

INSTALLATION INSTRUCTIONS

NI SCXI™-1378

Terminal Block for the NI SCXI-1130

This guide describes how to install and connect signals to the National Instruments SCXI-1378 terminal block to configure the SCXI-1130 as a:

- 4x64, 1-wire matrix
- 4x32, 2-wire matrix

The SCXI-1378 terminal block installs in front of the SCXI-1130 switch module. The SCXI-1378 has screw terminals available to connect signals and trigger input and trigger output signals to the terminal block.

Refer to the *NI Switches Getting Started Guide* to determine when to install the terminal block.

Conventions

The following conventions are used in this guide:

»

The » symbol leads you through nested menu items and dialog box options to a final action. The sequence **File»Page Setup»Options** directs you to pull down the **File** menu, select the **Page Setup** item, and select **Options** from the last dialog box.



This icon denotes a tip, which alerts you to advisory information.



This icon denotes a note, which alerts you to important information.



This icon denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash.

bold

Bold text denotes items that you must select or click in the software, such as menu items and dialog box options. Bold text also denotes parameter names.

italic

Italic text denotes variables, emphasis, a cross reference, or an introduction to a key concept. This font also denotes text that is a placeholder for a word or value that you must supply.

monospace

Text in this font denotes text or characters that you should enter from the keyboard, sections of code, programming examples, and syntax examples. This font is also used for the proper names of disk drives, paths, directories, programs, subprograms, subroutines, device names, functions, operations, variables, filenames and extensions, and code excerpts.

1. Unpack the Terminal Block

To avoid damage when you handle the terminal block, take the following precautions:



Caution *Never* touch the exposed pins of connectors.

- Ground yourself using a grounding strap or by touching a grounded object.
- Touch the antistatic package to a metal part of the chassis before you remove the terminal block from the package.

Remove the terminal block from the package and inspect the terminal block for loose components or any sign of damage. Notify NI if the terminal block appears damaged in any way. Do *not* install a damaged terminal block onto a switch module.

Store the terminal block in the antistatic package when not in use.

2. Verify the Components

Make sure that you have the following items:

- SCXI-1378 terminal block
- SCXI chassis
- SCXI-1130 switch module
- 1/8 inch flathead screwdriver
- Phillips screwdriver
- Wire cutter

- Wire insulation stripper
- Matrix expansion cable (to expand the columns of a matrix)
- Matrix expansion plug (to expand the rows of a matrix)



Tip NI recommends using 28 AWG wire (ribbon or discrete) for use with the SCXI-1378 terminal block.

