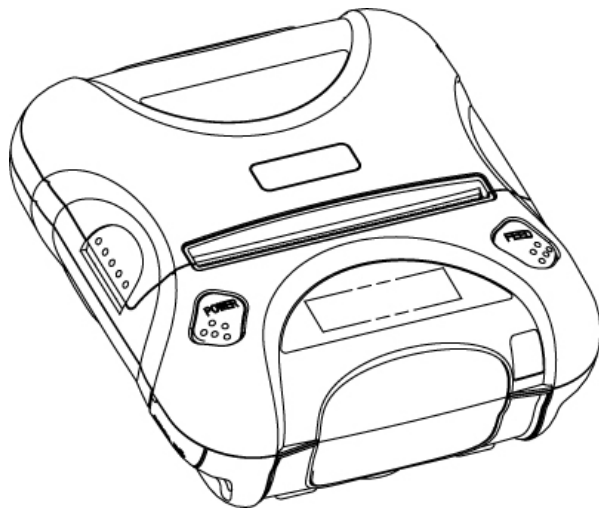OPERATOR'S MANUAL

MODEL **WSP-i350**

**(3inch Industrial Printer)**

**WOOSIM SYSTEMS Inc.**
**#501, Daerung Technotown 3th,**
**448, Gasan-Dong, GeumChun-Ku,**
**Seoul, Korea**
**Tel : +82-2-2107-3700**
**Fax : +82-2-2107-3707**
**URL: http://www.woosim.com**

## Copyright

**WSP-i350**   3inch Industrial printer operator's manual.

## Trademark

## 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"

# � Introduction

The **WSP-i350** 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-i350 printer are as follows:

- ▶ Pocket size (120× 130.5× 58.3mm)
- ▶ Light weight(520g) for true mobility
- ▶ Very silent printing thru direct thermal printing method
- ▶ High speed (60mm/sec, MAX)
- ▶ UART(RS-232C or TTL), IrDA Ver1.1, Bluetooth Ver2.0 interface
    Wireless LAN interface(IEEE802.11b/g)
- ▶ Support Magnetic Stripe Reader
- ▶ Support Graphic LCD(128× 32dots) with Blue LED Backlight
- ▶ Support text and graphic printing
- ▶ Support bit-image(logo), firmware download
- ▶ Easier paper roll loading by CLAMSHELL design
- ▶ One touch paper cover
- ▶ Printer door open & Paper-out sensor
- ▶ Microsoft Windows 98/ME/XP/2000 compatible.
- ▶ In field programming – Update Firmware, Download Fonts and Logos
- ▶ Support bit-image(logo) download.
- ▶ Flow control : Software (XON/XOFF)
      Hardware flow control not supported in printer.

# ◘ 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 : 10% to 90% (No condensation)

- 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.
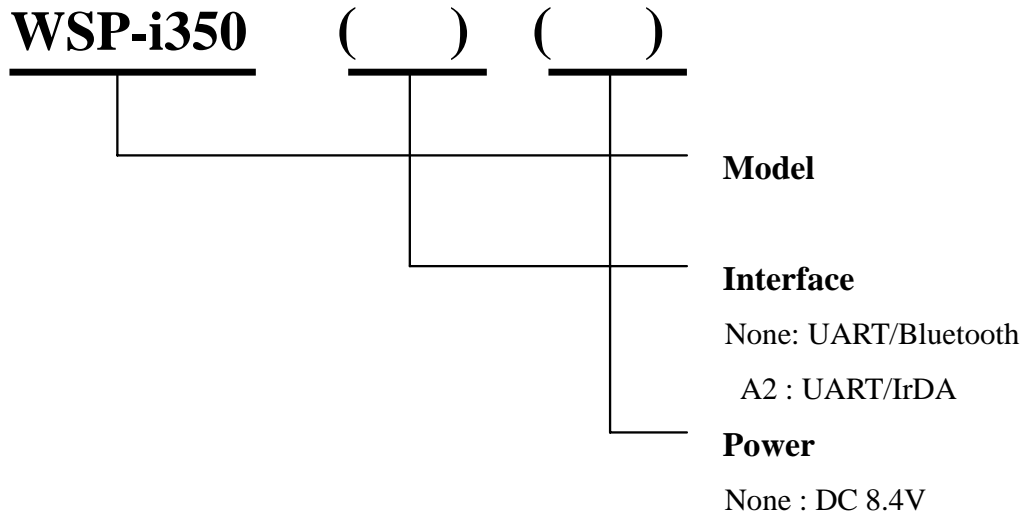
## ▶ Thermal Paper Handling

- 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.
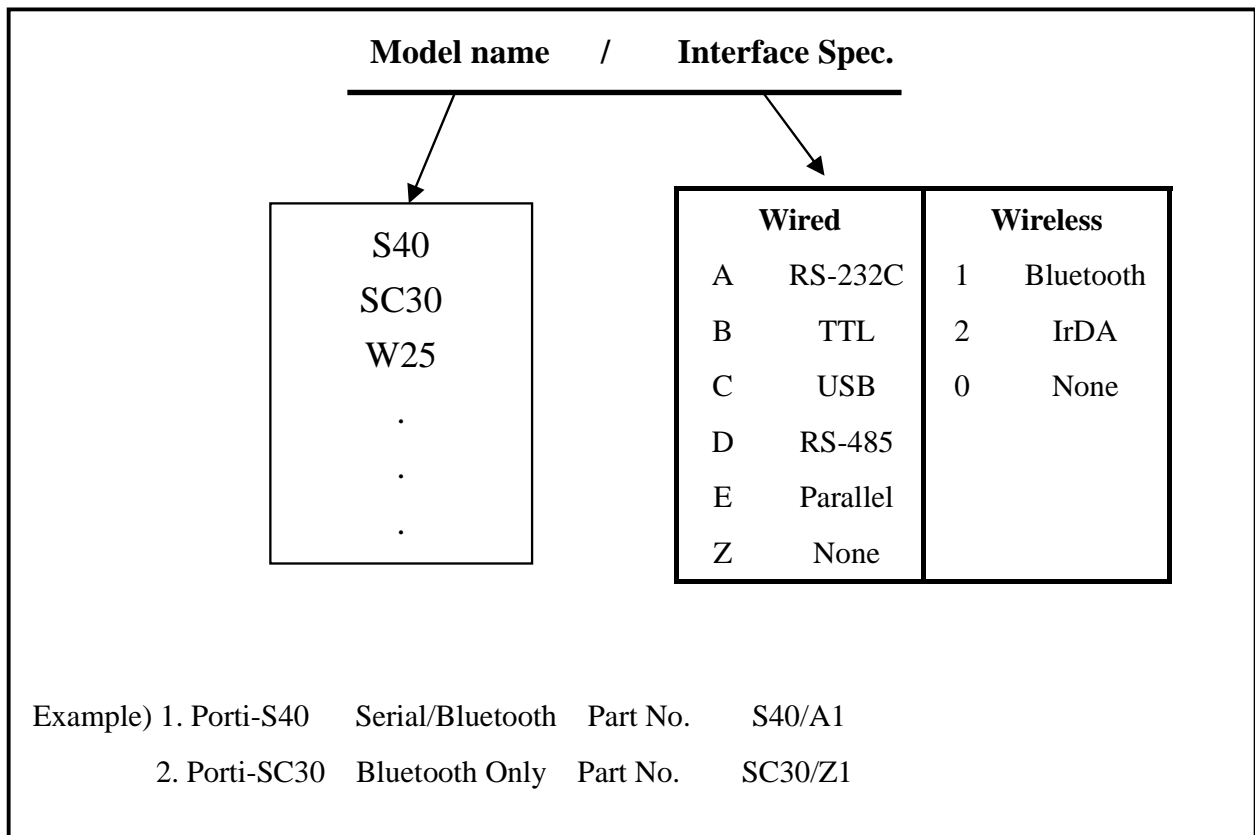- Always use the clean thermal paper.

