Direct Thermal Printer

4B-2044x/ 4B-2054x/4B-2064x/
4B-3034x/ 4B-3044x Series

DIRECT THERMAL BARCODE PRINTER

USER'S MANUAL

Please keep user manual for reference

Contents

Copyright Declaration

CAUTION

1. THE MAIN BOARD INCLUDES REAL TIME CLOCK FEATURE HAS LITHIUM BATTERY CR2032 INSTALLED. RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.

2. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER INSTRUCTIONS.

1. Introduction

Thank you for purchasing the 4BARCODE 4B-2044A/ 4B-2054A/ 4B-3034A/ 4B-3044A Series Direct Thermal BarCode Printer. Although it is a compact desktop printer, it is reliable and with Superior throughput performance.

This printer provides direct thermal printing at user selectable speed of: 2.0, 3.0, 4.0, 5.0, inches per second. It accepts roll feed, die-cut, and fan-fold labels for direct thermal printing. All common barcodes formats are available. Fonts and barcodes can be printed in 4 directions, 8 different alphanumeric bitmap fonts and a build-in true type font capability. You will enjoy high throughput for printing labels with this printer.

2. Getting Started

2.1 Unpacking and Inspection

This printer has been specially packaged to withstand damage during shipping. Please carefully inspect the packaging and printer upon receiving the barcode printer. Please retain the packaging materials in cover you need to reship the printer.

2.2 Equipment Checklist

- Printer
- BarTender UltraLite CD disk
- Quick start guide
- USB cable
- External universal switching power supply
- Power Cord
- Label Spindle
- Fixing tab x2

If any parts are missing, please contact the Customer Service Department of your purchased reseller or distributor.

Dealer option

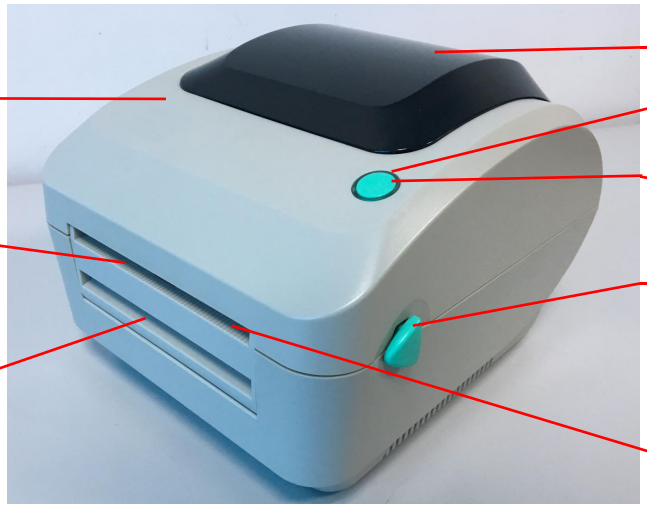
- Peel off module assembly.
- Main board integrated with internal Ethernet
- Internal Ethernet print server module

User option

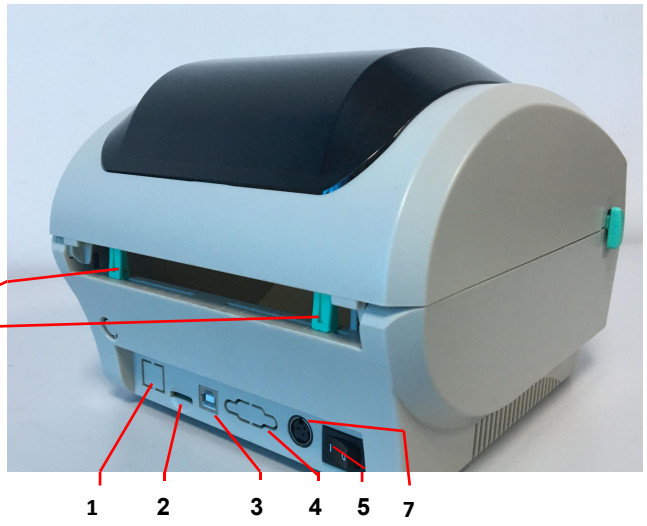
- PEEL module
- External roll mount, media OD. 214 mm (8.4”) with 3” core label spindle

2.3 Printer Parts

2.3.1 Front View



2.3.2 Rear View



1. Ethernet Interface
2. SD Card
3. USB Interface
4. RS-232C DB-9 Interface
5. Power Switch
6. Rear Label Guide
7. Power Jack

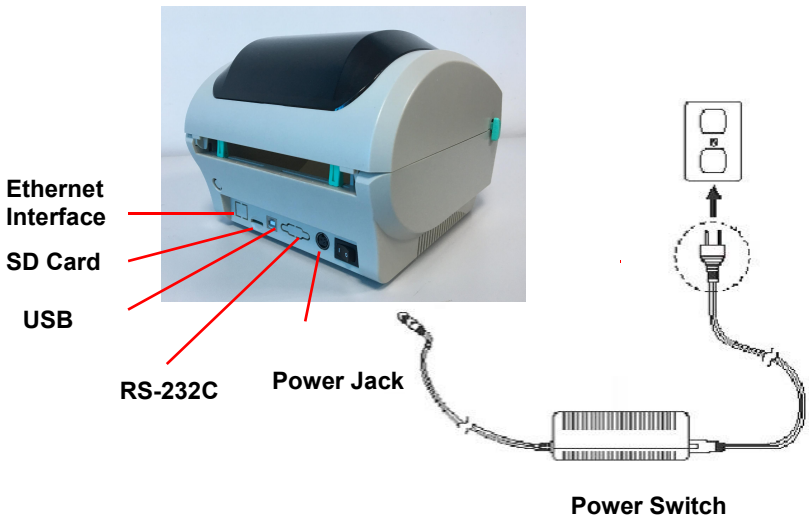
Note: The interface picture here is for reference only. Please refer to the product specification for the interfaces availability.

3 Setup

3.1 Setting Up the Printer

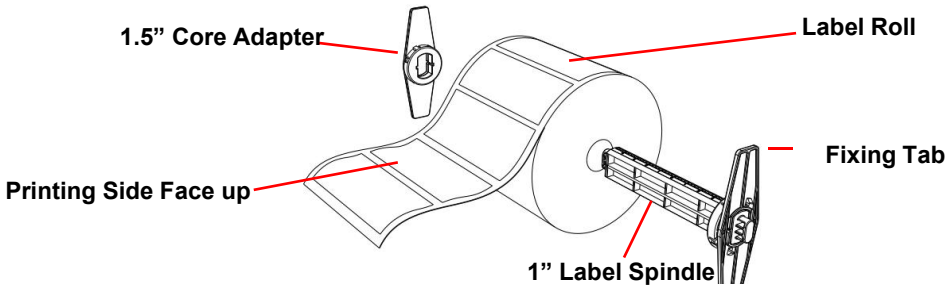
1. Place the printer on a flat, secure surface.
2. Make sure the power switch is off.
3. Connect the printer to the computer with the RS-232 or USB cable.
4. Plug the DC power cord into the power jack at the rear of the printer, and then plug the AC power cord into a properly grounded receptacle.

Note: When plug power code into the rear of printer please make sure the printer power switch is off.

