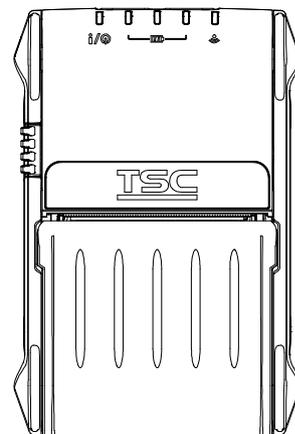# Alpha-2R Series

Direct Thermal Portable Printer

USER'S
MANUAL

Copyright Information

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Agency Compliance and Approvals

$\mathsf{C}\,\mathsf{E}$	**2014/30/EU(EMC), 2014/35/EU(LVD), 2011/65/EU(RoHS 2.0)** **EN 55032 Class B** **EN 55024** **EN61000-3-2:2014** **EN61000-3-3:2013** **EN 60950-1**
FC	**FCC part 15B, Class B** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: -Reorient or relocate the receiving antenna. -Increase the separation between the equipment and receiver. -Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. -Consult the dealer or an experienced radio/ TV technician for help. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. **This Class B digital apparatus complies with Canadian ICES-003** **Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.**
	AS/NZS CISPR 22 Class B **AS/NZS CISPR 32 Class B**
TÜV SÜD	**EN 60950-1**
NOM	**NOM-019-SCFI-1998**
BC	**10 C.F.R. Section 430.23(aa) (Appendix Y to Subpart B of part 430)**
ENERGY STAR	**Energy Star for Imaging Equipment 2.0**

	TP TC 004/2011
EAC	**TP TC 004/2011**
	TP TC 020/2011

(logo)	**LP0002**

Important safety instructions:

1. Read all of these instructions and keep them for later use.
2. Follow all warnings and instructions on the product.
3. Disconnect the power plug from the AC outlet before cleaning or if fault happened. Do not use liquid or aerosol cleaners. Using a damp cloth is suitable for cleaning.
4. The mains socket shall be installed near the equipment and easily accessible.
5. The unit must be protected against moisture.
6. Ensure the stability when installing the device, Tipping or dropping could cause damage.
7. Make sure to follow the correct power rating and power type indicated on marking label provided by manufacture.
8. Please refer to user manual for maximum operation ambient temperature.

WARNING:

Hazardous moving parts, keep fingers and other body parts away.

CAUTION:

(For equipment with RTC (CR2032) battery or rechargeable battery pack)

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

Dispose of used batteries according to the Instructions as below.

1. DO NOT throw the battery in fire.
2. DO NOT short circuit the contacts.
3. DO NOT disassemble the battery.
4. DO NOT throw the battery in municipal waste.
5. The symbol of the crossed out wheeled bin indicates that the battery should not be placed in municipal waste.

⚠ **Caution:** The printhead may be hot and could cause severe burns. Allow the printhead to cool.

CAUTION:

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

CE Statement:

This equipment complies with EU radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator & your body.

All operational modes:

2.4GHz: 802.11b, 802.11g, 802.11n (HT20), 802.11n (HT40)

5GHz: 802.11a,

The frequency, mode and the maximum transmitted power in EU are listed below:

2400 MHz – 2483.5 MHz: 19.88 dBm (EIRP)

5150 MHz – 5250 MHz: 17.51 dBm (EIRP)

5150-5350MHz for Only indoor use

5470-5725MHz for indoor/outdoor use

Restrictions In AZE

National restrictions information is provided below

Frequency Band	Country	Remark
5150-5350MHz	**Azerbaijan**	**No license needed if used indoor and power not exceeding 30mW**
5470-5725MHz		

Hereby, TSC Auto ID Technology Co., Ltd. declares that the radio equipment type [Wi-Fi] IEEE 802.11 a/b/g/n is in compliance with Directive 2014/53/EU

The full text of the EU declaration of conformity is available at the following internet address: http:// www.tscprinters.com

RF exposure warning (Wi-Fi)

This equipment must be installed and operated in accordance with provided instructions and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be providing with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

SAR Value: 0.736 W/kg

RF exposure warning (For Bluetooth)

The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment.

The equipment must not be co-located or operating in conjunction with any other antenna or transmitter.

Canada, Industry Canada (IC) Notices

This Class B digital apparatus complies with Canadian ICES-003 and RSS-210. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Radio Frequency (RF) Exposure Information

The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has been evaluated for and shown compliant with the IC Specific Absorption Rate ("SAR") limits when installed in specific host products operated in portable exposure conditions. **(For Wi-Fi)**

This device has also been evaluated and shown compliant with the IC RF Exposure limits under portable exposure conditions. (Antennas are less than 20 cm of a person's body). **(For Bluetooth)**

Canada, avis de l'Industry Canada (IC)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003 et RSS-210.

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie émise par l'appareil sans fil est inférieure à la limite d'exposition aux fréquences radio de l'Industry Canada (IC). Utilisez l'appareil sans fil de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce périphérique a été évalué et démontré conforme aux limites SAR (Specific Absorption Rate – Taux d'absorption spécifique) par l'IC lorsqu'il est connecté à des dispositifs hôtes spécifiques opérant dans des conditions d'utilisation mobile. **(Pour le Wi-Fi)**

Ce périphérique a également été évalué et démontré conforme aux limites d'exposition radio-fréquence par l'IC pour des utilisations par des opérateurs mobiles (les antennes sont à moins de 20 cm du corps d'une personne). **(Pour le Bluetooth)**

NCC 警語:
經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。(即低功率電波輻射性電機管理辦法第十二條)
低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。(即低功率電波輻射性電機管理辦法第十四條)

警告使用者：
此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

設備名稱：可攜式熱感條碼印表機，主型號：Alpha-2R Series						
Equipment name		Type designation (Type)				
單元Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr^{+6})	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
內外塑膠件	○	○	○	○	○	○
內外鐵件	-	○	○	○	○	○
滾輪	○	○	○	○	○	○
電路板	-	○	○	○	○	○
晶片電阻	-	○	○	○	○	○
積層陶瓷表面 黏著電容	○	○	○	○	○	○
集成電路-IC	-	○	○	○	○	○
電源供應器	○	○	○	○	○	○
印字頭	○	○	○	○	○	○
插座	-	○	○	○	○	○
線材	-	○	○	○	○	○

備考1.〝超出0.1 wt％〞及〝超出0.01 wt％〞係指限用物質之百分比含量超出百分比含量基準值

Note 1："Exceeding 0.1 wt %" and "exceeding 0.01 wt %" indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2.〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值

Note 2："○" indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

Note 3：The "-" indicates that the restricted substance corresponds to the exemption.

備考3.〝—〞係指該項限用物質為排除項目。

MFi for Bluetooth

Made for
 iPhone | iPad | iPod

Use of the Made for Apple badge means that an accessory has been designed to connect specifically to the Apple product(s) identified in the badge, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards.

For US Model

Made for iPhone®XS Max, iPhone XS, iPhone XR, iPhone X, iPhone 8, iPhone 8 Plus, iPhone 7,
iPhone 7 Plus, iPhone SE, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone 5s,
iPad Pro® 12.9-inch (2nd generation), iPad Pro 10.5-inch, iPad® (6th generation),
iPad (5th generation), iPad Pro 9.7-inch, iPad Pro 12.9-inch (1st generation), iPad Air® 2,
iPad mini™ 4, iPad mini 3, iPad Air, iPad mini 2, iPod touch® (6th generation)

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For JP Model

Made for iPhone XS Max, iPhone XS, iPhone XR, iPhone X, iPhone 8, iPhone 8 Plus, iPhone 7,
iPhone 7 Plus, iPhone SE, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone 5s,
iPad Pro 12.9-inch (2nd generation), iPad Pro 10.5-inch, iPad (6th generation), iPad (5th generation),
iPad Pro 9.7-inch, iPad Pro 12.9-inch (1st generation), iPad Air 2, iPad mini 4, iPad mini 3, iPad Air,
iPad mini 2, iPod touch (6th generation)

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Except for US, JP Model

Made for iPhone XS Max, iPhone XS, iPhone XR, iPhone X, iPhone 8, iPhone 8 Plus, iPhone 7,
iPhone 7 Plus, iPhone SE, iPhone 6s, iPhone 6s Plus, iPhone 6, iPhone 6 Plus, iPhone 5s,
iPad Pro 12.9-inch (2nd generation), iPad Pro 10.5-inch, iPad (6th generation), iPad (5th generation),
iPad Pro 9.7-inch, iPad Pro 12.9-inch (1st generation), iPad Air 2, iPad mini 4, iPad mini 3, iPad Air,
iPad mini 2, iPod touch (6th generation)

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Contents

1. Introduction

1.1 Product Introduction

Thank you very much for purchasing TSC bar code printer.