# CONTENTS

# 1. Outline.

## 1.1. Model classifications.

**WSP-i350  (   )  (   )**

**Model**

**Interface**
None: UART/Bluetooth
A2 : UART/IrDA

**Power**
None : DC 8.4V

## 1.2. Product Part Number System.

**Model name  /  Interface Spec.**

| S40 |
| SC30 |
| W25 |
| . |
| . |
| . |

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

Example) 1. Porti-S40   Serial/Bluetooth   Part No.   S40/A1

2. Porti-SC30   Bluetooth Only   Part No.   SC30/Z1

# 1.3. Specifications.

| Item | Specifications | | |
|---|---|---|---|
| Print method | Direct thermal line printing | | |
| Characters per line | 64cpl (MAX) | | |
| Character size | Eng. : 9× 24dots, 12× 24dots    Kor. : 16× 24dots, [24× 24dots] | | |
| Optional Characters | Simplified/Traditional Chinese, Arabic, Cyrillic, Russian, Tukish, Greek, Japanese, Persian, Latin9 and Others upon request. | | |
| Resolution | 203dpi, 8dots/mm | | |
| Print width | 3-inch (72mm, 576dots) | | |
| Print speed | 60mm / sec (MAX) | | |
| Dimension | 120× 130.5× 58.3 mm | | |
| Weight | 520g    (Including battery & roll paper) | | |
| Interface | UART(RS-232C or TTL), IrDA Ver1.1, Bluetooth Ver 2.0 Wireless LAN interface(IEEE802.11b/g) | | |
| Paper roll | Thermal roll paper (80mm wide, 50ø) | | |
| Barcodes | 1-dimension : Code128, EAN 128, Code39, I2/5, Code93 UPC, EAN, KAN, JAN, CODABAR<br>2-dimension : PDF417, QR Code, DATA Matrix | | |
| H/W Spec. | MCU : 32bits RISC, FLASH : 4Mbytes,   RAM : 8Mbytes | | |
| Receive buffer size | 1M bytes | | |
| MSR | ISO 7810 / 7811 / 7812   1&2 or 2&3 Track Reading | | |
| LCD | 128× 32 Dots FSTN (Blue LED Backlight) | | |
| Battery | Rechargeable 7.4V DC | | |
| Battery duration | 1 hour continuous printing | | |
| Battery charger | Input (100~250V AC, 50~60Hz)<br><br>Output(8.4VDC/0.8A), 4hours full charge time | | |
| Environment conditions | Temperature | -10°C ~ 50°C (operating)<br>-20°C ~ 60°C (storage) | |
| | Humidity | 30% - 80% (operating)<br>10% - 90% (storage) | |
| MCBF(Mean Cycle Between Failure) | Mechanical | 37,000,000 lines | |
| | Head | Approximately 50 Km | |

