Federal Communications Commission Statement

This device complies with FCC Rules Part 155. Operation is subject to the following two conditions:

- ◆ This device may not cause harmful interference
- ◆ This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy. If this equipment is not installed and used in accordance with the manufacturer's instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ◆ Reorient or relocate the receiving antenna.
- ◆ Increase the separation between the equipment and receiver.
- ◆ Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- ◆ Consult the dealer or an experienced radio/TV technician for help.

The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for audio noise emissions from digital apparatusses set out in the Radio Interference Regulations of the Canadian Department of Communications.

Manufacturer's Disclaimer Statement

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100% POST-CONSUMER RECYCLED PAPER

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PART I English Edition

Feature Explanations

PART II Deutsche Anleitung (German Edition)

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Chapter 1

Introduction

1-1 Product Specifications

❑ **Processor**
  - **-** Supports up to 333 MHz Intel **Pentium® II** processors
  - - Slot 1 CPU socket with retention mechanism
  - - High efficiency Switching Power Module (1.8v ~ 3.5v, 0.1v increments)
  - - Supports 60/66 MHz system clock speeds
  - - Innovative *SeePU* technology (software CPU installation with no jumper settings)

  ⚠ Supports 68(turbo mode)/75/83 MHz system clock speeds for overclocking possibility

❑ **Chipset**
  - **-** Intel **82440LX** two chip PCIset

❑ **DRAM Memory**
  - - Three 168-pin DIMM sockets support up to 384MB EDO and Synchronous DRAM
  - - Provides single-bit ECC capability

❑ **Expansion Slots**
  - - One AGP (Accelerated Graphic Port) slot (Rev 1.0 compliant)
  - - Four 32-bit PCI slots (Rev 2.1 compliant)
  - - Three 16-bit ISA slots (one PCI/ISA shared slot)

❑ **Boot-block Flash ROM**
  - - Award System BIOS, supports PnP, APM, DMI & Multi-device booting features such as floppy, HDD(IDE, SCSI), CD-ROM, LS120, ZIP-ATAPI, booting features, etc.
  - - Includes Adaptec SCSISelect BIOS
  - - Built-in **Trend** *ChipAway* Virus

❑ **Two Ultra DMA-33 PCI IDE Ports**
  - - Supports up to PIO Mode 4, Multi-word Mode 2 and Ultra DMA-33 timings
  - - Bus Mastering software drivers for all well known multi-task operating systems

❒ **On-board Ultra I/O**
- WB83977TF I/O chip (built-in AMI KBC software and RTC)
- One Parallel (SPP/ECP/EPP) and two Serial (16550A compliant) ports
- One floppy disk drive connector supports up to 2.88MB, 3-Mode, and 1Mbps transfer rate
- IrDA IR function supports up to 115.2Kbps

❒ **Ultra-Wide SCSI On Board**
- **Adaptec 7880** SCSI chip
- One 50-pin **Narrow (8-bit) SCSI** port, support up to 7 SCSI devices, and data transfer rate up to **20MBps**
- One 68-pin **Wide (16-bit) SCSI** port, support up to 15 SCSI devices and data transfer rate up to **40MBps**
- Many drivers & utilities provided (such as Adaptec EZ-SCSI, 7800 Family Manager Set, etc.) for major operating systems
- One 60-pin Adaptec **RAIDport** to support ARO-1130 RAID system upgadeability

⚠ RAID Card Compatibility

This mainboard uses Adaptec's newest SCSI technology, the AIC 7880 version B SCSI chip. Unlike the former AIC 7880 version A chip, version B is both fully PCI v2.1 compliant and supports all power management features such that it is compliant with PC97/98 specifications. Adaptec has not yet released RAID cards that are compatible with the Version B chip. To take advantage of your on-board raid port you must:

1) Employ Adaptec's future ARO-1130 version CA RAID card.

2) Upgrade your SCSI BIOS by asking your mainboard provider for BIOS support.

Please note that this is not a mainboard defect. All mainboards using the AIC 7880 version B chip will have this problem. Also note that old mainboards using the AIC 7880 version A chip must use the ARO-1130 version SA RAID card.

❒ **Two Channel USB Ports**

⚠ Now under compatibility testing with different peripherals

❒ **Board Dimensions**
- ATX form factor, 305mm x 240mm, 4 Layers
- Nine mounting holes

❐ **Advanced Management Features**
   - Optional *SMART* (System Monitoring & Alert) technology with **LDCM**™ utility
   - Software Power-off Control, Power On by Modem, Power On by Alarm, Power On by Keyboard, Over-ride Power Button, Power Failure Recovery, Blinking LED in Suspend
   - Hardware reset protect and Flash BIOS protect via BIOS

   ⚠ If your mainboard has the optional LM78 chip (PC Health monitor IC) located in the corner near the ISA slots, your mainboard includes the *SMART* feature.

❐ **Green PC**
   - Meets EPA Green PC standard: power consumption under 30W in Doze, Standby, and Suspend modes

1-2 Package Contents

This product comes with the following components:

❒ One mainboard

❒ CPU Slot 1 retention mechanism and four retention mechanism pins (Figure 2-4)

❒ One 40-pin IDE connector ribbon cable (Figure 1-1)

❒ One 34-pin floppy disk drive ribbon cable (Figure 1-2a) or (Figure 1-2b)

❒ One three-position, 50-pin, **Narrow SCSI** ribbon cable (Figure 1-3)

One Optional four-position, 68-pin, **Wide SCSI** ribbon cable with brack (Figure 1-4)

❒ One User's Manual

❒ Two CD-ROM disks with Award System BIOS Flash Utility, Award DMI Utility, Intel Bus Master IDE Drivers, Exclamation Mark Remover Utility, Shepherd (System Health Monitoring Software) Utility, Trend PC-cillin Anti-virus v3.0(OEM version) Utility in Eight Different Languages, and Intel LDCM (LanDesk Client Management) Utilities

(NOTE: The LDCM utility will only be included if the LM78 chip is on-board)

❒ One 3.5 inch Adaptec EZ-SCSI driver diskette, Two 3.5 inch Adaptec 7800 Family Manager Set diskettes

Figure 1-1 IDE cable

Figure 1-3 Narrow SCSI cable

Figure 1-2a Standard Floppy cable
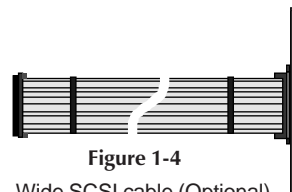
Figure 1-4
Wide SCSI cable (Optional)

Figure 1-2b Optional 5.25 in. floppy cable

1-3 Mainboard Layout
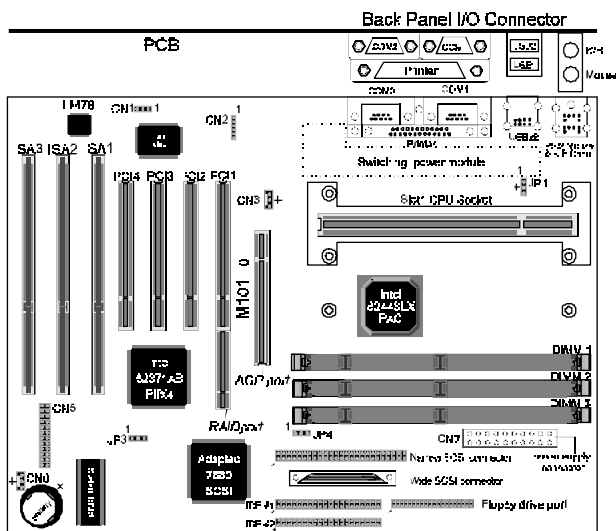
1-4 Connector and Jumper Reference Chart

Jumper & Connector No.	Function	Ref. page
CN1	Chassis intrusion monitoring connector	16
CN2	Infrared connector	15
CN3/CN6	CPU/System cooling fan connector	15
CN5	Green switch connector	14
	Green LED connector	14
	System reset switch connector	14
	Turbo LED connector	14
	Keyboard lock & power indicator LED connector	13
	Speaker connector	14
	SCSI/IDE activity LED connector	14
	Over-ride power button connector	13
CN7	ATX Power supply connector	12
JP1	Power on by keyboard	16
JP3	Clear CMOS data jumper	16
JP4	Internal/external SCSI jumper	21
Ports	Two USB ports	17
	PS/2 mouse and keyboard ports	17

Memo

Chapter 2

Hardware Setup

If your mainboard has already been installed in your computer you may still need to refer to this chapter if you plan to upgrade your system's hardware.

> ⚠ **Be sure to disconnect the power cable from the power source before performing any work on your mainboard, i. e. installing a CPU, memory module, changing a jumper setting, adding or removing expansion cards etc. Not doing so may result in electrical shock or severe damage to your mainboard and peripherals!**

2-1 Introduction to Jumpers

Jumpers are used to select between various operating modes. A jumper consists of a row of gold colored pins that protrude from the surface of the mainboard. It is important not to confuse jumpers with connectors or headers.

> ⚠ **Putting jumper caps on anything that is not a jumper may result in damaging your mainboard. Please refer to Section 1-3, Mainboard Layout, for the location of jumpers on your mainboard.**

As indicated in Figure 2-1 below, a cap is used to cover the pins of a jumper, resulting in shorting those pins that it covers. If the cap is removed from the top of the pins, the jumper is left "open." The number 1 shown both in the diagram below and in all multiple pin jumper and header diagrams in this manual indicates the pin designated with the number 1. The numbering of the remaining pins follows in sequence.

Pins   Cap   Setting

1   1
A 3-pin jumper   A cap over pin 1 and
                     pin 2 shorts these pins
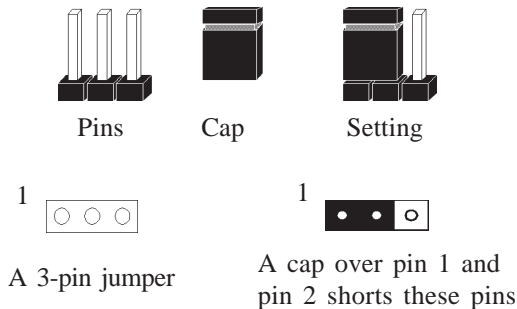
Figure 2-1

2-2 Installing an S.E.C. Processor in Slot 1

To Install the retention mechanism on Slot 1 refer to the figures and instructions below:

1. Locate the protruding, toothed edge at the end of Slot 1 (Figure 2-3). Find the complementary indentation at the bottom of the retention mechanism (Figure 2-2) and insert the retention mechanism onto Slot 1 until the plastic clips at the bottom of the retention mechanism completely protrude through the bottom of the mainboard.

Figure 2-2 Bottom view of the retention mechanism

Indentation to fit toothed edge of Slot 1

Toothed edge of Slot 1

Figure 2-3 Top view of Slot 1
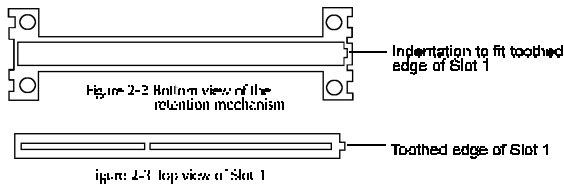
2. Insert the retention mechanism pins into the four holes at the base of the retention mechanism (Figure 2-4), pushing down until they click into place.

3. Insert the Pentium II processor into the retention mechanism. Press evenly and gently until the snaps on the upper side of the processor have been inserted into the holes at the top of the retention mechanism. Note that when removing the processor, these snaps can be clicked into a completely vertical position, leaving your hands free to stabilize the board. Pull the processor evenly and gently out of the retention mechanism. Also note that like PCI and ISA slots, Slot 1 has a divider that prevents backwards insertion of the CPU.

⚠ Installing a heat sink and cooling fan is necessary for proper heat dissipation from your CPU. Failing to install these items may result in overheating and possible burn-out of your CPU.
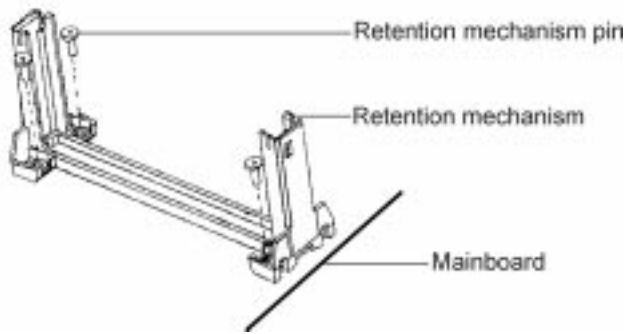
Figure 2-4 The retention mechanism for Slot1

2-3 Setting Your CPU's Parameters(*SeePU* Technology)

SeePU is a new user friendly technology that enables the user to setup a mainboard's CPU parameters through an easy to use BIOS setup procedure. It is no longer necessary to make many jumper settings as on conventional mainboards.

1. After installing all your hardware into your PC system, turn on your system's power. Enter the CMOS Setup Utility by pressing the Delete key when your BIOS identification screen appears.

2. Move the cursor to SeePU & Chipset Setup menu and press Enter. Find the CPU Setup commands at the lower right hand part of the BIOS screen (Figure 2-5) Commands for operating the cursor in BIOS are found at the bottom of the BIOS screen.

```
        ROM PCI / ISA BIOS (2A69JC39)
           SeePU & CHIPSET SETUP
           AWARD SOFTWARE, INC.

Auto Configuration        : Enabled    SDRAM CAS Latency Time     : 3
DRAM Speed Selection      : 60ns       Spectrum Spread Modulated  : Disabled
MA Wait State             : Slow       Power Failure Recovery     : Disabled
EDO RAS# To CAS# Delay    : 3          Flash BIOS Protection      : Disabled
EDO RAS# Precharge Time   : 3          Hardware Reset Protect     : Disabled
EDO DRAM Read Burst       : x333
EDO DRAM Write Burst      : x222
DRAM Data Integrity Mode  : Non-ECC         *****  CPU Setup  *****
CPU-To-PCI IDE Posting    : Enabled    CPU Type                   : Pentium-II-233
System BIOS Cacheable     : Disabled
Video BIOS Cacheable      : Disabled
Video RAM Cacheable       : Disabled
8 Bit I/O Recovery Time   : 1
16 Bit I/O Recovery Time  : 1
Memory Hole At 15M-16M    : Disabled
Passive Release           : Enabled
Delayed Transaction       : Disabled   ESC: Quit          ↑↓→←      :Select Item
AGP Aperture Size (MB)    : 64         F1  : Help          PU/PD/+/- : Modify
SDRAM RAS-to-CAS Delay    : Slow       F5  : Old Values    (Shift) F2  : Color
SDRAM RAS Precharge Time  : Slow       F7  : Load Setup Defaults
```

Figure 2-5

3. Change the CPU Type according to the speed of your Pentium II processor. See Figure 2-6 for frequency specifications.

CPU Type	CPU Speed		
	External Clock	Frequency Ratio	Internal Clock
Pentium II processor	66	3.5	233
		4	266
		4.5	300
		5	333

Figure 2-6

4. Use the User Define option to custom set your CPU's parameters. Set the frequency ratio (also known as external clock multiplier factor) and CPU bus frequency according to your processor's specifications. See Figure 2-7.

