860US)
- USB + Ethernet interface (TP860UE)
- USB + Serial interface+ Ethernet interface (TP860USE)
- USB + Bluetooth (TP860UB)
- Wi-Fi interface (TP860W)
- USB + Wi-Fi interface (TP860UW)

**Note: Please contact the local dealer to change the interface if needed with added expense.**

## 1.3 Main Parts of the Printer

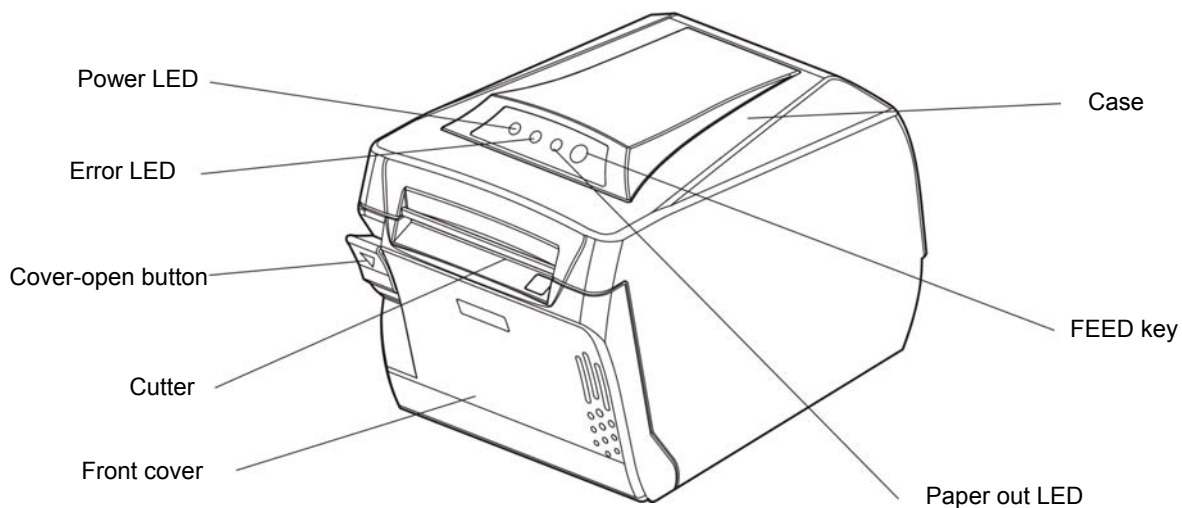


Figure 1-1 Main parts of the printer

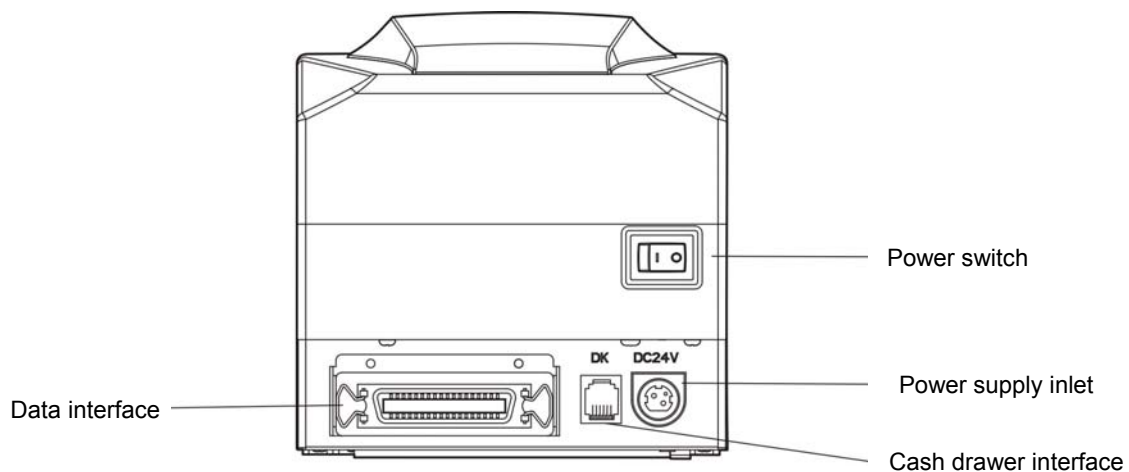


Figure 1-2 Interfaces on the back of the printer

**Note: Please take the specific interface as standard.**



## Chapter 2 Installing the Printer

### 2.1 Unpacking and Checking

Check the following items in the package, if any of these items is missing, please contact your dealer.

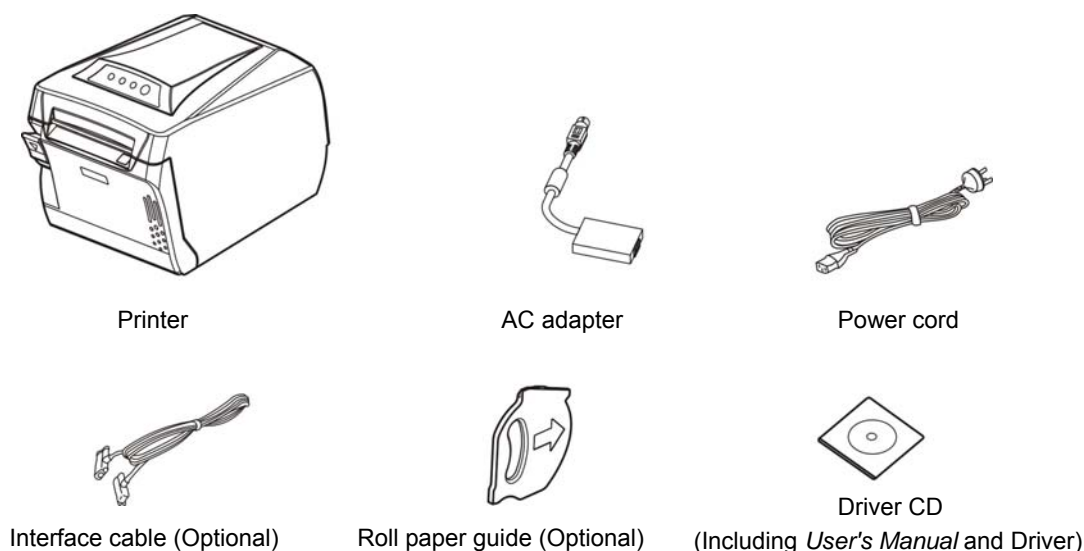


Figure 2-1 Packing list

**Note:** 1. Models with Bluetooth and Wi-Fi are not equipped with interface cable.  
2. Roll paper guide is equipped according to the necessity of the customers.

### 2.2 Removing the Protective Materials

1. Open the packing box, take out the printer.
2. Save all the original packing materials so that they can be used when transporting the printer in the future.

### 2.3 Connecting to Your Computer or Other Equipment

The printer is configured with a cash drawer interface and one data interface (you can select Parallel interface, USB interface, USB interface + Serial interface, USB interface + Ethernet interface, USB interface + Serial interface+ Ethernet interface, USB interface + Bluetooth, Wi-Fi interface or USB+Wi-Fi). (Please take the specific interface as standard) Connect the printer to your computer with the correct cable.

**Note:** Before connecting the cash drawer cable, parallel interface cable or serial interface cable, make sure that the power of the printer is turned off. Only after tightening the cable could you turn on the printer. Or else the printer may be damaged.

#### 2.3.1 Connecting the Cash Drawer Cable

Turn off the printer and plug one end of the cash drawer cable into the cash drawer interface of the printer and the other end to the cash drawer, as shown in Figure 2-2.

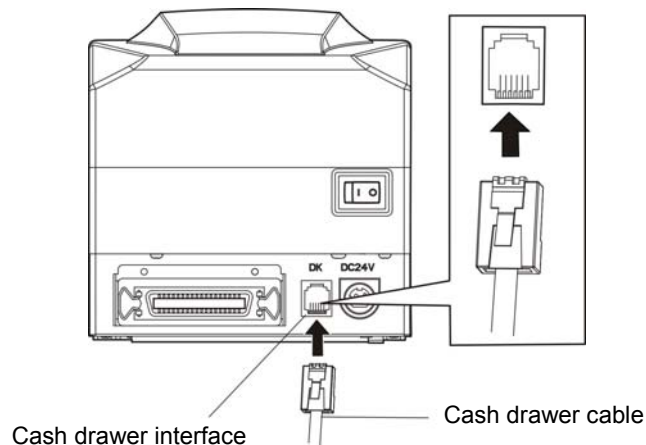


Figure 2-2 Connecting the cash drawer cable

**Caution: Please use the appropriate cash drawer. Manufacturer will not honor warranty when using unauthorized cash drawer.**

### 2.3.2 Connecting the Parallel Interface Cable

1. Make sure the computer and the printer are both turned off, plug the parallel cable to the parallel interface of the printer, Squeeze the wire clips on both sides and make the cable fixed. As shown in Figure 2-3.

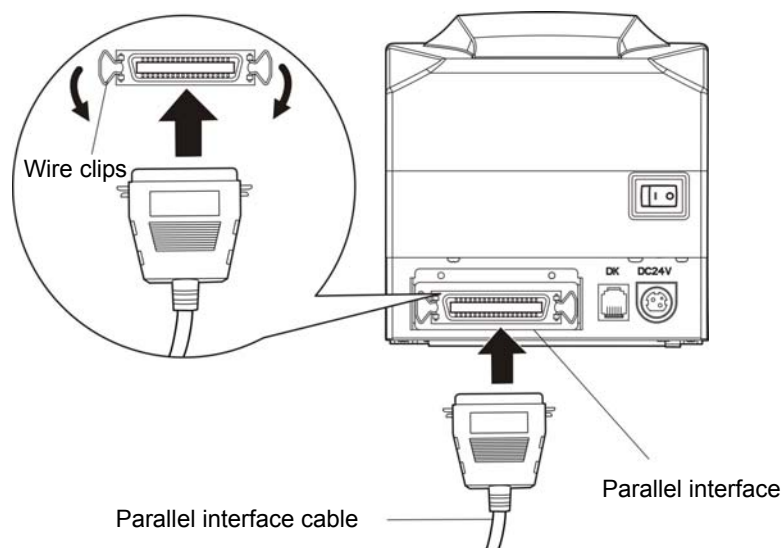


Figure 2-3 Connecting the parallel interface cable

2. Plug the other end of the cable to the computer. Tighten the screws on both sides and make the cable fixed.

### 2.3.3 Connecting the USB Interface Cable

1. Plug the USB cable A end (flat shape) into the computer's USB interface.
2. Plug the USB cable B end (square shape) into the printer's USB interface as shown in Figure 2-4.

**Note: Please don't impact the plug after connecting USB interface cable.**

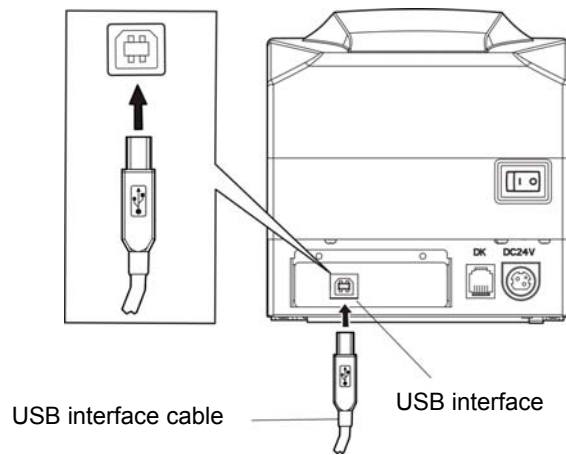


Figure 2-4 Connecting the USB interface cable

### 2.3.4 Connecting the Serial Interface Cable

1. Make sure the computer and the printer are both turned off, plug the serial cable to the serial interface of the printer. Tighten the screws on both sides and make the cable fixed. As shown in Figure 2-5.

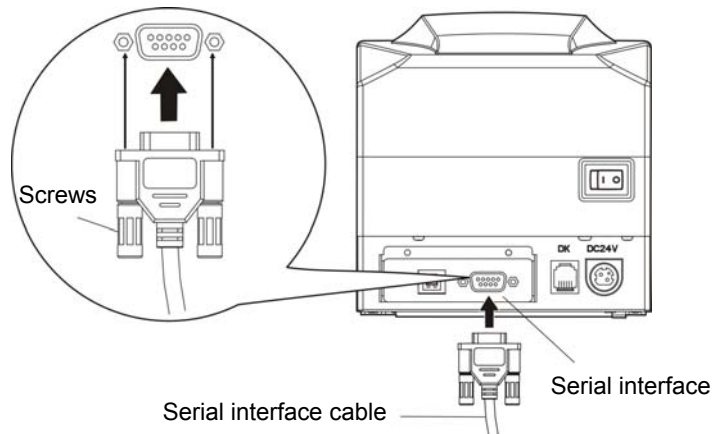


Figure 2-5 Connecting the serial interface cable

2. Plug the other end of the cable to the computer's serial interface. Tighten the screws on both sides and make the cable fixed.

### 2.3.5 Connecting the Ethernet Interface Cable

Plug the crystal end of the Ethernet cable (RJ-45) into the printer's Ethernet interface and the other end to the LAN. (As shown in Figure 2-6)

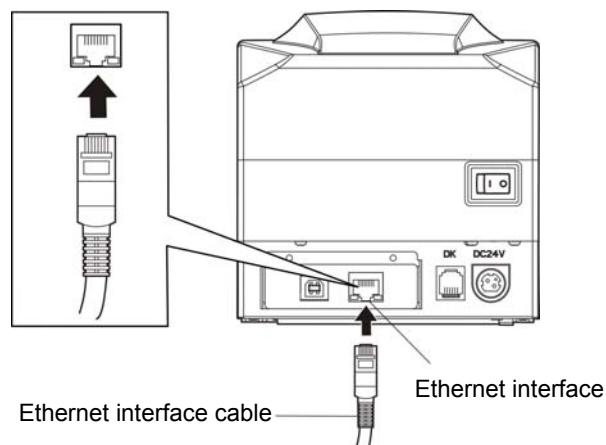


Figure 2-6 Connecting the Ethernet interface cable

**Note:** Please refer to the *user's manual* for detailed instructions of network settings.

## 2.4 Connecting the Power Cord

1. Make sure the printer is turned off. (The pressed down side on the switch with "O" mark denotes the printer is off)
2. Make sure the voltage of the electrical outlet matches that of the AC adapter.
3. Plug the AC adapter to the printer's power supply inlet.
4. Plug one end of power cord into the AC adapter, and then plug the other end of the power cord into the grounded electrical outlet.

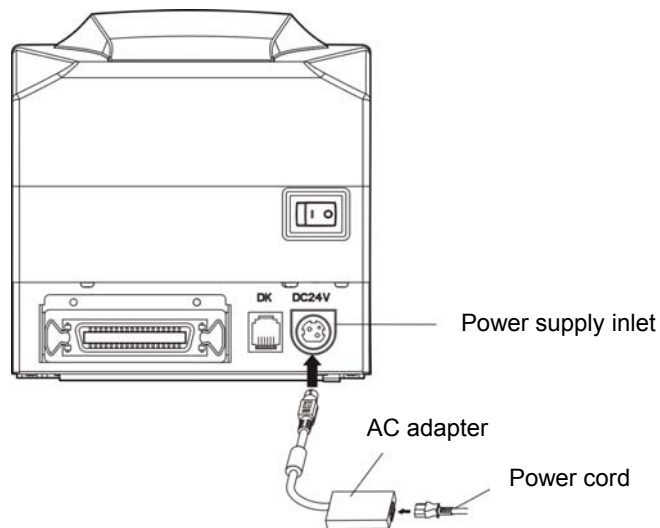


Figure 2-7 Connecting the power cord

**Warning:** 1. If the rated voltage doesn't match the outlet voltage, contact your dealer for assistance. Do not plug the power cord to electrical outlet.

2. Please use the electrical outlet connecting the ground properly.

3. Please use the original Jolimark AC adapter only. Manufacturers have no responsibilities for the problems which are led by using unauthorized AC adapter.

## 2.5 Installing the Driver

Please use the cable to connect computer with printer, then turn on the computer and the printer, put the driver CD into the CD-ROM. Install driver by the following way:

### 2.5.1 Auto-installing way (Recommended)

Double click the file "Setup.exe" in the driver disc, install driver by the following guide.

**Note:** Auto-installing way just works in the operating systems of Windows2000 and above and the operating systems of Window 98/ME and below are not supported.

## 2.5.2 Hand-operated installing way

**Note:** This installing way is used for the people who have some knowledge on hand-operated installing and equipment application.

### 2.5.2.1 The operating systems of Windows 2000/XP/Vista/Win7

#### (1) The hand-operated installing steps of parallel interface cable or serial interface cable:

The following steps are used Windows XP as an example. There are slight differences among different operating systems. The installing way with other operating systems depends on the practical installing process.

- 1 Click "Start" → "Settings" → "Select Printers".
2. Click "Add Printer", then a window of "Add Printer Wizard" pops up, click "Next", then please read the select guide carefully, such as, select "Local printer" in the "Local or Network Printer" window, then click "Next".
3. A window of "Select a Printer Port" pops up, according to your requirement, select "LPT1: (Recommended Printer Port)" or serial interface, click "Next".
4. A window of "Install Printer Software" pops up, click "Have Disk...".
5. A window of "Install From Disk" pops up. Please according to the operating system environment, you should select the path as follow: CD-ROM → "Drivers" → "WIN2000 (XP-Vista-Win7)", click "Open", then click "OK" to return to the window of "Install Printer Software", click "Next".
6. Follow the guide and click "Next" gradually till the installation is finished.

#### (2) The hand-operated installing steps of USB interface cable:

The following steps are used Windows XP as an example. There are slight differences among different operating systems. The installing way with other operating systems depends on the practical installing process.

1. Connect with the USB cable and turn on both the computer and the printer. After the computer finds out new hardware, and a window of "Found New Hardware" pops up — "Welcome to the new hardware wizard".
2. Select the "Set from the list or specific position", then click "Next".
3. A window of "Please choose your search and installation options" pops up, choose "Don't search, I will choose the driver to install", click "Next".
4. A window of "Add Printer Wizard" pops up, click "Have Disk...".
5. A window of "Install From Disk" pops up. Please according to the operating system environment, you should select the path as follow: CD-ROM → "Drivers" → "WIN2000 (XP-Vista-Win7)", click "Open", then click "OK" to return to the window of "Add Printer Wizard", click "Next".
6. Follow the guide and click "Next" gradually till the installation is finished.

### 2.5.2.2 The operating system of Windows 8/Windows 10

#### The hand-operated installing steps of parallel interface, serial interface or USB interface cable:

1. Enter "Control Panel" → "Device and Printers".
2. Click "Add Printer", then a window of "Add Printer Wizard" pops up, select "Add Local printer Manually" in the "Local or Network Printer" window.
3. A window of "Select a Printer Port" pops up, according to your requirement, click "Use the Current Port", select "LPT1: (Printer Port)", serial interface or USB interface, click "Next".
4. A window of "Install Printer Driver" pops up, click "Have Disk...".
5. A window of "Install From Disk" pops up. Please according to the operating system environment, you should select the path as follow: CD-ROM → "Drivers" → "WIN 8(WIN 10)", click "Open", then click "OK" to return to the window of "Install Printer Driver", click "Next".

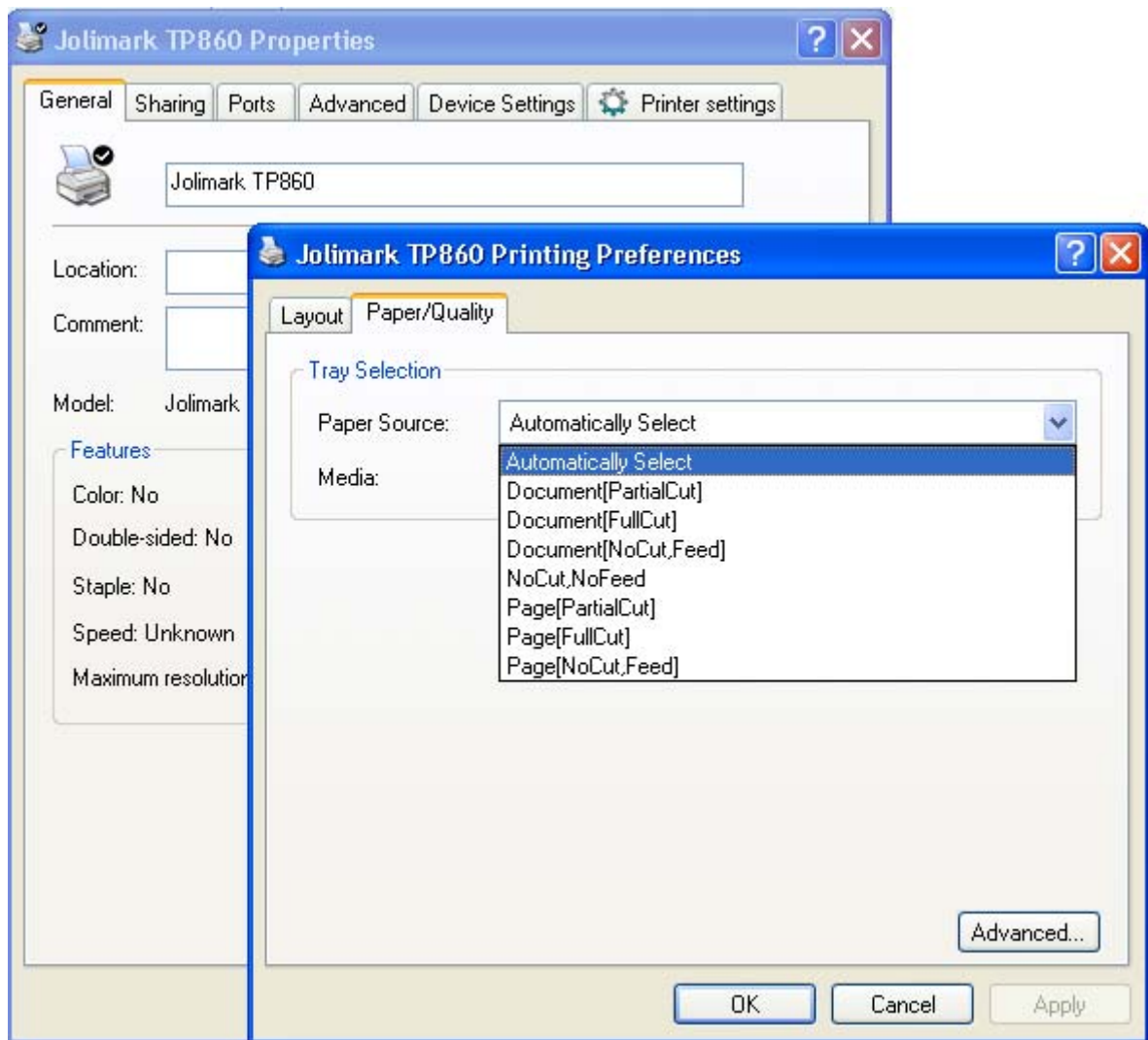
6. Follow the guide and click “Next” gradually till the installation is finished.

## 2.6 Selecting the Cutter

Please install the driver following the setup description in the Driver CD. What's more, you can use the TM-T88II, TM-T88III series driver of EPSON.

If you want to cut the paper after printing each page, please select “cut” or “not cut” in the “Paper Source” of “Paper/Quality” page after clicking the “Printing Preferences” button, which lies in the “General” page of the driver properties (as shown below).

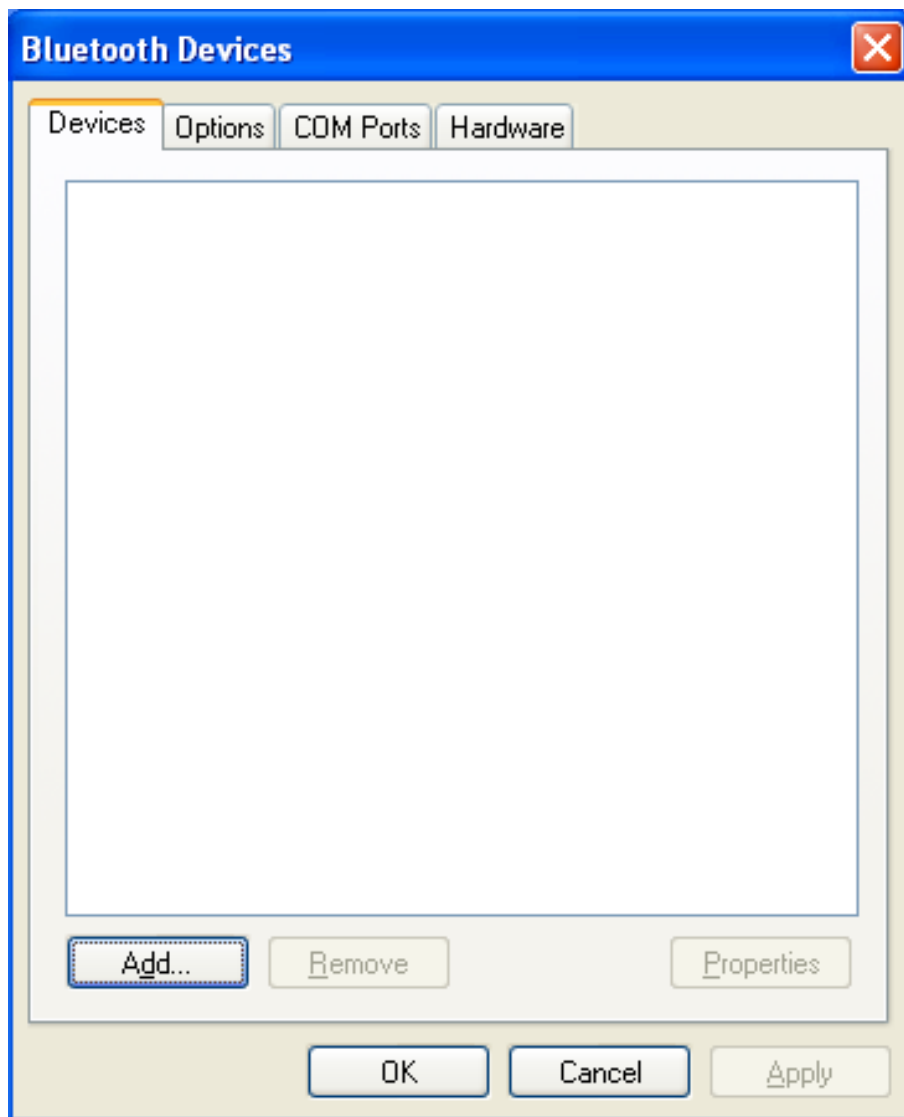
**Note:** if paper cut effect is the same whichever you select “full cut” or “partial cut” in the driver properties, it means that the cutter (the printer equipped with) can only carry out one kind of cut-methods.



## 2.7 Installing the Bluetooth Interface Driver

**Note:** Select to install this driver according to the chosen model.

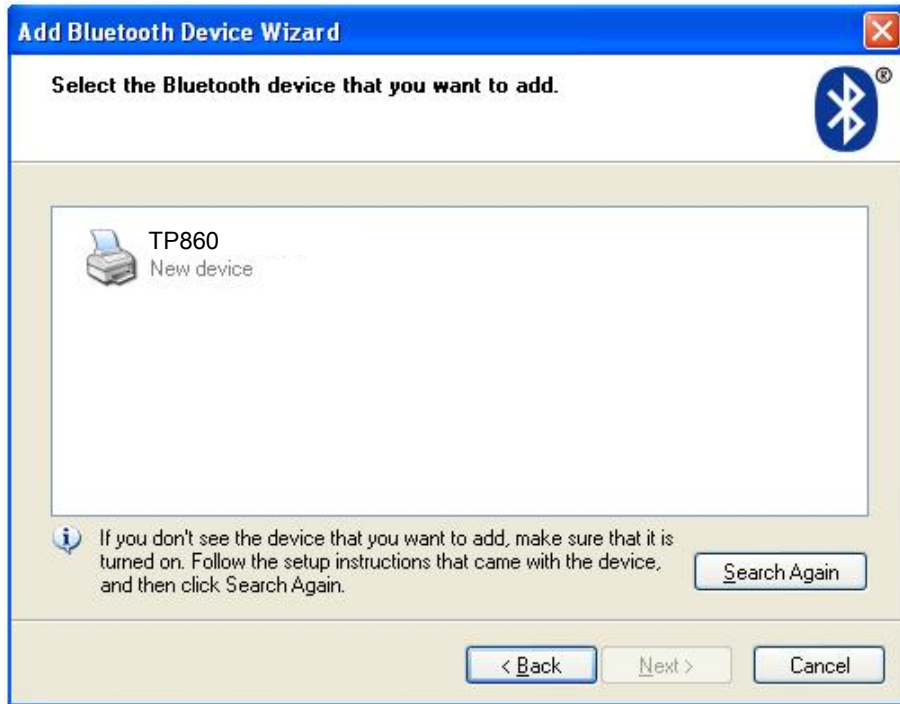
1. Choose the appropriate Bluetooth adapter, the operation system is Window XP or above which is with Bluetooth adapter driver.
2. Turn on the printer, search Bluetooth devices in Window XP system, and click “Add”.



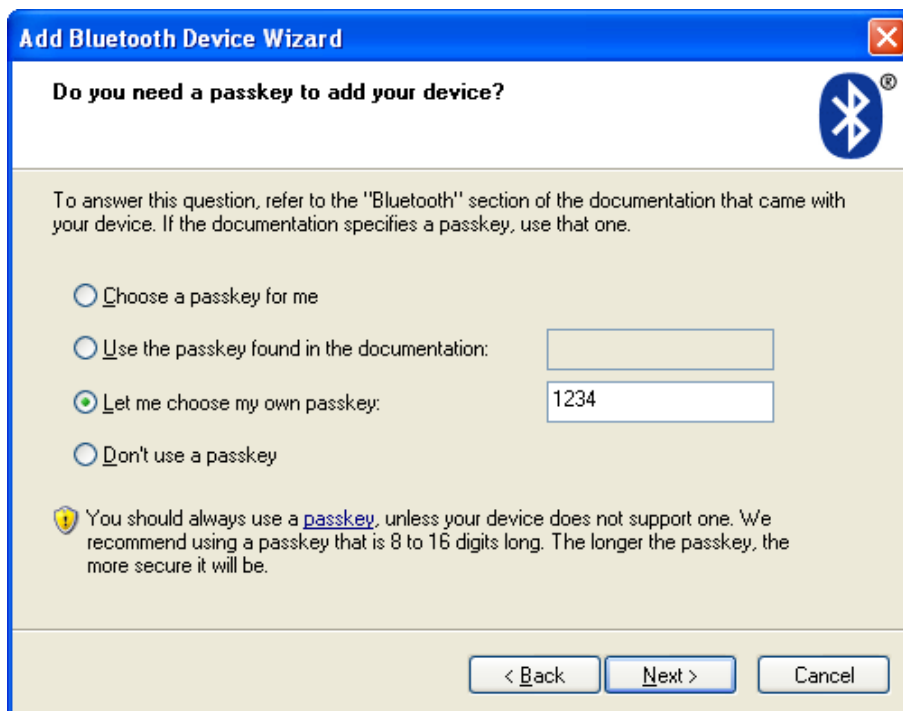
3. Tick off the option of "My device is set up and ready to be found." Click "Next" to continue.



4. Select the "TP860", and then click "Next".



5. Tick off the option of "Let me choose my own passkey" and enter "1234" as shown, then click "Next".



6. Record the Outgoing COM port and click "Finish", then reboot the computer.





7. Set the printer driver print port as the outgoing port and the installation is finished.

**Note: Every Bluetooth device has its own address. Please reinstall it when replacing the Bluetooth device.**

## 2.8 Ethernet Settings

Please use Jolimark network setting software NetFinder to set the IP address for Jolimark Ethernet interface network printers. NetFinder Software (NetFinder.exe) can be found in the CD or downloaded from [www.jolimark.com](http://www.jolimark.com).

**Caution: The network printing function needs the operation systems of Windows2000 and above and the operation systems of Window 98/ME and below are not supported.**

### 2.8.1 Connecting the Printer

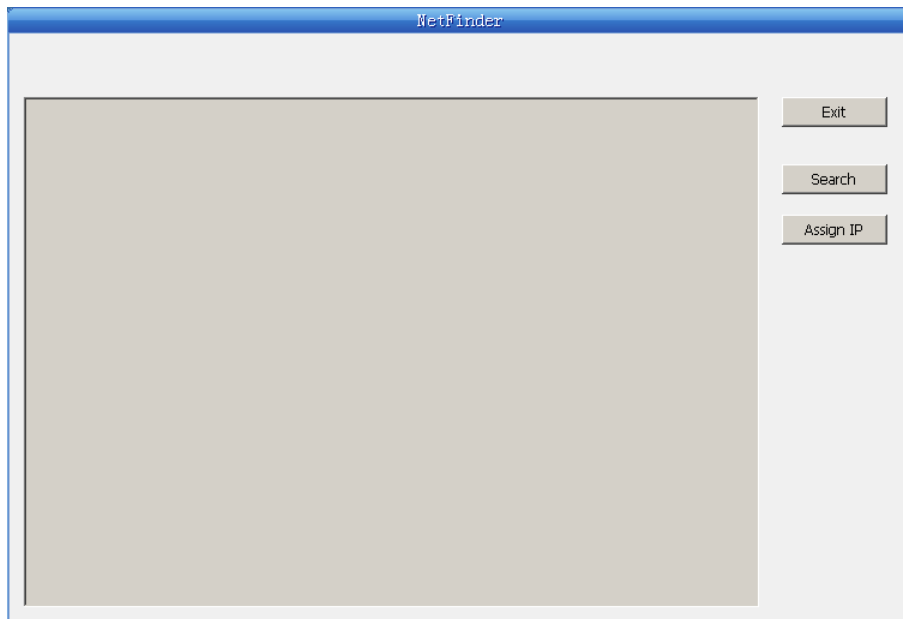
Power on the printer, connect with the Ethernet interface cable which has been connected to LAN, and look into the information of Ethernet LED to ensure the printer has entered the normal connection.

Orange LED	Green LED	Description
On	Blink	Online
Off	Off	Offline

### 2.8.2 Setting IP Address

#### 1. Running NetFinder Software

Double click NetFinder.exe in the PC which connects the printer in the same LAN. The figure of the software is shown as follows:



Button description:

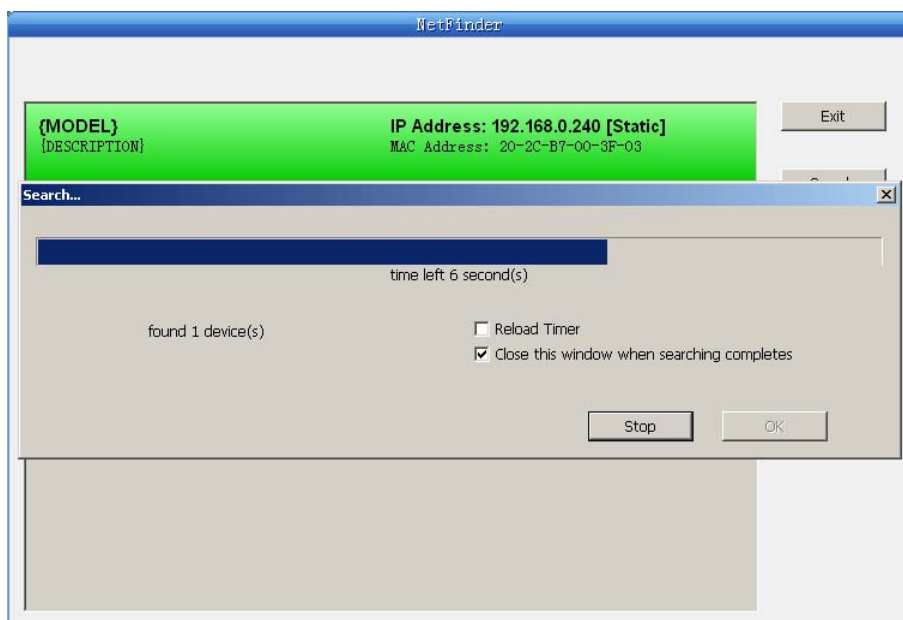
Exit — Exit from the software

Search — Search printers in the same LAN

Assign IP — Modify the IP address and other settings for the specified printer.

