LS7708
Quick Reference Guide
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Introduction

This Quick Reference Guide is designed to assist during routine LS7708 operation. Detailed information about unpacking, installation, performance specifications, and troubleshooting can be found in the LS7708 Product Reference Guide.

Product Description

The LS7708 high performance omni-directional laser scanner reads bar codes quickly and accurately with a minimum of effort. The scanner includes an Electronic Article Surveillance (EAS) antenna, which allows simultaneous bar code reading and security tag deactivation.

The LS7708 can rest on top of a counter or be attached to a mounting surface.

Operating the LS7708 Scanner

Power

The LS7708 does not have an on/off switch. It's ready to scan when connected to a power supply.

Indicator Lights

The scanner employs an LED with a combination of red and green lights to indicate operation and decode status. The Standard LED Definitions Table on page 13 lists the different light combinations and their meanings.

If the scanner is not operating normally, contact the technical person in charge of scanning, or contact Zebra Technologies Support.
Controls

The Volume Control & Wakeup button adjusts the volume of the beeper and wakes the scanner from rest or sleep mode.

When the scanner is operating, depress this button to adjust the volume. Hold down the button until the desired volume is obtained (approximately five seconds). There are three volume levels. The scanner beeps twice at each volume level before cycling to the next.

If the scanner is in a rest or sleep mode, briefly depressing the Volume Control & Wakeup button also awakens the scanner.

Connections

The scanner’s ports are at the bottom of the scanner. Turning the scanner upside down allows access to the scanner’s ports.

Routing the Cables

The scanner case has several channels to route the outgoing cables so that they are organized and don’t hinder the scanner’s placement. After placing the cable connectors in the appropriate scanner ports, route the cables through the nearest channel.
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For a cable with a Y-connector (containing both power and interface connectors):
1. Connect the power and interface cables to the appropriate ports.
2. Route the cables according to the following diagram.

Mounting the Scanner to a Surface

Caution: The LS7708 requires use of the mounting bracket for proper operation and safety. Failure to use the bracket can result in scanner instability.

The LS7708 is designed to sit on top of a counter or be mounted to a wall. The slot on the back of the scanner accepts a mounting bracket to secure it to the mounting surface. This bracket accommodates either configuration.
Attaching the Mounting Bracket

*Freestanding Configuration*

Use this method if the scanner will not be secured to a mounting surface.

1. Invert the scanner so that its bottom is facing up and the connections are visible.
2. Connect all interface and power cables to the scanner. Refer to the *LS7708 Product Reference Guide* for detailed information.
3. Orient the mounting bracket so that the plastic tab is facing downward and toward the slot on the back of the scanner. The square cushion on the mounting bracket should be positioned above the power cable.
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4. Tilt the plastic tab into the slot on the scanner, and rotate the opposite edge downward. As the bracket rotates, push it toward the slot so that the feet of the bracket lie flat against the scanner's bottom (see arrows).

5. When the bracket is flat against the scanner bottom, release pressure so that the feet slide forward into the front of the scanner.

Mounted Configuration

Use this method if the scanner will be secured to a mounting surface.

1. Determine where the LS7708 is going to be mounted.
2. Use a pencil to mark the four mounting holes. (A mounting template is provided in the LS7708 Product Reference Guide.)
3. Remove all rubber feet (from the bracket or from the scanner).
4. Place the mounting bracket in position over the drilled holes with its flat surface facing the mounting surface.
5. Insert four screws through the holes and fasten to the mounting surface.

6. Align the slot at the back of the scanner with the plastic tab on the mounting bracket.

7. Angle the scanner slightly to allow the bracket plastic tab to slide into the slot.

8. Push the scanner towards the plastic tab and rotate it so that it is perpendicular to the mounting surface.

9. Release the pressure on the scanner. The bracket locks into place.
Detaching the Scanner from the Mounting Bracket

To detach the scanner:

1. Grasp the scanner firmly on both sides.
2. Squeeze the back of the scanner slightly while pushing the scanner in the direction of the slot on the back.
3. Rotate the front of the scanner away from the mounting bracket until the bracket pops out of the slot.

Scanning Bar Codes

Install and program the scanner. (Refer to the LS7708 Product Reference Guide for programming instructions.) For assistance, contact the local supplier or Zebra Technologies Support.

For the best scanning performance, the counter top or surface area covered by the active scan area should be free of any designs (e.g. stripes or patterns). Ideally, that area should be a light, solid color. A rastering omni-directional scan pattern provides rapid, orientation-free scanning.

