

# PCI597

## PCIe VU13P UltraScale+™ with Massive Optical I/O



PCI597

### Key Features

- Dual PCIe x16 FPGA
- 72 fiber transceivers egress ports
- Optical speed choice of 10G or 28G per link
- Xilinx UltraScale+™ VU13P FPGA
- Active cooling for FPGA
- Dual x8 or single x16 lanes for direct connection to neighboring FPGA card(s)
- Dual bank of 64-bit wide DDR4 for 32 GB total

### Benefits

- Based on the widely-used VadaTech PCI592/PCI595
- Strong BSP support and example code to support system bring-up
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

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# PCI597

The PCI597 is based on the Xilinx VU13P UltraScale+™ FPGA, which provides over 12,000 DSP slices, 360 Mb of UltraRAM and 3,780K logic cells. The Unit provides active cooling of the FPGA making it appropriate for power-hungry applications or those requiring temperature stability for good performance. The FPGA has interface to dual DDR4 memory channels (dual bank of 64-bit wide, 32 GB total). This allows for large buffer sizes to be stored during processing as well as for queuing the data to the host.

Front panel I/O is via six Board-Mount Optical Assemblies, each providing 12 channel full-duplex transceivers with Clock Data Recovery (CDR\*) and fiber I/O via MTP/MPO. Transceivers are available in two speed grades, 10.6 Gb/s and 28.1 Gb/s per channel, both with multi-rate capability. The 10.6 Gb/s can drive 100 m over OM3 MM Fiber and 28.1 Gb/s can drive 100 m over the OM4 MM Fiber. The high number of egress ports allows the single FPGA to be the central point of data gathering.

The PCI597 has x16 PCIe edge connector routed to the FPGA PCIe Gen3 hard IP block. Further, the module has **an addition PCIe x16** hard core which takes a second PCIe x16 slot in the chassis that allows pushing/pulling data into the host as an aggregated x32 PCIe. See [PCI124](#) for details.

In addition, 16 uncommitted connection pairs are routed to a dual x8 expansion connector, providing direct connectivity to a neighbouring FPGA (e.g. via Aurora, 10/40GbE, SRIO, PCIe) without the need to go through the host.



Figure 1: PCI597

## Reference Design

VadaTech provides a reference design implementation for our FPGAs, complete with VHDL source code and configuration binaries. The reference design focuses on the I/O ring of the FPGA to demonstrate low-level operation of the interconnections between the FPGA and other circuits on the board and/or backplane. It is intended to prove-out the hardware for engineering/factory diagnostics and customer acceptance, and can be used as a starting point for developing an end application.

