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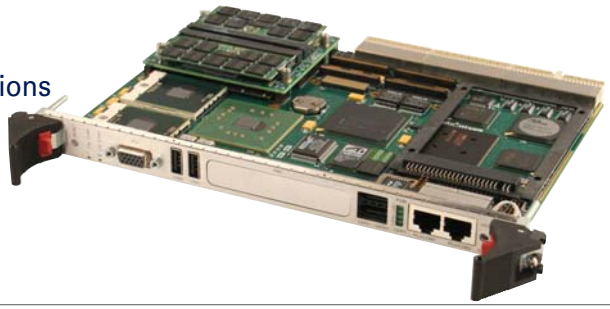
DATASHEET

Computer Systems, Inc.
MERCURY

CX6-200 CompactPCI Single-Board Computer, with Two Dual-Core Intel® Xeon® Processors

State-of-the-Art Performance Levels for Compute-Intensive Applications

- Brings server-level performance to a single cPCI slot
- 4-way SMP configuration eases porting from existing configurations
- Abundant I/O interfaces with easy connectivity
- PMC/XMC expansion site for added versatility
- Bridges the gap from legacy to industry-standard I/O



The Momentum™ Series CX6-200 6U CompactPCI® single-board computer from Mercury Computer Systems with two dual-core Intel® Xeon® processors delivers unprecedented levels of performance with dual-core processors in a single or dual processor configuration. The architecture supports up to 4-way symmetrical multiprocessing (SMP), which provides significant performance advantages for compute-intensive applications, while requiring minimal porting.

PCI Express® technology minimizes internal data-flow bottlenecks and maximizes external I/O throughput for onboard interconnects. The numerous I/O interfaces include quad Gigabit Ethernet, RS-232 serial I/O, high-speed serial ATA-150 (SATA), USB 2.0, and SVGA interfaces, with most available at the front panel for easy connectivity. For added versatility and flexibility, the CX6-200 features a single-wide PMC/XMC expansion site that supports both front and rear I/O.

Processor Circuit

The CX6-200 can be populated with either a single or a dual processor configuration, enabling scalable configurations to match application requirements. The one or two dual-core processors, coupled with the Intel® E7520 Memory Controller Hub (MCH) and Intel® 6300ESB I/O Controller Hub (ICH), provide the processing power for even the most demanding embedded computer environments.

The MCH supports three PCI Express® x8 links, each capable of bandwidths of up to 2 GB/s; a 667 MHz front side bus; and dual DDR2-400 memory interfaces that can access up to 4 GB of memory on dual SDRAM SO-DIMM modules.

The ICH provides a wealth of I/O functionality including a SATA-150 host controller, 16550-compatible UARTs, EHCI USB 2.0 host controllers, and an IDE Ultra ATA-100 controller. The ICH supports a wide range of system configurations and system management functions, including an advanced programmable interrupt controller, an enhanced four-channel DMA controller for moving large blocks of data efficiently, and an LPC interface for connecting to a super I/O controller, firmware hub, and IPMI BMC controller

Gigabit Ethernet

Up to four Gigabit Ethernet link ports are standard. Two link ports are available in a dual RJ-45 front-panel connector with link, speed, and activity LEDs for convenient network accessibility, or at the backplane. Two additional dedicated ports are provided at the backplane. Each dual-channel Gigabit Ethernet controller is located on a 64-bit PCI-X bus. Data is translated from the PCI-X bus through a PCIe link to the MCH through a PCIe-to-PCI-X dual-port bridge

Serial, USB, and Mass Storage Interfaces

Serial I/O technology is changing, and the CX6-200 helps bridge from legacy asynchronous RS-232 serial I/O to industry-standard USB 2.0 connectivity, and from traditional parallel IDE/ATA drive technology to emerging high-speed serial ATA (SATA) technology.

Legacy asynchronous RS-232 serial I/O is supported with an option for two front-panel serial ports through a dual RJ-45 connector, as well as two dedicated serial ports at the backplane. For high-speed USB connections, the CX6-200 includes one front-panel USB 2.0 Type A connector, and two additional USB ports at the backplane. Beyond the IDE Ultra ATA-100 interface and onboard mounting sled for additional permanent storage (or a removable CompactFlash® module via an adapter), the CX6-200 also provides two front-panel SATA-150 ports for conveniently adding hard disks, CD-ROM, or DVD drives to the system.

Video

The CX6-200 supports SVGA video with an onboard ATI Rage™ Mobility™ M graphics chip that has 4 MB of on-chip SDRAM. The Rage Mobility supports 16.7 million colors with 2D/3D resolutions of up to 1280 x 1024. Analog video output is available at the front panel through an HD-15 connector.

