StrataScan Bar Code Readers

(Cat. Nos. 2755-LHR-5B, 2755-LHR-3C, 2755-LHR-5C, and 2755-LHR-5BX1)
Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, Safety Guidelines for the Application, Installation, and Maintenance of Solid-State Control (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we use notes to make you aware of safety considerations:

**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Attention statements help you to:
- identify a hazard
- avoid the hazard
- recognize the consequences

**Important:** Identifies information that is critical for successful application and understanding of the product.
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# Preface

## Chapter Objectives

Read this chapter to familiarize yourself with the rest of the manual. You will learn about:

- contents of this manual
- conventions used in this manual
- intended audience
- related publications
- technical support

## Contents of this Manual

The following table describes the contents of this manual.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>Describes the purpose, background, and scope of this manual. Also specifies the audience for whom this manual is intended.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Introduction to StrataScan Bar Code Readers</td>
<td>Provides an introduction for the use of the StrataScan Bar Code Readers.</td>
</tr>
<tr>
<td>2</td>
<td>Hardware Features</td>
<td>Provides an overview of the readers and interface boxes. Includes a description of accessory items.</td>
</tr>
<tr>
<td>3</td>
<td>Designing Your System</td>
<td>Gives specific criteria for setup, symbols, symbol orientation and head range.</td>
</tr>
<tr>
<td>4</td>
<td>Installing Your Hardware</td>
<td>Describes how to connect your system hardware.</td>
</tr>
<tr>
<td>5</td>
<td>Maintenance and Troubleshooting</td>
<td>Describes how to maintain and troubleshoot your system hardware.</td>
</tr>
<tr>
<td>Appendix A</td>
<td>Specifications</td>
<td>Provides physical, electrical, environmental, and functional specifications for the readers and interface boxes.</td>
</tr>
<tr>
<td>Appendix B</td>
<td>Cable Pinouts</td>
<td>Lists the cable pinouts.</td>
</tr>
<tr>
<td>Appendix C</td>
<td>European Union Directives</td>
<td>Provides requirements for readers when used within the European Union.</td>
</tr>
</tbody>
</table>
Conventions Used in this Manual

The following conventions are used throughout this manual.

• Bulleted lists such as this one provide information, not procedural steps.
• Numbered lists provide sequential steps.
• *Italic* type is used for emphasis.
• Text within square brackets in this font represent the keys you press.

Intended Audience

No special knowledge is required to understand this document or use the StrataScan Bar Code Readers (Catalog Nos. 2755-LHR-5B, 2755-LHR-3C, 2755-LHR-5C and 2755-LHR-5BX1).

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

Related Publication

The following table lists an additional publication related to the StrataScan Bar Code Readers.

<table>
<thead>
<tr>
<th>Publication Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2755-6.14</td>
<td>StrataSet Programming Software Programming Guide</td>
</tr>
<tr>
<td>2755-921</td>
<td>Bar Code Basics</td>
</tr>
</tbody>
</table>

Technical Support Services

If you have any questions about the StrataScan Bar Code Reader, please consult this manual first. If you can’t find the answer, contact your local Allen-Bradley support office or distributor.
This chapter can help you to get started using the StrataScan Bar Code Readers. We base the procedures here on the assumption that you have an understanding of bar code readers and control equipment.

Because it is an introduction, this chapter *does not* contain detailed explanations about the procedures listed. It does, however, reference other chapters in this book where you can get more information.

If you have any questions or are unfamiliar with the terms used or concepts presented in the procedural steps, *always read the referenced chapters* and other recommended documentation before trying to apply the information.

This chapter tells you:
- what tools and equipment you need
- procedures for getting your system up and running

### Required Tools and Equipment

Have the following tools and equipment ready:
- screwdriver
- drill
- tape measure
- personal computer with StrataScan software
## Procedures

1. **Check the contents of shipping boxes.**

   Unpack the shipping boxes while making sure that the contents include:
   - StrataScan Holographic reader (Catalog No. 2755–LHR–5B, –3C, –5C or 5BX1)
   - Mounting bracket (Catalog No. 77126–898–01 or –02)
   - Power supply (12V dc) (Catalog No. 77126–896–01)
   - Disk-based Hardware User Manual (Catalog No. 2755–6.13-DISK)
   - StrataScan Bar Code Readers Instruction Sheet, Pub. No. 2755–5.16
   - On-line Programming Guide (Catalog No. 2755–6.14-DISK) included with Programming software
   - Self-Mailer [Catalog No. 41062–002–01(A)]

   If the contents are incomplete, call your local Allen-Bradley representative for assistance.

2. **Design the system.**

   Each application must be evaluated carefully. Successful bar code scanning begins with quality bar code symbols and the correct number, type, and location of readers, decoders, and package sensors.

   Refer to the following when designing your system:
   - Position the reader at a distance from the symbol that is within the range specified. A read rate test should be made to verify the range, and also to ensure optimum scanning and decoding.
   - If a package sensor is used, position it so it can sense the package before the symbol reaches the scan area.
3. **Install the reader.**

Mount the reader(s) (Catalog Nos. 2755-LHR–3C, 2755-LHR–5C, 2755-LHR–5B, 2755-LHR–5BX1) to the mounting bracket(s) (Catalog No. 77126–898–01 or 77126–898–02).

Make sure placement of the mounting bracket allows you to connect the reader to the interface box (Catalog No. 2755-LHB–1). Skip this information and step #4 if you are not using an interface box. The standard cable (Catalog No. 2755–LHC–2) from the interface box to the reader is 10 ft. long (3.05 m).
4. **Install the interface box.**

Mount the interface box to your mounting surface after having attached the sensor/relay leads to the sensor terminal block *inside the interface box*. Make sure that the 3 power leads from the interface box power cord are connected to their correct locations on the power terminal block and grounding posts terminals *inside the interface box case*.

<table>
<thead>
<tr>
<th>4. Install the interface box.</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount the interface box to your mounting surface after having attached the sensor/relay leads to the sensor terminal block <em>inside the interface box</em>. Make sure that the 3 power leads from the interface box power cord are connected to their correct locations on the power terminal block and grounding posts terminals <em>inside the interface box case</em>.</td>
<td>Chapter 4 (Installing Your Hardware)</td>
</tr>
</tbody>
</table>

![Diagram of interface box and sensor terminal block connections](image-url)
5. **Install the power supply.**

Place the power supply (Catalog No. 77126–896–01) within 12 ft. (3.66 m) of the scanner.

6. **Connect the hardware components together.**

If you are using an interface box, connect the reader, power supply and package detect to the interface box. If you are not using an interface box, connect the reader to the host device and power supply.

7. **Apply power to the reader system.**

After all your hardware components are installed and connected, apply power to the interface box first, then your reader system.
8. **Check the reader defaults, program as needed.**

Make sure you have DOS or Windows-based software on your personal computer. Run StrataSet Programming software, Catalog No. 2755-LHS-1. Make sure that communications has been established with your reader. e.g., read a test bar code to verify that the default settings are correct (i.e., the reader is communicating with the configuration device). Program as needed.

