SCC-RLY01 Relay Module

The SCC-RLY01 contains one single-pole double-throw (SPDT) nonlatching relay capable of switching 5 A at 30 VDC or 250 VAC. Any single E Series DAQ device digital input/output (P0.) line 0 to 7 can control the SCC-RLY01.

The SCC-RLY01 uses positive logic. A digital high sets the relay, and a digital low resets it. In the set state, the common (COM) contact is connected to the normally open (NO) contact. In the reset state, the common (COM) contact is connected to the normally closed (NC) contact.

Conventions

The following conventions are used in this guide:

<>	Angle brackets that contain numbers separated by an ellipsis represent a range of values associated with a bit or signal name—for example, P0.<3..0>.
»	The » symbol leads you through nested menu items and dialog box options to a final action. The sequence **File»Page Setup»Options** directs you to pull down the **File** menu, select the **Page Setup** item, and select **Options** from the last dialog box.
	This icon denotes a note, which alerts you to important information.
	This icon denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash. When this symbol is marked on the product, refer to the *Read Me First: Safety and Radio-Frequency Interference* document, shipped with the product, for precautions to take.
	When symbol is marked on a product, it denotes a warning advising you to take precautions to avoid electrical shock.
	When symbol is marked on a product, it denotes a component that may be hot. Touching this component may result in bodily injury.

NATIONAL INSTRUMENTS

bold	Bold text denotes items that you must select or click in the software, such as menu items and dialog box options. Bold text also denotes parameter names.
italic	Italic text denotes variables, emphasis, a cross reference, or an introduction to a key concept. This font also denotes text that is a placeholder for a word or value that you must supply.
`monospace`	Text in this font denotes text or characters that you should enter from the keyboard, sections of code, programming examples, and syntax examples. This font is also used for the proper names of disk drives, paths, directories, programs, subprograms, subroutines, device names, functions, operations, variables, filenames, and extensions.
SC-2345	SC-2345 refers to both the SC-2345 connector block and SC-2345 with configurable connectors.
SCC	SCC refers to any SCC Series signal-conditioning module.

What You Need to Get Started

To set up and use the SCC-RLY01, you need the following items:

❑ SC-2345/2350 with one of the following:
- – SCC-PWR01
- – SCC-PWR02 and the PS01 power supply
- – SCC-PWR03 (requires a 7 to 42 VDC power supply, not included)

❑ One or more SCC-RLY01 modules

❑ *SC-2345/2350 User Manual*, available at `ni.com`

❑ *SCC-RLY01 Relay Module User Guide*

❑ *SCC Quick Start Guide*, available at `ni.com`

❑ *Read Me First: Safety and Radio-Frequency Interference*

❑ SC-2345 Quick Reference Label

❑ 68-pin E Series DAQ device, documentation, and 68-pin cable

❑ 1/8 in. flathead screwdriver

❑ Numbers 1 and 2 Phillips screwdrivers

❑   Wire insulation strippers

❑   NI-DAQ (current version) for Windows 2000/NT/XP

Note   Configuring the SCC system using Measurement & Automation Explorer (MAX) is not supported on the Macintosh operating system.

Device Specific Information

Note   For general SCC module installation and signal connection information, and information about the SC-2350 carrier, refer to the *SCC Quick Start Guide*, available for download at ni.com/manuals.

Installing the Module

Caution   Refer to the *Read Me First: Safety and Radio-Frequency Interference* document before removing equipment covers or connecting/disconnecting any signal wires.

Plug the SCC-RLY01 into any P0. socket J(X+9), where X is 0 to 7, on the SC-2345.

Connecting the Input Signals

Note   The signal names have changed. Refer to ni.com/info and enter rdtntg to confirm the signal names.

Each screw terminal is labeled by pin number <1..3>. Pin 1 is the NC terminal, pin 2 is the COM terminal, and pin 3 is the NO terminal.

The SCC-RLY01 contains one SPDT relay controlled by an E Series DAQ device P0. line X. The value of X is determined by the number of the P0. socket, J(X+9), where you plug in the SCC-RLY01. The following figure is a circuit diagram of the SCC-RLY01.
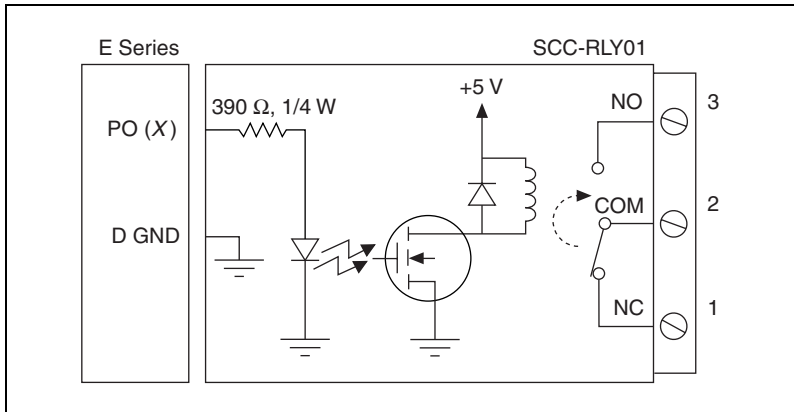
For information about how to configure the SCC-RLY01 module with NI-DAQmx, refer to the *SCC Quick Start Guide*.

