



# Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for NEC POWERMATE 5100. You'll find the answers to all your questions on the NEC POWERMATE 5100 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

**User manual NEC POWERMATE 5100**  
**User guide NEC POWERMATE 5100**  
**Operating instructions NEC POWERMATE 5100**  
**Instructions for use NEC POWERMATE 5100**  
**Instruction manual NEC POWERMATE 5100**

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**Manual abstract:**

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First Printing -- August 1998 Copyright 1998 NEC Computer Systems Division Packard Bell NEC, Inc. 1414 Massachusetts Avenue Boxborough, MA 01719-2298 All Rights Reserved Preface This manual contains technical information for servicing and repairing the NEC PowerMate® 5100 Series computers manufactured by NEC Computer Systems Division, Packard Bell NEC, Inc. The manual contains hardware and interface information for users who need an overview of system design. The manual includes system setup information, disassembly procedures, and illustrated parts lists. The manual is prepared for NEC CSD trained customer engineers, system analysts, service center personnel, and dealers.

The manual is organized as follows. Section 1 -- System Overview, provides an overview of system features and includes brief descriptions of system components. Section 2 -- System Configuration, includes information on system IRQs, jumpers, and BIOS. The section also contains information on video modes and power management features. Also included is information on system utilities, including the BIOS update utility, LANDesk® Client Manager, and NEC Select Install CD.

Section 3 -- Disassembly and Reassembly, provides computer disassembly and reassembly procedures. Each procedure is supported by detailed disassembly illustrations. Section 4 -- System Board, includes information on cable and board connectors, jumper settings, and upgrade sockets. Also provided is information on board components, pin assignments, and memory map. Section 5 -- Riser Board, provides cable connector information and pin assignments for the riser board installed in the system. Section 6 -- Illustrated Parts Breakdown, includes an exploded view diagram (illustrated parts breakdown) and parts lists for field-replaceable parts. Section 7 -- Preventive Maintenance, provides recommended maintenance information for maintaining the system in top condition. Section 8 -- Troubleshooting, includes information for solving possible computer problems and their solutions. Section 9 -- NEC CSD Information Services, lists telephone numbers for obtaining service. The section also includes information on NEC CSD technical support, website, bulletin board service, and FaxFlashSM service.

Section 10 -- Specifications, provides specifications on the major components in the system, including the system board, power supply, diskette drive, and hard drives. Appendix A -- NEC PowerMate 5100 Series Release Notes, describes recommended operating procedures not documented in other PowerMate 5100 Series documentation. Preface xiii Abbreviations A AC ACK AGP ASIC ampere alternating current acknowledge accelerated graphics port application-specific integrated circuit AT advanced technology (IBM PC) ATA AT attachment ATAPI AT attachment packet interface ATM asynchronous transfer mode BBS Bulletin Board Service BCD binary-coded decimal BCU BIOS Customized Utility BIOS basic input/output system bit binary digit BUU BIOS Upgrade Utility bpi bits per inch bps bits per second C capacitance C centigrade Cache high-speed buffer storage CAM constantly addressable memory CAS column address strobe CD-ROM compact disk-ROM CH channel clk clock cm centimeter CMOS complementary metal oxide semiconductor COM communication CONT contrast CPGA ceramic pin grid array CPU central processing unit DAC digital-to-analog converter DACK DMA acknowledge dB DC DCC DCE DDC DIMM DIP DMA DMAC DMI DOS DRAM DVD ECC ECP EDO EGA EISA email EMI EPP EPROM ESD EVGA F FAX FCC FG FM FP FRU ftp GB decibels direct current direct cable connection data communications equipment Display Data Channel Dual In-Line Memory Module dual in-line package direct memory access DMA controller Desktop Management Interface disk operating system dynamic RAM digital versatile disc error checking and correction extended capabilities port extended data output Enhanced Graphics Adapter enhanced ISA electronic mail electromagnetic interference enhanced parallel port erasable and programmable ROM electrostatic discharge Enhanced Video Graphics Array Fahrenheit facsimile transmission Federal Communications Commission frame ground frequency modulation fast page field-replaceable unit file transfer protocol gigabyte Abbreviations xv GND HEX HGA Hz IC ID IDE IDTR in. INTA I/O IPB IPC ips IR IrDA IRR ISA ISP IRQ K k KB kg kHz lb LAN LED LDCM LSB LSI M mA max MB MFM MHz xvi ground hexadecimal Hercules Graphics Adapter hertz integrated circuit identification intelligent device electronics interrupt descriptor table register inch interrupt acknowledge input/output illustrated parts breakdown integrated peripheral controller inches per second infrared Infrared Data Association Interrupt Request register Industry Standard Architecture internet service provider interrupt request kilo (1024) kilo (1000) kilobyte kilogram kilohertz pound local area network light-emitting diode LANDesk Client Manager least-significant bit large-scale integration mega (million) milliamps maximum megabyte modified frequency modulation megahertz MIDI musical instrument digital interface mm millimeter MMX multimedia extensions modem modulator/demodulator MOS metal-oxide semiconductor MPEG Motion Picture Experts Group ms millisecond MSB most-significant bit NC not connected NIC networked information center NMI Non-maskable Interrupt ns nanosecond NSRC National Service Response Center OCR optical character recognition OS operating system PAL programmable array logic PC personal computer PCB printed circuit board PCI Peripheral Component Interconnect PDA personal digital assistant PFP plastic flat package PIO parallel input/output pixel picture element PLCC plastic leaded chip carrier PLL phase lock loop POST Power-On Self-Test p-p peak-to-peak PPI programmable peripheral interface PROM programmable ROM PS/2 personal system/2 QFP quad flat pack R read RAM random-access memory RAMDAC RAM digital-to-analog converter RAS row address strobe RGB red green blue Abbreviations RGBI rms ROM rpm RTC R/W S SCSI SDRAM S.E.C. SG SGRAM SIMM S/N SNMP SPM SRAM SRS SSI SVGA SW T&D TSC TTL tpi UART UHF UL UMA UPS URL USB V Vac VCR Vdc red green blue intensity root mean square read-only memory revolutions per minute real-time clock read/write slave Small Computer System Interface synchronous dynamic random access memory single edge contact cartridge signal ground synchronous graphics random access memory single inline memory module signal to noise ratio simple network management protocol standard page mode static random access memory Sound Retrieval System small scale integration Super Video Graphics Array switch test and diagnostics Technical Support Center transistor/transistor logic tracks per inch universal asynchronous receiver/transmitter ultra high frequency Underwriter's Laboratories unified memory architecture uninterruptible power supply uniform resource locator universal serial bus volt volts, alternating current video cassette recorder volts, direct current VDT VESA VFC VGA VHF VLSI VRAM W WAN WRAM W www video display terminal video electronics standards association VESA-compliant feature connector Video Graphics Array very high frequency very large scale integration video RAM watt wide area network Windows RAM write world wide web Abbreviations xvii Contents Preface .



