



**sewoo**

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P12(Non peeler) Rev. C 01/18



**MODEL:LK-P12(Non peeler)**

Portable Printer

System Administrator Manual





**Disposal of Old Electrical&Electronic Equipment(Applicable in the European Union and other European countries with separate collection systems)**

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste.

Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronics equipment. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

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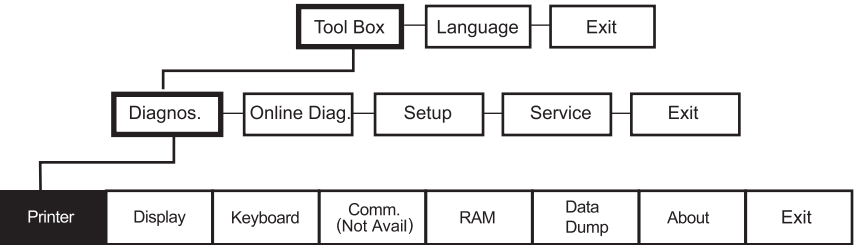
# 1. INTRODUCTION

## 1-1. Using This Manual

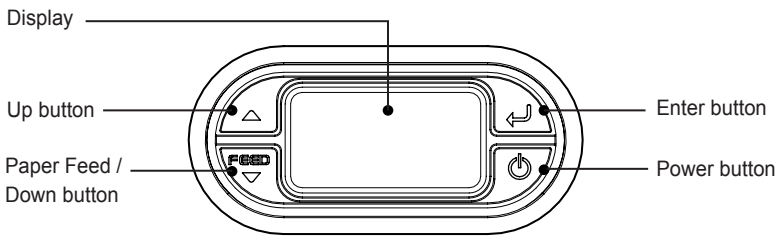
	Subjects	Contents
1	Introduction	Notes before using printer
2	Diagnostics	How to print test label, check sensor, check print position, etc.
3	Setting Up the Printer	How to use the Setting Menu to adjust stock and printer settings

## 1-2. Using the Menu Chart

The black boxes show present position, the boxes with a thick line show how you got there.



## 1-3. Using the Display and Buttons



### NOTE

The feed button operates as a feed button in ready mode only.

Screen displays	Meaning
↵	Selects the highlighted option.
▲	Moves the Menu position upwards by one step.
FEED ▼	Moves the Menu position down one step.
▶	Moves the cursor to the position you want to change.
+	Increases value.
-	Decrease value.
X	Returns to the parent Menu without saving settings.
Y	Returns to parent Menu after saving settings.

### 1-3-1. Selecting a Menu

1. Press the Enter(↵) button to enter the Menu.



2. Move the cursor through the menu using the Up(▲) / Down(▼) buttons, and select an item by pressing the Enter(↵) button.



### 1-3-2. Exiting a Menu

Select Exit Menu or press the power (⏻) button to return to the previous menu.

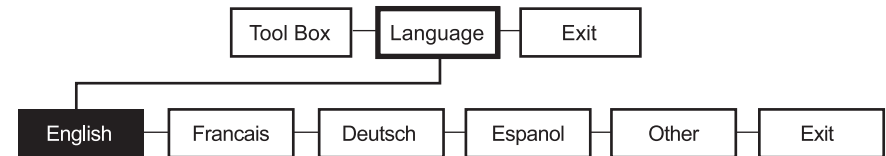
### 1-3-3. Printing

There are three ways to print.

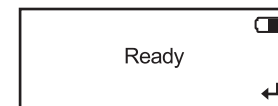
1. When turning on the printer, press and hold the power (⏻) button and the Down(▼) button. The printer prints a batch (if sent) or prints the printer status information.
2. Select a test label from the Diagnostics menu.
3. Send batch data to the printer.

### 1-4. Selecting a Language

You can read Menu names or messages on the printer in English, French, Spanish, German.



1. Turn on the printer. The printer name and software version information is displayed.



2. Press Enter(↵) button.



3. Move cursor to language by pressing Down(▼) button and then press Enter(↵) button.



4. Move the cursor to the language you want by pressing Up(▲)/Down(▼) button then press Enter(↵) button.



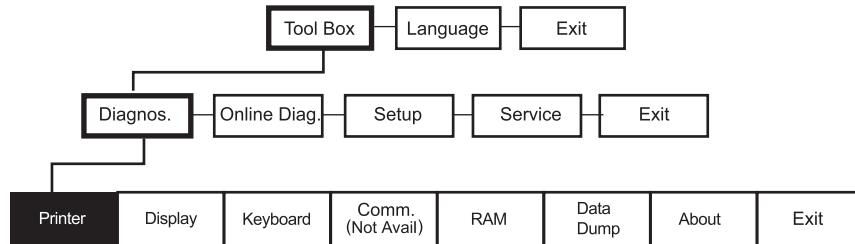
5. The selected language is displayed on the screen.
6. Select exit to return to the diagnostics menu or press the power button to return to the ready screen.

## 2. Using Diagnostics

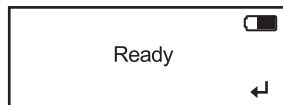
This chapter describes how to use Diagnostics in the Tool Box.

You can view test results through this Menu; however, you cannot change the setting.

### 2-1. Diagnostics



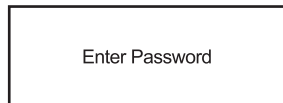
1. Turn on the printer. The printer name and software version information is displayed.



2. Press the Enter(↵) button.



3. Press the Enter(↵) button.

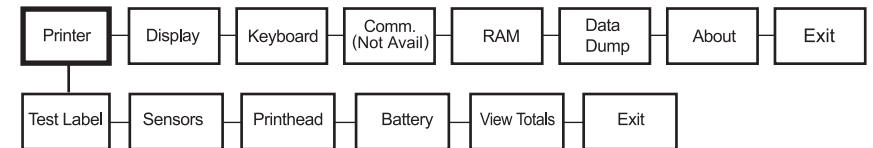


4. Press Up(▲) and Enter(↵) button in the sequence of ↵, ▲, ▲, ▲, ↵
5. If correct the password is typed you will see the screen below.



6. The cursor is positioned on the Diagnostics Menu. Enter into Diagnostics Menu by pressing the Enter(↵) button.

### 2-1-1. Printer



To return to initial screen, press the power(⏻)button.

#### \*\*Test Label

Four test labels can be printed: Diag Label, Test Pattern, Gray Scale, MIF (Monarch Initialization Files) Info.

1. Select **Printer - Test Label - Diag Label** in Diagnostics Menu (MPCL Only)

```

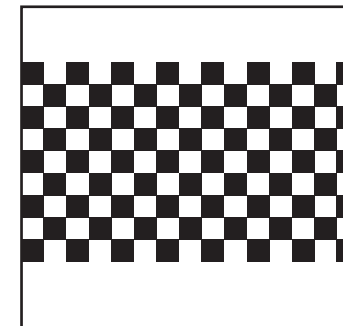
MODEL : LK-P12 S/W : Version 1.1 2
A,0,0,0,1,0: B,0,0,0,030,0:
C,0,0,0,40,0:
D,1,1,1,2:
E,{,,",,},~,^,"",0d/0a
F,0,0,0,0,0:
F,0,0,0:
M,R,R,400: M,T,R,100:
M,I,R,1280: M,D,R,640:
M,F,R,160: M,V,R,640:
  
```

```

MODEL : LK-P12 S/W : Version 1.1 2
TOTAL INCHES : 00000024
HI ENERGY INCHES : N/A
VOLTAGE : 8.0V
CONTRAST POT : N/A
PH RESISTANCE : N/A
BAD DOTS : N/A
MEMORY : 8MBR/16MBN
OPTIONS : -
SWID : 9485 prototype
  
```

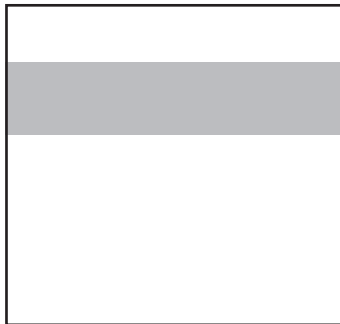
Printer Diagnostics Labels will be printed.

2. Select **Printer - Test Label- Test Pattern** in Diagnostics Menu.



A Checkerboard pattern will be printed.

3. Select **Printer - Test Label - Gray Scale** in Diagnostics Menu.



Gray Scale is printed.

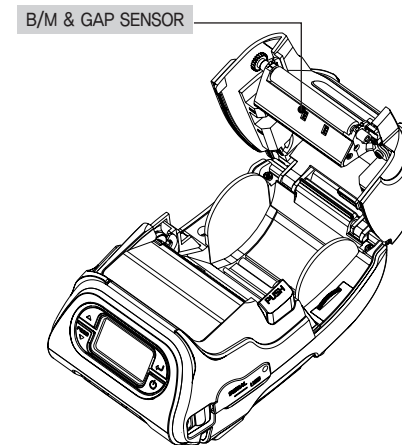
4. Select **Printer - Test Label - MIF** Info in Diagnostics Menu. (MPCL Only)

```
MODEL :LK-P12 S/W : Version 1.12  
[ LK-P12 ]  
COM = 19200, N, 8, 1, R  
LOW_POWER = 60  
PCONTRAST = 0  
SUPPLY_POS = 30  
PRINT_POS = 0  
MARGIN = 0  
OVERFEED = 0  
BACKFEED = 0  
BACKLIGHT = 1  
WIRELESS = 1  
ImageBuffer = 1280  
DownloadableFonts = 640  
ItemStorage = 160  
ScalableFonts = 640  
CTLCHAR = ~123~044~034~124~125~126~094  
LANG = 0  
INFO = 9485 prototype  
END
```

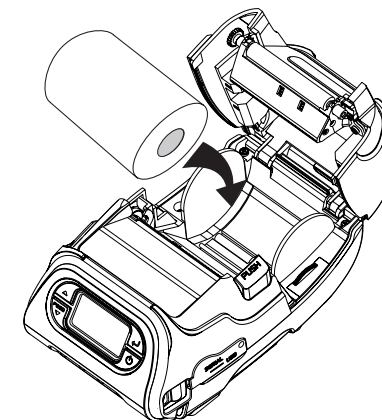
MIF Info is printed.

## **\*\*Sensors**

In this Menu, you can read each A/D value of the Black Mark and Gap sensor, or Peeler and Peel-SW sensors. The position of each sensor is shown in the following picture.



1. Load stock in the printer.

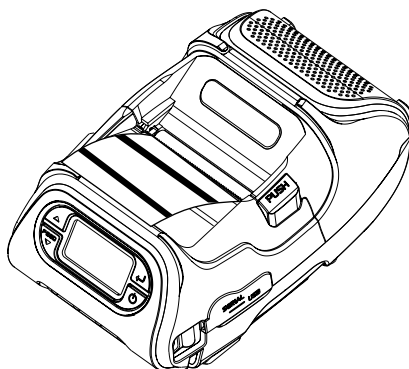


2. Select **Printer – Sensors – Black Mark** in the Diagnostics Menu.

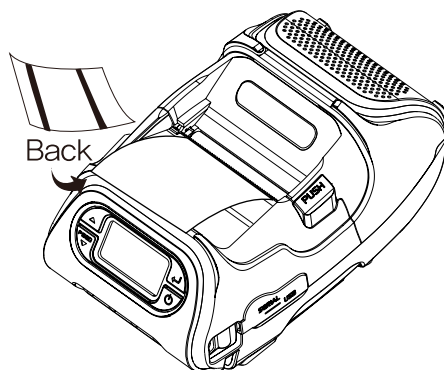
Check whether the A/D value is changing in Black Mark sensor position while feeding Black Mark stock manually.

