Tyan S1834

Tiger 133

Motherboard User's Manual
Revision 1.20

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chapter 1

Introduction

Overview

The S1834 Tiger 133 is a quality, high performance motherboard designed for dual Intel PII / PIII microprocessors. The Tiger 133 utilizes the VIA Apollo Pro 133A chipset (VT82C694X) with Award BIOS. The S1834 can support CPU speeds of 450MHz through 800+MHz, and host bus speeds of 100 MHz to 133 MHz (the VIA chipset's bus speed is Auto-Determined by the CPU). The S1834 motherboard, with built-in 4x 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, 3D Games and video production.

This system board in an ATX form factor offers far more features and expandability than other ATX models. Some of the features included are onboard dual channel PCI PIO, Bus Master IDE and UltraDMA/66, onboard floppy controller, and onboard high speed I/O, PC133 SDRAM support, and Virtual Channel Memory SDRAM support.

Flexibility and expandability have been designed into the Tiger 133. With I/O and drive controller support built onboard, the one AGP slot plus six PCI gives a total of seven usable slots for numerous add-on expansion cards. Remember to visit 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, and drivers.

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 install 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
- Two SECC/SECC2 slots (Slot One type)
- 100MHz and 133MHz bus support
- Pentium II or Pentium III 450-800MHz*
- Two onboard VRMs (VRM 8.4 spec)
- Auto detect CPU Core Voltage

Chipset Information
- VIA Apollo Pro 133A Chipset (VT82C694X & VT82C596B)
- Winbond W83977ATF Super I/O chip

BIOS Information
- Award BIOS 2Mbit Flash RAM
- APM 1.2 & ACPI 1.0
- User settings of HW monitoring
- Auto configuration of IDE hard disk types
- Multiple boot options
- DMI 2.0 compliant

Main Memory
- Four 168-pin 3.3V DIMM sockets
- Supports up to 2 GB at 100 MHz
- Supports up to 1.5 GB at 133 MHz
- Supports PC100 / PC133 SDRAM

Expansion Slots
- One 2x / 4x AGP v.2.0 slot
- Six 32-bit PCI v.2.2 compliant slots
- One ISA slot (shared w/ a PCI slot)
- Seven total usable slots

Integrated PCI IDE
- Two 40-pin IDE connectors for up to 4 drives
- UltraDMA33/66 supported
- ATAPI IDE CD-ROM and LS-120 supported

* See TYAN website for CPU Compatibility List: **www.tyan.com**

Integrated I/O	• One Floppy connector for up to 2 drives (1.44 MB, 2.88 MB, 3-mode) • Two 9-pin 16550 UART Serial ports • One 25-pin ECP/EPP Parallel port • Two USB ports • PS/2 Mouse & Keyboard ports
Hardware Monitoring	• Hardware monitoring chip • 3-pin Fan monitoring headers • 2-pin chassis Intrusion header • Temperature and Voltage monitoring • 3-pin Wake on Modem header
Form Factor	• ATX Footprint (12" x 9.6") • Stacked Mouse / Keyboard ports • Stacked two USB ports • Stacked two Serial & one Parellel ports
Regulatory	• FCC Class B (Declaration of Conformity) • European Community CE (Declaration of Conformity)

Software Specifications

OS	•Operates with MS-DOS ver 6.22, Windows 98 & Win98 SE, Windows NT 4.0, Novell 5.0 Windows 2000(RC3) pending, SCO Unix 5.01 Linux 6.0 **Please refer to http://www.tyan.com for OS updates**

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 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). Please refer to your dealer for specific warranty coverage details.

Help resources:
1. See FAQ and beep codes sections of this manual.
2. See Tyan web site for FAQ, bulletins, driver updates, etc.
   http://www.tyan.com
3. Contact your dealer or distributor for help **BEFORE** calling Tyan.
4. Check the Tyan user group: alt.comp.periphs.mainboard.tyan

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.

chapter 2

Board Installation

Unpacking

The motherboard package should contain the following:

(1)   S1834 mainboard
(1)   34-pin floppy cable pack
(1)   80-pin ATA-66 IDE cable
(1)   S1834 User's Manual
(1)   Driver CD
(2)   URM Retention Modules

(Terminator card is currently not needed on this board when using only a single processor. Check http://www.tyan.com for information and updates concerning CPUs.)

Installation

You are now ready to install your motherboard. The mounting hole pattern of the S1834 matches the ATX system board specifications. Your chassis should support a standard ATX mainboard form factor.

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.

Here are some precautions you should follow when installing your mother-

board:

> (1) **Ground yourself properly before removing your motherboard from the antistatic bag.** Unplug the power from your computer and then touch any metal part on the computer case. (Or wear a grounded wrist strap.)
> (2) **Hold the motherboard by its edges and do not touch the bottom of the board.**
> (3) **Avoid touching motherboard components, IC chips, connectors, and leads.**
> (4) **Avoid touching pins of memory modules and chips.**
> (5) **Place motherboard on a grounded antistatic surface or on the antistatic bag.**

Having reviewed the precautions above, the next step is to take the motherboard out of the cardboard box and static bag, hold it by its edges, and place it on a grounded antistatic 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 antistatic 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 do not ground yourself, you risk zapping the motherboard or adapter card. Subsequent problems may not arise immediately because electrostatic discharge damage, unlike physical damage, causes the device to fail over time.

Installation Steps

1. Set Jumpers
2. Mount Motherboard in Chassis
3. Install Memory
4. Install CPU & Cooling Fan
5. Connect IDE and Floppy Drives
6. Connect Power Supply
7. Install Add-on Cards
8. Connect PS/2, USB, Serial and Parallel Devices

Quick References for 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. See the **Figure 2-1** for examples of "on" and "off" pins and jumpers.

Jumpers and pins are connected by slipping the plastic jumper connector overtop of two adjacent jumper pins (indicated by **1-2** or **2-3**). The metal rod inside the plastic shell bridges the gap between the two pins, completing the circuit. See **Figure 2-2** for more example of pin connections.

INSTALL

2 pin jumpers   **3 (or more) pin jumpers**

off   on   1-2   2-3   open
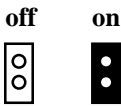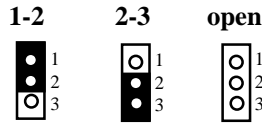
Figure 2-1   **Figure 2-2**

The tables and maps on the following pages will help you set the jumpers for CPU speed, Infrared, 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 next two pages.

Figure 2-3 : Map of Motherboard Jumpers
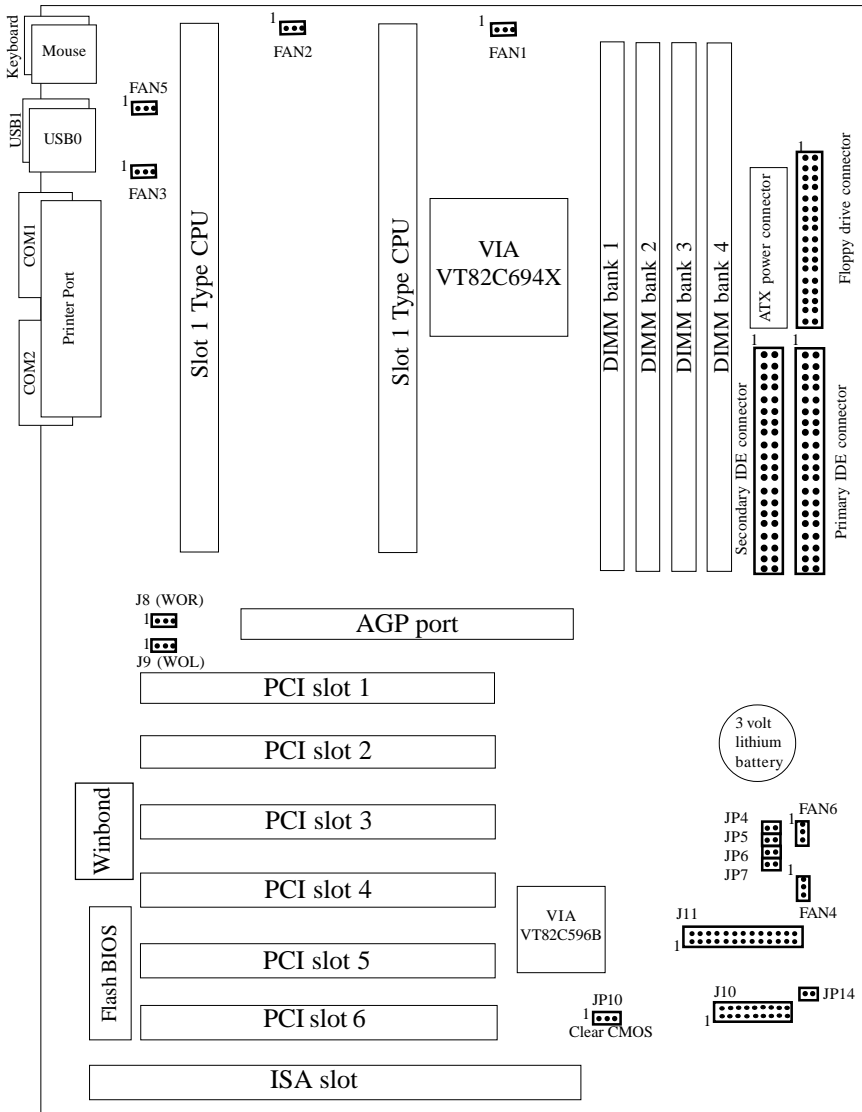
The tiny "1"s next to jumpers of 3 pins or more indicate the position of pin 1
for that jumper.

