
PXI-2540

Specifications

2022-07-06



Contents

PXI-2540 Specifications.	3
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PXI-2540 Specifications


This document lists specifications for the PXI-2540. All specifications are subject to change without notice.

PXI-2540 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.



Caution The protection provided by the PXI-2540 can be impaired if it is used in a manner not described in this document.

Topology

Topology	8 × 9 matrix
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Input Characteristics

Maximum switching voltage	60 V DC (42.4 V _{pk})
Maximum switching or carry current (per channel)	0.5 A



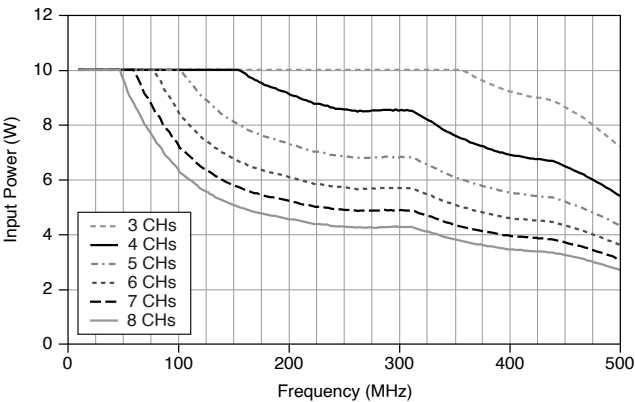
Caution The switching power is limited by the maximum switching current and the maximum voltage, and must not exceed 10 W.

Maximum DC switching or carry power (per channel)	10 W
Maximum RF power (per channel, 50 Ω system)	10 W
Simultaneous channels at maximum RF power (up to 350 MHz)	3



Note Maximum RF power derates as frequency and number of simultaneous channels increase and must not exceed the values shown in the following figures.

Figure 1. Maximum RF Input Power



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. Consult your RF source documentation for more information.

DC path resistance	
Initial	<2.1 Ω , typical

End-of-life	$\geq 3.1\ \Omega$, typical
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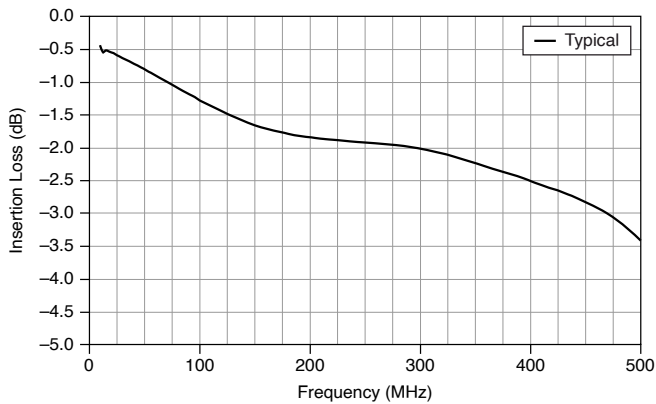
Path resistance is a combination of relay contact resistance and trace resistance. Contact resistance typically remains low for the life of a relay. At the end of relay life, the contact resistance rises rapidly above 3.1 Ω .

RF Performance Characteristics

Characteristic impedance (Z_0)	50 Ω , nominal
Insertion loss	
$\leq 350\text{ MHz}$	$< 3\text{ dB}$ ($< 2.3\text{ dB}$, typical)

Refer to the following figure for the insertion loss of the PXI-2540.

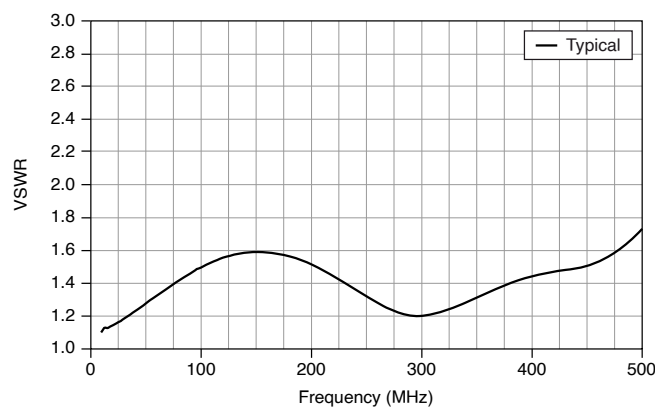
Figure 2. Insertion Loss, Typical



VSWR	
$\leq 350\text{ MHz}$	< 2.2 (< 1.6 , typical)

Refer to the following figure for the VSWR of the PXI-2540.

