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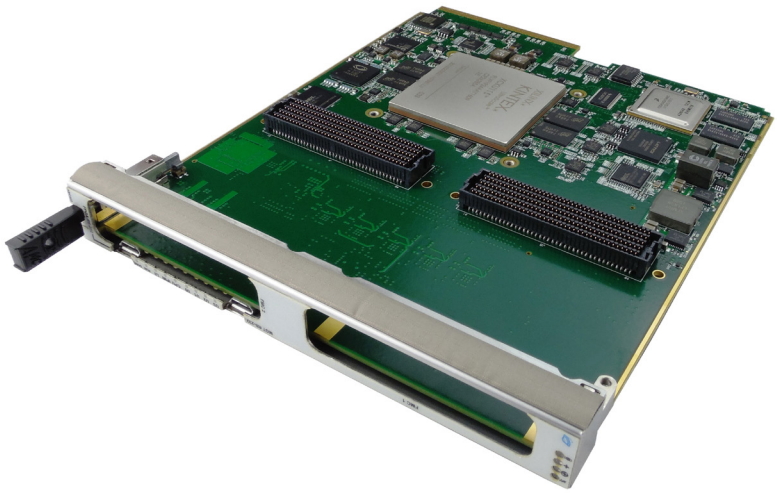
THE POWER OF VISION

AMC593 – AMC FPGA Dual FMC Carrier, Kintex UltraScale™ XCKU115 with P2040

FPGA UltraScale™ with P2040



KEY FEATURES

- Double module, mid-size AMC (full-size optional)
- Xilinx UltraScale™ Kintex XCKU115
- QorIQ PPC2040
- 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
- 8GB of DDR-4 (two banks of DDR-4)
- IPMI 2.0 compliant

AdvancedMC™

Benefits of Choosing VadaTech

- Xilinx UltraScale™ XCKU115 FPGA provides strong connectivity and processing power
- Dual FMC sites with broad choice of compatible network, A/D, D/A and RF FMCs
- Dual Banks of DDR4 memory allow larger buffer sizes while processing and queuing data to the host
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

The AMC593 provides a very capable I/O processing engine, with a large UltraScale™ FPGA coupled to two FMC sites and supported by an on-board quad-core processor. With over 5,500 DSP slices and supported by 8 GB of DDR4 (32-bits wide over two banks), the XCKU115 connects to all FMC LA/HA/HB pairs, balancing high-speed I/O with impressive processing power. The AMC593 is compliant to the AMC.1, AMC.2 and/or AMC.4 specification, and supports direct AMC-to-AMC connections over ports 12-15 and 17-20.

The dual FMC sites accept FMCs from VadaTech's extensive range of data acquisition, networking and RF units, and other 3rd party VITA-57 compliant modules.

The quad core P2040 on-board host has 4x PCIe interface to the FPGA in addition to its local bus, and is supported by DDR3, Boot Flash and a SD Card. The user can select whether to route ports 0 and 1 of the AMC to the PPC or FPGA.

The AMC593 has Serial over LAN (SOL) per IPMI specification, with a hardware RNG for secure session.

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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

