

MVME2700 Series  
VME Processor  
Modules

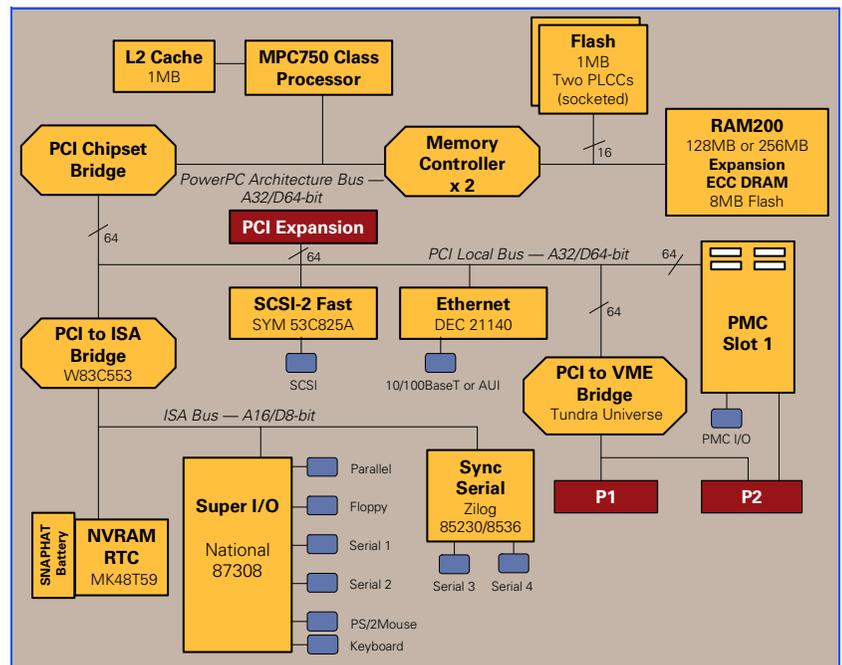


**Scalable high-performance VME computing with the flexibility of PMC expansion**

The MVME2700 series is a family of VME processor modules based on the Motorola PowerPlus VME Architecture with PowerPC architecture microprocessors that push performance and functionality to limits unprecedented on VME. The flexibility of the MVME2700 provides an excellent base platform that can be quickly and easily customized for a variety of industry-specific applications.

Designed to meet the needs of military and aerospace, industrial automation, and medical, the MVME2700 applies to a variety of applications.

- MPC750 class 32-bit microprocessor
- 32KB/32KB L1 cache
- 1MB backside L2 cache
- 128MB or 256MB ECC DRAM on-board memory
- 8MB on-board Flash, 1MB socketed
- 64-bit PCI mezzanine connector
- On-board debug monitor with self-test diagnostics
- IEEE P1386.1 compatible 32/64-bit PMC expansion slot
- Two or three async, one or two sync/async serial ports
- Ethernet transceiver interface with 32-bit PCI local bus DMA
- 8- or 16-bit Fast SCSI-2 bus interface
- Parallel, floppy, keyboard, and mouse interfaces
- 8KB x 8 NVRAM and time-of-day clock with replaceable battery backup
- Four 32-bit timers, one watchdog timer
- One VME slot, even when configured with PMC module



**PCI Expansion**

MVME2700 modules have a 64-bit PCI connection to support PCI expansion carriers such as Motorola PMCspan. Design details for the connector and electrical specifications are available from your local Motorola representative.

**Memory Modules**

The MVME2700 series has a modular memory design. Mezzanine arrays support 128MB or 256MB of add-on DRAM. These memory modules allow field upgrades of the memory capacity and do not require additional VME slots.

**Transition Modules**

Two artwork variants of the MVME2700 are available. One series provides backward compatibility with the MVME712M transition module I/O. The other series accepts the MVME761 transition module that features an additional sync/async serial port, a 10/100BaseT interface, Fast 16-bit SCSI, and an IEEE 1284 compatible parallel port.

**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 face plate 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, an AUI 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 interface 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.

Several other variations of the MVME712M are available for combinations of I/O and connectors.

**Firmware Monitor**

Firmware must fulfill the traditional functions of test and initialization, in addition to operating system boot support. The MVME2700 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 MVME2700 firmware, plus it supports booting both operating systems and kernels.

