

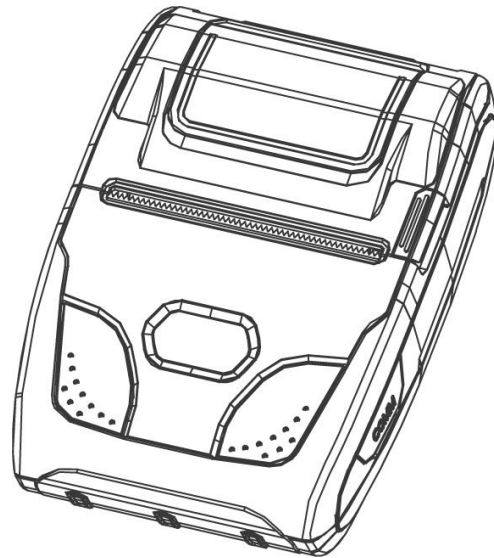
Operator's Manual

MODEL

WSP-R231/R241

(2inch Mobile Printer)

Rev. 1.5



All specifications are subjected to change without notice



<http://www.woosim.com>

■ Copyright

WSP-R231/R241 2inch mobile printer operator's manual.

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■ Trademark



Woosim system a registered trademark of Woosim Systems Inc.

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■ Caution

Some semiconductor devices are easily damaged by static electricity. You should turn the printer "OFF", before you connect or removed the cable on the rear side, in order to guard the printer against the static electricity.

If the printer is damaged by the static electricity, you should turn the printer "OFF".

■ Notice

The contents of this manual are subject to change without notice.

The specification is written with representatives R231. Please check the product specifications for detailed specifications.

■ Introduction

The **WSP-R231/R241** is suitable designed for use with a growing variety of mobile devices. Bluetooth/USB interfaces make the WSP-R231/R241 the perfect comrade for applications such as point of transaction warehousing, distribution, point of sales, hospitality, gaming and healthcare.

The general features of **WSP-R231/R241** printer are as follows:

- ▶ Pocket size (79.5 x 104.4 x 37.6mm)
- ▶ Light weight (193.5g) for true mobility.
- ▶ Very silent printing thru direct thermal printing method.
- ▶ High speed(100mm/sec, MAX)
- ▶ High resolution(203dpi : 8dots/mm)
- ▶ USB, Bluetooth Ver3.0 interface
- ▶ Intuitive LED's indicate Power(on/off),Error, Bluetooth status, Battery status
- ▶ Support Magnetic Stripe Reader [option]
- ▶ Support text and graphic printing.
- ▶ Easier paper loading by CLAMSHELL design.
- ▶ One touch paper cover
- ▶ Printer door open & Paper-out sensor
- ▶ Easier maintenance with self-diagnostics.
- ▶ In field programming – Update Firmware, Download Fonts and Logos
- ▶ Microsoft Windows/Windows CE, Linux, Android, iOS compatible
- ▶ Free fall: 1.5M drop resistance
- ▶ Flow control : Software (XON/XOFF)
 - ※ Hardware flow control not supported in printer.
- ▶ Agency Approvals



■ Operating Precautions

Please follow the precautions below to enjoy and maintain the full performance of the printer.

▶ Using the Printer

- Be careful not to drop or bump the printer on a hard surface.
- Do not install the printer in direct sunlight or such areas.
Suitable environment for the use of the printer is as follows:
 - ◆ Operating temperature :-10°C to 50°C
 - ◆ Relative humidity : 30% to 80%
- Do not install the printer near devices that generate strong electromagnetic fields such as a copy machine.
- Do not open the platen cover during printing .
- Do not remove or reinstall the communication cable during printing or transmission.
- Do not touch the connectors of the communication during printing.
- Switch the POWER OFF when not in use.
- Do not use other solvent.
- The AC adapter, the battery charger and the battery pack may become warm when in use.
This is normal and is not a malfunction.
- When the battery pack is used at low temperature, the length of time the printer can be used may be shortened.

▶ Thermal Paper Handling

- Store the thermal paper in a cool, dry and dark place.
- Do not rub the paper with hard object.
- Do not leave the paper with hard object.
- Do not allow plastic film, erasers, or adhesive tape to touch the paper for long periods.
- Do not stack the thermal paper with diazo copies immediately after copying or wet-type copies.
- Do not use chemical glue.
- Always use the clean thermal paper.

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**Federal Communications Commission
Radio Frequency Interference Statement**

FCC ID : QDDWSP-R241

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

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: 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.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

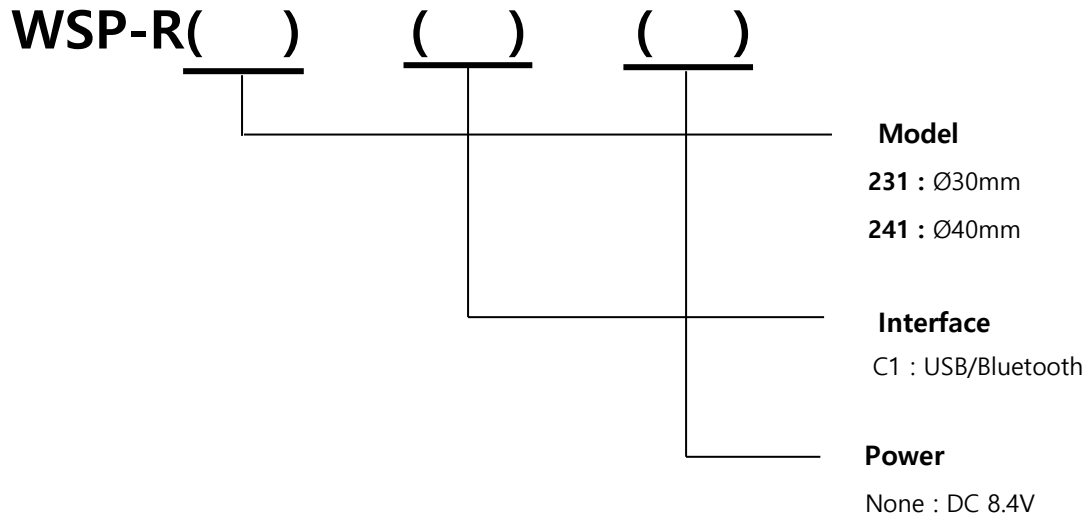
This Device has been evaluated to comply with RF exposure requirement for general use limit in portable condition. It is safe to be used in sold condition.

