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THE POWER OF VISION

AMC596 – FPGA Virtex UltraScale™ XCVU440 with P2040 and PinoutPlus™

FPGA UltraScale™ with P2040

KEY FEATURES

- Xilinx Ultra Scale XCVU440 w/ QorIQ PPC2040
- 8 GB of DDR-4 (single bank of 64-bits)
- 20 SERDES lanes optionally routed to Tongue 2
- Ideal for ASIC prototyping/emulation
- AMC Ports 4-11 are routed to FPGA per AMC.1, AMC.2 and AMC.4 (protocols such as PCIe, SRIO, 10GbE/40GbE, etc. are FPGA programmable)
- AMC Ports 12-15 and 17-20 are routed to the FPGA
- AMC FCLKA, TCLKA, TCLKB, TCLKC and TCLKD are routed
- Clock jitter cleaner
- Single module, mid-size AMC (full-size optional)

AdvancedMC™

Benefits of Choosing VadaTech

- Xilinx Virtex-7 XCVU440 FPGA in FLGA2892 package
- Single Bank of 64-bit wide DDR4 memory allows larger buffer sizes while processing and queuing data to the host
- Optional Tongue 2 routing for high-bandwidth connectivity to neighboring slot
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

The AMC596 is based on the Virtex UltraScale™ XCVU440 FPGA in FLGA2892 package with an on board Power PC P2040. The AMC596 is compliant to the AMC.1, AMC.2, AMC.3 and/or AMC.4 specification.

The module provides 20 SERDES lanes on tongue 2, providing high-bandwidth connectivity to another module at a very high speed (where supported by appropriate chassis). The use of the tongue 2 connector complies with the AMC.0 specification.

The on-board, re-configurable FPGA interfaces to the AMC FCLKA and TCLKA-D via a MLVDS Cross Bar Switch (CBS). The FPGA has interface to one DDR4, 64-bit wide, with 8 GB total memory. This allows for large buffer sizes to be stored during processing as well as for queuing the data to the host.

The on-board quad core P2040 runs at 1.2 GHz with 1 GB of DDR3, 128 MB of Boot Flash, and a 32 GB SD Card. The PPC has x4 PCIe interface to the FPGA in addition to its local bus. The PPC has its dual GbE routed to ports 0 and 1 of the AMC via a mux to allow FPGA routing to the ports as well. The same applies to ports 2-3 (PPC SATA ports or directly to the FPGA via mux selection).

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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 geared to prove out the hardware for engineering/factory diagnostics and customer acceptance of the hardware, but it does not strive to implement a particular end application.

