VPX705

Processor VPX, Layerscape LX2160A with PCIe/40G/10G/1G

VPX705

Key Features

- Processor VPX with Layerscape LX2160A (16-core)
- Two banks of 64-bit DDR4 memory (32 GB total) with ECC
- P1 PCIe x8 or dual x4
- P1 eight reconfigurable SERDES that can be configured with PCIe, 40GbE, 10GbE and/or GbE
- USB3.0/2.0
- SDHC Socket and 64GB of Flash
- 1TB NVMe
- GbE 1000Base-T
- 2x RS-232 and 2x RS422/485
- XMC module with PCIe Gen3 x4
- Secure boot

Benefits

- 16 ARM Cortex-A72 CPU cores, running up to 2.2 GHz
- 8 MB cache/on-chip memory
- Design utilizes proven VadaTech subcomponents and engineering techniques
- Electrical, mechanical, software, and system-level expertise in house
- Full system supply from industry leader
- AS9100 and ISO9001 certified company

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The VPX705 is a Layerscape Processor in 3U form factor based on the NXP LX2160A (16-core) processor. The module provides PCIe Gen3 x8 or Dual PCIe Gen3 x4 on P1 connector ports 0-7. Also, on the P1 connector the module has eight reconfigurable SERDES that are routed to ports 8-15. Below are some examples of the available SERDES configurations:

- Dual PCIe Gen3 x4
- 4x GbE with PCIe Gen3 x4
- 4x 10GBASE-KR with PCIe Gen3 x4
- 8x GbE
- PCIe Gen3 x4 with 4x 10GBASE-KR
- 4x 10GBASE-KR with 4x GbE
- 8x 10GBASE-KR
- PCIe Gen3 x4 with PCIe Gen3 x2 with 2x GbE
- 2x 40GBASE-KR4

The module includes 32 GB of DDR4 memory with ECC, SDHC Socket, 64 MB SPI flash, 512 KB I2C flash, 8 GB of eMMC, and 1TB NVMe storage.

The VPX705 can host an XMC module which interfaces to the host processor via PCIe Gen3 x4. The XMC I/Os are routed to the backplane per VITA 46.9 as P2W4+X8d+X12d. The module also routes RS-232 from management, dual RS-232, dual RS-422 from host, a USB 3.0/2.0 and 1000Base-T to the P2 connector. The RS485/RS422 termination and slew rates are software configurable.

The CPU has Secure Boot capabilities from power-on and hard reset.

This unit is also available for rugged conduction-cooled applications, see ordering options.