## 2. Searching the Printer

Click “Search” button in the main interface, the dialogue box appearing will begin searching automatically and displays the status, listing a printer in the main interface if found. The time is counting down in the progress bar (10s in total) and the search will finish as soon as the time is over. If you need to go on searching, press “Search” button again.



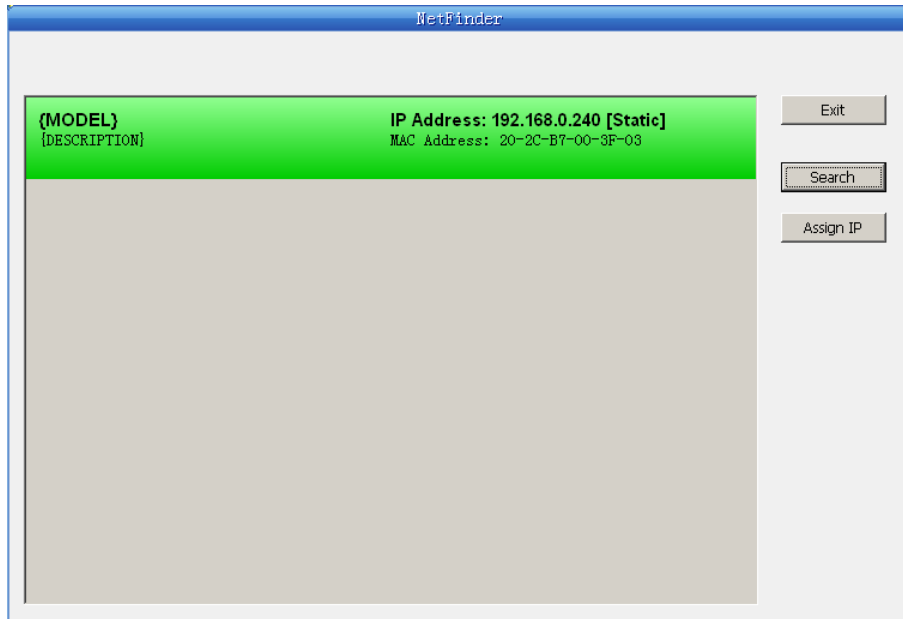
If the printer connects correctly, the IP address can be found in a search period.

If the printer still can not be found out when the network connection is correct in the same network. Please check whether the network fire wall on the PC is open or not. If there is fire wall, please close it temporarily; open it again after finishing searching and setting the printer completely.

## 3. Setting Printer's IP Address

The printer's information is listed in the main interface, the left side of which is the model and

description and the right are the IP address and MAC address. What's more, the assign mode (dynamic/static) is noted behind the IP address.



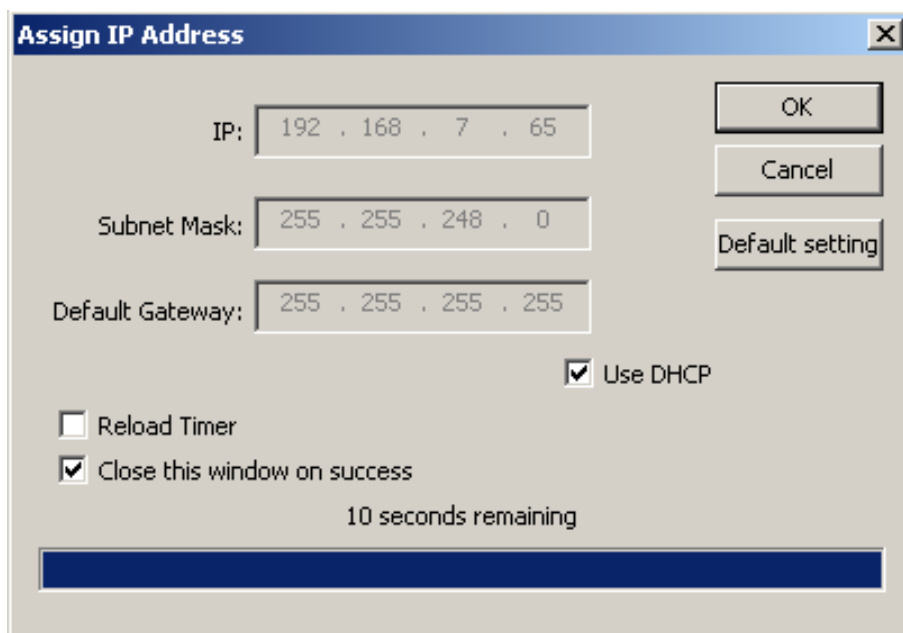
### 1) Correlative description for IP address settings

In order to search and set printer's IP address conveniently for the first time, the factory default setting is DHCP mode which assigns IP address dynamically. If there is no DHCP server in the connected LAN but printer is set to DHCP mode, then it will use the internal pre-set address (IP: 10.0.0.1, Subnet Mask: 255.255.255.0) automatically.

It is suggested that printer's IP is set to static in actual usage, which can cut down the time when initializing the Ethernet interface as the printer is turned on and prevent IP conflicts (The dynamic address used in printer may conflict with another one). The network segment part of the IP address and Subnet Mask must be the same as those of PC connecting with a printer. For example, the address of working PC is 192.168.0.1/255.255.255.0 (IP/Subnet Mask), then which of printer should be set to 192.168.0.x/255.255.255.0 (x=2~254 and should avoid the occupied IP). It is not restricted for NetFinder to search printers in the same network but different segment parts (can not stride gateway). Please refer to corresponding information for relative glossary of IP address.

### 2) Setting printer's IP address

Select the printer information to be modified (black frame appears), click "Assign IP" button. Set the IP in the dialogue box appearing.



Check the "Use DHCP" if needed to assign dynamic address, the settings above will be disabled automatically. Please make sure there is a DHCP server in the network, or the printer can not receive an effective IP address.

When to specify static address, uncheck "Use DHCP" and fill in "IP address", "Subnet Mask" and "Default Gateway". If there is no gateway in the network, fill 255.255.255.255 in the "Default gateway". "IP address" and "Subnet Mask" should obey the assigning rules of local LAN (Ethernet), please enquire the administrator of networks which the printer connects to for more details.

Click "OK" to send address setting information to the specified printer. Click "Cancel" if you abandon the modification.

Click "Search" in the main interface again to update printer information after modifying the printer's IP address and restarting the printer.

### **3) Record printer's IP address**

Record the printer's IP address, which will be used in the section "Newly-install printer network driver" or "Upgrade-install printer network driver (setting driver's network port)".

## **2.9 Wi-Fi Setting of Jolimark Printer**

### **2.9.1 Connecting the Printer**

TP830 is taken as an example to respectively describe the connection of Windows, Android and iOS operation systems. Please make the connection according to the operating guide of the current system, and skip to the next chapter "**Wi-Fi Parameters Description**" when the connection is successfully.

#### **(1) Connecting to the equipment in Windows**

Take Windows XP operating system as an example to show how to connect the printer with the equipment in Windows system.

1. Turn on the printer and make sure the printer is in normal working condition. Start the operation 30 seconds after the printer is on.
2. Right click "My Network Places", and then click "Properties" to find the "Local Area Connection 2". Double click it and the window of "Wireless Network Connection" pops up, select and double click the corresponding printer Wi-Fi name. The printer Wi-Fi default name is composed by "t the printer model+10 SN numbers" (as shown in Figure 1)

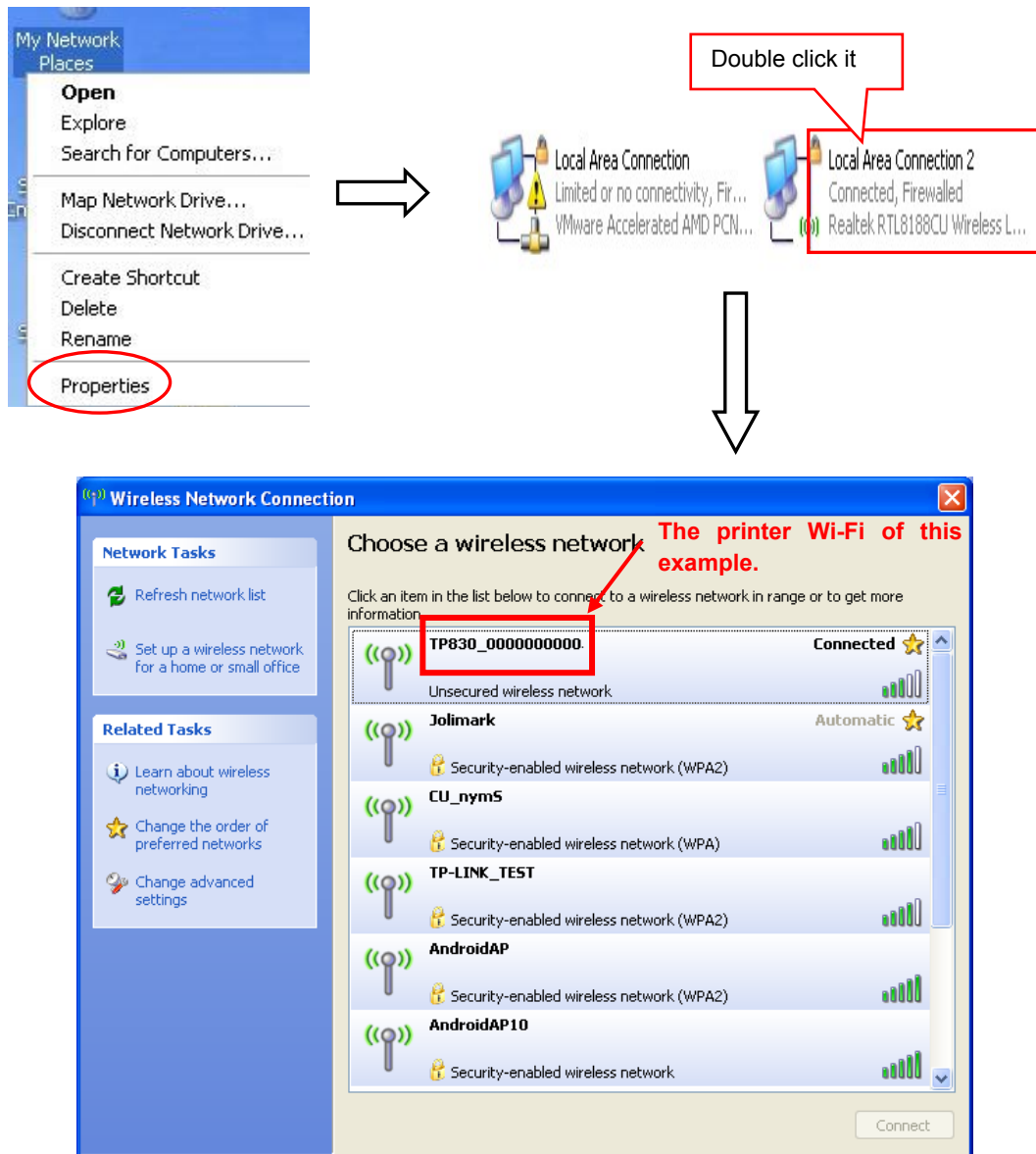


Figure 1

## (2) Connecting to the equipment in Android

Take the mobile phone of Android 4.4 as an example to show how to connect the printer with the equipment in Android.

1. Turn on the printer and make sure the printer is in normal working condition. Start the operation 30 seconds after the printer is on.
2. Click "Settings" and the interface pops up. Select the "WLAN" function to "ON", then click the printer Wi-Fi searched by the mobile phone to connect. The printer Wi-Fi default name is composed by "the printer model+10 SN numbers" (as shown in Figure 2).

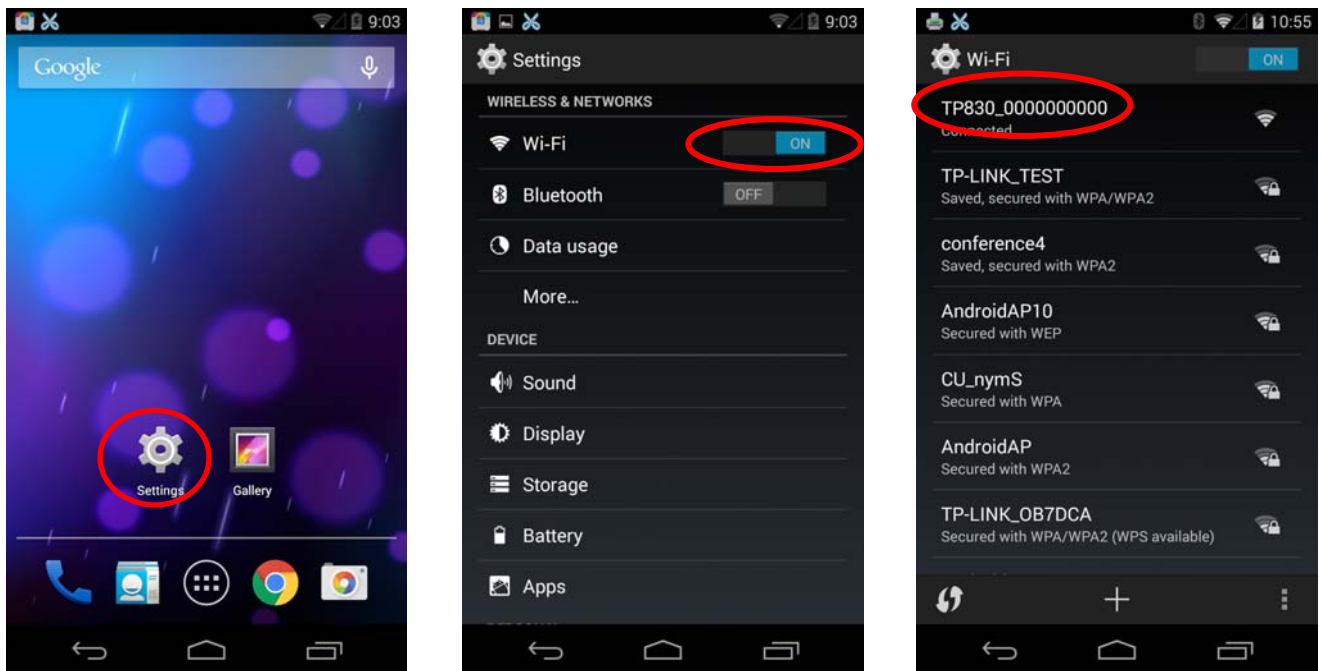


Figure 2

### (3) Connecting to the equipment in iOS

Take the mobile phone of iOS 8.1 as an example to show how to connect the printer with the equipment in iOS.

1. Turn on the printer; make sure the printer is in normal working condition. Start the operation 30 seconds after the printer is on.
2. Click "Settings" and the interface pops up. Select the "WLAN" function to "ON", then click the printer Wi-Fi searched by the mobile phone to connect. The printer Wi-Fi default name is composed by "the printer model+10 SN numbers" (as shown in Figure 3).



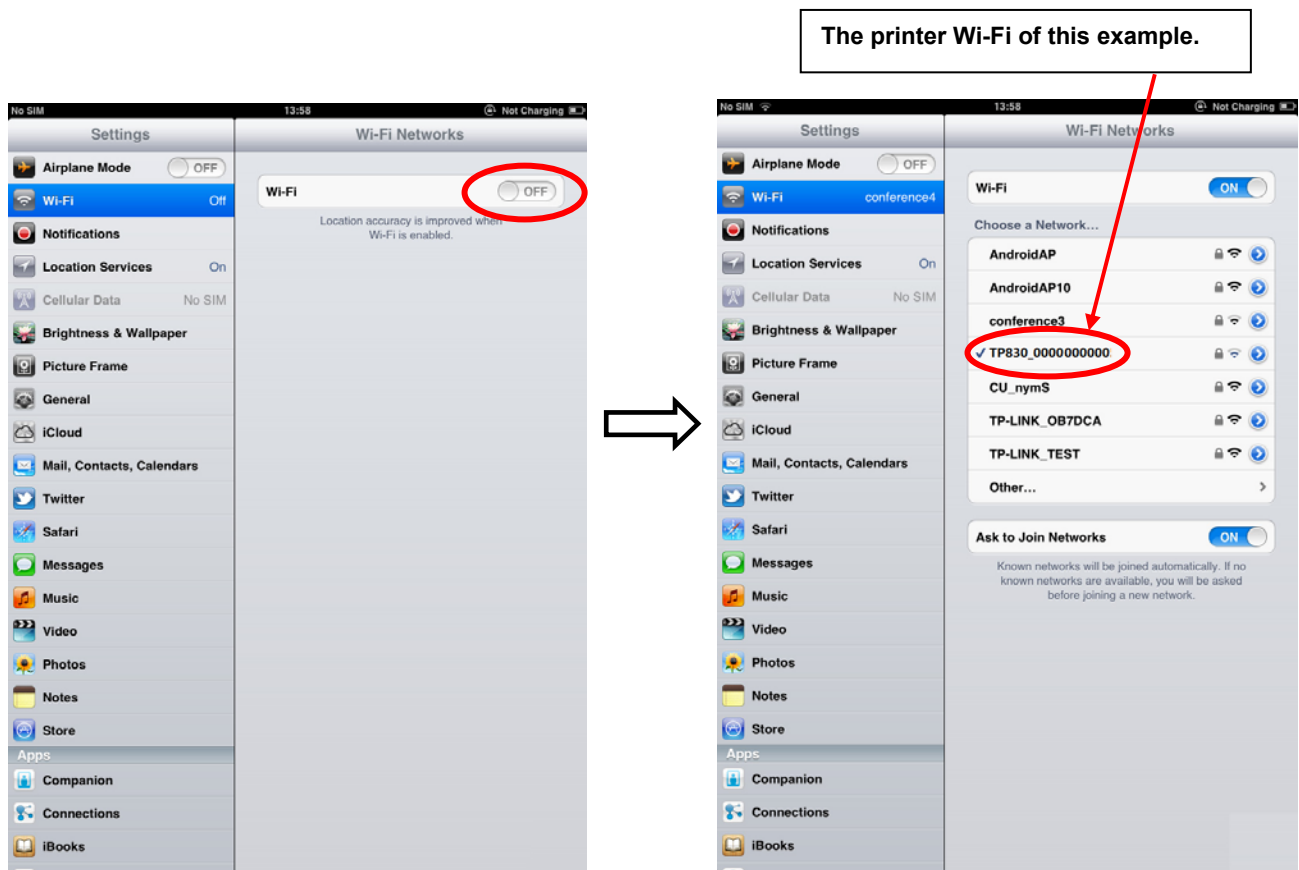


Figure 3

## 2.9.2 Wi-Fi Parameters Description

After connecting the equipment with the printer through wireless network, please import <http://10.10.10.1> in the browser address bar and enter, then the setting interface pops up. The display style of setting interface may differ in different systems, but the parameter items are the same. Take Windows XP as an example in the following, as shown in Figure 4.

The screenshot displays the configuration page of a TP860 device. At the top, there is a header bar with a menu icon. Below it, a table shows the 'F/W Version' as '1.0.306 Dec 5 2014' and a 'Select Language' dropdown menu currently set to 'English'. An 'Apply' button is located below the language selection. The main content area is divided into two sections: 'Wireless Settings' and 'AP Client'. The 'Wireless Settings' section includes fields for 'BSSID' (CC:D2:9B:35:43:7C), 'Network Name(SSID)' (TP830\_0000000000), 'IP Address' (10.10.10.1), 'Subnet Mask' (255.255.255.0), and 'Security Mode' (Disable). The 'AP Client' section includes fields for 'BSSID' (CC:D2:9B:35:43:7D), 'Channel' (Auto), 'SSID' (empty), 'Security Mode' (OPEN), 'Encrypt Type' (None), and 'Address Assignment' (DHCP (Auto config)).

F/W Version	
F/W Version	1.0.306 Dec 5 2014

Select Language	
Select Language	English

Apply

### Wireless Settings

BSSID	CC:D2:9B:35:43:7C
Network Name(SSID)	TP830_0000000000
IP Address	10.10.10.1
Subnet Mask	255.255.255.0
Security Mode	Disable

### AP Client

BSSID	CC:D2:9B:35:43:7D
Channel	Auto
SSID	
Security Mode	OPEN
Encrypt Type	None
Address Assignment	DHCP (Auto config)

Figure 4

You can select Simple Chinese, Traditional Chinese and English in the “Select Language” and the default language is English. When you need to change the language, just select the language you need in the “Select Language” and then click “Apply” (as shown in Figure 5).

The figure consists of two screenshots. The top screenshot shows the 'Select Language' dropdown menu open, displaying three options: '简体中文 (Simple Chinese)', 'English', and '繁體中文 (Traditional Chinese)'. The bottom screenshot shows the 'Apply' button circled in red, indicating the next step after selecting a language.

F/W Version	
F/W Version	1.0.306 Dec 5 2014

Select Language	
Select Language	简体中文 (Simple Chinese)

Apply

F/W Version	
F/W Version	1.0.306 Dec 5 2014

Select Language	
Select Language	简体中文 (Simple Chinese)

Apply

Figure 5



### (1) Printer-equipment connected printing

Printer-equipment connected printing is a way of printing which uses printer as the hotspot and connects the wireless equipment for printing.

“Wireless Settings” is the relevant setting parameter when the printer is as the hotspot (as shown in Figure 6). In the printer-equipment connected printing mode, the parameters of the wireless equipment must match that of the printer so as to make the communication successful. Please record the relevant parameters and fill them in the wireless equipment correctly.

After you finish resetting the parameters in the setting column, click “Apply” on the upper side of “Update Firmware”. Then the countdown interface of saving the modification appears and the wireless equipment can conduct communications with the printer as soon as the countdown is over.

Wireless Settings	
BSSID	CC:D2:9B:00:00:52
Network Name(SSID)	TP830_0000000000
IP Address	10.10.10.1
Subnet Mask	255.255.255.0
Security Mode	Disable

AP Client	
BSSID	CC:D2:9B:00:00:53
Channel	Auto
SSID	
Security Mode	OPEN
Encrypt Type	None
Address Assignment	DHCP (Auto config)
IP Address	
Subnet Mask	
<input type="button" value="Apply"/>	

Update Firmware	
Location:	<input type="text"/> <input type="button" value="Browse..."/>

Figure 6

#### Description in “Wireless Settings”

**BSSID:** The address of the printer wireless card in the “Wireless Settings”, which is the MAC address (Valid when it's in printer-equipment connected printing).

**Network name (SSID):** The network name of the printer wireless card. You can modify it if necessary, but you have to connect the network again after modifying.

**IP Address:** The IP address of the printer wireless card. You can modify it if necessary, but you need to enter the browser with the new IP after modifying.

**Subnet Mask:** The subnet mask of the printer wireless card. You can modify it if necessary.

**Security Mode:** The security mode of the printer wireless card. You can modify it if necessary.

If the connection between printer and computer is exceptional, please restart the printer or modify "Channel" in "AP Client".

## (2) AP connected printing

AP connected printing is a way of printing which connects the printer with the wireless equipment by the outer hotspot.

"AP Client" (as shown in Figure 7) includes the setting parameters of AP connection. Please fill the information of current outer hotspot in the corresponding place. The parameters of the printer should match that of the current outer hotspot so as to make the communication successful. Please input them correctly.

AP Client	
BSSID	CC:D2:9B:00:00:53
Channel	Auto ▼
SSID	<input type="text"/>
Security Mode	OPEN ▼
Encrypt Type	None ▼
Address Assignment	DHCP (Auto config) ▼
IP Address	<input type="text"/>
Subnet Mask	<input type="text"/>
<input type="button" value="Apply"/>	

Figure 7

### Description in "AP Client"

**BSSID:** The address of the printer wireless card in "AP Client", which is the MAC address. (Valid when it's in AP connected printing)

**Channel:** Select the corresponding channel according to the hotspot setting (Automatic is recommended).

**SSID:** The Wi-Fi name of the current hotspot.

**Security mode:** Select the corresponding security mode according to the hotspot setting.

**Encrypt type:** Select the corresponding encrypt type according to the hotspot setting.

### Acquiring and Setting the Security Mode and Encrypt Type

There are three ways to acquire security mode and encrypt type:

- (1) Get the security mode and encrypt type according to the corresponding network information given by the network administrator
- (2) Find them by entering the router of hotspot with the administrator's account.
- (3) Find them through Windows operating system and the steps are shown below (Take WIN XP as an example):

- ① Right click "My Network Places", and click "Properties", then double click "Local Area Connection 2" (as shown in Figure 8).

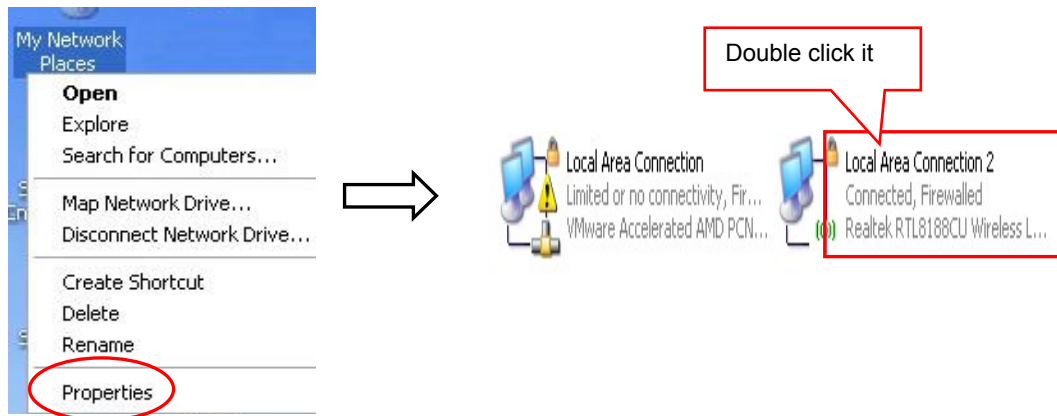


Figure 8

- ② The dialog box “Wireless Network Connection Status” pops up, then click “Properties” (as shown in Figure 9).

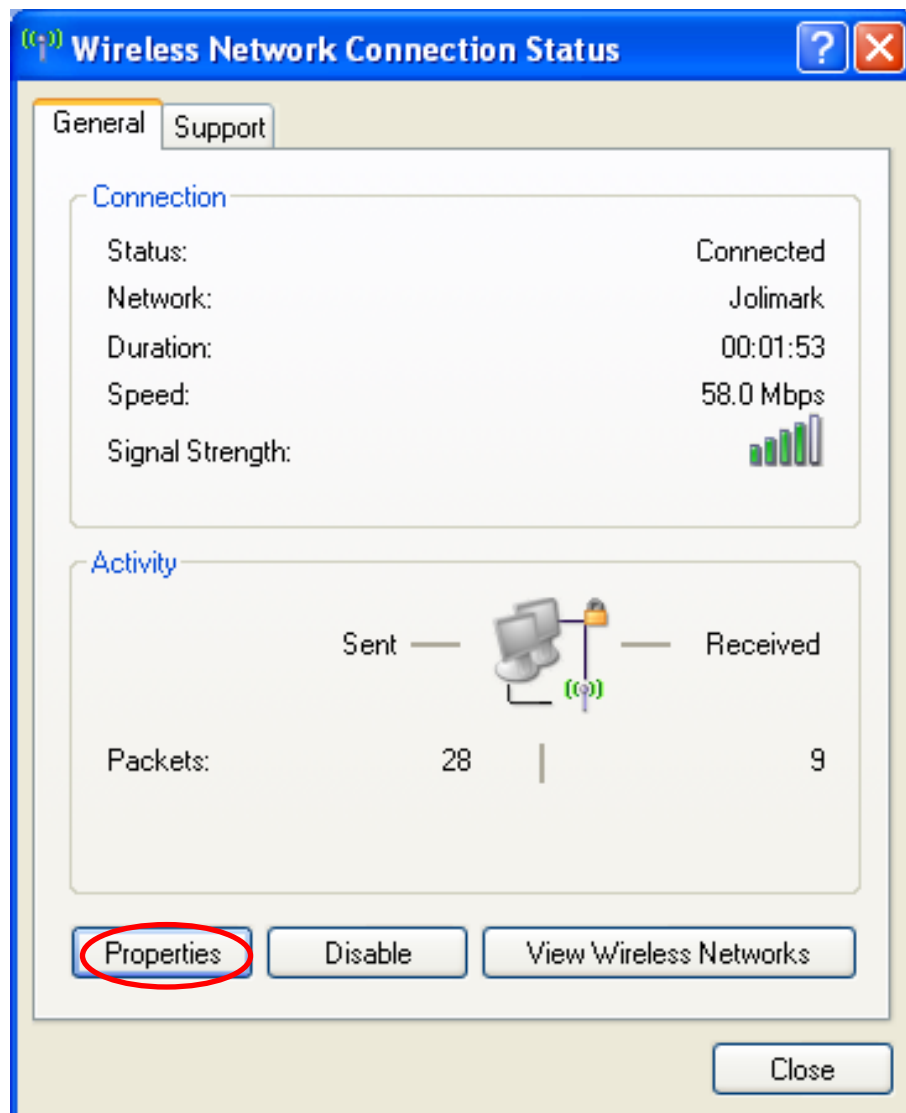


Figure 9

- ③ When the dialog box pops up, click “Wireless Networks” on the upper side of the dialog box (as shown in Figure 10).

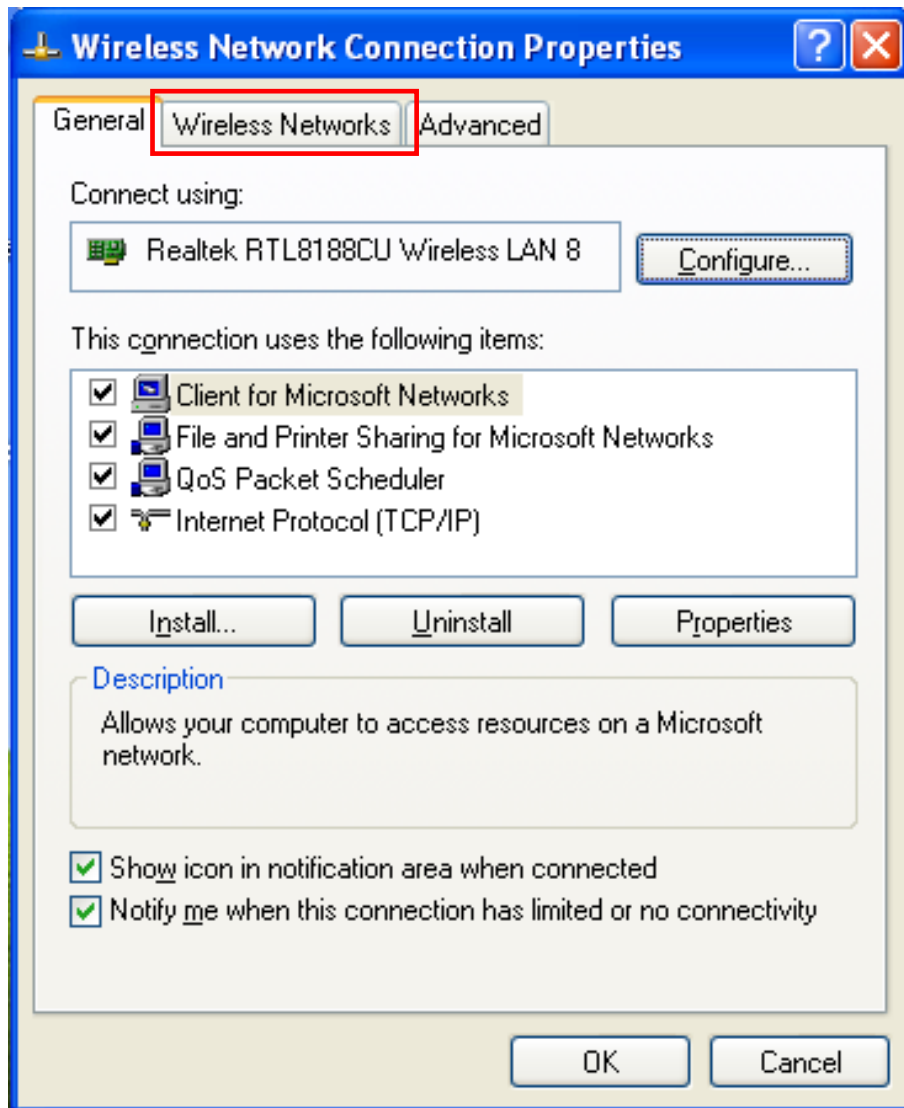


Figure 10

- ④ Select the current wireless network name in “Preferred networks” and then click “Properties” ( as shown in Figure 11).

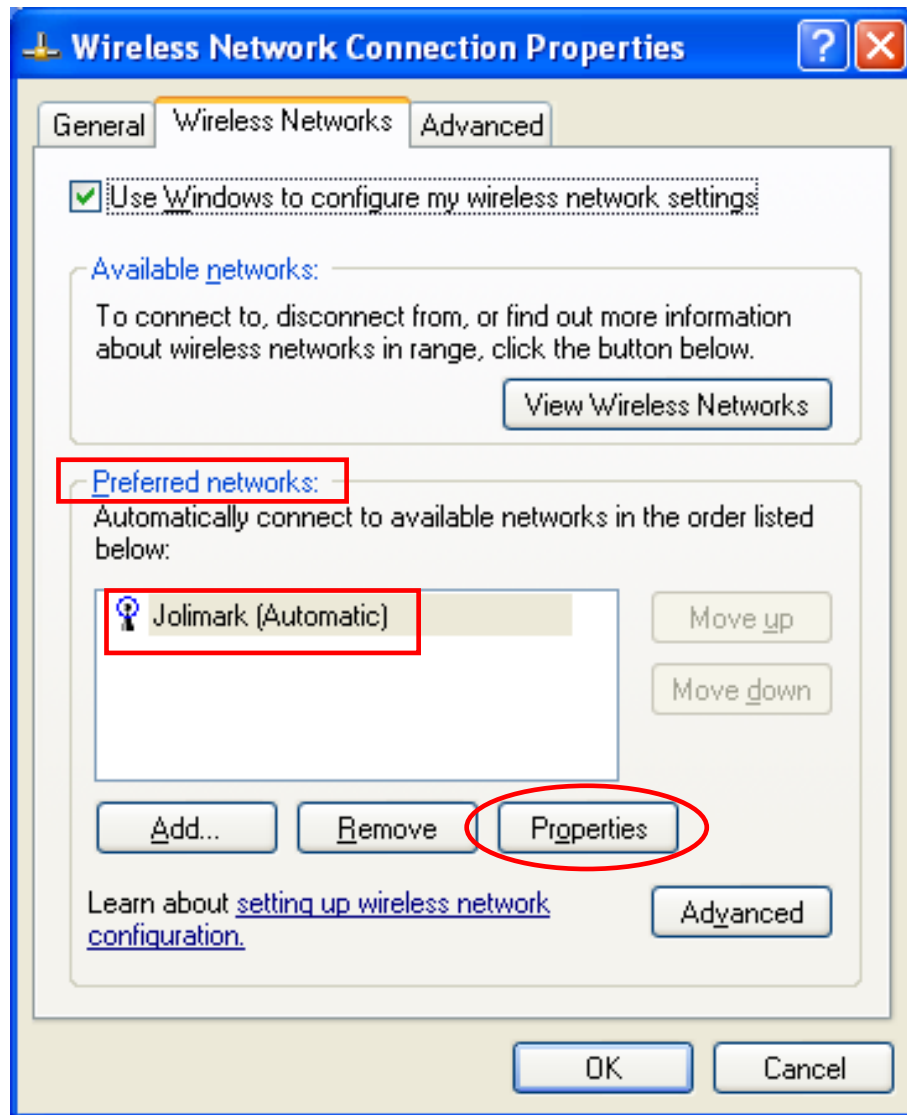


Figure 11

- ⑤ When the window of "Properties" pops up, find out the security mode and encrypt type in "Wireless network key" (as shown in Figure 12).