Figure 2-4 : Map of S1834 Features

2 SECC slots

VIA Apollo Pro
133A Chipset

4 DIMM slots

Double row ATX connectors

ATX Power supply connectors

IDE and Floppy connectors

AGP port

6 PCI slots

Award BIOS

1 ISA slot
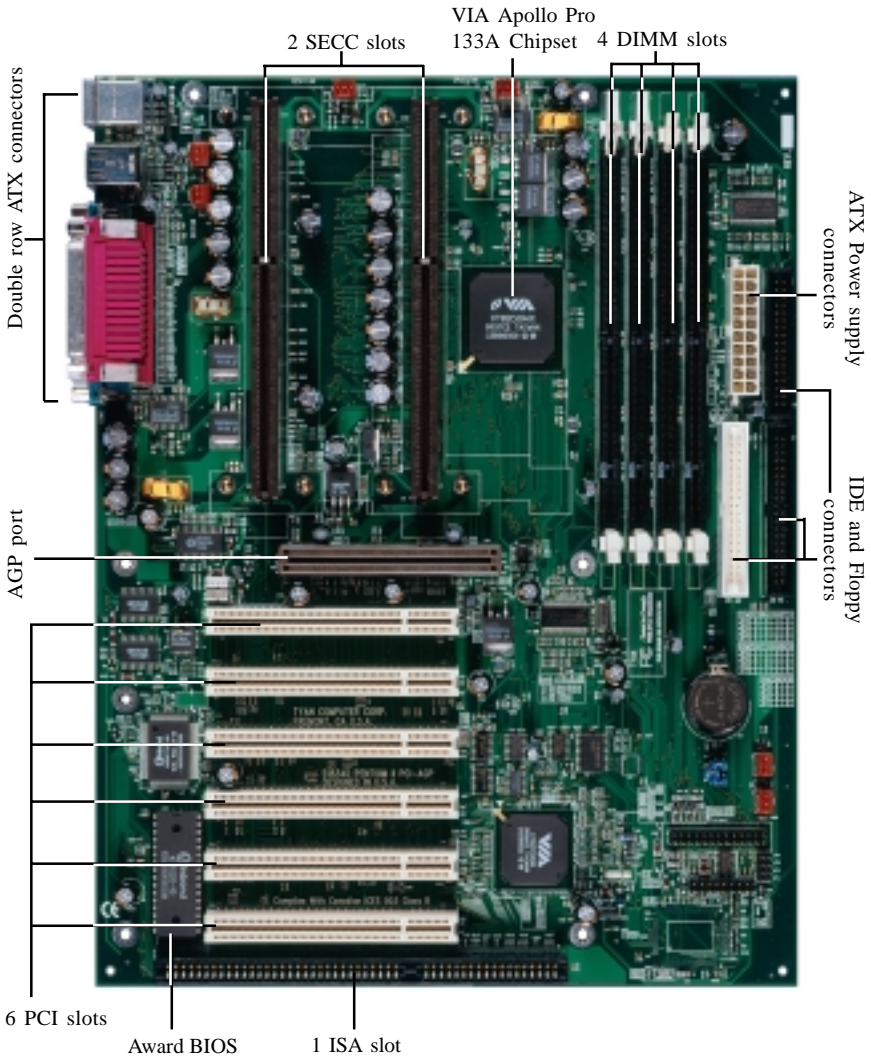
1. Setting Jumpers

1-A. CPU Speed Settings (Jumpers JP4, JP5, JP6, JP7)

There are two steps to set the CPU speed. First, set the **clock multiplier** with jumpers JP4 -7 according to the specification of your CPU using the chart below. After the system is ready to boot the **BUS Speed** is auto-detected. Presently all Celeron CPUs use a 66MHz bus speed. (Tyan does not recommend operating CPUs, memory, or PCI Bus at higher than rated speed. Tyan takes no responsibility for any problems related to overclocking any bus or component on the system board.)

! important!

Multiplier (set Jmprs on board)	Bus Speed (Auto-Detected)	CPU speed	JP4	JP5	JP6	JP7
3.5	100	350	ON	OFF	OFF	ON
	133	467				
4	100	400	OFF	ON	ON	ON
	133	533				
4.5	66	300	OFF	ON	OFF	ON
	100	450				
	133	600				
5	66	333	OFF	OFF	ON	ON
	100	500				
	133	667				
5.5	66	366	OFF	OFF	OFF	ON
	100	550				
	133	733				
6	66	400	ON	ON	ON	OFF
	100	600				
	133	800				
6.5	66	433	ON	ON	OFF	OFF
	100	650				
	133	866				
7	66	466	ON	OFF	ON	OFF
	100	700				
	133	933				
7.5	66	500	ON	OFF	OFF	OFF
	100	750				
	133	997				
8	66	533	OFF	ON	ON	OFF
	100	800				
	133	1064				

JP4, JP5, JP6, JP7

1-B. Panel Connector Settings (Jumper J10)

HDD LED					Pwr/Slp LEDs
	LED +	1	2	LED Green	
	LED -	3	4	LED Yellow	
Reset Switch	Ground	5	6	Power On/Off	Power (Sleep) Switch
	Reset	7	8	Ground	
Infrared	VCC	9	10	NC.	
	IRRX	11	12	Power +5V	
	Ground	13	14	N.C	
	IRTX	15	16	N.C	
	RESV	17	18	Speaker	

Power LED:
For 2-pin: bicolor/single
color - Use pins 2-4

J10

2	4	6	8	10	12	14	16	18	Top
1	3	5	7	9	11	13	15	17	Bottom

1-C. Wake-On LAN (J9)

1-D. Wake-On Ring (J8)

1-E. Clear CMOS and Reset Password (JP10)

	Default	Reset
JP10	1-2	2-3

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

⚠ important!

1. Power off the system, **UNPLUG POWER CONNECTOR**
2. Set jumper JP10 to pins 2 and 3
3. Wait for 2 seconds, then return jumper JP10 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.

1-F. Soft Power Connector

The Soft Power Connector is part of jumper block J10. The Tiger 133 uses the chipset for power management, including turning on and off the system. If the Power Button Function option in the BIOS Power Management 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 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.

1-G. 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. (J10 pin 5 & 7 for example).

1-H. Chassis Intrusion Alarm Connector (JP14)

The JP14 connector is an intrusion alarm that can be connected to the system chassis. When active (JP14 is connected to the chassis), this alarm will alert the system administrator anytime someone opens the system's case.

