

SPECIFICATIONS

NI 6521

This document lists specifications for the NI 6521 device. All specifications are subject to change without notice. These specifications are typical at 25 °C unless otherwise noted.

Certification	UL listed
Maximum working voltage	
Channel-to-channel	150 V
Channel-to-earth	150 V, Measurement Category II



Caution This module is rated for Measurement Category II and is intended to carry signal voltages no greater than 150 V. This module can withstand up to 1,500 V impulse voltage. Do *not* use this module for connection to signals or for measurements within Categories III or IV. Do *not* connect to MAINS supply circuits greater than 150 VAC. Refer to the *NI 6520/6521 User Guide* for more information about measurement categories.

When hazardous voltages ($>42.4 V_{pk}/60$ VDC) are present on any signal, all signals must be considered hazardous. Ensure that external wiring or any circuits connected to the device are properly insulated from human contact.



Caution This product must be used with special keyed cables and accessories. Refer to the [Accessories](#) section of this document and the *37-Pin High-Voltage Accessory Safety Kit Installation Guide* shipped with your device for more information.



Caution The PCI-6521 must be installed in a PC that adequately grounds the front panel bracket to the chassis of the PC.



Caution Do *not* remove covers from the PCI-6521. Doing so can result in electrical shock or death.



Caution Use the PXI-6521 in a PXI chassis with properly installed PXI filler panels. Do *not* remove the filler panels from the PXI-6521. Doing so can result in electrical shock or death.

Digital I/O

Number of channels	16 (eight optically isolated digital input channels and eight non-latching relay output channels)
Data transfers	Interrupts, programmed I/O
I/O connector	37-pin keyed male D-SUB

Isolated Inputs

Number of input channels	8 (each bipolar and isolated from other channels)
Configuration	8-channel optically isolated digital inputs
Input voltage range	-30 VDC to 30 VDC, P0.X+ to P0.X-; 150 V, channel-to-earth ¹
Isolation	
Channel-to-channel	60 VDC continuous ²
Channel-to-bus	150 V continuous ³
Channel-to-earth	150 V continuous ⁴

Table 1. Digital Logic Levels

Level	Minimum	Maximum
Input low voltage	0 VDC	±4 VDC
Input high voltage	±11 VDC	±30 VDC

Input current

11 V inputs	4.5 mA/channel maximum
30 V inputs	12.5 mA/channel maximum
Propagation delay	45 µs typical

¹ The voltage added on P0.X+ can reach up to 150 VDC. The voltage added on P0.X- can reach up to 150 VDC. However, the voltage drop from P0.X+ to P0.X- should be limited within ±30 VDC.

² Verified by 620 Vrms dielectric withstand test, 5 s.

³ Verified by 1,400 Vrms dielectric withstand test, 5 s.

⁴ Verified by 850 Vrms dielectric withstand test, 5 s.

Electromechanical Relay Outputs

Number of channels	8
Configuration	3-channel SPDT, non-latching; 5-channel SPST, non-latching
Relay types	3 non-latching SPDT (Form C), 5 non-latching SPST (Form A)
Power-on state	De-energized, default; user-programmable to de-energized or energized



Note The response time of programmable power-up states is 400 ms.

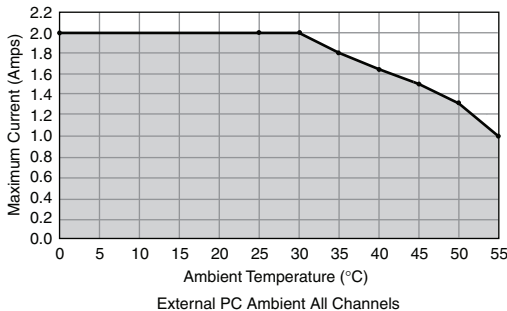
Default power-off state	Relays de-energized
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Caution The maximum switching current is limited by the maximum switching power, the maximum voltage, and must not exceed 60 W/60 VA.

