# TYAN

## Tomcat K8SH  / / /  S3850

### Revision 1.10

**Table of Contents**

**Before you begin…**

**Check the box contents!**

The retail motherboard package should contain the following:

1x Tomcat K8SH motherboard

1x 34-Pin floppy drive cable

4 x SATA cable

2 x SATA Drive Power Adapter

1 x Ultra-DMA-100/66 IDE cable

1 x USB2.0 cable

1 x COM Port cable

1 x Tomcat K8SH User's Manual

1 x Tomcat K8SH Quick Reference Guide

1 x TYAN driver CD

1 x I/O shield

1 x CPU Retention Frame

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

# Chapter 1: Introduction

**1.00 – Congratulations!**

You have purchased one of the most powerful AMD Opteron™ processor solutions, the Tomcat K8SH S3850. The Tomcat K8SH S3850 features an integrated high bandwidth memory controller for superior productivity.  The solution also employs HyperTransport™ chipset technology to increase overall performance by removing or reducing I/O bottlenecks.  Designed around the use of low profile I/O ports with strategically placed DIMM slots to allow maximum airflow across the motherboard for efficient system cooling.  The Tomcat K8SH S3850 also features an ATX form factor, Single or Dual Gigabit Ethernet port, an onboard XGI XG20 VGA controllers, and an onboard Quad channel Serial ATA, which provides a 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.

### 1.01 – Hardware Specifications

**Processor**
- Single µPGA 939-pin socket
- Supports AMD Opteron™ 100 series single core & dual core processor
- Up to 800 MHz Hyper-Transport link support

**Chipset**
- Broadcom HT1000
- NS PC87417 Super I/O chip

**Memory**
- 128-bit dual channel memory bus
- Four 184-pin DDR DIMM sockets
- Supports up to 8GB of unbuffered DDRI 400/333
- Supports PC2100, PC2700 and PC3200 DDRI memory

**Expansion Slots**
- One 64-bit, 133MHz (3.3V) PCI-X slot
- Four 32-bit, 33MHz PCI v2.3 slots
- Tyan TARO™ SO-DIMM
- Total of five usable slots

**Integrated LAN Controllers**
- Two Intel i82541PI GbE LAN controllers
- Operating on PCI 32-bit/33MHz bus
- With ASF 2.0/WfM/Teaming support

**Integrated I/O**
- One floppy connector supports up to two drives
- One IDE connectors for two IDE devices
- Two USB 2.0 Headers (via cable, 2 x 4pin)
- 2 x 25 connector for Tyan IPMI SMDC card (M3291)
- Four SATA ports
- One COM2 header

**Back Panel I/O Ports**
- One PS/2 Keyboard &  Mouse ports
- Two RJ45 10/100/1000 Base-T port w/ activity LED
- Two USB 2.0 ports
- One 9-pin UART Serial port
- One 15-pin VGA port

**BIOS**
- AMI BIOS® on 8Mbit LPC Flash ROM
- Serial Console Redirect
- USB boot supported
- Supports ACPI
- PnP, DMI 2.0, WfM 2.0 Power Management

**Integrated 2D Graphics**
- XGI XG20 graphics controller
- 16MB Frame Buffer of video memory

**Integrated SATA Controller**
- Supports four SATAⅡ ports running at 1.5Gb/s with NCQ (SATAII Phase Ⅰ)
- Supports four-channel SATA RAID (RAID 0, 1, 5, 10)

**Power**
- Onboard 4-phase VRD
- EPS12V (24+8) power connectors

**System Management**
- One Analog Device ADT7476
- Temperature and voltage monitoring
- One (1) 3+1-pin CPU fan header with tachometer monitoring and smart FAN control
- Six (6) 3+1-pin system fan headers with tachometer monitoring, all of them support smart FAN control
- One 2x7-pin fan connector (reserve to support TYAN FAN Adapter Board---M1012)
- Watchdog timer support

**Form Factor**
- ATX footprint
- 12" x 9.6"; 305mm x 244mm
- 6-layer board

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

**Software Specifications**

**OS (Operating System) Support**
Microsoft Windows 2000 SP4
Microsoft Windows XP SP2 (32-bit)
Microsoft Windows XP SP1 (64-bit)
Microsoft Windows Server 2003 SP1 (32-bit & 64bit)
SUSE LINUX 9.0 SP3 (64-bit)
SUSE LINUX Professional 9.1 (64-bit)
SUSE LINUX 10.0 (32-bit & 64-bit)
Fedora Core 3 (32-bit) & Fedora Core 3 Linux x86 (64-bit)
Fedora Core Linux 4
Fedora Core 5 Linux x86 (64-bit)
Mandrake Linux 9.1 (32-bit) & Mandrake Linux 9.2 (32-bit)
Turbo Linux 10 (32-bit)
RHEL3.0 & RHEL 3.0 (32-bit) UPDATE 5
RHEL4.0 (64-bit)

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

# Chapter 2: Board Installation

**Installation**

You are now ready to install your motherboard. The mounting-hole pattern of the Tomcat K8SH S3850 matches the ATX specification. Before continuing with installation, confirm that your chassis supports an 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**

**2.00 – Board Image**
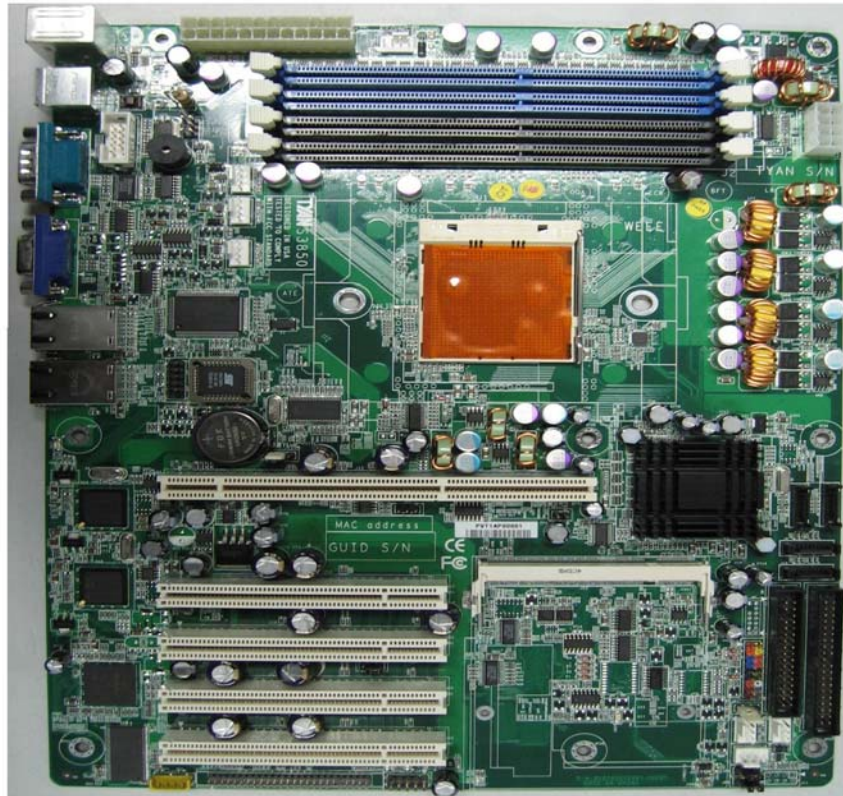


**This picture is representative of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the above picture.**

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

**2.01--Block Diagram**
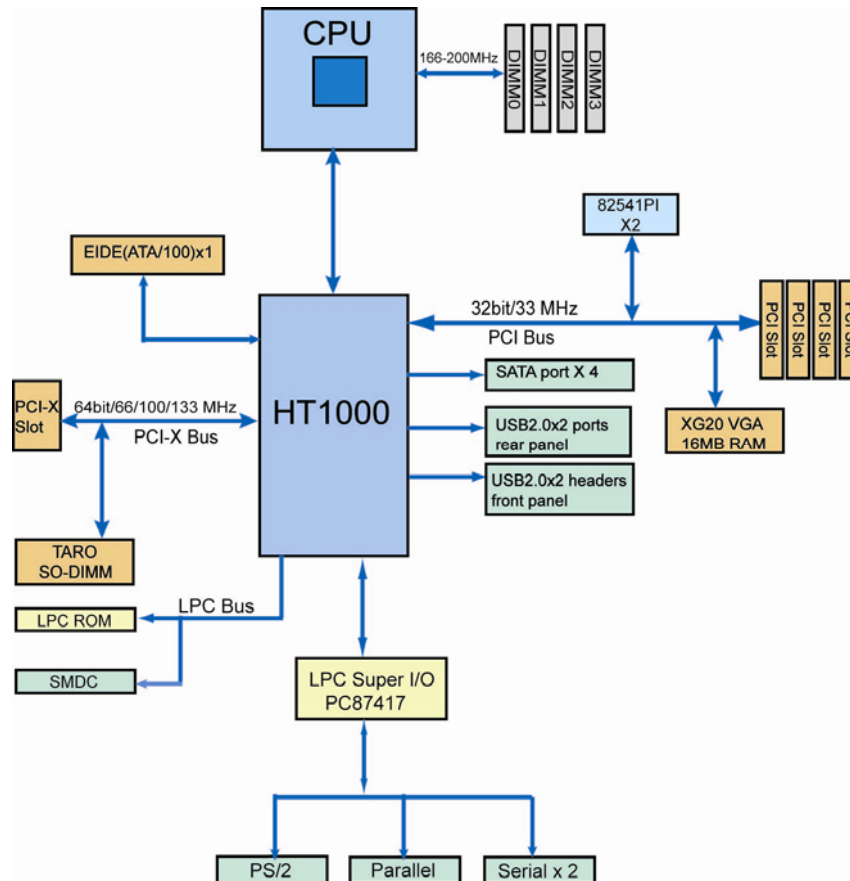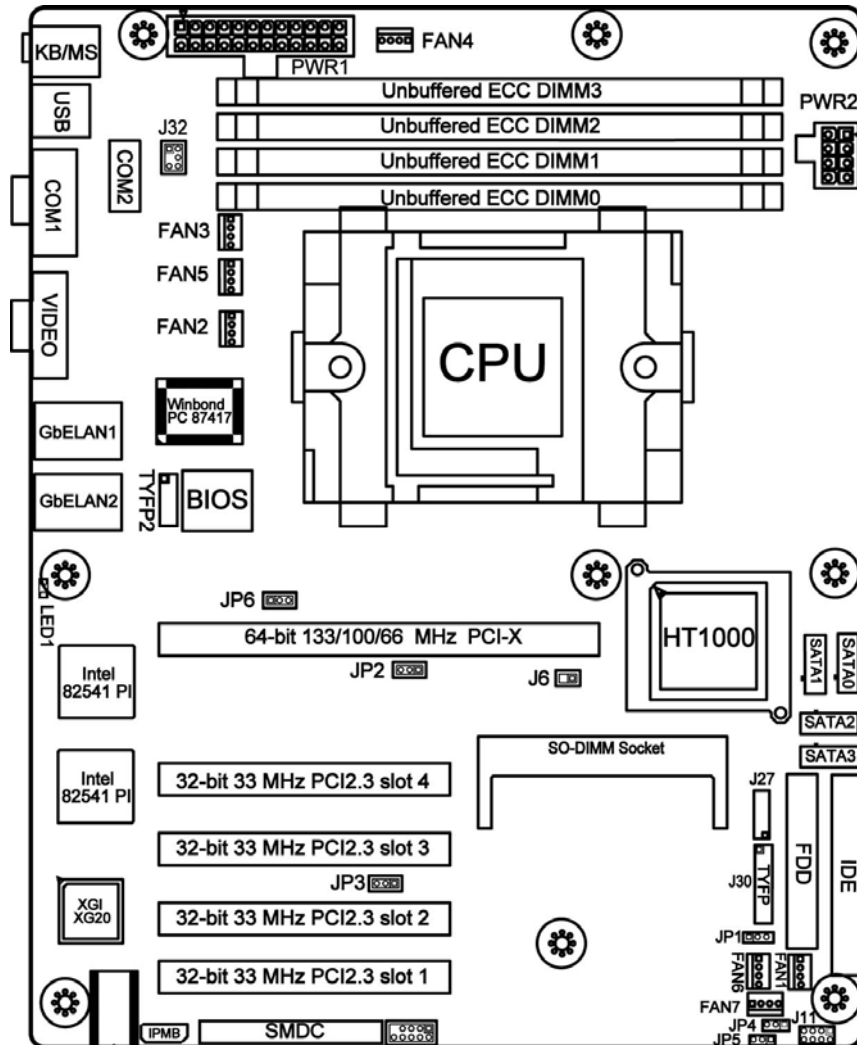
**This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram.**
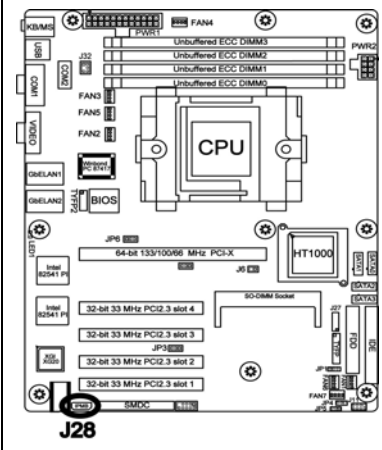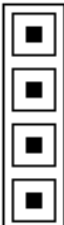
**2.03 – Jumper Settings**

