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# PXI-2523

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# PXI-2523 Specifications

This document lists specifications for the PXI-2523. All specifications are subject to change without notice.

## Definitions

**Warranted** specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

**Characteristics** describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- **Typical** specifications describe the expected performance met by a majority of the models.
- **Nominal** specifications describe parameters and attributes that may be useful in operation.

## Conditions

Specifications are valid at 23 °C unless otherwise noted.

All voltages are specified in DC, AC<sub>pk</sub>, or a combination unless otherwise specified.



**Caution** The protection provided by the PXI-2523 can be impaired if it is used in a manner not described in this document.

## Cleaning the Module

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.

## Cautions



**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. Refer to the **Read Me First: Safety and Electromagnetic Compatibility** document for more information on measurement categories.



**Caution** When hazardous voltages ( $>42.4$  Vpk/60 V DC) are present on any channel, safety low-voltage ( $\leq 42.4$  Vpk/60 V DC) cannot be connected to any other channel.



**Caution** The switching power is limited by the maximum switching current, the maximum voltage, and must not exceed 60 W, 62.5 VA.

## Input Characteristics

<b>Maximum switching voltage</b>	
Channel-to-channel	100 V
Channel-to-ground	100 V, CAT I
Maximum switching power	60 W, 62.5 VA (DC to 60 Hz) (per channel)
Maximum switching current	2.0 A (per channel)
Maximum switching power	60 W, 62.5 VA (DC to 60 Hz) (per channel)

Simultaneous channels at maximum current ( $\leq 55\text{ }^{\circ}\text{C}$ )	26
Minimum switching conditions	20 mV/1 mA



**Note** Switching inductive loads (for example, motors and solenoids) can produce high voltage transients in excess of the module's rated voltage. Without additional protection, these transients can interfere with module operation and impact relay life. For more information about transient suppression, visit [ni.com/info](https://ni.com/info) and enter the Info Code relayflyback.

#### DC path resistance

Initial	$<0.5\ \Omega$
End-of-life	$\geq 1.0\ \Omega$



**Note** DC path resistance typically remains low for the life of the relay. At the end of relay life, the path resistance rises rapidly above the specified value. Load ratings apply to relays used within the specification before the end of relay life.

Thermal EMF (typical at $23\text{ }^{\circ}\text{C}$ )	12 $\mu\text{V}$
Bandwidth (-3 dB, typical at $23\text{ }^{\circ}\text{C}$ , 50 $\Omega$ termination)	$\leq 35\text{ MHz}$
<b>Crosstalk (typical at <math>23\text{ }^{\circ}\text{C}</math>, 50 <math>\Omega</math> termination), Channel-to-channel</b>	
10 kHz	$\leq -65\text{ dB}$
100 kHz	$\leq -45\text{ dB}$
<b>Isolation (typical at <math>23\text{ }^{\circ}\text{C}</math>, 50 <math>\Omega</math> termination), Open channel</b>	

10 kHz	$\geq 75$ dB
100 kHz	$\geq 55$ dB

## Dynamic Characteristics

<b>Relay operate time</b>	
Typical	1 ms
Maximum	3.4 ms
Simultaneous drive limit	26 relays
<b>Expected relay life</b>	
Mechanical	$1 \times 10^8$ cycles
<b>Electrical (resistive)</b>	
30 V, 1 A	$5 \times 10^5$ cycles
30 V, 2 A	$1 \times 10^5$ cycles

## Trigger Characteristics

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



**Note** The PXI-2523 can recognize trigger pulse widths less than 150 ns if you disable digital filtering. Refer to the **NI Switches Help** at [ni.com/manuals](http://ni.com/manuals) for information about disabling digital filtering.

### Output trigger

Destinations	PXI trigger lines <0...7>
Pulse width	Programmable (1 $\mu$ s to 62 $\mu$ s)

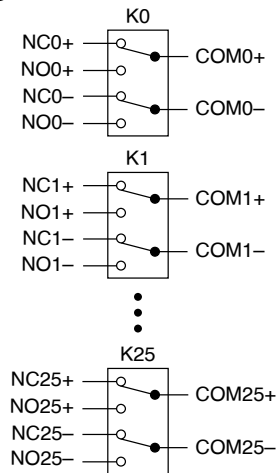
## Physical Characteristics

Relay type	Electromechanical, non-latching
Relay contact material	Palladium-ruthenium, gold covered
I/O connector	160 DIN 41612, 160 positions, male
PXI power requirement	5 W at 5 V, 2.5 W at 3.3 V
Dimensions (L $\times$ W $\times$ H)	3U, one slot, PXI/cPCI module 21.6 cm $\times$ 2.0 cm $\times$ 13.0 cm (8.5 in. $\times$ 0.8 in. $\times$ 5.1 in.)
Weight	175 g (6.2 oz)

## Diagrams

### Hardware Diagram

Figure 1. PXI-2523 Hardware Diagram



## Accessories

Table 1. NI Accessories for the PXI-2523

Accessory	Part Number
DIN160 to 50-pin D-SUB switch cable, 1 m	782417-03
DIN160 to DIN160 switch cable, 1 m	782417-02
DIN160 to bare wire switch cable, 1 m	782417-01
Relay replacement kit for Relay replacement kit	781089-10

## 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.)
<b>Random vibration</b> Operating 5 Hz to 500 Hz, 0.31 g <sub>rms</sub> (Tested in accordance with IEC 60068-2-64.)  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.)	

## 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 C22.2 No. 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, 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

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](http://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](http://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](https://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](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).)