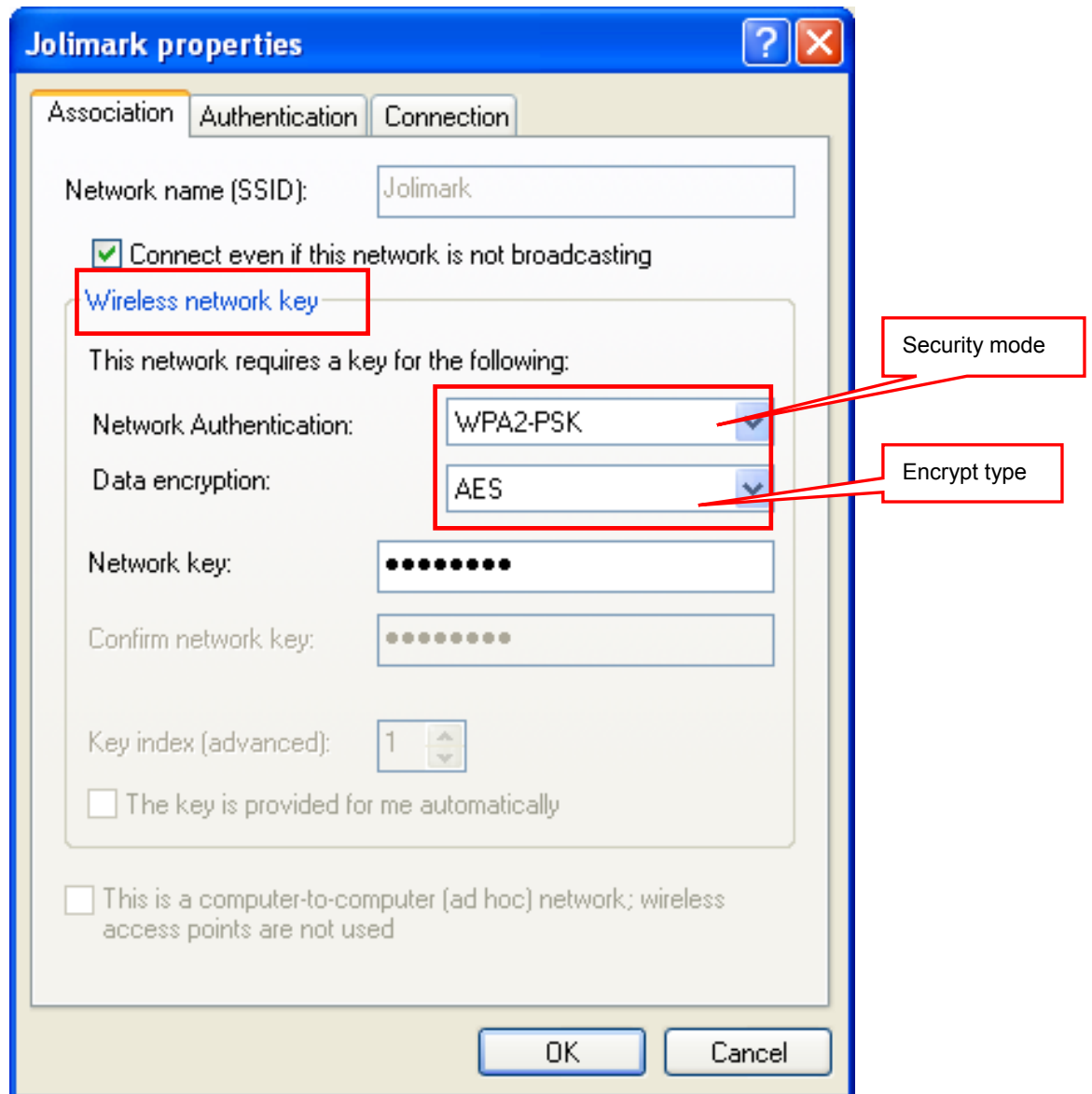


Figure 12

- ⑥ Close the windows in turn, then the dialog box "Local Area Connection 2 Status" pops up according to the operation of step ①, click "View Wireless Networks" (as shown in Figure 13). When the window of "Wireless Network Connection" pops up, double click the current hotspot and the connection will be disconnected (as shown in Figure 14).

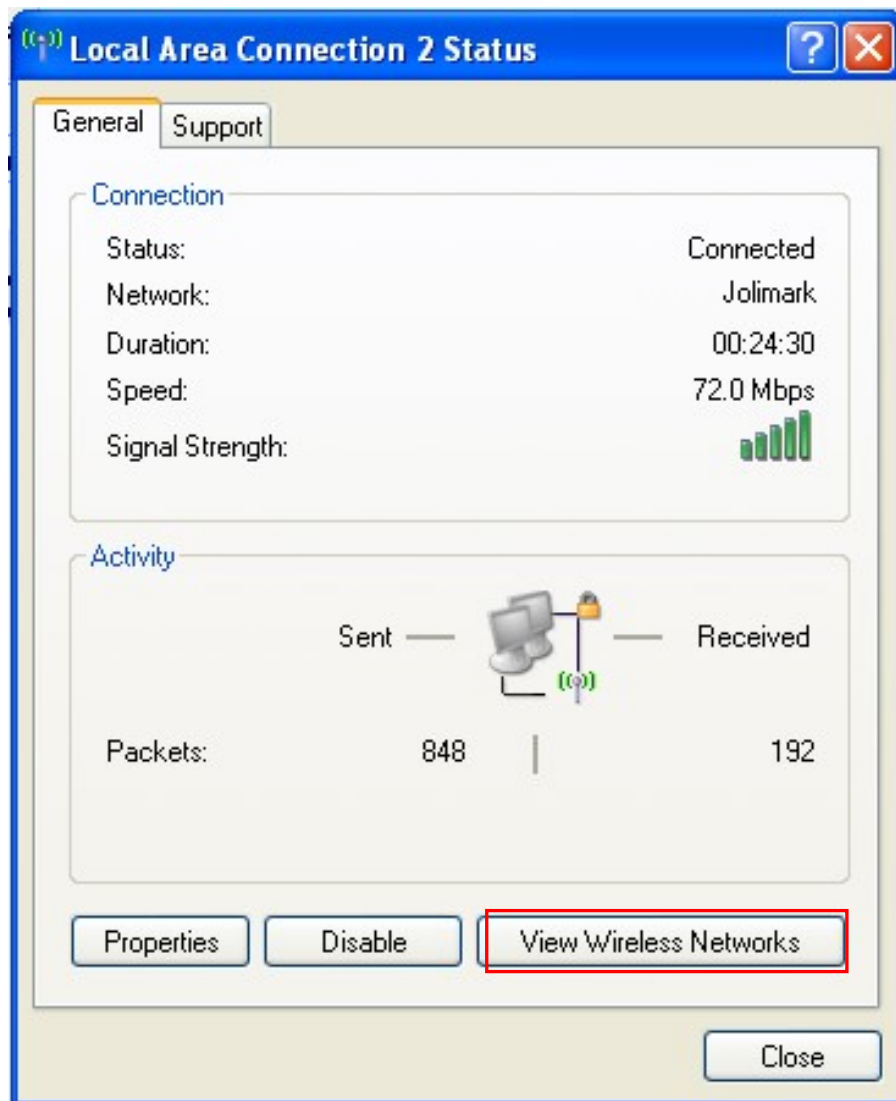


Figure 13

The current Wi-Fi hotspot of this example.

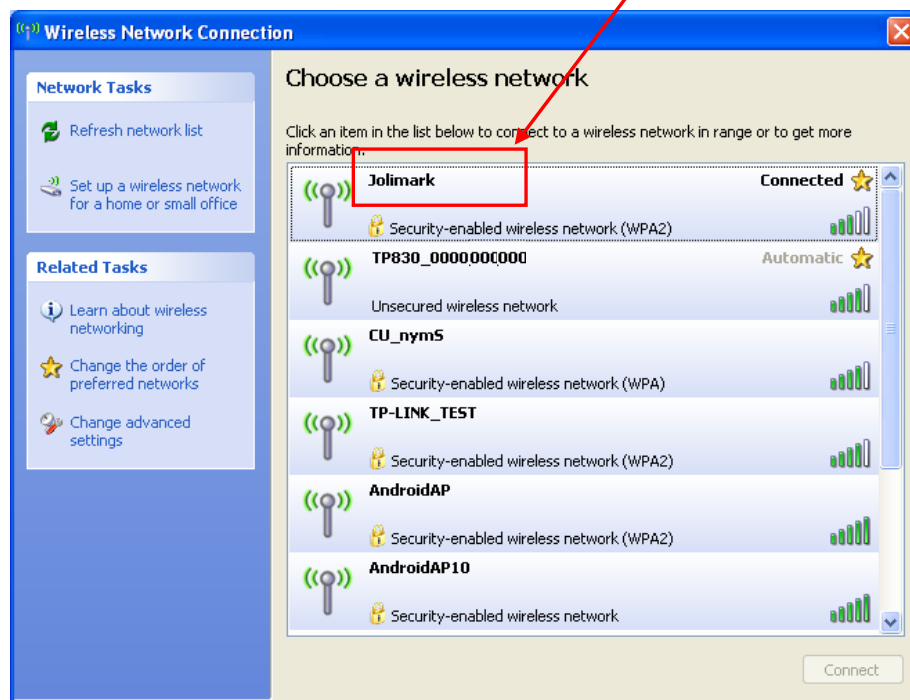


Figure 14

The setting of Security Mode and Encrypt Type

Refer to **“Connecting the Printer”**, connect the wireless equipment with the printer and select the parameters acquired by the above steps in the “Security Mode” and “Encrypt Type” of the **“AP Client”**.

**Pass Phrase:** The password of the hotspot

**Address Assignment:** It includes “DHCP (Auto config)” and “Static (Assigned IP)”. You can select the corresponding assignment way according to your need. When selecting “DHCP (Auto config)”, the IP Address and Subnet Mask can be acquired automatically (Click “Apply” and the system will assign automatically), and there is no need to set manually (as shown in Figure 15).



AP Client	
BSSID	CC:D2:9B:00:00:53
Channel	1
SSID	Jolimark
Security Mode	WPA2PSK
Encrypt Type	AES
Pass Phrase	••••••••
Address Assignment	DHCP (Auto config)
IP Address	192.168.43.129
Subnet Mask	255.255.255.0
<input type="button" value="Apply"/>	

Figure 15

**Note:** The green handshaking mark on the right side of the SSID column denotes the connection between the printer and the outer Wi-Fi hotspot is successful.

**IP Address:** Set the IP address of the printer wireless card and the IP address should be in the same segment with the wireless networks you are using.

**Subnet mask:** Set the subnet mask of the printer wireless card and the subnet mask should be the same with that of the wireless networks you are using.

Click “Apply” after all the parameters are set, then the countdown interface appears. When the time is over, disconnect the computer with the printer and connect the computer with the outer hotspot.

**Update Firmware:** Upgrade the wireless module of the printer (as shown in Figure 16), and you can neglect it if there is no need to upgrade.

Update Firmware	
Location:	<input type="text"/> <input type="button" value="Browse..."/>
<p style="color: red;">It takes about 1 minute to upload and upgrade flash and be patient please. Caution! A corrupted file will hang up the system.</p>	
<input type="button" value="Apply"/>	

Figure 16

### 2.9.3 Wi-Fi Interface Status Display and Parameters Reset

Wi-Fi interface is equipped with the “RESET button (Wi-Fi RESET)” and “LED indicator”.

Turn on the printer, the Wi-Fi LED blinks fast, which denotes the interface is on the ON status. 30 seconds later, the Wi-Fi LED blinks slowly, which denotes the Wi-Fi interface is in normal working condition.

If user needs to restore the Wi-Fi parameters to factory default setting; just press the Wi-Fi RESET button to do it in a quick way. The method is as below:

1. Turn on the printer, wait for a few seconds until the Wi-Fi LED blinks slowly, and then press down the Wi-Fi RESET button for 2 seconds. Loosen the button and the LED blinks twice fast then blinks slowly again.
2. Reboot the printer and the factory default settings have been restored.

## 2.10 Mobile Equipment Wi-Fi Printing Function Application

The Jolimark printer which is equipped with Wi-Fi interface supports the print service of Android system 4.4 or above version and the AirPrint wireless printing function of iPhone iOS system. After the Android mobile equipment has installed the Jolimark print service plug-in, it can directly use the system print service to realize wireless printing; the iPhone iOS equipment does not need to install any plug-in.

**Note: 1. Only if wireless printing function is supported by the APP can it be used.**

**2. The Android system must be 4.4 or above version and should have the complete Android Print function.**

TP830 which is equipped with Wi-Fi interface is taken as an example to describe printing application. Network name (SSID) is "TP830", IP Address is 10.10.10.1, Subnet Mask is 255.255.255.0 and Security Mode is "Disable". Turn on the printer and then conduct the subsequent application steps. As shown in Figure 17.

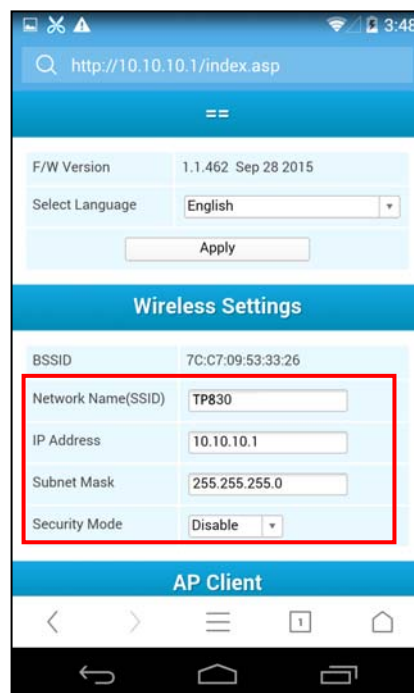


Figure 17

### 2.10.1 The System Print Service Application of Android Equipment

As the Android system is relatively open, the equipment manufacturers can customize the special interface and function according to their need. The parameter setting way may be different because of the different interfaces.

#### 1. Install the print service

Download the print service installation package AdrPrintSvc.apk from [www.jolimark.com](http://www.jolimark.com). After running the installation program, the “JM Print Service” will be added in the Android system.

## 2. Connect Wi-Fi printer

2.1 Enter into the “Settings” of system, as shown in Figure 18.

2.2 Find out the “WIRELESS & NETWORKS” in “Settings” interface, then click “Wi-Fi”, as shown in Figure 19.

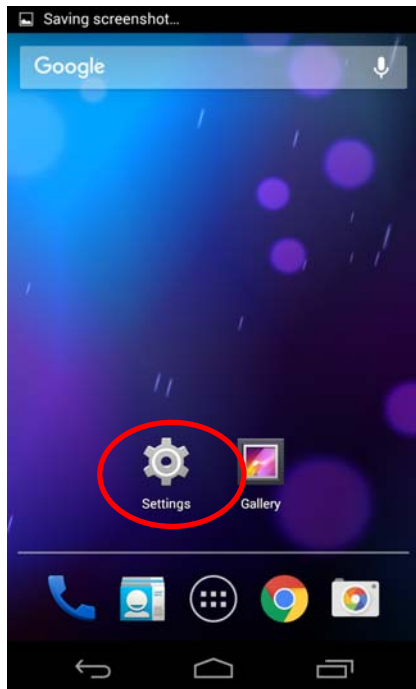


Figure 18

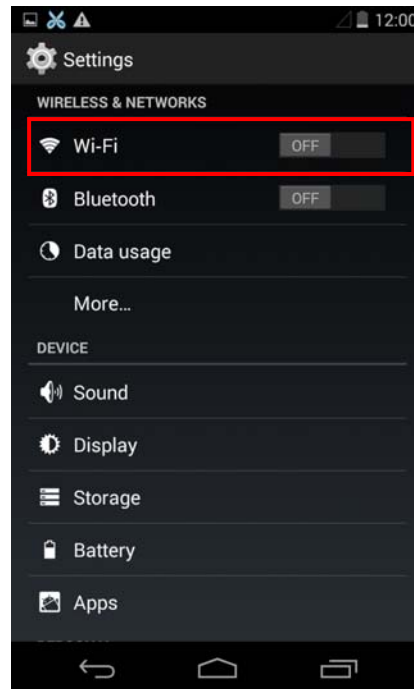


Figure 19

2.3 Select the “Wi-Fi” function to “ON”, and select the “TP830” hotspot, as shown in Figure 20.

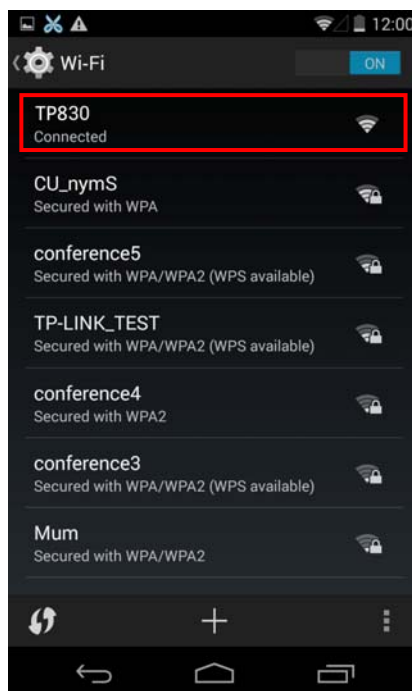


Figure 20

### 3. Turn on the print service

3.1 Enter into the “Settings” of the system, as shown in Figure 18.

3.2 Find out “Printing” in “Settings” interface and enter into, as shown in Figure 21.

3.3 Find out “JM Print Service” in “Printing” interface and enter into, as shown in Figure 22.

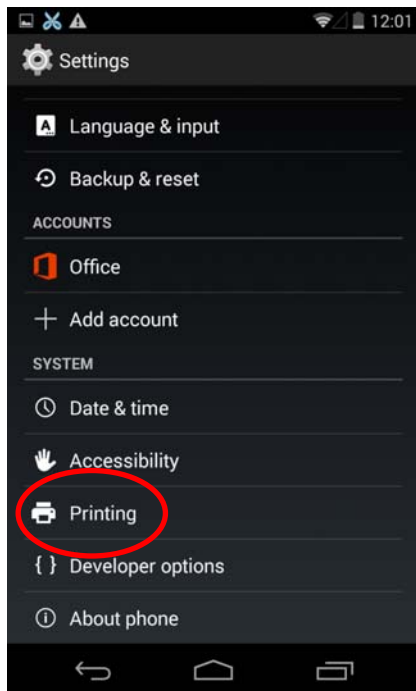


Figure 21

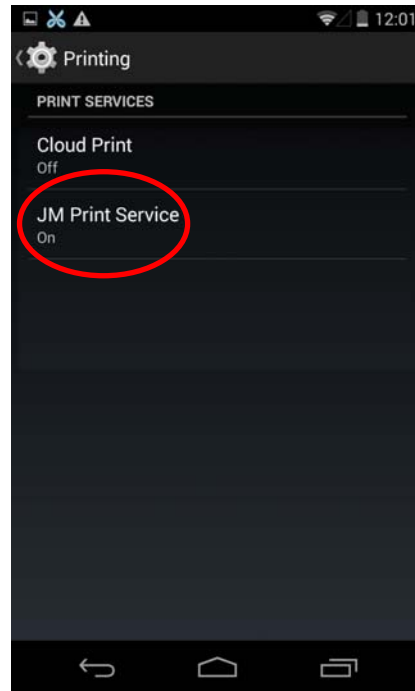


Figure 22

3.4 Switch the “JM Print Service” function from “OFF” to “ON”, as shown in Figure 23.

**Note:** If there is no function switch in the upper right of “JM Print Service” interface, it means the current system has no complete Android Print function; it does not support the system print service.

3.5 After turning on the “JM Print Service”, it will search automatically and show the printer if found, as shown in Figure 24.

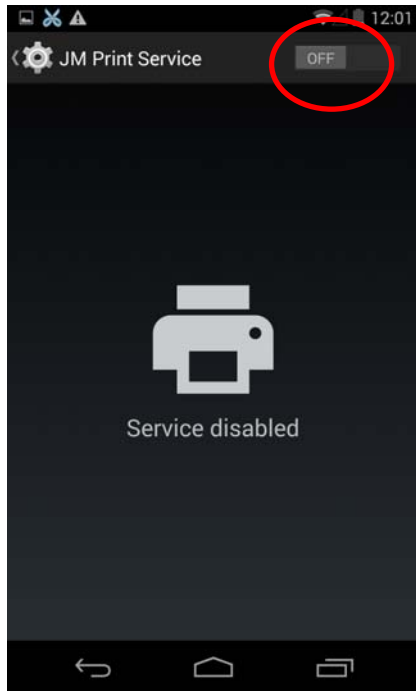


Figure 23

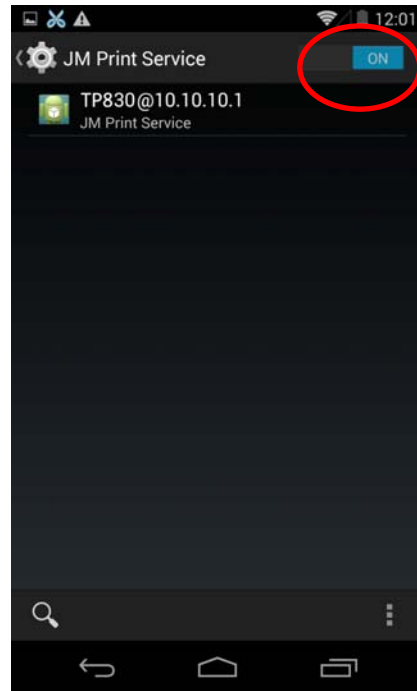


Figure 24

#### 4. Run APP

APP has to support the system's print service, WPS Office is taken as an example to describe.

4.1 Run the APP "WPS Office", as shown in Figure 25.

4.2 Open the document which is to be printed in the software, then click the "Tools" button, as shown in Figure 26.

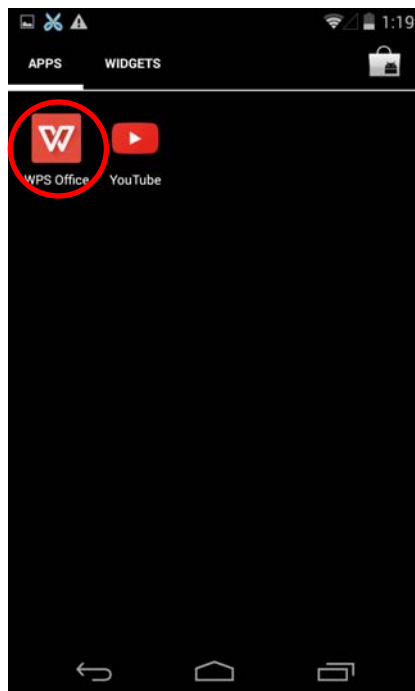


Figure 25



Figure 26

4.3 When the menu pops up, select "Print", as shown in Figure 27.

4.4 When the "Print" interface pops up, click "Print", as shown in Figure 28.

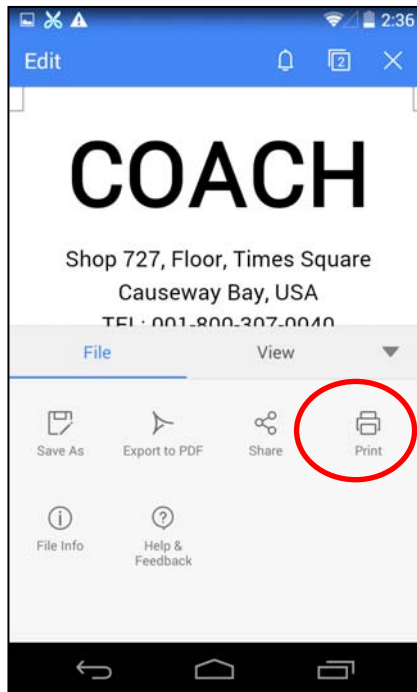


Figure 27

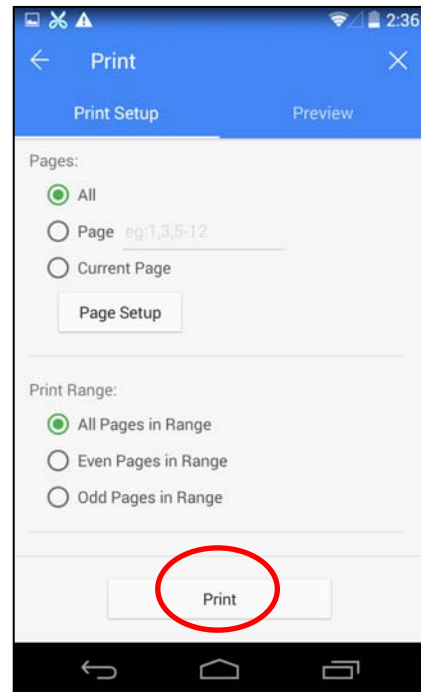


Figure 28

4.5 When the “Select Print Service” interface pops up, select “System Print Service”, as shown in Figure 29.

4.6 Select “TP830@10.10.10.1”, as shown in Figure 30.

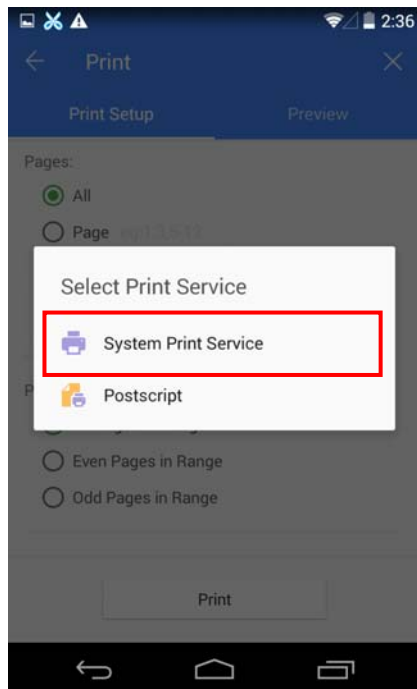


Figure 29

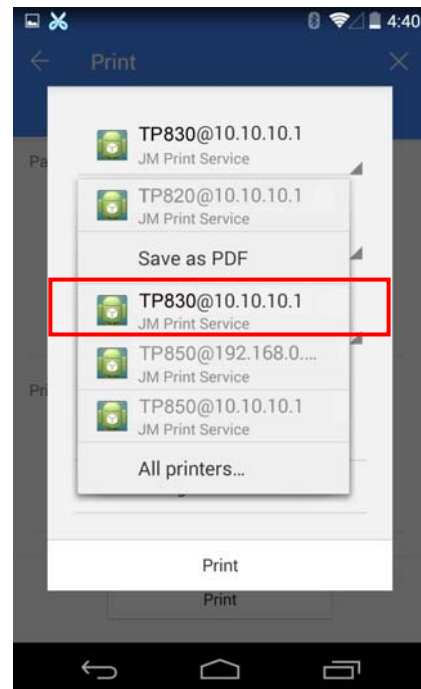


Figure 30

4.7 Make sure the printer and the corresponding printing parameters are correct, click “Print”, as shown in Figure 31.

4.8 The system sends print data to the printer, when the printer finishes receiving, a prompt “Print job completed!” will be shown, as shown in Figure 32.

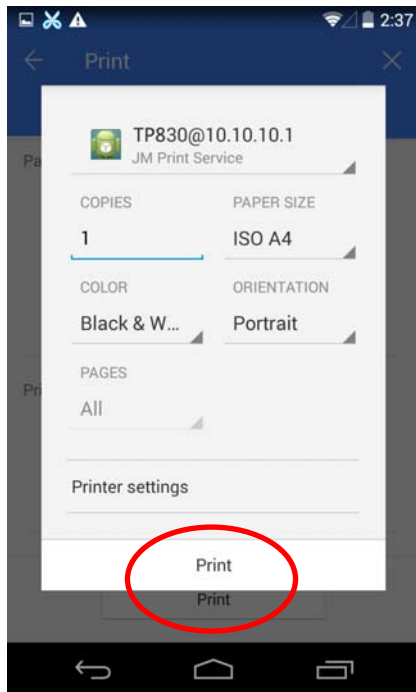


Figure 31

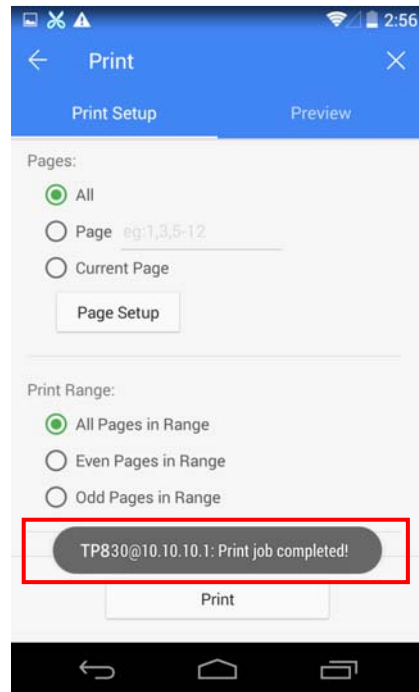


Figure 32

## 2.10.2 AirPrint Printing Application of iPhone iOS Equipment

iPhone iOS equipment used in this example is iPad Air2, iOS system version is 9.1. The application situation of other iOS equipment or system version may be different to this example.

### 1. Connect Wi-Fi printer

1.1 Enter into the "Settings" of the system, as shown in Figure 33.

1.2 Find out "WLAN" in "Settings" interface and enter into, as shown in Figure 34.

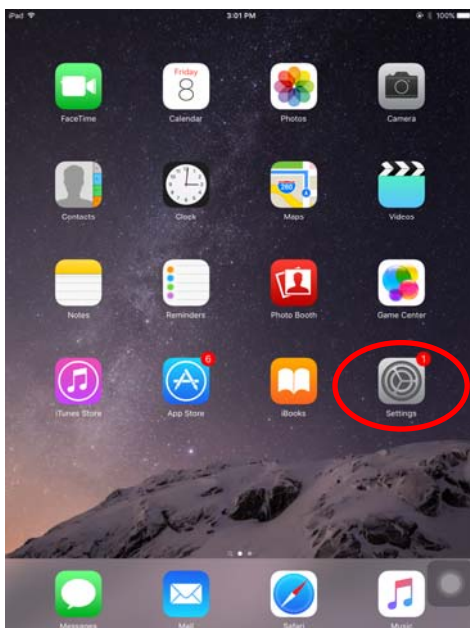


Figure 33



Figure 34

1.3 Turn on the "WLAN" function, equipment will search automatically and show the current hotspot, as shown in Figure 35.



1.4 Select the “TP830” hotspot, as shown in Figure 36.

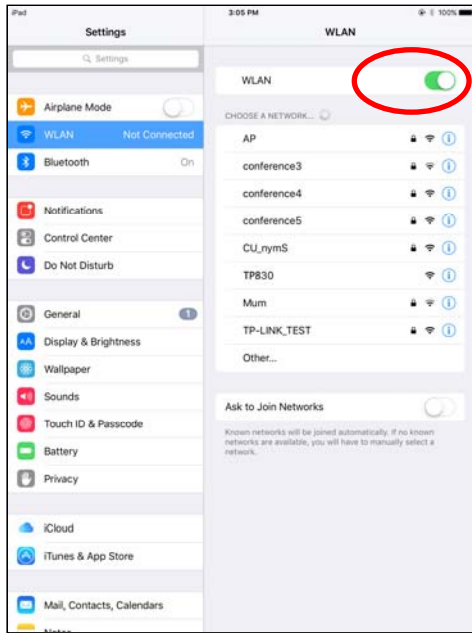


Figure 35

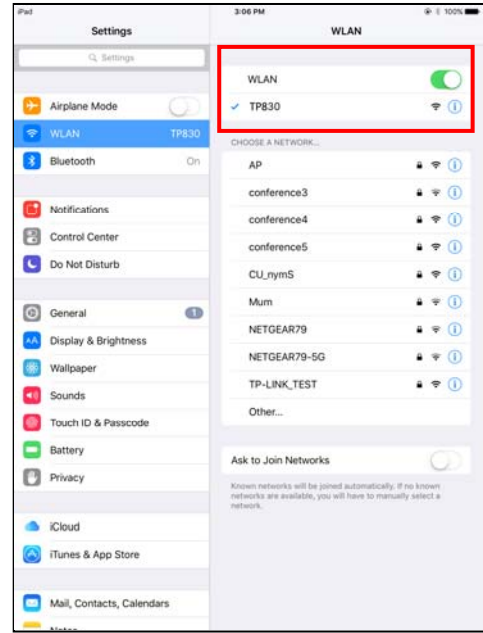


Figure 36

## 2. Run APP

As the interface designs of APP are different, the operating way of printing function will also be different. “Word” is taken as an example to describe.