1-I. Power LED Connector

Refer to panel connector J10 for 2 pin LEDs. 3 pin LED's can still be used on J10 where pin 13 would be for the Ground pin.

1-J. Server Management Connector (J11)

J11 is reserved for server management hardware connection.

J8 (WOR)
J9 (WOL)
J11
J10, JP14
JP10 (Clr CMOS)
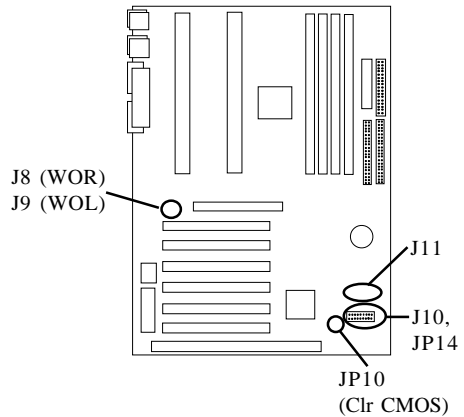
CMOS RTC

The Real Time Clock (RTC) circuit, which provides the date and time for the system is integrated into the Via Apollo Pro Plus 133A AGPset. 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 Tiger 133 uses flash memory to store BIOS firmware. It can be updated as new versions of the BIOS become available. You can upgrade your BIOS easily using the flash utility (see page 59).

2. Mounting the Motherboard in the Chassis

Follow the instructions provided by the case manufacturer for proper installation guidelines. TYAN recommends that you use screw down the motherboard. with all the mounting holes provided. 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.

3. Installing Memory

Since TYAN boards are manufactured with performance in mind, you should use add-in components that match. It is highly recommended that the memory DIMMs are installed prior to connecting the power supply. 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 contain 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. Please check the TYAN website for more information and updates about memory compatibility: **www.tyan.com**

!
important!

INSTALL

⚠ warning **This motherboard operates on a 3.3 volt standby for the DIMM banks . Because of this, you need to UNPLUG the AC power cord before installing your DIMM memory modules. Otherwise, the motherboard may automatically power up when the memory is inserted into the slot.**
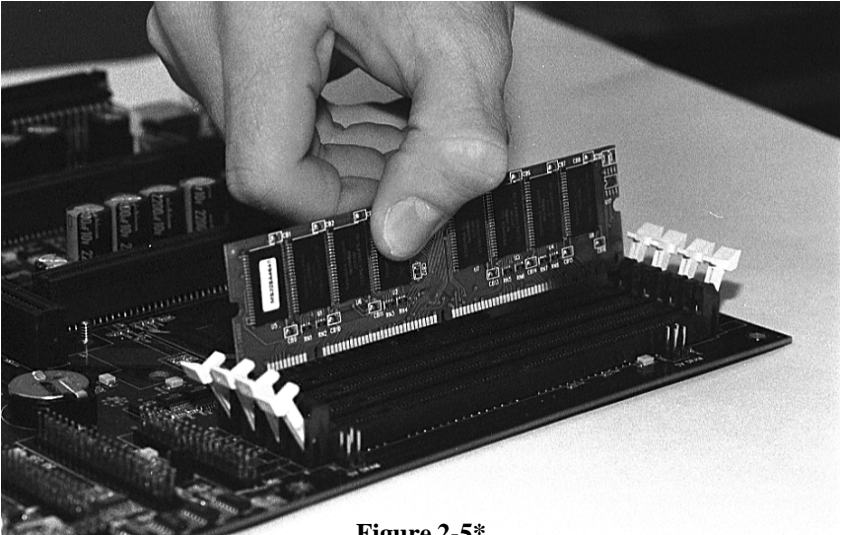
Figure 2-5*

*Note: The image above is used to illustrate a concept and may not represent the actual image of your motherboard.

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 2-5 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.

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 2-6 on the next page). To remove your DIMM, simply pull the clips back, and pull up on the module.

Place the DIMMs in an anti-static bag as soon as you remove them to avoid static damage.
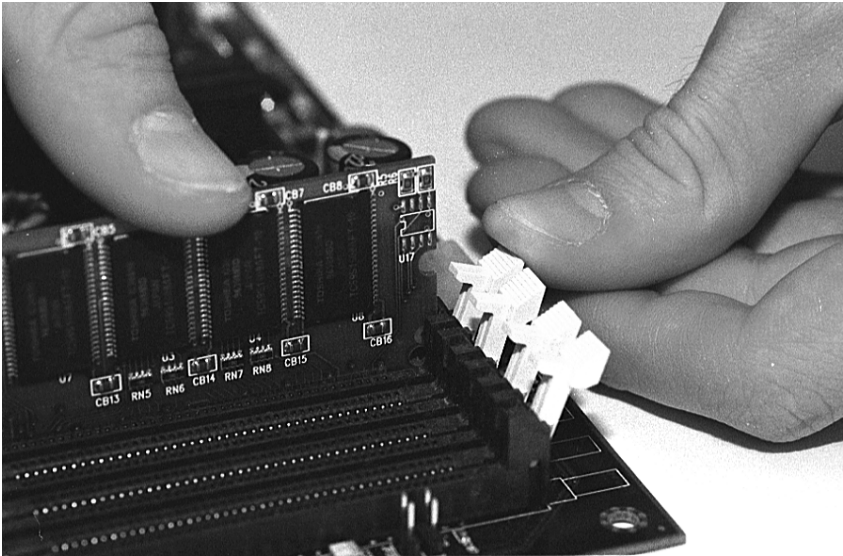
Figure 2-6*

*Note: The image above is used to illustrate a concept and may not represent the actual image of your motherboard.

The Tiger 133 uses a 64-bit data path from memory to CPU and can accommodate up to 2 GB of PC100 SDRAM and up to 1.5GB of PC133 SDRAM. The 168-pin DIMMs (Dual In-line Memory Modules) must be of the 3.3V, **unbuffered, non-ECC** variety. The position of the notch in the SDRAM key position will tell you whether or not a DIMM is unbuffered (see the Figure 2-7 below). All installed memory will be automatically detected, so there is no need to set any jumpers.

RFU——| |——Unbuffered
Buffered   **168-pin DIMM**
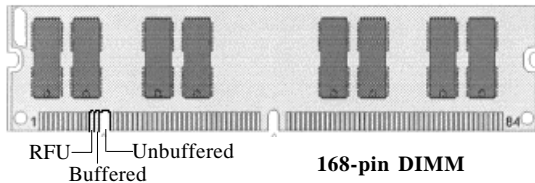
Figure 2-7

Some details of memory installation:
- At least one unbuffered DIMM must be installed for the system to POST.
- The mainboard supports 32MB, 64MB, 128MB and 256MB SDRAM.
- PC-100 DIMM is required if CPU bus speed is at 100MHz

The table below shows some of the possible memory configurations. Not all possible configurations are listed.

DIMM Bank 1	DIMM Bank 2	DIMM Bank 3	DIMM Bank 4	Total
8MBx1	0	0	0	8MB
8MBx1	8MBx1	0	0	16MB
8MBx1	8MBx1	8MBx1	0	24MB
16MBx1	8MBx1	8MBx1	0	32MB
16MBx1	16MBx1	8MBx1	0	40MB
16MBx1	16MBx1	16MBx1	0	48MB
32MBx1	16MBx1	16MBx1	0	64MB
32MBx1	32MBx1	16MBx1	0	80MB
32MBx1	32MBx1	32MBx1	0	96MB
64MBx1	64MBx1	0	0	128MB
128MBx1	0	0	0	128MB
128MBx1	0	128MBx1	0	256MB
128MBx1	128MBx1	128MBx1	0	384MB
128MBx1	128MBx1	128MBx1	128MBx1	512MB
256MBx1	0	256MBx1	0	512MB
256MBx1	256MBx1	256MBx1	0	768MB
256MBx1	256MBx1	256MBx1	256MBx1	1024MB
512MBx1	512MBx1	512MBx1	0	1.5GB*

*1.5GB memory capacity applies only to PC133 SDRAM.