**Operating Systems and Real-Time Kernels**

**Motorola Computer Group:** AIX

**Integrated Systems, Inc.:** pSOSsystem

**Lynx Real-Time Systems, Inc.:** LynxOS

**Microware Systems Corporation:** OS-9/OS-9000

**Microtec:** VRTX32

**Wind River Systems, Inc.:** VxWorks

## SPECIFICATIONS

### Processor

<b>Microprocessor:</b>	MPC750 class	MPC750 class	MPC750 class
<b>Clock Frequency:</b>	233 MHz	266 MHz	366 MHz
<b>On-chip Cache (I/D):</b>	32K/32K	32K/32K	32K/32K
<b>Memory Type:</b>	60 ns FPM	50 ns EDO	60 ns FPM 50 ns EDO
<b>SPECint95, estimated:</b>	10.2	10.5	16.4 (peak)
<b>SPECfp95, estimated:</b>	8.2	8.4	9.98 (peak)

### Memory

<b>MAIN MEMORY:</b>	Dynamic RAM
<b>Capacity (50ns EDO):</b>	128 or 256MB on RAM200
<b>Single Cycle Accesses:</b>	9 read/4 write
<b>Read Burst Mode (60ns FPM):</b>	9-1-2-1 idle; 3-1-2-1 aligned page hit
<b>Read Burst Mode (50ns EDO):</b>	8-1-1-1 idle; 2-1-1-1 aligned page hit
<b>Write Burst Mode:</b>	4-1-1-1 idle; 3-1-1-1 aligned page hit
<b>Architecture:</b>	128-bit, two-way interleaved
<b>Parity/ECC:</b>	No/Yes
<b>L2 CACHE:</b>	1MB
<b>Cache Bus Clock Frequency:</b>	Processor clock divided by 2
<b>FLASH:</b>	On-board programmable
<b>Capacity:</b>	1MB via two 32-pin PLCC/CLCC sockets; 4 or 8MB surface mount
<b>Read Access (8MB port):</b>	68 clocks (32 byte burst)
<b>Read Access (1MB port):</b>	260 clocks (8 byte burst)
<b>Write Access (1MB/8MB):</b>	19 clocks (2 bytes/8 bytes)
<b>NVRAM:</b>	8KB (4KB available for users)
<b>Cell Storage Life:</b>	50 years at 55° C
<b>Cell Capacity Life:</b>	10 years at 100% duty cycle
<b>Removable Battery:</b>	Yes

### PCI Expansion Connector

<b>Address/Data:</b>	A32/D32/D64
<b>PCI Bus Clock:</b>	33 MHz
<b>Signaling:</b>	5 V
<b>Connector:</b>	114-pin connector located on the planar of the MVME2700 between P1 and P2

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

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

### Ethernet Interface

	MVME761	MVME712M
<b>Controller:</b>	DEC 21140	DEC 21140
<b>Interface Speed:</b>	10/100Mb/s	AUI (10Mb/s)
<b>PCI Local bus DMA:</b>	Yes, with PCI burst	Yes, with PCI burst
<b>Connector:</b>	Routed to P2, RJ-45 on MVME761	Routed to P2, DB-15 AUI on MVME712M

### SCSI Interface

	MVME761	MVME712M
<b>Controller:</b>	Symbios 53C825A	Symbios 53C825A
<b>PCI Local Bus DMA:</b>	Yes, with PCI local bus burst	Yes, with PCI local bus burst
<b>Asynchronous:</b>	5.0MB/s	5.0MB/s
<b>Synchronous:</b>	10.0MB/s (8-bit mode), 20.0MB/s (16-bit mode)	10.0MB/s (8-bit mode), 20.0MB/s (16-bit mode)
<b>Connector:</b>	Routed to P2, 50- or 68-pin on MVME761EXT	Routed to P2, SCSI D-50 on MVME712M

### Asynchronous Serial Ports

	MVME761	MVME712M
<b>Controller:</b>	PC87308	PC87308
<b>Number of Ports:</b>	Two, 16550 compatible	Two 16550 compatible and one 85230/8536
<b>Configuration:</b>	EIA-574 DTE	EIA-232 DCE/DTE
<b>Async Baud Rate, bps max.:</b>	38.4K EIA-232, 115Kbps raw	38.4K EIA-232, 115Kbps raw
<b>Connector:</b>	Routed to P2, DB-9 on MVME761	Routed to P2, DB-25 on MVME712M

## Synchronous Serial Ports

	MVME761	MVME712M
<b>Controller:</b>	85230/8536	85230/8536
<b>Number of Ports:</b>	Two	One
<b>Configuration:</b>	TTL to P2 (both ports), SIM on MVME761	EIA-232 DCE/DTE
<b>Baud Rate, bps max.:</b>	2.5M sync, 38.4K async	2.5M sync, 38.4K async
<b>Oscillator Clock Rate (PCLK):</b>	10 MHz/5 MHz	10 MHz/5 MHz
<b>Connector:</b>	Routed to P2, HD-26 on MVME761	Routed to P2, DB-25 on MVME712M

