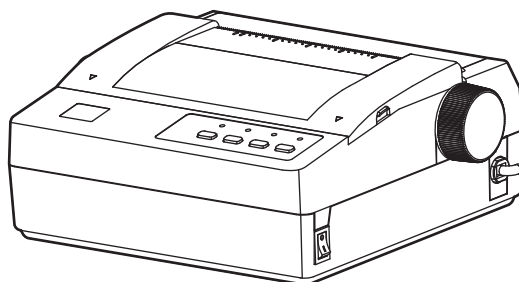




User's Manual

DP100 Series

Receipt Printer



Important Safety Instruction

Be sure to have read the manual carefully before your operation. Neither our Corporation nor its affiliates shall be liable to the purchaser of this product or third parties for damages, losses, costs, or expenses incurred by purchaser or third parties as a result of: accident, misuse, or abuse of this product or unauthorized modifications, repairs, or alterations to this product, or failure to strictly comply with our Corporation's operating and maintenance instructions.

- Follow all warnings and instructions in the manual as well as marked on the product.
- Unplug this product from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
- Do not use this product near water.
- Be sure to set this equipment on a firm, stable, horizontal surface. The product may break or cause injury if it falls.
- 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. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should not be placed in a built-in installation unless proper ventilation is provided.
- This product should never be placed near or over a radiator or heat origin, and should avoid of direct sunshine.
- Do not locate this product where the cord will be walked 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 damage.
- Be sure to use the specified power source. Connection to an improper power source may cause fire or shock.
- Do not use in locations subject to high humidity or dust levels. Excessive humidity and dust may cause equipment damage or fire.
- Never push objects of any kind into this product though cabinet slots as they may touch dangerous voltage dots or short out parts.
- Don't remove the printer's out-cover and repair the printer. When needed, call or take it to the professional.
- If water or other liquid spills into this equipment, unplug the power cord immediately, and then contact your dealer or a service center for advice.
- To ensure safety, please unplug this product prior to leaving it unused for an extended period. The wall outlet you plan to connect to should be nearby and unobstructed.
- Unplug this product from the wall outlet and refer 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 spilt 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, it indicates a need for service.

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

Overview

DP100 is the new-style printer with high quality performance, 24-pin and 40-column for bill printing.

DP100 is ideal for a wide range bill printing requirements, especially for all kinds of instruments and the industries of post & telecom, business, transportation and finance.

According to the paper types or different data ports (interface), the series of DP100 is divided into several different names:

1. Tractor paper model and roll paper model, roll paper model add "F" to distinguish.
2. Parallel interface, serial interface, and USB interface model, serial interface add "S" to distinguish, and USB interface add "U".

MODEL	DESCRIPTION	REMARK
DP100	Tractor Paper\Parallel Interface Model	Load paper by the tractor. This printer model can use the tractor paper (width: 76~142mm).
DP100S	Tractor Paper\Serial Interface Model	
DP100U	Tractor Paper\USB Interface Model	
DP100UE	Tractor Paper\USB+Ethernet Interface Model	
DP100F	Roll Paper\Parallel Interface Model	Load paper by the paper ladle. This printer model can use the roll paper (width: 57.5mm, 76mm or 114mm).
DP100FS	Roll Paper\Serial Interface Model	
DP100FU	Roll Paper\USB Interface Model	
DP100FUE	Roll Paper\USB+Ethernet Interface Model	

3. This series can also be equipped with cash drawer interface.

Note: Please contact your local dealer to replace the interface with payment if you need.

Features

- Use the high quality 24-pin print head, high reliability, and long life.
- Include GB18030 national standard Chinese character set, and support four bytes Chinese character printing out.
- With cash drawer interface, support two cashboxes, especially for market charge system.
- With Black Mark Function.
- Multi-emulation: EPSON ESC/PK2, ESC/POS, STAR 320.
- Build-in the bar code generator, supports EAN 8/13, NW7, Code 39, Industrial 2 of 5, Interleaved 2 of 5, Matrix 2 of 5, Code 128B/C.
- With pin-broken compensation function
- With pin- exchange printing function

Contents

Important Safety Instruction	i
Overview	ii
Chapter 1 Installation	1
1.1 Unpacking.....	1
1.2 Unpacking the Protective Materials.....	1
1.3 Identifying Main Parts of the Printer	2
1.4 Installing the Ribbon Cartridge.....	2
1.5 Installing and Uninstalling the Top Cover	4
1.5.1 <i>Installing the Top Cover</i>	4
1.5.2 <i>Uninstalling the Top Cover</i>	4
1.6 Connecting the Computer or Other Equipment	4
1.6.1 <i>Connecting the Cash Drawer Cable</i>	4
1.6.2 <i>Connecting the Parallel Interface Cable</i>	5
1.6.3 <i>Connecting the USB Interface Cable</i>	5
1.6.4 <i>Connecting the Serial Interface Cable</i>	5
1.6.5 <i>Connecting the Ethernet Interface Cable</i>	6
1.7 Connecting the Power Source	6
1.8 Installing the Driver	7
1.9 Network settings	9
1.9.1 <i>Connecting Printer</i>	9
1.9.2 <i>Setting IP Address</i>	9
1.9.3 <i>Installing Printer Network Driver</i>	12
Chapter 2 Control Panel	19
2.1 Control Panel.....	19
2.1.1 <i>Function Keys</i>	19
2.1.2 <i>Shortcut Keys</i>	19
2.1.3 <i>Indicator LED</i>	20
2.1.4 <i>Set the Print Speed, the Top of Form and the Tear-off Position</i>	21
2.2 To Print the Current Setting Report.....	21
2.3 To Enter the Setup Menu System and Change the Settings	23
2.4 Description of Options	23
2.5 Online-aptitude Parameter Settings.....	24
2.6 Using the Self Test Functions	25
Chapter 3 Loading Paper	28
3.1 Paper Thickness Adjustment.....	28
3.2 Top of Form Adjustment Mode	28
3.3 Loading the Tractor Paper	28
3.4 Loading the Roll Paper	30
Appendix A Maintenance and Troubleshooting	32
A.1 Maintenance.....	32
A.2 Error LED on the Control Panel.....	32

A.3 Troubleshooting	33
Appendix B Specifications	35
B.1 Basic Specification	35
B.2 Printable Area	37
Appendix C Command Code Summary	38
C.1 Introduction	38
C.2 ESC/PK2 Command Codes	38
C.3 ESC/POS Command Codes	40
C.4 STAR320 Command Codes	41
C.5 ESC/PK2 Commands Description	41
<i>Printer Operating Commands</i>	42
<i>Paper Input Commands</i>	42
<i>Data Control Commands</i>	43
<i>Page Mode Setting Commands</i>	43
<i>Line Spacing Commands</i>	44
<i>Orientation Setting Commands</i>	45
<i>Print Position Commands</i>	46
<i>Font Enhancement Commands</i>	47
<i>Print Effect Commands</i>	49
<i>Character Commands</i>	51
<i>Graphic Mode Printing Commands</i>	51
<i>Chinese Character Printing Commands</i>	52
C.6 ESC/POS Commands Description	57
C.7 Parts of STAR320 Compatible Commands Description	59
<i>Paper Feed Commands</i>	60
<i>Data Control Commands</i>	60
<i>Page Mode Setting Commands</i>	61
<i>Line Spacing Commands</i>	62
<i>Orientation Setting Commands</i>	63
<i>Print Position Commands</i>	63
<i>Font Enhancement Commands</i>	64
<i>Character Processing Commands</i>	65
<i>Barcode Commands</i>	65
Appendix D Interface	67
D.1 Cash Drawer Interface	67
D.2 Parallel Interface	67
D.3 USB Interface	69
D.4 Serial Interface	70
D.5 Ethernet Interface	71
Appendix E Black mark	72

Chapter 1 Installation

1.1 Unpacking

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

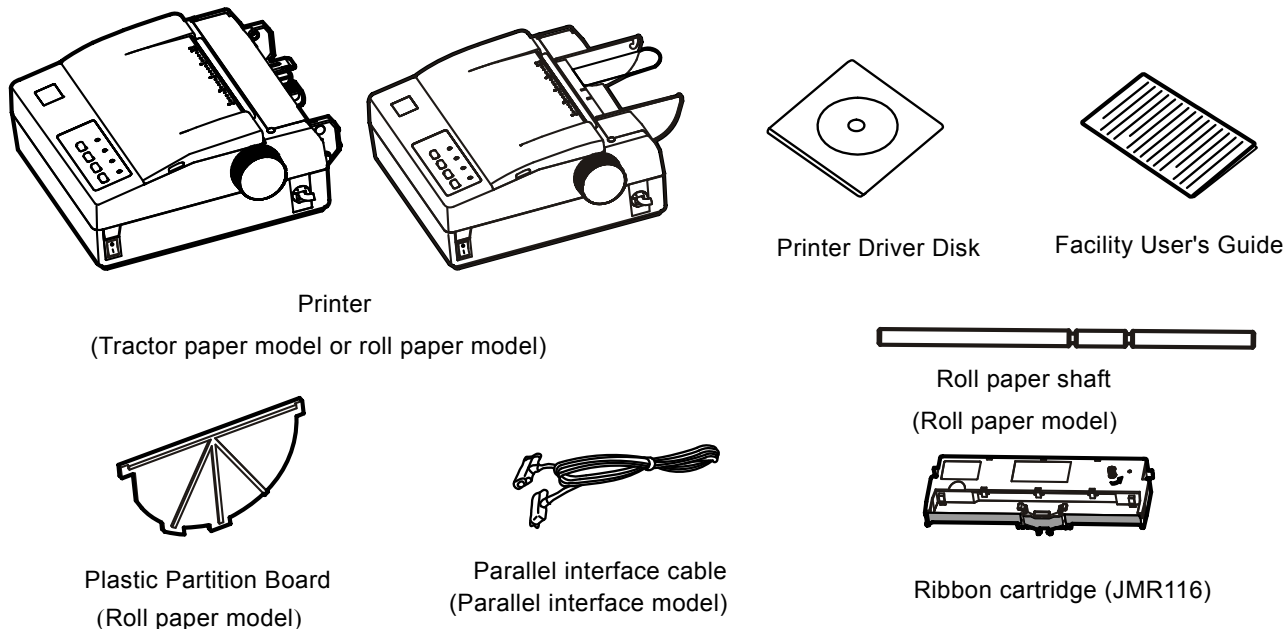


Figure1-1 Packing List

Note: 1. This printer contains two types, including tractor paper and roll paper.

2. The items you really hold according to the packing list are subject to change without notice.

3. Roll paper shaft and plastic partition board are special for DP100F/FS/FU (Roll paper model).

1.2 Unpacking the Protective Materials

1. Open the packing box, take the printer out, then lift the top cover up and remove the protective materials as follows (As shown in Figure1-2).

2. Please retain all the original packing materials in a safe place so as to transport the printer expediently in the future.

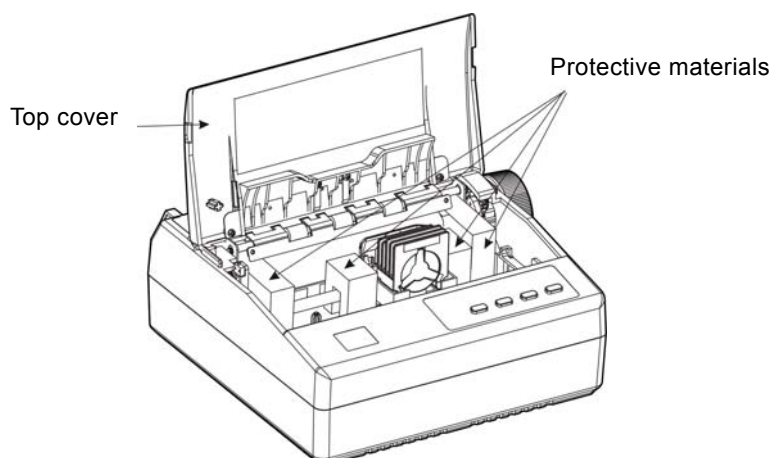


Figure1-2 Unpacking the protective materials

1.3 Identifying Main Parts of the Printer

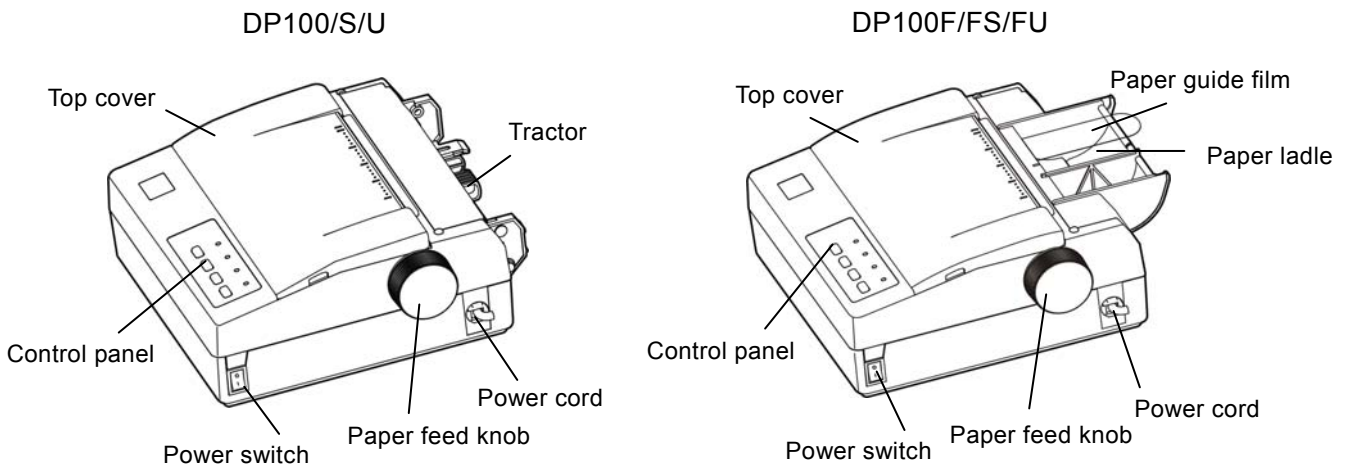


Figure 1-3 Main parts of printer (foreside)

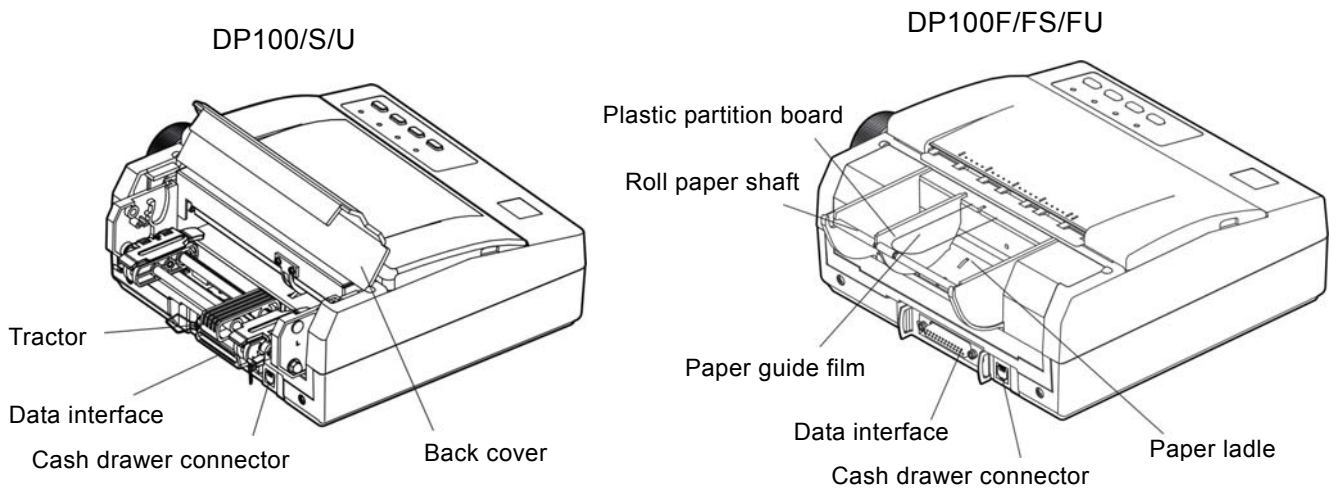


Figure 1-4 Main parts of printer (backside)

★According to specific interface standards

1.4 Installing the Ribbon Cartridge

1. Make sure the printer is turned off and disconnect the power cord.
2. Uninstalling the printer's top cover, and move the print head to the center carefully by hand (As shown in Figure 1-5).

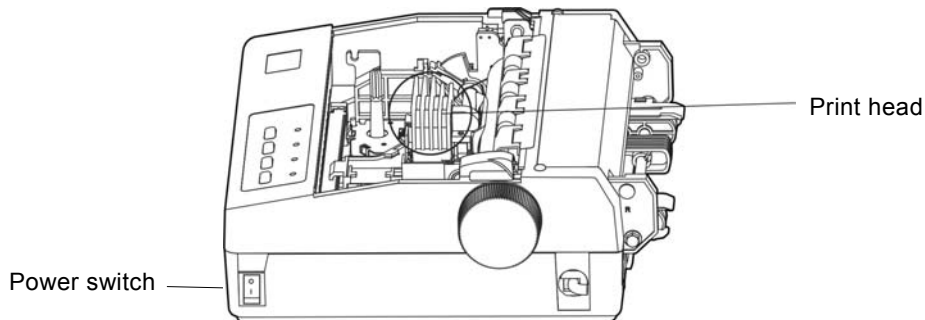
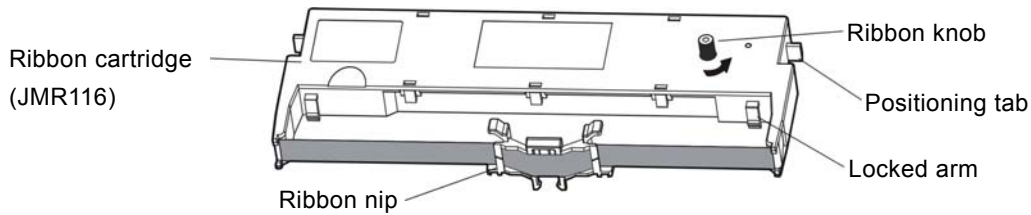


Figure 1-5 move the print head to the center

3. Hold the ribbon cartridge with the ribbon knob facing upwards and turn the ribbon knob in the direction shown by the arrow to take up any slack in the ribbon.



4. Hold the ribbon cartridge with the ribbon knob facing upwards. (As Figure 1-7 shown) Before installing the ribbon cartridge, adjust the gap adjust lever to the appropriate position. First push the upper locked arm into the corresponding spring hook, insert the positioning tab onto the corresponding positioning slot, press it lightly until it clicks into place, then insert the ribbon nip and ribbon core onto the place between the print head and the ribbon guide slice. (At the same time, turn the ribbon knob in the direction shown by the arrow on the ribbon cartridge to tighten the ribbon). Last, adjust the gap adjust lever according to the paper you used. (See the details in user's manual chapter 3.)

