

# NI PXI/PXIe-2529 Specifications

## 128-Crosspoint Relay Matrix

このドキュメントには、日本語ページも含まれています。

This document lists specifications for the NI PXI/PXIe-2529 (NI 2529) matrix module. All specifications are subject to change without notice. Visit [ni.com/manuals](http://ni.com/manuals) for the most current specifications.

Topologies ..... 2-wire 4 × 32 matrix  
2-wire 8 × 16 matrix  
2-wire dual 4 × 16 matrix

Refer to the *NI Switches Help* for detailed topology information.



**Caution** To ensure the specified EMC performance, operate this product only with shielded cables and accessories.



**Caution** Device relays might change state momentarily during electrostatic discharge.



**Caution** Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document at [ni.com/manuals](http://ni.com/manuals) for important safety and compliance information.

### 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. Typical specifications are not warranted.

### Input Characteristics

All input characteristics are DC, AC<sub>rms</sub>, or a combination unless otherwise specified.

Maximum switching voltage

Channel-to-channel ..... 150 V

Channel-to-ground..... 150 V, CAT I



**Caution** This module is rated for Measurement Category I and intended to carry signal voltages no greater than 150 V. This module can withstand up to 800 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 (such as wall outlets) of 115 or 230 VAC. Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document for more information about measurement categories.



**Caution** When hazardous voltages (>42.4 V<sub>pk</sub>/60 VDC) are present on any relay terminal, safety low-voltage (≤42.4 V<sub>pk</sub>/60 VDC) cannot be connected to any other relay terminal.



**Caution** The maximum switching power is limited by the maximum switching current, the maximum voltage, and must not exceed 30 W, 37.5 VA.

Maximum switching power.....30 W, 37.5 VA  
(per channel)

Maximum switching current ..... 1 A  
(per channel)

Maximum carry current.....2 A  
(per channel)

Maximum module current.....8 A



**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](http://ni.com/info) and enter the Info Code `induct`.

DC path resistance	
Initial .....	<1 $\Omega$
End-of-life .....	$\geq 2 \Omega$

Path resistance is a combination of relay contact resistance and trace resistance and is measured as the combined resistance of the high and low signal paths from one row to one column. Contact resistance typically remains low for the life of a relay. At the end of relay life, the contact resistance rises rapidly above 1  $\Omega$ .

Thermal EMF .....	<9 $\mu\text{V}$
Minimum current .....	10 $\mu\text{A}$

## RF Performance Characteristics

Typical single crosspoint bandwidth .....

>10 MHz  
(50  $\Omega$  system, one row to one column)

Typical crosstalk (50  $\Omega$  system)

10 kHz .....	<-80 dB
100 kHz .....	<-65 dB
1 MHz .....	<-50 dB

## Dynamic Characteristics

Relay operate time (at 20  $^{\circ}\text{C}$ ) .....

4 ms, maximum



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

Release time (at 20  $^{\circ}\text{C}$ ) .....

4 ms, maximum

Expected relay life

Mechanical .....	$5 \times 10^7$ cycles
Electrical	
30 V, 100 mA, resistive .....	$5 \times 10^5$ cycles
30 V, 1 A, resistive .....	$1 \times 10^5$ cycles



**Note** The relays used in the NI 2529 are field replaceable. Refer to the *NI Switches Help* for information about replacing a failed relay.

## Trigger Characteristics

Input trigger

Sources .....	PXI trigger lines 0–7, Front panel
Minimum pulse width .....	150 ns
Front panel input voltage	
Absolute minimum .....	-0.5 V
$V_{IL}$ maximum .....	+0.7 V

$V_{IH}$ minimum .....	+2.0 V
$V_I$ nominal .....	+3.3 V
Absolute maximum .....	+5.5 V



**Note** The NI 2529 can recognize trigger pulse widths that are less than 150 ns when you disable digital filtering. For information about disabling digital filtering, refer to the *NI Switches Help*.

