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Find the *Abaco Systems / VMIC VMIVME-7589-941* at our website: ***Click HERE***

VMIVME-7589
Single-Slot Pentium Processor-Based VMEbus CPU

- Pentium® processor-based CPU operating system support for VxWorks and Windows NT®
  - — 8 Mbyte bootable flash on secondary IDE
  - — Three programmable 16-bit timers
  - — 32 Kbyte of battery-backed SRAM
  - — Software-selectable watchdog timer with reset
  - — VMIVME-7434 expansion connector
  - — VME64 modes supported: A32/A24/D64/D32/D16/D08 (EO)/MBLT64/BLT32
  - — Includes byte-swapping hardware for little-endian and big-endian data interfacing
- Intel® TX chipset
- VMEbus interrupt handler, interrupter, and system controller
- External (L2) cache – 512 Kbyte synchronous burst SRAM
- Up to 128 Mbyte SDRAM using 168-pin DIMM
- 64-bit PCI SVGA controller with 2 Mbyte SGRAM
- On-board Fast Ethernet controller supporting 10BaseT and 100BaseTX interfaces
- On-board enhanced Ultra-IDE hard drive and floppy drive controllers
- Two high-performance 16550-compatible serial ports (requires VMIACC-0045 or individual connector adapters)
- Enhanced parallel port with ECP/EPP modes supported (requires VMIACC-0045 or individual connector adapters)
- PS/2 keyboard and mouse ports on front panel
- Real-time clock and miniature speaker
- VMISFT-9420 IOWorks Access™ and other IOWorks® family software available
- VMISFT-7418 VxWorks Board Support Package available
- Supports P2-only connection to HDD/floppy drive
- Year 2000 compliant

APPLICATIONS

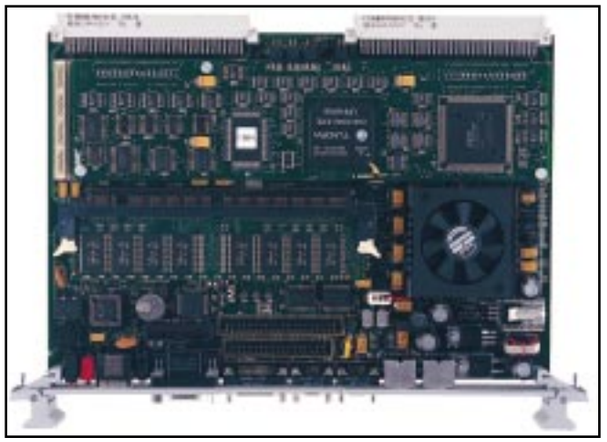
- Simulation
- Instrumentation
- Industrial control
- Process control and monitoring
- Factory automation
- Intelligent networked PLC controllers
- Automated test
- Data acquisition

MICROPROCESSOR — The VMIVME-7589 brings Intel Pentium MMX™ processor power to VMEbus, offering processor speeds from 166 to 233 MHz. The Pentium processor has 32-bit addressing and a 64-bit data bus. Its superscalar architecture includes two pipelined integer units and a pipelined floating-point unit, allowing two instructions to be executed per clock cycle. A dynamic branch prediction unit and separate instruction and data caches also increase the Pentium processor's performance.

EXTERNAL (L2) CACHE MEMORY — The VMIVME-7589 complements the Pentium processor with 512 Kbyte of external cache memory. Near-zero wait state operation of the Pentium processor is ensured by the use of synchronous burst static RAM with the Intel chipset.

DRAM MEMORY — The VMIVME-7589 accepts one 168-pin DIMM SDRAM module for a maximum memory capacity of 128 Mbyte. The on-board DRAM is dual ported to the VMEbus.

BIOS — System BIOS and video BIOS are provided in reprogrammable flash memory.



SUPER VGA CONTROLLER — High-resolution graphics and multimedia-quality video are supported on the VMIVME-7589 by the Cirrus Logic CL-GD5480 PCI graphics adapter. The CL-GD5480 is complemented by 2 Mbyte synchronous DRAM with a high-bandwidth 64-bit data interface. Screen resolutions up to 1,500 x 1,200 x 256 colors, 1,280 x 1,024 x 256 colors, or 800 x 600 x 16 M colors (noninterlaced) are supported by the CL-GD5480 graphics adapter.

ETHERNET CONTROLLER — The VMIVME-7589 supports Ethernet LANs with the DEC 21143 PCI Ethernet controller. 10BaseT and 100BaseTX interfaces are supported via an RJ45 connector.