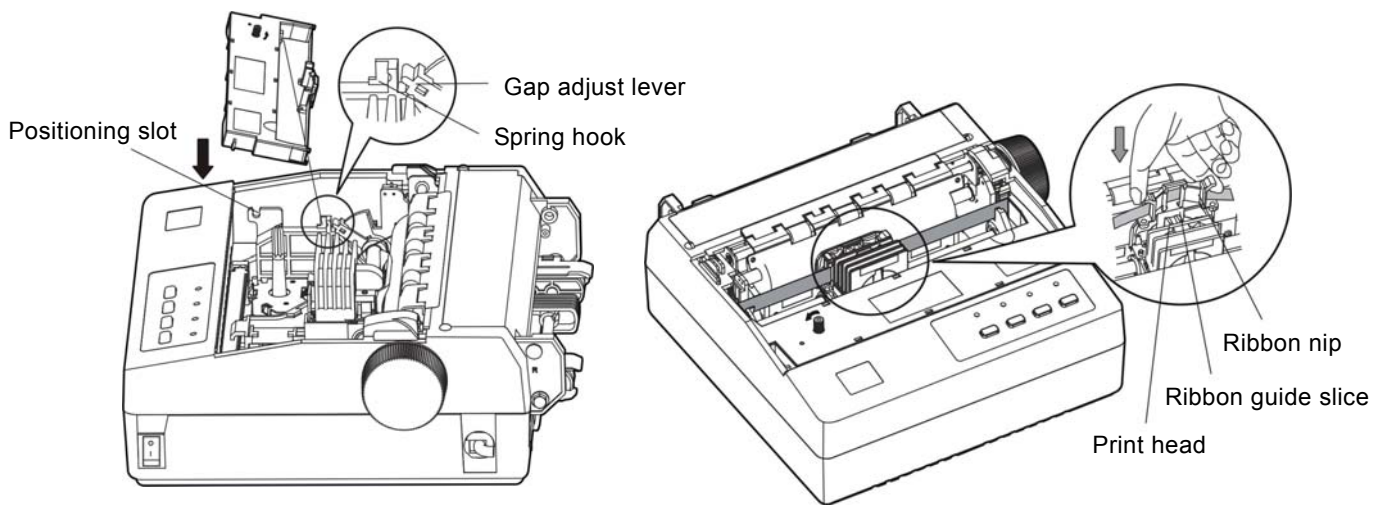


Figure 1-7 Installing the ribbon cartridge

5. If the ribbon between the print head and platen is crinkled or twisted, it should be adjusted in time. Turn the ribbon knob in the direction shown by the arrow on the ribbon cartridge to tighten the ribbon.
6. Move the print head back and forth a few times to ensure the print head moves smoothly.
7. Install the top cover (As shown in Figure 1-8)

Note: 1. When print becomes faint, please replace a new ribbon cassette. Or else, it may affect the print quality and damage the print head.

2. Make sure that the power switch has been cut off when replacing the ribbon cartridge. Move the print head to the center carefully by hand, and then hold both sides of the old ribbon cartridge to lift it out. And then install a new one as the above steps.

3. Please use the Jolimark JMR116 ribbon cartridge, our company will not guarantee to keep the printer in good repair, when it is damaged by unauthorized ribbon cartridge.

1.5 Installing and Uninstalling the Top Cover

1.5.1 Installing the Top Cover

To have the positioning pins locked into the holes of the printer, then close the top cover. To take its edges inosculate the printer upper cover. (As shown in Figure 1-8)

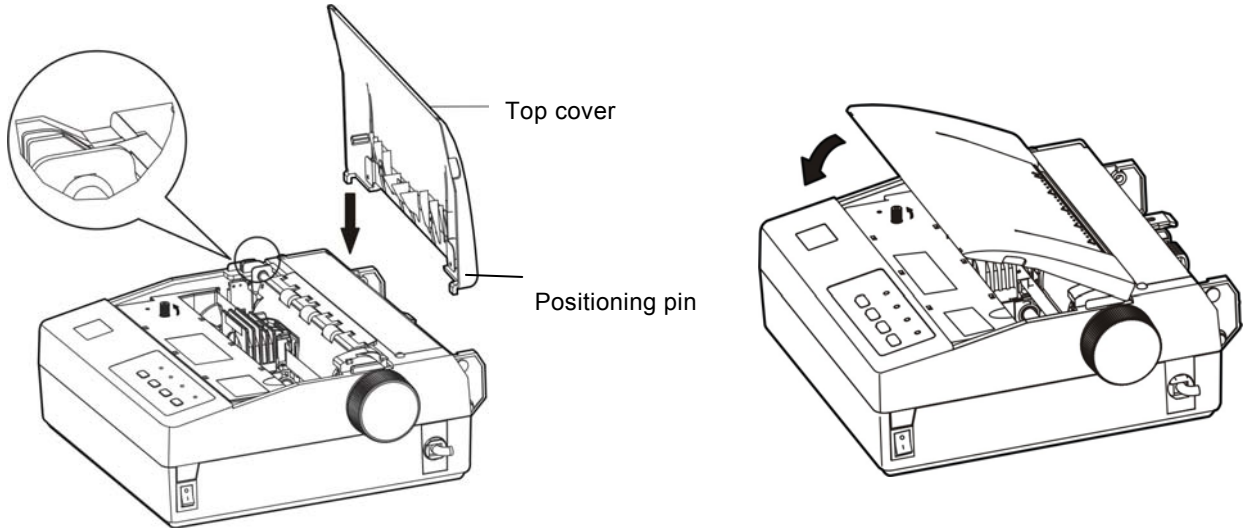


Figure 1-8 Installing the top cover

1.5.2 Uninstalling the Top Cover

Hold the convexity of top cover on both sides of the top cover, open the top cover, and then lift it out vertically.

1.6 Connecting the Computer or Other Equipment

DP100 is equipped with one data interface (parallel interface, serial interface, USB interface or USB & Ethernet interface) and one cash drawer interface. (According to specific interface standards) Please contact your dealer to change the interface with payment if needed. Make sure that you have selected the proper cable before connecting.

Note: You must make sure the printer is turned off before connecting the cash drawer cable, parallel interface cable or serial interface cable. Only after fixing the interface cable can you turn on the printer, or else, it will damage the printer.

1.6.1 Connecting the Cash Drawer Cable

Make sure the printer is turned off. Plug the cash drawer cable into the cash drawer connector and the other end is connected to the cash drawer (As shown in Figure 1-9).

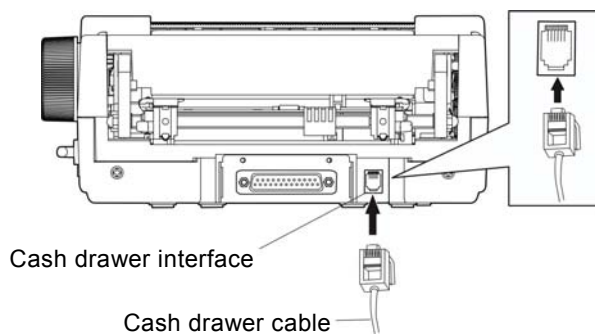


Figure 1-9 connecting the cash drawer cable

Note: You must use the cash drawer meets electric characteristics requirements, or else,

printer gets damaged for this reason that cannot be kept in repair service.

1.6.2 Connecting the Parallel Interface Cable

1. Make sure that the computer and the printer are both turned off, connect the parallel interface cable to the connector on the rear side of the printer, squeeze the wire chips together until they are locked into place on both sides of the connector. (As shown in Figure 1-10)
2. Connect the other end of the cable to the host computer's parallel interface. Tighten the screws on both sides of the printer.

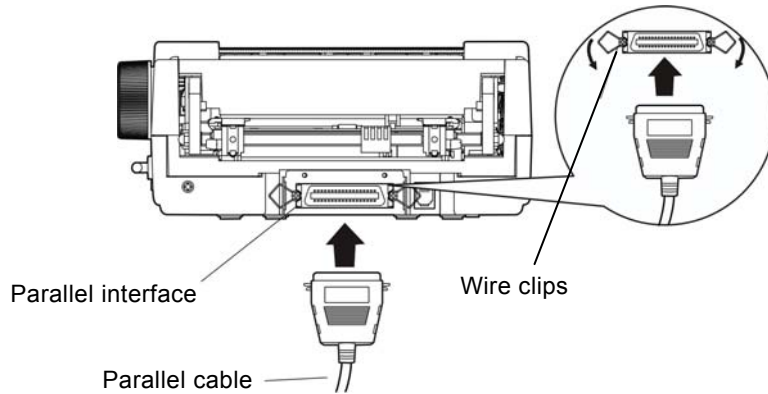


Figure 1-10 connecting the parallel cable

1.6.3 Connecting the USB Interface Cable

1. Plug the A end of USB interface (flat type) into the computer's USB interface connector.
2. Plug the B end of USB interface (square type) into the printer's USB interface connector.

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

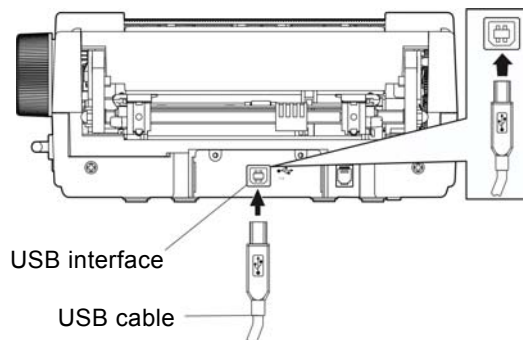


Figure 1-11 Connecting the USB cable

1.6.4 Connecting the Serial Interface Cable

1. Make sure that the computer and the printer are both turned off, connect the serial interface cable to the serial interface and tighten the screws (As shown in Figure 1-12)
2. Connect the other end of the cable to the host computer's serial interface and tighten the screws.

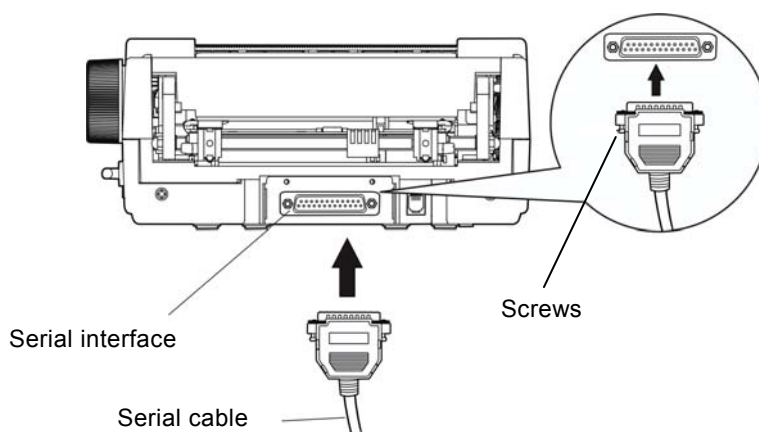


Figure 1-12 Connecting the serial cable

1.6.5 Connecting the Ethernet Interface Cable

Plug the crystal end of the Ethernet cable (RJ-45) into the printer's Ethernet interface, plug the other end of the Ethernet cable to the LAN. (As shown in Figure1-13)

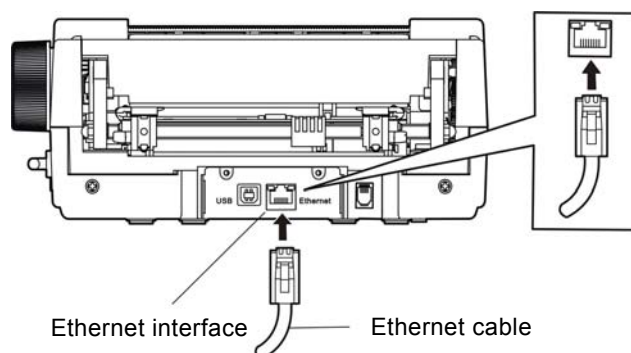


Figure 1-13 Connecting the Ethernet cable

Note: Please refer to *User's Manual* for details about the Ethernet interface network settings.

1.7 Connecting the Power Source

1. Make sure the power switch is on the OFF position (O mark on the power switch).

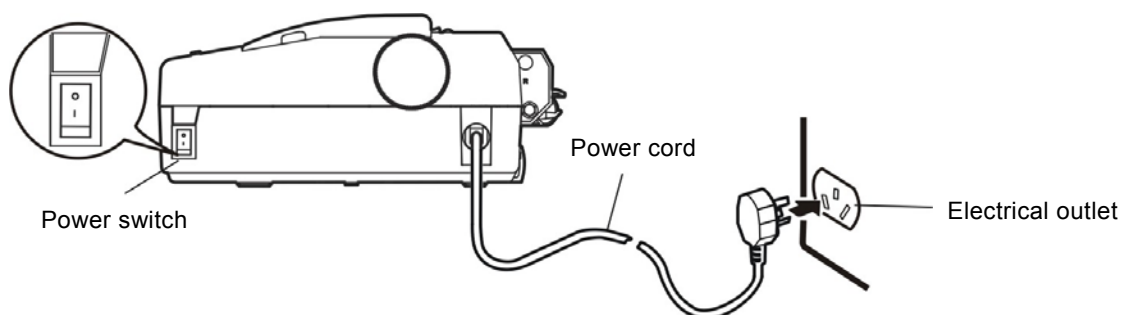


Figure 1-14 Connecting the power source

2. Make sure the voltage required by the printer matches that of your electrical outlet.
3. Plug the power cord into a properly grounded electrical outlet.

Warning: 1. If the voltage cannot match, please contact your dealer for assistance, do not plug in the power cord.

2. Use the electrical outlet to connect the ground properly.

1.8 Installing the Driver

Install the driver after connecting the computer, insert the driver disk to the computer, and then follow the steps below.

Auto-install way:

Double click the "setup.exe" file in the driver disk, and then follow the indications to finish installing.

Note: Automatic setup just runs in Windows 2000 operation system or above.

Hand operated installing way

Note: The hand operated installing ways of serial cable driver and parallel cable driver 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, you should select the path as follow: CD-ROM-"Driver"- "WIN 2000(XP-Vista-Win7)", that you can find a file named: DP100.inf, click "Open", then click "OK", return to the window of "Manufactures/Printers", 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: DP100.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 installing steps for windows 2000/XP/Vista/Win7 with an USB Driver:

The following steps are used Windows XP as example. There are slight differences between different operating systems. Other installing ways are according to real practice.

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 "Not Search, I want to Choose the Setup Driver (D)", 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, you should select the path as follow : CD-ROM-"Driver"-“WIN2000(XP-Vista-Win7)”,where you can find a file named: DP100.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 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: DP100.inf, click "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", 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.

The installing steps of USB driver:

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 finishes installing the file automatically, come out a window of "USB print supported, click "Finish".
7. The printer USB driver process is installed successfully.

The installing steps of USB printer driver:

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 (W-INME) ", where you can find a file named: DP100.inf, click "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.

1.9 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.

Note: The network printing function just runs in Windows2000 or above.

1.9.1 Connecting Printer

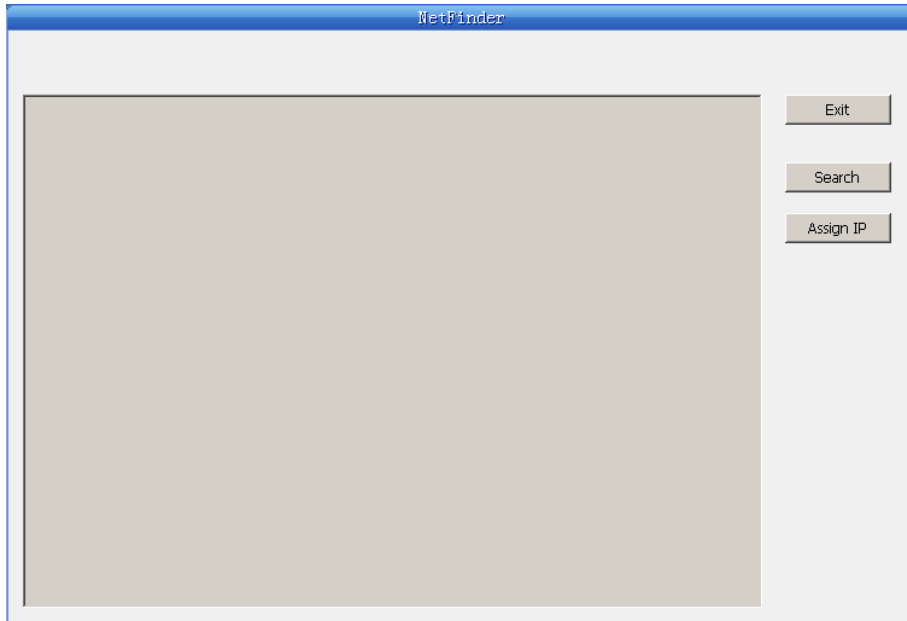
Power on the printer, connect with the Ethernet cable which has been connected to LAN, and look into the information of Ethernet LED indicator to ensure the printer has entered into the normal connection.

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

1.9.2 Setting IP Address

1. Run 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:

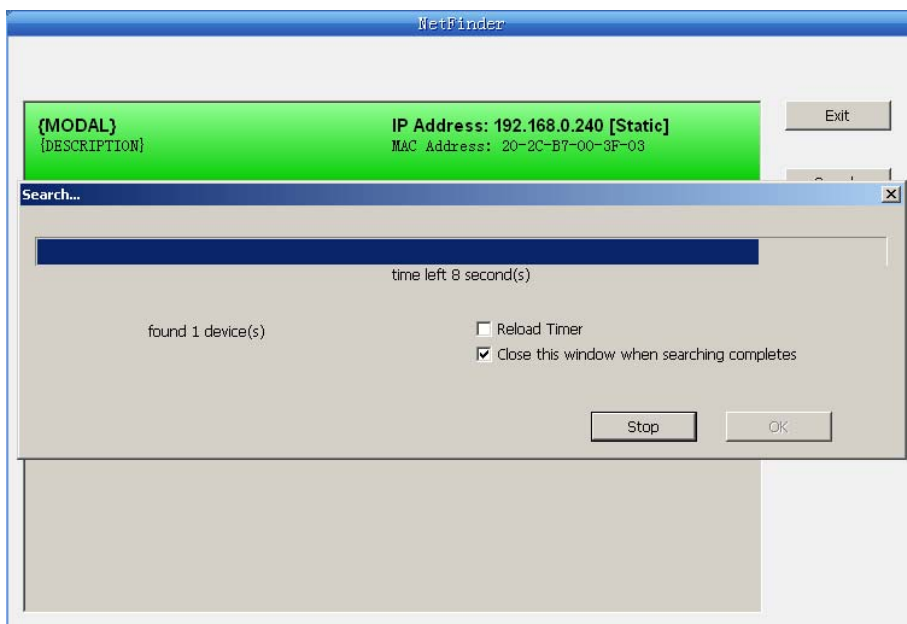
Exit—Exit from the software

Search—Search printers in the same LAN

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

2. Search printer

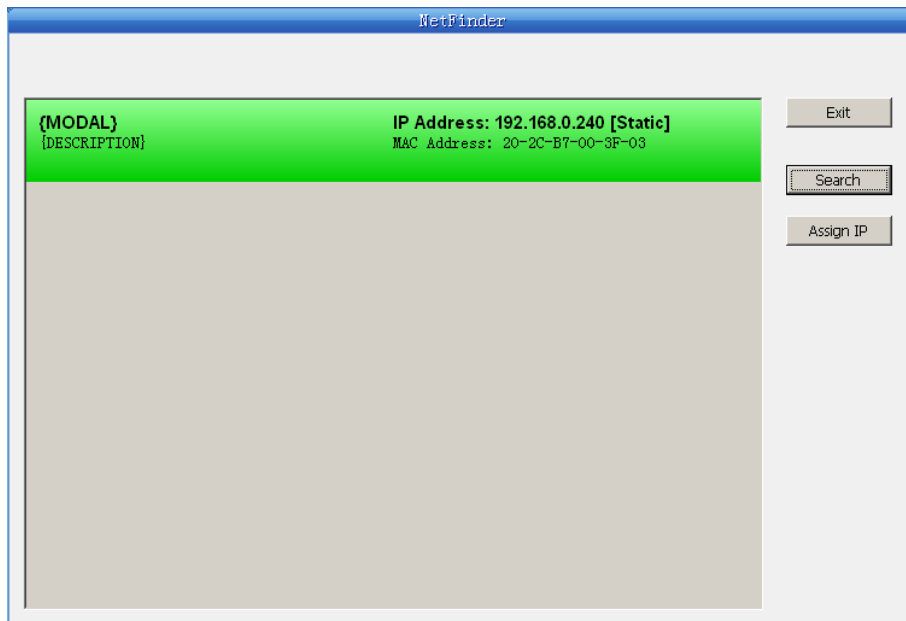
Click “Search” button in the main interface, the dialog box appearing will begin searching automatically and show appearance, listing a printer in the main interface if found. The time is counting down in the progress bar (10s in total) and the search will finish as soon as the time is over. When going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

1.9.3 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”.

