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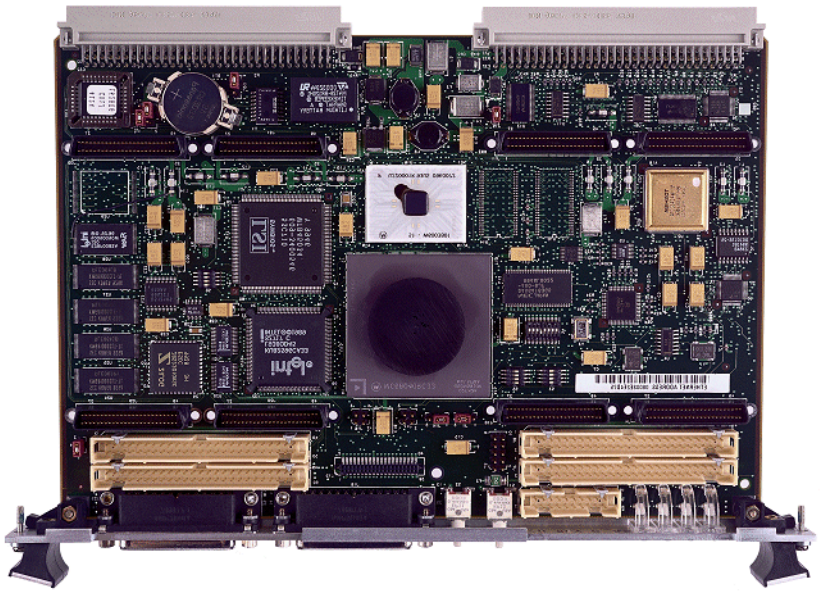
MVME172P4

VME Embedded Controller with 4 IP Slots



- Choice of processors: 60 MHz MC68060 enhanced 32-bit microprocessor with 16KB of cache, and MMU and FPU; or 64 MHz MC68LC060 enhanced 32-bit microprocessor with 16KB of cache and MMU
- A32/D64 VMEbus master/slave interface with system controller function
- 16MB of configurable SDRAM
- 512KB of SRAM with battery backup
- 2MB Flash memory for on-board monitor/debugger or user-installed firmware
- 8K x 8 NVRAM and time-of-day clock with battery backup
- Two serial communication ports, console port as EIA-232-D DCE and second port user configurable for EIA-232-D/EIA-422 (V.36) DTE/DCE
- Four 16- or two 32-bit IndustryPack® ports with one DMA channel per port
- Six 32-bit timers, one watchdog timer
- Optional SCSI and Ethernet interfaces
- One 32-pin JEDEC socket for EPROM

Four-slot IndustryPack logic interface for embedded monitoring and control applications

The MVME172P4 allows VME embedded controller users to achieve the price-performance value 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 inclusion of the new “Petra” application-specific integrated circuit (ASIC), which replaces functions formerly implemented in the IP2 chip, MC2 chip, and 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.

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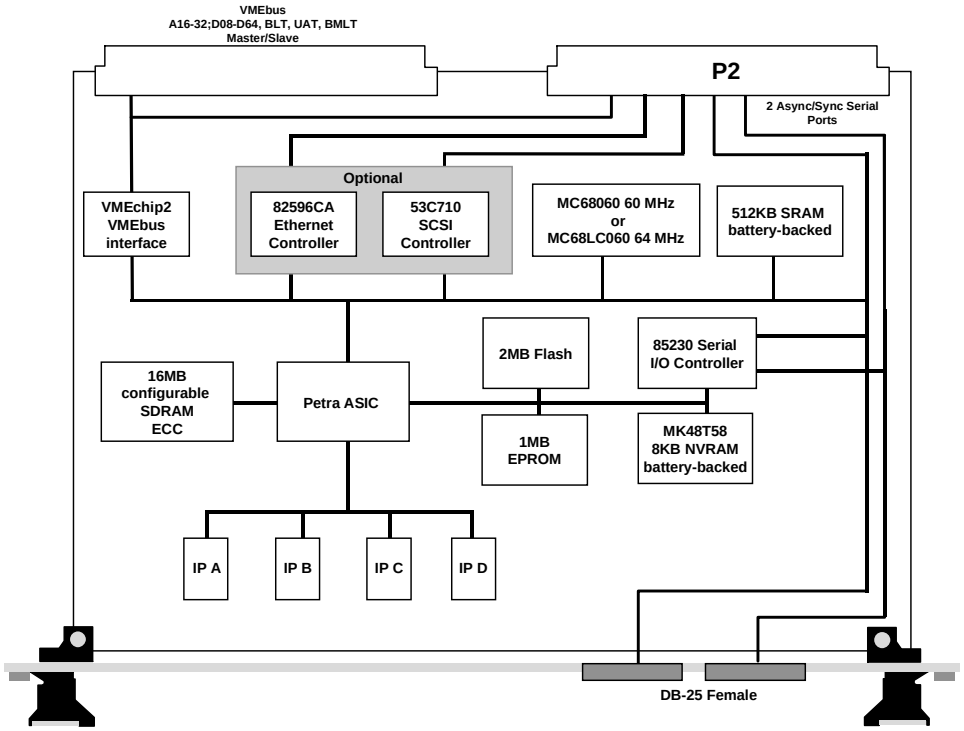

MVME172P4 Details

Microprocessor Options

The MVME172P4 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 ordered.