CE WARNING



- Changes and modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- It is desirable that it be installed and operated with at least 20cm or more between the radiator and person's body. (excluding extremities hand, wrists, feet, and ankles)

1. Outline

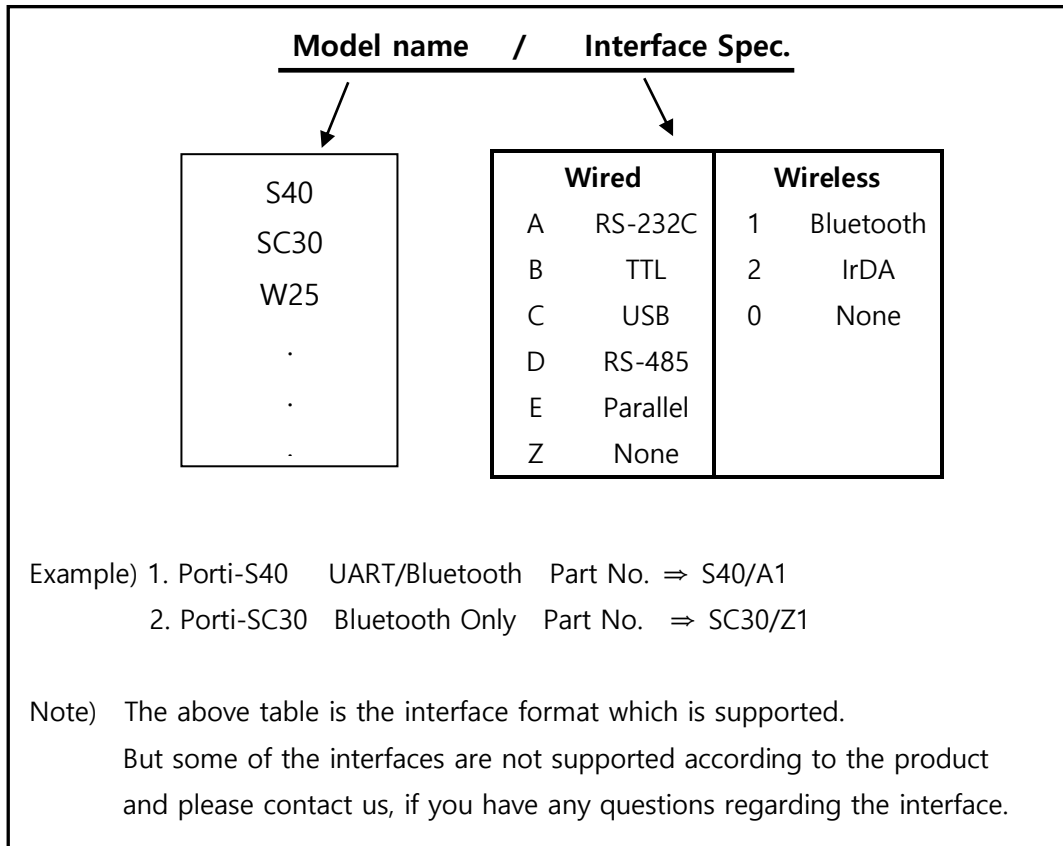
1.1. Model classifications



1.2 Symbol

	<p>Standby symbol IEC 5009, the standby symbol(line partially within a broken circle), Indicates a sleep mode or low power state.</p>
	<p>Direct current symbol This symbol is found on many electronic devices that either require or produce direct current.</p>

1.3. Product Part Number System



1.4. Specifications.

Item	Specification	
	R231	R241
Printing method	Direct thermal line printing	
Character size	- Font Size A: 12X24 / Font Size B : 9X24 / Font Size C : 8X16 - KOR : 24X24(16X24) / CHN, JPN : 24X24	
Characters per line	- Font A : 32cpl / Font B : 42cpl / Font C : 48cpl - KOR : 16cpl(24) / CHN, JPN : 16cpl	
Character set	Alphanumeric:95, Extended Graphics:128X50 pages, International:10, Simplified/Traditional Chinese, Japanese, Korean	
Resolution	203dpi, 8dots/mm	
Print width	2-inch (48mm, 384dots)	
Printing speed	100mm / sec (MAX)	
Dimensions	79.5 X 104.4 X 37.6mm 79.5 X 108.3 X 37.6mm (MSR)	79.5 X 114.3 X 43.5mm 79.5 X 118.4 X 43.5mm (MSR)
Weight (w/o paper)	193.5g / 197.5g (MSR)	197.2g / 202.1g (MSR)
Interface	USB, Bluetooth Ver3.0 interface	
Paper supplied	Thermal roll paper (58mm wide, 30ø)	Thermal roll paper, Label roll (58mm wide, 40ø)
Barcode supplied	1-dimension : UPC-A, UPC-E, EAN-8, EAN-13, CODE-39, CODE-93, CODE-128, ITF, CODABAR 2-dimension : PDF417, Micro PDF417, Truncated PDF417, QR-CODE, DATA Matrix, Maxicode Etc :GS1 databar	
Driver	Microsoft Windows, Linux	
H/W spec.	MCU : RX-32bit, RAM : 128M bit, FLASH : 64M bit	
Receive buffer size	1M bytes	
Sensor	Support Cover open, Paper	Support Cover open, Paper, Label
MSR (option)	Triple tracks (1&2&3 Tracks Reading) *Supports 3DES & AES encryption	

(Continue...)

