

What's New?

We have added a glossary to our manuals and have expanded our installation guide. We think you will find both more thorough, and thoroughly helpful. Our simple but accurate glossary explanations make it possible for the most novice of end users to understand the technical jargon that pops up in these pages. The numerous pictures in the step-by-step installation guide make it easy for you to put together your system without help from technical support personnel.

Don't like an explanation? Want to see terms explained that we left out? Have any other comments? Visit the TYAN web page and let us know about it at **www.tyan.com/html/contacts.html**

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chapter 1

Introduction

Overview

The S1694SA/L Tigercub is a quality, high performance mainboard designed for Intel Celeron and Pentium II microprocessors. This mainboard utilizes the Intel 440EX AGPset and supports CPU speeds of 233MHz through 333MHz and a host bus speed of 66MHz.

The Tigercub mainboard, with built-in AGP slot, provides high performance capabilities that are ideal for a wide range of demanding applications such as CAD, CAM, CAE, desktop publishing, 3D animation, and video production.

This integrated system board achieves high reliability with numerous features and yet is small enough to be supported in a Micro ATX form factor. Some of the features included are onboard dual channel PCI PIO, Bus Master IDE and UltraDMA/33, onboard floppy controller, and onboard high speed I/O.

Flexibility and expandability have been designed into the Tigercub. With I/O and drive controller support built onboard, optional sound controller

onboard, the one AGP slot, two PCI and two ISA slots (one shared, four usable) are free for add-on expansion cards.

Remember to take a look at TYAN Computer's web site located at <http://www.tyan.com>. There you can find information on all of TYAN's products along with FAQs, distributors list, drivers, and BIOS setting explanations.

Icons

In order to help you navigate this manual and set up your system, we have added several icons to our format.



This icon alerts you to particularly important details regarding the setup or maintenance of your system. This icon often appears next to information that may keep you from damaging your board or system. While we will often point out the most vital paragraphs in a chapter, you should always read every word in the text. Failing to do so can lead to exasperation and expense.



Wherever possible, we have included step-by-step instructions for setting up your system, which are indicated by this icon. However, it is in your best interest to read an entire section (and perhaps the entire manual) before you begin to fiddle with your motherboard.



While we have alerted you to potential dangers in several places in the manual with this icon, these warnings should not be regarded as the whole of your safety regimen. Never forget that computers are electrical devices, and are capable of delivering a shock. Prevent damage to yourself and to your board: always ensure that your system is turned off and unplugged whenever you are working with it, and that you are equipped with a static safety device.

Hardware Specifications/Features

Processor Information

- ♦One SEC slot (Slot One type).
- ♦Pentium II 233-333MHz.
- ♦Supports Celeron CPUs.
- ♦One VRM component installed onboard.
- ♦Onboard CPU fan header.

Chipset Information

- ♦Intel 440EX AGPset.
- ♦Intel PIIX4 controller.
- ♦ITE 8679 Super I/O chipset.

Voltage and Power Information

- ♦ATX power supply connector.
- ♦+12V power source for DC fan onboard.
- ♦3.3V DRAM support.
- ♦Utilizes GTL+ bus to reduce power consumption and EMI.
- ♦Power recovery after interrupt.
- ♦Windows 95 soft power down.

Main Memory

- ♦Up to 512MB EDO or SDRAM onboard.
- ♦Two 168-pin DIMM sockets.
- ♦EDO and SDRAM (with SPD) support (3.3V).

System Management

- ♦Wake-on LAN 3-pin header for remote booting by system administrator (ATX 2.01 compliant power supply required).
- ♦Optional National LM81 ASIC to monitor voltage, temperature, and fan speed.
- ♦Chassis intrusion detection capable (with LM81).

- ◆ Intel LANDesk Client Manager software and/or Intel LANDesk Server Manager software (with LM81 installed).

Expansion Slots

- ◆ One 32-bit AGP slot (supports 1X and 2X).
- ◆ Two 32-bit PCI bus master slots.
- ◆ Two 16-bit ISA slots.
- ◆ One shared PCI/ISA slot, four usable.

Physical Dimensions

- ◆ Smaller than MicroATX design.
- ◆ 9.6 inches x 7.1 inches.
- ◆ Double row ATX connectors.

BIOS Information

- ◆ Award Plug and Play flash BIOS.
- ◆ Deep Green, Energy Star, PC98, Year 2000 compliant.
- ◆ Multiple boot options.

Disk Drive & System I/O

- ◆ Two PCI bus mastering EIDE channels.
- ◆ Supports EIDE CD-ROMs.
- ◆ PIO Mode 3 & 4 (up to 17MB/sec DTR).
- ◆ UltraDMA/33 bus mastering mode (up to 33MB/sec DTR).
- ◆ Support for two floppy drives (2.88MB & 3 Mode support).
- ◆ Two serial ports (16550 UARTs).
- ◆ One ECP/EPP parallel port.
- ◆ One IR (InfraRed) I/O interface port.
- ◆ Two USB rev 1.2 ports.
- ◆ One PS/2 mouse port.
- ◆ One PS/2 keyboard port.

**Creative Sound
(optional)**

- ♦OPTi 82C933 chip.
- ♦Sound Blaster Pro, Ad Lib, Windows 95 compatible.
- ♦Microsoft PC97 compliant.
- ♦PnP 3D stereo sound with 64-bit software wavetable.

Warranty

- ♦3 year manufacturer's warranty.

Software Specifications

OS

- ♦Operates with MS-DOS, Windows 3.x, Windows for WorkGroups 3.x, Windows 95, Windows 98, Windows NT, OS/2, Novell Netware, Solaris, and SCO Unix.

Information presented in this publication has been carefully checked for reliability. However, no responsibility is assumed for inaccuracies. The information contained in this document is subject to change without notice.

Technical Support

If a problem arises with your system, you should turn to your dealer for help first. Your system has most likely been configured by them, and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance. Further, if you purchased your system from a dealer near to you, you can actually bring your system in to them to have it serviced, instead of attempting to do so yourself (which can have expensive consequences). If your dealer is unable to assist you,

try our web page,
user newsgroup,
technical support phone line,
or e-mail address

[http:// www.tyan.com](http://www.tyan.com)
alt.comp.periphs.mainboard.tyan
(510) 440-8808
techsupport@tyan.com

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor **FIRST** for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

For Resellers Only:

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You can obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid, or hand-carried to the manufacturer. TYAN will pay to have the board shipped back to you.

Trademarks

EliteBIOS is a trademark of Award Software Incorporated.

Windows is a trademark of Microsoft Corporation.

IBM, PC, AT, PS/2 are trademarks of IBM Corporation.

INTEL, Pentium II, Celeron are trademarks of Intel Corporation.

S1694SA/L Tigercub is a trademark of TYAN Computer Corporation.

All other trademarks are the property of their respective companies.

Disclaimer

Information presented in this publication has been carefully checked for reliability. However, no responsibility is assumed for inaccuracies. The information contained in this document is subject to change without notice.

chapter 2

Board Installation

Unpacking

The mainboard package should contain the following:

- S1694SA/L Tigercub mainboard
- One 40-pin IDE cable
- One 34-pin floppy cable
- User's manual
- One CPU retention module
- Creative/Ectiva sound CD (optional, includes installation guide).
- One LANDesk CD (optional)

Installation

You are now ready to install your mainboard. The mounting hole pattern of the S1694SA/L matches the Micro ATX system board specifications. The S1694SA/L will fit in a Micro ATX or a standard ATX chassis.



procedure

How to install our products right...the first time.

What's the first thing I should do?

The first thing you should do is read this user's manual. It contains important information which will make configuration and setup much easier.

The next step is to properly ground yourself. First, unplug the power from your computer case and then touch the metal casing of the power supply or any metal part on the computer case. This will discharge any electricity from your body. Take the motherboard out of the cardboard box and static bag, holding it by its edges, and place it on a grounded anti-static surface, component side up. Inspect the board for damage.



important!

DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED!

Press down on any of the socket ICs if it appears that they are not properly seated (the board should still be on an anti-static mat). Do not touch the bottom of the board. Remember, don't take any electronic device out of its protective bag until you are ready to actually install it into the computer case. If you don't discharge yourself and you zap the motherboard or adapter card, problems may not arise immediately because electrostatic discharge damage, unlike physical damage, causes the device to fail over time.

Install the motherboard into your case.

Follow the instructions provided by the case manufacturer for proper installation guidelines. TYAN recommends that you use only one screw to hold down the motherboard. The rest of the mounting holes should be used for the plastic standoffs. If your case does not have a hole for a standoff, simply cut off the bottom of the plastic standoff so that the flat portion rests on the metal. The adapter cards and the screws holding them down will keep your board flat. The fastening screw should not short any of the traces on the motherboard. Make certain that you do not overtighten the screw, as it will damage the motherboard and possibly break internal traces in the surrounding area. The hole you

should use is located at the top-center of the board where the adapter cards are fastened to the case.

Plug in the power connector as shown.

The photos below show the ATX power connector before (Figure 1) and after (Figure 2) it has been plugged in.

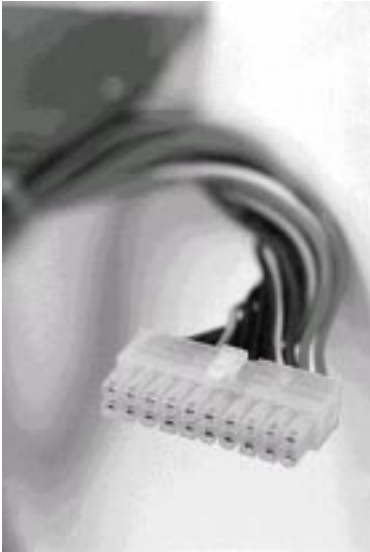


Figure 1

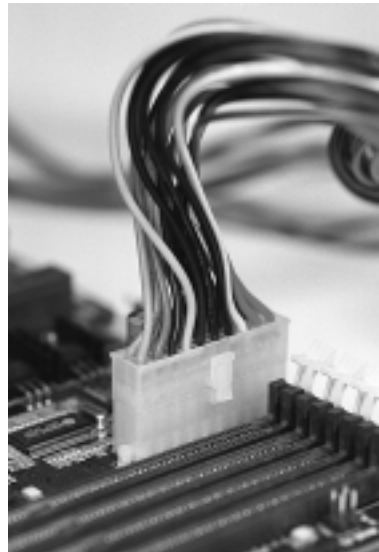


Figure 2

The plastic clip on the power connector should lock over the plastic tab on the onboard connector. You shouldn't be able to plug the power connector in any other way but just to be safe, make sure it looks like Figure 2 above. Make absolutely certain that you do not miss any pins because, if you do, you will void your warranty and cause damage to yourself or your motherboard when you turn the system on. After connecting the power, make sure the connector is seated firmly into its socket so it will not become loose or fall off when the computer is jostled or moved. **Note: TYAN recommends using an ATX power supply that conforms to industry standard revision 2.01.**



Next, connect your IDE cables (if you're using IDE hard drives).

Figure 3



The colored stripe on the cable (pin 1) should face towards the battery.

In Figure 3 you can see how the IDE cables should look when they are connected to your hard drive. Notice how Pin 1 (denoted by a red stripe) is connected so that it is next to the power connector of the drive. In most cases, this is the proper way of connecting your IDE cable to the hard drive. Figure 4 shows the IDE cable properly connected to the motherboard.

