INFORMS

MODEL:LK-P12(Non peeler)

Portable Printer

System Administrator Manual

INFORMS

P12(Non peeler) Rev. A 01/15

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.

Table of Contents

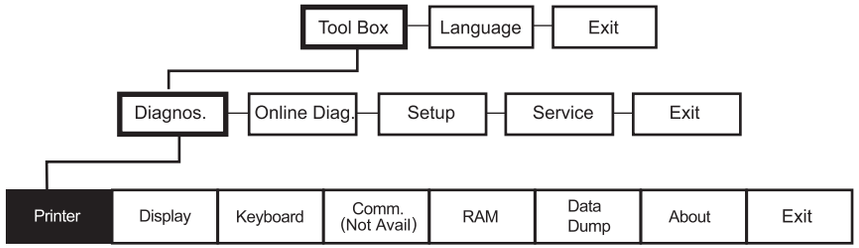
1. INTRODUCTION

1-1. Using This Manual

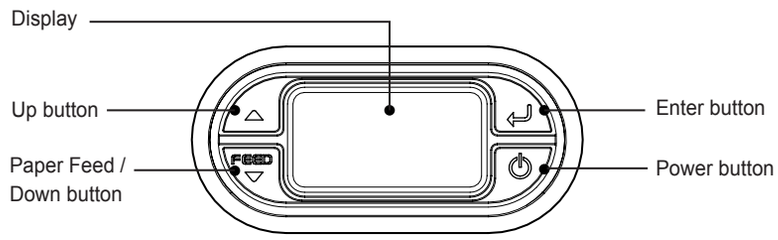
	Subjects	Contents
1	Introduction	Notes before using printer
2	Diagnostics	How to print test label, check sensor, check print position, etc.
3	Setting Up the Printer	How to use the Setting Menu to adjust stock and printer settings

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

button operates as feed button in ready condition only.

Screen displays	Meaning
↵	Selects the highlighted option.
▲	Moves position of Menu upwards by one step.
FEED ▼	Moves position of Menu downwards by one step
▶	Moves the cursor to the position to change.
+	Increases set value
–	Decreases set value
X	Returns to higher Menu without saving the setting
Y	Returns to higher Menu after saving the setting

1-3-1. Selecting a Menu

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

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

1-3-2. Exiting a Menu

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

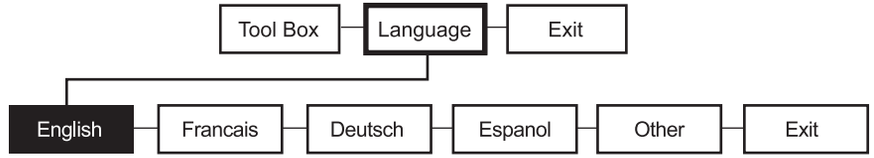
1-3-3. Printing

There are three ways to print.

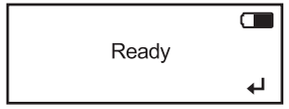
1. When turning on the printer, press and hold the power (⏻) button and the Down(▼) button. The printer prints a batch (if sent) or prints the printer status information.
2. Select a test label from the Diagnostics menu.
3. Send batch data to the printer.

1-4. Selecting a Language

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



1. Turn on the printer. The printer name and software version information are displayed. Then you see



2. Press Enter(↵) button.

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

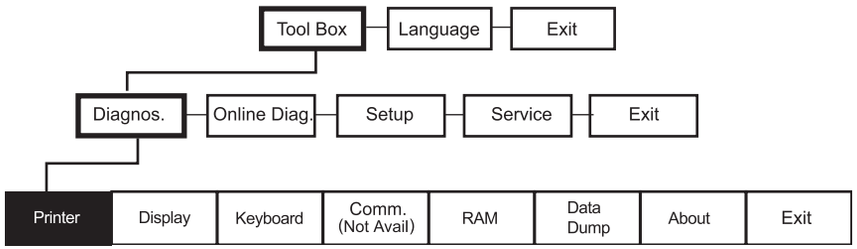
4. Move the cursor to the language you want by pressing Up(▲)/Down(▼) button then press Enter(↵) button.

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

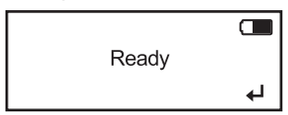
2. Using Diagnostics

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

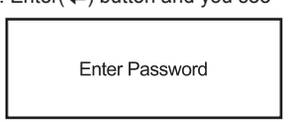


1. Turn on the printer. The printer name and software version information are displayed. Then you see



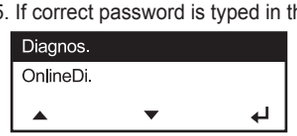
2. Press Enter(↵) button and then you see

3. Enter(↵) button and you see



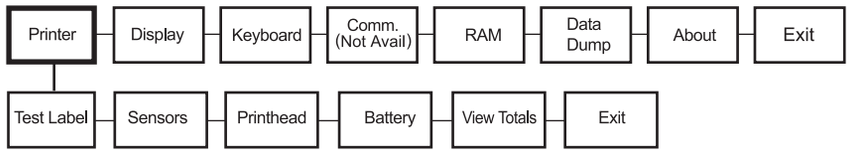
4. Press Up(▲) and Enter(↵) button in the sequence of ↵ ,▲, ▲, ▲,↵

5. If correct password is typed in then you see



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

2–1–1. Printer

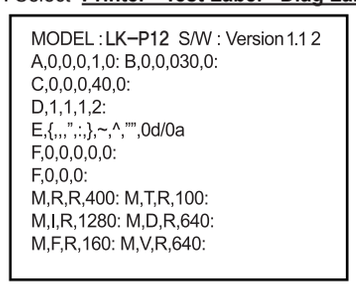


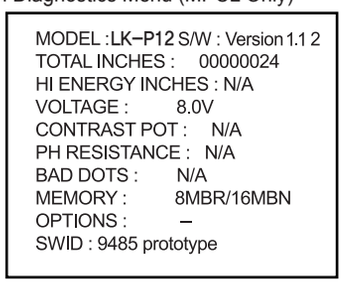
To return to initial screen, press power(⏻)button

**Test Label

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

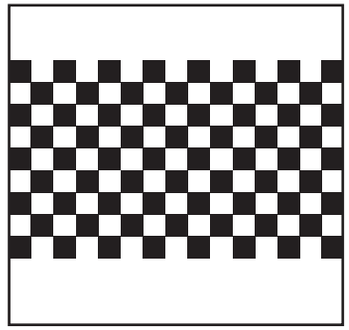
1. Select **Printer - Test Label - Diag Label** in Diagnostics Menu (MPCL Only)





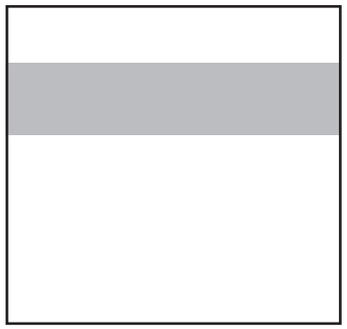
Printer Diagnostics Labels are printed

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



Checkerboard pattern is printed

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



Gray Scale printed

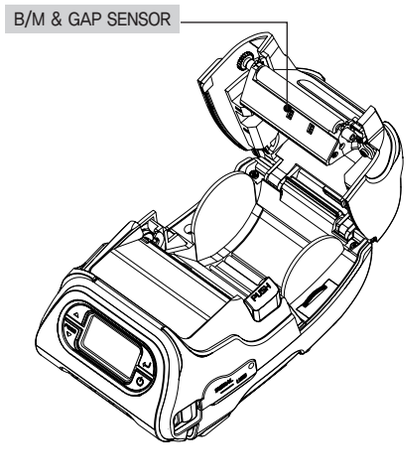
4. Select **Printer – Test Label – MIF** Info in Diagnostics Menu. (MPCL Only)

```
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
```

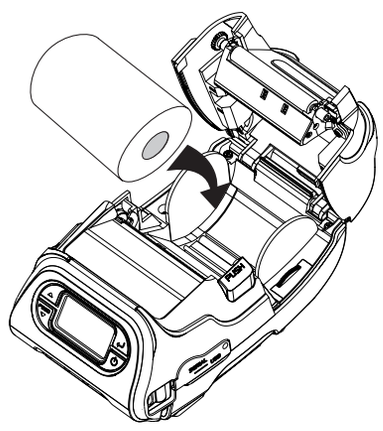
MIF Info printed

**Sensors

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



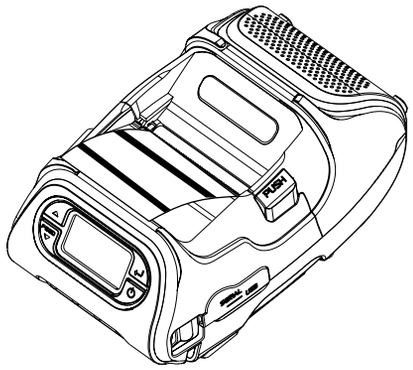
1. Load stock in the printer.



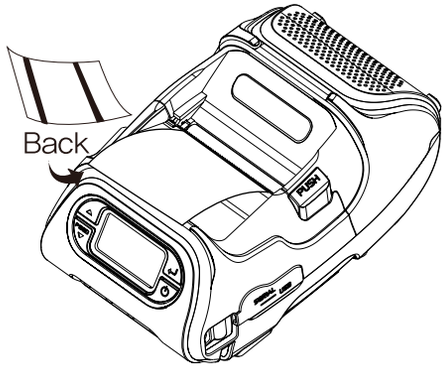
2. Select **Printer – Sensors – Black Mark** in the Diagnostics Menu.
Check whether A/D value is changing in Black Mark sensor position while feeding Black Mark stock manually.