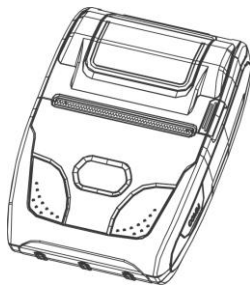
Item	Specification	
Battery	Rechargeable 7.4V DC , 1100mAh (Li-ion)	
Battery duration	1 hour continuous printing	
Battery Charger	Input (100~240V AC 50~60Hz) Output(8.4VDC/0.8A), 4hours full charge time	
Environment Conditions	Temperature	-10°C ~ 50°C (operating) -10°C ~ 70°C (storage)
	Humidity	30% - 80% (operating) 10% - 90% (storage)
Limited Warranty of Life	Head	100Km

< Table 1 >

2. Setting up the printer

2.1. Printer & Accessories

Your printer box should include these items. If any items are damaged or missing, please contact your dealer for assistance.



WSP-R231/R241



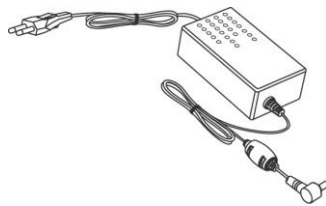
Battery Pack



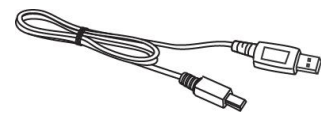
Thermal roll paper



Belt Clip

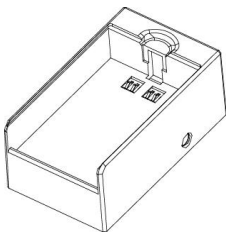


Battery charger adaptor

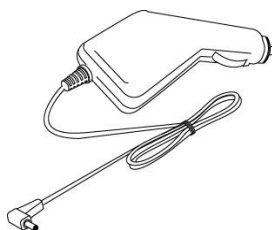


Communication cable

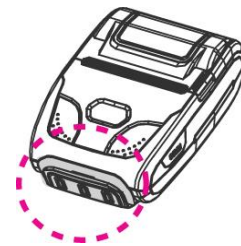
▼ OPTIONAL



External Battery
Cradle



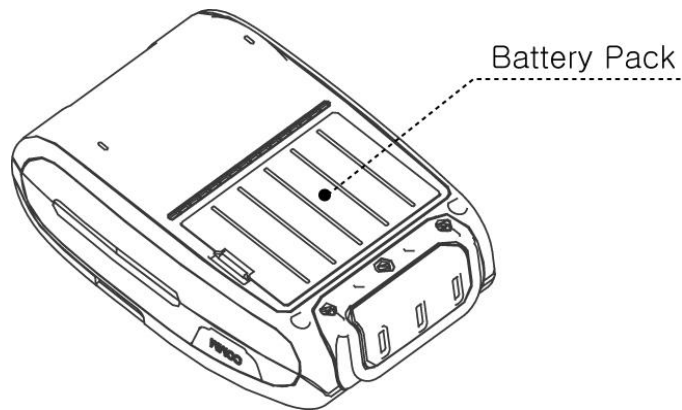
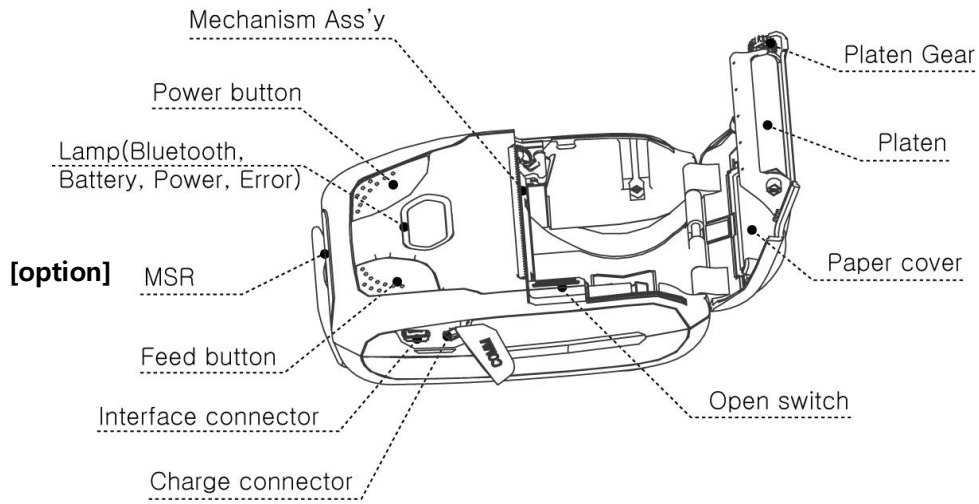
Car charger



