

NI PXI-2586 Specifications

10-SPST Relay Module

このドキュメントには、日本語ページも含まれています。

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.

Topologies 10-SPST
5-DPST

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

About These Specifications

Specifications characterize the warranted performance of the instrument under the stated operating conditions.

Typical Specifications are specifications met by the majority of the instrument under the stated operating conditions and are tested at 23 °C. Typical specifications are not warranted.

All voltages are specified in DC, AC_{pk}, or a combination unless otherwise specified.



Caution Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document for important safety and electromagnetic compatibility information. To obtain a copy of this document online, visit ni.com/manuals, and search for the document title.



Caution To ensure the specified EMC performance, operate this product only with shielded cables and accessories.

Input Characteristics

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

Maximum switching voltage 300 V
Channel-to-ground..... 300 V, CAT II



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



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 systems3 kVA (up to 60 Hz)
DC systemsRefer to Figure 1



Note Switching inductive loads (for example, motors and solenoids) can produce high voltage transients in excess of the module's rated voltage. Without additional protection, these transients can interfere with module operation and impact relay life. For more information about transient suppression, visit ni.com/info and enter the Info Code *induct*.

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 current2

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

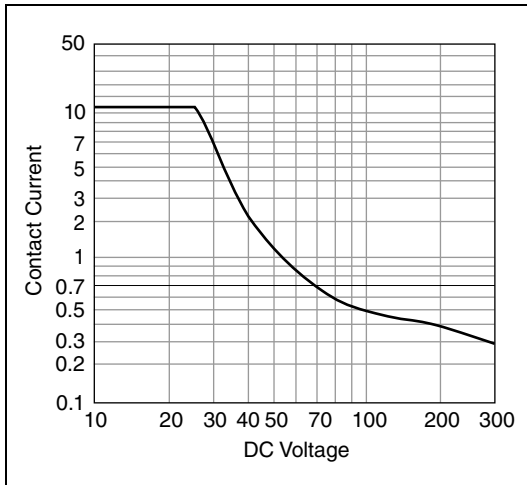


Figure 1. Maximum Switching Power for DC Loads (per channel)

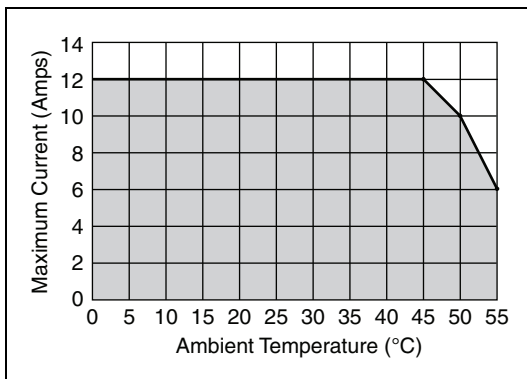


Figure 2. Maximum Current for Ambient Temperatures

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 switch load.....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 $400 \text{ A}^2 \times \text{channels}$ 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 $400 \text{ A}^2 \times \text{channels}$. The following formula represents this calculation:

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



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 $400 \text{ A}^2 \times \text{channels}$.

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 relay operate time 15.4 ms



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

Expected relay life

Mechanical 1×10^7 cycles

Electrical

30 VDC, 10 ADC resistive 1×10^5 cycles

30 VDC, 12 ADC resistive 3×10^4 cycles



Note The relays used in the NI PXI-2586 are field replaceable. Refer to the *NI Switches Help* for information about replacing a failed relay.

For AC load contact lifetime, refer to Figure 3.

