Soft Keys

Programmable LCD Settings

In addition to the status icons, the LCD control panel can display other printer settings and functions as text. Applications can be written to allow the user to view and /or modify these settings using the scroll and select keys on the display. The menu that comes with the printer provides access to the most commonly used parameters. Refer to the CPCL Programming Manual for a complete list of the parameters, and for details on how to change the front panel display (p/n PROMAN-CPCL at www.zebra.com/manuals).

The LCD backlighting option allows viewing of the screen in a dark environment, or provides better contrast in a very bright environment. The QLn320 can be programmed to enter a low power mode (Backlight Off) during periods of front panel inactivity. While in low power mode, the screen is populated with menus and status icons, data which may or may not be readable depending on ambient light conditions.

The QLn320 provides a configurable time delay from the time the backlight is turned on to when it turns off. The time range for this delay is 5 to 1200 seconds with a default time of 10 seconds. The backlight can be activated within one second after any of the cursor, select, or soft keys is pressed. (The feed button does not activate the backlight.) The status bar icons, the user space content, and the navigation bar will remain on the screen with the backlight off.

Extensive use of the display backlight will decrease the time the printer can run between charges. Refer to the section "Extending Battery Life" for more information.

Verify the Printer Is Working

Before you connect the printer to your computer or portable data terminal, make sure that the printer is in proper working order. You can do this by printing a configuration label using the "two key" method. If you can't get this label to print, refer to "Troubleshooting".

Printing a Configuration Label

1. Turn the printer off. Load the media compartment with journal media (media with no black bars printed on the back)
2. Press and hold the Feed Button.
3. Press and release the Power button and keep the Feed button pressed. When printing starts, release the Feed button.

The unit will print a line of interlocking "x" characters to ensure all elements of the print head are working, print out the version of software loaded in the printer and then print two reports.

The report indicates model, serial number, baud rate, and more detailed information on the printer's configuration and parameter settings. (See the Troubleshooting Section for sample printouts and a further discussion on how to use the configuration label as a diagnostic tool.)

Connecting the Printer

The printer must establish communications with a host terminal which sends the data to be printed. Communications occur in four basic ways:

- QLn320 printers can communicate by cable via either RS-232C or USB 2.0 protocols. USB drivers are included in the Zebra Designer Driver which can be downloaded from www.zebra.com/drivers.
- By means of a Bluetooth™ short range radio frequency link. (Optional)
- By means of a wireless LAN (Local Area Network) per 802.11 specifications. (Optional)
- By means of the Ethernet when docked on the Ethernet cradle. (Optional)

Cable Communication

The QLn320 printer can communicate by cable; the specific cable supplied with your printer will vary with the host terminal and your model printer.

RS-232C Communications

The 14-pin serial connector on your communications cable plugs into the serial communications port on the side of the printer. QLn320 model printers also have a USB port.

USB Communications

The small 5-pin connector on the USB cable plugs into the printer. The connectors are keyed to assure correct alignment; do not try to force the cable if it does not plug in. The
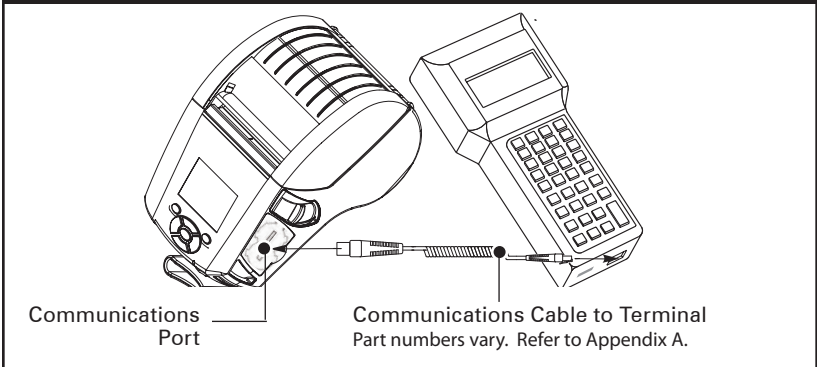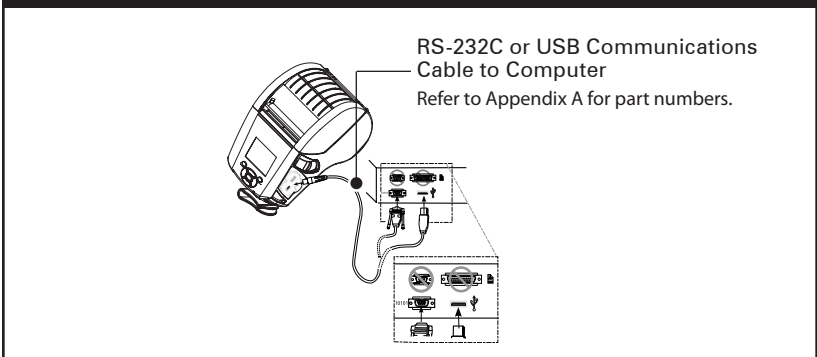

Figure 17: Cable Communications

Communications Port

Communications Cable to Terminal
Part numbers vary. Refer to Appendix A.

Figure 18: Communications with a P.C.

RS-232C or USB Communications Cable to Computer
Refer to Appendix A for part numbers.

other end of the cable must be plugged into the host terminal as shown in Figure 18, or to a serial or USB port on a computer (Figure 18). The QLn320 series is configured with the USB Open HCI interface driver allowing it to communicate with Windows® based devices.

USB drivers are included in the Zebra Designer Driver which can be downloaded from the Zebra Web site. Other terminals or communications devices may require the installation of special drivers to use the USB connection. Consult the factory for further details.

Providing Strain Relief for Communications Cable

If you are connecting either a USB or RS-232 communications cable to the printer permanently, access the communications port on the side of the printer next to the latch release lever. Plug the connector into the appropriate port and align the plastic locking cap with the cut outs shown below. Rotate the locking cap clockwise to lock the cable in place. (Turn counterclockwise to unlock the cable.) Once locked in place, this provides strain relief for the cable and will prevent the cable from disconnecting from the printer.

Note: Only one cable can be present in the USB/RS-232
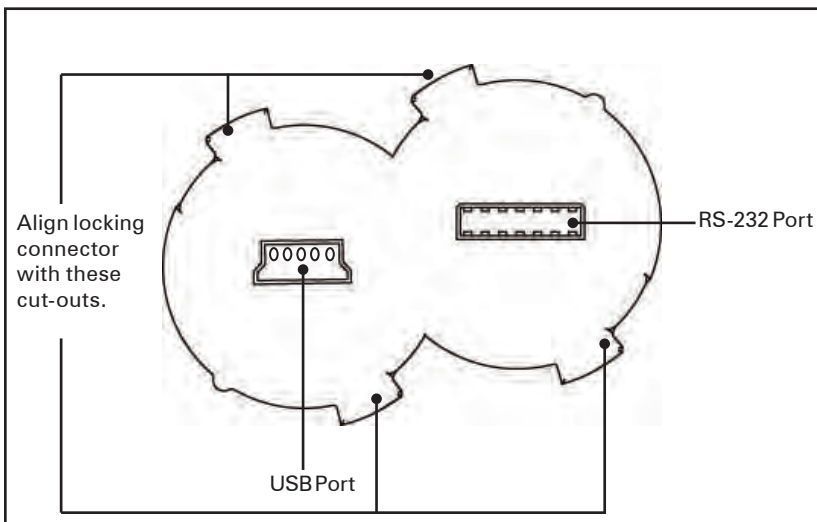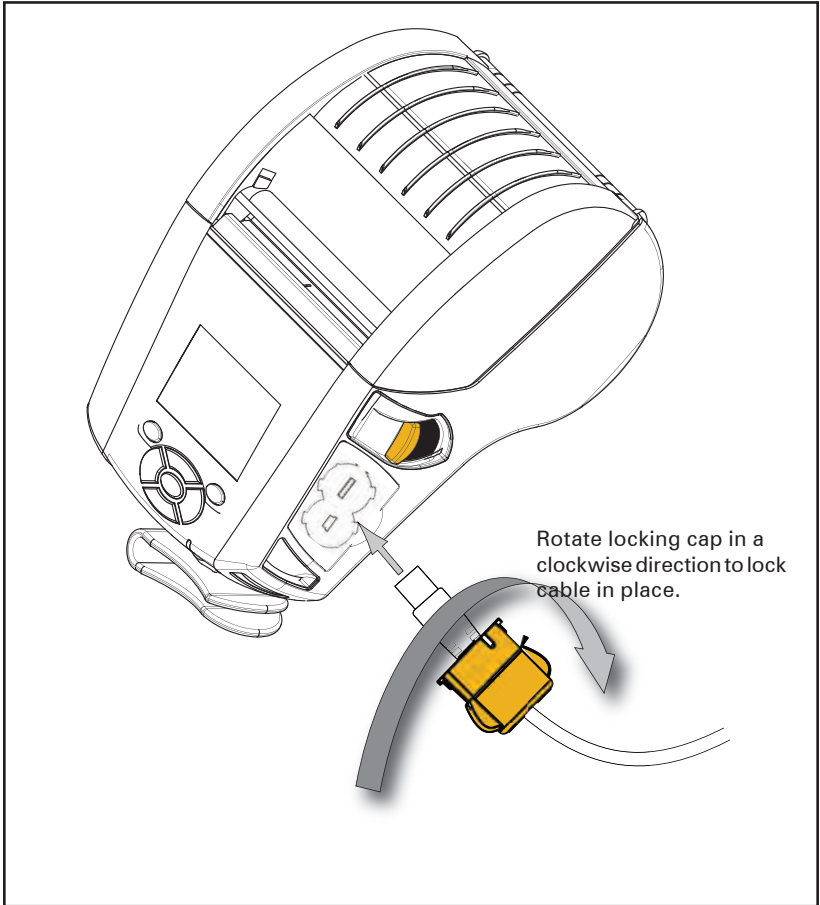
Figure 19: Communications Port

