BRADY

WHEN PERFORMANCE MATTERS MOST™

BBP®16E

Thermal Transfer / Direct Thermal Barcode Printer

User Guide

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Agency Compliance and Approvals

	GB-4943.1 GB9254 (Class A) GB17625.1 此为 A 级产品，在生活环境中，该产品可能会造成无线电干扰，在这种情况下，可能需要用户对干扰采取切实可行的措施。
	K 6095D-1 KN 22; KN24
	IS 13252 (Part 1): 2010
	EN 60950-1

Important safety instructions

1. Please read this notice carefully.
2. Please keep this manual for later use.
3. Before cleaning, the unit must be disconnected from the network. Do not use liquid or aerosol cleaners. The best way is to use a damp cloth for the cleaning.
4. The power supply outlet should be installed near the equipment and easily accessible.
5. The device must be protected against moisture.
6. Make sure device is in a stable position when setting up. Tipping or dropping could cause damage.
7. Note the input ratings when connecting to power supply.
8. This device can be operated up to an ambient temperature of maximum 40ºC.

CAUTION

Risk of explosion if battery is replaced by an incorrect type.

Dispose of used batteries according to the instructions.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

CAUTION
1. HAZARDOUS MOVING PARTS IN CUTTER MODULE. KEEP FINGER AND OTHER BODY PARTS AWAY. 2. THE MAIN BOARD INCLUDES REAL TIME CLOCK FEATURE HAS LITHIUM BATTERY CR2032 INSTALLED. RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. 3. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER INSTRUCTIONS.

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1. Introduction

1.1 Product Introduction

Thank you very much for purchasing Brady bar code printer.

This printer is designed with die-casting aluminum chassis and print mechanism, metal cover with large clear media view window, which ensuring to work for the extreme and heavy duty industrial environment and applications.

With back-lit graphic LCD display, printer status can be managed easier and operated more user friendly. The moveable sensor design can accept wide range of label media. All of the most frequently used bar code formats are included. Fonts and bar codes can be printed in any one of the four directions.

This printer is built-in the high quality, high performance MONOTYPE IMAGING® True Type font engine and one CG Triumvirate Bold Condensed smooth font. With flexible firmware design, user can also download the True Type Font from PC into printer memory for printing labels. Besides the scalable font, it also provides a choice of five different sizes of alphanumeric bitmap font, OCR-A and OCR-B fonts. By integrating rich features, it is the most cost-effective and high performance printer in its class!

- Applications
    - Industrial-duty printing
    - Healthcare patient safety
    - Compliance labeling
    - Work in process
    - Order fulfillment
    - Distribution
    - Shipping/ receiving
    - Ticketing
    - Electronics & jewelry labeling

1.2 Product Features

1.2.1 Printer standard features

The printer offers the following standard features.

Product standard feature
Thermal transfer/ or direct thermal
High quality die-cast aluminum design
Metal cover with large clear media view window
Moveable gap sensor (position adjustable)
Moveable black mark sensor (position adjustable)
Ribbon end sensor
Ribbon encoder sensor (Support color ribbon)
Head open sensor
Resistive Touch Screen, 16 bits Color, 480 x 272 pixels, with back lights
Supported languages: English, Japanese, Traditional Chinese, Simplified Chinese, Korean, French, German, Spanish, Italian, Russian, Polish, Lithuanian, Czech, Portuguese and Serbian
Control panel with 6 operation buttons
Control panel security (TCF)
LED indicators
Real time clock
Internal Ethernet print server (10/100 Mbps) interface
USB 2.0 client (High speed mode)
Serial RS-232C (2400-115200 bps) interface

USB host interface, for scanner or PC keyboard
128 MB DDR2 SDRAM memory
128 MB FLASH memory
SD FLASH card memory expands storage to 32 GB
32-bit RISC high performance processor
Standard industry emulations right out of the box including Eltron® and Zebra® language support
Internal 8 alpha-numeric bitmap fonts
Fonts and bar codes 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

Bar code, graphics/image printing

Supported bar code		Supported image
1D bar code	2D bar code	BITMAP, BMP, PCX (Max. 256 colors graphics)
Code128 subsets A.B.C, Code128UCC, EAN128, Interleave 2 of 5, Code 39, Code 93, EAN-13, EAN-8, Codabar, POSTNET, UPC-A, UPC-E, EAN and UPC 2(5) digits, MSI, PLESSEY, China Post, ITF14, EAN14, Code 11, TELPEN, PLANET, Code 49, Deutsche Post Identcode, Deutsche Post Leitcode, LOGMARS	CODABLOCK F mode, DataMatrix, Maxicode, PDF-417, Aztec, MicroPDF417, QR code, RSS Barcode (GS1 Databar)	

Supported code page:

- Codepage 437 (English - US)
- Codepage 737 (Greek)
- Codepage 850 (Latin-1)
- Codepage 852 (Latin-2)
- Codepage 855 (Cyrillic)
- Codepage 857 (Turkish)
- Codepage 860 (Portuguese)
- Codepage 861 (Icelandic)
- Codepage 862 (Hebrew)
- Codepage 863 (French Canadian)
- Codepage 864 (Arabic)
- Codepage 865 (Nordic)
- Codepage 866 (Russian)
- Codepage 869 (Greek 2)
- Codepage 950 (Traditional Chinese)
- Codepage 936 (Simplified Chinese)
- Codepage 932 (Japanese)
- Codepage 949 (Korean)
- Codepage 1250 (Latin-2)
- Codepage 1251 (Cyrillic)
- Codepage 1252 (Latin-1)
- Codepage 1253 (Greek)
- Codepage 1254 (Turkish)
- Codepage 1255 (Hebrew)
- Codepage 1256 (Arabic)
- Codepage 1257 (Baltic)
- Codepage 1258 (Vietnam)
- ISO-8859-1: Latin-1 (Western European)
- ISO-8859-2: Latin-2 (Central European)
- ISO-8859-3: Latin-3 (South European)
- ISO-8859-4: Latin-4 (North European)
- ISO-8859-5: Cyrillic
- ISO-8859-6: Arabic
- ISO-8859-7: Greek
- ISO-8859-8: Hebrew
- ISO-8859-9: Turkish
- ISO-8859-10: Nordic
- ISO-8859-15: Latin-9
- UTF-8

1.2.2 Printer optional features

The printer offers the following optional features.

Product option feature	User options	Dealer options	Factory options
Applicator I/O interface (GPIO)			○
Main board with extended memory (512 MB Flash/ 256 MB SDRAM)			○
Peel-off kit (Include liner rewind spindle and peel off sensor) Internal rewind kit (Max. 6” OD/ Include label rewind spindle and label redirect kit)		○ ○	
Regular guillotine cutter (Cut on non-adhesive material) 0.06~0.25 mm thickness	○		
Rotary heavy duty cutter paper weight <200g/m^2	○		
Care label cutter Media width: 25.4~70 mm Media thickness: Max. 0.15 mm Media core ID: 50.8 mm~76.2 mm Non-print area: 2mm from top of form	○		
KP-200 Plus series keyboard	○		
KU-007 Plus programmable smart keyboard	○		
Bluetooth module (Serial interface)	○		

Note: Except for the linerless cutter, all regular/heavy duty/care label cutters DO NOT cut on media with glue.

1.3 General Specification

General Specifications	
Physical dimensions	270 mm (W) x 308 mm (H) x 515 mm (D)
Weight	15 kg (33.07 lbs)
Power	Internal switching power supply Input: AC 100-240V, 2A, 50-60Hz Output: DC 24V, 5A, 120W
Environmental condition	Operation: 5 ~ 40˚C (41 ~ 104˚F), 25~85% non-condensing Storage: -40 ~ 60 ˚C (-40 ~ 140˚F), 10~90% non-condensing
Environmental concern	Comply with RoHS, WEEE

1.4 Print Specifications

Print Specifications	
Print head resolution (dots per inch/mm)	600 dots/inch (24 dots/mm)
Printing method	Thermal transfer/ or direct thermal
Dot size (width x length)	0.042 x 0.042 mm (1 mm = 24 dots)
Print speed (inches per second)	4 ips
Max. print width	4.09” (104 mm)
Max. print length	100” (2540 mm)
Printout bias	Vertical: 1 mm max. Horizontal: 1 mm max.
Printing ratio	20%, Full web black bar thickness can’t be greater than 48 dots height

1.5 Ribbon Specifications

Ribbon Specifications	
Ribbon outside diameter	Max. 90 mm
Ribbon length	600 meter long
Ribbon core inside diameter	1” core (25.4 mm)
Ribbon width	25.4 mm ~ 110 mm (1”~4.33”)
Ribbon wound type	Ink coated outside or inside
Note: Support color ribbon	

1.6 Media Specifications

Media Specifications	
Label roll capacity	208.3 mm (8.2”) OD
Media alignment	Edge alignment
Media type	Continuous, die-cut, Fan-fold, tag, notched, black mark, perforated, care label (width less than 3 inch)
Media wound type	Printing face outside wound
Media width	15 ~ 90mm (0.6” ~ 3.54”) (with small guide) / 25.4 ~ 113mm (1" ~ 4.44")
Media thickness	0.06 ~ 0.30 mm (2.3~11.8 mil), max. 300g/m^2
Media core diameter	25.4 ~ 76.2 mm (1”~3”)
Label length	5 ~ 2540mm (0.20”~100”)
Label length (cutter mode)	25.4 ~ 1016mm (1” ~ 100”)
Label length (peeler mode)	25.4 ~ 152.4 mm (1”~6”)
Gap height	Min. 2 mm
Black mark height	Min. 2 mm
Black mark width	Min. 8 mm (0.31”)

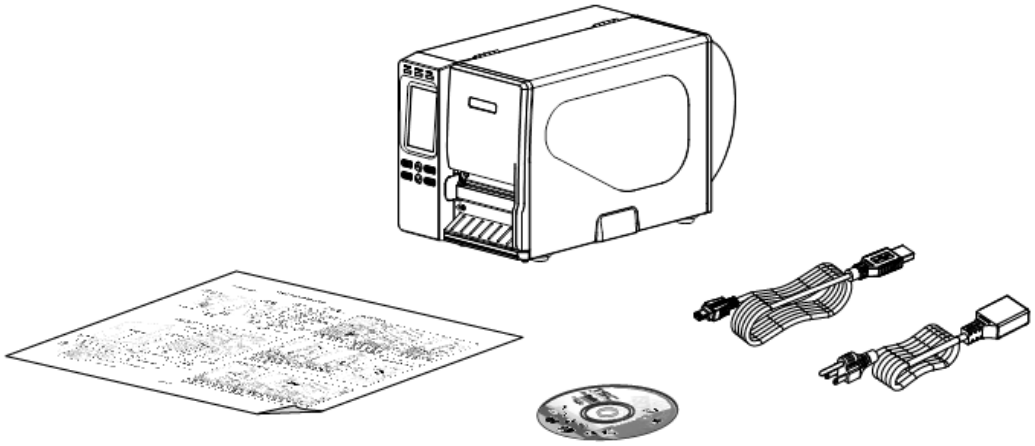
2. Operations Overview

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 bar code printer. Please retain the packaging materials in case you need to reship the printer.

Unpacking the printer, the following items are included in the carton.

- One printer unit
- One CD containing Windows driver and User Manual
- One quick installation guide
- One power cord
- One USB interface cable



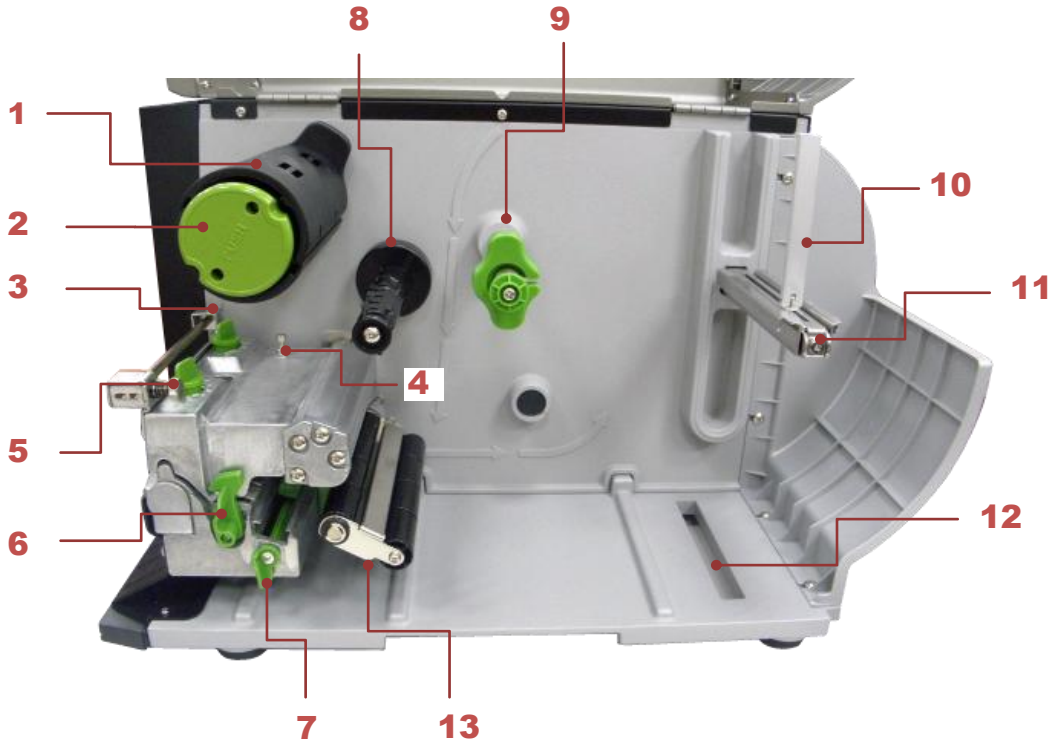
If any parts are missing, please contact the Customer Service Department of your purchased reseller or distributor.

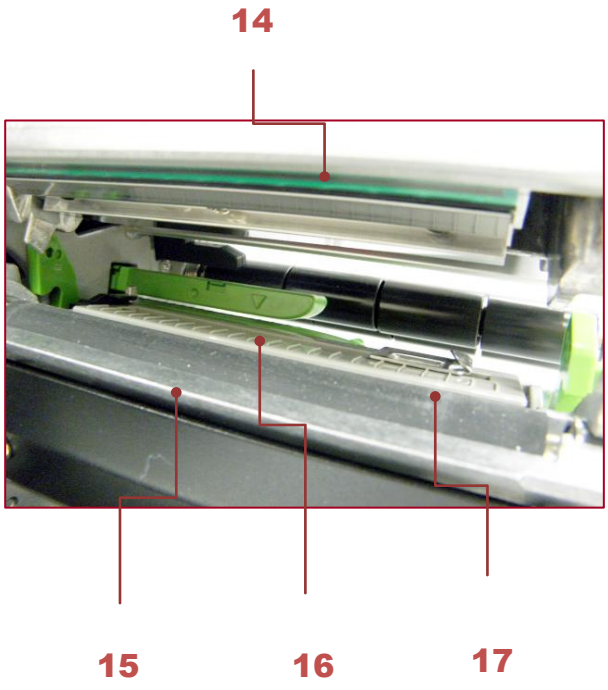
2.2 Printer Overview

2.2.1 Front View

1. LED indicators
2. LCD display
3. Operation buttons
4. Media view window
5. Paper exit chute
6. Printer cover

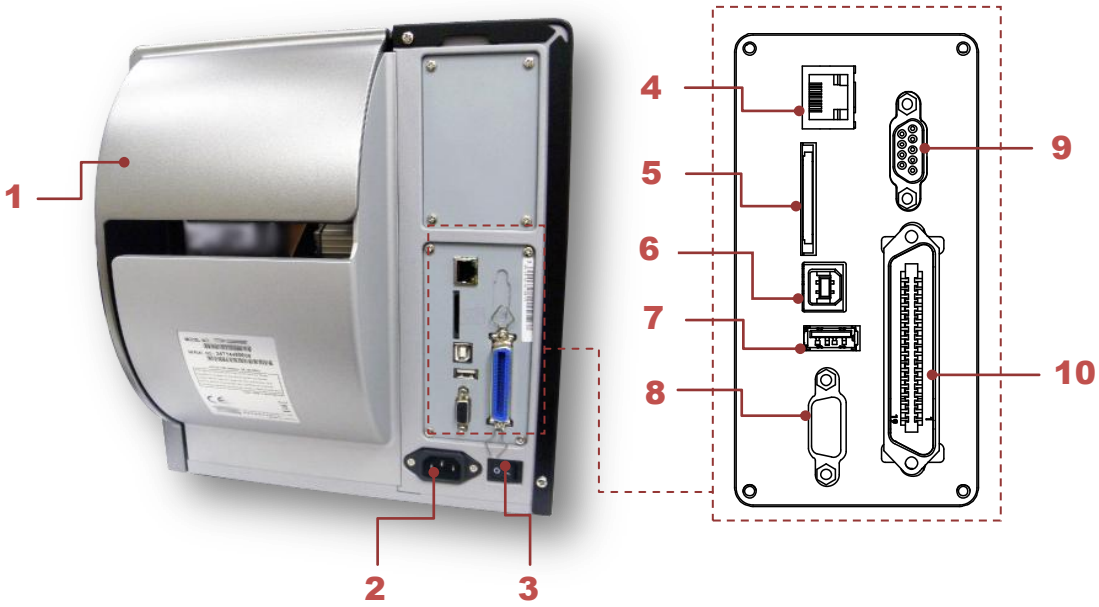
2.2.2 Interior view





1. Ribbon rewind spindle
2. Ribbon release button
3. Print head pressure adjustment knobs
4. Z axis mechanism adjustment knob
5. Ribbon tension adjustment knob
6. Print head release lever
7. Media sensor lock lever
8. Ribbon supply spindle
9. Media guide bar & Rear label guide
10. Label roll guard
11. 3” label supply spindle
12. External label entrance chute
13. Damper
14. Print head
15. Platen roller
16. Media sensor
17. Front label guide

