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**POWERMATE NETPC**

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First Printing — August 1997

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# Using This Guide

The *PowerMate NetPC System Administrator's Guide* provides a quick reference to information about the PowerMate NetPC computer.

The guide contains the following information:

- Chapter 1, *Setting Up the Computer*, provides a brief look at system components and information on how to choose a site and set up the hardware. This chapter also explains how to start up and shut down the system and how to secure it against unauthorized access.
- Chapter 2, *Using NECCSD Utilities*, describes the various software utilities shipped with the system, including the Setup utility, Flash utility, LANDesk® Client Manager, NEC Auto Backup utility, and the NEC Select Install program.
- Chapter 3, *Reviewing System Features*, provides a quick overview of the various features of the system.
- Chapter 4, *24-Hour Information Services*, lists the services available to you for information and help, and describes how to access the services.
- Chapter 5, *If You Have a Problem*, contains troubleshooting tips for solving simple problems and provides information on where you can find help when you cannot solve a problem yourself.
- Appendix A, *Setting Up a Healthy Work Environment*, contains guidelines to help you use the computer productively and safely. This appendix also instructs you on how to set up and use the computer to reduce your risk of developing nerve, muscle, or tendon disorders.

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 **WARNING**

Prolonged or improper use of a computer workstation may pose a risk of serious injury. To reduce your risk of injury, set up and use the computer in the manner described in Appendix A, Setting Up a Healthy Work Environment.

- Appendix B, Specifications, provides a technical description of the computer and its components.
- Appendix C, Limited Warranty, provides warranty information, policies, and restrictions.
- Appendix D, System Board Jumpers, provides information about the jumpers on the system board.

## TEXT CONVENTIONS

This guide uses the following text conventions.

- Warnings, cautions, and notes have the following meanings:

 **WARNING**

Warnings alert you to situations that could result in serious personal injury or loss of life.



## CAUTION

Cautions indicate situations that can damage the hardware or software.



Notes give important information about the material being described.

- Names of keyboard keys are printed as they appear on the keyboard, for example, **Ctrl**, **Alt**, or **Enter**.
- Text or keystrokes that you enter appear in boldface type. For example, type **abc123** and press **Enter**.
- File names are printed in uppercase letters. For example, AUTOEXEC.BAT.

## RELATED DOCUMENTS

In addition to this guide, the following printed documentation ships with the computer.

- *How Does Your Workplace Measure Up?*  
This brochure provides information for setting up and using the computer productively and safely. Information includes guidelines to reduce the risk of injury associated with using a computer.
- *NEC PowerMate NetPC Release Notes*  
Release Notes provide you with additional information about the computer that was not available at the time this guide was printed.

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The system also comes with a Healthy Environment online document. This document complements the “How Does Your Workplace Measure Up?” brochure.

In addition to the documentation that ships with the system, the following documentation is available from NECCSD:

- *NEC PowerMate NetPC Series Service and Reference Manual* (part number 819-181873-000)  
This manual provides information for maintaining, troubleshooting, and repairing the computer. Spare parts lists, option installation procedures, and instructions on how to change jumper settings and the system battery are included for qualified NECCSD personnel. This guide also includes hardware and interface information for programmers, engineers, and others who need to know how the system is designed.

To purchase the service and reference manual, call NECCSD at **1-800-632-4565** (in the U.S.) or your local NECCSD sales provider (outside the U.S.).

- NECCSD FaxFlash™  
NECCSD FaxFlash is an automated service that sends the latest information about NECCSD and its products directly to a fax machine. The service is available 24 hours a day, 7 days a week.

With FaxFlash, you can obtain product literature and technical information bulletins. By using FaxFlash, you can be kept up-to-date on the latest technical information for your system.

See “NECCSD FaxFlash Service” in Chapter 5 for information about using FaxFlash.

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# Contents

## Using This Guide

Text Conventions.....	x
Related Documents .....	xi

## 1 Setting Up the Computer

Site Selection.....	1-2
Installation.....	1-3
Checking the Voltage Switch.....	1-4
Selecting System Orientation.....	1-6
Connecting Cables .....	1-7
Preventing Internal Access .....	1-8
Operation .....	1-9
Starting Up.....	1-9
Shutting Down.....	1-12

## 2 Using NECCSD Utilities

The Setup Utility .....	2-1
When to Use Setup .....	2-2
How to Start Setup .....	2-3
How to Use Setup.....	2-4
Main Menu.....	2-5
Displayed Information.....	2-6
Language.....	2-6
System Time/Date .....	2-6
Floppy Options .....	2-6
Primary IDE.....	2-7
Advanced Menu.....	2-10
PnP O/S .....	2-10
Reset Configuration Data.....	2-10
Memory Cache .....	2-10
Memory Banks 0 and 1 .....	2-10
Resource Configuration .....	2-11

---

Peripheral Configuration .....	2-12
Keyboard Configuration.....	2-15
Video Configuration.....	2-15
DMI Event Logging .....	2-16
Security Menu .....	2-16
User Password Is .....	2-16
Supervisor Password Is.....	2-17
Set User or Supervisor Password .....	2-17
Clear User Password.....	2-18
User Setup Access .....	2-18
Using a Password .....	2-18
Unattended Start .....	2-19
Power Menu .....	2-20
Boot Menu.....	2-21
Exit Menu .....	2-23
Flash Utility.....	2-24
Landesk Client Manager .....	2-25
PC Health Indicator .....	2-26
Workstation Management .....	2-26
PC Health Meter.....	2-27
PC Health Description .....	2-27
Inventory .....	2-28
DMI .....	2-29
Monitoring Capabilities .....	2-29
NEC Auto Backup Utility .....	2-30
NEC Select Install CD .....	2-31
Operating System Restore .....	2-32
Selective Application Restore Program.....	2-40

### **3 Reviewing System Features**

System Chassis .....	3-3
System Board Components .....	3-3
Processor.....	3-3
System Memory.....	3-3
Interrupt Controller.....	3-5
PCI Local Bus .....	3-6
Flash ROM.....	3-6

---

Graphics Features .....	3-7
Motion Video Controller .....	3-7
Graphics Accelerator .....	3-8
Video Support .....	3-8
High-Speed Communication Ports .....	3-9
RJ-45 Port .....	3-10
IDE Port .....	3-10
USB Ports .....	3-10
Sound System .....	3-11
Plug and Play Support .....	3-11

#### **4 24-Hour Information Services**

NECCSD FaxFlash Service .....	4-2
NECCSD Bulletin Board Service .....	4-4
NECCSD on America Online Service .....	4-6
NECCSD on CompuServe Online Service .....	4-7
E-Mail/Fax Technical Support Service .....	4-8
Internet .....	4-9
NECCSD Technical Support Services .....	4-10

#### **5 Solving System Problems**

Finding Solutions to Common Problems .....	5-1
System Problems .....	5-2
Monitor Problems .....	5-3
Keyboard/Mouse Problems .....	5-4
Getting Help .....	5-5
Getting Help from Your Company .....	5-5
Getting Help from Your NECCSD Dealer .....	5-5
Getting Help from NECCSD Technical Support Center .....	5-6
NECCSD Warranty/Non-Warranty Repair Service .....	5-7

---

<b>A</b>	<b>Setting Up a Healthy Work Environment</b>	
	Making Your Computer Work for You.....	A-1
	Arrange Your Equipment .....	A-3
	Adjust Your Chair .....	A-4
	Adjust Your Input Devices.....	A-6
	Adjust Your Monitor .....	A-8
	Vary Your Workday .....	A-10
	Pre-Existing Conditions and Psychosocial Factors .....	A-11
	Checking Your Comfort: How Do You	
	Measure Up? .....	A-12
	Checking Your Chair .....	A-12
	Checking Your Keyboard.....	A-12
	Checking Your Mouse .....	A-12
	Checking Your Monitor .....	A-12
	Checking You.....	A-13
<b>B</b>	<b>System Specifications</b>	
	System Processor.....	B-1
	PGa Processor Socket.....	B-1
	Standard Random Access Memory (RAM).....	B-1
	Cache Memory .....	B-2
	Read Only Memory (ROM) .....	B-2
	Video Window RAM (WRAM) .....	B-2
	Calendar Clock.....	B-3
	Input/Output (I/O) Facilities .....	B-3
	Device Slots.....	B-4
	Graphics.....	B-4
	Sound System.....	B-5
	Dimensions.....	B-6
	Power.....	B-6
	Operating Environment .....	B-6

---

## **C Limited Warranty**

How Long is the Warranty? .....	C-1
Who is Protected? .....	C-1
What is Covered and What is Not Covered? .....	C-1
What We Will Pay For and What We Will Not Pay For .....	C-2
How You Can Get Warranty Service.....	C-3
Year One .....	C-3
Years Two and Three.....	C-3
Limitation of Damages and Implied Warranties .....	C-4
How State Law Relates to the Warranty .....	C-4
for Information, Telephone 1-800-632-4565 .....	C-5

## **D System Board Jumpers**

### **Index**

### **List of Tables**

Navigation Keys .....	2-5
Supported Dimms .....	3-4
Interrupt Level Assignments.....	3-5
Supported Refresh Rates.....	3-8

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# 1 Setting Up the Computer

## **WARNING**

Prolonged or improper use of a computer workstation may pose a risk of serious injury. To reduce your risk of injury, set up and use your computer in the manner described in Appendix A, Setting Up a Healthy Work Environment.

The PowerMate® NetPC is designed to enable central administration and management of your computer resources. NECCSD has designed the PowerMate NetPC so you can quickly set up the hardware and put your computer to work right away.

This chapter contains information on setting up the NetPC system and covers the following topics:

- Site selection
- Installation
- Startup and shutdown.

---

 **WARNING**

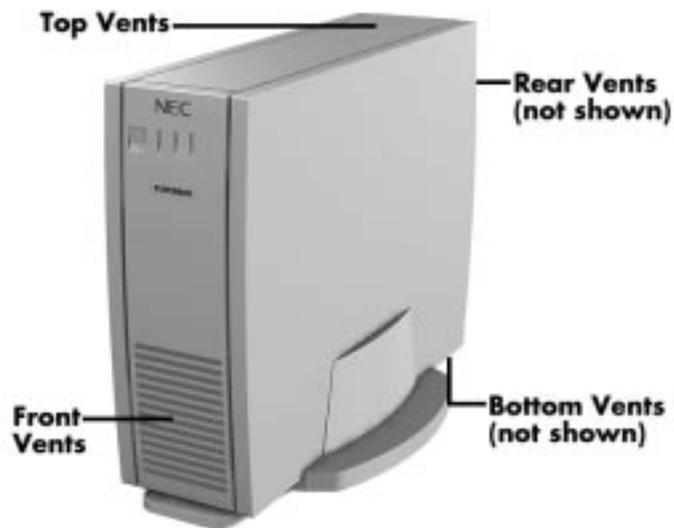
Hazardous voltage, current, and energy levels are present inside the computer. Do not open the computer; access to the inside is restricted to qualified personnel. There are no user-serviceable parts inside. See Chapter 5 for servicing information.

## SITE SELECTION

Your computer is designed to operate reliably in a normal office environment. Make sure the site is well ventilated, dust free, and away from heat sources. In addition, choose a site according to the following criteria:

- Place the computer on a desktop or other raised, flat surface; do *not* put the computer on the floor.
- Place the computer near a grounded, three-pronged power outlet.
  - In the United States and Canada, use a NEMA 5-15R outlet for 100-120 VAC or a NEMA 6-15R outlet for 200-240 VAC.
  - For other geographic regions, use a three-pronged power outlet applicable for the electrical code of the region.
- Make sure there is enough space around the computer for cooling and adequate air flow – about 3.93 in. (10 cm) clearance in back, 1.96 in.(5 cm) on each side, and 3.93 in. (10 centimeters) in front.

- 
- The computer has external vents for cooling and air flow (see the following figure). To ensure proper cooling of the computer, keep all vents clear of obstructions.
  - To ensure adequate air flow and reduce the risk of overheating or fire, use the stand provided with your system for vertical (“tower”) placement of the computer.



*Computer vents*

## **INSTALLATION**

Install the computer according to the following procedures and safety standards:

- Check the voltage switch.
- Select the system orientation.

- 
- Connect cables
  - Prevent internal access.

 **WARNING**

Do not plug in the computer power cable until you connect all other external cables (keyboard, mouse, monitor, LAN, and so on).

The following sections provide installation guidelines and procedures.

 **CAUTION**

The push-button on/off power switch on the front panel of the computer does not turn off the AC power. To remove AC power from the computer, you must unplug the AC power cable from the power supply or the wall outlet.

### Checking the Voltage Switch

A 51-watt (rated) power supply is integrated into the computer. The voltage ratings for the power supply are provided in the following table.

**Power Supply Voltage Rating**

VOLTAGE	INPUT FREQUENCY (HZ)	CURRENT (AMPS)
100-127	60	2
200-240	50	1.25

---

Before connecting the power cable to the back panel of the computer, make sure that the voltage selector switch is set to the correct AC line source voltage for your region.

- For line voltages between 100 and 127 VAC, set the line voltage selector on the power supply switch to 115V (115 VAC).
- For line voltages between 200 and 240 VAC, set the line voltage selector switch on the power supply to 230V (230 VAC).

Make sure that the correct voltage (115V or 230V) is visible on the switch (see the following figure). If necessary, use a flat-head screwdriver to set the switch.



*Line voltage switch selector*

---

## Selecting System Orientation

The computer is designed to sit in a horizontal or vertical position on a desktop or other surface away from the floor. In the horizontal position, the computer supports standard 15-inch monitors.

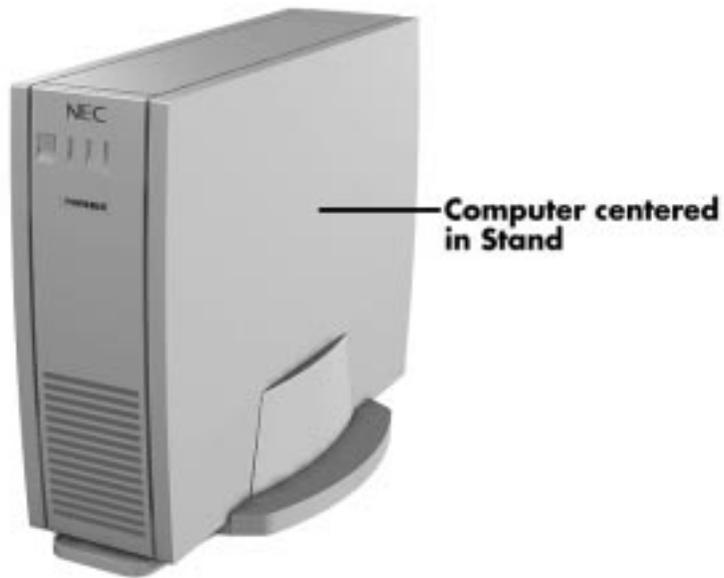


*Horizontal orientation*

For vertical placement, use the stand provided in the computer shipping box.