4. Installing the CPU and Cooling Fan

Slot 1 type Pentium II/III can be used on the Tiger 133. Please refer to page 15 for the correct CPU jumper settings for your CPU. Remember:

- 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. You should be able to insert the CPU into the slot with very little force. Do not press down hard on the CPU as you will bend or break pins and possibly damage your motherboard.
- After the CPU is securely seated, install the appropriate cooling device. Tyan strongly recommends a heatsink/fan combination. Consult with your case manufacturer for other cooling options.

Installing Slot1 Type CPUs

Using a cooling mechanism for processors is extremely important. The active cooler shown in Figure 2-9 below is equipped with a cooling fan and heat sink, allowing better air flow and heat dissipation for the CPU. The size of the cooling mechanism will not interfere with CPU installation. The CPU will fit with ease into the CPU slot of the Tiger 133 board.

Figure 2-9*

! important!
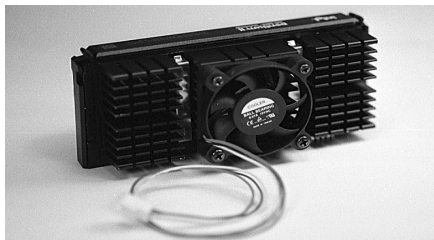
Note: If only one CPU is used, a terminator card (provided) must be inserted into the vacant CPU slot in order for the motherboard to POST.

Figure 2-10 below shows an overhead view of the retention braces positioned at both ends of the CPU slot. Be sure to tighten the retention brace screws to secure them onto the motherboard.

Figure 2-10*
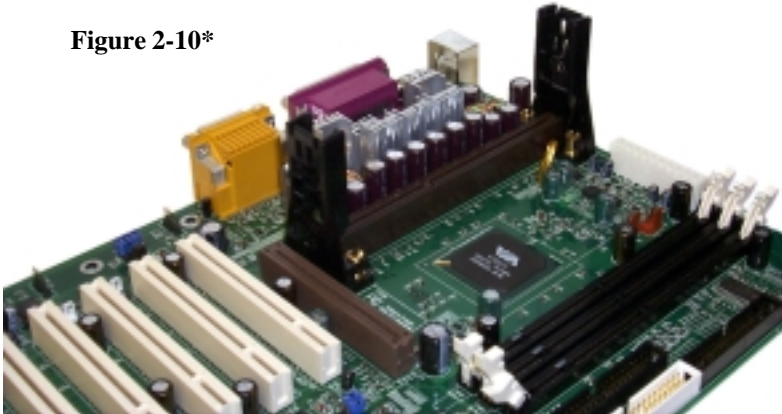
Carefully line up the pins of the CPU with the pins of the Slot while placing the CPU between the two retention braces (the CPU cooling fan should face the memory DIMM sockets). Lower the CPU onto the motherboard (see Figure 2-10 below). Your CPU will be firmly secured onto the motherboard once the retention braces "snap" into the sides of the CPU. The installed CPU should look like Figure 2-12 on the following page.

Figure 2-11*

*Note: The images on these two pages are used to illustrate a concept and may not represent the actual image of your motherboard.
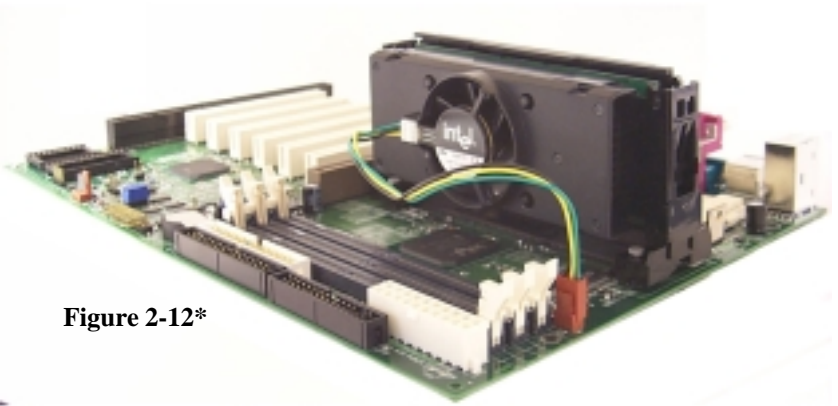
Figure 2-12*

**Note: The retention module shown above may not represent the one
provided with your motherboard.**

You will also need to connect the CPU's cooling fan cable to the cooling fan
power connector on the board. 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
2-13 below.

Removing CPU
To remove the CPU, gently bend the sides of the retention brace away from the
CPU and slowly pull the CPU upwards. This may require careful firm tugs to pull
the CPU out of its slot.
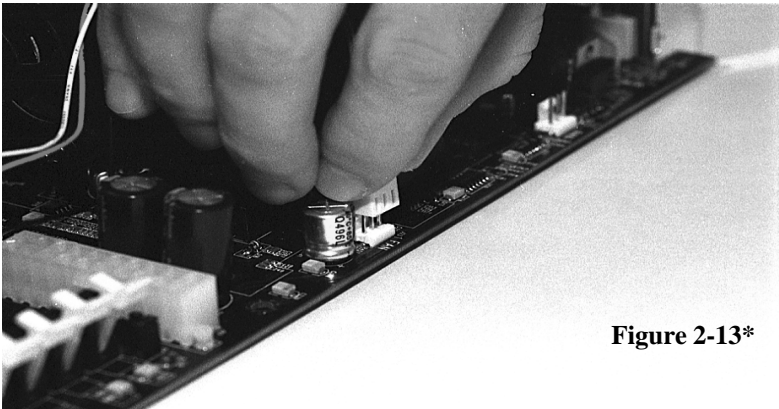
Figure 2-13*

5. Connecting IDE and Floppy Drives

The colored stripe on a ribbon cable should connect to Pin 1 The primary IDE connector is black; the secondary IDE connector is white. In most cases, this is the proper way of connecting your IDE cable to the hard drive. Figure 2-14 below shows the IDE cable properly connected to the motherboard. Contact your hard disk drive manufacturer or documentation for more information.
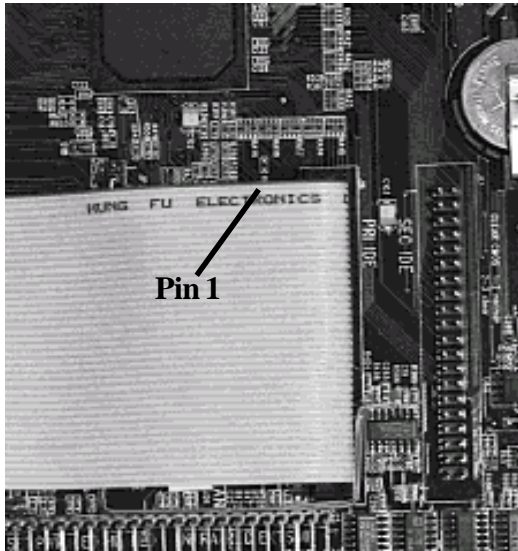
Figure 2-14*

*Note: The image above is used to illustrate a concept and may not represent the actual image of your motherboard.

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 onbootup: usually means the cable is on back wards.
- 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.

Connecting Floppy Drives

Pin 1 on the floppy cable is usually denoted by a red or colored stripe down one side of the cable (see Figure 2-15). 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.

3.5" Connector

5.25" Connector

Red Indicates Pin 1
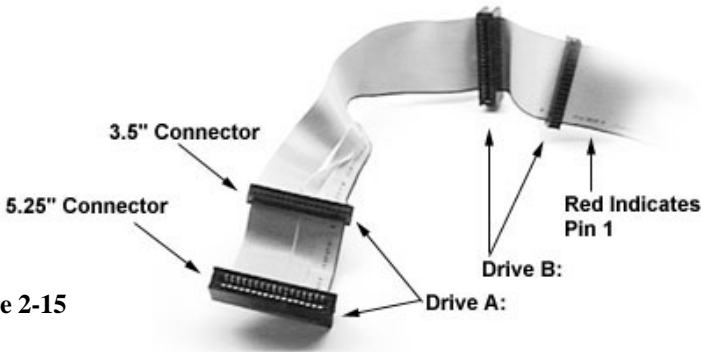
Drive B:

Drive A:

Figure 2-15

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 2-15 for a detailed anatomy of the floppy cable. Remember, you can only have 2 floppy drives connected at any given time.
The color stripe on the cable should face toward the top of your chassis, or toward the battery on the motherboard. Please refer to your documentation for proper installation.

