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# PXI-2545

# Specifications

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2022-07-06



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# PXI-2545 Specifications

This document lists specifications for the PXI-2545 . All specifications are subject to change without notice.

## PXI-2545 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<sub>pk</sub>, or a combination unless otherwise specified.



**Caution** The protection provided by the PXI-2545 can be impaired if it is used in a manner not described in this document.

## Input Characteristics

Maximum switching voltage	30 V
Maximum switching current (per channel)	0.5 A
Maximum carry current (per channel)	0.5 A
<b>Maximum RF power</b>	
Channel to common	10 W

Termination ( $\leq 25$ °C ambient)	1.5 W
Minimum switch load	0 dBm



**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.



**Caution** Terminations cannot withstand the full rated power of the PXI-2545 .



**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** 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](https://ni.com/info) and enter Info Code RFSwitching.

#### DC path resistance

Initial	<0.25 $\Omega$ , typical
End-of-life	$\geq 1.0$ $\Omega$ , typical

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  $\Omega$ .

#### Related reference

- [Termination Derating](#)

## RF Performance Characteristics

Characteristic impedance ( $Z_0$ )	50 $\Omega$ , nominal
<b>Insertion loss</b>	
$\leq 1$ GHz	<1.0 dB (<0.85 dB, typical)
$\leq 2.7$ GHz	<2.0 dB (<1.7 dB, typical)
<b>Voltage standing wave ratio (VSWR), channel to common</b>	
$\leq 1$ GHz	<1.3 (<1.25, typical)
$\leq 2.7$ GHz	<1.6 (<1.45, typical)
<b>Isolation</b>	
$\leq 1$ GHz	>60 dB, typical
$\leq 2.7$ GHz	>45 dB, typical
Channel-to-channel skew	<15 ps, typical
Propagation delay	1.3 ns, typical
Rise time (10% to 90%)	93 ps, typical

Refer to the following figures for typical insertion loss, typical channel to common VSWR, typical termination VSWR, and typical isolation.

