NI PXI-2522 Specifications

53-Channel SPDT Relay Module

This document lists specifications for the NI PXI-2522 general-purpose relay module. All specifications are subject to change without notice. Visit ni.com/manuals for the most current specifications.



Caution The protection provided by the NI PXI-2522 can be impaired if it is used in a manner not described in this document

Refer to the NI Switches Help for detailed topology 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 ambient temperature. Typical specifications are not warranted.

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



Caution Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document for important safety and electromagnetic compatibility information. To obtain a copy of this document online, visit ni.com/manuals, and search for the document title.



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

Input Characteristics

Maximum switching voltage

Channel-to-channel 100 V
Channel-to-ground 100 V, CAT I



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 or 230 VAC. Refer to the Read Me First: Safety and Electromagnetic Compatibility document for more information on measurement categories.



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



Caution The switching power is limited by the maximum switching current, the maximum voltage, and must not exceed 60 W, 62.5 VA.

Maximum switching power (per channel) 60 W, 62.5 VA (DC to 60 Hz) Maximum current Simultaneous channels at maximum current (≤55 °C)......40



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	$< 0.5 \Omega$
End-of-life	≥1.0 Ω

DC path resistance typically remains low for the life of the relay. At the end of relay life, the path resistance rises rapidly above 1 Ω . 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 \leq 51 MHz Crosstalk (typical at 23 °C, 50 Ω termination) Channel-to-channel 10 kHz....≤-70 dB 100 kHz....≤-50 dB Isolation (typical at 23 $^{\circ}$ C, 50 Ω termination) Open channel 10 kHz >75 dB

100 kHz....≥50 dB

Dynamic Characteristics

Relay operate time	
Typical	1 ms
Maximum	3.4 ms
Simultaneous drive limit	40 relays



Note Certain applications may require additional time for proper settling. For information about including additional settling time, refer to the NI Switches Help.

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



Note The relays used in the NI PXI-2522 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
Minimum pulse width	150 ns



Note The NI PXI-2522 can recognize trigger pulse widths less than 150 ns if you disable digital filtering. For information about disabling digital filtering, refer to the NI Switches Help.

Output trigger

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

Physical Characteristics

Relay type	Electromechanical, non-latching
Relay contact material	Palladium-ruthenium, gold covered
I/O connector	160 DIN 41612, 160 positions, male
PXI power requirement	7 W at 5 V,
	2.5 W at 3.3 V

Dimensions (L \times W \times H)	3U, one slot, PXI/cPCI module
	$21.6 \times 2.0 \times 13.0 \text{ cm} (8.5 \times 0.8 \times 5.1 \text{ in.})$
Weight	192 g (6.77 oz)

Environment

Storage temperature-20 °C to 70 °C Pollution Degree2 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.)

Diagrams

Figure 1 shows the NI PXI-2522 in power-on state.

Figure 1. NI PXI-2522 Power-On State

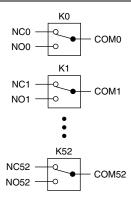


Figure 2. NI PXI-2522 Connector Pinout

COM 0	B32 C32	- NC 0
NO 0	D32 D00	— NO 3 — NO 4
	A32 E32	– NC 1
COM 1	B31 C31	— COM 3
NO 1	A31 0 0 0 0 D31 E31	— COM 4
COM 2		- NC 2
NO 2	D30 D20	— NC 3 — NC 4
	A30 0 0 0 0 0 E30	— NC 5
COM 5	B29 C29 D29	- NO 8
NO 5	A29 0 0 0 0 E29	— NO 9
COM 6	B28 C28	- NC 6
NO 6		— COM 8 — COM 9
		— NC 7
COM 7	B27 C27	- NC 8
NO 7	A27 O O O O D27	— NC 9
COM 10	B26 C26	— NC 10 — NC 13
NO 10		- NC 13
COM 11		— NC 11
	DZ5 D25	— COM 13
NO 11	A25 0 0 0 0 E25	- COM 14
COM 12	B24 C24	— NC 12 — NO 13
NO 12	A24 0 0 0 0 D24 E24	- NO 14
COM 15		— NC 15
NO 15	D23 D00	— NC 18 — NC 19
	A23 0 0 0 0 E23	- NC 16
COM 16	B22 C22	- COM 18
NO 16	A22 0 0 0 0 D22 E22	COM 19
COM 17	B21 C21	- NC 17
NO 17		— NO 18 — NO 19
COM 20	A21 C20 E21	- NC 20
	D20 D00	- NO 23
NO 20	A20 0 0 0 0 E20	- NO 24
COM 21	B19 C19	— NC 21 — COM 23
NO 21	A19 0 0 0 0 D19 E19	- COM 24
COM 22	C10	NC 22
NO 22	B18 D40	NC 23 NC 24
	A18 0 0 0 0 E18	- NC 25
COM 25	B17 C17 D17	— NO 28
NO 25	A17 0 0 0 0 0 E17	— NO 29
COM 26	C16	NC 26COM 28
		OOW 20

NO 25 —		_
	A17 ^O	— NC 26
COM 26 —	R16 C16	— NC 26 — COM 28
NO 26	A16 0 0 0 0 D16	COM 29
COM 27 —	C15	NC 27
NO 27 —	B15 D15	
	A15	— NC 30
COM 30 —	B14 C14 D14	NC 33
NO 30	A14 0 0 0 0 0 E14	NC 34
COM 31 -	B13 C13	— NC 31 — COM 33
NO 31 —		— COM 33 — COM 34
COM 32 —	C10	— NC 32
	DI2 DI0	NO 33
NO 32	A12 0 0 0 0 0 E12	NO 34 NC 35
COM 35 —	B11 C11	— NC 35 — NC 38
NO 35	A11 0 0 0 0 0 D11	NC 39
COM 36 -	C10	NC 36
NO 36 —	B10 1 0 D10	
	A10 E10	— COM 39 — NC 37
COM 37 —	B9 C9 D9	NO 38
NO 37 —	A9 0 0 0 0 E9	NO 39
COM 40	B8 C8	
NO 40		NC 43
COM 41 —	A8 C C C C E8	NC 41
	B7	— COM 43
NO 41 —	A7 0 0 0 0 0 E7	— COM 44 — NC 42
COM 42	B6 C6	NO 42
NO 42	A6 0 0 0 0 <u>D6</u>	NO 44
COM 45 —	B5 C5	NC 45
NO 45		
COM 46 —	A5 C C C E5	- NC 46
	B4 C4 D4	COM 48
NO 46	A4 0 0 0 0 0 E4	COM 49
COM 47 —	B3 C3	
NO 47	A3 0 0 0 0 D3 E3	NO 49
COM 50		NC 50
NO 50 —	B2 D0	
	A2 0 0 0 0 0 E2	NC 51
COM 51 —	B1 C1 D1	NC 52
NO 51 -	A1 0 0 0 0 0 0 D1	N/C

Accessories

Visit ni.com for more information about the following accessories.

Table 1. NI Accessories for the NI PXI-2522

Accessory	Part Number
DIN160 to 50 Pin DSUB 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	781089-10

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 generate radio frequency energy for the treatment of material or inspection/analysis purposes.



Note For EMC declarations and certifications, and additional information, refer to the *Online Product Certification* section.

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, 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 *Minimize Our Environmental Impact* 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.

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.

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