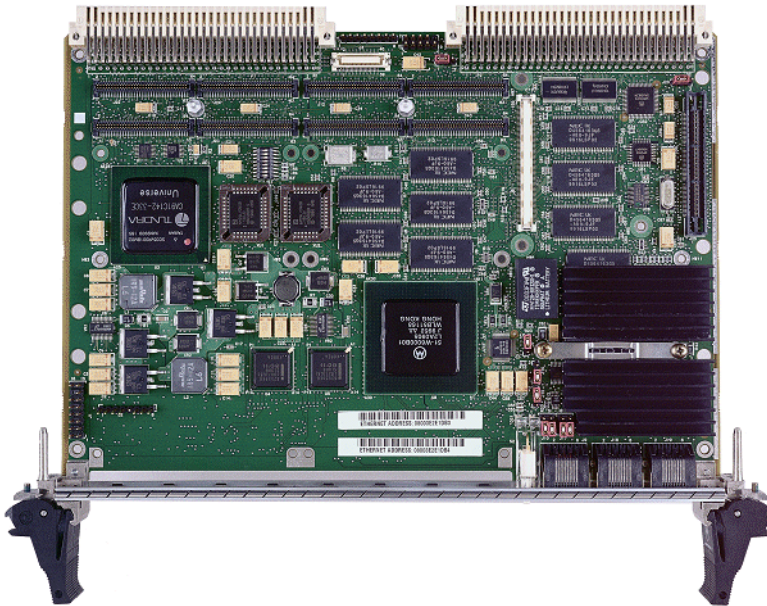# MVME5100 Series

VME Processor Modules

- ♦ PowerPC 7400 or PowerPC 750™ microprocessor with 32KB/32KB L1 cache
- ♦ Up to 2MB of secondary backside cache
- ♦ 100 MHz front-side bus
- ♦ 64MB, 128MB, or 512MB of on-board ECC SDRAM—expandable up to 1GB with optional RAM500 memory expansion modules
- ♦ Up to 17MB Flash memory
- ♦ Dual IEEE P1386.1 compatible 32/64-bit PMC expansion slots
- ♦ 64-bit PCI expansion mezzanine connector allowing up to four more PMCs
- ♦ Dual 16550 compatible async serial ports
- ♦ Dual 10BaseT/100BaseTX Ethernet
- ♦ 32KB NVRAM and time-of-day clock with replaceable battery backup
- ♦ Four 32-bit timers, one watchdog timer
- ♦ On-board debug monitor
- ♦ Single VME slot even when fully configured with two PMC modules and both add-on memory mezzanines

Supercomputing levels of performance in a scalable, single-board computer

The MVME5100 is a high-performance VME processor module featuring the Motorola Computer Group (MCG) PowerPlus II architecture with a choice of PowerPC® processors—either Motorola's MPC7400 with AltiVec™ technology for algorithmic-intensive computations or the low-power MPC750.

Based on an integrated PCI bridge–memory controller ASIC designed by MCG, PowerPlus II takes memory performance to new levels with 582MB/s memory read bandwidth and 640MB/s burst write bandwidth. Plus, Power-Plus II architecture supports full PCI throughput of 264MB/s without starving the CPU from its memory.

The MVME5100 is designed to meet the needs of OEMs servicing the military and aerospace, industrial automation, and semiconductor process equipment market segments.