3. Connect Signals

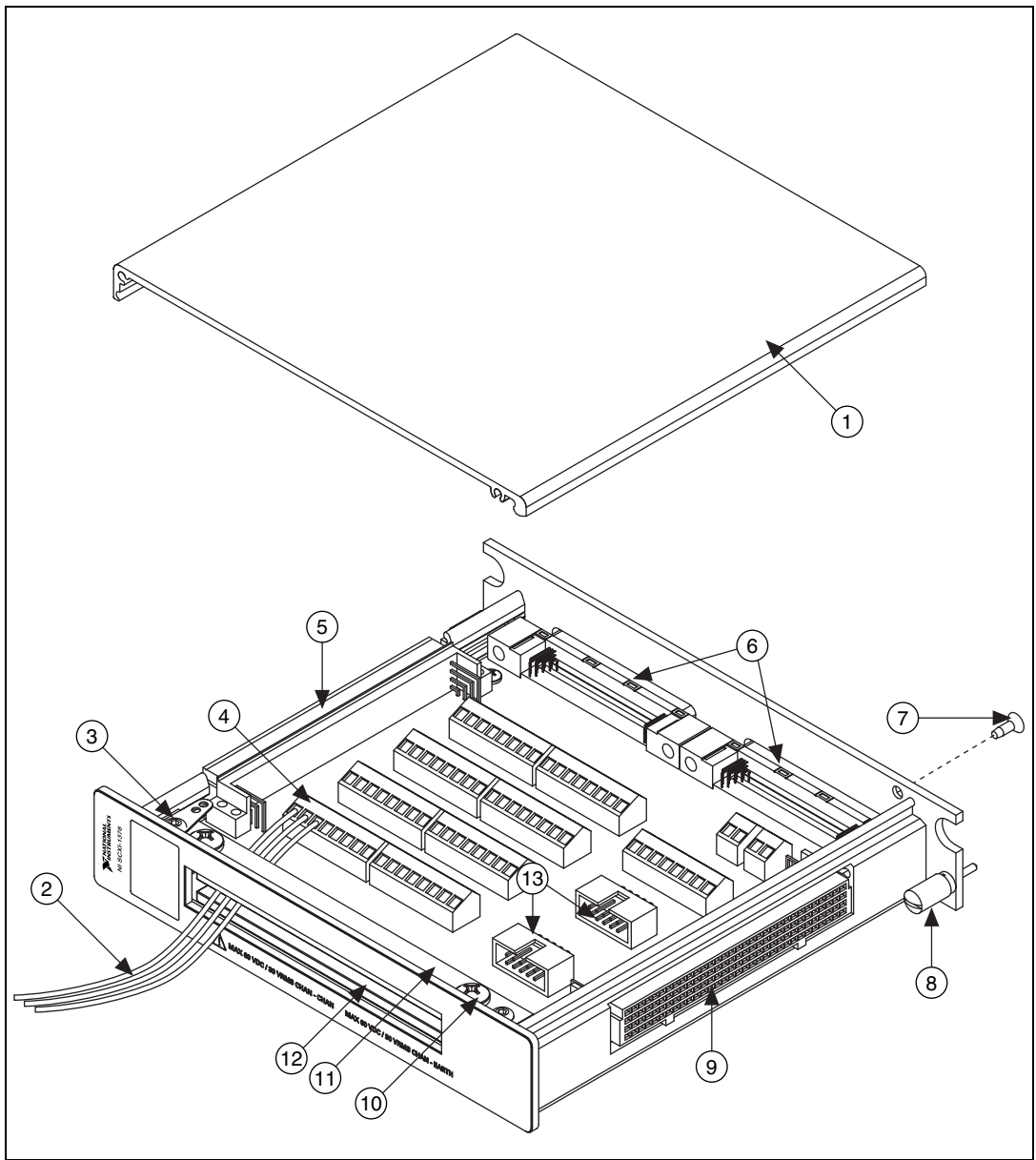
To connect signals to the terminal block, refer to Figures 1 and 2 while completing the following steps:

1. Prepare the signal wire by stripping the insulation no more than 7 mm.
2. Remove the top cover screw.
3. Unsnap and remove the top cover.
4. Loosen the two strain-relief screws on the strain-relief assembly.
5. Run the signal wires through the strain-relief opening.
6. Insert the stripped end of the wire fully into the terminal. Secure the wire by tightening the screw of the terminal. No bare wire should extend past the spring terminal. Exposed wire increases the risk of a short-circuit causing a failure.



Note When connecting wires to the SCXI-1378, refer to Tables 1 and 2 to determine terminal mapping for the chosen topology.

7. Tighten the two screws on the strain-relief assembly to secure the cables.
8. Reinstall the top cover.
9. Replace the top cover screw.



- | | |
|----------------------------|--------------------------|
| 1 Terminal Block Top Cover | 8 Thumbscrew |
| 2 Signal Wires | 9 Column Connector |
| 3 Safety Ground Lug | 10 Strain-Relief Screw |
| 4 Screw Terminals | 11 Strain-Relief Bar |
| 5 Column Connector | 12 Strain-Relief Opening |
| 6 Rear Connectors | 13 Row Connector |
| 7 Top Cover Screw | |