Output trigger

Destinations .....	PXI trigger lines 0–7, Front panel
Pulse width .....	Programmable (1 $\mu\text{s}$ to 62 $\mu\text{s}$ )
Front panel nominal voltage .....	+3.3 V TTL, 8 mA

## Physical Characteristics

Relay type .....	Electromechanical, latching
Relay contact material .....	Silver palladium and gold
Front panel connector .....	100-pin high-density interconnect (HDI)
Power requirement	
PXI .....	6 W at 5 V 2.5 W at 3.3 V
PXI Express .....	7.5 W at 12 V 2.5 W at 3.3 V
Dimensions (L $\times$ W $\times$ H) .....	3U, one slot, PXI/PCI module, PXIe compatible 21.6 $\times$ 2.0 $\times$ 13.0 cm (8.5 $\times$ 0.8 $\times$ 5.1 in.)
Weight .....	410 g (15 oz)

## Environment

Operating temperature .....	0 $^{\circ}\text{C}$ to 55 $^{\circ}\text{C}$
Storage temperature .....	-20 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$
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 to 500 Hz, 0.3  $g_{rms}$   
Nonoperating ..... 5 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.)

## Accessories

Visit [ni.com](http://ni.com) for more information about the following accessories.

**Table 1.** Accessories Available for the NI 2529

Accessory	Part Number
NI TB-2634 terminal block (4 × 32, 2-wire matrix)	778840-01
NI TB-2635 terminal block (8 × 16, 2-wire matrix)	778839-01
NI TB-2636 terminal block (4 × 32 2-wire matrix)	196762-01

**Table 2.** Third-Party Accessories for the NI 2529

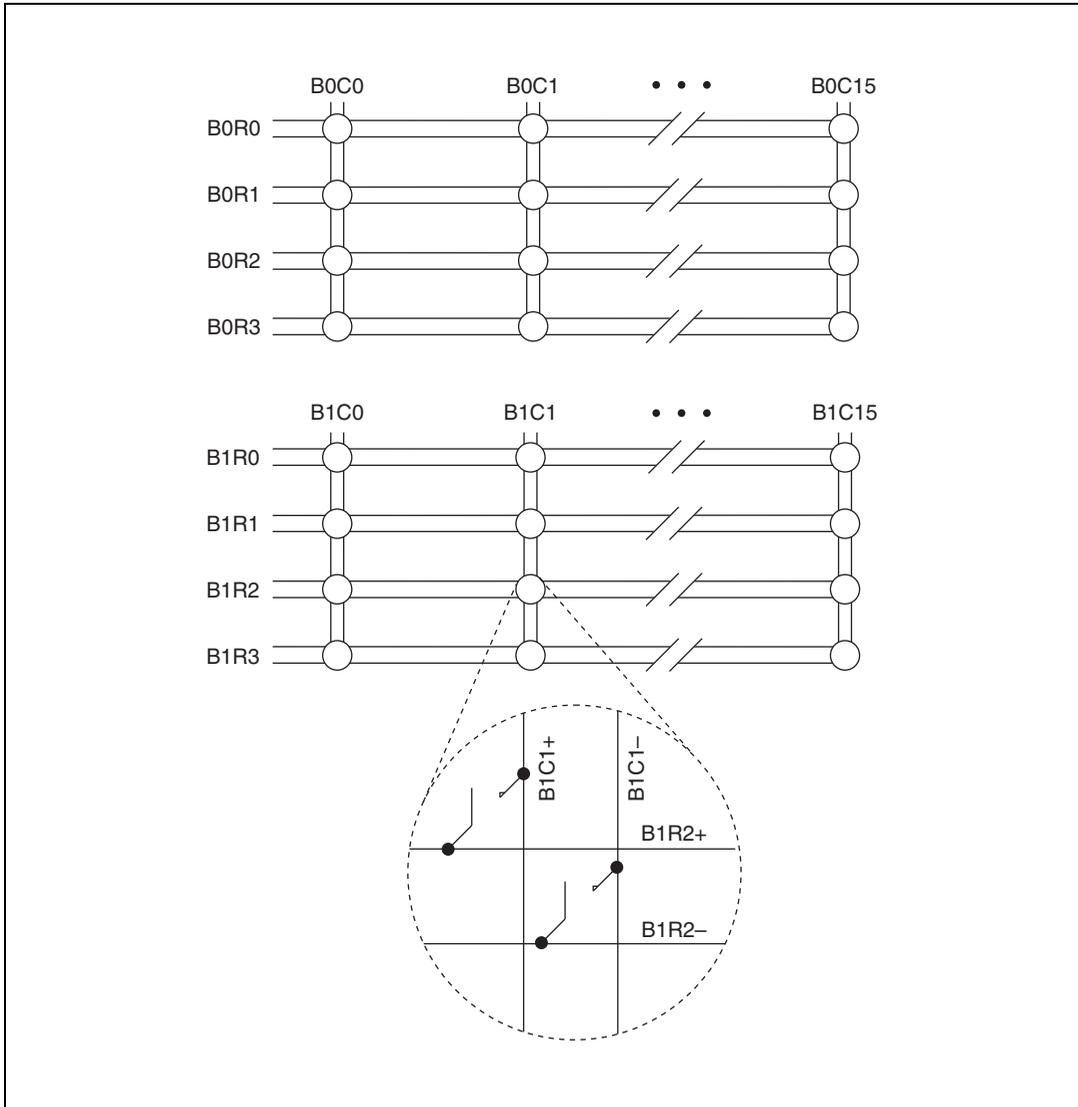
Accessory	Manufacturer	Part Number
Mating front panel connector, vertical*	AMP	5533285-1
Mating front panel connector, right-angle*	AMP	5532903-2
* PCB mount, additional cover or enclosure required. See previous safety caution.		



