

## CPV5000 COMPACTPCI PROCESSOR MODULE



### **Advantages**

Motorola's Pentium® microprocessor-powered CPV5000 "all-in-one" CompactPCI® CPU is a 6U x 8HP single board computer based upon the time-tested durability, reliability, and serviceability of Eurocard mechanics. Highly integrated, it provides standard PC I/O, including USB, PCI EIDE, SCSI-3, SVGA and Fast Ethernet controllers with optional on-board ultra-thin floppy and 2.5" EIDE drives in a cost-saving, slot-saving PICMG® compliant footprint.

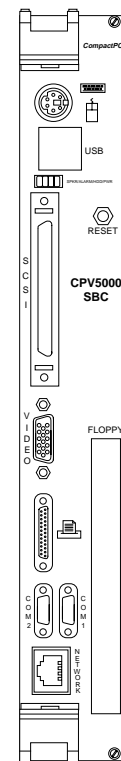
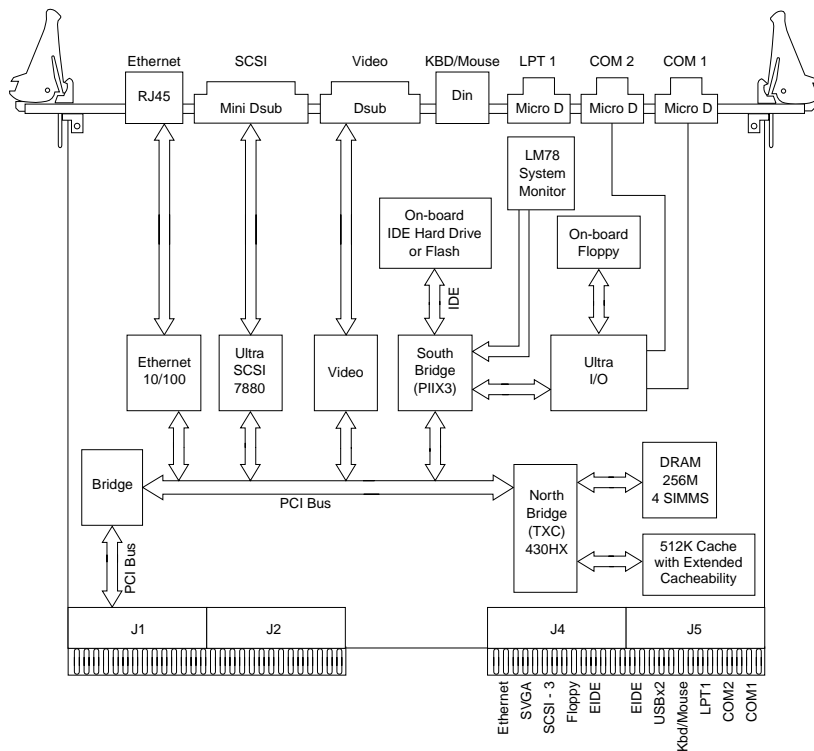
Compact. Feature rich. Front or rear I/O. Motorola's CPV5000 CompactPCI single board computer is designed to meet the needs of embedded application developers addressing high-bandwidth, broadband data or intelligent network switching; CTI server; industrial automation; military and aerospace; and medical, scientific, or imaging markets.

## Features

- Pentium processors with MMX™ technology (Socket 7 compatible)
- On-board 512KB L2 cache
- Intel 82430HX chipset
- On-board 10BaseT/100BaseTX fast Ethernet
- Two Universal Serial Bus (USB), two RS-232 (16550 compatible) serial, and one bidirectional IEEE 1284 compliant parallel port
- PCI Enhanced IDE controller with support for up to four devices (two primary/two secondary)
  - Optional on-board SanDisk Flash drive and/or
  - Optional on-board 2.5" EIDE hard drive
- Optional on-board ultra-thin 3.5" floppy drive
- Four 72-pin SIMM sites for memory expansion
  - Up to 512MB EDO DRAM SIMMs with ECC support
  - Up to 256MB FPM DRAM SIMMs with ECC support
- SCSI-3
- PCI SVGA with 1MB EDO memory
- On-board BIOS stored in 256KB Flash ROM
  - Optionally extended to 512KB for real-time OS
- Conforms to PICMG 2.1 How Swap specification
- Supported by industry standard operating systems including WindowsNT®, QNX®, LynxOS™, Solaris™ 2.5.1 and 2.6
- Front and rear I/O