Figure 1. SCXI-1378 Terminal Block

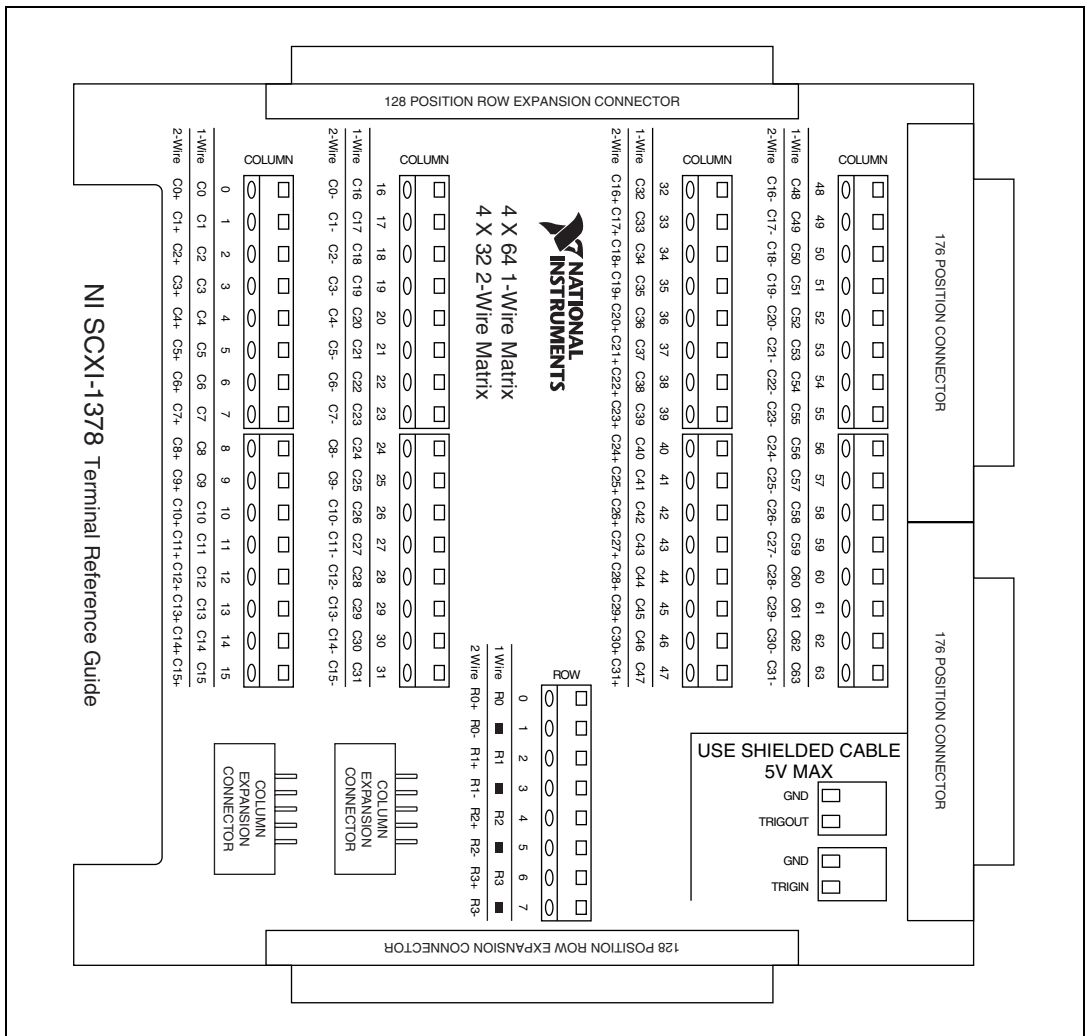


Figure 2. SCXI-1378 Terminal Block Signal Connections

Table 1. 4x64, 1-Wire Matrix Topology Mapping

| Software | Hardware | Software | Hardware | Software | Hardware |
|----------|-----------|----------|-----------|----------|-----------|
| r0 | ROW 0 | c19 | COLUMN 19 | c42 | COLUMN 42 |
| r1 | ROW 2 | c20 | COLUMN 20 | c43 | COLUMN 43 |
| r2 | ROW 4 | c21 | COLUMN 21 | c44 | COLUMN 44 |
| r3 | ROW 6 | c22 | COLUMN 22 | c45 | COLUMN 45 |
| c0 | COLUMN 0 | c23 | COLUMN 23 | c46 | COLUMN 46 |
| c1 | COLUMN 1 | c24 | COLUMN 24 | c47 | COLUMN 47 |
| c2 | COLUMN 2 | c25 | COLUMN 25 | c48 | COLUMN 48 |
| c3 | COLUMN 3 | c26 | COLUMN 26 | c49 | COLUMN 49 |
| c4 | COLUMN 4 | c27 | COLUMN 27 | c50 | COLUMN 50 |
| c5 | COLUMN 5 | c28 | COLUMN 28 | c51 | COLUMN 51 |
| c6 | COLUMN 6 | c29 | COLUMN 29 | c52 | COLUMN 52 |
| c7 | COLUMN 7 | c30 | COLUMN 30 | c53 | COLUMN 53 |
| c8 | COLUMN 8 | c31 | COLUMN 31 | c54 | COLUMN 54 |
| c9 | COLUMN 9 | c32 | COLUMN 32 | c55 | COLUMN 55 |
| c10 | COLUMN 10 | c33 | COLUMN 33 | c56 | COLUMN 56 |
| c11 | COLUMN 11 | c34 | COLUMN 34 | c57 | COLUMN 57 |
| c12 | COLUMN 12 | c35 | COLUMN 35 | c58 | COLUMN 58 |
| c13 | COLUMN 13 | c36 | COLUMN 36 | c59 | COLUMN 59 |
| c14 | COLUMN 14 | c37 | COLUMN 37 | c60 | COLUMN 60 |
| c15 | COLUMN 15 | c38 | COLUMN 38 | c61 | COLUMN 61 |
| c16 | COLUMN 16 | c39 | COLUMN 39 | c62 | COLUMN 62 |
| c17 | COLUMN 17 | c40 | COLUMN 40 | c63 | COLUMN 63 |
| c18 | COLUMN 18 | c41 | COLUMN 41 | | |

Table 2. 4x32, 2-Wire Matrix Topology Mapping

