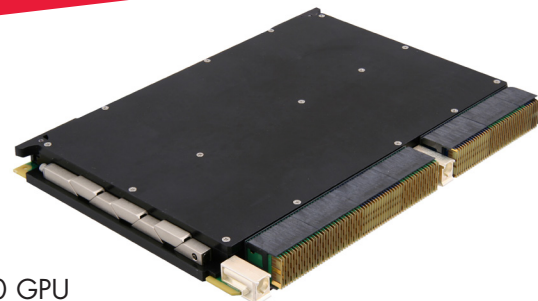




Data Sheet

VPX6-490

6U OpenVPX™ GPU Application Accelerator



Features

- ◆ 6U OpenVPX™ form factor
- ◆ One or two NVIDIA® Fermi architecture GPUs
 - 240-cores
 - 2 Gbytes GDDR5 memory
 - 256-bit wide memory bus
 - 80 Gbyte/s memory bandwidth
 - 16-lane Gen2 PCI Express® (PCIe) interface
- ◆ Dual DVI graphics outputs
- ◆ Temperature sensors
- ◆ Voltage sensor
- ◆ Current sensor
- ◆ Intelligent Platform Management Interface (IPMI) support
- ◆ 12V power
- ◆ Level 100 air-cooled and level 200 conduction-cooled
- ◆ CUDA 4.0 support for Linux®

The VPX6-490 GPU

(graphics processor unit) Application Accelerator brings the new generation of NVIDIA Fermi architecture class of graphics processor unit to the rugged deployed application developer. The VPX6-490 packs the punch of a pair of 240 core GPU devices into the 6U OpenVPX form factor. The ascendance of GPUs in the field of high-performance computing is demonstrated in the NVIDIA Fermi architecture, with numerous features aimed at improving GPU computing over prior generations: larger internal shared memories, a completely new L2 cache, unified memory addressing and many other enhancements designed to improve CUDA applications performance and improve programmer productivity. The addition of GPU technology complements Curtiss-Wright's High Performance Embedded Computing (HPEC) portfolio of products that address the complete data flow from sensor to operator: FMC/XMC data acquisition, FPGA-based processing modules, high-density multiprocessor boards, GPGPU co-processors and large catalog of system level interface products to connect to other computers or display information to human operators.

The VPX6-490 is designed to work with Intel® processor-based single board computers (SBCs) such as the Curtiss-Wright VPX6-1956 2nd Generation Core i7, as well as the CHAMP-AV8 dual 2nd Generation Core i7 multiprocessor board. The 16-lane Gen2 PCIe interface presented by each MXM can be used with x4 and x8 capable hosts. A block diagram of the VPX6-490 is shown in Figure 1.



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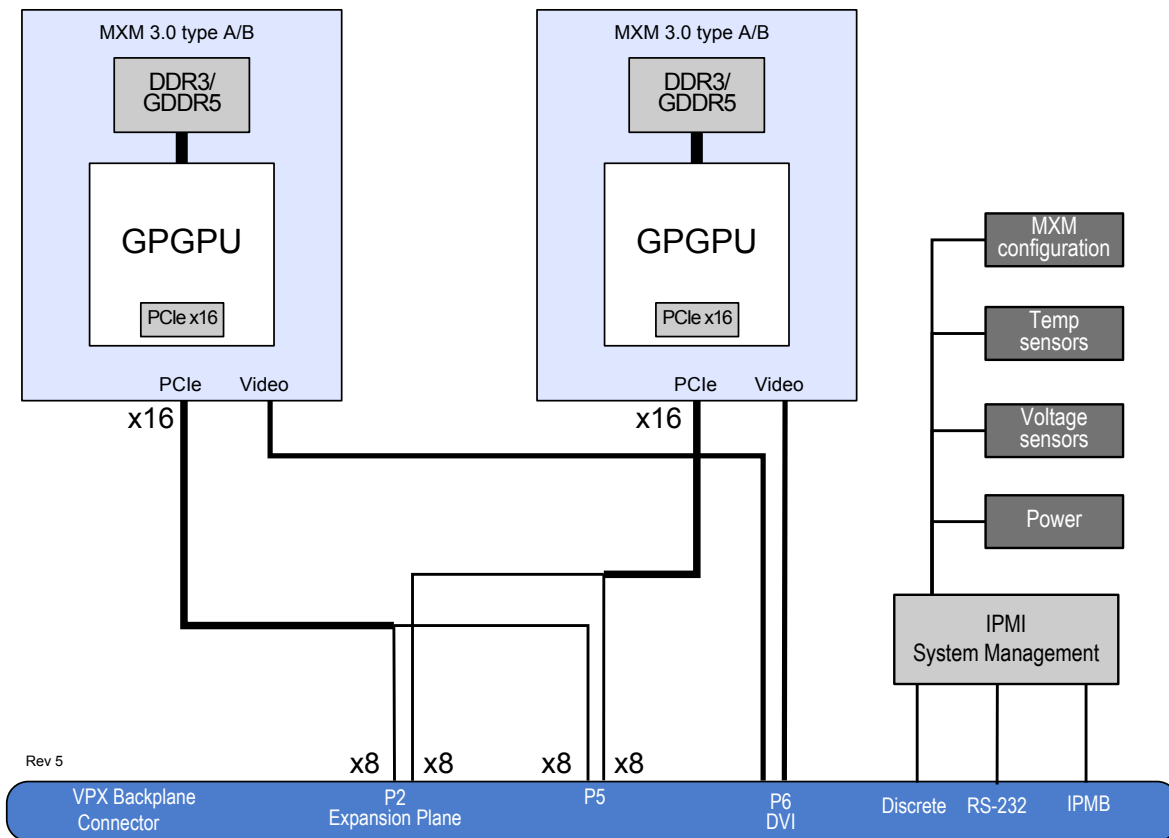
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Figure 1: VPX6-490 Block Diagram