⚠ You do not need to make voltage settings because *SeePU* automatically sets your CPU voltage.

```
        ROM PCI / ISA BIOS (2A69JC39)
           SeePU & CHIPSET SETUP
           AWARD SOFTWARE, INC.

Auto Configuration        : Enabled    SDRAM CAS Latency Time      : 3
DRAM Speed Selection      : 60ns       Spectrum Spread Modulated   : Disabled
MA Wait State             : Slow       Power Failure Recovery      : Disabled
EDO RAS# To CAS# Delay    : 3          Flash BIOS Protection       : Disabled
EDO RAS# Precharge Time   : 3          Hardware Reset Protect      : Disabled
EDO DRAM Read Burst       : x333
EDO DRAM Write Burst      : x222             ***** CPU Setup *****
DRAM Data Integrity Mode  : Non-ECC    CPU Type                    : User Define
CPU-To-PCI IDE Posting    : Enabled    Frequency Ratio             : x3.5
System BIOS Cacheable     : Disabled   CPU Bus Frequency           : 66
Video BIOS Cacheable      : Disabled
Video RAM Cacheable       : Disabled
8 Bit I/O Recovery Time   : 1
16 Bit I/O Recovery Time  : 1
Memory Hole At 15M-16M    : Disabled
Passive Release           : Enabled
Delayed Transaction       : Disabled   ESC: Quit          ↑↓→←      :Select Item
AGP Aperture Size (MB)    : 64         F1  : Help          PU/PD/+/- : Modify
SDRAM RAS-to-CAS Delay    : Slow       F5  : Old Values    (Shift) F2 : Color
SDRAM RAS Precharge Time  : Slow       F7  : Load Setup Defaults
```
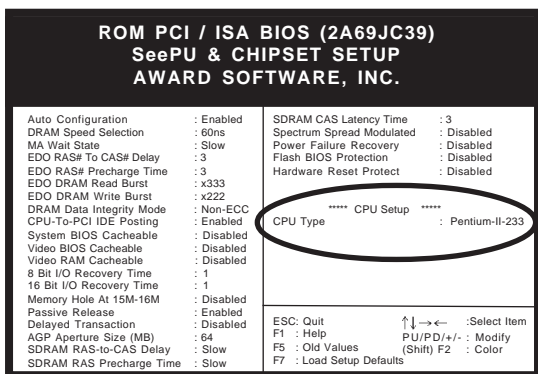
Figure 2-7

5. Press Esc to return to the CMOS Setup Utility, press F10 to Save and Exit Setup and choose 'Y' to confirm. The system will automatically reboot and during startup you will see the correct CPU type indicated on the start-up screen screen.

Overclocking

Operating a CPU at a higher frequency than it's specification allows is called overclocking. If the CPU frequency is set at a higher frequency than its specification allows, it may or may not run at that freqency, depending on the quality of your CPU and the extent to which the frequency has been overset. The mainboard manufacturer highly discourages overclocking as it may result in data loss, CPU burn-out, system failure, etc.

2-4 Connector and Jumper Settings

Connectors are used to link the system board with other parts of the system, including the power supply, the keyboard, and the various controllers on the front panel of the system case.

⚠ **The power supply connector is the last connection to be made while installing a mainboard. Before connecting the power supply, please make sure it is not connected to the power source.**

ATX Power Supply Connector (CN7)
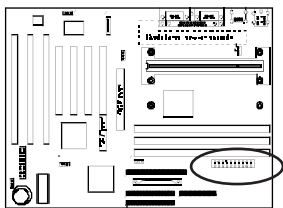
This mainboard requires a power supply of at least 200 watts. While installing the board, the power supply connector is usually the last part to be connected.
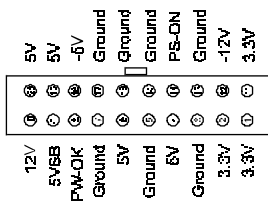
The ATX power supply provides a single 20-pin connector interface which incorporates standard +/-5V, +/-12V, optional 3.3V and soft-power signals. The Soft-power signal, a 5V trickle supply of at least 10mA, is continuously supplied when AC power is available. When the system is in the Soft-Off mode, this trickle supply maintains the system in it's minimum power state.

Software Power-Off Control

This mainboard can be powered down using theWindows 95 Software Power-Off function. To power down your computer, click the START button on the Windows 95 task bar. Select "Shut Down The Computer" and the system turns off. The message "It is now safe to turn off your computer" will not be shown when using this function.

Power On by Modem

While in Soft-off state, if an external modem ring-up signal occurs, the system wakes up and can be remotely accessed. Please see Power Management (Section 4-4) for setting information.

Front Panel Connector Set (CN5) A through G

Over-ride Power Button Operation
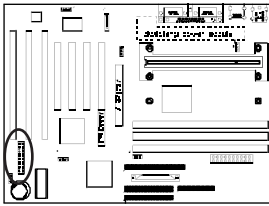
A. Over-ride Power Button Connector

The power button on the ATX chassis can be used as a normal power switch as well as a button to activate Advanced Power Management Suspend mode. This mode is used for saving electricity when the computer is not in use for long periods of time. The Soft-OFF by PWR-BTTN function in BIOS's Power Management Setup must set to "Delay 4 Sec." to activate this function. See Section 4-4 for details.
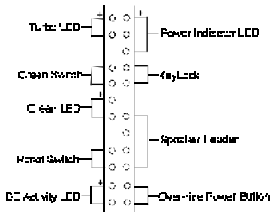
When the Soft-off by PWR-BTTN function is enabled, pushing the power button rapidly will switch the system between Full-On and Suspend mode. Pushing the button rapidly again or any occurence of external activity such as pressing a key on the keyboard will bring the system back to Full-On. Pushing the button while in Full-On for more than 4 seconds will switch the system to Soft-off and pushing the button again rapidly will turn the system back to Full-on. See Over-ride Power Button Operation diagram.
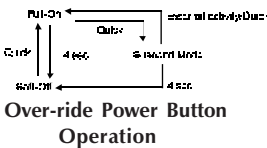
B. Keyboard Lock & Power Indicator LED Connector

Plugging this connector into the lock on the front panel of the system case allows the lock to enable or disable the keyboard. This function provides limited security against casual intruders. The power indicator LED shows the system's power status. It is important to pay attention to the correct cable and pin orientation (i.e., not to reverse the order of these two connectors.)

Pin	Definition
1	+5V DC
2	No Connect
3	Ground
4	Keylock
5	Ground

Pins 1-3: Power Indicator LED
Pins 4-5: Keyboard Lock

Blinking LED in Suspend

While in Suspend mode, the LED light on the front panel of your computer will flash. Suspend mode is entered by pushing the Green button on your ATX case or by setting Suspend in the Power Management menu discussed in Section 4-4.
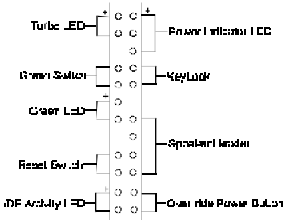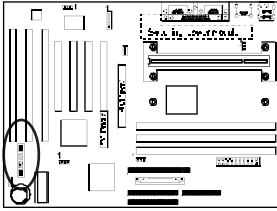
C. Green Switch/Green LED Connector

Some ATX cases provide a Green switch which is used to put the system in Suspend mode. In Suspend mode, the power supply to the system is reduced to a trickle, the CPU clock is stopped, and the CPU core is in it's minimum power state. The system is woken up whenever the keyboard or mouse is touched (an interrupt request occurs). The system resumes in different ways as defined by Power Management Setup screen in BIOS.

D. System Reset Switch Connector

This connector should be connected to the reset switch on the front panel of the system case. The reset switch allows you to restart the system without turning the power off.

Pin	Definition
1	System
2	GND

E. Speaker Connector

Pin	Definition
1	Speaker Signal
2	NC
3	NC
4	+5V DC

F. SCSI/IDE Activity LED Connector

The SCSI/IDE activity LED lights up whenever the system reads/writes to the SCSI/IDE devices.

G. Turbo LED Connector

This mainboard's Turbo button supports the Turbo speed mode and not the de-turbo or low speed mode. The turbo LED will light when the LED is connected and turbo button pressed. Low speed can be enabled under dos as described below.

Change CPU Speed with the Keyboard

Use the following commands to change the CPU speed between turbo/de-turbo in DOS.

Set to low speed   [CTRL] [ALT] [-]
Set to high speed (turbo)   [CTRL] [ALT] [+]

Infrared Connector (CN2)
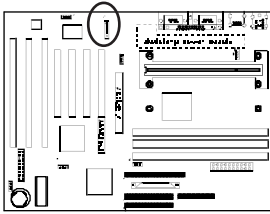
If you enable COM2 Mode in BIOS's Integrated Peripherals menu the COM2 port will support IR functions.
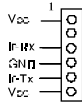
CPU/System Cooling Fan Connector (CN3/CN6)
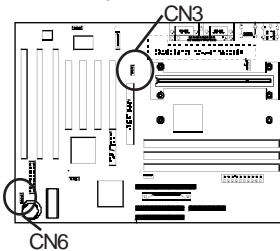
These added connectors allow the fans to draw their power from the mainboard instead of the disk drive connector. This function is available because some systems have all the disk drive power connectors in use.
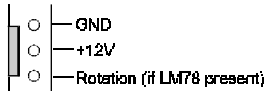
Management Extension Hardware for *SMART* Technology

The optional management extension hardware provides low-cost instrumentation capabilities. The hardware implementation is a single-chip ASIC (LM78) located in the corner of your mainboard near the ISA slots. Its features include an integrated temperature sensor, fan speed sensors, power supply voltage monitoring to detect levels above or below acceptable values, and a header for an external chassis security feature. If your mainboard does not have the LM78 chip, you can upgrade to LM78 status by obtaining a FANII-*SMART* technology upgrade kit. Contact your mainboard dealer for details about this kit.

Clear CMOS Data Jumper (JP3)

1 Default   1 Clear CMOS data
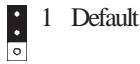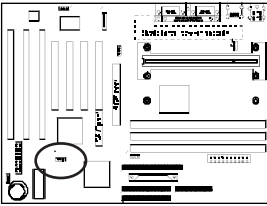
To clear the contents of the CMOS, please follow the steps below.
1. Disconnect the system power supply from the power source.
2. Set the jumper cap at location 2~3 for 5 seconds, then set back to the default position.
3. Connect the system's power and then start the system.
4. Enter BIOS's CMOS Setup Utility and choose Load Setup Defaults. Type Y and press enter.
5. Set the system configuration in the Standard CMOS Setup menu.

Chassis Intrusion Monitoring Connector (CN1)
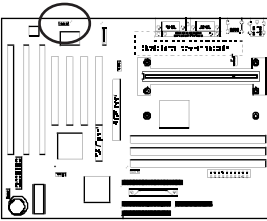
This board supports the chassis instruction monitoring feature of the management extension hardware by means of a mechanical or photo sensor switch attached to the motherboard through this 1x3-pin chassis security header. The mechanical switch is set to open for normal computer operation.

GND VCC
Intrusion Signal

Power On by Keyboard (JP1)

1 Disabled (default)   1 Enabled
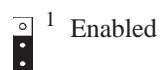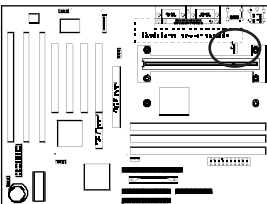
This board supports a power on function defined by the Power On by Keyboard option in BIOS's Power Management screen. Some older keyboards may require larger current than supplied by the Suspend 5V of modern power supplies. When using these older keyboards, disable this function.

USB(Universal Serial Bus) Ports
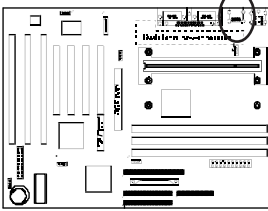
Enable the USB Keyboard Support function in BIOS's Integrated Peripherals Menu (Section 4-7) if you want to use a USB keyboard. USB is an open industry standard, providing a simple and inexpensive way to connect up to 125 devices to a single computer port. Keyboards, mice, tablets, digitizers, scanners, bar-code readers, modems, printers and many more can all be used at the same time.

USB is a dynamically reconfigurable serial bus with an elementary data rate of 12Mbps, based on off the shelf, low cost micro-controller technology. It's modular layered software protocol supports sophisticated devices and application programs.

This board contains a USB Host controller and includes a root hub with two USB ports (meets USB Rev 1.0 spec.), which permits the connection of two USB peripherals or hub devices.

Compatibility with USB peripherals is still being tested.

PS/2 Mouse and Keyboard Ports
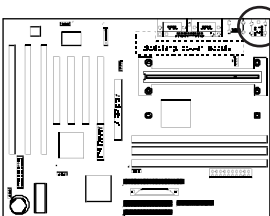
If a PS/2 mouse is used, BIOS will automatically detect and assign IRQ12 to the mouse.

Pin	Definition
1	Data
2	No Connect
3	Ground
4	+5V (fused)
5	Clock
6	No Connect

Poly-fuse Over Current Protection

The poly-fuse protects the system from dangerous voltages the system might be exposed to via the keyboard or USB connectors. In case of such exposure, the poly-fuse will immediately be disconnected from the circuit, just like a normal fuse. After being disconnected for a certain period of time, the poly-fuse will return to its normal state, after which the keyboard or USB can function properly. Unlike conventional fuses, the poly-fuse does not have to be replaced, relieving the user wasted time and inconvenience.

2-5 Main Memory Configuration

The DRAM memory system consists two banks--bank0 and bank1 and the memory size ranges from 8~512 MBytes. You must install 2 pcs DRAM modules of the same size, same speed, same sidedness (single or double sided) for each bank. If you only use one bank it does not matter which one you use and if you use two banks, it does not matter which bank you install first.

DIMM 1	Bank 2
DIMM 2	Bank 1
DIMM 3	Bank 0

RAM Specifications

DRAM type:	3.3V, 64/72-bit EDO(Extended Data Output) Synchronous DRAM
Module size:	Single/double-sided 8/16/32/64 MBytes
DRAM speed:	60-ns or faster EDO DRAM 10/12ns Synchronous DRAM
Parity:	Either parity or non-parity

⚠ The compatibility of 64/128MB DIMM is still under testing and cannot be 100% guaranteed.

Single-bit ECC DRAM

This mainboard can be configured to support ECC (Error Check and Correct) function when utilizing parity DIMM modules. To utilize the chipset's ECC features, you must use a 72-bit DIMM module.These modules are automatically detected during bootup. However, the user must configure the DRAM Data Integrity Mode to "ECC" in BIOS's Chipset Features Setup menu to enable the ECC function. ECC detects double bit errors and detects and corrects single bit memory errors on the fly without user intervention. Errors may be generated by a defective memory module, conflicting memory speeds between different banks, DMA, etc.

Chapter 3

Ultra-Wide SCSI Configuration

The on-board SCSI interface has the same functions as the popular **AHA-2940 UW** SCSI from Adaptec that supports up to **15** UltraSCSI devices and provides up to a **40** MBps SCSI data transfer rate. Wide and Ultra-Wide SCSIs support double the number of devices as the industry-standard SCSI and the Ultra-Wide SCSI bandwidth offers four times the transfer rate of standard SCSI adapters. Ultra-Wide SCSI provides a powerful multitasking interface between your computer's PCI bus and SCSI devices (disk drives, CD-ROM drives, scanners, tape backups, removable media drives, etc.).

Adaptec **EZ-SCSI** software and menu-driven **SCSIselect** optimization utility make installation and management of the SCSI I/O subsystem virtually automatic. Advanced Plug-and-Play features automatically assign IDs and control SCSI bus termination. Flash ROM enables users to easily upgrade the SCSI BIOS and system BIOS in one step and to readily take advantage of future product enhancements.

RAIDport   SCSI Host Controller   68-pin   50-pin
                   (Adaptec 7880)   Wide SCSI   Narrow SCSI
                                             Connector   Connector
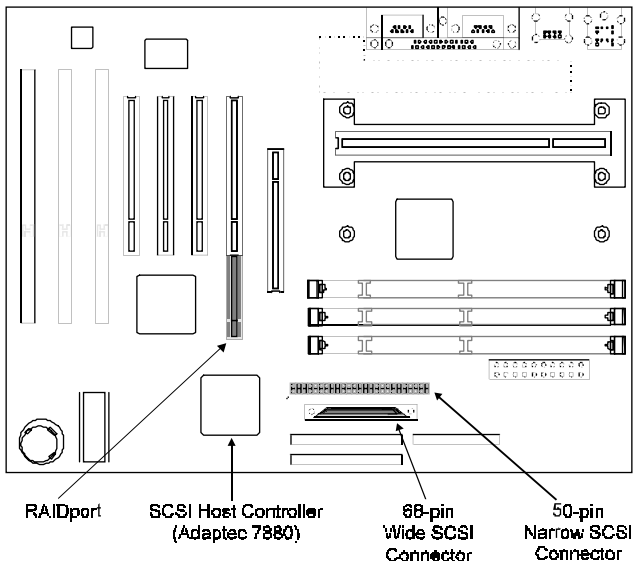
3-1 SCSI Configuration Guidelines

Before configuring your SCSI devices, you should understand the basic concepts described in this section. The information will help you set up your host controller and devices so that they can function properly.

