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MCH6 Motherboard

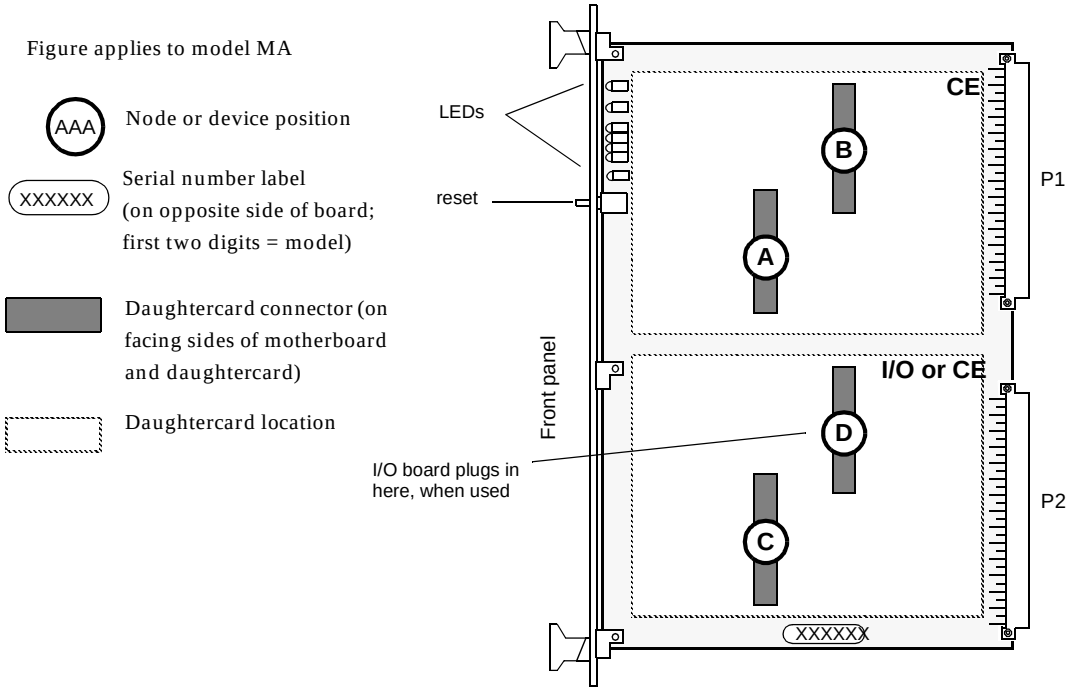
VME RACE 1.0 6U Motherboard

MCH6 Motherboard Overview

The MCH6 is a 6U motherboard with a RACEway-VME bridge and EPROM. The MCH6 has connectors for one standard RACEway daughtercard and one I/O daughtercard, VME P1, and VME P2. If no I/O daughtercard is installed, two standard RACEway daughtercards can be installed.

Layout

Figure applies to model MA



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Indicators

PRG1 — Programmable LED1

PRG2 — Programmable LED2

A — Node A slave access

B — Node B slave access

C — Node C slave access

D — Node D slave access

VME — VME slave access

Switches

RESET—System reset

MCH6 Motherboard Specifications

Physical Dimensions

Dimensions (mm): 233 x 160 (9.2" x 6.3")

Weight (gm): 355 (12.6 oz)

Slot-to-Slot spacing (mm): 20.3 (0.8")