BLOCK DIAGRAM

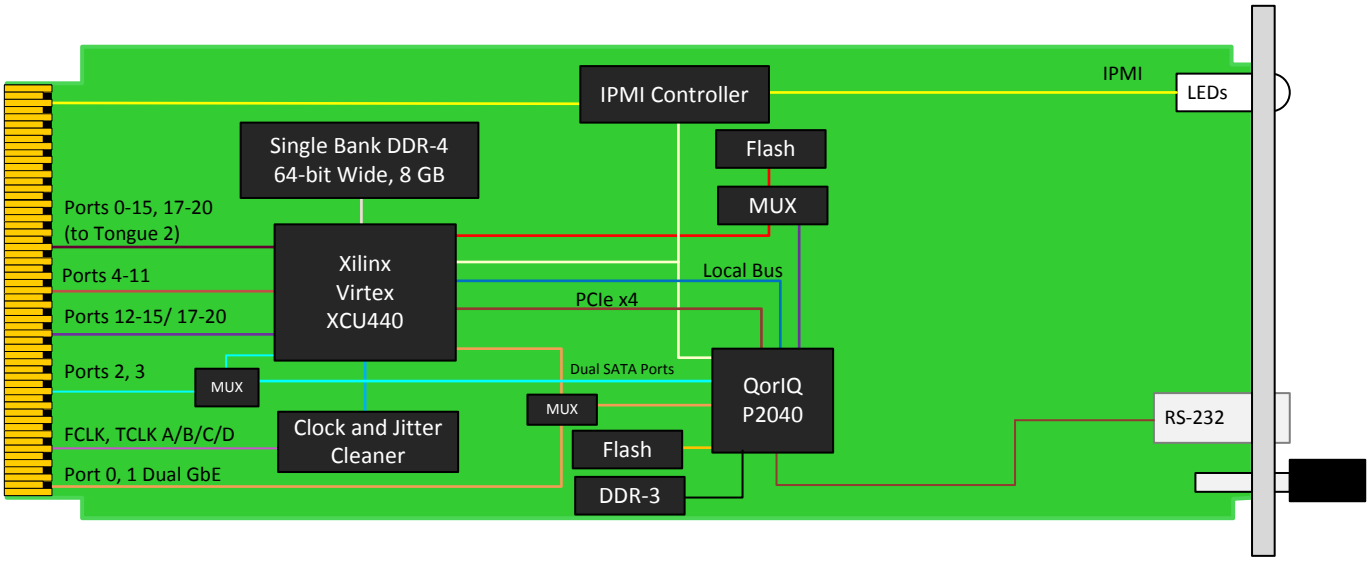

Figure 1: AMC596 Block Diagram

SPECIFICATIONS

Architecture		
Physical	Dimensions	Single module, mid-size (full-size and extended-size optional)
		Width: 2.89" (73.5 mm)
		Depth 7.11" (180.6 mm)
Type	AMC FPGA	Xilinx Virtex UltraScale™ XCVU440 FPGA
		Single bank of DDR4 (64-bit wide)
Standards		
AMC	Type	AMC.1, AMC.2, and AMC.4 (FPGA programmable)
Module Management	IPMI	IPMI version 2.0
PCIe	Lanes	Dual x4 or single x8 via FPGA to AMC
SRIO/Aurora	Lanes	Dual x4 via FPGA to AMC
Ethernet	1/10/40GbE	Dual 1/10/40 GbE via FPGA (ports 0-1 and 4-11) and/or Dual 1000-BaseBX from PPC to ports 0-1
Configuration		
Power	AMC596	~65W (application specific)
Environmental	Temperature	Operating Temperature: -5° to 45°C (55°C for limited time, performance restrictions may apply), industrial and military versions also available. (See environmental spec sheet)
		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 Connectors	MGT RS-232 and CPU RS-232
	LEDs	IPMI management control
		4 user defined LEDs
	Mechanical	Hot swap ejector handle
Software Support	Operating System	Linux, VxWorks and Windows
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 has a full ecosystem of ATCA and µTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTM), 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

AMC596 – ABC – DEF – GHJ

A = Ports 12-15 (Tongue 1)
0 = Not routed to FPGA
1 = LVDS
2 = SERDES

B = Tongue 2
0 = Not installed
1 = Installed

C = Front Panel Size
1 = Reserved
2 = Mid-size (4HP)
3 = Full-size (6HP)
4 = Extended-size (8HP)
5 = Reserved
6 = Mid-size, MTCA.1 (captive screw)
7 = Full-size, MTCA.1 (captive screw)
8 = Extended-size, MTCA.1 (captive screw)

D = Ports 17-20 (Tongue 1)
0 = Not routed to FPGA
1 = To FPGA

E = FPGA Speed
1 = Low
2 = High
3 = Highest

F = PCIe Option (Tongue 1)
0 = No PCIe
1 = PCIe on ports 4 – 7
2 = PCIe on ports 8 – 11
3 = PCIe on ports 4 – 11

G = Clock Holdover Stability
0 = Standard XO
1 = Stratum-3 (TCXO)

H = Tongue 2 Ports 4-11 PCIe
0 = No PCIe
1 = PCIe on ports 4-11

J = Temperature Range and Coating
0 = Commercial (–5° to +55° C), No coating
1 = Commercial (–5° to +55° C), Humiseal 1A33 Polyurethane
2 = Commercial (–5° to +55° C),Humiseal 1B31 Acrylic
3 = Industrial (–20° to +70° C), No coating
4 = Industrial (–20° to +70° C), Humiseal 1A33 Polyurethane
5 = Industrial (–20° to +70° C), Humiseal 1B31 Acrylic
6 = Military (–40° to +85° C), Humiseal 1A33 Polyurethane*
7 = Military (–40° to +85° C), Humiseal 1B31 Acrylic*

*Edge of module for conduction-cooled boards

RELATED PRODUCTS

VT899 Cube Chassis

AMC751 PrAMC, Intel Xeon E5, 40 GbE

UTC020 1000W Power Module

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