## Parallel Port

	MVME761	MVME712M
<b>Controller:</b>	PC87308	PC87308
<b>Configuration:</b>	8-bit bidirectional, full IEEE 1284 support; Centronics compatible	8-bit bidirectional, IEEE 1284 minus EPP and ECP
<b>Modes:</b>	Master only	Master only
<b>Connector:</b>	Routed to P2, HD-36 on MVME761	Routed to P2, D-36 on MVME712M

## Counters/Timers

<b>TOD Clock Device:</b>	M48T18; 8KB NVRAM
<b>Real-Time Timers/Counters:</b>	Four, 32-bit programmable
<b>Watchdog Timer:</b>	Time-out generates reset

## Mouse Interface

<b>Controller:</b>	PC87308
<b>Connector:</b>	6-pin circular female mini DIN on front panel

## Floppy

<b>Controller:</b>	PC87308
<b>Compatible Controllers:</b>	DP8473, 765A, N82077
<b>Configuration:</b>	3.5" 2.88MB and 1.44MB; 5.25" 1.2MB
<b>Connector:</b>	HD-50 on front panel

## Keyboard Interface

<b>Controller:</b>	PC87308
<b>Connector:</b>	6-pin circular female mini DIN on front panel

## IEEE P1386.1 PCI Mezzanine Card Slot

<b>Address/Data:</b>	A32/D32/D64, PMC PN1, PN2, PN3, PN4 connectors
<b>PCI Bus Clock:</b>	33 MHz
<b>Signaling:</b>	5 V
<b>Power:</b>	+3.3 V, +5 V, $\pm 12$ V; 7.5 watts maximum per PMC slot
<b>Module Types:</b>	Basic, single-wide, front panel I/O or P2 I/O Note: P2 I/O is only accessible to systems equipped for VME64 extension connectors.

## Board Size

<b>Height:</b>	233.4 mm (9.2 in.)
<b>Depth:</b>	160.0 mm (6.3 in.)
<b>Front Panel Height:</b>	261.8 mm (10.3 in.)
<b>Width:</b>	19.8 mm (0.8 in.)
<b>Max. Component Height:</b>	14.8 mm (0.58 in.)

## Miscellaneous

Reset and abort switches on front panel; six LEDs for FAIL, CHKSTP, CPU, PCI, SCON, and FUSE

## Transition Modules

## I/O Connectors

	MVME761	MVME712M
<b>Asynchronous Serial Ports:</b>	Two, DB-9 labeled as COM1 and COM2	Three, DB-25 labeled as Serial 1, Serial 2, and Serial 3
<b>Synchronous Serial Ports:</b>	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
<b>Parallel Port:</b>	HD-36, Centronics compatible	D-36, Centronics compatible
<b>Ethernet:</b>	10BaseT or 100BaseTX RJ-45	10Mb/s Ethernet DB-15 AUI
<b>SCSI:</b>	8- or 16-bit, 50- or 68-pin connector via P2 adapter	8-bit, standard SCSI D-50

## Board Size

<b>Height:</b>	233.4 mm (9.2 in.)
<b>Depth:</b>	80.0 mm (3.1 in.)
<b>Front Panel Height:</b>	261.8 mm (10.3 in.)
<b>Width:</b>	19.8 mm (0.8 in.)

## All Modules

## Power Requirements

(not including power required by PMC or external AUI transceiver)

	+5 V ±5%	+12 V ±10%
<b>MVME2700:</b>	5.5 A typ. 6.5 A max.	8 mA typ.
<b>MVME2700 w/MVME761:</b>	5.5 A typ. 6.5 A max.	250 mA typ. 500 mA max.