The MXM Standard

The Mobile PCIe Module (MXM) is a graphics mezzanine form factor standard used in a variety of embedded applications and mobile workstations. MXM modules are available from the leading providers of graphics silicon including NVIDIA and AMD/ATI. In conjunction with the ongoing evolution of graphics silicon is a matching product roadmap of increasingly powerful MXM modules.

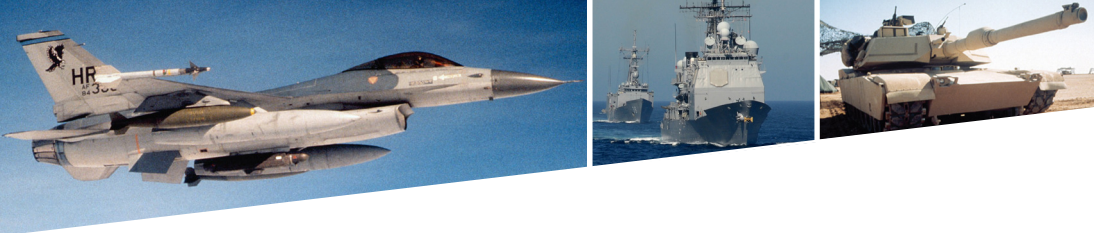
The VPX6-490 carries two MXM modules and incorporates specially designed metal work and heat sinks to secure the modules against shock and vibration and provide the maximum capacity to efficiently dissipate heat within the confines of the VITA 48 1" pitch envelope.

The use of MXM modules allows Curtiss-Wright to quickly adopt new generations of MXM modules as they become available, thus providing customers with a time to market advantage, as compared to the longer development cycle of fully custom boards.

The VPX6-490 will be initially offered with an NVIDIA MXM module featuring a 240-core GPU and 2 Gbytes of GDDR5 memory. The on-board memory is implemented with a 256-bit wide interface with a peak bandwidth of 80GB/s. With a memory bandwidth more than triple that of less capable DDR3 designs, users can be more confident of extracting the performance from the GPU.

Other MXM modules may be supported. Contact the factory for updated information.

The VPX6-490 supports two single-link DVI interfaces per MXM module. These graphics interfaces are provide on a backplane connector. An available Rear Transition Module (RTM) provides a standard DMS-59 connector to which cables may be attached to drive displays.