| Software | Hardware | |
|----------|-----------|-----------|
| | + | - |
| r0 | ROW 0 | ROW 1 |
| r1 | ROW 2 | ROW 3 |
| r2 | ROW 4 | ROW 5 |
| r3 | ROW 6 | ROW 7 |
| c0 | COLUMN 0 | COLUMN 16 |
| c1 | COLUMN 1 | COLUMN 17 |
| c2 | COLUMN 2 | COLUMN 18 |
| c3 | COLUMN 3 | COLUMN 19 |
| c4 | COLUMN 4 | COLUMN 20 |
| c5 | COLUMN 5 | COLUMN 21 |
| c6 | COLUMN 6 | COLUMN 22 |
| c7 | COLUMN 7 | COLUMN 23 |
| c8 | COLUMN 8 | COLUMN 24 |
| c9 | COLUMN 9 | COLUMN 25 |
| c10 | COLUMN 10 | COLUMN 26 |
| c11 | COLUMN 11 | COLUMN 27 |
| c12 | COLUMN 12 | COLUMN 28 |
| c13 | COLUMN 13 | COLUMN 29 |

| Software | Hardware | |
|----------|-----------|-----------|
| | + | - |
| c14 | COLUMN 14 | COLUMN 30 |
| c15 | COLUMN 15 | COLUMN 31 |
| c16 | COLUMN 32 | COLUMN 48 |
| c17 | COLUMN 33 | COLUMN 49 |
| c18 | COLUMN 34 | COLUMN 50 |
| c19 | COLUMN 35 | COLUMN 51 |
| c20 | COLUMN 36 | COLUMN 52 |
| c21 | COLUMN 37 | COLUMN 53 |
| c22 | COLUMN 38 | COLUMN 54 |
| c23 | COLUMN 39 | COLUMN 55 |
| c24 | COLUMN 40 | COLUMN 56 |
| c25 | COLUMN 41 | COLUMN 57 |
| c26 | COLUMN 42 | COLUMN 58 |
| c27 | COLUMN 43 | COLUMN 59 |
| c28 | COLUMN 44 | COLUMN 60 |
| c29 | COLUMN 45 | COLUMN 61 |
| c30 | COLUMN 46 | COLUMN 62 |
| c31 | COLUMN 47 | COLUMN 63 |

4. Expanding Rows & Columns

The SCXI-1378 terminal blocks offers convenient methods for expanding the rows and/or columns of a matrix using two or more SCXI-1378 terminal blocks. If you are not expanding the rows or columns of the matrix, skip to the [Install the Terminal Block](#) section. For more information about expanding matrices, refer to the *NI Switches Help*.