Align locking connector with these cut-outs.

RS-232 Port

USB Port

Rotate locking cap in a clockwise direction to lock cable in place.

Wireless Communications with Bluetooth™

Bluetooth is a worldwide standard for the exchange of data between two devices via radio frequencies. Bluetooth radios are relatively low powered to help prevent interference with other devices running at similar radio frequencies. This limits the range of a Bluetooth device to about 10 meters (32 feet). Both the printer and the device it communicates with must follow the Bluetooth standard. Other than conditions specified elsewhere in this manual, only one of the radio options can be installed in the printer at one time and the antenna used for these transmitters must not be co-located or must not operate in conjunction with any other antenna.

Bluetooth Networking Overview

Each Bluetooth enabled QLn320 printer is identified by a unique Bluetooth Device Address (BDA). In order to exchange data, two Bluetooth enabled devices must establish a connection.

Bluetooth software is always running in the background, ready to respond to connection requests. One device (known as the master or the client) must request a connection with another. The second device (the slave or the server) then accepts or rejects the connection. A Bluetooth enabled QLn320 printer will normally act as a slave creating a miniature network with the terminal sometimes referred to as a "piconet".

For the most part, communications using the Bluetooth protocol are initiated and processed without any operator intervention.

WLAN Overview

QLn320 printers can be equipped with a radio using the industry standard 802.11 protocols. They will have the FCC ID number on the serial number label on the back of the unit.

- QLn320 series Wireless Network Printers with the Zebra 802.11 WLAN radio module can be identified by the text "Wireless Network Printer" on the serial number label on the back of the printer.

- These printers allow wireless communication as a node within a local area network (LAN) and its wireless capabilities allow communications from any point within the LAN's perimeter. Methods of establishing communications to the printer will vary with each LAN application.

General information on establishing WLAN communications can be found in either the "CPCL Programming Manual" or the "Quick Start Guide for Mobile Wireless Printers" both available on-line. More information and LAN configuration utilities are included in Zebra's Net Bridge™ program (version 2.8 and later). Net Bridge may be downloaded from the Zebra Web site.

Setting Up the Software

QLn320 printers use Zebra's CPCL and ZPL Programming languages which were designed for mobile printing applications. CPCL and ZPL are fully described in the "CPCL Programming Manual" and the "ZPL Programming Guide" available on-line at www.zebra.com/manuals.

You can also use Designer Pro, Zebra's Windows® based label creation program which uses a graphical interface to create and edit labels in the CPCL language.

Refer to Appendix F for tips on downloading the Designer Pro application from Zebra's Web site.

Using the Accessories

Swivel Belt Clip

Refer to Figure 21. Most QLn320 printers have a belt clip (p/n P1024458) installed as a standard feature. To use: hook the clip over your belt, and ensure that the clip is securely attached to the belt. The belt clip will pivot to allow you to move freely while wearing the printer.

In order to install or remove the Belt Clip you will need to remove the battery pack.

Figure 21: Using the Belt Clip

Clip printer to belt

Belt

Printer can pivot freely
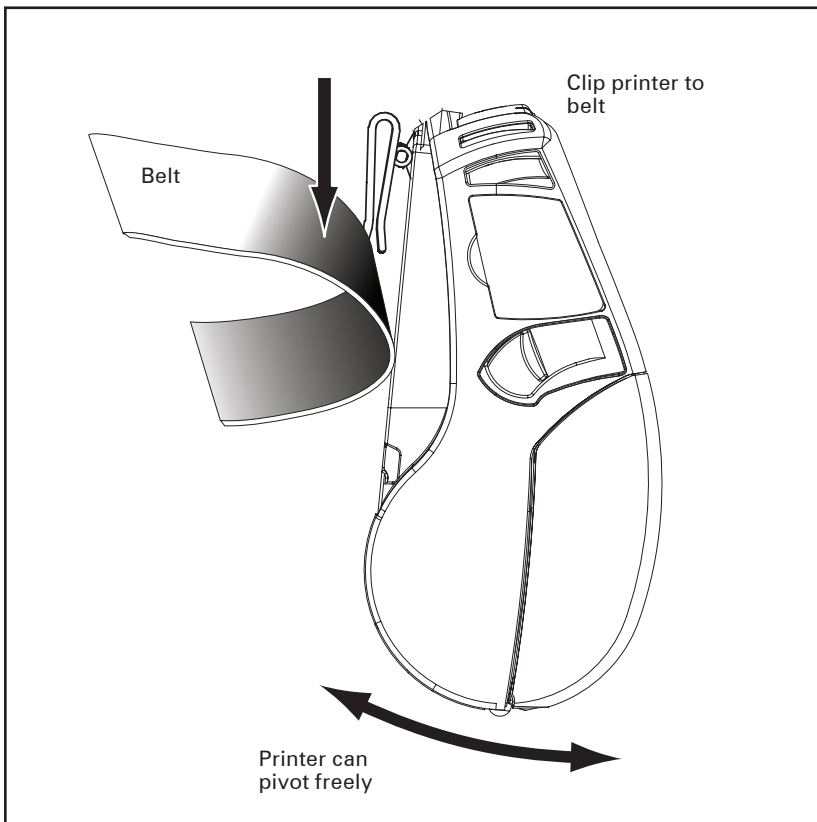
Adjustable Shoulder Strap

Refer to Figure 22 if your printer is equipped with the shoulder strap option (p/n P1028227). Insert each end of the shoulder strap into the cut-outs in each top corner of the printer and secure the looped end over the button on the end of the strap to fasten.

