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Find the *National Instruments PXI-8423/2* at our website: *Click HERE*

NI Serial Hardware Specifications Guide

This document lists safety and compliance information for NI Serial hardware, as well as physical specifications, software characteristics, and recommended operating conditions.

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Safety and Radio-Frequency Interference

This section contains safety instructions and information about the radio-frequency interference characteristics of the hardware it accompanies. Read this section before installing and using the new hardware.

Safety Information

This section contains important safety information that you *must* follow when installing and using the module.

Do *not* operate the module in a manner not specified in this document. Misuse of the module can result in a hazard. You can compromise the safety protection built into the module if the module is damaged in any way. If the module is damaged, return it to National Instruments (NI) for repair.

NATIONAL INSTRUMENTS

Do *not* substitute parts or modify the module except as described in this document. Use the module only with the chassis, modules, accessories, and cables specified in the installation instructions. You *must* have all covers and filler panels installed during operation of the module.

Do *not* operate the module in an explosive atmosphere or where there may be flammable gases or fumes. If you must operate the module in such an environment, it must be in a suitably rated enclosure.

If you need to clean the module, use a soft, nonmetallic brush. Make sure that the module is completely dry and free from contaminants before returning it to service.

Operate the module only at or below Pollution Degree 2. Pollution is foreign matter in a solid, liquid, or gaseous state that can reduce dielectric strength or surface resistivity. The following is a description of pollution degrees:

- Pollution Degree 1 means no pollution or only dry, nonconductive pollution occurs. The pollution has no influence.
- Pollution Degree 2 means that only nonconductive pollution occurs in most cases. Occasionally, however, a temporary conductivity caused by condensation must be expected.
- Pollution Degree 3 means that conductive pollution occurs, or dry, nonconductive pollution occurs that becomes conductive due to condensation.

You *must* insulate signal connections for the maximum voltage for which the module is rated. Do *not* exceed the maximum ratings for the module. Do not install wiring while the module is live with electrical signals. Do not remove or add connector blocks when power is connected to the system. Avoid contact between your body and the connector block signal when hot swapping modules. Remove power from signal lines before connecting them to or disconnecting them from the module.

Compliance with FCC/Canada Radio Frequency Interference Regulations

Determining FCC Class

The Federal Communications Commission (FCC) has rules to protect wireless communications from interference. The FCC places digital electronics into two classes. These classes are known as Class A (for use in industrial-commercial locations only) or Class B (for use in residential or commercial locations). All National Instruments (NI) products are FCC Class A products.

Depending on where it is operated, this Class A product could be subject to restrictions in the FCC rules. (In Canada, the Department of Communications (DOC), of Industry Canada, regulates wireless interference in much the same way.) Digital electronics emit weak signals during normal operation that can affect radio, television, or other wireless products.

All Class A products display a simple warning statement of one paragraph in length regarding interference and undesired operation. The FCC rules have restrictions regarding the locations where FCC Class A products can be operated.

Consult the FCC Web site at `www.fcc.gov` for more information.

FCC/DOC Warnings

This equipment generates and uses radio frequency energy and, if not installed and used in strict accordance with the instructions in this manual and the CE marking Declaration of Conformity[1], may cause interference to radio and television reception. Classification requirements are the same for the Federal Communications Commission (FCC) and the Canadian Department of Communications (DOC).

Changes or modifications not expressly approved by NI could void the user's authority to operate the equipment under the FCC Rules.

Class A

Federal Communications Commission

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at their own expense.

Canadian Department of Communications

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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[1] The CE marking Declaration of Conformity contains important supplementary information and instructions for the user or installer.

Compliance with EU Directives

Users in the European Union (EU) should refer to the Declaration of Conformity (DoC) for information[1] pertaining to the CE marking. Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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.

Caution If the NI Serial hardware is used in a manner inconsistent with the instructions or specifications listed by National Instruments, the protective features of the chassis may be impaired.

PCI Serial Hardware

This section describes the characteristics of the PCI serial hardware and the recommended operating conditions.

Note This equipment is intended for indoor use only.

