

Calibrating the SCXI™-1124 with Calibration Executive

This document contains specific instructions for loading and running a calibration procedure with Calibration Executive.

Equipment and Other Test Requirements

This section describes the equipment and environmental conditions needed for calibration.

Test Equipment

To calibrate an SCXI-1124 module, you need a digital multimeter (DMM). The calibration procedure runs in automated mode if you use IVI-supported instruments. NI recommends you use the following standards:

- DMM—Agilent 34401A
- 16-bit National Instruments E Series data acquisition (DAQ) device
- 290 Ω resistor



Note For an explanation of automated versus manual calibration, refer to the *Calibration Executive Software User Manual*.

If you do not have this DMM, you need to use a multiranging 5 1/2 digit DMM with an accuracy of 15 ppm as a substitute calibration standard.

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Connectors

Although you can perform the calibration procedure without any special connectors, connecting and disconnecting the standards is easier with the correct equipment. If you do not have custom connection hardware, you may need the following connectors:

- Connector block such as the National Instruments SCXI-1325
- Shielded 68-pin connector cable
- SCXI-1349 cable adapter

Connection and Environmental Considerations

Follow these guidelines to optimize the connections and the environment during calibration:

- Keep connections to the SCXI module as short as possible. Long cables and wires can act as antennae, which could pick up extra noise that would affect measurements.
- Use shielded copper wire for all cable connections to the device. It is often advisable to use twisted-pair wire to eliminate noise and thermal offsets.
- Maintain a temperature of 18 to 28 °C.
- Keep relative humidity below 80%.
- Allow a warm-up time of at least 30 minutes for the SCXI module and E Series DAQ device to ensure that the measurement circuitry is at a stable operating temperature.

Calibration Temperature Considerations

Temperature change affects an instrument's measurement characteristics. To take these changes into account, the tested specifications include the effects of temperature drift. For the SCXI-1124, valid temperature drift is ± 5 °C.

Running the SCXI-1124 Calibration Procedure

This section explains how to set up and run your calibration procedure. In automated mode, the calibration procedure should take approximately 30 minutes. In manual mode, the calibration procedure can take as long as an hour.

Setting Up the Device

To set up the module for calibration, refer to Figure 1 as you perform the following steps:

1. Install the SCXI-1124 in slot 1 of the SCXI chassis.
2. Install the E Series DAQ device in the host computer.
3. Connect a 68-to-68-pin cable between the SCXI module and the E Series DAQ device installed in the host computer through the SCXI-1349 cable adapter.
4. Configure the hardware with Measurement & Automation Explorer (MAX).

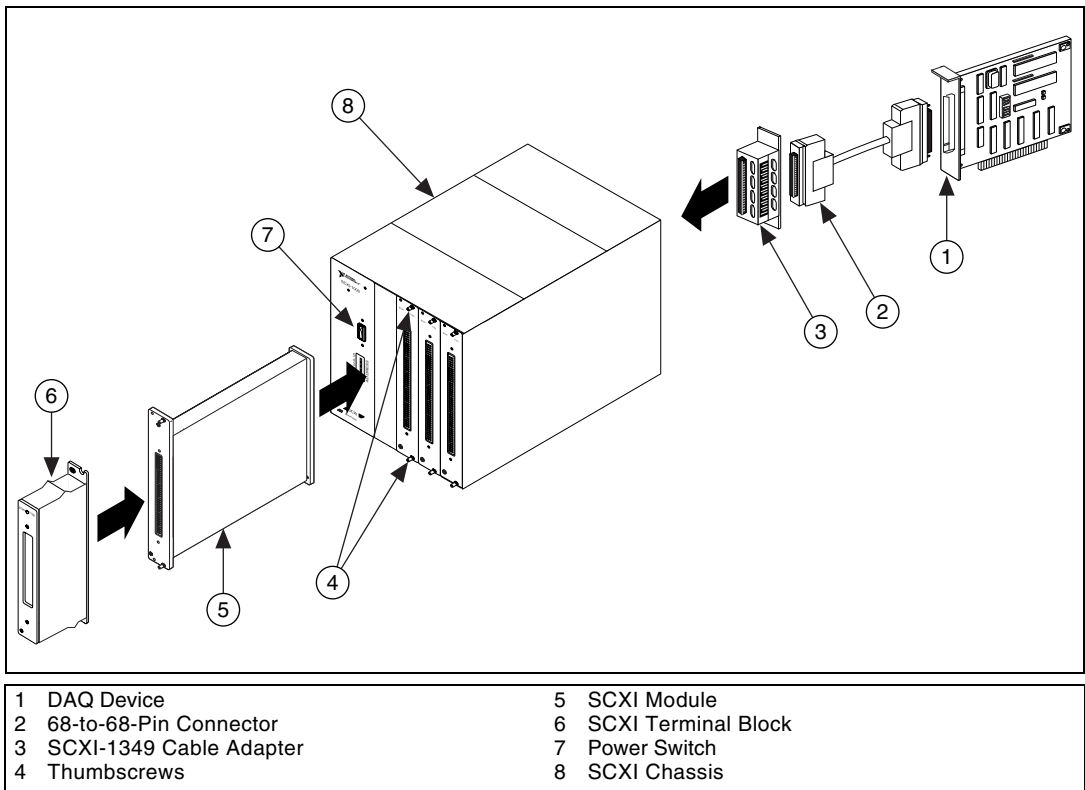


Figure 1. Connecting an SCXI Module to an E Series Device



Note Refer to the *SCXI Quick Start Guide* and *DAQ Quick Start Guide* that you received with your module for specific configuration information.

Connecting the DMM to the SCXI Module

Calibration Executive guides you through connections between the DMM and the SCXI module. However, the first steps are as follows:

1. Connect all GND inputs on each channel together.
2. Connect the LO voltage input of the DMM to any GND channel.
3. Connect the HI voltage input of the DMM to V_{OUT} on channel 0.

Loading Calibration Procedures

Launch Calibration Executive and follow the steps listed in the Calibration Configuration Wizard to load the SCXI-1124 calibration procedure. Refer to the *Calibration Executive Software User Manual* for more information on configuring and loading a calibration procedure.

To calibrate the module, the calibration procedure prompts you to enter the following information about the installed hardware:

- *MIO Device Number*—The device number assigned by MAX for the E Series device
- *SCXI Chassis ID*—The ID number that MAX assigns for the SCXI chassis
- *SCXI Module Slot*—The SCXI slot where the SCXI-1124 is installed

When the procedure is loaded, click **Run Procedure**. For more information on running a calibration procedure, refer to the *Calibration Executive Software User Manual*.

Specifications

Refer to the *SCXI-1124 User Manual* for module specifications. Visit ni.com/manuals for the most current specifications and product documentation.