Tiger i7501 /// S2723

Revision 1.02

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Before you begin…

Check the box contents!

The retail motherboard package should contain the following:


1x Tiger i7501 S2723 motherboard


2x CPU retention modules


2x CPU Back-plates with screws


1x 34-Pin floppy drive cable


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


1x Tiger i7501 S2723 User's Manual


1x Tiger i7501 S2723 Quick Reference


1x TYAN driver CD


1x I/O shield

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 have purchased one of the most powerful Dual Intel processor solutions, the Tiger i7501 S2723. Based on Intel's E7501 chipset, the Tiger i7501 S2723 is **Hyper-Threading** ready - utilizing onboard resources so that a second thread of data can be processed in a single processor. Compatible with both ATX12V and EPS12V power supplies, this platform offers convenient remote Intelligent Platform Management Interface (IPMI) monitoring through a Server Management Daughter Card. The Tiger i7501 also features an ATX form factor, Gigabit Ethernet port, Fast Ethernet port, and an onboard ATI 8MB PCI RAGE XL VGA, which provides an advanced and versatile solution for your server needs.

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

Processors

- Dual mPG604 ZIF Socket
- Supports one or two Intel Xeon processors with 512KB of integrated L2 cache
- Onboard 4-phase VRM (VRM 9.1 spec)
- Front-Side Bus support for 533 & 400MHz

Chipset

- Intel E7501 server chipset
- MCH + ICH3 + P64H2 + FWH
- Intel P64H2 supports two PCI-X buses
- Winbond W83627HF Super I/O chip
- Winbond W83782D hardware monitoring chip

Memory

- Four 184-pin 2.5-Volt DDR DIMM sockets
- Supports up to 8GB of Registered DDR200/266 (PC1600/PC2100)
- Dual or single channel memory bus
- Supports only Registered ECC type memory modules

Expansion Slots

- 3 independent PCI-X/PCI buses
- Two 64-bit 133/100/66MHz (3.3V) PCI-X slots
- Two 32-bit 33MHz (5V) PCI slot
- Total of four usable slots

Integrated PCI IDE

- Provides two PCI bus master channels for up to four Enhanced IDE devices
- Support for UDMA 33/66/100 IDE drives and ATAPI compliant devices

Integrated LAN Controllers

- Intel 82545EM Gigabit Ethernet controller (not included with GN version)
  - One RJ-45 LAN connector with LEDs
  - Connected to a PCI-X bus
  - 4-pin external activity/link LED header

- Intel 82551QM Fast Ethernet controller
  - One RJ-45 LAN connector with LEDs
  - 4-pin external activity/link LED header

Intelligent Platform Management Interface (Manufacturing Option)

- QLogic Zircon Baseboard Management Controller (BMC) based on powerful ARM7 technology
- Tailored for IPMI highest 1.5 specifications
- Supports KCS and BT styles
- Supports flexible Windows and Linux based Management Solution
- Supports RMCP and SNMP protocols
- Supports ASF standard and EMP
- I^2C serial multi-master controllers and UARTs
- Built-in IPMB connector
- Supports remote Power on/off and reset support (IPMI-over-LAN)
- Server Management Daughter card connection via a built-in 2x25 header

Integrated 2D/3D Graphics

- ATI RAGE XL PCI graphics controller
- 8MB Frame Buffer of video memory

Integrated I/O

- One floppy connector supports up to two drives
- Two 9-pin serial ports (one connector and one header)
- One 25-pin ECP/EPP/SPP parallel port header
- Four USB 1.1 ports (2 rear connectors and 2 headers) *
- PS/2 mouse and keyboard connectors

BIOS

- AMI BIOS 8.0 on 4Mbit Flash ROM
- LAN remote boot (PXE) and SMBIOS v2.3 support
- BIOS Boot Specification v3.1 (BBS) support
- Auto configuration of IDE hard disk types

Form Factor

- ATX footprint (12" x 9.8")
- ATX12V/EPS12V power connector
- One serial connector, & one VGA connector
- Stacked USB (two) connectors
- Stacked PS/2 mouse and keyboard connectors
- Two RJ-45 Side-by-side connectors with LEDs (GN version has one RJ45)

Regulatory

- FCC Class B (Declaration of Conformity)
- European Community CE (Declaration of Conformity)

*** Please see page 32 for instructions on how to enable internal USB ports**

System Management*

- Total seven 3-pin fan headers
- Six fan headers with tachometer monitoring
- One 2-pin Chassis Intrusion header
- Temperature, voltage and fan monitoring
- Watchdog timer

Hyper-Threading Support In:

Windows 2000 Server
Windows 2000 Advanced Server
Windows XP Pro
Windows NT 4.0 Server
Linux (Kernel 2.4.18)
Windows Sever 2003

TYAN reserves the right to add support or discontinue support for any OS with or without notice.

***** See Appendix III (Pg 47) for details on Tyan SMDC

Chapter 2: Board Installation

Installation

You are now ready to install your motherboard. The mounting hole pattern of the Tiger i7501 S2723 matches the ATX specification. Before continuing with installation, confirm that your chassis supports a standard ATX motherboard.

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 that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

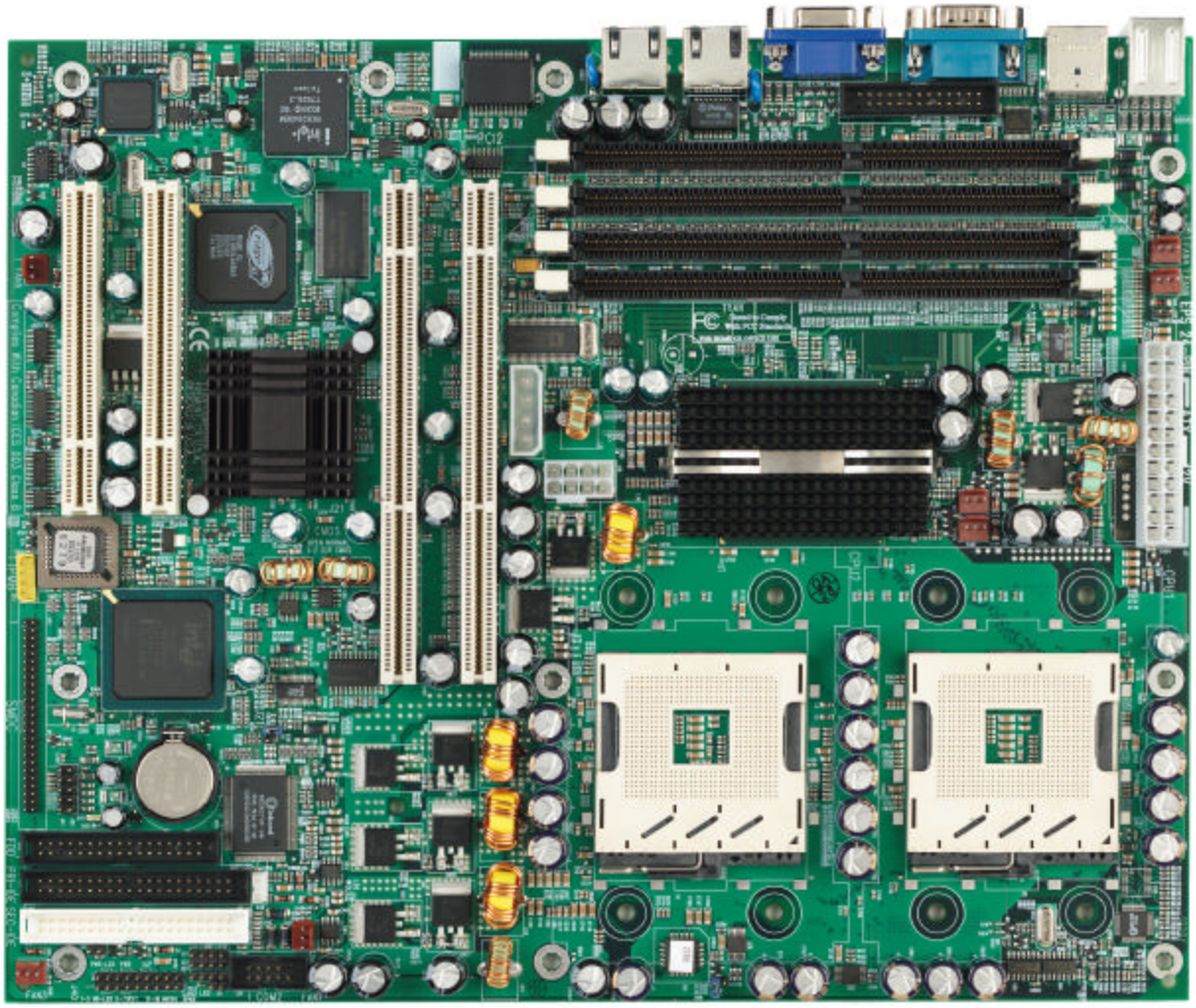
(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, Tyan recommends wearing a static safety wrist strap.
(2) Hold the motherboard by its edges and do not touch the bottom of the board, or flex the board in any way.
(3) Avoid touching the motherboard components, IC chips, connectors, memory modules, and leads.
(4) Place the motherboard on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
(5) Inspect the board for damage.

The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.

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

2.1 – Board

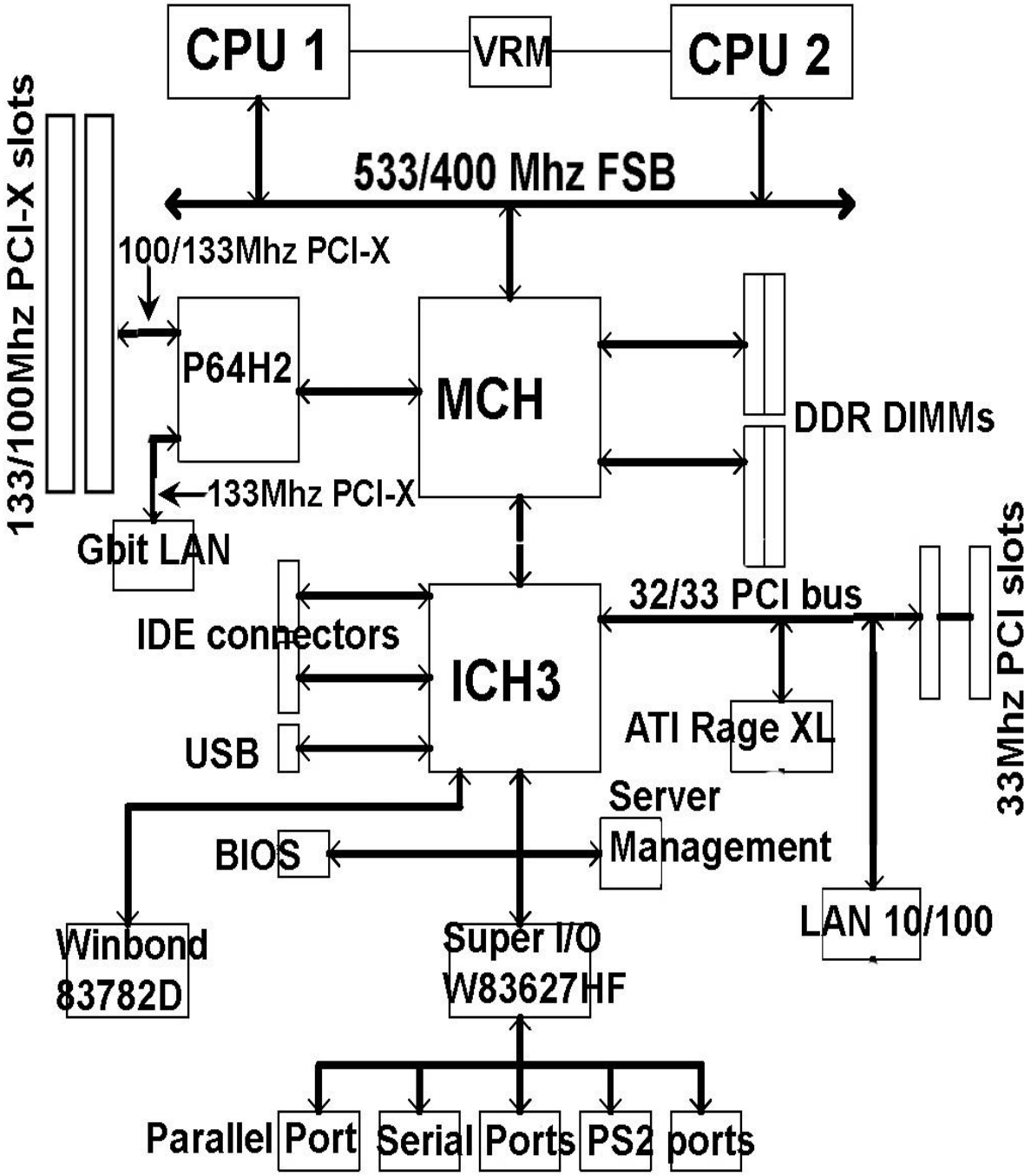
The following is an image of the Tiger i7501 S2723GNN.



