



P420T Barcode Printer

USER MANUAL



Questions?
Need some help?
This manual will help you
enjoy your new product



If you still have questions,
call our help line:
+65-6778-0075



or visit us at:
www.polaroid.com

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CE CLASS A
EN 55022
EN 55024



FCC CFR Title 47 Part 15 Subpart B
ICES-003 Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions.
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.



GB-4953
GB9254 (CLASS A)
GB27625

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IEC 60950-1

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Revise History	錯誤！ 尚未定義書籤。

1. Introduction

1.1 Product Introduction

Congratulations on your purchase of a *Polaroid P420T Barcode Printer*.

This printer features two durable gear-driven motors that are capable of handling large capacity 300 meter ribbons and large rolls of media within its sleek design. If the 5" interior label capacity is not enough, simply add an external media roll mount and it can easily handle 8.4" OD rolls of labels designed for expensive industrial label printers.

The adjustable sensor design accepts wide range of label media. Most of the frequently used barcode formats are included. Fonts and barcodes can be printed in any one of the four directions.

This series of printer is built with the high quality, high performance MONOTYPE IMAGING® True Type font engine and one CG Triumvirate Bold Condensed smooth font. With flexible firmware design, you may download any True Type Font to the printer's memory. Other than the scalable font, the printer also offers a choice of five different sizes of alphanumeric bitmap font, OCR-A and OCR-B fonts. With its rich features, the P420T is the most cost-effective and high performance printer in its class!

To print label formats, please refer to the instructions provided with your labeling software; if you need to write custom programs, please refer to the programming manual that can be found in the CD-ROM.

- **Applications**

- Manufacturing & Warehousing
 - Work in Progress
 - Item Labels
 - Instruction labels
 - Agency labels
- Healthcare
 - Patient Identification
 - Pharmacy
 - Specimen Identification
- Parcel Post
 - Shipping/ Receiving Labels
- Small Office/ Home Office
- Retail Marking
 - Price tags
 - Shelf labels
 - Jewelry tags

1.2 Product Features

1.2.1 Standard Features

The printer offers the following standard features.

Standard Features	P420T									
Thermal transfer printing	○									
Direct thermal printing	○									
ABS plastic enclosure	○									
Position adjustable gap sensor	○									
Position adjustable black mark sensor	○									
Ribbon sensor	○									
Head open sensor	○									
USB 2.0 (full speed) interface	○									
8 MB SDRAM memory	○									
4 MB FLASH memory	○									
micro SD memory card reader for memory expansion up to 4 GB	○									
Real time clock	○									
One power switch, one feed button and LED	○									
Standard industry emulations right out of the box including Eltron® and Zebra® language support	○									
Internal 8 alpha-numeric bitmap fonts	○									
Fonts and barcodes can be printed in any one of the four directions (0, 90, 180, 270 degree)	○									
Internal Monotype Imaging® true type font engine with one CG Triumvirate Bold Condensed scalable font	○									
Downloadable fonts from PC to printer memory	○									
Downloadable firmware upgrades	○									
Text, barcode, graphics/image printing (Please refer to the TSPL/TSPL2 programming manual for supporting code page)	○									
<table border="1"> <thead> <tr> <th colspan="2">Supported barcode</th> <th>Supported image</th> </tr> <tr> <th>1D barcode</th> <th>2D barcode</th> <th></th> </tr> </thead> <tbody> <tr> <td>Code 39, Code 93, Code128UCC, Code128 subsets A,B,C, Codabar, Interleaved 2 of 5, EAN-8, EAN-13, EAN-128, UPC-A, UPC-E, EAN and UPC2(5) digits add-on, MSI, PLESSEY, POSTNET, China POST, GS1 DataBar, Code 11</td> <td>PDF-417, Maxicode, DataMatrix, QR code, Aztec, GS1 DataBar Composite code</td> <td>BITMAP, BMP, PCX (Max. 256 colors graphics)</td> </tr> </tbody> </table>	Supported barcode		Supported image	1D barcode	2D barcode		Code 39, Code 93, Code128UCC, Code128 subsets A,B,C, Codabar, Interleaved 2 of 5, EAN-8, EAN-13, EAN-128, UPC-A, UPC-E, EAN and UPC2(5) digits add-on, MSI, PLESSEY, POSTNET, China POST, GS1 DataBar, Code 11	PDF-417, Maxicode, DataMatrix, QR code, Aztec, GS1 DataBar Composite code	BITMAP, BMP, PCX (Max. 256 colors graphics)	○
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1.2.2 Optional Features

The printer offers the following optional features.

Optional Features	User options	Dealer options	Factory options
LCD display (graphic type, 128x64 pixel) with back light	-	-	○
Internal Ethernet print server (10/100 Mbps) interface	-	-	○
Serial RS-232C (2400-115200 bps) interface	-	-	○
Centronics interface	-	-	○
Peel-off module	-	○	-
Guillotine cutter module (Full cut and partial cut) Paper thickness: 0.06~ 0.19mm, 500,000 cuts 0.20~ 0.25mm, 200,000 cuts Note: Except for the linerless cutter, all regular/heavy duty/care label cutters DO NOT cut on media with glue.	-	○	-
External roll mount with 3" core (8.4 OD) label spindle	○		
Extended plate for external roll mount	○		
Bluetooth module (RS-232C interface)	○	-	-
KP-200 Plus keyboard display unit	○	-	-
KU-007 Plus programmable smart keyboard display unit	○	-	-
HCS-200 long range CCD scanner	○	-	-

1.3 General Specifications

General Specifications	
Physical dimensions	224 mm (W) x 186 mm (H) x 294 mm (D)
Weight	2.45 kg
Electrical	External universal switching power supply Input: AC 100-240V Output: DC 24V 2.5A, 60W
Environmental condition	Operation: 5 ~ 40 °C (41 ~ 104 °F), 25~85% non-condensing Storage: -40 ~ 60 °C (-40 ~ 140 °F), 10~90% non-condensing

1.4 Print Specifications

Print Specifications	
Print head resolution	203 dots/inch (8 dots/mm)
Printing method	Thermal transfer and direct thermal
Dot size (width x length)	0.125 x 0.125 mm (1 mm = 8 dots)
Print speed (inches per second)	5 ips
Print speed for peel mode & cutter mode	2, 3 ips
Max. print width	108 mm (4.25")
Max. print length	2,794 mm (110")

1.5 Ribbon Specifications

Ribbon Specifications	
Ribbon outside diameter	Max. 67 mm
Ribbon length	300 meter
Ribbon core inside diameter	1 inch (25.4 mm)
Ribbon width	Max. 110 mm
	Min. 40 mm
Ribbon wound type	Outside wound

1.6 Media Specifications

Media Specifications	
Label roll capacity	127 mm (5") OD
Media type	Continuous, die-cut, black mark, fan-fold, notch
Media wound type	Printing face outside wound & Printing face inside wound
Media width (label + liner)	Max. 118 mm (4.6")
	Min. 25.4 mm (1.0")
Media thickness (label + liner)	Max. 0.254 mm (10 mil)
	Min. 0.06 mm (2.36 mil)
Media core diameter	25.4 mm~38 mm (1"~1.5")
Label length	10~2,794 mm (0.39"~110")
	Note: If your label length is less than 25.4mm (1"), we recommend you to use the perforation at the gap for easier tear away.
Label length (peeler mode)	Max. 152.4 mm (6")
	Min. 25.4 mm (1")
Label length (cutter mode)	Max. 2,794 mm (110")
	Min. 25.4 mm (1")
Gap height	Min. 2 mm (0.09")
Black mark height	Min. 2 mm (0.09")
Black mark width	Min. 8 mm (0.31")

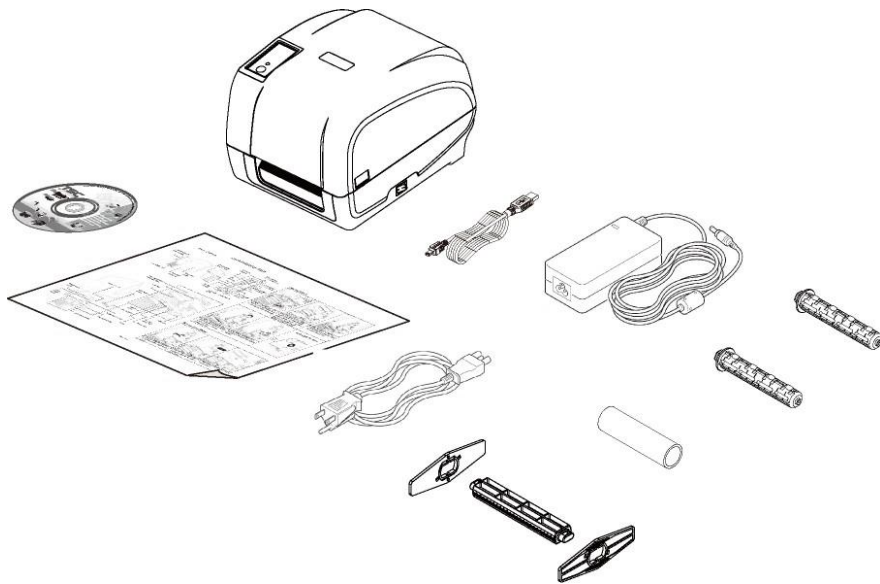
2. Operations Overview

2.1 Unpacking and Inspection

This printer has been specially packaged to be protected from damage during shipping. Upon receiving, please inspect the packaging and printer carefully. Please retain the packaging materials, in case you need to re-ship the printer.

