TYAN

Tomcat i815ef S2425

User's Manual
Revision 1.00

Table of Contents

Before you begin…

Check the box contents!

The retail motherboard package should contain the following:

1x Tomcat i815ef motherboard

1x 34-Pin floppy drive cable

1x Ultra-DMA-100/66/33 IDE cable

1x Tomcat i815ef user's manual

1x TYAN driver CD

1x I/O shield plate with dual LAN ports

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

Chapter 1: Introduction

1.1 Congratulations!

You are now the owner of the TYAN Tomcat i815ef motherboard. The TYAN Tomcat i815ef provides leading edge features and performance for systems based on the Flex ATX form factor. Utilizing the Intel 815e (B-Step) chipset, this system board supports Intel's Celeron, Pentium III as

In addition to flexible processor support, the Tomcat i815ef features dual LAN ports, perfect for supporting simultaneous connections to a network and a broadband communications device. This platform also features two DIMM sockets, two PCI slots, dual-channel UltraDMA-100, USB and more! *Please see TYAN's website for updates and information concerning CPU information and support:

http://www.TYAN.com

While the Tomcat i815ef is designed to fit into tight quarters, it also offers expansion options via two PCI slots. However, with all critical devices and tool built onboard already, the Tomcat i815ef cuts down on costs as well as time.

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 setting explanations.

1.2 Hardware Specifications

Processor
- Single PGA370 ZIF sockets
- Supports one Intel Celeron or Pentium III processor, including the new Tualatin CPU
- SDR bus support for 133MHz
- Integrated VRM (VRM 8.5 spec)

Chipset
- Intel i815e (B-Step) Chipset
- National PC87366 Super I/O ASIC

Memory
- Two 3.3v 168-pin DIMM sockets
- Supports up to 512MB of unbuffered PC133 SDRAM (only)

Expansion Slots
- 2 32-bit/33MHz PCI bus mastered slots (5V)

Integrated PCI IDE
- Two 40-pin IDE connectors for up to 4 devices
- PIO mode 3, 4, UltraDMA 33/66/100 support
- ATAPI, HDD, CDROM device support

Integrated LAN
- Two Intel 10/100 LAN controllers (per controller)
- One via 82599 controller and one via Intel's ICH2 (8252EM)

Integrated 2D/3D Graphics
- Onboard Intel 815e graphics accelerator
- Standard 15-pin analog VGA out

BIOS
- AMI 4Mb BIOS Flash ROM
- Fully Plug-and-Play
- APM 1.2/ACPI 1.0/PC99 compliant
- DMI 2.0 compliant
- Soft Power Down
- Multiple boot options

Form Factor
- Flex ATX footprint (9" x7.5" 228.6mmx190.5mm)
- One 20-pin ATX power connector
- Stacked USB (two) ports
- Stacked keyboard and mouse ports

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
- One IR Tx/Rx header
- 2 USB ports (additional via optional cable)
- PS/2 keyboard and mouse ports

Regulatory
- FCC DoC (declaration of Conformity)
- European Community of CE (declaration of Conformity)

1.3 Software Specifications

OS   Windows 9x/ME/NT/2000

Chapter 2: Board Installation

Installation

You are now ready to install your motherboard. The mounting hole pattern of the Tomcat i815ef matches the ATX system board specifications. Your chassis should support a standard ATX motherboard form factor.

How to install our products right… the first time

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 take when installing your motherboard:

(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch the power supply. For the safest conditions, Tyan recommends wearing a static safety wrist strap.
(2) Hold the motherboard by its edges and do not touch the bottom of the board.
(3) Avoid touching the motherboard components, IC chips, connectors, and leads.
(4) Avoid touching memory module contacts and IC chips
(5) Place the motherboard on a grounded antistatic surface or on the antistatic bag from which it came in.

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.

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

2.1 – Jumper Section

Pin outs for certain connectors are available on the Tyan website: http://www.tyan.com
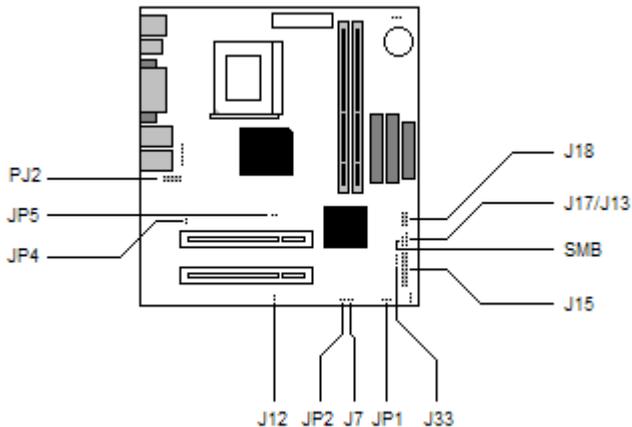
2.1a Front Panel Connector (J15)

Your chassis will usually come with connectors to install onto the motherboard, such as HDD and Power LEDs. The Front Panel Connector (J80) has been implemented for such purposes.