The above photograph is purely representative. Due to engineering updates and new board revisions, certain components may change and or be repositioned. The picture above may or may not look exactly like the board you received.

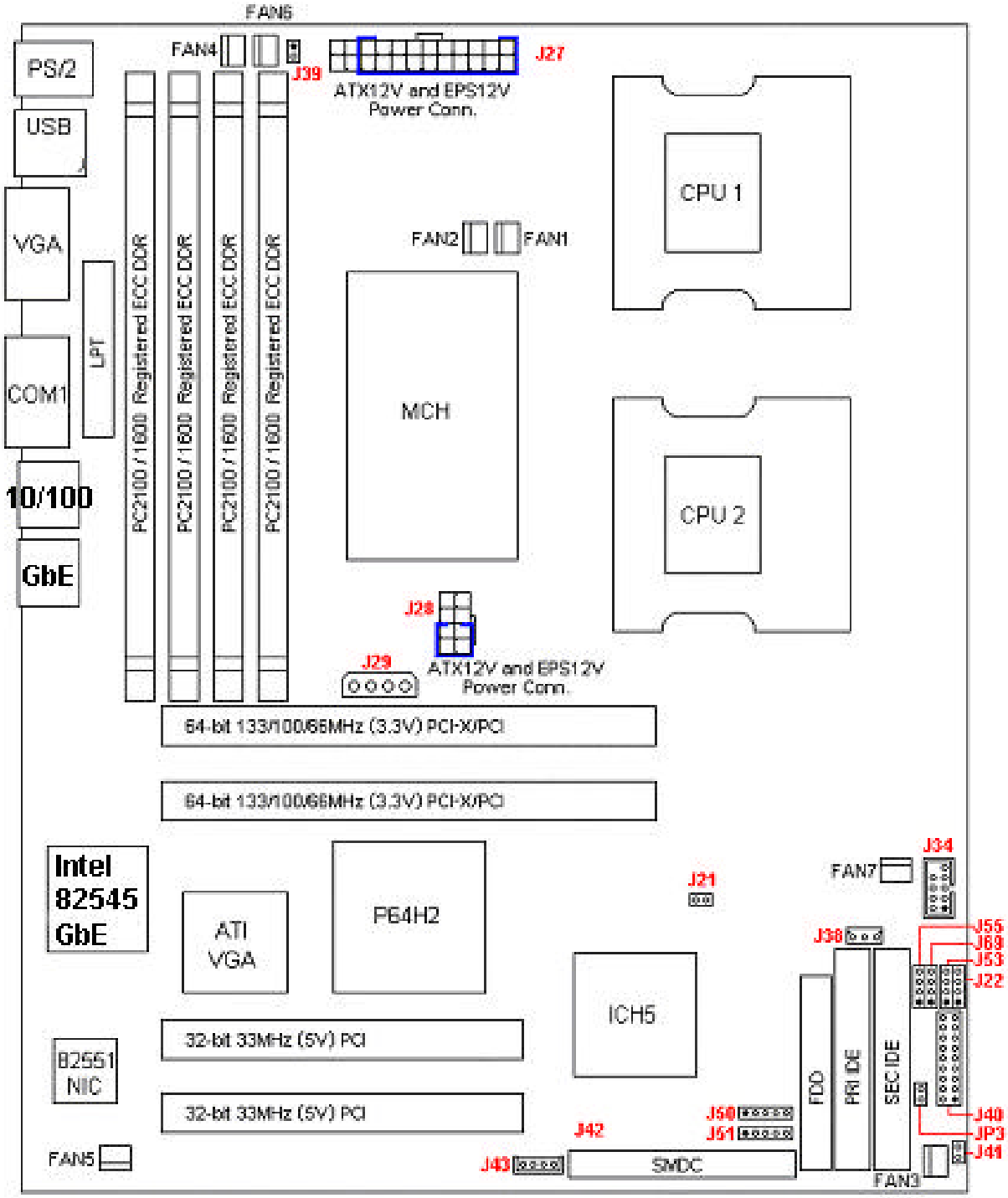
The following page will shows the S2723 Block Diagram. You can see the PCI-X/PCI bus assignment.

2.2 – Block Diagram of S2723



The following page includes details on the vital components of this motherboard.

2.3 – Board Jumpers, LEDs, and Fans



This jumper diagram is only a representation of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the above diagram.

2.4 – Jumper Settings

Jumper	Function	Ref. Page
J21	CMOS Clear	Page 11
J22	External speaker header	N/ A
J34	Serial Port internal header	N/A
J38 *	Wake On LAN	See below
J39* **	Hardware Monitor LED (Reserved)	See below
J40	Front panel connector	Page 12
J41**	Hard disk activity LED external input	See below
J42	SMDC (Server Management Daughter Card) connector	Page 47/50
J43* **	I^2C bus connector (Reserved)	See below
J50	USB header #2	Page 32/50
J51	USB header #3	Page 32/50
J53	Intel 82545EM GbE NIC 4-pin external LAN activity/link LED header	Page 41/49
J55	Intel 82551 4-pin external LAN activity/link LED header	Page 41/49
JP3	FAN 3 current rate select	Page 13

* WOL is only supported by LAN1 (82551, 10/100 Mbps)

**** J41 is an LED INPUT. The idea is to run a wire from the activity LED output header of any plug-in HD controller card (e.g. a RAID card) to the motherboard, so that the card's LED can be "combined " with the IDE and SCSI activity indicators on the motherboard and then driven to the J40 HD LED output. In other words, when a card's LED lights up, so will the front-panel hard-disk activity indicator. This is useful for chassis that have only a single LED to indicate HD activity from multiple controller sources. (Pin 1 = negative terminal of the add-on card's LED header, Pin 2 = do not connect.)

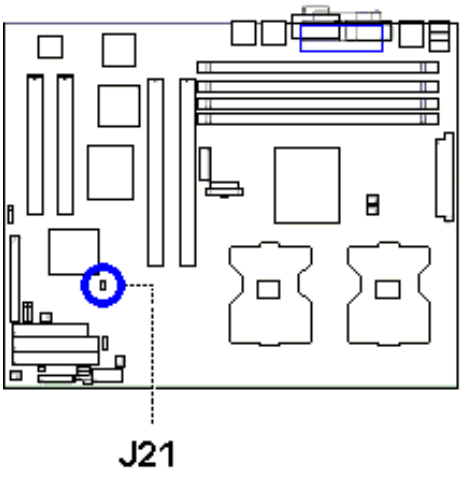
***** These jumpers are reserved.**

2.5 – Jumper Definitions

Jumper Example

	Jumper OFF – open (without pin)
	Jumper ON – closed (with pin)

CMOS Reset (J21)



1



Clear CMOS

1

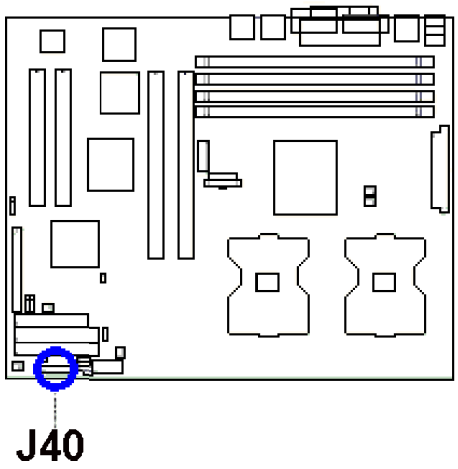


Normal
(with a spare jumper cap)

You can reset the CMOS settings in case an incorrect setting causes system instability or you have forgotten your system/setup password or have just flashed your BIOS by using these jumpers.

- Power off system, disconnect power supply from motherboard
- Set jumper J21 to Clear CMOS
- Wait about 5 seconds
- Set jumper J21 to Normal

Front Panel Connector (J40)

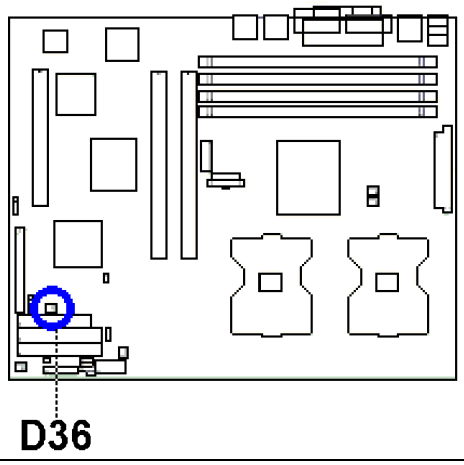




Your chassis will usually come with connectors to install onto the motherboard, such as HD and Power LEDs. The Front Panel Connector (J40) has been implemented for such purposes.

HD LED Header	= Pin 1 & 3
Power LED Header	= Pin 2 & 4
Power-On Switch	= Pin 6 & 8
Reset Switch	= Pin 5 & 7
Chassis Intrusion Header	= Pin 17 & 18

2.6 – LED Information



LEDs	Description
D36	Power LED

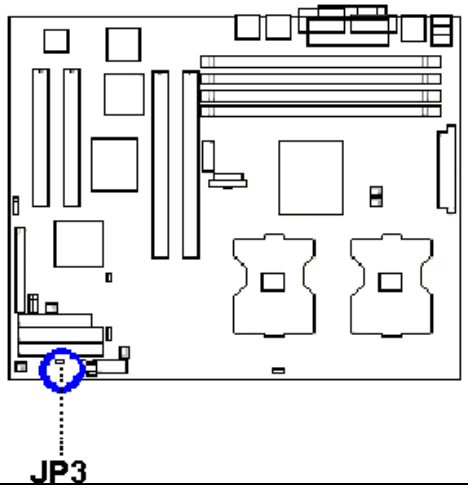
This LED functions as pins 2 & 4 in J40 above. Using those pins you can connect to the Chassis Power LED wire.