Black Mark A/D Value = 16

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



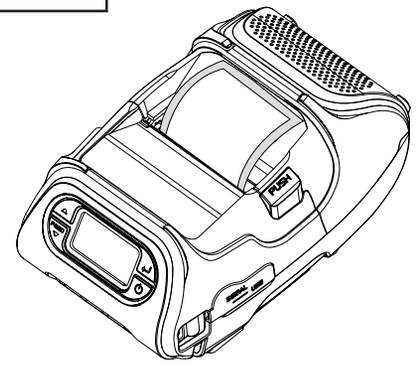
BM Upper Black Mark



BM Lower Black Mark

3. Select **Printer – Sensors – Gap** in Diagnostics Menu.
Check whether A/D value is changing in Gap sensor position by feeding Gap stock manually.

Gap A/D Value = 194



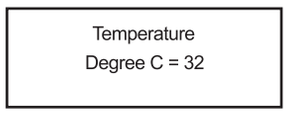
Gap Sensor

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

**Printhead

In this Menu, You can check Printhead temperature(TPH) in ℃(Centigrade) unit.

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



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

**Battery

There are two ways to check the battery level.

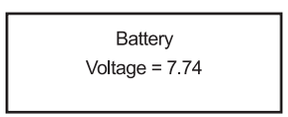
1. You can check it in the battery shape located at upper right side of the ready screen.

NOTE

Remaining electricity of battery

(7.8v above) (7.5v above)
(7.2v above) (6.8v below)

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

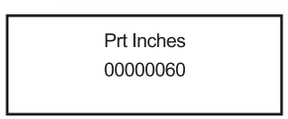


Press Enter(↵) button to return to the previous menu.

**View Total

In this Menu, you can view Total inches printed

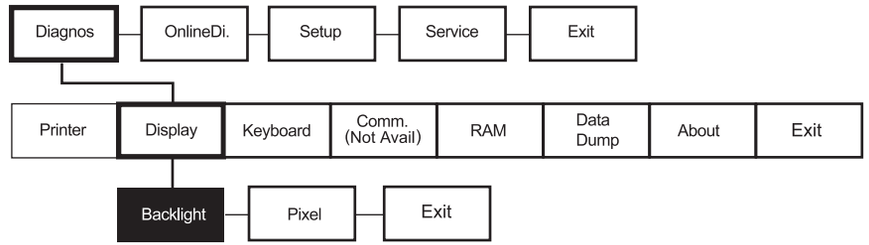
1. Select **Printer – View Total – Print Inch** in Diagnostics Menu.



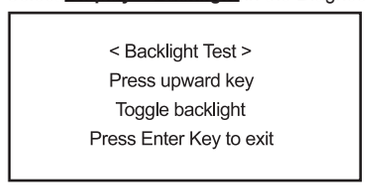
Press Enter(↵) button to return to the previous menu.

2-1-2. Display

You can check the display in this Menu.



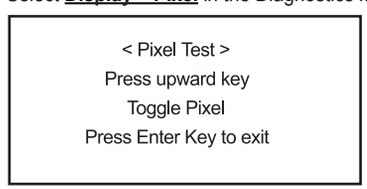
1. Select **Display – Backlight** in the Diagnostics Menu



2. Press the Up(▲) button Backlight is turned off, if the same button is pressed once more then it is turned on.

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

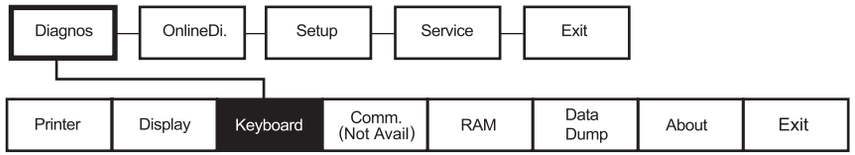
4. Select **Display – Pixel** in the Diagnostics Menu.



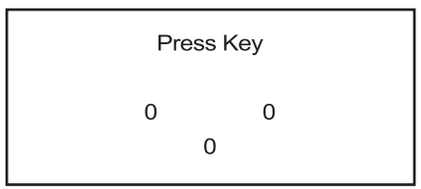
5. Press the Up(▲) button all Pixels on the screen are changed into black color and if it is pressed once more then all Pixels are changed into white color.

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

2-1-3. Buttons



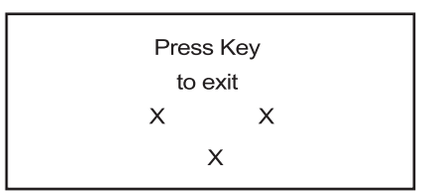
1. Select Keyboard in Diagnostics Menu.



2. Press the upper left Up(▲) button, press the Down(▼) button, and press Enter(↵) button.

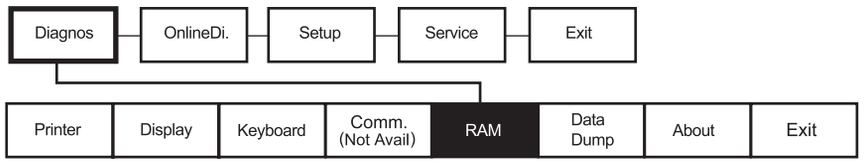
3. Each should change from O shape to X shape when pressed.

4. Press Enter(↵) button to from keyboard test.



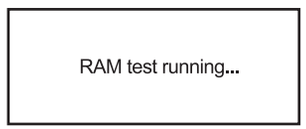
2-1-4. RAM

Select this Menu and check memory of the printer.

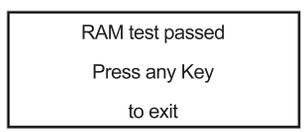


1. Select **RAM** in Diagnostics Menu.

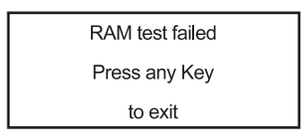
2. The message of RAM test running is displayed



3. If RAM test result is okay, then you see:



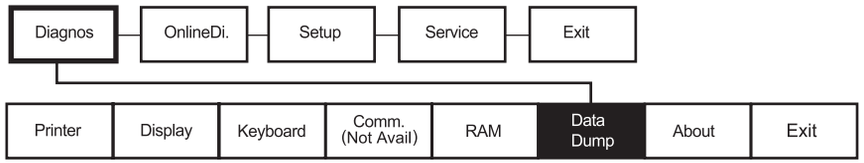
4. If RAM test result is not okay, then you see:



5. Press 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 **Data Dump** in Diagnostics Menu.

2. The labels print with data from the communication port.

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

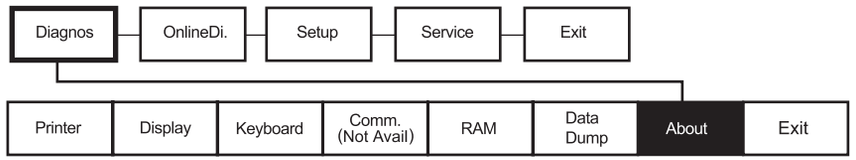
For CPCL, previous command data printed on the paper

```
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 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. Then you can check information of the printer

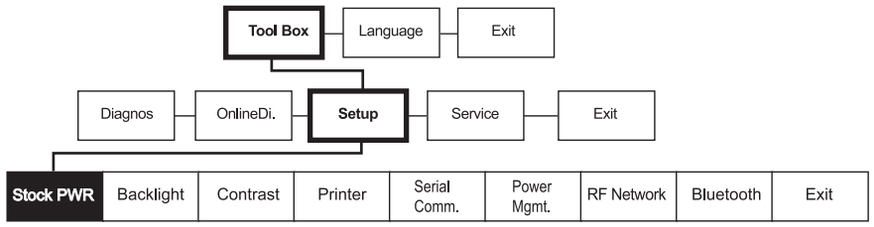
```
ABOUT LK-P12
S/W VER. v0.02a
H/W REV. v0.2
```

3. Press any key to exit

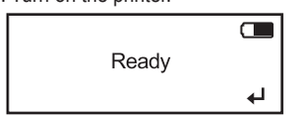
3. SETTING UP THE PRINTER

3-1. SETUP

This chapter describes, how to set up the printer

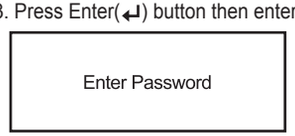


1. Turn on the printer.



2. Press Enter(↵) button.

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



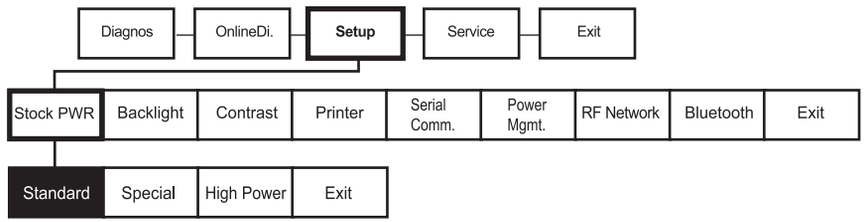
4. Press Up(▲) and Enter(↵) button in the sequence of ↵, ▲, ▲, ▲, ↵

5. If password is entered correctly, you see:

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

3-1-1. Stock PWR

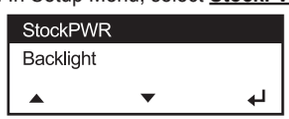
Using this Menu, you can set stock type. This printer uses two kinds of stock, Standard and High Power. Standard supports tag, label, or receipt and High Power supports linerless and synthetic



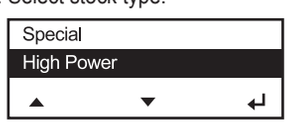
☑ NOTE

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

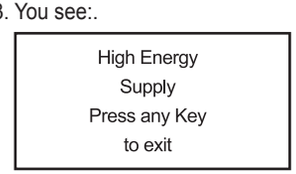
1. In Setup Menu, select **StockPWR.**



2. Select stock type.



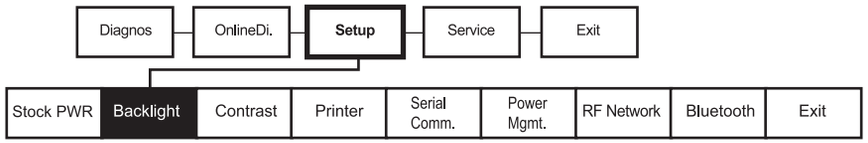
3. You see:.



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

3-1-2. Backlight

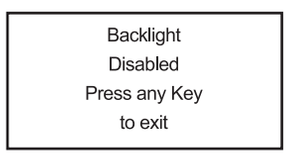
This Menu can activate or deactivate Backlight of LCD.



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

2. Select Disable or Enable

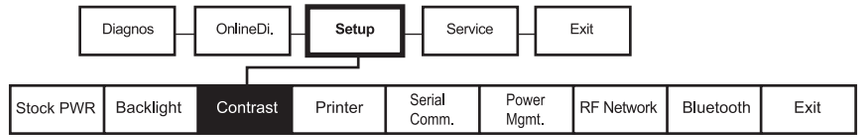
3. You see:.



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

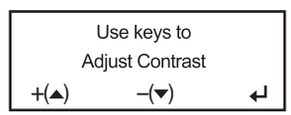
3-1-3. Contrast

This Menu sets Contrast of LCD



1. Select Contrast in Setup Menu.

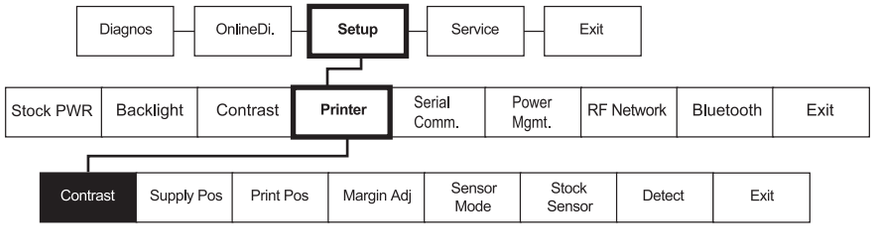
2. Press the Up(▲) button or Down(▼) button to adjust the contrast.



3. Press 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.

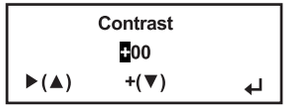


**Adjusting the Print Contrast

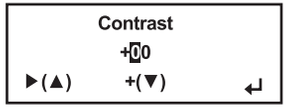
In this Menu, you can adjust print contrast.

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

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



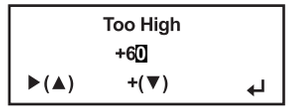
3. Press Up(▲) button to move the cursor one more step to the right.
   Press Down (▼) button to increase/decrease the print contrast setting (0 – 9).

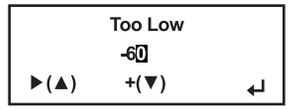


Above key operations are described in following table.

▶	+	↵
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(+00)	Changes second position.	
Third position (+00)	It changes third position.	

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



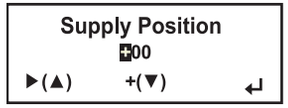


**Adjusting the Supply Position

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

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

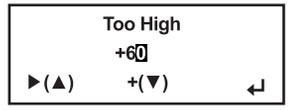
2. In following picture, if Up(▲) button is pressed then position of cursor moves towards right side by one step. And if Down(▼) button is pressed then the level of character on which the cursor is presently positioned is increased. For example, if you press on + then it changes to -/If it is pressed on – then it is changed to +, if it is pressed on figure(Number) then the figure increases by 1(0~9). If it becomes the data desired by user then store it and exit by pressing Enter(↵) button.

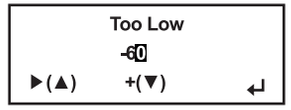


3. Above key operations are described in following table.

▶	+	↵
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(+00)	Changes 10^{th} digit.	
Third position (+00)	It changes 1^{st} digit.	

4. When to set, if you set exceeding minimum/maximum range then following Menu appears on the upper part and then returns to Setting Menu again.



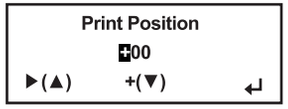


**Adjusting the Print Position

In this Menu, the position of printing material to be printed printing material will be adjusted towards Up/Down on the basis of present position.

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

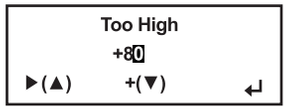
2. In flowing picture, if you press Up(▲) button then the position of cursor moves towards right side by one step. And if you press Down(▼) button then the level of character on which cursor is located increases. For example, if you press it on + then it changes to -/ If you press it on – then it changes to +, and if you press it on figure(Number) then the figure increases by 1(0~9). If it becomes the data desired by user, then store it and exit by pressing Enter(↵) button.

