Logic Controls

LR1100 POS Thermal Printer

USER MANUAL

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1 Introduction

Thank you for purchasing the LR1100 POS printer. Bematech is committed to continuously improve product quality and provide better after-sales service. In order to take full advantage of our devices, we strongly recommend that you take the time to read this manual before diving into software solution.

Note: Information in this manual may change without prior notice.

1.1 Safety Information

- Before plug in the product, please make sure the power you provide meets the power requirements (such as voltage, frequency); Make sure the ground terminal of the power outlet is working properly.
- To avoid electric shocks, disconnect the power cord from the electrical outlet before relocating the system.
- Lightning may damage this product. During lightning storms, unplug the interface cable, power cable and any other connections.
- Turn off power before connecting any devices (except USB devices and Ethernet) to the printer.
- Do not attempt to open the chassis. You may be hurt by electric shock. For service, call your place of purchase.
- Do not spill liquid on the printer. Do not place any objects into the ventilation holes of this product. It may cause short-circuit of the internal components and cause a fire or electric shock.
- After the printer is stored below temperature of 10 ° C, please place it in room temperature (10-35 ° C) in the original packing for at least two hours to allow the printer to restore to room temperature before operation. This is to avoid condensation that might cause electrical damage.
- Keep the printer clean, dry, and away from dust, moisture and direct sunlight.
- Do not use harsh chemicals or strong cleaning solvents to clean the printer. Wipe it clean with a soft terry cloth applied with a mild solution
- Do not share the same power outlet with high-power electrical appliances; keep distance from high level magnetic interference.

The thermal head is a hot surface. Do not touch.

When the following occurs:

- Liquid gets inside the POS printer;
- Accidental physical damage;
- The power cord or plug is damaged;
- POS printer produces a burning smell;

Immediately disconnect the power supply, unplug the power cord, and contact a qualified service technician.

1.2 Electromagnetic compatibility statement

FCC NOTICE

This device complies with Part 15 of FCC Rules. Operations are subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

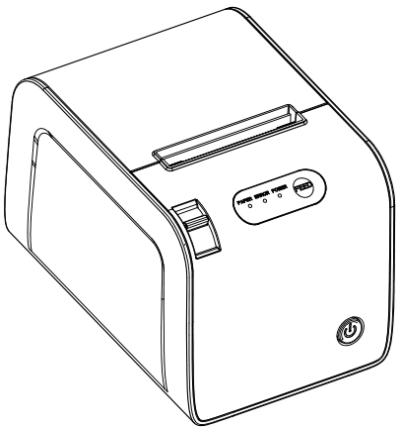
EUROPEAN COMMUNITY (CE) MARK OF CONFORMITY

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. Logic Controls cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product. This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

2 Overview

The LR1100 is a fast high quality POS printer using thermal technology for printing. It is compatible with most point-of-sale systems on the market. The printer can be used with computer peripheral systems, ECR and POS systems. The LR1100 was designed to facilitate simple and efficient operations.

2.1 Features



- Fast printing up to 9.8" per second
- High print quality
- Low noise printing
- Supports cash drawer kick out
- Low power consumption and operation cost
- Supports printing of different density bitmap
- Emulation: ESC/POS command set

2.2 I/O connectors

At the rear panel of the LR1100 is a row of external I/O device connectors detailed as follows:

- DC IN (3-pin) - for connection to power adapter (DC24V, 2.5A).
- CASH DAWER (RJ11) - for connection to cash drawer to open the drawer with commands sent to the printer.
- ETHERNET (RJ45) - for connection to network with LAN cable (LR1100E).
- USB (type B) - for connection to host computer with USB cable (LR1100U).

3 Installation

3.1 Connecting Printer to Computer or POS Terminal

3.1.1 Turn off printer and connect the interface cable (USB/Ethernet) to the printer.

3.1.2 For USB interface, connect the other end of USB interface cable to the computer.

3.1.3 For Ethernet interface, connect the Ethernet cable to Ethernet hub, switch, or router.

3.2 Connecting to Cash Drawer

Connect cash drawer cable to cash drawer port at the back of printer.

Use 24V/1A cash drawer only. Incompatible cash drawer will cause damage to both the cash drawer and the printer.

Do not connect cash drawer port to the telephone line. It may cause failure condition on telephone line and printer.

3.3 Connecting to Power

3.3.1 Please only use the supplied power adapter.

3.3.2 Make sure the AC power is unplugged and the printer is powered off before connecting the power cord.

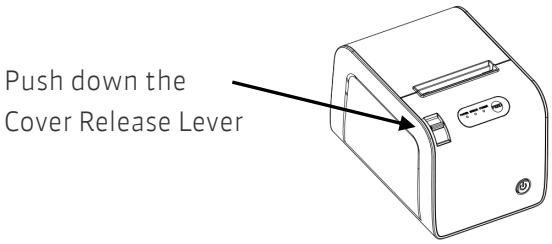
3.3.3 Connect DC power cord of the power adapter to printer.