MOTOROLA ✳
digital dna™
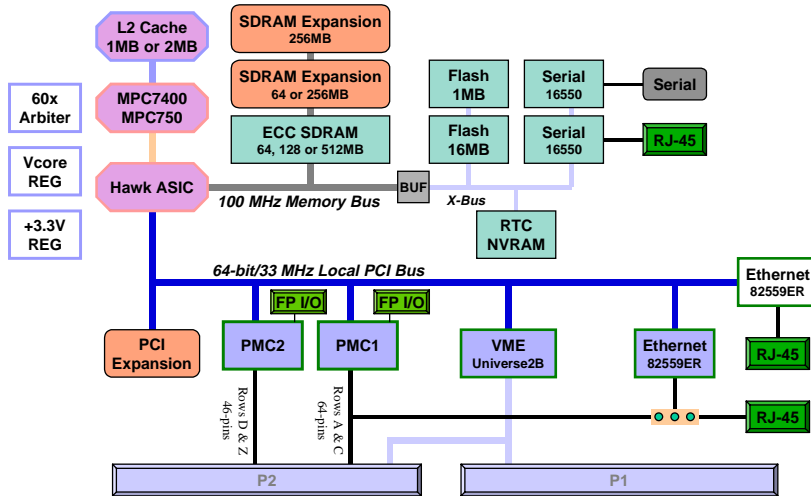
MVME5100 Block Diagram
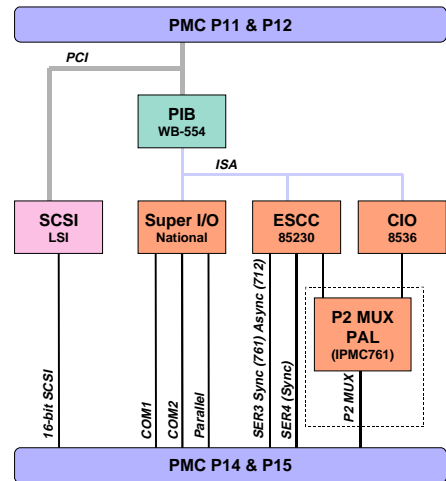
IPMC Block Diagram

MVME5100 P2 I/O

I/O Compatibility

Historically, MCG has offered two tracks in its PowerPC VME portfolio. The first track (which includes the MVME2600/2700) provides typical single-board computer I/O features including Ethernet, SCSI, multiple serial ports, a parallel port, and a single PMC slot. The on-board I/O is routed to P2 and made available to the user via MCG's MVME761 or MVME712M transition boards. The second track (which includes the MVME2300/2400) offers limited on-board I/O (Ethernet and a single serial port both via the front panel) but provides dual PMC slots enabling maximum user I/O customization.

The MVME5100 merges the best features of both tracks enabling the OEM to support varying I/O requirements with the same base platform, simplifying part number maintenance, technical expertise requirements, and sparing.

P2 I/O Modes

The MVME5100 supports two, jumper-configurable P2 I/O modes, PMC mode and IPMC mode.

PMC mode is backward compatible with the MVME2300/MVME2400. In PMC mode, 64 pins from PMC Slot 1 and 46 pins from PMC Slot 2 are available on P2 for PMC rear I/O.

In IPMC mode, the MVME5100 supports legacy MVME761 or MVME712M I/O modules (with limited PMC I/O) when an IPMC761 or IPMC712 PMC card is populated in PMC Slot 1. In this configuration, PMC Slot 2 contains some signals that are reserved for extended SCSI.

IPMC Modules

The IPMC761 and IPMC712 are optional add-on PMC modules that provide backward compatibility with previous-generation MCG products (such as MVME2600 and MVME2700)

using the MVME761 or MVME712M transition board. IPMC modules provide rear I/O support for

- one single-ended Ultra Wide SCSI port
- one parallel port
- four serial ports (2 or 3 async and 1 or 2 sync/async, depending on module)

With this PMC card configuration, the memory mezzanine, one PMC slot, and the PMCspan are still available, providing support for OEM product customization.

Transition Modules

MVME761

The MVME761 transition module provides industry-standard connector access to the IEEE 1284 parallel port, a 10BaseT or 100BaseT port via an RJ-45 connector, two DB-9 connectors providing access to the asynchronous serial ports configured as EIA-574 DTE, and two HD-26 connectors providing access to the sync/async serial ports. These serial ports, labeled as Serial 3 and Serial 4 on the faceplate of the MVME761, are individually user-configurable as EIA-232, EIA-530, V.35, or X.21 DCE or DTE via the installation of Motorola Serial Interface Modules (SIMs).

A P2 adapter provides interface module signals to the MVME761 transition module. The 3-row P2 adapter can be used for 8-bit SCSI. A 5-row P2 adapter supports 16-bit SCSI and PMC I/O.

