

# NI SCXI™-1169 Specifications

## 100-Channel SPST Relay Module

This document lists specifications for the NI SCXI-1169 general-purpose relay module. All specifications are subject to change without notice. Visit [ni.com/manuals](http://ni.com/manuals) for the most current specifications.

Configuration ..... 100-channel SPST, latching

## Input Characteristics

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All specifications at 23 °C unless otherwise noted.

All input characteristics are DC,  $AC_{\text{rms}}$ , or a combination unless otherwise specified.

Maximum switching voltage

Channel-to-channel ..... 100 V

Channel-to-ground ..... 100 V, CAT I



**Caution** This module is rated for Measurement Category I and is intended to carry signal voltages no greater than 100 V. This module can withstand up to 500 V impulse voltage. Do not use this module for connection to signals or for measurements within Categories II, III, or IV. Do not connect to MAINS supply circuits (for example, wall outlets) of 115 or 230 VAC. Refer to the *Read Me First: Safety and Radio-Frequency Interference* document for more information about measurement categories.

When hazardous voltages ( $>42.4 V_{\text{pk}}/60 \text{ VDC}$ ) are present on any relay terminal, safety low-voltage ( $<42.4 V_{\text{pk}}/60 \text{ VDC}$ ) cannot be connected to any other relay terminal.



**Caution** The switching power is limited by the maximum switching current, the maximum voltage, and must not exceed 60 W, 62.5 VA.

Maximum switching power .....60 W, 62.5 VA (DC to 60 Hz)  
(per channel)

Maximum current .....1 A  
(switching or carry, per channel)

Simultaneous channels at maximum  
current ( $\leq 25\text{ }^{\circ}\text{C}$ ).....50

## Module Load Derating at $>25\text{ }^{\circ}\text{C}$

Load derating is dependent on the ambient temperature and the sum of the current squared of each channel simultaneously carrying a signal. The result must fall within the shaded region of Figure 1. The following examples represent this calculation.

Example 1:

50 channels carry 0.75 A, while  
10 channels carry 0.5 A

$$(50 \times 0.75^2) + (10 \times 0.5^2) = 30.6\text{ A}^2 \times \text{Channels}$$

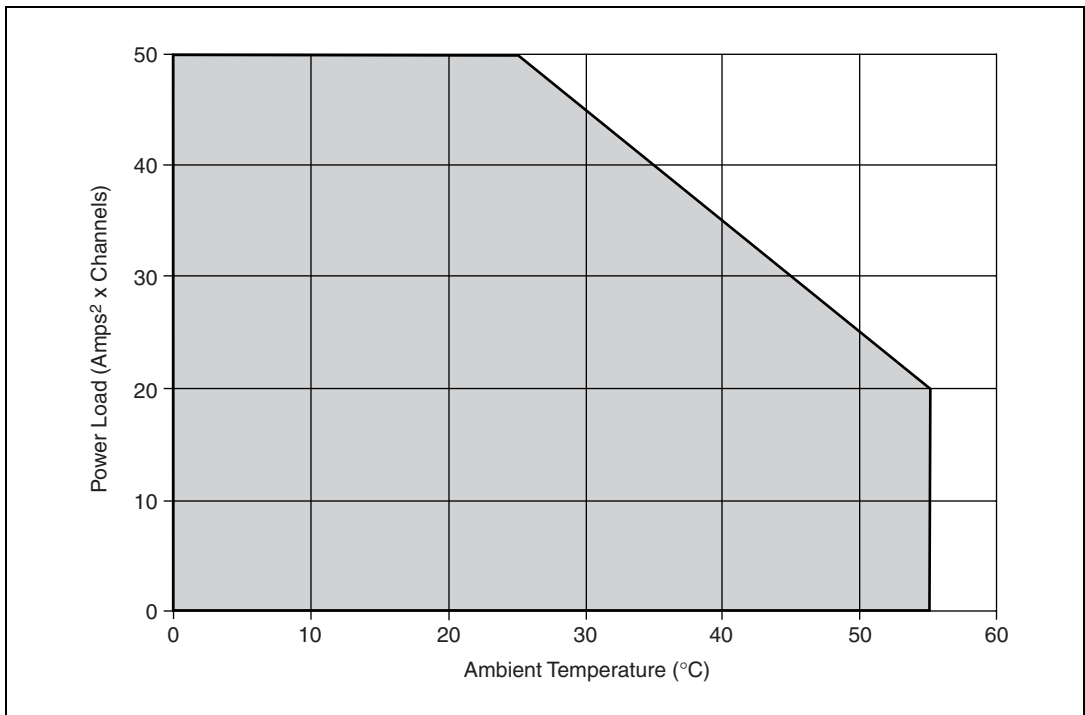
The module in Example 1 can be used at ambient temperatures between  $0\text{ }^{\circ}\text{C}$  and  $45\text{ }^{\circ}\text{C}$ .

