ZQ220 Plus/ZQ120 Plus

Mobile Printer

User Guide

ZEBRA

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About this Guide

This document is intended for use by any person who needs to perform routine maintenance, upgrade, or troubleshoot problems with the printer.

Notational Conventions

The following conventions are used in this document:

- **Bold** text is used to highlight the following:
  - Dialog box, window, and screen names
  - Drop-down list and list box names
  - Checkbox and radio button names
  - Icons on a screen
  - Key names on a keypad
  - Button names on a screen
- Bullets (•) indicate:
  - Action items
  - List of alternatives
  - Lists of required steps that are not necessarily sequential.
- Sequential lists (for example, those that describe step-by-step procedures) appear as numbered lists.

Icon Conventions

The documentation set is designed to give the reader more visual clues. The following graphic icons are used throughout the documentation set. These icons and their associated meanings are described below.

NOTE: The text here indicates information that is supplemental for the user to know and that is not required to complete a task.

IMPORTANT: The text here indicates information that is important for the user to know.

CAUTION—EYE INJURY: Wear protective eyewear when performing certain tasks such as cleaning the inside of a printer.

CAUTION—EYE INJURY: Wear protective eyewear when performing certain tasks such as installing or removing E-rings, C-clips, snap rings, springs, and mounting buttons. These parts are under tension and could fly off.

CAUTION—PRODUCT DAMAGE: If the precaution is not taken, the product could be damaged.

CAUTION: If the precaution is not heeded, the user could receive a minor or moderate injury.

CAUTION—HOT SURFACE: Touching this area could result in burns.

CAUTION—ESD: Observe proper electrostatic safety precautions when handling static-sensitive components such as circuit boards and printheads.

CAUTION—ELECTRIC SHOCK: Turn off (O) the device and disconnect it from the power source before performing this task or task step to avoid the risk of electric shock.

WARNING: If danger is not avoided, the user CAN be seriously injured or killed.

DANGER: If danger is not avoided, the user WILL be seriously injured or killed.

Printer Overview

This guide provides you with the information needed to operate the ZQ220 Plus and ZQ120 Plus MobilePrinters. The printers use the following technologies to connect to Android and Apple devices:

- Near Field Communication (NFC)
- USB charging (Type-C connector)
- Bluetooth 5.0 - Android devices
- BLE iOS - Apple devices (iPhone 7s or later, iPad Air, and iPod touch)

The printers use CPCL and ESC/POS programming languages to configure the printer and print properties, label design, and communications. Refer to the CPCL Programming Guide and the ESC/POS Programming guide at zebra.com/manuals for more information.

Software Resources and Utilities:

- ZebraNet Bridge Enterprise: printer configuration, fleet management
- Zebra Printer Setup Utilities: single printer configuration, quick setup
- ZebraDesigner Pro v2: label design
- Zebra Designer Drivers: Windows driver
- OPOS Driver: Windows driver
- Multiplatform SDK or ZQ220 Plus and ZQ120 Plus SDK (CPCL and ESC/POS only)
- Zebra Downloader
- Mobile Label Designer (斑马智印)

ZQ220 Plus and ZQ120 Plus Software Utilities:

These utilities can be found on the Zebra website at zebra.com/us/en/support-downloads.

Unpacking and Inspection

This section describes unpacking and inspecting the box contents.

1. Carefully remove all protective material from the device and save the shipping container for later storage and shipping.

2. Verify that the following were received:
   - Quick Start Guide
   - USB Cable
   - Printer
   - Battery Pack
   - Regulatory Guide
   - Plugs and Adapters (APAC Only)
   - Belt Clip (EMEA / LATAM Only)
3. Check all exterior surfaces for damage.
4. Open the printer media cover (refer to Loading the Media on page 21) and inspect the media compartment for damage.
5. Prior to using the device for the first time, remove the protective shipping film that covers the LCD display.

Reporting Damage

If you discover shipping damage:

- Immediately notify and file a damage report with the shipping company. Zebra Technologies Corporation is not responsible for any damage incurred during shipment of the printer and will not cover the repair of this damage under its warranty policy.
- Keep the carton and all packing material for inspection.
- Notify your authorized Zebra reseller.

Battery

The printer uses a two-cell Li-Ion battery pack with a charge time of under 3.5 hours using a 7.5W USB charger while printer power is on. The battery allows the printer to print reliably without recharge for three work days under the following conditions: 25 stops per day and will power up the device 25 times per day; up to 500 3x8.5 in. receipts per 8-hour shift with 13% coverage.

Operating Temperature	Charging Temperature	Storage Temperature
-10°C to 50°C (14°F to 122°F)	0°C to 40°C (32°F to 104°F)	-20°C to 60°C (-4°F to 140°F)

NOTE:

- Power down the printer before removing the battery to minimize the risk of corruption.
- The printer will only function properly with genuine Zebra battery packs.

Printing Technology

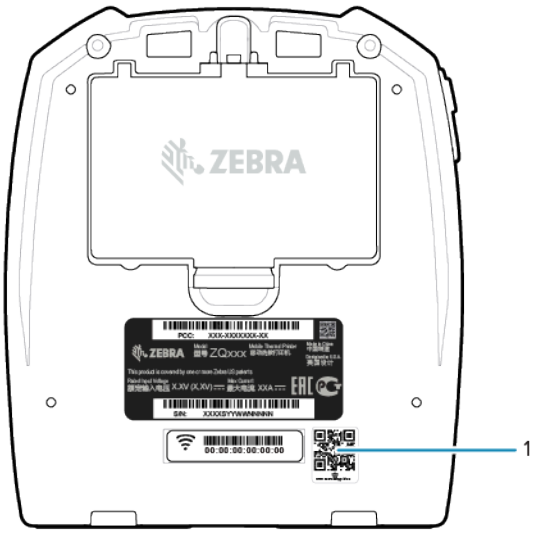
The printer uses the Direct Thermal method to print human readable text, graphics and barcodes. It incorporates a sophisticated print engine for optimal printing under all operational conditions. Direct thermal printing uses heat to cause a chemical reaction on specially treated media. This reaction creates a dark mark wherever a heated element on the printhead comes in contact with the media. Because the

printing elements are arranged very densely at 203 dpi (dots per inch) horizontal and 200 dpi vertical, highly legible characters and graphic elements may be created a row at a time as the media is advanced past the printhead. This technology has the advantage of simplicity, as there is no requirement for consumable supplies such as ink or toner. However, since the media is sensitive to heat, it will gradually lose legibility over long periods of time, especially if exposed to environments with relatively high temperatures or in direct sunlight.

Product Information QR Code

The QR code includes human-readable text URL - for example, zebra.com/zq220plus-info - which links the user to printer information and videos on topics such as buying supplies, features overview, loading media, printing a configuration report, cleaning instructions, and accessory information.

Figure 1 QR Code



1	QR Code

Near Field Communication (NFC)

The printer supports a passive NFC tag which complies with the Android Standard Tag format. The NFC tag is programmed from the factory and supports Bluetooth pairing to enable a tablet, smartphone, or mobile computer to automatically pair with the printer via a Bluetooth connection (within the bounds of the security profile being used).

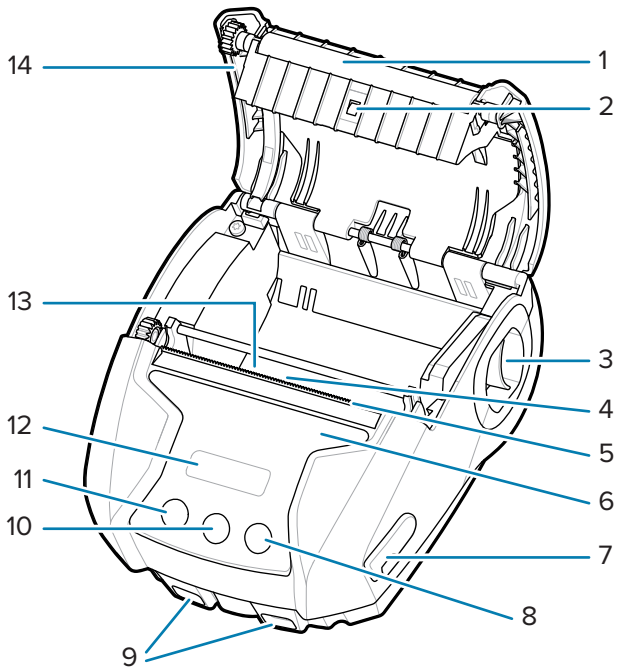
The NFC tag also supports app launching whereby an app developed either by Zebra or a third party launches on an NFC-enabled smartphone, tablet, or mobile computer. Similarly, the NFC tag enables launching to a web support page via a tablet, smartphone, or mobile computer. See Using Near Field Communication (NFC) on page 54.

NOTE: Tapping the Zebra Print Touch icon with an NFC-enabled mobile device provides instant access to printer-specific information. For more information about NFC and Zebra products, go to zebra.com/nfc. Bluetooth pairing applications via NFC is also possible. See Link-OS Multiplatform SDK for more information.

Printer Features

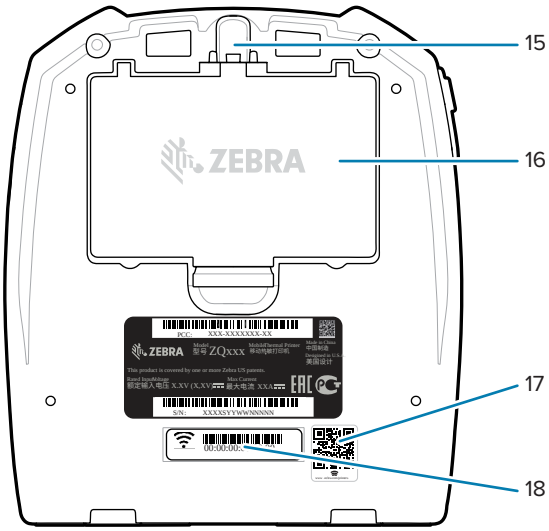
This section lists the features of the printer.

Figure 2 Printer Features - Top



1	Platen Roller
2	Back Side Sensor
3	Latch Release Lever
4	Front Side Sensor
5	Tear Bar
6	Print Touch Icon (NFC)
7	USB Port
8	Media Feed Button
9	Strap Posts
10	Configure Button
11	Power Button
12	LCD Display
13	Printhead
14	Media Cover

Figure 3 Printer Features - Bottom



15	Belt Clip Mounting Hole
16	Battery
17	QR Code
18	MAC Address Label

Printer Setup and Operation

This section assists the user with initial printer setup and operation.

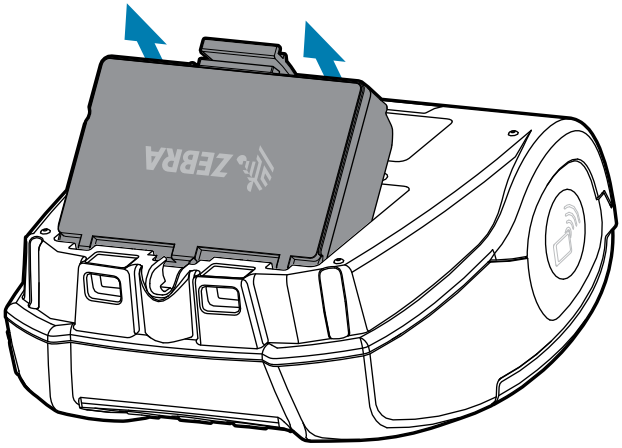
Preparing the Battery for Use

This section describes methods for preparing the battery prior to use.

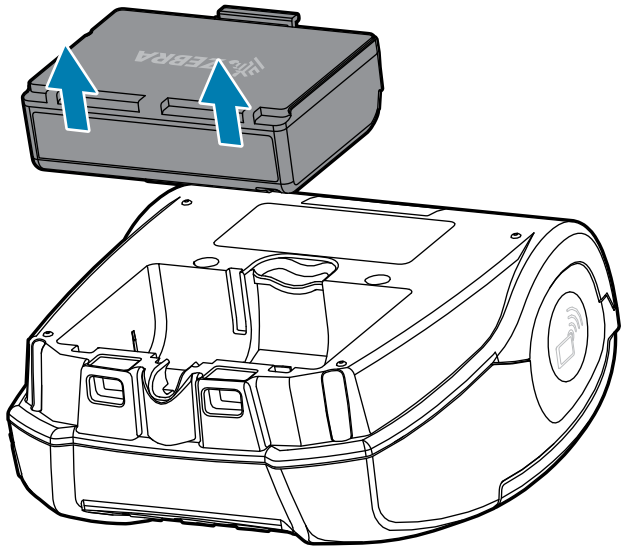
Installing/Removing the Battery and Battery Tape Insulator

Batteries are shipped in sleep mode to preserve their maximum capacity while in storage prior to initial use. The battery needs initial charging to wake it up before using for the first time. See AC-to-USB Charger on page 18.

1. Depress the release tab on the battery pack and begin to rotate the battery out of the battery compartment.



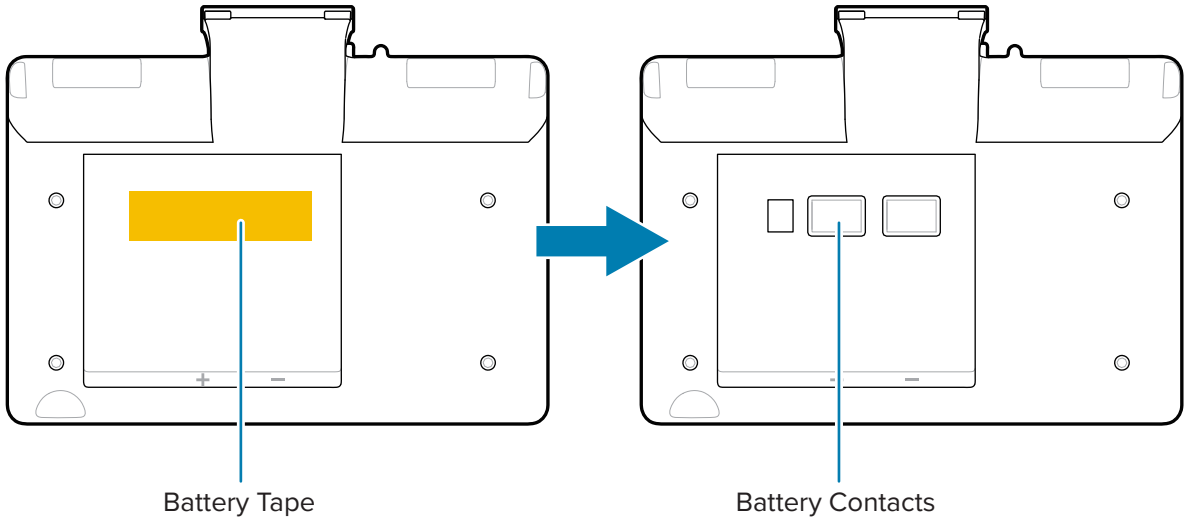
2. Lift the battery pack up and out of the battery well.



Removing the Battery Tape Insulator

CAUTION: The battery can explode, leak, or catch fire if improperly charged or exposed to high temperatures. Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water. Charge the battery on a Zebra-approved Lithium-Ion charger only.

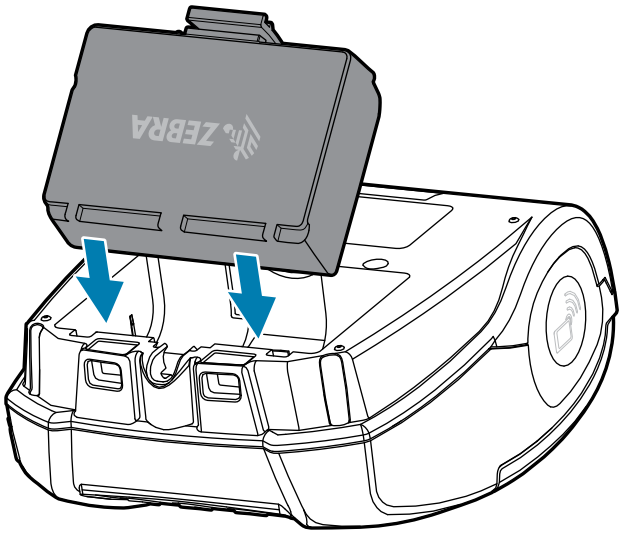
1. Turn the battery pack over and locate the battery tape over the contacts.
2. Peel off the battery tape to expose the contacts and discard.



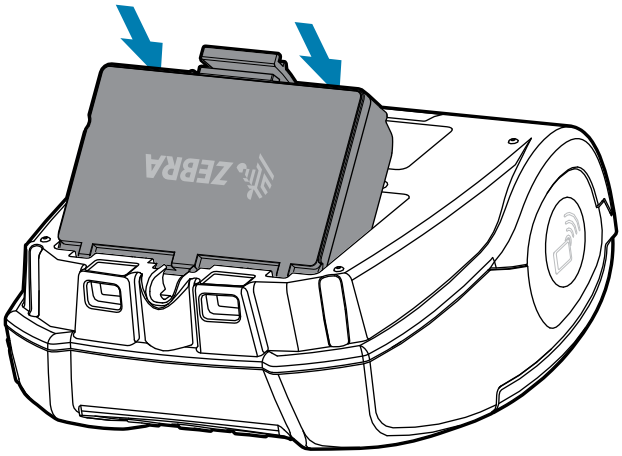
Installing the Battery

1. Locate the battery compartment on the bottom of the printer.

2. Angle the battery pack and insert it into the battery compartment.



3. Rotate the battery into the compartment until it locks in place and is sitting flush in the printer.



Printer Cautions

This section provides important printer cautionary information.