9. **Change configuration settings as necessary.**

If you need to set the reader to other than the default settings, refer to the software manual. Exit Program mode and place the reader in Run mode.

10. **Connect the system to host.**

11. **Run your application.**
Hardware Features

This chapter describes the features of the StrataScan Bar Code Readers (Catalog Nos. 2755-LHR-5B, 2755-LHR-3C, 2755-LHR-5C and 2755-LHR-5BX1) and interface box (Catalog No. 2755-LHB-1). Included are descriptions of:

- reader features
- interface box features
- decoding
- safety information
- scan beam options
- accessories

Reader Features

The reader features are shown below.
Holographic Scanning Disc

The rotating holographic disc takes the place of a focusing lens, light collection lens, and a rotating mirror. The disc contains 15 to 21 separate holographic sectors. Each sector has its own focal distance, light collection aperture, and mirror scan angle. As the disc rotates, each sector is operational, providing the reader an excellent opportunity to scan a bar code symbol.
Disc Operation

As the disc rotates, the laser beam hits the disc. The laser beam is then projected onto the mirror and then projected out through the reader’s window.

The reflected light travels toward the mirror. The reflected light is then projected onto the rotating disc where it is detected by an internal sensor.

Reader LEDs

There is one green and one red LED on the readers. The table below provides an explanation of the reader’s LED status.

<table>
<thead>
<tr>
<th>LED State</th>
<th>Indicates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Red</td>
<td>the reader has power.</td>
</tr>
<tr>
<td>Solid Red, Flashing Green</td>
<td>the reader has transmitted a successful read or the reader is in program mode.</td>
</tr>
<tr>
<td>Flashing Red and Green</td>
<td>the reader has a motor failure.</td>
</tr>
</tbody>
</table>

ATTENTION:  With a software command, both the red and green LED’s can exchange their meanings. If that command is active, then the following table with the following LED states applies.

<table>
<thead>
<tr>
<th>LED State</th>
<th>Indicates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid Green</td>
<td>the reader has power.</td>
</tr>
<tr>
<td>Solid Green, Flashing Red</td>
<td>the reader has transmitted a successful read or the reader is in program mode.</td>
</tr>
<tr>
<td>Flashing Green and Red</td>
<td>the reader has a motor failure.</td>
</tr>
</tbody>
</table>
Interface Box Features

The interface box routes signals between the readers and an external package detect. The interface box has the following components:

- **Power transformer.** Supplies a stepped down and isolated voltage that produces the 12V dc power for the interface box and external sensor.
- **F2 control fuse holder.** Contains the 12V dc fuse for the interface box.
- **F1 triac fuse holder.** Contains the fuse for the triac output.
- **Power terminal block.** Provides the input connection point for the AC line that supplies power to the interface box.
- **Triac terminal block.** Provides the output connection point for the reader–controlled power output.
- **LED status indicators.** Provides the status of power supply, package detect, and sensor alarm circuits.
- **Voltage selector switch.** Allows you to configure the interface box to match the incoming line voltage.
- **J1 jumper.** Allows you to configure the sensor input.
- **J2 jumper.** Allows you to configure the sensor input alarm.
- **Package detect terminal block.** Provides the connection point for the package detect.

**ATTENTION:** Before applying power to the interface box, make sure the voltage selector switch is in the correct position.
Decoding

The readers can decode the following symbologies:

- UPC/EAN
- Codabar
- Code 11
- Code 39
- Code 39 Full ASCII
- Code 39 Mod 43
- Code 93
- Code 128
- Interleaved 2 of 5
- Interleaved 2 of 5 Mod 10
- Paraf
- MSI Plessey
- MSI Plessey Mod 10 Check digit
- MSI Plessey Mod 10/10 Check digit
- UK Plessey
- Airline 2 of 5
- Matrix 2 of 5
- telepen

Refer to Chapter 2 of *StrataSet Programming Software Programming Guide* (Publication No. 2755–6.14) for more information on the code types listed above.
Safety Information

This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense. Any unauthorized changes or modifications to this equipment could void the user’s authority to operate this device.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Industry Canada.

- **ATTENTION:** Never attempt to look at the laser beam, even if the scanner appears to be nonfunctional. Doing so could result in hazardous laser light exposure.

- **ATTENTION:** Use of controls, adjustments, or performance of procedures other than those specified herein may result in hazardous laser light radiation exposure.

- **ATTENTION:** Never open the scanner in an attempt to look into the device or to service the laser scanner.

- **ATTENTION:** The use of optical instruments with the laser equipment will increase eye hazard.

- **ATTENTION:** If it is necessary to disable the scanner light emission, unplug the power supply’s AC power plug from its AC power source.
Laser Labels

Be aware of the following laser caution, danger and avoid exposure labels on the readers. Their locations vary depending upon reader catalog number shown below:

- **Catalog Number 2755-LHR-5B**
  - DANGER – Laser light when open. AVOID DIRECT EXPOSURE TO BEAM (hidden from view)

- **Catalog Numbers 2755-LHR-3C, -5C and -5BX1**
  - DANGER – Laser light when open. AVOID DIRECT EXPOSURE TO BEAM
  - AVOID EXPOSURE Laser light is emitted from this aperture.

- **Catalog Numbers 2755-LHR-5B**
  - DANGER – Laser light when open. AVOID DIRECT EXPOSURE TO BEAM
Scan Beam Strata

Scan beams are projected to focus in different strata as shown below. The various overlapping focus areas give the StrataScan holographic reader its great depth of field.

Note: This pattern or number of strata is different for each of the reader models.
## Reader Catalog Numbers

The following readers have their corresponding catalog numbers:

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>High density, five laser holographic reader</td>
<td>2755-LHR-5B</td>
</tr>
<tr>
<td>Medium density, three laser holographic reader</td>
<td>2755-LHR-3C</td>
</tr>
<tr>
<td>Medium density, five laser holographic reader</td>
<td>2755-LHR-5C</td>
</tr>
<tr>
<td>High density, five laser holographic reader</td>
<td>2755-LHR-5BX1</td>
</tr>
</tbody>
</table>

## Accessories

The following accessories are available with the readers:

<table>
<thead>
<tr>
<th>Description</th>
<th>Catalog Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface box</td>
<td>2755-LHB-1</td>
</tr>
<tr>
<td>Master/Slave cable for readers</td>
<td>2755-LHC-1</td>
</tr>
<tr>
<td>Interface box cable</td>
<td>2755-LHC-2</td>
</tr>
<tr>
<td>Master/Slave cable for interface box</td>
<td>2755-LHC-3</td>
</tr>
<tr>
<td>Null modem cable for readers</td>
<td>2755-LHC-11</td>
</tr>
<tr>
<td>Untenminated communications cable</td>
<td>2755-LHC-12</td>
</tr>
<tr>
<td>Replacement cover for 2755-LHR-5B</td>
<td>77126-899-01</td>
</tr>
<tr>
<td>Replacement cover for 2755-LHR-3C, -5C and -5BX1</td>
<td>77126-899-02</td>
</tr>
<tr>
<td>Replacement mounting bracket for 2755-LHR-5B</td>
<td>77126-898-01</td>
</tr>
<tr>
<td>Replacement mounting bracket for 2755-LHR-3C and 2755-LHR-5C</td>
<td>77126-898-02</td>
</tr>
<tr>
<td>StrataScan Programming Software</td>
<td>2755-LHS-1</td>
</tr>
<tr>
<td>Replacement power supply for the readers</td>
<td>77126-896-01</td>
</tr>
</tbody>
</table>
This chapter provides the information needed to set up a scanner system correctly. Items include:

- setup goals
- symbol height and length
- symbol quality
- symbol orientation
- tilt, pitch, and skew
- determining read range

Each application must be evaluated carefully. Successful bar code scanning begins with quality bar code symbols and the correct number, type, and location of readers, decoders, and package sensors. Refer to the following when designing your scanner system.

