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Find the *Mercury Computer Systems GSC6200* at our website: ***Click HERE***

Ensemble™

DATASHEET

MERCURY COMPUTER SYSTEMS™

Ensemble 6000 Series
6U OpenVPX GSC6200 GPU Processing Module

Massively Parallel Processing with latest generation dual NVIDIA GPUs in an embedded OpenVPX form factor

- Up to 2 of the latest generation NVIDIA® Fermi architecture based GPUs per 6U slot, providing the highest raw processing performance of over 1 TFLOP in addition to the highest GFLOP per Watt
- NVIDIA® CUDA™, OpenCL™ and Mercury SAL™ with MathPack™ software development toolkits
- GPU MXM form factor ensures rapid access to the latest generation GPU technology as it becomes available
- 6U OpenVPX™-compliant VITA 65/46/48 (VPX-REDI) module



Not just for graphics, the Ensemble™ 6000 series 6U OpenVPX™ GSC6200 GPU Processing Module from Mercury Computer Systems, Inc. harnesses the tremendous compute power of graphics processing units (GPUs) for rugged, high-performance, embedded signal and image-processing in a broad range of defense and commercial applications, including radar signal processing, electro-optical and infrared image-processing, electronic warfare and other applications requiring intense computational capabilities on large streams of data. Apply GPUs to accelerate compute-intensive applications including Fast Fourier Transforms (FFTs), Constant False Alarm Rate (CFAR), QR Decomposition (QRD) Synthetic Aperture Rader (SAR) and other algorithms that can benefit from the parallel processing and C/C++ software development environment.

Highest Performance with NVIDIA Fermi architecture

The GSC6200 uses 2 NVIDIA GPUs based on their latest generation Fermi architecture which provides significantly significant enhancements over the previous generation GPUs, including a larger number of parallel processing cores, larger memory capacity and higher memory bandwidth using GDDR5. These result in increased single-precision and dual-precision floating point operations as defined by NVIDIA's Compute Capability 2.1. Please contact Mercury for the latest supported GPUs.

Access latest GPU Technology

By leveraging the industry-standard Mobile PCI Express Module, applications can benefit from the latest generation GPU technology as they become available. For example, the availability of NVIDIA's latest generation Fermi architecture in an OpenVPX form factor is the result of leveraging commercial-of-the-shelf (COTS) modules. This modular approach provides the defense industry with quick access to the latest and most powerful GPU solution. With Mercury's unique innovation, it provides the most powerful embedded size, weight and power (SWaP)-optimized solution and have been field proven in some of the most hostile environments.

Flexible Software Development Platforms

Several software development environments are available for the GSC6200 processing module:

- **NVIDIA CUDA™**: a parallel computing architecture for NVIDIA GPUs that is accessible to software developers through industry standard programming languages
- **OpenCL™**: an open-source standard for cross-platform and parallel programming supported by most major companies in the computer industry
- **Mercury's Scientific Algorithm Library (SAL) with MathPack™**: a high-throughput, low-latency signal processing library containing efficient algorithms with the fewest possible instructions and computing resources. Port legacy applications to the latest generation hardware or maintain hardware independence while taking advantage of highly optimized processing functions for each hardware platform

Up to 4 DVI Outputs

Each GPU module supports up to two single-link DVI interfaces, giving a total of up to 4 DVI outputs. The data can be sent through the backplane and to the front panel (front panel option only available with air-cooled versions of GSC6200).

VPX-REDI

The VPX (VITA 46) standard defines 6U and 3U board formats with a modern high-performance connector set capable of supporting today's high-speed fabric interfaces. VPX is most attractive when paired with the Ruggedized Enhanced Design Implementation standard – REDI (VITA 48). VPX-REDI offers extended mechanical configurations supporting higher functional

density, such as two-level maintenance (2LM). 2LM allows maintenance personnel to quickly replace a failed module and restore the system to an operational state in a limited time period, minimizing potential damage to the module.

