

NI PXI-2586 Specifications

10-SPST Relay Module

This document lists specifications for the NI PXI-2586 general-purpose relay module. All specifications are subject to change without notice. Visit ni.com/manuals for the most current specifications.

Topology 10-SPST

Refer to the *NI Switches Help* for detailed topology and pinout information.

Input Characteristics

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

Maximum switching voltage

Channel-to-channel 300 V

Channel-to-ground..... 300 V, CAT II



Caution When module terminals are hazardous voltage LIVE ($>42.4 V_{pk}/60$ VDC), you must ensure that devices and circuits connected to the module are properly insulated from human contact.



Caution The switching power is limited by the maximum switching current and the maximum voltage. For AC systems, switching power must not exceed 3 kVA. For maximum DC switching power, refer to Figure 1.

Maximum switching power (per channel)

AC systems 3 kVA (up to 60 Hz)

DC systems Refer to Figure 1

Maximum current

(switching or carry, per channel or common)

Ambient temperature $\leq 45^{\circ}\text{C}$ 12 A

Ambient temperature $> 45^{\circ}\text{C}$ Refer to Figure 2

Simultaneous channels

at maximum current 2

Figures 1 and 2 show the maximum switching power for DC loads and maximum current for ambient temperatures, respectively.

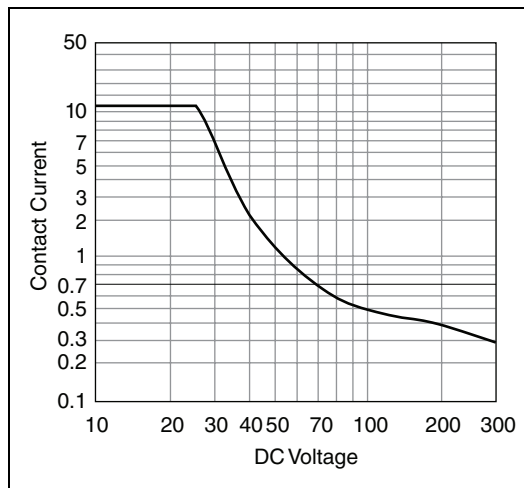


Figure 1. Maximum Switching Power for DC Loads (per channel)

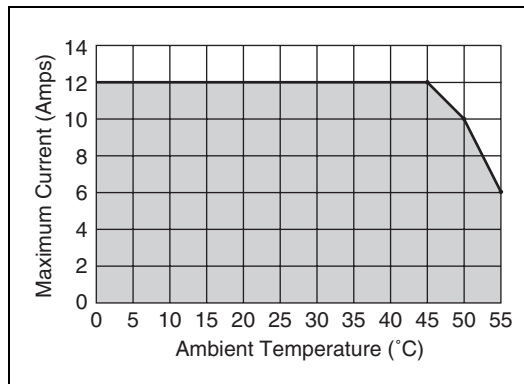


Figure 2. Maximum Current for Ambient Temperatures

DC path resistance

Initial ≤ 50 mΩ
End of life > 100 mΩ

DC path resistance typically remains low for the life of the relay. At the end of relay life, the path resistance rapidly rises above 100 mΩ. Load ratings apply to relays used within the specification before the end of relay life.

Minimum switching capacity 12 V or 100 mA

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 ≥ 90 dB
100 kHz ≥ 70 dB
1 MHz ≥ 50 dB
10 MHz ≥ 30 dB

Module Load Derating



Caution A total power load greater than 400 A² × channels will damage the NI PXI-2586 under certain conditions.

Load derating is dependent on the sum of the current squared of each channel simultaneously carrying a signal. The result must be less than 400 A² × channels. The following formula represents this calculation:

$$\sum_{N=0}^9 I_{\text{channel}}^2 \leq 400 \text{ A}^2 \times \text{channels}$$



Note When operating at ambient temperatures > 45 °C, refer to the derating chart in Figure 2 for the maximum allowed current per channel.

Example 1:

1 channel carries 8 A while
5 channels carry 6 A

$$(1 \times 8^2) + (5 \times 6^2) = 244 \text{ A}^2 \times \text{channels}$$

The module in Example 1 is acceptable since the result of the calculation is less than 400 A² × channels.

Example 2:

5 channels carry 5 A while
4 channels carry 9 A

$$(5 \times 5^2) + (4 \times 9^2) = 449 \text{ A}^2 \times \text{channels}$$

The module in Example 2 is *not* acceptable and will damage the module under certain conditions.

Dynamic Characteristics

Maximum cycle speed 45 cycles/s

Maximum relay operate time 10.4 ms

Expected relay life

Mechanical 1 × 10⁷ cycles
Electrical
30 VDC, 10 ADC resistive 1 × 10⁵ cycles
30 VDC, 12 ADC resistive 3 × 10⁴ cycles

For AC load contact lifetime, refer to Figure 3.

