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Find the *National Instruments PXIe-2746* at our website: *Click HERE*

DEVICE SPECIFICATIONS

# NI PXIe-2746

## 2.7 GHz Quad 4 × 1 50 Ω Multiplexer (SP4T)

This document lists specifications for the NI PXIe-2746 (NI 2746) multiplexer module. All specifications are subject to change without notice. Visit *ni.com/manuals* for the most current specifications.

Topology.....Quad 4 × 1 multiplexer

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## 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 ambient temperature. Typical specifications are not warranted.

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

**Caution** The protection provided by the NI 2746 can be impaired if it is used in a manner not described in this document.


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# Input Characteristics

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

Maximum switching voltage.....30 V

Maximum switching current.....0.5 A
(per channel)

Maximum carry current.....0.5 A
(per channel)

Maximum RF power.....10 W

**Caution** The switching power is limited by the maximum switching current and the maximum voltage. Channel-to-common switching power must not exceed 10 W.

**Note** National Instruments 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** Switching active RF signals below 0 dBm may degrade signal integrity and decrease relay life. For more information about switching active RF signals, visit *ni.com/info* and enter Info Code `RFSwitching`.

Typical DC path resistance

Initial.....<1 Ω

End-of-life.....≥2 Ω

Path resistance is a combination of relay contact resistance and trace resistance. Contact resistance typically remains low for the life of a relay. At the end of relay life, the contact resistance rises rapidly above 1.0 Ω.



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# RF Performance Characteristics

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

Insertion loss

≤1 GHz.....1.5 dB

≤2.7 GHz.....2.5 dB

Voltage standing wave ratio (VSWR)

≤1 GHz.....1.6

≤2.7 GHz.....1.8

Typical isolation

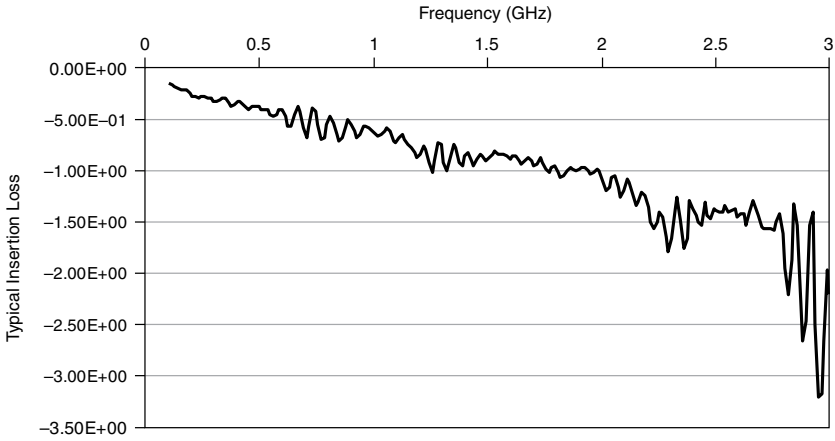
≤1 GHz.....>60 dB

≤2.7 GHz.....>40 dB

Typical channel-to-channel skew.....<160 ps

Refer to the following figures for typical insertion loss, typical VSWR, and typical isolation, respectively.

**Figure 1.** Typical Insertion Loss






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**Figure 2.** Typical VSWR

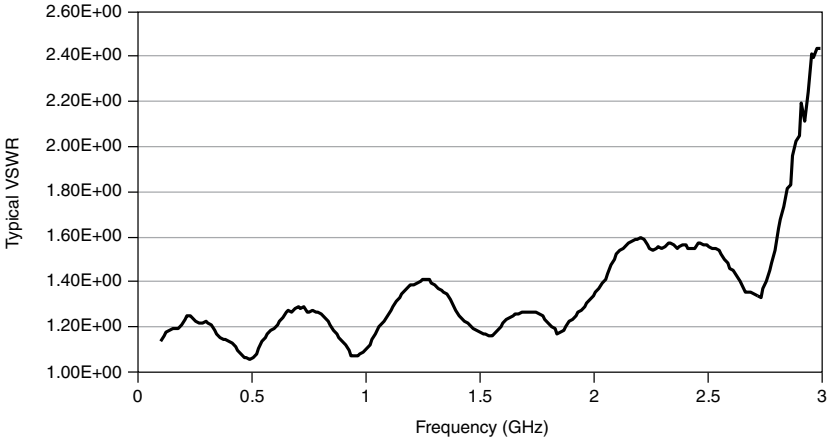
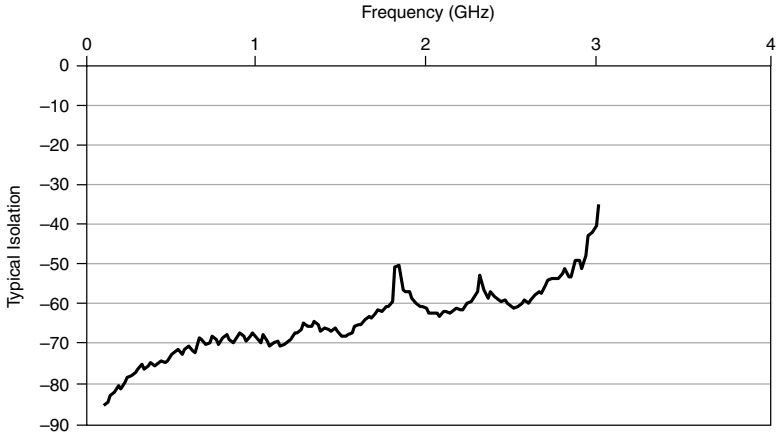



