PXI-2510 Specifications

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Contents

PXI-2510 Specifications

This document lists specifications for the PXI-2510 (PXI-2510) matrix relay card. All specifications are subject to change without notice. Visit ni.com/manuals for the most current specifications.

Topology	Independent

Refer to the NI Switches Help for detailed topology information.

> **Caution** The protection provided by the PXI-2510 can be impaired if it is used in a manner not described in this document.

PXI-2510 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.

> **Caution** The protection provided by the PXI-2510 can be impaired if it is used in a manner not described in this document.

Input Characteristics

Maximum switching voltage	
Channel-to-channel	150 V

Channel-to-ground	150 V, CAT I [1]

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 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.

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

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

Maximum switching power (per channel)	60 W

Note This module and cable accessory can operate at various ambient temperatures and currents as shown in the following table.

Current	Module Alone	Module with Cable	
Operating temperature range	0 to 55 °C	0 to 55 °C	0 to 40 °C
Maximum total module current	64 A	32 A	48 A
Maximum current per channel	2 A	1 A	1.5 A [2]

Table 1. NI PXI-2510 Operating Currents

Minimum switch load	1 mA

Maximum DC path resistance (channel-to-DUT)

Initial	150 mΩ, typical
End-of-life	>1 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 1 Ω. Load ratings apply to relays used within the specification before the end of relay life.

Bandwidth, typical (50 Ω system)	.>6.5 MHz[3]

Dynamic Characteristics

Relay Operate Time[4]	
Typical	1 ms
Maximum	3 ms

Expected mechanical relay life	1×10^8 cycles

Expected electrical relay life	
30 V, 1 A	5×10^5 cycles
30 V, 2 A	1×10^5 cycles

Simultaneous drive limit	38 relays

Note Relays are field replaceable. Refer to the **NI Switches Help** at ni.com/manuals for more information about replacing a failed relay.

Note Opening a CHn to DUTn path counts toward the simultaneous drive limit.

Trigger

Input trigger	
Sources	PXI trigger lines <0...7>
Minimum pulse width[5]	150 ns
Output trigger	
Destinations	PXI trigger lines <0...7>
Pulse width	Software-selectable: 1 µs to 62 µs

Physical Characteristics

Relay type	Electromechanical, non-latching
Relay contact material	Palladium-ruthenium, gold covered
Front panel connector	160 DIN 41612, 160 positions, male

Power Requirements	
5 V, typical	6.6 W
3.3 V, typical	0.48 W

Dimensions (L × W × H)	3U, one slot, PXI/cPCI module, 18.8 cm × 2.0 cm × 13.0 cm (7.4 in. × 0.8 in. × 5.1 in.)
Weight	358 g (12.6 oz)

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

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.

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.)

[1] Measurement Categories CAT I and CAT O (Other) are equivalent. These test and measurement circuits are not intended for direct connection to the MAINs building installations of Measurement Categories CAT II, CAT III, or CAT IV.

[2] Maximum 2 A per channel may be achieved with cable assembly with extra precaution on signal routing. See the **DIN160 Cable Installation Instructions** for more information.

[3] The module is designed to carry communication signals such as CAN signals up to 1 Mbps and FlexRay signals up to 20 Mbps (10 Mbps per channel path).

[4] Operate time is the time from the trigger received by hardware to relay output activation.

[5] The PXI-2510 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.