

## SPECIFICATIONS

# PXIE-7915

## PXI FlexRIO Coprocessor Module

This document lists the specifications for the PXIE-7915. Specifications are subject to change without notice. For the most recent device specifications, refer to [ni.com/support](http://ni.com/support).



**Note** Using the PXIE-7915 in a manner not described in this document might impair the protection the PXIE-7915 provides.



**Note** These specifications are typical at 25 °C unless otherwise noted.



**Note** Specifications are valid under the following conditions unless otherwise noted:

- 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* at [ni.com/manuals](http://ni.com/manuals).

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# Definitions

*Warranted* specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

*Characteristics* describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- *Typical* specifications describe the expected performance met by a majority of the models.
- *Nominal* specifications describe parameters and attributes that may be useful in operation.

Specifications are *Typical* unless otherwise noted.

## Digital I/O

Connector	Molex™ Nano-Pitch I/O™
5 V Power	5.0 V DC, ±5%, nominal 50 mA maximum

**Table 1.** Digital I/O Signal Characteristics

Signal	Type	Direction
Multi-gigabit transceivers (MGT) Tx± <3..0>	Xilinx UltraScale GTH	Output
MGT Rx± <3..0>	Xilinx UltraScale GTH	Input
DIO <7..0>	Single-ended	Bidirectional
5 V	DC	Output
GND	Ground	—

## Digital I/O Single-Ended Channels

Number of channels	8
Signal type	Single-ended
Voltage families	3.3 V, 2.5 V, 1.8 V, 1.5 V, 1.2 V
Input impedance	100 kΩ, nominal
Output impedance	50 Ω, nominal
Direction control	Per channel

Minimum required direction change latency	200 ns
Maximum output toggle rate	60 MHz with 100 $\mu$ A load, nominal

**Table 2.** DIGITAL I/O Single-Ended DC Signal Characteristics<sup>1</sup>

Voltage Family	V <sub>IL</sub>	V <sub>IH</sub>	V <sub>OL</sub> (100 $\mu$ A load)	V <sub>OH</sub> (100 $\mu$ A load)	Maximum DC Drive Strength
3.3 V	0.8 V	2.0 V	0.2 V	3.0 V	24 mA
2.5 V	0.7 V	1.6 V	0.2 V	2.2 V	18 mA
1.8 V	0.62 V	1.29 V	0.2 V	1.5 V	16 mA
1.5 V	0.51 V	1.07 V	0.2 V	1.2 V	12 mA
1.2 V	0.42 V	0.87 V	0.2 V	0.9 V	6 mA

## Digital I/O High-Speed Serial MGT<sup>2</sup>

Data rate	500 Mbps to 16.375 Gbps, nominal
Number of Tx channels	4
Number of Rx channels	4

<sup>1</sup> Voltage levels are guaranteed by design through the digital buffer specifications.

<sup>2</sup> For detailed FPGA and High-Speed Serial Link specifications, refer to Xilinx documentation.

**Figure 1. Digital I/O Connector**

Reserved	A1	B1	5 V
GND	A2	B2	GND
MGT Rx+ 0	A3	B3	MGT Tx+ 0
MGT Rx- 0	A4	B4	MGT Tx- 0
GND	A5	B5	GND
MGT Rx+ 1	A6	B6	MGT Tx+ 1
MGT Rx- 1	A7	B7	MGT Tx- 1
GND	A8	B8	GND
DIO 4	A9	B9	DIO 6
DIO 5	A10	B10	DIO 7
GND	A11	B11	GND
MGT REF+ / DIO 0	A12	B12	DIO 2
MGT REF- / DIO 1	A13	B13	DIO 3
GND	A14	B14	GND
MGT Rx+ 2	A15	B15	MGT Tx+ 2
MGT Rx- 2	A16	B16	MGT Tx- 2
GND	A17	B17	GND
MGT Rx+ 3	A18	B18	MGT Tx+ 3
MGT Rx- 3	A19	B19	MGT Tx- 3
GND	A20	B20	GND
5.0 V	A21	B21	Reserved

## MGT TX± <3..0> Channels

Minimum differential output voltage <sup>3</sup>	170 mV <sub>pk-pk</sub> into 100 Ω, nominal
I/O coupling	AC-coupled with 100 nF capacitor

## MGT RX± <3..0> Channels

Differential input voltage range	
≤ 6.6 GB/s	150 mV <sub>pk-pk</sub> to 2000 mV <sub>pk-pk</sub> , nominal
> 6.6 GB/s	150 mV <sub>pk-pk</sub> to 1250 mV <sub>pk-pk</sub> , nominal
Differential input resistance	100 Ω, nominal
I/O coupling	DC-coupled, requires external capacitor $\Delta$

<sup>3</sup> 800 mV<sub>pk-pk</sub> when transmitter output swing is set to the maximum setting.

# Reconfigurable FPGA

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FPGA	Xilinx KU060
LUTs	331,680
DSP48 Slices (25 × 18 multiplier)	2,760
Total block RAM	38.0 Mb
Default timebase	80 MHz
Timebase reference sources	PXI Express 100 MHz (PXIe_CLK100)
Data transfers	MGT
Number of DMA channels	60
Connection resources	PXI triggers, PXI_CLK10, PXI star trigger, PXIe_DStarB, PXIe_DStarC, and PXIe_Sync100

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**Note** The preceding specifications describe the total number of FPGA resources available on the part. The number of resources available to the user is slightly lower, as some FPGA resources are consumed by board-interfacing IP for PCI Express, device configuration, and various board I/O. For more information, contact NI support.



**Note** For FPGA designs using the majority of KU040 or KU060 FPGA resources while running at clock rates over 150 MHz, the module may require more power than is available. If the module attempts to draw more than allowed per its specification, the module protects itself and reverts to a default FPGA personality. Refer to the getting started guide for your module or contact NI support for more information.

## Onboard DRAM

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Memory size	4 GB (2 banks of 2 GB)
DRAM clock rate	1064 MHz
Physical bus width	32 bit
LabVIEW FPGA DRAM clock rate	267 MHz
LabVIEW FPGA DRAM bus width	256 bit per bank
Maximum theoretical data rate	17 GB/s (8.5 GB/s per bank)

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# Driver and Application Software

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This device is supported in NI LabVIEW Instrument Design Libraries for FlexRIO (instrument design libraries). Instrument design libraries allow you to configure and control the device.

The instrument design libraries provide programming interfaces, documentation, and sample projects for LabVIEW and LabVIEW FPGA Module.

## Bus Interface

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Form factor	PCI Express Gen-3 x8
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## Maximum Power Requirements

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**Note** Power requirements are dependent on the contents of the LabVIEW FPGA VI used in your application.

+3.3 V	3 A
+12 V	3 A
Maximum total power	36 W

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## Physical

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Dimensions (not including connectors)	18.8 cm × 12.9 cm (7.4 in. × 5.1 in.)
Weight	190 g (6.7 oz)

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**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

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

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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 4 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 4 limits.)
Relative humidity range	5% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)

# 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 <sub>rms</sub> (Tested in accordance with IEC 60068-2-64.)
Nonoperating	5 Hz to 500 Hz, 2.4 g <sub>rms</sub> (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.



**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

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](https://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](https://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](https://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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