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SCXI-1346 Shielded Multichassis Cable Adapter Installation Guide

Part Number 320722-01

This guide describes how to connect a multichassis SCXI system using the SCXI-1346 shielded multichassis adapter. In addition to the SCXI-1346 kits, you will need SCXI chassis, SCXI modules, a computer, a DAQ board, shielded cables, and a small flathead screwdriver.

Introduction

With the SCXI-1346 shielded multichassis adapter and cables, you can connect a multichassis SCXI system to your data acquisition board. You can use the SCXI-1346 adapter to connect the AT-MIO-16, AT-MIO-16F-5, AT-MIO-16X, MC-MIO-16, NB-MIO-16, NB-MIO-16X, and NEC-MIO-16 boards to the following modules:

- SCXI-1100
- SCXI-1120, SCXI-1121, and SCXI-1122
- SCXI-1124
- SCXI-1140
- SCXI-1160, SCXI-1161, SCXI-1162, and SCXI-1163
- SCXI-1180 and SCXI-1181

The SCXI-1346 shielded multichassis cable adapter is a connector assembly with four connectors, which are:

- A 68-pin male rear connector on the rear panel of the adapter, labeled TO NEXT CHASSIS
- A 68-pin male rear connector on the rear panel of the adapter, labeled FROM DAQ BOARD OR PREVIOUS CHASSIS
- A 50-pin male breakout connector on the PC board
- A 50-pin bracket-mounted female module connector

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Figure 1 shows the SCXI-1346 shielded multichassis adapter.

