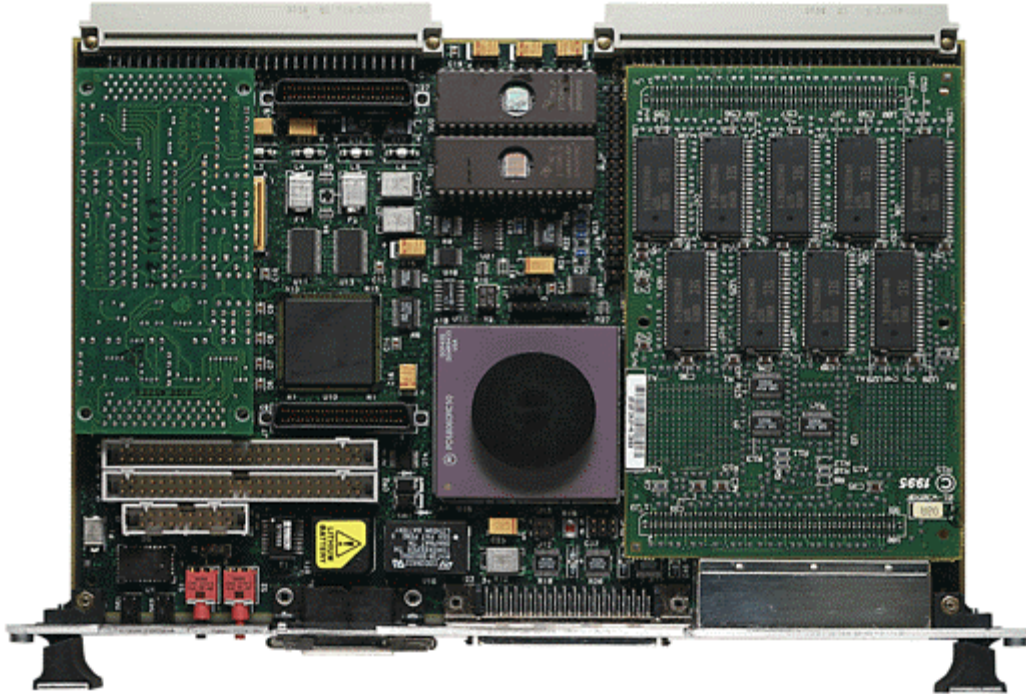


MVME172LX

VME EMBEDDED CONTROLLER



Advantages

The MVME172LX allows VME embedded controller users to achieve the price performance of RISC architectures while maintaining MC68000 object code compatibility.

By combining the MC68060 superscalar performance with a wide range of optional features and the IndustryPack[®] interface, OEMs can select the exact product for their application rather than paying for unwanted features.

The MVME172LX allows users of the MVME162 to increase computational performance in addition to DRAM and Flash memory size while maintaining software and hardware compatibility.



Features

- 60 MHz MC68060 or 64 MHz MC68LC060
- Optional VMEchip2 A32/D64 VMEbus master/slave interface with system controller function
- Optional 4, 8 or 16MB of shared DRAM
- Optional 4, 8, 16, 32 or 64MB of shared DRAM with Error Checking and Correction (ECC)
- 128KB SRAM with battery backup
- 2MB Flash memory
- 8K x 8 NVRAM and time-of-day clock with battery backup
- Four serial communication ports, configured as EIA-232-D DTE
- Two 16- or one 32-bit IndustryPack ports with one DMA channel per port
- Six 32-bit timers (four without VMEbus) and watchdog timer
- Optional SCSI bus interface with 32-bit local bus burst DMA
- Optional Ethernet transceiver interface with 32-bit local bus DMA
- Two 32-pin JEDEC sockets for EPROM
- Remote Reset/Abort/Status control functions
- On-board debugger and diagnostic firmware

The Motorola Commitment

Motorola Computer Group is committed to providing best-in-class embedded computing solutions. The MVME172LX series reinforces this commitment by providing superior hardware, price performance, and faithfulness to the tenets of open computing: modularity, scalability, portability, and interoperability.

The MVME172LX is offered with a five-year limited warranty which reduces the cost of ownership and demonstrates our commitment to quality and reliability of products to our OEM partners.

Motorola Computer Group is ISO9001 registered, and provides world class quality in manufacturing, engineering, sales, and marketing.

Ordering Information

Part Number Description

All models include 2MB Flash, two IndustryPack ports with DMA, four serial ports, SCSI and Ethernet.