SERIAL PORTS — Two 16550-compatible serial ports are featured on the VMIVME-7589 front panel. Each serial channel has an independent 16-byte FIFO to support baud rates up to 56 kHz. (Requires VMIACC-0045 or individual connector adapters.)

ENHANCED PARALLEL PORT — Also accessible on the VMIVME-7589 front panel is a Centronics-compatible, fully bidirectional parallel port meeting all IEEE-1284 standards (Compatibility, Nibble, EPP, and ECP). The parallel port contains a 16-byte FIFO to allow data rates up to 2 Mbyte/s in ECP mode. (Requires VMIACC-0045 or individual connector adapters.)

KEYBOARD AND MOUSE PORTS — The VMIVME-7589 has an ordering option of either standard PS/2 keyboard and mouse or two USB connectors for peripherals.

FLASH MEMORY — The VMIVME-7589 provides 8 Mbyte of flash memory accessible through the secondary IDE port. The VMIVME-7589 BIOS includes an option to allow the board to boot from the flash memory.

16-bit TIMERS — The VMIVME-7589 provides the user with three 16-bit timers which are 82C54 compatible.

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Ordering Options								
February 2, 1999 800-007589-000 D		A	B	C	–	D	E	F
VMIVME-7589	–				–			

A = Processor
- 0 = Not Used
- 1 = Reserved
- 2 = Reserved
- 3 = Reserved
- 4 = 200 MHz Pentium Processor with MMX
- 5 = Reserved
- 6 = Reserved
- 7 = 166 MHz Pentium Processor
- 8 = Reserved
- 9 = 233 MHz Pentium Processor with MMX

B = SDRAM Memory
- 0 = Reserved
- 1 = Reserved
- 2 = 16 Mbyte
- 3 = 32 Mbyte
- 4 = 64 Mbyte
- 5 = 128 Mbyte

C = Interface
- 0 = Reserved
- 1 = VMEbus with Universe, 10BaseT/100BaseTX, Standard Keyboard, and Mouse Connectors
- 2 = Reserved
- 3 = Reserved
- 4 = No VMEbus, 10BaseT/100BaseTX, Standard Keyboard, and Mouse Connectors
- 5 = Reserved
- 6 = VMEbus with Universe II, 10BaseT/100BaseTX, Standard Keyboard, and Mouse Connectors
- 7 = Reserved

Companion Single-Slot VMEbus Floppy/Hard Disk Module

		A	B	C	–	D	E	F
VMIVME-7452	–	3			–			

A = 3
BC = Indicates Disk Module Configuration (xx)
(See the VMIVME-7452 specification for details on disk module configuration options.)

***USB Ordering Options**

At the time of this printing, USB peripheral availability and USB operating system support is lagging behind industry predictions for this new technology. Accordingly, VMIC recommends the customer evaluate short-term requirements for USB before ordering the VMIVME-7589 with the USB options.

CONNECTOR ADAPTER KIT

VMIACC-0045

An accessory kit is available that adapts the product's front panel 9-pin serial and 25-pin parallel port Micro-D connectors to Standard-D size 9- and 25-pin connectors. The Connector Adapter Kit contains two 9-pin Micro-D to Standard-D serial port adapters and one 25-pin Micro-D to Standard-D parallel port adapter. Individual connector adapters:
360-010050-000 Micro-DB9 to DB9
360-010051-000 Micro-DB25 to DB25.
These adapters and accessory kit are sold separately.

For Ordering Information, Call:
1-800-322-3616 or 1-256-880-0444 • FAX (256) 882-0859
E-mail: info@vmic.com Web Address: www.vmic.com
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These timers are mapped in ISA I/O space, and are completely software programmable.

WATCHDOG TIMER — The VMIVME-7589 provides a software-programmable watchdog timer. The watchdog timer is enabled under software control. Once the watchdog timer is enabled, on-board software must access the timer within the specified timer period, or the output of the watchdog timer will reset the unit.

BATTERY-BACKED SRAM — The VMIVME-7589 provides 32 Kbyte of battery-backed SRAM. The SRAM is accessible in ISA memory space. The contents of the SRAM are preserved when +5 V power is interrupted or removed from the unit.

RESET SWITCH AND ANNUNCIATORS — A small push-button switch on the front panel will reset the VMIVME-7589. If the System Controller is enabled, a SYSRESET* will also be generated on the VMEbus. Five LEDs are visible on the front panel: +5 V power, status of VMEbus SYSFAIL, IDE activity, LAN activity, and LAN Mode (10 or 100 MHz mode). A small speaker is also included on the VMIVME-7589 to provide PC/AT sound output.