2.7 – Fan Header Information

Fan #	Fan Description	Functions	**Amp Rated** (Maximum)
1	CPU 2 Fan	RPM Read and controlled	1.2A
2	CPU 1 Fan	RPM Read and controlled	1.2A
3	Chassis Fan 3	RPM Read and controlled*	1.2A or 2A*
4	Chassis Fan 4	RPM Read	1.2A
5	Chassis Fan 5	RPM Read	1.2A
6	Chassis Fan 6	RPM Read	1.2A
7	Chassis Fan 7	None	2A

* Fan3 can support a fan up to 2 Amperes current by setting JP3 jumper.

FAN3 Current Rate Select (JP3)





Normal

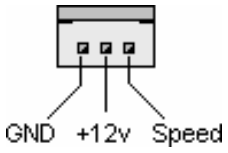


Up to 2 Amp on FAN3

Jumper open = FAN3 supports RPM read and fan control. FAN3 current rate is up to 1.2 Amperes.

Jumper closed = FAN3 supports RPM read, but no fan control. FAN3 current rate is up to 2 Amperes.

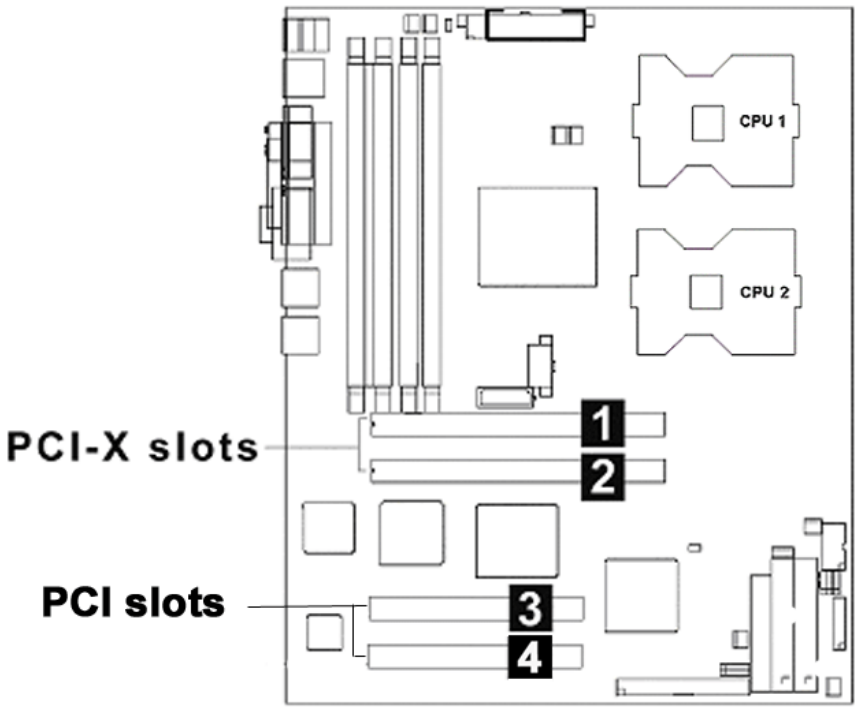
FAN connectors



Use these headers to connect cooling fans, both chassis and processor fans, to your motherboard. Cooling fans help keep the system more stable and operating reliably for its product life.

+12V fans supported

2.8 – PCI Setup



Slot (1, 2): 64-bit 133/100/66MHz (3.3V) PCI-X / PCI
- 3.3 volt cards accepted

Slot (3, 4): 32-bit 33MHz (5V) PCI
- 5 volt and 3.3 volt cards accepted

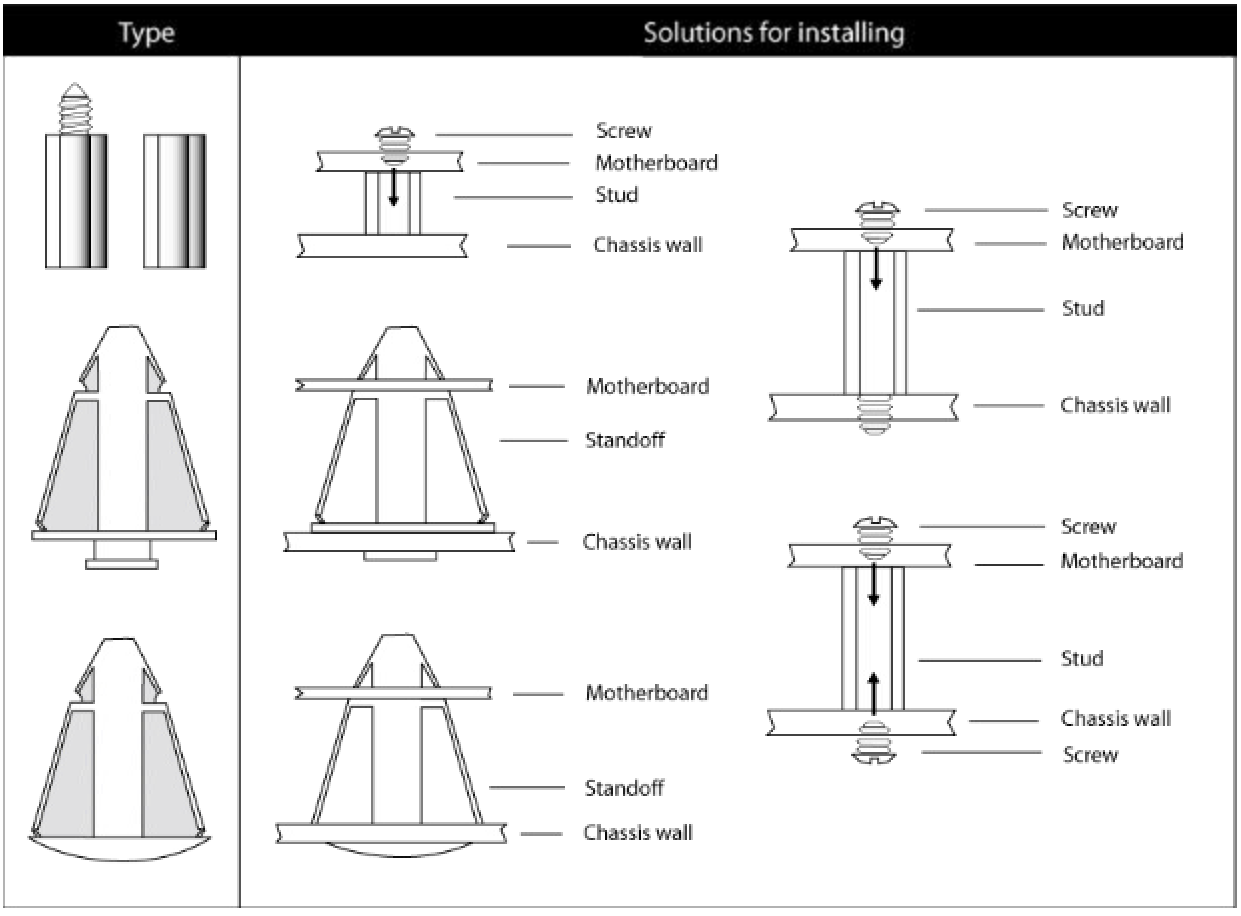
2.9 – Mounting the Motherboard

Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs. If you're unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case. If there are any studs missing, you will know right away since the motherboard will not be able to be securely installed.

Some chassis' include plastic studs instead of metal. Although the plastic studs are usable, Tyan recommends using metal studs with screws that will fasten the motherboard more securely in place.

Below is a chart detailing what the most common motherboard studs look like and how they should be installed.

Mounting the Motherboard

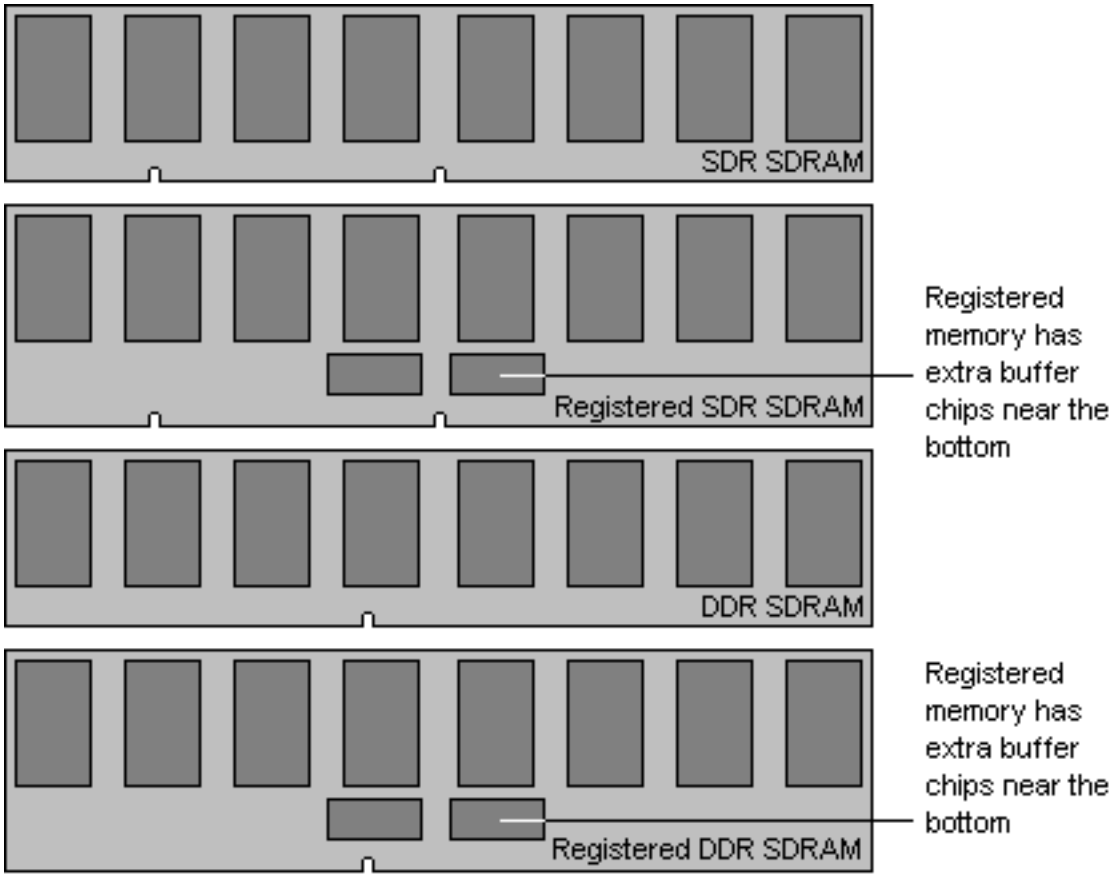


TIP: Use metal studs if possible, as they hold the motherboard into place more securely than plastic standoffs.