# 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.

**Battery Pack**     **Paper Roll**
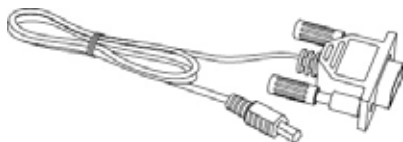
**WSP-i350**

**Battery Charger**

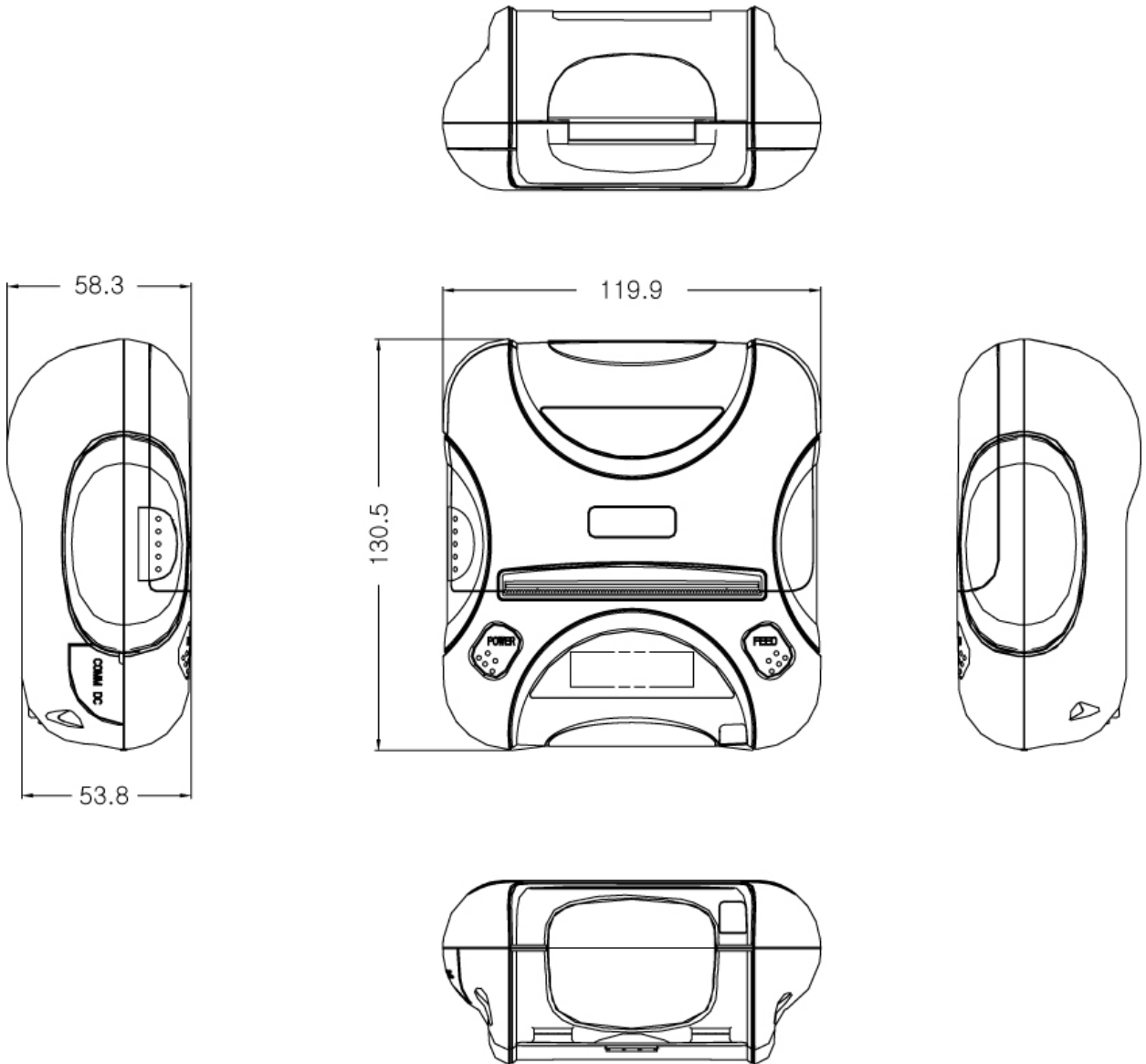OPTIONAL

**Communication Cable**     **Shoulder band**     **MSR**

## 2.2. Printer Features

### Part Name

**Dimensions**

58.3

119.9

130.5

53.8

POWER

FEED

COMM DC
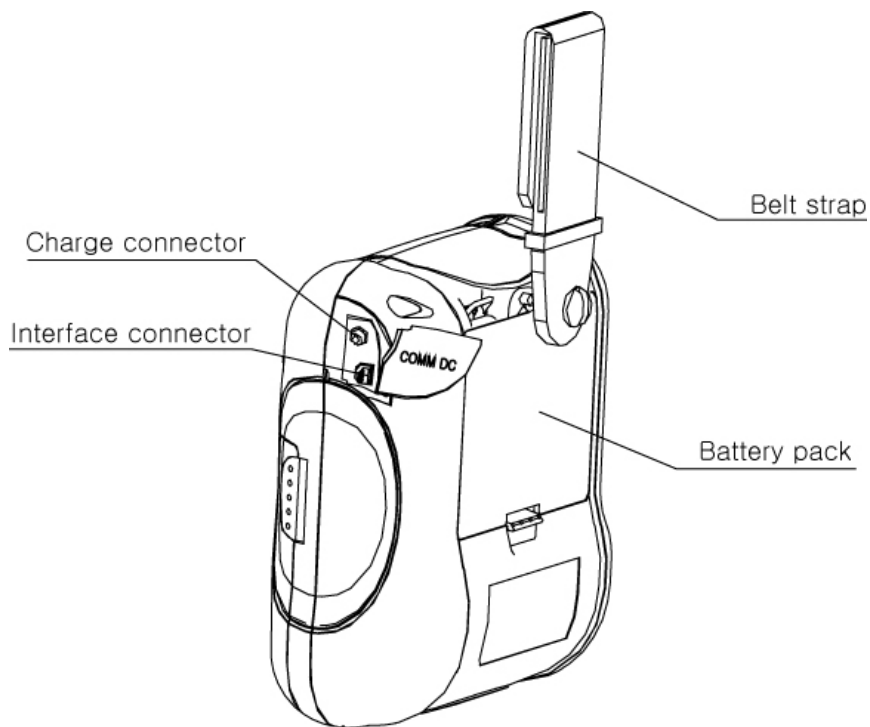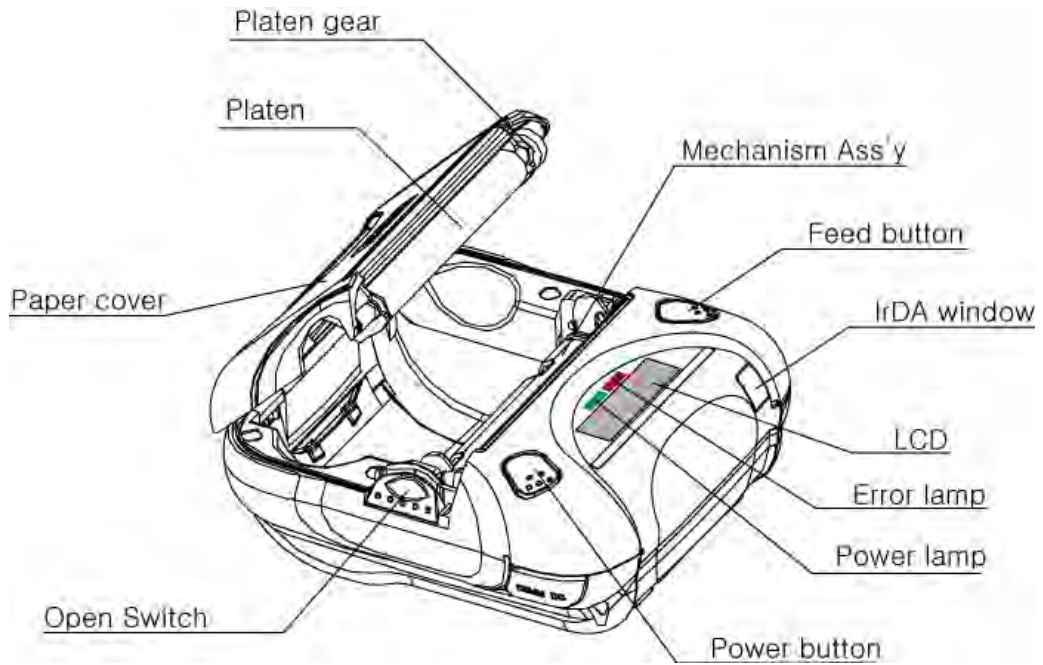
## 2.3. Replacing paper roll.

> **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 cannot detect the paper end correctly.**
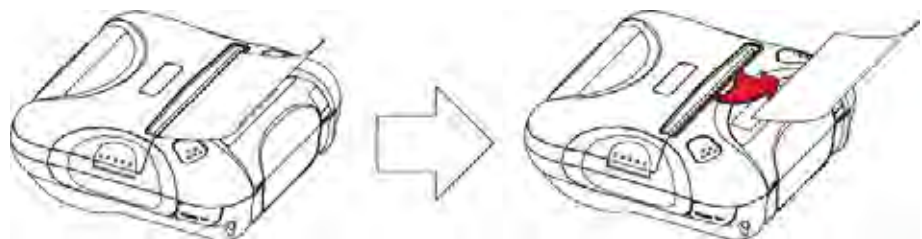
1. Make sure that the printer is not receiving data; otherwise, data may be lost.

2. Open the paper cover by placing your fingers under the paper cover lock and pull a paper cover lock open.
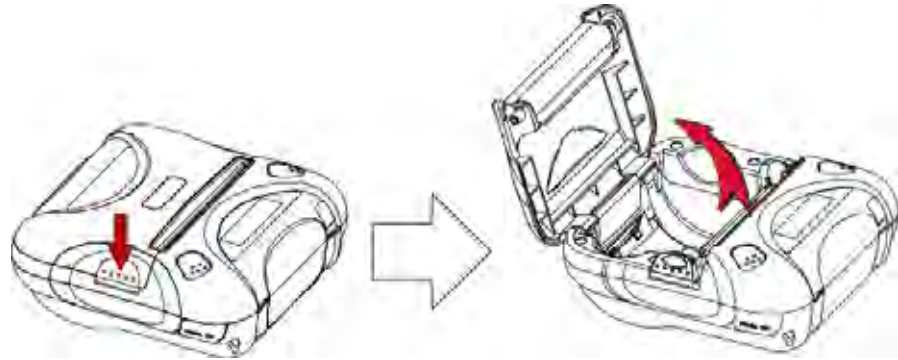


3. Insert a new paper roll as shown.
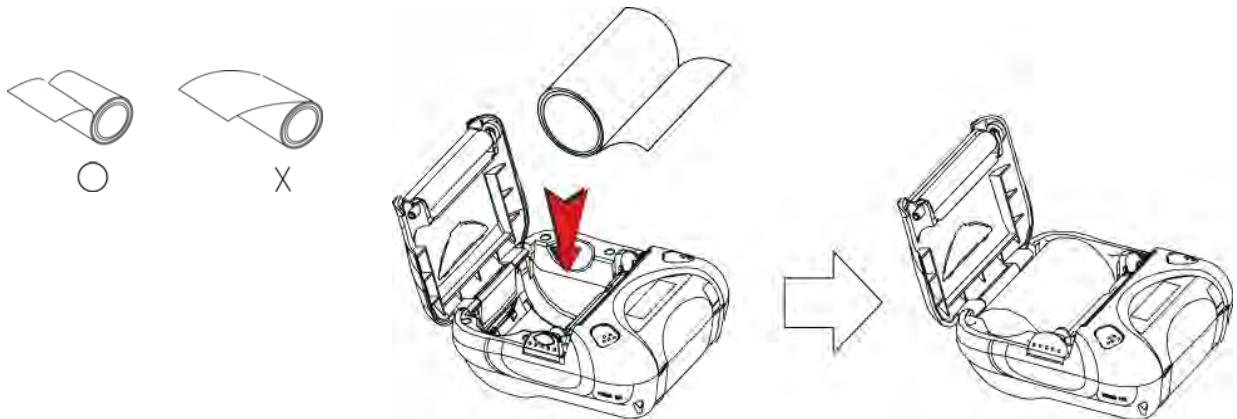


4. Tear the excess paper off using the edge of paper door as a tear bar.

## 2.4. Power supply

### 2.4.1. 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.

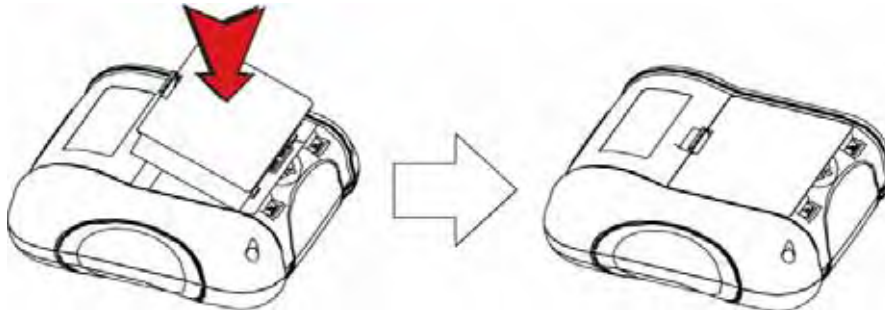### 2.4.2. Installing the battery and the belt strap

