P5XV3

**Rev. A+
System Board
User's Manual**

Copyright

Trademarks

Caution:
Danger of explosion if battery incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the battery manufacturer's instructions.

FCC and DOC Statement on Class B

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 when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. 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 the receiver.
- Connect the equipment into 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.

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.

2. Shielded interface cables must be used in order to comply with the emission limits.
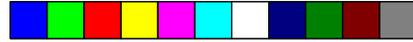
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Chapter 1 - Introduction

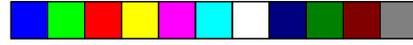## Chapter 2 - Hardware Installation

Chapter 3 - Award BIOS Setup Utility

Chapter 4 - Supported Softwares

Appendix A - Identifying Processors

Appendix B - System Error Messages

Appendix C - Troubleshooting

CHAPTER

1

Introduction

1.1 Features and Specifications

1.1.1 Features

Chipset

- VIA® Apollo VP3 AGP system chipset

Processor

The system board is equipped with a 321-pin ZIF socket (Socket 7). This socket is designed for easy removal of an old processor and easy insertion of an upgrade processor. The system board is also equipped with a switching voltage regulator that supports 2.0V to 3.5V core voltage for various processors.

- Intel Pentium® processor with MMX™ technology-166/200/233MHz
- Intel Pentium® 90/100/120/133/150/166/200MHz
- Cyrix® 6x86L PR120+/PR133+/PR150+/PR166+ and 6x86MX-PR166/PR200
- AMD® K5 PR90/PR100/PR120/PR133/PR166
- AMD® K6-166, K6-200, K6-233 and future K6 processors

System Memory

The system board supports 8MB to 256MB of memory. It is equipped with two DIMM and two SIMM sockets. The 168-pin DIMM sockets use x64 EDO (60/70ns) or SDRAM (10/12/13ns), 3.3V. The 72-pin SIMM sockets use EDO or FPM, 60/70ns, x32 DRAM, 5V.

Level 2 Cache Memory

- 512KB or 1MB pipeline burst, direct map write-back cache installed on the system board.

Expansion Slots

The system board is equipped with 1 dedicated AGP slot, 3 dedicated PCI slots, 2 dedicated 16-bit ISA slots and 1 shared PCI/ISA slot. All PCI and ISA slots are bus masters.
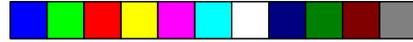
Desktop Management Interface (DMI)

The system board comes with a DMI 2.0 built into the BIOS. The DMI utility in the BIOS automatically records various information about your system configuration and stores these information in the DMI pool, which is a part of the system board's Plug and Play BIOS. DMI, along with the appropriately networked software, is designed to make inventory, maintenance and troubleshooting of computer systems easier. Refer to Chapter 4 for instructions on using the DMI utility.

Onboard I/O

- Two NS16C550A-compatible DB-9 serial ports
- One SPP/ECP/EPP DB-25 parallel port
- One floppy drive interface supports up to two 2.88MB floppy drives
- One mini-DIN-6 PS/2 mouse port
- One mini-DIN-6 PS/2 keyboard port

PCI Bus Master IDE Controller

- Two PCI IDE interfaces support up to four IDE devices
- Ultra DMA/33 supported (Synchronous Ultra DMA mode - data transfer rate up to a maximum of 33MB/sec.)
- PIO Mode 3 and Mode 4 Enhanced IDE (data transfer rate up to 16.6MB/sec.)
- Bus mastering reduces CPU utilization during disk transfer
- ATAPI CD-ROM supported
- LS-120 and ZIP supported

IrDA Interface

The system board is equipped with an IrDA connector for wireless connectivity between your computer and peripheral devices. It supports infrared peripheral devices that meet the ASKIR or HPSIR standard.

USB Ports

The system board is equipped with two USB ports. USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.
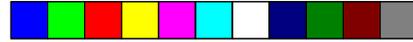
BIOS

- Award BIOS, Windows® 95 Plug and Play compatible
- Flash EPROM for easy BIOS upgrades

ATX Power Supply Connector

The system board is equipped with an ATX power supply connector. Using an ATX power supply, you can either shut down your computer by pressing the Power button located on the front bezel of your computer or by executing the Shut Down command under the Windows® 95 operating system. Your system will then enter the "Soft Off" state.

To power-on your system automatically, enable "Resume On Alarm" in the Power Management Setup of the Award BIOS (Chapter 3). This will allow you to set the date and time you would like your system to power-on.

1.1.2 Technology

AGP (Accelerated Graphics Port)

The system board is equipped with 1 AGP slot. AGP is an interface designed to support high performance 3D graphics cards. It utilizes a dedicated pipeline to access system memory for texturing, z-buffering and alpha blending; delivering up to 533MB/ sec. bandwidth for 3D graphics applications. AGP in this Intel Pentium® processor based system board will deliver faster and better graphics with your PC.

SDRAM (Synchronous Dynamic Random Access Memory)

The system board supports unbuffered SDRAM memory. SDRAM is a DRAM technology that uses the clock on the chip to synchronize with the CPU clock so that the timing of the memory chips and the timing of the CPU are synchronized. This saves time during transmission of data, subsequently increasing system performance.
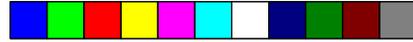
Ultra DMA/33 Bus Master IDE

Synchronous Ultra DMA mode provides data transfer rate up to a maximum of 33MB/sec, which is twice the data transfer rate of Enhanced IDE or ATA-2. This enables the CPU to operate more efficiently when handling simultaneous events.

ACPI (Advanced Configuration and Power Interface)

The system board is designed to meet the ACPI specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management.

PC '97 Compliant

The system board is PC '97 compliant. This will optimize your PC system to run Windows® 95 and Windows NT® and future versions of these operating systems.

1.1.3 Intelligence

Monitors Processor Temperature and Overheat Alarm

The system board is able to detect the temperature of the processor. An alarm will sound in case of processor overheat. Refer to Chipset Features Setup (Chapter 3) and System Health Monitor Utility (Chapter 4).

Monitors Processor/AGP Fan Speed and Failure Alarm

The system board is able to detect the fan speed (RPM-Revolutions Per Minute) of the processor and AGP fans, and alerts you to attend to any irregularity that may damage your system. Refer to Chipset Features Setup (Chapter 3) and System Health Monitor Utility (Chapter 4).

Monitors Power Voltages and Failure Alarm

The system board is able to detect the output voltage of the power supply. An alarm will sound warning you of voltage irregularity. Refer to Chipset Features Setup (Chapter 3) and System Health Monitor Utility (Chapter 4).
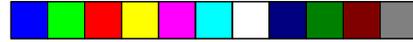
Automatic Fan Control

With the system's power switched on, the processor's fan will rotate only if the temperature of the processor is over 25°C. This saves energy, prevents system overheat, prolongs fan life and implements a silent system.

Dual Function Power Button

Depending on the setting in the BIOS setup, this switch will allow your system to enter the Soft-Off or Suspend mode. "Soft-Off By PWRBTN" in the Power Management Setup (Chapter 3) allows you to select the method of powering off your system.

External Modem Ring-on

The Modem Ring-on feature allows the Soft Power Down (Soft-Off) PC to power-on to respond to incoming calls. Enable this function in the "Resume On Ring" field and select an IRQ channel for the external modem in the "Modem Use IRQ" field. Refer to the Power Management Setup section (Chapter 3) for more information.

Note:
This feature supports external modem only. If you are using this function, make sure to turn on the power of the modem prior to powering-off the system.

RTC Timer to Power-on the System

The RTC installed on the system board allows your system to automatically power-on on the set date and time. Set the date and time you would like your system to power-on in the "Resume On Alarm" field of the Power Management Setup (Chapter 3).

Virus Protection

Most viruses today destroy data stored in hard drives. The system board is designed to protect the boot sector and partition table of your hard disk drive. If an attempt is made to write to the boot sector or partition table of the hard disk drive, the BIOS will halt the system and an error message will appear. Refer to the "Virus Warning" field in the BIOS Features Setup of the Award BIOS (Chapter 3).

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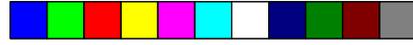
1.2 Package Checklist

The system board package contains the following items:

☑ The system board
☑ A user's manual
☑ One 40-pin IDE hard disk cable
☑ One 34-pin floppy disk drive cable
☑ One I/O shield
☑ One CD
☑ Five spare jumpers

If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.
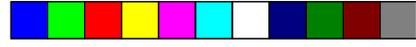
CHAPTER

2
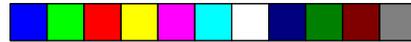
Hardware Installation
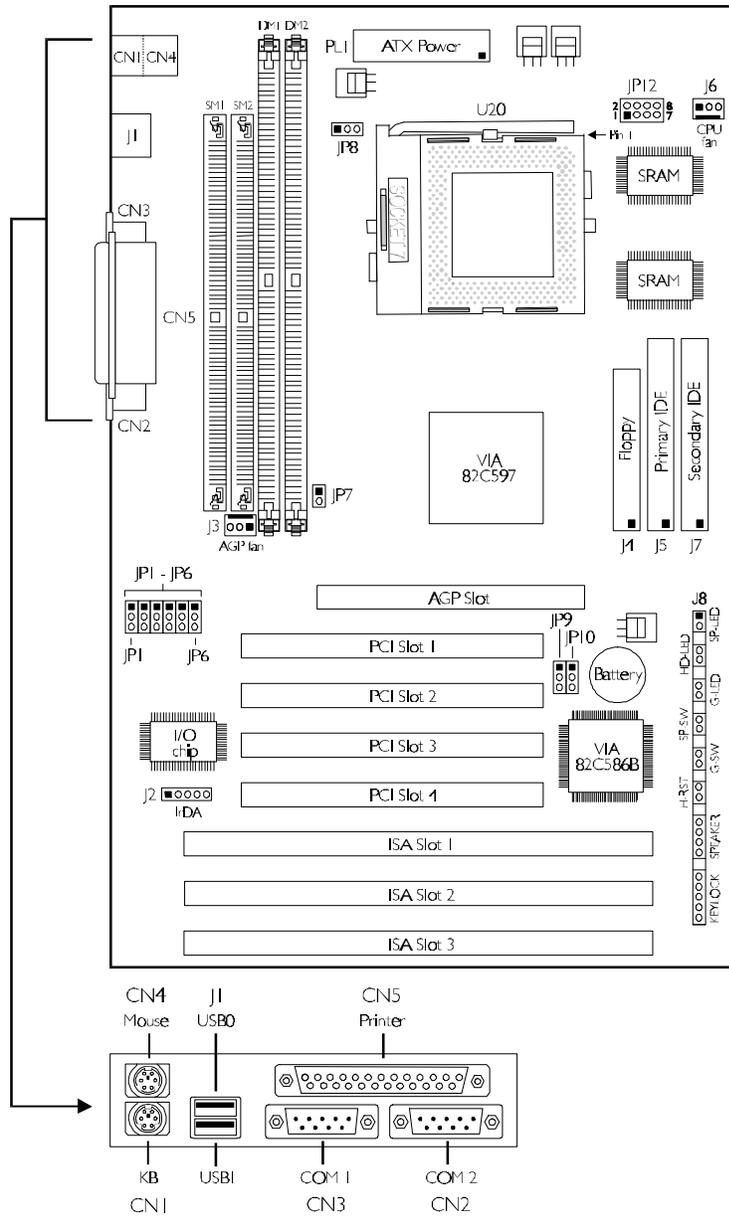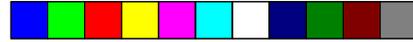
2

2.1 System Board Layout

2.2 Installation Steps

> **Warning:**
> *Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.*

The following outlines the basic installation steps prior to installing the system board into the chassis.