Safety

This product is designed to meet 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 visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

This product is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

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

[1] The CE marking Declaration of Conformity contains important supplementary information and instructions for the user or installer.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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

National Instruments is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial not only to the environment but also 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 any other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of their life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit `ni.com/environment/weee.htm`.

电子信息产品污染控制管理办法 （中国 RoHS）

中国客户 National Instruments 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 National Instruments 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`.)

PCI-843*x* Series Hardware

Nonisolated PCI Two-Port Boards

Dimensions..... 10.67 × 14.22 cm (4.2 × 5.6 in.)

I/O connector..... DB-9

Power requirement (from PCI channel)

PCI-8430/2

+5 VDC .....325 mA typical
500 mA maximum

PCI-8431/2

+5 VDC .....500 mA typical
700 mA maximum

Weight

PCI-8430/2 .....88 g

PCI-8431/2 .....92 g

Nonisolated PCI Four-Port Boards

Dimensions .....10.67 × 14.22 cm
(4.2 × 5.6 in.)

I/O connector[1].....10-position modular jack

Power requirement (from PCI channel)

PCI-8430/4

+5 VDC .....400 mA typical
600 mA maximum

PCI-8431/4

+5 VDC .....725 mA typical
1.1 A maximum

Weight

PCI-8430/4 .....99 g

PCI-8431/4 .....102 g

Nonisolated PCI Eight-Port Boards

Dimensions .....10.67 × 14.48 cm
(4.2 × 5.7 in.)

I/O connector[2].....68-position, SCSI type connector

[1] The four-port PCI serial boards require cables, which are included in your kit, to convert the 68-position connector to eight DB-9 connectors.

[2] The eight-port PCI serial boards require a cable, which is included in your kit, to convert the 68-position connector to eight DB-9 connectors.

Power requirement (from PCI channel)

PCI-8430/8

+5 VDC..... 600 mA typical
900 mA maximum

PCI-8431/8

+5 VDC..... 1.3 A typical
1.9 A maximum

Weight

PCI-8430/8..... 84 g

PCI-8431/8..... 85 g

Nonisolated PCI 16-Port Boards

Dimensions..... 10.67 × 17.52 cm
(4.2 × 6.9 in.)

I/O connector[1] ..... 68-position, VHDCI × 2

Power requirement (from PCI channel)

PCI-8430/16

+5 VDC..... 935 mA typical
1.4 A maximum

Weight..... 99 g

Isolated PCI Two-Port Boards

Dimensions..... 10.67 × 17.52 cm
(4.2 × 6.9 in.)

I/O connector..... DB-9

Rated voltage, continuous

RS-485 ..... –7 to +12 V

RS-232 ..... –25 to +25 V

Isolation voltage, noncontinuous (withstand)

From port to port..... 2,000 V_{rms}/5 s

From any port to host computer..... 2,000 V_{rms}/5 s

[1] The 16-port PCI serial boards require two cables, which are included in your kit, to convert the two 68-position connectors to the 16 (2 × 8) DB-9 connectors.

Power requirement (from PCI channel)

PCI-8432/2

+5 VDC .....380 mA typical
570 mA maximum

PCI-8433/2

+5 VDC .....380 mA typical
570 mA maximum

Weight

PCI-8432/2 .....102 g

PCI-8433/2 .....104 g

Isolated PCI Four-Port Boards

Dimensions .....10.67 × 17.44 cm
(4.2 × 6.9 in.)

I/O connector[1] .....10-position modular jack

Rated voltage, continuous

RS-485 .....–7 to +12 V

RS-232 .....–25 to +25 V

Isolation voltage, noncontinuous (withstand)

From port to port .....2,000 V_{rms}/5 s

From any port to host computer .....2,000 V_{rms}/5 s

Power requirement (from PCI channel)

PCI-8432/4

+5 VDC .....550 mA typical
815 mA maximum

PCI-8433/4

+5 VDC .....785 mA typical
1.2 A maximum

Weight

PCI-8432/4 .....105 g

PCI-8433/4 .....106 g

[1] The four-port PCI serial boards require cables, which are included in your kit, to convert the 10-position modular jacks to DB-9 connectors.