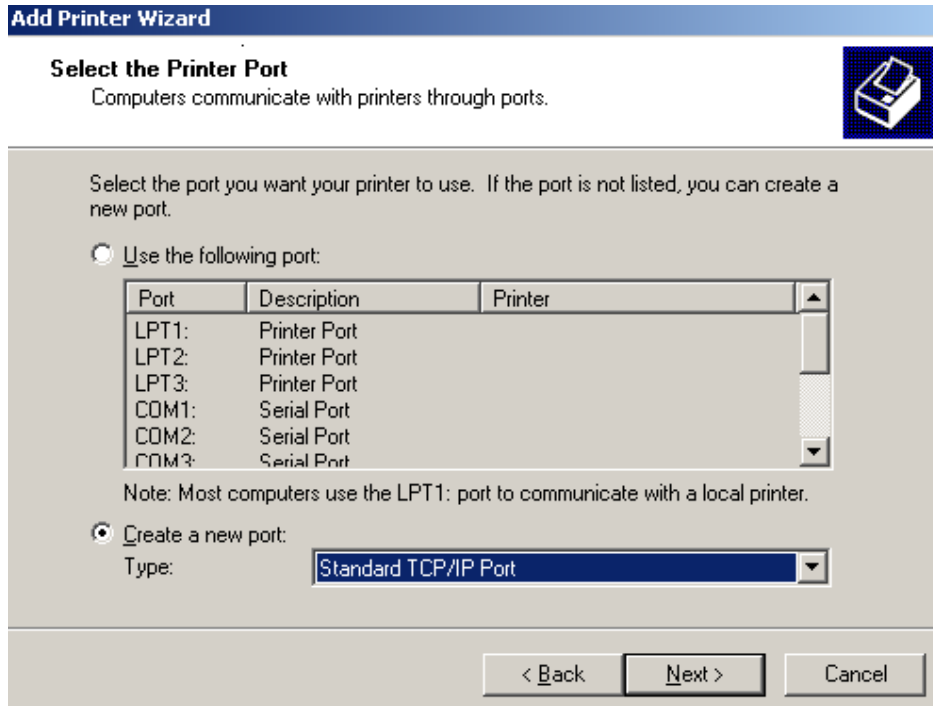
If the printer driver has been installed on the PC, adopt Upgrade-install way whose steps are shown in “Upgrade-install printer network driver”.

1. Newly-install printer network driver

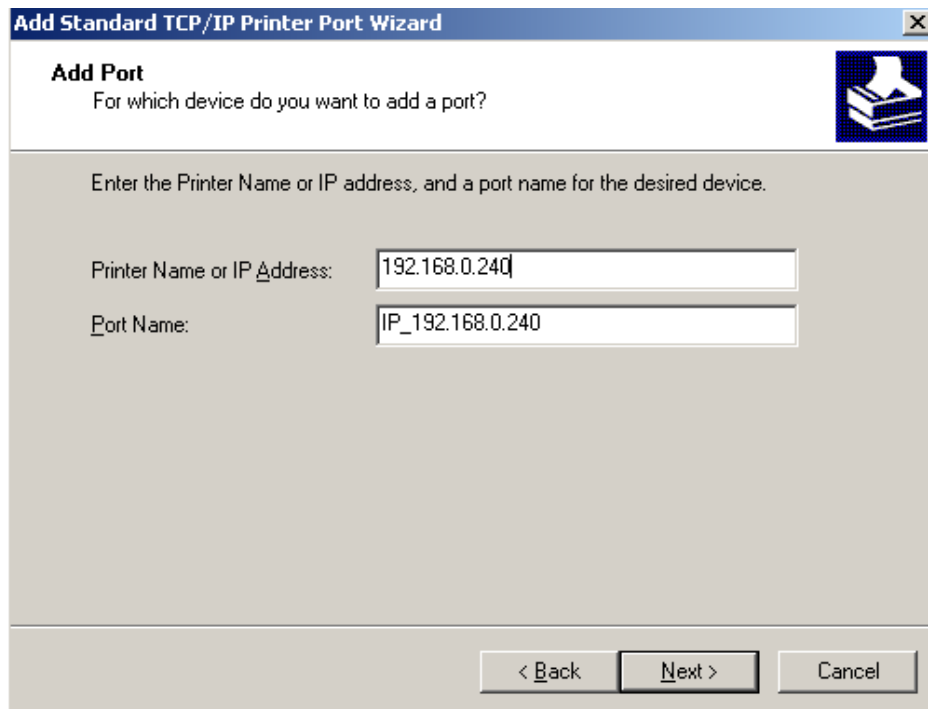
1) Click “Start”→”Settings”, select “Printers.

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".

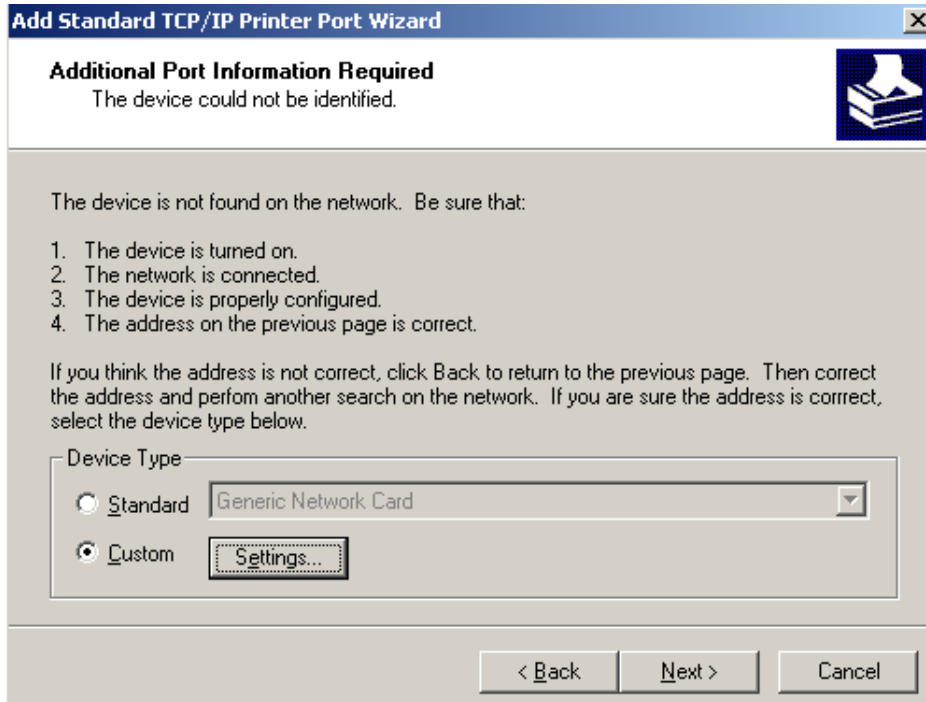


- 5) Come out a window of "Add standard TCP/IP Printer Port Wizard", click "Next".
- 6) Come out a window of "Add Port", enter the IP address reported by the "Setting printer's IP address" in the "Printer Name or IP Address" column. Take IP address "192.168.0.240" for example. "Port Name" is created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

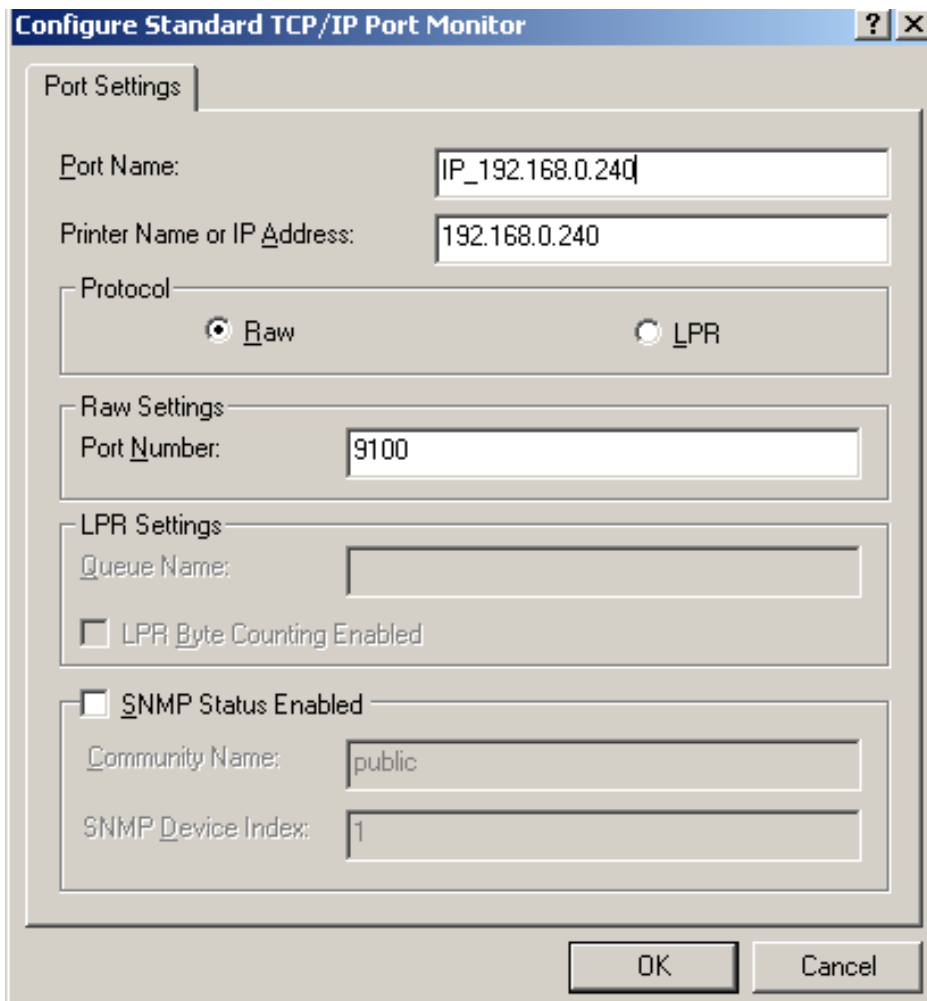


- 7) Come out a window of "Additional Port Information Required", select "Custom" in the "Device

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”.

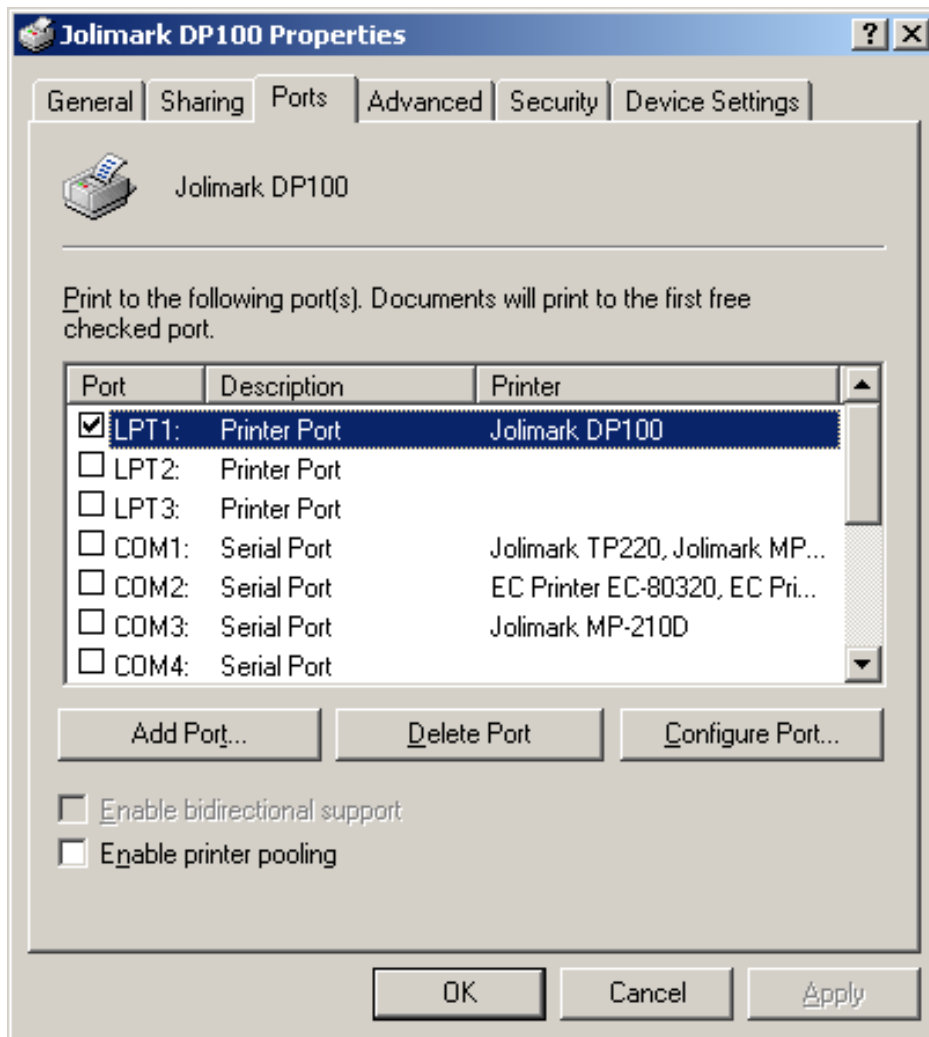


- 9) Return to "Additional Port Information Required", click "Next".
- 10) Come out a window of "Completing the Add Standard TCP/IP Printer Port Wizard", click "Finish".
- 11) In the selection of "Manufacturers/Printers", click "Have Disk", and then click "Next".
- 12) Come out a window of "Install From Disk". Please according to the operating system environment, such as Windows 2000/XP/Vista/Win7 operating system you should select the path as follows: CD-ROM-"Driver"- "WIN2000(XP-Vista-Win7)", that you can find a file named: DP100.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.

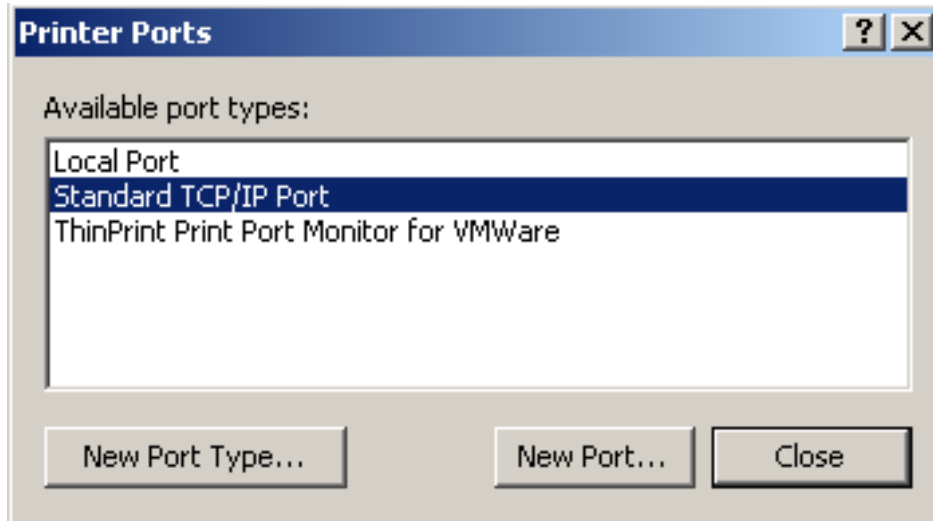
2. Upgrade-install printer network driver (setting driver's network port)

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

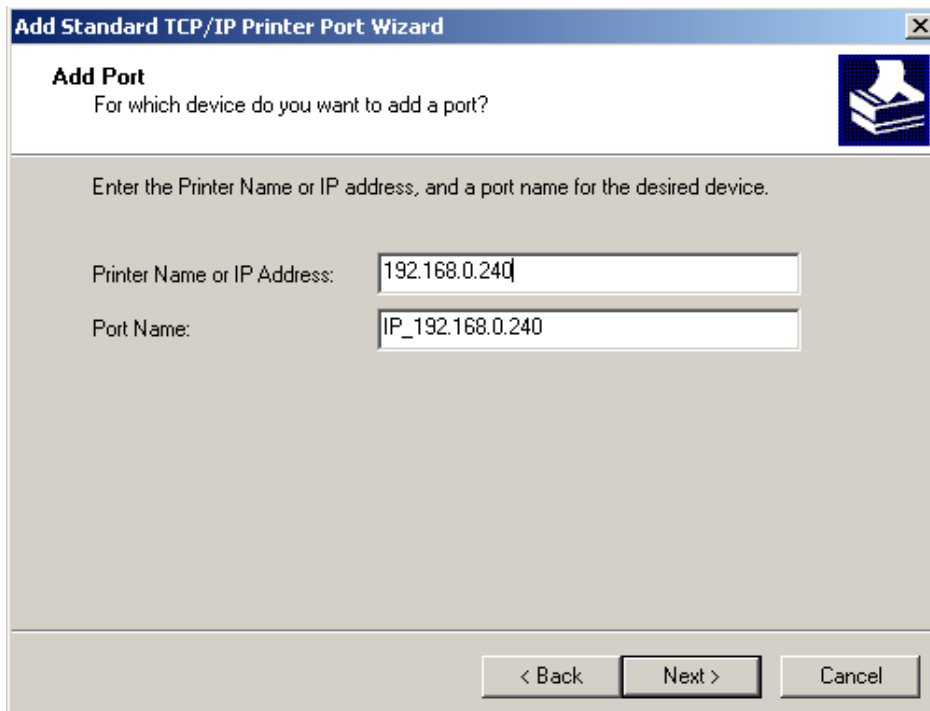
- 1) Click "Start"→"Settings", select "Printers".
- 2) Right click DP100 driver, click "Properties" on the window coming out.
- 3) Come out a window of "Properties", click "Ports" and "Add Ports".



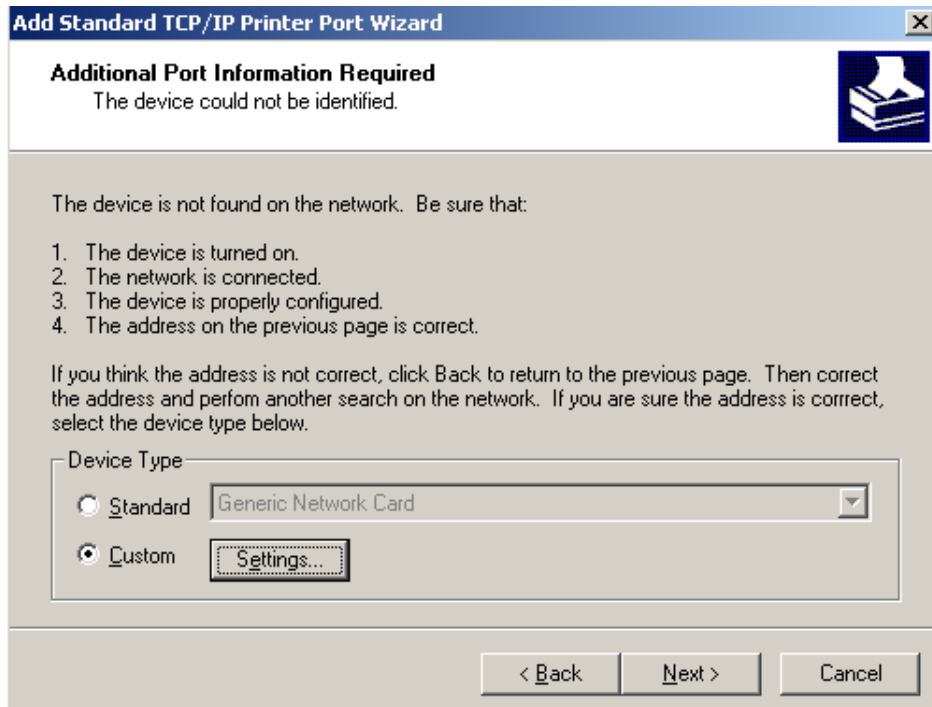
- 4) Come out a window of "Printer port", select "Standard TCP/IP Port", click "New port".