Contact your hard disk drive manufacturer or documentation for more

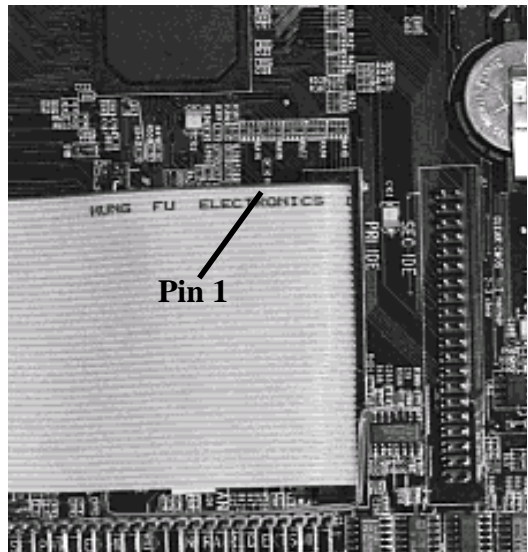


Figure 4

information.

Some symptoms of incorrectly installed HDDs are:

- Hard disk drives are not auto-detected: may be a Master/Slave problem or a bad IDE cable. Contact your vendor.
- Hard Disk Drive Fail message at bootup: may be a bad cable or lack of power going to the drive.
- No video or beeps on bootup: usually means the cable is on backwards.
- Hard drive lights are constantly on: bad IDE cable or defective drives/motherboard. Try another HDD.
- Hard drives do not power up: check power cables and cabling. May also be a bad power supply or IDE drive.

Now that you have installed your IDE drives, your floppies are next.

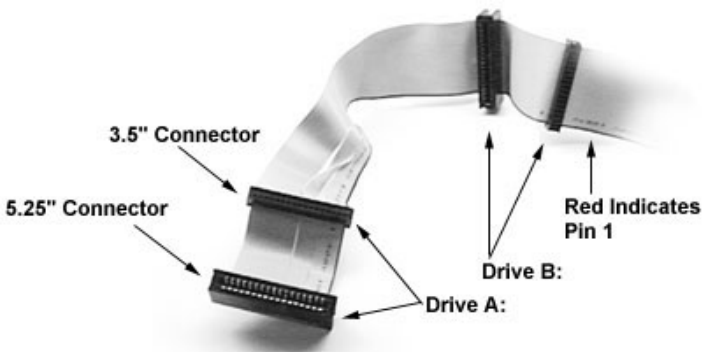


Figure 5

Pin 1 on the floppy cable is usually denoted by a red or colored stripe down one side of the cable (see Figure 5). Most of the current floppy drives on the market require that the colored stripe be positioned so that it is right next to the power connector. In most cases, there will be a key pin on the cable which will force you to connect the cable properly.

Drive A: is usually attached to the end of the cable with the twist in it.

Drive B: is usually connected to the middle of the cable. Refer to your installation instructions or call your dealer if you are unsure about attaching floppy drives. Refer to Figure 5 on the previous page for a detailed anatomy of the floppy cable. Remember, you can only have 2 floppy drives connected at any given time.

The colored stripe on the cable (pin 1) should face towards the battery. Please refer to your drive documentation for proper installation, or see Figure 4 on page 13.

Some symptoms of incorrectly installed floppies are:

- Floppy drives are not detected: usually caused by faulty cables, backward cables, or a bad floppy or motherboard. Try another single floppy drive to verify the problem or try another cable. Also, check to see if the onboard floppy is enabled in the BIOS.
- Floppy Drive Fail message at bootup: the cable, floppy, or motherboard may be faulty. Try another cable or floppy drive to verify.
- Light on the floppy is on constantly: a dead give-away that the cable is on backwards. Reverse the cable at the motherboard end and try again.

Next are the Com and Printer ports.

Warning: When plugging in your keyboard and mouse, or when plugging anything into a serial or Com port, make sure that the power is off. Connecting these devices and ports while the power is on is called “hot plugging,” and may damage your system.



important!

Figure 6 at the top of the next page shows the ATX double row connectors on this board. The Com and Printer ports, as well as the other ports, are labeled.

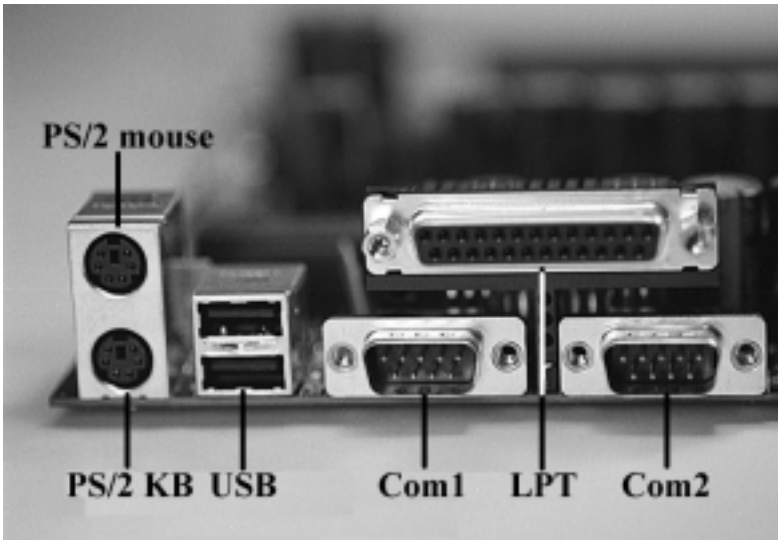


Figure 6

Note: Only TYAN cables will work on this motherboard. If you are using an existing case with old cables, your system will not function properly. Use only TYAN-approved cables.

Connecting the USB and PS/2 ports.

This board includes ports for USB, PS/2 mouse, and PS/2 keyboard devices. The location of these ports is shown in Figure 6 above. Note that, for this board, the PS/2 mouse port is the upper PS/2 port, and the PS/2 keyboard port is the lower PS/2 port.

The PS/2 connectors are probably quite familiar to you. The USB connectors, however, may be foreign. The USB (Universal Serial Bus) is a versatile port. This one port type can function as a serial, parallel, mouse, keyboard, or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices. Close-ups of the USB and PS/2 ports are on the following page.

Figure 7 shows the USB ports and Figure 8 the PS/2 ports.



Figure 7

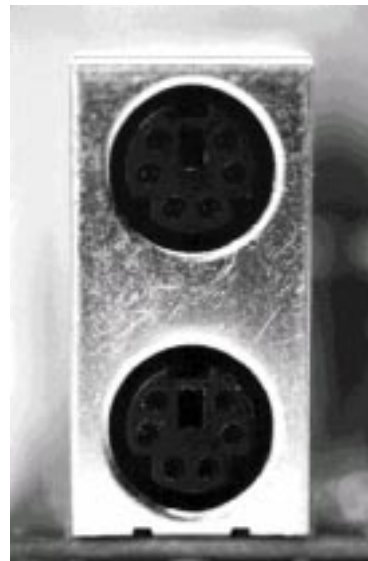


Figure 8

Installing your add-in cards is relatively simple but...

there are a few rules you need to follow when plugging in a card. In order to assure proper operation and a quick installation, adhere to these guidelines:

- If you are going to install a PCI-Bus interface card on your system, be aware that any one of the two PCI slots can support a Master or Slave device.
- NEVER force a card into a slot. If it doesn't fit, look at the socket on the computer to make sure there are no wires or other obstructions to the slot.
- NEVER plug an ISA card into a PCI slot or a PCI card in an ISA slot. You will void your warranty and damage your system board if you do this.
- When plugging the card in, especially when installing long cards, try to push the entire card in at one time. Don't force one end of the card into the socket first and then the other. This will create a



important!

rocking motion between the card and the slot and it will damage the pins within the socket.

- Make sure that the cards are seated securely into the slots.
- Before turning on the system, make sure no cards are touching each other or are shorting.

If you follow these basic guidelines, there shouldn't be any problems with installation. However, if you do encounter any problems, have a qualified professional install your cards for you or contact your card manufacturer.

Remember, always read the manuals and installation notes that come with the adapter cards. They contain important information which will help you install the components right, the first time.

Next, you need to install your memory.

Since TYAN boards are manufactured with performance in mind, you should use add-in components that match. Some DIMM modules may seem to be high quality because of name or feel but that does not guarantee real-world usability. Some cheaper or OEM memory may have brand-name components, but they may be on inferior or substandard parts which do not meet the critical tolerances our products require. Because of this, your memory may not work correctly in a TYAN board though it may work well in a competitor's board. This is because many of our competitors do not adhere to the strict tolerances required for high performance. If you buy a TYAN board, you are getting the best system available. To make installation easy and trouble free, get high quality parts. Some brands we recommend are Advantage Memory, Corsair Microsystems, Millenium, Kingston Memory, QesTec Incorporated, Unigen, Micron Technology, and Crucial Technology. These DIMMs have proven to be very stable on our boards and perform extremely well.

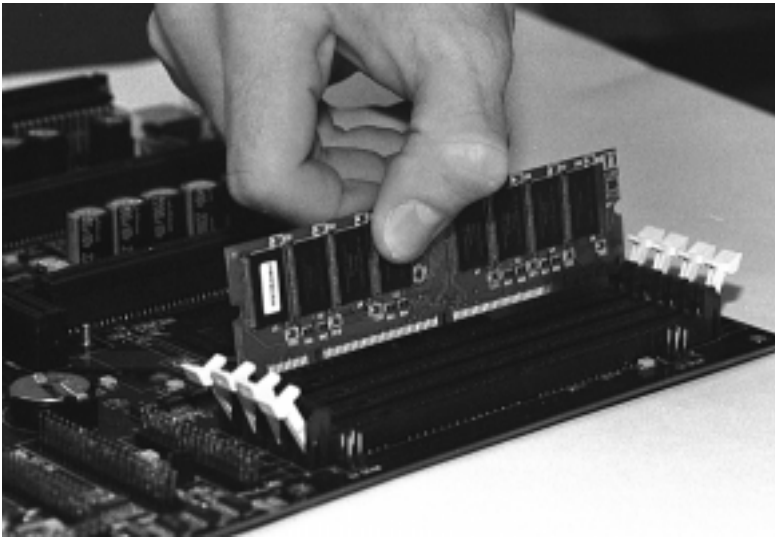


Figure 9

To install your DIMMs, line your module up so that the pins fit into the slot. There is only one way that your DIMM can fit properly. Make sure that the short row of pins is lined up with the short gap in the DIMM slot. Figure 9 shows how to sit the DIMM into its slot. To insert the DIMM, push down vertically on the module with even force, as shown in the photo. Do not shove one end in first; doing so will bend the DIMM pins.



important!

To lock the DIMM into place, push the plastic clips on either end of the slot onto the notches in the ends of the DIMM (see Figure 10 on the following page). To remove your DIMM, simply pull the clips back, and pull up on the module.

