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Find the *National Instruments PXI-2544* at our website: *Click HERE*

DEVICE SPECIFICATIONS

NI PXI/PXIe-2544

8 × 1 Terminated Multiplexer

This document lists specifications for the NI PXI/PXIe-2544 (NI 2544) multiplexer module. All specifications are subject to change without notice. Visit *ni.com/manuals* for the most current specifications.

Topology	8 × 1 multiplexers

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About These Specifications

Specifications characterize the warranted performance of the instrument under the following operating conditions:

- Chassis is powered on
- Calibration adjustment cycle maintained
- 50 Ω termination connected to unused I/O front panel connectors

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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.

Nominal values (or supplemental information) describe additional information about the product that may be useful, including expected performance that is not covered under *Typical Specifications*. Nominal values are not covered by warranty.

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

Clean devices and terminal blocks by brushing off light dust with a soft, nonmetallic brush. Remove other contaminants with a soft, lint-free, dampened cloth. Do not use detergent or chemical solvents. The unit must be completely dry and free from contaminants before returning to service.

Input Characteristics

Minimum input frequency	10 MHz
Characteristic impedance (Z_0)	50 Ω nominal
Coupling	AC
Maximum safe DC input voltage	±8V

Maximum Safe Continuous RF Power

Chassis power ON	+30 dBm
Chassis power OFF	+20 dBm

RF Performance Characteristics

Values in parentheses are typical.

Insertion loss	
≤2.4 GHz	<4.5 dB (<3.2 dB)
≤6 GHz	<6.3 dB (<5.2 dB)
≤6.6 GHz	<7.2 dB (<6.0 dB)
Insertion loss thermal coefficient	α = 3,402 ppm/°C

Use the following equation to calculate the insertion loss at a given temperature:

$$IL_T = IL_{T_0}(1 + \alpha(T - T_0))$$

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where	IL is insertion loss in dB
	T is the temperature at which the property is being measured in °C
	T_0 is the reference temperature in °C
	α represents insertion loss temperature coefficient in ppm/°C

Table 1. NI 2544 Flatness (Typical)

Frequency	Flatness / 200 MHz	Flatness / 1 GHz
10 MHz to 5 GHz	<0.30 dB	<0.8 dB
5 GHz to 6 GHz	<0.32 dB	<1.0 dB
6 GHz to 6.6 GHz	<0.47 dB	<1.3 dB

Voltage standing wave ratio (VSWR)	
10 MHz ≤ x ≤3.5 GHz	<1.9 (<1.5)
3.5 GHz < x ≤6 GHz	<1.9 (<1.4)
6 GHz < x ≤6.6 GHz	<2.2 (<1.6)
CH-COM isolation	
≤2.4 GHz	>77 dB (>95 dB)
≤6 GHz	>65 dB (>77 dB)
≤6.6 GHz	>61 dB (>72 dB)
CH-CH isolation	
≤2.4 GHz	>77 dB (>95 dB)
≤6 GHz	>62 dB (>82 dB)
≤6.6 GHz	>56 dB (>76 dB)
Typical channel-to-channel skew	<10 ps
Typical propagation delay	1100 ps
Input 1 dB compression	
Minimum	>27 dBm
Typical	>32 dBm

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

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Figure 1. Typical Insertion Loss

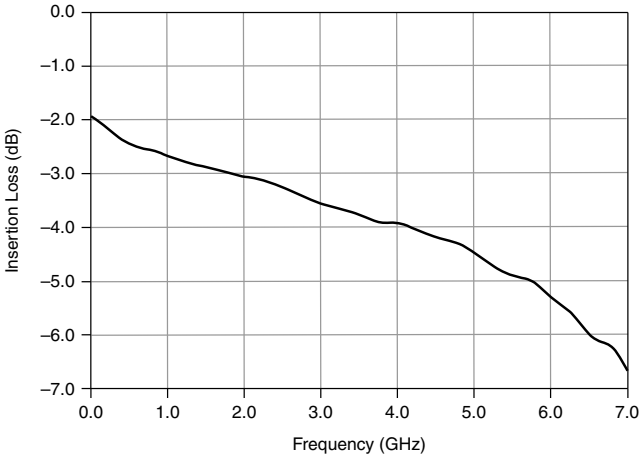
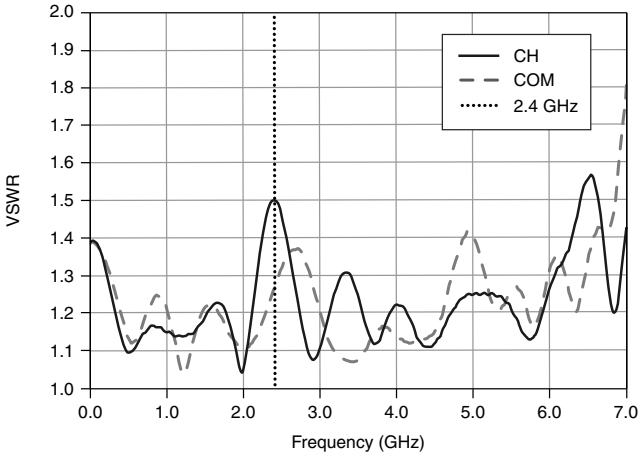
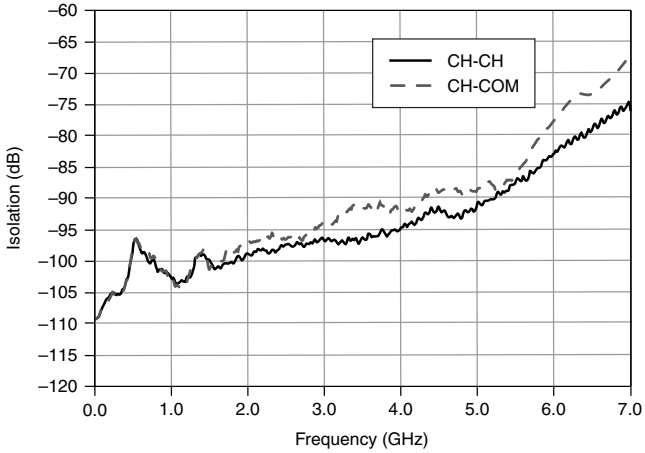