2.10– Installing the Memory

Before attempting to install any memory, make sure that the memory you have is compatible with the motherboard as well as the processor. Critically important is whether you're using the recommended memory for the current board you have. For this information, please check Tyan's web site at: **www.tyan.com**

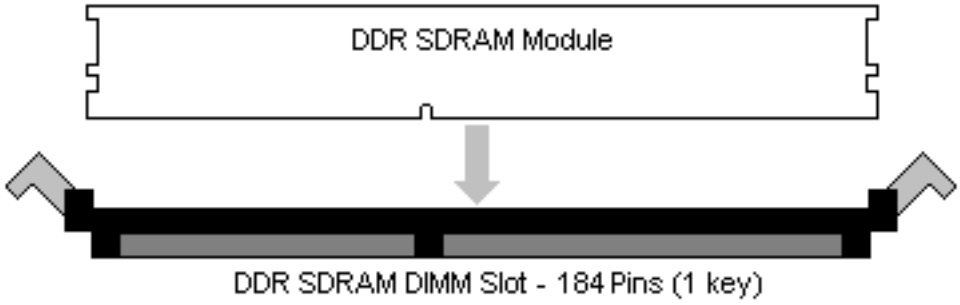
The following diagram shows the types of RAM modules you may encounter depending on your board:



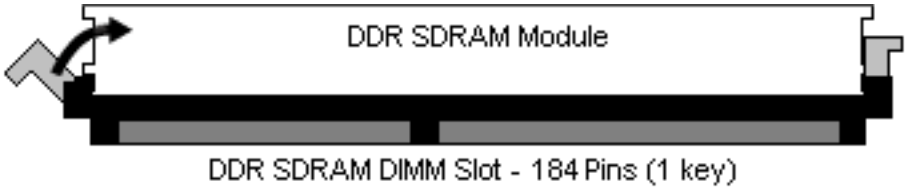
Memory Installation Procedure

The Tiger i7501 S2723 requires that memory modules be installed in pairs. Please check Tyan's website for updates to memory config uration. Please refer to the next page for exact details on installing memory modules correctly.

When installing memory modules, make sure the modules align properly with the memory socket. There should be keys (small indents) on your memory modules that fit according to the keys in the memory socket. DDR modules and sockets have only one key, which is slightly near the center of the module/socket. SDRAM modules (also referred to as PC100 or PC133) and their sockets have two keys and will not insert into DDR DIMM sockets. The method of installing memory modules is detailed in the following diagrams.



Once the memory modules are firmly seated in the socket, two clamps on either side will close and secure the module into the socket. Sometimes you may need to close the clamps manually.



To remove the memory module, simply push the clamps outwards until the memory module pops up. Then simply remove the module.

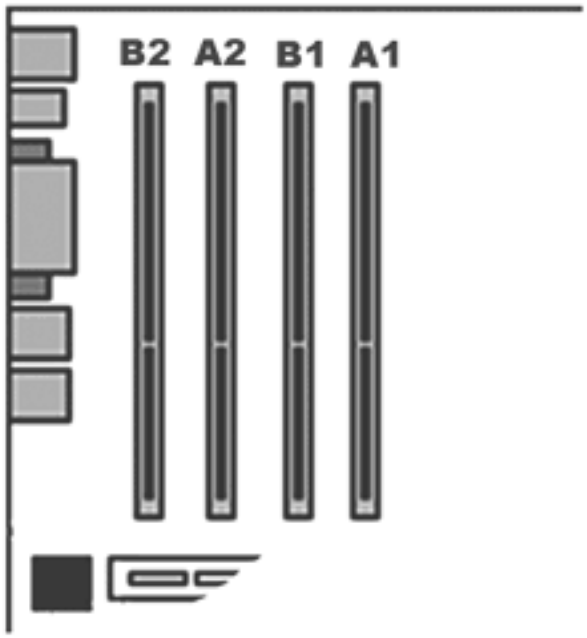
TIP: When installing memory, a module may require a considerable amount of force to seat properly, although this is very rare. To avoid bending and damaging your motherboard, place it on its anti-static bag and onto a flat surface, and then proceed with memory installation.

NOTE **YOU MUST** unplug the power connector to the motherboard before performing system hardware changes, to avoid damaging the board or expansion device.

Memory Pair Installation

When installing DIMM modules in pairs, you should install pairs in this order: **B1 + B2 then A1 + A2.**

Modules must be the same in both size and density. Modules must also use the same chip configuration, as in each module that is installed must physically have the same number of memory chips on them.



Points to remember:

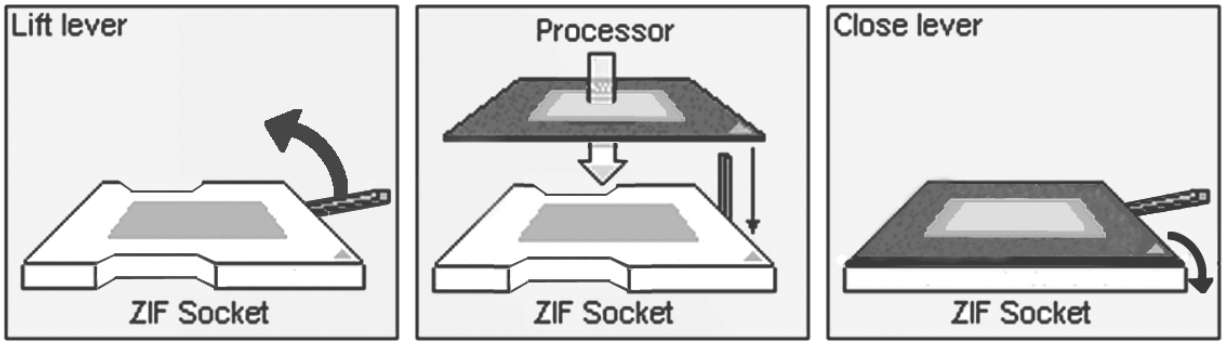
- **At least one Registered ECC DDR SDRAM module must be installed for the system to turn on and POST (Power On Self Test). Single Channel memory is supported.**
- **Use ONLY x8 or x4 type memory modules. Mixing memory types may affect stability.**
- **128MB, 256MB, 512MB, 1GB, and 2GB Registered ECC PC2100/PC1600 DDR SDRAM memory modules are supported in x4 or x8 configuration.**
- **The Tiger i7501 S2723 supports up to 8GB of memory with 2GB registered DDR modules.**

2.11 – Installing the Processor and Heatsink

Your Tiger i7501 S2723 supports the latest processor technologies from Intel. Check the following page on TYAN's website for latest processor support:

http://www.Tyan.com

The following diagrams will detail how to install your processor(s):



The processors you choose to use may not look exactly like the one pictured above, nor will the socket look exactly the same. The diagram is provided as a visual guide to help you install socket processors.

1. Lift the lever on the socket until it is approximately 130^{o} or as far back as possible to the socket.
2. Align the processor with the socket. There are keys underneath the processor just like on memory modules to ensure that they insert the correct way.
3. Seat the processor firmly into the socket by gently pressing down until the processor sits flush with the socket.
4. Place the socket lever back down until it snaps into place.
5. Your processor is installed.
6. Repeat these steps for the second processor if you are using two processors.

NOTE: If using only one CPU, it must be installed in CPU1 socket.

Heatsink Installation

After you are done installing the processor(s), you should proceed to installing their heatsinks. Heatsinks will ensure that the processors do not overheat and continue to operate at maximum performance for as long as you own them . Overheated processors may damage the motherboard.

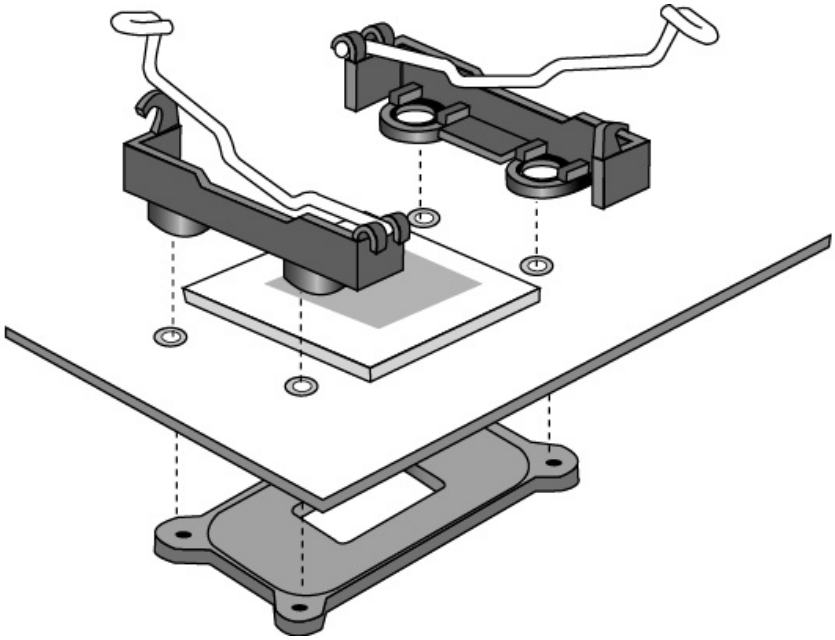
Because there are many different types of heatsinks available from many different manufacturers, a lot of them have their own method of installation. For the safest method of installation and information on choosing the appropriate heatsink, please refer to Intel's website at http://www.intel.com.

2.12 – Installing CPU Back-plates and retention modules

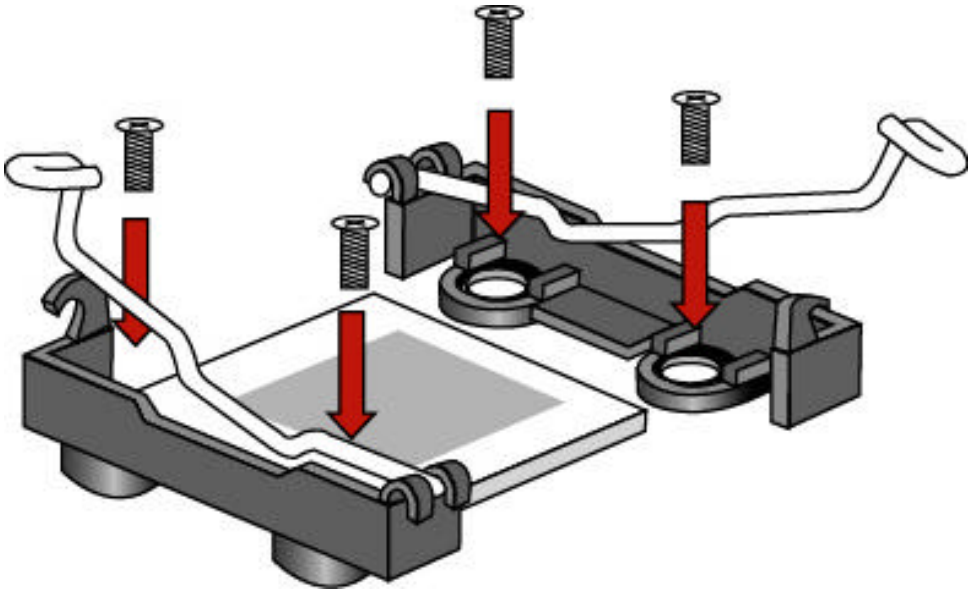
The following diagrams will illustrate how to install the included heatsink retention modules and CPU back-plates. You should have: two back-plates and 9 screws. (Four screws for each plate and one spare screw.)

NOTE: The back-plates must be installed prior to installing the motherboard into a chassis. (Certain 1U chassis may not require the back-plates.)

