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DAQ

SC-205*X* Series User Manual

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About This Manual

This manual describes the mechanical and electrical aspects of the SC-205*X* Series adapters and contains information about installing and operating the adapters.

Organization of This Manual

The SC-205X Series User Manual is organized as follows:

- Chapter 1, *Introduction*, introduces the SC-205*X* Series adapters; describes the SC-2050, SC-2051, SC-2052, SC-2053, SC-2054, SC-2055, SC-2056, and SC-2057 kits; describes the optional equipment, signal conditioning accessories, and software support; and explains how to unpack your SC-205*X* Series adapter.
- Chapter 2, *SC-2050*, describes the SC-2050 adapter in detail, including function, connection, mounting, and cabling.
- Chapter 3, *SC-2051*, describes the SC-2051 adapter in detail, including function, connection, mounting, and cabling.
- Chapter 4, *SC-2052*, describes the SC-2052 adapter in detail, including function, connection, mounting, and cabling.
- Chapter 5, *SC-2053*, describes the SC-2053 adapter in detail, including function, connection, mounting, and cabling.
- Chapter 6, *SC-2054*, describes the SC-2054 adapter in detail, including function, connection, mounting, and cabling.
- Chapter 7, *SC-2055*, describes the SC-2055 adapter in detail, including function, connection, mounting, and cabling.
- Chapter 8, *SC-2056*, describes the SC-2056 adapter in detail, including function, connection, mounting, and cabling.
- Chapter 9, *SC-2057*, describes the SC-2057 adapter in detail, including function, connection, mounting, and cabling.
- Chapter 10, *Installation and Operation*, describes the installation and operation of your SC-205*X* adapter, including configuration and cable connections.
- Appendix A, *Specifications*, lists the specifications for the SC-205*X* Series adapters.

- Appendix B, *Customer Communication*, contains forms you can use to request help from National Instruments or to comment on our products.
- The *Glossary* contains an alphabetical list and description of terms in this manual, including abbreviations, acronyms, metric prefixes, mnemonics, and symbols.
- The *Index* contains an alphabetical list of key terms and topics in this manual, including the page where you can find each one.

Conventions Used in This Manual

The following conventions are used in this manual.



This icon to the left of bold italicized text denotes a note, which alerts you to important information.



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



This icon to the left of bold italicized text denotes a warning, which advises you of precautions to take to avoid being electrically shocked.

bold — Bold text denotes the names of menus, menu items, parameters, dialog boxes, dialog box buttons or options, icons, windows, Windows 95 tabs, or LEDs.

bold italic — Bold italic text denotes a note, caution, or warning.

DIO-24 — Refers to the PC-DIO-24, PC-DIO-24PnP, and DAQCard-DIO-24.

DIO-32 — Refers to the AT-DIO-32F, AT-DIO-32HS, PCI-DIO-32HS, DAQCard-6533, PXI-6533.

DIO-96 — Refers to the PC-DIO-96, PC-DIO-96PnP, PCI-DIO-96.

E Series device — These are MIO and AI devices; for example, AT-MIO-16E-10, PCI-6031E, DAQPad-MIO-16XE-50, and DAQCard-AI-16XE-50.

italic — Italic text denotes emphasis, a cross reference, or an introduction to a key concept.

Lab/1200 — Refers to the DAQCard-1200, DAQPad-1200, Lab-PC+, Lab-PC-1200, Lab-PC-1200AI, PCI-1200.

SC-205*X*	Refers to the SC-2050, SC-2051, SC-2052, SC-2053, SC-2054, SC-2055, SC-2056, and SC-2057 adapters.

National Instruments Documentation

The SC-205X Series User Manual is one piece of the documentation set for your data acquisition or SCXI system. You could have any of several types of documents, depending on the hardware and software in your system. Use the documents you have as follows:

- *Getting Started with SCXI*—If you are using SCXI, this is the first manual you should read. It gives an overview of the SCXI system and contains the most commonly needed information for the modules, chassis, and software.
- Your SCXI hardware user manuals—If you are using SCXI, read these manuals next for detailed information about signal connections and module configuration. They also explain in greater detail how the module works and contain application hints.
- Your DAQ hardware manuals—These manuals have detailed information about the DAQ hardware that plugs into or is connected to your computer. Use these manuals for hardware installation and configuration instructions, specification information about your DAQ hardware, and application hints.
- Software documentation—Examples of software documentation you may have are the LabVIEW and LabWindows/CVI documentation sets and the NI-DAQ documentation. After you set up your hardware system, use either the application software (LabVIEW or LabWindows/CVI) or the NI-DAQ documentation to help you write your application. If you have a large, complicated system, it is worthwhile to look through the software documentation before you configure your hardware.
- Accessory installation guides or manuals—If you are using accessory products, read the terminal block and cable assembly installation guides or accessory board user manuals. They explain how to physically connect the relevant pieces of the system. Consult these guides when you are making your connections.
- *SCXI Chassis User Manual*—If you are using SCXI, read this manual for maintenance information on the chassis and for installation instructions.

Related Documentation

The following documentation from National Instruments contains information that may be helpful as you read this manual:

- *SC-2042-RTD User Manual*
- *SC-2043-SG User Manual*
- *SC-206X Series User Manual*
- *SC-207X Series User Manual*
- *5B Series User Manual*
- *AMUX-64T User Manual*

Customer Communication

National Instruments wants to receive your comments on our products and manuals. We are interested in the applications you develop with our products, and we want to help if you have problems with them. To make it easy for you to contact us, this manual contains comment and configuration forms for you to complete. These forms are in Appendix B, *Customer Communication*, at the end of this manual.

1

Introduction

This chapter introduces the SC-205*X* Series adapters; describes the SC-2050, SC-2051, SC-2052, SC-2053, SC-2054, SC-2055, SC-2056, and SC-2057 kits; describes the optional equipment, signal conditioning accessories, and software support; and explains how to unpack your SC-205*X* Series adapter.

About the SC-205*X* Series

The SC-205*X* Series consists of cable adapters that interface signal conditioning accessories to National Instruments DAQ devices. The SC-205*X* Series adapters convert cables from the various DAQ devices to standard pin connections that match the SC-206*X* Series, 5B Series, SSR Series, and ER 8/16 signal conditioning accessories. Table 1-1 lists the National Instruments DAQ devices that you can use with the SC-205*X* Series adapters.

Table 1-1. DAQ Hardware Used with the SC-205*X* Series Adapters

DAQ Hardware Family	SC-2050	SC-2051	SC-2052	SC-2053	SC-2054	SC-2055	SC-2056	SC-2057
E Series	AT-MIO-16E-10 AT-MIO-16DE-10 AT-MIO-16E-2 AT-MIO-16E-1 AT-MIO-16E-3 AT-MIO-16XE-50 AT-MIO-16XE-10 AT-AI-16XE-10 PCI-MIO-16E-4 PCI-MIO-16E-1 PCI-MIO-16XE-10 PCI-MIO-16XE-50 PCI-6023E PCI-6024E PCI-6052E PCI-6025E PCI-6032E PXI-6030E PXI-6040E PXI-6070E PCI/PXI-6031E PCI-6033E PCI/PXI-6071E DAQPad-MIO-16XE-50 DAQPad-6020E DAQCard-AI-16E-4 DAQCard-AI-16XE-50	AT-MIO-16D AT-MIO-16DE-10					AT-MIO-64E-3 PCI/PXI-6071E PCI/PXI-6031E, PCI-6033E VXI-MIO-64XE-10 VXI-MIO-64E-1	
DIO		PCI-6503 PC-DIO-24/PnP DAQCard-DIO-24	AT-DIO-32F AT-DIO-32HS PCI-DIO-32HS DAQCard-6533 PXI-6533		PC-DIO-24/PnP PC-DIO-96/PnP PCI-DIO-96 PXI-6508 DAQPad-6508			VXI-DIO-128
Lab/1200				Lab-PC-1200/AI PCI-1200 DAQPad-1200 DAQCard-1200				
Low Cost				Lab-PC+		DAQCard-700 PC-LPM-16/PnP		

The SC-205*X* Series adapters link the National Instruments DAQ devices and the signal conditioning accessories. You can configure any usual combination of signal conditioners (for example, solid-state relays, optical isolators, electromechanical relays, or analog signal conditioning modules) quickly and easily by connecting the SC-205*X* Series adapter designed for that device.

When a DAQ device is connected to its SC-205*X* Series adapter, you can connect each digital port (8 lines) or analog port (16 lines) to a signal conditioning accessory. Changing accessories for a port only requires changing the connector between the SC-205*X* Series adapter and the accessory. In this way, you can use the same signal conditioning accessory with any of the supported DAQ devices by connecting it with the appropriate SC-205*X* Series adapter.

What You Need to Get Started

The cable you need to connect your DAQ device to an SC-205X adapter depends upon both the DAQ device and the SC-205X adapter you are using. Cables and adapters are available separately. See the National Instruments catalogue or contact National Instruments for cabling details.

Certain common combinations of cable and adapter are available as kits. The SC-2050, SC-2051, SC-2053, and SC-2055 are available in kits with a 0.5 m or 1.0 m type NB1 cable, for use with 50-pin DAQ boards (not including DAQCards). The SC-2054 adapter is available in kits with NB5 cables. The NB5 cable is for use with PC-DIO-96/PnP boards only; it cannot be used with other boards, such as the PCI-DIO-96 or 6508 family. The SC-2054 with NB5 kits are available in one-adapter, 48-channel and two-adapter, 96-channel versions.

To set up and use your SC-205*X* Series adapters, you will need the following:

- An SC-205*X* adapter
- *SC-205X Series User Manual*
- The appropriate cable to connect your SC-205*X* board to your DAQ device. See the National Instruments catalogue or contact National Instruments for details.

- Your DAQ device
- Your computer

Detailed specifications for the SC-205*X* Series adapters are in Appendix A, *Specifications*.

Unpacking

Your SC-205*X* adapter is shipped in an antistatic package to prevent electrostatic damage to the adapter. Electrostatic discharge can damage several components on the adapter. To avoid such damage in handling the adapter, take the following precautions:

- Ground yourself via a grounding strap or by holding a grounded object.
- Touch the antistatic package to a metal part of your computer chassis before removing the adapter from the package.
- Remove the device from the package and inspect the adapter for loose components or any other sign of damage. Notify National Instruments if the device appears damaged in any way. *Do not* install a damaged adapter into your computer.

Never touch the exposed pins of connectors.

Software Programming Choices

The SC-205*X* Series adapters, except the SC-2056, are invisible to the host computer and require no additional software beyond the software you are using to control your DAQ device.

Optional Equipment

National Instruments offers a variety of products to use with your SC-205*X* Series adapter, including cables, connector blocks, rack-mount kits, and other accessories.

For more specific information about these products, refer to your National Instruments catalogue or call the office nearest you.

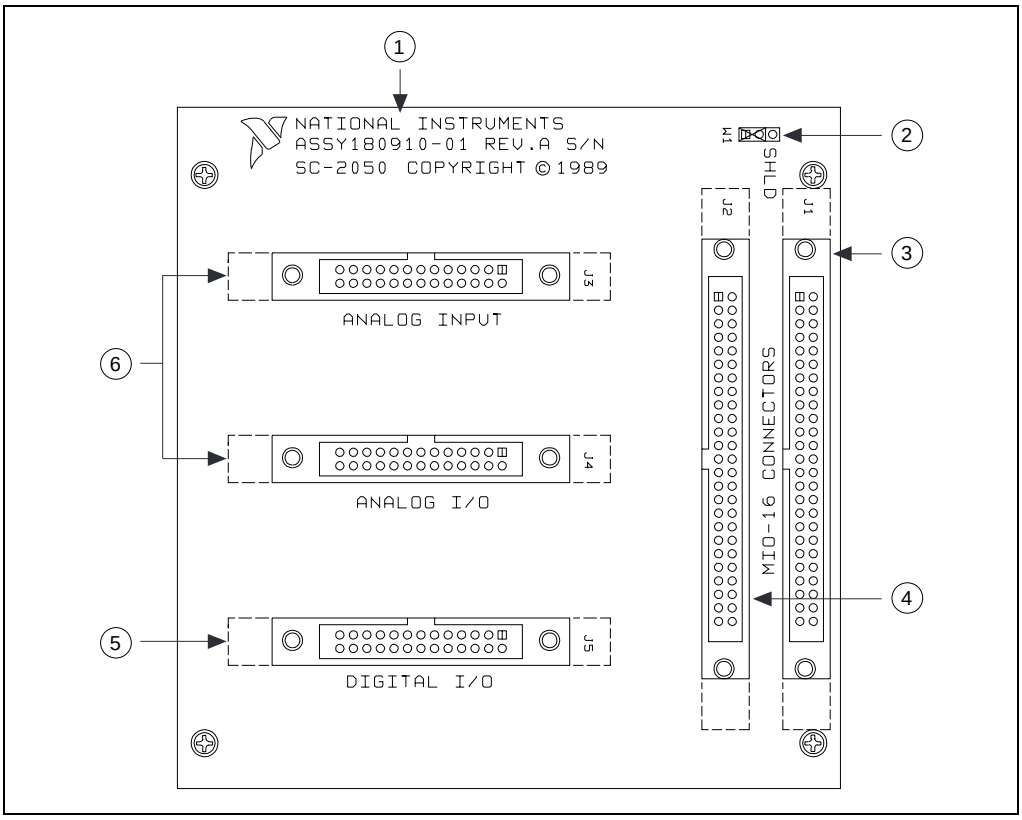
2

SC-2050

This chapter describes the SC-2050 adapter in detail, including function, connection, mounting, and cabling. Refer to Chapter 10, *Installation and Operation* to install and use your adapter.

The SC-2050 converts E Series connector signals to standard pin connections for signal conditioning accessories. The SC-2050 can be used with E Series devices such as the AT-MIO-16E-10, PCI-6031E, and DAQPad-MIO-16XE-50. See Table 1-1 for a complete list of DAQ devices that you can use with the SC-2050.

Figure 2-1 shows the SC-2050 parts locator diagram.



1	Product Name, Assembly Number, Revision Letter, and Serial Number	4	To SC-207X, AMUX-64T, or CB-50
2	Shield Jumper	5	To SC-206X Series or SSR Series
3	To E Series device (MIO-16, etc.)	6	To 5B Series

Figure 2-1. SC-2050 Parts Locator Diagram

SC-2050 Connection

Connect your SC-2050 to the DAQ device via an SH6850 cable or PSHR68-50 cable (for DAQCards). Connect the SC-2050 to the 100-pin AT-MIO-16DE-10 and PCI-6071E via a 100-pin R1005050 cable, available separately. Make this connection with the host computer powered off. Connect one end of the ribbon cable to the SC-2050 at either connector J1 or J2. Connect the other end to the DAQ device installed in your computer.

Warning ***Do not connect the SC-2050 to a board for which it is not designed. Such connection can damage the SC-2050 and any or all boards/accessories connected to the SC-2050 and host computer. National instruments is NOT liable for any damages resulting from incorrect connections.***

To connect your SC-2050 to the signal conditioning accessories, use a type NB7, 26-pin ribbon cable. This cable connects the SC-2050 to any of the SC-206*X* Series boards or to the 5B Series backplane. An 8-channel SSR Series backplane with a 26-conductor ribbon cable is also available for connection to the SC-2050. For instructions on making these connections to the proper signal conditioning accessories, refer to *Cable Connections* in Chapter 10, *Installation and Operation*.

Connectors

The SC-2050 has two 50-pin ribbon cable connectors that are connected pin-by-pin to each other. You can use either of these connectors to attach the SC-2050 to the DAQ device via a cable. You can daisy-chain the second connector to other 50-pin accessories.

The SC-2050 also has three 26-pin ribbon cable connectors that you can use to connect to the signal conditioning accessories. The analog ports have pin connections that are compatible with the 5B Series of analog signal conditioning modules. The digital ports are compatible with the SC-206*X* Series digital signal conditioners as well as with the 8-channel SSR Series solid-state relay board.

Figure 2-2 illustrates the connections between the SC-2050 and the necessary accessories and devices.

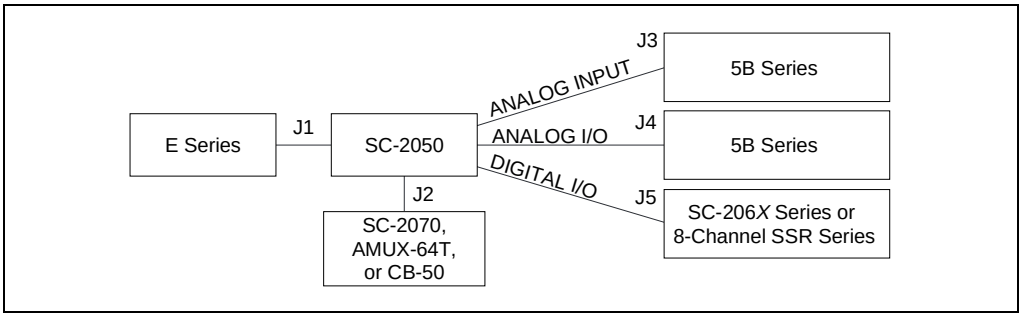


Figure 2-2. SC-2050 Connections

Table 2-1 describes the connectors on the SC-2050.

Table 2-1. SC-2050 Connectors

Connectors	Connection	Description
J1, J2	50-pin male ribbon cable connectors; E Series connection	Attach J1 or J2 to the DAQ device. The other connector can attach to the SC-2070, AMUX-64T, or CB-50. The connections at each connector are identical so that you can daisy-chain the E Series signals.
J3	26-pin male connector; 5B Series analog input connection	Attach J3 to the 5B Series backplane. This connection takes analog input lines 0–15 on the E Series to channels 0–15 of the 5B Series backplane, in sequential order.
J4	26-pin male connector; 5B Series analog I/O connection	Attach J4 to the 5B Series backplane. This connection takes analog input channels 0–13 on the E Series to channels 0–3 of the 5B Series backplane, in sequential order. It also connects the voltage output signal DAC0OUT from the E Series to channel 14 of the 5B Series and DAC1OUT to channel 15.
J5	26-pin male connector; digital I/O connection	Attach J5 to the SC-206*X* Series or SSR 8-channel boards. This connection takes the eight digital I/O lines from the E Series to a digital signal conditioning accessory with compatible pin connections, such as the SC-2060, SC-2061, SC-2062, or the 8-channel SSR Series backplane.

Figures 2-3 through 2-6 show the pin assignments for each I/O connector on the SC-2050.

AIGND	1	2	AIGND
ACH0	3	4	ACH8
ACH1	5	6	ACH9
ACH2	7	8	ACH10
ACH3	9	10	ACH11
ACH4	11	12	ACH12
ACH5	13	14	ACH13
ACH6	15	16	ACH14
ACH7	17	18	ACH15
AISENSE	19	20	DAC0OUT[1]
DAC1OUT[1]	21	22	EXTREF[1]
AOGND	23	24	DGND
DIO0	25	26	DIO4
DIO1	27	28	DIO5
DIO2	29	30	DIO6
DIO3	31	32	DIO7
DGND	33	34	+5 V
+5 V	35	36	SCANCLK
EXSTROBE*	37	38	PFI0/TRIG1
PFI1/TRIG2	39	40	PFI2/CONVERT*
PFI3/GPCTR1_SOURCE	41	42	PFI4/GPCTR1_GATE
GPCTR1_OUT	43	44	PFI5/UPDATE*
PFI6/WFTRIG	45	46	PFI7/STARTSCAN
PFI8/GPCTR0_SOURCE	47	48	PFI9/GPCTR0_GATE
GPCTR0_OUT	49	50	FREQ_OUT

[1] Not available on all boards. Check your board's documentation for these signals.

Figure 2-3. Pin Assignments for SC-2050 I/O Connectors J1 and J2

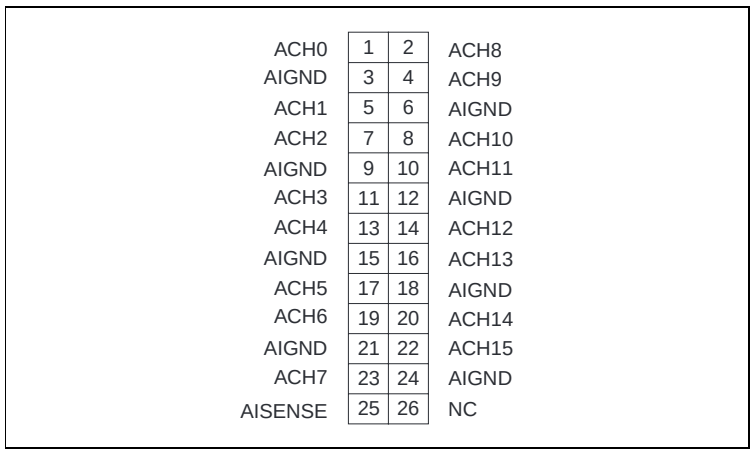


Figure 2-4. Pin Assignments for SC-2050 Analog Input Connector J3

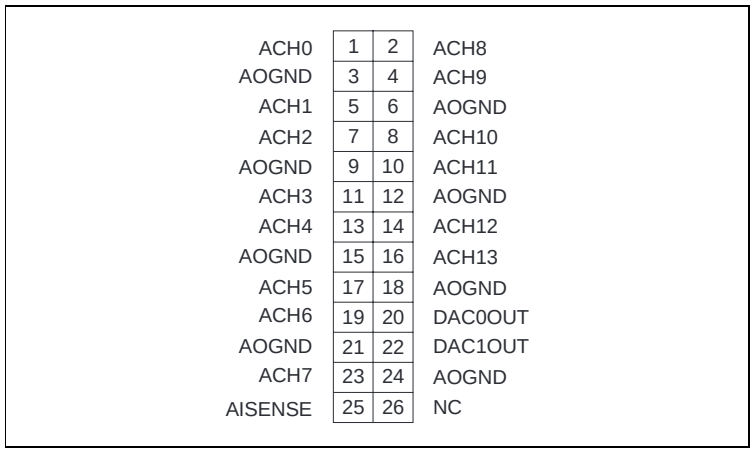


Figure 2-5. Pin Assignments for SC-2050 Analog I/O Connector J4

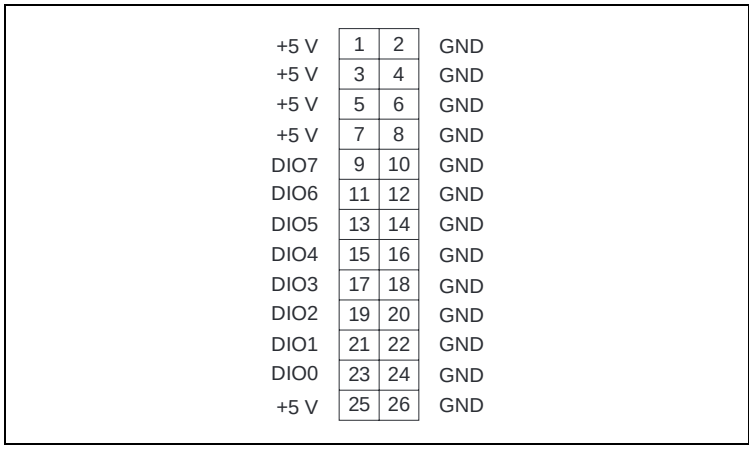


Figure 2-6. Pin Assignments for SC-2050 Digital I/O Connector J5

Mounting

The SC-2050 adapter is equipped with metal standoffs so it can sit on a workbench close to the host computer. A rack-mount chassis is also available and can be fitted with a flat acrylic plastic cover, or a metal wraparound cover. To ground the SC-2050 adapter to the chassis, set the jumper on the adapter as described in Chapter 10, *Installation and Operation*.

Cabling

You need a 50-pin ribbon cable to connect the SC-2050. Connections to the SC-206*X* Series boards require a 26-pin ribbon cable. A 26-conductor ribbon cable is needed for the 8-channel SSR backplane. Additional cables are available from National Instruments for connection to other accessories.

