

# Specifications for the NI PXI-2566

## 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, non-latching

## Input Characteristics

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Maximum switching voltage

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

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 (e.g., 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 current ..... 2 ADC, 2 AAC  
(per channel)

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

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

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

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## 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 in 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.

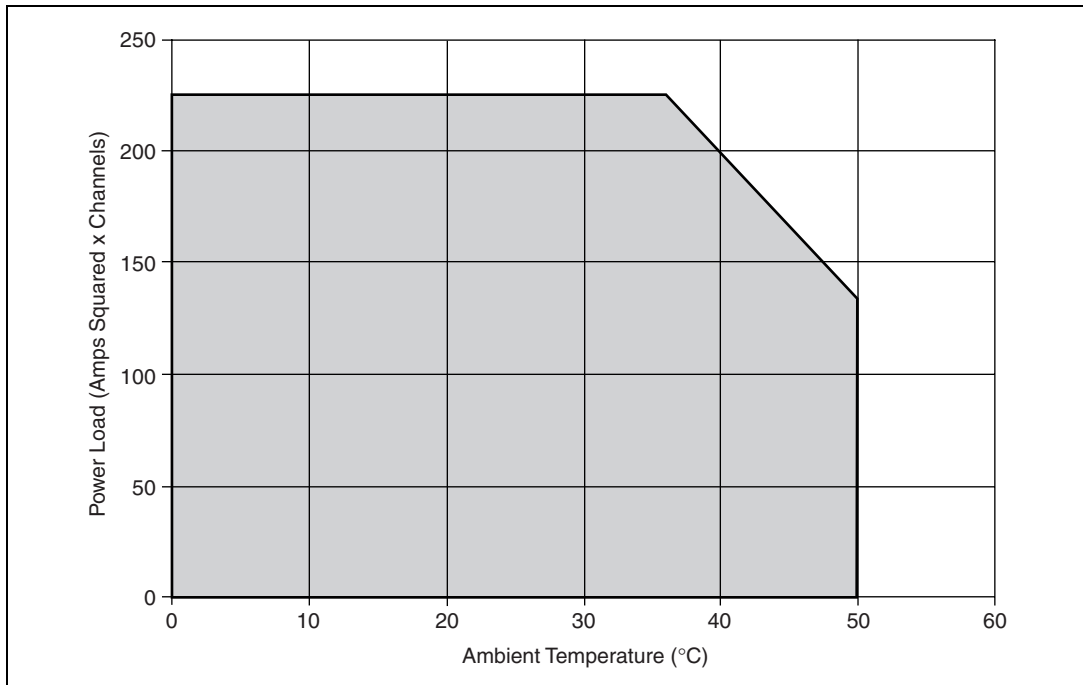


Figure 1. Module Load Derating

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

DC path resistance

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

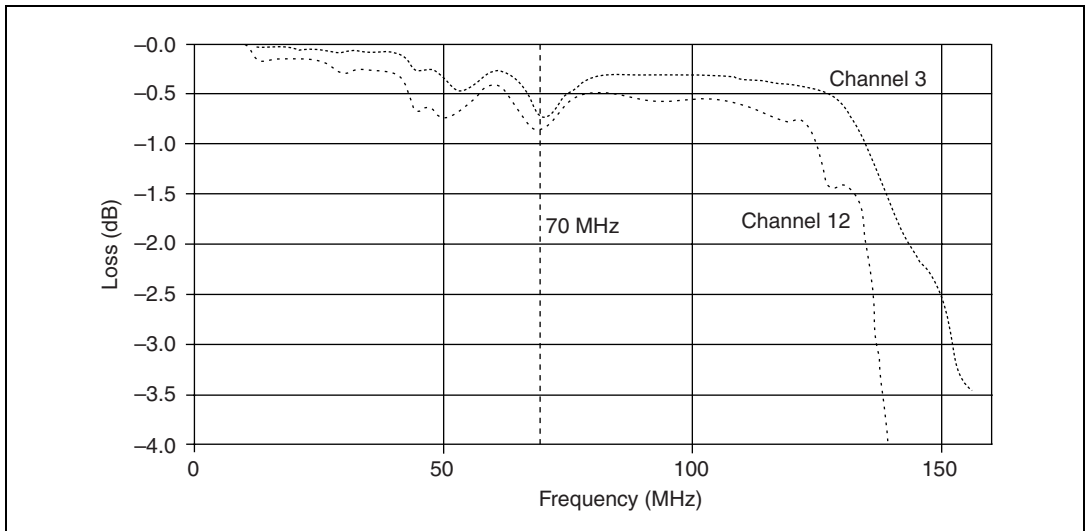
End of life .....  $\geq 1.0 \Omega$

DC path resistance typically remains low for the life of the relay. At the end of relay life, the path resistance rises rapidly 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, non-latching

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

I/O connectors ..... Two 62-pin DSUBs

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

Dimensions (W  $\times$  H  $\times$  D) ..... 3 cm  $\times$  10 cm  $\times$  16 cm  
(0.8 in.  $\times$  3.9 in.  $\times$  6.3 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

## 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 front connector is keyed and has pins removed for safety isolation.