Enjoy TSC's reputation for cost-efficient, high durability printers with the Alpha-2R economical printer. The Alpha-2R is a comfortable, light-weight printer capable of working with any mobile printing application where you need quick, simple receipts/labels on demand.
Our Alpha-2R is designed for a rough life, inside the IP54-rated environmental case to resist dust and water and with its rubber over-mold design prepared to take up to a five-foot fall and keep printing.
These small and light printers can be worn comfortably for a full shift, without interfering with the user's tasks. Use USB or optional Bluetooth, 802.11 a/b/g/n Wireless or Serial to connect to a mobile computer or even a smartphone and produce clear easy-to-read receipts hour after hour.

This document provides an easy reference for operating the Alpha-2R.
The online version of the Programmer's manual, or more information can be downloaded from service and support website as an Adobe$^{®}$ Acrobat$^{®}$ Reader file.
To print label formats, please refer to the instructions provided with your labeling software; if you need to write the custom programs, please refer to the TSPL/TSPL2 programming manual that can be found on the accessories or at [TSC official website](#).

- Applications
    - Direct store deliveries (DSD)
    - Proof of Delivery and Pickup
    - Field Sales/Repairs
    - Mobile Point-of-Sale
    - Parking Citations
    - Mobile Ticketing
    - Onboard Transportation Ticketing
    - Utility Billing/Meter Reading
    - Fleet Management

1.2 Product Features

1.2.1 Printer Standard Features

The printer offers the following standard features.

Product standard feature
Direct thermal printing (receipts & partial label)
Black mark reflective sensor
Head open sensor
3 operation buttons (On/off, feed/pause, and cover-open buttons)
5 LEDs: 1 for printer states (green or red); 3 for Battery capacity (green or orange); 1 for RF status (blue or green)
Audible alert Programmable buzzer
Mini type USB 2.0 (High speed mode)
64 MB DRAM
128 MB Flash memory
32-bit RISC high performance processor
Eltron® EPL, Epson® ESC-POS, and Zebra® ZPL emulation languages support
Fonts and bar codes can be printed in any one of the four directions (0, 90,180, 270 degree)
8 alpha-numeric bitmap fonts
One Monotype Imaging® CG Triumvirate Bold Condensed scalable font
Built-in Monotype True Type Font engine
Downloadable fonts from PC to printer memory
Downloadable firmware upgrades

Text, bar code, graphics/image printing (Please refer to the TSPL/TSPL2 programming manual for supporting code page)		
Supported bar code		Supported image
1D bar code	2D bar code	
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 add-on, 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)	BITMAP, BMP, PCX (Max. 256 colors graphics)

1.2.2 Printer Optional Features

The printer offers the following optional features.

Product option feature	User options	Factory options
Bluetooth V4.0 + EDR Standard mode ; support SMART READY		◯
Wi-Fi 802.11 a/b/g/n		◯
Bluetooth V4.2 + MFi ; support SMART READY		◯
NFC tag		◯
NFC (tag & reader)		◯
TSPL-EZ, CPCL or ESC-POS emulation		◯
128 MB DRAM memory		◯
256 MB Flash memory		◯
1 bay battery charger station	◯	
4 bay batteries charger station	◯	
Vehicle power adapter	◯	
12-24V DC automobile cigarette lighter plug	◯	

IP54-rated environmental case with shoulder strap	○	
Mini type USB cable	○	
Mini type USB to RS232 cable	○	
Li-ion battery	○	
Belt strap	○	
Fork truck mount	○	
Cart mount	○	
1"/2" media adapter	○	
Linerless mode		○

1.3 General Specifications

General Specifications	
Physical dimensions	89.3 mm (W) 134.5 mm (H) x 56.5 mm (D)
Enclosure	Plastic
Weight (w/ battery)	350g
Electrical	Internal charging capability (battery-in) ■ 12VDC automobile cigarette lighter plug ■ Auto-switching AC adapter External charging capability (battery-out) ■ 1 bay battery charger station - Input: 100 ~ 240VAC - Output: 12 VDC, 1.5 A ■ 4 bay batteries charger station - Input: 100 ~ 240VAC - Output: 12 VDC, 1.5 A Note: The printer will automatically turn off when stopping operation after 30 minutes.
Environmental condition	Operation Temperature: -20 ~ 50˚C (-4 ~ 122˚F) Charging Temperature: 0 ~ 40˚C (32 ~ 104˚F) Storage Temperature: -30 ~ 70 ˚C (-22 ~ 158˚F) Relative Humidity: - Operation: 10% to 90% non-condensing - Storage: 10% to 90% non-condensing IP54 w/ protective case

	IP42 w/o protective case Drop 1.5m (5ft) Drop 2.0m (6.5ft) w/ IP54-rated environmental case with shoulder strap

1.4 Print Specifications

Print Specifications	Alpha-2R
Print head resolution	203 dots/inch (8 dots/mm)
Printing method	Direct thermal (receipts & partial label)
Dot size (width x length)	0.125 x 0.125 mm (1 mm = 8 dots)
Print speed (inches per second)	Max. 4 ips (102 mm/sec) Max. 2 ips for linerless mode
Max. print width	48 mm (1.89")
Max. print length	Continuous receipt paper: 2,286 mm (90")
Printout bias	Vertical: 1 mm max.
	Horizontal: 1 mm max.

1.5 Media Specifications

Media Specifications	Alpha-2R
Media roll capacity	Label: 50 mm
Media type	Continuous, die-cut, receipt, and black mark
Media wound type	Outside wound
Media length	12.7 mm (0.5") ~ 2,286 mm (90") Tear mode: 50.8 mm (2.0") (suggested shortest printing length)
Media width	w/o adapter: 58 mm *w/ adapter: 50.8 mm and 25.4 mm ID core: 10.2 mm (0.4")
Media thickness	Receipt: 0.05 mm to 0.10 mm (2 mil to 4 mil) Label: Max. 0.14 mm (5.5 mil) Linerless: 2 mil ~ 3 mil (0.05 mm ~ 0.08 mm)

