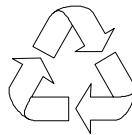


M9N System

User's Guide



100% Recycled Paper

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IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions carefully. Save these instructions for future reference.
2. Follow all warnings and instructions marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.
9. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.

-
10. If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed 15 amperes.
 11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
 12. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to qualified service personnel.
 13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power cord or plug is damaged or frayed
 - b. If liquid has been spilled into the product
 - c. If the product has been exposed to rain or water
 - d. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal condition.
 - e. If the product has been dropped or the cabinet has been damaged
 - f. If the product exhibits a distinct change in performance, indicating a need for service

-
14. Replace battery with the same type as the product's battery we recommend. Use of another battery may present a risk of fire or explosion. Refer battery replacement to a qualified serviceman.
 15. Warning! Battery may explode if not handled properly. Do not recharge, disassemble or dispose of in fire. Keep away from children and dispose of used battery promptly.
 16. Use only the proper type of power supply cord set (provided in your keyboard/manual accessories box) for this unit. It should be a detachable type: UL listed/CSA certified, type SVT/SJT, rated 6A 125V minimum, VDE approved or its equivalent. Maximum length is 15 feet (4.6 meters).

CD-ROM Safety Warning

DANGER

INVISIBLE RADIATION WHEN OPEN.
AVOID EXPOSURE TO BEAM.

VORSICHT

UNSICHTBARE LASERSTRAHLUNG WENN GEÖFFNET.
NICHT IN DEN STRAHL SEHEN.

ATTENTION

RADIATION DU FAISCEAU LASER INVISIBLE. EN CAS
D'OUVERTURE. EVITER TOUTE EXPOSITION AUX RAYONS.

VARO

AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE
LASERSÄTEILYLLE ÄLÄ KATSO SÄTEESEEN.

VARNING!

OSYNLING LASERSTRÄLNING NÄR DENNA DEL ÄR ÖPPNAD.
BETRAKTA EJ STRÄLEN.

VARNING

OSYNLING LASERSTRÄLNING NÄR DENNA DEL ÄR ÖPPNAD.
STIRRA EJ IN I STRÄLEN.

ADVARSEL

LASERSTRÄLING VED ÅBNING. SE IKKE IND I STRÄLEN.

CLASS 1 LASER PRODUCT
APPAREIL A LASER DE CLASSE 1
LASER KLASSE 1
LOUKAN 1 LASERLAITE
PRODUIT LASER
CATEGORIE 1

Caution on Lithium Batteries

CAUTION

Danger of explosion if 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.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Léver det brugte batteri tilbage til leverandøren.

ADVARSEL

Eksplosjonsfare ved feilaktig skifte av batteri.
Benytt samme batteritype eller en tilsvarende
type anbefalt av apparatfabrikanten.
Brukte batterier kasseres i henhold til fabrikantens instruksjoner.

WARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som
rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS

Päristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

VORSICHT!

Explosionsgefahr bei unsachgemäßen Austausch der Batterie Ersatz
nur durch denselben oder einem vom Hersteller empfohlenem
ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des
Herstellers.

FCC Class A Radio Frequency Interference Statement

WARNING!

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice 1:

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2:

If the EUT was tested with special shielded cables, the operator's manual for such product shall also contain the following statement or their equivalent:

Shielded interface cables and/or AC power cord, if any, must be used in order to comply with the emission limits.

About this Manual

Purpose

This user's guide aims to give you all the information you need to operate the system properly.

Manual Structure

This user's guide consists of five chapters.

Chapter 1 System Board

This chapter describes the system board and all its major components. It contains the system board layout, jumper settings, and information on other internal devices.

Chapter 2 CPU Board

This chapter describes the dual-processor CPU board. It includes the CPU board jumper settings and cache and system memory configurations. Step-by-step instructions tell you how to install the CPUs and memory modules.

Chapter 3 BIOS Utility

This chapter discusses the system BIOS and tells how to configure the system by setting the BIOS parameters.

Chapter 4 LAN Information

This chapter gives valuable information on LAN drivers.

Chapter 5 System Utilities

This chapter tells how to use the AFlash BIOS Utility and the SCSI*Select* Configuration Utility.

Conventions

The following are the conventions used in this manual:

Text entered by user

Represents text input by the user.

Screen messages

Denotes actual messages that appear on the screen.

ALT, ENTER, F8, etc.

Represent the actual keys that you have to press on the keyboard.



NOTE

Gives bits and pieces of additional information related to the current topic.



WARNING

Alerts you to any damage that might result from doing or not doing specific actions.



CAUTION

Gives precautionary measures to avoid possible hardware or software problems.



IMPORTANT

Reminds you to do specific actions relevant to the accomplishment of procedures.



TIP

Tells how to accomplish a procedure through little shortcuts.

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System Board

1.1 Features

The M9N is a dual-processor system board that supports the Intel Pentium II CPU. It contains an exclusive connector for the CPU board that carries two slots for the Pentium II CPU modules.

This high-performance 64-bit system board utilizes both the ISA and the PCI local bus architecture. Two ISA and five PCI bus slots reside on the board to allow installation of either master or slave devices.

A 50-pin Fast SCSI-II interface and two 68-pin Wide SCSI interfaces come with the system board to connect SCSI devices. External I/O interfaces include a parallel port and a video port, RJ-45 and USB connectors, and keyboard and mouse ports.

The system board supports two optional features, the ASM Pro and the remote diagnostic management (RDM), that allow better server management. The ASM Pro detects problems in CPU thermal condition, CPU working voltage detection ($\pm 12V/\pm 5V/3.3V/1.5V$), and PCI bus utilization calculation. It also detects if the CPU fan or the chassis fan malfunctions. The RDM allows execution of the RDM diagnostic program from a remote RDM station to fix detected problems or to reboot the system.

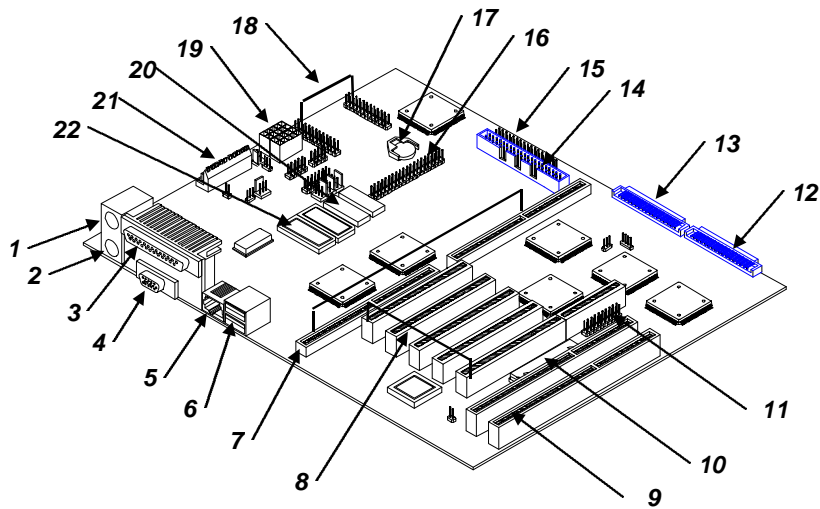
1.2 Major Components

The system board has the following major components:

- CPU board slot
- Two ISA and five PCI bus slots (one PCI slot may include an optional RAID port)
- 256-KB Flash ROM for system BIOS
- System clock/calendar with battery backup
- 50-pin Fast SCSI-II and two 68-pin Wide SCSI interfaces
- Two 24-pin RDM interfaces
- IDE hard disk and diskette drive interfaces
- Onboard VRAM and VRAM sockets for video memory upgrade
- Power connector for both standard 420-watt SPS and redundant 420-watt SPS
- Super I/O, SCSI, VGA, memory, and Advanced Server Management (ASM) controller chipsets
- External ports:
 - PS/2-compatible keyboard port (optional AT-keyboard port)
 - PS/2-compatible mouse port
 - Parallel port
 - Video port
 - RJ-45 connector
 - Universal Serial Bus (USB) connector

1.3 Layout

Figure 1-1 shows the system board components.



- | | |
|-------------------------|------------------------------|
| 1 Keyboard port | 12 Wide SCSI connector 2 |
| 2 Mouse port | 13 Wide SCSI connector 1 |
| 3 Parallel port | 14 Narrow SCSI connector |
| 4 Video port | 15 Diskette drive connector |
| 5 RJ-45 connector | 16 EIDE connector |
| 6 USB connector | 17 Battery |
| 7 CPU board slot | 18 RDM connectors |
| 8 PCI slots | 19 Power connectors |
| 9 ISA slots | 20 Video RAM |
| 10 Flash ROM BIOS | 21 Power connector |
| 11 RAID port (optional) | 22 Video RAM upgrade sockets |

Figure 1-1 System Board Layout

1.4 Jumpers and Connectors

1.4.1 Jumper and Connector Locations

Figure 1-2 shows the jumper and connector locations on the system board.

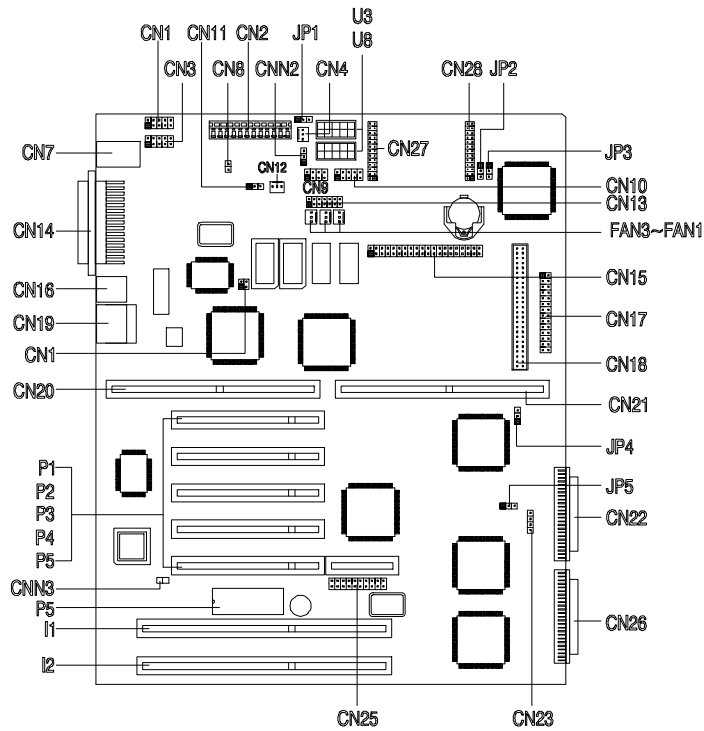


Figure 1-2 System Board Jumper and Connector Locations



Jumpers are prefixed “JP”. Connectors are prefixed “CN”. The blackened pin of a jumper represents pin 1.

1.4.2 Jumper Settings

Table 1-1 lists the system board jumpers with their corresponding settings and functions.

Table 1-1 System Board Jumper Settings

Jumper	Setting	Function
Software Shutdown Control for CN4 JP1	1-2 2-3*	Enabled Disabled
BIOS Type JP2	1-2 2-3*	Branded Generic
Password Security JP3	1-2 2-3*	Check password Bypass password
SCSI Channel 1 High-Byte Termination JP4	1-2* 2-3 Open	Terminator always set to ON SCSI terminator set to ON or OFF by software Terminator set to OFF
VGA Feature JP5	1-2* 2-3	Normal (Auto) Onboard VGA always disabled

* Default setting

1.4.3 Connector Functions

Table 1-2 lists the different connectors on the system board and their respective functions.

Table 1-2 Connector Functions

Connector	Function
CN1	COM 1
CN2, U3, U8	Power connectors
CN3	COM 2
CN4	Software shutdown connector for 420-watt SPS
CN7	PS/2 mouse (above) / keyboard (below) connectors
CN8	Power switch
CN9	Power LED and keylock connector
CN10	Monitor signal connector for redundant power supply
CN12	Software shutdown connector for redundant power supply
CN13	Backplane board LED connector
CN14	Printer port (above) / video port (below)
CN15	IDE connector
CN16	LAN connector
CN17	Diskette drive connector
CN18	Channel 1 narrow SCSI connector
CN19	Universal serial bus (USB) ports
CN22	Channel 1 wide SCSI connector
CN23	Hard disk LED connector
CN25	SMM connector
CN26	Channel 2 wide SCSI connector
CN27, CN28	RDM connectors
CNN3	Connector for chassis intrusion prevention
FA1, FA2, FA3	Fan connectors

1.5 ESD Precautions

Always observe the following electrostatic discharge (ESD) precautions before installing a system component:

1. Do not remove a component from its antistatic packaging until you are ready to install it.
2. Wear a wrist grounding strap before handling electronic components. Wrist grounding straps are available at most electronic component stores.



Do not attempt the procedures described in the following sections unless you are a qualified technician.

1.6 Video Memory Upgrade

Larger video memory allows you to display higher resolutions and more colors. The system board comes with a 1-MB video memory onboard upgradable to 2 MB.

Follow these steps to upgrade the video memory:

1. Locate the video DRAM upgrade sockets labeled U36 and U37 on the system board. See Figure 1-1.
2. Gently insert a video chip into each of the upgrade sockets.



Make sure that the pin 1 indicator on the chip matches the notched corner of the socket.

