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PowerPC 603 <sup>TM</sup> RISC Microprocessor Technical Summary PowerPC 604 <sup>TM</sup> RISC Microprocessor Technical Summary Literature Distribution Center for Motorola Telephone: 1-800- 441-2447 FAX: (602) 994-6430 or (303) 675-2150	MPC603E/D MPC604E/D
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PowerPC <sup>TM</sup> Microprocessor Family: The Programming Environment for 32-Bit Microprocessors Literature Distribution Center for Motorola Telephone: 1-800- 441-2447 FAX: (602) 994-6430 or (303) 675-2150  OR IBM Microelectronics Programming Environment Manual	MPCFPE/AD        G522-0290-01
PC16550 UART National Semiconductor Corporation	PC16550DV

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Document Title and Source	Publication Number
21140 Fast Etherworks PCI 10-Flash-100 Ethernet Adapter Owner's Manual Compaq Telephone: 1-800.at.compaq	EK-DE500-OM
W83C553 Enhanced System I/O Controller with PCI Arbiter (PIB) Winbond Electronics Corporation	W83C553F
M48T59 CMOS 8K x 8 TIMEKEEPER™ SRAM Data Sheet STMicroelectronics	M48T59
Universe User Manual Tundra Semiconductor Corporation	Universe Part Number 9000000.MD303.01

## Related Specifications

For additional information, refer to the following table for related specifications. For your convenience, a source for the listed document is also provided. It is important to note that in many cases, the information is preliminary and the revision levels of the documents are subject to change without notice.

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Document Title and Source	Publication Number
VME64 Specification VITA (VMEbus International Trade Association) 7825 E. Gelding Drive, Suite 104 Scottsdale, Arizona 85260-3415 Telephone: (602) 951-8866 FAX: (602) 951-0720	ANSI/VITA 1-1994
<b>NOTE:</b> An earlier version of this specification is available as: Versatile Backplane Bus: VMEbus Institute of Electrical and Electronics Engineers, Inc.  OR Microprocessor system bus for 1 to 4 byte data Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembe Geneva, Switzerland	ANSI/IEEE Standard 1014-1987     IEC 821 BUS
IEEE - Common Mezzanine Card Specification (CMC) Institute of Electrical and Electronics Engineers, Inc.	P1386 Draft 2.0
IEEE - PCI Mezzanine Card Specification (PMC) Institute of Electrical and Electronics Engineers, Inc.	P1386.1 Draft 2.0
Bidirectional Parallel Port Interface Specification Institute of Electrical and Electronics Engineers, Inc.	IEEE Standard 1284

D

Document Title and Source	Publication Number
Peripheral Component Interconnect (PCI) Local Bus Specification, Revision 2.0 PCI Special Interest Group	PCI Local Bus Specification
PowerPC Reference Platform (PRP) Specification, Third Edition, Version 1.0, Volumes I and II International Business Machines Corporation	MPR-PPC-RPU-02
PowerPC Microprocessor Common Hardware Reference Platform: A System Architecture (CHRP), Version 1.0 Literature Distribution Center for Motorola Telephone: 1-800- 441-2447 FAX: (602) 994-6430 or (303) 675-2150  OR Morgan Kaufmann Publishers, Inc. Telephone: (415) 392-2665 Telephone: 1-800-745-7323	
Interface Between Data Terminal Equipment and Data Circuit- Terminating Equipment Employing Serial Binary Data Interchange Electronic Industries Alliance  (for publications)	TIA/EIA-232 Standard

# Glossary

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## Abbreviations, Acronyms, and Terms to Know

This glossary defines some of the abbreviations, acronyms, and key terms used in this document.

<b>10Base-5</b>	An Ethernet implementation in which the physical medium is a doubly shielded, 50-ohm coaxial cable capable of carrying data at 10 Mbps for a length of 500 meters (also referred to as thicknet). Also known as thick Ethernet.
<b>10Base-2</b>	An Ethernet implementation in which the physical medium is a single-shielded, 50-ohm RG58A/U coaxial cable capable of carrying data at 10 Mbps for a length of 185 meters (also referred to as AUI or thinnet). Also known as thin Ethernet.
<b>10Base-T</b>	An Ethernet implementation in which the physical medium is an unshielded twisted pair (UTP) of wires capable of carrying data at 10 Mbps for a maximum distance of 185 meters. Also known as twisted-pair Ethernet.
<b>100Base-TX</b>	An Ethernet implementation in which the physical medium is an unshielded twisted pair (UTP) of wires capable of carrying data at 100 Mbps for a maximum distance of 100 meters. Also known as fast Ethernet.
<b>ACIA</b>	<b>Asynchronous Communications Interface Adapter</b>
<b>AIX</b>	<b>Advanced Interactive eXecutive</b> (IBM version of UNIX)
<b>architecture</b>	The main overall design in which each individual hardware component of the computer system is interrelated. The most common uses of this term are 8-bit, 16-bit, or 32-bit architectural design systems.
<b>ASCII</b>	<b>American Standard Code for Information Interchange</b> . This is a 7-bit code used to encode alphanumeric information. In the IBM-compatible world, this is expanded to 8-bits to encode a total of 256 alphanumeric and control characters.
<b>ASIC</b>	<b>Application-Specific Integrated Circuit</b>

