Portable, Shielded SCC Module Carriers

NI SC-2345 Series, NI SC-2350

- Accept up to 20 SCC modules
- Portable, low-profile packaging
- Cable directly to an E Series or Basic multifunction device
- Powered by DAQ device (additional power options available)

SC-2345 Connector Block
- Screw terminal connectivity

SC-2345 with Configurable Connectors
- Panelettes for sensor connectivity, control, and display
- Blank panelettes for filler

SC-2350 with Configurable TEDS Connectors
- Accepts up to 16 channels of TEDS Class II smart sensors
- Panelettes for sensor connectivity

Operating Systems
- Windows 2000/NT/XP

Recommended Software
- LabVIEW™
- LabWindows™/CVI™
- Measurement Studio™
- Lookout
- VI Logger

Other Compatible Software
- Visual Basic
- C/C++, C#

Measurement Services Software
- NI-DAQ 7

Overview

The National Instruments SC-2345 Series consists of two types of carriers, the NI SC-2345 connector block and the SC-2345 with configurable connectors. The SC-2350 is a similar carrier with configurable TEDS (Transducer Electronic Data Sheet) connectors for connecting to smart TEDS sensors. These enclosures for SCC signal conditioning modules connect directly to 68-pin DAQ devices. They include sockets for SCC modules, along with screw terminals for convenient connection to digital I/O and counter/time (GPCTR) signals from the DAQ device. These carriers offer three power options to increase the flexibility of deployment.

SC-2345 Connector Block

The SC-2345 includes 20 SCC sockets, labeled J1 through J20 (see Figure 1). Sockets J1 through J8 accommodate SCC modules for conditioning signals on the analog input channels of the DAQ device. For example, an SCC module plugged into socket J1 conditions signals for channels 0 and 8 of the device.

You can use sockets J9 through J16 for either digital I/O modules or dual-stage analog input conditioning. When using dual-stage conditioning of analog inputs (for applicable modules only in the SC-2345 series carriers), wire your input signal to the first-stage module (in sockets J9 through J16). The SC-2345 routes the output signal of the first-stage SCC module to the input of the second stage SCC module internally (see Figure 2). When using sockets J9 through J16 for digital I/O, simply plug in a digital SCC module or the SCC-FT01 for custom digital applications. You can use any combination of SCC digital input or digital output modules. The digital I/O lines of E Series or Basic multifunction DAQ devices are configurable for input and output on a line-by-line basis. You can also access the DIO lines of the DAQ device using the screw terminal block.

Sockets J17 through J20 access the two analog output channels and the GPCTR channels 0 and 1.

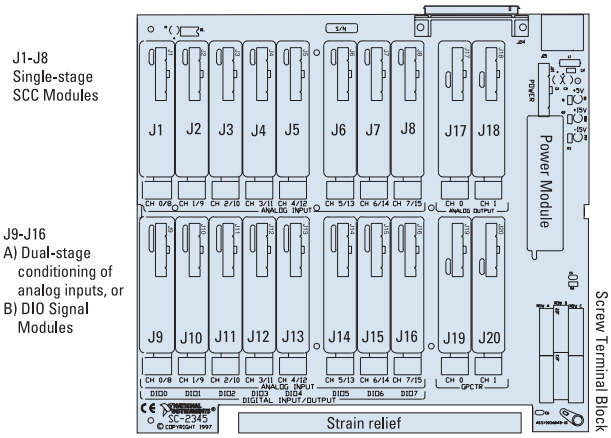

Figure 1. Diagram of Socket Layouts on SC-2345 Connector Block

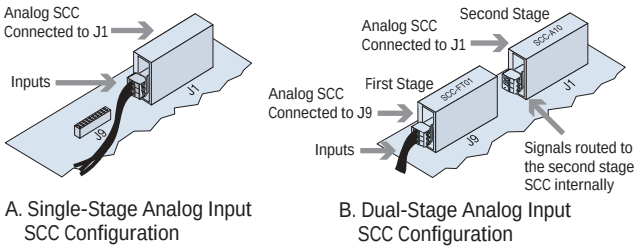

Figure 2. Single-Stage and Dual-Stage Analog Input SCC Configuration for the SC-2345 Connector Block

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SC-2345 Carrier with Configurable Connectors

The SC-2345 with Configurable Connectors is electrically and functionally identical to the SC-2345 connector block. The only differences are the orientation of some modules and the addition of I/O connector and interface panelettes. This carrier is available with either a side 68-pin connector (recommended for DAQCard products) or a rear 68-pin connector (recommended for DAQPad products).