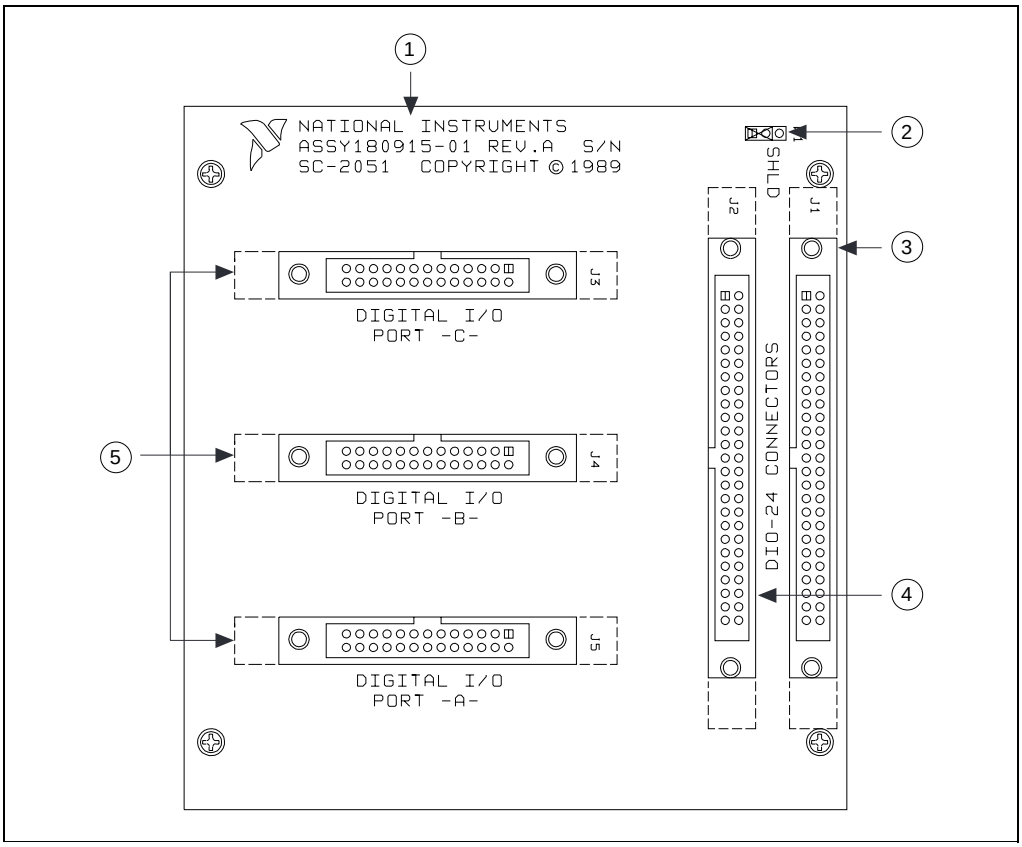
3

SC-2051

This chapter describes the SC-2051 adapter in detail, including function, connection, mounting, and cabling. Refer to Chapter 10, *Installation and Operation* to install and use your adapter.

The SC-2051 converts 24 digital I/O signals to standard pin connections for signal conditioning accessories. You can use the SC-2051 with DIO-24 and 6503 type devices. You can also use the SC-2051 with MIO devices having 24 additional digital channels, such as the AT-MIO-16DE-10. See Table 1-1 for a complete list of DAQ devices that you can use with the SC-2051.

Figure 3-1 shows the SC-2051 parts locator diagram.



1	Product Name, Assembly Number, Revision Letter, and Serial Number	4	To CB-50
2	Shield Jumper	5	To SC-206*X* Series or SSR Series
3	To DAQ device		

Figure 3-1. SC-2051 Parts Locator Diagram

SC-2051 Connection

Connect your SC-2051 to a 50-pin DAQ board via a type NB1, 50-pin ribbon cable. To connect the SC-2051 to the AT-MIO-16D or AT-MIO-16DE-10, you will need a type NB5 cable; use a PR50-50F cable for the DAQCard-DIO-24. Make this connection with the host computer powered off. Connect one end of the ribbon cable to the SC-2051 at either connector J1 or J2. Connect the other end to the DAQ device installed in your computer.

Warning ***Do not connect the SC-2051 to a board for which it is not designed. Such connection can damage the SC-2051 and any or all boards/accessories connected to the SC-2051 and host computer. National instruments is NOT liable for any damages resulting from incorrect connections.***

To connect your SC-2051 to the signal conditioning accessories, use a type NB7, 26-pin ribbon cable. This cable connects the SC-2051 to any of the SC-206*X* Series boards or to the 5B Series backplane. An 8-channel SSR Series backplane with a 26-conductor ribbon cable is also available for connection to the SC-2051. For instructions on making these connections to the proper signal conditioning accessories, refer to *Cable Connections* in Chapter 10, *Installation and Operation*.

Connectors

The SC-2051 has two 50-pin ribbon cable connectors that are connected pin-by-pin to each other. You can use either of these connectors to attach the SC-2051 to the DAQ device via a cable. You can daisy-chain the second connector to other 50-pin accessories.

The SC-2051 also has three 26-pin ribbon cable connectors that you can use to connect to the signal conditioning accessories. The digital ports are compatible with the SC-206*X* Series digital signal conditioners as well as with the 8-channel SSR Series solid-state relay board.

Figure 3-2 illustrates the connections between the SC-2051 and the necessary accessories and devices.

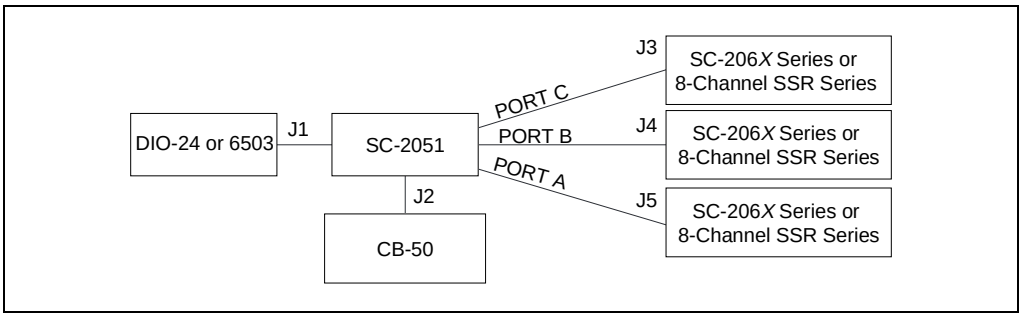


Figure 3-2. SC-2051 Connections

Table 3-1 describes the connectors on the SC-2051.

Table 3-1. SC-2051 Connectors

Connectors	Connection	Description
J1, J2	50-pin male connectors; 24 DIO channel connection	Attach J1 or J2 to the DAQ device. The other connector can daisy-chain the board signals to other 50-pin accessories such as a CB-50.
J3	26-pin male connector; port C, or 2, digital I/O connection	Attach each of these connectors to an SC-206*X* Series board or to an 8-channel SSR Series backplane. Connect the eight digital lines of the port corresponding to the label below the connector to the digital lines of the accessory.
J4	26-pin male connector; port B, or 1, digital I/O connection	
J5	26-pin male connector; port A, or 0, digital I/O connection	

Figures 3-3 through 3-6 show the pin assignments for each I/O connector on the SC-2051.

PC7	1	2	GND
PC6	3	4	GND
PC5	5	6	GND
PC4	7	8	GND
PC3	9	10	GND
PC2	11	12	GND
PC1	13	14	GND
PC0	15	16	GND
PB7	17	18	GND
PB6	19	20	GND
PB5	21	22	GND
PB4	23	24	GND
PB3	25	26	GND
PB2	27	28	GND
PB1	29	30	GND
PB0	31	32	GND
PA7	33	34	GND
PA6	35	36	GND
PA5	37	38	GND
PA4	39	40	GND
PA3	41	42	GND
PA2	43	44	GND
PA1	45	46	GND
PA0	47	48	GND
+5 V	49	50	GND

Figure 3-3. Pin Assignments for SC-2051 I/O Connectors J1 and J2

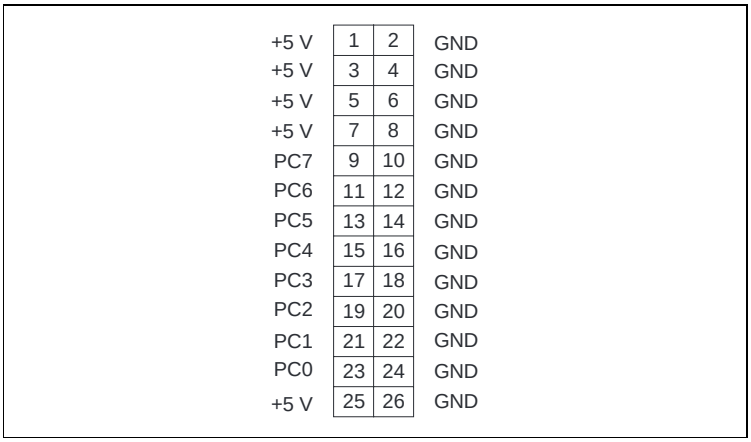


Figure 3-4. Pin Assignments for SC-2051 I/O Connector J3

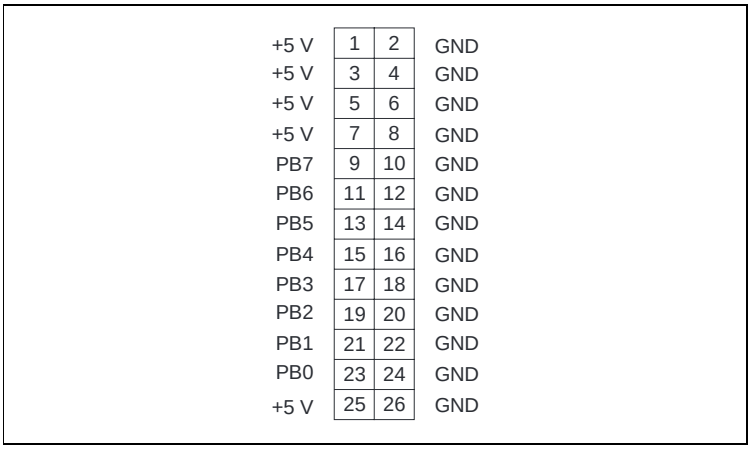


Figure 3-5. Pin Assignments for SC-2051 I/O Connector J4

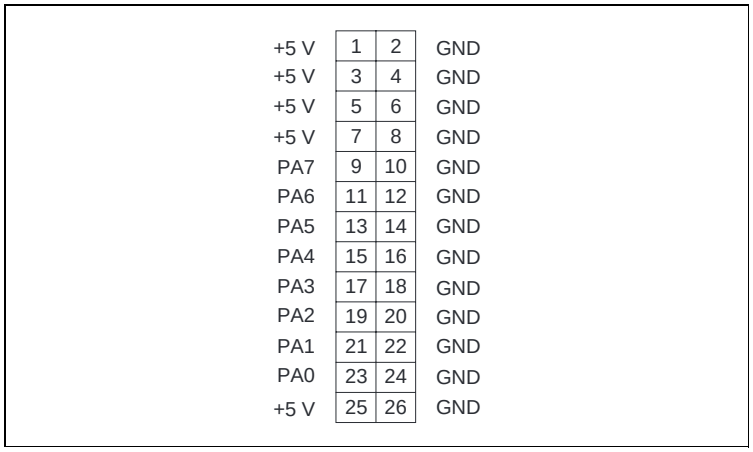


Figure 3-6. Pin Assignments for SC-2051 I/O Connector J5

Mounting

The SC-2051 adapter is equipped with metal standoffs so it can sit on a workbench close to the host computer. A rack-mount is also available and can be fitted with a flat acrylic plastic cover or metal wraparound cover. To ground the SC-2051 adapter to the chassis, set the jumper on the adapter as described in Chapter 10, *Installation and Operation*.

Cabling

You need a 50-pin ribbon cable to connect the SC-2051 to a DAQ device; the cable needed depends on the DAQ device. Connections to the SC-206*X* Series boards require a 26-pin ribbon cable. A 26-conductor ribbon cable is needed for the 8-channel SSR backplane. Additional cables are available from National Instruments for connection to other accessories.

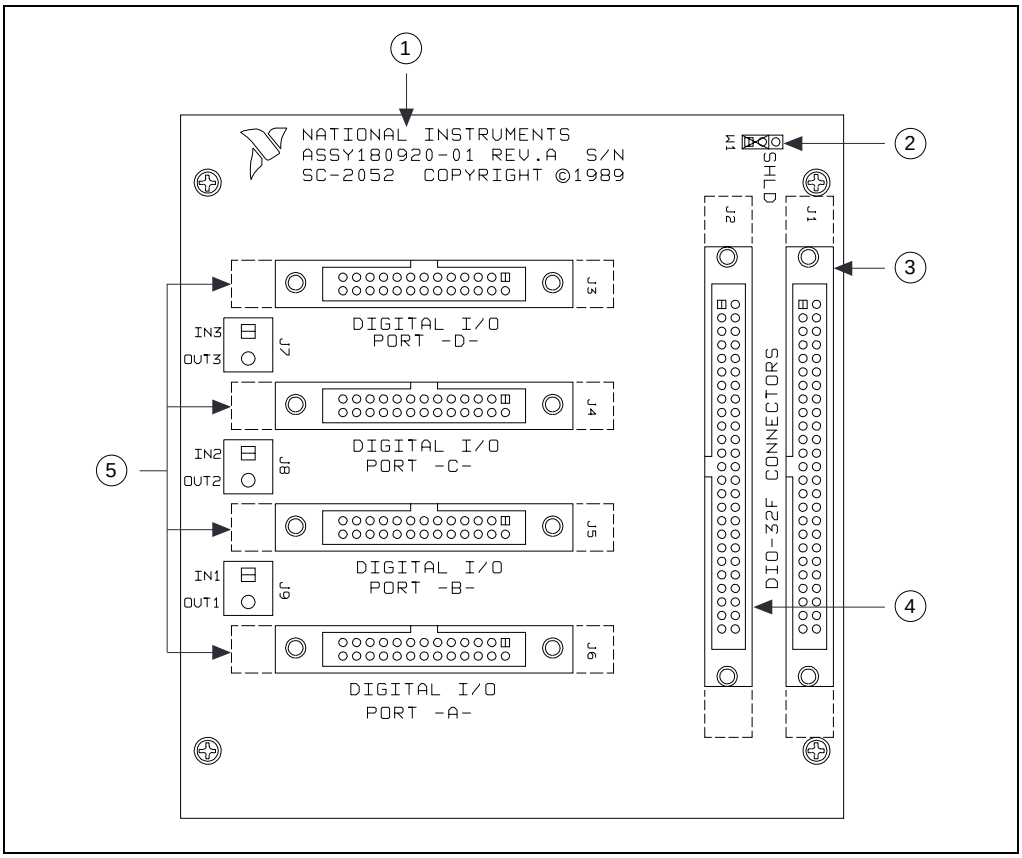
4

SC-2052

This chapter describes the SC-2052 adapter in detail, including function, connection, mounting, and cabling. Refer to Chapter 10, *Installation and Operation* to install and use your adapter.

The SC-2052 converts 32 digital I/O signals to standard pin connections for signal conditioning accessories. You can use the SC-2052 with DIO-32 and 6533 type devices. See Table 1-1 for a complete list of DAQ devices that you can use with the SC-2052.

Figure 4-1 shows the SC-2052 parts locator diagram.



1	Product Name, Assembly Number, Revision Letter, and Serial Number	4	To CB-50
2	Shield Jumper	5	To SC-206*X* Series or SSR Series
3	To DIO-32 and 6533 devices		

Figure 4-1. SC-2052 Parts Locator Diagram

SC-2052 Connection

Connect your SC-2052 to the DAQ device via an R6850-D1 or a type NB1, 50-pin ribbon cable (for the AT-DIO-32F). Make this connection with the host computer powered off. Connect one end of the ribbon cable to the SC-2052 at either connector J1 or J2. Connect the other end to the DAQ device installed in your computer.

Warning ***Do not connect the SC-2052 to a board for which it is not designed. Such connection can damage the SC-2052 and any or all boards/accessories connected to the SC-2052 and the host computer. National instruments is NOT liable for any damages resulting from incorrect connections.***

To connect your SC-2052 to the signal conditioning accessories, use a type NB7, 26-pin ribbon cable. This cable connects the SC-2052 to any of the SC-206*X* Series boards. An 8-channel SSR Series backplane with a 26-conductor ribbon cable is also available for connection to the SC-2052. For instructions on making these connections to the proper signal conditioning accessories, refer to *Cable Connections* in Chapter 10, *Installation and Operation*.

Connectors

The SC-2052 has two 50-pin ribbon cable connectors that are connected pin-by-pin to each other. You can use either of these connectors to attach the SC-2052 to the DAQ device via a cable. You can daisy-chain the second connector to other 50-pin accessories.

The SC-2052 also has four 26-pin ribbon cable connectors that you can connect to the signal conditioning accessories. The digital ports are compatible with the SC-206*X* Series digital signal conditioners as well as with the 8-channel SSR Series solid-state relay board.

The SC-2052 has 2-pin screw terminals which are connected to auxiliary digital input lines and digital output lines of the DAQ device. You can use these screw terminals to attach these lines to appropriate external circuitry.

Figure 4-2 illustrates the connections between the SC-2052 and the necessary accessories and devices.

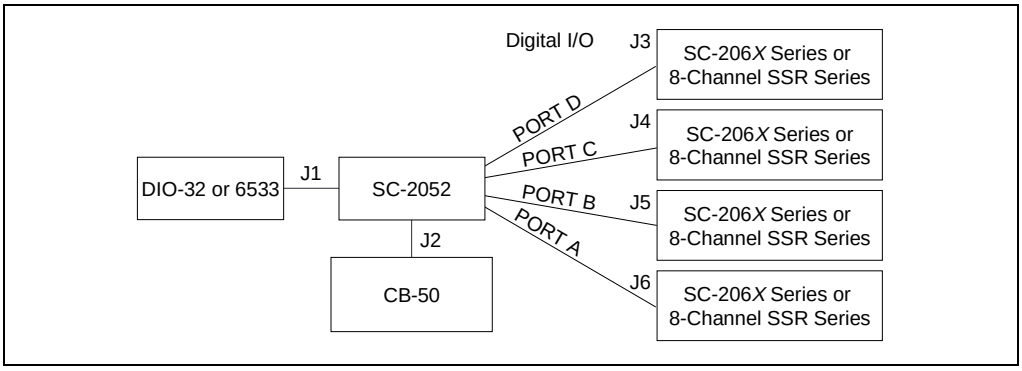


Figure 4-2. SC-2052 Connections

Table 4-1 describes the connectors on the SC-2052.

Table 4-1. SC-2052 Connectors

Connectors	Connection	Description
J1, J2	50-pin male connectors; DIO-32, 6533 connection	Attach J1 or J2 to the DAQ device. The other connector can daisy-chain the DAQ device signals to other 50-pin accessories such as a CB-50.
J3	26-pin male connectors; port D, or 3, digital I/O connection	You can attach each of these connectors to an SC-206*X* Series board or to an 8-channel SSR Series backplane. Connectors J3, J4, J5, and J6 connect the eight digital lines of the port corresponding to the label below the connector to the digital lines of the accessory.
J4	26-pin male connectors; port C, or 2, digital I/O connection	
J5	26-pin male connectors; port B, or 1, digital I/O connection	
J6	26-pin male connectors; port A, or 0, digital I/O connection	
J7	Two-position screw terminal block; grounded	Screw terminals J8 and J9 are connected to the two auxiliary digital input lines STOPTRIG1 (IN1) and STOPTRIG2 (IN2) and two auxiliary digital output lines PCLK1(OUT1) and PCLK2 (OUT2) of your DAQ device. You can insert wires in the screw terminals to attach these lines to appropriate external circuitry. Consult the user manual for your DAQ device for further details on the correct connection of these lines.
J8	Two-position screw terminal block; digital lines STOPTRIG2 (IN2) and PCLK2 (OUT2)	
J9	Two-position screw terminal block; digital lines STOPTRIG1 (IN1) and PCLK1(OUT1)	

Figures 4-3 through 4-7 show the pin assignments for each I/O connector on the SC-2052.

DIOD1	1	2	DIOD4
DIOD3	3	4	DIOD0
DIOD6	5	6	DIOD7
DIOD2	7	8	DIOD5
DIOC5	9	10	DIOC7
DIOC3	11	12	DIOC1
DIOC2	13	14	DIOC0
DIOC6	15	16	DIOC4
GND	17	18	ACK2
GND	19	20	STOPTRIG2 (IN2)
GND	21	22	PCLK2 (OUT2)
GND	23	24	REQ2
GND	25	26	GND
ACK1	27	28	GND
STOPTRIG1 (IN1)	29	30	GND
PCLK1 (OUT1)	31	32	GND
REQ1	33	34	GND
DIOA4	35	36	DIOA6
DIOA0	37	38	DIOA2
DIOA1	39	40	DIOA3
DIOA7	41	42	DIOA5
DIOB5	43	44	DIOB2
DIOB7	45	46	DIOB6
DIOB0	47	48	DIOB3
DIOB4	49	50	DIOB1

Figure 4-3. Pin Assignments for SC-2052 I/O Connectors J1 and J2

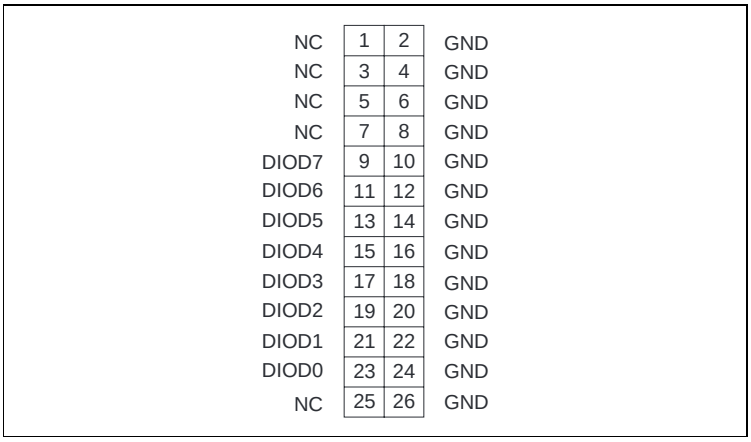


Figure 4-4. Pin Assignments for SC-2052 I/O Connector J3

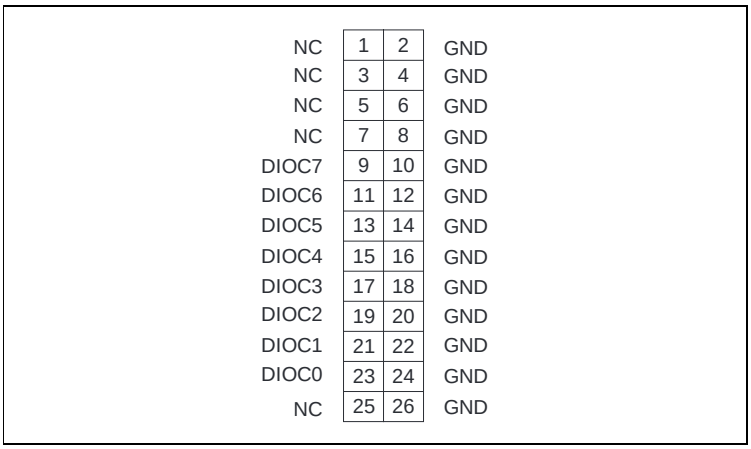
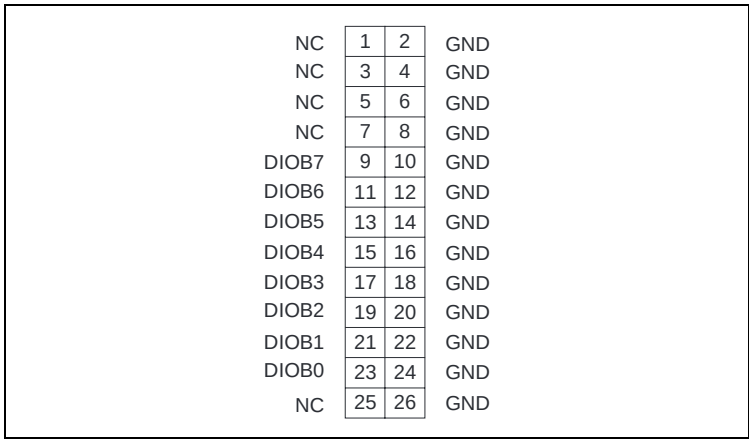
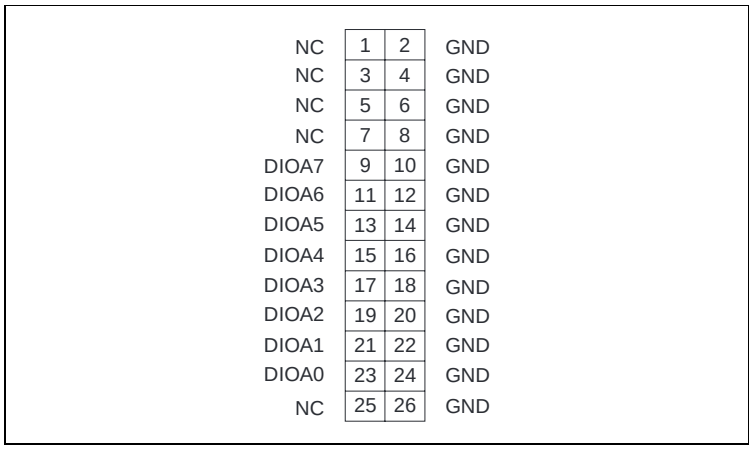


Figure 4-5. Pin Assignments for SC-2052 I/O Connector J4



NC	1	2	GND
NC	3	4	GND
NC	5	6	GND
NC	7	8	GND
DIOB7	9	10	GND
DIOB6	11	12	GND
DIOB5	13	14	GND
DIOB4	15	16	GND
DIOB3	17	18	GND
DIOB2	19	20	GND
DIOB1	21	22	GND
DIOB0	23	24	GND
NC	25	26	GND

Figure 4-6. Pin Assignments for SC-2052 I/O Connector J5



NC	1	2	GND
NC	3	4	GND
NC	5	6	GND
NC	7	8	GND
DIOA7	9	10	GND
DIOA6	11	12	GND
DIOA5	13	14	GND
DIOA4	15	16	GND
DIOA3	17	18	GND
DIOA2	19	20	GND
DIOA1	21	22	GND
DIOA0	23	24	GND
NC	25	26	GND

Figure 4-7. Pin Assignments for SC-2052 I/O Connector J6

Mounting

The SC-2052 adapter is equipped with metal standoffs so it can sit on a workbench close to the host computer. A rack-mount is also available and can be fitted with a flat acrylic plastic cover or metal wraparound cover. To ground the SC-2052 adapter to the chassis, set the jumper on the adapter as described in Chapter 10, *Installation and Operation*.