Hold the buckle and pull the strap as shown below until you achieve

Figure 22: Using the Optional Shoulder Strap
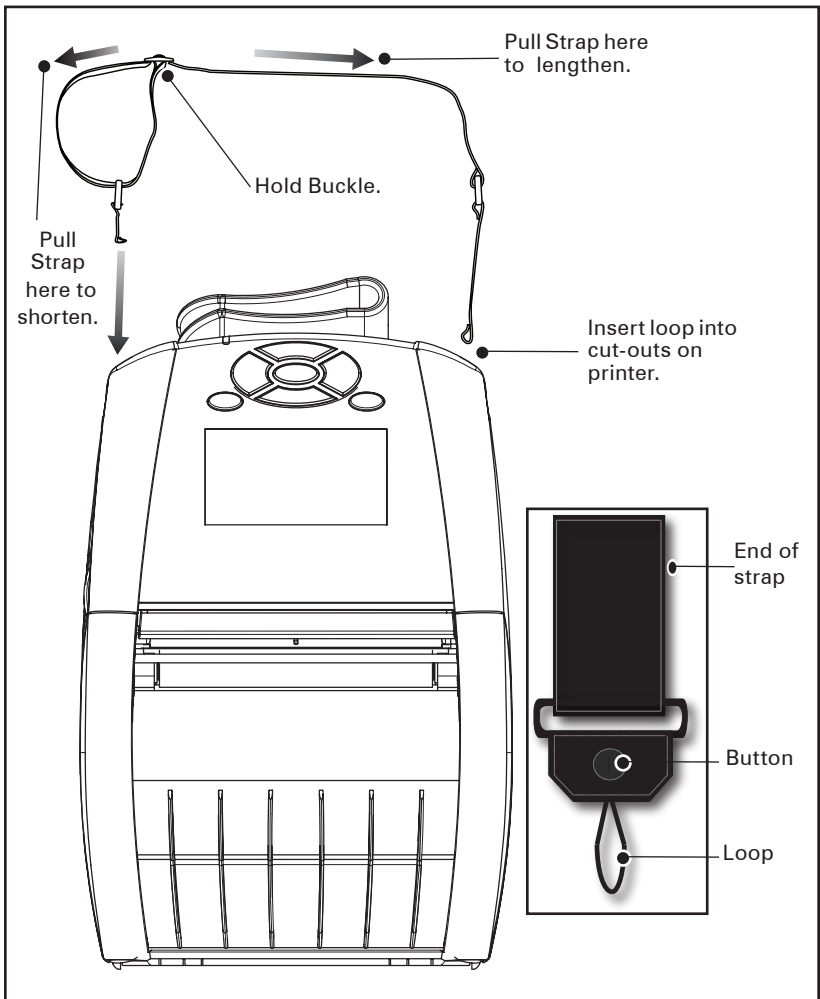
the desired length.

Hand Strap

The QLn320 hand strap accessory (p/n P1028226) attaches to the printer's cut-outs as does the shoulder strap to provide the user with a convenient and secure method of carrying the printer. To attach the hand strap to the printer:

- Insert the end of the strap through the cut out on the front of the printer as shown.
- Loop the end of the strap back around the cut out and secure it over the button.
- Repeat this process for the opposite end of the strap.

Figure 23: Detachable Hand Strap

Loop strap into cut-outs on printer.

The QLn320 printer also features two mounting holes on the base of the printer to accommodate future mounting options.

Preventive Maintenance

Extending Battery Life

- Never expose the battery to direct sunlight or temperatures over 104° F (40° C).
- Always use a Zebra charger designed specifically for Lithium-Ion batteries. Use of any other kind of charger may damage the battery.
- Use the correct media for your printing requirements. An authorized Zebra re-seller can help you determine the optimum media for your application.
- If you print the same text or graphic on every label, consider using a pre-printed label.
- Choose the correct print darkness, and print speed for your media.
- Use software handshaking (XON/XOFF) whenever possible.
- Remove the battery if the printer won't be used for a day or more and you're not performing a maintenance charge.
- Consider purchasing an extra battery.
- Remember that any rechargeable battery will lose its ability to maintain a charge over time. It can only be recharged a finite number of times before it must be replaced. Always dispose of batteries properly. Refer to Appendix E for more information on battery disposal.

General Cleaning Instructions

⚠ Caution • Avoid possible personal injury or damage to the printer: never insert any pointed or sharp objects into the printer.
Always turn the printer off before performing any cleaning procedures.
Use care when working near the tear bar. The edges are very sharp.

⚠ Caution • The printhead can be very hot after prolonged printing. Allow it to cool off before attempting any cleaning procedures.

❗ Only use the cleaning pen supplied with the printer or a cotton swab saturated with alcohol for cleaning the printhead.

Caution • Use only cleaning agents specified in the following tables. Zebra Technologies Corporation will not be responsible for damage caused by any other cleaning materials used on this printer.

QLn320 Cleaning

Area	Method	Interval
Printhead (Figure 24)	Use the supplied cleaning pen or 70% Isopropyl alcohol on a cotton swab to clean the print elements from end to end (the print elements are located in the thin gray line on the printhead).	After every five rolls of media (or more often, if needed), Linerless media requires more frequent cleaning
Platen Roller (Figure 24)	Rotate the platen roller and clean it thoroughly with the cleaning pen or 70% Isopropyl alcohol and a cotton swab.	
Platen Roller (Figure 25)	Units with linerless platens: Rotate platen & clean bearing points only. Avoid use of alcohol on the surface of linerless platens	
Peel bar (Figure 24)	Clean thoroughly with the cleaning pen or 70% Isopropyl alcohol and a cotton swab.	As needed
Tear bar (Figure 24)		As needed
Exterior	Water-dampened cloth or 70% Isopropyl alcohol wipe.	As needed
Interior (Figure 24)	Brush/air blow. Ensure the Bar Sensor, Gap Sensor and Label Present Sensor windows are free of dust.	
Interior (Figure 25)	Units with linerless platens: Clean inside surfaces of edge guides & media rollers with the supplied cleaning pen or 70% Isopropyl alcohol on a cotton swab.	After every five rolls of media (or more often, if needed)

QLn Series User Guide

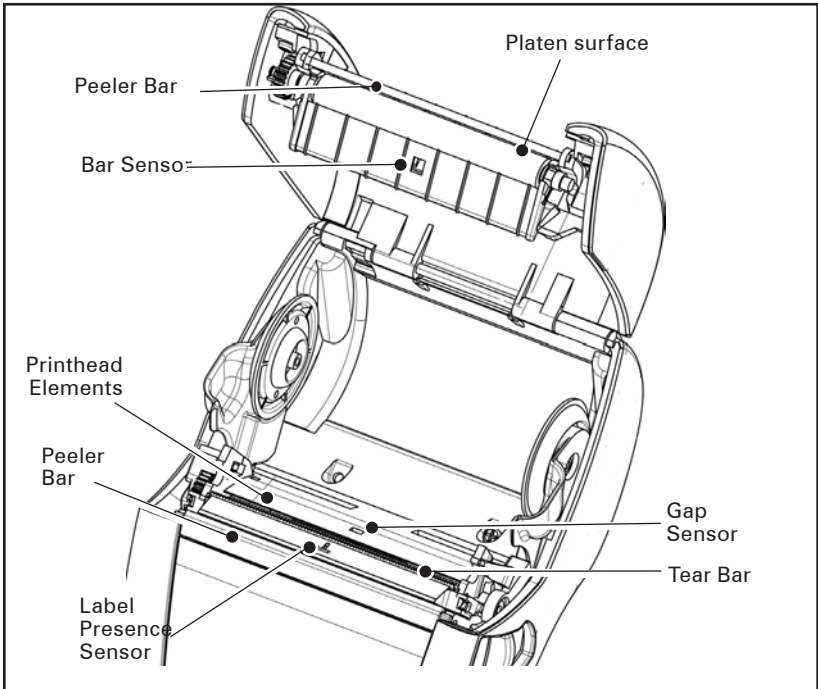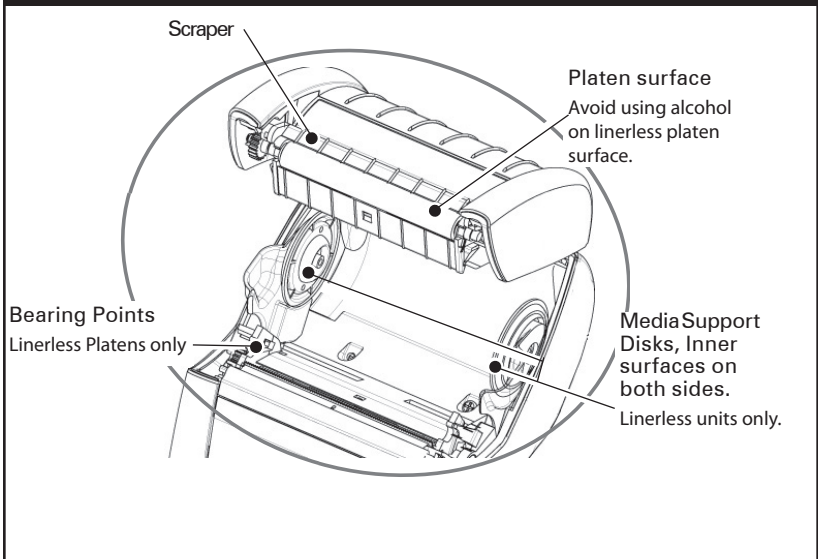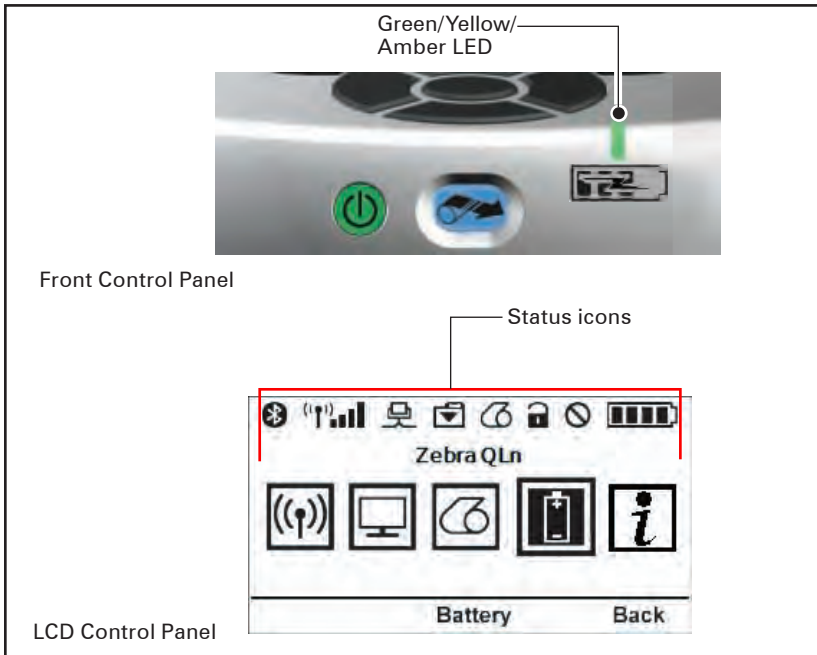## Figure 24: Cleaning the QLn320

