TYAN™

Tiger MP
S2460

User's Manual
Revision 1.03

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Table of Contents

http://www.tyan.com

Before you begin...

Check the box contents!

The retail motherboard package should contain the following:

Tiger MP motherboard

34-pin floppy cable

UltraDMA-100/66/33 IDE cable

Tiger MP user's manual

Tyan driver CD

If any of these items are missing, please contact your **vendor/dealer** for replacements before continuing with the installation process.

Chapter 1: Introduction

1.1 Congratulations!

You are now the owner of the world's first dual AMD processor platform!
- CONSUMER EDITION!

The Tyan Tiger MP™ is a direct descendent of the Thunder K7, the most critically acclaimed and deco-rated system board in the history of Tyan. Aimed directly at the power-user and enthusiast market, the Tiger MP is a high performance workstation platform designed for development and performance applica-tions that require the power of dual AMD Athlon™ MP processors. This platform utilizes the AMD-760™ MP chipset and can support CPU speeds greater than 1.0+GHz and front side bus speeds of 200 MHz or 266 MHz. Please see Tyan's website for updates and information concerning CPU information and sup-port:

http://www.tyan.com

This integrated performance board is supported in an ATX form factor. Features of the Tiger MP include onboard UltraDMA-100/66/33, and multiple boot options.

With both I/O and drive controller support onboard, the one 2x/4x mode AGP slot, four 64/32-bit 33MHz PCI slots, and two 32-bit 33MHz PCI slots are free for numerous types of add-on expansion cards. The four 184-pin DDR DIMM sockets can support up to 3GB of PC1600/2100 registered DDR SDRAM.

Remember to visit Tyan's website at **http://www.tyan.com**. There you can find information on all of Tyan's products with FAQs, distributors list, and BIOS settings explanations.

NOTE: See PAGE 28 for recommendations and details of power supply information and installa-tion.

* Indicates an optional feature, may not be available on most Tiger MP models

1.2 Tiger MP System Block Diagram

```
  AMD Athlon MP        S2K 200/          S2K 200/         AMD Athlon MP
  Processor 0          266MHz bus        266MHz bus       Processor 1
  Socket 462                                              Socket 462


  [184-pin          Dual-channel                64-bit /        [PCI slots
   Registered       200/266MHz                  33MHz            #1 - 5]
   DDR DIMMs]       DDR SDRAM      AMD-762       PCI bus
                    bus            System
                                   Controller

                                   AGP 4x
                                   bus
                                   AGP slot


                                   AMD-766       64-bit / 33MHz
  Winbond 83782D H/W   SMBus       Peripheral    PCI bus
                                   Bus
                                   Controller

                                   LPC bus

  Floppy Device                    Winbond       Hardware Monitoring
                                   W83627HF


                            Serial        LPT
                            Ports
```

1.3 Hardware Specifications

Processor Information

Dual PGA462 ZIF sockets
Supports dual AMD Athlon MP processors
Two onboard VRMs
200MHz and 266MHz system bus support

Expansion Slots

One AGP slot supports 2x/4x modes
Four 64/32-bit 33MHz 5V PCI v2.2 slots
Two 32-bit 33MHz 5V PCI v2.2 slots
Total of seven usable slots

Chipset Information

AMD-760 MP chipset
AMD-762 System Controller
AMD-766 Peripheral Bus Controller
Winbond W83627HF Super I/O ASIC

**Hardware Monitoring
(manufacturing option)**

Winbond W83782D hardware monitoring
3-pin fan monitoring headers
2-pin chassis intrusion header***
CPU temperature and voltage monitoring***

Memory*

Four 2.5V 184-pin DDR DIMM sockets
Supports up to 3.0GB* PC1600/2100 registered DDR
Supports ECC (72-bit) memory modules

Integrated I/O

One floppy connector supports up to two drives
Two 9-pin 16550-based serial ports
One 25-pin SPP/ECP/EPP parallel port
Four USB ports (two front panel via optional cable**,
USB v1.1)
PS/2 keyboard and mouse ports

Integrated PCI IDE

Dual-channel master mode
Up to four Enhanced IDE devices
Support for UltraDMA-100/66/33 IDE and ATAPI compliant devices

BIOS

Phoenix BIOS 4 Mb Flash
Supports APM 1.2 & ACPI 1.0
Auto-configuration of IDE hard disk types
User settings of hardware monitoring***
Multiple boot options
DMI 2.0 compliant

---

*   Please check Tyan website for memory compatibility information: **http://www.tyan.com**
** Only certain chassis allow for frontside USB connection. Please check with your chassis vendor for
    details on frontside USB connections. Tyan does not provide frontside USB cables.
*** Indicates an optional feature, may not be available on most Tiger MP models

Form Factor	ATX 12" x 10.3" (304.80mm x 261.62mm) One 20-pin power connector (requires 30A on +5V line) Stacked mouse & keyboard ports Stacked two USB ports Stacked one parallel, two serial ports
Regulatory	FCC Class B (Declaration of Conformity) European Community CE (Declaration of Conformity)

1.4 Software Specifications

OS	Windows NT/2000

Chapter 2: Board Installation

2.1 Installation

Once you've checked that everything is inside the box (see **p. 4** for details), you will then be ready to install your motherboard. The mounting hole pattern of the motherboard matches the ATX board specifications, so your chassis must be capable of supporting an Extended ATX board (check the motherboard dimensions provided on **p. 8**).

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

Question: what's the first thing I should do?
The first thing you should do is read the **user's manual**. It contains important information which will make configuration and setup much easier, as well as provide information on device installation and component setup. By reading through the manual completely before installing your motherboard, you will have a complete overview on the installation.

2.3 Here are some safety tips:

(1) **Ground yourself properly before removing your motherboard from the antistatic bag.** Unplug the power from your computer power supply and touch any metal part on the computer case. (You might also want to 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 (such as the bag it came in), component side up. Then, inspect the board for damage.

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

Press down on any of the socketed ICs if it appears that they are not properly seated (the board should still be on an antistatic mat or on top of the bag it came in). 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 start installing it into the computer case (e.g. setting jumpers, etc.) If you do not ground yourself, you risk "zapping" the motherboard or adapter card. Subsequent problems may not arise immediately because electrostatic discharge, unlike physical damage, causes the device to fail over time.

2.4 Quick References for Jumpers

In this manual, the term "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 **Figure 2.0a** and **Figure 2.0c** for examples of "on" and "off" pins and jumpers.

Jumpers and pins are connected by slipping the plastic jumper connector over the top 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 2.0b** and **Figure 2.0d** for more examples of 3-pin jumper connections. NOTE: The small number "1" indicates pin 1.

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. Full page maps of the motherboard can be found on the next two pages.

2-pin jumpers	
off	**on**
Figure 2.0a (overhead view)	

3-pin jumpers		
1-2	**2-3**	**open**
Figure 2.0b (overhead view)		

2-pin jumpers	
off	**on**
Figure 2.0c (front angle view)	

3-pin jumpers		
1-2	**2-3**	**open**
Figure 2.0d (front angle view)		
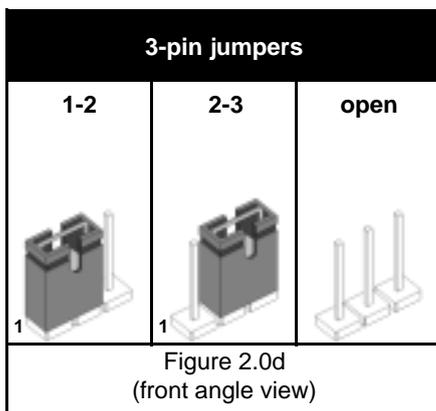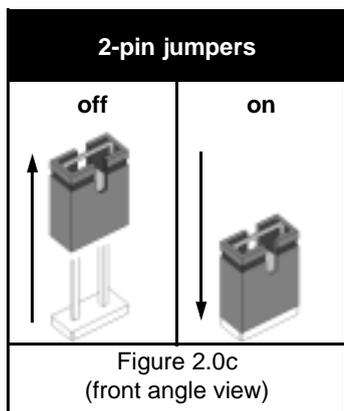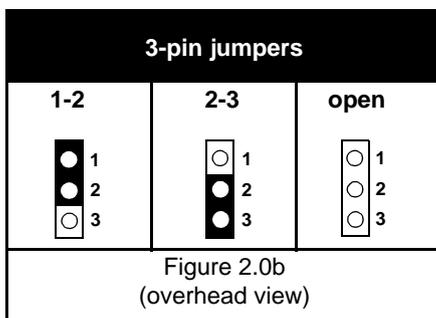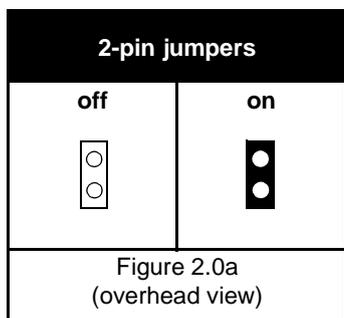
2.5 Map of Motherboard Jumpers