| Jumper | Function | Settings |
|---|---|---|
| J28 | IPMB Pin Header | See Section 2.04 |
| JP4, JP5 | ASF 2.0/SMDC Select | See Section 2.05 |
| JP6 | Clear CMOS Jumper | See Section 2.06 |
| J14 | USB Header | See Section 2.07 |
| J6 | PCI-X Bus Frequency | See Section 2.08 |
| J32 | LCM Pin Header | See Section 2.09 |
| J30 | Front Panel Connector | See Section 2.10 |
| JP2 | PCI/PCIX Mode Select | See Section 2.11 |
| J21~J25, J33, J34 | FAN Connectors with speed control | See Section 2.12 |
| J27 | 2x7 Pin Fan Connector | See Section 2.13 |
| J29 | SMDC | See Section 2.14 |

**Jumper Legend**

| | | |
|---|---|---|
| ■ ■ | OPEN - Jumper OFF | Without jumper cover |
| ■ ■ | CLOSED - Jumper ON | With jumper cover |

| | |
|---|---|
| ↑ Pin-1 | To indicate the location of pin-1 |
| ↑ Pin-1 | To indicate the location of pin-1 |

**2.04 – IPMB Pin Header (J28)**



Pin_4 : NC

Pin_3 : IPMB CLK

Pin_2 : GND

Pin_1 : IPMB DATA

## 2.05 – ASF 2.0/SMDC Select (JP4, JP5)
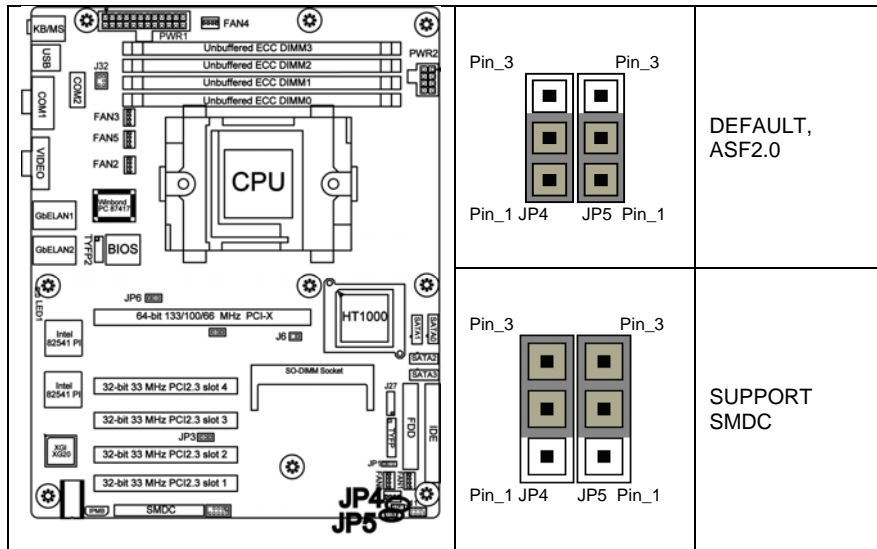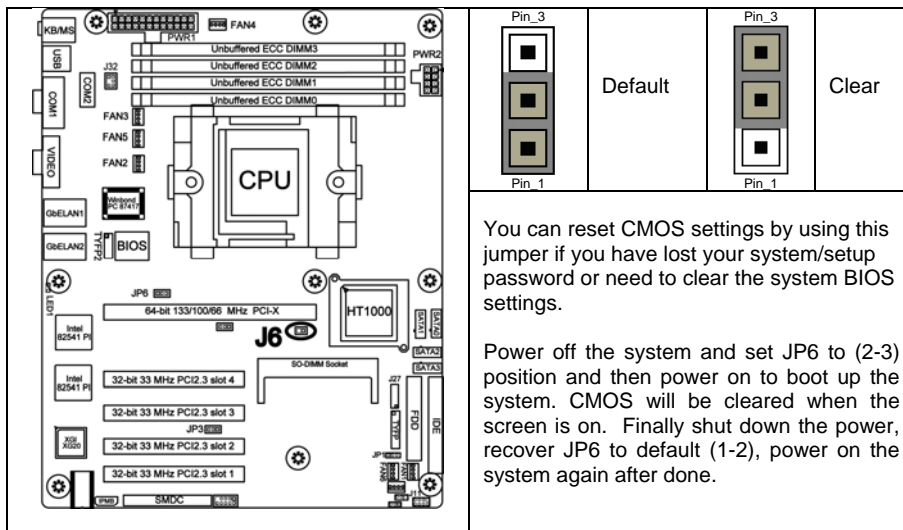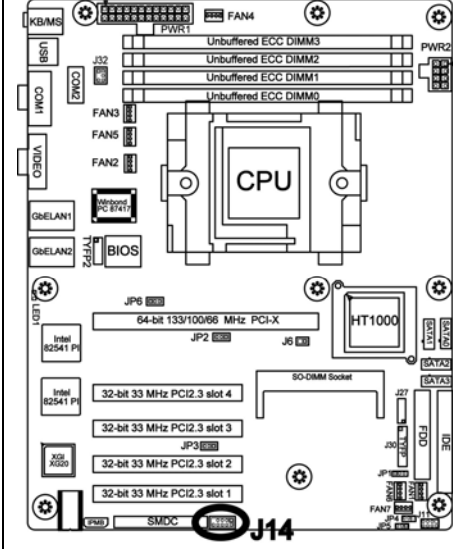
| | |
|---|---|
| Pin_3　　　　　Pin_3　　<br><br>Pin_1 JP4　JP5 Pin_1 | DEFAULT, ASF2.0 |
| Pin_3　　　　　Pin_3　　<br><br>Pin_1 JP4　JP5 Pin_1 | SUPPORT SMDC |

## 2.06 – Clear CMOS Jumper (JP6)

| | | | |
|---|---|---|---|
| Pin_3<br><br>Pin_1 | Default | Pin_3<br><br>Pin_1 | Clear |

You can reset CMOS settings by using this jumper if you have lost your system/setup password or need to clear the system BIOS settings.

Power off the system and set JP6 to (2-3) position and then power on to boot up the system. CMOS will be cleared when the screen is on. Finally shut down the power, recover JP6 to default (1-2), power on the system again after done.

**2.07 – USB2.0 Header (J14)**



| PIN-9 | | | | | | PIN-1 |
| PIN-10 | | | | | | PIN-2 |

| Signal Description | Pin # | Pin # | Signal Description |
|---|---|---|---|
| USB PWR | 1 | 2 | USB PWR |
| USB 3 - - | 3 | 4 | USB 4 - - |
| USB 3 + | 5 | 6 | USB 4 + |
| GND | 7 | 8 | GND |
| KEY | 9 | 10 | GND |

**2.08 – PCI-X Bus Frequency Configuration (J6)**



Open

Closed

J6 is used to adjust PCI-X frequency.
**Open(Default):100MHz/66MHz;**
**Closed: 133MHz**

**2.09 – LCM Pin Header (J32)**



| VCC | PIN 1 | PIN 2 | RXD2 |
|---|---|---|---|
| KEY | PIN 3 | PIN 4 | GND |
| 5VSB | PIN 5 | PIN 6 | TXD2 |

**2.10 – Front Panel Connector (J30)**



| Signal | PIN # | PIN # | Signal |
|---|---|---|---|
| HDD LED+ | 1 | 2 | PWR LED+ |
| HDD LED- | 3 | 4 | PWR LED- |
| Reset Button | 5 | 6 | PWR S/W |
| Reset Button | 7 | 8 | PWR S/W |
| NMI | 9 | 10 | NC |
| NMI | 11 | 12 | NC |
| 5VSB | 13 | 14 | KEY |
| SDA | 15 | 16 | GND |
| SCL | 17 | 18 | NC |

