

# NI PXI-2566 Specifications

## 16-Channel SPDT Relay Module

This document lists specifications for the NI PXI-2566 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 ..... 16-channel SPDT, nonlatching

## Input Characteristics

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Maximum switching voltage

Channel-to-channel ..... 150 VDC, 125 VAC

Channel-to-ground ..... 150 VDC, 125 VAC, CAT I



**Caution** This module is rated for Measurement Category I and intended to carry signal voltages no greater than 150 V. This module can withstand up to 800 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 *NI Switches Getting Started Guide* 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, not to exceed 2 A per channel)

Maximum switching current ..... 2 ADC, 2 AAC  
(per channel)

Simultaneous channels at maximum  
switching current ( $\leq 25$  °C) ..... 16

Maximum carry current ..... 5 ADC, 5 AAC  
(per channel)

Simultaneous channels at maximum  
carry current ( $\leq 25$  °C) ..... 9

## Module Load Derating at >25 °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:

5 channels carry 4 A while  
10 channels carry 2 A

$$(5 \times 4^2) + (10 \times 2^2) = 120 \text{ A}$$

Example 1 can be used at ambient temperatures between 0 °C and 50 °C.

Example 2:

6 channels carry 5 A while  
10 channels carry 2 A

$$(6 \times 5^2) + (10 \times 2^2) = 190 \text{ A}$$

Example 2 can be used at ambient temperatures between 0 °C and 41 °C.