> **NOTE :** ● **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.**
>
> **CAUTION : Risk of explosion if battery is replaced by an incorrect type.**
>
> **Dispose of used batteries according to the instructions.**
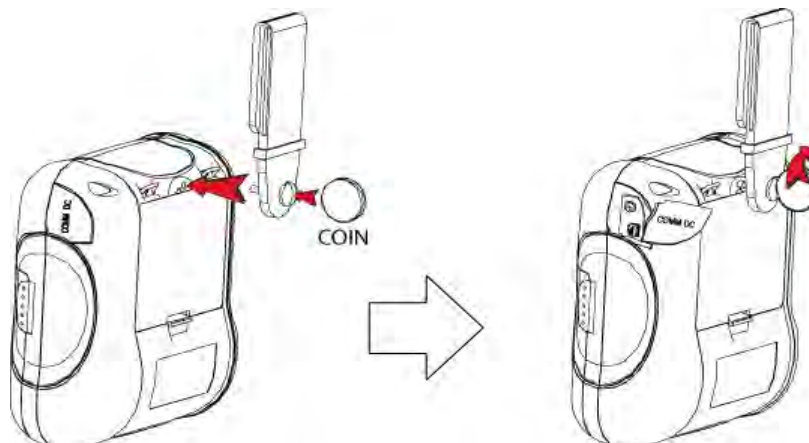
**\*\* BATTERY\*\***

To install battery pack, proceed as follows:

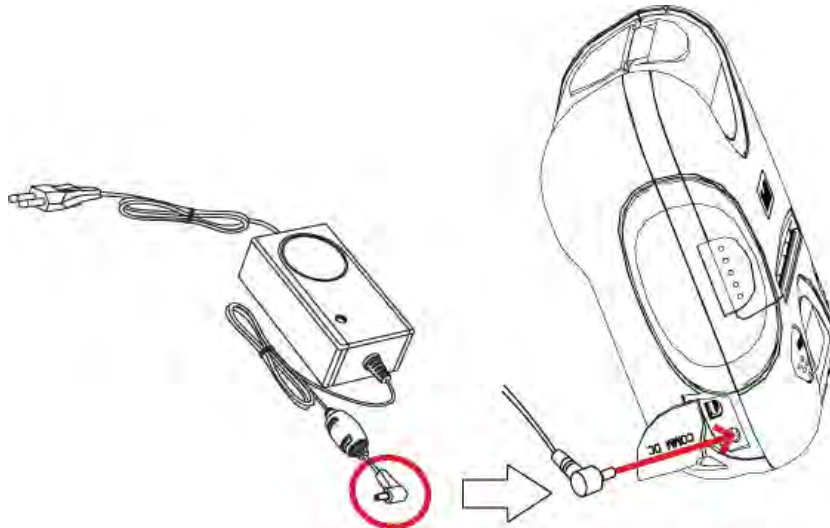- Insert the Battery pack in the direction of the arrow.



Reverse the order to remove the battery pack.

**\*\* BELT STRAP\*\***

## 2.4.3. Recharging the battery pack

For recharging the battery pack, install the battery pack in the printer.
Insert the Battery Charger 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, if takes about 4 to 5 hours to
recharge a battery pack.

● You must use only the supplied adapter.

● Red Lamp    : charging the battery.
Green Lamp: charging is finished.

## 2.5. Set operation mode.

1. Change the mode and option using   the mode Code (Table1).
   - **POWER button** : changing Printer MODE status.
   - **FEED button** : changing OPTION status.

2. [Example] The defaults of the printer are :

   UART/ 9600 BPS/8 DATA BIT/ NO Parity/1 STOP BIT/ Density LOW

   If a user wants to modify the defaults with

   Bluetooth/38400 BPS/7 DATA BIT/Even Parity/2 STOP BIT/Density HIGH

   ▶ After pressing the POWER and the FEED button simultaneously,
     if the ERROR lamp 5 turn signals POWER button is converted with
     MODE functions

     → You will see present **COMMUNICATION** mode in the LCD.
     → Press the **POWER Button** two times.
         (The interface mode has set to Bluetooth mode.)

   ▶ Press **FEED button** one time.
     → You will see present **BAUD RATE** mode in the LCD.
     → Press **POWER Button** 2 times.
         (The baud rate has set to 38,400 bps)

   ▶ Press **FEED button** one time.
     → You will see present **DATA BIT** mode in the LCD.
     → Press **POWER Button** one time.
         (The data bit has set to 7 data bit.)

   ▶ Press **FEED button** one time.
     → You will see present **PARITY BIT** mode in the LCD.
     → Press **POWER Button** 2 times.
         (The parity bit has set to even parity bit.)

▶ Press **FEED button** one time.

→ You will see present **STOP BIT** mode in the LCD.

→ Press **POWER Button** one time.

(The stop bit has set to 2 stop bit.)


▶ Press **FEED button** one time.

→ You will see present **DENSITY** mode in the LCD.

→ Press **POWER Button** two times.

(The density has set to high.)


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


The printer will print out the mode status which has modified.

**(Bluetooth/38,400 BPS/ 7 DATA BIT/Even Parity/ 2 STOP BIT / Density HIGH)**


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

| | POWER Lamp (Green) | ERROR Lamp (Red) | Option |
|---|---|---|---|
| Communication Port | 1 | 1 | UART |
| | | 2 | Protocol UART |
| | | 3 | Raw IrDA ( Bluetooth / WLAN) |
| | | 4 | Protocol IrDA ( Protocol Bluetooth / Protocol WLAN) |
| Baud Rate | 2 | 1 | 9600 bps |
| | | 2 | 19200 bps |
| | | 3 | 38400 bps |
| | | 4 | 57600 bps |
| | | 5 | 115200 bps |
| Data Bit | 3 | 1 | 7 Data bit |
| | | 2 | 8 Data bit |
| Parity Bit | 4 | 1 | No Parity |
| | | 2 | Even Parity |
| | | 3 | Odd Parity |
| Stop Bit | 5 | 1 | 1 Stop bit |
| | | 2 | 2 Stop bit |
| Density | 6 | 1 | Density Low |
| | | 2 | Density Medium |
| | | 3 | Density High |
| Quality | 7 | 1 | Low |
| | | 2 | High |

| | POWER Lamp (Green) | ERROR Lamp (Red) | Option |
|---|---|---|---|
| **Mark** | 8 | 1 | No use |
| | | 2 | Use |
| **Sensor** | 9 | 1 | Low |
| | | 2 | Medium1 |
| | | 3 | Medium2 |
| | | 4 | High |
| **Power Down** | 10 | 1 | No use |
| | | 2 | 1 minute |
| | | 3 | 2 minute |
| | | 4 | 3 minute |
| | | 5 | 4 minute |
| | | 6 | 5 minute |

# 3. Interface.

## 3.1. UART(RS-232C or TTL)
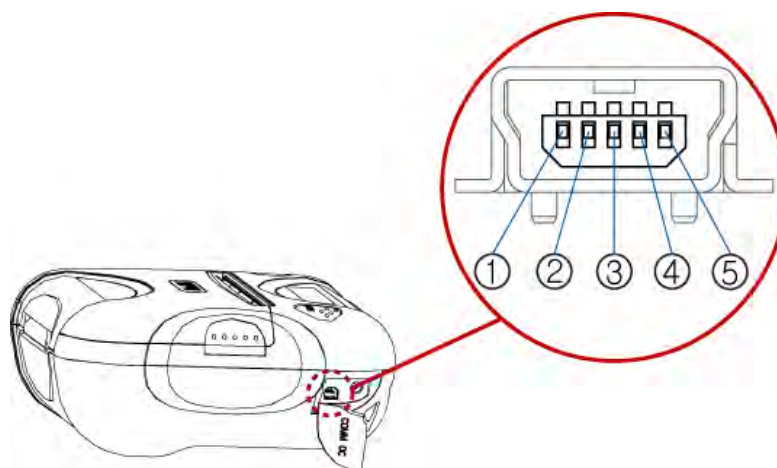


The WSP-i350 printer has a RS-232C or TTL interface and is connected by means of a 5 pin mini USB socket. In the following table, the signals present on the Mini-USB socke

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

**NOTE :**  ● When data receiving, when it removes the communication cable, it loses a data.

## 3.2. Infrared data communication

The WSP-i350 has a serial interface for bi-directional data exchange.

The infrared port is the right side of the front part.



Infrared Port

1. To use the WSP-i350's infrared port by
   a Computer or a Personal Digital Assistant
   (PDA) with IR port is required.

2. Position a PDA conforming to the specifications
   in point not more than 50 centimeter away from
   the printer's infrared port. Make sure the two ports
   are in front of each other with an angle of not more
   than 15° on the four sides.