- Adjust, if necessary, the symbol speed and/or the distance between bar-coded packages to ensure that the bar code symbol is being read.
- Position the reader at a distance from the symbol that is within the range specified. A read rate test should be made to verify the range, and also to ensure optimum scanning and decoding.
- If a package sensor is used, position it so it can sense the package before the symbol reaches the scan area.
Symbol Height and Length

The height is measured from one end of a bar to the other, and its length is always the distance from one end of the symbol to the other, including the Quiet Zones. A Quiet Zone is the empty space before or after the bars, and is usually equal to 10 times the Narrow Element Width.

![Diagram of Symbol Height and Length]

Symbol Quality


- Low-cost verifiers that can test this standard are available from several companies.
- Symbol samples can be submitted to an independent symbology testing company.

The ANSI guideline specified six parametric tests plus two pass/fail tests to determine the printed symbol quality. The tests result in an overall letter grade of A, B, C, D or F assigned to the symbol. In general, symbols are most decodable in the A range with diminishing quality through F. An F or failure occurs because a symbol does not conform to a legitimate bar code symbology, whereas a D grade has a better chance of being read. And a C has a still better chance of being read by more readers than a D. And so on.
Symbol Orientation

Bar code symbols must have the correct aspect ratio to be read by the reader. A scan line must cross every bar, space, and both quiet zones on the same sweep.

Correct:
All bars are crossed by a scan line

Not Correct:
Some bars are not crossed by a scan line

Tilt, Pitch, and Skew

Refer to the figure below for various package orientations. Tilt, pitch, and skew can affect the scan aspect ratio, and as a result, can affect the reader’s ability to read bar code symbols.
Tilt

A symbol is tilted when the symbol’s bars are not 90° to one of the scan lines. The symbol can be read with any tilt, provided a scan line passes through all bars and quiet zones on each sweep for the required minimum number of scans. Tilt may reduce the number of scans in a given application.

Pitch

A symbol is pitched when the symbol’s bars are at different distances from the reader. From the reader’s perspective, a pitched symbol appears to have a smaller narrow element width than it actually has. This may reduce both the read rate and the read range. However, the symbol can still be read if the apparent narrow element width is within the reader’s specifications.

Skew

A symbol is skewed when the ends of the symbol’s bars are not at the same distance from the reader. The symbol can be read if the distance of both ends of the bar are within the reader’s read range, and the skew is less than ±40 degrees from the centerline. Unlike pitch, skew does not affect the read range.
Determining Read Range

The readers can read bar code symbols at various distances depending upon the type of reader and the narrowest bar code element width (width of smallest bar or space).

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Minimum Bar Code Width</th>
<th>Read Range</th>
<th>Maximum Scan Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>2755-LHR-5B</td>
<td>0.008 in. (0.20 mm)</td>
<td>18 to 38 in. (45.7 to 96.5 cm)</td>
<td>12 in. (30.5 cm)</td>
</tr>
<tr>
<td></td>
<td>0.025 in. (0.64 mm)</td>
<td>18 to 38 in. (45.7 to 96.5 cm)</td>
<td>12 in. (30.5 cm)</td>
</tr>
<tr>
<td>2755-LHR-3C</td>
<td>0.013 in. (0.33 mm)</td>
<td>36 to 78 in. (91.4 to 198.1 cm)</td>
<td>22 in. (55.9 cm)</td>
</tr>
<tr>
<td></td>
<td>0.04 in. (1.02 mm)</td>
<td>36 to 78 in. (91.4 to 198.1 cm)</td>
<td>22 in. (55.9 cm)</td>
</tr>
<tr>
<td>2755-LHR-5C</td>
<td>0.013 in. (0.33 mm)</td>
<td>34 to 64 in. (86.4 to 162.6 cm)</td>
<td>22 in. (55.9 cm)</td>
</tr>
<tr>
<td></td>
<td>0.04 in. (1.02 mm)</td>
<td>36 to 78 in. (91.4 to 198.2 cm)</td>
<td>22 in. (55.9 cm)</td>
</tr>
<tr>
<td>2755-LHR-5BX1</td>
<td>0.008 in. (0.20 mm)</td>
<td>33 to 43 in. (83.8 to 109.2 cm)</td>
<td>13 in. (33.0 cm)</td>
</tr>
<tr>
<td></td>
<td>0.025 in. (0.64 mm)</td>
<td>33 to 43 in. (83.8 to 109.2 cm)</td>
<td>13 in. (33.0 cm)</td>
</tr>
</tbody>
</table>

Catalog Number 2755-LHR-5B

Catalog Number 2755-LHR-5BX1

Catalog Numbers 2755-LHR-3C and 2755-LHR-5C
Installing Your Hardware

This chapter provides the information needed to install the readers, their mounting brackets, their power supplies, and interface boxes. Items include:

- RS-232 installations
- master/slave installations

Because of the variety of uses for the information, users of and those responsible for applying this information must satisfy themselves as to the acceptability of each application and use of the program. In no event will Allen-Bradley Company be responsible or liable for indirect or consequential damages resulting from the use of application of this information.

The examples shown in this document are intended solely to illustrate the principles of the bar code reader and some of the methods used to apply them. Particularly because of the many requirements associated with any particular installation, Allen-Bradley Company cannot assume responsibility or liability for actual use based upon the illustrative uses and applications.
RS232 Installations

Refer to the following sections to install your system hardware, based on the type of equipment you select:

PLC or PC to the Reader

1. Make sure your system is planned properly. Refer to Chapter 3 for information about planning your system.

2. Refer to Appendix A for dimensions of readers, mounting brackets, power supplies, and interface boxes. Cable pinouts are shown in Appendix B.

3. Install the mounting bracket (Catalog Nos. 77126-898-01 or 77126-898-02) for the readers (Catalog Nos. 2755-LHR-5B, 2755-LHR-3C, 2755-LHR-5C, and 2755-LHR-5BX1).

Make sure placement of the mounting bracket allows you to connect the reader to the PLC or PC and power supply. Also make sure bracket placement provides the correct read range for the reader.

The maximum cable length from the reader to another device is 50 ft. (15.24 m) when using RS232. Use RS422 when distances reach up to 2000 feet (609.6 m).