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

1,3: HD LED
2,4: Power LED
5,7: Reset Switch
6,8: Power Switch
11-17: Infra Red (IR) On/Off

2.6b – CMOS Reset (JP1)

1	2	3

1,2: Connect these two pins together to reset the CMOS settings in case an incorrect setting causes system instability or you have forgotten your system/setup password of have just flashed your BIOS.
- Power off the system and disconnect the power supply.
- Close pins 2 and 3 on JP1
- Wait about 5 seconds
- Close pins 1 and 2 on JP1
- Reconnect the power supply and power on the system

2.6c – Disable/Enable LAN1 (JP5)

1	2

Closed (default): LAN1 port is disabled.
Open: LAN1 port is enabled.

2.6d – Disable/Enable LAN2 (JP4)

Closed (default): LAN1 port is disabled.
Open: LAN1 port is enabled.

2.6e – Hard drive activity LED (J12)

Use this jumper to connect your chassis' hard drive LED.

2.6f – Flash Open (JP2)

Closed (default): Allows you to upgrade the onboard CMOS
Open: Prevents onboard CMOS from being upgraded

2.6g – COM2 connector (PJ2)

This connector allows you to use the supplied serial extension cable if you need to use more than 1 serial devices.

2.6h – Chassis Intrusion header (J7) [optional]

Use these connectors if your chassis has intrusion detection, otherwise, leave it as is.

2.6i–USB connector (J18)

This connector allows you to use your chassis' front panel USB connector if it comes with one.

If 3 and 4 are connected (default), the motherboard will use the onboard speaker for audio related purposes. If 3 and 4 are not connected, you may use you chassis' internal speaker. Either one will be fine.

2.6k –ACPI LED (J33)

Use this connector if your chassis has front LEDs for notification for sleep or suspend modes.

2.7 Mounting the motherboard

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

If your chassis has the studs integrated into the chasses wall, then you would only need to use screws (possibly included with your chassis) to install the motherboard. See 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 may 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
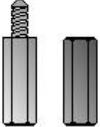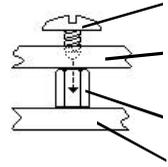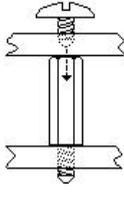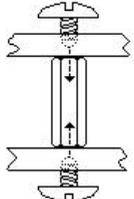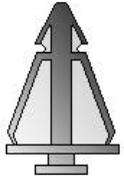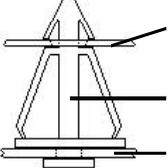
NOTE	The diagrams above are only representative of a few solutions for installing a motherboard into the chassis. The installation procedure for installing your motherboard into the chassis may differ.

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 SDRAM DIMM must be installed for the system to POST.
- Supports 128MB, 256MB, and 512MB PC133/100 SDRAM.
- All installed memory will be automatically detected.
- The motherboard supports up to 512MB of PC133 unregistered/unbuffered SDRAM memory.

Memory Installation Procedure

Step1: 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.
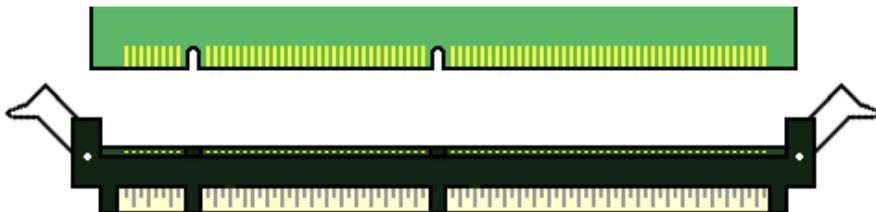
Step2: Insert the DIMM by pushing the module into the socket with even force Do not insert one end and then the other: install the whole module at once or you might bend the DIMM pins. Make sure the DIMM is securely seated.
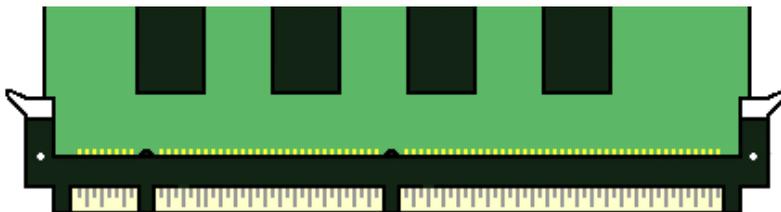
NOTE	Your memory modules may not look like those in the above diagram; they are used simply as examples.