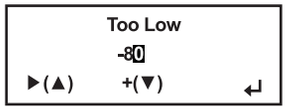


3. Above key operations are described in following table.

▶	+	↵
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(+00)	Changes 10th digit.	
Third position (+00)	It changes 1st digit.	

4. When to set, if you set exceeding minimum/maximum range then following Menu appears on the upper part and then returns to Setting Menu again.



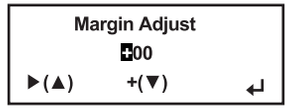


**Adjusting the Margin Adjust

In this Menu, the position to be printed can be adjusted in left/right on the basis of present position.

1. Select Setup Menu – Printer – Margin ADJ.

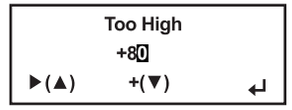
2. In flowing picture, if you press Up(▲) button then the position of cursor moves towards right side by one step. And if you press Down(▼) button then the level of character on which cursor is located increases. For example, if you press it on + then it changes to -/If you press it on – then it changes to +, and if you press it on figure(Number) then the figure increases by 1(0~9). If it becomes the data desired by user, then store it and exit by pressing Enter(↵) button.

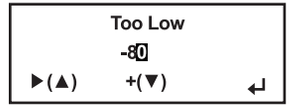


3. Above key operations are described in following table.

▶	+	↵
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(+00)	Changes 10th digit.	
Third position (+00)	It changes 1st digit.	

4. When to set, if you set exceeding minimum/maximum range then following Menu appears on the upper part and then returns to Setting Menu again.

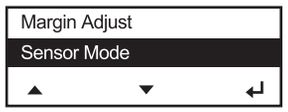




**Setting the Sensor Mode

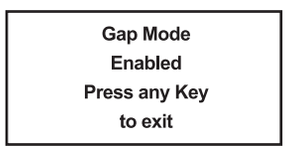
This Menu sets sensor according to presently loaded paperstock (Gap, BlackMark).

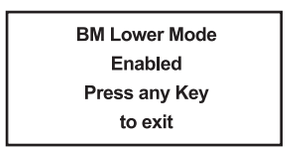
1. Select Setup **Menu – Printer – Sensor Mode.**



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

3. You see:.





4. Exit from the screen by pressing any key. The set value is saved.

Depending on your supply, set the sensor mode accordingly:

Gap	Use for die cut (no black mark) supplies. If your supply is die cut, with black marks, select BM Upper.
BM Lower	Use for supplies with black marks on the front (printing side) of the supply.
BM Upper	Use for supplies with black marks on the back (non-printing side) of the supply.
Non-indexed	Use for receipt paper.

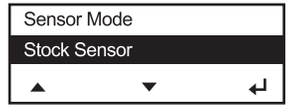
☑NOTE

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

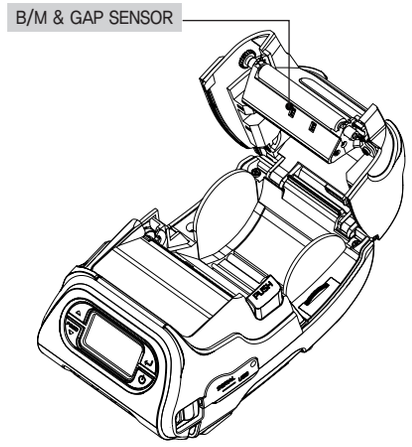
**Setting the Stock Sensor

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

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

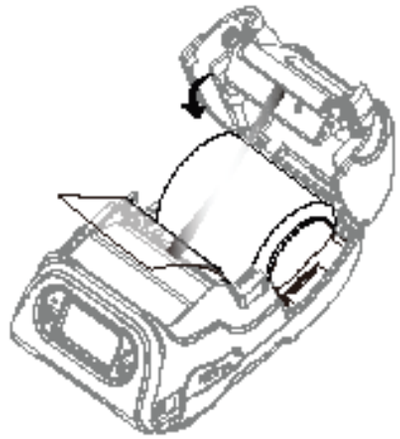


2. Conduct testing referring to following picture.



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.



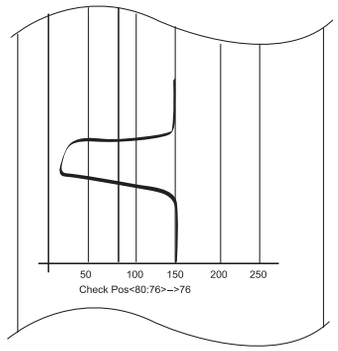
3. Press Enter(↵) button when you see:.

Gap Sensor Selected

4. Following message appears, Press Enter(↵) button to continue.

Insert Liner… Selected Then hit Enter

5. The information label prints.



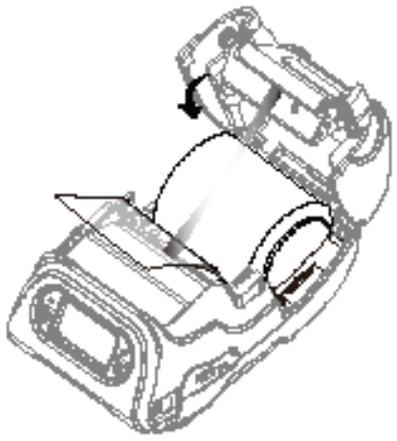
6. Following message appears

Successful	Failed

7. Press any key to exit from the Menu.

Black Mark Lower Mode

1. Cover the lower black mark with a label,



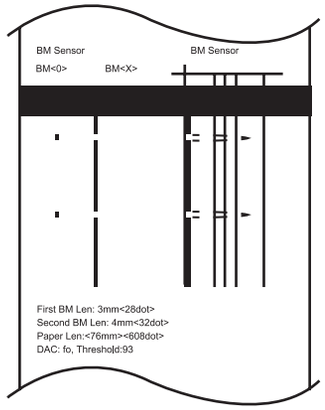
2. Press Enter(↵) button

BM Sensor **Selected**

3. Following message appears, press Enter(↵) button to continue.

Insert Liner… Selected **Then hit Enter**

4. The information label prints.



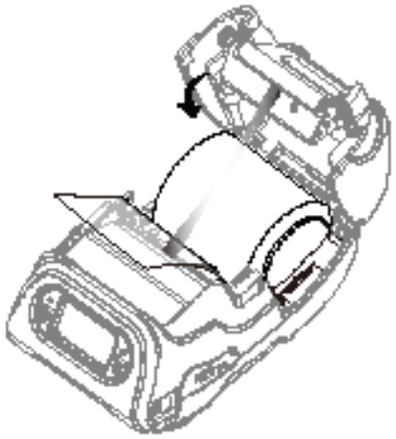
5. Following message appears according to the result.

Successful	**Failed**

6. Press any key to exit from the Menu.

Black Mark Upper Mode

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



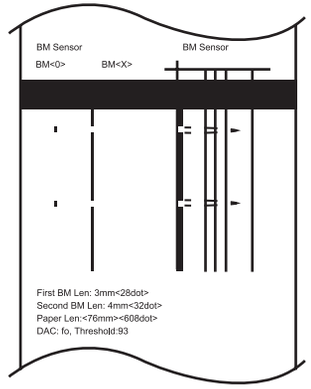
2. Move to next step by pressing Enter(↵) button in following screen.

BM Sensor **Selected**

3. Following message appears and if Enter(↵) button is pressed then test will be started

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.

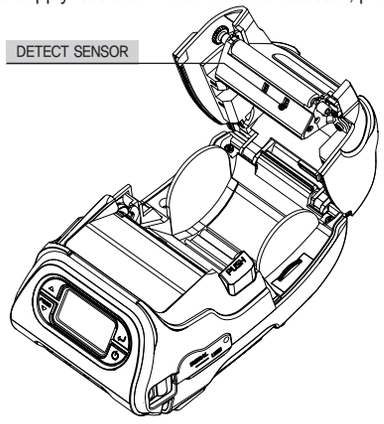
**Setting the Detect

This Menu can activate or deactivate Width-Detect Function.

1. Select Toolbox – Setup – Printer – Detect.

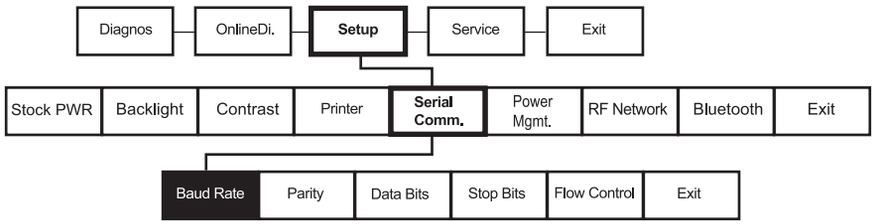
If “Enable” is selected and the supply less than 1 inch-width is detected, printing speed is reduced.

(Default : Disable)



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	Defualt
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

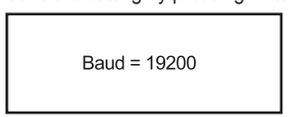
**Baud Rate

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

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

(※BPS=Bit Per Second)

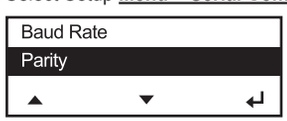
3. Save the setting by pressing Enter(↵)button.



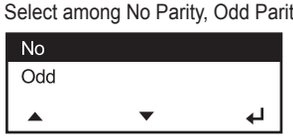
4. Select exit to return to the Serial Comm menu.

**Parity

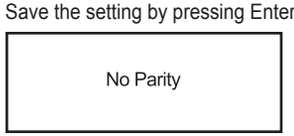