2.2.1   Install the System Memory

2.2.2   Install the Processor

2.2.3   Set the Jumpers on the System Board

2.2.4   Install the Expansion Cards

2.2.5   Connect the Ribbon Cables and Wires of the Ports and Connectors

2.2.6   Install the System Board

2.2.1 Installing System Memory

The system board supports two kinds of memory modules: DIMM and SIMM. DIMM, which sometimes uses SDRAM, performs better than SIMM, which uses DRAM. When you are purchasing DIMMs, please specify you want the Intel compatible type. (There are DIMMs made for other types of computers that are not compatible.)
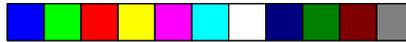
2.2.1.1 DIMM

The two 168-pin DIMM (Dual In-line Memory Module) sockets use x64 EDO or SDRAM. The system board can support 8MB to 256MB memory. Refer to the table below for the DIMM sockets and modules needed for the corresponding memory sizes.

DIMM sockets
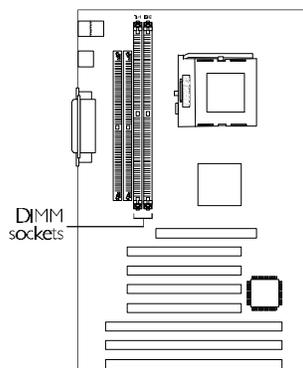
Memory Size	DM1	DM2
8MB	8MB	none
8MB	none	8MB
16MB	16MB	none
16MB	none	16MB
16MB	8MB	8MB
24MB	8MB	16MB
24MB	16MB	8MB
32MB	32MB	none
32MB	none	32MB
32MB	16MB	16MB
40MB	8MB	32MB
40MB	32MB	8MB
48MB	16MB	32MB
48MB	32MB	16MB
64MB	32MB	32MB
128MB	64MB	64MB
256MB	128MB	128MB
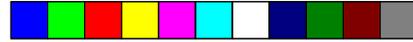
Installing the DIM Module

A DIM module simply snaps into a socket on the system board. Pin 1 of the DIM module must correspond with Pin 1 of the socket.
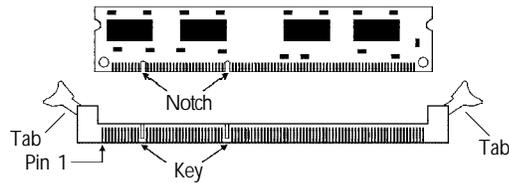
1. Pull the "tabs" which are at the ends of the socket to the side.

2. Position the DIMM above the socket with the "notches" in the module aligned with the "keys" on the socket.

3. Seat the module vertically into the socket. Make sure it is completely seated. The tabs will hold the DIMM in place.

2.2.1.2 SIMM

The two 72-pin SIMM (Single In-line Memory Module) sockets use EDO or FPM x32 DRAM. Refer to the table on the next page for the bank locations and modules needed for the corresponding memory sizes.
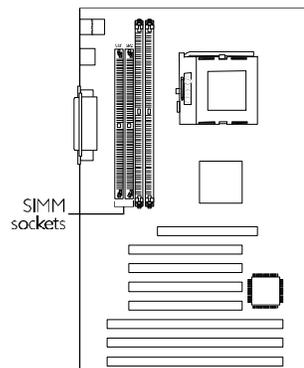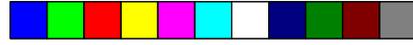
Memory Size	SM1	SM2
8MB	4MB	4MB
16MB	8MB	8MB
16MB	4MB	4MB
24MB	4MB	4MB
24MB	8MB	8MB
32MB	16MB	16MB
32MB	8MB	8MB
40MB	4MB	4MB
40MB	16MB	16MB
48MB	8MB	8MB
48MB	16MB	16MB
64MB	32MB	32MB
64MB	16MB	16MB
72MB	4MB	4MB
72MB	32MB	32MB
80MB	8MB	8MB
80MB	32MB	32MB
96MB	16MB	16MB
96MB	32MB	32MB
128MB	64MB	64MB
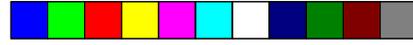
Installing a SIM Module

A SIM module simply snaps into a socket on the system board. Pin 1 of the SIM module must correspond with Pin 1 of the socket.
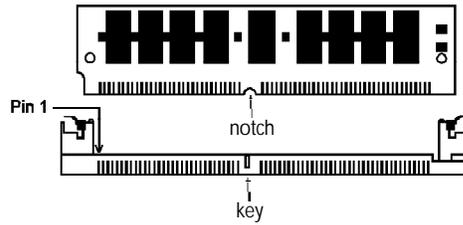
1. Position the SIMM above the socket with the "notch" in the module aligned with the "key" on the socket.

2. Seat the module at a 45° angle into the bank. Make sure it is completely seated. Tilt the module upright until it locks in place in the socket.
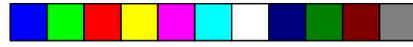
2.2.2 Installing a Processor

The system board is equipped with a 321-pin Zero Insertion Force (ZIF) socket The ZIF socket is designed for easy removal of an old processor and easy insertion of an upgrade processor. If you need to apply excessive force to insert the processor, you are not installing the processor correctly.

1. To raise the handle of the ZIF socket, push it down, slightly pull it out to the side, then raise it as far as it will go. It may be necessary to initially apply a small amount of sideways force to free the handle from its retaining "tab". Once clear of the "tab", the handle will open relatively easily. The top plate will slide back.

2. Insert the processor until the pins are in their corresponding holes. Make sure pin 1 of the processor is aligned with pin 1 of the socket. To prevent improper processor installation, the ZIF socket has a Plug/Keying mechanism. Several holes in the socket are plugged so that the processor will go in only one way.

3. Push the handle down until the handle locks into place. The top plate will slide forward.

◆ Warning:
The processor must be kept cool by using a fan with heatsink. Otherwise, the processor will overheat and damage the processor and the system board.
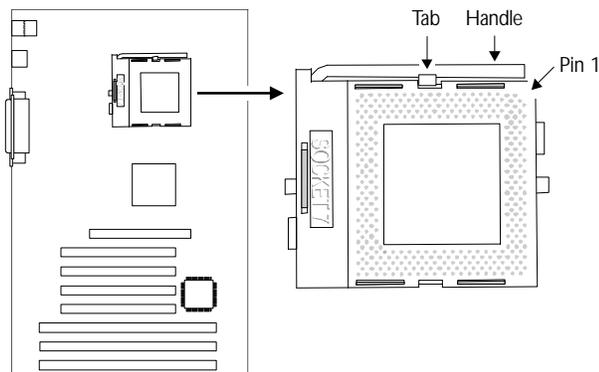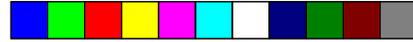
2.2.2.1 Jumper Settings of the Processors

A processor's internal clock speed is the actual internal operating clock of the processor. Its frequency ratio differs from one processor to another. An Intel® processor will multiply the external bus clock by the frequency ratio to become the internal clock speed. Internal clock speed is the commonly known speed of Intel® processors in the market and is the actual operating clock of the processor (external bus clock x frequency ratio = internal clock speed). Cyrix® and AMD® processors use the PR-rating system which is the overall processor performance rating.

The voltage of the processors are divided into Single voltage and Dual voltage processors. Single voltage processors include Intel Pentium®, Cyrix® 6x86 and AMD® K5 processors. Dual voltage processors include Intel Pentium® processors with MMX technology, Cyrix® 6x86L and 6x86MX, and AMD® K6 processors.

Make sure all jumpers are set correctly before applying power or you may damage the processor or system board. Use a needle-nosed plier to move the jumpers if necessary.

The table below shows the External System Bus Clock of the processors supported by the system board and their corresponding PCI Clock and ISA Bus Clock.

Ext. System Bus Clock	PCI CLK	ISA Bus CLK
60MHz	30MHz	7.5MHz
66MHz	33MHz	8.25MHz
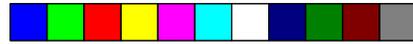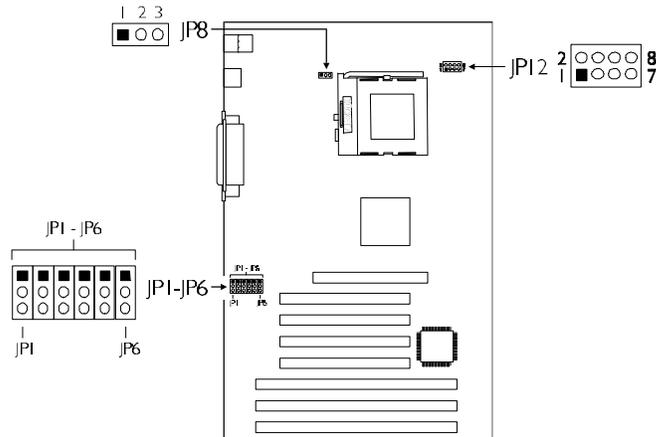
Jumper Settings for Intel Processors

Intel Processors	JP1 - JP6	Intel Processors	JP1 - JP6
90MHz - 60MHz - 1.5x	JP1 ... JP6	166MHz - 66MHz - 2.5x	JP1 ... JP6
100MHz - 66MHz - 1.5x	JP1 ... JP6	200MHz - 66MHz - 3x	JP1 ... JP6
120MHz - 60MHz - 2x	JP1 ... JP6	MMX166MHz - 66MHz - 2.5x	JP1 ... JP6
133MHz - 66MHz - 2x	JP1 ... JP6	MMX200MHz - 66MHz - 3x	JP1 ... JP6
150MHz - 60MHz - 2.5x	JP1 ... JP6	MMX233MHz - 66MHz - 3.5x	JP1 ... JP6