2.1 Install and run “Word”, as shown in Figure 37.

2.2 Open the document which is to be printed, as shown in Figure 38.

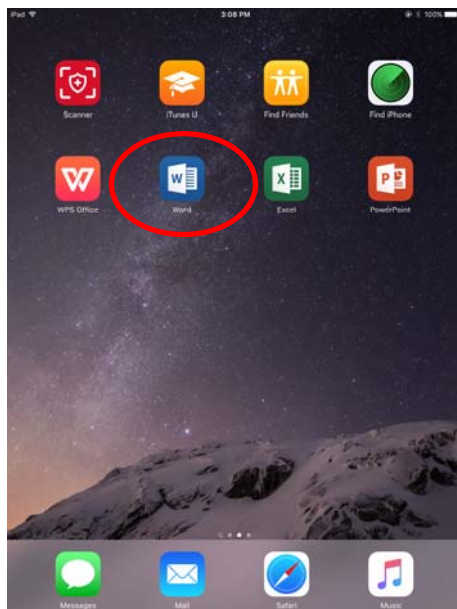


Figure 37

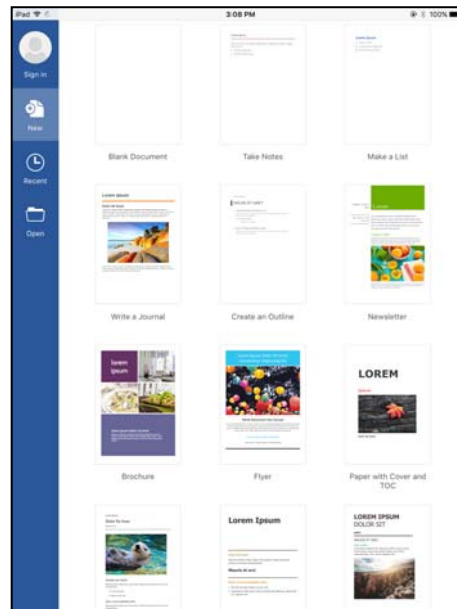


Figure 38

2.3 Click the menu icon on the upper left of the “Word” software interface, as shown in Figure 39.

2.4 When the menu pops up, click “Print”, as shown in Figure 40.



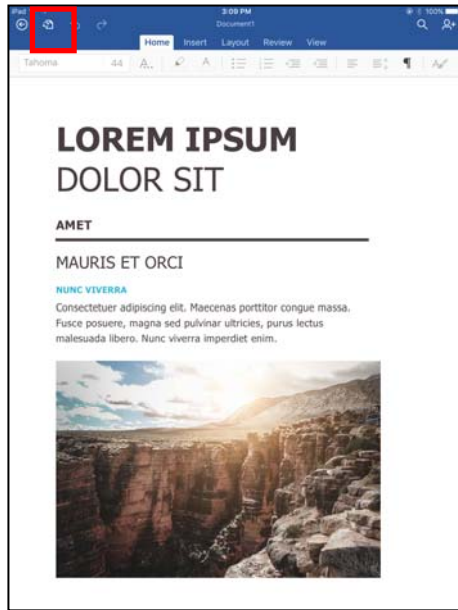


Figure 39

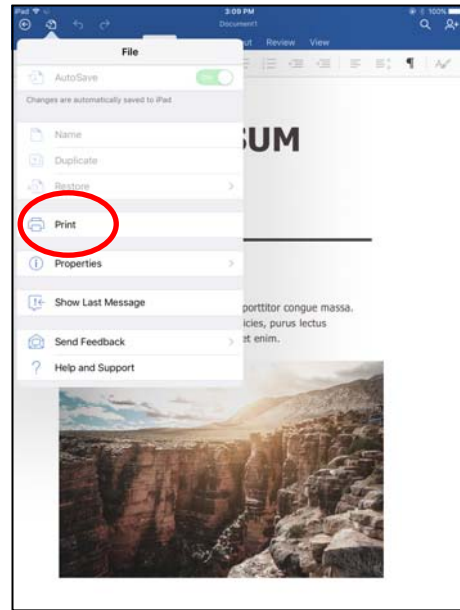


Figure 40

2.5 When the “Printer Options” interface pops up, click “Select Printer”, as shown in Figure 41.

2.6 Select “TP830” in the list, as shown in Figure 42.

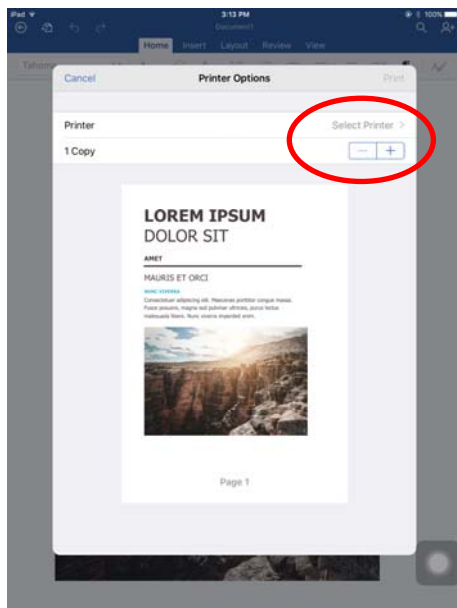


Figure 41

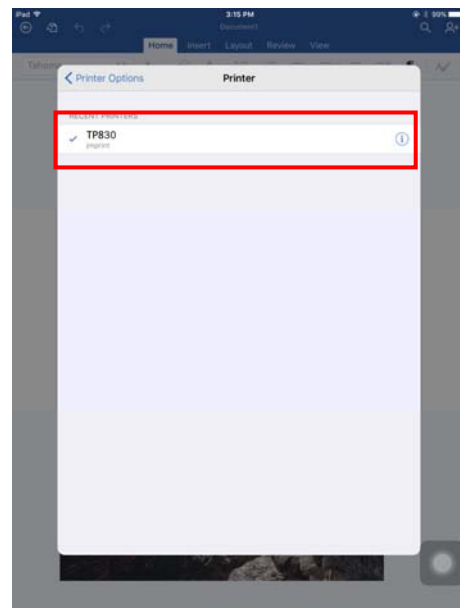


Figure 42

2.7 Return to “Printer Options” interface and click “Print”, the system sends print data to the printer, as shown in Figure 43.

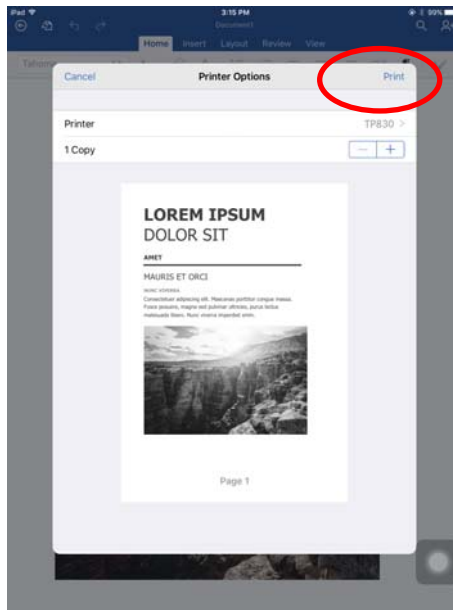


Figure 43

## 2.11 Installing Printer Network Driver

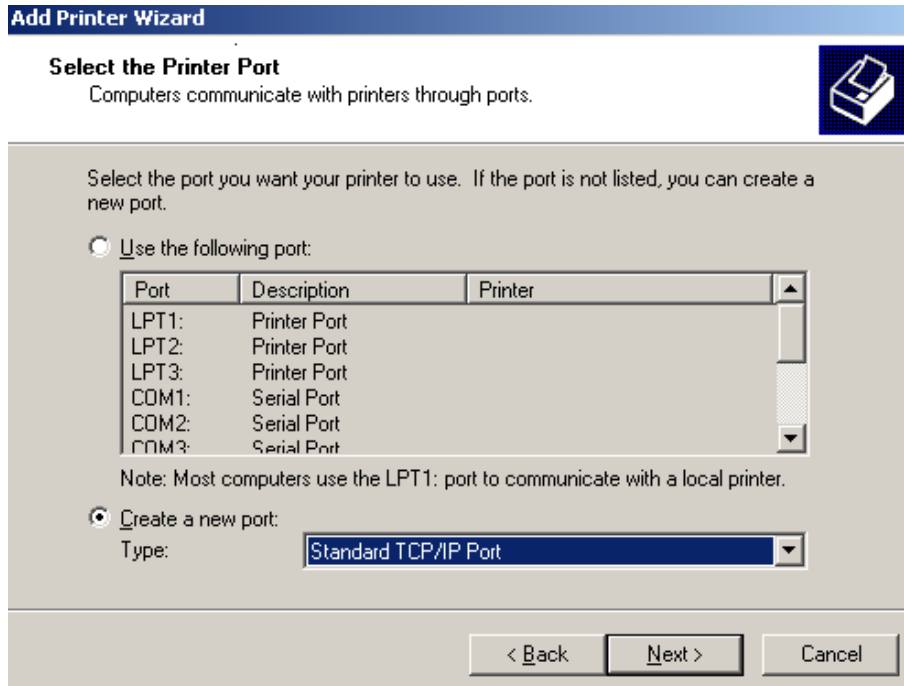
The ways of installing network driver are classified into Newly-install way and Upgrade-install way according to whether the PC is installed the printer driver or not.

If the printer driver hasn't been installed on the PC, adopt newly-install way whose steps are shown in "Newly-install printer network driver".

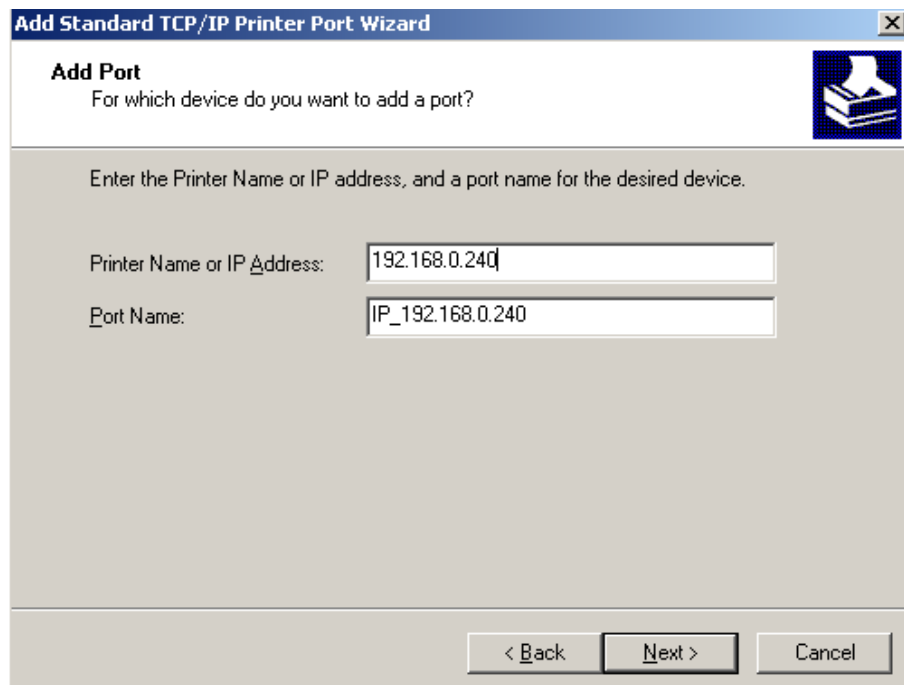
If the printer driver has been installed on the PC, adopt Upgrade-install way whose steps are shown in "Upgrade-install printer network driver".

### 1. Newly-install printer network driver

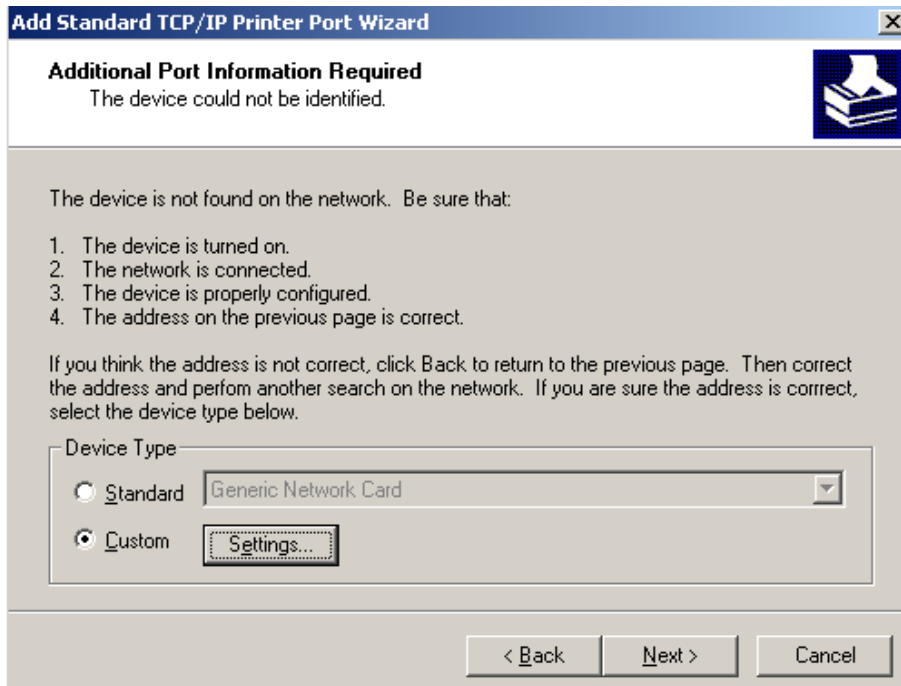
- 1) Click "Start" → "Settings" → "Select Printers".
- 2) Click "Add printer", then a window of "Add Printer Wizard" pops up, click "Next".
- 3) A window of "Add Printer Wizard" pops up, select "Local printer" in the "Local or Network Printer" window, and then click "Next".
- 4) A window of "Select the Printer Port" pops up, select "Create a new port", and then select "Standard TCP/IP Port" in the port and click "Next".



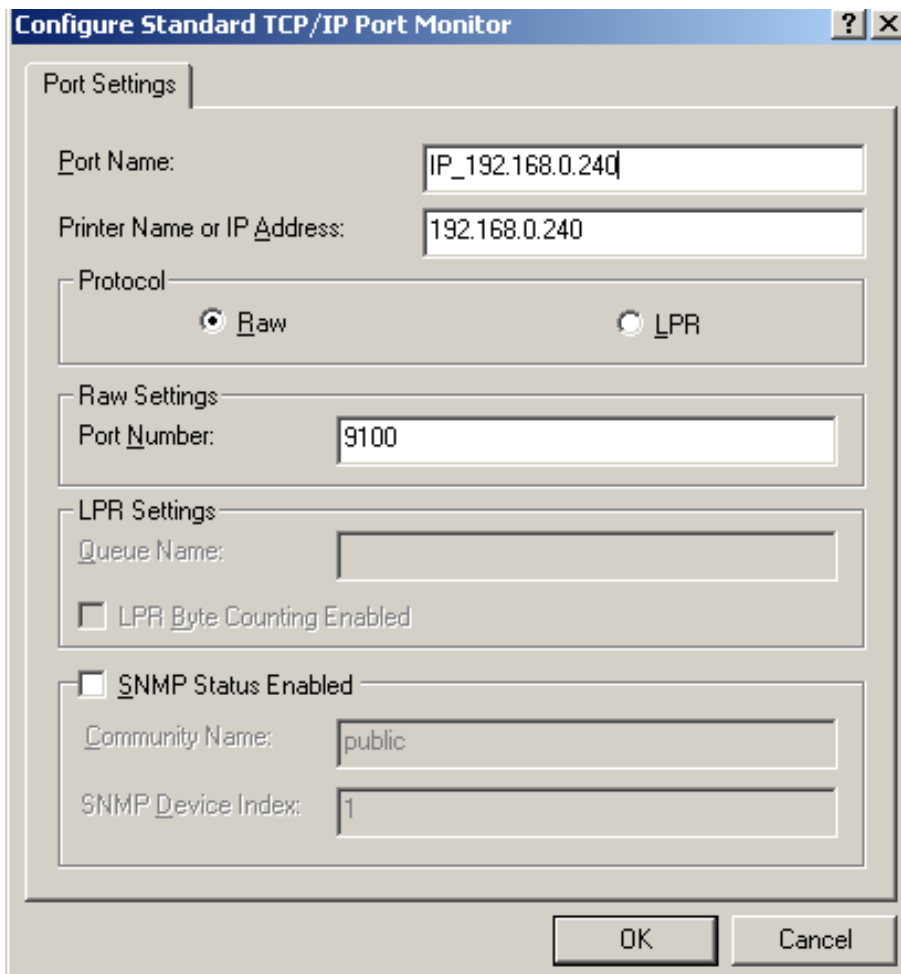
- 5) A window of “Add standard TCP/IP Printer Port Wizard” pops up, click “Next”.
- 6) A window of “Add Port” pops up, enter the IP address reported by the “Setting printer’s IP address” in the “Printer Name or IP Address” column. Take IP address “192.168.0.240” for example as the figure shown below. “Port Name” is created automatically after finishing filling in IP address. Click “Next”.



- 7) A window of “Additional Port Information Required” pops up, select “Custom” in the “Device Type”, then click “Settings”.



- 8) A window of “Port Settings” pops up. Affirm that “Port Name” and “Printer Name or IP Address” are correct, “Protocol” is “RAW” and “Port Number” is “9100”, click “OK”.



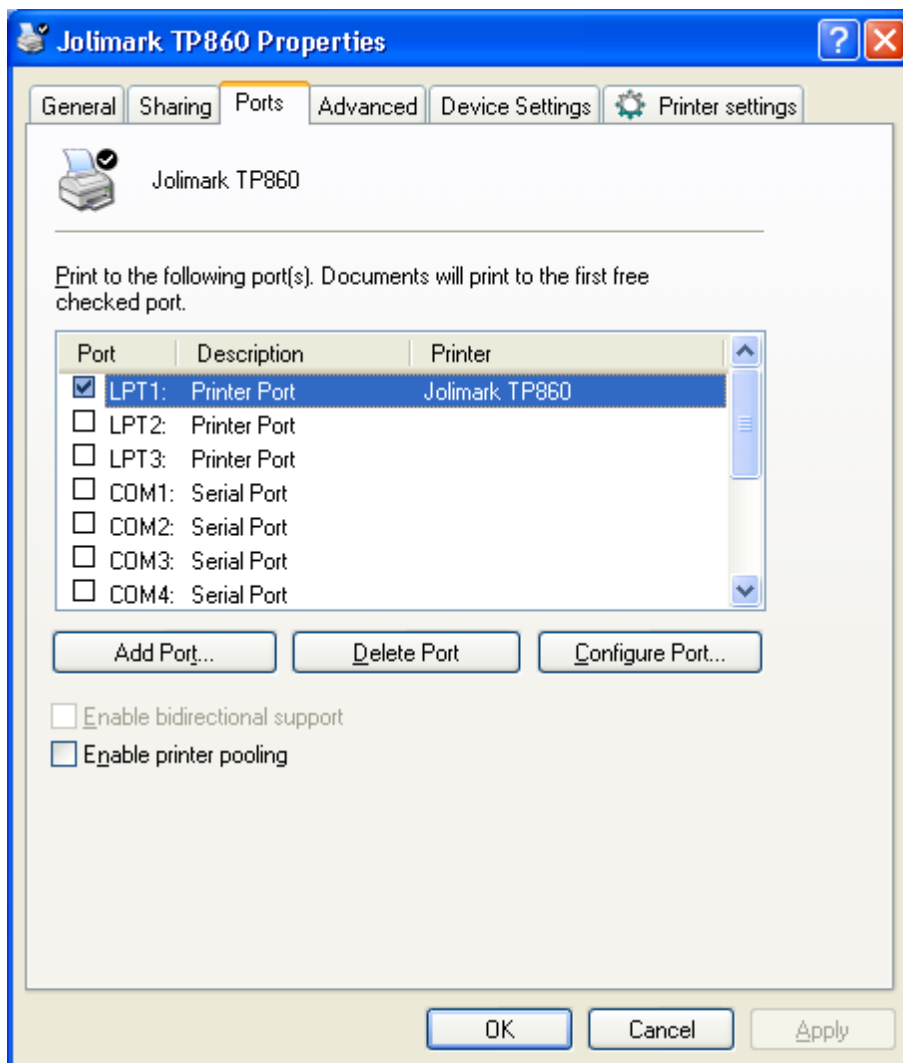
- 9) Return to “Additional Port Information Required”, click “Next”.

- 10) A window of "Completing the Add Standard TCP/IP Printer Port Wizard" pops up, click "Finish".
- 11) A window of "Install Printer Software" pops up, click "Have Disk".
- 12) A window of "Install From Disk" pops up. Please according to the operating system environment, such as Windows 2000/XP/Vista/Win7 operating system you should select the path as follows: CD-ROM → "Drivers" → "WIN2000 (XP-Vista-Win7)", click "Open", then click "OK" to return to the window of "Install Printer Software", click "Next".
- 13) Follow the guide and click "Next" gradually till the installation is finished. At this time, printer network driver is installed completely.

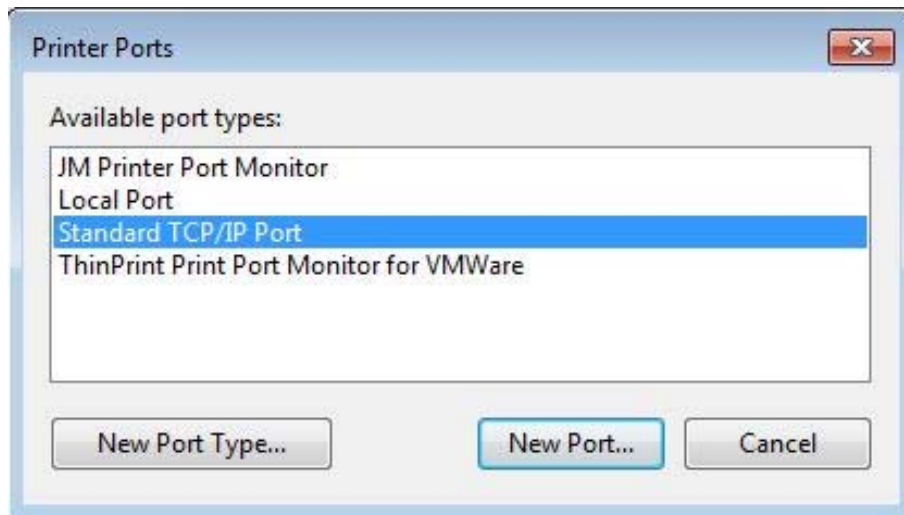
## 2. Upgrade-install printer network driver (setting driver's network port)

If PC has installed the printer's driver, set driver's network port to carry out network printing. The concrete steps are shown below:

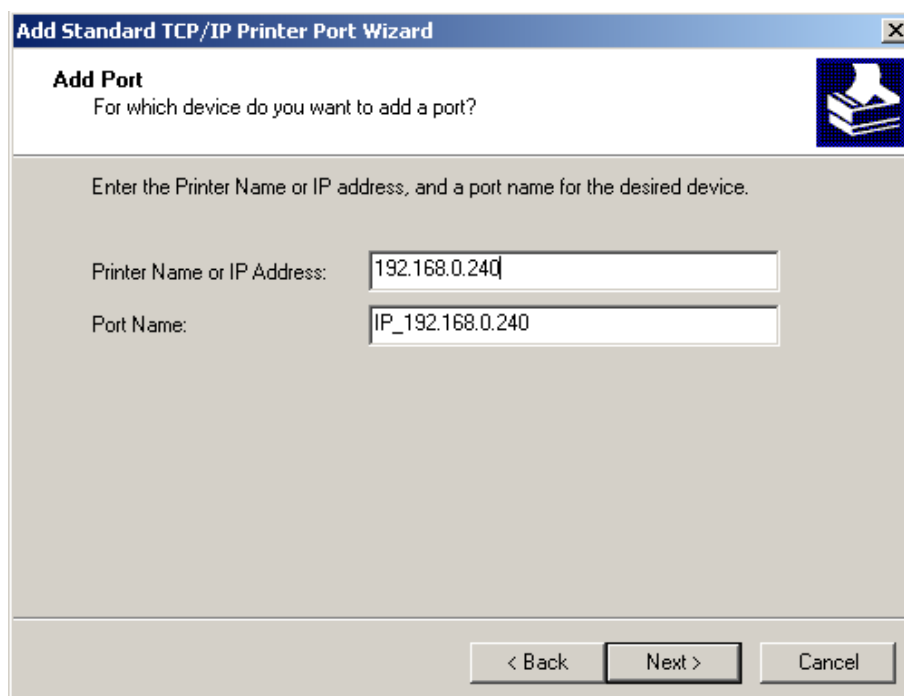
- 1) Click "Start" → "Settings" → "Select Printers".
- 2) Right click TP860 driver, click "Properties" on the window popping up.
- 3) A window of "Properties" pops up, click "Ports" and "Add Ports".



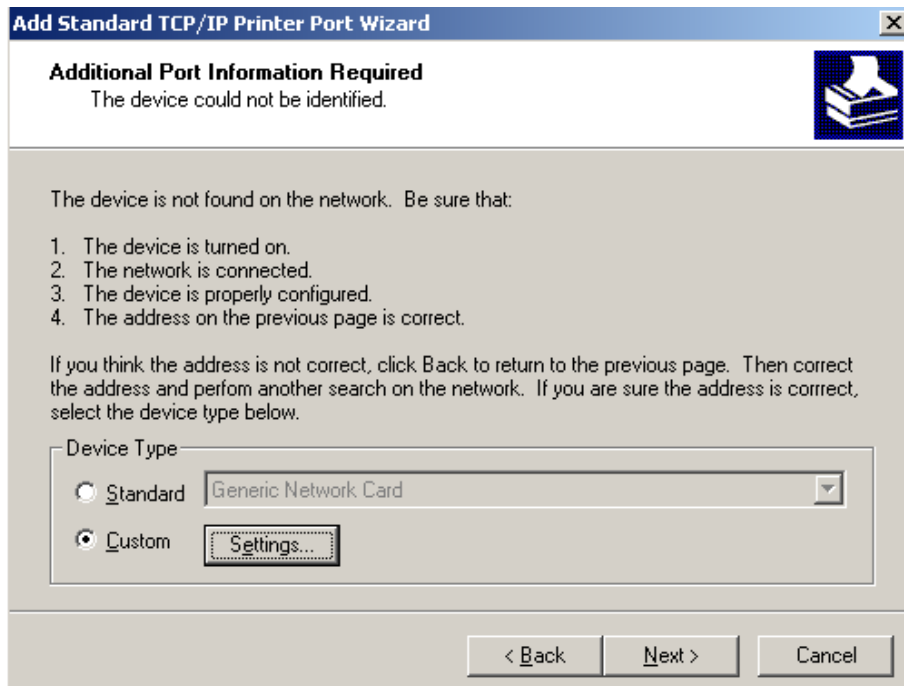
- 4) A window of "Printer ports" pops up, select "Standard TCP/IP Port", click "New port".



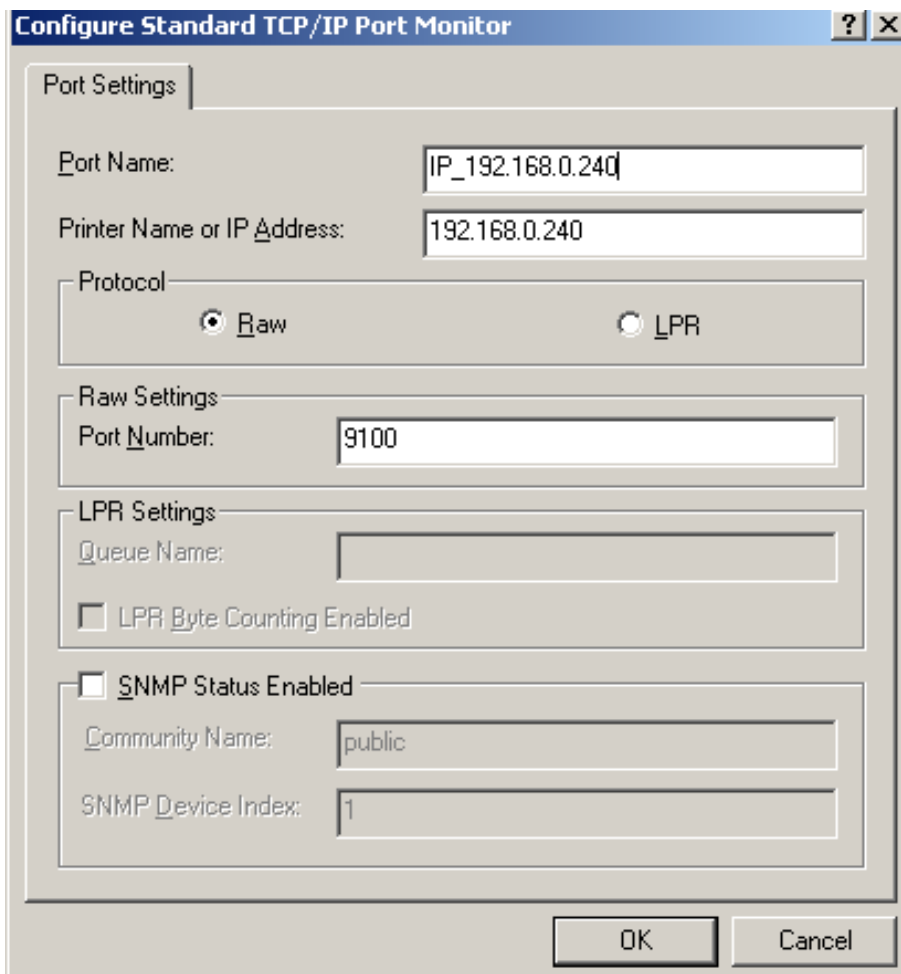
- 5) A window of "Add Standard TCP/IP Printer Port Wizard" pops up, click "Next".
- 6) A window of "Add port" pops up, import the IP address reported by the "Setting printer's IP address" in the "Printer Name or IP Address" column. Take IP address "192.168.0.240" for example. "Port Name" is created automatically after finishing filling in IP address. Click "Next".



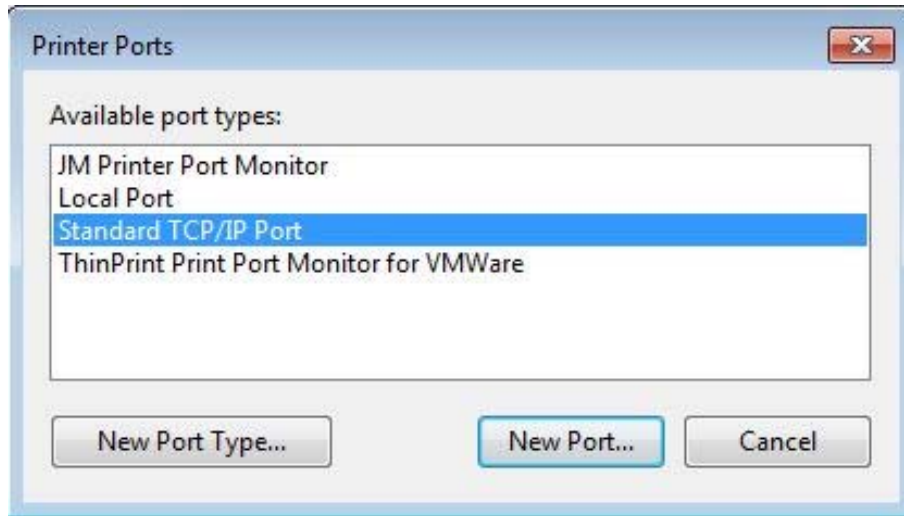
- 7) A window of "Additional Port Information Required" pops up, select "Custom" in the "Device Type", then click "Settings".



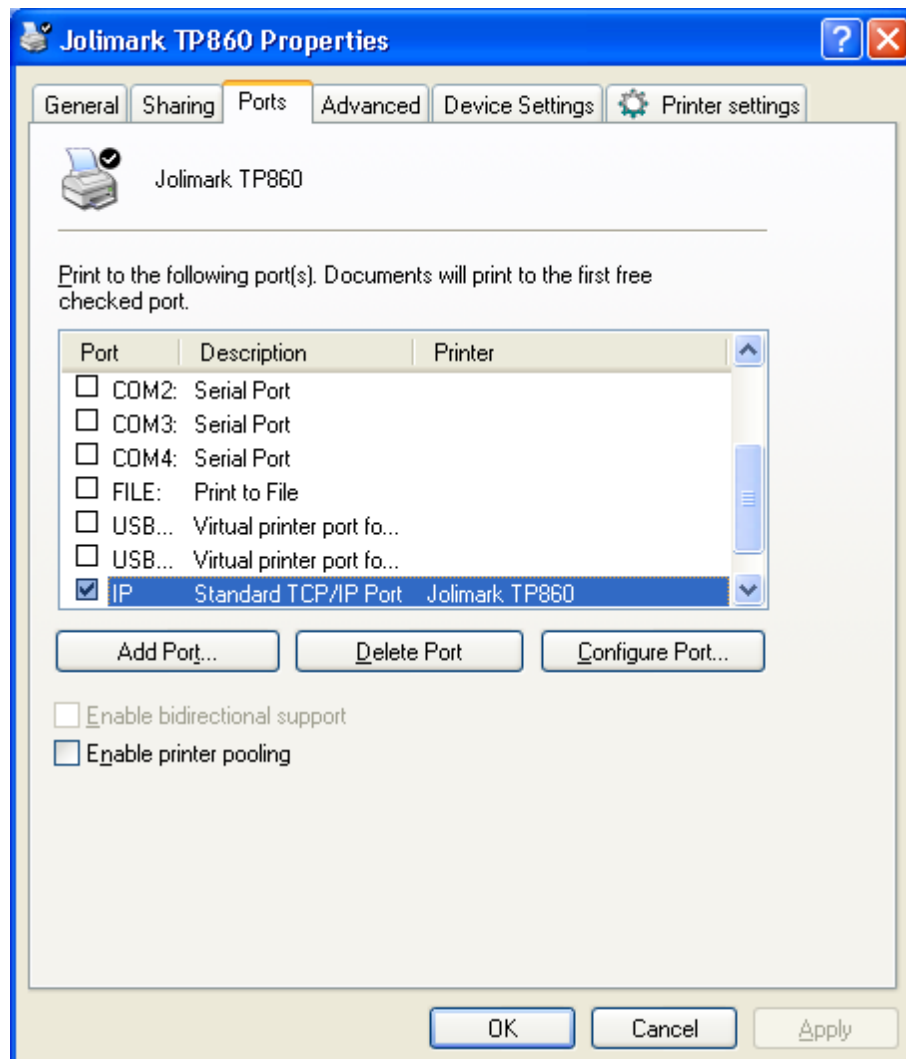
- 8) A window of “Port Settings” pops up. Affirm that “Port Name” and “Printer Name or IP Address” are correct, “Protocol” is “RAW” and “Port Number” is “9100”, click “OK”.



- 9) Return to “Additional Port Information Required”, click “Next”.
- 10) A window of “Completing the Add Standard TCP/IP Printer Port Wizard” pops up, click “Finish”.
- 11) Return to “Printer Ports”, click “Close”.



- 12) Return to “Properties”, make sure the network port is selected, click “Apply”, and then click “Close”. Thus, printer’s network port setting is finished.





## Chapter 3 Operation Instruction

### 3.1 Control Panel

There are three LEDs and one key on the control panel. (As shown in Figure 3-1)



Figure 3-1 Control panel

#### 3.1.1 LED

LED	Description
POWER (Green)	Denotes whether the printer's power supply is connected or not. The LED is on when the power is connected.
ERROR (Red)	Denotes printer's status. The LED is on when the malfunction occurs.
PAPER OUT (Red)	Denotes printer's paper status. The LED is on when paper out or is about to end.

**Note:** Refer to “Error Message on the Control Panel” for detailed information about LED malfunctions in this *user's manual*.

#### 3.1.2 Function Key

Key	Description
<b>【FEED】</b>	<b>【FEED】</b> controls paper feeding, you can enable or disable the key function with a command. When enabled, the paper will be fed continuously if you hold on pressing it, or stop paper feed if you loosen it.

### 3.2 Self Test

Self-test printing is to check whether the printer is working properly. If the printer printouts the self-test content normally, it denotes that there is nothing wrong with the printer except for the interface which connects to the computer. Otherwise, the printer should be repaired.

The printer will print self-test information such as the software version and interface etc.

Close the cover, hold on pressing the **FEED** key and turn on the printer, the **ERROR** LED blinks once with one beep (if beeper is installed in the printer). Loosen the key, then the printer prints out the self-test information.

### 3.3 Hex Dump Printing

This function is to check whether the connection between the printer and the computer or the terminal device works properly or not. The method is that hold on pressing the **FEED** button while turns on the printer, the **ERROR** LED blinks twice with two beeps, then loosen the button. Turn off the printer and restart it to exit this print mode.

### 3.4 Restoring Factory Default Setting

The function is to clear the settings stored in the printer and to restore the factory default settings for correlative parameters.

The method is that hold on pressing the **FEED** button while turns on the printer, the **ERROR** LED blinks five times with five beeps, then loosen the button, at this time, the function takes effect and the

printer can be turned off.