Figure 2. Typical VSWR



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Figure 3. Typical Isolation



Linearity

Second-order harmonic distortion (Input IP2 (IIP2))

Typical IP2 (input)	>+91 dBm

Note Measurements are performed with single CW tones, ranging from -26 dBm to +10 dBm at the RF input. This specification is based on both experimental and calculated data.

Third-order intermodulation distortion (Input IP3 (IIP3))

Typical IP3 (input)	>+56 dBm

Note Measurements performed with two 10 dBm input tones = 1 MHz apart. This specification is based on both experimental and calculated data.

Dynamic Characteristics

Maximum switch operate time	122 µs

Note Switch operate time is defined as the time from TRIG IN falling to 10% to when the output reaches 90% of final value.

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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.

Trigger Characteristics

Input trigger	
Sources	PXI trigger lines 0 –7, front panel
Minimum pulse width	150 ns

Note The NI 2544 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.

Front panel input voltage	
Minimum	-0.5 V
V_L maximum	+0.7 V
V_H 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 µs to 62 µs)
Front panel nominal voltage	3.3 V TTL, 8 mA

Physical Characteristics

Switch type	FET
Front panel connectors	
I/O	9 SMA jacks, female
Triggers	2 SMB jacks, female
Power requirement	
PXI	
5 V	0.1 W
3.3 V	0.6 W

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PXI Express	
12 V	0.6 W
3.3 V	0.9 W
Dimensions (L × W × H)	3U, one slot, PXI/cPCI module, PXI Express compatible 21.6 cm × 2.0 cm × 13.0 cm (8.5 in. × 0.8 in. × 5.1 in.)
Weight	538 g (19 oz)

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

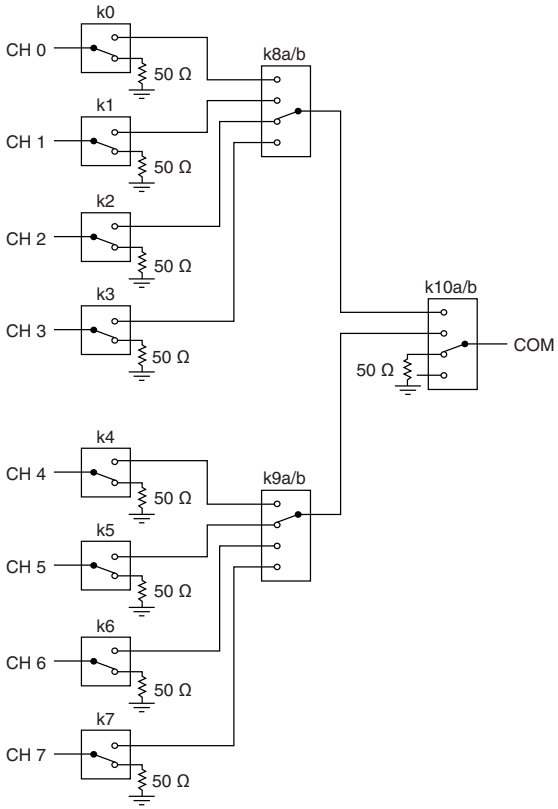
Ambient temperature range	-40 °C to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)
Relative humidity range	5% to 95%, noncondensing (Tested in accordance with IEC-60068-2-56.)
Operational shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC-60068-2-27. Test profile 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.)

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Diagrams

The following figure shows the NI 2544 power-on state.

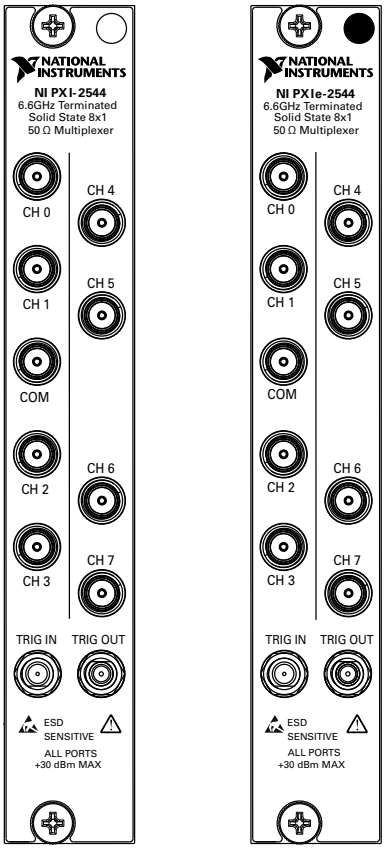
Figure 4. NI 2544 Power-On State



The following figure shows the NI 2544 front panel connector.

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Figure 5. NI 2544 Front Panel Connector



Accessories

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

Table 2. NI Accessories for the NI 2544

Accessory	Length	Part Number
SMA 100, SMA male to SMA male flexible cable	0.15 m	763443-01
	0.45 m	763444-01
SMA 50 Ohm termination plug	—	778353-01

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Table 2. NI Accessories for the NI 2544 (Continued)

Accessory	Length	Part Number
RF torque screwdriver and SMA driver bit	—	780895-01
RF SMA driver bit only	—	780894-01

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
- 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, 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:

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- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

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 not only to the environment but also 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*.

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