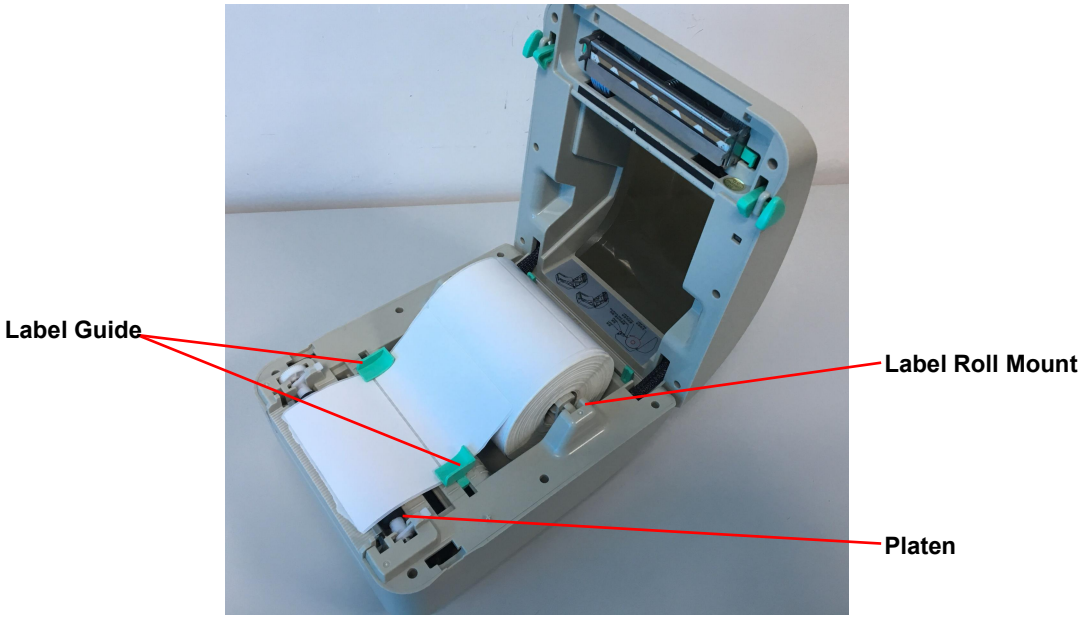


3.2 Loading Label Stock

1. Insert a 1” label spindle into a paper roll (If your paper core is 1 inch, remove the 1.5 inch core adapter from the fixing tab).



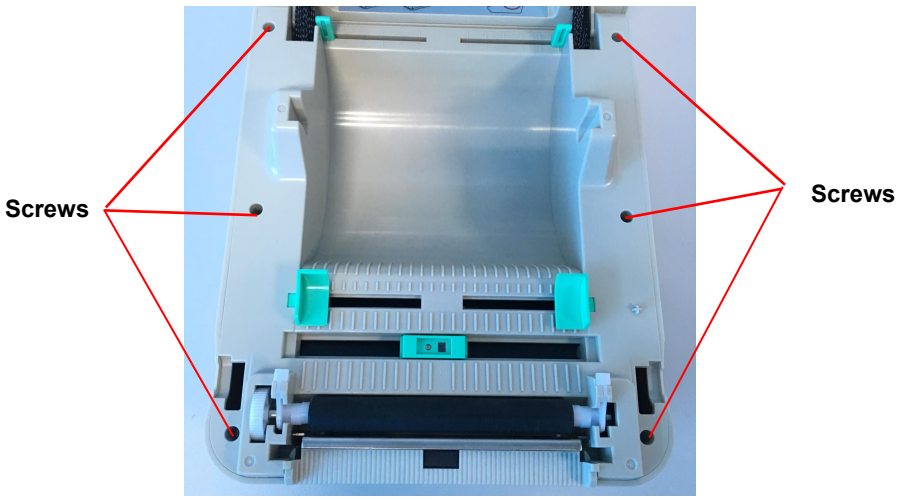
2. Open the printer’s top cover by releasing the green **top cover open levers** located on both sides of the printer and lifting the top cover.
3. Place a roll of paper into internal paper roll mount.
4. Feed the paper, printing side face up, through the **label guides** and place the label over the platen.
5. Adjust the label guides in or out so they are slightly touch the edges of the label backing.



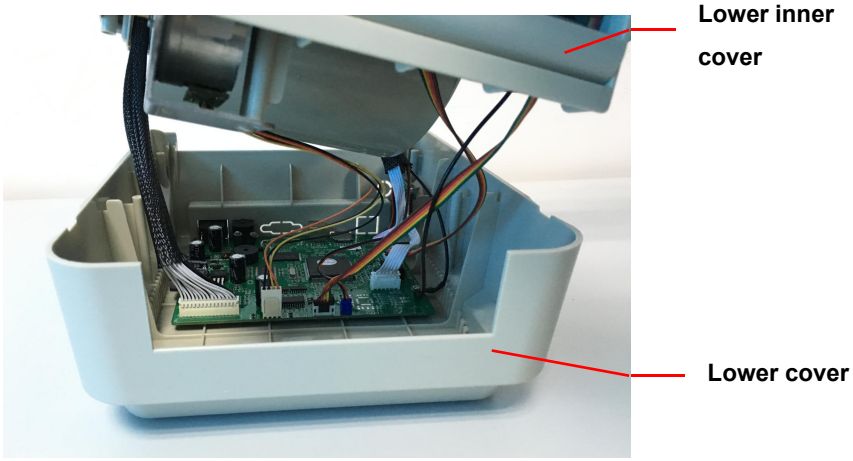
6. Close the printer top cover slowly and make sure the cover locks levers securely.

3.3 Peel-Off Installation Assembly (Option)

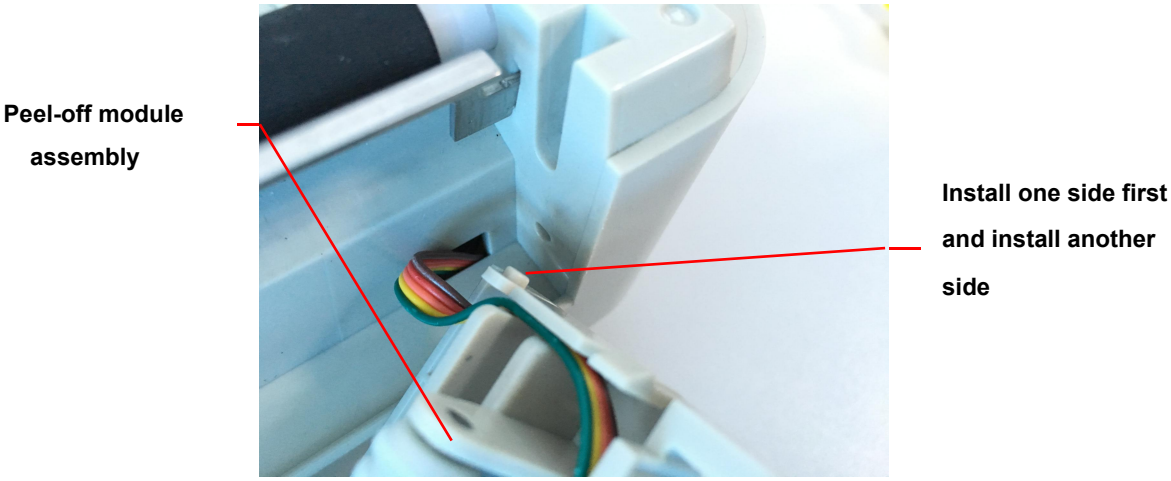
1. Open the top cover.
2. Unscrew the 4 screws in the lower inner cover.