2.2.3 Rear View



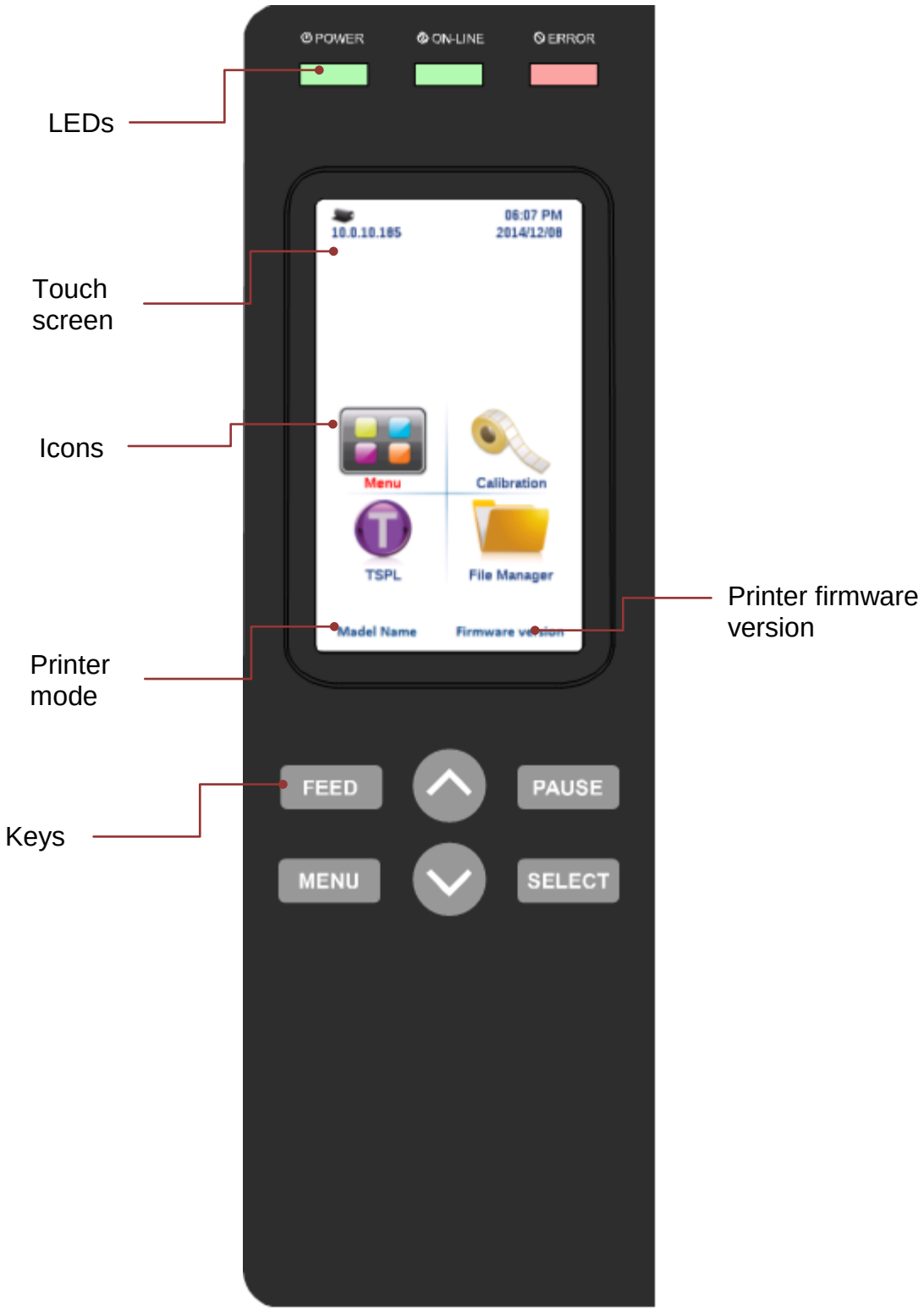
1. External label entrance chute
2. Power cord socket
3. Power switch
4. Ethernet interface
5. SD card socket
6. USB interface
7. USB host
8. RS-232C interface
9. GPIO interface (Option)
10. Centronics interface

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

*** Recommended SD card specification.**

Type	SD card spec	SD card capacity	Approved SD card manufacturer
SDHC	V2.0 Class 4	2G	Transcend
	V3.0 Class 10	32G	Kingston
	V3.0 Class 10	16G	Kingston
	V2.0 Class 4	8G	Scandisk
	V3.0 Class 10	32G	Scandisk
Micro SD	V2.0 Class 4	4G	Transcend
	V2.0 Class 4	8G	Transcend
	V3.0 Class 10 UHS-I	16G	Transcend
	V3.0 Class 10 UHS-I	32G	Transcend
	V3.0 Class 10	16G	Kingston
	V2.0 Class 4	16G	Scandisk
	V3.0 Class 10 UHS-I	16G	Scandisk
- 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. - The miniSD/microSD card to SD card slot adapter is required.			

2.3 Operator Controls

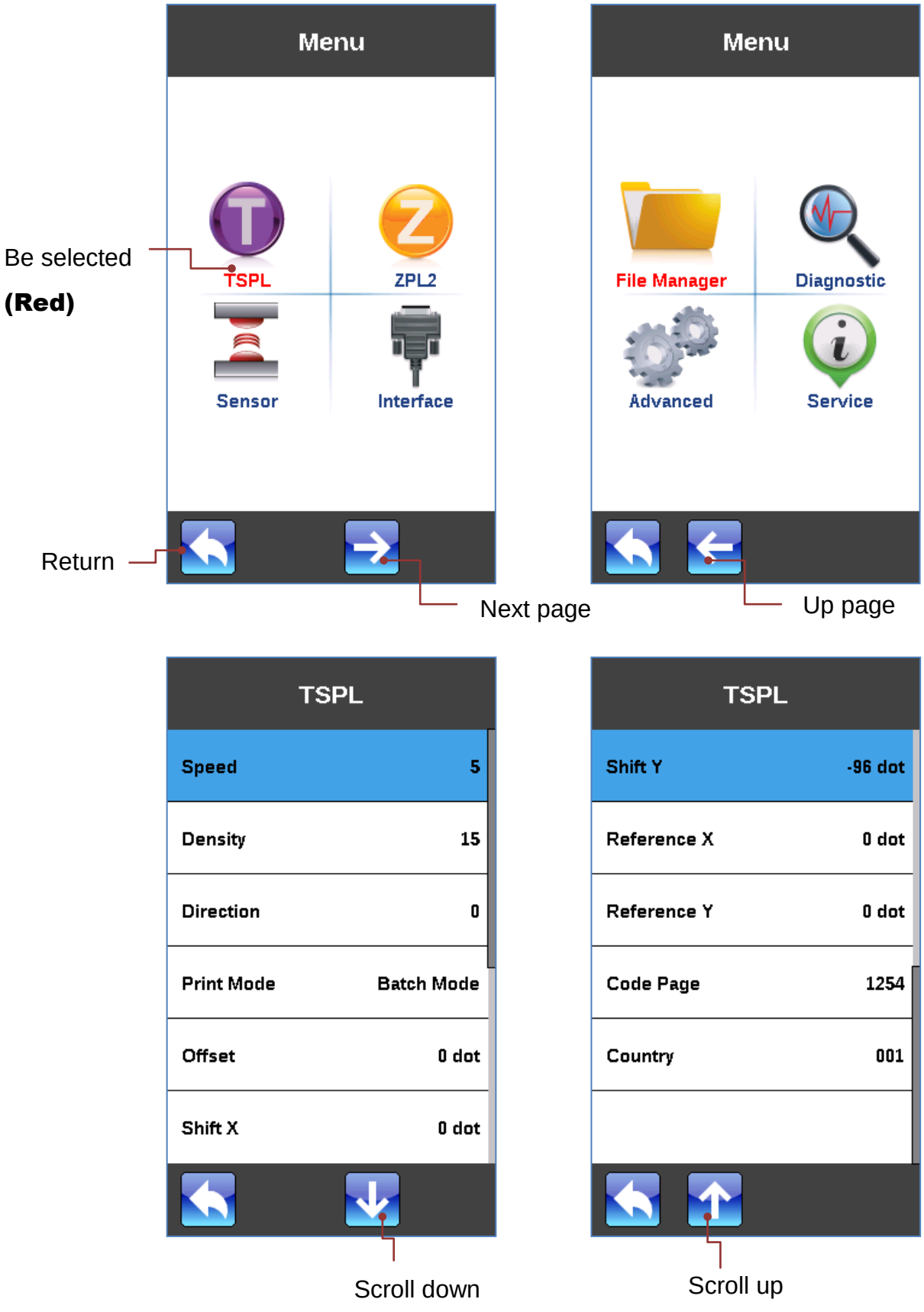


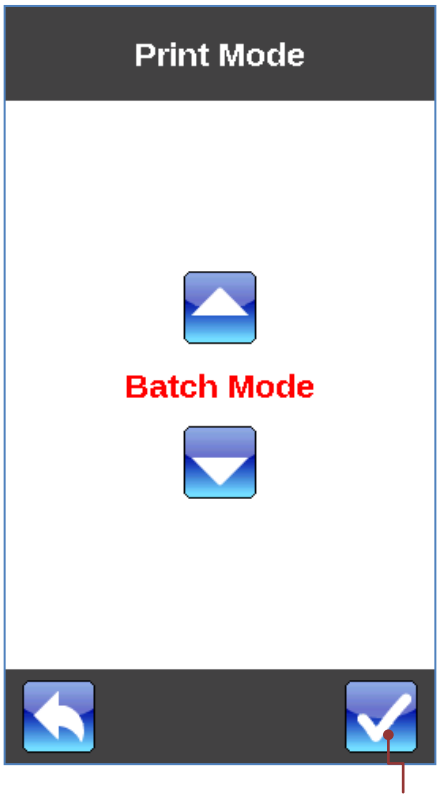
2.3.1 LED Indication and Keys

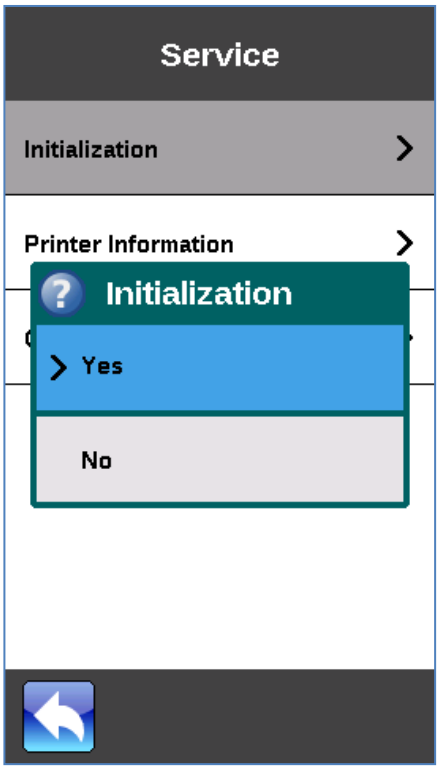
LED	Status	Indication
POWER	Off	Printer power off
	On	Printer power on
ON-LINE	On	Printer is ready
	Blinking	Printer is paused
		Printer is downloading data
ERROR	Off	Printer is ready
	On	Carriage open or cutter error
	Blinking	No paper, paper jam or no ribbon
Keys	**Function**	
PAUSE	Pause/Resume the printing process	
MENU	1. Enter the menu 2. Exit from a menu or cancel a setting and return to the previous menu	
FEED	Advances one label	
UP	Scroll up the menu list	
SELECT	Enter/Select cursor located option	
DOWN	Scroll down the menu list	

2.3.2 Touch Screen

Tap an item to open/use it.




Print Mode
Batch Mode


Service
Initialization
Printer Information
Initialization
Yes
No

Set

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.

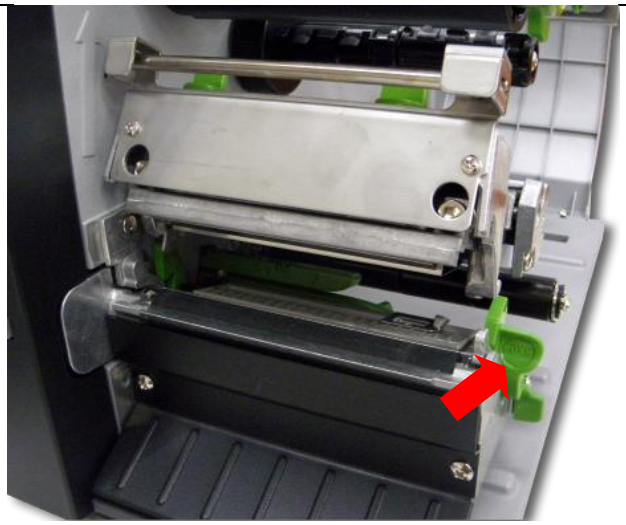
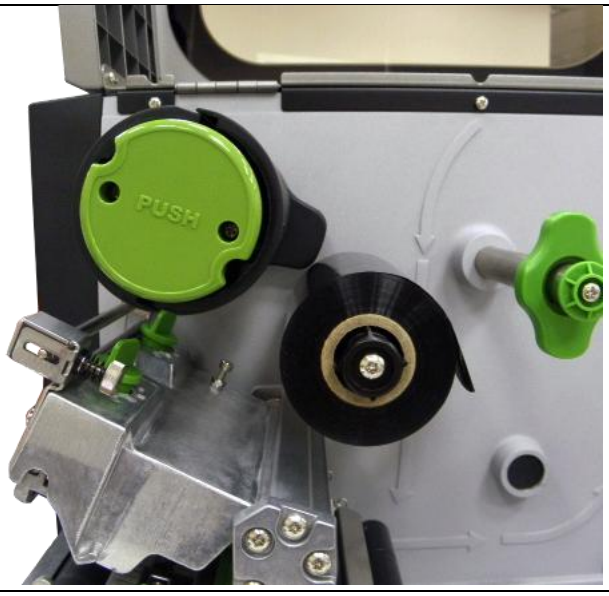
3. Connect the printer to the computer with the provided USB cable.

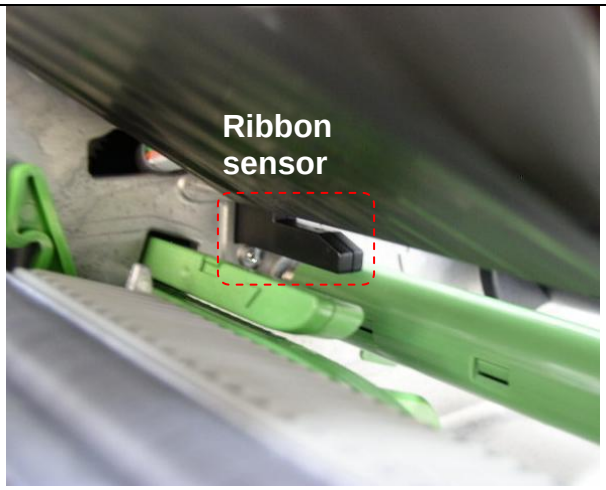
4. Plug the power cord into the AC power cord socket at the rear of the printer, and then plug the power cord into a properly grounded power outlet.

Note: Please switch OFF printer power switch prior to plug in the power cord to printer power jack.

