AMC590

ADC 8-bit @ up to 56 GSPS, 1/2/4 Channel, UltraScale™ XCKU115, AMC

AMC590

Key Features

- Xilinx UltraScale™ XCKU115 FPGA
- ADC 8-bit @ up to 56 GSPS
- 1 x 56, 2 x 28 or 4 x 14 GSPS channels
- 24 GB of DDR4 Memory (3 banks of 64-bit)
- ADC is 65 nm CMOS process technology
- Very low power consumption (5W 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 uses 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 features a Xilinx UltraScale™ XCKU115 FPGA with 5520 DSP Slices. The FPGA interfaces directly to the AMC and allows 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).

See Solution Brief for an overview of a 56 GSPS digitizer with IRIGB/GPS timestamping.

Figure 1: AMC590

Block Diagram

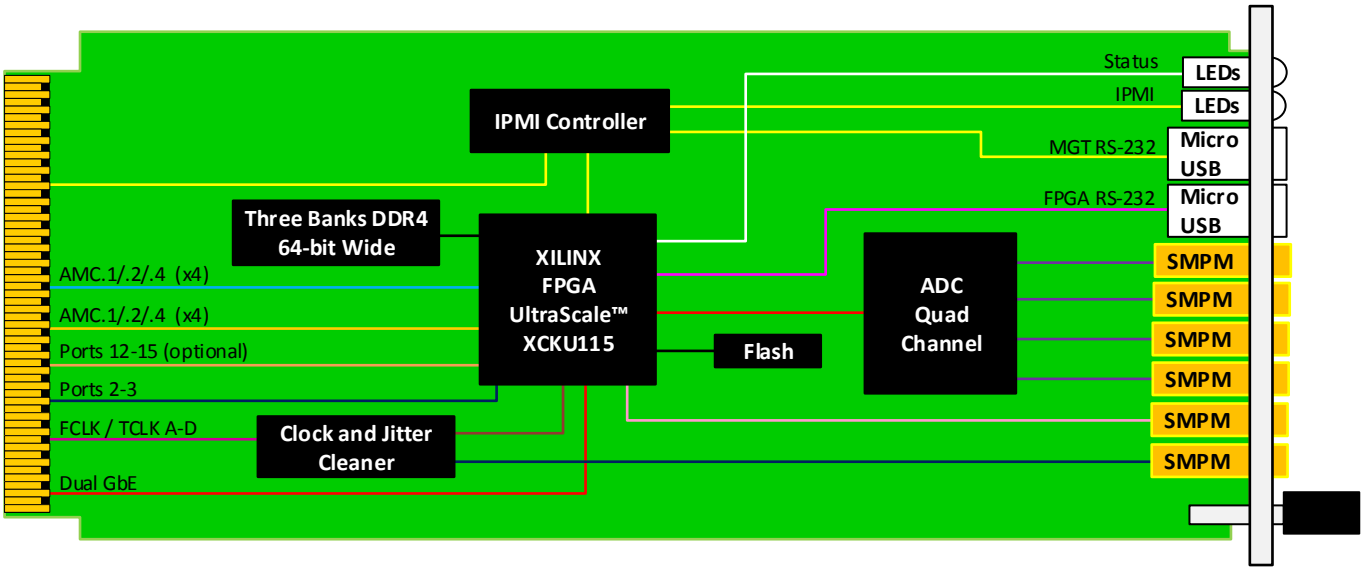

Figure 2: AMC590 Functional Block Diagram

Front Panel

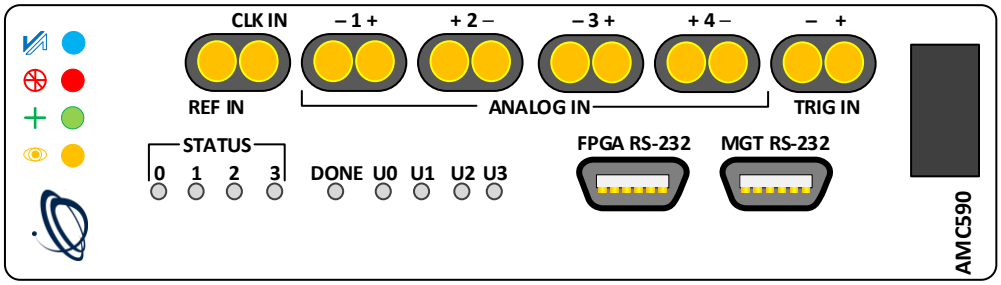

Figure 3: AMC590 Front Panel

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 v2.0
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
40GbE	**Lanes**	Dual x4 (Ports 4-11), additional Ports on 12-15
Configuration		
Power	**AMC590**	~65W (application specific)
Environmental	**Temperature**	See Ordering Options and Environmental Spec Sheet
		Storage Temperature: –40° to +85°C
	Vibration	Operating 9.8 m/s^2 (1G), 5 to 500 Hz on each axis
	Shock	Operating 30Gs on each axis
	Relative Humidity	5 to 95% 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**	SMPM: Differential input for each channel, Trig IN as a differential, CLK IN, REF IN
		Micro USB for MGT RS-232 and FPGA RS-232
	LEDs	IPMI management control
		4 Debug (user defined), 4x status and 1 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 ISO9001:2015 and AS9100D standards	
Warranty	Two (2) years, see VadaTech Terms and Conditions	

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

AMC590 – A0C-DE0-00J

A = RF Direct Clock Synthesis	D = PCIe Option	
0 = Front Panel 1 = Onboard Wideband 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*

Notes:

*Conduction cooled; temperature is at edge of module.

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

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 MTCA 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

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DOC NO. 4FM737-12 REV 01 | VERSION 4.3 – MAR/20