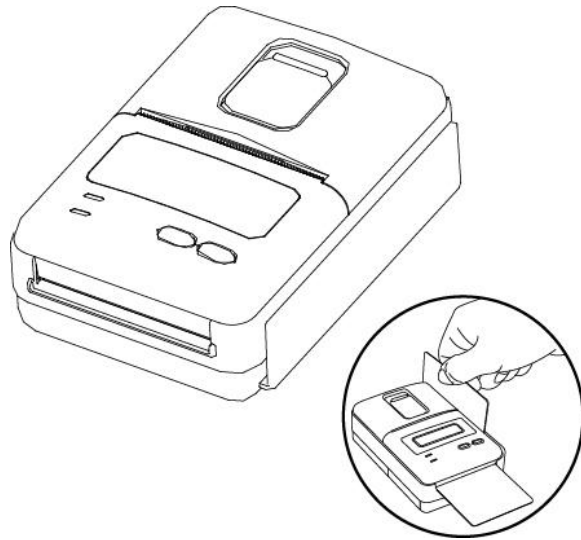


Operator's Manual

MODEL WSP-SM40

(2inch Mobile Printer)

Rev. 1.2



All specifications are subjected to change without notice

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WSP-SM40 2inch Mobile printer operator's manual.

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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.

■ Introduction

The **WSP-SM40** is the ideal solution for Mobile banking system , Retail, point of sales, Credit card Transaction, other traveling and mobile computing etc.

The general features of **WSP-SM40** printer are as follows:

- ▶ Pocket size (80.9×113.5×47.1mm)
- ▶ Light weight(247g) for true mobility
- ▶ Very silent printing thru direct thermal printing method
- ▶ High speed (85mm/sec, MAX)
- ▶ High resolution(203dpi : 8dots/mm).
- ▶ UART(RS-232C or TTL), Bluetooth Ver3.0 interface
- ▶ Support Graphic LCD(128×32dots) with Blue LED Backlight
- ▶ Support Magnetic Stripe Reader & Smart Card Module
- ▶ Support text and graphic printing
- ▶ Intutive LED's indicate Power(on/off), Error and Battery status
- ▶ Easier paper roll loading by CLAMSHELL design
- ▶ One touch paper cover
- ▶ Printer door open & Paper-out sensor
- ▶ Easier maintenance with self-diagnostic.
- ▶ In field programming – Update Firmware, Download Fonts and Logos
- ▶ Microsoft Windows/Windows CE, Linux, Android, iOS compatible
- ▶ Flow control : Software (XON/XOFF)
 - ※ Hardware flow control not supported in printer.
- ▶ Free fall: 1.5 meter onto concrete
- ▶ 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 alcohol or 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

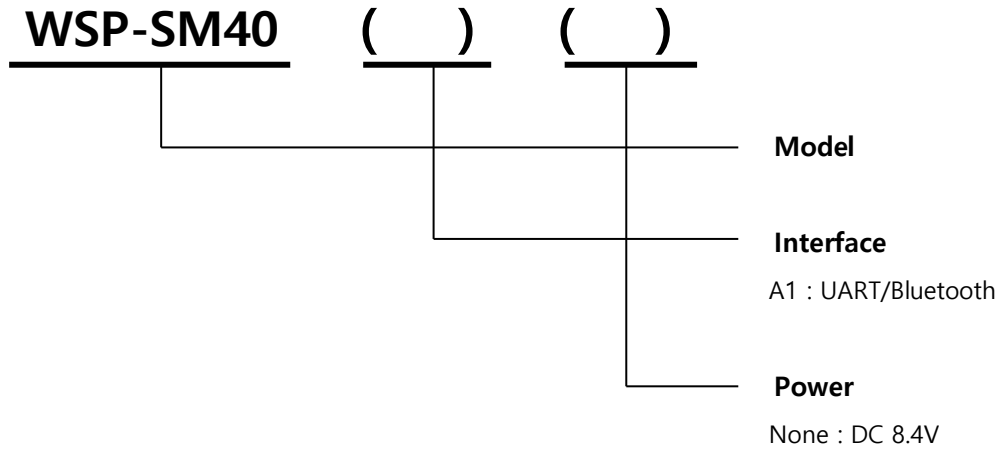
- Store the thermal paper in a cool, dry and dark place.
- Do not rub the paper with hard object.
- Do not leave the paper with hard object.
- Do not allow plastic film, erasers, or adhesive tape to touch the paper for long periods.
- Do not stack the thermal paper with diazo copies immediately after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

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1. Outline.

1.1. Model classifications.



1.2 Product Part Number System

Model name / Interface Spec.

S40

SC30

W25

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Wired		Wireless	
A	RS-232C	1	Bluetooth
B	TTL	2	IrDA
C	USB	3	Wireless LAN
D	RS-485	0	None
E	Parallel		
Z	None		

Example) 1. Porti-S40 Serial/Bluetooth Part No. ⇒ S40/A1
 2. Porti-SC30 Bluetooth Only Part No. ⇒ SC30/Z1

Note) The above table is the interface format which is supported.
 But some of the interfaces are not supported according to the product and please contact us, if you have any questions regarding the interface.