CAUTION—ESD: The discharge of electrostatic energy can damage or destroy the printhead or electronic components used in this device. DO NOT TOUCH the printhead or any exposed electronic components.

CAUTION—HOT SURFACE: The printhead can become hot after prolonged printing.

CAUTION: When printing, there must be a wait time of one second between labels to remain within the printer's optimal performance specifications.

Battery Safety

This section provides important battery safety information.

CAUTION: Avoid accidental short-circuiting of any battery. Allowing battery terminals to contact conductive material creates a short circuit which could cause burns and other injuries or could start a fire.

IMPORTANT: Always dispose of used batteries properly. Refer to Battery and Product Disposal on page 73 for more battery recycling information.

CAUTION: Use of any charger not approved specifically by Zebra for use with its batteries could cause damage to the battery pack or the printer and will void the warranty.

CAUTION: Do not incinerate, disassemble, short circuit, or expose to temperatures higher than 65°C (149°F).

Charger Safety

This section provides important charger safety information.

NOTE: Do not place any charger in locations where liquids or metallic objects may be dropped into the charging bays.

CAUTION: Use care in locating Battery Chargers. Do not block the ventilating slots on the top and bottom covers. Ensure that the Charger is plugged into a power source that will not accidentally be turned off if you will be charging batteries overnight.

CAUTION: Ensure that the Battery Charger is configured for the A.C. voltage used in your area and that you are using the correct A.C. power cord for the intended country of use.

NOTE: Refer to related vehicle cradle user manuals for applicable safety information.

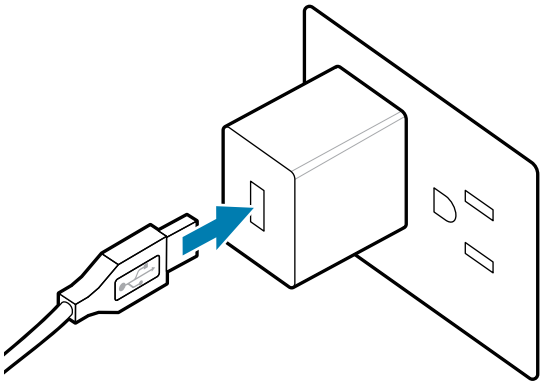
Charging the Battery

This section describes how to charge the battery safely.

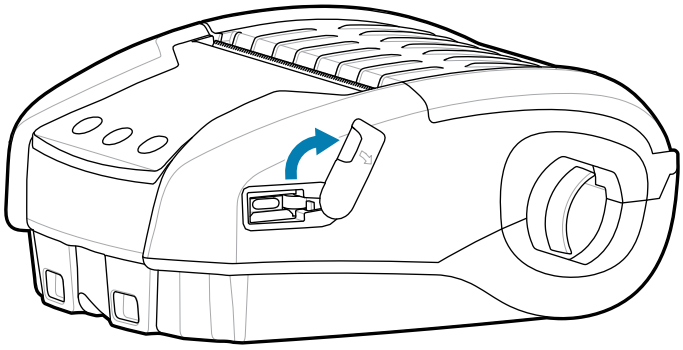
CAUTION: Do not place any charger in locations where liquids or metallic objects may be dropped into the charging bays.

AC-to-USB Charger

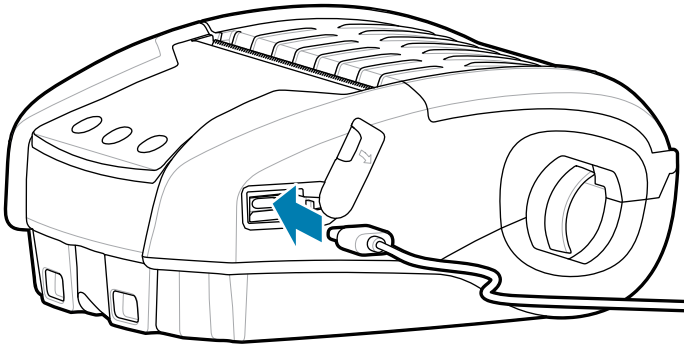
1. Plug the AC-to-USB adapter into the wall outlet and then plug the USB cable into the adapter.



2. Rotate the rubber door on the side of the printer to access the USB port.



3. Connect the USB cable to the printer.

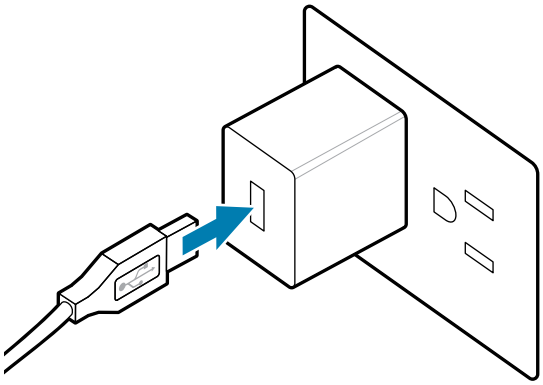


IMPORTANT: Batteries that have reached partial charge capacity may be used. However, it is recommended that you allow the batteries to reach a full charge to maintain maximum battery life.

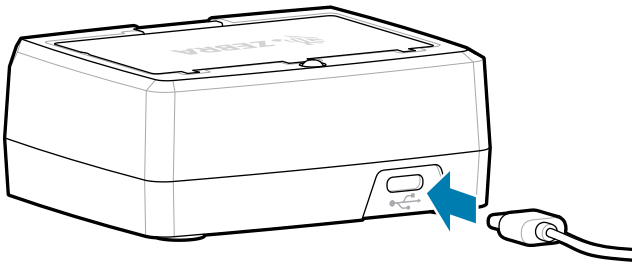
1-Slot Battery Charger

The 1-Slot Battery Charger charges one battery at a time and features an LED that displays solid red when charging and solid green when the battery is fully charged.

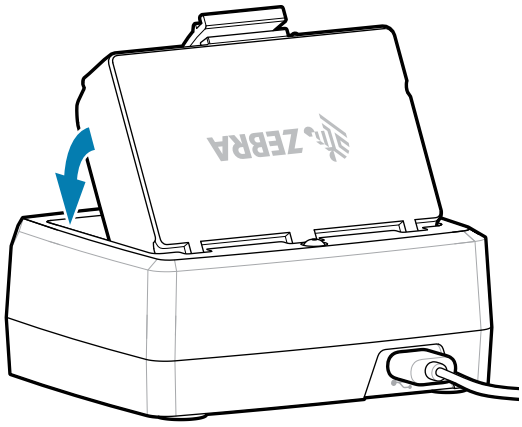
1. Plug the AC-to-USB adapter into the wall outlet and then plug the USB cable into the adapter.



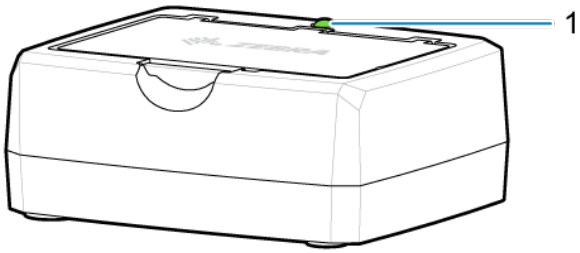
2. Plug the USB cable into the port on the back of the charger.



3. Angle the battery pack and insert it into the battery compartment. Rotate the battery into the compartment until it locks in place and sits flush in the charger.



The LED on the charger will display solid red when charging and solid green to indicate the battery is fully charged.

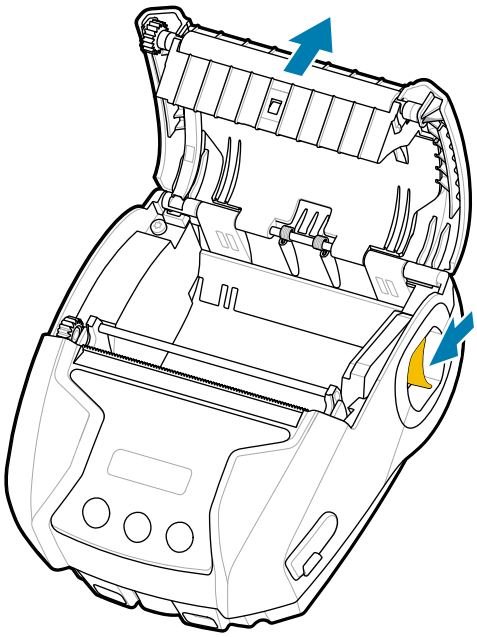


1	LED

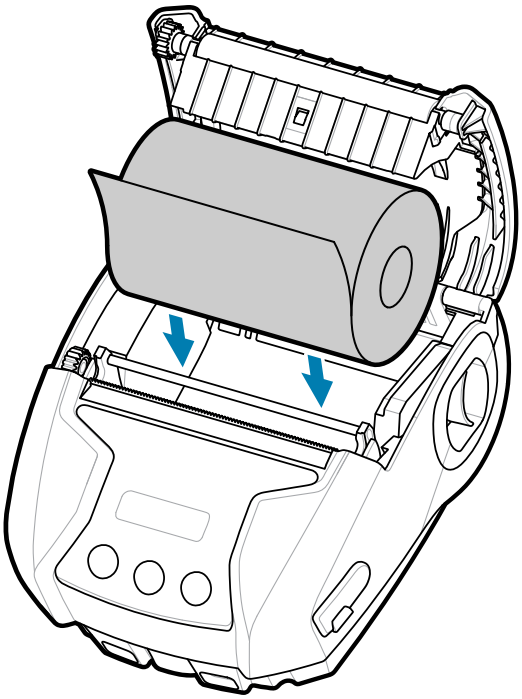
Loading the Media

The printer is designed to print either continuous (receipt) media or label stock.

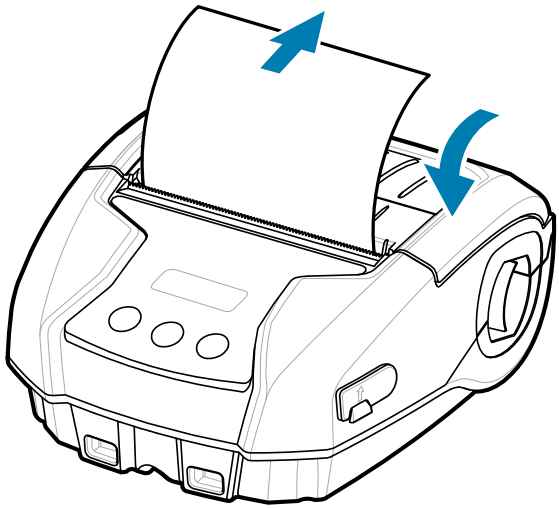
1. Slide the latch release forward to unlock the media cover. Lift and rotate the media cover.



2. Insert the roll of media (in the orientation shown) in the media compartment. The media roll should be able to spin freely inside the media compartment.



3. Close the media cover until it clicks into place and the media will advance as shown.

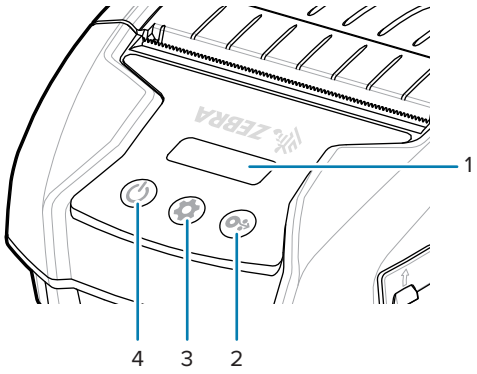


NOTE: Refer to the Programming Guide for information on changing the setting to adjust the media feed length via a Set Get Do (SGD) command.

Operator Controls

The printer features a three-button user interface for menu navigation and an OLED display that remains lit while the printer is powered on.

Figure 4 Operator Controls



1	OLED Display - Indicates the status of several printer functions.
2	Paper Feed Button - Press to advance the media one blank label or a software-determined length of journal media.
3	Configure Button - Press to select a menu choice on the LCD.
4	Power Button - Press to turn unit on. Press again to turn unit off.

Printer Status Icons

The LCD control panel allows the user to view content in one of four modes:

- Operation Screen Mode
- Information Screen Mode
- Configuration Screen Mode
- Sleep Screen Mode

The default mode, which the user sees upon powering up the printer, is Operation Screen mode. This mode is the display shown when the printer is idle, printing and/or receiving data and has no need to convey information beyond icons shown on the display. The LCD can display up to five status icons, including Status, Media, Data, Bluetooth, and Battery.

Table 1 Icon Descriptions

Icon	Description
	Indicates printer is fully operational.
	Indicates there is a condition the user should be aware of but the printer is still functional.
	Indicates there is something wrong with the printer that prevents some basic functionality from being used.
	Indicates media is loaded and ready to print.
	Indicates no media is loaded in the printer.
	Indicates media cover is unlatched.
	Indicates printer is not receiving data.

Table 1 Icon Descriptions (Continued)

Icon	Description
	Indicates printer is receiving data.
	Indicates connected to Bluetooth. (No icon means Bluetooth is disconnected.)
	Indicates battery charge status.
	Indicates battery level while charging.
	Indicates printer is getting power from USB.
	Indicates battery charge error.

Information Screen

The Information Screen displays when text is used to convey information to the user. The display is split into two viewing areas: The top portion displays the same icons previously described on the Operation Screen; the bottom portion will display text messages. There are two types of messages that are displayed on the Information Screen: Timed Messages and User Activity Messages.

Timed Messages

These messages appear for a specific period of time and are then removed. For example, after powering up the printer and the printer is ready to print, the message PRINTER READY appears for 30 seconds.

Figure 5 Printer Ready Message

User Activity Messages

These messages require the user perform a required action. For example, when the printer is out of media, a MEDIA OUT message displays until new media is loaded in the printer.

Figure 6 Media Out Message

1	Media Out

The printer supports the following User Activity messages:

Message	Type	English Phrase
Download Firmware	User Activity	Download FW

Message	Type	English Phrase
Download Failed	User Activity	Download Failed
Head Over Temp	User Activity	Head Overtemp
Head Under Temp	User Activity	Head Undertemp
Battery Too Low	User Activity	Battery Too Low
Media Out	User Activity	Media Out
Head Open	User Activity	Head Open
Charge Error	User Activity	Charge Error
Battery Missing	User Activity	No Printing
Battery Low	User Activity	Battery Low
Printer Ready	Time - 30 seconds	Printer Ready

When the Information Screen is used to display text messages, it replaces the Operation Screen. When the text message has been acknowledged, the printer will return to the Operation Screen.

Configuration Screen

The Configuration Screen is used to change printer parameters or initiate printing a configuration label. Specifically, the user may change the following parameters:

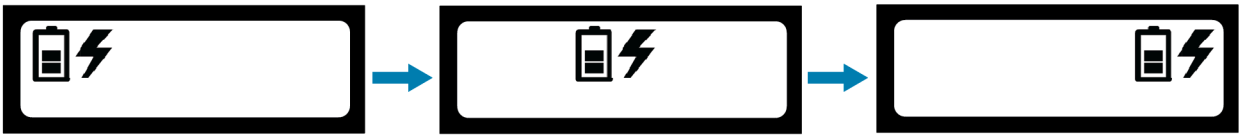
- Darkness: Increase or decrease the darkness by pressing Media Feed.
- Power Up: Select either Feed On or Feed Off by pressing Media Feed.
- Head Close: Select either Head Open or Head Close by pressing Media Feed.
- Power Sleep Mode: Select either Enable or Disable by pressing Media Feed.
- Print: Print a configuration report by pressing Media Feed.
- MAC Address: Select either Display On or Display Off by pressing Media Feed.
- Media Type: Select either Journal, Front Black Mark, Back Black Mark, or Label by pressing Media Feed.
- Exit Configuration: Exit the Configuration Screen and return to the Operation Screen by pressing Media Feed.

Sleep Screen

The Sleep Screen is displayed within 10 seconds when there is no activity. In this state, the screen displays either the Zebra logo moving across the screen from left to right or the battery charge icon if the printer is charging.

Figure 7 Sleep Screen

Sleep Mode While Charging



Buttons

Use the printer's multi-button interface to run the following power-up and runtime sequences.

Table 2 Power-Up Sequences

Sequence #	Function	Keys
1	Configuration Report	Hold down Media Feed while pressing and releasing Power.
2	Forced Download	Hold down Configuration and Media Feed while pressing Power.
3	Turn Printer On or Off	Press Power.

Verify Printer is Working

Before connecting the printer to the tablet, smartphone, or mobile computer, make sure the printer is in proper working order. You can do this by printing a configuration label using the two-key method. If you cannot get the label to print, refer to Maintenance and Troubleshooting on page 60.

Printing a Configuration Report

To print a configuration report, follow these steps:

1. Turn the printer off.
2. Load the media compartment with journal media (media with no black bars or gaps on the back).
3. Press and hold Media Feed.

4. Press and release Power and keep Media Feed pressed. When printing starts, release Media Feed. The printer prints a line of interlocking "x" characters to ensure all elements of the printhead are working, prints out the version of software loaded in the printer, and then prints the report.

   The report indicates the model, serial number, baud rate, and more detailed information on the printer's configuration and parameter settings. See Maintenance and Troubleshooting on page 60 for sample printouts and a further discussion on how to use the configuration label as a diagnostic tool.