The following items are included in the carton:

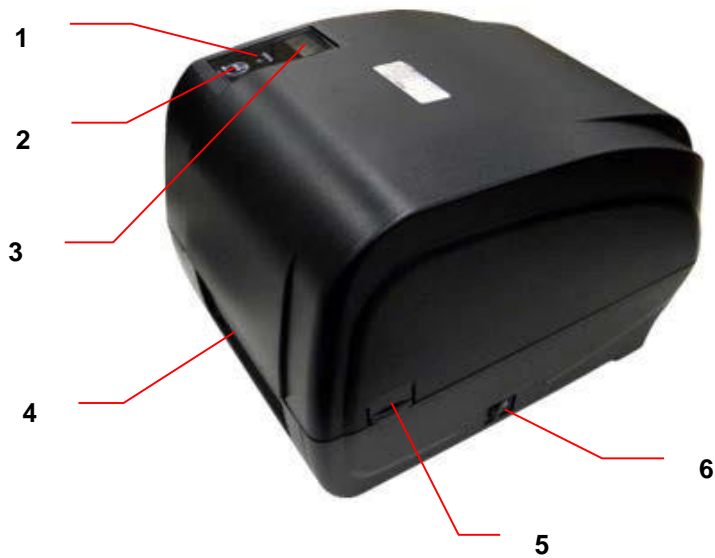
- One P420T printer
- One Windows labeling software/Windows driver CD
- One quick installation guide
- One power cord
- One auto switching power supply
- One USB interface cable
- Two ribbon spindles
- One ribbon paper core
- One label spindle



If any items are missing, please contact the Customer Service department of the reseller/distributor that you purchased the printer from.

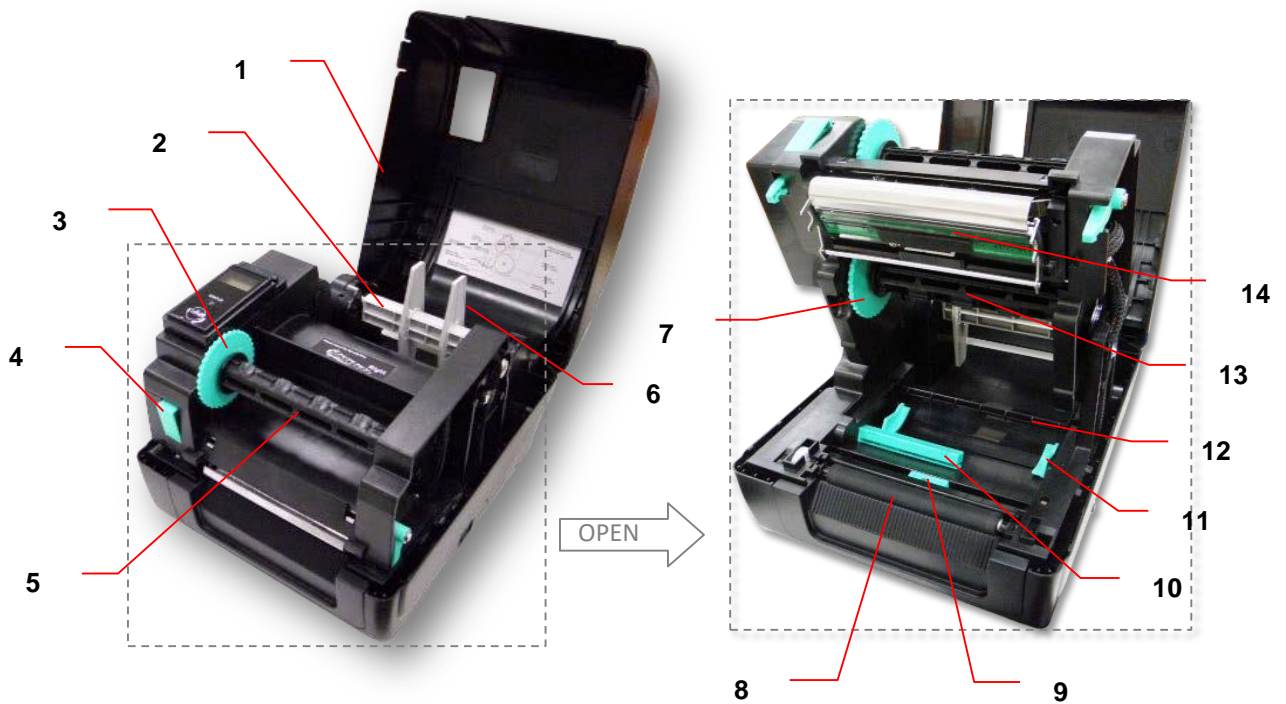
2.2 Printer Overview

2.2.1 Front View



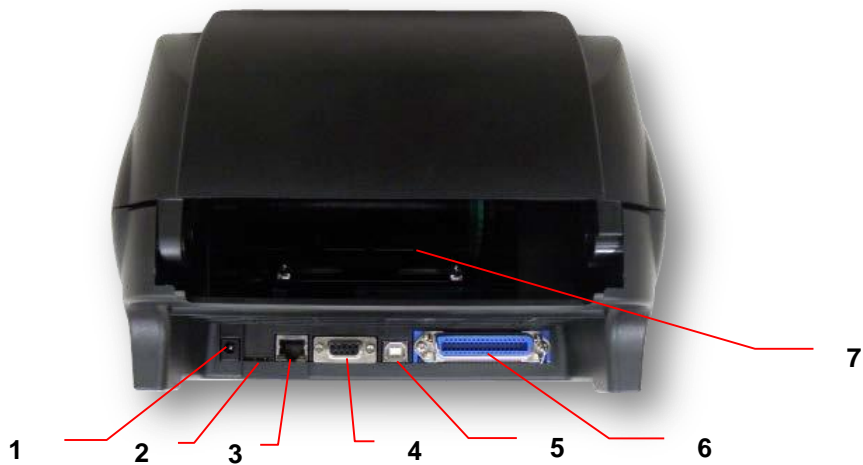
1. LED indicator
2. FEED Button
3. LCD display (Option)
4. Paper exit chute
5. Top cover open tab
6. Power switch

2.2.2 Interior View



1. Printer top cover
2. Media supply spindle
3. Ribbon rewind hub
4. Print head release button
5. Ribbon rewind spindle
6. Fixing tab
7. Ribbon supply hub
8. Platen roller
9. Black mark sensor
10. Gap sensor
11. Media guide
12. Media bar
13. Ribbon supply spindle
14. Print head

2.2.3 Rear View



1. Power jack socket
2. *micro SD card slot
3. Internal Ethernet interface (Option)
4. RS-232C interface (Option)
5. USB interface (USB 2.0/ Full speed mode)
6. Centronics interface (Option)
7. Rear external label entrance chute

Note:

The above interface is only for reference. Please refer to the product specifications for the interface options.

*** Recommended micro SD card specification**

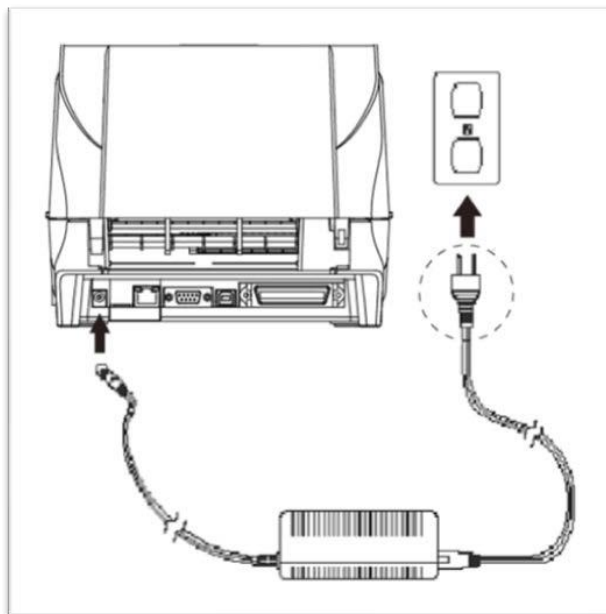
SD card spec	SD card capacity	Approved SD card manufacturer
V1.0, V1.1	microSD 128 MB	Transcend, Panasonic
V1.0, V1.1	microSD 256 MB	Transcend, Panasonic
V1.0, V1.1	microSD 512 MB	Panasonic
V1.0, V1.1	microSD 1 GB	Transcend, Panasonic
V2.0 SDHC CLASS 4	microSD 4 GB	Panasonic
V2.0 SDHC CLASS 6	microSD 4 GB	Transcend

- The DOS FAT file system is supported for the SD card.
- Folders/files stored in the SD card should be in the 8.3 filename format.

3. Setup

3.1 Setting up the Printer

1. Place the printer on a flat surface.
2. Ensure that the power is switched off.
3. Connect the printer to the computer with the provided USB cable.
4. Insert the power cord into the AC power cord socket of the printer. Then, insert the other end of the cord into a properly grounded AC electrical outlet.



Note:

- * The printer power should be turned off before connecting or disconnecting the communications and power cables.
- * The above interface is only for reference. Please refer to the product specifications for the interface options.

3.2 Loading the Ribbon



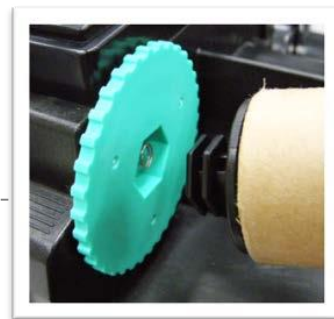
1. Open the printer's top cover by pulling the latches located on each side of the printer.

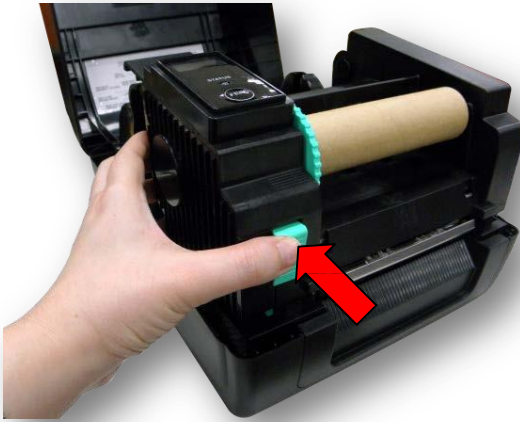


2. Insert the paper core into the ribbon rewind spindle.



3. Insert the left side of the spindle into the ribbon rewind hub first. Then, insert the right side into the hole at the right side of ribbon mechanism.