**Note: Please locate the black mark on the printing side when using black mark continuous label.**

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.
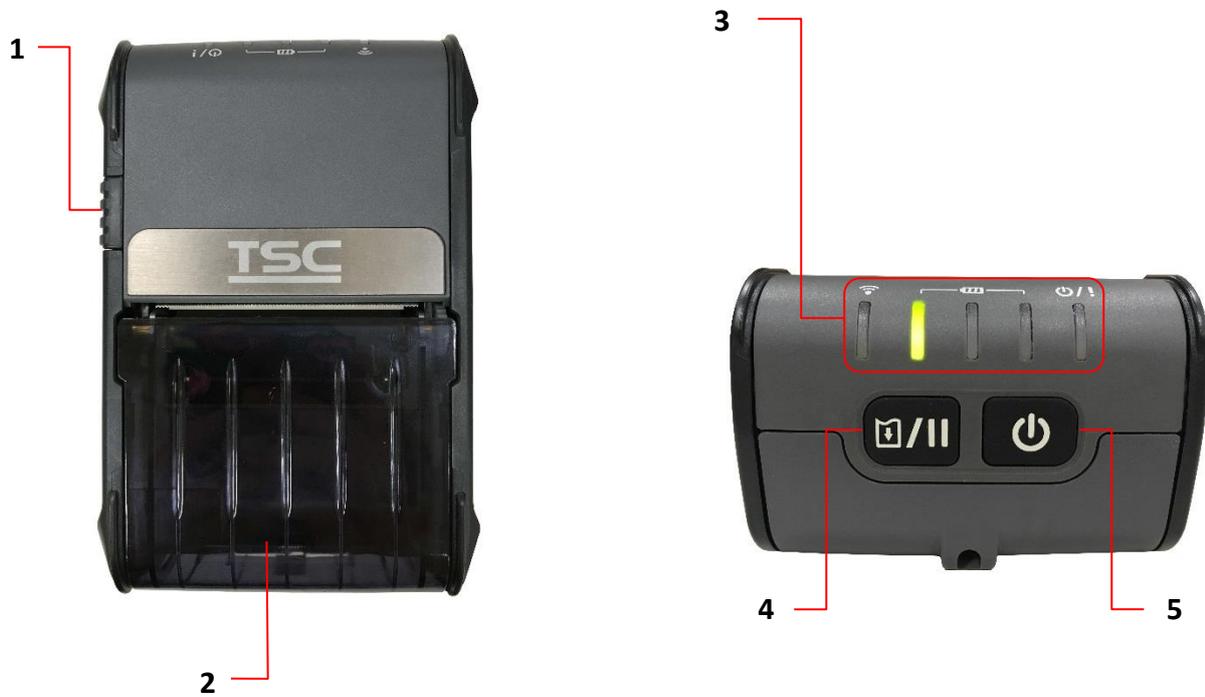
- One printer unit
- One Li-ion battery
- One quick installation guide
- One Auto-switching AC adapter
- One belt clip
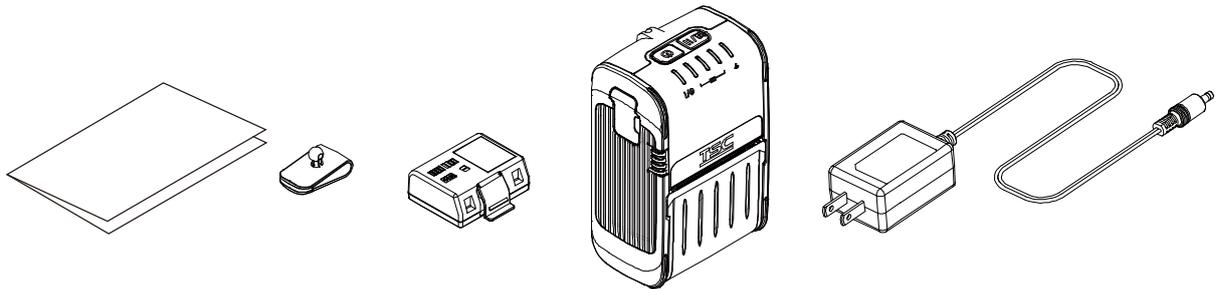
If any parts are missing, please contact the Customer Service Department of your purchased reseller or distributor.

2.2 Printer Overview

2.2.1 Front View
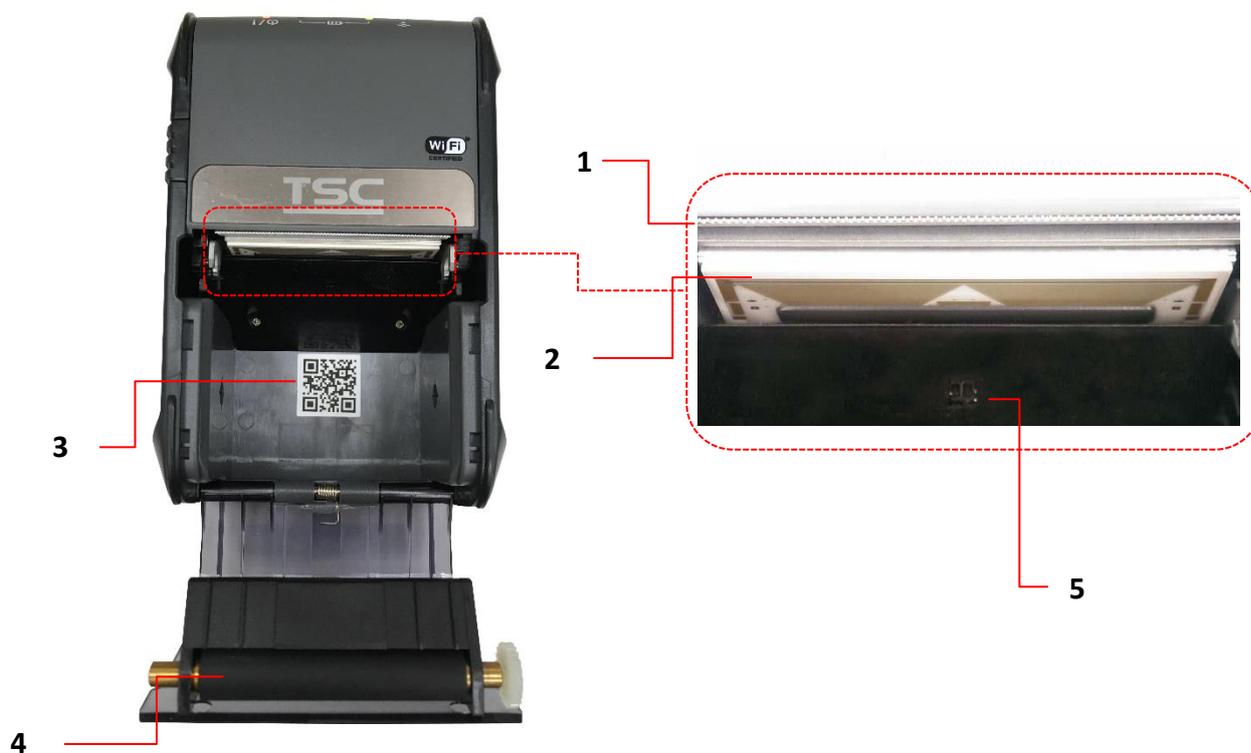

1. Media cover release button
2. Media cover
3. LED indicator
4. Feed/stop button
5. Power on/off button

2.2.2 Interior View

1. Tear edge
2. Print head
3. QR code label (link to TSC website downloads area for more information)
4. Platen roller
5. Black mark sensor

2.2.3 Rear View

1. Li-ion Battery
2. Battery open clasp
3. USB interface
4. Power jack
5. Interface cover

2.3 Operator control

2.3.1 LED Indication and Keys

1. Power on/off button
2. Printer status LED indicator
3. Battery charge level LED indicator
4. Wireless status LED indicator
5. Feed/Pause button

Keys	Function
⏻	1. Press and hold for 2-3 seconds to turn on the printer. 2. Press and hold for 2-3 seconds to turn off the printer.
↧/‖	1. Ready status: Feed one label 2. Printing status: Pause the print job

LED	Status			Indication
Printer status LED indicator ⏻/!	Off			Printer is ready
	Green (blinking)			Printer is paused
	Green (blinking every two seconds)			Sleep mode/ entered the sleep mode after stop working over 2 minutes (The interval can be changed by revising the command, refer to TSPL/TSPL2 programming manual on [TSC website](#)).
	Red (solid)			Media cover is open
	Red (blinking)			Printer error
Battery status LED indicator ⎡▯▯▯⎤	Green (blinking)			Recharge the battery
	Amber (solid)			Battery is charging
	Green (solid)			Fully charged
				2/3 charged level
				1/3 charged level
Wireless/Bluetooth status LED indicator 📶	Bluetooth	Blue (solid)		Bluetooth device is ready
		Blue (blinking)		Bluetooth device is communicating
	Wi-Fi	Green (solid)		Wireless device is ready
		Green (blinking)		Wireless device is communicating
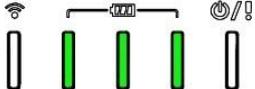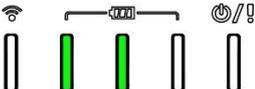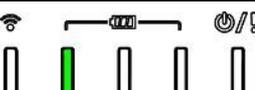
3. Setup

3.1 Install the Battery

	1. Insert the left side of battery to the slot on the rear of the printer.
	2. Push the right side of the battery clasp down and lock the battery.

Battery safety warning:

DO NOT throw the battery in fire. DO NOT short circuit the contacts.

DO NOT disassemble the battery. DO NOT throw the battery in municipal waste.

The symbol of the crossed out wheeled bin (▬) indicates that the battery should not be placed in municipal waste.