Row Expansion

Figure 3 shows how to expand the rows of a 4x32 matrix using a matrix expansion plug. The matrix expansion plug connects columns to expand the rows. To expand the rows of a matrix, complete the following steps:

1. Connect two SCXI-1378 terminal blocks to the front connectors of two adjacent SCXI-1130 modules.
2. Tighten the top and bottom chassis screws on the back of the terminal block rear panels to hold them securely in place.
3. Connect a matrix expansion plug to the top or bottom column connectors of the two SCXI-1378 terminal blocks.

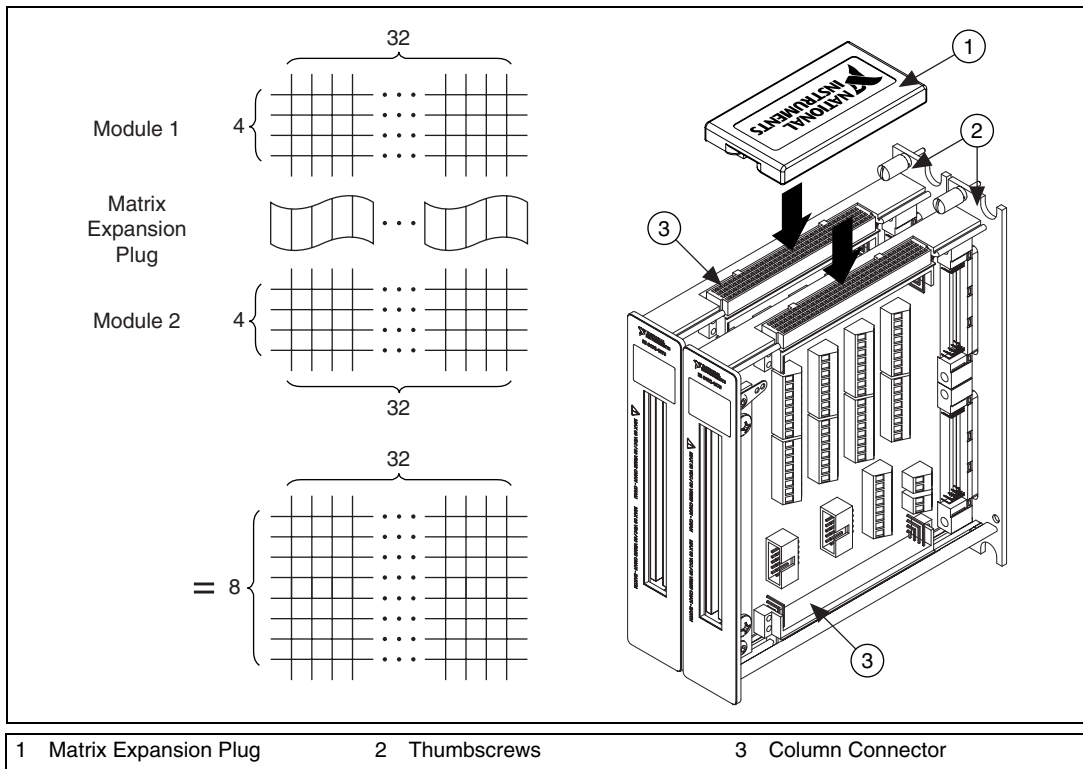


Figure 3. Row Expansion with the SCXI-1378

Column Expansion

Figure 4 shows how to expand the columns of a 4x32 matrix using a matrix expansion cable. The matrix expansion cable connects rows to expand the columns. To expand the columns of a matrix, complete the following steps:

1. Connect one end of the matrix expansion cable to one of the ROW CONNECTION CABLE terminals in one of the SCXI-1378 terminal blocks.
2. Connect the other end of the matrix expansion cable to one of the ROW CONNECTION CABLE terminals in another SCXI-1378.
3. Connect the two SCXI-1378 terminal blocks to the front connectors of the two SCXI-1130 modules.
4. Tighten the top and bottom chassis screws on the back of the terminal block rear panels to hold them securely in place.