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<b>AUI</b>	<b>Attachment Unit Interface</b>
<b>BBRAM</b>	<b>Battery Backed-up Random Access Memory</b>
<b>bi-endian</b>	Having big-endian and little-endian byte ordering capability.
<b>big-endian</b>	A byte-ordering method in memory where the address $n$ of a word corresponds to the most significant byte. In an addressed memory word, the bytes are ordered (left to right) 0, 1, 2, 3, with 0 being the most significant byte.
<b>BIOS</b>	<b>Basic Input/Output System.</b> This is the built-in program that controls the basic functions of communications between the processor and the I/O (peripherals) devices. Also referred to as ROM BIOS.
<b>BitBLT</b>	<b>Bit Boundary BLock Transfer.</b> A type of graphics drawing routine that moves a rectangle of data from one area of display memory to another. The data specifically need not have any particular alignment.
<b>BLT</b>	<b>BLock Transfer</b>
<b>board</b>	The term more commonly used to refer to a PCB (printed circuit board). Basically, a flat board made of nonconducting material, such as plastic or fiberglass, on which chips and other electronic components are mounted. Also referred to as a circuit board or card.
<b>bpi</b>	<b>bits per inch</b>
<b>bps</b>	<b>bits per second</b>
<b>bus</b>	The pathway used to communicate between the CPU, memory, and various input/output devices, including floppy and hard disk drives. Available in various widths (8-, 16-, and 32-bit), with accompanying increases in speed.
<b>cache</b>	A high-speed memory that resides logically between a central processing unit (CPU) and the main memory. This temporary memory holds the data and/or instructions that the CPU is most likely to use over and over again and avoids accessing the slower hard or floppy disk drive.
<b>CAS</b>	<b>Column Address Strobe.</b> The clock signal used in dynamic RAMs to control the input of column addresses.
<b>CD</b>	<b>Compact Disc.</b> A hard, round, flat portable storage unit that stores information digitally.

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<b>CD-ROM</b>	Compact <b>Disk Read-Only Memory</b>
<b>CFM</b>	Cubic <b>Feet per Minute</b>
<b>CHRP</b>	See Common Hardware Reference Platform (CHRP).
<b>CHRP-compliant</b>	See Common Hardware Reference Platform (CHRP).
<b>CHRP Spec</b>	See Common Hardware Reference Platform (CHRP).
<b>CISC</b>	<b>Complex-Instruction-Set Computer</b> . A computer whose processor is designed to sequentially run variable-length instructions, many of which require several clock cycles, that perform complex tasks and thereby simplify programming.
<b>CODEC</b>	<b>COder/DECoder</b>
<b>Color Difference (CD)</b>	The signals of (R-Y) and (B-Y) without the luminance (-Y) signal. The Green signals (G-Y) can be extracted by these two signals.
<b>Common Hardware Reference Platform (CHRP)</b>	A specification published by Apple, IBM, and Motorola which defines the devices, interfaces, and data formats that make up a CHRP-compliant system using a PowerPC processor.
<b>Composite Video Signal (CVS/CVBS)</b>	Signal that carries video picture information for color, brightness and synchronizing signals for both horizontal and vertical scans. Sometimes referred to as “Baseband Video”.
<b>cpi</b>	characters <b>per inch</b>
<b>cpl</b>	characters <b>per line</b>
<b>CPU</b>	<b>Central Processing Unit</b> . The master computer unit in a system.
<b>DCE</b>	<b>Data Circuit-terminating Equipment</b> .
<b>DLL</b>	<b>Dynamic Link Library</b> . A set of functions that are linked to the referencing program at the time it is loaded into memory.
<b>DMA</b>	<b>Direct Memory Access</b> . A method by which a device may read or write to memory directly without processor intervention. DMA is typically used by block I/O devices.
<b>DOS</b>	<b>Disk Operating System</b>
<b>dpi</b>	dots <b>per inch</b>

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<b>DRAM</b>	<b>D</b> ynamic <b>R</b> andom <b>A</b> ccess <b>M</b> emory. A memory technology that is characterized by extreme high density, low power, and low cost. It must be more or less continuously refreshed to avoid loss of data.
<b>DTE</b>	<b>D</b> ata <b>T</b> erminal <b>E</b> quipment.
<b>ECC</b>	<b>E</b> rror <b>C</b> orrection <b>C</b> ode
<b>ECP</b>	<b>E</b> xtended <b>C</b> apability <b>P</b> ort
<b>EEPROM</b>	<b>E</b> lectrically <b>E</b> rasable <b>P</b> rogrammable <b>R</b> ead- <b>O</b> nly <b>M</b> emory. A memory storage device that can be written repeatedly with no special erasure fixture. EEPROMs do not lose their contents when they are powered down.
<b>EIDE</b>	<b>E</b> nhanced <b>I</b> ntegrated <b>D</b> rive <b>E</b> lectronics. An improved version of <b>IDE</b> , with faster data rates, 32-bit transactions, and DMA. Also known as <b>F</b> ast <b>A</b> TA- <b>2</b> .
<b>EISA (bus)</b>	<b>E</b> xtended <b>I</b> ndustry <b>S</b> tandard <b>A</b> rchitecture (bus) (IBM). An architectural system using a 32-bit bus that allows data to be transferred between peripherals in 32-bit chunks instead of 16-bit or 8-bit that most systems use. With the transfer of larger bits of information, the machine is able to perform much faster than the standard ISA bus system.
<b>EPP</b>	<b>E</b> nhanced <b>P</b> arallel <b>P</b> ort
<b>EPROM</b>	<b>E</b> rasable <b>P</b> rogrammable <b>R</b> ead- <b>O</b> nly <b>M</b> emory. A memory storage device that can be written once (per erasure cycle) and read many times.
<b>ESCC</b>	<b>E</b> nhanced <b>S</b> erial <b>C</b> ommunication <b>C</b> ontroller
<b>ESD</b>	<b>E</b> lectro- <b>S</b> tatic <b>D</b> ischarge/ <b>D</b> amage
<b>Ethernet</b>	A local area network standard that uses radio frequency signals carried by coaxial cables.
<b>Falcon</b>	The DRAM controller chip developed by Motorola for the MVME2600 and MVME3600 series of boards. It is intended to be used in sets of two to provide the necessary interface between the Power PC60x bus and the 144-bit ECC DRAM (system memory array) and/or ROM/Flash.
<b>fast Ethernet</b>	See 100Base-TX.
<b>FDC</b>	<b>F</b> loppy <b>D</b> isk <b>C</b> ontroller