SCSI ID Number

Each device attached to the host controller, as well as the host controller itself must have a unique SCSI ID number (0 to 7 for the Narrow SCSI and 0 to 15 for the Wide SCSIs).

✎ The SCSI ID serves two purposes:

    1. To uniquely define each SCSI device on the SCSI bus

    2. To determine the device's priority on the SCSI bus

For the devices connected to the Wide SCSI bus, ID 7 has the highest priority. The priority of the remaining IDs, in descending order, is 6 to 0 and then 15 to 8.

We recommend that you **leave the host controller set to its default setting of SCSI ID 7**. If you need to change the host controller SCSI ID, see Configuring the Host Controller (Section 3-3). To change the SCSI ID on your hard disk and other SCSI devices, refer to the devices' documentation.

The host controller supports the SCSI Configured Automatically (**SCAM**) protocol, which assigns SCSI IDs dynamically and resolves SCSI ID conflicts automatically at bootup. If your system includes SCSI disk drives or other devices that support SCAM, you do not need to manually assign SCSI IDs to these devices. To enable SCAM support, see Configuring the Host controller (Section 3-3).

✎ Most SCSI devices currently in use do not support SCAM. The SCSI IDs on these devices must be set manually. To change the SCSI IDs on these devices, refer to the devices' documentation.

SCSI Terminators

To ensure reliable communication, the SCSI bus must be properly terminated. Termination is controlled by a set of electrical resistors, called terminators. **Terminators must be placed (or enabled) at the two extreme ends of the SCSI bus**. All devices that lie between the ends must have their terminators removed (or disabled).

Terminating the SCSI host Controller

The following table lists the termination settings of SCSI host controller.

SCSI devices		SCSI host controller	
Wide SCSI devices	Narrow SCSI devices	Hi-Byte termination	Lo-Byte termination
--	Int.	ON	ON
Int.	--	ON	ON
Ext.	--	ON	ON
Int. + Ext.	--	OFF	OFF
Int.	Int.	ON	OFF
Ext.	Int.	ON	OFF

✎ We recommend that you leave JP4 at pins 1-2 (Hi-Byte termination is always ON) to suit most SCSI configurations. While using Internal and External Wide SCSI devices at the same time, change JP4 to pins 2-3. BIOS will set the High-Byte/ Low-Byte termination to the same configuration--ON or OFF.

Terminating SCSI Devices

Read the device's documentation to dertermine how to enable or disable termination on your particular SCSI device(s).

Termination Examples:

A. Internal Narrow SCSI Devices Only
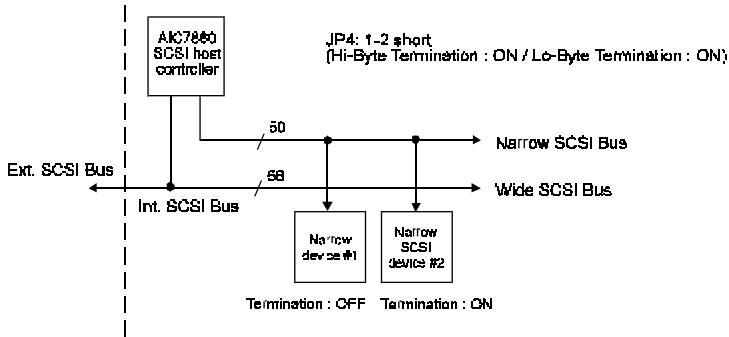
B. Wide SCSI Devices Only

B.1 Internal Devices Only
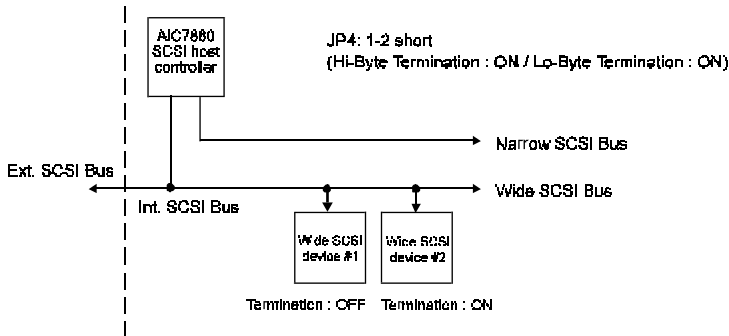
B.2 External Devices Only
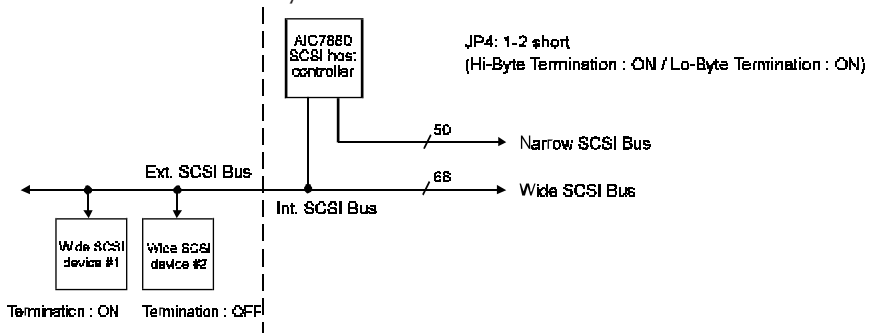
B.3 Internal & External SCSI devices
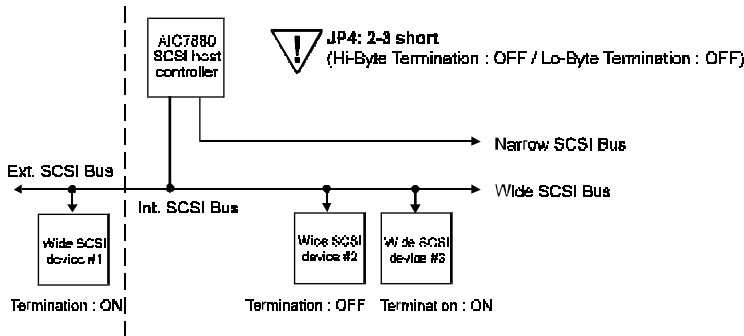
C. Combination of Narrow & Wide SCSI Devices

C.1 Internal SCSI Devices Only
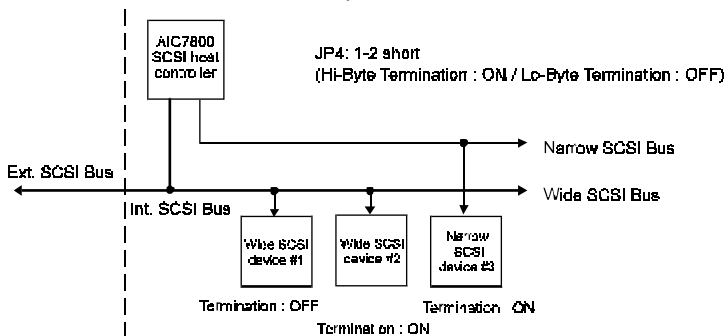
C.2 Internal & External SCSI devices
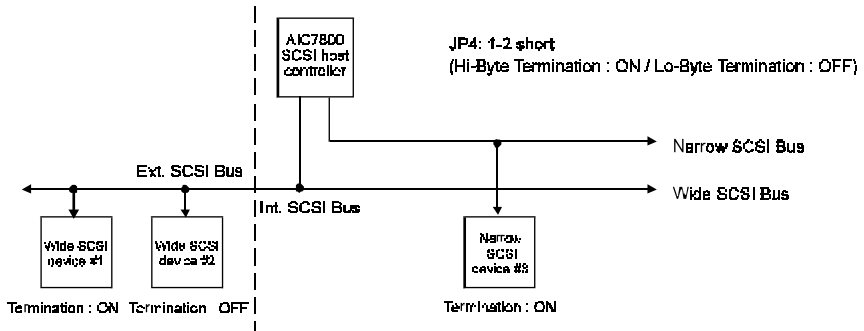
3-2 Installing SCSI Devices

You can connect up to seven internal and external Narrow SCSI devices to the Narrow SCSI port, and up to 15 devices (7 Narrow internal and 8 Wide internal or external SCSI devices, or 15 Wide internal and external SCSI devices) to the Wide SCSI port.

The enclosed Narrow SCSI cable allows you to connect up to 2 internal SCSI devices. If you are connecting more than 2 internal SCSI devices, you must obtain an internal SCSI cable with enough connectors to accommodate all of your devices. Contact your dealer for special cable service.

Length Limitation of SCSI Cables

When Fast SCSI devices are connected to the bus, the total length of all cables must not exceed 3 meters (9.8 ft.) to ensure reliable operation. If no Fast SCSI devices are connected, the total length of all cables must not exceed 6 meters (19.7 ft.).

Connecting Internal SCSI Devices

If you are connecting internal SCSI devices, make sure you have an internal SCSI cable with enough connectors to accommodate all of your devices.

1. Prepare each SCSI device for installation; configure the device SCSI ID and terminators (terminate the last internal device attached to the cable).

2. Install the SCSI device in your computer.

3. Plug the connector at one end of the internal SCSI cable into the host adapter's internal SCSI connector.

    Make sure the colored stripe on the side of the cable is aligned with pin-1 of the host adapter's connector. Pin-1 of the connector is usually designated by a small triangle (▲), or a "1" at a corner of the connector.

4. Plug the remaining connectors on the cable into the connectors on the of the devices.

    Make sure the colored stripe on the cable is aligned with pin-1 of the device's connector.

5. Connect a DC power cable (from your computer's power supply) to the power connector on the SCSI device.

Connecting External SCSI Devices

If you are connecting external SCSI devices to your host adapter, you must obtain an external SCSI cable for each external device you install.

1. Prepare each SCSI device for installation; configure the SCSI ID and attach a terminating plug into the last external device.

2. Plug the connector at one end of the external SCSI cable into the host adapter's external SCSI connector.

3. Plug the connector at the other end of the cable to either one of the SCSI connectors on the external SCSI device.

4. To connect other external SCSI devices, daisy-chain each device to the previous device until all external SCSI devices have been connected.
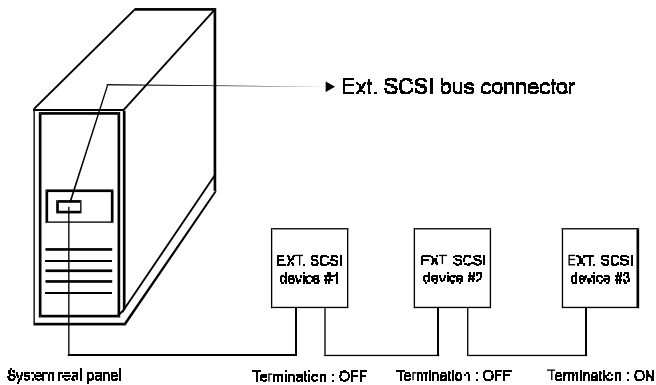
Daisy-chaining the Ext. SCSI devices

3-3 Configuring the Host Controller

The on-board SCSI includes a menu-driven **SCSISelect** configuration utility which allows you to change host controller settings without opening the computer or handling the board. SCSISelect also contains SCSI disk utilities that let you do low-level format or verify the disk media of your SCSI hard disk drives. The following table shows the default settings of the SCSI configuration utility.

Host Controller Settings	Default
Host Adapter SCSI ID	7
SCSI Parity Checking	Enabled
Host Adapter SCSI Termination	ON
Boot Device Settings	**Default**
Boot Target ID	0
Boot LUN Number [1]	0
SCSI Device Settings	**Default**
Initiate Sync Negotiation	Yes
Maximum Sync Transfer	20 MBps
Enable Disconnection	Yes
Initiate Wide Negotiation	Yes (Enabled)
Send Start Unit Command	No (Disabled)
Advanced Host Adapter Settings	**Default**
Host Adapter BIOS	Enabled
Support Removable Disks Under BIOS as Fixed Disks	Boot only
Extened BIOS Translation for DOS Drives > 1 GByte	Enabled
Display <Ctrl-A> Message During BIOS Initialization	Enabled
Multiple LUN Support [2]	Disabled
BIOS Support for Bootable CD-ROM	Enabled
BIOS Support for Int 13 Extensions	Enabled
Support for Ultra SCSI Speed	Disabled

1. Setting is valid only if Multiple LUN support is enabled.

2. Setting is valid only if host adapter BIOS is enabled.

Starting the SCSISelect Utility

You can start the SCSISelect utility by pressing **Ctrl-A** when the following prompt appears during bootup.

Press <Ctrl><A> for SCSISelect (TM) Utility !

The first menu that appears displays the options Configure/View Host Adapter Settings and SCSI Disk Utilities.

Adaptec AIC7880 SCSISelect(TM) Utility v1.32

AIC-7880 at Bus: 00h Device: 0Ch

Would you like to configure the host adapter or run the SCSI disk utilities? Select the option and press <Enter>. Press <F5> to switch between color and monochrome modes.

Options

Configure/View Host Adapter Settings

SCSI Disk Utilites

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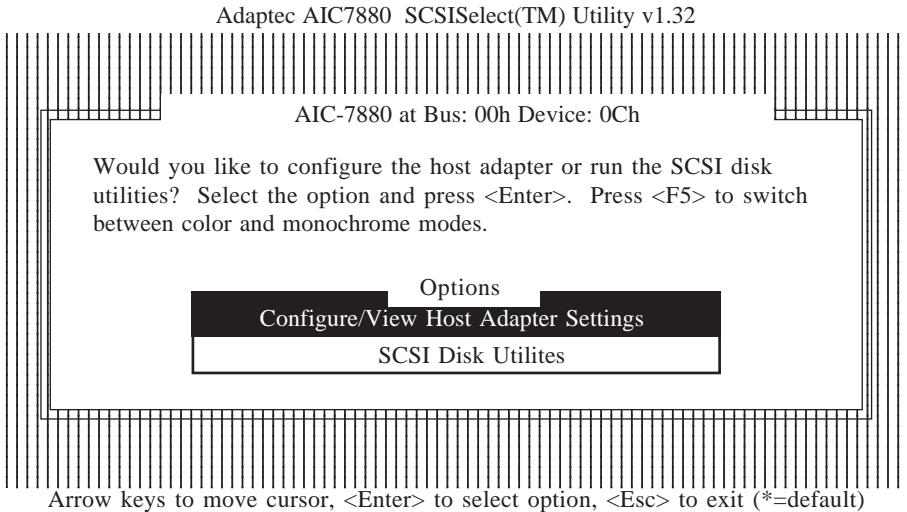
Using SCSISelect Menus

SCSISelect uses menus to list options you can select. To select an option, use the ↑ and ↓ keys to move the cursor to the desired option and then press **Enter**.

In some cases, selecting an option displays another menu. You can return to the previous menu at any time by pressing **Esc**. To restore the original SCSISelect default values, press F6. To toggle the display between color and monochrome modes, press F5 (this feature may not work on some monitors).

Exiting SCSISelect

To exit SCSISelect, press Esc until a message prompts you to exit. At the prompt, select **YES** to exit, then press any key to reboot the computer. Any changes you made in SCSISelect take effect after the computer boots.

Basic Host Adapter Setting

❑ Host adapter SCSI ID--The default setting is SCSI ID **7**, which gives the host adapter the highest priority in the SCSI bus (see SCSI ID Number in Section 3-1).

❑ SCSI Parity Checking--This option determines whether the host adapter verifies the accuracy of data transfer on the SCSI bus. The default setting is **Enabled**. You should disable SCSI Parity Checking if any SCSI device does not support SCSI parity. If you are not sure whether a device supports SCSI parity, consult the documentation of the device.

❑ Host Adapter SCSI Termination --The default setting is Enabled (Low ON/High ON) . To determine the appropriate termination setting for your host controller, see SCSI Terminators in Section 3-1.