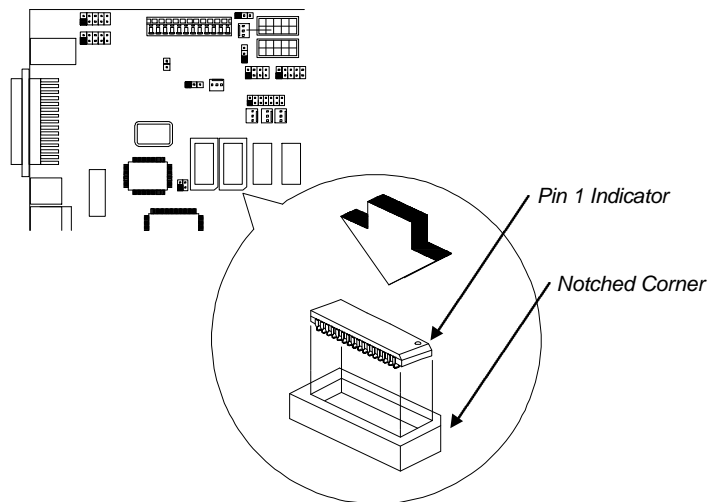


Figure 1-3 Installing a Video Memory Chip

1.7 ASM Pro

The ASM Pro is a server management tool based on the Simple Network Management Protocol (SNMP). It detects server problems related to the CPU thermal condition, 5V/3.3V/1.5V detection, or PCI bus utilization calculation.

This feature is designed primarily for server supervisors and management information system (MIS) personnel to help them detect errors or potential trouble spots in their network servers through a single management station.

The ASM Pro consists of two major parts:

- ASM-Station - a Windows-based monitoring station that communicates with the ASM-Agents.
- ASM-Agent(s) - the individual servers managed by the ASM-Station.

Refer to the ASM Pro user's manual for more information.

1.8 Remote Diagnostic Management

The Remote Diagnostic Management (RDM) is a network management tool that utilizes modems and telephone lines to control a host of servers from a remote station. It monitors and analyzes the server condition, updates the BIOS settings if necessary, or reboots the server in the event of failure and quickly return it to normal operation. This capability to execute the RDM program from a remote site bridges the distance barrier in fixing server problems and reduces wasted time due to system failure.

1.8.1 Installing the RDM Module

The system board comes with connectors CN27 and CN28 to accommodate the RDM module.

Follow these steps to install the RDM module and connect the cable:

1. See Figure 1-1 for the location of the RDM connectors.
2. Gently insert the RDM module into CN27 and CN28. The module fits only in one direction. Do not force it into to the connectors.

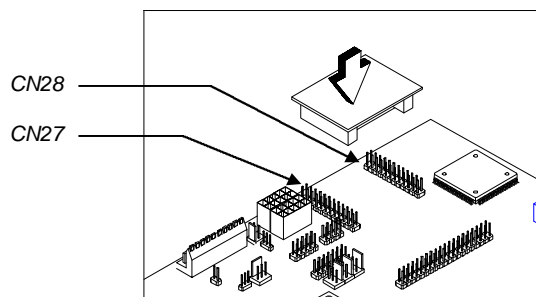


Figure 1-4 Installing the RDM Module

Refer to the RDM User's Guide for detailed instructions on RDM installation.

1.9 Error Messages

Do not continue using the computer if you receive an error message of any type. Note the message and take corrective action. This section explains the different types of error messages and corresponding corrective measures.

There are two general types of error messages:

- Software
- System

1.9.1 Software Error Messages

Software error messages are returned by your operating system or application. These messages typically occur after you boot the operating system or when you run your applications. If you receive this type of message, consult your application or operating system manual for help.

1.9.2 System Error Messages

A system error message indicates a problem with the computer itself. A message of this type normally appears during the power-on self-test, before the operating system prompt appears.

Table 1-3 lists the system error messages.

Table 1-3 System Error Messages

Message	Action
CMOS Battery Error	Replace the RTC chip or contact your dealer.
CMOS Checksum Error	Check the RTC chip and the necessary jumper. If the battery is still good, run Setup.
Display Card Mismatch	Run Setup.
Diskette Drive Controller Error or Not Installed	Check and connect the control cable to the diskette controller.
Diskette Drive Error	Diskette may be defective. If not, replace the diskette drive.
Diskette Drive A Type Mismatch	Run Setup and select the proper drive type.
Diskette Drive B Type Mismatch	Run Setup and select the proper drive type.
Equipment Configuration Error	Modify the memory configuration to agree with one of the options in Table 2-x.
Hard disk Controller Error	Run Setup.
Hard disk 0 Error	Check all cable connections. Replace hard disk.
Hard disk 1 Error	Check all cable connections. Replace hard disk.
Keyboard Error or No Keyboard Connected	Check and connect the keyboard to the system unit.
Keyboard Interface Error	Replace the keyboard or contact your dealer.

Table 1-3 System Error Messages (continued)

Message	Action
Memory Error at: MMMM:SSSS:OOO (W:XXXX, R:YYYY) where: M: MB, S: Segment, O: Offset, X/Y: write/read pattern	Check installed DIMMs. Contact your dealer.
Memory Size Mismatch CPU Clock Mismatch	Run Setup. Check if the values shown in the memory parameters are correct. If correct, exit Setup and reboot the system. If the error message reappears, seek technical assistance.
Onboard Serial Port 1 Conflict	Run Setup and disable the port.
Onboard Serial Port 2 Conflict	Run Setup and disable the port.
Onboard Parallel Port Conflict	Run Setup and disable the port.
Pointing Device Error	Check and connect pointing device.
Pointing Device Interface Error	Replace the pointing device or contact your dealer.
Press F1 key to continue or Ctrl-Alt-Esc for Setup	Press F1 or CTRL + ALT + ESC to enter Setup.
Real Time Clock Error	Check the RTC chip. If it is still good, run Setup. If not, replace the RTC chip.
CPU BIOS Code Mismatch	Contact your dealer.

1.9.3 Correcting Error Conditions

As a general rule, if an error message says "Press F1 to continue," it is caused by a configuration problem, which can be easily corrected. An equipment malfunction is more likely to cause a fatal error, i.e., an error that causes complete system failure.

Here are some corrective measures for error conditions:

1. Run Setup. You must know the correct configuration values for your system before you enter Setup, which is why you should write them down when the system is correctly configured. An incorrect configuration is a major cause of power-on error messages, especially for a new system.
2. Remove the system unit cover. Check that the jumpers on the system board and any expansion boards are set correctly.
3. If you cannot access a new disk, it may be because your disk is not properly formatted. Format the disk first using the FDISK and FORMAT commands.
4. Check that all connectors and boards are securely plugged in.

If you go through the corrective steps above and still receive an error message, the cause may be an equipment malfunction.

If you are sure that your configuration values are correct and your battery is in good condition, the problem may lie in a damaged or defective chip.

In either case, contact an authorized service center for assistance.

A graphic consisting of a grey square with a black border, containing the text "Chapter 2". The square is set against a black rectangular background that has a slight drop shadow effect.

Chapter
2

CPU Board

The CPU board carries two sockets to support a powerful dual-CPU configuration. The sockets accommodate the new Intel Pentium II CPU running at 233/266 MHz. The Pentium II CPU incorporates the first-level cache and boasts a new generation of power.

The board comes with four DRAM banks composed of four 168-pin dual-inline memory module (DIMM) sockets that accommodate both fast-page mode and EDO (extended data output) DIMMs.

Designed to work with Intel 440FX PCIset, the board includes the PCI bridge/memory controller (PMC) and the data bus accelerator (DBX) chipsets. The PMC provides bus control signals and address paths for transfers between the host bus, PCI bus, and the main memory. The DBX supports multiple-bit error detection and single-bit error correction through the ECC/parity feature.

2.1 Layout

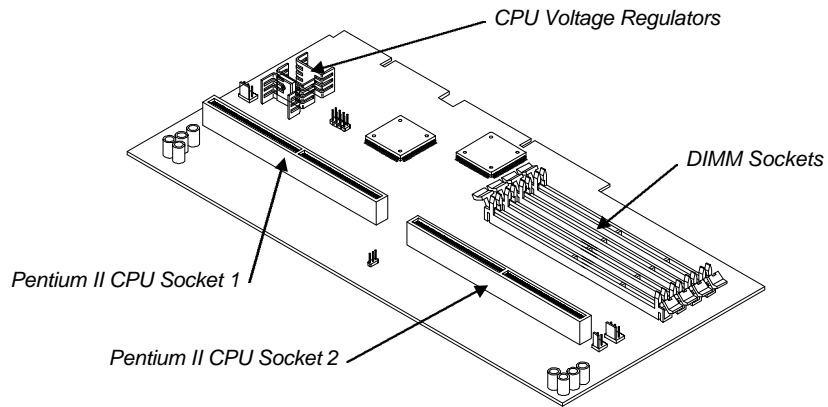


Figure 2-1 CPU Board Layout

2.2 Jumper Locations

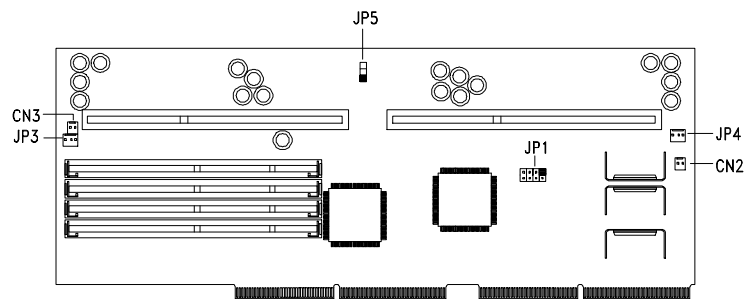


Figure 2-2 Pentium II CPU Board Jumper Locations

2.3 Jumper Settings

Table 2-1 Settings for CPU Core/Bus Frequency Ratio (JP1)

JP1 Settings				CPU Core/Bus Freq.
1-2	3-4	5-6	7-8	
1	1	1	1	2
1	1	0	1	3
1	1	1	0	4
1	1	0	0	2.5
1	0	0	1	3.5*

0 - Pins open 1 - Pins Closed

Table 2-2 ITP Debug Port (JP2)

JP2		ITP
1-2	2-3	
1	0	CPU 1*
0	1	CPU 2

0 - Pins open 1 - Pins closed

Table 2-3 Clock Settings (JP5)

JP5		CPU Clock Speed
1-2	2-3	
1	0	66 MHz*
0	1	60 MHz

0 - Pins open 1 - Pins closed

* Default setting

2.4 Memory Upgrade

The system board comes with eight 168-pin sockets, labeled DIMM1 to DIMM4, that accommodate single-density and double-density DIMMs. The sockets support both the fast-page mode and EDO DIMMs for a total of 512-MB system memory using 128-MB DIMMs. Table 2-4 lists some possible memory configurations.

2.4.1 Memory Configurations

Table 2-4 Memory Configurations

DIMM1	DIMM2	DIMM3	DIMM4	Total Memory
32 MB				32 MB
32 MB	32 MB			64 MB
32 MB	32 MB	32 MB		96 MB
32 MB	32 MB	32 MB	32 MB	128 MB
32 MB	32 MB	64 MB	64 MB	192 MB
64 MB				64 MB
64 MB	64 MB			128 MB
64 MB	64 MB	64 MB		192 MB
64 MB	64 MB	64 MB	64 MB	256 MB
64 MB	64 MB	128 MB	128 MB	384 MB
128 MB				128 MB
128 MB	128 MB			256 MB
128 MB	128 MB	128 MB		384 MB
128 MB	128 MB	128 MB	128 MB	512 MB



The above configurations are only some of the available memory combinations. When upgrading memory, simply install DIMMs into any of the empty sockets.

2.4.2 Installing a DIMM

To install a DIMM, align it with the socket and press it down until the holding clips secure the DIMM in place.



The DIMM socket is slotted to ensure proper installation. If you slip in a DIMM but does not completely fit, you may have inserted it the wrong way. Reverse the orientation of the DIMM.

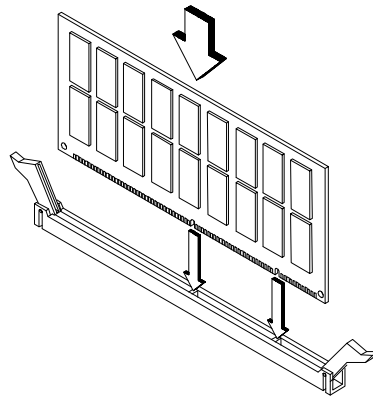


Figure 2-3 Installing a DIMM

2.4.3 Removing a DIMM

To remove a DIMM, press the holding clips on both sides of the socket outward to release the DIMM.



Place your forefingers on the top of the DIMM before you press the holding clips to gently disengage the DIMM from the socket.

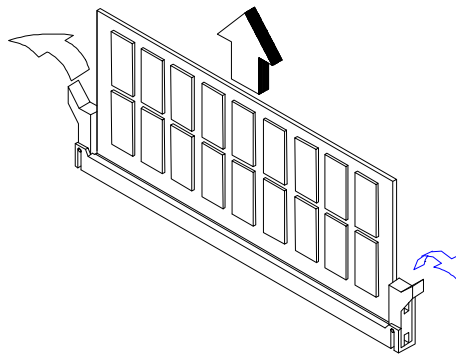


Figure 2-4 Removing a DIMM

2.4.3 Reconfiguring the System

You must enter Setup after installing or removing SIMMs to reconfigure the system.

Follow these steps to reconfigure the system:

1. Turn the system on. A memory error message appears, indicating that the total memory does not match the value stored in CMOS.
2. Press **CTRL** + **ALT** + **ESC** to enter Setup. A warning message appears indicating an incorrect memory configuration.
3. Press **ESC** twice to exit and reboot the system.

The system boots with the new memory configuration.