## Ordering Information

Part Number	Description
Base CPU Model CPV5000B-200	Pentium SBC with 512K cache, Ethernet, SVGA, EIDE, SCSI, front panel and rear I/O; bundled with 200 MHz Pentium MMX, heatsink/fan
CPV5000B-233	Pentium SBC as above; bundled with 233 MHz Pentium MMX, heatsink/fan
<b>Memory Options</b>	
MEMExxx (where xxx=MB)	32MB to 512MB EDO memory with ECC protection
<b>Other On-board Options</b>	
CPVEIDE2GHD	On-board 2.5" 2G (or larger) EIDE hard disk drive
CPVFLASHxxx (where xxx=MB)	On-board EIDE SanDisk Flash drive
CPVFLOPPY	On-board ultra-thin 3.5" floppy drive
Note: Physical support for any two of three optional on-board devices.	
<b>Transition Card</b>	
CPV5000TM80	IEEE 1101.11 compliant 80mm rear transition module (double-wide front panel)
<b>Miscellaneous</b>	
CPVCABLE	CPV5000 front panel cable kit, includes 9-pin microD to 9-pin D (2 pcs.); 25-pin microD to 25-pin D; 6-pin mini DIN to 5-ckt DIN; "Y" cable for keyboard/PS2 mouse
<b>Documentation</b>	
CPV5000A/IH1	CPV5000 user's manual
<b>Orderable Software</b>	
NT-WS4	Windows NT workstation



**CPV5000 Block Diagram and Front Panel I/O**

## CPV5000 Details

### CompactPCI Bus

Designed to the CompactPCI interface standard, the CPV5000 supports a 32-bit PCI interface on the J1 physical CompactPCI connector. On-card devices connect directly to the primary bus. Off-card accesses are supported through the DEC 21150 PCI-PCI bridge.

### Hot-Swap Compatible

While not intended to be inserted or removed in a powered system, the CPV5000 will allow other non-system slot boards to be removed or added with power on. Individual clocks for each slot and access to the backplane ENUM# signal are in compliance with the PICMG 2.1 Hot Swap Specification.

### Intel Pentium Processors with MMX

The CPV5000 fully supports the Intel Socket 7 Specification for Pentium processor technology to provide the latest computing power for the OEM. With the Intel® Pentium P55C (MMX) processor and the Intel 430HX PCI chipset, a high efficiency on-board CPU switching regulator, an integrated heatsink and fan for cooling, and Digital Equipment's 21150 PCI bridge chip driving up to seven bus-master CompactPCI slots, the CPV5000 provides state-of-the-art processor, memory and I/O system performance. For continual Socket 7 processor speed enhancement options, consult your Motorola Sales Representative.

### Memory

The CPV5000 provides four 72-pin SIMM sites, organized as two banks of two sockets each, for on-board memory expansion up to 512MB using Extended Data Out (EDO) memory SIMMs or 256MB using Fast Page Mode (FPM) memory SIMMs (with ECC provided by the on-board Intel 82430HX chipset and the appropriate software). Memory size is detected by the system BIOS.

### Cache Memory

The processor contains 32KB of internal Level 1 (L1) cache memory. Additionally, 512KB of 8ns synchronous, pipelined burst static memory (PBSRAM) is also supplied on board the CPV5000 as Level 2 cache, providing approximately a 15% performance improvement.

### On-Board Peripherals

The CPV5000 has an extensive array of on-board I/O that is available from both the front panel of the CPV5000 and/or the rear connectors via the CPV5000TM80 transition board. CompactPCI connectors J4 and J5 are used for routing I/O through the backplane. CompactPCI connector J3 is not used. For a brief description of the input/output interfaces, refer to the I/O Interfaces section under Specifications.

## Specifications

### Processor—Socket 7 Compatible

Single 200–233 MHz Pentium processor with MMX (faster clock frequencies available on request)

### Cache

Level 1: 32KB on the CPU  
Level 2: Write back, 512KB 8ns synchronous pipelined burst with extended cacheability

### Memory

Sockets: Two banks of two 72-pin latching SIMM sockets  
DRAM:  
Fast Page Mode (FPM) Up to 256MB; 1/2/4/8/16MB x 36, 60ns; parity or ECC mode  
Extended Data Out (EDO) Up to 512MB; 1/2/4/8/16MB x 36, 60ns; parity or ECC mode

Note: Only EDO memory is an orderable option from MCG. Consult your sales representative for other qualified memory suppliers.

### Addressing

Real (36-bit) and protected (32-bit on bus access) accessing supported

### Data Path

CPU/PCI bus: 64-bit/32-bit

### Bus Interface

CompactPCI bus: PCI Specification Rev. 2.1 compliant, 32 bit, 33 MHz  
Connector: J1, 2mm pin and socket (IEC-1076-4-101)

### Interrupts

Four CompactPCI level sensitive, configurable to any interrupt vector for Plug and Play compatibility

Note: All ISA on-card interrupts are Plug and Play compliant.

