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PXI-2520 Specifications

2022-10-27

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PXI-2520 Specifications

This document lists specifications for the PXI-2520 . 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 performance met by a majority of models.
- **Nominal** specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are **Typical** 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.

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 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 (for example, wall outlets) of 115 V AC or 230 V AC. Refer to the **Read Me First: Safety and Electromagnetic Compatibility** document for more information about measurement categories.

> **Caution** When hazardous voltages (>42.4 Vpk/60 V DC) are present on any channel, safety low-voltage (≤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

Maximum switching voltage	
Channel-to-channel	150 V
Channel-to-ground	150 V, CAT I
Maximum switching current	2.0 A (per channel)
Maximum carry 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 (≤43 °C)	30
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 and enter the Info Code relayflyback.

DC path resistance

Initial	<0.5 Ω
End-of-life	≥1.0 Ω

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 °C)	12 µV
Bandwidth (-3 dB, typical at 23 °C, 50 Ω termination)	≤35 MHz

Crosstalk (typical at 23 °C, 50 Ω termination), Channel-to-channel

10 kHz	≤-80 dB
100 kHz	≤-60 dB

Isolation (typical at 23 °C, 50 Ω termination), Open channel

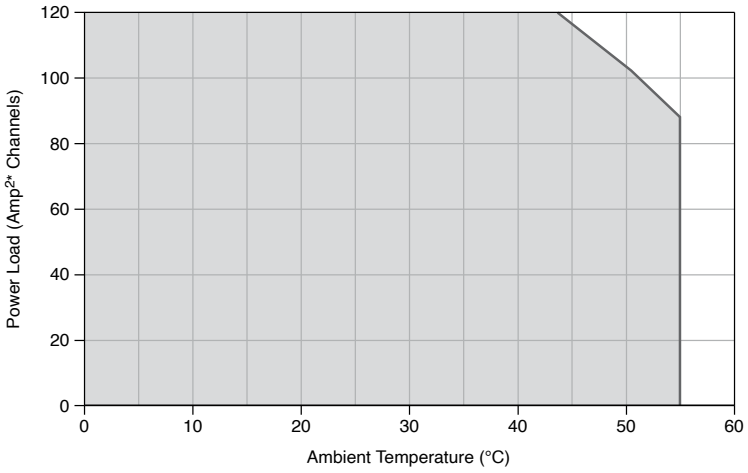
10 kHz	≥80 dB
100 kHz	≥60 dB

Derating PXI-2520 Load at >43 °C

To verify you are operating the PXI-2520 within supported 2-wire derating conditions, complete the following steps:

1. Use the following equation to calculate the load:
   $$\text{Load} = \text{Channels}_1 \times (\text{Current}_1)^2 + \text{Channels}_2 \times (\text{Current}_2)^2 + \ldots + \text{Channels}_n \times (\text{Current}_n)^2$$
   where **Channels** is the number of channels that simultaneously carry a signal, **Current**, for 1, ... , **n**.
2. Verify that the load at your ambient operating temperature falls within the shaded region of the following figure.

   Figure 1. PXI-2520 Load Derating



Examples of Load Derating

The following examples calculate supported derating conditions for the PXI-2520 .

Example 1

$$(30 \times 1.7^2) + (10 \times 1.5^2) = 109.2A^2 \times \text{channels}$$
$$(30 \times 1.7^2) + (10 \times 1.5^2) = 109.2A^2 \times \text{channels}$$

where	30 channels carry 1.7 A
	10 channels carry 1.5 A

You can use the module at ambient temperatures between 0 °C and 47 °C.

Example 2

$$(25 \times 1.55^2) + (5 \times 2.0^2) = 80.06A^2 \times \text{channels}$$
$$(25 \times 1.55^2) + (5 \times 2.0^2) = 80.06A^2 \times \text{channels}$$

where	25 channels carry 1.55 A
	5 channels carry 2.0 A

You can use the module at ambient temperatures between 0 °C and 55 °C.

Dynamic

Relay operate time	1 ms, typical 3.4 ms, maximum
Simultaneous drive limit	40 relays

Expected relay life

Mechanical	1×10^8 cycles

Electrical (resistive)

30 V, 1 A	5×10^5 cycles

30 V, 2 A	1×10^5 cycles

Trigger

Input trigger[1]

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

Output trigger

Destinations	PXI trigger lines <0...7>
Pulse width	Software-selectable: 1 µs to 62 µs

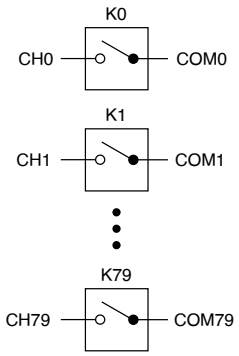
Physical

Relay type	Electromechanical, non-latching
Relay contact material	Palladium-ruthenium, gold covered
I/O connector	160 DIN 41612, 160 positions, male
Power requirement	6 W at 5 V, 2.5 W at 3.3 V
Dimensions (L × W × H)	3U, one slot, PXI/cPCI module 21.6 cm × 2.0 cm × 13.0 cm (8.5 in. × 0.8 in. × 5.1 in.)
Weight	174 g (6.1 oz)

Diagrams

Hardware Diagram

Figure 1. PXI-2520 Hardware Diagram



Accessories

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	782460-10

Table 1. NI Accessories for the PXI-2520

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.)

Random vibration

Operating	5 Hz to 500 Hz, 0.31 g_{rms} (Tested in accordance with IEC 60068-2-64.)
Nonoperating	5 Hz to 500 Hz, 2.46 g_{rms} (Tested in accordance with IEC 60068-2-64. 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.

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] The PXI-2520 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.

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