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*.....10-5 System Unit Specifications ..*

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*.....10-6 Diskette Drive Specifications.*

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*.....10-7 2.1-GB Seagate Hard Drive Specifications..*

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*.....10-8 4.3-GB Fujitsu Hard Drive Specifications...*

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*.10-9 6.4-GB Quantum Hard Drive Specifications ...*

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*...A-5 Contents vii Correcting Video Corruption in a Windows 95 System.....*

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2-43 NEC Selective Application Restore Screen.....

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*..... 3-5 Removing the Expansion Board ....*

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*..... 3-6 Front Panel Tab and Slot Locations..*

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*..... 3-7 Removing the Front Panel.....*

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... 3-9 Removing the Processor Subsystem .....

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.....3-10 Removing a 5 1/4-Inch Device ..

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.3-14 Removing the System Board ....

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*..... 4-2 System Board Internal Connector Locations...*

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..... 2-7 Quantum Fireball 6.4-GB IDE Hard Drive Jumper Settings...

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.. 2-7 Quantum Fireball 8.4-GB IBM IDE Hard Drive Jumper Settings..

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*. 2-8 NEC 32X CD-ROM Drive Jumper Settings.....*

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*. 2-8 Lucky Goldstar 32X CD-ROM Drive Jumper Settings ....*

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*... 5-4 Chassis Intrusion Detection Connector J5 Pin Assignments .....*

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*.....10-2 System Board Specifications ...*

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*...10-3 Riser Board Specifications ..*

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*10-6 Diskette Drive Specifications .....*

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*10-7 2.1-GB Seagate Hard Drive Specifications .....*

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*.....10-8 4.3-GB Fujitsu Hard Drive Specifications ...*

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*..10-10 8.4-GB Quantum Fireball SE Hard Drive Specifications..*

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*.10-11 NLX145 Watt Power Supply Specifications ....*

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.....10-17 Contents xi I System Overview T Configurations T Features T Components This section provides an overview of the NEC PowerMate® 5100 Series mini-desktop computer system configurations. The section highlights system hardware features, computer front, back, and inside features, and system security features. Also included are brief descriptions of the major components comprising the system. Configurations NEC PowerMate 5100 Series computers are built-to-order systems for commercial offices. The systems feature an Intel® Celeron™ or Pentium® II processor, a built-in Accelerated Graphics Port (AGP) controller, two dual inline memory module (DIMM) sockets, synchronous dynamic random access memory (SDRAM), and a plug and play input/output (I/O) controller.

The system also features two universal serial bus (USB) ports, two serial ports, and a parallel port. Ultra direct memory access (DMA), built-in LAN circuitry with remote wakeup ("Wake-On LAN"), and power management are supported. Build choices include intelligent device electronics (IDE) hard drives ranging from 2.1 gigabyte (GB) to 8.4 GB. System memory configurations range from a minimum of 32 megabyte (MB) to a maximum of 256 MB using 32-MB and, as available, 64-MB and 128-MB DIMM modules. Additional build choices include fax/modem, network, video, and peripheral devices such as CD-ROM drives. The NLX chassis design leaves the system board free of internal cabling and allows easy system board removal and replacement with a simple chassis latch. The following figure shows the components shipped with the PowerMate 5100 Series system (the monitor and speakers are optional).



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PowerMate 5100 Series System Components A Speaker B Monitor C System Unit D Keyboard E Mouse 1-2 System Overview The following table lists the PowerMate 5100 Series system configuration.

PowerMate 5100 Series System Configuration Component System Board CPU\* Description Intel KU440EX with sound Celeron 266-MHz or 300-MHz (66-MHz external) Pentium II 266-MHz MMX (66-MHz external) Pentium II 300-MHz MMX (66-MHz external) Pentium II 333-MHz MMX (66-MHz external) 32 MB (minimum) to 256 MB of SDRAM in 2 DIMM sockets IDE Ultra DMA/33: 2.1 GB (Seagate Maui ST32122A 300814) 4.3 GB (Fujitsu Pico Bird or Western Digital AC24300L-C2) 6.4 GB (Quantum Fireball SE) 8.4 GB (Quantum Fireball SE) 512-KB Pipeline Burst SRAM integrated on processor cartridge (Pentium II systems only) Built-in AGP controller (Rage IIC) on system board supports AGP graphics standard System board: 2 MB synchronous graphics random-access memory (SGRAM) Graphics board: XPERT@Work with 4 MB SGRAM Crystal CS4235B audio chip integrated on system board 3COM Hurricane (3C918) Wake-On LAN integrated on riser board NEC 3.

5-inch 1.44-MB (FD1231H-013) NLX 145-watt Chicony 6923 Microsoft IntelliMouse Lite-On 32X\* NEC 32X \* Lucky Goldstar 32X\* U.S. Robotics 56.6 Kbps Python V90 ATI PCI XPERT@Work 4-MB AGP board Altec-Lansing 9-watt (ASC-90R) ® ® ® System RAM\* Hard Drive\* Cache AGP Slot Graphics Memory Audio LAN Diskette Drive Power Supply Keyboard Mouse CD-ROM Drive\*\* Fax/Modem Board\*\* AGP Board\*\* Speakers\*\* \* Component varies by system \*\* Built-to-order component Features The system's front, back, and inside features are described in the following paragraphs.