22
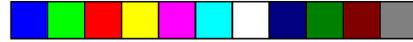
Jumper Settings for Cyrix Processors

Cyrix Processors	JP1 - JP6	Cyrix Processors	JP1 - JP6
6x86L PR120+ - 50MHz - 2x		6x86L PR166+ - 66MHz - 2x	
6x86L PR133+ - 55MHz - 2x		6x86MX-PR166 - 60MHz - 2.5x	
6x86L PR150+ - 60MHz - 2x		6x86MX-PR200 - 66MHz - 2.5x	

Jumper Settings for AMD Processors

AMD Processors	JP1 - JP6	AMD Processors	JP1 - JP6
K5 PR90 - 60MHz - 1.5x		K6-166 - 66MHz - 2.5x	
K5 PR100 - 66MHz - 1.5x		K6-200 - 66MHz - 3x	
K5 PR120 - 60MHz - 1.5x		K6-233 - 66MHz - 3.5x	
K5 PR133 - 66MHz - 1.5x		K6-266 - 66MHz - 4x	
K5 PR166 - 66MHz - 2.5x			
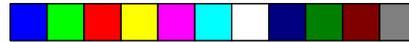
Jumper Settings for Core Voltage

Voltage	JP8	JP12
2.1V	1 2 3	2 ... 8 / 1 ... 7
2.2V	1 2 3	2 ... 8 / 1 ... 7
2.8V	1 2 3	2 ... 8 / 1 ... 7
2.9V	1 2 3	2 ... 8 / 1 ... 7
3.2V	1 2 3	2 ... 8 / 1 ... 7
3.3V	1 2 3	2 ... 8 / 1 ... 7
3.5V	1 2 3	2 ... 8 / 1 ... 7

2.2.3 Setting the Jumpers on the System Board

2.2.3.1 Jumper Settings for the Alarm

Jumper JP7
Alarm On/Off Select

The system board supports 3 types of sound for 3 different failure alarms (temperature, fan speed and voltage). Set JP7 to On if you wish the failure alarm to sound. The alarm will warn you of any irregularity that may damage your system. Refer to Chipset Features Setup (Chapter 3) for more information.

JP7
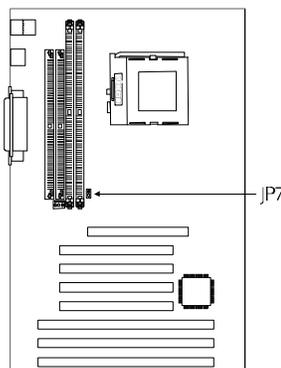
On: Alarm On   Off: Alarm Off

24
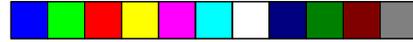
2.2.3.2 Jumper Settings for Clearing CMOS Data

Jumper JP9
Clear CMOS Data

If, for some reason, the CMOS data becomes corrupted, the system can be reconfigured with the default values stored in the ROM BIOS. To load the default values, power off your system and unplug the power cord. Set JP9 pins 1 and 2 to On. Wait for a few seconds and set JP9 back to its default setting, pins 2 and 3 On. You may now plug the power cord and power-on your system.
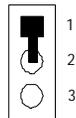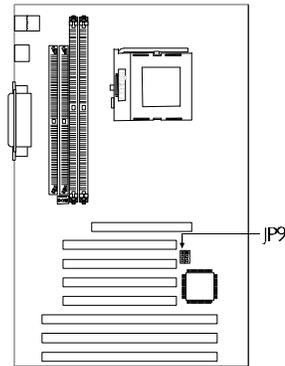
JP9

1
2
3

1-2 On:
Clear CMOS Data

1
2
3
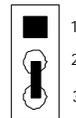
2-3 On: Normal
(default)
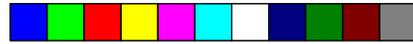
2.2.3.3 Jumper Settings for IRQ12 Select

Jumper JP10
IRQ12 Select

By default, the PS/2 mouse port uses IRQ12. If you are not using the mouse port, set JP10 pins 2 and 3 to On. IRQ12 will be available for other devices.
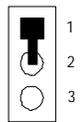
1-2 On:
PS/2 mouse
(default)

2-3 On: I/O device

JP10
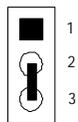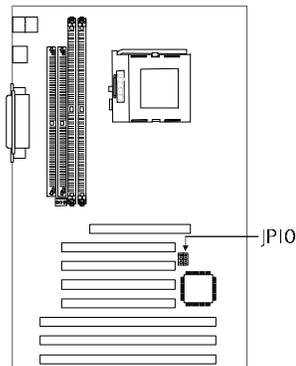
2.2.4 Installing Expansion Cards

1. Switch off the computer's power.

2. Remove the computer's cover.

3. Locate for a free expansion slot on the system board. Remove the screw and slot cover. Save the slot cover for future use. You will be using the screw in step 6.

4. Unpack the expansion card.

5. Refer to the expansion card's user's manual for any hardware settings such as jumpers.

6. Position the expansion card above the free slot. When the card's edge-connector is aligned with the slot, press firmly on the top of the card to seat it. Secure it with the screw you removed in step 3.

7. Replace the computer's cover and switch on the power.
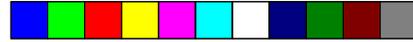
2.2.4.1 Assigning an IRQ for an Expansion Card

If your expansion card need an IRQ, make sure to assign an IRQ that has not been used yet. Refer to the expansion card's manual to determine whether an IRQ is needed.

The system has a total of 16 IRQs but most of them have been used by different components on the system leaving only 6 free IRQs available for expansion cards.

There are 2 types of ISA cards: Legacy (configured manually using jumpers) and PnP (IRQs are assigned automatically). When both types of cards exist, assign an IRQ for the Legacy cards first. The PnP card will then automatically be assigned an IRQ that has not been used by the Legacy cards.

After all ISA cards have been assigned an IRQ, the PCI cards will then be automatically assigned an IRQ.

Refer to the "Resources Controlled By" field in the PNP/PCI Configuration setup of the Award BIOS (Chapter 3) for more information.

To view the used and free IRQs, run Microsoft's Diagnostic, MSD.EXE. MSD.EXE is in the Windows directory. If you are using Windows® 95, double-click "My Computer" in the Windows® 95 desktop. In "My Computer", select "Control Panel". In "Control Panel", select "System". In "System", select "Device Manager". In "Device Manager", select a device to view the interrupt and IRQ used.

2.2.4.2 Assigning a DMA Channel for an Expansion Card

The same method (described above) is applied when assigning a DMA channel to an expansion card. Refer to the "Resources Controlled By" field in the PNP/PCI Configuration setup of the Award BIOS (Chapter 3) for more information.
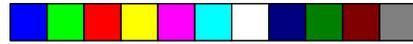
2.2.4.3 Expansion Slots

The system board is equipped with 1 dedicated AGP slot to support high performance 3D graphics cards. Refer to the "Technology" section (Chapter 1) for more information.

The system board is also equipped with 3 dedicated PCI slots, 2 dedicated 16-bit ISA slots and 1 shared PCI/ISA slot. All PCI and ISA slots are bus masters.
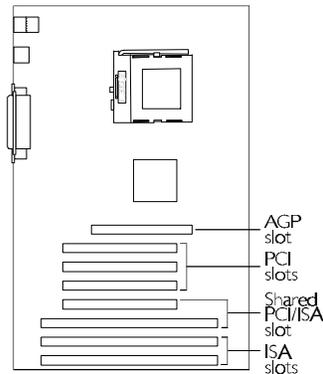
2.2.5 Connecting the Ribbon Cables and Wires of the Ports and Connectors

2.2.5.1 Serial Ports

The built-in serial ports are RS-232C asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices. You can set the serial ports' I/O address in the Integrated Peripherals setup of the Award BIOS.

28
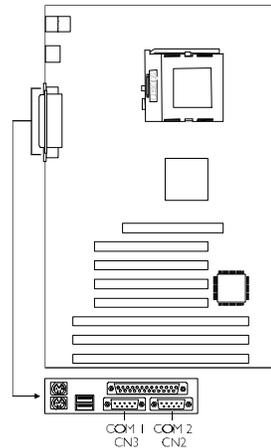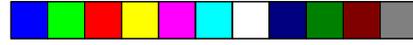
2.2.5.2 PS/2 Mouse Port

The PS/2 mouse port uses IRQ12. If a mouse is not connected to this port, the system will reserve IRQ12 for other expansion cards.

CN4
Mouse
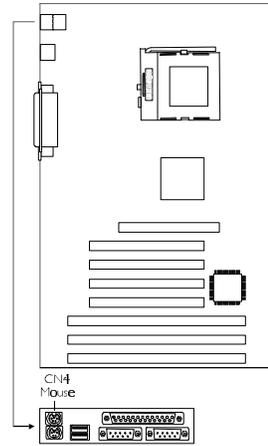
2.2.5.3 Parallel Port

The system board has a standard printer port for interfacing your PC to a parallel printer. It supports SPP, ECP and EPP modes. You can set the port's mode in the Integrated Peripherals setup of the Award BIOS.

CN5
Printer
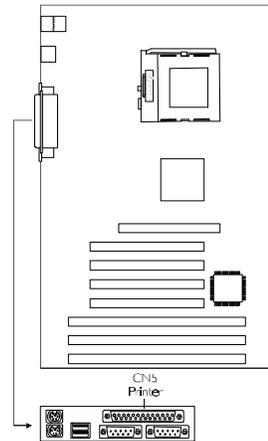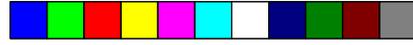
Setting	Function
SPP (Standard Parallel Port)	Allows normal speed operation but in one direction only.
ECP (Extended Capabilities Port)	Allows parallel port to operate in bidirectional mode and at a speed faster than the SPP's data transfer rate.
EPP (Enhanced Parallel Port)	Allows bidirectional parallel port operation at maximum speed.

2.2.5.4 Floppy Disk Drive Controller

The system board is equipped with a shrouded floppy disk header that supports two standard floppy disk drives. To prevent improper floppy cable installation, the shrouded floppy disk header has a keying mechanism. The 34-pin connector on the floppy cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

Connecting the Floppy Disk Cable

1. Install the 34-pin header connector into the shrouded floppy disk header (J4) on the system board. The colored edge of the ribbon should be aligned with pin 1 of J4.