14
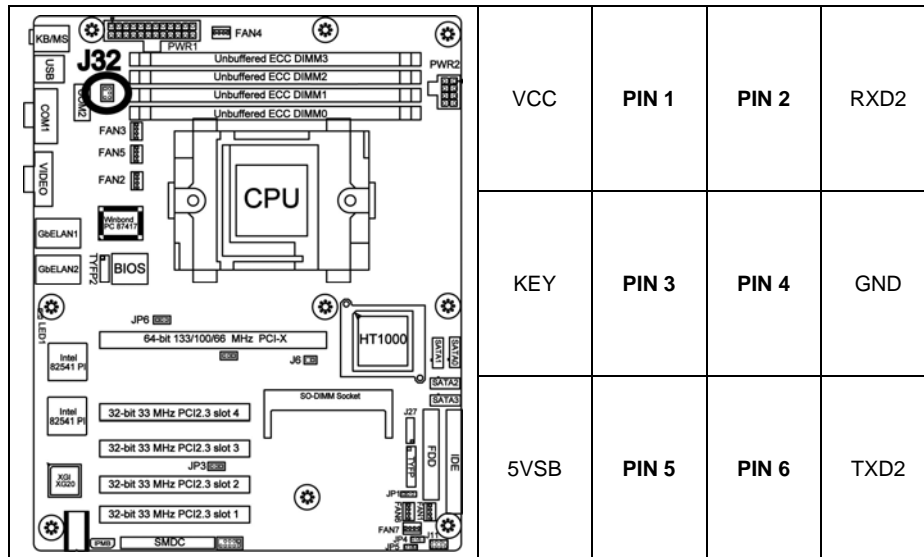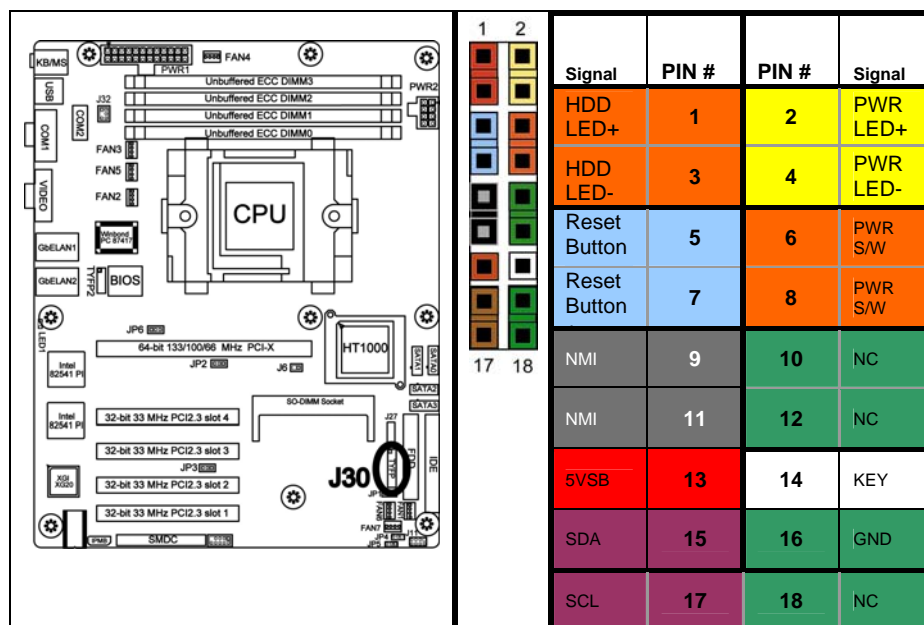
## 2.11 - PCI/PCI-X Mode Select (JP2)

| | | |
|---|---|---|
| | Pin_3 ▢■■ Pin_1 | **Auto Detect PCI-X Device** |
| | Pin_3 ■■▢ Pin_1 | **Force PCI Mode** |
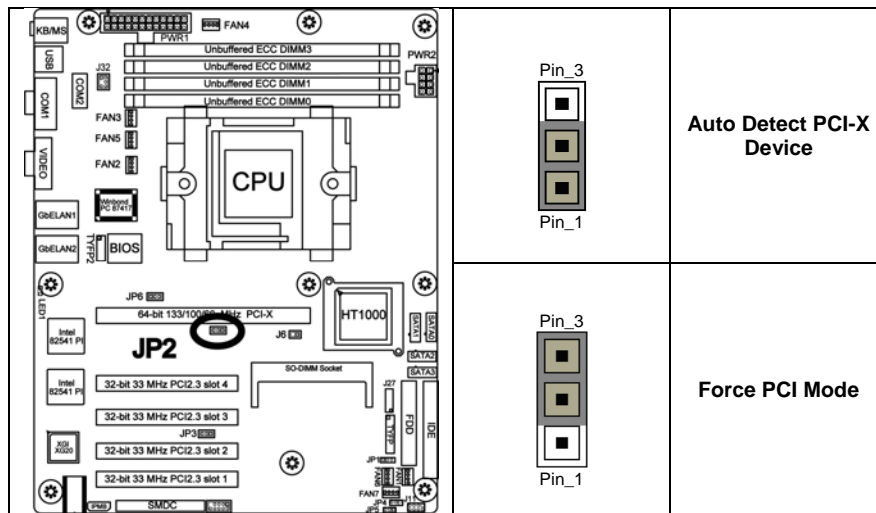
## 2. 12 – FAN Connectors with speed control (J21~J25, J33, J34)

| | | |
|---|---|---|
| | | **Pin_4:** Speed control |
| | ■ ■ ■ ■ Pin_1 | **Pin_3** : Tachometer |
| | | **Pin_2** : +12V |
| | | **Pin_1** : GND |
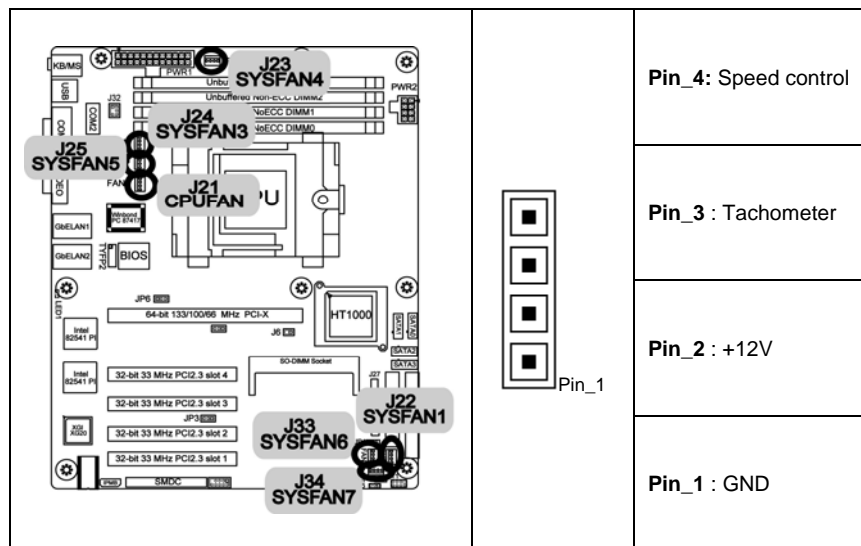
**2.13 - 2x7 Pin Fan Connector (J27) (For Barebone only)**



| Signal | Pin | Pin | Signal |
|--------|-----|-----|--------|
| FAN1_TACH | 1 | 2 | FAN2_TACH |
| FAN2_TACH | 3 | 4 | FAN2_TACH |
| FAN2_TACH | 5 | 6 | FAN2_TACH |
| FAN2_TACH | 7 | 8 | FAN2_TACH |
| NC | 9 | 10 | NC |
| GND | 11 | 12 | Key |
| GND | 13 | 14 | FAN1_PWM |

**2.14 - SMDC Connector (J29)**



For connection with Tyan Server Management Daughter Card (SMDC). The SMDC connector is compatible with only the Tyan M3291 (SMDC).
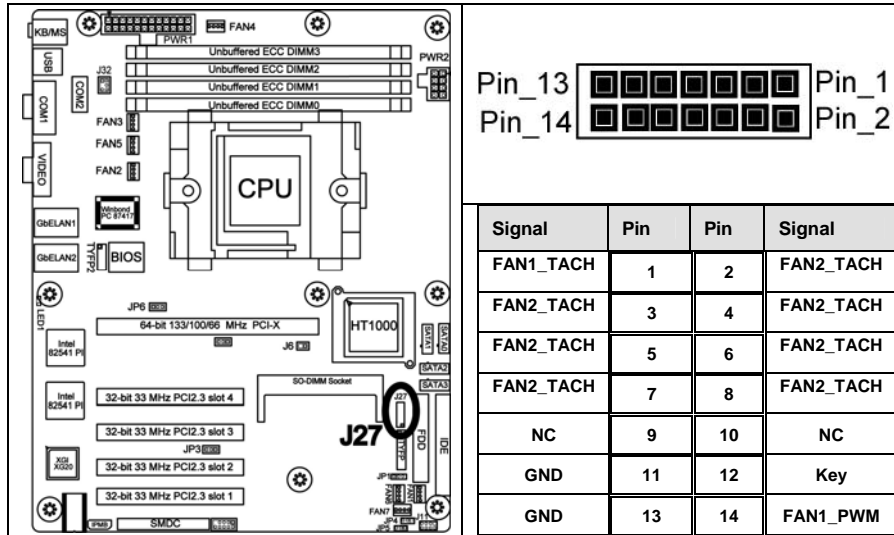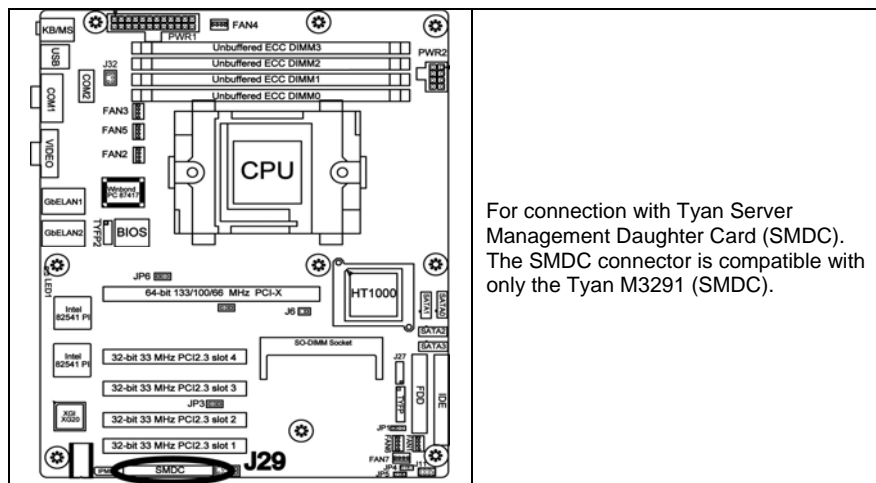
### 2.15 – Tips on Installing the Motherboard in Chassis

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.