1.3. Specifications.

Item	Specifications
Print method	Direct thermal line printing
Characters per line	42cpl (MAX)
Character size	Eng: 9*24dots, 12*24dots Kor: 16*24dots, [24*24dots]
Optional Characters	Simplified/Traditional Chinese, Arabic, Cyrillic, Russian, Turkish, Greek, Japanese, Persian, Latin9 and Others upon request.
Resolution	203dpi, 8dots/mm
Print width	2-inch (48mm, 384dots)
Print speed	85mm / sec (MAX)
Dimension	80.9×113.5×47.1mm
Weight (w/o paper)	247g
Interface	UART(RS-232C or TTL), Bluetooth Ver3.0
Paper roll	Thermal roll paper (57mm wide, 40ø)
Barcodes	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 Paper, Label
MSR	ISO 7810 / 7811 / 7812 1&2 or 2&3 Track Reading
Smart Card Module	ISO 7816 Compliant (EMV level 1/2 Certified) / T=0, T=1 support / 2 SAM (Security Application Module)
LCD	128×32 Dots FSTN (Blue LED Backlight)
Battery	Rechargeable 7.4V DC, 1100mAh (Li-ion)
Battery duration	1 hour continuous printing
Battery charger	Input (100~250V AC, 50~60Hz) Output(8.4VDC/0.8A), 4hours full charge time

(Continue...)

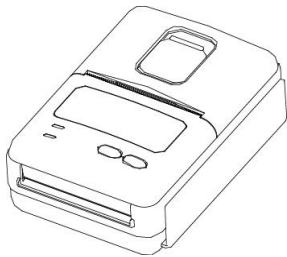
Item	Specifications	
Environment conditions	Temperature	-10°C ~ 50°C (operating) -10°C ~ 70°C (storage)
	Humidity	30% - 80% (operating) 10% - 90% (storage)
MCBF(Mean Cycle Between Failure)	Mechanical	37,000,000 lines
	Head	Approximately 50 Km

< Table 1 >

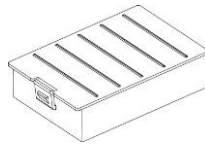
2. Setting up the printer.

2.1. Printer & Accessories

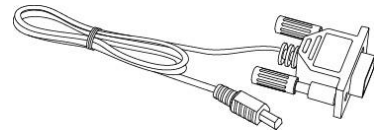
Your printer box should include these items. If any items are damaged or missing, please contact your dealer for assistance.