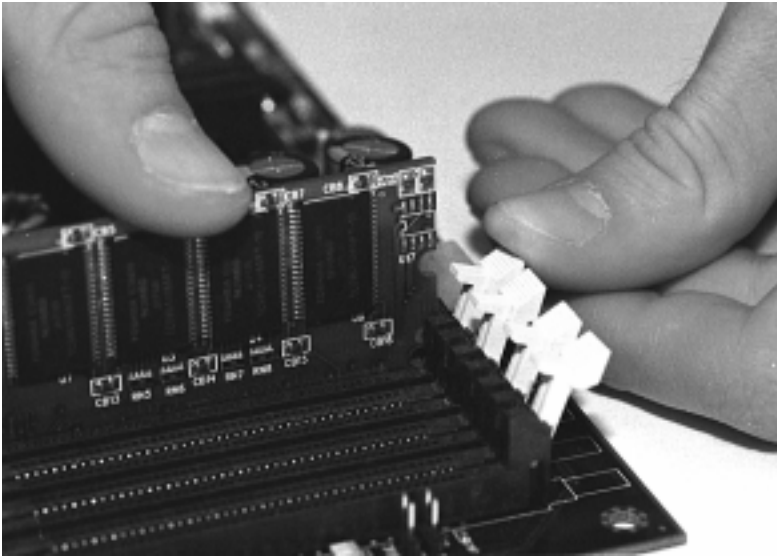


Figure 10

Place the DIMMs in an anti-static bag as soon as you remove them to avoid static damage.

Finally, install your CPU.

Pentium II processors (233 through 333MHz) can be used on the Tigercub. Please refer to pages 29-30 for the correct CPU jumper settings for your board. Remember:



important!

- ♦ The CPU is a sensitive electronic component and it can easily be damaged by static electricity. Do not touch the CPU pins with your fingers.
- ♦ Before the CPU is installed, the mainboard must be placed on a flat surface. You should be able to insert the CPU with minimal, but firm, pressure. Do not press down hard on the CPU.

Currently, Intel produces two types of Pentium II processors: the active (or boxed) processor and the passive processor (see Figures 11 and 12 below). These two types of processors are essentially the same in design; the only difference lies in their cooling methods. The active processor is equipped with a cooling fan and heat sink, while the

passive processor is equipped with a heat sink alone. Both types of CPUs provide the user with the same performance, and both types can be installed in the Pentium II slot on the Tigercub board.



Figure 11



Figure 12

Installing CPU Retention Modules

Installation of a Pentium II processor requires a CPU retention module, which is first secured onto the motherboard.

To attach the retention module, place the motherboard on a flat surface. Locate the key pin on one end of the Pentium II slot on the board. Then carefully line up the key notch on the retention module with the key pin on the Pentium II slot (the key pin on the Pentium II slot indicates the correct orientation of the CPU).

Figure 13



Pentium II Slot Connector and Key Pin

Drop the retention module (Figure 14 on the following page) down over the Pentium II slot so that the retention module sits flat against the motherboard. Tighten the screws in a clockwise manner to secure the module to the board. Warning: Do not overtighten the screws as you may damage the module and/or the motherboard.

Installing the Active Processor

When the retention module is securely installed, you are ready to plug in the CPU. Press down firmly on the CPU until you hear a “click” (see Figure 15). This clicking sound indicates that the CPU is fully locked into the retention module. If you have an active processor, you will also need to connect the CPU’s cooling fan cable to the cooling fan power connector on the board.



Figure 14



Figure 15

Locate the cooling fan connector (e.g. FAN1) on the motherboard. Plug the CPU’s cooling fan cable into the cooling fan connector on the board. There will be a plastic clip assembly similar to that of the ATX power connector that will force you to connect the fan cable correctly (see Figure 16 below).

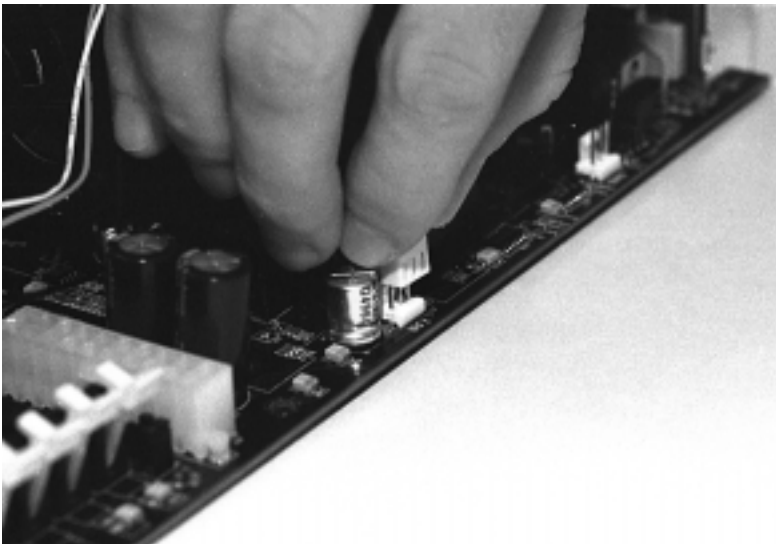


Figure 16

Installing the Passive Processor

The installation of the passive processor differs only slightly from that of the active processor. Your passive CPU package should contain one CPU retention module, one heat sink retention bracket with mounting locks, two mounting attachments, and one heat sink lock. Install the retention module as explained in the active processor section.



Figure 17

The heat sink mount (Figure 17) has two pins on the bottom and four pins on the top. Notice that the bottom two pins are of different sizes. The size of the pins and the

holes in the motherboard will determine the correct orientation. When the bracket is correctly installed, the four pins on top will be right next to the Pentium II CPU slot.

Insert the heat sink mount into the holes on the motherboard. When the bracket is properly inserted into the holes on the motherboard, you will hear a clicking noise.

Align the CPU with the CPU retention module. Make sure the heat sink is lined up with the heat sink mount bracket. If you put the CPU in the wrong way, you may damage the CPU, the motherboard, and/or the CPU socket. Slowly press down on the CPU module until the CPU locks into place. You will hear a clicking noise when the CPU is locked securely into the module.

The heat sink lock (Figure 18) has four notches which will correspond to the four pins on the heat sink mounting bracket. Gently slide the lock between the heat sink and the heat sink mounting bracket until both sides of the lock are firmly secured. A clicking sound will be heard when the lock is securely fastened to the heat sink mounting bracket. To remove the lock from the



Figure 18

heat sink mounting bracket, gently press the ends of the locks inward and pull.

Lock the heat sink mount to the board by inserting the two mounting locks (Figure 19) into the pins of the heat sink mounting bracket which are now below the mainboard. There will be a click when the locks are securely fastened.



Figure 19

Removing the CPU.

To remove the CPU, move the locks to the center of the CPU. A click will be heard when the CPU has been unlocked. Gently pull up on the CPU, taking care not to bend the motherboard or the CPU retention module.

To remove the lock from the retention module, gently press the ends of the locks inward and pull.

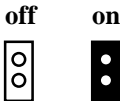
You are done.

Other than checking the jumper settings and cable connections and putting the case back on, you are done. Installing a new motherboard may sound difficult, but by following these directions, you should have a fairly uneventful time installing our products. If you do encounter problems, your dealer will be able to help you, or you can consult one of our many technical support resources (see page 8).

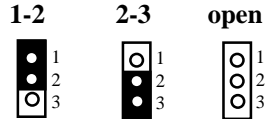
Setting Jumpers

In this manual, the terms “closed” and “on” are used when referring to jumpers (or jumper pins) that are active; “open” and “off” are used when referring to jumpers (or jumper pins) that are inactive. Jumpers and pins are connected by slipping the black plastic jumper connector overtop of two adjacent jumper pins. The metal rod inside the plastic shell bridges the gap between the two pins, completing the circuit. See the drawings below for examples of “on” and “off” pins and jumpers.

2 pin jumpers



3 (or more) pin jumpers



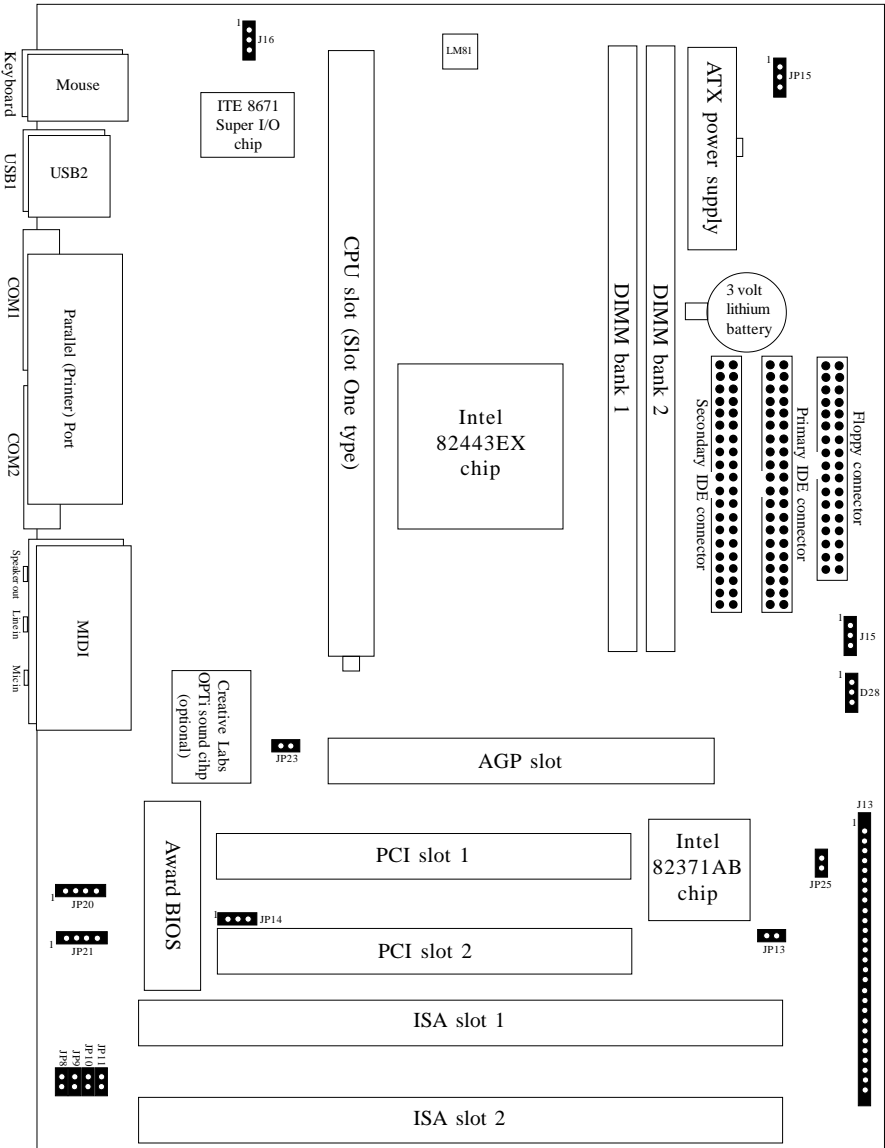
chapter 3

Onboard Resource Settings

Quick References for Jumpers

The tables on the pages which follow will help you set the jumpers for CPU speed, wake-on events, and external connector pin assignments, among others. The miniature motherboard maps will help you locate the jumpers on your board. A full-page map of the motherboard can be found on the facing page.