Platen surface

Peeler Bar

Bar Sensor

Printhead Elements

Peeler Bar

Gap Sensor

Tear Bar

Label Presence Sensor

Figure 25: Cleaning the Linerless QLn320

Scraper

Platen surface
Avoid using alcohol on linerless platen surface.

Bearing Points
Linerless Platens only

Media Support Disks, Inner surfaces on both sides.
Linerless units only.

Troubleshooting

Green/Yellow/Amber LED

Front Control Panel

Status icons

Zebra QLn
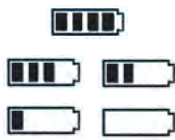
Battery   Back

LCD Control Panel

Front Control Panel

If the printer is not functioning properly, refer to the chart below to find the state of the LED charge indicator on the Front Control Panel. Then refer to the Troubleshooting topic referenced in the chart to resolve the problem.

Green	Yellow	Amber	Indication	Ref. to Topic
Solid	Off	Off	Fully charged	n/a
Off	Solid	Off	Charging	n/a
Off	Off	Solid	Fault	1, 6, 12

LCD Control Panel Indicators

The top of the display shows several icons which indicate the status of various printer functions. Check the indicator status, then refer to the Troubleshooting topic referenced in the chart to resolve the problem.
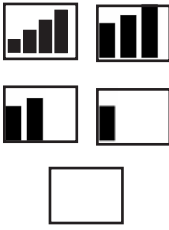
Icon	Status	Indication	Topic #
	On	Bluetooth Link established	n/a
	Not Present	Bluetooth Link inactive	6
	Blinking	Connecting or Transmitting Labels	
	Antenna Blinking	Looking for AP	
	Antenna Blinking/1 Parenthesis Solid	WLAN Associated & Attempting Authentication	
	Antenna and 2 Parentheses Solid	WLAN Associated and Authenticated	6
	Antenna and 2 Parentheses Blinking	Receiving Data	
	Not Present	No Radio Present	
	4 Bars	>80% Charged	
	3 Bars	60%-80% Charged	
	2 Bars	40%-60% Charged	3, 6, 7, 8
	1 Bar	20%-40% Charged	
	0 Bars	Low Battery	
	4 Blinking w/ Lightning Bolt	Charging >80% Capacity	
	3 Blinking w/ Lightning Bolt	Charging 60-80% Capacity	
	2 Blinking w/ Lightning Bolt	Charging 40-60% Capacity	8
	1 Blinking w/ Lightning Bolt	Charging 20-40% Capacity	
	0 Bars w/ Lightning Bolt	Charging <20% Capacity	
	Blinking	Media cover open	10, 12
	Blinking	Receiving data	
	Solid	Ethernet Connected	n/a
	Not Present	No Ethernet Connection	

	Blinking	Data processing in progress	9
	Steady	No data being processed	
	Blinking	Out of Media	10,12
	Steady	Media present	
	Blinking	Error exists (excluding Media Out and Head Latch Open)	3,4,6,12
	Not Present	No error exists	
	4 Bars	802.11 signal strength > 75%	6,12
	3 Bars	802.11 signal strength </= 75%	
	2 Bars	802.11 signal strength </= 50% but >25%	
	1 Bar	802.11 signal strength </= 25%	
	0 Bars	No Signal Strength	

Troubleshooting Topics

1. No power
   - Check that battery is installed properly.
   - Recharge or replace battery as necessary.

! Always dispose of batteries properly. Refer to Appendix E for more information on proper battery disposal.

2. Media does not feed:
   - Be sure print head is closed and latched.
   - Check spindle holding media for any binding.
   - Ensure most recently printed label is removed (only in peel mode).
   - Also ensure label sensor is not blocked.

3. Poor or faded print:
   - Clean print head.
   - Check quality of media.

4. blinking
   - Check battery and recharge or replace as necessary. Always dispose of batteries properly. Refer to Appendix D for more information on proper battery disposal.

5. Partial or missing print:
   - Check media alignment

- Clean print head.
- Ensure printhead is properly closed and latched.

6. Garbled print:
- Check baud rate.

7. No print:
- Check baud rate.
- Replace battery.
- Check cable to terminal.
- Establish RF Link (Wireless units only) and/or restore LAN associativity (Printers with WLAN radios only).
- Invalid label format or command structure. Place printer in Communications Diagnostic (Hex Dump) Mode to diagnose problem.

8. Reduced battery charge life
- Check battery date code — if battery is older than 1 year old, short charge life may be due to normal aging.
- Check battery health.
- Replace battery.

9. ⬇ flashing:
- If using wireless communications: flashing indicator is normal while data is being transmitted or received.

10. ⬁ or 🔒 flashing:
- Check that media is loaded and that the media cover is closed and securely latched.

11. Skips labels:
- Check media for top of form sense mark or label gap.
- Check that the maximum print field has not been exceeded on label.
- Ensure bar or gap sensor is not blocked or malfunctioning

12. Communication error:
- Check baud rate.
- Replace cable to terminal.

13. Label jam:
- Open head release latch and media cover.
- Generously apply alcohol to printer in area of jammed label.

14. Blank LCD screen
- No application loaded or application corrupted: reload program.

Troubleshooting Tests

Printing a Configuration Label

To print out a listing of the printer's current configuration follow these steps:

1. Turn the printer off. Load the media compartment with journal media (media with no black bars printed on the back).
2. Press and hold the Feed Button.
3. Press and release the Power button and keep the Feed button pressed. When printing starts, release the Feed button.

Refer to Figures 27a, b, and c for sample configuration printouts.

Communications Diagnostics

If there is a problem transferring data between the computer and the printer, try putting the printer in the Communications Diagnostics Mode (also referred to as the "DUMP" mode). The printer will print the ASCII characters and their text representation (or the period '.', if not a printable character) for any data received from the host computer.

To enter Communications Diagnostics Mode:

1. Print a configuration label as described above.
2. At the end of the diagnostics report, the printer will print: "Press FEED key to enter DUMP mode".
3. Press the FEED key. The printer will print: "Entering DUMP mode".

> Note • If the FEED key is not pressed within 3 seconds, the printer will print "DUMP mode not entered" and will resume normal operation.