6. Hold the lower cover and lift up the top cover opening levers to separate the lower inner cover from the lower cover.



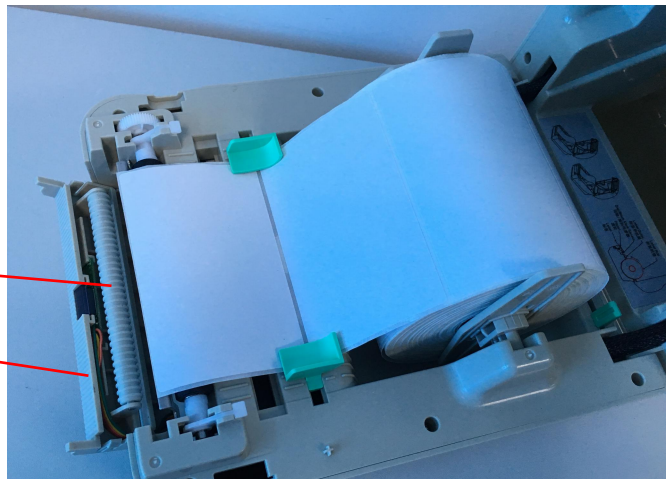
7. Thread the harness red connector through the cable hole at the front side of lower inner cover. Plug the red peel off module harness connector at the location JP17 on the main board. Place lower inner cover to the lower cover. Install the peel-off module to the lower inner cover slot.



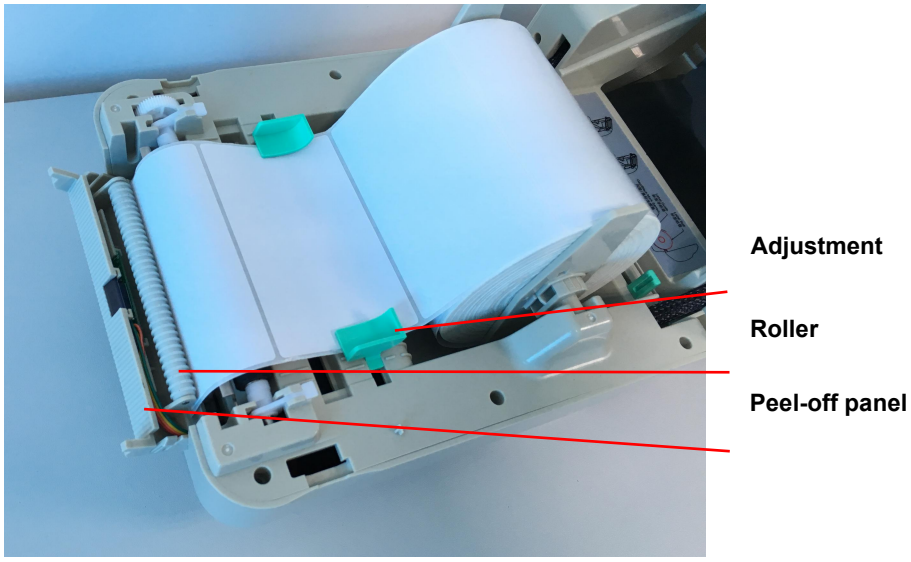
8. Gently push peel-off panel to lock to the lower inner cover.
9. Reassemble parts in reverse procedures after installing the module.

3.4 Loading Label for Peel-off Mode (Option)

1. Open the peel-off module by pulling it out.



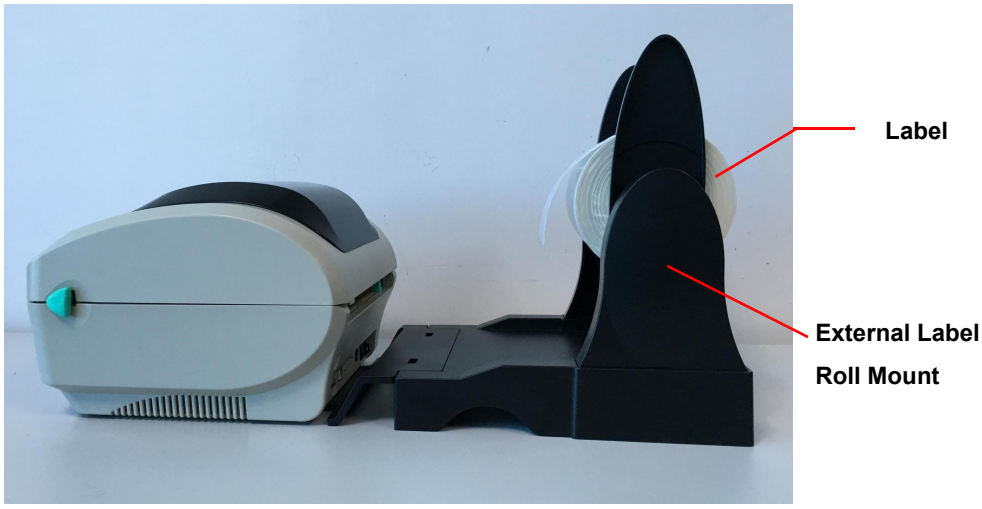
2. Thread the label, printing side facing up, through the label guides and place it on top of the platen.
3. Thread the label through the liner opening, which is beneath the roller.
4. Adjust the center-biased **label guides** by finger to fit the edge of the label backing.



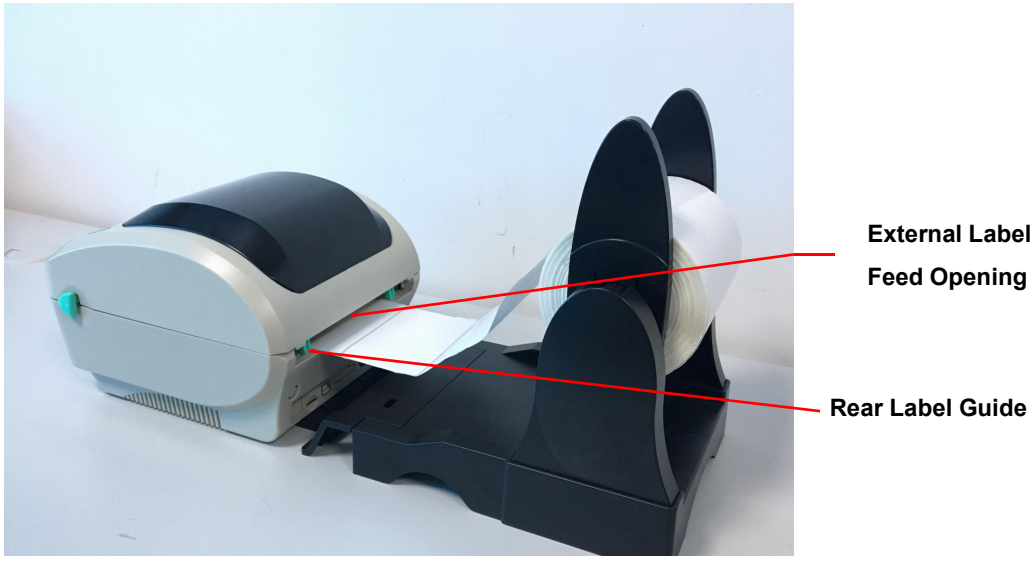
5. Push the peel-off panel back to the printer.
6. Close the top cover.

