VMIVME-7697
Pentium III Processor-Based VMEbus CPU

- Pentium® III processor-based CPU
- Special features for embedded applications
  - — 8 to 96 Mbyte bootable flash on secondary IDE (optional)
  - — Three programmable 32-bit timers
  - — 128 Kbyte of battery-backed SRAM
  - — Software-selectable watchdog timer with reset
  - — Remote Ethernet booting
  - — Supports VMEbus P2 connection to HD/floppy drive
  - — PMC mezzanine expansion site (IEEE-P1386 common mezzanine card standard, 5 V)
  - — VME64 modes supported: A32/A24/D32/D16/D08(EO)/MBLT64/BLT32
  - — VMEbus interrupt handler, interrupter, and system controller
  - — Includes real-time endian conversion hardware for little-endian and big-endian data interfacing (patent pending)
  - — Enhanced bus error handling
  - — Passive heat sink
- Standard features include
  - — Up to 850 MHz Pentium III processor with 256 Kbyte advanced transfer cache
  - — Up to 512 Mbyte SDRAM using 144-pin SODIMM
  - — 64-bit AGP SVGA controller with 4 Mbyte SGRAM
  - — 100 MHz system bus
  - — On-board Fast Ethernet controller supporting 10BaseT and 100BaseTX interfaces
  - — On-board Ultra-DMA-33 hard drive and floppy drive controllers (use VMEbus P2 for connection to IDE/floppy)
  - — PCI fast/wide SCSI-2 with VMEbus P2 I/O (requires P2 SCSI terminator cards, VMIACC-0561)
  - — Two high-performance 16550-compatible serial ports
  - — Enhanced parallel port with ECP/EPP modes supported
  - — PS/2-style keyboard and mouse ports on front panel
  - — Real-time clock and miniature speaker included
  - — Front panel universal serial bus (USB) connection
- Operating system support available:
  - — Windows NT®
  - — VxWorks
  - — Solaris
  - — QNX
  - — Linux

APPLICATIONS

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

MICROPROCESSOR — The VMIVME-7697 brings Intel® Pentium III processor with MMX™ to VMEbus. The Pentium III processor has 32-bit addressing and a 64-bit data bus. Its superscalar architecture allows three instructions to be executed per clock cycle. A dynamic branch prediction unit, separate instruction and data caches, MMX technology, and streaming SIMD extensions with 70 new instructions also increase the Pentium III processor's performance. The Pentium III processor has 256 Kbyte of advanced transfer cache (ATC). ATC is an L2 cache integrated on the same die as the processor core. ATC is available on the 550 MHz and higher processors.

DRAM MEMORY — The VMIVME-7697 accepts a 144-pin SODIMM SDRAM module for a maximum memory capacity of 512 Mbyte. The on-board DRAM is dual ported to the VMEbus.

BIOS — System BIOS, video BIOS, remote Ethernet BIOS, LAN Boot BIOS, and SCSI BIOS are provided in reprogrammable flash memory.

Ordering Options

March 30, 2000 800-007697-000 F		A	B	C	–	D	E	F
VMIVME-7697	–				–			

A = Processor
0 = Reserved
1 = 500 MHz Pentium III Processor
2 = 550 MHz Pentium III Processor
3 = 600 MHz Pentium III Processor
4 = Reserved
5 = 700 MHz Pentium III Processor
6 = Reserved
7 = 800 MHz Pentium III Processor
8 = 850 MHz Pentium III Processor

B = SDRAM Memory
0 = Reserved
1 = Reserved
2 = Reserved
3 = 32 Mbyte
4 = 64 Mbyte
5 = 128 Mbyte
6 = 256 Mbyte
7 = 512 Mbyte

C = Flash Memory
0 = No Flash
1 = 8 Mbyte
2 = Reserved
3 = Reserved
4 = Reserved
5 = 64 Mbyte
6 = Reserved
7 = 96 Mbyte

		A	B	C	–	D	E	F
VMIVME-7452	–	4			–			

A = 4
BC = Indicates Disk Module Configuration
(See the VMIVME-7452 specification for details on disk module configuration options.)

SCSI Terminator Board

VMIACC-0561

The VMIACC-0561 SCSI Terminator Board provides transition of the SCSI bus from the VMEbus P2 connector to a standard SCSI connector. This accessory is sold separately.

