

MVME2300 Series  
VME Processor  
Modules

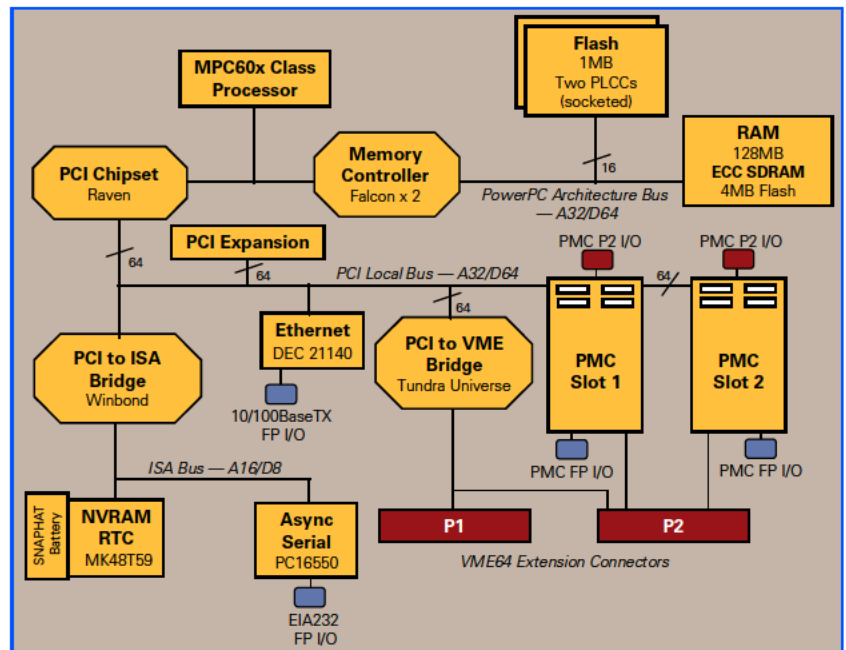


**High-performance expansion VME board with the ability to customize applications**

The MVME2300 series of VME boards provides the performance of Motorola's PowerPlus Architecture, and the ability to fully customize your application with two PCI mezzanine cards (PMCs).

Utilizing Motorola's MPC60x class 32-bit microprocessors, the peripheral component interconnect (PCI) bus for the on-board peripherals, processor-memory bus to PCI bus bridge, and a VME interface, the MVME2300 processor modules pack optimum levels of flexibility and performance into a single VME slot.

- MPC60x class 32-bit microprocessors
- L1 cache—16KB/16KB MPC603 or 32KB/32KB MPC604
- 128MB of on-board ECC DRAM
- Up to 1MB socketed Flash for on-board firmware or user-specified requirements
- 4MB on-board Flash memory for user-specified requirements
- On-board debug monitor with self-test diagnostics
- Two 32/64-bit PMC expansion slots with front-panel and P2 I/O
- 64-bit PCI expansion mezzanine connector
- 8K x 8 NVRAM and time-of-day clock with replaceable battery-backup
- One asynchronous serial debug port
- Four 32-bit timers, one 16-bit timer, one watchdog timer
- 10/100Mb/s Ethernet transceiver interface
- 4-level requester, 7-level interrupter, and 7-level interrupt handler for VMEbus



## MVME2300 DETAILS

### IEEE P1386.1 Compliant PMC Slots

The MVME2300 features dual PMC ports with support for both front-panel and P2 I/O. P2 I/O-based PMCs that follow the PMC committee recommendation for PCI I/O when using the VME64 extension connector are pin-out compatible with the MVME2300.

In addition to providing high-performance expansion I/O, the IEEE P1386.1 compliant PMC ports form a common architecture for future generations of products. Changing I/O requirements can be satisfied by simply replacing PMCs while reusing the same base platform, reducing the long-term cost of ownership.