Look 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 above details).

Removing a DIMM

Removing a DIMM is just the reverse: pull back the clips from the DIMM (see pictures on previous page), 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.
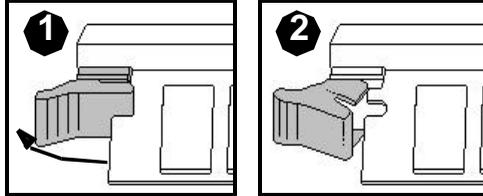
2.9 Installing the CPU and Cooling Fan

Intel Pentium III processors up to 1.13GHz 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 not 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 corresponding picture next to it to help guide you through the installation.

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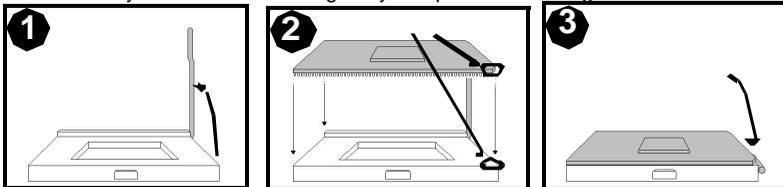
There are two beveled corners on the CPU, which will match the two angled corners on the socket. Careful install the CPU by lining both Pin 1 on the CPU and Pin 1 on the socket, making sure the pins actually fit into the socket. Do not force the CPU into the socket: check the pin alignment of the CPU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

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.

Installing the Cooling Fans

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 installing 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 the heatsink, 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.
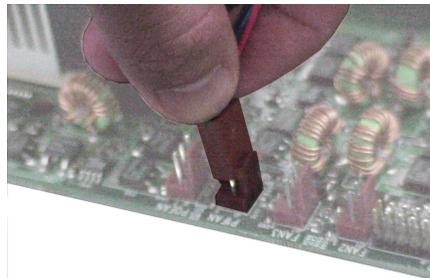
FAN		
1	2	3
Ground	+12V	Speed

Specifications	
Voltage	12V
Amperage	0.30A

NOTE	The FAN connector has a 12V, 0.30A limitation. Tyan takes no responsibility and will not be held liable for damage related to the misuse of any FAN jumper.

Alternatively, if you wish to also install chassis fans for increased cooling, headers are provided to power those fans as well. 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.

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
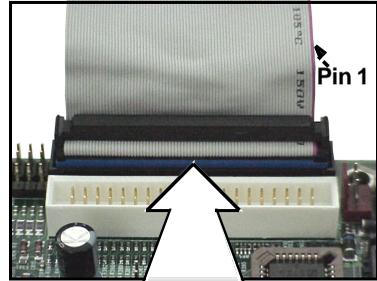
BLUE end goes to IDE connector

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.

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.

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

5.25" connector Colored stripe
indicates Pin 1
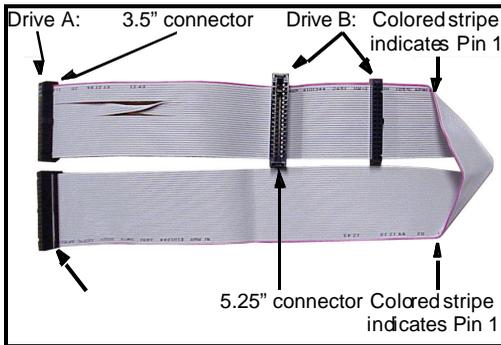
Figure 2.4*
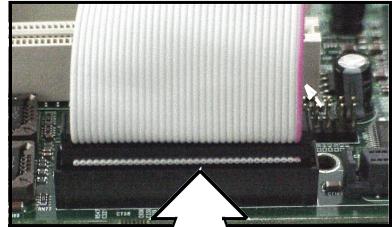
Match striped side with Pin 1

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.

2.11 Installing Add-in 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 five PCI slots can support a Master or Slave device.

- ALWAYS make sure the power supply is disconnected.

- 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 may 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 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.

Figure 2.1a:
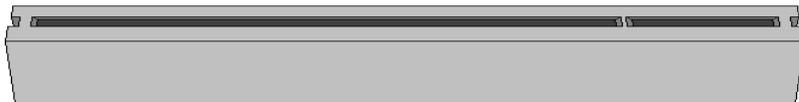
Then insert the expansion card as follows:

Figure 2.1b:
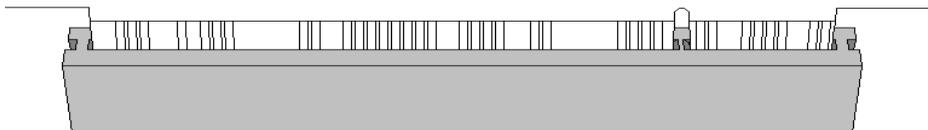
NOTE	*Your PCI slot may not look like those in the above diagrams; they are used simply as examples.