IDE/Floppy Transition Board

VMIACC-0562

The VMIACC-0562 converts P2 IDE/Floppy signals to 40- and 34-pin headers for use at the rear of the VMEbus backplane. This accessory is 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

SUPER VGA CONTROLLER — High-resolution graphics and multimedia-quality video are supported on the VMIVME-7697 by a 3D AGP graphics adapter. The adapter is complemented by 4 Mbyte synchronous DRAM with a high-bandwidth 64-bit data interface. Screen resolutions supported by the graphics adapter are shown in the table below.

Screen Resolution	Maximum Colors	Refresh Rate (Hz)
320 x 200	256, 64 K, 16 M	70
320 x 240	256, 64 K, 16 M	72
400 x 300	256, 64 K, 16 M	72
512 x 384	256, 64 K, 16 M	70
640 x 400	256, 64 K, 16 M	70
640 x 480	256, 32.768 K, 64 K, 16 M	60, 72, 75, 85
800 x 600	256, 32.768 K, 64 K, 16 M	56, 60, 72, 75, 85
1024 x 768	256, 32.768 K, 64 K, 16 M	43(I), 60, 70, 75, 85
1152 x 864	256, 32.768 K, 64 K, 16 M	60, 70, 75, 85
1280 x 1024	256, 32.768 K, 64 K	43(I), 60, 75, 85

PCI SCSI-2 CONTROLLER — Peripheral connections to SCSI hard drives, tape backup, and CD-ROM drives are facilitated by the on-board PCI SCSI-2 controller, which provides 8- or 16-bit operation at up to 40 Mbyte/s. SCSI I/O is provided through the VMEbus P2 connector, and requires the use of the VMIC VMIACC-0561 SCSI adapter card.

Ethernet CONTROLLER — The VMIVME-7697 supports Ethernet LANs with the DEC 21143 PCI Ethernet controller. 10BaseT and 100BaseTX options are supported via an RJ45 connector.

REMOTE Ethernet BOOTING — The VMIVME-7697 utilizes Lanworks Technologies, Inc.'s BootWare®. BootWare provides the ability to remotely boot the VMIVME-7697 using NetWare, TCP/IP, or RPL network protocols.

BootWare Features:

- NetWare, TCP/IP, RPL network protocol support
- Unparalleled boot sector virus protection
- Detailed boot configuration screens
- Comprehensive diagnostics
- Optional disabling of local boots
- Dual-boot option lets users select network or local booting

UNIVERSAL SERIAL BUS (USB) — The VMIVME-7697 provides a front panel single connection hub host controller for the USB. Supported USB features include: isochronous data transfers, asynchronous messaging, self-identification and configuration of peripherals, and dynamic (hot) attachment.

SERIAL PORTS — Two 16550-compatible serial ports are featured on the VMIVME-7697 front panel. Each serial channel has an independent 16-byte FIFO to support baud rates up to 56 kHz.

ENHANCED PARALLEL PORT — Also accessible on the VMIVME-7697 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.

KEYBOARD AND MOUSE PORTS — The VMIVME-7697 has standard PS/2 keyboard and mouse connectors for peripherals.

FLASH MEMORY — The VMIVME-7697 provides 8 to 96 Mbyte of Flash memory accessible through the secondary IDE port. The VMIVME-7697 BIOS includes an option to allow the board to boot from the Flash memory.

32-bit TIMERS — The VMIVME-7697 provides the user with three 16-/32-bit timers which are 82C54 compatible. These timers are mapped in PCI memory space, and are completely software programmable.

WATCHDOG TIMER — The VMIVME-7697 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 a timeout will occur. A user jumper allows the timeout to cause a Reset. Independent of the jumper, software can enable the watchdog timeout to cause a Nonmaskable Interrupt (NMI) or a VMEbus SYSFAIL.

BATTERY-BACKED SRAM — The VMIVME-7697 provides 128 Kbyte of battery-backed SRAM. The SRAM is accessible in PCI 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-7697. 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-7697 to provide PC/AT sound output.

PMC EXPANSION SITE — The VMIVME-7697 supports IEEE P1386 common mezzanine card specification

with a 5 V PCI mezzanine card expansion site. This expansion capability allows third-party devices to be used with the VMIVME-7697.

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

- Fibre Channel
- Reflective Memory
- Analog and digital I/O
- High-speed serial and parallel I/O
- Networking adapters: FDDI, ATM, 10BaseT, 100BaseTX 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

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

VMEbus INTERFACE — The VMIVME-7697 VMEbus interface is based on the Universe II high-performance PCI-to-VME interface from Newbridge/Tundra.

SYSTEM CONTROLLER — The on-board VMEbus system controller capabilities allow the board to operate as a slot 1 controller, 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 32-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.