**! WARNING**

To ensure stability, center the unit in the stand as shown in the following figure. Do not place the unit in the vertical position without the stand. Damage to equipment and data may result if the computer accidentally tips over.



*Vertical orientation*

### **Connecting Cables**

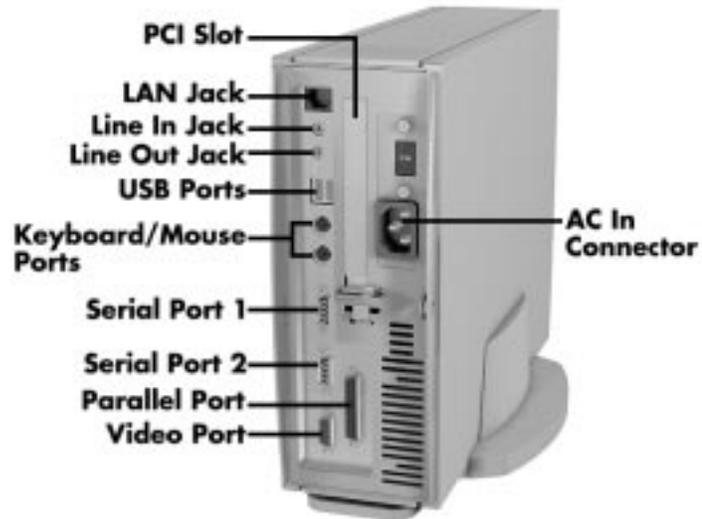
The following figure shows the connector locations on the back of the computer for connecting the keyboard, mouse, monitor, and power cables.

The figure also shows the locations for other device cables in case you are installing additional hardware.

---

 **CAUTION**

Turn off and unplug the computer before connecting any cables to the back of the computer. Equipment may be damaged if you connect cables while the power is on. Plug in the power cable only after all other device cables have been connected.



*Rear panel connectors*

### **Preventing Internal Access**

To prevent access to the inside of the computer, install a padlock in the small padlock slot in the back of the system (see the following figure).



*Chassis security*

## **OPERATION**

The following sections provide basic procedures for starting up and shutting down the computer.

### **Starting Up**

Power on the system using the following steps.

1. Plug the monitor power cable into a grounded wall outlet.
2. Plug the computer's power cable into the AC power-in connector on the back panel of the computer and into a grounded wall outlet.

---

 **CAUTION**

Ensure that the power service connection is through a properly grounded outlet.

NECCSD recommends that you plug the computer into a surge suppresser for protection against sudden transient increases or decreases in electrical power that could damage your computer's power supply and result in loss of data.

If the computer does not turn on, press the power button on the front panel (see the following figure). Use the lamps on the front panel to verify that the power, hard disk drive, and LAN connections are working as follows:

- Power-on (green)/Sleep mode (yellow)
- Hard drive activity (green)
- LAN activity (green).



*Front panel controls and indicators*

The power lamp lights green to indicate that the system is on. The NEC startup screen appears.

At the bottom of this screen, messages like the following appear:

Press <F2> key if you want to run Setup

Press ESC to display POST



These messages are part of your system's Power-On Self-Test (POST). Your computer is checking your hardware for any changes since the last startup. If you want to see the messages displayed during POST, press ESC. If you want to go into the Setup Utility, press F2.

---

One beep indicates that the system has successfully completed the power-on test. After about five seconds, Windows starts up.

If a problem occurs, a series of beeps may sound. If this happens repeatedly after powering on, power off the system and turn to Chapter 5, Solving System Problems. This chapter provides some helpful hints on obvious system problems.



If the system displays a message indicating that system settings have changed, run Setup (see Chapter 2, NECCSD Utilities).

On PowerMate NetPC systems loaded with the Windows NT<sup>®</sup> 4.0 operating system, press **Ctrl-Alt-Del** when prompted on-screen to do so. The log-on box appears for entering a password.

## Shutting Down

Follow these steps to shut down (power off) your computer.

1. Save your work. See the documentation that comes with your application.
2. Exit the application program.
3. Make sure that the hard disk drive is not in use. A lit hard disk activity lamp indicates that the drive is in use.

---

 **CAUTION**

Wait until a program is finished running before powering off the system.

Unless absolutely necessary, never power off the system when the system power lamp is yellow or when the hard disk activity lamp is lit. Information on the hard disk might be lost or damaged.

4. Press the Windows **Start** button, then point to and click “Shut Down.” Selecting “Shut Down” gives you several choices in the pop-up submenu. Select “Shut down the computer,” then click the **Yes** button or press **Enter** to shut down the computer.



A message appears informing you when it is safe to turn off your system.

5. Turn off power to your monitor.
6. Power off the system by pressing the system unit power button.

This completes the system setup procedures. For information about system features, see Chapter 3, “Reviewing System Features.”

---

# 2

## Using NECCSD Utilities

This chapter provides information about the computer's software tools and utility programs. These include:

- Setup utility
- Flash utility
- LANDesk® Client Manager
- NEC Auto Backup utility
- NEC Select Install CD.

### THE SETUP UTILITY

The Setup utility program is used to configure the main components of the computer.



The system ships from the factory with the correct system parameters for the configuration. Unless you add optional hardware, you do not need to run Setup to operate the system. However, you might wish to run the Setup utility to set features that customize the system, such as security features.

---

System configuration information is stored in nonvolatile memory. A nonvolatile memory device retains its data when system power is turned off. Nonvolatile memory in the system is stored in a complementary metal-oxide semiconductor (CMOS) chip backed up by a battery on the system board. The battery supplies continuous power to CMOS memory and maintains configuration information when system power is off.



NECCSD recommends that you print out or write down the current Setup parameters and store the information in a safe place. This allows you to restore the system to the current parameters if you ever need to have the battery replaced.

## When to Use Setup

The Setup utility lets you view and set system parameters. Use the Setup utility program to:

- set the time and date.
- update or check system parameters when expansion options have been added or removed.
- change or set power management features.
- correct a hardware discrepancy when the Power-On Self-Test (POST) displays an error message and prompts you to run Setup.
- check the installation of optional memory by comparing the amount of memory installed with the amount of memory displayed by Setup.
- change certain system operating parameters, such as boot device sequence and keyboard parameters.

- 
- configure system connections for peripherals, such as devices connected to the printer port and serial ports.
  - customize the system with security features such as passwords, virus check reminder, and system backup reminder.
  - set system parameters in the event that the CMOS battery has been replaced.

## How to Start Setup

To start the Setup utility, follow these steps:

1. Turn on or reboot the system.
2. Press **F2** after POST to start the memory test before the system boots up.

There is about five seconds in which to press **F2** before the system boot continues.

Setup's Main menu appears and looks similar to the following screen.

BIOS Setup Utility					
Main	Advanced	Security	Power	Boot	Exit
Processor Type	Pentium® with MMX™ Technology			Item-Specific Help	
Processor Speed	200 MHz			Select the current default language used by BIOS	
Cache RAM	256 KB				
Total Memory	16 MB				
BIOS Version	xxxxxxxxxx				
Language:	[English (US)]				
System Time:	[13:48:18]				
System Date	[08/10/1997]				
>Floppy Options					
>Primary IDE Master	[XXXXXXXXXX]				
>Primary IDE Slave	[XXXXXXXXXX]				
F1 Help	↑↓ Select Item	-/+ Change Values		F9 Setup Defaults	
ESC Exit	←→ Select Menu	Enter Select	> Sub-Menu	F10 Save and Exit	

*Setup Main menu*

**How to Use Setup**

Use the keys shown on the bottom of the Setup menu to make your selections or exit the current menu. The following table describes the navigation keys.

---

## Navigation Keys

Key	Function
F1	Provides help for the parameter field being displayed.
Esc	Exits the menu
Enter	Executes Command or Selects submenu
↓ or ↑ arrow keys	Moves cursor up and down
← or → arrow keys	Selects next menu
+ or –	Selects parameter values in a menu
F9	Loads the Default Configuration values for this menu
F10	Save and Exit

Main menu items preceded by > contain a submenu of selectable fields for setting system parameters. To display a submenu, use the arrow keys to move the cursor to the submenu you want. Then press **Enter**.

### Main Menu

Choose the Main menu by selecting Main menu in the legend bar. Other Main menu options are available by selecting submenus.



See "How to Start Setup" for a look at a typical Main menu screen.

Use the arrow keys to select one of the following Main menu options and press **Enter** to select a submenu. Items with grayed-out text are not available. Explanations of each menu item follow.

---

### ***Displayed Information***

The following information is displayed in the Main menu. These fields are read-only and cannot be changed:

- Processor type
- Processor speed
- Cache RAM
- Total Memory
- BIOS version.

### ***Language***

Selects the current language used by the BIOS. Use this field to select English (the default) or French.

### ***System Time/Date***

Use this menu to set the current time and date. The settings remain in memory even after the 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 **09:30:1997** for September 30, 1997.

### ***Floppy Options***

The parameters for this field appear only in Configuration mode as part of the BIOS recovery procedure described in Chapter 4. Unless you are recovering the system BIOS in Configuration mode, all the parameters for this field are set to “Disabled.”

---

## ***Primary IDE***

The Primary IDE Master and Slave settings control the system's hard disk drive.

The computer comes with the hard disk drive (drive C:) configured as the "Primary IDE Master." The system can support a maximum of two IDE drives (master and slave) on the primary IDE channel. Menu choices include:

- Primary Master
- Primary Slave.

The default setting for existing installed Master devices is "Auto," meaning that the system automatically detects the hard disk type and sets the remaining parameters. The default setting for existing installed Slave devices is "None."

If a hard disk drive that does not feature auto IDE type detection has been installed (or the IDE hard disk was formatted on another system with parameters different than those reported by the drive), enter a parameter for each of the following fields.



## CAUTION

When set to Auto Detected, 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.

### ■ Type

Use this field to enter the hard disk drive type. The following options are available:

- “Auto” automatically configures the device.
- “User” prompts the user to fill in the remaining fields.
- “CD-ROM” configures a CD-ROM device.
- “IDE Removable” configures a removable IDE device, such as a tape drive or Zip drive.
- “ATAPI Removable” configures a removable storage device that uses the AT attachment packet interface (ATAPI) standard
- “None” indicates that no device is selected.

### ■ Cylinders

Enter the number of cylinders.

### ■ Heads

Enter the number of read/write heads.

### ■ Sectors

Enter the number of sectors per track.

- 
- **Maximum Capacity**  
This read-only field displays the capacity of the hard disk drive installed in the system.
  - **Multiple Sector Transfers**  
Enter the number of sectors transferred per block. Choices include “Disabled” (no sectors chosen), “Standard” (one sector), 2, 4, 8, and 16 sectors.
  - **LBA Mode Control**  
When “Enabled” is selected, it causes logical block addressing to be used in place of cylinders, heads, and sectors.
  - **Transfer Mode**  
Enter the method for transferring the data between the hard disk drive and the system memory. The Setup menu only lists those options supported by the drive. Choices can include
    - Standard
    - Fast PIO 1, Fast PIO 2, Fast PIO 3, or Fast PIO 4
    - FPIO3 and Bus Mastering
    - FPIO 4 and Bus Mastering.
  - **Ultra DMA Mode**  
This field sets the Ultra DMA mode, which allows a faster read/write file transfer rate (33 MB per second). Choices include Mode 0, Mode 1, and Mode 2. This setting should be disabled if an older hard disk drive is installed that is not supported by Ultra DMA mode.

---

## **Advanced Menu**

Selecting “Advanced” from the Main menu displays a menu with the following options.

### ***PnP O/S***

The PnP field indicates if the computer’s operating system is configured to use Plug and Play devices. Choose “Yes” if you are using a system that has Plug and Play. The default is “Yes” for Windows 95 systems. For systems without Plug and Play (such as Windows NT 4.0), this field is set to “No.”

### ***Reset Configuration Data***

Use this setting to clear CMOS (by selecting “Yes” and rebooting) if the system parameters get corrupted. The default is “No.”

### ***Memory Cache***

Memory cache saves time for the CPU by holding data most recently accessed in regular memory (dynamic RAM or DRAM) in a special storage area of static RAM (SRAM), which is faster. Before accessing regular memory, the CPU first accesses the cache. If it does not find the data it is looking for, it accesses the regular memory.

The default for the Memory Cache is “Enabled.” This field controls both the primary and secondary caches. Setting the Memory Cache to “Disabled” will hurt performance, but might be required when running programs that utilize software-timing loops and need to be slowed down to execute properly.

### ***Memory Banks 0 and 1***

The two Memory Bank fields are read only. They display the total amount of memory in each DIMM bank.

---

## **Resource Configuration**

### ■ Memory Reservation

Use this field to reserve specified blocks of upper memory for use by other ISA devices. Select “Reserved” to choose a memory block. The default for each block is “Available.”

The following list includes the available memory blocks:

— C800-CBFF

— CC00-CFFF

— D000-D3FF

— D400-D7FF

— D800-DBFF

— DC00-DFFF

— Memory Hole

The default setting for this parameter is “Disabled.” When set to “Enabled,” this parameter turns system RAM off to free address space for use with an option card. When enabled, memory choices are “Conventional” or “Extended.” Either a 128-KB conventional memory hole (starting at 512 KB) or a 1-MB extended memory hole (starting at 15 MB) is created in system RAM.

### ■ IRQ Reservation

Use this field to reserve specified IRQs for legacy ISA cards. Select “Reserved” to choose an IRQ. The default for each IRQ is “Available.” The following list includes the available IRQs:

— IRQ 3

— IRQ 4

— IRQ 5

— IRQ 7

- 
- IRQ 10
  - IRQ 11
  - IRQ 15.

### ***Peripheral Configuration***

Adjustments must sometimes be made in the Setup Utility when peripheral devices are added, removed or changed.

Use the fields in the following list to configure the system when making any peripheral configuration changes.

#### ■ Serial Ports A and B

Selectable parameters for this field are “Disabled,” “Enabled,” and “Auto.” The default setting for Serial Port A is “Enabled.” The default setting for Serial Port B is “Disabled.” The serial ports can be auto detected by choosing “Auto.” The “Auto” parameter enables the serial device, but the BIOS does not place its resources unless the “PnP OS” field described previously is set to “No.”