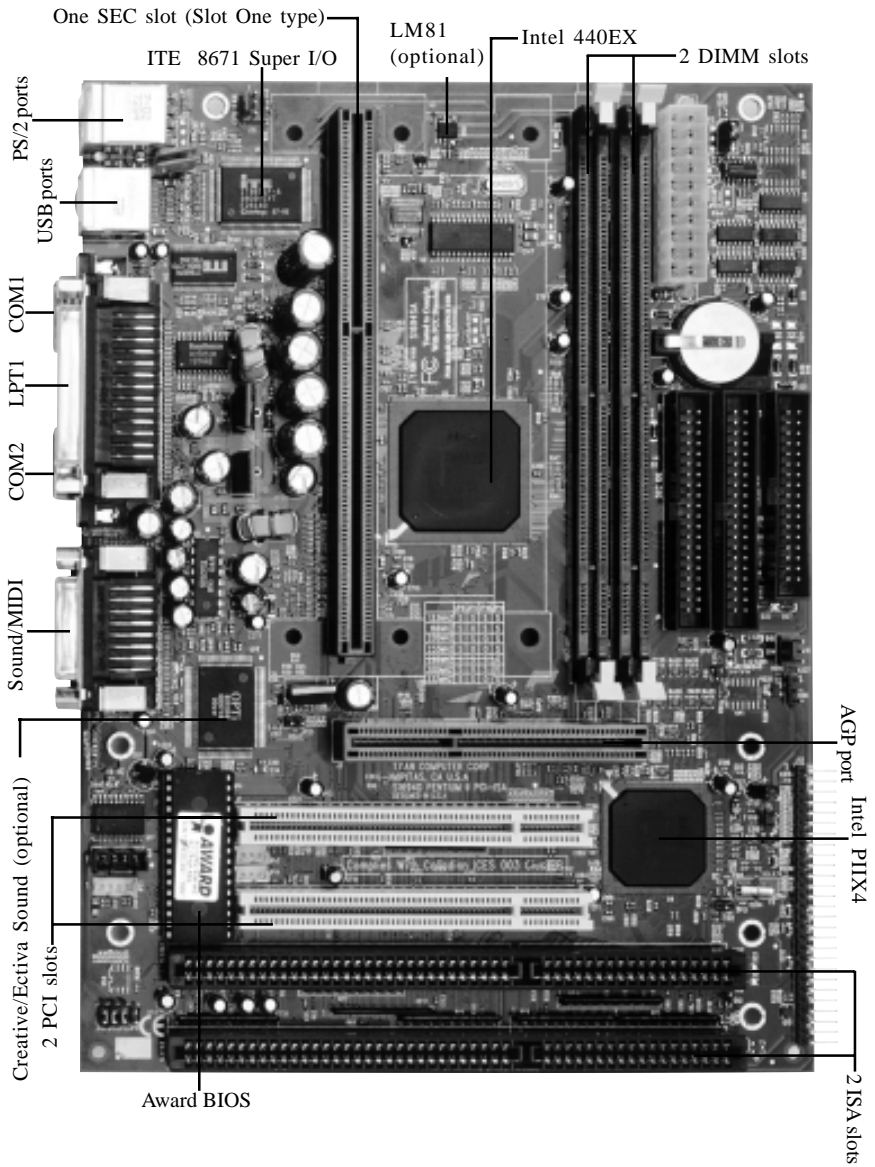
Map of Motherboard Jumpers



ONBOARD

The tiny "1"s next to jumpers of 3 pins or more indicate the position of pin 1 for that jumper.

TYAN Chapter 3
 COMPUTER Onboard Resource Settings



CPU Clock Settings

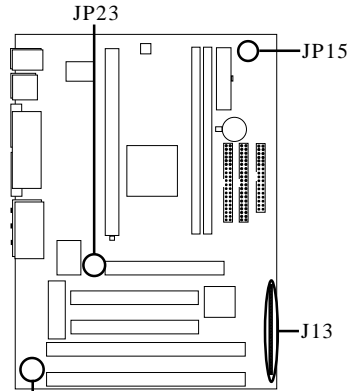
CPU Bus Speed and Multiplier	Clock Speed	JP8	JP9	JP10	JP11
66MHz x 2	133MHz	ON	ON	ON	ON
66MHz x 2.5	166MHz	ON	OFF	ON	ON
66MHz x 3	200MHz	ON	ON	OFF	ON
66MHz x 3.5	233MHz	ON	OFF	OFF	ON
66MHz x 4	266MHz	ON	ON	ON	OFF
66MHz x 4.5	300MHz	ON	OFF	ON	OFF
66MHz x 5	333MHz	ON	ON	OFF	OFF

CMOS RTC Settings

	JP15
Default	1-2
Reset CMOS	2-3

Hardware Sound Disable Settings

	JP23
Sound Disabled	ON
Sound Enabled	OFF



JP8, JP9,
JP10, JP11

J13 External Connector Pin Assignments

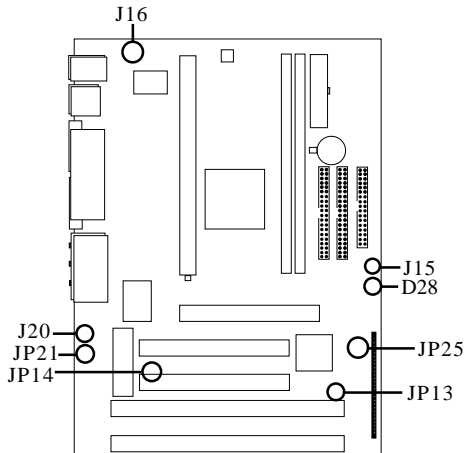
Pins	1-2	6-11	13-16	18-20	22-23	24-27
Function	Power On/Off	IR Connector	HDD LED	Power LED	Reset	Speaker
Assignment	1=Power On/Off 2=GND	6=VCC 7=NC 8=IR RX 9=GND 10=IR TX 11=Mode	13=VCC 14=NC 15=- 16=+	18=GND 19=NC 20=+	22=GND 23=Reset	24=VCC 25=NC 26=Internal Speaker 27=-

Other Jumper Assignments

Jumper	Function
D28	Connector for two color LED
JP13	Connector for External SMI
JP21	Panasonic CD audio connector
JP25	Chassis intrusion detection
J20	Mitsumi CD audio connector

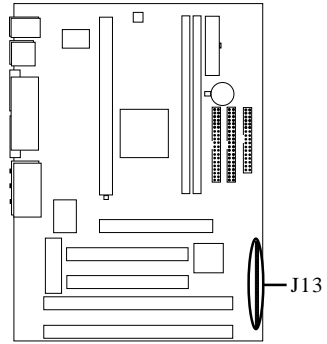
Other Pin Assignments

	1	2	3
JP14 (Wake on LAN)	Standby 5V	GND	Wake (Power On, Active High)
J15 (Chassis Fan)	GND	VCC	Fan Monitor
J16 (CPU Fan)	GND	VCC	Fan Monitor



Soft Power Connector

The Soft Power Connector is located on pins 1 and 2 of jumper block J13. The Tigercub uses the PIIX4 chip for power management, including turning on and off the system. If the Power Button Function option in the Power Mangement Menu is set to On/Off (which is the default), pressing the power button once, after the BIOS has booted up, will turn the system on and off. If the Power Button Function option is set to Suspend, pressing the power button once will wake the system or send it in to Suspend mode. In this case, you cannot turn the system off unless you shut down through the Windows operating system or you hold the power button down for four seconds.



ONBOARD

Speaker Connector Installation

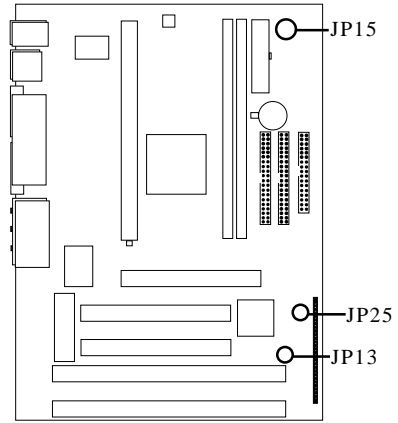
The Tigercub provides a 4-pin header to connect the speaker. The speaker is connected to pins 24-27 of jumper block J13.

Hardware Reset Switch Connector Installation

The Reset switch on your case's display panel provides you with the Hardware Reset function, which is the same as power on/off. The system will do a cold start after the Reset button is pushed. The Reset switch is a 2-pin connector and should be installed on pins 22 and 23 of jumper block J13.

External SMI

The EXTSMI (External System Management Interface) connector, JP13, is used by some plug-in cards. Certain applications associated with these plug-in cards use the interface for hardware control and queries.



Chassis Intrusion Alarm Connector

The JP25 connector is an intrusion alarm, that can be connected to the system chassis. When active (JP25 is connected), this alarm will alert the system administrator anytime someone opens the system's case.

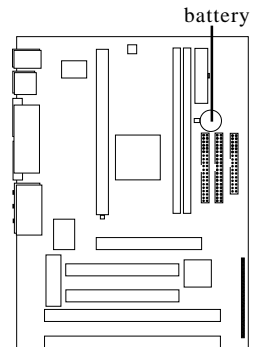


Windows 95 Users:

You may encounter problems with some of the devices in the Intel 82371AB chipset. Neither the PCI Bridge nor the PCI Universal Serial Bus device IDs for this chipset (also called PIIX4) are recognized by Windows 95. This is a software problem, not a hardware problem, and can be easily remedied by either upgrading to Windows 98 or downloading the 82371AB patch found at <http://www.tyan.com/html/drivers.html> or at <ftp://download.intel.com/design/pcisets/busmastr/setupex.exe>. Note that USB requires Windows 95 OSR 2.1 or above; please contact Microsoft for the USB update.

CMOS RTC

The 440EX AGPset includes a Real Time Clock (RTC) circuit, which provides the date and time for the system. If the external battery for the RTC is low, it will prevent your system from POSTing, and you will not get a display.



Normally the life span of an external battery is 2 years. If yours is running low, you will need to replace it with a new 3V lithium battery (Sony CR2032).

Flash EEPROM

The Tigercub uses flash memory to store BIOS programs. It can be updated as new versions of the BIOS become available. You can upgrade your BIOS easily using the Flash Writer Utility (see page 67).

Hardware CMOS & Password Reset



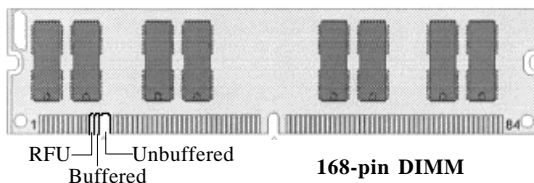
If you have been locked out of your system because you forgot your password or set the CMOS incorrectly, follow the instructions below.

1. Power off the system
2. Set jumper JP15 to pins 2 and 3 (see previous page for location of JP15).
3. Wait for 2 seconds, then return jumper JP15 to pins 1 and 2.
4. Power on the system again.

By following this procedure, you will erase your password and reset the CMOS to the BIOS defaults.

RAM Installation

The Tigercub uses a 64-bit data path from memory to CPU and can accommodate up to 512MB of EDO or SDRAM. The 168-pin DIMMs must be of the 3.3V, **unbuffered** variety. The position of the notch in the DRAM key position will tell you whether or not a DIMM is unbuffered (see the figure below). All installed memory will be automatically detected, so there is no need to set any jumpers.