\*CDR applies only to the 28G optics not the 10G optics

## Block Diagram

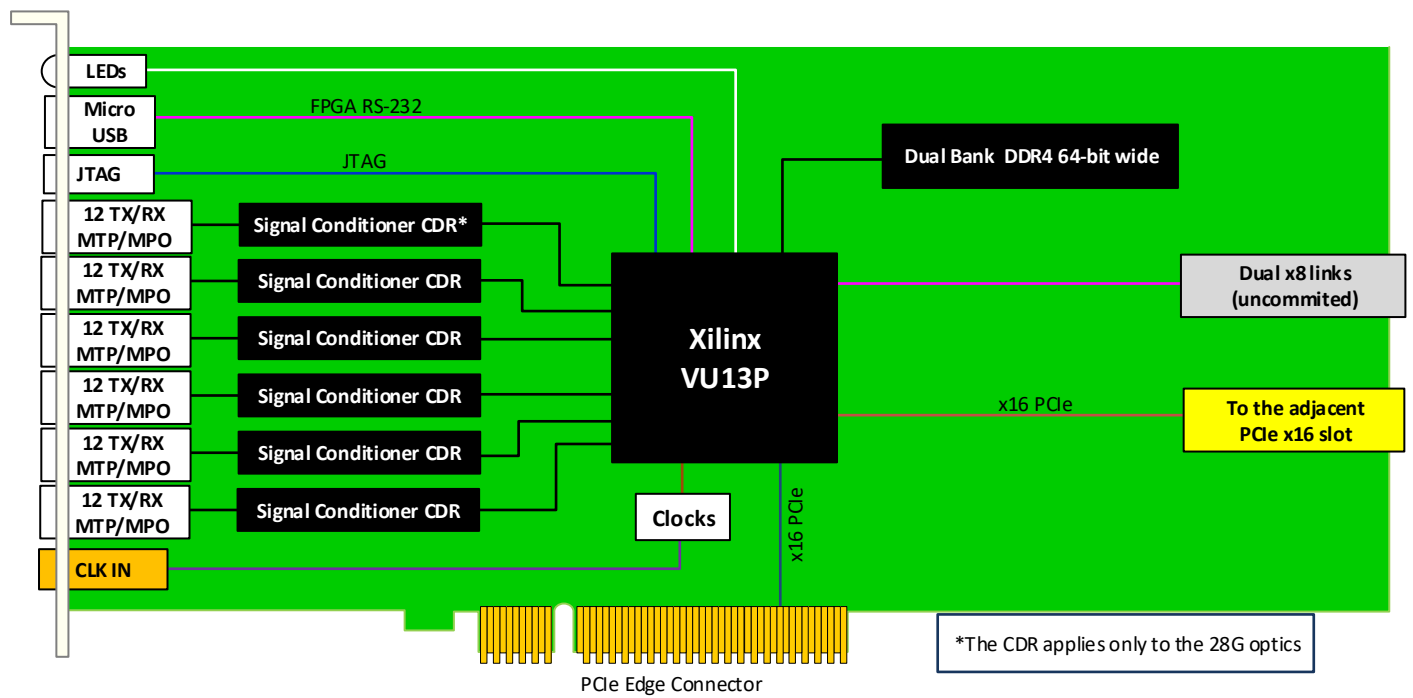


Figure 2: PCI597 Functional Block Diagram

# Specifications

Architecture		
Physical	Dimensions	Double Module
		Width: 4.36" (110.74 mm)
		Depth: 11.34" (288 mm)
Type	PCI Carrier	PCI FPGA
Standards		
PCIe	Lanes	Dual x16
Configuration		
Power	PCI597	~90W (FPGA load dependent as well as optical modules speed)
Environmental	Temperature	See <a href="#">Ordering Options</a>
		Storage Temperature: -40° to +85°C
	Vibration	Operating 9.8 m/s <sup>2</sup> (1G), 5 to 500 Hz
	Shock	30Gs on each axis
Front Panel	Relative Humidity	5 to 95% non-condensing
	Interface Connectors	x6 MTP/MPO (total of 72 Fiber)
	LEDs	Four Status and Four User defined
Software Support	Operating System	N/A
Other		
MTBF	MIL Hand book 217-F@ TBD hrs	
Certifications	Designed to meet FCC, CE and UL certifications, where applicable	
Standards	VadaTech is certified to both the ISO9001:2000 and AS9100B:2004 standards	
Warranty	Two (2) years, see <a href="#">VadaTech Terms and Conditions</a>	

## INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of OpenVPX, ATCA and MTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTMs), Power Modules, and more. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

# Ordering Options

## PCI597 – ABC-0E0-0HJ

<b>A = DDR4 Memory</b>		
0 = No Memory 1 = 16 GB 2 = 32 GB*		
<b>B = Transceiver Speed</b>	<b>E = FPGA Speed</b>	<b>H = Temperature Range</b>
0 = 10.6 Gb/s (678> Gb/s total bi-directional) 1 = 28.1 Gb/s (>1700 Gb/s total bi-directional)	1 = Low (-1)* 2 = High (-2) 3 = Highest (-3)*	0 = Commercial (–5° to +50°C) 1 = Industrial (–20° to +65°C)
<b>C = Link Distance for 28.1 Gb/s</b>		<b>J = Conformal Coating</b>
0 = 70 Meter 1 = 100 Meter**		0 = No coating 1 = Humiseal 1A33 Polyurethane 2 = Humiseal 1B31 Acrylic

Notes: \*Minimum order quantity applies for these FPGA SKU's and/or memory option

\*\*Applies only to the 28.1 Gb/s with minimum order qty required (OM4 MM Fiber). The 10.6 Gb/s can drive 100 m by default over OM3 MM Fiber.

For operational reasons VadaTech reserves the right to supply a higher speed FPGA device than specified on any particular order/delivery at no additional cost, unless the customer has entered into a Revision Lock agreement with respect to this product.

## Related Products

AMC592



- AMC FPGA carrier for FMC per VITA 57
- Xilinx UltraScale™ XCKU115 FPGA
- Supported by DAQ Series™ data acquisition software

FMC223



- FPGA Mezzanine Card (FMC) per VITA 57
- Single module DAC 14-bit @ 2.5 GSPS (AD9739)
- 2 Vpp differential Analog output swing

FMC229



- FMC per VITA 57
- Quad DAC based on DAC39J84
- Onboard dual Wideband Quadrature Modulator

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