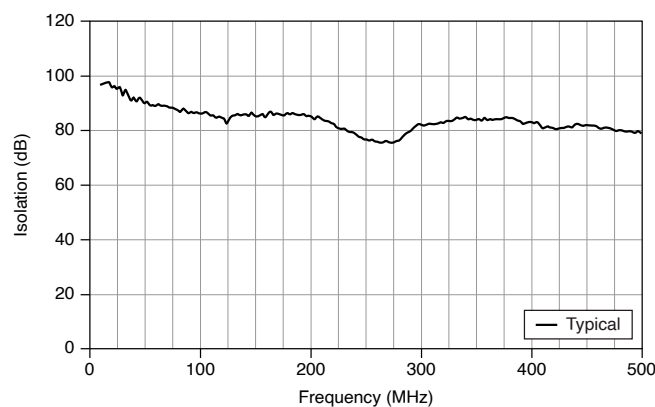
Figure 3. VSWR, Typical

**Open CH isolation** ≤ 350 MHz

>75 dB, typical

Refer to the following figure for the channel-to-channel isolation of the PXI-2540.

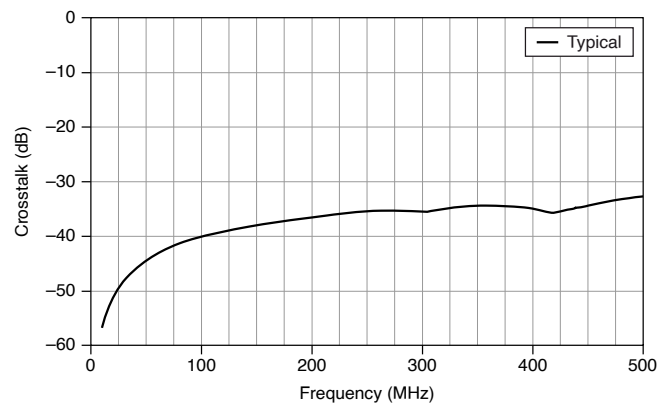
Figure 4. Open Channel Isolation, Typical

**Crosstalk** ≤ 350 MHz

<-35 dB, typical

Refer to the following figure for the crosstalk of the PXI-2540.


Figure 5. Crosstalk, Typical



Propagation delay	<6 ns, typical
CH-CH skew	<2 ns, typical

Dynamic Characteristics

Simultaneous drive limit	40 relays
Maximum operate time	0.25 ms
Maximum release time	0.25 ms



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

Relay life	
Mechanical	1 × 10 ⁹ cycles, typical
Electrical (resistive, <10 pF load, DC or 50 Ω RF systems)	

10 V, 100 mA	1×10^7 cycles, typical
20 V, 500 mA	5×10^6 cycles, typical



Note Reed relays are highly susceptible to damage caused by switching capacitive and inductive loads. Capacitive loads can cause high inrush currents while inductive loads can cause high flyback voltages. The addition of appropriate protection can greatly improve contact lifetime. For more information about adding protection circuitry to a capacitive load, visit ni.com/info and enter the Info Code relaylifetime. For information about inductive loads, enter the Info Code relayflyback.

Trigger

Input trigger	
Sources	PXI trigger lines <0...7>
Minimum pulse width ^[1]	150 ns
Output trigger	
Destinations	PXI trigger lines <0...7>
Pulse width	Software-selectable: (1 μ s to 62 μ s)

Physical Characteristics

Relay type	Reed, non-latching
Relay contact material	Rhodium

I/O connectors	17 MCX jacks
Power requirement <div> <div>PXI</div> <div>10 W at 5 V</div> <div>2 W at 3.3 V</div> </div> <div> <div>PXI Express</div> <div>10 W at 12 V</div> <div>2.5 W at 3.3 V</div> </div>	
Dimensions (L × W × H)	3U, one slot, PXI/cPCI module, PXIe compatible 21.6 cm × 2.0 cm × 13.0 cm (8.5 in. × 0.8 in. × 5.1 in.)
Weight	380 g (13.40 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 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.)	

Compliance and Certifications

Safety Compliance Standards

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 C22.2 No. 61010-1



Note For safety certifications, refer to the product label or the [Product Certifications and Declarations](#) 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, 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 [Product Certifications and Declarations](#) section.

Product Certifications and Declarations


Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

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 **Engineering a Healthy Planet** 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.

EU and UK Customers

-  Waste Electrical and Electronic Equipment (WEEE)—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 RoHS—NI 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 NI 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.)

¹ The PXI-2540 can recognize trigger pulse widths less than 150 ns if you disable digital filtering. Refer to the **NI Switches Help** for information about disabling digital filtering.