Legacy PCI Hardware

Nonisolated PCI Two-Port Boards

Dimensions..... 10.67 × 14.22 cm
(4.2 × 5.6 in.)

I/O connector..... DB-9

Power requirement (from PCI channel)

PCI-485/2

+5 VDC..... 350 mA typical
750 mA maximum

PCI-232/2

+5 VDC..... 50 mA typical
100 mA maximum

±12 VDC..... 20 mA typical
200 mA maximum

Nonisolated PCI Four-Port Boards

Dimensions..... 10.67 × 14.22 cm
(4.2 × 5.6 in.)

I/O connector[1] ..... 10-position modular jack

Power requirement (from PCI channel)

PCI-485/4

+5 VDC..... 700 mA typical
1.3 A maximum

PCI-232/4

+5 VDC..... 70 mA typical
150 mA maximum

±12 VDC..... 40 mA typical
400 mA maximum

[1] The four-port legacy PCI serial boards require a cable to convert the 10-position modular jack to either DB-9 or DB-25 connectors.

Nonisolated PCI Eight-Port Boards

Dimensions .....10.67 × 14.48 cm (4.2 × 5.7 in.)

I/O connector[1] .....68-position, SCSI type connector

Power requirement (from PCI channel)

PCI-485/8

+5 VDC .....1.1 A typical
2.0 A maximum

PCI-232/8

+5 VDC .....100 mA typical
180 mA maximum

±12 VDC .....80 mA typical
800 mA maximum

Nonisolated PCI 16-Port Boards

Dimensions .....10.67 × 17.52 cm (4.2 × 6.9 in.)

I/O connector[2] .....100-position, SCSI type connector

Power requirement (from PCI channel)

PCI-232/16

+5 VDC .....250 mA typical
500 mA maximum

Isolated PCI Two-Port Boards

Dimensions .....10.67 × 17.52 cm (4.2 × 6.9 in.)

I/O connector DB-9

Rated voltage, continuous

RS-485 .....–7 to +12 V

RS-232 .....–25 to +25 V

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[1] The eight-port legacy PCI serial boards require a cable, which is included in your kit, to convert the 68-position connector to eight DB-9 connectors.

[2] The 16-port legacy PCI serial boards require a breakout box, which is included in your kit, to separate the 100-position connector to 16 DB-9 connectors.

Isolation voltage, noncontinuous (withstand)

From port to port..... 2,000 V_{rms}/5 s

From any port to host computer..... 2,000 V_{rms}/5 s

Power requirement (from PCI channel)

PCI-485/2

+5 VDC..... 800 mA typical
1.3 A maximum

PCI-232/2

+5 VDC..... 400 mA typical
650 mA maximum

Isolated PCI Four-Port Boards

Dimensions..... 10.67 × 17.44 cm
(4.2 × 6.9 in.)

I/O connector[1] ..... 10-position modular jack

Rated voltage, continuous

RS-485 ..... –7 to +12 V

RS-232 ..... –25 to +25 V

Isolation voltage, noncontinuous (withstand)

From port to port..... 2,000 V_{rms}/5 s

From any port to host computer..... 2,000 V_{rms}/5 s

Power requirement (from PCI channel)

PCI-485/4

+5 VDC..... 1.0 A typical
1.5 A maximum

PCI-232/4

+5 VDC..... 500 mA typical
750 mA maximum

[1] The four-port legacy PCI serial boards require a cable to convert the 10-position modular jack to either DB-9 or DB-25 connectors.

Environmental Characteristics

Operating Environment

Ambient temperature .....0 to 55 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity .....10 to 90%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Altitude (maximum) .....2,000 m

Indoor use only.

Storage Environment

Ambient temperature .....–20 to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity .....5 to 95%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Other Specifications

Maximum cable length

- RS-485[1] .....30 m (limited by EMC/surge)
- RS-232.....2,500 pF equivalent (TIA-EIA-232-F 2.1.4)

Data line ESD protection (human body model)

- RS-485.....±15 kV
- RS-232.....±15 kV

[1] RS-485 is capable of 1.2 km (4,000 ft) without surge limitation.