**Tomcat K8SH S3850 Mounting Hole Placement**
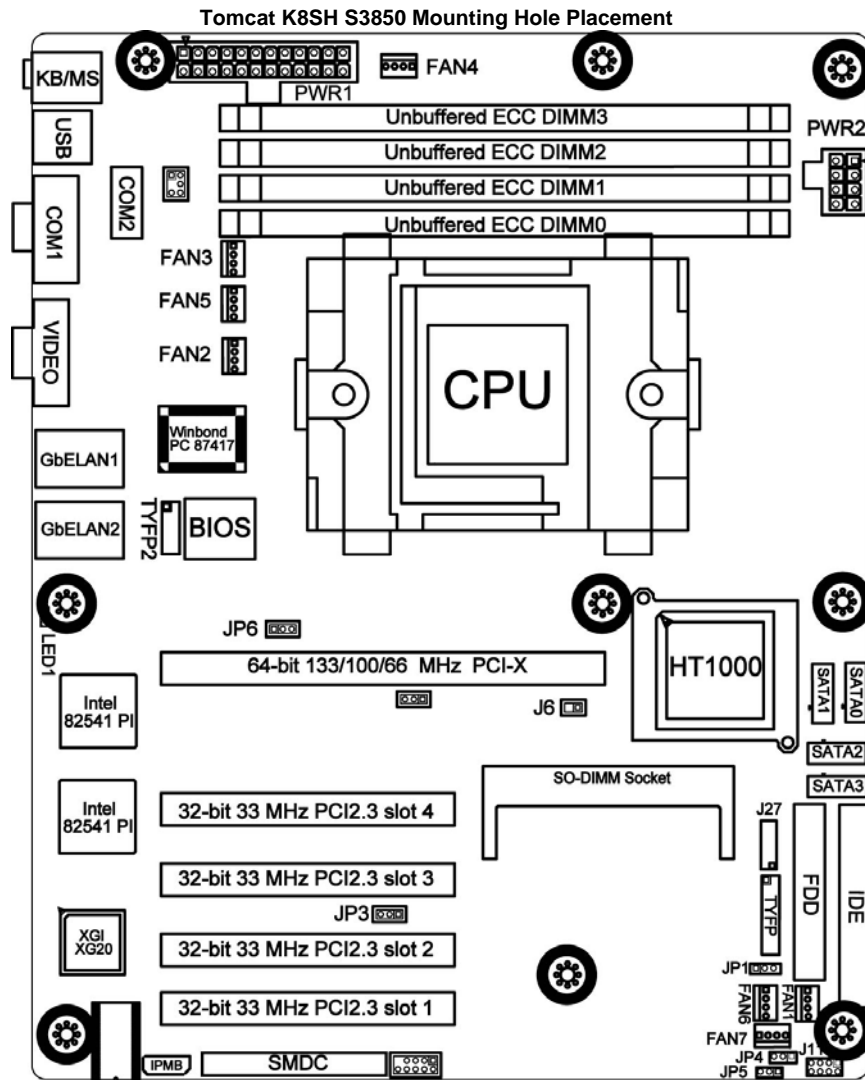
Some chassis include plastic studs instead of metal. Although the plastic studs are usable, Tyan recommends using metal studs with screws that will fasten the motherboard more securely
in place.

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

## Mounting the Motherboard

| Type | Solutions for installing |
|------|--------------------------|
| | Screw / Motherboard / Stud / Chassis wall — Screw / Motherboard / Stud / Chassis wall |
| | Motherboard / Standoff / Chassis wall — Screw / Motherboard / Stud / Chassis wall |
| | Motherboard / Standoff / Chassis wall — Screw / Motherboard / Stud / Chassis wall / Screw |
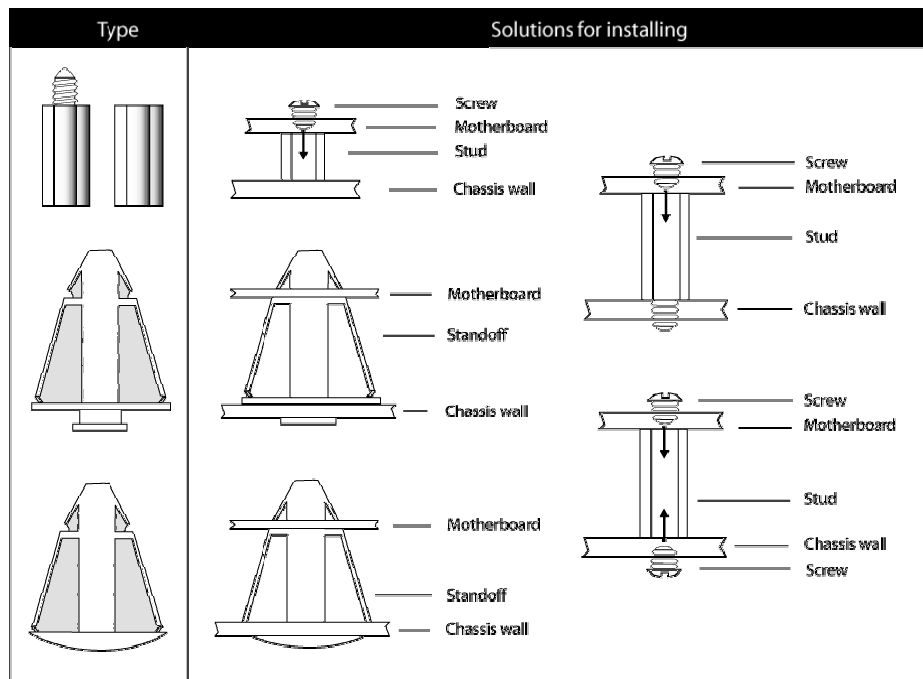
**TIP:** Use metal studs if possible, as they hold the motherboard into place more securely than plastic standoffs.

### 2.16 – 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*. A Critical aspect to system building is whether you're using the recommended memory for the motherboard that you have. For compatibility information, please check Tyan's web site at: **www.tyan.com**

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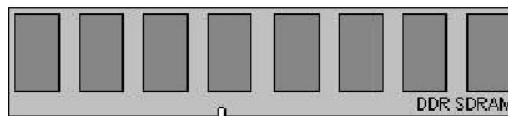


Here are a few key points to note before installing memory into your Tomcat K8SH:

- AMD Opteron$^{TM}$ processors support 64bit (non-interleaved) or 128bit (interleaved) memory configurations
- At least ONE Unbuffered ECC DDR SDRAM module must be installed for the system to turn on and POST (power on self test)
- 128MB, 256MB, 512MB, 1GB and 2GB* Unbuffered ECC PC2100, PC2700, PC3200 DDR SDRAM memory modules are supported
- All installed memory will be automatically detected
- The Tomcat K8SH supports up to 8GB.
- * Not validated at the time of print, subject to change.

**Valid DIMM Configurations**

The processor supports 64-bit mode and 128-bit mode configurations of the DIMMs. In 64-bit mode, only DIMMs 1 and 3 can be populated. Possible combinations of DIMMs in 64-bit mode are listed in the table as below. In 128-bit mode, a minimum of two DIMMs is required to create the 128-bit bus; therefore, DIMMs can only be populated in even numbered pairs in slots 1 & 2, and 3 & 4. The following table shows some possible combinations of DIMMs for 128-bit mode. **Not all possible combinations are listed in the table**.

| DIMM Number | 64-Bit Width | 128-Bit Width | Bank Interleave |
|---|---|---|---|
| DIMM0 | Bank 0 | Bank 0, low 64 | Bank 0, low 64, even |
| DIMM1 | Not Used | Bank 0, high 64 | Bank 0, high 64, even |
| DIMM2 | Bank 1 | Bank 1, low 64 | Bank 0, low 64, odd |
| DIMM3 | Not Used | Bank 1, high 64 | Bank 0, high 64, odd |

**Memory Installation Procedure**

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. The method of installing memory modules is detailed in the following diagrams.

DDR SDRAM Module

DDR SDRAM DIMM Slot - 184 Pins (1 key)
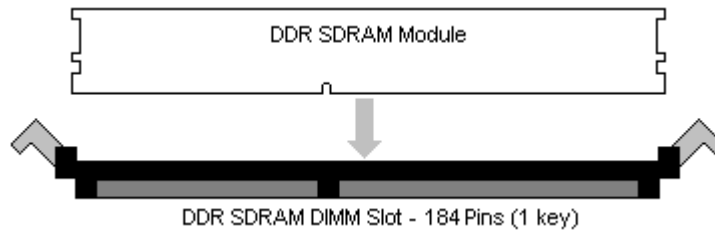
Once the memory modules are firmly seated in the socket, two clamps on either side will close and secure the module into the socket. Sometimes you may need to close the clamps manually.

DDR SDRAM Module

DDR SDRAM DIMM Slot - 184 Pins (1 key)
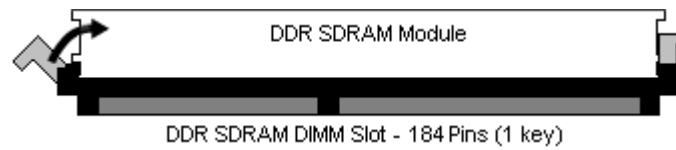
To remove the memory module, simply push the clamps outwards until the memory module pops up. Then simply remove the module.

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

**2.17 – Installing the Processor and Heatsink**

Your Tomcat K8SH S3850 supports the latest 64-bit processor technologies from AMD. However, **only AMD Opteron<sup>TM</sup> processor are certified and supported with this motherboard.** Reference the Tyan website for further details: **www.tyan.com**

The following diagrams will detail how to install your processor:
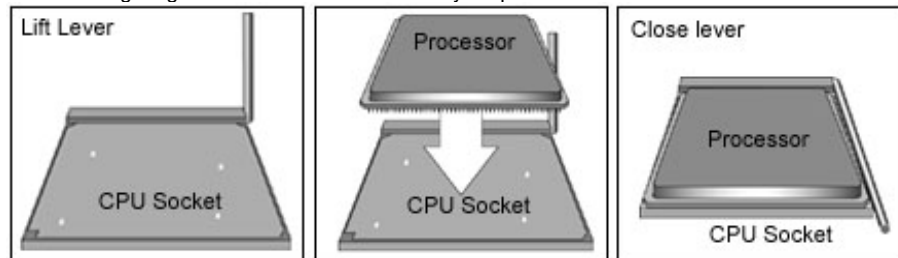


The processors you choose to use may not look exactly like the one pictured above, nor will the socket look exactly the same. The diagram is provided as a visual guide to help you install socket processors.

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.

**Take care when installing processor as it has very fragile connector pins below the processor and can bend and break if inserted improperly.**

**Heatsink Retention Frame and Back Plate Installation**

After you are done installing the processor, you should proceed to installing the heatsink. Heatsink will ensure that the processor does not overheat and continues to operate at maximum performance for as long as you own it. Overheated processor may damage the motherboard.

The back plate assembly prevents excessive motherboard flexing in the area near the processor and provides a base for the installation of the heatsink retention frame and heatsink.

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 AMD's website at **http://www.amd.com**.

The following diagram will illustrate how to install the most common CPU heatsink retention frame and back plates:

1) Remove the adhesive cover from the back plate.
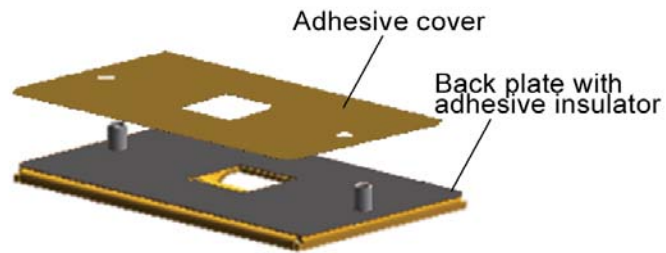


2) Align the back plate screw bolts to the holes around processor socket on the back of motherboard.
3) Align the heatsink retention frame to the back plate screw bolts on the front of motherboard.
4) Insert screws to fasten the retention frame and back plate.
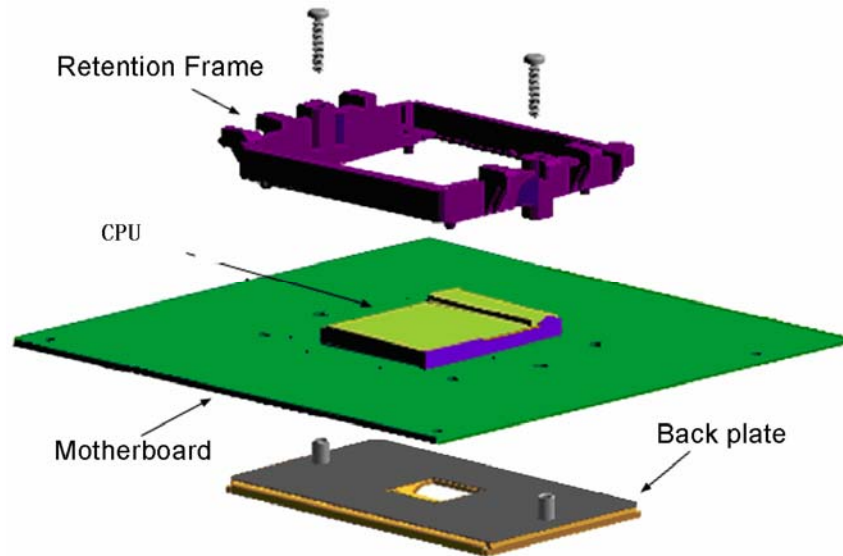
**2.18 -- Thermal Interface Material**
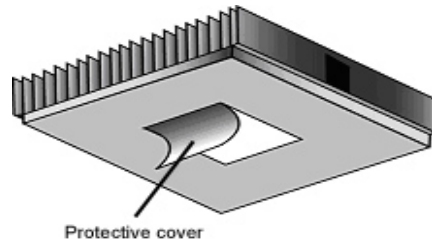
There are two types of thermal interface materials designed for use with the AMD Opteron processor.