Mouse port (upper port)
Keyboard port (lower port)

(4) DDR DIMM sockets

1 2 3 4

USB Ports

Serial port 1

Parallel port

Serial port 2

P0FAN

20-pin power connector

FAN3

P1FAN

CPU0

AMD-760 MP

CPU1

AGP Slot

J89

(4) 64/32-bit 33MHz PCI slots

1

2

3

4

J52

J53

J15

J90

J34

J36

BIOS

(2) 32-bit 33MHz PCI slots

5

6

Primary IDE

Secondary IDE

FDD

Battery

J48
J49

J21

J12

FAN1

FAN2

* Indicates an optional feature, may not be available on most Tiger MP models

2.6 Setting up Jumpers and Onboard Connectors

Pinouts for certain connectors are available on the Tyan website: **http://www.tyan.com**

2.6-A. Front Panel Connector (J12)

	SLP SW		PWR SW		RST SW				VCC	HDD LED
	SWITCH	GND	SWITCH	GND	SWITCH	GND		VCC		
	25	23	21 19 17	15	13 11	9	7	5 3	1	
	26	24	22 20 18	16	14 12	10	8	6 4	2	
	GND	KEYLOCK	GND GND no connect	VCC	SPEAKER no connect	no connect	+5VCC		GND	
	KEY LK		PWR LED		SPEAKER					

Your chassis will usually come with connectors to install onto the motherboard, such as HDD and Power LEDs. The Front Panel Connector has been implemented for such purposes.

Abbreviations	
RST ➡	Reset
PWR ➡	Power
SLP ➡	Sleep

2.6-B. CMOS Reset (J21)

J21	1-2	2-3
	normal	clear

* default is **1-2**

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

1. Power off the system, and disconnect the power supply
2. Close pins 2-3 on J21
3. Wait about three seconds
4. Close pins 1-2 on J21, then power on the system again

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

2.6-C. CPU Front Side Bus Jumpers (J48, J49; J52, J53) (READ NOTE BELOW)

With these jumpers, the CPU FSB can be set to either 200 **or** 266MHz.

| NOTE:	**YOU MUST SET THESE JUMPERS FOR PROPER CPU OPERATION. If your CPU can only run at 200MHz, altering these FSB jumpers will not make the CPU run at 266MHz.** Tyan takes no reponsibility and will not be held liable for damage related to operation of the CPU using different settings from those of the CPU manufacturer's specified default settings.
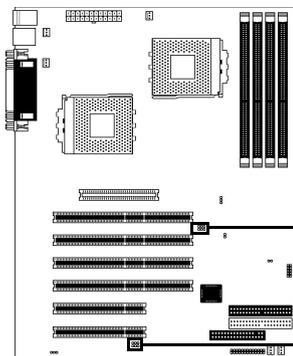
NOTE:	You MUST set ALL FOUR JUMPERS to the same speed. Damage may result otherwise!

	266MHz	200MHz
J52	2-3	1-2
J53	2-3	2-3
J48	1-2	2-3
J49	1-2	2-3

2.6-D. Front-side USB Header* (J36)

This header allows for a USB connection*. The USB channel on this header is on a separate channel from the rear USB connections channel. USB v1.1 is supported on this board.
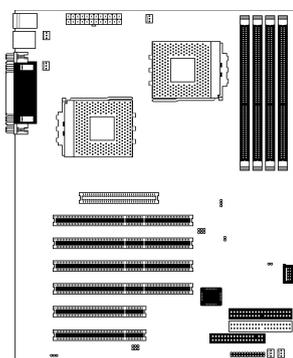
USB Header (J36)			
+VCC	1	2	ground
signal out	3	4	ground
signal in	5	6	signal in
ground	7	8	signal out
ground	9	10	+VCC

* Only certain chassis allow for frontside USB connection. Please check with your chassis vendor for details on frontside USB connections. Tyan does not provide frontside USB cables.

2.6-E. FAN Headers (P0FAN, P1FAN, FAN1, FAN2, FAN3)

These headers allow for extra fans to be installed. P0FAN and P1FAN are reserved for CPU0 and CPU1 (respectively). All other fans are left to the user's discretion.
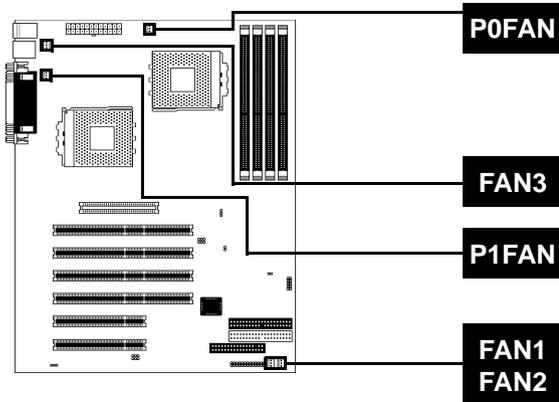
FAN			Specifications	
1	**2**	**3**	Voltage	12V
ground	+12V	speed	Amperage	300mA

NOTE:	The FAN connector has a **12V, 300mA limitation**. Tyan takes no responsibility and will not be held liable for damage related to the misuse of any FAN header.

2.6-F. Chassis Intrusion* Header (J90) (RESERVED)

This header is provided in the event that your chassis has a chassis intrusion feature*, and that an application is available to manage this feature.
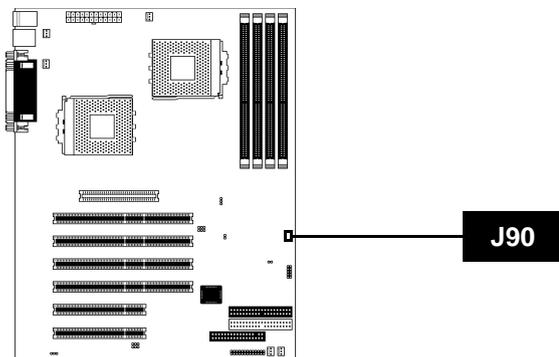
* Indicates an optional feature, may not be available on some Tiger MP models

2.6-G. SMBus Connector* (J89)

This is a reserved feature for specific functions not usually required for normal board operation.

J59
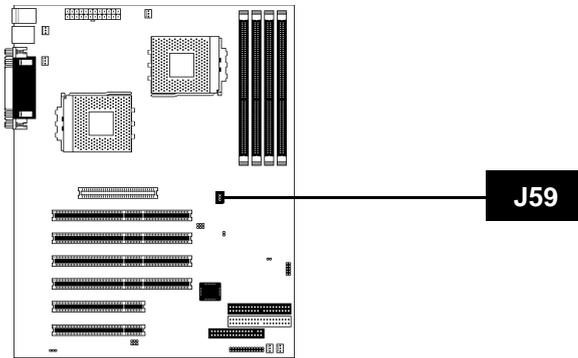
2.6-H. Reserved Jumper* (J34) (RESERVED)

This is a reserved feature* for debugging purposes only. DO NOT ADJUST OR TAMPER WITH THIS!

J34

* Indicates an optional feature, may not be available on most Tiger MP models

2.6-I. Soft Power Connector

The soft power connector is part of jumper block **J12** (pins 13 and 15). This board 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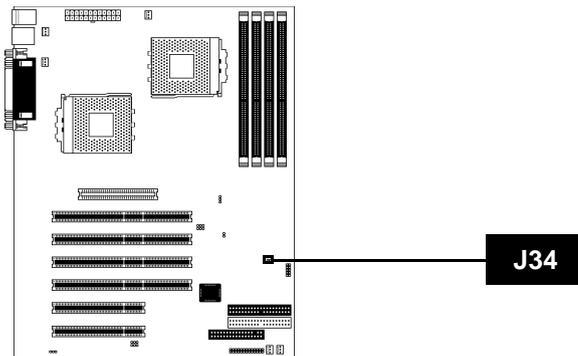 is set to "On/Off" (which is the default), pressing the power button once after the BIOS has booted up will turn the system on and off. If the power button function is set to Suspend, pressing the power button once will wake up the system or send it to Suspend mode. In this case, you cannot turn the system off unless you shut down through the Windows operating system or you hold the power button down for four seconds (BIOS-dependent feature).