4. At this point, the printer is in DUMP mode and will print the ASCII hex codes of any data sent to it, and their text representation (or "." if not a printable character).

Additionally, a file with a ".dmp" extension containing the ASCII information will be created and stored in the printer's memory. It can be viewed, "cloned" or deleted using the Net Bridge application. (Refer the Net Bridge documentation for

more information.)

To terminate the Communications Diagnostics Mode and return the printer to normal operations:
1. Turn the printer OFF.
2. Wait 5 seconds.
3. Turn the printer ON.

Contacting Technical Support

If the printer fails to print the configuration label, or you encounter problems not covered in the Troubleshooting Guide, contact Zebra Technical Support. Technical Support addresses and phone numbers for your area can be found in Appendix D of this manual. You will need to supply the following information:
- Model number and type (e.g. QLn320)
- Unit serial number (Found on the large label on the back of the printer, also found in the configuration label printout.
- Product Configuration Code (PCC) (15 digit number found on the label on the back of the unit)

Zebra QLn320 ●————————— Identifies
Serial Number: Printer as a
QLn320 series

XXXXXX-XX-XXXX ●
Name: XXXXXX-XX-XXXX
Program:
  OS:6.4.1
  PLD: 2 Rev. 2 ————————— Unit Serial
  Firmware:V68.16.0 Number
    Checksum:4AACFED2
Cable Communications:
  115200 BPS, n,8,1
  Handshake: xon/xoff
  DSR: on
Universal Serial Bus: ————————— Report appears
  2.0 Full Speed Device only on units
  Vendor ID No: 0x0A5F with wireless
  Product ID No: 0x00BD options in-
  Manufacturer String: Zebra Technologie stalled.
  Product String: QLn320
  ID string: off ————————— Units with no
Wireless Communications: ● wireless options
 will print an
Bluetooth: empty line and
.version   314 resume.
.date

.baud   115200
.device   printer
.mode   slave
.local_name
.minimum_security_mode 2
.discoverable on
.encryption
.Bluetooth spec 2.1
.afh_mode   off
.enable   on
.address 00:22:58:09:CF:97

[barcode] ————————— Application
201122334455 ● Number

TCP: Oct 7 2010 10:14:39 ————————— This unit has a
WLAN Enable: off 802.11b/g radio
IP Address: option installed.
Netmask: This section
Gateway: details the
MTU: radio's network
TCP/UDP Port: 9100 ● settings.
Remote Server:
Remote Server Port: 10013
TCP: on
UDP: on
LPD: on
DHCP:
BOOTP: on
FTP: on

Peripherals:
LCD: Installed
Expansion module: 0x02
 802.11 b/g Embedded Module
Power Management:
In-activity Timeout:0
Low-battery Timeout:60
Remote(DTR) pwr-off:Disabled
Voltage   :8.35
Low-bat Warning :7200(7.20V)
Low-bat Shut-down:6800(6.80V)
Power On Cycles :0
Battery Health   :good
Memory:
Flash :201326592 Bytes
RAM   :134217728 Bytes
Label:
Width :406 dots, 50 mm
Height:0 dots, 0 mm
Resident Fonts:

Font	Sizes	Chars
0	0- 6	20-FF
1	0	20-80
2	0- 1	20-59
4	0- 7	20-FF
5	0- 3	20-FF
6	0	20-44
7	0- 1	20-FF

File Directory:

File	Size
E:INDEX.HTM	7151
E:INDEX.WML	509
E:index.shtml	0
E:logo.png	0
Z:0.TTF	125880
Z:A.FNT	6839
Z:AZTEC.BAR	0
Z:B.FNT	7746
Z:BATTERY.WML	1270
Z:BATTERY_CHARGING_LEVEL_0_BAR_ICON.B 192	
Z:BATTERY_CHARGING_LEVEL_1_BAR_ICON.B 192	
Z:BATTERY_CHARGING_LEVEL_2_BAR_ICON.B 192	
Z:BATTERY_CHARGING_LEVEL_3_BAR_ICON.B 192	
Z:BATTERY_CHARGING_LEVEL_4_BAR_ICON.B 192	
Z:BATTERY_LEVEL_0_BAR_ICON.BMP	
Z:BATTERY_LEVEL_1_BAR_ICON.BMP	
Z:BATTERY_LEVEL_2_BAR_ICON.BMP	
Z:BATTERY_LEVEL_3_BAR_ICON.BMP	
Z:BATTERY_LEVEL_4_BAR_ICON.BMP	
Z:BATTERY_MENU_ICON.BMP	430
Z:BLUETOOTH.WML	1178
Z:BLUETOOTH_ICON.BMP	128
Z:BLUETOOTH_NOT_AVAILABLE_ICON.BMP	
Z:BTPAIRING.WML	1176
Z:CODABAR.BAR	0
Z:CODABLK.BAR	0
Z:CODE11	0

Peripherals installed: In this example the 802.11 option is installed.

Flash and RAM Memory Installed

Maximum Label Size

Resident Human Readable fonts installed.

File Directory:

File	Size
E:INDEX.HTM	7151
E:INDEX.WML	509
E:index.shtml	0
E:logo.png	0
Z:0.TTF	125880
Z:A.FNT	6839
Z:AZTEC.BAR	0
Z:B.FNT	7746
Z:BATTERY.WML	1270
Z:BATTERY_CHARGING_LEVEL_0_BAR_ICON.B	

Files Loaded in Printer Memory (will include Pre-scaled or Scalable Fonts).

Command Language:

```
CCL Key '!'[21]
ZPL Configuration Information
TEAR OFF.........Print Mode
Mark.............Media Type
0.................Darkness
+00.........Tear Off Adjust
1225...........Label Length
104mm..........Print Width
7Eh..........Control Prefix
5Eh...........Format Prefix
2Ch..............Delimiter
00.............Top Position
calibrate....Media Power Up
01.........Media Head Close
0..............Left Margin
832............Dots per row
End ZPL Configuration

End of report.
```

ZPL is standard on QLn320 series.

Specifications

🖼️ Note.- Printer specifications are subject to change without notice.

Printing Specifications

Parameter	QLn320
Print Width	Up to 2.91 in. (73,9 mm)
Print Speed	4 in./second (101,6 mm/second) without peeler
	2 in./second (50,8 mm/second) with peeler
Distance from Print Element to Top of Form	0.571 in. (14,5 mm) 116 dots
Print Head Life, calculated	1 million inches of paper fed
Print Density	203 dots/in.

Memory and Communications Specifications

Flash Memory	256 MB Flash [1]
RAM Memory	128 MB RAM [1]
Standard Communications	RS-232 serial port (14 Pin serial connector) Configurable Baud rate (from 9600 to 115.2 Kbps), parity and data bits. Software (X-ON/X-OFF) or hardware (DTR/STR) communication handshake protocols.
	USB 2.0 Full Speed Interface (12 Mbps)
Optional Wireless Communications	Bluetooth v2.1 compatible 2.4 GHz SRRF link
	Optional wireless LAN capabilities comply with802.11b/g protocols
Real Time Clock (RTC)	Time and date under application control. Refer to CPCL and ZPL Programming Manuals, available at www.zebra.com/manuals for RTC commands.
Ethernet	10 or 100 mps Ethernet auto detect when docked in cradle.

1. Memory configuration on your printer may be ascertained by printing a configuration label as detailed on pages 48.

Label Specifications

Parameter	QLn320
Media Width	1.0 in. to 3.125 in. (38,1 to 78,4 mm)
Max/Min Label Length	0.5 in. minimum to 32 in. maximum
Inter-label Gap.	0.08 in. to 0.16 in. (.12 in. preferred) (2 mm to 4 mm, 3 mm preferred)
Label Thickness	0.0023 in to 0.0065 in (0.058 mm to 0.165 mm)
Tag Thickness	0.0060 in. (0.152 mm) maximum
Max. Label Roll dia.	2.63 in. (66,8 mm) O.D.
Label Inner Core**	0.75 in. (19 mm) or 1.38 in (35,05 mm) minimum dia. for linered
	1.38 in. (35,05 mm) minimum dia. for linerless media
Black Mark Dimensions	The reflective media black marks should be centered on the media roll.
Media Requirements	Minimum mark width: 0.5 in. (12,7 mm) perpendicular to inside edge of media, centered within the width of the roll. Mark length: 0.12 in. to 0.43 in. (3-11 mm) parallel to inside edge of media

Use Zebra brand direct thermal media that is outside wound. Media may be reflective (black mark) sensing, or transmissive (gap) sensing, die-cut, continuous, or linerless.

