



# WS2 Series Printer

## Operator Manual

WS208 / WS212



WS2-r01-15-06-18OM

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## **Caution**

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

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# 1 Introduction

Thank you for purchasing an SATO WS2 Series industrial barcode printer. This manual provides information about how to set up and operate your printer, load media and solve common problems. Illustrations are provided to help you quickly become familiar with the printer.

## 1.1 Features

- **Clamshell design, easy loading**

The WS2 series features a user-friendly clamshell design that allows users to simply open the cover and loading media.

- **Compact size**

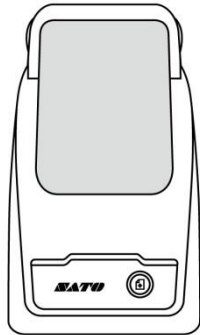
Small footprint design, the compact WS2 series fits into tight spaces and supports a wide range of applications.

- **Enhanced connectivity**

The WS2 series has built-in USB host, USB device, and Ethernet.

## 1.2 Unpacking

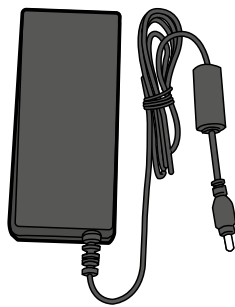
Make sure all of the following items are included in your package.



SATO WS2 Printer



User Documents  
(Quick Guide, Warranty,  
etc.)



Power Supply



AC Power Cord

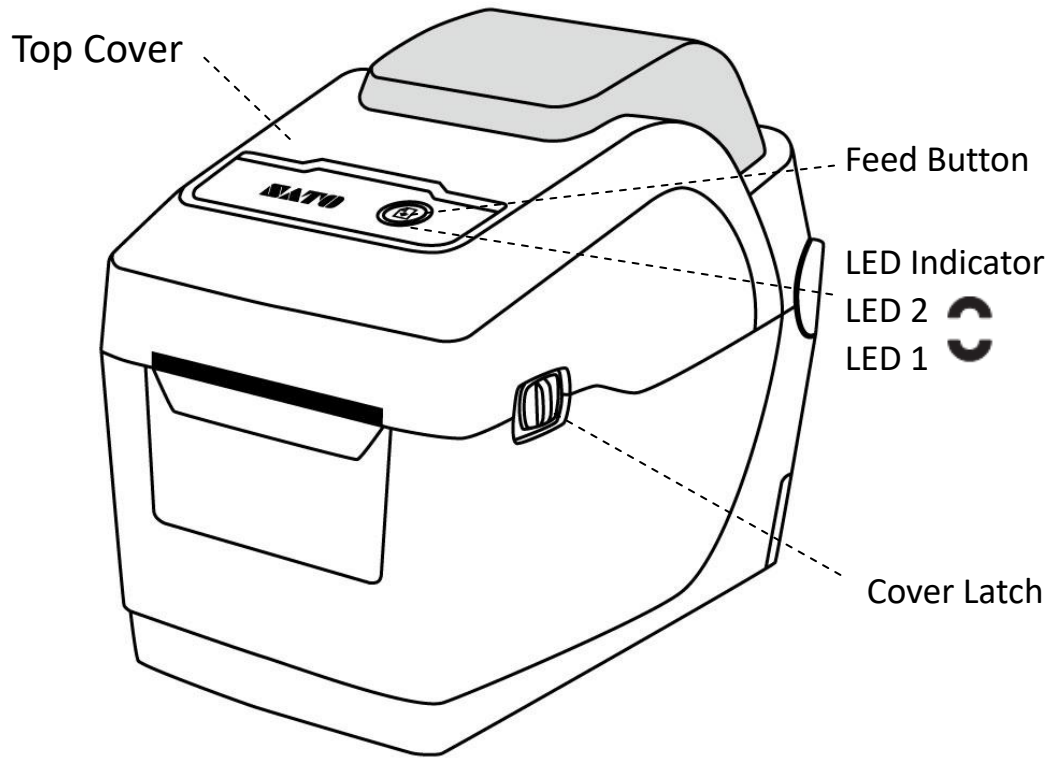
When you receive the printer, open the package immediately and inspect for shipping damage. If you discover any damage, contact the shipping company and file a claim. SATO is not responsible for any damage incurred during shipping. Save all package materials for the shipping company to inspect.



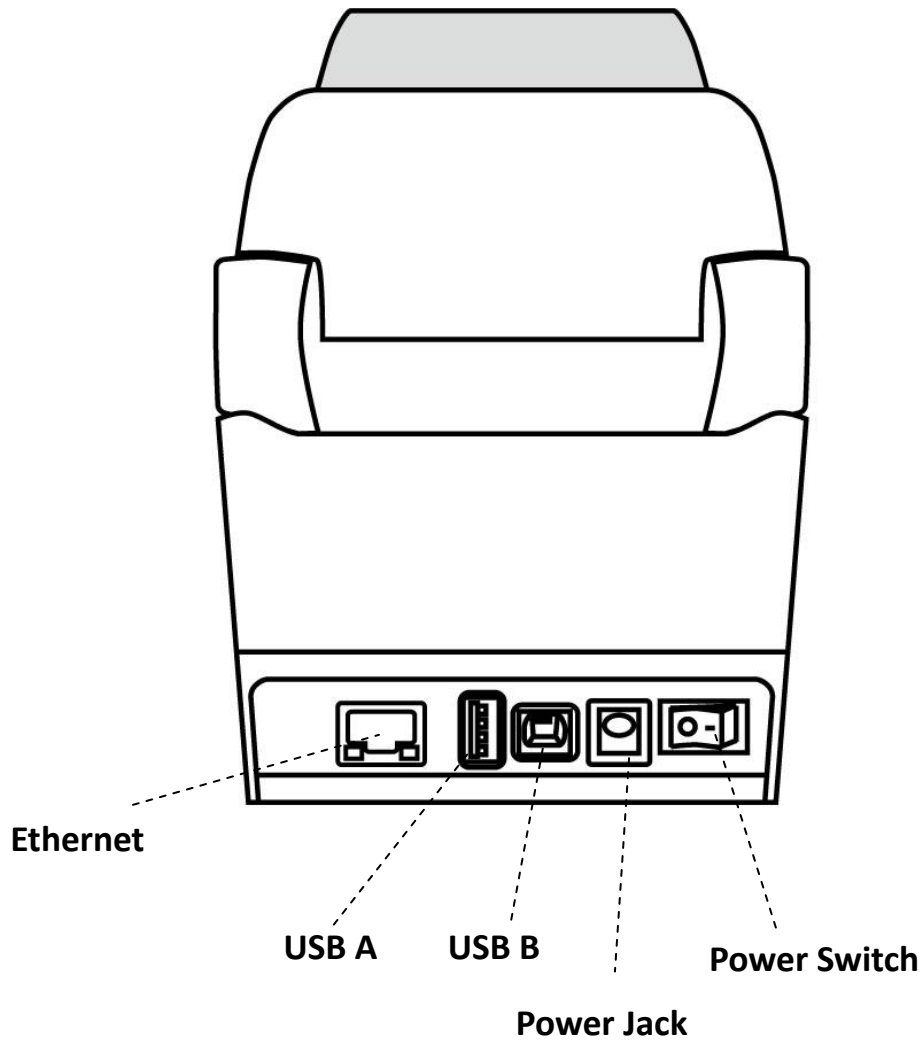
**Note** If any item is missing, please contact your local dealer.

