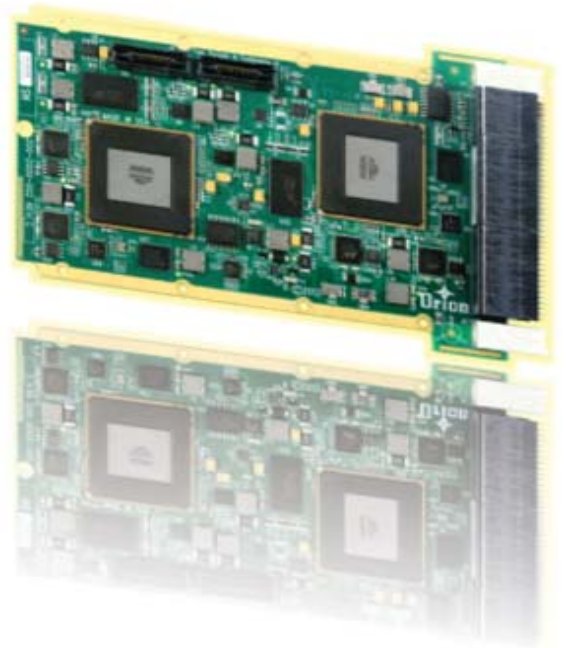




# VPX2000

Dual Altera REDI

(Vita 48) 3U VPX FPGA Module



# FEATURES

## POWER AND FLEXIBILITY

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. Available in 5 levels of "ruggedization" from commercial temperature air cooler (0.8" pitch) to extended temperature REDI (Vita 48.2, 0.85" pitch).

Dual or Single Reconfigurable Altera Arria V FPGAs	Full 2 Level Maintenance allows in-field replacement	Two Gen-2 x1 PCIe lanes per FPGA to backplane	Dual Gigabit Base-BX Ethernet per FPGA to backplane	One 10Gb XAUI port per FPGA to backplane	FPGAs linked via thirty-two differential signals FPGA code loads from the PCIe bus or from on-board prom
On-board temperature monitoring integrated in the FPGAs	Two Serial ports per FPGA, RS232/ RS422	1Gbit P33 NOR Flash per FPGA	576MBRLDRAM memory per FPGA	Twenty-eight GPIOs per FPGA to backplane	Programmable Clock generation
Mictor connector per FPGA for debug	JTAG interface enables on-board code debugging	Available as single FPGA card	4.7 W Max Single Arria V 8.3 W Max Dual Arria V	18W maximum total power dissipation	Rear Transition Module (RTM) available

## HARDWARE SPECIFICATIONS

### Peripherals Per FPGA

#### One XAUI Port

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

#### General Purpose I/O

- Configuration: Twenty-eight GPIO
- Signal levels: Configurable by 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

### Processing Capabilities

#### Memory

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

#### 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

### Miscellaneous

#### Temp Sensor

- Built in temperature sensor on FPGA

#### JTAG

- FPGA JTAG interface on RTM

#### LEDS

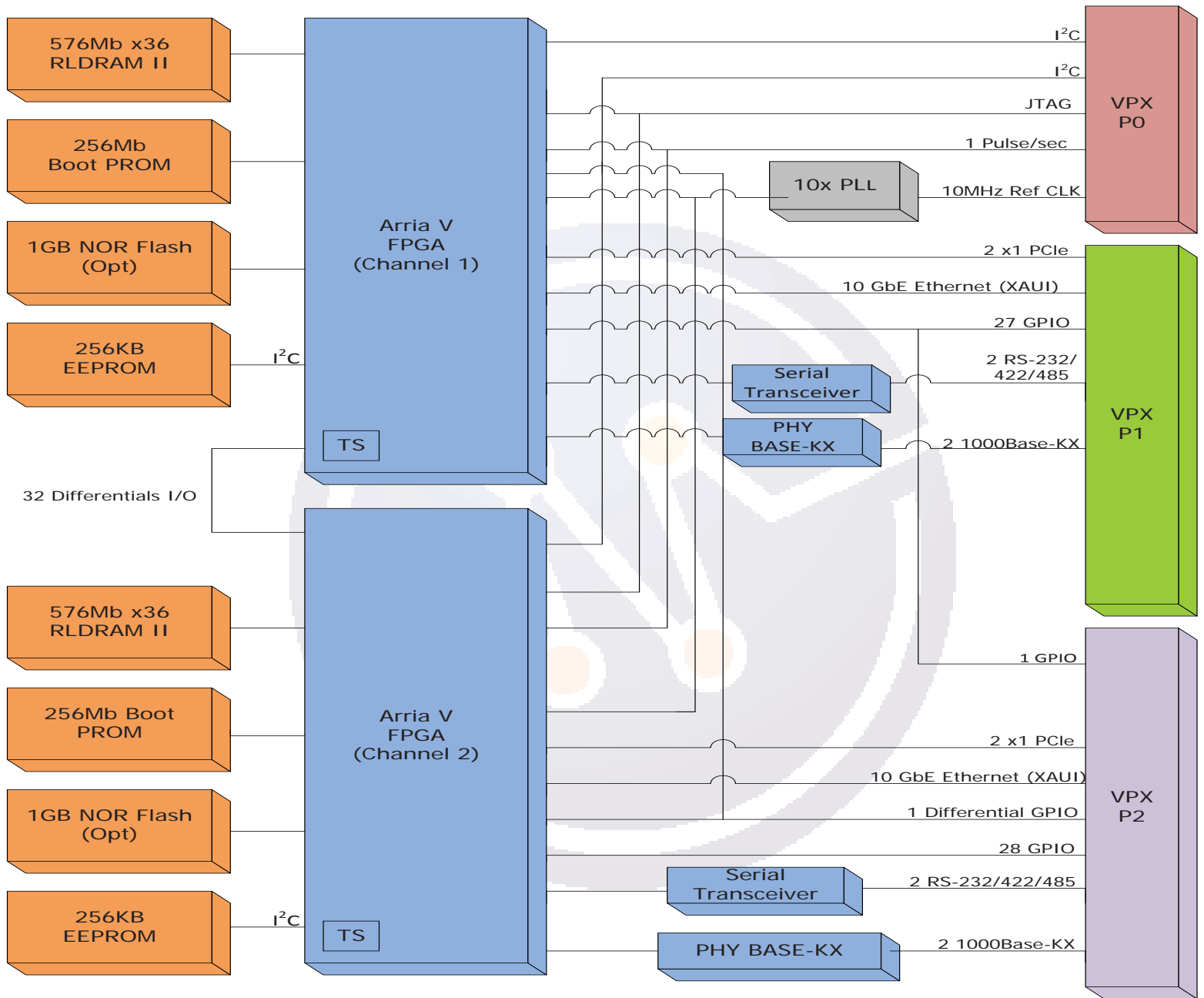
- Runtime Status LEDS

#### Reset

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



# BLOCK DIAGRAM



## Environmental

Level 1	Level 1	Level 2	Level 3	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	0.002g <sup>2</sup> /Hz*	0.002g <sup>2</sup> /Hz*	0.04g <sup>2</sup> /Hz*	0.1g <sup>2</sup> /Hz*	0.1g <sup>2</sup> /Hz*
Shock	20g Peak saw-tooth 11 ms duration	20g Peak saw-tooth 11 ms duration	20g Peak saw-tooth 11 ms duration	40g Peak saw-tooth 11 ms duration	40g Peak saw-tooth 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 response to 1000 Hz

# ORDERING GUIDE

VPX2000 - X X O 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

## Contact Us

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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, multi-core, multi-processor products. Our singleboard 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.