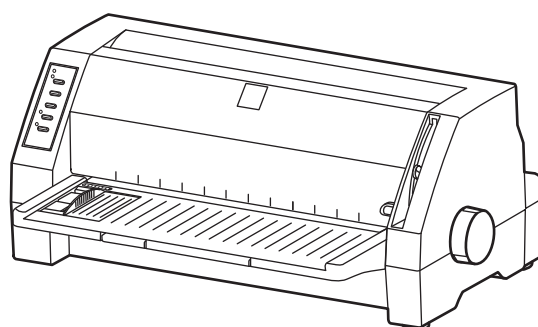




User's Manual

DP650

Flatbed Bill Printer



Important Safety Instructions

1. Read all of these instructions carefully and thoroughly and save them for later reference.
2. Follow all warnings and instructions in the manual as well as marked on the product.
3. Unplug this product from the power outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to you or the product.
6. Slots and openings on the cabinet and the back or bottom are provided for air ventilation. To ensure reliable operation of the product and to protect it from overheating, do not block or cover these openings. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should never be placed near or over a radiator or heater. This product should not be placed in a built-in installation or kiosk stand unless proper ventilation is provided.
7. This product should be operated from the type of power source indicated on the rating label. If you are not sure of the type of power available, consult your local dealer or an electrician.
8. Depending on the country of shipment this product may be equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your local electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
9. Do not allow anything to rest on the power cord. Do not locate this product in a location so that the power cord will be walked or driven over or on.
10. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
11. Except as explained elsewhere in this manual, do not attempt to service this product yourself. Opening and removing those covers that are marked "Do Not Remove " may expose you to dangerous voltage points or other hazardous risks. Leave all servicing on those compartments to qualified service personnel.
12. The mains plug on this equipment must be used to disconnect the mains power.
13. 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. Adjust only those controls that are covered by the operating instructions since importer adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
 - E. If the product has been dropped or the cabinet has been damaged.
 - F. If the product exhibits a distinct change in performance, indicating a need for service.

Note: The contents of this manual may be changed without notice.

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

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Chapter 1 Overview

1.1 Features

Thank you for purchasing this Jolimark printer.

This versatile, 24-pin, flatbed High speed Bill printer is ideal for a wide range bill printing requirements, especially for fax, mail, telecom, police, hospital, insurance, finance, stock, customhouse, cabaret, aviation and transport etc.

106 Column Flatbed Paper-feed Mechanism

Newly-style 106 column flatbed printer can feed the paper smoothly. Special designed paper guide makes you reassured to print continuously. So that some document papers, such as multi-copy report, multi-copy bill, envelope, postcard and label and so on, can smoothly in and out without jam.

Easy Paper Installing

Paper installing design of this printer makes you install paper conveniently. Fast paper installing can also save your time.

Automatic paper Load/Eject Function

Cut sheet may be fed from the front of the printer automatically. Finish printing, the paper may be automatically fed back to the front of the printer. Tractor paper is installed on the tractor. Press **LOAD/EJECT** key, paper may be fed to print position automatically. Finish printing, the paper may be fed to the front of the printer in order to tear conveniently.

Zero tear-off Function

This causes tractor paper to be automatically fed to the tear-off position at the edge of the window cover, for easy tear-off at the perforations after printing. This zero tear-off capability helps eliminate paper wastage.

Facility switch between cut-sheet and tractor paper

Feed the tractor paper back to the installing position through **LOAD/EJECT** key on the control panel, pull the paper select lever to the cut-sheet position. Insert the cut-sheet from front to print. If you want to use tractor paper again, pull the paper select lever back to the tractor paper position after cut-sheet printing. Then press **LOAD/EJECT** key, tractor paper may be fed to the printer again.

Automatic Interface Switching

The DP650 includes both a parallel interface, a USB interface, a serial interface or Ethernet interface. (According to specific interface standards) The printer automatically detects the type of data transfer received from the host computer and switches to the corresponding interface type.

High Resolution Graphics

A maximum resolution of 360×360 DPI enables the printer to produce fine, sharp graphics.

User-Friendly Control Panel

Current print status and access to all printer functions is available via simple commands from the control panel. In addition, the control panel is used to access the menu system (Setup Menu System) with complete control over the printer's set-up functions.

Emulation

The printer supports the Epson ESC/P2 emulation as standard.

Contain Letter Character Font

This print contain variously font of Roman, Sans Serif, Courier, Prestige, Script, OCR-A&B, Orator and so on which making printed document prettier.

Enhance Chinese Character Set

This printer contains GB18030 Chinese character set and also supports 4 bytes Chinese printing.

Compressing Printing

You can set compress print proportion through modifying the Menu System Setting of the printer. (Caution: High Speed mode and Super High mode is invalidated while the printer in Compress printing mode.) In addition, you can set the compress printing through driver. (Only set the compress printing through driver can High Speed printing mode and Super High Speed printing mode are valid.) The compress proportion of these two setting methods is compress relationship.

Facility Switch of High Speed Printing Function

This printer is special designed with one high speed button and one high speed indicator. In OFFLINE mode, the printer can switch among Normal speed, High speed and super high speed when press **SPEED** key repeatedly. Use high speed key can switch to high speed mode directly. When High speed indicator in on, indicates that the printer is in High speed printing mode. When High speed indicator blinks, indicates the printer is in super high speed printing mode. When High speed indicator is off, indicates the printer is in Normal speed printing mode. (In graphic printing mode, the printing efforts of High speed printing mode and Super high speed printing mode are the same.)

Facility Switch of Printing Mode

This printer is special designed with a **COPY** intelligent key. In OFFLINE mode, press **COPY** key on control panel and it can switch among NORMAL mode, "1+3" mode and "1+6" mode.

Facility Switch of Bill Print Mode

Facility switch of bill print mode is convenient for users to switch among different print modes quickly. According to different printing situations of "Invoice of value-added tax" and "Bill", using this function can quickly switch to correspondent print mode.

In ONLINE mode, holding **COPY** key for about 3 seconds, the printer enters "Invoice of value-added tax" print mode after beeping once.

In ONLINE mode, holding **SPEED** key for about 3 seconds, the printer enters "Bill" print mode after beeping once.

Note: When the printer is in "Invoice of value-added tax" print mode, the original printing position of the paper can not be adjusted.

Optional of Automatic Paper edge Detection, Any Position Paper feed Printing and Black Mark Detect Function

User can choose automatic paper edge detection, any position paper feed printing and black mark detect function optionally. Here, printer can detect the borderline of both sides automatically in order to ensure all the printing content is within the printable area. Also, it supports to feed the paper in any position of the paper feed path. Nevertheless, user can choose black mark detect function in the printer settings according to the type of print paper, the printer will carry out black mark detection.

Automatic Paper Skew Detection

The printer can detect the lean of the paper. If it is over the set lean, the printer will eject the paper automatically so that you can ensure the printing quality.

Contain Break Pin Compensation Function

User can set the printer to print using the pin which is in good condition to compensate the break pin.

Pin Switch Printing mode

User can set pins to switch while printing form transverse line in order to improve print head life.

Chapter 2 Preparation

2.1 Unpacking

Check each item against the following packing list, if any of these items are missing, please contact your local dealer.

NOTE

Hold the bottom of printer in the box, and then carefully lift it upwards. As you unpack, save all the original packing materials if possible. They are specially designed to protect the printer and will make repacking easy if necessary. Before you start using your new printer, please make sure to remove all the shipping pads from the printer. Open the window cover and remove the shipping pads made from white styrofoam.

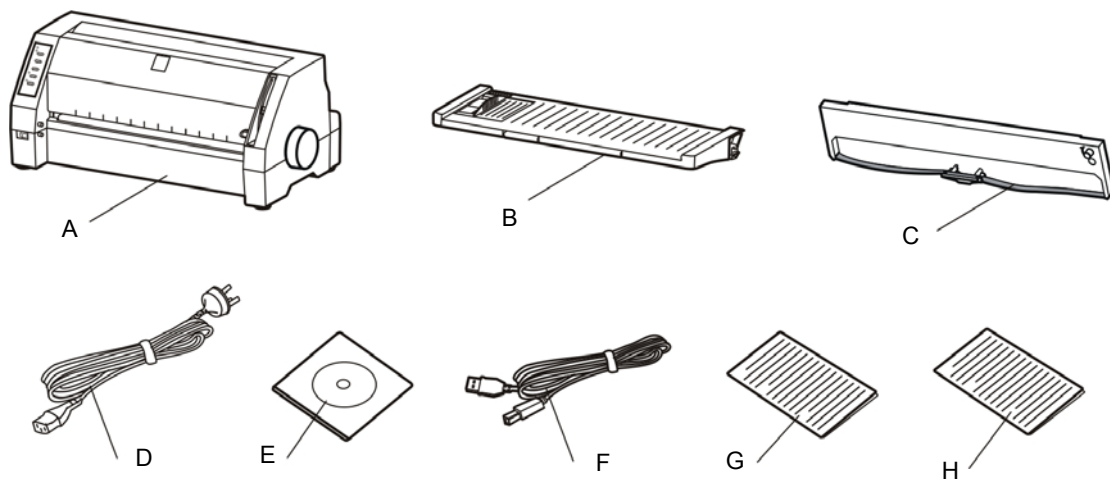


Figure 2-1 Packing list in the printer box

A	Printer	F	Interface cable
B	Front table	G	Facility user's guide
C	Ribbon cartridge JMR119	H	Packing list
D	Power cord		
E	Driver CD (Including <i>user's manual</i> and driver)		

Note: The fittings please refer the packing list. The packing style above is subject to change without notice.

2.2 Unpacking the Protective Materials

1. Open the packing box, lift up the printer, open the top cover of the printer, remove the packing materials as shown in Figure 2-2.
2. Save all the original packing materials, so that they can be used when transporting the printer.

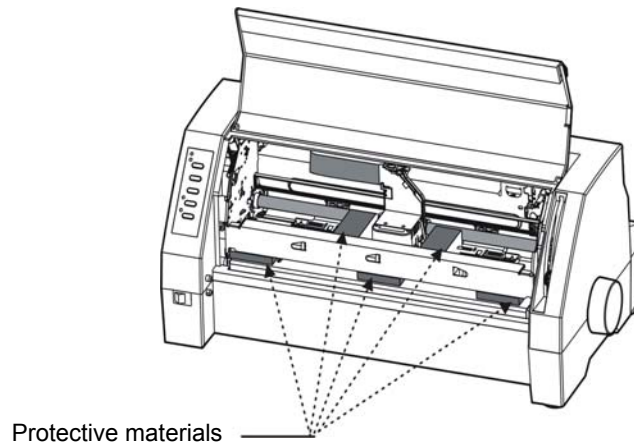


Figure 2-2 Unpacking the protective materials

2.3 Parts Identification

Figures 2-3 and 2-4 highlight the main components of the printer.

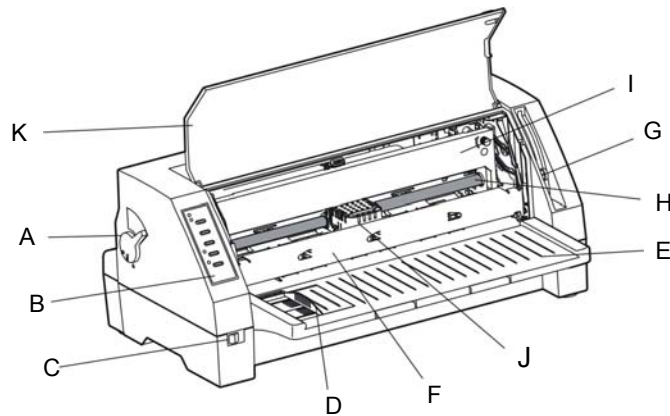


Figure 2-3 Main parts of printer (front view)

- | | | | |
|---|--------------------|---|------------------|
| A | Paper select lever | G | Gap adjust lever |
| B | Control panel | H | Carriage shaft |
| C | Power switch | I | Ribbon cartridge |
| D | Paper guide | J | Print head |
| E | Front table | K | Top cover |
| F | Sub friction lever | | |

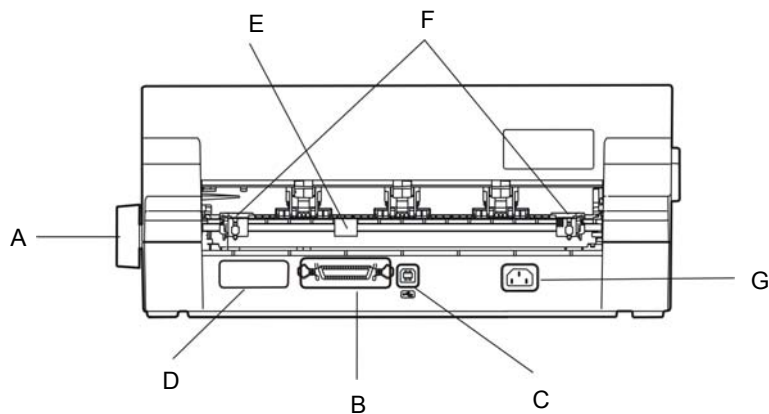


Figure 2-4 Main parts of printer (rear view)

- A Paper feed knob
- B Parallel interface
- C USB interface
- D Serial interface or Ethernet interface
- E Paper guide slider
- F Tractor
- G Power supply inlet

★ According to specific interface standards

2.4 Installation

Before placing the printer in your chosen location, consider the following guidelines:

- This printer should be placed on a normal table, printer stand or desk. Be sure that the surface is level, to avoid an uneven load on the carriage as it operates.
- Do not install the printer where it may be subjected to unsuitable conditions such as:
 - Where there is excessive dust.
 - Where it may be splattered with oil or metallic dust.
 - Where it may be exposed to direct sunlight.
 - Where it may be accidentally splashed with water.

2.4.1 Installing the Front Table

1. Hold both ends of the front table, make sure the install groove aimed at the positioning pin of crust inside (as Figure2-5 shown), then push it forward.
2. Press downwards the front table, making install groove locked on the positioning pin of the top.

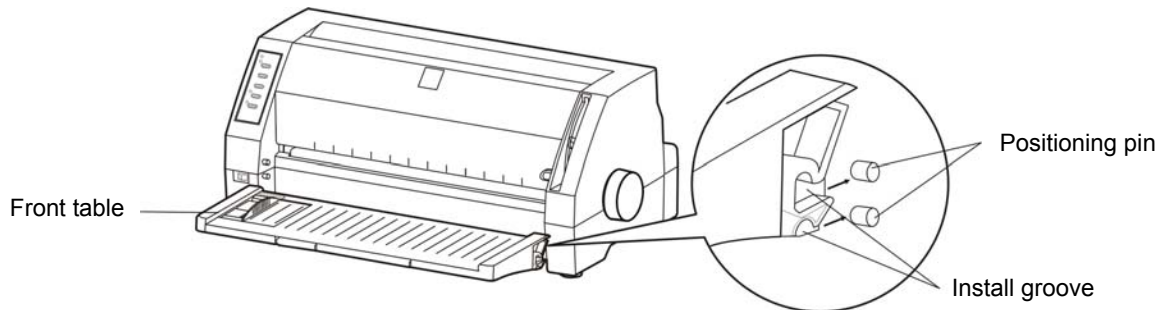


Figure 2-5 Installing the front table

2.4.2 Uninstalling the Front Table

Hold both ends of front table, Press the front table or printer slant side, lift it up and then take it out.

2.5 Installing and Replacing the Ribbon Cartridge

1. Turn off the printer.
2. Hold the concaves of the printer cover to open the top cover.
3. Hold up the sub friction lever. (As Figure2-6 shown)
4. Move the gap adjust lever to the highest position.
5. Move the print head to the middle of the printer.

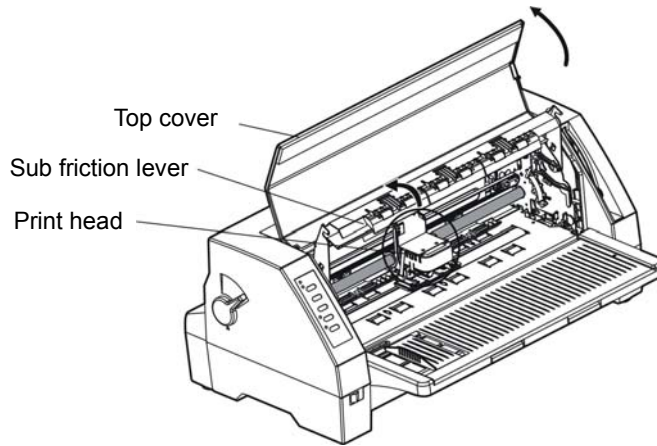


Figure 2-6 Opening the top cover and the sub friction lever

6. Turn the ribbon knob in the direction of the arrow to remove any slack from the ribbon so it is easier to install.

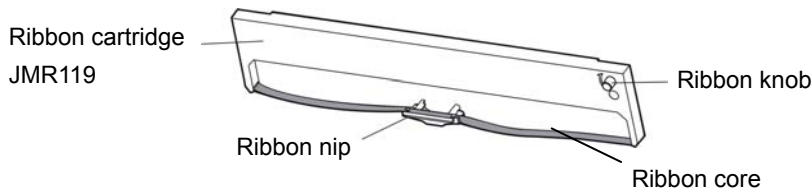


Figure 2-7 Ribbon cartridge

7. Hold both sides of the ribbon cartridge; aim the locking buckle at the install groove, push it front way until you hear a sound of “kacha”. Then aim the ribbon guide frame at the two poles on the carriage frame, fix it with pressure as shown in Figure2-8.
8. Use a pointed object, such as a pencil, to guide the ribbon between the print head and ribbon guide. Turn the ribbon knob to help feed the ribbon into place, it should not be twisted or creased.