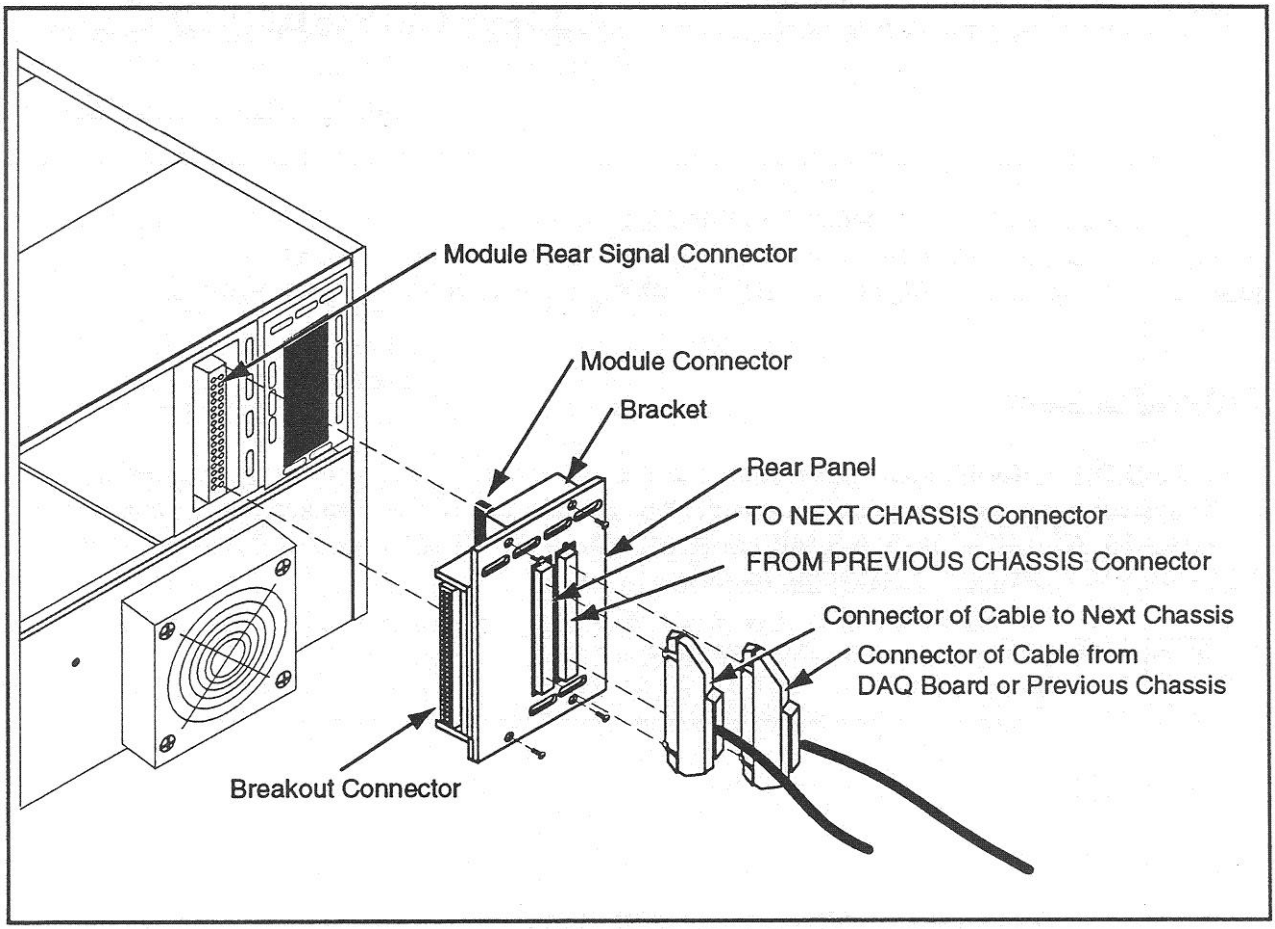


Figure 1. SCXI-1346 Shielded Multichassis Cable Adapter

Note: ***The SCXI-1346 occupies the rear connector space of two modules. You cannot bring any external cables into the rear of the module that is to the right of the module connected to the SCXI-1346. Because multichassis SCXI systems usually have only one set of cables, this should not be a problem for your application.***

Use a shielded cable to connect the FROM DAQ BOARD OR PREVIOUS CHASSIS connector to your DAQ board or to the previous SCXI chassis. Use a shielded cable to connect the TO NEXT CHASSIS connector to the next SCXI chassis. When you plug the adapter into the rear of the SCXI chassis, the module connector mates with the module rear signal connector. You can use the breakout connector to send the signals from the DAQ board to another module or to an SCXI-1180 feedthrough panel.

What Your Kit Should Contain

The SCXI-1346 shielded multichassis cable adapter kit contains the following components:

Kit Component	Part Number
Cable adapter assembly	182543-01
Four small screws	742413-01
SCXI-1346 Shielded Cable Installation Guide	320722-01

If your kit is missing any of the components, contact National Instruments.

Installation Procedure

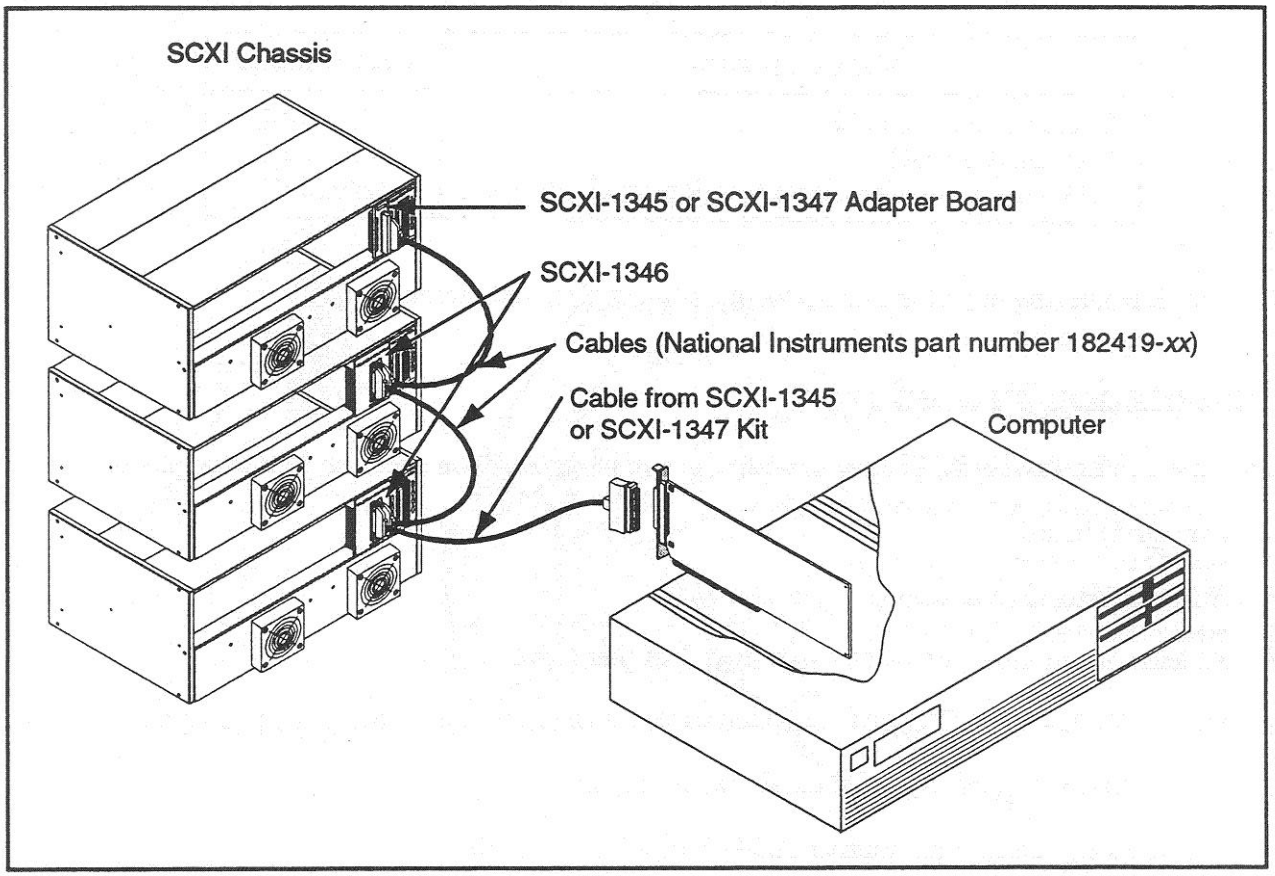
To cable a multichassis SCXI system with *N* chassis together, you need the following pieces:

- One DAQ board
- *N* SCXI-1001 chassis (a maximum of eight)
- At least one module per chassis (see page 1 of this guide)
- One SCXI-1345 or SCXI-1347 shielded cable kit (includes one cable and one adapter board)
- *N*-1 SCXI-1346 shielded multichassis cable adapters
- *N*-1 shielded cables (part number 182419-1m,-2m, -5m, -10m)
- The following table lists which cables work with which boards.

DAQ Board	SCXI-1345 or SCXI-1347
AT-MIO-16	SCXI-1345
AT-MIO-16F-5	SCXI-1345
AT-MIO-16X	SCXI-1345
AT-MIO-16X (68-pin version)	SCXI-1347
MC-MIO-16	SCXI-1345
NB-MIO-16	SCXI-1345
NB-MIO-16X	SCXI-1345
NEC-MIO-16	SCXI-1347

Note: ***You must not exceed 10 m of total cable length in a multichassis SCXI system for reliable operation. Also, if you are using the NB-MIO-16 or the NB-MIO-16X, you must not cable any chassis more than 1 m of cable length away from the last chassis in the system (the chassis with the SCXI-1345 or SCXI-1347 cable adapter in it).***

For example, to connect a three-chassis system with an AT-MIO-16 DAQ board, you need one SCXI-1345 shielded cable kit, two SCXI-1346 multichassis adapters, and two 1182419-1m,-2m, -5m, or -10m cables. The finished installation of this system looks like Figure 2.



Note: xx ***in part number 182419 stands for the cable meter length.***

Figure 2. Completed Cable Installation

Perform the following steps to install the SCXI-1346 and your cables:

1. Turn off the power to your computer and the SCXI chassis.
2. Configure the jumper-selectable address on each SCXI-1001 chassis to a different number. See your chassis manual for information on how to set your address jumpers.

   Note: ***You cannot use SCXI-1000 chassis in a multichassis system.***
3. Configure your modules. See your module manuals for information on how to configure them, and follow the instructions in the *Module Jumper Configuration* section of this guide.
4. Install your SCXI modules in your SCXI chassis according to the instructions in your module user manual.

5. Install your DAQ board in a slot in your computer according to the instructions in your DAQ board user manual.

6. If you are using an MIO board with a 50-pin I/O connector, follow the instructions in the SCXI-1345 installation guide to change the bracket on your MIO board and to remove the key inserts on the MIO board I/O connector. Then connect the 50-pin end of your SCXI-1345 cable to the I/O connector on the MIO board, following the instructions in the SCXI-1345 installation guide.

   If you are using an MIO board with a 68-pin connector, connect one end of the SCXI-1347 cable to the I/O connector of your MIO board.