To scan a bar code:

1. Ensure all cable connections are secure.
2. Orient the item with the bar code facing the scanner window.
3. Move the item through the active scan area in the direction of the arrows, or place the item in front of the scanner.
4. Upon successful decode, the scanner beeps and the green LED flashes momentarily.
Active Scan Area

The active scan area is the area in front of the scanner window in which a bar code can be decoded. The dotted area represents the active scan area.

Sleep Mode

The scanner automatically enters Sleep mode when it has been inactive for a specified length of time. The scanner has two levels of sleep: laser and motor. In laser sleep mode, after ten seconds of inactivity the laser pulses at a 50% rate, and then drops to 3% after a specified time. In motor sleep mode, the scanner is programmed to turn off the motor and the laser.

The scanner is awakened from either sleep mode by pressing the Volume Control & Wakeup button. In laser sleep mode, the scanner also is awakened by presenting a bar code at the scanner window.
Selecting Beeper Volume

The scanner emits a short beep when it successfully reads a bar code. The volume of the beep is changed by scanning one of the beeper volume bar codes in the LS7708 Product Reference Guide, or by using the Volume Control & Wakeup button on the front of the scanner as follows:

1. Press and hold the button for approximately five seconds. The scanner cycles through three settings (low, medium, high), emitting a two-beep tone at each setting.
2. To select a particular setting, release the button after the desired 2-beep tone is heard.

Beeper Definitions

The scanner communicates with the user by emitting different beeper sequences and patterns. See the Standard Beeper Definitions table for beeper sequences that occur during both normal scanning and while programming the scanner.

<table>
<thead>
<tr>
<th>Beeper Sequence</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Use</td>
<td></td>
</tr>
<tr>
<td>3 short high beeps</td>
<td>Power up.</td>
</tr>
<tr>
<td>Short high beep</td>
<td>A bar code symbol was decoded (if decode beeper is enabled).</td>
</tr>
<tr>
<td>4 long low beeps</td>
<td>A transmission error was detected in a scanned symbol. The data is ignored. Check option setting.</td>
</tr>
<tr>
<td>5 low beeps</td>
<td>Conversion or format error.</td>
</tr>
<tr>
<td>Hi-hi-hi-lo beep</td>
<td>RS-232 receive error on RS-232 host or RS-232 auxiliary port.</td>
</tr>
<tr>
<td>Code 39 Buffering</td>
<td></td>
</tr>
<tr>
<td>Hi-lo beep</td>
<td>New Code 39 data was entered into the buffer.</td>
</tr>
<tr>
<td>3 long high beeps</td>
<td>Code 39 buffer is full.</td>
</tr>
<tr>
<td>Beeper Sequence</td>
<td>Indication</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Lo-hi-lo beep</td>
<td>The Code 39 buffer was erased or there was an attempt to clear or transmit an empty buffer.</td>
</tr>
<tr>
<td>Lo-hi beep</td>
<td>A successful transmission of buffered data.</td>
</tr>
<tr>
<td>Host Specific</td>
<td></td>
</tr>
<tr>
<td>USB only</td>
<td></td>
</tr>
<tr>
<td>4 short high beeps</td>
<td>Scanner has not completed initialization. Wait several seconds and scan again.</td>
</tr>
<tr>
<td>Scanner gives a power-up beep after scanning a USB Device Type.</td>
<td>Communication with the bus must be established before the scanner can operate at the highest power level.</td>
</tr>
<tr>
<td>This power-up beep occurs more than once.</td>
<td>The USB bus may put the scanner in a state where power to the scanner is cycled on and off more than once. This is normal and usually happens when the PC cold boots.</td>
</tr>
<tr>
<td>RS-232 Host only</td>
<td></td>
</tr>
<tr>
<td>1 short high beep</td>
<td>A &lt;BEL&gt; character is received and Beep on &lt;BEL&gt; is enabled.</td>
</tr>
<tr>
<td>RS-232 Auxiliary Port only</td>
<td></td>
</tr>
<tr>
<td>1 short high beep</td>
<td>A complete block of data was received and sent to the host, either due to a carriage return or because the two-second serial response timeout has elapsed.</td>
</tr>
<tr>
<td>4 long low beeps</td>
<td>A data overrun condition has occurred. Abstain from scanning data from other ports when large amounts of data are sent to the RS-232 Auxiliary port.</td>
</tr>
</tbody>
</table>
LED Definitions

In addition to beeper sequences, the scanner communicates with the user via an LED display. The Standard LED Definitions table defines LED indications that display during scanning.