Use the Enabled setting if you want to choose a specific address for the serial port. The following options become available:

- Base I/O address  
Available addresses include “3F8h” (Serial Port A default), “2F8h” (Serial Port B default), “3E8h,” and “2E8h.”
- Interrupt  
Available IRQs include “IRQ3” (Serial Port A default) and “IRQ4” (Serial Port B default).
- Serial Port B Mode  
If you are using an IrDA device, the Serial Port B Mode field should be “IrDA.” The default is “Serial.”



When an option is selected for one serial port, that selection is not available for the second port.

■ **Parallel Port**

Selectable parameters for this field are Disabled, Enabled (default), and Auto. The parallel port device can be auto detected by choosing Auto. When Auto is selected, the first free LPT port is assigned. Setting this field to Auto enables the device, but the BIOS does not place its resources unless the “PnP OS” field described previously is set to “No.”

Select Enabled if you want to choose a specific address. The following options become available:

— **Mode**

Choices include: “ECP” for setting the parallel port to the Enhanced Capabilities Port (ECP) mode, “Disabled,” “Output Only,” and “Bi-directional” (sets the parallel port to input/output mode only). The default setting is “Bi-directional.”

— **Base I/O address**

Available addresses include “378h” (the default), “3BCh,” and “278h.”

— **Interrupt**

Available IRQs include “IRQ5” and “IRQ7” (the default).

---

— DMA channel

This field appears only when the Mode option is set to “ECP”; it does not appear when the Mode option is set to bidirectional (the default) or the other parameters. When Mode is set to ECP, DMA channel choices include “DMA3” (the default) and “DMA 1.”

■ Floppy Disk Controller

This field enables the diskette drive interface connector on the riser board. The default setting is “Disabled.”

■ IDE Controller

The IDE Controller field enables the IDE interface connector on the riser board. Choices include “Enabled” (default) and “Disabled.”

■ Audio

This field (“Enabled” by default) enables the audio system on the system board. Choose “Disabled” if an external audio card is installed.

■ LAN

This field configures the LAN device. The default setting is “Enabled.”

■ Legacy USB Support

This field enables (the default ) or disables support for legacy Universal Serial Bus (USB) devices.

■ Hardware Monitor

This field enables (the default) or disables the on-board hardware monitor device.

---

## **Keyboard Configuration**

Use this field to adjust the following keyboard features:

- **Numlock**  
This field controls whether the Num Lock key on the keyboard is “On” or “Off” at bootup. The default setting for this field is “Auto.”
- **Key Click**  
This field turns audible key click on or off. The default is “Disabled.”
- **Keyboard Auto-Repeat Rate**  
This field sets the number of times per second to repeat a keystroke when the key is held down. Options include 2, 6, 10, 13.3, 18.5, 21.8, 26.7, or 30 clicks per second. The default is “30.”
- **Keyboard Auto-Repeat Delay**  
This field controls the speed characters repeat when a keyboard key is held down. The higher the number the faster the repeat. Options include 1/4, 1/2, 3/4, or 1 second. The default is “1/2” second.

## **Video Configuration**

The Video Configuration submenu includes the Palette Snooping field. This option enables card “snoop” (also called RAMDAC shadowing) write cycles to the ISA video card’s palette registers. This field can be either “Enabled” or “Disabled.” The default is “Disabled.”

This field should only be enabled if all of the following conditions occur:

- An ISA card connects to the PCI graphics card via the VESA compatible feature connector.
- The ISA card connects to a color monitor.

- 
- The card uses the RAMDAC on the PCI card.
  - The palette snooping feature is broken on the PCI card.

### ***DMI Event Logging***

This field keeps track of system events.

- Event logging Capacity  
For example, space available.
- Event Logging Validity  
For example, valid.
- View DMI Log  
Press **Enter** to view the DMI log.
- Clear all DMI Event Logs  
“No” is the default; select “Yes” to clear logs.
- Event Logging  
The default setting for this field is “Enabled.”
- Mark DMI Events As Read  
Press **Enter** to mark DMI events.

### **Security Menu**

The Security menu contains features that enable you to restrict access to the computer. The Security menu contains the following fields.

#### ***User Password Is***

This read-only field lets you determine whether a User Password has been set. This field can be either “Clear” or “Set.” The default is “Clear” (no password has been set).

When both the User Password and Supervisor Password are enabled, only the Supervisor Password gives you full access to all Setup fields.

---

### ***Supervisor Password Is***

This read-only field lets you determine whether a Supervisor Password has been set. This field can be either “Clear” or “Set.” The default is “Clear” (no password has been set).

When both the User Password and Supervisor Password are Enabled, only the Supervisor Password gives you full access to all Setup fields.

### ***Set User or Supervisor Password***

The password fields allow you to enable a user-level password or supervisor-level password during POST and to enter Setup.

Use the following procedure to set a password.

1. Using the arrow keys, select Security from the menu bar. The Security menu appears.
2. Select “Set Supervisor Password” or “Set User Password” with the plus (+) or minus (-) keys.



Once the Supervisor Password feature is enabled, the Setup Utility can only be accessed by entering the password.

3. With the password field selected, press **Enter**. Setup displays a dialog box with the following prompts:

Enter new password: [            ]  
Confirm new password: [            ]

4. Type the password (passwords are not case sensitive) and press **Enter**. Reenter the password and press **Enter** again.

- 
5. Use the arrow keys to select **Exit**.
  6. Select Exit Saving Changes. Press **Enter**.
  7. At the prompt, to confirm exiting setup, press **Enter**.  
The password takes effect the next time you power on the system. You must enter a password the next time you power on.

### ***Clear User Password***

Use this field to clear a User Password. To clear the password, highlight the field and press **Enter**. Setup displays a confirmation window. Press **Enter** to clear the password. If you do not want to clear the password, highlight **No** in the confirmation window and press **Enter**.

### ***User Setup Access***

Use this field to prevent a user from accessing the Setup utility. The default setting is “Enabled,” which allows the user to access Setup. To prevent the user from accessing Setup, highlight the field and press **Enter**. Then highlight “Disabled” and press **Enter** again.

### ***Using a Password***

After you set the password in Setup and reboot the system, a password prompt appears each time you power on the system.

To use the password, type the password at the password prompt and press **Enter**.



For security, characters you enter do not appear on the screen. Enter the password carefully.

---

If you enter the password incorrectly, the system does not boot. You have three chances to enter the correct password. After the third unsuccessful attempt, you must reboot the system and try again.

Dual password security provides two levels of password security. A *supervisor password* allows access to the system's Setup utility for system configuration. A *user password* allows system boot-up only after the entry of a password.

### ***Unattended Start***

This field controls the point at which the user password is required. The Unattended Start field can only be set if a user password is in effect.

When this field is set to Disabled (the default setting), the user is prompted for the password before the system can boot. The text string prompt "Enter Password (1)" is displayed.

When this field is set to Enabled and a user password is set, the system boots and runs, but the keyboard is locked. The user password must be entered to unlock it. The BIOS *does not* display any prompt string.

---

## Power Menu

Power management reduces the amount of energy used after specified periods of inactivity. The Power menu provides the choice of operating the system in a full-on state or a full-power reduction state when idle.

- **Power Management**  
This field allows you to enable or disable the power management options. Selecting “Enabled” also allows you to further configure the Power Management options.
- **Inactivity Timer**  
This field sets the length of time before the computer powers down various system devices. Choices for inactivity time periods include Off, 5, 10, or 20 (the default) minutes and 1 or 2 hours.
- **Hard Drive**  
When this field is enabled, the hard disk drive is powered down during periods of inactivity. Choices include “Enabled”(default) and “Disabled.”
- **VESA Video Power Down**  
This field enables you to set the video power down level of inactivity. Choices include “Disabled,” “Sleep” (the most energy efficient setting), “Suspend,” and “Standby.” The default is “Standby.”

---

## Boot Menu

The Boot menu allows you to configure the system's boot process.

- **Scan User Flash Area**  
The field allows the BIOS to scan the Flash ROM. Selectable parameters for this field are Disabled and Enabled. The default is Disabled.
- **Restore On AC/Power Loss**  
This field enables you to decide whether the system automatically boots up or stays off after power is restored to the system (after an unexpected power loss). The default setting is "Power On," which causes the system to automatically boot up after power restoration. Choose "Stay Off" if you want the system to stay off. "Last State" restores the previous power state before the power loss occurred.
- **On Modem Ring**  
This field enables an external modem to work even when the system is in a power reduction state. Choosing "Power On" (the default) restores the system to full power so it can receive a modem ring. Choose "Stay off" if you do not want full power restored on a modem ring.
- **On LAN**  
This field enables the system to be contacted via a LAN connection even when the system is in a power reduction state. Choosing "Power On" (default) restores the system to full power so the LAN connection can be made. Choose "Stay off" if you do not want full power restored.

- 
- **On PME**  
This field controls how the system responds to a PCI Power Management Enable (PME) wake up event. The choices are “Power On” (the default) and “Stay Off.”
  
  - **Boot Order**  
These fields allow you to set the order in which the system’s drives boot up. The default order is:
    - Hard disk
    - LANDesk® Service or network
    - Diskette drive.
  
  - **Hard Drive**  
This field lists the bootable hard disk drives in the system as well as bootable ISA boards. Use this field to change the booting order.
  
  - **Removable Devices**  
This field lists the bootable removable device drives (diskette, Zip, CD-ROM, etc.) in the system as well as their booting order. Use this field to change the booting order.
  
  - **Boot Time Diagnostic screen**  
When set to enabled, this field allows you to display the Diagnostic Screen during boot up. The default setting is “Disabled.”
  
  - **Floppy Check**  
When set to “Enabled,” this field verifies the floppy type during boot up; “Disabled” (the default) speeds up the boot. This field is not applicable to the PowerMate NetPC.

- 
- **Virus Check Reminder**  
This field displays a reminder message during boot up at preset intervals (daily, once a week, or once a month). The default setting is “Disabled.”
  - **System Backup Reminder**  
This field displays a reminder message during boot up at preset intervals (daily, once a week, or once a month). The default setting is “Disabled.”
  - **Fixed Disk Boot Sector**  
This field write protects the hard disk boot sector to protect against viruses. Your choices are “Normal” (the default) and “Write Protect.”

## Exit Menu

Selecting “Exit” from the menu bar displays the following exit options.



**Esc** does not exit this menu. You must select one of the items from the menu to exit.

- **Exit Saving Changes**  
Choose this option if you wish to save any changes made and exit the Setup program.
- **Exit Discarding Changes**  
Choose this option if you wish to exit the program without saving any changes made.
- **Load Setup Defaults**  
Choose this option if you wish to load the original system BIOS default settings.
- **Load Custom Defaults**  
Choose this option to load the custom defaults.

- 
- **Save Custom Defaults**  
Choose this option to save any changes as custom defaults. Normally, the BIOS reads the setup parameters from CMOS, but if the CMOS fails, the BIOS will read the custom defaults (if you set them). If not, the BIOS uses the factory default settings.
  - **Discard Changes**  
Choose this option if you wish to discard any changes made in the current session, but want to continue to enter new changes.

## FLASH UTILITY

The system BIOS resides on a flash read only memory (ROM) chip in the system. The flash ROM can be updated with a very simple procedure.

Performing an update is done with a BIOS flash diskette. The diskette contains the latest version of the BIOS code. You can obtain the flash diskette from NECCSD or, if a modem is available, the latest BIOS can be downloaded from the NECCSD Bulletin Board Service (BBS). See “NECCSD Bulletin Board Service” in Chapter 4 for the procedure for logging onto the BBS to download information.

Update the BIOS from the BIOS flash diskette by using a configuration server such as Intel’s LANDesk Configuration Manager or proceed as follows.



The following procedure requires that you connect an external diskette drive (with a separate power supply) to the diskette drive connector on the riser board.

- 
1. Write down the Setup parameters currently set on the system.
  2. Turn off the system.
  3. Insert the flash diskette into drive A and turn on the system.
  4. When the flash upgrade menu appears, choose “Update Flash Memory Area from a file.”
  5. When the menu asks you to enter a path/filename, use the arrow keys to select the “.bio” file and press **Enter**.
  6. The utility asks for a confirmation that you want to load the new flash into memory. Select “Continue with Programming.”
  7. After the upgrade completes, remove the upgrade diskette.
  8. Reboot the system and start the Setup program. Press **F9** to reset the BIOS defaults. Then, use the copy of the Setup selections you made at the beginning of this procedure to set the parameters.

## LANDESK CLIENT MANAGER

LANDesk® Client Manager (LDCM) is a software program available on the NEC Select Install CD. LDCM uses the Desktop Management Interface (DMI) standard to manage components (network interface cards, memory, software applications) within a Client (local) or remote (workstation) PC system. It provides features for managing the resources of a local PC and can be used by system administrators to manage groups of computer systems.

See “NEC Select Install CD” for instructions on installing LANDesk Client Manager on the NetPC hard disk.

---

With Client Manager you can perform the following tasks:

- review system inventory of workstation hardware and software components
- view DMI-compliant component information
- troubleshoot
- receive notice of system events (for example, if the system is running low on memory, you are notified of the potential problem)
- detect changes to CPU, memory, and hard disk characteristics and alert you to these changes
- transfer files to and from client workstations
- remotely reboot client workstations.

There are two main components of Client Manager: PC Health Indicator and Inventory.

### **PC Health Indicator**

PC health indicator consists of three parts:

- Workstation management
- PC Health meter
- PC Health description.

### ***Workstation Management***

Client Manager sets up a connection to all the workstations running on the network to allow the administrator to monitor the functions of each workstation.

The monitoring is in real time so that if an unhealthy workstation is fixed, you can refresh the screen to view the new correct PC health. You can also set the monitor to report only unhealthy workstations.

---

### ***PC Health Meter***

The PC Health meter is a traffic signal that provides a visual indicator of workstation health.

- A red light indicates that a critical system event has occurred. You are required to fix the problem immediately.
- A yellow light or noncritical system event requires that you monitor the situation. It may be a problem that could get worse and become a critical event.
- A green light indicates everything is working fine with the system.

### ***PC Health Description***

The description of PC health is determined by monitoring various system components for threshold levels. Some of the components that are monitored include:

- drive space
- prediction of hard drive failure with automatic data backup (see “NEC Auto Backup Utility for further information)
- free virtual memory
- temperatures
- power supplies
- chassis opened
- non-critical boot failure
- boot virus detection.

Once a threshold level has been passed on a workstation, you can request notification of the problem and have it written into a log file.

---

## Inventory

Client Manager Inventory views the hardware and software components of the workstation. The inventory consists of the following categories:

- workstation summary
- basic hardware
- drives
- memory
- audio
- keyboard/mouse
- video
- system resources
- I/O ports
- operating system
- network
- applications
- system files
- user information.