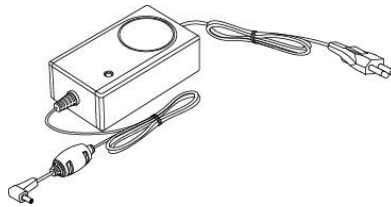
WSP-SM40



Battery Pack



Communication cable

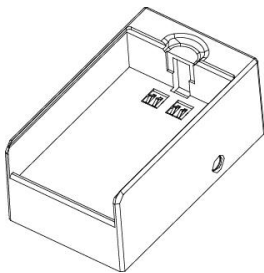


Battery charger adaptor

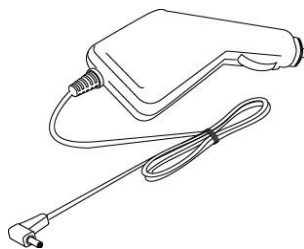


Thermal roll paper

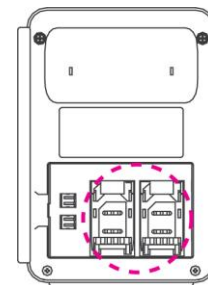
▼ OPTIONAL



External Battery Cradle



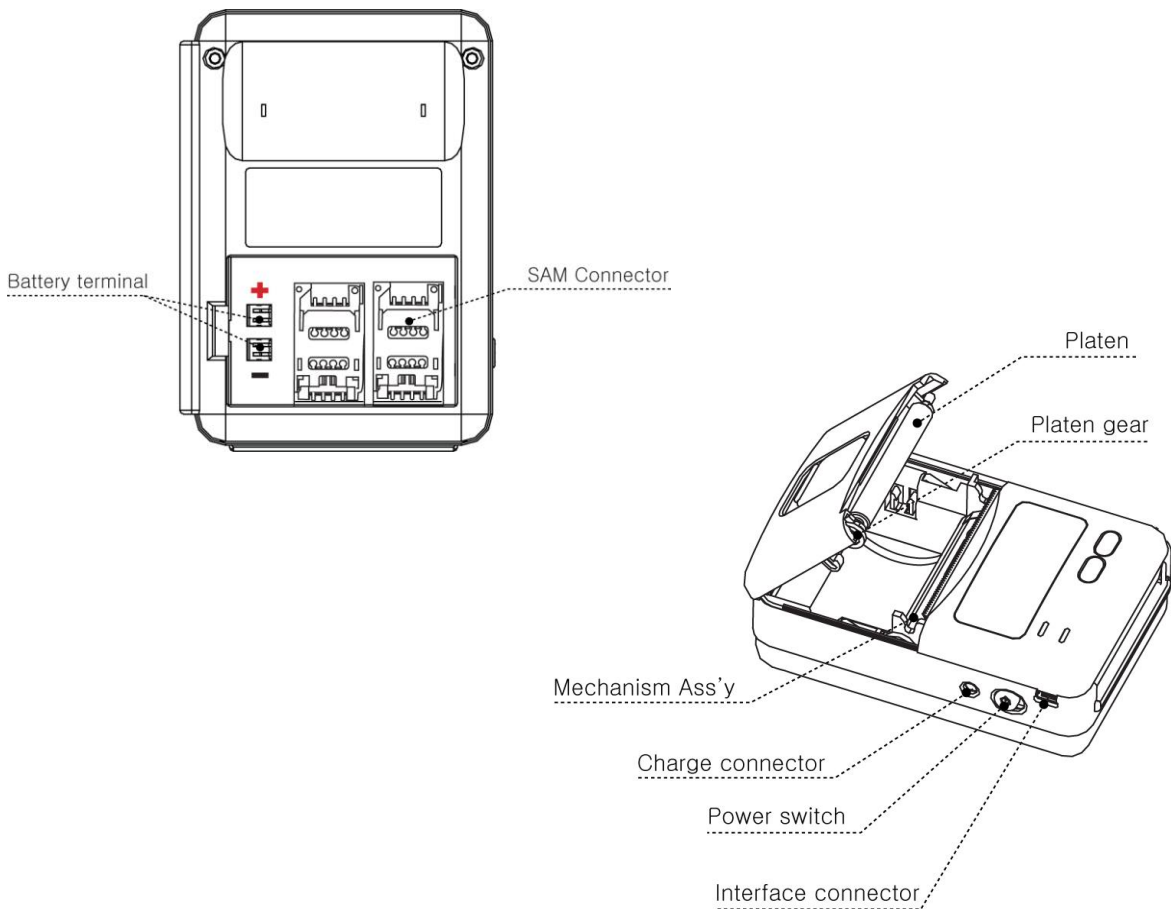
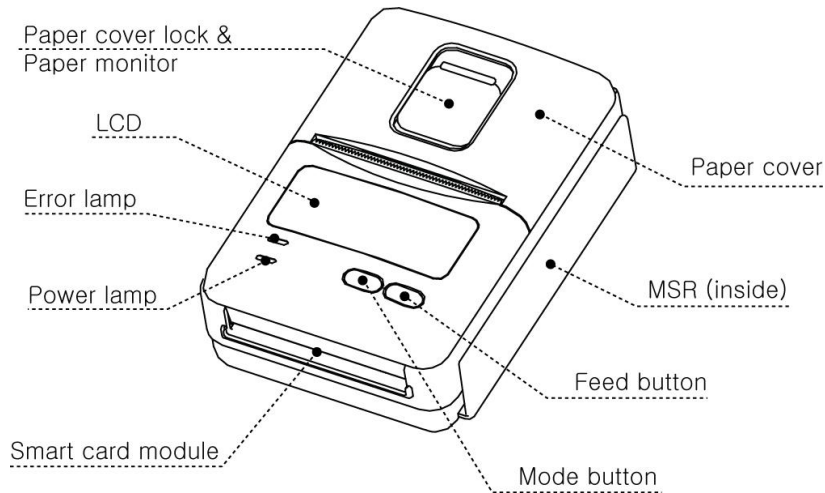
Car Charger