3.5 External Label Roll Mount Installation (Option)

1. Attach an external label roll mount on the bottom of the printer.
2. Install a roll of label on the external label roll mount.



3. Feed the label to the external label feed opening through the rear label guide.



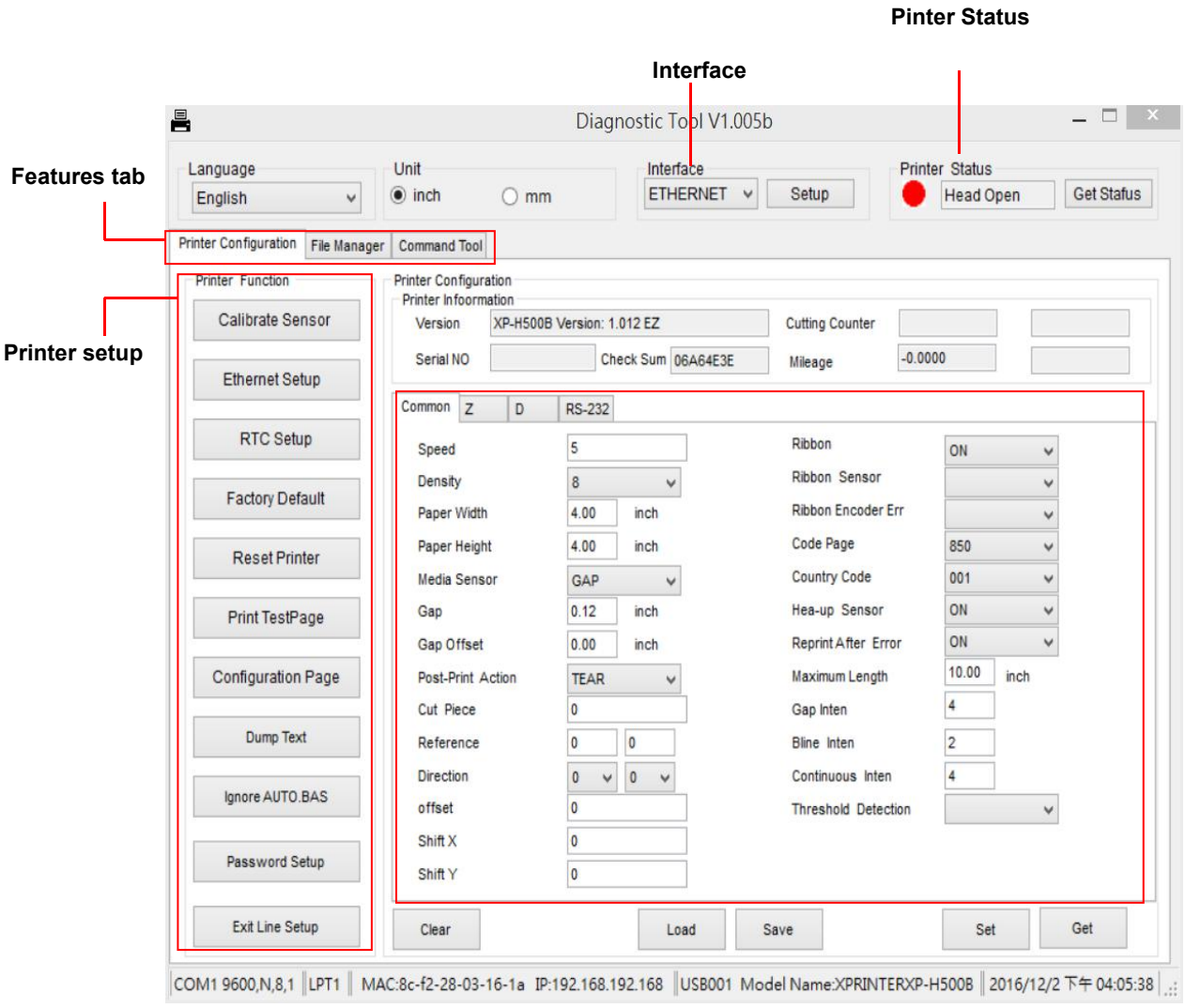
4. Open the printer top cover by pulling the top cover open levers.
5. Thread the label, printing side face up, through the label guide and place it on top the platen.
6. Adjust the label guides by finger to fit the edge of the label backing.
7. Close the printer top cover.

3.6 Diagnostic Tool

The Diagnostic Utility is a toolbox that allows users to explore the printer's settings and status; change printer settings; download graphics, fonts, and firmware; create printer bitmap fonts; and to send additional commands to the printer. Using this convenient tool, you can explore the printer status and settings and troubleshoot the printer.

3.6.1 Start the Diagnostic Tool

1. Double click on the Diagnostic tool icon Diagnostic Tool.exe to start the software.
2. There are four features (Printer Configuration, File Manager, Bitmap Font Manager, Command Tool) included in the Diagnostic utility.



3.6.2 Printer Function (Calibrate sensor, Ethernet setup, RTC setup……)

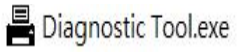
1. Select the PC interface connected with barcode printer.
2. Click the “Function” button to setting.
3. The detail functions in the Printer Function Group are listed as below.

Function	Description
Calibrate Sensor	Calibrate the sensor specified in the Printer Setup group media sensor field
Ethernet Setup	Setup the IP address, subnet mask, gateway for the on board Ethernet (Please refer to next section)
RTC Time	Synchronize printer Real Time Clock with PC
Factory Default	Initialize the printer and restore the settings to factory default.
Reset Printer	Reboot printer
Print Test Page	Print a test page
Configuration Page	Print printer configuration
Dump Text	To activate the printer dump mode.
Ignore AUTO.BAS	Ignore the downloaded AUTO.BAS program
Password Setup	Set Printer password when used.

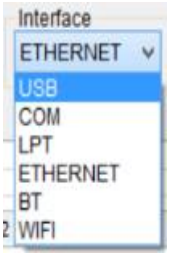
3.7 Setting Ethernet by Diagnostic Utility (Option)

The Diagnostic Utility is enclosed in the CD disk \Utilities directory. Users can use Diagnostic Tool to setup the Ethernet by RS-232, USB and Ethernet interfaces. The following contents will instruct users how to configure the Ethernet by these three interfaces.