You can also view the current system configuration, edit user information, and create or restore file snapshots.

---

## DMI

The Desktop Management Interface (DMI) is the industry-standard used to manage system components on the computer. The PowerMate NetPC uses this standard along with LANDesk Client Manager to ensure interoperability among different vendor's computers. Examples of system components are network interface cards and software applications. System components provide a Management Information Format (MIF) file to be DMI-compliant. The information file describes component attributes that can be managed.

Client Manager can be used to "get" attribute information on system components. It can also be used to "set" attribute values in real time.

More information on DMI is available on the World Wide Web at <http://www.dmtf.org>.

## Monitoring Capabilities

The PowerMate NetPC computer has a chip (NEC MagicEye™ technology) mounted on the system board that supports many new and advanced real-time monitoring capabilities used by DMI. This chip provides the following features:

- an integrated temperature sensor with configurable interrupt generation based on upper and lower temperature limits
- a power supply monitor with configurable interrupt generation based on upper and lower voltage limits
- chassis intrusion detection with interrupt generation capabilities.

---

To take advantage of these features, DMI has expanded its interface in the following areas:

- Interrupts may be enabled or disabled.
- High and low limits can be set and are displayed for temperature and power supply voltages.
- Current readings are displayed for temperature, power supply voltages, and chassis state.
- Interrupts can be detected when “out of range” conditions occur. User prompts are displayed to alert the user to a potentially harmful condition.

## **NEC AUTO BACKUP UTILITY**

The NEC Auto Backup utility is a data management and backup program (available on the NEC Select Install CD) that operates in conjunction with LANDesk’s DMI and the Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T) Hard Drive instrumentation. If the S.M.A.R.T. drive identifies a potential problem, the NEC Auto Backup utility automatically invokes the Cheyenne Backup program and backs up the entire file system to a user-selected backup device, such as a Zip drive, network drive, or tape.

NEC Auto Backup can also do regularly-scheduled backups and scan files for viruses during a backup operation.



For the NEC Auto Backup utility to work, Cheyenne Backup must be preconfigured. See the NEC Auto Backup utility “Read Me” file for information about Cheyenne Backup.

---

See “NEC Select Install CD” for instructions on installing the NEC Auto Backup utility on the NetPC hard disk.

## **NEC SELECT INSTALL CD**

The system comes with an NEC Select Install compact disc (CD). This disk contains all the system software files. Use the NEC Select Install CD to download the operating system and application software from a hardware/software service platform, such as LANDesk Configuration Manager (LCM). Should a problem occur that causes data loss or corruption, you can restore the system files using the NEC Select Install CD.

The Select Install CD installs all or part of the computer’s software in two phases:

- operating system (OS) restore program
- selective application restore program.

The OS restore phase allows you to install Windows 95 or Windows NT from the LCM CD-ROM reader. If you need to do a full restore, start with phase one.

Phase two, the Selective Application Restore program, takes place while the OS is running and lets you choose the application software you want to install. Use phase two for installing selected applications from the LCM CD-ROM reader at any time.

Both the OS and application phases use easy-to-understand dialog boxes and screen messages so you can smoothly proceed through the installation process.

The following sections explain how to use the NEC Select Install CD with LCM.

---

## Operating System Restore

OS Restore is the first phase of a full system installation. To perform an OS Restore, the System Administrator must create a service and download the operating system from the Select Install CD in the LCM CD-ROM reader. The Client (user) completes the restore process by selecting the service and running the OS Restore program on the PowerMate NetPC system.

Follow these steps to restore the original, factory-installed operating system using OS Restore.

1. Insert the NEC Select Install CD into the LCM CD-ROM reader.
2. Do a map connection to the CD-ROM reader.
  - From the LCM desktop, double click **My Computer** and right click on the CD-ROM drive. (For example, right click on **E:** if the LCM CD-ROM reader is designated as drive E.)
  - In the popup menu, right click on **Sharing**. The E:/Properties screen appears.
  - In the Properties screen, click **Shared As**.
  - Click the **New Share** button, then type a name in the Share Name field. (For example, type **CD-ROM** in the field.)
  - Click **OK**. This returns you to the Properties screen.
3. Using universal naming code (UNC), set up a service on the LCM to run the OS Restore program (OSRESTOR.BAT).
  - Press **Start**, then highlight **Programs** and select the Configuration Service Manager program from the Intel LANDesk submenu.

---

The Configuration Service Manager Connect screen appears.

- Click the **Connect** button.

The Configuration Service Manager screen appears. This screen has four tabs: Services, Menus, Users, and Activity Log.

- Make sure the **Services** tab is selected, then click the **New** button. The Service Wizard screen appears.
- Type a Service Definition name (maximum of 25 characters) in the Service Definition field. For example, type **netpc-1** in the field.
- Using the left mouse button, put a check mark in the “Setup applications and run programs” box by clicking once in the box.
- Click the **Next** button.
- In the Text and Description field, type in the service text that a user sees in the service boot menu (maximum of 80 characters). For example, type **NetPC System Setup**.

Type any additional information in the optional Description of Service field that you want displayed when the user highlights the service.

- Click the **Next** button. The Confirmation Message screen appears.
- Put a check mark in the “Show a confirmation message” box by clicking once in the box. Then type the message in the text box.

If you do not want a Confirmation Message to appear, make sure the default “Do NOT show a confirmation message” box is checked.

- 
- Click the **Next** button. The Setup Applications and Run Programs screen appears.
  - Click the **Add** button. The Preparing for Application Setup/Run Program screen appears.
  - Put a check mark in the “Yes, the files are located on the Configuration Server” box by clicking once in the box.
  - Using UNC, enter the full path and name for the CD-ROM’s OS Restore program. For example, type `\\LCM_0081\CD-ROM\OSRESTOR.BAT`. (If necessary, use the browse button to find the program.)
  - Click **OK**.

The program you are running appears in the Setup Applications and Run Programs screen.

- Click the **Next** button.
- Select the following optional settings:
  - Closing Message (type the message in the text box, then click **Next**)
  - Administrator’s Note (type the note in the text box, then click **Next**).

The Service Wizard Finish screen appears.

- Click the **Finish** button.

The new Service icon (in this example, “netpc-1”) appears in the Configuration Service Manager screen.

If you click once on the icon, the Service properties appear on the right side of the screen.

- 
- Add the new Service to a previously created menu that a user sees (for example, NetPC Main Menu).

- Click the **Menus** tab.

- Highlight the menu in the Available Menus list.

- Click **Edit**.

In the Menu Editor screen, Available Service appears on the lower left, and Displayed Services is on the lower right.

- In Available Service, highlight the new Service and click the **Add** button. This adds the service to the Displayed Services list.

- Click **OK**.

The new Service loads into the data base, and its icon appears in the Configuration Service Manager screen in the Services window.

- Press the File pull down menu, then select **Exit** and click **Yes**.



This completes the steps done by the System Administrator. The remaining steps are done by the Client (user) on the PowerMate NetPC.

4. Turn on the NetPC. At the prompt, press the spacebar to remotely log onto the LCM.

5. Enter the User logon name and password.

An Intel screen for the previously defined LANDesk Configuration menu appears with the new Service.

6. Highlight the Service name, then press **Enter**.

- 
7. If a Confirmation Message window appears, click **C** to continue.

The Operating System Restore Welcome screen appears.



*Welcome Screen*

8. Click **Continue** to continue (or **Exit** to exit the program).

A License Agreement screen appears with three options: Back, Reject, and Accept.

- The **Back** button returns you to the Welcome screen.
- The **Reject** button terminates the restoration process.
- The **Accept** button signals that you accept the terms of the license and allows you to continue.

---

9. Click **Accept** to continue.

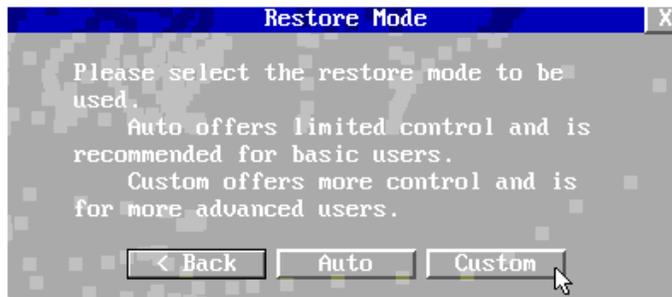
The Restore Mode screen appears (see the following figure) with three options: Back, Auto, and Custom.

- The **Back** button returns you to the License Agreement screen.
- The **Auto** button selects a restore process designed for *local* PCs configured with CD-ROM readers.

**! WARNING**

The Auto button does not function in the PowerMate NetPC system. Do *not* press the Auto button. System failure may result.

- The **Custom** button selects a restore process for system administrators who want control of restore functions in networking environments.
10. Click **Custom** (instead of **Auto**) on the Restore Mode screen so you do *not* partition and format the hard disk before restoring the OS (see the following figure).



*Restore Mode Screen*

---

After you click **Custom**, a Partitioning the Hard Drive screen appears with options allowing you to retain the present partition structure (by selecting **Skip**) or partition the hard disk using FAT16 or FAT32 (by selecting **Continue**).

**! WARNING**

The Continue button does not function in the PowerMate NetPC system. Do *not* press the Continue button. System failure or data corruption may result.



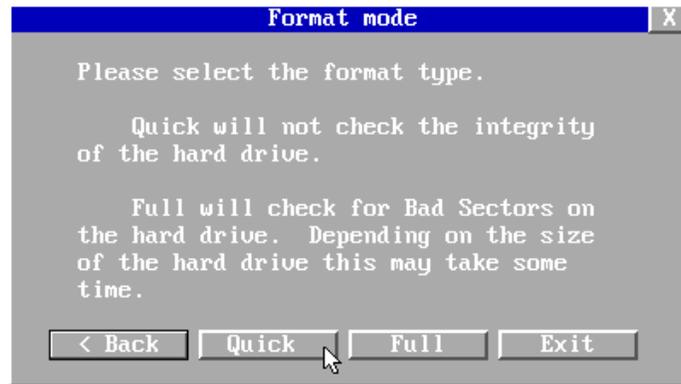
*Partitioning the Hard Drive Screen*

11. Click **Skip** (instead of **Continue**) on the Partitioning the Hard Drive screen to retain the present partition structure on the hard disk.

The Format Mode screen appears with four options: Back, Exit, Quick, and Full.

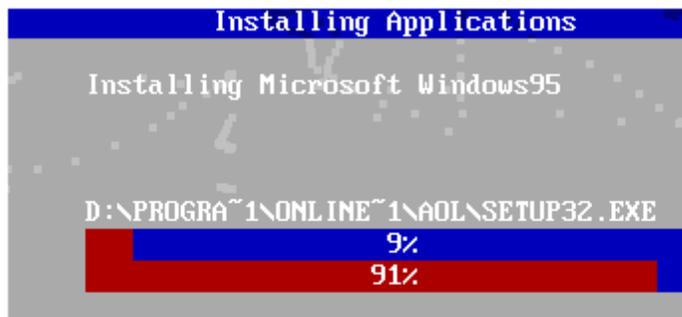
- Click **Back** to return to the Partition Information screen.
- Click **Exit** to terminate the restore process.

- 
- Click **Quick** to do a quick hard disk format.
  - Click **Full** to do a full hard disk format.



*Format Mode Screen*

After you click **Quick** or **Full**, the Installing Applications screen appears (see the following figure), indicating the status of the restore process as the operating system loads from the CD.



*Installing Application Screen*



The drivers and other software components required for the operating system are also loaded from the CD.

12. When the OS finishes loading, the Operating System Restore Completed screen appears. Remove the CD from the LCM CD tray.
13. Click **Continue** to reboot. Windows loads and sets up the system's devices and environment.

### Selective Application Restore Program

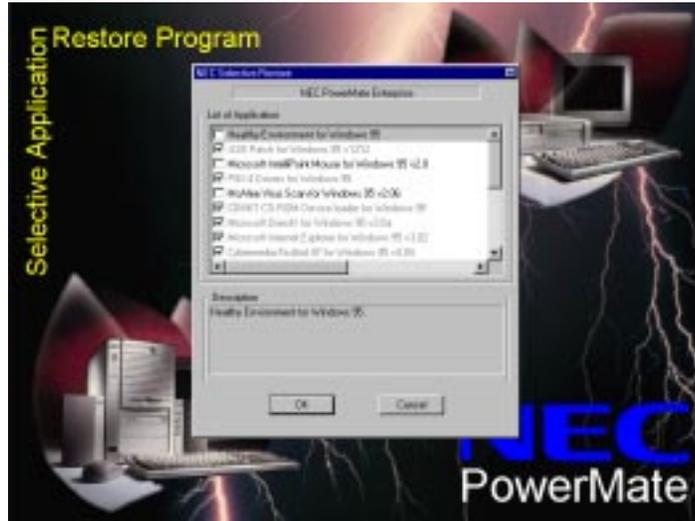
After the operating system is up and running, the System Administrator can begin phase two, allowing installation of the applications associated with the OS. Use this process to reinstall selected applications at any time.

1. Place the Select Install CD in the LCM CD tray.
2. On the Client desktop, double click **Network Neighborhood**.
3. Double click **Entire Network** and do a map connection to the LCM CD-ROM reader.
4. Double click on the **selrest.exe** program.

The NEC Selective Application Restore Program screen appears.



Only the applications that work with the system's OS appear in the Select Install Program screen. For example, if the OS is Windows 95, but there are applications for both Windows 95 and Windows NT 4.0 on the CD, only the drivers required for Windows 95 appear.



*Selective Application Restore Program Screen*

5. Select the applications you want to install by double clicking on the item box or line. A check mark appears in the box.

To unselect an item, double click it again so that the check mark disappears.



Items that appear grayed-out are already installed on the system.

**6. Click OK.**

The application files reload sequentially, and a progress bar appears for each application selected.

**7. When all the applications have finished installing, remove the CD.**

**8. Click **Restart Computer** to reboot and ensure that the installation process completes successfully.**

---

# 3

## Reviewing System Features

PowerMate NetPC systems are available in two basic models with the following features:

- Windows<sup>®</sup> 95 operating system, 166-MHz Intel<sup>®</sup> Pentium<sup>®</sup> MMX processor, 16 MB (minimum) of Synchronous Dynamic Random-Access Memory (SDRAM), and a 2.0-GB IDE hard disk drive
- Windows NT<sup>®</sup> 4.0 operating system, a 200-MHz Intel Pentium MMX processor, 32 MB of SDRAM, and a 3.2-GB hard disk drive.