1. Select Setup **Menu – Serial Comm – Parity.**



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



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

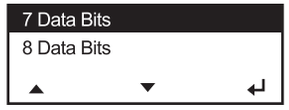


4. Select exit to return to the Serial Comm menu.

**Data Bits

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

2. Select one of 7 Data Bits, 8 Data Bits.



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

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

**Stop Bits

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

2. Select one of 1 Stop Bit, 2 Stop Bits.

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

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

**Flow Control

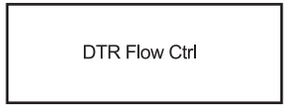
1. Select Setup **Menu – Serial Comm – Flow Ctrl.**

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

NOTE

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

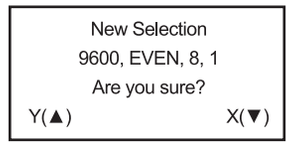
3. Save the setting by pressing Enter(↵) button.



4. Return to previous Serial Comm Menu using Exit.

Exit and Save

After setting all serial communications,select exit or press Power(⏻) button to exit. The selected values are displayed and asks whether to save it or not.

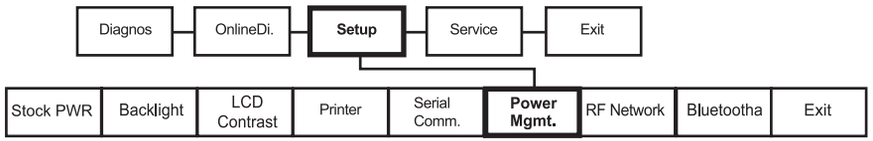


If you select Y by pressing Up(▲) button then it will be saved, and if you select X by pressing Down(▼) button then it exits from Menu without saving set values.

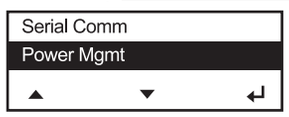
3-1-6. Power Management

This Menu sets Power Save Timeout.

(If 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, or pressing Power(⏻) button, or send data to the serial port.

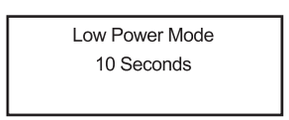


1. Select Setup **Menu – Power MGMT - Low Power**



2. Select the Power Save Time among disable, 10 sec, 20 sec, 30 sec, 1 min, 2 min, 5 min, 10 min, 30 min, 1 hour.

3. Selected time is displayed and buzzer sounds short two times.



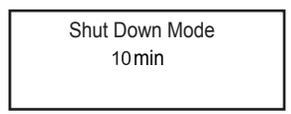
4. Pressing Enter(↵) button.

5. Select Exit to return to the Setup menu.

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

2. Select the Power Save Time among disable, 10min, 20min, 30 min

3. Selected time is displayed and buzzer sounds short two times.



4. Pressing Enter(↵) button.

5. Select Exit to return to the Setup menu.

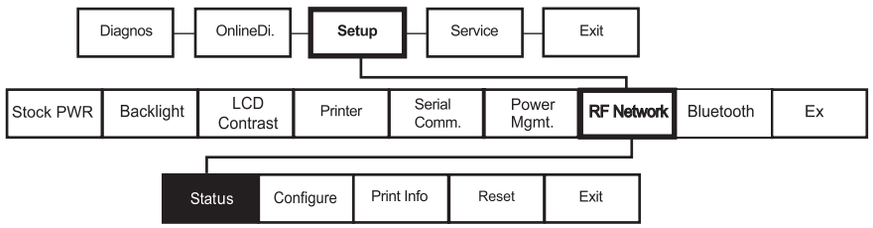
4. Wi-Fi

4-1. RF Network

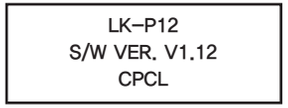
Use these instructions to set up a printer using the printer's RF Network menu in the printer's Tool Box.
The RF Network menu allows you to check the printer's status, configure the RF network settings, and reset the radio.

☑ 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 display printer version information.



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

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. And then press ▲ again, you can return to Ready mode.
	The printer is connected to a Wi-Fi module.
	The printer is not connected to Wi-Fi module.
	You can see the battery indicator. When the indicator seems to be empty, you have to recharge the battery.

2. Press Enter(↵) Button.

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

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

5. If password is entered correctly, you see.

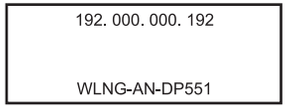
6. Press Up(▲)/Down(▼) button to select Setup menu and press Enter(↵) button

**Checking the Printer

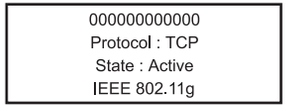
To check the printer's network status, use this menu.
To exit, press ⏻ at any time.

Checking the network staus

This option check 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 display printer's IP address



4. Press ▲ to check other information

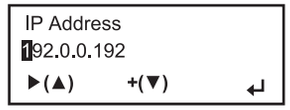


**Configuring the Printer

The Configure 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.



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:

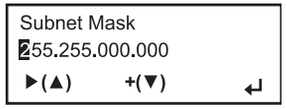
▶(▲) Press ▲ to	+(▼) Press ▼ to	↵ Press ↵ to
Scrolls through the positions from left to right	Increments the current position setting by 1	Saves the setting

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.



Use buttons as shown in the following table:

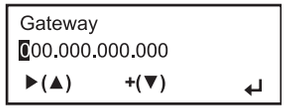
▶(▲) Press ▲ to	+(▼) Press ▼ to	↵ Press ↵to
Scrolls through the positions from left to right	Increments the current position setting by 1	Saves the setting

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.



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 Power Mode

This option sets the power mode.

1. From the Configure menu, select Power Mode.

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.

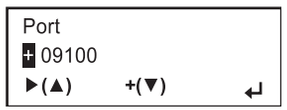
2. When the setting you want is displayed, press ↵ to save the setting. You return to the Configure menu.

