AP5S
Mainboard

User's Guide

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FCC Class B Radio Frequency Interference Statement

Note:

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

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/television technician for help.

Notice 1:

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

Notice 2:

Shielded interface cables, if any, must be used in order to comply with emission limits.

About This Manual

Purpose and Scope

This manual tells how to install and configure the system board.

Organization

This manual consists of three chapters and one appendix:
Chapter 1, **Overview**, covers the specifications, layout, and components of the system board.
Chapter 2, **Hardware Installation**, tells how to install the hardware components, configure the system by resetting the jumpers, install the system board and add expansion cards.
Chapter 3, **Award BIOS Utility**, explains the system BIOS and tells how to configure the system by setting the BIOS parameters.
Appendix A, **Jumper and Connector Summary**, gives you a tabular summary of the jumper settings and onboard connectors discussed in Chapter 2.

About This Manual

Conventions

The following conventions are used in this manual:

`Text entered by user, default settings, recommended selections`	Represent text input by the user, default settings and recommended selections
a, e, s, etc	Represent the actual keys that you have to press on the keyboard.
	**NOTE** Gives bits and pieces of additional information related to the current topic.
	**WARNING** Alerts you to any damage that might result from doing or not doing specific actions.
	**CAUTION** Suggests precautionary measures to avoid potential hardware or software problems.
	**IMPORTANT** Reminds you to take specific action relevant to the accomplishment of the procedure at hand.
	**TIP** Tells how to accomplish a procedure with minimum steps through little shortcuts.

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Chapter 1

Overview

The AP5S is a Pentium® -based system board that utilizes the PCI/ISA architecture. It has three ISA-AT and four PCI slots for future expansion. It also has four 72-pin single in-line memory modules (SIMM) sockets that accept both Fast Page Mode and EDO type DRAMs, and expand system memory to a maximum of 512 MB. The onboard 256-KB pipelined-burst cache memory supports write-back and write-through modes.

The system board integrates the SiS application-specific integrated circuits (ASICs) that enable the System Management Mode (SMM) function of the Pentium chip. This function enables the board to support the Dark Green Power Management feature that conforms to the U.S. Environmental Protection Agency (EPA) Energy Star standards.

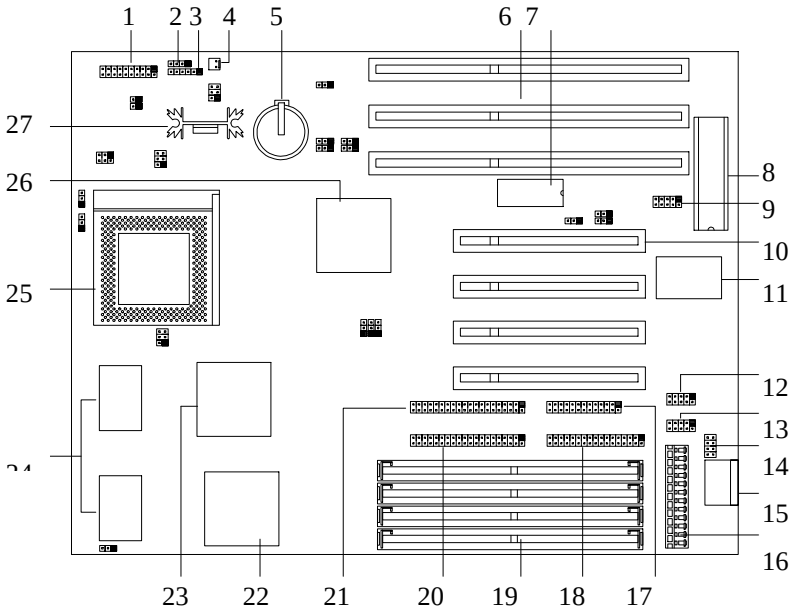
A super I/O controller and a two-channel PCI mode 4 enhanced IDE interface are also incorporated in the motherboard to further enhance system performance.

The board measures 220 mm x 280 mm, a size that easily fits most housings.

Overview

1.1 Board Layout

1 *Multifunction connector*
2 *IDE LED connector*
3 *IR connector (optional)*
4 *Two-pin fan connector*
5 *Battery*
6 *ISA slots*
7 *BIOS*
8 *Keyboard controller*
9 *USB connector (optional)*
10 *PCI slots*
11 *Super I/O controller*
12 *COM2 port*
13 *COM1 port*
14 *PS/2 mouse connector*
15 *AT-keyboard connector*
16 *Power connector*
17 *Parallel port*
18 *Floppy disk connector*
19 *SIMM sockets*
20 *IDE1 connector*
21 *IDE2 connector*
22 *SiS5512 ASIC*
23 *SiS5511 ASIC*
24 *Pipelined-burst cache*
25 *CPU socket*
26 *SiS5513 ASIC*
27 *Heatsink*



1.2 Specifications

Microprocessor	Intel Pentium (3.3V) Processor 75/90/100/120/133/150/166/200 MHz
Memory	512 MB (maximum)
SIMM Sockets	72-pin SIMM x 4, 64-bit
ASICs	SiS5511/5512/5513
Bus Architecture	ISA, PCI
Expansion Slots	Three ISA and four PCI slots
Ports	One parallel port (SPP/ECP/EPP) Two serial ports (UART 16C550) Two-channel PCI mode 4 IDE ports (bus master transfer support) One floppy disk drive port (360/720 K, 1.2/1.44/2.88 MB)
Secondary Cache	256-KB pipelined-burst cache
BIOS	Award Plug-and-Play Flash ROM BIOS
RTC & Battery	Lithium (CR2032)
Board Size	220 mm x 280 mm (baby AT)

1.3 System Board Parts

1.3.1 Microprocessor

The AP5S system board uses an Intel Pentium (3.3V) Processor running at 75, 90, 100, 120, 133, 150, 166, or 200 MHz. Chapter 2 gives details on how to install and upgrade a processor.

1.3.2 ASICs

The three ASICs (application-specific integrated circuits) onboard are the SiS5511, SiS5512, and SiS5513. The SiS5511 serves as the PCI/ISA cache memory controller that supports write-back and write-through cache modes. It features a high-performance arbiter with four PCI masters and a rotating priority mechanism. It also acts as a PCI bridge that translates CPU cycles into PCI cycles.
The SiS5512 functions as a PCI local bus data buffer that offers 64-bit DRAM and 32-bit PCI bus interfaces to support the 64-bit Pentium processor data bus. The SiS5513 acts as the ISA/PCI bus bridge that translates the PCI bus cycles into ISA bus cycles or vice-versa. It also functions as an ISA arbiter, DMA cycle and interrupt controller.

1.3.3 BIOS

The board supports the Award basic input-output system (BIOS). The BIOS is a program that performs the power-on self test (POST) upon booting. During POST, this program activates the peripheral devices, tests onboard memory and prepares the system for operation. For more information on Award BIOS, see Chapter 3.

1.3.4 Expansion Slots

The board has three ISA and four PCI expansion slots. The ISA expansion slots are the black parallel bars on the system board. The PCI slots are those with white color and are shorter than the ISA slots. There are rows of golden pins inside each slot that serve as a clutch to secure the contacts of the expansion board. For information on how to install the expansion boards, see Chapter 2.

1.3.5 DRAM Sockets

The system board has four 72-pin DRAM sockets that expand system memory to a maximum of 512 MB. These sockets accept single- and double-density single in-line memory modules (SIMMs) that support either Fast Page or Extended Data Out (EDO) modes. Chapter 2 discusses the different memory configurations available.

1.3.6 Second-level Cache

The AP5S motherboard comes with an onboard 256-KB pipelined-burst second-level cache. This pipelined-burst cache improves system performance by shortening the DRAM read prefetch time resulting to a faster data transfer rate.

1.3.7 Two-channel PCI Mode 4 Enhanced IDE Interface

The AP5S board integrates a two-channel PCI mode 4 enhanced integrated drive electronics (E-IDE) interface that allows the system to support four E-IDE devices (including hard disks with more than 528-MB capacity) via two onboard IDE connectors (see section 1.1). This feature offers users increased data storage capacity.

1.3.8 Super I/O Controller

The onboard super I/O controller accommodates the following:

- Two UART 16450/16550-compatible fast serial ports
- A parallel port with standard parallel port (SPP), enhanced parallel port (EPP) or extended capabilities port (ECP) support. Both the EPP and ECP comply with the IEEE 1284 standards.
- 3.5-inch floppy disk drives with 720-KB, 1.44-MB or 2.88-MB format
- 5.25-inch floppy disk drives with 360-KB, 1.2-MB format

1.3.9 Keyboard Connector

The onboard keyboard connector allows you to connect any AT-compatible keyboard. See the board layout figure for the location of the keyboard connector. Chapter 2 tells how to connect an AT keyboard.
The board may also come with or without a PS/2 keyboard connector.

