VPX519

FPGA FMC Carrier, 3U VPX, Artix-7

VPX519

Key Features

- 3U FPGA carrier for FPGA Mezzanine Card (FMC) per VITA-46 and VITA-57
- Xilinx Artix-7 FPGA in FBG-676 package
- High-performance clock jitter cleaner
- VHDL reference design with source code
- Protocols such as PCIe and GbE are FPGA programmable
- Compatible with VadaTech and 3rd-party FMCs

Benefits

- Reference design with VHDL source code speeds application development
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

OpenVPX™

vadatech
THE POWER OF VISION

VPX519

The VPX519 is a FPGA Carrier (VITA-46) with an FMC (VITA 57) interface. The unit has an on-board, re-configurable FPGA which interfaces directly to the FMC DP0-9 and all FMC LA/HA/HB pairs.

The FPGA has interfaces to two banks of DDR3 memory (14-bit wide) with a total memory of 512 MB. This allows for large buffer sizes to be stored during processing as well as for queuing the data to the host.

The module supports dual GbE and, dependent on FPGA code loaded, PCIe up to Gen3 (dual x1), or dual SRIO on P1.

The unit is available in a range of temperature and shock/vib specifications per ANSI/VITA-47, up to V3 and OS2.

Please contact VadaTech for details of Conduction Cooled versions.