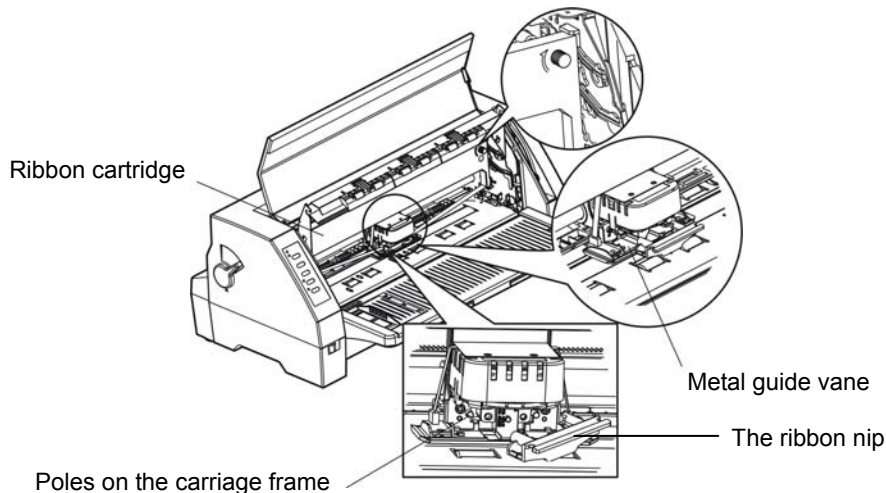


Figure 2-8 Installing the ribbon cartridge

9. Slide the print head from side to side to make sure it moves smoothly.
10. Having installed the ribbon, lower the sub friction lever and pull the gap adjust lever back to the former position. Then close the top cover.

Note: 1. When your print becomes faint, you need to replace the ribbon cartridge. Otherwise, the print quality will be affected and the print head may be damage.

2. To remove the old ribbon cartridge, first make sure the power is turned off, move the print head to the center of the printer. Then hold the ribbon cartridge handle on both sides and lift it out of the printer forwards. Install a new one as the above steps.
3. Never remove the print head when printer is on, or else the printer may get damaged. Besides, do not touch the print head at the time finishes using the printer for overheating.
4. Please use the Jolimark JMR119 ribbon cartridge, our company will not guarantee to keep the printer in good repair, when it is damaged by unauthorized ribbon cartridge.

2.6 Testing the printer

Before connecting the printer and computer, Please use the self-test function to examine if the printer working properly. Please refer to Printer Testing Function Chapter for details.

2.7 Connecting the Interface Cable

Your printer can be configured with parallel interface, USB interface, serial interface or Internet interface, (according to the specific interface standards). Connect the printer to your computer as described below. As Figure2-9, 2-10, 2-11, 2-12 shown.

Caution: Make sure that the power switches of both printer and host computer are turned off before you connect the parallel interface cable.

2.7.1 Connecting to the Parallel Interface Cable

1. Turn off both the computer and the printer. Plug the parallel interface cable securely into the printer's parallel interface. Squeeze the wire clips together until they lock in place on either side.
2. Plug the other end of the cable into the computer's parallel interface, and then tighten the screws on either side.

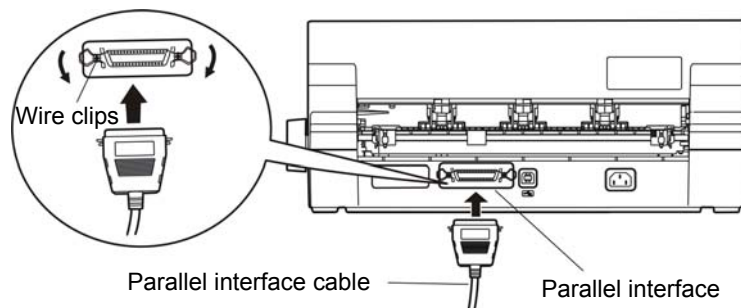


Figure 2-9 Connecting to the parallel interface cable

2.7.2 Connecting to 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.

Note: Don't impact the plug after connecting to the USB cable.

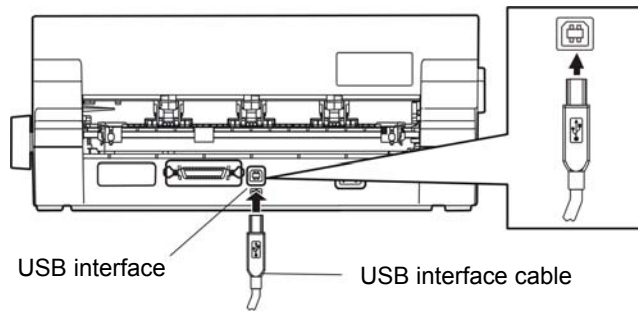


Figure 2-11 Connecting to the USB interface cable

2.7.3 Connecting to the Serial Interface Cable

1. Turn off both the computer and the printer. Plug the serial interface cable securely into the printer's serial interface. Squeeze the wire clips together until they lock in place on both sides of the connector.
2. Plug the other end of the cable into the computer's serial interface; then tighten the screws on both sides of the connector.

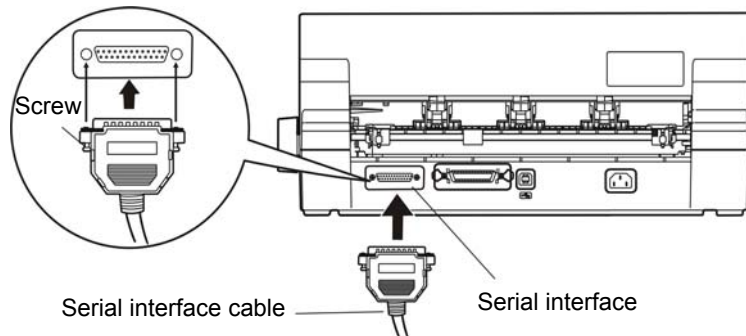


Figure 2-11 Connecting to the serial interface

2.7.4 Connecting to the Ethernet Interface Cable

Plug the RJ-45 crystal end of the Ethernet cable into the printer , and plug the other end into the LAN.(shown as Figure 2-12)

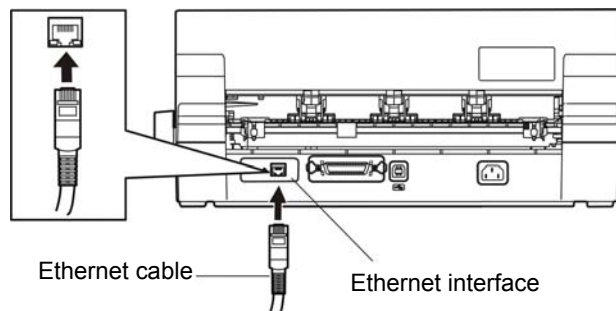


Figure 2-12 Connecting to the Ethernet interface cable

Note: The details of Ethernet interface printer's net setting please refer to the *User's Manual*.

2.8 Connecting to the Power Cord

1. Make sure the printer is turned off.
2. Make sure the voltage required by the printer matches that of your electrical outlet.

3. If the power cord is attached to the printer, connect it to the AC inlet on the printer.
4. Plug the power cord into a properly grounded electrical outlet.

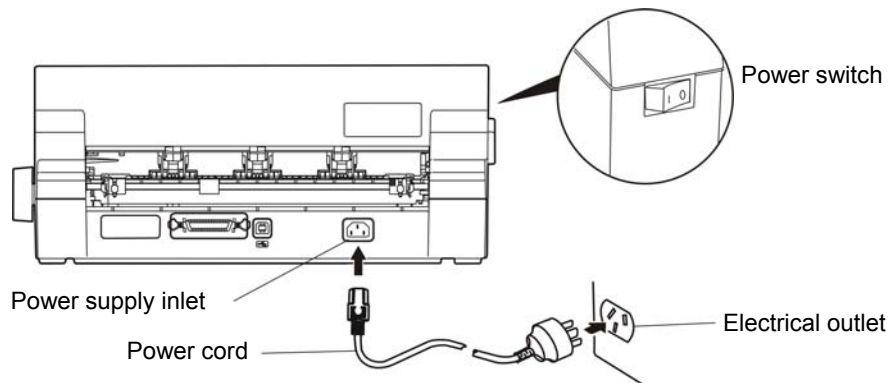


Figure 2-13 Connecting the power cord to the printer

- To turn the printer ON, press the **I** mark at the side of the power switch.
- To turn the printer OFF, press the **O** mark at the side of the power switch.

Caution: 1. If the rated voltage doesn't match the outlet voltage, contact your dealer for assistance. Do not plug in the power cord.
2. Use the electrical outlet connecting the ground properly.

2.9 Installing Driver

The Driver CD provides the printer drivers for Microsoft Windows 98, Windows 2000/XP and VISTA. 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:

Auto-install way

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

Hand-operated install way

Note: The hand-operated install ways of serial interface and parallel interface are the same.

The installing steps for Windows 2000/XP/Vista are as follows

1. Click "Start" -->"Settings", select "Printers".
2. Click "Add Printer", then it will show a window of "Add Printer Wizard", click "Next", then please read the select direct carefully, Such as, select "Local printer" in the "Local or Network Printer" window, then click "next".
3. Come out a window of "Select the Printer Port", select a usable port. Such as, select "LPT1: printer port", click "Next".
4. Come out a window of "Manufacturers/Printers", click "Have Disk...", click "Next".
5. Come out a window of "Install From Disk". Please according to the operating system environment, such as Windows XP operating system you should select the path as follow: CD-ROM-"Driver"-WIN2000 (XP-Vista-Win7)", that you can find a file named: DP650.inf, click "Open", then click "OK", click "Next".
6. Follow the direct click "Next" gradually till the installation is finished.

The installing steps for Windows 7 are as follows:

1. Click "Start" -->"Devices and Printers".
2. Click "Add a printer", then it will show a window of "Add Printer", click "Add a local printer", and then click "Next".
3. Come out a window of "Choose a printer port", select "Use an existing port", Such as, select "LPT1: Printer Port", click "Next".
4. Come out a window of "Manufacturers/Printers", click "Have Disk...", click "Next".
5. Come out a window of "Install From Disk". Please according to the operating system environment, such as Windows 7 operating system you should select the path as follow: CD-ROM-"Driver"-“WIN2000 (XP-Vista-Win7)”, where you can find a file named: DP650.inf, click "Open", then click "OK" to return to the window of "Manufacturers/Printers", click "Next".
6. Follow the direct click "Next" gradually till the installation is finished.

The USB interface installing steps for Windows 2000/XP/Visata/Win7 are as follows:

The following steps are used Windows XP as example. There are slight differences among different operating systems.

1. Connect an USB cable and turn on the printer.
2. After the computer find out new hardware and finish searching, come out a window of "Found New Hardware Wizard", choose "Install from a list or specific location (Advanced)", click "Next".
3. Come out a window of "Add New Hardware Wizard" ——"Windows operation", choose " Don't search, I will choose the driver to install ", click "Next".
4. Come out a window of "Hardware Type", select "Printer", click "Next". Come out a window of "Manufacturers/Printers", click "Have Disk..." click "Next".
5. Come out a window of "Install From Disk". Please according to the operating system environment, you should select the path as follow : CD-ROM-"Driver"-“WIN2000 (XP-Vista-Win7)”, where you can find a file named: DP650.inf, click "Open", then click "OK" to return to the window of "Add printer wizard" , click "Next".
6. Follow the direct click "Next" gradually till the installation is finished.

The installing steps for Windows 98 are as follows :

(1) The installing steps with a parallel cable or a serial cable:

1. Click "Start" -->"Settings"-->"Printers".
2. Click "Add Printer", then it will show a window of "Add Printer Wizard", click "Next", then please read the select direct carefully, Such as, select "Local printer" in the "Local or Network Printer" window, then click "Next".
3. Come out a window of "Click the manufacturer and model of your printer", click "Have Disk...", please click "Browse", select the path as follow: CD-ROM-"Driver"-“WIN98 (WINME) ", where you can find a file named: DP650.inf, click "Open", then click "OK".
4. Come out a window of "Install From Disk", click "OK, return to a window of " Add Printer", then click "Next".
5. Come out a window of "Printer port", select "Available ports", Such as, select "LPT1: Printer Port", click "Next", and then show the printer's name. If the system is not installed by other printer driver process, the printer is treated as default printer by the application process of Window98 environment, click "Next". Otherwise according to prompt, choose the printer is default: "Yes", click "Next", choose "Yes-(recommended)", click "Finish". Come out a window of "Printer test page completed!", click "Yes".
6. The printer driver process is installed successfully.

(2) The installing steps with an USB cable:

Note: 1. As the system of Windows 98/ME doesn't have integrated USB driver control, please install USB driver before using USB interface printing. Then install USB printer driver.

2. If it has installed the USB driver, please install the USB printer driver directly as the following steps.

USB driver installing steps:

1. Connect an USB cable and turn on the printer.
2. After the computer find out new hardware and finish searching, come out a window of "Add New Hardware Wizard", click "Next".
3. Come out a window of "Add New Hardware Wizard" ——"Windows operation" ,choose "Search the best driver for the device(recommended)", click "Next".
4. Come out a window of "Search for new drivers", check "Specify a location", click "Browse" , select the path as follows: CD-ROM-"Driver"- "【WIN98 (WINME) \USB driver】" , then click "OK".
5. Return to a window of "Search for new drivers", click "Next"; Come out a window of "Windows driver file search for the device", click "Next".
6. After the system finishing installing the file automatically, come out a window of "USB print supported, click "Finish".
7. The printer USB driver process is installed successfully.

USB printer driver installing steps:

1. Click "Start" -->"Settings"-->"Printers"
2. Click "Add Printer", then it will show a window of "Add Printer Wizard", click "Next".
3. Come out a window of "Click the manufacturer and model of your printer", click "Have Disk...", please click "Browse", select the path as follow : CD-ROM-"Driver"- "WIN98 (WINME) " , where you can find a file named: DP650.inf "Open", and then click "OK".
4. Come out a window of "Install From Disk", click "OK", return to a window of "Add Printer", then click "Next".
5. Come out a window of "Printer port", select "Available ports", select "JMUSB", click "Next", and then show the printer's name. If the system is not installed by other printer driver process, the printer is treated as default printer by the application process of Window98 environment, click "Next". Otherwise according to prompt, choose the printer is default: "Yes", click "Next" choose "Yes-(recommended)", click "Finish". Come out a window of "Printer test page completed!", click "Yes".
6. The printer driver process is installed successfully.

2.10 Network Settings

Please use Jolimark network setting software NetFinder to set the IP address for Jolimark printers, which can be found in the CD or downloaded from www.jolimark.com.

Caution: The network printing function needs the operation system of Windows2000 or above.

2.10.1 Connecting Printer

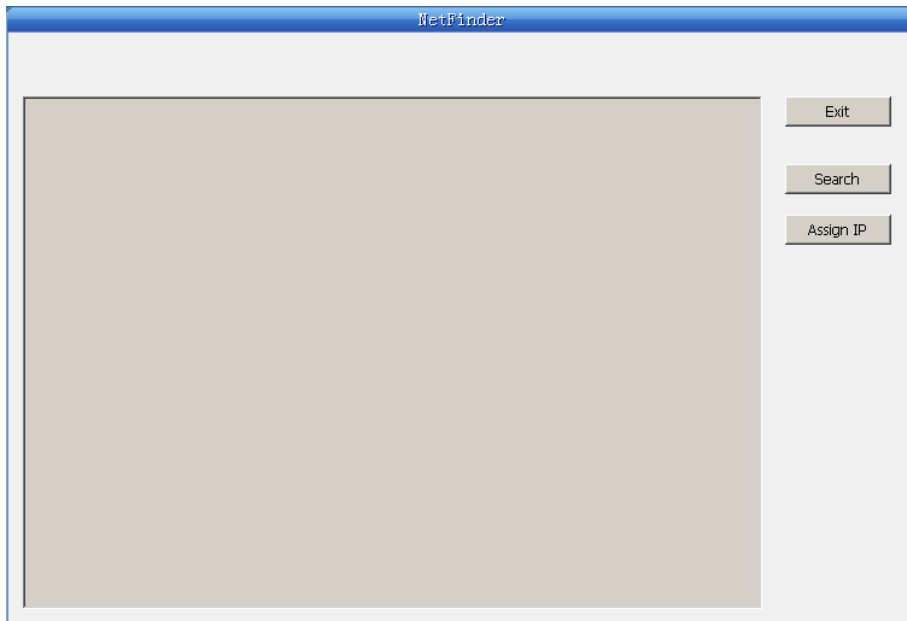
Power on the printer, connect with the Ethernet cable which has been connected to LAN, and look into the information of Ethernet LED indicator to ensure the printer has entered into the normal connection.