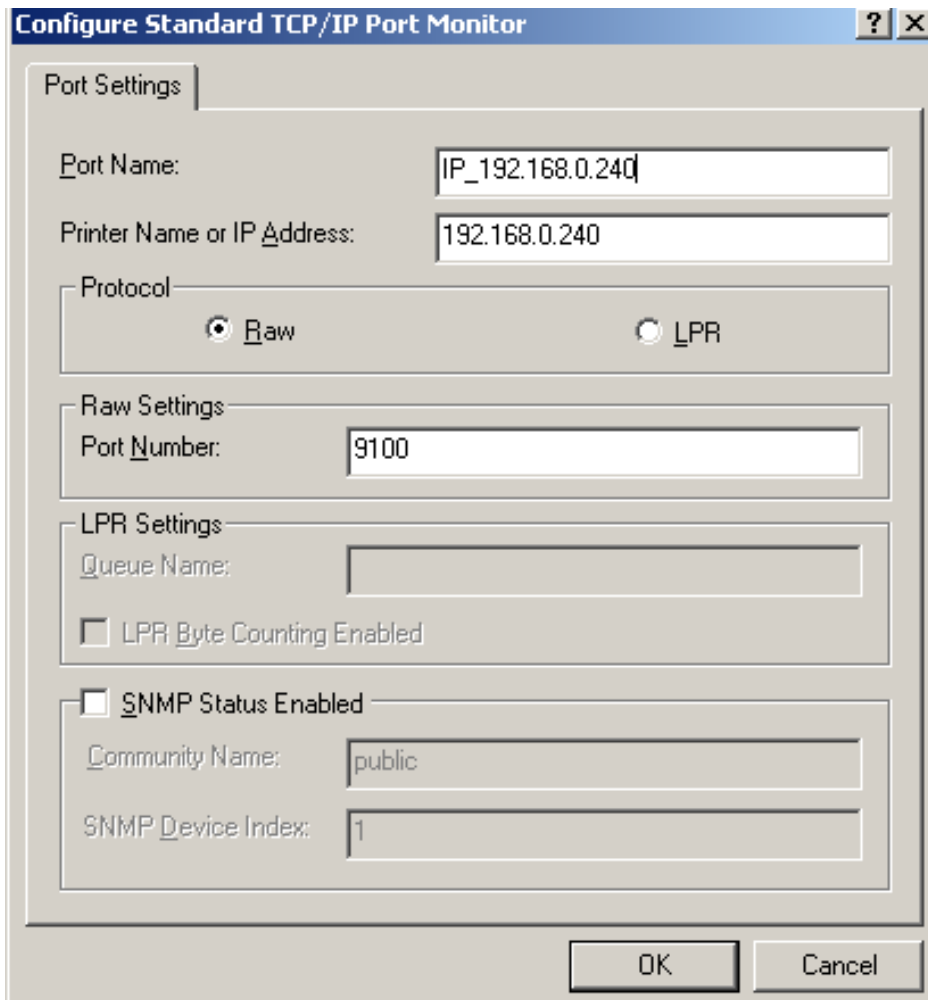
- 5) Come out a window of "Add Standard TCP/IP Printer Port Wizard", click "Next".
- 6) Come out a window of "Add a port", import the IP address reported by the "Setting printer's IP address" in the "Printer name or IP address" column. Take IP address "192.168.0.240" for example. "Port name" is created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



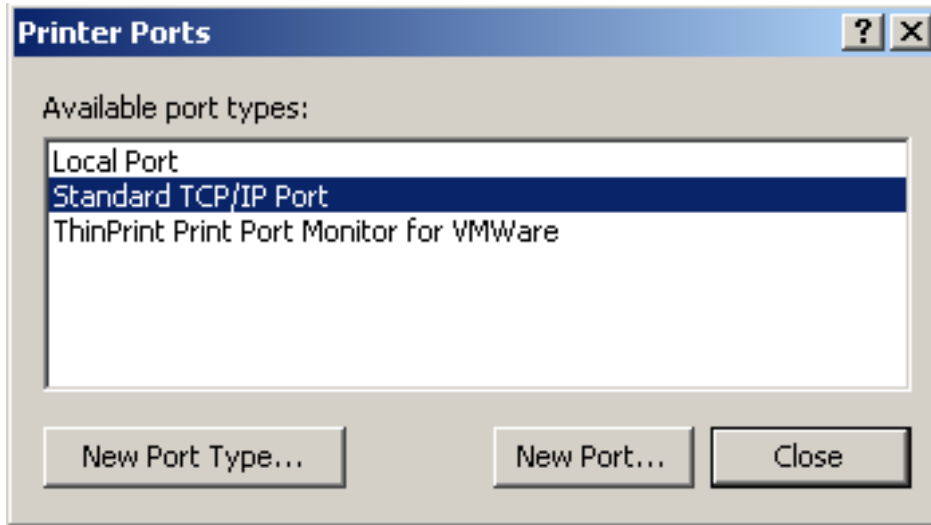
- 7) Come out a window of "Port information", select "Custom" in the "Equipment style", then click "setting".



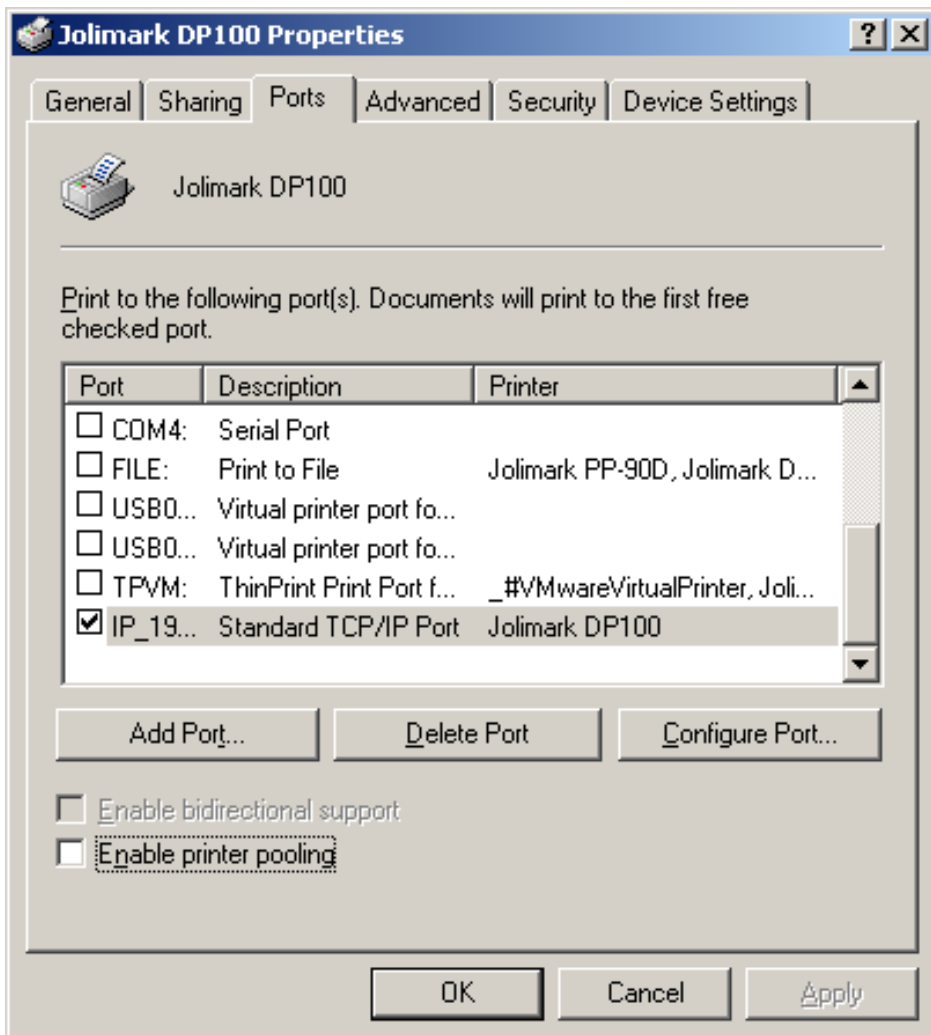
- 8) Come out a window of "Port Settings". Affirm that "Port name" and "Printer name or IP address" are correct, "Protocol" is "RAW" and "Port Number" is "9100", click "OK".



- 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 2 Control Panel

2.1 Control Panel

The control panel consists of four keys and four LEDs as shown in Figure 2-1.

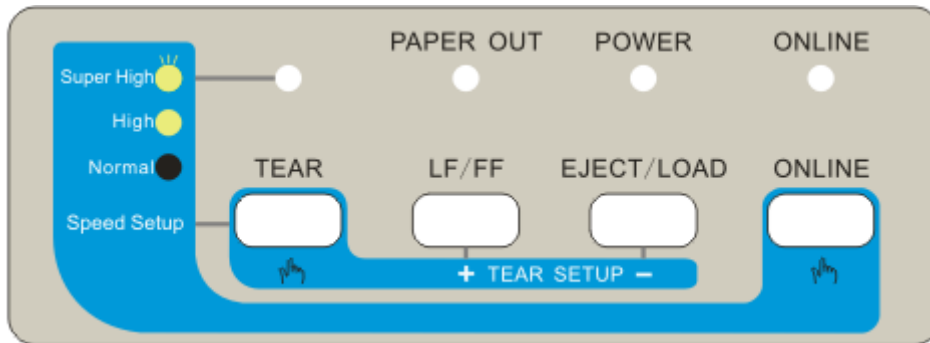


Figure 2-1 control panel

2.1.1 Function Keys

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

Key	Description
ON LINE	Press the ONLINE key, the printer is switched between ONLINE and OFFLINE mode.
EJECT/LOAD	Press the EJECT/LOAD key when the printer is paper out, then the paper will be fed, and it will be fed to the print position when the printer detects the paper. In the offline mode, if the printer is paper in, press the EJECT/LOAD key, the paper will be reversely fed (stop until exceed the setting length). In the online mode, hold the key down for about 3 seconds; the printer will enter the setup menu system.
LF/FF	In the offline mode, press the LF/FF key to feed the paper line by line. Alternatively, hold the key down for about 1 second; the printer will feed the paper one page. In the online mode, hold the key down for about 3 seconds, the printer will enter the alignment adjust mode.
TEAR	In the online mode, press the TEAR key to advance the paper to the tear-off position. And if you press the TEAR key again or the printer receives a new command, the paper (the top-of-form position of the next page) will be reversely fed to the print position. In the online mode, hold the key down for 5 seconds, the printer will be initialized (Menu settings and print speed).

2.1.2 Shortcut Keys

Keys	Function
TEAR + Power Switch	Long-time-printing test
LF/FF + Power Switch	print-pins test
LOAD/EJECT + Power Switch	Chinese self-test
ONLINE + Power Switch	ASCII self-test
ONLINE + LF/FF + Power Switch	H print mode

LF/FF + TEAR + Power Switch	Enter Hex Dump mode
LOAD/EJECT+ LF/FF + Power Switch	Print the current printer setting

In the online mode, hold down the **LOAD/EJECT** key, the printer will enter the current printer setting mode, the functions of the keys are described as follows:

Key	Function
LOAD/EJECT	Select the setting of the menu.
LF/FF	Confirm the option
ONLINE	Press and it will return to the above menu. Pressing and holding on and it will return to the main menu.

In the online mode, hold down the **LF/FF** key, the printer will enter the alignment adjust mode.

Key	Function
LF/FF	Increase left offset
LOAD/EJECT	Increase right offset
ONLINE	Print the result you just adjust
TEAR	Switch the adjustment among DP, high-speed and LQ.

In the online mode, press the following keys to adjust the top of form setting.

Keys	Function
ONLINE+LF/FF	Increase the top of form
ONLINE+ LOAD/EJECT	Decrease the top of form

In the online mode, press the following keys to adjust the tear-off position setting.

Keys	Function
TEAR+LF/FF	Move upwards (Tear-off position)
TEAR+ LOAD/EJECT	Move downwards (Tear-off position)

In the online mode, press the following keys to adjust the print speed.

Keys	Function
ONLINE + TEAR	Adjust the print speed among normal speed, high speed and super high speed

2.1.3 Indicator LED

Each indicator LED function is shown as follows:

Indicator LED	Function
ONLINE	ON: ONLINE mode; OFF: OFFLINE mode
PAPER OUT	ON: paper out; OFF: paper in
SPEED	OFF: normal speed; ON: high speed; BLINK: super high speed
POWER	ON: the printer is turned on; OFF: the printer is turned off

When the printer has something wrong, the printer buzzer sounds with “beep...beep”, and the alarm display as follows:

Error	LED
Print head overheated	PAPER OUT LED is on and ONLINE LED blinks
Home position error	PAPER OUT LED and ONLINE LED blinks alternately
Paper out	ONLINE LED is off and PAPER OUT LED blinks.

2.1.4 Set the Print Speed, the Top of Form and the Tear-off Position

1. Set the Print Speed

Power on and with the printer online, hold down the **ONLINE** key, then press the **TEAR** key to change the print speed: normal speed, high speed and super high speed, the state of the speed LED is described as follows:

Normal speed: off (Speed LED)

High speed: on (Speed LED)

Super high speed: blinks (Speed LED)

2. Set the Top of Form

The top of form setting determines the margin between the top of paper and the first printed line (the top margin). Turn on the printer, to have the paper back to the paper wharf, then press the **LOAD/EJECT** key to feed the paper, next press the **ONLINE + LF/FF** keys to increase the top of form or the **ONLINE + LOAD/EJECT** keys to decrease it. When the top of form reaches the default setting value, the printer will sound one beep. Based on the default value of the top of form, the maximum setting (tractor paper type) is up to 27mm and down to 4.2mm. The maximum setting (roll paper type) is up to 12.3mm and down to 19mm.

3. Set the Tear-off Position

Turn on the printer, to have the paper back to the paper wharf, then press the **LOAD/EJECT** key to feed paper, next press the **TEAR** key to feed the bottom of the current page to the tear-off position. Press the **TEAR+ LF/FF** keys to increase the tear-off position or the **TEAR + LOAD/EJECT** keys to decrease it. When the tear-off position reaches the default setting value, the printer will sound one beep. Based on the default tear-off position, the maximum setting of the tear-off position is up to 4.2mm and down to 4.2mm.

2.2 To Print 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 setting report:

1. Turn the printer off.
2. Install tractor paper in the tractor correctly. (The width of tractor paper is at less 136mm)
3. Hold down both the **LOAD/EJECT** and **LF/FF** key at the same time. Then turn on the printer.

The printer automatically loads paper and prints the current setting report as shown in Figure 2-2.

Jolimark DP100			
Current Setting Report			
SYSTEM SETUP			
LANGUAGE	ENGLISH	CHINESE	
EMULATION	ESC/PK2	ESC/POS	STAR 320
CHAR. MODE	ASCII	CHINESE	
CHARACTER			
FONT	ROMAN	SANS SER	COURIER
	PRESTIGE	SCRIPT	OCR-B
	OCR-A		
ENG PITCH	10 CPI	12 CPI	15 CPI
	PROPORTIONAL		
CHI PITCH	6.7 CPI	7.5 CPI	
INTL CHAR SET	U.S.A	FRANCE	GERMANY
	U.K.	DENMARK1	SWEDEN
	ITALY	SPAIN 1	JAPAN
	NORWAY	DENMARK2	SPAIN 2
	LATIN AM	KOREA	LEGAL
CHARACTER SET	ITALICS	GRAPHICS	
PAGE LAYOUT			
LINE SPACING	6 LPI	8 LPI	
FORM LENGTH	3.5 INCH	5 INCH	7 INCH
	LETTER	A4	12 INCH
	14 INCH		
PAGE SKIP	OFF	ON	
PRINT SETUP			
TEXT DIR	BI-DIR	UNI-DIR	
GRAPHIC DIR	BI-DIR	UNI-DIR	
QUIET MODE	OFF	ON	
AUTO LF	OFF	ON	
TEAR OFF	OFF	ON	
TEAR OFF(FF)	OFF	ON	
LOADING	PUSH KEY	0.5 SEC.	1.0 SEC.
	2.0 SEC.		
IMPACT MODE	OFF	ON	
PAPER TYPE	TRACTOR	ROLL	
BLACK MARK	OFF	ON	
TEAR KNIFE	OFF	ON	

Figure 2-2 Current setting report

Note: 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.

2.3 To Enter the Setup Menu System and Change the Settings

1. Make sure that the printer is in the online mode. The **ONLINE** LED is on.
2. Hold down the **LOAD/EJECT** key for about 3 seconds.

The **PAPER OUT** LED and **ONLINE** LED blinks two times simultaneously. The printer enters setup menu system.

Firstly, it prints out title and main menu. (As Figure2-3 shown) The default options are underlined. The print head stop below the default option.

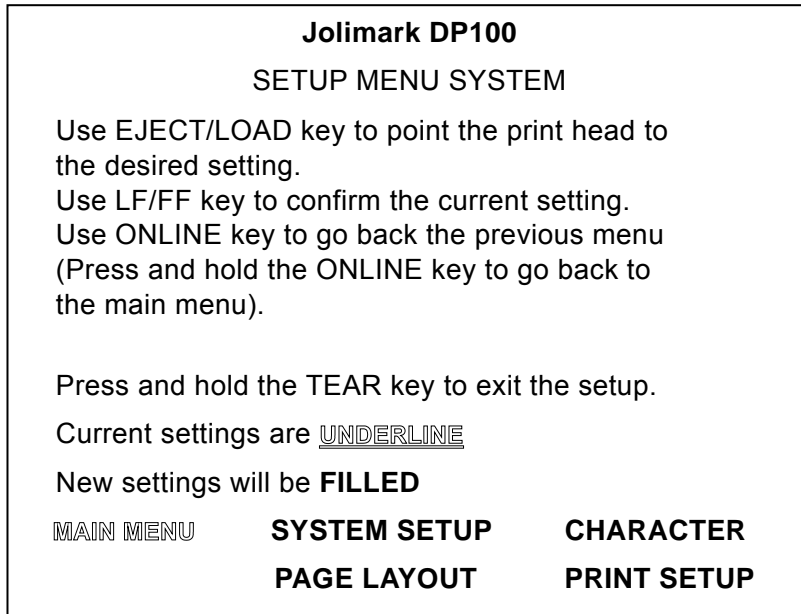


Figure 2-3 Setup menu system

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

Press:	To:
EJECT/LOAD	Select the menu options or setting value.
LF/FF	Enter the submenu or affirm the setting value. Note: Newly settings are shown in FILL
ONLINE	Go to the above menu, holding down this key will return to the main menu.

4. When you have made all of your settings (remember that you don't have to go all the way through the menu system), switch the printer off and then turn on again. New settings of the menu will be stored.

2.4 Description of Options

Options	Description
<u>SYSTEM SETUP</u>	
LANGUAGE	Select the language you want, ENGLISH or CHINESE
EMULATION	Select the emulation you want, ESC/PK2, ESC/POS or STAR 320 emulation
CHAR. MODE	Select ASCII characters (1 byte) or Chinese characters (2 bytes)
<u>CHARACTER</u>	
FONT	Set the font for the printer to use in the absence of any font control instructions from your software.