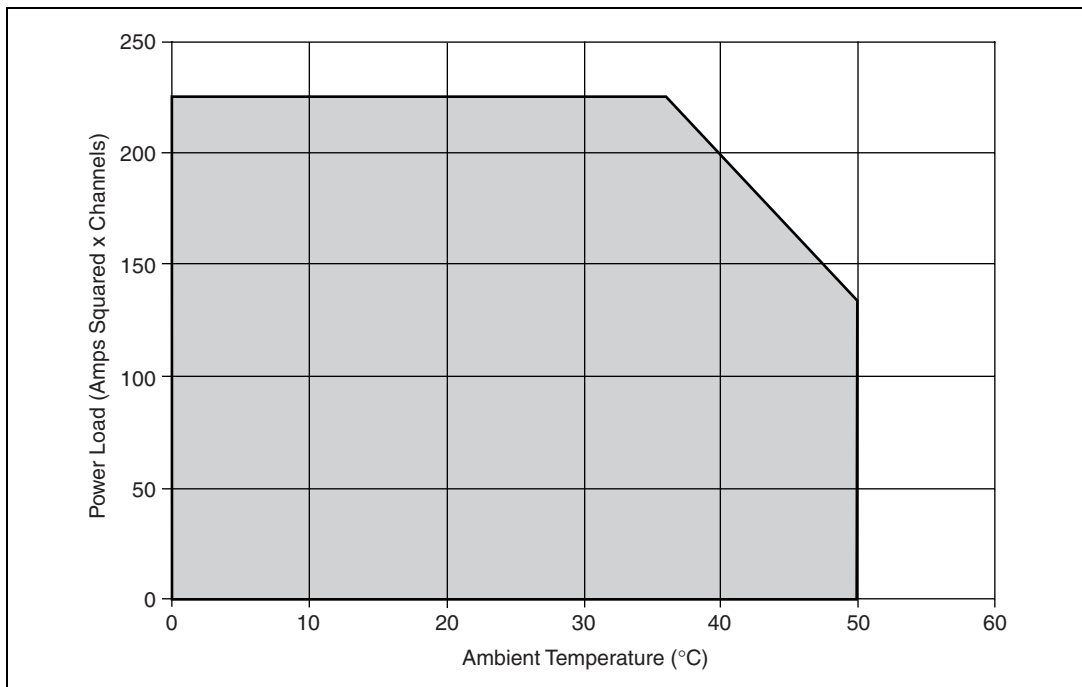


Figure 1. Module Load Derating

DC path resistance

Initial .....  $<0.1 \Omega$

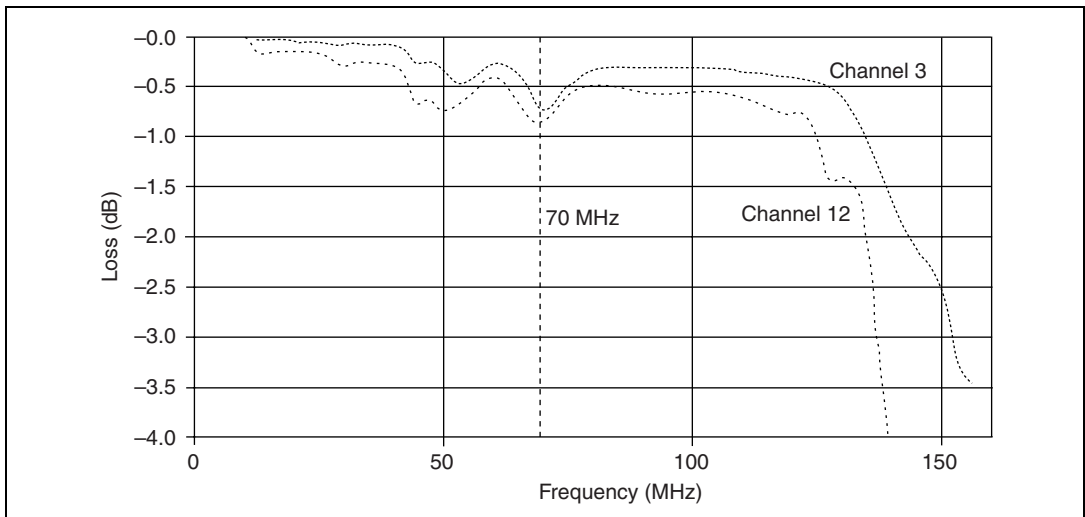
End of life .....  $\geq 1.0 \Omega$

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 .....  $<9 \mu\text{V}$  (typical at  $23^\circ\text{C}$ )

Minimum switching capacity .....  $10 \mu\text{A}$  at  $10 \text{ mV DC}$

Bandwidth ( $-3 \text{ dB}$ ) .....  $\geq 70 \text{ MHz}$



**Figure 2.** Insertion Loss Measured in a  $50 \Omega$  System (Worst Case, Based on 30 Engineering DUTs)

Crosstalk (typical at 23 °C)

Channel-to-channel

10 kHz .....	≤-75 dB
100 kHz .....	≤-65 dB
1 MHz.....	≤-45 dB
10 MHz.....	≤-25 dB

Isolation (typical at 23 °C)

Open channel

100 kHz .....	≥65 dB
1 MHz.....	≥45 dB
10 MHz.....	≥25 dB

## Dynamic Characteristics

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Maximum cycle speed .....115 cycles/s

Relay operate time

Typical.....	2 ms
Maximum .....	4.4 ms

Expected relay life

Mechanical .....100,000,000 cycles

Electrical

30 VDC, 1 ADC resistive.....	500,000 cycles
30 VDC, 2 ADC resistive.....	100,000 cycles
125 VAC, 0.2 AAC resistive....	300,000 cycles
125 VAC, 0.5 AAC resistive....	100,000 cycles

# Trigger Characteristics

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## Input trigger

Sources ..... PXI trigger lines 0–7,  
Front panel

Minimum pulse width ..... 150 ns

## Front panel/terminal block input voltage

Minimum ..... –0.5 V

VL maximum ..... +0.7 V

VH minimum ..... +2.0 V

Nominal ..... +3.3 V

Maximum ..... +5.5 V

## Output trigger

Destinations ..... PXI trigger lines 0–7,  
Front panel

Pulse width ..... Programmable (1  $\mu$ s to 62  $\mu$ s)

Front panel nominal voltage ..... 3.3 V TTL, 8 mA

# Physical Characteristics

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Relay type ..... Electromechanical, nonlatching

Relay contact material ..... Gold-clad silver alloy

I/O connectors ..... Two 62-pin D-SUB connectors

PXI power requirement ..... 4.5 W at 5 V  
2.5 W at 3.3 V

Dimensions (W  $\times$  H  $\times$  D) ..... 2.0 cm  $\times$  10.0 cm  $\times$  16.3 cm  
(0.8 in.  $\times$  3.9 in.  $\times$  6.4 in.)

Weight ..... 250 g  
(9 oz)

## Environment

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  
Indoor use only

## Accessories

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

**Table 1.** Accessories Available for the NI PXI-2566

Accessory	Part Number
NI TB-2666 terminal block	778717-66
Backshell and connector kit	778720-01



**Note** The module and accessory kit connectors are keyed and have pins removed for safety isolation.



**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.

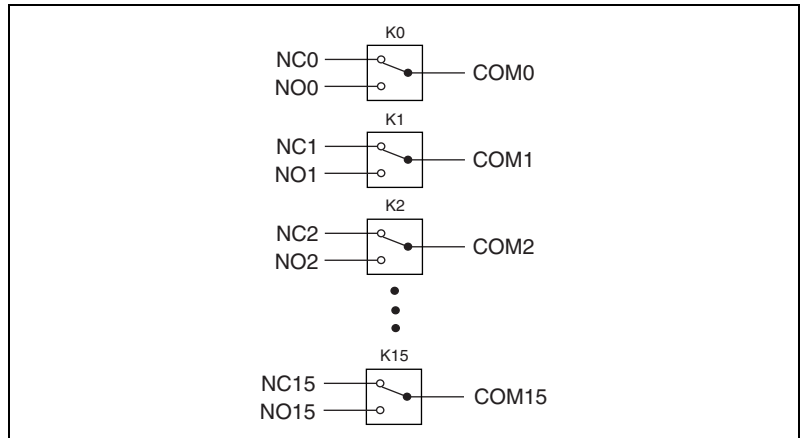
**Table 2.** Third-Party Accessory for the NI PXI-2566

