

NATIONAL INSTRUMENTS PXIe-4163 PXI Source Measure Unit Instruction Manual



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PXIe-4163

SAFETY, ENVIRONMENTAL, AND REGULATORY INFORMATION

PXIe-4163

PXIe, 24-Channel, ± 24 V, 100 pA Precision PXI Source Measure Unit

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Icons



Notice Take precautions to avoid data loss, loss of signal integrity, degradation of performance, or damage to the model.



Caution Take precautions to avoid injury. Consult the model documentation for cautionary statements when you see this icon printed on the model. Cautionary statements are localized into French for compliance with Canadian requirements.



ESD Sensitive Take precautions to avoid damaging the model with electrostatic discharge.

Safety



Caution Observe all instructions and cautions in the user documentation. Using the model in a manner not specified can damage the model and compromise the built-in safety protection. Return damaged models to NI for repair.

Safety Voltage and Current

DC voltage

Range	$\pm 24\text{ V}$
Functional isolation, any pin to earth ground	60 V DC



Note Pins are functionally isolated from chassis ground to prevent ground loops, but do not meet IEC 61010-1 for safety isolation.

DC current range

Chassis with slot cooling capacity $\geq 58\text{ W}$	$\pm 50\text{ mA}$
All other compatible chassis	$\pm 30\text{ mA}$



Caution Do not connect the PXle-4163 to signals or use for measurements within Measurement Categories II, III, or IV.

Safety 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

Electromagnetic Compatibility Guidelines

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference when the product is operated in its intended operational electromagnetic environment.

This product is intended for use in commercial and light-industrial locations. However, harmful interference may occur in some installations, when the product is connected to a peripheral device or test object, or if the product is used in residential areas. To minimize interference with radio and television reception and prevent unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Furthermore, any changes or modifications to the product not expressly approved by NI could void your authority to operate it under your local regulatory rules.

EMC Notices

Refer to the following notices for cables, accessories, and prevention measures necessary to ensure the specified EMC performance.



Notice Operate this product only with shielded cables and accessories. Do not use unshielded cables or accessories unless they are installed in a shielded enclosure with properly designed and shielded input/output ports and connected to the product using a shielded cable. If unshielded cables or accessories are not properly installed and shielded, the EMC specifications for the product are no longer guaranteed.



Notice The performance of this product can be disrupted if subjected to Electrostatic Discharge (ESD) during operation. To prevent damage, industry-standard ESD prevention measures must be employed during installation, maintenance, and operation.



Notice This product may become more sensitive to electromagnetic disturbances in the operational environment when test leads are attached or when the product is connected to a test object.



Notice For EMC declarations and certifications, and additional information, refer to the Product Certifications and Declarations section.

Electromagnetic Compatibility Standards

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-003: Class A emissions



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 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 in non-residential locations.



Notice This model is intended for use in indoor applications only.

Environmental Characteristics

Temperature and Humidity

Temperature	
Operating	
Chassis with slot cooling capacity ≥ 58 W1	0 °C to 55 °C
All other compatible chassis	0 °C to 40 °C
Storage	-40 °C to 71 °C
Humidity	
Operating	10% to 90%, noncondensing
Storage	5% to 95%, noncondensing
Pollution Degree	2
Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient temperature)

Shock and Vibration

Random vibration	
Operating	5 Hz to 500 Hz, 0.3 g RMS
Non-operating	5 Hz to 500 Hz, 2.4 g RMS
Operating shock	30 g, half-sine, 11 ms pulse

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.

¹ Not all chassis with slot cooling capacity ≥ 58 W can achieve this ambient temperature range. Refer to PXI chassis specifications to determine the ambient temperature ranges your chassis can achieve.

For additional environmental information, refer to the Commitment to 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 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.

RoHS

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

Power Requirements²

Chassis Slot Cooling Capacity	+3.3 V Current Draw, Typical		+12 V Current Draw, Typical	
	Idle	Full Output Load	Idle	Full Output Load
38 W	1 A	1 A	1.5 A	3 A
≥ 58 W		1 A		4.5 A

Physical

Dimensions	3U, one-slot, PXI Express/CompactPCI Express module 2.0 cm × 13.0 cm × 21.6 cm (0.8 in. × 5.1 in. × 8.5 in.)
Weight	394 g (13.9 oz)
Front panel connectors	Custom 62-position D-SUB, female

Maintenance

Clean the hardware with a soft, nonmetallic brush. Make sure that the hardware is completely dry and free from

contaminants before returning it to service.



This product meets the essential requirements of applicable European Directives, as follows:

- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)
- 2011/65/EU; Restriction of Hazardous Substances (RoHS)

Export Compliance

This model is subject to control under the U.S. Export Administration Regulations (15 CFR Part 730 et. seq.) administered by the U.S. Department of Commerce's Bureau of Industry and Security (BIS) (www.bis.doc.gov) and other applicable U.S. export control laws and sanctions regulations. This model may also be subject to additional license requirements of other countries' regulations.

Additionally, this model may also require export licensing before being returned to NI. The issuance of a Return Material Authorization (RMA) by NI does not constitute export authorization. The user must comply with all applicable export laws prior to exporting or re-exporting this model. See ni.com/legal/export-compliance for more information and to request relevant import classification codes (e.g. HTS), export classification codes (e.g. ECCN), and other import/ export data.

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.

Additional Resources

Visit ni.com/manuals for more information about your model, including specifications, pinouts, and instructions for connecting, installing, and configuring your system.

² Typical specifications describe the performance met by a majority of models.

Refer to the Getting Started Guide for the PXIe-4163 at ni.com/manuals for information about how to begin using your PXIe-4163.

Worldwide Support and Services

The NI website 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.

Visit ni.com/services for information about the services NI offers.

Visit ni.com/register to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

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Documents / Resources

	NATIONAL INSTRUMENTS PXIe-4163 PXI Source Measure Unit [pdf] Instruction Manual PXIe-4163, PXIe-4163 PXI Source Measure Unit, PXI Source Measure Unit, Source Measure Unit, Measure Unit, Unit
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References

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- [NI Engineering a Healthy Planet - NI](#)
- [NI Managing Critical Substances - NI](#)
- [NI Managing Critical Substances - NI](#)
- [NI Product Take-Back Program and Recycling - NI](#)
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Manuals+.