1) Align the heatsink mounting bracket to the holes around the processor socket

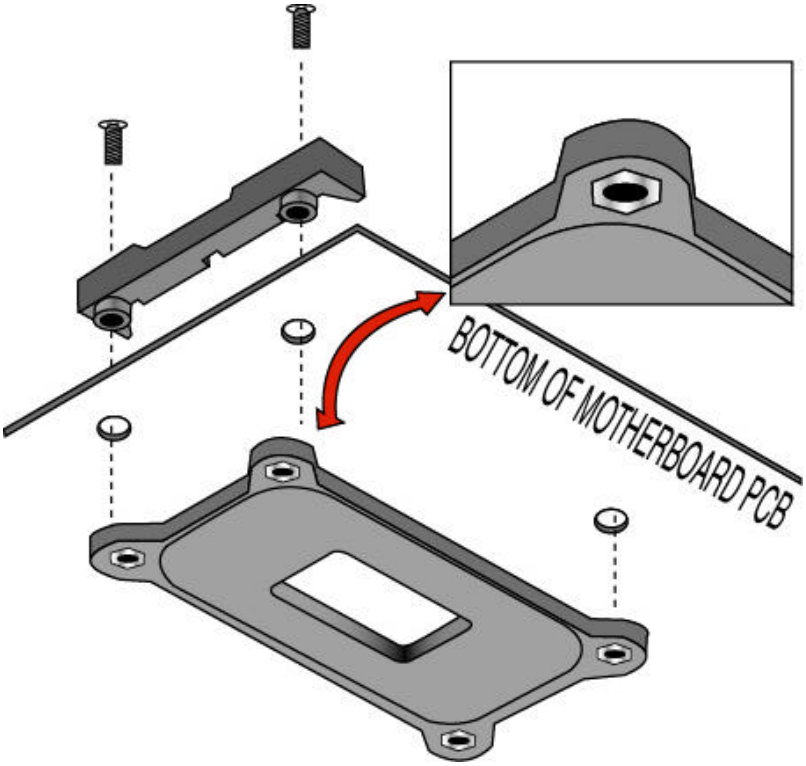


2) Insert screws into bracket holes

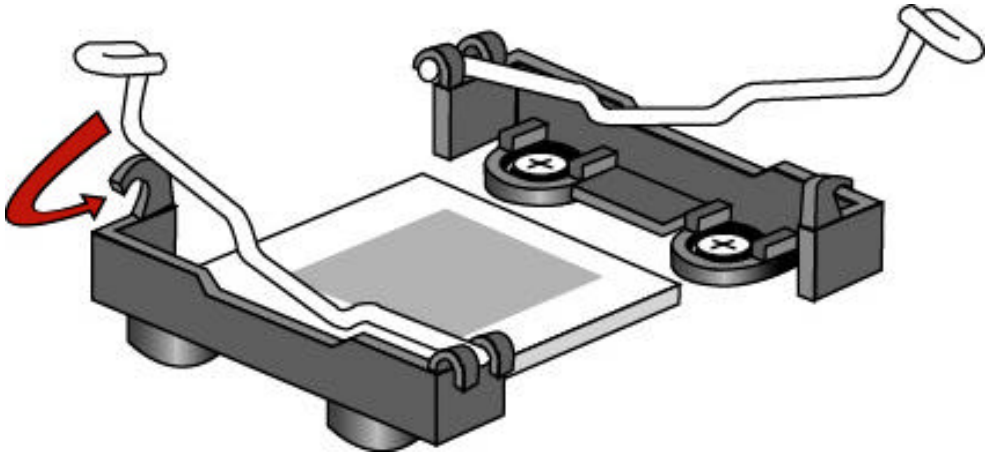


3) Screws should pass through bracket holes and through the motherboard.
4) Tighten screws into the CPU back-plates.

NOTE: The hexagonal nut **MUST** be on the viewable side of the CPU back-plate as shown below!

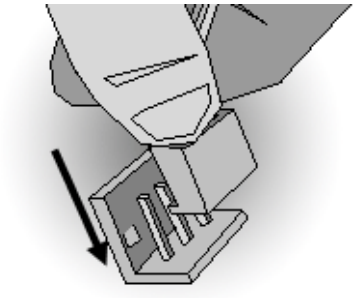


5) After installing the CPU, seat the heatsink between brackets on processor
6) Attach heatsink retaining arms by locking them in the hook as shown below.



Finishing Installing the Heatsink

After you finish installing the heatsink, attach the end wire of the fan (already be attached to the heatsink) to the motherboard.

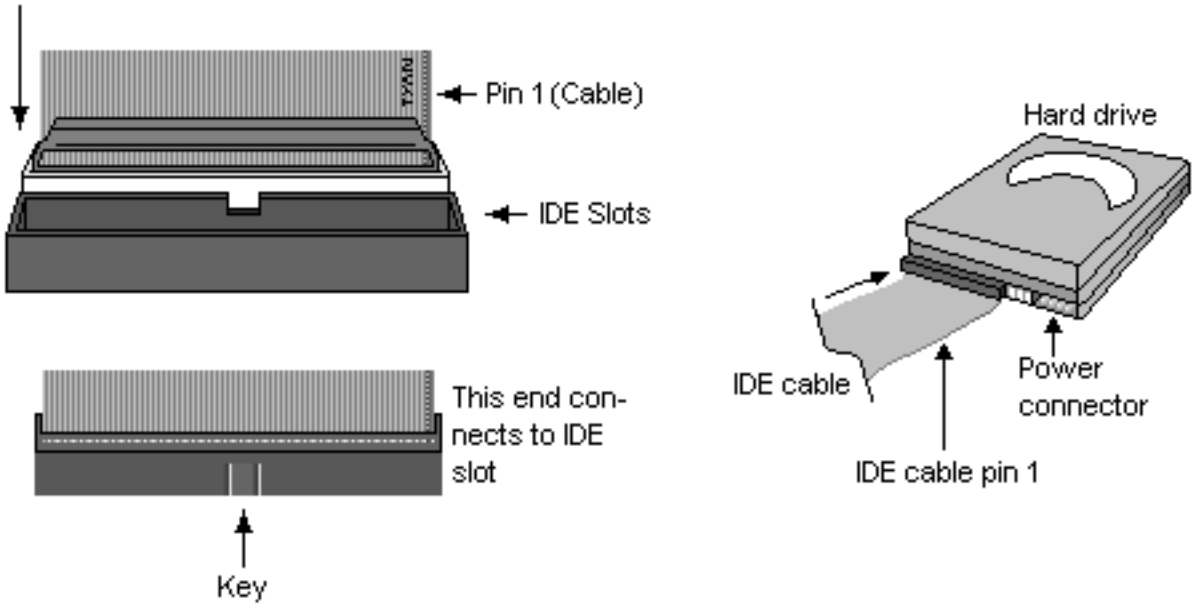


This diagram illustrates how to connect fans onto the motherboard.

2.13 – Attaching Drive Cables

Attaching IDE drive cabling is simple. These cables are "keyed" to only allow them to be connected in the correct manner. Tyan motherboards have two on-board IDE channels, each supporting two drives. **The black connector designates the Primary channel, while the white connector designates the Secondary channel.**

Attaching IDE cables to the IDE connectors is illustrated below:

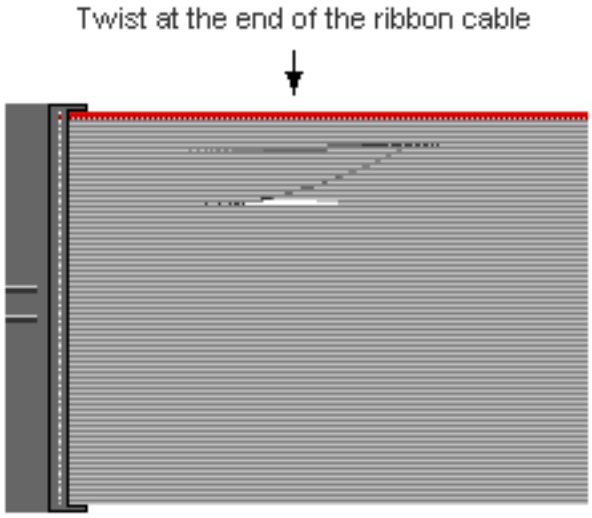


Simply plug in the BLUE END of the IDE cable into the motherboard IDE connector, and the other end(s) into the drive(s). Each standard IDE cable has three connectors, two of which are closer together. The BLUE connector that is furthest away from the other two is the end that connects to the motherboard. The other two connectors are used to connect to drives.

TIP: Pin 1 on the IDE cable (usually designated by a colored wire) faces the drive's power connector.

Floppy Drives

Attaching a floppy drive can be done in a similar manner to an IDE drive. See the diagram 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 proper connection of the cable.



The first floppy drive (commonly 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:**).

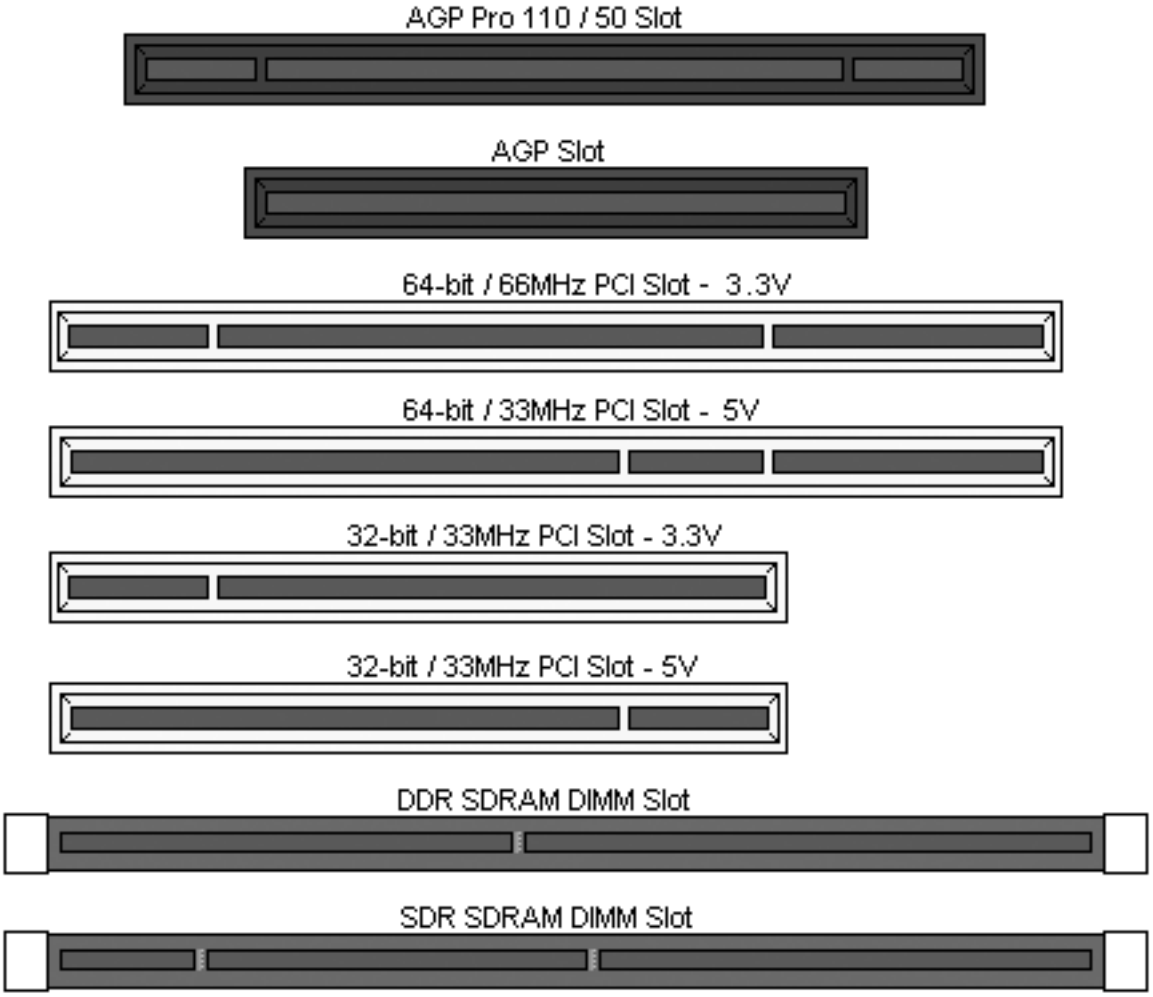
Refer to your floppy drive's installation instructions (if available), or contact your dealer if you are unsure about how to attach the floppy drive(s). Remember, you can only have 2 floppy drives connected at any given time.