**Caution** You *must* install mating connectors according to local safety codes and standards and according to the specifications provided by the connector manufacturer. You are responsible for verifying safety compliance of third-party connectors and their usage according to the relevant standard(s), including UL and CSA in North America and IEC and VDE in Europe.

# Diagrams

Figure 1 shows the NI 2529 power-on state.



**Figure 1.** NI 2529 Power-On State

Figure 2 shows the NI 2529 connector pinout.

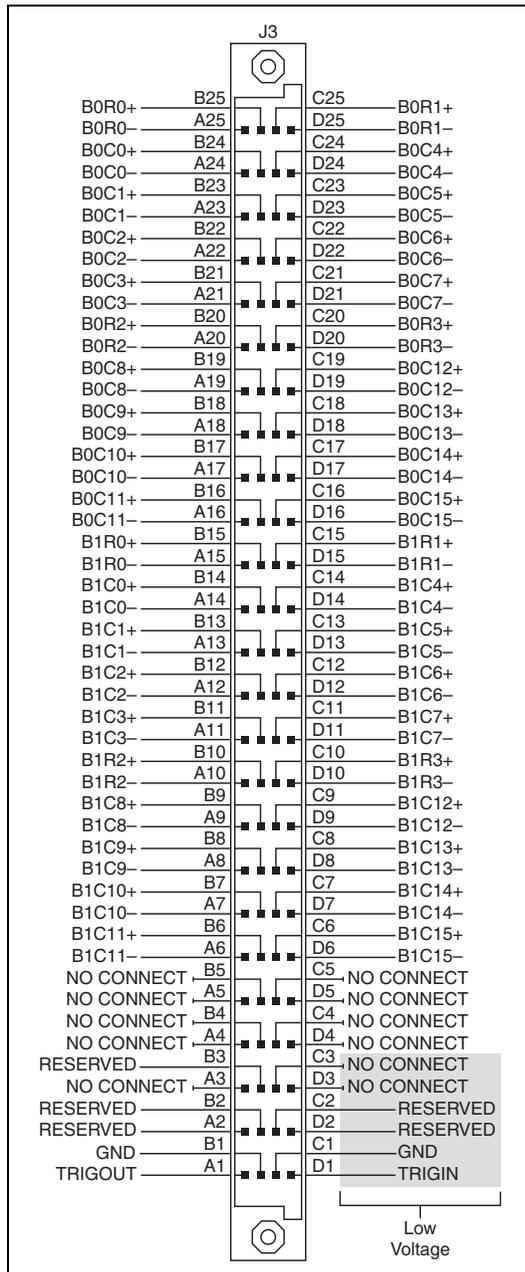


Figure 2. NI 2529 Connector Pinout



**Note** For topology-specific connection information, refer to your device in the *NI Switches Help* and the installation instructions for any associated cables or terminal blocks.

## Compliance and Certifications

### Safety

This product meets the requirements of the following standards of safety for electrical equipment 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 generates radio frequency energy for the treatment of material or inspection/analysis purposes.



**Note** For EMC declarations and certifications, refer to the [Online Product Certification](#) section. CE Compliance

### CE Compliance

This product meets the essential requirements of applicable European Directives as follows:

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

## Online Product Certification

To obtain product certifications and the Declaration of Conformity (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 *NI and the Environment* 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 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](http://ni.com/environment/weee).

## 电子信息产品污染控制管理办法（中国 RoHS）



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