DEVICE SPECIFICATIONS

NI PXI-2596

26.5 GHz Dual 6 × 1 50 Ω Multiplexer

This document lists specifications for the NI PXI-2596 (PXI-2596) relay module. All specifications are subject to change without notice. Visit *ni.com/manuals* for the most current specifications.

Contents

About These Specifications

Specifications characterize the warranted performance of the instrument under the stated operating conditions. Data in this document are *Specifications* unless otherwise noted.

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

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

Topology	Dual 6 × 1 multiplexer

Refer to the *NI Switches Help* at *ni.com/manuals* for detailed topology information.

Caution The protection provided by the PXI-2596 can be impaired if it is used in a manner not described in this document.

Input Characteristics

Hazardous Voltage This icon denotes a warning advising you to take precautions to avoid electrical shock.

Maximum voltage (cold-switching only)	90 Vrms, CAT I

Caution This module is rated for Measurement Category I and intended to carry signal voltages no greater than 100 V. This module can withstand up to 500 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.[1]

Caution When hazardous voltages (>42.4 V_{pk}/60 VDC) are present on any channel, safety low-voltage (≤42.4 V_{pk}/60 VDC) cannot be connected to any other channel.

Note NI recommends against switching active RF signals. 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.

Note National Instruments recommends against switching RF signals below -35 dBm with this device.

Maximum carry current (per channel)	1.73 A_{rms}
Maximum RF carry power (50 Ω load)	150 W
Minimum switch load	-35 dBm

RF Performance Characteristics

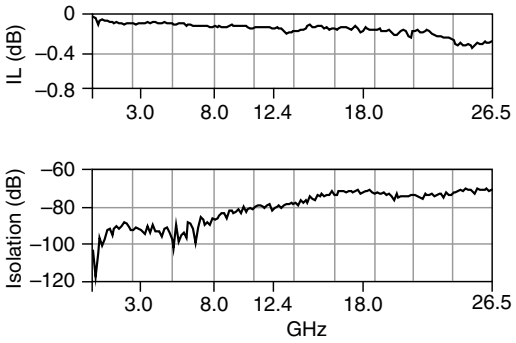
Characteristic impedance (Z_0)	50 Ω, nominal
Insertion loss	
≤3 GHz	<0.2 dB
≤8 GHz	<0.3 dB
≤12.4 GHz	<0.4 dB
≤18 GHz	<0.5 dB
≤26.5 GHz	<0.6 dB

[1] Measurement Categories CAT I and CAT O are equivalent. These test and measurement circuits are not intended for direct connection to the MAINS building installations of Measurement Categories CAT II, CAT III, or CAT IV.

Voltage standing wave ratio (VSWR)	
≤3 GHz	<1.2
≤8 GHz	<1.3
≤12.4 GHz	<1.4
≤18 GHz	<1.5
≤26.5 GHz	<1.6
Open channel isolation	
≤3 GHz	>80 dB
≤8 GHz	>70 dB
≤12.4 GHz	>60 dB
≤18 GHz	>60 dB
≤26.5 GHz	>55 dB
RF carry power	
≤3 GHz	150 W
≤8 GHz	95 W
≤12.4 GHz	75 W
≤18 GHz	65 W
≤26.5 GHz	25 W

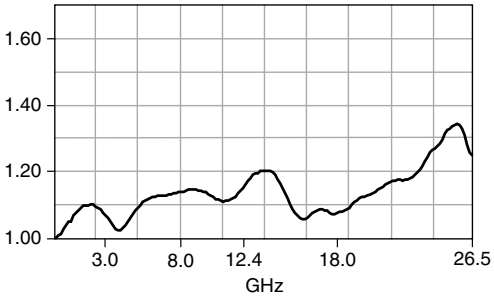
Refer to the following figure for the typical insertion loss and isolation of the PXI-2596.

Figure 1. Insertion Loss and Isolation, Typical



Refer to the following figure for the typical VSWR of the PXI-2596.

Figure 2. VSWR, Typical



Dynamic Characteristics

Relay operate/release time	10 ms

Note Certain applications may require additional time for proper settling. Refer to the *NI Switches Help* at *ni.com/manuals* for more information about including additional settling time.

