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.
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 your local Motorola sales representative for more information.

Software Support
Integrated Systems, Inc.: pSOS+™
Microware Systems Corporation: OS-9®/OS-9000™
Microtec: VTX32™
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)**
  - **+5V ± 5%**: 1.5 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
- **Temperature**: 0° C to +55° C, forced air cooling
  - **Operating**: −40° C to +85° C
- **Altitude**: 5,000 m
  - **Operating**: 15,000 m
- **Humidity (NC)**: 5% to 90%
  - **Operating**: 5% to 90%
- **Vibration**: 2 Gs RMS, 20–2000 Hz random
  - **Operating**: 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.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVME172P-644SE</td>
<td>60 MHz MC68060, SCSI, Ethernet</td>
</tr>
<tr>
<td>MVME172P-644LE</td>
<td>64 MHz MC68LC060, Ethernet</td>
</tr>
<tr>
<td>MVME172P-644LE</td>
<td>64 MHz MC68LC060, Ethernet</td>
</tr>
<tr>
<td><em>Petra I models are not recommended for new design-ins.</em></td>
<td></td>
</tr>
<tr>
<td>MVME172PA-644SE</td>
<td>60 MHz MC68060, SCSI, Ethernet</td>
</tr>
<tr>
<td>MVME172PA-644LE</td>
<td>64 MHz MC68LC060, Ethernet</td>
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</tbody>
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**Related Products**

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</thead>
<tbody>
<tr>
<td>MVME712M</td>
<td>Four DB-25 female serial port connectors, Centronics parallel port connector, DB-15 Ethernet connector, SCSI connector, and P2 adapter</td>
</tr>
<tr>
<td>MVME712PA2</td>
<td>P2 adapter module from VME backplane to cabling for transition modules</td>
</tr>
<tr>
<td>SIMM05</td>
<td>EIA-232D TDE module (option)</td>
</tr>
<tr>
<td>SIMM06</td>
<td>EIA-232D DCE module (factory configuration)</td>
</tr>
<tr>
<td>SIMM07</td>
<td>EIA-530 DTE module (option)</td>
</tr>
<tr>
<td>SIMM08</td>
<td>EIA-530 DCE module (option)</td>
</tr>
<tr>
<td>SIMM09</td>
<td>EIA-485 module (option)</td>
</tr>
</tbody>
</table>

**Documentation**

- V172PFXA/1H: MVME172P4 Installation and Use manual
- VME712MAH2: MVME712 Transition Module Installation and Use