Cabling

You need an R6850-D1 ribbon cable to connect the SC-2052 to a 68-pin DAQ device. Connections to the SC-206*X* Series boards require a 26-pin ribbon cable. A 26-conductor ribbon cable is needed for the 8-channel SSR backplane. Additional cables are available from National Instruments for connection to other accessories.

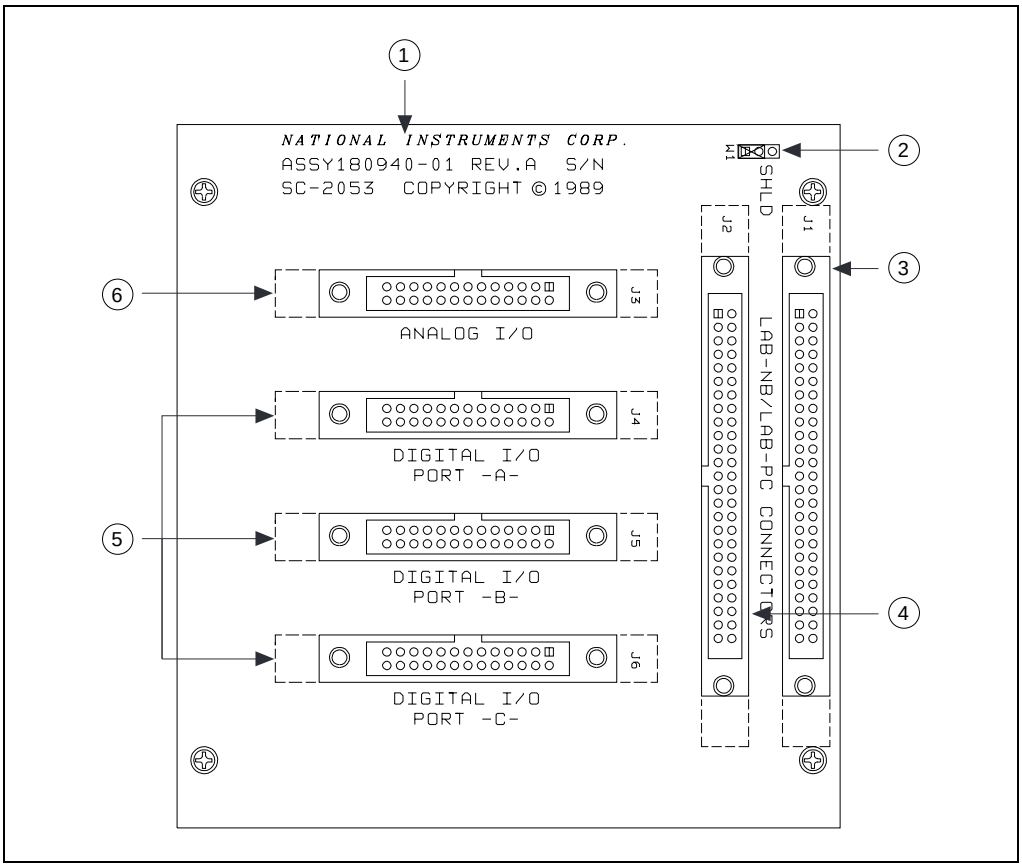
5

SC-2053

This chapter describes the SC-2053 adapter in detail, including function, connection, mounting, and cabling. Refer to Chapter 10, *Installation and Operation* to install and use your adapter.

The SC-2053 converts the Lab/1200 Series board I/O connector signals to standard pin connections for signal conditioning accessories. You can use the SC-2053 with the Lab/1200 devices. See Table 1-1 for a complete list of DAQ devices that you can use with the SC-2053.

Figure 5-1 shows the SC-2053 parts locator diagram.



1	Product Name, Assembly Number, Revision Letter, and Serial Number	4	To CB-50 or SC-2701
2	Shield Jumper	5	To SC-206*X* Series or SSR Series
3	To Lab-NB, Lab-PC, or 1200 device	6	To 5B Series

Figure 5-1. SC-2053 Parts Locator Diagram

SC-2053 Connection

Connect your SC-2053 to the DAQ device via a type NB1, 50-pin ribbon cable. Make this connection with the host computer powered off. Connect one end of the ribbon cable to the SC-2053 at either connector J1 or J2. Connect the other end to the DAQ device installed in your computer or to the DAQPad-1200.

Warning ***Do not connect the SC-2053 to a board for which it is not designed. Such connection can damage the SC-2053 and any or all boards/accessories connected to the SC-2053, and host computer. National instruments is NOT liable for any damages resulting from incorrect connections.***

To connect your SC-2053 to the signal conditioning accessories, use a type NB7, 26-pin ribbon cable. This cable connects the SC-2053 to any of the SC-206*X* Series boards or to the 5B Series backplane. An 8-channel SSR Series backplane with a 26-conductor ribbon cable is also available for connection to the SC-2053. For instructions on making these connections to the proper signal conditioning accessories, refer to *Cable Connections* in Chapter 10, *Installation and Operation*.

Connectors

The SC-2053 has two 50-pin ribbon cable connectors that are connected pin-by-pin to each other. You can use either of these connectors to attach the SC-2053 to the DAQ device via a cable. You can daisy-chain the second connector to other 50-pin accessories.

The SC-2053 also has four 26-pin ribbon cable connectors that you can use to connect to the signal conditioning accessories. The analog ports have pin connections that are compatible with the 5B Series of analog signal conditioning modules. The digital ports are compatible with the SC-206*X* Series digital signal conditioners as well as with the 8-channel SSR Series solid-state relay board.

Figure 5-2 illustrates the connections between the SC-2053 and the necessary accessories and devices.

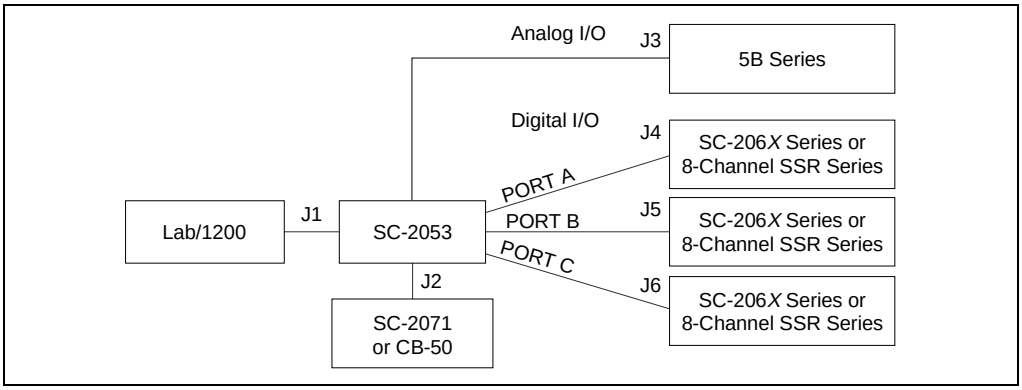


Figure 5-2. SC-2053 Connections

Table 5-1 describes the connectors on the SC-2053.

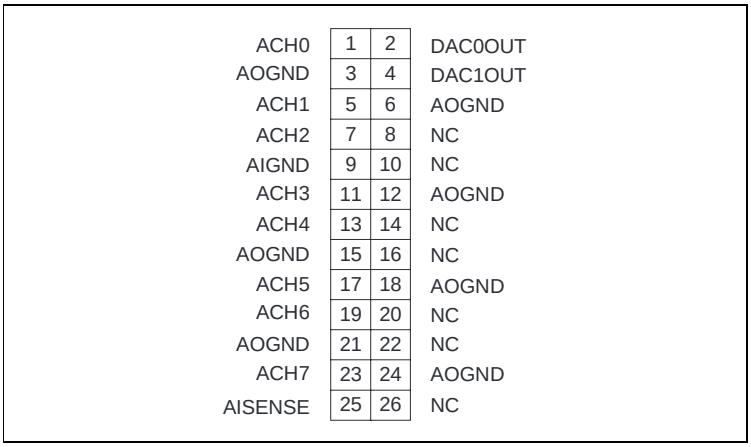
Table 5-1. SC-2053 Connectors

Connectors	Connection	Description
J1, J2	50-pin male connectors; Lab/1200 connection	Attach J1 or J2 to the DAQ device. The other connector can daisy-chain the DAQ device signals to other 50-pin accessories such as a CB-50 or SC-2071.
J3	26-pin male connector; 5B Series analog I/O connection	Attach J3 to the 5B Series backplane. This connection takes analog input channels 0–7 on the DAQ device to channels 0–7 of the 5B Series backplane in sequential order. The voltage output signal DAC0OUT from the DAQ device is connected to channel 8 of the 5B Series and DAC1OUT is connected to channel 9.
J4	26-pin male connector; port A digital I/O connection	Attach each of these connectors to an SC-206*X* Series board or to an 8-channel SSR Series backplane. Connectors J4, J5, and J6 connect the eight digital lines of the port corresponding to the label below the connector to the digital lines of the accessory.
J5	26-pin male connector; port B digital I/O connection	
J6	26-pin male connector; port C digital I/O connection	

Figures 5-3 through 5-7 show the pin assignments for each I/O connector on the SC-2053.

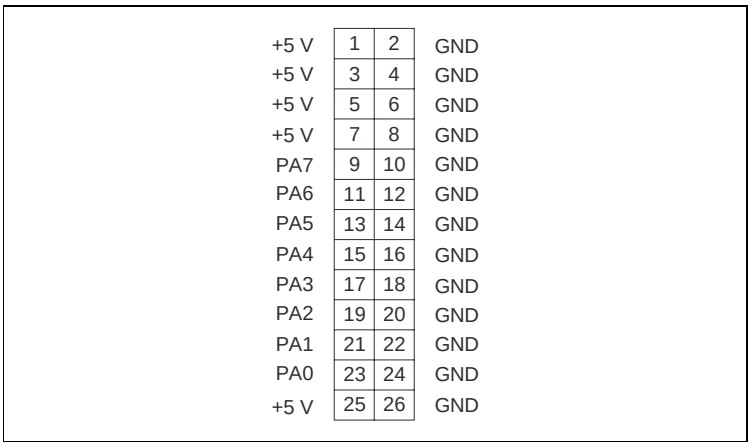
ACH0	1	2	ACH1
ACH2	3	4	ACH3
ACH4	5	6	ACH5
ACH6	7	8	ACH7
AIGND	9	10	DAC0OUT
AOGND	11	12	DAC1OUT
DGND	13	14	PA0
PA1	15	16	PA2
PA3	17	18	PA4
PA5	19	20	PA6
PA7	21	22	PB0
PB1	23	24	PB2
PB3	25	26	PB4
PB5	27	28	PB6
PB7	29	30	PC0
PC1	31	32	PC2
PC3	33	34	PC4
PC5	35	36	PC6
PC7	37	38	EXTRIG
EXTUPDATE	39	40	EXTCONV
OUT0	41	42	GAT0
OUT1	43	44	GAT1
CLK1	45	46	OUT2
GAT2	47	48	CLK2
+5 V	49	50	DGND

Figure 5-3. Pin Assignments for SC-2053 I/0 Connectors J1 and J2



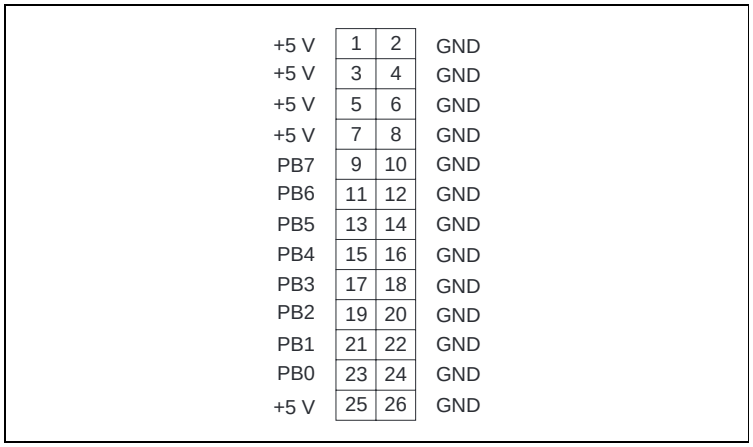
ACH0	1	2	DAC0OUT
AOGND	3	4	DAC1OUT
ACH1	5	6	AOGND
ACH2	7	8	NC
AIGND	9	10	NC
ACH3	11	12	AOGND
ACH4	13	14	NC
AOGND	15	16	NC
ACH5	17	18	AOGND
ACH6	19	20	NC
AOGND	21	22	NC
ACH7	23	24	AOGND
AISENSE	25	26	NC

Figure 5-4. Pin Assignments for SC-2053 I/O Connector J3



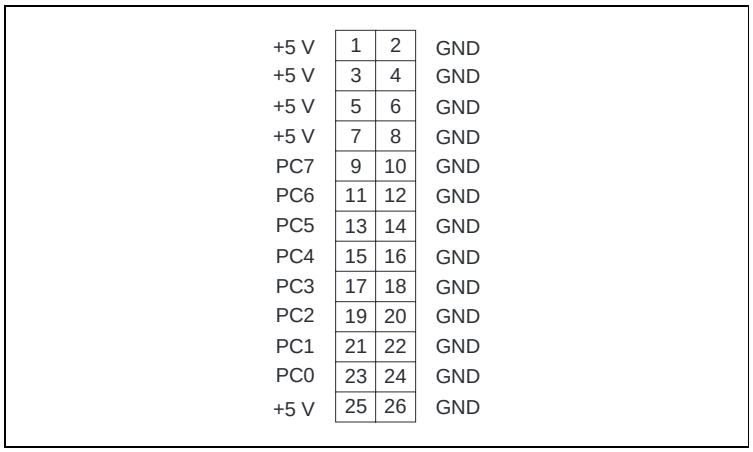
+5 V	1	2	GND
+5 V	3	4	GND
+5 V	5	6	GND
+5 V	7	8	GND
PA7	9	10	GND
PA6	11	12	GND
PA5	13	14	GND
PA4	15	16	GND
PA3	17	18	GND
PA2	19	20	GND
PA1	21	22	GND
PA0	23	24	GND
+5 V	25	26	GND

Figure 5-5. Pin Assignments for SC-2053 I/O Connector J4



+5 V	1	2	GND
+5 V	3	4	GND
+5 V	5	6	GND
+5 V	7	8	GND
PB7	9	10	GND
PB6	11	12	GND
PB5	13	14	GND
PB4	15	16	GND
PB3	17	18	GND
PB2	19	20	GND
PB1	21	22	GND
PB0	23	24	GND
+5 V	25	26	GND

Figure 5-6. Pin Assignments for SC-2053 I/O Connector J5



+5 V	1	2	GND
+5 V	3	4	GND
+5 V	5	6	GND
+5 V	7	8	GND
PC7	9	10	GND
PC6	11	12	GND
PC5	13	14	GND
PC4	15	16	GND
PC3	17	18	GND
PC2	19	20	GND
PC1	21	22	GND
PC0	23	24	GND
+5 V	25	26	GND

Figure 5-7. Pin Assignments for SC-2053 I/O Connector J6

Mounting

The SC-2053 adapter is equipped with metal standoffs so it can sit on a workbench close to the host computer. A rack-mount chassis is also available and can be fitted with a flat acrylic plastic cover or metal wraparound cover. To ground the SC-2053 adapter to the chassis, set the jumper on the adapter as described in Chapter 10, *Installation and Operation*.

Cabling

You need a 50-pin ribbon cable to connect the SC-2053. Connections to the SC-206*X* Series boards and 5B Series backplane require a 26-pin ribbon cable. A 26-conductor ribbon cable is needed for the 8-channel SSR backplane. Additional cables are available from National Instruments for connection to other accessories.

6

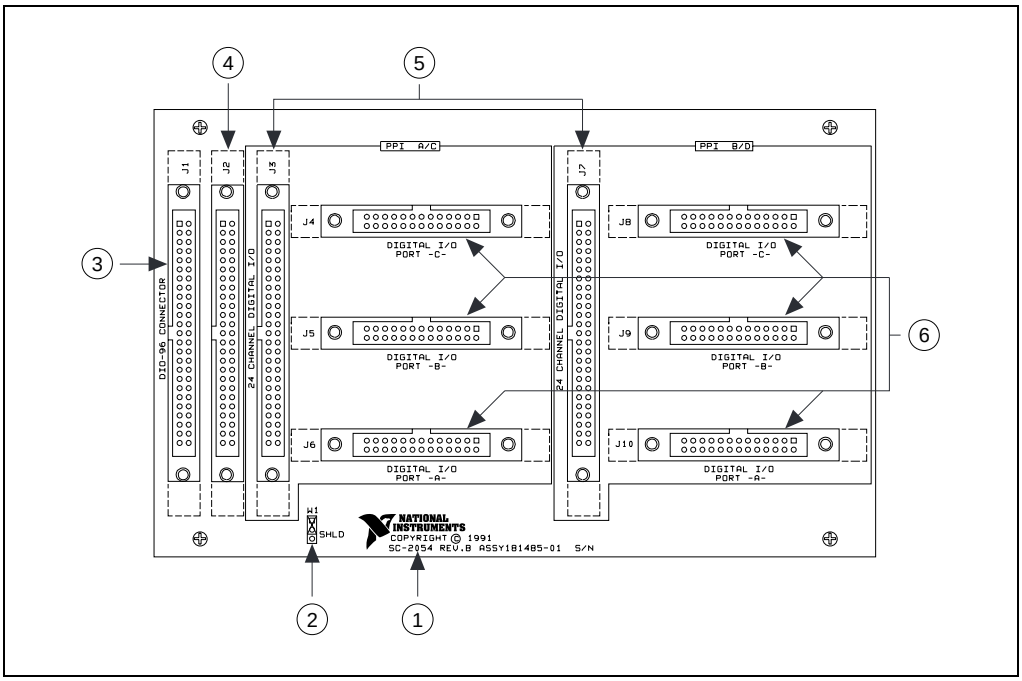
SC-2054

This chapter describes the SC-2054 adapter in detail, including function, connection, mounting, and cabling. Refer to Chapter 10, *Installation and Operation* to install and use your adapter.

The SC-2054 converts half of the 96 digital I/O connector signals from a 96 digital channel device to standard pin connections for signal conditioning accessories.

You can use the SC-2054 with DIO-96 and 6508 devices. The SC-2054 also works with DIO-24 devices; however, the SC-2051 is a more appropriate solution. See Table 1-1 for a complete list of DAQ devices that you can use with the SC-2054.

Figure 6-1 shows the SC-2054 parts locator diagram.



1	Product Name, Assembly Number, Revision Letter, and Serial Number	4	To CB-50
2	Shield Jumper	5	To 16-Channel or 24-Channel SSR
3	To DAQ Device	6	To SC-206*X* Series or 8-Channel SSR

Figure 6-1. SC-2054 Parts Locator Diagram

SC-2054 Connection

Your SC-2054 is connected to the 96-channel DAQ device via a type NB5, 100-pin ribbon cable or R1005050 ribbon cable depending on the device. Make this connection with the host computer powered off. Connect one of the 50-pin connector ends of the cable to the SC-2054 at connector J1. Connect the 100-pin connector end of the cable to the DAQ device installed in your computer.

Warning ***Do not connect the SC-2054 to a board for which it is not designed. Such connection can damage the SC-2054 and any or all boards/accessories connected to the SC-2054 and host computer. National instruments is NOT liable for any damages resulting from incorrect connections.***

Connect your SC-2054 to the signal conditioning accessories via a type NB7, 26-pin ribbon cable. This cable connects the SC-2054 to any of the SC-206*X* Series boards. An 8-channel SSR Series backplane with a 26-conductor ribbon cable is available for connection to the SC-2054. A 50-pin cable is also available to connect the SC-2054 to a 16-channel or 24-channel SSR Series backplane. For instructions on making these connections to the proper signal conditioning accessories, refer to *Cable Connections* in Chapter 10, *Installation and Operation.*

Connectors

The SC-2054 has four 50-pin ribbon cable connectors. The first two are connected pin-by-pin to each other. You can use either of the first two connectors to attach the SC-2054 to the DAQ device via a type NB5 or R1005050 cable. You can daisy-chain the second connector to 48-channel digital I/O signals and other 50-pin accessories. Each of the other two 50-pin connectors has 24-channel digital I/O signals in a DIO-24-style connector.

The SC-2054 also has six 26-pin ribbon cable connectors that you can use to connect to the signal conditioning accessories. The digital ports are compatible with the SC-206*X* Series digital signal conditioners as well as with the 8-channel SSR Series solid-state relay board.

Figure 6-2 illustrates the connections between the SC-2054 and the necessary accessories and devices.

☞ Note ***A single SC-2054 adapter has signal-conditioning compatible pin connections for only half of the signals on a 96-channel DAQ device. Two SC-2054 adapters with a type NB5 or R1005050 cable have signal-conditioning compatible pin connections for all 96 signals on the DAQ device.***

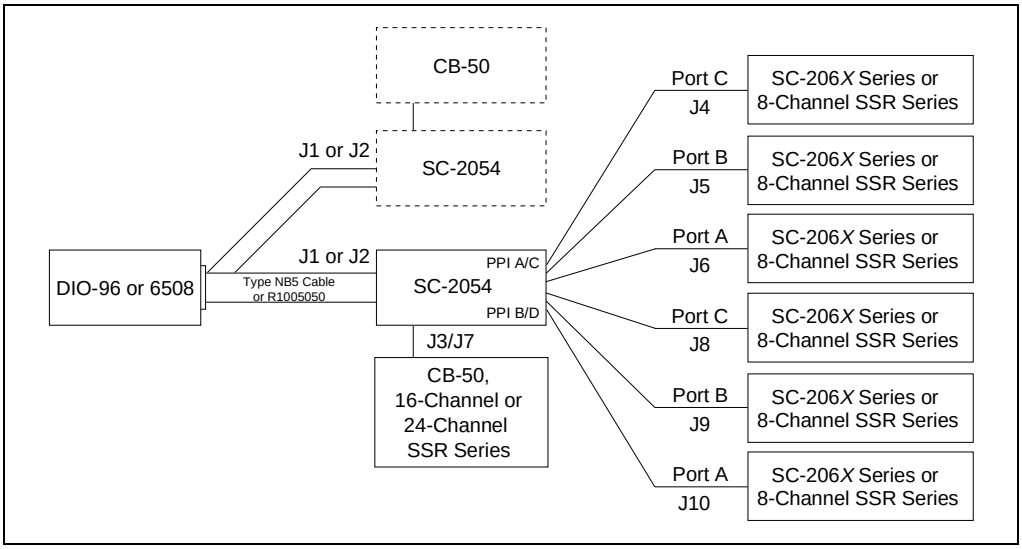


Figure 6-2. SC-2054 Connections

Table 6-1 describes the connectors on the SC-2054.