1.3.10 Mouse Connector

The board supports both serial and PS/2 mouse connectors. See Chapter 2 for details on how to connect a serial and a PS/2 mouse connector.

Chapter 2

Hardware Installation

This chapter gives you a step-by-step procedure on how to install your system. Follow each section accordingly.

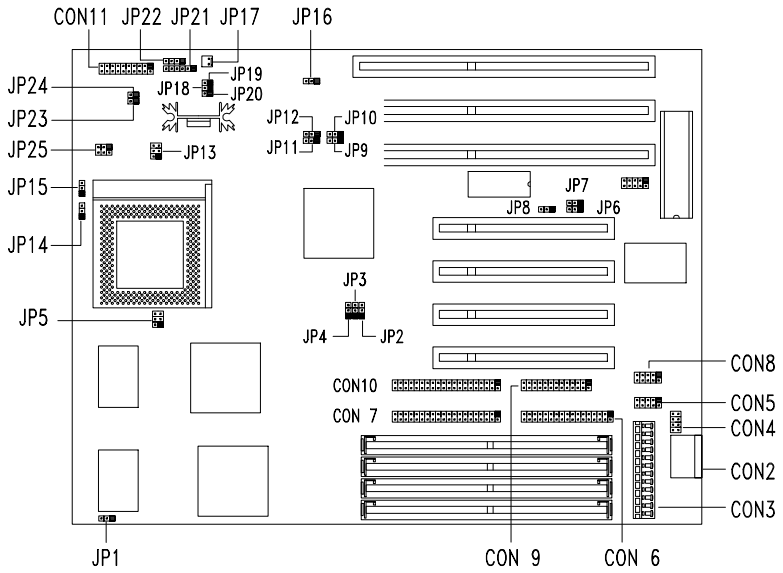
2.1 ESD Precautions

Electrostatic discharge (ESD) can damage your processor, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component.

1. Do not remove a component from its protective packaging until you are ready to install it.
2. Wear a wrist ground strap and attach it to a metal part of the system unit before handling a component. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.

2.2 Jumper Locations

The following figure shows the locations of the jumpers on the system board:

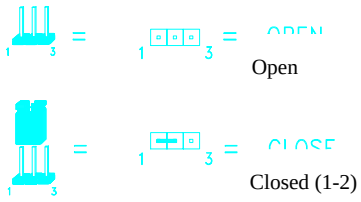


2.3 Setting the Jumper

Set a jumper switch as follows:

- To open a jumper, remove the jumper cap.
- To close a jumper, insert the plastic jumper cap over two pins of a jumper.

The conventions in the figure are used to represent the proper jumper settings.

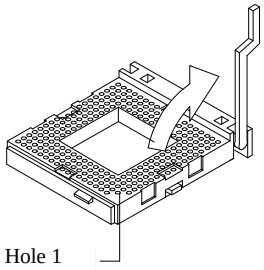


2.4 Installing a Microprocessor

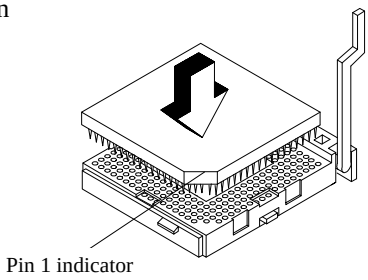
The motherboard comes with a zero-insertion force microprocessor socket that allows you to install a CPU without using any tool.
Follow these steps to install a CPU into a ZIF-type CPU socket:

Make sure that the system power is OFF before installing a component.

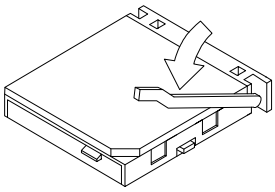
1. Locate the CPU socket on the system board and pull up the socket lever.



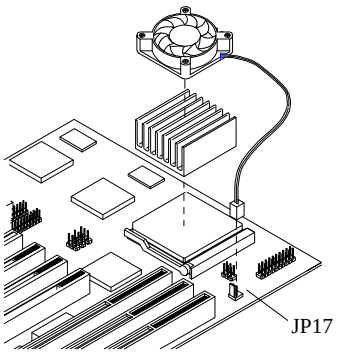
2. Insert the CPU making sure that pin 1 of the CPU aligns with hole 1 of the socket. The notched corner on the CPU indicates the location of pin 1.



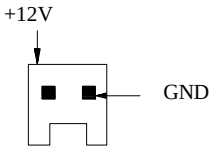
3. Pull down the socket lever to lock the CPU into the socket.



4. Attach the heatsink and fan to the CPU.



5. Plug the fan cable onto the two-pin fan connector onboard. The fan connector is marked **JP17** on the system board.



6. Set jumpers **JP5** and **JP13** according to the CPU type that you install.

CPU TYPE SELECT

	JP5	JP13
P54C		

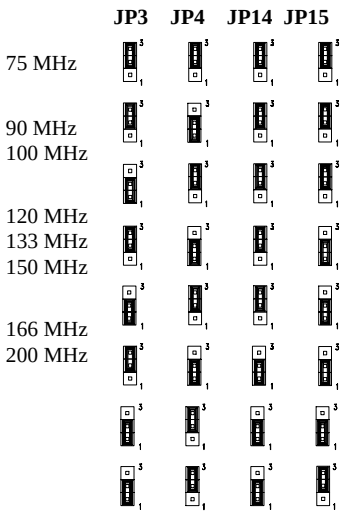
7. Set jumpers **JP18**, **JP19**, and **JP20** according to the CPU voltage supported.

CPU VOLTAGE

	JP18	JP19	JP20
VRE Type (3.450v ~ 3.600v)			
STD Type (3.135v ~ 3.465v)			

6. Set jumpers **JP3**, **JP4**, **JP14**, and **JP15** according to the frequency supported by your CPU.

CPU FREQUENCY SELECT



2.5 Upgrading the Microprocessor

To upgrade a CPU:

1. Turn off the system power and remove the housing cover.
2. Locate the CPU socket on the system board.
3. Pull up the socket lever.
4. Remove the installed CPU, if any.
5. Install the upgrade CPU. Refer to section 2.3 for instructions on how to install a CPU.

2.6 Configuring the System Memory

The system memory is expandable to 512 MB by adding single in-line memory modules (SIMMs). The four 72-pin SIMM sockets accommodate 4-, 16- and 64-MB single-density SIMMs, and 2-, 8- and 32-MB double-density SIMMs. These SIMM sockets also accept both Fast Page type and Extended Data Output (EDO) type DRAMs. The EDO feature extends the data transfer cycle, thus improves memory performance. All SIMMs support a DRAM speed of 60/70 ns or less.

The following are the possible SIMM configurations. Notice that you must install the same SIMMs in one bank.

Memory Configurations

Bank 0		Bank 1		Total Memory
SIMM 1	**SIMM 2**	**SIMM 3**	**SIMM 4**	
2 MB	2 MB			4 MB
2 MB	2 MB	2 MB	2 MB	8 MB
2 MB	2 MB	4 MB	4 MB	12 MB
2 MB	2 MB	8 MB	8 MB	20 MB
2 MB	2 MB	16 MB	16 MB	36 MB
2 MB	2 MB	32 MB	32 MB	68 MB
2 MB	2 MB	64 MB	64 MB	132 MB
2 MB	2 MB	128 MB	128 MB	260 MB
4 MB	4 MB			8 MB
4 MB	4 MB	4 MB	4 MB	16 MB
4 MB	4 MB	8 MB	8 MB	
4 MB	4 MB	16 MB	16 MB	40 MB
4 MB	4 MB	32 MB	32 MB	72 MB
4 MB	4 MB	64 MB	64 MB	136 MB
4 MB	4 MB	128 MB	128 MB	264 MB

Memory Configurations (continued)

Bank 0		Bank 1		Total Memory
SIMM 1	SIMM 2	SIMM 3	SIMM 4	
8 MB	8 MB			16 MB
8 MB	8 MB	8 MB	8 MB	32 MB
8 MB	8 MB	16 MB	16 MB	48 MB
8 MB	8 MB	32 MB	32 MB	80 MB
8 MB	8 MB	64 MB	64 MB	144 MB
8 MB	8 MB	128 MB	128 MB	272 MB
16 MB	16 MB			32 MB
16 MB	16 MB	16 MB	16 MB	64 MB
16 MB	16 MB	32 MB	32 MB	96 MB
16 MB	16 MB	64 MB	64 MB	160 MB
16 MB	16 MB	128 MB	128 MB	288 MB
32 MB	32 MB			64 MB
32 MB	32 MB	4 MB	4 MB	72 MB
32 MB	32 MB	8 MB	8 MB	80 MB
32 MB	32 MB	16 MB	16 MB	96 MB
32 MB	32 MB	32 MB	32 MB	128 MB
32 MB	32 MB	64 MB	64 MB	192 MB
32 MB	32 MB	128 MB	128 MB	320 MB
64 MB	64 MB			128 MB
64 MB	64 MB	64 MB	64 MB	256 MB
64 MB	64 MB	128 MB	128 MB	384 MB
128 MB	128 MB			256 MB
128 MB	128 MB	128 MB	128 MB	512 MB
4 MB				4 MB
8 MB				8 MB
16 MB				16 MB

32 MB				32 MB
64 MB				64 MB
128 MB				128 MB

Memory Configurations (continued)

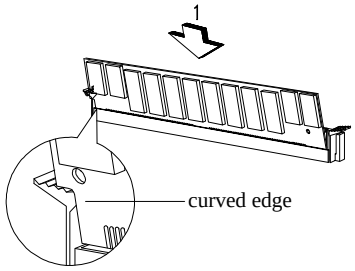
Bank 0		Bank 1		Total Memory
SIMM 1	**SIMM 2**	**SIMM 3**	**SIMM 4**	
		4 MB		4 MB
		8 MB		8 MB
		16MB		16 MB
		32 MB		32 MB
		64 MB		64 MB
		128 MB		128 MB

2.6.1 Installing a SIMM

Observe the ESD precautions when installing components.