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:

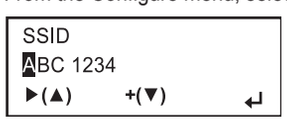
▶(▲) Press ▲ to	+(▼) Press ▼ to	↵ Press ↵ to
Scrolls through the positions from left to right	Toggles between + or – also increments the current position setting by 1	Saves the setting

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:

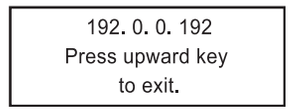
▶(▲) Press ▲ to	+(▼) Press ▼ to	↵ Press ↵ to
Scrolls through the positions from left to right	Increments the current position setting by 1 and scrolls through alpha/special characters	Saves the setting

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

**Network Information

You can see a network IP address.

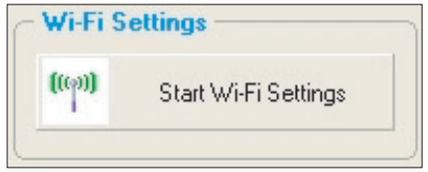
1. Turn on the printer.
2. Press ▲ under <T>. You see the printer's IP address. For example,

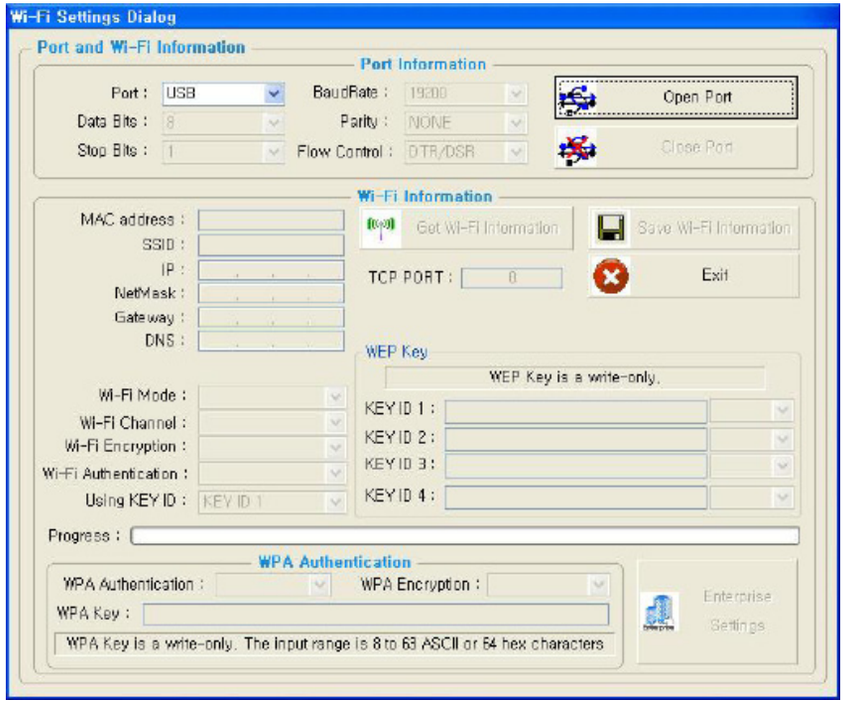


3. Press ⏻ or ▲ to exit.

4-2. Wi-Fi setting utility instruction

Execute a utility program, 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 PC to printer via serial port (COM1 – COM9) or USB port. If the users use serial port, check the Baud Rate both Printer and PC first.
After setting, prepare a connection between printer and PC to press the “Open Port” button.
The Wi-Fi information which stored in the printer will show when use press the ‘Get Wi-Fi Information’ button.
Users can change the Wi-Fi setting value in this menu.
To store the Wi-Fi setting, press the ‘Save Wi-Fi Information’ button. After that, press the ‘Close Port’ button to disconnect between PC and printer.

4–2–2. Wi–Fi Information Tab

User can change the network setting like SSID, IP, Net Mask, Gateway, DNS for suitable network environment. Also, users can change the settings value below.

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

4–2–3. WPA Authentication Tab

IN the Wi-Fi module, two WPA authentication (WPA PSK(TKIP) or WPA2 PSK(AES)) and three Enterprise authentication (WPA-Enterprise / WPA2-Enterprise / 802.1x (PEAP, TLS, TTLS, LEAP, FAST)) is supported in this module. To change an enterprise authentication, press the “Enterprise Settings” button right below on the menu.
Users can change those authentication ways on this menu.

4-3. Using the Web Interface

First, set the IP address of the Wi-Fi module to use a web page. After set the IP Address and connect user's PC with Adhoc Mode or connect the AP with Infrastructure Mode, users could access the AP and IP to see the webpage.

This Webpage supports Explorer v6.0 ~ 8.0, Firefox v3.x, Opera v9.6+ and Chrome v1.0+. When the users want to access the page, it requires a certification procedure like the Image 1 below.

Figure 1 - Website Login

Username: admin

Password : admin

If it is certified right, users can access the Module's web server and set the module in webpage. Please see the below for the Interface of Webpage.

4–3–1. Setting Menu

Figure 2 - Setting Menu

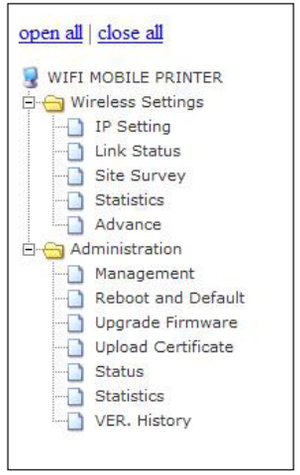


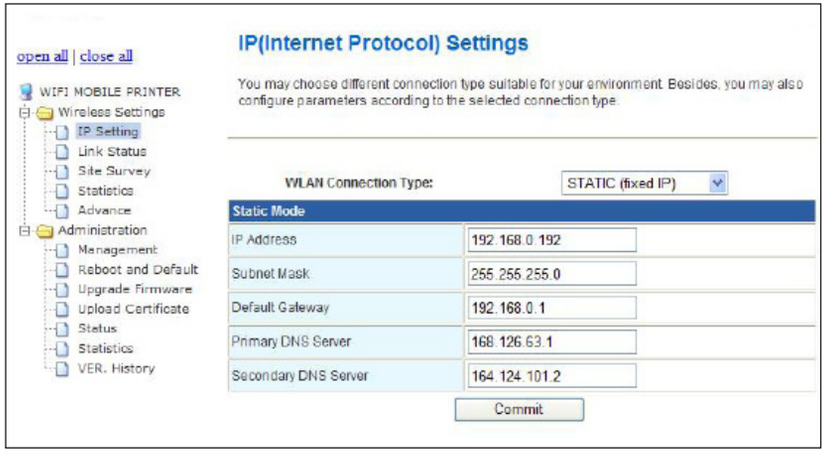
Chart 1 – Description of Menu

Title	Description
IP Setting	Set the Address value related to Internet Protocol.
Link Status	Show the status of current module.
Site Survey	After showing the AP that is around you, in order to connect to AP, it can be connected by each security protocol from providing setting page for protocol.
Statistics	Show the communication status of current module.
Advance	Users can set the 802.11 B/G/N setting or the Channel.
Management	Users can set the time, Webpage account, and etc.
Reboot and Default	Users can set the rebooting or the factory initialization.
Upgrade Firmware	Users can update the all the Firmware Modules.
Upload Certificate	Users can upload the Security Certification.
Status	It shows the system information and address value of wireless LAN.
Statistics	It shows the current memory usage or the amount of transmitted packet.
VER. History	It shows the firmware version of module.

4–3–2. IP Setting

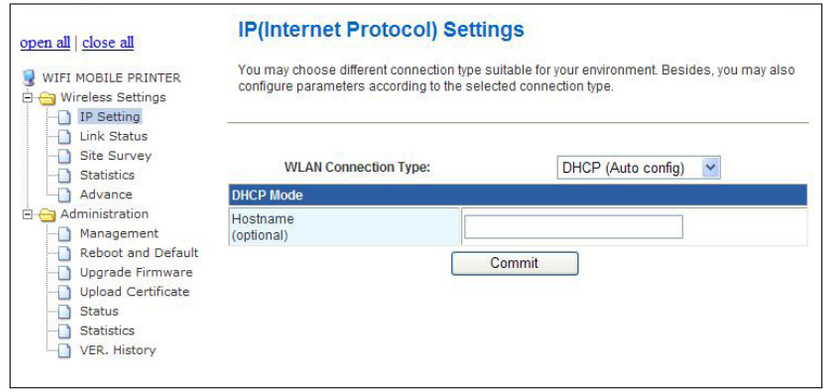
When a users selects the IP Setting of Wireless Settings, you will see the figure 3 (Static IP) below or the figure 4 (DHCP) below.
You can receive or change the address value in this screen.

Figure 3 – IP Setting (Static)



IP Address : It is an address that to distinguish the module in Wireless Network environment.
Subnet Mask : It is an address that to distinguish the Network ID and Host ID for IP Address.
Default Gateway : It is a network address that to enter the another network.
Primary DNS Server : It is a server address that to change the host name to IP Address.
Secondary DNS Server : It is a server address that to back up the Primary DNS Server.

Figure 4 – IP Setting (DHCP)

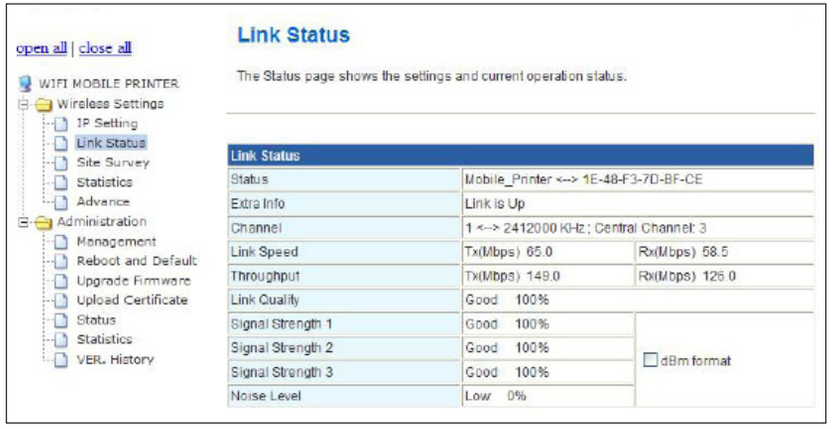


Hostname : Users can select the Hostname for a client.

4–3–3. Link Status

After selecting the Link Status of Wireless Settings, users would see the Image 5 will show up (Please see the below).