3.2 Charge the Battery

It takes 1.5 to 2 hours to fully charge the battery before the first time usage. The lifetime of the battery is 300 times for charge/discharge cycles.

3.2.1 Charge the Battery

	1. Open the interface cover and plug the power cord in to the power jack. **Note:** Please switch OFF printer power prior to plug in the power cord to printer power jack. When the battery is charging, please do not remove the battery from the printer, otherwise, please re-plug the power cord into a power outlet.
	2. Plug the power cord into a properly power outlet.

3. When the battery is charging, the color of battery status LED indicator is solid amber. The amber LED indicator will turned off after the battery is fully charged.
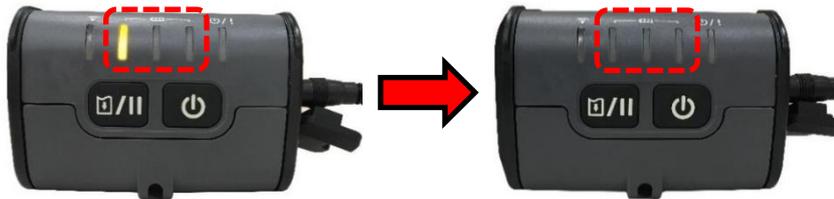
Note:

When checking the battery status, please connect the adapter and push power button, the LED indicator will turn to green then extinguished when the battery is fully charged.

3.2.2 Charge by Charger Station (Optional)

	1. Plug the power cord to the power jack on the charger station.
	2. Insert the battery along the slot to the right side of charger station as pictured.
	3. Push the battery clasp and properly install the battery, it will start charging. **Note:** The battery is completely charged and the amber of LED indicator will be off and turns to green.
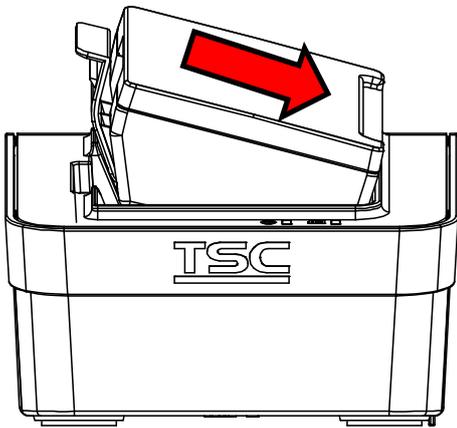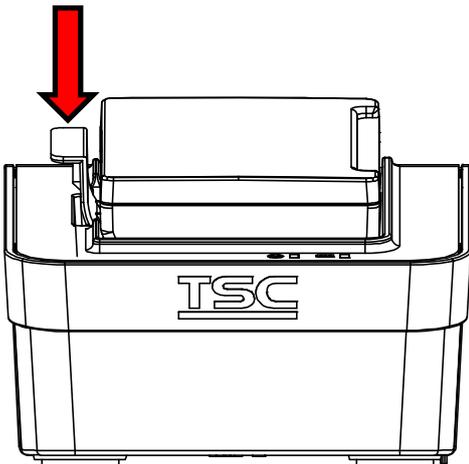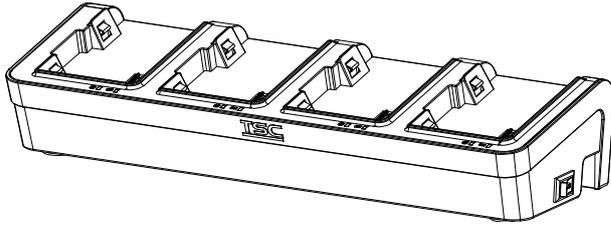
Note:

The four bay batteries charger station is also available for your reference.

LED Color	Description
Green / Solid	Battery is completely charged
Red / Solid	Battery is charging
Red / Blinking	Battery charging error
Off	No battery
	Battery is completely charged over 1.5~2 hrs.

3.3 Communicate

3.3.1 Connecting with the Communication Cable

● USB to USB Cable (Optional)

	1. Open the interface cover and connect the printer to the computer with USB cable.
USB interface	

● USB to RS-232 Cable (Optional)

USB interface (printer) RS-232 port (PC)	1. Open the interface cover and connect the printer to the computer with RS-232 cable.
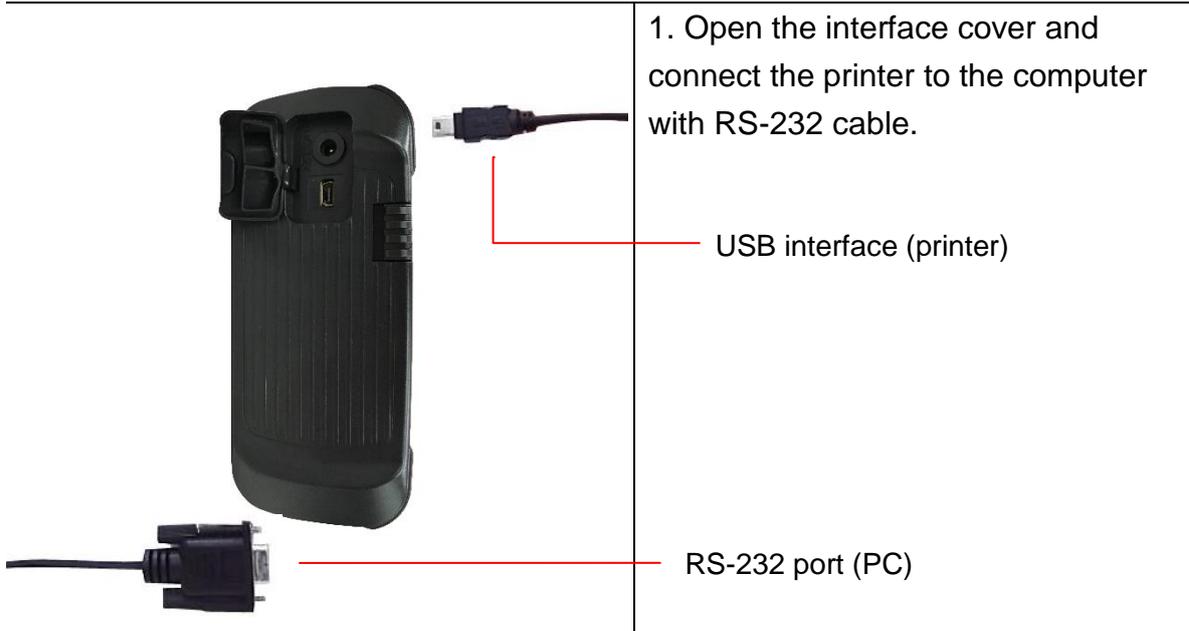
3.3.2 Connecting with Bluetooth (Optional)

Default	Turn on the printer and make sure the Bluetooth of device is opened.
Name	RF-BHS
PIN	0000

Turn on the printer and make sure the Bluetooth of device is opened.

Note:
Please refer to section 6.5 to change the name of default and PIN.

3.4 Loading the Media

	1. Open the printer media cover by pressing the media cover release button.
	2. Place the media roll at the correct side, and pull out enough paper over the tear edge. O X
	3. Press the media cover on both sides to close it and make sure the media cover have closed correctly.
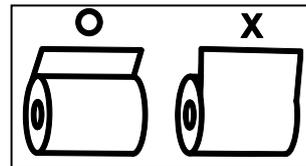
4. Accessories

4.1 Install the Belt Clip

	1. Remove the battery on the rear of the printer and lock the belt clip on the hole above the battery.
	2. Press the ball on the belt clip to the hole as pictured.
	3. After reinstalled the battery, the printer can be hung on the belt.