3.3.4 Connect power cord to power adapter and then AC power plug to wall socket.

3.3.5 Push the power switch on the front of printer to turn on power.

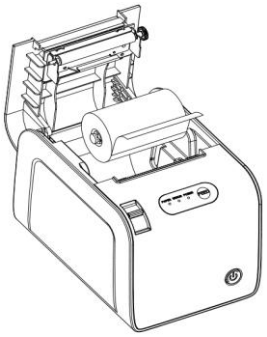
3.4 Load and Replace Paper Roll

3.4.1 Push down the Cover Release Lever to open paper roll cover

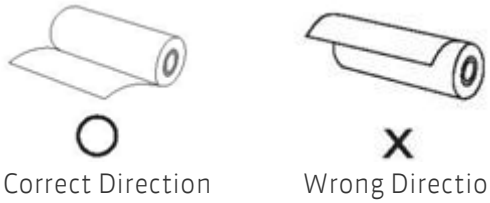


3.4.2 Remove the used paper roll to replace with a new roll

3.4.3 Load the paper roll as shown below:

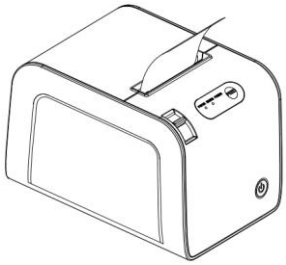


Make sure the paper roll is loaded in the correct direction.



3.4.4 Pull out part of the paper roll to the front of the printer and then close the cover as shown below.

3.5.5 Tear off extra paper with tear-cutter of the printer.



Paper Roll Specification

Paper thickness	0.06mm
paper gram weight	55g
paper width	80mm
max roll diameter	80mm

Paper Roll Recommendation

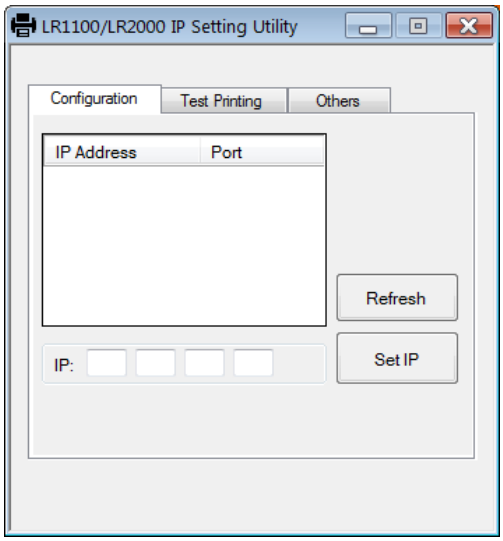
Paper Roll Model	Manufacturer
AF50KS-E	Jujo Paper Co.,Ltd
TF-50KS-E	Nippon Paper Industries Co.,Ltd

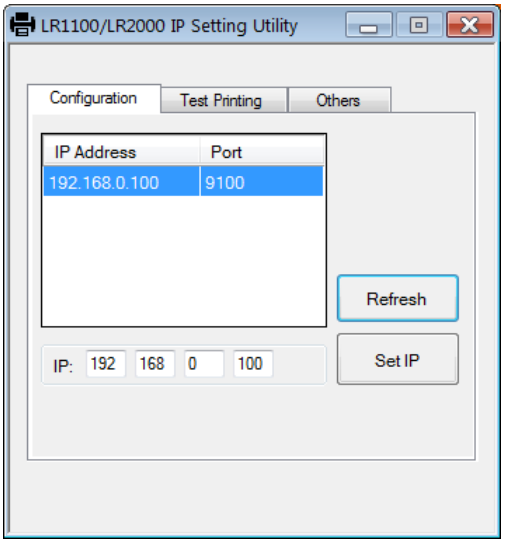
It is recommended to use thermal paper from manufacturers above. Improper or low quality paper roll may lead to critical fault on printer head and cutter that shorten the machine life span.

3.5 Ethernet IP Setup

The LR1100E Ethernet printer comes with an easy IP setup utility for Windows. Run the LR1100_IP_Setting.exe file in the software package and follow steps below.