PXI Serial Hardware

This section describes the characteristics of the PXI serial hardware and the recommended operating conditions.

Note This equipment is intended for indoor use only.

Safety

This product is designed to meet 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 visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

This product is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

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

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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

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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 any other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)



EU Customers At the end of their life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit `ni.com/environment/weee.htm`.

电子信息产品污染控制管理办法 （中国 RoHS）



中国客户 National Instruments 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 National Instruments 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`.)

PXI-843*x* Serial Hardware

Nonisolated PXI Two-Port Boards

Dimensions .....100 × 160 mm
(3.94 × 6.37 in.)

I/O connector DB-9

Power requirement (from PXI channel)

PXI-8430/2

+5 VDC .....325 mA typical
500 mA maximum

PXI-8431/2

+5 VDC .....500 mA typical
750 mA maximum

Weight

PXI-8430/2 .....134 g

PXI-8431/2 .....134 g

Nonisolated PXI Four-Port Boards

Dimensions..... 100 × 160 mm
(3.94 × 6.37 in.)

I/O connector[1] ..... 10-position modular jack

Power requirement (from PXI channel)

PXI-8430/4

+5 VDC..... 400 mA typical
600 mA maximum

PXI-8431/4

+5 VDC..... 725 mA typical
1.1 A maximum

Weight

PXI-8430/4..... 137 g

PXI-8431/4..... 140 g

Nonisolated PXI Eight-Port Boards

Dimensions..... 100 × 160 mm
(3.94 × 6.37 in.), 3U

I/O connector[2] ..... 68-position SCSI (68-pin SCSI to eight DB-9 adapter cable included)

Power requirement (from PXI channel)

PXI-8430/8

+5 VDC..... 1 A typical
1.5 A maximum

PXI-8431/8

+5 VDC..... 925 mA typical
1.4 A maximum

Weight

PXI-8430/8..... 135 g

PXI-8431/8..... 137 g

---

[1] The four-port PXI serial boards require cables, which are included in your kit, to convert the 10-position modular jacks to DB-9 connectors.

[2] The eight-port PXI serial boards require a cable, which is included in your kit, to convert the 68-position connector to eight DB-9 connectors.

Nonisolated PXI 16-Port Boards

Dimensions .....100 × 160 mm
(3.94 × 6.37 in.), 3U

I/O connector[1] .....68-position VHDCI × 2

Power requirement (from PXI channel)

PXI-8430/16

+5 VDC .....935 mA typical
1.4 A maximum

Weight .....157 g

Isolated PXI Two-Port Boards

Dimensions .....100 × 160 mm
(3.94 × 6.37 in.), 3U

I/O connector .....DB-9 × 2

Rated voltage, continuous

RS-485 .....–7 to +12 V

RS-232 .....–25 to +25 V

Isolation voltage, noncontinuous (withstand)

From port to port .....2,000 V_{rms}/5 s

From any port to host computer .....2,000 V_{rms}/5 s

Power requirement (from PXI channel)

PXI-8432/2

+5 VDC .....725 mA typical
1 A maximum

PXI-8433/2

+5 VDC .....725 mA typical
1 A maximum

Weight

PXI-8432/2 .....125 g

PXI-8433/2 .....125 g

[1] The 16-port PXI serial boards require two cables, which are included in your kit, to convert the two 68-position connectors to the 16 (2 × 8) DB-9 connectors.

Isolated PXI Four-Port Boards

Dimensions..... 100 × 160 mm
(3.94 × 6.37 in.), 3U

I/O connector[1] ..... 10-position modular jack
(RJ-50) × 4

Rated voltage, continuous

RS-485 ..... –7 to +12 V

RS-232 ..... –25 to +25 V

Isolation voltage, noncontinuous (withstand)

From port to port..... 2,000 V_{rms}/5 s

From any port to host computer..... 2,000 V_{rms}/5 s

Power requirement (from PXI channel)

PXI-8432/4

+5 VDC..... 925 mA typical
2 A maximum

PXI-8433/4

+5 VDC..... 950 mA typical
2 A maximum

Weight

PXI-8432/4..... 147 g

PXI-8433/4..... 147 g

Environmental Characteristics

Operating Environment

Ambient temperature..... 0 to 55 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity..... 10 to 90%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Altitude (maximum)..... 2,000 m

Indoor use only.