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.
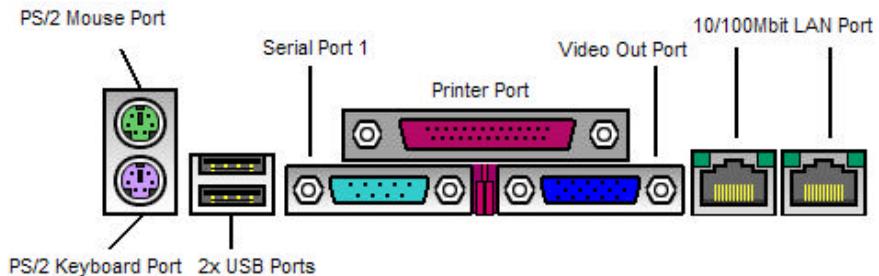
NOTE	On some Tomcat 2425 models, the ATX I/O stack may not look like the diagram above because some of the features are optional, it is only used for example purposes.

2.13 Connecting the power supply*

This motherboard requires the following:

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

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.
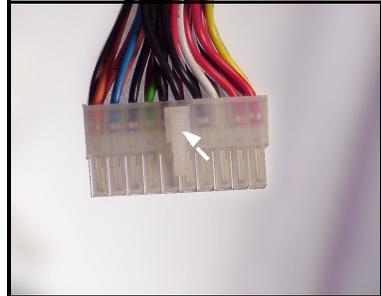
Step 2: Shown on the right, in Figure 2.4b, is the 20-pin connector plugged into the board*.

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.
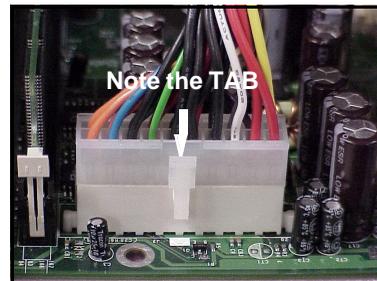
Figure 2.4b**

NOTE	Your ATX power connector may not look like those in the above diagram; they are used simply as examples.

2.14 You are done!

Other than checking the jumper settings and cable connections, and putting the case back together, you are done.

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 options such as our website and or technical support line.

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 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 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 will seek 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 selection
PgUp/PgDn Keys	Change highlighted selection

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 starting 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 machine turns off*.

The best advice is to alter only settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you're absolutely sure you need to. The Chipset defaults were carefully chosen by Tyan and or your system manufacturer for the best performance and reliability. Even a seemingly small change to anyone of the Chipset options without consideration, can cause your system to become unstable immediately or progressively.

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 options may or may not follow the same order listed in this manual. In addition, the final layout of all Setup options depends on your system designer. They can decide that certain items that are listed in the following pages remain hidden from user alteration.

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

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

3.2. Advanced Setup

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

3.2-A. Configure Nat366 Serial Port(s) and Parallel Port (Super I/O)

In this screen you can configure the different hardware ports available, change the status of the floppy controller, and more.

Onboard Floppy Controller	FORMAT:	[option]	
	OPTIONS:	Disabled Enabled	
	NOTES:	Enables or disables the onboard floppy controller.	

Serial Port Address	FORMAT:	[option]	
	OPTIONS:	Disabled #### (address)	
	NOTES:	You can enable the serial port through this option, and also by setting the address.	

Serial Port 2 Mode	FORMAT:	[option]	
	OPTIONS:	IR Normal	Selects the mode to use. IR = Infrared
	NOTES:	This option is only for Serial Port 2.	

Parallel Port Address	FORMAT:	[option]	
	OPTIONS:	Disabled ### (address)	
	NOTES:	You can enable the parallel port through this option, and also by setting the address.	

Parallel Port IRQ	FORMAT:	[option]	
	OPTIONS:	IRQ5 IRQ7	These options appear when the parallel port is enabled.

3.2-B. IDE Configuration

On bootup, the BIOS will attempt to detect all compatible devices on the IDE channel. If compatible devices are detected, options to control them wil be displayed in the associated IDE configuration screens.

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

Hard Disk Protect	FORMAT:	[option]	
	OPTIONS:	Disabled Enabled	
	NOTES:	Enables or disables the BIOS' ability to write to the IDE device.	

ATA(PI) Detect Time Out	FORMAT:	[option]	
	OPTIONS:	#	Sets the time that the BIOS will wait during IDE device detection, before determining that there are no devices available.