   You can also print a configuration report by turning the printer on, pressing Configure multiple times until you get to the SETTINGS-PRINT screen, and then pressing Media Feed.

Connecting the Printer

The printer must establish communications with a host device, which sends the data that is printed. Communications occur in two basic ways:

- Via a cable using USB 2.0 protocols. Windows drivers that support printing via USB are included in the Zebra Designer Driver which can be downloaded from zebra.com/drivers.
- By means of a Bluetooth short range radio frequency link.

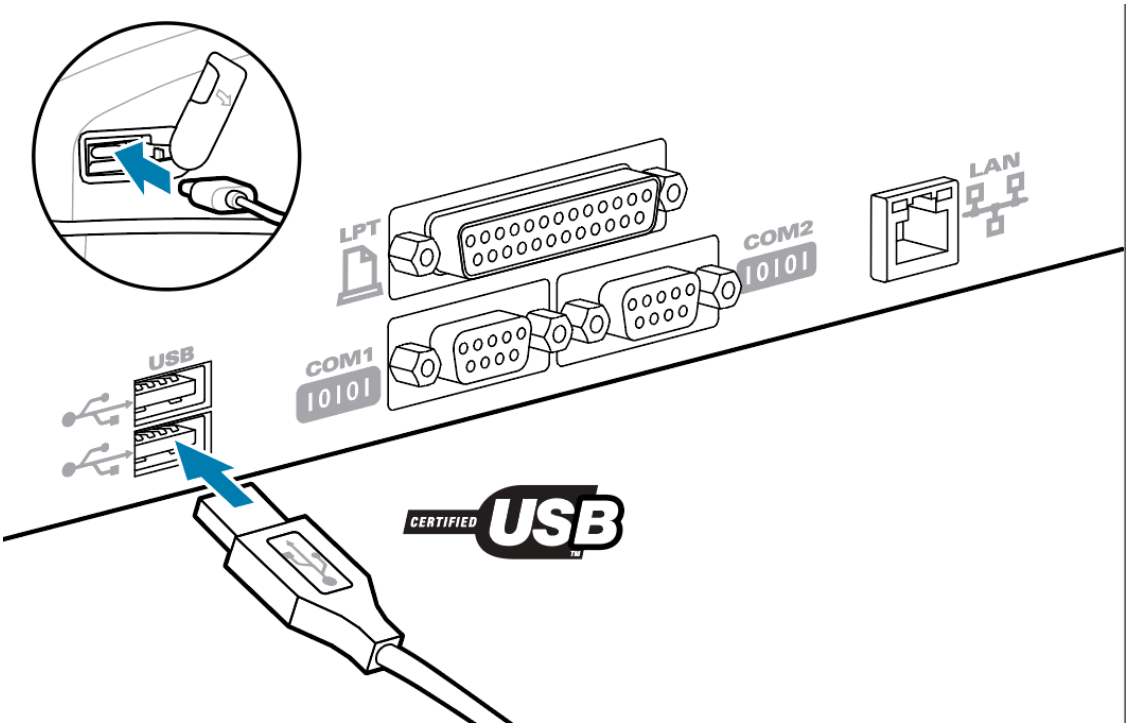
USB Communications

CAUTION: The printer must be turned off before connecting or disconnecting a communication cable.

The standard cable connection for the printers is a USB 2.0 communication and charging cable. One end of the cable has a USB Type-A connector while the other end is USB Type-C.

The small Type-C connector on the USB cable plugs into the printer. The connector is not keyed and therefore can be plugged in in either direction. However, do not try to force the connector if it does not plug in. The Type-A end of the cable must be plugged into any USB 2.0 host port. The printers utilize the USB cable to charge the printer (refer to AC-to-USB Charger on page 18) and for communications between the printer and computer.

Figure 8 USB Communications



USB drivers are included in the Zebra Designer Driver which can be downloaded from the Zebra website.

Wireless Communications with Bluetooth

Bluetooth is a worldwide standard for the exchange of data between two devices via radio frequencies. This form of point-to-point communication does not require access points or other infrastructure. 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). The default for the printers is Class 2. Both the printer and the device it communicates with must follow the Bluetooth standard.

Bluetooth Networking Overview

Each Bluetooth enabled printer is identified by a unique Bluetooth Device Address (BDADDR). This address resembles a MAC address whereby the first three bytes are vendor, and the last three bytes are device (for example, 00:22:58:3C:B8:CB). This address is labeled on the back of the printer via a barcode for ease of pairing. 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 client) must request/initiate a connection with another. The second device (the server) then accepts or rejects the connection. A Bluetooth enabled printer will normally act as a peripheral creating a miniature network with the host device sometimes referred to as a piconet. Discovery identifies Bluetooth devices that are available for pairing whereby the central device broadcasts a discovery request and devices respond. If a device is not discoverable, the central cannot pair unless in knows the BDADDR or has previously paired with the device.

Bluetooth Security Modes

This section describes Bluetooth security modes, functions, and communication.

Security Mode 4: Simple Secure Pairing

Simple Secure Pairing: a security architecture introduced supported in Bluetooth >= 2.1. Service-level enforced, similar to other modes. Mandatory when both devices are Bluetooth >= 2.1. There are four association models currently supported by mode 4. Security requirements for services must be classified as one of the following: authenticated link key required, unauthenticated link key required, or no security required. SSP improves security through the addition of ECDH public key cryptography for protection against passive eavesdropping.

Security Mode 2: Passkey Entry

Input the PIN code when connecting to the printer (default PIN is 0000). The PIN can be updated via bluetooth.bluetooth_pin SGD.

Bluetooth Mode Functions and Communication

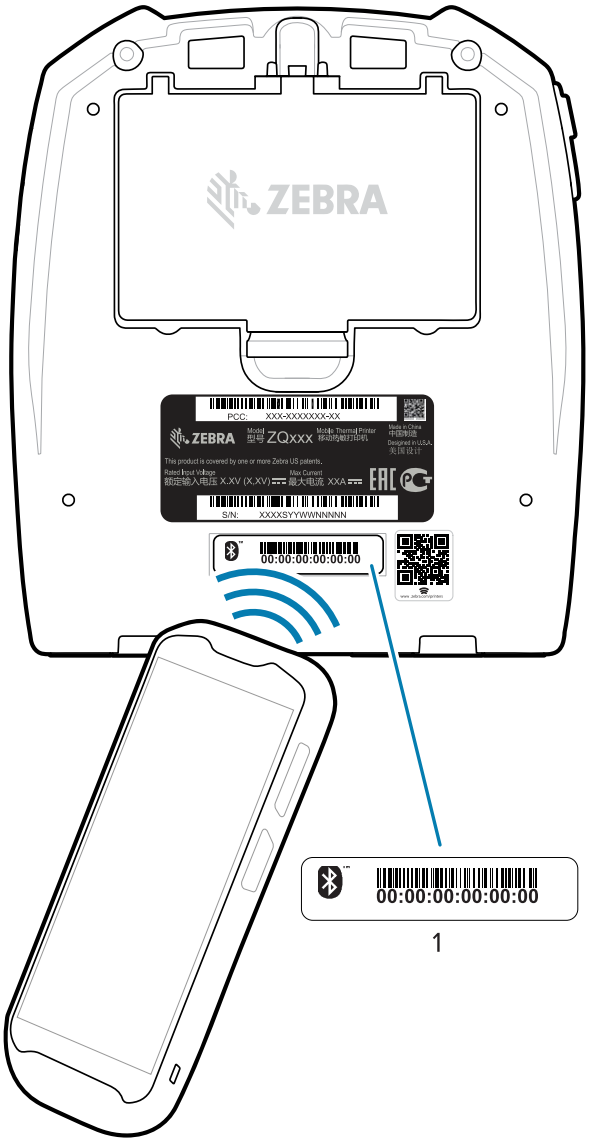
The bluetooth.minimum_security_mode SGD sets the security level at which the printer will establish a Bluetooth connection. To change the security mode and security settings in the printers, use Zebra Setup Utilities.

The ZQ220 Plus printer also features bonding for Bluetooth. The printer caches pairing information so devices stay paired through power cycles and disconnects. This eliminates the need to re-pair on every connection establishment.

The bluetooth.bonding SGD is on by default.

In addition, the printers support a Scan and Pair function via a handheld device and the MAC Address label on the bottom of the printer.

Figure 9 Bluetooth Communications



1	MAC Address Label

The ZQ220 Plus printer also features passive Near Field Communication (NFC) technology. Using the Print Touch feature located on the top of the printer, users can automatically pair with a handheld device that supports NFC technology. The NFC tag has the printer's BDADDR encoded in a URL on the tag. Simply touching the NFC handheld device to the Print Touch icon on the printer will connect and pair the handheld device to the printer (see Using Near Field Communication (NFC) on page 54.

Connecting the Printer to a Device

After you have set up the printer, you are ready to connect the printer to your device (such as a computer, phone, or tablet).

Connect to a Phone or Tablet

Download the free Zebra Printer Setup Utility app for your device.

- Android devices
- Apple devices

The applications support the following types of connectivity:

- Bluetooth Classic
- Bluetooth Low Energy (Bluetooth LE)
- Wired/Ethernet
- Wireless
- USB On-The-Go

For the User Guides for these printer setup utilities, go to zebra.com/setup.

Installing Drivers and Connecting to a Windows-Based Computer

To use your printer with a Microsoft Windows-based computer, you must first install the correct drivers.

IMPORTANT: You may connect your printer to your computer using any available connections. However, do not connect any cables from your computer to the printer until you are instructed to do so. If you connect them at the wrong time, your printer will not install the correct printer drivers. To recover from incorrect driver installation, see What to Do If You Forget to Install Printer Drivers First on page 39.

Installing the Drivers

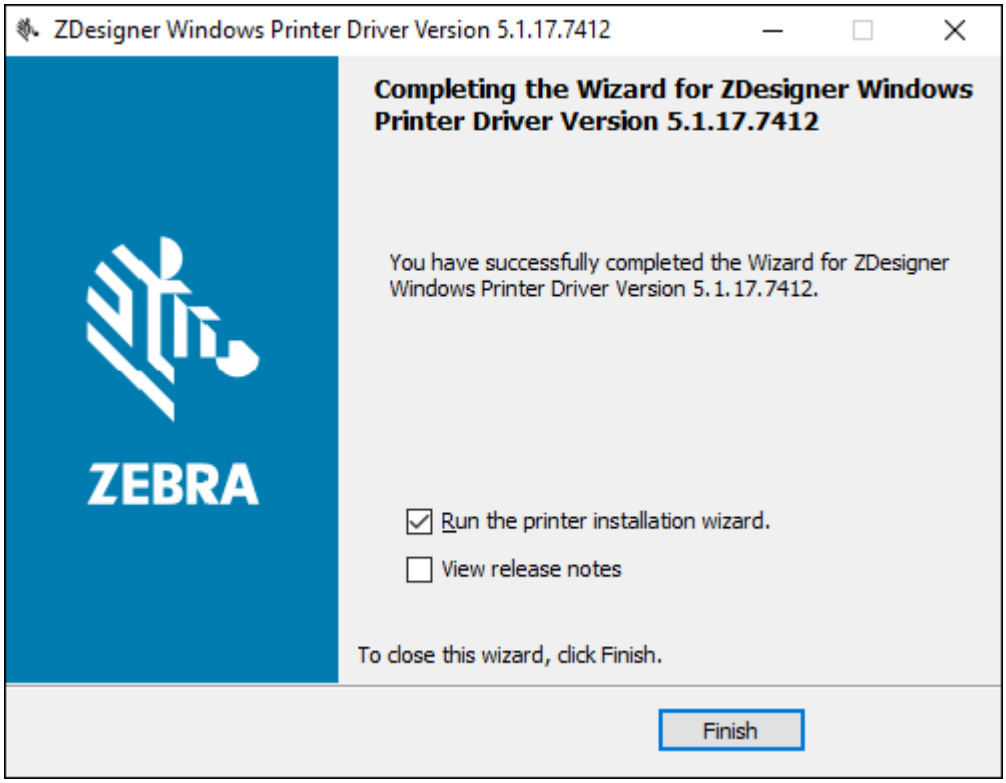
Follow these steps to install the correct drivers.

1. Navigate to zebra.com/drivers.
2. Click **Printers**.
3. Select your printer model.
4. On the printer product page, click **Drivers**.
5. Download the appropriate driver for Windows.

   The driver executable file (such as `zd86423827-certified.exe`) is added to your Download folder.

6. Run the executable file and follow the prompts.

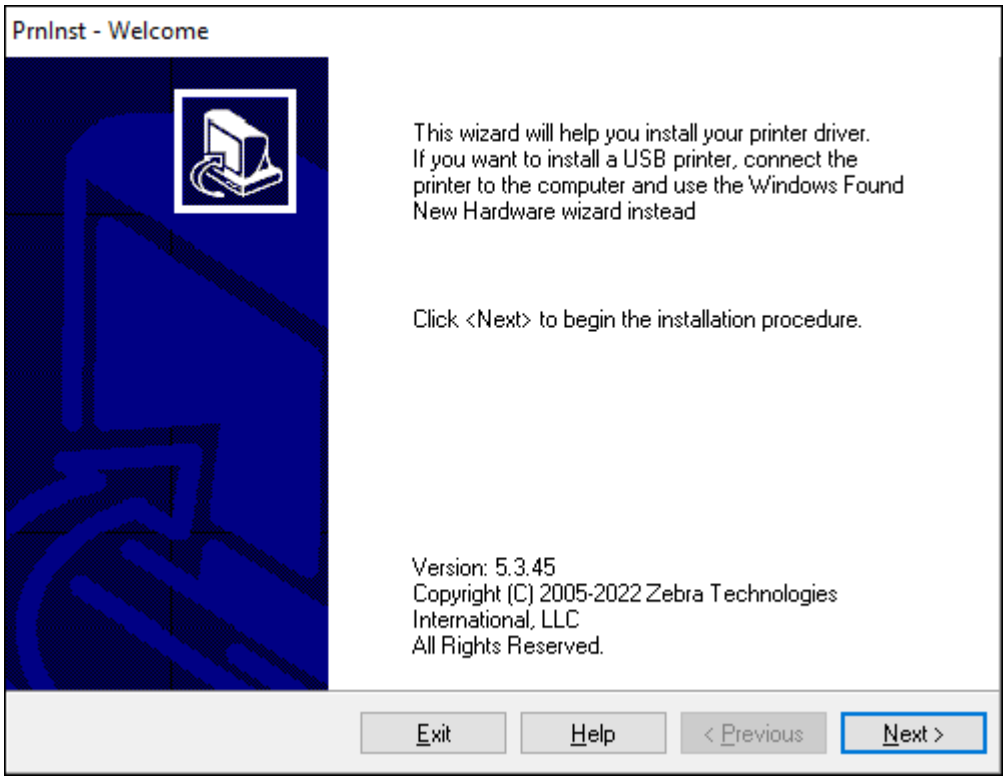
   When the setup is complete, you may add specific printers (see Running the Printer Installation Wizard on page 34).



Running the Printer Installation Wizard

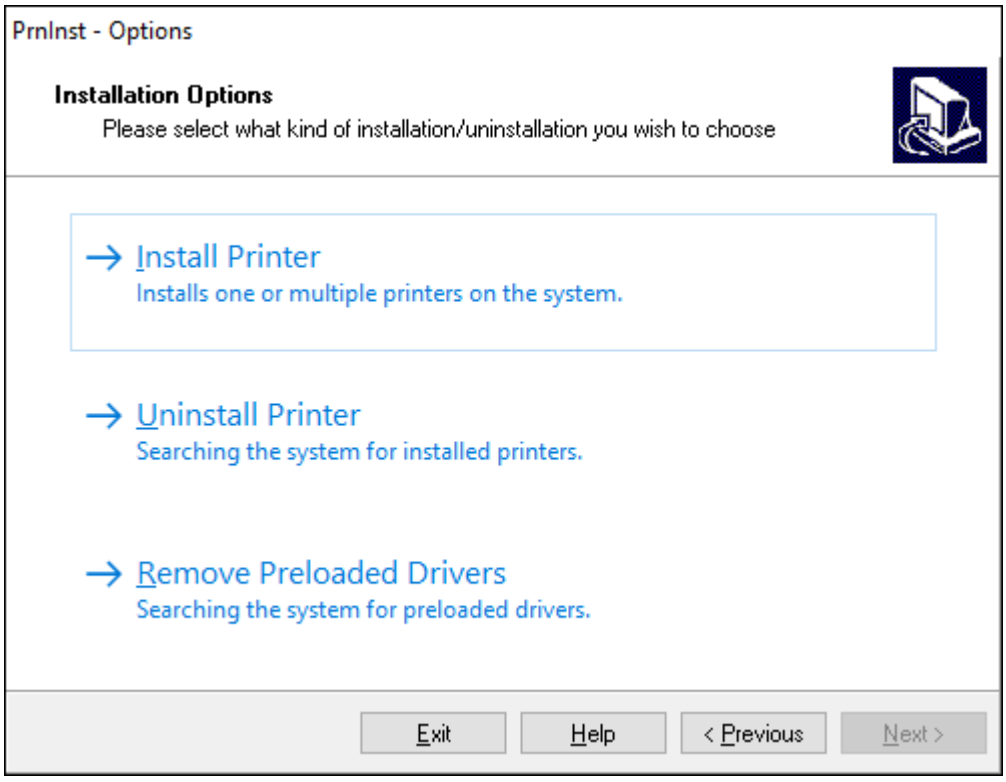
1. On the last screen of the driver installer, leave **Run the Printer Installation Wizard** checked, and then click **Finish**.