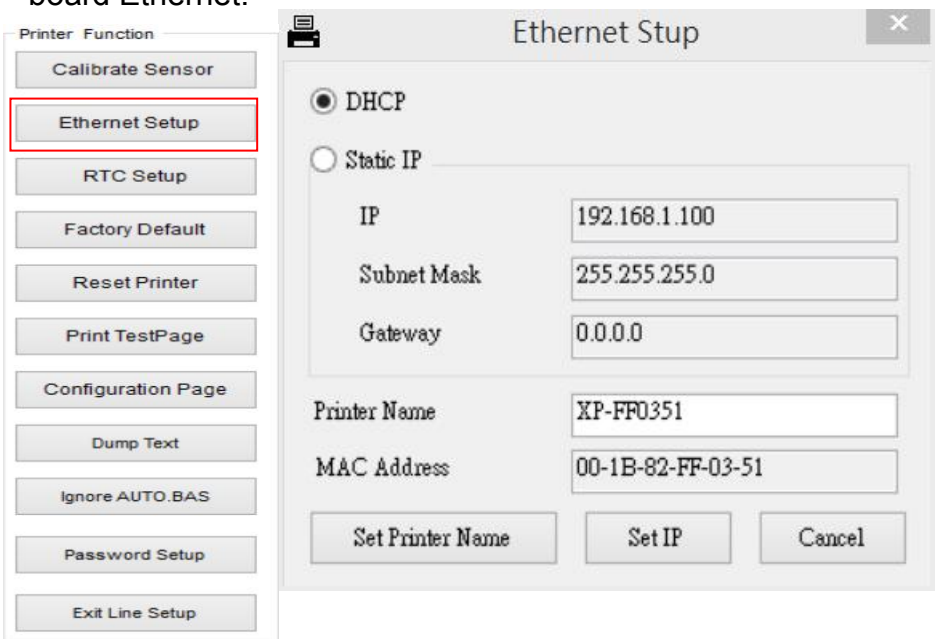
3.7.1 Using USB interface to setup Ethernet interface

1. Connect the USB cable between the computer and the printer.
2. Turn on the printer power.
3. Start the Diagnostic Utility by double clicking on the 

icon.
4. The Diagnostic Utility default interface setting is USB interface. If USB interface is connected with printer, no other settings need to be changed in the interface field.

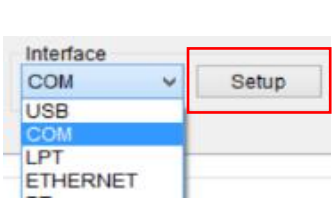


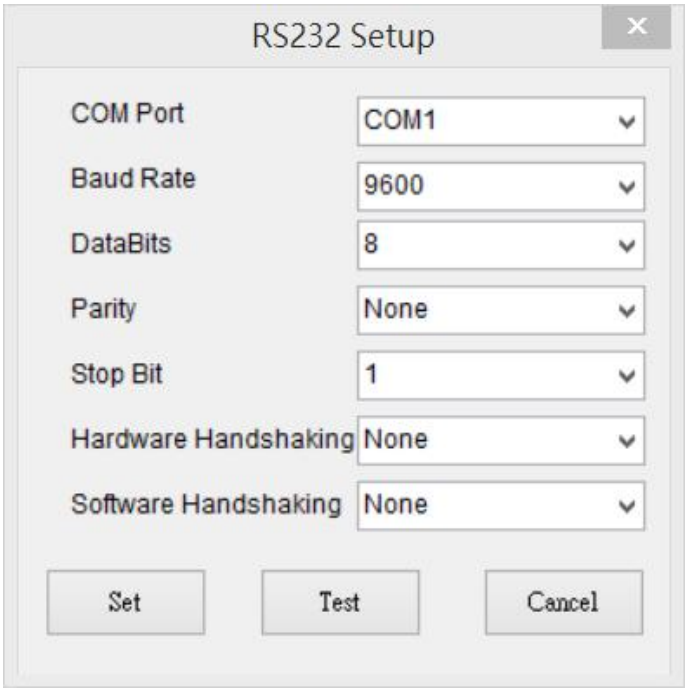
5. Click on the “Ethernet Setup” button from “Printer Function” group in Printer Configuration tab to setup the IP address, subnet mask and gateway for the on board Ethernet.



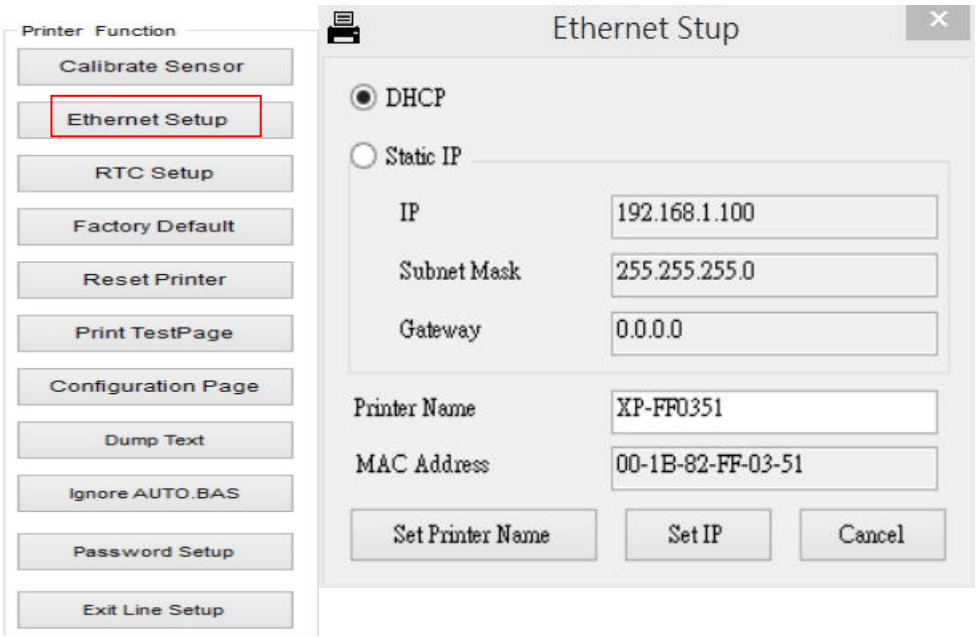
3.7.2 Using RS-232 interface to setup Ethernet interface

1. Connect the computer and the printer with a RS-232 cable.
2. Turn on the printer power.
3. Start the Diagnostic Utility by double clicks on the Diagnostic Tool.exe icon.
4. Select “COM” as interface then click on the “Setup” button to setup the serial port baud rate, parity check, data bits, stop bit and flow control parameters.



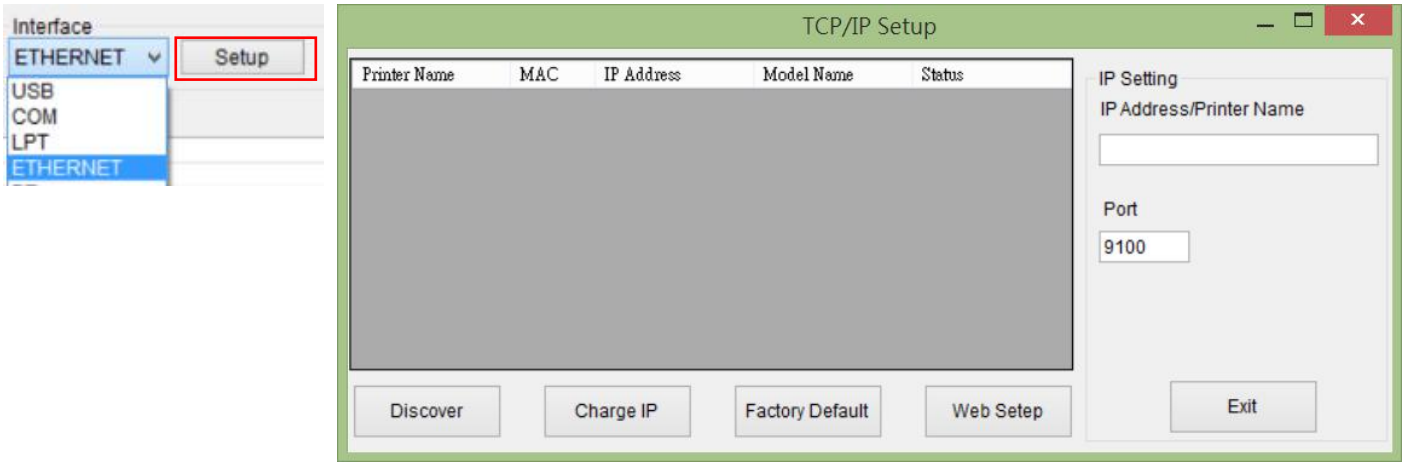


5. Click on the “Ethernet Setup” button from printer function of Printer Configuration tab to setup the IP address, subnet mask and the gateway for the on board Ethernet.