Black Mark  
A/D Value = 16

Make sure the stock is loaded in line with upper/lower Black Mark sensors.



BM Upper Black Mark

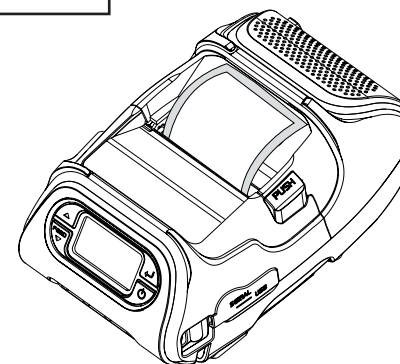


BM Lower Black Mark

3. Select **Printer – Sensors – Gap** in Diagnostics Menu.

Check whether the A/D value is changing in the Gap sensor position by feeding Gap stock manually.

Gap  
A/D Value = 194



Gap Sensor

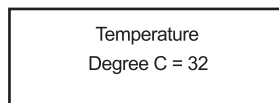
4. Press the Enter(↵) button to return to the previous menu.



## **\*\*Printhead**

In this Menu, You can check Printhead temperature(TPH) in °C(Centigrade).

1. Select **Printer – Printhead – Temperat** in the Diagnostics Menu.

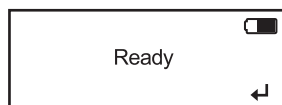


The temperature of Printhead must be lower than 60°C to print.  
Press the Enter(↵) button to return to the previous menu.

## **\*\*Battery**

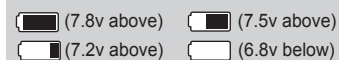
There are two ways to check the battery level.

1. You can check the battery indicator located on the upper right side of the screen.

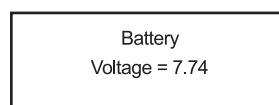


### **NOTE**

Remaining battery power



2. Select **Printer – Battery** from the Diagnostics Menu, and the battery level is displayed in voltage on the screen.

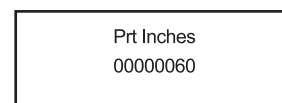


Press the Enter(↵) button to return to the previous menu.

## **\*\*View Total**

In this Menu, you can view Total inches printed

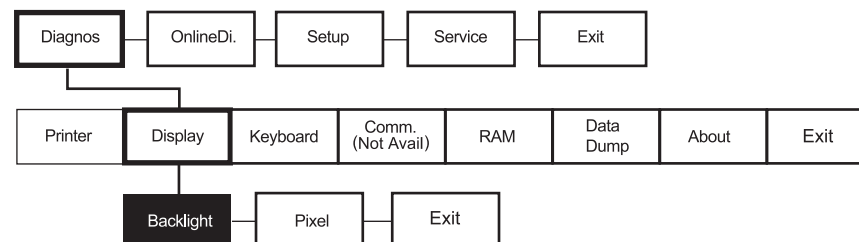
1. Select **Printer – View Total – Print Inch** from the Diagnostics Menu.



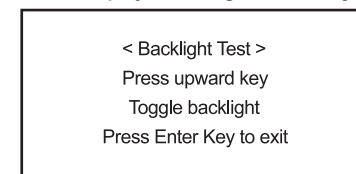
Press the Enter(↵) button to return to the previous menu.

## **2-1-2. Display**

You can check the display in this Menu.



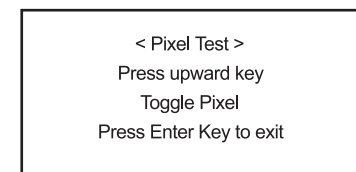
1. Select **Display – Backlight** in the Diagnostics Menu.



2. Press the Up(▲) button to turn the Backlight off. Press the same button again to turn the backlight on.

3. Press the Enter(↵) button to exit from Backlight Test.

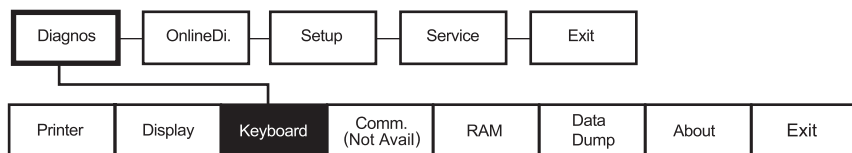
4. Select **Display – Pixel** in the Diagnostics Menu.



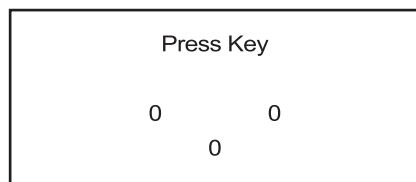
5. Press the Up(▲) button and all Pixels on the screen change to black. If the button is pressed again, all pixels change to white.

6. Press the Enter(↵) button to exit from the Pixel Test.

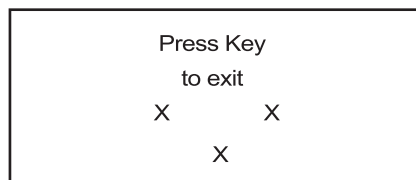
### 2-1-3. Buttons



1. Select Keyboard from the Diagnostics Menu.

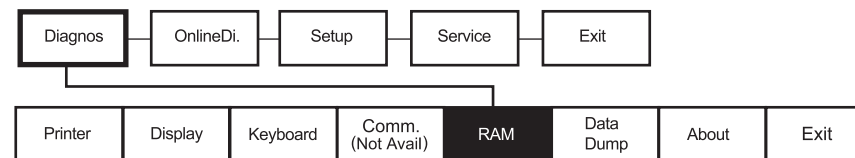


2. Press the Up(▲) button, press the Down(▼) button, and press the Enter(↵) button.
3. Each icon should change from O to X when pressed.
4. Press the Enter(↵) button from the keyboard test.

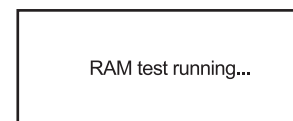


### 2-1-4. RAM

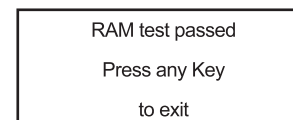
Select this Menu and check memory of the printer.



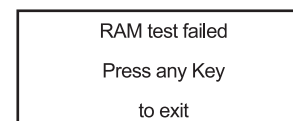
1. Select **RAM** in Diagnostics Menu.
2. The message "RAM test running" is displayed.



3. If the RAM test passes, you will see:



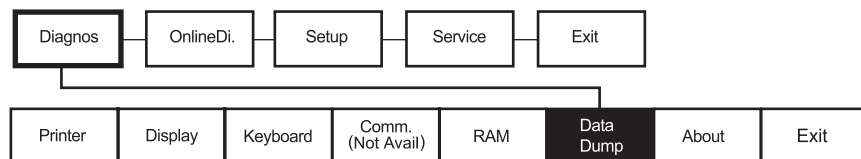
4. If the RAM test fails, you will see:



5. Press the Enter(↵) button to return to the previous menu.

## 2-1-5. Data Dump

Use this menu if you are having problems with a data stream. Data Dump captures the data from the communications port and prints that information to a label.



1. Select the **Data Dump** from Diagnostics Menu.
2. The labels print with data from the communication port.

```
0 200 200 210 1
TEXT 4 0 0 100 I<DATE
FORM
PRINT
```

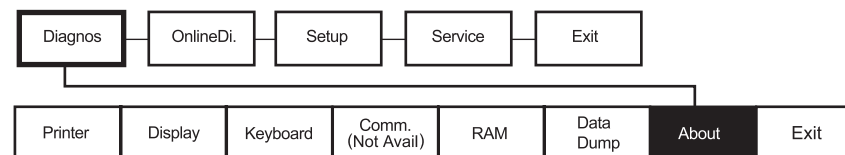
For CPCL, the previous command data will be printed on the paper.

```
1,0: T,08,1,v,195,182,0,,1,1,0
B,0,1,0: T,09,1,V,215,182,0,,1,
1,0,B,0,1,0: T,10,1,V,235,182,0
,,1,1,0,B,0,1,0: }B,3,N,1: 01,
"~128": 02, "~129": 03, "~130
": 04, "~131": 05, "132": 06
, "~133": 07, "~134": 08, "~13
5": 09, "~136": 10. "~137": }
```

For MPCL, previous command data will be printed on the paper.

## 2-1-6. About

You can see the model name of the printer and H/W and S/W version in this Menu.



1. Select **About** in Diagnostics Menu.
2. Printer information will be displayed on the screen.

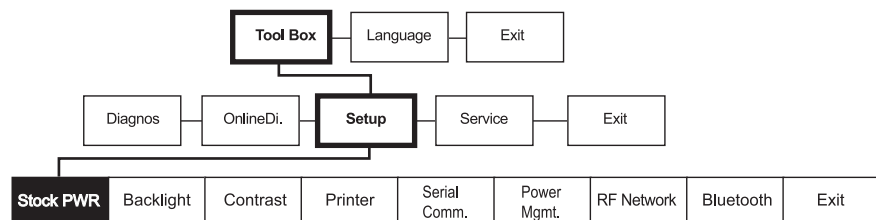
```
ABOUT LK-P12
S/W VER. v0.02a
H/W REV. v0.2
```

3. Press any key to exit.

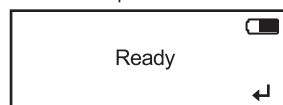
## 3. SETTING UP THE PRINTER

### 3-1. SETUP

This chapter describes, how to set up the printer.



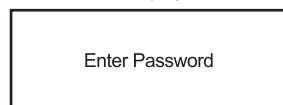
1. Turn on the printer.



2. Press the Enter(↵) button.



3. Press the Enter(↵) button then enter the password.



4. Press Up(▲) and Enter(↵) button in the sequence of ↵, ▲, ▲, ▲, ↵

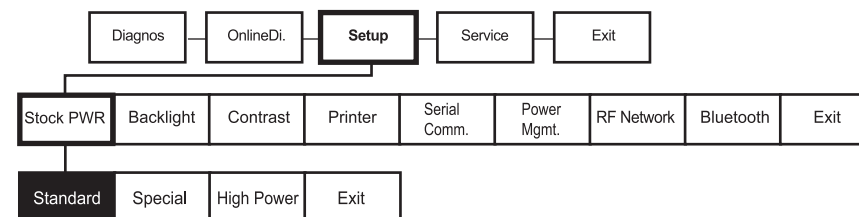
5. If the password is entered correctly, you see:



6. Press the Up(▲) / Down(▼) button to select Setup Menu and press the Enter(↵) button.

#### 3-1-1. Stock PWR

Using this Menu, you can set stock type. This printer uses two kinds of stock types, Standard and High Power. Standard supports tag, label, or receipt stock, and High Power supports linerless and synthetic.



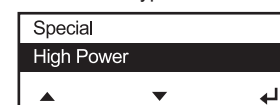
#### NOTE

The "special" setting is reserved for future supply types. Do not use this setting.