## 3.5 Online-aptitude Parameter Settings

### 3.5.1 Set the Printer Parameter by the Matching Driver

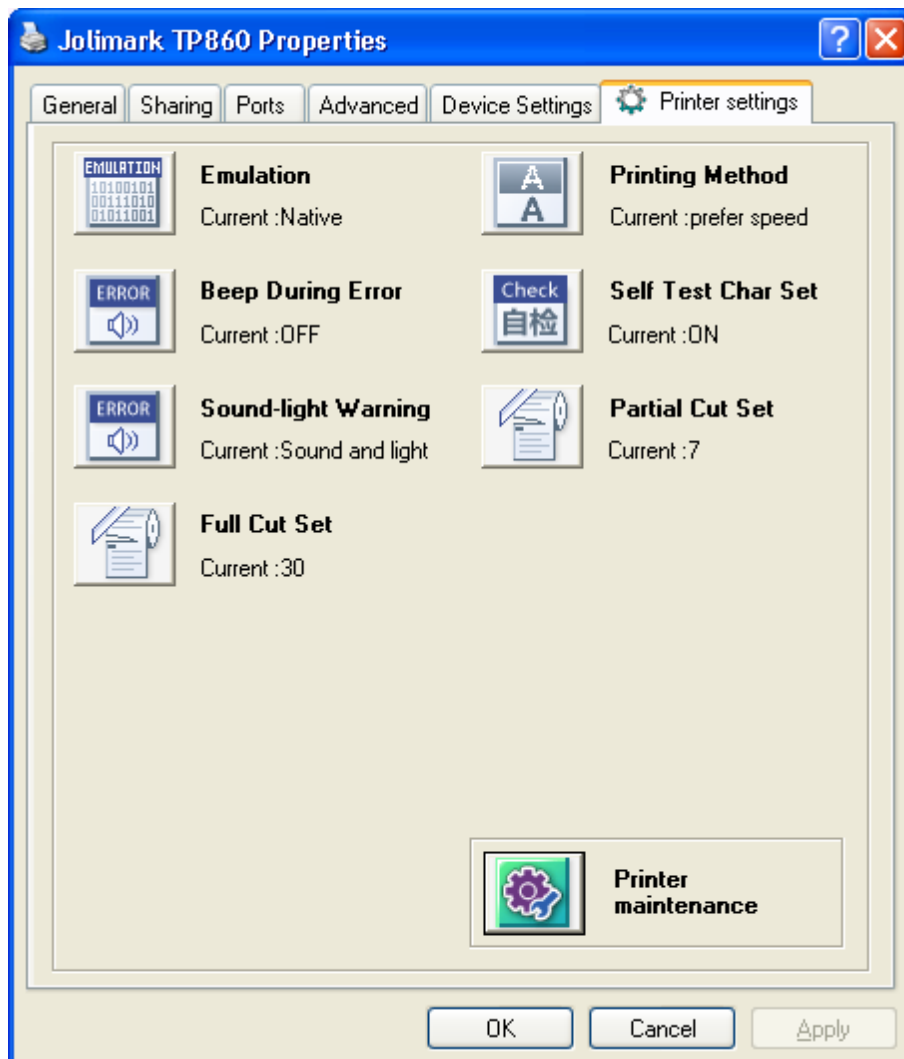
TP860 supports the function of parameter settings, which can be set in the PC with the driver installed in.

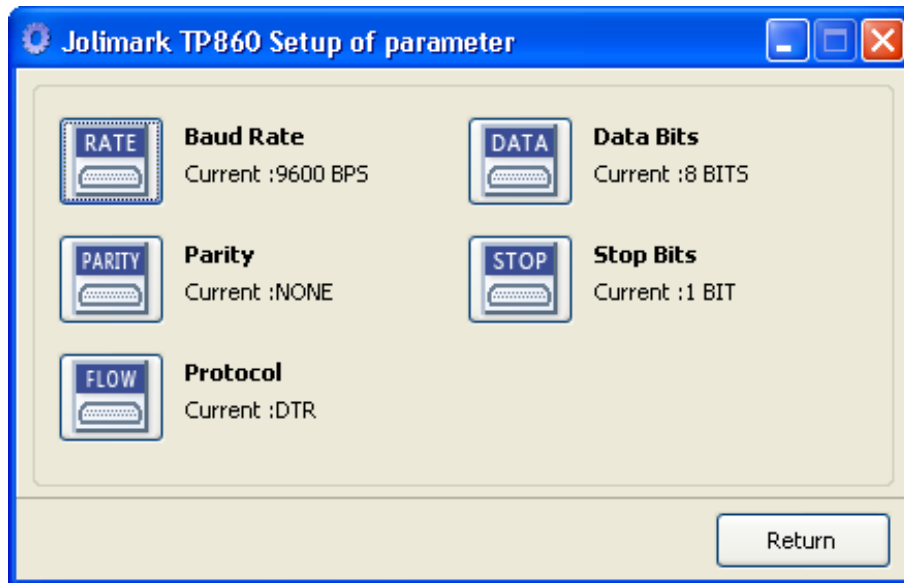
The concrete setting steps are shown as follows:

1. Make sure that the computer and the printer are connected with the USB cable and both the computer and the printer are turned on, the printer should be in normal working condition as well.
2. Under the operating system of WIN 2000/WIN XP/VISTA/WIN 7, click "Start" → "Settings" → "Printers", and open the window of "Printers".

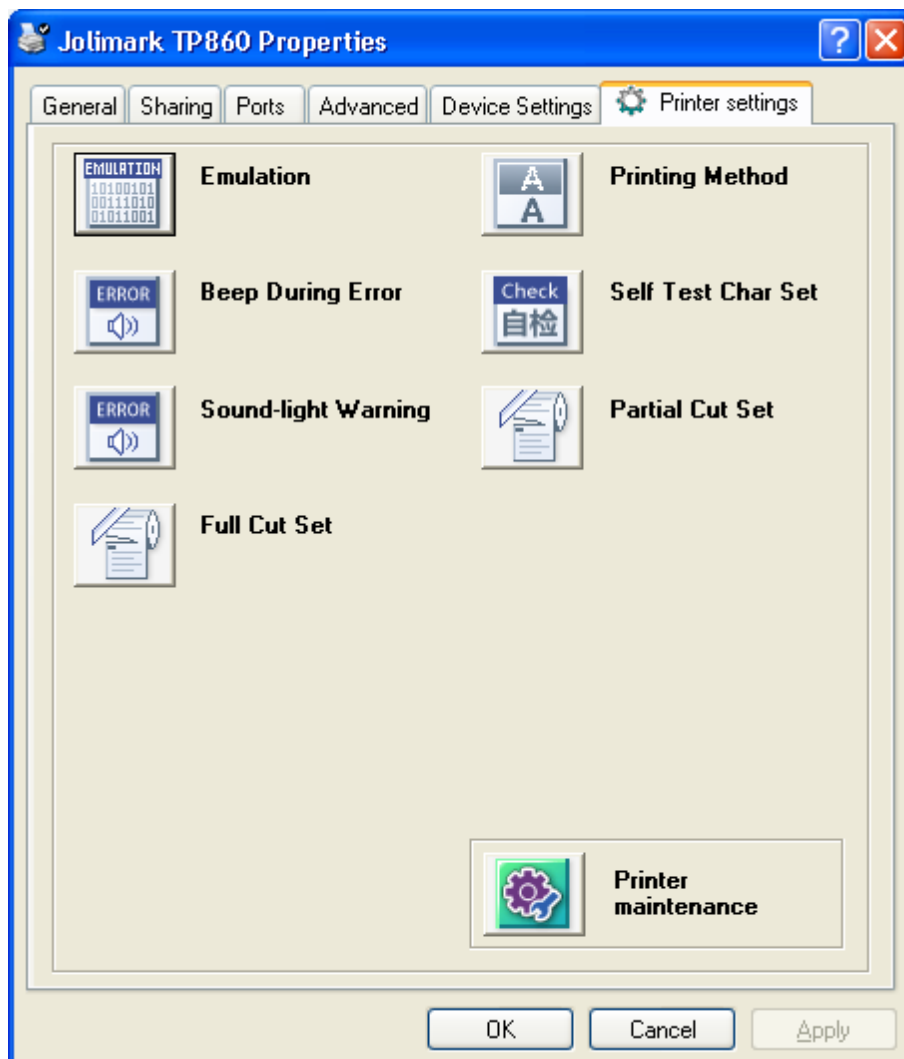
Under the operating system of Windows 8, click "Desktop" in the main panel firstly, and then double click "Control panel" after entering the window of "Desktop", click "Hardware and Sound" to find "Devices and printers", at last, open the window of "Devices and printers".

3. Right click "TP860" in the window of "Printers", and then select "Properties".
4. Click "Printer settings" in the "Properties" page and open the window of "Printer settings".
5. Printer parameters are classified into two levels: the first level is the normal items and the second level is maintenance items. Items shown in "Printer Settings" are normal items; Click "Printer maintenance" button in "Printer settings", the items shown in the window of "Printer maintenance" are the maintenance items.

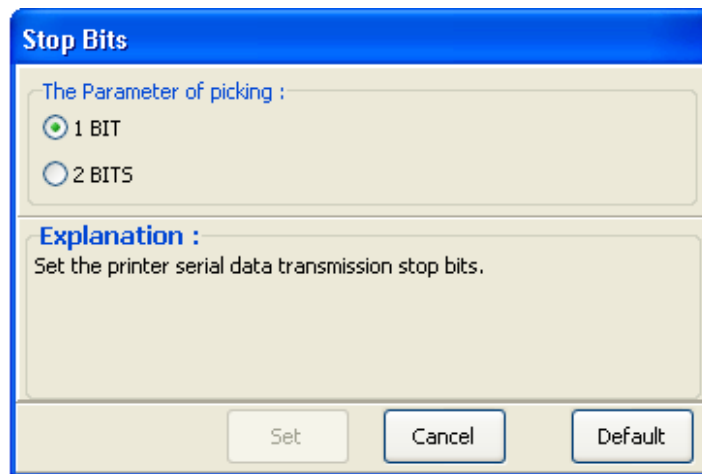




6. The left side of each item is the parameter icon, the top right is the item name and the bottom right is the current setting. The current settings of the printer will be loaded automatically when opening each parameters settings window. If the printer isn't online or uses the wrong port, the current settings will be blank, therefore, please make sure the printer is in ONLINE mode or set the correct printer port.



7. When setting the parameter, please click the parameter icon firstly to open the parameter setting window. In the parameter setting window, there are parameter options, item explanation and control buttons. After selecting the corresponding parameter, click "Set", the printer will change the setting at the moment it receives the change command. Click "Cancel" to return to the upper window. Click "Default" to show the default setting of this item.



8. If you want to set several parameters, please refer to the previous point and set the parameter one by one.
9. When the setting is finished, click "Set" to exit the window of "Properties".
10. Restart the printer and the new settings take effect.

### 3.5.2 Set the Printer Parameter by the Browser Webpage

This printer supports the function of checking the printer state and setting parameters in the host through Ethernet.

TP860 is taken as an example in the following.

The concrete setting steps are shown as follows:

1. Make sure that the computer (or LAN) and the printer are connected with the Ethernet cable and both the computer and the printer are turned on, the printer should be in normal working condition as well.
2. Under the operating system of WIN 2000/WIN XP/VISTA/WIN 7/WIN 8, open the browser, input the printer's IP address in the address column and enter into the interface as shown below. If you can not open the webpage, please check whether the IP address is correct and whether the current network is normal.

- [System Information](#)
- [Printer Status](#)
- [Menu Setting](#)

## System Information

Product	TP860
DHCP	ON
IP Address	10 . 0 . 0 . 1
Subnet Mask	255 . 255 . 255 . 0
Gateway	255 . 255 . 255 . 255
MAC Address	20 - 2C - B7 - FF - FF - FF

submit

Note: If you change the setting of DHCP and click the "submit", please restart the printer after 5 second so that the printer can update the information !

3. Click the different option of the left -side column to enter into the corresponding webpage, the webpage will show the relevant information and state of the printer, if the printer state has changed, please refresh the webpage to get the latest printer information.

- [System Information](#)
- [Printer Status](#)
- [Menu Setting](#)

## Printer Status

Command Mode	NATIVE
Printing Method	PREFER SPEED
Cutter Error	NO
Cover Open	NO
Paper End	NO
Over Hot	NO

- System Information
- Printer Status
- Menu Setting

## Menu Setting

1 EMULATION	NATIVE
2 PRINTING METHOD	PREFER SPEED
3 BEEP DURING ERROR	OFF
4 SELF TEST CHAR SET	ON
5 PARTIAL CUT SET	0
6 BAUD RATE	9600 BPS
7 DATA BITS	8 BITS
8 PARITY	NONE
9 STOP BITS	1 BIT
10 PROTOCOL	DTR
11 FULL CUT SET	0
12 SOUNDLIGHT SWITCH	ON

Submit

4. When setting the parameter, after setting the parameter in the corresponding webpage, click “submit” button, after the webpage reloading, the new settings take effect.

**Note:** In the “System Information” interface, if you change the setting of DHCP and click the “submit”, please restart the printer after 5 seconds so that the printer can update the information!

### 3.5.3 Menu Terms Descriptions

Terms	Description
Emulation	Select printer's control commands.
Printing Method	Select printing quality priority or speed priority.
Beep During Error	After selecting this function on, printer would beep when it detects error.
Self Test Char Set	Select whether characters are printed in self-test.
Sound-light Warning	Select the warning way when the ticket is not torn off after finishing the printing task. User can set different combination of beeper and LED.
Partial Cut Set	Set the paper-cut width in the partial cut mode, the paper-cut width is bigger while the value is higher.
Full Cut Set	Set the paper-cut width in the full cut mode, the paper-cut width is bigger while the value is higher.

## 3.6 Receipt Recovery Function

### 3.6.1 Overview

Receipt Recovery technology is the special function of Jolimark printers, it can solve the problem of data missing and make sure that all the data can be received and printed by printer. When something abnormal happens, printer can achieve the completeness of the receipt by printing again or continuous printing. It is especially suitable for the printing occasions like Wi-Fi, Bluetooth wireless printing, Ethernet and long-distance RS-232.

Receipt Recovery technology can solve the printing abnormality caused by the following situations.

- (1) communication network malfunction
- (2) strong electromagnetic interference
- (3) leaving the valid range of wireless signal
- (4) printer hardware malfunction
- (5) printer power-off unusually
- (6) paper out or cover open during printing

Receipt Recovery technology can support the printing operation of Windows, Android and iOS equipment, developer can use Jolimark Receipt Recovery SDK to finish the design of Receipt Recovery application software. For more details, please ask for the technology supporting department.

Windows user can get the benefit of Receipt Recovery by turning on this function on the driver. It can help the Windows application like Word, Excel and Power Point to realize high reliability of printing.

This function can be used only with Jolimark Receipt Recovery printer.

Receipt Recovery technology is used in LAN and point-to-point printing, and it supports the following ports:

- (1) Bluetooth
- (2) Wi-Fi
- (3) Ethernet
- (4) USB
- (5) Serial interface

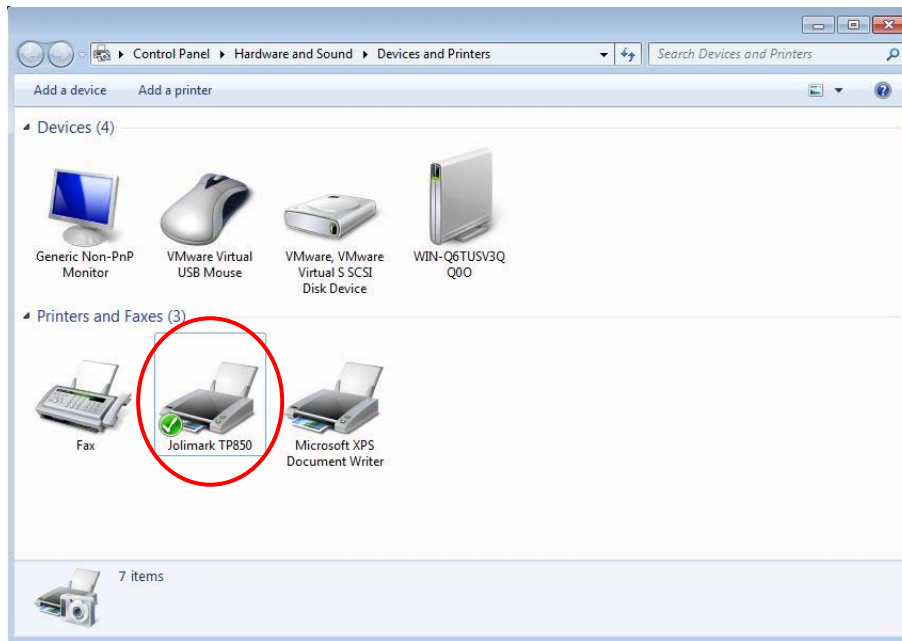
**Note: A few of the undetectable hardware malfunction is not included.**

### 3.6.2 How to use Receipt Recovery Function in Windows driver

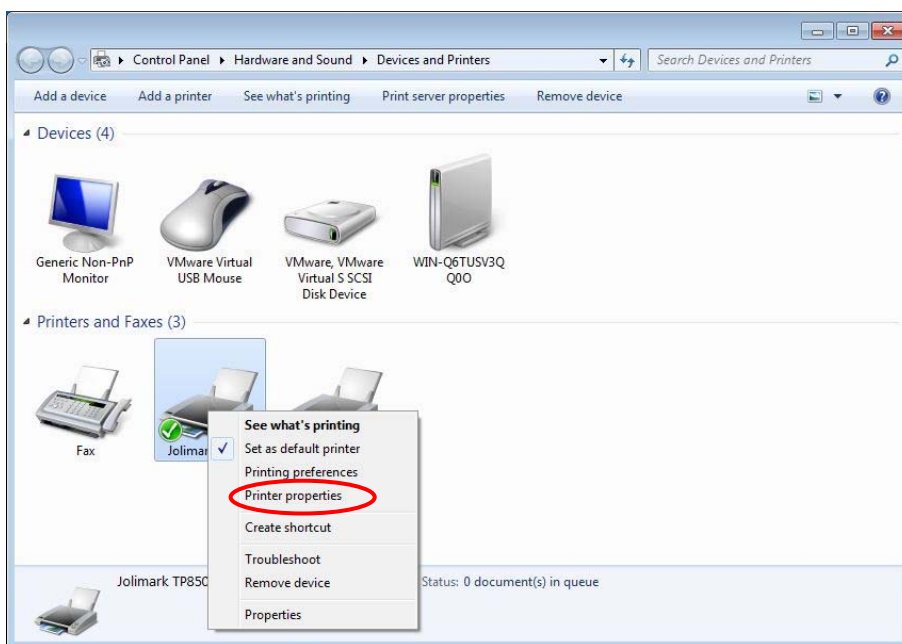
**Note: Windows 98 is not supported.**

TP850 is taken as an example in the following.

1. Open the interface of "Devices and printers", find out the printer driver.

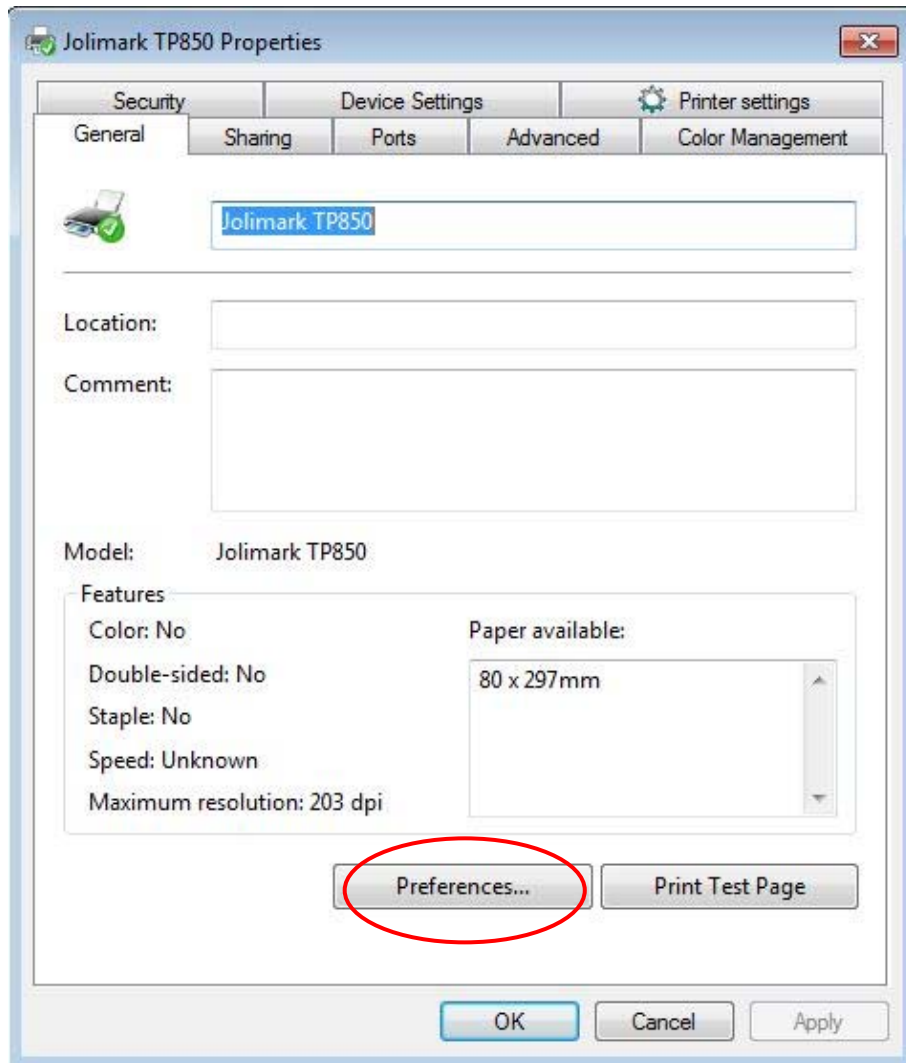


2. Select the corresponding driver, Right click and then select “Properties”.



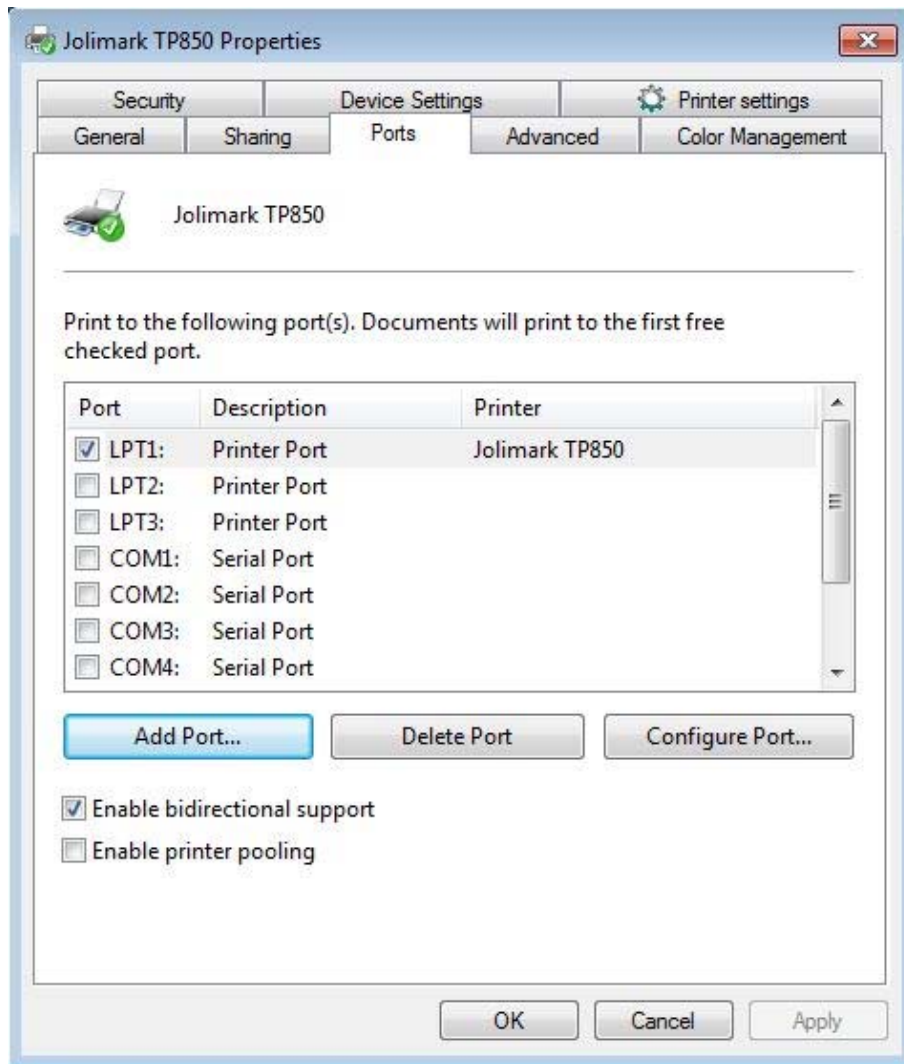
3. Click “preferences” in the “Properties” page



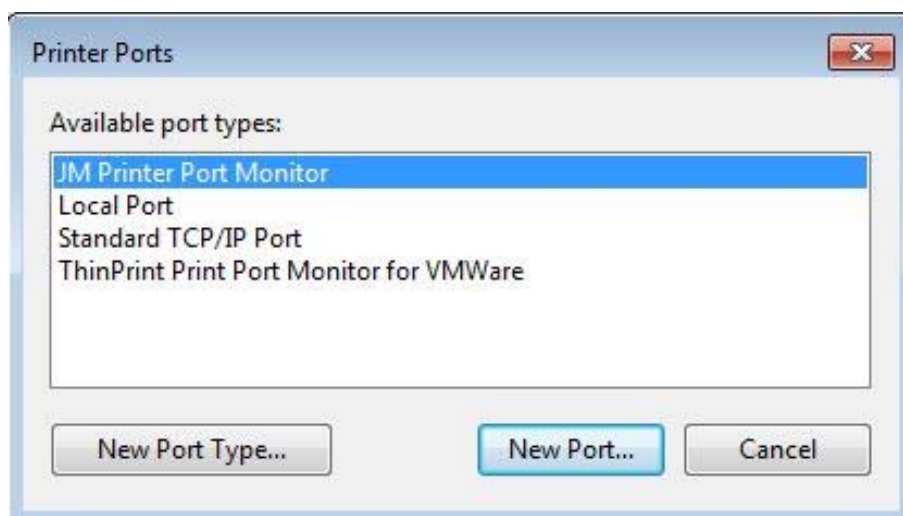


4. If the Ethernet or Wi-Fi is used, user needs to add “JM Printer Port Monitor” new port in the driver. If use other ports, please skip this step.

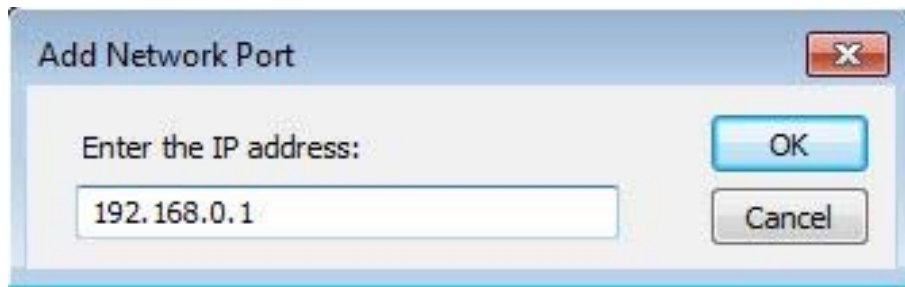
(1) Enter into the “Port” in the “Properties” page and click “Add Port”.



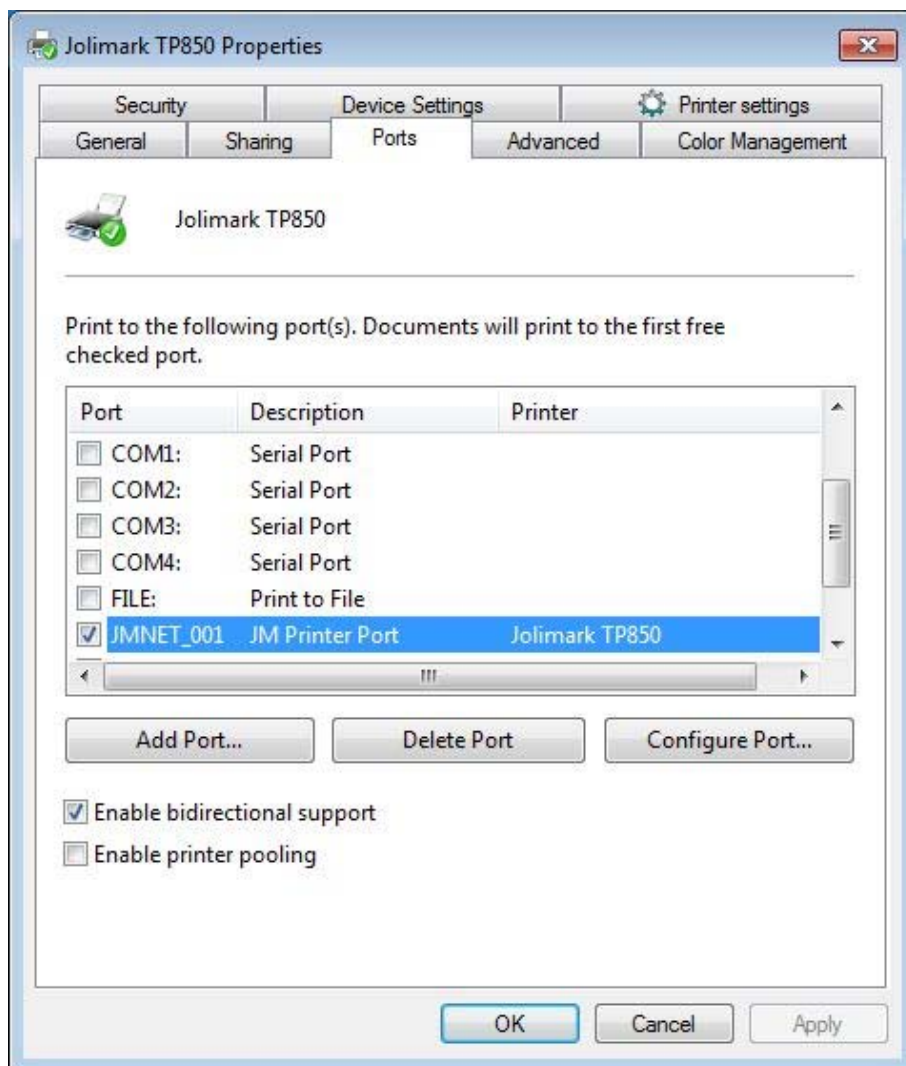
(2) Enter into the window of "Printer ports" and select the "JM Printer Port Monitor", click "New port".



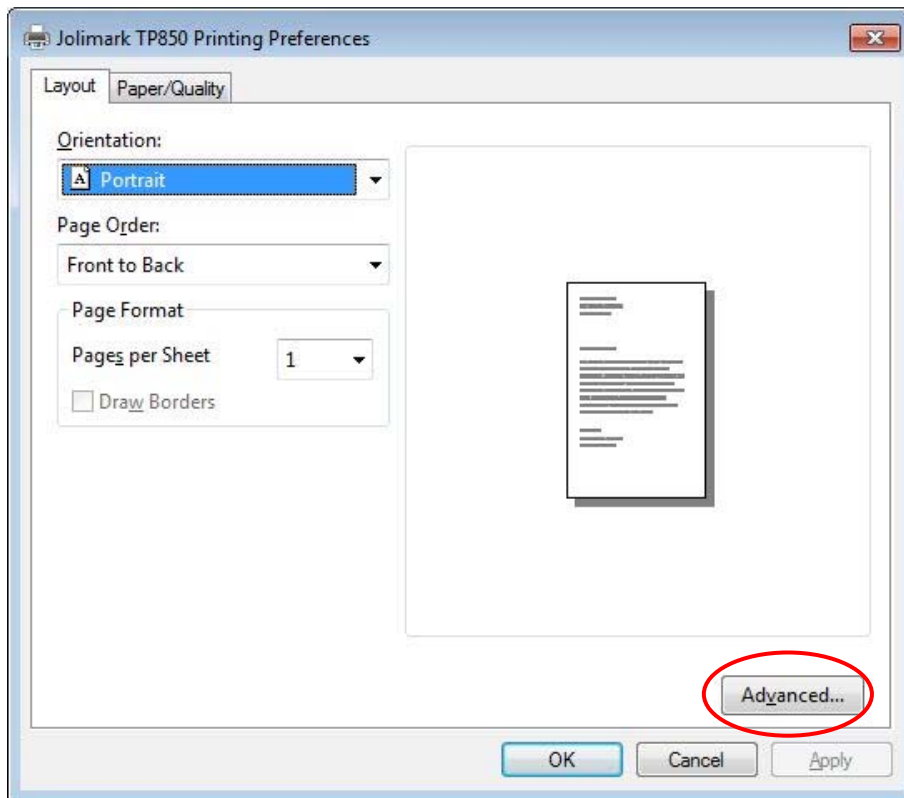
(3) Enter into the window of "Add Network Port" and fill in the corresponding network address, click "OK".



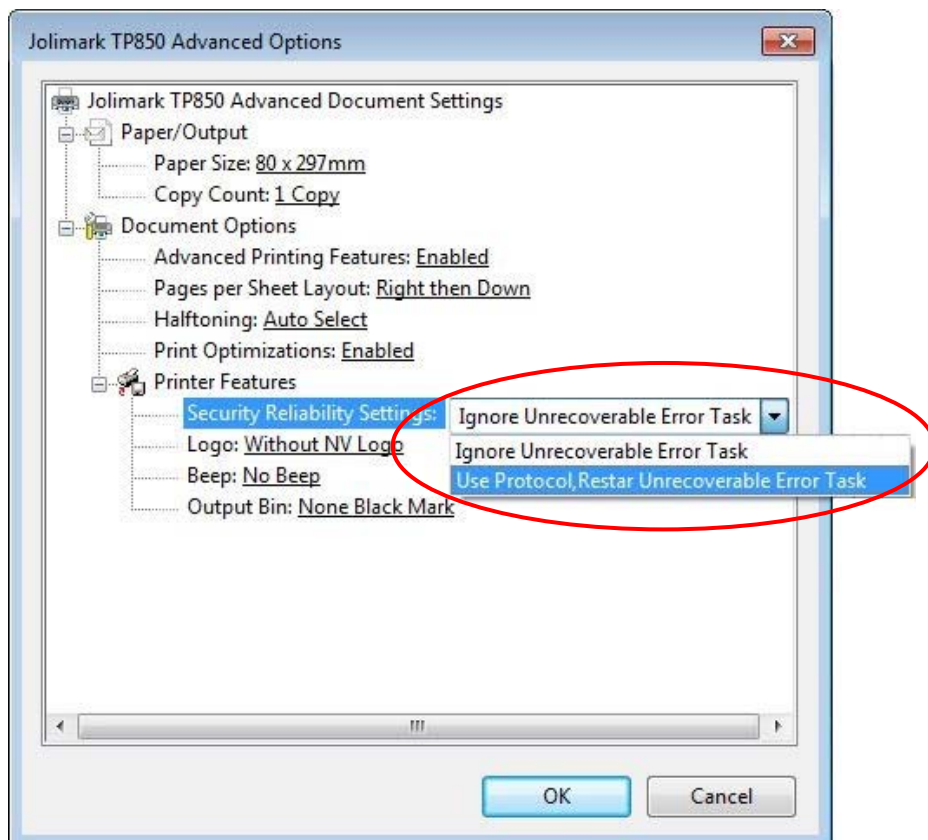
- (4) Close the window of “Printer ports” and return to “Properties” page, select JMNET and click “Apply”.