Software Support

The CX6-200 supports the following operating systems in the form of board support packages (BSPs) and software development kits (SDKs):

- Linux® 2.6
- Solaris™ 10
- Windows® XP Professional
- Windows Server 2003
- VxWorks® BSP
- Green Hills® Integrity

PMC/XMC Site

The face of expansion I/O cards is also changing, and the CX6-200 is once again bridging the gap by supporting both traditional IEEE 1386/1386.1 64-bit PCI mezzanine cards (PMC) and the latest VITA 42.3 switched mezzanine cards (XMC) with PCI Express in one single-wide PMC/XMC site. Switch fabric solutions are increasing throughout the embedded computer industry, and the CX6-200 allows the system integrator to take advantage of this emerging technology today. XMC modules can more than double the bandwidth (2 GB/s full duplex) of the fastest traditional PMC modules (1 GB/s half duplex with PCI-X), while maintaining the flexibility of modular expansion.

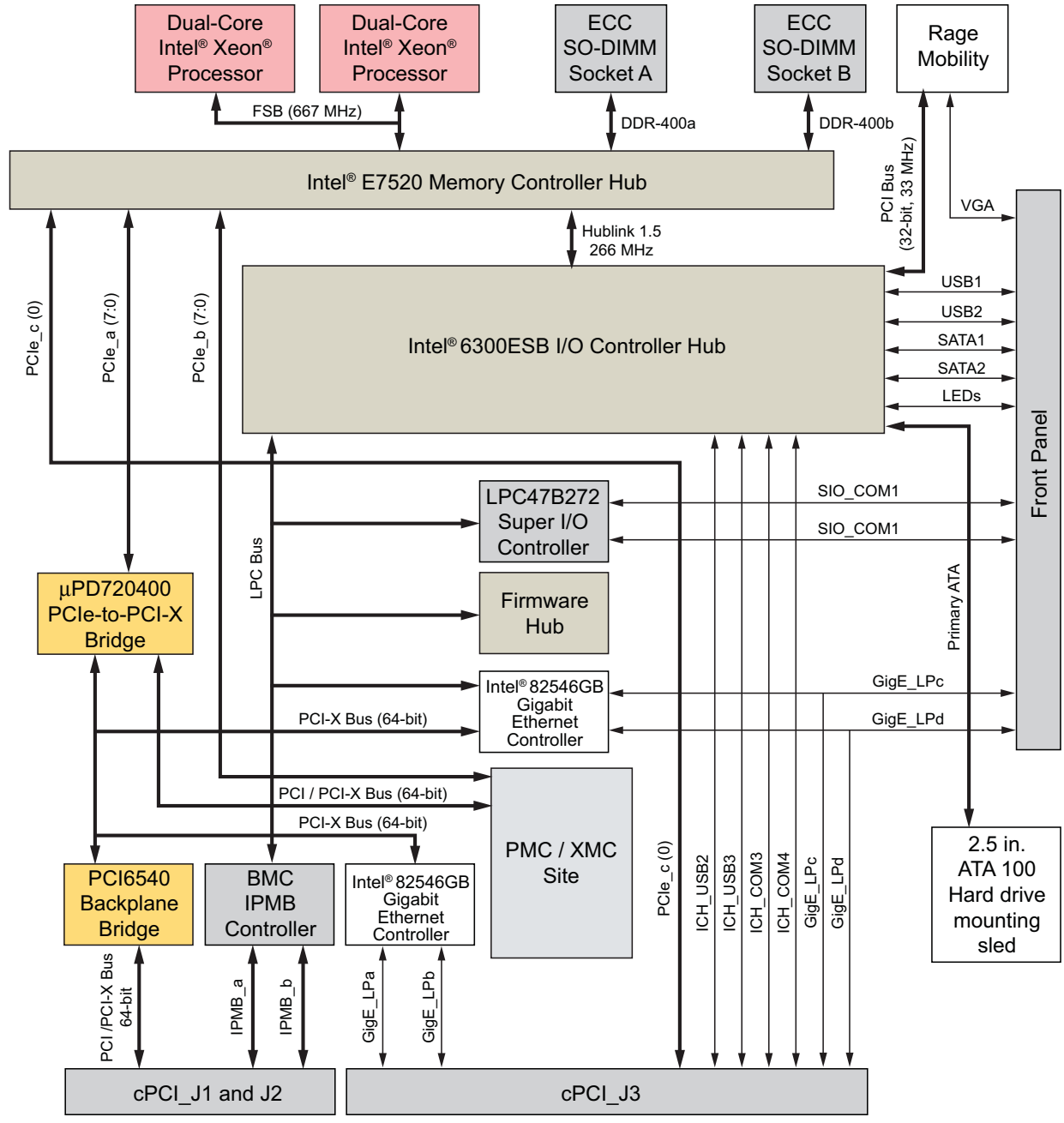


Figure 1. *CX6-200 block diagram*

Specifications

Dual-Core Intel® Xeon® processors

One or two Dual-Core Intel® Xeon® processors ULV at 1.66 GHz

Intel® E7520 Memory Controller Hub

PCI Express (PCIe)	Three x8 links
Dual-channel memory interface	DDR2-400
Processor system bus interface	667 MHz
HI1.5 Hublink interface between Intel® E7520 MCH and Intel® 6300ESB ICH	266 MHz

Intel® 6300ESB I/O Controller Hub

Two independent SATA host controllers
- 32-bit PCI connectivity
- Up to 150 MB/s transfer rates

16550-compatible UARTs

Four USB 2.0 ports

IDE controller with support for Ultra DMA-100 mode transfers

Advanced programmable interrupt controller (APIC)

Enhanced DMA controller

SMB host controller with I^2C interface

PCI interface to backplane	32-bit, 33 MHz

LPC interface

Dual-channel DDR SDRAM SO-DIMM sockets

Registered ECC DDR2-400 memory bus per socket

Firmware Hub

BIOS™ storage

PCI/PCI-X/PCIe interfaces

Two PCIe interfaces controlled through the E7520 MCH

Two 64-bit PCI-X interfaces controlled through a NEC μPD720400

PCIe-to-PCI-X bridge

Gigabit Ethernet

Two Intel® 82546GB dual-port Gigabit Ethernet Controllers with two fully integrated MAC and PHY combinations

Two link ports at J3 for PICMG® 2.16-compliance