VMIVME-7434 EXPANSION CONNECTOR — The VMIVME-7589 supplies an expansion connector for adding a VMIVME-7434 PMC/PC Card (PCMCIA) expansion board. This expansion capability allows third-party devices to be used with the VMIVME-7589, as shown in Figure 1.

The following is a partial list of commercially available PMC modules:

- Analog and digital I/O
- High-speed serial and parallel I/O
- Networking adapters: FDDI, ATM, 100BaseT Ethernet, Fast Ethernet
- PMC-to-PC Card adapter
- MIL-STD-1553 bus I/F
- SRAM
- Flash
- Solid-state disk
- Data acquisition cards
- SCSI-2 adapter
- Parallel links
- Octal DSP
- Quad SIO
- GPIB
- FAX/modem
- Second Ethernet
- PMC-to-PMC expanders

The following is a partial list of commercially available PC Card modules:

- ATA flash cards
- ATA hard drive cards
- SCSI cards
- Ethernet cards
- Modem cards
- Serial cards

Contact VMIC for more information concerning third-party PMC and PC Card modules and compatibility.

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VMEbus INTERFACE — The VMIVME-7589 VMEbus interface is based on the Universe high-performance PCI-to-VME interface from Newbridge/Tundra.

SYSTEM CONTROLLER — The on-board VMEbus system controller allows the board to work as slot 1, or it may be disabled when another board is acting as the system controller. The system controller may be programmed to provide the following modes of arbitration:

Round Robin (RRS)
Single Level (SGL)
Priority (PRI)

The system controller provides a SYSCLK driver, IACK* daisy-chain driver, and a VMEbus access timeout timer. The system controller also provides an arbitration timeout if BBSY* is not seen within a specified period after a BGOUT* signal is issued. This period is programmable for 16 or 256 µs.

VMEbus REQUESTER — The microprocessor can request and gain control of the bus using any of the VMEbus request lines (BR3* to BR0*) under software control. The requester can be programmed to operate in any of the following modes:

Release-On-Request (ROR)
Release-When-Done (RWD)
VMEbus Capture and Hold (BCAP)

MAILBOXES — The VMEbus Interface provides four 1-bit mailboxes, which are accessible from both the microprocessor and the VMEbus providing interprocessor communication. The mailboxes have the ability to interrupt the microprocessor when accessed by VMEbus. Access to mailbox registers is provided using A16/D8(O) VMEbus accesses only.

INTERRUPT HANDLER — The interrupt handler monitors, and can be programmed to respond to any or all VMEbus IRQ* lines. All normal-process VMEbus-related interrupts can be mapped to PCI INTA# or SERR# interrupts. These include:

Mailbox interrupts
VMEbus interrupts
VMEbus interrupter IACK cycle (acknowledgment of VMIVME-7589 VMEbus-issued interrupts)

All error processing VMEbus-related interrupts can be mapped to PCI INTA# or SERR#. Note: PCI SERR# initiates a CPU NMI. These include:

ACFAIL* interrupt
BERR* interrupt
SYSFAIL* interrupt

The interrupt handler has a corresponding STATUS/ID register for each IRQ* interrupt. Once the handler receives an IRQ*, it requests the VMEbus and, once granted, it performs an IACK cycle for that level. Once the IACK cycle is complete and the STATUS/ID is stored in the corresponding ID register, an appropriate interrupt status bit is set in an internal status register, and a PCI interrupt is generated. The PCI interrupt can be mapped to PCI INTA# or SERR#.

INTERRUPTER — Interrupts can be issued under software control on any or all of the seven VMEbus interrupt lines (IRQ7* to IRQ1*). A common ID register is associated with all interrupt lines. During the interrupt acknowledge cycle, the interrupter issues the ID to the interrupt handler.

The interrupter can be programmed to generate a PCI INTA# or SERR# interrupt when a VMEbus interrupt handler acknowledges a software-generated VMEbus interrupt.

BYTE SWAPPING — The Intel 80x86 family of processors use little-endian format. To accommodate other VMEbus modules which transfer data in big-endian format such as the 680x0 processor family, the VMIVME-7589 incorporates byte-swapping hardware. This provides independent byte swapping for both the Master and Slave interfaces. Both Master and Slave interface byte swapping are under software control.

