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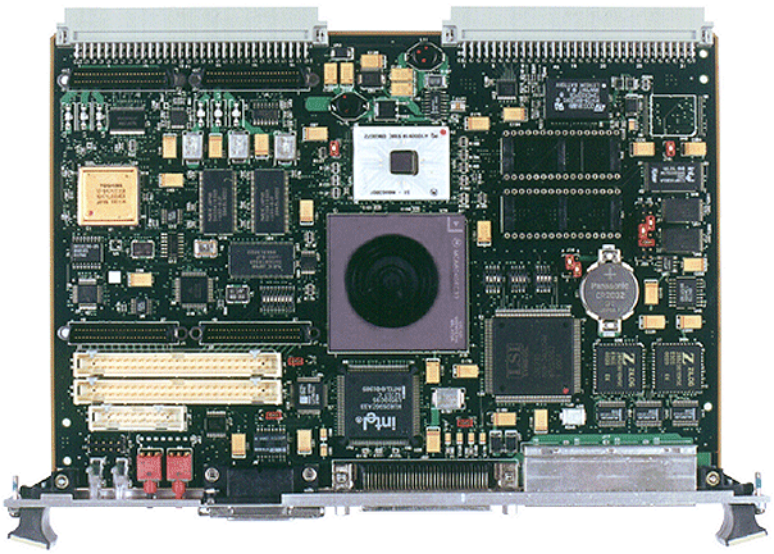
MVME162P2

VME Embedded Controller with 2 IP Slots



- 25 MHz MC68040 with floating point co-processor or 25 MHz MC68LC040
- High-performance DMA, supports VMEbus D64 and local bus memory burst cycles
- 16 or 32MB of configurable SDRAM with ECC option
- 128KB of SRAM with battery backup
- 1MB of 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-bit or one 32-bit IndustryPack® ports with one DMA channel per port
- Six 32-bit timers, one watchdog timer
- Optional SCSI and Ethernet interfaces
- Two 32-pin JEDEC DIP sockets for EPROM
- Remote Reset/Abort/Status control functions
- On-board debugger and diagnostic firmware

Dual IndustryPack logic interface for embedded monitoring and control applications

The MVME162P2 embedded controller provides a powerful and functional processor which can be customer-configured for specific applications.

The MVME162P2 extends its range of solutions by boosting the performance level and increasing the number of options. This flexibility allows a user to configure cost-effective solutions ranging from embedded controllers to single-board computers. With the compute power of the MC68040 and the flexibility of the IndustryPack mezzanine interface, the MVME162P2 combines the mechanical ruggedness of VME with the cost effectiveness of PC-type products.

