PXIe-1488 Specifications

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Contents

PXIe-1488 Specifications

Introduction

This document lists the specifications for the following variants of the PXIe-1488:

- PXIe-1488 FlexRIO FPD-Link IV Deserializer
- PXIe-1488 FlexRIO FPD-Link IV Serializer
- PXIe-1488 FlexRIO FPD-Link IV SerDes

Note If you purchased the PXIe-1488 as part of an NI system, refer to your system documentation for application-specific specifications.

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 performance met by a majority of models.
- ***Nominal*** specifications describe an attribute that is based on design, conformance testing, or supplemental testing.
- ***Measured*** specifications describe the measured performance of a representative model.

Specifications are ***Typical*** unless otherwise noted.

Conditions

Specifications are valid under the following conditions unless otherwise noted.

- Ambient temperature of 23 °C ±5 °C
- Installed in chassis with slot cooling capacity ≥58 W[1]

Serial Device Compatibility

Refer to the following information to verify that the PXIe-1488 module chip set is compatible with your serial device or camera.

Chip set brand	Texas Instruments
Module deserializer	DS90UB9702
Module serializer	DS90UB971
Supported mated SerDes	Input channel: DS90UB971, DS90UB953, DS90UB951, DS90UB935 Output channel: DS90UB9702, DS90UB954, DS90UB960, DS90UB962, DS90UB936
Supported clock modes	Synchronous mode, Non-synchronous mode
Support Data Formats	CSI-2 only, no DVP (digital video port)
Supported FPD-Link modes	FPD-Link III, FPD-Link IV

Note Modes not listed in the previous table are not supported with this device. Please consult the latest documentation from TI for compatibility information for further details which may be required for successful

implementation of backwards compatibility modes using this device.

Note Contact the manufacturer of your serial device or camera for details on compatibility with the PXIe-1488 module.

Bus Interface

Form factor	PCI Express Gen-3 x8

Reconfigurable FPGA

The following table lists the specifications for the PXIe-1488 FPGA.

FPGA	KU11P
LUTs	298,560
DSP48 slices (25 × 18 multiplier)	2,928
Embedded Block RAM	21 Mb
Timebase reference sources	PXI Express 100 MHz (PXIe_CLK100)
Data transfers	DMA, interrupts, programmed I/O
Embedded UltraRAM™	22 Mb

Number of DMA channels	60

Note These values reflect 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.

Onboard DRAM

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)

Serial I/O Characteristics

Input Channels

Connector label	SI

Connector type	HFM Male Code Z, coaxial
Power over Coax (PoC) output range, AUX power maximum	6 V to 32 V, 800 mA per channel

PoC Output Range, Internal Power Supply

Nominal voltage	12 V
Maximum current	400 mA per channel, 2 A total

I/O standard	FPD-Link IV with PoC
Maximum data rate	7.55 Gb/s
Reference clock speed	25 MHz

Output Channels

Connector label	SO
Connector type	HFM Male Code Z, coaxial

PoC Input Range

Nominal voltage	6 V to 32 V
Maximum current	800 mA per channel

I/O standard	FPD-Link IV with PoC
Maximum data rate	7.55 Gb/s
Reference clock speed	23.59275 MHz to 26 MHz

AUX Power Channels

Power sink or source maximum voltage	6 V to 32 V
Power sink or source maximum current	800 mA per channel
Power connector type	Conn Terminal Block, Weidmuller part number 2439690000

Power Connector Wiring

Gauge	0.08 mm^2 to 0.5 mm^2 (28 AWG to 20 AWG)

Wire strip length	8 mm
Terminal connection type	Tension clamp
Retention	External strain relief of AUX power connections recommended

PXIe-1488 Deserializer

Input channels	8
Communication	I2C, GPIO, CSI-2
CSI-2 interface	D-PHY, 1, 2, or 4 lanes, 600 Mb/s to 1,500 Mb/s per lane, no lane swaps or inversions

PXIe-1488 Serializer

Output channels	8
Communication	I2C, GPIO, CSI-2
CSI-2 interface	D-PHY, 1, 2, or 4 lanes, 600 Mb/s to 1,500 Mb/s per lane, no lane swaps or inversions

PXIe-1488 SerDes

Input channels	4
Output channels	4
Maximum Tap pairs per module	4
Communication	I2C, GPIO, CSI-2
CSI-2 interface	D-PHY, 1, 2, or 4 lanes, 600 Mb/s to 1,500 Mb/s per lane, no lane swaps or inversions

Power Requirements

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

Note Do not position product so that it is difficult to disconnect power.

Note If you are powering the PXIe-1488 using your PXIe chassis backplane, refer to the chassis specifications for detailed information about your internal power supply.

Backplane Power Source

3.3 V	3.0 A, maximum

12 V	6.0 A, maximum

Backplane Power

Total power	82 W, maximum

Power over Coax (PoC) Source, External Power Supply

Voltage range	6 V to 32 V
Maximum current	800 mA per channel, up to 8 channels

Power over Coax (PoC) Source, Internal Power Supply

Nominal voltage	12 V
Maximum current	400 mA per channel, up to 2 A total

Diagnostic PoC Current Measurement

Current measurement range	50 mA to 800 mA
Current measurement accuracy	50 mA to 100 mA: ±20% 100 mA to 800 mA: ±15%

Diagnostic PoC Voltage Measurement

Voltage measurement range	6 V to 32 V
Voltage measurement accuracy[2]	±2.5%

Environmental Characteristics

Operating temperature	0 °C to 55 °C[3]
Storage temperature	-40 °C to 71 °C
Operating humidity	10% to 90%, noncondensing
Storage humidity	5% to 95%, noncondensing

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

Operating vibration	5 Hz to 500 Hz, 0.3 g RMS
Non-operating vibration	5 Hz to 500 Hz, 2.4 g RMS

Operating shock	30 g, half-sine, 11 ms pulse

Physical

Dimensions	3U, two-slot PXI Express module, 21.6 cm × 4.1 cm × 13.0 cm (8.5 in. × 1.6 in. × 5.1 in.)
Weight	650 g (22.93 oz)

Timing and Synchronization

Timebase	100 MHz, shared by all ports, disciplined by PXI_Clk100
Trigger I/O source	PXI_Trig <0:7>