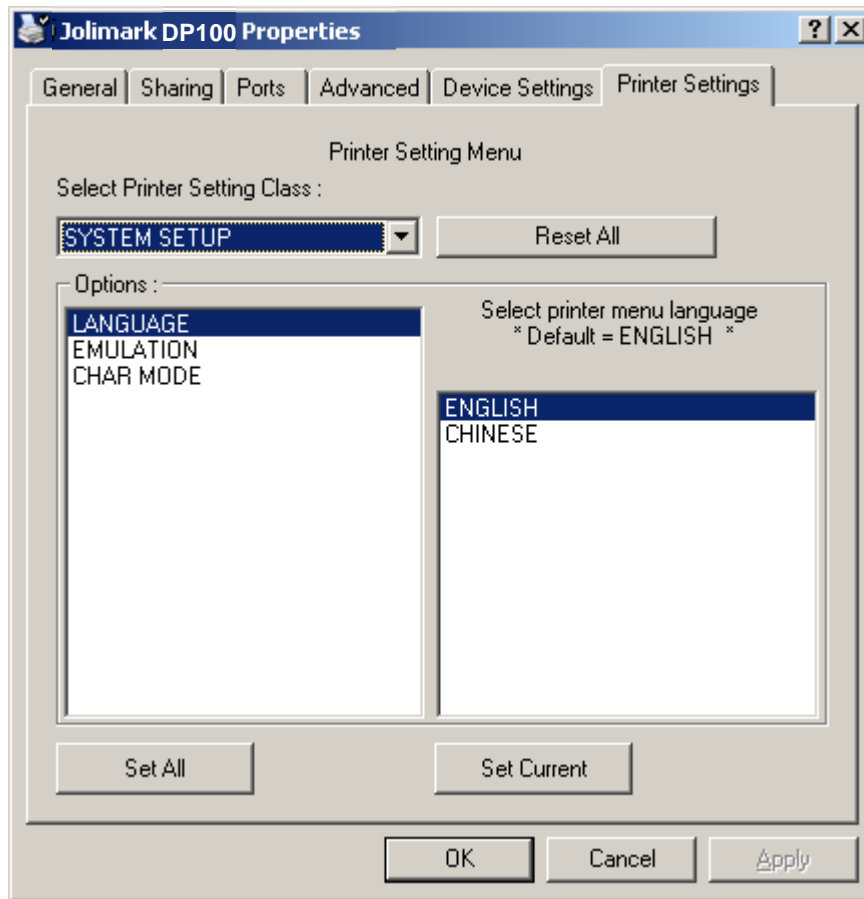
ENG PITCH	Set the pitch to determine the horizontal spacing of the printed ASCII characters.
CHI PITCH	Set the pitch to determine the horizontal spacing of the printed Chinese characters.
INTL CHAR SET	Select the internal character set (Only compatible to EPSON)(U.S.A., FRANCE, GERMANY, U.K., DENMARK1, SWEDEN, ITALY, SPAIN 1, JAPAN, NORWAY, DENMARK2, SPAIN 2, LATIN AM, KOREA, LEGAL)
CHARACTER SET	Select character set into Italic Character set or Graphic Character set.
PAGE LAYOUT	
LINE SPACING	Set the line spacing of the printed characters. You can set it to either 1/6 inch (the default setting) or 1/8 inch.
FORM LENGTH	Set the length of your printer paper, for both cut sheet or tractor paper.
PAGE SKIP	Select (ON) or cancel (OFF, the default) a bottom margin of one inch.
PRINT SETUP	
TEXT DIR	Set unidirectional or bi-directional printing for text.
GRAPHIC DIR	Set unidirectional or bi-directional printing for graphics. It is just compatible with EPSON.
QUIET MODE	Select the printer into quiet mode.
AUTO LF	Select (ON) or cancel (OFF) the automatic advance of the paper by one line after every carriage return command.
TEAR OFF	Enable or disable TEAR OFF function. To have the bottom of the current page feed to the tear off position when receives 0C command.
TEAR OFF(FF)	Enable or disable TEAR OFF (FF) function. To have the current position of the page feed to the tear off position when receives 0C command.
LOADING	This determines the action of the printer while it detects there is paper in. Select loading paper by pressing LF/FF key or automatic feeding after the stated delay time (0.5sec, 1.0sec or 2.0sec).
IMPACT MODE	Enable or disable impact mode function. When you select COPY print, enable the impact mode function and you will gain the good print effect.
PAPER TYPE	Select the paper type: tractor paper or roll paper.
BLACK MARK	Enable or disable the black mark function.
TEAR KNIFE	Enable or disable the tear cutter.
PIN SWITCH	Enable or disable the pin switch function. After open pin switch function, the printer will switch different print pins when printing Chinese tabs
HEAD PIN	Setting the situation of print pin. The default setting of the print pins are LIVE. But it may be break pins during printing, users can set the corresponding pins as "BROKEN", and then the printer will compensate the position of broken pins automatically.

2.5 Online-aptitude Parameter Settings

DP100 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", open the window of "Printers".
3. Right click "Jolimark DP100" 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.

2.6 Using the Self Test Functions

■ Maintenance Printing Test (H Print Mode)

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


```

DUMP MODE
0000:  BD F8 C8 EB CA AE C1 F9 BD F8 D6 C6 C4  =xHKJ. Ay=Xvfd
000D:  A3 CA BD BA F3 A3 AC B6 D4 B5 E7 C4 D4  #J=:S#, 6T5Gdt
001A:  B4 AB CA E4 C0 B4 B5 C4 CA FD BE DD A3  4+Jd@45DJ}>]#
0027:  AC BD AB D2 D4 CA AE C1 F9 BD F8 D6 C6  , =+RTJ. Ay=xVF
    
```

Figure 2-8 Hex Dump Mode

■ **Current Setting Printing Mode**

The printer will print out a piece of current setting report is performed by turning power on, while pressing **LOAD/EJECT** and **LF/FF** keys. The printing format is similar with that of Menu system.

■ **Alignment Adjust**

Enter the alignment adjust mode to improve the print quality when the printer is used for a long time.

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 for about 3 seconds, the printer prints the degree of make columns (DMC).
3. After entering the alignment adjust mode, press **EJECT/LOAD** and **LF/FF** keys to adjust the degree of make columns:

LOAD/EJECT	Each press this key, the singular line will move right with one step (30 steps max.)
LF/FF	Each press this key, the singular line will move left with one step (30 steps max.)
4. Press the **ONLINE** key to save the setting and the printer will print the setting which has been set.
5. Repeat step 3 and step 4 to adjust the DMC until you are satisfied with the result.
6. Press the **TEAR** key to switch to another alignment adjust mode, such as DP\HIGH SPEED and LQ, as shown in Figure 3, 4.
7. Restart the printer and exit the alignment adjust mode.

Note: Alignment adjust mode will affect the print quality, please make a thorough consideration before adjusting it, and you must follow the instructions strictly.

Chapter 3 Loading Paper

DP100 can use many kinds of different specification papers. And it also has convenient install and uninstall paper function. This chapter will introduce these functions in detail.

3.1 Paper Thickness Adjustment

Before loading roll paper or tractor paper, you have to adjust the gap adjust lever on the right side of the printer. To feed thicker paper 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 avoid problems (paper jam etc.), adjust the gap adjust lever as shown in the Figure 3-1. The scale number # 1 shown in Figure 3-1 identifies the standard of paper thickness setting. This is the recommended setting for most paper. Use Table 3-1 to find the recommended setting for other paper.

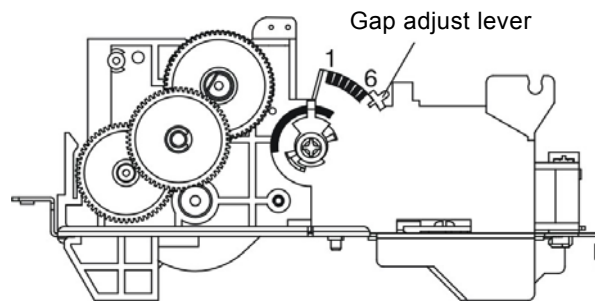


Figure 3-1 Setting the gap adjust lever

Paper Type		Lever Position
Standard Paper (single roll paper or single tractor paper)		1
Multiple	Original +1 copy	2
	Original +3 copies	3 or 4
Reserved		5 or 6

3.2 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). You can set the top of form without using the paper feed knob (See section 2.1.4 for details).

Note: The top margin setting is only effective to the first page.

3.3 Loading the Tractor Paper

1. Ensure the tractor unit has been installed on the back of the printer and the printer is turned off.
2. Lift up the back cover.

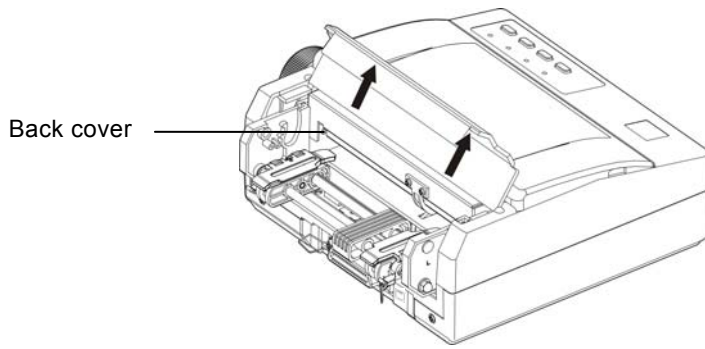


Figure 3-2 Lift up the back cover

3. Release the tractor locking levers, adjust the tractor position, and make it closed to the paper width.

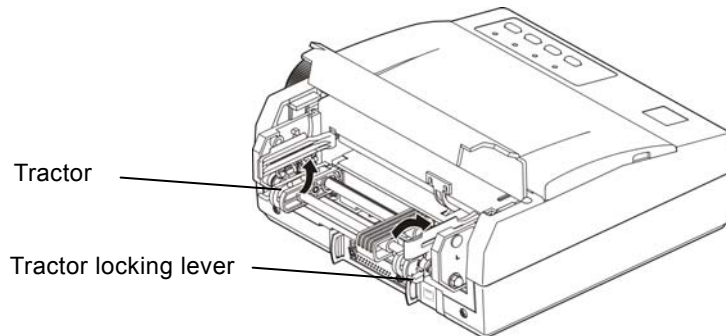


Figure 3-3 Release the tractor locking levers

4. Open the tractor covers and place the paper on the sprocket pins of the tractor unit, then close the tractor cover.

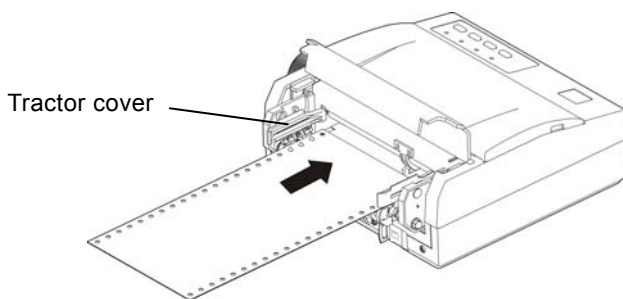


Figure 3-4 Place the paper on the sprocket pins

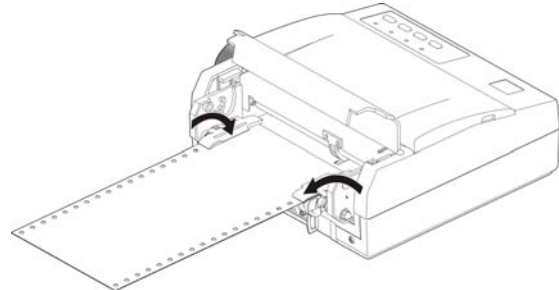


Figure 3-5 Close the tractor covers

5. Move the two tractors to make the paper tight, and then push down the two tractor locking levers.
6. Close the back cover.

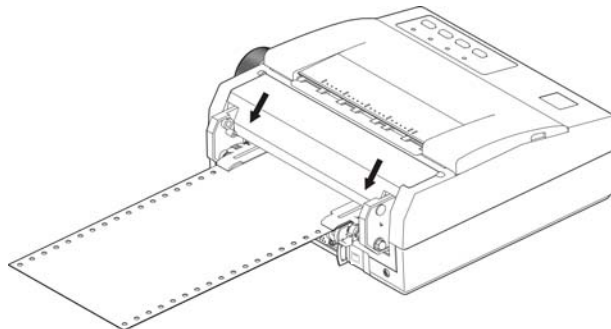


Figure 3-6 Close the back cover

7. Turn on the printer after installing the tractor paper, press **LOAD/EJECT** key, then it can load tractor paper automatically. Then adjust the top of form position.

3.4 Loading the Roll Paper

1. Ensure the paper ladle has been installed on the back of printer and the printer is turned off.
2. According to the size of the roll paper you used, insert the **plastic partition board** into the paper ladle. If you use the 76mm wide roll paper, please insert the **plastic partition board** into the paper ladle where is marked 76mm position, and if you use the 57.5mm wide roll paper, please insert the plastic partition board into the paper ladle where is marked 57.5mm position, and if you use the 114mm wide roll paper, please demount the **plastic partition board** and retain it.
3. Pull out the paper after turning on the printer, and push the head of the paper into the paper guide, the paper may load into the printer automatically. Then endue the roll paper shaft, uncover the **roll paper guide film**, finally, take the paper roll into the paper ladle.

(Note: The direction that the paper comes off the roll, which is shown as Figure 3-7. Take the roll paper guide film above the roll paper to prevent the paper from entangling into the paper guide.)

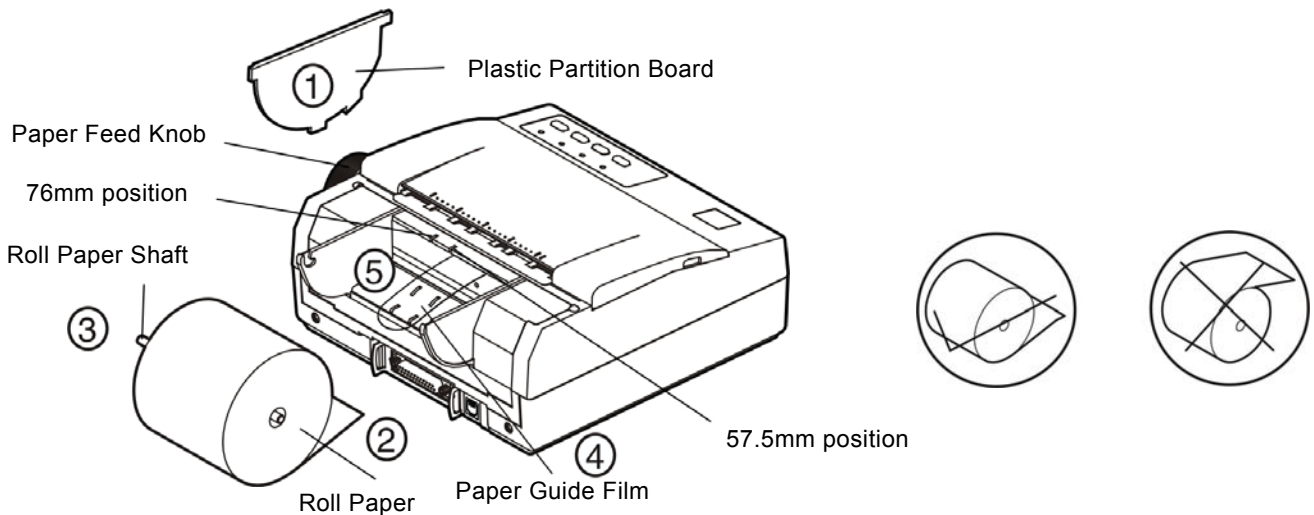


Figure 3-7 Loading the Roll Paper

4. Finish loading paper when the black mark function isn't selected. If the black mark function is selected, the printer will feed paper continuously for seeking the black mark until the black mark is found (If the black mark isn't found for a certain distance, the printer will stop feeding paper).

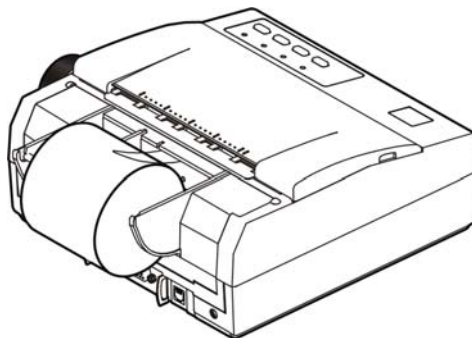


Figure 3-8 Finish installing roll paper

5. Finish loading paper as shown in figure 3-8.
6. Turn the paper feed knob to adjust the Top-of-Form position.

At this time, printer has already prepared for files printing. Before loading paper, printer stays at waiting state, and indicators on control panel will remind you of loading paper according to "Paper-out" indicator on.

Appendix A Maintenance and Troubleshooting

A.1 Maintenance

Clean out the waste paper or other sundries inside the printer periodically. Close the top cover when the printer is not being used.

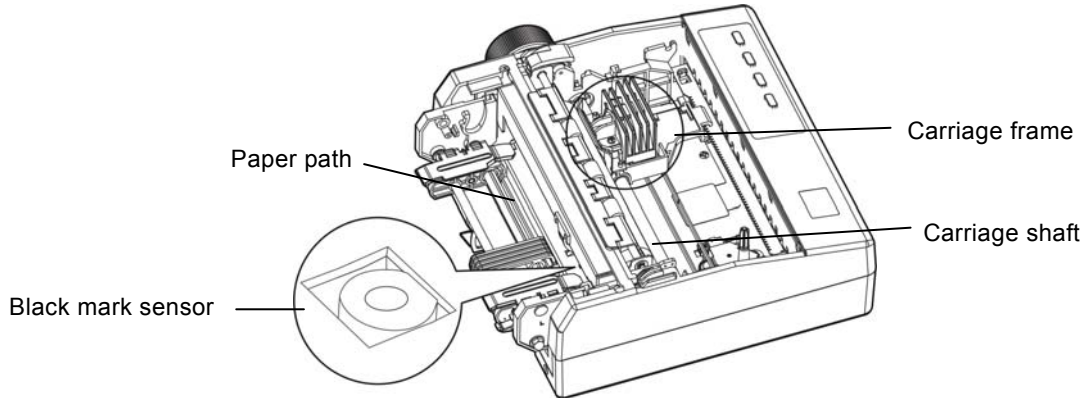


Figure A-1 cleaning printer

■ Periodic cleaning and cleaning tool

Periodic cleaning: every six months or 300 working hours once

Cleaning tools: dry cloth (clean the metal parts with soft cloth)

■ Cleaning the spare parts

Wipe soiled parts of the printer with a clean cloth.

■ Cleaning the paper feed platform

Please wipe off the 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 can run smoothly. But the oil is easy to absorb dust, please clean the dust with soft cloth first, add proper lube (NYE81 lube of NYE company is recommended), move the print head back and forth and make the lube scattered.

■ Cleaning the black mark detector

Because black mark sensor is photoelectric sensor, it needs to clean periodically.

Clean the surface of black mark sensor which under the platen every 3 months.

Note: 1. Being used under dusty circumstance, the carriage shaft may stack much dust and affect the print quality.

2. Turn off the printer and pull out the power cord before cleaning.

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

4. Don't use hard cloth and flammable solvent for cleaning.

A.2 Error LED on the Control Panel

(1) Print head overheating protection

Phenomenon: PAPER OUT LED is on, ONLINE LED blinks, and the print head is moving, but

not printing.

Reason: The temperature of the print head is too high, so it enters into the protection state.

Solution: Wait patiently, and the printer will recover automatically after the print head is cool.

(2) Fault check of the restoration sensor

Phenomenon: PAPER OUT LED and ONLINE LED blink alternately.

Reason: Fault check of restoration sensor.

Solution: Turn off and then turn on the printer.

(3) Printer is paper out

Phenomenon: ONLINE LED is off and PAPER OUT LED is on.

Reason: Paper out.

Solution: Load paper again.

A.3 Troubleshooting

WARNING: Never attempt to repair the printer by yourself.

● **Power supply**

Phenomenon: Turn on the printer, all LEDs are off.

Solution: 1. Check whether the power cord is connected to the power fastness or not.
2. Check the lights and other devices in the power connector.

● **Paper feed**

Phenomenon: Paper jammed when using tractor paper.

Solution: 1. Make sure that the tractor is locked.
2. Make sure that the gap adjust lever is matched the paper.
3. Make sure the paper is smooth.
4. Check whether there is sundries on the paper input path.
5. Check whether the paper input is twisted with power cord or computer cable.
6. Check whether there are labels or other papers under the platen.

Phenomenon: The paper can't be fed.

Solution: Check whether the tractor paper is installed correctly.

● **While printing**

Phenomenon: Print head doesn't move.

Solution: 1. Turn the ribbon knob. If the ribbon is blocked, replace a new one.
2. Check whether there is much dust or sundries that stop the print head moving.

● **Print quality**

Phenomenon: The printer can't print at all.

Solution: 1. Check the ribbon cartridge is installed correctly. The ribbon is between the print head and paper guide slice.
2. Make sure that the interface cable is connected correctly.

Phenomenon: The printed characters are faint.

Solution: Lift the ribbon cartridge out and turn the ribbon knob. If the ribbon is printed faint, please replace a new one.

Phenomenon: Printing ink pollutes the paper.

Solution: Check gap adjust lever. To feed thicker paper through the printer, you need to move the gap adjust lever from its standard position.

- **print character**

Phenomenon: The printer can't print the appropriate characters.

Solution: Make sure the driver is installed correctly, and the character format you selected in the application is in the appropriate format.