Yellow LED	Green LED	Description
ON	Flash	Normal
OFF	OFF	Not connect to network

2.10.2 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:

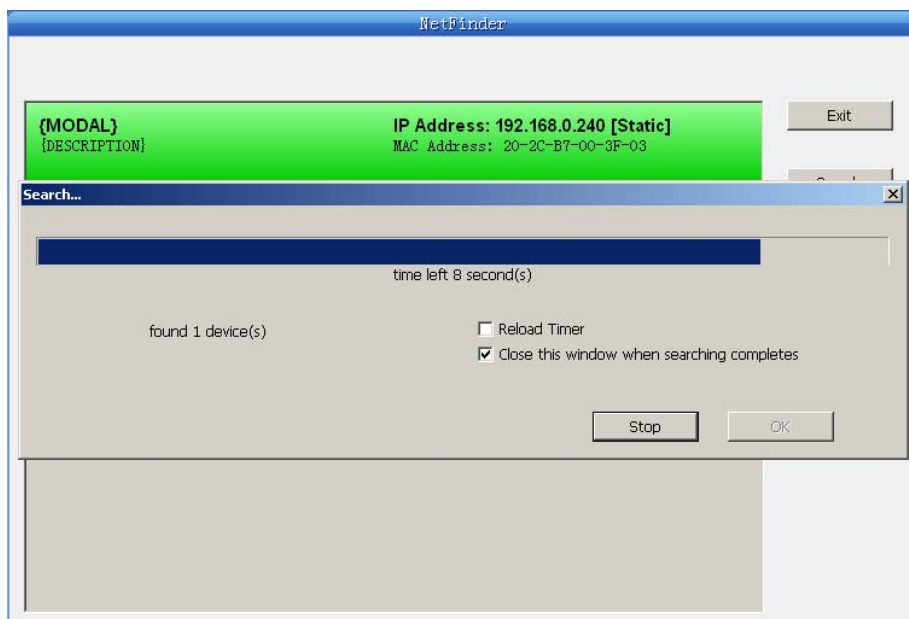
Exit—Exit from the software

Search—Search printers in the same LAN

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

2. Searching printer

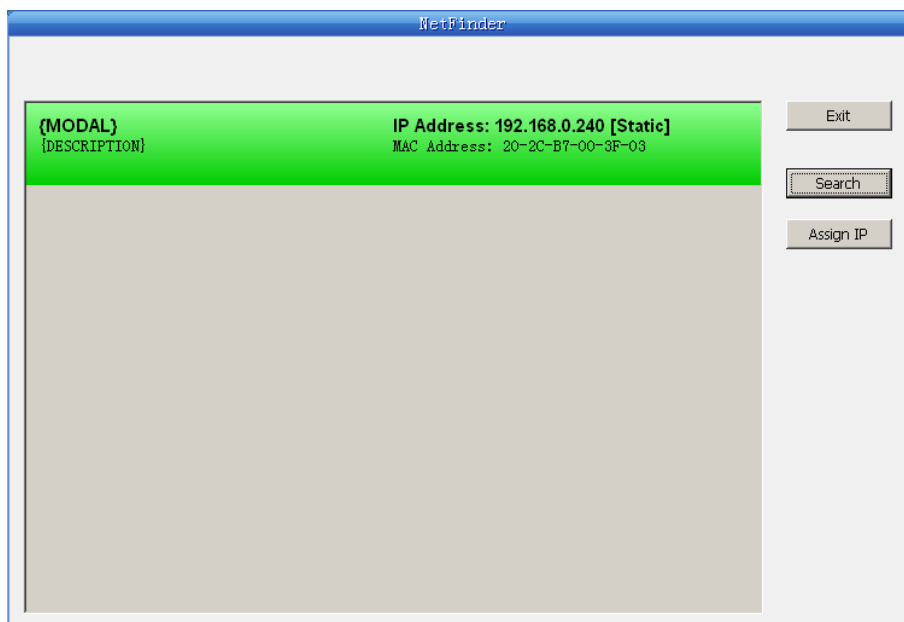
Click "Search" button in the main interface, the dialog box appearing will begin searching automatically and show appearance, listing a printer in the main interface if found. The time is counting down in the progress bar (10s in total) and the search will finish as soon as the time is over. When going on searching, press "search" button again.



If the printer still can not be found out when the network connection is correct and in the same network, Please check whether the network fire wall on the PC open or not. If there is fire wall, please close it temporarily, open again after finishing searching and setting a 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 is the IP 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 and printer is set to DHCP mode as well, 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 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 IP in used. It is not restricted for NetFinder to search printers in the same network but different segment parts (can not stride gateway). Relative glossary of IP address may refer to corresponding information.

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 dialog box appearing.

Check the “Use DHCP” if need 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. The printer takes response after “Close this window on success” is checked, and then this dialog is closed automatically. Select “Reload Timer” then the software will wait for the printer’s response. Generally, printer will take response in a circle time if network connection is correct.

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.

3) Report printer’s IP address

Report 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)”.

2.10.3 Installing Printer Network Driver

The ways of installing network driver are divided into Newly-install way and Upgrade-install way according to whether the PC installs 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

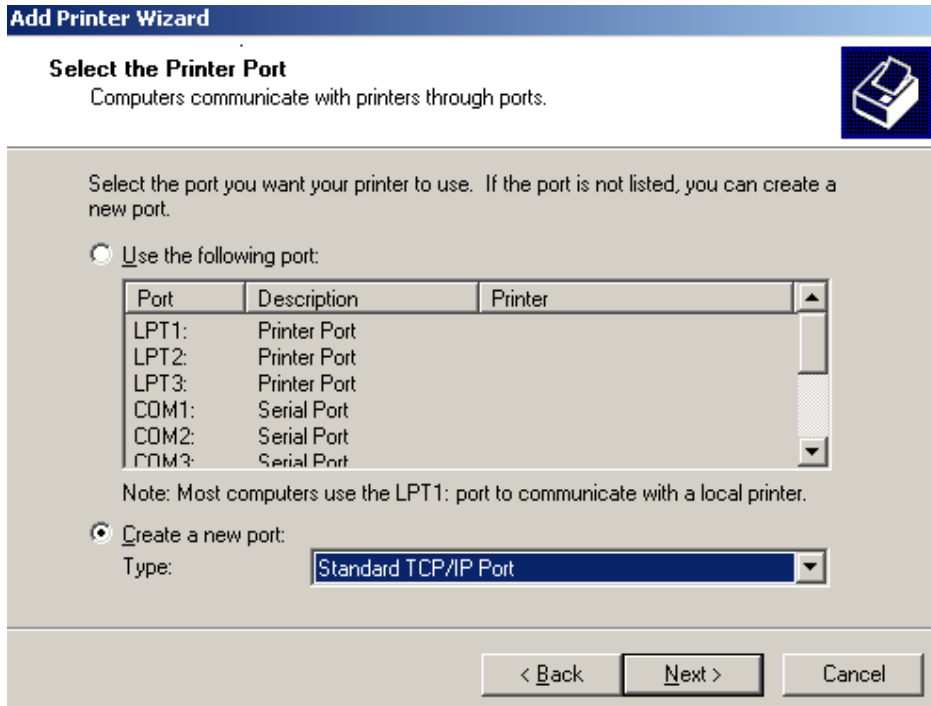
1) Click “Start” → “Settings”, select “Printers”.

2) Click “Add printer”, then come out a window of “Add Printer Wizard”, click “next”,

3) Come out a window of “Add Printer Wizard”, then please read the select direct carefully. Such as, select “local or Network Printer”, then click “next”.

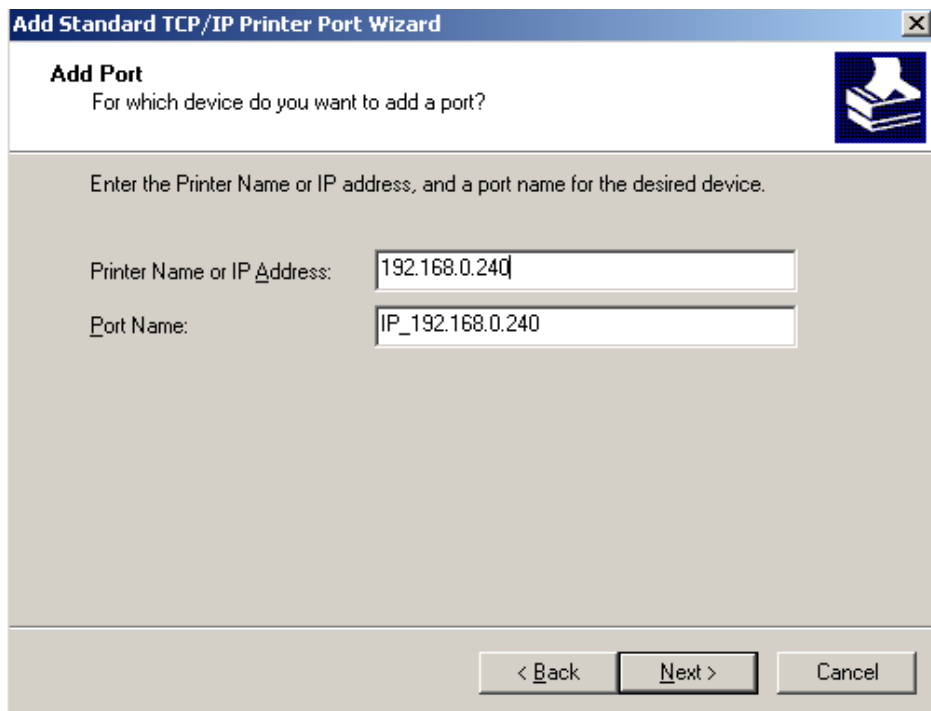
4) Come out a window of “Select the Printer port”, select a port you want your printer to use. For

example, select "Create a new port", select "Standard TCP/IP Port" in the port, click "next".

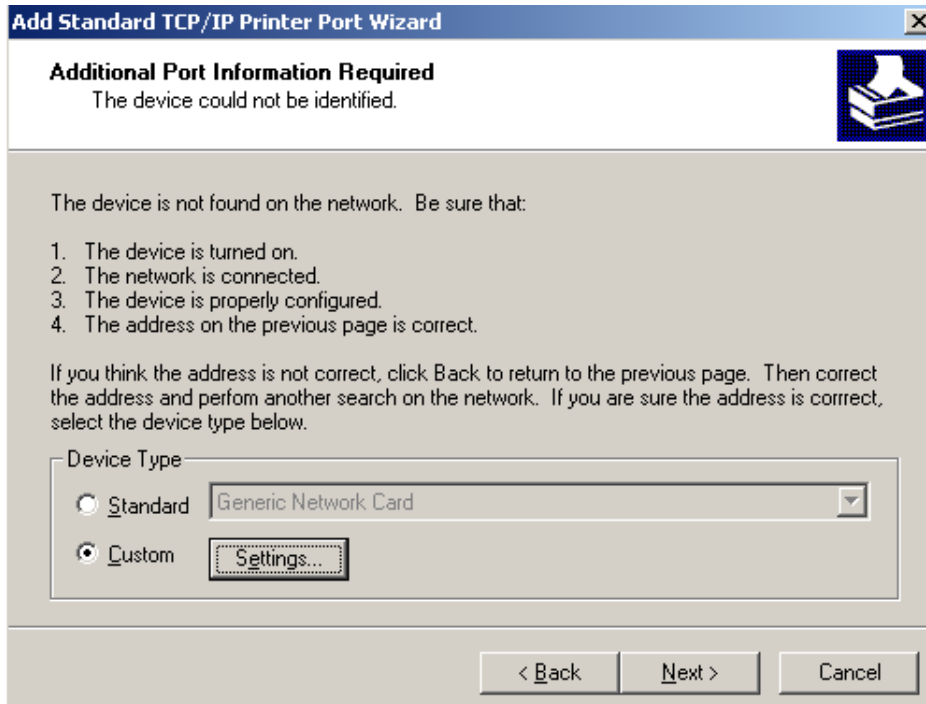


5) Come out a window of "Add standard TCP/IP Printer Port Wizard", click "Next".

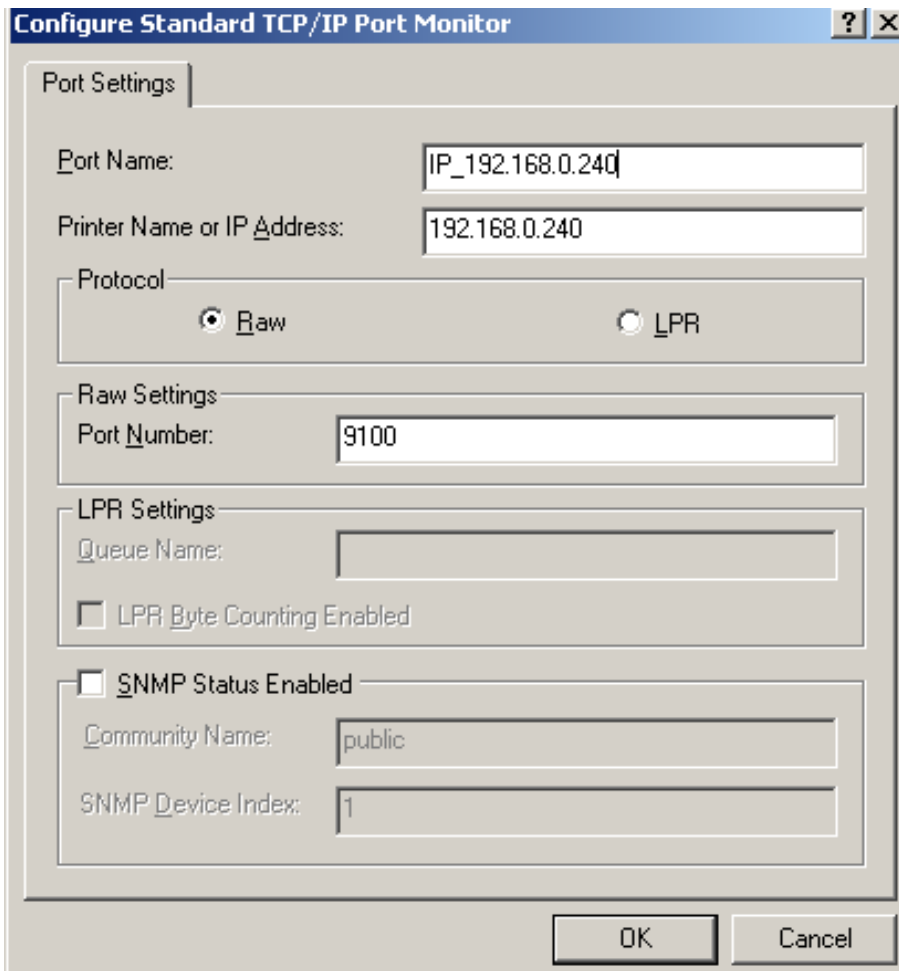
6) Come out a window of "Add Port", enter the IP address reported by the "Setting printer's IP address" in the "Printer Name or IP Address" column. Take IP address "192.168.0.240" for example. "Port Name" is created automatically after finishing filling in IP address.



7) Come out a window of "Additional Port Information Required", select "Custom" in the "Device Type", and then click "Settings".



- 8) Come out a window of "Port Settings". Affirm that "Port name" and "Printer name or IP address" are correct, "Protocol" is "RAW" and "Port Number" is "9100", click "OK".