4. Mount the reader to the mounting bracket.

5. Install your PLC or PC. For proper installation refer to the installation information provided with each product.
6. Connect the null modem cable (Catalog No. 2755-LHC-11) to the PLC or PC (9–pin connector) and the reader (25–pin connector).

7. Place the power supply (Catalog No. 77126-896-01) within 12 ft. (3.66 m) of the reader. Connect the power supply to the reader.

8. Connect the power supply cable to the power supply and to the power receptacle supplying 100/240V ac.

When power is applied to the reader, the green LED flashes on and off, then the red LED turns on and remains on. A beep is emitted from the reader as well, indicating the reader has power. Scan beams are also emitted from the reader.
PLC or PC to the Reader and Interface Box

1. Make sure your system is planned properly. Refer to Chapter 3 for information about planning your system.

2. Refer to Appendix A for dimensions of readers, mounting brackets, power supplies, and interface boxes. Cable pinouts are shown in Appendix B.

3. Install the mounting bracket (Catalog Nos. 77126-898-01 or 77126-898-02) for the readers (Catalog Nos. 2755-LHR-5B, 2755-LHR-3C, 2755-LHR-5C, and 2755-LHR-5BX1).

   Make sure placement of the mounting bracket allows you to connect the reader to the PLC or PC, interface box, and power supply. Also make sure bracket placement provides the correct read range for the reader.

   The maximum cable length from the reader to another device is 50 ft. (15.24 m) when using RS232. Use RS422 when distances reach up to 2000 feet (609.6 m).

4. Mount the reader to the mounting bracket.

5. Install your PLC or PC. For proper installation refer to the installation information provided with each product.
6. Connect the null modem cable (Catalog No. 2755-LHC-11) to the PLC or PC (9-pin connector) and the reader (25-pin connector).

7. Place the power supply (Catalog No. 77126-896-01) within 12 ft. (3.66 m) of the reader. Connect the power supply to the reader.

8. Connect the interface box cable (Catalog No. 2755-LHC-2) to the interface box and the reader. The 15-pin end of the cable connects to the reader and the 8-pin end to the interface box. Make sure you lock into place the interface box end of the cable.

9. Connect your sensor (PhotoSwitch 6000 or 9000 Series) to the interface box by attaching the sensor leads to the sensor terminal block inside the interface box. The sensor itself will have the proper connection scheme imprinted on its housing. Follow the method shown there. For instance, brown to +12V out, white to sink-in, blue to common, black to source. (Black is often disregarded.)
10. Mount the interface box (Catalog No. 2755-LHB-1). Its dimensions are shown in Appendix A.
**ATTENTION:** Before connecting power, make sure that the 3 power leads from the interface box power cord are connected to their proper locations on the power terminal block and grounding posts *inside the interface box case.* A domestic and a European example are shown in the following illustration. Make sure that the interface box is connected to an ac source per local/regional electrical codes.

![Power Terminal Block Diagram](image)

11. Connect the interface box to the power receptacle supplying 100/240V ac.

12. Connect the power supply cable to the power supply and to the power receptacle supplying 100/240V ac.

   When power is applied to the reader, the green LED flashes on and off, then the red LED turns on and remains on. A beep is emitted from the reader as well, indicating the reader has power. Scan beams are also emitted from the reader.

   When power is applied to the interface box, the green 12V LED turns on and remains on.
Refer to the following steps to install your system hardware:

**Master/slave Installation**  
(Without Interface Box)

**PLC or PC to the Reader, Reader to a Second Reader**

1. Make sure your system is planned properly. Refer to Chapter 3 for information about planning your system.

2. Refer to Appendix A for dimensions of readers, mounting brackets, power supplies and interface boxes. Cable pinouts are shown in Appendix B.

3. Install the mounting brackets (Catalog Nos. 77126-898-01 or 77126-898-02) for the readers (Catalog Nos. 2755-LHR-5B, 2755-LHR-3C, 2755-LHR-5C and 2755-LHR-5BX1).

   Make sure placement of the mounting brackets allows you to connect the first reader to the PLC or PC, interface box, and power supply. It should also allow you to connect the second reader to the interface box and a power supply. Also make sure bracket placement provides the correct read range for both readers.

   The maximum cable length from the reader to another device is 50 ft. (15.24 m) when using RS232. Use RS422 when distances reach up to 2000 feet (609.6 m).

4. Mount each reader to its mounting bracket.

5. Install your PLC or PC. For proper installation refer to the installation information provided with each product.
6. Connect the PLC or PC to the master reader (25-pin connector).

7. Connect the Master/Slave cable (Catalog No. 2755-LHC-1) to the first reader (master) and the second reader (slave). The 15-pin end of the cable connects to the master reader.

8. Connect the 25-pin end of the cable to the slave reader.

9. Connect each reader to a power supply.
ATTENTION: To prevent unsuccessful programming of your master/slave scanner configuration, follow this setup sequence when installing master/slave option:

1. Connect master and slave scanners with the appropriate master/slave cable.
2. Connect Allen–Bradley StrataScan Configuration software to the master scanner.
3. Apply power to the master/slave units.
4. Program the master scanner as you would a regular scanner with the StrataScan Configuration software.
5. The master scanner automatically programs the slave to the same parameters.

10. Connect each power supply cable to each power supply and to the power receptacle supplying 100/240V ac.

When power is applied to each reader, the green LED flashes on and off, then the red LED turns on and remains on. A beep is emitted from each reader as well, indicating the reader has power. Scan beams are also emitted from each reader.

**Master/slave Installation (With Interface Box)**

Refer to the following steps to install your system hardware:

**PLC or PC to the Reader, Interface Box, and a Second Reader**

1. Make sure your system is planned properly. Refer to Chapter 3 for information about planning your system.
2. Refer to Appendix A for dimensions of readers, mounting brackets, power supplies and interface boxes. Cable pinouts are shown in Appendix B.
3. Install the mounting brackets (Catalog Nos. 77126-898-01 or 77126-898-02) for the readers (Catalog Nos. 2755-LHR-5B, 2755-LHR-3C, 2755-LHR-5C, and 2755-LHR-5BX1).

Make sure placement of the mounting brackets allows you to connect the first reader to the PLC or PC, interface box, and power supply. It should also allow you to connect the second reader to the interface box and a power supply. Also make sure bracket placement provides the correct read range for both readers.

The maximum cable length from the reader to another device is 50 ft. (15.24 m) when using RS232. Use RS422 when distances reach up to 2000 feet (609.6 m).
4. Mount each reader to its mounting bracket.

5. Install your PLC or PC. For proper installation refer to the installation information provided with each product.
6. Connect the PLC or PC to the first reader.

7. Connect the Master/Slave Interface Box Cable (Catalog No. 2755-LHC-3) to the first reader (master) and the interface box. Make sure you lock into place the interface box end of the cable. The 15-pin end of the cable connects to the master reader.

8. Connect each reader to a power supply.

9. Connect the Master/Slave Interface Box Cable (Catalog No. 2755-LHC-3) to the second reader (slave). The 25-pin end of the cable connects to the slave reader.
ATTENTION: Before connecting power, make sure that the 3 power leads from the interface box power cord are connected to their proper locations on the power terminal block and grounding posts *inside the interface box case*. A domestic and a European example are shown in the following illustration. Make sure that the interface box is connected to an ac source per local/regional electrical codes.