MVME712M

The MVME712M transition module provides industry-standard connector access to the Centronics® parallel port, a narrow SCSI port, and four DB-25 connectors providing access to the asynchronous/synchronous serial ports jumper configurable as EIA-232 DCE or DTE. A P2 adapter provides inter-

face signals to the MVME712M transition module. The 3-row P2 adapter can be used for 8-bit SCSI.

To gain access to the additional user definable I/O pins provided via the 5-row VME64 extension connector, a special P2 adapter board is available. This adapter panel replaces the traditional 3-row P2 adapter and extends its capability by providing access to the PMC I/O pins.

Software Support

Firmware Monitor
Firmware must fulfill the traditional functions of test and initialization and provide operating system boot support. The MVME5100 firmware monitor exceeds these requirements with a proven monitor from the embedded VME leader. It expands features like power-up tests with extensive diagnostics, as well as a powerful evaluation and debug tool for simple checkout or when high-level development debuggers require additional support. All this is included with the MVME5100 firmware; plus it supports booting both operating systems and kernels.

Operating Systems and Kernels
MVME5100 supports booting a variety of operating systems including a complete range of real-time operating systems and kernels which may be purchased from the following companies:

Wind River Systems, Inc.:	VxWorks®
Multiple Partners:	Linux®

Specifications

MVME5100 Processor Module

Processor

Microprocessor:	MPC7400	MPC750
Clock Frequency:	400 MHz	450 MHz
On-chip Cache (I/D):	32K/32K	32K/32K
Secondary Cache:	1MB or 2MB	1MB

Main Memory

Type:	PC100 ECC SDRAM with 100 MHz bus
Capacity:	64MB, 128MB, or 512MB on board, expandable to 1GB with RAM500 memory mezzanines
Single Cycle Accesses:	10 Read/5 Write
Read Burst Mode:	7-1-1-1 idle; 2-1-1-1 aligned page hit
Write Burst Mode:	4-1-1-1 idle; 2-1-1-1 aligned page hit
Architecture:	64-bit, single interleave

Flash Memory

Type:	EEPROM, on-board programmable
Capacity:	1MB via two 32-pin PLCC/CLCC sockets; 16MB surface mount
Read Access (16MB port):	70 clocks (32-byte burst)
Read Access (1MB port):	262 clocks (32-byte burst)

NVRAM

Capacity:	32KB (4KB available for users)
Cell Storage Life:	50 years at 55° C
Cell Capacity Life:	5 years at 100% duty cycle, 25° C
Removable Battery:	Yes

Counters/Timers

TOD Clock Device:	M48T37V
Real-Time Timers/ Counters:	Four, 32-bit programmable
Watchdog Timer:	Time-out generates reset

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

Controller:	Tundra Universe
DTB Master:	A16–A32; D08–D64, BLT
DTB Slave:	A24–A32; D08–D64, BLT, UAT
Arbiter:	RR/PRI
Interrupt Handler/ Generator:	IRQ 1–7/Any one of seven IRQs
System Controller:	Yes, jumperable or auto detect
Location Monitor:	Two, LMA32

Ethernet Interface

Controller:	Two Intel 82559ER
Interface Speed:	10/100Mb/s
PCI Local bus DMA:	Yes, with PCI burst
Connector:	One routed to front panel RJ-45, one routed to front panel RJ-45 or optionally routed to P2, RJ-45 on MVME761

Asynchronous Serial Ports

Controller:	16C550C UART
Number of Ports:	Two, 16550 compatible
Configuration:	EIA-574 DTE
Async Baud Rate, bps max.:	38.4K EIA-232, 115Kbps raw
Connector:	One routed to front panel RJ-45, one on planar for development use

Dual IEEE P1386.1 PCI Mezzanine Card Slots

Address/Data:	A32/D32/D64, PMC PN1, PN2, PN3, PN4 connectors
PCI Bus Clock:	33 MHz
Signaling:	5V
Power:	+3.3V, +5V, ±12V; 7.5 watts maximum per PMC slot
Module Types:	Two single-wide or one double-wide, front panel or P2 I/O