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-7697 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-7697 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 nine 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	4 Kbyte	4 Gbyte
1 to 3, 5 to 7	64 Kbyte	4 Gbyte
Special Cycle	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 eight 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, VMEbus address/data size, etc.). The maximum/minimum window sizes for the four windows are as follows:

Window	Minimum Size	Maximum Size
0, 4	4 Kbyte	4 Gbyte
1 to 3, 5 to 7	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).

ENHANCED BUS ERROR HANDLING — Enhancements over the Universe chip's bus error handling features are provided. A latch and register are provided to allow the CPU to read the VMEbus address that caused the bus error in all modes. The Universe chip's support is limited to decoupled mode.

Support for bus cycle timeout and assertion of bus error is provided. The board may be configured to assert bus error upon timeout regardless of its status as system controller. The Universe chip asserts bus error only if it is system controller. In addition, this board may be configured to assert an interrupt upon bus cycle timeout.

OPERATING SYSTEM AND SOFTWARE SUPPORT — The VMIVME-7697 provides embedded features beyond PC/AT functionality. These features are supported by VMIC software products 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 by VMIC software products.

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 OS.

VMISFT-9420 IOWorks Access™ for Windows NT — The IOWorks Access product is specifically designed for accessing the advanced VMEbus architecture of the VMIVME-7697. Running on Windows NT, IOWorks Access is both sophisticated and easy to use.

The function library, VMEbus toolset, and open architecture IOWorks Access offers make it one of the most powerful products on the market today. It provides compatibility with existing VMIC VMEbus PC platforms and compatibility with future VMEbus PC platforms VMIC creates.

The IOWorks Access development package gives you everything you need to develop applications for your VME operations. This package includes the *VMEmanager*™ function library and four utilities that enable you to easily configure a VMEbus, dynamically monitor VMEbus activities, manage VMEbus data, and use DDE-client applications.

IOWorks Access provides powerful tools for developing, debugging, and monitoring VMEbus applications and increasing VMEbus performance. The flexible design of IOWorks Access enables you to incorporate it as a stand-alone solution, or use it to open your VMEbus operations to the IOWorks product suite.

IOWorks Access manipulates the hardware behind the scenes. With IOWorks Access, you can develop applications in or use existing applications developed in most programming environments. For example, IOWorks Access

enables your VMEbus to recognize applications developed in these popular programming environments:

- IOWorks Manager™
- LabVIEW
- Citect
- Wonderware InTouch
- Visual IOWorks®
- Visual Basic®
- Visual C++®

VMISFT-9406 IP VMEbus BACKPLANE DRIVER — VMIC's backplane network driver for the VMEbus provides support for Internet Protocol (IP) and shared memory accesses for VMIC's extensive line of CPU products. This driver allows the VMEbus backplane to perform the same function as any other network connection such as Ethernet, FDDI, or SLIP. VMIC's backplane network driver is fully compatible with VxWorks shared memory network from Wind River Systems, Inc. This compatibility allows users to tightly couple VMIC Windows NT CPUs with several different models of CPU products, which support VxWorks over the VMEbus. Networking tightly coupled CPUs together over the VMEbus using the backplane network driver provides a high-speed communications path among multiple CPUs using industry-standard TCP/IP protocol.

VxWorks OS SUPPORT

VMISFT-7418 BOARD SUPPORT PACKAGE — The VMISFT-7418 is a Wind River Systems, Inc.'s certified board support package (BSP) for VMIC's series of VMEbus Pentium processor-based computers, which is required to run the VxWorks OS. With the CPU, VxWorks, the BSP, and other VMEbus equipment from VMIC, implementations can be created for a wide variety of applications, including real-time factory automation, simulation, instrumentation and control, and process control and monitoring.

The BSP is linked with VxWorks OS, thus allowing software applications created with Wind River Systems, Inc.'s development system to load and run on the particular VMIC CPU hardware being used. Serial ports, parallel ports, keyboard, text mode video, and Ethernet transceivers are all supported, as well as floppy and IDE hard disk drives that can be connected to the computer boards. The BSP provides Flash boot, NVRAM, and timer support.

The BSP allows VxWorks applications to have access to the VMEbus. When hardware includes single cycle and block transfers using DMA devices, they are supported by the BSP, as well as interprocessor communications with mailbox registers. VMEbus interrupt handling and error handling are supported. Since the VMEbus environment often contains a mixture of devices from various manufacturers, the byte-swapping feature is provided to allow big-endian and little-endian devices to share data correctly.