The SC-2345 with Configurable Connectors handles dual-stage conditioning and digital I/O modules. It also offers custom connectivity by adding panelettes along its front and rear panels. Select up to 18 panelettes for side-mount 68-pin versions, or 15 panelettes for rear-mount 68-pin versions. With I/O panelettes, you can connect your sensor directly to the SCC system. With interface panelettes, you can add hardware controls and displays to your system. Blank panelettes are also available to fill unused positions or for modification to fit your custom application needs.

SC-2350

The SC-2350 includes 10 SCC module sockets, labeled J1 through J8, J17, and J18 (see Figure 3). Sockets J1 through J8 accommodate SCC modules for conditioning signals on the analog input channels of the DAQ device. For example, an SCC module plugged into socket J1 would condition signals for channels 0 and 8 of the device. You can use sockets J17 and J18 for SCC modules that condition analog signals on the output channels of the DAQ device.

The SC-2350 contains a TEDS microcontroller with two digital lines per analog input channel for communication with Class II smart TEDS sensors (for more information on smart TEDS sensors refer to ***ni.com/sensors***).

Sensors Plug&Play™

The IEEE 1451.4 standard delivers plug-and-play capability to analog sensors. End users, systems integrators, and developers can automate the configuation of measurement systems for analog sensors. By defining an easy add-on approach that brings TEDS benefits to all types of sensors, the standard makes data acquisition systems easier to set up, configure, and maintain. The TEDS structure is compact and flexible enough to handle a very wide range of sensor requirements.

Smart TEDS Sensors

An IEEE 1451.4 smart TEDS sensor consists of the analog components and an embedded memory chip, which together provide the mixed-mode interface for analog and digital signals. A smart TEDS sensor identifies and describes itself – providing the manufacturer, sensor model number, serial number, measurement range, sensitivity, and calibration information. TEDS information resides on a memory chip (EEPROM) within the sensor and is accessed by measurement systems such as the SC-2350 via a simple low-cost serial interface.