Electrical Specifications

Input voltage (Vdc ±5%): 5.0

Input current in amps (maximum): 2.4

Power dissipation (W maximum @ 5.0 Vdc): 12.0

Environmental Specifications

Operating temperature range (°C): 0 to 40

Storage temperature range (°C): -40 to +85

Cooling requirements: forced air @ 8 cubic ft / min

Relative humidity (% noncondensing): 10 to 90

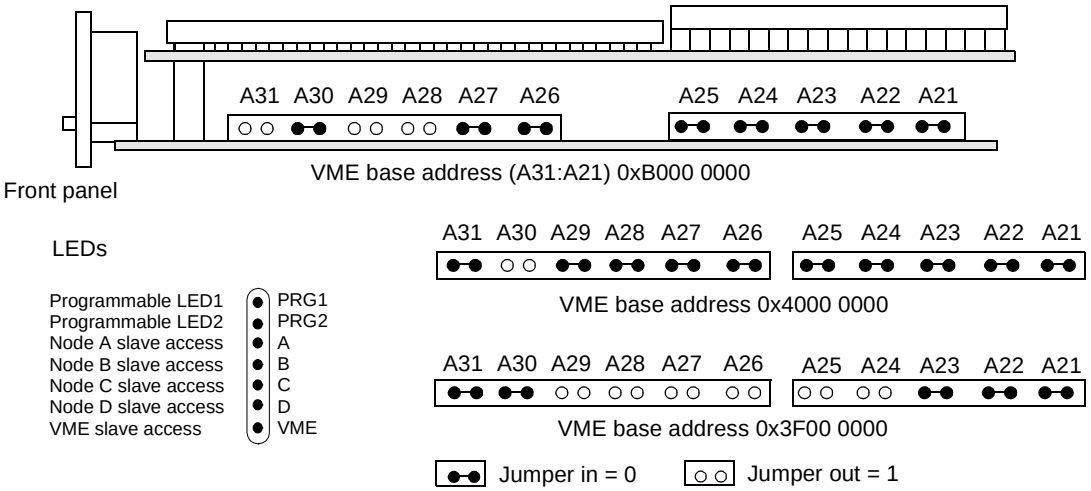
Altitude (ft above sea level): 0 to 10,000

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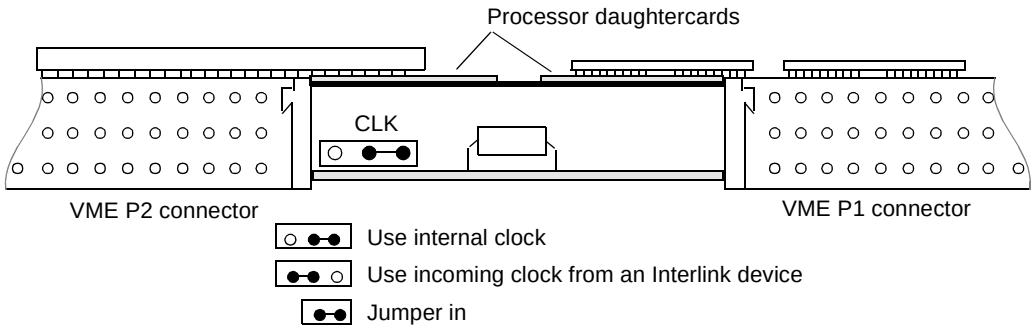
MCH6 Motherboard Installation

Jumpers

As shown in the next figure, A31:21 selects the VME slave address. Set the jumpers to the VME base address assigned. The addresses shown are examples; the board is shipped as 0xB000 0000.



If MCH6 is connected to a Motherboard Interlink, jumper MCH6 to use the incoming clock from the Motherboard Interlink. If MCH6 is not connected to a Motherboard Interlink, jumper MCH6 to generate its own clock. The next figure illustrates this jumpering.



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Assembly

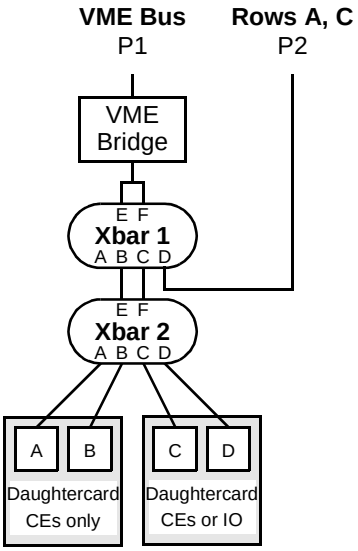
Caution: Align connectors carefully, to avoid bending pins. **Also note** that daughtercard connectors with bent pins often bend the pins on other daughtercard connectors plugged into them later, causing the problem to **propagate**.

Daughtercard Removal

When removing daughtercards from motherboards, work slowly and make sure to keep the daughtercard parallel to the motherboard.

Caution: Avoid pivoting or rocking as much as possible, since this can damage the connectors.

MCH6 Motherboard Topology



MCH6 Motherboard Configuration

The following sections provide configuration file directives used for this specific device. For general information about creating configuration files and the meaning of the configuration directives, see the *Mercury System Manager's Guide.*

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For configuration information for MC / OS 4.3.0 or earlier, use the online manual pages available through the manmc utility.