Appendix B Specifications

B.1 Basic Specification

Item	Description					
Type	24-Pin Dot Matrix Impact Printer					
Print direction	Bidirectional logic research orientation printing					
Print width	40 columns (10cpi)/101.6 mm					
Print speed	ASCII 10 CPI					
	Chinese 7.5 CPI					
	Speed	10 CPI	12 CPI	Speed	6.7 CPI	7.5 CPI
	Super high speed	200 CPS	240 CPS	Super high speed	134 CPS	150 CPS
	High speed	133 CPS	159 CPS	High speed	89 CPS	100 CPS
	Normal speed	67 CP S	80 CPS	Normal speed	45 CPS	50 CPS
Print head	Diameter of wire: 0.2 mm					
	Life: 300 million dots/wire					
Resolution	360×180DPI (Max.)					
Character set	ASCII: international character sets (USA, France, Germany, Britain, Danmark I, Sweden, Italy, Spain I, Japan, Norway, Danmark II, Spain II, Latin SA, Korea, LEGAL)					
	Chinese: GB 18030					
Fonts	ASCII: Draft, Roman, Sans Serif, Courier, Prestige, Script, OCR-A, OCR-B					
	Chinese: GB18030 Song Ti, Song Ti high speed					
Bar code	EAN 8/13, NW7, Code 39, Industrial 2 of 5, Interleaved 2 of 5, Matrix 2 of 5, Code 128B/C					
Character spacing	ASCII: 10 CPI, 2 CPI, 15 CPI proportional					
	Chinese: 6.7 CPI, 7.5 CPI, 13.3 CPI					
Line spacing	1/6 inch, 1/8 inch, programmable in 1/360 inch increments					
Max feed speed	101.6mm/sec. / 4inch per second (Continuous feed)					
Emulation	EPSON ESC/PK2, ESC/POS, STAR320					
Interface	Cash drawer interface and data interface (can be configured with parallel interface, USB interface, serial interface or USB & Ethernet interface) Cash drawer interface: CPC6 Parallel interface: Centronics USB interface: 2.0 Full-Speed Serial interface: RS-232C Ethernet interface: 10/100Base-T ★ According to specific interface standards					
Buffer Memory	60 KB					
Ribbon	Model: JMR116					
	Life: 3 million draft character					
Noise	<55 dB (A) (ISO7779 standard)					
Control panel	4 keys 4 indicator lights					
Paper type	Tractor paper or roll paper					
Feed method	Tractor paper: tractor feed					
	Roll paper: insert from the rear, eject from the front,					
Paper thickness	Set by paper adjust lever					
	Tractor paper Width: 76 ~ 142 mm Thickness: 0.065 ~ 0.32 mm					

DR640 User's Manual

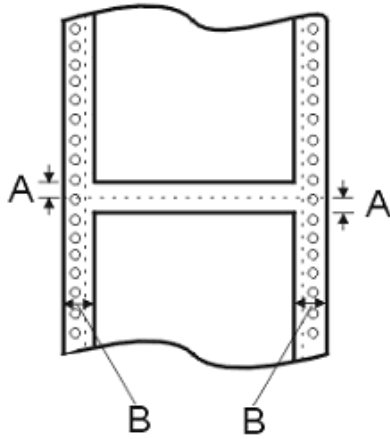
Paper specifications	Weight: single sheet: 52.3 ~ 82 g/m ² Multiple paper (Every page): 40 ~ 58.2 g/m ²
	Roll paper Width: 57.5、76、114 mm Thickness: 0.065 ~ 0.32 mm Weight: single sheet: 52.3 ~ 82 g/m ² Multiple paper Every page :40 ~ 58.2 g/m ² Maximum roll paper diameter: 83 mm
max paper thickness	0.32mm
copy	original + 3 copies (tractor paper) original +2 copies (roll paper)
Automatic function	Black mark detector
Especial function	Pin Break Compensation、 Pin Rotation Replacement Automatic Emulation Match、 Online Parameter Setting
Physical dimensions	233 mm (Width) × 230 mm (Depth) × 108 mm (Height)
weight	Approx.2 Kg
Environmental conditions	Operating temperature: 5 ~ 35°C Operating humidity: 40%RH ~ 80%RH(No condensation)
	Storage temperature: -40 ~ 55°C Storage humidity: ≤93%RH (40°C, No condensation)
Power requirements	Rated voltage: 198 ~ 242 V
	Rated frequency range: 50 ~ 60 Hz
Power consumption	①operation: 39 W; ②max: 80 W; ③standby: 8 W. Note: Only when the produce doesn't connect power supply could consume zero energy.
Reliability	MTBF≥10000 hours (IEC 605.7standard)
Safety marks	GB 4943
Wireless disturbance	Grade B
Certification	CCC certification、 China Environmental Labeling、 Energy Conservation Certification

Note: Print head's life and MTBF should be under Jolimark appointed conditions of the above descriptions, and use the appointed paper and ribbon that testing requirements.

B.2 Printable Area

- Note:** 1. To ensure the print quality, please make sure the contents are all within printable area.
2. If contents are out of the printable area, it may cause print head to break pins.

Tractor paper:



- A: The minimum blank is 10mm.
B: The minimum blank is 16mm.
The maximum print width is 101.6mm.

Figure B-1 Tractor paper printable area

Appendix C Command Code Summary

C.1 Introduction

This appendix lists three command codes of ESC/PK2, ESC/POS and STAR320 which can fulfill the requirements from different customers. Star320 command code just compatible with some of STAR320 model command codes, it just fit for the users who are using STAR320 model already and using DP100 to replace STAR320 model, it is not suggest for new users to use. A schedule is listing below and gives explanations for every command. The explanation of each command contains two parts of format and explanation. ASCII code, Decimal code and hex code are list in format part while explanation part gives description of command function. The formats of these three commands are the same, and users can choose either of them according to requirement.

Printing command	Function
Format: ASCII: Shown in standard ASCII character serial	
Decimal: Shown in Decimal number serial	
Hex: Shown in Hex number serial	

Explanation: that command function and use explanation

C.2 ESC/PK2 Command Codes

Symbol	Code (Hex.)	Function
BEL	07	Activates the printer buzzer
HT	09	Horizontal tab
LF	0A	Line feed
VT	0B	Vertical tab
FF	0C	Form feed
CR	0D	Carriage return
SO	0E	Select double width mode
DC4	14	Cancel Double Width Mode
CAN	18	Cancel line buffer
ESC SO	1B 0E n	Select Double Width Mode
ESC SP	1B 20 n	Set English word space
ESC !	1B 21 n	Select print mode
ESC \$	1B 24 n1 n2	Set Absolute Horizontal Tab
ESC *	1B 2A m n1 n2	Select Graphics Mode
ESC +	1B 2B n	Set n/360" Line Spacing
ESC -	1B 2D n	Select/Cancel Underline Mode
ESC /	1B 2F n	Select a VFU Channel
ESC 0	1B 30	Set 1/8" Line Spacing
ESC 2	1B 32	Set 1/6" Line Spacing
ESC 3	1B 33 n	Set n/180" Line Spacing
ESC 4	1B 34	Select Italic Mode
ESC 5	1B 35	Cancel Italic Mode
ESC 6	1B 36	Enable Character Printing
ESC 7	1B 37	Cancel command ESC 6
ESC <	1B 3C	Print Head Return Rome

ESC @	1B 40	Initialize printer
ESC A	1B 41 n	Set n/60" Line Spacing
ESC B	1B 42 n1 n2...0	Set Vertical Tab Positions
ESC C	1B 43 n	Set Form Length in Lines
ESC C 0	1B 43 0 n	Set Form Length in Inches
ESC D	1B 44 n1 n2...0	Set Horizontal Tab Positions
ESC D NULL	1B 44 0	Cancel all horizontal tap positions
ESC E	1B 45	Select Emphasized Mode
ESC F	1B 46	Cancel Emphasized Mode
ESC G	1B 47	Select Double Strike Mode
ESC H	1B 48	Cancel Double Strike Mode
ESC I	1B 49 n	Select Chinese CC-DOC printing mode
ESC J	1B 4A n	n/180" Line Feed
ESC K	1B 4B n1 n2	Select 8-dot Single-Density Graphics Mode
ESC L	1B 4C n1 n2	Select 8-dot Double-Density Graphics Mode
ESC M	1B 4D	Select Character Width Mode (12CPI)
ESC N	1B 4E n	Set page slot blank
ESC O	1B 4F	Cancel page slot blank
ESC P	1B 50	Select Character Width Mode (10DPI)
ESC Q	1B 51 n	Set right Margin
ESC R	1B 52 n	Select National Character Set
ESC S	1B 53 n	Select Superscript/Subscript Mode
ESC T	1B 54	Cancel Superscript/Subscript Mode
ESC U	1B 55 n	Select Print Direction
ESC W	1B 57 n	Select/Cancel Double Height Mode
ESC X	1B 58 m n1 n2	Select English character width and height
ESC Y	1B 59 n1 n2	Select 8-dot High-speed, Double-Density
ESC Z	1B 5A n1 n2	Select 8-dot Quadruple-Density
ESC \	1B 5C n1 n2	Set Relative Dot Position
ESC b	1B 62 c n1 n2...0	Select VFU Positions
ESC g	1B 67	Select 15CPI Mode
ESC l	1B 6C	Set Left Margin
ESC q	1B 71 n	Select Character Style
ESC (X	1B 28 58 n1 n2 a1 a2 a3	Select/Cancel net spot printing
ESC w	1B 77 n	Select/Cancel Double Height Mode
ESC x	1B 78 n	Select Print Quality
FS &	1C 26	Select Chinese language mode
FS .	1C 2E	Cancel Chinese language mode
FS SO	1C 0E	Select Double Width Mode (Chinese)
FS DC4	1C 14	Cancel Double Width Mode (Chinese)
FS W	1C 57 n	Select/Cancel quadruple-size mode for Chinese character
FS SI	1C 0F	Select half-size mode for Chinese character
FS DC2	1C 12	Cancel half-size mode for Chinese character
FS r	1C 72	Select demisemi-size mode for Chinese character
FS J	1C 4A	Select lengthways printing

FS K	1C 4B	Select transverse printing
FS S	1C 53 n1 n2	Select full-size mode pitch for Chinese character
FS T	1C 54 n1 n2	Select half-size mode pitch for Chinese character
FS U	1C 55	Select half-size mode pitch adjustment for character
FS V	1C 56	Cancel half-size mode pitch adjustment for character
FS -	1C 2D n	Select/Cancel Underline Mode for Chinese character
FS D	1C 44	Two character lengthways half-size mode paratactically printing
FS x	1C 78 n	Select /Cancel high speed printing
FS 2	1C 32	Chinese character of user-defined
FS v	1C 76 n	Select/Cancel form connect line
FS !	1C 21 n	Select Chinese character print mode

C.3 ESC/POS Command Codes

Symbol	Code (Hex.)	Function
HT	09	Horizontal tab
LF	0A	Print and line feed
CR	0D	Carriage return
ESC SP	1B 20 n	Set right space amount of character
ESC !	1B 21 n	Select print mode for character
ESC *	1B 2A m n1 n2	Select image print mode
ESC -	1B 2D n	set underline mode on/off
ESC 2	1B 32	Set 1/6 inch line feed amount
ESC 3	1B 33 n	set n/180 inch line feed amount
ESC <	1B 3C	Return home
ESC @	1B 40	Initialize printer
ESC D	1B 44 n1 n2...0	Set horizontal tab positions
ESC D NULL	1B 44 0	Cancel all horizontal tab positions setting
ESC E	1B 45 n	Turn emphasized mode on/off
ESC G	1B 47	Turn double-strike mode on/off
ESC J	1B 4A n	Feed paper n/180 inch
ESC R	1B 52 n	Select national character set
ESC U	1B 55 n	Turn uni-directional/Bi-directional printing mode on/off
ESC c 4 n	1B 63 34 n	Select paper sensor(s) to stop printing
ESC c 5 n	1B 63 35 n	Enable/disable panel buttons
ESC d	1B 64 n	Print and feed n lines
ESC p	1B 70 m t1 t2	Generate Cash drawer pulse
ESC {	1B 7B n	Select or cancel convert print mode
FS &	1C 26	Set Chinese language mode
FS .	1C 2E	Cancel Chinese language mode
FS W	1C 57 n	Select/Cancel quadruple-size mode for Chinese character
FS S	1C 53 n1 n2	Select full-size mode pitch for Chinese character
FS -	1C 2D n	Select/Cancel Underline Mode for Chinese character
FS 2	1C 32	Chinese character of user-defined

FS !	1C 21 n	Select print mode for Chinese character
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C.4 STAR320 Command Codes

Symbol	Code (Hex.)	Function
HT	09	Horizontal tab
LF	0A	Print and line feed
VT	0B	Enter next vertical tap position
FF	0C	Form feed
CR	0D	Carriage return
SO	0E	Select enlarge font mode
SI	0F	Select convert print mode
DC	12	Cancel convert print mode
DC4	14	Cancel enlarge font mode
CAN	18	Clear all data in the print buffer and initialize printer
BEL	1E	Activates the printer buzzer
ESC -	1B 2D n	Select /cancel underline mode
ESC 0	1B 30	Set 1/8 inch line feed amount
ESC 1	1B 31	Set 2/72 inch line feed amount
ESC 2	1B 32	Set ESCA command line feed effective
ESC 3 n	1B 33 n	Set 1/126 inch line feed amount
ESC @	1B 40	Initialize printer
ESC A n	1B 41 n	Set n/72 inch line feed amount
ESC B	1B 42 n1 n2...0	Set vertical tap position
ESC C n	1B 43 n	Set form length by line
ESC C 0 n	1B 43 0 n	Set form length by inch
ESC D	1B 44 n1 n2...0	Set horizontal tap position
ESC J n	1B 4A n	Paper feed n/72 inch
ESC N n	1B 4E n	Set Skip Over Perforation
ESC O	1B 4F	Cancel Skip Over Perforation
ESC Q n	1B 51 n	Set right borderline
ESC R n	1B 52 n	Select national character set
ESC U n	1B 55 n	Turn uni-directional/Bi-directional printing mode on/off
ESC W n	1B 57 n	Set/cancel enlarge font mode
ESC a n	1B 61 n	Print and paper feed n lines
ESC e n	1B 65 n	Allow/ forbid panel buttons
ESC f n	1B 66 n	Set online key effective/non-effective
ESC l n	1B 6C n	Set left borderline
ESC z n	1B 7A n	Set 1/6 or 1/12 inch line spacing

C.5 ESC/PK2 Commands Description

This section will explain for ESC/PK2 commands according to the function classification.

Printer Operating Commands

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

Description:

The data in the print buffer is cleared and the printer mode(s) is reset to the mode that was in effect when the power was turned on.

ESC <				Print Head Return Rome
Format:	ASCII:	ESC	<	
	Decimal:	27	60	
	Hex:	1B	3C	

Description:

The print head will move to the standby position and shift from left to right whatever the left margin is set.

ESC U				Turn unidirectional/bidirectional print mode
Format:	ASCII:	ESC	U	n
	Decimal:	27	85	n
	Hex:	1B	55	n

Description:

n=0~255 Only the lowest bit takes effect.

n=1, Unidirectional print mode is turned on.

n=0, Bidirectional print mode is turned on

Default: n=0

BEL			Beeper
Format:	ASCII:	BEL	
	Decimal:	7	
	Hex:	07	

Description:

Activates the printer buzzer

Paper Input Commands

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

Description:

Prints the data in the print buffer and feeds paper to top of form position on the next page according to the page length current setting.

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

Description:

Prints the data in the print buffer and feeds one line based on the current line spacing. (The amount of paper fed per line is base on the value set using the line spacing command, such as ESC 0, ESC 2, ESC 3, ESC and ESC +.) If the line buffer is cleared, feeds one line based on the current line spacing.

ESC J					n/180 inch line feed
Format:	ASCII:	ESC	J	n	
	Decimal:	27	74	n	
	Hex:	1B	4A	n	

Description:

n=0~255; Carriage return can not occur after using this command for line feed.

Data Control Commands

CR			Print and carriage return		
Format:	ASCII:	CR			
	Decimal:	13			
	Hex:	OD			

Description:

After finishes printing one line, the print head moves back to the beginning of print line.

CAN			Cancel line buffer		
Format:	ASCII:	CAN			
	Decimal:	24			
	Hex:	18			

Description:

Deletes all the print data in the current line buffer, but not influence control code.

Page Mode Setting Commands

ESC C					Set Form Length in Lines
Format:	ASCII:	ESC	C	n	
	Decimal:	27	67	n	
	Hex:	1B	43	n	

Description:

Set the page length at n lines according to the current line spacing.

n=1~127, When the line spacing is 0, the print head goes back to print but not line feed.

ESC C 0						Set form Length in Inches
Format:	ASCII:	ESC	C	0	n	
	Decimal:	27	67	0	n	
	Hex:	1B	43	00	n	

Description:

Set the page length at n inches.

n=1~22, Current line is the top of form position on the page.

ESC N					Set page slot blank
Format:	ASCII:	ESC	N	n	
	Decimal:	27	78	n	
	Hex:	1B	4E	n	

Description:

Set the page slot blank of the last line in every page and the first line in the next page n lines.

The value of n ranges from 1 to 127, which should less than the printable lines in the layout, or it is of no effect. For example, if the line space and page length is 66 lines, when inputting the command ESC N 6, the printer will print 60 lines, then goes on printing after jumping over 6 blank lines.

ESC O Cancel page slot blank

Format:	ASCII:	ESC	O	n
	Decimal:	27	79	n
	Hex:	1B	4F	n

Description:

Cancel the page slot blank set by the ESC N command.

ESC I 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 at n lines according to the current character width.

ESC Q Set right margin

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

Description:

 $0 \leq n \leq 255$,

Set the right margin at n lines according to the current character width.

Line Spacing Commands

ESC 0 Set 1/8 inch line spacing

Format:	ASCII:	ESC	0
	Decimal:	27	48
	Hex:	1B	30

Description:

Set the line spacing at 1/8 inch.

ESC 2 Set 1/6" Line Spacing

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

Description:

Set the line spacing to default line spacing (1/6 inch).

ESC A Set n/60 inch line spacing

Format:	ASCII:	ESC	A	n
	Decimal:	27	65	n
	Hex:	1B	41	n

Description:

Specifies the line feed pitch in units of n/60 inch

 $n=0 \sim 85$.

ESC 3					Set n/180 inch line spacing
Format:	ASCII:	ESC	3	n	
	Decimal:	27	51	n	
	Hex:	1B	33	n	

Description:

Specifies the line feed pitch in units of n/180 inch
n=0~255.

ESC +					Set n/360 inch line spacing
Format:	ASCII:	ESC	+	n	
	Decimal:	27	43	n	
	Hex:	1B	2B	n	

Description:

Specifies the line feed pitch in units of n/360 inch
n=0~255.

Orientation Setting Commands

ESC B							Set Vertical Tab Positions
Format:	ASCII:	ESC	B	n1	n2... nk	0	
	Decimal:	27	66	n1	n2... nk	0	
	Hex:	1B	42	n1	n2... nk	00	

Description:

$0 \leq nk \leq 255$, $1 \leq k \leq 16$;

n1, n2...nk specifies the vertical tabs, A maximum of 64 tabs can be specified. ESC B 0 cancels all the vertical tabs.

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

Description:

Set the horizontal tab position to the column specified by nk from the beginning of the line.

- **n** specifies the number of digits from the setting position to the left edge of the print area.
- **k** indicates the number of horizontal tab positions to be set.

k=1~32; A maximum of 32 horizontal tab positions can be set

nk=1~40, nk should be in the printable area .

Even if the character width is changed after setting the horizontal tab positions, the setting of the horizontal tab positions will not be changed.

Transmit [**n**]**k** in ascending order and place a **NUL** code at the end.

ESC b							Select VFU Positions
Format:	ASCII:	ESC	b	c	n1	n2...0	
	Decimal:	27	98	c	n1	n2...0	
	Hex:	1B	62	c	n1	n2...00	

Description:

$0 \leq c \leq 7$, $0 \leq nk \leq 255$, $1 \leq k \leq 16$

The function of this command is equal with ESC B except for parameter c, which can be used to choose a channel to store the vertical tabs. The channel is chosen by ESC /.

ESC b c 0 cancels tab setting in the c channel.

Specify vertical tabs from the lowest tab and end with (00)

ESC /		Select a VFU Channel			
Format:	ASCII:	ESC	/	c	
	Decimal:	27	47	c	
	Hex:	1B	2F	c	

Description:

$0 \leq c \leq 7$.

The VT command selects vertical tab channel according to this command. When using ESC B, the default channel is the 0 channel.

Print Position Commands

HT		Horizontal tab			
Format:	ASCII:	HT			
	Decimal:	9			
	Hex:	09			

Description:

Moves the print position to the next horizontal tab position

The command can not be executed if the current print position exceeds the last horizontal tab position. Horizontal tab positions are set by ESC D, and the default is 8 character intervals in the 5*7 dot matrix character mode.

VT		Vertical tab			
Format:	ASCII:	VT			
	Decimal:	11			
	Hex:	0B			

Description:

Moves the print position to the next vertical tab position according to the vertical orientation channel set by ESC /, or using vertical tab position set by ESC B, else the paper feeds one line.