4.2 Install the IP54-rated environmental case with shoulder strap (Optional)

Top cover	1. Open the case top cover.
	2. Place the printer in the case. **Note:** The printing side must face the outside cover as indicated.
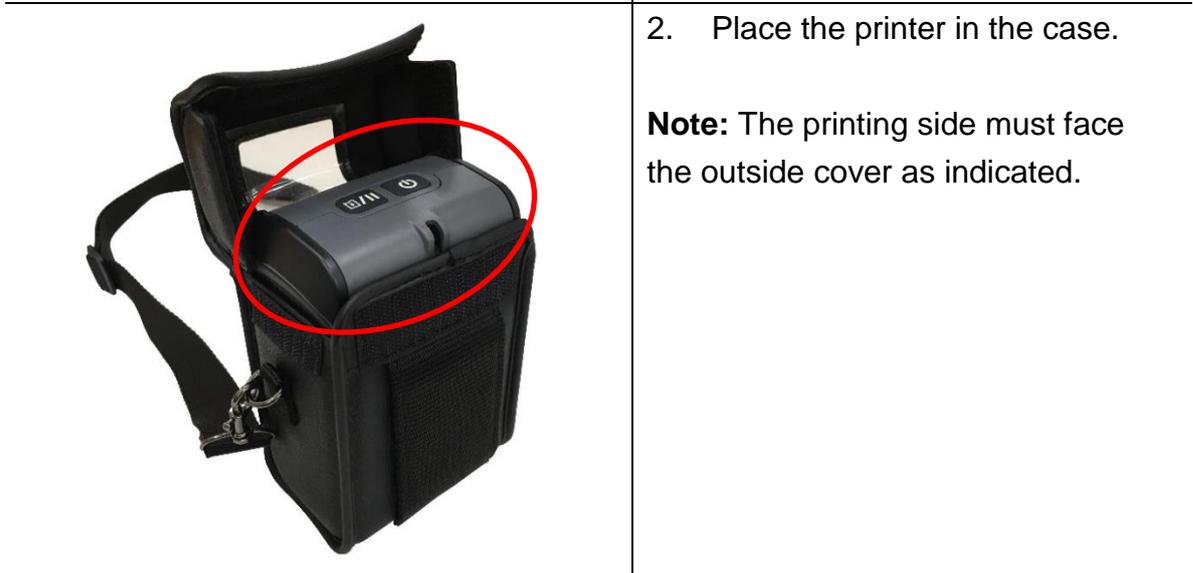
3. Close the case top cover. The outside cover should be opened and fixed while printing.

Outside cover fixed

Outside cover

4.3 Install the media adapter (Optional)

  Media fixing hole	1. Open the printer top cover and install the media adapter in the media fixing hole as indicated.
	2. The media adapters are installed in the media fixing hole on both sides.
 2" media adapter	3. The media which installed in the adapter can prevent the poor print quality. **Note:** Here are 1" and 2" media adapters available for your reference. 1" media adapter

5. Power-on Utilities

There are three power-on utilities to set up and test printer hardware. These utilities are activated by pressing FEED button (⬚/⬚) then turning on the printer power simultaneously and release the button at different positions of LED indicator.

Please follow the steps below for different power-on utilities.
1. Turn off the printer power switch.
2. Hold on the FEED button (⬚/⬚) then turn on the power switch (⏻).
3. Release the button (⬚/⬚) when LED indicates with different positions for different functions.

Power on utilities	The positions of LED light will be changed as following pattern:				
LED / **Functions**	(Solid)	(5 blinks)	(5 blinks)	(5 blinks)	(Solid green)
1. Media sensor calibration		*Release*			
2. Self-test and enter dump mode			*Release*		
3. Printer initialization				*Release*	

5.1 Media Sensor Calibration

Please follow the steps below to calibrate the media sensor.
1. Turn off the power switch.
2. Hold on the FEED button (⬚/⬚) then turn on the power switch.

3. Release the FEED button (⬚/⬚) when the indicator becomes [icon] and blinking. (Any green will do during the 5 blinks)

- It will calibrate the black mark sensor sensitivity.
- The LEDs will be changed as following order:

[icon] (amber) → [icon] **(5 blinks)** → [icon] (5 blinks) →

[icon] (5 blinks) → [icon] (solid green)
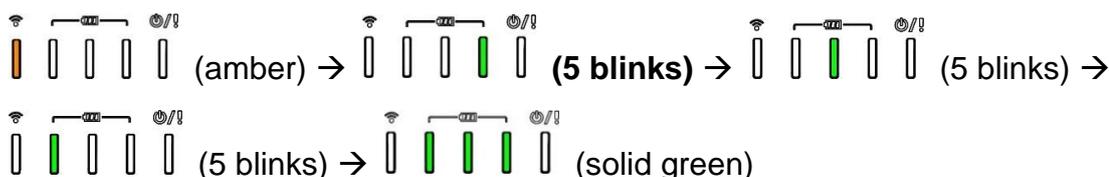
5.2 Self-test and Dump Mode

Please follow the steps below.

1. Turn off the power switch.
2. Hold on the FEED button (▣/▥) then turn on the power switch.
3. Release the FEED button (▣/▥) when the indicator becomes ▯ ▯ ▮ ▯ ▯ and blinking. (Any green will do during the 5 blinks)
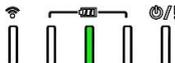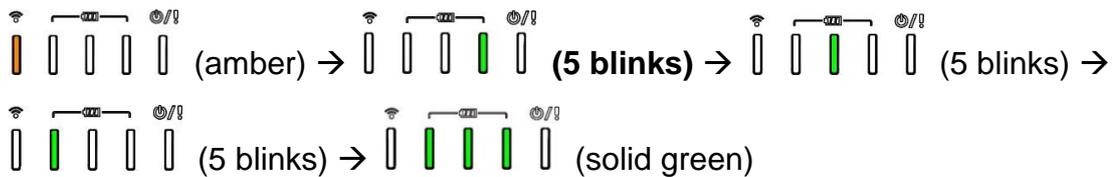
- The LEDs will be changed as following order:

▮ ▯ ▯ ▯ ▯ (amber) → ▯ ▯ ▯ ▮ ▯ **(5 blinks)** → ▯ ▯ ▮ ▯ ▯ (5 blinks) →

▯ ▮ ▯ ▯ ▯ (5 blinks) → ▯ ▮ ▮ ▮ ▯ (solid green)

4. It calibrates the sensor and measures the media length and prints internal settings then enter the dump mode.
5. Turn off / on the power to resume printer for normal printing.

- ### Self-test

Printer will print the printer configuration after media 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

```
--------------------------------
       SYSTEM INFORMATION
--------------------------------
      MODEL: XXXXXX
   FIRMWARE: X.XX
   CHECKSUM: XXXXXXXX
        S/N: XXXXXXXXXXX
        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)
--------------------------------
```

Model name
F/W version
Firmware checksum
Printer S/N
TSC configuration file
System date
System time
Printed mileage (meter)
Cutting counter

```
--------------------------------
        PRINTING SETTING
--------------------------------
      SPEED: 5 IPS                    ───────── Print speed (inch/sec)
    DENSITY: 8.0                      ───────── Print darkness
      WIDTH: 4.00 INCH                ───────── Label size (inch)
     HEIGHT: 4.00 INCH                ───────── Gap distance (inch)
        GAP: 0.00 INCH                ───────── Gap/black mark sensor intension
  INTENSION: 5                        ───────── Code page
   CODEPAGE: 850                      ───────── Country code
    COUNTRY: 001
--------------------------------
```

`SPEED: 5 IPS`	Print speed (inch/sec)
`DENSITY: 8.0`	Print darkness
`WIDTH: 4.00 INCH`	Label size (inch)
`HEIGHT: 4.00 INCH`	Gap distance (inch)
`GAP: 0.00 INCH`	Gap/black mark sensor intension
`INTENSION: 5`	Code page
`CODEPAGE: 850`	Country code
`COUNTRY: 001`	

```
--------------------------------
           Z SETTING
--------------------------------
   DARKNESS: 16.0
      SPEED: 4 IPS
      WIDTH: 4.00 INCH
      TILDE: 7EH  (~)

      CARET: 5EH  (^)
  DELIMITER: 2CH  (,)
   POWER UP: NO MOTION
 HEAD CLOSE: NO MOTION
--------------------------------
```

	ZPL setting information
`DARKNESS: 16.0`	Print darkness
`SPEED: 4 IPS`	Print speed (inch/sec)
`WIDTH: 4.00 INCH`	Label size
`TILDE: 7EH (~)`	Control prefix
`CARET: 5EH (^)`	Format prefix
`DELIMITER: 2CH (,)`	Delimiter prefix
`POWER UP: NO MOTION`	Printer power up motion
`HEAD CLOSE: NO MOTION`	Printer head close motion