Table 6-1. SC-2054 Connectors

Connectors	Connection	Description
J1, J2	50-pin male connectors	Attach J1 or J2 to the DAQ device via a type NB5 or R1005050 cable. The other connector can daisy-chain the 48-channel digital I/O signals to other 50-pin accessories such as a CB-50.
J3, J7	50-pin male connectors J3 is tied to PPI A (ports 0 to 2) or PPI C (ports 6 to 8), depending on which half of the type NB5 or R1005050 cable is attached to J1. J7 is tied to PPI B (ports 3 to 5) or PPI D (ports 9 to 11), depending on which half of the type NB5 cable is attached to J1.	Connect J3 or J7 to any DIO-24 accessories or daisy-chain the 24-channel digital I/O signals to other 50-pin accessories such as a CB-50 or a 16-channel or 24-channel SSR Series board.

Table 6-1. SC-2054 Connectors (Continued)

Connectors	Connection	Description
J4, J8	26-pin male connectors Port C digital I/O connection. J4 is tied to port C of PPI A or C (port number 2 or 8), depending on which half of the type NB5 cable is attached to J1. J8 is tied to port C of PPI B or D (port number 5 or 11), depending on which half of the type NB5 cable is attached to J1.	Attach J4 or J8 connectors to an SC-206*X* Series board or to an 8-channel SSR Series backplane. The eight digital lines of the port corresponding to the label below the connector are connected to the digital lines of the accessory.
J5, J9	26-pin male connectors Port B digital I/O connection. J5 is tied to port B of PPI A or C (port number 1 or 7), depending on which half of the type NB5 cable is attached to J1. J9 is tied to port B of PPI B or D (port number 4 or 10), depending on which half of the type NB5 cable is attached to J1.	Attach J5 or J9 connectors to an SC-206*X* Series board or to an 8-channel SSR Series backplane. The eight digital lines of the port corresponding to the label below the connector are connected to the digital lines of the accessory.
J6, J10	26-pin male connectors Port A digital I/O connection. J6 is tied to port A of PPI A or C (port number 0 or 6), depending on which half of the type NB5 cable is attached to J1. J10 is tied to port A of PPI B or D (port number 3 or 9), depending on which half of the type NB5 cable is attached to J1.	Attach J6 or J10 connectors to an SC-206*X* Series board or to an 8-channel SSR Series backplane. The eight digital lines of the port corresponding to the label below the connector are connected to the digital lines of the accessory.

Figures 6-3 through 6-7 show the pin assignments for each I/O connector on the SC-2054.

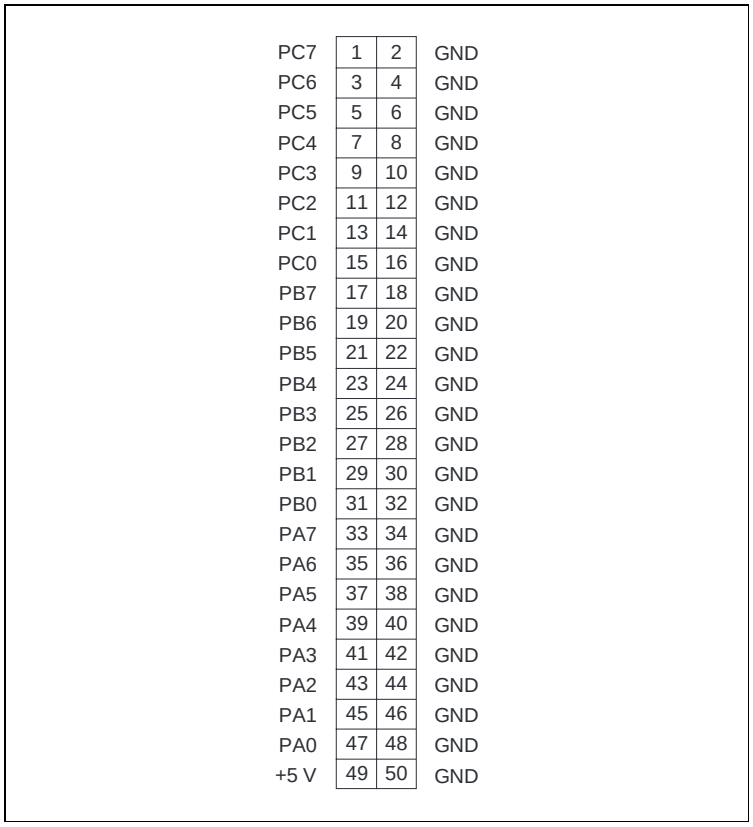
APC7	1	2	BPC7
APC6	3	4	BPC6
APC5	5	6	BPC5
APC4	7	8	BPC4
APC3	9	10	BPC3
APC2	11	12	BPC2
APC1	13	14	BPC1
APC0	15	16	BPC0
APB7	17	18	BPB7
APB6	19	20	BPB6
APB5	21	22	BPB5
APB4	23	24	BPB4
APB3	25	26	BPB3
APB2	27	28	BPB2
APB1	29	30	BPB1
APB0	31	32	BPB0
APA7	33	34	BPA7
APA6	35	36	BPA6
APA5	37	38	BPA5
APA4	39	40	BPA4
APA3	41	42	BPA3
APA2	43	44	BPA2
APA1	45	46	BPA1
APA0	47	48	BPA0
+5 V	49	50	GND

a. Type NB5 or R1005050 cable connector labeled pins 1-50 is attached to J1 or J2.

CPC7	1	2	DPC7
CPC6	3	4	DPC6
CPC5	5	6	DPC5
CPC4	7	8	DPC4
CPC3	9	10	DPC3
CPC2	11	12	DPC2
CPC1	13	14	DPC1
CPC0	15	16	DPC0
CPB7	17	18	DPB7
CPB6	19	20	DPB6
CPB5	21	22	DPB5
CPB4	23	24	DPB4
CPB3	25	26	DPB3
CPB2	27	28	DPB2
CPB1	29	30	DPB1
CPB0	31	32	DPB0
CPA7	33	34	DPA7
CPA6	35	36	DPA6
CPA5	37	38	DPA5
CPA4	39	40	DPA4
CPA3	41	42	DPA3
CPA2	43	44	DPA2
CPA1	45	46	DPA1
CPA0	47	48	DPA0
+5 V	49	50	GND

b. Type NB5 or R1005050 cable connector labeled pins 51-100 is attached to J1 or J2.

Figure 6-3. Pin Assignments for SC-2054 I/O Connectors J1 and J2



PC7	1	2	GND
PC6	3	4	GND
PC5	5	6	GND
PC4	7	8	GND
PC3	9	10	GND
PC2	11	12	GND
PC1	13	14	GND
PC0	15	16	GND
PB7	17	18	GND
PB6	19	20	GND
PB5	21	22	GND
PB4	23	24	GND
PB3	25	26	GND
PB2	27	28	GND
PB1	29	30	GND
PB0	31	32	GND
PA7	33	34	GND
PA6	35	36	GND
PA5	37	38	GND
PA4	39	40	GND
PA3	41	42	GND
PA2	43	44	GND
PA1	45	46	GND
PA0	47	48	GND
+5 V	49	50	GND

Figure 6-4. Pin Assignments for SC-2054 I/O Connectors J3 and J7

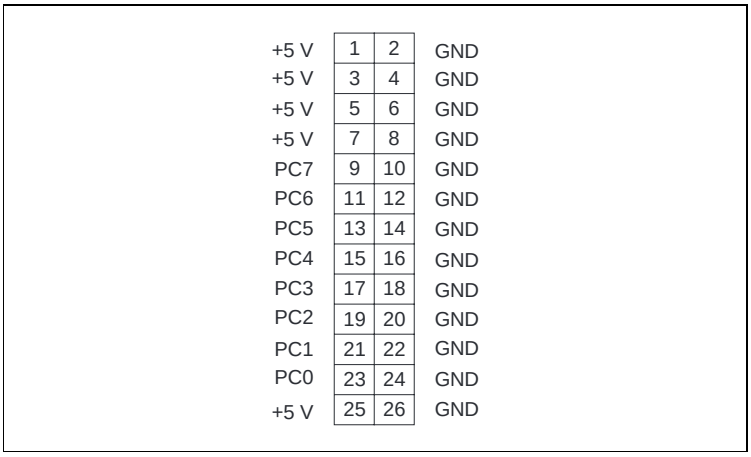


Figure 6-5. Pin Assignments for SC-2054 I/O Connectors J4 and J8

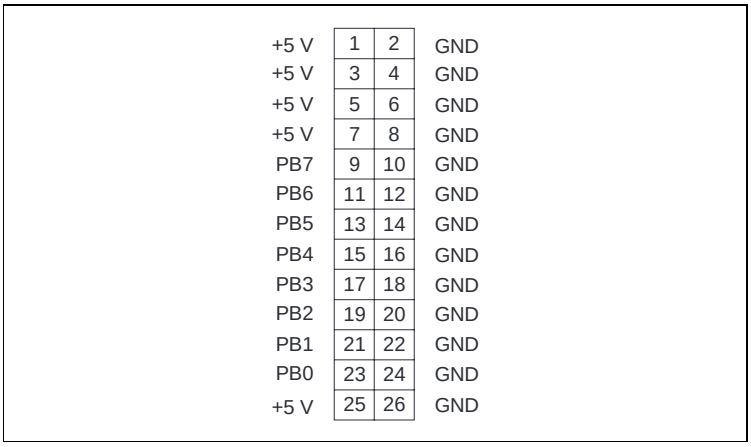


Figure 6-6. Pin Assignments for SC-2054 I/O Connectors J5 and J9

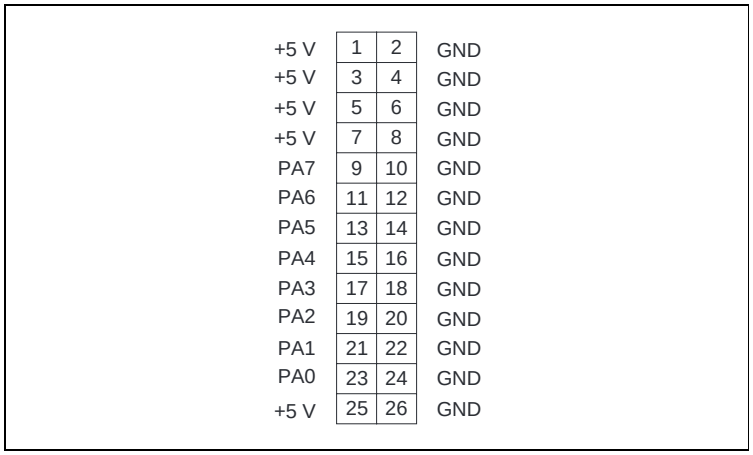


Figure 6-7. Pin Assignments for SC-2054 I/O Connectors J6 and J10

Mounting

The SC-2054 adapter has metal standoffs so it can sit on a workbench close to the host computer. A rack-mount is also available and can be fitted with a flat acrylic plastic cover or metal wraparound cover. To ground the SC-2054 adapter to the rack, set the jumper on the adapter as described in Chapter 10, *Installation and Operation*.

Cabling

You need an NB5 or R1005050 ribbon cable to connect the SC-2054 to a 96-channel DAQ device, depending on the device. Connections to the SC-206*X* Series boards require a 26-pin ribbon cable. A 26-conductor ribbon cable is needed for the 8-channel SSR backplane. Additional cables are available from National Instruments for connection to other accessories.

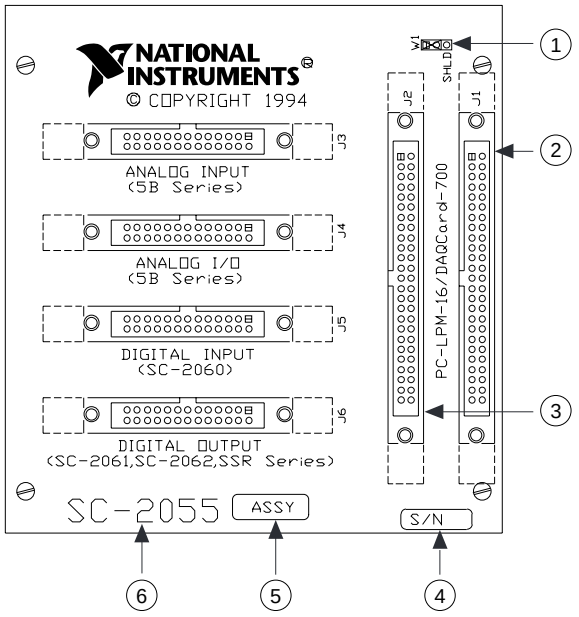
7

SC-2055

This chapter describes the SC-2055 adapter in detail, including function, connection, mounting, and cabling. Refer to Chapter 10, *Installation and Operation* to install and use your adapter.

The SC-2055 converts the DAQCard-700 and PC-LPM-16/PnP I/O connector signals to standard pin connections for signal conditioning accessories. See Table 1-1 for a complete list of DAQ devices that you can use with the SC-2055.

Figure 7-1 shows the SC-2055 parts locator diagram.



1	Shield Jumper	4	Serial Number
2	PC-LPM-16/PnP or DAQCard-700	5	Assembly Number and Revision Letter
3	To CB-50 or SC-2702	6	Product Name

Figure 7-1. SC-2055 Parts Locator Diagram

SC-2055 Connection

Connect your SC-2055 to the DAQ device via a type NB1, 50-pin ribbon cable. Make this connection with the host computer powered off. Connect one end of the ribbon cable to the SC-2055 at either connector J1 or J2. Connect the other end to the DAQ device installed in your computer.

Warning ***Do not connect the SC-2055 to a board for which it is not designed. Such connection can damage the SC-2055 and any or all boards/accessories connected to the SC-2055 and host computer. National instruments is NOT liable for any damages resulting from incorrect connections.***

To connect your SC-2055 to the signal conditioning accessories, use a type NB7, 26-pin ribbon cable. This cable connects the SC-2055 to any of the SC-206*X* Series boards or to the 5B Series backplane. An 8-channel SSR Series backplane with a 26-conductor ribbon cable is also available for connection to the SC-2055. For instructions on making these connections to the proper signal conditioning accessories, refer to *Cable Connections* in Chapter 10, *Installation and Operation*.

Connectors

The SC-2055 has two 50-pin ribbon-cable connectors that are connected pin-by-pin to each other. You can use either of these connectors to attach the SC-2055 to the DAQ device via a cable. You can daisy-chain the second connector to other 50-pin accessories.

The SC-2055 also has four 26-pin ribbon-cable connectors that you can use to connect to the signal conditioning accessories. The analog ports have pin connections compatible with the 5B Series of analog signal conditioning modules. The digital ports are compatible with the SC-206*X* Series digital signal conditioners and with the 8-channel SSR Series solid-state relay board.

Figure 7-2 illustrates the connections between the SC-2055 and the necessary accessories and devices.

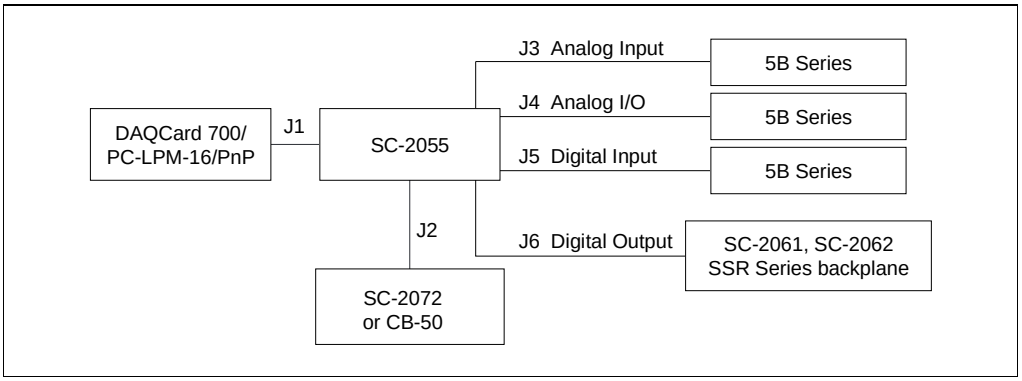


Figure 7-2. SC-2055 Connections

Table 7-1 describes the connectors on the SC-2055.

Table 7-1. SC-2055 Connectors

Connectors	Connection	Description
J1, J2	50-pin male ribbon cable connectors; DAQCard-700 or PC-LPM-16/PnP connection	Attach J1 or J2 to the DAQ device. You can attach the other connector to the SC-2070 or CB-50. The connections at J1 and J2 are identical so you can daisy-chain to the DAQ device signals.
J3	26-pin male connector; 5B Series analog input connection	Attach J3 to the 5B Series backplane. This connection takes analog input lines 0–15 on the DAQCard-700 or PC-LPM-16/PnP to channels 0–15 of the 5B Series backplane, in sequential order.
J4	26-pin male connector; 5B Series analog I/O connection; pin 20 is connected to channel 14 of the 5B Series; pin 21 is connected to channel 15 of the 5B Series	Attach J4 to the 5B Series backplane. This connection takes analog input lines 0–13 on the DAQCard-700 or PC-LPM-16/PnP to channels 0–13 of the 5B Series backplane, in sequential order. Pin 20 of the DAQCard-700 or PC-LPM-16/PnP is connected to channel 14 of the 5B Series and pin 21 is connected to channel 15.
J5	26-pin male connector; digital input connection	Attach J5 only to the SC-2060. This connection takes the eight digital input lines from a DAQCard-700 or PC-LPM-16/PnP to a digital signal conditioning accessory with a compatible pin assignment, such as the SC-2060.
J6	26-pin male connector; digital output connection	Attach J6 to the SC-2061, SC-2062, or 8-channel SSR Series backplane. This connects the eight digital output lines from the DAQCard-700 or PC-LPM-16/PnP to a digital signal conditioning accessory with a compatible pin connections.

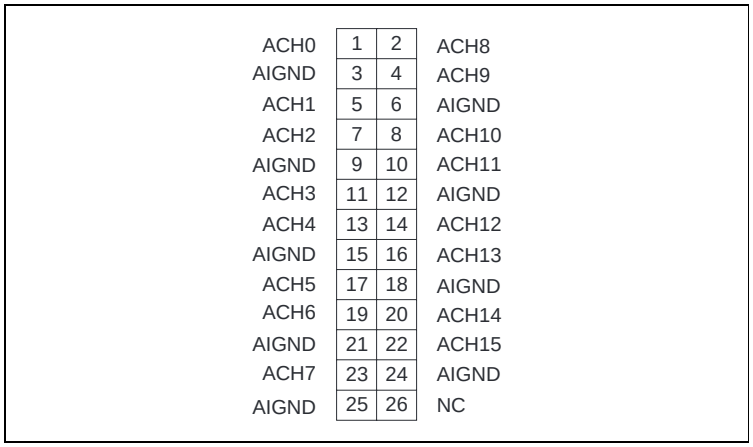
Caution ***If you are using a PC-LPM-16/PnP, do not use 5B Series analog output modules in the last two slots of the 5B backplane connected to the connector because the ±12 VDC supply is routed to those slots. Doing so can damage the modules and the PC-LPM-16/PnP.***

Figures 7-3 through 7-7 show the pin assignments for each connector on the SC-2055.

AIGND	1	2	AIGND
ACH0	3	4	ACH8
ACH1	5	6	ACH9
ACH2	7	8	ACH10
ACH3	9	10	ACH11
ACH4	11	12	ACH12
ACH5	13	14	ACH13
ACH6	15	16	ACH14
ACH7	17	18	ACH15
DGND	19	20	NC*
NC*	21	22	DIN0
DIN1	23	24	DIN2
DIN3	25	26	DIN4
DIN5	27	28	DIN6
DIN7	29	30	DOUT0
DOUT1	31	32	DOUT2
DOUT3	33	34	DOUT4
DOUT5	35	36	DOUT6
DOUT7	37	38	OUT1*
EXTINT*	39	40	EXTCONV*
OUT0	41	42	GATE0
OUT1	43	44	GATE1
CLK1	45	46	OUT2
GATE2	47	48	CLK2
VCC	49	50	DGND

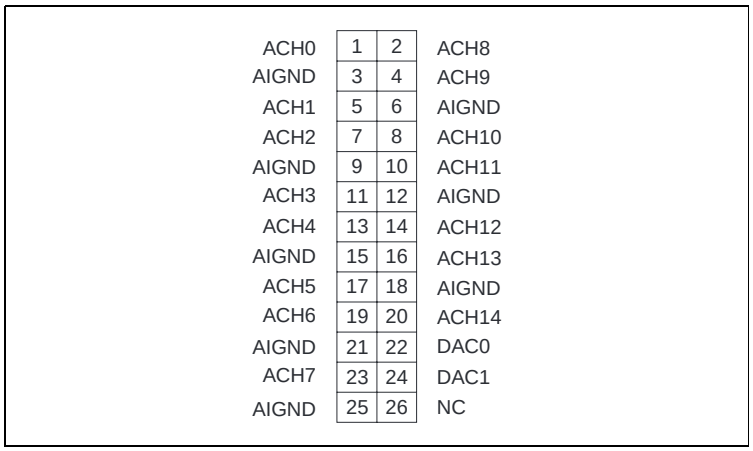
* PC-LPM pin 20 is –12 V and pin 21 is +12 V.
* DAQCard-700 pins 20 and 21 are not connected.

Figure 7-3. Pin Assignments for SC-2055 I/O Connectors J1 and J2



ACH0	1	2	ACH8
AIGND	3	4	ACH9
ACH1	5	6	AIGND
ACH2	7	8	ACH10
AIGND	9	10	ACH11
ACH3	11	12	AIGND
ACH4	13	14	ACH12
AIGND	15	16	ACH13
ACH5	17	18	AIGND
ACH6	19	20	ACH14
AIGND	21	22	ACH15
ACH7	23	24	AIGND
AIGND	25	26	NC

Figure 7-4. Pin Assignments for SC-2055 Analog Input Connector J3



ACH0	1	2	ACH8
AIGND	3	4	ACH9
ACH1	5	6	AIGND
ACH2	7	8	ACH10
AIGND	9	10	ACH11
ACH3	11	12	AIGND
ACH4	13	14	ACH12
AIGND	15	16	ACH13
ACH5	17	18	AIGND
ACH6	19	20	ACH14
AIGND	21	22	DAC0
ACH7	23	24	DAC1
AIGND	25	26	NC

Figure 7-5. Pin Assignments for SC-2055 Analog I/O Connector J4

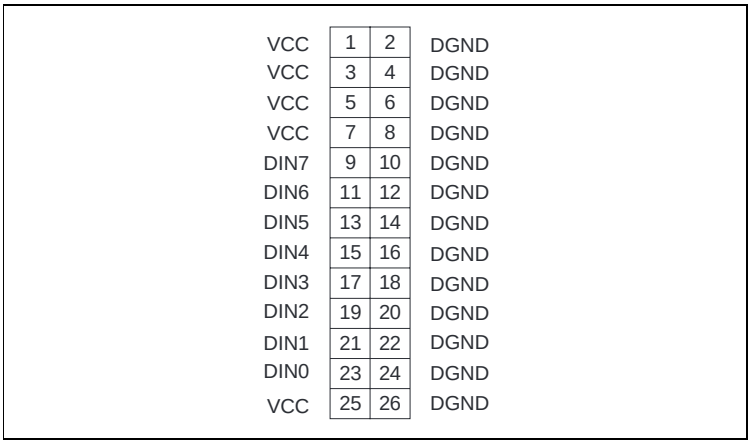


Figure 7-6. Pin Assignments for SC-2055 Digital Input Connector J5

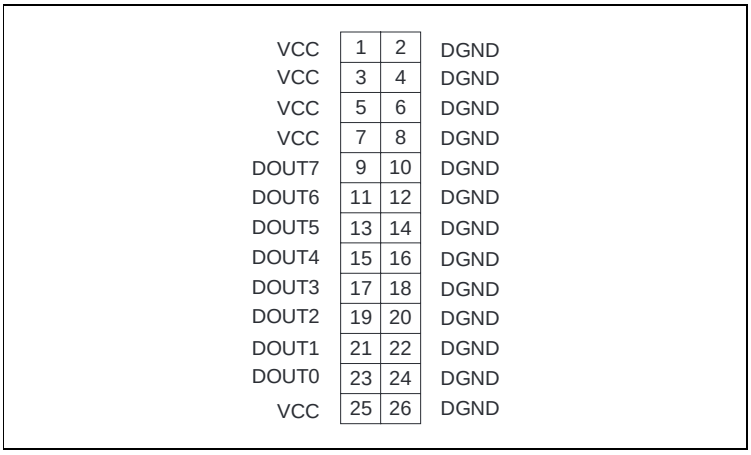


Figure 7-7. Pin Assignments for SC-2055 Digital Output Connector J6

Mounting

The SC-2055 adapter has metal standoffs so it can sit on a workbench close to the host computer. A rack-mount chassis is also available and can be fitted with a flat acrylic plastic cover or metal wraparound cover. To ground the SC-2055 adapter to the chassis, set the jumper on the adapter as described in Chapter 10, *Installation and Operation*.