# 1.3 Understand your printer

## 1.3.1 Perspective view



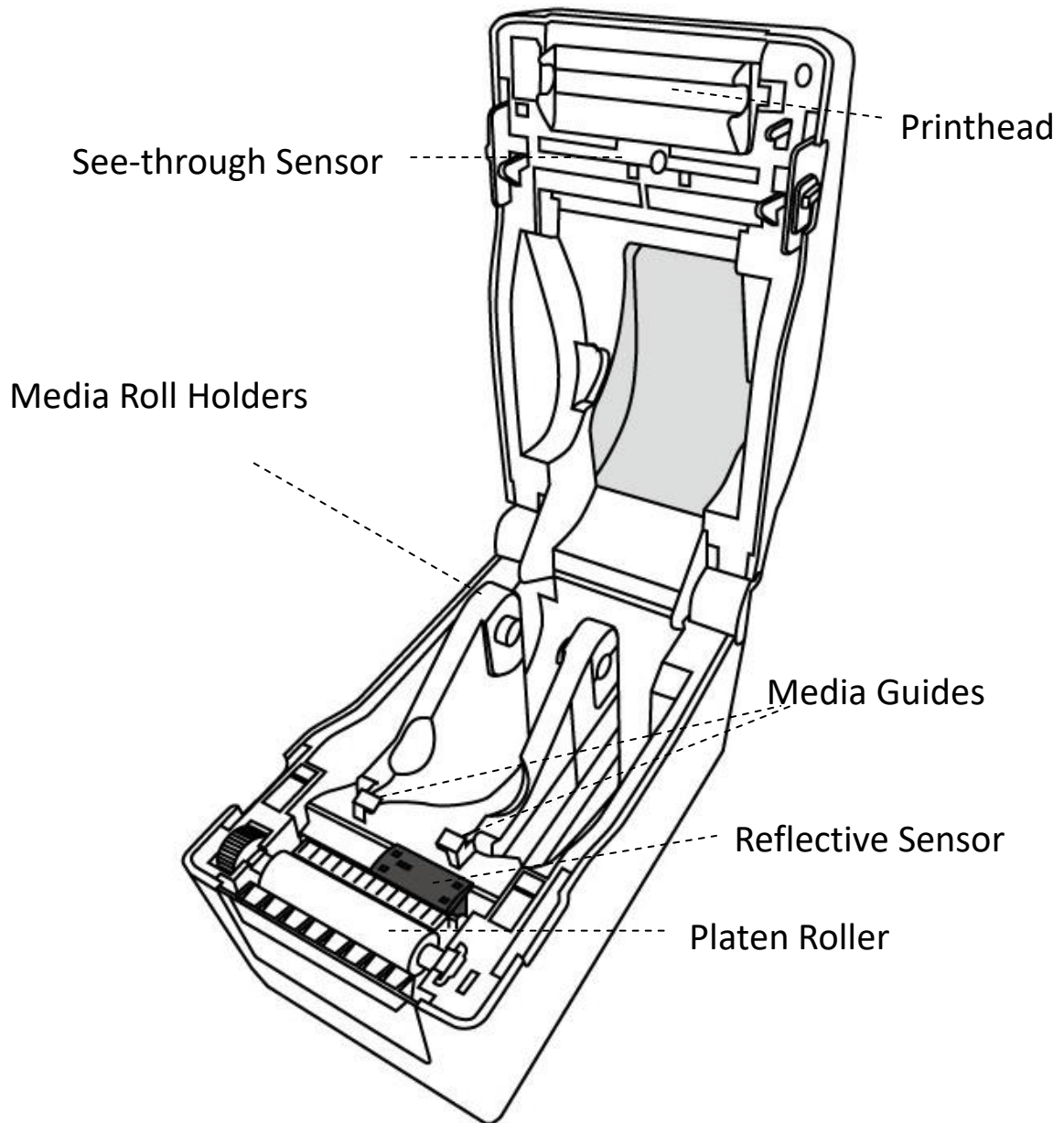
## 1.3.2 Back view



**Caution** To avoid injury, be careful not to trap your fingers in the Paper Slot while opening or closing the Top Cover.



### 1.3.3 Interior view



## 1.4 Printer lights

There are two LED lights that show the status of WS2 Series printer. The Upside light is defined in LED2. LED1 is below LED2 and Feed symbol.



### 1.4.1 Status lights

Status lights help you check printer's condition. The following tables show the blinking speed of status lights and the conditions they indicate.

Symbol	Blinking Speed	Blinking Interval
**	Fast	0.5 Second
*	Slow	2 Seconds
* LED2 + *LED1	Slow	LED2 & LED1 Blinking Interval at same time
* LED2 + LED1*	Slow	LED2 & LED1 Blinking Interval at different timing

LED 2	LED 1	Description
Green	Green	The printer is ready to print.
Green	** Green	The printer is transmitting data.
* Green	* Green	In pause.
* Green	Green *	The printer is writing data to the flash or USB memory. The USB memory is being initialized.
Green	Orange	Head high temperature.
Green	* Orange	The RTC battery is low. (If the printer has a built-in RTC)
Green	** Orange	The print module is opened when the printer is turned on.
Orange	Orange	Paper jam.
** Orange	** Orange	The media is out when the print data is sent to the printer.

		Paper end.
** Orange	Orange **	Ribbon end or ribbon error (for thermal transfer models)
Red	Orange	The printhead is broken.
Red	**Orange	Cutter error (with optional cutter).
Red	Red	Cover (Thermal Head) open error during printing.
		An EEPROM for backup cannot be read or written properly.
		A command has been fetched from an odd address.
Red	* Red	Word data has been accessed from a place other than the boundary of the word data.
		Long word data has been accessed from a place other than the boundary of the long word data.
Red	** Red	Command error.
		Flash ROM on the CPU board error or USB memory error.
* Red	Red *	An erase error has occurred when formatting the USB memory.
		Unable to save files due to insufficient USB memory.

## 1.4.2 System mode

The system mode consists of status light color combinations. It contains a list of commands for you to select and run.

To enter the system mode and run the command, do the following:

1. Turn off the printer.
2. Press and hold the **FEED** button, and turn on the printer.
3. Both status lights glow solid Orange for a few seconds. Next, they turn to green shortly, and then turn to other colors.
4. When status lights show the color combination you need, release the **FEED** button immediately.
5. Press the **FEED** button to run the command.

The following table is the command list of the system mode.

LED 1	LED 2	Command
Green	Red	Transmissive Sensor Calibration ( <a href="#">Section 3.1</a> )
Green	Orange	Reflective Sensor Calibration ( <a href="#">Section 3.1</a> )
Red	Red	Resetting Your Printer ( <a href="#">Section 3.3</a> )
Red	Orange	Reserved
Red	Green	Reserved
Orange	Red	Reserved
Orange	Green	Self-Test ( <a href="#">Section 3.2</a> )

## 2 Get started

This chapter describes how to set up your printer.



**Caution** Do not use your printer in areas exposed to splashing water or any other liquid.

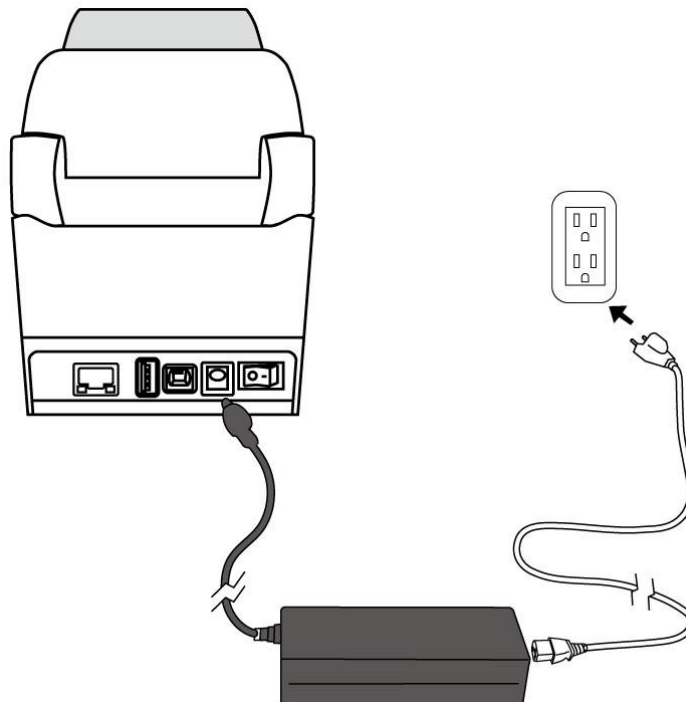


**Caution** Do not drop your printer, or place it in an area subject to humidity, vibration or shock.

### 2.1 Attach the power cord

1. Make sure the power switch is set to the **OFF** position.
2. Insert the power supply's connector into the printer power jack.
3. Insert the AC power cord into the power supply.
4. Plug the other end of the AC power cord into the wall socket.

**Important** Use only power supplies listed in the user instructions.



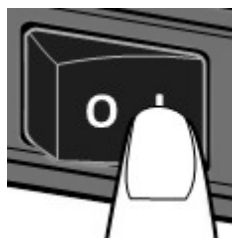
**Warning** Do not plug the AC power cord with wet hands, or operate the printer and the power supply in an area where they may get wet. Serious injury may result from these actions!

## 2.2 Turn on/off your printer

When your printer is connected to a host (a computer), it is good to turn on the printer before turning on the host, and turn off the host before turning off the printer.

### 2.2.1 Turn on your printer

1. To turn on your printer, turn on the **Power Switch** as below. The “I” is the **ON** position.



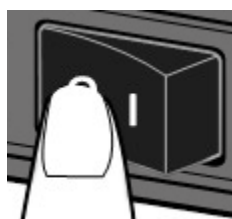
2. Both status lights glow solid Orange for a few seconds, then turns to solid green.



**Note** If you connect the printer to the internet or insert a USB drive before turning on the printer, it will take longer for the printer to enter the online mode after you turn it on.

### 2.2.2 Turn off your printer

1. Make sure LED is solid green before turning off the printer.
2. To turn off your printer, turn off the **Power Switch** as below. The “O” is the **OFF** position.



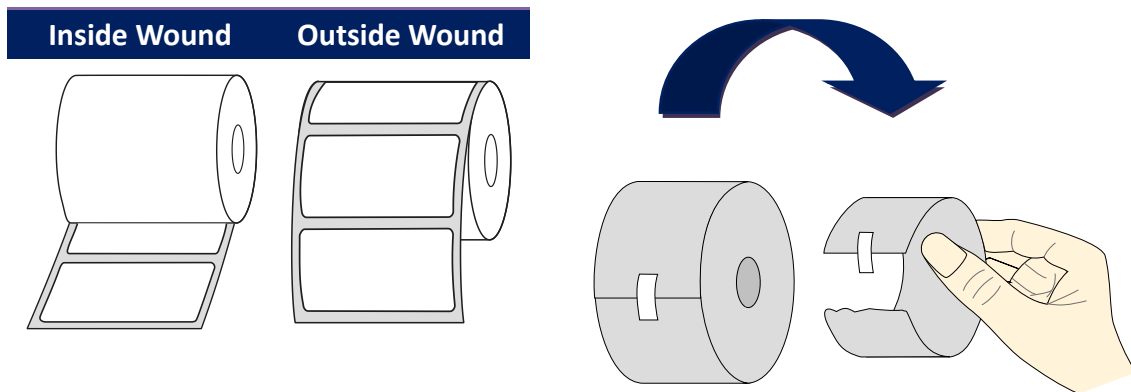
**Caution** Do not turn off your printer during data transmission.

