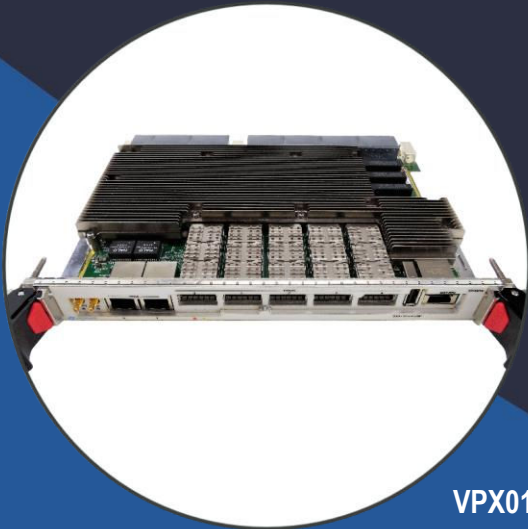


VPX010

6U OpenVPX 100G Switch with Integrated Health Management



VPX010

Key Features

- Unified 1.5 GHz quad-core CPU for, Shelf Manager, and Fabric management
- 20x 100/40GbE ports to the backplane
 - Each 100/40G can be bifurcated as dual 50G or 4x 25/10/1G)
- 8x 1000Base-T ports to the backplane
- Dual 10GBASE-T via RJ-45 to the front
- Five 100G egress Ports on the front panel
 - Each 100G/40G Port could be bifurcated to dual 50G or four 25G/10G/1G Ports
- Automatic fail-over with redundant VPX010
- Layer 3 managed switch
- PLL synthesizer for generating any clock frequency disciplined to SyncE/IEEE1588
- Non-blocking 100/50/40/25/10G/1GbE
- VITA 46 and VITA 65 compliant

Benefits

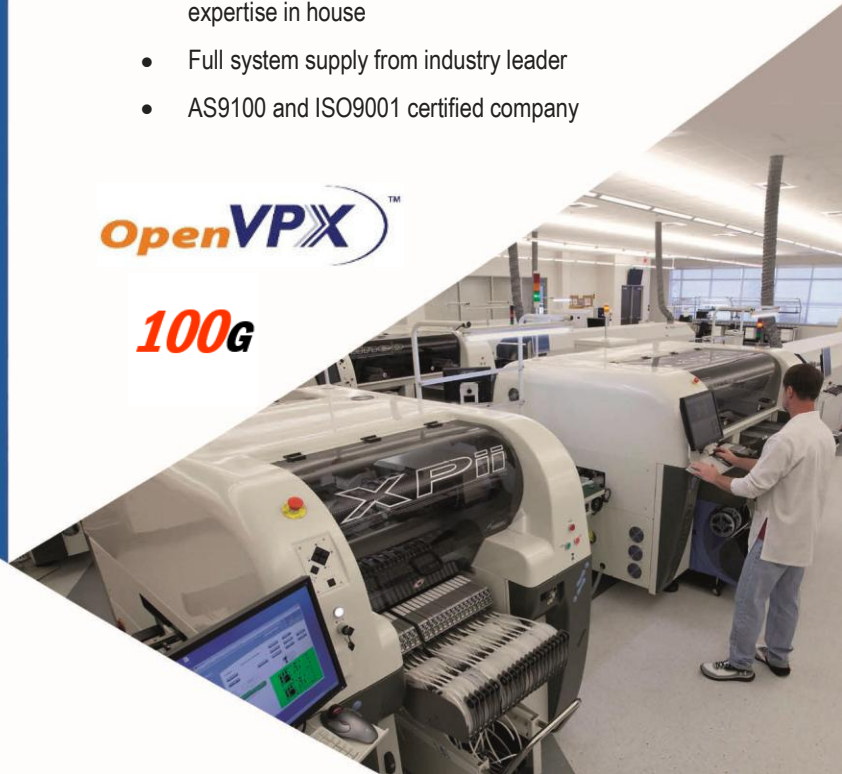
- Sophisticated clocking features enabling GPS/SyncE/NTP Grand Master Clock
- Optional virtual JTAG capability for remote programming and debugging eases FPGA code development
- VadaTech's Scorpionware® Shelf Management Software included at no additional cost
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

OpenVPX™

100G



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VPX010

The VPX010 is part of the VadaTech family of 100G switches fully integrated with health management. This range are the most feature-rich VPX products on the market.

The management software is based on VadaTech's operationally proven robust Carrier Manager and Shelf Manager. The MCMC manages the Power Modules, Cooling Units, and up to 12 payload modules within the chassis. It also manages the 100GbE switch.