Cabling

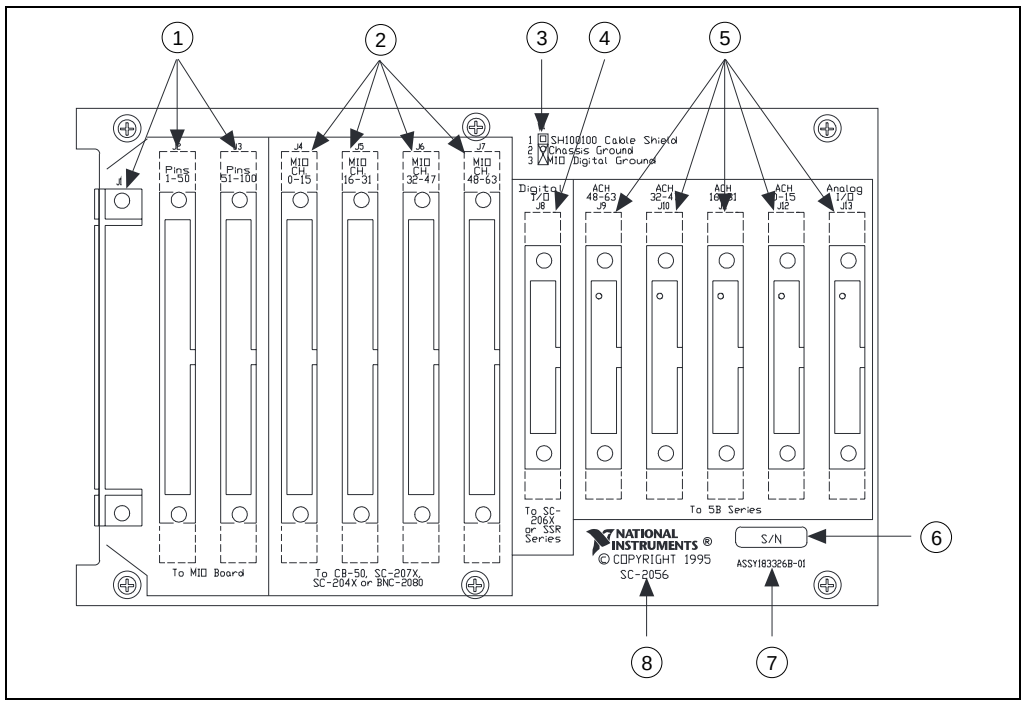
You need a 50-pin ribbon cable to connect the SC-2055. Connections to the SC-206*X* Series boards and 5B backplanes require a 26-pin ribbon cable. A 26-conductor ribbon cable is needed for the 8-channel SSR backplane. Additional cables are available from National Instruments for connection to other accessories.

8

SC-2056

This chapter describes the SC-2056 adapter in detail, including function, connection, mounting, and cabling. Refer to Chapter 10, *Installation and Operation* to install and use your adapter.

The SC-2056 converts 64-channel E Series device I/O connector signals to standard pin assignments for signal conditioning accessories. You can use the SC-2056 with E Series devices such as the AT-MIO-64E-3 and VXI-MIO-64E-1. See Table 1-1 for a complete list of DAQ devices that you can use with the SC-2056.



1	To MIO (or other 64-channel E Series device)	5	To 5B Series
2	To SC-2042, SC-2043, SC-2070, CB-50, or BNC-2080	6	Serial Number
3	Jumper W1	7	Assembly Number
4	To SC-206*X* Series or 8-Channel SSR Series	8	Product Name

Figure 8-1. SC-2056 Parts Locator Diagram

SC-2056 Connection

Connect your SC-2056 to the DAQ device via an SH100100, R1005050, or SH96-100 cable, available separately. Make this connection with the host computer or VXI chassis powered off. Connect one end of the cable to the SC-2056 at either connector J1, J2, or J3. Connect the other end to the DAQ device installed in your host computer or VXI chassis.

Warning ***Do not connect the SC-2056 to a board for which it is not designed. Such connection can damage the SC-2056 and any or all boards/accessories connected to the SC-2056 and host computer. National instruments is NOT liable for any damages resulting from incorrect connections.***

To connect your SC-2056 to the signal conditioning accessories, use a type NB7, 26-pin ribbon cable. This cable connects the SC-2056 to any of the SC-206*X* Series boards or to the 5B Series backplane. An 8-channel SSR Series backplane with a 26-conductor cable is also available for connection to the SC-2056 board. For instructions on making these connections to the proper signal conditioning accessories, refer to *Cable Connections* in Chapter 10, *Installation and Operation*.

Connectors

The SC-2056 has two 50-pin ribbon cable connectors (for use with the R1005050 cable), and a 100-pin connector (for use with the SH100100 or SH96-100 cable) that are used to connect the DAQ device to the SC-2056. You can use either of these connectors to attach the SC-2056 to the DAQ device via a cable. There are also four other 50-pin ribbon cable connectors that are used to connect to other 50-pin accessories. These four connectors have a standard MIO pin connector with analog channels 0–15, 16–31, 32–47, and 48–63 available for the 50-pin accessories.

☞ Note ***Because the four connectors' digital signals are available, it is possible to*** *double drive* ***these signals; that is, you can connect more than one digital output to the same digital input of the DAQ device, which can damage the digital output source.***

The SC-2056 also has six 26-pin ribbon cable connectors that you can use to connect to the signal conditioning accessories. The five analog port connectors have pin assignments that are compatible with the 5B Series of analog signal conditioning modules. The digital port connector is compatible with the SC-206*X* Series digital signal conditioners as well as with the 8-channel SSR Series solid-state relay board.

Figure 8-2 illustrates the connections between the SC-2056 and the necessary accessories and devices.

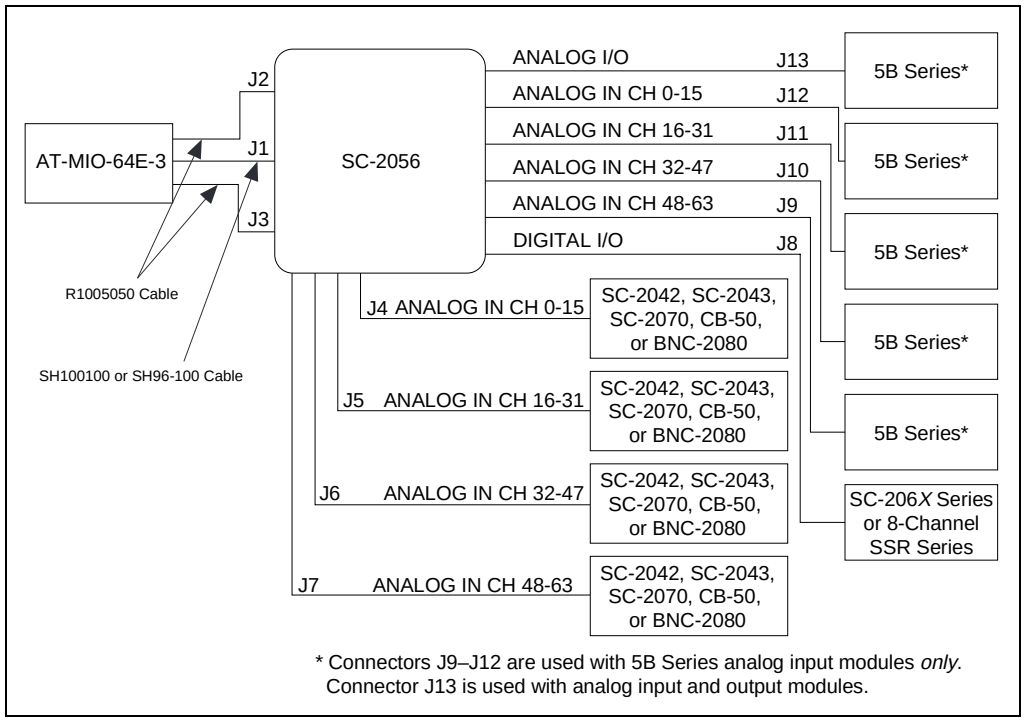


Figure 8-2. SC-2056 Connections

☞ Note ***When using an SC-2040 or SC-2043, you must apply external power to the SC-204X Series boards.***

You can use up to four SC-2042 or SC-2043 boards, but do not use both adapters simultaneously while using the SC-2056.

Table 8-1 describes the connectors on the SC-2056.

Table 8-1. SC-2056 Connectors

Connectors	Connection	Description
J1	100-pin female ribbon cable shielded connector; DAQ device connection	Attach J1 to the DAQ device when using the SH100-100 or SH96-100 cable.
J2	50-pin male ribbon cable connector; DAQ device connection (pins 1–50)	Attach J2 to the DAQ device pins 1–50 when using the R1005050 cable.
J3	50-pin male ribbon cable connector; DAQ device connection (pins 51–100)	Attach J3 to the DAQ device pins 51–100 when using the R1005050 cable.
J4	50-pin male ribbon cable connector; analog input channels 0–15	Attach J4 to the 50-pin accessories as shown in Figure 8-2.
J5	50-pin male ribbon cable connector; analog input channels 16–31	Attach J5 to the 50-pin accessories as shown in Figure 8-2. 50-pin accessories are labeled channels 0–15. This connector uses channels 16–31 of the DAQ device.
J6	50-pin male ribbon cable connector; analog input channels 32–47	Attach J6 to the 50-pin accessories as shown in Figure 8-2. 50-pin accessories are labeled channels 0-15. This connector uses channels 32–47 of the DAQ device.
J7	50-pin male ribbon cable connector; analog input channels 48–63	Attach J7 to the 50-pin accessories as shown in Figure 8-2. 50-pin accessories are labeled channels 0–15. This connector uses channels 48-63 of the DAQ device.
J8	26-pin male ribbon cable connector; digital I/O connection	Attach J8 to the SC-206*X* Series or SSR 8-channel boards. This connection takes the eight digital I/O lines from the DAQ device to a digital signal conditioning accessory with compatible pin connections, as shown in Figure 8-2.

Table 8-1. SC-2056 Connectors (Continued)

Connectors	Connection	Description
J9	26-pin male ribbon cable connector; 5B Series analog input connection; channels 48–63	Attach J9 to the 5B Series backplane. This connection takes analog input channels 48–63 on the DAQ device to channels 0–15 of the 5B Series backplane in sequential order.
J10	26-pin male ribbon cable connector; 5B Series analog input connection; channels 32–47	Attach J10 to the 5B Series backplane. This connection takes analog input channels 32–47 on the DAQ device to channels 0–15 of the 5B Series backplane in sequential order.
J11	26-pin male ribbon cable connector; 5B Series analog input connection; channels 16–31	Attach J11 to the 5B Series backplane. This connection takes analog input channels 16–31 on the DAQ device to channels 0–15 of the 5B Series backplane in sequential order.
J12	26-pin male ribbon cable connector; 5B Series analog input connection; channels 0–15	Attach J12 to the 5B Series backplane. This connection takes analog input channels 0–15 on the DAQ device to channels 0–15 of the 5B Series backplane in sequential order.
J13	26-pin male ribbon cable connector; 5B Series analog I/O connection	Attach J13 to the 5B Series backplane. This connection takes analog input channels 0–13 on the DAQ device to channels 0–13 of the 5B Series backplane in sequential order. It also connects the voltage output signal DAC0OUT from the DAQ device to channel 14 of the 5B Series, and DAC1OUT to channel 15.

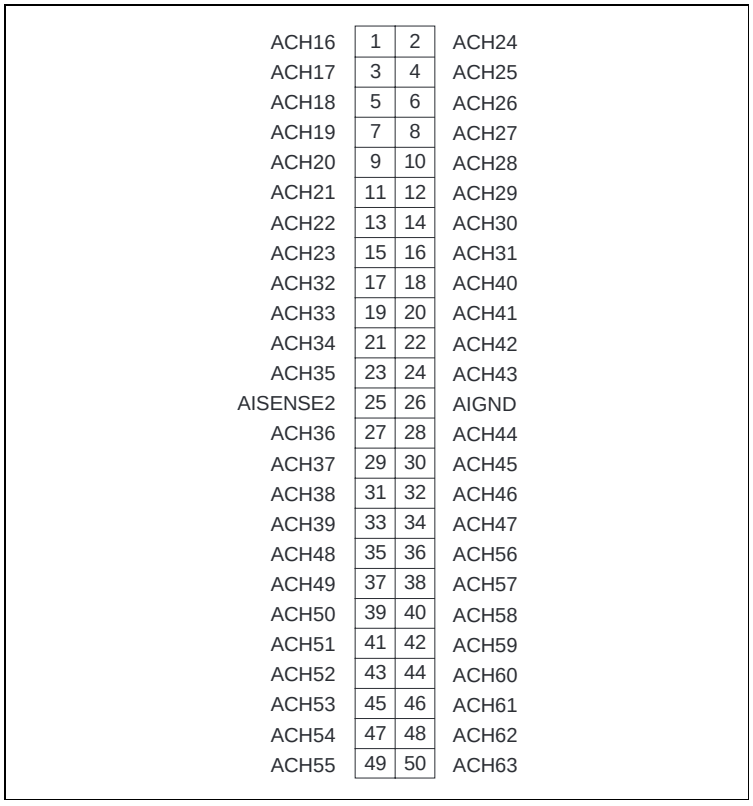
Figures 8-3 through 8-15 show the pin assignments for each I/O connector on the SC-2056.

AIGND	1	51	ACH16
AIGND	2	52	ACH24
AIGND	3	53	ACH17
ACH0	4	54	ACH25
ACH1	5	55	ACH18
ACH9	6	56	ACH26
ACH2	7	57	ACH19
ACH10	8	58	ACH27
ACH3	9	59	ACH20
ACH11	10	60	ACH28
ACH4	11	61	ACH21
ACH12	12	62	ACH29
ACH5	13	63	ACH22
ACH13	14	64	ACH30
ACH6	15	65	ACH23
ACH14	16	66	ACH31
ACH7	17	67	ACH32
ACH15	18	68	ACH40
AISENSE	19	69	ACH33
DAC0OUT	20	70	ACH41
DAC1OUT	21	71	ACH34
EXTREF	22	72	ACH42
AOGND	23	73	ACH35
DGND	24	74	ACH43
DIO0	25	75	AISENSE2
DIO4	26	76	AIGND
DIO1	27	77	ACH36
DIO5	28	78	ACH44
DIO2	29	79	ACH37
DIO6	30	80	ACH45
DIO3	31	81	ACH38
DIO7	32	82	ACH46
DGND	33	83	ACH39
+5 V	34	84	ACH47
+5 V	35	85	ACH48
SCANCLK	36	86	ACH56
EXSTROBE*	37	87	ACH49
PFI0/TRIG1	38	88	ACH57
PFI1/TRIG2	39	89	ACH50
PFI2/CONV*	40	90	ACH58
PFI3/GPCTR1SOURCE	41	91	ACH51
PFI4/GPCTR1GATE	42	92	ACH59
GPCTR1OUT	43	93	ACH52
PFI5/UPDATE*	44	94	ACH60
PFI6/WFTRIG	45	95	ACH53
PFI7/STARTSCAN	46	96	ACH61
PFI8/GPCTR0SOURCE	47	97	ACH54
PFI9/GPCTR0GATE	48	98	ACH62
GPCTR0OUT	49	99	ACH55
FOUT	50	100	ACH63

Figure 8-3. Pin Assignments for SC-2056 I/O Connector J1

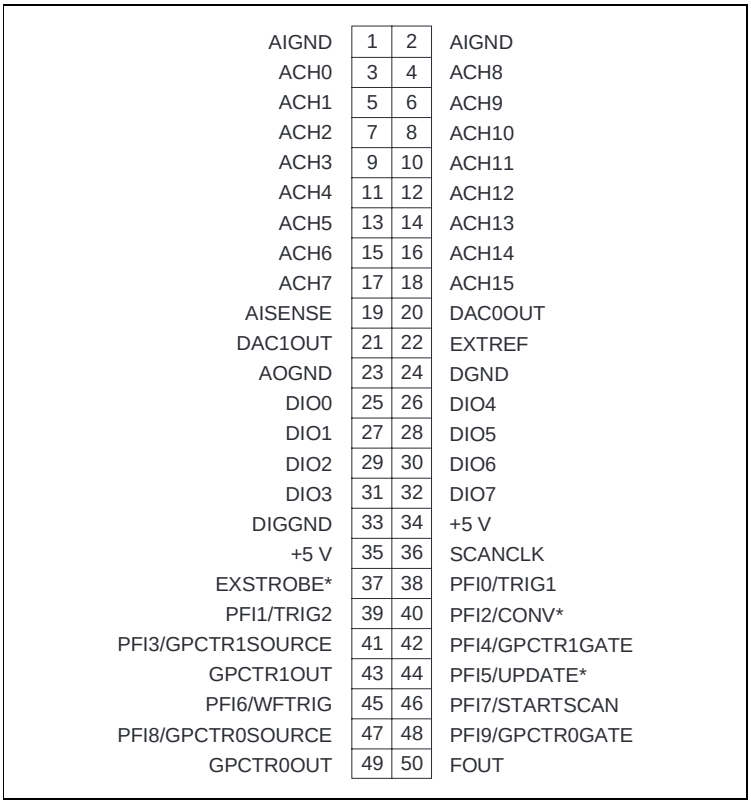
AIGND	1	2	AIGND
ACH0	3	4	ACH8
ACH1	5	6	ACH9
ACH2	7	8	ACH10
ACH3	9	10	ACH11
ACH4	11	12	ACH12
ACH5	13	14	ACH13
ACH6	15	16	ACH14
ACH7	17	18	ACH15
AISENSE	19	20	DAC0OUT
DAC1OUT	21	22	EXTREF
AOGND	23	24	DGND
DIO0	25	26	DIO4
DIO1	27	28	DIO5
DIO2	29	30	DIO6
DIO3	31	32	DIO7
DGND	33	34	+5 V
+5 V	35	36	SCANCLK
EXSTROBE*	37	38	PFI0/TRIG1
PFI1/TRIG2	39	40	PFI2/CONV*
PFI3/GPCTR1SOURCE	41	42	PFI4/GPCTR1GATE
GPCTR1OUT	43	44	PFI5/UPDATE*
PFI6/WFTRIG	45	46	PFI7/STARTSCAN
PFI8/GPCTR0SOURCE	47	48	PFI9/GPCTR0GATE
GPCTR0OUT	49	50	FOUT

Figure 8-4. Pin Assignments for SC-2056 I/O Connector J2



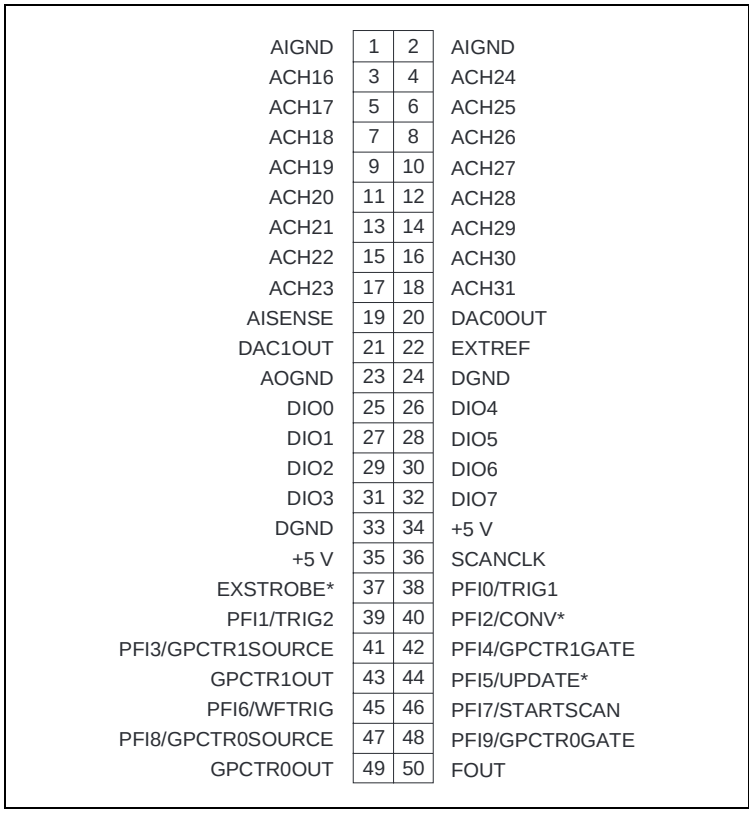
ACH16	1	2	ACH24
ACH17	3	4	ACH25
ACH18	5	6	ACH26
ACH19	7	8	ACH27
ACH20	9	10	ACH28
ACH21	11	12	ACH29
ACH22	13	14	ACH30
ACH23	15	16	ACH31
ACH32	17	18	ACH40
ACH33	19	20	ACH41
ACH34	21	22	ACH42
ACH35	23	24	ACH43
AISENSE2	25	26	AIGND
ACH36	27	28	ACH44
ACH37	29	30	ACH45
ACH38	31	32	ACH46
ACH39	33	34	ACH47
ACH48	35	36	ACH56
ACH49	37	38	ACH57
ACH50	39	40	ACH58
ACH51	41	42	ACH59
ACH52	43	44	ACH60
ACH53	45	46	ACH61
ACH54	47	48	ACH62
ACH55	49	50	ACH63