1000mm(Max)

15°

Infrared Port
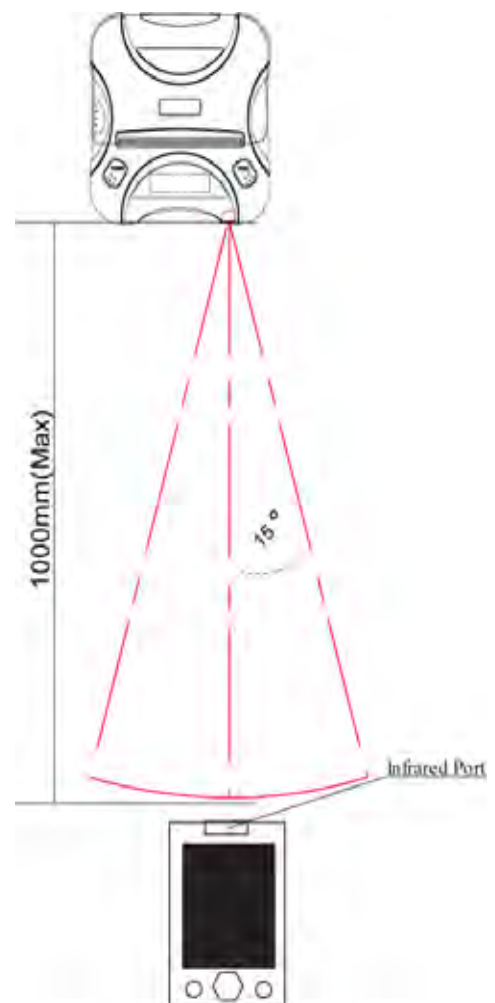
> **NOTE :** ● When infrared ray communication
> doing, directness it does not see
> the IrDA window roll up.
> Eye damage there is a danger.

## 3.3. Bluetooth

| Category | Specification |
|---|---|
| Bluetooth Spec. | Bluetooth V2.0/ Class2 (10m) |
| Frequency Range | 2.4GHz ISM BAND |
| Data Transmission Rate | 57600bps Fixed. |
| Data bit | 8 Data bit Fixed. |
| Parity bit | No parity Fixed. |
| Stop bit | 1 Stop bit Fixed. |

**Notice**

If the quantity of data which is printed at once is more than 10K byte on Bluetooth communication, it would cause the buffer to overflow and the data to get damaged.

## 3.4. Wireless LAN

| Category | Specification | |
|---|---|---|
| Interface | Network | IEEE802.11b/g |
| Protocol | TCP, UDP, IP, ICMP, ARP, DHCP, PPPoE DNS lookup, DDNS(Dynamic DNS), WEP | |
| Communication Mode | T2S | TCP Server Mode |
| | COD | TCP Client Mode |
| | ATC | TCP Server / Client (AT command emulation) |
| | U2S | UDP |

**Infrastrcture mode**
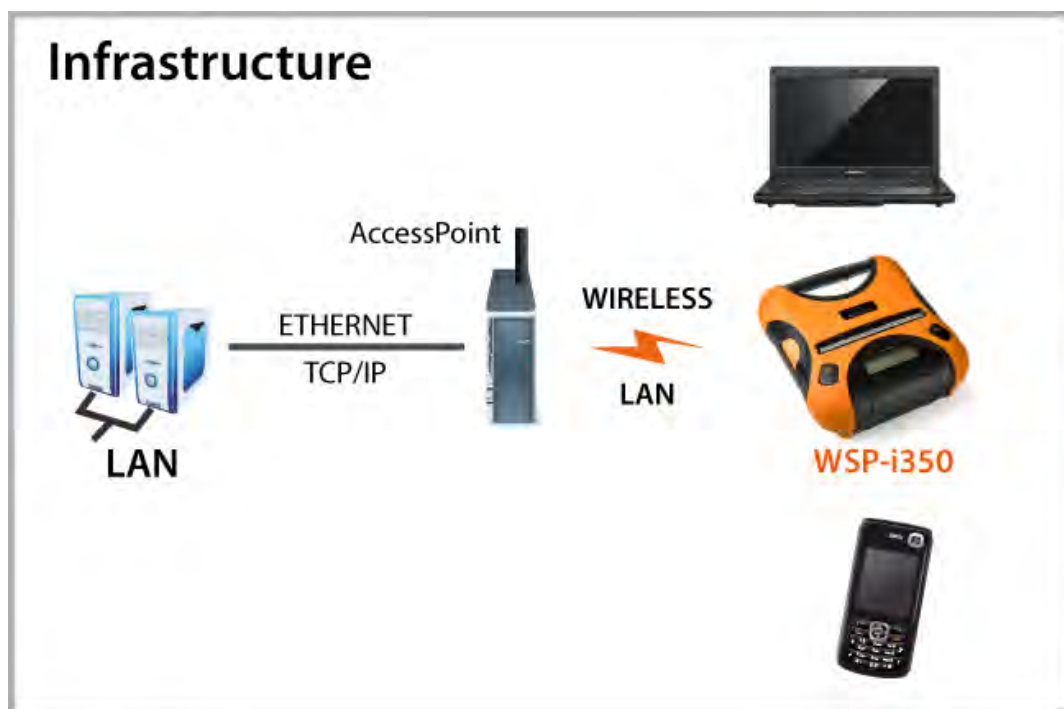


**Ad-hoc Mode**

## 3.4.1 wLAN SETTING

**1. wLAN Manager Program summary**

   wLAN Manager is a utility program, which configures i-350 equipment settings wireless LAN.

**2. wLAN Manager program function**

**2.1. The selection of the wLAN Manager Program operating mode**

You can select wLAN Manager program operating mode using [LOCAL] or [REMOTE]  and Serial.