VMEbus Interface

VMEbus interface functionality is provided by the VMEchip2 ASIC designed by Motorola. 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 MVME172P4 also provides support for the VME D64 specification within the VMEbus interface, further enhancing system performance.

Transition Module

An optional MVME712M transition module is available to support the use of standard I/O connections for the MVME172P4 series. This module takes the I/O connections for the peripherals on board the MVME172P4 series from the P2 connection of the module to a transition module that has industry-standard connections.

IndustryPack Interface

A key feature of the MVME172P4 is the IndustryPack logic interface. This interface provides a 32-bit data path for the IndustryPack modules to the local MC68040 bus. IndustryPack modules provide a wide variety of connections to "real-world" applications such as I/O, control, interface, analog and digital functions. Up to four single-wide or two double-wide IndustryPack modules can be installed on the MVME172P4 and still occupy only one VME slot. As I/O needs change, a new IndustryPack module can be installed thus preserving the customer's overall investment.

Memory Expansion

The MVME172P4 is offered with a configurable SDRAM. The size of the memory is determined by switch settings and the memory devices.

Flexible Design

Because of the flexible nature of the MVME172P4 design, some features can be removed from the board without affecting hardware or software compatibility. Configurations are available without SCSI or Ethernet. IndustryPack and VME interfaces could also be removed. Contact you local Motorola sales representative for more information.

Software Support

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

Specifications

Processor

Microprocessor:	MC68060	MC68LC060
Clock Frequency:	60 MHz	64 MHz

Memory

Synchronous Dynamic RAM

Capacity:	16MB
Read Burst Mode:	5-2-2-2
Write Burst Mode:	4-2-2-2
Shared:	VMEbus/local bus

Flash

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

User-Installed ROM

Capacity/Sockets:	1MB/one 32-pin PLCC

Static RAM

Capacity:	512KB
Read/Write Burst Mode:	5-3-3-3/5-3-3-3
Shared:	VMEbus/local bus
Battery Type:	Lithium
Battery Life (approximate):	406 days continuous backup at 25° C, 81 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 Logic Interface

Data Width:	16/32-bit
Interrupts:	Two levels
DMA:	Four channels
Clock Speed:	8 or 32 MHz
Module Types:	Four single-high, two double-high
Connectors:	Access via four 50-pin planar connectors

SCSI Bus

Controller:	NCR 53C710
Local Bus DMA:	Yes, with local bus burst
Asynchronous:	5MB/s
Synchronous:	10MB/s
Connector:	68-pin micro D high density, available on P2

Ethernet

Controller:	82596CA
Local Bus DMA:	Yes
Connector:	DB-15, available on P2

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:	One 85230
Number of Ports:	Two
Configuration:	EIA-232-D DCE
Sync/Async Baud Rate, bps max.:	38.4K
Connector:	Front panel DB-25

Hardware Support

Multiprocessing Hardware Support:	Four mailbox interrupts, RMW, shared RAM
Debug/Monitor (included):	172Bug, boot and diagnostics
Transition Module (optional):	MVME712M

Power Requirements

(with PROM, without IP modules)

	Typical	Maximum
+5V ± 5%	1.5 Amps	1.75 Amps
+12V ± 5%	—	100 mA (max., with off-board LAN transceiver)
–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.)

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 (NC):	5% to 90%	5% to 90%
Vibration:	2 Gs RMS, 20–2000 Hz random	6 Gs RMS, 20–2000 Hz random

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.

Ordering Information

Part Number	Description
All models include 16MB SDRAM, 2MB Flash, four IndustryPack DMA ports, two serial ports, and one SIMM module.	
Petra I*	
MVME172P-644SE	60 MHz MC68060, SCSI, Ethernet
MVME172P-644L	64 MHz MC68LC060
MVME172P-644LE	64 MHz MC68LC060, Ethernet
*Petra I models are not recommended for new design-ins.	
Petra II	
MVME172PA-644SE	60 MHz MC68060, SCSI, Ethernet
MVME172PA-644L	64 MHz MC68LC060
MVME172PA-644LE	64 MHz MC68LC060, Ethernet
MVME172PA-644LSE	64 MHz MC68LC060, SCSI, Ethernet
Related Products	
MVME712M	Four DB-25 female serial port connectors, Centronics parallel port connector, DB-15 Ethernet connector, SCSI connector, and P2 adapter
MVME712P2	P2 adaptor module from VME backplane to cabling for transition modules
SIMM05	EIA-232D DTE module (option)
SIMM06	EIA-232D DCE module (factory configuration)
SIMM07	EIA-530 DTE module (option)
SIMM08	EIA-530 DCE module (option)
SIMM09	EIA-485 module (option)
Documentation	
V172PFXA/IH	MVME172P4 Installation and Use manual
V1X2PFXA/PG	MVME172P4/162P4 Programmer's Reference Guide
V172DIAA/UM	172Bug Diagnostics User's Manual
VME712MA/IH2	MVME712 Transition Module Installation and Use
68KBUG1/D	68K Debugging Package User's Manual Part 1
68KBUG2/D	68K Debugging Package User's Manual Part 2
Documentation is available for on-line viewing and ordering at http://www.motorola.com/computer/literature.	

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