VITA 65 OpenVPX

The VITA 65 OpenVPX specification is an industry initiative by defense prime contractors and COTS system developers to build upon the VITA 46 (VPX) standard to provide for greater interoperability, define standard backplanes and provide additional functionality. One of the key new additions to the standard is the provision for the Expansion Plane. While the existing Data Plane (on P1) fabric is normally used as a system-wide communication fabric, the Expansion Plane (on P2, P5) provides for a standard mechanism to connect adjacent cards with a local PCIe

connection. The VPX6-490 design takes advantage of the Expansion Plane feature by providing two 16-lane PCIe Gen2 interfaces on the P2 and P5 connectors per draft slot standard MOD6-PAY-4F2Q2U2T-12.2.7-n. Designed for use with existing available OpenVPX backplanes such as BKP6-CEN16-11.2.2.30, the VPX6-490 presents the lower 8-lanes of each MXM to the P2 connector and the upper 8-lanes to the P5 connector. See Figures 2 and 3 for examples of using the VPX6-490 with the Curtiss-Wright VPX6-1956 SBC.

Figure 2: Example of connecting between VPX6-1956 SBC and VPX6-490 card using expansion plane signals in BKP6-CEN16-11.2.2.30 OpenVPX backplane

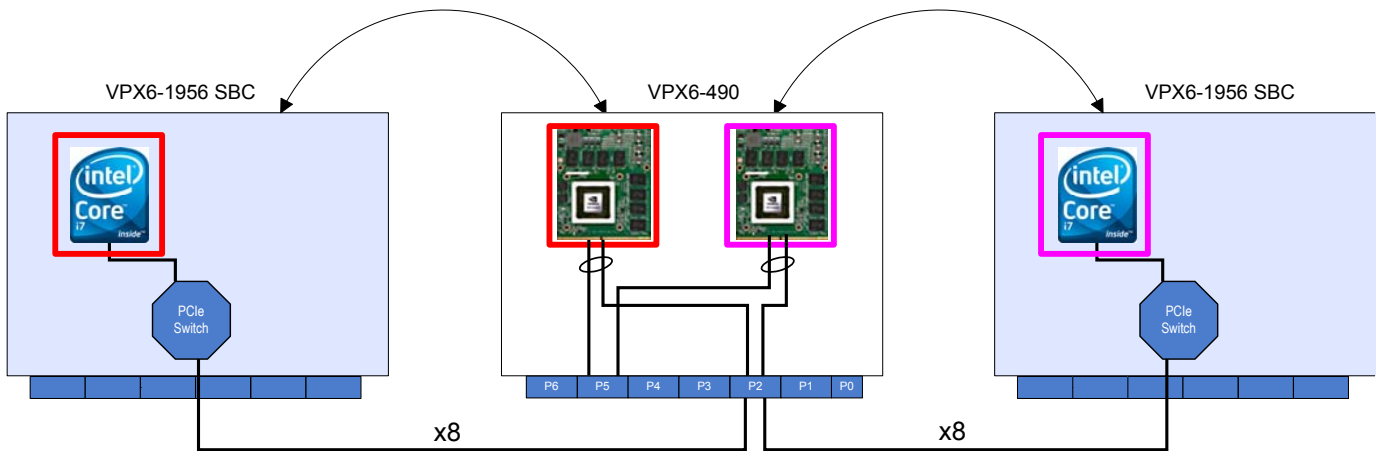
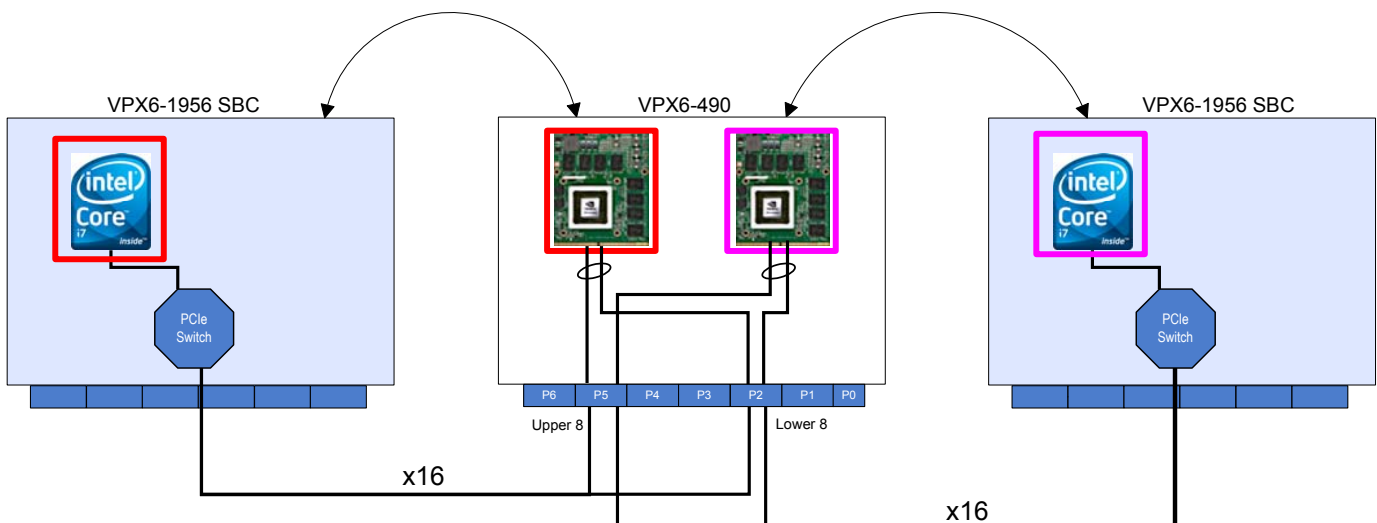
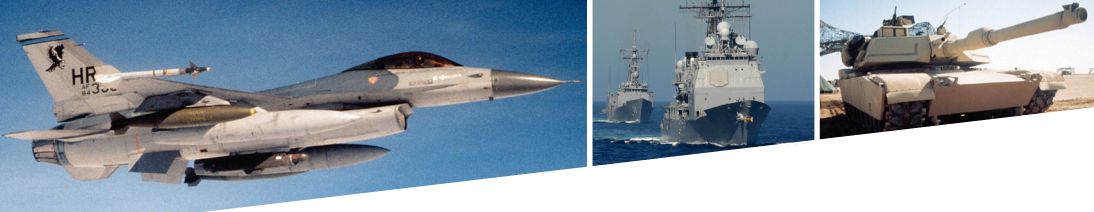