In this screen, users can check the Module's current SSID, Mac address, Channel, and etc.

Figure 5 – Link Status

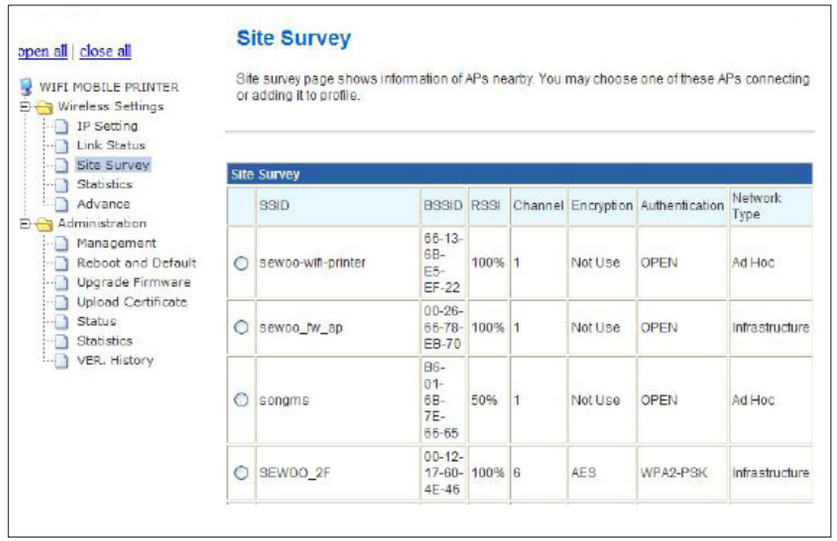


Status : Show the current SSID and BSSID of module.
Extra Info : When the Connecting status, 'Link is Up' will be showed and when is not, then will show up the 'Link is Down' will be showed to show the connecting status.
Channel : Show the channel that is being used by current module.
Link Speed : Show the maximum speed in order to receiving/transmitting of module.
Throughput : Show the amount of data that data is communicating.
Link Quality : Show the connecting status with transmitted ratio without damage of data.
Signal Strength 1~3 : Show each antenna's connecting status.
Noise Level : Show the noise occurrence.

4–3–4. Site Survey

After selecting the Site Survey of Wireless Settings, users can see the page below like Figure 6. Through this page, users can check the information of connectable AP, Encryption, and etc that is near the module. Moreover, after selecting the AP that users want to connect, users can access desirable AP by setting the Encryption of module from opening the setting page through connecting button.

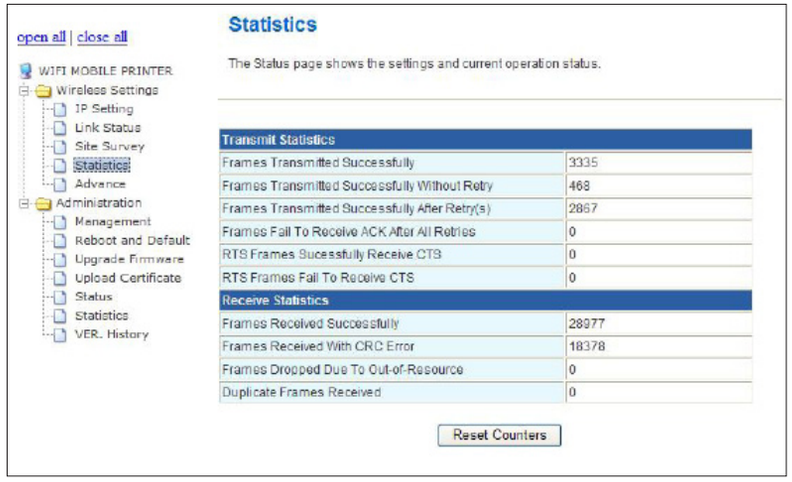
Figure 6 – Site Survey



4–3–5. Statistics

After selecting the Statistics of Wireless Settings, users could see the page like below figure 7. In this screen, it shows the current connecting status by counting the amount of transmission/ reception.

Figure 7 - Statistics

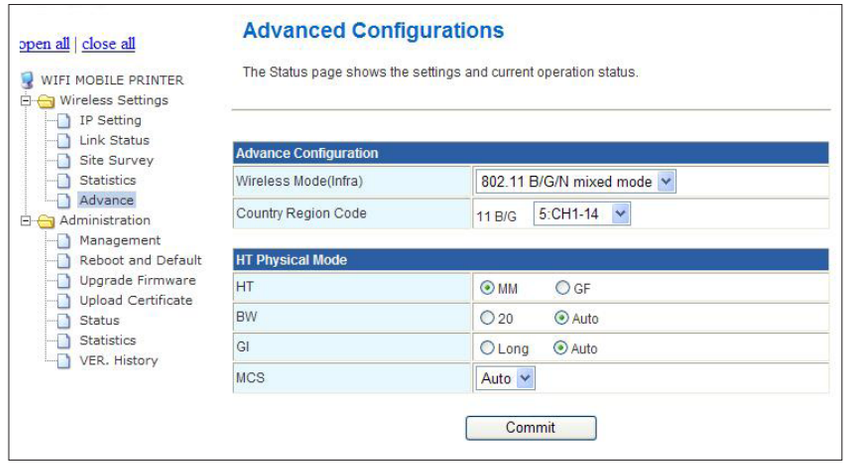


Frames Transmitted Successfully : Show a packet transmitted successfully.
Frames Transmitted Successfully Without Retry : Show a packet transmitted successfully without retry.
Frames Transmitted Successfully After Retry : Show a packet transmitted successfully after retry.
Frames Fail To Receive ACK After All Retries : Show a received packets without an ACK packet. Higher value means higher external interfere.
RTS Frames Successfully Receive CTS : Show a sent RTS frame value and successfully received RTS frame value.
RTS Frames Fail To Receive CTS : Show a RTS frame value which is failed to receive a CTS frame.
Frames Received Successfully : Show a successfully received frame.
Frames Received With CRC Error : Show a CRC error or dropped packets which identified Checksum error.
Frames Dropped Due To Out-of-Resource : Show a dropped packets due to out of resource.
Duplicate Frames Received : Show a duplicated frames value.

4–3–6. Advance

The page as shown the figure 8 will show when users choose “Advance” of the “Wireless Setting” menu. Users can set up Wi-Fi mode (802.11 B/G/N) and channel in this menu.

Figure 8 – Advanced

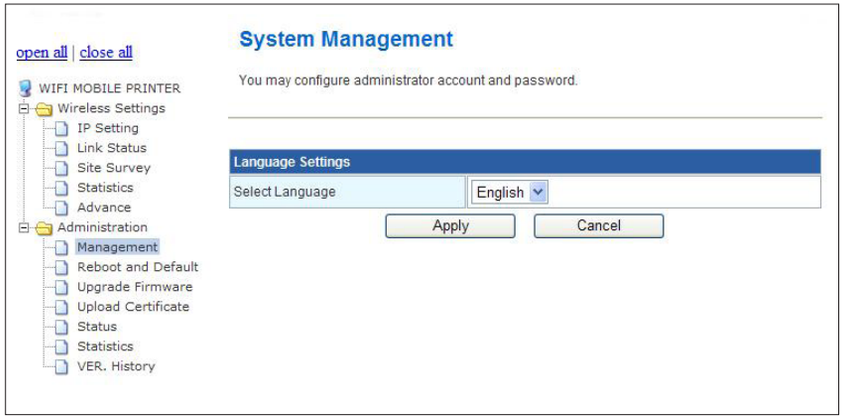


Wireless Mode : Set a 802.11 Wi-Fi mode.
Country Region Code : Set a channel regarding to certain region(country).
HT Physical Mode(only showed in n mode) –
HT : Select a High Throughput Mixed(MM) or High Throughput Greenfield(GF)
BW : Set a Bandwidth as 20 or Auto
GI : Set a Guard Interval as Long or Auto
MCS : Set a Modulation Coding Scheme value

4–3–7. Management

The page as shown the figure 9 will show when users choose “Management” of the “Administration” menu. Users can set up a users account and time setting in this menu.

Figure 9 – Management

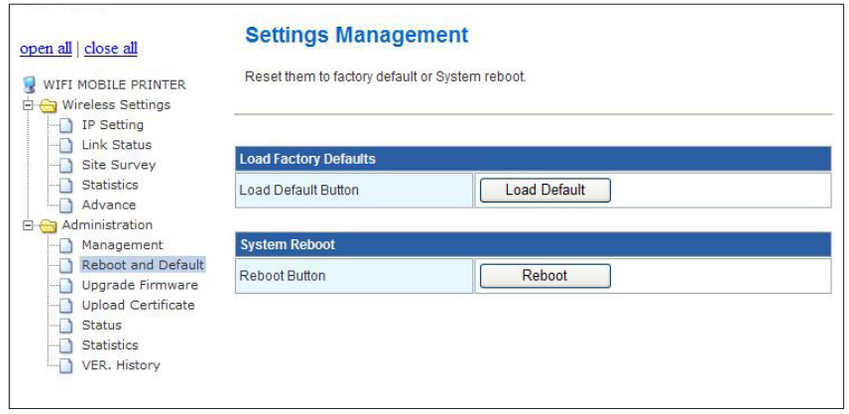


Select Language : Select a language show.

4–3–8. Reboot and Default

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

Figure 10 – Reboot and Default



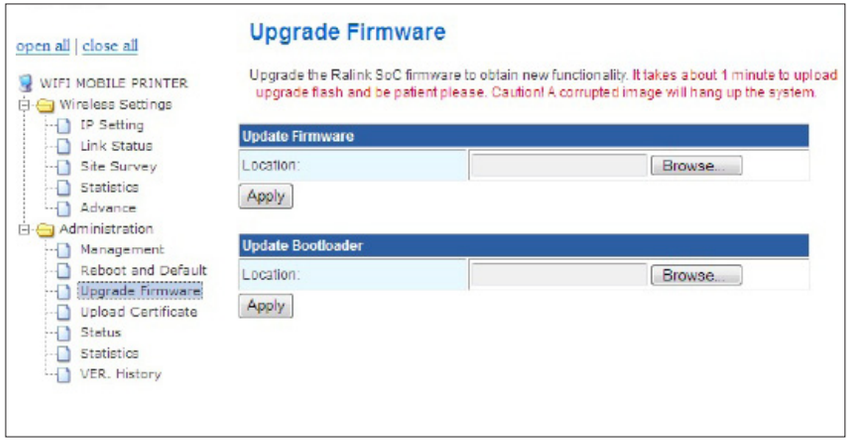
Load Factory Defaults : Make a module as a factory reset status.

Reboot Button : Reboot a module.

4–3–9. Upgrade Firmware

The page as shown the figure 11 will show when users choose an “Upload Firmware” of the “Administration” menu. Users can upload a module Firmware.

Figure 11 – Upgrade Firmware



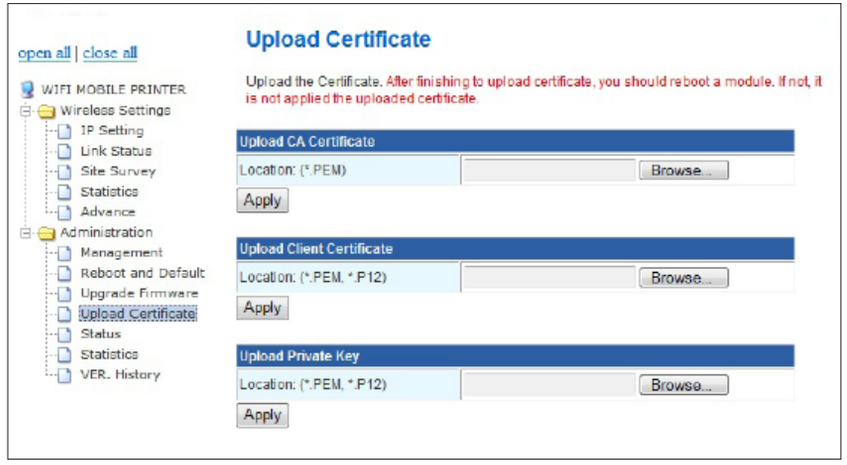
Update Firmware : Upload a module Firmware.

Update Boot loader : Upload a boot loader which needed for operating a module.

4–3–10. Upload Certificate

The page as shown the figure 12 will show when users choose an “Upload Certificate” of the “Administration” menu. Users can upload a certificate for security protocol.

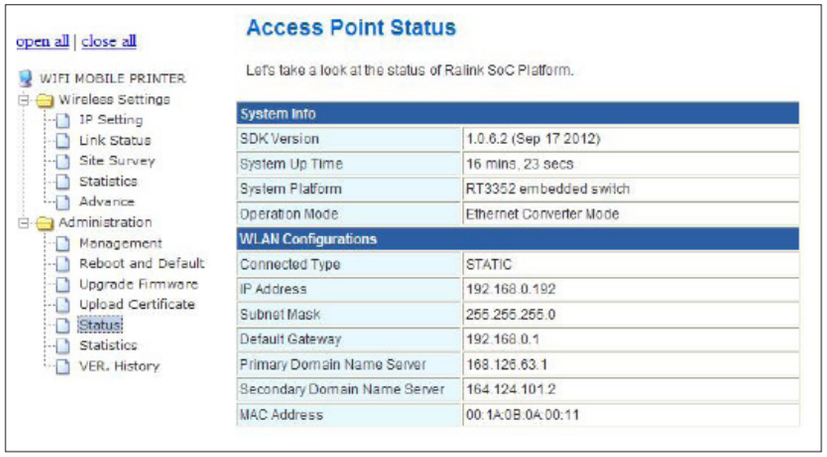
Figure 12 – Upload Certificate



4–3–11. Status

The page as shown the figure 13 will show when users choose a “Status” of the “Administration” menu. Users can check the current module system information in this page.

Figure 13 – Status

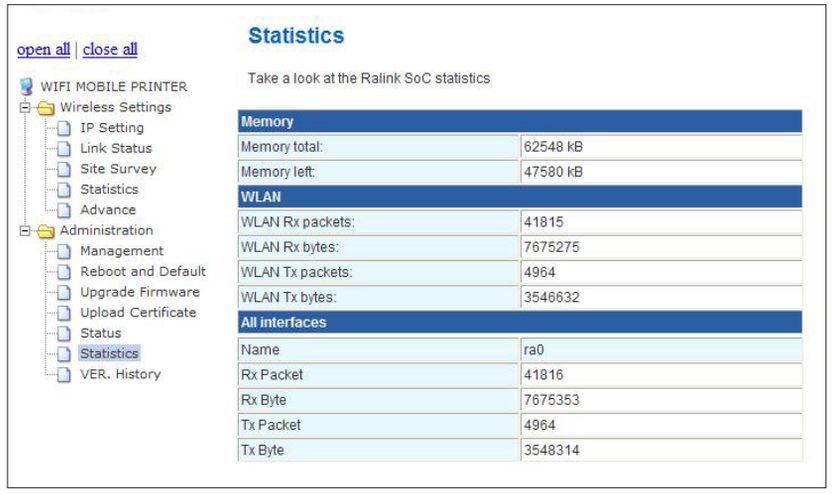


SDK Version : Check the SDK version.
System Up Time : Show the current operating system time.
System Platform : Show the current operating system environment.
Operation Mode : Show the system operating mode.
Connected Type : Show the Wi-Fi connection mode.
IP Address : Show the module IP address.
Subnet Mask : Show the module Subnet Mask address.
