PXI/PXIe-2531 Specifications

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Contents

PXIe-2531 Specifications

This document lists specifications for the PXIe-2531 . All specifications are subject to change without notice.

PXIe-2531 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.

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

Caution The protection provided by the PXIe-2531 can be impaired if it is used in a manner not described in this document.

Topology

Topologies	1-wire 4 × 128 matrix 1-wire 8 × 64 matrix 1-wire dual 4 × 64 matrix 1-wire dual 8 × 32 matrix

Input Characteristics

Maximum switching voltage	
Channel-to-channel	60 VDC, 30 VAC_{rms}
Channel-to-ground	60 VDC, 30 VAC_{rms}, CAT I

Note Measurement Categories CAT I and CAT O are equivalent. These test and measurement circuits are for other circuits not intended for direct connection to the MAINS building installations of Measurement Categories CAT II, CAT III, or CAT IV.

Maximum current (switching or carry, per channel)	0.5 A

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

Maximum switching power (per channel)	10 W
DC path resistance	
Initial	<1 Ω
End-of-life	≥2 Ω
Open channel	≥1 * 10^9 Ω

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 Ω. Load ratings apply to relays used within the specification before the end of relay life.

Thermal EMF	
1-wire	<50 µV, typical
2-wire	<20 µV, typical

RF Performance Characteristics

Bandwidth (-3 dB, 50 Ω termination), 1-wire row/column	≥20 MHz, typical
Crosstalk (50 Ω termination), channel-to-channel	
10 kHz	<-70 dB, typical
100 kHz	<-70 dB, typical
1 MHz	<-58 dB, typical
10 MHz	<-38 dB, typical
Isolation (50 Ω termination), open channel	
10 kHz	>91 dB, typical
100 kHz	>71 dB, typical
1 MHz	>51 dB, typical
10 MHz	>32 dB, typical

Dynamic Characteristics

Simultaneous drive limit

PXI	40 relays
PXI Express	64 relays
Relay operate time	0.25 ms

Note Certain applications may require additional time for proper settling.

Release time	0.25 ms
Relay life (no load)	
Mechanical	$1 * 10^9$ cycles, typical
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	$1 * 10^5$ 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 resistive 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.

Note The relays used in the PXIe-2531 are field replaceable.

Trigger Characteristics

Input trigger	
Sources	PXI trigger lines 0 to 7
Minimum pulse width	150 ns

Note The PXIe-2531 can recognize trigger pulse widths <150 ns if you disable digital filtering.

Output trigger	
Destinations	PXI trigger lines 0 to 7
Pulse width	Programmable (1 µs to 62 µs)

Physical Characteristics

Relay type	Reed

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.

Relay contact material	Rhodium
I/O connectors	2, 150 pos, Samtec ERM8 series
Power requirement	
PXI	10 W at 5 V, 2 W at 3.3 V

PXI Express	15 W at 12 V, 2 W at 3.3 V
Dimensions (L × W × H)	3U, one slot, PXI/cPCI module, 21.6 × 2.0 × 13.0 cm(8.5 × 0.8 × 5.1 in.)
Weight	454 g (1 lb)

Environment

Operating temperature	0 °C to 55 °C
Storage temperature	-40 °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

CE Compliance CE

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)
- 2011/65/EU; Restriction of Hazardous Substances (RoHS)
- 2014/53/EU; Radio Equipment Directive (RED)
- 2014/34/EU; Potentially Explosive Atmospheres (ATEX)

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.)

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