AMC590

56 GSPS 8-bit ADC, 1/2/4 Channel, UltraScale, AMC

AMC590

Key Features

- Xilinx UltraScale™ XCKU115 FPGA
- 8-bit ADC at up to 56 GSPS
- 1 x 56, 2 x 28 or 4 x 14 GSPS channels
- 24 GB of DDR-4 Memory (3 banks of 64-bit)
- ADC is 65 nm CMOS process technology
- Very low power consumption (5 W for the ADC)
- Single module, mid-size or full-size
- Calibration warning and over-range flags
- –3 dB analog input bandwidth nominally 15 GHz
- Internal 14 GHz VCO/PLL per I/Q ADC pair
- Differential analog input: 1.0V PPD

Benefits

- Highest sampling rate for the module size in the industry
- Uses MB8AC2070 ADC
- Low power consumption – CMOS process technology
- Flexible selection of sample rate and channel count
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

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The AMC590 used the Fujitsu MB8AC2070 ADC (Analog to Digital Converter) to provide 56 GSPS from a single channel, 28 GSPS from two channels, or 14 GSPS from four channels (user selectable). The board is compliant to the AMC.1 and AMC.2 specifications.

The AMC590 allows the implementation of extremely fast, high-resolution ADCs in CMOS process technology. The ADC is ideal for applications that require ultra-high-performance analog and digital processing such as 100G applications. Achieved input bandwidth depends on system configuration and operating conditions, contact VadaTech for details.

The AMC590 has a Xilinx UltraScale™ XCKU115 FPGA which has 5520 DSP Slices. The FPGA interfaces directly to the AMC, allowing the core to interface to the host with multiple protocols such as 40GbE, 10GbE, PCIe or SRIO. The FPGA has 3 banks of 64-bit DDR4 memory (24 GB total).

Block Diagram

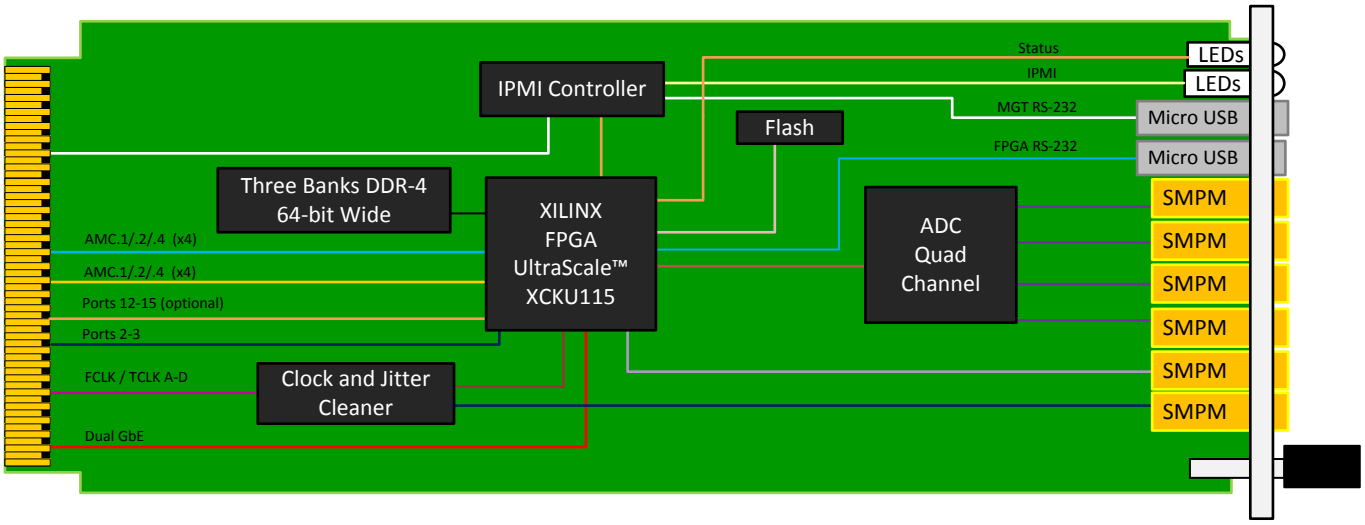
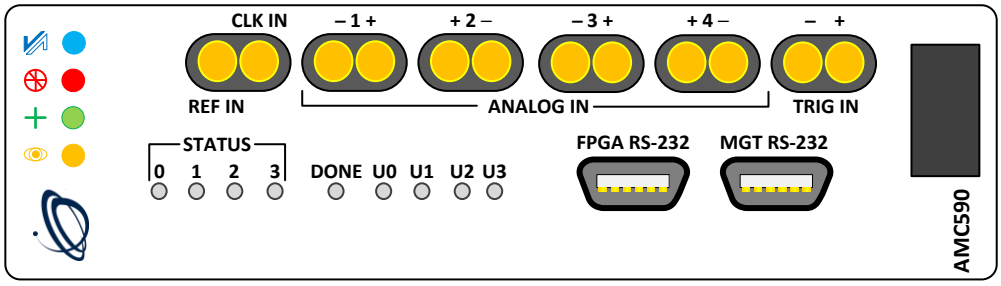