2. Install the other 34-pin header connector(s) into the disk drive(s). Align the colored edge of the daisy chained ribbon cable with pin 1 of the drive edge connector(s). The end-most connector should be attached to the drive you want to designate as Drive A.
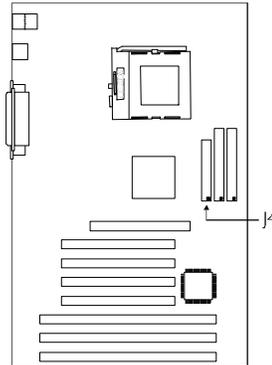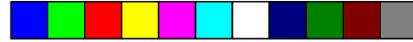
2.2.5.5 IDE Hard Disk Interface

The system board is equipped with two shrouded PCI IDE headers that will interface four Enhanced IDE (Integrated Drive Electronics) hard disk drives. To prevent improper IDE cable installation, each shrouded PCI IDE header has a keying mechanism. The 40-pin connector on the IDE cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

> **Note:**
> *An IDE cable with a standard 40-pin connector (without the keying mechanism) can be installed in the shrouded IDE header. Be extremely careful to match the colored edge of the ribbon with pin 1 of the header.*

Connecting the Hard Disk Cable

1. If you are connecting two hard drives, install the 40-pin connector of the IDE cable into the primary shrouded IDE header (connector J5). If you are adding a third or fourth IDE device, install the 40-pin connector of the other IDE cable into the secondary shrouded IDE header (connector J7).

2. Install the other 40-pin header connector(s) into the device with the colored edge of the ribbon cable aligned with pin 1 of the drive edge connector(s).
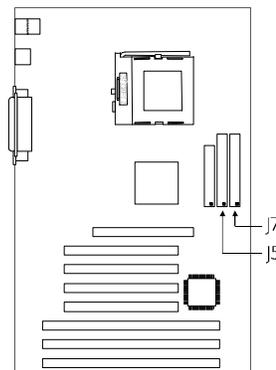
> **Note:**
> *Refer to your disk drive user's manual for information about selecting proper drive switch settings.*

31
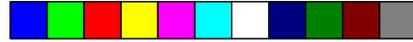
Adding a Second IDE Hard Drive

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.

We recommend that you use Enhanced IDE or ATA-2, ATA-3 and Ultra DMA hard drives be from the same manufacturer. In a few cases, drives from two different manufacturers will not function properly when used together. The problem lies in the hard drives, not the system board.

Important:
If you encountered problems while using an ATAPI CD-ROM drive that is set in Master mode, please set the CD-ROM drive to Slave mode. Some ATAPI CD-ROMs may not be recognized and cannot be used if incorrectly set in Master mode.

Preparing an IDE Drive for Use

IDE disk drives are already low-level formatted, with any bad-track errors entered, when shipped by the drive manufacturer. Do not attempt to do a low-level format or you may cause serious damage to the drive.

To use an IDE drive, you need to enter the drive type (this information is provided by the drive manufacturer) into the system's CMOS setup table. Then run FDISK and FORMAT provided with your operating system. You may also use the "IDE HDD Auto Detection" function which will allow the BIOS to auto detect your hard drive type. Refer to the Chapter 3 - IDE HDD Auto Detection section for details.

Warning:
Do not run FDISK and FORMAT programs on a drive that has already been formatted or you will lose all programs and data stored on the drive.
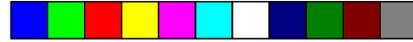
2.2.5.6 Universal Serial Bus Ports

The system board is equipped with two USB ports. USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

You must have the proper drivers installed in your operating system to use these ports. Refer to your operating system's manual or documentation.
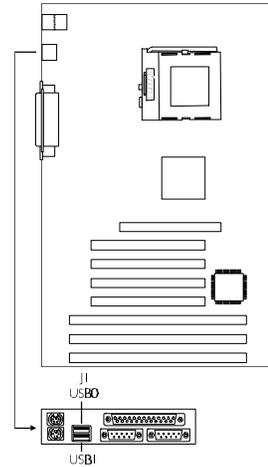
2.2.5.7 IrDA Connector

The system board is equipped with an IrDA connector for wireless connectivity between your computer and peripheral devices. Connect your IrDA cable to connector J2 on the system board. Make sure "Onboard UART 2 Mode" in the Integrated Peripherals setup of the Award BIOS (Chapter 3) is set to the type of IrDA standard supported by your IrDA peripheral/device.

You must have the proper drivers installed in your operating system to use this connector. Refer to your operating system's manual or documentation.

Pin	Function
1	IRTX
2	GND
3	IRRX
4	IRR3
5	VCC

33
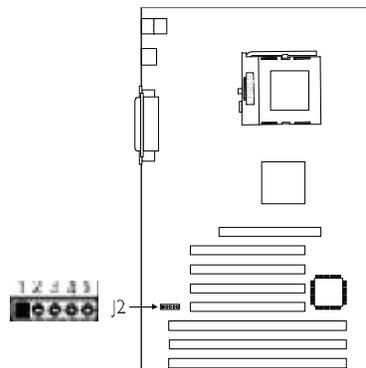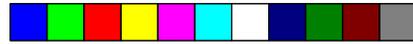
2.2.5.8 CPU Fan Connector

The processor must be kept cool by using a fan with heatsink. Connect the CPU fan to the 3-pin fan connector at location J6 on the system board.

Pin	Function
1	GND
2	+12V
3	Sense
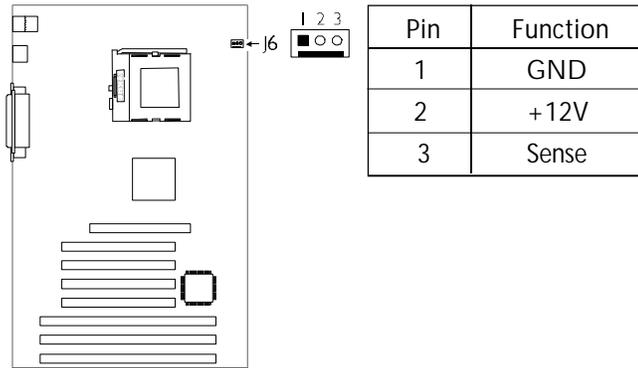
2.2.5.9 AGP Fan Connector

The system board is equipped with an AGP fan connector. If the system board is installed with an AGP add-on card and you wish to install a fan on the add-on card, connect the fan's connector to location J3 on the system board. Refer to the add-on card's manual for instructions on installing the fan.

Pin	Function
1	GND
2	+12V
3	Sense
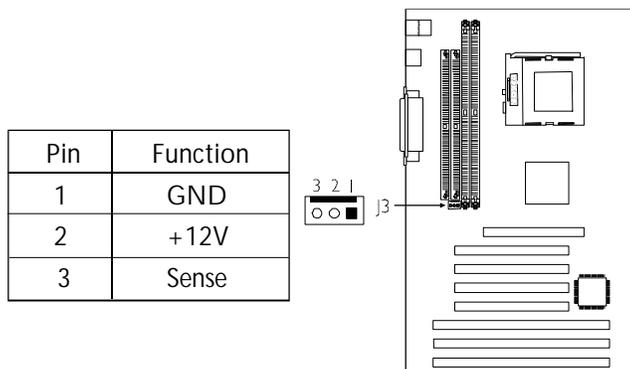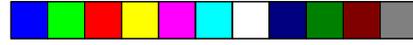
2.2.5.10 J8 (LEDs and Switches)
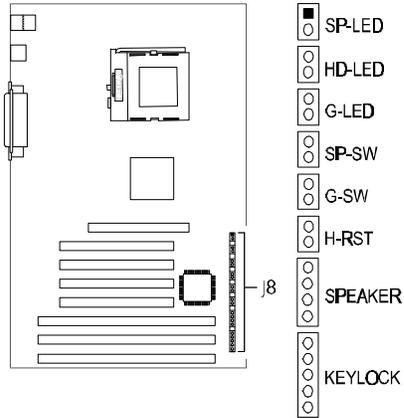
	Pin	Pin Assignment
SP-LED (ATX power LED)	1 2	ATX Power Ground
	3	Open
HD-LED (Primary/Secondary IDE LED)	4 5	HDD HDD LED Power
	6	Open
G-LED (Green LED)	7 8	Green LED Power Green
	9	Open
SP-SW (ATX power switch)	10 11	PWRBT Ground
	12	Open
G-SW (Green switch)	13 14	SMI Ground
	15	Open
H-RST (Reset switch)	16 17	H/W Reset Ground
	18	Open
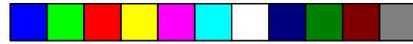
	Pin	Pin Assignment
SPEAKER (Speaker connector)	19 20 21 22	Speaker Power Ground N. C. Speaker
	23	Open
KEYLOCK (Keylock Connector)	24 25 26 27 28	LED Power N.C. Ground Keylock Ground

SP-LED - ATX Power LED

This LED will light when the system's power is On.

HD-LED - Primary/Secondary IDE LED

This LED will light when the hard drive is being accessed.

G-LED - Green LED

This LED will light when the system is in the Suspend mode or Soft Power-off mode.

SP-SW - ATX Power Switch

Depending on the setting in the BIOS setup, this switch is a "dual function power button" that will allow your system to enter the Soft-Off or Suspend mode. Refer to "Soft-Off By PWRBTN" in the Power Management Setup (Chapter 3).

G-SW - Green Switch

This switch will allow your system to enter the Suspend mode. To wake up the system, "PM Events" in the Power Management Setup (Chapter 3) must be enabled so that access to the specified IRQ will allow the system to wake up completely from the Suspend mode.

H-RST - Reset Switch

This switch allows you to reboot without having to power off the system thus prolonging the life of the power supply or system.
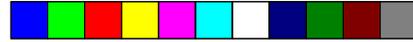
SPEAKER - Speaker Connector

This connects to the speaker installed in the system chassis.

KEYLOCK - Keylock Connector

This is used to connect to the keyboard lock (located on the front panel of the system chassis) for locking the keyboard. Use pins 24 to 26 to connect to the Power LED.

2.2.5.11 ATX Connector

The system board is equipped with an ATX power connector at location PL1 of the system board. Using an ATX power supply, you can either shut down your computer by pressing the Power button located on the front bezel of your computer or by executing the Shut Down command under the Windows® 95 operating system. Your system will enter the "soft power off" state. To power on your system automatically, enable "Resume On Alarm" in the Power Management Setup of the Award BIOS. This will allow you to set the date and time you would like your system to power-on. Install the 20-pin ATX power cable connector into location PL1 on the system board. The 20-pin connector can be inserted into PL1 only if pin 1 of the connector is aligned with pin 1 of PL1. The location of PL1 is shown on the next page.