   The printer driver wizard displays.



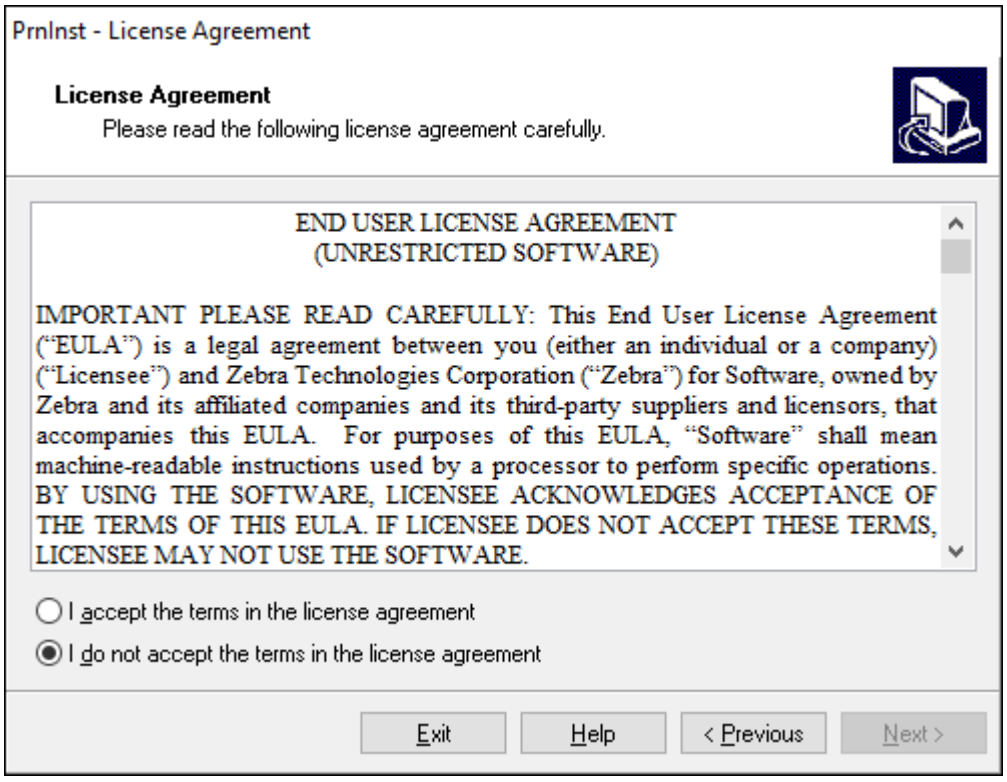
2. Click **Next**.

   You are prompted to select an installation option.



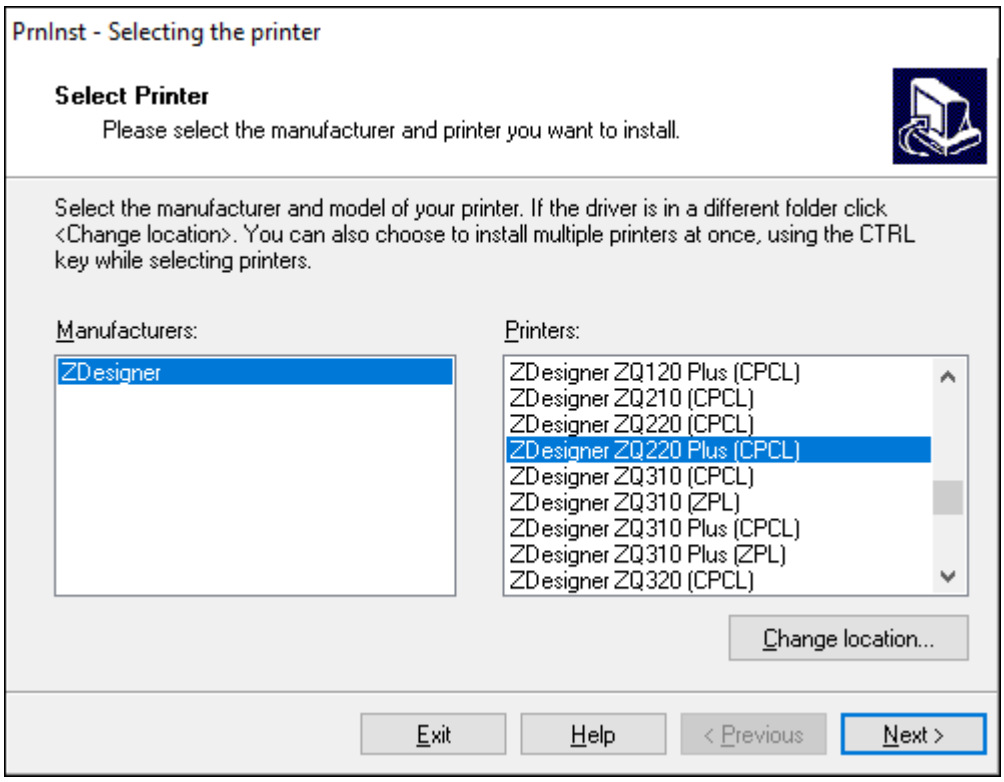
3. Click **Install Printer**.

   The license agreement displays.



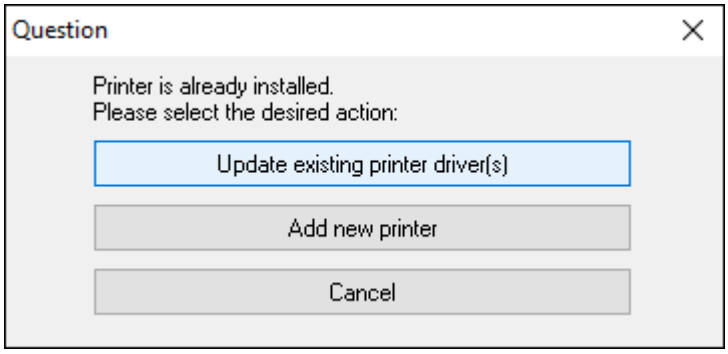
4. Read the important information and agree to the terms by selecting the **I Accept the Terms in the License Agreement** button. Click **Next**.

   You are prompted to select a printer type. The model of the printer is located on the top next to the tear bar, or on the part sticker located underneath the printer.



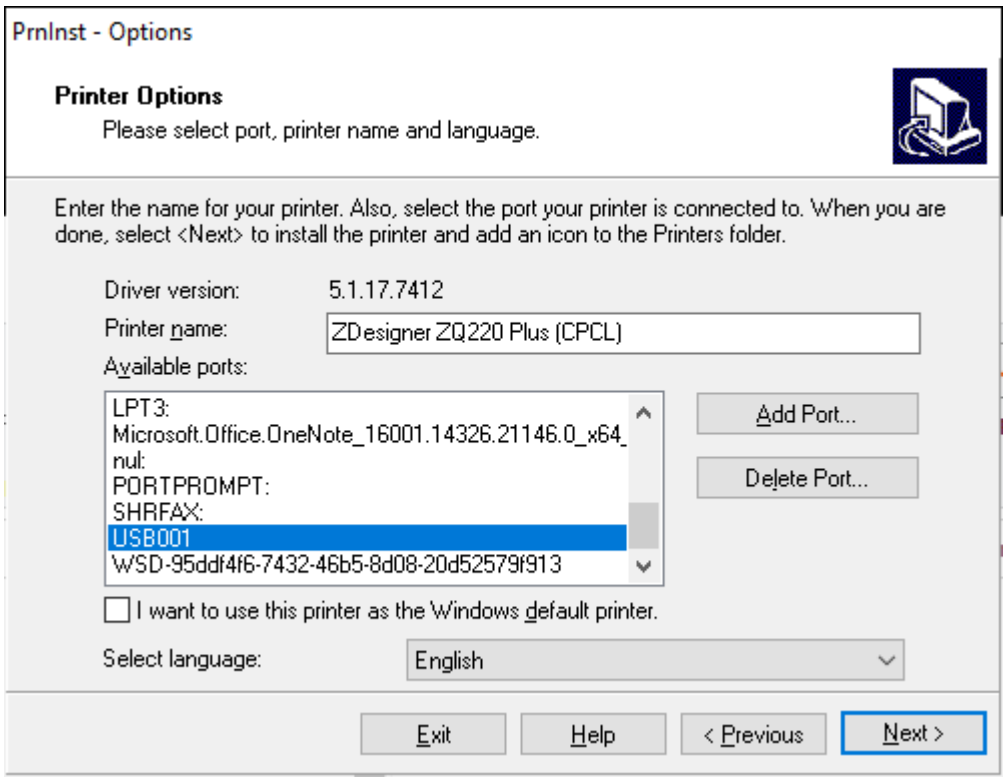
5. Click **Next**.

   You are notified that the printer is already installed.



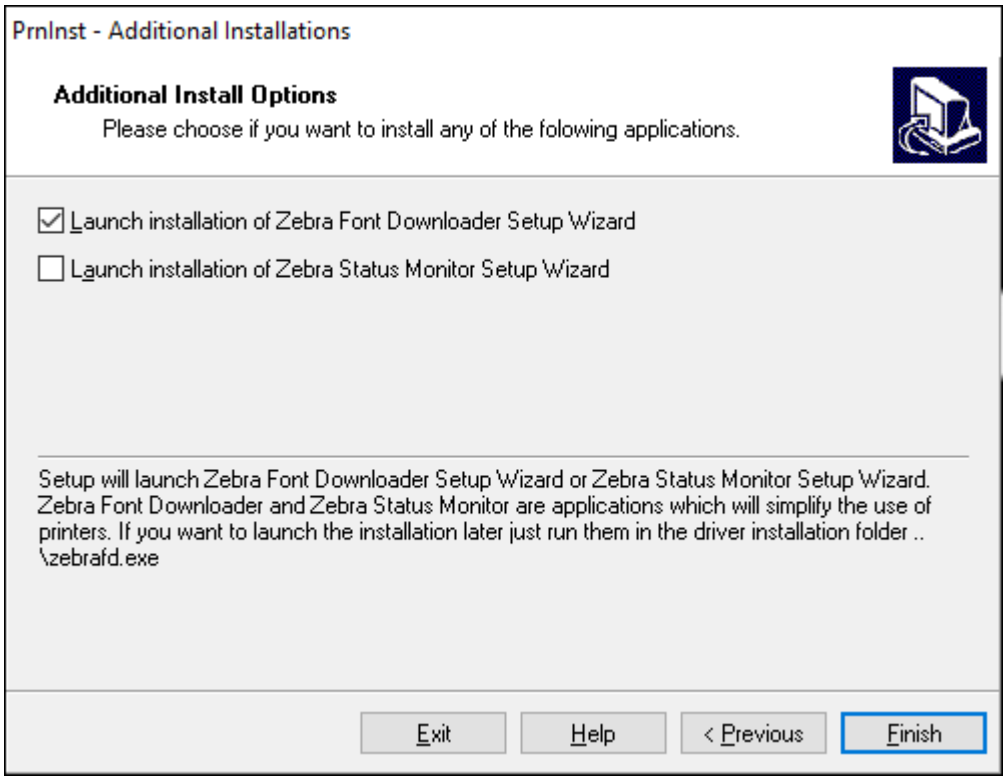
6. Click **Add new printer**.

   You are prompted for a printer name, the port to which the printer will be connected, and the language for the printer display. Select **USB001**.



7. Click **Next**.

   You are prompted to launch other setup wizards.



8. Click **Finish**.

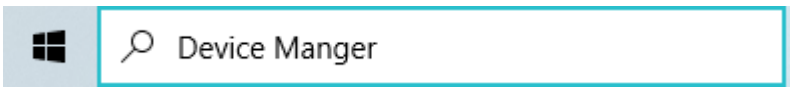
   After you install the drivers, connect the USB cord to the USB port on your printer (refer to USB Communications on page 28).

   As the printer boots up, your computer completes the driver installation and recognizes your printer. If you did not install the drivers first, see What to Do If You Forget to Install Printer Drivers First on page 39.

What to Do If You Forget to Install Printer Drivers First

If you plug in your Zebra printer before installing the drivers, the printer displays as an Unspecified device.

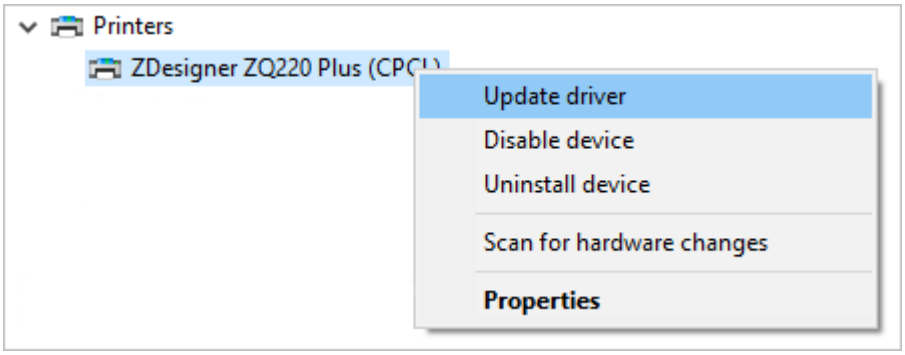
1. Follow the instructions in Installing Drivers and Connecting to a Windows-Based Computer on page 32 to download and install the drivers.
2. Right-click on the Windows menu and select Device Manager.
   - Alternatively, enter Device Manager in the Windows search bar located in the Taskbar.



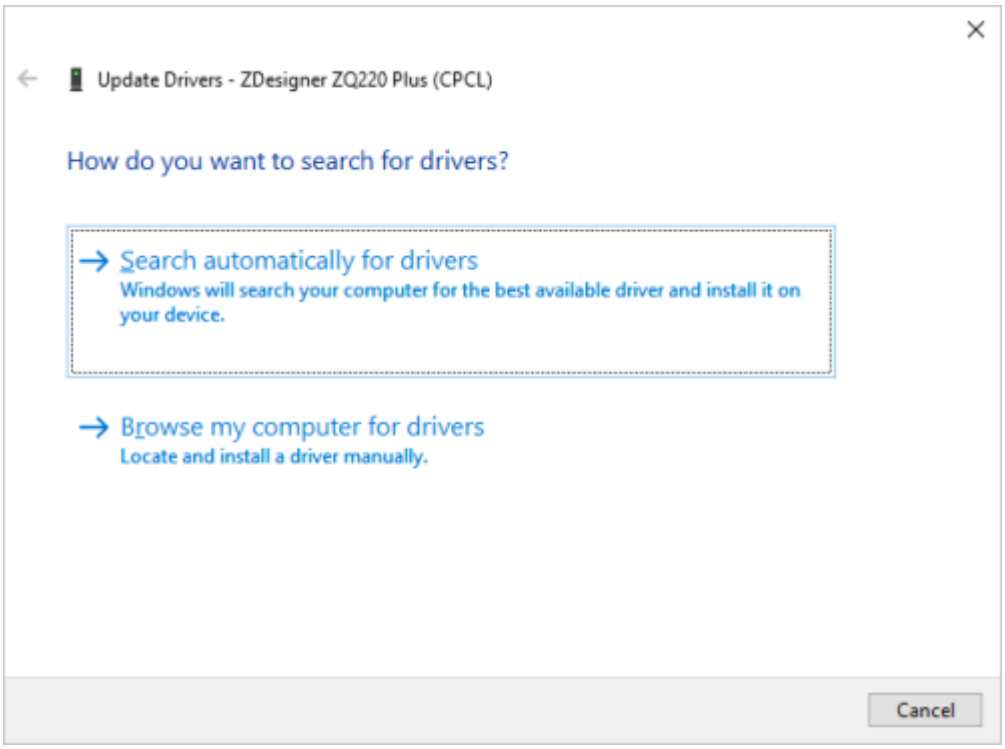
3. Click **Devices and Printers**.

   In this example, ZQ220 Plus is an incorrectly installed Zebra printer.
4. Find **Printers** from the list and select the arrow to expand the list.

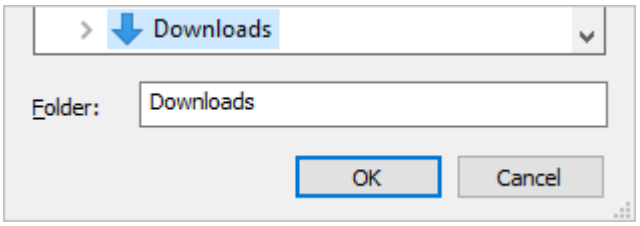
5. Right-click on ZDesigner ZQ220 Plus (CPCL) to open the menu.