Adaptec AIC7880 SCSISelect(TM) Utility v1.32

```
┌──────────────────────────────────────────────────────┐
│            AIC-7880 at Bus: 00h Device: 0Ch            │
│  ┌─ Configuration ──────────────────────────────────┐ │
│  │ SCSI Bus Interface Definitions                    │ │
│  │     Host Adapter SCSI ID................................ 7          │ │
│  │     SCSI Parity Checking................................ Enabled    │ │
│  │     Host Adapter SCSI Termination............... Enabled    │ │
│  │                                                   │ │
│  │ Additional Options                                │ │
│  │     Boot Device Options............................... Press <Enter> │ │
│  │     SCSI Device Configuration....................... Press <Enter> │ │
│  │     Advanced Configuration Options.............. Press <Enter> │ │
│  │          <F6> - Reset to Host Adapter Defaults    │ │
│  └───────────────────────────────────────────────────┘ │
│  ┌─ BIOS Information ───────────────────────────────┐ │
│  │ Interrupt (IRQ) Channel................................... 10       │ │
│  │ I/O Port Address............................................ 6400h    │ │
│  └───────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────┘
```

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

Boot Device Settings

```
                  Adaptec AIC7880 SCSISelect(TM) Utility v1.32
 ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
                        AIC-7880 at Bus: 00h Device: 0Ch
       ┌─ Configuration ─
       SCSI Bus Interface Definitions
            Host Adapter SCSI ID................................. 7
            SCSI Parity Checking................................. Enabled
                         Boot Device Configuration
    Select SCSI peripheral from which to boot.
    To view peripheral by ID# select "SCSI Disk Utilities" form previous menu.
    Boot SCSI ID.....................................................   0

    ── Options Listed Below Have NO EFFECT if MULTI LUN Support is Disabled ──
    Boot LUN Number.................................................. 0


       ┌─ BIOS Information ─
       Interrupt (IRQ) Channel....................................... 10
       I/O Port Address.............................................. 6400h

 ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
```

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

❏   Boot Target ID--This option specifies the SCSI ID of the device you wish to
    boot from. The default setting is SCSI ID 0. The SCSI ID selected here must
    correspond to the ID configured on the boot device.

❏   Boot LUN Number--If your boot device has multiple LUNs (Logical Unit
    Numbers) and Multiple LUN Support is enabled, you can specify which LUN
    to boot from on your boot device. The default setting is LUN 0.

SCSI Devices Settings

Adaptec AIC7880 SCSISelect(TM) Utility v1.32

```
┌───────────────────── 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...  40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 │
│  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  │
│  BIOS Multiple LUN Support      No   No   No   No   No   No   No   No  │
│  Include in BIOS Scan....       Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes │
│                                                                      │
│  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...  40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 │
│  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  │
│  BIOS Multiple LUN Support      No   No   No   No   No   No   No   No  │
│  Include in BIOS Scan....       Yes  Yes  Yes  Yes  Yes  Yes  Yes  Yes │
│                                                                      │
└──────────────────────────────────────────────────────────────────────┘
```

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

❑ Initiate Sync Negotiation--This option determines whether synchronous data transfer negotiation between the device and host adapter is initiated by the host adapter.

   ✍ Normally, you should leave the Initiate Sync Negotiation setting enabled because most SCSI devices support synchronous negotiation and because it allows for faster data transfer.

      ⚠ Some older SCSI-1 devices do not support Sync Negotiation. This may cause your computer to operate erratically or hang if Initiate Sync Negotiation is set to yes. Set Initiate Sync Negotiation to No for these devices.

❑ Maximum Sync Transfer Rate--This option sets the Maximum synchronous data transfer rate that the host adapter supports.

⚠ Some older SCSI-1 devices do not support Ultra SCSI data transfer rates. This may cause your computer to operate erratically or hang if the transfer rate is set too high. Select a maximum rate of 5.0 for these devices.

❑ Enable Disconnection--This option determines whether the host adapter allows the SCSI device to disconnect from the SCSI bus. Enabling disconnection allows the host adapter to perform other operations on the SCSI bus while the SCSI device is temporarily disconnected. The default setting is *Yes*.

You should leave Enable Disconnection set to yes if two or more SCSI devices are connected to the host adapter. This optimizes SCSI bus performance. If only one SCSI device is connected to the host adapter, set Enable Disconnection to No to achieve slightly better performance.

❑ Initiate Wide Negotiation--This option determines whether the host adapter attempts 16-bit data transfer instead of 8-bit data transfer. The default setting is *Yes*.

When set to No, the BIOS uses 8-bit data transfer unless the SCSI device itself requests Wide negotiation. The 16-bit data transfer doubles the transfer rate comparing to the 8-bit data transfer.

Some 8-bit SCSI devices may have trouble in handling Wide negotiation. For these devices, set Initiate Wide Negotiation to No.

Advanced Host Adapter Settings

Adaptec AIC7880 SCSISelect(TM) Utility v1.32

```
AIC-7880 at Bus: 00h Device: 0Ch
    Configuration
    SCSI Bus Interface Definitions
                    Adavanced Configuration Options
Reset SCSI Bus at IC Initialization..................................................  Enabled
Extended BIOS Translation for DOS Drives > 1 GByte................  Enabled

          Options Listed Below Have No EFFECT if the BIOS is Disabled
Host Adapter BIOS (Configuration Utility Reserves BIOS Space)....  Enabled
Support Removable Disks Under BIOS as Fixed Disks....................  Boot Only
Display <Ctrl-A> Message During BIOS Initialization.....................  Enabled
BIOS Support for Bootable CD-ROM.............................................  Enabled
BIOS Support for Int13 Extensions................................................  Enabled

    BIOS Information
    Interrupt (IRQ) Channel......................................................  10
    I/O Port Address...............................................................  6400h
```

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

❏ Host Adapter BIOS--If you boot from a SCSI disk drive connected to the host controller, the BIOS must be enabled. You should disable the host adapter BIOS if the peripherals on the SCSI bus (for example, CD-ROM drives) are all controlled by device drivers and do not need the BIOS.

❏ Support Removable Disks Under BIOS as Fixed Disk---This option controls which removable-media drives are supported by the host adapter BIOS. The default setting is *Boot Only*. The following choices are available:

Boot Only--Only the removable-media drive designated as the boot device is 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.

❏ Extended BIOS Translation for DOS Drives > 1 GByte--This option determines whether extended translation is available for SCSI hard disks with capacity greater than 1 GByte. This scheme supports disk drives as large as 8 GBytes under MS-DOS with a maximum partition size of 2 GBytes.

✎ Extended BIOS Translation is used only with MS-DOS 5.0 or above. You do not need to enable this option if you are using another operating system such as NetWare, OS/2, Windows NT, or UNIX.

✎ When you partition a disk larger than 1 GByte, use the MS-DOS *fdisk* utility as you normally would. Because the cylinder size increases to 8 MBytes under extended translation, the partition size you choose must be a multiple of 8 MBytes. If you request a size that is not a multiple of 8 MBytes, *fdisk* rounds up to the nearest whole multiple of 8 MBytes.

❏ Display <Ctrl-A> Message During BIOS Initialization--This option determines whether the **Press <Ctrl><A> for SCSISelect (TM) Utility !** message appears on your screen during system bootup.

❏ Multiple LUN Support--This option determines whether booting from a SCSI device that has multiple LUNs is supported.

❏ BIOS Support for Bootable CD-ROM--This option determines whether the host adapter BIOS provides support for booting from a CD-ROM drive. The default setting is *Enabled*.

Using the SCSI Disk Utilities

Adaptec AIC7880 Select(TM) Utility v1.32

AIC-7880 at Bus: 00h Device: 0Ch

Would you like to configure the host adapter, or run the SCSI disk utilities? Select the option and press <Enter>. Press <F5> to switch between color and monochrome modes.

Options
Configure/View Host Adapter Settings
SCSI Disk Utilites

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

```
        Adaptec  ┌─┐        AIC-7880 at Bus: 00h Device: 0Ch        ┌─┐ v1.32

                    ┌──── Select SCSI Disk and press <Enter> ────┐

                     SCSI ID #0   :   MAXTOR  7345-SCSI
                     SCSI ID #1   :   No device
                     SCSI ID #2   :   No device
                     SCSI ID #3   :   No device
                     SCSI ID #4   :   No device
                     SCSI ID #5   :   No device
                     SCSI I
                     SCSI I          Format Disk
                     SCSI I      Verify Disk Media
                     SCSI I
                     SCSI ID #10  :   No device
                     SCSI ID #11  :   No device
                     SCSI ID #12  :   No device
                     SCSI ID #13  :   No device
                     SCSI ID #14  :   No device
                     SCSI ID #15  :   No device
```

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

❑   BIOS Support for Int 13 Extensions--This option determines whether the host adapter BIOS supports disks with more than 1024 cylinders. The default setting is ***Enabled***.

To access the SCSI disk utilities, select the **SCSI Disk Utilities** option from the menu that appears after starting SCSISelect. Once the option is selected, SCSISelect immediately scans the SCSI bus and display a list of all SCSI IDs and the devices assigned to each ID.

When you select a specific ID and device, a small menu appears, displaying the options Format Disk and Verify Disk Media.

❑   Format Disk--This utility allows you to perform a low-level format on a hard disk drive. Most SCSI disk devices are preformatted at the factory and do not need to be formatted again. The Adapter Format Disk utility is compatible with the vast majority of SCSI disk drives.

❑   Verify Disk Media--This utility allows you to scan the media of a hard disk driver for defects. If the utility finds bad blocks on the media, it prompts you to reassign them; if you select yes, those blocks are no longer used. You can press Esc at any time to abort the utility.

Chapter 4

Award BIOS Setup Program

Award's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This information is stored in CMOS RAM so that it can retain the setup information, even when the power is turned off.

When you turn on or reboot the system, press the Delete key to enter the Award BIOS setup program. The primary screen as shown in Figure 4-1 is a list of the menus and functions available in the setup program. Select the desired item and press enter to make changes. Operating commands are located at the bottom of this and all other BIOS screens. When a field is highlighted, on-line help information is displayed on the left bottom edge of the screen.

```
ROM PCI / ISA BIOS (2A69JC39)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP              INTEGRATED PERIPHERALS

BIOS FEATURES SETUP              SUPERVISOR PASSWORD

SeePU & CHIPSET SETUP            USER PASSWORD

POWER MANAGEMENT SETUP           IDE HDD AUTO DETECTION

PNP/PCI CONFIGURATION            SAVE & EXIT SETUP

LOAD SETUP DEFAULTS              EXIT WITHOUT SAVING

ESC        : Quit                ↑↓→←        : Select Item
F10        : Save & Exit Setup   (Shift) F2  : Change Color

              Time, Date, Hard Disk Type...
```
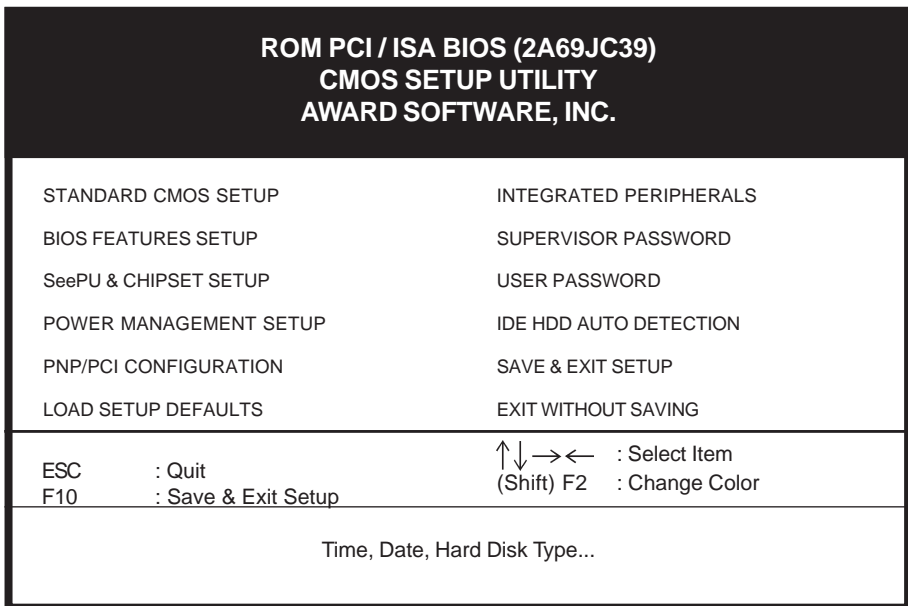
Figure 4-1 Setup Program Initial Screen

4-1 Standard CMOS Setup

The Standard CMOS Setup allows users to configure system components such as hard disk drive, floppy disk drive and video display as well as date, time and boot-up error signaling. This configuration menu should be changed when installing a mainboard for the first time, changing hardware in your system such as the HDD, FDD, video display, or when the CMOS data has been lost or contaminated. Choose the Standard CMOS Setup option from the CMOS Setup Utility menu (Figure 4-1) to display the following screen. When a field is highlighted, on-line help information is displayed on the left bottom edge of the screen.

```
                   ROM PCI / ISA BIOS (2A69JC39)
                        STANDARD CMOS SETUP
                       AWARD SOFTWARE, INC.


  Date (mm : dd : yy)  : Mon, July 21, 1997
  Time (hh : mm : ss) : 9: 14: 43

  HARD DISKS          TYPE  SIZE   CYLS    HEAD   PRECOMP   LANDZ   SECTOR    MODE

  Primary Master   :  Auto   0      0       0        0        0       0       Auto
  Primary Slave    :  Auto   0      0       0        0        0       0       Auto
  Secondary Master :  Auto   0      0       0        0        0       0       Auto
  Secondary Slave  :  Auto   0      0       0        0        0       0       Auto

  Drive A        : 1.44M, 3.5 in.
  Drive B        : None                        Base Memory :    640K
                                           Extended Memory :  15360K
  Video          : EGA/VGA                      Other Memory :    384K
  Halt On        : All Errors
                                              Total Memory :  16384K

  ESC        : Quit        ↑↓ → ←    : Select Item      PU/PD/+/-   : Modify
  F1         : Help        (Shift) F2   : Change Color
```

Figure 4-2 Standard CMOS Setup Screen

Date/Time
Set the date and time. Do not skip this function as all of your timed events such as power management, saving files, etc. are based on this timer.

Hard Disk Setup (Primary/Secondary; Master/Slave)
This category identifies up to four IDE hard disk drives that have been installed in the computer. This section does not show information on other IDE devices such as CD-ROM drives or other hard drive types such as SCSI drives.

Type (Auto/User/None): Use the fields under the Type column to determine the method you will use to configure the IDE devices. If you choose Auto, BIOS will automatically detect and make optimal settings for most IDE hard drives.

⚠ The mainboard manufacturer recommends that you choose Auto for all drives.

Choose User to define your own drive type manually. You must enter values indicated in the table below into each drive parameter field. This information should be included in the documentation from your hard disk vendor or system manufacturer:

TYPE	Setting method
CYLS	Number of cylinders
HEAD	Number of heads
PRECOMP	Write precompensation cylinder
LANDZ	Landing zone
SECTOR	Number of sectors
MODE	Mode type

Table 4-1 Hard Disk Drive Parameters

Cyls/Head/Sector: The number of Cylinders, Heads, and Sectors can usually be found written on the top of the hard disk. If you have a relatively new hard drive, entering this information alone is usually sufficient for normal hard disk operation. The hard disk will not work properly if you enter improper information for these categories.

Precomp: Older hard drives (i.e., MFM or RLL drives) have the same number of sectors per track at the innermost tracks as at the outermost tracks. Thus, the data density at the innermost tracks is higher and the bits are lying closer together. Even though the physical size of a sector gets progressively smaller as the track diameter diminishes, each sector must still hold 512 bytes. Write precompensation circuitry compensates for the difference in sector size by boosting the write current for inner track sectors.

Landz: This defines the address of the landing zone and is only used for older hard drives which do not have an auto-parking feature.

Mode: If the Type value is not None for any device, you must set the Mode value for that device. There are four different Mode values: Auto, Normal, Large, and LBA.