ATA(PI) 80Pin Cable Detection	FORMAT:	[option]	
	OPTIONS:	Host, Device Host & Device Disabled	
	NOTES:	Selects the process that the BIOS will use to detect the 80Pin ATA(PI) cable(s).	

Mode	FORMAT:	[option]	
	OPTIONS:	Normal	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.

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.	

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.	

Block (Multi-Sector Transfer)	FORMAT:	[#]	
	OPTIONS:	#, Auto	Number of sections transferred per block.
	NOTES:	All options are dependent on the drive.	

PIO 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:	Options are dependent on your drive. Please consult with your drive vendor for more info.	

DMA Mode	FORMAT:	[option]	
	OPTIONS:	[mode], Auto	Determines DMA mode for the IDE device. When set to Auto, the BIOS will determine the mode.
	NOTES:	All options are dependent on the drive.	

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.

32-bit Data Transfer	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.	

ARMD Emulation Type	FORMAT:	[option]	
	OPTIONS:	Disabled, [option], Auto	Specifies type of emulation for non-disk device on the primary IDE channel.
	NOTES:	All options are dependent on the drive.	

3.2-C. Floppy Configuration

In this screen, you can change options related to the Floppy Controller.

Floppy 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**.

Diskette Write Protect	FORMAT:	[option]	
	OPTIONS:	Disabled Enabled	
	NOTES:	Enables or disables the BIOS' ability to write to the floppy device.	
Floppy Drive Seek	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. Boot Settings Configuration

In this screen, you can change options related to the BIOS bootup.

Quick Boot	FORMAT:	[option]	
	OPTIONS:	Disabled Enabled	If Enabled, the BIOS will bypass some settings in order to boot up quicker.

Quiet Boot	FORMAT:	[option]	
	OPTIONS:	Disabled Enabled	When Disabled, normal POST messages will not appear at bootup time.

AddOnROM Display Mode	FORMAT:	[option]	
	OPTIONS:	Force BIOS Keep Current	Specifies the system display mode at time of booting an optional ROM.

Bootup Num-Lock	FORMAT:	[option]	
	OPTIONS:	Disabled Enabled	When Disabled, Num-Lock will not be activated at bootup.

Bootup CPU Speed	FORMAT:	[option]	
	OPTIONS:	High Low	Sets speed of CPU at bootup time.

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.

Typematic Rate	FORMAT:	[option]	
	OPTIONS:	# Fast	Sets speed that the system will accept keyboard input.

System Keyboard	FORMAT:	[option]	
	OPTIONS:	Disabled Enabled	Sets whether the system should detect if a keyboard is present.

Primary Display	FORMAT:	[option]	
	OPTIONS:	VGA/EGA CGA40, CGA80 MONO	Sets video display mode at bootup time.

	FORMAT:	[option]	
Parity Check	OPTIONS:	Enabled Disabled	Sets whether the memory will be checked at bootup for errors.

	FORMAT:	[option]	
Boot to OS/2	OPTIONS:	Yes No	Sets whether the system is booting to OS/2 or not.

	FORMAT:	[option]	
Wait for F1 if error	OPTIONS:	Enabled Disabled	Sets whether the system should wait for user input if an error occurs.

	FORMAT:	[option]	
Hit DEL Message Display	OPTIONS:	Enabled Disabled	Sets whether the system will show the BIOS entry key at bootup.

	FORMAT:	[option]	
Internal Cache	OPTIONS:	Write-Back Disabled	Sets the type of caching algorithm to use for the L1 cache.

	FORMAT:	[option]	
External Cache	OPTIONS:	Write-Back Disabled	Sets the type of caching algorithm to use for the L2 cache.

3.2-E. Event Log Configuration

In this screen, you can change options related to the logging of ECC events.

	FORMAT:	[option]	
Event Logging	OPTIONS:	Disabled Enabled	Sets whether events should be logged into memory or not

	FORMAT:	[option]	
ECC Event Logging	OPTIONS:	Disabled Enabled	On the Tomcat i815T, ECC events are not logged.

	FORMAT:	[option]	
Clear All Event Logs	OPTIONS:	Yes No	Setting this to Yes will cause all events to be cleared from memory.

	FORMAT:	[option]	
View Event Log	OPTIONS:	[ENTER]	Shows you the event log.

	FORMAT:	[option]	
Mark All Events As Read	OPTIONS:	[ENTER]	By using this option, the events in the Event Log can be organized.

3.3. Chipset Configuration screen

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

	FORMAT:	[option]	
Processor Serial Number	OPTIONS:	[varies]	Identifies the CPU (not user configurable)

	FORMAT:	[option]	
CPU and DRAM Frequency*	OPTIONS:	Auto [other]	Sets ratios for the CPU and DRAM frequencies.