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<b>FDDI</b>	<b>Fiber Distributed Data Interface.</b> A network based on the use of optical-fiber cable to transmit data in non-return-to-zero, invert-on-1s (NRZI) format at speeds up to 100 Mbps.
<b>FIFO</b>	<b>First-In, First-Out.</b> A memory that can temporarily hold data so that the sending device can send data faster than the receiving device can accept it. The sending and receiving devices typically operate asynchronously.
<b>firmware</b>	The program or specific software instructions that have been more or less permanently burned into an electronic component, such as a ROM (read-only memory) or an EPROM (erasable programmable read-only memory).
<b>frame</b>	One complete television picture frame consists of 525 horizontal lines with the NTSC system. One frame consists of two Fields.
<b>graphics controller</b>	On EGA and VGA, a section of circuitry that can provide hardware assist for graphics drawing algorithms by performing logical functions on data written to display memory.
<b>HAL</b>	<b>Hardware Abstraction Layer.</b> The lower level hardware interface module of the Windows NT operating system. It contains platform specific functionality.
<b>hardware</b>	A computing system is normally spoken of as having two major components: hardware and software. Hardware is the term used to describe any of the physical embodiments of a computer system, with emphasis on the electronic circuits (the computer) and electromechanical devices (peripherals) that make up the system.
<b>HCT</b>	<b>Hardware Conformance Test.</b> A test used to ensure that both hardware and software conform to the Windows NT interface.
<b>I/O</b>	<b>Input/Output</b>
<b>IBC</b>	<b>PCI/ISA Bridge Controller</b>
<b>IDC</b>	<b>Insulation Displacement Connector</b>
<b>IDE</b>	<b>Integrated Drive Electronics.</b> A disk drive interface standard. Also known as <b>ATA (Advanced Technology Attachment).</b>
<b>IEEE</b>	<b>Institute of Electrical and Electronics Engineers</b>

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<b>interlaced</b>	A graphics system in which the even scanlines are refreshed in one vertical cycle (field), and the odd scanlines are refreshed in another vertical cycle. The advantage is that the video bandwidth is roughly half that required for a non-interlaced system of the same resolution. This results in less costly hardware. It also may make it possible to display a resolution that would otherwise be impossible on given hardware. The disadvantage of an interlaced system is flicker, especially when displaying objects that are only a few scanlines high.
<b>IQ Signals</b>	Similar to the color difference signals (R-Y), (B-Y) but using different vector axis for encoding or decoding. Used by some USA TV and IC manufacturers for color decoding.
<b>ISA (bus)</b>	Industry Standard Architecture (bus). The de facto standard system bus for IBM-compatible computers until the introduction of VESA and PCI. Used in the reference platform specification. (IBM)
<b>ISASIO</b>	ISA Super Input/Output device
<b>ISDN</b>	Integrated Services Digital Network. A standard for digitally transmitting video, audio, and electronic data over public phone networks.
<b>LAN</b>	Local Area Network
<b>LED</b>	Light-Emitting Diode
<b>LFM</b>	Linear Feet per Minute
<b>little-endian</b>	A byte-ordering method in memory where the address $n$ of a word corresponds to the least significant byte. In an addressed memory word, the bytes are ordered (left to right) 3, 2, 1, 0, with 3 being the most significant byte.
<b>MBLT</b>	Multiplexed BLock Transfer
<b>MCA (bus)</b>	Micro Channel Architecture
<b>MCG</b>	Motorola Computer Group
<b>MFM</b>	Modified Frequency Modulation
<b>MIDI</b>	Musical Instrument Digital Interface. The standard format for recording, storing, and playing digital music.
<b>MPC</b>	Multimedia Personal Computer