The Ethernet switch is managed with an enterprise grade Layer 2 or 3 switching/routing stack that supports IEEE1588 and Synchronous Ethernet. Each 100G port is configurable to run as 40GbE, dual 50G or as four 25/10/1GbE. The switch has a throughput of 3.2 TB which allows each port to run at full 100G speed without any blocking.

The VPX010 runs Linux on its centralized quad-core CPU and is fully redundant when used in conjunction with a second instance of the module. The firmware is HPM.2 compliant which allows for easy upgrades.

The module has dual clock input as 10Mhz (sine wave) or 1PPS which on board PLL can lock to generate the necessary clock to provide SyncE as well IEEE1588v2.

The VPX010 has advanced clocking features including high-quality clock distribution/synthesis to the two VPX clocks in the backplane.



Figure 1: VPX010



Figure 2: VPX010 without Heatsink

Front Panel



Figure 3: VPX010 Front Panel View

Block Diagram

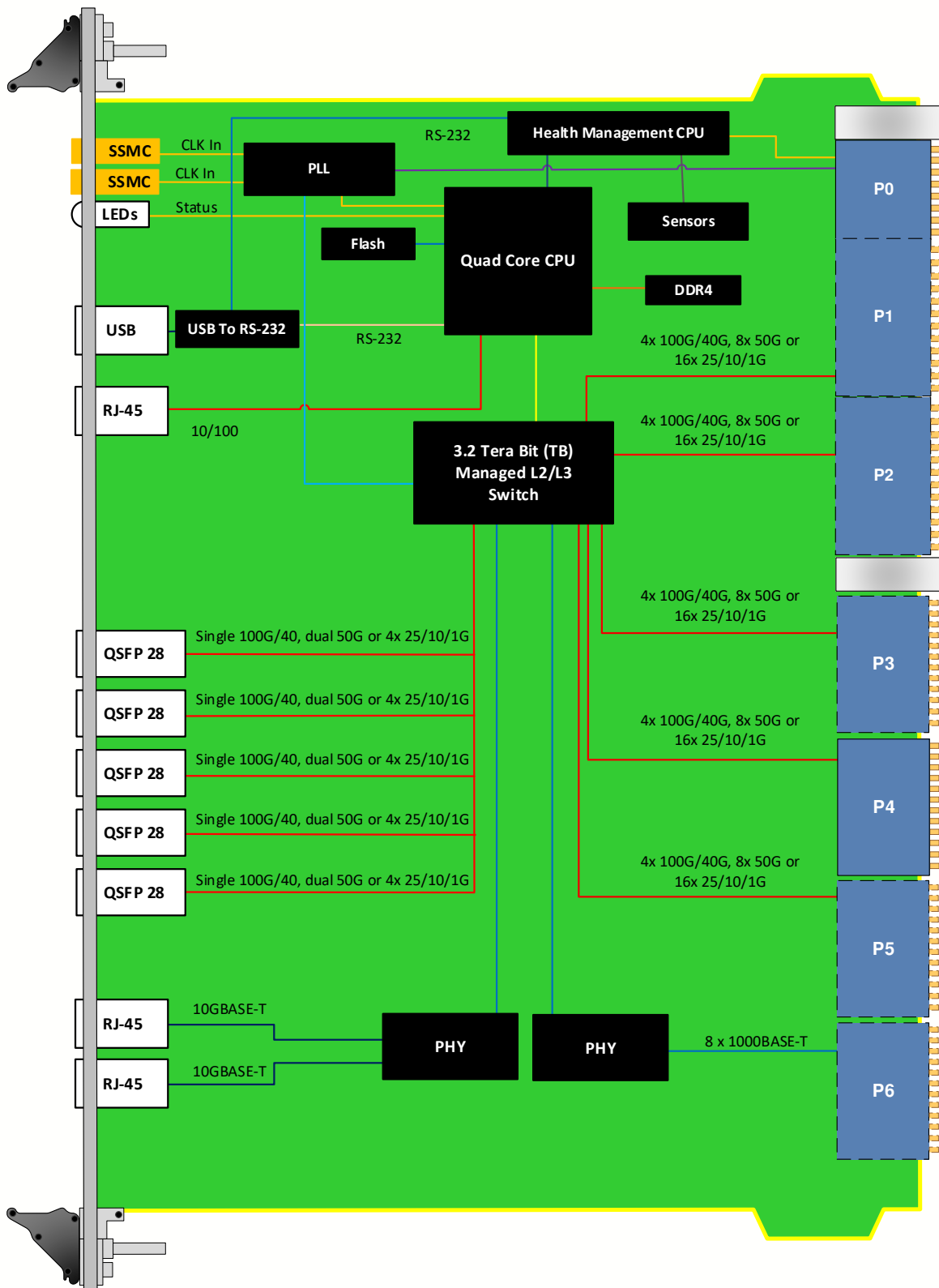


Figure 4: VPX010 Functional Block Diagram

Architecture

Optional IPMI Carrier Manager, Shelf Manager and Protocol Analyzer

The VPX010 utilizes the same proven standards-compliant IPMI management stack that has been utilized successfully in our previous generation products. It supports carrier manager, shelf manager, and protocol analyzer operations to help facilitate a seamless chassis integration experience. The IPMI stack enables a rich feature set including:

- IPMI v2.0 with IPMI v1.5 compatibility
- SDR, FRU, and SEL storage interfaces (SEL stored in MRAM for high-speed/non-volatile/no-wear-out access)
- Intelligent temperature, voltage, and current sensing
- Shelf cooling policy
- Shelf activation and power management/Automatic fail-over/redundancy management
- Alarm controls
- Event notification and flexible alerting policies
- CLI, SNMP, RMCP+, HTTP, and HPI
- IPMB Protocol Analyzer GUI for use on PC
- ScorpionWare GUI system manager integration tool on PC available separately

Fat Pipe Fabric

The VPX010 100GbE Switch provides:

- Layer 3 management
- SyncE and IEEE1588v2
- 3.2TB Gbps aggregate bandwidth

General-Purpose Clocks

The VadaTech VPX010 has the most sophisticated clocking distribution in the market to meet the most stringent requirements such as wireless infrastructure, high speed A/D, etc. The VPX010 supports the general-purpose clocking features:

- Low-jitter/low-skew backplane routing
- Clock disciplining with arbitrary clock frequency output and holdover (Stratum-3) including 1PPS regeneration and holdover
- Flexible integration and synchronization between SyncE, and NTP clocking
- ‘Any Frequency’ high-quality clock generation/jitter cleaning for up to two user clocks
- Supports hitless automatic clock failover for improved reliability

Specifications

Architecture		
Physical	Dimensions	6U, 1" pitch
Type	Controller	OpenVPX Switch with integrated Health Management
Standards		
VPX	Type	VITA 46.x
VPX	Type	VITA 65 OpenVPX
Module Management	IPMI	IPMI v2.0
		HPM v1.0
Configuration		
Power	VPX010	~100W (traffic dependent)
		Main power from +12V input
Front Panel	Interface Connectors	100G over QSFP 28 (40G/10G/1G per port configuration)
		CPU 10/100 (RJ-45)
		CPU RS-232 and Health Management CPU RS-232 via USB
		Dual 10Gbase-T via RJ-45
		LEDs Status per port
		Two CLK Inputs via SSMC
VPX Interfaces	Slot Profiles	See Ordering Options
	Rear IO	JTAG
		VPX Clocks
		100GbE on P1/P2/P3/P4/P5 (ports can be configured as 40G, four 10G or four 1G)
		Clocks
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

VPX010 – ABC-D00-GHJ-K00

A = Fabric routing (rear only)* 0 = P1/P2/P3/P4/P5/P6 loaded 1 = P1/P2/P3/P4/P5/P6 not loaded 2 = P1/P2/P6 loaded 3 = P1/P2 loaded 4 = P6 not loaded 5 = Reserved 6 = Reserved	D = Optical cable interface 0 = None (for option C = 0) 1 = LC style 2 = MTP/MPO	G = Applicable Slot Profile 0 = 5 HP, VITA 46 1 = 5 HP, VITA 48.1	K = VPX Connector Type 0 = High speed 50u Gold Rugged
B = Health Management 0 = No Shelf manager 1 = Shelf manager		H = Environmental See Environmental Specification	
C = QSFP28 TXCVRs (5 off) 0 = No TXCVRs 1 = 40GBASE-SR 2 = 40GBASE-LR (1 KM) 3 = 40GBASE-LR (10 KM) 4 = 100GBASE-SR 5 = 100GBASE-LR (1 KM) 6 = Reserved 7 = Reserved		J = Conformal Coating 0 = No coating 1 = Humiseal 1A33 Polyurethane 2 = Humiseal 1B31 Acrylic	

Notes: *For redundancy the P2 must be loaded and combined with the correct backplane routing.

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

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

Related Products

VPX550



- Xilinx Kintex UltraScale™ XCKU115 FPGA
- COM Express Module Type-6
- 8 GB of DDR4 Memory to FPGA

VPX551



- Dual Kintex UltraScale™ XCKU115
- 16 GB of 64-bit wide DDR4 Memory to each FPGA
- Rear fibre I/O via VITA 66.5

VPX580



- Xilinx UltraScale+ XCZU19EG FPGA
- 8 GB of 64-bit wide DDR4 Memory (single bank) with ECC
- Dual FMC+ sites (16 SERDES to each) on a 6U VPX

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DOC NO. 4FM737-12 REV 01 | VERSION 1.3 – OCT/25