Accessory	Manufacturer
62-pin D-SUB connector	Any

# Glossary

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- channel a single-pole, double-throw (SPDT) (form C) relay. Each channel has three terminals—common (COM), normally closed (NC), normally open (NO).
- cycle actuate an SPDT relay twice, leaving it in its original state.
- operate actuate an SPDT relay once, leaving it in the opposite state.



**Figure 3.** NI PXI-2566 Power-On State

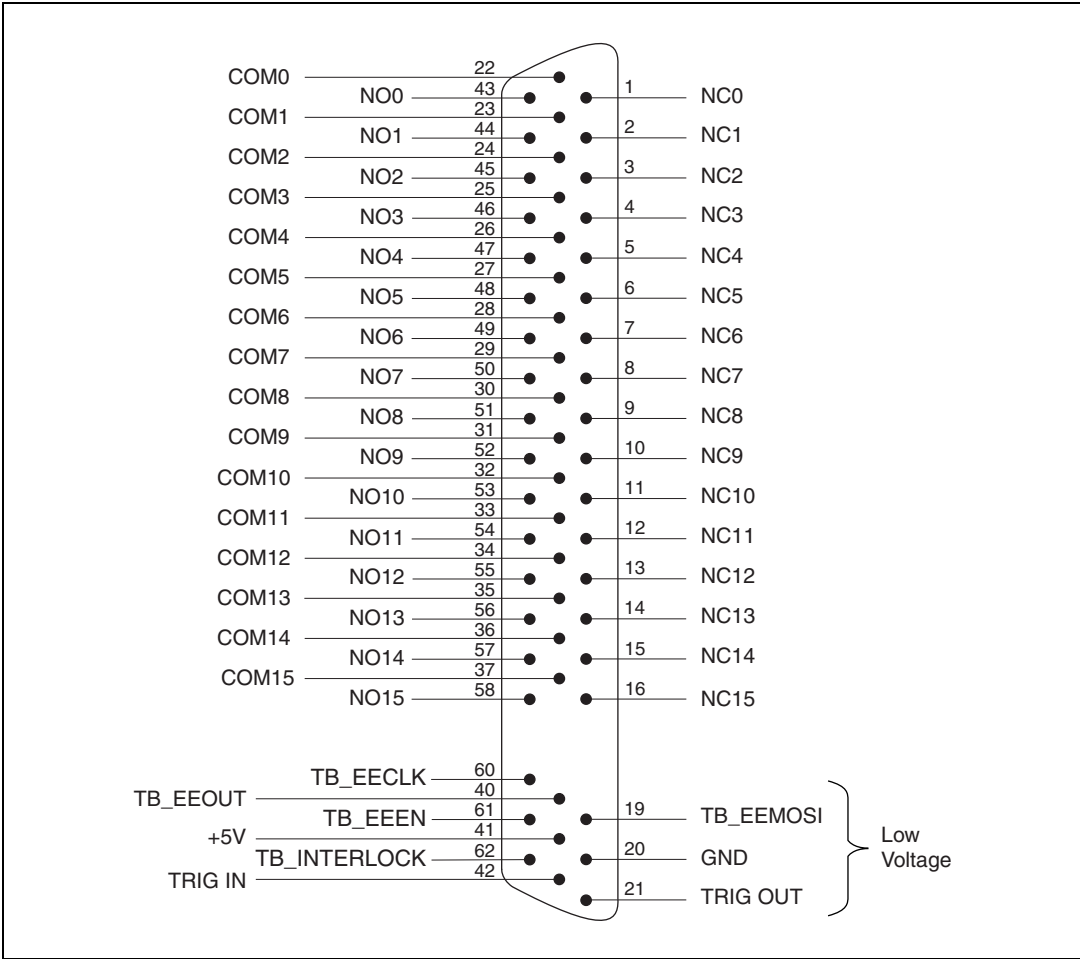


Figure 4. NI PXI-2566 Front Connector

# Compliance and Certifications

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## Safety

This product meets the requirements of the following standards for safety and 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](http://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](http://ni.com/hardref.nsf), search by model number or product line, and click the appropriate link in the Certification column.

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