Block Diagram

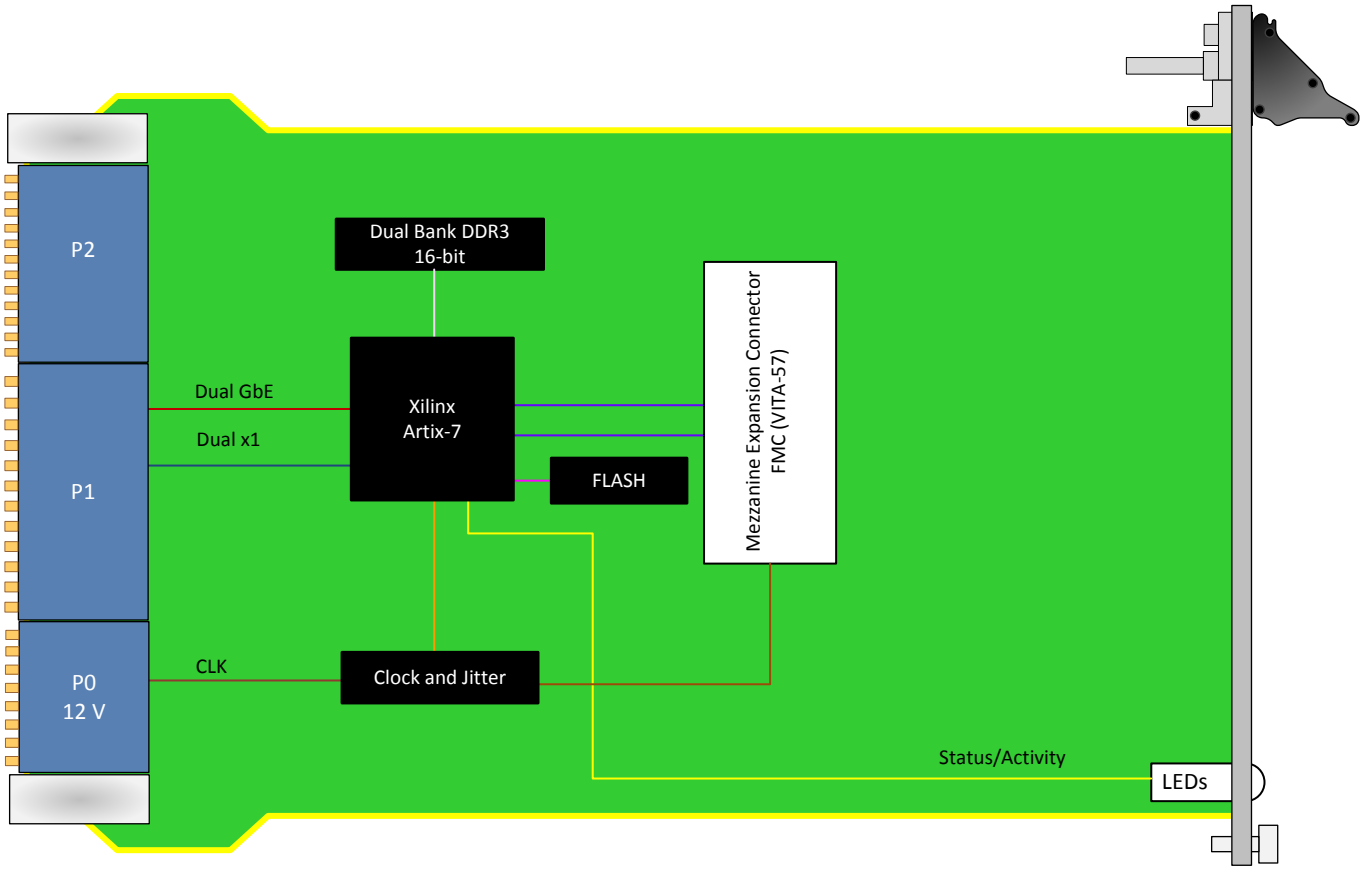

Figure 1: Functional Block Diagram

Front panel

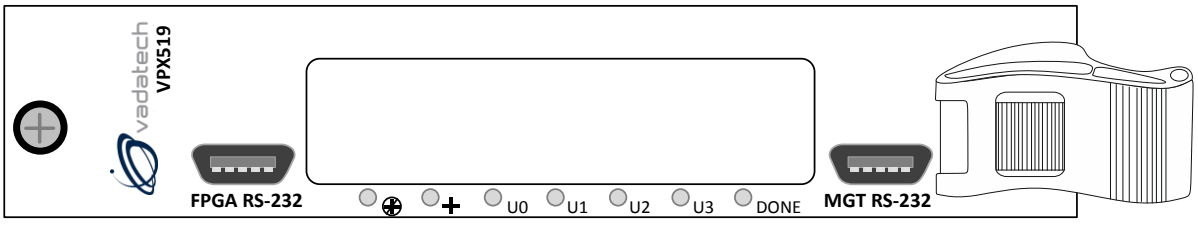

Figure 2: Front Panel

Reference Design

VadaTech provides an extensive range of Xilinx based FPGA products. The FPGA products are in two categories; FPGA boards with FMC 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 accessed from customer support site along with the reference images.

Supported Software

- Default FPGA image stored in flash memory
- 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

Specifications

Architecture		
Physical	**Dimensions**	3U, 1” pitch
Configuration		
Power		~TBD W (dependent on FPGA load and FMC)
Memory		Two banks of DDR3 (16-bit)
Front Panel	**FMC**	Single FMC slot
	Micro USB	RS-232 from Health Management CPU and RS-232 from FPGA
	LEDs	User defined by the FPGA and Health Management
On-board Interfaces		
VPX Interfaces	**Slot Profiles**	See ordering options
	Rear IO	PCIe on Ports 4 and 8 on P1
		Dual GbE on P1
	Power Supplies	On P0: VS1 = 12 V
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 µTCA 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.

Ordering Options

VPX519– 00C-DEF-GHJ

	D = FPGA Speed	G = Applicable Slot Profiles
	1 = Reserved 2 = High 3 = Highest	0 = 5 HP
	E = Clock Holdover Stability	**H = Environmental**
	0 = Standard (XO) 1 = Stratum-3 (TCXO)	See Environmental Specification table option H description
C = FPGA	**F = PCIe Option (P1) for Data Port 1/2**	**J = Conformal Coating**
0 = Reserved 1 = XC7A200T	0 = None 1 = PCIe / None 2 = None / PCIe 3 = PCIe / PCIe	0 = None 1 = Humiseal 1A33 Polyurethane 2 = Humiseal 1B31 Acrylic

Environmental Specification

	Air Cooled		Conduction Cooled		
Option H	**H = 0**	**H = 1**	**H = 2**	**H = 3**	**H=4**
Operating Temperature	AC1* (0°C to +55°C	AC3* (-40°C to +70°C)	CC1* (0°C to +55°C)	CC3* (-40°C to +70°C)	CC4* (-40°C to +85°C)
Storage Temperature	C1* (-40°C to +85°C)	C3* (-50°C to +100°C)	C1* (-40°C to +85°C)	C3* (-50°C to +100°C)	C3* (-50°C to +100°C)
Operating Vibration	V2* (0.04 g2/Hz max)	V2* (0.04 g2/Hz max)	V3* (0.1 g2/Hz max)	V3* (0.1 g2/Hz max)	V3 (0.1 g2/Hz max)
Storage Vibration	OS1* (20g)	OS1* (20g)	OS2* (40g)	OS2* (40g)	OS2* (40g)
Humidity	95% non-condensing	95% non-condensing	95% non-condensing	95% non-condensing	95% non-condensing

* Nomenclature per ANSI / VITA-47. Contact local sales office for conduction cooled (H=2, 3, 4).

Related Products

FMC108

- FPGA Mezzanine Card (FMC) per VITA-57
- Two QSPF+ cages for 10GbE/SRIO/PCIE and Aurora
- Re-driver on both ports for a better signal quality

FMC211

- FPGA Mezzanine Card (FMC) per VITA-57
- ADC EV10AS150B @ 2.6 GSPS
- 5 GHz Full Power Input Bandwidth (–3dB)

FMC224

- FPGA Mezzanine Card (FMC) per VITA 57
- Quad port DAC39J84
- On board-Wide band PLL

Contact

VadaTech Corporate Office

198 N. Gibson Road, Henderson, NV 89014
Phone: +1 702 896-3337 | Fax: +1 702 896-0332

Asia Pacific Sales Office

7 Floor, No. 2, Wenhu Street, Neihu District, Taipei 114, Taiwan
Phone: +886-2-2627-7655 | Fax: +886-2-2627-7792

VadaTech European Sales Office

VadaTech House, Bulls Copse Road, Southampton, SO40 9LR
Phone: +44 2380 016403

info@vadatech.com | www.vadatech.com

Choose VadaTech

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

XILINX
ALLIANCE PROGRAM
CERTIFIED

vadatech
THE POWER OF VISION

DOC NO. 4FM737-12 REV 01 | VERSION 2.0 – OCT/17