	FORMAT:	[option]	
CPU Latency Timer	OPTIONS:	[option] Disabled	Reserved for debugging purposes.

	FORMAT:	[option]	
C000 - C400, 16k Shadow	OPTIONS:	Cached/WP [other]	Specifies how the 16k of Video ROM is treated at the listed address.

	FORMAT:	[option]	
C800 - DC00, 16k Shadow	OPTIONS:	Cached/WP [other]	Specifies how the 16k of Video ROM is treated at the listed address.

3.3-A. GMCH Configuration screen

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

	FORMAT:	[option]	
Primary Video Device	OPTIONS:	Auto [other]	Sets the primary device for video output.

	FORMAT:	[option]	
Internal Graphics Mode Select	OPTIONS:	Enabled, 1MB [other]	Enables or disables the internal video device.
	FORMAT:	[option]	
Display Cache Window Size	OPTIONS:	###MB	Sets amount of cache available for the graphics local memory window.

* Not validated at time of print, please check the Tyan website for updates: http://www.tyan.com
  NOTE: Tyan will not be held liable for any damage incurred from ANY alteration of this setting from its default value.

Display VBIOS Message	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or disables the video BIOS message.

Internal Graphics Scaling	FORMAT:	[option]	
	OPTIONS:	Auto [other]	Sets the scaling process for the internal video device.

Internal Graphics TV Format	FORMAT:	[option]	
	OPTIONS:	NTSC PAL [other]	Sets the type of video standard for your country.

Output Device Sync / Non-sync	FORMAT:	[option]	
	OPTIONS:	Synchronous Non-Synchronous	Set this according to your video monitor type.

Digital Device Priority	FORMAT:	[option]	
	OPTIONS:	[other, dependent]	Sets order of priority for video output devices.

AGP Graphics Aperture Size	FORMAT:	[option]	
	OPTIONS:	##MB [other]	Sets maximum memory aperture size for onboard AGP port.

Init Display Cache Memory	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	If Enabled, display cache will be initialized at time of system boot.

Paging Mode Control	FORMAT:	[option]	
	OPTIONS:	Open Close	Enable or Disable the paging mode.

RAS-to-CAS Override	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled [other]	Enables or Disables the delay override.

CAS Latency	FORMAT:	[option]	
	OPTIONS:	Slow [other]	Sets number of SCLKs between Read by DRAM and Read by Whitney.

RAS Timing	FORMAT:	[option]	
	OPTIONS:	Slow [other]	Sets clock frequency for RAS and RC.

System Memory Frequency	FORMAT:	[option]	
	OPTIONS:	Auto	Sets frequency of
		[other]	onboard DIMM memory.

SDRAM Refresh	FORMAT:	[option]	
	OPTIONS:	Auto	Sets interval between
		[other]	refresh signals to the
			SDRAM.

DRAM Cycle Time (SCLKs)	FORMAT:	[option]	
	OPTIONS:	Auto	Sets length of DRAM
		[other]	cycle time in SCLKs.

RAS# to CAS# Delay (SCLKs)	FORMAT:	[option]	
	OPTIONS:	Auto	Sets delay time between
		[other]	RAS and CAS signals of
			the DRAM access cycle.

RAS Pre-charge	FORMAT:	[option]	
	OPTIONS:	Slow	Sets clock frequency for
		[other]	RAS and RP.

RAS# Precharge (SCLKs)	FORMAT:	[option]	
	OPTIONS:	Auto	Sets length of time for
		[other]	RAS precharging during
			memory access cycle.

DRAM Page CLosing Policy	FORMAT:	[option]	
	OPTIONS:	Open	Sets whether DRAM
		[other]	pages should be closed
			after use.

Memory Hole	FORMAT:	[option]	
	OPTIONS:	Enabled	If Enabled, a certain
		Disabled	memory portion is made
			off-limits to ISA bus.

3.3-B. ICH Configuration screen

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

ICH Positive Decode*	FORMAT:	[option]	
	OPTIONS:	Disabled	Sets type of ICH decode
		[other]	used.

CPU BIST Enable*	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables CPU BIST function.

ICH DCB*	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables DCB function.

ICH Dev31 Func(3,5,6) Enable*	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables ICH device listed.

LPC 4Eh-4Fh Decode*	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	If Enabled, a certain memory portion is made off-limits to ISA bus.

DMA-(0,1,2,3,5,6,7) Type*	FORMAT:	[option]	
	OPTIONS:	LPC DMA [varies]	Specifies the bus that the specified DMA channel can be used on.

3.4. PCI / PnP Configuration screen

Options related to the PCI Plug-n-Play interface can be altered through this screen.

Plug & Play O/S	FORMAT:	[option]	
	OPTIONS:	Yes No	Indicates whether a PnP OS is being used or not.

