SAFETY, ENVIRONMENTAL, AND REGULATORY INFORMATION

PXIe-5164

PXIe, 400 MHz, 1 GS/s, 14-bit PXI Oscilloscope

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.

Shock Warning—Take precautions to avoid electrical shock.

Hot Surface—Take precautions to avoid physical burns.

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.

Attention Suivez toutes les instructions et respectez toutes les mises en garde de la documentation utilisateur. L'utilisation d'un modèle de toute autre façon que celle spécifiée risque de l'endommager et de compromettre la protection de sécurité intégrée. Renvoyez les modèles endommagés à NI pour réparation.

Caution All wiring must be insulated for the highest voltage used.

Attention Tout le câblage doit être isolé pour la plus haute tension utilisée.

Caution If the device has been in use, it may exceed safe handling temperatures and cause burns. Allow the device to cool before removing it from the chassis.

Attention Si l'appareil a été utilisé, il peut avoir atteint des températures trop élevées pour être manipulé en toute sécurité, ce qui peut provoquer des brûlures. Laisser l'appareil refroidir avant de le retirer du châssis.

Safety Voltage and Frequency

Connect only voltages that are below these limits.

Maximum input overload[1]	
50 Ω	|Peaks| ≤5 V, nominal
1 MΩ	|Peaks| ≤250 V RMS,[2] nominal

Notice Signals exceeding the maximum input overload may cause damage to the device.

Frequency	400 MHz
Measurement category	CAT II

Caution Do not connect the PXIe-5164 to signals or use for measurements within Measurement Categories III or IV.

Attention Ne connectez pas le PXIe-5164 à des signaux et ne l'utilisez pas pour effectuer des mesures dans les catégories de mesure III ou IV.

1 *Nominal* specifications describe an attribute that is based on design, conformance testing, or supplemental testing.
2 Derate above 500 kHz at 20 dB/dec until 5 MHz, then derate at 10 dB/dec.

NATIONAL INSTRUMENTS

Measurement Category II is for measurements performed on circuits directly connected to the electrical distribution system. This category refers to local-level electrical distribution, such as that provided by a standard wall outlet, for example, 115 V for U.S. or 230 V for Europe.

Safety Guidelines for Hazardous Voltages

If hazardous voltages are connected to the device, take the following precautions. A hazardous voltage is a voltage greater than 42.4 V peak voltage or 60 V DC in DRY LOCATIONS, and 22.6 V peak or 35 V DC in WET LOCATIONS.

Caution Ensure that hazardous voltage wiring is performed only by qualified personnel adhering to local electrical standards.

Attention S'assurer que le câblage à tension dangereuse est effectué par du personnel qualifié respectant les normes électriques locales.

Caution When device terminals are hazardous voltage LIVE, you must ensure that devices and circuits connected to the device are properly insulated from human contact.

Attention Lorsqu'une haute tension dangereuse est appliquée aux bornes de l'appareil, s'assurer que les appareils et les circuits auxquels il est connecté sont correctement isolés de tout contact humain.

Caution All wiring must be insulated for the highest voltage used.

Attention Tout le câblage doit être isolé pour la plus haute tension utilisée.

Safety Compliance 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

Note For UL and other safety certifications, refer to the product label or the *Product Certifications and Declarations* section.

EMC Guidelines

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

This product is intended for use in 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 or commercial 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 When making CAT O/CAT I measurements, operate this product only with shielded cables and accessories.

Notice The length of all I/O cables must be no longer than 3 m (10 ft).

Notice The channel input ports of this product, when configured for a 1 MΩ input impedance, are rated for Measurement Category II (CAT II). When connecting these ports to a MAINS circuit, oscilloscope probes such as the SP500X (NI part number 783629-01), or other probes with similar ratings, must be used to ensure the specified EMC performance for surges and transients.

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 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: 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 only in heavy-industrial locations.

Environmental Guidelines

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

Environmental Characteristics

Temperature and Humidity

Temperature	
Operating	0 °C to 50 °C
Storage	-40 °C to 71 °C
Humidity	
Operating	10% to 90%, noncondensing
Storage	5% to 95%, noncondensing
Pollution Degree	2
Maximum altitude	4,600 m (570 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.

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 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*.

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`.)

Environmental Standards

This product meets the requirements of the following environmental standards for electrical equipment.

- IEC 60068-2-1 Cold
- IEC 60068-2-2 Dry heat
- IEC 60068-2-56 Damp heat (steady state)
- IEC 60068-2-64 Random operating vibration
- IEC 60068-2-27 Operating shock
- MIL-PRF-28800F
  - Low temperature limits for operation Class 3, for storage Class 3
  - High temperature limits for operation Class 3, for storage Class 3
  - Random vibration for non-operating Class 3
  - Shock for operating Class 2

Note To verify marine approval certification for a product, refer to the product label or visit *ni.com/certification* and search for the certificate.

Power Requirements[3]

+3.3 V DC	6.5 W, nominal
+12 V DC	18.5 W, nominal
Total power[4]	25 W, nominal
Total maximum power allowed[5]	38.25 W, nominal

Physical

Dimensions	3U, one-slot, PXI Express Gen 2 x8 module 21.26 cm × 12.88 cm × 2.0 cm (8.37 in. × 5.07 in. × 0.787 in.)
Weight	460 g (16.2 oz)
Front panel connectors	BNC SMB MHDMR

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.

CE Compliance CE

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

- 2014/35/EU; Low-Voltage Directive (safety)
- 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/certification*, search by model number or product line, and click the appropriate link in the Certification column.

Additional Resources

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

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.

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3 *Nominal* specifications describe an attribute that is based on design, conformance testing, or supplemental testing.
4 Power consumed depends on the FPGA image and driver software used. This specification represents the maximum power for the NI-SCOPE use case or typical value when using the Instrument Design Libraries (IDL).
5 Maximum allowable power when using a custom LabVIEW FPGA image.

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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