

PCI592 – PCIe FPGA Carrier for FMC, Kintex UltraScale™

PCIe FMC Carrier, Kintex UltraScale™



KEY FEATURES

- PCIe FPGA carrier for FMC per VITA-57
- Xilinx Kintex UltraScale™ XCKU115 FPGA
- Active cooling for FPGA and FMC
- Dual x8 lanes for direct connection to neighbouring FPGA card(s)
- Two banks of 64-bit wide and a single bank of 32-bit wide DDR-4 for a total of 20 GB
- RoHS compliant

Benefits of Choosing VadaTech

- Based on the widely-used VadaTech AMC592
- Strong BSP support and example code to support system bring-up
- Wide range of compatible FMCs, including ADC, DAC and networking
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

The PCI592 is based on the Xilinx XCKU115 Kintex UltraScale FPGA, which provides 5,520 DSP slices, 75.9 Mb RAM and 1,451,000 logic cells. The FPGA interfaces directly to the FMC DP 0-9 and all FMC LA/HA/HB pairs, making it compatible with a wide range of industry standard VITA-57 modules. The PCI592 provides active cooling of the FPGA and FMC, making it appropriate for power-hungry applications or those requiring temperature stability for good performance.

The FPGA has interface to three DDR4 memory channels (2x 64-bit wide and 1x 32-bit wide). This allows for large buffer sizes to be stored during processing as well as for queuing the data to the host.

The PCI592 has x8 PCIe edge connector routed to the FPGA PCIe Gen3 hard IP block. 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, 10G/40G, SRIO, PCIe) without the need to go through the host.

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 of the hardware, and can be used as a starting point for developing an end application.

COMPATIBLE FMC

VadaTech offers VITA-57 compatible FMCs providing ADC, DAC, RF transceivers and network interfaces. These FMCs are widely deployed in commercial and mil/aero form factors. Please contact VadaTech Sales for more information.

BLOCK DIAGRAM

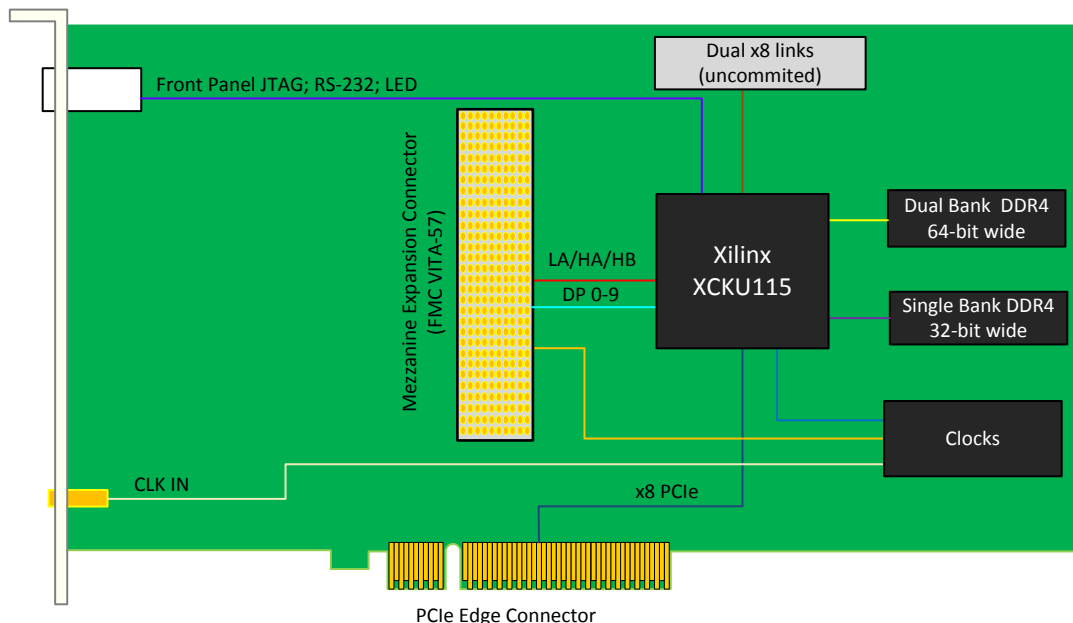


Figure 1: PCI592 Functional Block Diagram

SPECIFICATIONS

| Architecture | | |
|-------------------|---|--|
| Physical | Dimensions | Single Module |
| | | Width: 4.36" (110.74 mm) |
| | | Depth 12.28" (311.98 mm) |
| Type | PCI Carrier | PCI FPGA Carrier for FMC |
| Standards | | |
| PCIe | Lanes | x8 |
| Configuration | | |
| Power | PCI592 | TBD W |
| Environmental | Temperature | Operating Temperature: -5° to 45°C |
| | | Storage Temperature: -40° to +85°C |
| | Vibration | Operating 9.8 m/s ² (1.0 G), 5 to 500Hz |
| | Shock | 30Gs on each axis |
| | Relative Humidity | 5 to 95 per cent, non-condensing |
| Front Panel | Interface | Front Panel FMC |
| | | FPGA JTAG via micro HDMI |
| | | FPGA RS-232 via micro USB |
| | | CLK IN from SSMC |
| | LEDs | Four Status and Four User defined |
| Software Support | Operating System | N/A |
| Conformal Coating | | Humiseal 1A33 Polyurethane (Optional) |
| | | Humiseal 1B31 Acrylic (Optional) |
| 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 | |

INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech offers a full range of ATCA and μ TCA products including chassis platforms, shelf managers, AMC modules, carriers, Rear Transition Modules (RTM), Power Modules, and more. This allows customers to source complete systems from an industry-leader provider with confidence of interoperability. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

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ORDERING OPTIONS

PCI592 – 000 – 0E0 – GHJ

E = FPGA Speed

- 1 = Reserved
- 2 = High
- 3 = Highest

G = Clock Holdover Stability

- 0 = Standard (XO)
- 1 = Stratum-3 (TCXO)

H = Temperature Range

- 0 = Commercial (–5° to +45° C)
- 1 = Industrial (–20° to +60° C)

J = Conformal Coating

- 0 = None
- 1 = Humiseal 1A33 Polyurethane
- 2 = Humiseal 1B31 Acrylic

RELATED PRODUCTS



AMC592
Kintex UltraScale, FPGA Carrier



FMC223
14-bit 2.5 GSPS DAC



FMC229
Quad DAC 16-bit 2.8 GSPS

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