

XCalibur4840

Intel® Xeon® D-2700 Processor-Based 6U VPX-REDI Module with 64 GB of DDR4, 100 Gigabit Ethernet, and SecureCOTS™

- ▶ Supports Intel® Xeon® D-2700 series (formerly Ice Lake-D) processors
- ▶ Up to 20 Xeon®-class cores in a single, power-efficient SoC package
- ▶ SKUs available with native extended temperature support
- ▶ Designed with SecureCOTS™ technology to support enhanced security and trusted computing
- ▶ Microsemi® PolarFire™ SoC FPGA with 256 MB SPI flash
- ▶ 6U VPX (VITA 46) module
- ▶ Compatible with multiple VITA 65 OpenVPX™ slot profiles
- ▶ Ruggedized Enhanced Design Implementation (REDI) per VITA 48
- ▶ 64 GB of DDR4 ECC SDRAM in four channels
- ▶ 32 GB of SLC NAND flash
- ▶ Two XMC sites with x8 PCI Express Gen3-capable interfaces and rear I/O support
- ▶ Dual 100GBASE-KR4 Ethernet ports (up to 100 Gbps aggregate processor throughput)
- ▶ Two 1000BASE-X Ethernet ports
- ▶ Two 10/100/1000BASE-T Ethernet ports
- ▶ Four x4 PCI Express Gen3-capable interfaces and one x4 PCI Express Gen2-capable interface
- ▶ Two USB 2.0 ports
- ▶ Two RS-232/422/485 serial ports
- ▶ SOSA-aligned pinout compatible with backplane slot profile SLT6-PAY-4F1Q2U2T-10.2.1
- ▶ SOSA-aligned to AMPS profile MODA6-12.2.1-1-F2C-(2E18/E8)(4P4F)(2E2-2E3) (I/O limitations apply, contact factory for details)
- ▶ Wind River VxWorks BSP
- ▶ X-ES Enterprise Linux (XEL) BSP
- ▶ Contact factory for availability of Microsoft Windows drivers and other operating systems



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The XCalibur4840 is a secure, high-performance single board computer based on the Intel® Xeon® D-2700 series (formerly Ice Lake-D) of processors, making it an optimal choice for computationally heavy applications requiring maximum data protection. This 6U VPX-REDI module integrates SecureCOTS™ technology with a Microsemi® PolarFire™ System-on-Chip (SoC) FPGA for hosting custom functions to protect data from being modified or observed and provides an ideal solution when stringent security capabilities are required.

The XCalibur4840 provides incredible speed with two 100GBASE-KR4, two 1000BASE-X, and two 10/100/1000BASE-T Ethernet ports. The dual 100GBASE-KR4 Ethernet ports offer fallback redundancy to help ensure a consistent processor throughput of up to 100 Gbps is available at all times. The XCalibur4840 accommodates up to 64 GB of DDR4 ECC SDRAM in four channels and up to 32 GB of onboard SLC NAND flash in addition to numerous I/O ports, including USB 2.0, PCIe, and RS-232/422/485 serial through the backplane connectors. The XCalibur4840 provides additional expansion capabilities by including two integrated XMC/PMC sites. These sites each include a x8 PCI Express connection to the Intel® Xeon® D processor and X12d+X8d I/O mapped directly to the VPX backplane connectors. Additionally, each mezzanine site offers a single PMC connector, which provides a build option for P64s or X38s to the VPX backplane connectors.

The XCalibur4840 offers a SOSA-aligned pinout compatible with backplane slot profile SLT6-PAY-4F1Q2U2T-10.2.1. The AMPS profile is MODA6-12.2.1-1-F2C-(2E18/E8)(4P4F)(2E2-2E3), but limitations apply; contact factory for details.

Wind River VxWorks and X-ES Enterprise Linux (XEL) Board Support Packages (BSPs) are available.



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Processor

- Intel® Xeon® D-2700 series (formerly Ice Lake-D) processor
- Up to 20 Xeon®-class cores in a single, power-efficient SoC package
- SKUs available with native extended temperature support

Memory

- 64 GB of DDR4 ECC SDRAM in four channels
- 32 GB of SLC NAND flash
- 64 MB NOR boot flash
- 64 kB EEPROM

Security and Management

- Microsemi® PolarFire™ SoC FPGA with 256 MB SPI flash
- Designed with SecureCOTSTM technology to support enhanced security and trusted computing
- System voltage monitor, power-on/reset control, non-volatile write-protection control
- Trusted Platform Module (TPM)

VPX (VITA 46) P0 I/O

- Two IPMB connections to an IPMI Controller (IPMC)

VPX (VITA 46) P1 I/O

- Dual 100GBASE-KR4 Ethernet ports (up to 100 Gbps aggregate processor throughput) to P1.A and P1.B
- Two general-purpose interrupts