Auto - BIOS detects and enters the IDE drive type during bootup.

Normal - for IDE drives that meet the old IDE specification which support a maximum capacity of 528MB (1024 cylinders, 16 heads, and 63 sectors).

Large - for IDE drives that do not support LBA and have more than 1024 cylinders. Try this setting if your hard disk does not operate properly with the LBA setting. Large mode is not supported by all operating systems, i.e., only certain versions of DOS support large mode.

LBA - (Large/Logical Block Addressing) With LBA, the IDE controller transforms the data address described by sector, head, and cylinder number into a physical block address, significantly improving data transfer rates. This mode is for drives with greater than 1024 cylinders and between 528MB and 8.4GB in size. This protocol is the current common standard.

Choose None for Type if there are no IDE HDD devices in your system.

You can use the IDE HDD Auto Detection function to auto detect your hard drive parameters. Using this function will automatically insert the parameters discussed under Hard Disk Setup and will indicate User for the Field value. Please see Section 4-9 for more information.

Floppy Disk Drives
Choose the memory capacity and disk size that corresponds with that of your floppy disk drive(s).

Video
Select the type of video adapter present in your system. You can ignore this setting if you are using a VGA monitor since VGA BIOS automatically configures this setting.

Halt
When the system is powered on, BIOS performs a series of diagnostic tests called POST (Power On Self Test). This function stops the computer if BIOS detects a hardware error. You can tell BIOS to halt on all errors, no errors, or not to halt on specific errors.

4-2 BIOS Features Setup

By choosing the BIOS Features Setup option from the CMOS Setup Utility menu (Figure 4-1), the screen below is displayed. This sample screen contains the manufacturer's default values for the mainboard**.**

```
        ROM PCI / ISA BIOS (2A69JC39)
             BIOS FEATURES SETUP
            AWARD SOFTWARE, INC.

Trend ChipAway Virus          : Disabled      Video   BIOS   Shadow  : Enabled
Boot Sector Instrusion Alert  : Disabled      C8000 -  CBFFF Shadow  : Disabled
CPU Internal Cache            : Enabled       CC000-  CFFFF Shadow   : Disabled
External Cache                : Enabled       D0000 -  D3FFF Shadow  : Disabled
CPU L2 Cache ECC Checking     : Enabled       D4000 -  D7FFF Shadow  : Disabled
Quick Power On Self Test      : Enabled       D8000 -  DBFFF Shadow  : Disabled
Boot Sequence                 : A,C,SCSI      DC000-  DFFFF Shadow   : Disabled
Swap Floppy Drive             : Disabled
Boot Up Floppy Seek           : Enabled
Boot Up NumLock Status        : On
Boot Up System Speed          : High
Typematic Rate Setting        : Disabled
Typematic Rate (Chars/Sec)    : 6
Typematic Delay (Msec)        : 250
Security Option               : Setup         ESC : Quit              ↑↓→←        :Select Item
PCI/VGA Palette Snoop         : Disabled      F1   : Help             PU/PD/+/-   : Modify
OS Select (For DRAM>64MB)     : Non-OS2       F5   : Old Values       (Shift) F2  : Color
                                              F7   : Load Setup Defaults
```

Figure 4-3 BIOS Feature Setup Screen

A. VIRUS PROTECTION

Trend *ChipAway* Virus

Trend ChipAway Virus is a code incorporated in the mainboard's BIOS firmware. During the boot-up sequence, BIOS loads before loading of the partition table or boot sector. ChipAway Virus loads with BIOS and is able to detect boot-up viruses before they have a chance to infect the hard drive. ChipAway Virus employs rule-based logic that doesn't look for specific viruses but rather detects patterns found in every virus, eliminating the need to perform periodical version updates after new viruses have been found.

Boot Sector Intrusion Alert

When Enabled, BIOS activates a warning message to the user when any program (i.e., a virus) attempts to write to the boot sector or hard disk partition table. The user is able to intervene by running an anti-virus program. This function only protects the boot sector and not the entire hard drive.

B. CACHE CONTROL

CPU Internal Cache/External Cache
Cache memory is much faster than conventional DRAM system memory. These fields allow you to enable or disable the CPUs Level 1 built-in cache and Level 2 external cache. Both settings are left enabled to significantly increase the performance of your computer.

CPU L2 Cache ECC Checking
Enable this function to perform ECC (Error Check and Correct) on the CPU's L2 SRAM. ECC detects and corrects single-bit errors while it only detects double bit errors. Certain SDRAM modules also have ECC capability. For more information on SDRAM, see section 2-5. If you are using a 333MHz or higher CPU, this function must be enabled.

C. BOOT UP FEATURES

After turning on the system, BIOS will perform a series of device initializations and diagnostic tests discussed below.

Quick Power On Self Test (POST)
Enable this function to reduce the amount of time required to run the POST (Power On Self Test). BIOS saves time by skipping some items during POST. It is recommended that you disable this setting. Discovering a problem during bootup is better than loosing data during your work.

Boot Sequence
This option sets the sequence of drives BIOS attempts to boot from after POST completes. BIOS will search these drives for an operating system.

Swap Floppy Drive
Enabling this function will swap the floppy drive assignment so that drive A will function as drive B, and drive B will function as drive A. Note that the boot sequence assignment mentioned directly above does not inlcude booting from floppy drive B. This function is useful if floppy drives B and A are of a different format and you want to boot from floppy drive B.

Boot up Floppy Seek
During POST, BIOS will determine if the installed floppy disk drive has 40 or 80 tracks. A 360K drive has 40 tracks and 720K, 1.2M and 1.44M drives have 80 tracks. All modern floppy disk drives have 80 tracks.

Boot Up NumLock Status
This function defines the keyboard's numberpad as number keys or arrow keys.

Boot Up System Speed

This function determines the CPU speed while in non-protected mode under DOS. Set to High for regular CPU speed and low for decreased CPU speed. This function is used for applications such as games that require decreased CPU speed.

D. KEYBOARD INTERFACE

Typematic Rate Setting

When enabled, you can set the following two typematic control items. When disabled, keystrokes are determined arbitrarily by the keyboard controller in your system.

Typematic Rate (Chars/Sec)

The typematic rate sets the rate at which characters on the screen repeat when a key is pressed and held down.

Typematic Delay (Msec)

The typematic delay sets how long after you press a key that a character begins repeating.

E. Security Option

The Supervisor and/or User Password functions shown in Figure 3-1 must be set to take advantage of this function. See Section 3-8 for password setting information. When the Security Option is set to System, a password must be entered to boot the system or enter the BIOS setup program. When the Security Option is set to Setup, a password is required to enter the BIOS setup program.

F. PCI/VGA Palette Snoop

Some non-standard VGA cards or MPEG video cards may not show colors properly. Setting this function to Enabled can correct this problem.

G. OS Select (For DRAM > 64MB)

If your system's DRAM is larger than 64MB and you are running OS/2, select OS/2 as the item value. Otherwise, set the item value to Non-OS/2 for all other operating systems.

H. Shadow Memory

Software such as system BIOS, video BIOS, SCSI BIOS, etc that resides in ROM (Read Only Memory) chips is called firmware. Shadowing of firmware occurs when BIOS is copied to RAM address C0000h through DFFFFh. Video BIOS loads into the C0000-C7FFF memory area when video shadowing is enabled. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

Shadowing improves the firmware's performance because the firmware can be read by the CPU through the 16- or 32-bit DRAM bus as opposed to the 8-bit XT bus. However, shadowing also results in reducing the amount of high memory (640 KB to 1 MB) for loading device drivers. Shadowing is used mostly for ROM chips on ISA cards and not for PCI cards. Shadowing and playing games at the same time may result in system instability as some games access the RAM memory area being shadowed.

4-3 *SeePU* & Chipset Setup

By choosing the *SeePU* & Chipset Setup option from the CMOS SETUP UTILITY menu (Figure 4-1), the screen below is displayed. This sample screen contains the manufacturer's default values for the mainboard**.**

```
        ROM PCI / ISA BIOS (2A69JC39)
          SeePU & CHIPSET SETUP
          AWARD SOFTWARE, INC.

Auto Configuration      : Enabled    SDRAM CAS Latency  Time  : 3
DRAM Speed Selection    : 60ns       Power Failure Recovery   : Disabled
MA Wait State           : Slow       Spectrum Spread          : Disabled
EDO RAS# To CAS# Delay  : 3          Flash BIOS Protection    : Disabled
EDO RAS# Precharge Time : 3          Hardware Reset Protect   : Disabled
EDO DRAM Read Burst     : x333
EDO DRAM Write Burst    : x222            *****   CPU Setup     *****
DRAM Data Integrity Mode : Non-ECC   CPU Type                 : Pentium-II-233
CPU-To-PCI IDE Posting  : Enabled
System BIOS Cacheable   :Disabled
Video BIOS Cacheable    : Disabled
Video RAM Cacheable     : Disabled
8 Bit I/O Recovery Time : 1
16 Bit I/O Recovery Time : 1
Memory Hole At 15M-16M  : Disabled    ESC : Quit            ↑↓ →←      :Select Item
Passive Release         : Enabled     F1   : Help
Delayed Transaction     : Disabled    F5   : Old Values    PU/PD/+/-   : Modify
AGP Aperture Size (MB)  : 64          F7   : Load Setup Defaults  (Shift) F2  : Color
SDRAM RAS-to-CAS Delay  : Slow
SDRAM RAS Precharge Time : Slow
```

Figure 4-4 Chipset Features Setup Screen

⚠ With the esception of the CPU Setup, all of the above settings have been determined by the mainboard manufacturer and should not be changed unless you are absolutely sure of what you are doing. Explanation of the DRAM timing and chipset features setup is lengthy, highly technical and beyond the scope of this manual. Below are abbreviated descriptions of the functions in this setup menu. You can look on the world wide web for helpful chipset and RAM configuration information including AWARD's web site at http://www.award.com.

A. Auto Configuration

When Auto Configuration is enabled, BIOS autodetects the DRAM module type (i.e. EDO, FP) and determines the relevant DRAM settings. Note that these DRAM settings become background print (unchangeable) once the Auto Configuration is enabled. If Auto Configuration is enabled, you must set the DRAM timing function to 60ns or 70ns, depeding on the type of DRAM you install.

B. System BIOS Cacheable

Enabling this function allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. Caching the system BIOS results in better performance than shadowing the system BIOS as discussed in Section 4-2.

C. Video BIOS Cacheable

Enabling this function allows caching of the video BIOS ROM at C0000h-C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result. Caching the video BIOS results in better performance than shadowing the video BIOS as discussed in Section 4-2.

D. 8-bit I/O Recovery Time & 16-bit I/O Recovery Time

Back-to-back CPU or PCI master originated 8-bit and 16-bit cycles have an arbitrary delay of at least 3.5 system clock cycles. This category is used to add additional recovery delay between 8-bit and between 16-bit cycles. This delay takes place because the PCI bus is much faster than the ISA bus. The options are 1 to 8 and N/A.

E. Memory Hole at 15M-16M

Enabling this feature will reserve the 15MB to 16MB memory address space for ISA expansion cards. However, enabling this function will result in not allowing the system to have access to memory above 16MB. Please note that some expansion cards require this setting to be enabled.

F. AGP Aperture Size (MB)

This function determines the amount of system memory that is given to the AGP card. Options range from 4MB to 256MB. This is a dynamic memory allotment in that the AGP card will only use the amount of memory that it needs. The remaining memory not in use will be available for the system to use. For example, if 16MB are alloted to the AGP card and the card only needs 8MB, the remaining 8MB will be available for system use.

G. Power Failure Recovery

Computers using an ATX power supply do not turn back on after the power source to the computer unexpectedly fails (i.e. electricity outage). Enabling this setting will allow the system to always turn back on after a power failure. This is especially important for computers that must be on 24 hours per day.

H. Spectrum Spread

When Enabled, this function will cause lower EMI by spreading the system frequency over a range of frequencies. Choosing 0.6% or 1.5% will casue the frequency to spread by 0.6% or 1.5% on either side of the system clock frequency. While this function decreases EMI, system stability may be slightly compromised. Choosing Smart Clock will turn off the AGP, PCI, and SDRAM clocks when not in use. Smart Clock does not perform a spectum spreading function.

I. Flash BIOS Protection

The mainboard manufacturer developed BIOS protection technology that protects the System BIOS from accidental corruption by unauthorized users or computer viruses. When enabled, the BIOS data cannot be changed when attempting to update BIOS with the the FLASH utility. When disabled, the BIOS data can be updated by using the FLASH utility.

To pass the Windows 95 SCT testing, this item should be disabled.

Please note that when disabling this setting, the system BIOS is vulnerable by intrusion of computer viruses. It is recommended to disable this setting only temporarily while updating your system's BIOS.

J. Hardware Reset Protect

When enabled, your PC's hardware reset button will not function. This function is especially useful to prevent accidental resets for file servers and routers, etc. which should be available 24 hrs/day. When disabled, your PC's hardware reset button will function normally.

K. CPU Setup

The mainboard manufacturer developed *SeePU* technology that allows you to easily set your CPU's parameters (clock multiplier factor, internal clock speed, and voltage) in the BIOS setup. Refer to Section 2-3 for details.

4-4 Power Management Setup

This section provides information on the Green PC power management funtcions. By choosing the Power Management Setup option from the CMOS Setup Utility menu (Figure 4-1), the screen below is displayed. This sample screen contains the manufacturer's default values for the mainboard.
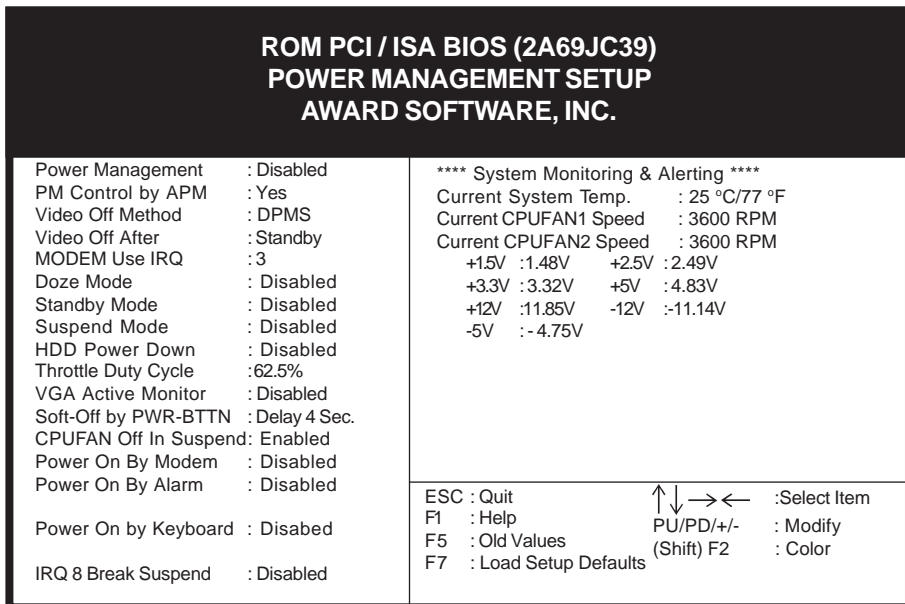
```
ROM PCI / ISA BIOS (2A69JC39)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management      : Disabled        **** System Monitoring & Alerting ****
PM Control by APM     : Yes             Current System Temp.    : 25 °C/77 °F
Video Off Method      : DPMS            Current CPUFAN1 Speed     : 3600 RPM
Video Off After       : Standby         Current CPUFAN2 Speed     : 3600 RPM
MODEM Use IRQ         : 3                 +1.5V  : 1.48V     +2.5V : 2.49V
Doze Mode             : Disabled          +3.3V : 3.32V     +5V   : 4.83V
Standby Mode          : Disabled          +12V  : 11.85V    -12V  : -11.14V
Suspend Mode          : Disabled          -5V   : - 4.75V
HDD Power Down        : Disabled
Throttle Duty Cycle   : 62.5%
VGA Active Monitor    : Disabled
Soft-Off by PWR-BTTN  : Delay 4 Sec.
CPUFAN Off In Suspend : Enabled
Power On By Modem     : Disabled
Power On By Alarm     : Disabled
                                        ESC : Quit           ↑↓→←        :Select Item
Power On by Keyboard  : Disabed         F1  : Help           PU/PD/+/-   : Modify
                                        F5  : Old Values     (Shift) F2  : Color
IRQ 8 Break Suspend   : Disabled        F7  : Load Setup Defaults
```

Figure 4-5 Power Management Setup Screen

A. Power Management

Power management allows the computer to save electricity when it is not in use by entering increasingly deep power saving modes as shown by the diagram below.
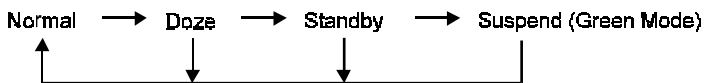
Figure 4-6 Power Saving Mode Flow Chart

The computer runs in Normal operation mode until the Doze timer expires, at which point the computer enters Doze mode. If no external activity occurs, the computer will go into Standby and Suspend modes when their respective timers expire. If external activity occurs, the computer will wake up from Power Management and return to Normal mode. To activate the function, set Power Management to

Maximum Saving, User Define, or Minimum Saving described below. For a description of the power saving modes (Doze, Standby, and Suspend) see their descriptions below.