Example 2:

60 channels carry 0.75 A, while  
5 channels carry 0.5 A

$$(60 \times 0.75^2) + (5 \times 0.5^2) = 35\text{ A}^2 \times \text{Channels}$$

The module in Example 2 can be used at ambient temperatures between  $0\text{ }^{\circ}\text{C}$  and  $40\text{ }^{\circ}\text{C}$ .



**Figure 1.** Module Load Derating

DC path resistance

Initial ..... <0.55  $\Omega$

End of life .....  $\geq 1 \Omega$

DC path resistance typically remains low for the life of the relay. At the end of relay life, the path resistance rapidly rises above 1  $\Omega$ . Load ratings apply to relays used within the specification before the end of relay life.

Thermal EMF (typical at 23 °C) .....  $\leq 12 \mu V$

Bandwidth (-3 dB, typical at 23 °C)

50  $\Omega$  termination .....  $\geq 20$  MHz

Crosstalk (typical at 23 °C, 50  $\Omega$  termination)

Channel-to-channel

10 kHz .....  $\leq -85$  dB

100 kHz .....  $\leq -65$  dB

1 MHz .....  $\leq -45$  dB

10 MHz .....  $\leq -25$  dB

Isolation (typical at 23 °C, 50 Ω termination)

Open channel

10 kHz .....≥85 dB

100 kHz .....≥65 dB

1 MHz.....≥45 dB

10 MHz.....≥25 dB

## Dynamic Characteristics

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Maximum cycle speed ..... 145 cycles/s

Relay operate time

Typical..... 1 ms

Maximum .....3.4 ms



**Note** Certain applications may require additional time for proper settling. For information about including additional settling time, refer to the *NI Switches Help*.

Expected relay life

Mechanical .....  $1 \times 10^8$  cycles

Electrical

10 VDC,

100 mADC resistive .....  $2.5 \times 10^6$  cycles

10 VDC, 1 ADC resistive.....  $1 \times 10^6$  cycles

30 VDC, 1 ADC resistive.....  $5 \times 10^5$  cycles

60 VDC, 1 ADC resistive.....  $1 \times 10^5$  cycles

## Trigger Characteristics

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Input trigger

Sources .....SCXI trigger lines 0–7,  
Rear connector

Minimum pulse width..... 150 ns

Output trigger

Destinations .....SCXI trigger lines 0–7,  
Rear connector

Pulse width .....Programmable (1 μs to 62 μs)

# Physical Characteristics

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Relay type .....	Electromechanical, latching
Relay contact material.....	Palladium-ruthenium, gold covered
I/O connector.....	200 POS LFH Matrix 50, receptacle
SCXI power requirement	
+5 VDC.....	50 mA
+18.5 VDC to +25 VDC .....	170 mA
-18.5 VDC to -25 VDC .....	170 mA
Dimensions (W × H × D).....	3 cm × 17.3 cm × 19.8 cm (1.2 in. × 6.7 in. × 7.8 in.)
Weight.....	755 g (26.6 oz)

## Environment

The NI SCXI-1169 is intended for indoor use only.

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

Storage temperature .....

-20 °C to 70 °C

Relative humidity .....

5% to 85% noncondensing

Pollution Degree .....

2

Approved at altitudes up to 2,000 m.

## Accessories

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Visit [ni.com](http://ni.com) for more information about the following accessories.

**Table 1.** NI Accessories for the NI SCXI-1169

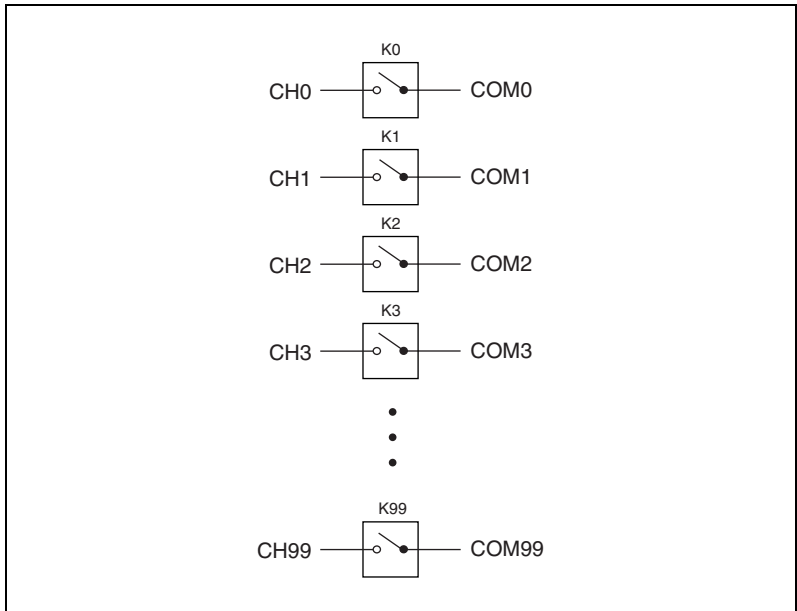
Accessory	Part Number
SH200LFH-4xDB50F-C, 1 m cable assembly to 4 × 50-pin female D-SUB	779038-02
SH200LFH-BARE WIRE, 2 m cable assembly to bare wire	779038-01