The most common material comes as a small pad attached to the heatsink at the time of purchase. There should be a protective cover over the material. Take care not to touch this material. Simply remove the protective cover and place the heatsink on the processor.

Protective cover
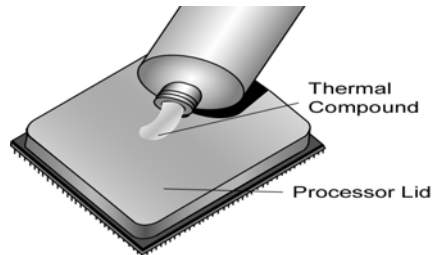
The second type of interface material is usually packaged separately. It is commonly referred to as 'thermal compound'. Simply apply a thin layer on to the CPU lid (applying too much will actually reduce the cooling).

Thermal Compound

Processor Lid

| NOTE | Aways check with the manufacturer of the heatsink & processor to ensure the Thermal Interface material is compatible with the processor & meets the manufacturer's warranty requirements |

**2.19 Heatsink Installation Procedures**

**Type A: CAM LEVER (TYPE) INSTALLATION**
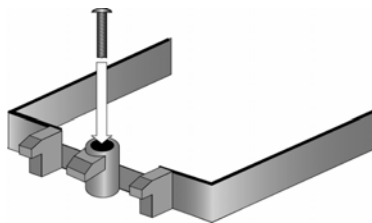
1. After placing backplate and interface material under motherboard place heatsink retention frame on top of motherboard. Align plastic retention bracket screw hole
with CPU back-plate standoffs. Tighten screws to secure plastic retention bracket. Repeat for on other side.
**DO NOT OVER TIGHTEN.**
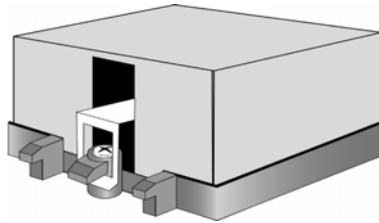
2. After tightening screws secure metal clip to plastic retention bracket center tab. Repeat for on other side of heatsink.
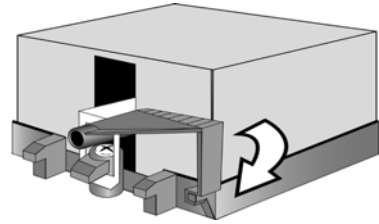
3. After securing metal clip to plastic retention bracket center tab, push down on plastic clip to lock plastic clip to side tab.

**Type B: SCREW RETENTION TYPE HEATSINK**
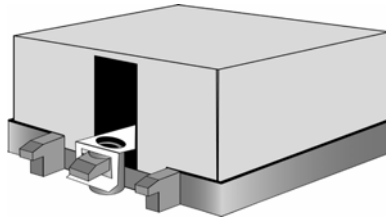
1. After placing CPU back-plate and adhesive interface material under motherboard, place heatsink retention frame on top of motherboard. Align heatsink retention frame screw hole with backplate assembly standoffs. Place heatsink inside plastic retention bracket. Place metal clip over retention frame tab. Repeat for other side.
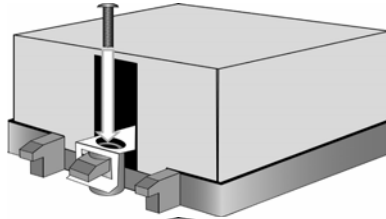
2. Insert screw through metal clip. **BE SURE METAL CLIP IS LOCKED ONTO RETENTION FRAME TAB.**
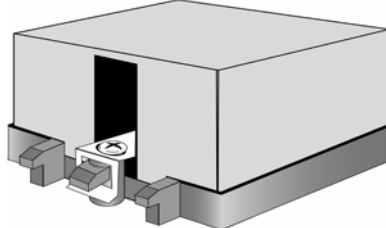
3. Tighten screw through metal clip. Repeat on other side. **DO NOT OVER TIGHTEN.**

**Finishing Installing the Heatsink**

After you finish installing the heatsink onto the processor and socket, attach the end wire of the fan (which should already be attached to the heatsink) to the motherboard. The following diagram illustrates how to connect fans onto the motherboard.
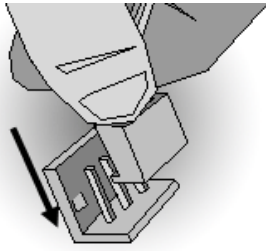
After you're finished installing all the fans you can connect your drives (hard drives, CD-ROM drives, etc.) to your motherboard.

**2.20 – Attaching Drive Cables**

**IDE Drives**

Attaching IDE drive cabling is simple. The cable is "keyed" to only allow it to be connected in the correct manner. Tyan motherboards have one on-board IDE channel, and it supporting two drives.

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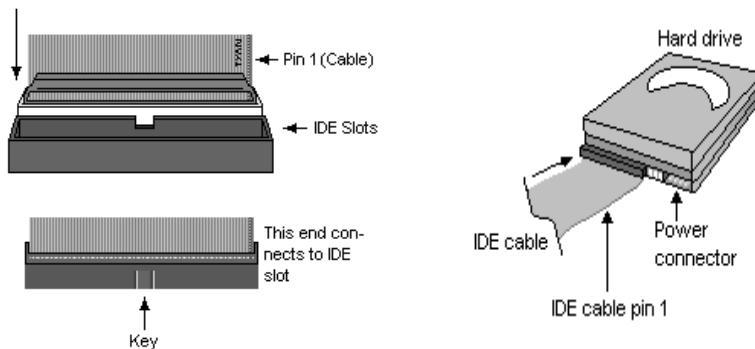
Simply plug in the BLUE END of the IDE cable into the motherboard IDE connector, and the other end(s) into the drive(s). Each standard IDE cable has three connectors, two of which are closer together. The BLUE connector that is furthest away from the other two is the end that connects to the motherboard.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

Note: Always remember to properly set the drive jumpers.  If only using one device on a channel, it must be set as Master for the BIOS to detect it.

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

**SATA Drivers**

The Tomcat K8SH may be also equipped with 4 Serial ATA (SATA) channels.
Connections for these drives are also very simple.
There is no need to set Master/Slave jumpers on SATA drives.
Tyan has supplied two SATA cables and one SATA power adapter for boards equipped with SATA" since this is a BOM option. If you are in need of other cables or power adapters please contact your place of purchase.
The following picture illustrates how to connect a SATA drive

1.  **SATA drive cable connection**

2.  **SATA drive power connection**

3.  **SATA cable motherboard connector**

4.  **SATA drive power adapter**
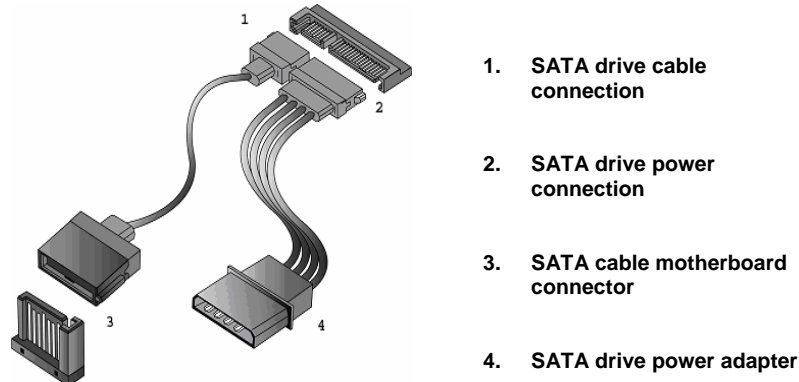
**Floppy Drives**

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.
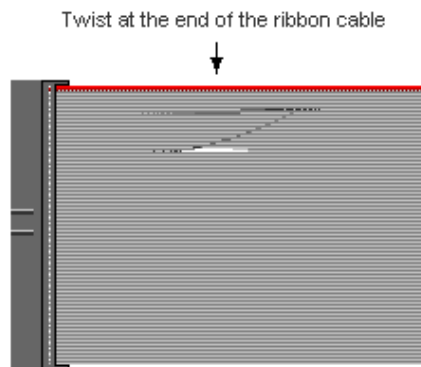
The first floppy drive (commonly denoted as **A:**) is usually attached to the end of the cable with the twist in it. Drive B: is usually connected to the second or third connector in the cable (the second or third connector after you install Drive **A:**).

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. |

**2.21 – 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 ALWAYS** unplug the power connector to the motherboard before performing system hardware changes, to avoid damaging the board or expansion device. |
|------|------|

### 2.22 - Installing Optional SO-DIMM Modules

Your Tiger K8SH S3850 motherboard is equipped with an optional proprietary SO-DIMM connector. The SO-DIMM connector can be used for expansion cards to provide such features as, additional SAS/SATA or SCSI support. For details of available expansions cards, visit the TYAN website at http://www.tyan.com. To install a SO-DIMM expansion card:

1. Open the spring levers as shown.
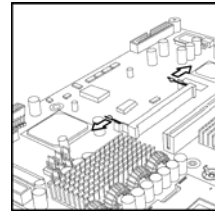
2. Insert the SO-DIMM card as shown, making sure that the card is the right way up. The card will fit in only one way and the screw holes in the card should line up exactly with the mounting posts on the motherboard.
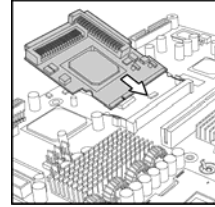
3. Push the SO-DIMM card down into place and make sure the spring levers click into place as shown.