MSR

2.2. Printer Features

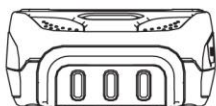
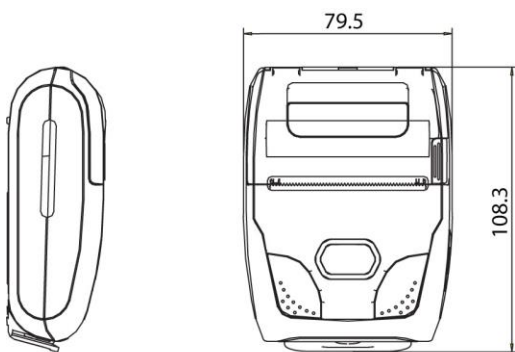
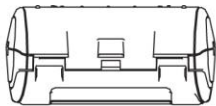
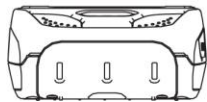
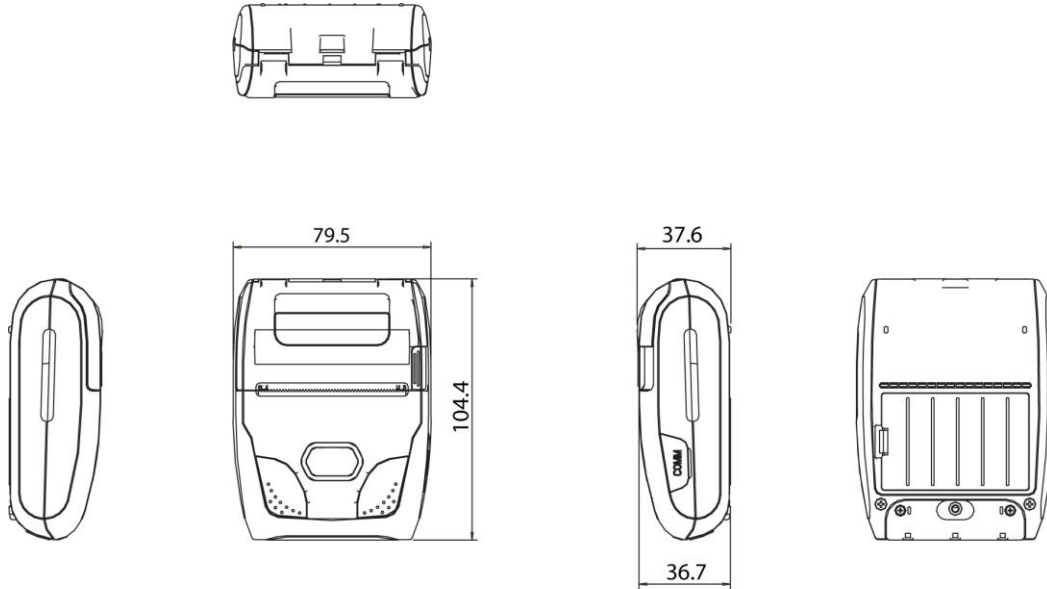
► Part Name



2.3. Dimensions

▶ R231

[Unit : mm]

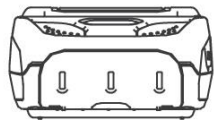
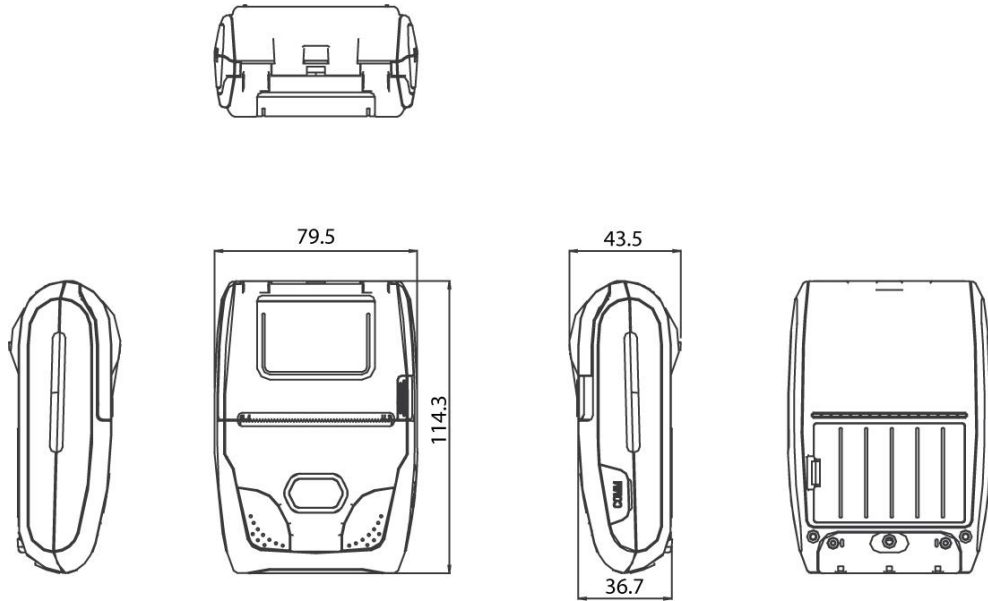


None MSR

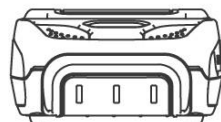
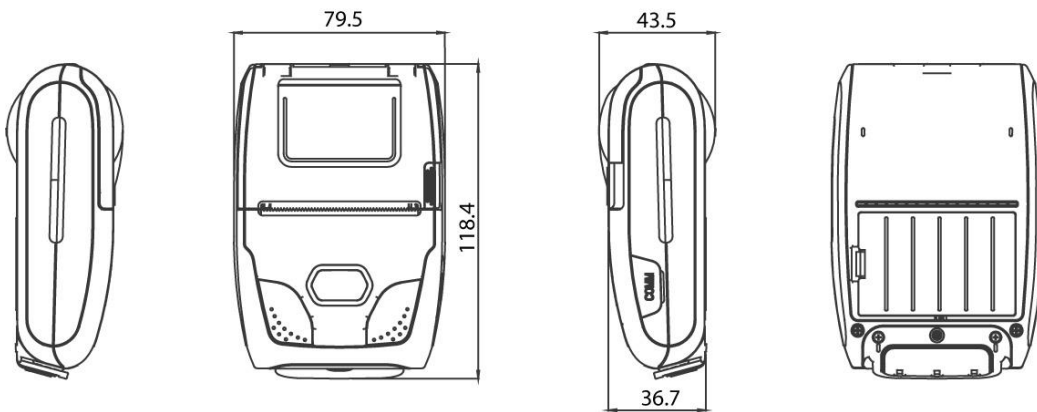
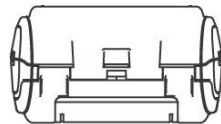
MSR