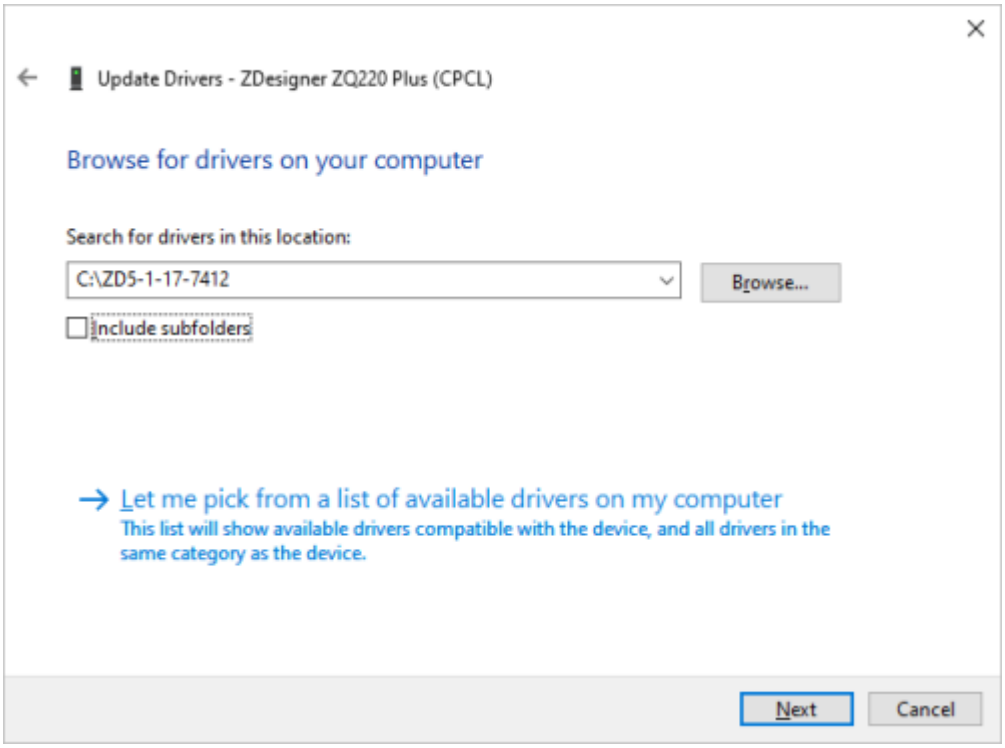
6. Click **Update Driver**.



7. Click **Browse my computer for driver software**.
8. Click **Browse...** and navigate to the Downloads folder.



9. Click **OK** to select the folder.



10. Click **Next**.

The device is updated with the correct drivers.

Zebra Printer Setup Utilities

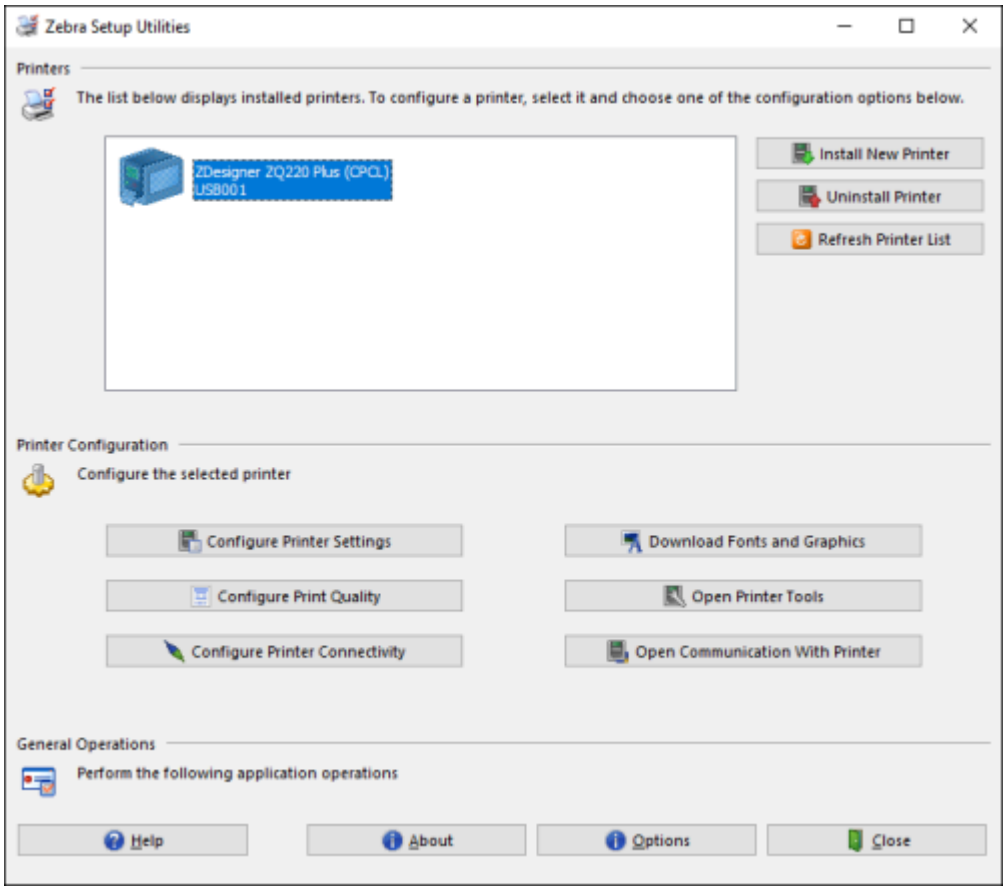
Before you configure your printer for use, you need some basic information that will enable you to establish the network configuration for your printer. The Zebra Printer Setup Utilities tool provides a quick and easy way to configure your printer for a variety of purposes, including setting it up to use the international Bluetooth communications standard.

Once Zebra Setup Utilities is downloaded to your computer, attach the USB cable to the printer and computer as shown in USB Communications on page 28. Go to zebra.com/us/en/support-downloads.html to download the tool.

Adding a Printer through Zebra Setup Utilities

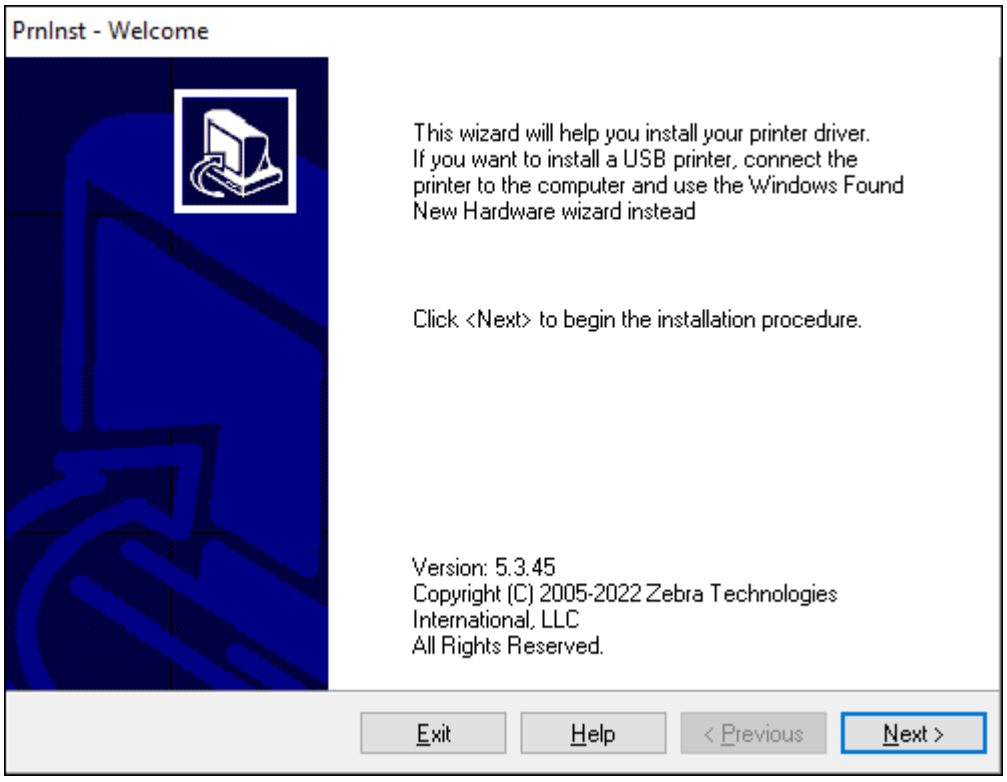
If desired, use Zebra Setup Utilities to add printers to Windows using this procedure, after installing the drivers.

1. If necessary, install the Zebra Setup Utilities program.
   a) Go to zebra.com/setup and download Zebra Setup Utilities for Windows.
   b) Run the `zsu-xxxxxxx.exe` file that you downloaded.
   c) Follow the prompts in the InstallAware Wizard.
   d) In the final screen of the wizard, click the checkbox next to **Run Zebra Setup Utilities now**, and then click **Finish**.
   e) Follow the prompts in the System Prepare Wizard.
2. If necessary, open the **Zebra Setup Utilities** program.



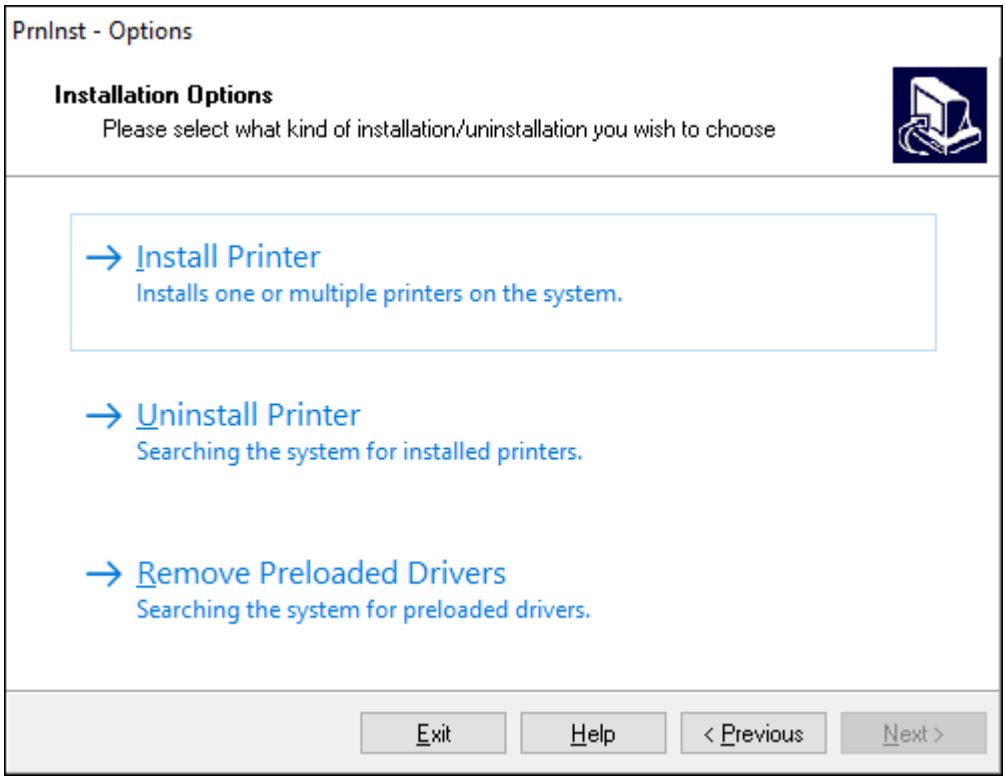
3. Click **Install New Printer**.

   The printer driver wizard displays.



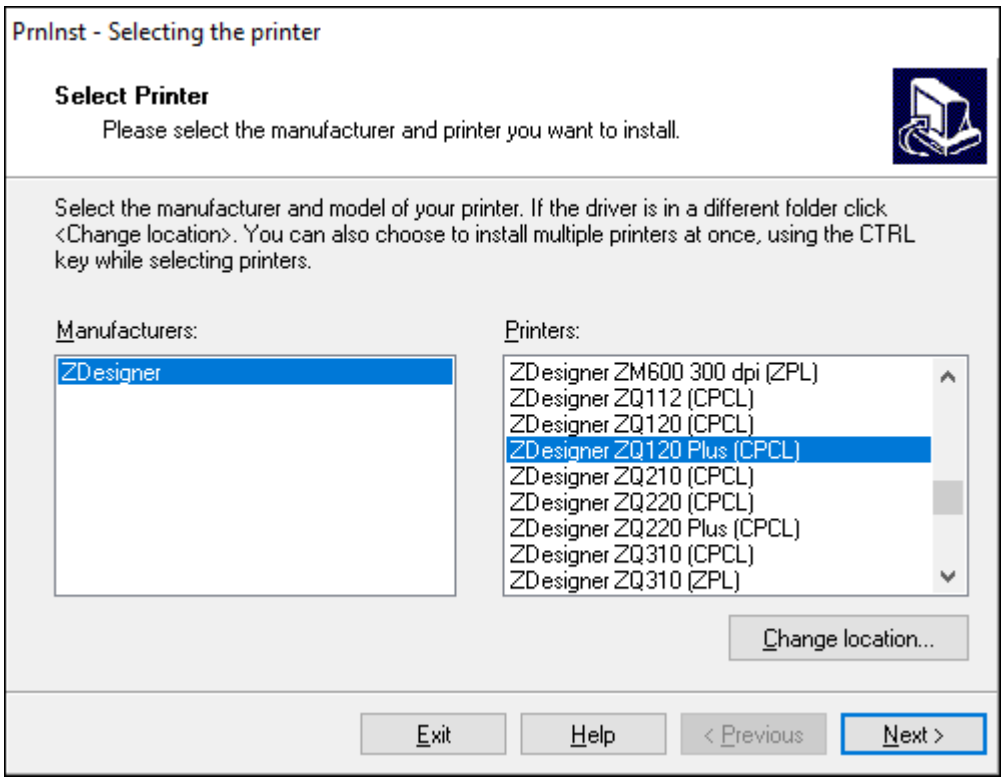
4. Click **Next**.

   You are prompted to select an installation option.



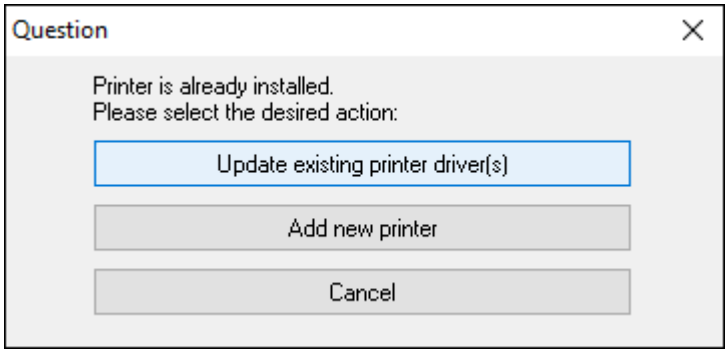
5. Click **Install Printer**.

   You are prompted to select a printer type. The model type is located on top of the printer next to the tear bar, or on the part sticker located underneath the printer.



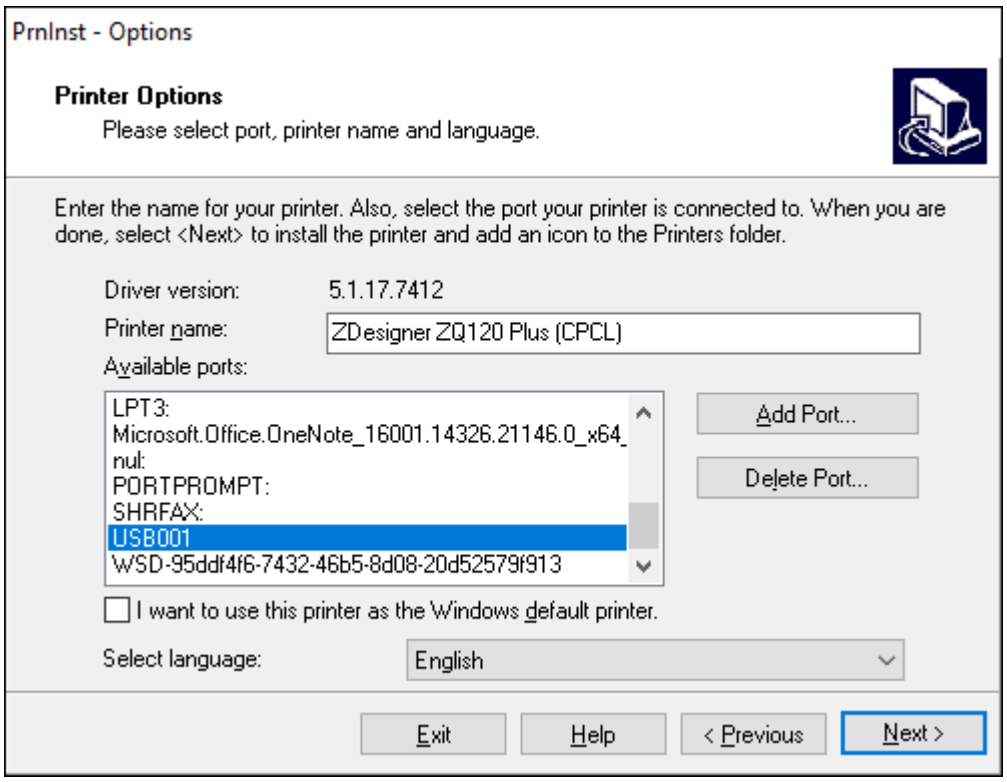
6. Click **Next**.

   You are notified that the printer is already installed.