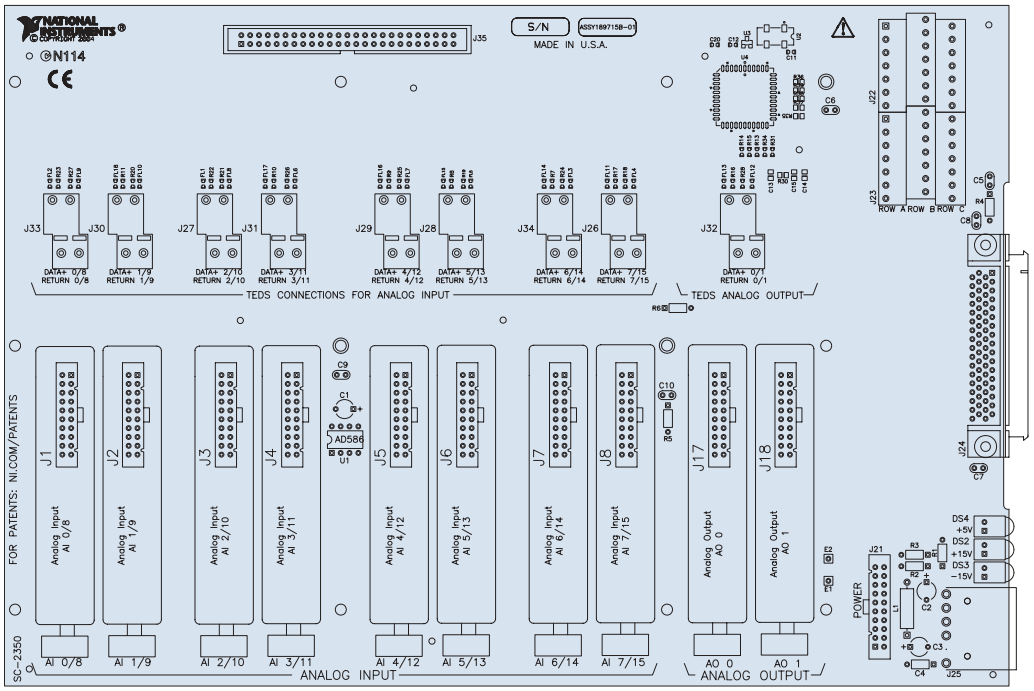


Figure 3. Diagram of Socket Layout for SC-2350

[1]SCC Socket Reference Designator
[2]SCC Socket
[3]SCC Key Slot
[4]50-Pin Test Header
[5]Serial Number
[6]Assembly Number
[7]Screw-Terminal Block
[8]J24
[9]Power LEDs
[10]J25
[11]J21

Portable, Shielded SCC Module Carriers

Panelette	Description	Connectors/Units per Panelette	Slot Width
Minithermocouple jack	J or K-type	2	1
	or uncompensated	2	1
Thermocouple jack	J or K-type	1	1
	or uncompensated	1	1
BNC	BNC connector	2	1
SMB	SMB connector	4	1
Banana jack	Banana jack	2	1
LEMO (B-Series)	2-pin female	2	1
	4, 6-pin female	1	1
MIL-Spec	2, 4, 6-pin female	1	1
9-pin D-Sub	Single (male)	1	2
	Single (female)	1	2
	Dual (male)	2	3
	Dual (female)	2	3
Momentary switch	On – off	2	1
Toggle switch	(On – off – on)	2	1
Rocker switch	(On – off – on)	1	1
LED	Red, green, yellow, and orange LEDs	4	1
Potentiometer	1 turn, 10 Ω	1	1
Strain relief	Small	1	2
Blank	Filler panel	–	–

Table 1. SC-2345/SC-2350 Panelette Options

Panelettes

If you choose either of the two versions of the SC-2345 with configurable connectors or the SC-2350 as your carrier, then you can install connectivity and interface panelettes to customize your SCC system. Panelette options (see Table 1, Figure 4) include BNC, SMB, LEMO (B-Series), MIL-Spec, banana jack, thermocouple plug, 9-pin D-Sub connectors, rocker switches, toggle switches, momentary switches, potentiometers, and LEDs. Please note, some panelettes occupy more than one panelette slot. All panelettes except for the strain-relief options include lead wires that you connect to the screw terminals of any SCC module or to the 42-pin screw terminal block inside the SC-2345 or SC-2350. The thermocouple and minithermocouple jack connector wires are made of the appropriate metals to avoid forming unwanted cold junctions.

Screw Terminals

Each SC-2345 and SC-2350 shielded carrier includes a 42-position screw terminal block for easy access to digital lines of the E Series or Basic Multifunction DAQ device, including DIO<3, 5, 6, 7>, PFI<0..9>, GPCTR 0,1, +5V, DGND, AISENSE, FREQ_OUT, EXTSTROBE, and SCANCLK.

Accessories

The SC-2345 with configurable connectors and SC-2350 offer two optional accessories. For 19 in. rack systems, choose the rack-mount kit. If you are using two SCC systems, or a single SCC system with a DAQPad device, choose the stacking kit to mechanically attach both systems.

Power Options

SC-2345 and SC-2350 carriers have three power options:

- SCC-PWR01 – 5 VDC from the DAQ device or an external supply
- SCC-PWR02 – universal AC external supply
- SCC-PWR03 – 7 to 42 VDC external supply module (power supply not included)

One power module is included with your carrier. Power modules are sold separately in case you want to use your SC-2345 or SC-2350 in two or more configurations.