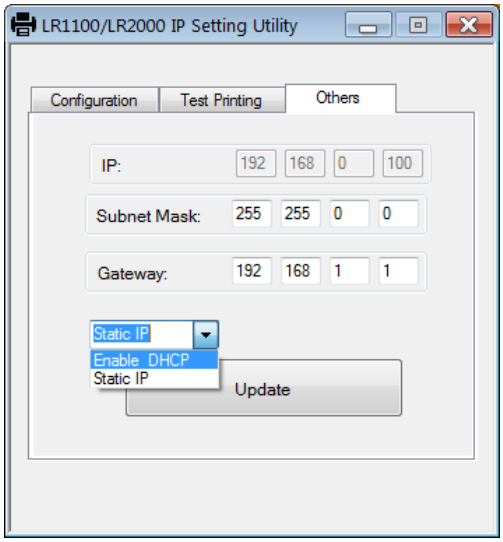
3.5.1. Make sure the LR1100E is connected properly to the network. Run the utility software. If the printer IP is not shown, click on "Refresh" button to search for the connected printer. Then select the printer to be configured.





3.5.2. Edit the IP address value on the edit box below the list box and click on "Set IP" button to write new IP address to printer.

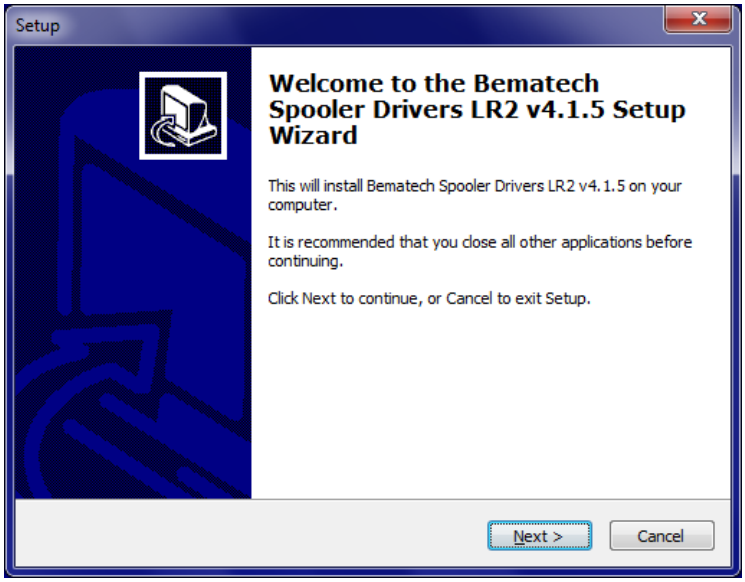
3.5.3. If DHCP server is to be used to get IP address allocated automatically, first set up a static IP address with the same IP group as the computer. Wait until the new IP address is detected, then click on "Others" tab and select "Enable DHCP" from the drop down box. Then click "Update" button to save the mode setting.



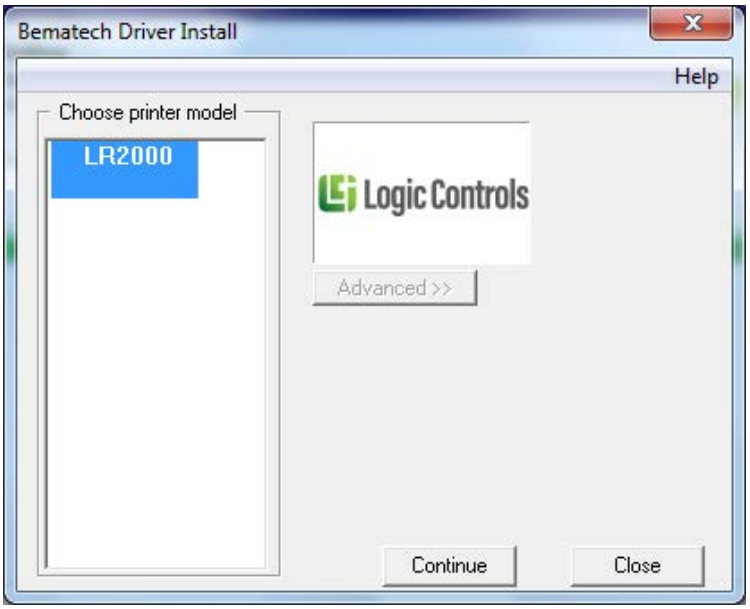
3.6 Driver Installation

3.6.1 In the software package, run the BemaSetup_LR_v4.1.5.exe if you are using 32 bit Windows or BemaSetup_LR_x64_v4.1.5 if you are using 64 bit Windows and follow steps below to install the printer driver.