VPX (VITA 46) P2 I/O

- Four x4 PCI Express Gen3-capable interfaces

VPX (VITA 46) P3 I/O

- Build option for PMC P24 I/O per VITA 46.9 P64s, or XMC P26 I/O per VITA 46.9 X38s

VPX (VITA 46) P4 I/O

- XMC P26 I/O per VITA 46.9 x12d+x8d
- Two 10/100/1000BASE-T Ethernet ports
- Two 1000BASE-X Ethernet ports
- Eight single-ended FPGA GPIOs

VPX (VITA 46) P5 I/O

- Two RS-232/422/485 serial ports
- Build option for PMC P14 I/O per VITA 46.9 P64s, or XMC P16 I/O per VITA 46.9 X38s

VPX (VITA 46) P6 I/O

- XMC P16 I/O per VITA 46 x12d+x8d
- Two USB 2.0 ports
- One x4 PCI Express Gen2-capable interface

XMC

- x8 PCI Express Gen3-capable port to J15 and J25
- Pn6 I/O to VPX connectors per VITA 46.9 X8d+X12d
- Build option for Pn6 I/O to VPX connectors, per VITA 46.9 X38s

PrPMC

- Build option for Pn4 I/O to VPX connectors per VITA 46.9 P64s

Software Support

- UEFI firmware
- Wind River VxWorks BSP
- X-ES Enterprise Linux (XEL) BSP
- Contact factory for availability of Microsoft Windows drivers and other operating systems

Physical Characteristics

- 6U VPX conduction-cooled form factor
- SOSA-aligned pinout compatible with backplane slot profile SLT6-PAY-4F1Q2U2T-10.2.1
- SOSA-aligned to AMPS profile MODA6-12.2.1-1-F2C-(2E18/E8)(4P4F)(2E2-2E3) (I/O limitations apply, contact factory for details)
- Dimensions: 233.35 mm x 160 mm

Environmental Requirements

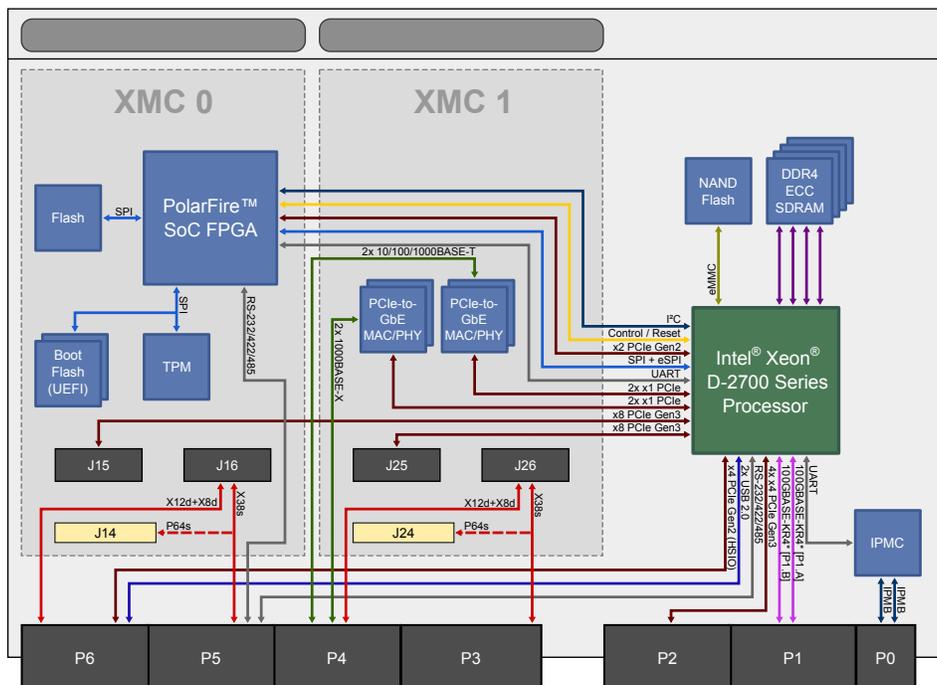
Contact factory for appropriate board configuration based on environmental requirements

- Supported ruggedization levels (see chart below): 5
- Conformal coating available as an ordering option
- Thermal performance will vary based on CPU frequency and application
- Contact X-ES for air-cooled development options

Power Requirements

- Power will vary based on configuration and usage. Please consult factory.

Ruggedization Level	Level 5
Cooling Method	Conduction-Cooled
Operating Temperature	-40 to +85°C (board rail surface)
Storage Temperature	-55 to +105°C (maximum)
Vibration	0.1 g ² /Hz (maximum), 5 to 2000 Hz
Shock	40 g, 11 ms sawtooth
Humidity	Up to 95% non-condensing



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* Dual 100GBASE-KR4 Ethernet ports provide up to 100 Gbps aggregate processor throughput.