4. Push the release button to lift up the print head mechanism.



5. Insert the ribbon into the ribbon spindle.

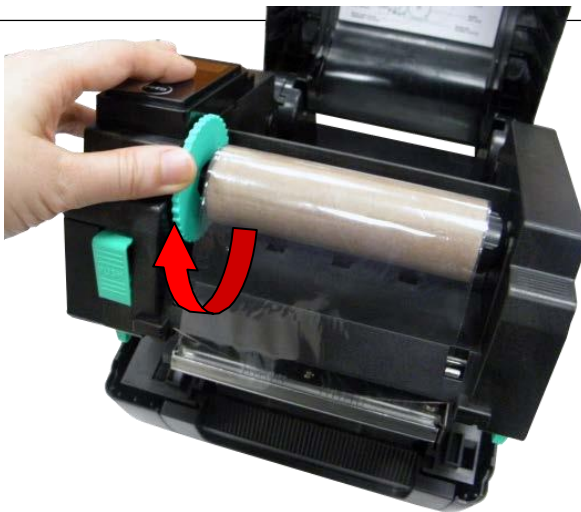
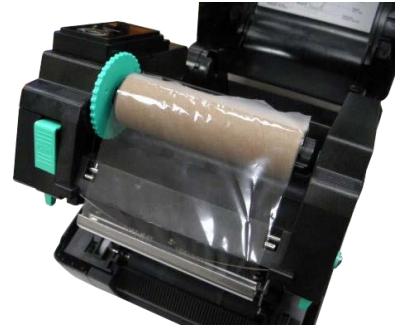


6. Insert the left side of ribbon supply spindle into the ribbon supply hub first. Then, insert the right side of ribbon supply spindle into the hole at the right side of ribbon mechanism.

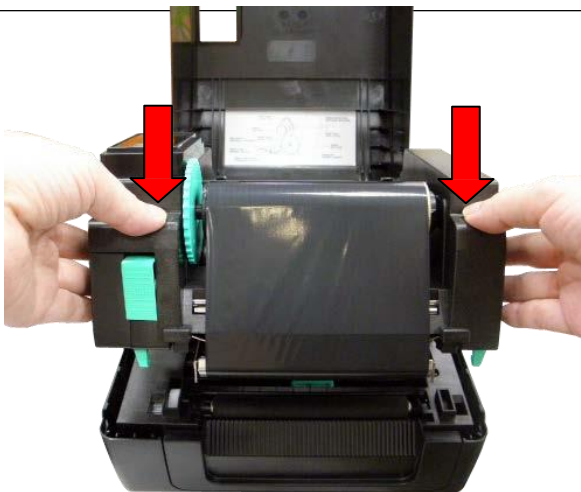
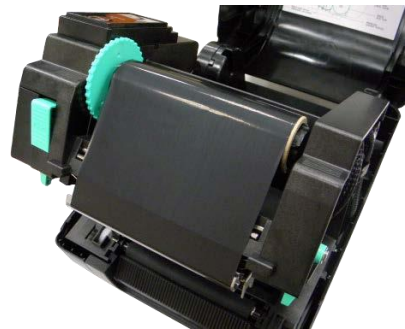




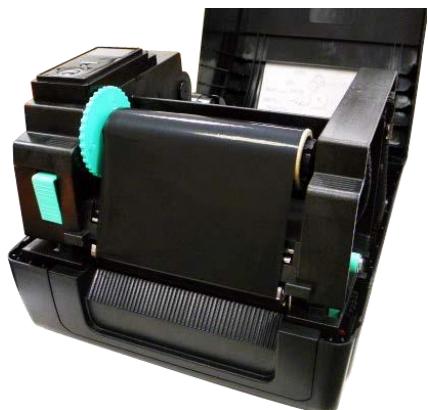
7. Lead the ribbon through the print head and stick the ribbon's clear front onto the ribbon rewind paper core.



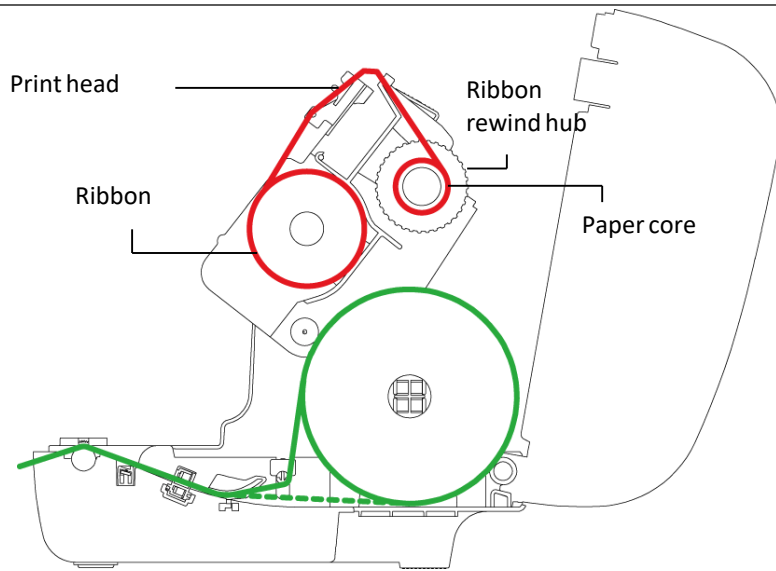
8. Wind up the ribbon rewind hub until the clear front part is thoroughly wound up and the black ribbon covers the print head.



9. Close the print head mechanism with both hands and ensure that it is latched securely.



- Ribbon loading path



3.3 Loading the Media

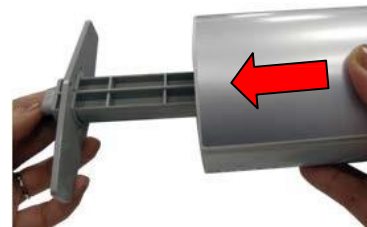
3.3.1 Loading the Roll Labels



1. Open the printer's top cover by pulling the latches located on each side of the printer.



2. Insert the label roll into the media supply spindle and use the two fixing tabs to centralise the paper roll onto the spindle. (If the width of your label is 4", you can remove the fixing tabs from the supply spindle.)

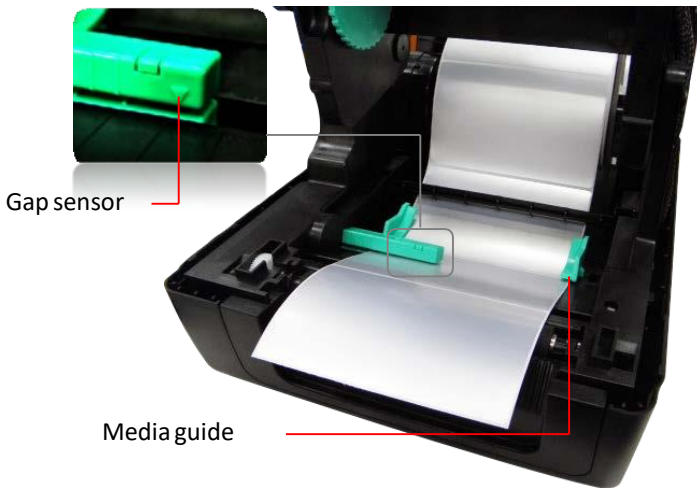


3. Place the label roll onto the media roll mount.

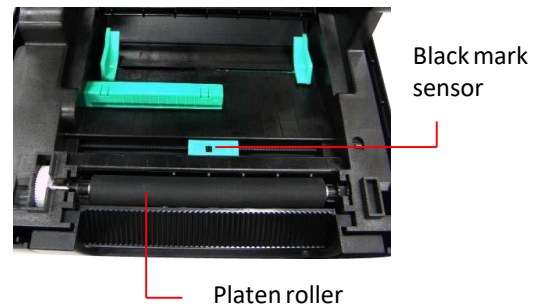




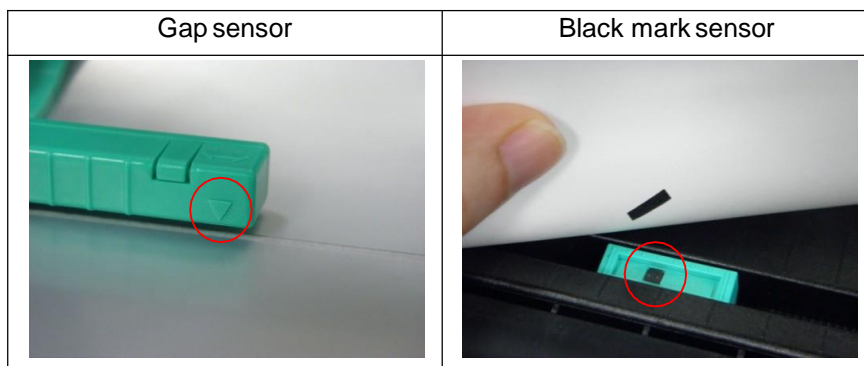
4. Push the release button to lift up the print head mechanism.

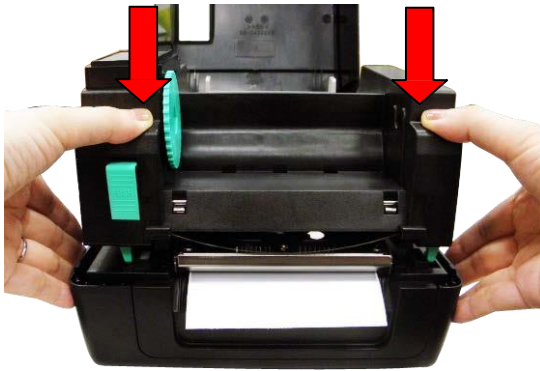


5. Pull the label (printing side faced up), through the media bar, media sensor and place the label's leading edge onto the platen roller. Move the media guides to fit the label.

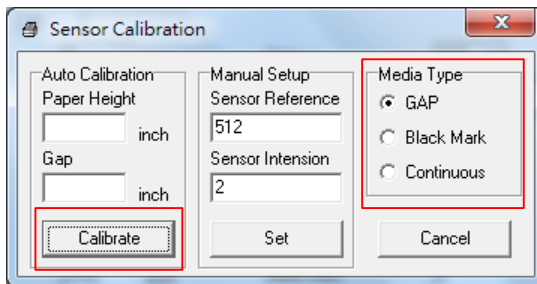


Note: The media guide is adjustable. Please ensure that the gap or black mark is at the location where media gap/black mark will pass through for sensing.