Below are some symptoms of incorrectly installed floppy drives. While they are minor and installing them incorrectly doesn't cause severe problems, it may cause your system to freeze or crash when trying to read and/or write to diskettes.

Symptoms of incorrectly installed floppy drives	
Drive is not automatically detected	Usually caused by faulty cables, cables put in backwards or a bad floppy drive or motherboard. Try another floppy drive to verify the problem if the cable is properly installed or try replacing the actual cable. Also check to see if the onboard floppy controller is enabled in the BIOS setup.
Drive Fail message at bootup	The cable, floppy drive or motherboard may be faulty. Try another drive or cable to verify.
Drive does not power on	Check power cable and cabling. Maybe a bad power supply or drive cable problem.
Drive activity light is constantly on	Usually signifies that the cable on the drive is on backwards, which is a common issue. Reverse the cable at the floppy drive end and try again.

2.14 – Installing Add-In Cards

Before installing add-in cards, it's helpful to know if they are fully compatible with your motherboard. For this reason, we've provided the diagrams below, showing the most common slots that may appear on your motherboard. Not all of the slots shown will necessarily appear on your motherboard, however, there will be combinations of what you see here.



Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards (or anything else) into any slots if they won't seat in place. It's better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

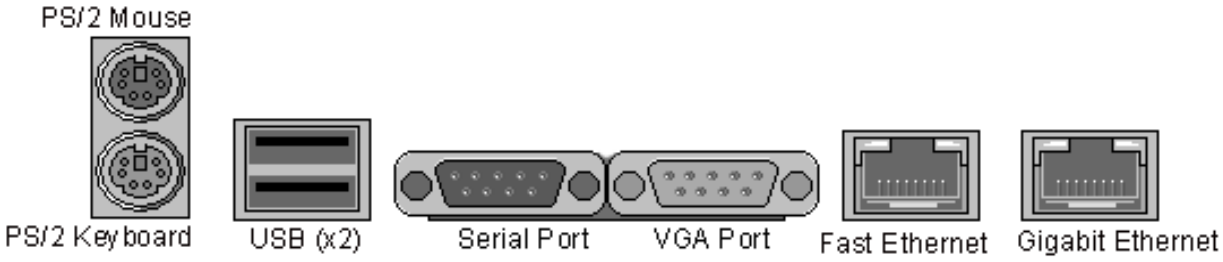
TIP: It's good practice to install add-in cards in a staggered manner, rather than directly adjacent to each other. This allows air to more easily circulate within the chassis, providing improved cooling for all installed devices.

NOTE **YOU MUST** unplug the power connector to the motherboard before performing system hardware changes, to avoid damaging the board or expansion device.

2.15 – Connecting External Devices

Connecting external devices to the motherboard is an easy task. The standard devices you should expect to plug into the motherboard are keyboards, mice, and printer cables. The following diagram will detail the ATX port stack for the following board:

Tiger i7501 S2723



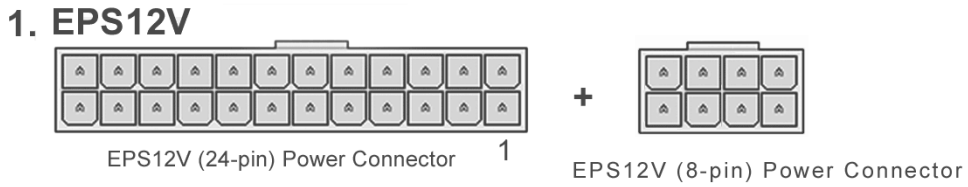
Besides being used primarily to connect printers, the Printer Port is also used for devices such as Zip drive, some external CD-RW drives and or other external devices. More on the uncommon side these days are the Serial Ports. They were primarily used to connect external modems, but most modems today are using USB or are installed internally.

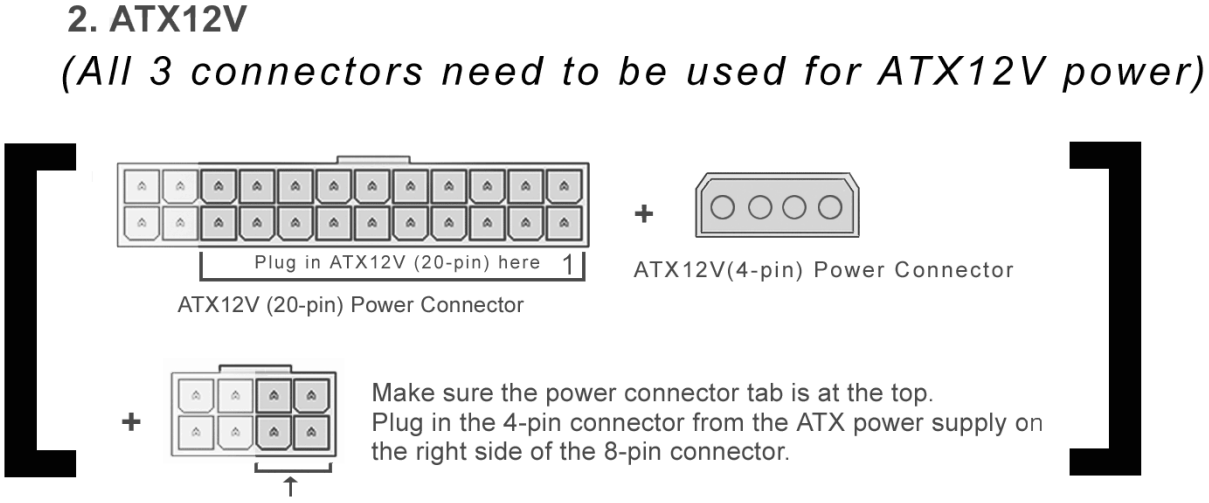
TIP: While the ports have been created to accept connectors in only one direction, make sure to be careful when inserting connectors. At times, attaching connectors in the incorrect orientation can damage, bend and or break the pins.

2.16 – Installing the Power Supply

The Tiger i7501 is ATX12V and EPS12V compatible. Use one of the two combinations below.

NOTE: You must remove the power cable from the electrical outlet before attaching the power connectors to the board!





2.17 – Finishing Up

Congratulations on making it this far! You're finished setting up the hardware aspect of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially IDE cables and most importantly, jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly.

In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by **calling your vendor's support line.**

Chapter 3: BIOS Setup

Installation

The BIOS is the Basic Input/Output System, the firmware on the motherboard that enables your hardware to interface with your software. This chapter describes different settings for the BIOS that can be used to configure your system.

The BIOS section of this manual is subject to change without notice and is provided for reference purposes only. The settings and configurations of the BIOS are current at the time of print, and therefore may not match exactly what is displayed on screen.

This section 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.

This motherboard's BIOS is a customized version of the industry-standard BIOS for IBM x86-compatible personal computers. The BIOS provides critical, low-level support for the system's central processing unit (CPU), memory, and I/O subsystems.

This BIOS has been customized by adding important features such as virus and password protection, power management, and chipset "tuning" features that control the system. This section will guide you through the process of configuring the BIOS for your system setup.

Starting Setup

The BIOS is immediately activated when you turn on the computer. The BIOS reads system configuration in CMOS RAM and begins the process of checking out the system and configuring it through the Power-On-Self-Test (POST).

When these preliminary tests are complete, the BIOS searches for an operating system on one of the system's data storage devices (hard drive, CD-ROM, etc). If one is found, the BIOS will launch that operating system and hand control over to it. You can enter the BIOS setup by pressing the [**Delete**] key (F4 from remote console) when the machine boots up and begins to show the memory count.

Setup Basics

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	More between selections
Enter	Opens highlighted section
PgUp/PgDn Keys	Change settings.

Getting Help

Pressing [**F1**] will 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 the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS.

The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of the outcome. 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 options may cause the system to become unstable or unusable.

Setup Variations

Not all systems will have the same BIOS setup layout or options. While the basic look and function of the BIOS setup remains more or less the same for most systems, the appearance of your Setup screen may differ from the charts shown in this section. Each system design and chipset combination requires a custom configuration. In addition, the final appearance of the Setup program depends on the system designer. Your system designer may decide that certain items should not be available for user configuration, and remove them from the BIOS setup program.

NOTE: On the following pages, options written in **bold type** represent the BIOS Setup default.

3.1 – Main BIOS 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	The System Time will always display the current time in a 24-hour format. You may adjust the System Time according to your location. Adjusting the clock in your operating system will also change the System Time inside BIOS setup.
System Date	System Date displays the current date and can be changed just like System Time.

Master/Slave Setup

All the options in this section are automatically detected by the motherboard chipset and BIOS. You do not need to configure this section.

3.2 – Advanced Settings

IDE Configuration Floppy Configuration Boot Settings Configuration Super IO Configuration Remote Access Configuration Onboard Device Configuration USB Configuration Hardware Monitor	All settings discussed in following sections.

3.3 – IDE Configuration

Options related to the IDE controller can be altered through the following.

Onboard PCI IDE Controller	**Both** Primary Secondary	Leave as Default. This setting toggles the onboard IDE drive controller on or off.
Primary Master/Slave Secondary Master/Slave	**Auto** Disabled	Leave as Default. This setting toggles the detection of drives attached to the IDE controller
Hard Disk Write Protect	Enabled **Disabled**	Toggles the use of boot sector protection. This ensures that no viruses can damage the hard drive.
ATAPI Detect Time Out	0, 5, 10, 15, 2.0x, 2.5x, 3.0x, **3.5x**	Defines how long the system will try to detect ATAPI devices for.
ATAPI 80pin Cable Detect	**Host & Device** Host Device	Toggles the detection of 80wire IDE cables.

3.4 – Floppy Configuration

Options related to floppy drives can be altered through the following.

Floppy A Floppy B	360KB, 5 ¼" 1.2MB, 5 ¼" 720KB, 3 ½" **1.44MB, 3 ½"** 2.88MB, 3 ½" Disabled	Defines the floppy drive type.

3.5 – Boot Settings Configuration

Options related to startup settings can be altered through the following.

Quick Boot	Enabled **Disabled**	When set to Enabled, some self-tests will be skipped during POST.
Quiet Boot	Enabled **Disabled**	If set to Enabled, OEM logo will be displayed instead of POST messages.
Add-On Rom Display Mode	**Force BIOS** Keep Current	Leave as Default. This setting toggles the Add-On ROM video display mode.
Boot up Num -Lock	**On** Off	Specifies whether Num-Lock will be on or off during bootup.
PS/2 Mouse Support	**Enabled** Disabled	Toggles the use of the PS/2 mouse port.
Typematic Rate	**Fast** Slow	Changes speed of key repeat rate.
System Keyboard	**Present** Unavailable	Will allow continual boot even if the keyboard is not attached.