The MMX processor technology boosts audio, video, and 3D graphics performance.

Both PowerMate NetPC models come with an RJ-45 network connector and a video adapter with 2 MB of Synchronous Graphics Random-Access Memory (SGRAM).

Both models also contain audio/video components for multimedia presentations and support optional memory expansion modules. For further hardware enhancements, both models contain a PCI expansion slot for adding an optional, 1/2-length PCI board.

In addition, you may upgrade the system's hard disk by ordering one of several Ultra DMA/33-compatible IDE hard disk options available from NECCSD.

---

 **WARNING**

Access to the inside of the computer is restricted and subject to warranty requirements. Use NECCSD-authorized personnel to perform system upgrades.

Depending on the model, the system might ship with the following software installed on the hard disk:

- Microsoft® Windows NT 4.0 or Windows 95
- Healthy Environment Help file
- Intel Pro100 Ethernet network drivers
- S3 3D Virge/GX video drivers
- Active Movie video drivers
- Yamaha audio drivers
- Microsoft Internet Explorer
- Microsoft Windows NT 4.0 or Windows 95 Bus Master IDE drivers
- Mouse drivers for Windows NT 4.0 or Windows 95.

CDs containing copies of the operating system and the following applications are included in the shipping carton:

- McAfee® VirusScan® and WebScan™
- LANDesk® Client Manager
- NEC Auto Backup utility
- Cheyenne Backup utility
- FirstAid Deluxe™ 97.

---

## **SYSTEM CHASSIS**

The chassis provides an enclosure for the system board, power supply, a riser card with one PCI expansion slot and RJ-45 network connector, a fan, and one storage device slot.

The storage device slot supports a single one-inch high, 3 1/2-inch IDE hard disk that is compatible with the Ultra DMA/33 standard for high-speed data transfers. (Non-Ultra DMA/33 compatible IDE devices are also supported.)

## **SYSTEM BOARD COMPONENTS**

The PowerMate NetPC system board has the following components.

### **Processor**

Depending on the model, processing for the system is provided by the 166-MHz or 200-MHz Intel Pentium MMX microprocessor.

The processor integrates a 16-KB internal cache and a 256-KB secondary cache and cache controller to improve system performance. An integrated math coprocessor increases the speed of floating point operations.

### **System Memory**

The system comes in configurations starting with a minimum of 16 MB of system memory. Two 168-pin sockets on the system board support up to 256 MB of high-speed memory using industry-standard, gold-plated, 168-pin dual in-line memory modules (DIMM).



An additional approved vendor list (AVL), 10-ns or 12-ns, Synchronous Dynamic Random Access Memory (SDRAM) DIMM can be installed into the open memory socket.

Memory can be installed in one socket or both. The memory type, size, and speed can vary between sockets. The system automatically detects the memory; no jumper settings are required. The DIMMS can be either single- or double-sided. The minimum allowable memory size for the system is 8 MB, and the maximum is 256 MB.

The following table describes supported DIMM modules.

### ***Supported DIMMs***

DIMM SIZE	TYPE	CONFIGURATION	TECHNOLOGY
8 MB	CAS Latency 2 SDRAM	1 M x 64	16 Mbit
16 MB	CAS Latency 2 SDRAM	2 M x 64	16 Mbit
32 MB	CAS Latency 2 SDRAM	4 M x 64	16 Mbit
64 MB*	CAS Latency 2 SDRAM	8 M x 64	16 Mbit
128 MB*	CAS Latency 2 SDRAM	16 M x 64	64 Mbit

\*64-MB and 128-MB modules are supported when available.

---

## Interrupt Controller

The interrupt controller operates as an interrupt manager for the entire system environment. The controller accepts requests from peripherals, issues interrupt requests to the processor, resolves interrupt priorities, and provides vectors for the processor to determine which interrupt routine to execute. The interrupt controller has priority assignment modes that can be reconfigured at any time during system operations.

The interrupt levels are described in the following table. Interrupt-level assignments 0 through 15 are in order of decreasing priority. See “The Setup Utility” in Chapter 2 for information on changing the interrupts using the Setup utility.

### *Interrupt Level Assignments*

INTERRUPT PRIORITY	INTERRUPT DEVICE
IRQ00	Counter/Timer
IRQ01	Keyboard
IRQ02	Cascade (INT output from slave)
IRQ03	COM2 and COM4
IRQ04	COM1 and COM3
IRQ05	Audio (if present)
IRQ06	Diskette Drive Controller
IRQ07	Parallel Port 1
IRQ08	Real-time clock
IRQ09	S3 Video and USB
IRQ10	Available
IRQ11	Available
IRQ12	PS/2 mouse

---

### ***Interrupt Level Assignments***

INTERRUPT PRIORITY	INTERRUPT DEVICE
IRQ13	Coprocessor
IRQ14	Primary IDE
IRQ15	Available

### **PCI Local Bus**

The 32-bit industry-standard PCI bus is a highly integrated input/output (I/O) interface that offers the highest performance local bus available for the Pentium-based processor. The PCI bus supports burst modes that send large chunks of data across the bus, allowing fast displays of high-resolution images.

The high-bandwidth PCI local bus eliminates data bottlenecks found in traditional systems, maintains maximum performance at high clock speeds, and provides a clear upgrade path to future technologies.

The PCI bus contains the embedded PCI local bus IDE interface and supports the video controller.

### **Flash ROM**

The Flash ROM allows fast, economical BIOS upgrades. Flash ROMs are reprogrammable system and video EPROMs.

With a Flash ROM, a ROM BIOS change:

- is fast and easily done using a Flash utility
- eliminates the expensive replacement of ROM BIOS chips, and reduces system maintenance costs
- reduces inadvertent system board damage that can take place when replacing ROMs

- 
- facilitates adopting new technology while maintaining corporate standards
  - gives network administrators company-wide control of BIOS revisions.

Information on how to use the Flash utility is provided in Chapter 2, Using NECCSD Utilities.

## **Graphics Features**

The system features a PCI local bus motion video playback controller and graphics accelerator (S3 Virge/GX) contained on a single chip on the system board.



The following sections describe the features of the S3 Virge/GX graphics chip on the system board. If you install your own graphics card in the PCI expansion slot, its features may be different.

### ***Motion Video Controller***

The motion video controller integrates a Windows graphical user interface (GUI) engine and motion video playback hardware. This means you can view 3D graphics and movies on the computer.

Support includes:

- MPEG-1 or MPEG-2
- Video for Windows
- Active Movie (Windows 95 only).

---

MPEG is a compression/decompression standard developed by a professional video group called the Motion Picture Experts Group. MPEG produces full-resolution, 30-frames-per-second (fps), broadcast-quality digital video.

### ***Graphics Accelerator***

The graphics accelerator is specifically designed for graphics-intensive operations, 3D effects, texture mapping, text and color pixel amplification, and scrolling. The graphics accelerator provides 64-bit, ultra-high performance for demanding True Color, High Color, and pseudocolor GUI and computer-aided design (CAD) applications.

The accelerator minimizes bus traffic by off-loading the tasks normally performed by the processor. The dedicated bit-block transfer (BitBLT) engine maximizes performance by speeding the movement of large blocks of image data in video memory.

### ***Video Support***

The system has 2 MB of Synchronous Graphics RAM (SGRAM) on the system board.

The system supports the following resolutions, colors, and refresh rates for systems with 2 MB of video memory.

---

### Supported Refresh Rates

RESOLUTION	REFRESH RATE (HZ)			
	4-BIT COLOR (16 COLORS)	8-BIT COLOR (256 COLORS)	15-/16-BIT COLOR (32K/64K COLORS)	24-BIT COLOR (16M COLORS)
640 x 480	60	60, 70, 72, 75, 85	60, 72, 75, 85	60, 72, 75, 85
800 x 600	56, 60, 72, 75, 85	56, 60, 72, 75, 85	56, 60, 72, 75, 85	56, 60, 72, 75, 85
1024 x 768	43 (IL), 60, 70, 75, 85	43 (IL), 60, 70, 75, 85	43 (IL), 60, 70, 75, 85	Not supported
1152 x 864	Not supported	60	Not supported	Not supported
1280 x 1024	43 (IL), 60, 75, 80	43 (IL), 60, 75, 85	Not supported	Not supported
1600 x 1200	Not supported	48.5 (IL), 60	Not supported	Not supported

IL = Interlaced

K = thousand

M = million

### High-Speed Communication Ports

The system features an enhanced parallel port and two buffered high-speed serial ports.

The enhanced parallel port supports Enhanced Capabilities Port (ECP) and Enhanced Parallel Port (EPP) modes for devices that require ECP or EPP protocols. These protocols allow high-speed bidirectional transfer over a parallel port and increase parallel port functionality by supporting more devices.

The buffered high-speed serial ports support transfer rates up to 115.2 kilobytes (KB) per second. These ports allow the installation of high-speed serial devices for faster data transfer rates.

---

The combination of the enhanced parallel port and buffered serial ports ensure optimum performance for future peripheral devices and operating systems.

### **RJ-45 Port**

The rear of the system contains an RJ-45-compatible network port for connection to an Ethernet network. This allows you to communicate with the server and share files with other computers on the network.

### **IDE Port**

The system board in the computer supports one internal IDE port.

The port supports two IDE devices, one set as master on the IDE channel, the other as slave. For system configuration flexibility, the computer allows the logical connection of an IDE device without the addition of a controller. (Physically, only one hard disk fits in the chassis.)

The IDE port supports the Ultra DMA/33 standard for 33.3 MB per second, 32-bit wide data transfers on the high-performance PCI local bus.



The system supports only one Ultra DMA/33 device on the IDE channel. If an additional IDE device is added to the IDE channel, neither device can use Ultra DMA/33 mode.

### **USB Ports**

The Universal Serial Bus (USB) ports allow you to add new serial devices without opening up the system — simply plug them into the ports. The USB determines system resources for each peripheral and assigns them without user intervention. Up to 127 devices can be daisy chained to a single USB port.

---

## **Sound System**

The Yamaha sound system installed on the system board provides compatibility with Sound Blaster Pro™, Sound Blaster™ 2.0, Ad Lib™, MPU-401, and Microsoft® Windows Sound System™ for PC sound applications.

For detailed sound specifications, see the “System Specifications” in Appendix B.

## **Plug and Play Support**

The computer comes with a Plug and Play BIOS that supports Plug and Play technology. Plug and Play eliminates complicated setup procedures for installing Plug and Play expansion boards.

With Plug and Play technology, you add a Plug and Play expansion board simply by powering off the system, installing the board, and powering on the system. There are no jumpers to set and no system resource conflicts to resolve. Plug and Play automatically configures the board for the system.

The system also supports non-Plug and Play boards.

---

# 4 24-Hour Information Services

NECCSD has made it easy for you to get information and help when you need it. We offer 24-hour information services via the following services described in this chapter:

- NECCSD FaxFlash™ Service
- NECCSD Bulletin Board Service
- NECCSD on America Online® Service
- NECCSD on CompuServe® Online Service
- E-mail to NECCSD Technical Support Services through a commercial online service or the Internet
- Fax Service to NECCSD Technical Support Services
- NECCSD Web and FTP Sites
- NECCSD Technical Support Services (U.S. customers only).

If you have access to a modem and/or fax machine (telephone for Technical Support), you can use the above services to obtain information about your system at any time, day or night, seven days a week.

Not only do these services provide general information about your system, they can also be used to answer your questions and help solve any problems you may have with your system, should that ever be necessary.

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## NECCSD FAXFLASH SERVICE

The NECCSD FaxFlash service is a self-help, automated electronic information service for obtaining up-to-date product application notes, installation procedures, troubleshooting tips, data sheets, technical information bulletins, illustrated parts lists, part numbers, and other information about your system.

Using a fax machine, you can obtain information from FaxFlash 24 hours a day, 7 days a week. Simply call the FaxFlash number on your touch-tone telephone and order the information you want by following the voice prompts. FaxFlash automatically faxes the information to you.

If you are new to FaxFlash, first order one of the following catalogs. Each catalog lists the available documents and their document numbers. Current catalogs include:

- Catalog 1, NECCSD Telephone Directory and Online Service Information
- Catalog 3, NECCSD Computer Product Specifications, Warranty Policy, Ultracare Guidelines, and Sales Information
- Catalog 5, NEC ProServa™ and Express Serva Product Information
- Catalog 6, NEC Ready Consumer Desktop Systems
- Catalog 7, NEC PowerMate Commercial Desktop Systems
- Catalog 8, NEC Portable Systems (including Versa® Notebook and MobilePro™ Handheld computers).

Catalogs 5, 6, 7, and 8 contain technical support information, including Technical Information Bulletins, Illustrated Parts lists, Frequently Asked Questions (FAQs) lists, and other product support documents.

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Order information from FaxFlash as follows.

1. Be sure that your fax machine or fax/modem is on. Have the document number ready for the document you want.
2. At your touch-tone telephone, enter **888-329-0088** (USA and Canada) or **508-635-6090** (international)
3. Listen to the instructions provided by the voice prompts.

Press **1** if you do not want an introduction to FaxFlash. Follow the automated instructions for ordering your document or catalog.

Press **2** if you want an introduction to FaxFlash. Follow the automated instructions for ordering your catalog or document.

4. When prompted, enter your fax number and name.

For international use, first enter the international long distance access number (**011**), your country code, your area code or city code, then your fax number.

FaxFlash automatically sends the information you request to your fax machine. Please wait for the ordered document to arrive at your fax machine before calling to order more documents. If FaxFlash attempts to send the second order before the first order is completed, the order may be canceled. After three tries, FaxFlash assumes that your line is busy and terminates any further processing of the order.

---

## NECCSD BULLETIN BOARD SERVICE

Through your network connection (or if you have access to a modem), you can use the NECCSD Bulletin Board Service (BBS) to get the latest information on hardware and software. The BBS allows you to download files (video drivers, printer drivers, BIOS updates, etc.) for system enhancements and upgrades.

The BBS can also be accessed through the CompuServe online service.

Log onto the BBS as follows.

1. From the Windows desktop, click the **Start** button.
2. Point to Programs. Point to Accessories and then click **HyperTerminal**.
3. Double click the **Hypertrm.exe** icon. The HyperTerminal program appears.
4. Follow the instructions on the screen to set up your modem. Click the **HyperTerminal** help button for information about dialing the phone number.

If you need to check communications settings, check that the settings match the following BBS parameters.

- Baud rate: select any baud rate that matches your modem
- Parity: none
- Data bits: 8
- Stop bits: 1
- Flow control: Xon/Xoff (select Hardware if using 14.4 bps or higher).