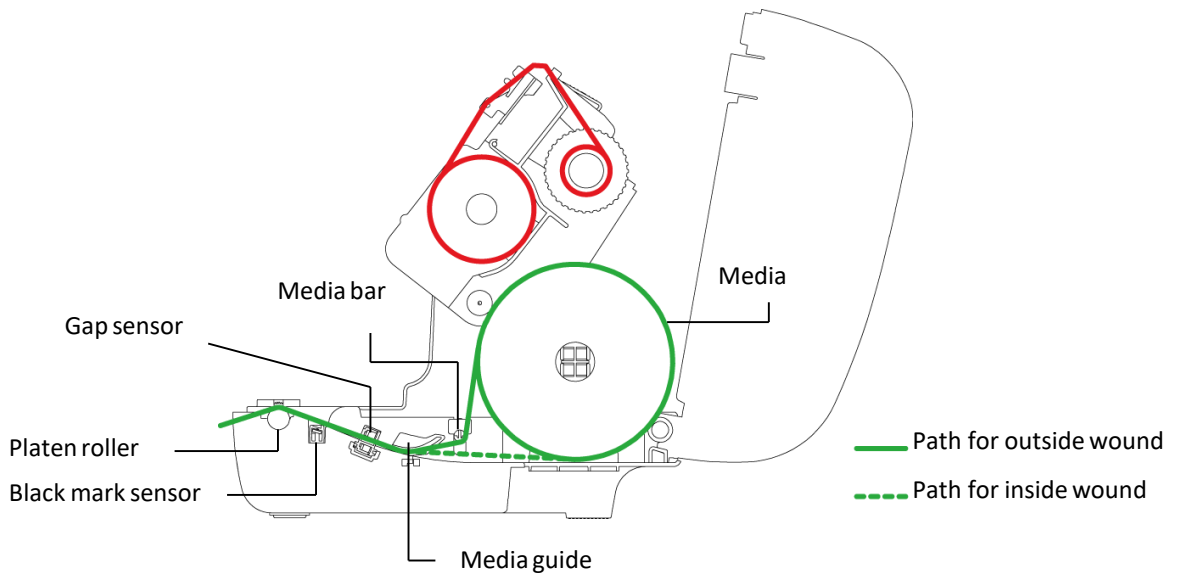
6. Close the print head mechanism with both hands and ensure that it is latched securely.



7. Use "Diagnostic Tool" to set the media sensor type and calibrate the selected sensor. (Start the "Diagnostic tool" → Select the "Printer Configuration" tab → Click the "Calibrate Sensor" button) Please refer to section 5.3.

Note: Please calibrate the gap/ black mark sensor when changing media.

● Media loading path



3.3.2 Loading the Media in Peel-off mode (Option)



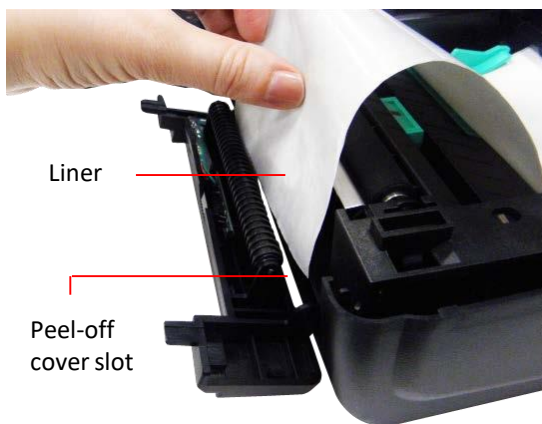
1. Refer to Chapter 3.3.1 to load the label roll. Use “Diagnostic Tool” to set the media sensor type and calibrate the selected sensor.



2. Pull the label through the front of the printer and peel some labels off the liner.

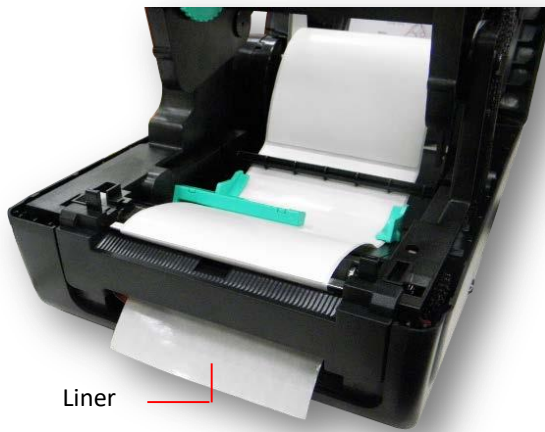
Liner

Label

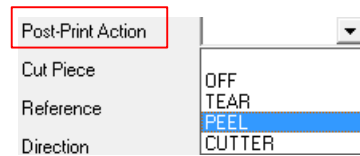


3. Open the peel-off cover. Feed the liner into peel-off cover slot.





4. Close the peel-off cover. Use the DiagTool to set the peel-off mode by selecting “PEEL” option for Post-Print Action setting. Then, click “Set” button to enable the peel-off mode.



5. Close the print head mechanism and printer cover. Printer is ready for peel-off mode.



6. Press the FEED button to test.

Label

Liner

Note:

Please calibrate the gap/black mark sensor when changing media.

3.3.3 Loading the Media in Cutter Mode (Option)



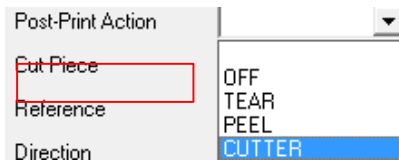
1. Refer to Chapter 3.3.1 to load the label roll.



2. Pull the label through the cutter paper opening.



3. Close the print head mechanism and printer cover. Use the DiagTool to set the printer for cutter mode by selecting "CUTTER" option for Post-Print Action setting then click "Set" button to enable the cutter mode. Press the FEED button to test.



Note:

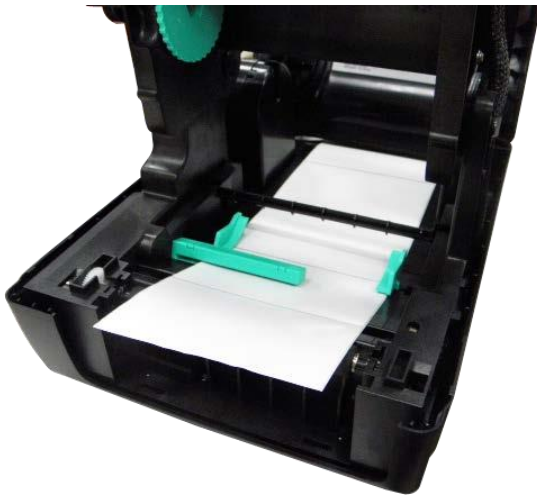
Please calibrate the gap/black mark sensor when changing media.

3.3.4 External Label Roll Mount Installation (Option)

 <p>Extended plate</p> <p>External label roll mount</p>	<p>1. Install the extended plate onto the external label roll mount with 2 screws.</p> 
	<p>2. Attach the extended plate on the bottom of the printer. If you purchase the external label roll mount only, you'd just need to put it on the rear of printer.</p> 
 <p>1" label spindle</p>	<p>3. Insert a 3" (or 1") label spindle into a paper roll. And install it onto the external paper roll mount.</p>  <p>3" label spindle</p>



4. Feed the media through the rear external label entrance chute.



5. Refer to chapter 3.3.1 to install the label. Use “Diagnostic Tool” to set the media sensor type and calibrate the selected sensor.

Note:

Please calibrate the gap/black mark sensor when changing media.

4. LED and Button Functions

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

4.1 LED Indicator

LED Color	Description
Green/Solid	This indicates that the power is on and the device is ready to be used.
Green/Flash	This indicates that the system is downloading data from the PC to the printer's memory, or the printer is being paused.
Amber	This indicates that the system is clearing data from printer.
Red / Solid	This indicates that the printer head is open / cutter error.
Red / Flash	This indicates a printing error, such as printer head is open, no paper, paper jam, no ribbon, or memory error etc.

4.2 Regular Button Functions

1. Feed labels

When the printer is at ready mode (Green/Solid), press the button to feed one label to the beginning of next.

2. Pause the printing job

When the printer is at printing mode, press the button to pause a print job. When the printer is paused, the LED will be blink in green. Press the button again to continue the printing job.

4.3 Power-on Utilities

There are six power-on utilities to set up and test the printer. These utilities are activated by pressing the FEED button and then, switching on the printer simultaneously and releasing the button at different color of LED.

Please follow the steps below for different power-on utilities:

1. Switch off the printer
2. Press the button while you switch on the printer
3. Release the button when LED indicates accordingly

<i>Power on utilities</i>	The LED color will change as follows:						
<i>LED color</i>	Amber	Red (5 blinks)	Amber (5 blinks)	Green (5 blinks)	Green/Amber (5 blinks)	Red/Amber (5 blinks)	Solid green
<i>Functions</i>							
1. Ribbon sensor calibration and gap / black mark sensor calibration		<i>Release</i>					
2. Gap / black mark sensor calibration, Self-test and enter dump mode			<i>Release</i>				
3. Printer initialization				<i>Release</i>			
4. Set black mark sensor as media sensor and calibrate the black mark sensor					<i>Release</i>		
5. Set gap sensor as media sensor and calibrate the gap sensor						<i>Release</i>	
6. Skip AUTO.BAS							<i>Release</i>

4.3.1 Ribbon and Gap/Black Mark Sensor Calibration

Gap/black mark sensor sensitivity calibration should be performed for the following conditions:

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

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

1. Switch off the printer
2. Press the button while you switch on the printer
3. Release the button when LED is **red** and blinking.

- It will calibrate the ribbon sensor and gap/black mark sensor sensitivity.
- The LED color will change according to the following order:
Amber → red (5 blinks) → amber (5 blinks) → green (5 blinks) → green/amber (5 blinks) → red/amber (5 blinks) → solid green

Note:

Please select gap or black mark sensor by sending GAP or BLINE command to printer prior to calibrating the sensor. For more information about GAP and BLINE command, please refer to TSPL2 programming manual.