PCI Expansion Connector

Address/Data:	A32/D32/D64
PCI Bus Clock:	33 MHz
Signaling:	5V
Connector:	114-pin connector located on the planar of the MVME5100

Power Requirements

(not including power required by PMC or IMPC modules)

	+5V ± 5%	**+12V ± 10%**	**−12V ± 10%**
MVME5100:	3.0 A typ.	8.0 mA typ.	2.0 mA typ.
MVME5100 with MVME761:	3.2 A typ., 4.0 A max.	0.2 A typ. 0.5 A max.	0.1 A typ. 0.3 A max.

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.)
Max. Component Height:	14.8 mm (0.58 in.)

IPMC Modules

PMC Interface

Address/Data:	A32/D32/D64, PMC PN1, PN2, PN3, PN4 connectors
PCI Bus Clock:	33 MHz
Signaling:	5V
Module Type:	Basic, single-wide; P2 I/O

SCSI Bus

Controller:	Symbios 53C895A
PCI Local Bus DMA:	Yes, with PCI local bus burst
Asynchronous (8-bit mode):	5.0MB/s
Ultra SCSI:	20.0MB/s (8-bit mode), 40.0MB/s (16-bit mode)

Note: 16-bit SCSI operation precludes the use of some PMC Slot 2 signals.

Synchronous Serial Ports

Controller:	85230/8536
Number of Ports:	Two (IPMC761); one (IPMC712)
Configuration:	IPMC761: TTL to P2 (both ports), SIM configurable on MVME761; IPMC712: EIA-232 to P2
Baud Rate, bps max.:	2.5M sync, 38.4K async
Oscillator Clock Rate (PCLK):	10 MHz/5 MHz

Asynchronous Serial Ports

Controller:	16C550 UART; 85230/8536
Number of Ports:	Two (IPMC761); three (IPMC712)
Configuration:	EIA-574 DTE (IPMC761); EIA-232 (IPMC712)
Async Baud Rate, bps max.:	38.4K EIA-232, 115Kbps raw

Parallel Port

Controller:	PC97307
Configuration:	8-bit bi-directional, full IEEE 1284 support; Centronics compatible (minus EPP and ECP on MVME712M)
Modes:	Master only

Power Requirements

(additional power load placed on MVME5100 with IPMC installed)

	IPMC761	**IPMC712**
+5V:	0.5 A max.	0.5 A max.
+3.3V	0.75 A max.	0.75 A max.

Transition Modules

I/O Connectors

	MVME761	**MVME712M**
Asynchronous Serial Ports:	Two, DB-9 labeled as COM1 and COM2	Three, DB-25 labeled as Serial 1, Serial 2, and Serial 3
Synchronous Serial Ports:	Two HD-26 labeled as Serial 3 and Serial 4 (user configurable via installation of SIMs), Two 60-pin connectors on MVME761 planar for installation of two SIMs	One, DB-25 labeled as Serial 4
Parallel Port:	HD-36, Centronics compatible	D-36, Centronics compatible
Ethernet:	10BaseT or 100BaseTX, RJ-45	not available
SCSI:	8- or 16-bit, 50- or 68-pin connector via P2 adapter	8-bit, standard SCSI D-50

Board Size

Height:	233.4 mm (9.2 in.)
Depth:	80.0 mm (3.1 in.)
Front Panel Height:	261.8 mm (10.3 in.)
Front Panel Width:	MVME761: 19.8 mm (0.8 in.) MVME712M: 39.6 mm (1.6 in.)

All Modules

Environmental

(Minimum of 400 LFM (linear feet per minute) of forced air cooling is recommended for operation in the higher temperature ranges.)

	Operating	**Nonoperating**
Temperature:	0° C to +55° C (inlet air temp. w/forced air cooling)	−40° C to +85° C
Humidity (NC):	5% to 90%	5% to 90%
Vibration:	2 Gs RMS, 20–2000 Hz random	6 Gs RMS, 20–2000 Hz random

Demonstrated MTBF

(based on a sample of eight boards in accelerated stress environment; results pending for IPMC712)

Mean:	190,509 hours
95% Confidence:	107,681 hours

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 (results pending for configurations with IPMC712)

Ordering Information

All models of the MVME5100 are available with either VME Scanbe front panel (-01*x*1) or IEEE 1101 compatible front panel (-01*x*3).