Parity Check	Enabled **Disabled**	Toggles checking of system memory for corruption.
Wait for F1 if "error"	**Enabled** Disabled	If Enabled, you will have to press F1 for the system to continue booting if an error is detected during POST.
Hit "Del" Message	**Enabled** Disabled	Toggles display of pressing DEL key to enter BIOS.

3.6 – Super IO Configuration

Options related to the IO interface can be altered through the following.

Serial Port 1, 2 Address	**COM1** **Enabled** Disabled Auto COM2 Enabled **Disabled** Auto	Toggles use of serial ports 1 and or 2 (com1 & 2). **Enabling** ports also requires you to enter the I/O address for that port unless you select **Auto**.
Parallel Port Address	**Disabled** 3F8, 2F8 3E8, 2E8	These options are dependent on the IRQ and vice versa.
Parallel Port Mode	**Output Only**	Standard one-way protocol for parallel devices.
	Bi-directional	Two-way protocol
	EPP	Enhanced Parallel Port may provide higher bandwidth if an **EPP** compliant device is
	ECP	Enhanced Compatibility Port may provide higher bandwidth if an **ECP** compliant device is
Parallel Port	IRQ **IRQ 7** **IRQ 5**	Sets the interrupt request for the parallel port. (IRQ 7 and IRQ 5 both can be defaults.)

3.7 – Onboard Device Configuration

Options related to onboard devices can be altered through the following.

Onboard ATI RageXL Video	**Enabled** Disabled	Toggles the onboard ATI video graphics.
Onboard 82551	**Enabled** Disabled	Toggles 10/100Mbit LAN port.
Onboard 82545	**Enabled** Disabled	Toggles the 1Gbit LAN port.

3.8 – USB Configuration

Options related to USB can be altered through the following.

USB Function	**Enabled** Disabled	Toggles the onboard USB ports.
Legacy USB Support	Enabled Disabled **Auto**	Toggles the use of onboard USB ports in DOS.
USB Zip Emulation Type	Enabled Disabled **Auto**	Toggles Zip drive emulation on USB ports when in use.
USB Beep Message	**Enabled** Disabled	Toggles USB beep error messaging.

3.9 – Hardware Monitor

Hardware Monitor	Reports CPU temperatures, voltage, and fan speeds.

3.10 – PCIPnP

Options related to the Plug and Play PCI settings interface can be altered through the following.

Plug & Play OS	**Yes** No	Toggles the option of letting the OS take care of IRQ routing or the BIOS. Select **Yes** to let the OS manage IRQ settings.
PCI Latency Timer	32, **64**, 96, 128, 160, 192, 224, 248	Leave on **64** for best combination of performance and stability.
Allocate IRQ to PCI VGA	Yes **No**	Assigns an IRQ to PCI video card.
Palette Snooping	Enabled **Disabled**	Palette Snooping can fix color problems associated with non-standard video cards such as MPEG decoders.
PCI IDE BusMaster	**Enabled** Disabled	Toggles the onboard IDE controllers to operate in BusMaster mode.
Offboard PCI/ISA IDE Card	Auto Enabled **Disabled**	Enables the system to recognize and boot from an add-in IDE controller card.
IRQ 3, 4, 5, 7, 9, 10, 11, 14, 15	These settings enable you to set which IRQs will be reserved for other devices other than the ones that use them by default.	
DMA Channel 0, 1, 3, 5, 6, 7	These settings enable DMA channel 0 and 1 to be enabled or disabled.	

3.11 – Chipset

Options related to the chipset can be altered through the following.

CPU Configuration	All settings discussed in following sections.
North Bridge	
ICH3 South Bridge	
Intel PCI-64 Hub 2	

3.12 – CPU Configuration

Options related to the CPU chipset settings can be altered through the following.

CPU Ratio Status	**Unlocked**		Sets the ratio between CPU Core Clock and the FSB Frequency. If an invalid ratio is set in CMOS then actual and setpoint values may differ. To modify, hit backspace and type new ratio.
CPU Ratio Actual Value	**20**		
CPU Ratio CMOS Setting	**255**	Auto detects CPU speed. It is recommended to leave as default (255), because changing CPU ratios may render your system inoperable.	

Hyper-Threading Enable	This setting allows you to take advantage of Hyper-Threading enabled Xeon processors. Enabling Hyper-Threading allows a compatible Xeon processor to process applications that are written for a multi-processor system even if you are using only one Xeon processor.

3.13 – ICH3 Chipset Configuration

Please leave all options in this section at their default setting because they are crucial to the stability of the system.

ICH3 Dev31 Func1, IDE	**[Enabled]** [Disabled]	Controls IDE On/Off
ICH3 Dev31 Func3, S MBUS	**[Enabled]** [Disabled]	Controls SMBUS On/Off
ICH3 Dev29 Func0, USB#1	**[Enabled]** [Disabled]	Enables external USB ports
ICH3 Dev29 Func1, USB#2	**[Enabled]** [Disabled]	Enables internal USB 2
ICH3 Dev29 Func2, USB#3	**[Enabled]** [Disabled]	Enables internal USB 3
LPC 2Eh-2Fh Decode	**[Enabled]** [Disabled]	

LPC 2Eh-2Fh Decode	**[Enabled]** [Disabled]	Super I/O address. (This is a fixed option)

IOAPIC	**[Enabled]** [Disabled]	Leave as default.
IOAPIC	**[Enabled]** [Disabled]	Leave as default.

(ICH3 Chipset Configuration continued)

DMA-0 Type	**[LPC DMA]**
DMA-1 Type	**[LPC DMA]**
DMA-2 Type	**[LPC DMA]**
DMA-3 Type	**[LPC DMA]**
DMA-4 Type	**[LPC DMA]**
DMA-5 Type	**[LPC DMA]**
DMA-6 Type	**[LPC DMA]**
DMA-7 Type	**[LPC DMA]**

3.14 – Intel PCI-64 Hub 2 Chipset Configuration

Options related to the Intel PCI-64 hub and its settings can be altered through the following.

I/O Port Decode	This option allows you to adjust the decode size of the I/O ports.
RAS Sticky Error Handling	This option allows you to define how RAS errors are handled and whether they are corrected or left as is.
IOAPIC Support in MP Table	This option allows you to adjust settings for IOAPIC functions that relate to multi-processor handling.
VGA Decode	Please leave this option at its default setting.

3.15 – ACPI

Options related to power management settings can be altered through the following options.

ACPI Aware O/S	**Yes** No	Defines whether the OS can manage IRQs, DMAs, and other system settings on its own.
ACPI Advanced	All settings discussed in following sections	

3.16 – ACPI Advanced

Options related to advanced power management settings interface can be altered through the following options.

ACPI APIC Support	This option allows you to define whether or not to enable ACPI management features.	
BIOS → AML ACPI Stable	Please leave this option at its default setting. This setting toggles BIOS control of ACPI power features.	
Headless Mode		
After Power Fail	Enable Disable **Previous State**	Allows system to reboot after a power failure.
Power button instant off	Enabled **Disabled**	Choose between instant on/off or a 4 second delay.
Watchdog Timer	**Enable** **Disable**	Do not enable unless you are familiar with this feature
WOL S1 & S5	**Enabled** Disabled	Enables Wake On Lan support. (Only on 82551 NIC.)

3.17 – Boot

Options related to boot devices can be altered through the following.

Boot Device Priority	1st Boot Device 2nd Boot Device 3rd Boot Device	Settings for boot priority. These can be customized depending on your preference.
Hard Disk Drives	Specifies the boot sequence for hard drive booting. This option will show all storage devices.	
Removable Devices	Specifies the boot sequence for removable drive booting. This option will show all removable devices.	
ATAPI CDROM Drives	Specifies the boot sequence for CD-ROM drive booting. This option will show all CD-ROM devices.	
Interrupt 19 Capture	This option allows removable devices to act as non-removable devices. Some SCSI RAID cards will need this one enabled. Please refer to your SCSI card's documentation. **Enabled**/Disabled	

3.18 – Security

Options related system security can be altered through the following.

Change Supervisor Password	Changes system password.	
Change User Password	Changes boot password.	
Clear User Password	Clears boot password.	
Boot Sector Virus Protection	Enabled **Disabled**	Toggles protection of boot sector on the hard drive from being modified.

3.19 – Exit

Options related exiting and saving can be done using the following.

Exit Saving Changes	Exit and save options.
Exist Discarding Changes	Exit but don't save options.
Load Setup Defaults	Load the BIOS setup default settings.
Discard Changes	Discard any changes made.
Save Changes	Save changes.

Chapter 4: Diagnostics

4.1 – Hardware Monitor Information

ICH3 SMBus base address = EC80h

Winbond83782D hardware Monitor Information

Hardware Monitor Chip 1:	Winbond83782D
Slave Address:	0x29h
Chip Clock:	14.318MHz

Sensor Name	Bank	Register	Other
CPU1 Fan	0	0x28h	controlled by PWM1
CPU2 Fan	0	0x29h	controlled by PWM3
Chassis Fan 3	0	0x2Ah	controlled by PWM4
System Volt 3.3V	0	0x22h	
System Volt 5V	0	0x23h	
System Volt 12V	0	0x24h	R1 = 28K, R2 = 10K
Battery Voltage	5	0x51h	
System(VRM) temp	0	0x27h	2N3904 diode
CPU1 533FSB temp	**1**	**0x50h**	PII compatible diode
CPU2 533FSB temp	**2**	**0x50h**	PII compatible diode

W83627HF Super IO hardware Monitor Information

Hardware Monitor Chip 2:	WinbondW83627HF (Super IO)
Slave Address:	0x2ah
Chip Clock:	48.000MHz

Sensor Name	Bank	Register
Chassis Fan 4	0	0x28h
Chassis Fan 5	0	0x29h
Chassis Fan 6	0	0x2Ah

On chip Xeon Thermal Sensor for 400Mhz FSB Xeon

Hardware Monitor Chip 3:	Intel Xeon Thermal Sensor
Slave Address:	0x18h

Sensor Name	Bank	Register
CPU1 temperature	0	0x01h

On chip Xeon Thermal Sensor for 400Mhz FSB Xeon

Hardware Monitor Chip 4:	Intel Xeon Thermal Sensor
Slave Address:	0x19h

Sensor Name	**Bank**	**Register**
CPU2 temperature	0	0x01h

Programming CPU thermal sensors for custom Hardware Monitoring requirements (the GPIO pins are on ICH3)

GPIO27	GPIO28	CHANNEL#	DEVICES
X	X	X	Winbond 83782D (Always on)
1	1	3	DIMM SPD (6 devices), and CK408B clock chip
0	**1**	**2**	**CPU1 and CPU2 Thermal sensor, Super IO W83627HF**
1	0	1	Reserved
0	0	0	Reserved

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.

4.2 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.