Some details of memory installation:

- ♦ One unbuffered DIMM must be installed for the system to POST.
- ♦ The mainboard supports 8MB, 16MB, 32MB, 64MB, 128MB, and 256MB EDO or SDRAM (with SPD) DIMM modules.

The table below shows some of the possible memory configurations.

DIMM Bank 1	DIMM Bank 2	Total
8MBx1	0	8MB
8MBx1	8MBx1	16MB
8MBx1	16MBx1	24MB
16MBx1	16MBx1	32MB
16MBx1	32MBx1	48MB
32MBx1	32MBx1	64MB
64MBx1	32MBx1	96MB
64MBx1	64MBx1	128MB
128MBx1	32MBx1	160MB
128MBx1	64MBx1	192MB
128MBx1	128MBx1	256MB
128MBx1	256MBx1	384MB
256MBx1	256MBx1	512MB

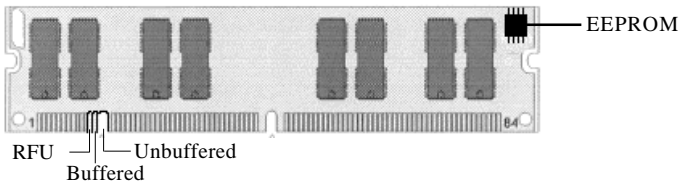
Cache Memory

Pentium II processors have the L2 (Level 2) cache built into their architecture, so there is no need for an L2 cache on the motherboard. The Pentium II processor has a physical L2 cache size of 512KB and a cacheable memory area of 512MB. The Celeron CPU may have no L2 cache or 128KB of L2 cache.

Frequently Asked Questions

Q: Why don't I get a display after I put in my old DIMM module?

A: The 440EX chipset requires the memory manufacturer to program an EEPROM chip with **SPD** (Serial Presence Detection) on the module in order for the BIOS to program the 440EX's timing registers properly. Your DIMM may not have the EEPROM chip on the module, or the EEPROM may not contain the correct program. Check with your memory vendor for details. The figure below shows a DIMM module with an EEPROM chip.



168-pin DIMM

Q: My system sometimes becomes unstable. How should I check the system?

A: The first thing to do is to check and see if you have any device conflict in address, IRQ, or DMA. If you are using Windows 95, the Device Manager is a good place to start. Please consult your operating system manual for details. Second of all, slowing down the memory timing in the BIOS's chipset setup section will help the situation, as well. Many memory modules are not suitable for high performance systems and are probably the main source of your problem.

Q: Can I mix EDO and SDRAM DIMMs on this motherboard?

A: Yes. However, the AGP graphics card will perform better if only SDRAM is installed on the motherboard because the AGP card can store the texture map in the system memory, and SDRAM is better suited for this than EDO.

Q: What is AGP?

A: AGP (Accelerated Graphics Port) is a new bus architecture for 3D graphics. The AGP slot eliminates the PCI bandwidth bottleneck by bypassing the PCI interface and accessing the system memory directly. Currently, the AGP supports 1X and 2X modes, which yield bandwidths of 264MB/s (at 33MHz bus speed) and 533MB/s (at 66MHz bus speed), respectively. Compare this with the mere 132MB/s (at 33MHz bus speed) that you get with the PCI bus.

Q: Does my operating system support AGP?

A: Currently, only Windows 98 and Windows NT 5.0 will have built-in support for AGP. Some AGP cards require Windows 95 OSR2.1 or a special driver from Intel. Please check with your graphics vendor for more details.

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chapter 4

BIOS Configuration

Introduction to Setup

This manual describes the Award EliteBIOS Setup program. The Setup program lets you modify basic system configuration settings. The settings are then stored in a dedicated battery-backed memory, called CMOS RAM, that retains the information when the power is turned off.

The EliteBIOS in your computer is a customized version of an industry-standard BIOS for IBM PC AT-compatible personal computers. It supports Intel x86 and compatible processors. The BIOS provides critical low-level support for the system central processing, memory, and I/O subsystems.

The EliteBIOS has been customized by adding important, but nonstandard, features such as virus and password protection, power management, and detailed fine-tuning of the chipset controlling the system. The rest of this manual is intended to guide you through the process of configuring your system using Setup.

Starting Setup

The EliteBIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking out the system and configuring it through the power-on self test (POST).

When these preliminaries are finished, the BIOS seeks an operating system on one of the data storage devices (hard drive, floppy drive, etc.). The BIOS launches the operating system and hands control of system operations to it.

During POST, you can start the Setup program in one of two ways:

1. By pressing immediately after switching the system on, or
2. By pressing the key or by simultaneously pressing <Ctrl>, <Alt>, and <Esc> keys when the following message appears briefly at the bottom of the screen during POST:

TO ENTER SETUP BEFORE BOOT PRESS DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the RESET button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message appears and you are again asked to

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

Setup Keys

The table on the following page shows how to navigate in Setup using the keyboard.

Key	Function
Up arrow	Move to previous item.
Down arrow	Move to next item.
Left arrow	Move to item on the left hand.
Right arrow	Move to item on the right hand.
Esc key	Main Menu: Quit and do not save changes into CMOS RAM. Status Page Setup Menu: Exit current page and return to Main Menu.
PgUp key	Increase the numeric value or make changes.
PgDn key	Decrease the numeric value or make changes.
+ key	Increase the numeric value or make changes.
- key	Decrease the numeric value or make changes.
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu.
F2 key Shift-F2	Change color from total 16 colors. F2 to select color forward, Shift-F2 to select color backwards.
F3 key	Calendar, only for Status Page Setup Menu.
F4 key	Reserved.
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu.
F6 key	Load the default CMOS RAM value from BIOS default table, only for Option Page Setup Menu.
F7 key	Load the default.
F8 key	Reserved.
F9 key	Reserved.
F10 key	Save all the CMOS changes, only for Main Menu.

Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the EliteBIOS supports an override to the CMOS settings that resets your system to its default configuration.

You can invoke this override by immediately pressing <Insert> when you restart your computer. You can restart by either using the ON/OFF switch, the RESET button or by pressing <Ctrl>, <Alt> and <Delete> at the same time.

The best advice is to alter only settings that you thoroughly understand. In particular, do not change settings in the Chipset screen without a good reason. The Chipset defaults have been carefully chosen by Award Software or your system manufacturer for the best performance and reliability. Even a seemingly small change to the Chipset setup may causing the system to become unstable.

Setup Variations

Not all systems have the same Setup. While the basic look and function of the Setup program remains the same for all systems, the appearance of your Setup screens may differ from the screens shown here. Each system design and chipset combination require custom configurations. In addition, the final appearance of the Setup program depends on your system designer. Your system designer can decide that certain items should not be available for user configuration and remove them from the Setup program.

Main Setup Menu

When you enter the EliteBIOS CMOS Setup Utility, a Main Menu, similar to the one shown below, appears on the screen. The Main Menu allows you to select from several Setup functions and two exit choices. Use the arrow keys to select among the items and press enter to accept and enter the sub-menu.

ROM PCI/ISA BIOS (2A69JT50)
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 BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	
F10 : Save & Exit Setup	
- - @ - : Select Item	
(Shift)F2 : Change Color	
Time, Date, Hard Disk Type...	

A brief description of each highlighted selection appears at the bottom of the screen. Following is a brief summary of each Setup category.

Standard CMOS Setup

Options in the original PC AT-compatible BIOS.

BIOS Features Setup

Award Software enhanced BIOS options.

Chipset Features Setup

Options specific to your system chipset.

Power Management Setup

Advanced Power Management (APM) options.

PnP/PCI Configuration

Plug and Play standard and PCI Local Bus configuration options.

Integrated Peripherals

I/O subsystems that depend on the integrated peripherals controller in your system.

Supervisor/User Password

Change, set, or disable a password. In BIOS versions that allow separate user and supervisor passwords, only the supervisor password permits access to Setup. The user password generally allows only power-on access.

IDE HDD Auto Detection

Automatically detect and configure IDE hard disk parameters.

Load BIOS Defaults

BIOS defaults are factory settings for the most stable, minimal-performance system operations.

Load Setup Defaults

Setup defaults are factory settings for optimal-performance system operations.

Save & Exit Setup

Save settings in nonvolatile CMOS RAM and exit Setup.

Exit Without Saving

Abandon all changes and exit Setup.

Standard CMOS Setup

In the Standard CMOS menu you can set the system clock and calendar, record disk drive parameters and the video subsystem type, and select the type of errors that stop the BIOS POST.

ROM PCI/ISA BIOS (2A69JT50)
 STANDARD CMOS SETUP
 AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Fri, Aug 1 1998																		
Time (hh:mm:ss) : 10 : 7 : 7																		
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.					<table border="1"> <tr> <td>Base Memory:</td> <td>640K</td> </tr> <tr> <td>Extended Memory:</td> <td>64512K</td> </tr> <tr> <td>Other Memory:</td> <td>384K</td> </tr> <tr> <td colspan="2"><hr/></td> </tr> <tr> <td>Total Memory:</td> <td>65536K</td> </tr> </table>				Base Memory:	640K	Extended Memory:	64512K	Other Memory:	384K	<hr/>		Total Memory:	65536K
Base Memory:	640K																	
Extended Memory:	64512K																	
Other Memory:	384K																	
<hr/>																		
Total Memory:	65536K																	
Drive B : None																		
Floppy 3 Mode Support : Disabled																		
Video : EGA/VGA																		
Halt On : All but Keyboard																		
ESC : Quit			- - @ ~ : Select Item			PU/PD/+/- : Modify												
F1 : Help		(Shift)F2 : Change Color																

Date

The BIOS determines the day of the week from the other date information. This field is for information only. Press the arrow keys to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time

The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the arrow keys to move to the desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

HARD DISKS

The BIOS supports up to four IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, or about other hard drive types, such as SCSI drives. Note: We recommend that you select type auto for all drives.

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. When you select type auto for a hard drive, the BIOS detects its specifications during POST, every time the system boots. If you do not want to select drive type auto, other methods of selecting the drive type are available:

1. Match the specifications of your installed IDE hard drive(s) with the preprogrammed values for drive types 1 through 45.
2. Select User and enter values into each drive parameter field.
3. Use the IDE HDD Auto Detection function in Setup.

Here is a brief explanation of drive specifications:

Type: The BIOS contains a table of pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write precompensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any pre-defined type are classified as type user.

Size: Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.

Cyls: Number of cylinders

Head: Number of heads

Precomp: Write precompensation cylinder

Landz: Landing zone

Sector: Number of sectors

Mode: Auto, Normal, large, or LBA

Auto: The BIOS automatically determines the optimal mode.

Normal: Maximum number of cylinders, heads, and sectors supported are 1024, 16, and 63.

Large: For drives that do not support LBA and have more than 1024 cylinders.

LBA (Logical Block Addressing): During drive accesses, the IDE controller transforms the data address described by sector, head, and cylinder number into a physical block address, significantly improving data transfer rates. For drives with greater than 1024 cylinders.

Drive A, Drive B

Select the correct specifications for the diskette drive(s) installed in the computer.

