NI 6521 Specifications

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]

[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.

Isolation

Channel-to-channel.....60 VDC continuous[1]

Channel-to-bus.....150 V continuous[2]

Channel-to-earth .....150 V continuous[3]

Digital logic levels

Level	Min	Max
Input low voltage	0 VDC	±4 VDC
Input high voltage	±11 VDC	±30 VDC

Input current

11 V inputs.....4.5 mA/channel max

30 V inputs.....12.5 mA/channel max

Propagation delay .....45 µs typ

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

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[4]

PCI-6521 (per channel)..... Refer to Figure 1

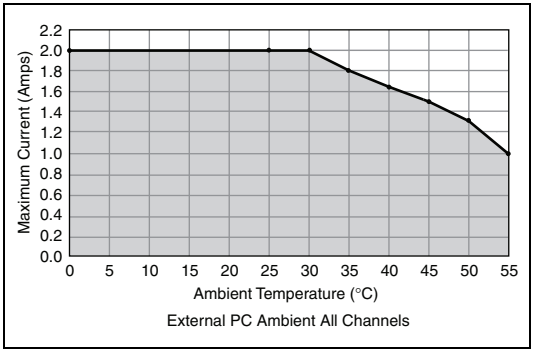

Figure 1. Maximum Current for Ambient Temperatures ≤55 °C

DC path resistance

Initial ..... <0.2 Ω typ

End of life..... ≥1.0 Ω typ

Relay operate time ..... 2 ms typ
4 ms max

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 (±5%)..... 100 mA max

5 V (±5%)..... 300 mA typ, 500 mA max

PCI-6521

5 V (±5%)..... 400 mA typ, 600 mA max

[1] Verified by 620 Vrms dielectric withstand test, 5 s.

[2] Verified by 1,400 Vrms dielectric withstand test, 5 s.

[3] Verified by 850 Vrms dielectric withstand test, 5 s.

[4] All relay channels—external PXI chassis ambient, up to 55 °C.

Physical Characteristics

PXI-6521

Dimensions ..... 16 cm × 10 cm (6.3 in. × 3.9 in.)

Weight ..... 150.0 g (5.0 oz)

PCI-6521

Dimensions ..... 17.5 cm × 9.9 cm (6.9 in. × 3.9 in.)

Weight ..... 170.0 g (6.0 oz)

Pin Assignments

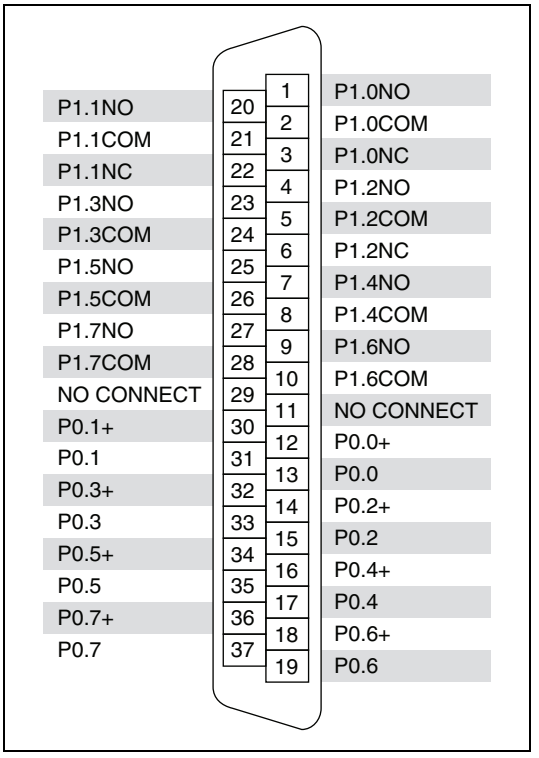

Figure 2. NI 6521 Pin Assignments

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 (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)

Altitude ..... 2,000 m (at 25 °C ambient temperature)

Pollution Degree 2

Storage Environment

Ambient temperature range ..... –20 to 70 °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 (PXI-6521 Only)

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 grms

Nonoperating ..... 5 to 500 Hz, 2.4 grms

Random vibration is tested in accordance with IEC-60068-2-64. The nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.

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 CE

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 *NI and the Environment* 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`.

电子信息产品污染控制管理办法 （中国 RoHS）

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Where to Go for Support

The National Instruments Web site is your complete resource for technical support. At `ni.com/support` you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

A Declaration of Conformity (DoC) is our claim of compliance with the Council of the European Communities using the manufacturer's declaration of conformity. This system affords the user protection for electromagnetic compatibility (EMC) and product safety. You can obtain the DoC for your product by visiting `ni.com/certification`. If your product supports calibration, you can obtain the calibration certificate for your product at `ni.com/calibration`.

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Czech Republic 420 224 235 774, Denmark 45 45 76 26 00,
Finland 358 (0) 9 725 72511, France 01 57 66 24 24,
Germany 49 89 7413130, India 91 80 41190000,
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Japan 0120-527196, Korea 82 02 3451 3400,
Lebanon 961 (0) 1 33 28 28, Malaysia 1800 887710,
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New Zealand 0800 553 322, Norway 47 (0) 66 90 76 60,
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