VPX2000

Dual Altera Arria V REDI (Vita 48) 3U VPX FPGA Module

Power and Flexibility

The Orion VPX2000 FPGA board is the industry's most flexible, rugged, high-performance Dual FPGA 3U VPX card in today's embedded marketplace.

Configurable Altera Arria V FPGAs with high-speed reduced latency DRAM (RLDRAM) memory buffers and four high-throughput PCIe 2.0 interfaces result in a powerful and flexible logic processor module that is capable of executing custom instruction sets and algorithms.

The VPX2000 is available in 5 levels of ruggedization from commercial temperature air cooled (0.8" pitch) to extended temperature REDI (Vita 48.2, 0.85" pitch).

Features

- Dual or Single Reconfigurable Altera Arria V FPGAs
- 576MB RLDRAM memory per FPGA
- 1Gbit P33 NOR Flash per FPGA
- One 10Gb XAUI port per FPGA to backplane
- Dual Gigabit Base-BX Ethernet per FPGA to backplane
- Two Gen-2 x1 PCIe lanes per FPGA to backplane
- On-board temperature monitoring integrated in the FPGAs
- Twenty-eight GPIOs per FPGA to backplane
- Two Serial ports per FPGA, RS232 / RS422
- FPGAs linked via thirty-two differential signals
- FPGA code loads from the PCIe bus or from
- on-board prom
- Programmable Clock generation
- Full 2 Level Maintenance allows in-field replacement
- 18W maximum total power dissipation
- Available as single FPGA card
- JTAG interface enables on-board code debugging
- Mictor connector per FPGA for debug
- Rear Transition Module (RTM) available
- Designed for conduction cooled or -40 to 85°C operation in air cooled systems

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www.oriontechnologies.com

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Hardware Specifications

FPGA

- Altera Arria V
- 5AGXFB7
- 5AGXFB3

FPGA Features

- 28 nm technology
- 503,500 equivalent logic elements
- 190,000 adaptive logic elements
- Twenty-four 6.375 Gbps transceivers
- 528 user I/Os
- Several Arria V hardcores available
- Altera and third party IP Cores available

VPX Connector

- Two x1 PCI Express 2.0 lanes from each FPGA
- One XAUI port from each FPGA
- Two 1000 Base-BX from each FPGA

Memory

- 576MB RLDRAM for each FPGA
- Boot PROM for each FPGA
- 1Gbit NOR flash for each FPGA
- 27,045Mbit on-chip for each FPGA

Peripherals per FPGA

One XAUI Port

- Controller: Arria V
- Access: VPX Connectors P1/P2

Two x1 PCIe

- Controller: Arria V
- Version: 2.0
- Access: VPX Connectors P1/P2

Two 10/100/1000 Base-BX Ports

- Controller: Arria V
- Phy: Marvell
- Configuration: Auto Negotiating 10/100/1000
- Access: VPX Connectors P1/P2

Dual Serial Ports

- Controller : Arria V
- Signal levels: Standard RS232/RS422/RS485
- Access: VPX Connectors P1/P2

General Purpose I/O

- Configuration: Twenty-eight GPIO
- Signal levels: Configurable by Arria V
- Access: VPX Connectors P1/P2

Miscellaneous

Temp Sensor

- Built in temperature sensor on FPGA

Reset

- Power on reset, Push button reset and VPX backplane reset.

JTAG

- FPGA JTAG interface on RTM

LEDS

- Runtime Status LEDS

Specifications

Power	Single	Dual
VPX Maximum +3.3v	4.4W	8W
VPX Maximum +5v	0.3W	0.3W
VPX Maximum +12v	5.0W	10.0W
Maximum Power Dissipation	9.7W	18W