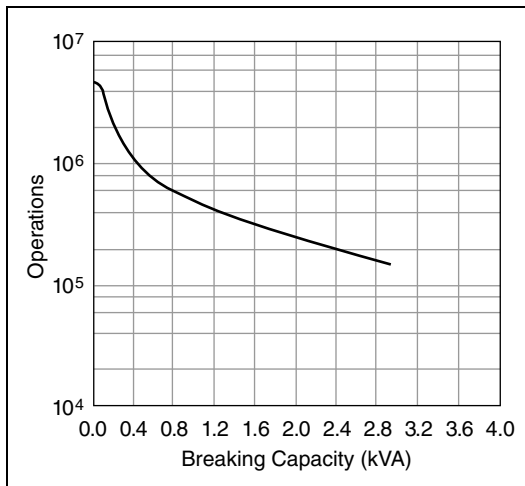


Figure 3. Contact Life for Resistive AC Load (Typical)

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



Note Refer to Figure 2 for operating temperatures >45 $^{\circ}$ C.

Storage temperature –20 $^{\circ}$ C to 70 $^{\circ}$ C

Relative humidity 5% to 85%,
noncondensing

Pollution Degree 2

Maximum altitude 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.)

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.)

Figure 4 shows the NI PXI-2586 power-on state.

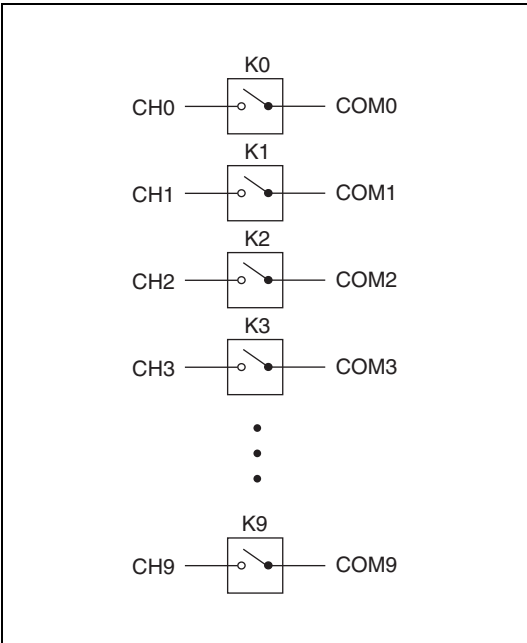


Figure 4. NI PXI-2586 Power-On State

Figure 5 shows the NI PXI-2586 connector pinout.

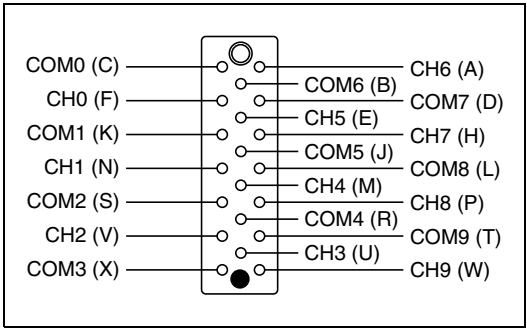


Figure 5. NI PXI-2586 Connector Pinout



Note Letters in parentheses reference the pin designators of the connector.



Note For topology-specific connection information, refer to your device in the *NI Switches Help*.

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 for PXI-258X switches	779168-01
GMCT20 to GMCT20 switch cable	781256-01
GMCT20 to bare wire switch cable	781257-01



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†	Positronic	GMCT20F0E100JC
Polyimide kapton tape	Small Parts, Inc.	HTT-180108-36
* Additional cover or enclosure required. See the previous safety caution.		
† 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.

Compliance and Certifications

Safety

This product meets 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 the *Online Product Certification* section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- AS/NZS CISPR 11: Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions



Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia and New Zealand (per CISPR 11) Class A equipment is intended for use only in heavy-industrial locations.



Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generates radio frequency energy for the treatment of material or inspection/analysis purposes.



Note For EMC declarations and certifications, refer to the *Online Product Certification* section.

CE Compliance

This product meets the essential requirements of applicable European Directives as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

To obtain product certifications and the Declaration of Conformity (DoC) for this product, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *NI and the Environment* Web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)



EU Customers At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste Electrical and Electronic Equipment, visit ni.com/environment/weee.

电子信息产品污染控制管理办法（中国 RoHS）



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