If you choose the SCC-PWR01, it is possible to power your SCC system with the internal power source of your DAQ device. NI DAQCards and DAQPads provide 800 mW of total power (480 mW of analog power) from their internal source. NI PCI and PXI devices provide 4.50 W of total power (1.74 W of analog power) from their internal source. If the power draw from your SCC modules is greater than the power available from your DAQ device, then you must use an external power source. The SCC-PWR02 includes an AC transformer. However, you must purchase an additional power cord to match your country's power requirements.

The SCC-PWR03 does not include a transformer but can be used with an external transformer that provides 7 to 42 VDC. To determine the valid power options for the modules in your SCC DAQ system, use the online SCC Advisor at ***ni.com/advisors***

Cabling

You connect your SC-2345 or SC-2350 to your DAQ device using standard cables. To determine the cabling needed for your configuration, see Table 2.

DAQ Device	SC-2345
68-pin E Series or Basic multifunction	SH68-68-EP[1]
100-pin E Series	SH100686[2]
Latching E Series DAQCards: 6062E, 6036E, 6024E	SHC6868-EP

[1]Can also use the SH68-68R1 or R6868 [2]Only the first 68 pins will interface to an SC-2345

Table 2. SC-2345 Cabling Options

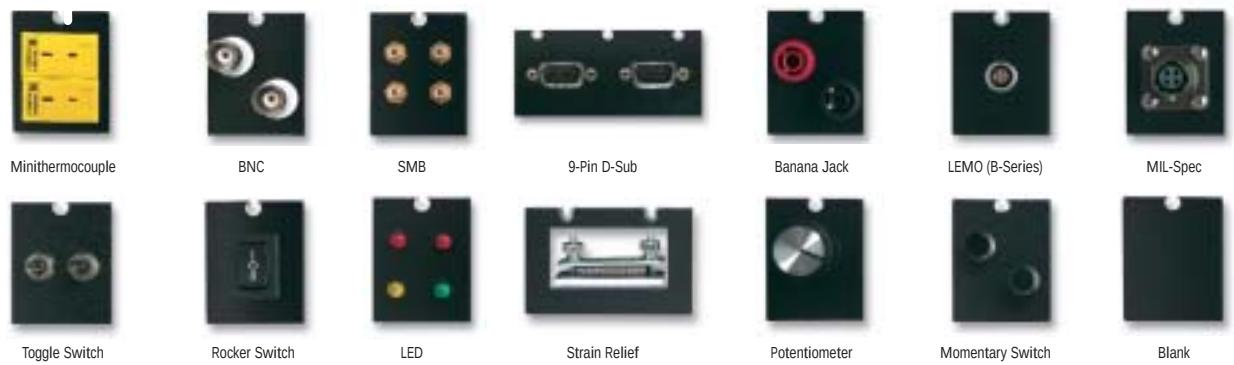


Figure 4. SC-2345/SC-2350 Panelette Photos

Portable, Shielded SCC Module Carriers

Ordering Information

NI SC-2345 Connector Block with
- SCC-PWR01 777458-01
- SCC-PWR02 777458-02
- SCC-PWR03 777458-03

NI SC-2345 with Configurable Connectors (side 68-pin) with
- SCC-PWR01 777722-01
- SCC-PWR02 777722-02
- SCC-PWR03 777722-03

NI SC-2345 with Configurable Connectors (rear 68-pin) with
- SCC-PWR01 778018-01
- SCC-PWR02 778018-02
- SCC-PWR03 778018-03

SC-2350 with Configurable TEDS Connectors
- SCC-PWR01 778990-01
- SCC-PWR02 778990-02
- SCC-PWR03 778990-03

Separate Power Modules

SCC-PWR01 183971-01
SCC-PWR02 183971-02
SCC-PWR03 183971-03

Power Cords for the SCC-PWR-02

U.S. 120 VAC 763000-01
Japan 100 VAC 763000-01
United Kingdom 240 VAC 763064-01
Swiss 220 VAC 763065-01
Australian 240 763066-01
Universal Euro 240 VAC 763067-01
North American 240 VAC 763068-01