4.3.2 Gap/Black Mark Calibration, Self-test and Dump Mode

While calibrating the gap/black mark sensor, printer will measure the label's length, print the internal configuration (self-test) on label and then, enter the dump mode. To calibrate gap or black mark sensor, it depends on the sensor setting from the last print job.

Please follow the steps below to calibrate the sensor:

1. Switch off the printer
2. Press the button while you switch on the printer
3. Release the button when LED becomes **amber** and blinking.
 - The LED color will change according to the following order:
*Amber → red (5 blinks) → **amber (5 blinks)** → green (5 blinks) → green/amber (5 blinks) → red/amber (5 blinks) → solid green*
4. Printer will calibrate the sensor, measure the label's length, print internal settings, and then enter the dump mode.

Note:

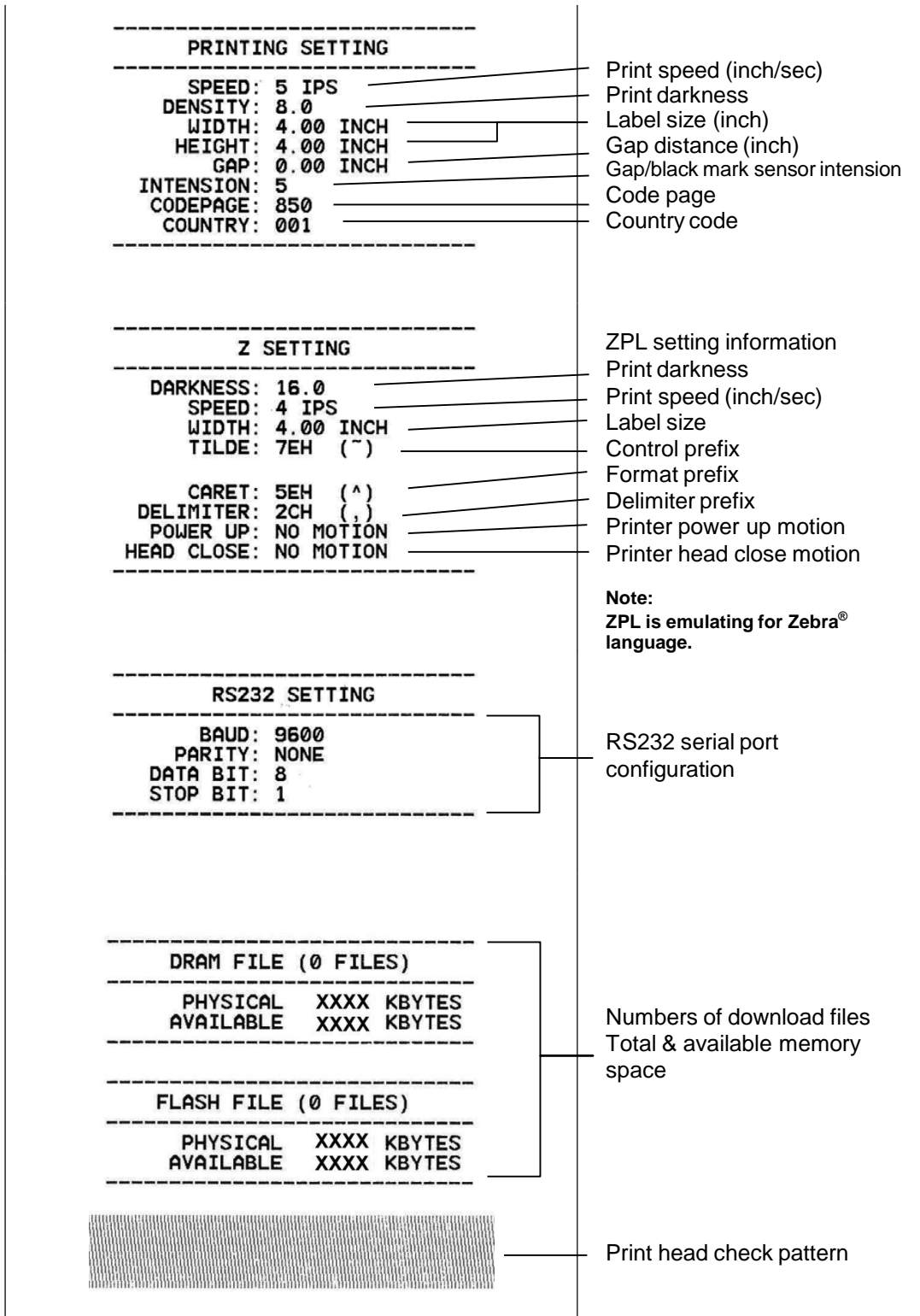
Please select gap or black mark sensor by Diagnostic Tool or by GAP or BLINE command prior to calibrate the sensor. For more information about GAP and BLINE command, please refer to TSPL2 programming manual.

■ Self-test

Printer will print its 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	
<pre> PRINTER INFO. XXXXX Version: X.XX EZ SERIAL NO.: XXXXXXXXXX MILAGE(m): 25 CHECKSUM: 07B575A3 SERIAL PORT: 9800,N,8,1 CODE PAGE: 850 COUNTRY CODE: 001 SPEED: 3 INCH DENSITY: 8.0 SIZE: 4.00 , 2.90 BLINE: 0.12 , 0.00 TRANSPARENCE: 2 HOST NAME: PS-600002 MAC ADDRESS: 00-1B-82-60-00-02 DHCP ENABLED: YES IP ADDRESS: 0.0.0.0 SUBNET MASK: 0.0.0.0 DEFAULT GATEWAY: 0.0.0.0 ***** FILE LIST: DRAM FILE: 0 FILE(S) FLASH FILE: 0 FILE(S) PHYSICAL DRAM: XXXX KBYTES AVAILABLE DRAM: XXX KBYTES FREE PHYSICAL FLASH: XXXX KBYTES AVAILABLE FLASH: XXXX KBYTES FREE END OF FILE LIST ***** </pre>	<p>Printer model name & Main board firmware version</p> <p>Printer serial number</p> <p>Printed mileage</p> <p>Main board firmware checksum</p> <p>Serial port setting</p> <p>Code page</p> <p>Country code</p> <p>Print speed</p> <p>Print darkness</p> <p>Label size (width, height)</p> <p>Black mark or gap size (vertical gap, offset)</p> <p>Sensor sensitivity</p> <p>Ethernet settings information (option)</p> <p>File management information</p> <p>Print head test pattern</p>

Self-test printout (with printer firmware V7.0 and later version)	
<pre> ----- SYSTEM INFORMATION ----- MODEL: XXXXXX FIRMWARE: X.XX CHECKSUM: XXXXXXXX S/N: XXXXXXXXXXXX TCF: NO DATE: 1970/01/01 TIME: 00:04:18 NON-RESET: 110 m (TPH) RESET: 110 m (TPH) NON-RESET: 0 (CUT) RESET: 0 (CUT) ----- </pre>	<p>Model name</p> <p>F/W version</p> <p>Firmware checksum</p> <p>Printer S/N</p> <p>Configuration file</p> <p>System date</p> <p>System time</p> <p>Printed mileage (meter)</p> <p>Cutting counter</p>



■ Dump mode

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

ASCII Data	→	<pre> SPEED 2.0 53 50 45 45 44 20 32 2E 30 0D DENSITY 8 0A 44 45 4E 53 49 54 59 20 38 SET PEEL 0D 0A 53 45 54 20 50 45 45 4C OFF DIRE 20 4F 46 46 0D 0A 44 49 52 45 CTION 0 G 43 54 49 4F 4E 20 30 0D 0A 47 AP 3.00 mm 41 50 20 33 2E 30 30 20 6D 6D .0.00 mm 2C 30 2E 30 30 20 6D 6D 0D 0A REFERENCE 52 45 46 45 52 45 4E 43 45 20 0.0 SET C 30 2C 30 0D 0A 53 45 54 20 43 JITTER OFF 55 54 54 45 52 20 4F 46 46 0A SIZE 100. 0A 53 49 5A 45 20 31 30 30 2E 02 mm.65.0 30 32 20 6D 6D 2C 36 35 2E 30 4 mm CLS 34 20 6D 6D 0A 43 4C 53 0D BARCODE 1 0A 42 41 52 43 4F 44 45 20 31 44.149.39 34 34 2C 31 34 39 2C 22 33 39 .120.1.0. 22 2C 31 32 30 2C 31 2C 30 2C 2.0.57114 32 2C 36 2C 22 35 37 31 31 34 38T PRIN 33 38 54 22 0D 0A 50 52 49 4E T 1.1 SPE 54 20 31 2C 31 0D 0A 53 50 46 ED 2.0 DE 45 44 20 32 2E 30 0D 0A 44 45 NSITY 8 S 4E 53 49 54 59 20 38 0D 0A 53 ET PEEL OF 45 54 20 50 45 45 4C 20 4F 46 F DIRECTI 46 0D 0A 44 49 52 45 43 54 49 ON 0 GAP 4F 4E 20 30 0D 0A 47 41 50 20 3.00 mm.0. 33 2E 30 30 20 6D 6D 20 30 2E 00 mm REF 30 30 20 6D 6D 0D 0A 52 45 46 ERENCE 0.0 45 52 45 4E 43 45 20 30 2C 30 SET CUTT 0D 0A 53 45 54 20 43 55 54 54 ER OFF SI 45 52 20 4F 46 46 0D 0A 53 49 ZE 100.02 5A 45 20 31 30 30 2E 30 32 20 mm.65.04 m 6D 6D 2C 36 35 2E 30 34 20 6D m CLS BA 6D 0D 0A 43 4C 53 0D 0A 42 41 RCODE 144. 52 43 4F 44 45 20 31 34 34 2C 149.39.1 31 34 39 2C 22 33 39 22 2C 31 20.1.0.2.0 32 30 2C 31 2C 30 2C 32 2C 36 .5711438T 2C 22 35 37 31 31 34 33 38 54 PRINT 1 22 0D 0A 50 52 49 4E 54 20 31 .1 2C 31 0D 0A </pre>	Hex decimal data related to left column of ASCII data
------------	---	---	---

Note:

1. Dump mode requires 4” wide paper width.
2. Turn off / on the power to resume printer for normal printing.

4.3.3 Printer Initialization

Printer initialization is used to clear DRAM and restore its settings to default. The only exception is ribbon sensitivity, which will not be restored to default.