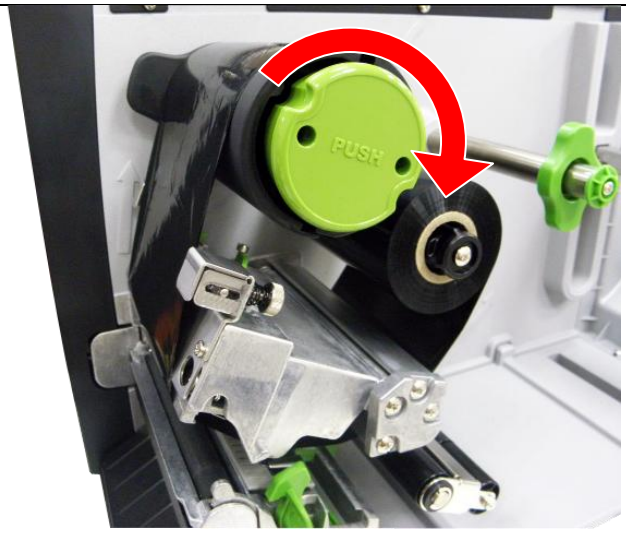
3.2 Loading Ribbon

3.2.1 Loading Ribbon

	1. Open the printer right side cover.
	2. Push the print head release lever to open the print head mechanism.
	3. Install the ribbon onto the ribbon supply spindle.

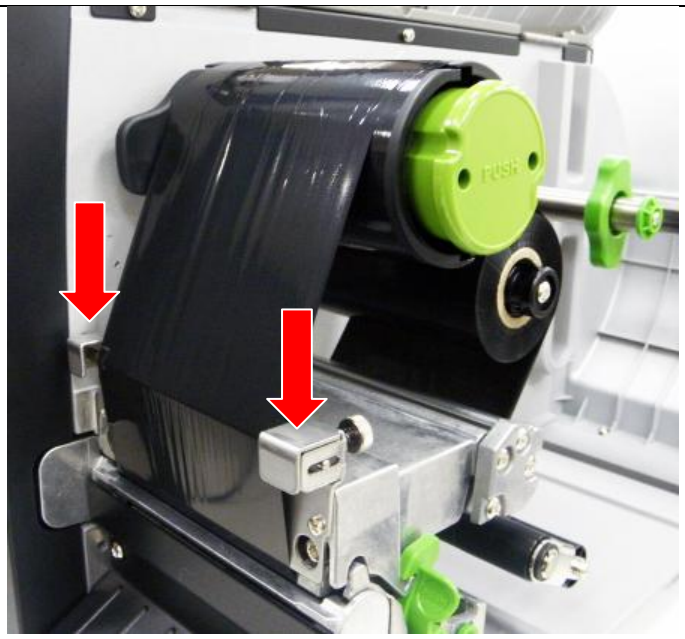


4. Thread the ribbon through the ribbon sensor slot and then through the open space in between print head and platen.



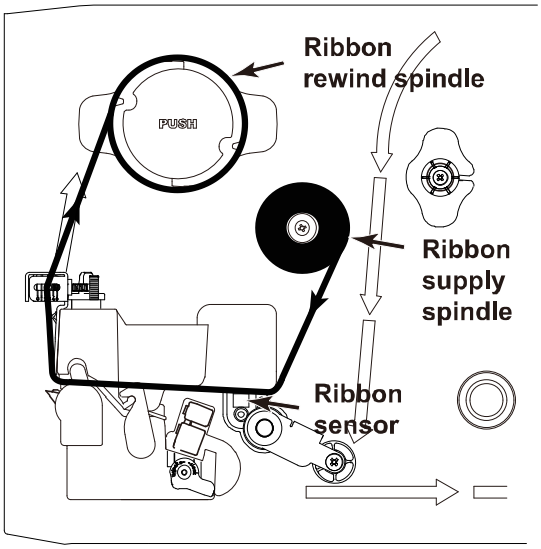
5. Wrap the ribbon onto the ribbon rewind spindle. Wind the ribbon clockwise about 3~5 circles onto the ribbon rewind spindle until it is smooth and properly stretched.

Note: Please DO NOT push the ribbon release button when you are loading the ribbon. The ribbon release button is used to remove the used ribbon.

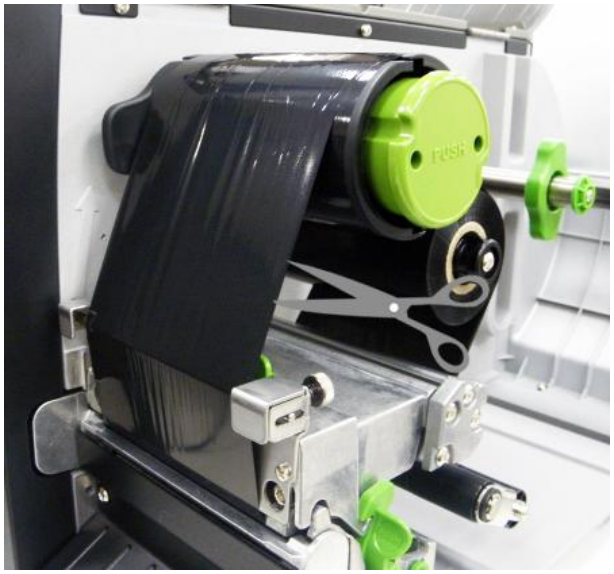
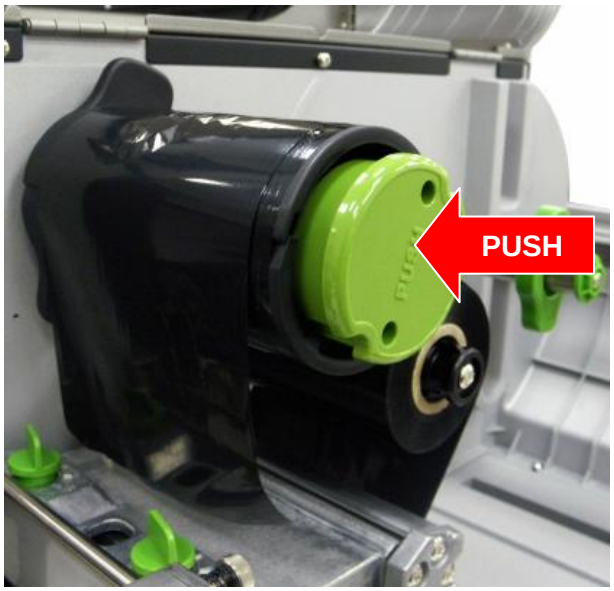
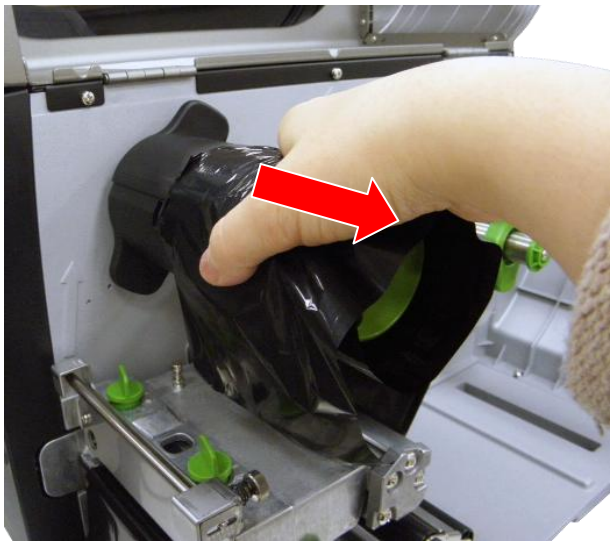


6. Close the print head mechanism, Make sure the latches are engaged securely.

Loading path for ribbon

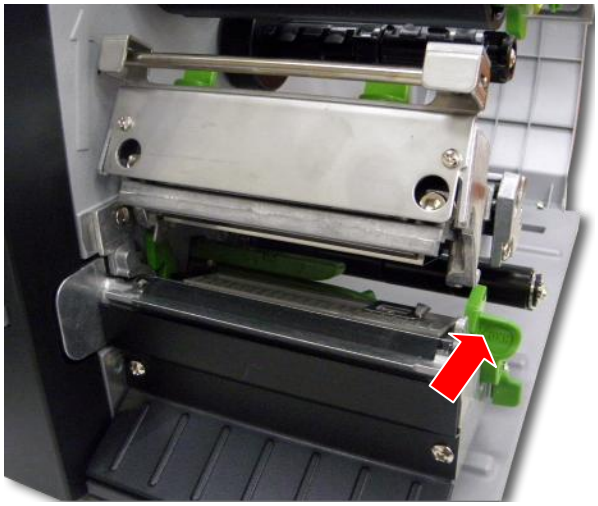
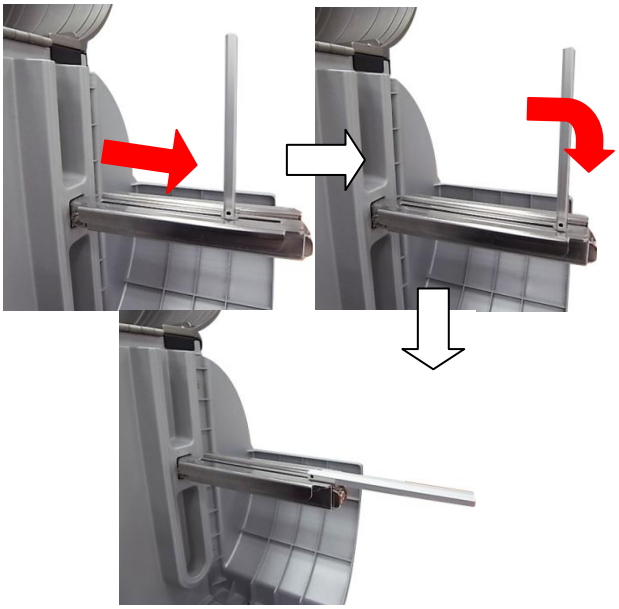


3.2.2 Remove Used Ribbon

	1. Break the ribbon between ribbon guide plate and the ribbon rewind spindle.
	2. Push the ribbon release button to release the ribbon on the ribbon rewind spindle.
	3. Slide off the ribbon from ribbon rewind spindle.

3.3 Loading the Media

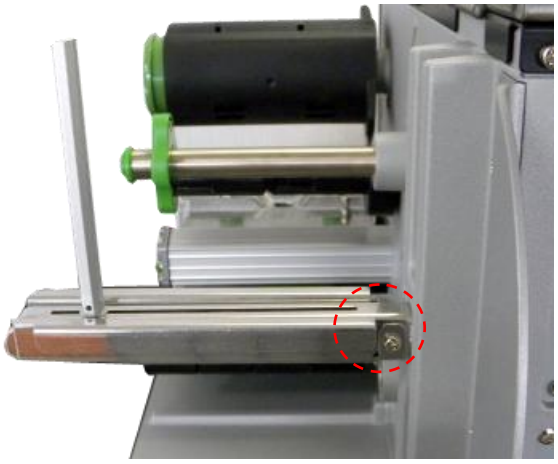
3.3.1 Loading the Media

	1. Open the printer right side cover.
	2. Push the print head release lever to open the print head mechanism.
	3. Move the label roll guard horizontally to the end of label spindle then flip down the label roll guard.

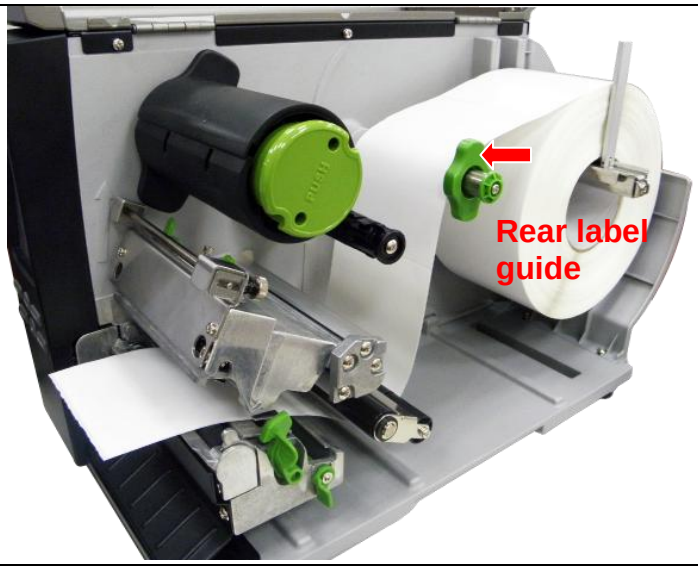
4. Place the roll of media on the label supply spindle. Flip up the label roll guard. Move the label roll guard horizontally to gently fit the width of label roll.

3” Label spindle	1” Label spindle

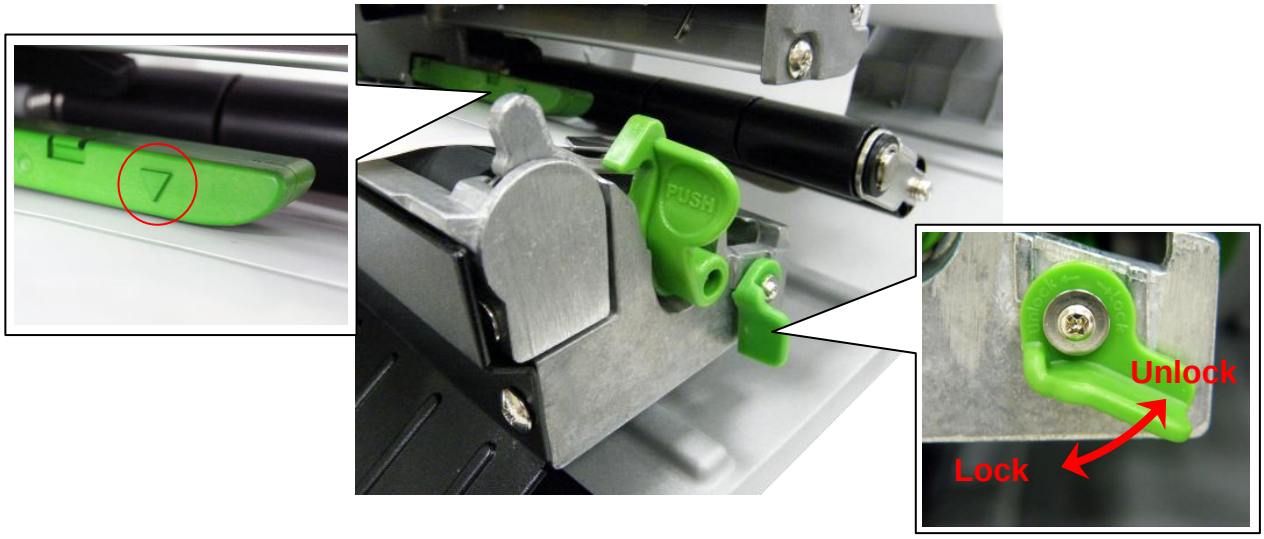
Replace 3” core label spindle module to fit the 1” core label by removing two screws.



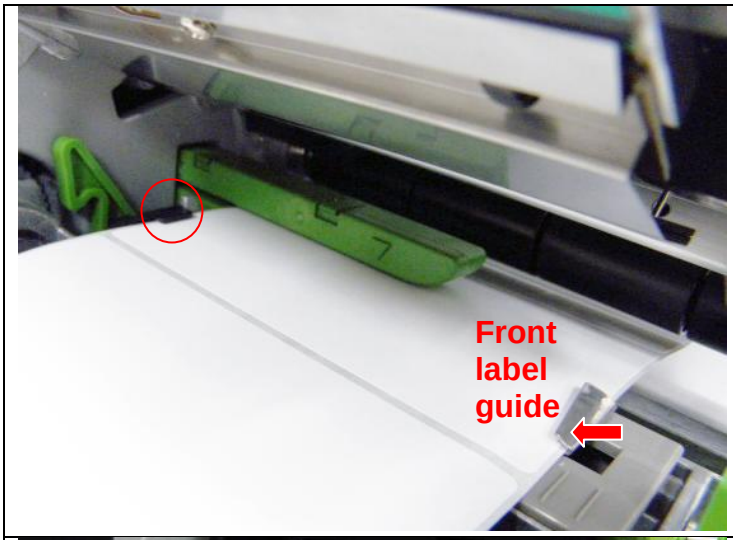
5. Pull label roll leading edge forward through the media guide bar, damper, media sensor (green) and place the label leading edge onto the platen roller. Adjust the rear label guide (green) to fit the width of the label.



