

AMC502 – AMC FPGA Carrier with Dual FMC, Kintex-7

AMC FPGA Carrier, Kintex-7



KEY FEATURES

- AMC FPGA carrier for dual FPGA Mezzanine Card (FMC) per VITA-57
- Double module, mid-size (full-size optional)
- Xilinx Kintex-7 FPGA (XC7K420T) in a FFG1156 package
- AMC Ports 4-7 and 8-11 are routed to FPGA per AMC.1, AMC.2 and AMC.4 (protocols such as PCIe, SRIO, XAUI, etc. are FPGA programmable)
- 32 MB of Flash memory
- IPMI version 2
- RoHS compliant

AdvancedMC™

Benefits of Choosing VadaTech

- Dual FMC carrier with high-performance Xilinx Kintex-7 FPGA
- The LVDS cross-bar switch provides improved clock flexibility
- Electrical, mechanical, software, and system-level expertise in house
- Full ecosystem of front and rear boards, enclosures, specialty modules, and test/dev products from one source
- AS9100 and ISO9001 certified company

The AMC502 is an AMC FPGA Carrier with dual FMC (VITA 57) interface. The AMC502 is compliant to the AMC.1, AMC.2 and/or AMC.4 specification. The unit has an on-board, re-configurable FPGA which interfaces directly to AMC FCLKA, TCLKA-D, FMC DP0-3, and all FMC LA/HA/HB pairs. Port 3 can be routed as LVDS.

The AMC502 has an on-board crystal-referenced clock source to provide at least 125 MHz as GTX reference inputs for PCIe, SRIO and GbE. The iMX6 CPU is a quad core ARM processor at 1 GHz for power-efficient distributed processing.

The AMC502 has dual FMC connectors per VITA-57 allowing the versatility of various FMC modules to be implemented.

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 tool for developing Digital Signal Processing (DSP) applications.