ESC \$		Set Absolute Horizontal Tab			
Format:	ASCII:	ESC	\$	n1	n2
	Decimal:	27	36	n1	n2
	Hex:	1B	24	n1	n2

Description:

Set the distance from the beginning of the line to the position at which subsequent characters are to be printed.

The distance is $(n1+n2*256)^*$ (horizontal or vertical motion unit). $N1=0\sim 255$, $n2=0\sim 3$.

The dot's interval unit is 1/60 inch.

This command will be ignored if the print head moves out of the right borderline.

ESC \		Set Relative Dot Position			
Format:	ASCII:	ESC	\	n1	n2
	Decimal:	27	92	n1	n2
	Hex:	1B	5C	n1	n2

Description:

Set the print position at $(n1+n2*256)^*$ (horizontal or vertical motion unit) inches from current position; $n1, n2=0\sim 255$.

This command will be ignored if the relative position set exceeds current borderline setting.

Font Enhancement Commands

	SO	Select double width mode
--	----	--------------------------

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

Description:

Beginning from the current position, set to double width printing in English mode.

This command is invalid in picture printing.

Cancel double width printing with DC4 or CR command.

	ESC SO	Select Double Width Mode
--	--------	--------------------------

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

Description:

Beginning from the current position, set to double width printing in English mode or in Chinese mode.

This command is invalid in picture printing.

Clear double width printing with DC4 or CR command.

	ESC w	Select/Cancel Double Height Mode
--	-------	----------------------------------

Format:	ASCII:	ESC	W	n
	Decimal:	27	119	n
	Hex:	1B	77	n

Description:

Beginning from the current position, set to double height printing mode. The height of each character is printed as twice that of standard height.

n=1: set double height printing.

n=0: Cancel double height printing.

	DC4	Cancel Double Width Mode
--	-----	--------------------------

Format:	ASCII:	DC4
	Decimal:	20
	Hex:	14

Description:

Cancel double width printing set by SO or ESC SO, but not set by ESC ! or ESC W.

	ESC W	Select/Cancel Double Width Mode
--	-------	---------------------------------

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

Description:

Beginning from the current position, set to double width printing mode. The height of each character is printed as twice that of standard width. This command can not be canceled by line feed command.

n=1: set double width printing.

n=0: Cancel double width printing.

	ESC G	Select double-strike mode
--	-------	---------------------------

Format:	ASCII:	ESC	G	
	Decimal:	27	71	
	Hex:	1B	47	

Description:

One character will be printed twice in the same place, which reduces the print speed and can be used

with bold mode.

ESC H Cancel double-strike mode

Format:	ASCII:	ESC	H
	Decimal:	27	72
	Hex:	1B	48

Description:

Cancels double-striking mode set by ESC G, which can be used in Chinese character printing mode.

ESC S n Select Superscript/Subscript Mode

Format:	ASCII:	ESC	S	n
	Decimal:	27	83	n
	Hex:	1B	53	n

Description:

x = 0 (ASCII): superscript printing

x = 1 (ASCII): subscript printing

The characters will be printed out as 2/3 that of standard height in this mode.

ESC T Cancel Superscript/Subscript Mode

Format:	ASCII:	ESC	T
	Decimal:	27	84
	Hex:	1B	54

Description:

Cancel English Superscript/Subscript Printing set by ESC S.

ESC - Select/Cancel Underline Mode

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

Description:

x = 0 (ASCII): Cancel underline mode

x = 1 (ASCII): Select underline mode

The underline mode is effective for all the English characters including space, but the printer cannot underline the space set by tab.

ESC q Select Character Style

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

Description:

n=0, Select normal character Style.

n=1, Select empty-heart character Style.

n=2, Select shadow character Style.

n=3, Select solid character Style.

This command is effective in both Chinese and English mode.

ESC (X Select/Cancel net spot printing

Format:	ASCII:	ESC	(X	n1	n2	a1	a2	a3
	Decimal:	27	40	88	n1	n2	a1	a2	a3
	Hex:	1B	28	58	n1	n2	a1	a2	a3

Description:

n1=3, n2=0;

a1: Specify net spot area:
a1=0, Select background net spot.
a1=1時, Select font interior net spot.
a2: Select net lines style (The original value is 0).
0: Cancel net spot. 1: Solid net spot; 2: Dot-shape net spot; 3: Diagonal net spot. 4: Crossing net spot.
a3: Select the color of net.
0: Black

Print Effect Commands

ESC x Select print quality

Format: ASCII: ESC x n
Decimal: 27 120 n
Hex: 1B 78 n

Description:
n=0, Select letter quality.
n=1, Select draft quality.
Note: Draft quality can not be printed out in proportion mode.

ESC ! Select print mode

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

Description:
Select the print mode using n as follows. n=0~255
 $n=2^7 \times k7 + 2^6 \times k6 + 2^5 \times k5 + 2^4 \times k4 + 2^3 \times k3 + 2^2 \times k2 + 2^1 \times k1 + 2^0 \times k0$.

Bit	Value	Function
0	0	Set 10dpi
	1	Set 12dpi
1	0	Proportion mode not selected
	1	Proportion mode selected
2	0	Compressed mode not selected
	1	Compressed mode selected
3	0	Bold mode not selected
	1	Bold mode selected
4	0	Double-strike not selected
	1	Double-strike selected
5	0	Double-width not selected
	1	Double-height selected
6	0	Italic not selected
	1	Italic selected
7	0	Underline mode not selected
	1	Underline mode selected

ESC P Select Character Width Mode (10DPI)

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

Description:
Set the character spacing as 10 CPI for Chinese characters or full-size characters.

	ESC M		Select Character Width Mode (12CPI)
--	-------	--	-------------------------------------

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

Description:

Set the character spacing as 12 CPI for Chinese characters or full-size characters.

	ESC g		Select 15CPI Mode
--	-------	--	-------------------

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

Description:

Set the character spacing as 15 CPI for Chinese characters or full-size characters.

	ESC E		Select Emphasized Mode
--	-------	--	------------------------

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

Description:

In this mode, each dot is printed twice that the speed becomes lower. The second printing is next to the right of the first printing. The mode can be used with double-striking mode as well.

	ESC F		Cancel Emphasized mode
--	-------	--	------------------------

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

Description:

Clear bold font printing set by ESC E.

	ESC 4		Select Italic mode
--	-------	--	--------------------

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

Description:

The characters following this command can be printed as italic fonts. Even if the EPSON graphic list is set by ESC t, the command is effective but the character graphics are not italic fonts.

	ESC 5		Cancel Italic Mode
--	-------	--	--------------------

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

Description:

Cancel the characters set by ESC 4.

	ESC SP		Set English word space
--	--------	--	------------------------

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

Description:

Default: n=0. n=0~127.

Set the right-side spacing of the character to n*(horizontal or vertical motion unit).

When characters are enlarged, the character spacing is *n* times normal value. The character spacing for double-width mode is twice the normal value. As for draft mode, the horizontal motion unit is 1/120 inch.

Character Commands

ESC R Select an international character set

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

Description:

Default: n=0, n=0~12.

Selects the international character set according the value of *n* as shown in the follow.

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 11Spain II 12: Latin America

ESC 6 Enable Character Set

Format:	ASCII:	ESC	6
	Decimal:	27	54
	Hex:	1B	36

Description:

The 80H~90H control cods in the ASCII characters are of no effect except the character codes.

The ESC 6/ESC 7 command has no effect after using ESC t 0.

ESC 7 Cancel command ESC 6

Format:	ASCII:	ESC	7
	Decimal:	27	55
	Hex:	1B	37

Description:

Enable the 80H~90H control cods in the ASCII characters

Graphic Mode Printing Commands

ESC K Select 8-dot Single-Density Graphics Mode

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

Description:

Number of data $k=n1+n2*256$

Horizontal dot density: 60dpi.

ESC L Select 8-dot Double-Density Graphics Mode

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

Description:

Number of data $k=n1+n2*256$

Horizontal dot density: 120dpi.

ESC Y Select 8-dot High-speed, Double-Density

Format:	ASCII:	ESC	Y	n1	n2
	Decimal:	27	89	n1	n2
	Hex:	1B	59	n1	n2

Description:

Number of data $k=n1+n2*256$
 Horizontal dot density: 120dpi.

ESC Z

Select 8-dot Quadruple-Density

Format:	ASCII:	ESC	Z	n1	n2
	Decimal:	27	90	n1	n2
	Hex:	1B	5A	n1	n2

Description:

Number of data $k=n1+n2*256$
 Horizontal dot density: 240dpi.

ESC *

Select image print 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:

Select the image mode with m; n1 and n2 specify the number of dots. The image data are d1...dk.
 $n1=0\sim 255$; $n2=0\sim 1$; $d=0\sim 255$.

$k=n1+256*n2$ ($m=0. 1$)

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

If the number dots exceed the max dot number in a line (shown as below), the excess data is ignored.

Vertical dot density	Horizontal dot height(dot/inch)	Number of dots	Mode	m	Command	Bytes in each column
60 dot/inch	60	8	Single-density	0	ESC K	1
	120	8	Double-density	1	ESC L	1
	120	8	High speed	2	ESC Y	1
	240	8	double-density *	3	ESC Z	1
	80	8	quadruple-density *	4	None	1
	90	8	CRT graphic	6	None	1
	90	8	CRT graphic II	6	None	1
180 dot/inch	60	24	Single height	32	None	3
	120	24	Double-density	33	None	3
	90	24	Graphic II	38	None	3
	180	24	CRT treble-density	39	None	3
	360	24	Sextuple-density*	40	None	3

Chinese Character Printing Commands

ESC I

Select Chinese CC-DOS printing mode

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

Description:

AS the application or driver exercises in this printer, use ESC/P instead of the CC-DOS common control code ESC I n to control the size of Chinese characters.

CC-DOS control code: Magnify horizontally or vertically, Overlap printing, and you can combine and cancel the ways according to the commands as follows.

	Double-width	Double-height
ESC I A		
ESC I B	○	
ESC I C		○
ESC I D	○	○

FS &

Set Chinese language mode

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

Description:

This command sets Chinese language mode.

After receiving this command, the printer stops to print characters in Chinese language mode starting from next line. Chinese characters are composed of two bytes which are bigger than the ASCII of 9FH, the printer will search for Chinese character model according to the codes received and print out international standard of 15*16 dot matrix characters.

When receiving single bit of ASCII code, the printer will print out corresponding 5*7 or 7*7 characters.

FS .

Cancel Chinese language mode

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

Description:

In this mode No Chinese character printed.

FS SO

Select Double Width mode (Chinese)

Format:	ASCII:	FS	SO
	Decimal:	28	14
	Hex:	1C	0E

Description:

Beginning from the current position, set to double width printing. This command is of no effect in the graphic mode. You cancel this mode with DC4, LF or FF as well as ESC W.

FS DC4

Cancel Double Width mode (Chinese)

Format:	ASCII:	FS	DC4
	Decimal:	28	20
	Hex:	1C	14

Description:

Cancel the Chinese Double-width printing set by FS SO but can not cancel the way set by ESC W 1.

FS W

Select/Cancel quadruple-size mode for Chinese character

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

Description:

The height of each Chinese character is printed as twice that of standard height, and the width is printed as twice that of standard width.

$0 \leq n \leq 255$

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

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

The characters in this mode can be printed twice and the line spacing is added 24/180 inch that of current line spacing. This command is of no effect if there are paper feeding commands such as CR, LF, FF, VT and ESC J and other characters in the line.

FS SI Select half-size mode for Chinese character

Format:	ASCII:	FS	SI
	Decimal:	28	15
	Hex:	1C	0F

Description:

Set Chinese characters to half-size mode. But this command has no effect on half-size characters.

FS DC2 Cancel half-size mode for Chinese character

Format:	ASCII:	FS	DC2
	Decimal:	28	18
	Hex:	1C	12

Description:

Cancel the characters set by FS SI and FS r.

FS r Select demisemi-size mode for Chinese character

Format:	ASCII:	FS	r	n
	Decimal:	28	114	n
	Hex:	1C	72	n

Description:

Beginning from the current position, according to the value of n, set superscript/subscript printing mode.

n = 0 (ASCII): superscript

n = 1 (ASCII): subscript

You can cancel this setting by FS DC2.

FS J Select lengthways printing

Format:	ASCII:	FS	J
	Decimal:	28	74
	Hex:	1C	4A

Description:

The Chinese characters and the symbols in the character model are printed at the 90° counter-clockwise.

FS K Select transverse printing

Format:	ASCII:	FS	K
	Decimal:	28	75
	Hex:	1C	4B

Description:

The Chinese characters and the symbols in the character model are printed horizontally. This mode is set once the printer is turned on.

FS S Select full-size mode pitch for Chinese character

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

Description:

$0 \leq n1 \leq 255$, $0 \leq n2 \leq 255$ Set the character left-side spacing to $n1^*$ (horizontal or vertical motion unit), right-side spacing to $n2^*$ (horizontal or vertical motion unit).

Horizontal or vertical motion unit is specified as 1/180 inch.

Default: n1=0, n2=3 when the printer is turned on.

FS T		Select half-size mode pitch for Chinese character			
Format:	ASCII:	FS	T	n1	n2
	Decimal:	28	84	n1	n2
	Hex:	1C	54	n1	n2

Description:

$0 \leq n1 \leq 127$, $0 \leq n2 \leq 127$ Set the character left-side spacing to $n1^*$ (horizontal or vertical motion unit), right-side spacing to $n2^*$ (horizontal or vertical motion unit).

Horizontal or vertical motion unit is specified as 1/180 inch.

Default: n1=0, n2=1.5 when the printer is turned on.

FS U		Select half-size mode pitch adjustment for character	
Format:	ASCII:	FS	U
	Decimal:	28	85
	Hex:	1C	55

Description:

Adjust half-size spacing between two characters so that the two widths can be matched with the width of Chinese character.

FS V		Cancel half-size mode pitch adjustment for character	
Format:	ASCII:	FS	V
	Decimal:	28	86
	Hex:	1C	56

Description:

Cancel Chinese half-size character spacing set by FS U.

FS -		Select/Cancel Underline Mode for Chinese character		
Format:	ASCII:	FS	-	n
	Decimal:	28	45	n
	Hex:	1C	2D	n

Description:

n= 0 Cancel the Chinese character underline mode.

n=1, Select one dot the thick underline of Chinese character mode.

n=2, Select two dots the thick underline of Chinese character mode on.

No 90°clockwise rotation for underline in underline mode.

Print a line of Chinese characters first, and then print lineation. While turning 90 degrees to print character list, print sequence is contrary. Two times of for prints all feed paper 4/180 inches.

FS D		Two character lengthways half-size mode paratactically printing			
Format:	ASCII:	FS	D	d1	d2
	Decimal:	28	68	d1	d2
	Hex:	1C	44	d1	d2

Description:

This command takes effect when printing in vertical position set by FS J. After inputting this command, a pair half-width characters d1 and d2 which are imported continuously can be printed out as a Chinese character spacing vertically.

FS x					Select /Cancel high speed printing
Format:	ASCII:	FS	x	n	
	Decimal:	28	120	n	
	Hex:	1C	78	n	

Description:

n=1, Turn on the Chinese character high speed printing mode.

n=0, Turn off the Chinese character high speed printing mode.

FS 2									Chinese character of user-defined
Format:	ASCII:	FS	2	a1	a2	d1	d2	d3	
	Decimal:	28	50	a1	a2	d1	d2	d3	
	Hex:	1C	32	a1	a2	d1	d2	d3	

Description:

Both a1 and a2 are the use-defined characters' address, a1 specified the first byte of the character code, the value of which is F8H, a2 specified the second byte of the character code, the value of which is A1H~FEH, while d is the data part of the Chinese character.

FS v					Select/Cancel form connect line
Format:	ASCII:	FS	v	n	
	Decimal:	28	118	n	
	Hex:	1C	76	n	

Description:

n=1, Turn on form sign on-line.

n=0, Turn off form sign on-line.

The table elements in the Chinese character code list are A9A4H~A9A7H,A9B0H~A9EFH.

FS !					Select Chinese character print mode
Format:	ASCII:	FS	!	n	
	Decimal:	28	33	n	
	Hex:	1C	21	n	

Description:

Selects the Chinese character mode according n as follows:

$0 \leq n \leq 255$, $n = 2^7 \times k_7 + 2^6 \times k_6 + 2^5 \times k_5 + 2^4 \times k_4 + 2^3 \times k_3 + 2^2 \times k_2 + 2^1 \times k_1 + 2^0 \times k_0$.

	1	0
K7	Set underline mode	Cancel underline mode
K6	--	--
K5	Subscript Chinese character	Superscript Chinese character
K4	Turn subscript/superscript Chinese character on	Turn subscript/superscript Chinese character off
K3	Set double-height printing	Cancel double-height printing
K2	Set double-width printing	Cancel double-width printing
K1	Set half-width Chinese character printing	Cancel half-width Chinese character printing
K0	Set printing vertically	Set printing horizontally

C.6 ESC/POS Commands Description

This section will describe for ESC/POS command lists.

The definition of these commands are same as ESC/PK except ESC !、ESC E、ESC G、ESC U、ESC c 4、ESC c 5、ESC d、ESC p、ESC {、FS !、FS W.

ESC !

Select print mode for character

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

Description:

$n=0\sim 255$, $n=2^7\times k7+2^6\times k6+2^5\times k5+2^4\times k4+2^3\times k3+2^2\times k2+2^1\times k1+2^0\times k0$.

Selects the character font and styles (10cpi, 12cpi, double-height, double-width, and underline) together as follows:

Bit	Value	Function
0	0	12 cpi
	1	10 cpi
1,2, 3	-- -- --	Not define
4	0	Double-height not selected
	1	Double-height selected
5	0	Double-width not selected
	1	Double-width selected
6	-- -- --	Not define
7	0	Underline mode not selected
	1	Underline mode selected

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 (LSB) of the n is 0, the emphasized mode is turn off.

When LSB of the n is 1, the emphasized mode is turn on.

ESC G

Turn double-strike mode on/off

Format:	ASCII:	ESC	G	n
	Decimal:	27	71	n
	Hex:	1B	47	n

Description:

When the last bit (LSB) of the n is 0, the double-striking mode is turn off.

When LSB of the n is 1, the double-striking mode is turn on.

ESC U

Turn unidirectional print mode on/off

Format:	ASCII:	ESC	U	n
	Decimal:	27	85	n
	Hex:	1B	55	n

Description:

When the last bit (LSB) of the n is 0, the unidirectional print mode is turn off.

When LSB of the n is 1, the unidirectional print mode is turn on.

ESC c 4					Select whether printing when paper end
Format:	ASCII:	ESC	c	4	n
	Decimal:	27	99	52	n
	Hex:	1B	63	34	n

Description:

When the LSB of n is 0, printer goes on printing when paper end.

When the LSB of n is 1, printer stop printing when paper end.

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

Description:

When the LSB of n is 0, enable button.

When the LSB of n is 1, disable button.

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 print buffer and feed n lines, n= 0~255.

ESC {					Select or cancel convert print mode
Format:	ASCII:	ESC	{	n	
	Decimal:	27	123	n	
	Hex:	1B	7B	n	

Description:

When the LSB of n is 0, cancel convert print mode.

When the LSB of n is 1, select convert print mode.

FS !					Select print mode for Chinese character
Format:	ASCII:	FS	!	n	
	Decimal:	28	33	n	
	Hex:	1C	21	n	

Description:

$0 \leq n \leq 255$, $n = 2^7 \times k_7 + 2^6 \times k_6 + 2^5 \times k_5 + 2^4 \times k_4 + 2^3 \times k_3 + 2^2 \times k_2 + 2^1 \times k_1 + 2^0 \times k_0$.

Selects the Chinese character mode according n as follows:

Bit	Off/On	Hex	Decimal	Function
0	-	-	-	Not define
1	-	-	-	Not define
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 define
5	-	-	-	Not define

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

FS W

Select/Cancel quadruple-size mode for Chinese character

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

Description:

$0 \leq n \leq 255$

When the LSB of n is 0, cancel the quadruple-size mode.

When the LSB of n is 1, select the quadruple-size mode.

C.7 Parts of STAR320 Compatible Commands Description

ESC @

Initialize printer

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

Description:

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

ESC U n

Turn unidirectional print mode on/off

Format:	ASCII:	ESC	U	n
	Decimal:	27	85	n
	Hex:	1B	55	n

Description:

When the last bit (LSB) of the n is 0, the unidirectional print mode is turned off.