Figure 8-5. Pin Assignments for SC-2056 I/O Connector J3



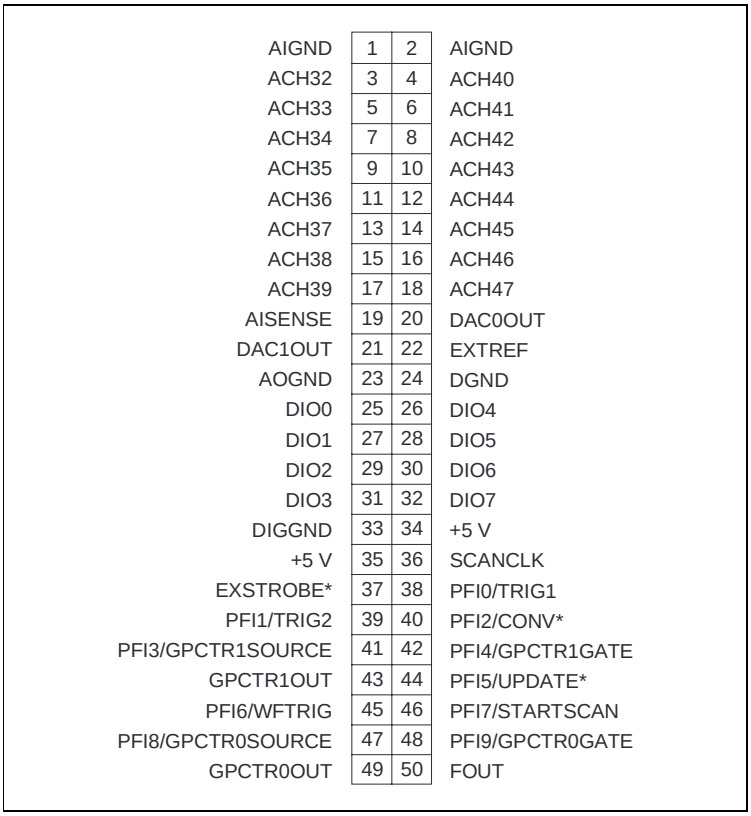
AIGND	1	2	AIGND
ACH0	3	4	ACH8
ACH1	5	6	ACH9
ACH2	7	8	ACH10
ACH3	9	10	ACH11
ACH4	11	12	ACH12
ACH5	13	14	ACH13
ACH6	15	16	ACH14
ACH7	17	18	ACH15
AISENSE	19	20	DAC0OUT
DAC1OUT	21	22	EXTREF
AOGND	23	24	DGND
DIO0	25	26	DIO4
DIO1	27	28	DIO5
DIO2	29	30	DIO6
DIO3	31	32	DIO7
DIGGND	33	34	+5 V
+5 V	35	36	SCANCLK
EXSTROBE*	37	38	PFI0/TRIG1
PFI1/TRIG2	39	40	PFI2/CONV*
PFI3/GPCTR1SOURCE	41	42	PFI4/GPCTR1GATE
GPCTR1OUT	43	44	PFI5/UPDATE*
PFI6/WFTRIG	45	46	PFI7/STARTSCAN
PFI8/GPCTR0SOURCE	47	48	PFI9/GPCTR0GATE
GPCTR0OUT	49	50	FOUT

Figure 8-6. Pin Assignments for SC-2056 I/O Connector J4



AIGND	1	2	AIGND
ACH16	3	4	ACH24
ACH17	5	6	ACH25
ACH18	7	8	ACH26
ACH19	9	10	ACH27
ACH20	11	12	ACH28
ACH21	13	14	ACH29
ACH22	15	16	ACH30
ACH23	17	18	ACH31
AISENSE	19	20	DAC0OUT
DAC1OUT	21	22	EXTREF
AOGND	23	24	DGND
DIO0	25	26	DIO4
DIO1	27	28	DIO5
DIO2	29	30	DIO6
DIO3	31	32	DIO7
DGND	33	34	+5 V
+5 V	35	36	SCANCLK
EXSTROBE*	37	38	PFI0/TRIG1
PFI1/TRIG2	39	40	PFI2/CONV*
PFI3/GPCTR1SOURCE	41	42	PFI4/GPCTR1GATE
GPCTR1OUT	43	44	PFI5/UPDATE*
PFI6/WFTRIG	45	46	PFI7/STARTSCAN
PFI8/GPCTR0SOURCE	47	48	PFI9/GPCTR0GATE
GPCTR0OUT	49	50	FOUT

Figure 8-7. Pin Assignments for SC-2056 I/O Connector J5

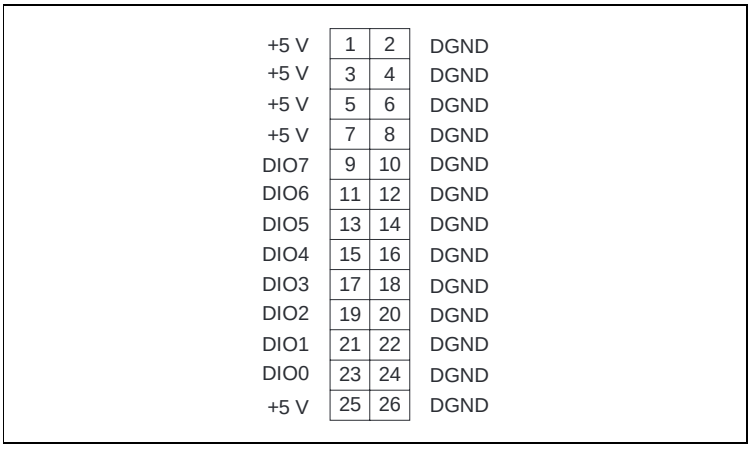


AIGND	1	2	AIGND
ACH32	3	4	ACH40
ACH33	5	6	ACH41
ACH34	7	8	ACH42
ACH35	9	10	ACH43
ACH36	11	12	ACH44
ACH37	13	14	ACH45
ACH38	15	16	ACH46
ACH39	17	18	ACH47
AISENSE	19	20	DAC0OUT
DAC1OUT	21	22	EXTREF
AOGND	23	24	DGND
DIO0	25	26	DIO4
DIO1	27	28	DIO5
DIO2	29	30	DIO6
DIO3	31	32	DIO7
DIGGND	33	34	+5 V
+5 V	35	36	SCANCLK
EXSTROBE*	37	38	PFI0/TRIG1
PFI1/TRIG2	39	40	PFI2/CONV*
PFI3/GPCTR1SOURCE	41	42	PFI4/GPCTR1GATE
GPCTR1OUT	43	44	PFI5/UPDATE*
PFI6/WFTRIG	45	46	PFI7/STARTSCAN
PFI8/GPCTR0SOURCE	47	48	PFI9/GPCTR0GATE
GPCTR0OUT	49	50	FOUT

Figure 8-8. Pin Assignments for SC-2056 I/O Connector J6

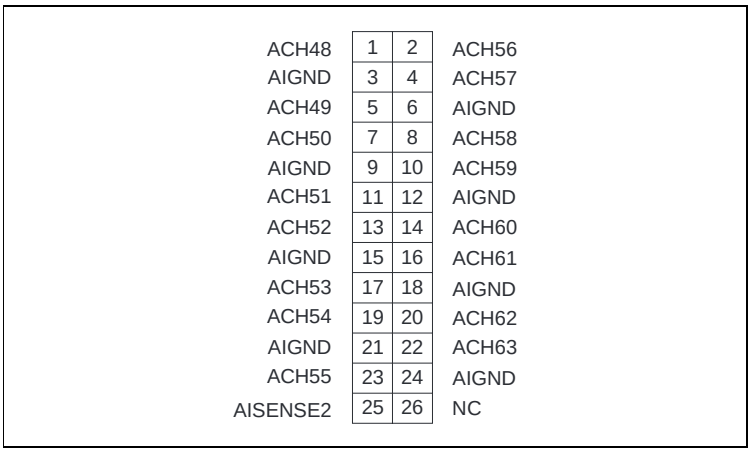
AIGND	1	2	AIGND
ACH48	3	4	ACH56
ACH49	5	6	ACH57
ACH50	7	8	ACH58
ACH51	9	10	ACH59
ACH52	11	12	ACH60
ACH53	13	14	ACH61
ACH54	15	16	ACH62
ACH55	17	18	ACH63
AISENSE	19	20	DAC0OUT
DAC1OUT	21	22	EXTREF
AOGND	23	24	DIGGND
DIO0	25	26	DIO4
DIO1	27	28	DIO5
DIO2	29	30	DIO6
DIO3	31	32	DIO7
DIGGND	33	34	+5 V
+5 V	35	36	SCANCLK
EXSTROBE*	37	38	PFI0/TRIG1
PFI1/TRIG2	39	40	PFI2/CONV*
PFI3/GPCTR1SOURCE	41	42	PFI4/GPCTR1GATE
GPCTR1OUT	43	44	PFI5/UPDATE*
PFI6/WFTRIG	45	46	PFI7/STARTSCAN
PFI8/GPCTR0SOURCE	47	48	PFI9/GPCTR0GATE
GPCTR0OUT	49	50	FOUT

Figure 8-9. Pin Assignments for SC-2056 I/O Connector J7



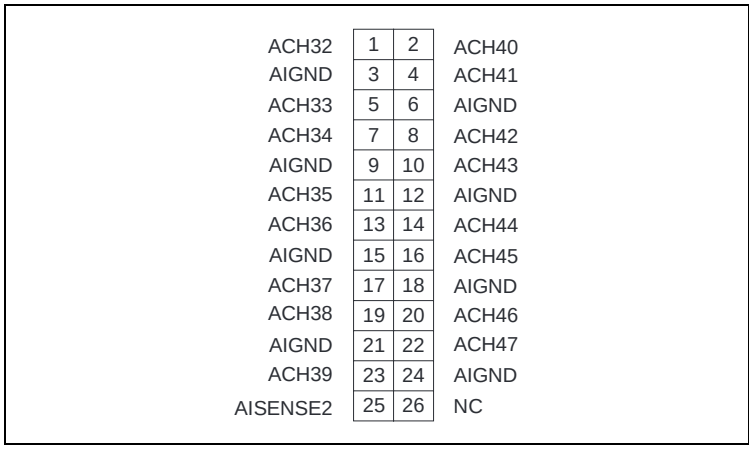
+5 V	1	2	DGND
+5 V	3	4	DGND
+5 V	5	6	DGND
+5 V	7	8	DGND
DIO7	9	10	DGND
DIO6	11	12	DGND
DIO5	13	14	DGND
DIO4	15	16	DGND
DIO3	17	18	DGND
DIO2	19	20	DGND
DIO1	21	22	DGND
DIO0	23	24	DGND
+5 V	25	26	DGND

Figure 8-10. Pin Assignments for SC-2056 I/O Connector J8



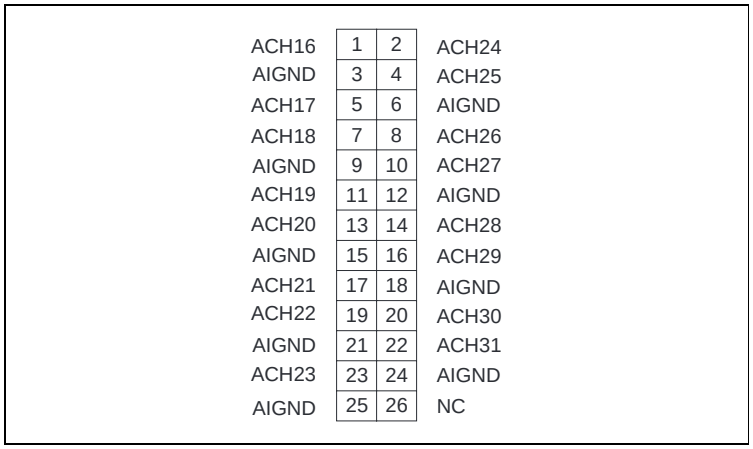
ACH48	1	2	ACH56
AIGND	3	4	ACH57
ACH49	5	6	AIGND
ACH50	7	8	ACH58
AIGND	9	10	ACH59
ACH51	11	12	AIGND
ACH52	13	14	ACH60
AIGND	15	16	ACH61
ACH53	17	18	AIGND
ACH54	19	20	ACH62
AIGND	21	22	ACH63
ACH55	23	24	AIGND
AISENSE2	25	26	NC

Figure 8-11. Pin Assignments for SC-2056 I/O Connector J9



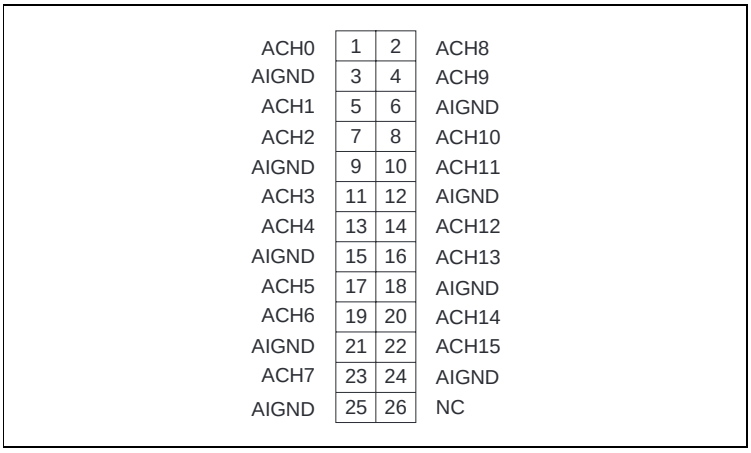
ACH32	1	2	ACH40
AIGND	3	4	ACH41
ACH33	5	6	AIGND
ACH34	7	8	ACH42
AIGND	9	10	ACH43
ACH35	11	12	AIGND
ACH36	13	14	ACH44
AIGND	15	16	ACH45
ACH37	17	18	AIGND
ACH38	19	20	ACH46
AIGND	21	22	ACH47
ACH39	23	24	AIGND
AISENSE2	25	26	NC

Figure 8-12. Pin Assignments for SC-2056 I/O Connector J10



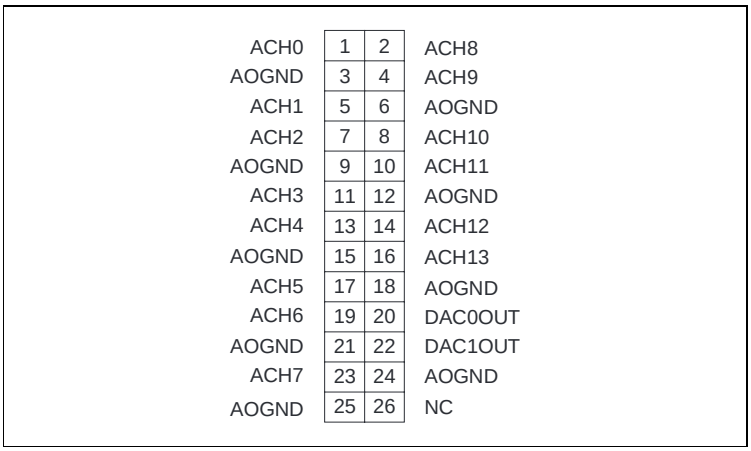
ACH16	1	2	ACH24
AIGND	3	4	ACH25
ACH17	5	6	AIGND
ACH18	7	8	ACH26
AIGND	9	10	ACH27
ACH19	11	12	AIGND
ACH20	13	14	ACH28
AIGND	15	16	ACH29
ACH21	17	18	AIGND
ACH22	19	20	ACH30
AIGND	21	22	ACH31
ACH23	23	24	AIGND
AIGND	25	26	NC

Figure 8-13. Pin Assignments for SC-2056 I/O Connector J11



ACH0	1	2	ACH8
AIGND	3	4	ACH9
ACH1	5	6	AIGND
ACH2	7	8	ACH10
AIGND	9	10	ACH11
ACH3	11	12	AIGND
ACH4	13	14	ACH12
AIGND	15	16	ACH13
ACH5	17	18	AIGND
ACH6	19	20	ACH14
AIGND	21	22	ACH15
ACH7	23	24	AIGND
AIGND	25	26	NC

Figure 8-14. Pin Assignments for SC-2056 I/O Connector J12



ACH0	1	2	ACH8
AOGND	3	4	ACH9
ACH1	5	6	AOGND
ACH2	7	8	ACH10
AOGND	9	10	ACH11
ACH3	11	12	AOGND
ACH4	13	14	ACH12
AOGND	15	16	ACH13
ACH5	17	18	AOGND
ACH6	19	20	DAC0OUT
AOGND	21	22	DAC1OUT
ACH7	23	24	AOGND
AOGND	25	26	NC

Figure 8-15. Pin Assignments for SC-2056 I/O Connector J13

Mounting

The SC-2056 adapter is equipped with metal standoffs so it can sit on a workbench close to the host computer. A rack-mount chassis is also available and can be fitted with a flat acrylic plastic cover or metal wraparound cover. To ground the SC-2056 adapter to the chassis, set the jumper on the adapter as described in Chapter 10, *Installation and Operation*.

Cabling

You need an R1005050 ribbon cable, SH100100 shielded cable, or SH96-100 shielded cable to connect to the SC-2056. Connections to the SC-206*X* Series boards and 5B backplane require a 26-pin ribbon cable. A 26-conductor ribbon cable is needed for the 8-channel SSR backplane. Additional cables are available from National Instruments for connection to other accessories.

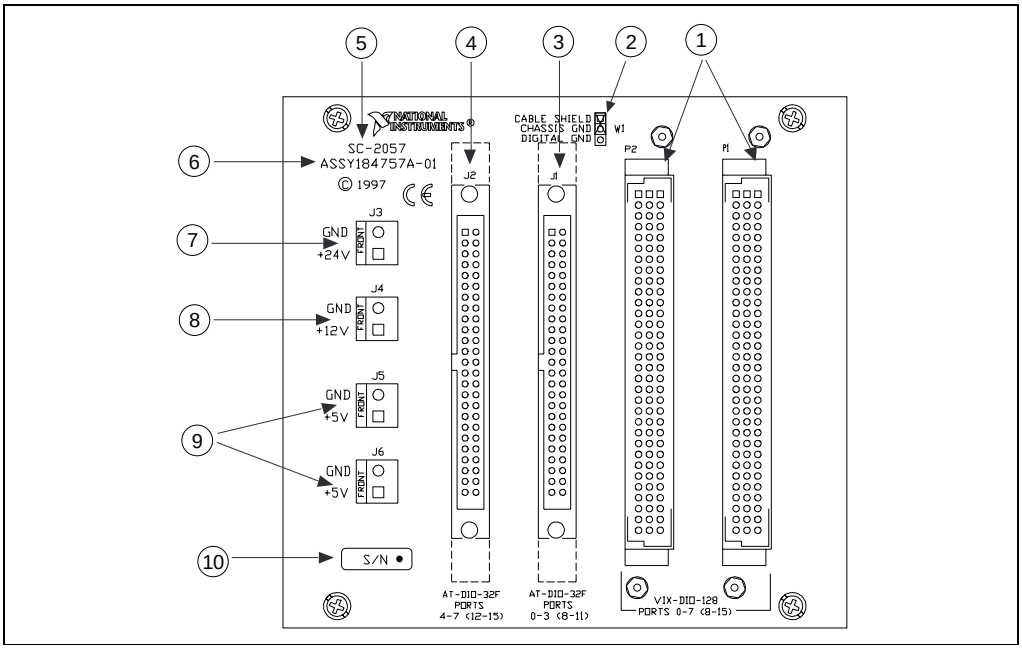
9

SC-2057

This chapter describes the SC-2057 adapter in detail, including function, connection, mounting, and cabling. Refer to Chapter 10, *Installation and Operation* to install and use your adapter.

The SC-2057 converts VXI-DIO-128 I/O connector signals to AT-DIO-32F connectors, which can connect to standard signal conditioning accessories. You can use the SC-2057 with the National Instruments VXI-DIO-128 board. See Table 1-1 for a complete list of DAQ devices that you can use with the SC-2057.

☞ Note ***The two 50-pin connectors on the SC-2057 are standard AT-DIO-32F pin connectors WITHOUT the two sets of handshaking lines.***



1	To VXI-DIO-128	6	Assembly Number
2	Jumper W1	7	+24 V, 0.5 A Source
3	To SC-206X, SCXI-116X, SSR Series, or ER-8/16	8	+12 V, 0.5 A Source
4	To SC-206X, SCXI-116X, SSR Series, or ER-8/16	9	+5 V, 1 A Source
5	Product Name	10	Serial Number

Figure 9-1. SC-2057 Parts Locator Diagram

SC-2057 Connection

Connect the SC-2057 to the VXI-DIO-128 via a SH96-96, available separately. Make this connection with the VXI-DIO-128 powered off. Connect one end of the SH96-96 to either of the 96-pin connectors, P1 or P2, on the SC-2057 and connect the other end to one of the 96-pin connectors on the VXI-DIO-128.

The VXI-DIO-128 has a 96-pin connector labeled OUTPUT. The digital lines from this connector are digital outputs. The VXI-DIO-128 has a 96-pin connector labeled INPUT. The digital lines from this connector are digital inputs.

If the SC-2057 is connected to the VXI-DIO-128 connector labeled INPUT, the accessories connected to the SC-2057 will need to supply only digital inputs. If the SC-2057 is connected to the VXI-DIO-128 connector labeled OUTPUT, the accessories connected to the SC-2057 will need to accept a digital input from the VXI-DIO-128 board.

Use a type NB1 cable to connect the SC-2057 and your signal conditioning accessories. When using SCXI modules with the SC-2057, you will need to use the SCXI-1348 cable adapter in addition to the type NB1 cable. See the *SCXI-1348 Cable Adapter Installation* section for specific information on using the SCXI-1348 cable adapter.

Connect one end of the type NB1 or SCXI-1348 cable to one of the 50-pin connectors on the SC-2057; the other end will be connected to the signal conditioning accessory. Make this connection with the VXI-DIO-128 and the signal conditioning accessories powered off, see Figures 9-2 through 9-8.

Warning ***Do not connect the SC-2057 to a board for which it is not designed. Such connection can damage the SC-2057 and any or all boards/accessories connected to the SC-2057 and VXI-DIO-128. National instruments is NOT liable for any damages resulting from incorrect connections.***

Connectors

The SC-2057 has two 96 pin connectors, P1 and P2, that you can use to connect the VXI-DIO-128 to the SC-2057. Only one connector is needed to connect the SC-2057 to the VXI-DIO-128; the other connector is a feedthrough of the signals from the VXI-DIO-128. You can use this feedthrough connector to access data lines not being used by the accessories connected to the SC-2057.

The SC-2057 has two 50-pin ribbon cable connectors that you can use to connect with signal conditioning accessories. The first 50-pin connector, J1, provides ports 0–3 or 8–11 from the VXI-DIO-128, depending on which 96-pin connector on the VXI-DIO-128 is connected to the SC-2057. The second 50-pin connector, J2, provides ports 4–7 or 12–15 from the VXI-DIO-128, depending on which 96-pin connector on the VXI-DIO-128 is connected to the SC-2057.

J1 and J2 are set up with a DIO-32F pin connector, which allows the VXI-DIO-128 to be connected to the same signal conditioning accessories available to the DIO-32F boards, provided that no handshaking is needed between the VXI-DIO-128 and the accessory.

If the SH96-96 is connected to the VXI-DIO-128 connector labeled INPUT, the SC-2057 will provide access to ports 0–7. If the SH96-96 cable is connected to the VXI-DIO-128 connector labeled OUTPUT, the SC-2057 will provide access to ports 8–15.

Note ***The two 50-pin connectors on the SC-2057 do NOT supply the two sets of handshaking lines normally found on a DIO-32F connector. The VXI-DIO-128 board does not have the handshaking circuitry that is available on the DIO-32F boards. Therefore, these lines are NOT provided by the SC-2057. Any accessories needing these handshaking lines will NOT work connected to the VXI-DIO-128 via the SC-2057.***

There are also four voltage supply connectors on the SC-2057: J3, a +24 V connector, which can supply +24 V ±10% at 0.5 A; J4, a +12 V connector, which can supply +12 V at 0.5 Amps, and J5 and J6, two +5 V connectors, which can supply +5 V at 1 Amp. *The total current draw from either or both of the +5 V connectors must not exceed 1 A.*

Warning ***Under no circumstances should you connect these +5 V, +12 V, or +24 V pins directly to ground or to any other voltage source on the VXI-DIO-128, SC-2057, or any other device. Doing so can damage the VXI-DIO-128, SC-2057, and your VXIbus system. National Instruments is NOT liable for damage resulting from such a connection.***

Figures 9-2 through 9-5 illustrate the output connections of the signal conditioning accessories to the VXI-DIO-128 and SC-2057 and the necessary cables and accessories.

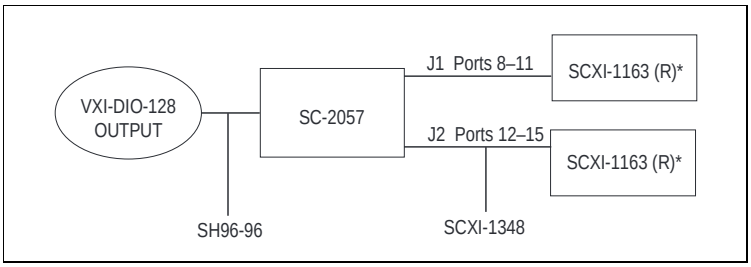


Figure 9-2. Output Connections with the SCXI-1163/R

For output connections with the SCXI-1163, SCXI boards must be in parallel mode to operate with the VXI-DIO-128.