MASTER INTERFACE — MA32:MBLT32:MBLT64 (A32:A24:A16:D32:D16:D8 (EO):BLT32)

The VMEbus master interface provides five separate memory *windows* into VMEbus resources. Each window has separate configuration registers for mapping PCI transfers to the VMEbus (that is, PCI base address, window size, VMEbus base address, VMEbus access type, VMEbus address/data size, etc.). The maximum/minimum window sizes for the five windows are as follows:

Window	Minimum Size	Maximum Size
0	4 Kbyte	4 Gbyte
1 to 3	64 Kbyte	4 Gbyte
4	64 Mbyte	64 Mbyte

SLAVE INTERFACE — Memory Access SAD032:SD32:SBLT32:SBLT64 (A32:A24:A16:D32:D16:D8 (EO): BLT32)

The VMEbus slave interface provides four separate memory *windows* into PCI resources. Each window has separate configuration registers for mapping VMEbus transfers to the PCI bus (that is, VMEbus base address, window size, PCI base address, VMEbus access type,

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VMEbus address/data size, etc.). The maximum/minimum window sizes for the four windows are as follows:

Window	Minimum Size	Maximum Size
0	4 Kbyte	4 Gbyte
1 to 3	64 Kbyte	4 Gbyte

In addition, each window can be programmed to operate in coupled or decoupled mode. In decoupled mode, the window utilizes a write-posting FIFO and/or a read prefetching FIFO for increased system performance. In coupled mode, the FIFOs are bypassed and VMEbus transactions are directly coupled to the PCI bus (that is, transfers on VMEbus are not completed until they are completed on the PCI bus).

GENERAL SOFTWARE — The VMIVME-7589 is 100 percent PC/AT compatible. VMIC supplies support software for Windows® 3.1, Windows 95, Windows NT, and VxWorks operating systems.

OPERATING SYSTEM AND SOFTWARE SUPPORT — VMIC has a wide range of software products designed to run on Intel processor-based CPUs such as the VMIVME-7589. These products are aimed at developers who are incorporating VMIC CPUs, I/O boards, and workstations into systems. Windows NT and VxWorks are the most common operating systems supported.

Windows NT

The IOWorks software family is a set of software components that can work together or separately to provide a total development environment for any application in a Windows NT operating system.

VMISFT-9420, IOWorks Access - Libraries and debug utilities to facilitate VMEbus access by the CPU

VMISFT-9406, IP VMEbus Backplane Driver - Allows VMEbus backplane communications to use Internet protocol

VMISFT-9450, IOWorks Board Drivers - Libraries with drivers for a wide variety of VMIC analog and digital I/O boards

VMISFT-9416, IOWorks Soft Logic Link™ - Package for compiling, downloading, and controlling host and target applications

VMISFT-9400, *WinUIOC*® - Host software for downloading and controlling VMIC's Universal I/O Controller (UIOC®), VMIVME-9300

VMISFT-9410, Visual IOWorks® - Ladder-logic development tool and run-time control package

VMISFT-9412, UCLIO™ for IOWorks - Used with Visual IOWorks. Generates code in VMIC's UCLIO language from ladder-logic input.

VMISFT-9414, C for IOWorks - Used with Visual IOWorks. Generates code in C language from ladder-logic input.

VMISFT-9510, Visual Soft Logic Control™ - Package containing total development and control IOWorks software listed above. Contains Visual IOWorks, C Package, Access, and Board Support Package.

VxWorks

VMISFT-7418, VxWorks Board Support Package - Provides the software needed to run VxWorks operating system on VMIC Pentium processor-based computers.

SPECIFICATIONS

6U single Eurocard format, one slot

Height	9.2 in. (233.4 mm)
Depth	6.3 in. (160 mm)
Thickness	0.8 in. (20.3 mm)

Power Requirements:

+5 VDC (±5 percent), 6 A (typical), 8.5 A maximum

+12 VDC (±5 percent), 105 mA (typical), 150 mA maximum

-12 VDC (±5 percent), 25 mA (typical), 50 mA maximum

Note: The currents at +12 and -12 VDC are specified with the serial connectors open.