5. Click “Advanced” in the “Preferences” page.



6. Select "Security Reliability Settings" in the Advanced Options interface, if select "Use Protocol Restart Unrecoverable Error Task", it means the function has been turned on. Otherwise, this function is turned off.



## Chapter 4 Installing the Roll Paper

The printer can use the paper with the width of  $79.5\pm0.5\text{mm}$ ,  $69.5\pm0.5\text{mm}$  and  $57.5\pm0.5\text{mm}$  and it is easy to load paper. How to deal with the paper will be introduced in details in this chapter.

### 4.1 Thermal Paper Installing Steps

**Caution:** 1. Don't touch the thermal print head after printing to avoid getting hurt.  
2. Don't pull the paper out directly with your hand.

1. Press the cover-open button to open the front cover. If you want to use 57.5/69.5mm paper to print, you must install the roll paper guide firstly.

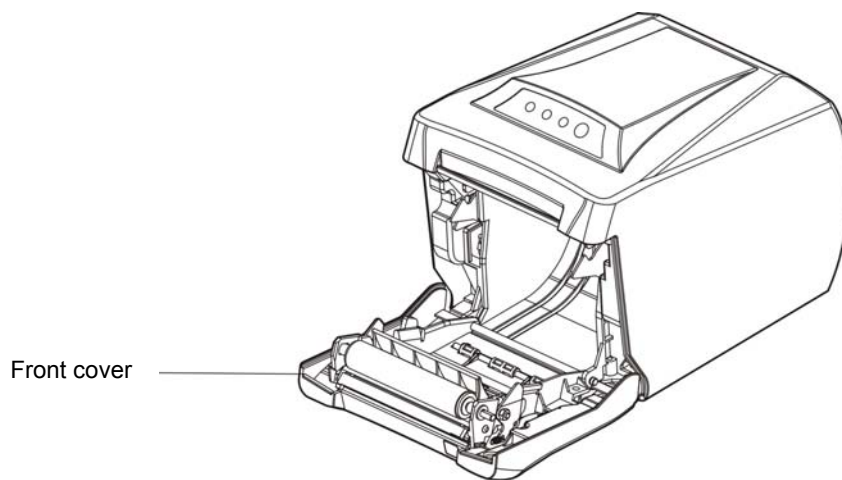


Figure 4-1 Opening the front cover

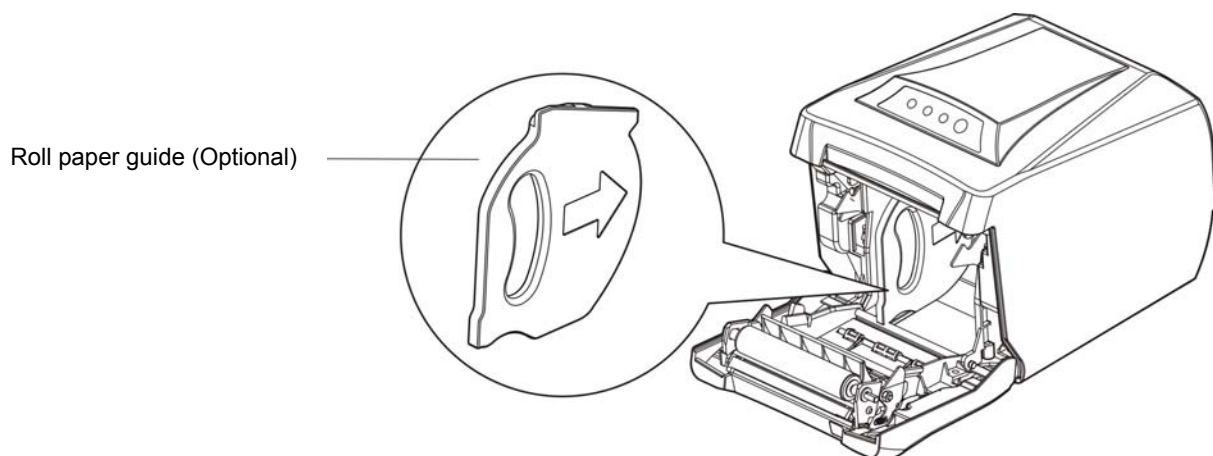


Figure 4-2 Installing the roll paper guide (Optional)

2. Load the roll paper into the paper holder.

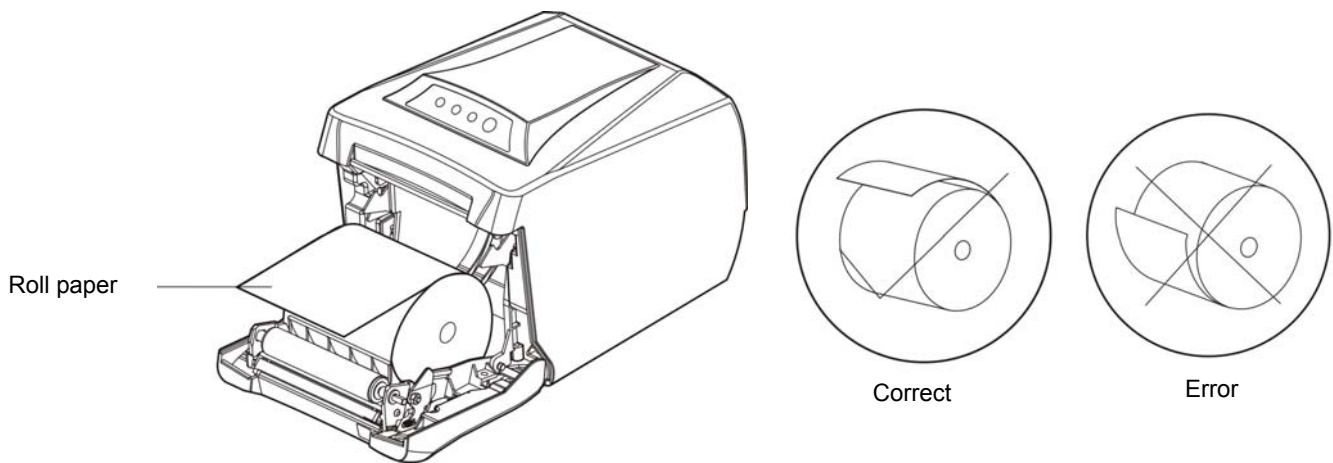


Figure 4-3 The direction of loading paper

**Note:** Paper head should be placed down and pulled towards the paper-input slot, but not the opposite.

3. Pull out a small amount of paper and put it as the figure shown, then close the front cover.

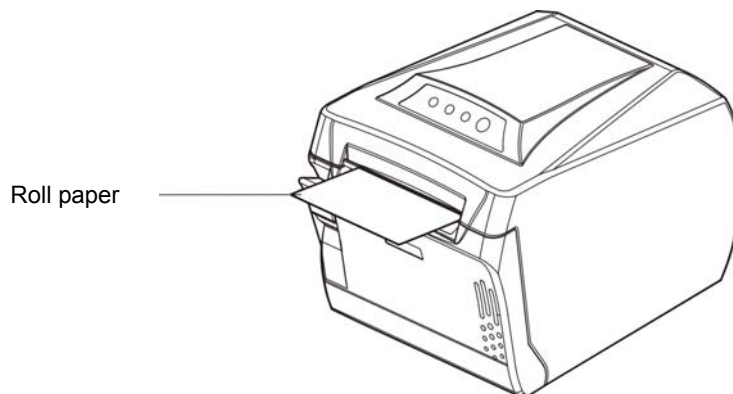


Figure 4-4 Pull out the paper head and close the front cover

**Note:** After finishing installing the paper, if PAPER OUT LED and ERROR LED are still on, or the printer makes strange noise when feeding paper, please open the cover and re-close it tightly.

## Chapter 5 Specification

### 5.1 General Specification

Item	Description	
Printing method	Thermal line printing	
Paper feed mode	Unidirectional with friction feed	
Paper eject direction	Eject from front	
Dot density	640 dots/line (203×203DPI)	
Printing width	Max:80 mm, 640 dots	
Print speed	Max: 300 mm/s	
Paper feed speed	Max: 300 mm/s	
Line spacing	3.75 mm	
Print head life	150 KM, 1X10 <sup>8</sup> pulse	<b>Note: The instructions are all under the laboratorial measurements with specified paper.</b>
Cutter life	1.5 million cut	
Paper thickness	0.065 ~ 0.14 mm	
Paper specification	Thermal roll paper model	TF50KS-E (Japan paper co.ltd)
		AF50KS-E (JUJO THERMAL)
	Width: 79.5 ±0.5 mm; 69.5 ±0.5 mm; 57.5 ±0.5 mm	
	Weight: 53 ~ 80 g/m <sup>2</sup>	
	Maximum diameter: Φ83 mm	
	Paper thickness: 0.065 ~ 0.14 mm	
	<b>Note: The inner diameter of paper shaft is Φ12 mm and the outer diameter of paper shaft is Φ18 mm.</b>	
Character set	ASCII: 13 international character sets	
Interface	This printer can be equipped with the following interfaces: Parallel interface: Centronics USB interface: 2.0 Full-Speed USB interface (2.0 Full-Speed)+ Serial interface (RS-232C, DB9) USB interface (2.0 Full-Speed)+ Ethernet interface (10/100Base-T) USB interface (2.0 Full-Speed)+ Serial interface (RS-232C, DB9)+ Ethernet interface (10/100Base-T) USB interface (2.0 Full-Speed)+ Bluetooth Wi-Fi (802.11b/g/n) USB interface (micro)+ Wi-Fi (802.11b/g/n)  <b>Note: 1. Only one of the data interfaces is supplied when leaving the factory.</b> <b>2. Please take the specific interface as standard.</b>	
Cash drawer interface	RJ-11, 24V (DC)/1A	
Special function	Automatic cutter, Online parameter settings, Online software upgrade	
Input buffer	4 MB	
Control command	ESC/POS Emulation, compatible with STAR Line Mode printing commands	

	Character printing command: Support ANK characters, user-defined characters and enlarged printing of Chinese characters 1~8 times (1-6 times enlarged printing in STAR Line Mode), can adjust character line spacing	
	Dot image printing command: Support different densities dot images and downloading image printing, can save NV bitmap without electricity (Can save LOGO for long)	
	Bar code	Linear bar code: UPC-A, UPC-E, EAN-13, EAN-8, CODE39, CODE128, ITF-25, CODABAR Two-dimension bar code: PDF417, QR CODE
Power Supply (AC adapter)	IN	Voltage: 100 ~ 240 V (AC)
		Frequency: 50Hz/60Hz
	OUT	Voltage: 24 V (DC)
		Current: 2.5 A
Power input	Parameters	Input voltage: 24 V (DC)
		Current: 2.5 A
		<b>Warning: Please use the original AC adapter only. Manufacturers have no responsibilities for the problems which are led by using unauthorized AC adapter.</b>
Environmental conditions	Operating environment	Temperature: 5 ~ 35℃
		Humidity: 25 ~ 80%RH (No condensation)
	Storage environment	Temperature: -40 ~ 55℃
		Humidity: ≤93%RH (40℃, no condensation)
Weight	Approx.1.45 kg	
Noise	<38 dB (A) (ISO7779 standard)	
Physical dimensions	142 mm (width)×200 mm (depth)×147 mm (height)	
Power consumption	① Operating: 40 W; ② Standby: Approximately 3.5 W	
	<b>Note: Only when the product is unconnected with outer power supply, can it achieve zero energy consumption state.</b>	
Code page	ESC/POS (77 kinds)	
	STAR Line Mode (42 kinds)	
Control panel	1 key and 3 LEDs	
Paper type	Thermal roll paper	

**Note:** All the technical instructions in this user's manual are the laboratorial measurements which are achieved under national standard store and work environment (normal temperature), the measuring paper accords with the specification in this user's manual.

**Caution:** In order to ensure the use life of printer, strictly prohibit printing full line and full black exceeding 2 CM.



## 5.2 Interface Specification

The printer is configured with one cash drawer interface and one data interface (you can select Parallel interface, USB interface, USB interface + Serial interface, USB interface + Ethernet interface, USB interface + Serial interface+ Ethernet interface, USB interface + Bluetooth, Wi-Fi interface or USB+Wi-Fi interface + Wi-Fi).

### 5.2.1 Cash Drawer Interface

The cash drawer interface is RJ-11 interface, shown as below.

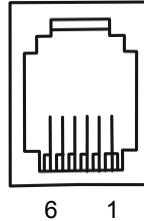


Figure 5-1 Cash drawer interface

The pin definition of cash drawer interface is shown as Table A-1:

Pin Number	Signal	Direction
1	Frame GND	---
2	Cash Drawer drive signal	OUT
3	Cash Drawer Open/closed signal	IN
4	24V (DC)	OUT
5	Cash Drawer drive signal	OUT
6	Cash Drawer Open/closed signal ground	---
Drive current≤24V/1A		

Table A-1 Pin definition of the cash drawer interface

**Note: Please use the cash drawer that meets the specification mentioned above. Manufacturer will not honor warranty when using unauthorized cash drawer.**

### 5.2.2 Parallel Interface

TP860 printer's parallel interface is compatible with Centronics protocol, supporting BUSY/ACK handshaking protocol and the interface connector is the 36 PIN Centronics type.

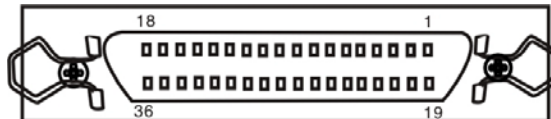


Figure 5-2 Parallel interface

Signal definition of each pin of 36PIN parallel interface is shown as the Table A-2 below:

Pin number	Signal	Direction	Description
1	/STB	IN	Trigger in low level, load the data in rising edge
2	DATA1	IN	These signals respectively represent the parallel data from the first bit to the eighth. "1" means high level, while "0" in logic means low level.
3	DATA2	IN	
4	DATA3	IN	
5	DATA4	IN	
6	DATA5	IN	
7	DATA6	IN	

8	DATA7	IN	
9	DATA8	IN	
10	/ACK	OUT	Acknowledge pulse, Low level means that printer is ready to receive data.
11	BUSY	OUT	High level means printer is too busy to receive data.
12	PE	OUT	High level means that paper is out.
13	SEL	OUT	“High” level is pulled up by resistor.
32	/ERR	OUT	Low level means the printer is in error state.
14, 15, 17, 18, 34, 36	NC	---	NC
16, 19~30, 33	GND	---	GND, “0” level in logic

Table A-2 Pin definition of 36PIN parallel interface

**Note:** ① “IN” means input to the printer, “OUT” means output from the printer.  
 ② The logical level of signal is TTL level.

Time sequence of parallel interface signal is shown as Figure 5-3.

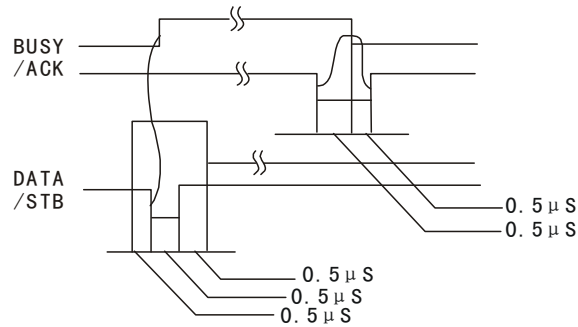


Figure 5-3 Time sequence of parallel interface signal

### 5.2.3 USB Interface

USB interface is the 2.0 Full-Speed version.

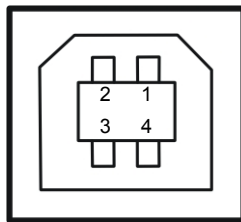


Figure 5-4 USB interface

Sequence number	Signal name	Color
1	VBUS	Red
2	D-	White
3	D+	Green
4	GND	Black

### 5.2.4 Serial Interface

TP860 printer's serial interface is compatible with RS-232C protocol, supporting RTS/CTS and XON/XOFF handshaking protocol. Its connector is a DB-9 type connector and pin number of serial interface connector is shown as below.

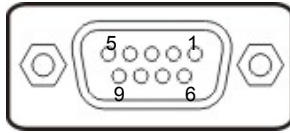


Figure 5-5 Pin number of serial interface connector

Table A-3: Signal definition of the serial interface pin

Pin number	Signal	From	Description
2	RXD	Host	Receive data from Host
3	TXD	Printer	Send control code X-ON/X-OFF and data to the Host
8	CTS	Printer	"MARK" state means printer is too busy to receive data; "SPACE" means printer is ready to receive data.
5	GND	—	Signal GND
4	DTR	Printer	Data terminal is ready.

Table A-3 Signal definition of the serial interface pin

**Note:** ① "From" means the source where signal comes out.  
② The logical level of signal is EIA level.

The default settings of baud rate and data configuration in serial connecting way are 9600bps, 8 data bits, parity check disabled and 1 stop bit.

TP860 printer's serial interface can be connected with the standard RS-232C interface. When connecting with a PC, the connection picture is shown as Figure 5-6. While connecting with an IBM PC or a compatible PC, you can connect the cable as shown in Figure 5-7.

The connection of the serial interface:

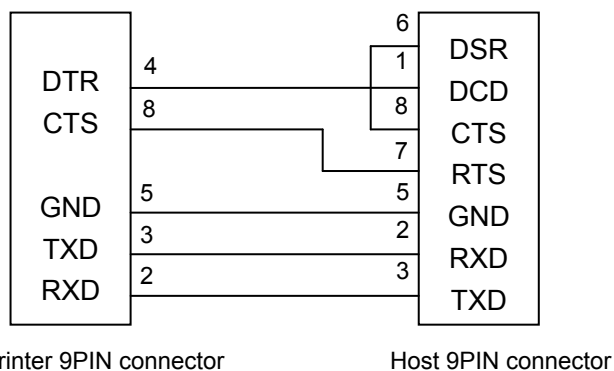


Figure 5-6 The connection figure of host 9PIN and printer

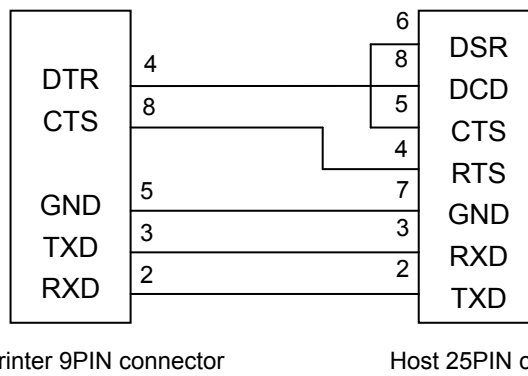


Figure 5-7 The connection figure of host 25PIN and printer

### 5.2.5 Ethernet Interface

Ethernet interface of 10/100Base-T can be connected to 10/100M Ethernet.

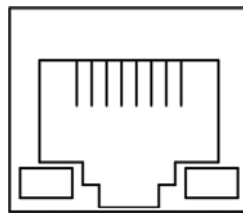


Figure 5-8 Ethernet interface

### 5.2.6 Power Supply Inlet

TP860 printer connects with a 24V±10%, 2.5A AC adapter. The power supply inlet is shown as Figure 5-9.

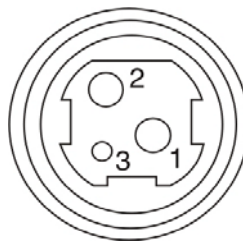


Figure 5-9 Power supply inlet

## Chapter 6 Maintenance

### 6.1 Cleaning the Printer

#### ■ Cleaning periodically and the cleaning tool

Periodical cleaning: every 3 months or every 300 working hours once

Cleaning tool: dry cloth (please use soft cloth to clean metal parts)

#### ■ Cleaning the printer parts

Clean the oily parts of the printer with dry cloth.

#### ■ Cleaning the paper feed path

Wipe off the paper scrap and clean the dirt and dust.

#### ■ Cleaning the photoelectric sensor part

As the paper sensor is a correlation photoelectric sensor. You should clean its parts periodically.

Clean the shield of the sensor every three months.

**Note:** 1. Turn off the printer and pull out the power cord before cleaning.

2. The temperature of print head and the surrounding parts may be high after using. Please avoid cleaning it at the moment.

3. Don't use hard cloth or combustible solvent to clean the printer.

### 6.2 Error Message on the Control Panel

When the malfunction occurs, the printer will be off-line and give an alarm through LEDs as shown below:

ERROR LED	PAPER OUT LED	Description	Solution
Blink fast	Off	Auto cutter error	Restart the printer and the auto-cutter will return to the home position automatically. If the problem is still unsolved, please contact the Customer Service Center for maintenance.
On	Off	Front cover is open	Close the front cover
On	On	Paper out	Load paper again
Blink slowly	Off	Print head overheated	Work automatically after cooling

### 6.3 Contact the Technical Service Center

If malfunction occurs and you cannot solve the problem through the operation shown in 6.2, the components of the printer are damaged during using or you need to buy some consumables, please contact the authorized technical service center.

## Chapter 7 Control Commands

### 7.1 General

TP860 supplies ESC/POS printing commands and is compatible with STAR Line Mode printing commands. The format is described as follows:

Command	Function
Format:	ASCII: Shown in standard ASCII character serial
	Decimal: Shown in Decimal number serial
	Hex: Shown in Hex number serial
Description:	The function and using instruction of that command
Example:	Some examples will be listed for easier understanding

### 7.2 Explanation of terms

#### 7.2.1 ESC/POS Printing Commands

BEL	Beep once
-----	-----------

Format:	ASCII:	BEL
	Decimal:	7
	Hex:	07

Description:

Beep once in the unit of 50 milliseconds

HT	Horizontal tab
----	----------------

Format:	ASCII:	HT
	Decimal:	9
	Hex:	09

Description:

Move the print position to the next horizontal tab position

LF	Print and line feed
----	---------------------

Format:	ASCII:	LF
	Decimal:	10
	Hex:	0A

Description:

Print the data in the input buffer and feed one line. If the line input buffer is empty, then it only feeds one line without printing.

FF	Print and Feed to the next black mark position
----	--

Format:	ASCII:	FF
	Decimal:	12
	Hex:	0C

Description:

Print the data in the print buffer and feeds paper to the next black mark position when black mark is valid.

DLE EOT n	Status transmission
-----------	---------------------

Format:	ASCII:	DLE	EOT	n
	Decimal:	16	4	n
	Hex:	10	04	n

Description:

Transmit the selected printer status in serial interface,  $1 \leq n \leq 4$ ; this command is still valid even in error or

off-line status.

n=1: Transmit printer status

n=2: Transmit printer off-line status

n=3: Transmit printer error status

n=4: Transmit paper sensor status

#### ESC BEL n1 n2

Beep for appointment

Format:	ASCII:	ESC	BEL	n1	n2	n3
	Decimal:	27	7	n1	n2	n3
	Hex:	1B	07	n1	n2	n3

Description:

n1 specifies the length of beeping time, n2 specifies the length of intermission time and n3 is the beeping times. The unit of n1 and n2 is 100 milliseconds.

#### ESC SP

Set right-side character spacing

Format:	ASCII:	ESC	SP	n
	Decimal:	27	32	n
	Hex:	1B	20	n

Description:

Set the right-side spacing of the character to n\*(horizontal or vertical minimal unit) n=0~255.

Horizontal or vertical minimal unit is specified by GS P command.

#### ESC !

Set character print mode

Format:	ASCII:	ESC	!	n
	Decimal:	27	33	n
	Hex:	1B	21	n

Description:

“ESC ! n” is the integrated setting command for character printing mode, n=0~255.

The significations of n are shown below.

Bit	Value	Function
0	0	Character A
	1	Character B
1, 2	-- -- --	Not defined
3	0	Emphasize mode not selected
	1	Emphasize mode selected
4	0	Double-height not selected
	1	Double-height selected
5	0	Double-width not selected
	1	Double-width selected
6	-- -- --	Not defined
7	0	Underline mode not selected
	1	Underline mode selected

#### ESC \$

Set absolute print position

Format:	ASCII:	ESC	\$	nL	nH
	Decimal:	27	36	nL	nH
	Hex:	1B	24	nL	nH

Description:

Set the distance from the beginning of the line to the print position is (nL+nH\*256)\* (horizontal or vertical

minimal unit). nL, nH=0~255.

Horizontal or vertical minimal unit is specified by GS P command.

ESC %					Select/cancel user-defined characters set
Format:	ASCII:	ESC	%	n	
	Decimal:	27	37	n	
	Hex:	1B	25	n	

Description:

n=1, Select the user-defined characters set; n=0, Select inner characters set

Default: n=0

ESC &								Define user-defined characters
Format:	ASCII:	ESC	&	y	c1	c2	[x1 d1..d(y*x1)]	[xk d1..d(y*xk)]
	Decimal:	27	38	y	c1	c2	[x1 d1..d(y*x1)]	[xk d1..d(y*xk)]
	Hex:	1B	26	y	c1	c2	[x1 d1..d(y*x1)]	[xk d1..d(y*xk)]

Description:

Define the user-defined Characters from c1 to c2.

y=3;  $32 \leq c1 \leq c2 \leq 126$ ;

$0 \leq x \leq 12$ ; [Character A 12\*24],  $0 \leq x \leq 9$ ; [Character B 8\*16];

d=0~255; k=c2-c1+1;

y specifies the number of bytes in the vertical direction, x specifies the number of dots in the horizontal direction, d specifies the user-defined character.

ESC *								Select bit-image mode
Format:	ASCII:	ESC	*	m	n1	n2	d1..dk	
	Decimal:	27	42	m	n1	n2	d1..dk	
	Hex:	1B	2A	m	n1	n2	d1..dk	

Description:

Set the image mode (with m); the number of dots (with n1 and n2); the image data (d1...dk)

m=0, 1, 32, 33; n1=0~255; n2=0~3; d=0~255.

$k = n1 + 256 \times n2$  (m=0, 1)

$k = (n1 + 256 \times n2) \times 3$  (m=32, 33)

The number of dots in horizontal direction is  $n1 + 256 \times n2$ .

If the number of dots exceeds one line, the part which exceeds the maximum number of dots (shown as below) is ignored. M is used to select the dot image mode.

M	Mode	Vertical		Horizontal	
		Number of dots	Dot density	Dot density	Number of dots (Max)
0	8-dot single-density	8	68 DPI	101 DPI	288
1	8-dot double-density	8	68 DPI	203 DPI	576
32	24-dot single-density	24	203 DPI	101 DPI	288
33	8-dot double-density	24	203 DPI	203 DPI	576



---

**ESC -** Turn underline mode on/off


---

Format:	ASCII:	ESC	-	n
	Decimal:	27	45	n
	Hex:	1B	2D	n

---

**Description:**

n=0, 48 Turn underline mode off.

n=1, 49 single underline mode on

n=2, 50 double underline mode on

---

**ESC 2** Set the line spacing to 3.75mm


---

Format:	ASCII:	ESC	2
	Decimal:	27	50
	Hex:	1B	32

---

**Description:**

Set the line spacing to 3.75mm.

---

**ESC 3** Set the user-defined line spacing


---

Format:	ASCII:	ESC	3	n
	Decimal:	27	51	n
	Hex:	1B	33	n

---

**Description:**

Set the line spacing to n dot lines, n=0~255.

The line spacing of TP860 printer is the n\* horizontal minimal unit.

The horizontal or vertical minimal unit is specified by GS P Command.

---

**ESC =** Enable/disable peripheral device


---

Format:	ASCII:	ESC	=	n
	Decimal:	27	61	n
	Hex:	1B	3D	n

---

**Description:**

The Last bit of n is 0, disable printer peripheral device.

The Last bit of n is 1, enable printer peripheral device.

---

**ESC ?** Cancel user-defined character


---

Format:	ASCII:	ESC	?	n
	Decimal:	27	63	n
	Hex:	1B	3F	n

---

**Description:**

Cancel the user-defined character specified by n. n=32~126.

---

**ESC @** Initialize the printer


---

Format:	ASCII:	ESC	@
	Decimal:	27	64
	Hex:	1B	40

---

**Description:**

Initialize the printer to the state when the printer was turned on.

---

**ESC D** Set horizontal tab position


---

Format:	ASCII:	ESC	D	n1.....nk NUL
	Decimal:	27	68	n1.....nk NUL
	Hex:	1B	44	n1.....nk NUL

---

**Description:**

Set the horizontal tab position to n columns from the beginning of the line.

n=0~255; k=0~32;

---

**ESC E** Turn emphasized mode on/off


---

Format:	ASCII:	ESC	E	n
	Decimal:	27	69	n
	Hex:	1B	45	n

---

**Description:**

When the last bit of the n is 0, the emphasized mode is turned off.

When the last bit of the n is 1, the emphasized mode is turned on.

---

**ESC J** Print and feed paper


---

Format:	ASCII:	ESC	J	n
	Decimal:	27	74	n
	Hex:	1B	4A	n

---

**Description:**

Print the data in input buffer and feed the paper n\* vertical minimal unit inches.

Horizontal or vertical minimal unit is specified by GS P command, n=0~255

---

**ESC M** Select English character font


---

Format:	ASCII:	ESC	M	n
	Decimal:	27	77	n
	Hex:	1B	4D	n

---

**Description:**

n=0, 48; Character A (12\*24) is selected;

n=1, 49; Character B (8\*16) is selected.

---

**ESC R** Select the international character set


---

Format:	ASCII:	ESC	R	n
	Decimal:	27	82	n
	Hex:	1B	52	n

---

**Description:**

Select the international character set according to the value of n as shown below.

0: USA	1: France	2: Germany	3: U.K	4: Denmark I	5: Sweden	6: Italy
7: Spain I	8: Japan	9: Norway	10: Denmark II	11: Spain II	12: Latin America	13: Korea

---

**ESC V** Turn 90°clockwise rotation mode on/off


---

Format:	ASCII:	ESC	V	n
	Decimal:	27	86	n
	Hex:	1B	56	n

---

**Description:**

n=0, 48 Turn off 90°clockwise rotation mode.

n=1, 49 Turn on 90°clockwise rotation mode.

If the underline mode is turned on, the rotation character does not have underline.

ESC \						Set relative print position
Format:	ASCII:	ESC	\	nL	nH	
	Decimal:	27	92	nL	nH	
	Hex:	1B	5C	nL	nH	

## Description:

Set the distance between print position and current position is:  $(nL+nH*256)*$  (horizontal or vertical minimal unit). nL, nH=0~255. Horizontal or vertical minimal unit is specified by GS P command.

ESC a n						Select alignment mode
Format:	ASCII:	ESC	a	n		
	Decimal:	27	97	n		
	Hex:	1B	61	n		

## Description:

n=0, 48: Left alignment; n=1, 49: middle alignment; n=2, 50: right alignment.

ESC c 3						Select paper sensor
Format:	ASCII:	ESC	c	3	n	
	Decimal:	27	99	51	n	
	Hex:	1B	63	33	n	

## Description:

n=xxxxxxx1B, xxxxxx1xB, xxxxxx11B, sensor is effective when paper near end.

n=xxxxx1xxB, xxxx1xxxB, xxxx11xxB, sensor is effective when paper out.

ESC c 4						Select paper sensor to stop printing
Format:	ASCII:	ESC	c	4	n	
	Decimal:	27	99	52	n	
	Hex:	1B	63	34	n	

## Description:

n=xxxxxxx1B, xxxxxx1xB, xxxxxx11B; Paper near end, printer stops printing.

n=xxxxx1xxB, xxxx1xxxB, xxxx11xxB; Paper out, printer stops printing.

ESC c 5						Enable/disable panel key
Format:	ASCII:	ESC	c	5	n	
	Decimal:	27	99	53	n	
	Hex:	1B	63	35	n	

## Description:

When the last bit of n is 1, disable **FEED** key to take effect.

When the last bit of n is 0, enable **FEED** key to take effect.

ESC d						Print and feed n lines
Format:	ASCII:	ESC	c	n		
	Decimal:	27	100	n		
	Hex:	1B	64	n		

## Description:

Print the data in input buffer and feed n lines, n= 0~255.

ESC p m t1 t2							Generate pulse
Format:	ASCII:	ESC	p	m	t1	t2	
	Decimal:	27	112	m	t1	t2	
	Hex:	1B	70	m	t1	t2	

## Description:

Printer generates pulse, whose width specified by t1 and t2. High is t1\*2ms, low is t2\*2ms.

m=0, 48, 1, 49.

ESC t

Select code page

Format:	ASCII:	ESC	t	n
	Decimal:	27	116	n
	Hex:	1B	74	n

Description:

n=0 PC437	n=1 PC932(katakana)	n=2 PC850	n=3 PC860(Portuguese)
n=4 PC863(Canadian)	n=5 PC865(Nordic)	n=6 (West Europe)	n=7 (Greek)
n=8 (Hebrew)	n=9 (East Europe)	n=10 Iran	n=15 IranII
n=16 PC1252	n=17 PC866	n=18 PC852	n=19 PC858
n=20 Thai(KU42)	n=21 Thai(TIS11)	n=22 PC1256(Arabic)	n=23 (PT151,1251)
n=24 PC747	n=25 (WPC1257)	n=26 Thai(TIS18)	n=27 Vietnam
n=28 PC864(Arabic)	n=29 PC737(Greek)	n=30 (Uigur)	n=31 (Hebrew)
n=32 PC1253(Greek)	n=33 PC775(Baltic)	n=34 Georgia	n=50 PC437(Std.Europe)
n=51 (Katakana)	n=52 PC437(Std.Europe)	n=53 PC858(Multilingual)	n=54 PC852(Latin-2)
n=55 PC860(Portuguese)	n=56 PC861(Icelandic)	n=57 PC863(Canadian)	n=58 PC865(Nordic)
n=59 PC866(Russian)	n=60 PC855(Cyrillic)	n=61 PC857(Turkish)	n=62 Hebrew
n=63 PC864(Arabic)	n=64 PC737(Greek)	n=65 PC851(Greek)	n=66 PC869(Greek)
n=67 PC928(Greek)	n=68 PC772(Lithuanian)	n=69 PC774(Lithuanian)	n=70 Thai
n=71 WPC1252(Latin-1)	n=72 WPC1250(Latin-2)	n=73 WPC1251(Cyrillic)	n=74 PC3840(Russian)
n=75 PC3841(Gost)	n=76 PC3843(Polish)	n=77 PC3844(CS2)	n=78 PC3845(Hungarian)
n=79 PC1254(Turkish)	n=80 PC3847(Brazil-ABNT)	n=81 PC3847(Brazil-ABNT)	n=82 PC1001(Arabic)
n=83 PC2001(Lithuan-KBL)	n=84 PC3001(Estonian-1)	n=85 PC3002(Estonian-2)	n=86 PC3011(Latvian-1)
n=87 PC3012(Latvian-2)	n=88 PC3021(Bulgarian)	n=89 PC3041(Maltese)	n=100 PC3846(Turkish)
n=101 WPC1255(Israel)	n=102 PC857(Tukey)	n=103 PC855(Bulgarian)	n=104 (Latvian)
n=255 Thai			

ESC {

Turn on/off upside-down printing mode

Format:	ASCII:	ESC	{	n
	Decimal:	27	123	n
	Hex:	1B	7B	n

Description:

When the last bit of n is 0, upside-down printing mode is turned off.

When the last bit of n is 1, upside-down printing mode is turned on.

FS !