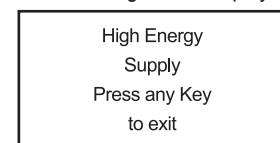
1. In the Setup Menu, select **StockPWR**.



2. Select stock type.



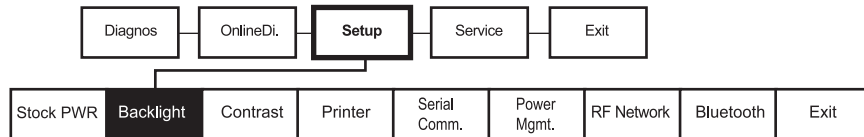
3. The following will be displayed:



4. Press any key to exit. Set Values are stored.

### 3-1-2. Backlight

This Menu activates or deactivates the LCD Backlight.



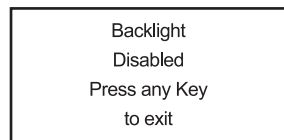
1. In the Setup Menu, select **Backlight**.



2. Select Disable or Enable.



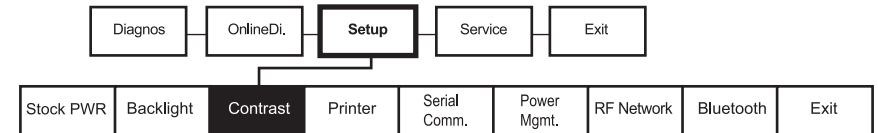
3. The display will show:



4. Press any key to exit. Set Values are stored.

### 3-1-3. Contrast

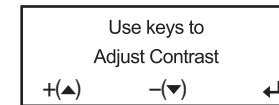
This Menu sets the Contrast of the LCD.



1. Select Contrast in Setup Menu.



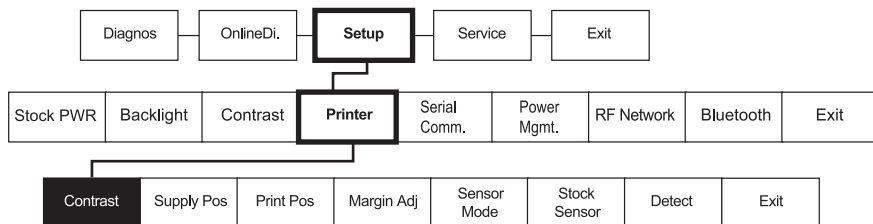
2. Press the Up(▲) button or Down(▼) button to adjust the contrast.



3. Press the enter button (↵) to save and exit.

### 3-1-4. Printer

In this Menu, you can set Print Contrast, Print Positions and use of various sensors.



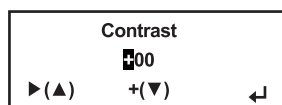
#### \*\*Adjusting the Print Contrast

In this Menu, you can adjust print contrast.

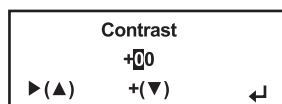
1. Select Setup **Menu – Printer – Contrast**.



2. Press the Up(▲) button to move the cursor one step towards the right side (selecting the +/-). Press the Down(▼) button to change the positive/negative setting.



3. Press the Up(▲) button to move the cursor one more step to the right. Press the Down (▼) button to increase/decrease the print contrast setting (0 – 9).



The operations above are described in the following table.

▶	+	↵
Press Up(▲) button [Move cursor. (+00)]	Press Down(▼) button [Character is changed]	Press Enter(↵) button. [Exit after stored.]
First position(00)	It changes +/-.	Store the setting and then exit.
Second position(+0)	Changes second position.	
Third position (+00)	It changes third position.	

4. If you exceed the minimum/maximum range, the following Menu appears and you must set the print contrast within the acceptable range.



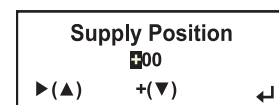
#### \*\*Adjusting the Supply Position

This Menu sets how much the paper is fed during printing.

1. Select Setup **Menu-Printer-Supply Pos**.



2. In the following picture, if the Up(▲) button is pressed, the position of the cursor moves towards the right side by one step. If the Down(▼) button is pressed, the level of characters on which the cursor is presently positioned is increased. For example, if you press on + it changes to -, and if Down(▼) is pressed on - then it is changed to +. If Down(▼) is pressed on a Number, then the number is increased by 1(0~9). Once you have the desired value, store it and exit by pressing Enter(↵) button.



3. The above key operations are described in the following table.

▶	+	↵
Press Up(▲) button [Move cursor. (+00)]	Press Down(▼) button [Character is changed]	Press Enter(↵) button. [Exit after stored.]
First position(00)	It changes +/-.	Store the setting and then exit.
Second position(+0)	Changes 10 <sup>th</sup> digit.	
Third position (+00)	It changes 1 <sup>st</sup> digit.	

4. When you try to set a value, if the value exceeds the minimum/maximum range, the following message appears at the top of the screen and then returns to the Setting Menu again.



## \*\*Adjusting the Print Position

This menu lets you increase or decrease the amount of whitespace above the printed label.

1. Select Setup **Menu – Printer – Print Pos.**

Supply Pos
Print Pos
▲ ▼ ↵

2. In flowing picture, if you press the Up(▲) button the position of the cursor moves to the right side one place. If you press the Down(▼) button the filed the cursor is highlighting is changed. For example, if you press Down(▼) on + it changes to - and if you press Down(▼) on – then it changes to +. In addition, if you press Down(▼) on a number then the number increases by 1 (0~9). Once you have selected the desired value, save and exit by pressing Enter(↵) button.

Print Position
000
▶(▲) +(▼) ↵

3. The above key operations are described in the following table.

▶	+	↵
Press Up(▲) button [Move cursor. (+00)]	Press Down(▼) button [Character is changed]	Press Enter(↵) button. [Exit after stored.]
First position(000)	It changes +/-.	Store the setting and then exit.
Second position(+00)	Changes 10 <sup>th</sup> digit.	
Third position (+00)	It changes 1 <sup>st</sup> digit.	

4. When you are changing values, if you set a value that exceeds the minimum/maximum range, the following message appears on the top of the screen before returning to the Setting Menu again.

Too High
+80
▶(▲) +(▼) ↵

Too Low
-80
▶(▲) +(▼) ↵

## \*\*Adjusting the Margin Adjust

In this Menu, the printing position can be adjusted left/right based on the value entered.

1. Select Setup Menu – Printer – Margin Adj.

Print Pos
Margin Adj
▲ ▼ ↵

2. In flowing picture, if you press the Up(▲) button the position of the cursor moves to the right side one place. If you press the Down(▼) button the filed the cursor is highlighting is changed. For example, if you press Down(▼) on + it changes to - and if you press Down(▼) on – then it changes to +. In addition, if you press Down(▼) on a number then the number increases by 1 (0~9). Once you have selected the desired value, save and exit by pressing Enter(↵) button.

Margin Adjust
00
▶(▲) +(▼) ↵

3. The above key operations are described in the following table.

▶	+	↵
Press Up(▲) button [Move cursor. (+00)]	Press Down(▼) button [Character is changed]	Press Enter(↵) button. [Exit after stored.]
First position(000)	It changes +/-.	Store the setting and then exit.
Second position(+00)	Changes 10 <sup>th</sup> digit.	
Third position (+00)	It changes 1 <sup>st</sup> digit.	

4. When you are changing values, if you set a value that exceeds the minimum/maximum range, the following message appears on the top of the screen before returning to the Setting Menu again.

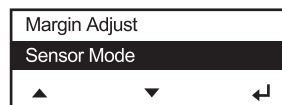
Too High
+80
▶(▲) +(▼) ↵

Too Low
-80
▶(▲) +(▼) ↵

## **\*\*Setting the Sensor Mode**

This Menu allows you to configure the paper sensor according to the type of paper loaded (Gap, BlackMark (BM)).

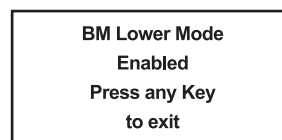
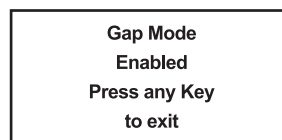
1. Select Setup **Menu – Printer – Sensor Mode.**



2. Select one of the four label sensor modes including Gap, BM Lower, BM Upper, or Non-indexed.



3. The display shows:



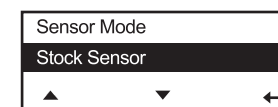
### **NOTE**

Our supplies are usually black mark on the back (non-printing side), so select BM Upper.

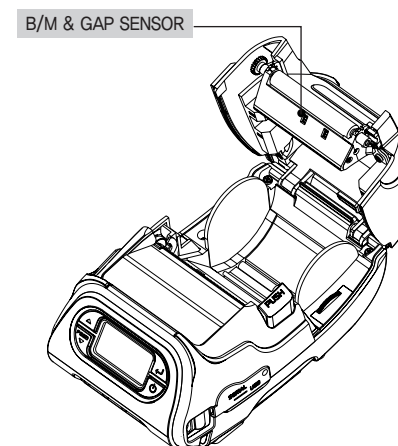
## **\*\*Setting the Stock Sensor**

This Menu sets the DAC value for each sensor (Gap, BlackMark).

1. Select Setup **Menu- Printer – Stock Sensor.**



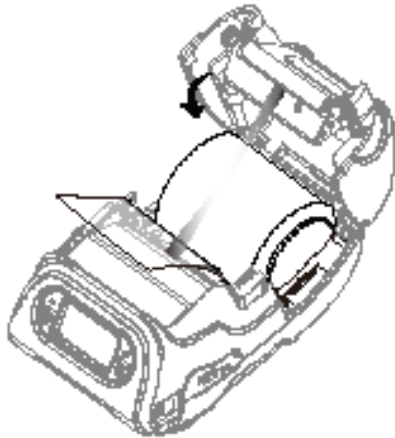
2. Perform the following tests using the following picture as reference.





## Gap Mode

1. With the printer turned off, remove one or two labels from the liner.
2. With the printer in peel mode, place the liner over the sensor.



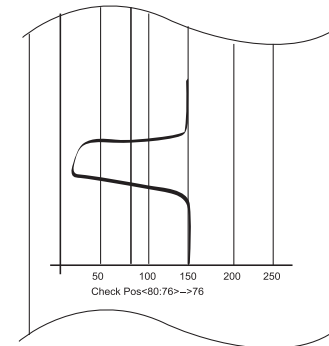
3. Press the Enter(↵) button when you see:

**Gap Sensor  
Selected**

4. The following message appears. Press the Enter(↵) button to continue.

**Insert Liner... Selected  
Then hit Enter**

5. The test label will print.



6. The following message appears.

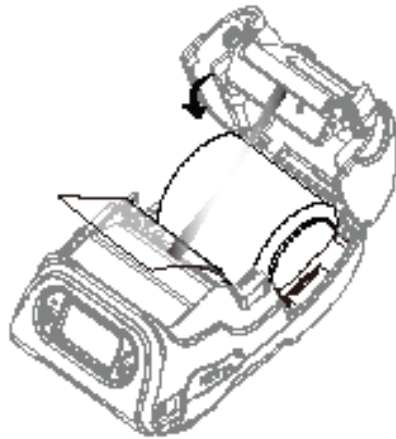
**Successful**

**Failed**

7. Press any key to exit from the Menu.

## Black Mark Lower Mode

1. Cover the lower black mark with a label.



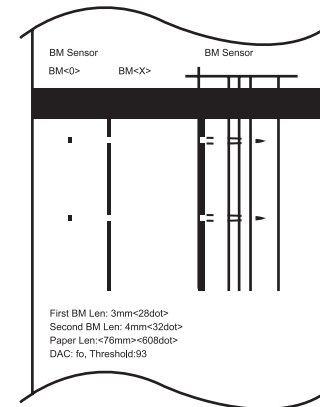
2. Press the Enter(↵) button.