2.5 Installing the Processor Heat Sink and Fan

The Pentium II processor module comes with holes on one side to hold the clips of the heat sink and fan. The upper set of holes (near the latches) on the processor are wider and should match the wider ends of the clips on the heat sink. The lower set of holes are smaller and should match the narrow ends of the heat sink clips.

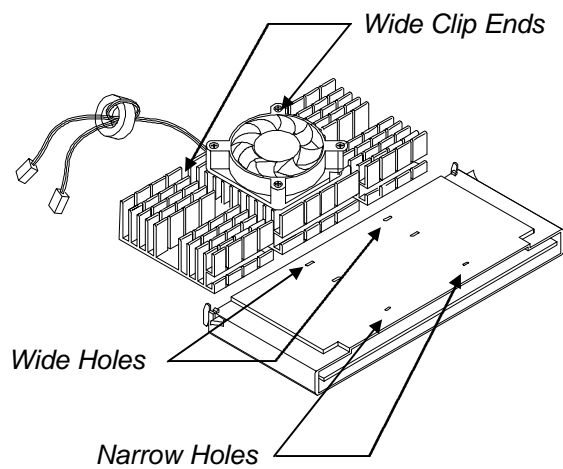


Figure 2-5 Matching the Fan-Heat Sink Clips with the Holes on the Processor

Follow these steps when installing the heat sink and fan to the Pentium II processor module:

1. Remove the thermal tape protector at the back of the heat sink.
2. Insert the wide clip ends to the wide holes on the processor and the narrow clip ends to the narrow holes.

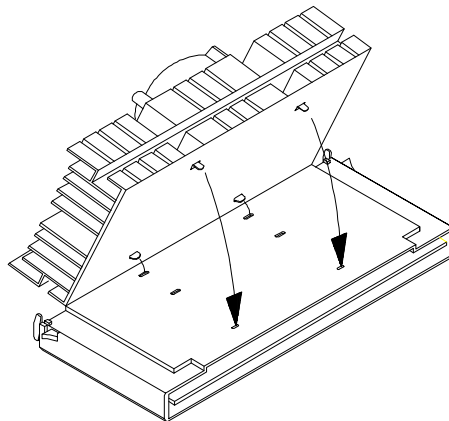


Figure 2-6 Inserting the Clip Ends to the Processor Holes

3. Use a screwdriver to press and lock in the wide end of a clip first. Then without lifting the screwdriver, point it downward to press and lock the narrow end of the clip. See Figures 7 and 8 for the illustration of this step.

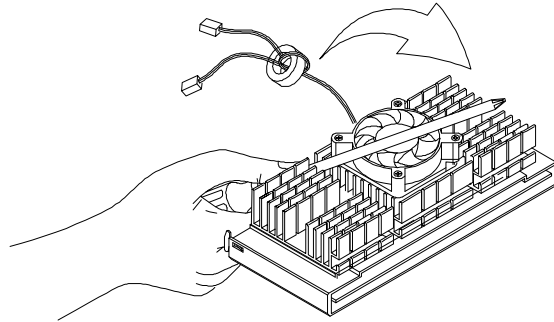


Figure 2-7 Locking a Wide Clip End

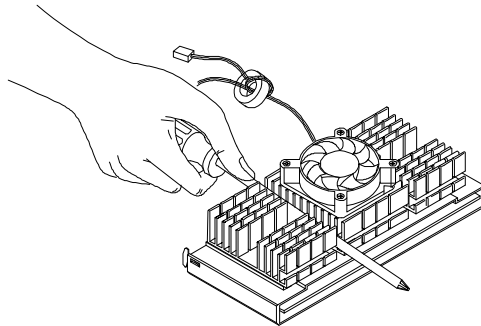


Figure 2-8 Locking a Narrow Clip End

4. Repeat step 3 to lock the other clip.

2.6 Installing a Pentium II Processor

Follow these steps to install the Pentium II processor to the socket on the CPU board.

1. Place the retention mechanism over the processor socket on the CPU board. Secure it with the screws that came with the package.

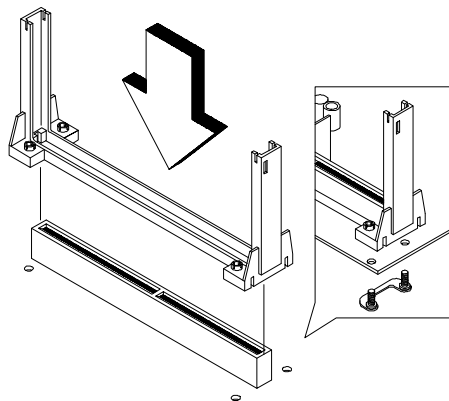


Figure 2-9 Installing the Pentium II Retention Mechanism

2. With the processor module golden fingers pointing downward, align the processor to the posts of the retention mechanism then lower it down. See Figure 2-10.



The golden fingers of the Pentium II module is slotted such that it only fits in one direction. Make sure that module groove matches the one on the processor socket.

-
3. Press down the processor module until the golden fingers completely fit into the socket.

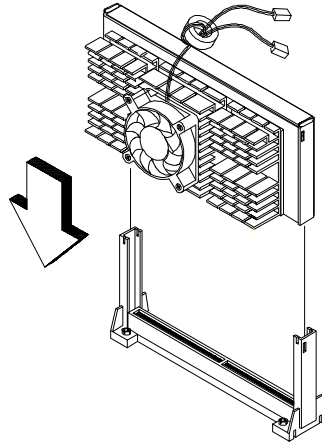


Figure 2-10 *Installing a Pentium II Processor*

4. Press the latches on the sides to lock the processor module into place.

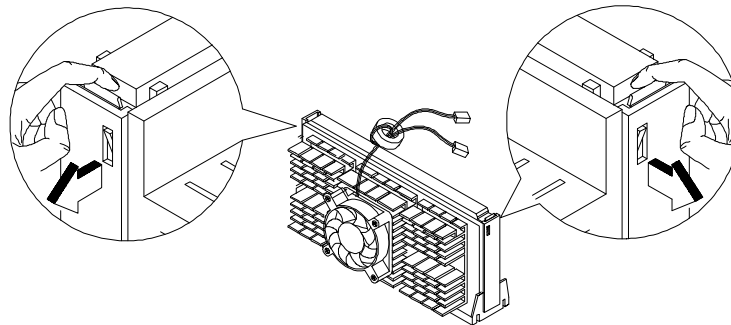


Figure 2-11 *Securing the Pentium II Processor*

2.7 Removing a Pentium II Processor

Follow these steps to remove the Pentium II CPU module from the slot.

1. Unlock the latches that secure that processor module.

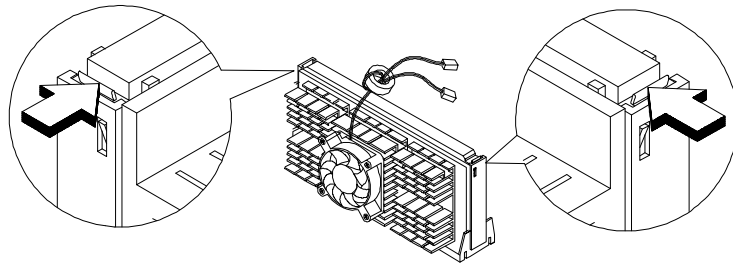


Figure 2-12 Unlocking the Module Latches

2. Firmly hold the processor module and pull it out of the socket.

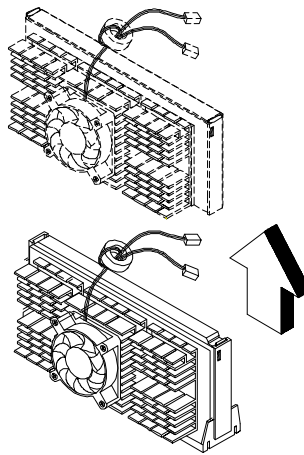


Figure 2-13 Removing the Pentium II Processor

2.8 CPU Board Installation

After setting the jumpers and installing memory modules and CPUs, install the CPU board into the CPU board slot on the system board.

Follow these steps to install the CPU board:

1. Position the CPU board over the slot on the system board such that the component side (CPU side) faces upward.
2. Gently insert the golden fingers of the board into the slot.

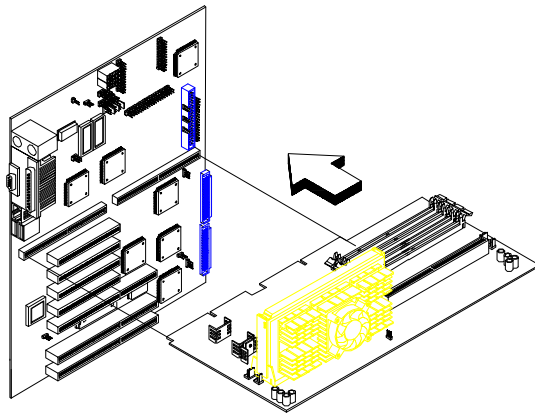


Figure 2-14 Installing the CPU Board



Make sure that the CPU board is properly seated in the slot.

BIOS Utility

Most systems are already configured by the manufacturer or the dealer. There is no need to run Setup when starting the computer unless you get a Run Setup message.



If you repeatedly receive Run Setup messages, the battery may be bad. In this case, the system cannot retain configuration values in CMOS. Ask a qualified technician for assistance.

Before you run Setup, make sure that you have saved all open files. The system reboots immediately after you exit Setup.

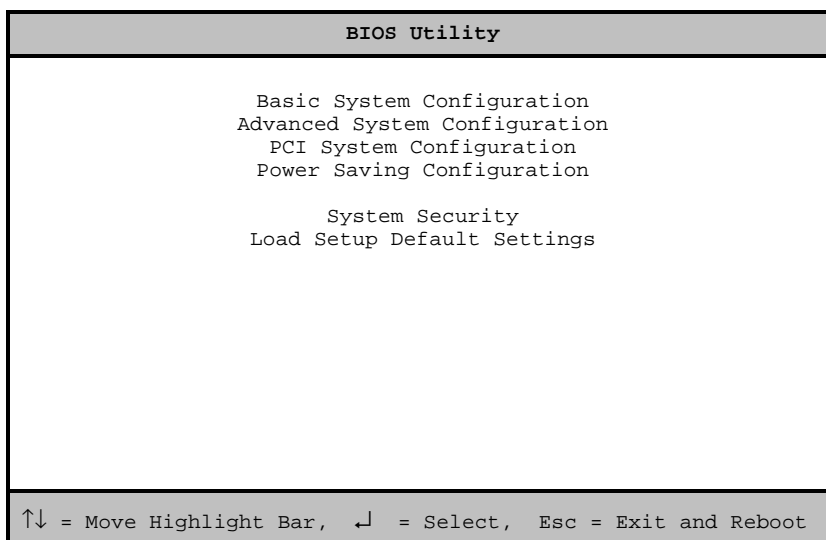
3.1 Entering Setup

To enter Setup, press the key combination **CTRL**+**ALT**+**ESC** .



*You must press **CTRL**+**ALT**+**ESC** while the system is booting. This key combination does not work during any other time.*

The BIOS Utility main menu then appears:



The parameters on the following screens show default values. These values may not be the same as those in your system.

The grayed items (denoted with asterisks) on the following screens have fixed settings and are non-configurable.

3.2 Basic System Configuration

Select Basic System Configuration to input configuration values such as date, time, and disk types.

The following screen shows the Basic System Configuration menu.

Basic System Configuration		Page 1/2		
Date	[MM/DD/YY]			
Time	[HH:MM:SS]			
Diskette Drive A	[xx-MB	xx-inch]		
Diskette Drive B	[xx-MB	xx-inch]		
Onboard IDE	[Enabled]			
		Cylinder	Head	Sector
IDE Drive 0 (xxx MB)	[Auto]	xx	xx	xx
IDE Drive 1 (xxx MB)	[Auto]	xx	xx	xx
Total Memory	[xxx] MB			
↑↓ = Move Highlight Bar, → ← = Change Setting PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit				

The command line at the bottom of the menu tells you how to highlight items, change settings, and move from one screen to another.

Press **↑** or **↓** on the cursor-edit keypad to highlight the desired parameter.

Press **→** or **←** to select the desired option for a parameter.

Press **PGDN** to move to the next page or **PGUP** to return to the previous page.

Press **ESC** to exit the configuration menu.

The following screen shows page 2 of the Basic System Configuration menu.

```
Basic System Configuration                               Page 2 / 2

Enhanced IDE Features
  Hard Disk Block Mode ..... [Enabled ]
  Advanced PIO Mode ..... [Enabled ]
  Hard Disk Size > 504MB ..... [Enabled ]
  Hard Disk 32-bit Access ..... [Enabled ]

Num Lock After Boot ..... [Enabled ]
Memory Test ..... [Disabled]
Quiet Boot ..... [Disabled]
Configuration Table ..... [Enabled ]



↑↓ = Move Highlight Bar,   → ← = Change Setting
PgDn/PgUp = Move Screen,  F1 = Help,   Esc = Exit
```

The following sections explain the different parameters and their settings.

3.2.1 Date and Time

The real-time clock keeps the system date and time. After setting the date and time, you need not enter them every time you turn on the system. As long as the internal battery remains good (approximately seven years) and connected, the clock continues to keep the date and time accurately even when the power is off.

Date

Highlight the items on the date parameter and press  or  to set the date following the month-day-year format.

Valid values for month, day, and year are:

- Month 1 to 12

-
- Day 1 to 31
 - Year 00 to 99

Time

Highlight the items on the time parameter and press **→** or **←** to set the time following the hour-minute-second format.