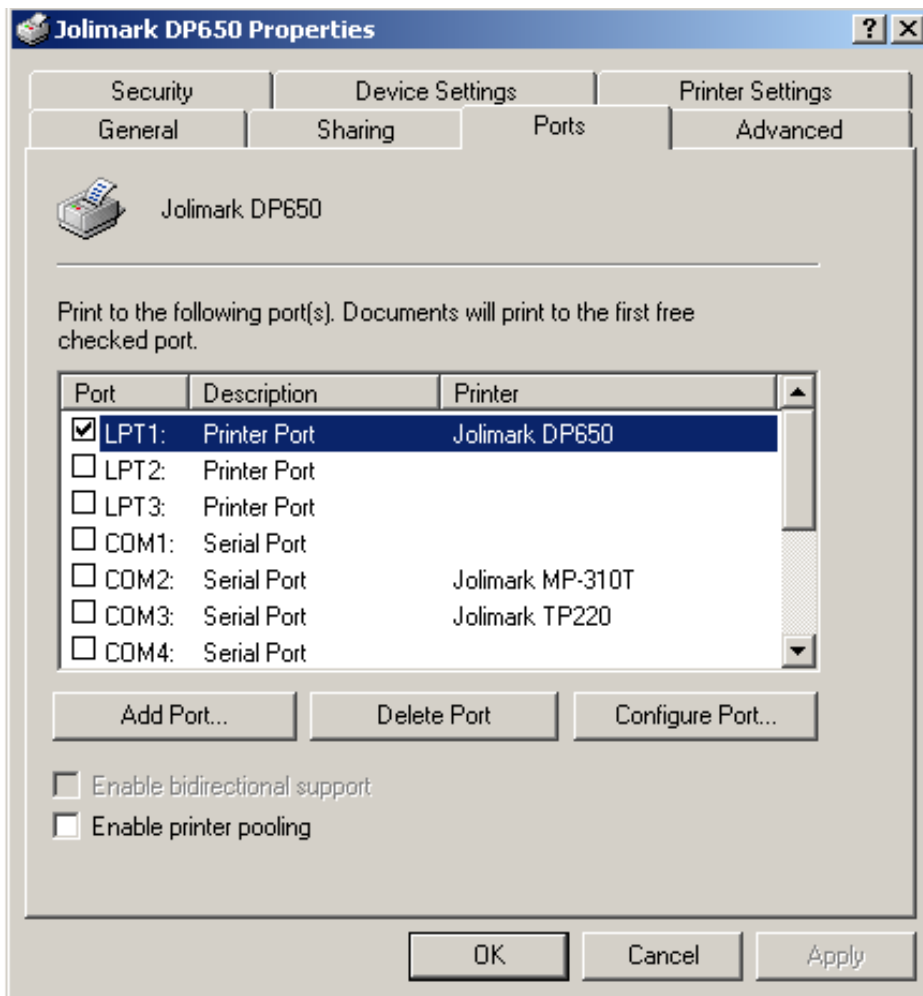


- 9) Return to "Additional Port Information Required", click "Next".
- 10) Come out a window of "Completing the Add Standard TCP/IP Printer Port Wizard", click "Finish".
- 11) In the selection of "Manufacturers/Printers", click "Have Disk", and then click "Next".
- 12) Come out a window of "Install From Disk". Please according to the operating system environment, such as Windows XP operating system you should select the path as follows: CD-ROM-"Driver"- "WIN2000 (XP-Vista-Win7)", that you can find a file named: DP650.inf, click "open", then click "OK", then return to the window "install printer software", click "next".
- 13) Follow the direct click "next" gradually till the installation is finish. At this time, printer network driver is installed completely.

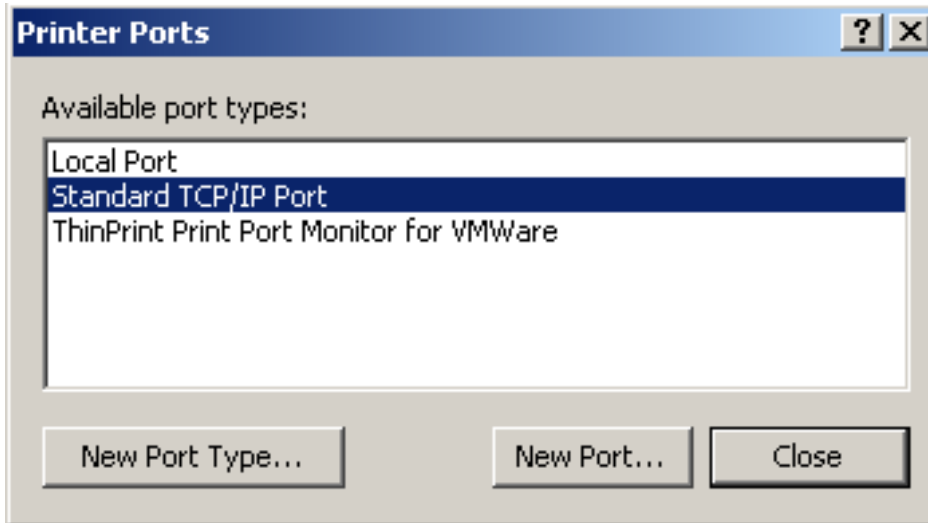
2. Upgrade-install printer network driver (setting driver's network port)

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

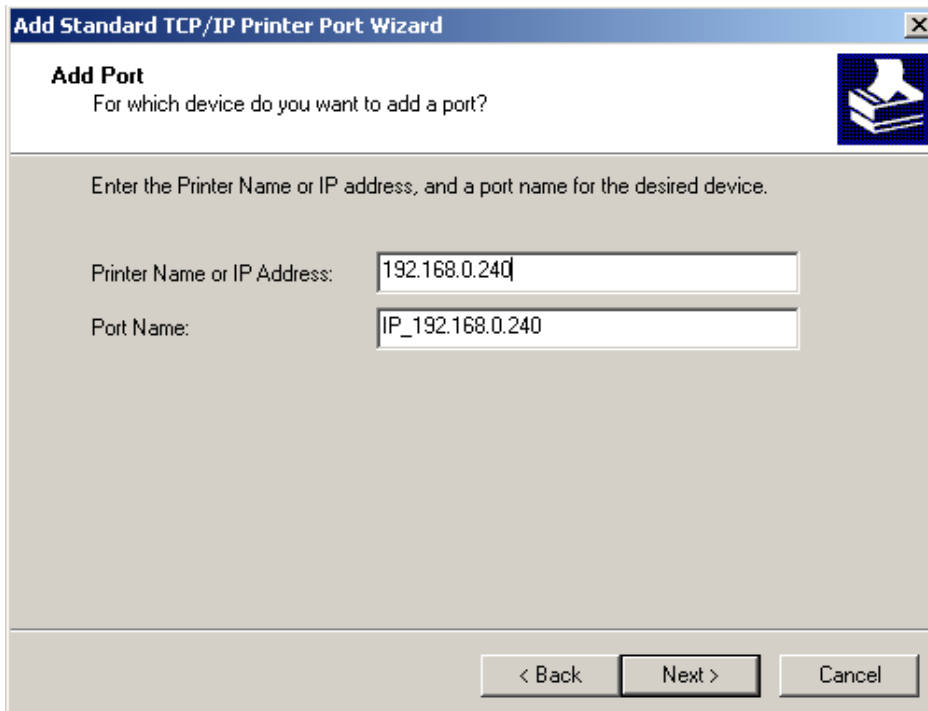
- 1) Click "Start" → "Settings", select "Printers"
- 2) Right click DP650 driver, click "Properties" on the window coming out.
- 3) Come out a window of "Properties", click "Ports" and "Add Ports".



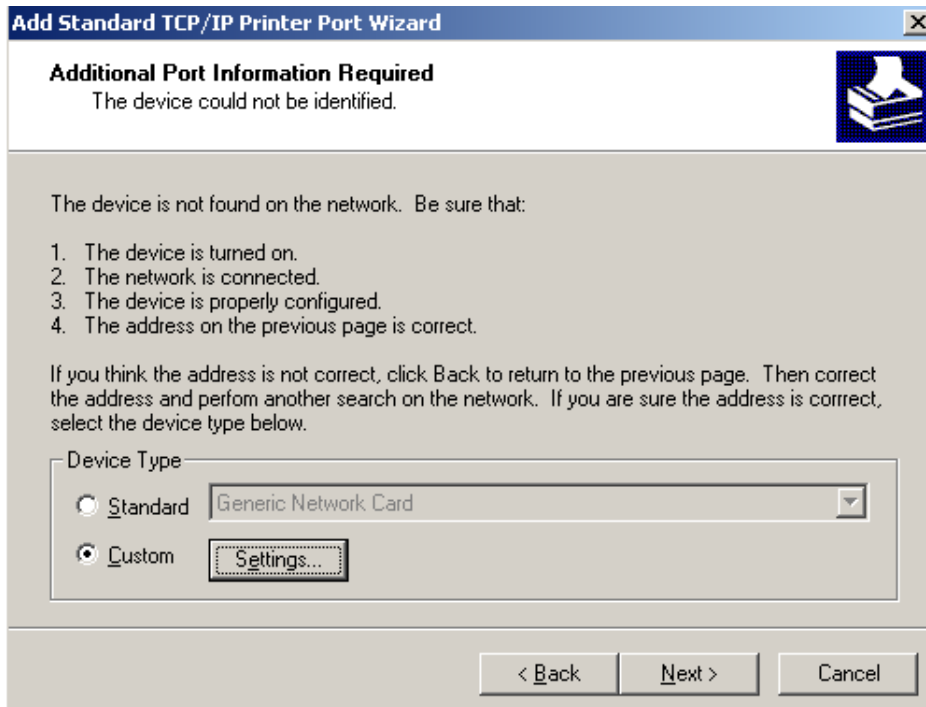
- 4) Come out a window of "Printer port", select "Standard TCP/IP Port", click "New port".



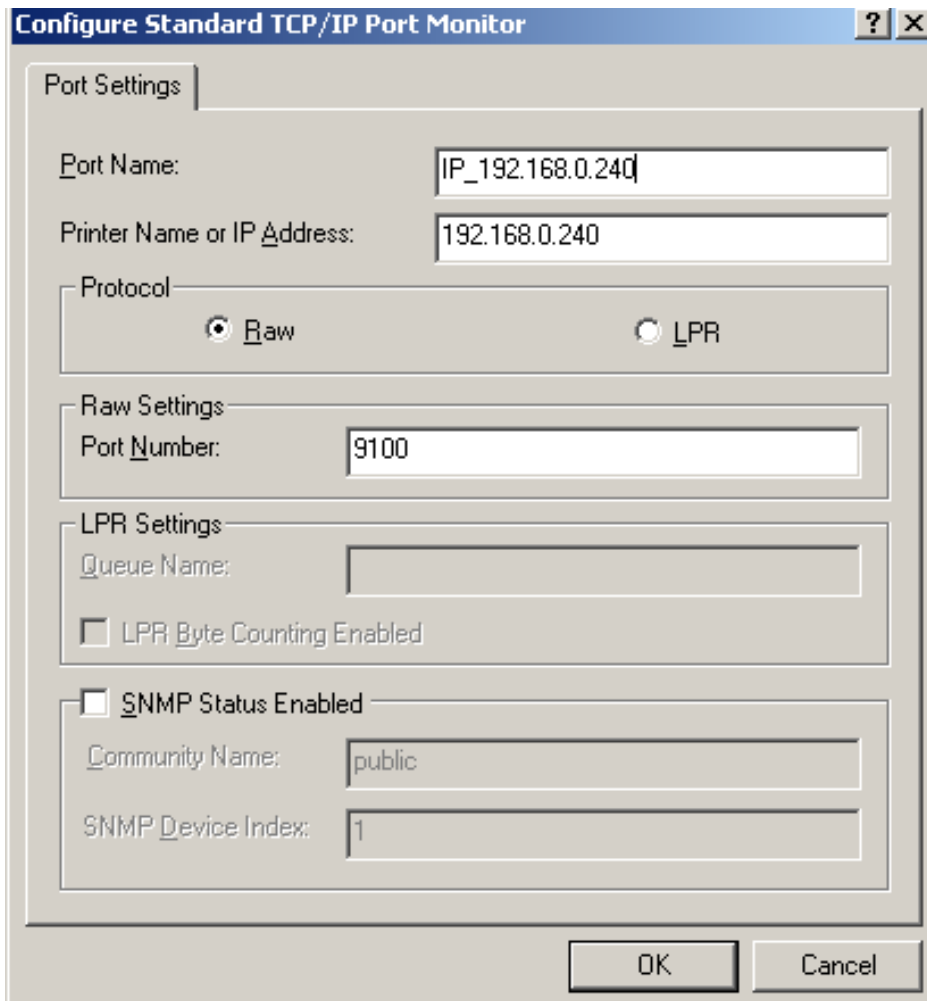
- 5) Come out a window of "Add Standard TCP/IP Printer Port Wizard", click "Next".
- 6) Come out a window of "Add a port", import the IP address reported by the "Setting printer's IP address" in the "Printer name or IP address" column. Take IP address "192.168.0.240" for example. "Port name" is created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



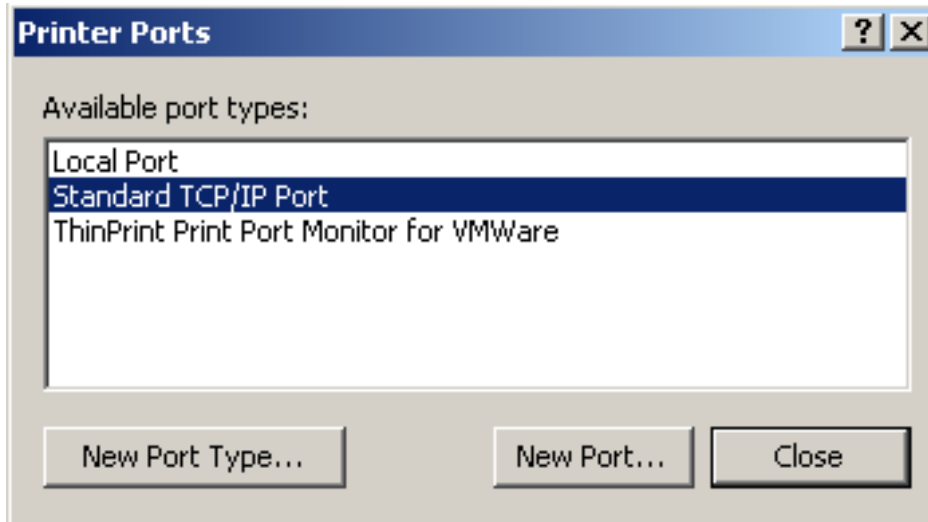
- 7) Come out a window of "Port information", select "User-defined" in the "Equipment style", then click "setting". Come out a window of "Additional Port Information Required", select "Custom" in the "Device Type", then click "settings".



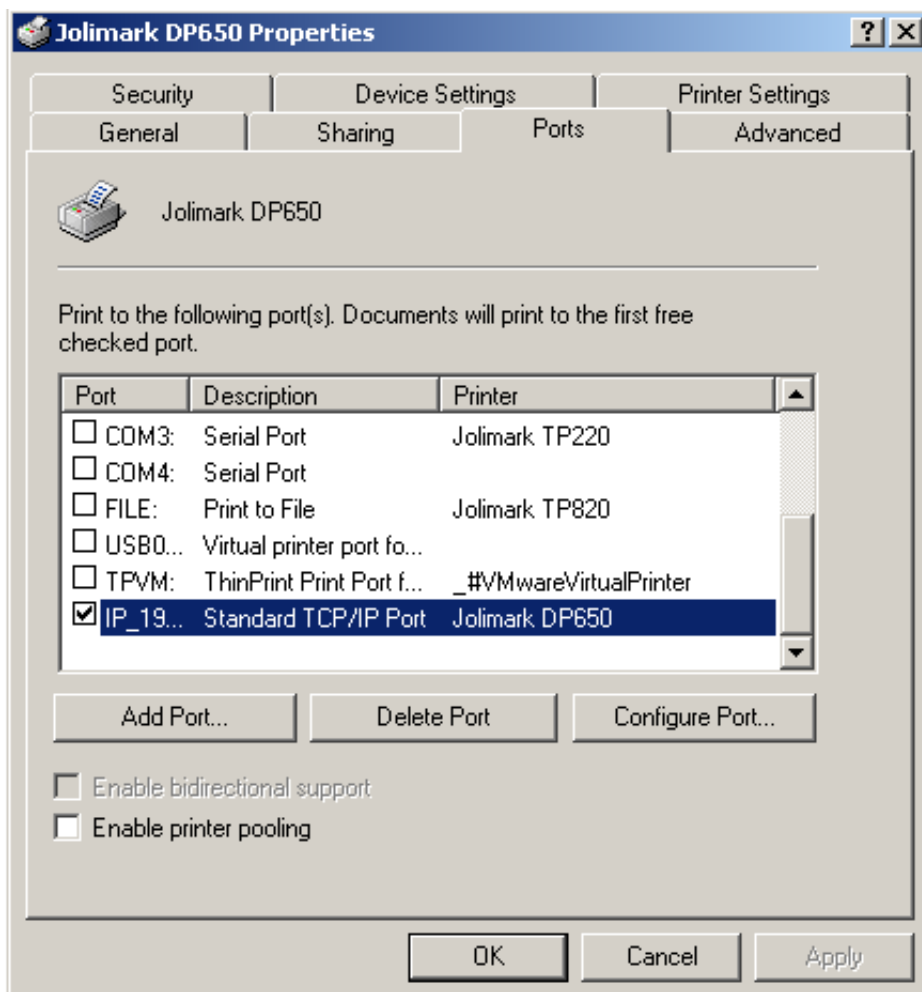
- 8) Come out a window of "Port Settings". Affirm that "Port name" and "Printer name or IP address" are correct, "Protocol" is "RAW" and "Port Number" is "9100", click "OK".