- 
5. Following the HyperTerminal instructions, enter the BBS phone number (**508-635-4706**). Your business phone system and/or location might require a **9 1** or **1** prefix.



The first time that you use the BBS, you are requested to provide information for a new user questionnaire.

6. Press **Enter** twice.
7. Enter your first name, last name, and password. Press **Enter** after each.
8. Follow the screen prompts until the Main Menu is displayed.
9. At the Main Menu, select **J** to join a conference. Select **Conference 1** for the desktop conference.
10. From the Main Menu, press **F** and **Enter** for the File menu.
11. At the File menu, select **F** for a list of downloadable files. Follow the prompts to select a file for downloading.



### **CAUTION**

Executable files automatically format your diskette when you download files from the BBS. Formatting destroys any data on the diskette. Before you download files from the BBS, check that you do not have information on the diskette that you need.

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After you complete downloading your file, log off the BBS as follows:

1. Press **Enter** (to continue).
2. Press **G** (command for Goodbye/Hangup).
3. Press **Enter**.

## **NECCSD ON AMERICA ONLINE SERVICE**

If you subscribe to America Online, you can use the service to obtain information about NECCSD and its products. You can use America Online to e-mail technical questions to NECCSD Technical Support staff, post technical questions and messages on the Message Board, and access the NEC Software Library to download files.

Use the following steps to access America Online and NECCSD online information services.

1. Log onto America Online.
2. At the opening screen, click **Go To** in the Main Menu.
3. At the Go To menu, click **Keyword**.
4. At the prompt, type **NEC**, then press **Enter**.
5. At the NEC menu, double click one of the following topics, then follow the prompts:
  - About NEC
  - Terms and Conditions
  - News
  - Product Information
  - Questions and Answers
  - NEC Promotions

- 
- Message Board
  - Software Library.

6. Exit anytime by double clicking the rectangle in the upper left corner of the screen.

## NECCSD ON COMPUERVE ONLINE SERVICE

If you subscribe to CompuServe, you can use the service to obtain information about NECCSD and its products. You can use CompuServe to e-mail technical questions to NECCSD Technical Support staff, post technical questions and messages on the Bulletin Board, and access the NECCSD BBS.



You cannot download information from the NECCSD Bulletin Board from CompuServe. You must call the NECCSD Bulletin Board directly using the procedure described earlier in this chapter.

Use the following steps to access CompuServe and NECCSD online information services.

1. Log onto CompuServe.
2. At the opening screen, click the **Go** button, then type **NECTECH** at the prompt, and click **OK**.
3. At the NEC menu, double click one of the following topics, then follow the prompts:
  - NEC Bulletin Board
  - Information About This Service
  - Access NEC BBS

- 
- Access CompuServe Information Services
  - Exit.

4. Exit anytime by double clicking on the rectangle in the upper left corner of the screen.

## **E-MAIL/FAX TECHNICAL SUPPORT SERVICE**

The NECCSD Technical Support Center offers technical support by e-mail over the Internet network if you have a modem. The Internet address is:

**tech-support@neccsd.com**

You can also fax technical questions to the NECCSD Technical Support Center if you have access to a fax machine or fax/modem. The fax number is:

**(508) 635-4100**

When using the e-mail or fax support service, you should include the following words in the subject field for prompt response from the appropriate technical person:

- Desktop
- Notebook.

You should provide as much specific information about your questions as possible. Also, if you are sending a fax, please include your voice telephone number and your fax number with the question. You will receive a response to your questions within one business day.

---

## INTERNET

If you have a modem, you can access the NECCSD Home Page on the Internet World Wide Web. You can do this through a commercial online service or through your Internet account. The NECCSD Home Page contains general information about NECCSD products.

You can also use the Internet to access the NECCSD FTP (file transfer protocol) site to download various files (video drivers, printer drivers, BIOS updates). The files are essentially the same files as on the NECCSD Bulletin Board Service.

To access the World-Wide-Web NECCSD Home Page, enter the following Internet Uniform Resource Locator (URL) through your service:

**<http://www.nec-computers.com/>**

To access the NECCSD FTP site, enter the following Internet ftp address through your service:

**<ftp.nectech.com>**

Once in the file menu, follow the prompts to choose and download the file(s) you want.

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## NECCSD TECHNICAL SUPPORT SERVICES

NECCSD also offers direct technical support through its Technical Support Center. (NECCSD technical support is for U.S. and Canadian customers only; international customers should check with their sales provider.)

Direct assistance is available 24 hours a day, 7 days a week. Call the NECCSD Technical Support Center, toll free, at **1-800-632-4565** (U.S. and Canada only) for the following support.

- System hardware — toll-free phone support is limited to the length of the standard warranty.

For hardware support after the standard warranty, get system hardware support for a fee.

- Preinstalled software — toll-free phone support for 90 days from the time of your first call to the NECCSD Technical Support Center.

After the initial 90 days, get preinstalled software support for a fee.

Please have available your system's name, model number, serial number, and as much information as possible about your system's problem before calling.

For outside the U.S., please contact your local NECCSD sales provider.

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# 5 Solving System Problems

Occasionally, you may encounter a problem with your computer. In most cases, the problem is one that you can solve yourself.

Your system has a built-in checking program that automatically tests its components when you turn the system unit power on. If there is a problem, the system displays an error message. If this happens, follow any instructions on the screen.

If screen messages do not help or an error message does not appear, refer to the following information in this chapter to determine and solve the problem:

- “Finding Solutions to Common Problems”  
Refer to this section to solve common minor problems.
- “Getting Help”  
Refer to this section if the above listed procedures have failed to correct the problem.

## FINDING SOLUTIONS TO COMMON PROBLEMS

See the following sections to match your problem area and view the possible causes and solutions.

When trying to solve problems, you should note what the system was doing when the problem occurred and what you attempted to do to correct the problem. This information is useful if you request assistance.

---

## System Problems

Check the following list to match your problem and see the possible cause and solution.

■ **No power and power lamp not lit.**

Check that all power switches are on.

Check that the power cable is plugged into the system power socket. Check that the other end of the cable is plugged into a live, properly grounded AC power outlet or surge protector.

Check the outlet or surge protector by plugging in a lamp.

■ **System does not boot and error message displayed on screen.**

Run the Setup Utility (see Chapter 2). Check that the parameters are set correctly, particularly if you just installed an option.

■ **System emits continuous beeps.**

Turn the system off, wait at least five seconds, and turn the system on. If the beeps continue, call your NECCSD dealer or the NECCSD Technical Support Center.

■ **System does not maintain date, time, system configuration information.**

Have qualified personnel change the battery. For assistance, call your NECCSD dealer or the NECCSD Technical Support Center.

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- **System performance appears sluggish.**

Check that your system is set for optimal operation. See your operating system documentation.

Check the memory requirements of your software applications. If required, have qualified personnel install additional DIMM memory. For assistance, call your NECCSD dealer or the NECCSD Technical Support Center.

- **User password forgotten.**

Clear the password and reset it. See “Clear User Password” and “Set User or Supervisor Password” in Chapter 2.

## **Monitor Problems**

Check the following problems to see the possible cause and solution.

- **Monitor screen is dark or the display is hard to read.**

Check that the monitor is on.

Check that the monitor power cable is connected to the monitor and a power outlet, the monitor signal cable is connected to the system, and the brightness and contrast controls are adjusted.

Press the space bar or move the mouse to take the system out of the power management mode.

- **Distorted image appears on your monitor screen.**

Adjust the monitor’s video controls. If this does not help, turn the monitor off for several seconds, then back on.

---

- **There is constant movement on the screen.**

A magnetic field is affecting your monitor. Move any devices (fan, motor, another monitor) that generate magnetic fields away from your monitor.

- **The screen display is fuzzy or flickering; graphics characters or garbage appears on the screen.**

Check that your monitor is set up correctly and that all connections have been made.

Check that the video refresh rate and video driver are correct.

Click the right mouse button anywhere on the Windows desktop and a menu appears. Click on Properties and the Display Properties window appears.

## **Keyboard/Mouse Problems**

Check the following problem to see the possible cause and solution.

- **Mouse or keyboard does not respond.**

You may have connected the mouse and keyboard after turning on your system. Turn the system off, make sure the mouse and keyboard are connected, and turn the system back on.

- **Image appears on screen but nothing happens when you use the mouse or keyboard.**

Tighten the keyboard or mouse cable connection.

If this does not help, turn off the system, wait five or more seconds, and turn on the system.

---

## GETTING HELP

If you tried correcting problems yourself and were not successful, you may want to try one or more of the following 24-hour services for answers to your questions. (Some services require a modem or fax machine.)

- NECCSD FaxFlash Service
- NECCSD Bulletin Board Service
- NECCSD on America Online Service
- NECCSD on CompuServe Online Service
- E-mail to NECCSD Technical Support Services through a commercial online service or the Internet
- Fax Service to NECCSD Technical Support Services
- Internet
- NECCSD Technical Support Services.

See Chapter 4 for detailed information about using these services. If you still need help, continue with the suggestions that follow.

### Getting Help From Your Company

If you are in a company, the best source of help may be internal. Your company may have designated central support personnel to whom you can go when you have problems.

### Getting Help From Your NECCSD Dealer

The NECCSD dealer from whom you purchased your system is a good source of help and should be contacted. The dealer is backed by complete support resources and programs within NECCSD.

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## Getting Help From NECCSD Technical Support Center

Help is available to you through the NECCSD Technical Support Center. (International customers should check with their sales provider.)

Direct assistance is available 24 hours a day, 7 days a week. Call the NECCSD Technical Support Center, toll free, at **1-800-632-4565** (for the U.S. only) for following support.

- System hardware — toll-free phone support is limited to the length of the standard warranty.

For hardware support after the standard warranty, get system hardware support for a fee.

- Preinstalled software — toll-free phone support for 90 days from the time of your first call to the NECCSD Technical Support Center.

After the initial 90 days, get preinstalled software support for a fee.

Before calling, please have ready your system name, model number, serial number, and purchase date. Also have ready as much information as possible about the problem you are having, including any error messages that occurred.

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## **NECCSD Warranty/Non-Warranty Repair Service**

NECCSD repair service is designed to support your warranty and non-warranty service activity.

Before you call for repair service, see the previous sections in this chapter to determine if you can solve the problem yourself, within your company, through your dealer, or with the help of a technician from the NECCSD Technical Support Center.

If your system requires repair service from NECCSD, call **1-800-632-4565** (United States and Canada only).

If you are outside the U.S. and Canada, please contact your local NECCSD sales provider.

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# A Setting Up a Healthy Work Environment



## WARNING

Prolonged or improper use of a computer workstation may pose a risk of serious injury. To reduce your risk of injury, set up and use your computer in the manner described in this appendix.

Contact a doctor if you experience pain, tenderness, swelling, burning, cramping, stiffness, throbbing, weakness, soreness, tingling and/or numbness in the hands, wrists, arms, shoulders, neck, back, and/or legs.

## MAKING YOUR COMPUTER WORK FOR YOU

Computers are everywhere. More and more people sit at computers for longer periods of time. This appendix explains how to set up your computer to fit your physical needs. This information is based on ergonomics — the science of making the workplace fit the needs of the worker.

Some nerve, tendon, and muscle disorders (*musculoskeletal disorders*) may be associated with repetitive activities, improper work environments, and incorrect work habits. Examples of musculoskeletal disorders that may be associated with certain forms of repetitive activities include: carpal tunnel syndrome, tendinitis, tenosynovitis, de Quervain's tenosynovitis, and trigger finger, as well as other nerve, tendon, and muscle disorders.

---

Although some studies have shown an association between increasing hours of keyboard use and the development of some musculoskeletal disorders, it is still unclear whether working at a computer causes such disorders. Some doctors believe that using the keyboard and mouse may aggravate existing musculoskeletal disorders.

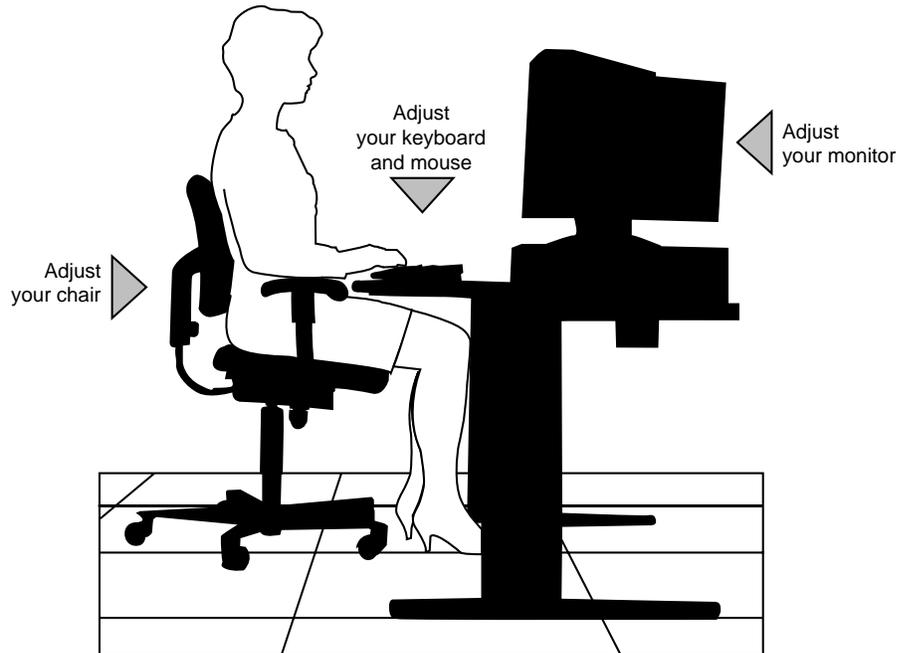
Some people are more susceptible to developing these disorders due to preexisting conditions or psychosocial factors (see “Preexisting Conditions and Psychosocial Factors” later in the appendix).

To reduce your risk of developing these disorders, follow the instructions in this appendix. If you experience discomfort while working at your computer or afterwards, even at night, contact a doctor as soon as possible. Signs of discomfort might include pain, tenderness, swelling, burning, cramping, stiffness, throbbing, weakness, soreness, tingling and/or numbness in the hands, wrists, arms, shoulders, neck, back, and/or legs.

---

## ARRANGE YOUR EQUIPMENT

Arrange your equipment so that you can work in a natural and relaxed position. Place items that you use frequently within easy reach. Adjust your workstation setup to the proper height (as described in this appendix) by lowering the table or stand that holds your computer equipment or raising the seat height of your chair. To create more desk space, you can put your computer base on the floor.



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## ADJUST YOUR CHAIR

Your chair should be adjustable and stable. Vary your posture throughout the day.