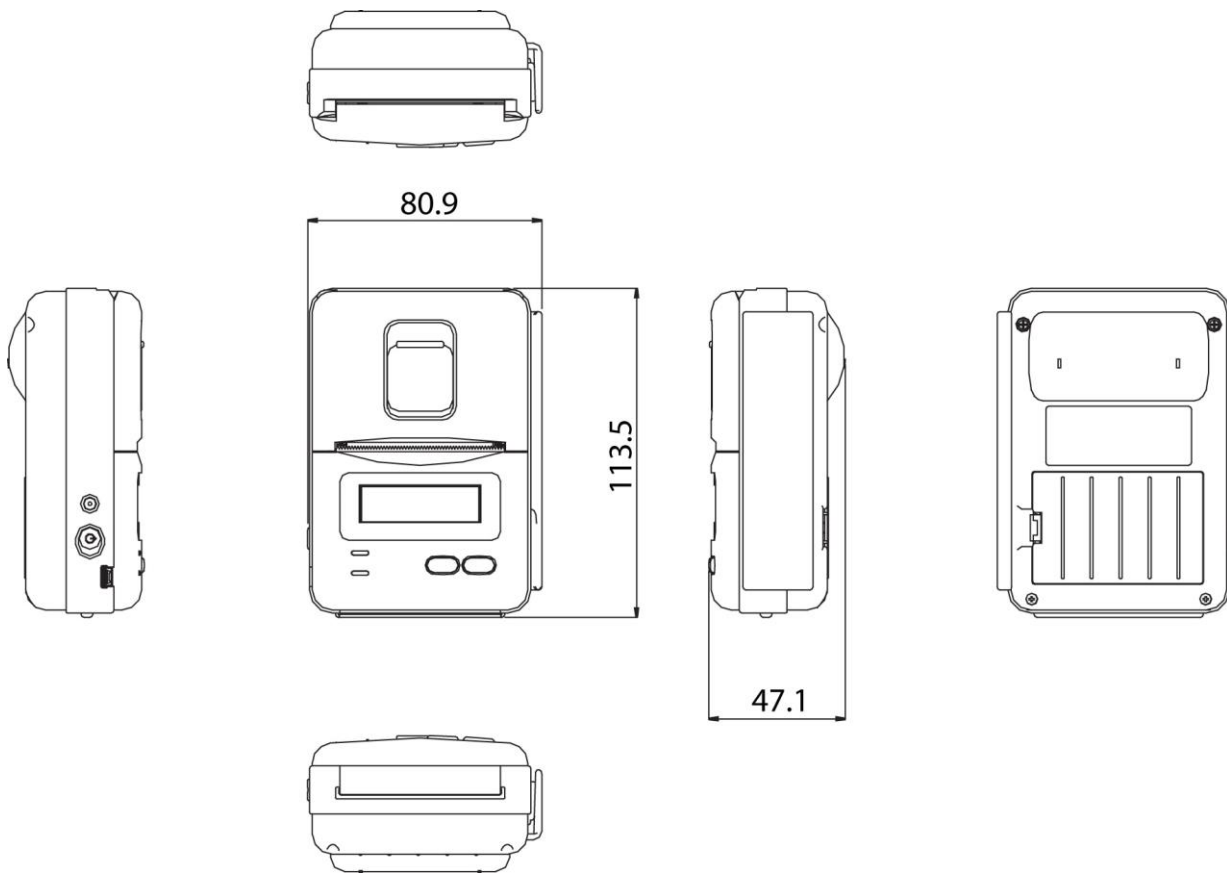
2 SAM

2.2. Printer Features

► Part Name



2.3. Dimensions

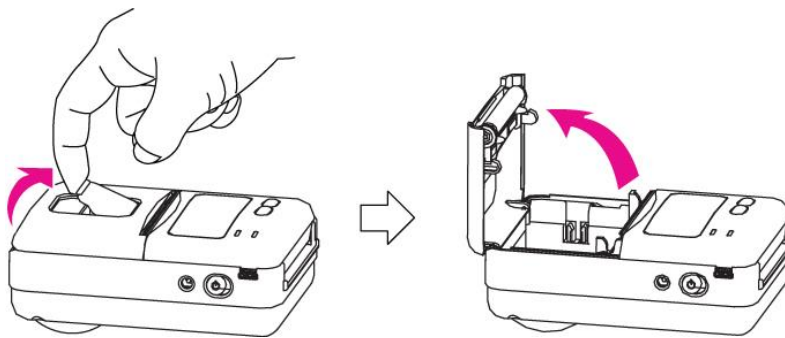


2.4. Replacing paper roll.

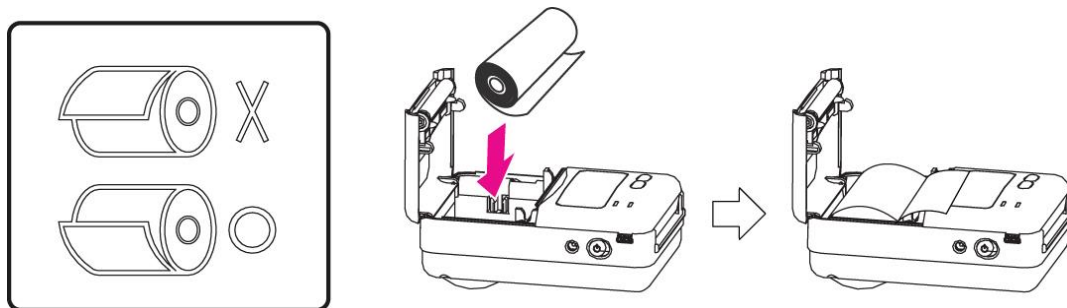
Note : Be sure to use paper rolls that meet the specifications.

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

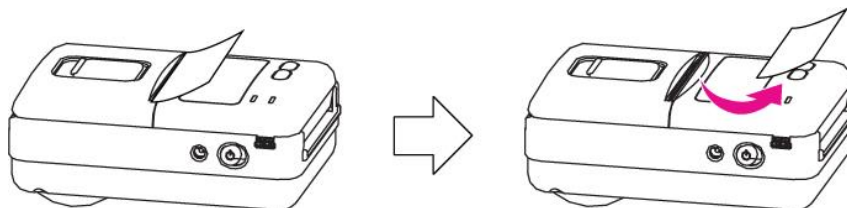
1. Make sure that the printer is not receiving data; otherwise, data may be lost.
2. Open the paper cover by placing your fingers under the paper cover lock and pull a paper cover lock open



3. Insert a new 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. Specified power supply

The following specification is requested for Power supply.

Battery Charger : DC 8.4V/0.8A

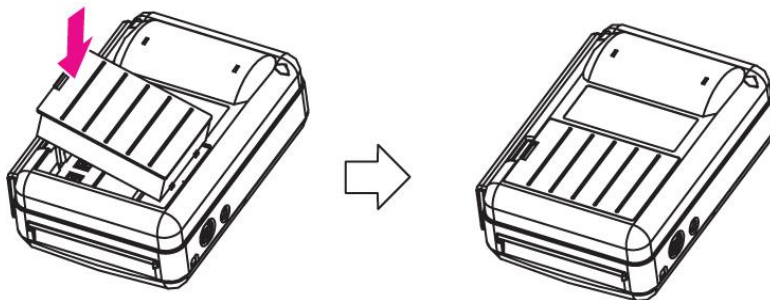
Avoid using power supply which its power capacity of power current is extremely high.

2.5.2. Installing the battery

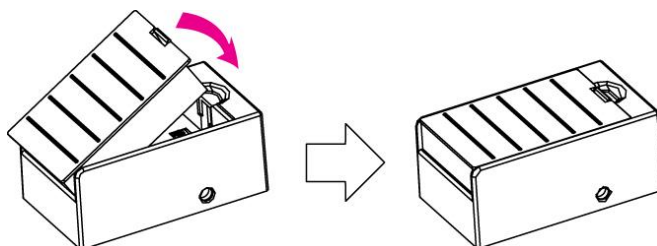
Warning :

- 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 pack in the direction of the arrow.