SLP SW		PWR SW		RST SW			HDD LED
SWITCH / GND		SWITCH / GND		SWITCH / GND			VCC

25	23	21	19	17	15	13	11	9	7	5	3	1
26	24	22	20	18	16	14	12	10	8	6	4	2

Bottom row labels: GND / no connect / VCC (**PWR LED**); GND (HDD LED)

Abbreviations		
RST	→	Reset
PWR	→	Power
SLP	→	Sleep

2.6-J. Hardware Reset Switch Connector Installation

The reset switch on your chassis case provides you with the Hardware Reset function, which is the same as power on/off, except that the system will immediately execute a cold start after the reset button is pushed. The reset switch needs to be connected to jumper block **J12** (pins 7 and 9).

PWR SW		RST SW	
SWITCH / GND		SWITCH / GND	

25	23	21	19	17	15	13	11	9	7	5	3	1
26	24	22	20	18	16	14	12	10	8	6	4	2

Abbreviations		
PWR	→	Power
RST	→	Reset

2.6-K. Flash Utility

You can upgrade the BIOS of this motherboard by using the Flash Utility (see **p. 44**). Check the Tyan website for more details: **http://www.tyan.com**

BIOS
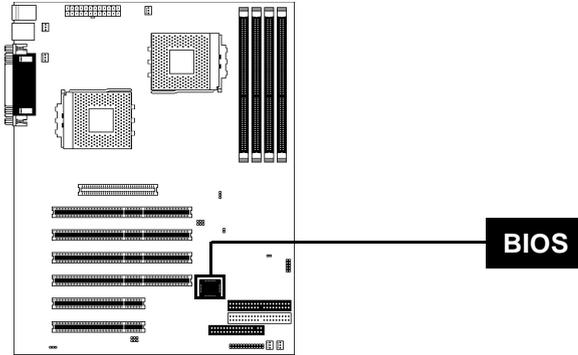
2.7 Mounting the Motherboard into the Chassis

Your chassis may include mounting hardware. If mounting hardware was included, you can use the following examples to help you in installing your motherboard into the chassis.

If your chassis has the studs integrated into the chassis wall, then you would only need to use screws (possibly included with your chassis) to install the motherboard. See the examples (**Figure 2.0**, shown below) for more details.

If the chassis includes mounting hardware without the studs pre-installed, then you will need to install the motherboard using the mounting hardware as shown in the examples **below**. Remember not to over-tighten any of the screws, or you might risk breaking internal traces in the surrounding area, or damage the motherboard in some other way.

Other examples of how to install your motherboard using other hardware (that may or may not have been included with your chassis) are shown below.
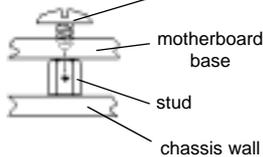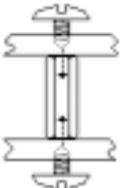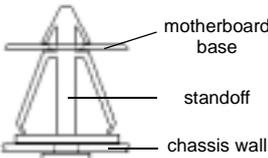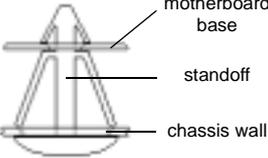
Type of hardware	One solution for installing motherboard	Another solution	Another solution
	screw motherboard base stud chassis wall		
	motherboard base standoff chassis wall		
	motherboard base standoff chassis wall		

Figure 2.0

| NOTE:	The diagrams above are only representative of a few solutions for installing a motherboard into the chassis. The installation procedure for installing your motherboard into the chassis may differ.

2.8 Installing Memory

Please keep in mind that although some memory modules may appear to be high-quality, they may contain inferior or substandard parts. The type of memory you choose to install should be checked against the memory compatibility list, which is available from Tyan's website at **http://www.tyan.com**

Here are some details of memory installation for this board:

- At least one REGISTERED DDR DIMM* must be installed for the system to POST.

- Supports 128MB, 256MB, 512MB**, & 1024MB** PC1600/2100 REGISTERED DDR ONLY*.

- All installed memory will be automatically detected, so there is no need to set any jumpers.

- The motherboard supports up to 3.0GB** of PC1600/2100 REGISTERED DDR memory ONLY*.

Memory Installation Procedure***

Step 1 Line your module up so that the pins fit into the socket. There is only one way your DIMM can fit properly. Make sure that the short row of pins is lined up with the short gap in the DIMM socket, just as the long row of pins should line up with the long gap in the DIMM socket.

short row of pins   long row of pins
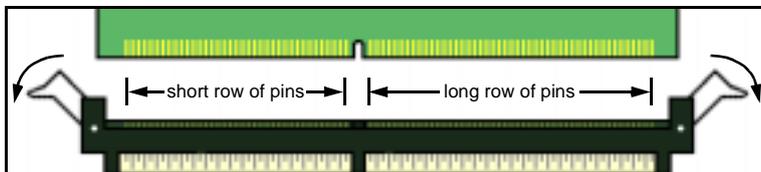
Step 2 Insert the DIMM by pushing the module into the socket **with even force**. Do not insert one end and then the other: install the whole module at once or you might bend the DIMM pins. Make sure the DIMM is securely seated.
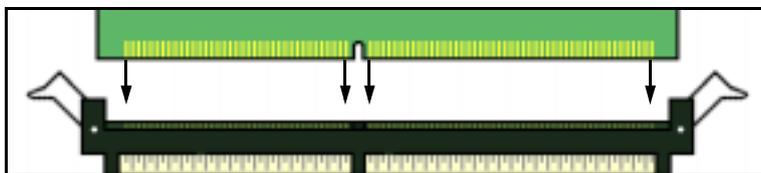

* This board supports DDR memory ONLY. Please check that you are using the correct type of memory.
** Not validated at time of print, please check Tyan website for memory compatibility information:
   http://www.tyan.com
*** Manufacturer suggestion: start installation with DIMM (bank) 1 (see **p.21**)

Step **3** Lock the DIMM into place by pushing the clips back on either end of the socket onto the notches in the ends of the DIMM (see pictures below for details).
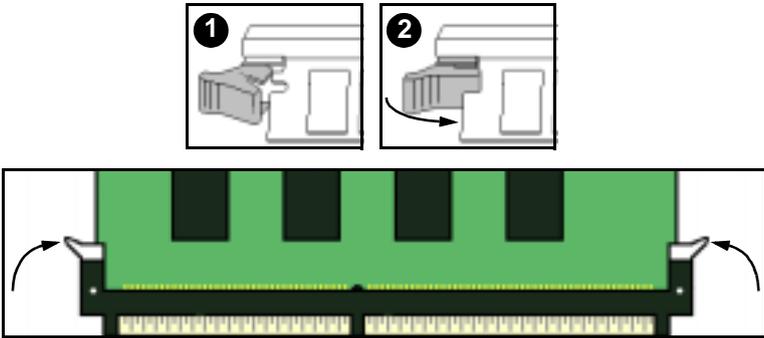
Removing a DIMM

Removing a DIMM is just the reverse: pull back the clips from the DIMM (see pictures below), and carefully pull the module straight out. Place the DIMMs in an anti-static bag as soon as you remove them to avoid static damage.
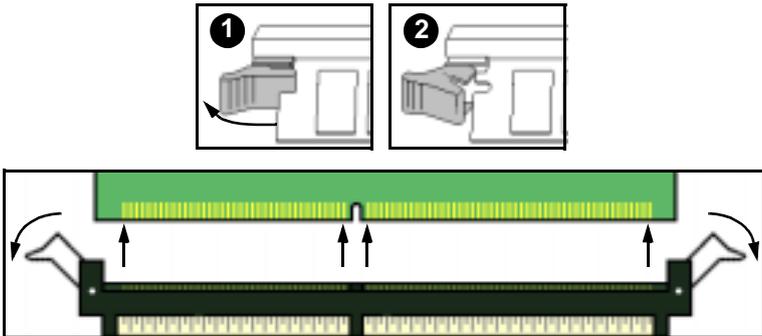
Suggested Memory Configurations

The table below shows some of the possible memory configurations. **Not all possible configurations are listed.** Your memory configuration may differ from one or more of the combinations** shown below.