**Table 2.** Third-Party Accessories for the NI SCXI-1169

<b>Accessory</b>	<b>Manufacturer</b>	<b>Part Number</b>
Terminal pin rows (four required per module)	Molex	71715-4002
Plug connector subassembly	Molex	71719-3000
Backshell only	Jevons	JDC200B-832
Mass interconnect cable assembly, 20 in.	Virginia Panel	540105010105
Mass interconnect cable assembly, 36 in.	Virginia Panel	540105010205
Mating ITA module (one required per module)	Virginia Panel	510108131
Mating ITA PC (198 required per module)	Virginia Panel	720101101

**Table 3.** Third-Party Accessories for the SH200LFH-4xDB50F-C Cable

<b>Accessory</b>	<b>Manufacturer</b>	<b>Part Number</b>
VARIOFACE module, with screw connection and 50 position D-Subminiature pin strip	Phoenix Contact	FLK-D50 SUB/S
VARIOFACE module, with screw connection and 50 position D-Subminiature pin strip	Phoenix Contact	FLKM-D50 SUB/S
VARIOFACE module, with screw connection and 50 position D-Subminiature pin strip	Phoenix Contact	FLKMS-D50 SUB/S
VARIOFACE module, with screw connection and 50 position D-Subminiature pin strip, with LED indicators	Phoenix Contact	FLKM-D50 SUB/S/LA



**Figure 2.** NI SCXI-1169 Power-On State

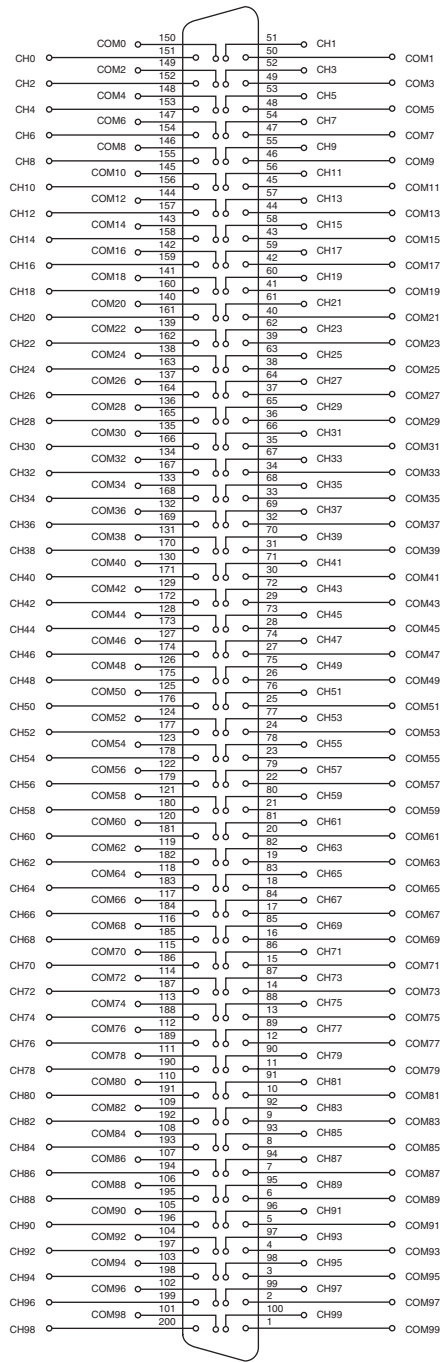


Figure 3. NI SCXI-1169 Front Panel Pinout



# Compliance and Certifications

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## Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1
- CAN/CSA C22.2 No. 61010-1



**Note** For UL and other safety certifications, refer to the product label or visit [ni.com/certification](http://ni.com/certification), 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
EMC/EMI.....	CE, C-Tick, and FCC Part 15 (Class A) Compliant



**Note** For EMC compliance, you *must* 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/certification](http://ni.com/certification), search by model number or product line, and click the appropriate link in the Certification column.

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