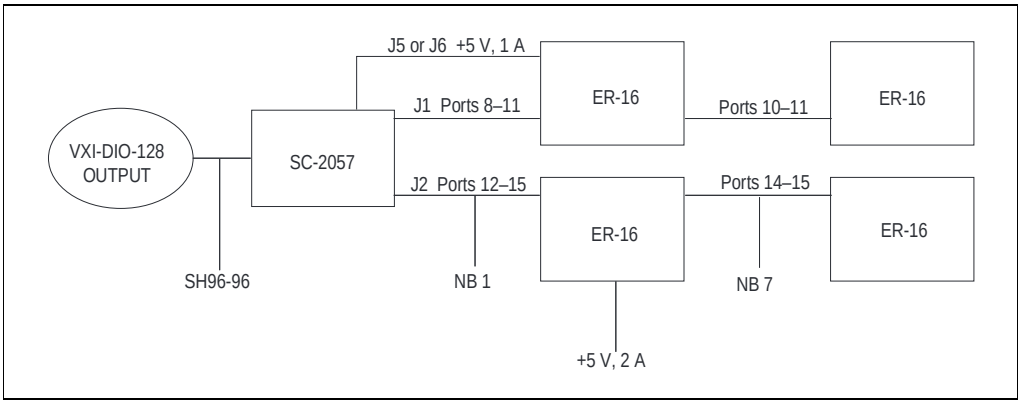


Figure 9-3. Output Connections with the ER-16

The VXI-DIO-128 can power a maximum of 16 ER channels. The VXI-DIO-128 supplies +5 V to these ER channels via the +5 V connectors (J5 or J6). Set the power source switch for the ER-16 that is connected to J5 or J6 to *external*. Also, set the power source switches for the ER-16 boards connected to ports 10–11 and 12–15 to *external*, and externally supply them with +5 V. The ER-16 connected to ports 14–15 needs to have its power source switch set to *internal*. This board is supplied +5 V through the NB7 cable.

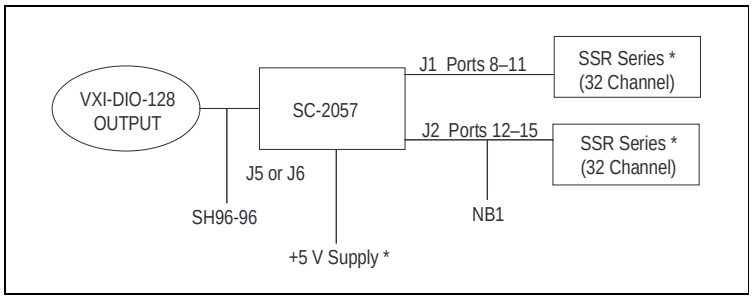


Figure 9-4. Output Connections with the 32 Channel SSR Backplane

* An external power supply is needed if more than 1 A of current is required to power the SSR backplanes. The current requirements for the SSR modules are as follows: SSR-OAC-5: 18 mA, SSR-OAC-5A: 19 mA, and SSR-ODC-5: 16 mA.

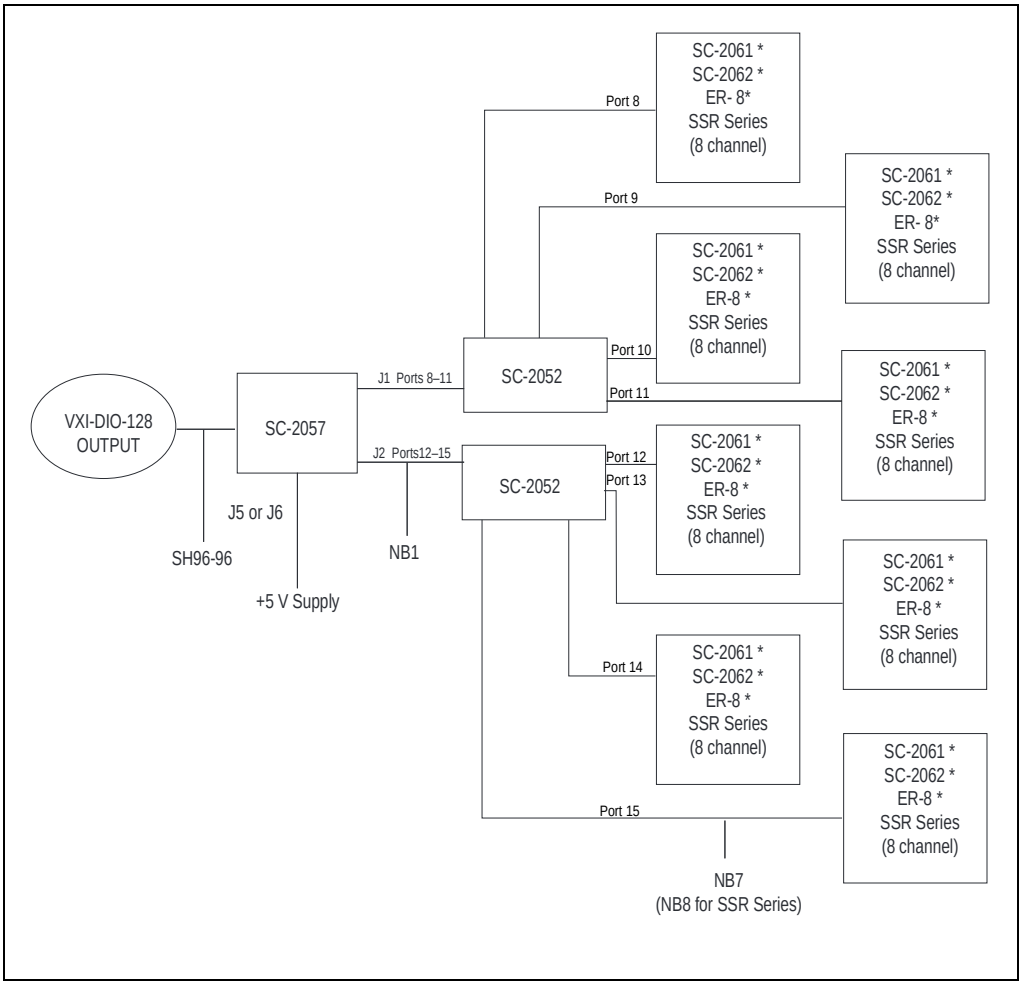


Figure 9-5. Output Connections with the SC-2061/2, ER-8, or 8-Channel SSR Backplane

* The VXI-DIO-128 supplies 1 A of current. If the combination of boards or SSR modules attached to the SC-2052 adapters require more than 1 A, use an external power supply. Set the power source switch on these boards to *external*. The board current requirements are as follows: SC-2061: 130 mA, SC-2062: 630 mA, and ER-8: 500 mA. The current requirements for the SSR modules are as follows: SSR-OAC-5: 18 mA, SSR-OAC-5A: 19 mA, and SSR-ODC-5: 16 mA.

Figures 9-6 through 9-8 illustrate the input connections of the signal conditioning accessories to the VXI-DIO-128 and SC-2057 and the necessary cables and accessories.

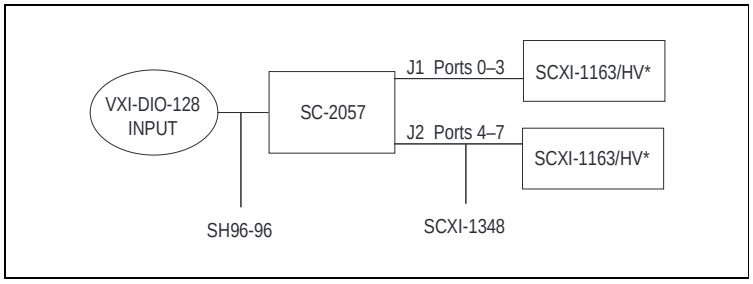


Figure 9-6. Input Connections with the SCXI-1162/HV

* For input connections with the SCXI-1163/HV, SCXI modules must be in parallel mode to operate with the VXI-DIO-128.

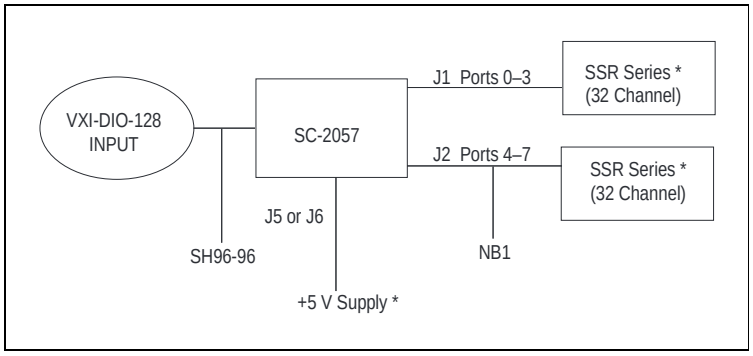


Figure 9-7. Input Connections with the 32-Channel SSR Backplane

* If more than 1 A of current is required to power the SSR backplanes, an external power supply is needed, see Figure 9-7. The current requirements for the SSR modules are as follows: SSR-IAC-5: 16 mA, SSR-IAC-5A: 16 mA, and SSR-IDC-5: 16 mA.

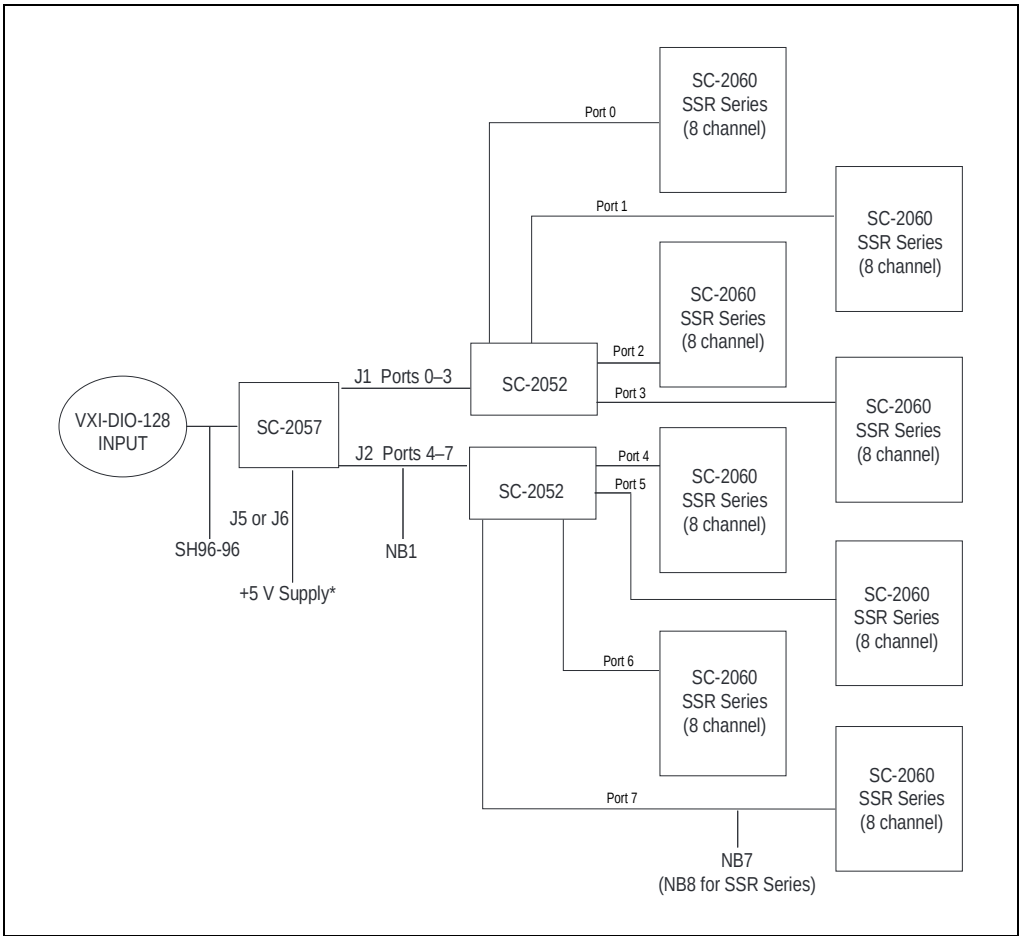


Figure 9-8. Input Connections with SC-2060 and 8-channel SSR Backplane

The VXI-DIO-128 can supply 1 A of current. If the combination of boards or SSR modules attached to the SC-2052 boards require more than 1 A, use an external power supply. The board current requirement is 210 mA for the SC-2060. The current requirements for the SSR modules are as follows: SSR-IAC-5: 18 mA, SSR-IAC-5A: 19 mA, and SSR-IDC-5: 16 mA. Set the power switch on the SC-2060 boards to *external*.

Table 9-1 describes the connectors on the SC-2057.

Table 9-1. SC-2057 Connectors

Connectors	Connection	Description
P1	96-pin male DIN connector; VXI-DIO-128 connection	Attach P1 or P2 to VXI-DIO-128.
P2	96-pin male DIN connector; VXI-DIO-128 connection	Attach P1 or P2 to VXI-DIO-128.
J1	50-pin male ribbon cable connector; Digital Ports 0–3 or 8–11	Attach J1 to 50-pin accessories as shown in Figure 9-2.
J2	50-pin male ribbon cable connector; Digital Ports 4–7 or 12–15	Attach J2 to 50-pin accessories as shown in Figure 9-2.
J3	2-position terminal block; +24 V at 0.5 A connection	Use J3 when +24 V is needed.
J4	2-position terminal block; +12 V at 0.5 A connection	Use J4 when +12 V is needed.
J5	2-position terminal block; +5 V at 1 A connection	Attach J5 to accessories if possible or when +5 V is needed.
J6	2-position terminal block; +5 V at 1 A connection	Attach J6 to accessories if possible or when +5 V is needed.

Figures 9-9 through 9-11 show the pin assignments for each I/O connector on the SC-2057.

A		B		C	
GND	32	GND	32	GND	32
GND	31	GND	31	GND	31
Port 0/8_Line0	30	+5 V	30	GND	30
Port 0/8_Line3	29	Port 0/8_Line2	29	Port 0/8_Line1	29
Port 0/8_Line6	28	Port 0/8_Line5	28	Port 0/8_Line4	28
Port 1/9_Line1	27	Port 1/9_Line0	27	Port 1/9_Line7	27
Port 1/9_Line4	26	Port 1/9_Line3	26	Port 1/9_Line2	26
Port 1/9_Line7	25	Port 1/9_Line6	25	Port 1/9_Line5	25
GND	24	GND	24	GND	24
GND	23	GND	23	GND	23
Port 2/10_Line0	22	+24 V	22	GND	22
Port 2/10_Line3	21	Port 2/10_Line2	21	Port 2/10_Line1	21
Port 2/10_Line6	20	Port 2/10_Line5	20	Port 2/10_Line4	20
Port 3/11_Line1	19	Port 3/11_Line0	19	Port 2/10_Line7	19
Port 3/11_Line4	18	Port 3/11_Line3	18	Port 3/11_Line2	18
Port 3/11_Line7	17	Port 3/11_Line6	17	Port 3/11_Line5	17
GND	16	GND	16	GND	16
GND	15	GND	15	GND	15
Port 4/12_Line0	14	+12 V	14	GND	14
Port 4/12_Line3	13	Port 4/12_Line2	13	Port 4/12_Line1	13
Port 4/12_Line6	12	Port 4/12_Line5	12	Port 4/12_Line4	12
Port 5/13_Line1	11	Port 5/13_Line0	11	Port 4/12_Line7	11
Port 5/13_Line4	10	Port 5/13_Line3	10	Port 5/13_Line2	10
Port 5/13_Line7	9	Port 5/13_Line6	9	Port 5/13_Line5	9
GND	8	GND	8	GND	8
GND	7	GND	7	GND	7
Port 6/14_Line0	6	+5 V	6	GND	6
Port 6/14_Line3	5	Port 6/14_Line2	5	Port 6/14_Line1	5
Port 6/14_Line6	4	Port 6/14_Line5	4	Port 6/14_Line4	4
Port 7/15_Line1	3	Port 7/15_Line0	3	Port 6/14_Line7	3
Port 7/15_Line4	2	Port 7/15_Line3	2	Port 7/15_Line2	2
Port 7/15_Line7	1	Port 7/15_Line6	1	Port 7/15_Line5	1

Figure 9-9. Pin Assignments for SC-2057 I/O Connector P1 and P2

Port 3/11_Line1	1	2	Port 3/11_Line4
Port 3/11_Line3	3	4	Port 3/11_Line0
Port 3/11_Line6	5	6	Port 3/11_Line7
Port 3/11_Line2	7	8	Port 3/11_Line5
Port 2/10_Line5	9	10	Port 2/10_Line5
Port 2/10_Line3	11	12	Port 2/10_Line1
Port 2/10_Line2	13	14	Port 2/10_Line0
Port 2/10_Line6	15	16	Port 2/10_Line4
GND	17	18	NC
GND	19	20	NC
GND	21	22	NC
GND	23	24	NC
GND	25	26	GND
NC	27	28	GND
NC	29	30	GND
NC	31	32	GND
NC	33	34	GND
Port 0/8_Line4	35	36	Port 0/8_Line6
Port 0/8_Line0	37	38	Port 0/8_Line2
Port 0/8_Line1	39	40	Port 0/8_Line3
Port 0/8_Line7	41	42	Port 0/8_Line5
Port 0/9_Line5	43	44	Port 1/9_Line2
Port 1/9_Line7	45	46	Port 1/9_Line6
Port 1/9_Line0	47	48	Port 1/9_Line3
Port 1/9_Line4	49	50	Port 1/9_Line1

Figure 9-10. Pin Assignments for SC-2057 I/O Connector J1

Port 7/15_Line1	1	2	Port 7/15_Line4
Port 7/15_Line3	3	4	Port 7/15_Line0
Port 7/15_Line6	5	6	Port 7/15_Line7
Port 7/15_Line2	7	8	Port 7/15_Line5
Port 6/14_Line5	9	10	Port 6/14_Line5
Port 6/14_Line3	11	12	Port 6/14_Line1
Port 6/14_Line2	13	14	Port 6/14_Line0
Port 6/14_Line6	15	16	Port 6/14_Line4
GND	17	18	NC
GND	19	20	NC
GND	21	22	NC
GND	23	24	NC
GND	25	26	GND
NC	27	28	GND
NC	29	30	GND
NC	31	32	GND
NC	33	34	GND
Port 4/12_Line4	35	36	Port 4/12_Line6
Port 4/12_Line0	37	38	Port 4/12_Line2
Port 4/12_Line1	39	40	Port 8/4_Line3
Port 4/12_Line7	41	42	Port 4/12_Line5
Port 5/13_Line5	43	44	Port 5/13_Line2
Port 5/13_Line7	45	46	Port 5/13_Line6
Port 5/13_Line0	47	48	Port 5/13_Line3
Port 5/13_Line4	49	50	Port 5/13_Line1

Figure 9-11. Pin Assignments for SC-2057 I/O Connector J2

Mounting

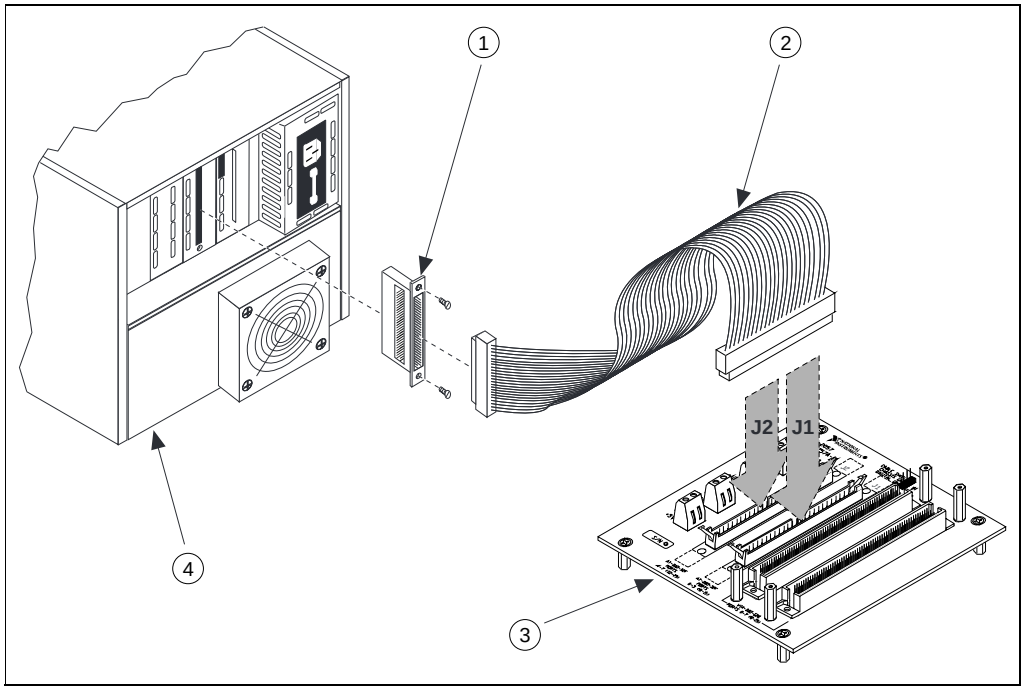
The SC-2057 adapter is equipped with metal standoffs so it can sit on a workbench close to the host computer. A rack-mount chassis is also available and can be fitted with a flat acrylic plastic cover. To rack mount your SC-2057, see the *Rack Mounting* section in Chapter 10, *Installation and Operation*. To ground the SC-2057 adapter to the chassis, set the jumper on the adapter as described in Chapter 10, *Installation and Operation*.

Cabling

You need an SH96-96 shielded cable to connect to the SC-2057. Connections to the signal conditioning accessories require an NB1 50-pin ribbon cable. In addition to an NB1 cable, you will need an SCXI-1348 cable adapter to connect to SCXI modules. Additional adapters and cables may be required for certain accessories.

SCXI-1348 Cable Adapter Installation

This section gives instructions for installing the SCXI-1348 cable adapter. Figure 9-12 shows how to connect the SCXI-1348 to the SC-2057 and SCXI module.



1	SCXI-1348 cable adapter	3	SC-2057
2	NB1 ribbon cable	4	SCXI chassis

Figure 9-12. Connecting the SCXI-1348 to the SC-2057 and SCXI Module

Perform the following steps to install the SCXI-1348 cable adapter:

1. Turn off the power to the VXI Chassis and the SCXI chassis.
2. Install your SCXI module in the SCXI chassis, following the instructions in your module user manual.
3. Plug the front connector of the SCXI-1348 into the rear signal connector of the SCXI module. A corner of the adapter board will enter the upper board guide of the chassis.
4. Secure the SCXI-1348 adapter board by screwing the two screws through the rear panel of the adapter board and into the threaded strips in the rear of the SCXI chassis.
5. Connect one end of the 50-pin ribbon cable to the adapter board rear connector.
6. Connect the loose end of the ribbon cable to either of the 50-pin connectors, J1 or J2, on the SC-2057.

Table 9-2 explains the way the SCXI-1348 translates pins from the SC-2057 to the SCXI module.

Table 9-2. SCXI-1348 Pin Translations

SC-2057 Connector Pin	SC-2057 Signal Name	Module Connector Pin
1	Port 3/7_Line1	46
2	Port 3/7_Line4	40
3	Port 3/7_Line3	42
4	Port 3/7_Line0	48
5	Port 3/7_Line6	36
6	Port 3/7_Line7	34
7	Port 3/7_Line2	44
8	Port 3/7_Line5	38
9	Port 2/6_Line5	5
10	Port 2/6_Line7	1
11	Port 2/6_Line3	9
12	Port 2/6_Line1	13
13	Port 2/6_Line2	11
14	Port 2/6_Line0	15
15	Port 2/6_Line6	3
16	Port 2/6_Line4	7
17, 19*	GND	2, 4*
21, 23*	GND	6, 8*
25, 26*	GND	10, 12*
28, 30*	GND	14, 16*
32, 34*	GND	50*
18	NC	26
20	NC	28
22	NC	30
24	NC	32
27	NC	18
29	NC	20
31	NC	22
33	NC	24
35	Port 0/4_Line4	39
36	Port 0/4_Line6	35
37	Port 0/4_Line0	47
38	Port 0/4_Line2	43
39	Port 0/4_Line1	45
40	Port 0/4_Line3	41
41	Port 0/4_Line7	33
42	Port 0/4_Line5	37
43	Port 1/5_Line5	21
44	Port 1/5_Line2	27
45	Port 1/5_Line7	17
46	Port 1/5_Line6	19
47	Port 1/5_Line0	31
48	Port 1/5_Line3	25
49	Port 1/5_Line4	23
50	Port 1/5_Line1	29

*All GND pins are connected to each other on the SCXI-1348 adapter board.

