Getting Ready to Print

Battery
Installing the Battery

**Important** • Batteries are shipped in sleep mode to preserve their maximum capacity while in storage prior to initial use. Plug the battery into the Smart Charger 2 or Quad Charger (see Pg. 17) to wake it up before using for the first time.

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

2. Insert the battery into the printer as shown in Figure 1. (It is not possible to insert the pack in an incorrect orientation.)

3. Rock the battery into the compartment as shown until it locks in place.

When the battery is first installed, the control panel indicators may briefly turn on and then go off which indicates the battery is not fully charged.

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**Battery Safety**

**Caution** • Avoid accidental short circuiting of any battery. Allowing battery terminals to contact conductive material will create a short circuit which could cause burns and other injuries or could start a fire.

**Important** • Always refer to the Important Safety Information data sheet shipped with each printer and the Technical Bulletin shipped with each battery pack. These documents detail procedures to ensure maximum reliability and safety while using this printer.

**Important** • Always dispose of used batteries properly. Refer to Appendix E 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**

**Caution** • Do not place any charger in locations where liquids or metallic objects may be dropped into the charging bays.
Smart Charger-2 (SC2) Single Battery Charger (P1027407)

The Smart Charger-2 (SC2) is a charging system for use with the 2-cell lithium-ion smart battery used in the ZQ510 printers.

Charging Status Indicators

The SC2 uses a LED indicator to indicate the charge state in either Green, Yellow, or Amber as detailed below.

<table>
<thead>
<tr>
<th>DC Power Input</th>
<th>Indicator</th>
<th>Battery Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>Green</td>
<td>Battery not present</td>
</tr>
<tr>
<td>Present</td>
<td>Green</td>
<td>Fully charged</td>
</tr>
<tr>
<td>Present</td>
<td>Yellow</td>
<td>Charging</td>
</tr>
<tr>
<td>Present</td>
<td>Amber</td>
<td>Fault</td>
</tr>
<tr>
<td>Present</td>
<td>Off</td>
<td>Present and Battery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Health = POOR</td>
</tr>
</tbody>
</table>

There will also be a battery charging graphic to indicate that this LED is the charging status indicator.

Battery Health Indicator

The SC2 features a tri-color (Yellow/Green/Amber) LED to indicate the health of the battery pack. An evaluation of the battery health begins upon insertion of the battery in the charger and results in the appropriate LED being illuminated as shown below. The LED will remain illuminated as long as input power is applied.

<table>
<thead>
<tr>
<th>Battery</th>
<th>Indicator</th>
<th>Health Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>None or non-smart</td>
<td>Off</td>
<td>GOOD</td>
</tr>
<tr>
<td>Smart battery present</td>
<td>Green</td>
<td>CAPACITY DIMINISHED</td>
</tr>
<tr>
<td>Smart battery present</td>
<td>Yellow</td>
<td>PAST USEFUL LIFE</td>
</tr>
<tr>
<td>Smart battery present</td>
<td>Amber</td>
<td>UNUSABLE-REPLACE (discard per Instructions in Appendix E)</td>
</tr>
</tbody>
</table>

Note • For detailed information on the SC2, refer to the Smart Charger 2 User Guide (p/n P1040985-001).

Model UCLI72-4 Quad Charger (AC18177-5)

The UCLI72-4 Quad Charger is designed to charge up to four (4) ZQ500 Series battery packs simultaneously. Batteries must be removed from the printer to be charged in the Quad Charger.

1. Ensure that the charger has been installed properly per the Quad Charger instruction manual. Ensure that the power indicator on the front panel is on.
2. Plug a battery pack into any one of the four charging bays as shown in Figure 5, noting the orientation of the battery pack. Slide the battery pack into the charging bay until it stops and then rock the battery pack back until it snaps into place. The amber indicator directly under the battery being charged will turn on if the battery is properly inserted.
The indicators under the battery will allow you to monitor the charging process per the table below:

<table>
<thead>
<tr>
<th>Amber</th>
<th>Green</th>
<th>Battery Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>Off</td>
<td>Charging</td>
</tr>
<tr>
<td>On</td>
<td>Flashing</td>
<td>80% charged (O.K. to use)</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
<td>Completely Charged</td>
</tr>
<tr>
<td>Flashing</td>
<td>Off</td>
<td>Fault-Replace Battery</td>
</tr>
</tbody>
</table>

**Important •** A fault condition is caused by a problem with the battery. The charger may indicate a fault because the battery is too hot or cold to charge reliably. Try to charge the battery again when it returns to the room’s ambient temperature. If the amber indicator starts flashing on the second attempt, the battery should be discarded. Always dispose of batteries in a proper manner as described in Appendix F.

