

NI PXI-2569 Specifications

100-Channel SPST Relay Module

This document lists specifications for the NI PXI-2569 general-purpose relay module. All specifications are subject to change without notice. Visit ni.com/manuals for the most current specifications.

Configuration 100-channel SPST, latching

Input Characteristics

All input characteristics are DC, AC_{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 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 on measurement categories.

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

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 ($\leq 35^\circ C$) 50

Module Load Derating at >35 °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 °C and 55 °C.

Example 2:

60 channels carry 0.75 A while
35 channels carry 0.5 A

$$(60 \times 0.75^2) + (35 \times 0.5^2) = 42.5 \text{ A}^2 \times \text{Channels}$$

The module in Example 2 can be used at ambient temperatures between 0 °C and 45 °C.

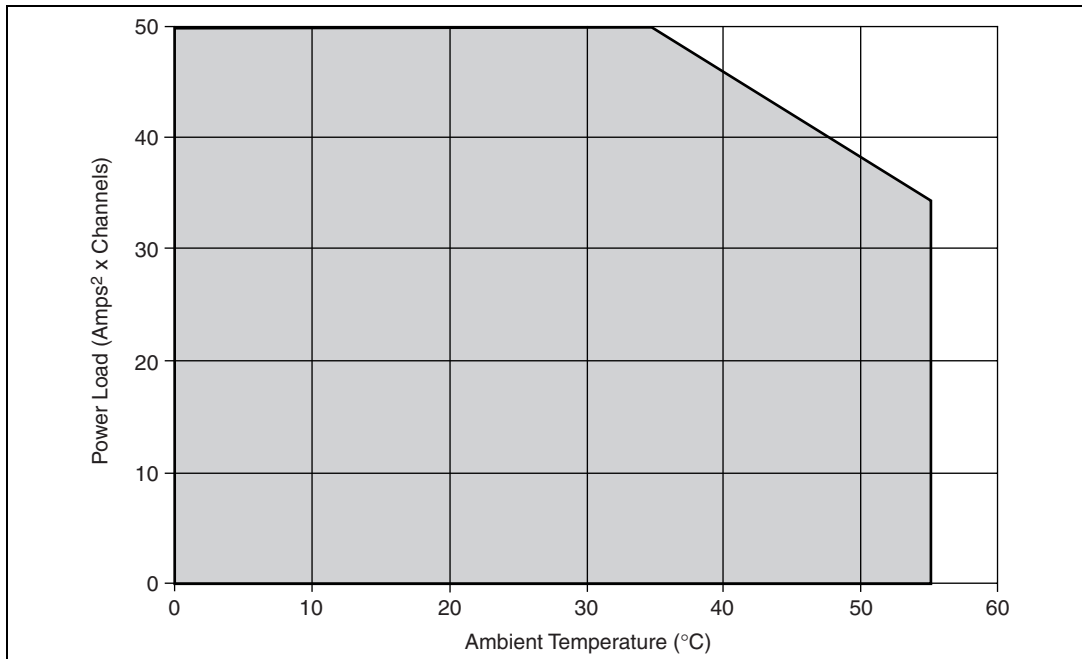


Figure 1. Module Load Derating

DC path resistance

Initial	<0.55 Ω
End of life	≥1 Ω

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 Ω. Load ratings apply to relays used within the specification before the end of relay life.

Thermal EMF (typical at 23 °C) ≤12 μV

Bandwidth (−3 dB, typical at 23 °C)

50 Ω termination ≥20 MHz

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

Channel-to-channel

10 kHz.....	≤−85 dB
100 kHz.....	≤−65 dB
1 MHz	≤−45 dB
10 MHz	≤−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

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	100,000,000 cycles
Electrical	
10 VDC,	
100 mADC resistive	2,500,000 cycles
10 VDC, 1 ADC resistive.....	1,000,000 cycles
30 VDC, 1 ADC resistive.....	500,000 cycles
60 VDC, 1 ADC resistive.....	100,000 cycles

Trigger Characteristics

Input trigger	
Sources	PXI trigger lines 0–7
Minimum pulse width.....	150 ns



Note The NI PXI-2569 can recognize trigger pulse widths less than 150 ns by disabling digital filtering. For information about disabling digital filtering, refer to the *NI Switches Help*.

Output trigger	
Destinations	PXI trigger lines 0–7
Pulse width	Programmable (1 μ s to 62 μ s)

Physical Characteristics

Relay type	Electromechanical, latching
Relay contact material	Palladium-ruthenium, gold covered
I/O connector	200 POS LFH Matrix 50, receptacle
PXI power requirement	6 W at 5 V 2.5 W at 3.3 V
Dimensions (W \times H \times D).....	Single PXI slot, 3U 2 cm \times 10 cm \times 17.5 cm (0.8 in. \times 3.9 in. \times 6.9 in.)
Weight	289 g (10.2 oz)

Environment

Operating temperature..... 0 °C to 55 °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.