**BM Sensor  
Selected**

3. The following message appears. Press the Enter(↵) button to continue.

**Insert Liner... Selected  
Then hit Enter**

4. The information label prints.



5. The following message appears based on the result.

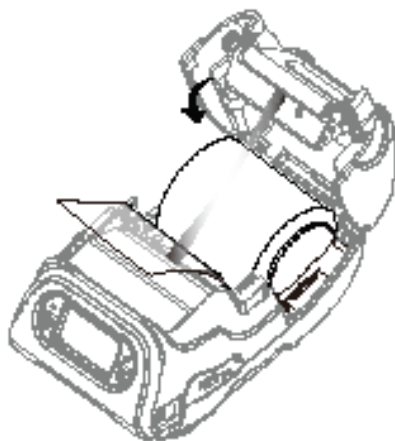
**Successful**

**Failed**

6. Press any key to exit from the Menu.

## Black Mark Upper Mode

1. Cover the upper black mark with a label. The BM Upper sensor is recommended for our supply.



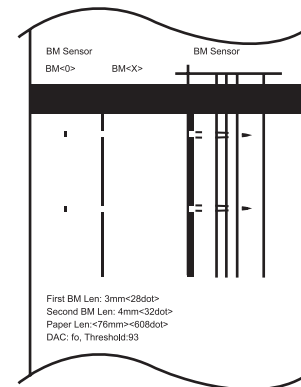
2. Move to the next step by pressing the Enter(↵) button on the following screen.

**BM Sensor  
Selected**

3. The following message appears and if the Enter(↵) button is pressed the test will begin.

**Insert Liner... Selected  
Then hit Enter**

4. The information label prints.



4. Following message appears according to the result.

**Successful**

**Failed**

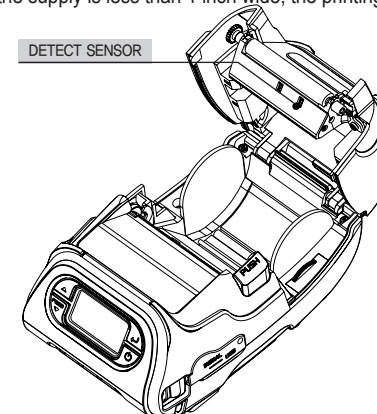
5. Press any key to exit from the Menu.

## **\*\*Setting Width Detection**

This Menu can activate or deactivate the Width-Detect Function.

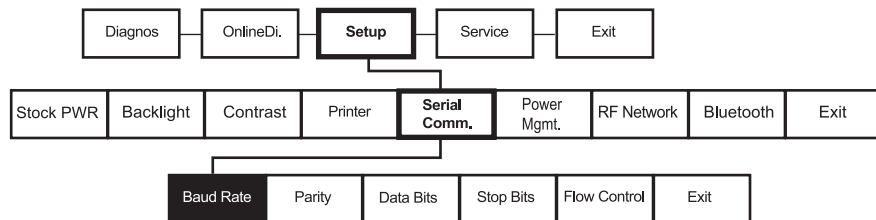
1. elect Toolbox – Setup – Printer – Detect.

If "Enable" is selected and the supply is less than 1 inch wide, the printing speed is reduced.



### 3-1-5. Serial Communications

You can set serial communication using this Menu.



The following values must be set for serial communication with PC.

Option	Choices	Default
Baud Rate	1200/2400/4800/9600/ 19200/38400/57600/115200	9600
Parity	None/Odd/Even	None
Data Bits	7/8	8
Stop Bits	1/2	1
Flow Control	No Flow/DTR Flow/ RTS Flow/Xon/Xoff/Special	DTR

#### \*\*Baud Rate

1. Select Setup **Menu – Serial Comm – Baud Rate.**

2. Select either 1200, 2400, 4800, 9600, 19200, 38400, 57600, or 115200.

(※BPS=Bit Per Second)

3. Save the setting by pressing the Enter(↵) button.

4. Select exit to return to the Serial Comm menu.

#### \*\*Parity

1. Select Setup **Menu – Serial Comm – Parity.**

2. Select No Parity, Odd Parity, or Even Parity.

3. Save the setting by pressing the Enter(↵) button.

4. Select exit to return to the Serial Comm menu.

## **\*\*Data Bits**

1. Select Setup **Menu – Serial Comm – Data Bits.**

Parity
<b>Data Bits</b>
▲ ▼ ↵

2. Select either 7 Data Bits, or 8 Data Bits.

<b>7 Data Bits</b>
8 Data Bits
▲ ▼ ↵

3. Save the setting by pressing the Enter( ↵ ) button.

8 Data Bits
-------------

4. Select exit to return to the Serial Comm menu.

## **\*\*Stop Bits**

1. Select Setup **Menu – Serial Comm – Stop Bits.**

Data Bits
<b>Stop Bits</b>
▲ ▼ ↵

2. Select either 1 Stop Bit, or 2 Stop Bits.

<b>1</b>
2
▲ ▼ ↵

3. Save the setting by pressing the Enter( ↵ ) button.

1 Stop Bit
------------

4. Select exit to return to the Serial Comm menu.

## **\*\*Flow Control**

1. Select Setup **Menu – Serial Comm – Flow Ctrl.**

Stop Bits
<b>Flow Ctrl</b>
▲ ▼ ↵

2. Select No Flow, DTR Flow, RTS flow, Xon/Xoff, or Special.

### **✓ NOTE**

The “special” setting is reserved for future supply types. Do not use this setting.

<b>DTR Flow</b>
RTS Flow
▲ ▼ ↵

3. Save the setting by pressing the Enter( ↵ ) button.

DTR Flow Ctrl
---------------

4. Return to previous Serial Comm Menu using Exit.


### **Exit and Save**

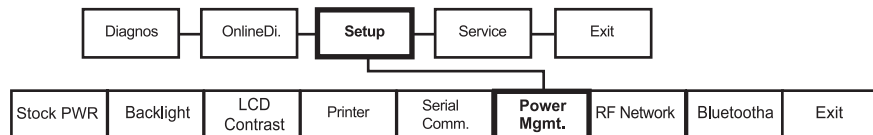
After setting all serial communication settings, select exit or press the Power( ⏻ ) button to exit. The selected values are displayed and the user is asked whether to save or not.

New Selection
9600, EVEN, 8, 1
Are you sure?
Y(▲) X(▼)

If you select Y by pressing the Up(▲) button the settings will be saved, but if you select X by pressing the Down(▼) button you will exit from the Menu without saving settings.

### 3-1-6. Power Management

This Menu sets the amount of time the printer waits before entering Power Save mode. If a USB cable is connected the printer does not go into Power Save. If the printer goes into Power Save Mode, wake-up the printer by connecting the USB cable, pressing Power(  ) button, or send data to the serial port.



1. Select Setup **Menu – Power MGMT - Low Power**


Serial Comm
<b>Power Mgmt</b>
▲ ▼ ↵

2. Select the Power Save Time including disabled, 10 sec, 20 sec, 30 sec, 1 min, 2 min, 5 min, 10 min, 30 min, or 1 hour.

Disable
<b>10 Sec</b>
▲ ▼ ↵

3. The selected time is displayed and a buzzer makes two short sounds.

Low Power Mode
10 Seconds

4. Press the Enter(  ) button.
5. Select Exit to return to the Setup menu.

1. Select Setup **Menu – Power MGMT -Shut Down**


Serial Comm
<b>Power Mgmt</b>
▲ ▼ ↵

2. Select the Power Save Time from disabled, 10min, 20min, or 30 min

Disable
<b>10min</b>
▲ ▼ ↵

3. The selected time is displayed and a buzzer makes two short sounds.

Shut Down Mode
10 min

4. Press the Enter(  ) button.
5. Select Exit to return to the Setup menu.

## 4. Wi-Fi

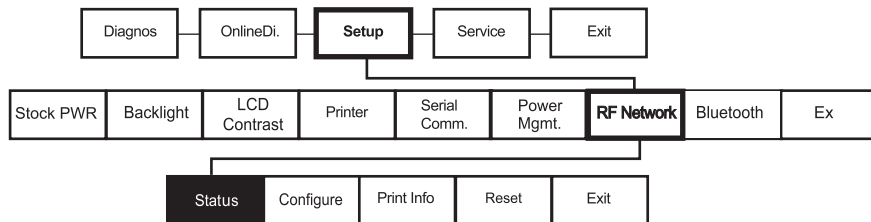
### 4-1. RF Network

Use these instructions to set up a printer using the printer's RF Network menu in the printer's Tool Box.

The RF Network menu allows you to check the printer's status, configure the RF network settings, and reset the radio.

#### NOTE

Refer to "4-3. Using the Web Interface" for the webpage configuration



1. Turn on the printer by pressing and holding the power button (⏻) until the display turns on. The printer displays version information.

```

  LK-P12
  S/W VER. V1.12
  CPCL
  
```

When you see this, the printer is waiting for the wireless print server to initialize.

Next, you may see:

```

  <T>      [Wi-Fi Icon] [Battery Icon]
  Ready
  
```

Display	Indicates
Ready	The printer is in Ready mode to send and receive data.
<T>	You can Press ▲ to display the printer's IP address. Press ▲ again to return to Ready mode.
[Wi-Fi Icon]	The printer is connected to a Wi-Fi module.
[No Wi-Fi Icon]	The printer is not connected to Wi-Fi module.
[Battery Icon]	The battery indicator shows the battery's remaining charge. When the indicator is empty, you will need to recharge the battery.

2. Press the Enter(↵) Button.

```

  Tool Box
  Language
  ▲ ▼ ↵
  
```

3. Press the Enter(↵)Button then enter the password.

```

  Enter Password
  
```

4. Press the Up(▲) and Enter(↵) button in the sequence of ↵, ▲, ▲, ▲, ↵

```

  Diagnos.
  OnlineDi.
  ▲ ▼ ↵
  
```


5. If the password is entered correctly, you will see.

```

  OnlineDi.
  Setup
  ▲ ▼ ↵
  
```

6. Press the Up(▲)/Down(▼) button to select the Setup menu and press the Enter(↵) button.

## **\*\*Checking the Printer's Network Status**

To check the printer's network status, use this menu.  
To exit, press  at any time.

### **Checking the Network Status**

This option displays the printer's IP address.

1. In Setup menu, Select RF Network.
2. From the RF Network menu, select Status.
3. Check your printer's IP address.

The printer displays the IP address.