Select Chinese character mode

Format:	ASCII:	FS	!	n
	Decimal:	28	33	n
	Hex:	1C	21	n

Description:

Bit	Off/On	Hex	Decimal	Function
0	-	-	-	Not defined
1	-	-	-	Not defined
2	Off	00	0	Double-width is not selected
	On	04	4	Double-width is selected
3	Off	00	0	Double-height is not selected
	On	08	8	Double-height is selected
4	-	-	-	Not defined

5	-	-	-	Not defined
6	-	-	-	Not defined
7	Off	00	0	Underline is not selected
	On	80	128	Underline is selected

FS & Enter Chinese mode

Format:      ASCII:      FS      &  
                  Decimal:    28    38  
                  Hex:        1C    26

Description:

Enter the Chinese mode.

FS - Turn Chinese character underline mode on /off

Format:      ASCII:      FS      -      n  
                  Decimal:    28    45      n  
                  Hex:        1C    2D      n

Description:

n=0, 48 turn off the Chinese character underline mode.

n=1, 49 turn Chinese character underline mode on (one dot high).

n=2, 50 turn Chinese character underline mode on (two dots high).

Underline mode is ignored if 90°clockwise rotation is turned on at the same time.

FS . Exit Chinese mode

Format:      ASCII:      FS      .  
                  Decimal:    28    46  
                  Hex:        1C    2E

Description:

Exit Chinese mode.

FS 2 User-defined Chinese characters

Format:      ASCII:      FS      2      c1    c2    d1.....d72  
                  Decimal:    28    50      c1    c2    d1.....d72  
                  Hex:        1C    32      c1    c2    d1.....d72

Description:

c1=fe; a1≤c2≤fe; 0≤d≤255; c1 is the first code of the character; c2 is the second code of the character. Data d is arranged from top to down and then from left to right. Each lengthways column has 3 bytes and there are 24 columns in total.

FS S Set Chinese character spacing

Format:      ASCII:      FS      S      n1    n2  
                  Decimal:    28    83      n1    n2  
                  Hex:        1C    53      n1    n2

Description:

0≤n1≤255, 0≤n2≤255 Set the character left-side spacing to n1\* horizontal motion unit, right-side spacing to n2\* horizontal motion unit.

FS W Turn quadruple-size mode on/off for Chinese character

Format:      ASCII:      FS      W      n  
                  Decimal:    28    87      n  
                  Hex:        1C    57      n

Description:

0≤n≤255

When the last bit of n is 0, turn off the quadruple-size mode.

When the last bit of n is 1, turn on the quadruple-size mode.

FS p n m Print NV bit image

Format:	ASCII:	FS	p	n	m
	Decimal:	28	112	n	m
	Hex:	1C	70	n	m

Description:

1≤n≤64 m=0, 1, 2, 3, 48, 49, 50, 51 Prints the NV bit image according to the mode specified by m.

m= 0, 48 Normal printing; m=1, 49 Double width printing;

m= 2, 50 Double height printing; m=3, 51 Quadruple-size printing.

FS q n Define the NV bit image

Format:	ASCII:	FS	q	n	[xL xH yL yH d1 d2 ...dk] 1...	[xL xH yL yH d1 d2 ...dk]
	Decimal:	28	113	n	[xL xH yL yH d1 d2 ...dk] 1...	[xL xH yL yH d1 d2 ...dk]
	Hex:	1C	70	n	[xL xH yL yH d1 d2 ...dk] 1...	[xL xH yL yH d1 d2 ...dk]

Description:

1≤n≤64; xH=0; 0≤xL≤72; yH=0; 0≤yL≤30

k= (xL+xH\*256)\*(yL+yH\*256)\*8

The command can define 64 bit images at the same time. All NV images preciously defined are canceled when new bit images are defined. After executing this command, ERROR LED will be on for a period of time, then the PAPER OUT LED and ERROR LED will be both on and the printer restarts. No other data or commands follow this command, or it may cause data lost or messy code. The NV image data will be stored in the printer even when printer is powered off, and will not lose till the image is redefined. In order not to damage the printer, the command should not be defined more than 10 times per day. The whole command including the bit image data should be less than 128K bytes (1M bits).

xL,xH specifies number of bytes in the horizontal direction for the NV bit image and the limited width is 72 bytes and 576 dots.

yL,yH specifies number of bytes in the vertical direction for the NV bit image with the height of 30 bytes and 240 dots..

d specifies the data for the NV bit image(column format).

GS BEL n1 n2 Beep for appointment

Format:	ASCII:	GS	BEL	n1	n2	n3
	Decimal:	29	7	n1	n2	n3
	Hex:	1D	07	n1	n2	n3

Description:

N1 specifies the beeping times, n2 specifies the length of beeping time and n3 specifies the length of intermission time. The unit of n1, n2 is 0.1 second.

GS ! Select Character size

Format:	ASCII:	GS	!	n
	Decimal:	29	33	n
	Hex:	1D	21	n

Description:

n=0~7, 16~23, 32~39, 48~55, 64~71, 80~87, 96~103,112~119;

The high four bits of n represent the enlarged multiple of the character width and the low four bits represent the enlarged multiple of the character height.

GS \* Define downloaded bit image

Format:     ASCII:     GS     \*     n1     n2     d1...dk  
               Decimal:   29     42     n1     n2     d1...dk  
               Hex:       1D     2A     n1     n2     d1...dk

Description:

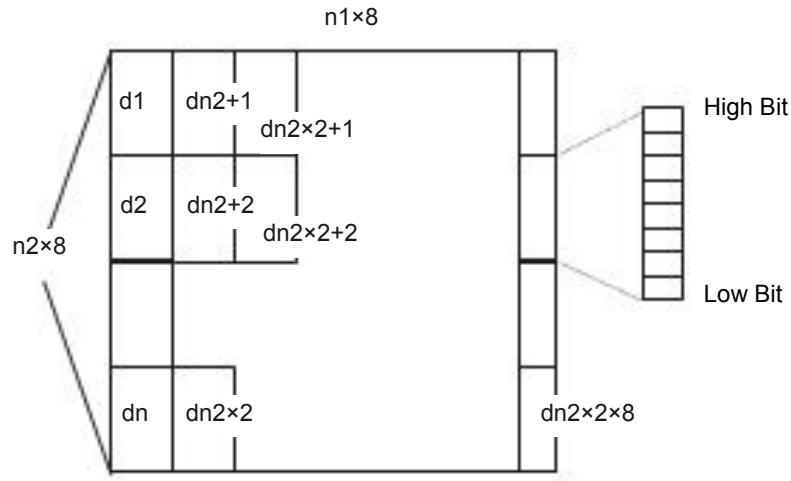
Define the downloaded bit image.

$n1=1\sim48$ .  $n2=1\sim255$ .  $n1\times n2<1200$ ,  $k=n1\times n2\times 8$ .

d is the bit image data.  $n1\times 8$  dots in the horizontal direction and  $n2\times 8$  dots in the vertical direction.

The downloaded bit image is valid till it is redefined or printer is restarted.

The format of bit image is shown below.



GS / Print downloaded bit image

Format:     ASCII:     GS     /     n  
               Decimal:   29     47     n  
               Hex:       1D     2F     n

Description:

Print the downloaded bit image.  $n=0, 1, 2, 3, 48, 49, 50, 51$ .

n is used to select the bit image. The bit image can be defined by GS \* command:

N	Mode	Dot Density in vertical	Dot Density in horizontal
0, 48	Normal	203 DPI	203 DPI
1, 49	Double-width	203 DPI	101 DPI
2, 50	Double-height	101 DPI	203 DPI
3, 51	Double-width and double-height	101 DPI	101 DPI

GS B Turn white/black reverse mode on/off

Format:     ASCII:     GS     B     n  
               Decimal:   29     66     n  
               Hex:       1D     42     n

Description:

When the last bit of n is 0, turn the white/black reverse mode off.

When the last bit of n is 1, turn the white/black reverse mode on.

GS H Enable/disable the printer to print HRI character				
Format:	ASCII:	GS	H	n
	Decimal:	29	72	n
	Hex:	1D	48	n

Description:

n=0, 48: no HRI printing. n=1, 49: printing HRI character above the bar code.

n=2, 50: printing HRI character above the bar code. n=3, 51: printing HRI character above and below the bar code.

GS L Set left margin					
Format:	ASCII:	GS	L	nL	nH
	Decimal:	29	76	nL	nH
	Hex:	1D	4C	nL	nH

Description:

Set the distance between print position and left margin is  $(nL+nH*256)*(horizontal\ or\ vertical\ minimal\ unit)$ ; nL, nH=0~255.

Horizontal or vertical minimal unit is specified by GS P command.

GS P Set horizontal or vertical minimal unit					
Format:	ASCII:	GS	P	x	y
	Decimal:	29	80	x	y
	Hex:	1D	50	x	y

Description:

Set the horizontal unit and vertical unit to 1/x inch and 1/y inch.

When x or y=0, the default 1/203 inch is selected.

GS V Select cut mode and cut paper					
Format:	ASCII:	GS	V	m	(n)
	Decimal:	29	86	m	(n)
	Hex:	1D	56	m	(n)

Description:

(The command can only realize full cut or partial cut according to the cutter type.)

m=0, 48; No n parameter, Executes a full cut.

m=1, 49; No n parameter, Executes a partial cut (with one point left in the middle).

m=6, n=0~255; Feed paper to n\*(vertical minimal unit) and executes a full cut.

m=66, n=0~255; Feed paper to n\*(vertical minimal unit) and executes a partial cut.

GS W Set print area width					
Format:	ASCII:	GS	W	nL	nH
	Decimal:	29	87	nL	nH
	Hex:	1D	57	nL	nH

Description:

Set the print area width to  $(nL+nH*256)*(horizontal\ or\ vertical\ minimal\ unit)$ , nL, nH=0~255.

Horizontal or vertical minimal unit is specified by GS P.

GS f Select the HRI character font				
Format:	ASCII:	GS	f	n
	Decimal:	29	102	n
	Hex:	1D	66	n

Description:



Select the HRI character when printing a bar code,

n=0, 48; Select character A (12\*24)

n=1, 49; Select character B (8\*16)

GS h

Set bar code height

Format:	ASCII:	GS	h	n
	Decimal:	29	104	n
	Hex:	1D	68	n

Description:

Set the height of the bar code to n dots.

n=0~255.

GS k

Print bar code

Format:	ASCII:	GS	k	m	d1..dk	NUL
	Decimal:	29	107	m	d1..dk	0
	Hex:	1D	6B	m	d1..dk	00
*	ASCII:	GS	k	m	n	d1..dn
	Decimal:	29	107	m	n	d1..dn
	Hex:	1D	6B	m	n	d1..dn

\*when m>64, select format\*

m	Bar code type	Amount of data	Number of characters	Character	Character code
0	UPC-A	Fixed	$11 \leq k \leq 12$	0 ~ 9	$48 \leq d \leq 57$
1	UPC-E	Fixed	$11 \leq k \leq 12$	0 ~ 9	$48 \leq d \leq 57$
2	EAN13	Fixed	$12 \leq k \leq 13$	0 ~ 9	$48 \leq d \leq 57$
3	EAN8	Fixed	$7 \leq k \leq 8$	0 ~ 9	$48 \leq d \leq 57$
4	CODE39	Can be changed	$1 \leq k$	0 ~ 9, A ~ Z, SP, \$, %, +, -, ., / * (start character)	$48 \leq d \leq 57$ , $65 \leq d \leq 90$ , d=32, 36, 37, 43, 45, 46, 47. d=42 (start character)
5	ITF	Can be changed	$1 \leq K$ (even)	0 ~ 9	$48 \leq d \leq 57$
6	CODABAR	Can be changed	$1 \leq k$	0 ~ 9, A ~ D, \$, +, -, ., /, :	$48 \leq d \leq 57$ , $65 \leq d \leq 68$ , 36, 43, 45, 46, 47, 58
*65	UPC-A	Fixed	$11 \leq n \leq 12$	0 ~ 9	$48 \leq d \leq 57$
*66	UPC-E	Fixed	$11 \leq n \leq 12$	0 ~ 9	$48 \leq d \leq 57$
*67	EAN13	Fixed	$12 \leq n \leq 13$	0 ~ 9	$48 \leq d \leq 57$
*68	EAN8	Fixed	$7 \leq n \leq 8$	0 ~ 9	$48 \leq d \leq 57$
*69	CODE39	Can be changed	$1 \leq n < 255$	0 ~ 9, A ~ Z, SP, \$, %, +, -, ., / * (start character)	$48 \leq d \leq 57$ , $65 \leq d \leq 90$ , d=32, 36, 37, 43, 45, 46, 47. d=42 (start character)
*70	ITF	Can be changed	$1 \leq n \leq 255$ (even)	0 ~ 9	$48 \leq d \leq 57$
*71	CODABAR	Can be changed	$1 \leq n \leq 255$	0 ~ 9, A ~ D, \$, +, -, ., /	$48 \leq d \leq 57$ , $65 \leq d \leq 68$ , 36, 43, 45, 46, 47, 58

				/, :	
*73	CODE128	Can be changed	$2 \leq n < 255$	NUL ~ SP (7FH)	$0 \leq d \leq 127$

GS v 0

Print raster bit image

Format:	ASCII:	GS	v	0	m	xL	xH	yL	yH	d1...dk
	Decimal:	29	118	48	m	xL	xH	yL	yH	d1...dk
	Hex:	1D	76	30	m	xL	xH	yL	yH	d1...dk

Description:

Print a raster bit image according to the numerical value of m.

m=0, 48: normal printing; m=1, 49: double width printing; m=2, 50: double height printing; m=3, 51: quadruple-size printing.

XL, xH, yL, yH=0~255.

The number of bytes in horizontal printing:  $xL + xH * 256$ ;

The number of dots in vertical printing:  $yL + yH * 256$ .

$k = (xL + xH * 256) * (yL + yH * 256)$

GS w

Set barcode transverse size

Format:	ASCII:	GS	w	n
	Decimal:	29	119	n
	Hex:	1D	77	n

Description:

Set the transverse size of barcode.

$2 \leq n \leq 6$ .

## 7.2.2 STAR Line Mode Printing Commands

ESC RS F n

Select font

Format:	ASCII:	ESC	RS	F	n
	Decimal:	27	30	70	n
	Hex:	1B	1E	46	n

Description:

$0 \leq n \leq 1$

Selects a font

n	Font
0	Font-A (12x24 dots)
1	Font-B (9x24 dots)

ESC GS t n

Select code page

Format:	ASCII:	ESC	GS	t	n
	Decimal:	27	29	116	n
	Hex:	1B	1D	74	n

Description:

$0 \leq n \leq 21$

$32 \leq n \leq 34$

$64 \leq n \leq 79$

Specifies code page

n	Code Page	n	Code Page
0	PC437	21	Thai (KU42)
1	PC437 (USA, Std. Europe)	32	WPC 1252 (Windows Latin-1)
2	Katakana	33	WPC 1250 (Windows Latin-2)
3	PC437 (USA, Std. Europe)	34	WPC 1251 (Windows Cyrillic)
4	PC858 (Multilingual)	64	PC 3840 (IBM-Russian)
5	PC 852 (Latin-2)	65	PC 3841 (Gost)
6	PC 860 (Portuguese)	66	PC 3843 (Polish)
7	PC 861 (Icelandic)	67	PC 3844 (CS2)
8	PC 863 (Canadian French)	68	PC 3845 (Hungarian)
9	PC 865 (Nordic)	69	PC 3846 (Turkish)
10	PC 866 (Cyrillic Russian)	70	PC 3847 (Brazil-ABNT)
11	PC 855 (Cyrillic Bulgarian)	71	PC 3848 (Brazil-ABICOMP)
12	PC 857 (Turkey)	72	PC 1001 (Arabic)
13	Hebrew	73	PC 2001 (Lithuanian-KBL)
14	PC 864 (Arabic)	74	PC 3001 (Estonian-1)
15	PC 737 (Greek)	75	PC 3002 (Estonian-2)
16	PC 851 (Greek)	76	PC 3011 (Latvian-1)
17	PC 869 (Greek)	77	PC 3012 (Latvian-2)
18	PC 928 (Greek)	78	PC 3021 (Bulgarian)
19	PC 772 (Lithuanian)	79	PC 3041 (Maltese)
20	PC 774 (Lithuanian)	255	Blank

ESC R n

Specify international character set

Format:      ASCII:      ESC      R      n  
                  Decimal:    27      82      n  
                  Hex:        1B      52      n

Description:

0≤n≤14

n=64

48≤n≤57 ("0"≤n≤"9")

65≤n≤69 ("A"≤n≤"E")

Specifies international characters

n	International Characters
0, 48	USA
1, 49	France
2, 50	Germany
3, 51	UK
4, 52	Denmark
5, 53	Sweden
6, 54	Italy
7, 55	Spain
8, 56	Japan
9, 57	Norway
10, 65	Denmark II
11, 66	Spain II
12, 67	Latin America
13, 68	Korea
14, 69	Ireland
64	Legal

---

ESC / n Specify/cancel slash zero

---

Format:        ASCII:        ESC    /    n  
                  Decimal:       27    47    n  
                  Hex:        1B    2F    n

---

Description:

n=0, 1, 48, 49

Specifies and cancels slash zeros.

n	Function
0, 48	Cancels slash zero
1, 49	Specifies slash zero

---

ESC SP n Set ANK right space

---

Format:        ASCII:        ESC    SP    n  
                  Decimal:       27    47    n  
                  Hex:        1B    20    n

---

Description:

0≤n≤15

48≤n≤57 ("0"≤n≤"9")

65≤n≤70 ("A"≤n≤"F")

Specify the right space amount of ANK characters in n dots.

The ANK character width is "left space amount" + "ANK font dot count" + "right space amount".

---

ESC M Specify 12 dot pitch

---

Format:        ASCII:        ESC    M  
                  Decimal:       27    77  
                  Hex:        1B    4D

---

Description:

Specify the right space amount of ANK characters in 0 dots.

---

ESC P Specify 15 dot pitch

---

Format:        ASCII:        ESC    P  
                  Decimal:       27    80  
                  Hex:        1B    50

---

Description:

Specify the right space amount of ANK characters in 3 dots.

---

ESC : Specify 16 dot pitch

---

Format:        ASCII:        ESC    :  
                  Decimal:       27    58  
                  Hex:        1B    3A

---

Description:

Specify the right space amount of ANK characters in 4 dots.

---

ESC g Specify 14 dot pitch

---

Format:        ASCII:        ESC    g  
                  Decimal:       27    103  
                  Hex:        1B    67

---

Description:

Specify the right space amount of ANK characters in 2 dots.

ESC i n1 n2

Set/cancel the double wide/high

Format:        ASCII:        ESC   i    n1   n2  
                  Decimal:       27   105   n1   n2  
                  Hex:        1B    69    n1   n2

Description:

0 ≤ n1 ≤ 5

48 ≤ n1 ≤ 53 ("0" ≤ n1 ≤ "5")

0 ≤ n2 ≤ 5

48 ≤ n2 ≤ 53 ("0" ≤ n2 ≤ "5")

Specifies/cancels double high/wide for characters.

This command is ignored if either n1 or n2 is outside of the defined area.

n1	Expanded high
0, 48	Cancels expanded high
1, 49	Specifies 2x high expansion
2, 50	Specifies 3x high expansion
3, 51	Specifies 4x high expansion
4, 52	Specifies 5x high expansion
5, 53	Specifies 6x high expansion

n2	Expanded wide
0, 48	Cancels expanded wide
1, 49	Specifies 2x wide expansion
2, 50	Specifies 3x wide expansion
3, 51	Specifies 4x wide expansion
4, 52	Specifies 5x wide expansion
5, 53	Specifies 6x wide expansion

ESC W n

Specify/cancel expanded wide

Format:        ASCII:        ESC   W   n  
                  Decimal:       27    87   n  
                  Hex:        1B    57   n

Description:

0 ≤ n ≤ 5

48 ≤ n ≤ 53 ("0" ≤ n ≤ "5")

Specifies/cancels double wide for characters.

n2	Expanded wide
0, 48	Cancels expanded wide
1, 49	Specifies 2x wide expansion
2, 50	Specifies 3x wide expansion
3, 51	Specifies 4x wide expansion
4, 52	Specifies 5x wide expansion
5, 53	Specifies 6x wide expansion

ESC h n

Specify/cancel expanded high

Format:        ASCII:        ESC   h    n  
                  Decimal:       27    104   n  
                  Hex:        1B    68    n

Description:

0 ≤ n ≤ 5

48 ≤ n ≤ 53 ("0" ≤ n ≤ "5")

Specifies/cancels double high for characters.

n1	Expanded high
0, 48	Cancels expanded high
1, 49	Specifies 2x high expansion
2, 50	Specifies 3x high expansion

3, 51	Specifies 4x high expansion
4, 52	Specifies 5x high expansion
5, 53	Specifies 6x high expansion

## SO

Set double wide

Format:      ASCII:      SO  
                  Decimal:    14  
                  Hex:        0E

### Description:

Specifies double wide for characters.

## DC4

Cancel expanded wide

Format:      ASCII:      DC4  
                  Decimal:    20  
                  Hex:        14

### Description:

Cancels expanded wide.

## ESC SO

Set double high

Format:      ASCII:      ESC    SO  
                  Decimal:    27    14  
                  Hex:        1B    0E

### Description:

Specifies double high for ANK characters and Chinese characters.

## ESC DC4

Cancel expanded high

Format:      ASCII:      ESC    DC4  
                  Decimal:    27    20  
                  Hex:        1B    14

### Description:

Cancels expanded high.

## ESC E

Select emphasized printing

Format:      ASCII:      ESC    E  
                  Decimal:    27    69  
                  Hex:        1B    45

### Description:

Specifies emphasized printing for ANK characters.

## ESC F

Cancel emphasized printing

Format:      ASCII:      ESC    F  
                  Decimal:    27    70  
                  Hex:        1B    46

### Description:

Cancels emphasized printing.

---

ESC – n Select/cancels underling mode

---

Format:        ASCII:        ESC   -    n  
                   Decimal:    27    45    n  
                   Hex:        1B    2D    n

---

Description:

n=0, 1, 48, 49

Specifies underlining (2 dots).

n	Underline
0, 48	Cancels underline
1, 49	Specifies underline

---

ESC \_ n Specify/cancel upperline

---

Format:        ASCII:        ESC   \_    n  
                   Decimal:    27    95    n  
                   Hex:        1B    5F    n

---

Description:

n=0, 1, 48, 49

Specifies upperlining (2 dots).

n	Upperline
0, 48	Cancels upperline
1, 49	Specifies upperline

---

ESC 4 Select white/black inverted printing

---

Format:        ASCII:        ESC   4  
                   Decimal:    27    52  
                   Hex:        1B    34

---

Description:

Specifies white/black inversion for ANK characters and Chinese characters.

---

ESC 5 Cancel white/black inversion

---

Format:        ASCII:        ESC   5  
                   Decimal:    27    53  
                   Hex:        1B    35

---

Description:

Cancels white/black inversion for ANK characters and Chinese characters.

---

SI Select upside-down printing

---

Format:        ASCII:        SI  
                   Decimal:    15  
                   Hex:        0F

---

Description:

Specifies upside-down printing

---

DC2 Cancel upside-down printing

---

Format:        ASCII:        DC2  
                   Decimal:    18  
                   Hex:        12

---

Description:

Cancels upside-down printing

LF			Line feed
Format:	ASCII:	LF	
	Decimal:	10	
	Hex:	0A	

## Description:

Feeds the currently specified amount of paper.

If print data exists in the line buffer, it prints that data.

CR			Carriage return (line feed)
Format:	ASCII:	CR	
	Decimal:	13	
	Hex:	0D	

## Description:

When the CR code is enabled, the CR code functions in the same way as the LF code.

ESC a n			Feed paper n lines
Format:	ASCII:	ESC a n	
	Decimal:	27 97 n	
	Hex:	1B 61 n	

## Description:

$1 \leq n \leq 127$

Executes a paper feed for (the currently specified line feed amount x n). If print data exists in the line buffer, it prints that data.

ESC z n			Select line feed amount
Format:	ASCII:	ESC z n	
	Decimal:	27 122 n	
	Hex:	1B 7A n	

## Description:

$n=1, 49$

Specifies 4 mm line feed amount.

ESC 0			Specify line spacing to 3 mm
Format:	ASCII:	ESC 0	
	Decimal:	27 48	
	Hex:	1B 30	

## Description:

Specifies the line feed amount to 3 mm.

ESC J n			n/4 mm line feed
Format:	ASCII:	ESC J n	
	Decimal:	27 74 n	
	Hex:	1B 4A n	

## Description:

$1 \leq n \leq 255$

Executes a n/4mm paper feed.

If print data exists in the line buffer, it prints that data.



---

ESC I n n/8mm line feed

---

Format:      ASCII:      ESC I n  
                  Decimal:    27    73 n  
                  Hex:        1B    49 n

---

Description:

$1 \leq n \leq 255$

Executes a n/8mm paper feed.

If print data exists in the line buffer, it prints that data.

---

ESC GS P 0 Selects page mode

---

Format:      ASCII:      ESC GS P 0  
                  Decimal:    27    29 80 48  
                  Hex:        1B    1D 50 30

---

Description:

Switches from standard mode to page mode.

---

ESC GS P 1 Cancel page mode

---

Format:      ASCII:      ESC GS P 1  
                  Decimal:    27    29 80 49  
                  Hex:        1B    1D 50 31

---

Description:

Cancels page mode.

---

FF Form feed

---

Format:      ASCII:      FF  
                  Decimal:    12  
                  Hex:        0C

---

Description:

Executes a form feed.

---

ESC C n Set page length to n lines

---

Format:      ASCII:      ESC C n  
                  Decimal:    27    67 n  
                  Hex:        1B    43 n

---

Description:

$1 \leq n \leq 127$

The position whereat this command is processed is considered the top of the page and sets the page length to (current form feed amount x n).

---

ESC C 0 n Set page length to n x 24 mm units

---

Format:      ASCII:      ESC C 0 n  
                  Decimal:    27    67 0 n  
                  Hex:        1B    43 00 n

---

Description:

$1 \leq n \leq 22$

The position whereat this command is processed is considered the top of the page and sets the page length to (n x 24 mm).

VT	Feed paper to vertical tab position	
Format:	ASCII:	VT
	Decimal:	11
	Hex:	0B

Description:

Feeds paper to the next vertical tab position.

ESC B n1 n2...nk NUL	Set vertical tab position	
Format:	ASCII:	ESC B n1 n2 ... nk NUL
	Decimal:	27 66 n1 n2 ... nk 0
	Hex:	1B 42 n1 n2 ... nk 00

Description:

$1 \leq n \leq 255$

$0 \leq k \leq 16$

Sets the vertical tab to the (current form feed amount x n) position.

ESC B NUL	Clear vertical tab position	
Format:	ASCII:	ESC B NUL
	Decimal:	27 66 0
	Hex:	1B 42 00

Description:

Clears the currently set vertical tab.

ESC I n	Set left margin	
Format:	ASCII:	ESC I n
	Decimal:	27 108 n
	Hex:	1B 6C n

Description:

$0 \leq n \leq 255$

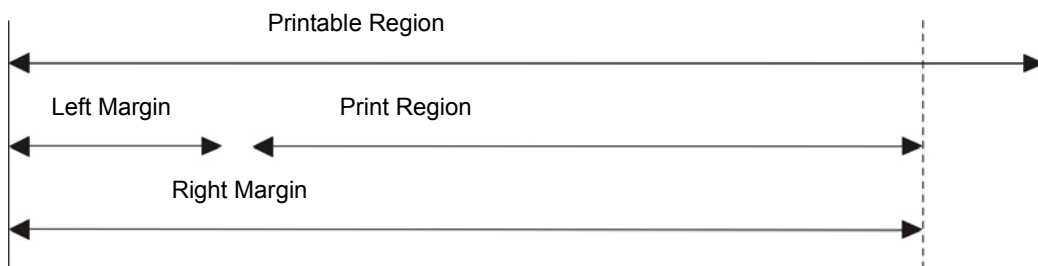
Set the left margin as (current ANK character pitch x n).

ESC Q n	Set right margin	
Format:	ASCII:	ESC Q n
	Decimal:	27 81 n
	Hex:	1B 51 n

Description:

$0 \leq n \leq 255$

Set the print region as (current ANK character pitch x n)



HT	Move horizontal ta	
Format:	ASCII:	HT
	Decimal:	9
	Hex:	09

Description:

Move print position to next horizontal tab position.

ESC D n1 n2...nk NUL	Set horizontal tab	
Format:	ASCII:	ESC D n1 n2 ... nk NUL
	Decimal:	27 68 n1 n2 ... nk 0
	Hex:	1B 44 n1 n2 ... nk 00

Description:

$1 \leq n \leq 255$

$0 \leq k \leq 16$

Uses the left edge as a standard to set the horizontal tab to the position of (current ANK character pitch x n).

ESC D NUL	Clear horizontal tab	
Format:	ASCII:	ESC D NUL
	Decimal:	27 68 0
	Hex:	1B 44 00

Description:

Clears the currently set horizontal tab.

ESC GS A n1 n2	Move absolute position	
Format:	ASCII:	ESC GS A n1 n2
	Decimal:	27 29 65 n1 n2
	Hex:	1B 1D 41 n1 n2

Description:

$0 \leq n1 \leq 255$

$0 \leq n2 \leq 255$

Moves the printing position from the left margin to the  $(n1+n2 \times 256)$  position.

This command is ignored if the print region is exceeded.

ESC GS R n1 n2	Move relative position	
Format:	ASCII:	ESC GS R n1 n2
	Decimal:	27 29 82 n1 n2
	Hex:	1B 1D 52 n1 n2

Description:

$0 \leq n1 \leq 255$

$0 \leq n2 \leq 255$

Moves the printing position from the current position to the  $(n1+n2 \times 256)$  position.

ESC GS a n	Specify position alignment	
Format:	ASCII:	ESC GS a n
	Decimal:	27 29 97 n
	Hex:	1B 1D 61 n

Description:

$0 \leq n \leq 2$

$48 \leq n \leq 50$  ("0"  $\leq n \leq$  "2")

Specifies the alignment position in the printing region that has been set.

n	Position alignment
0, 48	Left alignment
1, 49	Center alignment
2, 50	Right alignment

ESC & c1 c2 n d1...d48

Register 12 x 24 dot font download characters

Format:	ASCII:	ESC	&	c1	c2 n d1 ... d48
	Decimal:	27	38	c1	c2 n d1 ... d48
	Hex:	1B	26	c1	c2 n d1 ... d48

Description:

c1=1, 49

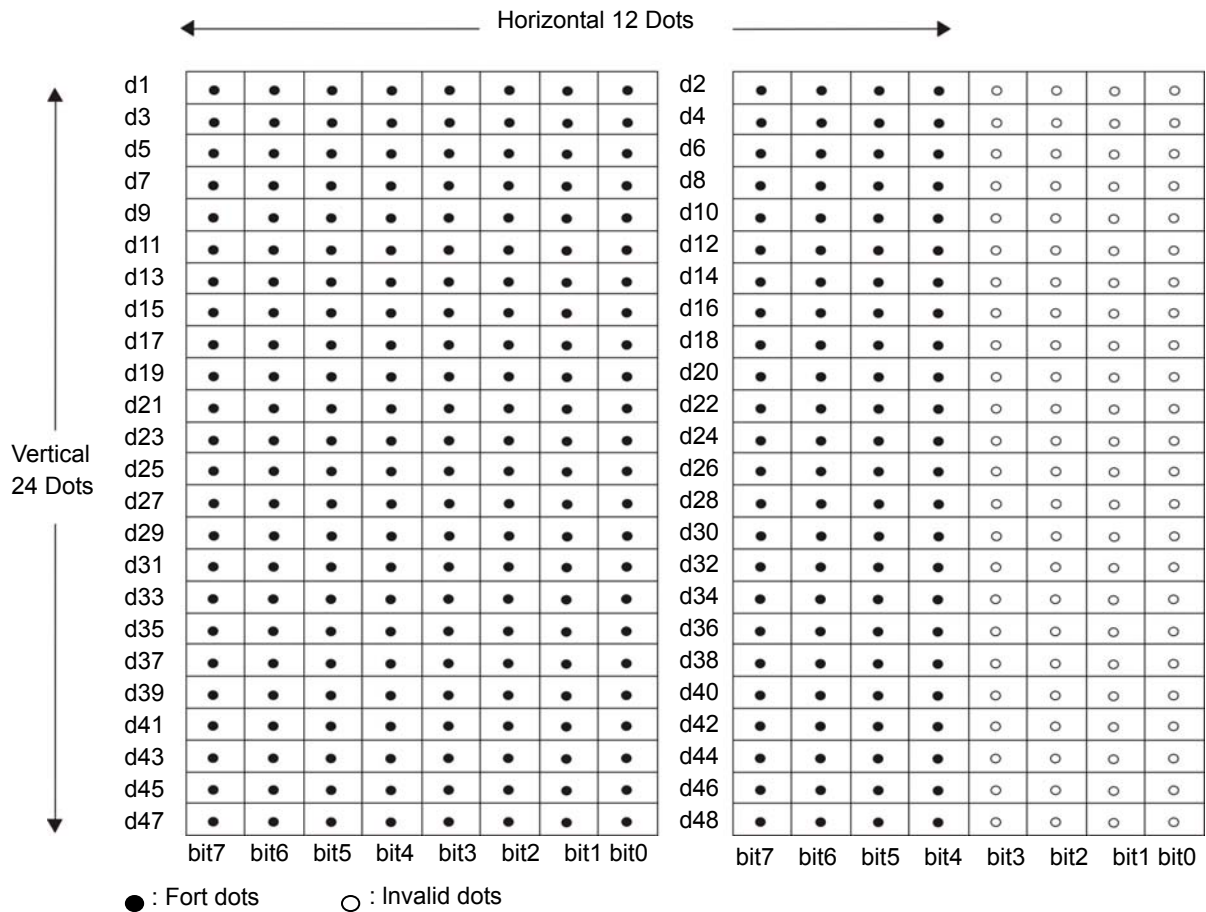
c2=1, 49

32≤n≤127

0≤d≤255

Registers 12 x 24 dot font download characters to the nth address.

Download characters can be registered to <20>H to <7F>H.



ESC & c1 c2 n

Delete 12 x 24 dot font download characters

Format:	ASCII:	ESC	&	c1	c2 n
	Decimal:	27	38	c1	c2 n
	Hex:	1B	26	c1	c2 n

Description:

c1=1, 49

c2=0, 48

32≤n≤127

Deletes 12 x 24 dot font download characters registered to the nth address.

ESC % n

Specifies/cancels ANK download characters

Format:	ASCII:	ESC	%	n
	Decimal:	27	37	n
	Hex:	1B	25	n

Description:

n=0, 1, 48, 49

Specifies/cancels ANK download characters

n	Download characters
0, 48	Cancels ANK download characters
1, 49	Specifies ANK download characters

ESC K n1 n2 d1...dk

Standard density bit image

Format:	ASCII:	ESC	K	n1	n2	d1 ... dk
	Decimal:	27	75	n1	n2	d1 ... dk
	Hex:	1B	4B	n1	n2	d1 ... dk

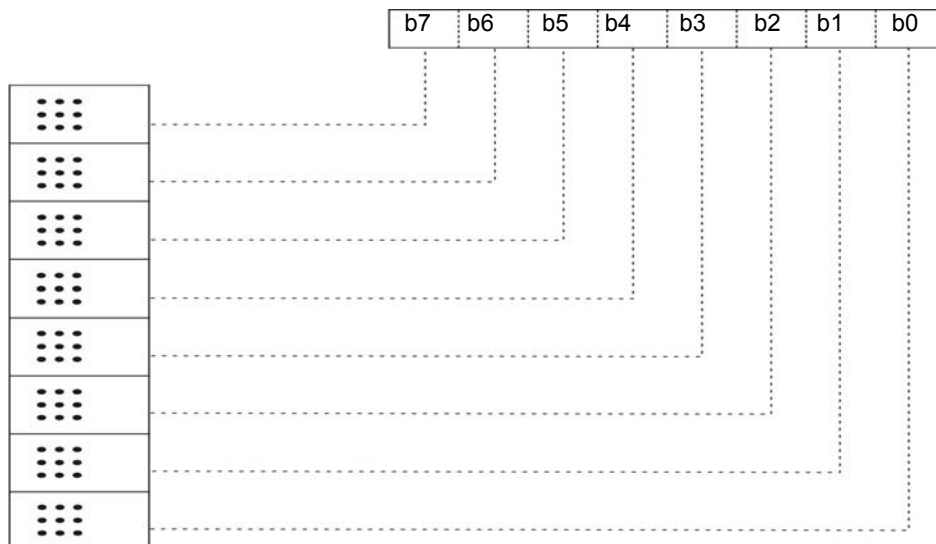
Description:

$1 \leq (n1+n2 \times 256) \times 3 \leq$  printable region

$k = (n1+n2 \times 256)$

$0 \leq d \leq 255$

Prints bit images using 3 dots wide and 3 dots high per 1 dot of input data.