Panelettes

Minithermocouple, J-type (2 included) 184736-01
Minithermocouple, K-type (2 included) 184736-02
Minithermocouple, uncompensated (2 included) 184736-03
Thermocouple, J-type 187597-01
Thermocouple, K-type 187597-02
Thermocouple, uncompensated 187597-03
BNC (2 included) 184737-01
Banana jack (2 included) 186405-01
LEMO (B-Series)
- 2-pin, female 187585-01
- 4-pin, female 187585-02
- 6-pin, female 187585-03

MIL–C–26482 (Series 1)
- MS 3112 E 8-2 S 187591-01
- MS 3112 E 8-2 S 187591-02
- MS 3112 E 8-4 S 187591-03

Panelettes (continued)

SMB (4 included) 185505-01
9-pin D-Sub
- 1 male 184738-01
- 2 male 184738-02
- 1 female 184738-03
- 2 female 184738-04

Strain relief (small) 184721-01
Blank 184483-01
Momentary push-button switches (2 included) 185380-01
Rocker switch (on/off/on) 185379-01
Toggle switches (on/off/on, 2 included) 185378-01
Potentiometer (10 kΩ, single-turn) 185377-01
LEDs (4 included-1 green, 1 red,
- 1 orange, 1 yellow) 185376-01

Cables

SH6868-EP
- 1 m 184749-01
- 2 m 184749-02

SH68-68R1-EP 187051-01
R6868 182482-01
SH1006868
- 1 m 182849-01
- 2 m 182849-02

PSHR68-68 shielded cable kit 777293-01
SHC6868-EP 186838-01

Accessories

Rack-mount kit (1U) 777665-01
Stacking kit 777666-01
Panel mount kit 187243-01
Strain relief kit[1] 187407-01

[1]You cannot use the strain relief kit in conjunction with the rack-mount, panel-mount, or stacking kits.

BUY ONLINE!

Visit ni.com/info and enter sc2345 or sc2350.

Specifications

SCC-PWR01

Input ..... 5 VDC ±5% from an external source, E Series, or Basic multifunction DAQ device
Output ..... +5 VDC, 100% efficiency ±15 VDC, 62% efficiency

SCC-PWR02

Input ..... 100 to 240 VAC, 1 A maximum
Output ..... +5 VDC, 1 A
±15 VDC, ±0.3 A

SCC-PWR03

Input ..... 7 to 42 VDC (from external source)
Output ..... +5 VDC, 75% efficiency
±15 VDC, 46% efficiency

Physical Dimensions

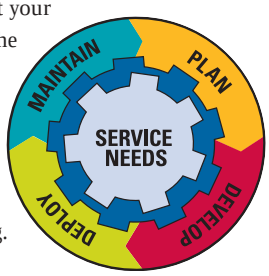
SCC modules ..... 8.9 by 2.9 by 1.9 cm (3.5 by 1.2 by 0.7 in.)
SC-2345 connector block ..... 24.1 by 26.2 by 3.94 cm (9.5 by 10.3 by 1.6 in.)
SC-2345 with configurable connectors and SC-2350 ..... 30.6 by 25.4 by 4.4 cm (12.1 by 10 by 1.7 in.)
External AC adapter (for SCC-PWR02) ..... 15.5 by 8.5 by 4.8 cm (6.1 by 3.3 by 1.9 in.)

Connectors

SC-2345 cable ..... 68-pin male SCSI II
SCC input ..... Removable screw terminal or minithermocouple connector
SCC output ..... 20-pin right-angle male connector

NI Services and Support

NI has the services and support to meet your needs around the globe and through the application life cycle – from planning and development through deployment and ongoing maintenance. We offer services and service levels to meet customer requirements in research, design, validation, and manufacturing. Visit ni.com/services.



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NI training is the fastest, most certain route to productivity with our products. NI training can shorten your learning curve, save development time, and reduce maintenance costs over the application life cycle. We schedule instructor-led courses in cities worldwide, or we can hold a course at your facility. We also offer a professional certification program that identifies individuals who have high levels of skill and knowledge on using NI products. Visit ni.com/training.

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