3.6.2 Then click "Next" on the Welcome screen.

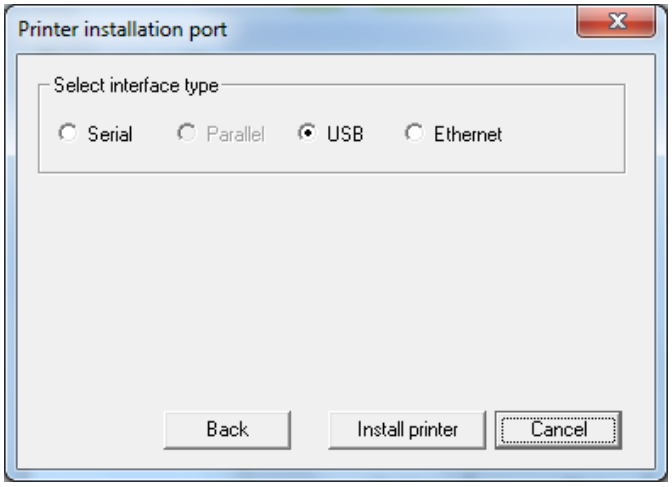


3.6.3. Since the LR1100 shares the same driver as LR2000, just select LR2000 model and click "Continue". The LR2000 driver will be installed.

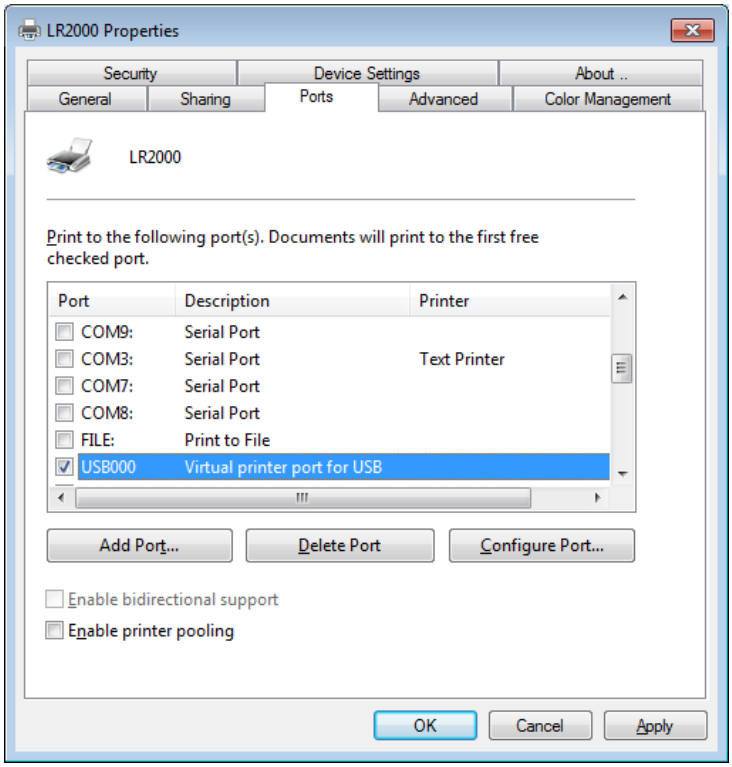


3.6.4. Make sure the printer is turned ON. Next choose the printer interface according to the hardware connection.

3.6.5.1 USB Interface

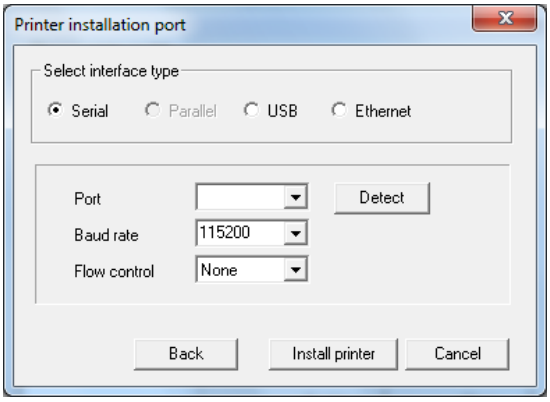


The driver will use a virtual printer port for USB (default USB001) and it should be selected automatically during driver installation. After installation has finished, please click “Yes” to print a test page to make sure the printer is working. If you don’t see test pages printing after installing the driver, please go to **“Start -> Devices and printers -> LR2000 -> Printer Properties -> Port”**, and select the USB001 port manually. Sometimes it might be named USB002 if there are other devices that use USB001 already).