–12V power is not used on the MVME2700 but is supplied for use by other devices (such as PMC); requirements vary by device

## Demonstrated MTBF

(based on a sample of eight boards in accelerated stress environment)

**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.

## Environmental

	Operating	Nonoperating
<b>Temperature:</b>	0° C to +55° C, forced air cooling	–40° C to +85° C
<b>Humidity (NC):</b>	10% to 80%	10% to 90%
<b>Vibration:</b>	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

## ORDERING INFORMATION

Part Number	Description
<b>MVME2700 with MVME761 I/O</b>	
All models of the MVME2700 include 1MB backside L2 cache and 9MB Flash.	
<b>MVME2700-1251A</b>	233 MHz MPC750 class, 128MB ECC DRAM, MCG1101 compatible front panel with injector/ejector handles
<b>MVME2700-3251A</b>	233 MHz MPC750 class, 128MB ECC DRAM, original VME Scanbe front panel and handles
<b>MVME2700-1361</b>	266 MHz MPC750 class, 256MB ECC DRAM, MCG1101 compatible front panel with injector/ejector handles
<b>MVME2700-3361</b>	266 MHz MPC750 class, 256MB ECC DRAM, original VME Scanbe front panel and handles
<b>MVME2700-1461</b>	366 MHz MPC750 class, 256MB ECC DRAM, MCG1101 compatible front panel with injector/ejector handles
<b>MVME2700-3461</b>	366 MHz MPC750 class, 256MB ECC DRAM, original VME Scanbe front panel and handles
<b>MVME2700 with MVME712 I/O</b>	
<b>MVME2700-4251A</b>	233 MHz MPC750 class, 128MB ECC DRAM, original VME Scanbe front panel and handles
<b>MVME2700-4361</b>	266 MHz MPC750 class, 256MB ECC DRAM, original VME Scanbe front panel and handles
<b>MVME2700-4461</b>	366 MHz MPC750 class, 256MB ECC DRAM, original VME Scanbe front panel and handles
<b>MVME761 Transition Module</b>	
<b>MVME761-001</b>	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
<b>MVME761-011</b>	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 5-row DIN P2 adapter module and cable; requires backplane with 5-row DIN connectors
<b>MVME761P2-011</b>	5-row DIN P2 adapter compatible with MVME761; connectors for 16-bit (wide) SCSI and PMC I/O; requires backplane with 5-row DIN connectors
<b>MVME761EXT</b>	MVME761 I/O extension module, connectors for Ethernet, SCSI and PMC I/O
<b>SIM232DCE or DTE</b>	EIA-232 DCE or DTE Serial Interface Module
<b>SIM530DCE or DTE</b>	EIA-530 DCE or DTE Serial Interface Module
<b>SIMV35DCE or DTE</b>	V.35 DCE or DTE Module
<b>SIMX21DCE or DTE</b>	X.21 DCE or DTE Serial Interface Module
<b>MVME712 Transition Module</b>	
<b>MVME712M</b>	Transition module connectors: One DB-25 sync/async serial port, three DB-25 async serial port, one AIU connector for Ethernet, one D-36 parallel port, and one 50-pin 8-bit SCSI; includes 3-row DIN P2 adapter module and cable

Part Number	Description
<b>Related Products</b>	
<b>PMCSPAN-001</b>	Primary 32-bit PCI expansion, mates directly to the MVME2700 providing slots for either two single-wide or one double-wide PMC card, accepts optional PMCSPAN-010, MCG1101 compatible front panel with injector/ejector handles
<b>PMCSPAN1-001</b>	PMCSPAN-001 with original VME Scanbe front panel and handles
<b>PMCSPAN-010</b>	Secondary 32-bit PCI expansion, plugs directly into PMCSPAN-001 providing two additional PMC slots; for MCG1101 handles
<b>PMCSPAN1-010</b>	PMCSPAN-010 with original VME Scanbe front panel and handles
<b>Documentation</b>	
<b>V2700A/IH</b>	MVME2700 Installation and Use
<b>V2600A/PG</b>	MVME2600/2700 Programmer's Reference Guide
<b>VME761A/IH</b>	MVME761 Transition Module Installation and Use
<b>VME712A/IH</b>	MVME712 Transition Module Installation and Use
<b>PPCBUGA1/UM and PPCBUGA2/UM</b>	PPC Bug Firmware Package User's Manual
<b>PPCDIAA/UM</b>	PPC Bug Diagnostics Manual
Documentation is available for online viewing and ordering at <a href="http://www.motorola.com/computer/literature">http://www.motorola.com/computer/literature</a>	

**Motorola Computer Group  
Regional Offices**

NORTH AMERICA: Tempe, AZ 800-759-1107 or 602-438-5720  
 EUROPE: Loughborough, UK +44 1509 634300  
 EAST MEDITERRANEAN: Tel Aviv, Israel +972 3 568 4388

ASIA: Shanghai, China +86 21 5292 5693  
 PACIFIC RIM: Tokyo, Japan +81 3 5424 3101  
 ASIA/PACIFIC: Hong Kong +852 2966 3210



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