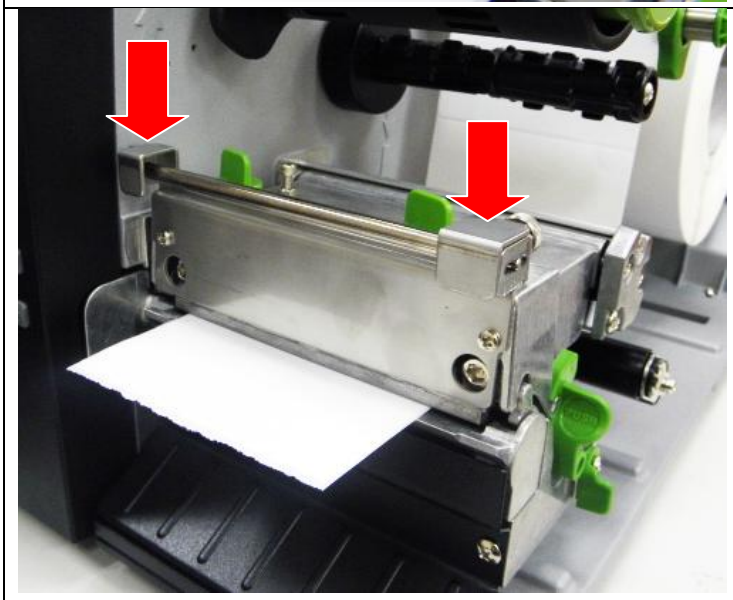
6. Unlock the media sensor lock lever to adjust the media sensor.



Note:
*** The sensor location is marked by a triangle mark ▽at the sensor housing.**
*** The media sensor position is moveable, please make sure the gap or black mark is at the location where media gap/black mark will pass through for sensing.**



7. Adjust front label guide to fit the width of the label.



8. Close the print head mechanism. Make sure the latches are engaged securely.

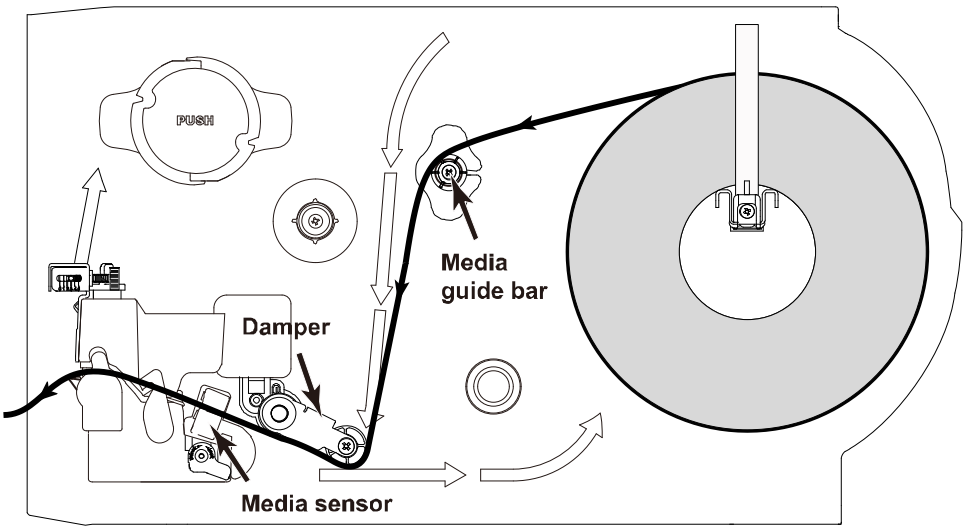
9. Using the front display panel, set media sensor type and calibrate the selected sensor.

Note:

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

*** Please refer to video in driver CD.**

Loading path for roll labels

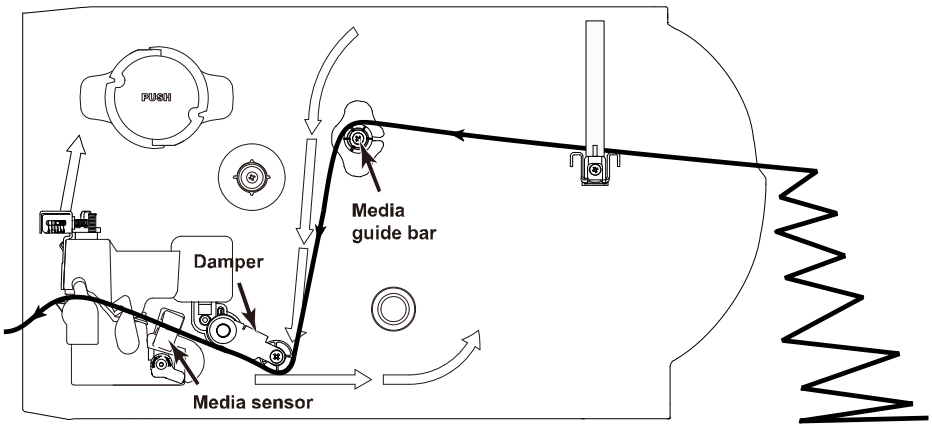


3.3.2 Loading the Fan-fold/External Media

1. Open the printer right side cover.
2. Insert the fan-fold media through the bottom or rear external label entrance chute.
3. Please refer to section 3.3.1 to loading media.

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

Loading path for fan-fold labels

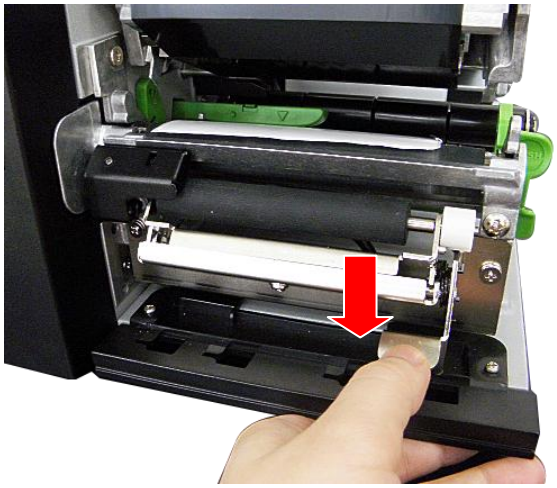


3.3.3 Loading Media in Peel-off Mode (Option)

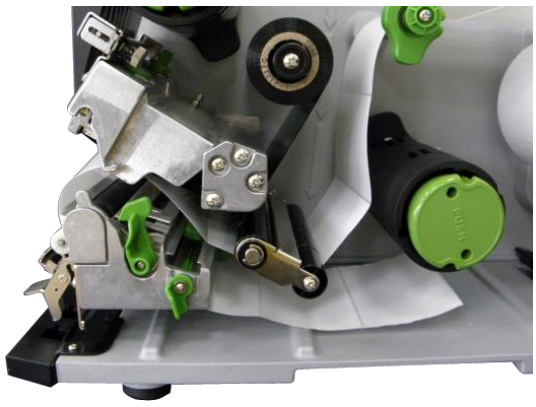
1. Open the printer right side cover.
2. Please refer to section 3.3.1 step 3~9 for loading media.
3. Using the front display panel to do the calibration first and set the printer mode to peeler mode.

Note: Please calibrate the gap/black mark sensor before loading media in peel-off mode to avoid paper jam.

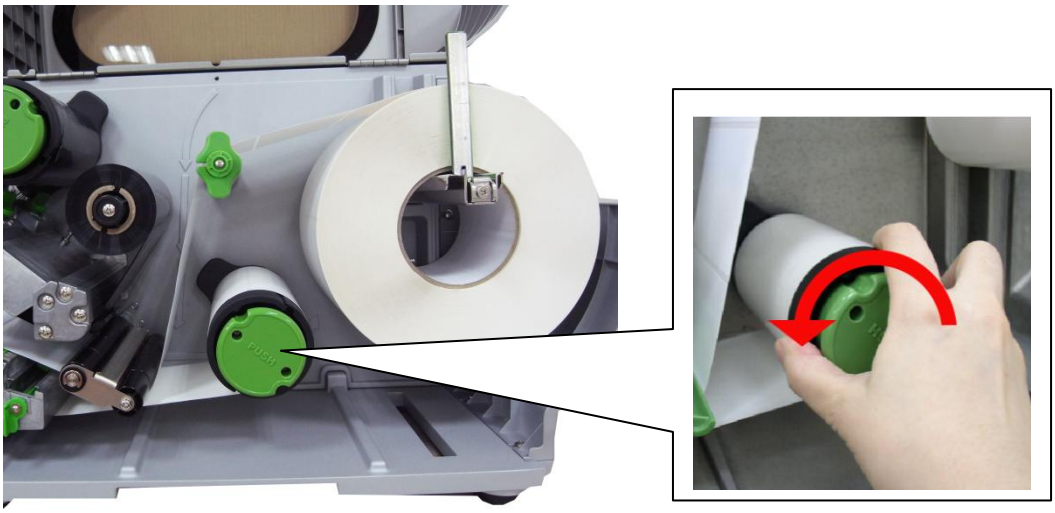
4. Open print head release lever to pull approximately 650mm of label through the front of the printer.
5. Push down the peel-off roller release lever.



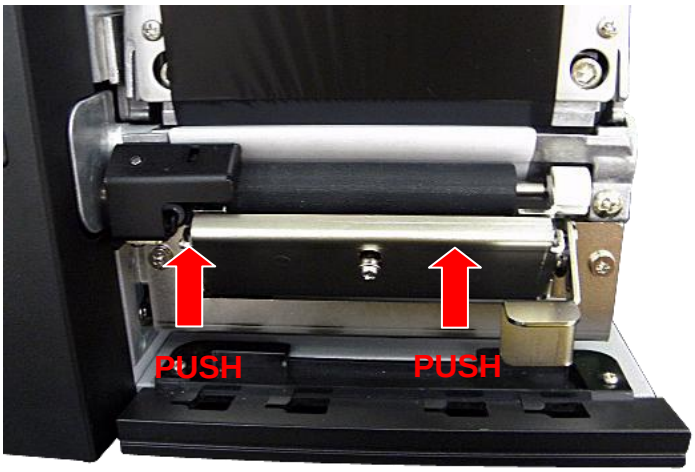
6. Feed the label between peel-off roller and platen roller.

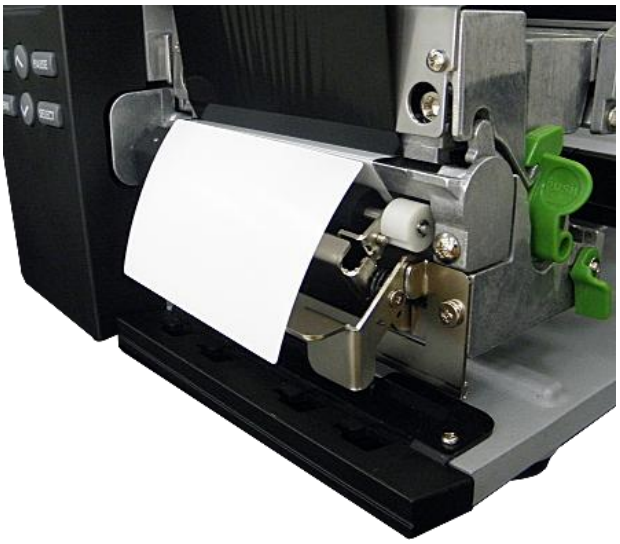


7. Wrap the label onto the internal rewind spindle and wind the spindle counter-clockwise about 3~5 circles until the label is properly stretched.



8. Lift up the peel-off roller release lever and close the print head mechanism.



	9. Peeling will automatically start. Press the FEED button to test.

3.3.4 Remove Liner from Internal Rewind (Option)

	1. Break the liner between peel-off roller and the internal rewind spindle.
	2. Push the liner release button to release the liner on the internal rewind spindle.

3. Slide off the liner from internal rewind spindle.

3.3.5 Loading Media in Rewind Liner with Label Mode (Option)

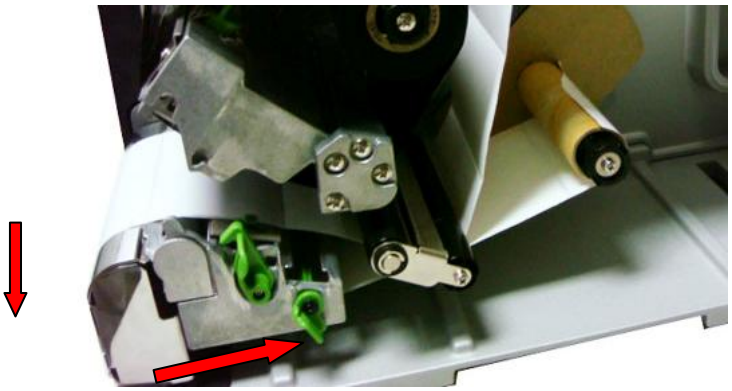
This mode can rewind the media including liner and label on the rewind spindle

1. Open the printer right side cover and the print head mechanism.
2. Insert the supply holder guide and paper core into the internal rewind for 1” core label roll. Insert the supply holder guide, 3” label core adapter and paper core into the internal rewind for 3” core label roll.

1” core label roll

3” core label roll

1. Insert media into the printer label spindle. Pull label roll leading edge forward through the media guide bar, damper media sensor and place the label leading edge onto the platen roller.
2. Pull approximately 650mm of label through the label redirect front panel.
3. Wrap the label onto the internal rewind spindle and stick the label onto the paper core.



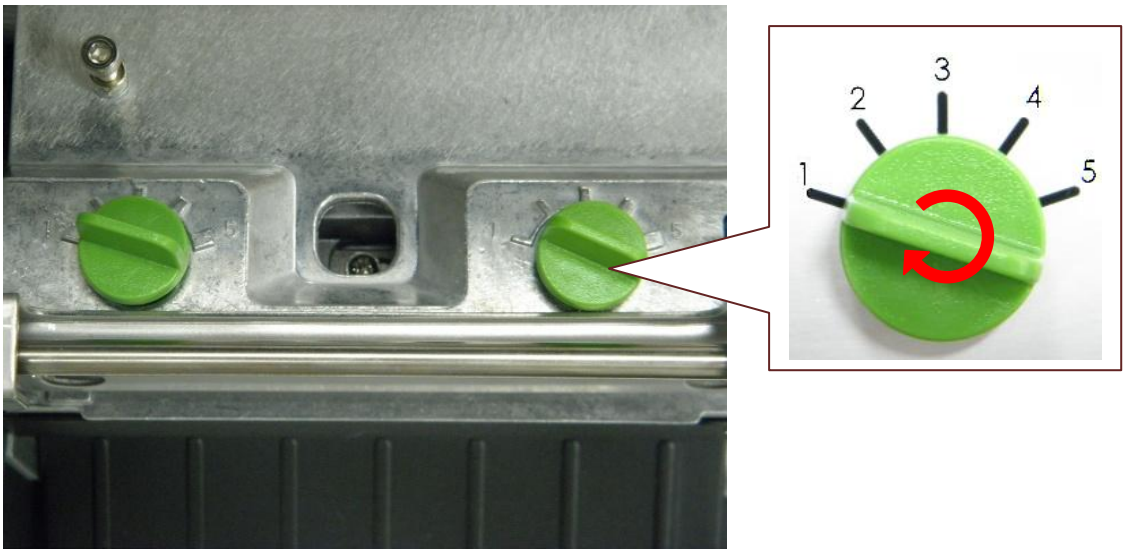
4. Insert another supply holder guide into the internal rewind for 1” core label roll.
5. Close the print head mechanism.
6. Using the LCD panel to set the media sensor type and calibrate the selected sensor.

