

# AMC560

Zynq UltraScale+ FPGA,  
Dual FMC+ Carrier, AMC

AMC560

## Key Features

- Xilinx UltraScale+ XCZU19EG FPGA
- Dual FMC+ sites
- 8 GB of 64-bit wide DDR-4 Memory (single bank) with ECC
- MPSoC with block RAM and UltraRAM
- SD Card (option)
- 128 MB of boot Flash
- 64 GB of user Flash
- Double module, mid-size

## Benefits

- Dual FMC+ sites on a double module AMC
- Zynq UltraScale+ MPSoC
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

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# AMC560

The AMC560 is an AMC FPGA Carrier with dual FMC+ (VITA 57) interfaces. The AMC is compliant to AMC.1, AMC.2, AMC.3 and AMC.4 specifications. The unit has an on-board, re-configurable FPGA which interfaces directly to the AMC FCLKA, TCLKA-D, FMC+ DP0-15 and all FMC+ LA/HA/HB pairs. The FPGA has an interface to a single DDR4 memory channel (64-bit wide with ECC). This allows for large buffer sizes to be stored during processing as well as for queuing the data to the host.

The AMC is based on Xilinx UltraScale+ XCZU19EG MPSoC FPGA with dual FMC+ sites.

The FPGA has 1968 DSP Slices and 1143k logic cells. The XCZU19EG includes a quad-core ARM processor.

The Module has on board 64 GB of Flash, 128 MB of boot flash and an SD Card as an option.