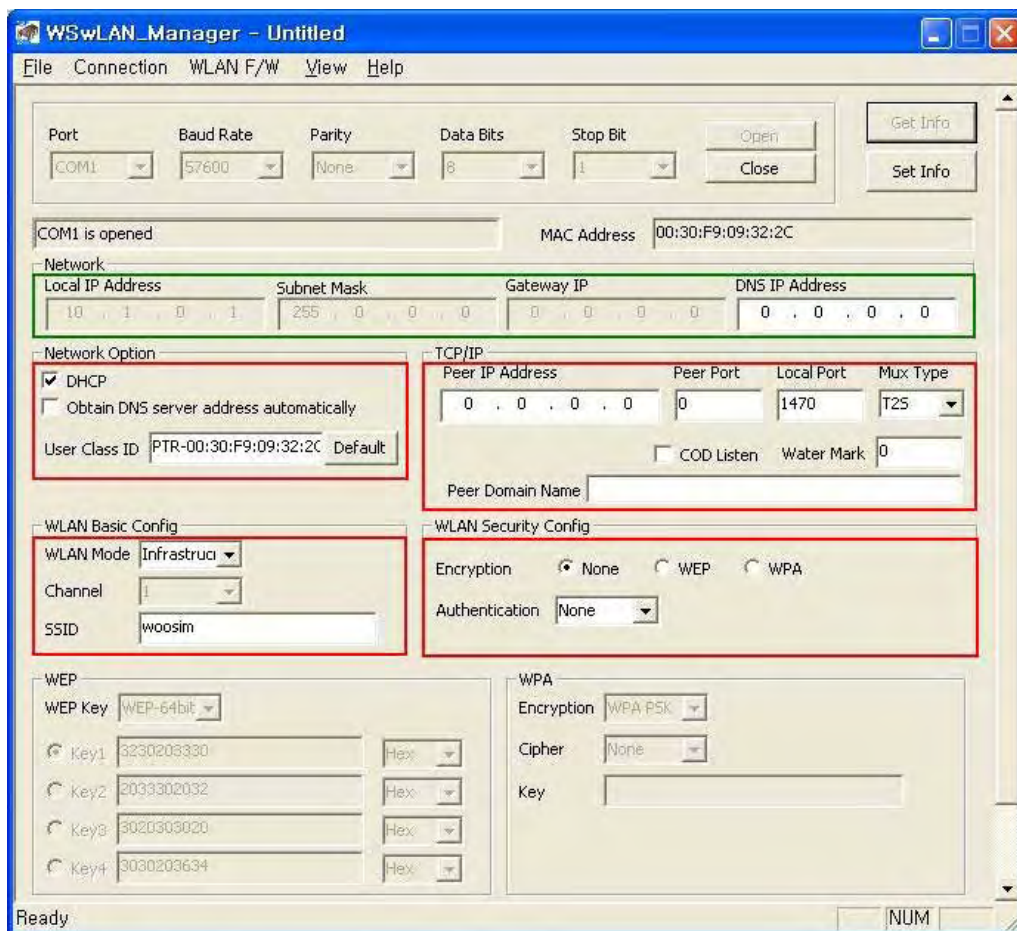Following is the screen shot of WSwLAN_Manager which is just launched.
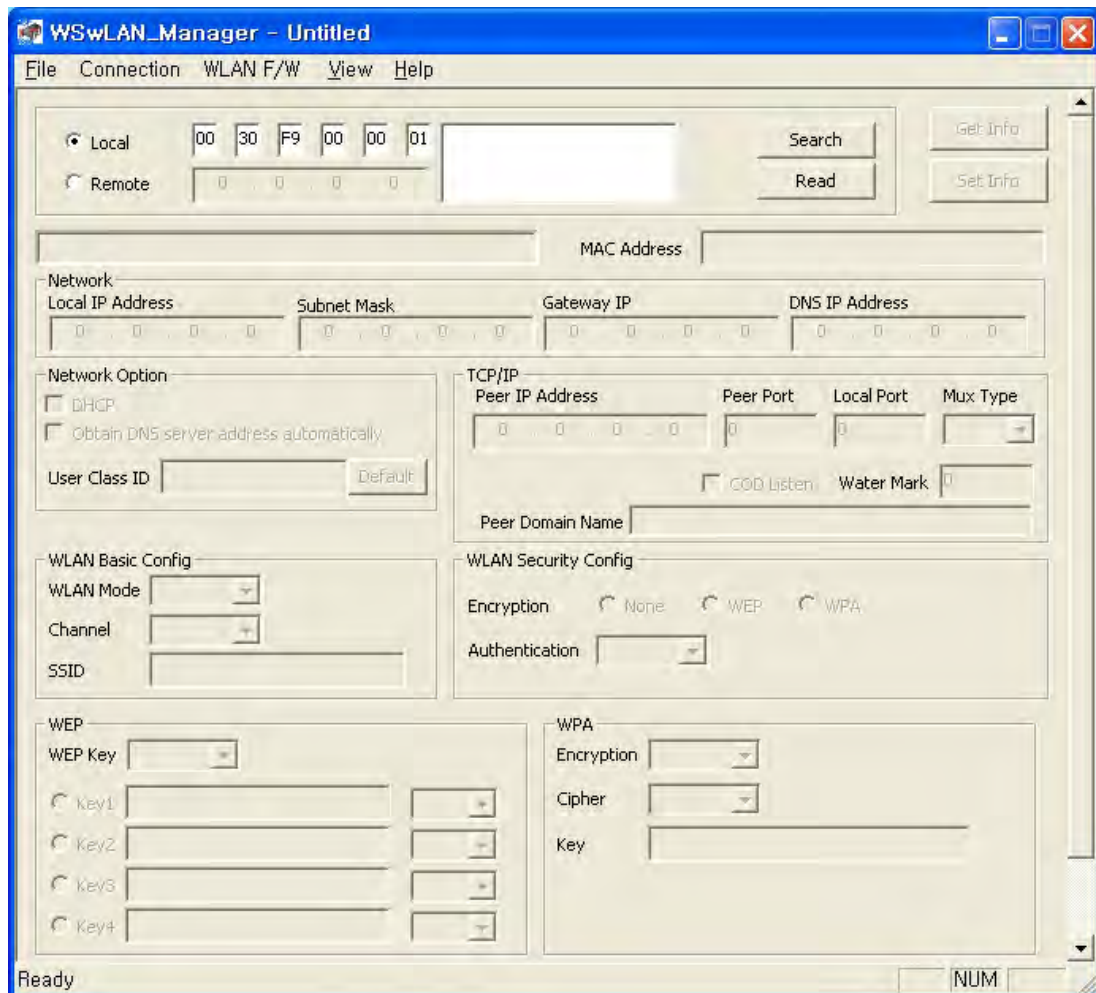
**2.2. Select Serial from the Menu→Connection (default : Serial)**

    1)   Click "Open" button after serial communication config.



    2)   Click "Get Info" button.



    3)   Complete setting and click "Set Info" button.

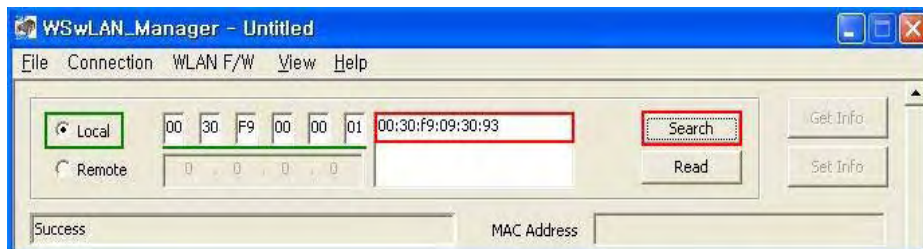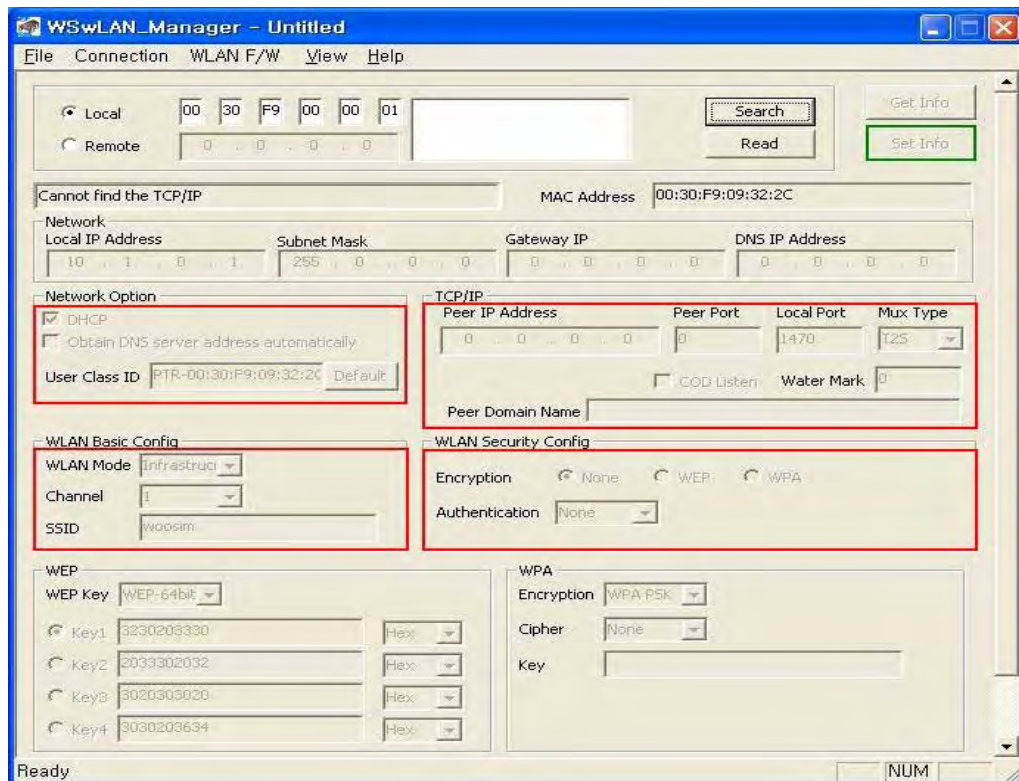### 2.3. Select TCP/IP from the Menu→Connection
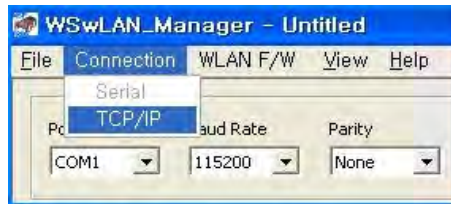


1) Local Mode

Remove serial cable in printer

Click "Search" button

Click Searched MAC Address.