Disabled - Turns off the Power Management functions.

Max. Saving - All timers are set at the minimum value of one minute to maximize power saving.

Min. Saving - All timers are set at the maximum value of one hour for minimal power saving.

User Define - User can configure the timer to a desired time according to the values available.

Note that enabling the Power Management function will result in enabling the HDD Power Down function (Max Saving = 15 min, Min Saving = 1 min). The HDD Power Down function is not part of the Power Management scheme as indicated in Figure 4-6 Refer to the Standby Mode, Suspend Mode, and HDD Power Down descriptions below for more informaiton on hard drive power management.

B. PM Control by APM

This function allows software other than BIOS to control Power Management features Enable this function in BIOS and make sure APM (Advanced Power Management) is present. For example, run the Power utility program located in the DOS directory, C:\DOS\POWER.EXE to use Power Management features under DOS. For Windows 3.1x and Windows 95, you need to install Windows with the APM feature.

C. Video Off Method

This function serves as both a screen saver and power saver for monitors. See the next function, Video Off After, for setting the video timer.

Blank - BIOS will only blank the monitor's screen. The electricity saved in this mode is negligible and this function is only used as a screen saver to prevent screen damage while the screen is on but not in use.

V/H SYNC+Blank - The system turns off the vertical and horizontal synchronization ports, writes blanks to the VGA buffer and the monitor's electron gun turns off. This function requires a monitor with Green features in order to take advantage of the power saving function. If you enable this function and do not have a Green monitor, the result will be the same as if you had selected Blank. This function serves as both a screen saver and an electricity saver.

DPMS Supported - Select this option if your video card supports the Display Power Management Signaling (DPMS) standard (i.e., you have a monitor that supports Green features). Use software supplied by your video subsystem to set video power management options.

D. Video Off After

This setting determines when the monitor enters power saving mode. As the function name indicates, the monitor enters the power saving mode after the chosen event expires. The Power Management function must be enabled to use this function.

E. Modem Use IRQ

If your computer has an modem, use this function to tell BIOS which IRQ is being occupied by the modem card. When the system is in Green mode, the modem requires an IRQ assignment to wake up the system and perform tasks. This assignment is compliant with the APM 1.2 specification and is to be used in coordination with APM 1.2 compliant operating systems.

F. Doze Mode

The Power Management function must not be set to disabled to enable this function. If no interrupts have occured and the Doze timer expires, system will enter Doze mode. In Doze mode, the CPU clock runs at a lower speed while all other devices operate normaly.

Power saving modes achieved in lower power saving states will either be maintained or enter higher power saving modes when switching to higher power saving states. For example, the CPU clock will not switch back to normal in Standby mode. It will maintain a decreased rate in Standby Mode and turn off in Suspend Mode.

G. Standby Mode

The Power Management function must not be set to disabled to enable this function. If the system runs in Doze mode and the Standby timer expires, the system will enter Standby mode. In Standby mode, the hard disk drive and the monitor shut off while all other devices still operate at full speed. Note that the Video Off and HDD Power Down functions in Figure 4-5 provide the same power saving options found in Standby mode. The priority for determining which function controls power saving for the monitor and hard drive is determined by which timer expires first.

H. Suspend Mode

The Power Management function must not be set to disabled to enable this function. If the system runs in Standby mode and the Suspend timer expires, all devices regulated by power management will shut off and the CPU speed will be 0 MHz.

I. HDD Power Down

The Power Management function must not be set to disabled to enable this function. When the HDD idle time has elapsed, BIOS sends a command to the hard disk to turn off the motor. Set a time between 1 and 15 to indicate time required to wait before the hard drive enters a power saving mode. Some old hard drives may not support this function.

J. Throttle Duty Cycle

When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs.

K. VGA Active Monitor

When Enabled, any video activity restarts the global timer for Standby mode.

L. Soft-Off by PWR-BTTN

When set to Delay 4 Sec., this function allows the power button to put the system in Suspend, a power saving mode. See Section 2-4 for operation instructions of the over-ride power button operation wich puts the system in Suspend mode. When set to Instant-Off the Soft-Off by PWR-BTTN function is disabled and the computer turns completely off when the power button is pressed.

M. CPU Fan Off in Suspend

When Enabled, the CPU fan turns off during Suspend mode. This does not damage the CPU because the CPU frequency is 0MHz in Suspend mode.

N. Power On by Modem

When enabled, a modem that receives a call will wake up the system from soft off and green mode. You should connect the modem to the COM port and turn on the resume event in green mode. The Power Failure Recovery function in the *SeePU* and Chipset Setup menu (Section 4-3) must be set to Enabled to use Power On by Modem.

O. Power On By Alarm

When enabled, this setting allows the system to turn back on at a designated time of the month. User must designate date of month and time of day. This function is only available when using an ATX power supply and the Software Power-Off function to turn off the computer. See the Software Power-Off feature in Section 2-4 of this manual for instructions. The Power Failure Recovery function in the *SeePU* and Chipset Setup menu (Section 4-3) must be set to Enabled to use Power On By Alarm.

P. Power On By Keyboard

Set the keyboard power-on jumper (discussed in Section 2-4) to its enabled position, and select a hot-key (i.e., Ctr-F1, Ctr-F2) or a password to turn the computer on from Soft-off state. The Power Failure Recovery function in the *SeePU* and Chipset Setup menu (Section 4-3) must be set to Enabled to use Keyboard Power On.

Q. IRQ8 Break Suspend

Enabling this setting turns the monitoring of IRQ8 (the Real Time Clock) On so it does not awaken the system from Suspend mode.

R. SMART (System Monitoring and Alerting) Technology (Optional)

The optional management extension hardware (LM78 chip) incorporates features that are compliant with Desktop Management Interface (DMI) as well as LANDesk® Client Manager software. The hardware implementation comes with the following features:

- Seven on-board voltage monitors
  - Power supply voltage monitoring +/-12V, +/-5V
  - CPU voltage monitoring +1.5V, +2.5V, +3.3V
- Two fan speed sensing and On/Off control
- System overheat monitoring and alerting
- Security switch for detecting physical intrusion, such as when the chassis lid has been removed, even when power is off.

4-5 PnP/PCI Configuration

This section provides IRQ and DMA setting information. By choosing the PnP/PCI Configuration option from the CMOS Setup Utility menu (Figure 4-1), the screen below is displayed. This sample screen contains the manufacturer's default values for the mainboard.

```
┌────────────────────────────────────────────────────────────────────┐
│              ROM PCI / ISA BIOS (2A69JC39)                           │
│                 PNP/PCI CONFIGURATION                                │
│                  AWARD SOFTWARE, INC.                                │
│                                                                      │
│  PNP OS Installed        : No          PCI IDE IRQ Map To   : ISA    │
│  Resources Controlled By : Manual                                    │
│  Reset Configuration Data: Disabled    FDD IRQ Can Be Free  : No     │
│                                        Assign IRQ For VGA    : Enabled│
│  IRQ-3 assigned to     : PCI/ISA PnP   Assign IRQ for USB    : Enabled│
│  IRQ-4 assigned to     : PCI/ISA PnP                                 │
│  IRQ-5 assigned to     : PCI/ISA PnP                                 │
│  IRQ-7 assigned to     : PCI/ISA PnP   Used MEM base addr  : N/A      │
│  IRQ-9 assigned to     : PCI/ISA PnP                                 │
│  IRQ-10 assigned to    : PCI/ISA PnP                                 │
│  IRQ-11 assigned to    : PCI/ISA PnP                                 │
│  IRQ-12 assigned to    : PCI/ISA PnP                                 │
│  IRQ-14 assigned to    : Legacy ISA                                  │
│  IRQ-15 assigned to    : Legacy ISA                                  │
│  DMA-0 assigned to     : PCI/ISA PnP   ESC : Quit      ↑↓→←  :Select Item│
│  DMA-1 assigned to     : PCI/ISA PnP   F1   : Help                    │
│  DMA-3 assigned to     : PCI/ISA PnP   F5   : Old Values  PU/PD/+/- : Modify│
│  DMA-5 assigned to     : PCI/ISA PnP   F7   : Load Setup Defaults (Shift) F2 : Color│
│  DMA-6 assigned to     : PCI/ISA PnP                                 │
│  DMA-7 assigned to     : PCI/ISA PnP                                 │
└────────────────────────────────────────────────────────────────────┘
```

Figure 4-7 PCI & ONBOARD I/O Setup Screen

A. PNP OS Installed

If you want to install a PNP compatible OS (such as Windows 95), please set to **Yes**.

B. Resources Controlled By

When set to Manual the system BIOS will not refer to the ESCD for IRQ & DMA information. Instead, it will refer to the items in the setup menu for assigning IRQ & DMA. When set to Auto the system BIOS will refer to the ESCD for all legacy information.

⚠ ESCD(Extended System Configuration Data) provides a detailed format of the configuration data structures stored in flash memory. Each data structure defines the resources used by a device or a card in the system. This includes legacy and PCI/ISA PnP devices.Each data structure defines the resources

C. Reset Configuration Data

When enabled the system BIOS will clear/reset the ESCD during POST. After clearing the ESCD, the BIOS will then change this item's value to Disabled. Otherwise, the ESCD data will become useless.

D. IRQ#/DMA# assign to

When resources are controlled manually, you can assign each system interrupt & DMA channel for "Legacy ISA" or "PCI/ISA PnP" card used.

> While using **Legacy ISA Card**(non-PnP ISA card), please set it's necessary corresponding resources (INT#, DMA#) from "PCI/ISA PnP" to "Legacy ISA."

✎ All ISA non-PnP devices are legacy devices that select resources (I/O Addr., INT# or DMA#) by using hardware jumpers.

✎ IRQ-3/4/7/12/14/15 have been set as default for on board devices (COM2, COM1, Printer port, PS/2 mouse, IDE1 and IDE2).

E. PCI IDE IRQ Map to

This function allows user to select PC AT (ISA) interrupts or PCI IDE IRQ mapping.

ISA: BIOS does not designate any IRQ signal to the PCI slot. This is the default setting.

PCI-SLOT 1-4: User can designate which PCI slot (1-4) the IDE card is inserted into. This setting is suitable for use with older PCI IDE cards that BIOS is not able to recognize.

PCI-AUTO: BIOS automatically detects which PCI slot the PCI IDE card is inserted into.

F. FDD IRQ Can Be Free

This function allows user to choose if the FDD IRQ is able to be freed up. The default setting is NO and this does not allow the IRQ to be free.

G. Assign IRQ For VGA

This function allows BIOS to make an IRQ available to VGA cards. Most current VGA card models do not require this function to be enabled. The default setting is disabled to optimize Windows 95 IRQ resources for other IRQ usage.

H. Assign IRQ For USB

If USB is employed this function must be Enabled. Otherwise, disable this

function to optimize Windows 95 IRQ resources for other IRQ usage.

I. Used MEM base addr

This function devotes a space of memory (8K, 16K, 32K, 64K) for any peripheral that has a high memory requirement. This is also used to designate memory space for legacy ISA cards. The settings C800~DC00 are used to to designate point at which the memory will start being used. The default setting is N/A (disabled.)

J. Used MEM Length

8K~64K: Determines the amount of memory to be used by ISA cards mentioned in the Used MEM base addr function above.

4-6 Load Setup Defaults

Load Setup Defaults loads the default system values directly from the CMOS Setup Utility menu (Figure 4-1). If the stored record created by the setup program becomes corrupted and therefore unusable, these defaults will be loaded automatically when
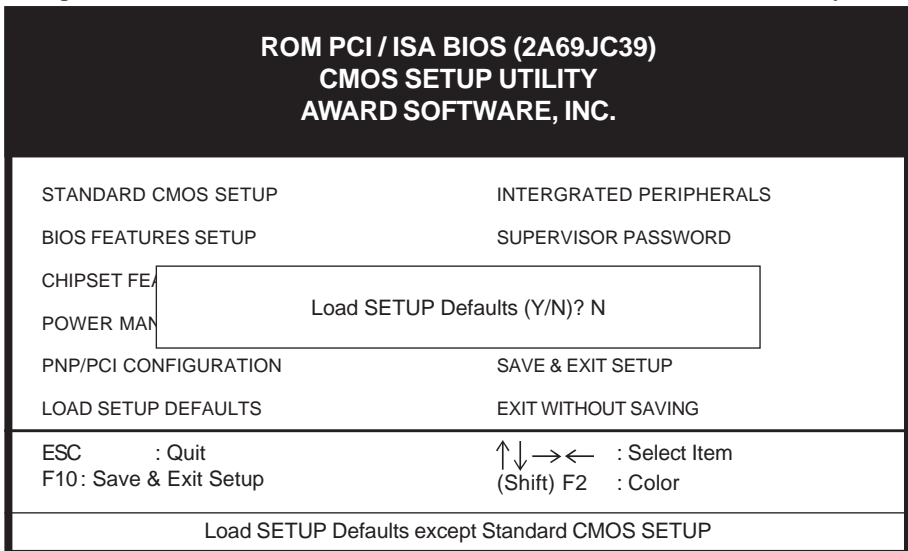
```
          ROM PCI / ISA BIOS (2A69JC39)
              CMOS SETUP UTILITY
             AWARD SOFTWARE, INC.


  STANDARD CMOS SETUP          INTERGRATED PERIPHERALS

  BIOS FEATURES SETUP          SUPERVISOR PASSWORD

  CHIPSET FE
                    Load SETUP Defaults (Y/N)? N
  POWER MAN

  PNP/PCI CONFIGURATION        SAVE & EXIT SETUP

  LOAD SETUP DEFAULTS          EXIT WITHOUT SAVING

  ESC      : Quit              ↑↓ → ←    : Select Item
  F10: Save & Exit Setup       (Shift) F2   : Color

            Load SETUP Defaults except Standard CMOS SETUP
```

Figure 4-8 Load Setup Defaults Screen

4-7 Integrated Peripherals

This section provides information on setting peripheral devices. By choosing the Integrated Peripherals option from the CMOS Setup Utility menu (Figure 4-1), the screen below is displayed. This sample screen contains the manufacturer's default values for the mainboard.
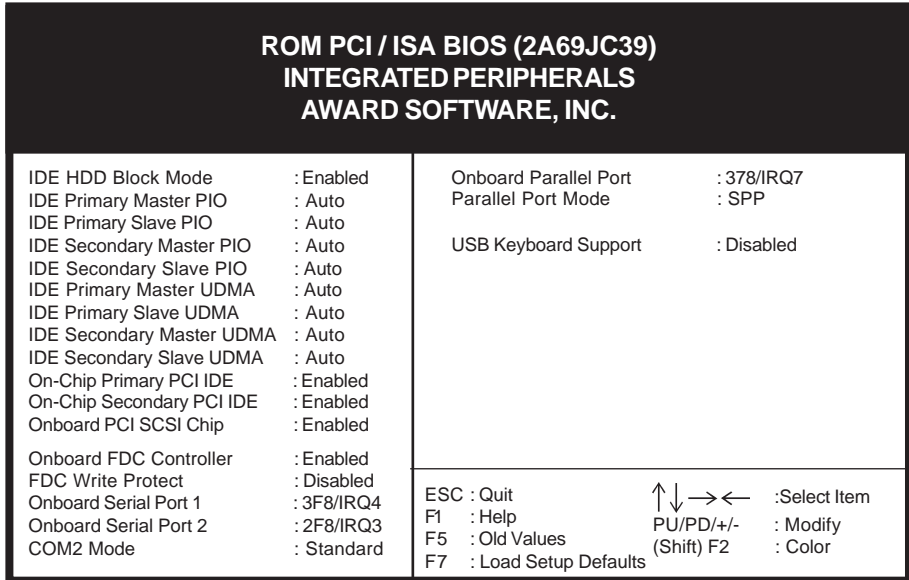
```
ROM PCI / ISA BIOS (2A69JC39)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode         : Enabled      Onboard Parallel Port       : 378/IRQ7
IDE Primary Master PIO     : Auto         Parallel Port Mode          : SPP
IDE Primary Slave PIO      : Auto
IDE Secondary Master PIO   : Auto         USB Keyboard Support        : Disabled
IDE Secondary Slave PIO    : Auto
IDE Primary Master UDMA    : Auto
IDE Primary Slave UDMA     : Auto
IDE Secondary Master UDMA  : Auto
IDE Secondary Slave UDMA   : Auto
On-Chip Primary PCI IDE    : Enabled
On-Chip Secondary PCI IDE  : Enabled
Onboard PCI SCSI Chip      : Enabled

Onboard FDC Controller     : Enabled
FDC Write Protect          : Disabled     ESC : Quit          ↑↓→←        :Select Item
Onboard Serial Port 1      : 3F8/IRQ4     F1   : Help         PU/PD/+/-   : Modify
Onboard Serial Port 2      : 2F8/IRQ3     F5   : Old Values   (Shift) F2  : Color
COM2 Mode                  : Standard     F7   : Load Setup Defaults
```

Figure 4-9 Integrated Peripherals Setup Screen

A. On Board IDE Control

IDE HDD Block Mode
Specifies the maximum number of sectors that can be transferred at a time.