Specifications

These ratings are typical at 25 °C unless otherwise stated.

Electrical

Contact type ....SPDT (Form C), nonlatching

Nominal switching capacity ....5 A at 250 VAC
5 A at 30 VDC

Signal bandwidth ....DC to 400 Hz

Contact resistance ....30 mΩ max

Switching time

Operate time (NC to NO) ....5 ms (10 ms max)

Release time (NO to NC) ....4 ms (5 ms max)[1]

Maximum operating speed ....30 cps at rated load

Contact lifetime ....5×10^7 operations at 180 cpm
(minimum)

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[1] Excluding contact bounce time

Power Requirement

Digital power.. 300 mW max

+5 V... 60 mA max

Physical

Dimensions.. 8.89 cm × 2.92 cm × 1.85 cm
(3.50 in. × 1.15 in. × 0.73 in.)

Mass .... 37 g (1.3 oz)

I/O connectors .... One 20-pin right-angle
male connector
One 3-pin screw-terminal block

Field-wiring diameter............................ 28 to 16 AWG

Maximum Working Voltage

Maximum working voltage refers to the signal voltage plus the
common-mode voltage.

Channel to earth (inputs)........................ ±300 V, Installation Category II[1]

Environmental

Operating temperature............................ 0 to 50 °C

Storage temperature .... −20 to 65 °C

Humidity .... 10 to 90% RH, noncondensing

Maximum altitude .... 2,000 m

Pollution Degree (indoor use only)........ 2

Safety

The SCC-RLY01 meets the requirements of the following standards
for safety of electrical equipment for measurement, control, and
laboratory use:

- IEC 61010-1, EN 61010-1

- UL 3111-1, UL 61010B-1

- CAN/CSA C22.2 No. 1010.1

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[1] Isolation test voltage is 2,400 VAC at 2 s.

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

Electromagnetic Compatibility

Emissions..EN 55011 Class A at 10 m
FCC Part 15A above 1 GHz

Immunity ....EN 61326:1997 + A2:2001,
Table 1

CE, C-Tick, and FCC Part 15 (Class A) Compliant

Note For full EMC compliance, operate this device with shielded cabling.

CE Compliance

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

Low-Voltage Directive (safety)..............73/23/EEC

Electromagnetic Compatibility
Directive (EMC)....................................89/336/EEC

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

SCC-RLY01 Module Pin Assignments

Figure 1 shows the I/O connector pins on the bottom of the module.

| 1 | Pin 1 | 2 | Pin 2 | 3 | PWB Key | 4 | Pin 19 | 5 | Pin 20 |
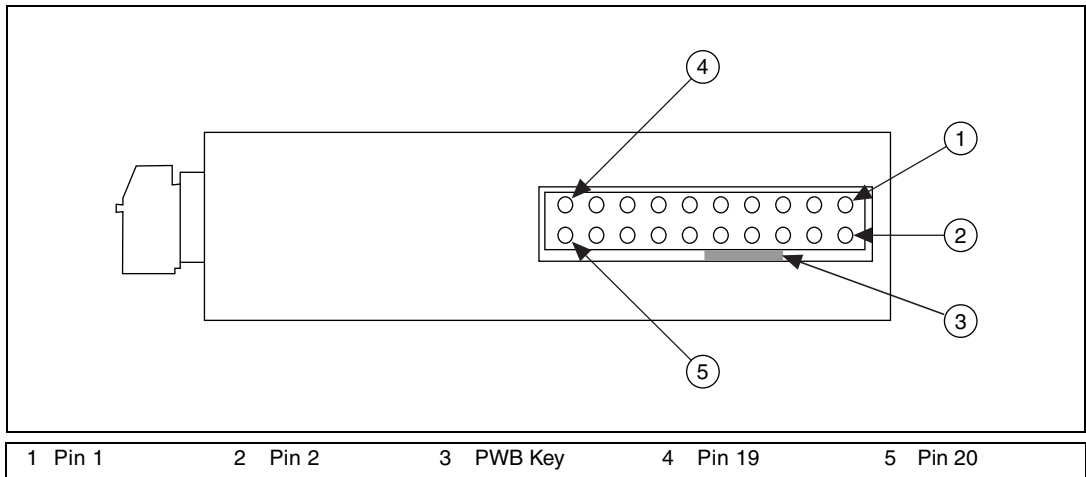
Figure 1. SCC Module Bottom View

Table 1 lists the signal connection corresponding to each pin. GND is the reference for the +5 V supply.

Table 1. SCC-RLY01 Pin Signal Connections

Pin Number	Signal
1	—
2	—
3	—
4	—
5	—
6	—
7	P0.(*X*)
8	—
9	+5 V
10	GND
11	—
12	—

Table 1. SCC-RLY01 Pin Signal Connections (Continued)

Pin Number	Signal
13	—
14	—
15	—
16	—
17	—
18	—
19	—
20	—

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