Pin	Function	Pin	Function
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	COM	13	COM
4	5V	14	PS-ON
5	COM	15	COM
6	5V	16	COM
7	COM	17	COM
8	PW-OK	18	-5V
9	5VSB	19	5V
10	12V	20	5V
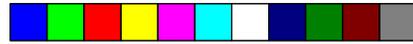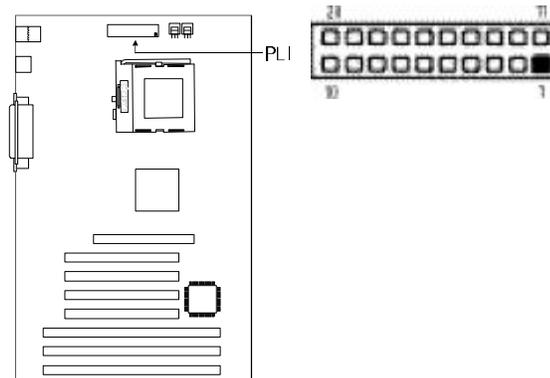
2.2.6 Installing the System Board

1. Remove the I/O shield located at the rear of the system unit and replace it with the I/O shield included in the package. Refer to your system chassis manual for instructions on removing and installing the I/O shield.

2. After you have finished installing or upgrading the system board, install the system board into the chassis.

3. Install all expansion cards, cables and connectors.

4. Replace the system unit cover. Reconnect all power cords and cables.

5. You may now turn on the power of your system unit. After you power up your system, the BIOS message appears on your screen and the memory count begins. After the memory test, the following message will appear on the screen:

   Press DEL to enter setup.

   If the message disappears before you respond, restart your system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

6. Refer to Chapter 3 for descriptions on the BIOS setup.

CHAPTER

3
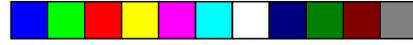
Award BIOS Setup Utility
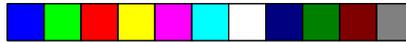
3.1 The Basic Input/Output System

The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contain codes for various advanced features found in this system board. This chapter explains the Setup Utility for the Award BIOS.

After you power up your system, the BIOS message appears on your screen and the memory count begins. After the memory test, the following message will appear on the screen:

Press DEL to enter setup

If the message disappears before you respond, restart your system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

When you press <Del>, the main program screen will appear.

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

    STANDARD CMOS SETUP           INTEGRATED PERIPHERALS
    BIOS FEATURES SETUP           SUPERVISOR PASSWORD
    CHIPSET FEATURES SETUP        USER PASSWORD
    POWER MANAGEMENT SETUP        IDE HDD AUTO DETECTION
    PNP/PCI  CONFIGURATION        SAVE & EXIT SETUP
    LOAD FAIL-SAFE SETTINGS       EXIT WITHOUT SAVING
    LOAD OPTIMAL SETTINGS


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

3.1.1 Standard CMOS Setup

Use the arrow keys to highlight "Standard CMOS Setup" and press <Enter>. A screen similar to the one on the next page will appear.

```
                        ROM PCI/ISA BIOS
                      STANDARD CMOS SETUP
                      AWARD SOFTWARE, INC.

 ┌─────────────────────────────────────────────────────────────────────┐
 │ Date (mm:dd:yy) : Mon, Dec 1 1997                                     │
 │ Time (hh:mm:ss) : 13: 27: 50                                         │
 │ 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 : 64512K │  │
 │ Video   : EGA/VGA                      │ Other Memory :     384K  │  │
 │ Halt on : All Errors                   │ Total Memory : 65536K    │  │
 │                                        └──────────────────────────┘  │
 │  Esc  :  Quit          ↑↓→←   :  Select Item    PU/PD/+/-  :  Modify  │
 │  F10  :  Save & Exit Setup   (Shift)F2  :  Change                    │
 └─────────────────────────────────────────────────────────────────────┘
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1994 to 2079.

Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Primary Master, Primary Slave, Secondary Master and Secondary Slave

These categories allow you to enter the appropriate specifications for the type of hard disk drive(s) installed in your system. Press <PgUp> or <PgDn> to select a numbered hard disk type or type the number and press <Enter>. The hard disk will not work properly if you enter improper information for this category. You can use Type "User" to define your own drive type manually. This information should be included in the documentation from your hard disk vendor. If you select Type "Auto", the BIOS will auto-detect the HDD & CD-ROM drive at the POST stage and show the IDE for the HDD & CD-ROM drive. If a hard disk has not been installed, select "None" and press <Enter>.

41
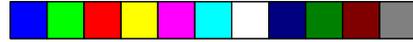
Drive A and Drive B

These categories identify the types of floppy disk drives installed. Choosing an incorrect type might cause your system to format the floppy disk improperly and you cannot access your data. The options for drive A and B are:

None   No floppy drive is installed
360K, 5.25 in. 5-1/4 in. standard drive; 360KB capacity
1.2M, 5.25 in. 5-1/4 in. AT-type high-density drive; 1.2MB capacity
720K, 3.5 in. 3-1/2 in. double-sided drive; 720KB capacity
1.44M, 3.5 in. 3-1/2 in. double-sided drive; 1.44MB capacity
2.88M, 3.5 in. 3-1/2 in. double-sided drive; 2.88MB capacity

Video

This category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in Setup. The default setting is EGA/VGA (BIOS default, Setup default).

EGA/VGA   Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SVGA and PGA monitor adapters.
CGA 40   Color Graphics Adapter. Power up in 40-column mode.
CGA 80   Color Graphics Adapter. Power up in 80-column mode.
Mono   Monochrome adapter. Includes high resolution monochrome adapters.

Halt On

This category determines whether the system will stop if an error is detected during power up. The default setting is All Errors (BIOS default, Setup default).

No Errors The system boot will not stop for any errors detected.
All Errors The system boot will stop whenever the BIOS detects a non-fatal error.
All, But Keyboard The system boot will not stop for a keyboard error; it will stop for all other errors.
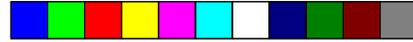
All, But Diskette   The system boot will not stop for a disk error; it will stop for all other errors.

All, But Disk/Key   The system boot will not stop for a disk or keyboard error; it will stop for all other errors.

Memory

The base memory size, extended memory size and the other memory size cannot be altered; your computer automatically detects and displays them.

Base Memory   The POST will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory   The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

Other Memory   This refers to the memory located in the 640K to 1024K address space. This is the memory that can be used for different applications. DOS uses this area to load device drivers in an effort to keep as much base memory free for application programs. The BIOS is the most frequent user of this RAM area since this is where it shadows the ROM.

3
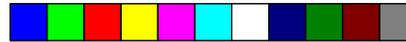
3.1.2 BIOS Features Setup

The BIOS Features Setup allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

```
                          ROM PCI/ISA BIOS
                        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, SCSI D4000-D7FFF Shadow  : Disabled
  Swap Floppy Drive        : Disabled   D8000-DBFFF Shadow  : Disabled
  Boot Up Floppy Seek      : Disabled   DC000-DFFFF Shadow  : Disabled
  Boot Up NumLock Status   : On
  Gate A20 Option          : Fast
  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
  HDD S.M.A.R.T. Capability : Disabled   F6  : Load Fail-Safe Settings
                                         F7  : Load Optimal Settings
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Virus Warning

This category protects the boot sector and partition table of your hard disk drive. When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive. If an attempt is made to write to the boot sector or partition table of the hard disk drive, the BIOS will halt the system and an error message will appear.

After seeing the error message, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

Many disk diagnostic programs which attempt to access the boot sector table will cause the warning message to appear. If you are running such a program, we recommend that you first disable this category. Also, disable this category if you are installing or running certain operating systems like Windows® 95 or the operating system may not install nor work.
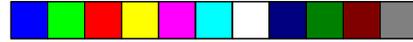
CPU Internal Cache and External Cache

These categories speed up the memory access. The default value is enabled. Enable the External Cache for better performance.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on your system. When Enabled, the BIOS will shorten or skip some check items during POST.

Boot Sequence

This category determines which drive to search first for the disk operating system. The default is A, C, SCSI. The options are:

A, C, SCSI;	C, A, SCSI;	C, CDROM, A;	CDROM, C, A;
D, A, SCSI;	E, A, SCSI;	F, A, SCSI;	SCSI, A, C;
SCSI, C, A;	C only;	LS120/ZIP, C.	

Swap Floppy Drive

When this option is enabled and the system is booting from the floppy drive, the system will boot from drive B instead of drive A. When this option is disabled and the system is booting from the floppy drive, the system will boot from drive A. You must have two floppy drives to use this function.

Boot Up Floppy Seek

When enabled, the BIOS will check whether the floppy disk drive installed is 40 or 80 tracks. Note that the BIOS cannot distinguish between 720K, 1.2M, 1.44M and 2.88M drive types as they are all 80 tracks. When disabled, the BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360KB.

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.
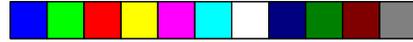
Gate A20 Option

This entry allows you to select how gate A20 is handled. Gate A20 is a device used to address memory above 1 Mbyte. Initially, gate A20 was handled via the keyboard controller. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

Typematic Rate Setting

When disabled, continually holding down a key on your keyboard will cause the BIOS to report that the key is down. When the typematic rate is enabled, the BIOS will not only report that the key is down, but will first wait for a moment, and, if the key is still down, it will begin to report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys.

Typematic Rate (Chars/Sec)

This selection allows you to select the rate at which the keys are accelerated.

Typematic Delay (Msec)

This selection allows you to select the delay between when the key was first depressed and when the acceleration begins.

Security Option

System The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

Setup The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

PCI/VGA Palette Snoop

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. The default value is Disabled.

Enabled PCI/VGA working with MPEG ISA/VESA VGA cards.
Disabled PCI/VGA not working with MPEG ISA/VESA VGA cards.

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OS Select for DRAM > 64MB

This item allows you to access the memory that is over 64MB in OS/2. The options are: Non-OS/2 and OS/2.

HDD S.M.A.R.T. Capability

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. The default is Disabled. If you are using hard drives that support S.M.A.R.T., set this field to Enabled. SMART is supported in ATA-3 or later hard drives.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. Video Shadow will increase the video speed. Note that some graphics boards require that this option be disabled. The default value is Enabled.

Enabled   Video shadow is enabled.
Disabled   Video shadow is disabled.

C8000-CBFFF Shadow to DC000-DFFFF Shadow

These categories determine whether option ROMs will be copied to RAM.

Enabled   Optional shadow is enabled.
Disabled   Optional shadow is disabled.