For die-cut labels, use only full auto dies.

** QLn320 supports coreless media which is 0.75 in. (19 mm) in diameter.

CPCL Font and Bar Code Specifications and Commands

Standard Fonts	25 bit-mapped fonts; 1 scalable font (CG Trimvirate Bold Condensed*) *Contains UFST from Agfa Monotype Corporation Downloadable optional bit-mapped & scalable fonts via Net Bridge software.
Available Optional Fonts	Optional International character sets: Chinese 16 x 16 (trad), 16 x 16 (simplified), 24 x 24 (simplified); Japanese 16 x 16, 24 x 24; Hebrew/Arabic
	Barcode (CPCL Command)
Linear Bar Codes Available	Aztec (AZTEC)
	Codabar (CODABAR, CODABAR 16)
	UCC/EAN 128 (UCCEAN128)
	Code 39 (39, 39C, F39, F39C)
	Code 93 (93)
	Code 128 (128)
	EAN 8, 13, 2 and 5 digit extensions (EAN8, EAN82, EAN85, EAN13, EAN132, and EAN135)
	EAN-8 Composite (EAN8)
	EAN-13 Composite (EAN13)
	Plessey (PLESSEY)
	Interleaved 2 of 5 (I2OF5)
	MSI (MSI, MSI10, MSI1110)
	FIM/POSTNET (FIM)
	TLC39 (TLC39)
	UCC Composite A/B/C (128(Auto))
	UPCA, 2 and 5 digit extensions (UPCA2 and UPCA5)
	UPCA Composite (UPCA)
	UPCE, 2 and 5 digit extensions (UPCE2 and UPCE5)
	UPCE Composite (UPCE)
2-D Bar Codes Available	MaxiCode (MAXICODE)
	PDF 417 (PDF-417)
	Datamatrix (using ZPL emulation) (DATAMATRIX)
	QR Code (QR)
	RSS: RSS-14 (RSS-Subtype 1)
	RSS-14 Truncated (RSS-Subtype 2)
	RSS-14 Stacked (RSS-Subtype 3)
	RSS-14 Stacked Omnidirectional (RSS-Subtype 4)
	RSS Limited (RSS-Subtype 5)
	RSS Expanded (RSS-Subtype 6)
Rotation Angles	0°, 90°, 180°, and 270°

ZPL Font and Bar Code Specifications and Commands

Standard Fonts	15 bit-mapped fonts; 1 scalable font (CG Trimvirate Bold Condensed*) Downloadable optional bit-mapped & scalable fonts via Net Bridge software.
Available Optional Fonts	Zebra offers font kits covering multiple languages including Simplified and Traditional Chinese, Japanese, Korean, Hebrew/Arabic, and others.
	Barcode (ZPL Command)
	Aztec (^B0)
	Codabar (^BK)
	Codablock (^BB)
	Code 11 (^B1)
	Code 39 (^B3)
	Code 49 (B4)
	Code 93 (^BA)
	Code 128 (^BC)
	DataMatrix (^BX)
	EAN-8 (^B8)
	EAN-13 (^BE)
	GS1 DataBar Omnidirectional (^BR)
	Industrial 2 of 5 (^BI)
Linear Bar Codes Available	Interleaved 2 of 5 (^B2)
2-D Bar Codes Available	ISBT-128 (^BC)
	LOGMARS (^BL)
	Micro-PDF417 (^BF)
	MSI (^BM)
	PDF-417 (^B7)
	Planet Code (^B5)
	Plessey (^BP)
	Postnet (^BZ)
	Standard 2 of 5 (^BJ)
	TLC39 (^BT)
	UPC/EAN extensions (^BS)
	UPC-A (^BU)
	UPC-E (^B9)
	Maxi Code (^BD)
	QR Code (^BQ)
Rotation Angles	0°, 90°, 180°, and 270°

*Contains UFST from Agfa Monotype Corporation

Communications Ports
RS-232C

Pin#	Signal Name	Type	Description
1	CTS	input	Clear To Send from host
2	TXD	output	Transmit Data
3	RXD	input	Receive Data
4	DSR	input	Data Set Ready: low to high transition turns printer on, high to low transition turns printer off (if enabled)
5	GND		Ground
6	DTR	output	Data Terminal Ready: set high when printer is on. Switched 5V (300mA max)
7	N/A		Do Not Use
8	RTS	output	Request To Send set high when printer is ready to accept a command or data
9	N/A		Do Not Use
10	N/A		Do Not Use
11	N/A		Do Not Use
12	N/A		Do Not Use
13	N/A		Do Not Use
14	N/A		Do Not Use
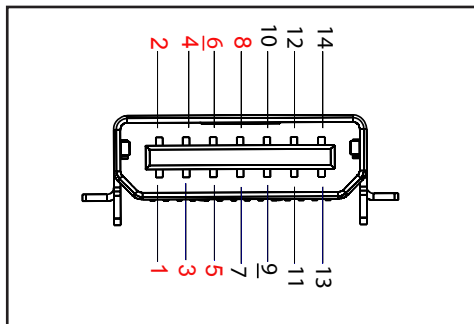
Figure 28: RS-232C Communications Port

USB

Pin #	Signal Name	Type	Description
1	VBUS	-	USB Bus Power
2	USB -	bi-directional	I/O signals
3	USB +	bi-directional	I/O signals
4	USB_ID	-	Identifies A/B connector
5	Return		Ground
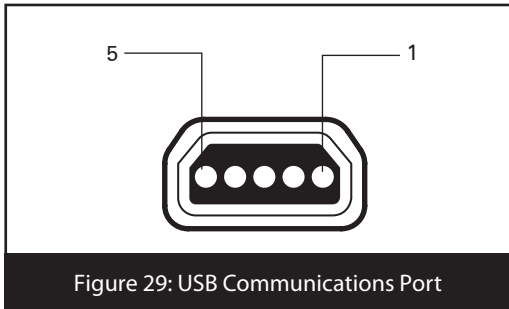
Figure 29: USB Communications Port

Physical, Environmental and Electrical Specifications

Parameter	QLn320
Weight w/ battery,excluding media & wireless options.	1.60 lbs. (0.75 kg.)
Temperature	Operating : -4° to 122° F (-20° to 50° C)
	Storage: -13° to 149° F (-25° to 65° C) Range Charging: 32° to 104° F (0° to 40° C)
Relative Humidity	Operating: 10% to 80% (non-condensing)
	Storage: 10% to 90% (non-condensing)
Battery	Lithium-Ion, 7.4 VDC (nominal); 2.45 AHr min.
Intrusion Protection (IP) Rating	IP14 (without optional environmental case) IP54 (with case)

3.15 in.
(76,9 mm)

Depth

6.85 in.
(173,7 mm)

4.65 in.
(117,9 mm)

Width

Height

QLn320 Accessories

Description
Adjustable shoulder strap (p/n P1028227)
Hand Strap (p/n P1028226)
Protective soft case (p/n P1029820)
Extra battery packs (p/n P1023901)
Ethernet Cradle
Quad Ethernet Cradle
SC2 Smart Single Battery Charger
AC Power Adapter (p/n P1031365-024)
Model UCLI72-4 Quad Battery Charger (100-240 VAC input)

Refer to Appendix A for information on Data I/O Cables

For more accessory kit details and order numbers, contact the factory or your authorized Zebra re-seller.