Total possible memory is 3.0GB* PC1600/2100 registered DDR SDRAM							
DIMM 1**							
128MB	128MB	128MB	256MB	256MB	512MB	1024MB	1024MB
DIMM 2							
0	0	128MB	0	256MB	512MB	1024MB	1024MB
DIMM 3							
0	0	0	256MB	256MB	0	512MB	1024MB
DIMM 4							
0	64MB	0	0	256MB	1024MB	512MB	512MB
TOTAL							
128MB	**192MB**	**256MB**	**512MB**	**1024MB**	**2048MB***	**3072MB***	**3584MB***

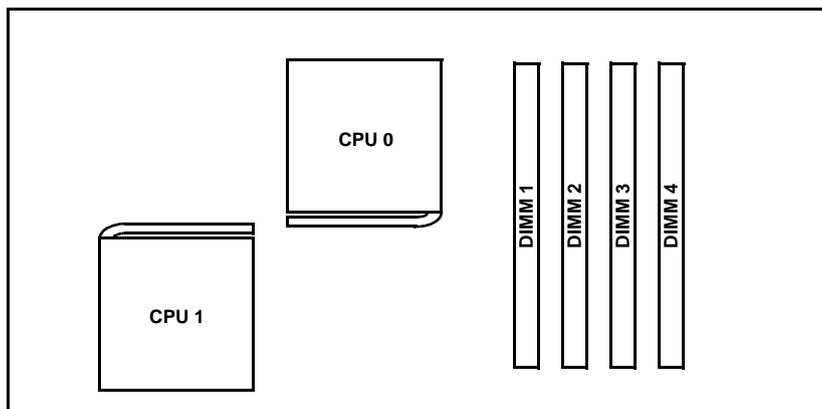* Not validated at time of print, please check Tyan website for memory compatibility information:
  http://www.tyan.com

** Manufacturer suggestion: start installation with DIMM (bank) 1 (see **above**)

2.9 Installing the CPU and Cooling Fan

AMD Athlon MP processors up to 1.4GHz can be used on this board. For more information on CPU compatibility, check Tyan's website at: **http://www.tyan.com**.

When installing your CPU, remember the following:

➡️ The CPU is a sensitive electronic component and 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 socket with virtually no force

➡️ Do not press down hard on the CPU as you might bend or break pins, or otherwise damage the CPU

➡️ The CPU voltage will automatically be detected by the motherboard, so there is no need to set any jumpers or BIOS setting.

Installing the CPU

Before installing the CPU, check it for any visible damage. Make sure none of the pins are bent or missing. Be sure where Pin 1 is on both the CPU and the socket. The following steps each have a corresponding picture next to it to help guide you through the installation.

Step 1 Carefully lift the arm of the ZIF socket until it is at a 90 degree angle pointing away from the motherboard. Be very careful not to damage any components that might be next to the socket.
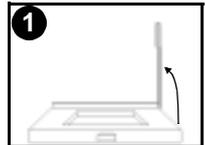
Step 2 There are two beveled corners on the CPU, which will match the two angled corners on the socket. Carefully install the CPU by lining both Pin 1 on the CPU and Pin 1 on the socket, making sure the pins actually fit into the socket. **Do not** force the CPU into the socket: check the pin alignment of CPU pins to socket holes.

Pin 1
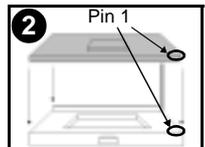
Step 3 Push down lightly on the CPU while lowering the arm on the socket to secure the CPU (see right). A squeaking noise may be heard while lowering the arm, or the socket may make a 'click' noise when the arm is locked into position: these noises are normal.

Arm moves down to lock CPU
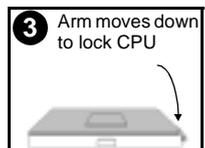
Step 4 Install the CPU cooling fans (see **next page**), then check **Section 2.6-C**, **p.13** for details on setting the CPU FSB jumpers.

Installing the Cooling Fan(s)

After a CPU has been installed, you will need to **install the proper cooling device*** for the CPU. This device, a heatsink/fan combination, can be purchased at many computer retail stores. Installation of the cooling device* may vary depending on the fan manufacturer's design. You should also take space into consideration when install a cooling device*: make sure the cooling device is not too big, or else you may end up damaging components around the CPU socket.

Tyan **highly recommends** that you use a thin layer of some type of thermal compound (available from many computer retail stores), between the CPU and heat sink, to maximize distribution of heat away from the CPU. Please use extra caution when installing any type of clamp-style fan, or else damage may occur to the CPU socket, and/or the CPU itself. See **the picture to the right** for an example of how to connect the cooling fan's power supply. Another diagram has also been provided below, to aid in CPU fan installation onto the socket. Check the **note below*** for more details about installation.

Can be used to install a cooling device
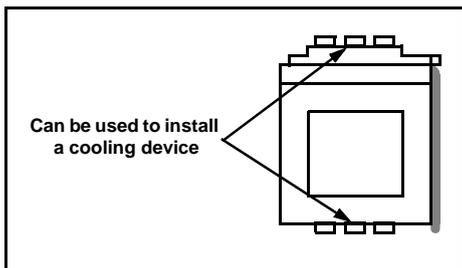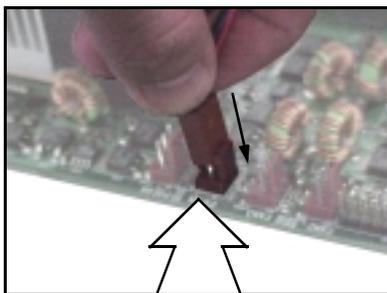
Mounting points on the CPU socket

Close-up of fan connector

FAN				Specifications	
1	2	3		Voltage	12V
ground	+12V	speed		Amperage	300mA

NOTE:	The FAN connector has a **12V, 300mA limitation**. Tyan takes no responsibility and will not be held liable for damage related to the misuse of any FAN jumper.

Installing Chassis Fans

Alternatively, if you wish to also install chassis fans for increased cooling, headers are provided to power those fans as well (see **p. 14**, **section 2.6-E**). Chassis fan installation will vary depending on your chassis manufacturer's design. Please check with your chassis manufacturer for details on proper chassis fan installation.

* Please check the AMD website for recommended cooling device solutions, and more information on how to install cooling devices: **http://www.amd.com/products/cpg/athlon/pdf/23986.pdf**

2.10 Connecting IDE and Floppy Drives

A variety of IDE and ATAPI-compliant devices can be installed on this motherboard, such as hard disk drives (HDDs) and CD-ROMs.

Please keep in mind that on this motherboard, the primary IDE connector is **BLACK**, and the secondary IDE connector is **WHITE**. See **the picture to the right** for an example of the IDE cable properly connected to the motherboard, with the **BLUE** end of the IDE cable installed on the motherboard.

Pin 1 on the IDE cable is usually denoted by a red or colored stripe down one side of the cable. That side of the cable must match Pin 1 on the motherboard's IDE connector. There will also be a key pin on the cable that matches with a notch in the IDE connector, to ensure proper installation. Consult the documentation that came with your IDE/ATAPI device, or contact the device's manufacturer for more details on installation.

Please note that UltraDMA-100/66 IDE HDDs require a special 80-wire cable (see picture at **right**), which has additional grounding wires. This cable has been included with this motherboard for your convenience. The UltraDMA-100/66 cable is backwards compatible with UltraDMA-33 and legacy IDE HDDs.

Pin 1
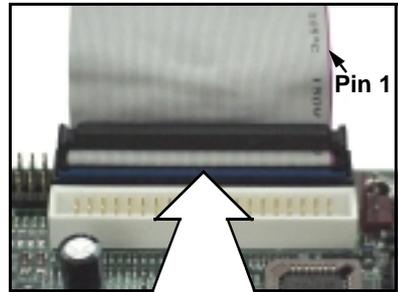
BLUE end goes to IDE connector

NOTE:	Only Tyan-approved cables are recommended for this motherboard. If you are using an existing configuration with older cables, your system might not function properly. Use only Tyan-approved cables (i.e. the ones included with your new motherboard).

Some symptoms of incorrectly installed HDDs are...	
HDDs are not auto-detected	May be a Master/Slave configuration problem, bad IDE cable, or BIOS mis-configuration. Consult the HDD documentation or contact your HDD vendor.
Hard Disk Drive Fail message at bootup	May be a bad cable or lack of power going to the drive. Check the cables for damage and bad connections.
No video or beeps during bootup	Usually means the cable was installed backwards.
HDD lights are constantly on	Bad IDE cable or defective drives/motherboard. Try another HDD, or contact your HDD vendor.
HDD does not power on	Check power cables and cabling. May be a bad power supply or IDE drive problem.

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Connecting Floppy Drives

See **the picture below** for an example of a floppy cable. Most of the current floppy drives on the market require that the cable be installed with the colored stripe positioned next to the power connector. In most cases, there will be a key pin on the cable which will force a proper connection of the cable.