![Diagram showing power connections]

ATTENTION: Before applying power to the interface box, make sure the voltage selector switch is in the correct position.

10. Mount the interface box. The dimensions of the interface box are shown in Appendix A.

11. Connect the interface box to the power receptacle supplying 100/240V ac.

12. Connect each power supply cable to each power supply and to the power receptacle supplying 100/240V ac.
When power is applied to each reader, the green LED flashes on and off, then the red LED turns on and remains on. A beep is emitted from each reader as well, indicating the reader has power. Scan beams are also emitted from each reader.

When power is applied to the interface box, the green 12V LED turns on and remains on.
This chapter provides information on how to maintain and troubleshoot your StrataScan hardware. Items include:

- cleaning the scan window
- troubleshooting the readers
- contacting Technical Support

**CAUTION!:** Before cleaning window, make sure that power to the reader is off. Failure to disconnect power may cause exposure to laser light.

**Cleaning the Scan Window**

Carefully clean the window by first removing loose particles of dirt with canned ultra–filtered air. Then use an optical quality cloth moistened with an optical quality cleaning fluid for plastic lenses. Wipe the window in a single direction, turning the cloth to a clean side after each wipe (don’t wipe cloth back and forth across window). Do not leave streaks.

**ATTENTION:** Do not use abrasive materials such as disposable wipes and facial tissue. Do not use solvents like alcohol or acetone. These materials will damage the window and the finish on the reader.

**ATTENTION:** The reader has no serviceable parts. Do not open the housing of the reader.
# Troubleshooting the Readers

The following table provides a list of the most common operating problems, probable causes, and corrective actions.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause(s)</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>No blinking Green LED</td>
<td>No power</td>
<td>Check transformer, outlet and power strip.</td>
</tr>
<tr>
<td>No Motor Spin</td>
<td>No power</td>
<td></td>
</tr>
<tr>
<td>Blinking Green LED</td>
<td>Motherboard problem</td>
<td></td>
</tr>
<tr>
<td>No Motor Spin</td>
<td>1. Motherboard problem</td>
<td>Contact an Allen–Bradley service representative.</td>
</tr>
<tr>
<td></td>
<td>2. Reader is in motor failure condition.</td>
<td></td>
</tr>
<tr>
<td>LED’s toggle back and forth and unit produces “razzes”</td>
<td>1. Motor may be defective.</td>
<td>Contact an Allen–Bradley service representative(^1).</td>
</tr>
<tr>
<td></td>
<td>2. Too much vibration or jarring</td>
<td>Isolate reader from vibration.</td>
</tr>
<tr>
<td>Reader makes “razz” tone during power-up</td>
<td>Decode module failed communications with the motherboard</td>
<td>Contact an Allen-Bradley service representative.</td>
</tr>
<tr>
<td>Power-up OK, reads OK but does not communicate properly to host.</td>
<td>COM Port at host not working or is configured improperly</td>
<td>As a quick test, put reader into Program mode through StrataScan software. If successful, the RECEIVE and TRANSMIT lines are working(^2).</td>
</tr>
<tr>
<td>Does not communicate properly to host</td>
<td>Cable not connected to the proper COM Port</td>
<td>Check cable connections.</td>
</tr>
</tbody>
</table>

\(^1\) If reader is in an environment subject to much vibration or sudden jarring, the motor may experience a motor failure condition temporarily. The unit will recover after the external stimulus has disappeared.

\(^2\) If the reader is not configured for host RTS/CTS, this test is enough to verify that the reader, communication cable and host are all working properly. When the reader is configured for host RTS/CTS, temporarily disable this function in the reader and try the quick test above. If the reader works with RTS/CTS disabled, and fails when RTS/CTS is re-enabled, there is a problem with either the RTS or CTS line or both. Contact an Allen–Bradley service rep.

*Table continued on the next page.*
<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause(s)</th>
<th>Corrective Action</th>
</tr>
</thead>
</table>
| Reader does not enter Program mode | 1. Host COM Port not working properly  
2. Wrong COM Port  
3. Communication cable is not connected properly or is defective | 1. Check to see if cable connection to COM Port is correct.  
2. Make sure COM Port selection in StrataScan configuration software is correct. |
| Host receiving data but data does not look correct | Interface format incompatibility | Check that the reader and host are configured for the same interface format. |
| Characters are being dropped | No inter-character delay | Add some inter-character delay to the transmitted output. Program this into reader through the StrataScan configuration software. |
| Unit powers up properly and lasers come on, but still does not read. | Reading a particular symbology that has been deselected. | Verify that the bar code being read is selected. |
|  | Reader has been programmed for a character length lock or for a minimum length and the bar code being read does not satisfy the programmed criteria. | Verify that bar code being read falls into the criteria. |
|  | Reader has been configured for Package Detect Support, but is not receiving a Package Detect signal | Verify that the device used to generate the package detect input is working properly. |
|  | Reader reads and transmits a bar code, but the reader hangs up (green LED comes on and stays on) after the first read. The reader is configured to support some form of host handshaking, but is not receiving the signal. If the reader is setup to support ACK/NAK, RTS/CTS, XON/XOFF or D/E. | Verify that host is supporting the handshaking properly. |
|  | Package Detect is selected and the Package Detect signal seems to be generated properly, but the reader is not reading. | Read duration may be set too short. Read duration can be set from 100 msec to 8.9 sec. Make sure that read duration time is set correctly for the particular application. |
|  | Reader reads and transmits, but the data is not correct at the host. | Verify that reader’s data format matches that required by the host. Make sure that the reader is connected to the proper host port. As a rule of thumb, if configurations can be downloaded successfully to the reader, the cable and port setup are physically working. The only exception is with RTS/CTS, which is not used during the download sequence. |

Table continued on the next page.
## Maintenance and Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause(s)</th>
<th>Corrective Action</th>
</tr>
</thead>
</table>
| Cannot read bar code<sup>1</sup> | 1. Print quality of the bar code is suspect.  
2. The aspect ratio of the bar code is out of tolerance.  
3. The bar code may have been printed incorrectly. | To verify the basic operation of the reader, configure the reader with the standard default settings. To do this, enter the reader's Program Mode from StrataScan's main menu. Press Enter at the Configuration screen menu choice. From the Configuration screen, press F5 to download the configuration to the reader. The reader is now setup to read all common symbologies with a minimum of 4 characters. Try reading a typical UPC bar code on a typical office supply product or food product. If the reader reads the bar code presented, the basic operation of the reader is verified. The problem is within the reader setup. Determine how the reader should be configured. Contact an Allen–Bradley service rep. for help. | |
| DOS error code:  
# 68 – Device unavailable | This error occurs when a file or COM Port is accessed (that according to the system) does not exist. Normally this occurs when the COM Port is used that is attached to a wrong type of peripheral. Or when there is a problem with the COM Port itself. | Try using another COM Port, if available. If all else fails, reboot the system. |
| DOS error code:  
# 24 – Device timeout | This error occurs when the host did not receive information from the I/O device within a predetermined amount of time. | Check that the reader is connected to the correct COM Port and verify that the COM Port is working correctly. If all else fails, reboot the system. |