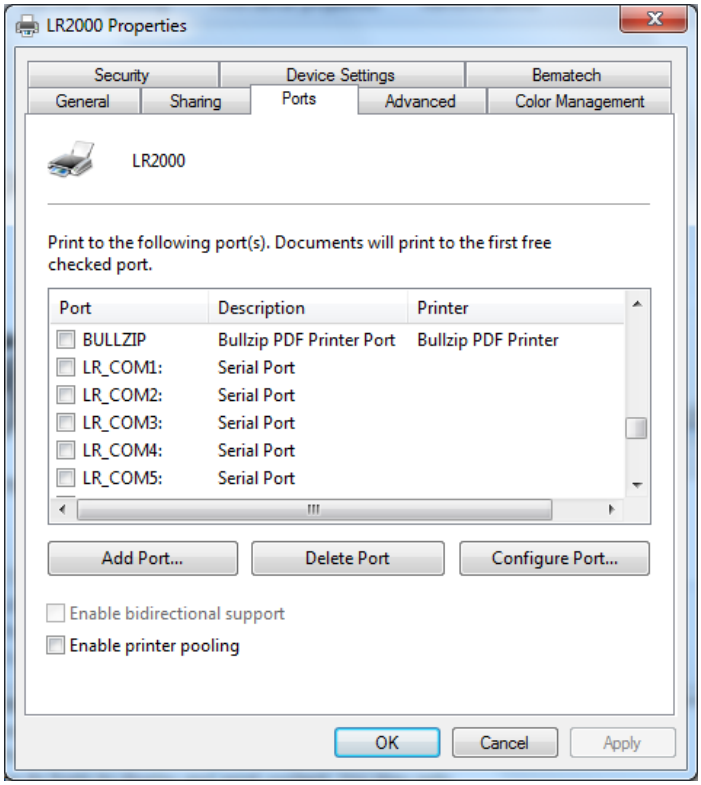


3.6.5.2 Serial Interface

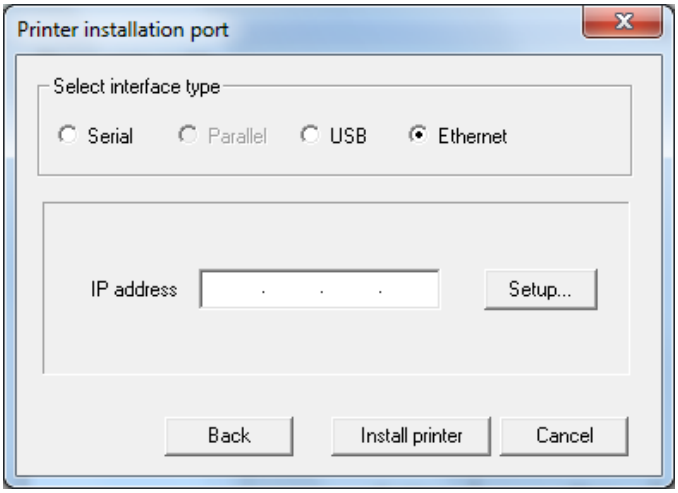
Select the serial port from the drop down box if you know which port your printer connected to, or you can use “Detect” to automatically detect the port for you. Choose or Enter the Baud rate of the printer(Note: you can check the baud rate from the printer’s testing page, shutdown the printer and hold feed button while you turn the printer On), with flow control set to “None”.



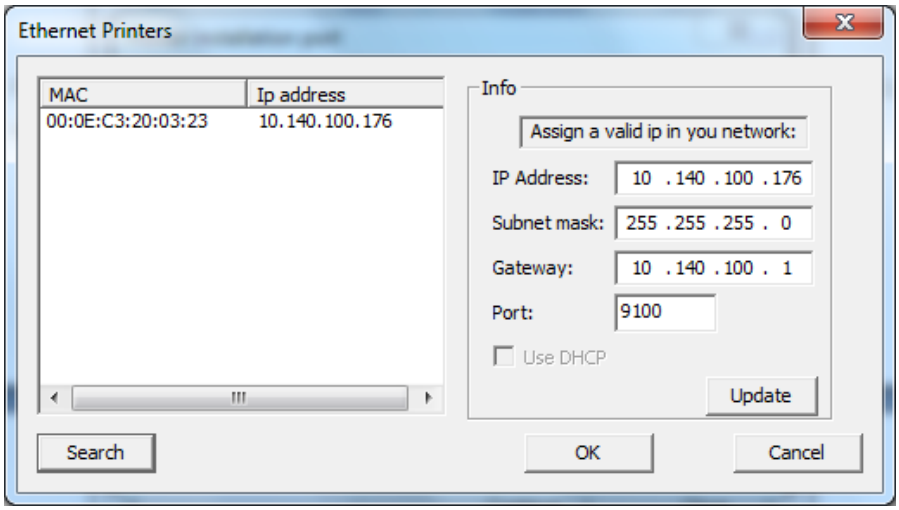
After driver installation, you can also change the port at any time from the LR2000 properties port setting tab Please make sure you choose port name start with LR_COM as shown below:



3.6.5.3 Ethernet Interface

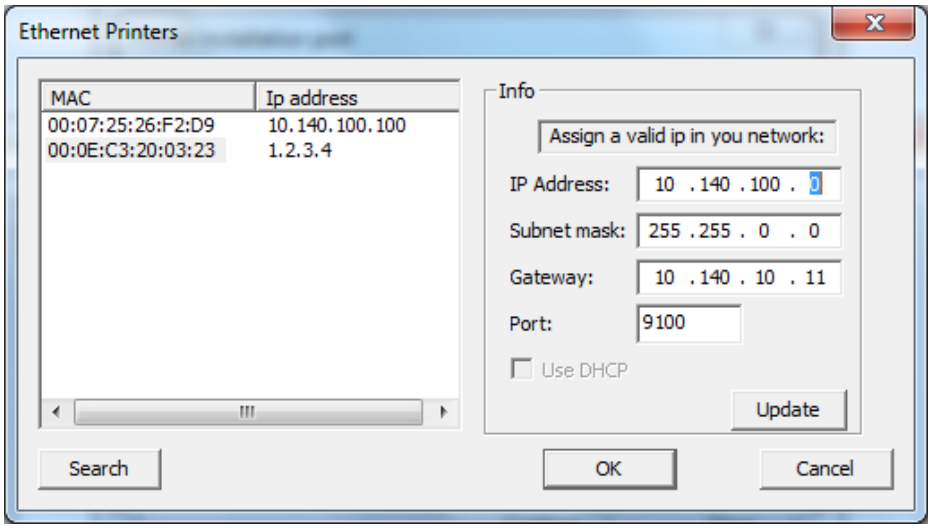


Click "Setup" to find the IP of the printer (if you know the printer's IP already, you can also type it in manually).

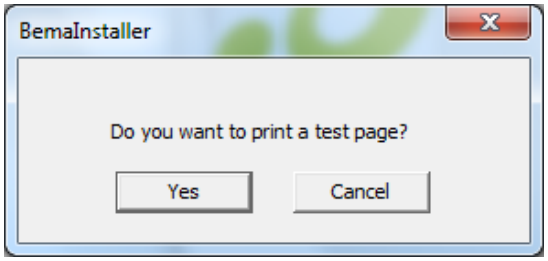


Then, click "Search" to search all available LR1100 printers over the network, choose the printer from the list on the left by clicking on the MAC column corresponding to the printer that you want to install the driver. Modify the IP address to desired value if necessary and click update to apply the new IP. Then click OK to finish.

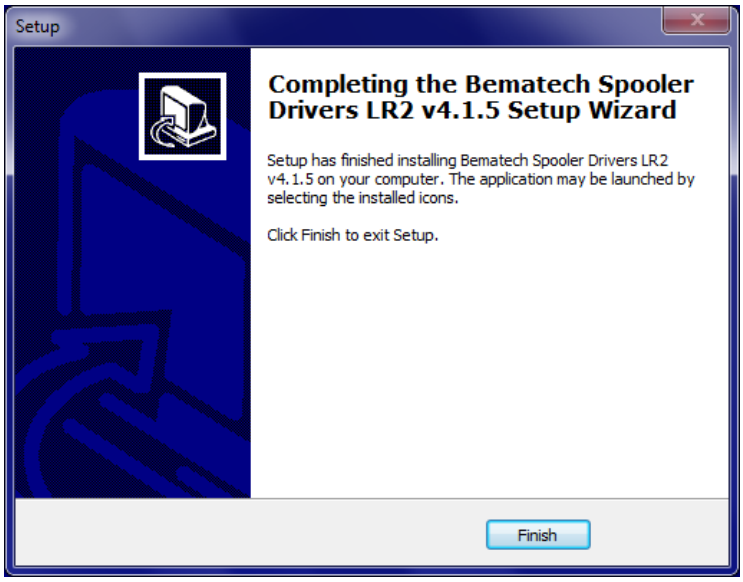
Note: If your printer's IP address is not valid (no within the valid network IP range), you will be reminded to assign a valid IP to the printer. Assign a new valid address, click Update button and then click OK to finish. As demonstrated in picture below, the IP address "1.2.3.4" is invalid; it will then ask you to assign a new IP address.



3.6.6. After setting up the interface, click "Install Printer" to install the driver. You can verify if the driver installation is done successful by printing out a test page when prompted as shown below.

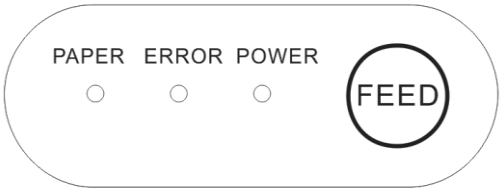


3.6.7 Click “Finish” to complete the setup.



4 Operations

4.1 Printer Control Panel



Feed key	-	In standby status, press feed key to feed a length of paper. When printing, the feed function is disabled.
Power indicator	-	Turns on when printer is in power-on status.
Error indicator	-	Turns on under the following conditions: 1. Receipt Paper Low or no paper 2. Paper cover open 3. Printer head overheats 4. Other errors in printer
Paper indicator	-	Turns on when out of paper.