<table>
<thead>
<tr>
<th>LED</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>No power is applied to the scanner.</td>
</tr>
<tr>
<td>Green</td>
<td>The scanner is on and “ready to scan.”</td>
</tr>
<tr>
<td>Momentary flash</td>
<td>A bar code was successfully decoded.</td>
</tr>
<tr>
<td>Slow continuous red flashing, green on</td>
<td>The scanner is in programming mode.</td>
</tr>
<tr>
<td>Fast continuous red flashing, green on</td>
<td>There is an internal problem; the laser is shut off for regulatory reasons.</td>
</tr>
<tr>
<td>Green on (and laser blinking)</td>
<td>Scanner is in Low Power Blink mode.</td>
</tr>
<tr>
<td>Red and green on</td>
<td>Scanner is in Low Power Motor and Laser Shutdown mode.</td>
</tr>
</tbody>
</table>

Maintenance

Cleaning the exit window is the only maintenance required. A dirty or scratched window may affect scanning activity.

- Remove any dirt particles with a damp cloth.
- Wipe the window with a tissue moistened with ammonia or water.
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Causes</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>The omni-line scan pattern does not display when you follow the directions for installing the host cable.</td>
<td>No power to the scanner.</td>
<td>Ensure the host has power, and is on. If the scanner uses a separate power supply, ensure it's connected to a working AC outlet. Power-up sequence is incorrect. Refer to the LS7708 Product Reference Guide for more information.</td>
</tr>
<tr>
<td>Interface cable is not properly connected.</td>
<td></td>
<td>Check for loose cable connections.</td>
</tr>
<tr>
<td>Scan line(s) display, but bar code cannot be read.</td>
<td>Scanner is not programmed to read the bar code type.</td>
<td>Ensure scanner is programmed to read the bar code type you are scanning.</td>
</tr>
<tr>
<td>Bar code is damaged.</td>
<td></td>
<td>Try scanning other bar codes of the same bar code type.</td>
</tr>
<tr>
<td>Bar code is too far from scanner.</td>
<td></td>
<td>Move the bar code closer to the scanner.</td>
</tr>
<tr>
<td>The host has disabled scanning or overridden parameter settings.</td>
<td></td>
<td>See the technical person in charge of scanning.</td>
</tr>
<tr>
<td>Bar code is decoded, but not transmitted to the host.</td>
<td>Scanner is not programmed for the correct host type.</td>
<td>Scan the appropriate host type bar code.</td>
</tr>
</tbody>
</table>
### Problem | Possible Causes | Possible Solutions
--- | --- | ---
Scanned data is incorrectly displayed on the host. | Scanner is not programmed to work with the host. Check scanner host type parameters or editing options. | Ensure proper host is selected. For RS-232, ensure the scanner’s communication parameters match the host’s settings. For keyboard wedge, ensure scanner is programmed with the correct country code and that the CAPS LOCK key is off. Ensure editing options (e.g., UPCE-to-UPCA Conversion) are properly programmed. |
Although the green and red LEDs are on, the scanner does not produce the omni-directional scan pattern. | The scanner has gone into the Low Power “Motor Sleep” Mode. | Press the Volume Control & Wakeup button to awaken the unit. |
USB or Synapse host not functioning properly. | Scanner does not recognize host. | Remove and reinsert external power supply to force cable to autodetect correct host. |

**NOTE** If the symbol still does not scan, contact distributor or contact Zebra Technologies Support. See the back cover for contact information.
Programming

Generally, the technical person in charge of scanning customizes the scanner for the particular application using programming bar codes found in the *LS7708 Product Reference Guide*. If the user is programming the scanner, the *LS7708 Product Reference Guide* should be consulted for more information.

Following are some frequently used programming bar codes.


When scanning the desired bar code, cover other bar code on page.

Test

To confirm that your scanner is working properly, scan the UPC-A bar code below.

Verify the Scanner Is Working
Quick Reference Guide

Set Defaults

Scanning this bar code sets all parameters to their factory default values.

Set Defaults

Host Type Selection

If a Synapse cable (i.e., part number STIxx-xxxx) is used, the scanner autodetects the type of host, so there is no need to scan host type selection bar codes.

If a USB interface is used, the scanner autodetects the USB and defaults to the HID keyboard interface. See page 28 to select the IBM Hand-Held host type. Refer to the LS7708 Product Reference Guide, p/n 72-69531-01, for additional USB host types.

If a Keyboard Wedge, RS-232, Wand Emulation, or IBM 46XX host is used, select that host type from the programming bar codes that follow. If Keyboard Wedge is selected, also select a country keyboard type from the following pages.

Keyboard Wedge Host Type

IBM PC/AT & IBM PC Compatibles
Country Keyboard Types (Country Codes)

Country keyboard options apply to the Keyboard Wedge interface only.

