
PXle-2532B

Specifications

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These specifications apply to the PXIe-2532B.

All specifications are subject to change without notice.



Notice The protection provided by the PXIe-2532B can be impaired if it is used in a manner not described in this document.

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 performance met by a majority of models.
- **Nominal** specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are **Warranted** unless otherwise noted.

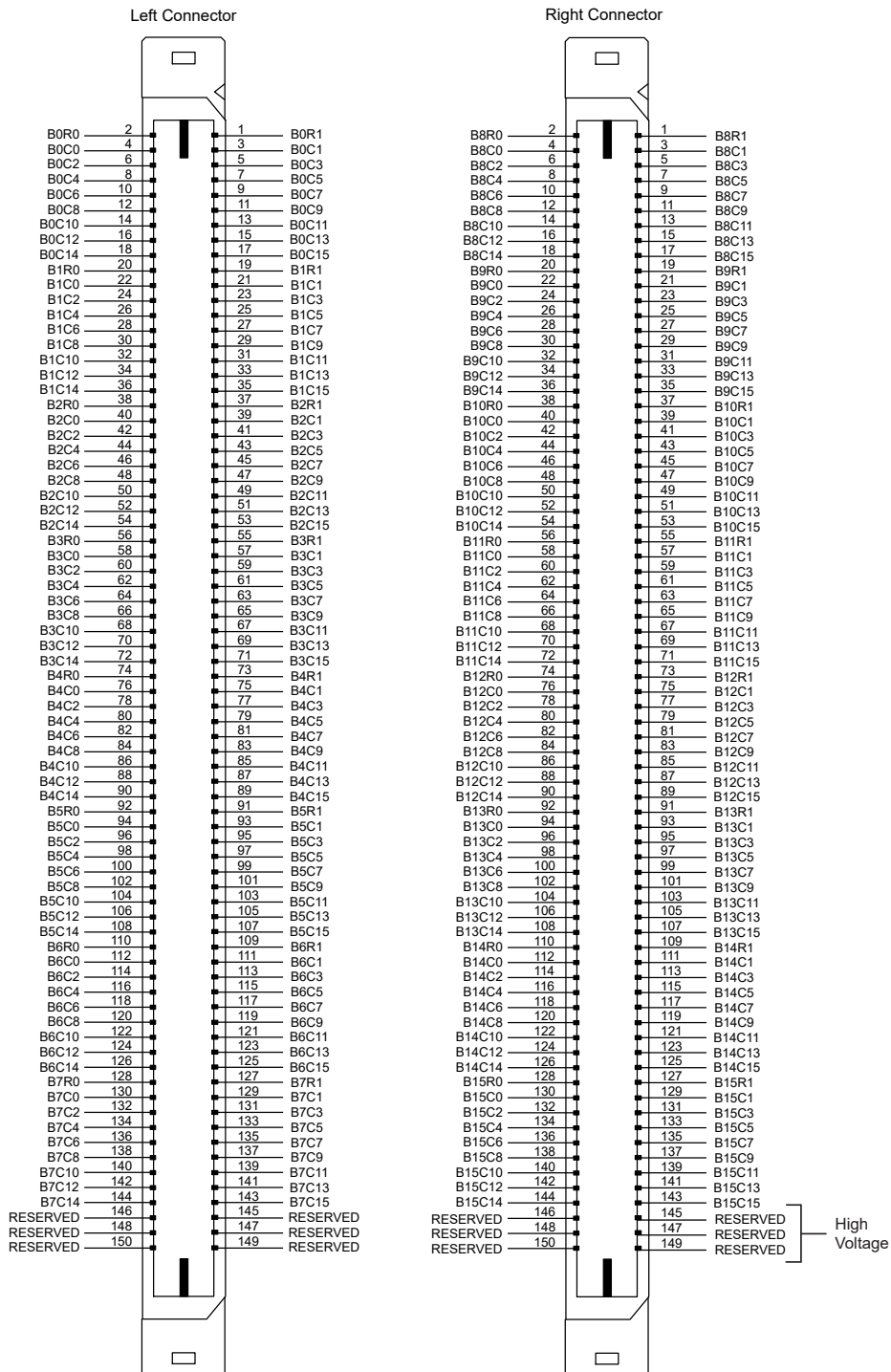
Conditions

Specifications are valid at 23 °C unless otherwise noted.

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

PXle-2532B Pinout

Figure 1. PXle-2532B Pinout



Related information:

- PXle-2532B Hardware Diagram

- [NI Switches Cable and Accessory Compatibility](#)
- [Pinouts for Different Topologies and Terminal Blocks](#)

Topology

Table 1. Topologies

Topologies	1-wire 4 x 128 matrix
	1-wire 8 x 64 matrix
	1-wire 16 x 32 matrix
	1-wire dual 4 x 64 matrix
	1-wire dual 8 x 32 matrix
	1-wire dual 16 x 16 matrix
	1-wire quad 4 x 32 matrix
	1-wire sixteen 2 x 16 matrix
	2-wire 4 x 64 matrix
	2-wire 8 x 32 matrix
	2-wire 16 x 16 matrix
	2-wire dual 4 x 32 matrix

Input Characteristics



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 VAC or 230 VAC.