QNX OS SUPPORT

VMISFT-7417 BOARD SUPPORT PACKAGE — The VMISFT-7417 BSP provides QNX support and includes a VMEbus manager, user API, and configuration files needed to run the QNX BSP on VMIC's VMIVME-7xxx CPU products. This BSP provides customizable VMEbus access. Using the QNX OS on the VMIVME-7xxx CPUs provides a computing platform suitable for real-time applications. QNX provides the applications programmer with a real-time extensible POSIX OS.

VMIC's VMISFT-7417 is designed to tailor QNX's x86 OS to the VMIVME-7xxx platform. This combination provides a self-hosted development environment which runs entirely on the VMIVME-7xxx CPU boards without requiring any external host systems.

Solaris OS SUPPORT

VMISFT-7416 BOARD SUPPORT PACKAGE — The VMISFT-7416 BSP includes everything necessary to allow installation of the Solaris Intel edition OS (available separately from Sun Microsystems, Inc.) onto VMIVME-7697 CPU. This BSP includes a nexus driver for VMEbus access. It allows military and telecommunications and other applications to take advantage of Sun Microsystems, Inc.'s Solaris OS on a VMEbus-based Intel CPU. This BSP and the Solaris OS provides POSIX-compliant real-time characteristics.

LynxOS x86 OS SUPPORT

The VMISFT-7419 board support package (BSP) includes all of the device drivers and configuration tables needed to install the LynxOS x86 development system (available separately from Lynx Real-Time Systems, Inc.) onto VMIC's VMIVME-7696.

Using the LynxOS on the VMIC CPUs provides a computing platform suitable for hard real-time applications. LynxOS provides the applications programmer with a stable development environment based on industry-wide standards such as POSIX and Motif.

I/O SUPPORT

VMISFT-9450 IOWorks BOARD DRIVERS — This driver supports VMIC's extensive line of VME I/O boards, and is available for Windows NT and VxWorks. IOWorks board drivers take advantage of all the key benefits and features of each supported I/O board, and new I/O boards are constantly being added.

IOWorks board drivers contain both a C++ class library and a C function library that provide a common interface to VMIC I/O products for reading, writing, and configuring. You do not need to know the details of how an individual board is programmed. For instance, you can use the SetAttributes function on any supported VMIC board; the WriteAnalog function controls the output from any VMIC analog output board; or the GetScanMode function retrieves the scan mode for any VMIC analog board.

SPECIFICATIONS

6U two Eurocard format, two slots

Height	9.2 in. (233.4 mm)
Depth	6.3 in. (160 mm)
Thickness	1.6 in. (20.3 mm)

Power Requirements:
+5 VDC (±5 percent), 7.5 A (typical), 12.0 A maximum

+12 VDC (±5 percent), 105 mA (typical), 200 mA maximum

-12 VDC (±5 percent), 50 mA (typical), 75 mA maximum

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

Operating Temperature:
0 to 55 ˚C (Forced air cooling required, 300 LFM minimum)

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

PMC Expansion Site Connector:
5 V signaling, types 1 and 2
32-bit PCI bus, 33 MHz maximum

MTBF: 34,681 hours (217F)

COMPATIBLE PRODUCTS

The VMIVME-7697 can be used with a number of VMIC 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 6.0 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. The VMIACC-0562 converts P2 IDE/Floppy signals to 40- and 34-pin headers for use at the rear of the VMEbus backplane.

PMC Capability: VMIC supports PMC via the on-board PMC expansion site. This expansion site allows the VMIVME-7697 to take advantage of the many commercially available PMC boards available from third-party sources.

CD-ROM Support: Since much of today's advanced software is delivered on CD-ROM, the VMIVME-7455 provides CD-ROM capability within a single 6U VME slot. Alternating the on-board SCSI port can be used with an external CD-ROM drive.

VMEbus: The VMIVME-7697 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 drivers or 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.

IOWorks for Industrial Automation and Test and Measurement: IOWorks is a modular IEC 61131-3-compliant component PC control software product designed to support just about any I/O requirement for industrial automation and test and measurement. The IOWorks control strategy was designed around PC platform and operating system independency to provide you with the highest performance solutions based upon open architecture and open software standards. Software standards such as OPC, OLE, ODBC, and DDE provide significant flexibility and expandability. IOWorks software, coupled with open architecture solutions, provides the ideal solution for applications where supportability, cost, and performance coupled with designed in migration paths to protect your software investment is critical.