The first floppy drive (sometimes denoted as A:) is usually attached to the end of the cable with the twist in it. Drive B: is usually connected to the second or third connector in the cable (the second or third connector after you install Drive A:). Refer to your floppy drive's installation instructions (if available), or contact your dealer if you are unsure about how to attach the floppy drive(s). Remember, you can only have 2 floppy drives connected at any given time.

Pin 1

Drive A: 3.5" connector   Drive B: Colored stripe indicates Pin 1

This connector goes to motherboard   5.25" connector   Colored stripe indicates Pin 1
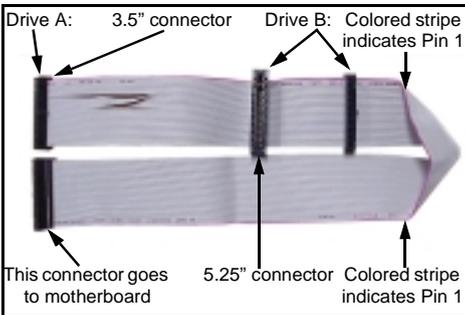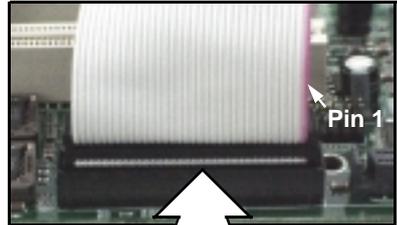
Figure 2.4*

Match striped side with Pin 1

Some symptoms of incorrectly installed FDDs are...	
FDDs are not auto-detected	Usually caused by faulty cables, cables put in backwards, or a bad floppy or motherboard. Try another 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.
FDD does not power on	Check power cables and cabling. May be a bad power supply or IDE drive problem.
FDD light is constantly on	Usually signifies that the cable is on backwards. Reverse the cable at the floppy drive end and try again.

* Cable may vary. Diagram provided for reference only.

2.11 Installing Add-on Cards

There are a few rules you need to follow when installing add-on cards. In order to assure proper operation and a quick installation, adhere to the following guidelines:

- If you are going to install a PCI-bus interface card on your system, be aware that any one of the six PCI slots can support a Master or Slave device.

- NEVER force a card into a slot. If it won't fit properly, look at the socket on the motherboard to make sure there are no wires or other obstructions to the slot. **Damage will occur otherwise.**

- NEVER plug an ISA card into a PCI slot. You will void your warranty, and you will damage your system board if you try to 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, or a rocking motion between the card and the slot might occur, and could damage the pins within the socket.

- Make sure the cards are seated securely into their slots.

- Before turning on the system, make sure no cards are touching.

- Check the PCI device specifications with the PCI slot specifications (**p.5**) BEFORE installing!

When installing the add-on cards, make sure the cards are installed with **even** force; do not insert one end and then the other. See the before (**Figure 2.1a**) and after (**Figure 2.1b**) example installation images below for details.

Check orientation of card when installing

Figure 2.1a*

Push card down with **even** force
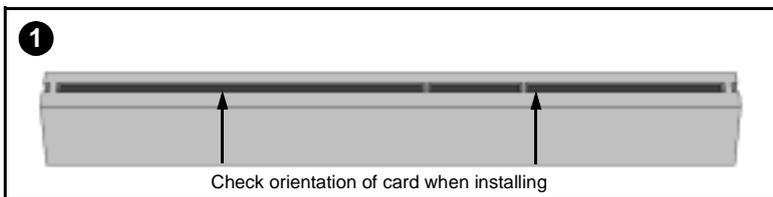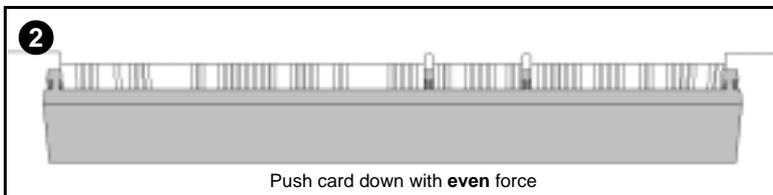
Figure 2.1b*

* diagrams are provided as an example for installation, and may not represent an actual slot

2.12 Connecting PS/2, USB, and Serial Devices

This motherboard includes ports for PS/2 mouse and keyboard, Universal Serial Bus (USB) devices, and serial and parallel devices. Please note that the upper PS/2 port is the mouse port, and the lower PS/2 port is for the keyboard (see **Figure 2.3** below).

Installation of peripheral/external devices may vary. For details on installation of devices into the various ports shown below, please consult your device's documentation, device manufacturer, or your dealer for details.

Connecting Serial and Parallel Ports
The serial and parallel ports can be used to connect various devices such as a mouse or printer. The connectors can only be connected one way: be sure and check the orientation of the connector before installing it into the port.
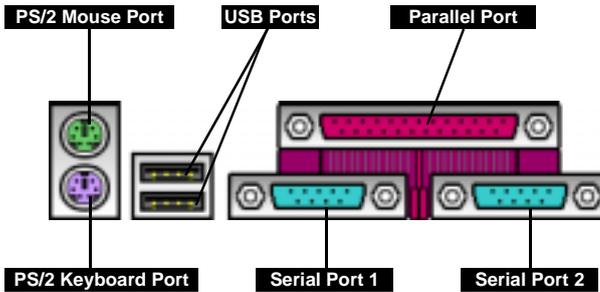
Figure 2.3

2.13 Connecting the power supply*

This motherboard requires the following:

➡ **ATX power supply**, one that conforms to **ATX standard 2.01 or better**

➡ **A minimum of 30+A** on the **+5V power line***

The clip on the power connector should lock over the tab on the onboard connector. You shouldn't be able to plug the power connector in any other way but just to be safe, make sure it looks like **Figure 2.4b**. Make certain that you do not miss connecting any of the pins because if you do, you will void your warranty and possibly cause damage to yourself and/or your motherboard when the power is turned 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.

Step 1

Shown on the **right**, in **Figure 2.4a**, is the 20-pin connector of the ATX power supply.

Note the clip in the image: it will help you install the plug correctly.
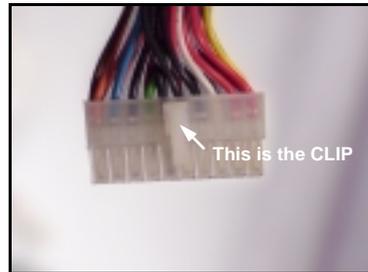
This is the CLIP

Figure 2.4a

Step 2

Shown on the **right**, in **Figure 2.4b**, is the 20-pin connector plugged into the board*.

The clip is over the **TAB** of the onboard connector.

When you connect the cable into the motherboard's 20-pin onboard connector, it will make a CLICK noise as it is installed.

This is normal.

Note the TAB
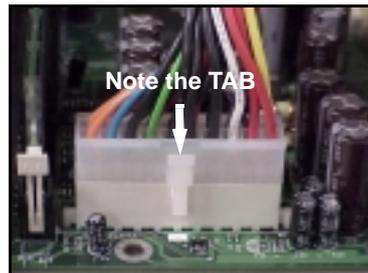
Figure 2.4b**

| **NOTE:** | Figure 2.4b is not an image of the Tiger MP ATX power connector. The Tiger MP power connector tab faces to the inside of the motherboard. Image provided as an example for installation only. |

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* Check http://www.tyan.com for updates and information about the Tiger MP

2.14 You are done!

After double-checking the jumper settings and cable connections, and putting the case back together, you are done setting up the computer.

Installing a new motherboard may seem difficult, but by following these directions, you should have a fairly uneventful time installing our products. If you do encounter problems, your vendor/dealer will be able to help you, or you can consult one of our many technical support resources (see **p. 63**).

2.15 Frequently Asked Questions (FAQ)

Q: My system sometimes becomes unstable. How should I check the system?
A: The first thing to do is to check and see if you have any device conflicts related to the IRQ, or DMA. If you are using Microsoft Windows, the Control Panel is a good place to start investigating the conflict. Please consult your operating system documentation for details. Secondly, check to make sure you are using an **ATX 2.01 or better** power supply that has a **minimum of 30A** on the **+5V power line**. Lastly, make sure the motherboard is receiving adequete cooling.