## 2.3 Load media

There are various types and sizes for the media roll. Load the applicable media to satisfy your need.

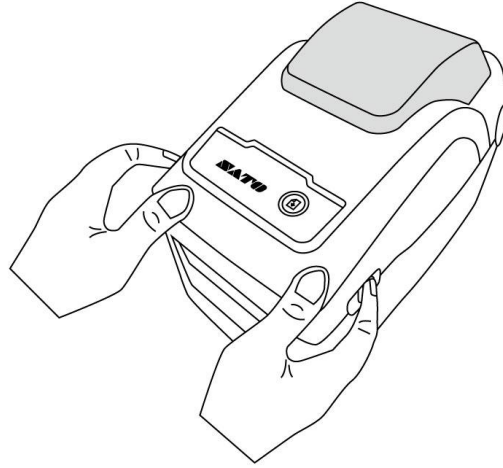
### 2.3.1 Prepare media

The inside wound and outside wound media roll can be loaded into the printer the same way. In case the media roll is dirty during shipping, handling or storage, remove the outside length of the media. It helps avoid dragging adhesive and dirty media between the printhead and platen roller.

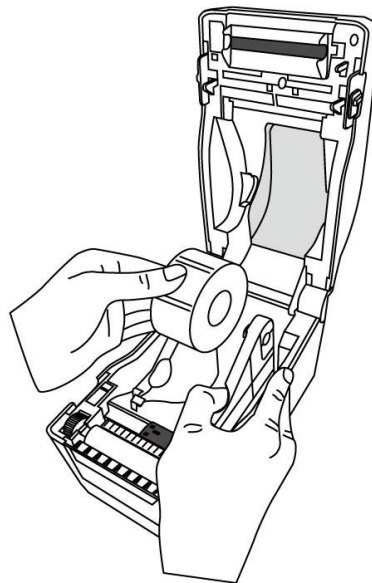


## 2.3.2 Place a media roll

1. Pull the head latch to open the top cover of the printer.

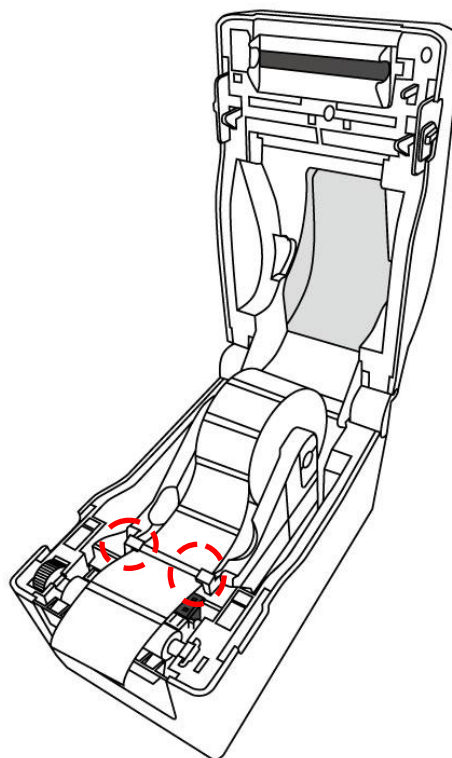


2. Pull the **Media Roll Holders** to slide them outward, and place the media roll between the holders. Make sure the print side is up, and the media roll is clamped tightly by the holders.

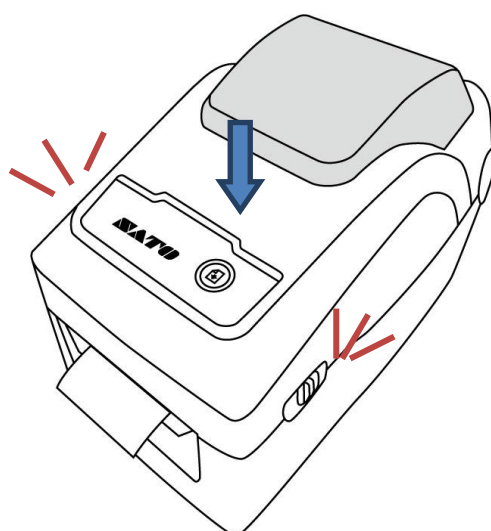




3. Pull the media until it reaches out of the printer. Thread the media under the media guides.



4. Close the top cover on both sides.

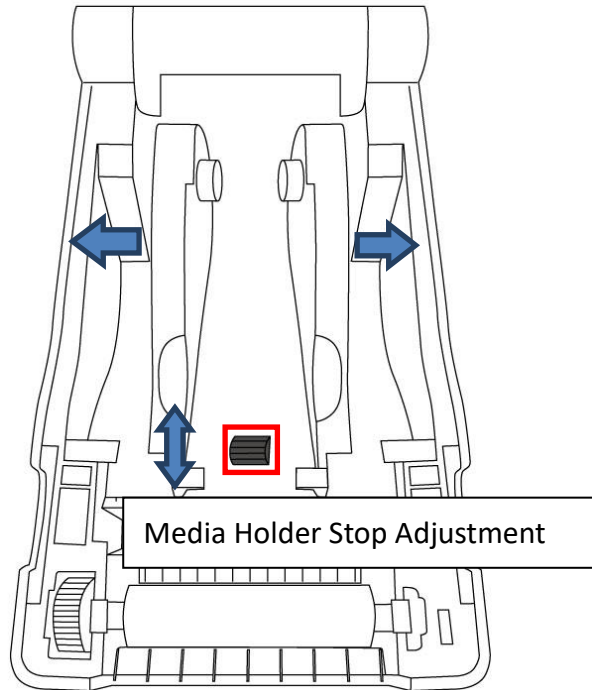


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*Flexibility*

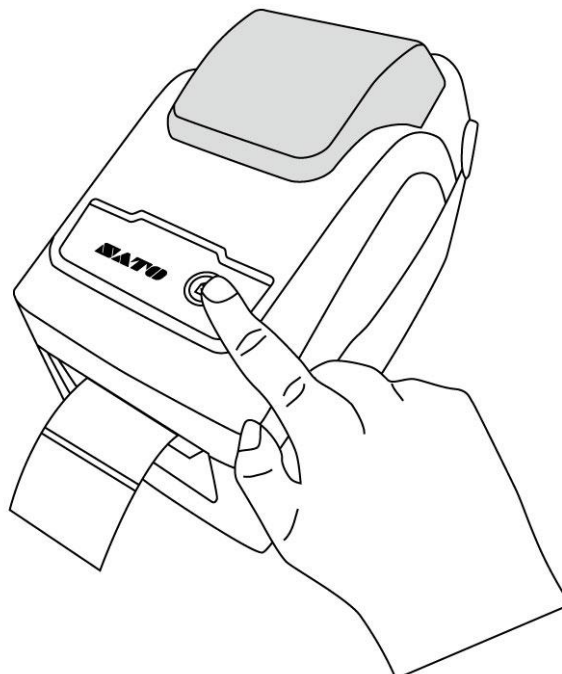
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If you usually use the same width media or fanfold media, scroll the “Media Roll Holder Wheel” to adjust width to the same media guide.

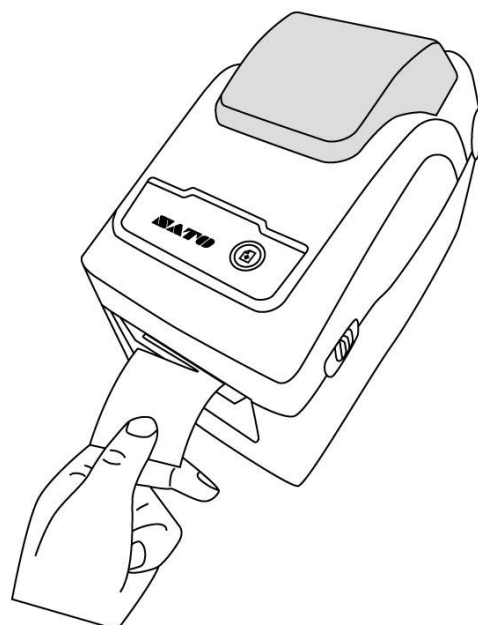


### 2.3.3 Test media feed

1. Turn on the printer, and press the **FEED** button to feed a label.

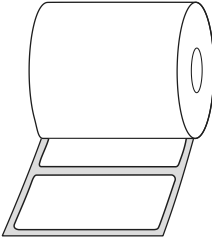
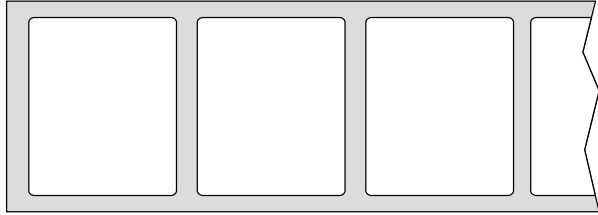
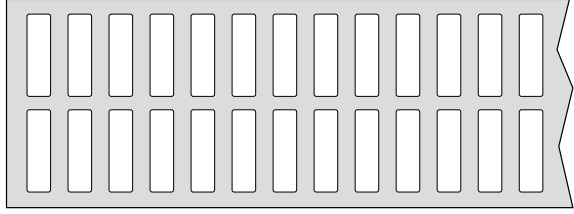
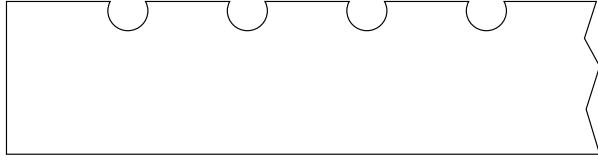




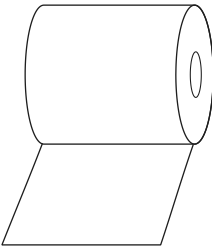
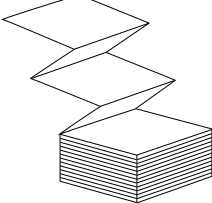

2. Flip the media and tear it along the edge of the front cover.



## 2.4 Media types

Your printer supports various media types, including non-continuous media, continuous media, and fanfold media. The following table provides details about them.