3.3.6 Remove Labels from Internal Rewind (Option)

1. Slide off the labels with supply holder guides from internal rewind spindle.

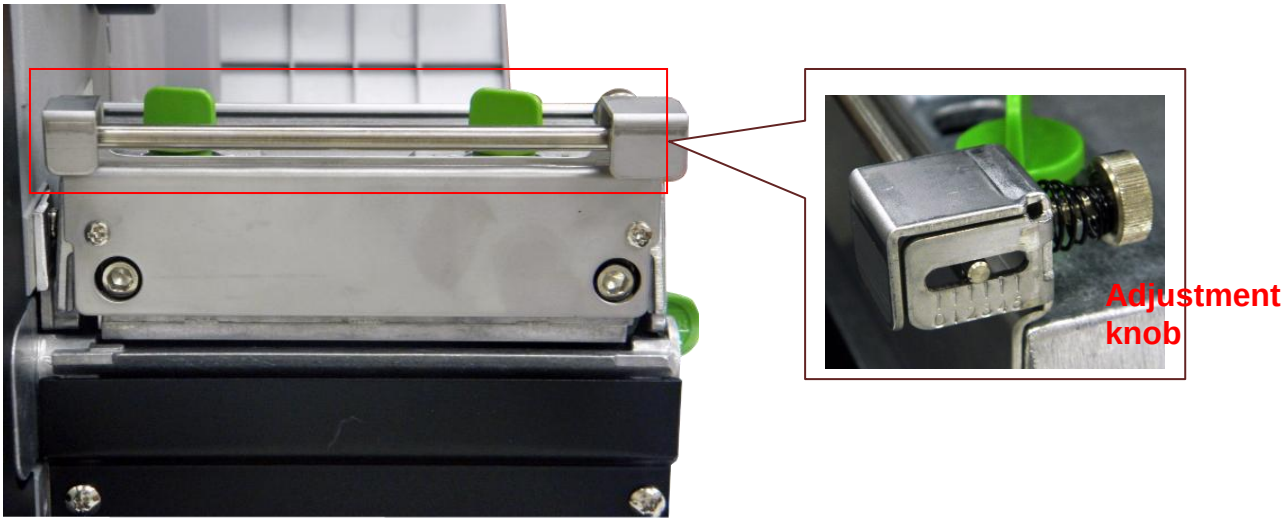
4. Adjustment Knob

4.1 Print Head Pressure Adjustment knob



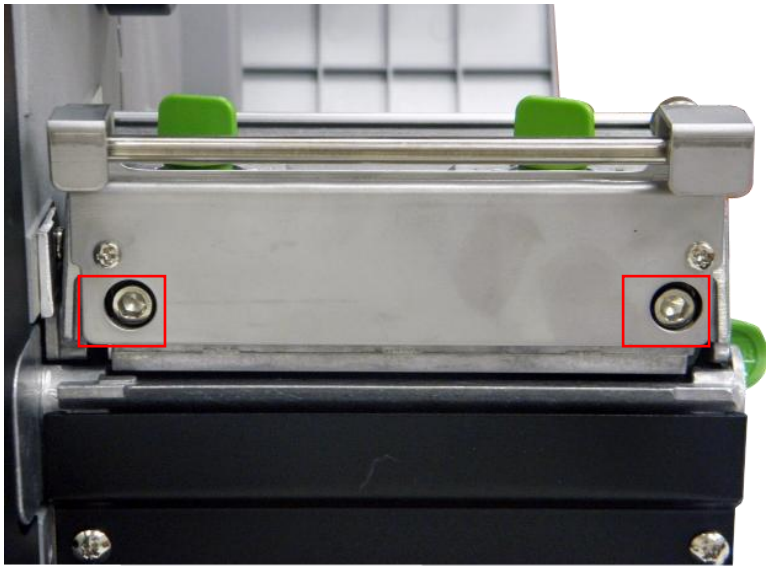
The print head pressure adjustment knob has 5 levels of adjustment. Because the printer's paper alignment is to the left side of mechanism, different media widths require different pressure to print correctly. Therefore it may require to adjust the pressure knob to get your best print quality. For example, if the label width is 4", adjust both print head pressure adjustment knobs to the same level. If the label is less than 2" wide, increase the left side print head pressure by rotating the adjustment knob clockwise and decrease the right side pressure by rotating the adjustment knob counter-clockwise to level 1. Please refer to section 4.4 for more information.

4.2 Ribbon Tension Adjustment Module



The ribbon tension adjustment knob has 0 ~ 5 positions for adjustment. Because the printer's ribbon alignment is to the left side of mechanism, different ribbon or media widths require different tension to print correctly. Therefore it may require to adjust the ribbon tension knob to get your best print quality. Please refer to section 4.4 for more information.

4.3 Print Head Burn Line Adjustment Knob



The print head burn line adjustment knobs are used to fine tune the print quality for different thickness of media. Turning the knobs adjusts the print head's burn line forward or backward as it relates to the platen roller.

The print head burn line default is set for general purpose printing media (plain paper and paper thickness less than 0.20mm). In general using, it does not need to adjust the print head burn line. If you have poor print quality, please modify the printer density or adjust the print head pressure adjustment knob, or adjust z-axis mechanism first.

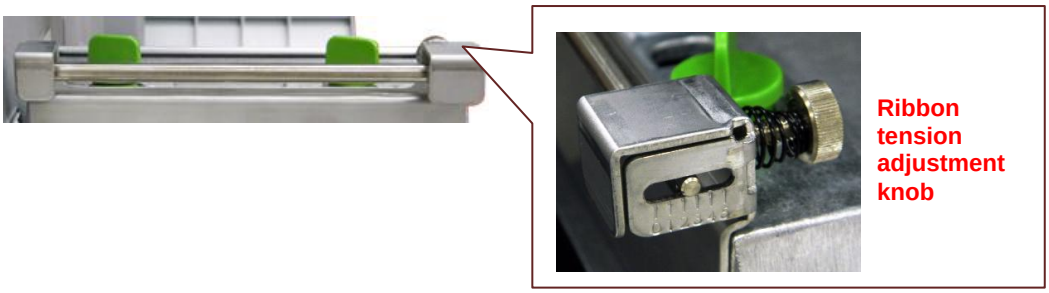
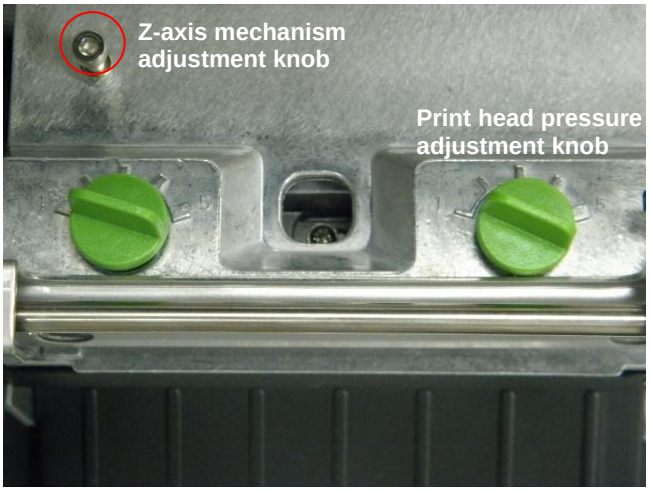
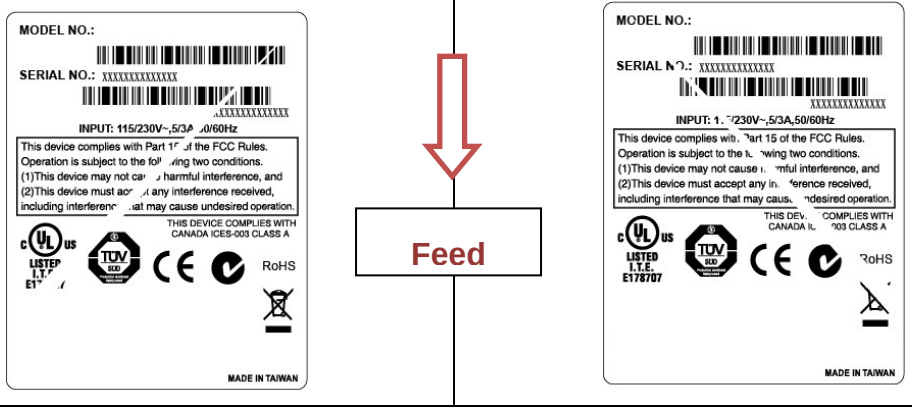
Caution:

Incorrectly adjusting print head burn line adjustment knobs can lead to poor print quality and may cause damage to the printer. Proceed with caution.

Poor print quality when using paper thicker than 0.20mm may be due to the print head burn line not being at the optimized position. To improve the print quality, increase the head pressure or adjust the knobs counter-clockwise to move print head burn line toward the paper out direction then print again. Continue to adjust the burn line position and test print as necessary until the printout image is clear.

4.4 Mechanism Fine Adjustment to Avoid Ribbon Wrinkles

This printer has been fully tested before delivery. There should be no ribbon wrinkle presented on the media for general-purpose printing application. Ribbon wrinkle is related to the media thickness, print head pressure balance, ribbon film characteristics, print darkness setting…etc. In case the ribbon wrinkle happens, please follow the instructions below to adjust the printer parts.

<table>
<tr><td rowspan="2">Adjustable Printer Parts</td><td colspan="2">The ribbon tension adjustment knob has 0 ~ 5 positions for adjustment.
 
</td></tr>
<tr><td colspan="2">The print head pressure adjustment knob has 5 levels of settings. Clockwise direction adjustment is to increase the print head pressure. Counter Clockwise adjustment can decrease the print head pressure.
 
</td></tr>
<tr><td>Symptom</td><td>1. Wrinkle happens from label lower left to upper right direction (“/”)</td><td>2. Wrinkle happens from label lower right to upper left direction (“\”)</td></tr>
<tr><td>Wrinkle Example</td><td colspan="2"> 
</td></tr>
</table>

	If the wrinkle on the label starts from the lower left side to upper right side, please do following adjustment. 1. Clockwise direction adjust the ribbon tension adjustment knob to “2” or “1” position. Then check if wrinkle is gone. 2. Decrease the right side print head pressure adjustment knob setting 1 level per each adjustment then print the label again to check if wrinkle is gone. 3. If the right side print head adjustment knob setting has been set to index 1 (the lowest pressure index), please increase the left side print head pressure. 4. If the left side print head adjustment knob setting has been set to 5 (the highest pressure index) the wrinkle can’t be avoid, please rotate the both knobs back to setting 1 then rotate the Z-axis mechanism adjustment knob clockwise for a few degrees and print again for fine tune the print head pressure distribution **Note for step 4:** *Factory default setting, the Z-axis knob is rotated counter clockwise to the end of thread. *Turn the Z-axis mechanism adjustment knob clockwise until you feel the knob touch the mechanism for the first adjustment. * If the wrinkle is still there, please turn the Z-axis mechanism adjustment knob clockwise about 1/4 circle each time for adjustment * If the winkled direction is change from “/” to “\” by adjusting the Z-axis mechanism adjustment knob, please turn the Z axis mechanism adjustment knob counter clockwise to avoid the wrinkle.	If the wrinkle on the label starts from the lower right side to upper left side, please do following adjustment. 1. Counter clockwise adjust the ribbon tension adjustment knob to “4” or “5” position. Then check if wrinkle is gone. 2. Decrease the left side print head pressure adjustment knob setting 1 level per each adjustment then print the label again to check if wrinkle is gone. 1. 3. If the left side print head adjustment knob level has been set to index 1 (the lowest index), please increase the right side print head pressure.

5. LCD Menu Function

5.1 Enter the Main Menu

*** By Keys:**

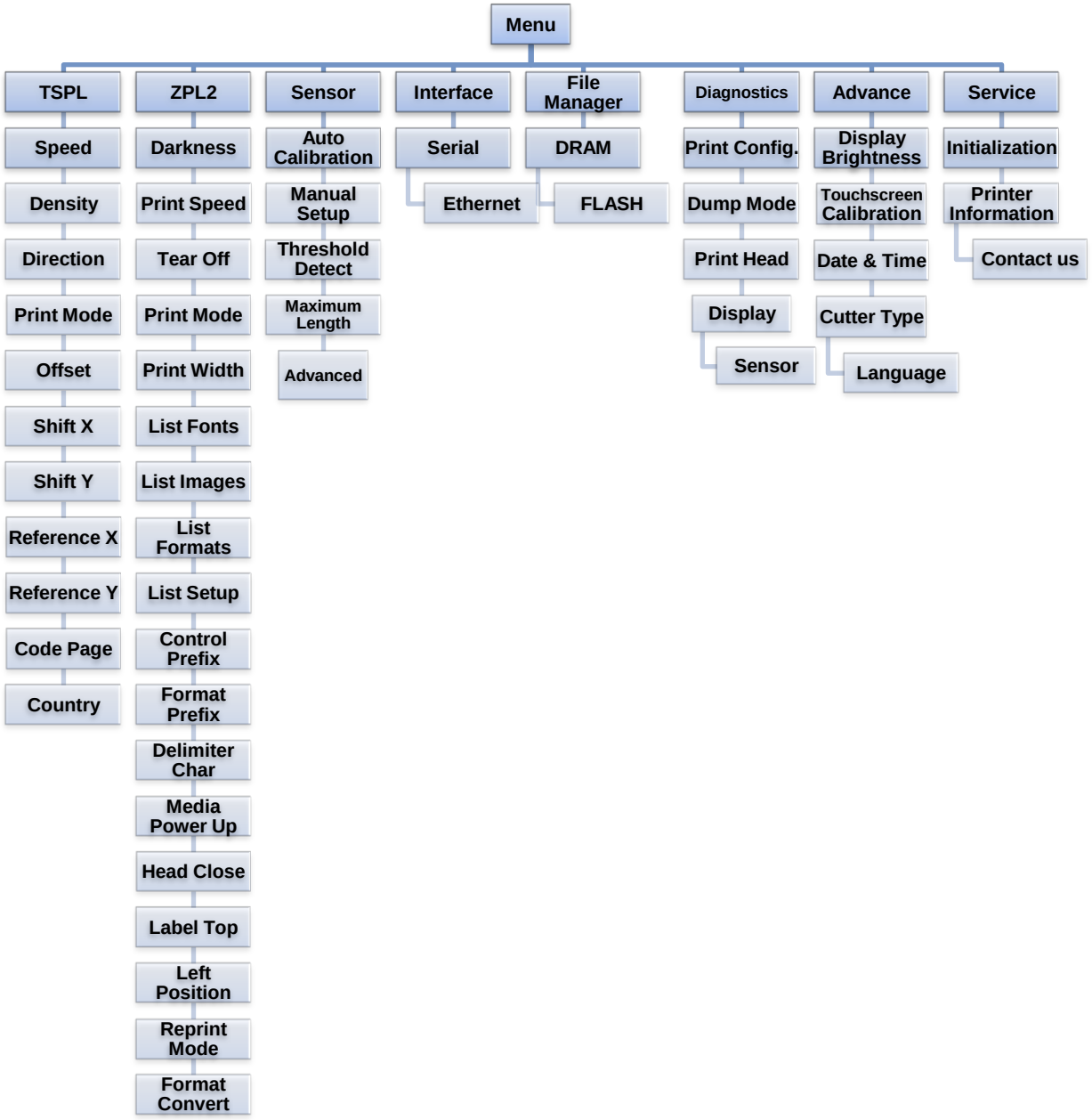
Press the “MENU” button and press the “SELECT” button to enter the main menu.

*** By touch display:**

Tap the “Menu” icon on LCD to enter the main menu.

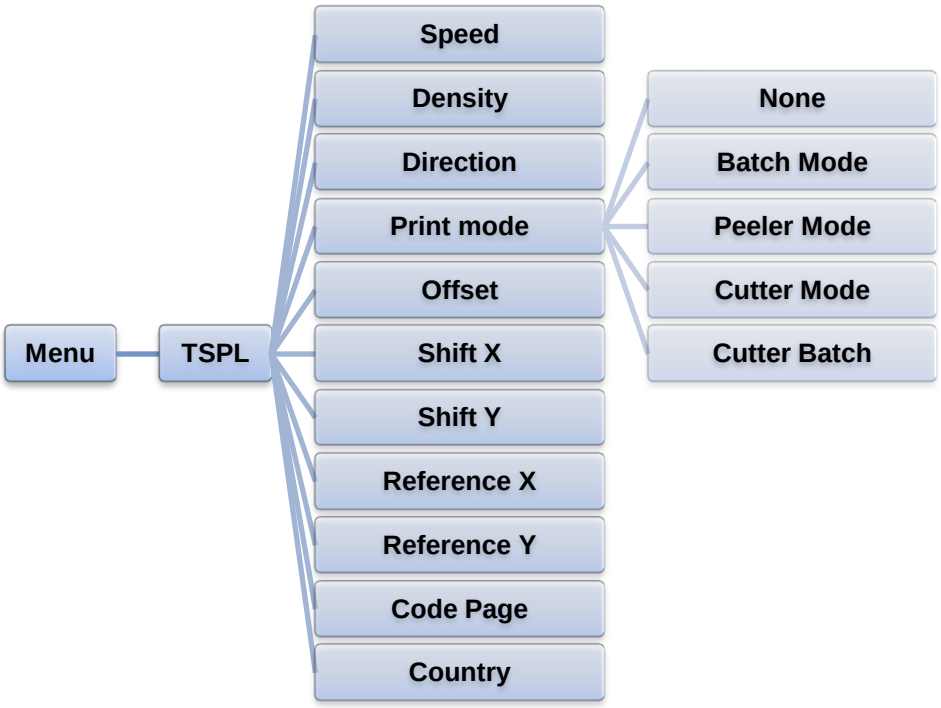
5.2 Main Menu Overview

There are 8 categories for the main menu. You can easy to set the settings of printer without connecting the computer. Please refer to following sections for more details.