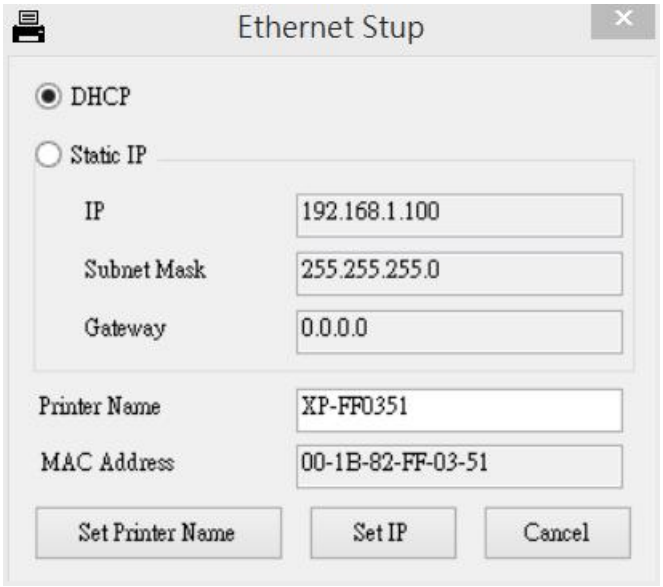


3.7.3 Using Ethernet interface to setup Ethernet interface

1. Connect the computer and the printer to the LAN.
2. Turn on the printer power.
3. Start the Diagnostic Utility by double clicks on the Diagnostic Tool.exe icon.
4. Select “Ethernet” as the interface then click on the “Setup” button to setup the IP address, subnet mask and gateway for the on board Ethernet.



5. Click the “Discover Device” button to explore the printers that exist on the network.
6. Select the printer in the left side of listed printers, the correspondent IP address will be shown in the right side “IP address/Printer Name” field.
7. Click “Change IP Address” to configure the IP address obtained by DHCP or static.



The default IP address is obtained by DHCP. To change the setting to static IP address, click “Static IP” radio button then enter the IP address, subnet mask and gateway. Click “Set IP” to take effect the settings.

Users can also change the “Printer Name” by another model name in this fields then click “Set Printer Name” to take effect this change.

Note: After clicking the “Set Printer Name” or “Set IP” button, printer will reset to take effect the settings.

4. Click “Exit” button to exit the Ethernet interface setup and go back to Diagnostic Tool main screen.

Factory Default button

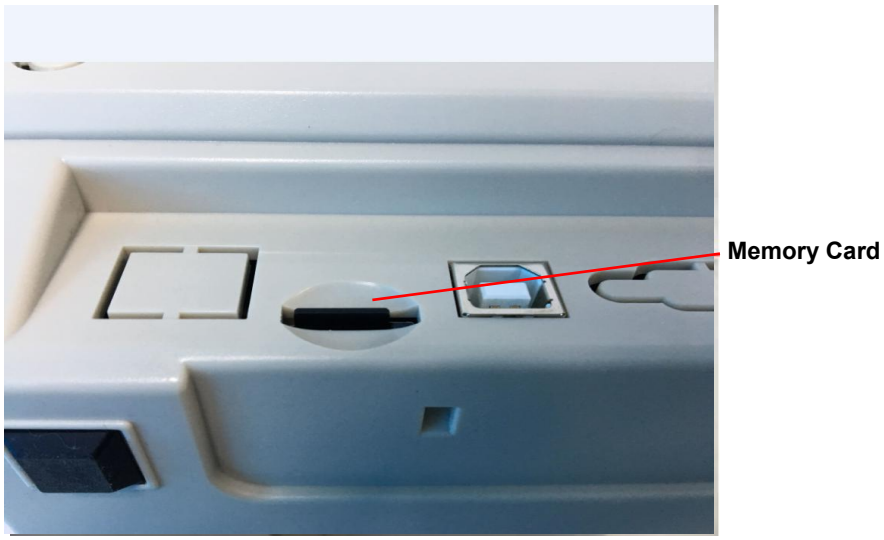
This function will reset the IP, subnet mask, gateway parameters obtained by DHCP and reset the printer name.

Web setup button

Except to use the Diagnostic Utility to setup the printer, you can also explore and configure the printer settings and status or update the firmware with the IE or Firefox web browser. This feature provides a user friendly setup interface and the capability to manage the printer remotely over a network.

3.8. Install Memory Card

1. Upside down the printer.
2. Remove 1 screw and open the memory card cover.



4. Power on Utilities

There are six power-on utilities to set up and test printer hardware. These utilities are activated by pressing FEED button and by turning on the printer power simultaneously.

The utilities are listed as below:

1. Gap/Black mark sensor calibration
2. Gap/black mark sensor calibration, Self-test and Dump mode
3. Printer initialization
4. Skip AUTO.BAS

4.1 Gap/Black Mark Sensor Calibration

Gap/black mark sensor sensitivity should be calibrated at the following conditions:

1. A brand new printer
2. Change label stock.
3. Printer initialization.

Please follow the steps below to calibrate the gap/black sensor：

1.Turn off the power switch.

2. Hold on the button then turn on the power switch.

3 Release the button when LED becomes **red** and blinking. (Any red will do during the 5 blinks).

- It will calibrate the gap/black mark sensor sensitivity.
- The LED color will be changed as following order：
- Blue → **red (5 blinks)** → purple (5 blinks) → blue (5 blinks) → solid blue
  It calibrates the sensor and measures the label length.

Note:

Please select gap or black mark sensor by GAP or BLINE command prior to calibrate the sensor.

For more information about GAP and BLINE command, please refer to programming manual.

4.2 Gap/Black Mark Calibration, Self-test, Dump Mode

While calibrate the gap/black mark sensor, printer will measure the label length, print the internal configuration (self-test) and then enter the dump mode.

Please follow the steps as below.

1.Turn off the power switch.

2. Hold on the button then turn on the power switch.

3. Release the button when LED becomes **purple** and blinking. (Any **purple** will do during the 5 blinks).

- The LED color will be changed as following order.
  Blue → red (5 blinks) → **purple (5 blinks)** → blue (5 blinks) → solid blue
  It calibrates the sensor and measures the label length and prints internal

- settings then enter the dump mode.