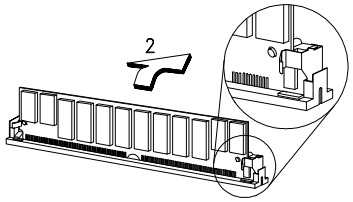
Follow these steps to install a SIMM:

1. Slip a SIMM at a 45° angle into a socket. If the SIMM does not completely fit into the socket, reverse the SIMM orientation. The SIMM has a curved edge indicating pin 1 that ensures installation in one direction only.



Be careful when inserting or removing SIMMs. Forcing a SIMM in or out of a socket can damage the socket or the SIMM (or both).

2. Gently push the SIMM up until the pegs of the socket slip into the holes on the SIMM and the holding clips lock the SIMM into a vertical position.

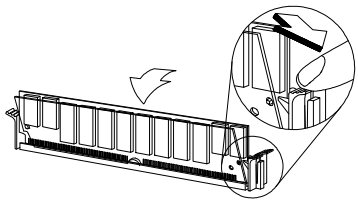


The SIMM should be at a 90°angle when installed.

2.6.2 Removing a SIMM

To remove a SIMM:

1. Press the holding clips on both sides of the SIMM outward to release it.
2. Press the SIMM downward to about a 45° angle.
3. Gently pull the SIMM out of the socket.



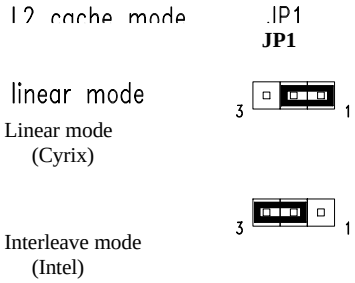
2.7 Customizing your Hardware Setup

You may customize your hardware setup according to your desired system performance. However, doing so requires resetting of several jumpers. The onboard jumpers are normally set to its default setting. See the figure in section 2.2 for the location of the jumpers on the system board.

The following sections tell how to configure the system board to meet the desired performance:

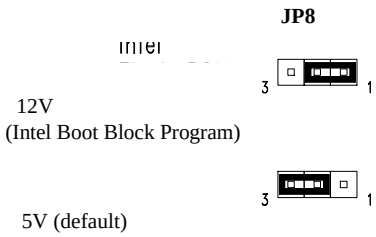
2.7.1 Selecting the L2 Cache Mode

The motherboard comes with a 256-KB pipelined-burst cache that supports both the linear and the interleave cache modes. The onboard three-pin jumper **JP1** enables you to set the cache mode depending on the CPU type in use. Select linear mode if the CPU in use is a Cyrix CPU. For an Intel CPU, select interleave mode. The default setting is 2-3.



2.7.2 Selecting the Flash ROM Type

The AP5S board supports both the 5V and 12V Flash ROM types. Normally, the board comes with a 5V Flash ROM and with the jumper **JP8** set to 2-3. Reset it to 1-2 if you want to install a 12V Flash ROM.



2.7.3 Disabling the Onboard Super I/O Controller

The board is preset by the manufacturer with the onboard I/O controller enabled. In case you wish to use an external I/O controller, you need to disable the onboard I/O before the external I/O card functions. To disable, you need to reset jumper **JP16** to 2-3.

JP16

Enabled (default)

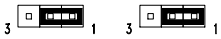
Disabled

2.7.4 Selecting the ECP DMA Channel

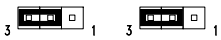
The available ECP DMA channel selections are 3 and 1. The default is DMA channel 3. To select DMA channel 1, reset jumpers **JP6** and **JP7** to 2-3.

JP6 **JP7**

DMA channel 3 (default)



DMA channel 1



2.7.5 Clearing the CMOS

You need to clear the CMOS if you forget your system password. To do this, shut off the system power and short pins 2-3 of **JP12** for a few seconds. Reset the jumper to normal setting by shorting pins 1-2. Enter Setup to specify a new password.

JP12

Normal (default)

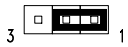
Clear CMOS

2.7.6 Disabling the PS/2 Mouse Function

The PS/2 mouse function is normally enabled and occupies IRQ12. To reassign IRQ12 to another function, you need to disable the PS/2 mouse function by opening jumper **JP10** and changing the BIOS setup. For detailed information on BIOS, see Chapter 3.

JP10

Enabled (default)



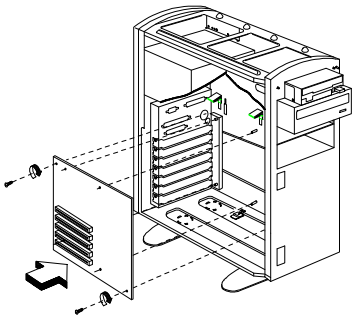
Disabled

2.8 Installing the System Board

Make sure that you have already installed the system board components like the CPU and memory, and have set the appropriate jumpers before you proceed.

Follow these steps to install a system board into a housing:

1. Open the system housing. Refer to the housing documentation for steps on how to remove the housing cover.
2. Install the board into the housing and secure it with the screws that come with the housing.
3. Attach the cables and install the necessary peripherals. See the following section for information on how to connect the peripherals.

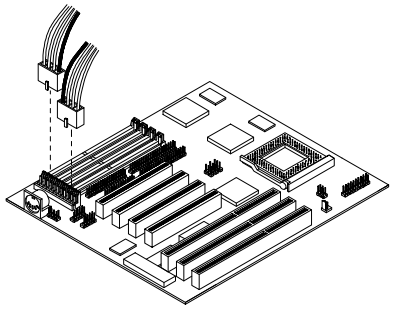


Refer to your housing documentation for more information on the system housing.

2.9 Connecting Peripherals

2.9.1 Power Cable

A standard power supply has two cables with six wires each. Plug these cables to the onboard power connector in such a way that all the black wires are in the center. The power connector is marked **CON3** on the system board.

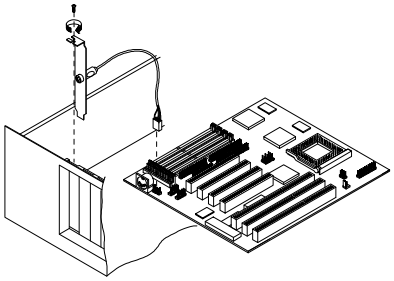


Make sure that the power supply is off before connecting or disconnecting the power cable.

2.9.2 Mouse

PS/2 Mouse

To connect a PS/2 mouse, simply insert the PS/2 bracket connector onto **CON4** on the system board. Plug a PS/2 mouse into the mouse port on the bracket.

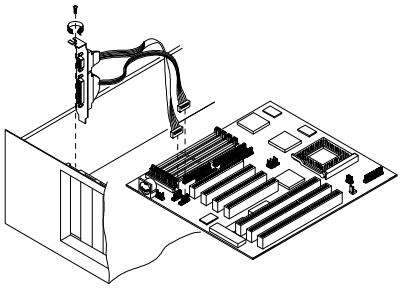


Serial Mouse

To connect a serial mouse, plug in the serial bracket connectors onto the **CON5** and **CON8**. Insert the serial mouse connector into the appropriate COM port on the bracket. See section 2.9.3.

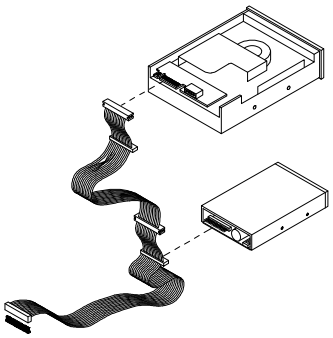
2.9.3 Serial Devices (COM1/COM2)

To support serial devices, insert the serial device connector into the serial port on the bracket. Plug in the serial port bracket connectors onto the appropriate onboard connectors. The COM1 connector is marked **CON5** and the COM2 connector is marked **CON8** on the system board.



