

MVME177P

Single-Board Computer



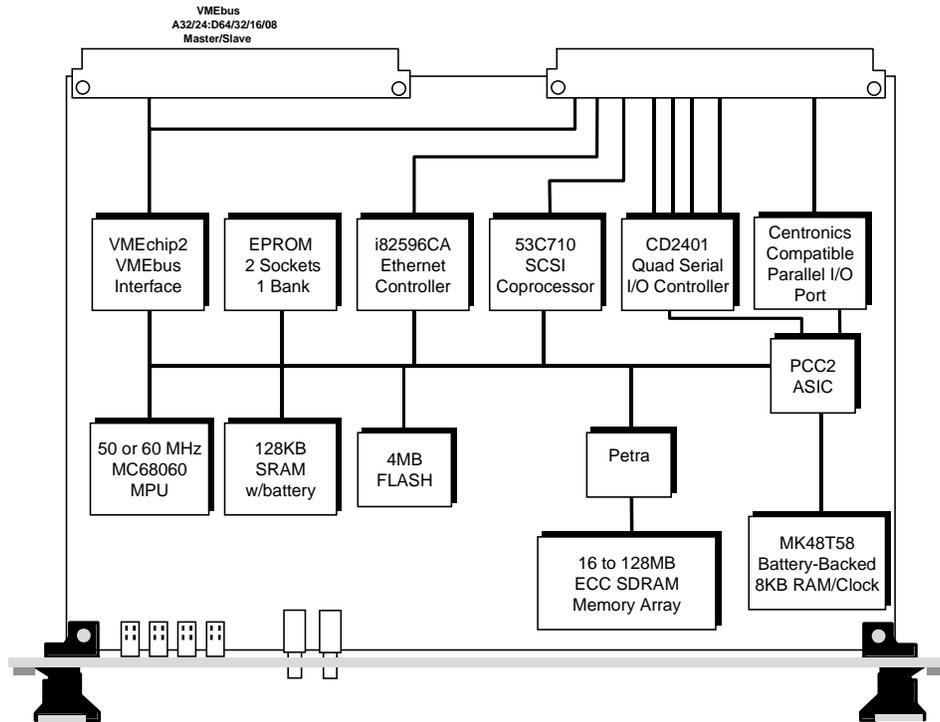
- ◆ 50 or 60 MHz MC68060 32-bit microprocessor with 8KB of cache, MMU, and FPU
- ◆ Full 32-bit master/slave VMEbus interface
- ◆ High-performance DMA supports VMEbus D64 and local bus memory burst cycles
- ◆ 16, 32, 64 or 128MB configurable SDRAM, with ECC option
- ◆ 128KB SRAM with battery backup
- ◆ On-board SCSI and Ethernet interfaces
- ◆ 4MB of Flash ROM
- ◆ Up to 2MB on-board ROM/EPROM
- ◆ Four serial ports (EIA-232-D) and one parallel port
- ◆ Four 32-bit timers and one watchdog timer
- ◆ 8KB of NVRAM with real-time clock/calendar
- ◆ Remote Reset/Abort/Status functions
- ◆ Completely programmable for maximum integration flexibility
- ◆ Low power consumption—less than 20 watts typical

Combination of superscalar microprocessor and world-class quality VME products

The company that pioneered the VMEbus single-board computer has added new dimensions in performance and functionality. Motorola's third-generation single-board computer, the MVME177P, upholds the tradition by combining a superscalar MC68060 microprocessor with the feature flexibility and world-class quality found only in Motorola VME products.

The MVME177P's compatibility with existing M68000 family hardware and software allows users to realize RISC performance levels while protecting their chassis, peripheral, specialized I/O, and software investment. The MVME177P makes an ideal solution for scientific, industrial, and high-end monitoring and control applications.

The inclusion of the new "Petra" application-specific integrated circuit (ASIC), which replaces functions formerly implemented in the MCECC chip, improves the performance of the memory subsystem. Memory configuration switches enable the customer to tailor memory size for applications requiring smaller memory configurations.



MVME177P Details

MVME177P Memory Map					
Address Range	Devices Accessed	Port Size	Size	Software Cache Inhibit	Notes
\$00000000–SDRAMsize	User Programmable (On-board SDRAM)	D32	SDRAMsize	No	1, 2
SDRAMsize–\$FF7FFFFFFF	User Programmable (VMEbus)	D32/D16	3GB	No	2, 3, 4
\$FF800000–\$FFBFFFFFFF	EEPROM/Flash	D32	4MB	No	1
\$FFC00000–\$FFDFFFFFFF	Reserved	—	2MB	—	5
\$FFE00000–\$FFE1FFFF	SRAM	D32	128KB	No	—
\$FFE20000–\$FFEFFFFFFF	SRAM (repeated)	D32	896KB	No	—
\$FFF00000–\$FFFFFFFFFF	Local I/O Devices	D8–D32	1MB	Yes	3
\$FFFF0000–\$FFFFFFFFFF	User Programmable (VMEbus A16)	D32/D16	64KB	No	2, 4

Notes:

- Flash/EPROM devices appear at \$FF800000–\$FFBFFFFFFF and also appear at \$0–\$3FFFFFFF if ROM0 bit in VMEchip2 EPROM control register is high (ROM0 = 1). ROM0 is set to 1 after each reset. ROM0 bit must be cleared before other resources (SDRAM or SRAM) can be mapped in this range (\$0–\$3FFFFFFF). On MVME177P, the Flash memory is mapped at \$0–\$3FFFFFFF by hardware default through VMEchip2.
- This area is user-programmable. The suggested use is shown in the table. The SDRAM decoder is programmed in the Petra chip, and the local-to-VMEbus and local-to-VSB decoders are programmed in the VMEchip2.
- Size is approximate.
- Cache inhibit depends on devices in area mapped.
- This area is not decoded. If these locations are accessed and the local bus timer is enabled, the cycle times out and is terminated by a TEA signal.

