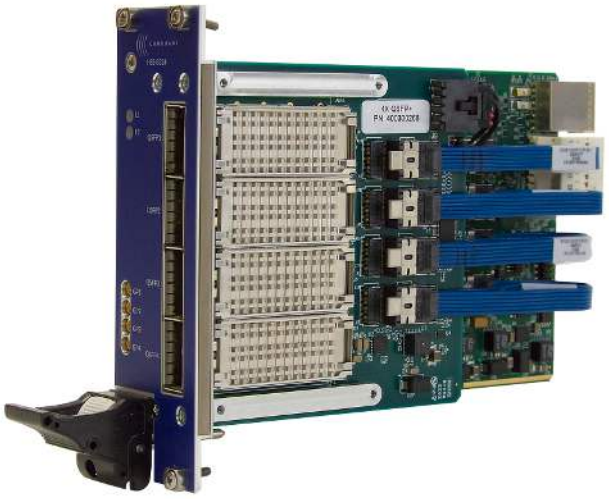
CONDUANT

PXIE-8316 QSFP FPGA BOARD

Product Features

- AMD Kintex Ultrascale FPGA XCKU115 or XCKU085
- 8-lane PCI Express Gen 3.0 (max 8 GB/s)
- PXIe dual slot
- 4 QFSP ports supporting up to 16.3 Gbps lanes
- 8 GB DDR3 SDRAM Memory
- 8 MB QDR II+ SRAM Memory
- 4X MMCX external connectors
- Fractional divide clock synthesis



Advanced Capabilities

The Conduant PXIE-8316 FPGA board provides a hardware platform that is able to sustain high-bandwidth transfers through its 8-lane Gen3 PXI Express (PXIe) interface and its 4 QSFP ports. The PXIe interface provides a theoretical maximum throughput of 8 GB/s (full duplex).

The board provides 8 GB of high-speed DDR3 SDRAM and 8 MB of QDR II+ SRAM. At the center of the design is an AMD Kintex Ultrascale FPGA which connects all ports and other devices while supplying the additional resources within the FPGA. The board is available with either the AMD XCKU115 or XCKU085 FPGA.

With 16 high speed serial IO lanes available in 4 QSFP ports, the board can be adapted to applications that require high speed data connectivity. Each lane can be independent or bonded to other lanes to create a higher speed interface. Serial protocols such as the Aurora protocol from AMD can be used to create IO connections to external devices. The QSFP ports allow the use of copper or optical tranceivers depending on requirements for cable length and performance.

The FPGA is quickly configured with the user program by using the SPI x4 serial flash memory device. This provides the fast wake-up required for PCI Express. The user content can be encrypted using a key that is either permanently programmed into the FPGA (eFUSE) or can be preserved in a volatile memory using the on-board battery.

The board includes a microcontroller (uC) for power sequencing and an on-board I2C interface connecting the uC and FPGA. The board also supports AMD system monitoring to report system voltages and other information.

www.conduant.com
sales@conduant.com
1.303.485.2721
1.888.497.7327 *toll free*

Specifications

FPGA	AMD Kintex Ultrascale XCKU115 or XCKU085
Encryption	AMD eFuse or battery-backed 256-bit AES bitstream
PXI Express Revision	1.0 ECN 1
High Speed Serial (HSS)	16 lanes (4x QSFP) with line rates up to 16.3 Gbps
Form Factor	PXI Express hybrid, peripheral or timing slot (2 slots required)
Dimensions	6.1875" (D) x 1.574" (W) x 5.0" (H)
Weight	< 1lb
DRAM	8 GB DDR3 SDRAM 2x512Mx64b @ 800 MHz
SRAM	8 MB QDR II+Extreme SRAM 2Mx36b @ 600 MHz
External Connectors	4x MMCX 50 Ω for clock, trigger or signal IO JTAG for AMD programming and debug
Clock Generation	Skyworks clock generator with integer and fractional divide
Power	Typical 35W (will vary depending on user programming and clock speeds)
PXIe Backplane	PCIe Gen3 x8 (8 GB/s) PXI signals (triggers, clocks, etc.)
IO Interface	UART interface (3 wire, RS-232 compatible)
User programmable LEDs	Faceplate: 2 Internal (back of board): 8
Flash Memory	Micron 1 GiB configuration flash (SPI 4 bits)

Available FPGA Options

Kintex Ultrascale XCKU115		
	System Logic Cells	1,451,100
	CLB Flip Flops	1,326,720
	CLB LUTs	663,660
	Distributed RAM	18.3 Mb
	Block RAM	76.9 Mb
	DSP Slices	5,250
Kintex Ultrascale XCKU085		
	System Logic Cells	1,088,325
	CLB Flip Flops	995,040
	CLB LUTs	497,520
	Distributed RAM	13.4 Mb
	Block RAM	56.9 Mb
	DSP Slices	4,100

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Software

Provided AMD Vivado Project includes:

- VHDL source code for board self-test which can also be used as a programming example on how to access different IP Core ports:
  - Independent DRAM self test, one for each bank
  - SRAM self test
  - HSS Interface loopback test, Tx looped back to Rx with QSFP loopback plug receives and verifies data
- VHDL source code that instantiates Vivado cores, available signals, and pins to expose all available resources that the user can then connect to with their own Intellectual Property as desired:
  - One PCI Express Gen3 8-lane Core
  - Two 4GiB DDR3 DRAM MIG Cores
  - One 8MiB QDRII+ SRAM MIG Core
  - One System Monitor to monitor board voltages
  - Four QSFP HSS (High-Speed-Serial) instances implemented as either Aurora or ODI per user request
- External signals exposed include:
  - Four MMCX front panel connectors
  - Two front panel LEDs
  - 8 LEDs on back of board

Available Windows Software:

- Windows Driver
- Program to read/write registers and flash FPGA code updates over the PCIe bus

Options

High speed serial | *Copper or optical transceivers*

Battery backup for encrypted FPGA configuration support

Extended temperature

Custom software | *Contact your Conduant sales representative for custom software availability*

Warranty & Customer Support

Conduant hardware products are backed by a limited one-year warranty. All software includes a 90 day warranty. Maintenance and priority support is available on a yearly subscription basis. Please contact your Conduant sales representative for more details. Customer support is provided through a web portal at www.conduant.com/support. Private logins and trouble ticket management are provided along with technical downloads, a knowledge base, and other support tools.