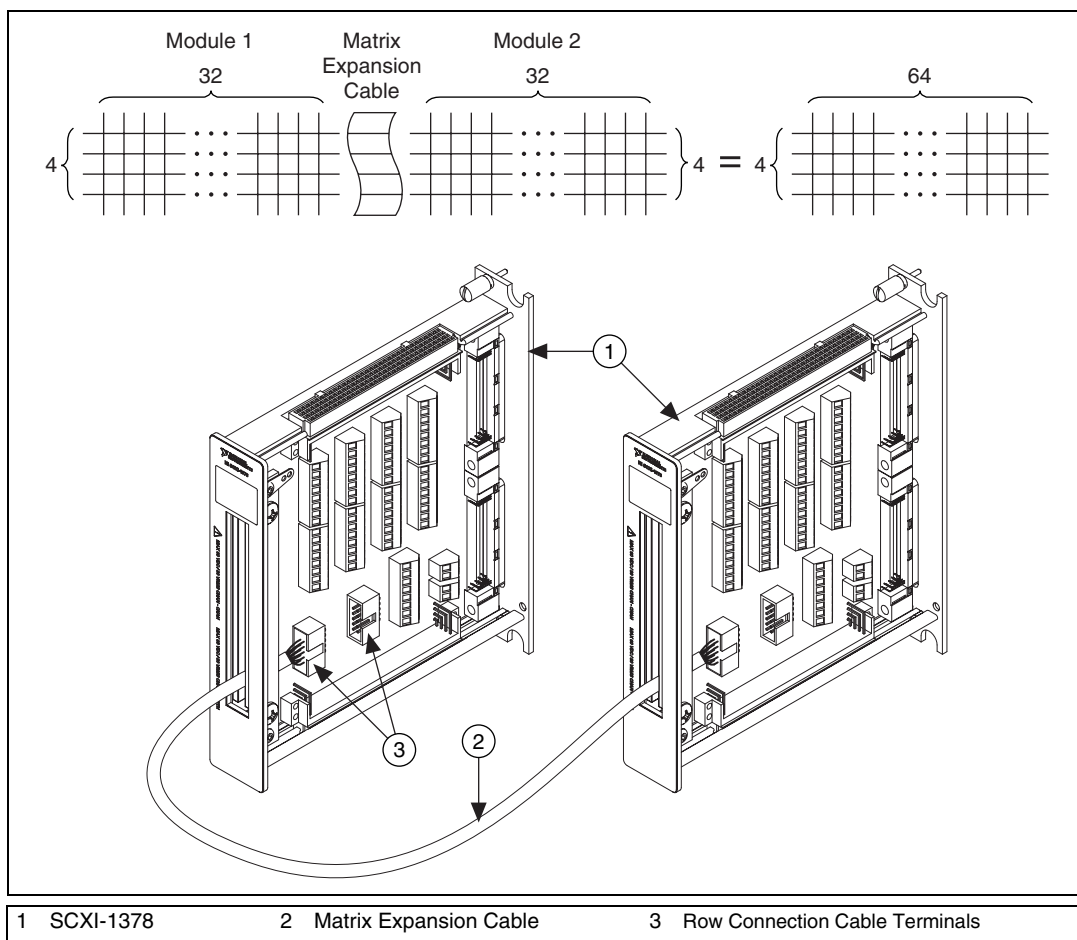


Figure 4. Column Expansion with the SCXI-1378

5. Install the Terminal Block

To connect the SCXI-1378 terminal block to the SCXI-1130 front panel, refer to Figure 5 and complete the following steps (the SCXI-1130 should already be installed in an SCXI chassis):

1. Plug the SCXI-1378 onto the front connectors of the SCXI-1130.
2. Tighten the top and bottom thumbscrews on the back of the terminal block rear panel to hold it securely in place.