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 giveaway that the cable is on backwards. Reverse the cable at the motherboard end and try again.

6. Installing Add-on Cards

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:

! important!

- 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 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

warning

- **NOTE: This motherboard operates on a 3.3 volt standby for PCI v2.2. Because of this, you need to UNPLUG the AC power cord before installing your card. Otherwise, the motherboard may automatically power up when the card is inserted into the slot.**

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.

7. Connecting PS/2, USB, Serial & Parallel Devices

This board includes ports for USB, PS/2 mouse, and PS/2 keyboard devices. 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. Figures 2-16 and 2-17 on the following page shows the USB ports on the left and PS/2 ports on the right (respectively).

Figure 2-16

Mouse

Keyboard

Figure 2-17

INSTALL
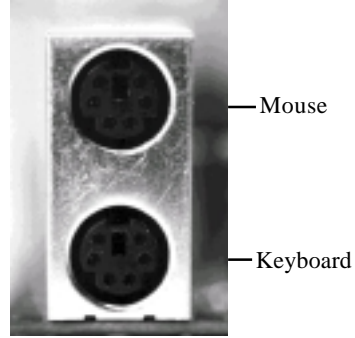
Connecting Com and Printer Ports

PS/2 mouse

PS/2 KB USB   Com1   LPT   Com2
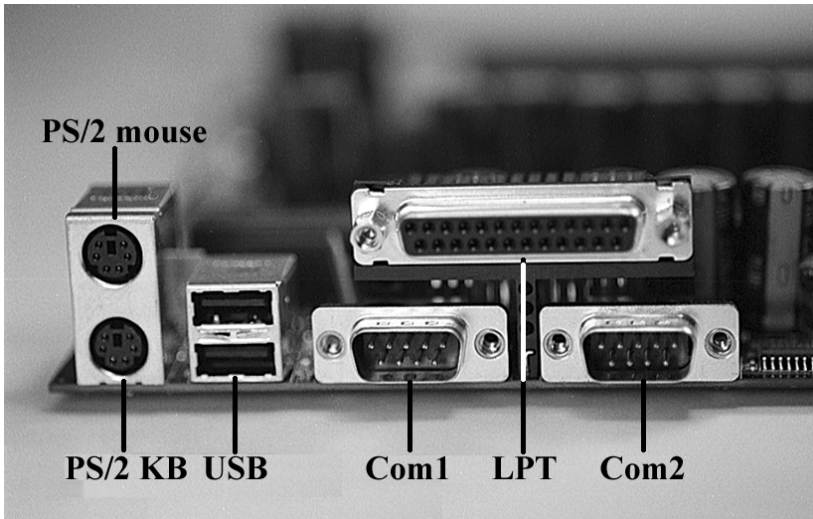
Figure 2-18

warning **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.Figure 2-18 above shows the ATX double row connectors on this board. The Com and Printer ports, as well as the other ports, are labeled.

8. Connecting the Power Supply

Tyan recommends using an ATX power supply that conforms to industry standard revision 2.01. The Tiger 133 motherboard comes equipped with one onboard power connector. Figure 2-16 below shows an ATX power connector. When plugging in the power connector, make sure that the plastic clip on the power connector is aligned with the plastic tab on the onboard connector (see Figure 2-17 below). Make 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.
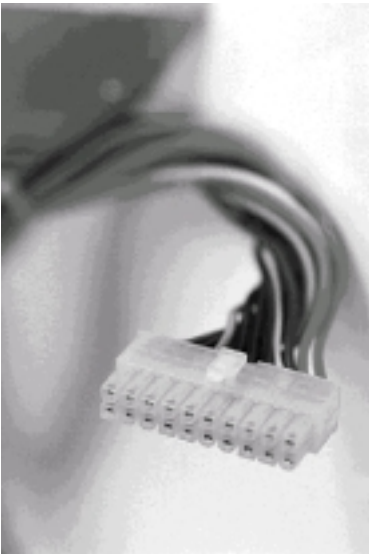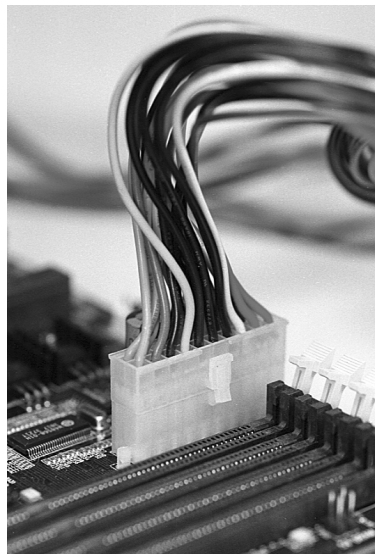
Figure 2-16	**Figure 2-17***

*Note: The image above is used to illustrate a concept and may not represent the actual image of your motherboard.

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).

chapter 3

BIOS Configuration

Introduction to Setup

! important!

The BIOS section of the manual is subjected to change without notice and is provided here for reference purposes only. The settings and configurations of the BIOS are current at the time of print, although they may not be exactly the same as that displayed on your screen.

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

The Award BIOS 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 Award BIOS 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 Award BIOS 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 <Del> immediately after switching the system on, or
2. By pressing the <Del> key 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.

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.

Key	Function
Up arrow	Move to previous item.
Down arrow	Move to next item.
Left arrow	Move to iten 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.

BIOS

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer is no longer able to boot, restart by either using the ON/OFF switch, the RESET button or by pressing <Ctrl>, <Alt> and <Delete> at the same time, or clear the CMOS (see page 15 for details)

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

```
        CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
┌─────────────────────────────────────────────────────────────────────────┐
│                                                                           │
│  ▶ Standard CMOS Features          Load Fail-Safe Defaults                │
│                                                                           │
│  ▶ Advanced BIOS Features          Load Optimized Defaults                │
│                                                                           │
│  ▶ Advanced Chipset Features        Set Supervisor Password               │
│                                                                           │
│  ▶ Integrated Peripherals          Set User Password                      │
│                                                                           │
│  ▶ Power Management Setup           Save & Exit Setup                      │
│                                                                           │
│  ▶ PnP/PCI Configurations           Exit Without Saving                   │
│                                                                           │
│  ▶ PC Health Status                                                       │
│                                                                           │
├─────────────────────────────────────────────────────────────────────────┤
│ Esc : Quit                      ↑ ↓ → ←   : Select Item                   │
│ F10 : Save & Exit Setup         (Shift)F2 : Change Color                  │
│                                                                           │
│                                                                           │
└─────────────────────────────────────────────────────────────────────────┘
```

Standard CMOS Features
Options in the original PC AT-compatible BIOS.

Advanced BIOS Features
Award Software enhanced BIOS options.

Advanced Chipset Features
Options specific to your system chipset.

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

Power Management Setup
Advanced Power Management (APM) options.

BIOS

PnP/PCI Configurations
Plug and Play standard and PCI Local Bus configuration options.

PC Health Status
Displays CPU / System Temperature and Fan Speeds

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

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

Set Supervisor Password
Change, set, or disable a password. Only the supervisor password permits access to Setup.

Set User Password
Change, set, or disable a password. The user password generally allows only power-on access.

Save & Exit Setup
Save settings in nonvolatile CMOS RAM and exit Setup.

Exit Without Saving
Abandon all changes and exit Setup.

S1834 Tiger 133

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.