3.1.3 Chipset Features Setup

```
                        ROM PCI/ISA BIOS
                     CHIPSET FEATURES SETUP
                      AWARD SOFTWARE, INC.
┌──────────────────────────────────────────────────────────────────┐
│ SIMM DRAM Timing        : 70 ns      PCI#2 Access #1 Retry  : Disabled │
│ DIMM 1 DRAM Timing      : 70 ns      AGP Master 1 WS Write  : Disabled │
│ DIMM 2 DRAM Timing      : 70 ns      AGP Master 1 WS Read   : Disabled │
│ SDRAM CAS Latency       : 3                                            │
│ SDRAM Bank Interleave   : Disabled     **** System Health Monitor **** │
│ DRAM Read Pipeline      : Disabled   Current CPU Temperature  : 27ºC/80ºF │
│ Tag RAM Number          : One        Current CPU Fan Speed    : 4285 RPM │
│ Sustained 3T Write      : Enabled    Current AGP Fan Speed    : 4137 RPM │
│ Cache Pipeline          : Disabled   CPU Temperature Limit    : Ignore │
│ Read Around Write       : Disabled   CPU Fan Speed Limit      : Ignore │
│ Cache Timing            : Fastest    AGP Fan Speed Limit      : Ignore │
│ Video BIOS Cacheable    : Enabled    +3.3V Voltage            : Ignore │
│ System BIOS Cacheable   : Enabled    +12V Voltage             : Ignore │
│ Memory Hole at 15Mb Addr. : Disabled +5V Voltage              : Ignore │
│ AGP Aperture Size (MB)  : 256                                          │
│ AGP-2x Mode             : 1x, 2x   ─────────────────────────────────── │
│ CPU to PCI Write Buffer : Disabled   ESC : Quit      ↑↓→← : Select Item │
│ PCI Dynamic Bursting    : Disabled   F1  : Help    PU/PD/+/- : Modify   │
│ PCI Master 0 WS Write   : Enabled    F5  : Old Values (Shift) F2 : Color │
│ PCI Delay Transaction   : Disabled   F6  : Load Fail-Safe Settings      │
│ PCI Master Read Prefetch : Disabled  F7  : Load Optimal Settings        │
└──────────────────────────────────────────────────────────────────┘
```

The settings on the screen are for reference only. Your version may not be identical to this one.

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources. It also coordinates communications between the conventional ISA bus and the PCI bus. These items should not be altered unless necessary. Depending on your add-in cards, you may not or should not enable some of those features. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered some incompatibility or that data was being lost while using your system.

Current CPU Temperature, Current CPU Fan Speed and Current AGP Fan Speed

These fields show the current temperature of the processor, and the current fan speed of the CPU and AGP fans in RPM (Revolutions Per Minute).

CPU Temperature Limit

This field allows you to manually set a limit to the processor's temperature. If the temperature of the processor is over the temperature set in this field (70ºC/158ºF recommended), an alarm

will sound warning you of system overheat. The sound of the alarm is continuous low to high beeps. Some of the most common causes leading to high temperature are:

- The fan is not functioning normally or has stopped. Turn off your system and replace the fan.
- The space clearance of the processor, fan and heat sink is inadequate to maintain proper airflow and heat dissipation.
- The chassis or cabinet has poor ventilation.

CPU Fan Speed Limit and AGP Fan Speed Limit

These fields allow you to manually set a limit to the speed of the CPU and AGP fans. If the CPU/AGP fan speed is under the speed set in these fields, an alarm will sound informing you to attend to any issue that may damage your system. The sound of the alarm resembles that of the siren of an ambulance. The "failure detection" circuit requires a fan to operate at greater than 3600 RPM.

+3.3V, +5V and +12V Voltages

Set these fields to "Monitor" if you want the system board to detect the output voltage of the power supply. If the output voltage is over or under +3.3V/+5V/+12V (±10%), an alarm will sound warning you of voltage issue. The sound of the alarm is continuous low to high beeps but shorter than the temperature alarm. Some of the most common causes leading to unstable output voltage of a power supply are:

- The power supply is not functioning normally. Turn off your system and replace the power supply.
- The AC input from the power outlet to your system is unstable. Please consult your MIS department or an electrician.
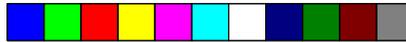
3.1.4 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy. If you like to use the soft power down feature of Windows® 95, you must enable the Power Management field below. Select Min. Power, Max. Power or User Defined. Either one can be used as long as it is NOT disabled.

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

  Power Management    : User Define          ** PM Events **
  PM Control by APM   : Yes         IRQ3   (COM 2)      : Primary
  Video Off Method    : DPMS Support IRQ4  (COM 1)      : Primary
  Video Off After     : Suspend      IRQ5  (LPT 2)      : Primary
  MODEM Use IRQ       : 3            IRQ6  (Floppy Disk) : Primary
  Standby Mode        : Disabled     IRQ7  (LPT 1)      : Primary
  Suspend Mode        : Disabled     IRQ8  (RTC Alarm)  : Disabled
  HDD Power Down      : Disabled     IRQ9  (IRQ2 Redir) : Secondary
  Soft-Off by PWRBTN  : Hold 4 sec.  IRQ10 (Reserved)   : Secondary
  Resume on Ring      : Disabled     IRQ11 (Reserved)   : Secondary
  Resume on Alarm     : Disabled     IRQ12 (PS2 Mouse)  : Primary
                                     IRQ13 (Coprocessor) : Primary
                                     IRQ14 (Hard Disk)  : Primary
                                     IRQ15 (Reserved)   : Disabled

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

The settings on the screen are for reference only. Your version may not be identical to this one.

Power Management

This category allows you to select the type (or degree) of power saving by changing the length of idle time that elapses before the Standby mode and Suspend mode are activated.

Disable No power management. Disables the Standby and Suspend modes.
Min. Power Saving Minimum power management. Standby Mode = 1 hr., and Suspend Mode = 1 hr.
Max. Power Saving Maximum power management. Standby Mode = 1 min., and Suspend Mode = 1 min.
User Defined Allows you to set each mode individually. When enabled, each option ranges from 1 min. to 1 hr.

PM Control by APM

Yes   An Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU's internal clock. Use this option in Windows® 95. (default)

No   The system BIOS will ignore APM when initiating the Power Management mode.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank   This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

Blank Screen   This option only writes blanks to the video buffer.

DPMS   Initializes display power management signaling. Use this option if your video board supports it.

Video Off After

N/A   The system BIOS will never turn off the screen.
Suspend The screen is off when the system is in the Suspend mode.
Standby The screen is off when the system is in the Standby mode.
Doze   The screen is off when the system is in the Doze mode.

MODEM Use IRQ

This category is used to set an IRQ channel (IRQ 3, 4, 5, 7, 9, 10 or 11) for the modem installed in your system.

Standby Mode

This is user configurable only when the Power Management category is set to User Defined. When enabled and after the set time of system inactivity, the CPU clock will run at a speed slower than the speed during Doze mode (1/3 of full speed) while all other devices still operate at full speed.

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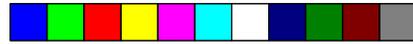
Suspend Mode

This is user configurable only when the Power Management category is set to User Defined. When enabled and after the set time of system inactivity, the CPU and onboard peripherals will be shut off.

HDD Power Down

This is user configurable only when the Power Management category is set to User Defined. When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Soft-Off by PWRBTN

This category allows you to select the method of powering off your system.

Hold 4 Sec. Regardless of whether the Power Management field is enabled or disabled, if the power button is pushed and released in less than 4 sec, the system enters the Suspend mode. The purpose of this function is to prevent the system from powering off in case you accidentally "hit" or pushed the power button. Pushing the power button for more than 4 seconds will power off the system.

Instant-Off Pressing and then releasing the power button at once will immediately power off your system.

Resume On Ring

Enabled Enables the Modem Ring-on feature. This allows your system to power on to respond to incoming calls. Make sure to select an IRQ channel for the external modem in the "Modem Use IRQ" field.

Disabled Disables the Modem Ring-on feature. Your system will not respond to incoming calls.

Resume On Alarm

Enabled When Enabled, you can set the date and time you would like the Soft Power Down (Soft-Off) PC to power-on. "Date (of Month)" and "Timer (hh:mm:ss)" will appear right below this field.
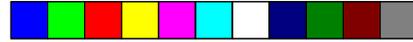
Disabled Disables the automatic power-on function. (default)

Date (of Month)

0 The system will power-on everyday according to the time set in the "Timer (hh:mm:ss)" field.

1-31 Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the "Timer (hh:mm:ss)" field.

Timer (hh:mm:ss)

This is used to set the time you would like the system to power-on. If you want the system to power-on everyday as set in the "Date (of Month)" field, the time set in this field must be later than the CMOS RTC's time.

PM Events

When enabled, access to the specified IRQ will cause the system to wake up completely from the power management mode. When disabled, the system will not wake up from the power management mode despite access to the specified IRQ.

3.1.5 PNP/PCI Configuration

This section describes configuring the PCI bus system. It covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
                        ROM PCI/ISA BIOS
                     PNP/PCI CONFIGURATION
                      AWARD SOFTWARE, INC.

 ┌──────────────────────────────────────────────────────────────────┐
 │ Resources Controlled By   :  Auto   │ PCI IRQ Actived By   :  Level │
 │ Reset Configuration Data  :  Disabled│ Assign IRQ for VGA  :  Enabled│
 │                                      │                               │
 │                                      │                               │
 │                                      │                               │
 │                                      │                               │
 │                                      │                               │
 │                                      │                               │
 │                                      │                               │
 │                                      │ ESC :  Quit    ↑↓→← : Select Item│
 │                                      │ F1  :  Help    PU/PD/+/- : Modify│
 │                                      │ F5  :  Old Values (Shift) F2 : Color│
 │                                      │ F6  :  Load Fail-Safe Settings │
 │                                      │ F7  :  Load Optimal Settings   │
 └──────────────────────────────────────────────────────────────────┘
```

The settings on the screen are for reference only. Your version may not be identical to this one.
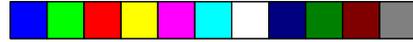
Resources Controlled By

The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

Auto   The system will automatically detect the settings for you. The categories that follow will not be shown on the screen.

Manual   This will allow you to set the IRQ/DMA (you have assigned your add-in card) to Legacy ISA or PCI/ISA PnP. For non-PnP ISA cards, select Legacy ISA. For PnP ISA or PCI cards, select PCI/ISA PnP.

Reset Configuration Data

Enabled The BIOS will reset the configuration data once automatically. It will then recreate a new set of configuration data.

Disabled The BIOS will not reset the configuration data.

PCI IRQ Actived By

This category is used to set the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless a different setting is needed.

Assign IRQ for VGA

When Enabled, the system automatically assigns an IRQ for the VGA card installed. Your VGA card will need an IRQ only when using the video capture function of the card. If you are not using this function and a new device requires an IRQ, you can set this function to Disabled. The IRQ (previously occupied by the VGA card) will be available for your new device.

Note:
When Disabled, a "Yellow" mark will appear in Windowsᵃ 95's Device Manager.
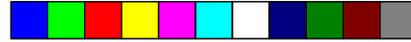
3.1.6 Load Fail-Safe Settings

The "Load Fail-Safe Settings" option loads the troubleshooting default values permanently stored in the ROM chips. These settings are not optimal and turn off all high performance features. You should use these values only if you have hardware problems. Highlight this option on the main menu and press <Enter>. The message below will appear.

<div align="center">Load Fail-Safe Settings (Y/N)? N</div>

If you want to proceed, type <Y> and press <Enter>. The default settings will be loaded.

3.1.7 Load Optimal Settings

The "Load Optimal Settings" option loads optimized settings from the BIOS ROM. Use the Setup default values as standard values for your system. Highlight this option on the main menu and press <Enter>. The message below will appear.

<div align="center">Load Optimal Settings (Y/N)? N</div>

Type <Y> and press <Enter> to load the Setup default values.

3.1.8 Integrated Peripherals

```
                              ROM PCI/ISA BIOS
                           INTEGRATED PERIPHERALS
                            AWARD SOFTWARE, INC.