Q: I have a question about memory compatibility; what memory will work on my motherboard?
A: Memory compatibility information can be found on Tyan's website at: **http://www.tyan.com**

Q: I have a question about CPU compatibility; what CPU will work on my motherboard?
A: CPU compatibility information can be found on Tyan's website at: **http://www.tyan.com**

Q: Where can I get additional accessories for my Tyan motherboard?*
A: You can purchase additional accessories such as USB cables*, as well as other Tyan-approved accessories at the Tyan Computer Online Store: **http://www.etyan.com**

Q: Where do I get pinout information for my motherboard?
A: Pinouts of certain headers are available on the Tyan website: **http://www.tyan.com**

Q: My motherboard is dead, how do I return it?
A: Contact the place of purchase or your distributor for assistance to return the motherboard for service. RMA issues will not be handled via e-mail by Tyan Tech Support. Please refer to the URL link here for more details: **http://www.tyan.com/support/html/faq_rma.html**

Q: How do I upgrade my BIOS?
A: Check the section about the Flash Utility (see **p. 46**) for information on upgrading your BIOS. BIOS update files, flash utilities, and instructions on how to install them are also available from the Tyan website at: **http://www.tyan.com**

Q: Why do I get a "CMOS checksum invalid" error message during POST?
A: If you get the above error message or "Invalid configuration, run Setup" message, it is an indication that the CMOS battery needs to be changed. Contact your dealer for assistance. Once you've replaced your battery or flashed your BIOS, don't forget to check the Clear CMOS section (see **p.12**) so that you can reset your CMOS.

* If your chassis supports frontside USB connectors, it will usually come with the necessary cables.
   Check that your chassis is frontside USB capable. Please check with your chassis vendor for details.
   Tyan does not provide frontside USB cables.

Chapter 3: BIOS Setup

Introduction to the BIOS setup

The BIOS is the basic input/output system, required by the computer to perform functions such as CPU and hard drive support. This chapter describes different settings for the BIOS that can be used to configure your system.

The BIOS section of the manual is subject 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, and therefore they may not be exactly the same as that displayed on your screen.

This manual describes the BIOS setup program. The setup program lets you modify basic 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 BIOS in your motherboard is a customized version of an industry-standard BIOS for IBM PC AT-compatible personal computers. It supports the AMD Athlon family of processors, and other compatible processors. The BIOS provides critical low-level support for the system central processing, memory, and I/O subsystems.

The BIOS has been customized by adding important, but non-standard, 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 this BIOS setup program.

Starting Setup

The 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 (HDD, floppy drive, etc.) If one is found, the BIOS will launch that operating system and hand control of system operations to it. You can start the setup program by pressing the **[F2]** key while the system is booting up.

Setup Keys

The table below shows how to navigate in the setup program using the keyboard.

Key	Function
Tab	Moves from one selection to the next
Left/Right Arrow Keys	Change from one menu to the next
Up/Down Arrow Keys	Move between selections
Enter	Opens highlighted section
PgUp/PgDn Keys	Change setting

Getting Help

Press **[F1]** to display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press **[ESC]** or the **[F1]** key again.

In Case of Problems

If you discover that you have trouble booting the computer after making and saving changes with the BIOS setup program, you can restart the computer by either:

Holding the power button down until the computer shuts off

The best advice is to alter only settings that you thoroughly understand. In particular, do not change settings in the Chipset screen unless you absolutely sure that you need to. The Chipset defaults were carefully chosen by Tyan or your system manufacturer for the best performance and reliability. Even a seemingly small change to the Chipset setup may cause the system to become unstable.

Setup Variations

Not all systems have the same setup program. While the basic look and function of the setup program remains more or less the same for all systems, the appearance of your Setup screen 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 BIOS setup program.

3.1 Main Setup

In this screen, you can alter general features such as the date and time, as well as access the IDE configuration screens. Note that the options listed below are for options that can directly be changed within the **Main Setup** screen.

System Time	FORMAT:	*hh*:*mm*:*ss*
	OPTIONS:	hh = hours mm = minutes ss = seconds
	NOTES:	System time works on 24-hour format

| System Date | FORMAT: | *mm*/*dd*/*yyyy* |
| | OPTIONS: | mm = month
dd = day
yyyy = year |

Legacy Diskette A (..B)	FORMAT:	[*size in MB*] [*media dimensions*]
	OPTIONS:	360KB, 5 1/4" 1.2MB, 5 1/4" 720KB, 3 1/2" 1.44/1.25MB, 3 1/2" 2.88MB, 3 1/2" Not Installed Disabled
	NOTES:	This option is provided for your floppy device needs. It is also linked to the **Boot Sequence** in the **Boot Menu**.

Primary Master/Slave	Discussed on **p. 34**

Secondary Master/Slave	Discussed on **p. 34**

System / Extended Memory	FORMAT:	[*size in KB*]
	OPTIONS:	N/A
	NOTES:	Cannot be altered. Provided for your information only.

Large Disk Access Mode	FORMAT:	[*option*]
	OPTIONS:	Other Select Other if you have another operating system such as UNIX.
	NOTES:	A large disk is one that has more than 1024 cylinders, more than 16 heads, or more than 63 tracks per sector.

Boot Summary Screen	FORMAT:	[*option*]
	OPTIONS:	Disabled Enabled
	NOTES:	Enables or disables the information screen seen on boot-up of the system.

3.1-A. Master and Slave screens

The following options are for setting the configuration of the IDE devices installed in the system.

Type	FORMAT:	[*option*]	
	OPTIONS:	None	Auto-typing is not able to supply the drive type, or the user has selected *None* to disable any drives that might be installed.
		1 to 39	Pre-configured drive parameters. This option is dependent on your drive.
		User	The user must define the different parameters of the drive.
		Auto	Auto-detect the drive parameters.
		IDE Removeable	Removeable read-and-write media (e.g. Zip drive).
		CD-ROM	Readable CD-ROM drive.
		ATAPI Removeable	Removeable ATAPI media (e.g. USB Zip drive).
	NOTES:	All options are dependent on the drive.	

Cylinders	FORMAT:	[#]	
	OPTIONS:	1 to 65,536	Number of cylinders.
	NOTES:	All options are dependent on the drive.	

Heads	FORMAT:	[#]	
	OPTIONS:	1 to 16	Number of read/write heads.
	NOTES:	All options are dependent on the drive.	

Sectors/Track	FORMAT:	[#]	
	OPTIONS:	1 to 63	Number of sectors per track.
	NOTES:	All options are dependent on the drive.	

Landing Zone	FORMAT:	[#]	
	OPTIONS:	1 to 2048	Number of the cylinders specified as the landing zone for the read/write heads.
	NOTES:	IDE devices do not require a Landing Zone.	

Write Precomp	FORMAT:	[#] or [*None*]	
	OPTIONS:	1 to 2048 None	Number of the cylinder at which to change the write timing.
	NOTES:	IDE devices do not require a Write Precomp.	

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(master and slave screens, continued)

Multi-Sector Transfers	FORMAT:	[*option*]	
	OPTIONS:	Disabled	DIsables the feature.
		Standard	Standard is 1 sector per block.
		2 sectors 4 sectors 8 sectors 16 sectors	Number of sectors transferred per block.
	NOTES:	All options are dependent on the drive.	

LBA Mode Control	FORMAT:	[*option*]	
	OPTIONS:	Disabled / Enabled	Enabling LBA causes logical block addressing to be used in place of Cylinders, Heads, and Sectors.
	NOTES:	All options are dependent on the drive.	

32-bit I/O	FORMAT:	[*option*]	
	OPTIONS:	Disabled / Enabled	Enables 32-bit communication between CPU and IDE card. Requires PCI or local bus.
	NOTES:	All options are dependent on the drive.	

Transfer Mode	FORMAT:	[*option*]	
	OPTIONS:	Standard Fast PIO 1 Fast PIO 2 Fast PIO 3 Fast PIO 4	Selects the method for transferring data between the HDD and system memory.
	NOTES:	The Setup menu only lists those options supported by the drive and platform.	

SMART Monitoring	FORMAT:	[*option*]	
	OPTIONS:	Disabled / Enabled	Self-Monitoring Analysis-Reporting Technology, which monitors condition of the HDD and reports when a catastrophic IDE failure is about to happen.

3.2 Advanced Setup

Options such as I/O device interfaces can be altered through this screen.

	FORMAT:	[*option*]	
Reset Configuration Data	OPTIONS:	Yes	Erases all configuration data in a section of memory for ESCD (Extended System Configuration Data) which stores the configuration settings for non-PnP plug-in devices.
		No	Does not erase ESCD.
	NOTES:	Select Yes when required to restore the manufacturer's defaults.	

	FORMAT:	[*option*]	
USB Host Controller	OPTIONS:	Disabled / Enabled	Enables or disables the USB onboard controller.