Figure 1. Insertion Loss, Typical

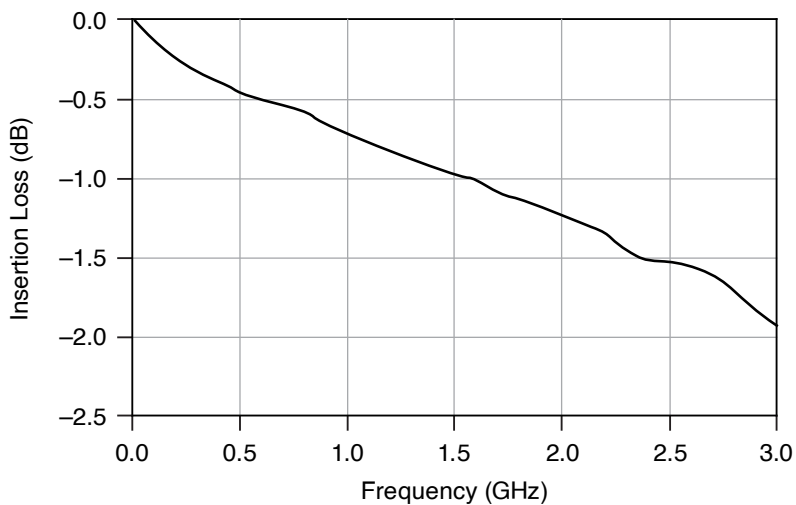


Figure 2. Channel to Common VSWR, Typical

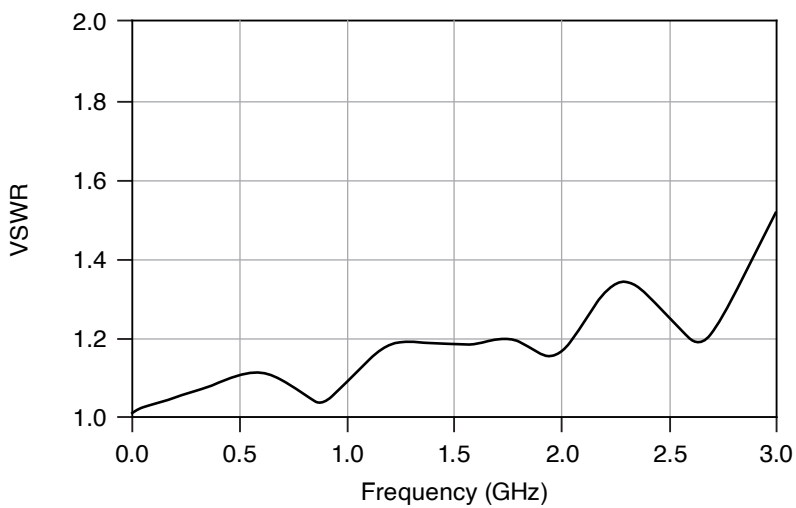


Figure 3. Termination VSWR, Typical

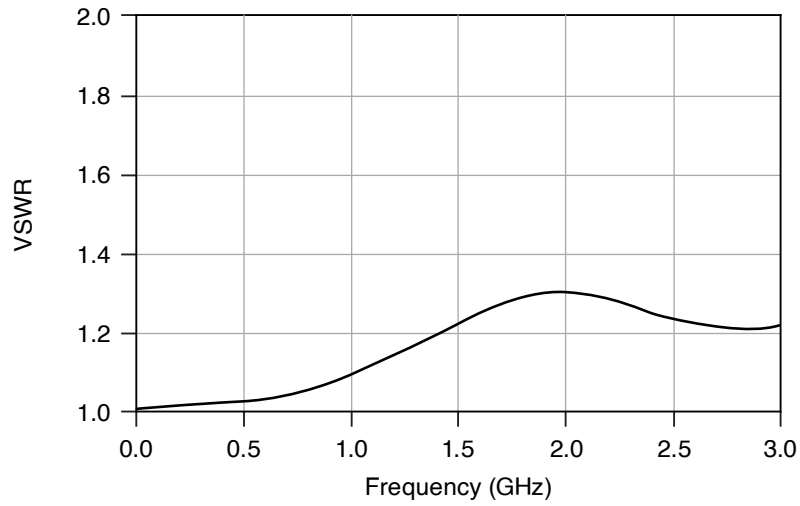
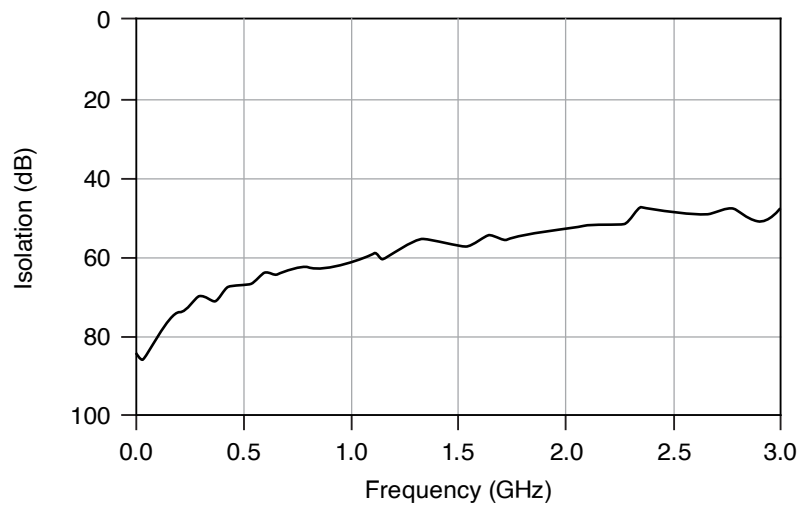


Figure 4. Isolation, Typical

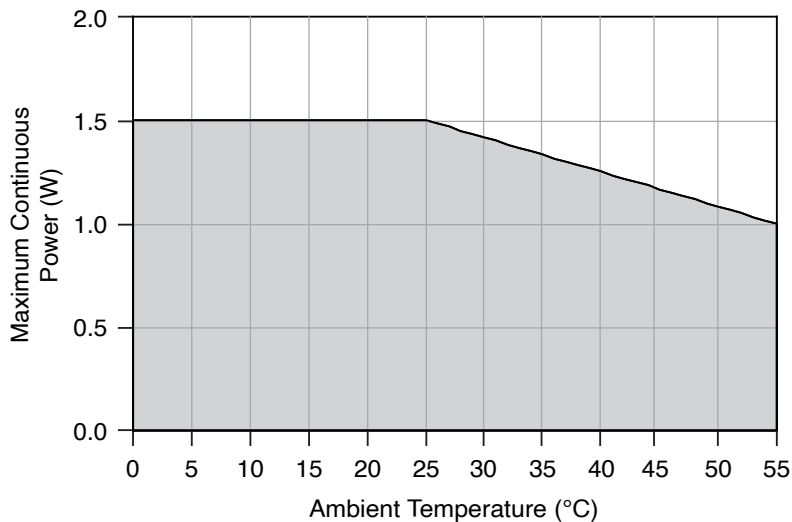


## Termination Derating



Caution When operating the PXI-2545 at ambient temperatures  $>25\text{ }^{\circ}\text{C}$ , the derating in the following figure limits the maximum constant power each termination can dissipate.

Figure 5. Termination Derating



Caution Failure to operate below listed power limits can result in permanent damage to the device.

## Dynamic Characteristics

Maximum relay operate time	10.4 ms
<b>Expected relay life</b>	
Mechanical	$1 \times 10^6$ cycles
Electrical (30 V, 10 mA, DC resistive)	$3 \times 10^5$ cycles

## Trigger

<b>Input trigger</b>	
Sources	PXI trigger lines <0...7>



Minimum pulse width <sup>[1]</sup>	150 ns
<b>Output trigger</b>	
Destinations	PXI trigger lines <0...7>
Pulse width	Software-selectable: 1 $\mu$ s to 62 $\mu$ s

## Physical Characteristics

Relay type	Electromechanical, latching
I/O connectors	5 SMA jacks, gold plated
PXI power requirement	3.7 W at 5 V 0.3 W at 3.3 V
Dimensions (L × W × H)	3U, one slot, PXI/cPCI module 21.6 cm × 2.0 cm × 13.0 cm (8.5 in. × 0.8 in. × 5.1 in.)
Weight	255 g (9 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 71 °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.)
<p><b>Random vibration</b></p> <p>Operating 5 Hz to 500 Hz, 0.31 g<sub>rms</sub> (Tested in accordance with IEC 60068-2-64.)</p> <p>Nonoperating 5 Hz to 500 Hz, 2.46 g<sub>rms</sub> (Tested in accordance with IEC 60068-2-64. Test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)</p>	

## 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](https://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](https://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](https://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](https://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](https://ni.com/environment/rohs_china).)

<sup>1</sup> The PXI-2545 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.