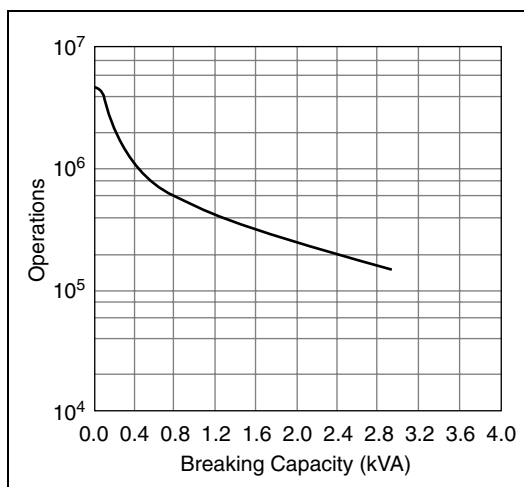


Figure 3. Contact Life for Resistive AC Load (Typical)

Trigger Characteristics

Input trigger

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



Note The NI PXI-2586 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, single-side stable
Relay contact material	Silver-Nickel
I/O connector	20 position, Positronic GMCT series plug
PXI power requirement.....	5 W at 5 V 2.5 W at 3.3 V
Dimensions (L $\times$ W $\times$ H)	3U, one slot, PXI/cPCI module 21.6 $\times$ 2.0 $\times$ 13.0 cm (8.5 $\times$ 0.8 $\times$ 5.1 in.)
Weight.....	400 g (14 oz)

Environment

Operating temperature	0 $^{\circ}$ C to 55 $^{\circ}$ C
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Note Refer to Figure 2 for operating temperatures $>45^{\circ}\text{C}$.

Storage temperature	-20°C to 70 $^{\circ}\text{C}$
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Relative humidity.....	5% to 85%, noncondensing
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Pollution Degree	2
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Approved at altitudes up to 2,000 m.

Indoor use only.

Shock and Vibration

Operational Shock.....	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC-60068-2-27. Test profile developed in accordance with MIL-PRF-28800F.)
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Random Vibration

Operating	5 to 500 Hz, 0.3 g_{rms}
Nonoperating	5 to 500 Hz, 2.4 g_{rms} (Tested in accordance with IEC-60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

Accessories

Visit ni.com for more information about the following accessories.

Table 1. NI Accessories for the NI PXI-2586

Accessory	Part Number
Connector and backshell kit for PXI-258X switches	779168-01



Caution You *must* install mating connectors according to local safety codes and standards and according to the specifications provided by the connector manufacturer. You are responsible for verifying safety compliance of third-party connectors and their usage according to the relevant standard(s), including UL and CSA in North America and IEC and VDE in Europe.

Table 2. Third-Party Accessories for the NI PXI-2586

Accessory	Manufacturer	Part Number
Mating pins to front connector	Positronic	FS116N2
Connector and backshell ¹	Positronic	GMCT20F0E1400JC
Polymide kapton tape	Small Parts, Inc.	HTT-180108-06

¹ The Positronic Connector and backshell require Mating pins to front connector. Mating pins to front connector must be purchased separately.



Note When using third-party accessories with the NI PXI-2586, always observe safety guidelines. For information about how to safely build a third-party connector and backshell, refer to the *NI PXI-2585/2586 Connector and Backshell Kit Installation Guide* located at ni.com/manuals.

Figures 4 and 5 show the NI PXI-2586 power-on state and front panel pinout, respectively.

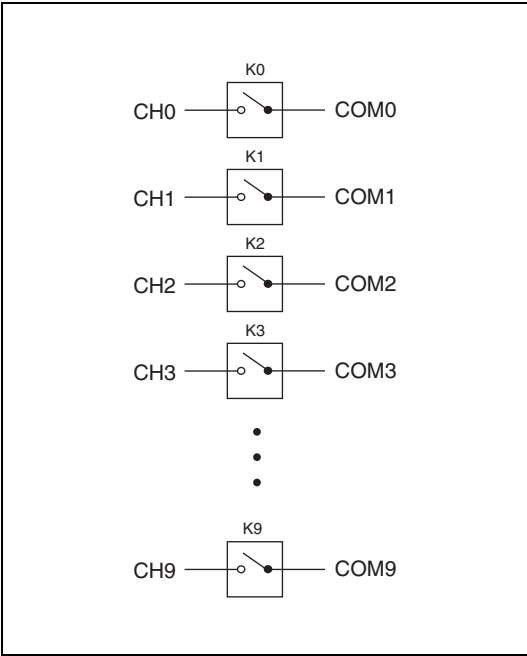


Figure 4. NI PXI-2586 Power-On State

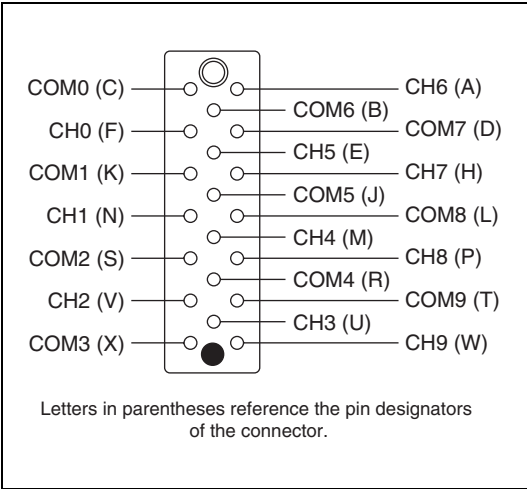


Figure 5. NI PXI-2586 Front Panel Pinout

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 61010-1, CSA 61010-1



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

Electromagnetic Compatibility

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

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A



Note For EMC compliance, operate this device according to product documentation.

CE Compliance

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

- 73/23/EEC; Low-Voltage Directive (safety)
- 89/336/EEC; Electromagnetic Compatibility Directive (EMC)



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

Waste Electrical and Electronic Equipment (WEEE)



EU Customers At the end of their life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit ni.com/environment/weee.htm.

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