Figure 3: Example of connecting between VPX6-1956 SBC and VPX6-490 card using custom backplane providing the full 16-lane PCIe interface to both MXM modules





Sensors

The VPX6-490 provides an IPMI controller which provides access to read voltage, current and thermal sensors on the board. The IMPI controller can also command the power supplies to turn on and off. Control over the IPMI function is via the VPX IMPB signals. The IPMI controller also provides a pair of EIA-232 serial interfaces provide on the backplane connector.

Rear Transition Module

A rear transition module (RTM) is available for use with the VPX6-490. The RTM provides two DMS-59 connectors for DVI signals from the MXM (example mating cable is Molex SD-88744-099). The RTM also provides a reset switch and two RS-232 interfaces to the IPMI controller on the VPX6-490.

Ordering information

The VPX6-490 is ordered with the following part numbers:

Table X: VPX6-490 Ordering Information

VPX6-490-UVWXYYY	
U	Cooling method <ul style="list-style-type: none"> A: air-cooled C: conduction-cooled F: air flow through cooling
V	Temperature range <ul style="list-style-type: none"> 0: 0°C to 50°C 1: -40°C to 71°C 2: -40°C to 85°C
W	Mechanical format <ul style="list-style-type: none"> 4: 1" pitch 5: 1.0" pitch, 2-level maintenance support 7: 1.5", air flow through
X	A: Standard PCIe to P2 and P5
YYY	Identifies a specific configuration that describes type and number of MXM modules

Table 2: Dimensions and Weight

Option	Dimensions	Weight
Air-cooled level 0	per VITA 48, 1" pitch (see note)	<1000g (estimated)
Air-cooled level 100	per VITA 48, 1" pitch (see note)	<1100g (estimated)
Conduction-cooled	per VITA 48, 1" pitch (see note)	<1250g (estimated)

Note:

Front panel hardware on air-cooled modules includes: injector/extractor handles, EMC strip, alignment pin, and keying provisions in accordance with ANSI/VITA 1.1, American National Standards for VME64 Extensions (and IEEE 1101.10).

Table 3: Power Requirements

12V (Vs1)	Used for main power (see note)
3.3V_Aux	Used for IPMI controller power
12V_Aux	Not used
-12V_Aux	Not used

Note

The VPX6-490 power consumption will vary depending on type of MXM, application usage and ambient temperature. Consult the user manual or factory for power characterization information

Warranty

This product has a one year warranty.

Contact Information

To find your appropriate sales representative:

Website: www.cwembedded.com/sales

Email: sales@cwembedded.com

Technical Support

For technical support:

Website: www.cwembedded.com/support

Email: support1@cwembedded.com

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