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Find the *National Instruments PXIe-7902* at our website: *Click HERE*

SPECIFICATIONS

PXIe-7902

High-Speed Serial FPGA Module

This document lists specifications for the PXIe-7902. Specifications are subject to change without notice. For the most recent device specifications, refer to *ni.com/manuals*.

Specifications describe the warranted, traceable performance of the device over an ambient temperature range of 0 ºC to 45 ºC and include guardband for measurement uncertainty, unless otherwise noted. Specifications are valid under the following conditions unless otherwise noted:

- The PXIe-7902 module is warmed up for 15 minutes at ambient temperature.
- The chassis fan speed is set to HIGH, the foam fan filters are removed if present, and the empty slots contain PXI chassis slot blockers and filler panels. For more information about cooling, refer to the *Maintain Forced-Air Cooling Note to Users* available at *ni.com/manuals*.

Nominal and *Characteristic* specifications describe basic functions and attributes of the device established by design. *Nominal* and *Characteristic* values are not covered by warranty.

Data in this document are Specifications unless otherwise noted.

Caution The protection provided by the PXIe-7902 can be impaired if it is used in a manner not described in this document.

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Front Panel Connectors

Port 0..5

Data rate	500 Mbps to 8 Gbps and 9.8 Gbps to 12.5 Gbps
Connector	Six Mini-SAS HD (x4)
Number of multi-gigabit transceivers (MGTs)	24 (4 per connector)
Supported high-speed cable type	Electrical/optical
Optical cable power	3.3V ±5%, 1 A per port
I/O AC coupling capacitor	100 nF

TX Channel

Minimum differential generation peak-to-peak voltage[1]	1,000 mV into 100 Ω, characteristic

RX Channel

Differential peak-to-peak input voltage range	
≤6.6 Gb/s	150 mV to 2,000 mV, nominal
>6.6 Gb/s	150 mV to 1,250 mV, nominal
Differential input resistance	100 Ω, nominal

CLK IN

Connector	SMA
Coupling	AC
Input impedance	50 Ω, nominal
Input frequency range	10 MHz to 300 MHz
Input frequency accuracy tolerance	±100 ppm
Input amplitude	0.4 V_{pp} to 5.7 V_{pp} into 50 Ω

[1] When transmitter output swing is set to the maximum setting.

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Multi-Gigabit Transceiver Reference Clock Generator

Frequency range	60 MHz to 700 MHz, characteristic
Locking resources	PXIe_CLK100[2], PXIe_DStarA, CLK IN

Reconfigurable FPGA

FPGA	Xilinx Virtex-7 XC7VX485T
Package	FFG1158
LUTs	303,600
Flip-flops	607,200
DSP48 slices (25 × 18 multiplier)	2,800
Embedded block RAM (kbits)	37,080
Data transfers	DMA, interrupts, programmed I/O
DMA interrupts	32 interrupt channels numbered 0-31

Onboard DRAM

Memory size	2 GB, single bank
Theoretical maximum data rate	10.5 GB/s

Bus Interface

Form factor	Gen 2×8 PXI Express, specification v1.0 compliant
Slot compatibility	×1, ×4, ×8, and ×16 PXI Express or PXI Express hybrid slots

Maximum Power Requirements

Note Power requirements are dependent on the contents of the LabVIEW FPGA VI used in your application. Use a maximum total of 38.25 W from the backplane.

[2] Frequency accuracy is ±25 ppm, characteristic.

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Exceeding this amount may cause the FPGA to overheat and force the device into a power/thermal shutdown state.

+3.3V	3 A
+12 V	3 A

Physical

Dimensions (not including connectors)	18.3 cm × 13.0 cm × 2.0 cm(7.4 in. × 5.1 in. × 0.8 in.
Weight	350 g (12.3 oz)

Note Clean the hardware with a soft, nonmetallic brush. Make sure that the hardware is completely dry and free of contaminants before returning it to service.

Environment

Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient temperature)
Pollution Degree	2

Indoor use only.

Operating Environment

Ambient temperature range	0 °C to 40 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 low temperature limit and MIL-PRF-28800F Class 2 high temperature limit.)
Relative humidity range	10% to 90%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Storage Environment

Ambient temperature range	-40 °C to 71 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 limits.)
Relative humidity range	5% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)

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Shock and Vibration

Operating shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC 60068-2-27. Meets MIL-PRF-28800F Class 2 limits.)
Random vibration	
Operating	5 Hz to 500 Hz, 0.3 g_{rms} (Tested in accordance with IEC 60068-2-64.)
Nonoperating	5 Hz to 500 Hz, 2.4 g_{rms} (Tested in accordance with IEC 60068-2-64. Test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

Compliance and Certifications

Safety

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 *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 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- AS/NZS CISPR 22: Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

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.

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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 For EMC declarations, certifications, and additional information, refer to the *Online Product Certification* section.

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)

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 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*.

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Visit *ni.com/services* for NI Factory Installation Services, repairs, extended warranty, and other services.

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

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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