XPedite7677

Intel® Xeon® D-1500 Family Processor-Based 3U VPX-REDI Module with Dual 10GbE and Kintex® UltraScale™ FPGA

- Supports Intel® Xeon® D-1500 family processors (formerly Broadwell-DE)
- Up to 16 Xeon®-class cores in a single, power-efficient SoC package
- 4, 8, or 12 core SKUs available with native extended temperature support
- Designed with SecureCOTS™ technology to support enhanced security and trusted computing
- Xilinx Kintex® UltraScale™ XCKU060 or XCKU095 FPGA with up to 8 GB DDR4-2133 ECC SDRAM and 1 Gb configuration BPI flash
- 3U VPX (VITA 46) module
- Compatible with multiple VITA 65 OpenVPX™ slot profiles
- Ruggedized Enhanced Design Implementation (REDI) per VITA 48
- Up to 16 GB of DDR4-2133 ECC SDRAM in two channels
- Up to 32 GB of SLC NAND flash
- XMC site with a x8 PCIe interface and rear I/O support
- Two 10GBASE-KR backplane fabric interconnects
- Two 10/100/1000BASE-T and two 1000BASE-KX ports
- Four SATA ports and two USB 2.0 ports
- Support for Atmel MSP430FR5994 microcontroller (optional)
- coreboot firmware powered by Intel® FSP
- Wind River VxWorks BSP
- X-ES Enterprise Linux (XEL) BSP
- Contact factory for availability of Green Hills INTEGRITY, QNX Neutrino, and LynuxWorks LynxOS BSPs, as well as Microsoft Windows drivers

XPedite7677

The XPedite7677 is a high-performance, 3U VPX-REDI, multiprocessing, single board computer that is ideal for ruggedized systems requiring high-bandwidth processing and low power consumption. Featuring Intel® Xeon® D-1500 family processors coupled with the Xilinx Kintex® UltraScale™ FPGA, the XPedite7677 delivers enhanced performance and efficiency for today's embedded computing applications.

The XPedite7677 integrates SecureCOTS™ technology with the Xilinx Kintex® UltraScale™ 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 Xilinx Kintex® UltraScale™ FPGA can control, intercept, and monitor the Xeon® D subsystem, implement penalties, and interface to the system through single-ended and differential I/O directly connected to the VPX backplane. Circuit board enhancements and optimized Two-Level Maintenance (2LM) metalwork provide additional protection to the physical hardware.

The XPedite7677 maximizes network performance with two 10 Gigabit 10GBASE-KR interfaces, two 10/100/1000BASE-T ports, and two 1000BASE-KX ports. It accommodates up to 16 GB of DDR4-2133 ECC SDRAM in two channels and up to 32 GB of onboard SATA NAND flash in addition to numerous I/O ports, including USB, SATA, and RS-232/422/485 serial through the backplane connectors. The XPedite7677 provides additional expansion capabilities by including an XMC site. This XMC site includes a x8 PCIe connection to the Intel® Xeon® D processor and X12d I/O mapped directly to the VPX backplane connectors.

Wind River VxWorks and X-ES Enterprise Linux (XEL) Board Support Packages (BSP) are available. The XPedite7677 uses coreboot, powered by Intel®'s Firmware Support Package (FSP), to provide fast boot times and significantly simplify code traceability over legacy BIOS implementations.

X-ES
Extreme Engineering Solutions

...Always Fast

Extreme Engineering Solutions
9901 Silicon Prairie Parkway • Verona, WI 53593
Phone: 608.833.1155 • Fax: 608.827.6171
sales@xes-inc.com • https://www.xes-inc.com

Processor

- Intel® Xeon® D-1500 family processors (formerly Broadwell-DE)
- Up to 16 Xeon®-class cores in a single, power-efficient SoC package
- 4, 8, or 12 core SKUs available with native extended temperature support

Memory

- Up to 16 GB of DDR4-2133 ECC SDRAM in two channels
- Up to 32 GB of SLC NAND flash
- 32 MB NOR boot flash
- 64 kB EEPROM

VPX (VITA 46) P0 I/O

- One IPMB port

VPX (VITA 46) P1 I/O

- One 10GBASE-KR Ethernet port to P1.A
- One 10GBASE-KR Ethernet port to P1.B
- Two 1000BASE-KX Ethernet ports
- One 10/100/1000BASE-T Ethernet port
- Four SATA ports capable of 6 Gb/s

VPX (VITA 46) P2 I/O

- One 10/100/1000BASE-T Ethernet port
- Two USB 2.0 ports
- Two RS-232/422/485 serial ports
- XMC P16 I/O, P2w7 mapping X8d+X12d per VITA 46.9
- GPIO from FPGA

XMC Site

- x8 PCI Express Gen3-capable port

Security and Management

- Xilinx Kintex® Ultrascale™ XCKU060 or XCKU095 FPGA
- Designed with SecureCOTS™ technology to support enhanced security and trusted computing
- 1 Gb configuration BPI flash
- Up to 8 GB of DDR4-2133 ECC SDRAM
- One x4 PCI Express Gen3-capable interface
- One x1 PCI Express Gen3-capable interface
- One x4 PCI Express Gen2-capable interface
- Support for Atmel MSP430FR5994 microcontroller (optional)

Software Support

- coreboot firmware powered by Intel® FSP
- Wind River VxWorks BSP
- X-ES Enterprise Linux (XEL) BSP
- Contact factory for availability of Green Hills INTEGRITY, QNX Neutrino, and LynuxWorks LynxOS BSPs, as well as Microsoft Windows drivers

Physical Characteristics

- 3U VPX-REDI conduction- or air-cooled form factor
- Dimensions: 100 mm x 160 mm
- 0.8 in. pitch without solder-side cover
- 1.0 in. pitch with Two-Level Maintenance (2LM) support (optional)

Environmental Requirements

Contact factory for appropriate board configuration based on environmental requirements.

- Supported ruggedization levels (see chart below): 3, 5
- Conformal coating available as an ordering option
- Thermal performance will vary based on CPU frequency and application

Power Requirements

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

Ruggedization Level	Level 1	Level 3	Level 5
Cooling Method	Standard Air-Cooled	Rugged Air-Cooled	Conduction-Cooled
Operating Temperature	0 to +55°C ambient (300 LFM)	-40 to +70°C (600 LFM)	-40 to +85°C (board rail surface)
Storage Temperature	-40 to +85°C ambient	-55 to +105°C ambient	-55 to +105°C (maximum)
Vibration	0.002 g²/Hz (maximum), 5 to 2000 Hz	0.04 g²/Hz (maximum), 5 to 2000 Hz	0.1 g²/Hz (maximum), 5 to 2000 Hz
Shock	20 g, 11 ms sawtooth	30 g, 11 ms sawtooth	40 g, 11 ms sawtooth
Humidity	0% to 95% non-condensing	0% to 95% non-condensing	0% to 95% non-condensing