4. Screw the board into place using one or two screws as required.
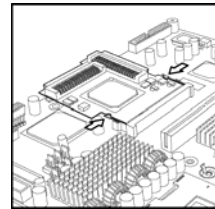
Removal of a SO-DIMM card is a reversal of the installation procedure. Push out the spring levers as shown and pull the card out of the socket.
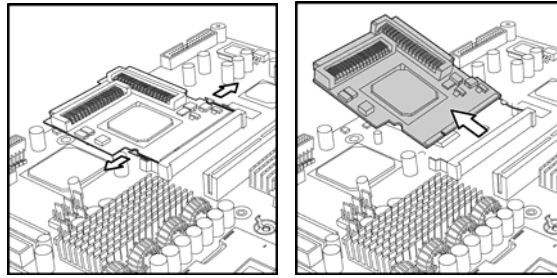


The SO-DIMM expansion cards will fit in the slot only one way. Make sure that you align the slot in the card with the key in the card slot.



Key slot
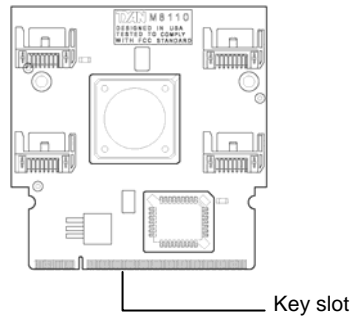
### 2.23 – Connecting External Devices

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:



PS/2 Mouse

USB Ports

PS/2 Keyboard

Serial Port

VGA Port

1 Gbit or 10/100Mbit Ethernet Port

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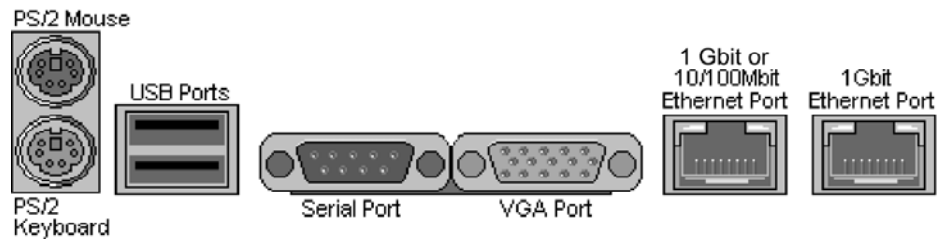
Besides being used primarily to connect printers, the Printer Port is also used for devices such as Zip drive, some external CD-RW drives and or other external devices. More on the uncommon side these days are the Serial Ports. They were primarily used to connect external modems, but most modems today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

### 2.24 – Installing the Power Supply



**PWR1: 24-pin EPS 12V power connector**

**PWR2: 8-pin EPS 12V power connector**
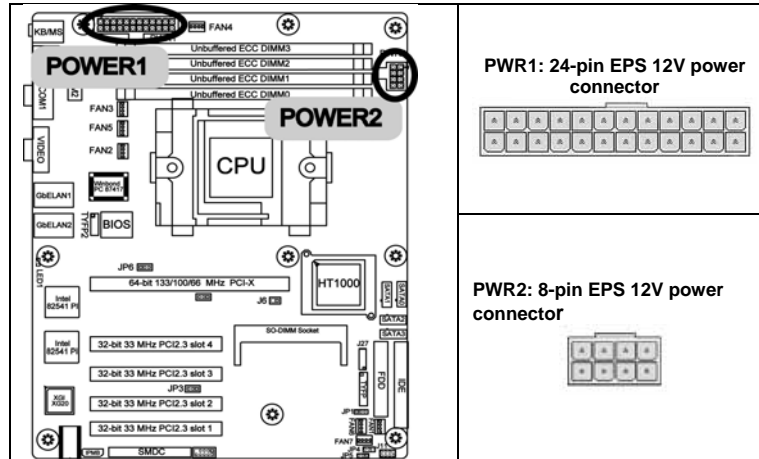
We suggest using a **400W** or higher power supply; this is of course dependent on how many devices you attach. A **400W** is sufficient for systems without many devices (i.e. 1 hard drive, 1 optical drive, and 1 or 2 expansion cards) however a higher wattage solution may be needed if the system is fully loaded. Look to the www.tyan.com website for further information.

**NOTE:** The S3850 Tomcat K8SH peripheral drive power connector must be independent of any other devices. A device such as a DVD/CD-ROM drive, hard drive, or any other devices cannot be attached onto the same power line. If connected, system stability is compromised.

**2.25 – 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

### 3.1 – BIOS Setup Utility

With the BIOS setup utility, you can modify BIOS settings and control the special features of your computer.  The setup utility uses a number of menus for making changes and turning the special features on or off.

| NOTE | All menus are based on a typical system.  The actual menus displayed on your screen may be different and depend on the hardware and features installed in your computer. |
|------|------|

To start the BIOS setup utility:

    a.   Turn on or reboot your system

    b.   Press <Del> during POST (F4 on remote console) to start BIOS setup utility

```
                          BIOS Setup Utility
        Main    Advanced   PCI/PnP   Boot   Security    Chipset    Exit

  System Overview                              Use [ENTER], [TAB]
                                               or [SHIFT-TAB] to
  AMIBIOS                                      select a field
  Version    : xx.xx.xx
  Build Date : MM/DD/YY                        Use [+] or [-] to
  ID         : XXXXXXX                         configure system time.

  Processor
  Type       : AMD Opteron(tm) Model xxx
  Speed      :  xxxx MHz
  Count      :  x                              ←  → Select Screen
                                               ↑ ↓  Select Item
  System Memory                                +/-    Change Option
  Size       : xxxx MB                         F1    General Help
                                               F10   Save and Exit
  System Time              [XX:XX:XX]          ESC  Exit
  System Date             [Day xx/xx/xxxx]
```

**To select an item**
Use the left/right (← →) arrow keys to make a selection.

**To display a sub-menu** (A pointer " ▶ " marks all sub menus)
Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>.

**3.2 – BIOS Menu Bar**

The menu bar at the top of the windows lists these selections:

| Main | To configure basic system setups |
|---|---|
| Advanced | To configure the advanced chipset features |
| PCI/PnP | To configure legacy Plug & Play or PCI settings |
| Boot | To configure system boot order |
| Security | To configure user and supervisor passwords |
| Chipset | To configure chipset management features |
| Exit | To exit setup utility |

**NOTE**     Options written in **bold type** represent the BIOS setup default

**3.3 – BIOS Legend Bar**

The chart describes the legend keys and their alternates:

| Key | Function |
|---|---|
| <F1> | General help window |
| <ESC> | Exit current menu |
| ← → arrow keys | Select a different menu |
| ↑ or ↓ arrow keys | Move cursor up/down |
| <Tab> or <Shift-Tab> | Cycle cursor up/down |
| <Home> or <End> | Move cursor to top/bottom of the window |
| <PgUp> or <PgDn> | Move cursor to next/previous page |
| <-> | Select the previous value/setting of the field |
| <+> | Select the next value/setting of the field |
| <F8> | Load Fail Safe default configuration values of the menu |
| <F9> | Load the Optimal default configuration values of the menu |
| <F10> | Save and exit |
| <Enter> | Execute command or select submenu |

### 3.4 – BIOS Main Menu

The Main BIOS Menu is the first screen that you can navigate. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured, options in blue can be changed.

The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often, a text message will accompany it.

```
                        BIOS Setup Utility
     Main     Advanced    PCI/PnP    Boot   Security   Chipset    Exit

   System Overview                              Use [ENTER], [TAB] or
                                                [SHIFT-TAB] to select a
                                                field
   AMIBIOS
   Version    : 08.00.xx                        Use [+] or [-] to
   Build Date : mm/dd/yy                         configure system time.
   ID         : xxxxxxxx

   Processor
   Type       : AMD Opteron(tm) Model xxxx
   Speed      : xxxx MHz
   Count      : x                               ← → Select Screen
                                                ↑ ↓ Select Item
   System Memory                                Enter Go to Sub Screen
   Size       : xxxx MB                         F1    General Help
                                                F10  Save and Exit
   System Time           [HH:MM:SS]             ESC  Exit
   System Date           [DD MM/DD/YYYY]
```

| Feature | Option | Description |
|---|---|---|
| **Main** | | |
| System Time | HH : MM : SS | Set the system time |
| System Date | MM : DD : YYYY | Set the system date |

### 3.5 – BIOS Advanced Menu

You can select any of the items in the left frame of the screen, such as Super I/O Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.

```
                            BIOS Setup Utility
        Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit
```

| Advanced Settings | Options for CPU |
|---|---|
| WARING: Setting wrong values in below sections may cause system to malfunction.<br><br>▸ CPU Configuration<br>▸ IDE Configuration<br>▸ Floppy Configuration<br>▸ Super IO Configuration<br>▸ S-ATA Configuration<br>▸ ACPI Configuration<br>▸ Event Log Configuration<br>▸ Hyper Transport Configuration<br>▸ Hardware Health Configuration<br>▸ MPS Configuration<br>▸ AMD Cool 'N Quiet Configuration<br>▸ Remote Access Configuration<br>▸ USB Configuration<br>▸ Device & PCI Slots Configuration | ← → Select Screen<br>↑ ↓ Select Item<br>Enter   Go to Sub Screen<br>F1     General Help<br>F10   Save and Exit<br>ESC  Exit |

| Feature | Option | Description |
|---|---|---|
| **Advanced Settings** | | |
| CPU Configuration | **Menu Item** | Options for CPU |
| IDE Configuration | **Menu Item** | Configure the IDE device(s) |
| Floppy Configuration | **Menu Item** | Configure the Floppy drive(s) |
| Super IO Configuration | **Menu Item** | Configures Super IO Chipset Nat417 |
| S-ATA Configuration | **Menu Item** | Configure ServerWorks HT1000 S-ATA |
| ACPI Configuration | **Menu Item** | Section for Advanced ACPI Configuration |
| Event Log Configuration | **Menu Item** | Mark as read, Clear or View Event Log statistics |
| Hyper Transport Configuration | **Menu Item** | Configure HT links |
| Hardware Health Configuration | **Menu Item** | Configure/monitor the Hardware Health |
| MPS Configuration | **Menu Item** | Configure the Multi-Processor Table |
| AMD Cool 'N Quiet Configuration | **Menu Item** | Configure AMD PowerNow support |
| Remote Access Configuration | **Menu Item** | Configure Remote Access |
| USB Configuration | **Menu Item** | Configure the USB support |
| Device & PCI Slots Configuration | **Menu Item** | Onboard Devices and PCI Add-On Cards Enabled/Disabled |

**3.5.1 CPU Configuration Sub-Menu**

You can use this screen to view CPU Configuration Menu. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

```
                           BIOS Setup Utility
        Main     Advanced    PCI/PnP    Boot    Security    Chipset    Exit

 CPU Configuration                                    This option should
                                                      remain disabled for
                                                      normal operation.
 Module Version  :  XX.XX                             The driver developer
 Physical Count  :  X                                 may disable it for
 Logical Count   :  X                                 testing purpose.


 Dual Core AMD Opteron (tm) Processor  XXX
 Revision :  XX
 Cache L1: XXXKB
 Cache L2: XXXXKB
 Speed:     XXXXMHz
 Current FSB Multiplier   :   XXX                     ← → Select Screen
 Maximum FSB Multiplier  :   XXX                      ↑ ↓ Select Item
 Able to change Freq.      :   Yes                     +/-   Change Option
 uCode Patch Level         :   XXXX                    F1    General Help
                                                       F10  Save and Exit
 GART Error Reporting        [Disabled]                ESC  Exit
 MTRR Mapping                [Continuous]
```

| Feature | Option | Description |
|---------|--------|-------------|
| **CPU Configuration** | | |
| Module Version<br>Physical Count<br>Logical Count | Read only | Displays information about CPU |
| Revision<br>Cache L1<br>Cache L2<br>Speed<br>Current FSB Multiplier<br>Maximum FSB Multiplier<br>Able to change Freq.<br>uCode Patch Level | Read only | Displays information about CPU |
| GART Error Reporting | **Disabled**<br><br>Enabled | This option should remain disabled for normal operation.  The driver developer may enable it for the purpose of testing. |