**Figure 3.** Typical Isolation




# Dynamic Characteristics

Maximum relay operate 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.

Expected mechanical relay life.....$1 \times 10^7$ cycles



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# Physical Characteristics

| | |
|---|---|
| Relay type | Electromechanical, latching |
| I/O connectors | 20 MCX jacks, gold plated |
| PXI Express power requirement | 3.96 W at 3.3 V, 0.2 W at 12 V |
| Dimensions (L × W × H) | 3U, one slot, PXI/cPCI module<br>21.6 cm × 2.0 cm × 13.0 cm<br>(8.5 in. × 0.8 in. × 5.1 in.) |
| Weight | 372 g (11.45 oz) |

# Environment

| | |
|---|---|
| Operating temperature | 0 °C to 55 °C |
| Storage temperature | -40 °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 Hz to 500 Hz, 0.3 $g_{rms}$ |
| Nonoperating | 5 Hz 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.) |

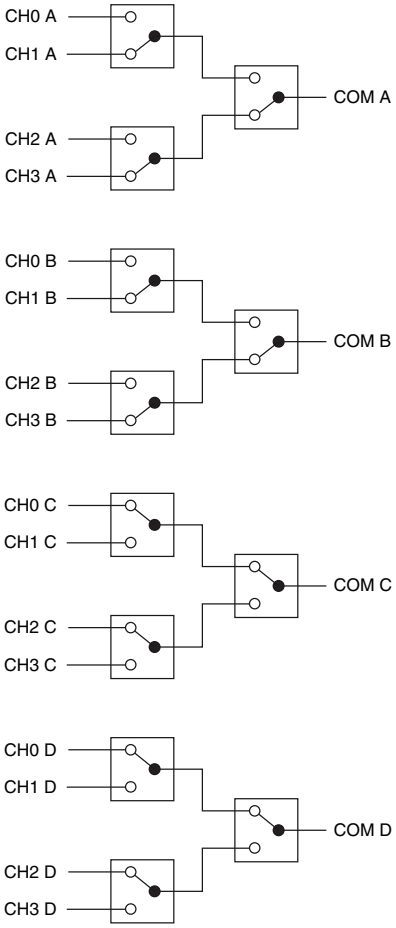
# Diagrams

The following figure shows the NI PXIe-2746 power-on state.



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**Figure 4.** NI PXIe-2746 Power-On State

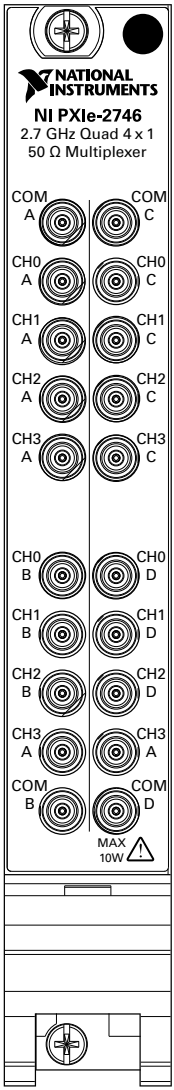



The following figure shows the NI PXIe-2746 front panel connector.



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**Figure 5.** NI PXIe-2746 Front Panel




# Accessories

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



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**Table 1.** NI Accessories for the NI PXIe-2746

| Accessory | Length | Part Number |
|---|---|---|
| MCX-MCX cable | 0.3 m | 188374-0R3 |
| MCX-MCX cable | 1.0 m | 188374-01 |
| MCX-BNC cable | 0.3 m | 188375-0R3 |
| MCX-BNC cable | 1.0 m | 188375-01 |
| MCX-SMB cable | 0.3 m | 188376-0R3 |
| MCX-SMB cable | 1.0 m | 188376-01 |
| MCX-SMA cable | 0.3 m | 188377-0R3 |
| MCX-SMA cable | 1.0 m | 188377-01 |

# 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
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- AS/NZS CISPR 22: 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,



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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, certifications, and additional information, 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*.

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376207A-01 Jun15

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