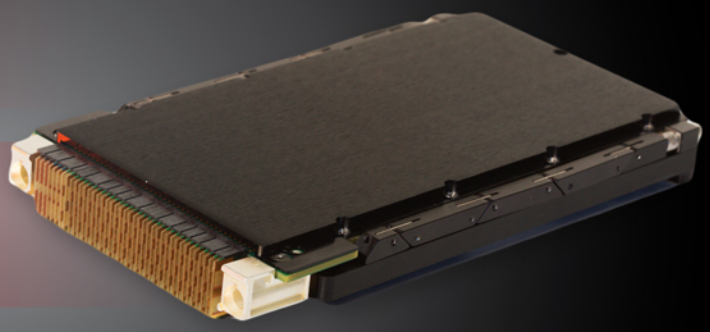
ORION
A Phoenix Mecano Company

Certified System
AS9100
Aerospace

VPX7668

3U VPX Intel Xeon D Single Board Computer (Air or Conduction Cooled)



Power and Flexibility

The Orion VPX7668 single board computer (SBC) is the industry's most flexible, rugged, high-performance Multi-Core SBC in today's embedded marketplace. Our anti-tamper options make it ideal for military applications.

By incorporating the power of the Intel® Xeon® D processor and an unparalleled complement of I/O via the customer configurable "Personality Module", it can be adapted to practically any Military, Industrial, or Commercial application.

The VPX7668 is available in 6 levels of ruggedization from commercial temperature air-cooled (0.8" pitch) to extended temperature REDI (Vita 48.2, 1" pitch).

With two OpenVPX 4-lane PCI express v3.0 fabric ports and an 8-lane PCI express v3.0 XMC/PMC slot the VPX7668 design has streamlined high-speed board-to-board communication.

The VPX7668 includes two 10GbE Base-KR ports, six serial ports, four USB 3.0 ports, one USB 2.0 port, eight general purpose I/O and XMC P16 I/O which are all accessible through VPX connectors P1 and P2.

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Features

- Intel® Xeon® Processor up to 16 Core
- Up to 24MB last level cache
- Extended temperature and rugged REDI (Vita 48.2)
- On-board temperature monitoring
- Up to 16GB of soldered DDR3 SDRAM with ECC
- Up to 64GB of on-board NAND Flash
- Trusted Platform Module
- One 8-lane PCIe 3.0 XMC slot (Vita 42.3)
- Two 4-lane PCIe v3.0 ports on VPX P1 (Vita 46.4)
- Two 10GbE Base-KR ports
- Two 1000Base-T ports
- Two 1000Base-KX ports
- Six serial ports, configurable
- Eight general purpose I/O configurable
- Four USB 3.0 and one USB 2.0
- Five SATA 6.0 Gb/s ports
- PCIe non-transparent port and DMA capabilities
- XMC P16 and PMC P14 rear I/O
- Various Board Support Packages (BSP's) available including Linux, WindRiver VxWorks & Windows
- Anti-Tamper features available

Hardware Specifications

Processor
- Intel®: Xeon® Processor D-1500 Family
- Up to 16 cores
- Processor Speed: 1.3GHz to 1.6GHz
- Up to 24MB Intel® Smart Cache

Processor Features
- From two up to sixteen core plus Hyper-Threading technology
- Integrated PCH into System-on-Chip (SOC)
- Dual channel integrated memory controller

VPX Connector
- Two PCI Express Fat Pipes Version 3.0

OpenVPX Profiles
- MOD3-PAY-2F2U-16.2.3
- MOD3-PAY-1F1F2U-16.2.4
- MOD3-PAY-1D-16.2.6
- MOD3-PAY-2F-16.2.7
- MOD3-PAY-1F4U-16.2.8
- MOD3-PAY-8U-16.2.9
- MOD3-PAY-1F2U-16.2.11
- MOD3-PER-2F-16.3.1
- MOD3-PER-1F-16.3.2
- MOD3-PER-1U-16.3.3

Local XMC Bus
- XMC Bus: PCI Express 3.0
- XMC Bus Width: Double FAT Pipe (x8 Lanes)

Memory
- DRAM Memory Type: DDR4 SDRAM
- DRAM Memory Size: Up to 16Gb
- On-Board user FLASH: Up to 64Gb
- BIOS Flash: 128Mb

PCIe
- PCIe lanes: Two x4 lanes v3.0
- Access: VPX Connectors P1
- Non-transparent support: Yes

Peripherals
Five SATA Ports
- Controller: Integrated in SoC
- Speed: 6.0 Gb/s
- Access: VPX Connector P2 (via PM)

Two 10 Gb Ethernet Base-KR Ports
- Controller: Integrated in SoC
- Configuration: Auto Negotiating 10GBase-KR/1000BASE-KX
- Access: VPX Connector P1

Two 1 Gb Ethernet Base-KX Ports
- Controller: Intel i210 MAC/PHY
- Configuration: Supports both 1000BASE-KX and 1000BASE-BX
- Access: VPX Connector P1

Two 1 Gb Ethernet Base-T Ports
- Controller: Intel i210 MAC/PHY
- Configuration: Auto Negotiating 1GbE/100MbE/10MbE
- Access: VPX Connector P1

Up to Five USB Ports
- Controller: Integrated on SoC
- Version: Four 3.0, One 2.0
- Access: USB 2.0 in dedicated debug connector, USB 3.0 in VPX Connector P2 (via PM)

Six Serial Ports
- Controller Type: Two integrated in SoC, four via PCIe to serial bridge
- Signal levels: One dedicated RS-232, remaining configurable via Personality Module
- Access: RS-232 in VPX Connector P1, remaining in VPX Connector P2 (via PM)