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

BLOCK DIAGRAM

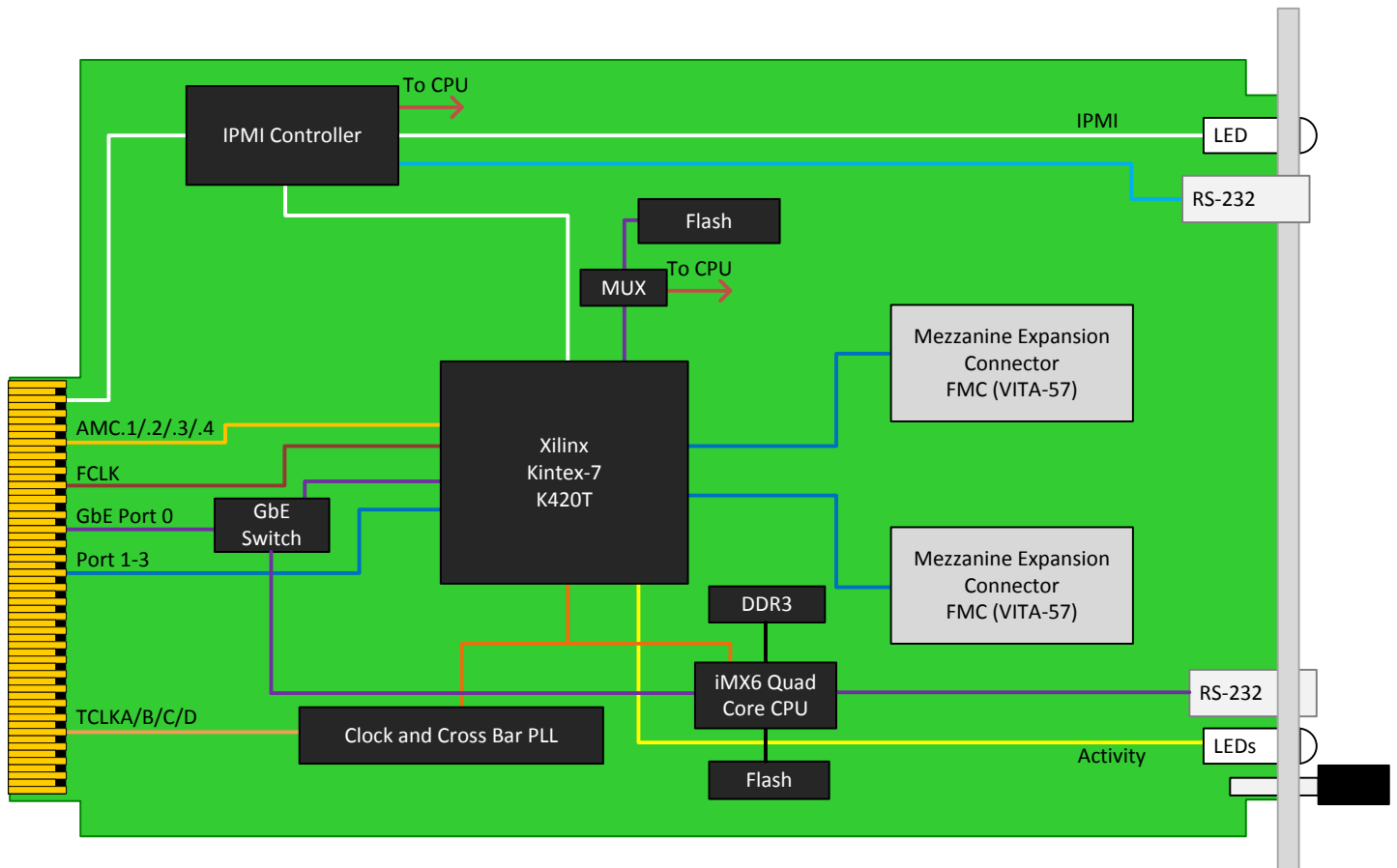


Figure 1: AMC502 Block Diagram

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 Carrier	Xilinx Kintex-7 Device (XC7K420T) Dual FMC slots iMX6 Quad CPU
Standards		
AMC	Type	AMC.1, AMC.2, AMC. 3 and AMC.4 (FPGA programmable)
Module Management	IPMI	IPMI version 2.0
PCIe	Lanes	Dual x4 or x8 PCIe Gen 2 via FPGA to AMC
SRIO	Lanes	Dual x4 via FPGA to AMC
Ethernet	GbE	Ports 0 and 1
Configuration		
Power	AMC502	Carrier is ~20W, 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	Front panel dual FMC, IPMI RS-232, FPGA RS-232
	LEDs	IPMI management control 8 user defined LEDs
	Mechanical	Hot swap ejector handle
Software Support	Operating System	Linux, VxWorks and Windows
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 μ TCA 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

AMC502 – A0C – DEF – G0J

A = I/O Clock Signal Routing

- 0 = Standard routing
- 1 = CMS routing

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)

D = FPGA

- 0 = Reserved
- 1 = Reserved
- 2 = XC7K420T

E = FPGA Speed

- 1 = Low (min buy required**)
- 2 = High
- 3 = Highest (min buy required**)

F = PCIe Option

- 0 = None
- 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)

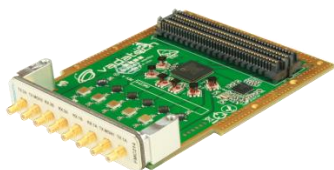
J = Temperature Range and Coating

- 0 = Commercial (–5° to +45° C), No coating
- 1 = Commercial (–5° to +45° C), Humiseal 1A33 Polyurethane
- 2 = Commercial (–5° to +45° 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*

*Edge of module for conduction-cooled boards

** Contact Sales for details

RELATED PRODUCTS



FMC214 Wideband
Transceiver FMC



FMC223 2.5 GSPS
DAC FMC



FMC210 2.5 GSPS
ADC FMC

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