[1] The four-port PXI serial boards require cables, which are included in your kit, to convert the 10-position modular jacks to DB-9 connectors.

Storage Environment

Ambient temperature .....–20 to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity .....5 to 95%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Other Specifications

Maximum cable length

- RS-485[1] .....30 m (limited by EMC/surge)
- RS-232.....2,500 pF equivalent (TIA-EIA-232-F 2.1.4)

Data line ESD protection (human body model)

- RS-485.....±15 kV
- RS-232.....±15 kV

Legacy PXI Serial Hardware

Nonisolated PXI Two-Port Boards

Dimensions .....100 × 160 mm (3.94 × 6.37 in.)

I/O connector DB-9

Power requirement (from PXI channel)

- PXI-8420/2
  - +5 VDC .....100 mA typical, 150 mA maximum
  - ±12 VDC .....20 mA typical, 200 mA maximum
- PXI-8421/2
  - +5 VDC .....350 mA typical, 750 mA maximum

[1] RS-485 is capable of 1.2 km (4,000 ft) without surge limitation.

Nonisolated PXI Four-Port Boards

Dimensions..... 100 × 160 mm
(3.94 × 6.37 in.)

I/O connector[1] ..... 10-position modular jack

Power requirement (from PXI channel)

PXI-8420/4

+5 VDC..... 125 mA typical
200 mA maximum

±12 VDC..... 40 mA typical
400 mA maximum

PXI-8421/4

+5 VDC..... 350 mA typical
750 mA maximum

Nonisolated PXI Eight-Port Boards

Dimensions..... 100 × 160 mm
(3.94 × 6.37 in.)

I/O connector[2] ..... 68-position, SCSI type connector

Power requirement (from PXI channel)

PXI-8420/8

+5 VDC..... 150 mA typical
250 mA maximum

±12 VDC..... 80 mA typical
800 mA maximum

PXI-8421/8

+5 VDC..... 1.1 A typical
2.0 A maximum

[1] The four-port legacy PXI serial boards require a cable to convert the 10-position modular jack to either DB-9 or DB-25 connectors.

[2] The eight-port legacy PXI serial boards require a cable, which is included in your kit, to convert the 68-position connector to eight DB-9 connectors.

Nonisolated PXI 16-Port Boards

Dimensions .....100 × 160 mm (3.94 × 6.37 in.)

I/O connector[1].....100-position, SCSI type connector

Power requirement (from PXI channel)

PXI-8420/16

+5 VDC .....500 mA typical
750 mA maximum

Isolated PXI Two-Port Boards

Dimensions .....100 × 160 mm (3.94 × 6.37 in.)

I/O connector DB-9

Rated voltage, continuous

RS-485.....–7 to +12 V

RS-232.....–25 to +25 V

Isolation voltage, noncontinuous (withstand)

From port to port .....2,000 V_{rms}/5 s

From any port to host computer .....2,000 V_{rms}/5 s

Power requirement (from PXI channel)

PXI-8422/2

+5 VDC .....400 mA typical, 650 mA maximum

PXI-8423/2

+5 VDC .....800 mA typical, 1.3 A maximum

Isolated PXI Four-Port Boards

Dimensions .....100 × 160 mm (3.94 × 6.37 in.)

I/O connector[2].....10-position modular jack

[1] The 16-port legacy PXI serial boards require a breakout box, which is included in your kit, to separate the 100-position connector to 16 DB-9 connectors.

[2] The four-port legacy PXI serial boards require a cable to convert the 10-position modular jack to either DB-9 or DB-25 connectors.

Rated voltage, continuous

RS-485 ..... –7 to +12 V

RS-232 ..... –25 to +25 V

Isolation voltage, noncontinuous (withstand)

From port to port..... 2,000 V_{rms}/5 s

From any port to host computer..... 2,000 V_{rms}/5 s

Power requirement (from PXI channel)

PXI-8422/4

+5 VDC..... 500 mA typical
750 mA maximum

PXI-8423/4

+5 VDC..... 1.0 A typical
1.5 A maximum

Environmental Characteristics

Operating Environment

Ambient temperature..... 0 to 55 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity..... 10 to 90%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Altitude (maximum)..... 2,000 m

Indoor use only.