On-chip Primary/Secondary PCI IDE
You can set this to disable the On-chip IDE controller if you are going to add a higher performance IDE board.

IDE Primary/Secondary Master/Slave PIO
The four IDE PIO (programmed Input/Output) fields let you set a PIO mode (0-4) for each IDE device that the internal PCI IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

B. On Board IR Controller
The COM port will support IR functionality when this function is enabled.

4-8 Supervisor Password & User Password Setting

There are four different variables that control password settings. The first two are located under the Security Option function in BIOS Features Setup Menu (Figure 3-3). When the Security Option function is set to Setup, a password is required to enter BIOS and change BIOS settings. When the Securitiy Option function is set to System, a password is required to to enter both BIOS and the the computer's operating system (for example Windows 95) found on the boot drive. This is shown in Figures 4-10 and 4-11.

The third and fourth variables are user password and supervisor password selected in BIOS (Figure 4-1). The main purpose of separating user and supervisor is to allow only the supervisor to have control over the settings in BIOS. The user, on the other hand, is only allowed to access the computer's operating system and change the user passorword in BIOS (See Figure 4-11 below). Note that when there is no supervisor password set, the user password controls access to all BIOS settings (See Figure 4-10 below).

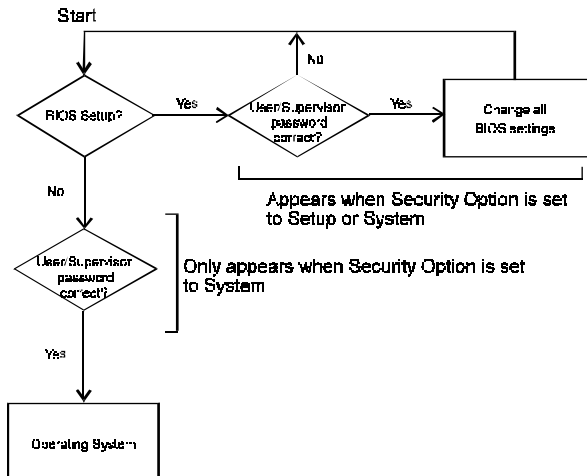### *A. Set Either Supervisor Password or User Password*

Figure 4-10 Set Either Supervisor or User Password

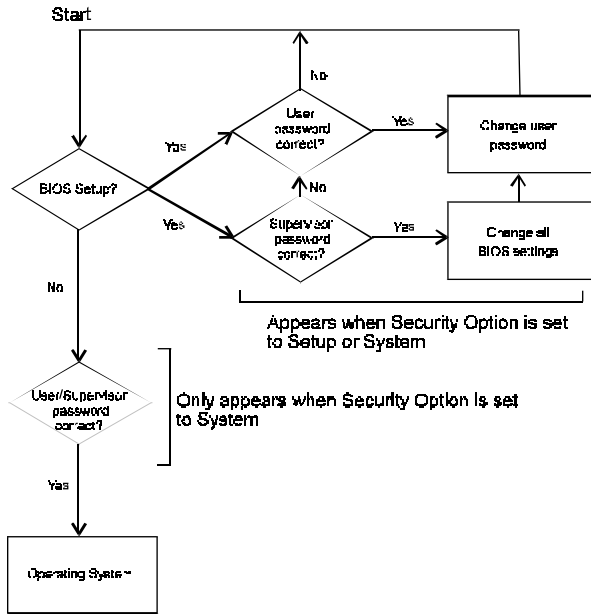## B. Set Both Supervisor Password and User Password

Figure 4-11 Set Both Supervisor and User Password

4-9 IDE HDD Auto Detection

This utility can automatically detect IDE hard disk type and parameters. The detection process take about 5 seconds for each physical drive. After the utility detects the disk drive, type Y and press [Enter] to automatically load the parameters in the Hard Disk section of the Standard CMOS Setup menu. Otherwise, leave the option set at N and press [Enter] or the [Esc] key to skip the detected drive. After detecting your hard drive(s), return to the Standard CMOS menu to check your settings.
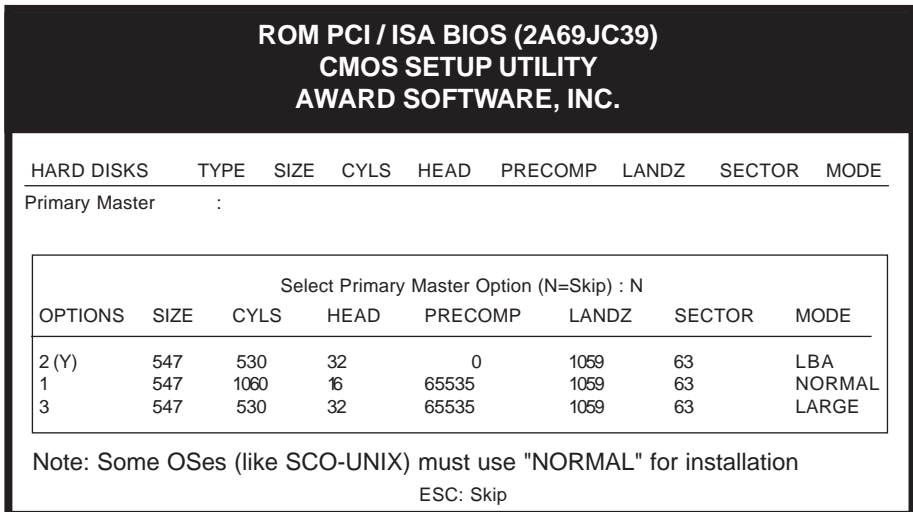
```
ROM PCI / ISA BIOS (2A69JC39)
          CMOS SETUP UTILITY
         AWARD SOFTWARE, INC.


HARD DISKS      TYPE   SIZE   CYLS   HEAD   PRECOMP   LANDZ   SECTOR   MODE
Primary Master         :


              Select Primary Master Option (N=Skip) : N
OPTIONS    SIZE    CYLS    HEAD    PRECOMP    LANDZ    SECTOR    MODE

2 (Y)      547     530     32          0      1059      63       LBA
1          547     1060    16      65535      1059      63       NORMAL
3          547     530     32      65535      1059      63       LARGE

Note: Some OSes (like SCO-UNIX) must use "NORMAL" for installation
                        ESC: Skip
```

Figure 4-12 IDE HDD Auto Detection Screen

4-10 Save and Exit Setup

If you select this and type Y (for yes) followed by the [Enter] key, the values entered in the setup utilities will be recorded in the CMOS memory of the BIOS chip.

4-11 Exit Without Saving

Selecting this option and pressing Y followed by the [Enter] key lets you exit the Setup program without recording any new values or changing old ones.

Memo

Chapter 5

Driver Installation

⚠ If your mainboard has the optional LM78 chip (PC Health monitor IC) located in the corner near the ISA slots, your mainboard will also have TWO CD-ROM disks, each with their own Software Driver Guide enclosed as a PDF file. Both of the CD-ROM disks have many of the same software, all of which can be used with your mainboard. If the LM78 chip is not on your mainboard, only one CD-ROM disk will be enclosed. See below for details on the Software Driver Guide.

⚠ The LM78 chip is required for utilization of the Shepherd utility on the CD-ROM disk labeled **Pentium®/Pentium® II Processor Based Mainboard with Trend PC-cillin Utility**.

⚠ Installation of the Intel LANDesk Client Manager utility (LDCM) requires that Microsoft Explorer version 3.02 or above be present on your hard drive. The LDCM installation utility will detect if the correct version is present. If not, this utility will automatically install Microsoft Explorer for you. When Microsoft Explorer has finished installing, you will be required to restart your computer. **At this point, LDCM has not yet been installed. After restarting your computer, you must go back into the LDCM installation utility and finish installing LDCM.**

5-1 SCSI Driver Update for Windows 95 OSR2

When utilizing Windows 95 OSR2 with the AIC 7880 version B SCSI chip, performance of your Windows software may be abnormally slow. This is because the 7800 Family Manager Set SCSI driver included with Windows 95 OSR2 is out of date. The mainboard manufacturer has provided you with the new V2.11 of this driver on the 7800 Family Manager Set V2.10 disk 1/2 that comes with the mainboard.

⚠ Windows 95 users (versions other than OSR2) are also able to use V2.11 of the 7800 Family Manager Set driver.

Install the new driver via the following pathway: Start/Control Panel/System/Device Manager/SCSI Controllers/Properties/Driver/Update Driver. Follow the instructions on the screen to complete your driver update. When asked for the new driver, insert the 7800 Family Manager Set disk 1/2 into the a:\ drive, click on the Browse button

and go to drive a:\Win95\. The driver will be automatically detected. Press enter to accept and follow instructions on the screen until driver installation is complete.

5-2 Software Driver guide

The Software Driver guide is a PDF file which must be viewed with Adobe's freeware called Acrobat®Reader. The Acrobat Reader software is included on the CD-ROM disk labled **Pentium®/Pentium® II Processor Based Mainboard with Trend PC-cillin Utility**. See the Readme.txt file in the CD-ROM's root directory for installation instructions of the Acrobat Reader. There are two versions of the Software Driver Guide. The English version is the **readme.pdf** file and the German version is the **readmegm.pdf** file, both located in the root directory of either CD-ROM.

The following items are discussed in the PDF files:

- Bus Master/PIO IDE Driver Installation
- USB Driver Installation
- Removing the Exclamation and/or Question Marks From the Windows 95 Device
  Manager Menu
- Updating Your System BIOS
- Installing and Using a Desktop Management Interface (DMI) Utility

Chapter 6

Installing SCSI Device Drivers & Troubleshooting Tips

Some operating systems embed (include) the AHA-2940Ultra/2940 Ultra-Wide device driver as part of their installation software. These drivers work fine with on board SCSI host controller; however, the most recent version of the driver should be installed in order for your SCSI system to perform at its optimum level. Please see **http://www.award.com** for more SCSI installation information.

The device drivers includes the latest Adaptec EZ-SCSI and Adaptec 7800 Family Manager Set software.

❏ **Adaptec EZ-SCSI--**allows you to install software drivers for DOS/Windows 3.x and several additional utilities.

❏ **Adaptec 7800 Family Manager Set**--allows you to install software drivers for NetWare, OS/2, Windows 95, Windows NT, and UNIX. Refer to the *7800 Family Manager Set User's Guide at the back of this manual.*

❏ All the software mentioned in this chapter is found in the diskettes that are included in your mainboard package. **The installation instructions assume that the A drive is a floppy disk drive and C drive is a hard disk drive.**

6-1 Adaptec EZ-SCSI Setup Guide

Follow the instructions for your operation system software in one of the following sections.

Windows 95 or Windows NT

If you want to install Windows 95 or Windows NT on a new computer system, you may not be able to access your SCSI CD-ROM drive at first. (Usually, you install Windows 95 and Windows NT from a CD-ROM disc.) To gain access to your CD-ROM drive, follow the DOS installation instructions in Section 6-1. Then reboot your computer and follow these instructions:

1. Install Windows 95 or Windows NT version 3.51 or above, and start it running on your computer.
2. Insert the Adaptec EZ-SCSI Setup Diskette in your floppy disk drive.
3. Click the Start button and select Run.

4. Type A:\setup then click OK.

5. Follow the instructions that appear on the screen.

Windows for Workgroups 3.1x

1. Install Windows 3.1x or Windows for Workgroups 3.1x and start it running on your computer.

2. Insert the Adaptec EZ-SCSI Setup Diskette in your floppy disk drive.

3. Select File/Run from the Program Manager menu.

4. When the Run dialog box appears, type a:\setup then click OK.

5. Follow the instructions that appear on the screen.

DOS

1. Install DOS 6.x or above and start it running on your computer.

2. Insert the Adaptec EZ-SCSI Setup Diskette in your floppy disk drive.

3. At the DOS prompt, type A:\dosinst then press Enter.

4. Follow the instructions that appear on the screen.

6-2 Troubleshooting Tips

SCSI Device Troubleshooting

Review this checklist if your newly-installed SCSI disk drives, CD-ROM drives, and other devices do not seem to work properly:

1. Be sure that termination is correctly set for all devices on the SCSI bus, as described in your host adapter documentation.

2. Be sure there are no hardware conflicts such as devices in your computer trying to use the same interrupts (IRQs) or DMA channels.

3. Be sure the cables connecting the external and internal SCSI devices and the host adapter are attached securely. Also be sure the pin-1 orientation is correct for internal cables. See the host adapter documentation for more information.

4. Be sure that each SCSI device connected to the host adapter has a unique SCSI ID.

5. Be sure CD-ROM drives and other SCSI devices are attached to a power source and are turned ON.

Windows 95/Windows NT Troubleshooting

What is a miniport driver, and how do I make sure that the miniport driver for my host adapter is installed correctly?

Miniport drivers are a new kind of 32-bit protect mode device driver used by Windows 95 and Windows NT to control host adapters and other kinds of devices. Windows 95 and Windows NT include a set of miniport drivers for various types of SCSI host adapters. The host adapter miniport driver is automatically installed and configured during Windows 95 and Windows NT installation if your host adapter is already installed. To make sure the driver is installed correctly in systems running Windows 95, open the Control Panel, double-click on System, and click the Device Manager tab. Then double-click the SCSI Controller icon; you should see the model name of the SCSI host adapter(s) installed in your system.

What if there is no SCSI controller icon under Device Manager or the model name of the host adapter dose not appear under Device Manager?

If the SCSI controllers icon or your host adapter's model name do not appear, open Control Panel and double-click the Add New Hardware icon. Let Windows search for the host adapter by selecting Yes on the second screen of the Add New Hardware Wizard.

If Windows does not detect the host adapter, run the Add New Hardware Wizard again. This time, select No on the second screen of the wizard, then select SCSI controllers on the next screen. Select the name of your host adapter when it appears.