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<b>MPC105</b>	The PowerPC-to-PCI bus bridge chip developed by Motorola for the Ultra 603/Ultra 604 system board. It provides the necessary interface between the MPC603/MPC604 processor and the Boot ROM (secondary cache), the DRAM (system memory array), and the PCI bus.
<b>MPC601</b>	Motorola's component designation for the PowerPC 601 microprocessor.
<b>MPC603</b>	Motorola's component designation for the PowerPC 603 microprocessor.
<b>MPC604</b>	Motorola's component designation for the PowerPC 604 microprocessor.
<b>MPIC</b>	<b>M</b> ulti- <b>P</b> rocessor <b>I</b> nterrupt <b>C</b> ontroller
<b>MPU</b>	<b>M</b> icro <b>P</b> rocessing <b>U</b> nit
<b>MTBF</b>	<b>M</b> ean <b>T</b> ime <b>B</b> etween <b>F</b> ailures. A statistical term relating to reliability as expressed in power on hours (poh). It was originally developed for the military and can be calculated several different ways, yielding substantially different results. The specification is based on a large number of samplings in one place, running continuously, and the rate at which failure occurs. MTBF is not representative of how long a device, or any individual device is likely to last, nor is it a warranty, but rather, a gauge of the relative reliability of a family of products.
<b>multisession</b>	The ability to record additional information, such as digitized photographs, on a CD-ROM after a prior recording session has ended.
<b>non-interlaced</b>	A video system in which every pixel is refreshed during every vertical scan. A non-interlaced system is normally more expensive than an interlaced system of the same resolution, and is usually said to have a more pleasing appearance.
<b>nonvolatile memory</b>	A memory in which the data content is maintained whether the power supply is connected or not.
<b>NTSC</b>	<b>N</b> ational <b>T</b> elevision <b>S</b> tandards <b>C</b> ommittee (USA)
<b>NVRAM</b>	<b>N</b> on- <b>V</b> olatile <b>R</b> andom <b>A</b> ccess <b>M</b> emory
<b>OEM</b>	<b>O</b> riginal <b>E</b> quipment <b>M</b> anufacturer
<b>OMPAC</b>	<b>O</b> ver - <b>M</b> olded <b>P</b> ad <b>A</b> rray <b>C</b> arrier

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<b>OS</b>	<b>Operating System.</b> The software that manages the computer resources, accesses files, and dispatches programs.
<b>OTP</b>	<b>One-Time Programmable</b>
<b>palette</b>	The range of colors available on the screen, not necessarily simultaneously. For VGA, this is either 16 or 256 simultaneous colors out of 262,144.
<b>parallel port</b>	A connector that can exchange data with an I/O device eight bits at a time. This port is more commonly used for the connection of a printer to a system.
<b>PCI (local bus)</b>	<b>Peripheral Component Interconnect (local bus) (Intel).</b> A high-performance, 32-bit internal interconnect bus used for data transfer to peripheral controller components, such as those for audio, video, and graphics.
<b>PCMCIA (bus)</b>	<b>Personal Computer Memory Card International Association (bus).</b> A standard external interconnect bus which allows peripherals adhering to the standard to be plugged in and used without further system modification.
<b>PCR</b>	<b>PCI Configuration Register</b>
<b>PDS</b>	<b>Processor Direct Slot</b>
<b>PHB</b>	<b>PCI Host Bridge</b>
<b>physical address</b>	A binary address that refers to the actual location of information stored in secondary storage.
<b>PIB</b>	<b>PCI-to-ISA Bridge</b>
<b>pixel</b>	An acronym for picture element, and is also called a pel. A pixel is the smallest addressable graphic on a display screen. In RGB systems, the color of a pixel is defined by some Red intensity, some Green intensity, and some Blue intensity.
<b>PLL</b>	<b>Phase-Locked Loop</b>
<b>PMC</b>	<b>PCI Mezzanine Card</b>
<b>POWER</b>	<b>Performance Optimized With Enhanced RISC architecture (IBM)</b>

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<b>PowerPC™</b>	The trademark used to describe the <b>Performance Optimized With Enhanced RISC</b> microprocessor architecture for <b>Personal Computers</b> developed by the IBM Corporation. PowerPC is superscalar, which means it can handle more than one instruction per clock cycle. Instructions can be sent simultaneously to three types of independent execution units (branch units, fixed-point units, and floating-point units), where they can execute concurrently, but finish out of order. PowerPC is used by Motorola, Inc. under license from IBM.
<b>PowerPC 601™</b>	The first implementation of the PowerPC family of microprocessors. This CPU incorporates a memory management unit with a 256-entry buffer and a 32KB unified (instruction and data) cache. It provides a 64-bit data bus and a separate 32-bit address bus. PowerPC 601 is used by Motorola, Inc. under license from IBM.
<b>PowerPC 603™</b>	The second implementation of the PowerPC family of microprocessors. This CPU incorporates a memory management unit with a 64-entry buffer and an 8KB (instruction and data) cache. It provides a selectable 32-bit or 64-bit data bus and a separate 32-bit address bus. PowerPC 603 is used by Motorola, Inc. under license from IBM.
<b>PowerPC 604™</b>	The third implementation of the PowerPC family of microprocessors currently under development. PowerPC 604 is used by Motorola, Inc. under license from IBM.
<b>PowerPC Reference Platform (PRP)</b>	A specification published by the IBM Power Personal Systems Division which defines the devices, interfaces, and data formats that make up a PRP-compliant system using a PowerPC processor.
<b>PowerStack™ RISC PC (System Board)</b>	A PowerPC-based computer board platform developed by the Motorola Computer Group. It supports Microsoft's Windows NT and IBM's AIX operating systems.
<b>PRP</b>	See PowerPC Reference Platform (PRP).
<b>PRP-compliant</b>	See PowerPC Reference Platform (PRP).
<b>PRP Spec</b>	See PowerPC Reference Platform (PRP).
<b>PROM</b>	<b>Programmable Read-Only Memory</b>
<b>PS/2</b>	<b>Personal System/2 (IBM)</b>