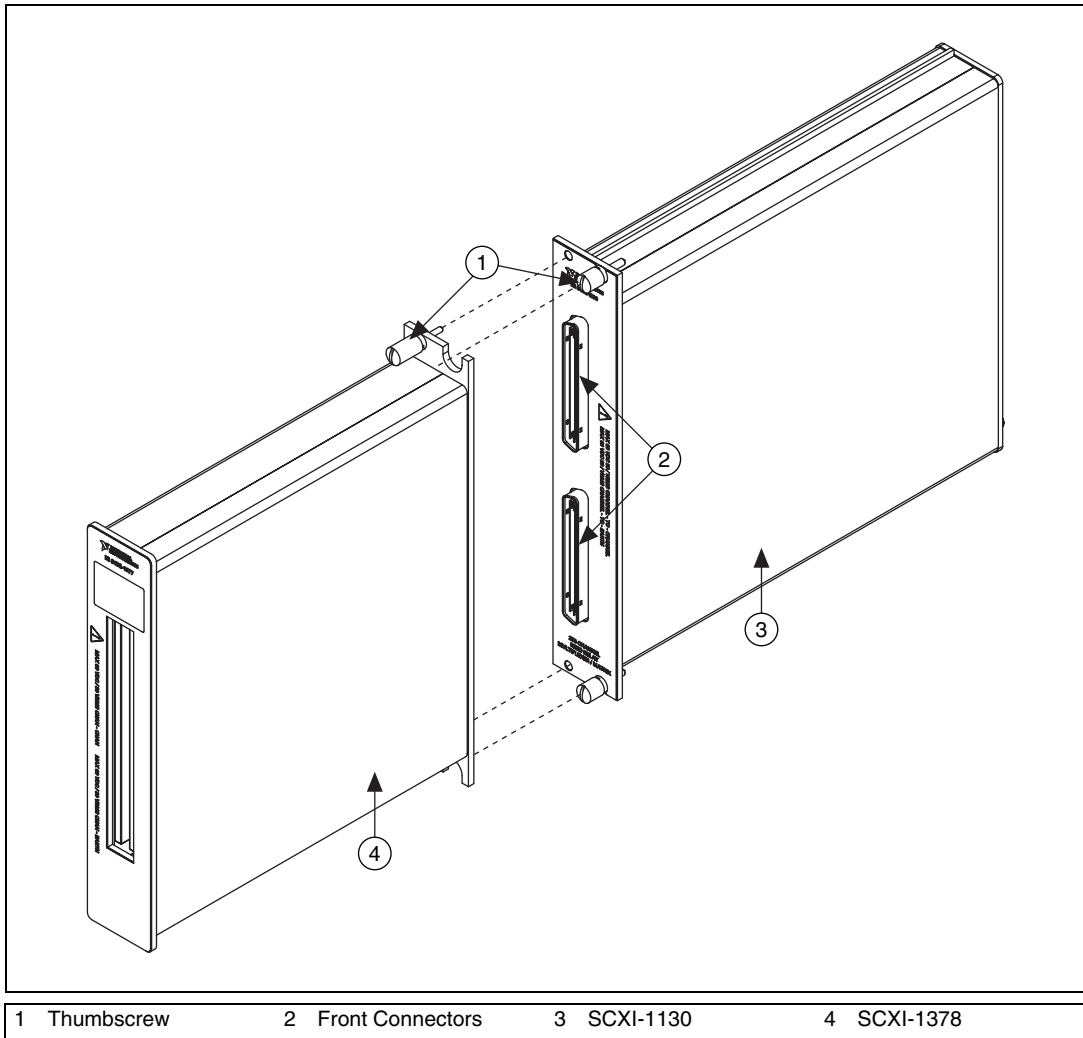


Figure 5. Installing the SCXI-1378 Terminal Block

Compliance and Certifications

Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 3111-1, UL 61010B-1
- CAN/CSA C22.2 No. 1010.1



Note For UL and other safety certifications, refer to the product label, or visit ni.com/hardref.nsf, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

| | |
|-----------------|--|
| Emissions | EN 55011 Class A at 10 m FCC Part 15A above 1 GHz |
| Immunity | EN 61326:1997 + A2:2001, Table 1 |
| EMC/EMI..... | CE, C-Tick, and FCC Part 15 (Class A) Compliant |



Note For EMC compliance, you *must* operate this device with shielded cabling.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

| | |
|--|------------|
| Low-Voltage Directive (safety) | 73/23/EEC |
| Electromagnetic Compatibility Directive (EMC) | 89/336/EEC |



Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, visit ni.com/hardref.nsf, search by model number or product line, and click the appropriate link in the Certification column.

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