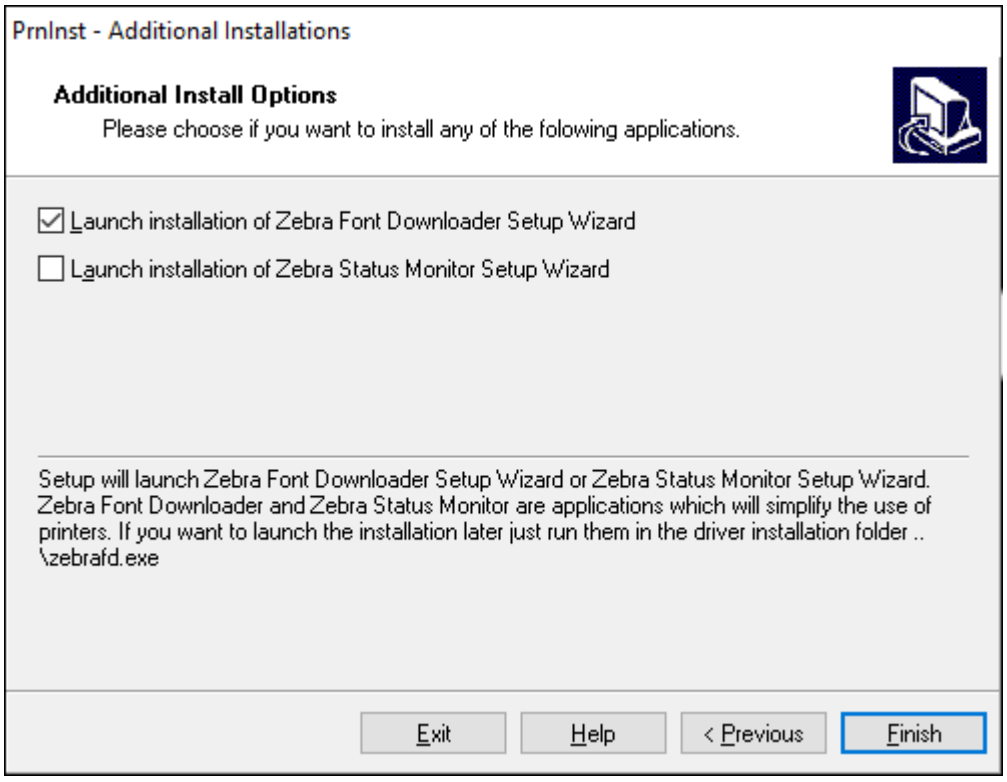
7. Click **Add new printer**.

   You are prompted for a printer name, the port to which the printer will be connected, and the language for the printer display. Click **USB001**.



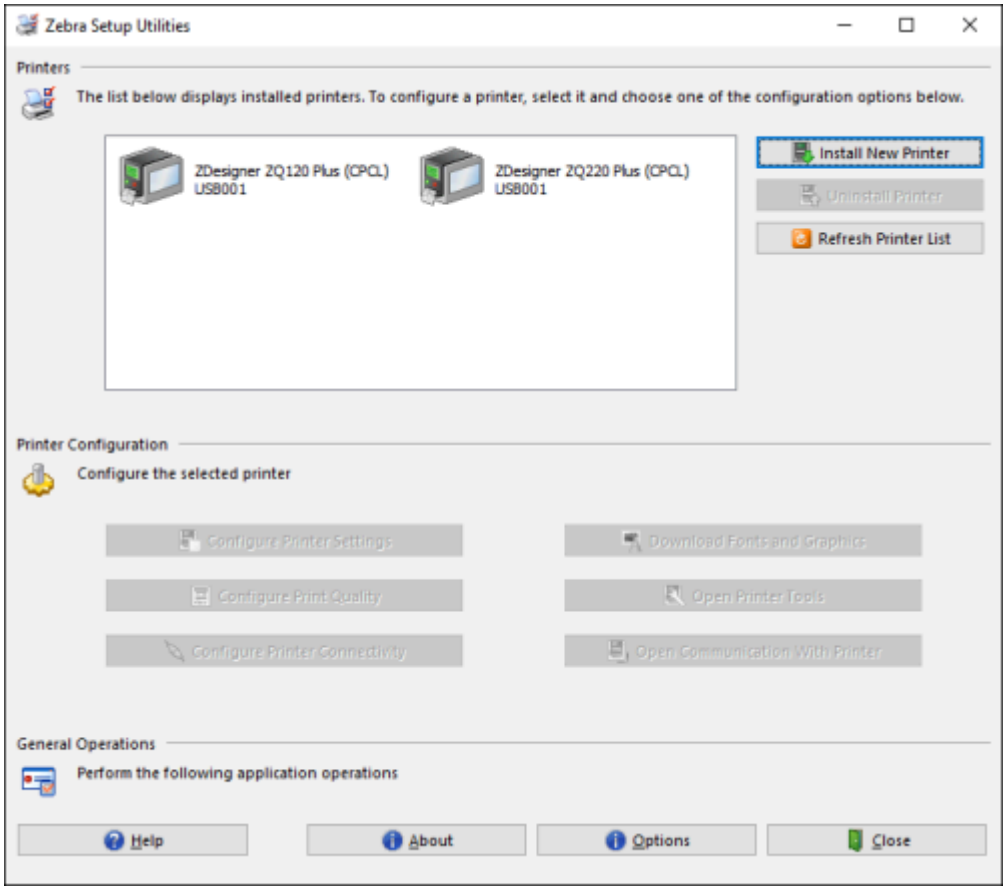
8. Click **Next**.

   You are prompted to launch other setup wizards.



9. Check the desired options, and then click **Finish**.

   The printer driver is installed. If you are prompted that other programs might be affected, click the appropriate option to continue.



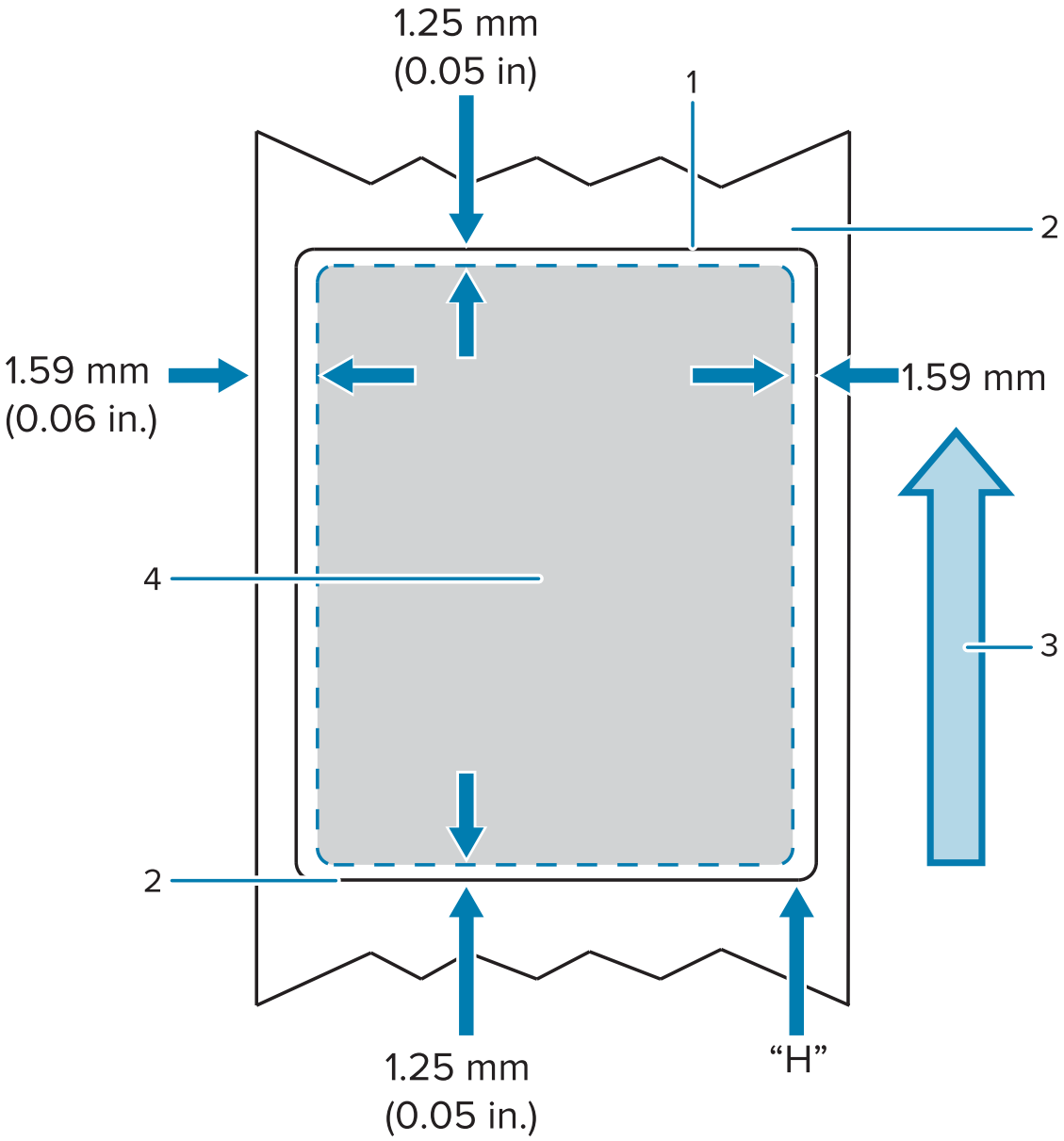
Setting Up the Software

The printer uses Zebra's CPCL Programming language which were designed for mobile printing applications. CPCL is fully described in the CPCL Programming Guide available online at zebra.com/support. You can also use ZebraDesigner Professional 3, Zebra's Windows-based label creation program which uses a graphical interface to create and edit labels in either language.

Designing Labels

The following examples provide guidelines for designing labels for the printers, specifically for Gap Media, Black Bar Media, and Journal Media. The illustrations for each media type define recommended tolerances, keep-out zones, and safe printing zones designed to avoid any vertical registration issues during printing. Dimensions are determined based on product registration capabilities and Zebra-recommended media tolerances.

Figure 10 Gap Media

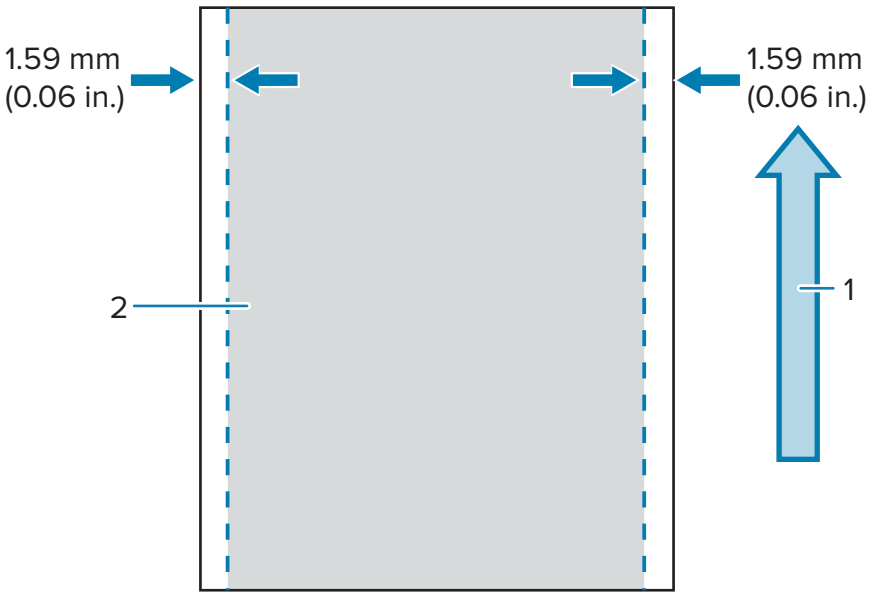


1	CPCL Label Height
2	Media Feed Direction
3	Bottom Edge of Die-Cut Label
4	Top Edge of Die-Cut Label

NOTE:

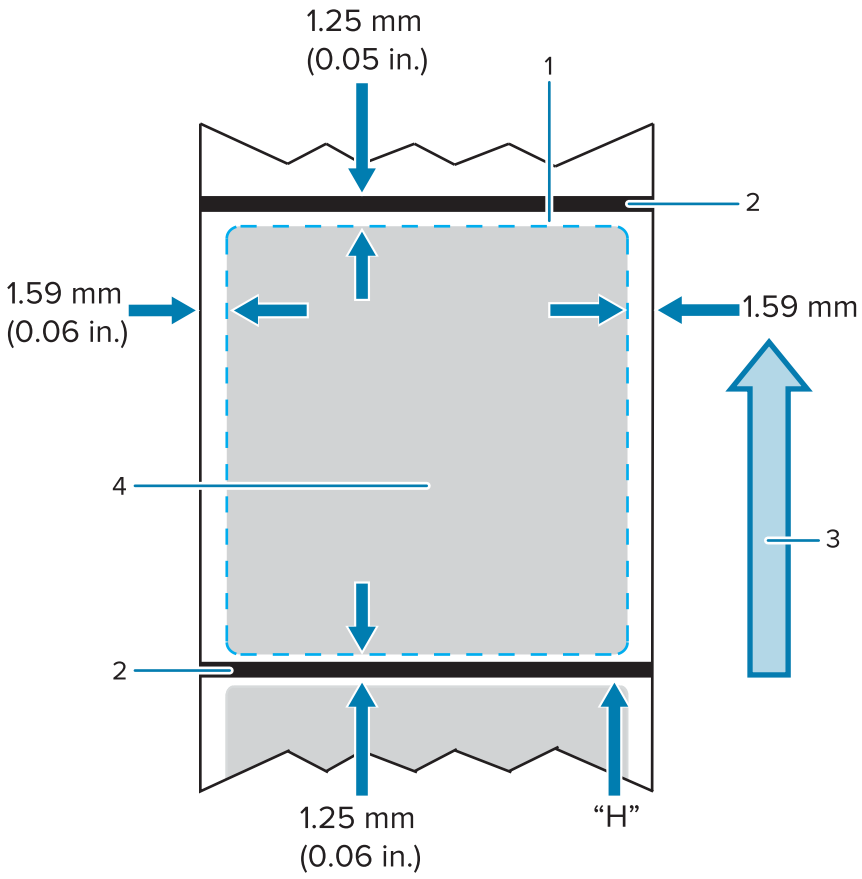
Maximum Label Height = "H" = 2.5 mm (0.10 in)

Figure 11 Journal Media



1	Media Feed Direction
2	Safe Printing Zone

Figure 12 Black Bar Media



1	CPCL Label Height
2	Black Bar
3	Media Feed Direction
4	Safe Printing Zone

NOTE:

Maximum Label Height = "H" = 2.5 mm (0.10 in)

Using Pre-Printed Receipt Media

The printer supports alignment of pre-printed receipts by using the out of paper sensor located near the printhead.

Black Mark Dimensions (Receipt Media)

The reflective media black marks (or black bar/marks) should extend past the centerline of the roll on the front side of the paper.

- Minimum mark width: 15 mm (0.59 in.) perpendicular to the edge of the media, and centered within the width of the roll.

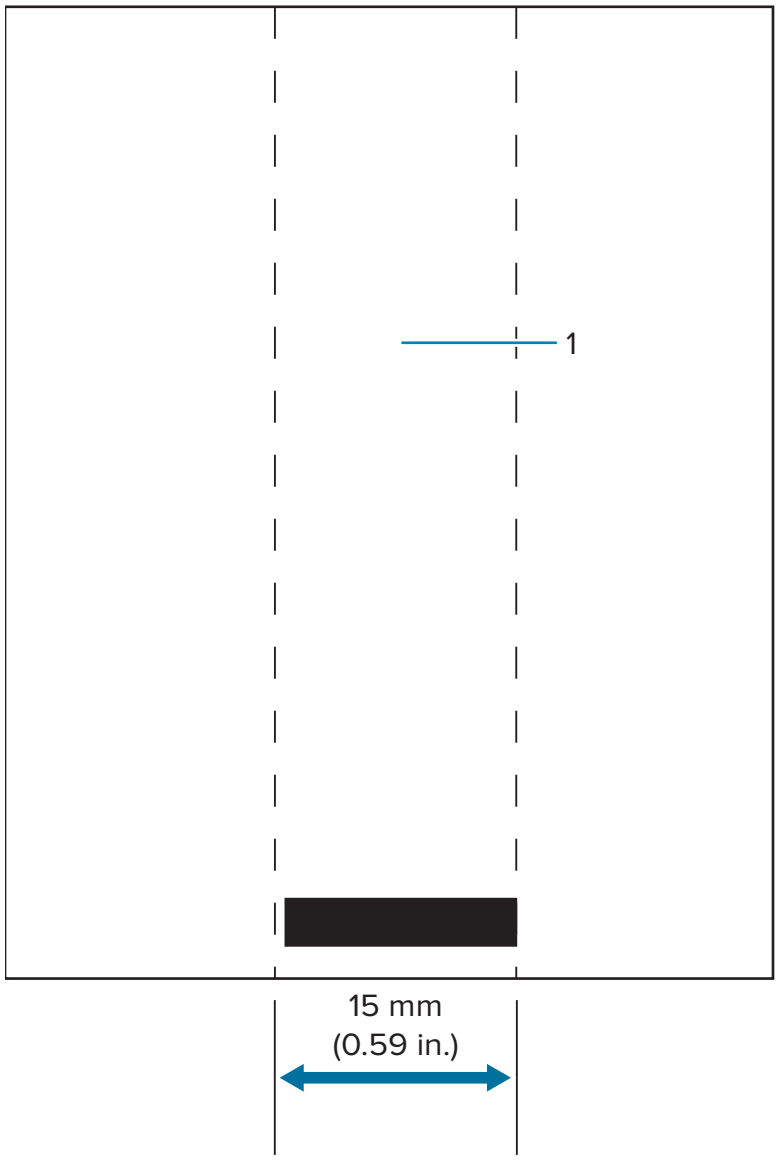
- Mark length: 4.8 - 6.0 mm (0.19 - 0.24 in.) parallel to the edge of the media.