The inclusion of the new “Petra” application-specific integrated circuit (ASIC), which replaces functions formerly implemented in the IP2 chip and MC2 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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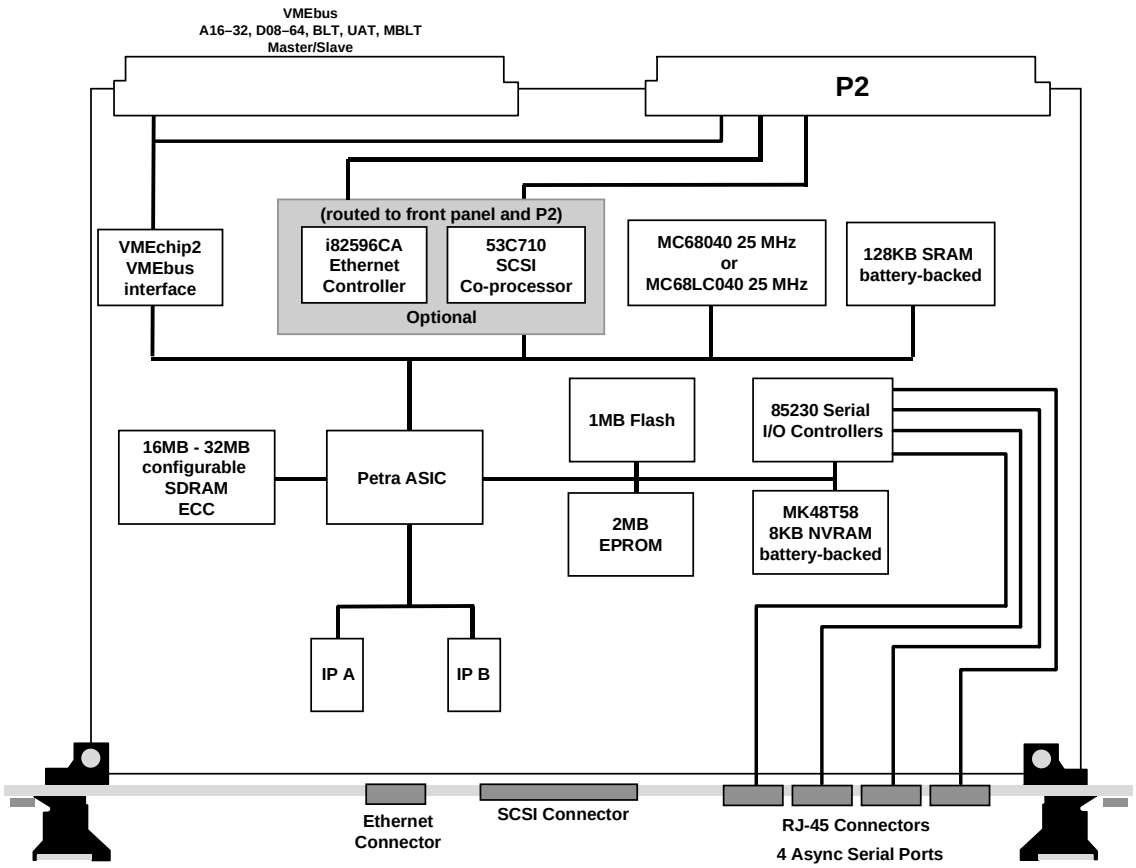

MVME162P2 Details

IndustryPack Interface

A key feature of the MVME162P2 is the IndustryPack interface. IndustryPack modules provide a wide variety of connectivity to “real-world” I/O. Expansion is accomplished by means of a mezzanine board mounted to the MVME162P2. Up to two single-wide IndustryPack modules can be installed on the MVME162P2 and still occupy only one VME slot.

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 MVME162P2 also provides support for the VME D64 specification within the VMEbus interface, further enhancing system performance.

For deeply embedded applications, versions of the MVME162P2 are available without the VMEbus interface. These versions have power and ground connections through the P1 VMEbus connector.

Peripheral Interface

Peripheral I/O connections for the MVME162P2 series are located on the front panel of the module. Serial port connection is via four RJ-45 connectors. SCSI devices are interfaced via an industry-standard 68-pin connector. A DB-15 connector is used for Ethernet. IndustryPack I/O signals are available via 50-pin connectors behind the front panel for connecting external I/O devices.

Memory Options

The MVME162P2 provides users with a variety of data storage options such as SDRAM with ECC option, EPROM/ROM, Flash, and battery-backed SRAM.

Software Support

The MVME162P2 is supported by a wide range of real-time kernels and embedded operating systems.

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

Specifications

Processor

Microprocessor:	MC68LC040	MC68040
Clock Frequency:	25 MHz	25 MHz

Memory

Synchronous Dynamic RAM

Capacity:	16 or 32MB
Read Burst Mode:	4-1-1-1
Write Burst Mode:	3-1-1-1
Shared:	VMEbus and local bus

Static RAM

Capacity:	128KB
Read Burst Mode:	5-3-3-3
Write Burst Mode:	5-3-3-3
Parity:	No
Shared:	VMEbus and local bus
Battery Type:	Lithium
Battery Life (approximate):	406 days continuous backup at 25° C, 81 days at 70° C