Printer initialization is activated by the following procedures.

1. Switch off the printer
2. Press the button while you switch on the printer
3. Release the button when LED turns **green** after 5 amber blinks.

- The LED color will be changed as following:
 Amber → red (5 blinks) → amber (5 blinks) → **green (5 blinks)** → green/amber (5 blinks)
 → red/amber (5 blinks) → solid green

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

Parameter	Default setting
Speed	101.6 mm/sec (4 ips) (203DPI) 76 mm/sec (3 ips) (300DPI)
Density	8
Label Width	4" (101.5 mm)
Label Height	4" (101.5 mm)
Sensor Type	Gap sensor
Gap Setting	0.12" (3.0 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

4.3.4 Set Black Mark Sensor as Media Sensor and Calibrate the Black Mark Sensor

Please follow the steps as below.

1. Switch off the printer
2. Press the button while you switch on the printer
3. Release the button when LED turns **green/amber** after 5 green blinks. (Any green/amber will do during the 5 blinks).

- The LED color will change according to the following order:
Amber → red (5 blinks) → amber (5 blinks) → green (5 blinks) → **green/amber (5 blinks)**
→ red/amber (5 blinks) → solid green

4.3.5 Set Gap Sensor as Media Sensor and Calibrate the Gap Sensor

Please follow the steps as below.

1. Switch off the printer
2. Press the button while you switch on the printer

3. Release the button when LED turns **red/amber** after 5 green/amber blinks.

- The LED color will change according to the following order:
Amber → red (5 blinks) → amber (5 blinks) → green (5 blinks) → green/amber (5 blinks) → **red/amber (5 blinks)** → solid green

4.3.6 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 switching on the printer. The AUTO.BAS program can be interrupted without running the program by the power-on utility.

Please follow the procedures below to skip an AUTO.BAS program.

1. Switch off the printer
2. Press the FEED button while you switch on the printer
3. Release the FEED button when LED becomes **solid green**.


- The LED color will change according to the following order:
Amber → red (5 blinks) → amber (5 blinks) → green (5 blinks) → green/amber (5 blinks) → red/amber (5 blinks) → **solid green**

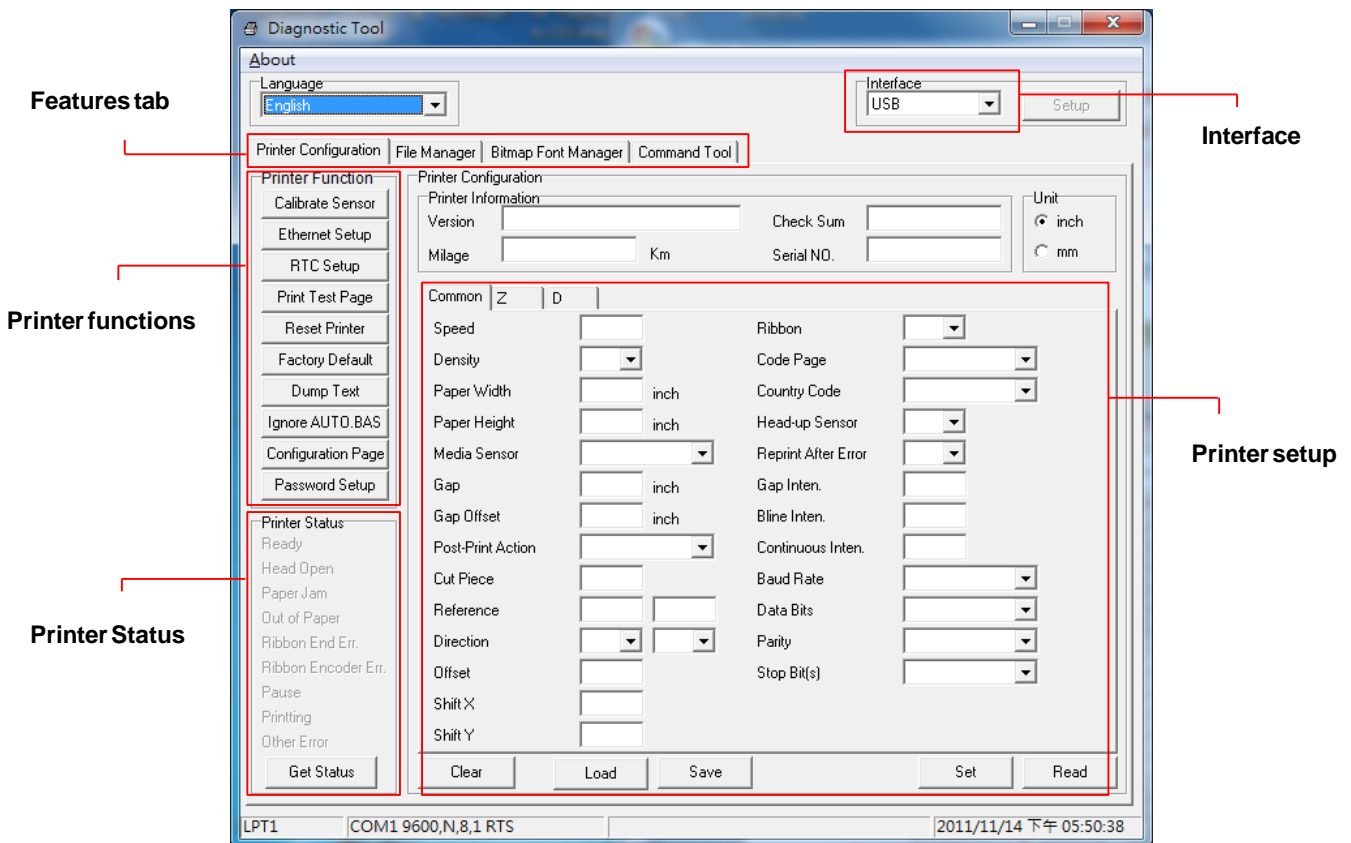
4. Printer will be interrupted to run the AUTO.BAS program.

5. Diagnostic Tool

This Diagnostic Utility is an integrated tool incorporating features that enable you to explore a printer's settings/status; change a printer's settings; download graphics, fonts and firmware; create a printer bitmap font; and send additional commands to a printer. With this powerful tool, you can review printer status and settings in an instant, which makes it much easier to troubleshoot problems or issues.

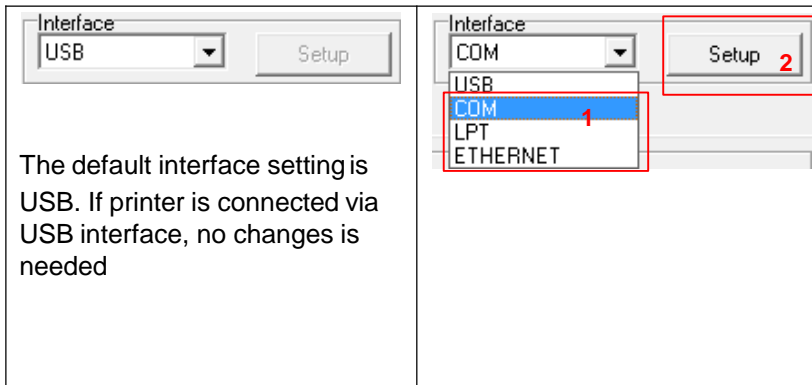
5.1 Start the Diagnostic Tool

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



5.2 Printer Function

1. Select the PC's interface connected to the printer.



2. Click the “Printer Function” button to setup.
3. The detailed functions in the Printer Function Group are listed as below.

	Function	Description
Printer Function Calibrate Sensor Ethernet Setup RTC Setup Print Test Page Reset Printer Factory Default Dump Text Ignore AUTO.BAS Configuration Page Password Setup	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
	RTC Setup	Synchronize printer Real Time Clock with PC
	Print Test Page	Print a test page
	Reset Printer	Reboot printer
	Factory Default	Initialize the printer and restore the settings to factory default. (Please refer section 4.3.3)
	Dump Text	To activate the printer dump mode.
	Ignore AUTO.BAS	Ignore the downloaded AUTO.BAS program
	Configuration Page	Print printer configuration (Please refer section 4.3.2)
	Password Setup	Set the password to protect the settings

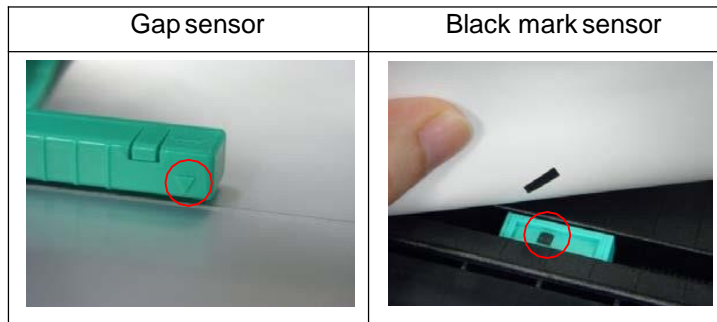
For more information about Diagnostic Tool, please refer to the diagnostic utility quick start guide in the CD disk \ Utilities directory.

