

VT560

Xilinx Zynq® UltraScale+ FPGA,
with 10GbE, CoaXPress LVDS, RS-
485, High speed SERDES and GPIO



VT560

Key Features

- Xilinx Zynq® UltraScale+ XCZU19EG FPGA
- 16 GB of 64-bit wide DDR4 Memory (single bank) with ECC to the PS side
- 128 MB of boot Flash and 64 GB of user Flash
- Dual 10GBASE-T, 5GBASE-T, 2.5GBASE-T, 1000BASE-T, 100BASE-TX
- Support for IEEE1588-2008 Version 2-compliant
- Support for Synchronous Ethernet (SyncE)
- Dual CoaXPress per CXP-12 specification
- 17x LVDS, 2x RS-485 and 8x single ended I/O
- Conduction cool

Benefits

- 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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VT560

The VT560 is an integrated monolithic FPGA module in conduction cooled form-factor.

The VT560 is based on a Xilinx® UltraScale+ XCZU19EG MPSoC FPGA. The FPGA has 1968 DSP Slices and 1143k logic cells. The XCZU19EG includes a quad-core ARM processor.

The Module has onboard 64 GB of Flash, 128 MB of boot flash and an SD Card.

The VT560 had dual RJ-45 connectors that can support 10GBASE-T over copper with Category 6, 6A and 7 twisted-pair cable.

The unit also supports 5GBASE-T, 2.5GBASE-T, 1000BASE-T and 100BASE-TX on standard Category 5e Unshielded Twisted Pair (UTP) cable.

The Module has transceiver-MAC to magnetics:

- 10GBASE-T IEEE802.3an
- 5GBASE-T IEEE802.3bz
- 2.5GBASE-T IEEE802.3bz
- 1000BASE-T IEEE802.3ab
- 100BASE-TX IEEE 802.3u

The VT560 supports both the IEEE1588 as well as SyncE and has a very high-end performance PLL which meets the G.8262 EEC Opt 1, 2 (SyncE).

In addition, the module has dual CoaXPress receivers per CXP 2.0 specification and can receive data at 12.5 Gbps with 40 meters of cable, and transmit at 21/42Mbit. It can also support up to 130 meters of cable at 1.25 Gbps.

The VT560 further provides 17 LVDS input/outputs, 2x RS-485, 8x +5V GPIO and high speed SERDES pair (RX+/- and TX+/- XOR). Each of the single-ended ports can be configured as input or output.



Figure 1: VT560



Figure 2: VT560 Rear View



Figure 3: VT560 Front I/O



Figure 3: VT560 Rear I/O

Block Diagram

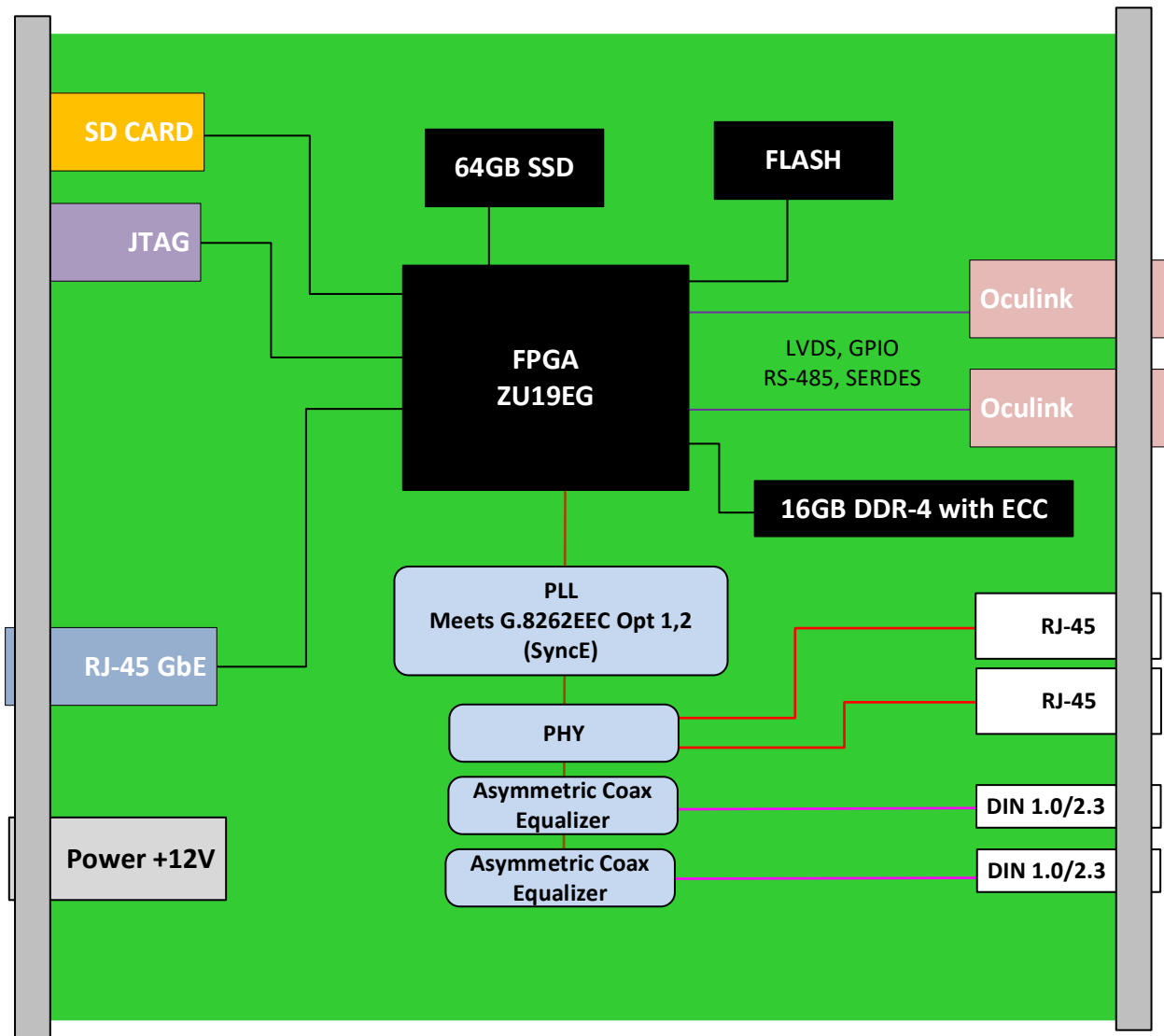


Figure 2: VT560 Functional Block Diagram

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	
Physical	Dimensions Length: 5.3" Width: 3.7" Height: 0.78" without stand off
Type	FPGA SOC Xilinx Zynq® UltraScale+ with Dual 10GbE and I/O
Standards	
Custom	Type Conduction cool
Configuration	
Power	VT560 ~25W FPGA load dependent +12V input power
Environmental	Temperature -40° to +85°C operational Storage Temperature: -55° to +95°C Relative Humidity 5 to 95% non-condensing
Front Panel	Interface Connectors Dual RJ-45 connectors for 10 GbE and dual DIN 1.0/2.3 Micro USB for RS-232 Dual Oculink for I/O (LVDS, RS-485, GPIO and SERDES) RJ-45 for GbE LEDs Link indication Debug (user defined) LED
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 and AS9100D:2015 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

VT560 – ABC-DEF-G0J

A = SD Card		
0 = No SD Card		
1 = 32GB		
J = Coating		
		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 8 = Extended (–40° to +85°C), Parylene

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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