▶ R241

[Unit : mm]



None MSR



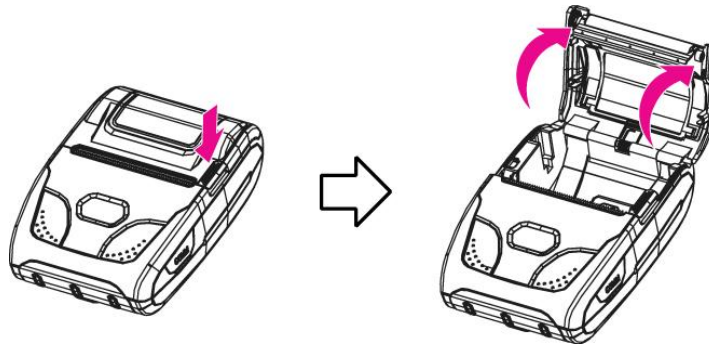
MSR

2.4. Replacing the paper roll

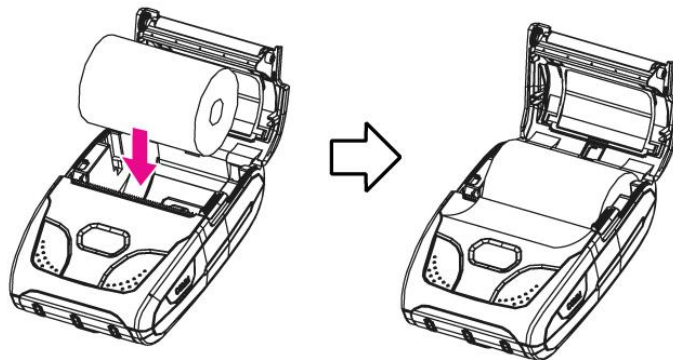
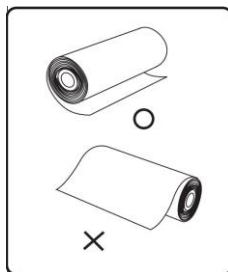
Note : Be sure to use paper rolls that meet the specifications.

Do not use paper rolls that have the paper glued to the core because the printer can not detect the paper end correctly.

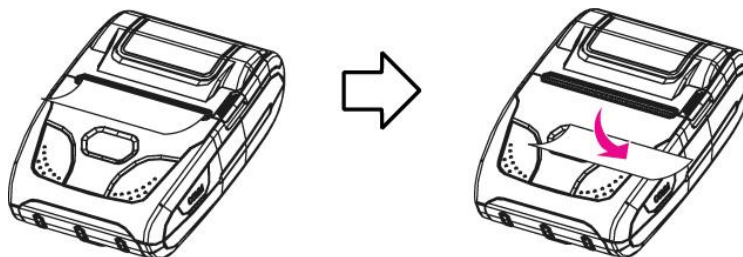
1. Make sure that the printer is not receiving data; otherwise, data may be lost.
2. Open the paper cover as the "One-Touch" way by pressing the button in the arrow direction like the picture.



3. Insert the paper roll as shown.



4. Tear the excess paper off using the edge of paper door as a tear bar.



2.5. Power supply

2.5.1. Internal power supply

The following specification is requested for Power supply.

Battery Charger : DC 8.4V/0.8A

Avoid using power supply which its power capacity of power current is extremely high.

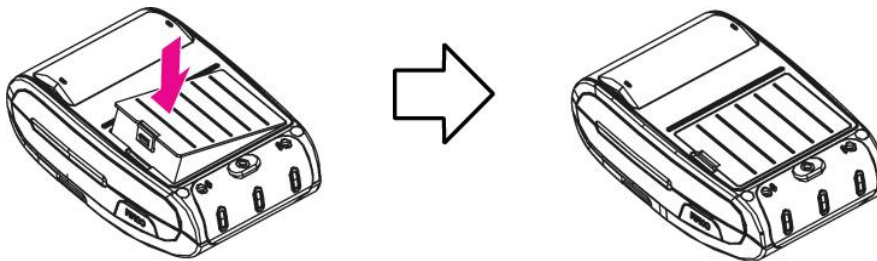
2.5.2. Installing the Battery

Warning :

- Before installing or removing the battery pack, ensure the printer is OFF.
- If the printer is not used for long period of time, remove the battery pack from the printer.
- Risk of explosion if battery is replaced by an incorrect type.
Dispose of used batteries according to the instructions.
- Batteries are provided not being charged. Please charge the battery before use.

① To install battery pack, proceed as follows:

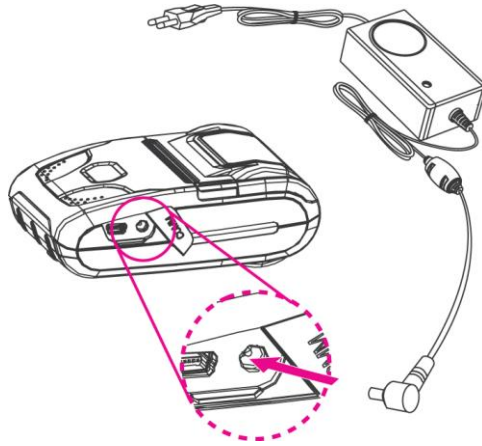
-Insert the Battery Connector in the direction of the arrow.