- 9) Return to "Additional Port Information Required", click "Next".
- 10) Come out a window of "Completing the Add Standard TCP/IP Printer Port Wizard", 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 Loading paper

3.1 Paper Thickness Adjustment

Before loading cut sheet or tractor paper, you have to adjust the gap adjust lever on the front right side of the printer.

To feed thicker papers through the printer, you need to move the gap adjust lever from its standard position.

The lever moves the print head relative to the platen so that there is more room for the paper.

Adjusting the gap adjust lever

To obtain good quality printing and prevent problems (paper jam etc.), adjust the gap adjust lever as shown in Figure 3-1. The scale number # 1 shown in Figure 3-1 identifies the standard paper thickness setting. This is the recommended setting for most paper. Use Table 3-1 to find the recommended setting for other paper.

Table 3-1 Paper thickness setting

Paper type	Position	
Thick paper	4-5	
Fanfold paper	7	2.5-3
	5-6	2.5
	4	1.5-2
	2-3	1.5
Single sheet	1	
For reference only.		

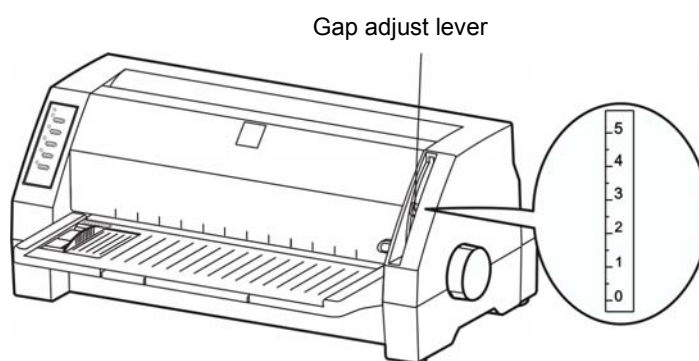


Figure 3-1 Setting the gap adjust lever

Remark:

Position	Paper thickness
1	0.06 mm-0.12 mm
1.5	0.12 mm-0.22 mm
2	0.22 mm-0.32 mm
2.5	0.32 mm-0.42 mm
3	0.42 mm-0.52 mm
3.5	0.52 mm-0.62 mm
4	0.62 mm-0.70 mm
4.5	0.70 mm-0.78 mm
5	0.78 mm-0.85 mm

3.2 Loading Cut Sheet Paper

1. Turn the printer on.
2. Set paper select lever toward the back of printer as shown in Figure 3-2.

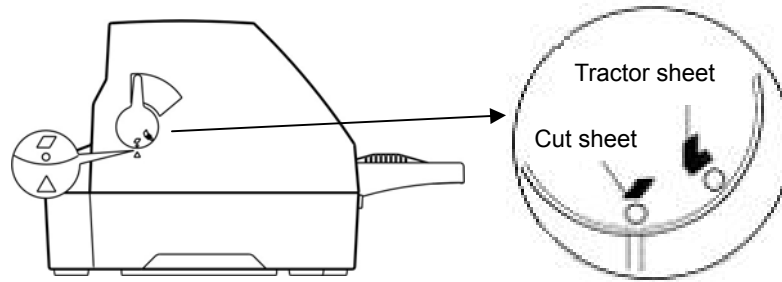


Figure 3-2 Setting the paper select lever

3. Set the gap adjust lever for example to the position "1" for thin paper.
4. Position the left cut sheet guide by referring to the marking on the window cover. The positions for A4 and letter size paper are indicated on the left side of the window cover as shown in Figure 3-3.

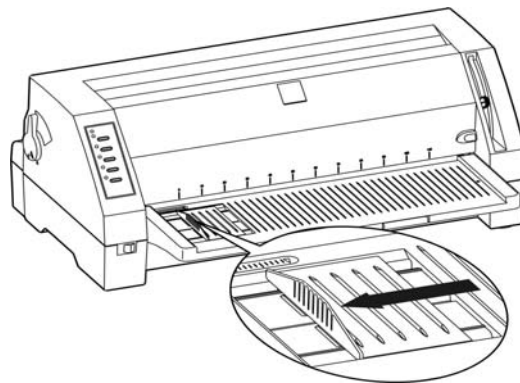


Figure 3-3 Adjusting the paper guide

5. Please pull out the small front table extension tabs if the size of paper is long and requires extra support, as shown in Figure 3-4.

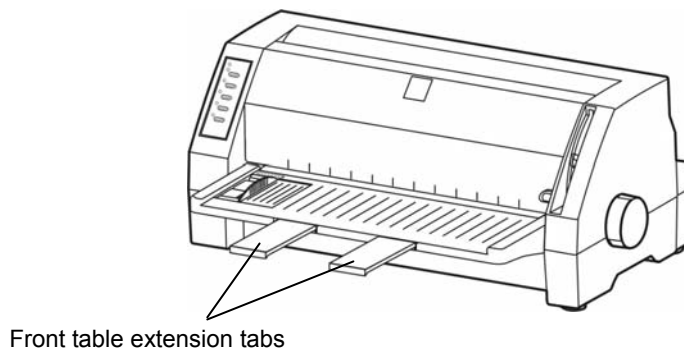


Figure 3-4 Pull out the small front table extension tabs

6. Insert the paper as shown in Figure 3-5.
The paper is fed into the printer automatically and stops at the printing home position. You can set the printer to detect skew so if the paper skews during loading, the printer detects it and automatically ejects the paper to the front table.

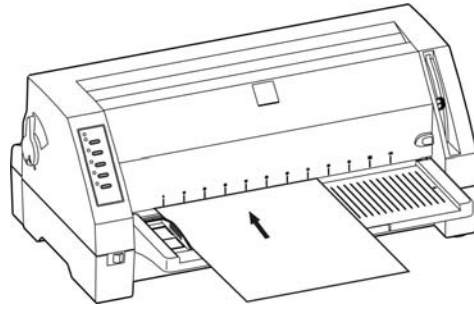


Figure 3-5 Loading cut sheet

After the above steps, the printer is ready to print.

NOTE

The printer's skew detection level can be set within the Setup Menu System. Be careful with the lowest possible setting because the printer might reject the paper due to even the smallest skew. If this happens, try a medium setting.

3.3 Using Tractor Paper

This printer feeds tractor paper from the rear of the printer to the front.

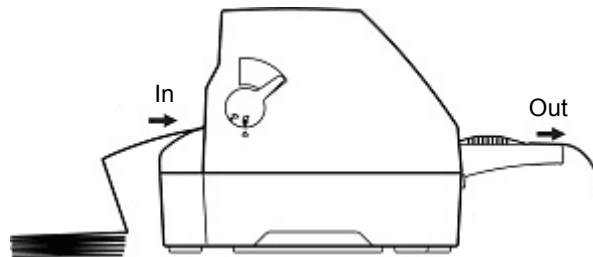


Figure 3-6 Feeding direction of tractor paper

1. Turn the printer on.
2. Set paper select lever toward the front of printer as shown in Figure 3-7.

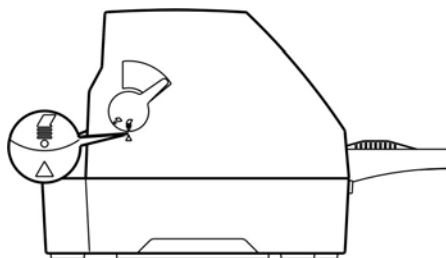


Figure 3-7 Setting the paper select lever

3. Move the left cut sheet guide to the far left as much as possible.

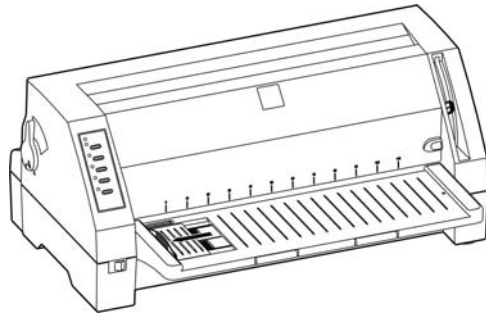


Figure 3-8 Moving the left paper guide to the far left

4. Release the lock lever of tractor.

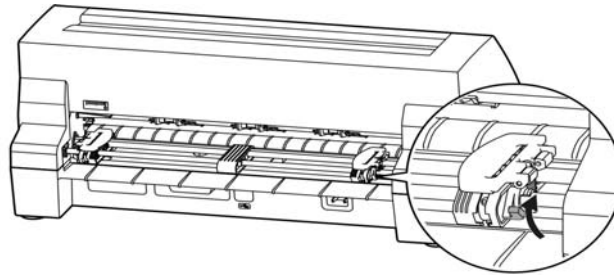


Figure 3-9 Releasing the lock lever of the right tractor (view from rear)

5. Move the left tractor to the left proper position (The "0" position indicates the horizontal printing home position). When moving the left tractor to the leftmost position, the distance between the printing home position and the centre of the sprocket pins is 11.75 cm. Lock the left tractor. Moving the right tractor to the proper position, but do not lock it yet.

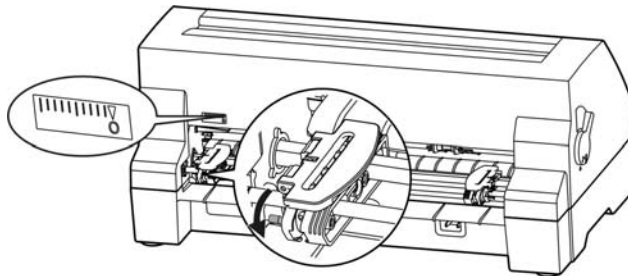


Figure 3-10 Adjusting the tractor position

6. Move the paper guide pulleys to the center between the left and right tractor.

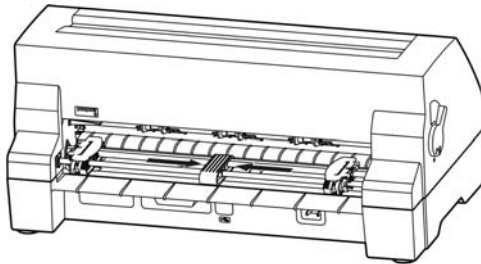


Figure 3-11 Adjusting the paper guide pulley position

7. Open the tractor covers and place the paper on the sprocket pins. If you are using preprinted paper or labels, install them with the printed or labeled side facing upwards.

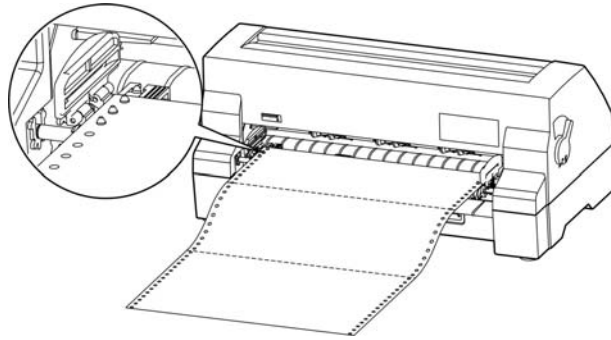


Figure 3-12 Setting paper on the sprocket pins

8. Close the tractor covers.

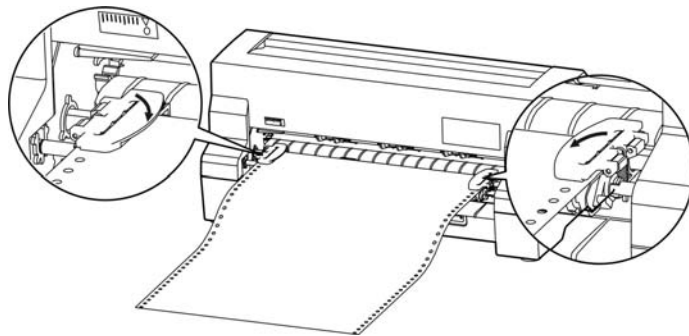


Figure 3-13 Close the tractor covers

9. Slide the right tractor to the left to take up any slack in the paper, and then fasten the lock lever to fix the tractor in position. Ensure the tractor paper is in line with the printing home position. If the paper is not aligned with the printing home position, align the paper, and then fasten the lock lever to lock the tractors.

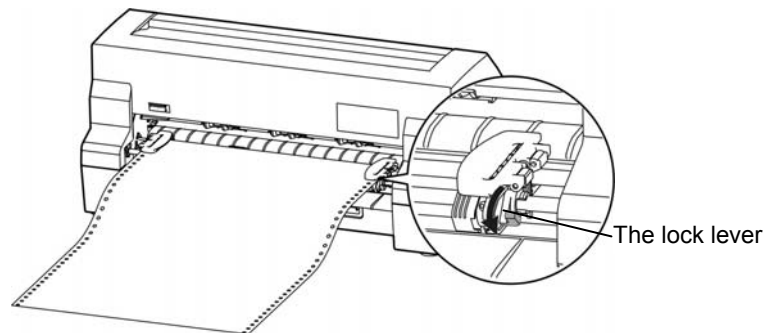


Figure 3-14 Locking the position of the right tractor

10. When starting a new print task, the printer will automatically load the paper before the actual printing starts. (You can also press the **LOAD/EJECT** key to load the paper manually.)

3.4 Tearing off Tractor Paper

To tear off the paper, make sure that printed-paper is fed to the front table. If not, switch the printer offline then press the **LOAD/EJECT** key.

Hold the edge of the paper and pull it towards the edge of the window cover as shown in Figure 3-15. If the perforation of the paper is not at the edge of the window cover, adjust the tear-off position (refer to chapter 4, Control Panel).

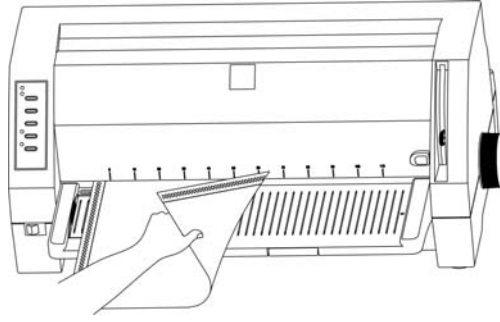


Figure 3-15 Tractor paper tear-off

Chapter 4 Control Panel

4.1 Control Panel Keys and LEDs

The control panel consists of five keys and four LEDs as shown in Figure 4-1.

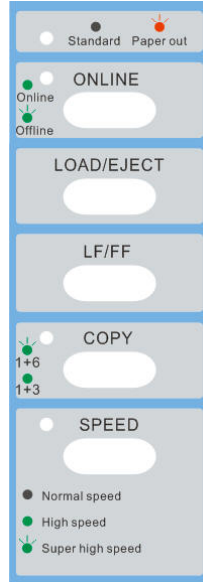


Figure 4-1 The printer control panel

The following table details each indicator LED function:

Indicator LED	On	Blink	Off
PAPER OUT (red)	Compounding reference (see Appendix A.2)	Paper runs out or on error condition	The printer is in the standard mode
ONLINE (green)	Lights when the printer is online.	The printer is offline	Compounding reference (see Appendix A.2)
COPY MODE (green)	The printer is in the "1+3" mode.	The printer is in the "1+6" mode.	The printer is in the normal mode.
SPEED MODE (green)	Lights when the printer is in high speed mode.	The printer is in super high speed mode	The printer is in the letter quality mode.

Table 4-1 LEDs on the control panel

NOTE

If you set the scale number of the lever position equal to or greater than 2 in the normal mode, the printer will transfer to the COPY MODE 1 as the current printing mode. However, the COPY MODE LED is still off.

4.2 Basic Control Panel Operations

You can use the five keys on the control panel to operate your printer.

ONLINE	Press the ONLINE button, switch between ONLINE and OFFLINE mode.
---------------	---

LOAD/EJECT	When offline, press LOAD/EJECT key can control cut sheet or tractor paper feeding. In cut sheet mode, if you press LOAD/EJECT key when offline, the paper will be ejected. In tractor paper mode, if you had fixed tractor chain wheel, press LOAD/EJECT key when offline, the printer will be fed to the printing home position. The printer now being in the online mode. You need to being in the offline mode again, then press LOAD/EJECT key, paper will be fed to the tear position. Press it one more time paper will again back to the ready position, repetition.
LF/FF	In the offline mode, press the LF/FF key to feed the paper line by line. Alternatively, hold the LF/FF key down, the printer will eject the cut sheet, or feed the tractor paper one page.
COPY	In the offline mode, press the COPY key, switch among the three modes: NORMAL , COPY "1+3" MODE , and COPY "1+6" MODE .
SPEED	In the offline mode, pressing the SPEED key, switch among the HIGH SPEED mode, SUPER HIGH SPEED mode and NORMAL mode. If HIGH SPEED led on, indicates that the printer is in HIGH SPEED print mode: If HIGH SPEED led blinks, indicates that the printer is in SUPER HIGH SPEED mode: If HIGH SPEED led off, indicates that the printer is in LETTER QUALITY mode.(Under graphic print mode, high speed mode and super high speed mode are the same.)