Recommended cycle speed	5 channels/s
Expected mechanical relay life	1×10^7 cycles
Insertion loss repeatability	<0.03 dB, typical

Trigger Characteristics

Input trigger	
Sources	PXI trigger lines <0...7>
Minimum pulse width	150 ns

Note The PXI-2596 can recognize trigger pulse widths less than 150 ns if you disable digital filtering. Refer to the *NI Switches Help* at *ni.com/manuals* for information about disabling digital filtering.

Output trigger	
Destinations	PXI trigger lines <0...7>
Pulse width	Programmable (1 µs to 62 µs)

Physical Characteristics

Relay manufacturer/PN	Radiall/R591 series
Relay type	Electromechanical, non-latching

Contact material	Beryllium copper, gold-plated
I/O connector	14 SMA 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, two slot, PXI/cPCI module, 21.6 cm × 4.1 cm × 13.0 cm (8.5 in. × 1.6 in. × 5.1 in.)
Weight	391 g (13.8 oz)

Caution Clean the hardware with a soft, nonmetallic brush. Make sure that the hardware is completely dry and free from contaminants before returning it to service.

Environment

Maximum altitude	2,000 m (at 25 °C ambient temperature)
Pollution Degree	2

Indoor use only.

Operating Environment

Ambient temperature range	0 °C to 55 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2.)
Relative humidity range	10% to 90%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Storage Environment

Ambient temperature range	-40 °C to 70 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2.)
Relative humidity range	5% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)

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 Hz to 500 Hz, 0.31 g_{rms} (Tested in accordance with IEC 60068-2-64.)
Nonoperating	5 Hz to 500 Hz, 2.46 g_{rms} (Tested in accordance with IEC 60068-2-64. Test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

Compliance and Certifications

Safety

This product is designed to meet the requirements of the following electrical equipment safety standards 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 generate 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:

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and 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.

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 NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit *ni.com/environment/weee*.

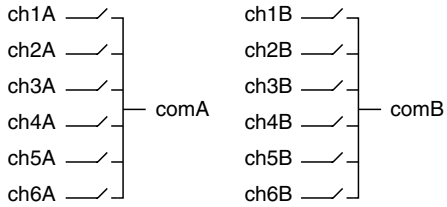
电子信息产品污染控制管理办法（中国 RoHS）

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`.)

Diagrams

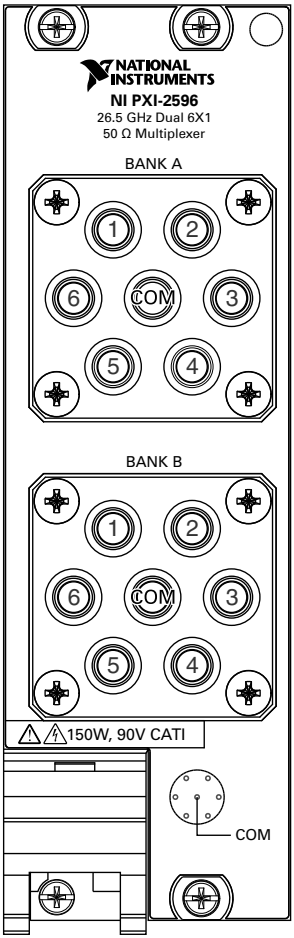
Refer to the following figure for the power-on state diagram of the PXI-2596.

Figure 3. PXI-2596 Power-On State



Refer to the following figure for the front panel connectors of the PXI-2596.

Figure 4. PXI-2596 Front Panel



Note For topology-specific connection information, refer to your device in the *NI Switches Help* at *ni.com/manuals* and the installation instructions for any associated cables or terminal blocks.

Accessories

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

Table 1. NI Accessories for the PXI-2596

Accessory	Part Number
SMA 100, SMA male to SMA male flexible cable, 0.15 m	763443-01
SMA 100, SMA male to SMA male flexible cable, 0.45 m	763444-01
Torque wrench for SMA connectors (1 N · m)	187106-01