5.3 TSPL2

This “TSPL2” category can set up the printer settings for TSPL2.



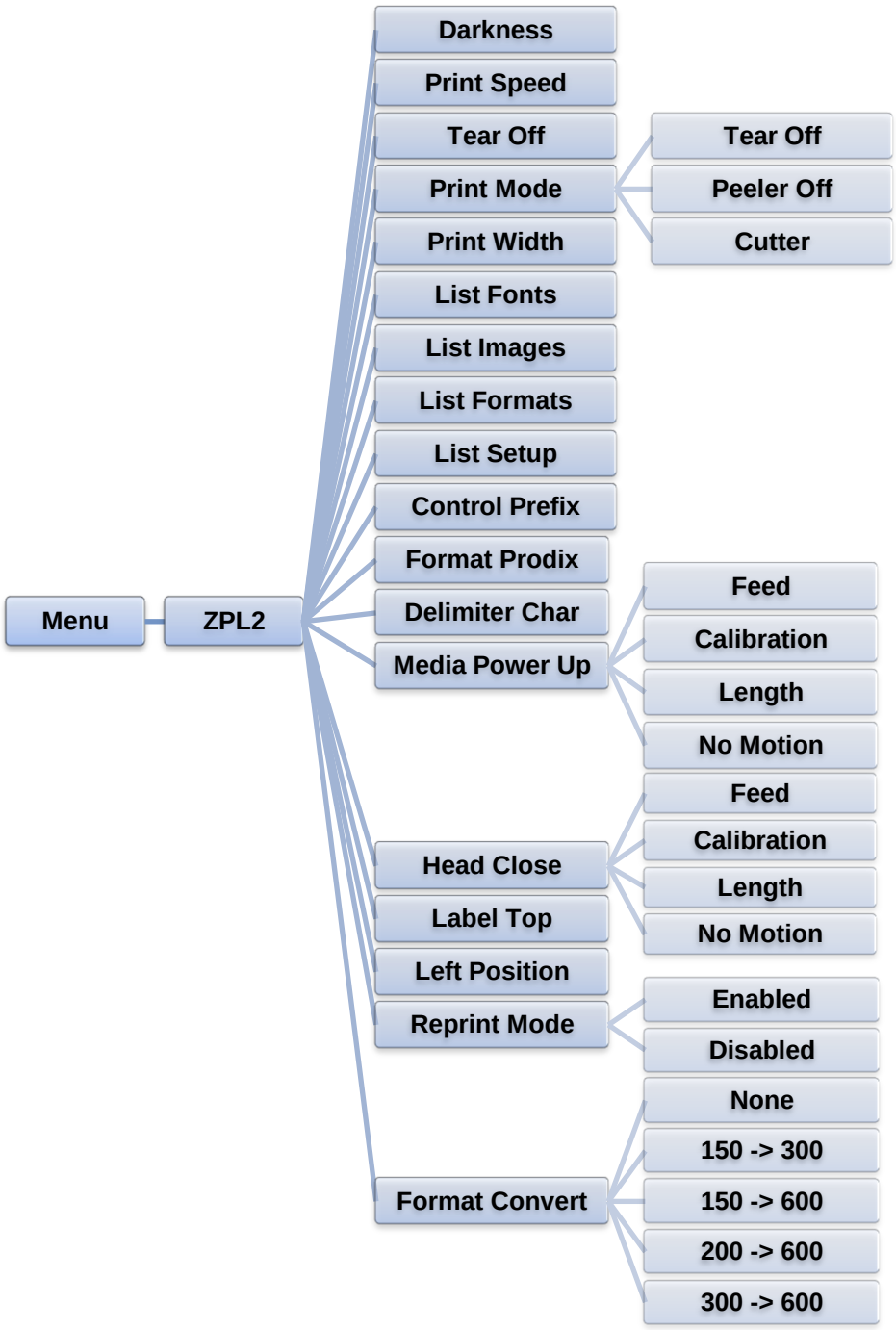
Item	Description	Default
Speed	Use this item to setup print speed. The each increase or decrease is 1 ips. Available setting is from 4 to 12.	6
Density	Use this option to setup printing darkness. The available setting is from 0 to 15, and the step is 1. You may need to adjust your density based on selected media.	8
Direction	The direction setting value is either 1 or 0. Use this item to setup the printout direction. DIRECTION 0: Direction DIRECTION 1: FEED, Direction	0

<table>
<tr><td>Print mode</td><td>This item is used to set the print mode. There are 5 modes as below,<table><tr><th>Printer Mode</th><th>Description</th></tr><tr><td>None</td><td>Next label top of form is aligned to the print head burn line location. (Tear Off Mode)</td></tr><tr><td>Batch Mode</td><td>Once image is printed completely, label gap/black mark will be fed to the tear plate location for tear away.</td></tr><tr><td>Peeler Mode</td><td>Enable the label peel off mode.</td></tr><tr><td>Cutter Mode</td><td>Enable the label cutter mode.</td></tr><tr><td>Cutter Batch</td><td>Cut the label once at the end of the printing job.</td></tr></table></td><td>Batch Mode</td></tr>
<tr><td>Offset</td><td>This item is used to fine tune media stop location. Available setting value is from “+” to “-” or “0” to “9”.</td><td>+000</td></tr>
<tr><td>Shift X</td><td rowspan="2">This item is used to fine tune print position. Available setting value is from “+” to “-” or “0” to “9”.</td><td>+000</td></tr>
<tr><td>Shift Y</td><td>+000</td></tr>
<tr><td>Reference X</td><td rowspan="2">This item is used to set the origin of printer coordinate system horizontally and vertically. Available setting value is from “0” to “9”.</td><td>000</td></tr>
<tr><td>Reference Y</td><td>000</td></tr>
<tr><td>Code page</td><td>Use this item to set the code page of international character set.</td><td>850</td></tr>
<tr><td>Country</td><td>Use this option to set the country code.</td><td>001</td></tr>
</table>

Note: If printing from enclosed software/driver, the software/driver will send out the commands, which will overwrite the settings set from the panel.

5.4 ZPL2

This “ZPL2” category can set up the printer settings for ZPL2.



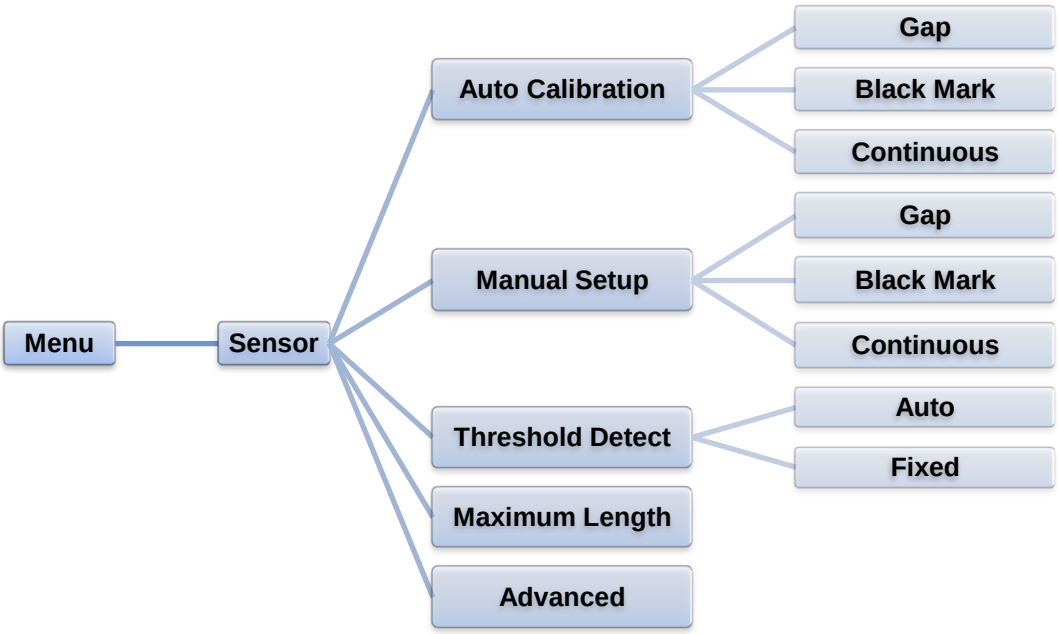
<table>
<tr><th>Item</th><th>Description</th><th>Default</th></tr>
<tr><td>Darkness</td><td>Use this item to setup printing darkness. The available setting is from 0 to 30, and the step is 1. You may need to adjust your density based on selected media.</td><td>16</td></tr>
<tr><td>Print Speed</td><td>Use this item to setup print speed. The each increase or decrease is 1 ips. Available setting is from 1 to 6.</td><td>N/A</td></tr>
<tr><td>Tear Off</td><td>This item is used to fine tune media stop location. Available setting value is from “+” to “-” or “0” to “9”.</td><td>+000</td></tr>
<tr><td>Print mode</td><td>This item is used to set the print mode. There are 3 modes as below,
<table>
<tr><th>Printer Mode</th><th>Description</th></tr>
<tr><td>Tear Off</td><td>Next label top of form is aligned to the print head burn line location.</td></tr>
<tr><td>Peeler Off</td><td>Enable the label peel off mode.</td></tr>
<tr><td>Cutter</td><td>Enable the label cutter mode</td></tr>
</table></td><td>Tear Off</td></tr>
<tr><td>Print Width</td><td>This item is used to set print width. The available value is from “0” to “9”.</td><td>812</td></tr>
<tr><td>List Fonts</td><td>This feature is used to print current printer available fonts list to the label. The fonts stored in the printer’s DRAM, Flash or optional memory card.</td><td>N/A</td></tr>
<tr><td>List Images</td><td>This feature is used to print current printer available images list to the label. The images stored in the printer’s DRAM, Flash or optional memory card.</td><td>N/A</td></tr>
<tr><td>List Formats</td><td>This feature is used to print current printer available formats list to the label. The formats stored in the printer’s DRAM, Flash or optional memory card.</td><td>N/A</td></tr>
<tr><td>List Setup</td><td>This feature is used to print current printer configuration to the label.</td><td>N/A</td></tr>
<tr><td>Control Prefix</td><td>This feature is used to set control prefix character.</td><td>N/A</td></tr>
<tr><td>Format Prefix</td><td>This feature is used to set format prefix character.</td><td>N/A</td></tr>
<tr><td>Delimiter Char</td><td>This feature is used to set delimiter character.</td><td>N/A</td></tr>
</table>

<table>
<tr><td>Media Power Up</td><td>This option is used to set the action of the media when you turn on the printer.<table><tr><th>Selections</th><th>Description</th></tr><tr><td>Feed</td><td>Printer will advance one label</td></tr><tr><td>Calibration</td><td>Printer will calibration the sensor levels, determine length and feed label</td></tr><tr><td>Length</td><td>Printer determine length and feed label</td></tr><tr><td>No Motion</td><td>Printer will not move media</td></tr></table></td><td>No Motion</td></tr>
<tr><td>Head Close</td><td>This option is used to set the action of the media when you close the print head.<table><tr><th>Selections</th><th>Description</th></tr><tr><td>Feed</td><td>Printer will advance one label</td></tr><tr><td>Calibration</td><td>Printer will calibration the sensor levels, determine length and feed label</td></tr><tr><td>Length</td><td>Printer determine length and feed label</td></tr><tr><td>No Motion</td><td>Printer will not move media</td></tr></table></td><td>No Motion</td></tr>
<tr><td>Label Top</td><td>This option is used to adjust print position vertically on the label. The range is -120 to +120 dots.</td><td>0</td></tr>
<tr><td>Left Position</td><td>This option is used to adjust print position horizontally on the label. The range is -9999 to +9999 dots.</td><td>+0000</td></tr>
<tr><td>Reprint Mode</td><td>When reprint mode is enabled, you can reprint the last label printer by pressing ⌃ button on printer’s control panel.</td><td>Disabled</td></tr>
<tr><td>Format Convert</td><td>Selects the bitmap scaling factor. The first number is the original dots per inch (dpi) value; the second, the dpi to which you would like to scale.</td><td>None</td></tr>
</table>

Note: If printing from enclosed software/driver, the software/driver will send out the commands, which will overwrite the settings set from the panel.

5.5 Sensor

This option is used to calibrate the selected sensor. We recommend calibrate the sensor before printing when changing the media.



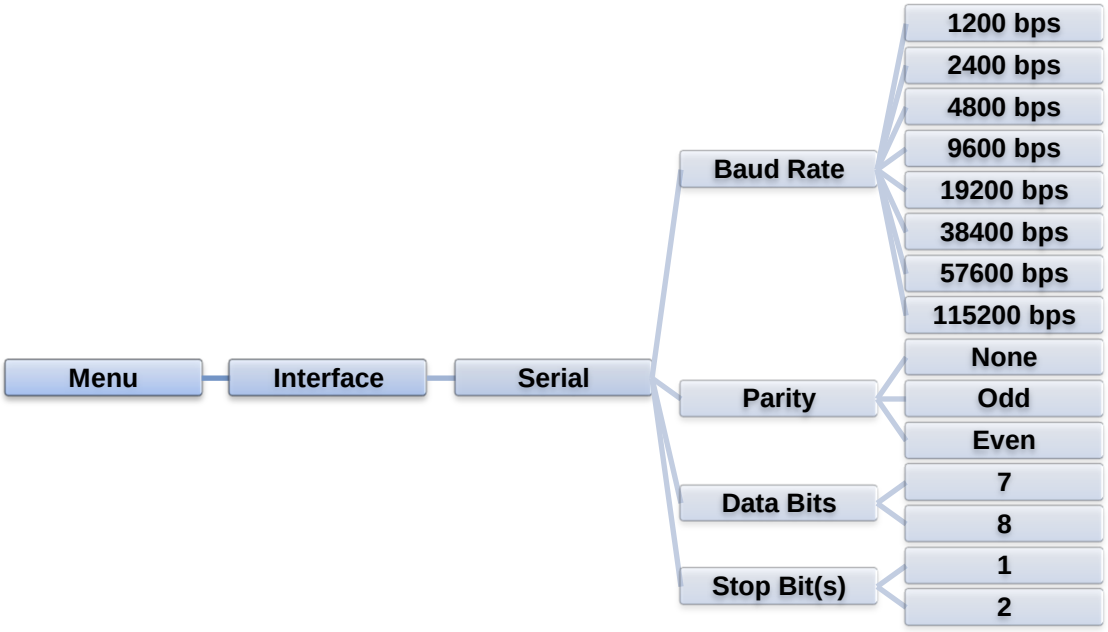
Item	Description	Default
Auto Calibration	This option is used to set the media sensor type and calibrate the selected sensor automatically. Printer will feed 2 to 3 gap labels to calibrate the sensor sensitivity automatically.	N/A
Manual setup	In case “Automatic” cannot apply to the media, please use “Manual” function to set the paper length and gap/bline size then scan the backing/mark to calibrate the sensor sensitivity.	N/A
Threshold Detect	This option is used to set sensor sensitivity in fixed or auto.	Auto
Maximum Length	This option is used to set the maximum length for label calibration.	254 mm
Advanced	This function can set the minimum paper length and maximum gap/bline length for auto-calibrate the sensor sensitivity.	N/A

5.6 Interface

This option is used to set the printer interface settings.

5.6.1 Serial Comm.

This option is used to set the printer RS-232 settings.



Item	Description	Default
Baud Rate	This item is used to set the RS-232 baud rate.	9600
Parity	This item is used to set the RS-232 parity.	None
Data Bits	This item is used to set the RS-232 Data Bits.	8
Stop Bit(s)	This item is used to set the RS-232 Stop Bits.	1

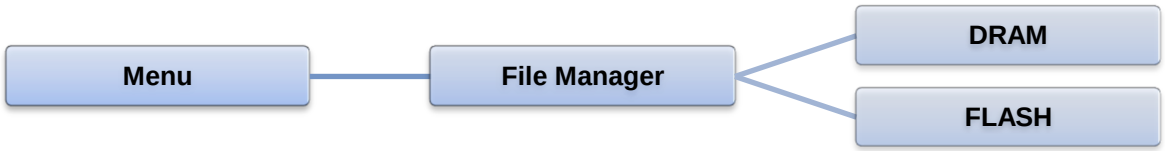
5.6.2 Ethernet

Use this menu to configure internal Ethernet configuration check the printer's Ethernet module status, and reset the Ethernet module.