	FORMAT:	[*option*]	
USB BIOS Legacy Support	OPTIONS:	Disabled	Enables or disables support for Legacy USB.

Chipset Configuration	Discussed on **p. 38**

Keyboard Configuration	Discussed on **p. 39**

I/O Device Configuration	Discussed on **p. 39**

	FORMAT:	[*option*]	
Onboard PCI IDE	OPTIONS:	Both	'Both' enables both IDE ports.
		Disabled	Disables the ports.
		Primary	Enables the primary port only.
		Secondary	Enables the secondary port only.

	FORMAT:	[*option*]	
Serial Port A (..B)	OPTIONS:	Disabled	'Disabled' turns off the port.
		Enabled	'Enabled' requires you to enter the base I/O address and the INT number on the next line.
		Auto	'Auto' makes the BIOS configure the port during POST.

(*advanced setup, continued*)

Mode	FORMAT:	[*option*]	
	OPTIONS:	Normal	Selects the mode to use.
	NOTES:	This option is only for Serial Port B.	

Base I/O	FORMAT:	[*option*]	
	OPTIONS:	3F8, 2F8 3E8, 2E8	These options are dependent on the IRQ, and vice versa.
	NOTES:	Recommended combinations include '3F8, IRQ4' and '2F8, IRQ3'.	

Interrupt	FORMAT:	[*option*]	
	OPTIONS:	IRQ4 IRQ3	These IRQs are paired with the Base I/O option.
	NOTES:	Recommended combinations include '3F8, IRQ4' and '2F8, IRQ3'.	

Parallel Port	FORMAT:	[*option*]	
	OPTIONS:	Disabled	'Disabled' turns off the port.
		Enabled	'Enabled' requires you to enter the base I/O address and the INT number.
		Auto	'Auto' makes the BIOS configure the port during POST.

Mode	FORMAT:	[*option*]	
	OPTIONS:	Output only	Standard one-way protocol for parallel devices.
		Bi-directional	Two-way protocol for parallel devices.
		EPP	Enhanced Parallel Port interface may provide higher bandwidth, if an EPP device is used.
		ECP	Enhanced Capability Port interface may provide higher bandwidth, if an ECP device is used.

Base I/O	FORMAT:	[*option*]	
	OPTIONS:	378 278 3BC	These options appear when the parallel port is set to 'Enabled'.

Interrupt	FORMAT:	[*option*]	
	OPTIONS:	IRQ5 IRQ7	These options appear when the parallel port is set to 'Enabled'.

DMA Channel	**FORMAT:**	[*option*]	
	OPTIONS:	DMA1 DMA3	These options appear when parallel port is set to 'Enabled'.

PCI Configuration	Discussed on **p. 40**

3.2-A. Chipset Configuration screen

Options related to the graphics interface can be altered through this screen.

Graphics Aperture	**FORMAT:**	[*option*]	
	OPTIONS:	32MB 64MB 128MB 256MB 512MB 1GB None	Sets the size of the memory area reserved for storage of graphics data structures used by the AGP.

SERR Signal Condition	**FORMAT:**	[*option*]	
	OPTIONS:	None	ERR signals not output under any condition.
		Single bit	ERR signal output for a single bit
		Multiple bits	ERR signal output for multiple bits
		Both	ERR signal output for both instances.

ECC Config	**FORMAT:**	[*option*]	
	OPTIONS:	Disabled	No error checking.
		EC (single bit)	Error checking & status report enabled. Data not corrected.
		ECC (multiple bits)	Error checking & status report enabled. Data is corrected.
		ECC Scrub	Error checking & status report enabled. Data is corrected. Memory contents are corrected (scrubbed) after all reads with errors.

3.2-B. Keyboard Configuration screen

Options related to the keyboard can be altered through this screen.

NumLock	FORMAT:	[*option*]	
	OPTIONS:	Auto	'Auto' will have the BIOS taking control of the Num-Lock key at POST.
		On	NumLock will be on after POST.
		Off	NumLock will remain off after POST.

Keyboard auto-repeat rate	FORMAT:	[*option*]	
	OPTIONS:	30/sec 26.7/sec 21.8/sec 18.5/sec 13.3/sec 10/sec 6/sec 2/sec	Sets speed at which key-strokes will be input into the system.

Keyboard auto-repeat delay	FORMAT:	[*option*]	
	OPTIONS:	1/4 sec 1/2 sec 3/4 sec 1 sec	Sets speed at which key-strokes will initially be delayed from being input into the system.

3.2-C. I/O Configuration screen

Options related to the I/O interface can be altered through this screen.

PS/2 Mouse	FORMAT:	[*option*]	
	OPTIONS:	AutoDetect	BIOS will auto-detect the presence of a PS/2 mouse.
		Disabled	Disable any installed PS/2 mouse device.
		Enabled	Enable any installed PS/2 mouse device.

Floppy disk controller	FORMAT:	[*option*]	
	OPTIONS:	Enabled	Onboard floppy controller is enabled.
		Disabled	Onboard floppy controller is disabled.
		Auto	BIOS will detect the presence of a floppy controller.

3.2-D. PCI Configuration screen

Options related to the PCI slots can be altered through this screen.

Primary Video	FORMAT:	[*option*]	
	OPTIONS:	AGP PCI	Selects primary video boot device

PCI Device, Slot 1 (..2, 3, 4, 5)	FORMAT:	[*option*]	
	OPTIONS:	**Option ROM Scan** (Enable or Disable)	Enables or disables device expansion ROM.
		Enable Master (Enable or Disable)	Enables selected device as a PCI bus master. Not every device can function as a master. Check your device documentation.
		Latency Timer (0020h, 0040h, 0060h, 0080h, 00C0h, Default)	Sets the bus master clock rate. A device that has high priority and high throughput may benefit from a greater value.

3.2-E. PCI/PnP IRQ Exclusion screen

Options related to the PCI/PnP interrupts can be altered through this screen.

IRQ3 [..4, 5, 7, 10, 11]	FORMAT:	[*option*]	
	OPTIONS:	Available Reserved	Sets the availability of PCI IRQs to ISA devices. If set to 'Reserved', ISA devices are excluded from using the IRQ in question.

3.2-F. PCI/PnP UMB Exclusion screen

Options related to the upper memory buffer (UMB) can be altered through this screen.

C800 - CBFF CC00 - CFFF D000 - D3FF D400 - D7FF D800 - DBFF DC00 - DFFF	FORMAT:	[*option*]	
	OPTIONS:	Available Reserved	Sets the availability of the UMB address to ISA devices. If set to 'Reserved', ISA devices are excluded from using the UMB address in question.

3.3 Security Setup

Security options can be altered through this screen.

Set Supervisor Password	FORMAT:	[*press the [ENTER] key*]	
	OPTIONS:	[Enter]	Enter up to seven alpha-numeric characters. You will be asked to confirm the password. In related systems, features will be accessible only by users who use the supervisor password.

Password on boot	FORMAT:	[*option*]	
	OPTIONS:	Disabled Enabled	Enabling requires a pass-word on boot. Also requires prior setting of the supervisor password. If the supervisor password is set and this option is disabled, the BIOS assumes the user is boot-ing.

Fixed disk boot sector	FORMAT:	[*option*]	
	OPTIONS:	Normal	Disk is unrestricted.
		Write Protect	Write protect the boot sector on the fixed disk. Fixed disk will required a password to Fdisk or for-mat the drive.

Diskette Access	FORMAT:	[*option*]	
	OPTIONS:	Disabled Enabled	Enabling this feature will password-restrict diskette drive access.

3.4 Power Setup

Power management options can be altered through this screen.

ACPI Enabled	FORMAT:	[*option*]	
	OPTIONS:	No Yes	ACPI can be enabled or disabled using this option.

Power Savings	FORMAT:	[*option*]	
	OPTIONS:	Customized	User must define the power saving values.
		Maximum Power Savings Maximum Perfor-mance	Each of these options will pre-define power saving values for the user.
		Disabled	Turns off power manage-ment.

(*power setup, continued*)

	FORMAT:	[*option*]	
Standby Timeout	**OPTIONS:**	Off 1 Minute 2 Minute 4 Minute 6 Minute 8 Minute 12 Minute 16 Minute	Inactivity period required to put system in Standby (partial power shutdown).

	FORMAT:	[*option*]	
Auto Suspend Timeout	**OPTIONS:**	Off 5 Minutes 10 Minutes 15 Minutes 20 Minutes 30 Minutes 40 Minutes 60 Minutes	Inactivity period required after Standby to Suspend (maximum power shutdown).

