



VPX3-450

Xilinx® Virtex®-5 based 3U VITA-46/48 Module

- ♦ VPX 3U form factor
- ♦ Xilinx Virtex-5 based FPGA with attached memories
- ♦ Dual-core Freescale Power Architecture™ MPC8640D processor
- ♦ XMC site

The VPX3-450 is a high-performance, 3U processing module combining the massively-parallel computational capabilities of an FPGA with the flexible, general-purpose processing capabilities of a Freescale Power Architecture based processor for demanding, high-performance signal and image processing applications such as radar, sonar, and signal intelligence. Providing a state-of-the-art Virtex-5 FPGA for high-performance configurable logic, an AltiVec™-enabled Freescale Power Architecture MPC8640 processor for general-purpose processing, command and control functions, and high-speed floating-point calculations, and the I/O flexibility of an XMC mezzanine site, the VPX3-450 gives developers enormous processing power in a package designed to meet both commercial and rugged environments.



The computing power of the Xilinx® Virtex®-5 FPGA is complemented by a balanced mix of I/O and memory. Attached to the FPGA is one bank of DDR2 SDRAM and two banks of QDR-II+ SRAM. Two 4-lane high-speed serial ports to the backplane and an additional port to the XMC site provide a total of 7.5GB/s bandwidth into and out of the FPGA in addition to the primary 4-lane PCI Express® (PCIe) link to the on-board fabric.

The VPX3-450 offers a rich set of system and support software and tools designed specifically to ease the developer's task of integrating FPGA-based computation into a larger heterogeneous multicomputer application. Software and development tools for the VPX3-450 are part of the Continuum Software Architecture (CSA). The Continuum FXtools package contains the full Continuum Firmware and BSP package, plus additional VPX3-450 specific support libraries for the MPC8640 processor using such off-the-shelf operating systems as VxWorks® and Linux®. The Continuum FXtools package also provides a set of highly optimized IP blocks (memory control, serial and LVDS interfaces, etc.), FPGA-specific function libraries (configuration, command bus mappings, etc.) and a scriptable FPGA simulation environment. The Continuum Vector algorithm library gives the MPC8640 a rich set of optimized signal and image processing functions utilizing the AltiVec unit.

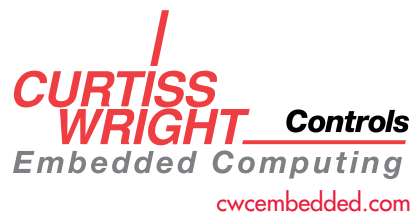
The VPX3-450 is designed to operate in rugged environments and is available in air- and conduction-cooled formats. Innovative cooling techniques are employed to handle high-performance FPGA implementations. Rugged or commercial, the VPX3-450 provides the developer with a flexible, high-performance computing platform in either a stand-alone or heterogeneous multi-computing environment. When combined with the various software packages, the developer can expect significant time-to-market/time-to-deployment improvements due to the high-performance IP blocks, tools, and communications infrastructure.

Learn More

Sales Info: sales.cwcmbedded.com

Sales Email: sales@cwcmbedded.com

ABOVE & BEYOND



Features

- ♦ One user-programmable Xilinx Virtex-5 FPGA node (LX155T or SX95T) with:
 - One bank of DDR2 SDRAM (256MB). Up to 2.2GB/s peak bandwidth
 - Two banks of QDR-II+ SRAM (36MB total). Up to 4.4GB/s peak bandwidth
 - Two 4-lane 3.125GHz serial links to the backplane
 - One 4-lane PCIe link to the on-board switching fabric
 - 18 pairs (36 pins) of discrete LVDS signals to the backplane
- ♦ One Dual-core Freescale Power Architecture MPC8640 processor
 - Running at 1GHz
 - 1GB of DDR2 with ECC
 - 256MB of Flash with write protection for user code, data, or FPGA bitstreams
 - Protected backup Flash
 - Two Gigabit Ethernet interfaces, factory configurable to either 1000 Base-T or 1000 Base-X
 - Two EIA-232 serial ports
 - Connections to the FPGA configuration bus and command/control bus
- ♦ On-board PCIe switch
 - 8-lane port to the MPC8640 processor
 - 4-lane port to the FPGA node
 - 8-lane port to the XMC site
 - Two 4-lane ports to the backplane. One is factory-configurable to be Serial RapidIO®
- ♦ XMC site
- ♦ Thermal sensors for monitoring board temperatures
- ♦ Sensors for monitoring board temperatures and FPGA power consumption
- ♦ Support for ChipScope™ Pro and JTAG processor debug interfaces
- ♦ Multi-board synchronous clock
- ♦ Continuum FXtools for the VPX3-450
 - FPGA design kit with highly-optimized IP Blocks, development environment, reference designs, scriptable simulation test benches and software libraries
 - Continuum Firmware and BSP for VxWorks and Linux and systems library kit for the MPC8640 processor
- ♦ Continuum Vector subroutine library available
- ♦ VITA 48 1" pitch format
- ♦ Range of air- and conduction-cooled ruggedization levels available

Figure 1: VPX3-450 Architecture