Media Type	Looks Like	Description
<p><b>Non-Continuous Media</b></p>	          	<p>Non-continuous media is the typical media for bar code printing. Labels and tags are made of various materials, such as paper, fabric or cardstock, and are separated by gaps, holes, notches or black marks. Many labels are self-adhesive with liners, while some are linerless.</p>

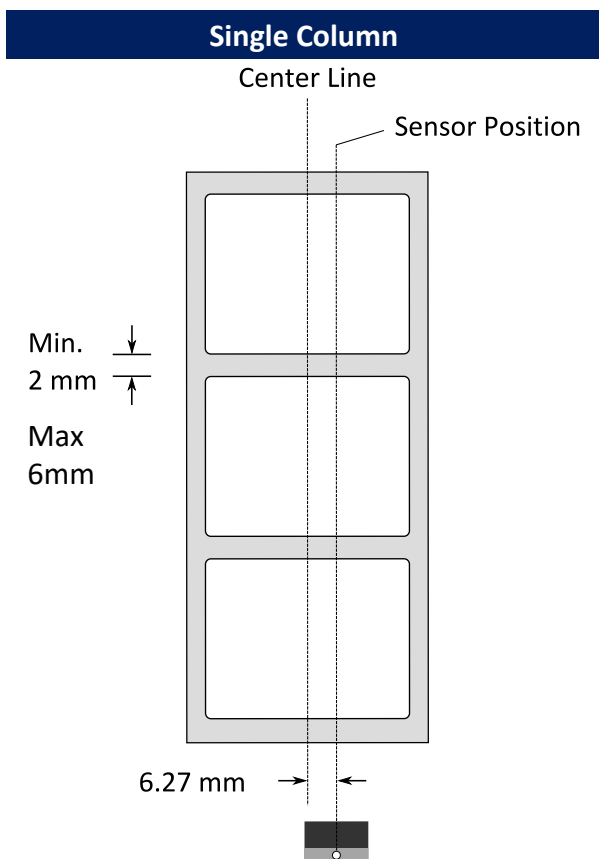
Media Type	Looks Like	Description
<b>Continuous Media</b>		<p>Continuous media does not have gaps, holes, notches or black marks. It allows you to print data anywhere on the media. A cutter may be used for splitting labels.</p>
<b>Fanfold Media</b>		<p>Fanfold media is in continuous form, but it can be used as non-continuous media, because its labels are separated by folds. Some fanfold media also has black marks or liners.</p>
<b>Tag Media</b>		<p>Tag media is usually made from a heavy paper, with central hole to index. It does not have adhesive or a liner, and it is typically perforated between tags. The media may also have black marks or other separations</p>

## 2.5 Media sensing

WS2 printer offers reflective sensor. It used for detecting specific media types.

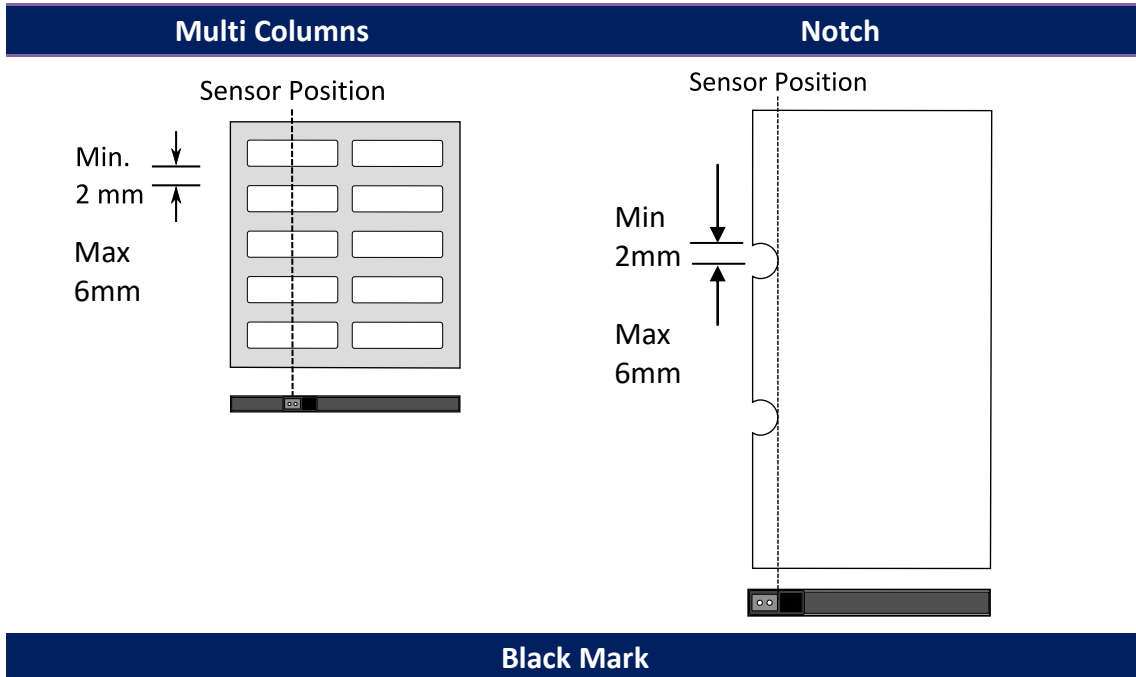
### 2.5.1 Transmissive sensor

The transmissive sensor is fixed and placed near the center line with 6.27 mm offset of the printhead. It is used for detecting gaps across the entire width of the label.

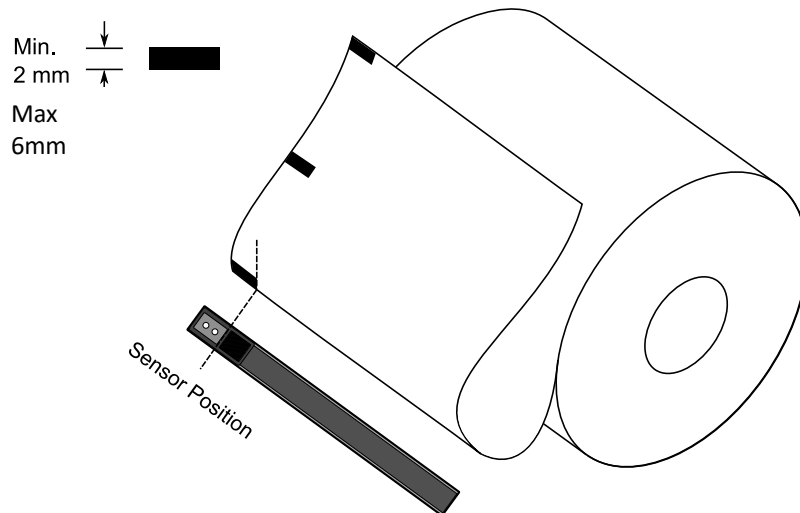


## 2.5.2 Reflective sensor

The reflective sensor is movable within the entire width of the media. It detects gaps, notches and black marks not located at the center of the media.



Flip the media so the black-mark side is facing down to align with the sensor.



# 3 Printer operation

This chapter provides information about printer operation.

## 3.1 Printing Media Calibration & Configuration

You need to calibrate the media sensor to print properly. WS printers provide transmissive and reflective sensor calibration. Take the following steps to use them.

### Doing calibration directly

1. Make sure the media is properly loaded, the print module is closed
2. Press and hold "FEED" button 3 seconds until LED2 turns to orange and LED1 turns to green. Media calibration start. Release "FEED" key

### Go to System mode doing calibration

1. Make sure the media is properly loaded, the print module is closed
2. Set the power switch to the **OFF** position.
3. Press and hold the **FEED** button, and turn on the printer.
4. Both status lights glow solid Orange for a few seconds. Next, they turn to green shortly, and then turn to other colors. Do one of the following to select the sensor:
  - If you want to calibrate the transmissive sensor, when LED 1 turns to green and LED 2 turns to red, release the **FEED** button immediately.
  - If you want to calibrate the reflective sensor, when LED 1 turns to green and LED 2 turns to orange, release the **FEED** button immediately.
5. Press the **FEED** button. The media calibration is complete after the printer feeds 3-4 labels and stops.



## 3.2 Self test

The printer can run a self test to print a configuration label, which helps you understand current settings of the printer.

1. Turn off the printer.
2. Press and hold the **FEED** button, and turn on the printer.
3. Both status lights glow solid Orange for a few seconds. Next, they turn to green shortly, and then turn to other colors. When LED 2 turns to green and LED 1 turns to Orange, release the **FEED** button.
4. Press the **FEED** button to print a configuration label.