# Block Diagram

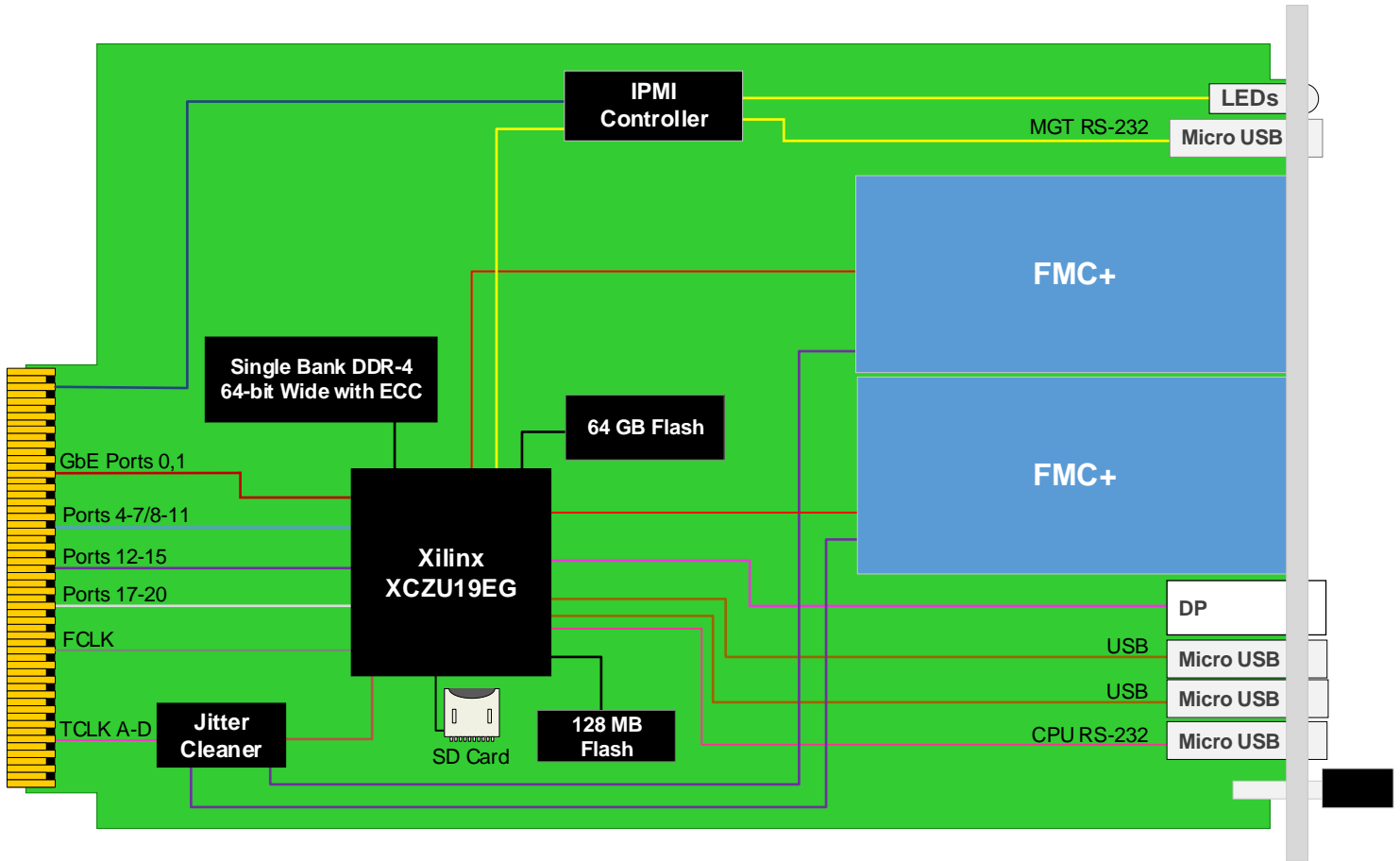


Figure 1: AMC560 Functional Block Diagram

# Reference Design

VadaTech provides an extensive range of Xilinx based FPGA products. The FPGA products are in two categories; FPGA boards with FMC carriers and FPGA products with high speed ADC and DACs. The FPGA products are designed in various architectures such as AMC modules, PCIe cards and Open VPX.

VadaTech provides a reference design implementation for our FPGAs complete with VHDL source code, documentation 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 designed to prove out the hardware for early prototyping, engineering/factory diagnostics and customer acceptance of the hardware, but it does not strive to implement a particular end application. The reference VHDL reduces customer time to develop custom applications, as the code can be easily adapted to meet customer's application requirements.

The reference design allows you to test and validate the following functionality (where supported by the hardware):

- Base and Fabric channels
- Clocks
- Data transfers
- Memory
- User defined LEDs

Xilinx provides Vivado Design Suite for developing applications on Xilinx based FPGAs. VadaTech provides reference VHDL developed using the Vivado Design Suite for testing basic hardware functionality. The reference VHDL is provided royalty free to use and modify on VadaTech products, so can be used within applications at no additional cost. However, customers are restricted from redistributing the reference code and from use of this code for any other purpose (e.g. it should not be used on non-VadaTech hardware).

The reference VHDL is shipped in one or more files based on a number of ordering options. Not all ordering options have an impact on the FPGA and a new FPGA image is created for those options that have direct impact on the FPGA. Use the correct reference image to test your hardware. For more information, refer to the FPGA reference design manual for your device which can be accessed from customer support site along with the reference images.

## Supported Software

- Default FPGA image stored in flash memory
- Linux BSP
- Build Scripts
- Device Driver
- Reference application projects for other ordering options

The user may need to develop their own FPGA code or adapt VadaTech reference code to meet their application requirements. The supplied pre-compiled images may make use of hardware evaluation licenses, where necessary, instead of full licenses. This is because VadaTech does not provide licenses for the Vivado tool or Xilinx IP cores, so please contact Xilinx where these are required.

Xilinx also provides System Generator tools for developing Digital Signal Processing (DSP) applications.

See the following links:

[Xilinx Vivado Design Suite](#), [Xilinx System Generator for DSP](#).