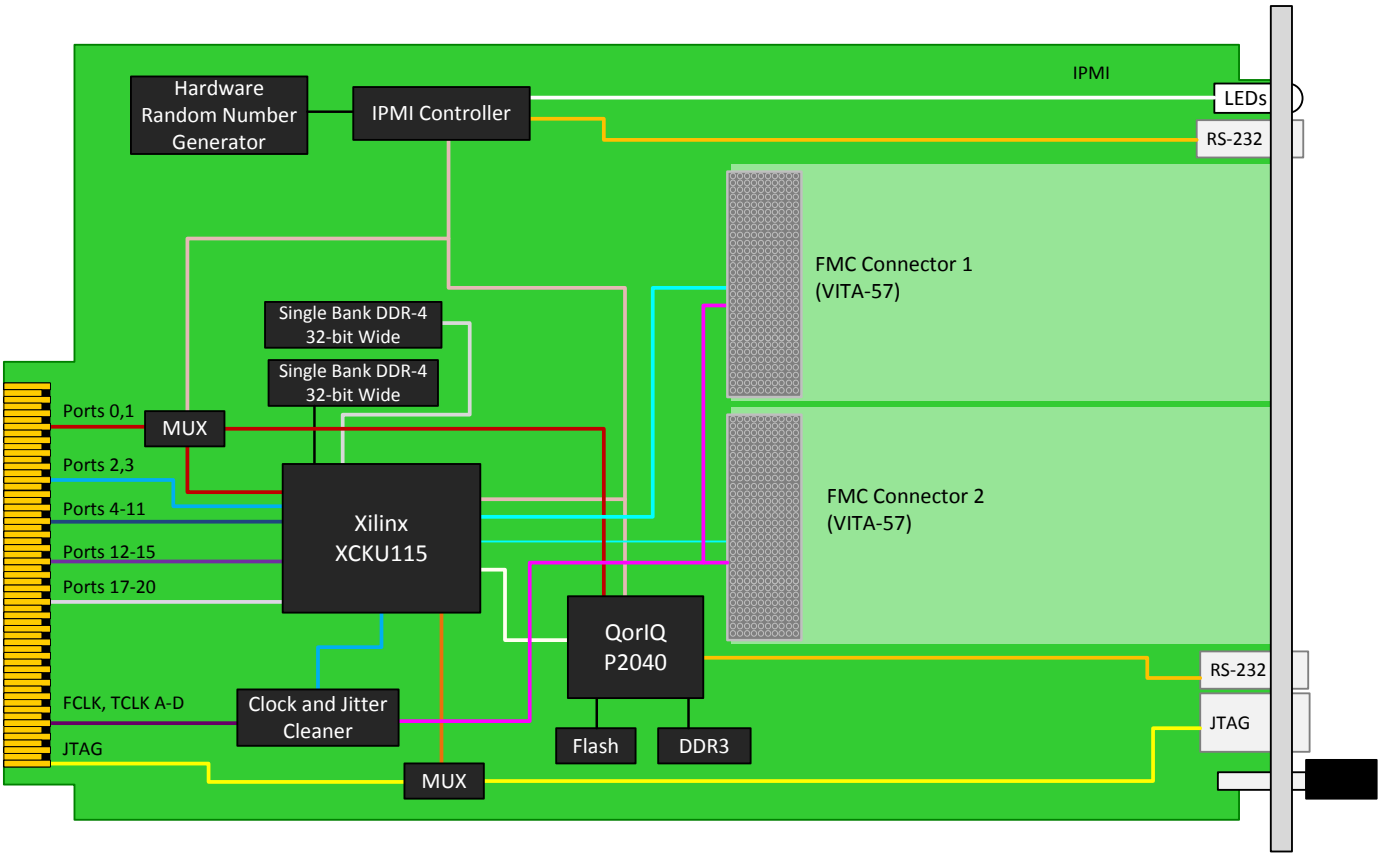

Figure 1: AMC593 Block Diagram

FRONT PANEL

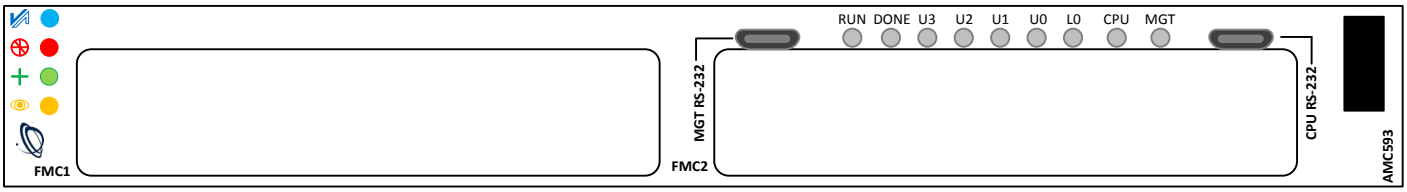

Figure 2: AMC593 Front Panel

SPECIFICATIONS

Architecture		
Physical	Dimensions	Double module, mid-size (full-size optional)
		Width: 5.85" (148.5 mm)
		Depth 7.11" (180.6 mm)
Type	AMC FPGA	Xilinx UltraScale™ XCKU115 FPGA with PPC2040
		Dual bank of DDR4
Standards		
AMC	Type	AMC.1, AMC.2, and AMC.4 (FPGA programmable)
Module Management	IPMI	IPMI version 2.0
PCIe	Lanes	Dual x4 via FPGA to AMC
SRIO/Aurora	Lanes	Dual x4 via FPGA to AMC
Ethernet	10/40 GbE and GbE	Dual 10/40 GbE via FPGA and Dual 1000-BaseBX from PPC
Configuration		
Power	AMC593	Carrier is ~50 W (without mezzanine) 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	Dual FMC VITA-57
		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
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

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ORDERING OPTIONS

AMC593 – A0C – DEF – G0J

A = FPGA DDR4 Memory
0 = Reserved
1 = 8 GB
2 = Reserved

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

*Edge of module for conduction-cooled boards

D = Ports 12-15 and 17-20
0 = Not routed to FPGA
1 = To FPGA

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

F = PCIe Option
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)

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*

RELATED PRODUCTS

VT899 Cube Chassis

FMC223 High Speed FMC for DAC

UTC020 1000W Power Module

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