None	No diskette drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

Floppy 3 Mode Support

When Enabled, the BIOS supports Japanese 3 Mode 1.2MB, 3.5-in diskette drive as well as standard 720-KB and 1.44-MB diskettes.

Video

Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA, or 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

During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain

errors during POST and continue the boot-up process. These are the selections:

No errors	POST does not stop for any errors.
All errors	If the BIOS detects any non-fatal error, POST stops and prompts you to take corrective action.
All, But Keyboard	POST does not stop for a keyboard error, but stops for all other errors.
All, But Diskette	POST does not stop for diskette drive errors, but stops for all other errors.
All, But Disk/Key	POST does not stop for a keyboard or disk error, but stops for all other errors.

Memory

You cannot change any values in the Memory fields; they are only for your information. The fields show the total installed random access memory (RAM) and amounts allocated to base memory, extended memory, and other (high) memory. RAM is counted in kilobytes (KB: approximately one thousand bytes) and megabytes (MB: approximately one million bytes).

RAM is the computer's working memory, where the computer stores programs and data currently being used, so they are accessible to the CPU. Modern personal computers may contain up to 64 MB, 128 MB, or more.

Base Memory: Typically 640 KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory: Above the 1-MB boundary. Early IBM personal computers could not use memory above 1 MB, but current PCs and their software can use extended memory.

Other Memory: Between 640 KB and 1 MB; often called High memory. DOS may load terminate-and-stay-resident (TSR) programs, such as device drivers, in this area, to free as much conventional memory as possible for applications. Lines in your config.sys file that start with loadhigh load programs into high memory.

BIOS Features Setup

This screen contains industry-standard options additional to the core PC AT BIOS. This section describes all fields offered by Award Software in this screen. The example screen below may vary from the one in your Setup program. Your system board designer may omit or modify some fields.

ROM PCI/ISA BIOS (2A69JT50)
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	: Disabled	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	: Enabled	DC000-DFFFF Shadow	: Disabled
Boot Up NumLock Status	: On		
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Disabled		
Assign IRQ For VGA	: Enabled		
OS Select For DRAM > 64MB	: Non-OS2		
		ESC : Quit	- @- : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program.

Keep in mind that this feature protects only the boot sector, not the entire hard drive. Note: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.

CPU Internal Cache/External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. The External Cache field may not appear if your system does not have external cache memory.

Quick Power On Self Test

Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

Boot Sequence

The original IBM PCs loaded the operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, modern computers usually load the operating system from the hard drive, and may even load it from a CD-ROM drive. The BIOS now offers a large number of boot devices and boot sequence options.

Swap Floppy Drive

This field is effective only in systems with two floppy drives. Selecting Enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

Boot Up Floppy Seek

When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KB, 1.2 MB, and 1.44 MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to Disabled to save time.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.

Boot Up System Speed

Select High to boot at the default CPU speed; select Low to boot at the speed of the AT bus. Some add-in peripherals or old software (such as old games) may require a slow CPU speed. The default setting is High.

Gate A20 Option

Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to Fast, the system chipset controls Gate A20. When set to Normal, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows.

Typematic Rate Setting

When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystrokes repeat at a rate determined by the keyboard controller in your system. When Enabled, you can select a typematic rate and typematic delay.

Typematic Rate (Chars/Sec)

When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24 or 30 characters per second.

Typematic Delay (Msec)

When the typematic rate setting is enabled, you can select a typematic delay (the delay before key strokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.

Security Option

If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.

PCI/VGA Palette Snoop

Your BIOS Setup may not contain this field. If the field is present, leave at Disabled.

OS Select for DRAM > 64MB

Select OS2 only if you are running OS/2 operating system with greater than 64 MB of RAM on your system.

MPS Version Control for OS

The BIOS supports versions 1.1 and 1.4 of the Intel multiprocessor specification. Select the version supported by the operating system running on this computer.

Shadow

Software that resides in a read-only memory (ROM) chip on a device is called firmware. The EliteBIOS permits shadowing of firmware such as the system BIOS, video BIOS, and similar operating instructions that come with some expansion peripherals, such as, for example, a SCSI adaptor.

Shadowing copies firmware from ROM into system RAM, where the CPU can read it through the 16-bit or 32-bit DRAM bus. Firmware not shadowed must be read by the system through the 8-bit X-bus. Shadowing improves the performance of the system BIOS and similar ROM firmware for expansion peripherals, but it also reduces the amount of high memory (640 KB to 1 MB) available for loading device drivers, etc.

Enable shadowing into each section of memory separately. Many system designers hardwire shadowing of the system BIOS and eliminate a System BIOS Shadow option.

Video BIOS shadows into memory area C0000-C7FFF. The remaining areas shown on the BIOS Features Setup screen may be occupied by other expansion card firmware. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

Chipset Features Setup

This section describes features of the Intel 440EX chipset.

Advanced Options

The parameters in this screen are for system designers, service personnel, and technically competent users only. Do not reset these values unless you understand the consequences of your changes. Note: This chapter describes all fields offered by Award Software in this screen. Your system board designer may omit or modify some fields.

ROM PCI/ISA BIOS (2A69JT50)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	SDRAM CAS latency Time	: 3
DRAM Speed Selection	: 60ns	LM81 Present	: Disabled
MA Wait State	: Slow		
EDO RAS# To CAS# Delay	: 3		
EDO RAS# Precharge Time	: 3		
EDO DRAM Read Burst	: x333		
EDO DRAM Write Burst	: x222		
DRAM Data Integrity Mode	: Non-ECC		
CPU-To-PCI IDE Posting	: Enabled		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
Video RAM Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 1		
16 Bit I/O Recovery Time	: 1		
Memory Hole At 15M-16M	: Disabled		
Passive Release	: Enabled	ESC : Quit	-~@~ : Select Item
Delayed Transaction	: Disabled	F1 : Help	PU/PD/+/- : Modify
AGP Aperture Size (MB)	: 64	F5 : Old Values (Shift)	F2 : Color
SDRAM RAS-to-CAS Delay	: Slow	F6 : Load BIOS Defaults	
SDRAM RAS Precharge Time	: Slow	F7 : Load Setup Defaults	

Auto Configuration

Auto Configuration selects predetermined optimal values of chipset parameters. When Disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled.

DRAM Speed Selection

The value in this field must correspond to the speed of the DRAM installed in your system. DO NOT change the default setting of this

field, as determined by the system board manufacturer for the installed DRAM. This value is access speed, so a lower value means a faster system.

MA Wait State

Selecting Slow inserts one wait state before the beginning of a memory read. The setting of this parameter depends on the board design. Do not change from the manufacturer's default unless you are getting memory addressing errors.

EDO RAS# to CAS# Delay

This field applies only if EDO DRAM is installed in the system. It lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Disabled gives faster performance; and Enabled gives more stable performance. EDO is short for Extended Data Output. EDO DRAM is faster than conventional DRAM if the cache controller in the system supports pipeline burst transfer mode. Unlike conventional DRAM, which only allows one byte to be read at a time, EDO DRAM can copy an entire block of memory to its internal cache. While the processor is accessing this cache, the memory can collect a new block to send.

EDO RAS# Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data. This field applies only if EDO DRAM is installed in the system.

EDO DRAM Read Burst

Set the timing for burst-mode reads from DRAM. The lower the timing numbers, the faster the system addresses memory. This field applies only if EDO DRAM is installed in the system.

EDO DRAM Write Burst

Set the timing for burst-mode writes from EDO DRAM. The lower the timing numbers, the faster the system addresses memory. This field applies only if EDO DRAM is installed in the system.

DRAM ECC/Parity Select

Select Parity, ECC (error-correcting code), or Disabled, depending on the type of DRAM installed in your system.

CPU-To-PCI IDE Posting

Select Enabled to post write cycles from the CPU to the PCI IDE interface. IDE accesses are posted in the CPU to PCI buffers, for cycle optimization.

DRAM Read-Around-Write

DRAM optimization feature: If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM.

Burst Write Combining

When this option is Enabled, the chipset assembles long PCI bursts from the data held in these buffers.

PCI-To-DRAM Pipeline

DRAM optimization feature: If Enabled, full PCI-to-DRAM write pipelining is enabled. Buffers in the chipset store data written from the PCI bus to memory. When Disabled, PCI writes to DRAM are limited to a single transfer per write cycle.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video BIOS Cacheable

Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a memory access error may result.

Video RAM Cacheable

Selecting Enabled allows caching of the video memory, resulting in better video performance.

8/16 Bit I/O Recovery Time

The I/O recovery mechanism adds bus clock cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is so much faster than the ISA bus. These two fields let you add recovery time (in bus clock cycles) for 16-bit and 8-bit I/O.

Memory Hole at 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

Passive Release

When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

AGP Aperture Size (MB)

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See www.agpforum.org for APG information.

SDRAM RAS to CAS Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance; and Slow gives more stable perfor-

mance. This field applies only when synchronous DRAM is installed in the system.

SDRAM RAS Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

The following features are only available with the optional LM81 chip.

CPU Warning Temperature

Select the combination of lower and upper limits for the CPU temperature. If the CPU temperature extends beyond either limit, any warning mechanism programmed into your system will be activated.

Current CPU Temperature

This field displays the current CPU temperature, if your computer contains a monitoring system.

Current System Temperature

This field displays the current system temperature, if your computer contains a monitoring system.

Current CPUFAN 1/2/3 Speed

These fields display the current speed of up to three CPU fans, if your computer contains a monitoring system.

IN0-IN6 (V)

These fields display the current voltage of up to seven voltage input lines, if your computer contains a monitoring system.

Power Management Setup

Note: This chapter describes all fields offered by Award Software in this screen. Your system board designer may omit or modify some fields.

ROM PCI/ISA BIOS (2A69JT50)
 POWER MANAGEMENT SETUP
 AWARD SOFTWARE, INC.

ACPI Function	: Enabled	** Reload Global Timer Events **
Power Management	: Max Saving	IRQ[3-7,9-15],NMI : Enabled
PM Control by APM	: Yes	Primary IDE 0 : Disabled
Video Off Method	: V/H Sync+Blank	Primary IDE 1 : Disabled
Video Off After	: Standby	Secondary IDE 0 : Disabled
MODEM Use IRQ	: 3	Secondary IDE 1 : Disabled
Doze Mode	: 1 Min	Floppy Disk : Disabled
Standby Mode	: 1 Min	Serial Port : Enabled
Suspend Mode	: 1 Min	Parallel Port : Disabled
HDD Power Down	: 1 Min	Power Interruption : Disabled
Throttle Duty Cycle	: 62.5%	PC98 LED : Disabled
ZZ Active in Suspend	: Disabled	
VGA Active Monitor	: Disabled	
Power Button Function	: Suspend	
Fan1 Speed in Suspend	: Off	
Fan2 Off in Suspend	: Enabled	ESC : Quit -@- : Select Item
Resume by Ring	: Enabled	F1 : Help PU/PD/+/- : Modify
Resume by Alarm	: Disabled	F5 : Old Values (Shift)F2 : Color
Wake up on LAN	: Enabled	F6 : Load BIOS Defaults
IRQ 8 Break Suspend	: Disabled	F7 : Load Setup Defaults

Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. See the section PM Timers for a brief description of each mode. This table describes each power management mode:

Max saving	Maximum power savings. Only available for SL CPUs. Inactivity period is 1 minute in each mode.
User Define	Set each mode individually. Select time-out periods in the PM Timers section, following.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

PM Control by APM

If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings.