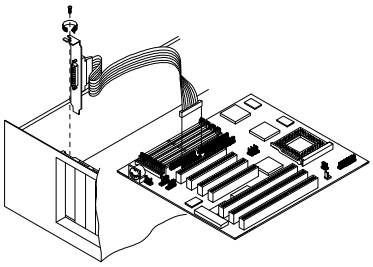
2.9.4 Floppy Drives

Connect the floppy drive cable onto the floppy drive connector marked **CON6** on the system board. See section 1.1 for the location of the connector. Refer to the figure on how to connect the cables.



2.9.5 Printer

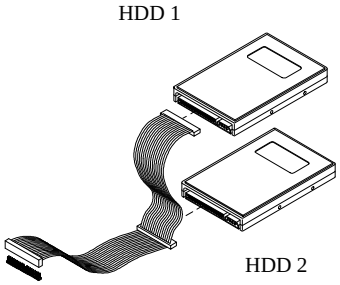
Plug in the printer bracket connector onto the onboard parallel connector marked **CON9** on the board. Refer to the figure.
The printer port on the bracket accepts the printer cable.



2.9.6 IDE Devices

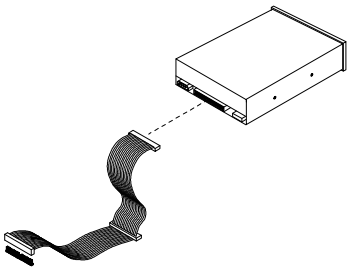
Primary IDE Connector

The primary IDE connector marked **CON7** on the system board supports two IDE devices - one IDE hard disk and one additional IDE device. Connect your IDE HDD into the master port of the primary IDE cable. Plug in the slave port into another IDE device, if any.



Secondary IDE Connector

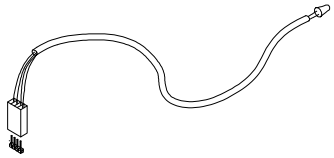
The secondary IDE connector is marked **CON10** on the board. This connector also supports two IDE devices. To install an IDE CD-ROM drive into your system, insert master port of the secondary IDE cable into the CD-ROM drive connector.
If you have more than two hard disks, connect your third hard disk into the master port. Connect your CD-ROM drive into the slave port.



2.9.7 Front-panel Switches and LEDs

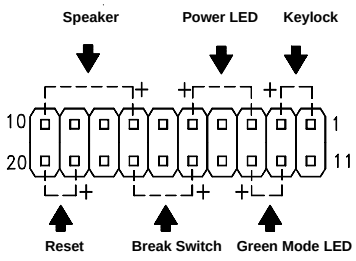
HDD LED

The HDD LED connector is marked **JP22** on the board. Plug the HDD LED socket onto this four-pin connector. See the figure.

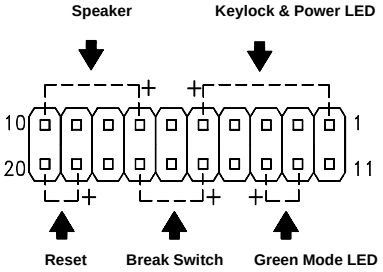


Multifunction Connector

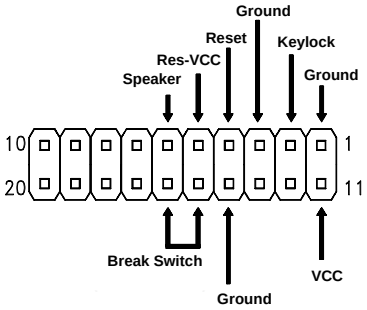
The multifunction connector is a 20-pin connector marked **CON11** on the board. Attach the green mode LED, keylock, reset switch, turbo switch, and turbo LED connectors onto the corresponding pins as shown in the figure.



Some housings have a five-pin connector for the keylock and power LED.

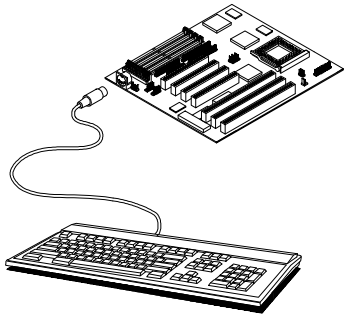


Other housings may have a 12-pin connector. If your housing has this type of connector, plug it onto CON11 as shown in the following figure. Make sure that the red wire of the connector connects to pin 11.



2.9.8 Keyboard

The onboard keyboard connector is a five-pin AT-compatible connector marked **CON2**. Refer to the figure on how to connect an AT keyboard.

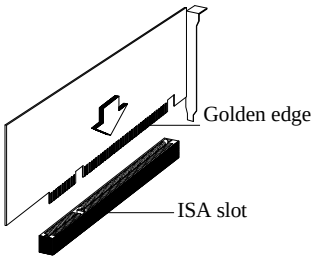


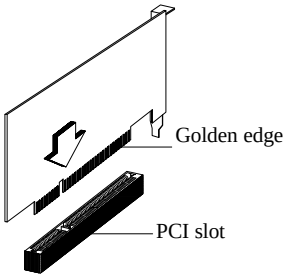
The PS/2 keyboard connector is optional.

2.10 Installing Expansion Boards

Before you install any expansion board, make sure that you have secured the system board in the housing.
Follow these steps to install an expansion board:

1. Observe the ESD precautions before removing the expansion board from its protective packaging.
2. Locate an empty expansion slot on the system board.
3. Remove the bracket opposite the slot that you want to use. Save the cover and screw for future use.
4. Remove the board from its protective packaging.
5. Gently insert the golden edge of the board onto the slot until it fits into place.
6. Secure the bracket to the housing with a screw.





Chapter 3

Award BIOS Utility

This chapter explains the Setup Utility for the Award BIOS and tells how to configure the system by setting the BIOS parameters.

3.1 Entering the Award BIOS Setup Menu

The Award BIOS Utility allows you to reconfigure your system. To enter the system menu, turn on the system. During POST, a message telling you how to enter Setup appears at the bottom of the screen. Follow this instruction by simply pressing C.

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

STANDARD CMOS SETUP	I/O CONFIGURATION SETUP
BIOS FEATURES SETUP	PASSWORD SETTING
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	HDD LOW LEVEL FORMAT
PCI CONFIGURATION SETUP	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Description of each function	

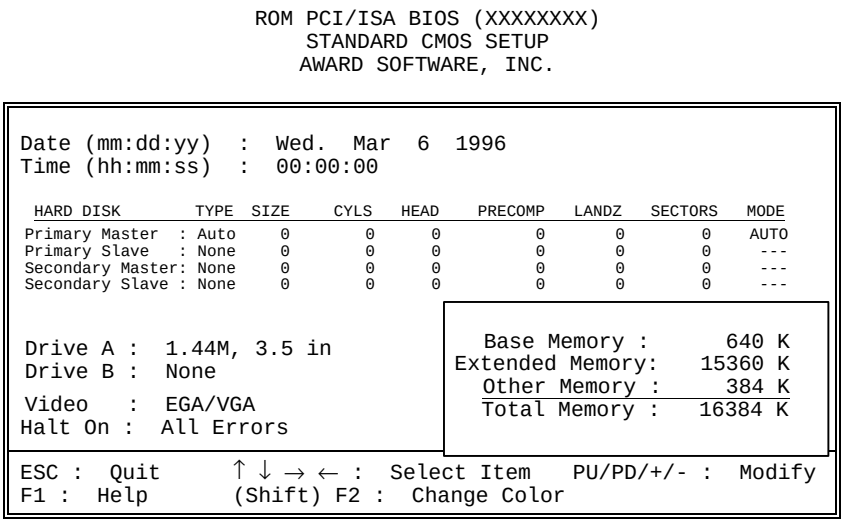
Choosing Load BIOS Defaults or Load Setup Defaults at this point modifies all applicable settings.

The section at the bottom of the screen tells how to control the screen. Use the arrow keys to move between items, jm to color scheme of the display, ^ to exit,

and u to save the changes before exit. Another section at the bottom of the screen displays a brief description of the highlighted item.
After selecting an item, press e to select or enter a submenu.

3.2 Standard CMOS Setup

The Standard CMOS Setup sets the basic system parameters such as the date, time, and the hard disk type. Use the arrow keys to highlight an item and { or } to select the value for each item.



3.2.1 Date

To set the date, highlight the Date parameter. Press { or } to set the current date. The date format is month, date, and year.