Also included are descriptions of the system's security features. System Overview 1-3 Front Features The following figures identify the components, lamps, and controls on the front of the system. Brief descriptions of the components follow the figures. PowerMate 5100 Series System Front View A System Controls and Lamps C Diskette Drive (not installed in all systems) B CD-ROM Drive (not installed in all systems) System Controls and Lamps A Power Button B Power Lamp C Suspend Button D Reset Button E Disk Lamp System controls allow the selection of specific system operations. Lamps visually alert the user to the status of system operation. The system has the following devices, controls, and lamps on the front of the system (see the preceding figures for device, control, and lamp locations). T Diskette drive (not installed in all systems) -- copy data files to and from a diskette or as a bootable drive for loading and starting programs from a diskette. T CD-ROM drive (not installed in all systems) -- load and start programs from a compact disc (CD) and to play audio CDs. 1-4 System Overview T Suspend button -- suspends system operation for saving power in systems with Windows 95 or Windows 98 installed. An amber power lamp lights when in suspend (power-saving) mode.

Pressing any key or moving the mouse resumes system operation. The Suspend button does not function in systems with Windows NT 4.0 installed. T Disk lamp -- when lit, indicates that the hard drive is active. A lit lamp indicates that the hard drive is reading or writing data. T Power lamp -- indicates if system power is on or off or in suspend mode. A steady green lamp indicates power is on to all components. An amber lamp indicates that the system is in suspend mode with full power reduction. T Reset button -- restarts the computer after it is powered on. Used to reset the computer if it is not operating properly.

T Power button -- turns system power on or off. Back Features The back of the computer contains external connectors, a power socket, and expansion board slots. The following figures identify the connectors on the back of the system. Brief descriptions of each connector follow the figures. PowerMate 5100 Series System Back View A PCI Slot E Audio Connectors I Serial Port B Shared PCI/ISA Slot F USB Connectors J Parallel Port C Power Supply Fan G Mouse Port K VGA Connector D LAN Connector H Keyboard Port System Overview 1-5 Audio Connectors A Microphone In Jack B Line Out Jack External connectors allow the attachment of peripheral devices such as a monitor, keyboard, mouse, and printer.

The system has the following external connectors. T LAN connector -- The RJ-45 local area network (LAN) connector permits connection of the system to an Ethernet LAN for communication with other computers. T Audio connectors -- The following audio connectors are on the back of the system: microphone in jack. This jack allows the connection of a microphone for recording audio information in data files. line out jack.

This jack allows the connection of an amplified output device such as powered speakers, stereo tape recorder, or an external amplifier for audio output. Use this jack for ordered speakers. T USB ports -- The two USB ports permit the connection of up to 127 USB configured peripheral devices such as printers, monitors, modems, mouse, and game pads/joysticks. T Serial ports -- Serial port 1 (COM1) and serial port 2 (COM2) allow the connection of serial devices with 9-pin connectors. The devices include a pointing device, serial printer, or modem. T Keyboard port -- Attach a keyboard (PS/2®-compatible, 101-key or 102-key) with a 6-pin mini DIN connector to this port. T Mouse port -- Attach a mouse (PS/2-compatible) to this port. T Printer port -- Attach a parallel printer with a 25-pin connector to this port. 1-6 System Overview T VGA monitor connector -- Attach a video graphics array (VGA)-compatible monitor (NEC MultiSync® monitor or other VGA-compatible monitor) with a 15-pin connector to this AGP board connector. boards (graphics, fax/modem, or network).

See Section 5 for a description of the expansion slot connectors (PCI and ISA) on the riser board. T Expansion board slots -- Use these slots to install one or two optional T Fax/modem ports -- Some systems come with a 56-Kbps fax/modem board (U.S. Robotics Python V90) installed in an expansion slot. The board allows the connection of a phone line to the system for fax and data communications. T Network board -- Some system come with a network board (Intel Pro100M2 Kaiser) installed in an expansion slot. This board allows you to configure your system to meet varying network interface requirements. T PCI Video Board -- Some systems come with a video board (ATI® PCI 4-MB XPERT@Work 3D) installed in an expansion slot. This board is compatible with the PCI graphics standard and supports graphicsintensive, 3-D applications. Inside Features The following figure shows the interior of the computer and its major areas.

A list of features follow the figure.



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Inside the System A Riser Board E Power Supply B Expansion Slots F Accessible Device Slots C System Board D Internal Hard Drive System Overview  
1-7 The inside of the system has the following features: T system board with connectors for the Celeron or Pentium II processor single edge contact (S.E.C.) cartridge, AGP controller, DIMM memory, and riser board T riser board with two IDE connectors, diskette drive connector, three expansion board connectors, an external LAN connector, and internal signal and power connectors T one accessible 5 1/4-inch slot for expansion (some systems contain a 32X CD-ROM drive) T one accessible 3 1/2-inch drive slot (some systems contain a 1.

44-MB diskette drive) T one 3 1/2-inch internal device slot (contains one hard drive) T 145-watt power supply. For more information on the above features, see "Components" in this section. Security Features The system has hardware, software, and mechanical security features that offer protection against unauthorized access to the system and data. The following security features are available: T Password Security The BIOS Setup utility includes a feature that allows a user to set either a user or supervisor password or both. The user password controls booting of the system and controls access to the Setup utility and the keyboard.

User access to the BIOS Setup utility is limited when a supervisor password is set. The supervisor password allows full access to the system and the BIOS. The unattended start security feature, when enabled, allows the system to boot but locks the keyboard until the user password is entered. See Section 2, "System Configuration," for further information on setting and using passwords and the unattended start feature. T NEC Security The NEC Security utility allows password protection and permits the user to disable access to the diskette drive, COM ports, or printers. Refer to Section 2, "System Configuration," for information on using the NEC Security utility. 1-8 System Overview T Windows Network Security Features The Windows Network Security feature is available through the Windows operating system. Check the Windows documentation for details. T Chassis Intrusion Notification Whenever the chassis cover is removed, LANDesk Client Manager logs the incident and reports it on screen the next time the system is booted. See Section 2, "System Configuration," for information on the chassis intrusion notification feature.