NOTE

1. The printer can only print **DRAFT** font in the **HIGH-SPEED** or **SUPER HIGH-SPEED** mode. If you need any other font listed in the **SETUP MENU SYSTEM**, please change to the **LETTER QUALITY** mode.
2. **SUPER HIGH-SPEED** mode will be invalid when printing graphic images.
3. Push button selections may override the menu selections.

4.3 Bill Print Mode Function

In **ONLINE** mode, holding **COPY** key 3 seconds, after beep once, the printer enter "Invoice of value-added tax" print mode.

In **ONLINE** mode, holding **SPEED** key 3 seconds, after beep once, the printer enter "Bill" print mode.

Note: Under "Invoice of value-added tax" mode, the top of form position can not be adjusted. Please in **ONLINE** mode, holding **SPEED** key 3 seconds, the printer enter "Bill" print mode after beep once. Then adjust the top of form position.

4.4 Top of Form Adjustment Mode

The top of form setting determines the margin between the top of paper and the first printed line (the top margin).

In the **ONLINE** mode, press the **LF/FF** key for about 3 seconds to enter the top of form adjustment mode. The **ONLINE** and **POWER LED** will blink alternating.

NOTE

Your application software usually sets your top margin. You needn't change the top-of-form setting very often.

Use the **LOAD/EJECT** and **LF/FF** keys to alter the top of form setting:

LOAD/EJECT: Increase the top of form by 1/60 inch. You can increase the margin to a maximum of

+60 increments (+60/60 inch) from the factory setting.

LF/FF: Decrease the top of form by 1/60 inch. You can decrease the margin to a maximum of -10 (-10/60 inch) from the default setting.

Press the **ONLINE** key to exit and save your new setting. The **POWER LED** and **ONLINE LED** blink simultaneously 2 times with two beeps, and then the **POWER LED** will be on.

NOTE

To exit without saving, just turn the printer OFF.

4.5 Tear-off Adjustment Mode

There is a tear-off bar at the edge of the window cover. When you have finished printing, you can advance the tractor paper on the tracker to the tear-off bar by the tear-off function to easily tear off the perforated sheets. The tear-off setting determines the distance between the perforation of tractor paper and the tear-off bar. If the default distance is not suitable for you, you can adjust it by the printer's tear-off adjustment feature.

With the printer online, press both the **LOAD/EJECT** and **LF/FF** keys for about 3 seconds to get the printer to enter the tear-off adjustment mode. When the printer enters this mode, the **ONLINE LED** and the **PAPER OUT LED** blink alternately.

Use the **LOAD/EJECT** and **LF/FF** keys to alter the tear-off setting:

LOAD/EJECT: Press the **LOAD/EJECT** key to adjust the distance in 1/60 inch increments. You can maximum increase to +15/60 inch

LF/FF: Press the **LF/FF** key to adjust the distance in 1/60 inch decrements. You can maximum decrease to -15/60 inch

To exit and save your new setting, press **ONLINE** key. The **PAPER OUT LED** and the **ONLINE LED** blink simultaneously for 2 times with two beeps, then the **POWER LED** turns on. Your new tear-off setting value is saved.

NOTE

To exit without saving, just turn off the printer.

4.6 Using the Setup Menu System

The factory settings of this printer are selected to meet the requirements of the majority of users. However, you may want to use a different character set for a different language or you may prefer printing in different fonts or styles. To achieve this, you can use the Setup Menu System to create your own printer settings by modifying or changing the factory defaults.

The Setup Menu System is divided into several groups, and each group contains a number of menu lists, each list containing several settings. You can select a new setting of the menu list and save it, or just go to the next menu list without altering the current setting.

4.6.1 Printing the Current Setting Report

You can use the information in the current setting report to decide which setting you want to change.

To print the current settings:

1. Turn the printer off.
2. If using the tractor paper, please fix the tractor paper properly (At less 240mm width)
3. Hold down both the **LOAD/EJECT** and **LF/FF** key at the same time. Turn the printer on.

The printer automatically loads paper and prints the current settings. An example print out is shown in Figure 4-2.

Caution: 1. The options whose color is printed contrarily are the current settings. If the initialization of "Language" is "English", saving the setting and operating the upper steps again, and it will print the current settings in English. The way of changing the settings is in the next section.

2. When the driver has compress printing scale function, If choose 80% compress mode in the driver, at the same time, choose 75% compress mode in the menu settings system. Then it will comes a result that the transverse compress will be $80\% \times 75\% = 60\%$.
3. When choose 75% compress mode in the menu settings system, **HIGH SPEED/SUPER HIGH SPEED** print mode will not be valid.

Jolimark DP650

Current Setting Report

SYSTEM SETUP

LANGUAGE	ENGLISH	CHINESE
EMULATION	EPSON	OKI
CHAR. MODE	ASCII	CHINA

CHARACTER

FONT	ROMAN	SANS SER	COURIER	PRESTIGE	SCRIPT	OCR-B	OCR-A
	ORATOR						
ENG PITCH	10 CPI	12 CPI	15 CPI	PROPORTIONAL			
CHI PITCH	6.7 CPI	7.5 CPI					
SLASH ZERO	OFF	ON					
INTL CHAR SET	U.S.A.	FRANCE	GERMANY	U.K.	DENMARK1	SWEDEN	ITALY
	SPAIN 1	JAPAN	NORWAY	DENMARK2	SPAIN 2	LATIN AM	KOREA
	LEGAL	NETHER	TURKEY				
CHARACTER SET	ITALICS	GRAPHICS					
CODE PAGE	U.S.A.	MULTI	PORTUGAL	CANADA	NORWAY	EAST EURO	CYRILLIC
	RUSSIAN	HUNGARY	KAMENICKY	TURKEY	ICELAND	BULGARIA	MAZOVIA
	GRK 437	GRK 851	GRK8859-7	GRK 1253	ARAB NLS	ARAB EXT	WIN LAT1
	WIN LAT2	ISO LTN1	ISO LTN2	TUR8859-9	ISO LTN9	KBL	LATIN 7

PAGE LAYOUT

LINE SPACING	6 LPI	8 LPI					
FORM LENGTH	3 INCH	3.5 INCH	11/3 INCH	4 INCH	5 INCH	5.5 INCH	6 INCH
	7 INCH	LETTER	A4	12 INCH	14 INCH		
FORM LOCK	OFF	ON					
PAGE SKIP	OFF	ON					
COMPRESS PRT	NORMAL	75%	50%				
LEFT EDGE	0/10 INCH	1/10 INCH	2/10 INCH	3/10 INCH	4/10 INCH	5/10 INCH	6/10 INCH
EDGE DETECT	OFF	ON					
BLACK MARK	DISABLE	LEFT	RIGHT				

PRINT SETUP

PRINT DIR	BI-DIR	UNI-DIR	AUTO				
QUIET MODE	OFF	ON					
AUTO LF	OFF	ON					
AUTO TEAR OFF	OFF	ON					
LOADING	PUSH KEY	0.5 SEC.	1.0 SEC.	2.0 SEC.			
SKEW DETECTION	OFF	ON					
SKEW LEVEL	001	002	003	004	005	006	007
	008	009	010				
PIN SWITCH	OFF	ON					

SERIAL I/F

BAUD RATE	19200 BPS	9600 BPS	4800 BPS	2400 BPS	1200 BPS
PARITY	NONE	ODD	EVEN		
DATA BIT	8 BIT	7 BIT			
STOP BIT	1 BIT	2 BIT			
PRTOCOL	XON/XOFF	DTR			

PIN TEST

24	23	22	21	20	19	18	17
16	15	14	13	12	11	10	09
08	07	06	05	04	03	02	01

Figure 4-2 Setup menu system

Note: Only installed the subassembly of automatic edge detection, and the black mark and paper edge detection two menus can be printed out.

4.6.2 Entering the Setup Menu System and Changing the Settings

If need to use different fonts or printing formats, you can use the setup menu system to change the settings.

The operating steps of changing the menu system

1. Turn on the printer.
2. Load the paper to the top of form position (make sure the paper is enough) then switch the printer **ONLINE**.
3. Keep pressing the **LOAD/EJECT** key for 3 seconds.

This starts the Setup Menu System and prints the instructions for using it. The current setting is underlined.

The print head points to the current selection in the menu.

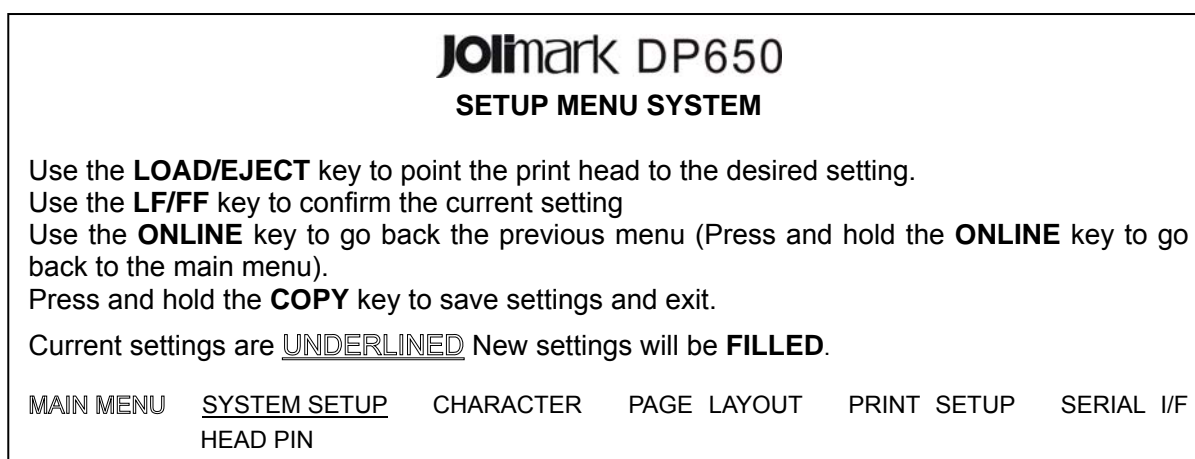


Figure 4-3 Setup menu system

4. Make a selection from the menu with the keys on the control panel:

Press:	To:
LOAD/EJECT	Move the print head to the next menu selection. Repeat this until you get the selection that you want.
LF/FF	Go to the next menu or save the setting that is currently indicated by the print head position. Note: Newly setting will be shown in fill character.
ONLINE	Move to the upper menu (Holding on pressing ONLINE key will back to main menu directly)
SPEED	Save the settings and exit the menu setting system

5. When you have made all of your settings (remember that you don't have to go all the way through the menu system), holding on press COPY key, newly settings will be stored and exit the menu setting mode. If you do not want to store the settings, just switch off the printer directly.
6. Switch the printer off and then turn on again. New settings of the menu will be stored.

4.6.3 Restoring Factory Printer Settings

You can restore to the factory printer settings without having to work through the Setup Menu System to

reset the menus.

To restore to the factory settings:

1. Make sure that the printer is **ONLINE**
2. Press and hold down the **ONLINE** and **COPY** keys on the control panel for 3 seconds.

The LED's of the **POWER** and **ONLINE** on the control panel flash 2 times respectively at the same time and the printer makes 3 beeps to confirm that the printer's factory settings have been restored.

3. Release the keys and switch the printer off and reboot.

After these steps, the printer's factory settings work.

Note: After restoring factory printer settings, the network settings also back to default.

4.6.4 Explaining Menu Terms

Options	Description
SYSTEM SETUP	
LANGUAGE	Choose the language set menu, menu content according to setting of the language style to print.
EMULATION	Select the printer emulation to match the printer driver that installed on PC.
CHAR. MODE	Select the ASCII or China character mode.
CHARACTER	
FONT	Set the font for the printer to use in the absence of any font control instructions from your software.
ENG PITCH	Set the pitch to determine the horizontal spacing of the printed Chinese.
CHI PITCH	Set the pitch to determine the horizontal spacing of the printed Chinese.
SLASH ZERO	Select or cancel the printing of a slash (/) through zero to distinguish them from the letter O.
INTL CHAR SET	Select interior character (only with EPSON compatible). (USA France Germany Britain Denmark I Sweden Italy Spain I Japan Norway Denmark II Spain II Latin America Korea LEGAL Holland Turkey)
CHARACTER SET	Select character set into Italic Character Table or Graphic Character Table.
CODE PAGE	Select a code page.
PAGE LAYOUT	
LINE SPACING	Set the vertical spacing of the printed characters. You can set it to either 6 LPI (the default setting) or 8 LPI.
FORM LENGTH	Set the length of your printer paper, for both cut sheets and continuous-feed paper.
FORM LOCK	Pages long setup instructions invalid
PAGE SKIP	Select (ON) or cancel (OFF, the default) a bottom margin of one inch.
COMPRESS PRT	Select compressed print mode or normal print mode.
LEFT EDGE	Setting distance from the first print character to the left paper edge, unit is 1/10 inch.
EDGE DETECT	Automatic edge detection function (options).
BLACK MARK	Whether or not choose the black mark detection (options).
PRINT SETUP	
PRINT DIR	Print direction mode contains one-way、bidirectional and automatic mode. When default option is automatic mode, print direction is bidirectional. Only choosing "automatic mode", print direction instruction is in effect. If choosing "one-way" or "bidirectional" mode, print direction instruction is invalid.

QUIET MODE	Select the printer into quiet mode. The acoustic noise is lower but the printing speed is reduced by half.
AUTO LF	Select (ON) or cancel (OFF) the automatic advance of the paper by one line after every carriage return command.
AUTO TEAR OFF	Enable or disable AUTO TEAR OFF function. The feed delay for the tear-off advance can be set.
LOADING	This determines the action of the printer while the single sheet paper is front feeding. PUSH KEY disables automatic loading allowing loading only by pressing the LF/FF key. The other options allow automatic feeding after the stated delay time.
SKEW DETECT	Enable or disable the skew detection for front feeding, if the paper is more inclined level set out, the paper automatic retreat. if you use this function value, please refer to tilt level.
SKEW LEVEL	Sets the Skew sensor sensitivity. 001 is the most critical while 010 is the least. If a skew error is detected the single sheet will be automatically ejected. Note: With setting "1" manual feed becomes highly difficult.
PIN SWITCH	Select pins switch mode. The printer auto switches the different pin to print table Line.
SERIAL I/F	
BAUD RATE	Set the printer RS-232C interface speed.
PARITY	Set the printer RS-232C interface parity error checking type.
DATA BIT	Set the printers RS-232C data width either 8 bits or 7 bits.
STOP BIT	Set the printers RS-232C transmission stop bits.
PROTOCOL	Set the printers RS-232C interface protocol (handshaking).
HEAD PIN	Select broken-pin mode. The default settings is every root and printed needle is live. When the printer is printing, if user finds out broken-pin, please select broken-pin mode, then the printer can automatic compensate broken-pin position.

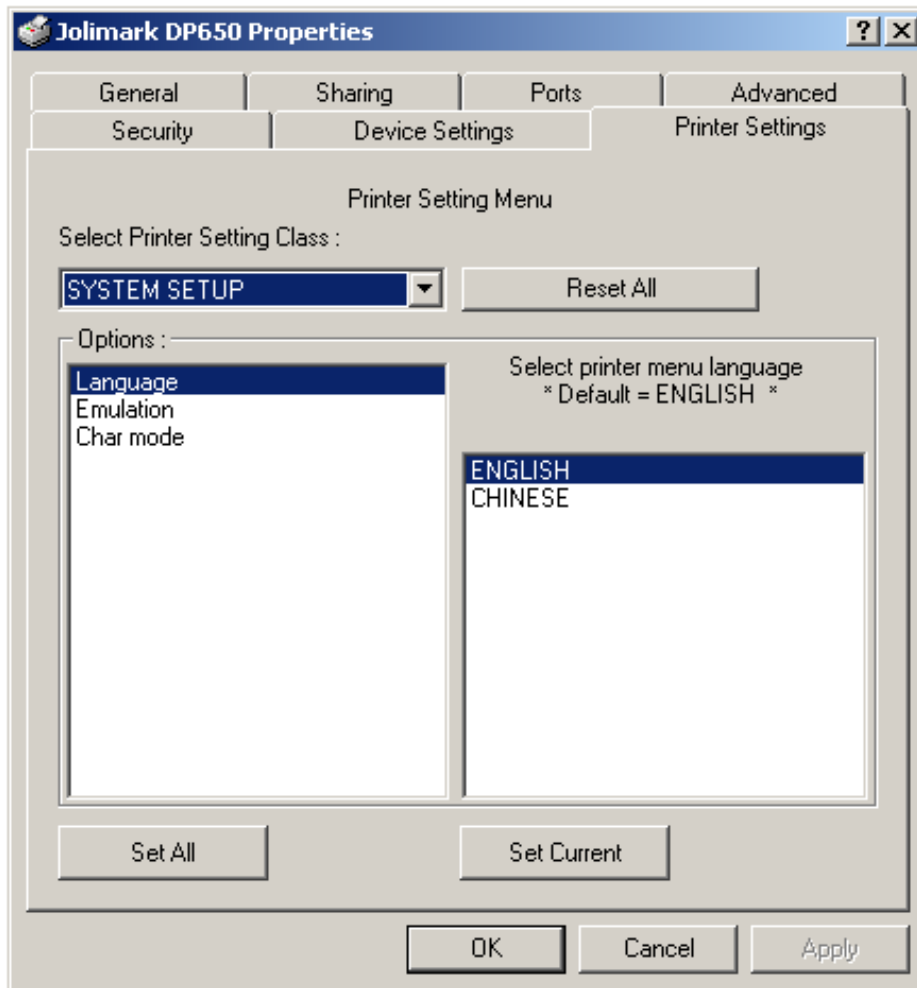
Table 4-2 Description of Options

4.6.5 Online-aptitude Parameter Settings

DP650 supports the function of online-aptitude 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 host and the printer are connected with a cable and both the host and the printer is turned on, the printer should be online as well.
2. Click "Start" → "Settings" → "Printers"
3. Right click "Jolimark DP650" in the "Printers", select "Properties".
4. Click "Device Property" in the property page.