MVME172-223y	60 MHz MC68060, 4MB DRAM
MVME172-243y	60 MHz MC68060, 4MB ECC DRAM
MVME172-313y	60 MHz MC68060, 8MB DRAM
MVME172-333y	60 MHz MC68060, 8MB ECC DRAM
MVME172-373y	60 MHz MC68060, 16MB DRAM
MVME172-263y	60 MHz MC68060, 16MB ECC DRAM
MVME172-353y	60 MHz MC68060, 32MB ECC DRAM
MVME172-213y	64 MHz MC68LC060, 4MB DRAM
MVME172-233y	64 MHz MC68LC060, 4MB ECC DRAM
MVME172-303y	64 MHz MC68LC060, 8MB DRAM
MVME172-323y	64 MHz MC68LC060, 8MB ECC DRAM
MVME172-363y	64 MHz MC68LC060, 16MB DRAM
MVME172-253y	64 MHz MC68LC060, 16MB ECC DRAM
MVME172-343y	64 MHz MC68LC060, 32MB ECC DRAM

Memory Modules

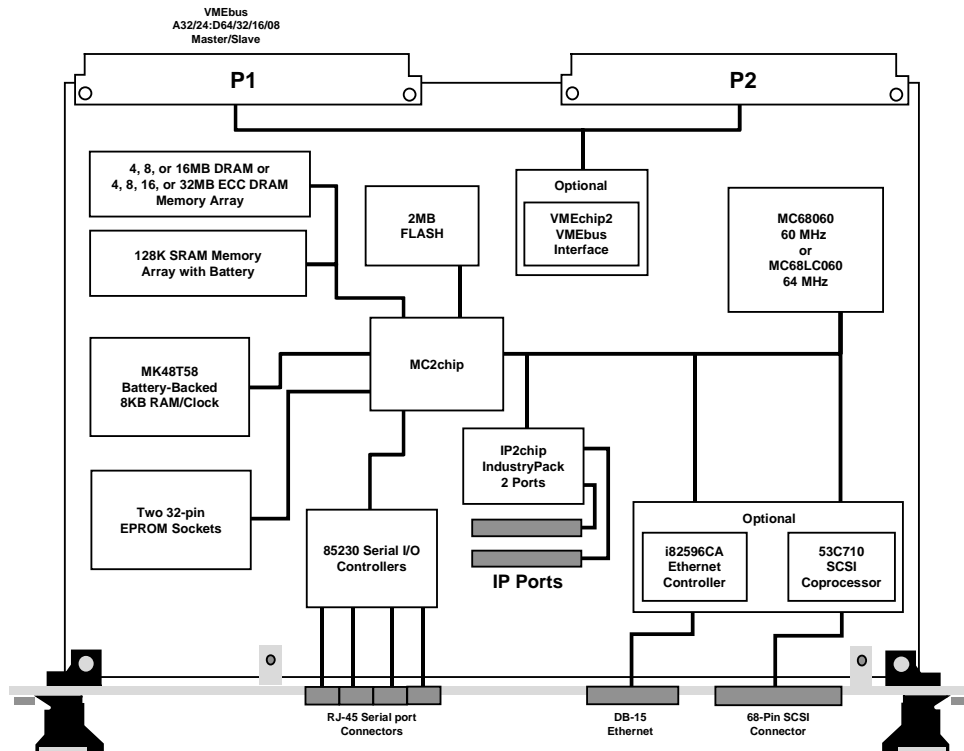
MEM172-001y	4MB DRAM module
MEM172-002y	8MB DRAM module
MEM172-003y	16MB DRAM module
MEM162-203y	16MB ECC DRAM module
MEM162-204y	Add-on 16MB ECC DRAM module
MEM162-208y	Add-on 4MB ECC DRAM module
MEM162-209y	8MB ECC DRAM module
MEM162-210y	Add-on 8MB ECC DRAM module
MEM162-211y	32MB ECC DRAM module
MEM162-212y	Add-on 32MB ECC DRAM module

Documentation

VME172LXA/IH	Installation and Use Guide
VME172A/PG	Programmer's Reference Guide
V172DIAA/UM	Hardware Diagnostics Manual
68KBUG1/D	68K Debugging Package User's Manual Part 1
68KBUG2/D	68K Debugging Package User's Manual Part 2

Notes

1. y indicates product revision level if any; for example, "-001A."
 2. Firmware source and object modules are available upon request.
 3. Versions of the MVME172LX are available without SCSI, Ethernet, VME or IndustryPack interface by special request. Contact local Motorola representative for additional information.
 4. Documentation is also available on line at <http://www.mcg.mot.com/literature>.
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MVME172LX Embedded Controller

Microprocessor Options

The MVME172 features the superscalar MC68060 microprocessor which achieves superb integer and floating point performance from its RISC hybrid architecture. The object code compatibility of the MC68060 with earlier generations allows a significant performance increase while preserving software investment.

For cost-sensitive applications where floating point performance is not required, the optional MC68LC060 can be substituted.

VMEbus Interface

VMEbus interface functionality is provided by the Motorola designed VMEchip2 ASIC. In addition to controlling the system's VMEbus functions, the VMEchip2 includes a local bus to/from VMEbus DMA controller, VME board support features, as well as global control and status register (GCSR) for interprocessor communications. The MVME172LX also provides support for the VME D64 specification within the VMEbus interface, further enhancing system performance.

IndustryPack Interface

The MVME172 uses the IndustryPack interface to provide additional expansion and connectivity features. The second generation IP2 ASIC features four channels of DMA, and 8 or 32 MHz bus speed, and complies with the ANSI specification. Up to two single-wide or one double-wide IndustryPack modules can be installed, and still only require one VME backplane slot.