Reset Configuration Data	FORMAT:	[option]	
	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.	

PCI Latency Time	FORMAT:	[option]	
	OPTIONS:	##	Specifies latency timing for PCI devices.

http://www.tyan.com

Allocate IRQ to PCI VGA*	FORMAT:	[option]	
	OPTIONS:	Yes [other]	Sets whether PCI devices recognize another type of VGA adapter.

Palette Snooping	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	If Enabled, multiple VGA devices on different buses will function correctly.

PCI IDE Bus Master	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Specifies whether PCI IDE device has bus mastering capability.

Offboard PCI/ISA IDE Card	FORMAT:	[option]	
	OPTIONS:	Auto [other]	Specifies if an offboard PCI IDE controller card is installed.

USB Function	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables USB functionality.

Legacy USB Support	FORMAT:	[option]	
	OPTIONS:	Auto [other]	Enables legacy USB support.

IRQ (3,4,5,7,9,10,11,14,15)	FORMAT:	[option]	
	OPTIONS:	Available [other]	Specifies if the listed IRQ is usable by PCI / PnP devices.

DMA Channel (0,1,3,5,7)	FORMAT:	[option]	
	OPTIONS:	Available [other]	Specifies if the listed DMA channel is usable byPCI / PnP devices.

Reserved Memory Size	FORMAT:	[option]	
	OPTIONS:	Disabled [other]	Specifies size of memory area resereved for legacy ISA devices.

3.5 Power Configuration screen

Power management options can be altered through this screen.

ACPI Aware O/S	FORMAT:	[option]	
	OPTIONS:	No Yes	Indicates if the O/S can manage power functions or not.

Repost Video on S3 Resume	FORMAT:	[option]	
	OPTIONS:	No Yes	Sets whether or not to repost the video on S3 power state (hibernation).

Power Management / APM	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enable or Disable power management functions.

Standby Timeout	FORMAT:	[option]	
	OPTIONS:	Disabled [other]	Set time that system will wait for inactivity before going to Standby mode.

Suspend Power Saving Type	FORMAT:	[option]	
	OPTIONS:	S1 [other]	Set type of power saving mode for Suspend mode.

Suspend Time Out	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Set time that system will wait for inactivity before goging to Suspend mode.

Power Button Mode	FORMAT:	[option]	
	OPTIONS:	On/Off Suspend	Set function for external power button.

After G3 Enable	FORMAT:	[option]	
	OPTIONS:	Disabled Enabled	Enable or Disable After G3 function.

Green PC Monitor Power State	FORMAT:	[option]	
	OPTIONS:	Suspend [other]	Sets power state for the green PC-compliant moni- tor (if present).

Video Power Down Mode	FORMAT:	[option]	
	OPTIONS:	Suspend [other]	Set power state for video subsystem after period of inactivity ends.

Hard Disk Power Down Mode	FORMAT:	[option]	
	OPTIONS:	Suspend [other]	Set power state for hard disk drive after period of inactivity ends.

Hard Disk Time Out (minute)	FORMAT:	[option]	
	OPTIONS:	Disabled [other]	Sets time that the system will wait before hard disk enters power save state.

Display Activity	FORMAT:	[option]	
	OPTIONS:	Ignore [other]	Sets event monitoring on video display.

Manual Throttle Ratio	FORMAT:	[option]	
	OPTIONS:	50% [other]	Sets speed at which system clock runs in Standby mode.

THRM Throttle Ratio	FORMAT:	[option]	
	OPTIONS:	50% [other]	Adjusts THRM throttle ratio.

Intruder Sel*	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Sets Intruder Sel function onboard.

Thermal SMI Enable	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables Thermal SMI functionality.

PME SMI Enable	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables PME SMI functionality.

SW SMI Timer Enable	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables SW SMI functionality.

TCO Logic SMI Enable	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables of Disables TCO Logic SMI functionality.

SLP SMI Enable	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables SLP SMI functionality.

RTC Resume	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables RTC's ability to trigger system resume.

AC97 Logic Resume	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables AC'97 Logic's ability to trigger system resume.

USB Controller Resume	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables USB's ability to trigger system resume.

PME Resume	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables PME's ability to trigger system resume.

RI Resume	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables RI's ability to trigger system resume.

SMBus Resume	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables SMBus' ability to trigger system resume.

3.6 Boot Configuration screen

Boot options can be altered through this screen.

(menu dependent on devices detected	FORMAT:	[option]	
	OPTIONS:	(dependent on devices detected)	Hard disk drives, Removeable drives, and ATAPI CD-ROM drives can be re-ordered in boot priority through this menu. The first item listed a (or moved to) the top will take precedence over the devices listed after the first item.