5. The setting way is corresponding with that of printer menu system. In the “Printer Settings” layout, select the first class menu in the combo box of “Select Printer Setting Class”, select the second menu in the “Configuration” and set the item in the current parameters list.
6. Click the button “Reset All” to reset all the parameters to be the driver’s default, but not change the printer’s settings.
7. When setting the parameters: you can click “Set Item” to save the current settings after setting each item, or you can also click “Set All Items” after setting all parameters. After clicking “Set All Item” or “Set Item”, the parameter’s instruction will be sent to the printer.
8. The printer’s parameter settings are changed at once after receiving the instruction and the printer does not need to restart.
9. After finishing settings, click “OK”, exit the “Properties” window.

4.7 Using the Self- Test Functions

4.7.1 ASCII Test Mode

One page of ASCII pattern is performed by turning power on while pressing the **ONLINE** key.

Continuous printing of ASCII pattern is performed by turning power on, while pressing the **ONLINE** key and **LOAD/EJECT** key at the same time. Pressing the **ONLINE** key can stop printing, and turn off the printer to exit ASCII test mode.

```

                ASCII TEST MODE

Jolimark  DP650  VX.X  20XX/XX/XX

!"#$%&'()*+,-./0123456789;:<=>?@ABCDEFGHIJKLMN
!"#$%&'()*+,-./0123456789;:<=>?@ABCDEFGHIJKLMN
!"#$%&'()*+,-./0123456789;:<=>?@ABCDEFGHIJKLMN
    
```

Figure 4-4 The former of English self-test

4.7.2 Maintenance Printing Test (H pattern)

One page printing of H pattern is performed by turning power on, while pressing the **ONLINE** and **LF/FF** keys.

Continuous printing of H pattern is performed by turning power on, while pressing the **COPY** key. Pressing the **ONLINE** key can stop printing, and turn off the printer to exit H pattern mode.

```

                H PRINT MODE

Jolimark  DP650  VX.X  20XX/XX/XX
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
    
```

Figure 4-5 The former of the maintenance print

4.7.3 Hex Dump Mode

Turn power on while pressing the **LOAD/EJECT** key, which causes the printer to enter Hex Dump mode. In this mode, the data which are sent from computer will print with Hex mode. Pressing the **ONLINE** key can stop printing, and turn off the printer to exit Hex Dump mode.

The results of the hex dump printing will be shown as follows.

```

***** HEXADECIMAL DUMP *****
(0000) 1B 34 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E, 4ABCDEFGHIJKLMN
(0010) 4F 50 51 52 53 54 55 56 57 58 59 5A 0D 0A 1B 35 OPQRSTUVWXYZ, , 5
(0020) 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F 50 ABCDEFGHIJKLMN
(0030) 51 52 53 54 55 56 57 58 59 0D 0A          QRSTUVWXYZ,
    
```

Figure 4-6 The hexadecimal dump printing

4.7.4 Alignment Adjust Mode

Enter the alignment adjust mode to improve the print quality when the printer is used for a long time. In DPI state, use **COPY** key to choose different copy mode, correspondingly adjust alignment in every mode. In the alignment adjust title, **COPY 1** indicates the “1+4” mode while **COPY 2** indicates the “1+6” mode.

1. Make sure the printer is paper in and turn on the printer.
2. In the online mode, press and hold on the **LF/FF** key and **COPY** key until the **POWER** and **ONLINE** indicators blink simultaneously, the printer enters the alignment adjust mode.
3. After entering the alignment adjust mode, press the following keys to adjust the degree of make columns:

- EJECT/LOAD** Each press this key, the even line will move left with one step (30 steps max.)
Press **ONLINE** key to check the result.
- LF/FF** Each press this key, the even line will move right with one step (30 steps

- max.) Press **ONLINE** key to check the result.
- COPY** In the alignment adjust mode, press this key to the next copy mode. It can switch among NORMAL print mode, "1+4" print mode and "1+6" print mode. Press **ONLINE** key to check the result.
- SPEED** Switch to the next DPI adjust state
- ONLINE** Store and print the current settings
4. Restart the printer and exit the alignment adjust mode.

Note: Alignment adjust mode will affect the printing quality, think over before adjust it and strict to the instructions while adjusting.

Appendix A Troubleshooting and Maintenance

Caution

- Do not open the printer top cover or rotate the paper feed knob while printing,
- Do not place any heavy object on the printer no matter it is printing or not.
- Turn off both the printer and the Host before connecting them. Not allow plug in the power cord or the signal cord. Or it may burn out the chip and damage the printer interface or the power supply.
- Turn off the printer and pull out the plug before cleaning the printer.

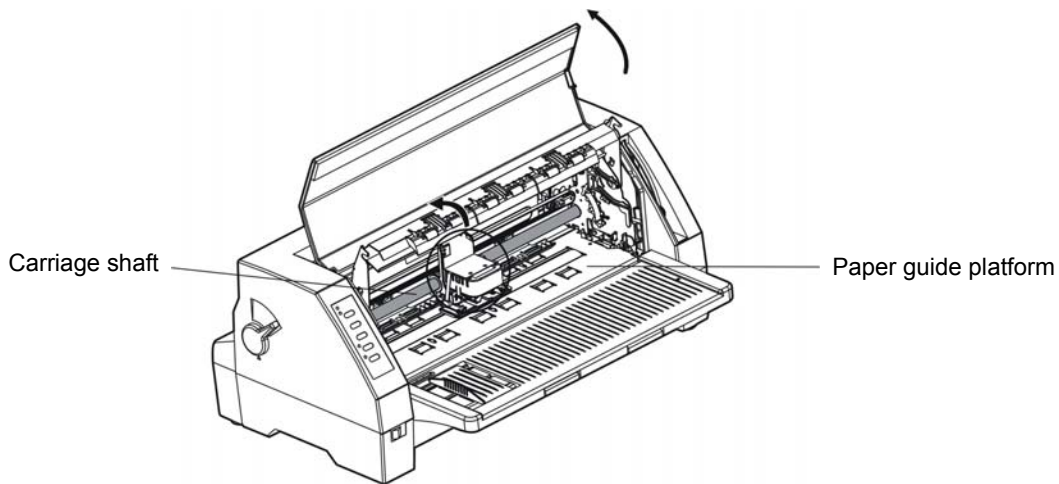


Figure A-1 Cleaning printer

A.1 Cleaning the Printer

Cleaning periodically and the cleaning tool

Periodical cleaning: every six months or every 300 working hours once.

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

Cleaning the paper feed platform and spare parts

Please clean the oil covered spare parts with a piece of soft cloth. Wipe off wasted paper and clean dirt and dust.

Cleaning the carriage shaft

There is a layer of oil covered on the carriage shaft which guarantees the carriage runs smoothly. But the oil is easy to absorb dust, please clean the dust with soft cloth first, and then add proper lube (NYE181 lube of NYE Company is recommended), move print head back and forth to make lube scattered.

Cleaning the photoelectric sensor part

As the paper feed sensor use a correlation photoelectric sensor. You should clean the parts periodically.

1. Clean the three light extinction patch every three months.
2. Clean the photoelectric sensor's protect cover every three months.

When the paper feed sensor can not detect the paper which make the paper can not be fed you may take following actions:

1. Clean the dust on the light extinction patch.
2. Clean the dust on the protect cover of the photoelectric sensor.

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

2. Being used under dust circumstance, the carriage shaft may stack much dust and affect the print quality.

3. If you have just finished using the printer, let the print head cool for a few minutes before you touch it.

4. Please use a soft cloth for cleaning, do not use combustible solvent.

A.2 Problems and Solutions

No.	Problem	Solution	Note
1	Paper jammed while printing	Stop printing and take the jammed paper out. Then restart to print.	
2	The carriage has no action while printing	Stop printing, check if the ribbon is blocked or the ribbon cartridge has been inserted properly.	
3	The noise is too loud while printing	Stop printing, check if every part is in proper position or the running clasp has any error.	
4	Bugs in the print character	Check whether the ribbon has been inserted properly, then print out the current settings. Check if the print head pins have been broken.	Send to check
5	Nothing prints out while printing	Check if the ribbon is jammed or the paper select lever in the right position	
6	Paper do not feed or feed unsmoothly	Check if the gap adjust lever is in right position, or else send to check.	
7	Carriage runs uneasy and has loud noise.	Stop printing and check, if there is strange things, takes them out; if there is a layer of dust on the carriage shaft, clean it and add some lube. (See A1 Cleaning the printer for reference).	Send to check
8	Print characters are too faint	Replace the ribbon carriage with a new one	

A.3 Error LED on the Control Panel

In case of printer error, the printer enters offline state and indicates an alarm by blinking the LEDs as shown below.

LED	Error	Remedy
The PAPER OUT LED blinks and the ONLINE LED is off.	Paper empty or paper jam	Load paper or remove the jammed paper
The PAPER OUT LED and the ONLINE LED blink simultaneously quickly.	Paper slant	Re-insert the cut sheet paper correctly
The PAPER OUT LED and the ONLINE LED blink alternately quickly.	Home position error	Turn off the power and turn it on again. If an error still occurs, clean and lubricate the carriage shaft(see A.1 cleaning the printer)
The PAPER OUT LED and the ONLINE LED blink alternately slowly.	Select lever error	Return the select lever to the correct position
The PAPER OUT LED is on and the ONLINE LED blinks. At the same time, the print head traverse automatically but nothing is printed.	Print head overheating	Automatically traverse when print head temperature too high. The printer will continue to work after it cool down.

Appendix B

B.1 Specifications

B.1.1 General

Item	Description						
Type	24-Pin Flatbed Dot Matrix Impact Printer						
Print direction	Unidirectional or bidirectional						
Number of columns	106 columns (10 CPI)						
Print speed	ASCII						
	speed	10 CPI	12 CPI	Chinese	speed	6.7 CPI	7.5 CPI
	Super high speed	340 CPS	408 CPS	Super high speed	184 CPS	206 CPS	
	High speed	300 CPS	360 CPS	High speed	134 CPS	150 CPS	
	Normal speed	150 CPS	180 CPS	Normal speed	100 CPS	112 CPS	
Print head	Diameter of wire: 0.22 mm						
	wire pitch: 1/180 inch						
	Life: 500 million dots/wire						
Resolution	360 x 360 dpi (Max.)						
Character set	ASCII: 17 international character sets (U.S.A,FRANCE,GERMANY,U.K,DENMARK1,SWEDEN, ITALY,SPAIN1,JAPAN,NORWAY,DENMARK2,SPAIN2,LATIN AM,KOREA,LEGAL,NETHER, TURKEY)						
	Chinese: GB 18030						
Code Page	28 types: U.S.A.、MULTI、PORTUGAL、CANADA、NORWAY、EAST EURO、CYRILLIC、RUSSIAN、 HUNGARY、KAMENICKY、TURKEY、ICELAND、BULGARIA、MAZOVIA、GRK 437、GRK 851、 GRK8859-7、GRK 1253、ARAB NLS、ARAB EXT、WIN LAT1、WIN LAT2、ISL LTN1、ISO LTN2、 TUR8859-9、ISO LTN9、KBL、LATIN 7						
Fonts set	ASCII: Draft、Roman、Sans Serif、Courier、Prestige、Script、OCR-A、OCR-B、Orator						
	Chinese: GB 18030 song ti						
Bar code	EAN-13、EAN-8、Interleaved 2 of 5、Matrix 2 of 5、Industrial 2 of 5、Code 39、Code 128 B、Code 128 C、NW-7						
Character pitch	ASCII: 10 CPI, 12 CPI, 15 CPI, proportional						
	Chinese: 6.7 CPI, 75 CPI						
Line space	1/6 inch, 1/8 inch, programmable in 1/360 inch increments						
Emulation	EPSON ESC/PK2、OKI 5530SC						
Interface	Parallel interface: Centronics (IEEE1284 NIBBLE Mode) USB interface: USB 2.0 Full-Speed Serial interface :RS-232C Ethernet interface :10/100Base-T Ethernet Interface * Only one serial interface or Ethernet interface is supplied, you can choose either according to your requirement. ★ According to specific interface standards						
Input Buffer	132 KB						
Ribbon	Model: JMR119						
	Life: 8 million characters (draft mode)						
Noise	<55 dB (A) (ISO7779 standard)						
Control Panel	5 keys and 4 indicator lights						

Paper feed type	Cut sheet: Load/eject from front Continuous paper: load front rear, eject from front
Paper specification	Cut sheet: Width: 70 ~ 340 mm Length: 56 ~ 536 mm Thickness: 0.06 ~ 0.85 mm Weight: 45 ~ 150 g/m ² Continuous paper: Width: 65 ~ 335 mm Total Thickness: 0.06 ~ 0.85 mm Weight: Single paper 45 ~ 150 g/m ² Multiple paper Every page 30 ~ 40 g/m ²
Max paper thickness	0.85 mm
Copy	Original + 6 copies Normal print mode: Original+2copies (print once) "1+3" print mode: Original+2 to 4 copies (print once) "1+6" print mode: Original+6 copies (print once)
Automatic function	STANDARD: Document Skew detection OPTIONAL: Automatic document border detection, Black mark detection
Compress set	Support graph and character printing
Especial functions	Pin Break Compensation、 Pin Rotation Replacement Automatic Emulation Match、 Online Parameter Setting、 Full slot position paper loading and printing (OPTIONAL)
Physical dimensions	470 (width) × 252 (depth) × 207 height) mm
Weight	Approx. 7.8 Kg
Environmental conditions	Operating environment: Temperature: 0 ~ 40°C Humidity: 40%RH ~ 90%RH (No condensation)
	Storage environment: Temperature: -40 ~ 55°C Humidity: ≤93%RH (40°, No condensation)
Power requirements	Rated voltage range: 176 ~ 242 V
	Rated frequency range: 50 ~ 60 Hz
Power	①working power: 45W; ②Largest power: 160W; ③Waiting power: 4.4W Caution: Only when the product is unconnected with outer power supply, it can achieve zero energy consumption state.
Reliability	MTBF≥15,000 hours (IEC 605.7standard)
Safety marks	GB 4943
Wireless disturbance	Grade B
Certification	China Compulsory Certification, China Environmental Labelling, Energy Conservation Certification, Adopting International Standard Product Marking Certificate
Warranty	Three years limited warranty

B.2 Printable Area

DP650 is configured with Centronics (IEEE1284 NIBBLE) parallel interface, 2.0 Full-Speed USB interface, RS-232 serial interface or 10/100Base-T Ethernet interface. You can connect to the computer according to your requirement.