3.2.2 Time

To set the time, highlight the Time parameter. Press { or } to set the current time in hour, minute, and second format. The time is based on the 24-hour military clock.

3.2.3 Hard Disks

The four hard disk parameters listed in the menu are Primary Master, Primary Slave, Secondary Master and Secondary Slave. These parameters allow you to configure the drives that you connect into your IDE connectors.
To configure, press { or } to select a hard disk drive type, or type the number and press e. Select User to define your own hard disk type manually. You can use the IDE HDD Auto Detection function in the Main Menu to automatically configure your hard disk drive parameters. If your system does not have a hard disk drive, select None and press e.

For an IDE hard disk, we recommend that you use the Auto Detection utility to enter the drive specifications automatically. See the section IDE HDD Auto Detection.

Select the User *option if you want to enter the specifications manually.*

3.2.4 Floppy Drive Types

Press { or } to select a floppy disk drive type. The settings are:

- 360 K, 5.25-in.
- 1.2 M, 5.25-in.
- 720 K, 3.5-in.
- 1.44 M, 3.5-in.
- 2.88 M, 3.5-in.

Choose None if you have no floppy drive.

3.2.5 Video

This parameter allows you to configure the video display card present in your system. The video settings are:

- EGA/VGA
- CGA 40
- CGA 80
- MONO

Select the adapter type setting that matches your video display card and monitor.

3.2.6 Error Halt

This parameter enables you to control the system stops in case of error. The available settings are:

- `No Errors`
- `All Errors`
- `All But Keyboard`
- `All But Diskette`
- `All But Disk/Key`

The default setting is `All Errors`.

3.2.7 Memory

The Memory parameters are for display only. These are determined by the BIOS power-on self-test.

Base Memory

The POST detects the amount of base (or conventional) memory installed in the system. The value of the base memory is 640 KB for systems with 640 KB or more memory installed on the mainboard.

Extended Memory

The BIOS detects the amount of extended memory present during the POST. This is the amount of memory located above 1 MB in the CPU memory address map.

Other Memory

This refers to the memory located in the 640 KB to 1024 KB address space. This is the memory that can be used for different applications. DOS uses this

area to load device drivers to keep as much base memory free for application programs.

3.3 BIOS Features Setup

This screen appears when you select the option BIOS Features Setup from the main menu.

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

Virus Warning	:	Disabled	Video BIOS Shadow	:	Enabled
CPU Internal Cache	:	Enabled	C8000-CBFFF Shadow	:	Disabled
External Cache	:	Enabled	CC000-CFFFF Shadow	:	Disabled
Quick Power On Self Test	:	Enabled	D0000-D3FFF Shadow	:	Disabled
Boot Sequence	:	A, C	D4000-D7FFF Shadow	:	Disabled
Swap Floppy Drive	:	Disabled	D8000-DBFFF Shadow	:	Disabled
Boot Up Floppy Seek	:	Enabled	DC000-DFFFF Shadow	:	Disabled
Boot Up NumLock Status	:	On			
Boot Up System Speed	:	High			
Gate A20 Option	:	Fast			
Memory Parity Check	:	Disabled			
Typematic Rate Setting	:	Disabled			
Typematic Rate (Chars/Sec)	:	6			
Typematic Delay (Msec)	:	250			
Security Option	:	Setup			
PS/2 mouse function control	:	Disabled			
PCI/VGA Palette Snoop	:	Disabled			

ESC: Quit	↑↓→←: Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values	(Shift) F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

3.3.1 Virus Warning

Set this parameter to `Enabled` to activate the warning message. This feature protects the boot sector and partition table of your hard disk from virus intrusion. Set it to `Disabled` to disregard the message.
Any attempt during boot-up to write to the boot sector of the hard disk drive stops the system and the following warning message appears on the screen. Run an anti-virus program to locate the problem.

```
! WARNING !
Disk Boot Sector is to be modified
Type "Y" to accept write, or "N" to abort
write
Award Software, Inc.
```

3.3.2 CPU Internal Cache

The default setting for this parameter is `Enabled.` This enables the CPU's built-in cache. Disabling the parameter slows down the system. Therefore, we recommend that you leave it enabled unless you are troubleshooting a problem.

3.3.3 External Cache

Similar to the CPU internal cache, the default setting for this parameter is `Enabled`. This enables the secondary cache. Disabling the parameter slows down the system. Therefore, we recommend that you leave it enabled unless you are troubleshooting a problem.

3.3.4 Quick Power-on Self-test

This parameter speeds up POST by skipping some items that are normally checked. The default setting is `Enabled.`

3.3.5 Boot Sequence

The settings are `C,A` and `A,C` to specify the system search sequence. The default setting is `A,C`.

3.3.6 Swap Floppy Drive

Enabling this parameter tells your system to read the current floppy disk drive in use regardless of the drive designation. The system may read drive A as drive B or vice-versa. The default setting is `Disabled`.

3.3.7 Boot-up Floppy Seek

When this parameter is set to `Enabled`, BIOS detects whether there is a floppy disk drive installed in your system. Set it to `Disabled` to disregard the function. The default setting is `Enabled`.

3.3.8 Boot-up NumLock Status

Setting this parameter to `On` enables the numeric function of the numeric keypad. Set this parameter to `Off` to disregard the function. Disabling the numeric function allows you to use the numeric keypad for cursor control. The default setting is `On`.

3.3.9 Boot-up System Speed

Set the system speed to `High` or `Low` with this parameter. `High` is the default setting.

3.3.10 Gate A20 Option

The settings for this parameter are `Normal` and `Fast`. If the data transfer is controlled by the 8042 chip, set the parameter to `Normal`. The `Fast` setting transfers the control to the ASICs. The default setting is `Fast`.

3.3.11 Memory Parity Check

This parameter lets you enable or disable the optional parity DRAM. The default setting is `Disabled`. If you install SIMMs with parity bit chips, set this parameter to `Enabled`.

3.3.12 Typematic Rate Setting

Set this parameter to Enabled to determine the typematic rate. Set it to Disabled to disregard the rate setting. The default setting is Disabled.

3.3.13 Typematic Rate

This parameter allows you to control the speed at which the system registers repeated keystrokes. The typematic rate settings are 6, 8, 10, 12, 15, 20, 24, and 30 chars/sec. The default setting is 6 chars/sec.

3.3.14 Typematic Delay

This parameter allows you to control the display time between the first and the second characters. The typematic delay settings are 250, 500, 750, and 1000 msec. The default setting is 250 msec.

3.3.15 Security Option

The security option settings are System and Setup. The System option limits access to both the System and Setup. A prompt asking you to enter your password appears on the screen everytime you boot the system. The Setup option limits access only to setup. The default setting for this parameter is Setup.
To disable the security option, select Password Setting from the main menu and press e.

3.3.16 PS/2 Mouse Function Control

Setting the parameter to Enabled and connecting a mouse device to your system automatically assigns IRQ12 to mouse function. Select Disabled to re-assign IRQ12 to other functions. The default setting is Disabled.

3.3.17 PCI/VGA Palette Snoop

This function lets you enable or disable the palette snooping function in the PCI/VGA devices installed in the system. Palette snooping is a technique that enables the a device to transfer the control access to the palette registers.

Before you set this parameter to `Enabled`, check your PCI and VGA device manuals for more information about this function. The default setting is `Disabled`.

3.3.18 Video BIOS Shadow

Enabling the parameter allows you to change the video BIOS from ROM to RAM. When the system boots, the video display card BIOS routines are copied into the RAM area. This enhances system performance as information access is faster in RAM than in ROM. The default setting for this parameter is `Enabled`.

3.3.19 C8000-CBFFF Shadow to DC000-DFFFF Shadow

These six lines are for shadowing other expansion cards with ROMs. The default setting for these areas is `Disabled`. You need to know the specific addresses that ROMs use to shadow the expansion cards. If you do not know this information, enable all the ROM shadow settings. This ensures shadowing of any present ROMs. Also, enabling all the settings reduces the available memory by 640 KB to 1024 KB.

The F000 and E000 addresses are exclusively shadowed for BIOS.

3.4 Chipset Features Setup

The following screen appears when you select the option Chipset Features Setup from the main menu.

```
ROM PCI/ISA BIOS (XXXXXXXX)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.
```

Auto Configuration	: Enabled	System BIOS Cacheable	: Disabled
		Video BIOS Cacheable	: Enabled
L2 Cache Update Mode	: WB	Memory Hole At 15M-16M	: Disabled
L2 (WB) Tag Bit Length	: 7 bits	16 bit I/O wait state	: 1 wait
Sync SRAM Leadoff Timing	: 3T	16 bit I/O Recovery time	: 5 BusClk
DRAM RAS to CAS Delay	: 4T	8 bit I/O Recovery time	: 8 BusClk
RAS Active When Refresh	: 5T		
CAS Delay In Posted-WR	: 1T		
FP CAS Precharge Time	: 1T		
FP RAS Precharge Time	: 4T		
EDO CAS Pulse Width	: R1 W2 T		
EDO CAS Precharge Time	: 1T		
EDO RAS Precharge Time	: 4T		
Slow Refresh (1:4)	: Disabled	ESC: Quit	↑↓→←: Select Item
ISA Bus Clock Frequency	: PCICLK/3	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Do not change the values of the Chipset parameters unless you are a qualified technician. To configure, simply set the Auto Configuration parameter to `Enabled`. This automatically enters and locks the optimum settings for the chipset. Disable the parameter to unlock the settings without changing them. The default setting is `Enabled`.