Note:
ZPL is emulating for Zebra® language.

```
--------------------------------
         RS232 SETTING
--------------------------------
       BAUD: 9600
     PARITY: NONE
   DATA BIT: 8
   STOP BIT: 1
--------------------------------
```

RS232 serial port configuration

```
--------------------------------
       DRAM FILE (0 FILES)
--------------------------------
    PHYSICAL    XXXX KBYTES
    AVAILABLE   XXXX KBYTES
--------------------------------

--------------------------------
       FLASH FILE (0 FILES)
--------------------------------
    PHYSICAL    XXXX KBYTES
    AVAILABLE   XXXX KBYTES
--------------------------------
```
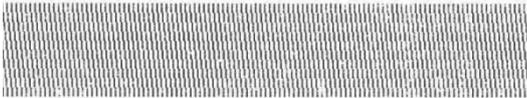
Numbers of download files
Total & available memory space

Print head check pattern

■ Dump mode

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

ASCII Data ⟶

```
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
UTTER OFF    55 54 54 45 52 20 4F 46 46 0D
  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 0D 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
2,6,"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 45
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 2C 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
20,1,0,2,6   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
```

⟵ Hex decimal data related to left column of ASCII data

Note:

1. Dump mode requires 2" wide paper width.

2. Turn off / on the power to resume printer for normal printing.
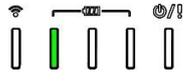
5.3 Printer Initialization

Printer initialization is used to clear DRAM and restore printer settings to defaults. Printer initialization is activated by the following procedures.

1. Turn off the power switch.
2. Hold on the FEED button then turn on the power switch.
3. Release the FEED button when the indicator becomes ▯ ▮ ▯ ▯ ▯ and blinking. (Any green will do during the 5 blinks).
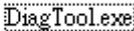
■   The LEDs will be changed as following order:

▮ ▯ ▯ ▯ ▯ (amber) → ▯ ▯ ▯ ▮ ▯ **(5 blinks)** → ▯ ▯ ▮ ▯ ▯ (5 blinks) →

▯ ▮ ▯ ▯ ▯ (5 blinks) → ▯ ▮ ▮ ▮ ▯ (solid green)
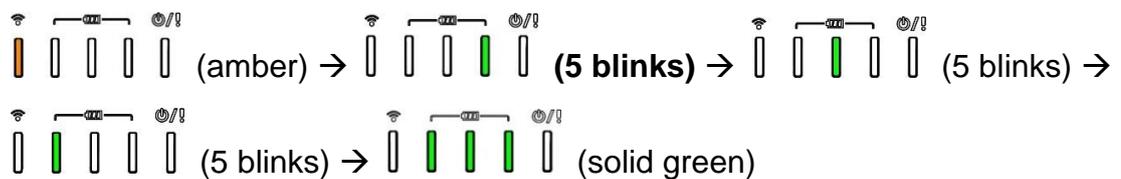
Printer configuration will be restored to defaults as below after initialization.

Parameter	Default setting
Speed	76.2 mm/sec (3 ips)
Density	8
Media Width	1.89" (48 mm)
Media Height	2" (50.8 mm)
Sensor Type	Black mark sensor (As paper end sensor)
Black Mark Setting	As paper end sensor
Print Direction	0
Reference Point	0,0 (upper left corner)
Offset	0
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

6. Diagnostic Tool

TSC's 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 settings in an instant, which makes it much easier to troubleshoot problems and other issues.
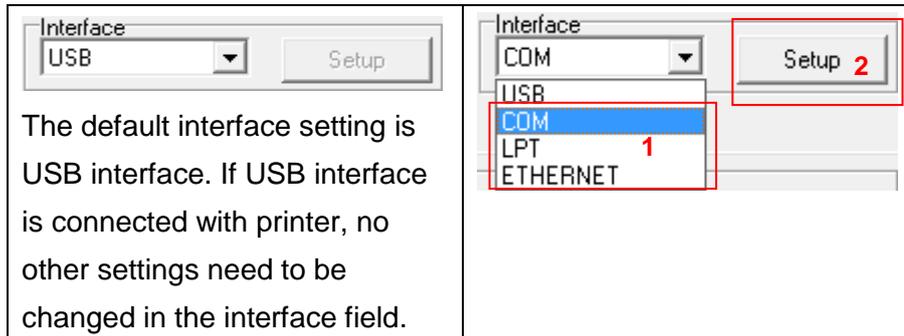
6.1 Start the Diagnostic Tool

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.

Features tab

Interface

Printer functions

Printer setup

Printer Status
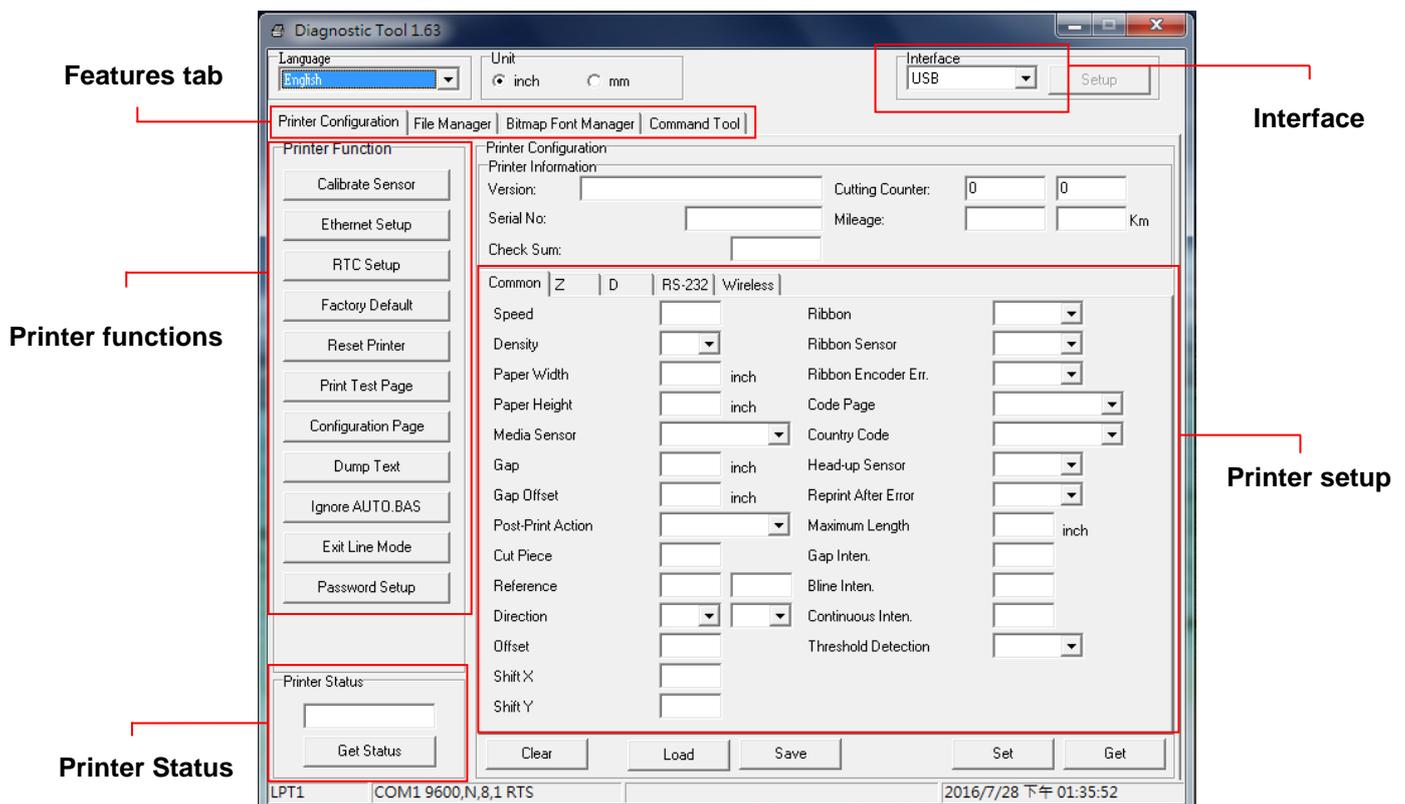
6.2 Printer Function

1. Select the PC interface connected with bar code printer.

Interface USB ▼ Setup 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.	**Interface** COM ▼ Setup **2** USB COM LPT **1** ETHERNET

2. Click the "Printer Function" button to setup.
3. The detail functions in the Printer Function Group are listed as below.