5.3 Calibrating Media Sensor by Diagnostic Tool

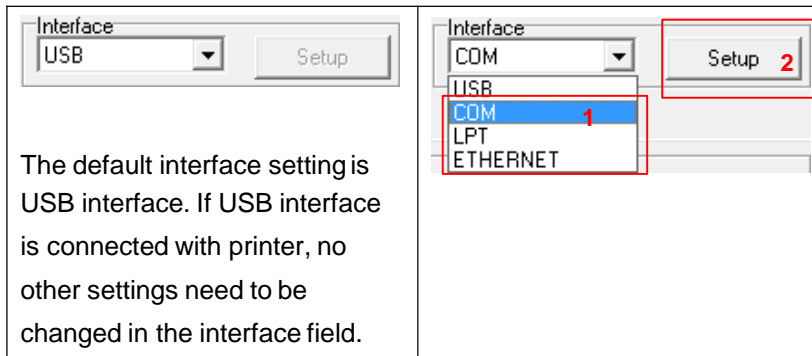
5.3.1 Auto Calibration

1. Make sure the media is install ready and print head mechanism is closed. (Please refer to section 3.3.)

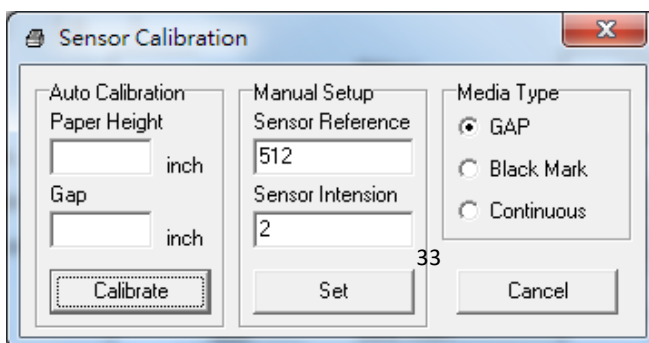
Note: The media sensor position is adjustable. Please ensure that the gap (▽) or black mark is at the location where media gap/black mark will pass through for sensing.



2. Switch on the printer
3. Open Diagnostic tool and set the interface. (The default setting is USB.)




4. Click the “Calibrate Sensor” button.
5. Select the media type and click the “Calibrate” button.

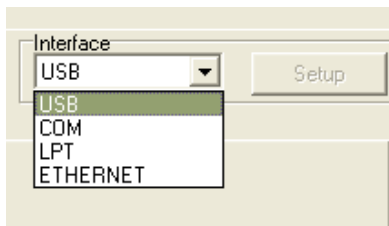


5.4 Setting Ethernet by Diagnostic Utility (Option)

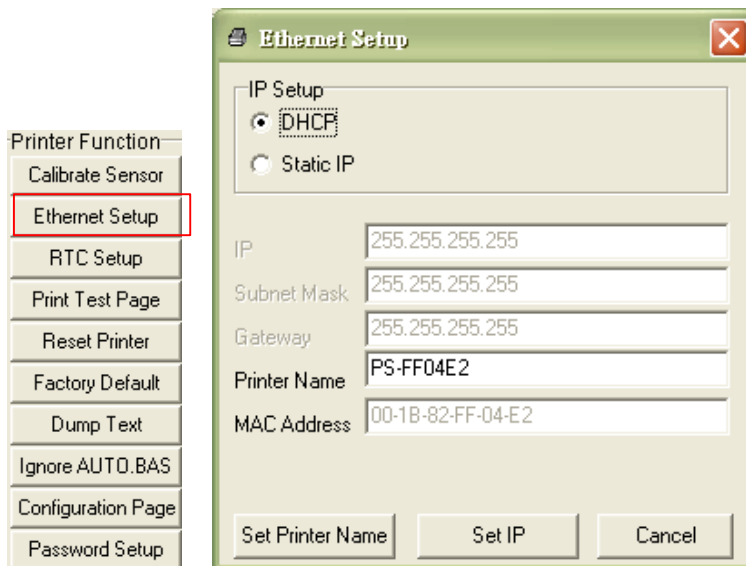
The Diagnostic Utility is enclosed in the CD disk \Utilities directory. Users can use Diagnostic Tool to set up the Ethernet by RS-232, USB and Ethernet interfaces. The following contents will guide users on how to configure the Ethernet settings via these three interfaces.

5.4.1 Using USB interface to setup Ethernet interface


1. Connect the USB cable between the computer and the printer.
2. Switch on the printer.
3. Start the Diagnostic Utility by double clicking on the  icon.
4. The Diagnostic Utility default interface setting is USB. If USB interface is connected with printer, no other settings need to be changed in the interface field.

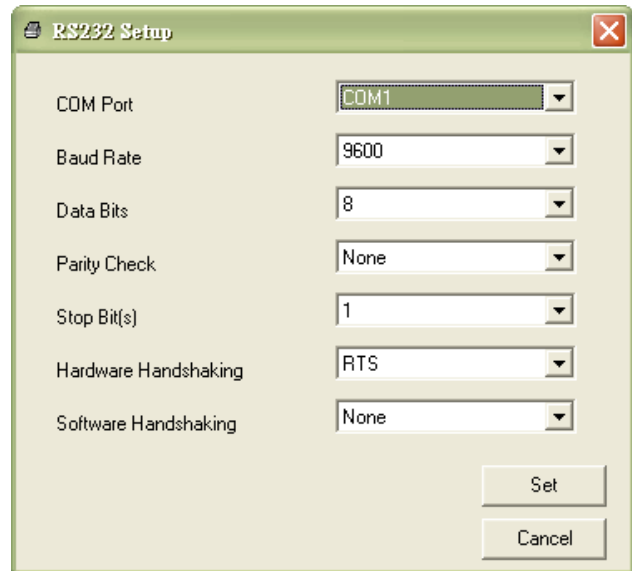
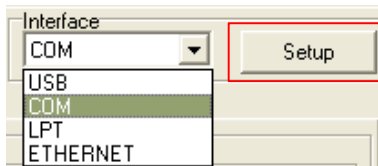


5. Click on the "Ethernet Setup" button from "Printer Function" group in Printer Configuration tab to setup the IP address, subnet mask and gateway for the on board Ethernet.

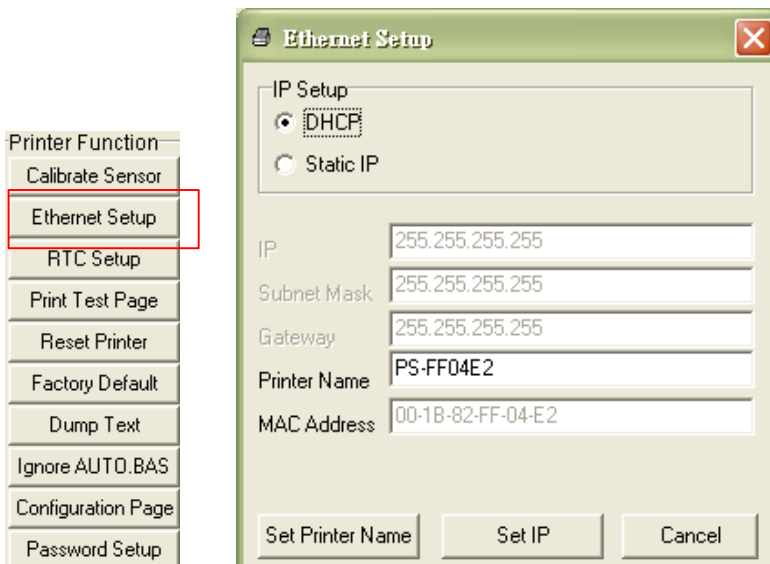


5.4.2 Using RS-232 interface to setup Ethernet interface


1. Connect the computer to the printer with a RS-232 cable.
2. Switch on the printer.
3. Start the Diagnostic Utility by double-clicking on the  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.

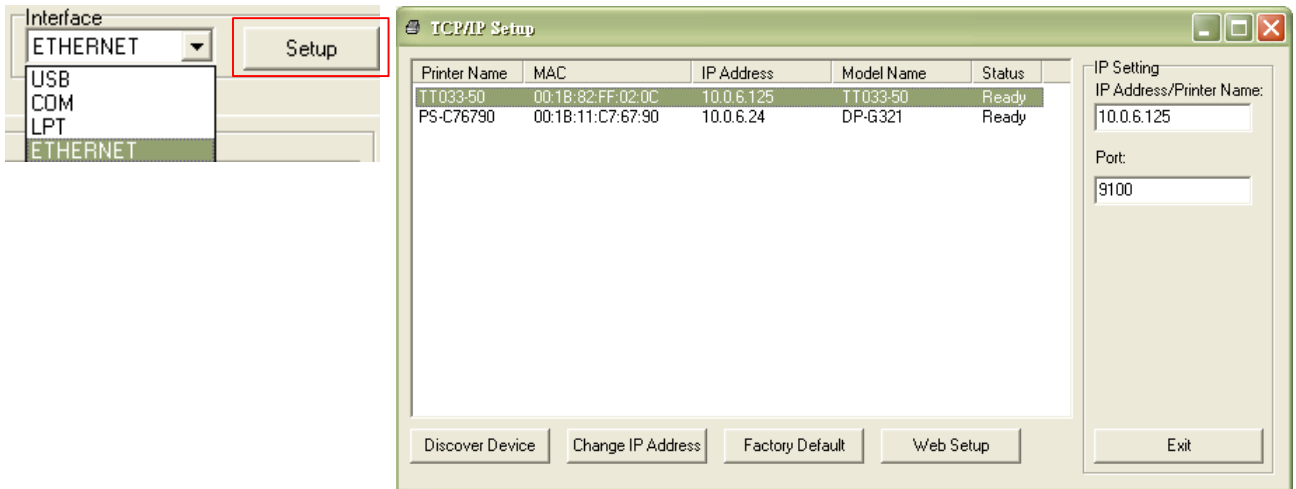


5. Click on the “Ethernet Setup” button from printer function of Printer Configuration tab, to setup the IP address, subnet mask and the gateway for the on board Ethernet.

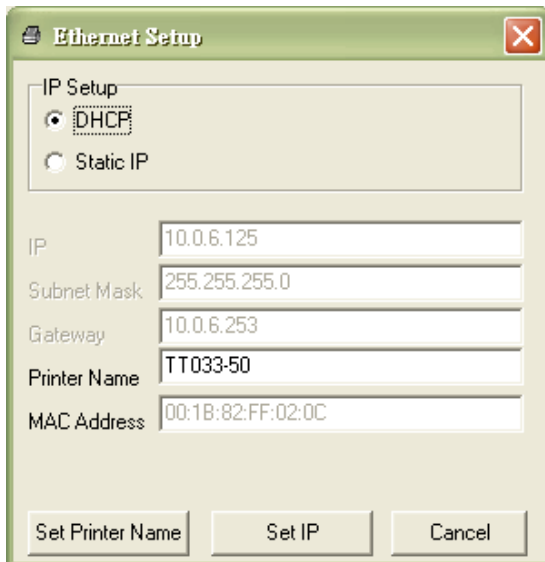


5.4.3 Using Ethernet interface to setup Ethernet interface

1. Connect the computer and the printer to the LAN.
2. Switch on the printer.
3. Start the Diagnostic Utility by double-clicking on the  `DiagTool.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 field, then click “Set Printer Name” to take effect this change.