Part Number	Description
MPC750 configurations with 450 MHz MPC750, 17MB Flash and 1MB L2 cache	
MVME5100-013*x*	64MB ECC SDRAM
MVME5100-016*x*	512MB ECC SDRAM
MPC7400 configurations with 400 MHz MPC7400 and 17MB Flash	
MVME5101-013*x*	64MB ECC SDRAM, 1MB L2 cache
MVME5101-016*x*	512MB ECC SDRAM, 1MB L2 cache
MVME5101-213*x*	64MB ECC SDRAM, 2MB L2 cache
MVME5101-214*x*	128MB ECC SDRAM, 2MB L2 cache
MVME5101-216*x*	512MB ECC SDRAM, 2MB L2 cache

I/O Modules

MVME712M Compatible I/O	
IPMC712-001	Multifunction rear I/O PMC module; Ultra Wide SCSI, one parallel port, three async and one sync/async serial ports
MVME712M	Transition module connectors: One DB-25 sync/async serial port, three DB-25 async serial port, one AUI connector, one D-36 parallel port, and one 50-pin 8-bit SCSI; includes 3-row DIN P2 adapter module and cable

MVME761 Compatible I/O	
IPMC761-001	Multifunction rear I/O PMC module; Ultra Wide SCSI, one parallel port, two async and two sync/async serial ports
MVME761-001	Transition module: Two DB-9 async serial port connectors, two HD-26 sync/async serial port connectors, one HD-36 parallel port connector, one RJ-45 10/100 Ethernet connector; includes 3-row DIN P2 adapter module and cable (for 8-bit SCSI)
MVME761-011	Transition module: Two DB-9 async serial port connectors, two HD-26 sync/async serial port connectors, one HD-36 parallel port connector, and one RJ-45 10/100 Ethernet connector; includes 5-row DIN P2 adapter module and cable (for 16-bit SCSI); requires backplane with 5-row DIN connectors
SIM232DCE or DTE	EIA-232 DCE or DTE Serial Interface Module
SIM530DCE or DTE	EIA-530 DCE or DTE Serial Interface Module
SIMV35DCE or DTE	V.35 DCE or DTE Module
SIMX21DCE or DTE	X.21 DCE or DTE Serial Interface Module

Related Products

PMCSPAN-002	Primary 32-bit PCI expansion, mates directly to the MVME5100 providing slots for either two single-wide or one double-wide PMC cards; optional PMCSPAN-010
PMCSPAN-010	Secondary 32-bit PCI expansion, plugs directly into PMCSPAN-002 providing two additional PMC slots
RAM500-004	Stackable (top) 64MB ECC SDRAM mezzanine
RAM500-006	Stackable (top) 256MB ECC SDRAM mezzanine
RAM500-016	Stackable (bottom) 256MB ECC SDRAM mezzanine

Documentation

V5100A/IH	MVME5100 Installation and Use
V5100A/PG	Programmer's Reference Guide
VME761A/IH	MVME761 Transition Module Installation and Use
VME712MA/IH	MVME712 Transition Module Installation and Use
PPCBUGA1/UM PPCBUGA2/UM	PPCBug Firmware Package User's Manual (volumes one and two)
PPCDIAA/UM	PPCBug Diagnostics Manual

Documentation is available for online viewing and ordering at http://www.motorola.com/computer/literature.

Free Manuals Download Website

http://myh66.com

http://usermanuals.us

http://www.somanuals.com

http://www.4manuals.cc

http://www.manual-lib.com

http://www.404manual.com

http://www.luxmanual.com

http://aubethermostatmanual.com

Golf course search by state

http://golfingnear.com

Email search by domain

http://emailbydomain.com

Auto manuals search

http://auto.somanuals.com

TV manuals search

http://tv.somanuals.com