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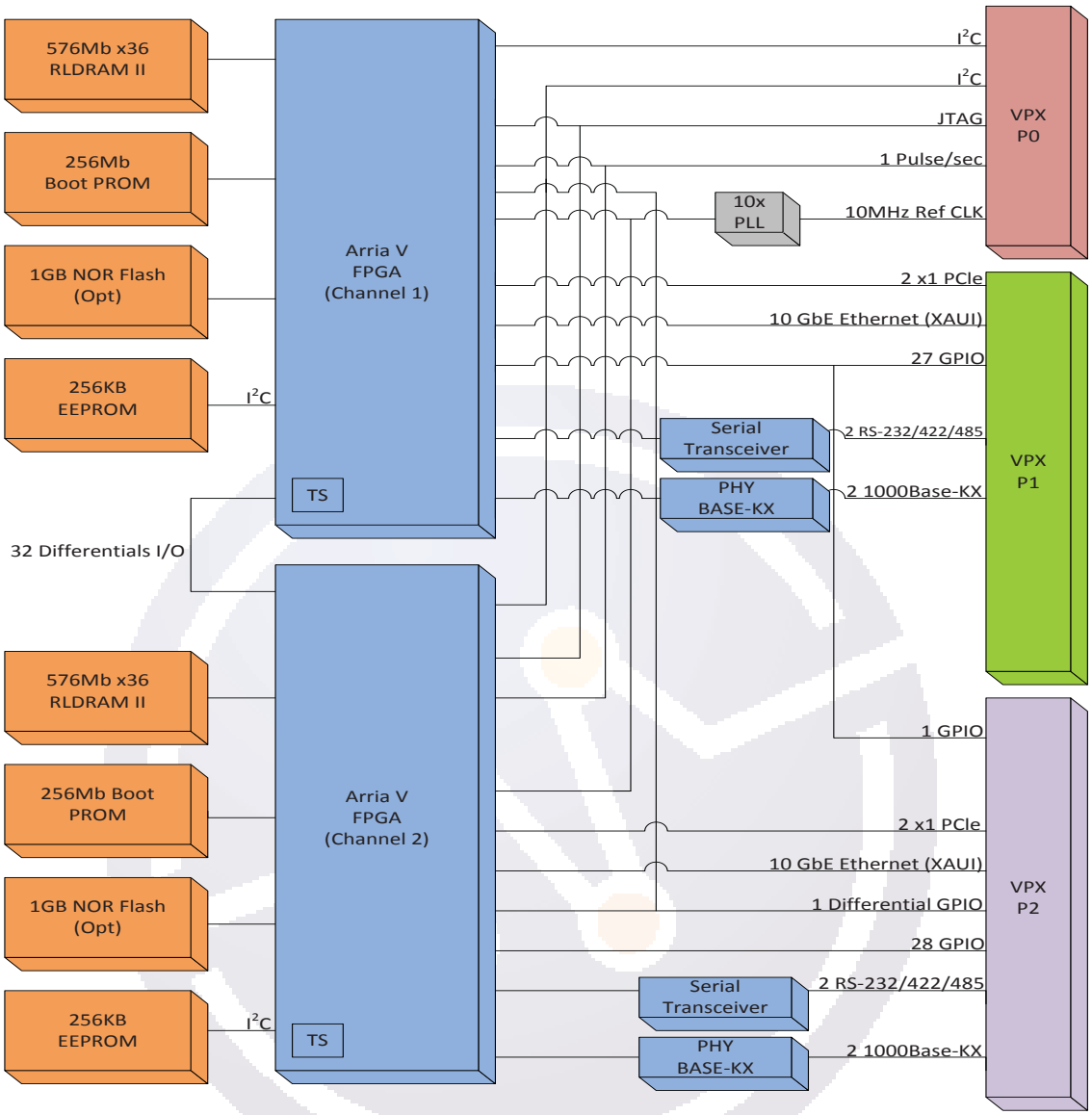
Block Diagram



Environmental

	Level 1	Level 2	Level3	Level 4	Level 5
Cooling Method	Air-Cooled	Air-Cooled	Air-Cooled	Conduction	Conduction
Conformal Coating	Standard	Standard	Standard	Standard	Standard
Operating Temperature	0 to +55°C	-40 to 55° C	-40 to 70° C	-40 to 70° C	-40 to 85° C
Vibration	0.002g²/Hz*	0.002g²/Hz*	0.04g²/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
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

*Flat repsonse to 1000 Hz

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Ordering Information

VPX2000 – x x 0 x

Base Model Number

Channel Options

1 = Single Arria V 576MB RLF Ram
2 = Dual Arria V 576MB RLD Ram, 1GB NOR Flash (Per Channel)

FPGA Options

1 = 5AGXFB1
3 = 5AGXFB3
4 = 5AGXFA5
5 = 5AGXFB5
6 = 5AGXFA7
7 = 5AGXFB7

Reserved

Must be 0

Environmental Options

1 = Level 1
2 = Level 2
3 = Level 3
4 = Level 4
5 = Level 5

Orion has successfully generated products utilizing an extensive assortment of microprocessors since 1990. Our design experience ranges from the development of a single, very low power processors to the latest, high-performance, mulit-core, multi-processor products. Our single board computer product offering includes both custom and standard form factors such as VPX, VME, CompactPCI and PMC. The majority of our products are offered in five ruggedization levels from standard commercial to rugged, extended temperature with conduction cooling.

We guarantee all of our products are free of manufacturing and design defects, and we provide real customer 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.

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