Item	Description	Default
Status	Use this menu to check the Ethernet IP address and MAC setting status.	N/A
DHCP	This item is used to ON or OFF the DHCP (Dynamic Host Configuration Protocol) network protocol.	N/A
Static IP	Use this menu to set the printer's IP address, subnet mask and gateway.	N/A

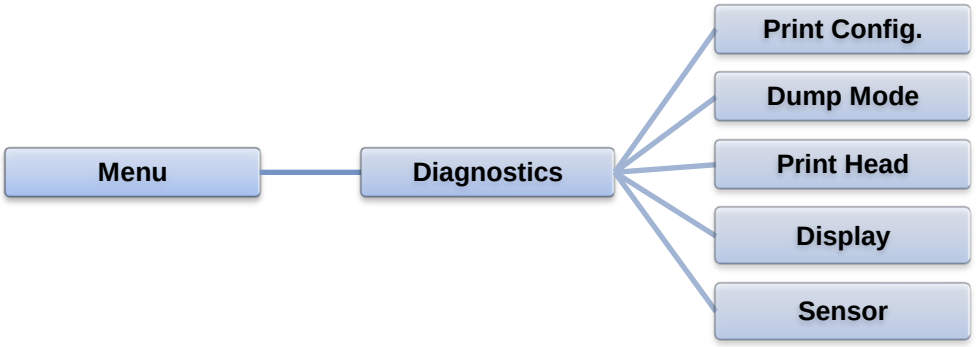
5.7 File Manager

This feature is used to check the printer available memory and file list.



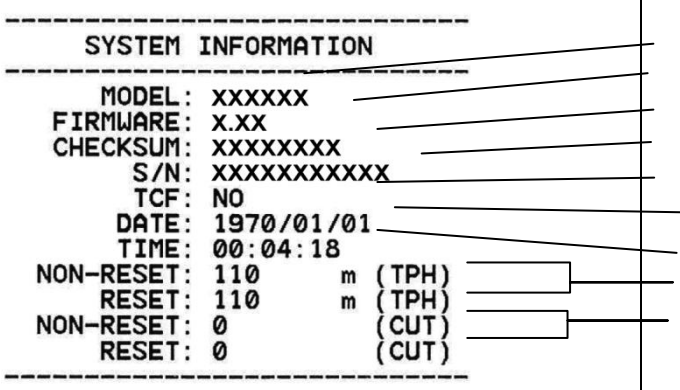
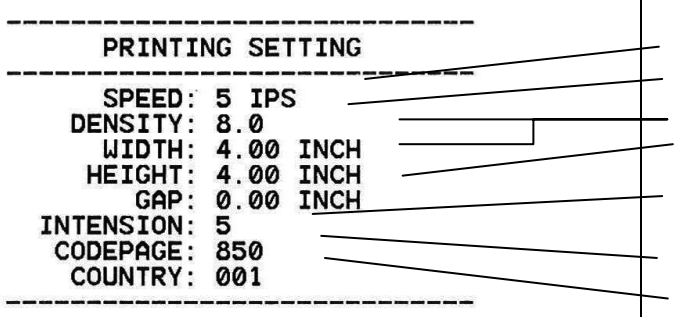
Item	Description
DRAM	Use this menu to show, delete and run (.BAS) the files saved in the printer DRAM memory.
FLASH	Use this menu to show, delete and run (.BAS) the files saved in the printer Flash memory.

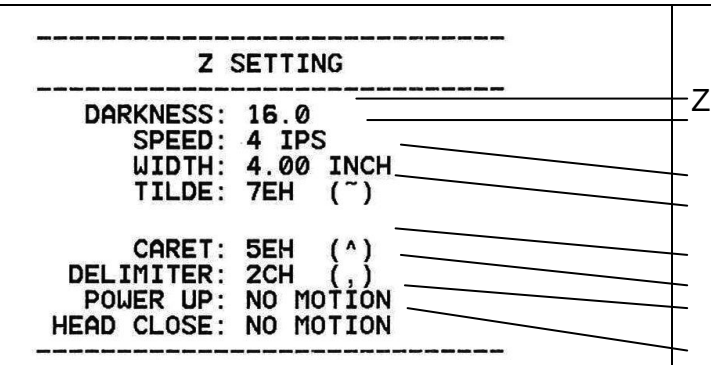
5.8 Diagnostics



5.8.1 Print Config.

This feature is used to print current printer configuration to the label. On the configuration printout, there is a print head test pattern, which is useful for checking if there is any dot damage on the print head heater element.

Self-test printout	
	Model name F/W version Firmware checksum Printer S/N Configuration file System date System time Printed mileage (meter) Cutting counter
	Print speed (inch/sec) Print darkness Label size (inch) Gap distance (inch) Gap/black mark sensor intension Code page Country code



ZPL setting information

Print darkness

Print speed (inch/sec)

Label size

Control prefix

Format prefix

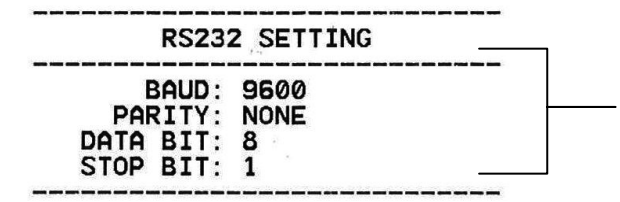
Delimiter prefix

Printer power up motion

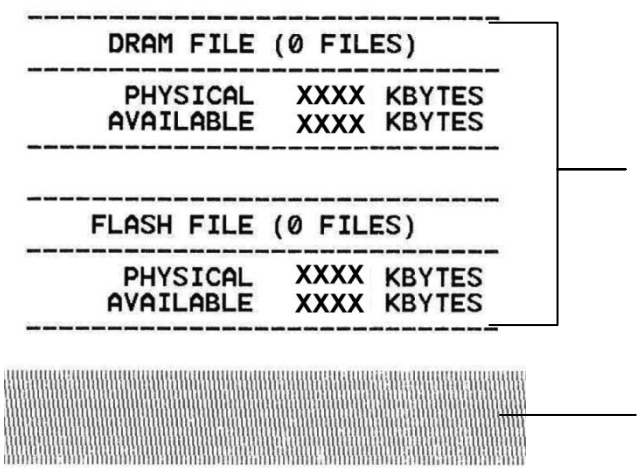
Printer head close motion

Note:

ZPL is emulating for Zebra® language.



RS232 serial port configuration



Numbers of download files
Total & available memory space

Print head check pattern

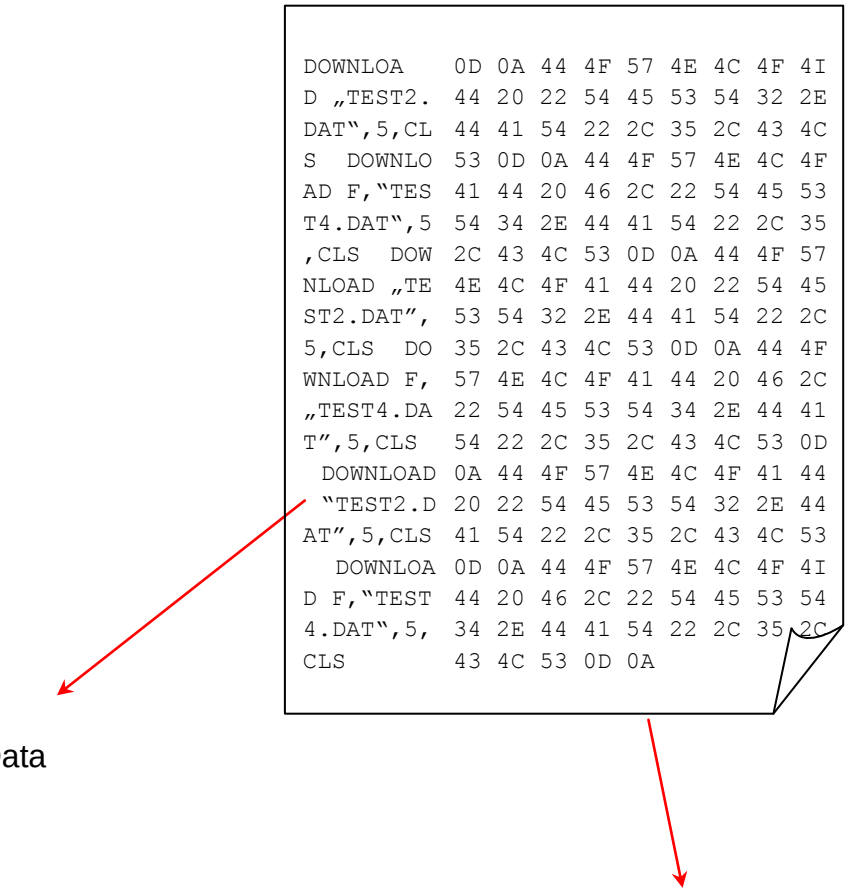
Note:

Checking dot damage requires 4” wide paper width.

5.8.2 Dump Mode

Captures the data from the communications port and prints out the data received by printer. In the dump mode, all characters will be printed in 2 columns. 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.

Menu → **Diagnostics** → **Dump Mode**



Note:

Dump mode requires 4” wide paper width.

5.8.3 Print Head

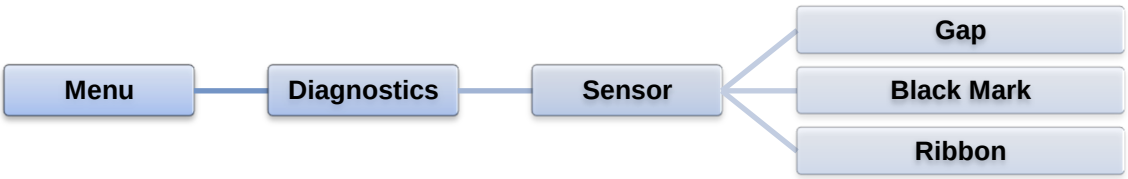
This feature can check the temperature, resistance and bad dots for print head.

5.8 4 Display

This feature can check the display for printer.

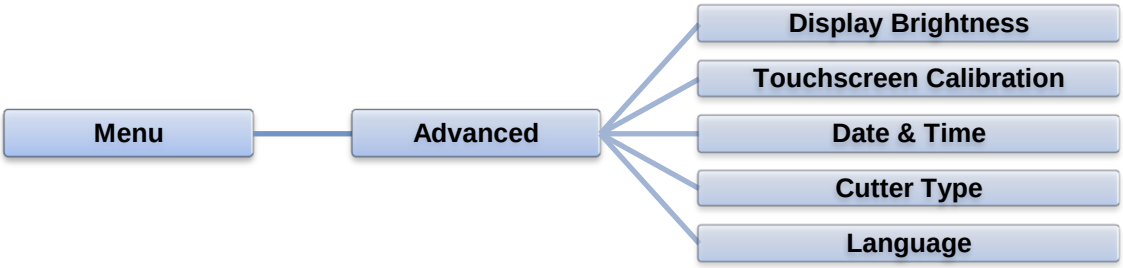
5.8.5 Sensor

This feature can check the intension & reading values for printer sensors.



5.9 Advanced

This feature is used to set the printer advanced settings.



Item	Description
Display Brightness	This item is used to setup the brightness for display.
Touchscreen Calibration	This item is used to calibrate the center of the cross for best result for touchscreen.
Date & Time	This item is used to setup the date and time on display.
Cutter Type	This item is used to set the cutter type.
Language	This item is used to setup the language on display.

5.10 Service

This feature is used to restore printer settings to defaults and checking information for printer.

Item	Description
Initialization	This feature is used to restore printer settings to defaults.
Printer Information	This feature is used to check printer serial number, printed mileage(m), labels(pcs.) and cutting counter.
Contact us	This feature is used to check the contact information for tech support service

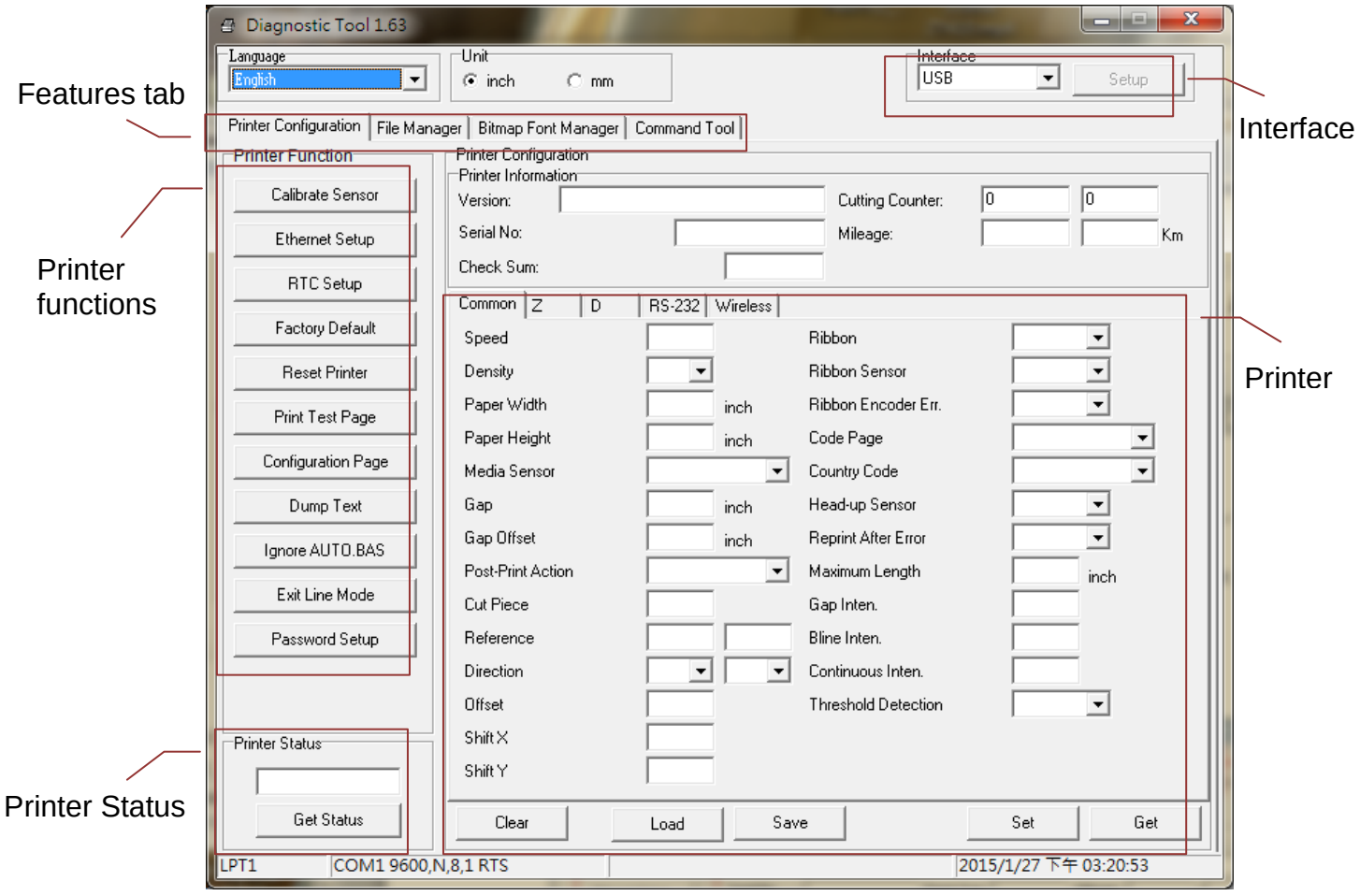
6. Diagnostic Tool

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 the aid of this powerful tool, you can review printer status and setting in an instant, which makes it much easier to troubleshoot problems and other issues.

6.1 Start the Diagnostic Tool

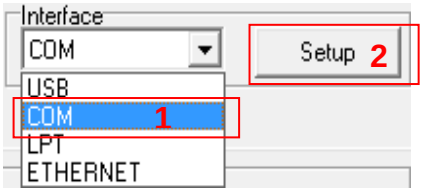
1. Double click on the Diagnostic tool icon DiagTool.exe to start the software.

2. There are four features (Printer Configuration, File Manager, Bitmap Font Manager, Command Tool) included in the Diagnostic utility.



6.2 Printer Function

1. Connect the printer and computer with a cable.
2. Select the PC interface connected with bar code printer.

USB cable	Other cable
 The default interface setting is USB interface. If USB interface is connected with printer, no other settings need to be changed in the interface field.	

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

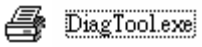
Function	Description
Calibrate Sensor	Calibrate the sensor specified in the Printer Setup group media sensor field
Ethernet Setup	Setup the IP address, subnet mask, gateway for the on board Ethernet
RTC Setup	Synchronize printer Real Time Clock with PC
Factory Default	Initialize the printer and restore 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
Exit Line Mode	Exit line mode.
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.