Components The major system components are listed in the following table, along with the page number where each component is briefly described. System Components Component System Board Riser Board Diskette Drive Hard Drive\* Power Supply Keyboard Mouse PCI Graphics Board\*\* CD-ROM Drive\*\* Speakers\*\* Fax/Modem Board\*\* Go to Page 1-9 1-10 1-10 1-11 1-11 1-11 1-11 1-12 1-12 1-12 1-13 \* Component varies by system; manufacturer is subject to availability \*\* Built-to-order component System Board The system board contains the Celeron or Pentium II processor mounted in a S.E.C. cartridge, system DIMM memory, Intel 82440EX AGP chipset, SMC FDC37M707QFP super I/O controller, Crystal audio controller, ATI IIC AGP graphics controller with 2 MB of SGRAM video memory, and a hardware monitor. Internal connectors on the system board include two DIMM sockets, S.E.C. cartridge socket (slot 1 connector), and the riser board edge connector. System Overview 1-9 External connectors on the system board include two serial connectors, a parallel connector, two USB ports, keyboard port, mouse port, and external audio connectors.

The system board supports a 1.44-MB diskette drive, and up to four IDE devices such as a hard drive or CD-ROM drive. The system board seats in the NLX connector on the riser board. The system board is installed in the chassis along guide rails and is secured with a single latch for easy access. For further information on the system board, see Section 4, "System Board.

" Section 6, "Illustrated Parts Breakdown" lists the NEC CSD part number for the system board. Riser Board The riser board contains most of the cable connectors in the system, including: T T T T T primary and secondary IDE connectors diskette drive connector expansion board connectors front panel connector for lamp and power signals NLX connector for the system board CD audio in, modem in, Wake-On LAN, chassis intrusion, speaker, and fan connectors T external LAN connector T power connectors T system fan and LAN jumpers. For further information on the riser board, see Section 5, "Riser Board." Section 6, "Illustrated Parts Breakdown" lists the NEC CSD part number for the riser board. Diskette Drive A single diskette drive is supported in the system (the BIOS does not support a second diskette drive).

The installed 1.44-MB 3 1/2-inch diskette drive is connected by a single ribbon cable with two connectors. The diskette drive cable plugs directly into the riser board. There are no switches or jumpers that need to be set and the diskette drive is terminated. Connector locations for the diskette drive on the riser board are given in Section 5, "Riser Board." Section 6, "Illustrated Parts Breakdown," lists the NEC CSD part number for the diskette drive. Diskette drive specifications are given in Section 10, "Specifications." 1-10 System Overview Hard Drive All systems ship with one internal 3 1/2-inch hard drive (1-inch high, thinheight) installed in the internal drive slot, at the front of the system. Drives are available in a 2.1-GB, 4.

3-GB, 6.4-GB, and 8.4-GB IDE Ultra DMA models. The riser board has two IDE/PCI interface connectors (primary and secondary) for connecting IDE storage devices. A two-connector hard drive IDE cable connects to the IDE hard drive and the primary connector on the riser board. Each connector (primary and secondary) supports up to two IDE devices. Note: Physically, the chassis contains room for three storage devices. Logically, the riser board supports four storage devices. Hard drive jumper settings are given in Section 2, "System Configuration." Connector locations for the IDE hard drive connectors on the riser board are given in Section 5, "Riser Board.

" Section 6, "Illustrated Parts Breakdown" lists the NEC CSD part numbers for the hard drives. Hard drive specifications are given in Section 10, "Specifications." Power Supply The power supply is mounted inside the system unit. It supplies power to the system board, riser board, option boards, diskette drive, hard drives, CD-ROM drive, keyboard, mouse, and other internal options. A fan inside the power supply provides system ventilation. The power supply provides 145 watts and is NLX-compatible. Power supply connector locations on the riser board are given in Section 5, "Riser Board." Power supply specifications are given in Section 10, "Specifications.



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*" Keyboard The PS/2-compatible ergonomic keyboard is standard equipment for the system. The keyboard provides a numeric keypad, separate cursor control keys, 12 function keys, and is capable of up to 48 functions.*

*Key status lamps on the keyboard include Num (Numeric) Lock, Caps (Capital) Lock, and Scroll Lock. The keyboard's six-pin connector plugs into the back of the system. Keyboard pin assignments are included in Section 4, "System Board." Keyboard specifications are given in Section 10, "Specifications." Mouse A Microsoft® IntelliMouse® is standard equipment for the system. This PS/2-compatible mouse has two buttons and a cursor control wheel. The mouse has a self-cleaning mechanism that prevents a buildup of dust or lint around the mouse ball and tracking mechanism. System Overview 1-11 The six-pin mouse cable connector plugs into the back of the system. Mouse pin assignments are included in Section 4, "System Board." Mouse specifications are given in Section 10, "Specifications."*

*" PCI Graphics Board Some systems come with a graphics accelerator board (ATI® PCI 4-MB XPERT® Work 3-D) preinstalled in a PCI expansion slot. The board provides an integrated, advanced MPEG (Motion Picture Experts Group), 3D and 2D graphics and video accelerator for exceptional graphics and superior quality fullscreen, full-motion video. Included on the board is a standard VGA output connector for connecting a VGA-compatible monitor. Graphics modes are given in Section 2, "System Configuration." Graphics board specifications are given in Section 10, "Specifications." CD-ROM Drive Some systems come with a 32X CD-ROM drive. The drive features up to 32-speed technology, allowing data to be transferred at up to 4920 KB/second, affording faster data transfer and smoother animation and video. The CD-ROM drive comes with an Enhanced IDE (EIDE) interface. The drive is fully compatible with Kodak Multisession Photo CDs™, CD-I, FMV, and CD Plus, as well as standard CDs. The CD-ROM drive can also play audio CDs (for systems with sound capabilities).*