192. 000. 000. 192


WLNG-AN-DP551

4. Press  to check other network information.

000000000000  
Protocol : TCP  
State : Active  
IEEE 802.11g

## **\*\*Configuring the Printer**




The Configuration menu allows you to set the printer's IP address, subnet mask, gateway, power mode, protocol, SSID, and escape character.

To exit, press at  any time.

## **Setting the IP Address**







This option sets the printer's IP address.


1. From the RF Network menu, select Configure.
2. From the Configure menu, select IP Address.

IP Address  
192.0.0.192  
  

For:      Select:  
BOOTP    0.0.0.0  
DHCP     0.0.0.1  
Static IP   nnn.nnn.nnn.nnn

Use the buttons as shown in the following table:

 Press  to	 Press  to	 Press  to
Scrolls through the positions from left to right	Increments the current position setting by 1	Saves the setting

3. When the setting you want is displayed, press  to save the setting.  
You return to the Configure menu.



## Setting the Subnet Mask

This option sets the printer's subnet mask.

1. From the Configure menu, select Subnet Mask.

Subnet Mask

255.255.000.000

▶(▲)
 + (▼)
 ↵

Use buttons as shown in the following table:

▶(▲) Press ▲ to	+ (▼) Press ▼ to	↵ Press ↵ to
Scrolls through the positions from left to right	Increments the current position setting by 1	Saves the setting

2. When the setting you want is displayed, press ↵ to save the setting. You return to the Configure menu.

## Setting the Gateway

This option sets the printer's router (gateway) address.

1. From the Configure menu, select Gateway.

Gateway

000.000.000.000

▶(▲)
 + (▼)
 ↵

Use buttons as shown in the following table:

▶(▲) Press ▲ to	+ (▼) Press ▼ to	↵ Press ↵ to
Scrolls through the positions from left to right	Increments the current position setting by 1	Saves the setting

2. When the setting you want is displayed, press ↵ to save the setting. You return to the Configuration menu.

## Setting the Power Mode

This option sets the power mode.

1. From the Configure menu, select Power Mode.

CAM

PSP

▲
 ▼
 ↵

The choices include CAM (Continuous Awake Mode) or PSP (Power Save Protocol). PSP conserves battery power. CAM means the printer is continuously receiving and transmitting data. This mode uses battery power quickly.

2. When the setting you want is displayed, press ↵ to save the setting. You return to the Configure menu.

## Setting the Protocol

This option sets the Protocol.

1. From the Configure menu, select Protocol : TCP or LPD. (TCP Fixed)

2. Use ▼ to select the protocol you want. For example, if you select LPD, you must specify a raw printer port:

Use buttons as shown in the following table:

(▲) Press ▲ to	+ (▼) Press ▼ to	 Press ↵ to
Scrolls through the positions from left to right	Toggles between + or – also increments the current position setting by 1	Saves the setting

3. Press ↵ to save the setting. You return to the Configure menu.

## Setting the SSID

This option sets the SSID. The SSID is case-sensitive.

1. From the Configure menu, select SSID.

Use buttons as shown in the following table:

(▲) Press ▲ to	+ (▼) Press ▼ to	 Press ↵ to
Scrolls through the positions from left to right	Increments the current position setting by 1 and scrolls through alpha/special characters	Saves the setting

2. When the setting you want is displayed, press ↵ to save the setting. You return to the Configure menu.

## \*\*Network Information

You can see the printer's network IP address.

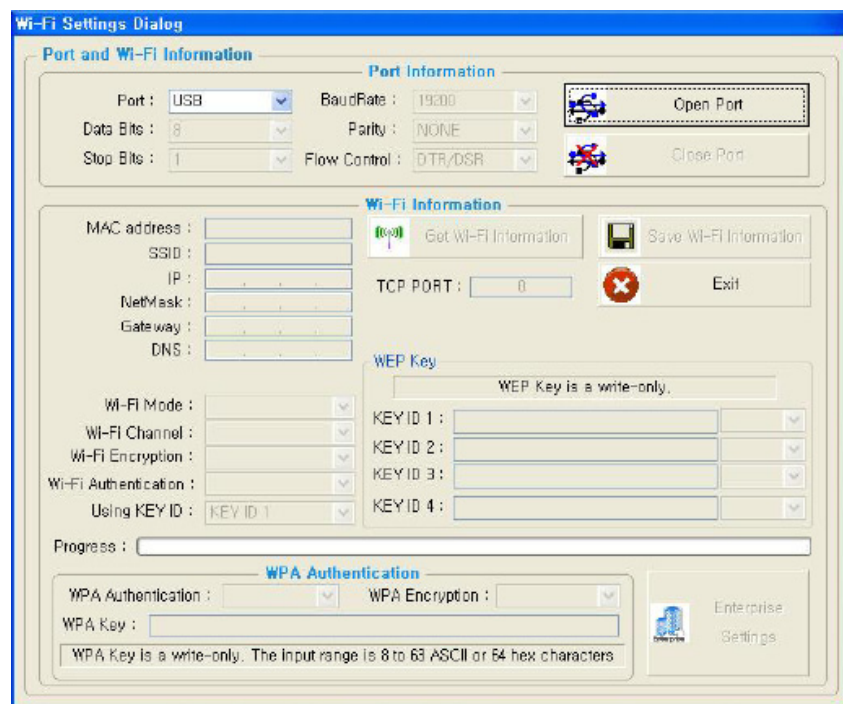
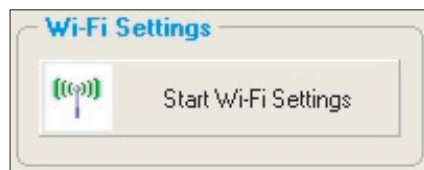
1. Turn the printer on.
2. Press ▲ under <T>. You will see the printer's IP address.

For example:

3. Press ⏻ or ▲ to exit.

## 4-2. Wi-Fi setting utility instruction

Run the configuration utility, and press the 'Start Wi-Fi Settings' button as shown the image below.



### 4-2-1. Port and Wi-Fi Information Tab

Users can connect from a PC to the printer via serial port (COM1 – COM9) or USB port. If the users use a serial port, check the Baud Rate on both the Printer and the PC first.

After setting the baud rate, connect the printer and PC and press the "Open Port" button. Press the 'Get Wi-Fi Information' button and the Wi-Fi information stored in the printer will show in the appropriate fields.

Users can change the Wi-Fi settings in this menu.

To store the Wi-Fi setting, press the 'Save Wi-Fi Information' button. Once all configuration is completed, press the 'Close Port' button to disconnect the PC and printer.

### 4-2-2. Wi-Fi Information Tab

Users can change network settings like SSID, IP, Net Mask, Gateway, and DNS to the appropriate settings for their network. Users can also change the settings below.

- Wi-Fi Mode (Ad-Hoc or Infrastructure)
- Wi-Fi Channel
- Wi-Fi Encryption mode
- Wi-Fi Authentication mode
- KEY ID

### 4-2-3. WPA Authentication Tab

This Wi-Fi module supports two WPA authentication types (WPA PSK(TKIP) or WPA2 PSK(AES)) and three types of enterprise authentication (WPA-Enterprise / WPA2-Enterprise / 802.1x (PEAP, TLS, TTLS, LEAP, FAST)). To change an enterprise authentication, press the "Enterprise Settings" button at the bottom of the utility.

4-3. Using the Web Interface

First, set the IP address of the Wi-Fi module so the printer can be accessed on the network. After setting the IP Address and connecting the user's PC and the printer to the same network, users can access the printer by entering the IP address into a web browser to access the web-based configuration page.

This Webpage supports Explorer v6.0 ~ 8.0, Firefox v3.x, Opera v9.6+ and Chrome v1.0+. To access the printer's settings, the user will need to log in with the information below.

Figure 1 - Website Login

Connect to 192.168.0.254



GoAhead

User name: admin

Password: .....

☐ Remember my password

OKCancel

Username: admin  
Password : admin

If the login information is correct, users can configure the printer via web browser.

4-3-1. Setting Menu

Figure 2 - Setting Menu

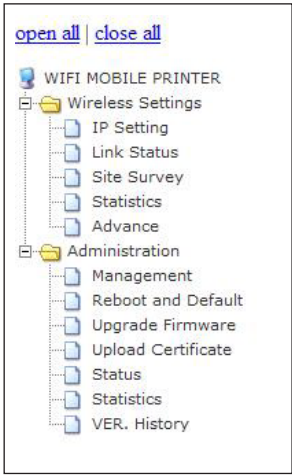


Chart 1 – Description of Menu

Title	Description
IP Setting	Set the IP Address.
Link Status	Show the connection status.
Site Survey	This will show up APs around the printer. User can setup the security protocol and connect to the printer
Statistics	Show the connection status.
Advance	Users can configure 802.11 B/G/N settings or the radio Channel being used.
Management	Users can configure the time, login information, and more.
Reboot and Default	Users can set reboot or return the printer to factory default.
Upgrade Firmware	Used to update the Firmware.
Upload Certificate	Used to upload a security certification.
Status	Shows the system information and address the of the wireless network.
Statistics	Shows the current memory usage and the amount of transmitted packets.
VER. History	Shows the firmware version.

#### 4-3-2. IP Setting

When IP Setting from Wireless Settings is selected, you will see the figure 3 (Static IP) below, or figure 4 (DHCP) below.

You can receive or change the address on this screen.

Figure 3 – IP Setting (Static)

open all | close all

WIFI MOBILE PRINTER

- Wireless Settings
  - IP Setting**
  - Link Status
  - Site Survey
  - Statistics
  - Advance
- Administration
  - Management
  - Reboot and Default
  - Upgrade Firmware
  - Upload Certificate
  - Status
  - Statistics
  - VER. History

**IP(Internet Protocol) Settings**

You may choose different connection type suitable for your environment. Besides, you may also configure parameters according to the selected connection type.

WLAN Connection Type: **STATIC (fixed IP)**

Static Mode	
IP Address	192.168.0.192
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Primary DNS Server	168.126.63.1
Secondary DNS Server	164.124.101.2

Commit

**IP Address:** An address to distinguish the nodes in Wireless Network environment.

**Subnet Mask:** An address to distinguish the Network ID and Host ID from the IP Address.

**Default Gateway:** A network address required to enter another network.

**Primary DNS Server:** A server address required to change the host name to IP Address.

**Secondary DNS Server:** A server address to back up the Primary DNS Server.

Figure 4 – IP Setting (DHCP)

open all | close all

WIFI MOBILE PRINTER

- Wireless Settings
  - IP Setting**
  - Link Status
  - Site Survey
  - Statistics
  - Advance
- Administration
  - Management
  - Reboot and Default
  - Upgrade Firmware
  - Upload Certificate
  - Status
  - Statistics
  - VER. History

**IP(Internet Protocol) Settings**

You may choose different connection type suitable for your environment. Besides, you may also configure parameters according to the selected connection type.

WLAN Connection Type: **DHCP (Auto config)**

DHCP Mode	
Hostname (optional)	

Commit

**Hostname :** Users can select the Hostname for a client.

#### 4-3-3. Link Status

After selecting Link Status from Wireless Settings, users will see the image below. From this screen, users can check the Module's current SSID, Mac address, Channel, etc.