VMEbus Interface

Another design advantage of the MVME177P is the use of a second-generation application-specific integrated circuit (ASIC). The ASIC interfaces the MVME177P to the VMEbus for higher levels of quality, reliability, and functionality.

In addition to controlling the system's VMEbus functions, the VMEbus interface ASIC also includes a local bus to/from VMEbus DMA controller, VME board support features, as well as global control and status register (GCSR) for micro-processor communications. The MVME177P also provides support for the VME D64 specification within the VMEbus interface, further enhancing system performance.

Transition Modules

Optional MVME712 series transition modules are available to support the use of standard I/O connections for the MVME177P series. These modules take the I/O connections for the peripherals on-board the MVME177P series from the P2 connection of the module to a transition module that has industry-standard connections.

Development Software

Development software for the MVME177P series includes the on-board debugger/monitor firmware. Object and source code is available for application development. Firmware is included on the board.

Specifications

Processor

Type: MC68060

Clock Frequency: 50 or 60 MHz

Memory

Synchronous Dynamic RAM

Capacity: 16, 32, 64 or 128MB

Wait States: 3/0 (read/write)

Read Burst Mode: 4-1-1-1

Write Burst Mode: 2-1-1-1

Shared: VMEbus/local bus

Flash (120ns)

Capacity: 4MB

Access Cycles: 5 read, 6 write

EPROM

Socket Type: 44-pin PLCC

Number of Sockets (Max. Capacity): Two (256K x 16)

Data Width/Capacity: 32-bit/2MB

VMEbus (IEEE 1014)

DTB Master/Slave: A16, A24, A32, D08(EO), D16, D32, D64, BLK, UAT

Arbiter: RR/PRI

Interrupt Handler: IRQ 1-7

Interrupt Generator: Any 1 of 7

System Controller: Yes, jumperable

Location Monitor: 4, LMA32

SCSI Bus

Controller: 53C710

Asynchronous: 5.0MB/s

Synchronous: 10.0MB/s

Local Bus DMA: Yes, with local bus burst

Ethernet

Controller: i82596CA

Local bus DMA: Yes

TOD Clock

TOD Clock Device: M48T58; 8KB NVRAM

Timers

Timers: Four 32-bit, 1µsec resolution

Local bus DMA: Yes

Serial Ports

Controller: CD2401

Console: Four (EIA-232-D DTE)

Async Baud Rate: 38.4K bps max.

Sync Baud Rate: 64K bps max.

Power Dissipation

Maximum: 23 watts

+5V ± 5%: 2.0 A max.; 1.75 A typical @ 50 MHz

+12V ± 10%: 1.0 A (max., with off-board LAN transceiver)

-12V ± 10%: 100 mA (typical)

Hardware Support

Multiprocessing Hardware Support: Four mailbox interrupts, RMW, shared RAM

Debug/Monitor (included): MVME177FW

Transition Module (optional): MVME712 Series

Board Size

Card Height: 233.4 mm (9.2 in.)

Card Depth: 160.0 mm (6.3 in.)

Front Panel Height: 261.8 mm (10.3 in.)

Front Panel Width: 19.8 mm (0.8 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
Temperature:	0° C to +55° C, forced air cooling	-40° C to +85° C
Altitude:	5,000 m	15,000 m
Humidity (non-condensing):	5% to 90%	5% to 90%
Vibration:	2 Gs RMS, 20-2000 Hz random	6 Gs RMS, 20-2000 Hz random

Safety

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

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 A; Immunity: EN50082-1

Kernel and Operating System Software Support

Integrated Systems, Inc.: pSOS+™

Lynx Real-Time Systems, Inc.: LynxOS™

Microware Systems Corporation: OS-9®

Microtec: VRTX32™

Wind River Systems, Inc.: VxWorks®

Ordering Information

Part Number	Description
MVME177P-54SE	50 MHz MC68060, 16MB SDRAM, SCSI and Ethernet
MVME177P-55SE	50 MHz MC68060, 32MB SDRAM, SCSI and Ethernet
MVME177P-56SE	50 MHz MC68060, 64MB SDRAM, SCSI and Ethernet
MVME177P-64SE	60 MHz MC68060, 16MB SDRAM, SCSI and Ethernet
MVME177P-65SE	60 MHz MC68060, 32MB SDRAM, SCSI and Ethernet
MVME177P-66SE	60 MHz MC68060, 64MB SDRAM, SCSI and Ethernet
MVME177P-67SE	60 MHz MC68060, 128MB SDRAM, SCSI and Ethernet
Related Products	
MVME712B	DB-15 Ethernet connector and SCSI connector
MVME712P2	P2 adaptor module from VME backplane to cabling for transition modules



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