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                    Standard CMOS Features
```

```
   Date (mm:dd:yy)          Sat, Jan 1 2000        Item Help
   Time (hh:mm:ss)            0 : 10: 30
                                                 Menu Level    ▶
 ▶ IDE Primary Master       Press Enter None
 ▶ IDE Primary Slave        Press Enter None      To enter next page for
 ▶ IDE Secondary Master     Press Enter None      detail hard drive
 ▶ IDE Secondary Slave      Press Enter None      settings

  Drive A                   1.44M, 3.5 in.
  Drive B                   None

  Video                     EGA/VGA
  Halt On                   All,But Keyboard

  Base Memory                     640K
  Extended Memory               31744K
  Total Memory                  32768K
```

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

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.

IDE Primary/Secondary, Master/Slave

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                    IDE Primary Master
```

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master	Auto	Menu Level ▶▶
Access Mode	Auto	
Capacity	0 MB	To auto-detect the HDD's size, head... on this channel
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

```
↑↓→←  :Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   F1:General Help
       F5:Previous Values     F6:Fail-Safe Defaults     F7:Optimized Defaults
```

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 Dectection function in Setup.

The following 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

Access 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

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

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.

BIOS

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 adpater, 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.

Advanced BIOS Features

The screen (shown on the following page) 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.

Advanced BIOS Features - Fail-Safe Defaults

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                  Standard CMOS Features
```

```
┌─────────────────────────────────────────────────┬──────────────────────┐
│    Virus Warning             Enabled      ▲      │      Item Help       │
│    CPU Internal Cache        Enabled             │                      │
│    External Cache            Enabled             │  Menu Level  ▶       │
│    CPU L2 Cache ECC Checking  Enabled            │                      │
│    Quick Power On Self Test  Disabled            │  Allows you to choose│
│    First Boot Device         Floppy              │  the VIRUS warning   │
│    Second Boot Device        HDD-0               │  feature for IDE Hard│
│    Third Boot Device         LS120               │  Disk boot sector    │
│    Boot Other Device         Enabled             │  protection. If this │
│    Swap Floppy Drive         Disabled            │  function is enabled │
│    Boot UpFloppy Seek        Enabled             │  and someone attempts│
│    Boot Up NumLock Status    On                  │  to write data into  │
│    Gate A20 Option           Normal              │  this area, BIOS will│
│    Typematic Rate Setting    Disabled            │  show a warning      │
│  X Typematic Rate (Chars/Sec) 6                  │  message on screen   │
│  X Typematic Delay (Msec)    250                 │  and alarm beep      │
│    Security Option           Setup               │                      │
│    MPS Version Control For OS 1.1                │                      │
│    OS Select For DRAM > 64MB  Non-OS2            │                      │
│    Video BIOS Shadow         Enabled             │                      │
│    C8000-CBFFF Shadow        Disabled            │                      │
│    CC000-CFFFF Shadow        Disabled            │                      │
│    D0000-D3FFF Shadow        Disabled            │                      │
│    D4000-D7FFF Shadow        Disabled            │                      │
│    D8000-DBFFF Shadow        Disabled     ▼      │                      │
│    DC000-CFFFF Shadow        Disabled            │                      │
└─────────────────────────────────────────────────┴──────────────────────┘
```

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5:Previous Values   F6:Fail-Safe Defaults   F7:Optimized Defaults
```

Advanced BIOS Features - Optimized Defaults

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                    Standard CMOS Features
```

Virus Warning	Disabled	▲	Item Help
CPU Internal Cache	Enabled		
External Cache	Enabled		Menu Level ▶
CPU L2 Cache ECC Checking	Enabled		
Quick Power On Self Test	Disabled		Allows you to choose
First Boot Device	Floppy		the VIRUS warning
Second Boot Device	HDD-0		feature for IDE Hard
Third Boot Device	LS120		Disk boot sector
Boot Other Device	Enabled		protection. If this
Swap Floppy Drive	Disabled		function is enabled
Boot UpFloppy Seek	Enabled		and someone attempts
Boot Up NumLock Status	On		to write data into this
Gate A20 Option	Fast		area, BIOS will show a
Typematic Rate Setting	Disabled		warning message on
X Typematic Rate (Chars/Sec)	6		screen and alarm beep
X Typematic Delay (Msec)	250		
Security Option	Setup		
MPS Version Control For OS	1.1		
OS Select For DRAM > 64MB	Non-OS2		
Video BIOS Shadow	Enabled		
C8000-CBFFF Shadow	Disabled		
CC000-CFFFF Shadow	Disabled		
D0000-D3FFF Shadow	Disabled		
D4000-D7FFF Shadow	Disabled		
D8000-DBFFF Shadow	Disabled	▼	
DC000-CFFFF Shadow	Disabled		

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized 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.

CPU L2 Cache ECC Checking
Enables Error Checking and correction (ECC) on the L2 cache onboard the CPU.

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 option allows you to swap the floppy drives if more than one is installed. It allows you to switch the A: and B: to make B: become A: .

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.

BIOS

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 millisec-
onds.

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.

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.

Video BIOS 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.

BIOS

Advanced Chipset Features

This section describes features of the VIA KX-133 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.

Chipset Features Setup - Fail-Safe Default Settings

```
         CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                        Advanced Chipset Features

      Bank 0/1 DRAM Timing     SDRAM 10ns      ▲        Item Help
      Bank 2/3 DRAM Timing     SDRAM 10ns
      Bank 4/5 DRAM Timing     SDRAM 10ns            Menu Level  ▶
      Bank 6/7 DRAM Timing     SDRAM 10ns
      SDRAM Cycle Length       3
      DRAM Clock               Host CLK
      Memory Hole              Disabled
      P2C/C2P Concurrency      Enabled
      Fast R-W Turn Around     Disabled
      System BIOS Cacheable    Disabled
      Video RAM Cacheable      Disabled
      AGP Aperature Size       64M
      AGP-4X Mode              Enabled
      AGP Driving Control      Auto
    X AGP Driving Value        DA
      AGP Fast Write           Disabled
      OnChip USB               Disabled
      USB Keyboard Support     Disabled
      CPU to PCI Write Buffer  Enabled
      PCI Dynamic Bursting     Disabled
      PCI Master 0 WS Write    Enabled
      PCI Delay Transaction    Disabled
      PCI#2 Access #1 Retry    Disabled
      AGP Master 1 WS Write    Disabled
      AGP Master 1 WS Read     Disabled
      Memory Parity/ECC Check  Disabled    ▼

↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

Chipset Features Setup - Optimized Default Settings

```
       CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                        Advanced Chipset Features
```

Bank 0/1 DRAM Timing	SDRAM 10ns	▲	Item Help
Bank 2/3 DRAM Timing	SDRAM 10ns		
Bank 4/5 DRAM Timing	SDRAM 10ns		Menu Level ▶
Bank 6/7 DRAM Timing	SDRAM 10ns		
SDRAM Cycle Length	3		
DRAM Clock	Host CLK		
Memory Hole	Disabled		
P2C/C2P Concurrency	Enabled		
Fast R-W Turn Around	Disabled		
System BIOS Cacheable	Disabled		
Video RAM Cacheable	Disabled		
AGP Aperature Size	64M		
AGP-4X Mode	Enabled		
AGP Driving Control	Auto		
X AGP Driving Value	DA		
AGP Fast Write	Disabled		
OnChip USB	Disabled		
USB Keyboard Support	Disabled		
CPU to PCI Write Buffer	Enabled		
PCI Dynamic Bursting	Enabled		
PCI Master 0 WS Write	Enabled		
PCI Delay Transaction	Enabled		
PCI#2 Access #1 Retry	Enabled		
AGP Master 1 WS Write	Disabled		
AGP Master 1 WS Read	Disabled		
Memory Parity/ECC Check	Disabled	▼	

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

Bank 0/1, 2/3, 4/5, 6/7 DRAM Timing
The system board designer must select the proper value for these fields,
according to the specifications of the installed DRAM chips. Turbo mode
reduces CAS access time by 1 clock tick.

SDRAM Cycle Length
This field sets the CAS latency timing.

DRAM Clock
Allows you to set the memory clock speed to either 66MHz or equal to the
CPU clock speed, depending on your memory speed.

BIOS

Memory Hole
This option specifies the location of an area of memory that cannot be addressed on the ISA bus. The settings are Disabled, 512KB-64KB, or 15MB-16MB.