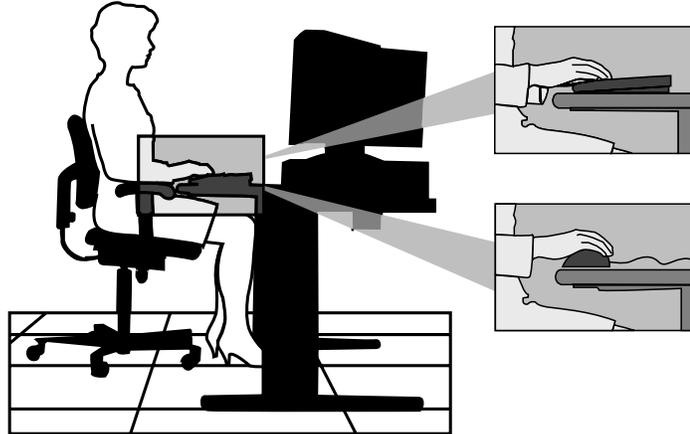
Check the following:

- Keep your body in a relaxed yet upright position. The backrest of your chair should support the inward curve of your back.
- Use the entire seat and backrest to support your body. Tilt the backrest slightly backwards. The angle formed by your thighs and back should be 90° or more.

- 
- Your seat depth should allow your lower back to comfortably contact the backrest. Make sure that the backs of your lower legs do not press against the front of the chair.
  - Extend your lower legs slightly so that the angle between your thighs and lower legs is 90° or more.
  - Place your feet flat on the floor. Only use a footrest when attempts to adjust your chair and workstation fail to keep your feet flat.
  - Be sure that you have adequate clearance between the top of your thighs and the underside of your workstation.
  - Use armrests or forearm supports to support your forearms. If adjustable, the armrests or forearm supports should initially be lowered while all the other adjustments discussed in this appendix are made. Once all these adjustments are completed, raise the armrests or adjust the forearm supports until they touch the forearms and allow the shoulder muscles to relax.

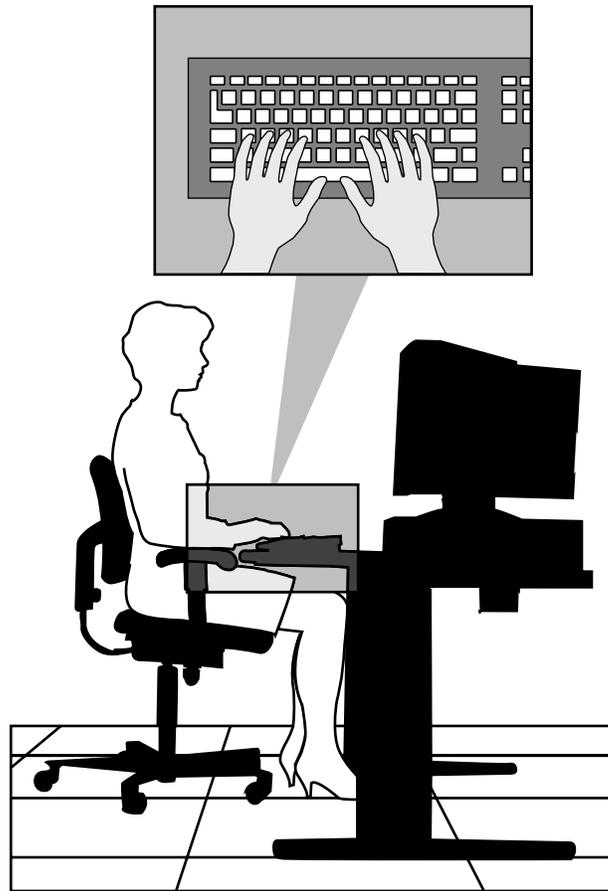
---

## ADJUST YOUR INPUT DEVICES



Follow these points in positioning your keyboard and mouse.

- Position your keyboard directly in front of you. Avoid reaching when using your keyboard or mouse.
- If you use a mouse, position it at the same height as the keyboard and next to the keyboard. Keep your wrists straight and use your entire arm when moving a mouse. Do not grasp the mouse tightly. Grasp the mouse lightly and loosely.
- Adjust the keyboard height so that your elbows are near your body and your forearms are parallel to the floor, with your forearms resting on either armrests or forearm supports, in the manner described previously. If you do not have armrests or forearm supports, your upper arms should hang comfortably at your sides.
- Adjust your keyboard slope so that your wrists are straight while you are typing.

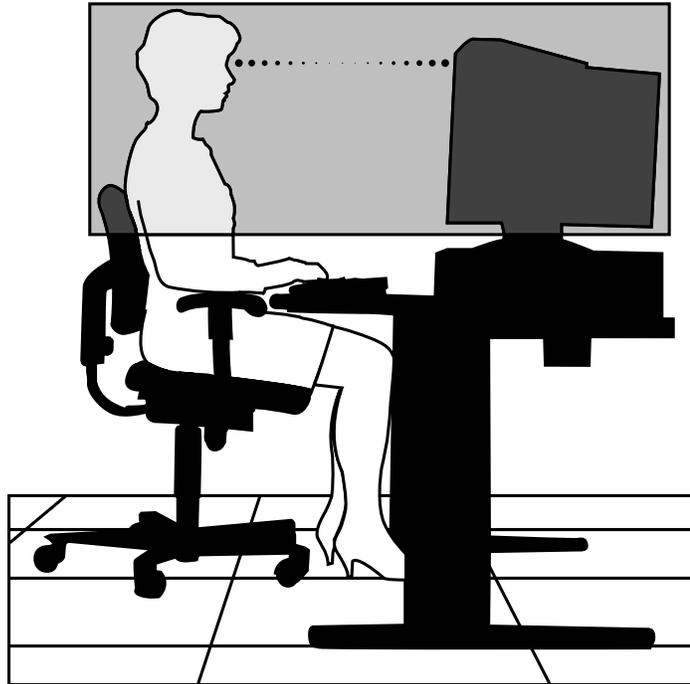


- Type with your hands and wrists floating above the keyboard. Use a wrist pad only to rest your wrists between typing. Avoid resting your wrists on sharp edges.
- Type with your wrists straight. Instead of twisting your wrists sideways to press hard-to-reach keys, move your whole arm. Keep from bending your wrists, hands, or fingers sideways.
- Press the keys gently; do not bang them. Keep your shoulders, arms, hands, and fingers relaxed.

---

## ADJUST YOUR MONITOR

Correct placement and adjustment of the monitor can reduce eye, shoulder, and neck fatigue. Check the following when you position the monitor.



- Adjust the monitor height so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen.
- Position your monitor no closer than 12 inches and no further away than 28 inches from your eyes. The optimal distance is between 14 and 18 inches.

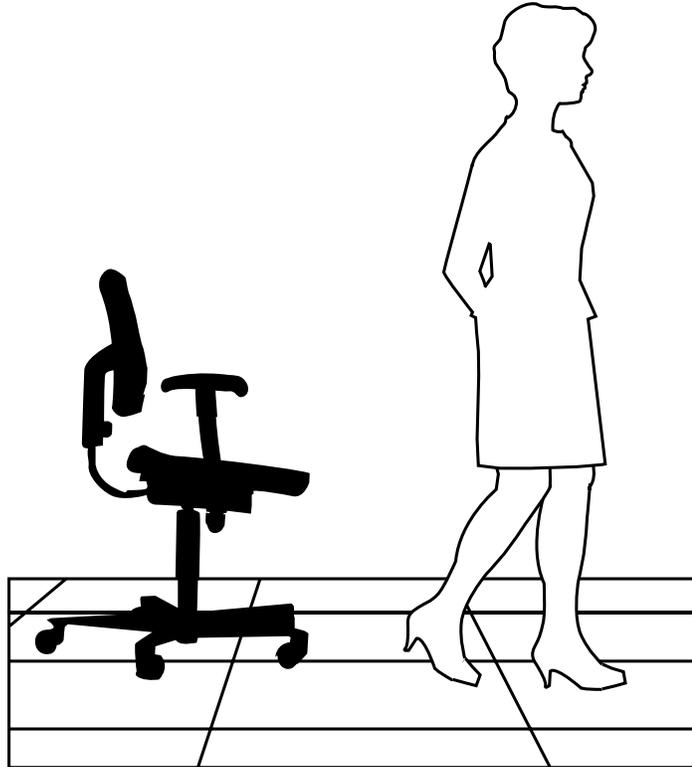
- 
- Rest your eyes periodically by focusing on an object at least 20 feet away. Blink often.
  - Position the monitor at a 90° angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on your screen.
  - If reflected light makes it hard for you to see your screen, use an anti-glare filter.
  - Clean your monitor regularly. Use a lint-free, non-abrasive cloth and a non-alcohol, neutral, non-abrasive cleaning solution or glass cleaner to minimize dust.
  - Adjust the monitor's brightness and contrast controls to enhance readability.
  - Use a document holder placed close to the screen.
  - Position whatever you are looking at most of the time (the screen or reference material) directly in front of you to minimize turning your head while you are typing.
  - Get regular eye check-ups.

---

## VARY YOUR WORKDAY

If you use your computer for prolonged periods, follow these instructions.

- Vary your tasks throughout the day.
- Take frequent short breaks that involve walking, standing, and stretching. During these breaks, stretch muscles and joints that were in one position for an extended period of time. Relax muscles and joints that were active.



- 
- Use a timer or reminder software to remind you to take breaks.
  - To enhance blood circulation, alter your sitting posture periodically and keep your hands and wrists warm.



For more information on workstation setup, see the American National Standard for Human Factors Engineering of Visual Display Terminal Workstations. ANSI/HFS Standard No. 100-1988. The Human Factors Society, Inc., P.O. Box 1369, Santa Monica, California 90406

## **PRE-EXISTING CONDITIONS AND PSYCHOSOCIAL FACTORS**

Pre-existing conditions that may cause or make some people more susceptible to musculoskeletal disorders include the following: hereditary factors, vascular disorders, obesity, nutritional deficiencies (e.g., Vitamin B deficiency), endocrine disorders (e.g., diabetes), hormonal imbalances, connective tissue disorders (e.g., arthritis), prior trauma (to the hands, wrists, arms, shoulders, neck, back, or legs), prior musculoskeletal disorders, aging, fluid retention due to pregnancy, poor physical conditioning and dietary habits, and other conditions.

Psychosocial factors associated with these disorders include: workplace stress, poor job satisfaction, lack of support by management, and/or lack of control over one's work.

Contact a doctor if you experience pain, tenderness, swelling, burning, cramping, stiffness, throbbing, weakness, soreness, tingling and/or numbness in the hands, wrists, arms, shoulders, neck, back, and/or legs.

---

## **CHECKING YOUR COMFORT: HOW DO YOU MEASURE UP?**

Use this checklist to see if you are setting up your work environment to fit your physical needs.

### **Checking Your Chair**

- Do you sit in an upright position with the backrest supporting your lower back?
- When sitting, are your feet flat on the floor?
- Do you periodically adjust your chair and your posture?

### **Checking Your Keyboard**

- Is your keyboard angled so your wrists are straight when you type?
- Is your keyboard directly in front of you?
- Do you avoid resting your wrists on sharp edges?
- Do you press the keys gently and not bang on them?

### **Checking Your Mouse**

- Is your mouse at the same height as the keyboard and next to the keyboard?
- Are your wrists straight and your touch light when moving the mouse?

### **Checking Your Monitor**

- Did you adjust your monitor so that the top of the screen is at or slightly below eye level?
- Do you periodically rest your eyes by blinking often or looking away from the screen?
- Is your monitor no closer than 12 inches and no further away than 28 inches from your eyes?
- Do you use a document holder placed close to the screen?

---

## Checking You

- Is your work area set up to promote a natural and relaxing working position with frequently used work items within close reach?
- Do you take frequent short breaks?
- Do you stretch and walk during your breaks?
- Do you vary your tasks during the day?
- Do you have regular eye checkups?
- Do you contact your doctor if you feel any sustained discomfort?

*For more information on workstation setup, see the American National Standard for Human Factors Engineering of Visual Display Terminal Workstations. ANSI/HFS Standard No. 100-1988. The Human Factors Society, Inc., P.O. Box 1369, Santa Monica, California 90406*

*This appendix was prepared in consultation with Dr. David Rempel of the University of California/San Francisco Ergonomics Program and Mr. M.F. Schneider of HUMANTECH, Inc., Ann Arbor, Michigan.*

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# **B** System Specifications

The following specifications are standard except where noted.

System specifications are listed by component.

## **System Processor**

Pentium Processor Clock Rate

- 166-MHz MMX processor — 166-MHz internally, 66-MHz externally
- 200-MHz MMX processor — 200-MHz internally, 66-MHz externally

Processor Support

- 32-bit addressing
- 64-bit data
- MMX processor enhances audio, video, and 3D graphics performance

## **PGA Processor Socket**

The system comes equipped with the latest 321-pin zero-insertion-force (ZIF) socket (Socket 7) for easy processor upgrades with next-generation processors.

## **Standard Random Access Memory (RAM)**

Standard RAM — minimum of 16 or 32 MB of Synchronous Dynamic Random Access Memory (SDRAM) installed in one of two industry-standard dual in-line memory module (DIMM) sockets on system board

---

Total Memory — support for up to 256 MB of high-speed RAM in two memory module sockets on system board

Memory module type — gold-plated, non-parity, 10- or 12-ns SDRAM modules

Expansion — expandable in increments using 8-MB, 16-MB, 32-MB, 64-MB, and 128-MB DIMMs

### **Cache Memory**

- pipelined 32-bit addressing
- 64-bit data
- 256 KB of pipeline burst secondary cache integrated on system board; direct mapped write-back and write-through organization

### **Read Only Memory (ROM)**

Flash ROM — 2 Mbit

### **Video Window RAM (WRAM)**

Standard video memory — 2 MB of SGRAM

The system supports the following resolutions and colors:

- 1280 by 1024 pixels, up to 256 colors
- 1024 by 768 pixels, up to 64K colors
- 800 by 600 pixels, up to 16M colors
- 640 by 480 pixels, up to 16M colors.

Your computer comes factory-set at 800 by 600 with 256 colors.