Your configuration label should look like this:

SZPL

```

LABEL PRINTER WITH FIRMWARE
1 WS212-V01.03 20171123SZPL
2 STANDARD RAM : 32M BYTES
3 AVAILABLE RAM : 3684K BYTES
4 FLASH TYPE :
  ON BOARD 16M BYTES
5 AVAILABLE FLASH :
  8438K BYTES
6 NO. OF DL SOFT FONTS(FLASH):0
7 NO. OF DL SOFT FONTS(RAM) :0
8 NO. OF DL SOFT FONTS(HOST) :0
9 H. POSITION ADJUST.: 0011
10 SEE-THRU SENSOR
11 REF: 0000 SEE: 0000
12 RTC TIME: 1/1/0(0:38:24)
13 MAX LABEL HEIGHT: 50 INCHES
14 PRINT WIDTH: 638 DOTS
15 LAB LEN(TOP TO TOP): 10mm
16 SPEED: 3 IPS
17 ABS. DARKNESS: 16
18 TRIM. DARKNESS: 0
19 DIRECT THERMAL
20 PRINT LENGTH: 1M
21 CUT COUNT:0
22 CARET CONTROL CHAR : <^>5EH
23 DELIMITER CONTROL CHAR : <.>2CH
24 TILDE CONTROL CHAR : <~>7EH
25 CODE PAGE : USA1
26 MEDIA : CONTINUOUS
27 CALIBRATION MODE: INTELLI
28 REPRINT AFTER ERROR : ENABLED
29 BACKFEED DISABLED
30 CUTTER DISABLED
31 PEELER DISABLED
32 CUTTER/PEELER OFFSET:
  0 <+-0.01mm>
LAN MODULE NOT INSTALL
33 IP ADDRESS: 0.0.0.0
34 SUBNET MASK: 0.0.0.0
35 GATEWAY: 0.0.0.0
36 MAC ADDRESS:
  AB-CD-EF-00-01-D2
37 DHCP: ENABLED
38 DHCP CLIENT ID:
  FFFFFFFFFFFFFFFF
  FFFFFFFFFFFFFFFF
39 DHCP HOST NAME:
40 SNMP: ENABLED
41 SOCKET COMM.: ENABLED
42 SOCKET PORT: 9100
43 IPV6 MODE: MANUAL
44 IPV6 TYPE: NONE
45 IPV6 ADDRESS:
  0000:0000:0000:0000
  0000:0000:0000:0000
46 LINK LOCAL :
  0000:0000:0000:0000
  0000:0000:0000:0000
47 PRODUCT SN: 0000000001
48 USB SN: 0000000001
49 CG ENABLED
50 ot(0.0)<0.1dot.0.01mm>
54 rm(0.0)<1+ 0-.0 01mm>
52 sm(0.0)<1+ 0-.0 01mm>
53 rv(0.0,0)<0.01v><F>
54 sv(0.0,0)<0.01v><F>
55 rso(0)<0.01mm>
56 sso(0)<0.01mm>
57 rago(0)<0.01v><F>
58 sago(0)<0.01v><F>
59 sw: - - 0 0 0 -
      1 2 3 4 5 6
60 font a. 0123ABCabc
61 FONT B. 0123ABCabc
62 FONT C. 0123ABCabc
63 FONT D. 0123ABCabc
64 FONT E. 0123ABCabc
65 FONT F. 0123ABCabc
66 FONT G.
67 FONT H. 0123ABC
68 Font CG 0123ABC
69 ██████████
70 ██████████
71 ██████████
72 ██████████
73 ██████████
74 ██████████

```

**1. Version Information**

The firmware version and its build date.

**2. Standard RAM**

Display SDRAM size.

**3. Available RAM**

RAM is able to be used.

**4. Flash Type**

The flash memory type and size.

**5. Available Flash**

Flash is able to be used.

**6. No of DL soft fonts (FLASH)**

The number of fonts is downloaded in Flash.

**7. No of DL soft fonts (RAM)**

The number of fonts is downloaded in RAM.

**8. No of DL soft fonts (HOST)**

The number of fonts is downloaded in USB HOST.

**9. H. Position Adjust**

Move the print position horizontally.

**10. Sensor Type**

Two kinds of media sensor type, reflective sensor and see-through sensor.

**11. Label-less Calibration Value**

Check if a label-less calibration has been performed on the printer. If not, the value is 0000.

**12. RTC Time**

The default format is month/day/year (hour:minute:second). If your printer has a built-in RTC, the RTC time shows here.

**13. Max Label Height**

The max label length you can print at a time. For 200 dpi models, it is 100 inches; for 300 dpi models, it is 50 inches.

**14. Print Width**

Display the print width in dots.

**15. Lab Len (Top to Top)**

For non-continues media, it is the length between the tops of two labels.

**16. Speed**

Printing speed unit is inch per second (ips).

#### **17. ABS. Darkness**

Display the current darkness. You can use the SZPL command `~SD` to define it.

#### **18. Trim. Darkness**

Display the adjustment of the current darkness. You can use the SZPL command `^MD` to define it.

#### **19. Print Method**

It is either thermal transfer (TT) or direct thermal (DT) printing. TT requires ribbons and DT doesn't.

#### **20. Print Length**

Display total print length.

#### **21. Cut Count**

It counts the times the cutter cuts.

#### **22. Caret Control Char**

The control character your printer is using.

#### **23. Delimiter Control Char**

The control character your printer is using.

#### **24. Tilde Control Char**

The control character your printer is using.

#### **25. Code page**

The character set table.

#### **26. Media**

The media type in use.

#### **27. Calibration mode**

Intelli Mode: Just install labels, latch print module, press FEED button once, and then the printer will feed 1-2 labels to detect next gap / black mark before printing. The printer will feed 1-2 labels automatically before printing, if FEED button is not pressed.

#### **28. Reprint After Error**

When it is enabled, your printer reprints the label after the error fixed if it is printed incorrectly due to the error.

#### **29. Backfeed Enabled/Disabled**

Enable or disable backfeed during the printing process. When it is enabled, the printer moves the paper forward in a predefined length 1 second after printing, and pulls the paper back in a predefined length once the printing begins again. When it is disabled, the printer won't move the paper at all.

**30. Cutter Enabled/Disabled**

Enable or disable the cutter during the printing process.

**31. Peeler Enabled/Disabled**

Enable or disable the dispenser during the printing process.

**32. Cutter/Peeler Offset**

Move the cutting line or the peeling position forward or backward. The value in the angle brackets is the offset unit.

**33. IP Address**

Display printer current IP address in. The default value is "192.168.1.1".

**34. Subnet Mask**

Display printer subnet mask. The default value is "255.255.255.0".

**35. Gateway**

Display printer gateway. The default value is "0.0.0.0".

**36. MAC Address**

The unique address assigned to the printer that connects to the internet.

**37. DHCP**

When DHCP is enabled, it assigns a dynamic IP address to the printer automatically.

**38. DHCP Client ID**

It is an arbitrary value sent to the DHCP server to reserve an IP address for the printer.

**39. DHCP Host Name**

It is the name of a DHCP client. The host name allows up to 32 alphanumeric characters.

**40. SNMP**

When it is enabled, the host gets or sets parameters registered as SNMP entities.

**41. Socket Communication**

When it is enabled, the host communicates with the printer via the socket.

**42. Socket Port**

Display printer port number.

**43. IPv6 Mode**

It determines how you get the IPv6 address of your printer. There are three modes: MANUAL, DHCPv6 or AUTO.

**44. IPv6 Type**

It is the IPv6 address type of your printer. There are four types: NONE, NORMAL, EUI and ANY.

**45. IPv6 Address**

Display printer current IPv6 address.

**46. Link Local**

The IPv6 address that used in a network segment. It is allocated automatically.

**47. Product SN**

Display printer serial number.

**48. USB SN**

Display printer USB host serial number.

**49. CG Enable**

Printer is able to use True Type font.

**50. TPH and Cutter Offset**

This is for developers to debug.

**51. Reflective Sensor Gap Calibration**

This is for developers to debug.

**52. See-Through Sensor Gap Calibration**

This is for developers to debug.

**53. Reflective Sensor Profile**

This is for developers to debug.

**54. See-Through Sensor Profile**

This is for developers to debug.

**55. Ribbon Voltage Delta**

This is for developers to debug.

**56. Reflective Sensor Offset**

This is for developers to debug.

**57. See-Through Sensor Offset**

This is for developers to debug.

**58. See-Through Sensor Automatic Gain Control**

This is for developers to debug.

**59. SW**

Display status of the dip switch.

**60-68. Font Image**

You can use them as the reference to check your label font.

**69-74. TPH Test Pattern**

You can use them to check broken pins on the printhead.

## Option Parts

If your printer has a Wi-Fi module, your SZPL configuration label will contain the following entries:

**FW Version**

Display WLAN board firmware version.

**Date**

Display WLAN board firmware version date.

**IP Address**

Display the IP address of your printer. When DHCP is enabled, it shows the automatically assigned IP address; when DHCP is disabled, it shows the manually specified IP address.

**Subnet mask**

Display the current IPv4 subnet mask of your printer in Wi-Fi module.

**Gateway**

Display the gateway of your printer. When DHCP is enabled, it shows the automatically assigned gateway; when DHCP is disabled, it shows the manually specified gateway.

**Mac address**

The unique address assigned to your printer that connects to the internet.

**DHCP**

When DHCP is enabled, it assigns an IP address to your printer automatically.

**DHCP Hostname**

Display the name of a DHCP client in Wi-Fi module.

**Socket Port**

Display the socket number of the printer in Wi-Fi module.

**SSID**

Short for service set identifier. It is the name of a wireless local area network.