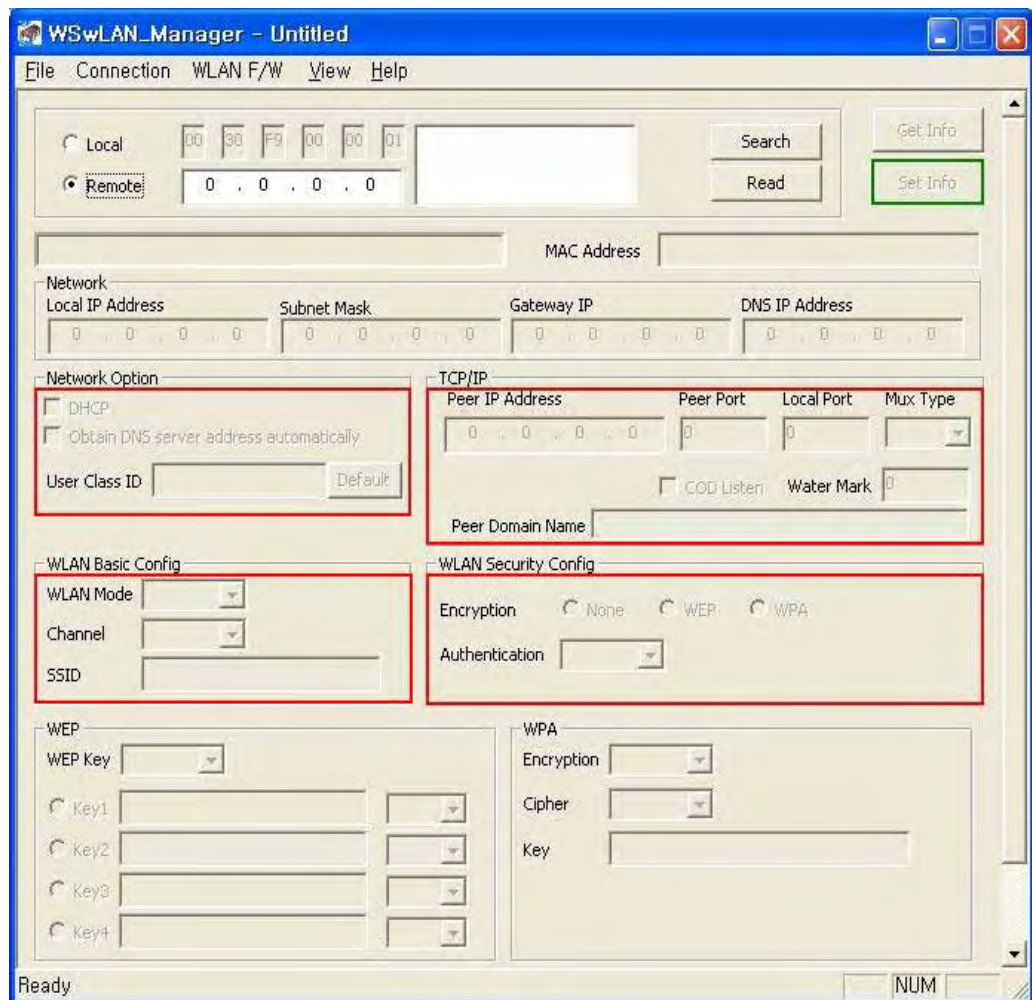Complete setting and click "Set Info" button.

2) Remote Mode

   Remove serial cable in printer.

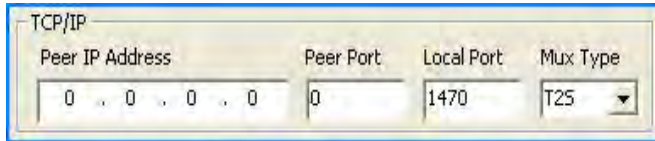   Select "Remote" mode and Input after confirm allocated IP Address in printer LCD.



   Complete setting and click "Set Info" Button.
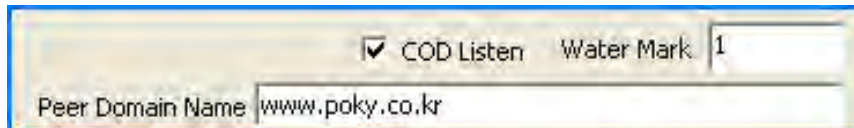
**2.4. Setup Item**

1) TCP / IP Group



| TCP / IP | | |
|---|---|---|
| **Peer Address** | IP address or host name to connect in TCP Client mode<br>IP address or host name to send in U2S mode | |
| **Peer Port** | Port number to connect in Client mode | |
| **Local Port** | Port number for waiting to be connected in T2S Client mode.<br>Port number for UDP data in U2S mode. | |
| **Mux Type** | T2S | TCP Server Mode |
| | COD | TCP Client Mode |
| | ATC | TCP Server / Client<br><br>(AT command emulation) |
| | U2S | UDP |



| TCP / IP | |
|---|---|
| **COD Listen** | In case mux_type is COD-TCP Client and you choose cod_listen WSP-i350 works under TCP server.<br>In this case, the data is set up in Local_port is used for the standby Server Port |
| **Water Mark** | Data size before TCP connection.<br>if the serial port of Printer receive the data which the bigger than the size of water_mark data size, it tries to access to   TCP or send the data to Network. |
| **Peer Domain Name** | Set domain to receive download. |

2)  Network Group



| Network | |
|---|---|
| **Local IP Address** | i350 IP address |
| **Subnet Mask** | Subnet Mask |
| **Gateway IP address** | Gateway's IP address |
| **DHCP** | Decide whether to receive i350 IP address via DHCP |
| **Obtion DNS server address automatically** | If i350 IP address is set a dynamic IP(DHCP), it will automatically receive DNS server address.<br>If this check box is not activated, the IP address designated in the [DNS IP Address] will be used as the DNS server address. |
| **User Class ID** | Set User Class ID ( DHCP option77 )<br>Default Format : Ptr-<Mac Address> |

3) WLAN Basic Config Group
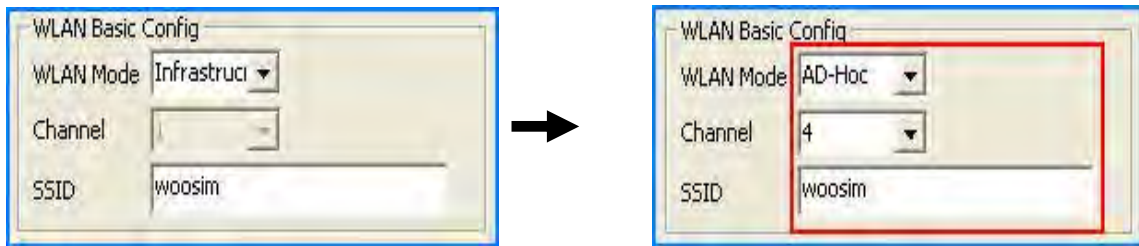


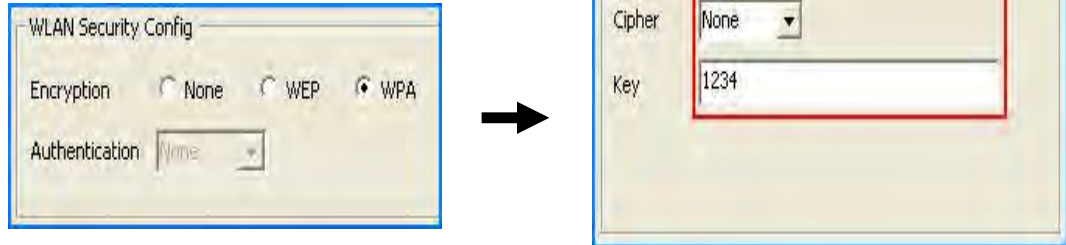| WLAN Basic config | |
|---|---|
| **WLAN Mode** | Network type to connect. ( Infrastructure / Ad-hoc ) |
| **SSID** | SSID to connect (Maximum 32 bytes)<br>Default value : woosim |
| **Channel** | Channel number for ad-hoc<br>(The channel number will be random in some case.) |