If the name of your SCSI host adapter dose not appear, you may be able to find its miniport driver on the Windows 95 CD-ROM or on the Adaptec EZ-SCSI Setup Diskette. Follow these steps:

1. Place the Windows 95 CD-ROM in your CD-ROM drive and run the Add New Hardware wizard.
2. Select No on the second screen, and select SCSI controllers on the next screen.
3. Click on the Have Disk button, then click the Browse button.
4. Look in the \drivers\storage directory of the CD-ROM and select the name of your SCSI host adapter if it appears.

Follow steps 1-3 to check for miniport drivers on the Adaptec EZ-SCSI Setup Diskette. When you click the Browse button on the wizard screen, simply select the floppy drive where the Setup disk is located.

What if a yellow exclamation point or a red X appears in Device Manager in front of my host adapter?

This means there is some kind of resource problem. First, see if the names of any host adapters appear that are not actually installed in your computer. If so, select the

name and click Remove. If a red X appears in front of your host adapter name, remove all the host adapter references under SCSI Controllers and run Add New Hardware, as described in the previous question/answer. If a yellow exclamation point appears in front of your host adapter name, the resources that the driver uses probably do not match the resources used by the hardware. Deselect the Use Automatic Settings box and edit the resources (Interrupt Request, Direct Memory Access, etc.) so they match those used by the host adapter. If the problem still remains, there is probably a hardware conflict in your computer. You can fix this by changing the hardware resource settings. (See your hardware documentation.)

What do I need to do if I change or upgrade my host adapter?
1. Open the Control Panel, double-click on System, and click the Device Manager tab.
2. Double-click the SCSI Controllers icon, select the name of the old host adapter, and click Remove.
3. Turn OFF the computer and physically remove the currently installed host adapter.
4. Install the new host adapter according to the instructions in the hardware documentation.
5. Turn the computer ON. If the new host adapter supports Plug and Play, Windows will install and configure it automatically. Otherwise, run Add New Hardware to make sure the new driver is loaded.

If I am running under Windows 95, do I need lines for the Adaptec real mode ASPI drivers and mscdex in my config.sys and autoexec.bat files?
Usually, you do not need to use these real mode ASPI drivers, because the new Windows miniport drivers support most SCSI host adapters and SCSI devices. However, you need to load the drivers (including mscdx, if you have a CD-ROM drive) if any of the following is true:
1. You are running in MS-DOS mode
2. You are using a scanner or another SCSI device with config.sys or autoexec.bat based drivers, such as HP's sjiix.sys
3. You have an older model SCSI-1 CD-ROM drive that Windows 95 does not support
4. You are using a CD-Recorder drive (however, some newer models of CD-ROM-Recorder drives can use the embedded Windows miniport drivers)
To install the Adapter EZ-SCSI DOS drivers, click the Start button and select Restart the computer in MS-DOS mode. When the DOS prompt appears, follow the Installation instructions for DOS in Section 6-1.

My CD-ROM drive doesn't work properly under Windows 95.
Some older models of SCSI CD-ROM drives are not compatible with the
embedded Windows 95 CD-ROM driver. You can add support for the CD-ROM
drive by doing the following:
1. Click the Start button and select Restart the computer in MS-DOS mode.
2. When the DOS prompt appears, follow the Installation instructions for DOS in
   Section 6-1.
3. When finished running Adaptec EZ-SCSI for DOS, find the file name cdtsd.vxd in
   the windows\system\iosubsys directory and rename it cdtsd.sav.

My CD-ROM drive shows up as more than one icon under *My Computer*
The mapping between mscdex, which runs in real mode, and the Windows 95 CD-
ROM driver does not match. You can correct this in one of two ways:
1. Comment out the line that loads mscdex.exe in the autoexec.bat file.
2. Change the /L switch on the line that loads mscdex.exe in the autoexec.bat file so
   it assigns the CD-ROM drive the next highest logical drive letter after the hard
   disk drives.

Information for DOS/Windows 3.1x Users

The following information may by useful if you install Adaptec EZ-SCSI on a com-
puter running DOS, Windows 3.1x, or Windows for Workgroups 3.1x.

> The Windows 95/Windows NT Troubleshooting section above in
> Section 6-2 describes a few situations when you may need to use
> DOS/Windows 95 or Windows NT.

DOS and Windows 3.1x Device Drivers

Device drivers are software programs that enable your computer to communicate
with SCSI devices such as hard disk drives, CD-ROM drives, and scanners. Each
kind of device requires a different device driver. Adaptec EZ-SCSI includes
several DOS/Windows 3.1x device drivers that are copied to your hard disk
during installation. Adaptec EZ-SCSI adds command lines to your config.sys and
autoexec.bat files to load these device drivers if it finds these kinds of devices
on your computer.
To learn more about the Adaptec EZ-SCSI device drivers, including their
command line option information, see the on-line Adaptec EZ-SCSI On-line
Reference, a Windows Help application.

DOS Formatting Utilities

Adaptec EZ-SCSI includes several DOS-based formatting utilities:

Low-level Formatter (scsifmt)

Use the DOS-based scsifmt utility for low-level formatting of SCSI hard disk drives, removable media, Floptical® drives, and magneto-optical drives. You can also use it to scan a disk device for surface defects before you store data on it.

Run scsifmt from the DOS prompt, not from the Windows MS-DOS prompt. Before you run it, be sure the disk devices you want to format are connected to the host adapter and that they are powered. Then follow these steps:

1. Change to the directory where scsifmt.exe is located (usually c:\scsi), type scsifmt at the DOS prompt, and press Enter.

    ⚠️ If you are formatting a SCSI disk device that supports more than one LUN (for example, Iomega's Bernoulli dual multidrive) type scsifmt /L at the command line.

2. When the first screen appears, read it and press Enter to continue. (Press F1 at any time to view Help.) Information about your SCSI disk devices appears on the screen.

3. Use the arrow keys to move the highlight bar to a disk device you want to format or verify, then press Enter.

4. When the next screen appears, select either Format or Verify (to verify that the disk is free of surface defects), then press Enter.

    ⚠️ Back up important data before you format the disk device! A low-level format erases all data from the disk.

5. If you select Format, confirm that you want to format the disk, then wait while the disk device is formatted. This may take a long time if the disk is large.
   If you select Verify, you can press Esc at any time to stop the verification process. (This does not damage the disk.) If the utility finds bad blocks on the disk, it displays information about them. You can reassign the bad block(s) to prevent data from being stored there.

6. Repeat steps 3, 4, and 5, as needed, to format or verify other disk devices. When you finish, press Esc to exit.

Formatter and Partitioner (afdisk)

Use the DOS-based afdisk utility to partition and format SCSI hard disk drives, Floppy drives, and magneto-optical drives. You can also use afdisk to remove DOS and non-DOS partitions from a disk drive and to format removable media in standard hard disk format, OS/2 floppy format, or DOS V (Japanese) format.
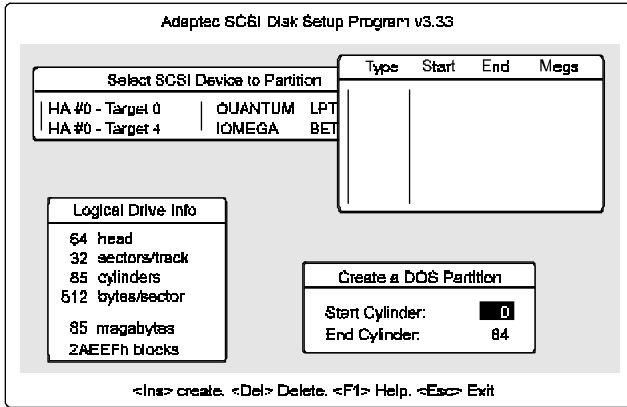
⚠️ Use afdisk only if the disk device is not controlled by the host adapter BIOS—that is, if the host adapter does not have a BIOS or if its BIOS is not enabled. If the disk device is controlled by the host adapter BIOS, use the DOS fdisk utility to partition and format the disk device. (See the MS-DOS documentation.)

Run afdisk from the DOS prompt only, not from the Windows MS-DOS prompt. Before you run it, be sure the disk devices you want to format and partition are connected to the host adapter and that they are powered. Then follow these steps:

1. Change to the directory where afdisk.exe is located (usually c:\scsi), type afdisk at the DOS prompt, and press Enter. Information about your SCSI disk devices appears on screen. (The number that appears after Target is the device SCSI ID.)

2. Use the arrow keys to move the highlight bar to the disk device you want to partition, then press Enter.
   - If the selected disk device is controlled by the host adapter BIOS, you can view information about it but you cannot partition it with afdisk (Use the DOS fdisk and format utilities.)
   - If the selected disk device is unpartitioned, you must partition it before you can format it. To do this, follow the instructions on the screen. (Press F1 to see an explanation of the partitioning options.)
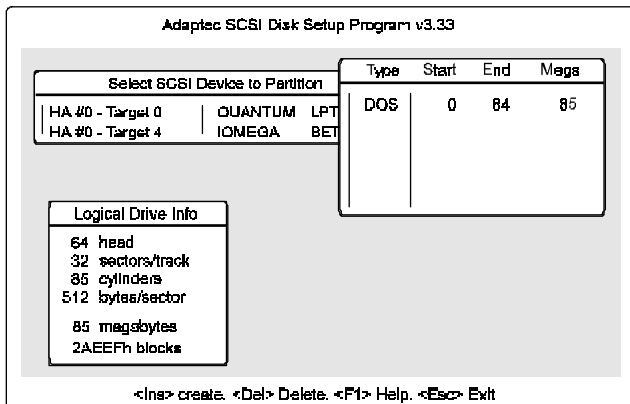
   Information about the selected disk device appears in the lower left of the screen. Disks smaller than 1 Gigabyte have 64 heads, 32 sectors per track, and cylinders equal to the number of MBytes of available capacity. Disks larger than 1 Gigabyte have 255 heads, 63 sectors per track, and one cylinder per 8 MBytes of available capacity.

3. To create a new partition on the disk device, press Ins. A screen similar to this appears:

```
            Adaptec SCSI Disk Setup Program v3.33

                                    Type   Start   End   Megs
     ┌─ Select SCSI Device to Partition ─┐
     │ HA #0 - Target 0    QUANTUM  LPT  │
     │ HA #0 - Target 4    IOMEGA   BET  │


     ┌─ Logical Drive Info ─┐
     │   64  head           │
     │   32  sectors/track  │
     │   85  cylinders      │
     │  512  bytes/sector   │        ┌── Create a DOS Partition ──┐
     │                      │        │                            │
     │   85  magabytes      │        │ Start Cylinder:      0     │
     │  2AEEFh blocks       │        │ End Cylinder:       84     │
                                     └────────────────────────────┘

              <Ins> create.  <Del> Delete.  <F1> Help.  <Esc> Exit
```

The Create a DOS Partition window suggests that you create one partition on the disk device, equal to its entire capacity. If this is what you want to do, skip to step 5.

4. To change the size of the partition, use the arrow keys to select Start Cylinder and End Cylinder, and type in the numbers you want. Partitions up to 2 Gigabytes are supported.

5. Press Esc after deciding the number of cylinders you want. When the confirmation prompt appears, select Yes and press Enter to create the partition. To create more partitions on the same disk device, repeat steps 3, 4 and 5. As you create partitions on the disk, they are added to the window at the upper right of the screen, as shown right side:

```
            Adaptec SCSI Disk Setup Program v3.33

                                    Type   Start   End   Megs
     ┌─ Select SCSI Device to Partition ─┐  DOS     0     84    85
     │ HA #0 - Target 0    QUANTUM  LPT  │
     │ HA #0 - Target 4    IOMEGA   BET  │


     ┌─ Logical Drive Info ─┐
     │   64  head           │
     │   32  sectors/track  │
     │   85  cylinders      │
     │  512  bytes/sector   │
     │                      │
     │   85  magabytes      │
     │  2AEEFh blocks       │

              <Ins> create.  <Del> Delete.  <F1> Help.  <Esc> Exit
```

6. Press Esc to return to the Select SCSI Device to Partition window. If you want to partition a different disk device, select the device from the list and repeat the earlier steps.

7. To quit afdisk, press Esc and select Yes to confirm that you want to quit.

Removable Media Manager (rmvtool)

Use the DOS-based rmvtool utility to lock, unlock, and eject removable media--for example, a cartridge in a SyQuest removable cartridge drive. You run rmvtool by entering commands at the DOS prompt. Here are the commands for a removable drive installed at SCSI ID 5:

* To lock the disk media: rmvtool /lock   /ID=5
* To unlock the disk d=media: rmvtool /unlock /ID=5
* To eject the disk media: rmvtool /eject   /ID=5

 Note: Some devices do not support the Eject command.

If the device is at another SCSI ID, type that number instead of 5. If you are not sure which device is at which SCSI ID, type rmvtool /? at the DOS prompt and press Enter. A list of SCSI devices appears. (Devices that support removable media are marked.)

If your computer has two or more host adapters, you need to add another number to the command. For example, if you have two host adapters, one of them is host adapter 0 and the other is host adapter 1. (This information appears when you type the rmvtool /? command.) So if the removable disk drive is at SCSI ID 3 on host adapter 1, you would enter this command to lock the disk media:

    rmvtool   /lock /ID=3

You can issue rmvtool commands for two or more devices, and you can add the commands to the autoexec.bat file. If you add this command line to your autoexec.bat file, rmvtool locks the media in the two devices when the computer boots. This prevents the disk media from being removed until another command is issued to unlock it.

    rmvtool   /lock /ID=4 /ID=5

Memo

On Board I/O Addresses & IRQ Maps

System Resource	IRQ	I/O Address
1. Timer	IRQ0	040, 043
2. Keyboard	IRQ1	060, 064
3. Programmable INT	IRQ2	0020, 0021, 00A0, 00A1
4. COM2(B)	IRQ3	2F8, 2FF
5. COM1(A)	IRQ4	3F8, 3FF
6. Floppy	IRQ6	3F0, 3F7
7. LPT1	IRQ7	378, 37F
8. Real Time Clock	IRQ8	070, 071
9. PS/2 Mouse	IRQ12	060, 064
10.Math coprocessor	IRQ13	0F0, 0FF
11.IDE 1	IRQ14	1F0, 1F7
12.IDE 2	IRQ15	170, 177

✎ **IRQ 5, 9, 10 and 11 are available for interface cards.**

Memo

Quick Connector and Jumper Reference
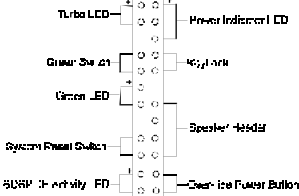
CN1: Chassis intrusion monitoring connector

CN2: Infrared connector

CN3/CN6: CPU/System cooling fan connectors

CN5: Front panel connector set
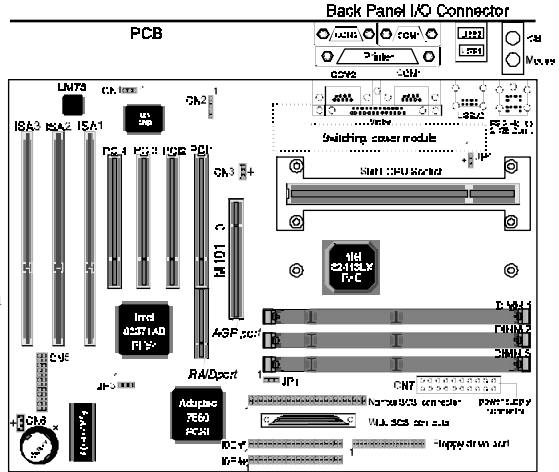
JP1: Power on by keyboard jumper
    1~2: Disabled (default)
    2~3: Enabled

JP3: Clear CMOS data jumper
    1~2: Normal (default)
    2~3: Clear CMOS data

JP4: Internal/external SCSI jumper
    1~2: Normal
    2~3: Install internal & external
        wide SCSI devices at the
        same time

SeePU (Jumper free CPU installation) setting table

CPU Type	CPU Speed		
	External Clock	Frequency Ratio	Internal Clock
Pentium II processor	66	3.5	233
		4	266
		4.5	300
		5	333

Memo