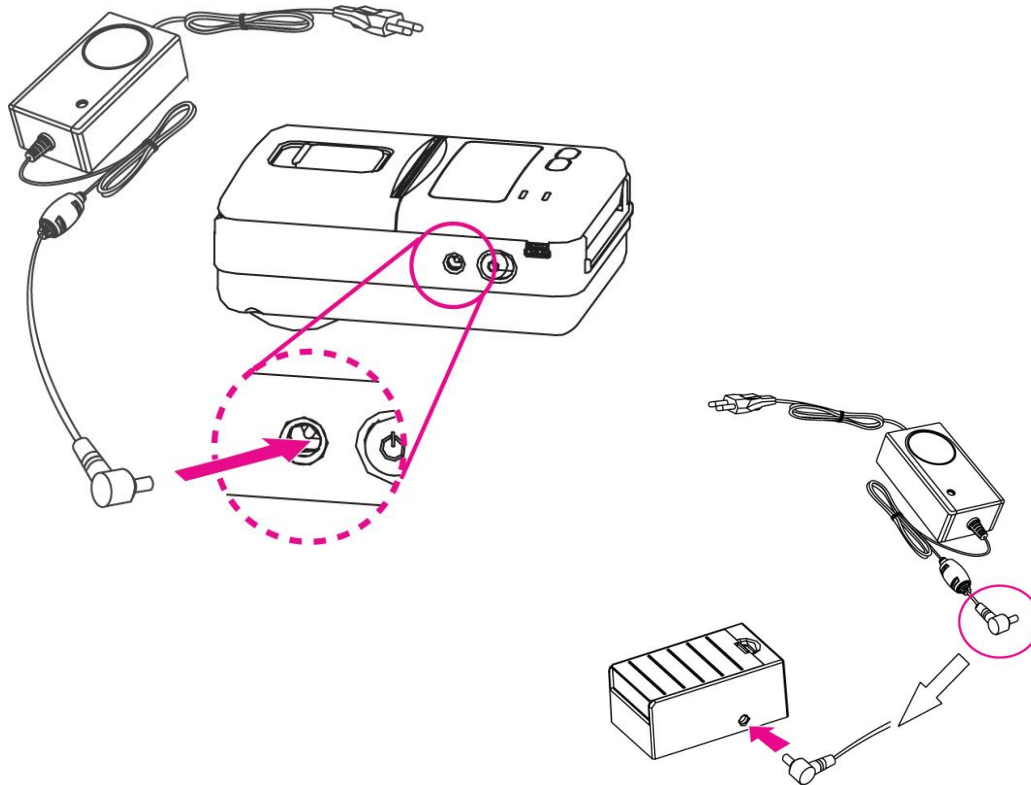
- ② Reverse the order to remove the battery pack.
- ③ The battery pack install into External Battery Cradle.
 - Insert the battery pack in the direction of the arrow.



2.5.3. Recharging the battery pack

For recharging the battery pack, install the battery pack in the printer.

Insert the Battery Charger or External Battery Cradle to the charge connector of the printer.



- 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 Mode button simultaneously until after the **ERROR lamp** blinks 5 times, the printer comes out at the circumstance to change the printer mode.

(refer Table 2)

** Only the printer which support iOS Bluetooth interface comes out at the circumstance to change the printer mode. (Bluetooth Mode or Bluetooth(iAP) Mode).

** Manipulation methods :

1. Press Feed and Mode buttons simultaneously until the **ERROR lamp** blinks 5 times and then keep pressing two buttons for 2 Seconds.
2. After the printer beeps twice, the Bluetooth mode is changed and it will print the result of change.
3. The changed mode can be checked in the printout.

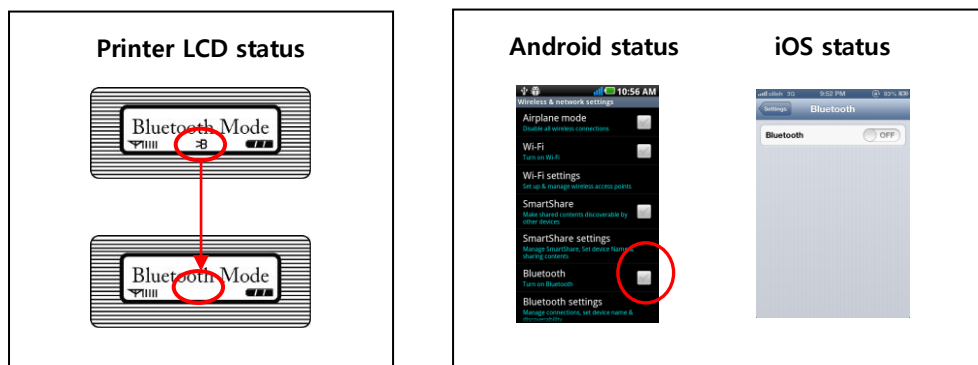
Example) If the printer is in Bluetooth Mode → Bluetooth(iAP) Mode

If the printer is in Bluetooth(iAP) Mode → Bluetooth Mode

** 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.
(Bluetooth ICON in LCD is disappeared.)
2. Change the printer mode.
(Additionally, we want to recommend you to rest(OFF→ON) the printer and change mode.)