3.5 Power Management Setup

The Power Management Setup screen enables you to control the mainboard's green features. See the following screen.

```
                ROM PCI/ISA BIOS (XXXXXXXX)
                  POWER MANAGEMENT SETUP
                   AWARD SOFTWARE, INC.

Power Management     :  Disabled          VGA Activity          :  Disabled
PM Control by APM    :   Yes              IRQ3  (COM2)          :  Enabled
Video Off Option     :  Susp, Stby→Off    IRQ4  (COM1)          :  Enabled
Video Off Method     :  V/H SYNC+Blank    IRQ5  (LPT2)          :  Enabled
Suspend Switch       :  Enabled           IRQ6  (Floppy Disk)   :  Enabled
Doze Speed (div by)  :  2                 IRQ7  (LPT1)          :  Enabled
Stby Speed (div by)  :  3                 IRQ8  (RTC Alarm)     :  Disabled
                                          IRQ9  (IRQ2 Redir)    :  Enabled
         ** PM Timers**                   IRQ10 (Reserved)      :  Enabled
HDD Off After        :  Disabled          IRQ11 (Reserved)      :  Enabled
Doze Mode            :  Disabled          IRQ12 (PS/2 Mouse)    :  Enabled
Standby Mode         :  Disabled          IRQ13 (Coprocessor)   :  Enabled
Suspend Mode         :  Disabled          IRQ14 (Hard Disk)     :  Enabled
                                          IRQ15 (Reserved)      :  Enabled
         ** PM Events**
COM Ports Activity   :  Enabled
LPT Ports Activity   :  Enabled
HDD Ports Activity   :  Enabled          ESC: Quit           ↑↓→←: Select Item
PCI/ISA Master Act.  :  Enabled          F1 : Help           PU/PD/+/- : Modify
IRQ-15 Activity      :  Enabled          F5 : Old Values    (Shift) F2 : Color
                                         F6 : Load BIOS Defaults
                                         F7 : Load Setup Defaults
```

3.5.1 Power Management

This function enables you to control the power-saving modes, display turn off and HDD power down. The four settings are as follows:

Setting	Description
Max Saving	Maximize energy conservation by putting the system into power-saving mode after a brief period of system inactivity. The maximum saving default is `20 sec`.
Min Saving	A power-saving assignment which activate after a moderate period of system inactivity. The minimum saving default is `40 Min`.
Disabled	Turns off the power-saving function.
User Defined	Allows you to set the power-saving options according to your requirements.

3.5.2 PM Control by APM

If your system supports the Advanced Power Management (APM) feature, set this parameter to `Yes`.

3.5.3 Video Off Option

This parameter determines when the video off feature activates. The default is `Susp, Stby→Off`.

3.5.4 Video Off Method

If your video display adapter supports the green features, set this parameter to its default setting which is `V/H SYNC+Blank`. If not, then set this to `Blank Setting`.

The default setting saves more power since it turns off the CRT vertical and horizontal scanning once the monitor screen blanks. However, with non-green monitors, CRT scanning does not stop even if the monitor screen blanks.

Screen saver software does not work with this feature. It is used only to prevent burning in a static image on the CRT while the monitor is on. A screen saver cannot display while the monitor is shut down to save both energy and the screen.

3.5.5 Suspend Switch

Enabling this parameter also enables the SMI connector on the mainboard which connects to the lead from a Suspend switch mounted on the system case. The default setting is `Enabled`.

3.5.6 Doze & Standby Speeds

These lines allow you to set the speed at which the CPU will operate during each mode. The number indicates the normal CPU speed divisor.

3.5.7 PM Timers

These parameters enable you to control the time-out settings for the Power Management Scheme.

HDD Off After

This time-out setting indicates when to shut down the IDE hard disk. The settings are from `1` to `15 minutes` or `Disabled`.

HDD Power Down does not affect SCSI hard disks.

Doze Mode, Standby Mode, Suspend Mode

These modes set the period of time after which each of these modes activates.

3.5.8 PM Events

This function allows you to monitor system activities. Enabling the items under this function resumes system to full power.

Normally, a Microsoft serial mouse or compatible uses either COM1 (IRQ4) or COM2 (IRQ3) and a PS/2-type mouse uses IRQ12. If you know the IRQ of your mouse, you can make sure that the wake-up event for that IRQ is enabled by moving the mouse or clicking a button.

3.5.9 IRQ3 to IRQ15

These lines allow you to set the IRQs individually. An activity from any enabled IRQ resumes the system to normal mode if the IRQ 15 Activity item in the PM Events is enabled.

3.6 PCI Configuration Setup

The PCI Configuration Setup allows you to configure the PCI devices installed in your system. The following screen appears if you select the option PCI Configuration Setup from the main menu.

```
                ROM PCI/ISA BIOS (XXXXXXXX)
                  PCI CONFIGURATION SETUP
                    AWARD SOFTWARE, INC.

PnP BIOS Auto Config    :  Disabled
1st Available IRQ       :  10  *
2nd Available IRQ       :  11  *
3rd Available IRQ       :   9  *
4th Available IRQ       :   5  *
PCI IRQ Activated By    :  Level
PCI IDE 2nd Channel     :  Enabled
```

```
PCI IDE IRQ Map To:      :  PCI-AUTO
  Primary IDE INT#       :  A
  Secondary IDE INT#     :  B

CPU-PCI Post Write Rate  :  4T
Latency for CPU-PCI      :  1T
CPU-PCI Burst Mem Write  :  Enabled
CPU-PCI Post Mem Write   :  Enabled
PCI Master Burst Range   :  2KB
```

```
ESC: Quit            ↑↓→←: Select Item
F1 : Help            PU/PD/+/- : Modify
F5 : Old Values    (Shift) F2 : Color
F6 : Load BIOS Defaults
F7 : Load Setup Defaults
```

3.6.1 PnP BIOS Auto Configuration

When enabled, the BIOS automatically sets an IRQ for each PCI/PnP device. The Disabled setting allows you to manually set the IRQ assignments. The default setting is `Disabled.`

Disable the parameter if you have a non-PnP device installed in your system.

3.6.2 Available IRQs

These parameters appear only if the PnP BIOS Auto Configuration parameter is set to `Disabled`. These let you to sequentially assign the IRQ to the PCI slots. The available settings are `3`, `4`, `5`, `7`, `9`, `10`, `11`, `12`, `14`, `15` and `NA`. When assigning, make sure that the IRQs do not conflict.
Enabling the PnP BIOS Auto Configuration to `Enabled` automatically sets the IRQ for each slot. Therefore, these parameters do not appear on screen.

3.6.3 PCI IRQ Activated By

This option lets the user set when to activate the PCI IRQ. The available settings are `Edge` and `Level`. The `Edge` is the start of the signal and `Level` is the point at which the signal is high. The default setting for this parameter is `Level`.

3.6.4 PCI IDE 2nd Channel

This parameter lets you enable or disable the second channel of the PCI IDE card, including the I/O port and the assigned IRQ to it. The default setting is Enabled.

3.6.5 PCI IDE IRQ Map To

This feature enables you to control the PCI IDE IRQ mapping. The available options are ISA, PCI-Slot 1, PCI-Slot 2, PCI-Slot 3, PCI-Slot 4, and PCI-Auto. The default is PCI-Auto.

Primary and Secondary IDE INT#

These options let you set the interrupt pins assigned for the primary and secondary channels of the PCI IDE card installed in your system.

3.6.6 CPU-PCI Post Write Rate

This parameter lets you to set the posting rate of the CPU to the PCI write data in the posting buffer. The selections are 3T and 4T. The default setting is 4T.

3.6.7 Latency for CPU-PCI

This parameter lets you to set the CPU to PCI latency time during write cycle. The latency time refers to the length of time that the bus master occupies the PCI bus. The selections are 1T and 2T. The default is 1T.

3.6.8 CPU-PCI Burst Mem Write

Enabling this parameter allows the translation of the host cycles into memory-burst cycles. After translation, this controls the memory burst-write cycles.

3.6.9 CPU-PCI Post Mem Write

This parameter lets you control the CPU posting to PCI write data in the posting buffers. The default setting is Enabled.