<sup>1</sup> Many other scenarios can cause reading problems. If problems persist, contact an Allen–Bradley service representative.
Technical Support Services

If you have any questions about the StrataScan Bar Code Reader, please consult this manual first. If you can’t find the answer, contact your local Allen-Bradley support office or distributor.
Appendix A

Specifications

This appendix provides the specifications and dimensions for the:

- StrataScan Bar Code Readers (Catalog Nos. 2755-LHR-5B, 2755-LHR-3C, 2755-LHR-5C and 2755–LHR–5BX1)
- interface box (Catalog No. 2755-LHB-1)
- replacement power supply (Replacement Part No. 77126-896-01)
- replacement mounting brackets for readers (Replacement Part Nos. 77126-898-01 and 77126-898-02)
# StrataScan Bar Code Reader Specifications

The following table provides the specifications for the StrataScan Bar Code Readers (Catalog Nos. 2755-LHR-5B, 2755-LHR-3C, and 2755-LHR-5C).

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catalog No.</strong></td>
<td><strong>Catalog No.</strong></td>
</tr>
<tr>
<td>2755-LHR-5B</td>
<td>2755-LHR-3C</td>
</tr>
<tr>
<td>2755-LHR-5C</td>
<td>2755–LHR–5BX1</td>
</tr>
<tr>
<td><strong>Scan Speed</strong></td>
<td>5250 scan lines per second</td>
</tr>
<tr>
<td></td>
<td>3360 scan lines per second</td>
</tr>
<tr>
<td></td>
<td>5600 scan lines per second</td>
</tr>
<tr>
<td></td>
<td>7350 scan lines per second</td>
</tr>
<tr>
<td><strong>Number of Scan Lines</strong></td>
<td>75 interlocking lines</td>
</tr>
<tr>
<td></td>
<td>48 interlocking lines</td>
</tr>
<tr>
<td></td>
<td>80 interlocking lines</td>
</tr>
<tr>
<td></td>
<td>80 interlocking lines</td>
</tr>
<tr>
<td><strong>Operating Current</strong></td>
<td>2.5 A</td>
</tr>
<tr>
<td></td>
<td>2.8 A</td>
</tr>
<tr>
<td></td>
<td>3.59 A</td>
</tr>
<tr>
<td></td>
<td>3.59 A</td>
</tr>
<tr>
<td><strong>Power Requirements</strong></td>
<td>Input + 12V dc ± 4% regulated @ 480 mA with 200 mV p-p maximum ripple</td>
</tr>
<tr>
<td><strong>Scan Pattern</strong></td>
<td>Omnidirectional</td>
</tr>
<tr>
<td><strong>Tilt</strong></td>
<td>360°</td>
</tr>
<tr>
<td><strong>Skew Tolerance</strong></td>
<td>± 60°</td>
</tr>
<tr>
<td><strong>Pitch Angle</strong></td>
<td>± 60°</td>
</tr>
<tr>
<td><strong>Decode Depth of Field</strong></td>
<td>36 in. to 76 in. (91 cm to 193 cm)</td>
</tr>
<tr>
<td><strong>Print Contrast Minimum</strong></td>
<td>35% reflectance difference</td>
</tr>
<tr>
<td><strong>Output Wavelength</strong></td>
<td>675 nm nominal</td>
</tr>
<tr>
<td><strong>Ambient Light Immunity</strong></td>
<td></td>
</tr>
<tr>
<td>Artificial Lighting</td>
<td>400 ft candles (fluorescent, incandescent, and mercury vapor)</td>
</tr>
<tr>
<td>Soft Outdoor</td>
<td>1800 ft candles</td>
</tr>
<tr>
<td><strong>Housing Rating</strong></td>
<td>NEMA 12 steel case</td>
</tr>
<tr>
<td><strong>Operating Shock</strong></td>
<td>100g for 1 ms</td>
</tr>
<tr>
<td><strong>Electrostatic Discharge</strong></td>
<td>15 kv IEC 801-2 level 4</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>32° F to 104° F (0° C to 40° C)</td>
</tr>
<tr>
<td><strong>Storage Temperature</strong></td>
<td>−40° F to 140° F (−40° C to 60° C)</td>
</tr>
<tr>
<td><strong>Humidity</strong></td>
<td>5% to 95% noncondensing</td>
</tr>
<tr>
<td><strong>CDRH Class</strong></td>
<td>II</td>
</tr>
<tr>
<td><strong>Agency Certification</strong></td>
<td>• cUL listed</td>
</tr>
<tr>
<td></td>
<td>• UL listed</td>
</tr>
<tr>
<td></td>
<td>• CE marked for all applicable directives.</td>
</tr>
<tr>
<td></td>
<td>• IEC class I</td>
</tr>
</tbody>
</table>
## Interface Box Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog Number</td>
<td>2755-LHB-1</td>
</tr>
<tr>
<td><strong>Electrical Characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Input Voltage</td>
<td>UL and cUL</td>
</tr>
<tr>
<td></td>
<td>100, 115, or 230 V ac at 50 Hz, 60 Hz 6.1 A</td>
</tr>
<tr>
<td></td>
<td>CE</td>
</tr>
<tr>
<td></td>
<td>115, 230 V ac at 50 Hz, 60 Hz 5.1A</td>
</tr>
<tr>
<td>Relay</td>
<td>Triac, 5 A EEA Countries</td>
</tr>
<tr>
<td></td>
<td>6 A USA and Canada</td>
</tr>
<tr>
<td>Output for Sensor</td>
<td>+12 V dc @ 200 mA</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>32 °F to 122 °F (0 °C to 50 °C)</td>
</tr>
<tr>
<td>Humidity</td>
<td>5% to 95% noncondensing</td>
</tr>
<tr>
<td><strong>Agency Certification</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• cUL listed</td>
</tr>
<tr>
<td></td>
<td>• UL listed</td>
</tr>
<tr>
<td></td>
<td>• CE marked for all applicable directives.</td>
</tr>
</tbody>
</table>

## Power Supply Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replacement Part Number</td>
<td>77126–896–01</td>
</tr>
<tr>
<td>Input Voltage</td>
<td>100 to 240 V ac</td>
</tr>
<tr>
<td>Input Frequency</td>
<td>50 to 60 Hz</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>+12 V</td>
</tr>
<tr>
<td><strong>Vibration</strong></td>
<td>± 7.35 m/sec^2</td>
</tr>
<tr>
<td>Acceleration</td>
<td>x, y, and z axis</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>41 °F to 113 °F (5 °C to 45 °C)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-13 °F to 185 °F (-25 °C to 85 °C)</td>
</tr>
<tr>
<td><strong>Operating Humidity</strong></td>
<td>20%–80% non-condensing</td>
</tr>
<tr>
<td><strong>Storage Humidity</strong></td>
<td>5%–90% non-condensing</td>
</tr>
<tr>
<td><strong>Agency Certification</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• CSA certified</td>
</tr>
<tr>
<td></td>
<td>• UL Recognized</td>
</tr>
<tr>
<td></td>
<td>• CE marked for all applicable directives.</td>
</tr>
</tbody>
</table>
Reader dimensions are shown below:

**Catalog Number 2755-LHR-5B**

Front View

Side View

- 5.75 in. (14.6 cm)
- 11.45 in. (29.1 cm)
- 11.12 in. (28.2 cm)

**Catalog Numbers 2755-LHR-3C, -5C and -5BX1**

Front View

Side View

- 7.25 in. (18.4 cm)
- 15.19 in. (38.6 cm)
- 14.31 in. (36.3 cm)
Interface Box Dimensions

Dimensions for the interface box are shown below:

Catalog Number 2755-LHB-1

Power Supply Dimensions

Power supply dimensions are shown below:

Replacement Part Number 77126-896-01
Mounting Bracket Dimensions

Mounting bracket dimensions for all StrataScan readers are shown starting below:

Replacement Part Number 77126-898-01 (for reader 2755-LHR-5B)
Replacement Part Number 77126-898-02 (for readers 2755-LHR-3C, -5C and -5BX1)

Top View

Side View

Front View

- 0.41 in. (1.04 cm)
- 3.25 in. (8.26 cm)
- 14.75 in. (37.47 cm)
- 12.00 in. (30.48 cm)
- 1.50 in. (3.81 cm)
- 11.19 in. (28.42 cm)
- 6.00 in. (15.24 cm)
Cable Pinouts

This appendix provides the cable pinouts for the readers, interface box, power supply, and assorted cables.
The following sections provide the pinouts for the StrataScan Bar Code Readers (Catalog Nos. 2755-LHR-5B, -3C, -5C and 5BX1).

RS-232 Port

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>Chassis ground</td>
</tr>
<tr>
<td>2</td>
<td>RXD</td>
<td>Reader receives data from the host device.</td>
</tr>
<tr>
<td>3</td>
<td>TXD</td>
<td>Reader transmits data to the host device.</td>
</tr>
<tr>
<td>4</td>
<td>CTS Input</td>
<td>Reader is requesting data from the host device.</td>
</tr>
<tr>
<td>5</td>
<td>RTS Output</td>
<td>Host device is requesting data from the reader.</td>
</tr>
<tr>
<td>6</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
<td>Signal ground</td>
</tr>
<tr>
<td>8</td>
<td>Not used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>9</td>
<td>RXB–</td>
<td>Reader receives data from the host device (RS-422).</td>
</tr>
<tr>
<td>10</td>
<td>RXA+</td>
<td>Reader receives data from the host device (RS-422).</td>
</tr>
<tr>
<td>11</td>
<td>TXY+</td>
<td>Host transmit data to the reader (RS-422).</td>
</tr>
<tr>
<td>12</td>
<td>TXZ–</td>
<td>Host transmit data to the reader (RS-422).</td>
</tr>
<tr>
<td>13</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>14</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>15</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>16</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>17</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>18</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>19</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>20</td>
<td>DTR Input</td>
<td>The data terminal is ready.</td>
</tr>
<tr>
<td>21</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>22</td>
<td>Not Used</td>
<td>Ground</td>
</tr>
<tr>
<td>23</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>24</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>25</td>
<td>GND</td>
<td>Ground</td>
</tr>
</tbody>
</table>
## Interface Box Port

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RXD</td>
<td>Reader receives data from the interface box.</td>
</tr>
<tr>
<td>2</td>
<td>CTS</td>
<td>Reader is requesting data from the interface box.</td>
</tr>
<tr>
<td>3</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>4</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>5</td>
<td>Triac+</td>
<td>Controls the triac input.</td>
</tr>
<tr>
<td>6</td>
<td>Sensor+</td>
<td>Pin that provides the sensor’s object detected input signal.</td>
</tr>
<tr>
<td>7</td>
<td>Sensor Alarm+</td>
<td>Pin that provides the sensor’s optional marginal sensing alarm input signal.</td>
</tr>
<tr>
<td>8</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>9</td>
<td>TXD</td>
<td>Reader transmit data to the interface box.</td>
</tr>
<tr>
<td>10</td>
<td>RTS</td>
<td>Interface box is requesting data from the reader.</td>
</tr>
<tr>
<td>11</td>
<td>GND</td>
<td>Signal ground</td>
</tr>
<tr>
<td>12</td>
<td>Not used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>13</td>
<td>Triac−</td>
<td>Controls the triac input.</td>
</tr>
<tr>
<td>14</td>
<td>Sensor−</td>
<td>Pin that provides the sensor’s object detected input signal.</td>
</tr>
<tr>
<td>15</td>
<td>Sensor Alarm−</td>
<td>Pin that provides the sensor’s optional marginal sensing alarm input signal.</td>
</tr>
</tbody>
</table>
Power Supply Port

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12V dc input power to the reader.</td>
</tr>
<tr>
<td>2</td>
<td>12V dc input power to the reader.</td>
</tr>
<tr>
<td>3</td>
<td>Earth ground</td>
</tr>
<tr>
<td>4</td>
<td>Power ground</td>
</tr>
<tr>
<td>5</td>
<td>Power ground</td>
</tr>
<tr>
<td>6</td>
<td>12V dc input power to the reader.</td>
</tr>
<tr>
<td>7</td>
<td>12V dc input power to the reader.</td>
</tr>
<tr>
<td>8</td>
<td>Power ground</td>
</tr>
<tr>
<td>9</td>
<td>Power ground</td>
</tr>
</tbody>
</table>

Hand–Held Port Pinouts

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Start of Scan</td>
<td>Synchronizes decode logic with the scanner.</td>
</tr>
<tr>
<td>2</td>
<td>Digitized Bar Pattern</td>
<td>Input receives a series of pulses proportional to the widths of bar code being scanned from the hand-held scanner.</td>
</tr>
<tr>
<td>3</td>
<td>Decode LED</td>
<td>Controls green decode LED on hand-held scanner.</td>
</tr>
<tr>
<td>5</td>
<td>Trigger Switch</td>
<td>Connected to trigger switch of the hand-held scanner</td>
</tr>
<tr>
<td>6</td>
<td>Enable</td>
<td>Signal output to power up the hand-held scanner, turn on the laser, and turn on the scanning motor.</td>
</tr>
<tr>
<td>7</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Shield ground</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Power</td>
<td>+5V dc to power hand-held scanner</td>
</tr>
</tbody>
</table>

Note: Place a female contact in pin 4 of the 9-pin hand-held connector.
## Interface Box Pinouts

