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VX6-200R Dual Dual-Core Xeon®
VXS Air-Cooled Single-Board Computer

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



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

The VX6-200R Dual Dual-Core Xeon® VXS Single-Board Computer (SBC) from Mercury Computer Systems delivers unprecedented levels of performance with dual dual-core Intel® Xeon® processors in an air-cooled format. The architecture supports 4-way symmetric multiprocessing (SMP), which provides significant performance advantages for compute-intensive applications, while requiring minimal software porting.

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 VX6-200R features a single-wide PMC-X/XMC expansion site that supports both front-panel and rear I/O.

Processor Circuit

The dual-core Intel® Xeon® 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 with parity, and dual DDR2-400 ECC memory interfaces that can access up to 4 GB of memory.

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 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 firmware hub and IPMI BMC controller.

Gigabit Ethernet

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. Two additional dedicated ports are provided at the backplane on the VME P2 connector. Each dual-channel Gigabit Ethernet controller is connected directly to the MCH via PCI Express®, allowing maximum bandwidth potential.

Serial, USB, and Mass Storage Interfaces

Serial I/O technology is changing, and the VX6-200R helps bridge from legacy asynchronous RS-232 serial I/O to industry-standard USB 2.0 connectivity. Legacy asynchronous RS-232 serial I/O is supported via two dedicated serial ports at the backplane. For highspeed USB connections, the VX6-200R includes one front-panel USB 2.0 Type A connector and two additional USB ports at the backplane.

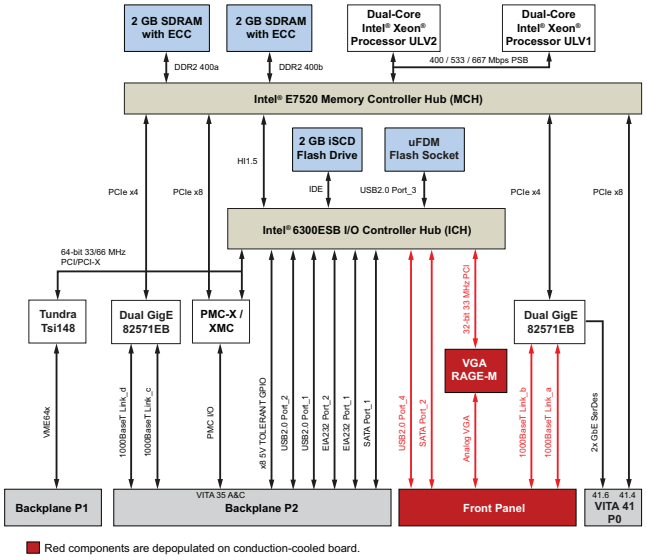


Figure 1: *VX6-200R functional block diagram*

One eSATA port from the ICH is available on the front panel, and another SATA port is routed to the VME P2 connector. The IDE iSCD is an embedded single-chip flash drive with a 2-GB capacity. For additional onboard mass storage, the USB socket is available for uFDM flash devices.

Video

The VX6-200R supports optional 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 VX6-200R supports the following operating systems:

- Linux Fedora Core 7
- Windows® XP Professional
- Windows® Server 2003

PMC-X/XMC Site

The face of expansion I/O cards is changing, and the VX6-200R is bridging the gap by supporting both traditional IEEE 1386/1386.1 64-bit PCI mezzanine cards (PMC-X) and the latest VITA 42.3 switched mezzanine cards (XMC) with PCI Express in one single-wide PMC-X/XMC site.

Switch fabric solutions are quickly increasing throughout the embedded computer industry, and the VX6-200R allows the system integrator to take advantage of this emerging technology today. XMC modules can more than double the bandwidth (2 GB/s each direction with 8 lanes) of traditional PMC modules (1 GB/s with PCI-X), while maintaining the flexibility of modular expansion. The PMC-X site supports both PCI-X and PCI running at up to 66 MHz.

Specifications

Dual-Core Intel® Xeon® Processors

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	2 GB or 4 GB DDR2-400
Processor system bus interface	667 MHz

Intel® 6300ESB I/O Controller Hub

16550-compatible UARTs
Two USB 2.0 ports
IDE port with 2-GB flash drive

Firmware Hub

BIOS™ storage (write-protected)

Gigabit Ethernet

Two Intel® 82571EB dual-port Gigabit Ethernet MAC/PHY chips
Two link ports available at front panel (dual RJ-45 connector)
Two link ports available at the P2 backplane

Serial RS-232 I/O

Two asynchronous serial RS-232 port interfaces at P2 backplane

USB 2.0

Single USB 2.0 Type A connector at front panel
Two USB interfaces at P2 backplane
USB uFDM flash device socket

SATA

eSATA connector at front panel
Second SATA port at P2 backplane

GPIO

8 GPIO pins available on the J2 backplane (5V tolerant)

SVGA Graphics (Air-Cooled Version)

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-X/XMC Site

IEEE 1386/1386.1 PCI mezzanine card
VITA 39 PMC with PCI-X running at up to 66 MHz
VITA 42.3 XMC switched mezzanine card with PCI Express
User I/O pins routed to J2 per VITA 35

Backplane Interface

System controller or peripheral card operation through the backplane bridge
VME64 Tundra® Tsi148™ PCI-to-VME bridge

Dimensions

Form factor	6U VME per VITA 41
Height	9.2 in (233 mm)
Depth	6.3 in (160 mm)

Weight

1.2 lb (0.544 kg) air-cooled

Power Requirements

5V, 3.3V	Required from backplane

±12V	As required by PMC module

Specifications

Power Consumption*

Dual processor, dual memory configuration

5V	34W
3.3V	42W
Total	76W

* Power consumption values are estimates of worst-case conditions.

Environmental Specifications

Temperature	
Operating	-25°C to +55°C, air-cooled
Storage	-40°C to +85°C
Humidity (air cooled)	5-95% at 40°C (non-condensing)
Shock	50 z-axis; 80g x/y axis; 11 ms half-sine
Vibration	0.04g, 22/Hz at 20-20,000 Hz, 1 hr/axis, air-cooled
Airflow	270 LFM minimum, air-cooled
Altitude	
Operating	0-30,000 ft, Level 1 air-cooled
Storage	0-50,000 ft, air-cooled

Standards Compliance*

Safety	Designed to meet standard UL1950/60950
Emissions	Designed to meet FCC Part15, Sub-Part A

* VX6-200R SBC is designed to be certified within a system environment.

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