Figure 5 – Link Status

The screenshot shows the 'Link Status' page. On the left is a navigation menu with options like 'Wireless Settings', 'IP Setting', 'Link Status', 'Site Survey', 'Statistics', 'Advance', 'Administration', 'Management', 'Reboot and Default', 'Upgrade Firmware', 'Upload Certificate', 'Status', 'Statistics', and 'VER. History'. The main content area has a title 'Link Status' and a subtitle 'The Status page shows the settings and current operation status.' Below this is a table with the following data:

Link Status		
Status	Mobile_Printer <-> 1E-48-F3-7D-8F-CE	
Extra Info	Link is Up	
Channel	1 <-> 2412000 KHz; Central Channel: 3	
Link Speed	Tx(Mbps) 65.0	Rx(Mbps) 58.5
Throughput	Tx(Mbps) 149.0	Rx(Mbps) 126.0
Link Quality	Good 100%	
Signal Strength 1	Good 100%	<input type="checkbox"/> dBm format
Signal Strength 2	Good 100%	
Signal Strength 3	Good 100%	
Noise Level	Low 0%	

**Status:** Shows the current SSID and BSSID of the module.

**Extra Info:** When the module is connected to a network, 'Link is Up' will be shown, and when the module is not connected the message will say 'Link is Down' for the connection status.

**Channel:** Shows the channel that is being used by the module.

**Link Speed:** Shows the maximum speed of receiving/transmitting data.

**Throughput:** Shows the amount of data that is being communicated.

**Link Quality:** Shows the connection quality in regards to packet loss.

**Signal Strength 1~3:** Shows each antenna's connection status.

**Noise Level:** Shows the noise occurrence.

#### 4-3-4. Site Survey

After selecting Site Survey from Wireless Settings, users will see the page below. Through this page, users can see the information for any available APs that are near the module. Moreover, after selecting the AP that users want to connect to, users can access the desired AP by configuring the Encryption of the module by opening the Settings page through the Connection button.

Figure 6 – Site Survey

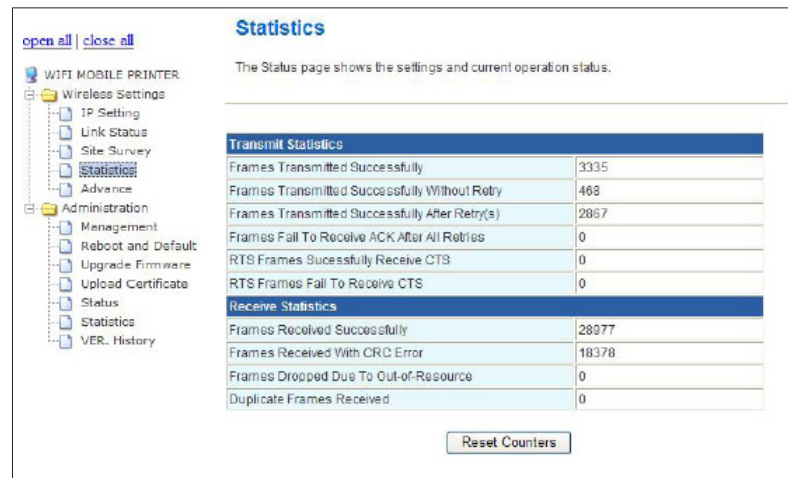
The screenshot shows the 'Site Survey' page. On the left is a navigation menu similar to the one in Figure 5. The main content area has a title 'Site Survey' and a subtitle 'Site survey page shows information of APs nearby. You may choose one of these APs connecting or adding it to profile.' Below this is a table with the following data:

Site Survey							
	SSID	BSSID	RSSI	Channel	Encryption	Authentication	Network Type
<input type="radio"/>	sewoo-wifi-printer	66-13-6B-E5-EF-22	100%	1	Not Use	OPEN	Ad Hoc
<input type="radio"/>	sewoo_fw_ap	00-26-66-78-E8-70	100%	1	Not Use	OPEN	Infrastructure
<input checked="" type="radio"/>	songms	86-01-68-7E-66-65	50%	1	Not Use	OPEN	Ad Hoc
<input type="radio"/>	SEWOO_2F	00-12-17-60-4E-46	100%	6	AES	WPA2-PSK	Infrastructure

#### 4-3-5. Statistics

After selecting Statistics From Wireless Settings, users will see a page like the image below. This screen shows the current connection statistic by counting the amount of data transmitted and received.

Figure 7 - Statistics



**Frames Transmitted Successfully:** Shows the number of packets transmitted successfully.

**Frames Transmitted Successfully Without Retry:** Shows the number of packets transmitted successfully on the first attempt.

**Frames Transmitted Successfully After Retry:** Shows the number of packets retransmitted successfully after failing.

**Frames Fail To Receive ACK After All Retries:** Shows the number of received packets without an ACK packet. Higher values mean higher external interference.

**RTS Frames Successfully Receive CTS:** Shows sent RTS frame values and successfully received RTS frame values.

**RTS Frames Fail To Receive CTS:** Shows RTS frame values that failed to receive a CTS frame.

**Frames Received Successfully:** Shows the number of successfully received frames.

**Frames Received With CRC Error:** Shows the number of CRC error or dropped packets which were identified with a Checksum error.

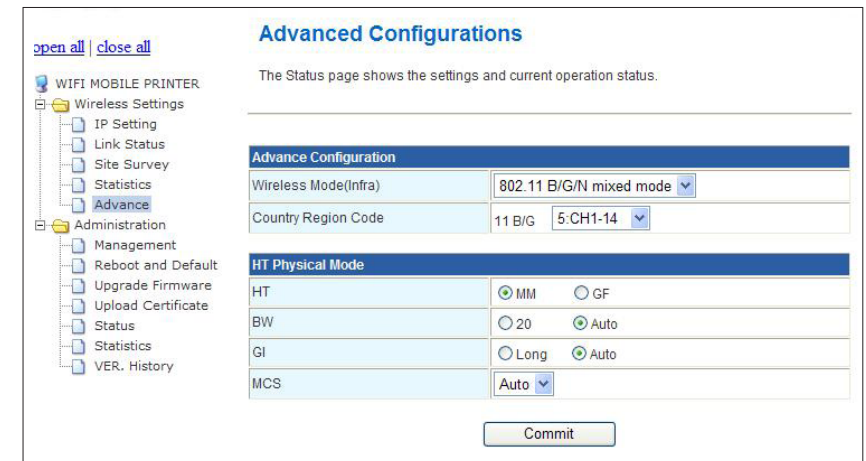
**Frames Dropped Due To Out-of-Resource:** Shows the number of dropped packets due to out of resource errors.

**Duplicate Frames Received:** Shows the number of duplicated frames.

#### 4-3-6. Advance

The page shown in figure 8 will show when users choose "Advance" from the "Wireless Setting" menu. Users can set the Wi-Fi mode (802.11 B/G/N) and channels from this menu.

Figure 8 – Advanced



**Wireless Mode:** Set an 802.11 Wi-Fi mode.

**Country Region Code:** Set a channel according to a certain region (country).

**HT Physical Mode (only showed in n mode) -**

**HT :** Select a High Throughput Mixed (MM) or High Throughput Greenfield (GF)

**BW:** Set the Bandwidth as 20 or Auto

**GI:** Set the Guard Interval as Long or Auto

**MCS:** Set the Modulation Coding Scheme value



#### 4-3-7. Management

The page shown in figure 9 will show when users choose “Management” from the “Administration” menu. Users can set up a user account and change the time settings in this menu.

Figure 9 – Management

The screenshot shows the 'System Management' page. On the left is a navigation tree with 'WIFI MOBILE PRINTER' at the top, followed by 'Wireless Settings' (containing IP Setting, Link Status, Site Survey, Statistics, and Advance) and 'Administration' (containing Management, Reboot and Default, Upgrade Firmware, Upload Certificate, Status, Statistics, and VER. History). The 'Management' item under 'Administration' is selected. The main content area has the title 'System Management' and a subtitle 'You may configure administrator account and password.' Below this is a 'Language Settings' section with a 'Select Language' dropdown menu currently set to 'English', and 'Apply' and 'Cancel' buttons.

**Select Language:** Select a language.

#### 4-3-8. Reboot and Default

The page shown in figure 10 will appear when users choose “Reboot and Default” of the “Administration” menu. Users can reboot a module or perform a factory reset from this menu.

Figure 10 – Reboot and Default

The screenshot shows the 'Settings Management' page. The navigation tree on the left is identical to Figure 9, but the 'Reboot and Default' item under 'Administration' is selected. The main content area has the title 'Settings Management' and a subtitle 'Reset them to factory default or System reboot.' There are two sections: 'Load Factory Defaults' with a 'Load Default Button' and a 'Load Default' button, and 'System Reboot' with a 'Reboot Button' and a 'Reboot' button.

**Load Factory Defaults:** Reset the module to factory default settings.

**Reboot Button:** Reboot a module.



#### 4-3-9. Upgrade Firmware

The page shown in figure 11 will appear when a user chooses “Upload Firmware” from the “Administration” menu.

Figure 11 – Upgrade Firmware

open all | close all

WIFI MOBILE PRINTER

- Wireless Settings
  - IP Setting
  - Link Status
  - Site Survey
  - Statistics
  - Advance
- Administration
  - Management
  - Reboot and Default
  - Upgrade Firmware
  - Upload Certificate
  - Status
  - Statistics
  - VER. History

### Upgrade Firmware

Upgrade the Ralink SoC firmware to obtain new functionality. It takes about 1 minute to upload upgrade flash and be patient please. Caution! A corrupted image will hang up the system.

#### Update Firmware

Location:

#### Update Bootloader

Location:

**Update Firmware:** Allows you to update the Firmware loaded on the module.

**Update Bootloader:** Allows you to update the bootloader loaded on the module.

#### 4-3-10. Upload Certificate

The page shown in figure 12 will appear when a user chooses “Upload Certificate” from the “Administration” menu.

Figure 12 – Upload Certificate

open all | close all

WIFI MOBILE PRINTER

- Wireless Settings
  - IP Setting
  - Link Status
  - Site Survey
  - Statistics
  - Advance
- Administration
  - Management
  - Reboot and Default
  - Upgrade Firmware
  - Upload Certificate
  - Status
  - Statistics
  - VER. History

### Upload Certificate

Upload the Certificate. After finishing to upload certificate, you should reboot a module. If not, it is not applied the uploaded certificate.

#### Upload CA Certificate

Location: (\*.PEM)

#### Upload Client Certificate

Location: (\*.PEM, \*.P12)

#### Upload Private Key

Location: (\*.PEM, \*.P12)

### 4-3-11. Status

The page shown in figure 13 will appear when a user chooses "Status" from the "Administration" menu. Users can check the current system information from the module on this page.

Figure 13 – Status

**Access Point Status**

Let's take a look at the status of Ralink SoC Platform.