   Note: ***The cable in the SCXI-1347 kit is the same as the cables you buy separately, so you can use them interchangeably.***

7. Plug an SCXI-1346 adapter into the back of one of the SCXI modules that is in the first chassis so that the module rear connector mates with the SCXI-1346 module connector. See Figure 2.

8. Secure the SCXI-1346 adapter board by screwing the four screws from the SCXI-1346 kit through the rear panel of the adapter board and into the threaded strips in the rear of the SCXI chassis.

9. Connect any accessories (such as an SCXI-1180) to the breakout connector of the SCXI-1346.

10. Connect the remaining loose end of your shielded cable to the 68-pin male rear connector that is labeled FROM DAQ BOARD OR PREVIOUS CHASSIS on the adapter rear panel.

11. Connect one end of one of the individual shielded cables to the 68-pin male rear connector that is labeled TO NEXT CHASSIS on the adapter rear panel.

12. For each additional chassis except the last one, repeat steps 7 through 11.

13. Plug the socket connector of the adapter board from your SCXI-1345 or SCXI-1347 shielded cable kit into the rear connector of a module in the last chassis (see your SCXI-1345 or SCXI-1347 installation guide for more information).

14. Secure the SCXI-1345 or SCXI-1347 adapter board by screwing the two screws from the shielded cable kit through the rear panel of the adapter board and into the threaded strips in the rear of the last SCXI chassis.

15. Connect the remaining loose end of your shielded cable to the 68-pin male rear connector on the rear panel of the SCXI-1345 or SCXI-1347 adapter board.

16. Connect any accessories (such as an SCXI-1180) to the breakout connector of the SCXI-1345 or SCXI-1347.

SCXI-1346 Multichassis Pin Translations

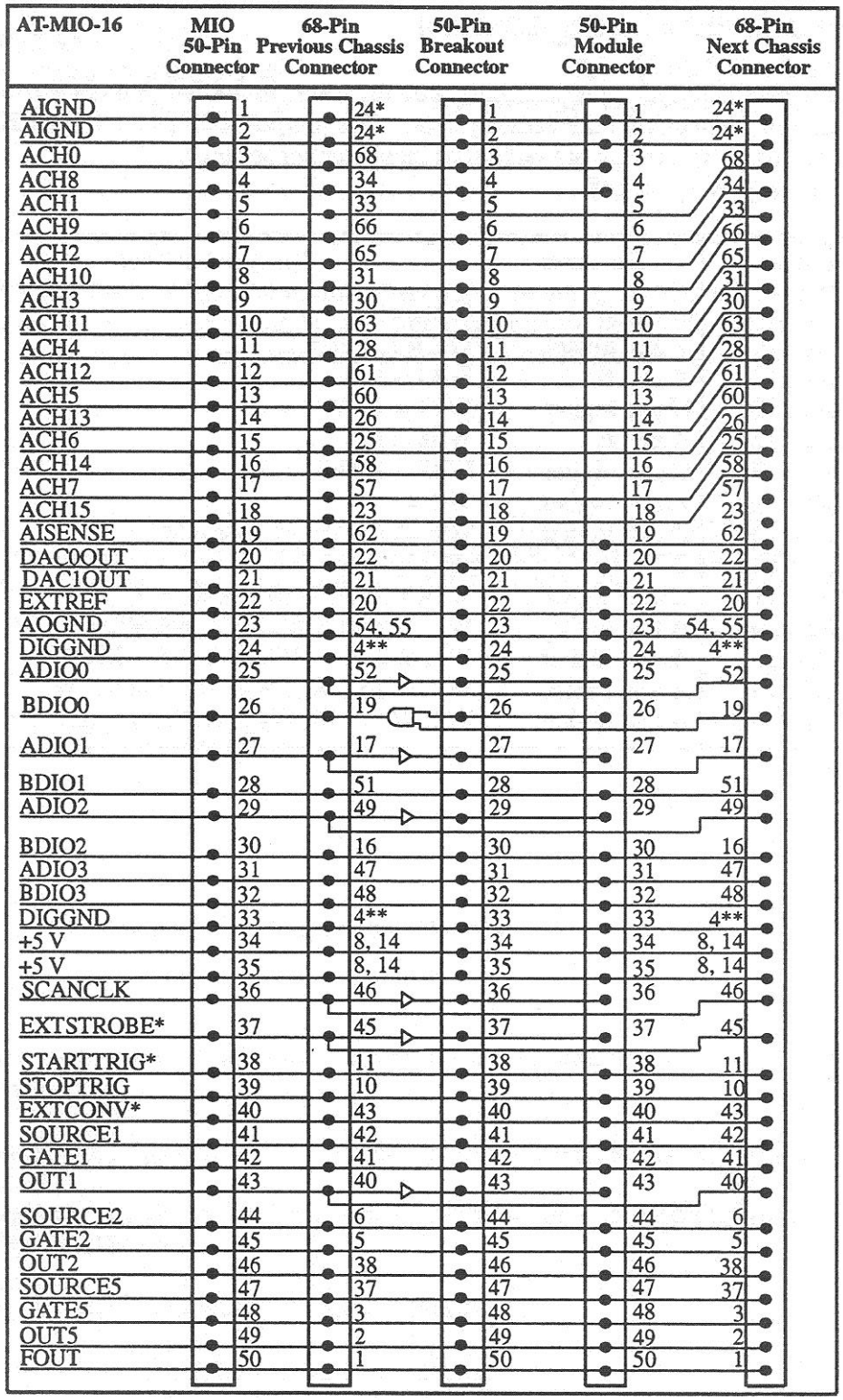
If you are accessing individual signals from the MIO board in addition to using SCXI, you should read the following section to determine how the SCXI-1346 affects the signals you are using.