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| Feature | Option | Description |
|---|---|---|
| **CPU Configuration** | | |
| MTRR Mapping | Continuous | This option determines the method used for programming CPU MTRRs when 4GB or more of memory is preset. Discrete leaves the PCI hole below the 4GB boundary undescribed. Continuous explicitly describes the PCI hole as non-cacheable. |
| | **Discrete** | |

**3.5.2– IDE Configuration Sub-Menu**

You can use this screen to select options for the IDE Configuration Settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option.

| Feature | Option | Description |
|---|---|---|
| **IDE Configuration** | | |
| Primary IDE Master/Slave | **Auto** <br> XXXX <br> Not Installed <br> Enabled | While entering Setup, BIOS auto detects the presence of IDE devices. This displays the status of auto detection of IDE devices. |
| IDE Detect Time Out (Sec) | **0~35** <br> (at 5 interval) | Selects the time out value for detecting ATA/ATAPI device(s). |

```
                             BIOS Setup Utility
         Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

  IDE Configuration                              [Disabled] : disables the
                                                 integrated IDE controller.
                                                 [Primary] : enables only
  ▶ Primary IDE Master           [xxxx]          the primary IDE controller.
  ▶ Primary IDE Slave            [xxxx]
                                                 ← → Select Screen
  IDE Detect Time Out (Sec) :    [xx]            ↑ ↓ Select Item
                                                 +/-   Change Option
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC  Exit
```

**3.5.2.1 – Primary/Secondary IDE Master/Slave Sub-Menu**

| BIOS Setup Utility | | | | | | |
|---|---|---|---|---|---|---|
| **Main** | Advanced | PCI/PnP | Boot | Security | Chipset | Exit |

| Primary IDE Master | |
|---|---|
| Device: Not Detected | ← → Select Screen<br>↑ ↓ Select Item<br>+/-   Change Option<br>Tab  Select Field<br>F1   General Help<br>F10  Save and Exit<br>ESC  Exit |
| Type                               [Auto]<br>LBA /Large Mode           [Auto]<br>Block (Multi-Sector Transfer)  [Auto]<br>PIO Mode                 [Auto]<br>DMA Mode              [Auto]<br>S.M.A.R.T.                [Auto]<br>32 Bit Data Transfer      [Enabled] | |

| Feature | Option | Description |
|---|---|---|
| **Configure Nat417 Super IO Chipset** | | |
| Type | **Auto** | Selects the type of device connected to the system. |
| | Not Installed | |
| | CD/DVD | |
| | ARMD | |
| LBA/Large Mode | **Auto** | Auto: Enabled LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.<br>Disabled: Disabled LBA Mode. |
| | Disabled | |
| Block (Multi-Sector Transfer) | **Auto** | Disabled: The Data transfer from and to the device occurs one sector at a time.<br>Auto: The Data transfer from and to the device occurs multiple sectors at a time if the device supports it. |
| | Disabled | |
| PIO Mode | **Auto** | Selects the PIO Mode. Select Auto to enhance hard disk performance by optimizing the hard disk timing. |
| | 0~4<br>(at 1 interval) | |
| DMA Mode | **Auto** | Selects DMA Mode.<br>Auto: Auto detected. |
| S.M.A.R.T. | **Auto** | S.M.A.R.T (Self-Monitoring Analysis and Reporting Technology) is a utility that monitors your disk status to predict hard disk failure. |
| | Disabled | |
| | Enabled | |
| 32Bit Data Transfer | **Enabled** | Enables 32-bit to maximize the IDE hard disk data transfer rate. |
| | Disabled | |

### 3.5.3 – Floppy Configuration Sub-Menu

You can use this screen to specify options for the Floppy Configuration Settings. Use the up and down <Arrow> keys to select an item. Use the <Plus> and <Minus> keys to change the value of the selected option. The settings are described on the following pages.

```
                        BIOS Setup Utility
      Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

  Floppy Configuration                          Select the type of
                                                floppy drive connected
                                                to the system.

  Floppy A              [1.44 MB 31/2"]         ← → Select Screen
  Floppy B              [Disabled]              ↑ ↓ Select Item
                                                +/-  Change Option
                                                F1    General Help
                                                F10  Save and Exit
                                                ESC  Exit
```

| Feature | Option | Description |
|---|---|---|
| **Floppy Configuration** | | |
| Floppy A<br>Floppy B | Disabled | Selects the type of floppy drive connected to the system. |
| | 360 KB 51/4" | |
| | 1.2 MB 51/4" | |
| | 720 KB 31/2" | |
| | **1.44 MB 31/2"** | |
| | 2.88 MB 31/2" | |

### 3.5.4 – Super IO Configuration Sub-Menu

You can use this screen to select options for the Super I/O settings. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option

```
                        BIOS Setup Utility
      Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

  Configure Nat417 Super IO Chipset             Allows BIOS to enable
                                                or disable Floppy
                                                Controller.

  Onboard Floppy Controller     [Enabled]
  Serial Port1 Address          [3F8/IRQ4]      ← → Select Screen
  Serial Port2 Address          [2F8/IRQ3]      ↑ ↓ Select Item
                                                +/-   Change Option
                                                F1    General Help
                                                F10  Save and Exit
                                                ESC  Exit
```

| Feature | Option | Description |
|---|---|---|
| **Configure Nat417 Super IO Chipset** | | |
| Onboard Floppy Controller | **Enabled** | Allows BIOS to enable or disable the floppy controller. |
| | Disabled | |
| Serial Port1 Address | **3F8/IRQ4** | Allows BIOS to select Serial Port1 Base Addresses. |
| | 3E8/IRQ4 | |
| | 2E8/IRQ3 | |
| | Disabled | |
| Serial Port2 Address | **2F8/IRQ3** | Allows BIOS to select Serial Part2 Base Addresses. |
| | 3E8/IRQ4 | |
| | 2E8/IRQ3 | |
| | Disabled | |

**3.5.5 S-ATA Configuration Sub-Menu**

You can use this screen to view S-ATA Configuration Menu. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

```
                          BIOS Setup Utility
          Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

       Configure ServerWorks                          Enable HT1000
                                                      S-ATA.
       _____

       HT1000 S-ATA                [Enabled]          ← → Select Screen
       S-ATA Mode                  [P-ATA]            ↑ ↓ Select Item
       INT13 Support               [Enabled]          +/-    Change Option
                                                      F1     General Help
                                                      F10  Save and Exit
                                                      ESC  Exit
```

| Feature | Option | Description |
|---|---|---|
| **Configure ServerWorks** | | |
| HT1000 S-ATA | **Enabled** | Allows user to enable or disable HT1000 S-ATA controller. |
| | Disabled | |
| S-ATA Mode | **P-ATA** | Sets S-ATA mode as P-ATA emulation or native S-ATA. |
| | S-ATA | |
| INT13 Support | **Enabled** | Enables or disables INT13 support. |
| | Disabled | |

**3.5.6 –ACPI Configuration Sub-Menu**

Use this screen to select options for ACPI. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. A description of the selected item appears on the right side of the screen. The settings are described on this page. The screen is shown below.

| BIOS Setup Utility | | | | | | |
|---|---|---|---|---|---|---|
| Main | **Advanced** | PCI/PnP | Boot | Security | Chipset | Exit |

| Advanced ACPI Configuration | | Enable RSDP pointers to 64-bit Fixed System Description Tables.  Di ACPI version has some |
|---|---|---|
| ACPI Version Features | [ACPI v2.0] | |
| ACPI APIC Support | [Enabled] | |
| ACPI SRAT Table | [Enabled] | |
| AMI OEMB table | [Enabled] | ← → Select Screen |
| Headless mode | [Disabled] | ↑ ↓ Select Item |
| | | +/-  Change Option |
| | | F1  General Help |
| | | F10  Save and Exit |
| | | ESC  Exit |

| Feature | Option | Description |
|---|---|---|
| **Advanced ACPI Configuration** | | |
| ACPI Version Features | ACPI v3.0 | Set this value to allow or prevent the system to be complaint with the ACPI 2.0 specification. |
| | **ACPI v2.0** | |
| | ACPI v1.0 | |
| ACPI APIC Support | **Enabled** | This option allows you to define whether or not to enable ACPI management features. |
| | Disabled | |
| ACPI SRAT Table | **Enabled** | Enable or disable the building of ACPI SRAT Table. |
| | Disabled | |
| AMI OEMB table | **Enabled** | Set this value to allow the ACPI BIOS to add a pointer to an OEMB table in the Root System Description Table (RSDT) table. Note: OEMB table is used to pass POST data to the AMI code during ACPI O/S operations. |
| | Disabled | |
| Headless mode | Enabled | Enable or disable Headless operation mode through ACPI. |
| | **Disabled** | |

**3.5.7 – Event Logging details Sub-Menu**

You can use this screen to view the Event Log Control Menu. This logs system events (such as CMOS clear, ECC memory errors, etc) and writes the log into NVRAM. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

| BIOS Setup Utility | | | | | | |
|---|---|---|---|---|---|---|
| Main | **Advanced** | PCI/PnP | Boot | Security | Chipset | Exit |

**Event Logging details**

View all unread events on the Event Log.