System Info	
SDK Version	1.0.6.2 (Sep 17 2012)
System Up Time	16 mins, 23 secs
System Platform	RT3352 embedded switch
Operation Mode	Ethernet Converter Mode

WLAN Configurations	
Connected Type	STATIC
IP Address	192.168.0.192
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Primary Domain Name Server	168.126.63.1
Secondary Domain Name Server	164.124.101.2
MAC Address	00:1A:0B:0A:00:11

**SDK Version:** Displays the SDK version.

**System Up Time:** Shows the amount of time since the module was powered on.

**System Platform:** Shows the current operating environment.

**Operation Mode:** Shows the system operating mode.

**Connected Type:** Shows the Wi-Fi connection mode.

**IP Address:** Shows the module's IP address.

**Subnet Mask:** Shows the module's Subnet Mask address.

**Default Gateway:** Shows the module's Gateway address.

**Primary Domain Name Server:** Shows the first DNS server's address.

**Secondary Domain Name Server:** Shows the second DNS server's address.

**MAC Address:** Shows the MAC address.

### 4-3-12. Statistics

The page shown in figure 14 will appear when a user chooses "Statistics" from the "Administration" menu. Users can check the current memory usage and transmitted data from this page.

Figure 14 – Statistics

**Statistics**

Take a look at the Ralink SoC statistics

Memory	
Memory total:	62548 kB
Memory left:	47580 kB

WLAN	
WLAN Rx packets:	41815
WLAN Rx bytes:	7675275
WLAN Tx packets:	4964
WLAN Tx bytes:	3546632

All interfaces	
Name	ra0
Rx Packet	41816
Rx Byte	7675353
Tx Packet	4964
Tx Byte	3548314

**Memory total:** Shows the total memory of the module shown in kB.

**Memory left:** Shows the usable memory shown in kB.

**WLAN Rx packets:** Shows the number of received packets.

**WLAN Rx bytes:** Show the number of received data shown in kB.

**WLAN Tx packets:** Show the number of sent packets.

**WLAN Tx bytes:** Show the number of sent data shown in kB.

**Name:** Shows the name of the interface.

**Rx Packet:** Shows the received packets through current interface.

**Rx Byte:** Shows the received data through current interface shown in kB.

**Tx Packet:** Shows the number of transmitted packets data through the current interface.

**Tx Byte:** Shows the sent data shown in kB through the current interface.

### 4-3-13. VER. History

The page shown in figure 15 will appear when a user chooses "VER. History" from the "Administration" menu. Users can check the current Firmware version on this page.

Figure 15 – VER. History



## 4-4. Wi-Fi Glossary

### Access Point

An interface between a wireless network and a wired network. Access points can be used with Ethernet or other communications to enable roaming throughout a facility.

### Ad-Hoc Mode

A wireless network composed of devices that contain a network interface card and no access point. Ad-Hoc mode is also called peer-to-peer (point-to-point) communications or BSS network. As long as the devices are in range and are on the same channel and SSID, they connect and communicate. Use this mode if a wireless infrastructure does not exist or where services are not required.

### Authentication Method

Identifies users on a network, based on a username and password. There are two types, open and shared. Authentication protocols include LEAP, PEAP, TLS, TTLS, EAP-FAST, and PSK.

### Auto Method

One of the available boot methods. Auto tries DHCP, BOOTP, and RARP, then sets to the last IP address used if the IP address is not automatically set using any of the previous methods.

### BOOTP or Bootstrap Protocol

One of the available boot methods. It is a protocol used by devices that know their MAC address, but do not know their IP address. The device broadcasts its hardware address and the BOOTP server responds with the IP address for it. The network administrator must enter the MAC address in the BOOTP Config file to obtain the IP address from the server.

### Boot Method

The wireless print server uses this method to obtain an IP address. Can be set to Auto, DHCP, BOOTP, RARP, or Static. Boot Tries The number of times the device tries to get an IP address from the server when using the BOOTP and DHCP methods.

### BSS or Basic Service Set

A set of 802.11b/g/n devices operating as a fully connected wireless network.

BSSID : See MAC Address.

### Channel or RF Channel

You can select which channel your network devices use to communicate. All devices must be on the same channel to communicate in Ad-Hoc mode. Other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4-GHz cordless phones may operate/interfere if they are on the same channel as your network.

### DHCP or Dynamic Host Configuration Protocol

One of the available boot methods. It is a protocol that issues IP addresses automatically within a specified range to devices (such as printers) when they are first turned on. The device keeps the IP address for a defined period of time set by your System Administrator; however, a device could have a different IP address every time it connects to the network.

#### EAP (Extensible Authentication Protocol)

Defines how to pass authentication information between the device and authentication server. The authentication is handled by the EAP type: FAST, TLS, TTLS, etc.

#### FAST (Flexible Authentication via Secure Tunneling)

Cisco Systems® developed this authentication protocol. It does not use certificates to authenticate, but a PAC (Protected Access Credential), which is managed dynamically by the server. The PAC is distributed one at a time to the client manually or automatically.

#### Gateway

Allows connections (communications) between different subnets on a network.

#### Infrastructure Mode

Requires an access point to communicate with other devices on the network. In infrastructure mode, wireless devices can communicate with each other or with a wired network.

#### IP Address

One of the available boot methods. It is a protocol used by devices that know their MAC address, but do not have an Internet Protocol identifier for a device on a network. It consists of four 3-digit numeric fields, separated by periods. Each number can be zero to 255. An IP address has two components, the network address and the host address. Most company networks have ranges for their IP addresses.

#### Boot Method

The wireless print server uses this method to obtain an IP address. Can be set to Auto, DHCP, BOOTP, RARP, or Static. Boot Tries The number of times the device tries to get an IP address from the server when using the BOOTP and DHCP methods.

#### LEAP (Lightweight Extensible Authentication Protocol)

Cisco Systems® introduced this authentication protocol and provides mutual authentication with unique WEP keys for each user. New keys are issued based on a time limit. Changing the WEP key time limits provides additional security.

#### LPD/LPR

A printer protocol that uses TCP/IP to establish connections between printers on a network. Also known as Line Printer Daemon/Line Printer Remote.

#### MAC Address or Media Access Control

A hardware address (6-byte) that uniquely identifies each node of a network. The MAC address is set during manufacturing and does not change. Also, two Network Interface Cards (NIC) will not have the same value.

#### MSCHAPv2

The Microsoft® version of CHAP. It is a three-way handshake protocol that is more secure than PAP. It provides mutual authentication between devices.

#### NIC or Network Interface Card

An adapter (board or card) that can be inserted into a device, so the device can be connected to a network. The NIC converts data from the device into the form transmitted or received from the network.

#### Node

A processing location on a network. The location can be a workstation, computer, or printer. Each Node has a unique MAC address.

#### Open Authentication

This allows any device to authenticate and then attempt to communicate with the access point. Any wireless device can authenticate with the access point, but if WEP is used, the device can communicate only if its WEP keys match the access point's. There is no challenge that occurs, you either have the correct key or not when you communicate with the access point. By eliminating the challenge process, it actually makes this more secure than shared key authentication.

#### PAP (Password Authentication Protocol)

A simple authentication protocol used with PPP (Point-to-Point Protocol). It is a plain text password system, which is not very secure. Pathname/The location of a particular file or directory that includes the full path to the needed filename or directory. This is a combination of path and filename.

#### PEAP (Protected Extensible Authentication Protocol) :

Authenticates clients into a network using only server-side certificates, which makes implementing and administering a wireless LAN easier.

#### Ping

A way to determine if a device is accessible. It sends a packet to the specified address and waits for a reply.

#### Protocol

This is the way two devices transmit data between each other, including error checking, data compression, and how messages start and end.

#### PSK (Pre-Shared Key)

Authentication mode of WPA used in SOHO environments. The key value (or pass-phrase) is used for network authentication only (not data encryption). It does not use a RADIUS server like the other modes, but uses a shared key to provide the initial authentication with the access point or host.

#### RADIUS (Remote Authentication Dial-In Server)

This is an authentication server, such as the Cisco® ACS, Microsoft® IAS, etc.

#### RARP

One of the available boot methods. The device sends an RARP request and the RARP server responds with an IP address. The device knows its MAC address and the server responds with the IP address for it.

### Router

Any device that forwards data along networks. Routers are located at gateways.

### Shared Authentication

The access point sends an unencrypted challenge text string to any device attempting to communicate with it. The device requesting authentication encrypts the challenge text and sends it back to the access point. If the challenge text is encrypted correctly, the access point allows the requesting device to authenticate. Both the unencrypted challenge and the encrypted challenge can be monitored; however, this leaves the access point open to attack. Because of this weakness, shared key authentication can be less secure than open authentication.

### Signal Strength

A percentage (1 to 100) of the connection between the device and access point. If the signal strength is 0, there is no connection with the access point; 30 or less indicates you may be experiencing interference or close to being out of access point range, and below 50, printing performance could be affected. To improve the signal strength, try moving the printer closer to the access point and away from other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4-GHz cordless phones.

### Speed or Transmit Rate

Sets the maximum rate of communication between the devices on the network. It is also called transmit rate.

### SSID or Service Set Identifier

A unique identifier that must match for all nodes on a subnetwork to communicate with each other. It consists of up to 32 characters (any printable character, including spaces). If using the space character, it must be enclosed in quotation marks. It is case-sensitive.

### Static Method

One of the available boot methods. Use static if your network uses fixed configuration. The IP address remains the same every time the device connects to the network.

### Subnet

A portion of a network that shares a common address component. On TCP/IP networks, subnets are all devices with the same prefix. For example, all devices that start with 192.192.192 are part of the same subnet. Dividing a network into subnets is useful for both security and performance reasons.

### Subnet Mask

A mask is used to determine what subnet an IP address belongs to. Companies often have ranges of IP addresses that can be described by one or more masks. For example, a mask of 255.255.255.0 allows variation in the last position only, because the first three positions are fixed.

### TCP/IP

A way that two devices can transmit data between each other. TCP/IP (Transmission Control Protocol/Internet Protocol) is generally the standard for transmitting data over a network.

### TKIP (Temporal Key Integrity Protocol)

Changes the encryption keys regularly and has time limits before new keys are created. Changing the key periodically provides additional security.

### TLS (Transport Layer Security)

A cryptographic protocol that uses client-side and server-side certificates to authenticate users on the Web. It can dynamically create user-based and session-based keys.

### TTLS (Tunneled Transport Layer Security)

Provides certificate-based, server-side, mutual authentication of the client and network through an encrypted channel (or tunnel). It can dynamically create user-based and session-based keys.

### WEP or Wired Equivalent Privacy

A security protocol for wireless local area networks. WEP was designed to provide the same level of security as that of a wired network, which is inherently more secure than a wireless network because wired networks are easily protected against unauthorized access. Wireless networks use radio waves to communicate and can be vulnerable to unauthorized users. WEP provides security by encrypting data over radio waves so that it is protected as it is transmitted. However, it has been found that WEP is not as secure as once believed.

#### NOTE

If one part of a wireless network has WEP enabled, they all must have it enabled with the same key or they cannot communicate.

### 128 Bit / 64 Bit WEP Key

This is the 64 or 128 bit WEP key that must match other Nodes' encryption keys to communicate: 10 hex characters for 64 bit (40 unspecified characters), or 26 hex characters for 128 bit (104 unspecified characters). You must use the same key values for devices to communicate with each other.

### WLAN or Wireless Local Area Network

A LAN that uses high-frequency radio waves to communicate between nodes, rather than telephone wires, etc.

### WPA (Wi-Fi Protected Access)

A network security protocol that uses improved authentication and temporal keys. It was created to address the weaknesses of WEP encryption.

### WPA2 (or IEEE 802.11i) :

A network security protocol with stronger encryption than WPA. It was created to address the weaknesses of WEP encryption.