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

8. 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.

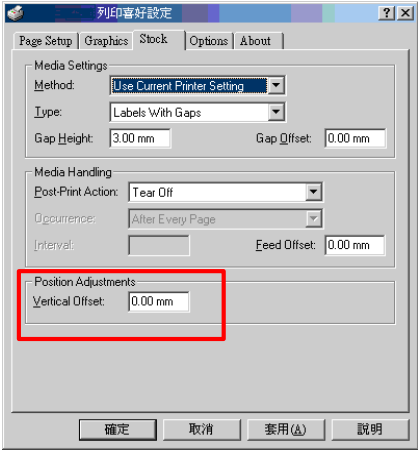
6. Troubleshooting

6.1 Common Problems

The following guide lists out the most common problems that you may encounter when using this barcode printer. If the printer still does not function after applying the suggested solutions, please contact the Customer Service Department of the reseller or distributor that you purchased the printer from, for assistance.

Problem	Possible Cause	Suggested Solution
Power indicator does not illuminate	* The power cord is not properly connected.	* Plug in the power cord to printer and outlet. * Switch on the printer .
- The printer status from DiagTool indicates “Head Open”. - The LCD shows “Carriage Open”.	* The printer cover is open.	* Please close the print cover.
- The printer status from DiagTool indicates “Ribbon End Err.” Or “Ribbon Encoder Err.” - The LCD shows “No Ribbon”.	* Running out of ribbon. * The ribbon is installed incorrectly.	* Install a new ribbon roll. * Please refer to the steps on section 3.2 to re-install the ribbon.
- The printer status from DiagTool shows “Out of Paper”. - The LCD shows “No Paper”.	* Running out of label. * The label is installed incorrectly. * Gap/black mark sensor is not calibrated.	* Install a new label roll. * Please refer to the steps on section 3.3 to re-install the label roll. * Calibrate the gap/black mark sensor.
- The printer status from DiagTool shows “Paper Jam”. - The LCD shows “Paper Jam”.	* Gap/black mark sensor is not set properly. * Make sure label size is set properly. * Labels may be stuck inside the printer mechanism.	* Calibrate the gap/black mark sensor. * Set label size correctly.
- The LCD shows “Take Label”.	* Peel-off function is enabled.	* If the peel-off module is installed, please remove the label. * If there is no peel-off module in front of the printer, please switch off the printer and install it. * Check if the connector is plugging correctly.

Problem	Possible Cause	Suggested Solution
<p>Not Printing</p>	<ul style="list-style-type: none"> * Cable is not connected to serial or USB interface or parallel port correctly. * The serial port cable pin configuration is not pin to pin connected. 	<ul style="list-style-type: none"> * Re-connect cable to interface. * If using serial cable, <ul style="list-style-type: none"> - Please replace the cable with pin to pin connected. - Check the baud rate setting. The default baud rate setting of printer is 9600,n,8,1. * If using the Ethernet cable, <ul style="list-style-type: none"> - Check if the Ethernet RJ-45 connector green LED is lit on. - Check if the Ethernet RJ-45 connector amber LED is blinking. - Check if the printer gets the IP address when using DHCP mode. - Check if the IP address is correct when using the static IP address. - Wait a few seconds let the printer get the communication with the server then check the IP address setting again. * Change a new cable. * Ribbon and media are not compatible. * Verify the ribbon-inked side. * Reload the ribbon again. * Clean the print head. * The print density setting is incorrect. * Print head's harness connector is not well connected with printhead. Turn off the printer and plug the connector again. * Check your program if there is a command PRINT at the end of the file and there must have CRLF at the end of each command line.
<p>Memory full (FLASH / DRAM)</p>	<ul style="list-style-type: none"> * The space of FLASH/DRAM is full. 	<ul style="list-style-type: none"> * Delete unused files in the FLASH/DRAM. * The max. numbers of DRAM is 256 files. * The max. user addressable memoryspace of DRAM is 256KB. * The max. numbers of file of FLASH is 256 files. * The max. user addressable memoryspace of FLASH is 256KB.
<p>microSD card is unable to use</p>	<ul style="list-style-type: none"> * microSD card is damaged. * microSD card doesn't insert correctly. * Use the non-approved microSD card manufacturer. 	<ul style="list-style-type: none"> * Use the supported capacity microSD card. * Insert the microSD card again. * The supported microSD card spec and the approved microSD card manufacturers, please refer to section 2.2.3.
<p>Poor Print Quality</p>	<ul style="list-style-type: none"> * Ribbon and media is loaded incorrectly * Dust or adhesive accumulation on the print head. * Print density is not set properly. * Printhead element is damaged. * Ribbon and media are incompatible. * The printhead pressure is not set properly. 	<ul style="list-style-type: none"> * Reload the supply. * Clean the print head. * Clean the platen roller. * Adjust the print density and print speed. * Run printer self-test and check the print head test pattern if there is dot missing in the pattern. * Change proper ribbon or proper label media. * The print head mechanism does not latch the print head properly.

Problem	Possible Cause	Suggested Solution
Cutter is not working	<ul style="list-style-type: none"> * The connector is loose. * Cutter jam. * Cutter PCB is damaged. 	<ul style="list-style-type: none"> * Plug in the connect cable correctly. * Remove the label. * Make sure the thickness of label is less than 0.19 mm. * Replace a cutter driver IC board.
Skip labels when printing	<ul style="list-style-type: none"> * Label size is not specified properly. * Sensor sensitivity is not set properly. * The media sensor is covered with dust. 	<ul style="list-style-type: none"> * Check if label size is setup correctly. * Calibrate the sensor by Auto Gap or Manual Gap options. * Clear the GAP/Black mark sensor by blower.
The printing position of small label is incorrect	<ul style="list-style-type: none"> * Media sensor sensitivity is not set properly. * Label size is incorrect. * The parameter Shift Y in the LCD menu is incorrect. * The vertical offset setting in the driver is incorrect. 	<ul style="list-style-type: none"> * Calibrate the sensor sensitivity again. * Set the correct label size and gap size. * If using the software BarTender, please set the vertical offset in the driver.  <p>The screenshot shows a software window titled '列印者設定' (Printer Settings) with tabs for 'Page Setup', 'Graphics', 'Stock', 'Options', and 'About'. The 'Options' tab is active. Under 'Media Settings', 'Method' is 'Use Current Printer Setting' and 'Type' is 'Labels With Gaps'. 'Gap Height' is 3.00 mm and 'Gap Offset' is 0.00 mm. Under 'Media Handling', 'Post-Print Action' is 'Tear Off', 'Occurrence' is 'After Every Page', and 'Feed Offset' is 0.00 mm. The 'Position Adjustments' section at the bottom has 'Vertical Offset' set to 0.00 mm, which is highlighted with a red box.</p>
Missing printing on the left or right side of label	<ul style="list-style-type: none"> * Wrong label size setup. 	<ul style="list-style-type: none"> * Set the correct label size.
RTC time is incorrect when reboot the printer	<ul style="list-style-type: none"> * The battery has run down. 	<ul style="list-style-type: none"> * Check if there is a battery on the main board.
Wrinkle problem	<ul style="list-style-type: none"> * Ribbon installation is incorrect. * Media installation is incorrect. * Print density is incorrect. * Media feeding is incorrect. 	<ul style="list-style-type: none"> * Please set the suitable density to have good print quality. * Make sure the label guide touch the edge of the media guide.
Gray line on the blank label	<ul style="list-style-type: none"> * The print head is dirty. * The platen roller is dirty. 	<ul style="list-style-type: none"> * Clean the print head. * Clean the platen roller.
Irregular printing	<ul style="list-style-type: none"> * The printer is in Hex Dump mode. * The RS-232 setting is incorrect. 	<ul style="list-style-type: none"> * Turn off and on the printer to skip the dump mode. * Re-set the Rs-232 setting.

7. Maintenance

This section provides routine cleaning and maintenance procedures.

1. Please use one of following material to clean the printer.

- Cotton swab
- Lint-free cloth
- Vacuum / Blower brush
- 100% ethanol

2. The cleaning process is described as following,

Printer Part	Method	Interval
Print Head	<ol style="list-style-type: none"> 1. Always switch off the printer before cleaning the print head. 2. Allow the print head to cool for at least one minute. 3. Use a cotton swab and 100% ethanol to clean the print head surface. 	Clean the print head when changing a new label roll.
	<p>The diagram illustrates the print head assembly. It shows a long, cylindrical component labeled 'Print Head' with several 'Element' labels pointing to internal components. A 'Head Cleaner Pen' is shown at the bottom left, pointing towards the print head. A callout box on the right provides a magnified view of the 'Print Head' and 'Element' components.</p>	
Platen Roller	<ol style="list-style-type: none"> 1. Switch off the printer. 2. Rotate the platen roller and wipe it thoroughly with 100% ethanol and a cotton swab, or lint-free cloth. 	Clean the platen roller when changing a new label roll
Tear Bar/Peel Bar	Use the lint-free cloth with 100% ethanol to wipe it.	As needed
Sensor	Compressed air or vacuum	Monthly
Exterior	Wipe it with water-dampened cloth	As needed
Interior	Brush or vacuum	As needed

Note:

- Do not touch printer head by hand. If you touch it, please use ethanol to clean it.
- Please use 100% Ethenol. DO NOT use medical alcohol, which may damage the printer head.
- Regularly clean the print head and supply sensors once you change to a new ribbon, in order to maintain the printer's performance and extend the printer's life.



**Questions?
Need some help?**
This manual will help you
enjoy your new product



If you still have questions,
call our help line:
+65-6778-0075



or visit us at:
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