Label Areas

The media/black bar sensor detects the dark, pre-printed bar on the media, so a path in the center of the paper must be kept free of dark, pre-printed graphics.

NOTE: Dark, pre-printed graphics refer to any symbols, barcodes, text and/or colored areas that have been applied to the receipt paper rolls before they have ever been used in the printer.

Figure 13 Label Areas



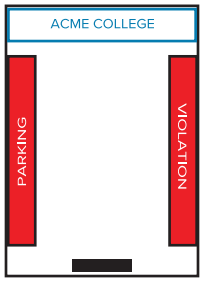
1	Center Label Area Path

NOTE:

Keep dark color pre-printed graphics, barcodes, and text out of the path of the sensor.

Label Design Examples

This section shows examples of labels with and without problems.

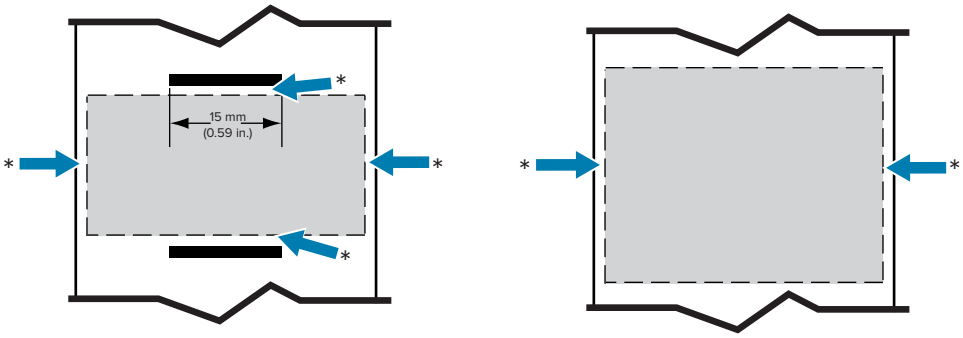
Problem Label Designs	Good Label Designs
	
The dark colors, pre-printed text, and graphics are in the path of the black bar at the bottom of the receipt.	The center path to the black bar is free of dark colors, pre-printed text, and graphics.
	

NOTE: Complete information on using pre-printed receipt paper can be found in the FORM command in the CPCL Programming Guide at zebra.com/manuals.

Keep-Out Areas

At times, incomplete printing of text and/or graphics appear because minimum margins are not provided during label design. The recommended minimum margins, or keep-out areas are shown below.

Figure 14 Keep-Out Areas



NOTE: The length of each continuous receipt is determined by the data sent to the printer.

Using Near Field Communication (NFC)

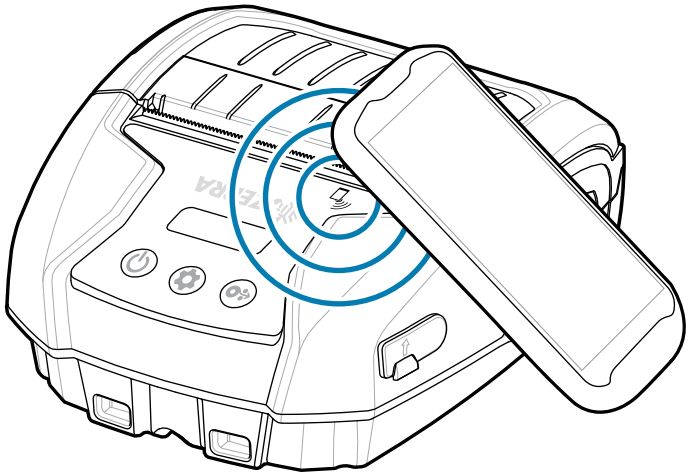
Near Field Communication (NFC) allows wireless communication and data exchange between digital devices such as this printer and a smartphone by using electromagnetic radio fields, while technologies such as Bluetooth use radio transmissions instead.

NFC is a sub-class of Radio Frequency Identification (RFID) technology that is designed for use by devices within close proximity to each other. NFC technology allows devices to establish communication by touching or bringing them into close proximity, usually no more than 7.62 cm (3 in.).

The printer contains a passive NFC tag which contains information that other devices, such as a smartphone, can read. The NFC tag does not read information itself; it only transmits information.

Active devices can read information and send data. An active NFC device, such as a smartphone, would not only be able to collect information from NFC tags, but it would also be able to exchange information with other compatible phones or devices. An active device could even alter the information on the NFC tag if authorized to make such changes. To ensure security, NFC often establishes a secure channel and uses encryption when sending sensitive information.

Figure 15 NFC Pairing



NFC Use Cases

Passive

- Bluetooth Pairing – causes a tablet, smartphone, or mobile computer to automatically pair with the printer via a Bluetooth connection, within the bounds of the security profile being used. This shall contain the Bluetooth address and the serial number of the printer.
- App launching – causes an app, developed either by Zebra or a third party, to be executed on a smartphone, tablet, or terminal.
- Website launching – causes a smartphone, tablet, or terminal to display a website developed by Zebra or a third-party developer.

Tapping the Zebra Print Touch icon with an NFC-enabled smartphone will provide instant access to printer-specific information. For more information about NFC and Zebra products, go to zebra.com/nfc. Pairing Bluetooth applications via NFC is also possible. Go to Link-OS Multi-platform SDK for more information.

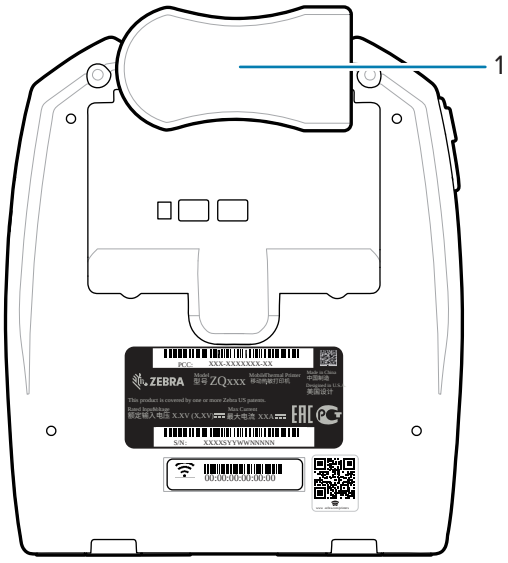
Wearing the Printer

This section describes how to utilize the printer accessories so you can wear the printer.

Swivel Belt Clip

The printer has a plastic swivel belt clip included as an accessory.

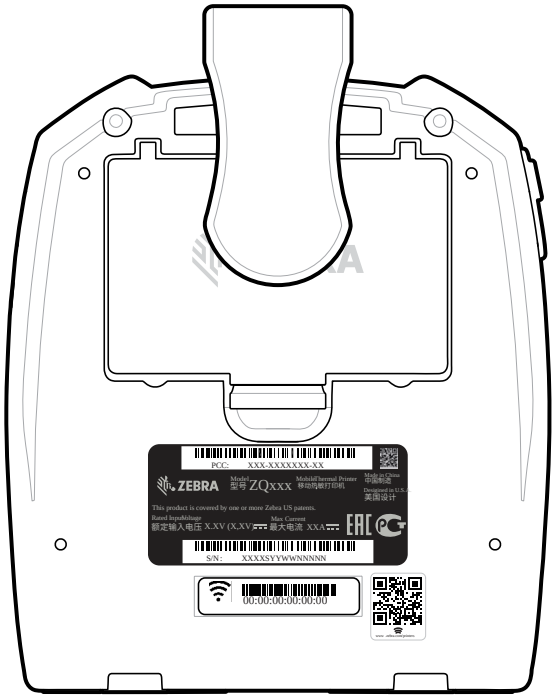
1. Remove the battery pack and insert the ball on the back of the belt clip in the socket on the bottom of the printer.



1	Belt Clip

2. Swivel the belt clip horizontally to clear the opening to the battery compartment.

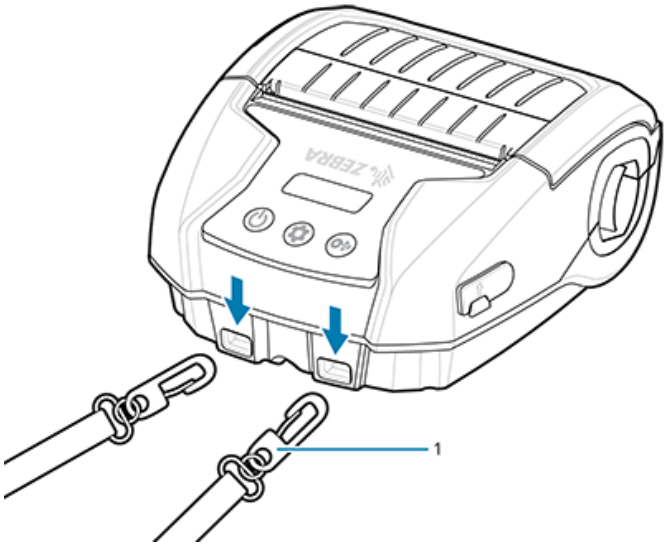
3. Reinstall the battery pack and swivel the belt clip vertically.



Shoulder Strap

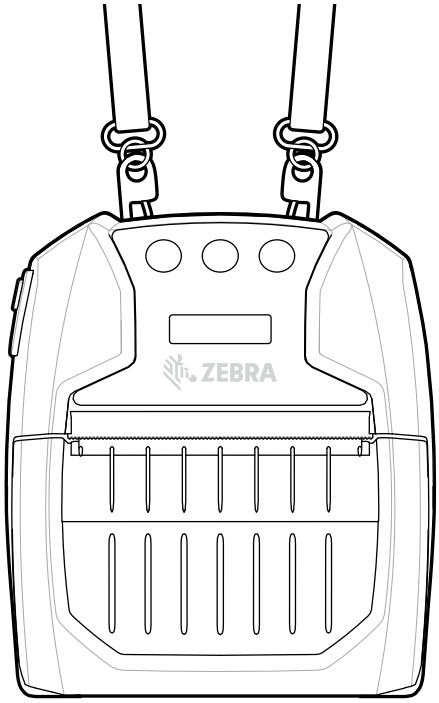
A shoulder strap accessory is also offered to provide another option for comfortably carrying the ZQ220 Plus and ZQ120 Plus printers. The shoulder strap attaches to the two strap posts on the front of the printer via rugged swivel snap hooks. The strap is easily adjustable up to 142.2 cm (56 in.) from end to end.

1. Clip each shoulder strap snap hook to its corresponding strap post on the front of the printer.



1	Swivel Snap Hook

2. Hang the shoulder strap over one shoulder so the printer hangs securely in a vertical position.

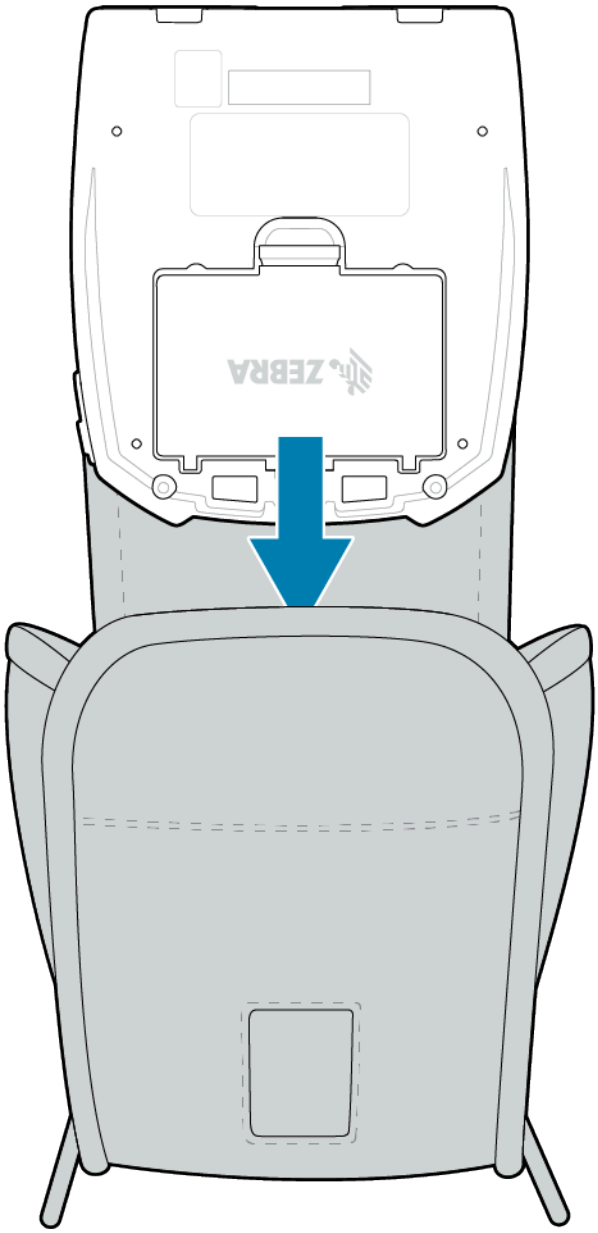


Soft Case

The printers have an environmental Soft Case option that helps protect the printer, while also allowing the user to carry it from their belt. The paper path is left open to maintain printing capability and the controls are visible and accessible while in the case. D-Ring connectors allow for attachment to the shoulder strap option.

1. Lift the top flap of the soft case, which is secured with a self-fastener.

2. Insert the printer in the case with the bottom of the printer facing forward as shown.



3. Turn the case around to access the LCD display and user controls which are visible through the plastic window. Lift the bottom half of the window to access the paper path.

Maintenance and Troubleshooting

This section includes instructions on cleaning the device and provides troubleshooting solutions for potential problems during operation.

Preventative Maintenance

This section provides routine cleaning and maintenance procedures.

Extending Battery Life

- Never expose the battery to direct sunlight or temperatures over 40°C (104°F) when charging.
- Always use a Zebra charger designed specifically for Lithium-Ion batteries. 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.
- Consider using a pre-printed label if you print the same text or graphic on every 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 will not be used for a day or more and you are 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 Battery and Product Disposal on page 73 for more information on battery disposal.

General Cleaning Instructions

This section provides important general cleaning information.

CAUTION: Avoid possible personal injury or damage to the printer. Never insert any pointed or sharp objects into the printer. Always turn off the printer before performing any cleaning procedures. Use care when working near the tear bars as the edges are very sharp.

NOTE: The printhead can get very hot after prolonged printing. Allow it to cool off before attempting any cleaning procedures.

IMPORTANT: Only use a Zebra cleaning pen (not supplied with the printer) or a cotton swab with 90% medical grade alcohol for cleaning the printhead.

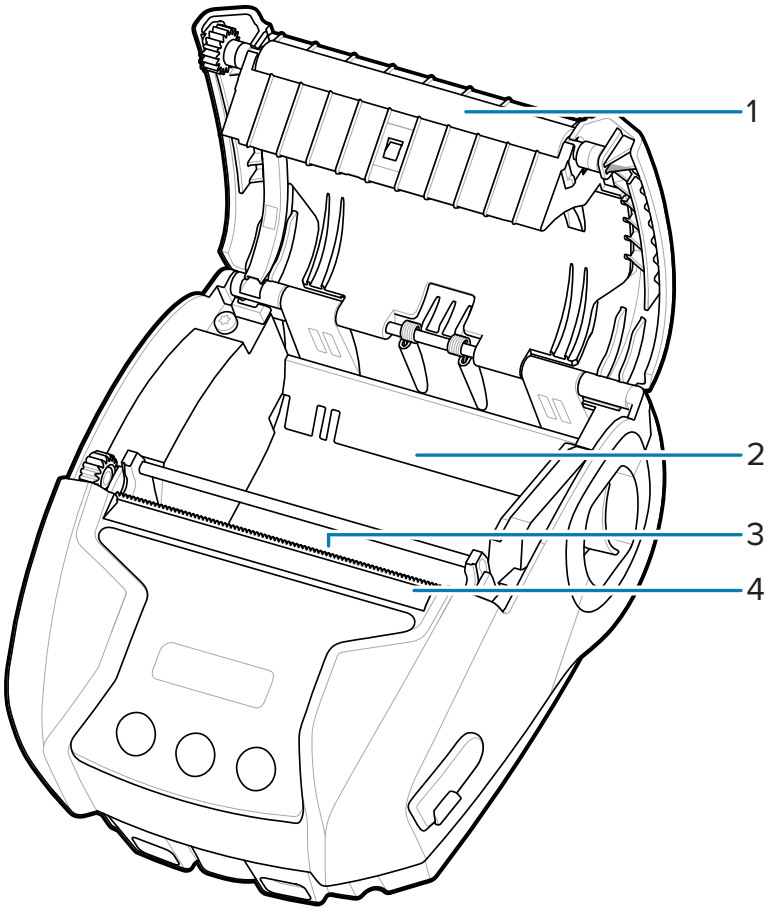
CAUTION: Use only cleaning agents specified in the following tables. Zebra Technologies Corporation will not be responsible for damage caused by any other cleaning materials used on this printer.

Cleaning

This section provides methods for cleaning printer areas and how often.