Default Gateway : Show the module Gateway address.
Primary Domain Name Server : Show the first DNS server address.
Secondary Domain Name Server : Show the second DNS server address.
MAC Address : Show the current MAC address.

4–3–12. Statistics

The page as shown the figure 14 will show when users choose a “Statistics” of the “Administration” menu. Administration Statistics. Users can check the current module memory usage and transmitted data in this page.

Figure 14 – Statistics



Memory total : Show the total memory of the module shown as kB.
Memory left : Show the usable memory shown as kB.
WLAN Rx packets : Show the current received packets.
WLAN Rx bytes : Show the current received data shown as kB.
WLAN Tx packets : Show the current sent packets.
WLAN Tx bytes : Show the current sent data shown as kB.
Name : Show the name of the interface.
Rx Packet : Show the received packets through current interface.
Rx Byte : Show the received data through current interface shown as kB.
Tx Packet : Show the sent packet data through current interface.
Tx Byte : Show the sent data shown as kB through current interface.

4–3–13. VER. History

The page as shown the figure 15 will show when users choose a “VER. History” of the “Administration” menu. Users can check the current Firmware version in 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 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 accesspoint, 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 thenetwork. 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 serspecifiedcharacters), or 26 hex characters for 128 bit (104 user-specified 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

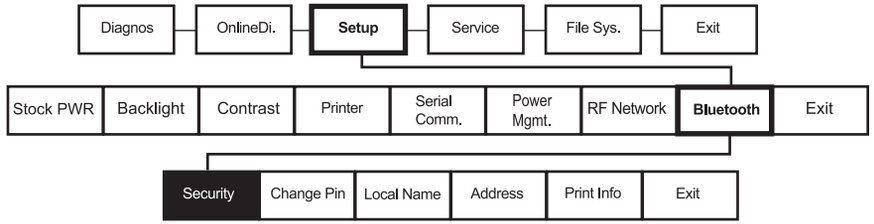
- Frequency 2.4 ~ 2.4835 GHz (US/Canada/Europe), 2.4 ~ 2.497 GHz (Japan)
- Communication Rate : 802.11b = 11, 5.5, 2, 1 Mbps
802.11g = 54, 48, 36, 24, 18, 12, 9, 6 Mbps
802.11n(20Mhz) = MCS0-7, up to 72.2 Mbps maximal
802.11n(40Mhz) = MCS0-7, up to 150 Mbps maximal
- Channels : USA/Canada: 11 channels
  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 Protocal : 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.

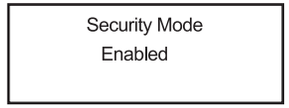


5–1–1. Enabling the Security

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

2. Select one of Enable and Disable.

3. Selected option is displayed as shown below



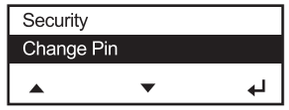
4. Press Enter(↵) button to exit.

☑ NOTE

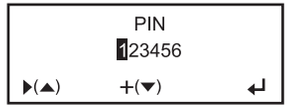
Refer to “3-1-14. Bluetooth Interface” for the Bluetooth configuration.

5–1–2. Change Pin

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



2. Screen to set PIN appears as shown below.

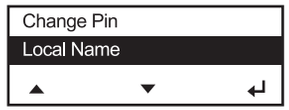


3. On above screen, if Up(▲) button is pressed then the position of cursor moves towards right side by one step. If Down(▼) button is pressed then the selected character is increased.

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

5–1–3. Local Name

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



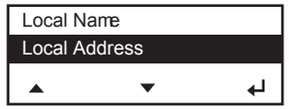
2. The screen to set Local Name appears as shown below.

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

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

5–1–4 Local Address

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



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

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

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

5–1–5 Printing Info

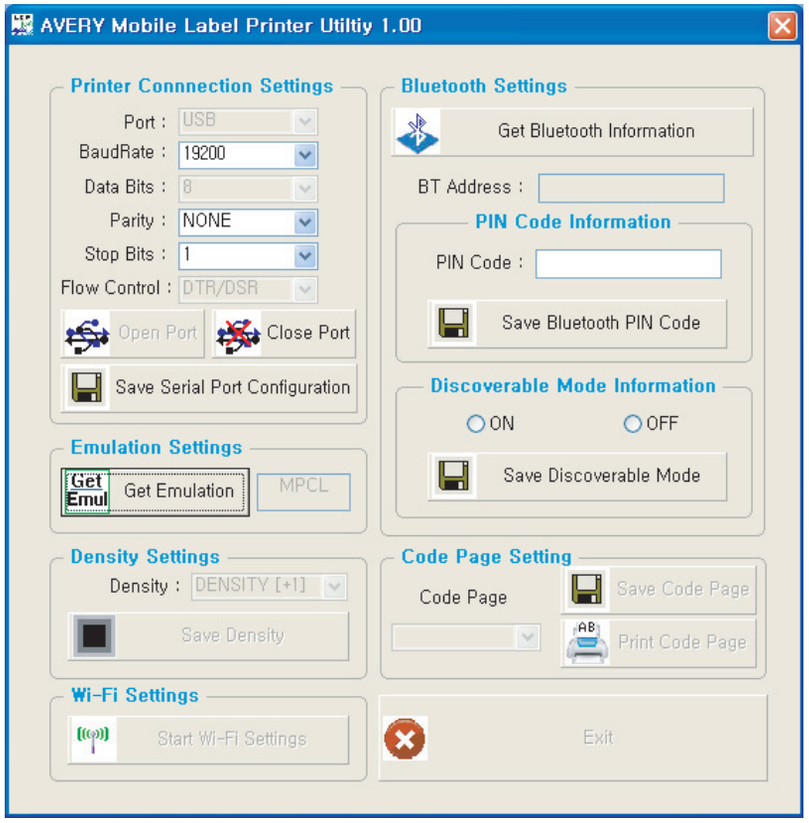
1. Select Setup **Menu – Bluetooth – Printing Info.**

2. You may see:.

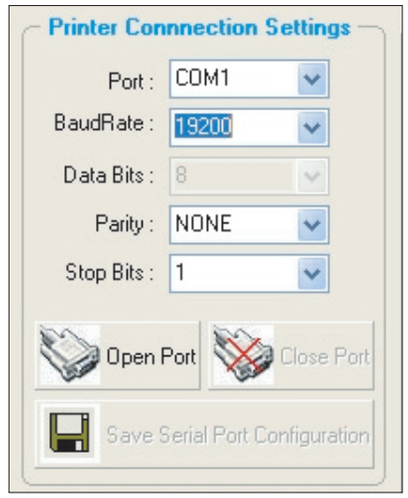
3. If it is successful, it starts to print, and if not, you see:.

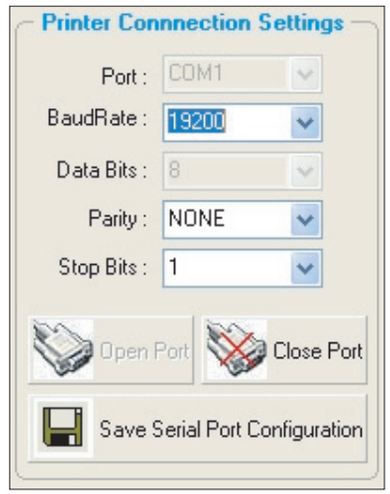
4. Press any key to exit

5-2. Bluetooth Interface



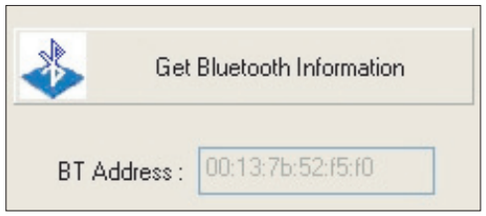
5–2–1. Printer Connection Settings





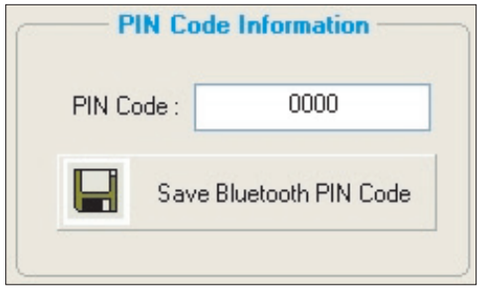
You can connect the printer to PC by Serial (COM1 – COM9) or USB port. When you use Serial Port, you have to check the BaudRate setting between the printer & PC. When the printer is connected with PC, you can change the BaudRate setting of the printer. You can save the changed BaudRate to the printer by executing ‘Save Serial Port Configuration’. You can disconnect printer from the PC by clicking ‘Close Port’.

5-2-2. Get Bluetooth Information



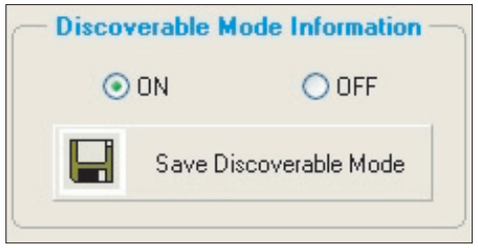
You can get 12 characters Bluetooth Address.

5-2-3. PIN Code Information



You can register Bluetooth PIN Code by inputting PIN Code and execute “Save Bluetooth PIN Code”

5-2-4. Discoverable Mode Information



When you set “Discoverable Mode” as ON, the printer can be detected by other Bluetooth devices(PDA, Smart Phone…) and when you set it as “Off”, the printer can not 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.