Battery packs which are only partially discharged will take less time to reach their charged state. Batteries which have reached 80% of their charge capacity may be used, however, it is recommended that you allow the batteries to reach a full charge to maintain maximum battery life.

**Note •** These times are for completely discharged batteries.

AC Power Adapter (included in kit p/n P1031365-024 for all ZQ510 Printers)

![Figure 4: Charging the Battery Pack with the AC Power Adapter](image-url)
• Open the protective cover on the ZQ510 printer to expose the DC input charger jack.
• Connect the appropriate AC power cord for your location to the adapter and then plug the power cord into an AC receptacle.
• Plug the barrel plug from the P1029871 AC adapter into the charger jack on the printer.
• The printer will power up and begin charging. The printer can be left on or turned off at this point. Charging will continue in either state.

Note • Batteries are shipped in sleep mode to preserve their maximum capacity while in storage prior to initial use. Plug the battery into the Smart Charger 2 or Quad Charger (see Pg. 17) to wake it up before using for the first time.

! While it’s possible to charge the battery when using the printer, charge times will increase under this condition.

Vehicle Cradle (P1063406-029)

The ZQ500 Series Vehicle Cradle provides a means to mount a ZQ510 and ZQ520 printer in a vehicle while at the same time providing charging power to the battery. The Vehicle Cradle features USB connectivity to allow the user to connect a laptop or tablet to the cradle.

Battery Eliminator (P1063406-032)/Battery Eliminator Vehicle Cradle (P1063406-028)

The ZQ500 Series Battery Eliminator allows a vehicle based mobile printer user to operate the printer without the use of a battery. The Battery Eliminator Vehicle Cradle enables the user to mount a ZQ500 Series printer in a vehicle without the use of a battery.

4-Bay Power Station (P1063406-027)

The ZQ500 4-Bay Power Station allows a total of four (4) ZQ510 or ZQ520 printers to be docked and charged. The Power Station provides battery charging power while still maintaining all of the printer’s functionality.

Note • For detailed information on accessories, refer to the ZQ500 Series User Guide (P1071204-001), the ZQ500 4-Bay Power Station User Guide (P1071266-001), the Battery Eliminator User Guide (P1071365-001), and the Battery Eliminator Cradle User Guide (P1073631-001).
Introduction to the ZQ500™ Series Printer

Thank you for choosing our Zebra® ZQ500™ Series Mobile Printer. You will find this rugged printer will become a productive and efficient addition to your workplace thanks to its innovative design and state of the art features. Zebra Technologies is the leader in industrial printers with world-class support for all of your bar code printers, software, and supplies.

This user’s guide gives you the information you will need to operate the ZQ510 and ZQ520 printers. These printers use some of the latest technologies such as Near Field Communication (NFC) and Made for iPhone® (MFi). MFi printers provide Apple co-processor (MFi) support which allows an Apple device such as an iPhone or iPad® to authenticate and connect over Bluetooth®.

These printers use CPCL and ZPL programming languages. To create and print labels using the CPCL and ZPL languages, refer to the Programming Guide for CPCL and ZPL (p/n P1012728-008). See Appendix G for instructions on how to access manuals on zebra.com.

ZQ500 Series Software Utilities:
• Zebra Net Bridge™: printer configuration, fleet management
• Zebra Setup Utility: single printer configuration, quick set-up
• Zebra Designer Pro: label design
• Zebra Designer Drivers: Windows® driver
• OPOS Driver: Windows driver
• Multiplatform SDK
(These utilities can be found on the Zebra website at http://www.zebra.com/us/en/support-downloads.html. See Appendix G.)

Unpacking and Inspection
• Check all exterior surfaces for damage.
• Open the media cover (refer to “Loading the Media” in the Getting Ready to Print section) and inspect the media compartment for damage.
In case shipping is required, save the carton and all packing material.

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 re-seller.

ZQ500 Series Technology
The ZQ500 Series printers use several technologies made popular in other Zebra Mobile Printer product lines.