### VME64 Extension Connectors

To maximize the capabilities of the MVME2300, 5-row 160-pin DIN connectors replace the 3-row, 96-pin connectors historically used on VME for P1 and P2. Two rows, Z and D, have been added to the VME P1/J1 and

P2/J2 connectors providing a user with additional I/O. The VME64 extension connector is 100 percent backward compatible with existing VME card systems.

### PowerPlus Architecture

The PowerPlus Architecture is a processor and bus architecture fully optimized to get the maximum performance from the PowerPC architecture microprocessor family, the PCI bus, and the VMEbus. The outstanding performance of VME processor boards based on the PowerPlus Architecture is not due to a single factor. A number of elements in the design contribute to its outstanding performance including the processor-memory subsystem, high-speed local bus, optimally decoupled architecture, decoupling the processor from PCI, and the advanced VME interface that reduces PCI delays. Contact your sales representative for details.

## SPECIFICATIONS

### Processor

<b>Microprocessor:</b>	MPC603	MPC604
<b>Clock Frequency:</b>	200 MHz	333 MHz
<b>On-chip Cache (I/D):</b>	16KB/16KB	32KB/32KB

### Memory

<b>ECC Protected Main Memory:</b>	Dynamic RAM with 66 MHz bus
<b>Capacity (50ns EDO):</b>	128MB
<b>Single Cycle Accesses:</b>	9 read/4 write
<b>Read Burst Mode (60ns):</b>	9-1-2-1 idle; 3-1-2-1 aligned page hit
<b>Read Burst Mode (50ns):</b>	8-1-1-1 idle; 2-1-1-1 aligned page hit
<b>Write Burst Mode:</b>	4-1-1-1 idle; 3-1-1-1 aligned page hit
<b>Architecture:</b>	128-bit, 2-way interleaved
<b>EEPROM/Flash:</b>	On-board programmable
<b>Capacity:</b>	1MB via two 32-pin PLCC/CLCC sockets; 4MB surface mount
<b>Read Access (4MB port):</b>	68 clocks (32-byte burst)
<b>Read Access (1MB port):</b>	260 clocks (32-byte burst)
<b>NVRAM:</b>	8KB; 4KB available for users
<b>Cell Storage Life:</b>	50 years at 55° C
<b>Cell Capacity Life:</b>	10 years at 100% duty cycle
<b>Removable Battery:</b>	Yes

### VMEbus ANSI/VITA 1-1994 VME64 (IEEE STD 1014)

<b>DTB Master:</b>	A16–A32; D08–D64, BLT
<b>DTB Slave:</b>	A24–A32; D08–D64, BLT, UAT
<b>Arbiter:</b>	RR/PRI
<b>Interrupt Handler/Generator:</b>	IRQ 1–7/Any one of seven IRQs
<b>System Controller:</b>	Yes, jumperable or auto detect
<b>Location Monitor:</b>	Two, LMA32

### Ethernet Interface

<b>Controller:</b>	DEC 21140
<b>PCI Local bus DMA:</b>	Yes
<b>Connector:</b>	Routed to front panel via an RJ-45

### Asynchronous Serial Port

<b>Controller:</b>	PC16550
<b>Connector:</b>	Routed to the front panel via an RJ-45

### Counters/Timers

<b>TOD Clock Device:</b>	MK48T59; 8KB NVRAM
<b>Real-Time Timers/Counters:</b>	Four, 16-bit programmable
<b>Watchdog Timer:</b>	Time-out generates reset