4) WLAN Security Group

None.
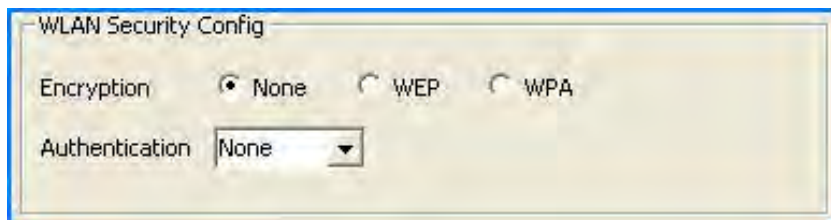


WEP.
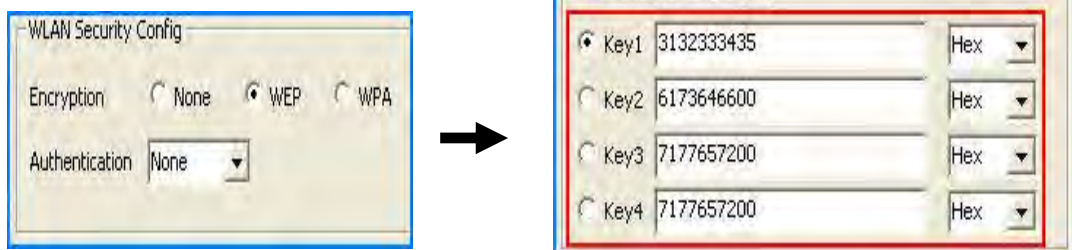


▶Note

- WEP-64bit : Max key length is 5 byte, and store up to 4 keys.

- WEP-128bit : Max key length is 13 byte, and store up to 4 keys.

WPA.



▶ Note

- WPA-PSK : Input more than minimum 8 byte.

## 2.5. Setting WEP key.

Check the settings of AP to connect to (authenticate method – open, shared key;

key length – 64 bits, 128 bits and key index).

1) Click the [WEP] menu

2) Select an Authentication method – [Open System] / [Shared Key]

3) Select a WEP key length – [64 Bits] / [128 bits]

4) Select a key index to use – [Key1] / [Key2] / [Key3] / [Key4]

5) Select key format to input – [HEX] / [ASCII]

6) Input the Key.

7) The following is an example.
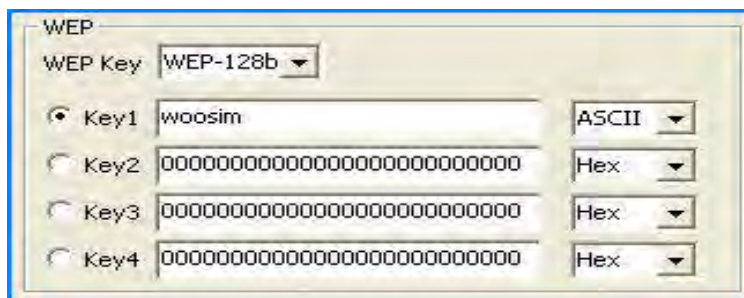
# 4. Using the printer.

## 4.1. Control panel.

Mode status

Battery capacity status

POWER    FEED

Bluetooth Mode

Display data transmission

Bluetooth connection status
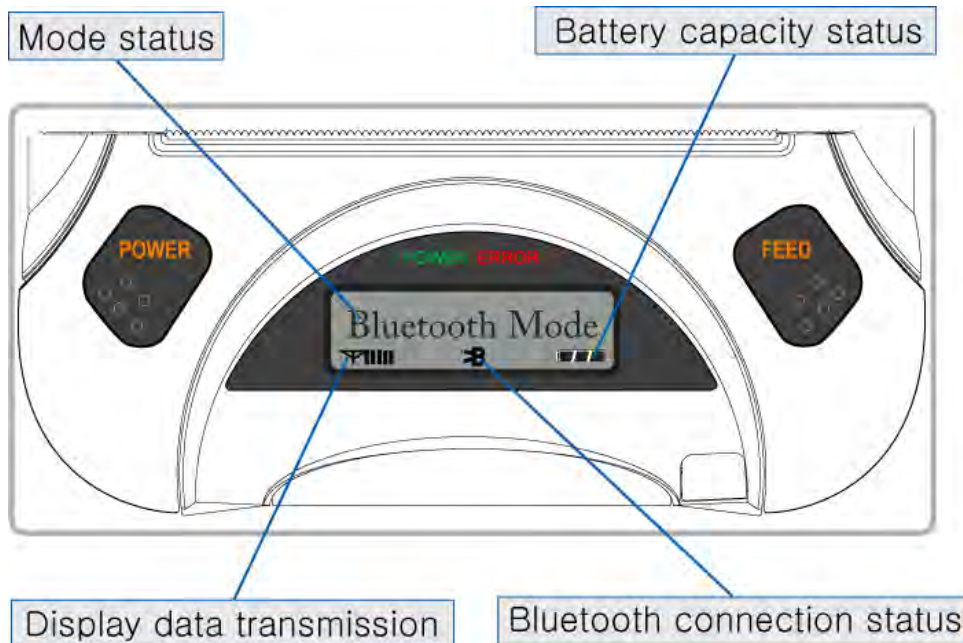
▶ Butt

**- FEED Button :**

When the printer is on, paper can be feed manually by pressing and holding the
FEED button for more than one second.

**- POWER Button :**

When of 5 or more seconds presses and power comes to on or off.

After pressing the POWER and the FEED button simultaneously,

if the ERROR lamp 5 turn signals POWER button is converted with

MODE functions.

MODE functions are for use to change communication mode.

(Refer to **2.5. Set operation mode** for details about mode conversion)


▶ **Panel lamp**

**-POWER (Green)    :** Printer is ON and ready to receive data.

**-ERROR (Red)    :** Indicated a fault condition or a printer error.

(i.e : no paper, paper cover opened. etc.)

## 4.2. The self test.

The self test procedure will check most of the printer functions.

For self test, turn on the power while holding down the FEED Button.

The Self-Test checks the following :

1) Make sure paper roll has been installed properly.

2) The Self-Test prints the current printer status, which provides the control ROM version and the communication method setting.

3) After printing the current printer status, Self-Test will print a pattern using the built-in character set.

4) The Self-Test automatically ends.

The printer is ready to receive data as soon as it completed the self test.

# 5. Consumable Parts.

## 5.1. Recommended paper.

Type                    : Thermal Paper

Paper width             : 80mm

Paper thickness         : 60±5

Outer diameter          : Ø50mm or less

Recording side          : Outside of roll

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⚠ **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    .

    Pay attention to heat, humidity and sun light.

4.  Color of paper may be changed by being scratched by nail or hard metal, etc

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## 5.2. Printing position.
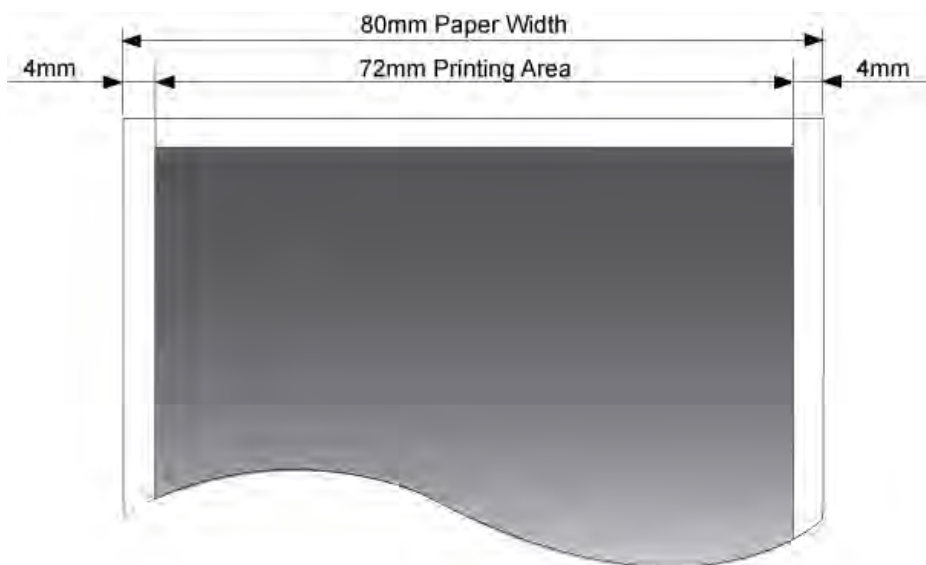
FCC ID : QDDWSP-I350

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 operated 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.