Smart Battery
The ZQ500 Series battery pack is a high capacity, smart Lithium Ion battery that contains electronics which allow the printer to monitor its operating parameters. Among these are the number of charge cycles it has undergone and its date of manufacture. Using these parameters, the printer’s software can monitor the battery’s condition and alert the user when to recharge or remove the battery from service.

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>Charging Temperature</th>
<th>Storage Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°C to +40°C (32°F to 104°F)</td>
<td>0°C to +40°C (32°F to 104°F)</td>
<td>-25°C to +65°C (-13°F to 149°F)</td>
</tr>
</tbody>
</table>

*The ZQ510 and ZQ520 printers will only function properly with genuine Zebra smart battery packs.*
The smart battery’s health has three states: GOOD, REPLACE, and POOR. The battery health factor determines whether or not the printer can operate and what is communicated to the user via the display.

<table>
<thead>
<tr>
<th># of Charge Cycles</th>
<th>Health</th>
<th>Power-up Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;300</td>
<td>GOOD</td>
<td>None</td>
</tr>
<tr>
<td>&gt;300 but &lt;550</td>
<td>REPLACE</td>
<td>“Battery Diminished Consider Replacing” *</td>
</tr>
<tr>
<td>&gt;550 but &lt;600</td>
<td>REPLACE</td>
<td>“Warning-Battery is Past its Useful Life” **</td>
</tr>
<tr>
<td>&gt;600</td>
<td>POOR</td>
<td>“Replace Battery Shutting Down” ***</td>
</tr>
</tbody>
</table>

* Warning accompanied by three beeps in rapid succession.
** Warning accompanied by a series of three double beeps in rapid succession.
*** Warning will flash on and off and be accompanied by beeping at a rate of once per second. After 30 seconds the printer will shut down.

Printing Technology
The ZQ500 Series printers use 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
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. Since the printing elements are arranged very densely at 203 d.p.i. (dots per inch) horizontal and 200 d.p.i. 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.

Thermal Shutdown
The ZQ500 Series printers have a thermal shutdown feature whereby the printer hardware will detect a printhead over-temperature condition at 65°C. The printer will automatically stop printing until the printhead cools down to 60°C. Printing will then recommence without a loss of label data or without any degradation of print quality.

QR Code
The QR barcode includes human readable text (URL) which links the user to printer information and short videos on topics such as buying supplies, features overview, loading media, printing a configuration report, cleaning instructions, and accessory information. (See Page 13 for each printer’s URL address.)

Made for iPhone (MFi)
ZQ500 Series printers support communication with Apple devices running iOS 5 or later over a standalone Bluetooth 4.0 radio and the BT3.0 radio included with the 802.11n (dual) radio.

Near Field Communication (NFC)
A passive NFC tag with the Bluetooth printer address will provide instant access to printer-specific information via an NFC-enabled smartphone. The ZQ500 Series printers are also active NFC devices that can not only collect information but exchange that information with other compatible devices.
Mag Card Reader
The ZQ500 Series printers can be equipped with optional Magnetic Stripe reader (p/n P1063406-036). The magnetic stripe card reader allows the user to swipe magnetic stripe cards such as credit cards through a slot in the printer and then read and process the data contained in the card. The Mag Card reader is capable of reading all three (3) tracks simultaneously, but can be configured to read two (2) tracks if desired. The reader also features an audio indicator to alert users of a successful card swipe. The Mag Card reader can be encrypted by working with Zebra’s Professional Services team and getting a key loaded.

The Mag Card reader is installed by removing the existing front bumper of the printer and replacing it with the Mag Card reader (as illustrated in Fig. 19 below).

![Figure 19: Installing the Mag Card Reader](image)

1. 2.

3. 4.

Bi-directional swiping capability

Preventive Maintenance
Extending Battery Life

- Never expose the battery to direct sunlight or temperatures over 65° C (149° F).
- 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 off the printer before performing any cleaning procedures. Use care when working near the tear bars as the edges are very sharp.

- **Warning** • The printhead can get very hot after prolonged printing. Allow it to cool off before attempting any cleaning procedures.

- **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.

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Note • For a complete list of accessories, see ZQ500 Series Accessories on Page 59.
Appendix F

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 G

Using Zebra.com

The following examples illustrate the search function on Zebra’s website for finding specific documents and downloads.

Example 1: Find the ZQ500 Series User Guide.


Select the appropriate printer from the Printer Support dropdown menu.

Click on the Manuals tab and select the desired language from the dropdown menu.

At the resulting screen, select “ZQ500 Series User Guide (en)” or Download to view.