Valid values for hour, minute, and second are:

- Hour 00 to 23
- Minute 00 to 59
- Second 00 to 59

3.2.2 Diskette Drives

To enter the configuration value for the first diskette drive (drive A), highlight the Diskette Drive A parameter. Press **→** or **←** key to view the options and select the appropriate value.

Possible settings for the Diskette Drive parameters:

- [None]
- [360 KB, 5.25-inch]
- [1.2 MB, 5.25-inch]
- [720 KB, 3.5-inch]
- [1.44 MB, 3.5-inch]
- [2.88 MB, 3.5-inch]

Follow the same procedure for Diskette Drive B. Choose None if you do not have a second diskette drive.

3.2.3 Onboard IDE

When set to `Enabled`, this parameter enables the IDE drives installed in the system. Setting to `Disabled` deactivates the IDE drives and grays the IDE Drive parameters.

3.2.4 IDE Drives

Move the highlight bar to the IDE Drive 0 parameter to configure the first IDE drive (drive C). Press `→` or `←` to display the IDE hard disk types with their respective values. Select the type that corresponds to your drive. Follow the same procedure for the other drives, if any. Choose `None` if you do not have other drives.

Selecting the “Auto” Option

If you do not know the exact type of your IDE drive, select the option `Auto`. During the power-on self-test (POST), when the system performs self-testing and self-initialization before loading the operating system and applications, the BIOS utility automatically determines your IDE drive type. You can see the drive type and its values when you enter the BIOS Utility.

```

                                     Cylinder Head Sector
IDE Drive 0 (xx MB) ... [Auto]      xx      xx      xx
```

If desired, you can save the values under the option `User`.

	Cylinder	Head	Sector
IDE Drive 0 (xx MB) ... [User]	xx	xx	xx

The next time you boot the system, the BIOS utility does not have to auto-configure your IDE drive as it detects the saved disk information during POST.



We recommend that you copy the IDE disk drive values and keep them in a safe place in case you have to reconfigure the disk in the future.

Follow the same procedure to auto-configure other IDE drives.

Selecting the “User” Option

There are cases when you cannot use the option `Auto`, instead you have to select `User`. Choose the `User` option when you have installed an hard disk that was previously formatted but does not use the disk native parameters or structure, that is, the disk type may be in the hard disk types list but the number of cylinders, heads, and sectors differ.

Follow these steps to configure a hard disk with the `User` option:

1. Highlight an hard disk parameter.
2. Select the option `User` and press `ENTER`.
3. Type in the number of cylinders, heads, and sectors of the drive under the appropriate columns.



Be sure to have the correct hard disk information beforehand.

-
4. Choose **YES** when asked if you want to save CMOS data.

3.2.5 Total Memory

The system automatically detects the total amount of onboard memory during the POST and sets the memory parameters accordingly. If you install additional memory, the system automatically adjusts this parameter to display the new memory size.

3.2.6 Enhanced IDE Features

Hard Disk Block Mode

This function enhances disk performance depending on the hard disk in use. If you set this parameter to **Enabled**, it allows data transfer in block (multiple sectors) by increasing the data transfer rate to 256 bytes per cycle. If your system does not boot after enabling this parameter, change the setting to **Disabled**. This parameter is normally set to **Enabled**.

Advanced PIO Mode

Enabling this parameter improves system performance by allowing the use of faster hard drives. If your hard disk does not support this function, set this parameter to **Disabled**. The default is **Enabled**.

Hard Disk Size > 504 MB

If enabled, BIOS allows you to use a hard disk with a capacity of more than 504 MB. This is made possible through the Logical Block Address (LBA) mode translation. Other operating systems require this parameter to be set to **Disabled**.

To prevent data loss, set this parameter set to *Enabled* if you are using a hard disk with more than 504 MB capacity that was previously configured through LBA mode. If you use a hard disk configured through cylinder-head-sector (CHS) mode, set this parameter to *Disabled*. The default is *Enabled*.

Hard Disk 32-bit Access

Enabling this parameter improves system performance by allowing the use of the 32-bit hard disk access. This enhanced IDE feature only works under DOS, Windows 3.x, Windows 95, and Novell NetWare. If your software or hard disk does not support this function, set this parameter to *Disabled*. The default is *Enabled*.

3.2.7 Num Lock After Boot

This parameter allows you to activate the Num Lock function upon booting. The default setting is *Enabled*.

3.2.8 Memory Test

When set to *Enabled*, this parameter allows the system to perform a RAM test during the POST routine. When set to *Disabled*, the system detects only the memory size and bypasses the test routine. The default setting is *Disabled*.

3.2.9 Quiet Boot

This parameter enables or disables the quiet boot function. When set to *Enabled*, BIOS is in graphical mode and displays only an identification logo during POST and while booting. After which the screen displays the operating system prompt (such as DOS) or logo (such as Windows 95). If any error occurred while booting, the system automatically switches to text mode.

Even if your setting is `Enabled`, you may also switch to the text mode while booting by pressing `F8` after you hear a beep that indicates the activation of the keyboard.

When set to `Disabled`, BIOS is in the conventional text mode where you see the system initialization details on the screen.

3.2.10 Configuration Table

This parameter allows you to display the configuration table after POST but before booting. The configuration table gives a summary of the hardware devices and settings that BIOS detected during POST. Following is a sample configuration table.

CPU ID	:Pentium II	Base Memory:	: xxx KB
CPU Clock	:xxx MHz	Extended Memory:	xxxx KB
Math Coprocessor:	Installed	Shadow RAM	: xxx KB
IDE Drive 0	: xxx MB	Internal Cache	: xxx KB, Enabled
IDE Drive 1	: xxx MB	External Cache	: xxx KB, Enabled
IDE Drive 2	: xxx MB	Serial Port(s)	: 3F8h, 2F8h
IDE Drive 3	: xxx MB	Parallel Port	: 378h
Diskette Drive A:	xx-MB, xx-inch	DRAM Bank 0	: None
Diskette Drive B:	None	DRAM Bank 1	: None (EDO)
Pointing Device:	None	DRAM Bank 2	: None
ECC/Parity Mode:	ECC	DRAM Bank 3	: None

3.3 Advanced System Configuration

The Advanced System Configuration option allows you to configure the advanced system memory functions.



Do not change any settings in the Advanced Configuration if you are not a qualified technician to avoid damaging system.

The following screen shows page one of the Advanced System Configuration parameters.

```
Advanced System Configuration                               Page 1/1

Internal Cache (CPU Cache) ..... [Enabled ]
External Cache (CPU Cache) ..... [Enabled ]
Cache Scheme ..... [Write back]

ECC/Parity Mode Selection ..... [  ECC  ]
Operation of ECC ..... [Correction Enabled]

Memory at 15MB-16MB Reserved for ..... [  System  ] Use

↑↓ = Move Highlight Bar,   → ← = Change Setting
PgDn/PgUp = Move Screen,  F1 = Help,   Esc = Exit
```

3.3.1 Internal Cache (CPU Cache)

This parameter enables or disables the first-level cache memory integrated in the Pentium II CPU.

3.3.2 External Cache (CPU Cache)

This parameter enables or disables the second-level cache memory.

Cache Scheme

This parameter allows you to select `Write back` or `Write through` for the cache mode. `Write back` updates the cache but not the memory when there is a write instruction. It updates the memory only when there is an inconsistency between the cache and the memory. `Write through` updates both the cache and the memory whenever there is a write instruction.

3.3.3 ECC/Parity Mode Selection

This parameter allows you to select `ECC`, `Parity`, or `Disabled`. The `ECC` option allows single-bit error detection and automatic correction. The automatic correction depends on the setting of the parameter `Operation of ECC`. See section 3.3.4 for details.

`ECC` also detects multiple-bit errors but does not correct them. Instead, it issues a non-maskable interrupt (NMI) signaling the operating system of the multiple-bit error detection.

The `Parity` option allows parity check. If it detects any parity errors, it sets up the parity error flag in the chipset. This signals the operating system of the parity error detection.

Fast-page mode SIMMs with parity support both `ECC` and parity mode. EDO SIMMs with parity support only `ECC` mode.



Both the ECC and parity check features require parity SIMMs. You must disable this parameter if you installed SIMMs without parity.

3.3.4 Operation of ECC

This parameter allows you to enable or disable the error correction function. In the option *Correction Enabled*, ECC automatically corrects any single-bit errors detected. For multiple-bit errors detected, ECC only issues an NMI to signal the operating system of the multiple-bit error detection.

In the option *Correction Disabled*, ECC detects both single-bit and multiple-bit errors but does not correct either one. It only issues an NMI to signal the operating system of the error detection.

This parameter is grayed if the *ECC/Parity Mode Selection* parameter is set to either *Parity* or *Disabled*. Refer to section 3.3.3.

3.3.5 Memory at 15MB-16MB

To prevent memory address conflicts between the system and expansion boards, reserve this memory range for the use of either the system or an expansion board. Before setting this parameter, check your add-on card manual to determine if your add-on card needs this memory space. If not, set this parameter to *System Use*.

3.4 PCI System Configuration

The PCI System Configuration allows you to specify the settings for your PCI devices.

PCI System Configuration		Page 1/2			
PCI IRQ Setting [Auto]					
		INTA	INTB	INTC	INTD
PCI Slot 1		[--]	[--]	[--]	[--]
PCI Slot 2		[--]	[--]	[--]	[--]
PCI Slot 3		[--]	[--]	[--]	[--]
PCI Slot 4		[--]	[--]	[--]	[--]
PCI Slot 5		[--]	[--]	[--]	[--]
Onboard LAN		[--]			
Onboard SCSI1		[--]			
Onboard SCSI2		[--]			
VGA Palette Snoop [Disabled]					
↑↓ = Move Highlight Bar, → ← = Change Setting PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit					

PCI System Configuration		Page 2/2			
Onboard LAN [Enabled]					
USB Host Controller [Disabled]					
Onboard SCSI1 [Enabled]					
Boot SCSI1 Device [Enabled]					
Onboard SCSI2 [Enabled]					
Boot SCSI2 Device [Enabled]					
PCI IRQ Sharing [No]					
Plug & Play OS [Yes]					
Reset Resources Assignment . [No]					
↑↓ = Move Highlight Bar, → ← = Change Setting PgDn/PgUp = Move Screen, F1 = Help, Esc = Exit					

3.4.1 PCI IRQ Setting

This parameter allows for `Auto` or `Manual` configuration of PCI devices. If you use plug-and-play (PnP) devices, set this parameter to `Auto`. The system then automatically assigns IRQ to the PnP devices. If your PCI device is not a PnP, you can manually assign the interrupt for each device. Refer to your manual for technical information about the PCI card.



When the PCI IRQ Setting is set to `Auto`, all the IRQ setting fields become gray and non-configurable.





PCI Slots

These parameters allow you to specify the appropriate interrupt for each of the PCI devices. You can assign IRQ3, IRQ4, IRQ5, IRQ7, IRQ9, IRQ10, IRQ11, IRQ12, IRQ14, or IRQ15 to the slots.

The items PCI Slot 4 and Onboard SCSI share the same IRQ. Setting an interrupt for the former automatically sets that same interrupt for the latter.



Make sure that the interrupt you assign in any of the PCI slots are not used by other devices to avoid conflicts.

Press  or  to move between fields. Press  or  to select options.

Onboard LAN





This item allows you to manually assign the interrupt for the onboard LAN when the PCI IRQ Setting parameter is set to `Manual`. This parameter is grayed and not user-configurable when the PCI IRQ Setting is set to `Auto` and when the Onboard LAN parameter is set to `Disabled`.

Onboard SCSI1/Onboard SCSI2

These items allow you to manually assign the interrupts for the onboard SCSI hard disks when the PCI IRQ Setting parameter is set to *Manual*. These parameters are grayed and not user-configurable when the PCI IRQ Setting is set to *Auto* and when the Onboard SCSI1 and Onboard SCSI2 parameters on page 2 are set to *Disabled*.



Make sure to assign an IRQ to this item if you set the PCI IRQ Setting parameter to Manual.

Press  or  to move between fields. Press  or  to select options.

3.4.2 VGA Palette Snoop

This parameter permits you to use the palette snooping feature if you installed more than one VGA card in the system.

The VGA palette snoop function allows the control palette register (CPR) to manage and update the VGA RAM DAC (Digital Analog Converter, a color data storage) of each VGA card installed in the system. The snooping process lets the CPR send a signal to all the VGA cards so that they can update their individual RAM DACs. The signal go through the cards continuously until all RAM DAC data have been updated. This allows display of multiple images on the screen.



Some VGA cards have required settings for this feature. Check your VGA card manual before setting this parameter.

3.4.3 Onboard LAN

This parameter allows you to enable or disable the onboard LAN feature.

3.4.4 USB Host Controller

This parameter allows you to enable or disable the onboard USB host controller and the external USB ports.

3.4.5 Onboard SCSI1

This parameter allows you to enable or disable the onboard SCSI1 device.

Boot SCSI1 Device

This parameter allows you to enable or disable the onboard SCSI1 as a boot device priority.

3.4.6 Onboard SCSI2

This parameter allows you to enable or disable the onboard SCSI2 device.

Boot SCSI2 Device

This parameter allows you to enable or disable the onboard SCSI2 as a boot device priority.

3.4.7 PCI IRQ Sharing

When set to *Yes*, this parameter allows you to assign the same IRQ to more than one PCI device installed in the system. When set to *No*, you must assign different IRQs to the PCI devices.

3.4.8 Plug & Play OS

When this parameter is set to **Yes**, BIOS initializes only PnP boot devices such as SCSI cards. When set to **No**, BIOS initializes all PnP boot and non-boot devices such as sound cards.