Indoor use only.

Accessories

Table 1. Third-Party Accessories for the NI PXI-2569

Accessory	Manufacturer	Manufacturer Part Number
Terminal pin rows (four required)	Molex	71715-4002
Plug connector subassembly	Molex	71719-3000
Backshell only	Jevons	JDC200B-832
Mass interconnect cable assembly, 20 in.	Virginia Panel at www.vpc.com	540 005 010 105

Glossary

channel	A single SPST (form A) relay. Each channel has two terminals—A and B.
cycle	The actuation of a SPST relay twice, leaving it in its original state.
operate	The actuation of a SPST relay once, leaving it in the opposite state.
SPST	Single-pole single-throw.

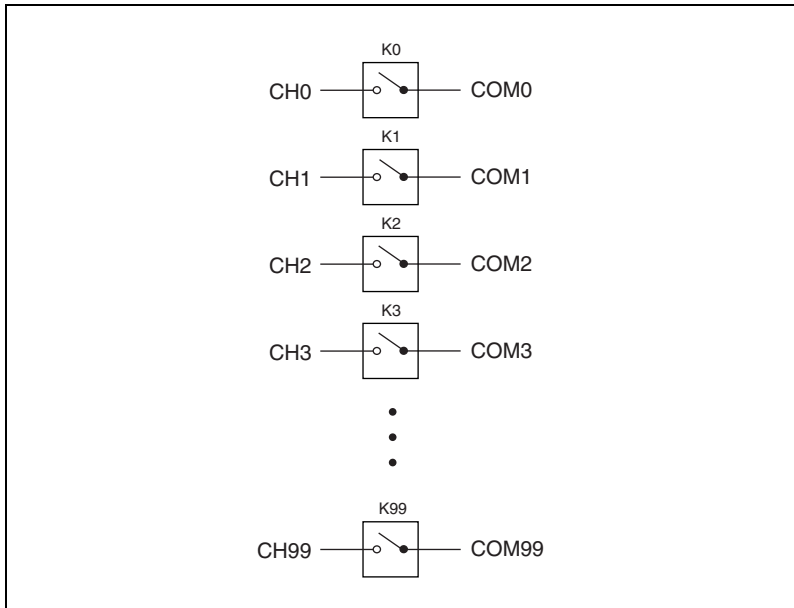


Figure 2. NI PXI-2569 Power-On State

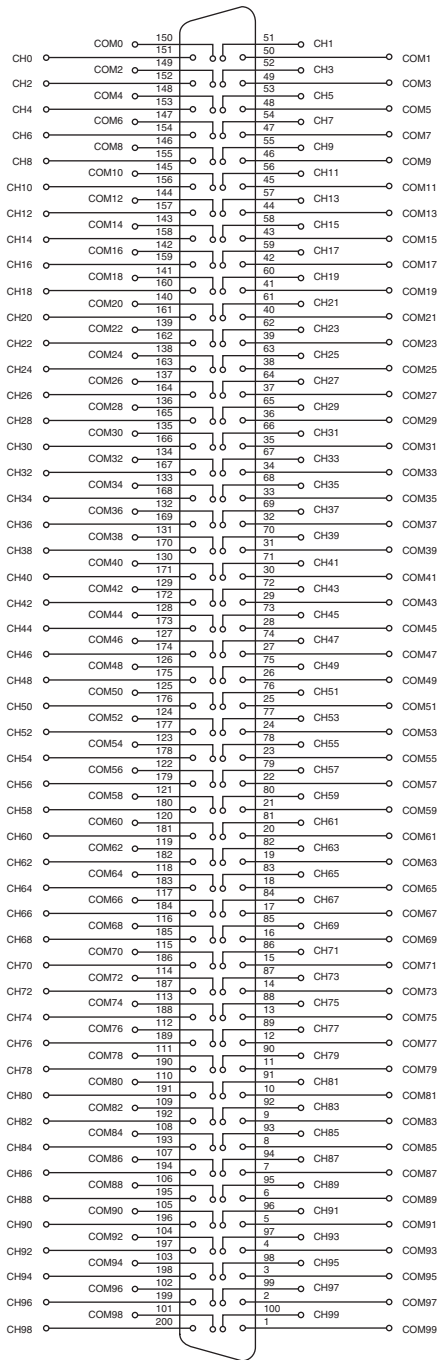


Figure 3. NI PXI-2569 Front Panel Pinout

Compliance and Certifications

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 3111-1, UL 61010B-1
- CAN/CSA C22.2 No. 1010.1



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
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/hardref.nsf, search by model number or product line, and click the appropriate link in the Certification column.