**Mode**

There are ad-hoc and infrastructure mode. Refer to Print Tool Network type description from Technical manual.

**Country Code**



Display the country or region in Wi-Fi module.

**Channel**

Display the Wi-Fi channel.

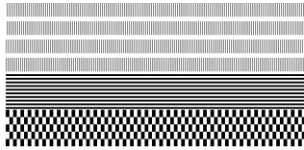
**Network Authentication**

There are six modes. Refer to Printer Tool Network authentication description from Technical manual.

**WEP**

Display the printer WEP encryption is on or off.

SDPL



Smooth font(18)

Smooth font(14)

Smooth font(12 points)

Smooth font(1 points) - 12345

Smooth font(8 points) - 123456789 AB

Smooth font(6 points) - 123456789 ABCabcXyz

123456789

font7. 0CR-A ABCabc

**FONT**

FONT5. 012345678

FONT4. 012345678

FONT3. 0123456789 ABCABC

font2. 0123456789 ABCabcXyz

font1. 0123456789 ABCabcXyz

font8. 0123456789 ABCabcXyz

```

1 2 3 4 5 6
su: - - 0 0 0 -
sasc(0)<0.01w><F>
rasc(0)<0.01w><F>
sso(0)<0.01mm>
rso(0)<0.01mm>
sv(0.0.0)<0.01w><F>
rv(0.0.0)<0.01w><F>
sm(0.0)<1+ 0-.0.01mm>
rm(0.0)<1+ 0-.0.01mm>
ot(0.0)<0.1dot.0.01mm>
CG ENABLED
USB SN: 000000000001
PRODUCT SN: 000000000001
0000-0000:0000-0000
0000-0000:0000-0000
LINK LOCAL :
0000-0000:0000-0000
0000-0000:0000-0000
IPUG ADDRESS:
IPUG TYPE: NONE
IPUG MODE: MANUAL
SOCKET PORT: 9100
SOCKET COMM.: ENABLED
SNMP: ENABLED
DHCP HOST NAME:
FFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFF
DHCP CLIENT ID:
DHCP: ENABLED
AB-CD-EF-00-01-02
MAC ADDRESS:
GATEWAY: 0.0.0.0
SUBNET MASK: 0.0.0.0
IP ADDRESS: 0.0.0.0
LAN MODULE NOT INSTALL
0 <+-0.01mm>
CUTTER/PEELER OFFSET:
PEELER DISABLED
CUTTER DISABLED
BACKFEED DISABLED
CALIBRATION MODE: INTELLI
MEDIA : CONTINUOUS
STD CTRL CODES
CODE PAGE : PC-850
CUT COUNT: 0
PRINT LENGTH: 1M
DIRECT THERMAL
DARKNESS: 10
SPEED: 3 IPS
LAB LEN(TOP TO TOP): 10mm
PRINT WIDTH: 1184 DOTS
MAX LABEL HEIGHT: 50 INCHES
RTC TIME: 1/1/0(0:56:48)
REF: 0000 SEE: 0000
SEE-THRU SENSOR
H. POSITION ADJUST.: 0011
NO. OF DL SOFT FONTS(HOST) : 0
NO. OF DL SOFT FONTS(RAM) : 0
NO. OF DL SOFT FONTS(FLASH) : 0
8438K BYTES
AVAILABLE FLASH :
ON BOARD 16M BYTES
FLASH TYPE :
AVAILABLE RAM : 3684K BYTES
STANDARD RAM : 32M BYTES
US212-U01.03 20171123SDPL
LABEL PRINTER WITH FIRMWARE
    
```

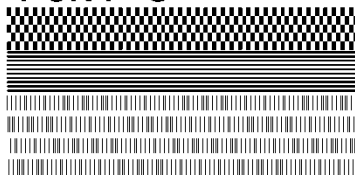
SEPL

```

LABEL PRINTER WITH FIRMWARE
WS212-V01.03 20171123SEPL
STANDARD RAM : 32M BYTES
AVAILABLE RAM : 3684K BYTES
FLASH TYPE :
ON BOARD 16M BYTES
AVAILABLE FLASH :
8438K BYTES
NO.OF DL SOFT FONTS(FLASH):0
NO.OF DL SOFT FONTS(RAM) :0
NO.OF DL SOFT FONTS(HOST) :0
H. POSITION ADJUST.: 0011
SEE-THRU SENSOR
REF: 0000 SEE: 0000
RTC TIME: 1/1/0(0:18:46)
MAX LABEL HEIGHT: 50 INCHES
PRINT WIDTH: 638 DOTS
LAB LEN(TOP TO TOP): 10mm
SPEED: 3 IPS
DARKNESS: 8
DIRECT THERMAL
PRINT LENGTH: 1M
CUT COUNT:0
CODE PAGE : English (437)
MEDIA : CONTINUOUS
CALIBRATION MODE:INTELLI
BACKFEED DISABLED
CUTTER DISABLED
PEELER DISABLED
CUTTER/PEELER OFFSET:
0 <+-0.01mm>
LAN MODULE NOT INSTALL
IP ADDRESS: 0.0.0.0
SUBNET MASK: 0.0.0.0
GATEWAY: 0.0.0.0
MAC ADDRESS:
AB-CD-EF-00-01-D2
DHCP: ENABLED
DHCP CLIENT ID:
FFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFF
DHCP HOST NAME:
SNMP: ENABLED
SOCKET COMM.: ENABLED
SOCKET PORT: 9100
IPV6 MODE: MANUAL
IPV6 TYPE: NONE
IPV6 ADDRESS:
0000:0000:0000:0000
0000:0000:0000:0000
LINK LOCAL :
0000:0000:0000:0000
0000:0000:0000:0000
PRODUCT SN: 0000000001
USB SN: 000000000001
CG ENABLED
ot(0,0)<0.1dot,0.01mm>
rm(0,0)<1+ 0-,0.01mm>
sm(0,0)<1+ 0-,0.01mm>
rv(0,0,0)<0.01v><F>
sv(0,0,0)<0.01v><F>
rso(0)<0.01mm>
sso(0)<0.01mm>
ragc(0)<0.01v><F>
sagc(0)<0.01v><F>
sw: - - 0 0 0 -
    1 2 3 4 5 6
font 1. 0123456789 ABCabcxyz
font 2. 0123456789 ABCabcXyz
font 3. 0123456789 ABCabcXy
font 4. 0123456789 ABCXY

```

FONT 5



## 3.3 Reset your printer

By resetting your printer, you can return your printer to the state it was in when you receive it. This can help you solve some problems caused by settings changed during the printing.

Do the following to reset your printer:

1. Turn off the printer.
2. Press and hold the **FEED** button, and turn on the printer.
3. Both status lights glow solid Orange for a few seconds. Next, they turn to green shortly, and then turn to other colors. When both lights turn to red, release the **FEED** button immediately.
4. Press and hold the **FEED** button over 3 seconds and release it. Both status lights blink red three times, and turn to solid Orange for a few seconds. After the printer is reset, LED 1 goes out while LED 2 turns to solid green.



---

**Important** In step 4, if you do not hold the **FEED** button long enough, LED 1 will blink Orange three times while LED 2 goes out. It means the printer is not reset.

---

## 3.4 Communications

### 3.4.1 Interfaces and Requirements

This printer comes with USB type A and type B interface, an ethernet.

#### ■ USB Interface Requirements

The Universal Serial Bus (USB) interface is compatible with your existing PC hardware. The USB's "plug and play" design makes installation easy. Multiple printers can share a single USB port/hub. The different usage of type A and B are as below.

USB type A	USB Flash drive, USB keyboard or USB Scanner.
USB type B	PC to set printer.

#### ■ Ethernet Module Status Indicators

The indicators with two different colors help users understand status of Ethernet:

LED Status	Description	
<b>Both Off</b>	No Ethernet link detected.	
<b>Blinking</b>	The printer waits for printer ready. It will take about few seconds to be ready.	
<b>Green</b>	Speed LED	On: 100 Mbps link Off: 10 Mbps link
<b>Orange</b>	Link/Activity LED	On: link up Off: link down Blinking: activity

# 4 Maintenance

This chapter describes routine cleaning procedure.

## 4.1 Cleaning

To maintain print quality and prolong the printer's life, you need to perform some routine maintenance. Daily maintenance should be done for high volume printing, and weekly for low volume printing.



**Caution** Always turn off the printer before cleaning.

### 4.1.1 Printhead

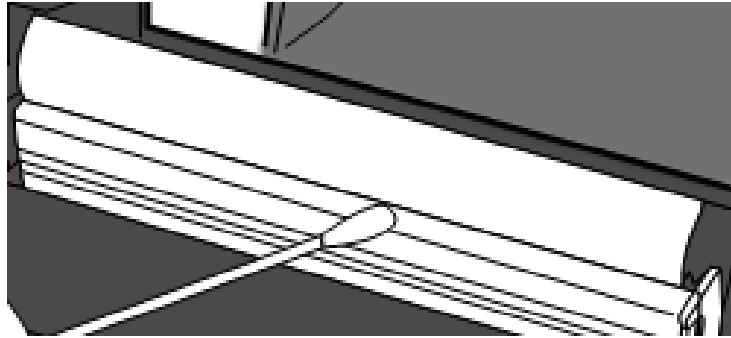
It is essential to keep printhead clean if you want the best print quality. We strongly recommend that you clean the printhead when you load a new media roll. If the printer is operated in critical environment, or the print quality declines, you need to clean the printhead more frequently.