When LSB of the n is 1, the unidirectional print mode is turned on.

Default: n=0.

ESC e n

Allow/ forbid panel buttons

Format:	ASCII:	ESC	e	n
	Decimal:	27	101	n
	Hex:	1B	65	n

Description:

When the LSB of n is 0, allow the button.

When the LSB of n is 1, forbid the button.

Default: n=0.

ESC f n

Enable/disable online button

Format:	ASCII:	ESC	f	n
	Decimal:	27	102	n
	Hex:	1B	66	n

Description:

When the LSB of n is 0, enable the button.

When the LSB of n is 1, disable the button.

Default: n=0.

BEL				Beeper
Format:	ASCII:	BEL		
	Decimal:	7		
	Hex:	07		

Description:
Activates the printer buzzer

Paper Feed Commands

FF				Print and Form feed
Format:	ASCII:	LF		
	Decimal:	12		
	Hex:	0C		

Description:
Prints the data in the print buffer and feeds paper to the print starting position on the next page according to the page length current setting.

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

Description:
Prints the data in the print buffer and feeds one line based on the current line spacing. (The amount of paper fed per line is base on the value set using the line spacing command, such as ESC 0, ESC 2, ESC 3,ESC and ESC +.) If the line buffer is cleared, feeds one line based on the current line spacing.

ESC J					Paper feed n/72 inch
Format:	ASCII:	ESC	J	n	
	Decimal:	27	74	n	
	Hex:	1B	4A	n	

Description:
n=0~255; Carriage return can not occur after using this command for line feed.
Prints the data in the print buffer and feeds the paper n/72 inch.

ESC a n					Print and paper feed n lines
Format:	ASCII:	ESC	a	n	
	Decimal:	27	74	n	
	Hex:	1B	4A	n	

Description:
n=0~127; Prints the data in the print buffer and feeds the paper n lines.

Data Control Commands

CR				Carriage returns
Format:	ASCII:	CR		
	Decimal:	13		
	Hex:	0D		

Description:
After finishes printing one line, the print head moves back to the beginning of print line.

CAN			Cancel line buffer
Format:	ASCII:	CAN	
	Decimal:	24	
	Hex:	18	

Description:

Deletes all the print data in the current line buffer and initializes the printer.

Page Mode Setting Commands

ESC C					Set form length in lines
Format:	ASCII:	ESC	C	n	
	Decimal:	27	67	n	
	Hex:	1B	43	n	

Description:

Set Form length at n lines according to the current line spacing.

n=1~255, When the printer receiving this command, current position is top of form position.

ESC C 0						Set form length in inches
Format:	ASCII:	ESC	C	0	n	
	Decimal:	27	64	0	n	
	Hex:	1B	43	0	n	

Description:

Set the form length at n inches.

n=1~127, When the printer receiving this command, current position is top of form position.

ESC N					Set page slot blank
Format:	ASCII:	ESC	N	n	
	Decimal:	27	78	n	
	Hex:	1B	4E	n	

Description:

Set the page slot blank of the last line in every page and the first line in the next page n lines.

The value of n ranges from 1 to 127, which should not less than the printable lines in the layout, or it is of no effect. For example, if the line space and page length is 66 lines, when inputting the command ESC N 6, the printer will print 60 lines, then goes on printing after jumping over 6 blank lines.

ESC O					Cancel page slot blank
Format:	ASCII:	ESC	O	n	
	Decimal:	27	79	n	
	Hex:	1B	4F	n	

Description:

Cancel the page slot blank set by the ESC N command.

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

Description:

0≤n≤255,

Set the left margin at n lines according to the current character width.

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

Description:

$0 \leq n \leq 255$,

Set the right margin at n lines according to the current character width.

Line Spacing Commands

ESC 0					Set 1/8 inch line spacing
Format:	ASCII:	ESC	0		
	Decimal:	27	48		
	Hex:	1B	30		

Description:

Set the line spacing at 1/8 inch.

ESC 1					Set 7/72 inch line spacing
Format:	ASCII:	ESC	1		
	Decimal:	27	49		
	Hex:	1B	31		

Description:

Set the line spacing at 7/72 inch.

ESC A					Set n/72 inch line spacing
Format:	ASCII:	ESC	A	n	
	Decimal:	27	65	n	
	Hex:	1B	41	n	

Description:

Specifies the line feed pitch in units of n/72 inch.

n=0~85.

Selected line spacing is effective until ESC 2 is executed.

ESC 2					Make line spacing in effect
Format:	ASCII:	ESC	2	n	
	Decimal:	27	50	n	
	Hex:	1B	32	n	

Description:

The line spacing selected in ESC A is effective. If ESC A command is not defined, the line spacing is set to default 1/6 inch after executing this command.

ESC 3 n					Set n/216 inch line spacing
Format:	ASCII:	ESC	3	n	
	Decimal:	27	51	n	
	Hex:	1B	33	n	

Description:

Specifies the line feed pitch in units of n/216 inch

ESC z n					Set 1/6 or 1/12 inch line spacing
Format:	ASCII:	ESC	A	n	
	Decimal:	27	65	n	
	Hex:	1B	41	n	

Description:

Specifies the line feed pitch is 1/6 or 1/12 inch.
 n=0 or "0", Set 1/12 inch line spacing.
 n=1 or "1", Set 1/6 inch line spacing.

Orientation Setting Commands

ESC B							Set Vertical Tab Positions
Format:	ASCII:	ESC	B	n1	n2...nk	0	
	Decimal:	27	66	n1	n2... nk	0	
	Hex:	1B	42	n1	n2... nk	00	

Description:

0≤nk≤255, 1≤k≤16;
 n1, n2... nk specify the vertical tabs, a maximum of 64 tabs can be specified. ESC B 0 cancels all the vertical tab positions.

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

Description:

Set the horizontal tab position to the column specified by nk from the beginning of the line.
 • **n** specifies the number of digits from the setting position to the left edge of the print area.
 • **k** indicates the number of horizontal tab positions to be set.
 k=1~32; A maximum of 32 horizontal tab positions can be set.
 nk=1~40, nk should be in the printable area .
 Even if the character width is changed after setting the horizontal tab positions, the setting of the horizontal tab positions will not be changed.
 Transmit **[n]k** in ascending order and place a NUL code at the end. ESC D 0 is used to cancel the vertical positions.

Print Position Commands

HT		Horizontal tab
Format:	ASCII:	HT
	Decimal:	9
	Hex:	09

Description:

Moves the print position to the next horizontal tab position.
 The command can not be executed if the current print position exceeds the last horizontal tab position.
 Horizontal tab positions are set by ESC D, and the default is 8 character intervals in the 5*7 dot matrix character mode.

VT		Vertical tab
Format:	ASCII:	VT
	Decimal:	11
	Hex:	0B

Description:

Moves the print position to the next vertical tab position according to the vertical orientation channel

set by ESC B, or using vertical tab position set by ESC B, else the paper feeds one line.

Font Enhancement Commands

SO Select enlarge font mode

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

Description:

Beginning from the current position, set to double width printing mode.
 The function of this command is same as ESC W n and you can cancel it with DC4 command.

SI Select convert print mode

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

Description:

Set to convert print mode and cancel it with DC command.

ESC SO Double Width Printing

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

Description:

Beginning from the current position, set to double width printing in English mode or in Chinese mode.
 This command is invalid in picture printing.
 Clear double width printing with DC4 or CR command.

ESC w Select/Cancel Double height Mode

Format: ASCII: ESC W n
 Decimal: 27 119 n
 Hex: 1B 77 n

Description:

Beginning from the current position, set to double height printing mode. The height of each character is printed as twice that of standard height.
 n=1: set double height printing.
 n=0: Cancel double height printing.

DC4 Cancel enlarge font mode

Format: ASCII: DC4
 Decimal: 20
 Hex: 14

Description:

Cancel double width printing set by SO or ESC W n.

DC Cancel convert print mode

Format: ASCII: DC
 Decimal: 18
 Hex: 12

Description:

Cancel convert print mode set by DC.

ESC -					Turn underline mode on/off
Format:	ASCII:	ESC	-	n	
	Decimal:	27	45	n	
	Hex:	1B	2D	n	

Description:

x = 0 (ASCII): Turns off underline mode

x = 1 (ASCII): Turns on underline mode

The underline mode is effective for all the English characters including space, but the printer cannot underline the space set by tab.

Character Processing Commands

ESC R					Select the international character set
Format:	ASCII:	ESC	R	n	
	Decimal:	27	82	n	
	Hex:	1B	52	n	

Description:

Selects the international character set according the value of n as shown in the follow.

n=0~12, default: n=0.

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 11Spain II 12: Latin America

Barcode Commands

Support 9 kinds barcode, including EAN 8/13, NW7, Code 39, Industrial 2 of 5, Interleaved 2 of 5, Matrix 2 of 5, Code 128B/C.

Barcode command:

ESC + '}' + n + 'R' + k + m1+m2 + v1 +v2 + c + data[i]

Description:

N: length, the value is 8+i (i specifies the numbers of data).

'R': Character 'R', the ASCII code of 52H.

K: barcode types:

NW7: B1H

EAN 13: B2H

EAN 8: B3H

Code 39: B4H

Industrial 2 of 5: B5H

Interleaved 2 of 5: B6H

Matrix 2 of 5: B7H

Code 128B: BEH

Code 128C: BFH

m1+m2: width of modulus (m1=0, m2 can only take 0, 8, 16, 24, 32)

v1+v2: barcode length (192=<v1*256+v2=<4095, if other values, default is 192.)

c: option:

;+--+--+--+--+--+

;|7|6|5|4|3|2|1|0|

;+--+--+--+--+--+

;| ||

;| |+-- **0: Checkout code, 1: Not printing checkout code (Only suits to 39 barcode and three kinds of 25 barcode)**

;| |

;| +---- **0: Printing character, 1: Not printing character (Suits to all barcodes.)**

;|

;|

;|

;|

;+----- **0: Barcode (If 1, not print barcode. So it must be 0)**

Appendix D Interface

D.1 Cash Drawer Interface

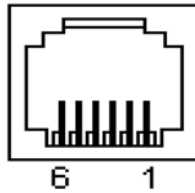


Figure D-1 Cash drawer interface

Pin Assignments

Pin NO.	Signal Name	Signal Direction
1	Frame GND	
2	Cash drawer drive signal 1	Output
3	Cash drawer Open/closed signal	Input
4	+24VDC Power	
5	Cash drawer drive signal 2	Output
6	Signal GND	

D.2 Parallel Interface

1. Technical condition

- Selected pulse: pulse /STROBE supplied from exterior.
- Signal switch: /ACKNLG (respond) and BUSY (busy)
- Logic level: all the data input and interface control signal should be compatible with TTL level.

2. Connector

Connector 57-30360 (AMPHENOL) requires the cable as short as possible. The connector is a type of 36 pin bore, whose pin numbers are shown as figure D-2.

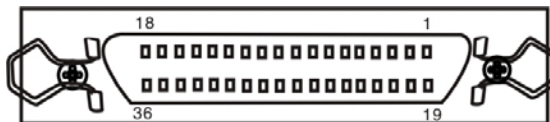


Figure D-2 Pin numbers of parallel interface connector

3. Connector Pin Assignments (shown as table D-2)

Table D-2

Pin number	Return	Signal		Direction	Description
1	19	/STROBE	Data selected	IN	The selected pulse width is 0.5 μ s.
2	20	DATA1	Bit 1	IN/OUT	Indicate 8-bit parallel data signal. High lever means logic 1, whereas lower lever means logic 0.
3	21	DATA2	Bit 2	IN/OUT	
4	22	DATA3	Bit3	IN/OUT	
5	23	DATA4	Bit 4	IN/OUT	
6	24	DATA5	Bit 5	IN/OUT	
7	25	DATA6	Bit 6	IN/OUT	
8	26	DATA7	Bit 7	IN/OUT	
9	27	DATA8	Bit 8	IN/OUT	
10	28	/ACKNLG	Respond output	OUT	Pulse width is about 12 μ s. Low lever means that data has been received and printer has been ready to receive more data.
11	29	BUSY	Printer state	OUT	The high lever output means that the printer is too busy to receive data. This pin outputs high lever under the following condition: 1. Data input period. 2. Printing period. 3. Offline. 4. Mistaken.
12	30	PE	Paper out	OUT	The high lever output means that printer is out of paper.
13		SLCT	Select printer	OUT	The voltage is pulled to 5V through 3.3K Ω resistance.
14		/AUTOFEED	Feed paper automatically	IN	Line feed automatically after having printed one line when in low lever.
15		NC	Null pin	--	This pin is null.
16		GND	Logic GND	--	Logic ground
17		CHASSIS	Structural GND	--	Printer's structural ground, which is separated from logic ground.
18		NC	Null pin	--	This pin is null.
19 - 30		GND	Ground	--	Loop ground with signal line double-twisted.
31	16	/INIT	Printer initialized	IN	Printer is initialized when the signal lever is low.
32		/ERROR	Printer makes a mistake	OUT	The signal lever becomes lower when the printer is in the condition of paper out, offline and mistaken.
33		GND	Ground	--	The same as 19~30 pin.

34		NC	Null pin	--	This pin is null.
35		+5V	+5V Power supply	OUT	The voltage is pulled to 5V through 3.3KΩ resistance.
36		/SLCTIN	Printer is selected to respond.	IN	Only when this signal lever is low, can data input to the printer.

- ★ The “Direction” in the above table is the flow which is for printer signal to printer.
- ★ “Return” means return with double-twisted, which is connected with ground .Make sure the interface cable is a double-twisted screen line that should be connected to computer host and structural ground of the printer. Each signal line should be double-twisted together with ground line and form a loop.
- ★ The estate of interface is based on the TTL lever and the signal ascending and descending time should less than 0.2ms.
- ★ The data transmission must observe the prescription of signal ACKING or Busy. Only the lever of signal ACKING or Busy is low, is the data transmitted.

4. Timing signal in parallel interface transmission shown as figure D-3.

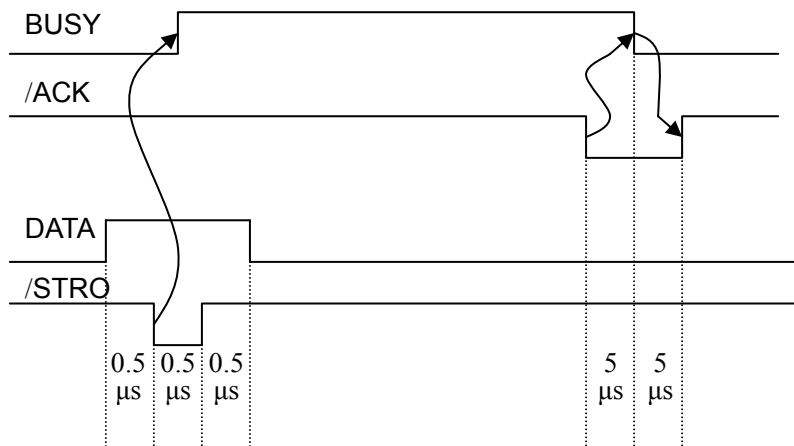


Figure D-3 Timing signal in parallel

D.3 USB Interface

1. The USB interface connector is a type of USB-B shown as figure D-4.

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

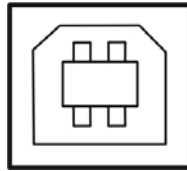


Figure D-4 USB-B type connector

2. Connecting with printer and computer USB interface shown as figure D-5.

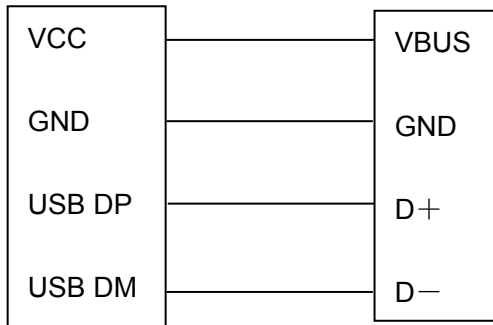


Figure D-5 Connecting figure of printer and computer USB

D.4 Serial Interface

Serial Interface Specifications

The serial interface meets the standard of RS-232. The connector is a type of DB-25 pin bore, whose pin numbers are shown as figure D-6.

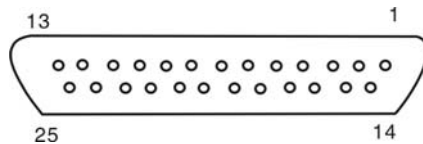


Figure D-6 Pin numbers of serial interface connector

The serial interface has the following characteristics.

Method of data in/out	7-bit or 8-bit serial interface
Synchronization:	Asynchronous
Handshaking:	DTR protocol, XON/XOFF protocol
Baud rate:	2400 bps, 4800 bps, 9600 bps, 19200 bps, 38400bps
Data length:	7 or 8-bit
Parity check:	Odd, even, or none
Stop bit	1 bit
Synchronization:	Asynchronous
Handshaking:	DTR protocol, XON/XOFF protocol

Signal level is described as follows:

1=low (Mark): -3~-15VDC

0=high (Space): +3~+15VDC

Pin Assignments as table D-3 shown

Table D-3

Pin Number	Name	Direction	Pin Description
1	FG	—	Frame ground
2	TXD	OUT	Send data
3	RXD	IN	Receive data
7	SG	—	Signal ground
20	DTR	OUT	Data terminal ready

Note: The signal direction is according to the printer main board.

Connection of serial interface is as follows:

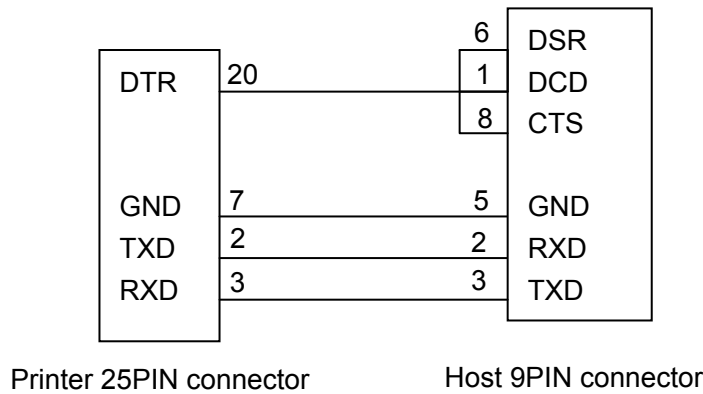


Figure D-7 Connecting figure between host and printer

D.5 Ethernet Interface

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

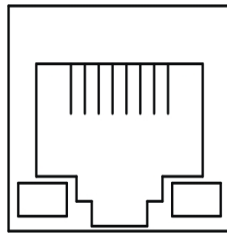


Figure D-8 Ethernet interface

Appendix E Black mark

DP100 series printer is equipped with black mark checked settings, which is installed on the left side of the printer at the factory setting and other selectable installed position should be reserved. The concrete installed position of black mark sensor is according to the paper specification that customer use practically.

DP100 printer with Tractor paper can use any black mark paper specification as follows:

1. Tractor paper with 76mm to 142mm Paper width (Black mark is on the left.)
2. Tractor paper with 76mm Paper width (Black mark is on the left.)
3. Tractor paper with 142mm Paper width (Black mark is on the left.)

DP100 printer with roll paper can use any black mark paper specification as follows:

1. Roll paper with 57.5mm、76mm or 114mm Paper width (Black mark is on the left.)
2. Roll paper with 57.5mm Paper width (Black mark is on the left.)
3. Roll paper with 76mm Paper width (Black mark is on the left.)
4. Roll paper with 114mm Paper width (Black mark is on the left.)

The black mark center should be aligned with the middle of “arrow” when installing the black mark paper.

The command of searching black mark: 1D 0C (HEX)

Description:

After receiving this command, the printer feeds paper automatically to search black mark till check there is one, and then stops after leaping over it. Notice in black mark printing:

- ① Black mark is usually printed on the left print surface of bill.
- ② The dimension of black mark is (width * height): 10×6mm.
- ③ The black area of black mark, reflectivity \leq 10%. The white area outside, reflectivity $>$ 70%. The reflectivity is based on the measure value using Macbeth density meter (PCMII) D filter.
- ④ The black mark printing should be away from bore location, printed in the non-perforation area between two holes.
- ⑤ The distance between black mark center and print position center is about 2.8cm.

Jolimark