*Set this parameter to **Yes** only if your operating system is Windows 95.*

3.4.9 Reset Resources Assignment

Set this parameter to **Yes** to avoid IRQ conflict when installing non-PnP or PnP ISA cards. This clears all resource assignments and allows BIOS to reassign resources to all installed PnP devices the next time the system boots. After clearing the resource data, the parameter resets to **No**.

3.5 Power Saving Configuration

The Power Saving Configuration parameters are configurable only if your system supports the power management feature.

The following screens show the Power Saving Configuration parameters and their default settings:

```
Power Saving Configuration                               Page 1/1

Power Management Mode .....[Disabled]
IDE Hard Disk Standby Timer .....[15] Minute(s)
System Standby Timer .....[ 5] Minute(s)
System Suspend Timer .....[15] Minutes

Monitored Activities
IRQ 0 ..... [Disabled]           IRQ 8 ..... [Disabled]
IRQ 1 ..... [Enabled ]           IRQ 9 ..... [Disabled]
IRQ 3 ..... [Disabled]           IRQ 10 ..... [Disabled]
IRQ 4 ..... [Disabled]           IRQ 11 ..... [Disabled]
IRQ 5 ..... [Disabled]           IRQ 12 ..... [Enabled ]
IRQ 6 ..... [Enabled ]           IRQ 13 ..... [Enabled ]
IRQ 7 ..... [Disabled]           IRQ 14 ..... [Enabled ]
                                   IRQ 15 ..... [Disabled]

↑↓ = Move Highlight Bar,   → ← = Change Setting
PgDn/PgUp = Move Screen,  F1 = Help,   Esc = Exit
```

3.5.1 Power Management Mode

This parameter allows you to reduce power consumption. When this parameter is set to `Enabled`, you can configure the system timers. Setting to `Disabled` deactivates the power management feature and all the timers.



For system models with RDM module installed, enabling the RDM feature disables the power management parameters.

IDE Hard Disk Standby Timer

This parameter allows the hard disk to enter standby mode after inactivity of 1 to 15 minutes, depending on your setting. When you access the hard disk again, allow 3 to 5 seconds (depending on the hard disk) for the disk to return to the normal speed. Set this parameter to `Off` if your hard disk does not support this function.

System Standby Timer

This parameter sets the system to a "fast-on" power saving mode. It automatically enters the standby mode after a specified period of inactivity. Any keyboard or mouse action, or any enabled monitored activities occurring through IRQ channels, resume system operation. See section 2.5.2.

System Suspend Timer

This parameter sets the system to a "fast-on" power saving mode. It automatically enters the standby mode after a specified period of inactivity. Any keyboard or mouse action, or any enabled monitored activities occurring through the IRQ channels, resume system operation. See section 2.5.2.

3.5.2 Monitored Activities

This parameter allows you to monitor system activities occurring through the IRQ and determine whether or not to enter power saving mode.

For example, if you assign IRQ3 to a fax/modem and you set this item to *Enabled*, any fax/modem activity wakes up the system from suspend mode.

3.6 System Security

The Setup program has a number of security features to prevent unauthorized access to the system and its data.

Enter the Setup program and select System Security to display the following screen.

```
System Security                                     Page 1/1
Disk Drive Control
Diskette Drive..... [      Normal      ]
Hard Disk Drive..... [      Normal      ]
System Boot Drive..... [Drive A then C]
Onboard Communication Ports
Serial Port 1 Base Address..... [ 3F8h  ]
Serial Port 2 Base Address..... [ 2F8h  ]
Parallel Port Base Address..... [378 (IRQ 7]
  Operation Mode..... [Standard Parallel Port (SPP)] Mode
    *ECP DMA Channel ..... [-]
Onboard PS/2 Mouse (IRQ12) ... [Enabled ]
Setup Password..... [ None  ]
Power On Password..... [ None  ]
↑↓ = Move Highlight Bar,   → ← = Change Setting
PgDn/PgUp = Move Screen,  F1 = Help,   Esc = Exit
```

3.6.1 Disk Drive Control

The disk drive control features allow you to enable or disable the read/write functions of a disk drive. These features can also control the diskette drive or the hard disk drive boot function to prevent loading operating systems or other programs from a certain drive while the other drives are operational.

Table 3-1 lists the drive control settings and their corresponding functions.

Table 3-1 Drive Control Settings

Setting	Description
Diskette Drive	
Normal	Diskette drive functions normally
Write Protect All Sectors	Disables the write function on all sectors
Write Protect Boot Sector	Disables the write function only on the boot sector
Disabled	Disables all diskette functions
Hard Disk Drive	
Normal	Hard disk drive functions normally
Write Protect All Sectors	Disables the write function on all sectors
Write Protect Boot Sector	Disables the write function only on the boot sector
Disabled	Disables all hard disk functions
System Boot Drive	
Drive A then C	The system checks drive A first. If there is a diskette in the drive, the system boots from drive A. Otherwise, it boots from drive C.
Drive C then A	The system checks drive C first. If there is a hard disk (drive C) installed, the system boots from drive C. Otherwise, it boots from drive A.
C:	The system always boots from drive C.
A:	The system always boots from drive A.

3.6.2 Onboard Communication Ports

Serial Port 1 Base Address

This parameter allows you to set the serial port 1 logical base address.

Table 3-2 Serial Port 1 Settings

Setting	Description
3F8h	Serial port 1 with address 3F8h using IRQ4
2F8h	Serial port 1 with address 2F8h using IRQ3
3E8h	Serial port 1 with address 3E8h using IRQ4
2E8h	Serial port 1 with address 2E8h using IRQ3
Disabled	Disables serial port 1

Serial Port 2 Base Address

This parameter allows you to set the serial port 2 logical base address.

Table 3-3 Serial Port 2 Settings

Setting	Description
3F8h	Serial port 2 with address 3F8h using IRQ4
2F8h	Serial port 2 with address 2F8h using IRQ3
3E8h	Serial port 2 with address 3E8h using IRQ4
2E8h	Serial port 2 with address 2E8h using IRQ3
Disabled	Disables serial port 2



If you assign 3F8h to serial port 1, you may only assign 2F8h or 2E8h to serial port 2.

If you assign 2F8h to serial port 1, you may

only assign 3F8h or 3E8h to serial port 2.

Parallel Port Base Address

The system has one parallel port. Table 3-4 lists the options for selecting the parallel port address. You also have the option to disable the parallel port.

Table 3-4 Parallel Port Settings

Setting	Function
3BCh (IRQ 7)	Corresponds to the parallel port with address 3BCh
378h (IRQ 7)	Corresponds to the parallel port with address 378h
278h (IRQ 5)	Corresponds to the parallel port with address 278h
Disabled	Disables the parallel port

To deactivate the parallel port, select the *Disabled* option. If you install an add-on card with a parallel port whose address conflicts with the onboard parallel port, the system automatically disables the onboard functions.

Check the parallel port address on the add-on card and change the address to one that does not conflict.

OPERATION MODE

This item allows you to set the operation mode of the parallel port. Table 3-5 lists the different operation modes.

Table 3-5 Parallel Port Operation Mode Settings

Setting	Function
Standard Parallel Port (SPP)	Allows normal speed one-way operation
Standard and Bidirectional	Allows normal speed operation in a two-way mode
Enhanced Parallel Port (EPP)	Allows bidirectional parallel port operation at maximum speed
Extended Capabilities Port (ECP)	Allows parallel port to operate in bidirectional mode and at a speed higher than the maximum data transfer rate

ECP DMA CHANNEL

This item becomes active only if you select *Extended Capabilities Port (ECP)* as the operation mode. It allows you to select DMA channel 1 or DMA channel 3 depending on the available system resource.

3.6.3 Onboard PS/2 Mouse (IRQ12)

This parameter enables or disables the onboard PS/2 mouse. When set to *Enabled*, it allows you to use the onboard PS/2 mouse assigned with IRQ12. When set to *Disabled*, it deactivates the mouse and frees IRQ12 for the use of other devices.

3.6.4 Setup Password

The setup password prevents unauthorized access to the BIOS utility.



Setting a Setup Password

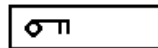
1. Make sure that jumper JP3 is set to pins 2-3 (bypass).



You cannot enter the BIOS utility if a setup password does not exist and jumper JP3 is set to pins 1-2 (check).

The jumper JP3 is set to pins 2-3 (bypass) by default.


2. Enter BIOS utility and select System Security.
3. Highlight the Setup Password parameter and press the  or  key. The password prompt appears:

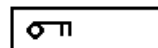
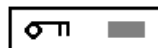



4. Type a password. The password may consist of up to seven characters.



Be very careful when typing your password because the characters do not appear on the screen.

5. Press . A prompt asks you to retype the password to verify your first entry.



6. Retype the password then press .

After setting the password, the system automatically sets the Setup Password parameter to `Present`.

-
7. Press **ESC** to exit the System Security screen and return to the main menu.
 8. Press **ESC** to exit the BIOS utility. A dialog box appears asking if you want to save the CMOS data.
 9. Select Yes to save the changes and reboot the system.
 10. While rebooting, turn off the system then open the housing.
 11. Set jumper JP3 to pins 1-2 to enable the password function.

The next time you want to enter the BIOS utility, you must key-in your Setup password.

Changing or Removing the Setup Password

Should you want to change your setup password, do the following:

1. Enter the BIOS utility and select System Security.
2. Highlight the Setup Password parameter.
3. Press the **←** or **→** key to display the password prompt and key-in a new password.
or
Press the **←** or **→** key and select None to remove the existing password.
4. Press **ESC** to exit the System Security screen and return to the main menu.
5. Press **ESC** to exit the BIOS utility. A dialog box appears asking if you want to save the CMOS data.
6. Select Yes to save the changes and reboot the system.

Bypassing the Setup Password

If you forget your setup password, you can bypass the password security feature by hardware. Follow these steps to bypass the password:

1. Turn off and unplug the system.
2. Open the system housing and set JP3 to pins 2-3 to bypass the password checking.
3. Turn on the system and enter the BIOS utility. This time the system does not require you to type in a password.



*You can either change the existing Setup password or remove it by selecting **None**. Refer to the previous section for the procedure.*

3.6.5 Power On Password

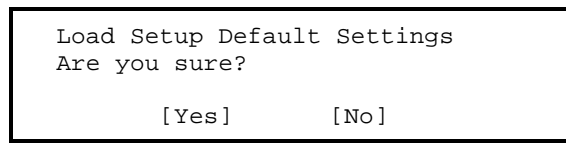
The power on password secures your system against unauthorized use. Once you set this password, you have to type it whenever you boot the system.

To set a power on password, highlight the Power On Password parameter and follow the same procedure as in setting a setup password. See section 3.6.4.

3.7 Load Setup Default Settings

Use this option to load the default settings for the optimized system configuration. When you load the default settings, some of the parameters are grayed-out with their fixed settings. These grayed parameters are not user-configurable.

The following dialog box appears when you select Load Setup Default Settings from the main menu.



Select [Yes] to load the default settings.

3.8 Leaving Setup

Examine the system configuration values. When you are satisfied that all the values are correct, write them down. Store the recorded values in a safe place. In the future, if the battery loses power or the CMOS chip is damaged, you will know what values to enter when you rerun Setup.

Press **[ESC]** to leave the system configuration setup. The following screen appears:

```
Do you want to save CMOS data?  
[Yes]      [No]
```

Use the arrow keys to select your response. Select **Yes** to store the new data in CMOS. Select **No** to retain the old configuration values. Press **[ENTER]**.

Chapter 4

LAN Information

The system comes with local area network (LAN) drivers diskette. The diskette contains README files on the following topics:

- Installing adapter drivers
- Latest news and general adapter information
- Hardware specifications and cabling information
- Adapter installation and special configurations
- Running diagnostics

To view the README files, insert the diskette into a drive and type

```
setup /readme 
```

The following sections give useful information on the LAN compatibility.

4.1 DOS and Windows 3.1 Setup for Novell NetWare Clients



Windows 95 users and Windows NT users do not need to run Setup.

4.1.1 Automatic configuration

PCI computers automatically detect and configure PCI-compliant adapters while booting. The PRO/100 TX PCI adapter IRQ level and I/O memory address are automatically set each time you start your computer.

Start your computer to automatically configure the adapter. Configuration is complete when the DOS prompt appears. You can now continue with the procedure below.

If your computer displays an error while booting, it may require additional steps to configure a PCI adapter. See the PCI installation tips section for more information if you get an error.

4.1.2 Test the adapter and install network drivers

Although not required for operation, it's a good idea to run diagnostic tests every time you install an adapter. Intel's Setup program lets you test the adapter to see if there are any problems with the adapter hardware, the cabling, or the network connection.

Setup can automatically install NetWare DOS ODI client drivers for you or display a README file with installation instructions for other NOS drivers.

1. If your computer already has network drivers installed, restart the computer without loading them. If the drivers are loaded from the AUTOEXEC.BAT file, type REM in front of each line that loads a network driver. Or, with DOS 6.x or later press F5 as DOS starts, to bypass the lines.

-
2. Insert the Intel Configuration and Drivers disk in a floppy drive, switch to that drive, and at the DOS prompt, type

SETUP

3. If you have more than one Intel PRO series PCI adapter in your computer, an adapter selection menu appears on the screen. Select the adapter you want by noting the Ethernet address. See page 10 for more information on multiple adapters.
4. Select Automatic Setup from the Main menu. Then follow the instructions on the screen. (If you want to test the adapter with a responder on the network, see the next procedure.)

Setup displays the adapter's configuration, then runs a series of diagnostic tests that makes sure the adapter and network are functioning properly. If Setup finds a problem, it displays the results and some possible solutions.