- North American
- French

**NOTE** When scanning the desired bar code, cover other bar code on page.
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Country Keyboard Types (continued)

French Canadian Win95/98

NOTE When scanning the desired bar code, cover other bar code on page.

French Canadian XP/2000
Country Keyboard Types (continued)

German

Spanish

NOTE When scanning the desired bar code, cover other bar code on page.
Country Keyboard Types (continued)

Italian

Swedish

NOTE When scanning the desired bar code, cover other bar code on page.
Country Keyboard Types (continued)

UK English

Japanese

NOTE When scanning the desired bar code, cover other bar code on page.
Country Keyboard Types (continued)

Brazil Portuguese Windows

RS-232 Host Types

Standard RS-232

NOTE When scanning the desired bar code, cover other bar code on page.
RS-232 Host Types (continued)

ICL RS-232

Nixdorf RS-232 Mode A

NOTE When scanning the desired bar code, cover other bar code on page.
RS-232 Host Types (continued)

Nixdorf RS-232 Mode B

Fujitsu RS-232

**NOTE** When scanning the desired bar code, cover other bar code on page.
RS-232 Host Types (continued)

OPOS

JPOS

NOTE  When scanning the desired bar code, cover other bar code on page.
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USB Host Types

HID Keyboard Emulation
(Common Keyboard Wedge Interfacing)

IBM Hand-Held USB
(For IBM SurePOS 700 Series)

NOTE
When scanning the desired bar code, cover other bar code on page.
IBM 46XX Host Types

Port 5B

Port 9B

NOTE When scanning the desired bar code, cover other bar code on page.
IBM 46XX Host Types (continued)

Port 17
Regulatory Information

This guide applies to Model Number: LS7708.

All Zebra devices are designed to be compliant with rules and regulations in locations they are sold and will be labeled as required.

Any changes or modifications to Zebra equipment, not expressly approved by Zebra, could void the user's authority to operate the equipment.

Ergonomic Recommendations

Caution: In order to avoid or minimize the potential risk of ergonomic injury follow the recommendations below. Consult with your local Health & Safety Manager to ensure that you are adhering to your company’s safety programs to prevent employee injury.

• Reduce or eliminate repetitive motion
• Maintain a natural position
• Reduce or eliminate excessive force
• Keep objects that are used frequently within easy reach
• Perform tasks at correct heights
• Reduce or eliminate vibration
• Reduce or eliminate direct pressure
• Provide adjustable workstations
• Provide adequate clearance
• Provide a suitable working environment
• Improve work procedures.
Laser Devices


The laser classification is marked on one of the labels on the device.

Class 1 Laser devices are not considered to be hazardous when used for their intended purpose. The following statement is required to comply with US and international regulations:

CAUTION Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

Class 2 laser scanners use a low power, visible light diode. As with any very bright light source, such as the sun, the user should avoid staring directly into the light beam. Momentary exposure to a Class 2 laser is not known to be harmful.

Scanner Labeling
Laser Labels

In accordance with IEC60825-1 and EN60825, the following information is provided to the user:

**Power Supply**

Note: Use ONLY a LISTED, Type no. 50-14000 (5Vdc / 2A), or PWRS-14000 (5Vdc / 2A), Direct Plug-In Power supply, marked Class 2 or LPS (IEC60950-1, SELV). Use of Alternative Power Supply will invalidate any approvals given to this unit and may be dangerous.
Radio Frequency Interference Requirements-FCC

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

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

Radio Frequency Interference Requirements - Canada

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Marking and European Economic Area (EEA)

Statement of Compliance

Zebra hereby declares that this device is in compliance with all the applicable Directives, 2004/108/EC, 2006/95/EC and 2011/65/EU. A Declaration of Conformity may be obtained from http://www.zebra.com/doc.

Other Countries

Ukraine

Дане обладнання відповідає вимогам технічного регламенту №1057, № 2008 на обмеження щодо використання деяких небезпечних речовин в електричних та електронних пристроях.
Waste Electrical and Electronic Equipment (WEEE)

English: For EU Customers: All products at the end of their life must be returned to Zebra for recycling. For information on how to return product, please go to: http://www.zebra.com/weee.


Italiano: per i clienti dell’UE: tutti i prodotti che sono giunti al termine del rispettivo ciclo di vita devono essere restituiti a Zebra al fine di consentirne il riciclaggio. Per informazioni sulle modalità di restituzione, visitare il seguente sito Web: http://www.zebra.com/weee.


Service Information

If you have a problem using the equipment, contact your facility’s Technical or Systems Support. If there is a problem with the equipment, they will contact Zebra Support at:
http://www.zebra.com/support.

For the latest version of this guide go to:
http://www.zebra.com/support.