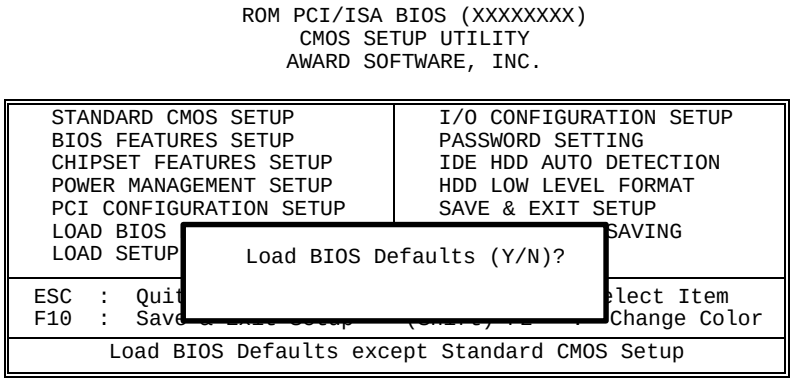
3.6.10 PCI Master Burst Range

Increasing the burst range improves system performance. However, the burst range varies depending on the SIMM configuration that your system supports. The available options are 256 B, 512 B, 1 KB, 2 KB, and 4 KB. Select 4 KB if you want to install SIMMs in pairs.

3.7 Load BIOS Defaults

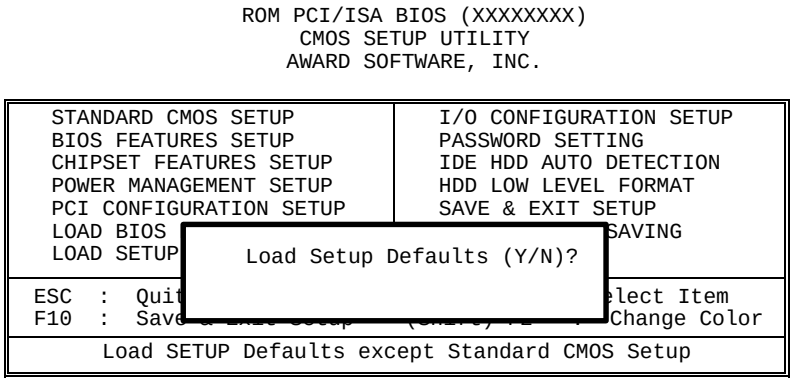
This option loads the default values permanently stored in the BIOS ROM. If the values specified in the Setup utility become corrupted, these defaults load automatically when you turn on the system power. The defaults loaded affect all the Setup items except the Standard CMOS Setup. These settings are non-optimal and bypass all high-performance features. This is useful if you are having problems with your current system configuration and need to determine the cause.

To use this feature, highlight this option on the main menu and press e. A line appears on the screen asking if you want to load the BIOS default values. To load, press Y then e. Press N to disregard. See the following screen.



3.8 Load Setup Defaults

The Load Setup Defaults option loads optimized settings from the BIOS ROM. Use this option to load the default settings for normal use. The defaults loaded affect all the Setup items except the Standard CMOS Setup.
To use this feature, highlight this option on the main screen and press e. A line appears on the screen asking if you want to load the Setup default values. To load, press Y then e. Press N to disregard. See the screen below.



3.9 I/O Configuration Setup

The I/O Configuration Setup allows you to configure the I/O features. The following screen appears if you select the option I/O Configuration Setup from the main menu.

```
                    ROM PCI/ISA BIOS (XXXXXXXX)
                      I/O CONFIGURATION SETUP
                        AWARD SOFTWARE, INC.

Onboard FDC Controller  :  Enabled
Onboard Serial Port 1   :  COM1/3F8
Onboard Serial Port 2   :  COM2/2F8
Onboard Parallel Port   :  378/IRQ7
Parallel Port Mode      :  Normal

IDE HDD Block Mode      :  Enabled
Internal PCI/IDE        :  Both
IDE Primary Master PIO  :  Auto
IDE Primary Slave PIO   :  Auto
IDE Secondary Master PIO:  Auto
IDE Secondary Slave PIO :  Auto
Primary IDE Prefetch    :  Disabled
Secondary IDE Prefetch  :  Disabled
IDE Burst Mode          :  Disabled
IDE Post Write          :  Disabled

ESC: Quit           ↑↓→←: Select Item
F1 : Help           PU/PD/+/- : Modify
F5 : Old Values    (Shift) F2 : Color
F6 : Load BIOS Defaults
F7 : Load Setup Defaults
```

3.9.1 Onboard FDC Controller

Setting this parameter to `Enabled` allows you to connect your floppy disk drives to the onboard floppy disk connector instead of a separate controller card. Change the setting to `Disabled` if you want to use a separate controller card. The default setting is `Enabled`.

3.9.2 Onboard Serial Ports 1 and 2

These lines allow you to assign addresses for the board's serial connectors. The serial ports can be assigned as follows:

Port	Address
COM1	3F8H (onboard serial port 1 default)

COM2	2F8H (onboard serial port 2 default)
COM3	3E8H
COM4	2E8H
Disabled	Disables the onboard port

Make sure that the ports have different assignments.

3.9.3 Parallel Port

This parameter controls the onboard parallel port connector. The options for this parameter are:

- `378H/IRQ7`
- `3BCH/IRQ7`
- `278H/IRQ5`
- `Disabled`

The default setting is `378H/IRQ7`.

If you are using an I/O card with a parallel port, make sure that the addresses do not conflict.

3.9.4 Parallel Port Mode

The default setting for this function is `Normal`. If your system has a parallel interface peripheral device, set this function according to the enhanced mode that your device supports. The available options are:

- `Normal`
- `EPP (Enhanced Parallel Port)`
- `ECP (Extended Capabilities Port)`

- ECP/EPP

3.9.5 IDE HDD Block Mode

This feature enhances disk performance by allowing multisector data transfers. Most IDE drives, except with old designs, can support this feature. The default setting is `Enabled`.

3.9.6 Internal PCI/IDE

Enabling this function activates the onboard IDE channels and connectors. Set this to `Disabled` to deactivate the onboard PCI and IDE controllers. The default setting is `Both`.

3.9.7 IDE Primary Master PIO

This parameter allows you to set the PIO mode supported by the master drive connected to your primary IDE connector. The options are `Auto`, `Mode 1`, `Mode 2`, `Mode 3`, and `Mode 4`. Select `Auto` to automatically detect the HDD PIO mode of your hard disk. The default setting is `Auto`.

This parameter does not appear if the Internal PCI/IDE is disabled.

3.9.8 IDE Primary Slave PIO

This parameter allows you to set the PIO mode supported by the slave drive connected to your primary IDE connector. The options are `Auto`, `Mode 1`, `Mode 2`, `Mode 3`, and `Mode 4`. Select `Auto` to automatically detect the HDD PIO mode of your hard disk. The default setting is `Auto`.

This parameter does not appear if the Internal PCI/IDE is disabled.

3.9.9 IDE Secondary Master PIO

This parameter allows you to set the PIO mode supported by the master drive connected to your secondary IDE connector. The options are `Auto`, `Mode 1`, `Mode 2`, `Mode 3`, and `Mode 4`. Select `Auto` to automatically detect the HDD PIO mode of your hard disk. The default setting is `Auto`.

This parameter does not appear if the Internal PCI/IDE is disabled.

3.9.10 IDE Secondary Slave PIO

This parameter allows you to set the PIO mode supported by the slave drive connected to your secondary IDE connector. The options are `Auto`, `Mode 1`, `Mode 2`, `Mode 3`, and `Mode 4`. Select `Auto` to automatically detect the HDD PIO mode of your hard disk. The default setting is `Auto`.

This parameter does not appear if the Internal PCI/IDE is disabled.

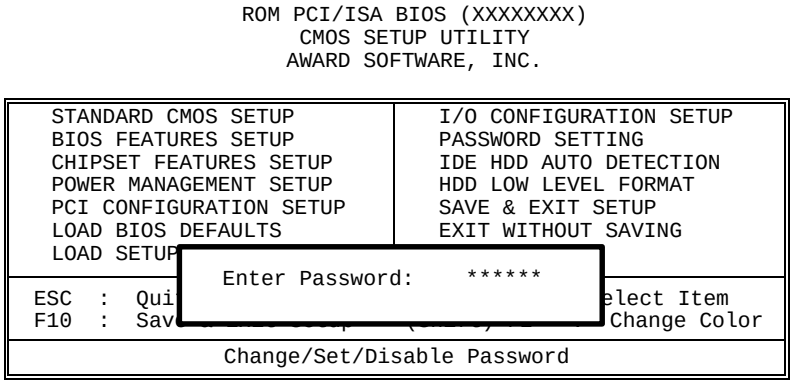
3.9.11 Primary IDE Prefetch/ Secondary IDE Prefetch/ IDE Burst Mode/ IDE Post Write

Enabling these parameters improve system performance. However, not all hard disks support these features. We recommend that you consult your hard disk manual before you enable one of these parameters.

