NI PXI-2799 Specifications

40 GHz Dual SPDT 50 Ω Relay Module

This document lists specifications for the NI PXI-2799 relay module. All specifications are subject to change without notice. Visit `ni.com/manuals` for the most current specifications.

Topology 2-SPDT

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

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

Caution Device relays might change state momentarily during electrostatic discharge.

Caution Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document at `ni.com/manuals` for important safety and compliance 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.

Input Characteristics

Maximum voltage ..... 30 V_{rms}
(cold switching only)

Caution Active RF signals must not be switched. As a relay actuates, the channel is momentarily unterminated. Some RF sources can be damaged by reflections if their outputs are not properly terminated. Refer to your RF source documentation for more information.

Maximum carry current ..... 0.6 A_{rms}
(per channel)

Maximum RF carry power ..... 18 W
(50 Ω load)

NATIONAL INSTRUMENTS

Caution The switching power is limited by the maximum switching current and the maximum voltage. Channel to common switching power must not exceed 18 W.

RF Performance Characteristics

Characteristic impedance (Z_0) .....50 Ω nominal

Insertion loss

- ≤6 GHz .....<0.3 dB
- ≤12.4 GHz .....<0.4 dB
- ≤18 GHz .....<0.5 dB
- ≤26.5 GHz .....<0.7 dB
- ≤40 GHz .....<0.8 dB

Voltage standing wave ratio (VSWR)

- ≤6 GHz .....<1.30
- ≤12.4 GHz .....<1.40
- ≤18 GHz .....<1.50
- ≤26.5 GHz .....<1.70
- ≤40 GHz .....<1.90

Open channel isolation

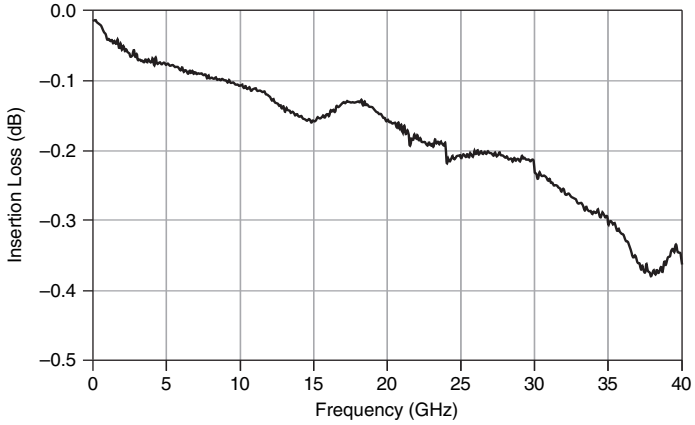
- ≤6 GHz .....>70 dB
- ≤12.4 GHz .....>60 dB
- ≤18 GHz .....>60 dB
- ≤26.5 GHz .....>55 dB
- ≤40 GHz .....>50 dB

RF carry power

- ≤26.5 GHz .....18 W
- ≤40 GHz .....10 W

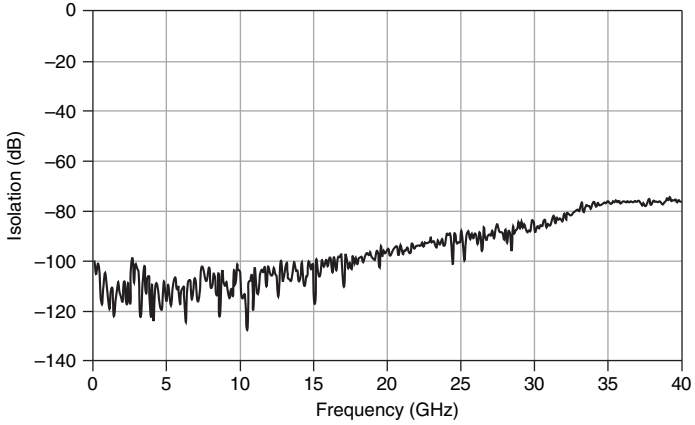
Refer to the following figure for the typical insertion loss of the NI PXI-2799.

Figure 1. Typical Insertion Loss and Isolation



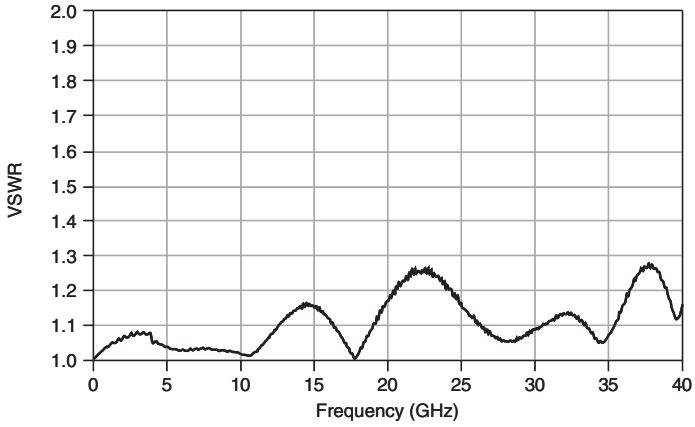
Refer to the following figure for the typical isolation of the NI PXI-2799.

Figure 2. Typical Isolation



Refer to the following figure for the typical VSWR of the NI PXI-2799.

Figure 3. Typical VSWR



Dynamic Characteristics

Relay operate/release time ..... 10 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

Trigger Characteristics

Input trigger

Sources ..... PXI trigger lines 0-7

Minimum pulse width ..... 150 ns

Note The NI PXI-2799 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 µs to 62 µs)

Physical Characteristics

Relay manufacturer/PN	Radiall/R571 series
Relay type	Electromechanical, latching
Contact material	Beryllium copper, gold-plated
I/O connector	6 SMA 2.9 jacks
SMA Torque	0.8 N · m to 1.1 N · m (7 in. · lbs to 10 in. · lbs)
PXI power requirement	2.5 W at 3.3 V, 1 W at 5 V, 6 W at 12 V
Dimensions (L × W × H)	3U, one slot, PXI/cPCI module, 21.6 × 2.0 × 13.0 cm (8.5 × 0.8 × 5.1 in.)
Weight	229 g (8.125 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
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.)

Diagrams

Figure 4 shows the NI PXI-2799 power-on state.

Figure 4. NI PXI-2799 Power-On State

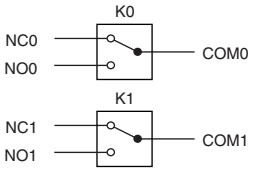
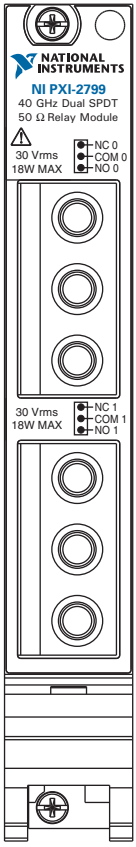


Figure 5 shows the NI PXI-2799 front panel.

Figure 5. NI PXI-2799 Front Panel



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

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 CE

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 *Minimize Our Environmental Impact* 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）

中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 `ni.com/environment/rohs_china`。 (For information about China RoHS compliance, go to `ni.com/environment/rohs_china`.)

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