 Onboard Primary PCI IDE      : Enabled    Onboard FDC Controller  : Enabled
 Onboard Secondary PCI IDE    : Enabled    Onboard UART 1          : 3F8/IRQ4
 IDE Prefetch Mode            : Enabled    Onboard UART 2          : 2F8/IRQ3
 IDE HDD Block Mode           : Enabled    Onboard UART 2 Mode     : Standard
 IDE Primary Master PIO       : Auto
 IDE Primary Slave PIO        : Auto
 IDE Secondary Master PIO     : Auto       Onboard Parallel Port   : 378/IRQ7
 IDE Secondary Slave PIO      : Auto       Parallel Port Mode      : ECP+EPP
 IDE Primary Master UDMA      : Auto       ECP Mode Use DMA        : 3
 IDE Primary Slave UDMA       : Auto       Parallel Port EPP Type  : EPP1.7
 IDE Secondary Master UDMA    : Auto
 IDE Secondary Slave UDMA     : Auto
 USB Controller               : Disabled
                                           ESC :  Quit       ↑↓→←  :  Select Item
                                           F1  :  Help       PU/PD/+/-  :  Modify
                                           F5  :  Old Values  (Shift) F2  :  Color
                                           F6  :  Load Fail-Safe Settings
                                           F7  :  Load Optimal Settings
```

The settings on the screen are for reference only. Your version may not be identical to this one.
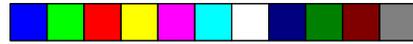
Onboard Primary PCI IDE and Onboard Secondary PCI IDE

These categories allow you to enable or disable the primary and secondary IDE controller. The default is Enabled. Select Disabled if you want to add a different hard drive controller.

IDE Prefetch Mode

This allows data and addresses to be stored in the internal buffer of the chip, thus reducing access time. Enable this field to achieve better performance.

IDE HDD Block Mode

Enabled The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block size the system can transfer. The block size will depend on the type of hard disk drive.

Disabled The IDE HDD uses the standard mode.

IDE Primary Master/Slave PIO and IDE Secondary Master/Slave PIO

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. Your system supports five modes, 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

Auto The BIOS will automatically set the system according to your hard disk drive's timing.

0-4 You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors.

IDE Primary Master/Slave UDMA and IDE Secondary Master/Slave UDMA

These categories allow you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.
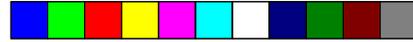
Auto   The BIOS will automatically detect the settings for you.
Disabled The BIOS will not detect these categories.

USB Controller

By default, the USB controller is Disabled. To use the USB interface, set this option to Enabled. "USB Keyboard Support" will appear right below this field.

Onboard FDC Controller

Enabled Enables the onboard floppy disk controller.
Disabled Disables the onboard floppy disk controller.

Onboard UART 1 and Onboard UART 2

Auto   The system will automatically select an I/O address for the onboard serial port 1 and serial port 2.
3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3 Allows you to manually select an I/O address for the onboard serial port 1 and serial port 2.
Disabled Disables the onboard serial port 1 and/or serial port 2.

Onboard UART 2 Mode

The system board supports IrDA function for wireless connectivity between your computer and peripheral devices. You may not use IrDA (J2) and the COM 2 serial port (CN2) at the same time. If you are using the COM 2 serial port, make sure "Onboard UART 2 Mode" is set to Standard.

To use the IrDA function, follow the steps below.

1.   Connect your IrDA cable to connector J2 on the system board.

2.   Set "Onboard UART 2 Mode" to the type of IrDA standard supported by your IrDA peripheral/device (HPSIR or ASKIR).

3.   The following will appear right below "Onboard UART 2 Mode".

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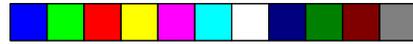
IR Duplex Mode

Half   Data is completely transmitted before receiving data.
Full   Transmits and receives data simultaneously.

Use IR Pins

Set this field according to the IR pins of your IrDA peripheral/
device.

Onboard Parallel Port

378H/IRQ7, 3BCH/IRQ7, 278H/IRQ5 Selects the I/O address and
                IRQ for the onboard parallel port.
*Disabled*   Disables the onboard parallel port.

Parallel Port Mode

Parallel Port Mode will appear only if you selected an I/O address
and IRQ in the Onboard Parallel Port field. This option applies to
a standard specification and will depend on the type and speed of
your device. Refer to your peripheral's manual for the best option.
Select the parallel port mode according to the type of printer device
connected to your onboard parallel port.

The parallel modes are Normal, EPP, ECP and ECP+EPP. The default
is ECP+EPP. Both "ECP Mode Use DMA" and "Parallel Port EPP
Type" will appear on the screen.

If you selected EPP, "Parallel Port EPP Type" will appear. This field
applies to standard specification. The options are EPP1.9 and EPP1.7.
Default setting: EPP1.7.

If you selected ECP, "ECP Mode Use DMA" will appear. This is used
to select a DMA channel for the parallel port. The options are 1
and 3. Default setting: 3.
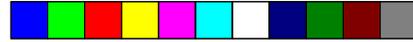
3.1.9 Supervisor Password

If you want to protect your system and setup from unauthorized entry, set a supervisor's password with the "System" option selected in the BIOS Features Setup. If you want to protect access to setup only, but not your system, set a supervisor's password with the "Setup" option selected in the BIOS Features Setup. You will not be prompted for a password when you cold boot the system.

Use the arrow keys to highlight the "Supervisor Password" option and press <Enter>. The message below will appear.

<div align="center">Enter Password:</div>

Type in the password. You are limited to eight characters. When done, the message below will appear:

<div align="center">Confirm Password:</div>

You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Supervisor Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

3.1.10 User Password

If you want another user to have access only to your system but not to setup, set a user's password with the "System" option selected in the BIOS Features Setup. If you want a user to enter a password when trying to access setup, set a user's password with the "Setup" option selected in the BIOS Features Setup. Using user's password to enter Setup allows a user to access only the "User Password" option that appears on the main screen. Access to all other options is denied. To set, confirm, verify, disable or delete a user's password, follow the procedures described in the section "Supervisor Password". If you forget your password, refer to the procedure described in the same section.
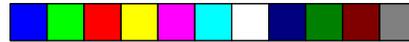
3.1.11 IDE HDD Auto Detection

Use this option to detect the parameters for the hard disk drives installed in your system. These parameters will then be automatically entered into the "Standard CMOS Setup". The IDE HDD Auto Detection screen displays the following categories of information: Size, Cylinders, Heads, Precomp, LandZone, Sectors and Mode.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

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

Select Primary Master Option (N=Skip): N

OPTIONS	SIZE	CYLS	HEAD	RECOMP	LANDZ	SECTOR	MODE
2 (Y)	853	827	32	0	1653	63	LBA
1	853	1654	16	65535	1653	63	Normal
3	853	827	32	65536	1653	63	Large

Note: Some OS (like SCO-UNIX) must be "NORMAL" for installation

ESC: Skip

The settings on the screen are for reference only. Your version may not be identical to this one.

For hard drives larger than 528MB, you would typically select the LBA type. Certain operating systems require that you select Normal or Large. Please check your operating system's manual or Help desk on which one to select.
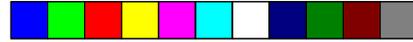
3.1.12 Save & Exit Setup

When all the changes have been made, highlight "Save & Exit Setup" and press <Enter>. The message below will appear:

Save to CMOS and Exit (Y/N)? N

Type "Y" and press <Enter>. The modifications you have made will be written into the CMOS memory, and the system will reboot. You will once again see the initial diagnostics on the screen. If you wish to make additional changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

3.1.13 Exit Without Saving

When you do not want to save the changes you have made, highlight "Exit Without Saving" and press <Enter>. The message below will appear:

Quit Without Saving (Y/N)? N

Type "Y" and press <Enter>. The system will reboot and you will once again see the initial diagnostics on the screen. If you wish to make any changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.
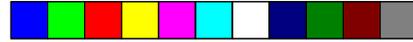
CHAPTER

4
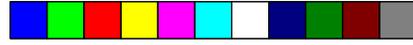
Supported Softwares

4.1 Desktop Management Interface (DMI)

The system board comes with a DMI built into the BIOS. DMI, along with the appropriately networked software, is designed to make inventory, maintenance and troubleshooting of computer systems easier. With DMI, a network administrator or MIS engineer can remotely access some information about a particular computer system without physically going to it. Quite often a service call may be unnecessary as the problem can be solved remotely.
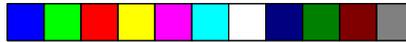
The DMI utility in the BIOS automatically records various information about your system configuration. Information about the type and speed of CPU, type and amount of memory for each memory slot, BIOS revision level, types of add-in PCI boards and components, certain revision numbers of hardware installed, etc. are automatically detected and stored in the DMI pool, which is a part of the system board's Plug and Play BIOS. Additional information, such as ISA based peripherals, which may not be automatically detected, can be manually recorded in the DMI pool by using the Add DMI menu. The DMI pool data is then verified or updated whenever the system hardware or setup is altered.

4.1.1 Running the DMI Utility

To run the DMI utility, type: DMICFG.EXE. You can download this utility from http://www.dfiweb.com - BIOS & DRIVERS section or ftp.dfiusa.com - /pub/DMI directory.

The DMI utility must run in real mode with at least 180K of base memory. Memory managers like HIMEM.SYS (required by Windows) must not be installed. You may do this by using one of the 3 methods listed below.
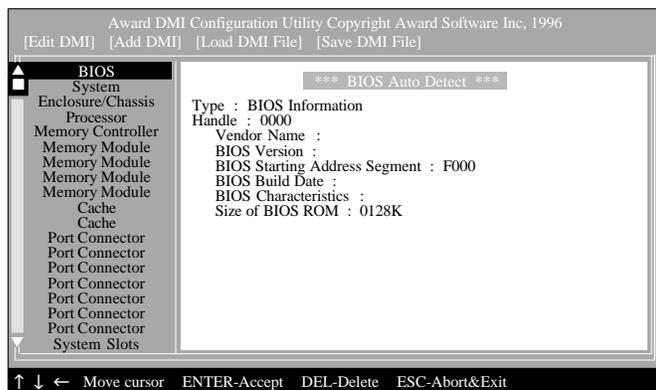
1. Boot up from a system diskette without the AUTOEXEC.BAT and CONFIG.SYS files,

2. "REM" HIMEM.SYS in the CONFIG.SYS, or

3. Press <F5> during bootup to bypass your AUTOEXEC.BAT and CONFIG.SYS files.

4.1.2 Using the DMI Utility