Appendix A

Interface Cables

RS232 Cables

Part Number P1027474; DB-9 to 14-Pin Serial
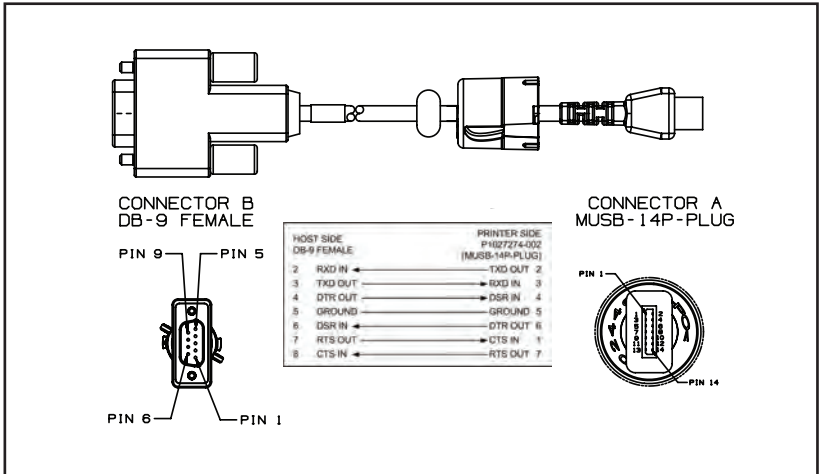
Part Number P1024467; 8-Pin DIN to 14-Pin Serial Cable (QL Adapter Cable)
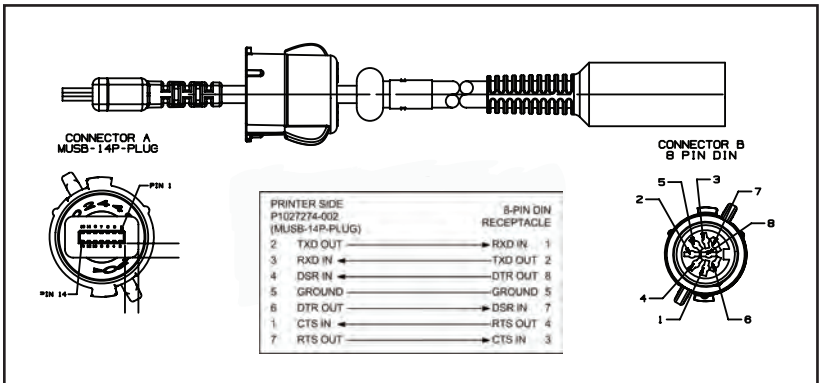
USB Cable

Part Number AT17010-1; USB A to USB Mini B Cable
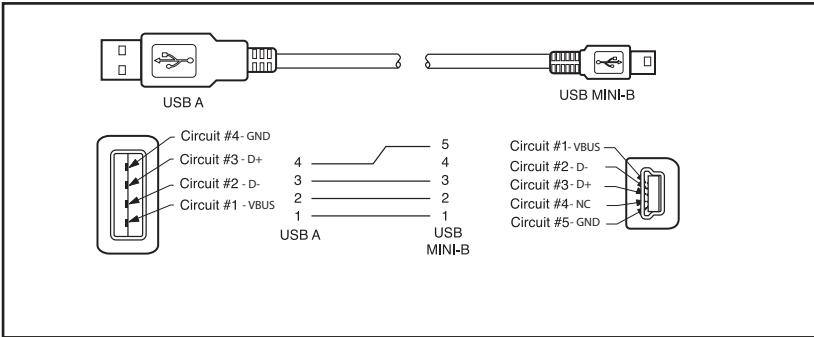
Part Number P1028669; 4 Position USB Mini to 4-Pin USB (w/ Strain Relief)
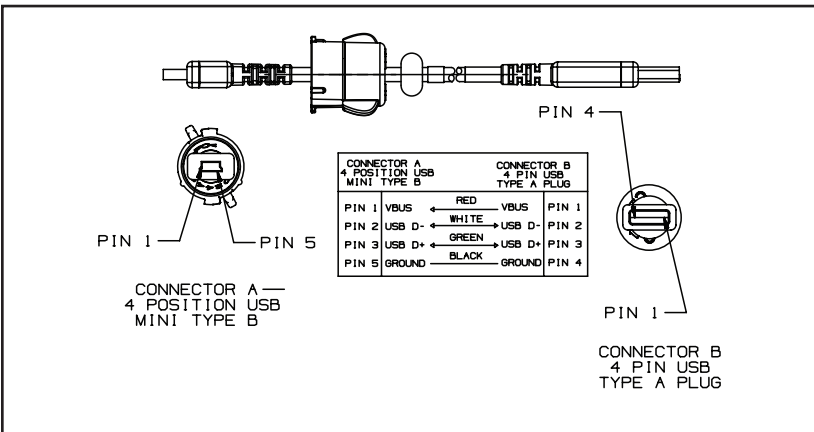
More Interface Cables

Contact the Factory or your Zebra Sales Representative for more information on interface cables to most major manufacturer's data terminals.

You may also vist the Zebra Web site at: www.zebra.com/accessories for a listing of interface cables for all series of Zebra mobile printers

Appendix B

Media Supplies

To insure maximum printer life and consistent print quality and performance for your individual application, it is recommended that only media produced by Zebra be used. Advantages include:
- Consistent quality and reliability of media products.
- Large range of stocked and standard formats.
- In-house custom format design service.
- Large production capacity which services the needs of many large and small media consumers including major retail chains world wide.
- Media products that meet or exceed industry standards.

For more information go the Zebra website (www.zebra.com) and select the Products tab, or refer to the CD included with the printer.

Appendix C

Maintenance Supplies

In addition to using quality media provided by Zebra, it is recommended that the printer be cleaned as prescribed in the maintenance section. The following items are available for this purpose:
- Cleaning Pen (10 pack), Reorder No. AN11209-1

Appendix D

Product Support

　　When calling with a specific problem regarding your printer, please have the following information on hand:
- Model number/type (e.g. QLn320)
- Unit serial number (refer to figure on opposite page)
- Product Configuration Code (PCC) (refer to figure on following page))

In the Americas contact

Regional Headquarters	Technical Support	Customer Service Dept.
Zebra Technologies Corporation 475 Half Day Road, Suite 500 Lincolnshire, Illinois 60069 U.S.A T: +1 847 634 6700 Toll-free +1 866 230 9494 F: +1 847 913 8766	T: +1 877 275 9327 F: +1 847 913 2578 Hardware: ts1@zebra.com Software: ts3@zebra.com	For printers, parts, media, and ribbon, please call your distributor, or contact us. T: +1 877 275 9327 E: clientcare@zebra.com

In Europe, Africa, the Middle East, and India contact

Regional Headquarters	Technical Support	Internal Sales Dept.
Zebra Technologies Europe Limited Dukes Meadow Millboard Road Bourne End Buckinghamshire SL8 5XF, UK T: +44 (0)1628 556000 F: +44 (0)1628 556001	T: +44 (0) 1628 556039 F: +44 (0) 1628 556003 E: Tseurope@zebra.com	For printers, parts, media, and ribbon, please call your distributor, or contact us. T: +44 (0) 1628 556032 F: +44 (0) 1628 556001 E: cseurope@zebra.com

In the Asia Pacific region contact

Regional Headquarters	Technical Support	Customer Service
Zebra Technologies Asia Pacific Pte. Ltd. 120 Robinson Road #06-01 Parakou Building Singapore 068913 T: +65 6858 0722 F: +65 6885 0838	T: +65 6858 0722 F: +65 6885 0838 E: (China) tschina@zebra.com All other areas: tsasiapacific@zebra.com	For printers, parts, media, and ribbon, please call your distributor, or contact us. T: +65 6858 0722 F: +65 6885 0836 E: (China) order-csr@zebra.com All other areas: csasiapacific@zebra.com

Appendix D (continued)