	FORMAT:	[*option*]	
Resume on modem ring	**OPTIONS:**	On Off	Wakes up system when an incoming call is detected by the modem.

	FORMAT:	[*option*]	
Resume on time	**OPTIONS:**	On Off	Wakes up system at pre-set time.

	FORMAT:	[*00:00:00*]	
Resume Time	**OPTIONS:**	hours minutes seconds	Preset time to wake system up.

	FORMAT:	[*00/00/0000*]	
Resume Date	**OPTIONS:**	month day year	Preset date to wake system up.

http://www.tyan.com

3.5 Boot Setup

Boot settings can be altered through this screen. All options are arranged by vertical priority.

	FORMAT:	[*option*]	
(menu dependent on devices detected	OPTIONS:	(dependent on devices detected)	Each item detected as a removeable device, will be listed in this section. As the user presses the '+' key, the item will move up in priority. The item at the top will take first priority, the second item takes next highest priority, and so on.

3.6 Exit Menu

Selecting "Exit" will display this menu.

	FORMAT:	[*option*]	
Exit Saving Changes	OPTIONS:	Yes No	Saves changes to CMOS and exits BIOS setup.

	FORMAT:	[*option*]	
Exit Discarding Changes	OPTIONS:	Yes No	Discard any changes and then exit BIOS setup.

	FORMAT:	[*option*]	
Load Setup Defaults	OPTIONS:	Yes No	Loads preset defaults from CMOS.

	FORMAT:	[*option*]	
Discard Changes	OPTIONS:	Yes No	Discards all changes.

	FORMAT:	[*option*]	
Save Changes	OPTIONS:	Yes No	Saves all changes.

Chapter 4: System Resources

Note: If you experience problems with setting up your system, always check the following things in the following order:

MEMORY, VIDEO, CPU

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the Tyan website at **http://www.tyan.com**

4.1 Beep Codes

Fatal errors, which halt the boot process, are communicated through a series or audible beeps. For example, if the Phoenix BIOS POST can initialize the video but an error occurs, an error message will be displayed. If it cannot display video, it will convey a series of beeps.

If you hear one long beep followed by two short beeps, then a video problem has probably occured and the BIOS is having difficulty initializing the video display. Any other beep sequences that may or may not occur are probably due to memory problems.

4.2 Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, you must check the Tyan website: **http://www.tyan.com**

NOTE:	Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. Tyan does not have a policy of replacing BIOS chips directly with end users. In no event will Tyan be held responsible for damage done to the BIOS by the end user.

http://www.tyan.com

Appendix I: Glossary

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

AGP (Accelerated Graphics Port): 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 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

ATAPI (AT Attachment Packet Interface): also known as IDE or ATA; 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 HDDs.

ATX: the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 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, USB, serial, and parallel ports are built-in.

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

BBS (BIOS Boot Specification): is a feature within the BIOS that creates, prioritizes, and maintains a list of all Initial Program Load (IPL) devices, and then stores that list in NVRAM. IPL devices have the ability to load and execute an OS, as well as provide the ability to return to the BIOS if the OS load process fails for some reason. At that point, the next IPL device is called upon to attempt loading of the OS.

BIOS (Basic Input/Output System): the program that 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.

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

Bus: 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).

Cache: a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times, since the needed information is stored in the SRAM instead of in the slow 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 4GB 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 512KB of the main memory onboard is capable of being cached. However, only 512KB of this memory will be in the cache at any given moment. Any main memory above 512MB could never be cached.

Closed and open jumpers: jumpers and jumper pins are active when they are "on" or "closed", and inactive when they are "off" or "open".

CMOS (Complementary Metal-Oxide Semiconductors): chips that hold the basic startup information for the BIOS.

COM port: another name for the serial port, which is called as such 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).

DDR (Double Data Rate): is a technology designed to double the clock speed of the memory. It activates output on both the rising and falling edge of the system clock rather than on just the rising edge, potentially doubling output.

DIMM (Dual In-line Memory Module): faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

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

DMA (Direct Memory Access): channels that are similar to IRQs. DMA channels allow hardware devices (like soundcards 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-n-Play devices will take care of this for you.

Doze mode: in this mode, only the CPU's speed is slowed.

DRAM (Dynamic RAM): 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.

ECC (Error Correction Code or Error Checking and Correcting): allows data to be checked for errors during run-time. Errors can subsequently be corrected at the same time that they're found.

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

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

Fault-tolerance: a term describing a system where one component can quickly be replaced without causing a loss of service, such as in a **RAID** system.

Firmware: low-level software that controls the system hardware.

Form factor: an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX, although Tyan also makes some Baby-AT and ATX Footprint boards.

Global timer: onboard hardware timer, such as the Real-Time Clock (RTC).

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

HDD: stands for Hard Disk Drive, a type of fixed drive.

H-SYNC: controls the horizontal synchronization/properties of the monitor.

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

IDE (Integrated Device/Drive Electronics): a simple, self-contained HDD interface. It can handle drives up to 8.4 GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs), with maximum capacity determined by the hardware controller.

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

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

Initial Program Load (IPL): a feature built into BBS-compliant devices, describing those devices as capable of loading and executing an OS, as well as being able to provide control back to the BIOS if the loading attempt fails.

IPL: see **Initial Program Load**.

IRQ (Interrupt Request): 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. Plug-n-Play operating systems can take care of these details for you.

ISA (Industry Standard Architecture): a slower 8- or 16-bit bus (data pathway).

Latency: 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 it waiting for the peripheral to send some data back (peripherals tend to be slower than onboard system components).

Mirroring: see **RAID**.

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

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

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 (Peripheral Component Interconnect): a 32 or 64-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).

PCI PIO (PCI Programmable Input/Output) modes: the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, 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: 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.

http://www.tyan.com

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

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

PnP (Plug-n-Play): a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Novice end users can simply plug them into a computer that is running on a Plug-n-Play aware operating system (such as Windows 98), and go to work. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

PXE (Preboot Execution Environment): one of four components that together make up the Wired for Management 2.0 baseline specification. PXE was designed to define a standard set of preboot protocol services within a client, towards the goal of allowing networked-based booting to boot using industry standard protocols.

RAID (Redundant Array of Independent Disks): a way for the same data to be stored in different places on many hard drives. By using this method, the data is stored redundantly, also the multiple hard drives willl appear as a single drive to the operating system. RAID level 0 is is known as striping, where data is striped (or overlapped) across multiple hard drives, but offers no fault-tolerance. RAID level 1 is known as mirroring, which stores the data within at least two hard drives, but does not stripe. RAID level 1 also allows for faster access time and fault-tolerance, since either hard drive can be read at the same time. RAID level 0+1 is both striping and mirroring, providing fault-tolerance, striping, and faster access all at the same time.

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

ROM (Read-Only Memory): a storage chip which contains the BIOS; the basic instructions required to boot the computer and start up the operating system.

SDRAM (Synchronous Dynamic RAM): called as such 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.

Serial port: called as such 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 (<u>S</u>ingle <u>I</u>n-line <u>M</u>emory <u>M</u>odule): formerly the most common form of RAM for motherboards. They must be installed in pairs, and do not have the carrying capacity or the speed of DIMMs.

Sleep/Suspend mode: in this mode, all devices except the CPU shut down.

SRAM (<u>S</u>tatic <u>RAM</u>): unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster, and more expensive.

Standby mode: in this mode, the video and fixed disk drive (usually the HDD) shuts down; all other devices continue to operate normally.

Striping: see **RAID**.

UltraDMA/33/66/100: a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without the proper UltraDMA controller, your system cannot take advantage of the higher data transmission rates of the new UltraDMA/UltraATA HDDs.

USB (<u>U</u>niversal <u>S</u>erial <u>B</u>us): 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 (<u>V</u>ideo <u>G</u>raphics <u>A</u>rray): the PC video display standard.

V-SYNC: controls the vertical properties of the monitor.

ZIF socket (<u>Z</u>ero <u>I</u>nsertion <u>F</u>orce socket): these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and the metal level is pulled down. This shifts the processor over and down, guiding it into place on the board.

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. Furthermore, if you purchased your system from a dealer near you, you can actually bring your system to them to have it serviced, instead of attempting to do so yourself (which can have expensive consequences).

Help Resources:

1. See the FAQ and beep codes section of this manual.
2. See the Tyan website for FAQ, bulletins, driver updates, and other information: **http://www.tyan.com**
3. Contact your dealer 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.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may 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. Tyan will pay to have the board shipped back to you.

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 Candien des Communications dans les réglements d'inteférence radio.)

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

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

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