Two link ports available at front panel (dual RJ-45 connector) or backplane

64-bit PCI-X interface

Serial RS-232 I/O

Optional two asynchronous serial RS-232 ports at front panel (dual RJ-45 connector)

Two asynchronous serial RS-232 port interfaces at backplane

Serial ATA

Dual SATA connector at front panel

Primary ATA hard disk

Onboard HDD mounting sled

Accepts CompactFlash® via adapter

USB 2.0

Single USB 2.0 Type A connector at front panel

Two USB interfaces at backplane

SVGA graphics

ATI Rage™ Mobility™ M graphics with 4-MB on-chip SDRAM

Resolutions up to 1280 x 1024

HD-15 VGA connector at front panel

PMC/XMC site

IEEE 1386/1386.1 PCI mezzanine card

VITA 42.3 XMC switched mezzanine card with one 8x PCI Express

IPM interface

Hitachi® H8S/2168 baseboard management controller (BMC)

CompactPCI version PICMG 2.9 R2.0 compliant

Dual IPMB interfaces at the backplane

Backplane interface

CompactPCI system controller or peripheral card operation through backplane bridge

PLX PCI6540 PCI-X to PCI-X bridge

Dimensions

Form factor	6U Compact PCI per PICMG 2.0, R3.0
Height	9.2 in (233 mm)
Depth	6.3 in (160 mm)

Power Requirements

5V, 3.3V	Required from backplane
±12V	As required by PMC module

Power Consumption*

Dual processor, dual memory configuration	
5V	34W
3.3V	42W
Total	76W
Single processor, dual memory configuration	
5V	17W
3.3V	42W
Total	59W
Single processor, single memory configuration	
5V	17W
3.3V	36W
Total	53W

* Power consumption values are estimates of worst case condition

Environmental Specifications

Temperature	
Operating	0°C to 55°C (270 LFM minimum)
Non-operating	–40°C to +85°C
Humidity	
Operating	5% to 95% at 40°C (non-condensing)
Non-operating	5% to 95% at 40°C (non-condensing)
Shock	
Operating	Up to 30g at 20 ms
Vibration	
Operating	0.5g (4 Hz to 50 Hz)
Non-operating	1.0g (4 Hz to 50 Hz)
Altitude	
Operating	0 ft to 15000 ft (0 m to 4572 m)

Standards Compliance*

Safety	Designed to meet standard UL1950/60950
Emissions	Designed to meet FCC Part15, Sub-Part A
RoHS	Designed to meet RoHS 5 of 6 compliance

* CX6-200 SBC is designed to be certified within a system environment.

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