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<b>QFP</b>	<b>Quad Flat Package</b>
<b>RAM</b>	<b>Random-Access Memory.</b> The temporary memory that a computer uses to hold the instructions and data currently being worked with. All data in RAM is lost when the computer is turned off.
<b>RAS</b>	<b>Row Address Strobe.</b> A clock signal used in dynamic RAMs to control the input of the row addresses.
<b>Raven</b>	The PowerPC-to-PCI local bus bridge chip developed by Motorola for the MVME2600 and MVME3600 series of boards. It provides the necessary interface between the PowerPC 60x bus and the PCI bus, and acts as interrupt controller.
<b>Reduced-Instruction-Set Computer (RISC)</b>	A computer in which the processor's instruction set is limited to constant-length instructions that can usually be executed in a single clock cycle.
<b>RFI</b>	<b>Radio Frequency Interference</b>
<b>RGB</b>	The three separate color signals: <b>Red, Green, and Blue.</b> Used with color displays, an interface that uses these three color signals as opposed to an interface used with a monochrome display that requires only a single signal. Both digital and analog RGB interfaces exist.
<b>RISC</b>	See Reduced Instruction Set Computer (RISC).
<b>ROM</b>	<b>Read-Only Memory</b>
<b>RTC</b>	<b>Real-Time Clock</b>
<b>SBC</b>	<b>Single Board Computer</b>
<b>SCSI</b>	<b>Small Computer Systems Interface.</b> An industry-standard high-speed interface primarily used for secondary storage. While the oldest standard, SCSI-1 provides up to 5 Mbps data transfer, the most current (as of the printing date of this manual) ULTRA-160 provides transfer rates of 160 Mbps (a two-fold increase over ULTRA-2 LVD which stands at 80 Mbps).
<b>serial port</b>	A connector that can exchange data with an I/O device one bit at a time. It may operate synchronously or asynchronously, and may include start bits, stop bits, and/or parity.
<b>SIM</b>	<b>Serial Interface Module</b>

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<b>SIMM</b>	<b>Single Inline Memory Module.</b> A small circuit board with RAM chips (normally surface mounted) on it designed to fit into a standard slot.
<b>SIO</b>	<b>Super I/O controller</b>
<b>SMP</b>	<b>Symmetric MultiProcessing.</b> A computer architecture in which tasks are distributed among two or more local processors.
<b>SMT</b>	<b>Surface Mount Technology.</b> A method of mounting devices (such as integrated circuits, resistors, capacitors, and others) on a printed circuit board, characterized by not requiring mounting holes. Rather, the devices are soldered to pads on the printed circuit board. Surface-mount devices are typically smaller than the equivalent through-hole devices.
<b>software</b>	A computing system is normally spoken of as having two major components: hardware and software. Software is the term used to describe any single program or group of programs, languages, operating procedures, and documentation of a computer system. Software is the real interface between the user and the computer.
<b>SRAM</b>	<b>Static Random Access Memory</b>
<b>SSBLT</b>	<b>Source Synchronous BLock Transfer</b>
<b>standard(s)</b>	A set of detailed technical guidelines used as a means of establishing uniformity in an area of hardware or software development.
<b>SVGA</b>	<b>Super Video Graphics Array (IBM).</b> An improved VGA monitor standard that provides at least 256 simultaneous colors and a screen resolution of 800 x 600 pixels.
<b>Teletext</b>	One way broadcast of digital information. The digital information is injected in the broadcast TV signal, VBI, or full field, The transmission medium could be satellite, microwave, cable, etc. The display medium is a regular TV receiver.
<b>thick Ethernet</b>	See 10base-5.
<b>thin Ethernet</b>	See 10base-2.
<b>twisted-pair Ethernet</b>	See 10Base-T.
<b>UART</b>	<b>Universal Asynchronous Receiver/Transmitter</b>
<b>Universe</b>	ASIC developed by Tundra in consultation with Motorola, that provides the complete interface between the PCI bus and the 64-bit VMEbus.

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<b>UV</b>	<b>UltraViolet</b>
<b>UVGA</b>	<b>Ultra Video Graphics Array.</b> An improved VGA monitor standard that provides at least 256 simultaneous colors and a screen resolution of 1024 x 768 pixels.
<b>Vertical Blanking Interval (VBI)</b>	The time it takes the beam to fly back to the top of the screen in order to retrace the opposite field (odd or even). VBI is in the order of 20 TV lines. Teletext information is transmitted over 4 of these lines (lines 14-17).
<b>VESA (bus)</b>	<b>Video Electronics Standards Association (or VL bus).</b> An internal interconnect standard for transferring video information to a computer display system.
<b>VGA</b>	<b>Video Graphics Array (IBM).</b> The third and most common monitor standard used today. It provides up to 256 simultaneous colors and a screen resolution of 640 x 480 pixels.
<b>virtual address</b>	A binary address issued by a CPU that indirectly refers to the location of information in primary memory, such as main memory. When data is copied from disk to main memory, the physical address is changed to the virtual address.
<b>VL bus</b>	See <b>VESA Local bus (VL bus).</b>
<b>VMEchip2</b>	MCG second generation VMEbus interface ASIC (Motorola)
<b>VME2PCI</b>	MCG ASIC that interfaces between the PCI bus and the VMEchip2 device.
<b>volatile memory</b>	A memory in which the data content is lost when the power supply is disconnected.
<b>VRAM</b>	<b>Video (Dynamic) Random Access Memory.</b> Memory chips with two ports, one used for random accesses and the other capable of serial accesses. Once the serial port has been initialized (with a transfer cycle), it can operate independently of the random port. This frees the random port for CPU accesses. The result of adding the serial port is a significantly reduced amount of interference from screen refresh. VRAMs cost more per bit than DRAMs.
<b>Windows NT™</b>	The trademark representing <b>Windows New Technology</b> , a computer operating system developed by the Microsoft Corporation.