Note:

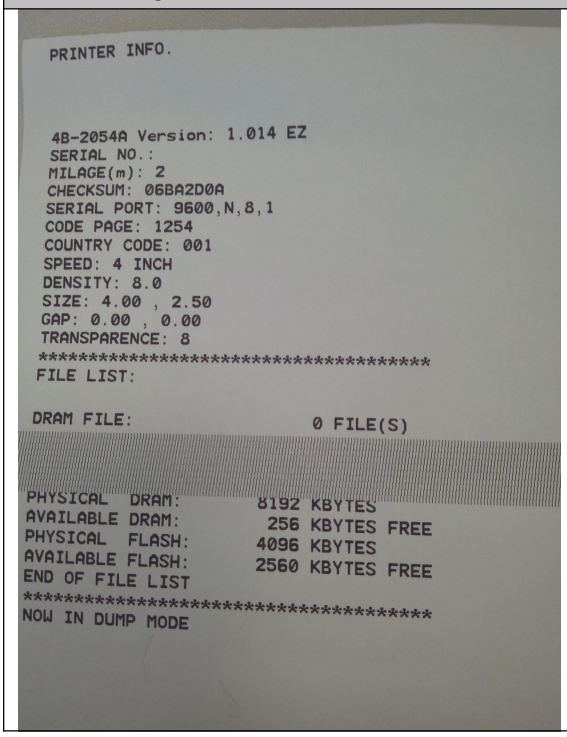
Please select gap or black mark sensor by Diagnostic Tool or by GAP or BLINE command prior to calibrate the sensor.

For more information about GAP and BLINE command, please refer to XPL programming manual.

Self-test

Printer will print the printer configuration after gap/black mark sensor calibration.

Self-test printout can be used to check if there is any dot damage on the heater element, printer configurations and available memory space.

Self-test printout		
		Print head check pattern Model name and F/W version Printed mileage (meter) Firmware checksum Serial port configuration Code page Country code Print speed (inch/sec) Print darkness Label size (inch) Gap distance (inch) Gap/black mark sensor sensitivity Numbers of download files Total & available memory space

Note:

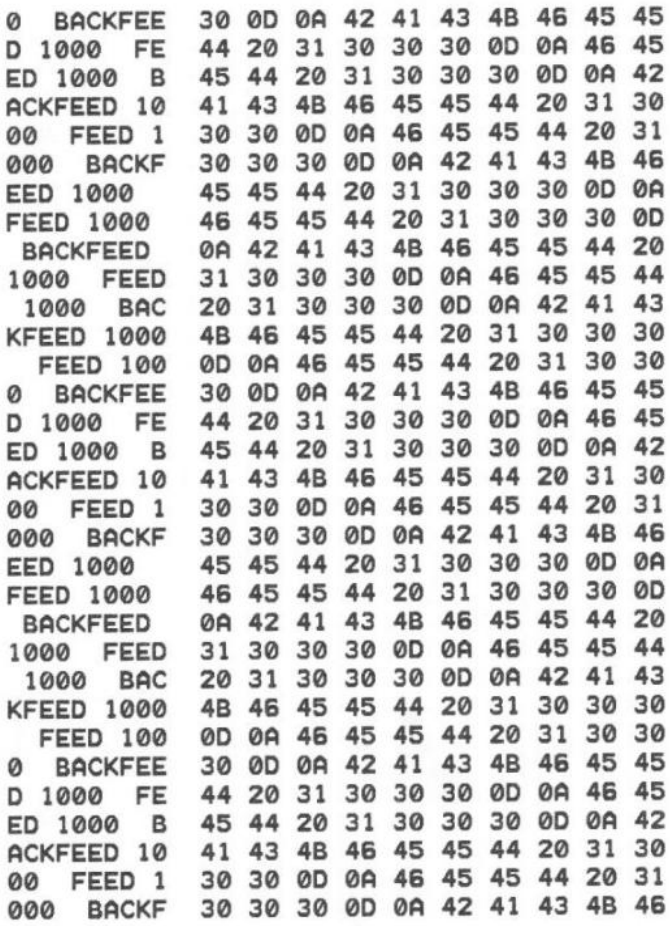
1. The physical flash memory for RoHS compliant version is 4MB Flash and 8MB SDRAM (4BARCODE 4B-2044A/ 4B-2054A/ 4B-3034A/ 4B-3044A Model)

2. System occupies 4096 KB in Flash memory so total flash memory space for user downloading is 2560 KB

3. System occupies 8192 KB in DRAM so total DRAM memory space for user downloading is 256 KB

Dump mode

Printer will enter dump mode after printing printer configuration. In the dump mode, all characters will be printed in 2 column s as following. The left side characters are received from your system and right side data are the corresponding hexadecimal value of the characters. It allows users or engineers to verify and debug the program.



Dump mode printout

Note :

Turn off and on the power switch to reset the printer for normal printing.

4.3 Printer Initialization

Printer initialization is used to clear DRAM and restore printer settings to defaults. The only one exception is ribbon sensitivity, which will note be restored to default.

Printer initialization is activated by the following procedures.

1. Turn off the power switch.
2. Hold on the button then turn on the power switch.
3. Release the button when LED turns **blue** after 5 blue blinks. (Any blue will do during the 5 blinks).
   - The LED color will be changed as following:
     Blue → red (5 blinks) → purple(5 blinks) → **blue (5 blinks)** → solid blue

Printer configuration will be restore to defaults as below after initialization.

Parameter	Default setting
Speed	152 mm/sec (6 ips)
Density	8
Label Width	4” (101.6 mm)
Label Height	7.08” (180 mm)
Media Sensor Type	Gap sensor
Gap Setting	0.157” (4.0 mm)
Print Direction	0
Reference Point	0,0 (upper left corner)
Offset	0
Tear Mode	On
Peel off Mode	Off
Cutter Mode	Off
Serial Port Settings	9600 bps, none parity, 8 data bits, 1 stop bit
Code Page	850
Country Code	001
Clear Flash Memory	No
IP Address	DHCP

Note :

Always do gap/black mark sensor calibration after printer initialization.

4.4 Skip AUTO.BAS

TSPL2 programming language allows user to download an auto execution file to flash memory. Printer will run the AUTO.BAS program immediately when turning on printer power. The AUTO.BAS program can be interrupted without running the program by the power-on utility.

Please follow the steps as below.

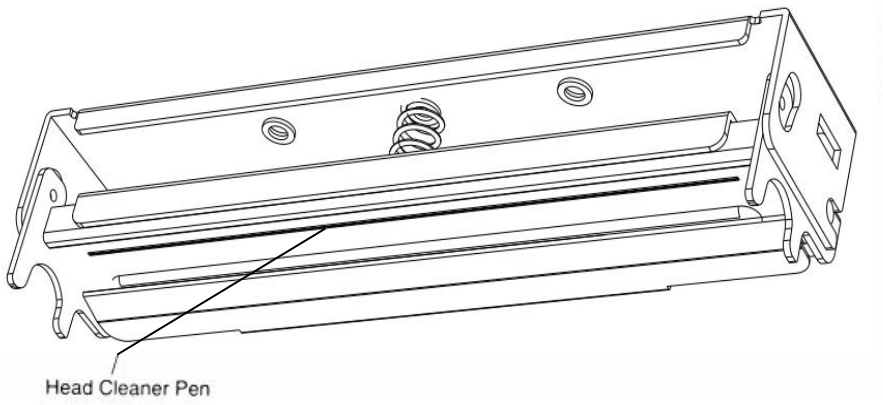
1. Turn off printer power.
2. Press the FEED button and then turn on power.
3. Release the FEED button when LED becomes **solid blue**.
    - The LED color will be changed as following:
      Blue → red (5 blinks) → purple (5 blinks) → blue (5 blinks) → **solid blue**
4. Printer will be interrupted to run the AUTO.BAS program.