Memory Expansion

Two memory types are offered on the MVME172: standard DRAM, or ECC (error checking and correction) DRAM. Standard memory capacity is 4, 8 or 16MB. ECC memory options are 4, 8, 16, 32 or 64MB. Memory is designed to be user upgradeable.

I/O Connections

I/O connections are physically located on the front panel of the board. They include four RJ-45 connectors for the serial ports, an AUI connector for Ethernet, and a 68-pin SCSI interface connector.

User-Specified Options

Because of the flexible nature of the MVME172 design, some options that are not required can be removed from the board. Removable options are SCSI interface, Ethernet interface, IndustryPack, and VME interfaces. Deletion of these options does not affect hardware or software compatibility.

Software Support

The MVME172FX is supported by a wide range of real-time kernels and embedded operating systems.

Integrated Systems, Inc.:	pSOS™
Microware Systems Corporation:	OS-9®/OS-9000™
Microtec:	VRTX32™
Wind River Systems, Inc.:	VxWorks®

Specifications

MVME172LX VME Embedded Controller

Processor

Microprocessor:	MC68060	MC68LC060
Clock Frequency:	60 MHz	64 MHz
L1 On-Chip Cache (I/D):	4/4KB	

Memory

Dynamic RAM

Capacity:	4, 8 or 16MB
Read Burst Mode:	5-2-2-2
Write Burst Mode:	4-2-2-2
Shared:	VMEbus and Local Bus

ECC Dynamic RAM

Capacity:	4, 8, 16, 32 or 64MB
Wait States Read/Write:	3/0
Read Burst Mode:	5-1-1-1
Write Burst Mode:	2-1-1-1
Shared:	VMEbus and Local Bus

Flash ROM

Capacity:	2MB
Access Cycles:	6 read, 7 write

User-Installed ROM

Capacity/Sockets:	4MB/Two 32-pin DIP
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Static RAM

Capacity:	128KB
Read/Write Burst Mode:	5-3-3-3
Shared:	VMEbus and local bus
Battery Type:	Lithium
Battery Life (approximate):	1,371 days continuous backup at 25° C, 270 days at 70° C

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

DTB Master:	A16-A32; D08-D64, BLT, UAT + MBLT
DTB Slave:	A16-A32; D08-D64, BLT, UAT + MBLT
Arbiter:	RR/PRI
Interrupt Handler:	IRQ 1-7
Interrupt Generator:	Any 1 of 7
System Controller:	Yes, jumperable
Location Monitor:	Four, LMA32

IndustryPack Interface ANSI/VITA 4-1995

Clock Speed:	8 MHz or 32 MHz
Module Types:	Two single wide or one double wide
DMA:	Memory based and compelled

SCSI Bus

Controller:	NCR 53C710
Local Bus DMA:	Yes, with local bus burst
Asynchronous:	5.0MB/s
Synchronous:	10.0MB/s

Ethernet

Controller:	82596CA
Local bus DMA:	Yes

TOD Clock

TOD Clock Device:	MK48T58; 8KB NVRAM
Replaceable Battery:	Yes

Counters/Timers

Real-Time Timers/Counters:	Six 32-bit programmable, 1 µsec resolution
Watchdog Timer:	Time-out generates reset

Serial Ports

Controller:	Two 85230
Number of Ports:	Four
Configuration:	EIA-232-D DTE (all 4 ports)
Sync/Async Baud Rate, bps max.:	38.4K
Connector:	Front panel RJ45

Power Requirements

(with PROM, without IP modules)

	Typical	Maximum
+5V ± 5%	3.5 Amps	4.5 Amps
+12V ± 5%	—	100 mA
-12V ± 5%	—	100 mA

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.)

Hardware Support

Multiprocessing Hardware Support:	Four mailbox interrupts, RMW, shared RAM
Debug/Monitor (included):	MVME172FW, boot, and diagnostics

Peripheral Connectors

Serial Ports:	Four RJ-45 connectors
Ethernet:	DB-15
SCSI:	68-pin micro D high density
IndustryPack I/O:	Access via two 50-pin connectors

Environmental

	Operating	Nonoperating
Temperature:	0° C to +55° C, forced air cooling exit air	-40° C to +85° C
Altitude:	5,000 m	15,000 m
Humidity (NC):	5% to 90%	—
Vibration:	2 Gs RMS, 20-2000 Hz random	8 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 (nonresidential)
Canada:	ICES-003, Class A (nonresidential)

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: EN50082-1

Demonstrated MTBF

Mean/90% Confidence:	190,509 hours/107,681 hours
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For more information, visit our World Wide Web site at <http://www.mcg.mot.com>

To call us dial 1-800-759-1107 in the U.S. and 512-434-1526 outside of the U.S.

Corporate headquarters address: Motorola Computer Group, 2900 S. Diablo Way, Tempe, AZ 85282

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Data Sheet: 172LX-D4 4/99

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