Serial Number
Barcode

PCC
Barcode

QLɴ320 (Bᴏᴛᴛᴏᴍ Vɪᴇᴡ)
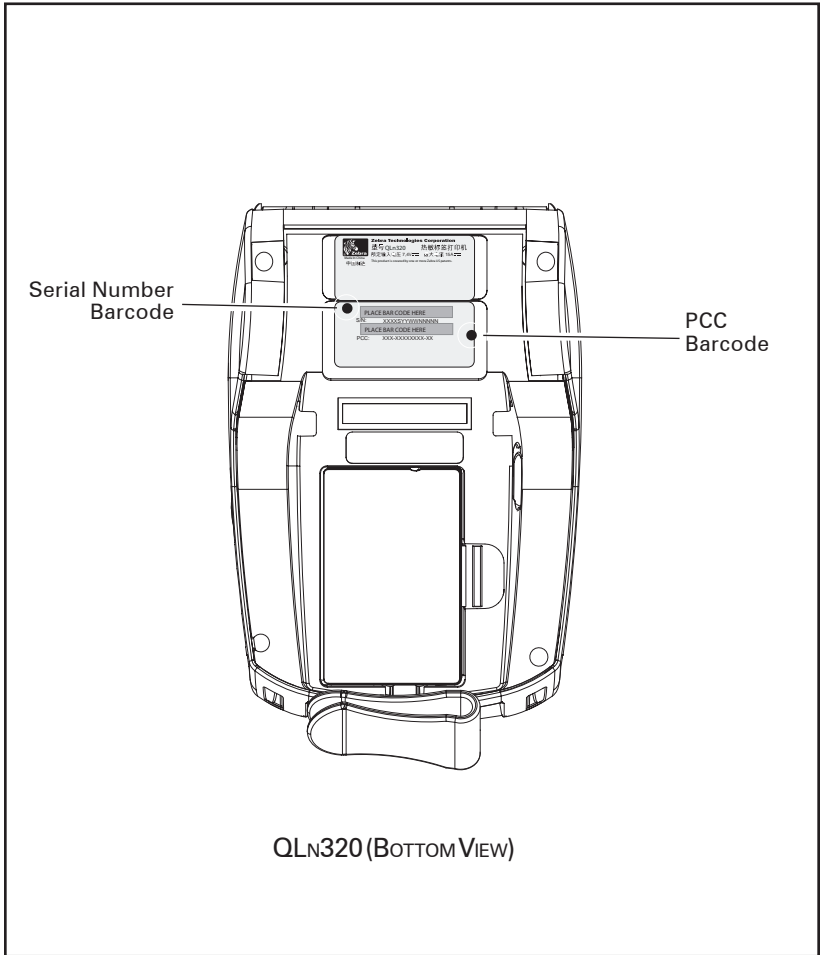
Appendix E

Battery Disposal

The EPA certified RBRC® Battery Recycling Seal on the Lithium-Ion (Li-Ion) battery supplied with your printer indicates Zebra Technologies Corporation is voluntarily participating in an industry program to collect and recycle these batteries at the end of their useful life, when taken out of service in the United States or Canada. The RBRC program provides a convenient alternative to placing used Li-Ion batteries into the trash or the municipal waste stream, which may be illegal in your area.

! Important • When the battery is depleted, insulate the terminals with tape before disposal

Please call 1-800-8-BATTERY for information on Li-Ion battery recycling and disposal bans/restrictions in your area. Zebra Technologies Corporation's involvement in this program is part of our commitment to preserving our environment and conserving our natural resources.

Outside North America, please follow local battery recycling guidelines.

Product Disposal

The majority of this printer's components are recyclable.

Do not dispose of any printer components in unsorted municipal waste. Please dispose of the battery according to your local regulations, and recycle the other printer components according to your local standards.

For more information, please see our web site at: http://www.zebra.com/environment

Appendix F

Using zebra.com

The following examples use the search functions on Zebra's Web site for finding specific documents .

Example1: Find the Mobile Printer WIreless Configuration Guide.
Go to www.zebra.com/manuals.
Select as a manual type "Networking Manual" then click on "Submit".

Select
manual
type
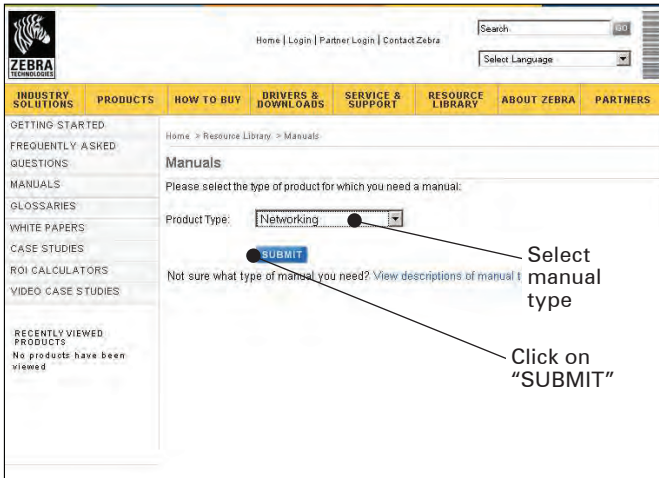
Click on
"SUBMIT"

At the resulting screen, select Wireless Mobile as the networking type. Then select the desired language. (Best choices are "All" or "English")

Select networking
type (Wireless
Mobile in this
example)

Select language
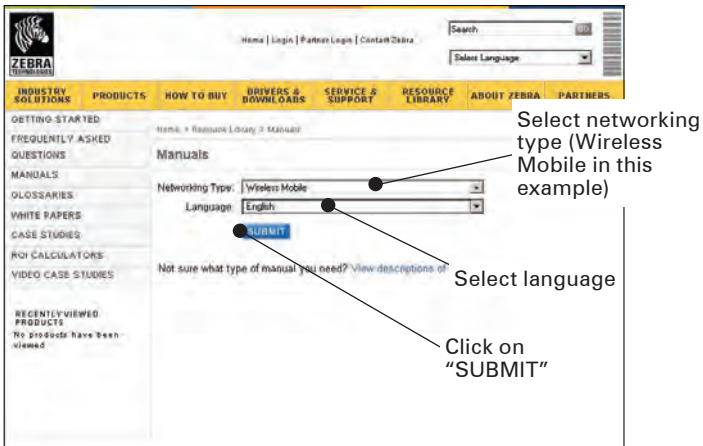
Click on
"SUBMIT"

At the resulting screen, select "Zebra Mobile Printers - Wireless Configuration Guide" then click on "Download" to begin the download process.

Example 2: Find the Net Bridge Download page:

Go to www.zebra.com/software and access the screen below.

Select the "ZebraNet Bridge Enterprise

At the resulting window select "Download Current Release"

Index

Patent Numbers

This product and/or its use may be covered by one or more of the following US patents and corresponding international patents worldwide

D 275,286	5,113,445	5,399,846	5,726,630	6,261,009
D 347,021	5,140,144	5,408,081	5,768,991	6,261,013
D 389,178	5,132,709	5,410,139	5,790,162	6,267,521
D 430,199	5,142,550	5,410,140	5,791,796	6,270,072 B1
D 433,702	5,149,950	5,412,198	5,806,993	6,285,845 B1
D 549,768	5,157,687	5,415,482	5,813,343	6,292,595
3,964,673	5,168,148	5,418,812	5,816,718	6,296,032
4,019,676	5,168,149	5,420,411	5,820,279	6,364,550
4,044,946	5,180,904	5,436,440	5,848,848	6,379,058 B1
4,360,798	5,229,591	5,444,231	5,860,753	6,409,401 B1
4,369,361	5,230,088	5,449,891	5,872,585	6,411,397 B1
4,387,297	5,235,167	5,449,893	5,874,980	6,428,227 B2
4,460,120	5,243,655	5,468,949	5,909,233	6,480,143
4,496,831	5,247,162	5,479,000	5,976,720	6,530,705
4,593,186	5,250,791	5,479,002	5,978,004	6,540,122
4,607,156	5,250,792	5,479,441	5,995,128	6,540,142
4,673,805	5,262,627	5,486,057	5,997,193	6,607,316
4,736,095	5,267,800	5,503,483	6,004,053	6,609,844
4,758,717	5,280,163	5,504,322	6,010,257	6,655,593
4,816,660	5,280,164	5.519,381	6,020,906	6,784,787
4,845,350	5,280,498	5,528,621	6,034,708	6,874,958
4,896,026	5,304,786	5,532,469	6,036,383	6,899,477
4,897,532	5,304,788	5,543,610	6,057,870	6,908,034
4,923,281	5,321,246	5,545,889	6,068,415	7,126,716
4,933,538	5,335,170	5,552,592	6,068,415	7,137,000
4,992,717	5,364,133	5,570,123	6,095,704	7,172,122
5,015,833	5,367,151	5,578,810	6,109,801	7,190,270
5,017,765	5,372,439	5,589,680	6,123,471	
5,021,641	5,373,148	5,612,531	6,147,767	
5,029,183	5,378,882	5,642,666	6,151,037	
5,047,617	5,396,053	5,657,066	6,201,255 B1	
5,103,461	5,396,055	5,680,459	6,231,253 B1	