



# VPX3-491

## 3U OpenVPX™ GPU Application Accelerator



### Features

- ◆ 3U OpenVPX™ form factor
- ◆ NVIDIA® Fermi architecture GPU
  - 240-core
  - 2 Gbytes GDDR5 memory
  - 256-bit wide memory bus
  - 80 Gbytes/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
- ◆ Air-cooled and conduction-cooled versions
- ◆ CUDA 4.0 support for Linux®

The VPX3-491 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 VPX3-491 packs the punch of a 240-core GPU device into the 3U 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, Intel® processor boards, GPGPU co-processors and large catalog of system level interface products to connect to other computers or display information to human operators.

The VPX3-491 is designed to work with Intel processor-based single board computers (SBCs) such as the Curtiss-Wright VPX3-1256 2nd Generation Core™ i7 board. The 16-lane Gen2 PCIe interface presented by the VPX3-491 can be used with x4 and x8 capable hosts. A block diagram of the VPX3-491 is shown in Figure 1.



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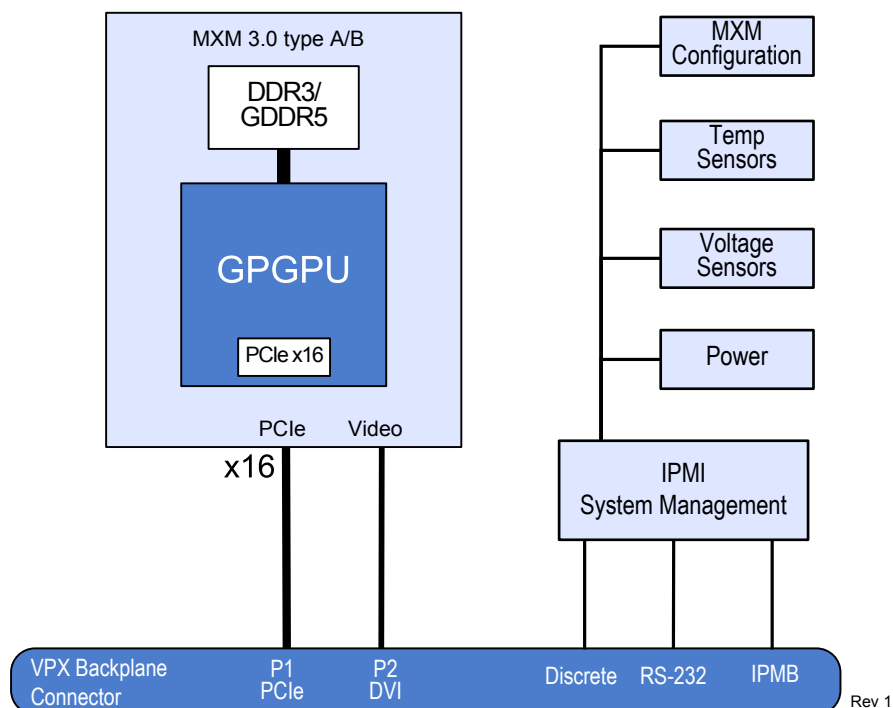
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Figure 1: VPX3-491 Block Diagram



## 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 VPX3-491 carries one MXM module 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 VPX3-491 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.

A 96-core MXM with 2GB DDR3 is available. Consult the factory for current information on MXM options.

The VPX3-491 supports two single-link DVI interfaces. 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.



## Sensors

The VPX3-491 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 provided on the backplane connector.

## Rear Transition Module

A rear transition module (RTM) is available for use with the VPX3-491. 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 VPX3-491.

## Ordering Information

The VPX3-491 is ordered with the following part numbers:

Table 1: VPX3-491 Ordering Information

VPX3-491-UVWXY	
U	Cooling method A: air-cooled C: conduction-cooled
V	Temperature range 0: 0°C to 50°C 2: -40°C to 85°C
W	Mechanical format 4: 1" pitch 5: 1.0" pitch, 2-level maintenance support
X	A: Standard PCIe to P1
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)	TBD
Conduction-cooled	per VITA 48, 1" pitch (see note)	TBD

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 VPX3-491 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](http://www.cwembedded.com/sales)

Email: [sales@cwembedded.com](mailto:sales@cwembedded.com)

## Technical Support

For technical support:

Website: [www.cwembedded.com/support](http://www.cwembedded.com/support)

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