Operating Temperature:

0 to 55 °C	166 MHz option (Forced air cooling required)
0 to 50 °C	200 to 233 MHz options

Relative Humidity: 10 to 90 percent, noncondensing

VMEbus Interface:

DTB Master:	BLT32/BLT64, A32/D32, A24/D32, A16/D32
DTB Slave:	BLT32/BLT64, A32/D32, A24/D32, A16/D32
Requester:	Programmable, BR(3 to 0), ROR, RWD, BCAP

Interrupt Handler: IH(1 to 7) D8(O)

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Interrupter:	Programmable, IRQ7* to IRQ1*
Arbiter:	SGL, PRI, RRS
BTO:	Programmable (4 to 1,024 µs)
Compliance:	Rev. C.1

PCI Expansion Site Connector:

VMIVME-7434 compatible
32-bit PCI bus, 33 MHz maximum

COMPATIBLE PRODUCTS

The VMIVME-7589 can be used with a number of VMIC's PMC bus and VMEbus products.

Floppy/Hard Disk: VMIC produces floppy/hard drive modules to support the built-in IDE and floppy controller ports.

The VMIVME-7452 provides up to 6.4 Gbyte of hard disk storage and a 3.5-inch 1.44 Mbyte floppy drive. The unit fits into a standard VMEbus 6U single-slot form factor. An internal flexible cable option along with a VMEbus P2 option are available. This option requires a P2 backplane that supports ribbon cable.

The VMIVME-7453 provides 1 Gbyte of hard disk storage and a 3.5-inch 1.44 Mbyte floppy drive. The unit fits into a standard VMEbus 6U single-slot form factor with cable connections available from the front panel.

PMC/PC Card Capability: VMIC supports PMC and PC Card via our VMIVME-7434 PMC/PC Card Expansion Board. This expansion board allows the VMIVME-7589 to take advantage of the many commercially available PMC boards and PC Cards available from third-party sources.

CD-ROM Support: Since much of today's advanced software is delivered on CD-ROM, the parallel port can be used with an external CD-ROM drive such as the Backpack from Micro Solutions.

VMEbus: The VMIVME-7589 enables access to VMIC's wealth of VMEbus products. If you have real-world control, monitoring and real-time networking requirements, VMIC has a solution for you. Today's system requirements demand state-of-the-art solutions. Our advanced I/O features such as Built-in-Test, self-test, isolation, digital autocalibration, and intelligent on-board DSP processing give our customers those solutions.

Analog ADC:

— Up to 64 channels
— 12- and 16-bit ADC
— Isolation
— Differential and single-ended
— Low- and high-speed sampling rates
— Programmable gains and filters
— Simultaneous sample-and-hold
— Autocalibration
— Signal conditioning: RTD, strain gauge, and thermocouples

Analog Output:

— Up to 32 channels
— 12- and 16-bit DAC
— Isolation
— Voltage and current outputs
— Programmable function generator

Digital Input:

— Up to 128 channels per board
— Change-of-state and time tagging
— Isolated
— Contact and voltage sensing
— Pulse accumulators
— AC and DC inputs up to 240 V
— TTL, RS-422, or RS-485

Digital Output:

— Up to 128 channels
— TTL and high voltage
— Isolated
— Solid-state and mechanical relays, latching or momentary
— Real-time and off-line fault detection and isolation

Chassis and Power Supplies: VMIC provides a number of chassis and table top enclosures to complete your installation. A variety of power supplies are available to suit your system needs.

TRADEMARKS

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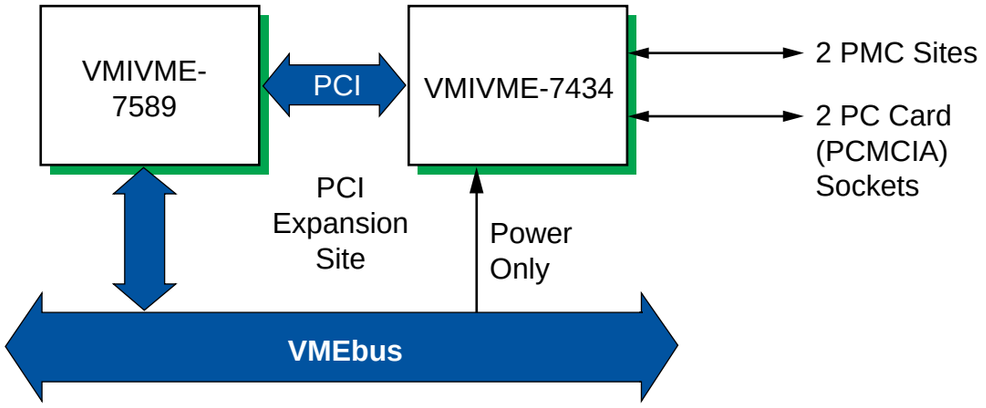


Figure 1. PCI Expansion Site

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