Area	Method	Interval
Printhead	Use a Zebra cleaning pen (p/n 105950-035), a Zebra preventative maintenance kit (p/n 47362), or a clean swab dipped in 99.7% isopropyl alcohol.	After every five rolls of media (or more often, if needed). When using linerless type media, cleaning is required after every roll of media.
Platen Surface	Rotate the platen roller and clean it thoroughly with a fiber-free swab, or lint free, clean, damp cloth lightly moistened with 99.7% isopropyl alcohol.	After every five rolls of media (or more often, if needed).
Tear Bar	Clean thoroughly with 99.7% isopropyl alcohol and a cotton swab.	As needed.
Printer Exterior	Water-dampened cloth or 99.7% isopropyl alcohol wipe.	As needed.
Printer Interior	Gently brush out the printer. Ensure the sensor windows are free of dust.	As needed.

Figure 16 Cleaning Areas



1	Platen
2	Printer Interior
3	Printer Interior
4	Tear Bar

LCD Control Panel Indicators

The printer's display shows several icons which indicate the status of various printer functions. Check the indicator status, then refer to the corresponding troubleshooting topic to resolve the problem.

Troubleshooting Topics

This section provides information about errors that you might need to troubleshoot.

No Power

- Check that the battery is installed properly.
- Recharge or replace the battery as necessary.

CAUTION: Always dispose of batteries properly. Refer to Battery and Product Disposal for more information on proper battery disposal.

Media does not feed

- Be sure media cover is closed and latched.
- Check the media compartment for any binding.
- Ensure label sensor is not blocked.

Poor or faded print

- Clean print head.
- Check quality of media.

Partial or missing print

- Check media alignment.
- Clean print head.
- Ensure media cover is properly closed and latched.

Garbled Print

- Replace battery.
- Check the cable to the host device.
- Establish RF Link and/or restore LAN associativity.

No Print

- Replace battery.
- Check the cable to the host device.
- Establish RF Link and/or restore LAN associativity.
- Invalid label format or command structure. Place printer in Communications Diagnostic (Hex Dump) Mode to diagnose problem.

Reduced Battery Charge Life

- If battery is older than one year, short charge life may be due to normal aging.
- Check battery health.
- Replace battery.

Data icon flashing

- Flashing Data icon is normal while data is being received.

Media Out or Head Open icons flashing

- Check that media is loaded and that the media cover is closed and securely latched.

Communication Error

- Replace cable to terminal.
- Check baud rate.

Label binding

- Open head release latch and media cover.
- Remove and reinstall media.

Skip Labels

- Check media for top of form sensor 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.

Blank LCD Screen

- Make sure printer is turned on.
- No application loaded or application corrupted: reload program.

No NFC Connectivity

- Ensure smartphone is positioned 7.62 cm (3 in.) or closer to the Print Touch icon on the top of the printer.

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.

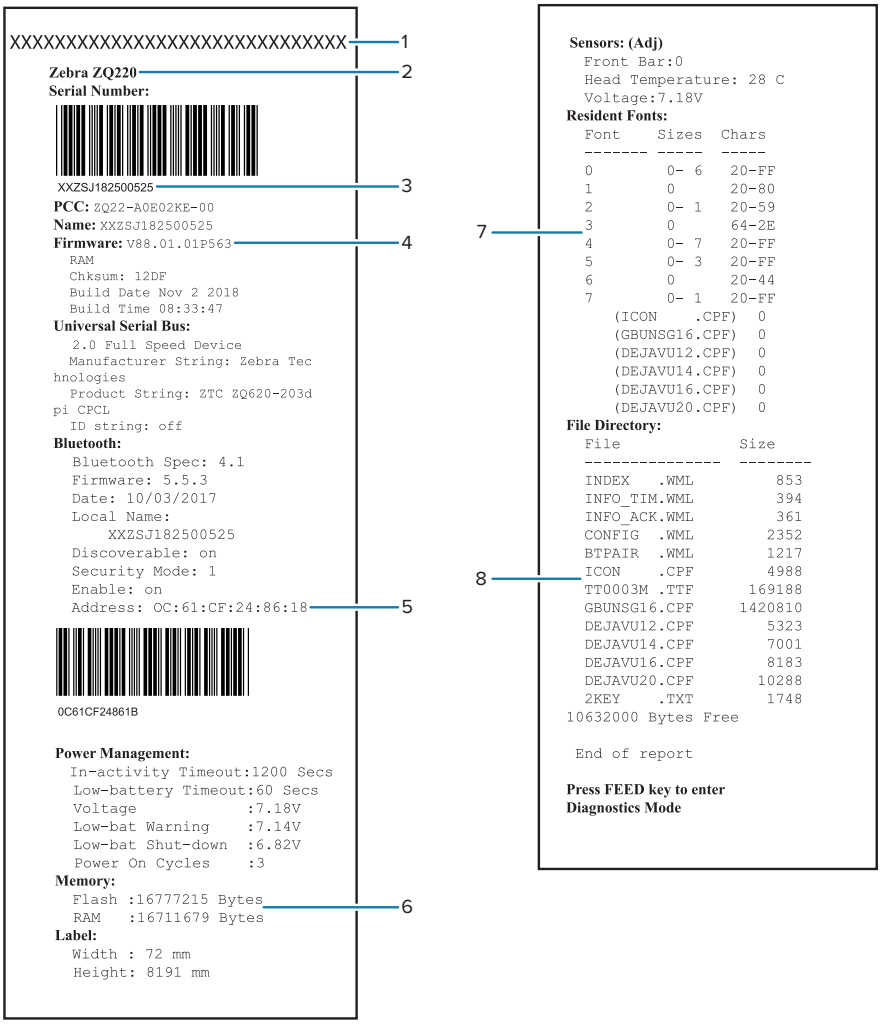
Troubleshooting Tests

Self tests and other diagnostics provide specific information about the condition of the printer. The self tests produce sample printouts and provide specific information that helps determine the operating conditions for the printer.

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 Media Feed.
3. Press and release Power and keep Media Feed pressed. When printing starts, release Media Feed.



1	Printhead Test
2	Identifies Printer as a ZQ220 Plus or ZQ120 Plus
3	Printer Serial Number
4	Firmware Version
5	Bluetooth Radio Address
6	Flash and RAM memory installed

7	Resident Human Readable Fonts Installed
8	Files loaded in printer memory (includes pre-scaled or scalable fonts)

Contacting Technical Support

If the printer fails to print the configuration label, or if you encounter problems not covered in the Troubleshooting section, contact Zebra Technical Support.

You will need to supply the following information:

- Model number (for example, ZQ220 Plus or ZQ120 Plus)
- Unit serial number (Found on the large label on the back of the printer, also found in the configuration label printout.) Refer to Serial Number and Product Configuration Code (PCC) Number Locations on page 71.
- Product Configuration Code (PCC) (15-digit number found on the label on the back of the unit). Refer to Serial Number and Product Configuration Code (PCC) Number Locations on page 71.

Specifications

NOTE: Printer specifications are subject to change without notice.

Printing Specifications

Parameter	ZQ220 Plus and ZQ120 Plus
Print Width	Up to 72 mm (2.83 in.)
Print Speed	45.72 to 50.8 mm (1.8 to 2 in.)/second @ 13% max density
Printhead Burn Line to Tear Edge Distance	Front Side: 5.4 mm (0.21 in.) +/- 0.5 mm (0.02 in.)
	Reverse tear not available.
Printhead Life	4064 m (160,000 in.) of paper feed MTBF of output at 13% density at 23°C +/- 5 when using virgin media.
Print Density	203 dots/in. or better

Memory and Communications Specifications

Parameter	ZQ120 Plus and ZQ220 Plus
Flash Memory	16 MB
RAM Memory	8 MB
Standard Communications	USB 2.0
Wireless Communication Options	Bluetooth 5.0

Memory configuration on your printer may be found by referring to Printing a Configuration Label on page 65.

Label Specifications

Parameter	ZQ120 Plus and ZQ220 Plus
Media Width	Standard: 80 mm +/- 0.75 mm (3.15 in. +/- 0.02 in.)

Parameter	ZQ120 Plus and ZQ220 Plus
	*Optional: 76.2 mm +/- 0.65 mm (3 in. +/- 0.025 in.) *Optional: 58 mm +/- 0.65 mm (2.28 in. +/- 0.025 in.) *Optional: 50.8 mm +/- 0.65 mm (2 in. +/- 0.025 in.)
Media Length	12.7 mm minimum to 203.2 mm maximum (0.5 to 8 in.)
Black Bar Sensor to Printhead Burnline Distance	16.57 mm (0.65 in.) +/- 1.0/-0.6 mm (0.03/-0.02 in.)
Media Thickness	0.058 to 0.1575 mm (2.28 to 6.2 mils)
Max Label Roll Outer Diameter	50 mm (1.97 in.)
Inner Core Diameters	12.7 mm (0.5 in.) standard
Black Mark Location	The reflective media black marks should be centered on media roll
Black Mark Dimensions	Minimum mark width: 12.7 mm (0.5 in.) Mark length: 2.4 to 11 mm (0.09 to 0.43 in.)

* Optional media requires use of media spacers.

CPCL Font and Bar Code Specifications and Commands

Item	Available Options
Standard Fonts	FONTA.CPF - ESC/POS default font, 12x24 bitmap; FONTB.CPF - ESC/POS default font, 9x17 bitmap; FONTC.CPF - ESC/POS default font, 9x24 bitmap; GBUNSG16.CPF - SimSun, Simplified Chinese 16x16 bitmap; GBUNSG24.CPF - SimSun, Simplified Chinese 24x24 bitmap.
Available Optional Fonts	SWIS721.CSF - CPCL scalable font; DEJAVU12.CPF - Pre-Scaled font; DEJAVU14.CPF - Pre-Scaled font; DEJAVU16.CPF - Pre-Scaled font; DEJAVU20.CPF - Pre-Scaled font; MUTOS16.CPF - Utah, Vietnamese, 16x16 bitmap; CTUNMK24.CPF - M Kai, Traditional Chinese, 24x24 bitmap; NSMTTC16.CPF - New Sans MT, Traditional Chinese, 16x16 bitmap.
Linear Bar Codes	Codabar (CODABAR, CODABAR 16); UCC/EAN 128 (UCCEAN128) Code 39 (39, 39C, F39, F39C); Code 93 (93); Code 128 (128);

Item	Available Options
	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	Aztec (AZTEC) MaxiCode (MAXICODE) PDF 417 (PDF-417) QR Code (QR) 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°

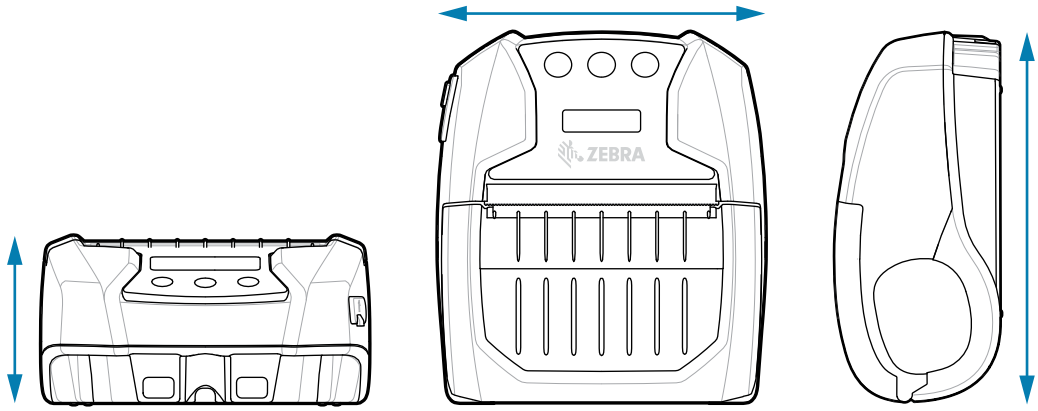
Physical, Environmental and Electrical Specifications

Parameter	ZQ120 Plus and ZQ220 Plus
Weight w/ battery	Less than 390 g (0.85 lb.)
Temperature	Operating: -5°C to 50 °C (23°F to 122°F)
	Storage: -20°C to 60°C (-4°F to 140°F)
	Charging: 0°C to 40°C (32°F to 104°F)
Relative Humidity	Operating/Storage: 10% to 90% non-condensing
Battery	2-cell Lithium-Ion Battery; 7.2 VDC (nominal); 2500 mAh (rated capacity); 2600 mAh (nominal capacity).
Intrusion Protection (IP) Rating	IP54 (without soft case)

ZQ220 Plus and ZQ120 Plus Dimensions

This section describes the printer dimensions.

Figure 17 Printer Dimensions



Height - 58.8mm (2.31 in.)

Width - 114.5 mm (4.5 in.)

Length - 129.5 mm (5.09 in.)

Accessories

For a complete list of printer accessories, go to zebra.com/manuals, search for the Mobile Printer Accessories guide, and go to the ZQ220 Plus or ZQ120 Plus product page in the guide. Or scan the following QR code with a mobile device to access the guide.

Figure 18 Mobile Printer Accessories

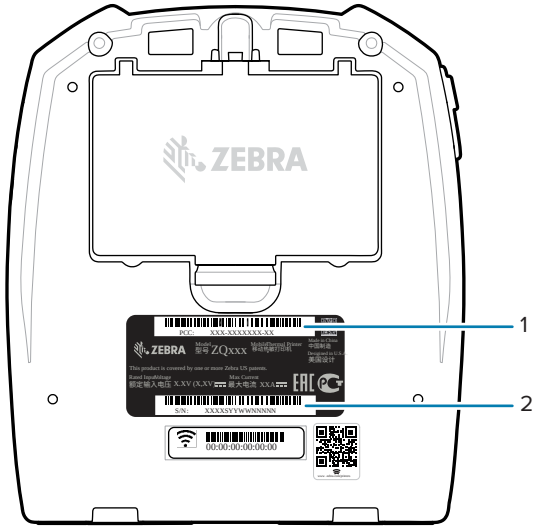
Miscellaneous

This section provides additional information relating to the printer.

Serial Number and Product Configuration Code (PCC) Number Locations

This section describes where to find the serial number and PCC number on the printer.

Figure 19 Serial Number and PCC Number Locations



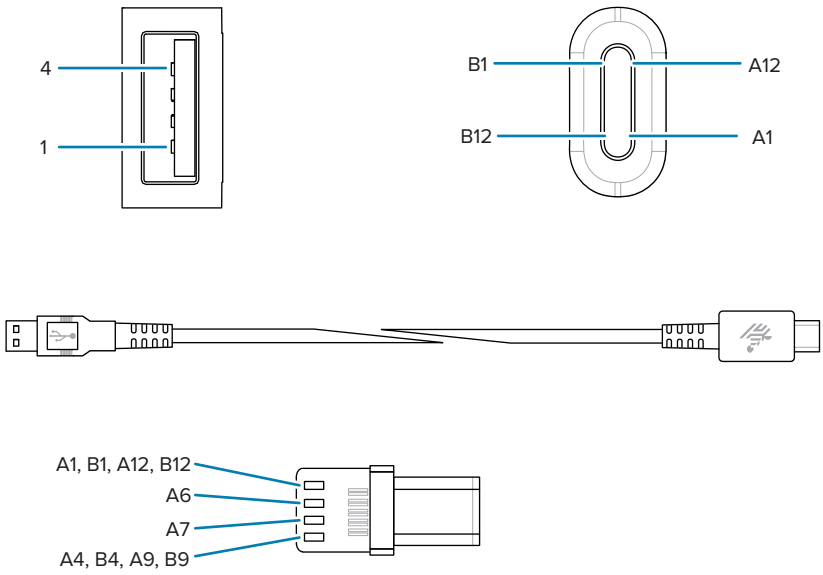
1	Serial Number Barcode
2	PCC Barcode

NOTE: Due to compliance and customs restraints, an integrator may not be able to ship a printer purchased in one country to another country based on the limitations imposed by regional SKUs. The country code identified in the printer SKU determines the area of the world in which the printer can be used.

USB Cable

This section describes the USB cable specifications.

Figure 20 USB Cable



Type-C Plug		Wire		Type-A Plug	
Pin #	Signal Name	Wire #	Signal Name	Pin #	Signal Name
A1,B1,A12,B12	GND	1	GND_PWrt1	4	GND
A4,B4,A9,B9	VBUS	2	PWR_VBUS1	1	VBUS
A5	CC	See Note item 1.			
B5	VCONN				
A6	Dp1	3	UTP_Dp	3	D+
A7	Dn1	4	UTP_Dn	2	D-
	Shield	Braid	Shield	Shell	Shield

NOTE:

1. Pin A5 (CC) of the USB Type-C plug shall be connected to VBUS through resistor Rp (56 kΩ +/- 5%). Pin A5 (CC)
2. Contacts B6 and B7 should not be present in the USB Type-C plug.
3. All VBUS pins shall be connected together within the USB Type-C plug. Bypass capacitors are not required for the VBUS pins in this cable.
4. All ground return pins shall be connected together within the USB Tupe-C plug.
5. Shield and GND grounds shall be connected within the USB Type-C and USB 2.0 Standard-A plugs on both ends of the cable assembly.
6. All USB Type-C plug pins that are not listed in this table shall be open (not connected).

Media Supplies

To ensure 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.

NOTE: For more information go to the Zebra website (zebra.com) and select the Products tab.

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 item is available for this purpose:

- Cleaning Pen (12 pack): p/n 105950-035

Battery and 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: zebra.com/environment.

NOTE: When the battery is depleted, insulate the terminals with tape before disposal.