### SCSI

Controller: Adaptec® AIC-7880  
PCI Local Bus DMA: Yes, with PCI burst

### Ethernet

Controller: Intel S82558  
PCI Local Bus DMA: Yes, with PCI burst

### Graphics

Controller: Cirrus Logic® GD5446  
Video memory: 1MB EDO

### I/O Interfaces—Front Panel and Planar

Reset Switch: Guarded, on front panel  
USB Ports: Two, 4-pin USB on front panel  
Serial Ports: Two, RS232 (16550) 9-pin Dsub on front panel  
Parallel Port: One, bidirectional 25-pin Dsub on front panel with all IEEE 1284 protocols supported including EPP and ECP  
SCSI: 68-pin D on front panel  
Ethernet: RJ-45 on front panel  
Video: 15-pin D on front panel  
Keyboard/mouse: 6-pin mini-DIN on front panel  
Floppy Disk: One channel (360K to 2.88MB); support for one, optional ultra-thin drive, mounted on board  
EIDE: Two channel/four device PCI EIDE with LBA and PIO mode 5 support; support for one, optional 2.5" hard drive and/or SanDisk FlashDisk™, mounted on board

Note: Physical on-board support is limited to any 2 of 3 devices: floppy, EIDE HD, or FlashDisk. Additional devices may be attached via transition module.

### CPV5000TM80 Transition Module—Rear I/O

Transition module provides rear I/O from J4 and J5 on the CPV5000.

On-board Headers: Speaker, reset, two 40-pin IDE, 34-pin floppy

#### Panel Connectors

USB Ports: Two, 4-pin  
Serial Ports: Two, RS-232 9-pin Dsub  
Parallel Port: One, bidirectional 25-pin Dsub  
SCSI: 68-pin D  
Ethernet: RJ-45  
Video: 15-pin Dsub  
Keyboard: 6-pin mini-DIN  
Mouse: 6-pin mini-DIN

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## BIOS Features

AMI WINBIOS in Flash EPROM  
Auto-configuration or extended setup with serial/parallel ports remappable  
Diskless, keyboardless, and videoless operation extensions  
BIOS POST and Setup  
Programmable memory wait states  
System and video BIOS shadowing, configurable

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## Clock/Calendar

Real-time clock with (replaceable) battery backup; includes CMOS

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## Supervisory

Watchdog Timer: Two-level, software programmable, (17.8 ms to 291 sec.) drives interrupt (configurable), NMI, or system reset

Alarm Microcontroller (NS LM78): CPU temperature (user definable threshold alarm on selectable IRQ: 5, 7, 9, 11, NMI, or SMI), backplane and CPU voltages, and chassis fan rotation and intrusion, with status interrogated via NMI, SMI, or SM Bus (on J4)

Front panel LEDs: Power OK (green), disk activity (green), watchdog alarm (red), speaker output (amber), Ethernet link (green), Ethernet activity (amber)

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## Mechanical

6U, 8HP wide (233mm x 160mm x 61mm), including optional on-board 3.5" floppy drive and 2.5" EIDE drive; conforms to PICMG CompactPCI 2.1 and PCI SIG 2.1 specifications

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## Power Requirements

Input power: 39 watt (single 200 MHz without DRAM)

+5V	5.5 A typical (dual DC/DC for split voltage Pentium, Socket 7)
+12V	0.1 A typical
-12V	0.0 A typical
+3.3V	1.0 A typical



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## Environmental

	Operating	Storage/Transit
Temperature:	0° C to 50° C	-40° C to +65° C
Humidity (NC):	5 to 90% @ 40° C	5 to 95% @ 40° C
Altitude:	15,000 ft. (4,572 m) 10,000 ft. with disk drives	40,000 ft. (12,192 m)
Shock:	—	per ASTM 0775
Vibration:	1.0 G @ 10 to 330 Hz	1.2 Gs @ 5 to 330 Hz

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## Demonstrated MTBF

(based on sample testing in accelerated stress environment)

Mean/90% Confidence: 190,509/107,681

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## Safety

All printed wiring boards (PWBs) are manufactured with a flammability rating of 94V-0 by UL recognized manufacturers.

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## Electromagnetic Compatibility (EMC)

Intended for use in systems meeting the following regulations:

U.S.: FCC Part 15, Subpart B, Class A

Canada: ICES-003, Class A

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 A; Immunity: EN50082-1

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## The Motorola Commitment

**Motorola Computer Group is committed to providing best-in-class embedded computing solutions.** The CPV5000 reinforces this commitment by providing superior hardware, price performance, and faithfulness to the tenets of open computing: modularity, scalability, portability, and interoperability.

The CPV5000 is offered with a five-year limited warranty which reduces the cost of ownership and demonstrates our commitment to quality and reliability of products to our OEM partners.

Motorola Computer Group is ISO9001 registered, and provides world class quality in manufacturing, engineering, sales, and marketing.

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Data Sheet: CV500-D3

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