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Triac+</td>
<td>Controls the triac input.</td>
</tr>
<tr>
<td>B</td>
<td>Triac–</td>
<td>Controls the triac input.</td>
</tr>
<tr>
<td>C</td>
<td>Sensor+</td>
<td>Provides the sensor’s object detected input signal.</td>
</tr>
<tr>
<td>D</td>
<td>Sensor–</td>
<td>Provides the sensor’s object detected input signal.</td>
</tr>
<tr>
<td>E</td>
<td>Sensor Alarm</td>
<td>Provides the sensor’s optional marginal sensing alarm input signal.</td>
</tr>
<tr>
<td>F</td>
<td>Sensor Alarm</td>
<td>Provides the sensor’s optional marginal sensing alarm input signal.</td>
</tr>
<tr>
<td>G</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
<tr>
<td>H</td>
<td>Not Used</td>
<td>Pin not used.</td>
</tr>
</tbody>
</table>
### Power Supply Pinouts

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12V dc input power to the reader.</td>
</tr>
<tr>
<td>2</td>
<td>12V dc input power to the reader.</td>
</tr>
<tr>
<td>3</td>
<td>Earth ground</td>
</tr>
<tr>
<td>4</td>
<td>Power ground</td>
</tr>
<tr>
<td>5</td>
<td>Power ground</td>
</tr>
<tr>
<td>6</td>
<td>12V dc input power to the reader.</td>
</tr>
<tr>
<td>7</td>
<td>12V dc input power to the reader.</td>
</tr>
<tr>
<td>8</td>
<td>Power ground</td>
</tr>
<tr>
<td>9</td>
<td>Power ground</td>
</tr>
</tbody>
</table>

![Diagram of power supply pinout connections]
Reader Master/slave Cable Pinouts

<table>
<thead>
<tr>
<th>Master Reader Connector (15-Pin) Pin Number</th>
<th>Signal from Master Reader</th>
<th>Slave Reader Connector (25-Pin) Pin Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RXD (input)</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>CTS (output)</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>TXD (output)</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>RTS (input)</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>GND</td>
<td>7</td>
</tr>
</tbody>
</table>
Reader Null Modem Cable Pinouts

<table>
<thead>
<tr>
<th>PC or PLC Connector (9-Pin) Pin Number</th>
<th>Signal from Reader</th>
<th>Reader Connector (25-Pin) Pin Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>RS-232 Receive</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>RS-232 Transmit</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>CTS (input)</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>RTS (output)</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>DTR (input)</td>
<td>20</td>
</tr>
</tbody>
</table>
## Interface Box Cable Pinouts

<table>
<thead>
<tr>
<th>Reader Connector (15-Pin) Pin Number</th>
<th>Signal from Reader</th>
<th>Interface Box Connector (8-Pin) Pin Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Triac+</td>
<td>A</td>
</tr>
<tr>
<td>13</td>
<td>Triac−</td>
<td>B</td>
</tr>
<tr>
<td>6</td>
<td>Sensor+</td>
<td>C</td>
</tr>
<tr>
<td>14</td>
<td>Sensor−</td>
<td>D</td>
</tr>
<tr>
<td>7</td>
<td>Sensor alarm+</td>
<td>E</td>
</tr>
<tr>
<td>15</td>
<td>Sensor alarm−</td>
<td>F</td>
</tr>
</tbody>
</table>
## Interface Box Master/slave Cable Pinouts

<table>
<thead>
<tr>
<th>Interface Box Connector (8-Pin) Pin Number</th>
<th>Master Reader Connector (15-Pin) Pin Number</th>
<th>Signal from Master Reader</th>
<th>Slave Reader Connector (25-Pin) Pin Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>No connection</td>
<td>1</td>
<td>RXD (input)</td>
<td>3</td>
</tr>
<tr>
<td>No connection</td>
<td>2</td>
<td>CTS (output)</td>
<td>4</td>
</tr>
<tr>
<td>A</td>
<td>5</td>
<td>Triac+</td>
<td>No connection</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td>Sensor+</td>
<td>No connection</td>
</tr>
<tr>
<td>E</td>
<td>7</td>
<td>Sensor alarm+</td>
<td>No connection</td>
</tr>
<tr>
<td>No connection</td>
<td>9</td>
<td>TXD (output)</td>
<td>2</td>
</tr>
<tr>
<td>No connection</td>
<td>10</td>
<td>RTS (input)</td>
<td>5</td>
</tr>
<tr>
<td>No connection</td>
<td>11</td>
<td>GND</td>
<td>7</td>
</tr>
<tr>
<td>B</td>
<td>13</td>
<td>Triac−</td>
<td>No connection</td>
</tr>
<tr>
<td>D</td>
<td>14</td>
<td>Sensor−</td>
<td>No connection</td>
</tr>
<tr>
<td>F</td>
<td>15</td>
<td>Sensor alarm−</td>
<td>No connection</td>
</tr>
</tbody>
</table>
This appendix provides information regarding:

- compliance to European Union Directives
- declaration of conformity

If this product has the CE mark, it meets applicable standards required for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

This product is tested to meet Council Directive 89/336/EEC Electromagnetic Compatibility (EMC) and the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2
  EMC – Generic Emission Standard, Part 2 – Industrial Environment
- EN 50082-2
  EMC – Generic Immunity Standard, Part 2 – Industrial Environment

This product is intended for use in an industrial environment.

Low Voltage Directive


For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines For Noise Immunity, publication 1770-4.1
- Guidelines for Handling Lithium Batteries, publication AG-5.4
- Automation Systems Catalog, publication B111
Declaration of Conformity

Below is a copy of the Declaration of Conformity for the StrataScan Bar code Readers (Catalog Numbers 2755-LHR-5B, -3C, -5C, and -5BX1)

DECLARATION OF CONFORMITY

This Declaration of Conformity is suitable to the European Standard EN 45014, "General criteria for supplier's declaration of conformity." The basis for the criteria has been found in international documentation, particularly in: ISO/IEC Guide 22, 1982, "Information on manufacturer's declaration of conformity with standards or other technical specifications."

Allen-Bradley liability under this declaration is limited to that set forth in the current Allen-Bradley publication 6500, Terms and Conditions of Sale as well as similar publications from Allen-Bradley affiliates doing business in the European Community.

Applied Council Directive(s):
Electromagnetic Compatibility Directive (EMC) 89/336/EEC,
Low Voltage Directive 73/23/EEC,

We, Manufacturer: Allen-Bradley Company, Inc.
1201 South 2nd Street
Milwaukee, WI 53204
USA

Authorized Representative in the Community (and location of Responsible Person):
Rockwell Automation, subsidiary of Rockwell International GmbH
Düsselberger Str. 15
D-42781 Haan, Germany

declare under our sole responsibility that the product(s) (name, type/model, batch/serial number):


to which this declaration relates is in conformity with the relevant provisions of the following standard(s) or other normative document(s):

EN 55 022 : 1993
EN 60 825-1 : 1994 / A11:1996

Test Information is maintained at:
Allen-Bradley Company, Inc.
1201 South Second Street
Milwaukee, WI 53204 USA

Year of CE Marking (Low Voltage Directive): 1997

We, the undersigned, hereby declare that the product(s) specified above conforms to the listed directive(s) and standard(s).

Authorized Representative in the Community through its Responsible Person

Signature:

I.V.

Full Name: Robert Gardiner
Position: Manager, Quality Engineering
Date: Oct. 29, 1997

Full Name: Viktor Schiffer
Position: Engineering Manager
Date: Oct. 30, 1997

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