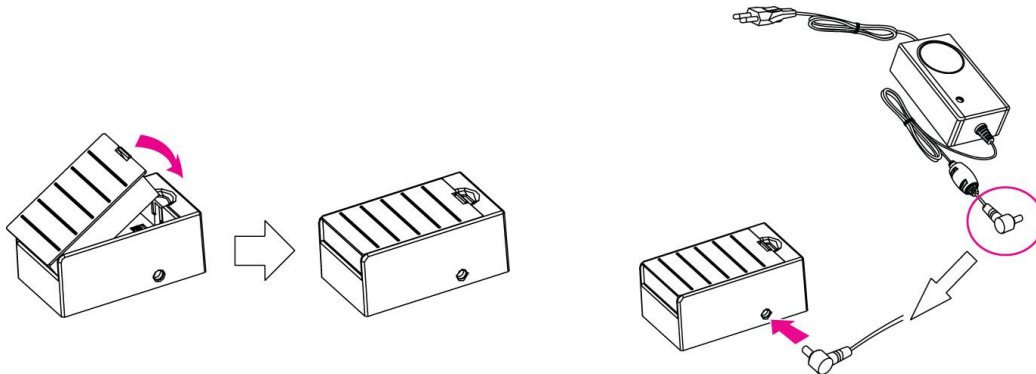
② To remove battery pack, proceed the above order reverse.

2.5.3. Recharging the battery

For recharging the battery pack, install the battery pack in the printer.
Insert the Battery Charger to the charge connector of the printer.



Insert the Battery charger adaptor to the charge connector of the **External Battery Cradle**.



- NOTE :**
- While charging the printer, turn off the printer power.
 - Do not remove the battery during charging.
 - The battery is consumable parts and when purchasing, compared to the use hour is gradually decreases. (Warranty 6 month)
 - If the printer is not used for a long time, unplug the power cord from the printer and outlet.
 - The recharging time depends on the voltage level and ambient temperature of the battery.
Normally, it takes about 4 hours to recharge a battery pack.
 - You must use only the supplied adapter.
 - Red Lamp : charging the battery.
 - Green Lamp : charging is finished.

2.6. Set operation mode

In keeping on pressing the Feed and Power button simultaneously until after the **ERROR lamp** blinks 5 times, the printer comes out at the circumstance to change the printer mode.
(refer to Table 2)

- **POWER button** : use for changing OPTION status. (Error Lamp)
- **FEED button** : use for changing MODE status. (Power Lamp)

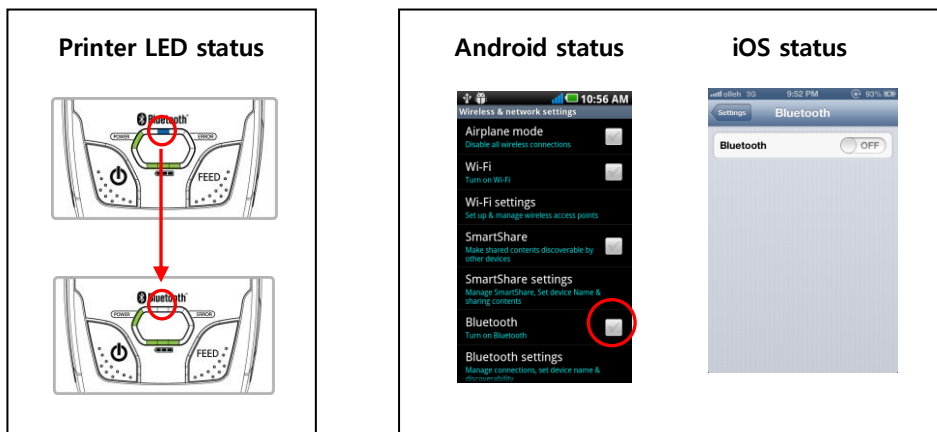
*** Note**

No additional mode settings are required to connect Android or iOS devices.

** If you want to change the Bluetooth Mode of printer, you need to disconnect the Bluetooth function of the current paired Smartphone.

**** Methods :**

1. Turn off the Bluetooth function of the current paired Smartphone.
(Blue LED is off.)
2. Change the printer mode.
(Additionally, we want to recommend you to rest(OFF→ON) the printer and change mode.)



[Example] The defaults of the printer are :

USB / Density Low / Mark No Use / Sensor High / PWDN 5 min slp

If a user wants to modify the defaults with

Bluetooth / Density High / Mark Use / Sensor Low / PWDN No Use

- ▶ Press FEED & POWER Button during the **Error Lamp** flickers 5 times.
 - You will see the **Power Lamp** and the **Error Lamp** flickers once.
 - Press the **POWER Button** twice and the **Error Lamp** flickers 3 times.
And then, interface mode has set to **Bluetooth** mode.
- ▶ When you press **FEED Button** once again, **Power Lamp** flickers 2 times and **Error Lamp** flickers once.
 - Press **POWER Button** twice, **Error Lamp** flickers 3 times.
And then the density has set to **Density high**.
- ▶ When you press **FEED Button** once again, **Power Lamp** flickers 3 times and **Error Lamp** flickers once.
 - Press **POWER Button** once, **Error Lamp** flickers twice.
And then the mark has set to **Mark use**.
- ▶ When you press **FEED Button** once again, **Power Lamp** flickers 4 times and **Error Lamp** flickers 4 times.
 - Press **POWER Button** once, **Error Lamp** flickers once.
And then the sensor has set to **Sensor Low**.
- ▶ When you press **FEED Button** once again, **Power Lamp** flickers 5 times and **Error Lamp** flickers 6 times.
 - Press **POWER Button** 6 times, **Error Lamp** flickers once
And then the power down has set to **Power down no use**.

If all the mode have set, press the **POWER Button** and the **FEED Button** at the same time. After then release the buttons at the same time.