ROM/EPROM (150ns)

Number of Sockets:	Two (512K x 16)
Capacity:	2MB
Access Cycles:	Six read, seven write

Flash (120ns)

Capacity:	1MB
Access Cycles:	Five read, six write

Counters/Timers

Real-Time Timers/ Counters:	Six 32-bit, 1 µsec resolution
TOD Clock Device:	8KB NVRAM; MK48T58
Watchdog Timer:	Time-out generates Reset

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:	Two channels
Clock Speed:	8 MHz or 25 MHz
Module Types:	Two single-high, one double-high
Transfer Rate, 8 MHz:	8MB/sec 16-bit; 16MB/sec 32-bit
Connectors:	Access via two 50-pin planar connectors

SCSI Bus

Controller:	NCR 53C710
Local Bus DMA:	Yes, with local bus burst
Asynchronous:	5.0MB/s
Synchronous:	10.0MB/s
Connector:	Front panel 68-pin micro D high density

Ethernet

Controller:	82596CA
Local bus DMA:	Yes
Connector:	Front panel DB-15

Power Requirements (no IP Modules)

	Typical	Maximum
+5V ± 5%:	1.75 A	2.25 A
+12V ± 5%:	—	100 mA (max., with off-board LAN transceiver)
–12V ± 5%:	100 mA	—

Asynchronous Serial Ports

Controller:	Two, 85230
Number of Ports:	Four
Configuration:	EIA-232-D DTE (all four ports)
Async Baud Rate:	38.4Kbps max.
Sync Baud Rate:	38.4Kbps max.
Connectors:	Front panel RJ-45

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:	MVME162FW, boot and diagnostics

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 +70° C
Altitude:	4,000 m	15,000 m
Humidity (NC):	5% to 85%	5% to 95%
Vibration:	0.5 G 20–2000 Hz random	6 Gs 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 B; Immunity: EN55024

Ordering Information

Part Number	Description
All modules contain two IndustryPack slots, 1MB Flash and 2MB EPROM.	
Petra I*	
MVME162P-242L	25 MHz MC68LC040, 16MB SDRAM
MVME162P-242LE	25 MHz MC68LC040, 16MB SDRAM, Ethernet
MVME162P-242LSE	25 MHz MC68LC040, 16MB SDRAM, SCSI and Ethernet
MVME162P-242	25 MHz MC68040, 16MB SDRAM
MVME162P-242E	25 MHz MC68040, 16MB SDRAM, Ethernet
MVME162P-242SE	25 MHz MC68040, 16MB SDRAM, SCSI, Ethernet
MVME162P-252SE	25 MHz MC68040, 32MB SDRAM, SCSI, Ethernet
*Petra I models are not recommended for new design-ins.	
Petra II	
MVME162PA-242	25 MHz MC68040, 16MB SDRAM
MVME162PA-242E	25 MHz MC68040, 16MB SDRAM, Ethernet
MVME162PA-242L	25 MHz MC68LC040, 16MB SDRAM
MVME162PA-242LE	25 MHz MC68LC040, 16MB SDRAM, Ethernet
MVME162PA-242LNS	25 MHz MC68LC040, 16MB SDRAM, SCSI, no VME bus chip
MVME162PA-242LSE	25 MHz MC68LC040, 16MB SDRAM, SCSI, Ethernet
MVME162PA-242SE	25 MHz MC68040, 16MB SDRAM, SCSI, Ethernet
MVME162PA-252LSE	25 MHz MC68LC040, 32MB SDRAM, SCSI, Ethernet
MVME162PA-252SE	25 MHz MC68040, 32MB SDRAM, SCSI, Ethernet
Documentation	
V162PLXA/IH	MVME162P2 Installation and Use Manual
V1X2PLXA/PG	MVME162P2/172P2 Programmer's Guide
V162DIAA/UM1	162Bug Diagnostics User's Manual
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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