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**XGA**

**EX**tended **G**raphics **A**rray. An improved IBM VGA monitor standard that provides at least 256 simultaneous colors and a screen resolution of 1024 x 768 pixels.

**Y Signal**

Luminance. This determines the brightness of each spot (pixel) on a CRT screen either color or B/W systems, but not the color.



## Numerics

10/100 BASET port [2-4](#)  
16/32-bit timers [3-19](#)

## A

abbreviations, acronyms, and terms to know  
[GL-1](#)  
abort (interrupt) signal [2-3](#)  
ABT switch (S1) [2-3](#)  
address pipelining [3-9](#), [3-10](#)  
altitude (operating) [A-1](#)  
ambient air temperature [A-3](#)  
appendix listing [xvi](#)  
architecture, MVME2300 [1-2](#)  
assembly language [5-3](#)  
asynchronous debug port [3-16](#)  
Autoboot enable [6-6](#)

## B

backplane  
    connectors, P1 and P2 [1-21](#)  
    jumpers [1-21](#)  
    VMEbus [1-3](#)  
battery [3-18](#)  
baud rate [1-12](#), [2-5](#)  
BFL LED (DS1) [2-4](#)  
BG and IACK signals [1-21](#)  
bits per character [1-12](#), [2-5](#)  
block diagram  
    memory [3-8](#)  
    MVME2300 [3-3](#)  
board failure, what to do [C-4](#)  
board information block [6-2](#)

board layout, MVME2300 [1-9](#)  
board placement [1-20](#)  
board structure [6-2](#)  
board won't autoboot [C-3](#)  
bridge controller functions [3-16](#)  
buses, standard [3-3](#), [4-1](#)

## C

cables, I/O ports [A-4](#)  
chapter listing (see also appendix listing) [xvi](#)  
chassis, VMEsystem [1-4](#)  
clock, real-time [3-17](#)  
CNFG [6-2](#)  
commands, debugger [5-6](#)  
conductive chassis rails [A-4](#)  
configurable items, MVME2300 base board  
    [1-8](#)  
configuration, debug port [2-5](#)  
configurations, MVME2300 [1-2](#)  
configure  
    PPC1Bug parameters [6-3](#)  
    VMEbus interface [6-12](#)  
Configure Board Information Block (CNFG)  
    [6-2](#)  
configuring the hardware [1-7](#)  
connector pin assignments [B-1](#)  
console terminal [1-4](#)  
    preparing [1-12](#)  
contact sales office [D-1](#)  
content overview [xv](#), [xvi](#)  
cooling requirements [A-3](#)  
counters [3-18](#)  
CPU LED (DS2) [2-3](#), [2-4](#)

**D**

debug console terminal [1-4](#)  
debug firmware, PPCBug [5-1](#)  
DEBUG port [1-21](#)  
DEBUG port, MVME2300 [2-5](#)  
debug prompt gone [C-2](#)  
debugger  
    commands [5-6](#)  
    directory [5-10](#)  
    prompt [5-2](#)  
debugger firmware (PPCBug) [3-11](#), [6-1](#)  
DECchip 21140 LAN controller [3-12](#), [4-4](#)  
description of MVME2300 [1-1](#)  
diagnostics  
    directory [5-10](#)  
    hardware [5-10](#)  
    prompt [5-2](#)  
    test groups [5-10](#)  
dimensions of base board [A-2](#)  
directories, debugger and diagnostic [5-10](#)  
DMA channels [4-8](#)  
documentation, related [D-1](#)  
DRAM latency [3-8](#)  
DRAM memory [3-7](#)  
DRAM speed [6-10](#)  
DRAM, base address [1-22](#)

**E**

Electro-Static Discharge (ESD) [1-13](#)  
EMC emissions standards [A-4](#)  
EMC regulatory compliance [A-4](#)  
endian issues  
    function of Raven ASIC [4-10](#)  
    function of Universe ASIC [4-11](#)  
    PCI domain [4-10](#)  
    processor/memory domain [4-10](#)  
    VMEbus domain [4-11](#)  
ENV command [6-3](#)  
environmental parameters [6-1](#)  
equipment, required [1-1](#)  
Ethernet interface [3-12](#)  
expansion mezzanine [1-3](#)