```
          Award DMI Configuration Utility Copyright Award Software Inc, 1996
         [Edit DMI]   [Add DMI]   [Load DMI File]   [Save DMI File]

            BIOS                        *** BIOS Auto Detect ***
           System
        Enclosure/Chassis      Type : BIOS Information
          Processor           Handle : 0000
       Memory Controller          Vendor Name :
        Memory Module             BIOS Version :
        Memory Module             BIOS Starting Address Segment : F000
        Memory Module             BIOS Build Date :
        Memory Module             BIOS Characteristics :
           Cache                  Size of BIOS ROM : 0128K
           Cache
        Port Connector
        Port Connector
        Port Connector
        Port Connector
        Port Connector
        Port Connector
        Port Connector
         System Slots

       ↑  ↓  ←   Move cursor   ENTER-Accept   DEL-Delete   ESC-Abort&Exit
```

The four menus located on top of the DMI Configuration Utility screen are Edit DMI, Add DMI, Load DMI File and Save DMI File. Use the ← or → (left or right) arrow keys to select a menu from the Menu bar.

On the left side of the screen is a list of the system configuration items. Use the ↑ or ↓ (up or down) arrow keys to select an item.

The commands at the bottom of the screen will allow you to navigate through the various setup menus.

Edit DMI

1. Use the ← or → arrow keys to select the Edit DMI menu.

2. Highlight the item on the left screen that you would like to edit by using the ↑ or ↓ arrow keys, then press <Enter>.

3. The cursor will move to the screen you select allowing you to edit information. The screen will also display the auto-detected information.

4. Press <F10> to update the edited information into the flash ROM.

Add DMI

1. Use the ← or → arrow keys to select the Add DMI menu.

2. Highlight the item on the left screen that you would like to add by using the ↑ or ↓ arrow keys, then press <Enter>.

3. The cursor will move to the screen you select allowing you to enter information about the added item.

4. Press <F10> to save information into the flash ROM.

To view information about the added items, go to the Edit DMI menu.

Load DMI File

1. Use the ← or → arrow keys to select the Load DMI File menu.

2. The following message will appear.

   Press [Enter] to select DMI file for load

   Press <Enter>.

3. The DMI files will appear on the screen. Select the file you would like to load and press <Enter>.

4. The following message will appear.

   Do you want to execute? (Y/N)

   Type <Y>. All previous DMI structures will be destroyed and the new file will be saved into the flash ROM.

Save DMI File

1. Use the ← or → arrow keys to select the Save DMI File menu.

2. The following message will appear.

   Press [Enter] to select DMI file for save

   Press <Enter>.

3. Enter the directory and filename under which you would like the DMI file saved.
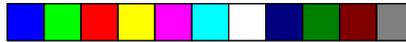
4.2 System Health Monitor Utility

The system board comes with a System Health Monitor utility contained in the provided CD. This utility shows the current temperature of the processor, power voltages, and CPU/AGP fan speed.

The utility also allows you to manually set the range of the processor's temperature, power voltages, and CPU/AGP fan speed. If the settings/values are over or under the set range, an error message will pop-up and an alarm will sound. There are three types of sound for the three different failure alarms (temperature, voltage and fan). Refer to the Chipset Features Setup (Chapter 3) section for details.

When you hear a failure alarm, you must power off your computer and check the following: processor fan/heatsink, AGP fan and power supply. We recommend that you use the "Default Setting" which is the ideal setting that would keep the system in good working condition.

Important:
Once this utility is installed, the system will ignore the settings in the "System Health Monitor" field of the Chipset Features Setup. If you are using Windows® 95 or Windows NT® 4.0, you may select between using the utility and the Chipset Features Setup. For other operating systems, you may only use the Chipset Features Setup.
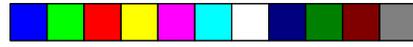
4.2.1 Installing the Utility

Insert the CD that came with the system board into a CD-ROM drive. Run SETUP.EXE of the System Health Monitor utility. After completing installation, you will find this utility in "StartUp" under "Programs" of Windows® 95/NT4.0. Please refer to the "Readme" file for details on using the utility.

4.3 Drivers

The system board package comes with drivers contained in the provided CD. To install the drivers, please refer to the "Readme" file contained in the provided CD.

All steps or procedures to install software drivers are subject to change without notice as the softwares are occassionally updated. Please refer to the readme files for the latest information.
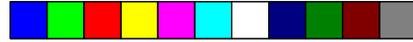
APPENDIX

A

Identifying Processors

A.1 Intel Processors

SXXXX/RSS

R (voltage range)
V for VRE voltage range
S for Standard voltage range

SXXXX/KLM

K = V for VRE voltage range, S for Standard voltage range
L = M for min valid MD timings, S for min valid standard
    timings
M = U is not tested for DP, S is tested for DP, UP and MP

A.2 Cyrix Processors

6x86L-PR200+GP   150MHz   2.8V

Product   Grid-array   Processor   Core
name   package   clock   voltage
                              speed
      P-rating

6x86MX-PR166   60MHz Bus 2.5x   2.9V (or as
                                       marked)
Product P-rating   Processor   Core
name   clock   voltage
                     speed
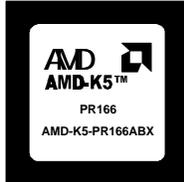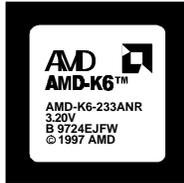
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A.3 AMD Processors

AMD-K5-PR166ABX

K5 = Processor core
PR166 = Performance rating
A = Package type: Type A = CPGA
B = Operating voltage:
    B: 3.45V-3.60V
    C: 3.30V-3.465V
    F: 3.135V-3.465V
    H: 2.76V-3.0V/3.3V (core/IO)
    J: 2.57V-2.84V/3.3V (core/IO)
    K: 2.38V-2.63V/3.3V (core/IO)
X = Case temperature
    W: 55°C   R: 70°C   Q: 65°C
    Y: 75°C   X: 65°C Z: 85°C
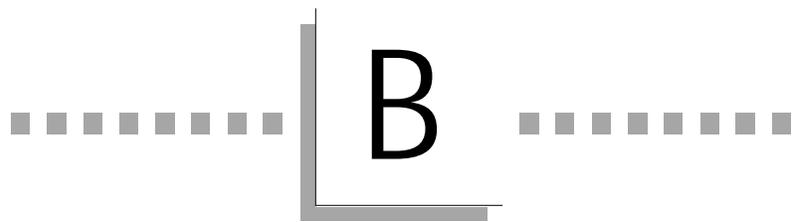
AMD-K6-233ANR

K6 = Processor core
233 = Performance rating
A = Package type: Type A = CPGA
B = Operating voltage:
    N: 3.1V-3.3V (core)/3.135V-3.6V (I/O)
    L: 2.755V-3.045V (core)/3.135V-3.6V (I/O)
X = Case temperature
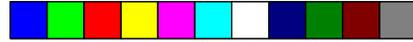   W: 55°C   R: 70°C   Q: 65°C
    Y: 75°C   X: 65°C Z: 85°C
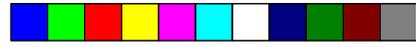
APPENDIX

B

System Error Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

B.1 POST Beep

There are two kinds of beep codes in the BIOS. One code indicates that a video error has occured and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps. The other code indicates that a DRAM error has occured. This beep code consists of a single long beep.

B.2 Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

CMOS BATTERY HAS FAILED
The CMOS battery is no longer functional. It should be replaced.

⚠ Caution:
Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

CMOS CHECKSUM ERROR
Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISPLAY SWITCH IS SET INCORRECTLY
The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.
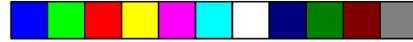
FLOPPY DISK(S) fail (80)
Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40)
Floppy type mismatch.

Hard Disk(s) fail (80)
HDD reset failed.

Hard Disk(s) fail (40)
HDD controller diagnostics failed.

Hard Disk(s) fail (20)
HDD initialization error.

Hard Disk(s) fail (10)
Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)
Sector Verify failed.

Keyboard is locked out - Unlock the key
The BIOS detects that the keyboard is locked. Keyboard controller
is pulled low.

Keyboard error or no keyboard present
Cannot initialize the keyboard. Make sure the keyboard is attached
correctly and no keys are being pressed during the boot.

Manufacturing POST loop
System will repeat POST procedure infinitely while the keyboard
controller is pull low. This is also used for the M/B burn in test at
the factory.

BIOS ROM checksum error - System halted
The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail
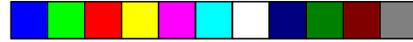The BIOS reports memory test fail if the memory has error(s).

APPENDIX

C
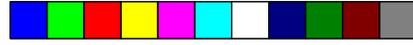
Troubleshooting

C.1   Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

Monitor/Display

If the display screen remains dark after the system is turned on:

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.
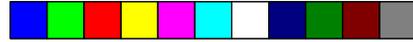
The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card's output frequencies are supported by this monitor.

The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

Power Supply

When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

Floppy Drive

The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.
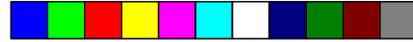
Hard Drive

Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

Excessively long formatting period.

1. If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

Parallel Port

The parallel printer doesn't respond when you try to print.

1. Make sure that your printer is turned on and that the printer is on-line.
2. Make sure your software is configured for the right type of printer attached.
3. Verify that the onboard LPT port's I/O address and IRQ settings are configured correctly.
4. Verify that the attached device works by attaching it to a parallel port that is working and configured correctly. If it works, the printer can be assumed to be in good condition. If the printer remains inoperative, replace the printer cable and try again.
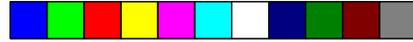
Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.
3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.
2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

System Board

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the memory sockets.
4. Make sure the SIMMs are in the correct locations.
5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.