General Purpose I/O
- Configuration: 8 GPIOs
- Signal levels: Configurable by Personality Module
- Access: VPX Connector P2 (via PM)

Environmental

VPX7668

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Cooling Method	Air-cooled	Air-cooled	Air-cooled	Conduction	Conduction	Conduction
Conformal Coating	Standard	Standard	Standard	Standard	Standard	Standard
Operating Temperature	0 to +55°C	-40 to +55°C	-40 to +85°C	-40 to +70°C	-40 to +85°C	-40 to +85°C
Vibration	0.002g²/Hz*	0.002g²/Hz*	0.04g²/Hz*	0.1g²/Hz*	0.1g²/Hz*	0.1g²/Hz*
Shock	20g Peak sawtooth 11 ms duration	20g Peak sawtooth 11 ms duration	20g Peak sawtooth 11 ms duration	40g Peak sawtooth 11 ms duration	40g Peak sawtooth 11 ms duration	40g Peak sawtooth 11 ms duration
Humidity	0% to 95%, non-condensing	0% to 95%, non-condensing	0% to 95%, non-condensing	0% to 95%, non-condensing	0% to 95%, non-condensing	0% to 95%, non-condensing
Wedgelocks				Primary	Primary	Secondary

*Flat response to 1000 Hz

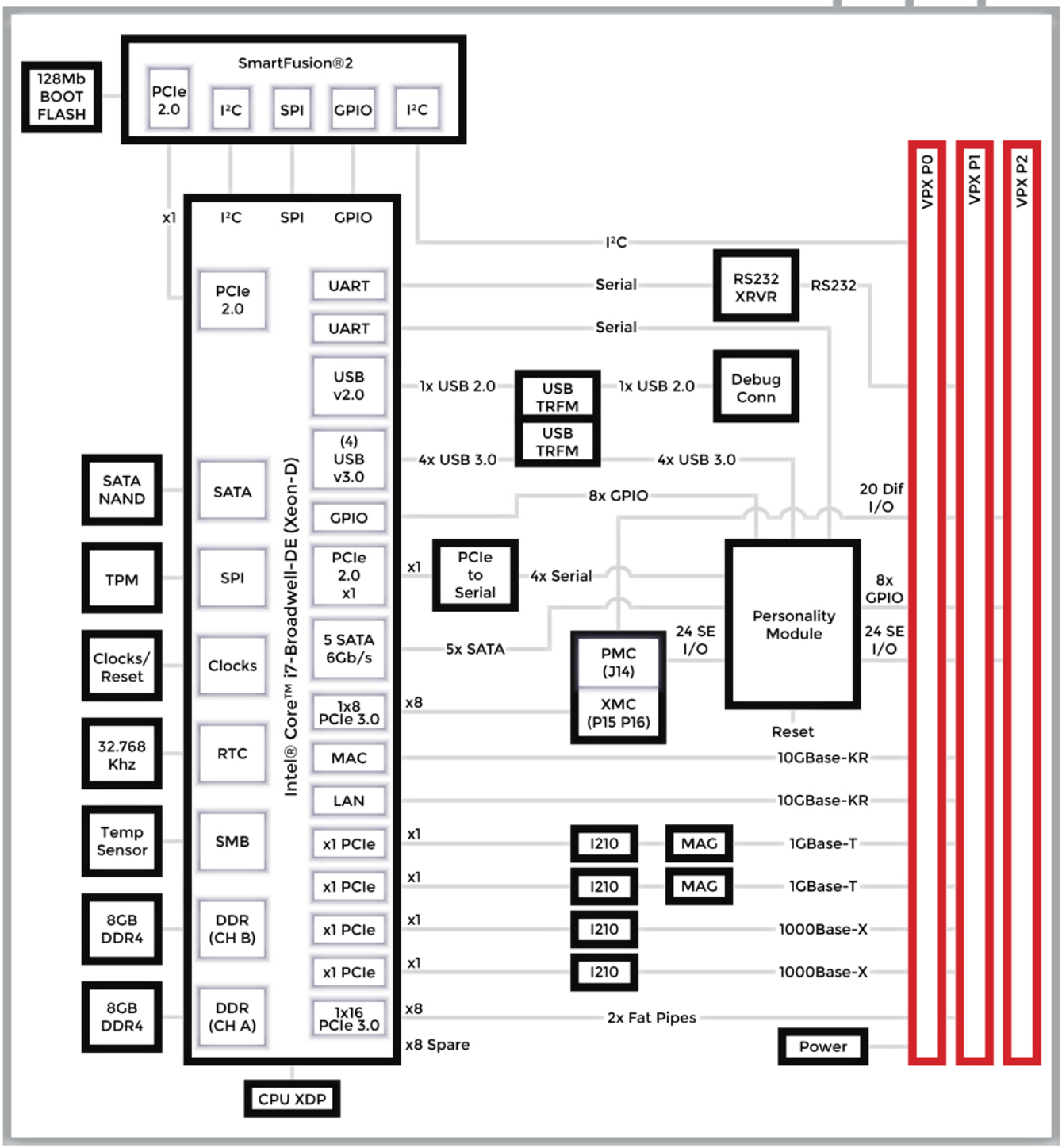
Options Guide

Orion has successfully generated products utilizing an extensive assortment of microprocessors since 1990. Our single board computer product offering includes both custom and standard form factors such as VPX, VME, Compact PCI, XMC and PMC. The majority of our products are offered in five ruggedization levels from standard commercial to rugged, extended temperature with conduction cooling. At Orion, we put the customer at the center of our business. We strive to provide the highest quality of products backed by our exceptional service and support.

Whether it's a small quantity, one-time requirement or a high volume product for years to come, we would like to be your partner in embedded solutions.

Block Diagram

VPX7668



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