## 4-5. Wi-Fi Specifications

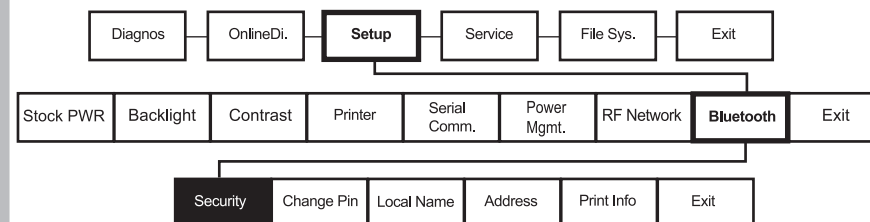
- Frequency 2.4 ~ 2.4835 GHz (US/Canada/Europe), 2.4 ~ 2.497 GHz (Japan)
- Communication Rate : 802.11b = 11, 5.5, 2, 1 Mbps  
802.11g = 54, 48, 36, 24, 18, 12, 9, 6 Mbps  
802.11n(20Mhz) = MCS0-7, up to 72.2 Mbps maximal  
802.11n(40Mhz) = MCS0-7, up to 150 Mbps maximal
- Channels : USA/Canada: 11 channels  
Europe: 13 channels  
France: 7 channels  
Japan: 14 channels (13 channels for 802.11g)
- Mode : Ad-Hoc or infrastructure
- Receive Sensitivity : 150Mb/s(40MHz)=-67dBm  
72.2Mb/s(20MHz)=-68dBm  
54Mb/s = -75dBm  
36Mb/s = -82dBm  
18Mb/s = -88dBm  
6Mb/s = -93dBm  
11Mb/s = -88dBm  
1Mb/s = -98dBm
- Network Protocol : TCP/IP, ARP, ICMP, DHCP, UDP, PING
- Security Protocols :

Personal	Disabled, WEP 64 & 128bit, WPA (TKIP), WPA (AES), WPA2(AES), 802.1x (EAP) Supplicant 802.11i
WPA & WPA2 Enterprise supplicants	EAP-TLS, EAP-TTLS(MSCHAPv2), EAP-PEAPv0(MSCHAPv2), EAP-FAST, LEAP
Supports Certificates and Private Key Upload and Storage (Multiple)	

## 5. Bluetooth

### 5-1. Using the Bluetooth Settings Dialog

This Menu sets Bluetooth communication.



#### 5-1-1. Enabling the Security

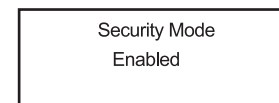
1. Select Setup **Menu – Bluetooth – Security.**



2. Select either Enable or Disable.



3. The selected option is displayed as shown below.



4. Press the Enter( ↵ ) button to exit.

#### NOTE

Section 3-1-14 does not exist in this manual.  
Either update this to the correct section or remove the note.

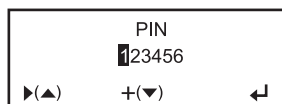
### 5-1-2. Changing the Pin

1. Select Setup **Menu – Bluetooth – Change Pin.**



A screenshot of a menu with three items: 'Security', 'Change Pin', and an empty line with navigation arrows. 'Change Pin' is highlighted with a black background.

2. The Pin modification screen appears, as shown below.



A screenshot of a screen titled 'PIN' showing the number '123456'. Below the number are three buttons: a right arrow, a plus sign with a down arrow, and an enter key.

3. On the above screen, if the Up(▲) button is pressed the position of the cursor moves to the right by one step. If the Down(▼) button is pressed, the selected character is increased by one.

4. Press the Enter(↵) button to save and exit.

### 5-1-3. Local Name

1. Select Setup **Menu- Bluetooth – Local Name.**



A screenshot of a menu with three items: 'Change Pin', 'Local Name', and an empty line with navigation arrows. 'Local Name' is highlighted with a black background.

2. The screen to set Local Name appears as shown below.



A screenshot of a screen titled 'Local Name' showing the text 'LOCAL12345'. Below the text are three buttons: a right arrow, a plus sign with a down arrow, and an enter key.

3. On the above screen, if the Up(▲) button is pressed the position of the cursor moves to the right by one step. If the Down(▼) button is pressed, the selected character is increased by one.

4. Press the Enter(↵) button to save and exit.

### 5-1-4 Local Address

1. Select Setup **Menu – Bluetooth – Local Address.**



A screenshot of a menu with three items: 'Local Name', 'Local Address', and an empty line with navigation arrows. 'Local Address' is highlighted with a black background.

2. The screen to set Local Name appears as shown below.



A screenshot of a screen titled 'Local Address' showing the IP address '23.456.789.123'. Below the address are three buttons: a right arrow, a plus sign with a down arrow, and an enter key.

3. On the above screen, if the Up(▲) button is pressed the position of the cursor moves to the right by one step. If the Down(▼) button is pressed, the selected character is increased by one.

4. Press Enter(↵) button to save and exit.

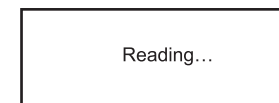
### 5-1-5 Printing Info

1. Select Setup **Menu – Bluetooth – Printing Info.**



A screenshot of a menu with three items: 'Local Address', 'Printing Info', and an empty line with navigation arrows. 'Printing Info' is highlighted with a black background.

2. You may see:



A screenshot of a rectangular box containing the text 'Reading...'.

3. If the printer was able to read the information successfully, it will start to print, otherwise you will get this message:

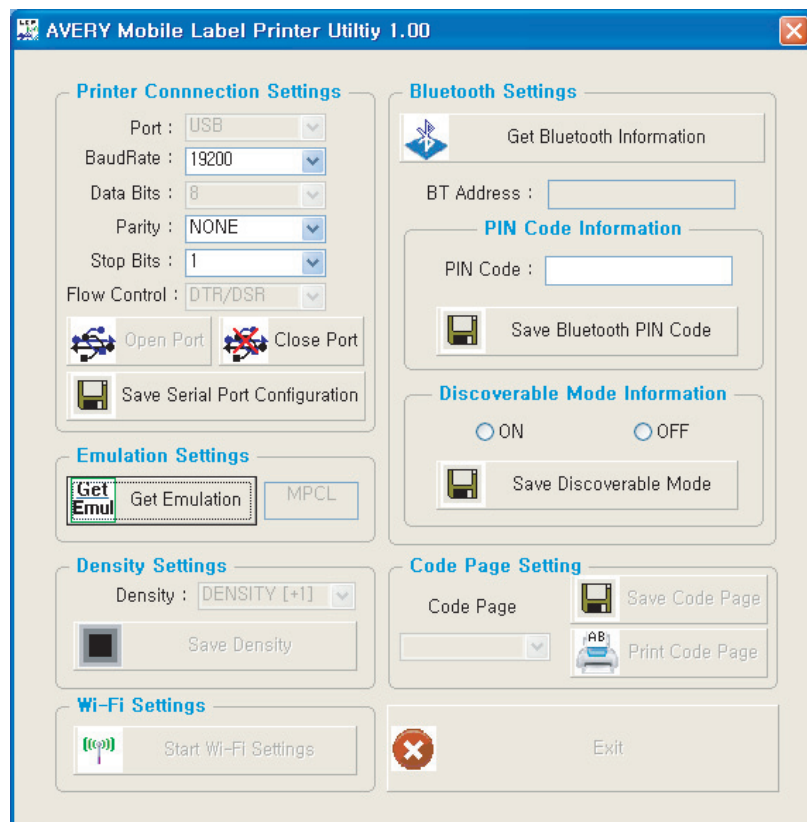


A screenshot of a rectangular box containing the text 'Read Failed'.

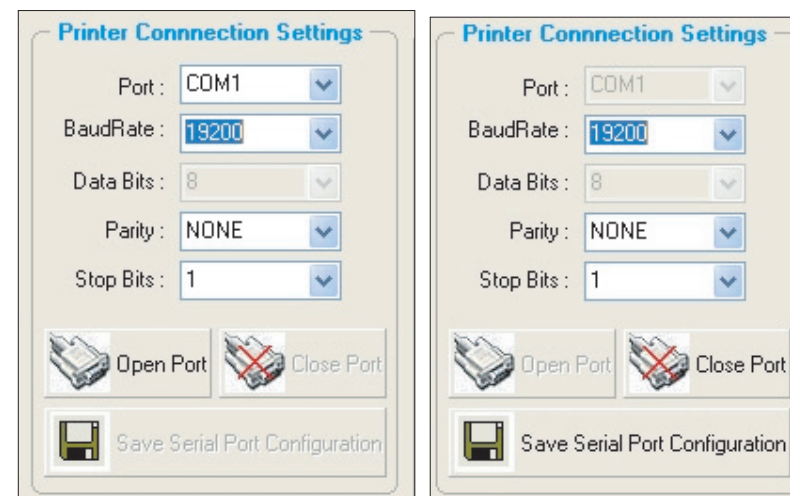
4. Press any key to exit.



## 5-2. Bluetooth Interface



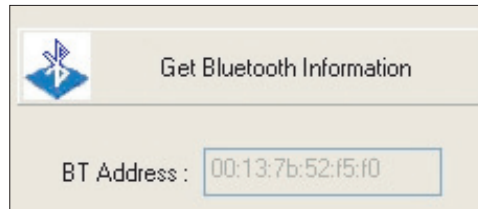
### 5-2-1. Printer Connection Settings



You can connect the printer to a PC via serial port (COM1 – COM9) or USB port. When you use a serial port, you have to check the BaudRate setting between the printer & PC. You can change the BaudRate setting of the printer by connecting it to a PC. After you make the required changes you can save the changed BaudRate to the printer by executing 'Save Serial Port Configuration'. Once you have finished making changes, disconnect the printer from the PC by clicking 'Close Port'.

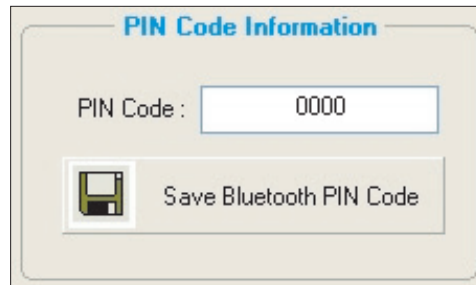


#### 5-2-2. Getting Bluetooth Information



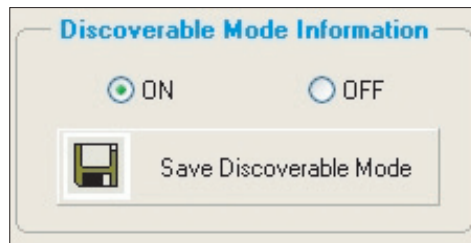
This displays the 12 digit Bluetooth Address.

#### 5-2-3. PIN Code Information



You can change the Bluetooth PIN Code by inputting a new PIN Code and pressing "Save Bluetooth PIN Code."

#### 5-2-4. Discoverable Mode Information



When you set "Discoverable Mode" to ON, the printer can be detected by other Bluetooth devices (PDAs, Smart Phones, etc) and when you set it to "Off", the printer cannot be detected by other devices.

#### 5-2-5. Emulation Settings



When you click "Get Emulation", you can see the current emulation setting of the printer.