Bluetooth / Density High / Mark Use / Sensor Low / PWDN No Use

2.7. Memory switch table

	Mode	Option	Etc.		Mode	Option	Etc.
1	Communi- cation Port	1	USB	5	Power Down	1	No use
		2	USB(Pro)			2	1min Sleep
		3	Bluetooth			3	2min Sleep
		4	Bluetooth(Pro)			4	3min Sleep
		5	Bluetooth(iAP)			V	5
2	Density	1	Low	6		5min Sleep	
		2	Medium	7		1min Off	
		3	High	8		2min Off	
3	Mark	1	No use	9		3min Off	
		2	Use	10		4min Off	
4	Sensor sensitivity	1	Low	11		5min Off	
		2	Medium1				
		3	Medium2				
		4	High				

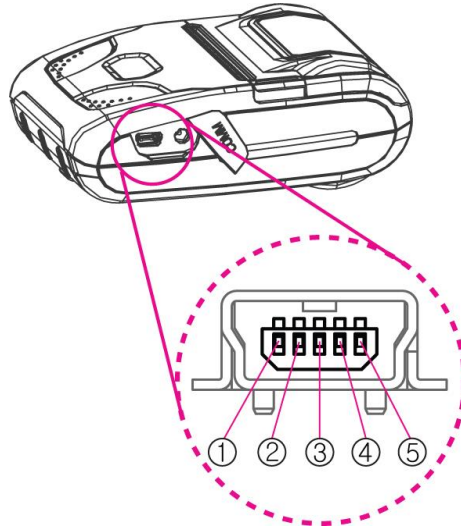
< Table 2 >

Notice : Bluetooth(iAP) is the mode which is used in iPod, iPhone and iPad Whole aspect.

Etc. (V): no function due to the specification of the product.

3. Interface

3.1. USB



(Fig.3.1)

The WSP-R231/R241 printer has a USB interface and is connected by means of a 5 pin mini USB socket. In the following table, the signals present on the Mini- USB socket are listed:

Pin No.	Name	Function
1	VCC	+5V
2	DM	DATA "-"
3	DP	DATA "+"
4	NC.	-
5	GND	Ground

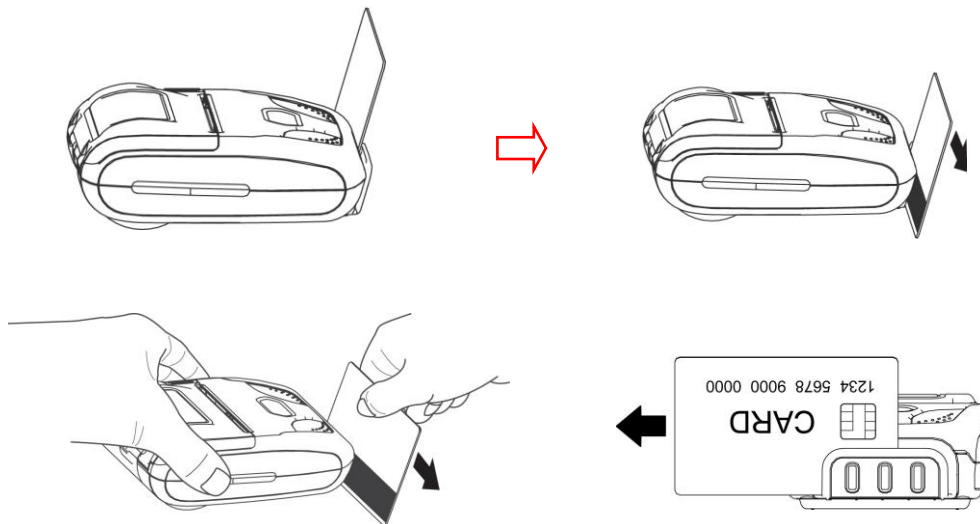
NOTE :

- If you connect the printer interface cable is converted to USB mode.
- When data receiving, when it removes the communication cable, it loses a data.

3.2. Bluetooth

Category	Specification
Bluetooth Spec.	Bluetooth Ver3.0 / Class2 (10m)
Frequency band	2402~2480 MHz
Protocol	L2CAP, RFCOMM, SDP
Profile	GAP, SDAP, SPP

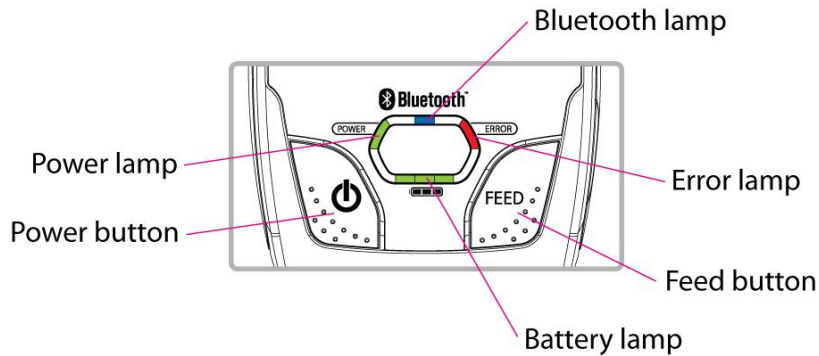
3.3. Read a magnetic stripe card (option)



- ▶ Check the direction of the magnetic stripe and read the card.
- ▶ Holding the card as shown above, please pass at a steady speed (check the direction of the arrow).
- ▶ When the card reading is successful, buzzer sound one time. If it fails, buzzer sounds three times.

4. Using the printer

4.1. Control panel



(Fig.4.1)

► Button

- **FEED Button** : Use feed button to feed the paper continuously.
- **POWER Button** : This button is used to power on/off.
When of 5 or more seconds presses and power comes to on or off.