**F**

Falcon memory controller chip set [4-2](#), [4-6](#),  
    [4-10](#)  
features, hardware [3-1](#)  
features, Universe ASIC [3-15](#)  
firmware initialization [5-3](#)  
firmware, PPCBug [5-1](#)  
flash latency [3-11](#)  
flash memory [1-10](#), [3-10](#)  
flash memory bank A/bank B reset vector  
    header (J15) [1-8](#), [1-10](#)  
forced air cooling [A-3](#)  
front panel  
    controls [2-2](#)  
    MVME2300 [2-2](#)  
front panels, using [2-1](#)

**G**

general description [3-3](#)  
general-purpose software-readable header  
    (J17) [1-11](#)  
global bus timeout [1-22](#)

**H**

hardware  
    configuration [1-7](#)  
    diagnostics [5-10](#)  
    initialization [5-3](#)  
hardware features [3-1](#)  
HE (Help) command [5-10](#)  
headers  
    J15 [1-10](#)  
    J16 [1-10](#)  
    J17 [1-11](#)  
help command [5-10](#)  
humidity, relative [A-1](#)

**I**

IACK and BG signals [1-21](#)  
initialization process [5-3](#)  
installation considerations [1-21](#)  
installing

---

- multiple MVME2300 boards [1-22](#)
- MVME2300 [1-19](#)
- MVME2300 hardware [1-13](#)
- MVME2300 into chassis [1-19](#)
- PCI mezzanine cards [1-13](#)
- PMC carrier board [1-18](#)
- PMC module [1-14](#)
- PMCs [1-13](#)
- PMCSpan [1-15](#), [1-17](#)
- PMCSpan-002 [1-16](#)
- interconnect signals [B-1](#)
- interface
  - Ethernet [3-12](#)
  - PCI bus [3-13](#)
  - VMEbus [3-15](#)
- interrupt architecture, MVME2300 [4-7](#)
- Interrupt Controller (MPIC) [3-18](#)
- interrupt support [4-6](#)
- interval timers [3-19](#)
- ISA Bus [3-3](#)
- ISA bus [2-3](#), [3-17](#), [4-4](#), [4-6](#)

## J

- J11 and J12 pin assignments [B-14](#)
- J15, flash memory bank A/bank B reset vector [1-8](#)
- J16, VMEbus system controller selection header [1-8](#), [1-10](#)
- J17, general purpose software readable header [1-11](#)
- J21 and J22 pin assignments [B-16](#)
- jumper headers [1-8](#)
- jumpers, backplane [1-21](#)
- jumpers, software readable [1-11](#)

## L

- L2 cache [3-1](#)
- latency, DRAM [3-8](#)
- LED/serial startup diagnostic codes [6-12](#)
- LEDs
  - MVME2300 front panel [2-2](#)
  - PMC [2-4](#)

- LEDs, MVME2300 front panel [2-4](#)
- literature web site [D-1](#)
- local reset (LRST) [2-3](#)
- lowercase [5-11](#)

## M

- manufacturers' documents [D-2](#)
- memory available [A-1](#)
- memory block diagram [3-8](#)
- memory maps
  - MVME2300 [4-1](#)
  - PCI local bus [4-2](#), [4-3](#)
  - VMEbus [4-3](#)
- memory size [6-10](#)
- MK48T559 timekeeper device [4-8](#)
- MPC604 processor [3-3](#)
- MPIC (MultiProcessor Interrupt Controller) [3-18](#)
- MPU initialization [5-3](#)
- MPU specifications [A-1](#)
- MVME2300
  - board layout [1-9](#)
  - cooling requirements [A-3](#)
  - EMC regulatory compliance [A-4](#)
  - installing [1-19](#)
  - LEDs [2-4](#)
  - programming [4-1](#)
  - regulatory compliance [A-4](#)
  - specifications [A-1](#)
- MVME2300 features [3-1](#)
- MVME2300 models [1-2](#)
- MVME2300 VME processor module [1-2](#)

## N

- NETboot enable [6-8](#)
- Network Auto Boot enable [6-8](#)
- Non-Volatile RAM (NVRAM) [6-1](#), [6-3](#)
- NVRAM [3-17](#)
- NVRAM (BBRAM) configuration area [3-12](#)

## O

- operating parameters [6-1](#)

ordering literature [D-1](#)  
 overview of manual [xv](#)

## P

P1 and P2 connectors [1-3](#), [1-21](#), [B-2](#)  
 parallel port [4-8](#)  
 parity [1-12](#), [2-5](#)  
 PC16550 [2-5](#)  
 PCI bus [3-3](#), [3-13](#), [4-3](#), [4-6](#)  
 PCI bus latency [3-5](#)  
 PCI expansion [3-13](#), [3-15](#)  
 PCI Host Bridge (PHB) [3-18](#)  
 PCI Mezzanine Card (PMC) [2-6](#)  
 PCI mezzanine card slots [A-2](#)  
 PCI Mezzanine Cards (PMCs) [1-4](#)  
 PCI to ECC memory access timing [3-6](#)  
 PCI-ISA Bridge (PIB) controller [3-16](#)  
 Peripheral Computer Interface (PCI) [A-2](#)  
 PHB (PCI Host Bridge) [3-18](#)  
 PIB controller [3-16](#), [4-4](#)  
 pin assignments, connector [B-1](#)  
 PMC carrier board  
   installation on MVME2300 [1-18](#)  
 PMC module  
   installation on MVME2300 [1-14](#)  
 PMC power requirements [A-3](#)  
 PMC slots [1-3](#), [2-6](#)  
 PMC1 (PMC slot 1) [2-6](#)  
 PMC1 connector pin assignments [B-14](#) to [B-15](#)  
 PMC1 LED (DS4) [2-4](#)  
 PMC2 (PMC slot 2) [2-6](#)  
 PMC2 connector pin assignments [B-16](#) to [B-19](#)  
 PMC2 LED (DS3) [2-4](#)  
 PMCs, installing [1-13](#)  
 PMCs, preparing [1-12](#)  
 PMCspan [2-7](#)  
 PMCspan expansion mezzanine [1-3](#)  
 PMCspan, preparing [1-12](#)  
 PMCspan-002 installation [1-16](#)  
 port