5. When Setup finishes the tests, the Install Network Drivers screen appears.
6. Select the driver you want to install. Setup can install a NetWare client driver for you. If you're installing other drivers, Setup displays a README file with installation instructions.

4.1.3 Test the adapter with a responder on the network (optional)

Setup can test the adapter more thoroughly if you have a responder on the network while running the tests.

1. Go to a computer on the network with any EtherExpress adapter installed (except EtherExpress 32 or EtherExpress 16 MCA).
2. Run the appropriate configuration program for the installed adapter and set it up as a responder.
3. Return to the computer with the new adapter. Run Setup and make the new adapter a sender. Test the adapter.

4.1.4 Troubleshooting

If you can't connect to a server, try the suggestions here, then turn to page 14.

- Make sure you're using the drivers for this adapter. The driver filename contains the letter B (for example, E100BODI.COM).
- If you're replacing an existing adapter, make sure the LINK statement in your NET.CFG is correct for the new adapter. For example, the LINK statement for a NetWare client should be:

```
LINK DRIVER E100BODI
```

- Verify FRAME type in your NET.CFG file matches your server.
- If setting up a server, check your LOAD and BIND statements.
- Make sure the PCI slots are busmaster-enabled (see page 17).
- Make sure adapter and hub duplex mode match. See page 11 for more information on duplex modes for the PRO/100 TX adapter.
- Make sure the network cable is securely attached to both the adapter and hub port and the adapter LNK light is on.
- At 100 Mbps, make sure you are connected to a 100BASE-TX hub (not a 100BASE-T4).
- Test the adapter.
- Check the README files.

4.2 Windows NT - Server or Workstation

4.2.1 Automatic configuration

PCI computers automatically detect and configure PCI-compliant adapters while booting. The PRO/100 TX PCI adapter IRQ level and I/O address are automatically set each time you start your computer.

Start your computer to automatically configure the adapter. Configuration is complete when Windows NT starts or the DOS prompt appears.

If your computer displays an error while booting, it may require additional steps to configure. See the PCI Installation Tips section for more information if you get an error.

4.2.2 Install network drivers and test the adapter

After putting the adapter in the computer and starting Windows NT, you need to install the Intel drivers and test the adapter.

1. Double-click the Network icon in the Control Panel.
2. Click Add Adapter.
3. Don't select an Intel adapter from the list. Instead, scroll to the end of the list and select

<Other> Requires disk from manufacturer

4. Insert the Intel Configuration and Drivers disk in a floppy drive and click OK. Drivers and the Intel PROSet utility are installed and PROSet starts.

PROSet is an enhanced utility that you can use to easily configure and test your adapter in Windows NT. PROSet automatically scans computer resources and determines what resources were assigned to the adapter.

5. Click Test.

If you've just added the adapter, the network driver is not active and the diagnostics will test the adapter and its connection to the network.

If you're testing an existing PRO/100 TX adapter, the network driver will probably be active and the diagnostics will test the driver. This diagnostic tracks the driver's actual network activity.

6. Click OK to accept the adapter's configuration.
7. Click OK in the Network Settings dialog box and when prompted, restart Windows NT.
8. To install multiple adapters, repeat this procedure for each new adapter. In addition, read the notes on page 10.

To run the PROSet software at any time, double-click the Intel PROSet icon in the Control Panel.

4.2.3 Troubleshooting

If you can't connect to a server, or if Windows NT reports an error while trying to connect, try the suggestions here, then turn to page 14.

- Make sure you're using the drivers that are on the drivers diskette that ships with this adapter.
- Make sure the driver is loaded and the protocols are bound. See the Network Bindings dialog box in Windows NT.
- Make sure the PCI slots are busmaster-enabled.
- Make sure the network cable is securely attached to both the adapter and hub port and the adapter LNK light is on.
- Make sure the hub port is configured for the same duplex mode as the adapter. See page 11 for more information on full duplex.

-
- Test the adapter.
 - After installing the adapter you can run PROSet from your hard disk. To do this, double-click the Intel PROSet icon in the Control Panel.
 - Check with your LAN administrator — you may need to install supplemental networking software.

4.3 Windows 95

4.3.1 Automatic Configuration

PCI computers automatically detect and configure PCI-compliant adapters while booting. The PRO/100 TX PCI adapter IRQ level and I/O address are automatically set each time you start your computer.

Start your computer to automatically configure the adapter. Configuration is complete when Windows 95 starts.

If your computer displays an error while booting, it may require additional steps to configure. See the PCI installation tips section for more information if you get an error.

4.3.2 Adapter installation for Windows 95

Have your Windows 95 installation CD-ROM or disks available, as Windows 95 prompts for them when you install the new adapter.

- 1 After you put the adapter in the computer, start Windows 95.

The New Hardware Found dialog box appears. If this box does not appear and Windows 95 starts normally, you will need to manually add the adapter. See next page.

- 2 Click "Driver from disk provided by hardware manufacturer," then click OK. The Install From Disk dialog box appears.
- 3 Insert the Intel Configuration and Drivers disk.
- 4 Specify A:\ (or B:\) as the path, then click OK.
- 5 Follow prompts for any Windows 95 installation disks and restart when prompted. (If you installed from CD-ROM, the installation files are typically located at D:\Win95, where D is your CD-ROM drive.)

4.3.3 Install PROSet Software and Test the Adapter

Although not required for operation, it's a good idea to run diagnostic tests every time you install an adapter. Intel's PROSet program is an enhanced configuration and diagnostics utility for Windows 95. To install PROSet:

- 1 Insert the Intel Configuration and Drivers disk.
- 2 From Explorer, double click on the 3.5 Floppy disk icon.
- 3 Find the PROSet icon and click the right mouse button. From the menu that appears click Install.
- 4 The PROSet files are copied to your hard disk.
- 5 Start PROSet by double-clicking on the Intel PROSet icon in the Control Panel.
- 6 The PROSet software examines your computer and displays the PRO Adapter Setup Window. This window shows the adapter's I/O address, interrupt, and Ethernet address.
- 7 Click Test to begin diagnostics.

There are two testing options. Testing with the NDIS driver checks overall operation of the adapter with the network. The second option tests the adapter hardware only. Read both sections below before testing.

- Test the adapter and driver together

The adapter and driver test doesn't require you to unload the NDIS driver. You don't need to restart after testing.

- 1 Click Test NDIS.
- 2 When the test is complete, click OK to exit.
- 3 If this test fails, try again, unloading NDIS first.

-
- Test the adapter hardware only (recommended)

This test unloads the NDIS driver. You will need to restart after testing.

- 1 Click Unload NDIS.
- 2 After the NDIS driver unloads, click OK to continue.
- 3 When the test is complete, click OK to exit or click Advanced for more testing options. Click Help in the Advanced Diagnostics window for more information.
- 4 Restart the computer. You must restart the computer before accessing any network drives.

4.3.4 Manually Adding an Adapter

If the New Hardware Found dialog box does not appear at startup, or if you are adding a second adapter, use the following procedure.

- 1 From the Control Panel, double click the System icon.
- 2 Click the Device Manager tab in the window that appears.
- 3 Double-click Other Devices (question mark icon) in the list area.
- 4 Double-click PCI Ethernet Controller.
- 5 Click the Driver tab and then click Change Driver.
- 6 Select Network Adapters and click OK.
- 7 Click Have Disk from the window that appears. Insert the Intel Configuration and Drivers Disk and click OK.
- 8 Follow any prompts for Windows 95 installation disks and restart when prompted.

4.3.5 Troubleshooting

If you can't connect to a server or Windows 95 reports an error after you double-click Network Neighborhood.

4.4 Other Operating Systems and Servers

If you're using an operating system (OS) other than DOS, Windows 3.1, Windows NT, or Windows 95, or if you are setting up a server, you'll need to read our online tips.

On a DOS computer, view the appropriate README file for information on installing your network driver.

To view the README files, insert the Intel Configuration and Drivers disk into a drive, switch to that drive, and type

```
SETUP /README 
```

Look through the selection called "Installing EtherExpress PRO/100 TX PCI Adapter Drivers" for the operating system you need. The README files contain driver information for the following:

- Novell (client & server)
- IBM
- Microsoft (workstation & server)
- LANtastic
- Banyan

4.5 Installing Multiple Adapters



This section applies when PRO100B is installed.

Windows NT and Windows 95 users: Repeat the configuration procedure for each adapter you want to install (add only one adapter at a time). While PROSet can detect all the PRO/100B adapters in your computer, you still need to perform the configuration process on each adapter. In Windows NT, be sure to click the Show all PRO Adapters box in the Configuration window. See the README file for more information.

NetWare users: The server drivers use the PCI slot number to identify each installed adapter. You can correlate the PCI slot number to the adapter by using the Ethernet address that is printed on a label on the adapter. Run Setup from the Intel diskette to view the Ethernet address and slot number for each installed adapter. See the README file for more information.

All users: The adapter's 12-digit, hexadecimal Ethernet address is on a sticker near the edge of the adapter. The Ethernet address is sometimes called the node address or the MAC address. Note that the PCI slot number may not correspond with the physical connector in your computer.

4.6 Select Duplex Mode (optional)

Duplexing is a performance option that lets you choose how the adapter sends and receives data packets over the network. The PRO/100 TX adapter can operate at full duplex only when connected to a full duplex 10BASE-T or 100BASE-TX switching hub. To summarize:

- Auto (requires a full duplex switching hub with auto-negotiation capability). The adapter negotiates with the hub to send and receive packets at the highest rate.
- Full duplex (requires a full duplex switching hub). The adapter can send and receive packets at the same time. This mode can increase adapter performance capability.
- Half duplex. The adapter performs one operation at a time; it either sends or receives. Half duplex is the default mode.

Note that if your hub is running at 100 Mbps and half duplex, your potential bandwidth is higher than if you run at 10 Mbps and full duplex.

4.6.1 Configuring for full duplex

If your hub supports auto-negotiation with the N-way standard, duplex configuration is automatic and no action is required on your part. However, few hubs in the current installed base support auto-negotiation. Check with your network system administrator to verify. Most installations will require manual configuration for changing from half duplex to full duplex mode.

To configure for full duplex, first verify that your adapter is connected to a full duplex, 10BASE-T (10 Mbps only) or 100BASE-TX (10 or 100 Mbps) switching hub. Configuring the PRO/100 TX PCI adapter for full duplex is a two-step process: the Speed setting on your adapter must be changed from Auto to 10 or 100, and the Duplex setting also must be changed to full duplex. However, configuration is specific to the driver you're loading for your network operating system (NOS), as shown in the sections below.

To set up the duplex mode, refer to the section below that corresponds to your operating system. For example, if you are running Windows NT on a Novell network, choose the Windows NT method.



Note that performance may suffer or your adapter may not operate if your hub is not full duplex and you configure the adapter to full duplex. Leave the adapter on half duplex if you are not sure what type of hub you are connected to.

DOS ODI, NDIS 2.01 Clients

Edit the NET.CFG or PROTOCOL.INI file. Add to Link Driver section:

```
FORCEDUPLEX 2
SPEED 100 (or 10 if 10BASE-T)
```

NetWare server

In AUTOEXEC.NCF, Load E100B.LAN and add the following statement (you must include the equal sign for servers):

```
FORCEDUPLEX=2
SPEED=100 (or 10 if 10BASE-T)
```

For more information, see the README file for NetWare servers.

Windows NT

While running Windows NT:

- 1 From the Control Panel, double-click the Intel PROSet icon.
- 2 PROSet examines your system and displays the Adapter Setup window. If you have multiple adapters, click the "Show All Adapters" box and then select the adapter you are configuring (it can be identified by its Ethernet address). Each adapter must be configured separately. See page 10, Installing Multiple Adapters, for more information.
- 3 From the window that appears, click Change.
- 4 From the Adapter Setup window, click the menu for Network Speed.
- 5 Click 100 or 10 Mbps, depending on hub speed.
- 6 Click the menu for Duplex Mode
- 7 Click Full.
- 8 Click OK when finished.
- 9 Click Restart Windows NT.

Windows 95

While running Windows 95:

- 1 From the Control Panel, double-click the Intel PROSet icon.
- 2 PROSet examines your system and displays the Adapter Setup window. If you have multiple adapters, click the adapter you are configuring (it can be identified by its Ethernet address). Each adapter must be configured separately. See Installing Multiple Adapters for more information.
- 3 From the window that appears, click Change.

-
- 4 From the Adapter Setup window, click the menu for Network Speed.
 - 5 Click 10 Mbps, depending on hub speed.
 - 6 Click the menu for Duplex Mode
 - 7 Click Full.
 - 8 Click OK when finished.
 - 9 Click OK to restart Windows 95.

Other NOS

See the Adapter Installation and Special Configurations README file.
See instructions on viewing README files.

System Utilities

This chapter contains information about system utilities that you need when you upgrade your system. These utilities are the AFlash BIOS Utility and SCSISelect Configuration Utility.



The AFlash BIOS Utility diskette does not come with the system package. Ask your dealer for assistance if you need the utility.

5.1 AFlash BIOS Utility



Do not install memory-related drivers (XMS, EMS, DPMI) when you use AFlash.

The AFlash functions support all the operations required for system Flash ROM. The functions are divided into four steps as follows.

1. **Load BIOS file to buffer** reads a specified file from a diskette to memory for future program use or for check only. It supports the 64-KB, 128-KB, 192-KB, or 256-KB files.
2. **Save BIOS to disk file** reads BIOS from the current BIOS area and writes to the file specified by the user.
3. **Edit OEM string** reads specified file from a diskette to memory, edits OEM string and writes to a file.