P2C/C2P Concurrency
By enabling this function the PCI/AGP Master to CPU Cycle can be concurrent if the Host CPU is performing R/W access to the PCI or slave devices.

Fast Read Write turn-around
If Enabled, it reduces the turn around time for a memory read is followed by a memory write consecutively.

System BIOS Cacheable
If Enabled, results in better system performance by permitting caching of the system BIOS ROM at F0000h-FFFFFh. Any program which tries to write to this memory area, however, may cause a system error.

Video RAM Cacheable
Increases video performance by caching video memory.

AGP Aperture Size
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 AGP information.

AGP-4x Mode
Enables the 4X AGP mode for higher AGP throughput. A 4X AGP graphics card is required to enable this function.
Due to Tyan's commitment to advanced technologies and first to market, not all high performance 4X AGP graphics cards are compatible w/ our S1834 at the time of print, please go to our web site for the latest update.

AGP Driving Control
Due to the compatibility of some AGP cards with the chipset this setting is used to fine tune these issues. Default is set to Auto.

AGP Driving Value
This is the value set for the AGP Driving control. The manufacturers recommended setting is set to CC and it is suggested not to change this value.

AGP Fast Write
This function allows the AGP port to function at a increased rate. Enable this function to allow faster graphics performance.

OnChip USB
The chipset contains an integrated USB controller. Select Enabled if you have USB peripherals.

USB Keyboard Support
This function enables the use of a USB Keyboard. Default is Disabled.

CPU to PCI Write Buffer
When this field is Enabled, writes from the CPU to the PCI bus are buffered to compensate for the speed differences between the CPU and the PCI bus. When Disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

PCI Dynamic Bursting
When Enabled, every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus; nonburstable transactions do not.

PCI Master 0 WS Write
When this field is Enabled, writes to the PCI bus are executed with zero wait states.

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

PCI#2 Access #1 Retry
Select Enabled to rotate priority of PCI masters.

AGP Master 1 WS Write / Read
Select Enabled to add one clock tick to AGP write operations.

Memory Parity / ECC Check
Select Enabled, Disabled, or Auto. In Auto mode, the BIOS enables memory checking automatically when it detects the presence of ECC or parity DRAM. **NOTE: ECC memory functions are not supported on the Tiger 133 S1834.**

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.

Integrated Peripherals - Fail-Safe Default Settings

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                    Integrated Peripherals
```

```
┌──────────────────────────────────────────────┬─────────────────────┐
│    OnChip  IDE  Channel0      Enabled      ▲  │      Item Help      │
│    OnChip  IDE  Channel1      Enabled         │                     │
│    IDE Prefetch Mode          Disabled        │  Menu  Level  ▶     │
│    Primary Master    PIO      Auto            │                     │
│    Primary Slave     PIO      Auto            │                     │
│    Secondary Master PIO       Auto            │                     │
│    Secondary Slave   PIO      Auto            │                     │
│    Primary Master    UDMA     Disable         │                     │
│    Primary Slave     UDMA     Disable         │                     │
│    Secondary Master UDMA      Disable         │                     │
│    Secondary Slave   UDMA     Disable         │                     │
│    Init Display First         PCI Slot        │                     │
│    IDE HDD Block Mode         Disabled        │                     │
│    KBC input clock            8 MHz           │                     │
│    Onboard FDD Controller     Enabled         │                     │
│    Onboard  Serial  Port 1    3F8/IRQ4        │                     │
│    Onboard  Serial  Port 2    2F8/IRQ3        │                     │
│    UART  Mode  Select         Normal          │                     │
│  X UART2 Duplex Mode          Half            │                     │
│  X RxD , TxD Active           Hi,Lo           │                     │
│  X IR Transmission delay      Enabled         │                     │
│    Onboard Parallel  Port     378/IRQ7        │                     │
│    Onboard Parallel  Mode     Normal          │                     │
│  X ECP Mode Use DMA           3               │                     │
│  X Parallel Port EPP Type     EPP1.9          │                     │
│    PWRON  After  PWR-Fail     Off          ▼  │                     │
└──────────────────────────────────────────────┴─────────────────────┘
```

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

Integrated Peripherals - Optimized Default Settings

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                  Integrated Peripherals
```

```
    OnChip IDE Channel0       Enabled    ▲          Item Help
    OnChip IDE Channel1       Enabled
    IDE Prefetch Mode         Enabled              Menu Level  ▶
    Primary Master   PIO      Auto
    Primary Slave    PIO      Auto
    Secondary Master PIO      Auto
    Secondary Slave  PIO      Auto
    Primary Master   UDMA     Auto
    Primary Slave    UDMA     Auto
    Secondary Master UDMA     Auto
    Secondary Slave  UDMA     Auto
    Init Display First        PCI Slot
    IDE HDD Block Mode        Enabled
    KBC input clock           8 MHz
    Onboard FDD Controller    Enabled
    Onboard Serial Port 1     3F8/IRQ4
    Onboard Serial Port 2     2F8/IRQ3
    UART Mode Select          Normal
X   UART2 Duplex Mode         Half
X   RxD , TxD Active          Hi,Lo
X   IR Transmission delay     Enabled
    Onboard Parallel Port     378/IRQ7
    Onboard Parallel Mode     SPP
X   ECP Mode Use DMA          3
X   Parallel Port EPP Type    EPP1.7
    PWRON After PWR-Fail      Off        ▼
```

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

BIOS

On-Chip IDE Channel 0/1

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.

DE Prefetch Mode
The onboard IDE drive interface supports IDE prefetching for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to Disabled if the interface does not support prefetching.

IDE Primary/Secondary Master/Slave PIO
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 Primary/Secondary Master/Slave UDMA
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 66 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.

Init Display First
Select the type of display adapter used in your system.

IDE HDD Block Mode
Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

KBC Input Clock
Allows you to adjust the keyboard clock signal.

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 Port 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.

UART Mode Select
Select an operating mode for the second serial port:

Standard	RS-232C serial port
IrDA	Serial infrared port
ASKIR	Amplitude shift keyed infrared port

UART2 Duplex Mode
This setting allows the COM port to receive and transmit data simultaneously. Default is at half duplex.

RxD, TxD Active
This setting is reserved and should be left as default. Default setting is Hi, Lo

IR Transmission delay
Adjust this setting to set the delay before a signal is sent through the IR port.

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

Onboard Parallel Mode
This option allows the user to select a mode for the onboard parallel port.

ECP Mode Use DMA
Allows the parallel ports to enable DMA, this a faster transfer rate.

EPP Mode Select
This setting selects the printer port's data transfer mode.

PWRON After PWR-Fail
This function enables the computer to power up or down after a sudden power interruption. If the setting is set to OFF, the computer will stay off even if the power is resumed. If it is set to On, the computer will power on when power is restored. If the setting is set to Former-Sts, the computer will return to the previous state before the power was interrupted.

BIOS

Power Management Setup

Power Management Setup - Fail-Safe and Optimized Default Settings

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                    Power Management Setup
```

```
    ACPI  Function              Enabled              Item Help
▶  Power  Management            Press  Enter
    Video  Off  Option          Suspend -> Off      Menu  Level  ▶
    Video  Off  Method          V/H SYNC+Blank
    MODEM  Use  IRQ             3
    Soft-Off  by  PWRBIN        Instant-Off
▶  Wake  Up  Events            Press  Enter
```

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

ACPI Function
Enable or disable Advanced Configuration Power Interface.

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).

(*Power Management option - Fail-safe and Optimized Default Settings*)

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                    Power Management
```

```
┌──────────────────────────────────────────────┬─────────────────────┐
│  Power  Management          User Define        │      Item Help       │
│  HDD Power Down             Disable            │                     │
│  Doze Mode                  Disable            │  Menu  Level  ▶     │
│  Suspend Mode               Disable            │                     │
│                                                │                     │
│                                                │                     │
│                                                │                     │
│                                                │                     │
│                                                │                     │
│                                                │                     │
│                                                │                     │
│                                                │                     │
│                                                │                     │
│                                                │                     │
└──────────────────────────────────────────────┴─────────────────────┘
```

BIOS

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

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.