Printer Function	Function	Description
Calibrate Sensor	Calibrate Sensor	Calibrate the sensor specified in the Printer Setup group media sensor field
Ethernet Setup	Ethernet Setup	Setup the IP address, subnet mask, gateway for the on board Ethernet
RTC Setup	RTC Setup	Synchronize printer Real Time Clock with PC
Factory Default	Factory Default	Initialize the printer and restore the settings to factory default. (Please refer section 5.3)
Reset Printer	Reset Printer	Reboot printer
Print Test Page	Print Test Page	Print a test page
Configuration Page	Configuration Page	Print printer configuration (Please refer section 5.2)
Dump Text	Dump Text	To activate the printer dump mode.
Ignore AUTO.BAS	Ignore AUTO.BAS	Ignore the downloaded AUTO.BAS program
Exit Line Mode	Exit Line Mode	Exit line mode.
Password Setup	Password Setup	Set the password to protect the settings

For more information about Diagnostic Tool, please refer to the diagnostic utility quick start guide on TSC website at Downloads \ Manuals \ Utilities \ Diagnostic utility quick start guide**.**
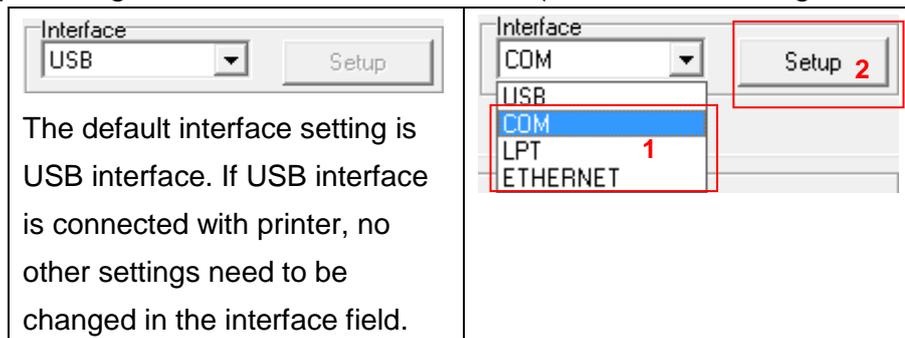
Note: The three different print modes below are available, you can download the command on TSPL/TSPL2 programming manual at TSC official website:

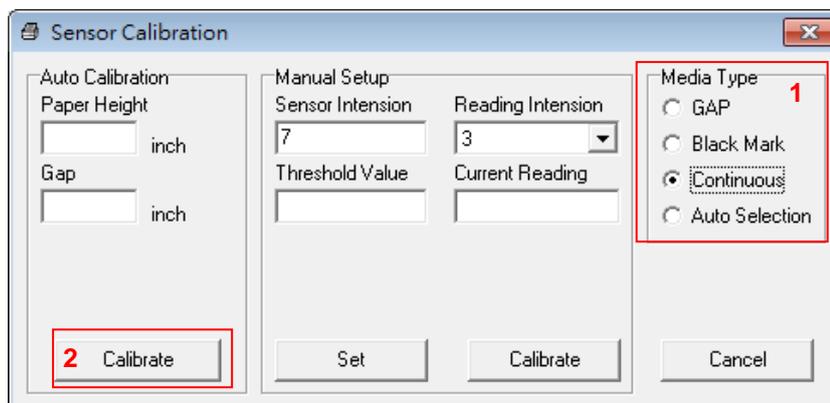| Print modes	
DRAFT	High print speed with lower density.
OPTIMUM	According to the label content such as barcode, text, and graphic to lower the print speed for getting higher print quality.
STANDARD (default)	Standard print speed and quality.

6.3　Calibrating Media Sensor by Diagnostic Tool

6.3.1 Auto Calibration

1. Make sure the media is already installed and media cover is closed. (Please refer to section 3.4)
2. Turn on the printer power switch.
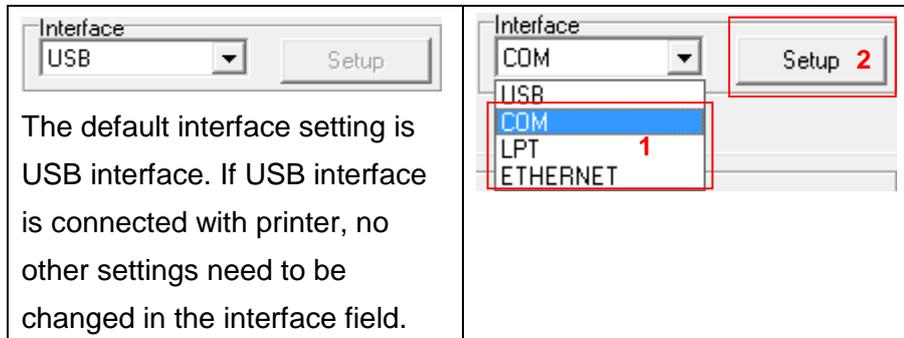3. Open Diagnostic tool and set interface. (The default setting is USB)

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.

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

Note: The Alpha-2R can only support continuous, die-cut, receipt, and black mark media type.

6.4 Setting Wi-Fi by Diagnostic Tool (Optional)

1. Make sure the media is already installed and media cover is closed. (Please refer to section 3.4)
2. Turn on the printer power switch.
3. Open Diagnostic tool and set interface. (The default setting is USB)

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.

4. Select "Wireless" tab and "Built-in wireless module" item.
5. Enter and select the new WLAN settings in the editor.
6. Press "Set" button to set the new settings to the printer.
7. Press "Get" button to make sure WLAN is set properly.
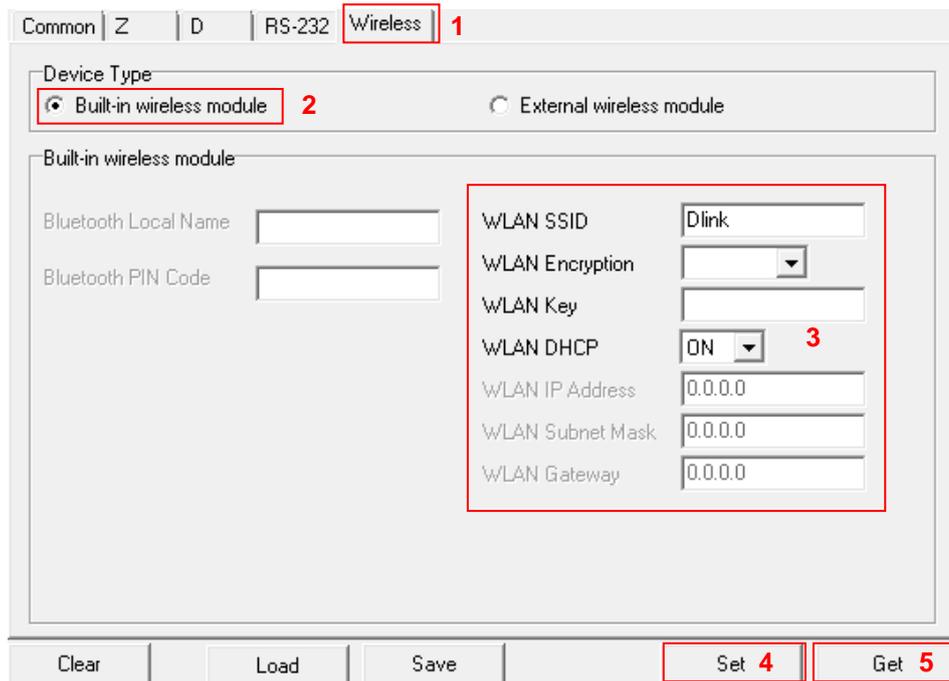
Note:
* **The printer connects with the computer via USB cable or RS-232 cable, which are option.**

6.5 Setting Bluetooth by Diagnostic Tool (Optional)

1. Make sure the media is already installed and media cover is closed. (Please refer to section 3.4)
2. Turn on the printer power switch.
3. Open Diagnostic tool and set interface. (The default setting is USB)