Beep codes that are used by AMIBIOS:

Number of Beeps	Description
1	Memory refresh timer error
2	Parity error
3	Main memory read / write test error
4	Motherboard timer not operational
5	Processor error
6	Keyboard controller BAT test error
7	General exception error
8	Display memory error
9	ROM checksum error
10	CMOS shutdown register read/write error
11	Cache memory bad

Troubleshooting BIOS Beep Codes

Number of Beeps	Trouble shooting action
1, 2 or 3	Reseat the memory, or replace with known good modules. Make sure they are Registered ECC.
4-7, 9-11	Fatal error indicating a serious problem with the system. Consult your system manufacturer. Before declaring the motherboard beyond all hope, eliminate the possibility of interference by a malfunctioning add-in card. Remove all expansion cards except the video adapter. • If the beep codes are generated even when all other expansion cards are absent, the motherboard has a serious problem. Consult your system manufacturer. • If the beep codes are not generated when all other expansion cards are absent, one of the add-in cards is causing the malfunction. Insert the cards back into the system one at a time until the problem happens again. This will reveal the malfunctioning add-in card.
8	If the system video adapter is an add-in card, replace or reseat the video adapter. If the video adapter is an integrated part of the system board, the board may be faulty.

Tyan Reference for troubleshooting:

6 Beeps = No memory inserted.
7 Beeps = Non Reg/ECC DIMMs inserted.
9 Beeps = Only one DIMM inserted.

Before contacting your vendor or Tyan Technical Support, be sure that you note as much as you can about the beep code length and order that you experience. Also, be ready with information regarding add-in cards, drives and O/S to speed the support process and come to a quicker solution.

4.3 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, please check the Tyan web site: http://www.tyan.com/

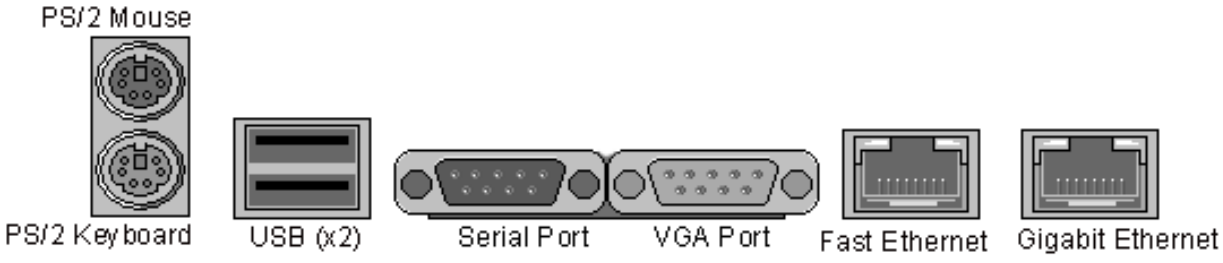
NOTE	Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. Tyan does not have a policy for replacing BIOS chips directly with end users. In no event will Tyan be held responsible for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

Appendix I: Onboard LAN LED Color Definition and Pinout

LAN 2 Port, 10/100/1000 Mbps, Intel 82545, RJ-45 Connector = J53		
	Left LED	**Right LED**
Network link not established	Off	Off
Linked at 10 Mbps (10 BaseT) Activity at 10 Mbps	Off Off	Green Blink Green
Linked at 100 Mbps (100 BaseTX) Activity at 100 Mbps	Yellow Blink Yellow	Off Off
Linked at 1000 Mbps (1000 BaseT) Activity at 1000 Mbps	Yellow Blink Yellow	Green Blink Green

LAN 1 Port, 10/100 Mbps, Intel 82551, RJ-45 Connector = J55		
	Left LED	**Right LED**
Network link not established	Off	Off
Linked at 10 Mbps (10 BaseT) Activity at 10 Mbps	Off Off	Green Blink Green
Linked at 100 Mbps (100 BaseTX) Activity at 100 Mbps	Yellow Blink Yellow	Off Off

NIC four pin headers pin-outs: J53 & J55
Pin 1 = Link <> Yellow + Pin 2 = Link <> Yellow - Pin 3 = Speed <> Green + Pin 4 = Speed <> Green -



Appendix II: 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

EMRL: Embedded RAID Logic. An Adaptec specific RAID technology.

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.

IPMB: Intelligent Platform Management Bus. It is a subset of I2C or SMBus. Brief description, it is used to send IPMI messages/commands. (The communication uses standard I2C or SMBus protocol. It is just that the message being sent into the bus is formatted to IPMI standard.)

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 will appear as a single drive to the operating system. RAID level 0 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.

RAIDIOS: RAID I/O Steering (Intel)

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 such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (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. SISL: SCSI Interrupt Steering Logic (LSI) (only on LSI SCSI boards)

SIMM (Single In-line Memory Module): Formerly the most common RAM for motherboards. They must be installed in pairs, and don't have the 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.

SSI (Server System Infrastructure): an industry initiative intended to provide ready-to-use design specifications for common server hardware elements (chassis, power supplies, and racks) to promote and support server industry growth.

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 a 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.

Wake On LAN (WOL): A remote wake-up technology that enables you to remotely power systems "on" for off-hours maintenance. A result of the Intel-IBM Advanced Manageability Alliance and part of the Wired for Management Baseline Specification, this technology helps save time on automated software installations, upgrades, disk backups and virus scans. Equally important, it increases end-user productivity by moving such planned disruptions to off-hours.

Watch Dogtimer (WDT): A device that performs a specific operation after a certain period of time if something goes wrong with an electronic system and the system doesn't recover on its own. The WDT contains a digital counter that counts down to zero at a constant speed from a preset number. The counter speed is kept constant by a clock circuit. If the counter reaches zero before the computer recovers, a signal is sent to designated circuits to perform the desired action, e.g. reset the system. A normally functioning system must re-load the WDT occasionally, to prevent the counter from reaching zero.

ZCR: Zero Channel RAID. PCI card that allows a RAID card to use the onboard SCSI chip, thus lowering cost of RAID solution

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.

Appendix III : SMDC Information

Tyan Server Management Daughter Card (SMDC) is a powerful yet cost-efficient solution for high-end server management hardware packages. Tyan's goal is to provide remote system monitoring and control even when the operating system is absence or simply fails. This empowers Tyan's server board with advanced industrial-standard features.

Tyan SMDC is a snap-in card that provides essential server management solution. It enables any IT Manager by providing multi-interfaces to access the hardware remotely and perform **monitor, control** and **diagnose** activities effectively.

Tyan SMDC is powered by an intelligent controller known as Baseboard Management Control (BMC). BMC is a standalone mini-CPU and runs on its own Real Time Operating System (RTOS) to complete all different kinds of tasks. Backed by QLogic's ARM7 technology, IT manager can rest assure his server machines are always taken care.

Tyan SMDC is not a peripheral card. Unlike regular peripheral card such as AGP card, Network card or SCSI card, SMDC does not require any hardware specific driver. As long as a standby power comes into the system, SMDC will begin looking after the system.

Tyan SMDC provides diversified methods to communicate with the hardware. IT manager has the flexibility to choose among *Keyboard Controller Style* (KCS), *Block Transfer* (BT) style, Intelligent Chassis Management Bus (ICMB), Intelligent Platform Management Bus (IPMB), Emergency Management Port (EMP) and standard IPMI-Over-LAN communication as defined in latest IPMI 1.5 specification.

Tyan SMDC is compatible with all IPMI-compliance software as well as Tyan System Operator™ (TSO) software package.

By adding SMDC, Tyan's server board becomes a highly manageable and IPMI compatible system with all the advanced features suggesting in IPMI Spec.

More detailed information on Tyan's SMDC card can be found on our website:
Http://www.Tyan.com

Appendix IV: Riser Cards



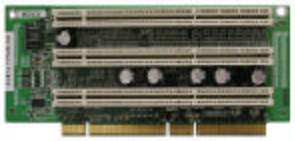
M2037



M2037R



M2042



M2043



M2043X

	M2037	M2037R*	M2042	M2043	M2043X
UPC Code	635872-007255	635872-007286	635872-006876	635872-006906	635872-007095
Form Factor	1U	1U	2U	2U	2U
What kind of Gold Finger	3.3V and 5V	3.3V and 5V	3.3V and 5V	3.3V and 5V	3.3V and 5V
How many slots	1	1*	3	3	2
What kinds of slots	5V	5V	5V	3.3V	3.3V
What speeds can support	ALL SPEEDS	ALL SPEEDS	66MHz 33MHz	66MHz 33MHz	100MHz 66MHz 33MHz
What boards can support	ALL BOARDS	ALL BOARDS	S2727 S2722 **S2723** S2721 S2707	S2727 S2722 **S2723** S2721 S2707	S2727 S2722 **S2723** S2721 S2707

* NOTE: **M2037R** allows for "butterfly configuration", see example below

Example:



Please check with your distributor for these riser cards or check http://www.etyan.com to purchase the desired card(s).

Appendix V: Pinouts of onboard jumpers/headers

Pinouts for the following jumpers/headers are listed: j22, j34, j42, j50, j51, j53 & j55

J22……. Onboard 4 pin speaker header

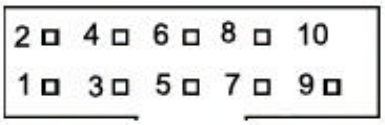
J22 Speaker header	
1	Pin 1 = VCC*
2	Pin 2 = No Connect
3	Pin3 = No Connect
4	Pin4 = SPK

* pin one is identified on the motherboard and also on page 8

J34…….Serial port header (com2)

Signal	DB9 PIN#(j33)	10 PIN header(j34)
DCD	1	1**
RX	2	3
TX	3	5
DTR	4	7
GND	5	9
DSR	6	2
RTS	7	4
CTS	8	6
RI	9	8
NC/KEY	NC/KEY	10

J34 header as appears on motherboard



** pin one is identified on the motherboard and also on page 8

J53, j58……..Intel 82545 4 pin external activity
J55……...Intel 82551 4 pin external activity

NIC four pin Header 'Pin Out' j53, J55, J58, J67 & J68	
1	Pin 1 = Link <> Yellow + ***
2	Pin 2 = Link <> Yellow -
3	Pin3 = Speed <> Green +
4	Pin4 = Speed <> Green -

*** pin one is identified on the motherboard and also on page 9

J50 & J51……Internal USB headers

J50 & j51 (labeled onboard as USB3 & USB4)
 Pin 1 = VCC ****   Pin 2 = USBD(2&3)R-   Pin3 = USBD(2&3) R+   Pin4 = Gnd   Pin5 = Gnd   **** pin one is identified on the motherboard and also on page 8.

J42 ……SMDC (Server Management daughter card)

Odd pin	Signal	Even Pin	Signal
1*****	LAD0	2	LAD1
3	LAD2	4	LAD3
5	GND1	6	LFRAME#
7	GND2	8	PCI_CLK
9	GND3	10	PCIRST#
11	GND4	12	I2C1CLK
13	I2C1DA	14	GND5
15	IC24CLK	16	I2C4DA
17	GND6	18	I2C3CLK
19	I2C3DA	20	5VSB1
21	I2C2CLK	22	I2C2DA
23	5VSB2	24	GND7
25	PWRBTN#	26	PCIPME#
27	RSTBTN#	28	SVM_IRQ#
29	SLPBTN#	30	SVM_WOL#
31	EXTSMI#	32	SVM_THERM#
33	CPUNMI	34	GND8
35	GPIO1	36	GPIO2
37	GND9	38	GPIO4
39	GPIO5/KEY	40	PS_PWRGD
41	GND10	42	RSVD2
43	RSVD3	44	GND11
45	RSVD5	46	BMC_RST#
47	GND12	48	SMALERTA#
49	SMALERTB#	50	GND13

***** pin one is identified on the motherboard and also on page 8

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 beep codes section of this manual on pg 38.
2. See the TYAN website for FAQ's, 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 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.)

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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