10

Installation and Operation

This chapter describes the installation and operation of your SC-205*X* adapter, including configuration and cable connections.

Hardware Installation

The following are general instructions for installing your SC-205*X* Series adapter in your DAQ system. Consult your computer user manual or technical reference manual for specific instructions and warnings. Notice that the installation instructions are the same for each SC-205*X* Series adapter.

☞ Note ***Turn off the host computer before making any connections.***

1. Mount your board in the 19-in. rack (optional).
2. Set the shield selection jumper for appropriate grounding.
3. Install the signal conditioning accessories you are using with your SC-205*X* Series adapter.
4. Connect your SC-205*X* Series adapter to the accessories and to the host computer DAQ device using the appropriate cables.
5. Attach the appropriate cover on the rack (optional).
6. Turn on the computer.

The sections that follow explain each step in more detail.

Rack Mounting

You can mount all of your SC-205*X* Series adapters in a 19-in. rack but you must mount your SC-2056 at the far left or far right of the rack to facilitate cable entry at the side of the chassis, as shown in Figure 10-1.

When using the SC-2057, you cannot route the SH96-96 cable through the cable access slots in the sides of the rack-mount kit. The SH96-96 will have to be routed from the top or bottom of the 19-in. rack. Since the SH96-96 cable will need to be routed from the top or bottom of the rack, the metal wraparound cover cannot be used with the SC-2057.

The acrylic plastic cover can be used with SC-2057 in a single-height rack-mount kit (not the double-height rack-mount kit) because it allows access through the top and bottom of the kit.

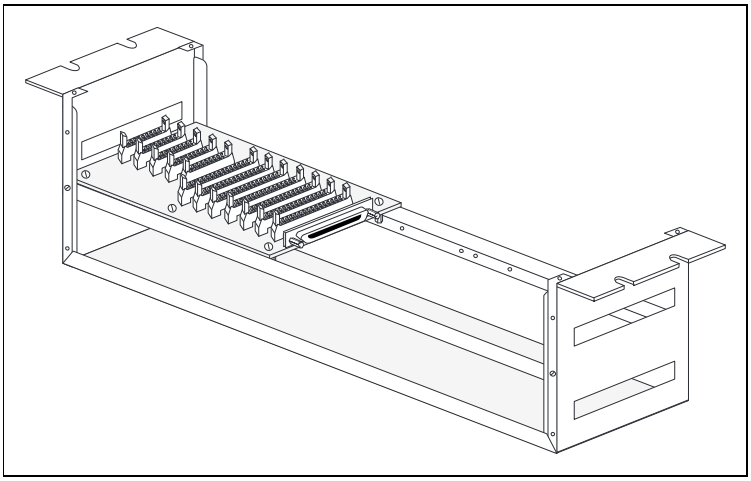


Figure 10-1. SC-2056 Adapter Mounted in a 19-in. Rack

Mount the SC-205*X* Series adapter in the chassis by unscrewing the screws on the bottoms of the standoffs attached to the adapter and using those same screws to attach the adapter to the mounting rack. Be sure to put the washers around the screws when attaching your adapter to the rack, as shown in Figure 10-2.

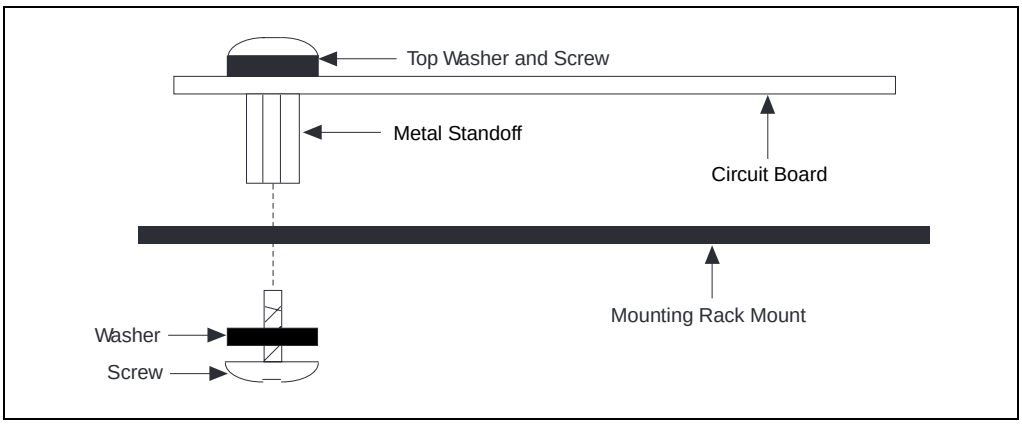


Figure 10-2. Attaching a Mountable Board to a Chassis

Shield Selection

The SC-2050, SC-2051, SC-2052, SC-2053, SC-2054, and SC-2055 adapters have one jumper, W1, shown in Figure 10-3, for an optional connection from the board ground to the rack-mount chassis.

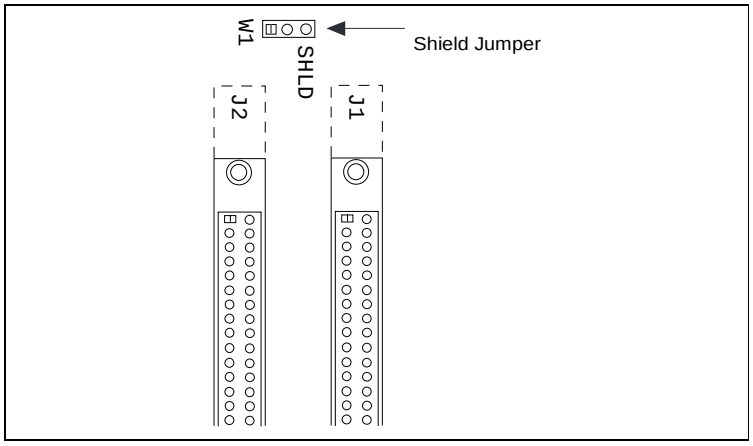


Figure 10-3. Shield Jumper Location

Setting jumper W1 to the position labeled SHLD connects the SC-2050, SC-2051, SC-2052, SC-2053, SC-2054, and SC-2055 ground to the four metal standoffs. If the adapter is installed in the 19-in. rack, this setting grounds the adapter to the rack. Setting jumper W1 away from the position labeled SHLD disconnects shielding and isolates the ground from the rack.

The SC-2050, SC-2051, SC-2052, SC-2053, SC-2054, and SC-2055 are shipped from the factory with the jumper W1 set to the position away from SHLD, so shielding is disabled. Jumper W1 settings are shown in Figure 10-4.



Figure 10-4. Ground Settings for Jumper W1

SC-2056

The SC-2056 has one jumper, W1, shown in Figure 10-5. Jumper W1 connects the shield of the SH100100 cable to the mounting rack or the digital ground of the AT-MIO-64E-3 to the mounting rack.

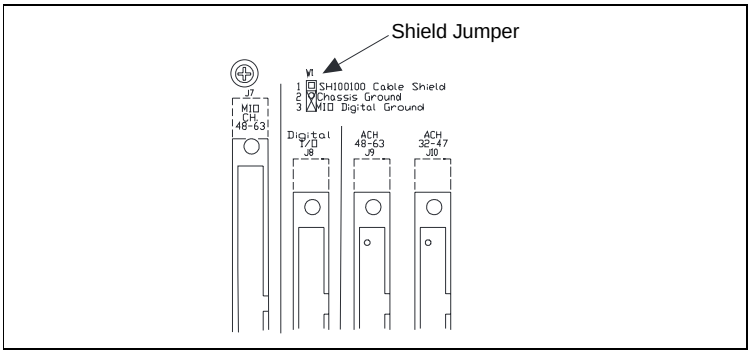


Figure 10-5. SC-2056 Shield Jumper Location

Setting jumper W1 to the position between the two labels SH100100 CABLE SHIELD and CHASSIS GROUND connects the shield of the SH100100 cable to the four metal standoffs. If the adapter is installed in the 19-in. rack, this setting grounds the shield of the SH100100 to the rack. If jumper W1 is positioned between the two labels CHASSIS GROUND and MIO DIGITAL GROUND, the digital ground of the AT-MIO-64 E-3 is connected to the four metal standoffs. If the adapter is installed in the 19-in. rack, this setting grounds the digital ground of the AT-MIO-64 E-3 to the rack. If the jumper W1 is removed, the shield of the SH100100 and the digital ground of the AT-MIO-64 E-3 from the rack are isolated.

The SC-2056 is shipped from the factory with jumper W1 set to the position between the MIO DIGITAL GROUND and CHASSIS GROUND. Figure 10-6 shows the ground settings for SC-2056 jumper W1.

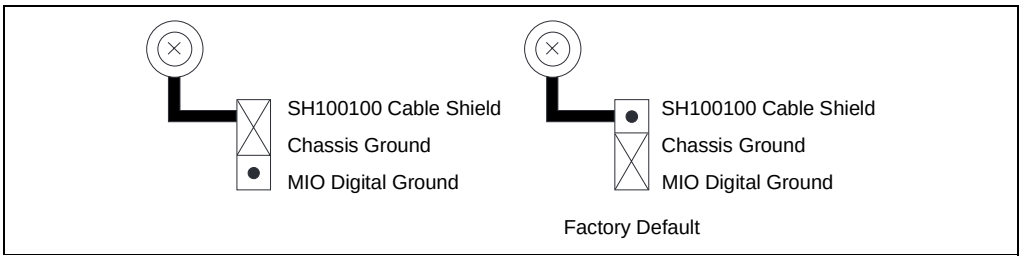


Figure 10-6. Ground Settings for SC-2056 Jumper W1

SC-2057

The SC-2057 has one jumper, W1, shown in Figure 10-5. Jumper W1 connects the shield of the SH96-96 cable to the mounting rack or the digital ground of the VXI-DIO-128 to the mounting rack.

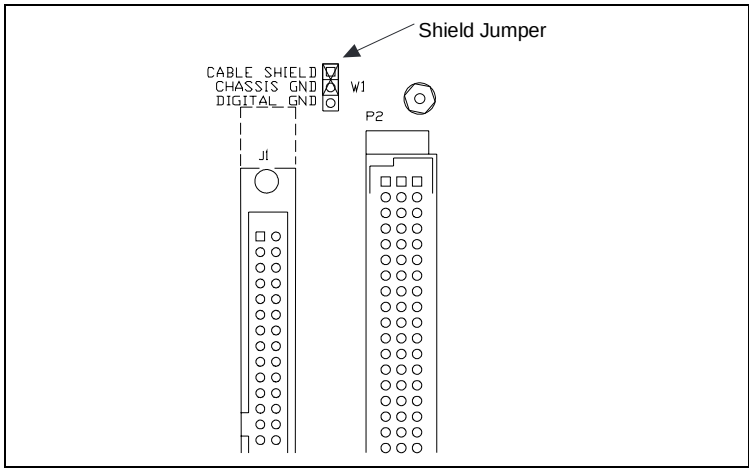


Figure 10-7. SC-2057 Shield Jumper Location

Setting jumper W1 to the position between the two labels CABLE SHIELD and CHASSIS GND connects the shield of the SH96-96 cable to the four metal standoffs. If the board is installed in the 19-in. rack, this setting grounds the shield of the SH96-96 to the rack. If jumper W1 is positioned between the two labels CHASSIS GND and DIGITAL GND, the digital ground of the VXI-DIO-128 is connected to the four metal standoffs. If the adapter is installed in the 19-in. rack, this setting grounds the digital ground of the VXI-DIO-128 to the rack. Removing jumper W1 will isolate the shield of the SH96-96 and the digital ground of the VXI-DIO-128 from the rack.

The SC-2057 is shipped from the factory with the jumper W1 set to the position between the CABLE SHIELD and CHASSISGND. Figure 10-8 shows the ground settings for SC-2057 jumper W1.

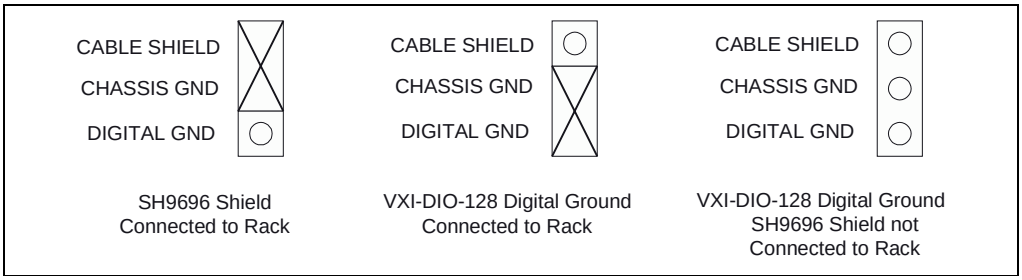


Figure 10-8. Ground Settings for SC-2057 Jumper W1

Signal Conditioning Accessory Installation

Consult the signal conditioning accessory user manual for instructions on accessory installation. The National Instruments SC-206*X* Series signal conditioning accessory boards work with your SC-205*X* Series adapter and have the convenience of sharing space in the rack with, and the ease of direct connection to, your SC-205*X* adapter. For more details, consult the *SC-206X Series User Manual*.

Additional hardware for double-height mounting within a single rack for four or more SC Series boards is available from National Instruments.

Rack-Mount Chassis Cover Attachment

The optional 19-in. rack-mount accessory includes a flat, acrylic plastic cover that you can install with the four screws supplied in the kit.

Cable Connections

Pin assignments for the cable connectors on your SC-205*X* Series adapter are illustrated in the specific chapter for your adapter. On the SC-2050, SC-2051, SC-2052, SC-2053, and SC-2055 connectors, J1 and J2 are connected pin-by-pin and, for 50-pin DAQ devices, have exactly the same pin assignment as the host device for which the signal conditioning accessory was designed. Use one connector to connect the SC-205*X* adapter to the DAQ device. You can connect the remaining connector via a cable to the SC-207*X* Series boards, the AMUX-64T, or to a CB-50 terminal block. On the SC-2054, the pin assignments on J1 and J2 are the same as those on the type NB5 or R1005050 cable connecting the SC-2054 to the 96-channel digital board.

On the SC-2056, J1 connector has the same pin assignment as the DAQ device. Connectors J2 and J3 are used with the R1005050 cable to connect the SC-2056 to the DAQ device. On the SC-2057 the pin assignments on J1 and J2 have the same pin assignment as the AT-DIO-32F without the handshaking lines. Connectors P1 and P2 are connected pin-by-pin and have exactly the same pin assignment as the DAQ device. Use one connector to connect the SC-2057 to the VXI-DIO-128. You can connect the remaining connector via a cable to a terminal block or other accessories.

The 26-pin connectors J3, J4, J5, and J6 on the SC-2052 and SC-2053, connect to SC-206*X* Series adapters or 5B Series signal conditioning boards with type NB7 cable, or to 8-channel SSR Series backplane with 26-conductor cabling. The 26-pin connectors J4, J5, J6, J8, J9, and J10 on the SC-2054 are for connection to SC-206*X* Series adapters. The 26-pin connectors J8, J9, J10, J11, J12, and J13 on the SC-2056 are for connection to SC-206*X* Series, SSR Series, and 5B Series boards. You must make these connections with the host computer powered off.



Warning ***Do not attempt to connect any SC-205X adapter to any board for which it was not designed. Such connection can result in damage to the SC-205X adapter and any or all boards connected to the SC-205X adapter and the host computer. National Instruments is NOT liable for any damages resulting from incorrect connections.***

For additional information concerning the connection of these signals on the accessory boards, consult the *SC-206X Series User Manual*, the *5B Series User Manual*, the *SC-207X Series User Manual*, the *AMUX-64T User Manual*, or the user manuals for your SSR Series backplane and CB-50 terminal block.

A

Specifications

This appendix lists the specifications for the SC-205X Series adapters. These specifications are typical at 25° C unless otherwise noted.

Physical

Dimensions (including standoffs)

SC-2050, SC-2051, SC-2052,
SC-2053, SC-2055, SC-2057..... 13.2 by 12.4 by 4.8 cm
(5.2 by 4.9 by 1.9 in.)
SC-2054, SC-2056..... 20.1 by 12.4 by 4.8 cm
(7.9 by 4.9 by 1.9 in.)

I/O Connectors	50-pin Male	26-pin Male	Screw Terminals	100-Pin Female	96-Pin Male
SC-2050	2	3	0	0	0
SC-2051	2	3	0	0	0
SC-2052	2	4	6	0	0
SC-2053	2	4	0	0	0
SC-2054	4	6	0	0	0
SC-2055	2	4	0	0	0
SC-2056	6	6	0	1	0
SC-2057	2	0	4	0	2

Environment

Operating temperature..... 0° to 70° C

Storage temperature ..... –55° to 150° C

Relative humidity..... 5% to 90% noncondensing

B

Customer Communication

For your convenience, this appendix contains forms to help you gather the information necessary to help us solve your technical problems and a form you can use to comment on the product documentation. When you contact us, we need the information on the Technical Support Form and the configuration form, if your manual contains one, about your system configuration to answer your questions as quickly as possible.

National Instruments has technical assistance through electronic, fax, and telephone systems to quickly provide the information you need. Our electronic services include a bulletin board service, an FTP site, a fax-on-demand system, and e-mail support. If you have a hardware or software problem, first try the electronic support systems. If the information available on these systems does not answer your questions, we offer fax and telephone support through our technical support centers, which are staffed by applications engineers.

Electronic Services

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National Instruments has BBS and FTP sites dedicated for 24-hour support with a collection of files and documents to answer most common customer questions. From these sites, you can also download the latest instrument drivers, updates, and example programs. For recorded instructions on how to use the bulletin board and FTP services and for BBS automated information, call 512 795 6990. You can access these services at:

United States: 512 794 5422
Up to 14,400 baud, 8 data bits, 1 stop bit, no parity

United Kingdom: 01635 551422
Up to 9,600 baud, 8 data bits, 1 stop bit, no parity

France: 01 48 65 15 59
Up to 9,600 baud, 8 data bits, 1 stop bit, no parity

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To access our FTP site, log on to our Internet host, `ftp.natinst.com`, as `anonymous` and use your Internet address, such as `joesmith@anywhere.com`, as your password. The support files and documents are located in the `/support` directories.

Fax-on-Demand Support

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E-Mail Support (Currently USA Only)

You can submit technical support questions to the applications engineering team through e-mail at the Internet address listed below. Remember to include your name, address, and phone number so we can contact you with solutions and suggestions.

`support@natinst.com`

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Belgium	02 757 00 20	02 757 03 11
Brazil	011 288 3336	011 288 8528
Canada (Ontario)	905 785 0085	905 785 0086
Canada (Québec)	514 694 8521	514 694 4399
Denmark	45 76 26 00	45 76 26 02
Finland	09 725 725 11	09 725 725 55
France	01 48 14 24 24	01 48 14 24 14
Germany	089 741 31 30	089 714 60 35
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Mexico	5 520 2635	5 520 3282
Netherlands	0348 433466	0348 430673
Norway	32 84 84 00	32 84 86 00
Singapore	2265886	2265887
Spain	91 640 0085	91 640 0533
Sweden	08 730 49 70	08 730 43 70
Switzerland	056 200 51 51	056 200 51 55
Taiwan	02 377 1200	02 737 4644
United Kingdom	01635 523545	01635 523154
United States	512 795 8248	512 794 5678

Technical Support Form

Photocopy this form and update it each time you make changes to your software or hardware, and use the completed copy of this form as a reference for your current configuration. Completing this form accurately before contacting National Instruments for technical support helps our applications engineers answer your questions more efficiently.

If you are using any National Instruments hardware or software products related to this problem, include the configuration forms from their user manuals. Include additional pages if necessary.

Name _____

Company _____

Address _____

_____

Fax (___) _____Phone (___) _____

Computer brand_____ Model _____Processor_____

Operating system (include version number) _____

Clock speed _____MHz RAM _____MB Display adapter _____

Mouse ___yes ___no Other adapters installed_____

Hard disk capacity _____MB Brand_____

Instruments used _____

_____

National Instruments hardware product model _____ Revision _____

Configuration _____

National Instruments software product _____ Version _____

Configuration _____

The problem is: _____

_____

_____

_____

_____

List any error messages: _____

_____

_____

The following steps reproduce the problem: _____

_____

_____

_____

_____

SC-205*X* Series Hardware and Software Configuration Form

Record the settings and revisions of your hardware and software on the line to the right of each item. Complete a new copy of this form each time you revise your software or hardware configuration, and use this form as a reference for your current configuration. Completing this form accurately before contacting National Instruments for technical support helps our applications engineers answer your questions more efficiently.

National Instruments Products

Hardware revision _____

Interrupt level of hardware _____

DMA channels of hardware _____

Base I/O address of hardware _____

Programming choice _____

National Instruments software _____

Other boards in system _____

Base I/O address of other boards _____

DMA channels of other boards _____

Interrupt level of other boards _____

Other Products

Computer make and model _____

Microprocessor _____

Clock frequency or speed _____

Type of video board installed _____

Operating system version _____

Operating system mode _____

Programming language _____

Programming language version _____

Other boards in system _____

Base I/O address of other boards _____

DMA channels of other boards _____

Interrupt level of other boards _____

Documentation Comment Form

National Instruments encourages you to comment on the documentation supplied with our products. This information helps us provide quality products to meet your needs.

Title: *SC-205X Series User Manual*

Edition Date: November 1998

Part Number: 371176A-01

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If you find errors in the manual, please record the page numbers and describe the errors.

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Thank you for your help.

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Glossary

Prefix	Meanings	Value
p-	pico	10^{-12}
n-	nano-	10^{-9}
µ-	micro-	10^{-6}
m-	milli-	10^{-3}
k-	kilo-	10^{3}
M-	mega-	10^{6}
G-	giga-	10^{9}
t-	tera-	10^{12}

Numbers/Symbols

°	degrees
Ω	ohms
/	per
%	percent
±	plus or minus
+5 V	+5 V signal

A

A	amperes
AC	alternating current
ACH#	analog channel
A/D	analog-to-digital

ADC	A/D converter
AGND	analog ground signal
AIGND	analog input ground signal
AISENSE	analog input sense signal
AO	analog output
AOGND	analog output ground signal

C

C	Celsius
CLK#	clock signal

D

D	data bit
D/A	digital-to-analog
DAC	D/A converter
DAC#OUT	voltage output signal
DAC1UNI/B1*	DAC1 unipolar/bipolar bit
DAQ	data acquisition
DC	direct current
DIGGND/DGND	digital ground signal
DIN	digital input signal
DIO	digital I/O
DLL	dynamic link library
DMA	direct memory access

E

EISA	Extended Industry Standard Architecture
EXTCONV	external convert signal
EXTREF	external reference signal
EXTSTROBE	external strobe signal
EXTUPDATE	external update signal

F

FOUT	frequency output signal

G

GATE#	gate signal
GND	ground signal

H

hex	hexadecimal
Hz	hertz

I

IDE	Integrated Development Environment
in.	inch
IN#	input signal
INL	integral nonlinearity
I/O	input/output
ISA	Industry Standard Architecture

L

LED	light-emitting diode

M

m	meter
MB	megabytes of memory

N

NC	not connected (signal)

O

OUT	output signal

P

PA	port A
PB	port B
PC	port C
PPI	Programmable Peripheral Interface
PPM	parts per million

R

rms	root mean square

S

S	samples
s	seconds

SCANCLK	scan clock signal
SCLK	serial clock bit
SCXI	Signal Conditioning eXtensions for Instrumentation
SDK	Software Development Kit
SOURCE#	source signal
SSR	solid-state relay
STARTSCAN	startscan signal
STOPTRIG	stop trigger signal

T

TRIG#	trigger signal
TPCX	Turbo Pascal Compiler

U

UPDATE	update signal

V

V	volts
VCC	positive supply voltage from the PCMCIA bus (usually +5V)
VDC	volts, direct current

W

WFTRIG	waveform trigger signal
WRTPRT	write protect bit

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