*A two-connector device cable connects the drive to the secondary IDE/PCI channel on the riser board. The drive is connected as the master device on the secondary channel. CD-ROM jumper settings are included in Section 2, "System Configuration." Section 6, "Illustrated Parts Breakdown" lists the NEC CSD part number for the CD-ROM drive. Specifications for the CD-ROM drive are given in Section 10, "System Specifications."*

*" Speakers Some systems come with a high-quality 9-watt stereo speaker set, an AC adapter, and connecting cables. The speaker set features a volume control, power on/off switch, power lamp, and treble control. The speaker set also includes a subwoofer output jack. The speaker set connects to the speaker line out jack on the back of the system. Speaker specifications are given in Section 10, "Specifications."*

*" 1-12 System Overview Fax/Modem Board Some systems come with a fax/modem board (U.S. Robotics Python V90) preinstalled. The board operates as a fax system and data modem according to the operating system and software installed. The modem board offers a full-duplex speakerphone and 56,600 bits per second (bps) data/14,400 bps fax communications. The fax/modem board is Plug and Play compatible. There are no switches or jumpers to set if the system is running the Windows 95 or Windows 98 operating system. The fax/modem default settings are COM2, IRQ3 for Windows 95 or Windows 98. Systems running the Windows NT 4.0 operating system must be configured for COM2 and IRQ3.*

*See Section 2, "System Configuration," for information on setting Windows NT jumpers. Section 4, "System Board," and Section 5, "Riser Board," include cable connection information for the fax/modem. Fax/modem board specifications are provided in Section 10, "Specifications." Local Area Network All systems come with an onboard local area network (LAN) capability (3COM Hurricane 3C918). Through the RJ-45 LAN connector on the riser board, the system can be connected to another computer, to a LAN, or to the Internet. Systems also have remote startup capability from a server with "Wake-On LAN" technology. Specifications for the LAN are given in Section 10, "Specifications." System Overview 1-13 2 System Configuration T Interrupt Requests T Jumper Settings T BIOS Setup T Video Modes T Utilities This section provides information for configuring the system. The section includes: T T T T T T system interrupt request (IRQ) assignments system jumper settings procedures for using the BIOS Setup utility to configure the system descriptions of video modes information on power management descriptions and procedures for using the following utilities and applications BIOS Update utility LANDesk Client manager NEC Auto Backup utility NEC Select Install CD NEC Driver CD Cheyenne Backup NEC Security NEC SNMP Agent NEC WebTelligent NEC Configuration Change Notice. Interrupt Requests The following paragraphs list the system interrupts (IRQs), parallel addresses and interrupts, and serial addresses and interrupts.*

*Section 4, "System Board," includes information on system resources (memory map, I/O addresses, and DMA settings). System Interrupts The system has 16 IRQs (IRQ 0 through 15) assigned to different devices (for example, printer, modem, keyboard, mouse). Initial IRQ settings are assigned at the factory, with settings dependent on the installed device(s). Several IRQs are unassigned for the installation of add-on devices. See "BIOS Setup" in this section for information on using the BIOS Setup utility to assign or change the interrupts.*

*The following table lists the IRQ settings. Note that assignments 0 through 15 are in order of decreasing priority. 2-2 System Configuration Interrupt Level Assignments\* Interrupt Priority NMI IRQ00 IRQ01 IRQ02 IRQ03 IRQ04 IRQ05 IRQ06 IRQ07 IRQ08 IRQ09 IRQ10 IRQ11 IRQ12 IRQ13 IRQ14 IRQ15 Interrupt Device I/O Channel Check System Timer Keyboard Programmable Interrupt Cascade COM2\* COM1\* LPT2 (plug and play option)/Audio integrated on system board/User available Diskette Drive Controller Parallel Port 1 Real-Time clock User Available User Available Available (used by network board if present)\* Mouse Reserved, Math Coprocessor Primary IDE Secondary IDE \* In Plug and Play systems, these interrupts are typical but may vary by configuration. Parallel Port Interrupts The parallel port I/O interrupts are given in the following table. The table lists all of the possible configurations but the port only uses one set.*

*Any interrupts used for the built-in parallel port are not available for ISA parallel ports. Parallel Port Interrupts Port LPT1 LPT2 LPT3 LPT1 LPT2 LPT3 Interrupt IRQ05 IRQ05 IRQ05 IRQ07 IRQ07 IRQ07 System Configuration 2-3 Serial Port Interrupts The interrupts for serial port 1 and serial port 2 are given in the following table.*



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Any interrupts used for the built-in serial ports are not available for ISA parallel ports. Also, if serial ports share an interrupt, verify that hardware and software added to the system can share these interrupts without problems. Serial Port 1 and Serial Port 2 Interrupts Port COM1 COM2 COM3 COM4 COM1 COM2 COM3 COM4 Interrupt IRQ04 IRQ03 IRQ04 IRQ03 IRQ03 IRQ04 IRQ04 Jumper Settings Jumpers on the boards and devices in the system are used to set the system configuration. Boards and devices using jumpers include: T T T T system board riser board IDE hard drives CD-ROM drives fax/modem board. The following paragraphs list the jumpers and their factory settings. Note: Jumpers are set correctly at the factory for the system configuration. If a jumper change is required, change only the setting for that condition (see Section 4 and Section 5 for procedures on setting jumpers). 2-4 System Configuration System Board Jumper Settings The factory settings for Configuration Select jumper block J6C1 on the system board are shown in the following table.

See Section 4 for procedures to reset the jumper. Specifications for the system board are included in Section 10. System Board Jumper J6C1 Settings Function Normal Mode Configure Mode Jumper Pins 1 and 2 Description Sets the system for normal operation. The BIOS uses the current configuration information and passwords for booting. Factory setting: pins 1 and 2 jumpered. Allows system configuration. After POST runs, the Setup utility loads automatically. The Maintenance menu appears for setting configuration parameters (including processor speed and password settings). Enables BIOS recovery procedures. The BIOS attempts to recover the BIOS configuration.