Video Off Method

Determines the manner in which the monitor is blanked.

V/H SYNC+Blank	System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS Support	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.
Blank Screen	System only writes blanks to the video buffer.

Video Off After

As the system moves from lesser to greater power-saving modes, select the mode in which you want the monitor to blank.

MODEM Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

Doze Mode

After the selected period of system inactivity (1 minute to 1 hour), the CPU clock runs at slower speed while all other devices still operate at full speed. This mode is user-configurable only during User Defined Power Management mode.

Standby Mode

After the selected period of system inactivity (1 minute to 1 hour), the fixed disk drive and the video shut off while all other devices still operate at full speed. This mode is user-configurable only during User Defined Power Management mode.

Suspend Mode

After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. This mode is user-configurable only during User Defined Power Management mode.

HDD Power Down

After the selected period of drive inactivity (1 to 15 minutes), the hard disk drive powers down while all other devices remain active. This mode is user-configurable only during User Defined Power Management mode.

Throttle Duty Cycle

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

ZZ Active in Suspend

When Enabled, the ZZ signal is active during Suspend mode.

VGA Active Monitor

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

CPUFAN Off in Suspend

Selecting Enabled causes the CPU fan to turn off during Suspend mode.

Resume by Ring

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

IRQ8 Break Suspend

You can Enable or Disable monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

Reload Global Timer Events

When Enabled, an event occurring on each device listed below restarts the global timer for Standby mode.

IRQ3-7, 9-15, NMI	Floppy Disk
Primary IDE 0	Serial Port
Primary IDE 1	Parallel Port
Secondary IDE 0	Power Interruption
Secondary IDE 1	

PnP/PCI Configuration

Note: This chapter describes all fields offered by Award Software in this screen. Your system board designer may omit or modify some fields.

ROM PCI/ISA BIOS (2A69JT50)
 PNP/PCI CONFIGURATION
 AWARD SOFTWARE, INC.

PNP OS Installed : No Resources Controlled By : Manual Reset Configuration Data : Disabled IRQ-3 assigned to : PCI/ISA PnP IRQ-4 assigned to : PCI/ISA PnP IRQ-5 assigned to : PCI/ISA PnP IRQ-7 assigned to : PCI/ISA PnP IRQ-9 assigned to : PCI/ISA PnP IRQ-10 assigned to : PCI/ISA PnP IRQ-11 assigned to : PCI/ISA PnP IRQ-12 assigned to : PCI/ISA PnP IRQ-14 assigned to : PCI/ISA PnP IRQ-15 assigned to : PCI/ISA PnP DMA-0 assigned to : PCI/ISA PnP DMA-1 assigned to : PCI/ISA PnP DMA-3 assigned to : PCI/ISA PnP DMA-5 assigned to : PCI/ISA PnP DMA-6 assigned to : PCI/ISA PnP DMA-7 assigned to : PCI/ISA PnP	PCI IDE IRQ Map To : ISA Used MEM base addr : N/A Assign IRQ for USB : Enabled ESC : Quit -~@~ : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults
---	--

BIOS

PNP OS Installed

Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95).

Resources Controlled By

The Plug and Play EliteBIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, because the BIOS automatically assigns them.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you

have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

IRQ n Assigned to

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA: Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

PCI/ISA PnP: Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

DMA n Assigned to

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA: Devices compliant with the original PC AT bus specification, requiring a specific DMA channel

PCI/ISA PnP: Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

PCI IDE IRQ Map to

This field lets you select PCI IDE IRQ mapping or PC AT (ISA) interrupts. If your system does not have one or two PCI IDE connectors on the system board, select values according to the type of IDE interface(s) installed in your system (PCI or ISA). Standard ISA interrupts for IDE channels are IRQ14 for primary and IRQ15 for secondary.

Primary/Secondary IDE INT#

Each PCI peripheral connection is capable of activating up to four interrupts: INT# A, INT# B, INT# C and INT# D. By default, a PCI connection is assigned INT# A. Assigning INT# B has no meaning unless the peripheral device requires two interrupt services rather than just one. Because the PCI IDE interface in the chipset has two channels, it requires two interrupt services. The primary and secondary IDE

INT# fields default to values appropriate for two PCI IDE channels, with the primary PCI IDE channel having a lower interrupt than the secondary.

Used Mem base addr

Select a base address for the memory area used by any peripheral that requires high memory.

Used Mem Length

Select a length for the memory area specified in the previous field. This field does not appear if no base address is specified.

Integrated Peripherals

Note: This chapter describes all fields offered by Award Software in this screen. Your system board designer may omit or modify some fields.

ROM PCI/ISA BIOS (2A69JT50)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	Parallel Port Mode	: SPP
IDE Primary Master PIO	: Auto	Onboard Sound Chip	
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
KBC Input Clock	: 8 MHz		
Onboard FDC Controller	: Enabled		
Onboard Serial Port 1	: Auto	ESC : Quit	-^@~ : Select Item
Onboard Serial Port 2	: Auto	F1 : Help	PU/PD/+/- : Modify
UR2 Mode	: Standard	F5 : Old Values (Shift)	F2 : Color
IRRX Mode Select	: IRMODE	F6 : Load BIOS Defaults	
Onboard Parallel Port	: 3BC/IRQ7	F7 : Load Setup Defaults	

IDE HDD Block Mode

Select Enabled only if your hard drives support block mode.

IDE PIO Modes (Primary/Secondary Master/Slave)

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

IDE UDMA Modes (Primary/Secondary Master/Slave)

UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select Auto in the

four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device.

On-Chip PCI IDE (Primary/Secondary)

This chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary and/or secondary onboard IDE interface. Select Disabled to deactivate this interface, if you install a primary and/or secondary add-in IDE interface.

Onboard PCI SCSI Chip

Select Enabled if your system contains a built-in PCI SCSI controller.

USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.

Onboard Serial Ports (1, 2)

Select a logical COM port address and corresponding interrupt for the first and second serial ports. The second serial port offers infrared options in the next field.

UR2 Mode

Select an operating mode for the second serial port:

- Standard RS-232C serial port
- IrDA 1.0 IrDA specification 1.0-compliant serial infrared port
- IrDA 1.1 IrDA specification 1.1-compliant serial infrared port
- ASK-IR Amplitude shift keyed infrared port

Duplex Select

Select the value required if an IR device is connected to the IR port. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time.

TxD, RxD Active

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

Onboard Parallel Port

Select a logical LPT port address and corresponding interrupt for the physical parallel port.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select Normal or SPP unless you are certain both your hardware and software support one of the other available modes.

Supervisor Password

When you select this function, a message appears at the center of the screen:

ENTER PASSWORD:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory. Now the message changes:

CONFIRM PASSWORD:

Again, type the password and press Enter. To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System	Enter a password each time the system boots and whenever you enter Setup.
Setup	Enter a password whenever you enter Setup.

Note: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.

Flash Writer Utility

You can upgrade the BIOS on your motherboard by using the Flash Memory Writer (FMW) utility. This utility can be downloaded from TYAN's BBS and from the TYAN website. The system BIOS is stored on a flash EEPROM chip on the mainboard, which can be erased and reprogrammed by the FMW. The following three files make up the FMW:

- AWDFLASH.EXE The Flash Memory Writer utility for Award to Award upgrade.
- README.TXT A text file of instructions.
- S71AWXX.BIN* The new BIOS file.

(*This file name is subject to change and can have either a .bin or .rom extension.)

The FMW records (or programs) a new BIOS onto the flash memory chip. You cannot upgrade an Award BIOS to an AMI BIOS or vice-versa.

Note: You should always clear your CMOS after flashing a BIOS. This will clear out any stray settings from your old BIOS which may have been carried over from the flashing process. Most problems encountered after flashing a BIOS will be solved by this simple procedure (see Hardware CMOS & Password Reset, page 33).

To reprogram the system BIOS, the CPU must be running in real mode. FMW will not run if the CPU is operating in a protected or virtual mode. This means that you cannot run it with Windows running or with any memory manager software. You must disable any memory

manager software before you can run FMW. The easiest way to do this is as follows:

1) Boot your system from a bootable floppy disk with no CONFIG.SYS or AUTOEXEC.BAT files, and then run FMW from a backup copy of your support disk. You can make your back-up floppy bootable when you format it, and use one disk for both purposes.

2) If you are using MS-DOS 6.x, you can use the feature that allows you to bypass the CONFIG.SYS and AUTOEXEC.BAT files. You can access this feature by pressing <F5> while the “Starting MS-DOS...” line is on the screen during boot-up.

If you are uncertain whether or not you have a memory manager running, try FMW. If it works, then there is no active memory manager on your system. If you see a warning message about the CPU mode, follow the above directions to get around the memory manager.

Once you have your CPU in real mode, you can run FMW. You can copy the contents of the “Flash” directory to your hard drive, or you can run the utility from a backup of the support floppy disk. Either way, make sure that the new BIOS file is in the same directory as the FMW utility.

To start FMW, change to the “Flash” directory if you are not already in it. Type “awdf flash” at the DOS command line and press the <Enter> key. The FMW utility screen will appear:

FLASH MEMORY WRITER V3.0 Copyright(C) 1993, AWARD SOFTWARE, INC.	
For VX/HX-2A59CT51	Date:4/13/98
File Name to Program:	
Error Message:	

Type in the whole file name, e.g. A61AW10.BIN, and confirm that you want to program the BIOS. The utility will then “Blank,” “Erase,” and “Program” the flash memory on the mainboard with the new BIOS file. You should choose “Yes” to save the original system BIOS to a floppy diskette **before** you program the new BIOS. This leaves you with a backup of your original BIOS in case you need to re-install it. If you cannot successfully program the new BIOS file for some reason, re-install your original BIOS from the backup file. Remember, always reset the CMOS after flashing to a new BIOS (see page 33).

Warning: If you do not successfully install a complete BIOS file in the flash memory on the mainboard, your system may not be able to boot. If this happens, it will require service by your system vendor. Follow the instructions in this section precisely to avoid such an inconvenience.

chapter 5

System Resources

POST Messages

During the power-on self test (POST), the BIOS either sounds a beep code or displays a message when it detects a correctable error. Following is a list of POST messages for the ISA BIOS kernel. Specific chipset ports and BIOS extensions may include additional messages. An error message may be followed by a prompt to press F1 to continue or press DEL to enter Setup.

Beep

Currently the only beep code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps.

BIOS ROM checksum error - System halted

The checksum of the BIOS code in the BIOS chip is incorrect, indicating the BIOS code may have become corrupt. Contact your system

dealer to replace the BIOS.

CMOS battery failed

CMOS battery is no longer functional. Contact your system dealer for a replacement battery.

CMOS checksum error - Defaults loaded

Checksum of CMOS is incorrect, so the system loads the default equipment configuration. A checksum error may indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

CPU at nnnn

Displays the running speed of the CPU.

Display switch is set incorrectly.

The display switch on the motherboard can be set to either monochrome or color. This message indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

Press ESC to skip memory test

The user may press Esc to skip the full memory test.

