

MVME162PA2

VME Embedded Controller with Two IndustryPack Slots



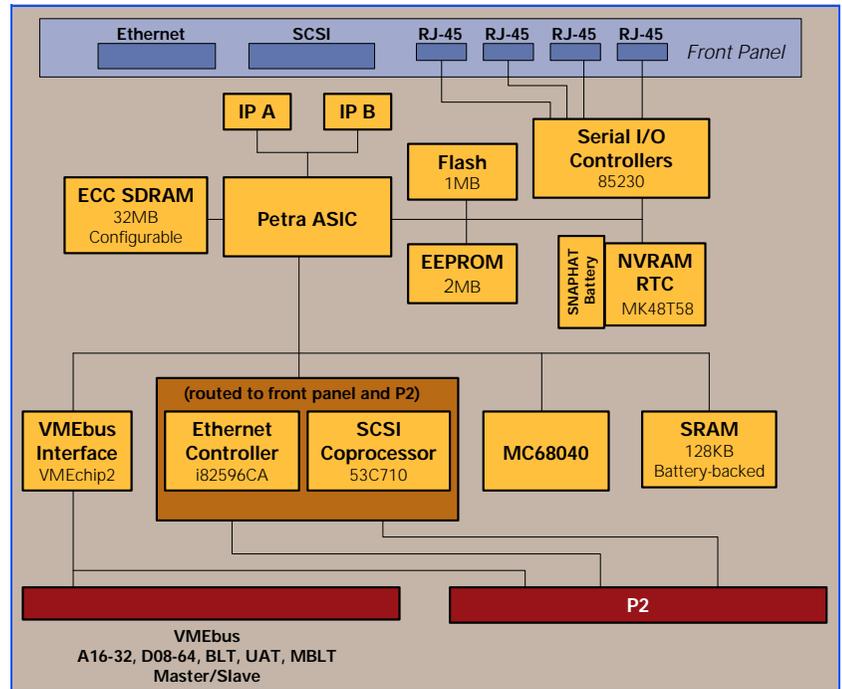
Dual IndustryPack logic interface for embedded monitoring and control applications

The MVME162PA2 embedded controller provides a powerful and functional processor that can be customer-configured for specific applications.

With the compute power of the MC68040 and the flexibility of the IndustryPack mezzanine interface, the MVME162PA2 combines the mechanical ruggedness of VME with the cost effectiveness of PC-type products.

The inclusion of the 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.

- 25 MHz MC68040 with floating-point coprocessor
- High-performance DMA, supports VMEbus D64 and local bus memory burst cycles
- 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
- One SCSI interface
- One Ethernet interface
- Two 32-pin JEDEC DIP sockets for EPROM
- Remote Reset/Abort/Status control functions
- On-board debugger and diagnostic firmware



MVME162PA2 DETAILS

IndustryPack Interface

A key feature of the MVME162PA2 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 MVME162PA2. Up to two single-wide IndustryPack modules can be installed on the MVME162PA2 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 the VMEbus DMA controller, VME board support features, as well as a global control and status register (GCSR) for interprocessor communications. The MVME162PA2 also provides support for the VME D64 specification within the VMEbus interface, further enhancing system performance.

Peripheral Interface

Peripheral I/O connections for the MVME162PA2 are located on the front panel of the module. The serial port connection is via four RJ-45 connectors. The SCSI device is interfaced via an industry-standard 68-pin connector. A DB-15 connector is used for the Ethernet connection. IndustryPack I/O signals are available via 50-pin connectors behind the front panel for connecting external I/O devices.

Memory Options

The MVME162PA2 provides users with a number of data storage options such as SDRAM with ECC option, EPROM/ROM, Flash, and battery-backed SRAM.

Software Support

The MVME162PA2 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: MC68040
Clock Frequency: 25 MHz

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

Memory

Synchronous Dynamic RAM

Capacity: 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

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

Asynchronous Serial Ports

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

Counters/Timers

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

Hardware Support

Multiprocessing Hardware Support:	Four mailbox interrupts, RMW, shared RAM
Debug/Monitor:	MVME162FW, boot and diagnostics

Power Requirements (no IP Modules)

	Typical	Maximum
+5V \pm5%:	1.75 A	2.25 A
+12V \pm5%:	—	100 mA (max., with off-board LAN transceiver)
-12V \pm5%:	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 +70° C
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
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 online viewing and ordering at http://www.motorola.com/computer/literature	

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