AMC536

Altera Carrier for FMC, Arria-10™ GX1150

AMC536

Key Features

- Single module, mid-size AMC (full-size optional)
- Altera Arria-10 GX1150 in F1517 package
- 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
- 16 GB of DDR4 (dual bank, 64-bit)

Benefits

- Dual Bank of 64-bit wide DDR4 memory allows 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

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The AMC536 is based on the Altera Arria-10™ GX1150 FPGA in F1517 package and is compliant to AMC.1, AMC.2, AMC.3 and/or AMC.4 specifications.

The module routes all LA/HA/HB and 10 DP SERDES to the FMC slot.

The onboard, re-configurable FPGA interfaces directly to the AMC FCLKA and TCLKA-D via a Cross Bar Switch (CBS) MLVDS. It also has two banks of DDR4 (64-bit wide) giving 16 GB total memory. This allows for large buffer sizes to be stored during processing as well as for queuing the data to the host.

See Intel FPGA Solutions for the advantages of using VadaTech products during application development.
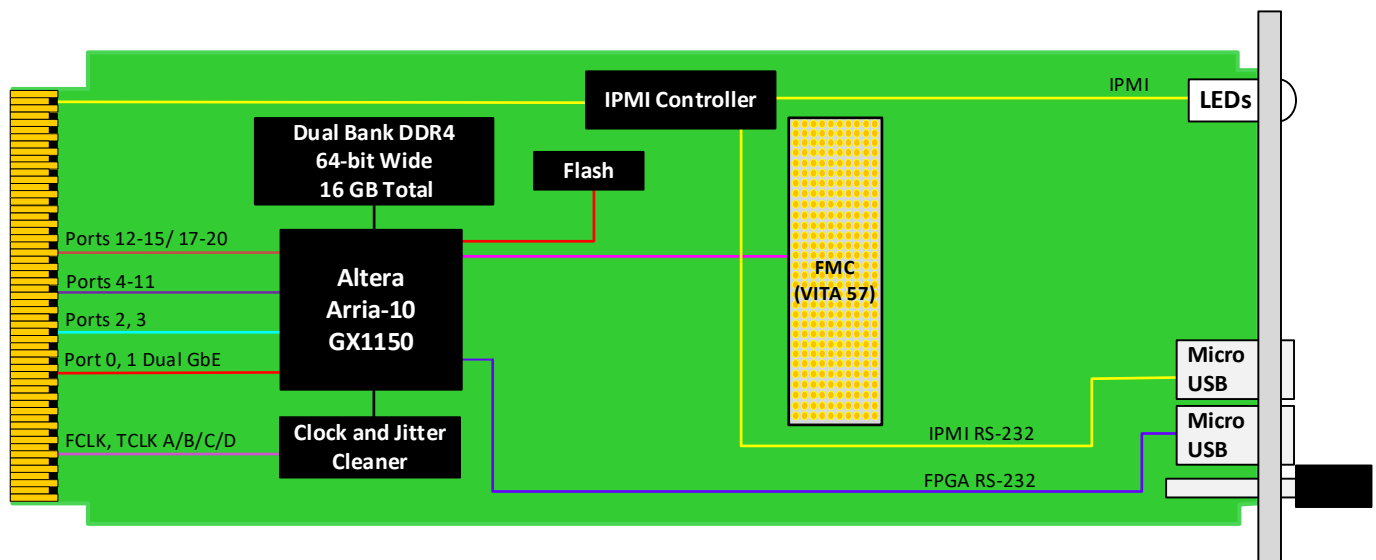

Figure 1: AMC536

Block Diagram

Figure 2: AMC536 Functional Block Diagram

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Reference Design

VadaTech provides an extensive range of FPGA-based 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

VadaTech provides reference VHDL 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 the 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 development tools or silicon vendor IP cores, so please contact FPGA vendor where these are required.

Specifications

Architecture		
Physical	Dimensions	Single module, mid-size (full-size optional)
		Width: 2.89" (73.5 mm)
		Depth 7.11" (180.6 mm)
Type	AMC FPGA	Arria-10™ GX1150 FPGA
Memory		Dual bank of DDR4 (64-bit wide)
Standards		
AMC	Type	AMC.0, AMC.1, AMC.2, AMC.3 and/or AMC.4
Module Management	IPMI	IPMI v2.0
PCIe	Lanes	Dual x4 or x8 via FPGA to AMC
SRIO/Aurora	Lanes	Dual x4 via FPGA to AMC
Ethernet	1/10/40G	Dual 1/10/40GbE via FPGA (Ports 0-1 and 4-11)
Configuration		
Power	AMC536	~30W (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	30G each axis
	Relative Humidity	5 to 95% non-condensing
Front Panel	Interface Connectors	Dual micro USB for MGT RS-232 and FPGA RS-232
		Single FMC slot
	LEDs	IPMI management control
		Four user defined LEDs
	Mechanical	Hot-swap ejector handle
Software Support	Operating System	Linux
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

AMC536 – A0C-0EF-G0J

A = Ports 12-15/17-20		G = Clock Holdover Stability
0 = Not routed to FPGA 1 = Routed to FPGA		0 = Standard XO 1 = Stratum-3 (TCXO)
	E = FPGA Speed	
	1 = Highest 2 = High 3 = Reserved	
C = Front Panel Size	**F = PCIe Option**	**J = Temperature Range and Coating**
1 = Reserved 2 = Mid-size 3 = Full-size 4 = Reserved 5 = Mid-size, MTCA.1/.4 6 = Full-size, MTCA.1/.4 7 = Extended (8 HP), 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:

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

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

FMC223

- FPGA Mezzanine Card (FMC) per VITA 57
- Single module DAC 14-bit @ 2.5 GSPS (AD9739)
- 2 Vpp differential Analog output swing

UTC020

- Single module, full-size per AMC.0
- Dual -36V DC to -75V DC input, 936W (available in 468W)
- Hot-swappable with support for power module redundancy

VT899

- MTCA System Platform 5" x 7U x 9" deep (with handles 10" deep)
- Up to six AMCs: 6 full-size single-width or 3 full-size double width
- High-speed routing on 26 layers

Contact

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