ESC L n1 n2 d1...dk

High density bit image

Format:	ASCII:	ESC	L	n1	n2	d1 ... dk
	Decimal:	27	76	n1	n2	d1 ... dk
	Hex:	1B	4C	n1	n2	d1 ... dk

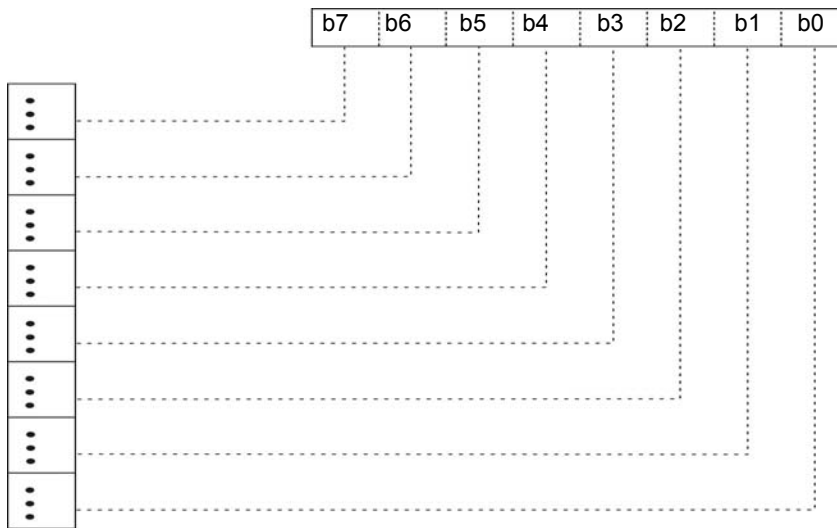
Description:

$1 \leq (n1+n2 \times 256) \leq$  printable region

$k = (n1+n2 \times 256)$

$0 \leq d \leq 255$

Prints bit images using 1 dot wide and 3 dots high per 1 dot of input data.



ESC k n1 n2 d1...dk

Fine density bit image

Format:	ASCII:	ESC	k	n1	n2	d1 ... dk
	Decimal:	27	107	n1	n2	d1 ... dk
	Hex:	1B	6B	n1	n2	d1 ... dk

Description:

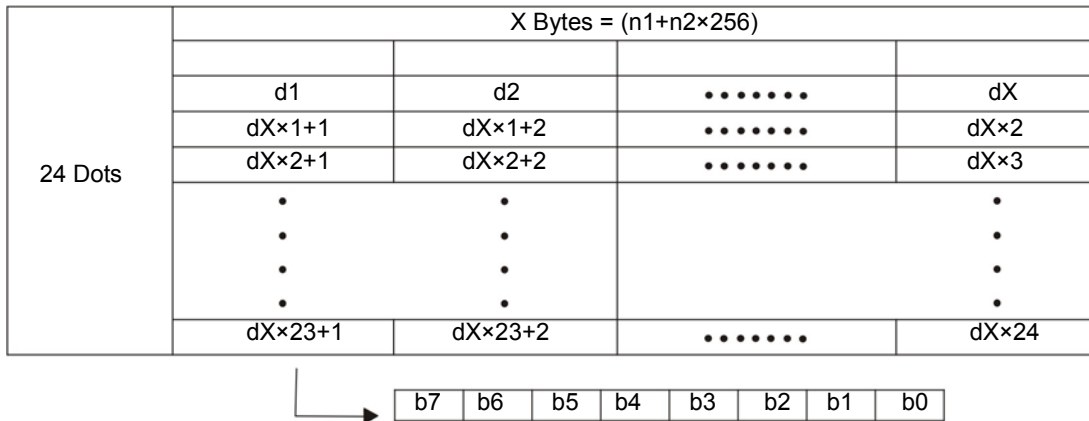
$n2=0$

$1 \leq \{(n1+n2 \times 256) \times 8\} \leq \text{printable region}$

$k = \{(n1+n2 \times 256) \times 24\}$

$0 \leq d \leq 255$

Prints bit images using 1 dot wide and 1 dots high per 1 dot of input data.



ESC X n1 n2 d1...dk

Fine density bit image (Compatible with 24 bit wire dots)

Format:	ASCII:	ESC	X	n1	n2	d1 ... dk
	Decimal:	27	88	n1	n2	d1 ... dk
	Hex:	1B	58	n1	n2	d1 ... dk

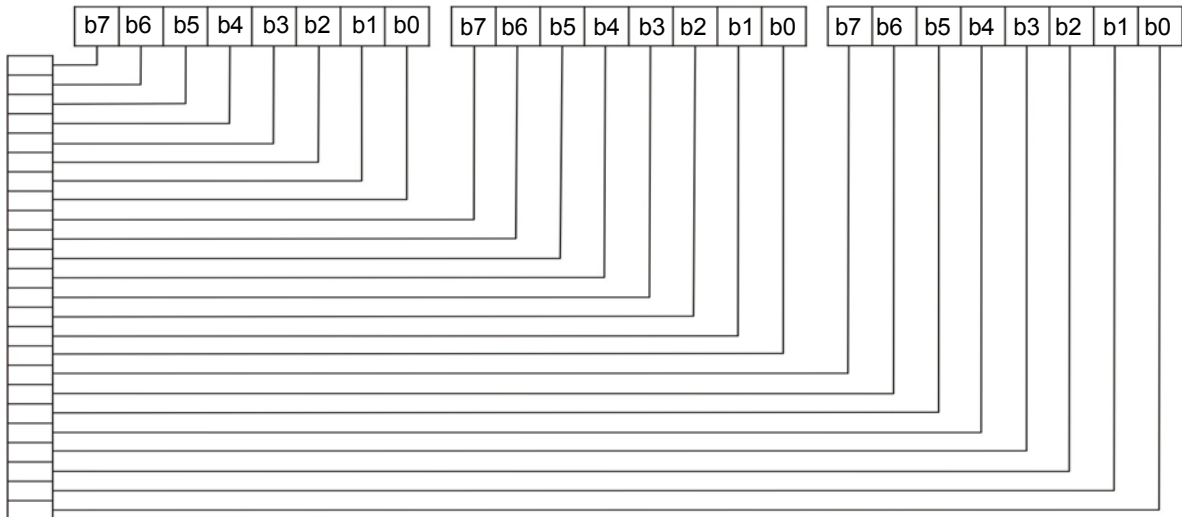
Description:

$1 \leq (n1+n2 \times 256) \leq \text{printable region}$

$k = \{(n1+n2 \times 256) \times 3\}$

$0 \leq d \leq 255$

Prints input bit images with 8 dots/mm resolution for both horizontal and vertical.



ESC FS q n [x11 x12 y11 y12 d1...dk]1...[xn1 xn2 yn1 yn2 d1...dk]n Register logo

Format: ASCII: ESC FS q n [x11 x12 y11 y12 d1 ... dk]1 ... [xn1 xn2 yn1 yn2 d1 ... dk]n

Decimal: 27 28 113 n [x11 x12 y11 y12 d1 ... dk]1 ... [xn1 xn2 yn1 yn2 d1 ... dk]n

Hex: 1B 1C 71 n [x11 x12 y11 y12 d1 ... dk]1 ... [xn1 xn2 yn1 yn2 d1 ... dk]n

Description:

$1 \leq n \leq 255$

$0 \leq x_{n1} \leq 255, 0 \leq x_{n2} \leq 3$

$1 \leq (x_{n1} + x_{n2} \times 256) \leq 1023$

$0 \leq y_{n1} \leq 255, 0 \leq y_{n2} \leq 1$

$1 \leq (y_{n1} + y_{n2} \times 256) \leq 288$

$0 \leq d \leq 255$

$k = \{(x_{n1} + x_{n2} \times 256) \times (y_{n1} + y_{n2} \times 256) \times 8\}$

Parameter details

\* n: Specifies registered logo count

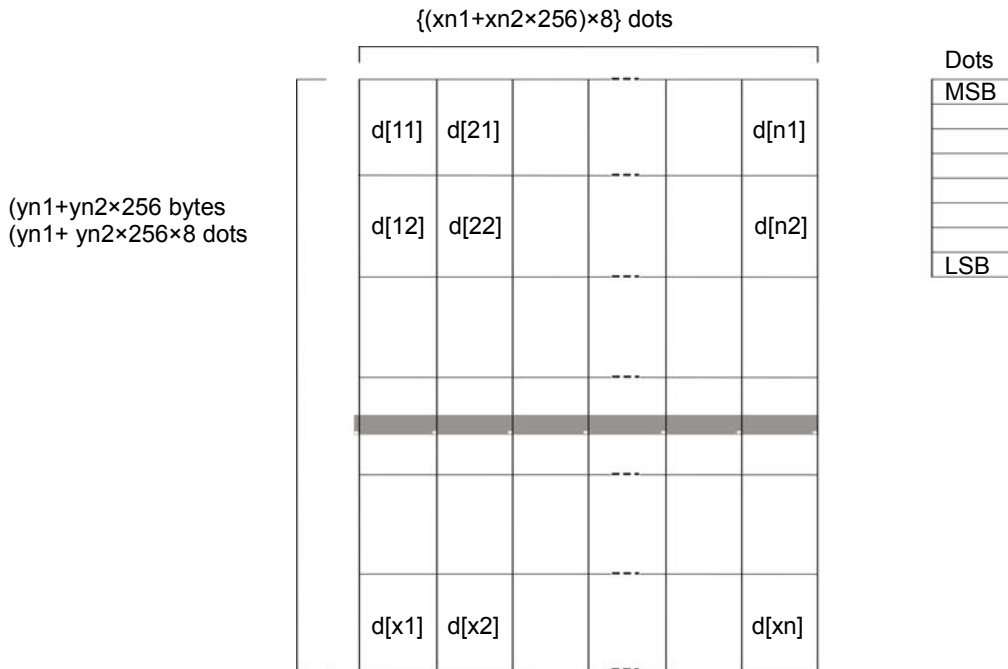
\* x<sub>n1</sub>, x<sub>n2</sub>: Horizontal size of registered logo  $\{(x_{n1} + x_{n2} \times 256) \times 8\}$  dots

\* y<sub>n1</sub>, y<sub>n2</sub>: Vertical size of registered logo  $\{(y_{n1} + y_{n2} \times 256) \times 8\}$  dots

\* d: Registered logo data

\* k: Logo data count

Relationships of logo and registered data  
 $xn = xn1 + xn2 \times 256$ ,  $yn = yn1 + yn2 \times 256$



ESC FS p n m

Print logo

Format:    ASCII:   ESC   FS   p    n m  
              Decimal: 27    28   112   n m  
              Hex:   1B    1C   70   n m

Description:

$1 \leq n \leq 255$

$0 \leq m \leq 3$

$48 \leq m \leq 51$  ("0"  $\leq m \leq$  "3")

Prints the logo of registration number n registered using the logo registration command (ESC FS q) according to the print mode m.

m	Logo print mode
0, 48	Normal mode
1, 49	Double wide mode
2, 50	Double high mode
3, 51	Double high/wide mode

ESC RS L m

Print logo in batch

Format:    ASCII:   ESC   RS   L   m  
              Decimal: 27    30   76   m  
              Hex:   1B    1E   4C   m

Description:

$0 \leq m \leq 3$      $48 \leq m \leq 51$  ("0"  $\leq m \leq$  "3")

Prints all registered logos according to a print mode specified by m. Executes a printer reset after printing.

m	Logo print mode
0, 48	Normal mode
1, 49	Double wide mode



2, 50	Double high mode
3, 51	Double high/wide mode

ESC b n1 n2 n3 n4 d1...dk RS

Print bar code

Format: ASCII: ESC b n1 n2 n3 n4 d1 ... dk RS

Decimal: 27 98 n1 n2 n3 n4 d1 ... dk 30

Hex: 1B 62 n1 n2 n3 n4 d1 ... dk 1E

Description:

 $0 \leq n1 \leq 8$ ,  $48 \leq n1 \leq 56$  ("0"  $\leq n1 \leq$  "8") $1 \leq n2 \leq 4$ ,  $49 \leq n2 \leq 52$  ("1"  $\leq n2 \leq$  "4") $1 \leq n4 \leq 255$ 

n3 (bar code mode), n4 bar code height (dot count), d (bar code data), k (bar code data count) definitions differ according to the type of bar code.

Bar code printing is executed according to the following parameters.

n1	Bar code type
0, 48	UPC-E
1, 49	UPC-A
2, 50	JAN/EAN8
3, 51	JAN/EAN13
4, 52	Code39
5, 53	ITF
6, 54	Code128

n2	Under-bar character selection and added line feed selection
1, 49	No added under-bar characters Executes line feed after printing a bar code
2, 50	Adds under-bar characters Executes line feed after printing a bar code
3, 51	No added under-bar characters Does not execute line feed after printing a bar code
4, 52	Adds under-bar characters Does not execute line feed after printing a bar code

ESC d n

Auto-cutter

Format: ASCII: ESC d n

Decimal: 27 100 n

Hex: 1B 64 n

Description:

 $0 \leq d \leq 3$  $48 \leq d \leq 51$  ("0"  $\leq d \leq$  "3")

Executes the auto-cutter.

n	Auto cutter
0, 48	Full cut at the current position. Print data in line buffer is printed before a full cut. This command is ignored if the printer is not equipped with an auto-cutter.
1, 49	Partial cut at the current position. Print data in line buffer is printed before a partial cut. This command is ignored if the printer is not equipped with an auto-cutter.
2, 50	Paper is fed to cutting position, then a full cut. Print data in line buffer is printed before the operation described above. This command is ignored if the printer is not equipped with an auto-cutter.

3, 51	Paper is fed to cutting position, then a partial cut. Print data in line buffer is printed before the operation described above. This command is ignored if the printer is not equipped with an auto-cutter.
-------	--

## ESC BEL n1 n2

Set external drive device 1 pulse width

Format:    ASCII:   ESC   BEL   n1   n2  
              Decimal: 27     7     n1   n2  
              Hex:   1B     07     n1   n2

### Description:

$1 \leq n1 \leq 127$

$1 \leq n2 \leq 127$

Sets the energizing and delay times for drive of the external device.

\* Energizing time =  $10 \times n1$  (ms)

\* Delay time =  $10 \times n2$  (ms)

## BEL

External device 1 drive instruction

Format:    ASCII:   BEL  
              Decimal: 7  
              Hex:   07

### Description:

Executes the external device drive

## FS

External device 1 drive instruction

Format:    ASCII:   FS  
              Decimal: 28  
              Hex:   1C

### Description:

Executes the external device drive conditions set according to the command to set the external drive device pulse width (ESC BEL n1 n2).

## SUB

External device 2 drive instruction

Format:    ASCII:   SUB  
              Decimal: 26  
              Hex:   1A

### Description:

Drives external device 2.

The energizing time and delay time for the external device 2 are fixed at 200 ms each.

## EM

External device 2 drive instruction

Format:    ASCII:   EM  
              Decimal: 25  
              Hex:   19

### Description:

Drives external device 2.

The energizing time and delay time for the external device 2 are fixed at 200 ms each.

ESC GS BEL m t1 t2

Ring buzzer

Format:    ASCII:   ESC   GS   BEL   m   t1   t2  
              Decimal: 27    29    7    m   t1   t2  
              Hex:    1B    1D    07   m   t1   t2

Description:

$1 \leq m \leq 2$ ,  $49 \leq m \leq 50$  ("1"  $\leq m \leq$  "2")

$1 \leq t1 \leq 255$

$1 \leq t2 \leq 255$

Rings the buzzer.

m specifies the drive terminal of the buzzer.

m	Buzzer Drive Terminal
1, 49	Buzzer Drive Terminal 1
2, 50	Buzzer Drive Terminal 2

• Energizing time = 20 msec x t1

• Delay time = 20 msec x t2

ESC GS EM DC1 m n1 n2

External buzzer drive pulse condition settings

Format:    ASCII:   ESC   GS   EM   DC1 m n1 n2  
              Decimal: 27    29    25   17 m n1 n2  
              Hex:    1B    1D    19   11 m n1 n2

Description:

$1 \leq m \leq 2$      $49 \leq m \leq 50$

$0 \leq n1 \leq 255$

$0 \leq n2 \leq 255$

Sets external buzzer derive pulse condition.

m	Buzzer Drive Terminal
1, 49	Buzzer Drive Terminal 1
2, 50	Buzzer Drive Terminal 2

\* Energizing time = 20 msec x n1

\* Delay time = 20 msec x n2

ESC GS EM DC2 m n1 n2

External buzzer drive execution

Format:    ASCII:   ESC   GS   EM   DC2 m n1 n2  
              Decimal: 27    29    25   18 m n1 n2  
              Hex:    1B    1D    19   12 m n1 n2

Description:

$1 \leq m \leq 2$      $49 \leq m \leq 50$

$1 \leq n1 \leq 20$

$n2=0$

Repeatedly drives the buzzer according to the ON/OFF conditions set by the external buzzer drive pulse conditions command <ESC> <GS> <EM> <DC1> m t1 t2.

m	Buzzer Drive Terminal
1, 49	Buzzer Drive Terminal 1
2, 50	Buzzer Drive Terminal 2

## ESC RS d n

## Set print density

Format:    ASCII:  ESC  RS  d  n  
               Decimal: 27    30  100 n  
               Hex:    1B    1E    64  n

## Description:

$0 \leq n \leq 6$

$48 \leq n \leq 57$  ("0"  $\leq n \leq$  "6")

Sets print density.

n	Print density
0, 48	Print density 1.3
1, 49	Print density 1.2
2, 50	Print density 1.1
3, 51	Print density 1.0
4, 52	Print density 0.9
5, 53	Print density 0.8
6, 54	Print density 0.7

## ESC RS r n

## Set print speed

Format:    ASCII:  ESC  RS  r  n  
               Decimal: 27    30  114 n  
               Hex:    1B    1E    72  n

## Description:

$0 \leq n \leq 3$

$48 \leq n \leq 51$  ("0"  $\leq n \leq$  "3")

Sets print speed.

n	Print speed
0, 48	High speed
1, 49	Mid-speed
2, 50	Slow speed
3, 51	Slower speed

## ESC RS a n

## Set status transmission conditions

Format:    ASCII:  ESC  RS  a  n  
               Decimal: 27    30  97  n  
               Hex:    1B    1E    61  n

## Description:

$0 \leq n \leq 3$ ,  $48 \leq n \leq 51$  ("0"  $\leq n \leq$  "3")

Sets the status transmission conditions.

n	Status transmission conditions
0, 48	ASB invalid
1, 49	ASB valid

ESC ACK SOH

Real-time printer status (ASB status)

Format:    ASCII:  ESC  ACK  SOH  
               Decimal: 27   6    1  
               Hex:   1B   06   01

Description:

Sends ASB status information to the host.

This command is not used when ASB is valid.

ENQ

Real-time printer status (1)

Format:    ASCII:  ENQ  
               Decimal: 5  
               Hex:   05

Description:

Sends 1 byte of the following the printer status

This command is not used when ASB is valid.

Bit	Contents	Status	
		"0"	"1"
7	Conversion SW	OPEN	CLOSE
6	Overrun Error	No	Yes
5	Reception Buffer Empty	Has Data	Empty
4	Fixed at "0"	-	-
3	Paper end	Paper	No Paper
2	Other Errors	No	Yes
1	Framing Error	No	Yes
0	Parity Error	No	Yes

EOT

Real-time printer status (2)

Format:    ASCII:  EOT  
               Decimal: 4  
               Hex:   04

Description:

Sends 1 byte of the following the printer status.

This command is not used when ASB is valid.

Bit	Contents	Status	
		"0"	"1"
7	Compulsion SW	OPEN	CLOSE
6	Presenter Paper Jam Error	Paper	No Paper
5	Paper Near-end (Outer Side)	Has Data	Empty
4	Fixed at "1"	-	-
3	Paper end	Paper	No Paper
2	Paper Near-end (Inner Side)	Paper	No Paper
1	BINDING MEDIA Error	No	Yes
0	Fixed at "0"	-	-

ESC ACK CAN

Execute real-time printer reset

Format:    ASCII:  ESC  ACK  CAN  
               Decimal: 27   6    24  
               Hex:   1B   06   18

Description:

Execute real-time printer reset.

**ETB**

Update ASB ETB status

Format:    ASCII:  ETB  
           Decimal: 23  
           Hex:   17

**Description:**

Sets the ASB ETB status when reading this command from the reception buffer, then sends ASB.

**ESC RS E n**

Initialize ASB ETB counter and ETB status

Format:    ASCII:  ESC  RS  E  n  
           Decimal: 27   30  69  n  
           Hex:   1B   1E  45  n

**Description:**

n=0

n=48 ("0")

Clears the ASB ETB counter to zero, then clears the ETB status.

**ESC p**

Specify Chinese character mode

Format:    ASCII:  ESC  p  
           Decimal: 27   112  
           Hex:   1B   70

**Description:**

Specifies Chinese character mode

**ESC q**

Cancel Chinese character mode

Format:    ASCII:  ESC  q  
           Decimal: 27   113  
           Hex:   1B   71

**Description:**

Cancel Chinese character mode

**ESC \$ n**

Specify/cancel Chinese character mode

Format:    ASCII:  ESC  \$  n  
           Decimal: 27   36  n  
           Hex:   1B   24  n

**Description:**

Specifies and cancels the Chinese character mode.

n	Chinese character mode
0, 48	Cancels Chinese character mode
1, 49	Specifies Chinese character mode

**ESC s n1 n2**

Set 2 byte Chinese left/right spaces

Format:    ASCII:  ESC  s  n1  n2  
           Decimal: 27   115  n1  n2  
           Hex:   1B   73  n1  n2

**Description:**

$0 \leq n1 \leq 7$

$48 \leq n1 \leq 55$  ("0"  $\leq n1 \leq$  "7")

$0 \leq n2 \leq 15$

$48 \leq n2 \leq 57$  ("0"  $\leq n2 \leq$  "9")

65≤n2≤70 (“A”≤n2≤“F”)

Adds n1 dots left space amount and n2 dots right space amount to Chinese characters.

ESC t n1 n2

Set 1 byte Chinese character left/right spaces

Format:     ASCII:   ESC   t     n1   n2  
               Decimal:  27   116   n1   n2  
               Hex:   1B    74   n1   n2

Description:

0≤n1≤7

48≤n1≤55 (“0”≤n1≤“7”)

0≤n2≤15

48≤n2≤57 (“0”≤n2≤“9”)

65≤n2≤70 (“A”≤n2≤“F”)

Adds n1 dots left space amount and n2 dots right space amount to single-byte Chinese characters.

ESC r c1 c2 d1...dk

Register Chinese download characters

Format:     ASCII:   ESC   r     c1   c2 d1 ... dk  
               Decimal:  27   114   c1   c2 d1 ... dk  
               Hex:   1B    72   c1   c2 d1 ... dk

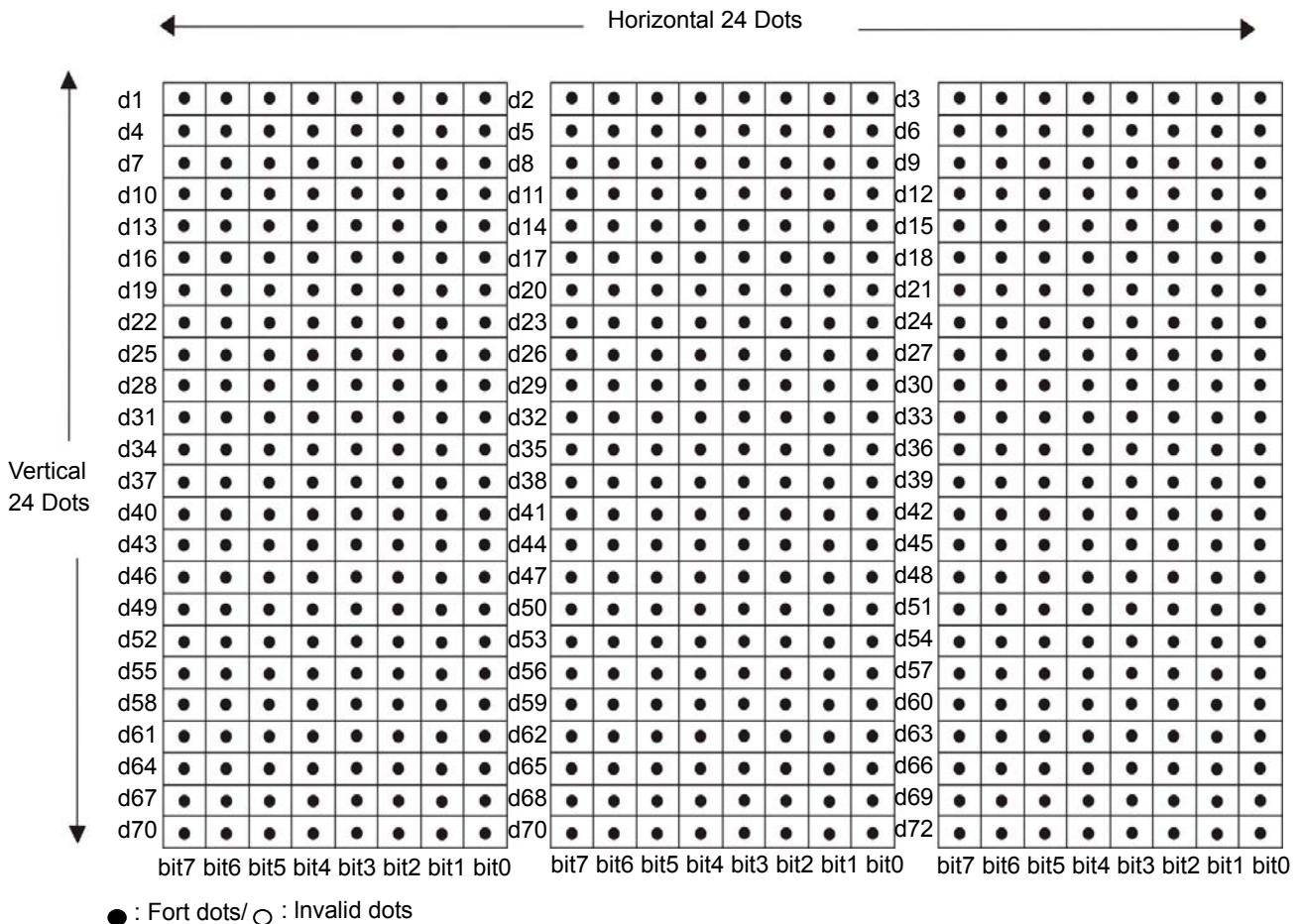
Description:

0≤d≤255

k=72

c1=FEh   A1h≤c2≤FEh

Registers Chinese download characters to c1 and c2 addresses.



---

ESC @Command initialization

---

Format:    ASCII:  ESC  @  
          Decimal: 27  64  
          Hex:   1B  40

---

Description:

Initializes each command after printing data in the line buffer.

ESC ? LF NUL

Reset printer (execute self print)

---

Format:    ASCII:  ESC  ?  LF  NUL  
          Decimal: 27   63  10  0  
          Hex:   1B   3F  0A  00

---

Description:

Resets the printer and executes on self print.



## Chapter 8 Command List

### 8.1 ESC/POS Command List

Control command	Description
BEL	Beep once
HT	Horizontal tab
LF	Print and line feed
FF	Print and Feed paper to the next black mark position
DLE EOT	Status transmission
ESC BEL	Beep for appointment
ESC SP	Set right-side character spacing
ESC !	Set character print mode
ESC \$	Set absolute print position
ESC %	Select/cancel user-defined character set
ESC &	Define user-defined characters
ESC *	Select bit-image mode
ESC –	Turn underline mode on/off
ESC 2	Set the line spacing to 3.75mm
ESC 3	Set the user-defined line spacing
ESC =	Enable/disable peripheral device
ESC ?	Cancel user-defined character
ESC @	Initialize the printer
ESC D	Set horizontal tab position
ESC E	Turn emphasized mode on/off
ESC J	Print and feed paper
ESC M	Select English character font
ESC R	Select the international character set
ESC V	Turn 90°clockwise rotation mode on/off
ESC \	Set relative print position
ESC a	Select alignment mode
ESC c 3	Select paper sensor
ESC c 4	Select paper sensor to stop printing
ESC c 5	Enable/disable panel key
ESC d	Print and feed n lines
ESC p	Generate pulse
ESC t	Select code page
ESC {	Turn on/off upside-down printing mode
FS !	Select Chinese character mode
FS &	Enter Chinese mode

FS -	Turn Chinese character underline on /off
FS .	Exit Chinese mode
FS 2	User-defined Chinese characters
FS S	Set Chinese character spacing
FS W	Turn quadruple-size mode on/off for Chinese character
FS p n m	Print NV bit image
FS q n	Define the NV bit image
GS BEL	Beep for appointment
GS !	Select Character size
GS *	Define downloaded bit image
GS /	Print downloaded bit image
GS B	Turn white/black reverse mode on/off
GS H	Enable/disable the printer to print HRI character
GS L	Set left margin
GS P	Set horizontal or vertical minimal unit
GS V	Select cut mode and cut paper
GS W	Set print area width
GS f	Select the HRI character font
GS h	Set bar code height
GS k	Print bar code
GS v 0	Print raster bit image
GS w	Set barcode transverse size

## 8.2 STAR Line Mode Command List

Control command	Description
ESC RS F (1B 1E 46 n)	Select font
ESC GS t (1B 1D 74 n)	Specify code page
ESC 52 n (1B 52 n)	Specify international character set
ESC / (1B 2F n)	Specify/cancel slash zero
ESC SP (1B 20 n)	Set ANK right space
ESC M (1B 4D)	Specify ANK 12 dot pitch
ESC P (1B 50)	Specify ANK 15 dot pitch
ESC : (1B 3A)	Specify ANK 16 dot pitch
ESC g (1B 67)	Specify ANK 14 dot pitch
ESC I (1B 69 n1 n2)	Set/cancel the double wide/high printing
ESC W (1B 57 n)	Set/cancel the double wide printing
ESC h (1B 68 n)	Set/cancel the double high printing
SO (0E)	Set double wide printing
DC4 (14)	Cancel double wide printing
ESC SO (1B 0E)	Set double high printing
ESC DC4 (1B 14)	Cancel expanded high printing
ESC E (1B 45)	Select emphasized printing

ESC F (1B 46)	Cancel emphasized printing
ESC - (1B 2D n)	Select/cancels underline mode
ESC _ (1B 5F n)	Specify/cancel upperline
ESC 4 (1B 34)	Select white/black inverted printing
ESC 5 (1B 35)	Cancel white/black inversion
SI (0F)	Select upside-down printing
DC2 (12)	Cancel upside-down printing
LF (0A)	Line feed
CR (0D)	Carriage return (line feed)
ESC a (1B 61 n)	Feed paper n lines
ESC z (1B 7A n)	Select line feed amount
ESC 0 (1B 30)	Specify line spacing to 3 mm
ESC J (1B 4A n)	n/4 mm line feed
ESC I (1B 49 n)	n/8mm line feed
ESC GS P	Set page mode
FF (0C)	Form feed
ESC C (1B 43 n)	Set page length to n lines
ESC C 0 (1B 43 00 n)	Set page length to n x 24 mm units
VT (0B)	Feed paper to vertical tab position
ESC B (1B 42 n1 n2 ... nk 00)	Set/Clear vertical tab position
ESC I (1B 6C n)	Set left margin
ESC Q (1B 51 n)	Set right margin
HT (09)	Move horizontal tab
ESC D (1B 44 n1 n2 ...nk 00)	Set/Clear horizontal tab
ESC GS A (1B 1D 41 n1 n2)	Move absolute position
ESC GS R (1B 1D 52 n1 n2)	Move relative position
ESC GS a (1B 1D 61 n)	Specify position alignment
ESC & (1B 26 c1 c2 n d1 ... d48)	Register/delete 12 x 24 dot font download characters
ESC % (1B 25 n)	Specifies/cancels ANK download characters
ESC K (1B 4B n1 n2 d1 ... dk)	Standard density bit image
ESC L (1B 4C n1 n2 d1 ... dk)	High density bit image
ESC k (1B 6B n1 n2 d1 ... dk)	Fine density bit image
ESC X (1B 58 n1 n2 d1 ... dk)	Fine density bit image (Compatible with 24 bit wire dots)
ESC FS q (1B 1C 71 n[x11 x12 y11 y12 d1 ... dk]1 ... [xn1 xn2 yn1 yn2 d1 ... dk]n)	Register logo
ESC FS p (1B 1C 70 n m)	Print logo
ESC RS L (1B 1E 4C m)	Print logo in batch/Batch control of registered logos
ESC b (1B 62 n1 n2 n3 n4 d1 ...dk 1E)	Print bar code
ESC d (1B 64 n)	Paper cutter instruction
ESC BEL (1B 07 n1 n2)	Set external drive device 1 pulse width
BEL (07)	External device 1 drive instruction
FS (1C)	External device 1 drive instruction
SUB (1A)	External device 2 drive instruction
EM (19)	External device 2 drive instruction
ESC GS BEL (1B 1D 07 m t1 t2)	Ring buzzer
ESC GS EM DC1 (1B 1D 19 11 m n1 n2)	External buzzer drive pulse condition

	settings
ESC GS EM DC2 (1B 1D 19 12 m n1 n2)	External buzzer drive execution
ESC RS d (1B 1E 64 n)	Set print density
ESC RS r (1B 1E 72 n)	Set print speed
ESC RS a (1B 1E 61 n)	Set status transmission conditions
ESC ACK SOH (1B 06 01)	Real-time printer status (ASB status)
ENQ (05)	Real-time printer status (1)
EOT (04)	Real-time printer status (2)
ESC ACK CAN (1B 06 18)	Execute real-time printer reset
ETB (17)	Update ASB ETB status
ESC RS E (1B 1E 45 n)	Initialize ASB ETB counter and ETB status
ESC p (1B 70)	Specify Chinese character mode
ESC q (1B 71)	Cancel Chinese character mode
ESC \$ (1B 24 n)	Specify/cancel Chinese character mode
ESC s (1B 73 n1 n2)	Set 2 byte Chinese character left/right spaces
ESC t(1B 74 n1 n2)	Set 1 byte Chinese character left/right spaces
ESC r (1B 72 c1 c2 d1 ... dk)	Register Chinese download characters
ESC @ (1B 40)	Command initialization
ESC ? (1B 3F 0A 00)	Reset printer (execute self print)

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