Keep in mind these things before you clean:

- Keep the water away in case of corrosion on heating elements.
- If you just finish printing, wait until the printhead cools down.
- Do not touch the printhead with bare hands or hard objects.

Cleaning steps:

1. Moisten a soft cloth or a cotton swab with ethyl alcohol.
2. Gently wipe the printhead in one direction. That is, wipe it only from left to right or vice versa. Do not wipe back-and-forth, in case dust or dirt attaches to the printhead again.



**Note** Printhead warranty becomes void if printhead serial number is removed, altered, defected, or made illegible, under every circumstance.

## 4.1.2 Media housing

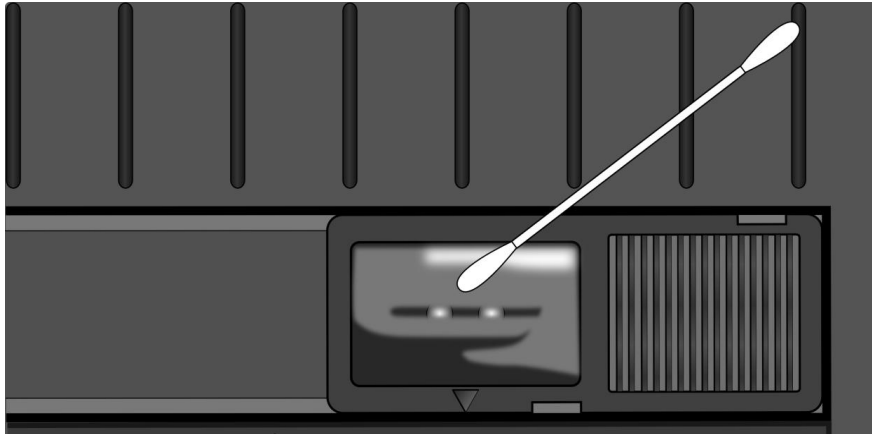
Use a soft cloth to clean the dust, dirt or debris built up on the **Media Roll Holders, Media Guides** and media path.

1. Moisten a soft cloth with ethyl alcohol.
2. Wipe the **Media Roll Holders** to clean dust.
3. Wipe the **Media Guides** to clean dust and dirt.
4. Wipe the media path to clean paper debris.

## 4.1.3 Sensor

Media sensors may not be able to detect the media correctly if it becomes dirty.

1. Moisten a soft cloth or a cotton swab with absolute ethyl alcohol.
2. Gently brush sensors to remove the dust away.
3. Use a dry cloth to clean the residue.



### 4.1.4 Platen roller

The platen roller is also important for print quality. Dirty platen roller may damage the printhead. Clean the platen roller right away if the adhesive, dirt or dust accumulates on it.

1. Moisten a soft cloth with absolute ethyl alcohol.
2. Gently wipe the platen roller to remove the dust and adhesive.



# 5 Troubleshooting

This chapter provides the information about printer problems and solutions.

## 5.1 Printer issues

### The printer is not turned on

- Did you attach the AC power cord?
- Make sure the power supply's connector is inserted into the printer power jack.
- Check the power connection from the wall socket to the printer. Test the power cord and the socket with other electrical devices.
- Disconnect the printer from the wall socket, and connect it again.

### The printer turns itself off

- Turn on the printer again.
- Make sure the power supply's connector and the power cord are plugged properly.
- Make sure the power supply and the power cord are not damaged.
- Use the applicable power supply.
- If the printer keeps turning itself off, check the socket and make sure it has enough power for the printer.

### The printer does not feed the media out

- The media is not loaded correctly. See Section 2.3, "Loading Media" to reload the media.
- If there is a paper jam, clear it.

## 5.2 Media issues

### The media is out

- Load a new media roll.

### The paper is jammed

- Open the printer and clear the jammed paper.
- Make sure the paper is held properly by the **Media Guides**.

### The printing position is not correct

- Did you use the correct media type for printing?
- The media is not loaded correctly. See Section 2.3, “Loading Media” to reload the media.
- The media sensor needs to be calibrated. See Section 3.1, “Media Sensor Calibration” to calibrate the sensor.
- The media sensor is dirty. Clean the media sensor.

### Nothing is printed

- The media is not loaded correctly. See Section 2.3, “Loading Media” to reload the media.
- The print data might not be sent successfully. Make sure the interface is set correctly in the printer driver, and send the print data again.

### The print quality is poor

- The printhead is dirty. Clean the printhead.
- The platen roller is dirty. Clean the platen roller.
- Adjust the print darkness, or lower the print speed.
- The media is incompatible for Direct Thermal. Use the compatible media instead.
- The media is incompatible for the printer.

## 5.3 Other issues

### **There are broken lines in the printed label**

- The printhead is dirty. Clean the printhead.

### **An error occurred when writing data to the USB memory**

- Did you insert the USB drive?
- Make sure the USB drive is plugged tightly into the port.
- The USB drive might be broken. Replace it with another one.

### **The printer is unable to save files due to insufficient USB memory**

- Delete the files on your USB drive to free some space, or replace your USB drive with an empty one.

### **The cutter is experiencing issues**

- If there is a paper jam, clear it.
- The cutter has become loose. Fix the cutter in position and tighten it.
- The cutter blade is not sharp anymore. Replace your cutter with a new one.

### **The printhead temperature is extremely high**

- The printhead temperature is controlled by the printer. If it is extremely high, the printer will stop printing automatically, until the printhead is cool down. After that, the printer will resume printing automatically, if there is any unfinished print job.

### **The printhead is broken**

- Contact your local dealer for assistance.

# 6 Specifications

This chapter provides specifications for the printer. Specifications are subject to change without notice.

## 6.1 Printer

Model	WS208	WS212
<b>Print method</b>	Direct Thermal	
<b>Resolution</b>	203 dpi (8 dots/mm)	300 dpi (12 dots/mm)
<b>Media Alignment</b>	Centered	
<b>Operation Mode</b>	Standard: Continuous <b>mode</b> , Tear-off <b>mode</b> Optional: Cutter <b>mode</b> , Peeler <b>mode</b>	
<b>Sensor</b>	Reflective Sensor (Movable) Media Transmissive sensor x 1 (fixed, 6.27mm offset) Head Open Switch	
<b>Operation interface</b>	LED indicator x 2, Button x 1	
<b>Print Speed</b>	2, 3, 4, 5, 6, 7 inches/sec (50.8, 76.2, 101.6, 127, 152.4, 177.8 mm/sec) 2 & 3ips for peel off mode	2, 3, 4, 5 inches/sec (50.8, 76.2, 101.6, 127 mm/sec) 2 & 3ips for peel off mode
<b>Printable Area</b>	Max. length 100”(2540mm)	Max. length 50”(1270mm)
<b>Print Ratio</b>	Average print ratio within 15 % or less (whole print layout area) Full width with 1mm pitch is required	
<b>Interface</b>	USB hosts(Type A), USB device(Type B) , Ethernet	
<b>Programming Language</b>	SDPL+SEPL+SZPL	
<b>Accessories</b>	Peeler, Full Cutter	
<b>On-Board Memory</b>	Standard Memory (Flash ROM): 16 MB User Memory: 8 MB Standard Memory (SDRAM): 32 MB USB storage up to 32 GB (FAT32 format only)	

## 6 Specifications

<b>CPU Type</b>	32 bit RISC microprocessor
<b>Software---Label editing</b>	Windows Driver (Windows Vista/ Win 7/ Win 8/ Win 10), BarTender® from Seagull Scientific, Nice Label
<b>Software--- Utility</b>	Printer Tool
<b>Agency Listing</b>	CB, CE

## 6.2 Media

Properties	Description
<b>Media Size</b>	Max. width: 60mm, Min. width: 12mm Max length 100" (2540 mm), Min length 0.4" (10mm) Thickness: 0.00236"~0.00787" (0.06mm~0.2mm) 5"(127mm) OD on a 1"/1.5" (25.4/38 mm) ID core 4.5"(115mm) OD on a 0.5" (12.7mm) ID core Min. width: 12mm for partial cutter options. Min. length: 25mm for cutter options.
<b>Media Type</b>	Direct Thermal Label Direct Thermal Tag Roll Paper (Inside Wound or Outside Wound) Fanfold Paper

## 6.3 Electrical and operating environment

Properties	Range
<b>Power Supply</b>	Voltage: AC 100 V ~ 240 V $\pm$ 10 % (full range) Frequency: 50 Hz - 60 Hz $\pm$ 5 %
<b>Temperature</b>	Operating: 41°F~104°F(5 °C ~ 40 °C) Storage: -4°F~140°F(-20 °C ~ 60 °C)
<b>Humidity</b>	Operating: 25 %RH ~ 85 %RH (non-condensing) Storage: 10 %RH ~ 90 %RH (non-condensing)

## 6.4 Physical dimension

Dimension	Size and Weight
<b>Size</b>	W 116 mm x H 170 mm x D 215 mm
<b>Weight</b>	1.05 kg (excluding media and accessories)

## 6.5 Fonts, Barcodes, and Graphics Specification

The specifications of fonts, bar codes and graphics depends on the printer emulation.

The emulations SDPL, SEPL, and SZPL are printer programming languages, through which the host can communicate with your printer.