4.2 Setting Printer Mode

LR1100 printer is initially setup with default value. However, the default printer mode can be reconfigured to satisfy customer's needs through a configuration utility software.

4.3 Self-Checking Function

The Self-Checking Function allows the user to identify if the printer is operating normally. If the printer is detected with failure condition, please contact the distributor.

(1) Self-checking Procedure:
- Make sure the printer is powered off.
- Press FEED button and switch on the power supply while the FEED button still pressed.
- The Self-Checking list should be printed when the printer is brought to power.

(2) Self-Checking function printers out part of character set, command mode, interface type, printer settings, dip switch settings, etc. sequentially.

(3) The auto-cutter cuts the receipt paper immediately when printing is finished.
(4) The printer automatically goes into data receipt mode after finishing the self-check printing process.

4.4 Preventive Maintenance

This printer has been developed to have a long life expectancy with no replacement of components and minimum user interference. But printer lifetime is highly influenced by the following factors: paper quality, regular preventive maintenance, environmental conditions and how carefully the user handles this product.

(1) During normal operation some ink particles from the thermal paper will adhere to the thermal print head surface. Therefore, it is recommended to clean the printer head after 10 km of printed length or if printing quality is degrading. Switch off the printer before cleaning it. Clean the print head with a cotton swab, soaked with alcohol solvent (ethanol or isopropanol). Do not clean the print head with hard, abrasive objects or your fingers, since this can cause damage to its delicate surface. Clean the platen roller (rubber roller) with the cotton swab to remove any dust particles.

⚠ CAUTION!

The print head can be hot just after printing. Do not touch the print head; let it cool down before touching and cleaning. Because the thermal elements of the print head and driver IC are fragile, avoid touching them with any metal objects or any abrasive material.

(2) During normal operation paper particles will build up inside the printer. This is normal, but dust and paper particles can prevent the sensors from functioning properly. To avoid that, verify once a year that the sensor surfaces are unobstructed. To remove small paper particles from the sensors, use a small brush to wipe off the dust and paper particles. Do not attempt to use liquids to clean the sensors, in order to avoid damage.

(3)The cutter is manufactured with hardened steel for maximum wear resistance. It is normal to have some dust buildup in the blades and this will not affect cutter performance.

(4) Clean the external cabinet with a soft cloth, moistened in water or neutral detergent. Never use a tow chemically treated or chemical substances like alcohol or similar solvent. The use of these products can make the cabinet of the printer changes its color or be deformed.

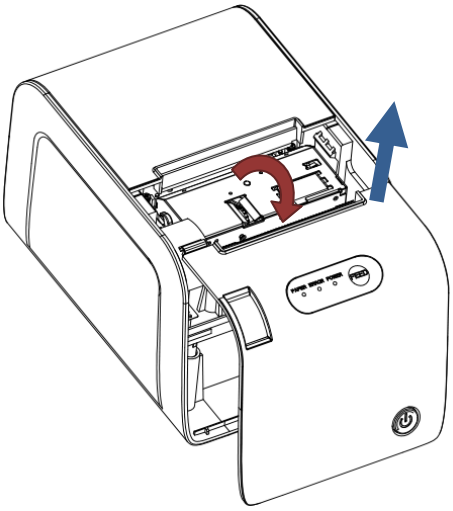
4.5 Fixing Paper Jam

The error light turns on and flashes with warning prompt when paper jam happens. Following steps below to clear the paper jam.

(1) Turn off the power supply and open the top cover.

(2) Wait for the print head to cool down and then remove the jammed paper.

(3) If necessary, pull the front cover open by pulling upwards at the tear cutter. (Put fingers in space below the tear cutter to pull up and be careful not to touch the sharp edges of the cutter). Turning the cutter blade wheel towards the front will move the automatic cutter blade out to release small pieces of jammed paper. Reinstall the front cover and while the top cover is still open, turn on power of the printer to retract the cutter blade. Always make sure that the cutter blade is retracted completely before closing cover.



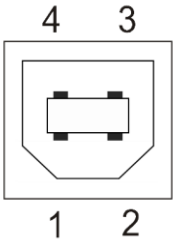
(3) After that, reload the paper roll and close the top cover.

Use the recommendatory paper or one with same quality and specified width would reduce the risk of paper jam.