-
4. **Program flash memory** programs Flash memory according to the data loaded in step 1. This function also shows the BIOS checksum and BIOS type to make sure that the operation is correct.



AFlash features password security to prevent unauthorized access.

5.1.1 Executing AFlash

Follow these steps to execute AFlash:

1. Copy the MSG.DAT and AFLASH.EXE files from the system utilities diskette into the subdirectory of your choice.
2. From that subdirectory, type:

```
aflash 
```
3. A help message appears. Press any key to continue.
4. The main menu appears. Use the or key to highlight the options. Press to select.
5. If you want to save a copy of the current BIOS into a file, select Save BIOS to Disk File.
6. Select Load BIOS File to load the BIOS file into memory.

-
7. Select Program Flash Memory to erase the current BIOS, and program Flash ROM.




Never turn off the system power while Flash BIOS is programming. This will destroy the BIOS.

8. Reboot the system.

5.1.2 Quick Way to Execute AFlash

When you have already copied the AFlash files into your hard disk, you can simply type the following on the DOS prompt (subdirectory where the files are located) to quickly execute the program.

```
aflash (filename) 
```

The program automatically performs the loading and programming functions, then reboots the system.

If the program cannot find the BIOS file, it returns to the main menu and flashes the following message:

```
Can't Read This File !!! Press any key to continue...
```

In this case, follow the procedures for loading and programming the BIOS file using the main menu.

5.2 SCSISelect Configuration Utility

The SCSISelect utility allows you to change SCSI controller settings without opening the system or changing jumpers.

5.2.1 Overview

Default Values

Table 5-1 lists the settings that you can change using the SCSISelect utility and the default value for each setting. Some settings apply globally to the SCSI controller and all SCSI devices on the bus. Other settings apply individually to each device on the bus.

Table 5-1 Settings for the SCSI Controller and All Devices

Item	Default
Host Adapter SCSI ID	7
SCSI Parity Checking	Enabled
Host Adapter SCSI Termination	Enabled
Boot Device Option	0 (zero)
Host Adapter BIOS ¹	Enabled
Support Removable Disks under BIOS as Hard Disks	Boot only
Extended BIOS Translation for DOS Drives > 1 GB	Enabled
Display <Ctrl-A> Message During BIOS Initialization	Enabled
Multiple Lun Support	Disabled
BIOS Support for Bootable CD-ROM	Enabled
BIOS Support for Int13 Extensions	Enabled
Support for Ultra SCSI Speed	Disabled

¹ The settings are valid only if the host adapter BIOS is enabled.

Table 5-2 *Individual Settings for SCSI Drives*

Item	Default
Initiate Sync Negotiation	Yes
Maximum Sync Transfer Rate	20 MB/sec.
Enable Disconnection	Yes
Send Start Unit SCSI Command ¹	No
Initiate Wide Negotiation	Yes

When to Use the SCSISelect Utility

Use the SCSISelect utility if you need to do either one of the following:

- Change any of the default values listed in Table 5-1.
- Check and/or change SCSI device settings that may conflict with those of other devices
- Perform low-level formatting on new SCSI disk devices

Running the SCSISelect Utility

A screen message giving the option to access the SCSISelect utility appears after the BIOS and POST routine.

To start SCSISelect, press **CTRL**+A when the following message appears during power on or system reset:

```
Press <Ctrl> <A> for SCSISelect™ Utility!
```

¹ The settings are valid only if the host adapter BIOS is enabled.



Your screen may show the key sequence as **CTRL**+<Hot Key> instead of **CTRL**+A. The correct sequence is **CTRL**+A.

5.2.2 Utility Options

When the SCSISelect utility detects that AIC-7880 SCSI controller in the system, it displays the following Options menu.

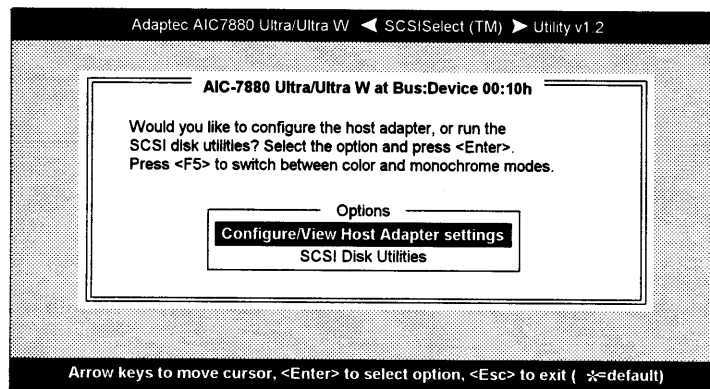


Figure 5-1 Options Menu Screen

Use the **↑** and **↓** keys and press **ENTER** to make selections in the SCSISelect utility. Press **ESC** at any time to return to the previous menu.



You can press **F5** to toggle the display between color and monochrome modes.

This feature may not work with some kinds of monitors.

Configure/View Host Adapter Settings Menu

The Configure/View Host Adapter Settings menu lists three settings under SCSI Bus Interface Definitions and three additional options.

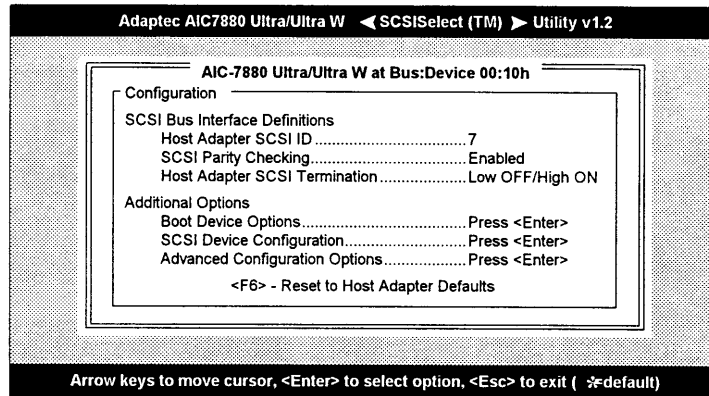


Figure 5-2 Configure/View Host Adapter Settings Screen

Use the **↑** and **↓** keys to select a parameter. Press **ENTER** to display a pop-up menu with a list of possible settings for the parameter. Press **ESC** at any time to return to the previous menu.



Press to reset all settings to the SCSI controller defaults. SCSI controller default settings are marked with an asterisk (*) throughout the selection submenus.

HOST ADAPTER SCSI ID

This parameter allows you to change the host controller SCSI ID. Figure 5-3 shows the available IDs for use with the AIC-7880. The default setting is SCSI ID 7, which has the highest priority on the SCSI bus. We recommend that you keep the default setting since most system applications run only in this setting.

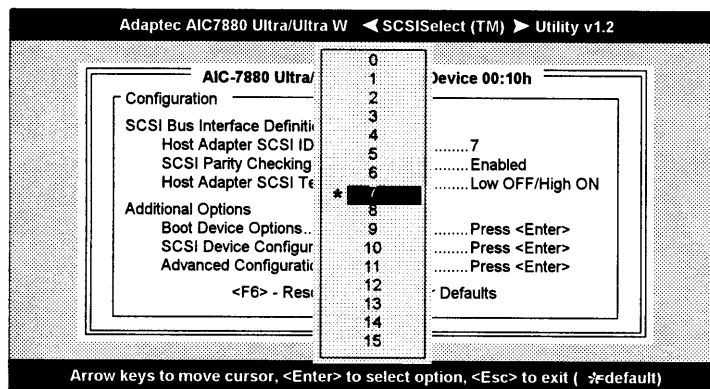


Figure 5-3 Host Adapter SCSI ID Selections

Each device on the SCSI bus, including the SCSI controller, must be set to a unique SCSI ID. The SCSI ID serves two purposes. It uniquely identifies each SCSI device on the bus, and it determines the device's priority on the bus during the arbitration phase. The arbitration phase determines which device controls the bus when two or more devices request for the use of it.

Use the or keys then press to select the SCSI ID if you need to change it. Press at anytime to return to the previous menu.

SCSI PARITY CHECKING

Select this option to enable or disable the SCSI parity checking function on the SCSI controller. Figure 5-4 displays the selections. The default setting is **Enabled**.

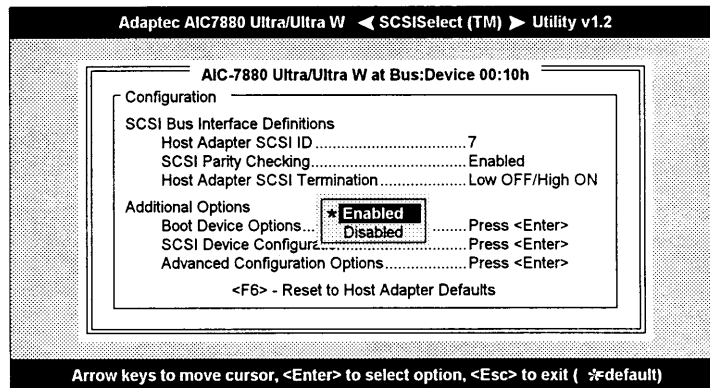


Figure 5-4 SCSI Parity Checking Selections

The SCSI controller always checks parity when reading from the SCSI bus to verify the correct transmission of data from the SCSI devices. You should disable the SCSI Parity Checking parameter if any of the installed SCSI devices does not support SCSI parity. Most currently available SCSI devices support this feature.

Use the **↑** or **↓** keys then press **ENTER** to select options. Press **ESC** at anytime to return to the previous menu.

HOST ADAPTER SCSI TERMINATION

This parameter allows you to configure the host controller SCSI termination function. Figure 5-5 shows the possible settings. The default setting is **Enabled**.

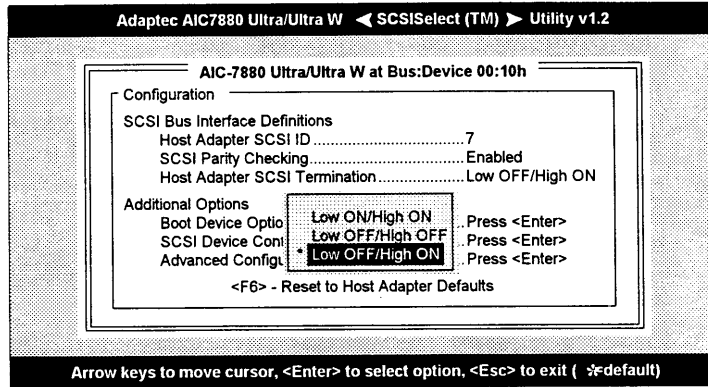


Figure 5-5 Host Adapter SCSI Termination

Use the  or  keys then press  to make a selection. Press  at anytime to return to the previous menu.



If the AIC-7880 is not at one end of the SCSI cable, the terminating resistors located on the system board must be disabled by setting the SCSI terminator to Low OFF/High OFF. See Figure 5-5. The three resistors are in the SIP packages installed in the sockets.

BOOT DEVICE OPTIONS

This parameter shows the target ID of your boot device. The default setting is 0 (zero). We recommend that you keep the default setting since most system applications run only in this setting. Figure 5-6 shows the boot device configuration menu.

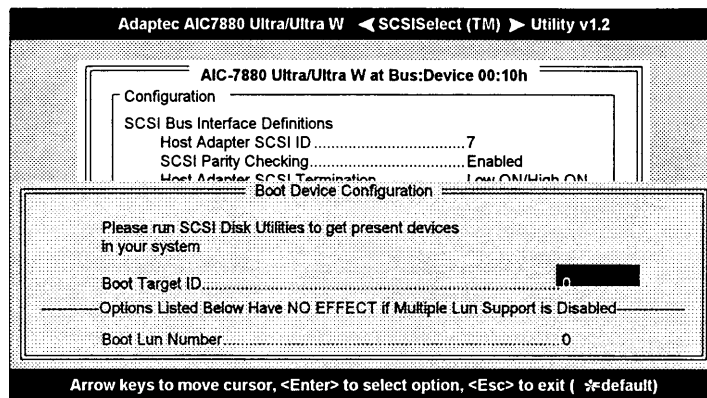


Figure 5-6 Boot Device Configuration

SCSI DEVICE CONFIGURATION

This parameter allows you to configure details of each SCSI device on the SCSI bus. A screen similar to Figure 4-7 appears. The screen shows a column of information for each SCSI ID, even if some SCSI IDs are not assigned to a device. To configure a specific SCSI device, you need to know which SCSI ID it uses. See the SCSI Disk Utilities later in this section for instructions on how to determine the SCSI ID used by a device.

Adaptec AIC7880 Ultra/Ultra W ◀ SCSSelect (TM) ▶ Utility v1.2

AIC-7880 Ultra/Ultra W at Bus:Device 00:10h

SCSI Device Configuration

SCSI Device ID	#0	#1	#2	#3	#4	#5	#6	#7
Initiate Sync Negotiation.....	yes	yes	yes	yes	yes	yes	yes	yes
Maximum Sync Transfer Rate.....	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Enable Disconnection.....	yes	yes	yes	yes	yes	yes	yes	yes
Initiate Wide Negotiation.....	yes	yes	yes	yes	yes	yes	yes	yes
Options Listed Below Have NO EFFECT if the BIOS is Disabled								
Send Start Unit Command.....	no	no	no	no	no	no	no	no

SCSI Device ID	#8	#9	#10	#11	#12	#13	#14	#15
Initiate Sync Negotiation.....	yes	yes	yes	yes	yes	yes	yes	yes
Maximum Sync Transfer Rate.....	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Enable Disconnection.....	yes	yes	yes	yes	yes	yes	yes	yes
Initiate Wide Negotiation.....	yes	yes	yes	yes	yes	yes	yes	yes
Options Listed Below Have NO EFFECT if the BIOS is Disabled								
Send Start Unit Command.....	no	no	no	no	no	no	no	no

Arrow keys to move cursor, <Enter> to select option, <Esc> to exit (*default)

Figure 5-7 SCSI Device Configuration

Use the or keys to move between options, then press to display a pop-up menu with a list of values.