These parameters do not appear if the Internal PCI/IDE is disabled.

3.10 Password Setting

This option lets you set a password. Password prevents unauthorized use of your computer.



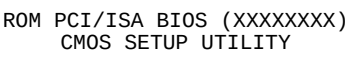
To set a password, highlight the password type that you want and press e. At the prompt, type your password. Your password can be up to 8 alphanumeric characters. Press e to enter your password. At the next prompt, re-type your password and press e again to confirm the new password. After the password entry, the screen automatically reverts to the main screen.

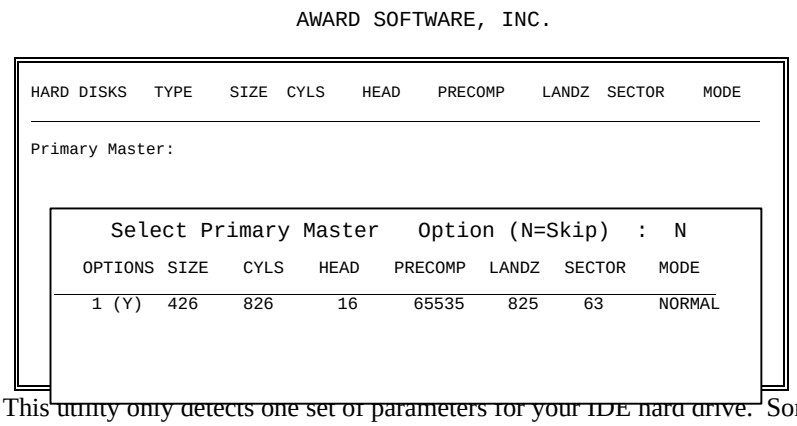
To disable the password, press e when prompted to enter the password. The screen displays a message confirming that the password has been disabled.

If you use the Password features, the Security Option line in the BIOS Features Setup determines when to enter the password.

3.11 IDE HDD Auto Detection

If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.

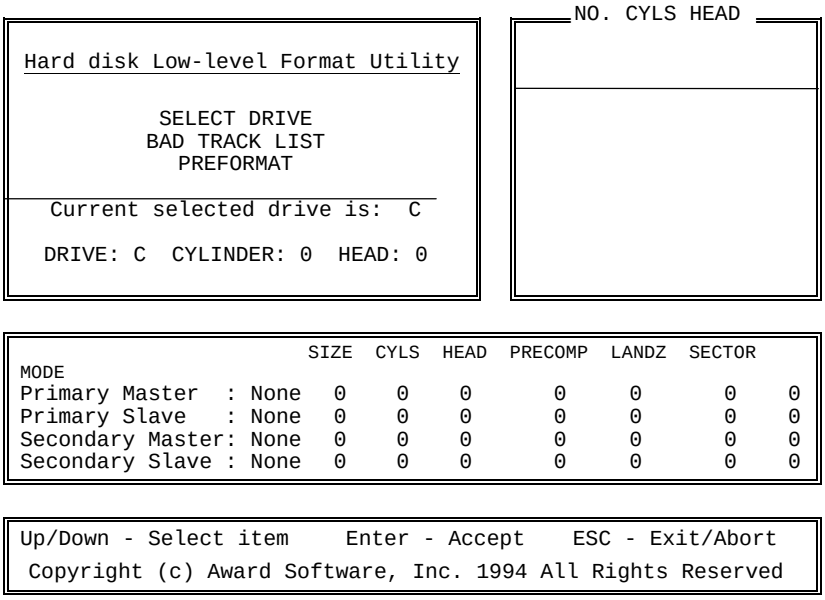




This utility only detects one set of parameters for your IDE hard drive. Some IDE drives can use more than one set of parameters. If your hard disk is formatted using different parameters than those detected, you have to enter the parameters manually. If the parameters listed don't match the ones used to format the disk, the information on that disk won't be accessible. If the auto-detected parameters displayed do not match those that used for your drive, ignore them. Press N to reject the values and enter the correct ones manually from the Standard CMOS Setup screen.

3.12 HDD Low-level Format

The HDD Low-level Format utility is designed as a tool to save your time formatting your hard disk. This automatically sets the necessary information of the selected drive. It also searches for the bad tracks and lists them for your reference.
This screen appears if you select HDD Low-level Format from the main menu.



Press w and y to move around the selections. Press e to accept the selection. Press ^ to abort the selection or exit the utility.

3.12.1 Select Drive

Select an installed hard disk drive (either C, D, E, or F). The bottom of the screen displays the drive automatically detected by the utility.

3.12.2 Bad Track List

The following options are available for this function:

- `Auto scan bad track -` Automatically scans and lists the bad tracks in the window located at the right side of the screen.
- `Add bad track -` Allows you to manually enter the information of the known bad track in the window located at the right side of the screen.
- `Modify bad track -` Allows you to modify the information of the added bad track in the window located at the right side of the screen.
- `Delete bad track -` Deletes the added bad tracks.
- `Clear bad track table -` Clears the whole bad track list in the window located at the right side of the screen.

3.12.3 Preformat

The following options are available for this function:

- `Interleave -` Allows you to manually set the interleave number of the hard disk drive selected for low-level formatting. You may enter any number from 1 to 8. Before setting, check the documentation that comes with the drive for the correct interleave number, or select `0` for automatic detection.
- `Auto scan bad track -` Allows the utility to scan first then format. Formatting is done by tracks.
- `Start -` Allows you to begin the low-level format by pressing `Y`.

3.13 Save & Exit Setup

This function automatically saves all CMOS values before leaving Setup.

3.14 Exit without Saving

Use this function to exit Setup without saving the CMOS value changes. Do not use this option if you want to save the new configuration.

3.15 NCR SCSI BIOS and Drivers

The NCR 53C810 SCSI BIOS resides on the same flash memory chip as the system BIOS. To use the onboard NCR BIOS, you need to install an NCR 53C810 SCSI controller card in your system.

All SCSI devices that you install in your system require software drivers. The NCR SCSI BIOS directly supports SCSI hard disks under DOS, Windows and OS/2. It also uses DOS-format and SCO UNIX-format support floppy disk device drivers that come with the NCR 53C810 SCSI controller card. The DOS-format device drivers are for SCSI devices used with DOS, Windows NT, Novell NetWare and OS/2. The SCO UNIX-format device drivers are for SCSI devices used with SCO UNIX. These drivers offer higher performance than the direct BIOS support.

To use the device drivers, you must install them in your system hard disk drive and add them to your system configuration files. For detailed installation instructions, see the README files that come with the drivers.

The system board also supports the Award Flash Memory Writer Utility which allows you to upgrade the system BIOS. For more information on this utility, contact your local distributor.

Appendix A

Jumper and Connector Summary

CPU Type

CPU Type	JP5	JP13
P54C	1-2, 3-4, 5-6	1-2, 3-4, 5-6

CPU Voltage

CPU Voltage	JP18	JP19	JP20
VRE Type	Closed	Open	Open
STD Type	Open	Closed	Open

CPU Frequency

CPU Frequency	JP3	JP4	JP14	JP15
75 MHz	2-3	2-3	2-3	2-3
90 MHz	2-3	1-2	2-3	2-3
100 MHz	1-2	2-3	2-3	2-3
120 MHz	2-3	1-2	2-3	1-2
133 MHz	1-2	2-3	2-3	1-2
150 MHz	2-3	1-2	1-2	1-2
166 MHz	1-2	2-3	1-2	1-2
200 MHz	1-2	2-3	1-2	2-3

L2 Cache Mode

Cache Mode	JP1
Linear mode (Cyrix)	1-2
Interleave mode (Intel)	2-3

Flash ROM Type

Flash ROM	JP8
12V	1-2
5V (default)	2-3

Super I/O Controller

Function	JP16
Enabled	1-2
Disabled	2-3

ECP DMA Channel

ECP DMA Channnel	JP6	JP7
3	1-2	1-2
1	2-3	2-3

CMOS

Function	JP12
Normal	1-2
Clear CMOS	2-3

PS/2 Mouse

Function	JP10
Enabled	1-2
Disabled	2-3

Onboard Connectors

Connector	Function
CON2	AT-keyboard
CON3	Power
CON4	PS/2 mouse header
CON5	COM1
CON6	Floppy disk
CON7	IDE1
CON8	COM2
CON9	Parallel
CON10	IDE2
CON11	Multifunction connector
JP2	Reserved
JP9	Reserved
JP11	Reserved
JP17	Fan
JP21	IR
JP22	IDE LED
JP23	Reserved
JP24	Reserved
JP25	Reserved
USB	USB interface