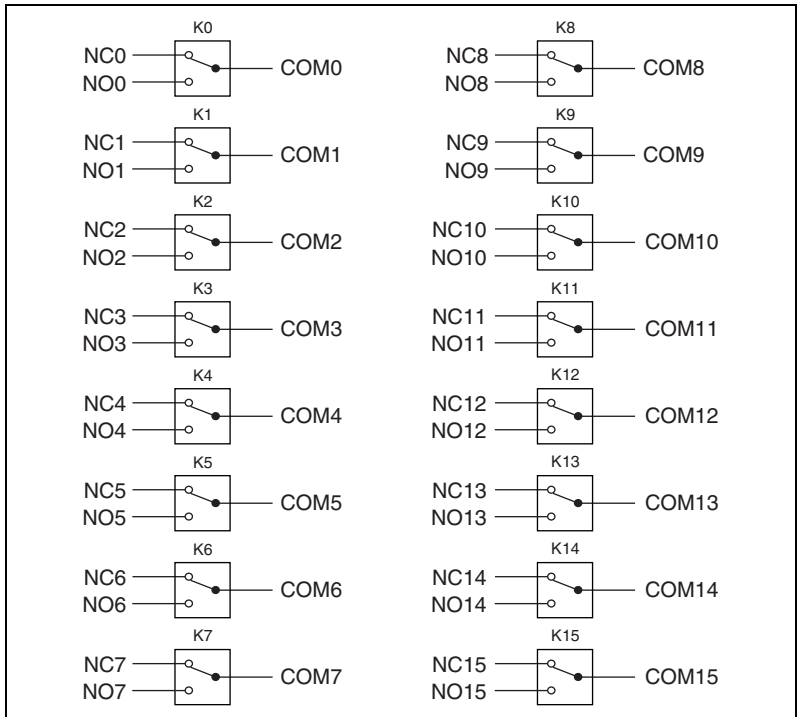
## Glossary

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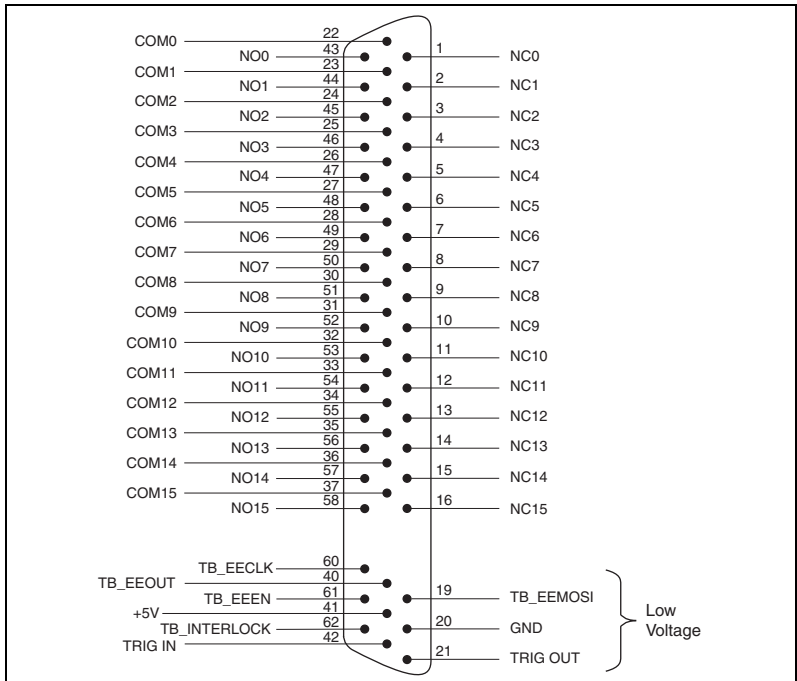
channel                    a single SPDT (form C) relay. Each channel has three terminals—common (COM), normally closed (NC), normally open (NO).

cycle                      actuate a SPDT relay twice, leaving it in its original state

operate                    actuate a 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 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 to [ni.com](http://ni.com).

## 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, click **Declarations of Conformity Information** at [ni.com/hardref.nsf/](http://ni.com/hardref.nsf/).



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