Storage Environment

Ambient temperature..... –20 to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity..... 5 to 95%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Other Specifications

Maximum cable length

RS-485[1] .....30 m (limited by EMC/surge)

RS-232.....2,500 pF equivalent (TIA-EIA-232-F 2.1.4)

Data line ESD protection (human body model)

RS-485.....±15 kV

RS-232.....±15 kV

USB Serial Hardware

This section describes the characteristics of the USB serial hardware and the recommended operating conditions.

Note This equipment is intended for indoor use only.

Safety

This product is designed to meet 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 visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

This product is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

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

[1] RS-485 is capable of 1.2 km (4,000 ft) without surge limitation.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

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Waste Electrical and Electronic Equipment (WEEE)

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电子信息产品污染控制管理办法 （中国 RoHS）

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One-Port USB Hardware

Dimensions..... 3.81 × 3.56 × 1.52 cm (1.5 × 1.4 × 0.6 in.)

Case material..... PVC

Weight

- USB-232 ..... 121 g (0.27 lb)
- USB-485 ..... 118 g (0.26 lb)

I/O connector DB-9

USB connector.....Captive cable with USB series A plug

Power requirement (from USB channel)

USB-485

+5 VDC .....175 mA typical
500 mA maximum

USB-232

+5 VDC .....80 mA typical
100 mA maximum

Two and Four-Port USB Hardware

Dimensions .....21.08 × 12.45 × 3.56 cm (8.3 × 4.9 × 1.4 in.)

Case material .....Hard plastic with metal baseplate

Weight .....375 g (0.83 lb)

I/O connector DB-9

USB connector.....USB series B

Power requirement (from USB channel)

USB-485/2

+5 VDC .....300 mA typical
500 mA maximum

USB-232/2

+5 VDC .....200 mA typical
500 mA maximum

USB-232/4

+5 VDC .....300 mA typical
500 mA maximum

Power requirement (from external supply)

USB-485/4 (9 V–30 V)

+12 VDC (typical).....225 mA typical
500 mA maximum

Environmental Characteristics

Operating Environment

Ambient temperature ..... 0 to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity ..... 10 to 90%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Altitude (maximum) ..... 2,000 m

Indoor use only.

Storage Environment

Ambient temperature

- One port ..... –40 to 80 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)
- Two and four port ..... –40 to 85 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity ..... 5 to 95%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Other Specifications

Maximum cable length

- RS-485[1] ..... 30 m (limited by EMC/surge)
- RS-232 ..... 2,500 pF equivalent (TIA-EIA-232-F 2.1.4)

Data line ESD protection (human body model)

- RS-485 ..... ±15 kV
- RS-232 ..... ±15 kV

[1] RS-485 is capable of 1.2 km (4,000 ft) without surge limitation.

ENET Serial Hardware

This section describes the characteristics of the ENET serial hardware, along with the recommended operating conditions.

Note This equipment is intended for indoor use only.

Safety

This product is designed to meet 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 visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

This product is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

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

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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

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(For information about China RoHS compliance, go to `ni.com/environment/rohs_china`.)

Electrical Characteristics

Power requirement (from external supply)

External supply (9 V–30 V)

+12 VDC (typical) ..... 500 mA typical
750 mA maximum

Environmental Characteristics

Operating Environment

Ambient temperature..... 0 to 70 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity..... 10 to 90%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Altitude (maximum)..... 2,000 m

Storage Environment

Ambient temperature .....–40 to 85 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity .....5 to 95%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Physical Characteristics

Overall case size (dimensions) .....21.0 × 12.4 × 3.7 cm (8.25 × 4.89 × 1.44 in.)