  asynchronous [3-16](#)  
   debug [3-16](#)  
   Ethernet [2-4](#)  
 power needs [1-3](#), [1-21](#)  
 power requirements [3-5](#), [A-1](#), [A-3](#)  
 PowerPC bus to DRAM access timing [3-6](#), [3-8](#)  
 PPC1-Bug> [5-10](#)  
 PPC1-Diag> [5-10](#)  
 PPCBug  
   basics [5-1](#)  
   overview [5-1](#)  
   prompt [5-2](#)  
 PPCBug commands [5-5](#)  
 PPCBug debugger firmware [3-11](#), [6-1](#)  
 preparing  
   MVME2300 [1-7](#)  
   PMCs [1-12](#)  
   PMCspan [1-12](#)  
   system console terminal [1-12](#)  
 preparing and installing MVME2300 [1-1](#)  
 primary PMCspan installation [1-15](#)  
 problem resolution (troubleshooting) [C-1](#)  
 processor bus [3-3](#)  
 product information, to obtain [D-1](#)  
 programming the MVME2300 [4-1](#)  
 prompt, debugger [5-10](#)

## R

Raven MPU/PCI bus bridge controller ASIC  
   [3-5](#), [3-16](#), [4-2](#), [4-4](#), [4-6](#), [4-10](#), [4-11](#)  
 readable jumpers [1-11](#)  
 Real-Time Clock/NVRAM/timer function  
   [3-17](#)  
 regulatory guidelines [A-4](#)  
 related documentation, ordering [D-1](#)  
 related specifications [D-5](#)  
 remote control/status connector [3-19](#)  
 required equipment [1-1](#)  
 resetting the system [2-3](#), [4-8](#)  
 restart mode [5-11](#)  
 revision history [xvi](#)

---

RF emissions [A-4](#)

ROMboot enable [6-7](#), [6-11](#)

## S

SCSI bus [6-5](#)

SD command [5-10](#)

secondary PMCspan installation [1-17](#)

sending your comments [xvii](#)

serial port, MVME2300 [2-5](#)

set environment to bug/operating system  
(ENV) [6-3](#)

setup terminal [1-21](#)

shielded cables [A-4](#)

single-width PMC placement on  
MVME2300 [1-14](#)

size of base board [A-2](#)

software readable jumpers [1-11](#)

sources of reset [4-8](#)

speaker output [3-19](#)

specifications

MVME2300 [A-1](#)

related [D-5](#)

start-up procedures [1-5](#)

station address, Ethernet [3-12](#)

status indicators [2-4](#)

status indicators, MVME2300 [2-4](#)

stop bit per character [1-12](#), [2-5](#)

submitting comments [xvii](#)

suggestions and comments [xvii](#)

switches [2-2](#)

switches, MVME2300 front panel [2-2](#)

SYSFAIL\* [6-5](#)

system console terminal [1-4](#)

system console, connecting [1-21](#)

system controller [1-20](#)

system controller function [2-3](#)

system controller selection header [1-10](#)

## T

temperature

operating [A-1](#)

storage [A-1](#)

terminal has no display, display not on terminal [C-2](#)

terminal setup [1-21](#)

terminal won't respond to keyboard/mouse  
[C-2](#)

testing the hardware [5-10](#)

timekeeper device [4-8](#)

timeout, global [1-22](#)

timer function [3-17](#)

timers

16/32-bit [3-19](#)

interval [3-19](#)

timers, programmable [3-18](#)

timers, via Universe chip [A-1](#)

timing

PCI to ECC memory [3-6](#)

PowerPC bus to DRAM [3-6](#), [3-8](#)

troubleshooting procedures [C-1](#)

troubleshooting the MVME2300 [5-10](#)

typographical conventions [xviii](#)

## U

Universe VMEbus interface ASIC [2-3](#), [3-15](#),  
[4-3](#), [4-4](#), [4-9](#), [4-11](#)

unpacking the hardware [1-7](#)

uppercase [5-11](#)

using the front panels [2-1](#)

## V

vibration (operating) [A-1](#)

VME processor module [1-2](#)

VME processor module, board layout [1-9](#)

VMEbus [3-3](#), [A-2](#)

address/data configurations [1-22](#)

backplane [1-3](#)

connectors [B-2](#)

memory maps [4-3](#)

system controller selection header (J16)  
[1-10](#)

Universe ASIC and [3-15](#)

VMEbus interface [6-12](#)

VMEbus system controller selection (J16)  
[1-8](#)

VMEsystem enclosure [1-4](#)

## **W**

Winbond PCI/ISA bus bridge controller  
[3-16, 4-4](#)