Change the mode and option using the mode Code.

- **MODE button** : changing Printer OPTION status. (Error Lamp)
- **FEED button** : changing MODE status.

[Example] The defaults of the printer are :

**UART / 9600 bps / 8 data bit / No parity /1 stop bit / Density low /
Quality low / Mark use / Sensor low**

If a user wants to modify the defaults with

**Bluetooth / 57,600 bps / 7 data bit / Odd parity /2 stop bit / Density high /
Quality high/ Mark no use / Sensor medium1**

- ▶ Press **MODE Button** during the **Error Lamp** flickers 5 times.
 - You will see present **COMMUNICATION** mode in the LCD. (UART)
 - Press the **MODE Button** twice. And then, interface mode has set to **Bluetooth** mode.
- ▶ When you press **FEED button** once.
 - You will see present **BAUD RATE** mode in the LCD. (9600 bps)
 - Press **MODE Button** 3 times. And then, **BAUD RATE** has set to **57,600 bps**.
- ▶ When you press **FEED button** once.
 - You will see present **DATA BIT** mode in the LCD. (8 Data bit)
 - Press **MODE Button** once. And then Data Bit has set to **7 DATA BIT**.
- ▶ When you press **FEED button** once.
 - You will see present **PARITY** mode in the LCD. (No parity)
 - Press **MODE Button** once. And then the Parity bit has set to **ODD Parity Bit..**
- ▶ When you press **FEED button** once.
 - You will see present **STOP BIT** mode in the LCD. (1 stop bit)
 - Press **MODE Button** once. And then the density has set to **2 Stop bit**.
- ▶ When you press **FEED button** once.
 - You will see present **DENSITY** mode in the LCD. (Density low)
 - Press **MODE Button** twice. And then the density has set to **Density high**.

- ▶ When you press **FEED button** once.
 - You will see present **Quality** mode in the LCD. (Low)
 - Press **MODE Button** once. And then the quality has set to **Quality high**.
- ▶ When you press **FEED button** once.
 - You will see present **MARK** mode in the LCD. (Use)
 - Press **MODE Button** once. And then the mark has set to **Mark no use**.
- ▶ When you press **FEED button** once.
 - You will see present **SENSOR** mode in the LCD. (Low)
 - Press **MODE Button** once. And then the sensor has set to **Sensor medium1**.

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

Bluetooth / 57600bps / 7 data bit / Odd parity / 2 stop bit / Density high / High/No use / Medium 1

If the status is not correct, please try it again according to the procedure.

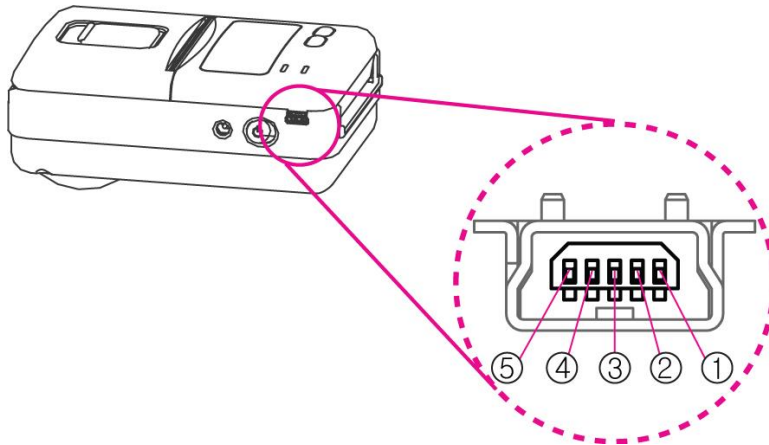
Mode No.	Mode (Feed Button)	Option No.	Option (Mode Button)
1	Communication Port	1	UART
		2	Protocol UART
		3	Bluetooth
		4	Protocol Bluetooth
		5	Bluetooth(iAP)
2	Baud Rate	1	9600 bps
		2	19200 bps
		3	34800 bps
		4	57600 bps
		5	115200 bps
3	Data Bit	1	7 Data bit
		2	8 Data bit
4	Parity Bit	1	No Parity
		2	Odd Parity
		3	Even Parity
5	Stop Bit	1	1 Stop Bit
		2	2 Stop Bit
6	Density	1	Low Density
		2	Medium Density
		3	High Density
7	Mark	1	No use
		2	Use
8	Sensor	1	Sensor Low
		2	Sensor Medium 1
		3	Sensor Medium 2
		4	Sensor High
9	Power Down	1	No use
		2	1 minute
		3	2 minute
		4	3 minute
		5	4 minute
		6	5 minute

< Table 2 >

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

3. Interface

3.1. UART(RS-232C or TTL)



The WSP-SM40 printer has a UART(RS-232C or TTL) 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:

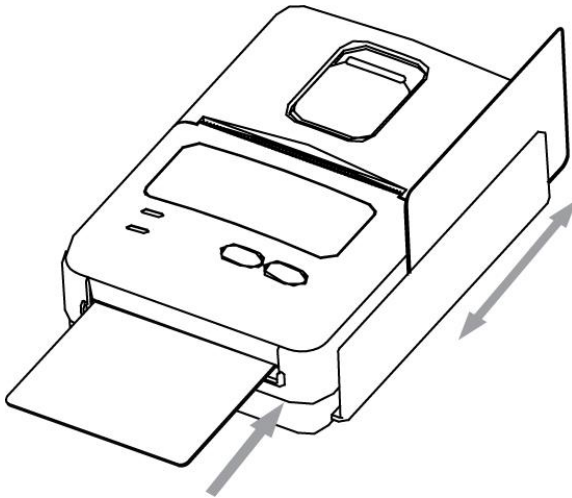
Pin No.	Name	Direction	Function
1	TxD	Output	Transmit Data
2	RxD	Input	Receive Data
3	CD	-	Cable Detect
4	NC.	-	-
5	GND	-	Ground

NOTE : ● If you connect the printer interface cable is converted to UART 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. Magnetic stripe card Reading & IC Card insert



▶ Please take notice that Magnetic Stripe Card should be swapped in direction of arrow.
Card can be read in both.