Contact rating	
Maximum switching power	60 W/60 VA
Maximum voltage (AC)	150 VAC, CAT II
Maximum voltage (DC)	150 VDC, CAT II
Maximum current	
PXI-6521 (per channel)	2 A ¹
PCI-6521 (per channel)	Refer to Figure 1

Figure 1. Maximum Current for Ambient Temperatures ≤55 °C



¹ All relay channels—external PXI chassis ambient, up to 55 °C.

DC path resistance

Initial	<0.2 Ω typical
End of life	\geq 1.0 Ω typical
Relay operate time	2 ms typical, 4 ms maximum
Expected relay life	
Mechanical	100,000,000 cycles
Electrical	
30 VDC, 1 ADC resistive	500,000 cycles
30 VDC, 2 ADC resistive	100,000 cycles
125 VAC, 0.2 AAC resistive	300,000 cycles
125 VAC, 0.5 AAC resistive	100,000 cycles

Power Requirement

PXI-6521

3.3 V (\pm 5%)	100 mA maximum
5 V (\pm 5%)	300 mA typical, 500 mA maximum

PCI-6521

5 V (\pm 5%)	400 mA typical, 600 mA maximum
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Physical Characteristics

PXI-6521

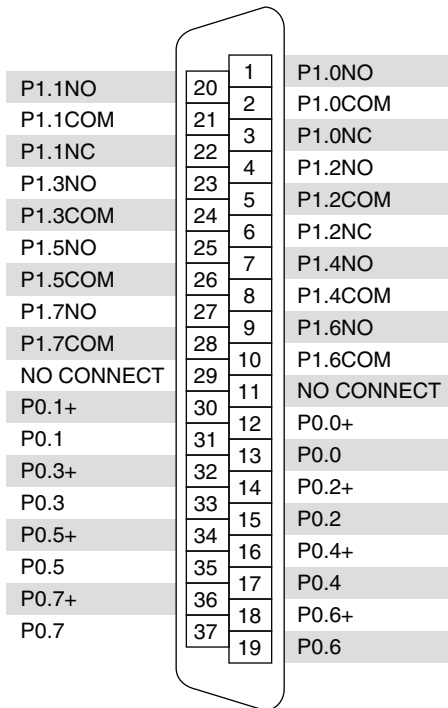
Dimensions	16 cm \times 10 cm (6.3 in. \times 3.9 in.)
Weight	150.0 g (5.0 oz)

PCI-6521

Dimensions	17.5 cm \times 9.9 cm (6.9 in. \times 3.9 in.)
Weight	170.0 g (6.0 oz)

Pin Assignments

Figure 2. NI 6521 Pin Assignments



Accessories

- **(PXI-6521 Only)** TB-2621, High-Voltage CAT II 150 V 37-Pin Front-Mounting PXI Terminal Block—779444-01
- SH37F-37M-2 37-Pin Female-to-Male Shielded I/O Cable, 2 m—778621-02
- SH37F-37M-1 37-Pin Female-to-Male Shielded I/O Cable, 1 m—778621-01
- CB-37F-HVD 37-Pin High-Voltage DIN Rail Mountable Terminal Block—779491-01
- 37-Pin High-Voltage Accessory Safety Kit—779445-01
- TB-37F-37CP 37-Pin Crimp and Poke Terminals—779185-01

Environmental

The NI 6521 device is intended for indoor use only.

Operating Environment

Ambient temperature range	0 to 55 °C
Relative humidity range	10 to 90%, noncondensing
Altitude	2,000 m (at 25 °C ambient temperature)
Pollution Degree	2

Storage Environment

Ambient temperature range	-20 to 70 °C
Relative humidity range	5 to 95%, noncondensing

Shock and Vibration (PXI-6521 Only)

Operational shock	30 g peak, half-sine, 11 ms pulse
Random vibration	
Operating	5 to 500 Hz, 0.3 grms
Nonoperating	5 to 500 Hz, 2.4 grms

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 (IEC 61326): 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 For the standards applied to assess the EMC of this product, refer to the [Online Product Certification](#) section.



Note For EMC compliance, operate this device with shielded cabling.

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

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the 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, NI WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste and Electronic Equipment, visit ni.com/environment/weee.

电子信息产品污染控制管理办法（中国 RoHS）



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