Board Directive

board MCH6*user-assigned-name* vme_addr=*address* vme_owner=*ce_name* [*optional attributes*]

where:

user-assigned-name

A name assigned by the user.

vme_addr=*address*

The VME base address set on the motherboard with the VME address field jumpers.

vme_owner=*ce_name*

The CE on a daughtercard connected to the MCH6 that is to handle incoming VME interrupts (the VME bridge owner). Specify the name as *board_name.cpu* , where *board_name* is the daughtercard's user-assigned name specified in the board directive for the daughtercard, and *cpu* specifies a CE on the daughtercard

optional attributes

vme_ws=*size*

The window size to use. The default is 2M. Sizes of 2M, 4M, 8M, 16M, 32M, 64M, and 128M can be specified.

Connect Directive

connect *user-assigned-name1.connector1 user-assigned-name2.connector2*

where:

user-assigned-name1
user-assigned-name2

Two names assigned by the user in a board directive: one for the MCH6 and the other for the hardware device being connected to.

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connector1
connector2

Two connectors, one being a connector on the MCH6 and the other a connector on the hardware device being connected to. The MCH6 connector can be:

VME—RACEway-VME Bridge on P1 VME connector

RWP2—RACEway on P2 VME connector

DC_A—Node connector

DC_B—Node connector

DC_C—Node connector (unused when I/O device is connected in this daughtercard position)

DC_D—Node or I/O device connector

MCH6 Motherboard Diagnostics

Diagnostics tool DMC supports the following test phases and tests on this hardware device. For test descriptions, see the *Mercury System Manager's Guide*.

Additional test phases and tests depend on the hardware configuration. See the *Hardware Device Note* for each other hardware device in the system.

XBAR Phase

XBAR Probe test

XBAR DMA test

MCH6 Motherboard Reference

VME Master Cycles

A32, A24, A16

D64:BLT, D32, D32:BLT, D16, D08(EO), RMW:D08(EO), RMW:D16

VME Slave Cycles

A32

D64:BLT, D32, D32:BLT, D16, D08(EO), RMW:D08(EO), RMW:D16, UAT

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VME Address Modifiers Driven (Master)

0x3F, 0x3D, 0x3B, 0x39, 0x2D, 0x29, 0x0F, 0x0D, 0x0C, 0x0B, 0x09, 0x08

VME Address Modifiers Sensed (Slave)

0x0F, 0x0E, 0x0D, 0x0C, 0x0B, 0x0A, 0x09, 0x08, 0x07, 0x06, 0x05, 0x04, 0x03, 0x02, 0x01, 0x00

Address Space

`MEM_VME_A16D16 (Master)`

RACEway masters can access up to 64 kilobytes of A16D16 VME memory through the RACEway-VME bridge.

`MEM_VME_A16D32 (Master)`

RACEway masters can access up to 64 kilobytes of A16D32 VME memory through the RACEway-VME bridge.

`MEM_VME_A24D16 (Master)`

RACEway masters can access up 16 megabytes of A24D16 VME memory through the RACEway-VME bridge.

`MEM_VME_A24D32 (Master)`

RACEway masters can access up 16 megabytes of A24D32 VME memory through the RACEway-VME bridge.

`MEM_VME_A32D16 (Master)`

RACEway masters can access up to 4 gigabytes of A32D16 VME memory through the RACEway-VME bridge.

`MEM_VME_A32D32 (Master)`

RACEway masters can access up to 4 gigabytes of A32D32 VME memory through the RACEway-VME bridge.

`MEM_VME_A32D64 (Master)`

RACEway masters can access up to 4 gigabytes of A32D64 VME memory through the RACEway-VME bridge.

`MEM_VME_A32D16 (Slave)`
`MEM_VME_A32D32 (Slave)`
`MEM_VME_A32D64 (Slave)`

Up to 16,384 8Kbyte pages of slave RACEway memory can be mapped concurrently by VME masters through the 128Mbyte page-mapped window

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of the RACEway-VME bridge. Each page has an associated mapping register. These pages are a common resource of all RACEway slaves, so that any pages mapped to one slave's memory are not available for mapping the memory of another RACEway slave. The base address of the window can be jumpered anywhere within the VMEbus's 4Gbyte address space. Slave VME addresses received through the page-mapped window have an effective range of 256 megabytes.

Files

`${MC_ROOT_DIR}/etc/desc/MCH6.desc`

Hardware description file for this device.

See Also

None.

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