

AMC565

Xilinx Kintex® UltraScale+™ FPGA

NVIDIA Jetson AGX Xavier

SOFI Carrier, AMC



AMC565

Key Features

- Xilinx Kintex UltraScale+™ XCKU11P FPGA
- NVIDIA Jetson AGX Xavier
- [SOFI](#) site
- 8 GB of dual 2x 32-bit wide DDR4 Memory to FPGA
- Double module, Full-size

Benefits

- SOFI with integrated NVIDIA Jetson and FPGA
- Highly integrated
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company



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AdvancedMC™



AMC565

The AMC565 has an integrated NVIDIA Jetson AGX Xavier, a Xilinx Kintex UltraScale+™ XCKU11P FPGA with an [SOFI](#) (Serial Optimized FPGA Interface) slot. The AMC is compliant to AMC.1, AMC.2 and AMC.4 PICMG open standard specifications.

The unit has an onboard, re-configurable Xilinx Kintex UltraScale+™ XCKU11P FPGA with 2,928 DSP Slices and 653K logic cells. It interfaces directly to the backplane clock lanes FCLKA and TCLKA-D, to the backplane dual x4 SERDES or single x8 SERDES lanes per ordering option F (AMC.1 and AMC.4), as well as 32 lanes of SERDES to the SOFI. The FPGA has an interface to 8 GB of DDR4 memory (dual 2x 32-bit wide). This allows for a large buffer size to be stored during processing as well as for queuing the data to the host. The FPGA is linked to the Jetson via PCIe x8 lanes at Gen3 speed.

The Jetson AGX Xavier has a 32 TeraOPS (TOPS) of peak compute, 512-Core NVIDIA Volta GPU with 64 Tensor cores, 8-core NVIDIA Carmel Arm V.8.2 64-bit CPU and 32GB of LPDDR4. It has a link to an SDHC Socket for 64GB of additional memory (per ordering option D) as well as to an M.2 NVMe for mass storage (per ordering option B).

The backplane dual GbE link (AMC.2) can be routed either to the FPGA or to the NVIDIA GbE via onboard MUX.