The SCXI-1346 connects all signals from the connector labeled FROM DAQ BOARD OR PREVIOUS CHASSIS directly to the corresponding pins on the other three connectors, with the following exceptions:

- Differential analog channel 0 of the FROM DAQ BOARD OR PREVIOUS CHASSIS connector is only connected to the 50-pin breakout connector and the 50-pin module connector, but not to the TO NEXT CHASSIS connector.
- Differential analog channels 1 through 7 do not connect to the 50-pin module connector.
- Differential analog channels 1 through 7 connect to differential analog channels 0 through 6, respectively, on the TO NEXT CHASSIS connector.
- ADIO0, ADIO1, ADIO2, EXTSTROBE*, SCANCLK, and OUT1 are connected between the two 68-pin connectors, and then buffered and driven on their respective pins on the 50-pin connectors.
- The BDIO0 lines of the two 50-pin connectors are connected together and drive one input of an AND gate. The BDIO0 of the TO NEXT CHASSIS connector drives the other input of the AND gate. The output of the AND gate drives the BDIO0 line on the FROM DAQ BOARD OR PREVIOUS CHASSIS connector.
- All gate and buffer inputs are pulled up to +5 V with 100 kΩ resistors.

Note: ***The MIO board supplies power to the SCXI-1346 chips. If the fuse on the board is blown, the adapter will not function properly.***

The following diagram shows the pin translations that the SCXI-1346 makes.



* also connects to pins 27, 29, 32, 56, 59, 64, and 67

** also connects to pins 7, 9, 12, 13, 15, 18, 35, 36, 39, 44, 50, and 53

Note: ***Several of the pins on other MIO boards may have slightly different names. Refer to your DAQ board manual for the correct pin names.***

Module Jumper Configuration

When you use a shielded multichassis system, you must set certain jumpers on the one module in each chassis that is connected to the cable system. The jumper settings configure the modules to drive the BDIO0 line. The following table lists these jumper settings.

Module	Revision	Jumper Settings
SCXI-1100	A and B	W5 = 1
SCXI-1100	C and higher	W5 = 1, W9 = 1
SCXI-1120	A and B	W43 = 1
SCXI-1120	C and higher	W43 = 1, W42 = 1
SCXI-1121	A and B	W38 = 1
SCXI-1121	C and higher	W38 = 1, W32 = 1
SCXI-1122	A and higher	W2 = 1
SCXI-1124	A and higher	W1 = P, W2, W3, W4 = M
SCXI-1140	B	W14 = A-B
SCXI-1140	C and higher	W14 = A-B, W13 = A-B
SCXI-1160	A and higher	W1, W5 = 1, W2, W3, W4 = MIO
SCXI-1161	A and higher	W1, W2 = 1, W3, W4, W5 = MIO
SCXI-1162	A and higher	W2 = SER, W3, W4, W6 = MIO, W5 = A
SCXI-1163	A and higher	W2, W3 = M, W4 = A, W5 = MIO, W6 = S