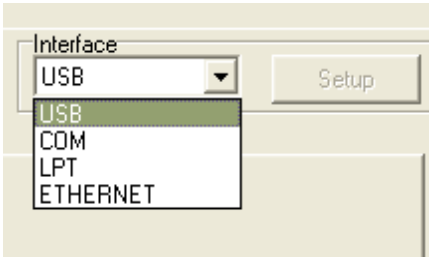
6.3 Setting Ethernet by Diagnostic Tool

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.

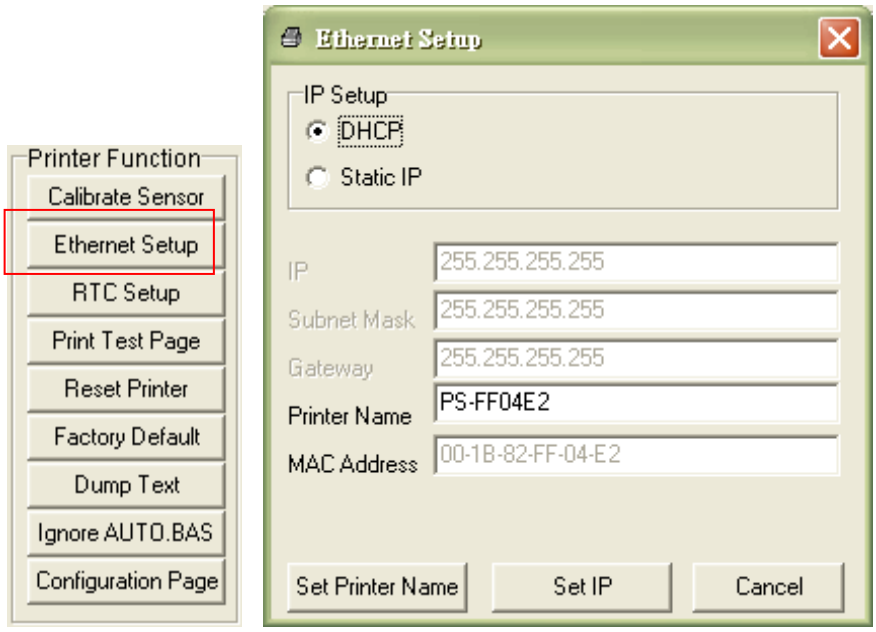
6.3.1 Using USB interface to setup Ethernet interface

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

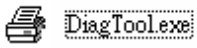
icon.
4. The Diagnostic Utility default interface setting is USB interface. If USB interface is connected with printer, no other settings need to be changed in the interface field.



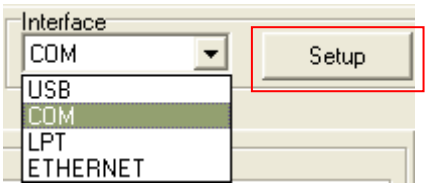
5. Click on the “Ethernet Setup” button from “Printer Function” group in Printer Configuration tab to setup the IP address, subnet mask and gateway for the on board Ethernet.

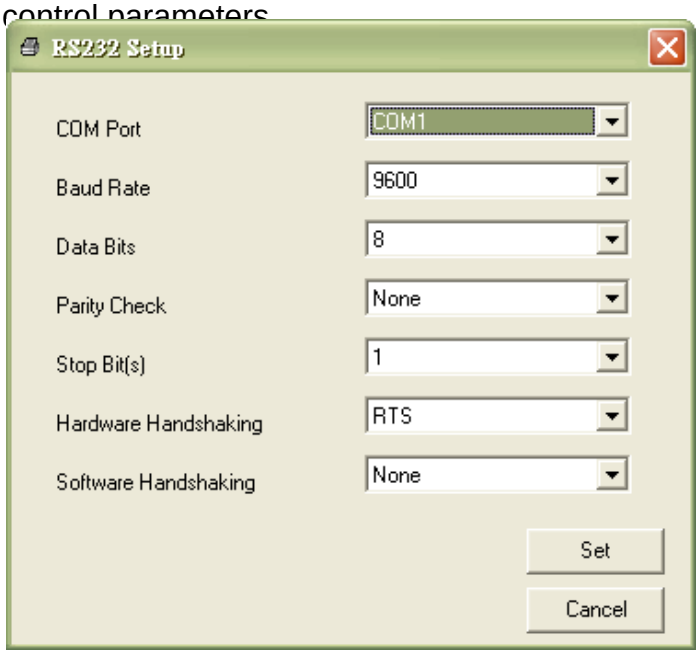


6.3.2 Using RS-232 interface to setup Ethernet interface

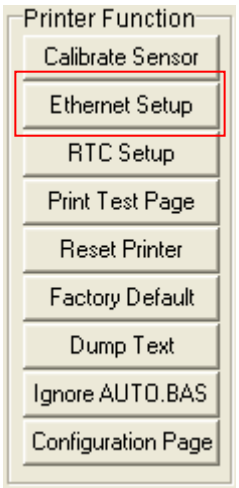
1. Connect the computer and the printer with a RS-232 cable.
2. Turn on the printer power.
3. Start the Diagnostic Utility by double clicks on the 

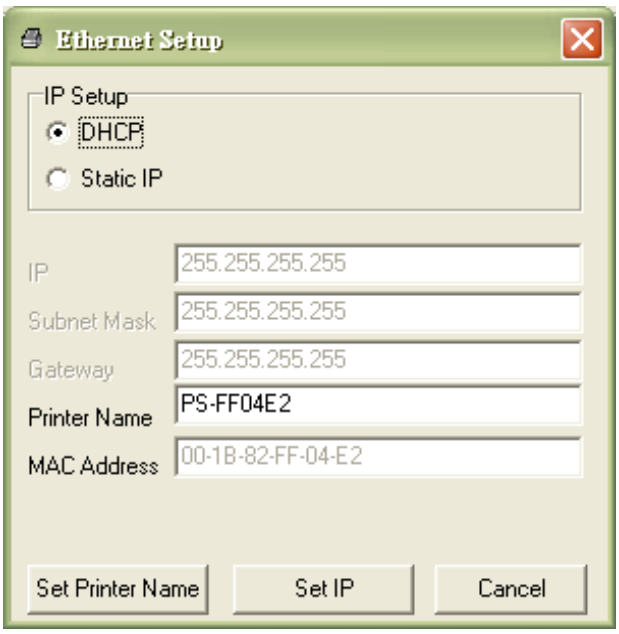
icon.
4. Select “COM” as interface then click on the “Setup” button to setup the serial port baud rate, parity check, data bits, stop bit and flow control parameters.



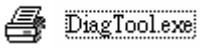


5. Click on the “Ethernet Setup” button from printer function of Printer Configuration tab to setup the IP address, subnet mask and the gateway for the on board Ethernet.

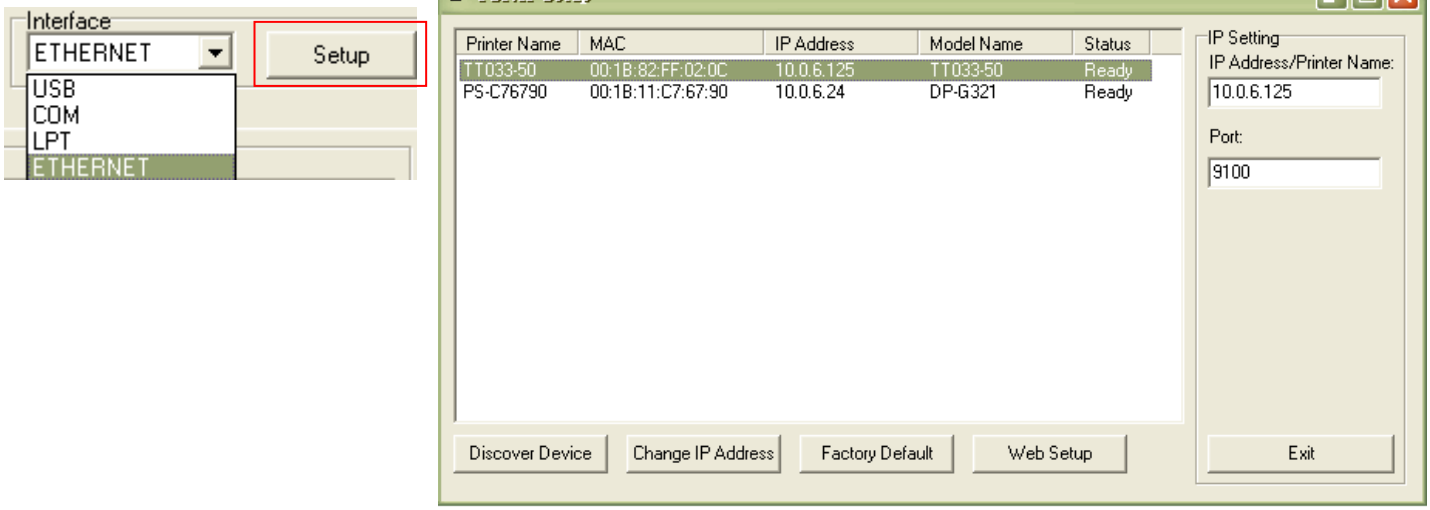




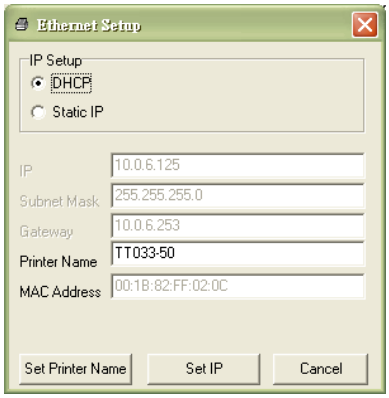
6.3.3 Using Ethernet interface to setup Ethernet interface

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 

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.

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.

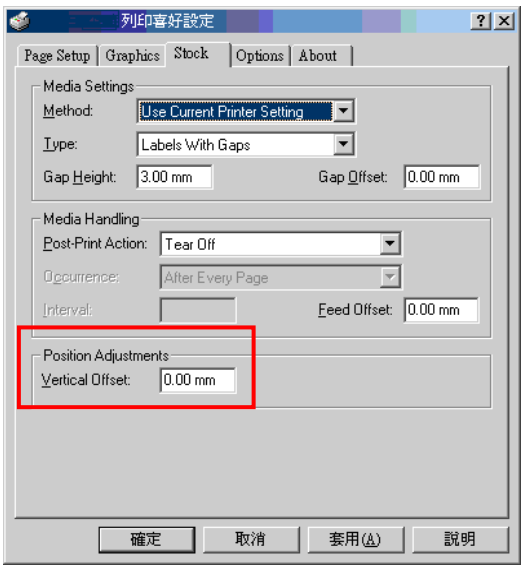
7. Troubleshooting

The following guide lists the most common problems that may be encountered when operating this bar code 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.

Problem	Possible Cause	Recovery Procedure
Power indicator does not illuminate	* The power cord is not properly connected.	* Plug the power cord in printer and outlet. * Switch the printer on.
Carriage Open	* The printer carriages are open.	* Please close the print carriages.
Not Printing	* Check if interface cable is well connected to the interface connector. * Check if wireless or Bluetooth device is well connected between host and printer. * The port specified in the Windows driver is not correct.	* Re-connect cable to interface or chang a new cable. * Please reset the wireless device setting. * Select the correct printer port in the driver. * Clean the printhead. * Printhead's harness connector is not well connected with printheat. 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.
No print on the label	* Label or ribbon is loaded not correctly. * Use wrong type paper or ribbon	* Follow the instructions in loading the media and ribbon. * Ribbon and media are not compatible. * Verify the ribbon-inked side. * The print density setting is incorrect.
No Ribbon	* Running out of ribbon. * The ribbon is installed incorrectly.	* Supply a new ribbon roll. * Please refer to the steps in user's manual to reinstall the ribbon.

No Paper	* Running out of label. * The label is installed incorrectly. * Gap/black mark sensor is not calibrated.	* Supply a new label roll. * Please refer to the steps in user's manual to reinstall the label roll. * Calibrate the gap/black mark sensor.
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 media sensor. * Set media size correctly. * Remove the stuck label inside the printer mechanism.
Take Label	* Peel function is enabled.	* If the peeler module is installed, please remove the label. * If there is no peeler module in front of the printer, please switch off the printer and install it. * Check if the connector is plugging correctly.
Can't downloading the file to memory (FLASH / DRAM/CARD)	* The space of memory is full.	* Delete unused files in the memory.
SD card is unable to use	* SD card is damaged. * SD card doesn't insert correctly. * Use the non-approved SD card manufacturer.	* Use the supported capacity SD card. * Insert the SD card again. * The supported SD card spec and the approved SD card manufacturers, please refer to section 2.2.3.

Poor Print Quality	* 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.	* 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. * Adjust the printhead pressure adjustment knob. * The release lever does not latch the printhead properly.
Missing printing on the left or right side of label	* Wrong label size setup.	* Set the correct label size.
Gray line on the blank label	* The print head is dirty. * The platen roller is dirty.	* Clean the print head. * Clean the platen roller.
Irregular printing	* The printer is in Hex Dump mode. * The RS-232 setting is incorrect.	* Turn off and on the printer to skip the dump mode. * Re-set the Rs-232 setting.
Label feeding is not stable (skew) when printing	* The media guide does not touch the edge of the media.	* If the label is moving to the right side, please move the label guide to left. * If the label is moving to the left side, please move the label guide to right.
Skip labels when printing	* Label size is not specified properly. * Sensor sensitivity is not set properly. * The media sensor is covered with dust.	* 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.

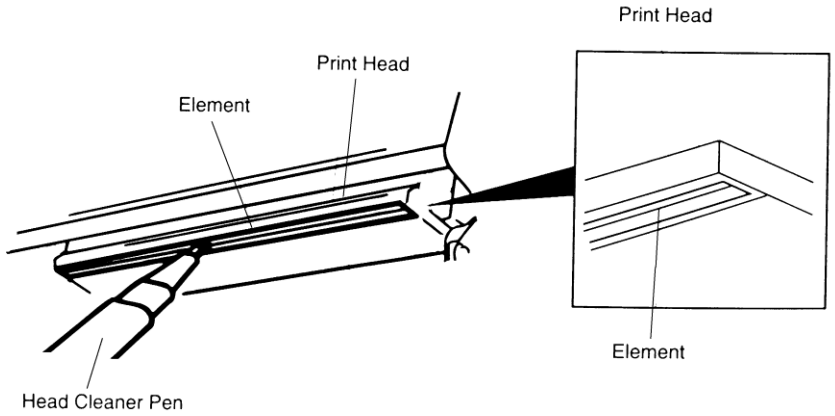
Wrinkle Problem	* Printhead pressure is incorrect. * Ribbon installation is incorrect. * Media installation is incorrect. * Print density is incorrect. * Media feeding is incorrect.	* Please refer to chapter 4.4. * Please set the suitable density to have good print quality. * Make sure the label guide touch the edge of the media guide.
RTC time is incorrect when reboot the printer	* The battery has run down.	* Check if there is a battery on the main board.
The left side printout position is incorrect	* Wrong label size setup. * The parameter Shift X in LCD menu is incorrect.	* Set the correct label size. * Press [MENU] → [SELECT] x 3 → [DOWN] x 5 → [SELECT] to fine tune the parameter of Shift X.
The printing position of small label is incorrect	* 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.	* Calibrate the sensor sensitivity again. * Set the correct label size and gap size. * Press [MENU] → [SELECT] x3→[DOWN]x6 → [SELECT] to fine tune the parameter of Shift Y. * If using the software BarTender, please set the vertical offset in the driver. 

8. Maintenance

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

1. Please use one of following material to clean the printer.
   - Cotton swab
   - Lint-free cloth
   - Vacuum / Blower brush
   - 100% Ethanol or Isopropyl Alcohol

2. 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 and 100% Ethanol or Isopropyl 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 water.</td><td>Clean the platen roller when changing a new label roll</td></tr>
<tr><td>Peel Bar</td><td>Use the lint-free cloth with 100% ethanol 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 cloth</td><td>As needed</td></tr>
<tr><td>Interior</td><td>Brush or vacuum</td><td>As needed</td></tr>
</table>

Note:

- Do not touch printer head by hand. If you touch it careless, please use ethanol to clean it.

- Please use 100% Ethenol or Isopropyl Alcohol. DO NOT use medical alcohol, which may damage the printer head.
- Regularly clean the print head and supply sensors once change a new media to keep printer performance and extend printer life.

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