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.

Suspend Mode
After the selected period of system inactivity (1 minute to 1 hour), all devices
except the CPU shut off.

ACPI Suspend Type
This setting controls the type of suspend function that is enabled once the
computer has gone into suspend mode.

Video Off Option

Selects the power-saving modes during which the monitor goes blank.

Always On	Monitor remains on during power-saving modes.
Suspend --> Off	Monitor blanked when system enters Suspend mode.
All Modes--> Off	Monitor blanked when system enters any power-saving mode.

Video Off Method

Determines the manner in which the monitor is blanked. The Blank Screen option will let the system BIOS blank the screen when disabling video. V/H sync+Blank will allow the system BIOS to turn off the V-SYNC and H-SYNC signals running from the VGA card to the monitor.

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.

Modem Use IRQ

If Modem Ring Resume is Enabled, it is possible to wake the system by dialing in to it. This field determines which IRQ will be monitored for the incoming call.

Soft-Off by PWRBTN

When you select Instant Off or Delay 4 Sec., turning the system off with the on/off button places the system in a very low power usage state, either immediately or after 4 seconds, with only enough circuitry receiving power to detect wake-up event activity.

Wake Up Events

A power management (PM) event awakens the system from, or resets activity timers for, Suspend mode.

Wake Up Events option - Fail-safe and Optimized Default Settings)

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                      Wake Up Events
```

VGA OFF	Item Help
LPT & COM LPT/COM	
HDD & FDD ON	Menu Level ▶
DMA/ Master OFF	
Wake Up On LAN Disabled	
Modem Ring Resume Disabled	
RTC Alarm Resume Disabled	
X Date (of Month) 0	
X Resume Time (hh:mm:ss) 0 0 0	
Primary INTR ON	
▶ IRQs Activity Monitoring Press Enter	

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

VGA
When On, any video activity is a PM event.

LPT & COM
Select none, or one or more, ports whose activity is a PM event.

HDD & FDD
When On, any hard drive or floppy drive activity is a PM event.

DMA/master
When On, any DMA or bus master activity is a PM event.

Wake Up on LAN
This feature allows remote power up through a LAN connection when used in conjunction with a Wake on LAN compliant network adapter and appropriate software.

BIOS

Modem Ring Resume

When Enabled, an input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from Suspend mode.

RTC Alarm Resume

When Enabled, you can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

Wake Up on LAN

This feature allows remote power up through a LAN connection when used in conjunction with a Wake on LAN compliant network adapter and appropriate software.

Primary INTR

A system peripheral signals that it wants to gain the attention of the operating system by sending an interrupt request. When the system is in Suspend mode, IRQ activity can cause a Primary or Secondary wake-up. When Primary INTR is On, the IRQs in the above fields can be configured as Primary, Secondary, or Disabled.

Primary	The system wakes up fully when it detects IRQ activity.
Secondary	The system does not wake up, but the interrupt request is processed. Secondary interrupts are typically housekeeping devices needed to maintain the system while not requiring the use of the rest of the system resources. For example, IRQ8, the RTC Alarm, is configured as Secondary by default. Another example might be a network adapter continually polled by the network.

IRQ*n*

The following is a list of IRQs (Interrupt Request Lines) assigned to common system peripherals.

IRQ0 (System Timer)

IRQ1 (Keyboard)

IRQ2 (Cascade- Reserved)

IRQ3 (COM2)

IRQ4 (COM1)

IRQ5 (FREE)

IRQ6 (Floppy Disk)

IRQ7 (LPT1)

IRQ8 (RTC Alarm)

IRQ9 (FREE)

IRQ10 (FREE)

IRQ11 (FREE)

IRQ12 (PS/2 Mouse)

IRQ13 (Coprocessor)

IRQ14 (Primary IDE)

IRQ15 (Seconday IDE)

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.

PnP/PCI Configurations - Fail-Safe and Optimized Default Settings

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                  PnP/PCI Configurations
```

```
    PNP OS Installed           NO              Item Help

    Reset Configuration Data   Disabled
                                           Menu Level ▶
    Resources Controlled By    Auto(ESCD)
X   IRQ Resources              Press Enter   Select Yes if you are
X   DMA Resources              Press Enter   using a Plug and Play
                                           capable operating
    PCI/VGA Palette Snoop      Disabled      system. Select No if
    Assign IRQ For VGA         Enabled       you need the BIOS to
    Assign IRQ For USB         Enabled       configure non-Boot
                                           devices
```

BIOS

```
↑↓→← :Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

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

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.

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.

IRQ Resources (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 Resources (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 / VGA Palette Snoop

Please leave this field at Disabled.

Assign IRQ for VGA

Assign an IRQ number to your VGA adapter.

Assign IRQ For USB

Assign an IRQ number to your USB device / controller.

User Password (Supervisor / User)

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 Advanced BIOS Features Setup screen, select System or 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

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BIOS will be solved by this simple procedure (see Hardware CMOS & Password Reset, page 16).

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 "awdflash" 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:
```

BIOS

Type in the whole file name, e.g. 1834v100.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 15).

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 hap-
pens, it will require service by your system vendor. Follow the instructions in
this section precisely to avoid such an inconvenience.

chapter 4

System Resources

Beep Codes

Fatal errors, which halt the boot process, are communicated through a series of audible beeps. Currently the only beep code indicated that a video error has occured and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. Any other beeps are probably a RAM problem

Appendix

Glossary

ACPI (**A**dvanced **C**onfiguration and **P**ower **I**nterface) 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 (**A**ccelerated **G**raphics **P**ort) 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.

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

ATAPI (**AT A**ttachment **P**acket **I**nterface), 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.

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

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data the bus, phone line, or other electrical path, can carry. Greater bandwidth, then, also results in greater speed.

The **BIOS** (**B**asic **I**nput/**O**utput **S**ystem) 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 key-board 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. Informa- tion 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 informa- tion 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 **M**etal-**O**xide **S**emiconductors 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 **I**n-line **M**emory **M**odules 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 **M**emory **A**ccess 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 three to ten times slower than non-recharged RAM such as SRAM.

EDO RAM (**E**xtended **D**ata-**O**ut **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 on the website.

ESCD (**E**xtended **S**ystem **C**onfiguration **D**ata) 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.

GLOSSARY

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 **H**ard **D**isk **D**rive.

H-SYNC controls the horizontal properties of the monitor.

IC (**I**ntegrated **C**ircuit) is the formal name for the computer chip.

IDE Integrated **D**evice (or Drive) **E**lectronics 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 Int**errupt) is a hardware interrupt signal that goes to the IDE. **I/O I**nput/**O**utput 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 **I**ndustry **S**tandard **A**rchitecture. 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 **N**on-**V**olatile **RAM**, memory that holds its data without power. DRAM, in contrast, is volatile.

 OEMs (**O**riginal **E**quipment **M**anufacturers) 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 **P**eripheral **C**omponent **I**nterconnect. 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 P**rogrammable **I**nput/**O**utput) 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 (**P**ower **M**anagement **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.

GLOSSARY

The term **RAM** (**R**andom **A**ccess **M**emory), 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 (**R**ead-**O**nly **M**emory) 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 (**S**ynchronous **D**ynamic **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 **S**ingle **I**n-line **M**emory **M**odules 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 **S**tatic **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/66 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 (**V**ideo **G**raphics **A**rray) is the PC video display standard.

V-SYNC controls the vertical properties of the monitor.

ZIF socket Zero **I**nsertion **F**orce 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.

GLOSSARY

TYAN

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' interference radio tel que spécifié par le Ministére Canadien des Communications dans les réglements d'interférence radio.)

Notice for Europe (CE Mark)

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

CAUTION: Lithium Batteries included with this board. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used batteries according to manufacturer instructions.F1 (Fuse 1), F2 (Fuse 2): Rated 30V DC, hold current at 1.6 A.

Note: The joystick port maximum output rating is 9 amperes at 5 volts.

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