Figure 1: Functional Block Diagram

Front Panel



* *Front panel overlay labels are provided for information purpose only, the label text may be different on the actual product.*

Specifications

Architecture		
Physical	**Dimensions**	Single module, mid-size (full-size, 8 HP optional)
		Width: 2.89” (73.5 mm)
		Depth 7.11” (180.6 mm)
Type	**AMC ADC**	ADC, up to 4 input channels, quad 14 GSPS or dual 28 GSPS or single 56 GSPS
Standards		
AMC	**Type**	AMC.1, AMC.2
Module Management	**IPMI**	IPMI version 2.0
PCIe	**Lanes**	x4 or x8 (ports 4-11), additional ports on 12-15
SRIO/XAUI	**Lanes**	Dual x4 (ports 4-11), additional ports on 12-15
40 GbE	**Lanes**	Dual x4 (ports 4-11), additional ports on 12-15
Configuration		
Power	**AMC590**	~65 W application dependent
Environmental	**Temperature**	Operating temperature: -5° to 45° C (55°C for limited time, performance restrictions may apply), industrial and extended versions also available (See environmental spec sheet)
		Storage Temperature: –40° to +85°C
	Vibration	Operating 9.8 m/s^2 (1G), 5 to 500Hz on each axis
	Shock	Operating 30G on each axis
	Relative Humidity	5 to 95 per cent, non-condensing
Electrical	**DNL/INL**	+/- 0.5 LSB, +/- 1.0 LSB
	SNDR	40 dBFS @ Fin = 1 GHz , 36 dBFS @ Fin = 17 GHz
	Output Rate	128 samples x 8-bit @ 437.5 MHz
	Signals	<100 fs rms jitter, <500 fs I/Q sample time error
Front Panel	**Interface Connectors**	FPGA JTAG port
		Micro USBs for MGT RS-232
		SMPM TRIG IN as a differential
		SMPM as differential input for each channel
		SMPM for clock input (CLK and REF)
	LEDs	IPMI management control
		4 Debug (user defined), 4x status and 1x Done LEDs
	Mechanical	Hot-swap ejector handle
Software Support	**Operating System**	Independent
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

AMC590 – A0C-DE0-00J

A = RF Direct Clock Synthesis	D = PCIe Option	
0 = Front Panel 1 = On Board Wide Band PLL	0 = No PCIe 1 = PCIe on ports 4 – 7 2 = PCIe on ports 8 – 11 3 = PCIe on ports 4 – 11	
	E = Ports 12-15 to FPGA	
	0 = No 1 = Yes	
C = Front Panel Size		**J = Temperature Range and Coating**
1 = Reserved 2 = Mid-size 3 = Full-size 4 = Reserved 5 = Mid-size, MTCA.1 (captive screw) 6 = Full-size, MTCA.1 (captive screw) 7 = 8 HP		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 = Extended (–40° to +85° C), Humiseal 1A33 Polyurethane* 7 = Extended (–40° to +85° C), Humiseal 1B31 Acrylic*

* Conduction cooled, temperature is at edge of module.

Related Products

AMC104

- AMC PCIe Gen 3 carrier (x4 or x8)
- Double module, full-size
- Accept any standard PCIe edge style module

AMC626

- Host Bus Adapter (HBA) for external SATA III (6.0 Gbps) or SAS-3 (12 Gbps) drives
- AMC.1 compliant, PCIe Gen3 x8 or x4
- Support for 8 SAS/SATA ports

VT899

- 7U µTCA Cube
- 5” x 7U x 9” deep (with handles 10” deep)
- Up to six AMCs: 6 full size single module or 3 full size double module

Contact

VadaTech Corporate Office

198 N. Gibson Road, Henderson, NV 89014
Phone: +1 702 896-3337 | Fax: +1 702 896-0332

Asia Pacific Sales Office

7 Floor, No. 2, Wenhu Street, Neihu District, Taipei 114, Taiwan
Phone: +886-2-2627-7655 | Fax: +886-2-2627-7792

VadaTech European Sales Office

VadaTech House, Bulls Copse Road, Southampton, SO40 9LR
Phone: +44 2380 016403

info@vadatech.com | www.vadatech.com

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