Figure 1: AMC585

Block Diagram

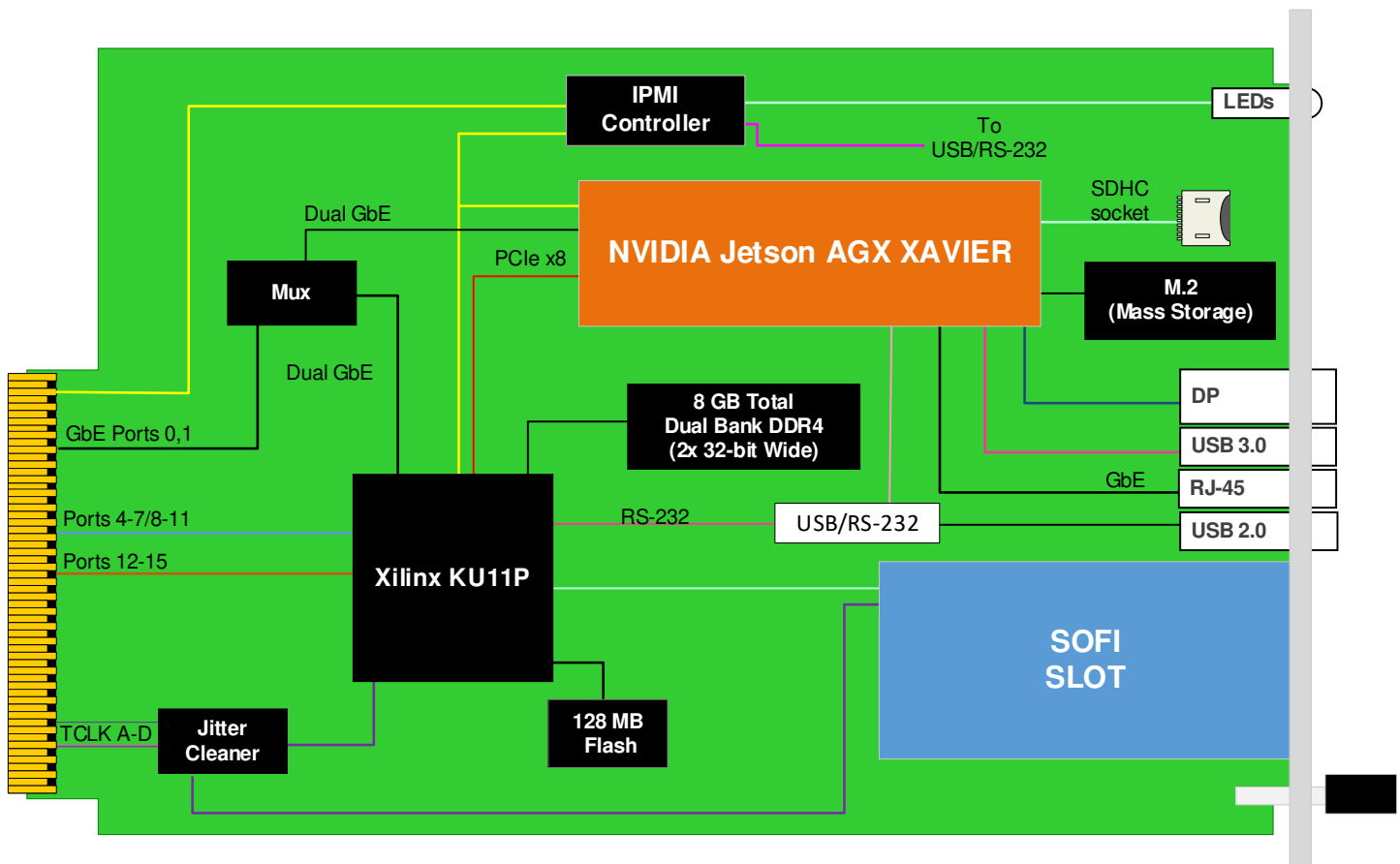


Figure 2: AMC565 Functional Block Diagram

Front Panel



Reference Design

VadaTech provides an extensive range of Xilinx based FPGA products. The FPGA products are in two categories; FPGA boards with FMC/SOFI 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		
Physical	Dimensions	Double module, full-size (extended-size optional)
		Width: 5.85" (148.5 mm)
		Depth 7.11" (180.6 mm)
Type	AMC FPGA Carrier	Xilinx Kintex® UltraScale+™, single SOFI site and NVIDIA Jetson
Standards		
AMC	Type	AMC.0, AMC.1, AMC.2 and AMC.4
Module Management	IPMI	IPMI v2.0
GbE	Lanes	Port 0 and 1
PCIe	Lanes	x4 (Ports 4-7/8-11) or x8 (Ports 4-11) per option F
10GbE/40GbE/SRIO		Ports 4-7, 8-11 per option F and additional Ports on 12-15
Configuration		
Power	AMC565	~50W FPGA load dependent
	SOFI	Module dependent
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 30G on each axis
	Relative Humidity	5 to 95% non-condensing
Front Panel	Interface Connectors	Single SOFI Slots
		USB2.0 for RS-232 (management, FPGA and JETSON); USB3.0 to Jetson
		RJ-45 GbE
		Display Port
	LEDs	IPMI Management Control
		Debug (user defined) LED
	Mechanical	Hot swap ejector handle
SOFI	On-board	Single SOFI slot
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 ISO9001:2000 and AS9100B:2004 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

AMC565 – ABC-DEF-G0J

A = Ports 12-15 to FPGA	D = SD Card	G = SOFI Module***
0 = No Ports 12-15 1 = SERDES*	0 = No SD Card 1 = 64GB	0 = None 1 = SOF220 2 = SOF221 3 = Reserved 4 = Reserved
B = M.2 Storage	E = FPGA Speed	
0 = None 1 = 512GB 2 = 1TB 3 = Reserved	1 = Reserved 2 = High 3 = Highest	
C = Front Panel	F = PCIe Fabric	J = Temperature Range and Coating
1 = Reserved 2 = Reserved 3 = Full-size 4 = Extended-size (8HP) 5 = Reserved 6 = Reserved 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.

.....***VadaTech has well over 20 SOFI products that customer could choose from, please contact your Sales Representative

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

VT813



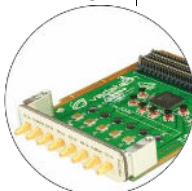
- MTCA.4 Chassis Platform with rear I/O
- 19" x 8U x 14.9" deep (with handles 16.23" deep)
- Full redundancy with dual MicroTCA Carrier Hubs

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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