B.2.1 Parallel Interface

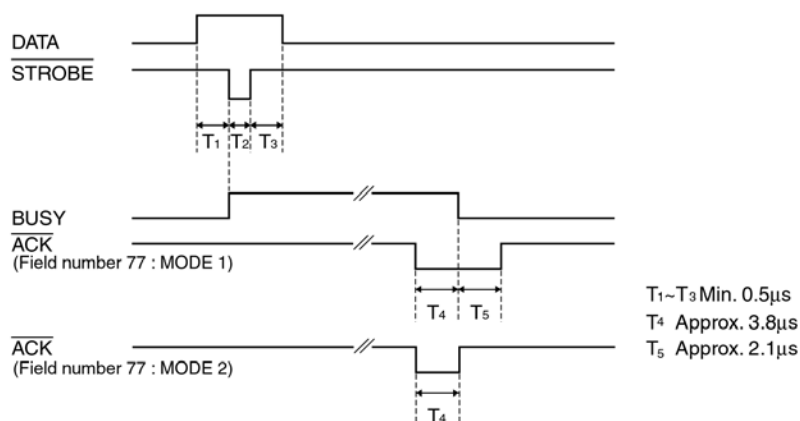
Sequence and signal level

Sequence Diagram as B-1

Signal level

Input High level: 2 to 5V, Low level: 0 to 0.8V

Output High level: 2.4 to 5V, Low level: 0 to 0.4V



B-1 Sequence diagram

Connector Pin Assignments

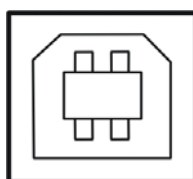
Signal Pin No.	Return Line Pin No.	Signal Name	Signal Direction
1	19	/STROBE	Printer ← Host
2 ~ 9	20 ~ 27	DATA	Printer ← Host
10	28	/ACK	Printer → Host
11	29	BUSY	Printer → Host
12	30	PE	Printer → Host
13	—	SELECT	Printer → Host
14	—	/AUTO FEED	Printer ← Host
15	—	NC	NC
16	—	SIGNAL GND	Printer ↔ Host
17	—	CHASSIS GND	Printer ↔ Host
18	—	+5V	Printer → Host
31	—	/PRIME	Printer ← Host
32	—	/ERROR	Printer → Host
33	—	SIGNAL GND	Printer ↔ Host
34	—	NC	Printer → Host
35	—	PULLED UP 5V	Printer → Host
36	—	/SELECT IN	Printer ← Host

B.2.2 USB Interface

USB 2.0 Full-Speed.

The following table provides the standardized contact terminating assignments by number and electrical value for Series "A" and Series "B" connectors.

Contact Number	Signal Name	Typical Wiring Assignment
1	VBUS	Red
2	D-	White
3	D+	Green
4	GND	Black



B-2 USB-B Type connector

B.2.3 Serial Interface

Serial Specification

Data input/output mode: 7-bit or 8-bit serial interface

Data input code: ASCII, JIS 7-bit or 8-bit, International character code, CG, Dot matrix graphic code based on graphic symbol code (8-bit)

Data buffer: 132K bytes most

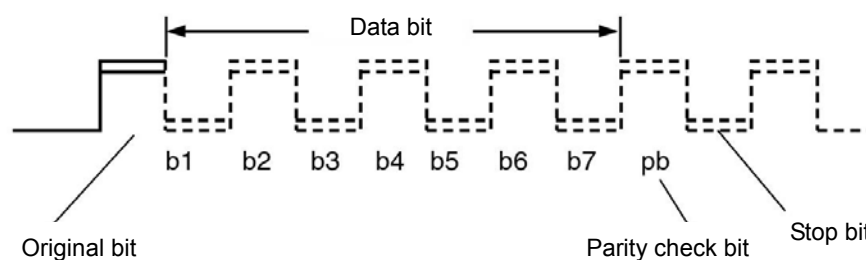
Signal level: RS-232C: $\pm 12V$

Data transit speed (baud rate) RS-232C: 1200bps, 2400bps, 4800bps, 9600bps, 19200bps

Data transmission protocol RS-232C: READY/BUSY (DTR) or X-ON/X-OFF

Synchronous system: Original bit: 1 bit stop bit: 1~2 bit

Character length: 7~8 bits



B-3 Serial data format

Connector Pin Assignments

RS-232C default settings

PIN	ABBREVIATION	NAME	DIRECTION	RDY/BSY	X-ON/X-OFF
1	FG	Frame Ground	—	O	O
2	SD	Transmitted Data	OUT	X	O
3	RD	Received Data	IN	O	O
4	RTS	Request to Send	OUT	*	*
7	SG	Signal Ground	—	O	O
20	DTR	Data Terminal Ready	OUT	O	O

O: USE X: NOT USE *: HIGH LEVEL

Signal description:

Prescription of signal level on RS-232C

1=Low (Mark): -23 ~ -3 V

0=High (Space): +3 ~ +25V

RDY/BSY protocol (RS-232C)

PIN 1 FG (Frame Ground--- connect to the printer rack
Connect to the circuit frame ground

PIN 3 RD (Received Data)
Receive serial data from the computer through this pin. This pin is low level when it receives no data.

PIN 7 SG (Signal Ground)
Connect to the signal ground

PIN 20 DTR (Data Terminal Ready)
This pin is high level when the printer is ready to receive data. It is low level when not ready to receive data.

X-ON/X-OFF Protocol

PIN 1 FG (Frame Ground---connect to the printer rack)
Connect to the circuit frame ground.

PIN 2 SD (Transmitted Data)
Send serial data to the printer through this pin. This pin is low level when it receives no data.

PIN 3 RD (Received Data)
Receive serial data from the printer through this pin. This pin is low level when it receives no data.

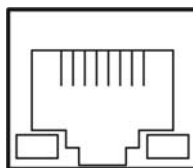
PIN 4 RTS (Request to Send)
Send Request to send signal from the printer. This pin is high level when the printer is turned on.

PIN 7 SG (Signal Ground)
Connect to the signal ground.

PIN 20 DTR (Data Terminal Ready)
Output the signal from the printer. This pin is high level when the printer is turned on.

B.2.4 Ethernet Interface

10/100Base-T Ethernet interface, it can connect to 10/100M Ethernet.



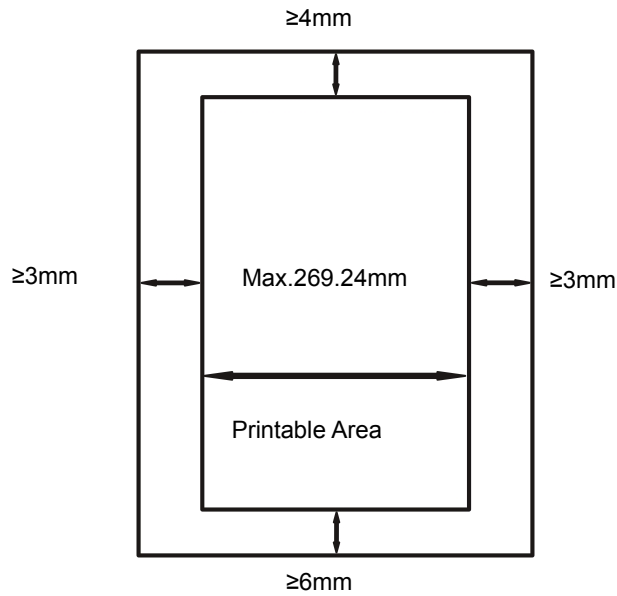
B-4 Ethernet Interface

B.3 Printable Area

Caution: 1. To guarantee the print quality, please ensure the contents are all within printable area.

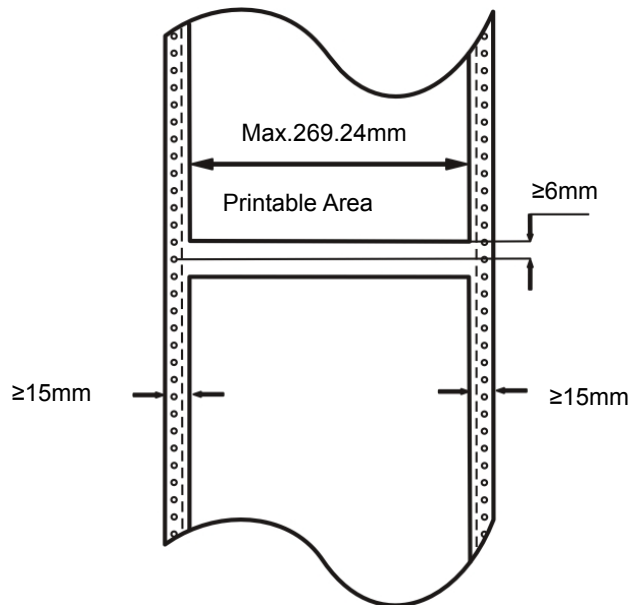
2. If the print contents are out of the printable area, it may cause the print head to break pins.

Cut Sheet Printable Area:



B-5 the printable area of cut sheet

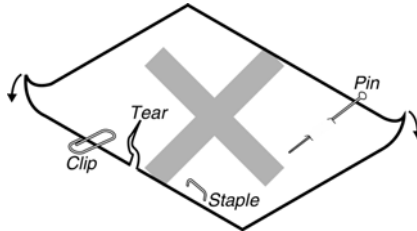
Tractor Paper Printable Area:



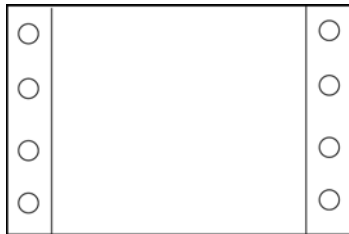
B-7 the printable area of tractor paper

B.4 Cautions of Printing

- The paper which inserted should not be collapsed, tore or carry any staple, clip or pin and so on. (As shown in B-8) Or else, it will damage the printer seriously.
- Do not use the print paper which edges fall into disrepair.
- In cut sheet print mode, do not use the one page tractor paper or the one page copy paper. Because the hole on the tractor paper edge and the impress on the copy paper edge will cause printing jam. (As shown in B-9)



B-8



One page tractor paper



One page copy paper

B-9

Appendix C Command Code Summary

C.1 Epson Emulation

Name	Code (Symbol)	Code (Hex.)	Code (Dec.)
Print and Line Feed Execution			
Carriage Return	CR	0D _h	13 _d
Line Feed	LF	0A _h	10 _d
n/180" Line Feed	ESC J	1B _h 4A _h	27 _d 74 _d
n/180" Reverse Line Feed	ESC j	1B _h 6A _h	27 _d 106 _d
Format Control			
Set 1/8" Line Spacing	ESC 0	1B _h 30 _h	27 _d 48 _d
Set 1/6" Line Spacing	ESC 2	1B _h 32 _h	27 _d 50 _d
Set n/180" Line Spacing	ESC 3	1B _h 32 _h	27 _d 51 _d
Set n/60" Line Spacing	ESC A	1B _h 41 _h	27 _d 65 _d
Set n/360" Line Spacing	ESC +	1B _h 2B _h	27 _d 43 _d
Form Feed	FF	0C _h	12 _d
Set Form Length in Lines	ESC C	1B _h 43 _h	27 _d 67 _d
Set Form Length in Inches	ESC C NUL	1B _h 43 _h 00 _h	27 _d 67 _d 0 _d
Set Form Length in Defined Unit	ESC (C	1B _h 28 _h 43 _h	27 _d 40 _d 67 _d
Select Skip-Over-Perforation	ESC N n	1B _h 4E _h	27 _d 78 _d
Cancel Skip-Over-Perforation	ESC O	1B _h 4F _h	27 _d 79 _d
Vertical Tab	VT	0B _h	11 _d
Set Vertical Tab Positions	ESC B	1B _h 42 _h	27 _d 66 _d
Select a VFU Channel	ESC /	1B _h 2F _h	27 _d 47 _d
Select VFU Positions	ESC b	1B _h 62 _h	27 _d 98 _d
Set right Margin	ESC Q	1B _h 51 _h	27 _d 81 _d
Set Left Margin	ESC I	1B _h 6C _h	27 _d 108 _d
Horizontal Tab	HT	09 _h	9 _d
Set Horizontal Tab Positions	ESC D	1B _h 44 _h	27 _d 68 _d
Set Character Space	ESC SP	1B _h 20 _h	27 _d 32 _d
Set Absolute Horizontal Tab	ESC \$	1B _h 24 _h	27 _d 36 _d
Set Relative Dot Position	ESC \	1B _h 5C _h	27 _d 92 _d
Define Unit	ESC (U	1B _h 28 _h 55 _h	27 _d 40 _d 85 _d
Set Absolute Vertical Print Position	ESC (V	1B _h 28 _h 56 _h	27 _d 40 _d 86 _d
Set Relative Vertical Print Position	ESC (v	1B _h 28 _h 76 _h	27 _d 40 _d 118 _d
Set Form Format	ESC (c	1B _h 28 _h 63 _h	27 _d 40 _d 99 _d
Set Horizontal Motion Index (HM)	ESC c	1B _h 63 _h	27 _d 99 _d
Print Mode			
Select Print Quality	ESC x	1B _h 78 _h	27 _d 120 _d
Select ELITE Width Mode (12CPI)	ESC M	1B _h 4D _h	27 _d 77 _d
Select PICA Width Mode (10CPI)	ESC P	1B _h 50 _h	27 _d 80 _d
Select 15CPI Mode	ESC g	1B _h 67 _h	27 _d 103 _d
Select/Cancel Proportional Mode	ESC p	1B _h 70 _h	27 _d 112 _d

Name	Code (Symbol)	Code (Hex.)	Code (Dec.)
Select Double Width Mode (one line)	SO	0E _h	14 _d
Cancel Double Width Mode (one line)	DC4	14 _h	20 _d
Select/Cancel Double Width Mode	ESC W	1B _h 57 _h	27 _d 87 _d
Select Compressed Mode	SI	0F _h	15 _d
Cancel Compressed Mode	DC2	12 _h	18 _d
Select Emphasized Mode	ESC E	1B _h 45 _h	27 _d 69 _d
Cancel Emphasized Mode	ESC F	1B _h 46 _h	27 _d 70 _d
Select Double Strike Mode	ESC G	1B _h 47 _h	27 _d 71 _d
Cancel Double Strike Mode	ESC H	1B _h 48 _h	27 _d 72 _d
Select Italic Mode	ESC 4	1B _h 34 _h	27 _d 52 _d
Cancel Italic Mode	ESC 5	1B _h 35 _h	27 _d 53 _d
Select/Cancel Underline Mode	ESC - n	1B _h 2D _h	27 _d 45 _d
Select Superscript/Subscript Mode	ESC S n	1B _h 53 _h	27 _d 83 _d
Cancel Superscript/Subscript Mode	ESC T	1B _h 54 _h	27 _d 84 _d
Select Print Mode	ESC ! n	1B _h 21 _h	27 _d 33 _d
Select/Cancel Double Height Mode	ESC w n	1B _h 77 _h	27 _d 119 _d
Select/Cancel Quiet Print Mode	ESC s n	1B _h 73 _h	27 _d 115 _d
Select Justification Mode	ESC a n	1B _h 61 _h	27 _d 97 _d
Select Character Style	ESC q n	1B _h 71 _h	27 _d 113 _d
Define and Apply a Style of Scoring	ESC (-	1B _h 28 _h 2D _h	27 _d 40 _d 45 _d
Print Data as Characters	ESC (^	1B _h 28 _h 5E _h	27 _d 40 _d 94 _d
Character Set			
Select International Character Set	ESC R	1B _h 52 _h	27 _d 82 _d
Select Font Style	ESC k	1B _h 6B _h	27 _d 107 _d
Select Character Table	ESC t n	1B _h 74 _h	27 _d 116 _d
Enable Character Set 2	ESC 6	1B _h 36 _h	27 _d 54 _d
Cancel command ESC 6	ESC 7	1B _h 37 _h	27 _d 55 _d
Assign Character Table	ESC (t	1B _h 28 _h 74 _h	27 _d 40 _d 116 _d
Download Character			
Select/Deselect User-Defined Set	ESC % n	1B _h 25 _h	27 _d 37 _d
Define Downloaded Characters	ESC &	1B _h 26 _h	27 _d 38 _d
Copy ROM Characters Set into RAM	ESC:	1B _h 3A _h	27 _d 58 _d
Bit-Image			
Select Single-Density Graphics Mode	ESC K	1B _h 4B _h	27 _d 75 _d
Select Double-Density Graphics Mode	ESC L	1B _h 4C _h	27 _d 76 _d
Select High-speed, Double-Density	ESC Y	1B _h 59 _h	27 _d 89 _d
Select Quadruple-Density	ESC Z	1B _h 5A _h	27 _d 90 _d
Graphics Mode			
Select Graphics Mode	ESC *	1B _h 2A _h	27 _d 42 _d
Reassign Graphics Mode	ESC ?	1B _h 3F _h	27 _d 63 _d
Select Graphics Mode	ESC (G	1B _h 28 _h 47 _h	27 _d 40 _d 71 _d
Print Raster Graphics	ESC .	1B _h 2E _h	27 _d 46 _d

Name	Code (Symbol)	Code (Hex.)	Code (Dec.)
Input Data Control			
Cancel Line	CAN	18 _h	24 _d
Delete Character	DEL	7F _h	127 _d
Select Printer	DC1	11 _h	17 _d
Deselect Printer	DC3	13 _h	19 _d
Cancel MSB Control Sequence	ESC #	1B _h 23 _h	27 _d 35 _d
Set MSB to 1	ESC >	1B _h 3E _h	27 _d 62 _d
Reset MSB to 0	ESC =	1B _h 3D _h	27 _d 61 _d
Miscellaneous			
Null	NUL	00 _h	0 _d
Beeper	BEL	07 _h	7 _d
Backspace	BS	08 _h	8 _d
Initialize Printer	ESC @	1B _h 40 _h	27 _d 64 _d
Select Unidirectional Mode (online)	ESC <	1B _h 3C _h	27 _d 60 _d
Select Print Direction	ESC U n	1B _h 55 _h	27 _d 85 _d

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