A Recovery diskette is required (downloadable from the NEC CSD website. 2 and 3 Recovery Mode None Riser Board LAN Jumper Settings The factory settings for LAN jumper block JP4 on the riser board are shown in the following table. See Section 5 for procedures to reset the jumper. Specifications for the riser board are included in Section 10. Riser Board LAN Jumper JP4 Settings Function Enable Disable Jumper Pins 1 and 2 2 and 3 Description Enable onboard LAN.

Factory setting: pins 1 and 2 jumpered. Disable onboard LAN (used for Pro100M2 Kaiser configurations). Riser Board Fan Jumper Settings The factory settings for fan jumper block JP3 on the riser board are shown in the following table. See Section 5 for procedures to reset the jumper. Specifications for the riser board are included in Section 10.

Fan Jumper Block JP3 Settings Function 2-Wire 3-Wire Jumper Pins 1 and 2 2 and 3 Description Setting for 2-wire fan. Factory setting: pins 1 and 2 jumpered. Setting for 3-wire fan. System Configuration 2-5 Hard Drive Jumper Settings Hard drive jumpering varies according to the particular model in the system and how that model is configured. The following hard drive models are available for your system from NEC CSD: T T T T Seagate Maui 2.1-GB Fujitsu Pico Bird 4.3-GB Quantum Fireball 6.4-GB Quantum Fireball 8.4-GB. Note: Other hard disks may also be available for the system.

Jumper settings are included on a label attached to the top of the drive. Refer to the label for correct jumper settings for your system's configuration. Seagate Maui 2.1-GB IDE Hard Drive Jumper Settings The factory settings for the jumpers on the Seagate Maui 2.1-GB IDE hard drive are shown in the following table. The settings are for a single drive installed in the system. Specifications for the hard drives are included in Section 10. Seagate Maui 2.1-GB IDE Hard Drive Jumper Settings Function Master Device (Drive Select) Jumper Pins 5 and 6 Description Sets hard drive as master device in single drive system or dual drive system. Slave Device Not jumpered (all pins open) Sets hard drive as slave in dual drive system.

Cable Select (CS) 3 and 4 Not used. 2-6 System Configuration Fujitsu Pico Bird 4.3-GB IDE Hard Drive Jumper Settings The factory settings for the jumpers on the Fujitsu Pico Bird 4.3-GB IDE hard drive are shown in the following table. The settings are for a single drive installed in the system.

Specifications for the hard drives are included in Section 10. Fujitsu Pico Bird 4.3-GB IDE Hard Drive Jumper Settings Function Master Device 2 (Drive Select) 1 2 1 Jumper Pins 6 5 Description Sets hard drive as master device in single drive system or dual drive system. Slave Device 6 5 Sets hard drive as slave in dual drive system. Cable Select (CS) 2 1 6 5 Not used.

Quantum Fireball 6.4-GB Hard Drive Jumper Settings The factory settings for the jumpers on the Quantum Fireball 6.4-GB IDE hard drive are shown in the following table. The settings are for a single drive installed in the system. Specifications for the hard drives are included in Section 10. Quantum Fireball 6.4-GB IDE Hard Drive Jumper Settings Function Master Device (Drive Select) Slave Device Cable Select (CS) Park Jumper Pins DS-1 and DS-2 DS-1 and DS-2 CS-1 and CS-2 PK-1 and PK-2 Description Sets hard drive as master device in single drive system or dual drive system. Factory setting: pins DS-1 and DS-2 jumpered. Sets hard drive as slave in dual drive system. Not used.

Factory setting: pins CS-1 and CS-2 open. Used to park DS jumper when drive set as slave device. Factory setting: pins PK-1 and PK-2 open. System Configuration 2-7 Quantum Fireball 8.4-GB IDE Hard Drive Jumper Settings The factory settings for the jumpers on the Quantum Fireball 8.4-GB IDE hard drive are shown in the following table. The settings are for a single drive installed in the system. Specifications for the hard drives are included in Section 10.

Quantum Fireball 8.4-GB IBM IDE Hard Drive Jumper Settings Function Master Device (Drive Select) Slave Device Cable Select (CS) Park Jumper Pins DS-1 and DS-2 DS-1 and DS-2 CS-1 and CS-2 PK-1 and PK-2 Description Sets hard drive as master device in single drive system or dual drive system.

Factory setting: pins DS-1 and DS-2 jumpered. Sets hard drive as slave in dual drive system. Not used. Factory setting: pins CS-1 and CS-2 open. Used to park DS jumper when drive set as slave device.

Factory setting: pins PK-1 and PK-2 open. NEC 32X CD-ROM Drive Jumper Settings The factory settings for the jumpers on the NEC 32X CD-ROM drive are shown in the following table. The drive is set as the master device on the secondary channel. The CD-ROM cable plugs onto the Secondary IDE connector on the riser board. Specifications for the CD-ROM drive are included in Section 10.

NEC 32X CD-ROM Drive Jumper Settings Jumper Cable Select (CS) Slave Present (SL) Master Select (MA) Jumper Pin Settings Not used. Disabled, pin 2 open (factory default). Enabled, pin 2 jumpered. Enabled, pin 3 jumpered (factory default). Disabled, pin 3 open. 2-8 System Configuration Lucky Goldstar 32X CD-ROM Drive Jumper Settings The factory settings for the jumpers on the Lucky Goldstar 32X CD-ROM drive are shown in the following table.



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The drive is set as the master device on the secondary channel. The CD-ROM cable plugs onto the Secondary IDE connector on the riser board. Specifications for the CD-ROM drive are included in Section 10. Lucky Goldstar 32X CD-ROM Drive Jumper Settings Jumper Cable Select (CS) Slave Present (SL) Master Select (MA) Jumper Pin Settings Disabled, pins open (factory default).