# Specifications

Architecture	
<b>Physical</b>	<b>Dimensions</b> Double module, mid-size (full-size optional) Width: 5.85" (148.5 mm) Depth 7.11" (180.6 mm)
<b>Type</b>	<b>AMC FPGA Carrier</b> Xilinx Zynq UltraScale+, Dual FMC sites
Standards	
<b>AMC</b>	<b>Type</b> AMC.0, AMC.1, AMC.2, AMC.3 and AMC.4
<b>Module Management</b>	<b>IPMI</b> IPMI version 2.0
<b>GbE</b>	<b>Lanes</b> Port 0 and 1
<b>PCIe</b>	<b>Lanes</b> x4 (4-7/8-11) or x8 (4-11) and additional ports on 12-15
<b>10GbE/40GbE/SRIO</b>	4-7, 8-11 and additional ports on 12-15
Configuration	
<b>Power</b>	<b>AMC560</b> ~35 W FPGA load dependent <b>FMC+</b> Module dependent
<b>Environmental</b>	<b>Temperature</b> See ordering options and <a href="#">environmental spec sheet</a> Storage Temperature: -40° to +85°C <b>Vibration</b> Operating 9.8 m/s <sup>2</sup> (1 G), 5 to 500 Hz on each axis <b>Shock</b> Operating 30 G on each axis <b>Relative Humidity</b> 5 to 95% non-condensing
<b>Front Panel</b>	<b>Interface Connectors</b> Dual FMC+ Slots Dual Micro USB for RS-232 (management and CPU) Dual Micro USB for USB Display Port <b>LEDs</b> IPMI Management Control Debug (user defined) LED <b>Mechanical</b> Hot swap ejector handle
<b>FMC</b>	<b>On-board</b> Dual FMC+
<b>RTM</b>	<b>Rear</b> None
<b>Software Support</b>	<b>Operating System</b> Linux
Other	
<b>MTBF</b>	MIL Hand book 217-F@ TBD hrs
<b>Certifications</b>	Designed to meet FCC, CE and UL certifications, where applicable
<b>Standards</b>	VadaTech is certified to both the ISO9001:2000 and AS9100B:2004 standards
<b>Warranty</b>	Two (2) years

## 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

## AMC560 – ABC-DEF-G0J

A = Ports 12-15 to FPGA	D = SD Card	G = Clock Holdover Stability
0 = No Ports 12-15 1 = SERDES*	0 = No SD Card 1 = 32 GB	0 = Standard (XO) 1 = Stratum-3 (TCXO)
B = Ports 17-20 to FPGA	E = FPGA Speed	
0 = No Ports 17-20 1 = MLVDS	1 = Reserved 2 = High 3 = Highest	
C = Front Panel	F = PCIe Fabric	J = Temperature Range and Coating
1 = Reserved 2 = Mid-size 3 = Full-size 4 = Extended-size (8HP) 5 = Reserved 6 = Mid-size, MTCA.1/4 7 = Full-size, MTCA.1/4 8 = Extended-size, MTCA.1/4	0 = No PCIe 1 = PCIe on ports 4-7 2 = PCIe on ports 8-11 3 = PCIe on ports 4-11	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: \*These ports are not LVDS compatible.

\*\*Conduction cooled, temperature is at edge of module. Consult factory for availability.

## Related Products

VT813



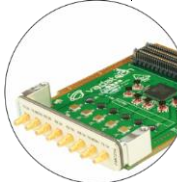
- MTCA.4 Chassis Platform with rear I/O
- 19" x 8U x 14.9" deep (with handles 16.23" deep)
- Full redundancy with dual MicroTCA Carrier Hubs

AMC592



- AMC FPGA carrier for FMC per VITA 57
- Xilinx UltraScale™ XCKU115 FPGA
- Supported by DAQ Series™ data acquisition software

FMC214



- Dual complete transceiver signal chain solution using Analog Devices AD9361 transceiver
- Frequency range 70 MHz to 6 GHz with instantaneous bandwidth from 200 kHz to 56 MHz
- MIMO transceiver is Time Domain Duplex (TDD)

# Contact

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## We are technology leaders

- First-to-market silicon
- Constant innovation
- Open systems expertise

## We commit to our customers

- Partnerships power innovation
- Collaborative approach
- Mutual success

## We deliver complexity

- Complete signal chain
- System management
- Configurable solutions

## We manufacture in-house

- Agile production
- Accelerated deployment
- AS9100 accredited



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