▶ Check the contact IC chip and the card in the direction of the arrow insert.

4. Smart Card Module

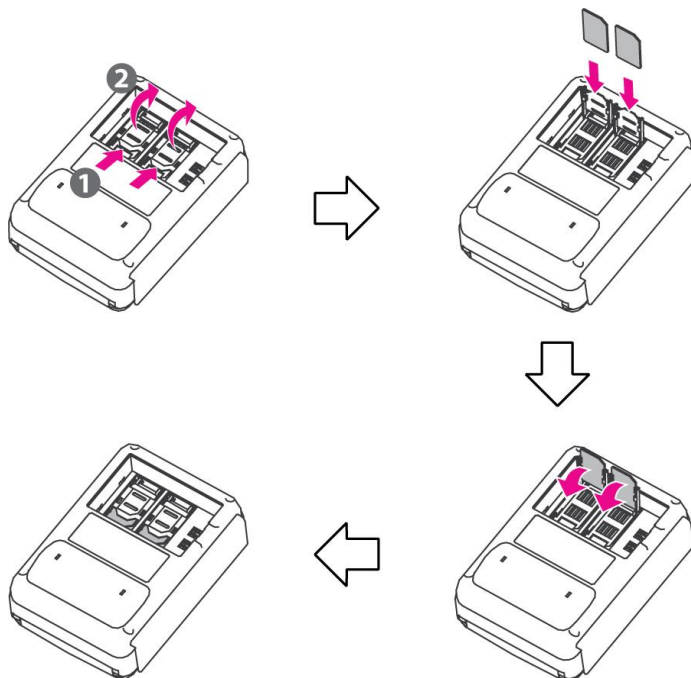
4.1. General Spec.

- ▶ Contact Smart Card Reader Module for ISO/IEC-7816
- ▶ Support Asynchronous Protocol T=0,T=1
- ▶ Smart Card Connection
 - Short Circuit Current Limitation
 - 6KV ESD Protection on whole Smart Card Interface
 - Connector : Friction Type with Smart Card presence detection
- ▶ 2 SAM (Security Application Module)
- ▶ EMV Level 1/2 Certified

4.2. Inserting the SAM card

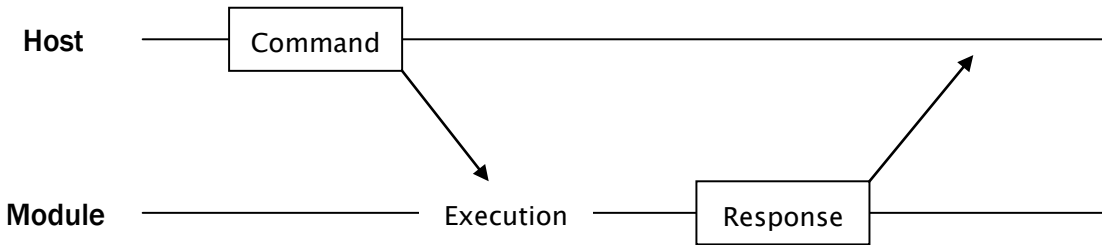
To install SAM card, proceed as follows:

- Insert the SAM card in the direction of the arrow.

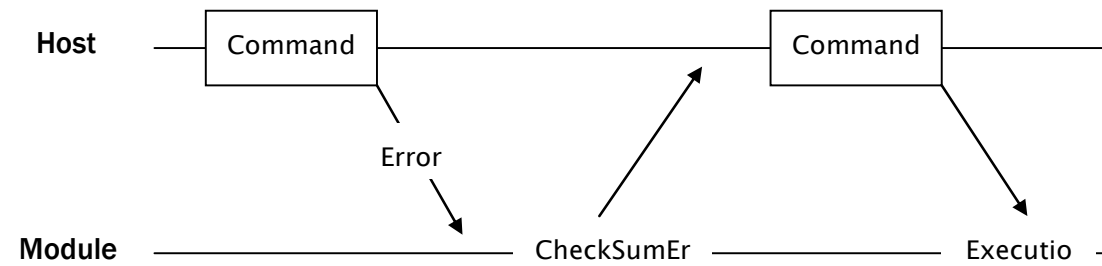
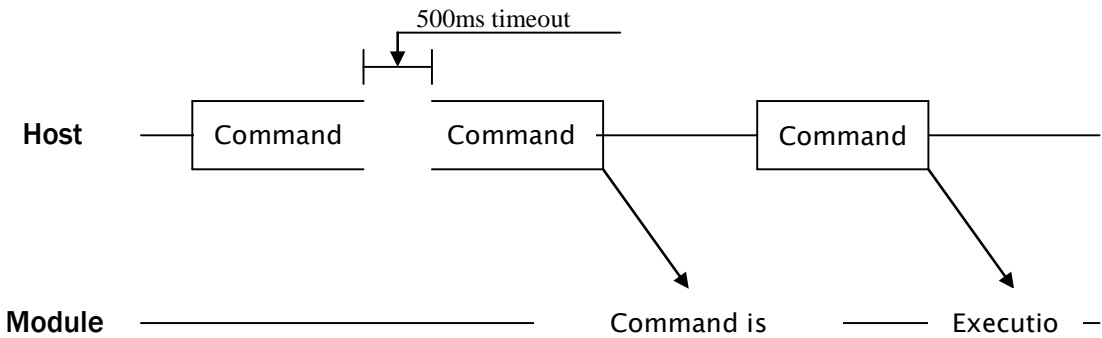