5. Maintenance

5.1 Cleaning

This session presents the clean tools and methods to maintain your printer.

- Please use one of following material to clean the printer.
- Cotton swab (Head cleaner pen)
- Lint-free cloth
- Vacuum / Blower brush
- Medical alcohol
  - The cleaning process is described as following

<table>
<tr><th>Printer Part</th><th>Method</th><th>Interval</th></tr>
<tr><td rowspan="2">Print Head</td><td>1. Always turn off the printer before cleaning the print head.
2. Allow the print head to cool for a minimum of one minute.
3. Use a cotton swab (Head cleaner pen) and Medical alcohol to clean the print head surface.</td><td>Clean the print head when changing a new label roll</td></tr>
<tr><td colspan="2"> 
</td></tr>
<tr><td>Platen Roller</td><td>1. Turn the power off.
2. Rotate the platen roller and wipe it thoroughly with Medical alcohol and a cotton swab, or lint-free cloth.</td><td>Clean the platen roller when changing a new label roll</td></tr>
<tr><td>Tear Bar/Peel Bar</td><td>Use the lint-free cloth with Medical alcohol to wipe it.</td><td>As needed</td></tr>
<tr><td>Sensor</td><td>Compressed air or vacuum</td><td>Monthly</td></tr>
<tr><td>Exterior</td><td>Wipe it with water-dampened</td><td>As needed</td></tr>
</table>

	cloth	
Interior	Brush or vacuum	As needed

Note:

- **Do not touch printer head by hand. If you touch it careless, please use ethanol to clean it.**
- **Please use medicinal alcohol. Do not use industrial alcohol, industrial alcohol may damage the print head.**
- **Regularly clean the print head and supply sensors once change a new ribbon to keep printer performance and extend printer life.**

6. Troubleshooting

The following guide lists the most common problems that may be encountered when operating this barcode printer. If the printer still does not function after all suggested solutions have been invoked, please contact the Customer Service Department of your purchased reseller or distributor for assistance.

● LED Status

This section lists the common problems that according to the LED status and other problems you may encounter when operating the printer. Also, it provides solutions.

LED Status / Color	Printer Status	Possible Cause	Recovery Procedure
OFF	No response	No power	* Turn on the power switch. * Check if the green LED is lit on power supply. If it is not lit on, power supply is broken. * Check both power connections from the power cord to the power supply and from the power supply to the printer power jack if they are connected securely.
Solid Blue	ON	The printer is ready to use	* No action necessary.
Blue with blinking	Pause	The printer is paused	* Press the FEED button to resume for printing.
Red with blinking	Error	The out of label or the printer setting is not correct	1. Out of label * Load a roll of label and follow the instructions in loading the media then press the FEED button to resume for printing. 2. Printer setting is not correct * Initialize the printer by instructions in “Power on Utility” or “Diagnostic Tool”.

Note:

Printer status can be easily shown on the Diagnostic Tool. For more information about the Diagnostic Tool, please refer to the instruction in the software CD disk.

● Print Quality

`Problem	Possible Cause	Recovery Procedure
Not Printing	Check if interface cable is well connected to the interface connector.	Re-connect cable to interface.
	The serial port cable pin configuration is not pin to pin connected.	Please replace the cable with pin to pin connected.
	The serial port setting is not consistent between host and printer.	Please reset the serial port setting.
	The port specified in the Windows driver is not correct.	Select the correct printer port in the driver.
	The Ethernet IP, subnet mask, gateway is not configured properly.	Configure the IP, subnet mask and gateway.
No print on the label	Label loaded not correctly.	Follow the instructions in loading the media.
Continuous feeding labels	The printer setting may go wrong.	Please do the initialization and gap/black mark calibration.
Paper Jam	Gap/black mark sensor sensitivity is not set properly (sensor sensitivity is not enough)	Calibrate the gap/black mark sensor.
	Make sure label size is set properly.	Set label size exactly as installed paper in the labeling software or program.
	Labels may be stuck inside the printer mechanism near the sensor area.	Remove the stuck label.
Poor Print Quality	Top cover is not closed properly.	Close the top cover completely and make sure the right side and left side levers are latched properly.
	Check if supply is loaded correctly.	Reload the supply.
	Media are incompatible.	Change the label combination.
	Check if dust or adhesives are accumulated on the print head.	Clean the print head.
	Check if print density is set properly.	Adjust the print density and print speed.
	Check print head test pattern if head element is damaged.	Run printer self-test and check the print head test pattern if there is dot missing in the pattern.

7. LED and Button Operation

This printer has one button and one three-color LED indicator. By indicating the LED with different color and pressing the button, printer can feed labels, pause the printing job, select and calibrate the media sensor, print printer self-test report, reset printer to defaults (initialization). Please refer to the button operation below for different functions.

7.1 LED

LED Color	Description
Blue/ Solid	This illuminates that the power is on and the device is ready to use.
Blue/ Flash	This illuminates that the system is downloading data from PC to memory and the printer is paused.
Purple	This illuminates that the system is clearing data from printer.
Red / Solid	This illuminates printer head open.
Red / Flash	This illuminates a printing error, such as head open, paper empty, paper jam, or memory error etc.

7.2 Button Operation

FEED	● Press the button when the LED is **blue**. ■ It feeds the label to the beginning of the next label.
Pause	● Press the feed button during printing. ■ The printing job is suspended.

Gap/Black Mark Sensor Calibration	1. Turn off the power switch. 2. Hold on the button then turn on the power switch. 3. Release the button when LED turns **red** after 5 green/amber blinks. (Any red/amber will do during the 5 blinks). ■ The LED color will be changed as following order. The LED color will be changed as following order： Blue → **red** (5 blinks) → purple (5 blinks) → blue (blinks) → solid blue
Gap/Black Mark Sensor Calibratio, Label Length Measurement, Self Test and enter Dump Mode	1.Turn off the power switch. 2. Hold on the button then turn on the power switch. 3. Release the button when LED becomes **purple** and blinking. (Any amber will do during the 5 blinks). ■ The LED color will be changed as following order. The LED color will be changed as following order： Blue → red (5 blinks) → **purple (5 blinks)** → blue blinks) → solid blue ■ It calibrates the sensor and measures the label length and prints internal settings then enter the dump mode. **Note:** **Please select gap or black mark sensor by GAP or BLINE command prior to calibrate the sensor.** **For more information about GAP and BLINE command, please refer to XPL programming manual.**

Printer Initialization	1.Turn off the power switch. 2. Hold on the button then turn on the power switch. 3 Release the button when LED becomes **bule** and blinking. (Any red will do during the 5 blinks). ■ It will calibrate the gap/black mark sensor sensitivity. ■ The LED color will be changed as following order： Blue → red (5 blinks) → purple (5 blinks) → **blue (blinks)** → solid blue ■ It calibrates the sensor and measures the label length.
Skip AUTO.BAS	1. Turn off printer power. 2. Press the FEED button and then turn on power. 3. Release the FEED button when LED becomes solid **bule**. ■ The LED color will be changed as following: Amber→red (5 blinks) →purple (5 blinks)→bule (5 blinks)→solid **bule** 4. Printer will be interrupted to run the AUTO.BAS program.

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