The I/O Solution for Your I/O Problem: VMIC's 13 years of experience in suppling high-performance deterministic controllers for multiple markets lead to the development of IOWorks software with features, benefits, and capabilities to solve just about any I/O problem. From PLC alternatives to data servers which support the seamless interconnection of dissimilar systems, VMIC has the solution for simple to complex, high-speed, deterministic requirements. IOWorks PC platforms, target, OS and I/O independency provide the flexibility for solutions shown in Figure 1.

TRADEMARKS

Figure 1. IOWorks Solutions for Your I/O Problems

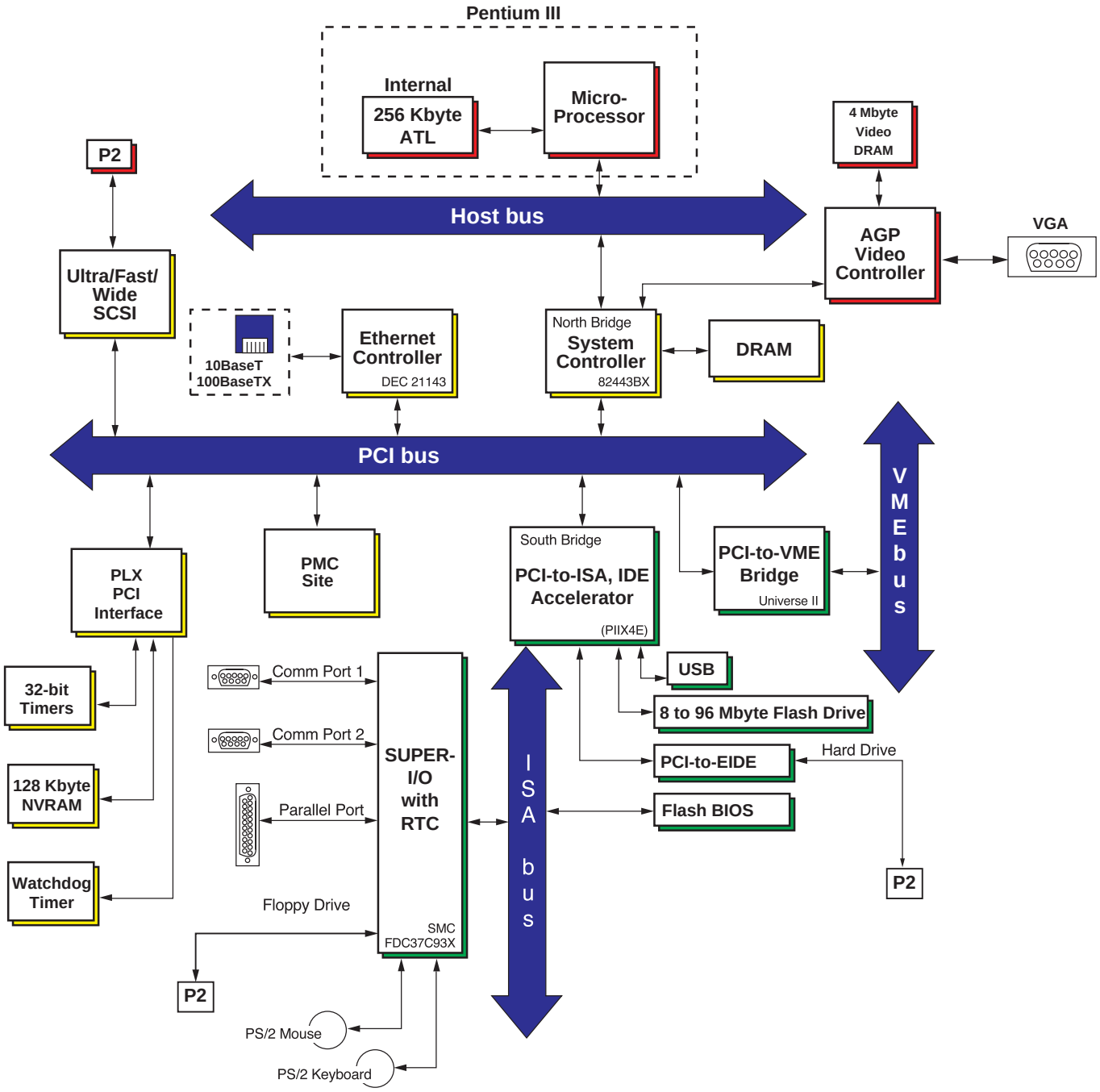

Figure 2. VMIVME-7697 Block Diagram