5 Connector Pinouts

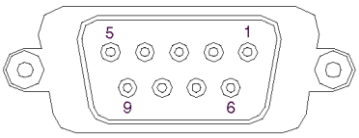
USB Connector (type B)

Pin No.	Signal Name
1	VBUS
2	D-
3	D+
4	GND



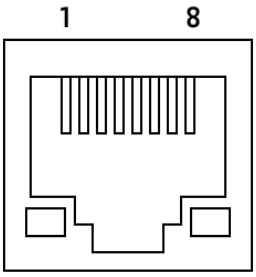
Serial Connector (DB9F)

Pin No.	Signal Name
1	DCD
2	TxD
3	RxD
4	DTR
5	GND
6	DSR
7	CTS
8	RTS
9	RI



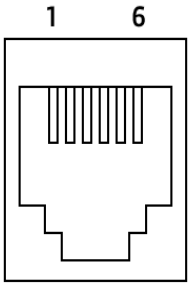
Ethernet Connector (RJ45)

Pin No.	Signal Name
1	TX+
2	TX-
3	RX+
4	NC
5	NC
6	RX-
7	NC
8	NC



Cash Drawer (RJ11)

Pin No.	Signal Name
1	GND
2	Drawer 1 kick-out drive
3	Drawer open/close signal
4	+24VDC
5	Drawer 2 kick-out drive
6	GND



6 Troubleshooting

The following table describes some of the problems that may occur while using the printer. For every problem there is a possible cause and a suggested procedure to solve the problem.

Problem	Possible Cause	Procedure
The printer does not turn on.	There is no power in the electric outlet.	Check if there is a central switch for the room / outlets. Connect any other equipment to the outlet to check its operation.
	Possible problem with the power cord – it may be broken or not well connected to the printer and / or outlet.	Turn off the printer; check the power cord continuity and a perfect connection between the printer and the electric outlet.
The printer does not respond to the commands.	The communication cable has one or more lines with faulty connections / broken wires.	Check for a good connection between the printer and the host or change the communication cable.
	Wrong programming sequences.	Check the command set being used. The printer is configured to ESC/POS™.
Communication is faulty.	The communication cable has one or more lines with faulty connections / broken wires.	Check for a good connection between the printer and the host or change the communication cable.
	The interface pin-out does not follow the correct protocol.	Check if the adopted pin-out complies with the protocol being used for data transmission. Cables and Dip switches.
	The baud rate is incorrectly set.	If the baud rate set in the printer is different from the host's baud rate, the printer will print random characters or not print at all. Check carefully the host's serial baud rate configuration as well as the printer's dip switches settings.
The error LEDs are on	The printer informs you its status	Check the Error and Paper LED status. A red light means there is an error in printer or paper loading.
Poor printing.	Paper dust and paper residues on the print head can influence printing quality	Clean the print head as described at chapter 3.

Problem	Possible Cause	Procedure
The paper does not get out the printer.	Paper jam	CAUTION! Do not touch the print head; let it cool down before touching, as it can be very hot after printing. Switch off the printer and open the cover. Remove the crumpled paper from the printer and install a new paper roll. If necessary, remove the rest of the disrupted paper.
Blocked cutter blade.	Objects may be blocking the blade	If the blade is blocked, switch off the printer. Open the cover. Remove the objects that are blocking the blade, such as paper clips. Then turn the printer on again. Wait for the blade to return. The firmware will move the blade to the normal position without any intervention from the user. Close the cover and wait over 3 seconds. If this doesn't solve the problem, please don't try to fix it yourself. Call for assistance to fix the problem.
Printer is on but does not print	You printer device type may be online	Check if your printer device is online: Go to Star- Devices and Printers- LR1100, if the printer is dimmed, then it's offline. You can switch it to online by double click the printer icon and choose "Printer-check use Printer offline" option.

7 Specifications

Characteristics		Specification
Printing Property	Printing Method	Direct thermal printing
	Resolution	203dpi (8 dots/mm)
	Paper Width	79.5±0.5mm
	Printing Width	72mm
	Character Font	ASCII Font A：12X24 ASCII Font B：9X17
	Characters per line	48 - font A / 64 - font B
	Printer Density	576 dots/line
	Printing Speed	250mm/s
Paper spec	Paper Type	Thermal paper
	Paper width	80mm
	Paper roll diameter	Max 80mm
Sensor	Paper sensor	Paper end, Paper near end
Cash drawer port	RJ11	DC24V, 1A
Communication	Interfaces	LR1100U: USB LR1100E: Ethernet
Power Adaptor	Input Voltage	AC 100～240V, 50/60Hz
	Output Voltage	DC 24V，2.5A
Environment	Operating Temperature	0～40°C
	Storage Temperature	-20～70°C
	Operating Humidity	20% - 85%
	Storage Humidity	5% - 95%
Life Span	Printer Head service lifetime	15,000,000 lines (100km)
	Auto-cutter	1,000,000 cuts
	MCBF	60,000,000 lines
Physical Characteristics	Dimensions (W x D x H)	5.5" x 7.8" x 5.1" (140mm x 198mm x 130mm)
	Weight	2.6lb (1.2kg)

Note: Printer speed changes as the as the combination of the data transmission speed and control command varies.

FC CE

LR1100 POS Thermal Printer

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