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.
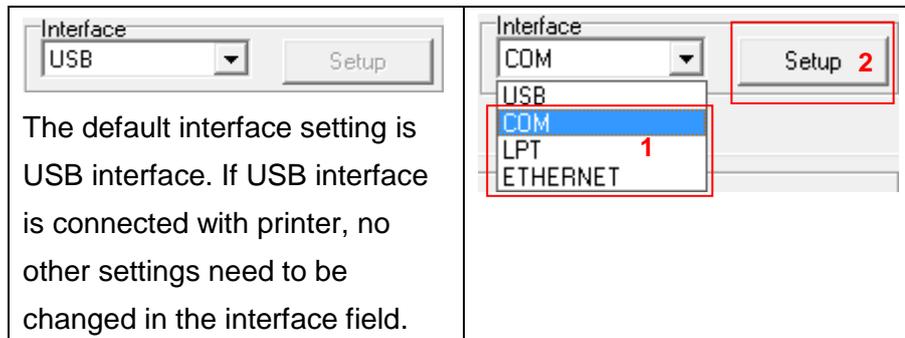
4. Select "Wireless" tab and "Built-in wireless module" item.
5. Enter the new BT Local Name or BT PIN Code in the editor.
6. Press "Set" button to set the new BT name or BT PIN code of the printer.
7. Press "Get" button to get back the settings. Make sure the Bluetooth module settings are set properly.
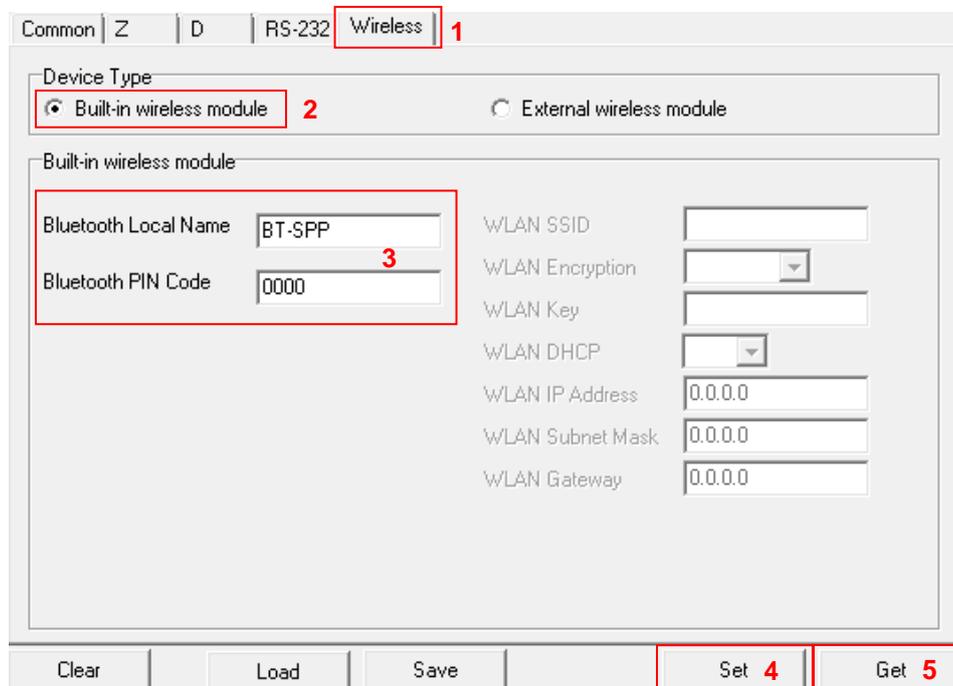
Note:
* The printer connects with the computer via USB cable or RS-232 cable, which are option.

7. Troubleshooting

7.1 Common Problems

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 battery is not properly installed. * The battery is dead.	* Reinstall the battery. * Switch the printer on. * Charge the battery.
- The printer status from DiagTool shows "**Head Open**".	* The printer carriage is open.	* Please close the print carriage.
- The printer status from DiagTool shows "**Out of Paper**".	* Running out of media roll. * The media is installed incorrectly. * Black mark sensor is not calibrated.	* Supply a new media roll. * Please refer to the steps on section 3.4 to reinstall the media roll. * Calibrate the black mark sensor.
- The printer status from DiagTool shows "**Paper Jam**".	* Black mark sensor is not set properly. * Make sure media size is set properly. * Media may be stuck inside the printer mechanism.	* Calibrate the black mark sensor. * Set media size correctly.
Memory full (FLASH / DRAM)	* The space of FLASH/DRAM is full.	* Delete unused files in the FLASH/DRAM. * Run printer self-test and check the available memory space for DRAM or FLASH. * Check the available memory space for DRAM or FLASH via DiagTool.
Poor Print Quality	* Media is loaded incorrectly * Dust or adhesive accumulation on the print head. * Print density is not set properly. * Print head element is damaged.	* 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 media roll.

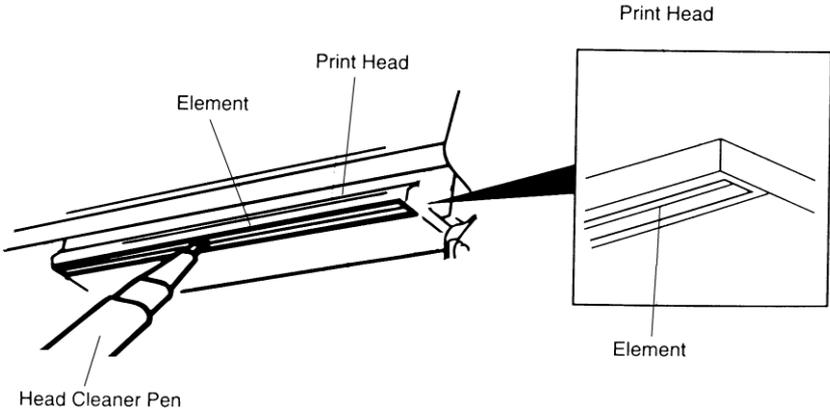|		
Missing printing on the left or right side of label	* Wrong label size setup.	* Set the correct label size.
Gray line on the blank label	* The print head is dirty. * The platen roller is dirty.	* Clean the print head. * Clean the platen roller.
Irregular printing	* The printer is in Hex Dump mode. * The RS-232 setting is incorrect.	* Turn off and on the printer to skip the dump mode. * Re-set the Rs-232 setting.

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,

Printer Part	Method	Interval
Print Head	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. 	Clean the print head when changing a new label roll
Platen Roller	1. Turn the power off. 2. Rotate the platen roller and wipe it thoroughly with water.	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 careless, please use ethanol to clean it.
● Please use 100% Ethanol 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 ribbon to keep printer performance and extend printer life.

Revise History

Date	Content	Editor
2016/11/3	Revise Agency Compliance and Approvals	Kate
2016/11/4	Revise Ch.1.3 General Specifications, Ch.2.3.1 LED Indication and Keys, and Ch.3.2.1 Charge the Battery	Kate
2017/3/9	*Add Ch.1.4 Print speed of linerless model *Revise Ch.2.3.1 status and indication of Wireless/Bluetooth status LED indicator	Kate
2017/4/7	*Delete Ch.1.2.1 RF with Combo mode *Delete Ch.1.2.2 Wi-Fi 802.11 a/b/g/n with BT 4.0 (Supports Bluetooth, use either one of them) function *Revise Ch.1.3 Drop 1.5m (5ft) w/ IP54-rated environmental case with shoulder strap to Drop 2.0m (6.5ft) w/ IP54-rated environmental case with shoulder strap	Kate
2017/4/14	*Revise Ch.3.2.1 Battery charge status description *Revise Ch.5 ~ Ch.5.3 LED status and description	Kate
2017/5/17	*Revise Ch.2.3.1 sleep mode description *Revise Ch.6.2 print modes and description. *Add Ch.6.2 note with TSPL/TSPL2 programming manual link	Kate
2018/1/17	*Add Agency Compliance and Approvals	Kate
2019/10/21	*Add Agency Compliance and Approvals (MFi for Bluetooth)	Kate
2020/7/6	Change TUV NOM Logo	Linda