Floppy disk(s) fail

Cannot find or initialize the floppy drive controller or the drive. Make sure the controller is installed correctly. If no floppy drives are installed, be sure the Diskette Drive selection in Setup is set to NONE or AUTO.

HARD DISK initializing**Please wait a moment...**

Some hard drives require extra time to initialize.

HARD DISK INSTALL FAILURE

Cannot find or initialize the hard drive controller or the drive. Make sure

the controller is installed correctly. If no hard drives are installed, be sure the Hard Drive selection in Setup is set to NONE.

Hard disk(s) diagnosis fail

The system may run specific disk diagnostic routines. This message appears if one or more hard disks return an error when the diagnostics run.

Keyboard error or no keyboard present

The keyboard cannot initialize. Make sure the keyboard is attached correctly and no keys were pressed during POST. To purposely configure the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. The BIOS then ignores the missing keyboard during POST.

Keyboard is locked out - Unlock the key

This message usually indicates that one or more keys have been pressed during the keyboard tests. Be sure no objects are resting on the keyboard.

Memory Test :

This message displays during a full memory test, counting down the memory areas being tested.

Memory test fail

If POST detects an error during memory testing, additional information appears giving specifics about the type and location of the memory error.

Override enabled - Defaults loaded

If the system cannot boot using the current CMOS configuration, the BIOS can override the current configuration with a set of BIOS defaults designed for the most stable, minimal-performance system operations.

Press TAB to show POST screen

System OEMs may replace the EliteBIOS POST display with their own proprietary display. Including this message in the OEM display permits the operator to switch between the OEM display and the

default POST display.

Primary master hard disk fail

POST detects an error in the primary master IDE hard drive.

Primary slave hard disk fail

POST detects an error in the secondary master IDE hard drive.

Resuming from disk, Press TAB to show POST screen

The BIOS offers a save-to-disk feature for notebook computers. This message may appear when the operator re-starts the system after a save-to-disk shut-down. See the Press TAB ... message above for a description of this feature.

Secondary master hard disk fail

POST detects an error in the primary slave IDE hard drive.

Secondary slave hard disk fail

POST detects an error in the secondary slave IDE hard drive.

Glossary

ACPI (Advanced Configuration and Power Interface) is a power management specification that allows the operating system to control the amount of power distributed to the computer's devices. Devices not in use can be turned off, reducing unnecessary power expenditure.

AGP (Accelerated Graphics Port) is a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs at only 66MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133MHz.

The **AT** was the original form factor of IBM's PC.

ATAPI (AT Attachment Packet Interface), also known as IDE or ATA, is a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like hard drives.

The **ATX** form factor was designed to replace the AT form factor. It improves on the AT design by rotating the board ninety degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, serial, USB, and parallel ports are built in.

Bandwidth refers to carrying capacity. The greater the bandwidth, the more data the bus, phone line, or other electrical path, can carry. Greater bandwidth, then, also results in greater speed.

A **BBS** (Bulletin Board System) is a computer system with a number of modems hooked up to it which acts as a center for users to post messages and access information.

The **BIOS** (Basic Input/Output System) program resides in the ROM chip, and provides the basic instructions for controlling your computer's hardware.

Both the operating system and application software use BIOS routines to ensure compatibility.

A **buffer** is a portion of RAM which is used to temporarily store data, usually from an application, though it is also used when printing, and in most keyboard drivers. The CPU can manipulate data in a buffer before copying it, all at once, to a disk drive. While this improves system performance--reading to or writing from a disk drive a single time is much faster than doing so repeatedly--there is the possibility of losing your data should the system crash. Information stored in a buffer is temporarily stored, not permanently saved.

A **bus** is a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

Bus mastering allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

A **cache** is a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times, since the needed information is stored in the SRAM instead of in the slower DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 1GB of regular memory.

Cache size refers to the physical size of the cache onboard. This should not be confused with the cacheable area, which is the total amount of memory which can be scanned by the system in search of data to put into the cache. A typical setup would be a cache size of 512KB, and a cacheable area of 512MB. In this case, up to 512MB of the main memory onboard is capable of being cached. However, only 512KB of this memory will be in the cache at any given moment. Any main memory above 512MB could never be cached.

Closed and open jumpers Jumpers and jumper pins are active when they are On or Closed, and inactive when they are Off or Open.

CMOS Complementary Metal-Oxide Semiconductors are chips that hold the basic start-up information for the BIOS.

The **COM port** is another name for the serial port, which is so-called because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

DIMM Dual In-line Memory Modules are a faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

DIMM bank DIMM banks are sometimes called DIMM sockets, because the physical slot and the logical unit are the same. That is, one DIMM module fits into one DIMM socket, which is capable of acting as a memory bank.

DMA Direct Memory Access channels are similar to IRQs. DMA channels allow hardware devices (like sound cards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other tasks. As with IRQs, it is vital that you do not double up devices on a single line. Plug and Play devices will take care of this for you.

In **Doze mode**, only the CPU's speed is slowed.

DRAM Dynamic RAM is a widely available, very affordable form of RAM which has the unfortunate tendency to lose data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM slower three to ten times slower than non-recharged RAM such as SRAM.

EDO RAM (Extended Data-Out RAM) speeds access to memory locations by assuming that memory addresses are static: the next time it looks for a bit of data, it will be at the same spot, or one nearby.

EEPROM Electrically Erasable Programmable ROM, also called Flash BIOS, is a ROM chip which can, unlike normal ROM, be updated. This allows you to keep up with changes in the BIOS programs without having to buy a new chip. TYAN's BIOS updates can be found at <http://www.tyan.com/html/drivers.html>

ESCD (Extended System Configuration Data) is a format for storing information about Plug and Play devices in the system BIOS. This information helps properly configure the system each time it boots.

Firmware is low level software that controls the system hardware.

Form factor is an industry term for the size, shape, power supply type, and external connector type of the PCB (personal computer board) or motherboard. The standard form factors are the AT and ATX, although TYAN also makes some Baby-AT boards.

A **Global timer** is an onboard hardware timer, such as the Real Time Clock.

Handshaking is a form of encryption. One system, typically the server, sends an encryption scheme to another agent, typically a client. Thus, the client's data is protected during transmittal to the server.

HDD stands for **Hard Disk Drive**.

H-SYNC controls the horizontal properties of the monitor.

IC (Integrated Circuit) is the formal name for the computer chip.

IDE Integrated Device (or Drive) Electronics is a simple, self-contained hard drive interface. It can handle drives up to 8.4GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs).

IDE INT (**IDE Interrupt**) is a hardware interrupt signal that goes to the IDE.

I/O Input/Output is the connection between your computer and another piece of hardware (mouse, keyboard, etc.).

IRQ An Interrupt Request is an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one device hooked up to each IRQ line; doubling up devices on IRQ lines can

lock up your system. Happily, Plug and Play operating systems take care of these details for you.

ISA stands for **Industry Standard Architecture**. ISA is a slower 8- or 16-bit BUS (data pathway).

Latency is the amount of time that one part of a system spends waiting for another part to catch up. This is most common when the system sends data out to a peripheral device, and is waiting for the peripheral to send some data back (peripherals tend to be slower than onboard system components).

NVRAM ROM and EEPROM are both examples of **Non-Volatile RAM**, memory that holds its data without power. DRAM, in contrast, is volatile.

OEMs (**Original Equipment Manufacturers**) like Compaq or IBM package other companies' motherboards and hardware inside their case and sell them.

The **parallel port** transmits the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

PCI stands for **Peripheral Component Interconnect**. PCI is a 32-bit local bus (data pathway) which is faster than the ISA bus. Local buses are those which operate within a single system (as opposed to a network bus, which connects multiple systems).

The **PCI PIO (PCI Programmable Input/Output)** modes are the data transfer modes used by IDE drives. These modes use the CPU for data transfer (DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

PCI-to-PCI bridge allows you to connect multiple PCI devices onto one PCI slot.

Pipeline burst SRAM is a fast secondary cache. It is used as a secondary cache because SRAM is slower than SDRAM, but usually larger. Data is cached first to the faster primary cache, and then, when the primary cache is full, to the slower secondary cache.

Pipelining improves system performance by allowing the CPU to begin executing a second instruction before the first is completed. A pipeline can be likened to an assembly line, with a given part of the pipeline repeatedly executing a set part of an operation on a series of instructions.

PM timers (Power Management timers) are software timers that count down the number of seconds or minutes until the system times out and enters sleep, suspend, or doze mode.

PnP is an acronym for Plug and Play, a design standard that has become ascendant in the industry. Plug and Play devices require little set-up to use. Novice end users can simply plug them into a computer that is running on a Plug and Play-aware operating system (such as Windows 95), and go to work. Devices and operating systems that are not Plug and Play require you to reconfigure your system each time you add or change any part of your hardware.

The term **RAM (Random Access Memory)**, while technically referring to a type of memory where any byte can be accessed without touching the adjacent data, is often used to refer to the system's main memory. This memory is available to any program running on the computer.

ROM (Read-Only Memory) is a storage chip which contains the BIOS (Basic Input/Output System), the basic instructions required to boot the computer and start up the operating system.

SDRAM (Synchronous Dynamic RAM) is so-called because it can keep two sets of memory addresses open simultaneously. By transferring data alternately from one set of addresses, and then the other, SDRAM cuts down on the delays associated with non-synchronous RAM, which must close one address bank before opening the next.

The **serial port** is so called because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another).

SIMM Single In-line Memory Modules are the most common form of RAM. They must be installed in pairs, and do not have the carrying capacity or the speed of DIMMs.

SIMM bank/socket SIMM sockets are the physical slots into which you stick SIMM modules. A pair of SIMM sockets form a SIMM bank, and act as a unit. If only one socket is filled, the bank will not operate.

In **Sleep/Suspend mode**, all devices except the CPU shut down.

SRAM Static **RAM**, unlike DRAM, does not need to be refreshed in order to prevent data loss. Thus, it is faster, and more expensive.

In **Standby mode**, the video and fixed disk drive shut down; all other devices operate normally.

UltraDMA/33 is a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without UltraDMA your system cannot take advantage of the higher data transmission rates of the new UltraATA hard drives.

Universal Serial Bus or USB, is a versatile port. This one port type can function as a serial, parallel, mouse, keyboard, or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices.

VGA (Video Graphics Array) is the PC video display standard.

V-SYNC controls the vertical properties of the monitor.

ZIF socket Zero Insertion Force sockets make it possible to insert CPUs without damaging the sensitive pins. The CPU is lightly placed in an open ZIF socket, and the metal lever pulled down. This shifts the processor over and down, guiding it into place on the board.

Notice for the USA

Compliance Information Statement (Declaration of Conformity Procedure) DoC

FCC Part 15: This Device complies with Part 15 of the FCC Rules.

Operation is subject to the following conditions:

1) this device may not cause harmful interference, and
2) this device must accept any interference received including interference that may cause undesired operation. 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 one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Plug the equipment into an outlet on a circuit different from that of the receiver.
- Consult the dealer or an experienced radio/television technician for help.

Notice for Canada

This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations.

Cet appareil est conforme aux normes de Classe B d'interférence radio tel que spécifié par le Ministère Canadien des Communications dans les règlements d'interférence radio.

Notice for Europe (CE Mark)

This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

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