Figure 1: VPX705

Figure 2: VPX705 without Heatsink

Front Panel

Figure 3: VPX705 Front Panel View

Block Diagram

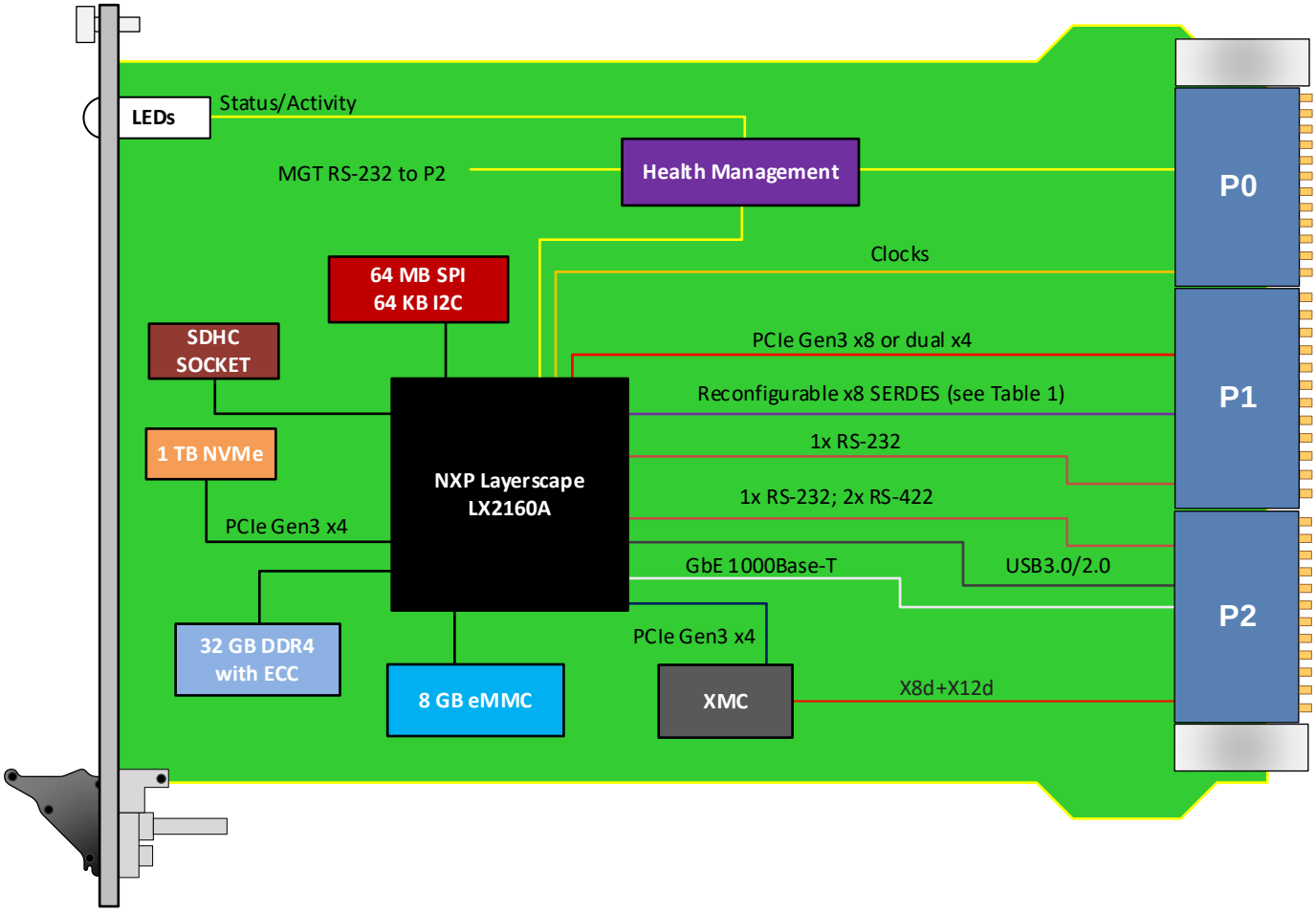

Figure 4: VPX705 Functional Block Diagram

Option F =	Configuration for the 8x reconfigurable SERDES
0	Dual PCIe Gen3 x4
1	4x GbE with PCIe Gen3 x4
2	4x 10GBASE-KR with PCIe Gen3 x4
3	8x GbE
4	PCIe Gen3 x4 with 4x 10GBASE-KR
5	4x 10GBASE-KR with 4x GbE
6	8x 10GBASE-KR
7	PCIe Gen3 x4 with PCIe Gen2 x2 with 2x GbE
8	2x 40GBASE-KR4
9	Reserved (other options are possible, please contact VadaTech Sales)

Table 1: Ordering Option F for reconfigurable x8 SERDES

Specifications

Architecture		
Physical	**Dimensions**	3U, 5HP (1" Pitch), VITA 48.1
Type	**VPX Processor**	LX2160A (16-core) processor
Standards		
VPX	**Type**	VPX VITA 46
Module Management	**IPMI**	IPMI v2.0 Tier Two support
PCIe	**Lanes**	P1 Ports 0-7 per option F
Configuration		
Power	**VPX705**	~30W (not including the XMC module)
Environmental	**See Profile**	See Ordering Options
	Relative Humidity	5 to 95% non-condensing
Front Panel	**Interface Connectors**	XMC I/O if any
	LEDs	IPMI management control
		Activity/Link user LEDs
Software Support	**Operating System**	Linux (default) and VxWorks
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

VPX705 – ABC-DEF-GHJ

A = Processor Option	D = XMC Connectors	G = Applicable Slot Profile
0 = Reserved 1 = Reserved 2 = LX2160A, 2.2 GHz with Security Engine	0 = VITA 42 1 = VITA 61	0 = 5 HP, VITA 48.1
B = DDR4 Memory	**E = P1 Ports 0-7 Configuration**	**H = Environmental**
0 = Reserved 1 = Reserved 2 = 32 GB	0 = Not connected 1 = Dual PCIe x4 2 = Single PCIe x8	See Environmental Specification
C = VPX Connector Type	**F = P1 Ports 8-15 Configuration**	**J = Conformal Coating**
0 = Standard 50u Gold Rugged 1 = KVPX	Per Table 1	0 = No coating 1 = Humiseal 1A33 Polyurethane 2 = Humiseal 1B31 Acrylic

Notes:
*Other options available pls consult VadaTech Sales

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

VPX004

- Unified 1 GHz quad-core CPU for, Shelf Manager, and Fabric management
- Automatic fail-over with redundant VPX004
- 1GbE base switch with dual 100/1000/10G uplink

VPX599

- 3U FPGA Dual ADC and Dual DAC per VITA 46
- Xilinx Kintex UltraScale™ XCKU115 FPGA
- Dual ADC 12-bit @ 6.4 GSPS or quad ADC at 3.2 GSPS with TI ADC12DJ3200

VTX870

- Open VPX benchtop development platform
- Dedicated Switch/management slot
- Up to five 3U VPX payload slots

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