4.3. Communication Protocol Sequence

4.3.1. Regular Operation

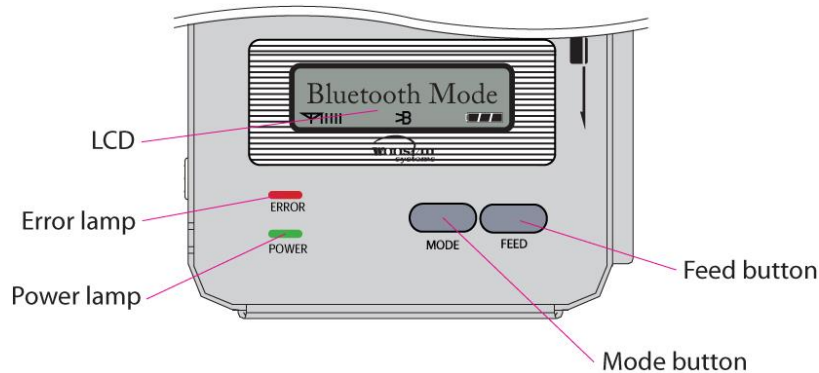


4.3.2. Irregular Operation (Communication Error)



5. Using the printer

5.1. Control panel.



► BUTTON

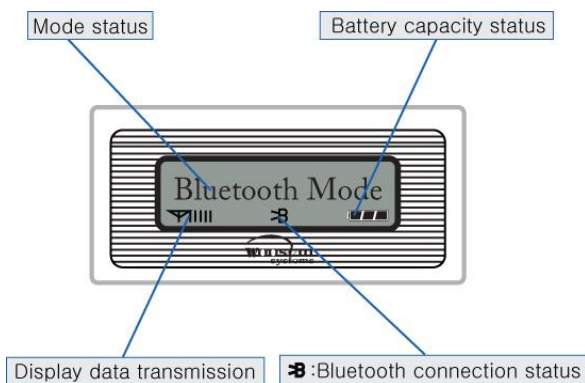
- **FEED Button** : Use to feed paper continuously.
- **MODE Button** : MODE Button is for use to change communication mode.
(Refer to **2.6. Set operation mode** for details about mode conversion)

► LAMP

- **POWER lamp(GREEN)** : Printer is ON and ready to receive data.
The status indicator will flash continuously to show the batteries are nearly exhausted and in need of recharging.
- **ERROR lamp(RED)** : Indicated a fault condition or a printer error.
(details: no paper, paper cover opened. etc.)

► LCD

- LCD will display most of the printer status.
(details: current printer status, paper out, indicated remaining battery, communication connection etc.)



5.2. 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.

6. Consumable Parts.

6.1. Recommended paper.

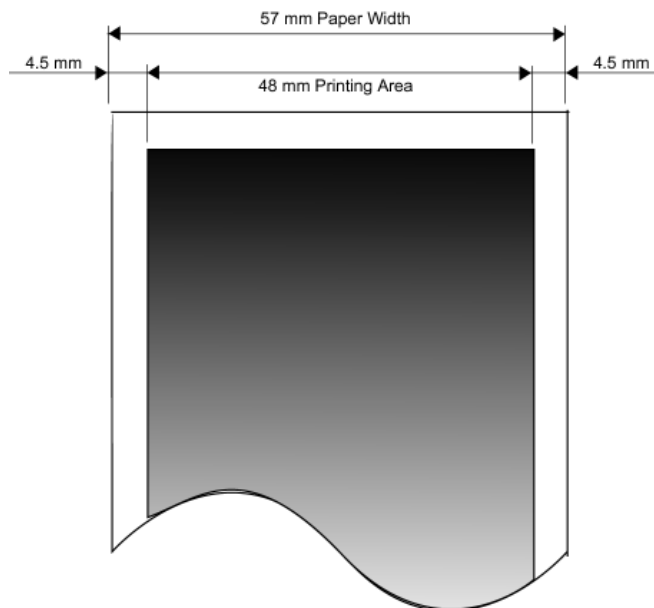
Type	: Thermal Paper
Paper width	: 57mm
Paper thickness	: $60 \pm 5 \mu\text{m}$
Outer diameter	: $\varnothing 40\text{mm}$ or less
Recording side	: Outside of roll



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

6.2. Printing position.



7. Revision History

Date	Version	Comments
Jul. 25. 2014	1.0	Initialize
Jul. 01. 2016	1.1	p3 Agency Approvals update p8, 12 Dimension update p8, 24 SCR : EMV level 2 add p14 Additional battery charging Notes
May. 16. 2017	1.4	Change page layout (B5→A4) * Delete address