Use the or keys to select a value, then press .

Initiate Sync Negotiation

This option determines whether the SCSI controller initiates synchronous negotiation with the SCSI device.

When set to *Yes*, the SCSI controller initiates synchronous negotiation with the SCSI device. When set to *No*, the SCSI controller does not initiate synchronous negotiation. The SCSI controller, however, always responds to synchronous negotiation if the SCSI device initiates it. The default setting is *Yes*.

Data is transferred in asynchronous mode if neither the SCSI controller nor the SCSI peripheral negotiates for synchronous data transfers.



Some older SCSI-1 devices do not support synchronous negotiation. This may cause the system to operate erratically or hang when the Initiate Sync Negotiation is enabled. Set this item to No if you installed SCSI-1 devices.

Maximum Sync Transfer Rate

This option determines the maximum synchronous data transfer rate that the SCSI controller can support. The SCSI controller supports rates up to the Fast Wide SCSI maximum of 20.0 MB per second. The default value is 20.0.

In most cases, you can use the maximum value of 20.0. However, if the SCSI controller is not set to negotiate data transfer (i.e., Initiate Sync Negotiation is set to *No*), the value selected here is the maximum rate that the SCSI controller accepts from the device during negotiation. This is a standard SCSI protocol.



Some older SCSI-1 devices do not support Fast SCSI data transfer rates 10.0, 8.0, and 6.7. This may cause the system to operate erratically or hang if the transfer rate is too high. Select a Maximum Sync Transfer Rate of 5.0 for these devices.

Enable Disconnection

This option determines whether the SCSI controller allows a SCSI device to disconnect from the SCSI bus (sometimes called Disconnect/Reconnect). Disconnect/Reconnect allows the SCSI controller to perform other operations on the SCSI bus while the SCSI device is temporarily disconnected.

When set to *Yes*, the SCSI device may disconnect from the SCSI bus. The SCSI device, however, may choose not to disconnect, even if permitted by the SCSI controller. When set to *No*, the SCSI device is not allowed to disconnect from the SCSI bus. The default setting is *Yes*.

Keep this item set to *Yes* if two or more SCSI devices are connected to the SCSI controller. This optimizes SCSI bus performance. If only one SCSI device is connected to the SCSI controller, set this item to *No* to achieve better system performance.

Initiate Wide Negotiation

This option allows communication between all devices (lower 8-bit or upper 8-bit) on the wide (16-bit) SCSI bus. When set to *Yes*, each device can connect on the bus. When set to *No* (disabled), communication can only occur on the lower eight bits of the 16-bit SCSI bus. The default setting is *Yes*.

Send Start Unit Command

This option determines whether the Start Unit Command (SCSI command 1B) is sent to the SCSI device (most devices do not require this). Enabling this item reduces the load on the system power supply by allowing the SCSI controller to power-up SCSI devices one at a time upon booting. Otherwise, all the devices power up at the same time. Most devices require you to set a jumper before they can respond to this command.

When set to *Yes*, the Start Unit Command is sent to the SCSI device at system boot. When set to *No*, each SCSI device powers-up in the normal procedure.



The Send Start Unit Command setting is valid only if the host adapter BIOS is enabled.

If this option is enabled for more than one SCSI device, the Start Unit Command is sent first to the device with the lowest SCSI ID. When this device responds to the SCSI controller, the Start Unit Command is sent to the next highest SCSI ID with a setting of *Yes*. The process continues until all supported devices respond to the SCSI controller.

If many drives are set to *Yes* for Send Start Unit Command, the boot time varies depending on how long it takes each drive to spin up.

ADVANCED CONFIGURATION OPTIONS

Selecting the Advanced Configuration Options displays a screen as in Figure 3–8. Do not change the settings of the items under this parameter unless it is absolutely necessary.

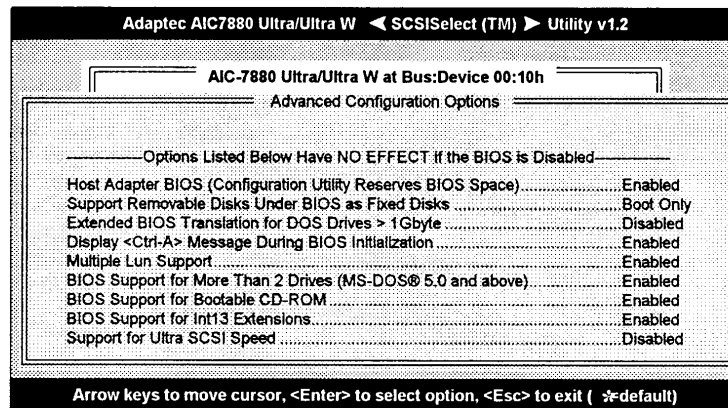





Figure 5-8 Advanced Configuration Options

Use the  or  keys to move between options, then press  to display a pop-up menu with a list of options.

Use the  or  keys to select an option, then press .

Host Adapter BIOS

This option enables or disables the SCSI controller BIOS. The default setting is `Enabled`.

The SCSI controller BIOS must be enabled if you want the system to boot from a SCSI hard disk drive connected to the SCSI controller. Several `SCSISelect` options cannot be used unless the SCSI controller BIOS is enabled.

Support Removable Disks Under BIOS as Fixed Disks

This option allows you to control which removable-media drives are supported by the SCSI controller BIOS. This is only valid when the SCSI controller BIOS is enabled. The default setting is `Boot Only`. The following choices are available:

- `Boot Only` - Only the removable-media drive designated as the boot device are treated as a hard disk drive.
- `All Disks` - All removable-media drives supported by the BIOS are treated as hard disk drives.
- `Disabled` - No removable-media drives are treated as hard disk drives. In this case, software drivers are needed because the drives are not controlled by BIOS.

Support for removable-media drives means that the SCSI controller BIOS allows use of a removable-media drive as if it is a hard disk drive. It does not mean that you can remove the disk media during operation.



If a removable-media SCSI device is controlled by the SCSI controller BIOS, do not remove the media while the drive is powered-on or you may lose data!.

Extended BIOS Translation fro DOS Drives > 1 GByte

This option allows you to enable or disable extended translation for SCSI hard disks with a capacity greater then 1 GB. This is valid only if the SCSI controller BIOS is enabled. The default factory setting is *Enabled*.

When enabled, this options use the following translation schemes:

- SCSI hard disks < 1 GB use a translation scheme of 64 heads, 32 sectors per track
- SCSI hard disks > 1 GB use a translation scheme of 255 heads, 63 sectors per track

See the section *Disk Drives Over 1 GB* in this chapter, for more information on this option. This option should be left disabled for most operating systems except DOS.

Display <Ctrl-A> Message During BIOS Initialization

This option allows entering the *SCSISelect* utility during BIOS initialization. The default setting is *Enabled*.

Multiple Lun Support

This option allows access to multiple logical unit numbers (Lun) per SCSI ID, The default setting is *Disabled*.

BIOS Support for Bootable CD-ROM

When enabled, this option allows you to use a bootable CD-ROM device to directly load an operating system. The default setting is *Enabled*.

BIOS Support for Int13 Extensions

This option allows access to attached SCSI devices through BIOS Int13 functions. The default setting is *Enabled*.

Support for Ultra SCSI Speed

This option enables wide SCSI data transfers at 40 MB per second. Most hard disk drives or other SCSI devices do not currently support a communication rate this high. If enabled, make sure that the device you installed is capable of running at this rate. The default setting is Disabled.

SCSI Disk Utilities

When you select SCSI Disk Utilities from the Options menu, the *SCSISelect* Utility scans the SCSI bus and lists all SCSI devices installed on the SCSI bus. The list shows the individual SCSI IDs assigned to each device on the SCSI bus.

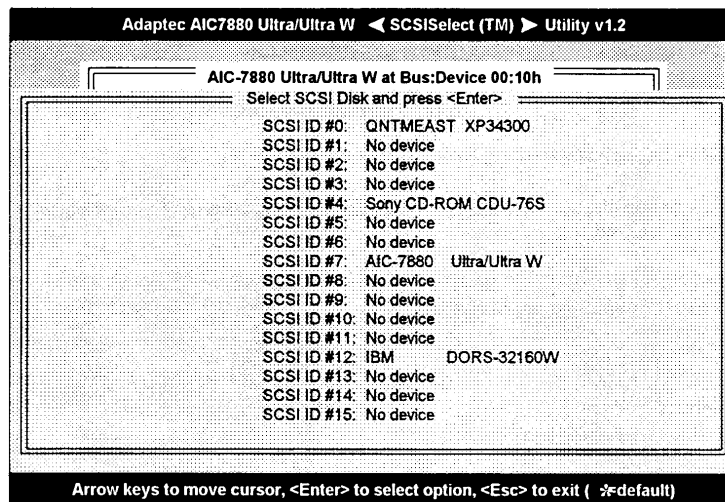





Figure 5-9 SCSI Disk Utilities Screen

Select a disk device to display a small menu window. From this menu, select *Format Disk* or *Verify Media*.

Use the  or  keys to move between options, then press  to display a pop-up menu with a list of values.

Use the  or  keys to select a value, then press .

FORMAT DISK

The Format Disk utility performs a low-level format on disk devices.

Most SCSI disk devices are preformatted and do not need to be formatted again. The Adaptec Format Disk utility is compatible with the vast majority of SCSI disk drives. Run it on hard disk drives or removable-media drives that were previously used with a non-Adaptec SCSI controller.




A low-level format destroys all data on the drive. Be sure to back up your data before performing this operation. You cannot abort a low-level format once it is started.

VERIFY MEDIA

The Verify Media utility scans the selected device's media for defects. If the utility finds bad blocks, it prompts you to reassign them. If you select **Yes**, those blocks will no longer be used.



You can press  at any time to abort the Verify Disk Media utility.

5.2.3 Configuring Multiple SCSI Controllers



The following procedure uses AHA-2940/W/UW SCSI controller as an example.

Follow these steps to configure multiple SCSI controllers:

1. Install the boot SCSI controller in the lowest PCI Device number. The Device number is determined by the slot number on the PCI bus.
 - a. To find out the Device number of the AHA-2940 SCSI controller(s), run the *SCSISelect* utility by pressing the key combination **CTRL**+A at power on.
 - b. On the first screen of *SCSISelect*, look for the following on the upper right hand corner.
`Bus:Device xx:xxxh` (given in hexadecimal)
 - c. If the device number is high, move the AHA-2940 to a PCI slot at the other end of the system board then rerun *SCSISelect* to see if the number is lower.



Step 1.3 is a recommended solution for most PCI systems. You can move the AHA-2940 SCSI controller to another PCI slot if the boot order is not what is desired.

- d. Refer to your system documentation for further details on determining the PCI slot number and slot number order in the system.
2. If you are booting from the AHA-2940 and using ISA/EISA-based host adapters as secondary devices, you must disable the BIOS on all ISA/EISA-based SCSI controllers.

-
3. If you are booting from ISA/EISA-based controllers and using AHA-2940 as a secondary device, see your ISA/EISA-based SCSI controller documentation to ensure that the SCSI controller is at the lowest BIOS base address. ISA/EISA-based SCSI controllers with their BIOS enabled boot before the AHA-2940.

5.2.4 Disk Drives Over 1 GByte

Extended Translation

Adaptec SCSI controller have always supported the full range of disk drive capacities under all major operating systems. As disk drives have recently grown beyond 1 GB in formatted capacity, they have run up against the DOS 1024-cylinder limit.

To continue its support for all SCSI disk drive capacities under DOS, Adaptec has included an extended translation scheme for the AIC-7880 SCSI controllers. This feature supports disk drives of up to 8 GB capacity under DOS. The section Extended BIOS Translation for DOS Drives > 1 GB explains how to change the setting of this option. Most operating systems leave this option disabled.

DOS 1 GByte Limit

All current versions of DOS are limited to 1024 cylinders per drive. The standard translation scheme for SCSI host controllers, using 64 heads and 32 sectors, gives a maximum capacity of 1 GB.

To eliminate the 1-GB limit, Adaptec's extended translation feature uses 255 heads and 63 sectors, extending the disk drive capacity limit under DOS to 8 GB.



If you have already partitioned a large hard disk drive with one translation method, conversion to another method erases the data on the drive. Be sure to back up your disk drive prior to any change in the translation method.

When to Use the Extended Translation

WITH DOS 5.0 AND ABOVE

NetWare 386 (version 3.0 and above) and the version of UNIX do not share the 1024 cylinder limit of DOS and do not require extended translation to support large disk drives and should not be enabled.

DRIVES WITH MIXED PARTITIONS

Use standard translation (not extended translation) on drive formatted with two or more partitions for different operating systems. Partitions for UNIX and NetWare can be larger than 1 GB when using standard translation.



The term UNIX, as used here includes all version of AT&T/USL UNIX, SCO v3.2.4 (or later), and ISC v3.0 (or later).

USING FDISK

To install a new disk, or to re-partition an existing disk, use the FDISK DOS utility as you normally would. The cylinder size increases to 8 MB when you enable extended translation. The size of the partition you request must therefore be a multiple of 8 MB. If you request a partition size that is not a multiple of 8 MB, FDISK rounds up to the nearest whole multiple of 8 MB.