---

## Calendar Clock

Year/Month/Day/Hour/Minute/Second/.01 Second;  
maintained by battery backup module

Battery Type — Real Time Clock (RTC) battery module

## Input/Output (I/O) Facilities

Industry-Standard Interfaces on the system board

- Parallel — bidirectional, ECP/EPP support; one 25-pin connector
- Serial — two high-speed RS-232C ports using 16550 UART, support transfer rates up to 115.2 KB per second; 9-pin connectors
- Universal Serial Bus (USB) — two USB ports, support two USB peripherals directly to the system; with appropriate connector, each port supports up to 127 daisy-chained devices; supports 12 megabits (Mbs) per second
- VGA Video Monitor — supports standard, super, and high-resolution VGA modes; 15-pin connector (D-shell)
- Keyboard — PS/2-compatible, 6-pin connector (mini DIN)
- Mouse — PS/2 compatible, 6-pin connector (mini DIN)
- Microphone In — supports a microphone or other audio input device for recording audio information in your data files, or broadcasting audio
- Line Out — supports an amplified output device

---

## Industry-Standard Interfaces on the riser card

- IDE
  - primary IDE channel enabled (supporting one master Ultra DMA/33 IDE device)
  - support for up to 33.3 MB/second 32-bit transfers on PCI bus
  - support for PIO mode 3 and mode 4
- RJ-45 Ethernet network connector
- Diskette drive connector (for external diskette drive with power source)

## Device Slots

- I/O Bus — PCI
- Expansion slot — One 32-bit PCI slot (1/2-length)

## Graphics

S3 Virge/GX Video/Graphics Accelerator (on system board)

- 2D/3D video/graphics accelerator, 170 MHz RAMDAC, and clock synthesizer integrated in a single chip
- Video Memory — 2 MB of video SGRAM
- S3 Streams Processor technology for video playback
- Supports SGRAM
- Graphics Support
  - 1280 by 1024 pixels, up to 256 colors
  - 1024 by 768 pixels, up to 64K colors
  - 800 by 600 pixels, up to 16M colors
  - 640 by 480 pixels, up to 16M colors

- 
- Text
    - 80 columns by 25 lines
    - 132 columns by 25 lines
    - 132 columns by 43 lines

## **Sound System**

Audio on system board based on Yamaha OPL3-SA3 hardware component

- Compatible with Sound Blaster Pro™, Sound Blaster™ 2.0, Ad Lib™, MPU-401, and Microsoft® Windows Sound System™ for PC sound applications
- Stereo jacks — microphone in and line out
- Built-in 16-bit sigma-delta stereo CODEC
- Dual DMA channel and built-in FIFOs for full duplex simultaneous playback and record in 16-bit stereo
- Programmable sample rate from 5.5 KHz to 48 KHz for recording and playback
- 6-bit (64 steps) master volume control
- IMA-compatible adaptive differential pulse code modulation (ADPCM), A-Law and u-Law compression/decompression
- Built in 6-channel stereo mixer; supports 3 channel analog input
- Software programmable ISA bus interface (DMA, Interrupt, I/O address)
- Power down mode, dual master clock input
- Sound Retrieval System® (SRS) for 3D sound effects

---

## Dimensions

### System Unit

- Height (horizontal) — 3.5 in. (89 mm)
- Width (horizontal) — 9.5 in. (241 mm)
- Depth — 12.5 in. (318 mm)
- Weight (including hard disk) — 10 lbs. (4.54 kg.)

### Keyboard

- Height — 1.6 in. (40.6 mm)
- Width — 19.0 in. (482.6 mm)
- Depth — 8.4 in. (213.3 mm)
- Weight — 3.5 to 4 lb (1.6 to 1.8 kg)

## Power

Universal Power Supply — opened frame, 51 Watt (rated), dual-line input 100-120 or 200-240 VAC

Power Management — Remote ON/OFF and standby voltage

## Operating Environment

Temperature — 50° F to 95° F (10° C to 35° C)

Relative Humidity — 20% to 80%

---

# C Limited Warranty

NEC Computer Systems Division, Packard Bell NEC, Inc. (hereinafter "NECCSD") warrants this Product to be free from defects in material and workmanship under the following terms:

## HOW LONG IS THE WARRANTY?

Labor and parts are warranted for three (3) years from the date of the first consumer purchase in the U.S.A., Canada, and selected countries. Year one is on-site; years two and three are on a return-to-service-center basis. Spare parts are warranted for ninety (90) days.

## WHO IS PROTECTED?

This warranty is non-transferable and may be enforced only by the first consumer purchaser.

## WHAT IS COVERED AND WHAT IS NOT COVERED?

Except as specified below, this warranty covers all defects in material and workmanship in the PowerMate Desktop Computer.

1. Any product which is not distributed in the U.S.A. or Canada by NECCSD, or by an authorized NECCSD dealer or distributor. If you are uncertain as to whether a dealer is authorized, please contact NECCSD or **1-800-632-4565**.
2. Any Product on which the serial number has been defaced, modified or removed.

- 
3. Damage, deterioration or malfunction resulting from, but not limited to:
    - a. Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature, unauthorized Product modification, or failure to follow instructions supplied with the product.
    - b. Repair or attempted repair by anyone not authorized by NECCSD.
    - c. Any shipment of the Product (claims must be presented to the carrier).
    - d. Removal or installation of the Product.
    - e. Any other cause which does not relate to a Product defect.
  4. Cartons, carrying cases, pens, external cabinets, magnetic media, or any accessories used in connection with the Products.
  5. This warranty covers only NECCSD-supplied components. Service required as a result of third party Products is not covered under this warranty.

#### **WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR**

We will pay labor and material expenses for covered items, but we will not pay for the following:

1. Removal or installation charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls. These costs are the responsibility of the NECCSD dealer from whom the Product was purchased.
3. Payment of shipping and related charges incurred in returning the Product for warranty repair.

---

## HOW YOU CAN GET WARRANTY SERVICE

### *Year One*

For the first year, NECCSD provides an on-site limited warranty for all PowerMate Series Computers installed within a 50-mile radius of an NECCSD TotalService Preferred Dealer location or NECCSD authorized third party maintenance organization.

On-site warranty service is available Monday through Friday during normal business hours, exclusive of NECCSD holidays.

Such on-site warranty service may be obtained by contacting your local NECCSD TotalService Preferred Dealer or calling **1-800-632-4565**. Beyond the 50-mile radius, travel charges will be applied. Alternatively, you may obtain warranty service in the same manner as the procedure for years two and three, below.

### *Years Two and Three*

To obtain warranty service during years two and three of the warranty terms, you must return this Product to a NECCSD authorized service center or directly to a NECCSD factory for repair. Packaging material used to transport the Product to an authorized repair facility is the responsibility of the owner. Packaging should be suitable to reduce risk of damage to the Product in transit. Damage in shipping is the responsibility of the shipping party.

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## **LIMITATION OF DAMAGES AND IMPLIED WARRANTIES**

NECCSD'S SOLE LIABILITY FOR ANY DEFECTIVE PRODUCT IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE PRODUCT AT OUR OPTION. NECCSD SHALL NOT BE LIABLE FOR:

1. DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN THIS PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME OR DATA, LOSS OF SOFTWARE, COMMERCIAL LOSS; OR
2. ANY OTHER DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE.

THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SOME STATES DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR THE LIMITATION OR EXCLUSION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES; THEREFORE, THE ABOVE EXCLUSIONS OR LIMITATIONS MAY NOT APPLY TO YOU.

## **HOW STATE LAW RELATES TO THE WARRANTY**

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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**FOR INFORMATION, TELEPHONE 1-800-632-4565**

**NOTE:** All Products returned to NECCSD for service MUST have prior approval; this may be obtained by calling the above number.

NECCSD Products are warranted in accordance with the terms of the applicable NECCSD limited warranty. Product performance is affected by system configuration, software, the application, customer data, and operator control of the system, among other factors. While NECCSD Products are considered to be compatible with many systems, the specific functional implementation by the customers of the Product may vary. Therefore, the suitability of a Product for a specific purpose or application must be determined by the customer and is not warranted by NECCSD.

---

# D System Board Jumpers

System board jumpers enable qualified personnel to configure the system for a particular system requirement.



## **CAUTION**

Jumpers are set correctly at the factory for the configuration. If the system requires a jumper change, qualified personnel should change only the setting for that condition. Otherwise, keep the jumpers at their factory settings.

Conditions that require changing jumper settings include the following situations:

- You want to upgrade the processor. The jumpers must be set correctly for processor upgrade.
- You forgot your password and cannot boot the system. You need to set a jumper to “clear” your current password.
- The BIOS has become corrupted and must be recovered.

---

 **WARNING**

Access to the inside of the computer is restricted and subject to warranty requirements. Use NECCSD-authorized personnel to change jumper settings.

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# Index

## A

Advanced Setup menu, 2-10

America Online, 4-6

## B

Boot Setup menu, 2-22

Bulletin board service, 4-4

## C

Chassis, 3-3

Computer stand, 1-6

Configurations, 3-2

Connector locations, 1-7

## D

Device slots, 3-3

DIMM memory, 3-3

Documentation, xi

Drivers, 3-2

## E

ECP. *See* Enhanced Capabilities Port

E-mail support, 4-8

Enhanced Capabilities Port, 3-9

Enhanced Parallel Port, 3-9

EPP. *See* Enhanced Parallel Port

Error message, 5-1

Exit Setup menu, 2-23

Expansion slot, 3-3

## F

Fax support, 4-8

FaxFlash service, 4-2

Features, 3-3

  DIMM memory, 3-3

  Flash ROM, 3-6

  graphics, 3-7

  PCI local bus, 3-6

  Processor, 3-3

Flash ROM, 3-6

Flash utility, 2-24

## G

Graphics, 3-7

  MPEG, 3-7

  Graphics accelerator, 3-8

  Video support, 3-8

## H

Help, 5-5

  from the NECCSD Technical Support Center, 5-6

  from your company, 5-5

  from your NECCSD dealer, 5-5

  repair service, 5-7

## I

IDE devices

  configuring in setup, 2-7

Information services, 4-1

  America Online, 4-6

  CompuServe, 4-7

  E-mail support, 4-8

  fax support, 4-8

  Internet, 4-9

  NECCSD Bulletin Board

    Service, 4-4

- 
- NECCSD FaxFlash, 4-2
  - NECCSD ftp site, 4-9
  - NECCSD technical support, 4-10
  - NECCSD World Wide Web home page, 4-9
  - World Wide Web, 4-9
  - Installation, 1-3
  - Internet, 4-9
  - Interrupt controller, 3-5
  - J**
  - Jumper settings, D-1
  - K**
  - Keyboard features
    - configuring in Setup, 2-15
  - L**
  - LANdesk Client Manager, 2-25
    - Monitoring capabilities, 2-29
    - NEC Auto Backup utility, 2-30
    - PC health indicator, 2-26
    - Using DMI, 2-29
  - LANdesk Configuration Manager, 2-24, 2-31, 2-40
  - M**
  - Memory, 3-3
  - MPEG, 3-7
  - N**
  - NEC Auto Backup, 2-30
  - NEC Select Install CD, 2-31
    - operating system restore, 2-32
    - restoring applications, 2-40
  - NECCSD Bulletin Board Service, 4-4
  - NECCSD FaxFlash, 4-2
  - NECCSD repair service, 5-7
  - NECCSD technical support center, 5-6
  - NECCSD technical support services, 4-10
  - Non-warranty repair service, 5-7
  - O**
  - Online documentation, xii
  - Orientation, 1-6
  - P**
  - Padlock slot, 1-8
  - Password
    - setting, 2-17
    - use of, 2-18
  - PC Health Indicator
    - Inventory, 2-28
    - Managing Workstations, 2-26
    - PC Health Description, 2-27
    - PC Health Meter, 2-27
  - PCI local bus, 3-6
  - Ports
    - ECP, 3-9
    - EPP, 3-9
    - IDE, 3-10
    - RJ-45, 3-10
    - USB, 3-10
  - Power on, 1-9
  - Power Setup menu, 2-20
  - Power supply, 1-4
  - Problems
    - common problem solutions, 5-1
    - keyboard/mouse, 5-4
    - monitor, 5-3
    - system, 5-2
  - Processor, 3-3

- 
- R**  
Repair service, 5-7  
Restoring  
    applications, 2-40  
    files, 2-31  
    operating system, 2-32
- S**  
Security, 1-8  
Security Setup menu, 2-16  
Select Install CD, 2-31  
Diskette drive, 2-6  
Services, 5-5  
Setting a password, 2-17  
Setting system date/time, 2-6  
Setup, 1-1  
Setup menus  
    Advanced, 2-10  
    Boot, 2-22  
    Exit, 2-23  
    Power, 2-20  
    Security, 2-16  
Setup Utility, 2-1  
    Main menu, 2-5  
    navigation keys, 2-4  
    starting, 2-3  
    uses, 2-2  
Shutting down system, 1-12  
SIMMs supported, 3-4  
Site selection, 1-2  
Sound, 3-11  
Starting  
    Setup utility, 2-3  
    system, 1-9  
System  
    orientation, 1-6  
    setup, 1-1  
    shutdown, 1-12  
    startup, 1-9  
System specifications, B-1  
    cache memory, B-2  
    calendar clock, B-3  
    device slots, B-4  
    dimensions, B-6  
    graphics, B-4  
    input-output facilities, B-3  
    operating environment, B-6  
    PGA processor socket, B-1  
    power, B-6  
    processor, B-1  
    random-access memory, B-1  
    read-only memory, B-2  
    sound system, B-5  
    video memory, B-2
- T**  
Technical support, 4-10  
Troubleshooting, 5-1  
    Common problems, 5-1  
    NECCSD technical support center, 5-6
- U**  
USB ports, 3-10
- V**  
Voltage selection, 1-4
- W**  
Warranty repair service, 5-7

**(For United States Use Only)**

**FEDERAL COMMUNICATIONS COMMISSION  
RADIO FREQUENCY INTERFERENCE STATEMENT**

**WARNING:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from the one to which the receiver is connected.

Use shielded and properly grounded I/O cables and power cable to ensure compliance of this unit to the specified limits of the rules.

**(For Canadian Use Only)**

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

---

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## BATTERY REPLACEMENT

A lithium battery in some computers maintains system configuration information. In the event that the battery fails to maintain system configuration information, NEC recommends that you replace the battery. For battery replacement information, call your NECCSD dealer or the NECCSD Technical Support Center.

**WARNING:** There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

**ATTENTION:** Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

## BATTERY DISPOSAL

Do not place used batteries in your regular trash.

The nickel-cadmium or nickel metal-hydride batteries must be collected, recycled, or disposed of in an environmentally-approved manner.

The incineration, landfilling, or mixing of batteries with the municipal solid waste stream is **prohibited by law** in most areas.

Return batteries to a federal or state approved battery recycler. This may be where you purchased the battery or a local seller of automotive batteries. In MINNESOTA, call 1-800-225-PRBA if further disposal information is required.

Contact your local waste management officials for other information regarding the environmentally sound collection, recycling, and disposal of the batteries.