3.7 Security Configuration screen

Security options can be altered through this screen.

Change Supervisor Password	FORMAT:	[option]	
	OPTIONS:	[ENTER]	Changes the password for the Supervisor (6 letter and/or number limit).

Change User Password	FORMAT:	[option]	
	OPTIONS:	[ENTER]	Changes the password for the User (6 letter and/or number limit).

Clear User Password	FORMAT:	[option]	
	OPTIONS:	[ENTER]	Clears the password for the User.

Boot Sector Virus Protection	FORMAT:	[option]	
	OPTIONS:	Enabled Disabled	Enables or Disables protection against boot sector viruses.

3.8 Exit screen

Exit and BIOS-related loading options are available through this screen.

Exit Saving Changes	FORMAT:	[option]	
	OPTIONS:	[ENTER]	Save changes and exit the BIOS setup.

Exit Discarding Changes	FORMAT:	[option]	
	OPTIONS:	[ENTER]	Exit BIOS setup without saving any changes.

Load Optimal Defaults	FORMAT:	[option]	
	OPTIONS:	[ENTER]	Loads default settings for BIOS Optimal system setup.

Load Failsafe Defaults	FORMAT:	[option]	
	OPTIONS:	[ENTER]	Loads default settings for BIOS Failsafe system setup.

Discard Changes	FORMAT:	[option]	
	OPTIONS:	[ENTER]	Disregard all changes made; reset all settings back to stored values.

4.0 Installing the hard drives

Hard drives must be of the Fast ATA-2, EIDE, or UltraDMA-33/66/100 type. For best performance, we recommend that you use drives of identical model and capacity. By matching drives, you ensure compatibility as well. If you are planning to use an UDMA-66 or 100 drive, you must use an UltraDMA-66/100 cable (Tyan has included that cable with the motherboard).

Step 1: The first step is to set the hard drive to Master, Slave, or Cable Select setting, and install them according to the table below. Note: Sometimes the Master drive with no Slave attached is called "single". The Master/Slave setting differentiates two drives connected on the same cable. **NOTE: Check your HDD documentation for master, slave, and cable select settings**.

Jumper Settings (see your HDD documentation for jumper settings)		
# of Drives	IDE Channel 1	IDE Channel 2
1	M	-
2	M	M
3	M & S	M
4	M & S	M & S

M=Master, S=Slave

Step 2: Next, you should install the drives into your system, and connect the power. Attach one UltraDMA cable (black connector) to each drive (if you have a Slave drive, connect that drive to the second connector (grey connector) on the UltraDMA cable). Make sure that Pin 1 on the cable (indicated by the colored stripe) is connected to Pin 1 of the hard drive. See Figure I-1 (to the right) for an example.

Step 3: The blue end of the cable (see Figure I-2 to the right for an example) goes to the Primary or Secondary connector on the motherboard (see p. 7 for location). Make sure Pin 1 of the ATA-100/66 cable connects to Pin 1 of the Primary IDE connector (see p. 7 for location). Check all connections after completing this step, before you continue to the next part of the installation.
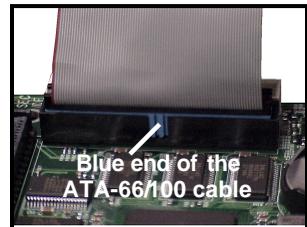

Blue end of the ATA-66/100 cable

Figure I-2

Chapter 5: 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.

5.1 Beep Codes

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

If you hear one long beep followed by two short beeps, then a video problem has probably occurred 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. If calling Tyan Tech Support, be sure that you know how many beeps your board made, and how long the beeps were. Also have other information such as your attached add-in cards, drives and OS to help speed up the support process and come to a possible solution faster.

5.2 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 even 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 even will Tyan be held responsible for damage done to the BIOS by the end user.

Appendix: 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.

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).

SCSI Interrupt Steering Logic (SISL): Architecture that allows a RAID controller, such as AcceleRAID 150, 200 or 250, to implement RAID on a system board-embedded SCSI bus or a set of SCSI busses.

SIMM (Single In-line Memory Module): formally 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 DIMM modules.

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

SDRAM (Static RAM): 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 hard drives shut 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 proper UltraDMA controller, your system cannot take advantage of higher data transfer rates of the new UltraDMA/UltraATA hard drives.

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

VGA (Video Graphics Array): the PC video display standard

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

ZIF Socket (Zero Insertion Force 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 a lever is pulled down. This shift the processor over and down, guiding into the board and locking it into place.

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.

FC

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 the receiver.
- Plug the equipment into an outlet on a circuit different from that of the receiver.
- Consult the dealer on 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 norms de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'ineteference radio.)

CE 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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