: In keeping on pressing the **Feed and Power button** simultaneously until after the **ERROR lamp** blinks 5 times, the printer comes out at the circumstance to change the printer mode.
(Refer to **2.6. Set operation mode** for details about mode conversion)

► LAMP

- **Power** : Printer is ON and ready to receive data.
(**GREEN**)
- **Error** : Indicates a fault condition or a printer error.
(**RED**) (details: no paper, paper cover opened. etc.)
- **Bluetooth** : Indicates a Bluetooth connection status.
(**BLUE**)
- **Battery Power** : These lamps(**Green**) indicated the battery power remaining.
(**GREEN**) The battery gain in quantity and these lamps are on the decrease.
If so, you must recharge the battery by using the battery charger.

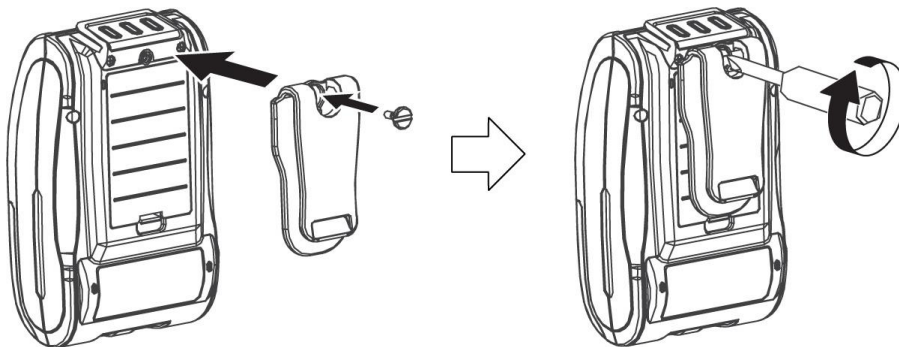
4.2. The self test

Self-Test prints out the current setting value of printer. The way of self-test is as follows.

1. Insert proper paper into the printer.
2. Power on while pressing feed button to start self-test.
3. Printer will print out the current status. (F/W version and set contents)
4. And then pattern of characters will be printed out.
5. Self-test will be finished automatically and turned to the standby status.

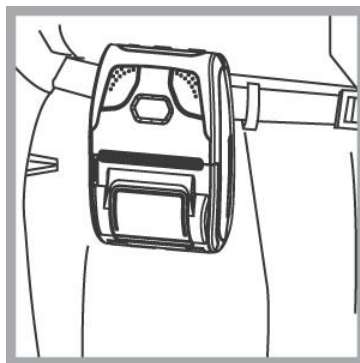
※ In case printer does not work properly, please contact Woosim customer service center.

4.3. Using the Belt clip



Following the instruction of the arrow, please put the belt clip in the hole and turn and fix the screw to the right by using a thing like a screw driver.

Afterward, you can use it like the picture below



5. Consumable Parts

5.1. Recommended paper

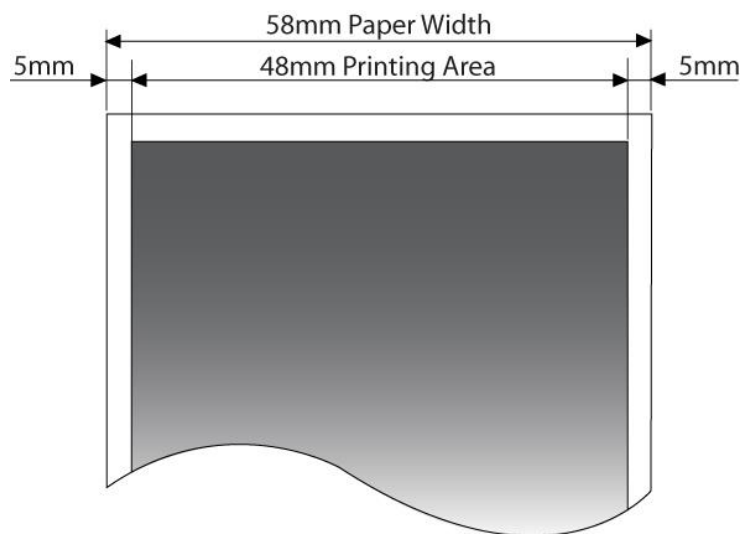
Type	: Thermal Paper
Paper width	: 58mm
Paper thickness	: $60 \pm 5 \mu\text{m}$
Outer diameter	: R231 - $\text{Ø}30\text{mm}$ or less R241 - $\text{Ø}40\text{mm}$ or less
Recording side	: Outside of roll



Cautions

1. Do not paste the paper to the core. And the roll paper which has Near end mark printing on its near end is recommended.
2. Chemicals or oil may change the color of paper, or printed Characters may fade.
3. Change of paper color starts from approx 70 °C.
Pay attention to heat, humidity and sun light.
4. Color of paper may be changed by being scratched by nail or hard metal, etc

5.2. Printing position



6. Revision History

Date	Version	Comments
Oct. 20. 2014	1.0	Initialize
Jul. 15. 2015	1.1	p3,7,22 Bluetooth spec. update : Ver2.1+ EDR → Ver3.0+ EDR p3 Agency Approvals update p7,12 Dimension(MSR) modify p16 Mode setting modify(Android or iOS)
Oct. 28. 2015	1.2	p1,7,9,13,26 R231 product specifications update p3 Agency approvals update(CCC added) p6 Additional CE warning p7 Additional Symbol(standby, DC current) p3,9,22 Bluetooth spec. modify p10,11 Battery charger spec. & image modify p16 Additional battery warnings p19-20 Set operation mode update p21 Interface modify (UART part delete) p22 Read a magnetic stripe card image update p25 Using the belt clip image update
Mar. 07. 2016	1.3	p3,9 Weight update p22 3.3 Read a magnetic stripe card(option) update
Jun. 27. 2016	1.4	p16 Additional battery charging Notes
May. 16. 2017	1.5	Change page layout (B5→A4) * Delete address