Enabled, pins jumpered. Disabled, pins open (factory default). Enabled, pins jumpered. Enabled, pins jumpered (factory default). Disabled, pins open. Lite-On 32X CD-ROM Drive Jumper Settings The factory settings for the jumpers on the Lite-On 32X CD-ROM drive are shown in the following table. The drive is set as the master device on the secondary channel. The CD-ROM cable plugs onto the Secondary IDE connector on the riser board. Specifications for the CD-ROM drive are included in Section 10. Lite-On 32X CD-ROM Drive Jumper Settings Jumper Cable Select (CS) Slave Present (SL) Master Select (MA) Jumper Pin Settings Disabled, pins open (factory default).

Enabled, pins jumpered. Disabled, pins open (factory default). Enabled, pins jumpered. Enabled, pins jumpered (factory default). Disabled, pins open. System Configuration 2-9 56-Kbps Fax/Modem Board Jumper Settings The factory settings for the jumpers on the fax/modem board are as follows. For Windows 95 and Windows 98 systems, the jumper blocks for COM port and IRQ settings are not jumpered (factory default) or are parked on pin 1 of a pair. For Windows NT systems, the jumpers settings are shown in the following table. 56-Kbps Fax/Modem Board Jumper Settings (Windows NT Only) Jumper COM Jumper Block Jumper Pin Settings COM1 -- 0 pins, 1 pins, and SEL pins. COM2 -- 1 pins and SEL pins (factory default).

COM3 -- 0 pins and SEL pins. COM4 -- SEL pins. Jumpered on pin 3 only. IRQ Jumper Block BIOS Setup The BIOS Setup utility configures system parameters. The parameters are saved in nonvolatile memory in a CMOS chip backed by a battery on the system board. The battery supplies continuous power to maintain parameter configuration information when system power is off. Note: Before changing parameters or replacing the battery, print out or write down the current setup parameter settings and store in a safe place. Use this information to restore the system to the current parameters if a wrong setting is made or if the battery needs replacement (see Section 3 for battery replacement). When to Use BIOS Setup The BIOS Setup utility is used to view and set parameters. Use the Setup utility to: T T T T set the time and date update or check parameters when adding or removing expansion options change or set power management features correct a hardware discrepancy when the Power-On Self-Test (POST) displays an error message and prompts to run Setup memory installed with the amount of memory displayed by Setup T check the installation of optional memory by comparing the amount of T change certain operating parameters, such as boot device sequence and keyboard parameters 2-10 System Configuration T configure system connections for peripherals such as diskette drive, hard drives, and devices connected to the printer port and serial ports T customize the system with security features such as passwords, diskette drive restriction, virus check reminder, and system backup reminder T set system parameters after the CMOS battery is replaced.

How to Start BIOS Setup To start the BIOS Setup utility, follow these steps: 1. Turn on or reboot the system. 2. To start the memory test before the system boots up, press F2 after POST. There is about five seconds to press F2 before the system boot continues. 3. Setup's Main Menu appears and looks similar to the following screen. Note: The BIOS Setup utility Main Menu may contain additional setup options in systems that contain a Pentium II processor. See the Help facility built into the Setup utility for more information on these options. System Configuration 2-11 BIOS Setup Main Menu How to Use Setup Use the keys shown on the bottom of the Main Menu to make selections or to exit the current menu.

The following table describes the navigation keys. Navigation Keys Key F1 Esc Enter or arrow keys or arrow keys /+ F9 F10 Function Provides help for the parameter field being displayed. Exits the menu Executes Command or Selects submenu Moves cursor up and down Selects next menu Changes values Loads the Default Configuration values for this menu Save and Exit Menu items preceded by > contain a submenu of selectable fields for setting system parameters. Display a submenu by using the arrow keys to move the cursor to the desired submenu, then press Enter. 2-12 System Configuration Main Menu Choose the Main menu by selecting Main in the legend bar on the Main menu screen.

Other Main menu options are available by selecting submenus. Use the arrow keys to select one of the Main menu options and press Enter to select a submenu. Items with grayed-out text are not available. Explanations of each menu item are in the following paragraphs. Displayed Information The following read-only information is displayed in the Main menu and cannot be changed: T T T T T T Language BIOS Version Processor Type Processor Speed System Memory Memory Bank 0 Memory Bank 1 The installed language appears in the Setup and BIOS text strings.

English (US) is the default. Other choices are French, Italian, German, and Spanish. System Time/Date This menu sets the time and date. The settings remain in memory even after system power is turned off. To set the time, enter the current hour, minute, and seconds in hh:mm:ss, 24-hour format. For example, type 13:30:00 for 1:30 P.M. To set the date, enter the current month, day, and year in mm/dd/yyyy format. For example, type 11:20:1998 for November 20, 1998. Advanced Menu Selecting Advanced from the Main menu displays a menu with the following options.

Plug & Play O/S The Plug and Play field indicates if the computer's operating system is configured to use Plug and Play devices. Yes is the default setting if using an operating system with Plug and Play (Windows 95 or Windows 98). No is the default setting if using an operating system without Plug and Play (Windows NT 4.0 or other operating systems). System Configuration 2-13 Reset Configuration Data Select Yes to clear the PCI/PnP configuration data stored in FLASH ROM on the next system reboot. A Yes setting reverts to the No setting after reboot. The default setting is No. Numlock This field controls whether the Num Lock key on the keyboard is On or Off at bootup. Auto sets NumLock to the same setting it had before the system was rebooted. The default setting is Auto.

Peripheral Configuration This menu configures peripheral devices as they are added, removed, or changed. Use the fields in the following table to configure the system when making any peripheral changes. Peripheral Configuration Parameters Menu Item Serial Port A Settings and Description Enabled (default), Auto, Disabled.



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Auto enables the device but the BIOS does not place its resources unless the Plug and Play OS option in the BIOS is set to No. Selecting Enabled enables Base I/O Address and Interrupt.

Base I/O Address 3F8 (default), 2F8, 3E8, 2E8 An asterisk ( \*) displayed next to an address indicates a conflict with another device. This option only appears if Serial Port A is set to Enabled. Interrupt IRQ3, IRQ4 (default) An asterisk ( \*) displayed next to an interrupt indicates a conflict with another device. This option only appears if Serial Port A is Enabled. Serial Port B Enabled, Auto, IrDA, Disabled The default setting for Serial Port B supports the hardware shipped with the system.