Caution When hazardous voltages ($>42.4\text{ V}_{pk}/60\text{ VDC}$) are present on any relay terminal, safety low-voltage ($<42.4\text{ V}_{pk}/60\text{ VDC}$) cannot be connected to any other relay terminal.

Table 2. Maximum Switching Voltage, Current, and Power

Maximum switching voltage, channel-to-channel	100 V
Maximum switching voltage, channel-to-ground	100 V, CAT I
Maximum current	0.5 A (switching or carry, per channel)
Maximum switching power	10 W (per channel)



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

Table 3. DC Path Resistance

Initial	$<1\ \Omega$, warranted
End-of-life	$\geq 2\ \Omega$
Open channel	$>1 \times 10^9\ \Omega$



Note DC path resistance typically remains low for the life of the relay. At the end of relay life, the path resistance rapidly rises above $2\ \Omega$. Load ratings apply to relays used within the specification before the end of relay life.

Table 4. DC Path Resistance with Terminal Block

DC Path Resistance, PXle-2532B with TB-2640B	<2 Ω
DC Path Resistance, PXle-2532B with TB-2641B	<2.2 Ω

Table 5. Thermal EMF

1-wire	<50 μ V
2-wire	<20 μ V

Table 6. Bandwidth, Typical (-3 dB, 50 Ω Termination)

PXle-2532B	1-wire row/column	$\geq$ 30 MHz
PXle-2532B	2-wire row/column	$\geq$ 25 MHz
PXle-2532B with TB-2640B	1-wire row/column	$\geq$ 10 MHz
PXle-2532B with TB-2641B	1-wire row/column	$\geq$ 12 MHz

Table 7. Channel-to-Channel Crosstalk, Typical (50 Ω Termination) Channel-to-Channel, PXle-2532B Only

10 kHz	<-85 dB
100 kHz	<-65 dB
1 MHz	<-45 dB

Table 8. Channel-to-Channel Crosstalk, Typical (50 Ω Termination) Channel-to-Channel, PXle-2532B with TB-2640B/TB-2641B

10 kHz	<-75 dB
100 kHz	<-55 dB
1 MHz	<-35 dB

Table 9. Open Channel Isolation, Typical (50 Ω Termination) Open Channel

10 kHz	>84 dB
100 kHz	>64 dB
1 MHz	>44 dB

Dynamic Characteristics

Table 10. Dynamic

Simultaneous drive limit	64 relays
Relay operate time	0.25 ms
Release time	0.25 ms
Relay life (no load), mechanical	1×10^9 cycles, typical



Note Relay operate time may be longer; certain applications may require additional time for proper settling.



Note Optional series protection resistance, available for the terminal blocks, increases the expected relay life at higher voltages. This series protection resistance shields the reed relays from the effects of cable and load capacitance. For more information, refer to the ***NI-SWITCH User Manual***.



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 resistive protection can greatly improve contact lifetime. For more information about adding protection circuitry to a capacitive load, refer to the ***NI-SWITCH User Manual***. For information about inductive loads, visit ni.com/r/relayflyback.



Note The relays used in the PXle-2532B are field replaceable.

Table 11. Electrical (Resistive, <10 pF Load)

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

Related information:

- [Reed Relay Protection in the NI-SWITCH User Manual](#)
- [Relay Life in the NI-SWITCH User Manual](#)
- [Protecting NI Switch Modules When Switching Inductive Loads](#)

Trigger Characteristics

Table 12. Input Trigger

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



Note The PXIe-2532B recognizes pulse widths less than 150 ns if digital filtering is disabled. Refer to the ***NI-SWITCH User Manual*** for information about disabling digital filtering.

Table 13. Output Trigger

Destinations	PXI trigger lines <0...7>
Default pulse width	2 μ s, typical

Related information:

- [Disabling Digital Filtering in the NI-SWITCH User Manual](#)

Physical Characteristics

Table 14. Physical

Relay type	Reed
Relay contact material	Rhodium
I/O connectors	2, 150 pos, Samtec ERM8-EM series. Terminal block connectivity is with standard 0.050 inch pitch headers.
Dimensions (L $\times$ W $\times$ H)	3U, one slot, PXI/cPCI module, PXI Express compatible 18.5 cm $\times$ 2.0 cm $\times$ 4.4 cm

H)	13.0 cm (7.3 in. × 0.8 in. × 5.1 in.)
Weight	454 g (1 lb)



Note NI advises against installing reed relay modules directly adjacent to an embedded controller with a magnetic hard drive because of the sensitivity of reed relays and the possibility of interference.

Table 15. PXI Express Power Requirement

12 V	15 W
3.3 V	2 W

Environment

Table 16. 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

Table 17. 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}
Random vibration, 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 ***Product Certifications and Declarations***.

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.)