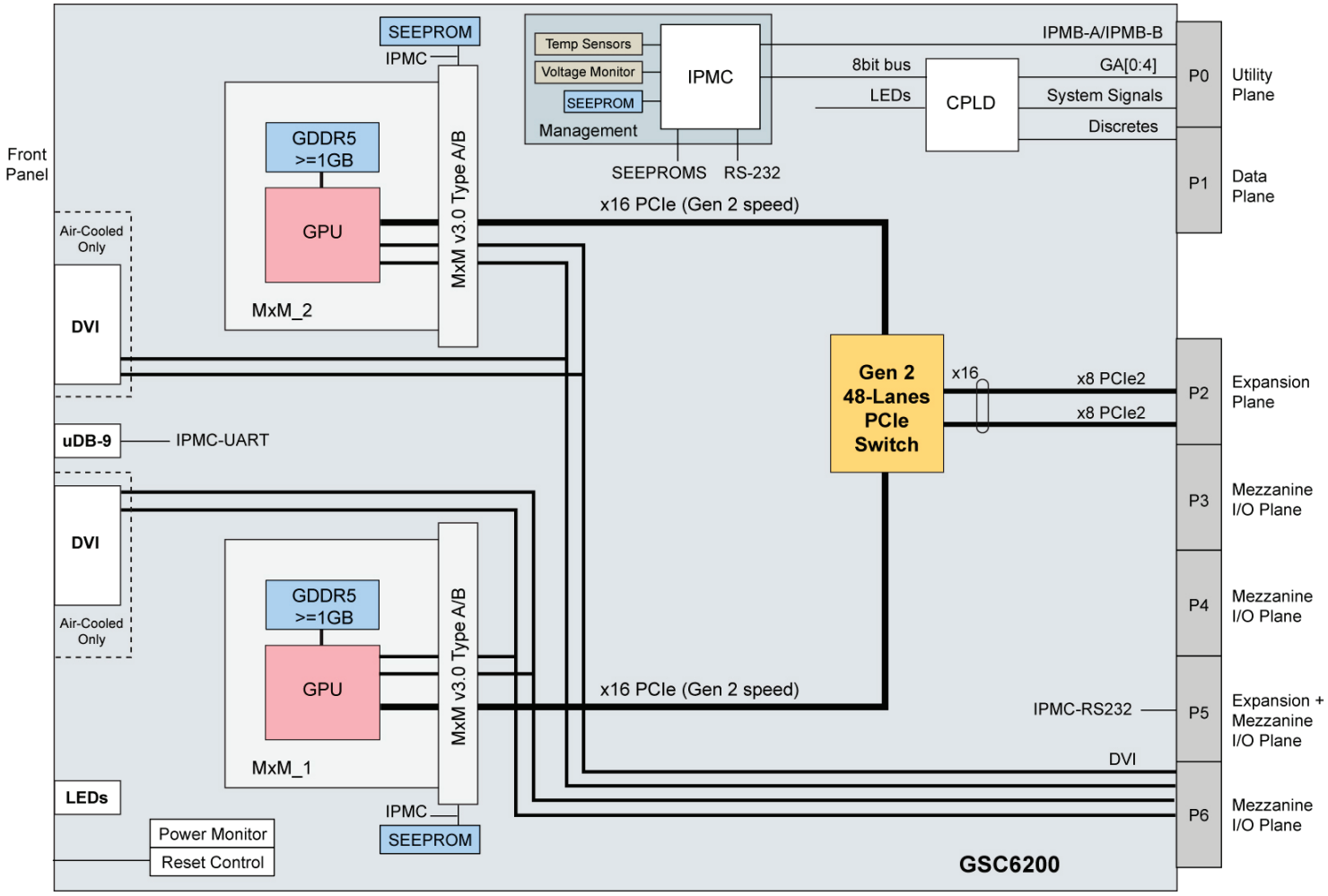


Figure 1. The GSG6200 block diagram

Specifications

GPUs Supported

NVIDIA GeForce GTX 460M (Fermi Architecture)

- 384 Total Processing Cores (192 cores per MxM)
- 1.036 TFLOPS Peak Theoretical (518 GFLOPS per MxM)
- 3.072 GB GDDR5 Memory (1.536 GB per MxM)
- Compute Capability 2.1

Note: Contact Mercury Sales for updates to the latest supported GPU processors.

MxMs

MxM revision 3.0 compliant

Support for Type A and Type B modules

Two single-link DVI display interfaces per site

- Configurable per interface for front panel or backplane connector connectivity

One x16 PCIe connection per site

PCIe Switch

x16 PCIe 2.0 connection to each MxM site

x16 PCIe 2.0 connection to each backplane

- Configurable as a single x16 upstream port
- Configurable as a single x8 upstream port and a single x8 downstream port

IPMI (System Management)

Renasas® HD64F2166 IPMI Controller

Voltage monitor

Geographical address monitor

Temperature monitor

Power/reset control

FRU and on-board MxM EEPROM interfaces

CPLD interfaces

OpenVPX Connector

IPMB-A and IPMB-B link management plane

Dual x16 PCIe Gen2 speed expansion plane

Mechanical

6U VPX

1.0” slot width pitch

OpenVPX and VPX REDI

Environmental

Air-Cooled

Temperature

Operating	0°C to 55°C*
Storage	-55°C to +85°C

Humidity

Operating	5-95%, non-condensing

Vibration	Consult Factory
Shock	Consult Factory

Altitude

Operating	0-30,000 ft*

*Customer must maintain required CFM level.

Conduction-Cooled

Consult factory

Compliance

OpenVPX System Specification encompasses

VITA 46.0, 46.3, 46.4, 46.6, 46.11

Compatible with VITA 65

VITA 46/48.1/48.2 (REDI)

PCI Express 2.0

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MERCURY COMPUTER SYSTEMS™

Corporate Headquarters
201 Riverneck Road
Chelmsford, MA 01824-2820 USA
+1 (978) 967-1401 • +1 (866) 627-6951
Fax +1 (978) 256-3599
www.mc.com

Europe
Mercury Computer Systems, Ltd.
Unit 1 - Easter Park, Benyon Road • Silchester, Reading • RG7 2PQ UNITED KINGDOM
+ 44 0 1189 702050 • Fax + 44 0 1189 702321

Asia
Nihon Mercury Computer Systems K.K.
No. 2 Gotanda Fujikoshi Bldg. 4F • 5-23-1 Higashi Gotanda • Shinagawa-ku, Tokyo 141-0022 JAPAN
+81 3 3473 0140 • Fax +81 3 3473 0141

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