### Printer Programming Language SDPL

Programming Language	SDPL
Internal fonts	9 fonts with different point size 6 fonts with ASD smooth font. Courier font with different symbol sets.
Symbol sets (Code pages)	Courier font symbol set: Roman-8, ECMA-94, PC, PC-A, PC-B, Legal, and PC437 (Greek), Russian.
Soft fonts	Downloadable soft fonts by Print Tool
Font size	1x1 to 24x24 times
Character rotation	0, 90, 180, 270 degree, 4 direction rotation
Graphics	PCX, BMP, IMG, GDI and HEX format files
1D Barcodes	Codabar、Code 128 subset A/B/C、Code 39、Code 93、 EAN-13、EAN-8、GS1 Data bar (RSS) 、Interleaved 2 of 5 (Standard/with modulo 10 checksum/ with human readable check digit/ with modulo 10 checksum & shipping bearer bars) 、Plessey、Postnet、UCC/EAN-128、 UCC/EAN-128 K-MART、UCC/EAN-128 Random weight、 UPC2、UPC5、UPC-A、UPC-E、FIM、HBIC、Telepen
2D Barcodes	Data Matrix (ECC 200 only) 、MaxiCode、PDF417、QR code、Aztec 、Composite Codes

## Printer Programming Language SEPL

Programming Language	SEPL
Internal fonts	5 fonts with different point size
Symbol sets (Code pages)	8 bits code page : 437, 850, 852, 860, 863, 865, 857, 861, 862, 855, 866, 737, 851, 869, 1252, 1250, 1251, 1253, 1254, 1255 7 bits code page: USA, BRITISH, GERMAN, FRENCH, DANISH, ITALIAN, SPANISH, SWEDISH and SWISS
Soft fonts	Downloadable soft fonts by Print Tool
Font size	1x1 to 24x24 times
Character rotation	0, 90, 180, 270 degree, 4 direction rotation
Graphics	PCX , Binary Raster, BMP and GDI
1D Barcodes	Codabar、Code128 subset A/B/C、Code 128 auto、Code 128 UCC (shipping container code)、Code 39、Code 39 with check sum digit 、Code 93、EAN-13、EAN-13 2/5 digit add-on、EAN-8 (Standard, 2 /5digit add-on) 、GS1 Data bar (RSS) 、Interleave 2 of 5、Interleaved 2 of 5 with check sum、Interleaved 2 of 5 with human readable check digit、Matrix 2 of 5、Postnet 、UCC/EAN code 128 (GS1-128) 、UPC-Interleaved 2 of 5、UPC-A、UPCA 2/5 digit add-on、UPC-E、UPCE 2/5 digit add-on、German Postcode
2D Barcodes	Data Matrix (ECC 200 only) 、MaxiCode、PDF417、QR code、Aztec 、Composite Codes



## Printer Programming Language SZPL

Programming Language	SZPL
Internal fonts	8 (A~H) fonts with different point size. 8 AGFA fonts: 7 (P~V) fonts with fixed different point size (not scalable). 1 (O) font with scaling point size. CG Triumvirate Bold Internal TTF font.
Symbol sets (Code pages)	USA1, USA2, UK, HOLLAND, DENMARK/NORWAY, SWEDEN/FINLAND, GERMAN, FRANCE1, FRANCE2, ITALY, SPAIN, MISC, JAPAN, IBM850, Multibyte Asian Encodings, UTF-8, UTF-16 Big-Endian, UTF-16 Little-Endian, Code page 1250, 1251, ,1252, 1253, 1254
Soft fonts	Downloadable soft fonts by Print Tool
Font size	1x1 to 10x10
Character rotation	0, 90, 180, 270 degree, 4 direction rotation
Graphics	GRF, Hex and GDI
1D Barcodes	Codabar、 Code 11、 Code128 subset A/B/C、 Code39、 Code 39 with check sum digit、 Code 93、 EAN-13、 EAN-8、 GS1 Data bar (RSS)、 Industrial 2 of 5、 Interleave 2 of 5、 Interleaved 2 of 5 with check sum、 Interleaved 2 of 5 with human readable check digit、 MSI、 Plessey、 Postnet、 UPC-A、 UPC-E、 Logmars 、 Standard 2 of 5
2D Barcodes	Data Matrix (ECC 200 only) 、 MaxiCode、 PDF417、 QR code、 Aztec 、 Composite Codes

## 6.6 Ethernet

Properties	Description
Port	RJ-45
Speed	10Base-T/100Base-T (Auto Detecting)
Protocol	ARP, IP, ICMP, UDP, TCP, HTTP, DHCP, Socket, LPR, IPv4, IPV6, SNMPv2
Mode	TCP Server/Client, UDP Client
Technology	HP Auto-MDIX, Auto-Negotiation

## 6.7 Wireless LAN (Option)

Properties	Wireless LAN I/F				
Hardware	Protocol	IEEE 802.11 b/g/n			
	Enabled Device	WIRELESS PRINTER			
	Operating Temperature	-20°C ~ +85°C			
	Destination	USA	Europe		
	Frequency (Center Channel)	2412 ~ 2462 MHz	2412 ~ 2472 MHz		
	Channel	1 ~ 11 ch	1 ~ 13 ch		
	Spacing	5 MHz			
	Transmission Speed/Modulation	IEEE 802.11b	Transmission Method	Conforming to IEEE 802.11b DSSS method	
			Channel	Depending on the country	
	Transmission Speed/Modulation	IEEE 802.11g	Data Transmission Speed/Modulation	11/5.5 Mbps: CCK 2 Mbps: DQPSK 1 Mbps: DBPSK	
			Transmission Method	Conforming to IEEE 802.11g OFDM method DSSS method	
	Transmission Speed/Modulation	IEEE 802.11g	Channel	Depending on the country	
			Data Transmission Speed/Modulation	54/48 Mbps: 64 QAM 36/24 Mbps: 16 QAM 18/12 Mbps: QPSK 9/6 Mbps: BPSK	

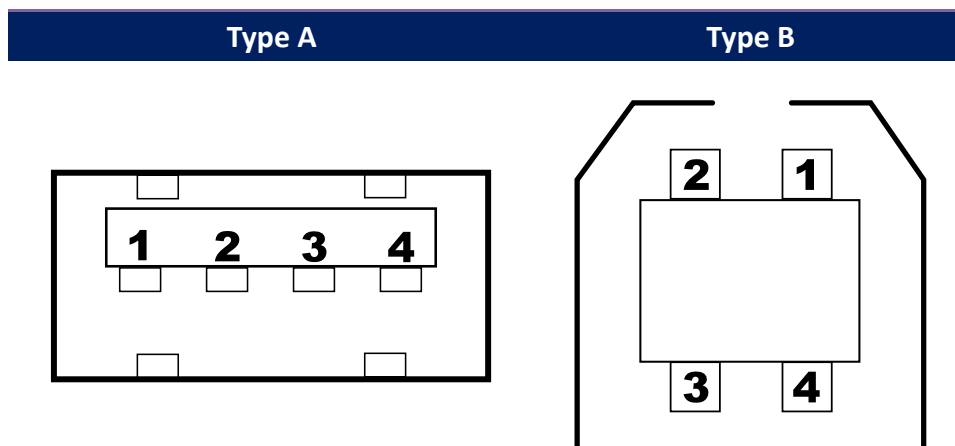
Properties		Wireless LAN I/F		
	IEEE 802.11n	Transmission Method	Conforming to IEEE802.11n OFDM method	
		Channel	(US)1-11ch (JP/DE)1-13ch	
		Data Transmission Speed/Modulation	20MHz : 6.5M / 7.2M / 13M / 14.4M / 19.5M / 21.7M / 26M / 28.9M / 39M / 43.3M / 52M / 57.8M / 58.5M / 65M / 72.2M(Auto-sensing)	
Antenna	External antenna			
Aerial power	802.11b	Max +15 dBm		
	802.11g	Max +17 dBm		
	802.11n	Max +17 dBm		
<b>Software</b>	Connection mode	Infrastructure, Adhoc		
	Default IP Address	192.168.1.1		
	Default Subnet Mask	255.255.0.0		
	Default ESSID	WIRELESS PRINTER		
	Security	IEEE 802.11i		
		Cryptography	WEP 128 bit, TKIP (WPA), AES (WPA2)	
		Authorization	Open Key (for WEP), PSK	
	Protocol (*)	TCP/IP, Socket, DHCP		
Wireless LAN Parameter Setting and Status Monitor	Parameter Setting: Command (PC Setting Tool)			

## 6.8 Ports

This section provides information about IO port specifications for the printer.

### 6.8.1 USB

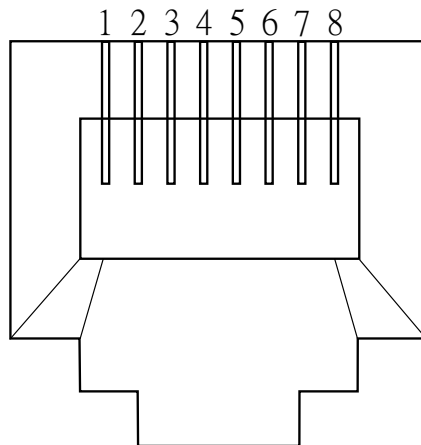
There are two common USB connectors. Typically, type A is found on hosts and hubs; type B is found on devices and hubs. The figure below shows their pinouts.



Pin	Signal	Description
1	VBUS	+5V
2	D-	Differential data signaling pair -
3	D+	Differential data signaling pair +
4	Ground	Ground

## 6.8.2 Ethernet

The Ethernet uses RJ-45 cable, which is 8P8C (8-Position 8-Contact). The figure below shows its pinout.



Pin	Signal
1	Transmit+
2	Transmit-
3	Receive+
4	Reserved
5	Reserved
6	Receive-
7	Reserved
8	Reserved