### Miscellaneous

Reset and Abort switches and four LEDs for Fail, CPU, PMC1, PMC2 on front panel

## IEEE P1386.1 PCI Mezzanine Card Slot

**Address/Data:** A32/D32/D64, PMC PN1, PN2, PN3, PN4 connectors

**PCI Bus Clock:** 33 MHz

**Signaling:** 5 V

**Power:** +3.3 V, +5 V,  $\pm 12$  V, 7.5 watts maximum per PMC slot

**Module Types:** One double-wide or two single-wide front-panel I/O or P2 I/O

**Note:** P2 I/O from PMC slot 2 is only accessible to systems equipped for VME64 extension connectors.

## PCI Expansion Connector

**Address/Data:** A32/D32/D64

**PCI Bus Clock:** 33 MHz

**Signaling:** 5V

**Connector:** 114-pin connector located on the planar of the MVME2300

## Power Requirements

**+ 5 V  $\pm 5\%$**

**MVME2300 w/ MPC603 @ 200 MHz:** 4.0 A typical, 4.75 A max.

**MVME2300 w/ MPC604 @ 333 MHz:** 5.0 A typical, 5.5 A max.

**Note:** Power requirements are PMC dependent at +12 and -12 volts.

## Board Size

**Height:** 233.4 mm (9.2 in.)

**Depth:** 160.0 mm (6.3 in.)

**Front Panel Height:** 261.8 mm (10.3 in.)

**Width:** 19.8 mm (0.8 in.)

**Max. Component Height:** 14.8 mm (0.58 in.)

## Demonstrated MTBF

(based on a sample of eight boards in accelerated stress environment)

**Mean:** 190,509 hours

**95% Confidence:** 107,681 hours

## Environmental

	Operating	Nonoperating
<b>Temperature:</b>	0° C to +55° C	-40° C to +70° C
<b>Humidity (NC):</b>	5% to 85%	5% to 95%
<b>Vibration:</b>	1 G Sine Sweep 5-100 Hz	.5 G Sine Sweep 5-100 Hz; 3 G Sine Sweep 50-500 Hz

## Electromagnetic Compatibility (EMC)

Intended for use in systems meeting the following regulations:

**U.S.:** FCC Part 15, Subpart B, Class A (non-residential)

**Canada:** ICES-003, Class A (non-residential)

This product was tested in a representative system to the following standards:

CE Mark per European EMC Directive 89/336/EEC with Amendments; Emissions: EN55022 Class B; Immunity: EN55024

## Safety

All printed wiring boards (PWBs) are manufactured with a flammability rating of 94V-0 by UL recognized manufacturers.

## Software Support

The MVME2300 is supported by a complete range of real-time operating systems and kernels.

## ORDERING INFORMATION

Part Number	Description
All models contain 5MB Flash.	
<b>MVME2304</b>	200 MHz MPC603, 128MB ECC DRAM, IEEE handle
<b>MVME2304-900</b>	200 MHz MPC603, 128MB ECC DRAM, Scanbe handle
<b>MVME2304-0141</b>	333 MHz MPC604, 128MB ECC DRAM, original VME Scanbe front panel and handles
<b>MVME2304-0141SC</b>	333 MHz MPC604, 128MB ECC DRAM, original VME Scanbe front panel and handles w/ serial I/O pin-out
<b>MVME2304-0143</b>	333 MHz MPC604, 128MB ECC DRAM, IEEE 1101 compatible front panel with injector/ejector handles
<b>Related Products</b>	
<b>PMCSpan-002</b>	Primary PCI expansion, mates directly to the MVME2300 providing slots for either two single-wide or one double-wide IEEE P1386.1 compliant PMC cards; optional PMCSpan-010
<b>PMCSpan1-002</b>	PMCSpan-002 with original VME Scanbe ejector handles
<b>PMCSpan-010</b>	Secondary PCI expansion, plugs directly into PMCSpan-002 providing two additional PMC slots
<b>PMCSpan1-010</b>	PMCSpan-010 with original VME Scanbe ejector handles
<b>Documentation</b>	
<b>V2300A/IH</b>	MVME2300 Installation and Use Manual
<b>V2300A/PG</b>	MVME2300 Programmer's Reference Guide
<b>PMCSpanA/IH</b>	PMCSpan Installation Guide
<b>PPCBUGA1/UM</b>	PPC1Bug User's Manual, Part 1 of 2
<b>PPCBUGA2/UM</b>	PPC1Bug User's Manual, Part 2 of 2
<b>PPCDIAA/UM</b>	Firmware Diagnostics Manual
Documentation is available for online viewing and ordering at <a href="http://www.motorola.com/computer/literature">http://www.motorola.com/computer/literature</a>	

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