Case material .....Hard plastic with metal baseplate

Weight .....394 g (0.87 lb)

Serial connectors.....DB-9

Network Specifications

Ethernet connector RJ-45

Connection type .....IEEE 802.3 compliant
100Base-TX (100 Mbits/s)
10Base-T (10 Mbits/s)

Duplex mode.....Half duplex

Other Specifications

Maximum cable length

- RS-485[1] .....30 m (limited by EMC/surge)
- RS-232.....2,500 pF equivalent (TIA-EIA-232-F 2.1.4)

Data line ESD protection (human body model)

- RS-485.....±15 kV
- RS-232.....±15 kV

[1] RS-485 is capable of 1.2 km (4,000 ft) without surge limitation.

ExpressCard Serial Hardware

This section describes the characteristics of the ExpressCard serial hardware, along with the recommended operating conditions.

Note This equipment is intended for indoor use only.

Safety

This product is designed to meet 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 visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

This product is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

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

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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.

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(For information about China RoHS compliance, go to `ni.com/environment/rohs_china`.)

Hardware Specifications

Dimensions .....34 × 75 × 5 mm
(1.34 × 2.95 × 0.2 in.)

Weight

- ExpressCard-8420/2 .....16 g (0.5 oz)
- ExpressCard-8421/2 .....17 g (0.6 oz)

Connectors

- I/O connector .....26-position latching connector with 20 cm breakout cable to two DB-9 connectors (male)
- ExpressCard.....ExpressCard/34 standard connector interface

Power requirements
(from ExpressCard USB interface)

Voltage.....+3.3 VDC ± 10%

NI ExpressCard-8420/2

- +3.3 VDC .....100 mA typical
  250 mA maximum

NI ExpressCard-8421/2

+3.3 VDC ..... 160 mA typical
260 mA maximum

Environmental Characteristics

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

Pollution Degree 2

Indoor use only.

Operating Environment

Ambient temperature ..... 0 to 65 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity ..... 5 to 95%, noncondensing (Tested in accordance with IEC-60068-2-56.)



Hot Surface Be careful when removing ExpressCards. Recently used ExpressCards may exceed safe handling temperatures.

Storage Environment

Ambient temperature ..... –20 to 65 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Nonoperating thermal shock ..... –20 to 65 °C, 5 shocks

Other Specifications

Maximum cable length

RS-485[1] ..... 30 m (limited by EMC/surge)

RS-232 ..... 2,500 pF equivalent (TIA-EIA-232-F 2.1.4)

Data line ESD protection (human body model)

RS-485 ..... ±15 kV

RS-232 ..... ±15 kV

[1] RS-485 is capable of 1.2 km (4,000 ft) without surge limitation.

PCMCIA Serial Hardware

This section describes the characteristics of the PCMCIA serial hardware, along with the recommended operating conditions.

Note This equipment is intended for indoor use only.

Safety

This product is designed to meet 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 visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

This product is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

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

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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.

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Hardware Specifications

Dimensions..... Type II PC card

I/O connector..... Adapter cable with DB-9 Dsub connector and converter for PC card

Power requirement
(from PCMCIA expansion slot)

PCMCIA-232

+5 VDC..... 40 mA typical, 150 mA maximum

PCMCIA-485

+5 VDC..... 110 mA typical, 225 mA maximum

PCMCIA-232/2

+5 VDC..... 60 mA typical, 250 mA maximum

PCMCIA-485/2

+5 VDC .....150 mA typical, 400 mA maximum

PCMCIA-232/4

+5 VDC .....60 mA typical, 200 mA maximum

Environmental Characteristics

Operating Environment

Ambient temperature .....0 to 55 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity .....10 to 90%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Altitude (maximum) .....2,000 m

Storage Environment

Ambient temperature .....–40 to 120 °C (Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity .....5 to 95%, noncondensing (Tested in accordance with IEC-60068-2-56.)

Other Specifications

Maximum cable length

RS-485[1] .....30 m (limited by EMC/surge)

RS-232.....2,500 pF equivalent (TIA-EIA-232-F 2.1.4)

Data line ESD protection (human body model)

RS-485.....±15 kV

RS-232.....±15 kV

[1] RS-485 is capable of 1.2 km (4,000 ft) without surge limitation.

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.

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