For example, if the system shipped with a fax/modem board, Serial Port B defaults to Disabled. Auto enables the device but the BIOS does not place its resources unless the Plug and Play OS option in the BIOS is set to No. Mode Serial, IrDA, ASK-IR Sets the mode for Serial Port B. This option only appears if Serial Port B is Enabled. 2-14 System Configuration Peripheral Configuration Parameters Menu Item Base I/O Address Settings and Description 3F8, 2F8 (default), 3E8, 2E8 An asterisk ( \*) displayed next to an address indicates a conflict with another device. This option only appears if Serial Port B is Enabled. Interrupt IRQ3 (default), IRQ4 An asterisk ( \*) displayed next to an interrupt indicates a conflict with another device. This option only appears if Serial Port B is Enabled. Parallel Port Disabled, Enabled (default), Auto The parallel port device can be auto detected when Auto is selected. With Auto, the first free LPT port is assigned.

Auto enables the device but the BIOS does not place its resources unless the Plug and Play OS field is set to No. Selecting Enabled enables Mode, Base I/O Address, Interrupt, and DMA Channel. Mode Output only, Bi-directional, EPP, ECP This option only appears if Parallel Port is Enabled. Base I/O Address 278, 378, 3BC, 228 An asterisk ( \*) displayed next to an address indicates a conflict with another device. This option only appears if Parallel Port is Enabled. Interrupt IRQ7, IRQ5 An asterisk ( \*) displayed next to an interrupt indicates a conflict with another device. This option only appears if Parallel Port is set to Enabled. An interrupt set to IRQ5 in a multimedia system might conflict with the audio subsystem settings. DMA Channel DMA1, DMA3 DMA not displayed when Mode is Bi-directional The DMA field is only displayed when the Parallel Port field is set to Enabled, and the Mode field is set to ECP. Audio Disabled, Enabled Select Disabled if an audio board is installed.

Legacy USB Support Disabled, Enabled System Configuration 2-15 IDE Configuration This menu configures IDE devices as they are added, removed, or changed. Use the fields in the following table to configure the system when making any IDE device changes. IDE Device Configuration Parameters Menu Item IDE Controller Settings and Description Disabled, Primary, Secondary, Both This field enables the primary, secondary, or both interface connectors on the riser board. Hard Disk Delay Disabled, 3 seconds, 6 seconds, 9 seconds, 12 seconds, 15 seconds, 21 seconds, 30 seconds The hard disk pre-delay gives the hard drive time to spin up before the system boots. Set a hard disk pre-delay if your hard drive needs more time to spin up.

Primary IDE Master Primary IDE Slave Secondary IDE Master Secondary IDE Slave Device type, None Device type, None Device type, None Device type, None Each device menu item displays the Hard drive or CD-ROM identifier if a device is installed. If you install a hard drive that does not feature auto IDE type detection or your IDE hard drive was formatted on another system with parameters different from those reported by the drive, enter a parameter for each of the fields in the device submenu. Press Enter to bring up a device submenu. Type None, CD-ROM, IDE Removable, User, ATAPI Removable, Auto Defaults to Disabled and changes at boot time based on auto-detection. When set to Auto, the values for Cylinders, Heads, Sectors, and Maximum Capacity are displayed but are read only.

When set to Auto, the BIOS detects what the drive is capable of, not the translation mechanism that was used to format the drive. If a drive is run in a mode other than the mode in which it was partitioned and formatted, unpredictable results may occur, including data loss. 2-16 System Configuration IDE Device Configuration Parameters Menu Item Maximum Capacity Settings and Description Displays capacity in MB. When Type is set to Auto, the value in the Maximum Capacity field is computed from the auto-detected values in Cylinders, Heads, and Sectors, and the field is read only. Multi-Sector Transfers Disabled, 2 sectors, 4 sectors, 8 sectors, 16 sectors When Type is set to Auto, the value in the Multi-Sector Transfers field is auto-detected and the field is read only. LBA Mode Control Disabled, Enabled When Enabled is selected, it causes logical block addressing to be used in place of cylinders, heads, and sectors. When Type is set to Auto, the value in the LBA Mode Control field is auto-detected and the field is read only. Transfer Mode Standard Fast PIO Mode 1 Fast PIO Mode 2 Fast PIO Mode 3 Fast PIO Mode 4 FPIO3 & Bus Mastering FPIO4 & Bus Mastering When Type is set to Auto, the value in the Transfer Mode field is auto-detected and the field is read only. Ultra DMA Disabled, Mode 0, Mode 1, Mode 2 When Type is set to Auto, the value in the Ultra DMA field is auto-detected and the field is read only. Floppy Options This menu configures the floppy (diskette) drive device whenever it is removed or its settings need to be changed.

Use the fields in the following table to configure the system when making any diskette drive changes. Floppy Drive Options Menu Item Floppy Disk Controller Settings and Descriptions Enabled (default), Disabled. This field enables the diskette drive interface connector on the riser board. Diskette A: Floppy Write Protect Disabled, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3 1/2", 1.44/1.25 MB 3 1/2" (default), 2.88 MB 3 1/2". Disabled (default), Enabled. Set the field to Enabled to write-protect diskettes.

System Configuration 2-17 DMI Event Logging This menu keeps track of system events. Use the fields in the following table to configure DMI events. Bring up the submenu by pressing Enter. DMI Event Logging Menu Item Event Log Capacity Settings and Descriptions This field is read-only and cannot be changed from the BIOS Setup utility. Example: Space Available This field is read-only and cannot be changed from the BIOS Setup utility.

Example: Valid View DMI Event log [Enter] Press Enter to view the DMI Event log. Clear all DMI event logs No, Yes Yes clears all DMI event logs upon rebooting. Event logging Disabled, Enabled Enabled allows the logging of DMI events. SETUP Prompt Disabled, Enabled Displays the Setup entry prompt on boot: when set to disabled, does not prevent entering the BIOS Setup utility.



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