View Event Log
Mark All Events as Read
Clear Event Log
Event Log Statistics

← → Select Screen
↑ ↓ Select Item
+/-    Change Option
Enter Go to Sub Screen
F1    General Help
F10   Save and Exit
ESC  Exit

| Feature | Option | Description |
|---|---|---|
| **Event Logging details** | | |
| View Event Log | | Views all unread events on the Event Log. |
| Mark All Events as Read | OK Cancel | Marks all unread events as read. |
| Clear Event Log | OK Cancel | Erases all of events. |
| Event Log Statistics | | View details on the count of total unread events.  Other stats include size occupied and size free. (in terms of event units) |

**3.5.8 – Hyper Transport Configuration Sub-Menu**

You can use this screen to view the Hyper Transport Configuration Menu. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

| | | | | | | |
|---|---|---|---|---|---|---|
| | | BIOS Setup Utility | | | | |
| Main | **Advanced** | PCI/PnP | Boot | Security | Chipset | Exit |

| | |
|---|---|
| **Hyper Transport Configuration** | The Hyper Transport link will run at this speed if it is slower than or equal to the system clock and the board is capable. |
| CPU: HT1000 HT Link Speed          [Auto]<br>CPU: HT1000 HT Link Width          [Auto] | |
| | ← → Select Screen<br>↑ ↓ Select Item<br>+/-     Change Option<br>F1     General Help<br>F10   Save and Exit<br>ESC  Exit |

| Feature | Option | | Description |
|---|---|---|---|
| **Hyper Transport Configuration** | | | |
| CPU: HT1000 HT Link Speed | **Auto** | | The Hyper Transport link will run at this speed if it is slower than or equal to the system clock and the board is capable. |
| | 200MHz | | |
| | 400MHz | | |
| | 600MHz | | |
| | 800MHz | | |
| CPU: HT1000 HT Link Width | **Auto** | | The Hyper Transport link will run at this width. |
| | 2 Bit | | |
| | 4 Bit | | |
| | 8 Bit | | |

**3.5.9 – Hardware Health Configuration Sub-Menu**

   You can use this screen to view the Hardware Health Configuration Settings. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

```
                            BIOS Setup Utility
        Main      Advanced    PCI/PnP    Boot    Security    Chipset    Exit

     Hardware Health Configuration                        Enables Hardware
                                                          Health Monitoring
                                                          Device.
     H/W Health Function                 [Enabled]
     FAN Select                          [4Pin FAN]
     FAN Power Control                   [Disabled]
        PWM Minimal Duty Cycle           [50% Duty Cycle]

     Hardware Health Event Monitoring
                                                          ←  →  Select Screen
     ‣ Mainboard Voltages Report                          ↑ ↓  Select Item
                                                          +/-     Change Option
     CPU Temperature              :xx C/ xxx F            Tab  Select Field
     VRM Temperature              :xx C/ xxx F            F1     General Help
     System Temperature           :xx C/ xxx F            F10   Save and Exit
     ‣ FAN1 To FAN4 Speed Report                          ESC  Exit
     ‣ FAN5 To FAN7 Speed Report
```

| Feature | Option | Description |
|---------|--------|-------------|
| **Hardware Health Configuration** | | |
| H/W Health Function | **Enabled** | Enables Hardware Health Monitoring Device. |
| | Disabled | |
| FAN Select | **4Pin FAN** | Selects the FAN type. |
| | 3Pin FAN | |
| FAN Power Control | Enabled | FAN power duty cycle is auto dynamic programmed in selected temperature range.<br>Disabled: Fan Power On.<br>Enabled: Fan Power Duty Cycle=30%(40°C)-<br>               100%(60°C), see CPU temperature |
| | **Disabled** | |
| PWM Minimal Duty Cycle | **50% Duty Cycle** | Duty Cycle control range:<br>50%-100%<br>40%-100%<br>30%-100%<br>0%  -100% |
| | 40% Duty Cycle | |

| Feature | Option | Description |
|---------|--------|-------------|
| **Hardware Health Configuration** | | |
| | 30% Duty Cycle | |
| | 0% Duty Cycle | |

| Feature | Option | Description |
|---------|--------|-------------|
| **Hardware Health Event Monitoring** | | |
| Mainboard Voltages Report | **Menu Item** | Displays Voltage for CPU, memory, & other devices. |
| CPU Temperature | read only | Displays CPU Temperature and FAN Speed. |
| VRM Temperature | | |
| System Temperature | | |
| FAN1 To FAN4 Speed Report | **Menu Item** | Displays FAN1 To FAN4 Speed. |
| FAN5 To FAN7 Speed Report | Menu Item | Displays FAN5 To FAN7 Speed. |

**3.5.9.1 – Mainboard Voltages Report Sub-Menu**

```
                              BIOS Setup Utility
          Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

          ____Board Voltages Event Monitoring ____      ← → Select Screen
                                                        ↑ ↓ Select Item
                                                        +/-   Change Option
 CPU Vdimm                             : x.xxx V        Tab   Select Field
 CPU Vcore                             : x.xxx V        F1    General Help
 +5 V                                  : x.xxx V        F10   Save and Exit
 +12 V                                 : x.xxx V        ESC  Exit
```

**3.5.9.2 – FAN1 To FAN4 Speed Report Sub-Menu**

```
                              BIOS Setup Utility
          Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

          ____Board Fan1 To Fan4 Speed Monitoring____   ← → Select Screen
                                                        ↑ ↓ Select Item
                                                        +/-   Change Option
 FAN1 Speed                            xxxx RPM         Tab   Select Field
 FAN2 Speed                            xxxx RPM         F1    General Help
 FAN3 Speed                            xxxx RPM         F10   Save and Exit
 FAN4 Speed                            xxxx RPM         ESC  Exit
```

**3.5.9.3 – FAN5 To FAN7 Speed Report Sub-Menu**

| BIOS Setup Utility | |
|---|---|
| Main  **Advanced**  PCI/PnP  Boot  Security  Chipset  Exit | |
| _____**Board Fan5 To Fan7 Speed Monitoring**_____<br><br>FAN5 Speed                          xxxx RPM<br>FAN6 Speed                          xxxx RPM<br>FAN7 Speed                          xxxx RPM | ← → Select Screen<br>↑ ↓ Select Item<br>+/-    Change Option<br>Tab  Select Field<br>F1    General Help<br>F10  Save and Exit<br>ESC  Exit |

**3.5.10 MPS Configuration Sub-Menu**

You can use this screen to select MPS revision. Use the up and down arrow (↑/↓) keys to select an item. The settings are described on the following pages.

| BIOS Setup Utility | |
|---|---|
| Main  **Advanced**  PCI/PnP  Boot  Security  Chipset  Exit | |
| **MPS Configuration**<br><br>MPS Revision                    [1.4] | Select MPS Revision.<br>← → Select Screen<br>↑ ↓ Select Item<br>+/-    Change Option<br>F1    General Help<br>F10  Save and Exit<br>ESC  Exit |

| Feature | Option | Description |
|---|---|---|
| **MPS Configuration** | | |
| MPS Revision | 1.1 | Allows user to select MPS revision. |
| | **1.4** | |

**3.5.11 AMD PowerNow Configuration Sub-Menu**

You can use this screen to enable AMD PowerNOw support. Use the up and down arrow (↑/↓) keys to select an item. The settings are described on the following pages.

| BIOS Setup Utility | |
|---|---|
| Main  **Advanced**  PCI/PnP  Boot  Security  Chipset  Exit | |
| **AMD PowerNow  Configuration**<br><br>PowerNow                          [Disabled] | Enabled/Disabled PowerNow.<br>← → Select Screen<br>↑ ↓ Select Item<br>+/-    Change Option<br>F1    General Help<br>F10  Save and Exit<br>ESC  Exit |

| Feature | Option | Description |
|---------|--------|-------------|
| **AMD PowerNow Configuration** | | |
| PowerNow | Enabled | Enabled/Disabled PowerNow |
| | **Disabled** | |

**3.5.12 – Remote Access Configuration Sub-Menu**

   You can use this screen to view the Remote Access Configuration Menu. This feature allows access to the Server remotely via serial port. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

```
                        BIOS Setup Utility
        Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

                                                 Select remote access
   Configure Remote Access type and parameters   type.

                                                 ← → Select Screen
   Remote Access                  [Disabled]     ↑ ↓ Select Item
   Serial port number             [COM1]         +/-    Change Field
      Base Address, IRQ           [3F8h, 4]      F1    General Help
   Serial port Mode               [115200 8,n,1] F10   Save and Exit
   Flow Control                   [None]         ESC  Exit
   Redirection After BIOS POST    [Always]
   Terminal Type                  [ANSI]
   VT-UTF8 Combo Key Support      [Disabled]
   Sredir Memory Display Delay    [No Delay]
```

| Feature | Option | Description |
|---------|--------|-------------|
| **Configure Remote Access type and parameters** | | |
| Remote Access | Enabled | Enables remote access to system through serial port. |
| | **Disabled** | |
| **Serial port number** | **COM1** | Selects Serial Port for console redirection. Make sure the selected port is enabled. |
| | COM2 | |
| **Base Address, IRQ** | Read only | Shows the IRQ of the selected Serial Port. |
| **Serial port Mode** | **115200 8,n,1** | Selects Serial Port settings. |
| | 57600 8,n,1 | |
| | 38400, 8,n,1 | |
| | 19200 8,n,1 | |
| | 09600 8,n,1 | |

| Feature | Option | Description |
|---|---|---|
| **Configure Remote Access type and parameters** | | |
| **Flow Control** | **None** | Selects Flow Control for console redirection. |
| | Hardware | |
| | Software | |
| **Redirection After BIOS POST** | Disabled | Disable: Turns off the redirection after POST<br>Boot Loader:<br>Redirection is active during POST and during Boot Loader.<br>Always:<br>Redirection is always active.<br><Some OSs may not work if set to Always> |
| | Boot Loader | |
| | **Always** | |
| **Terminal Type** | **ANSI** | Selects the target terminal type. |
| | VT100 | |
| | VT-UTF8 | |
| **VT-UTF8 Combo Key Support** | **Disabled** | Enables VT-UTF8 Combination key Support for ANSI/VT100 terminals. |
| | Enabled | |
| Sredir Memory Display Delay | **No Delay** | This file allows user to select the delay in seconds to display memory information. |
| | Delay 1 sec | |
| | Delay 2 sec | |
| | Delay 4 sec | |

**3.5.13 – USB Configuration Sub-Menu**

You can use this screen to view the USB Configuration Menu. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

```
                         BIOS Setup Utility
        Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

 USB Configuration                                  Enables USB host
                                                    controllers.
 Module Version – X.XX.X-XX.X                        ←  →  Select Screen
                                                     ↑  ↓  Select Item
 USB Devices Enabled:                                +/-    Change Option
         None                                        F1    General Help
                                                     F10   Save and Exit
 Legacy USB Support           [Enabled]              ESC   Exit
 BIOS EHCI Hand-Off           [Enabled]
```

| Feature | Option | Description |
|---|---|---|
| USB Configuration | | |
| Legacy USB Support | Disabled | Enables support for legacy USB. |
| | **Enabled** | |
| BIOS EHCI Hand-Off | **Enabled** | This is a work around for OSes without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver. |
| | Disabled | |

**3.5.14 Device & PCI Slots Configuration Sub-Menu**

You can use this screen to enable the onboard devices and PCI slots. Use the up and down arrow (↑/↓) keys to select an item. The settings are described on the following pages.

```
                              BIOS Setup Utility
        Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

    Onboard Device and PCI Slots Configuration          Enabled
                                                        Disabled

    Onboard LAN1 Device                 [Enabled]       ← → Select Screen
        Onboard LAN1 OP-ROM             [Disabled]      ↑ ↓ Select Item
    Onboard LAN2 Device                 [Enabled]       +/-    Change Option
        Onboard LAN2 OP-ROM             [Disabled]      F1     General Help
                                                        F10   Save and Exit
                                                        ESC  Exit
```

| Feature | Option | Description |
|---|---|---|
| MPS Configuration | | |
| Onboard LAN1 Device Onboard LAN2 Device | Disabled | Enabled/Disabled LAN controller |
| | **Enabled** | |
| Onboard LAN1 OP-ROM Onboard LAN2 OP-ROM | **Disabled** | Executed LAN OPROM or not |
| | Enabled | |

**3.6 –BIOS PCI/PnP Menu**

You can use this screen to view PnP (Plug & Play) BIOS Configuration Menu. This menu allows the user to configure how the BIOS assigns resources & resolves conflicts. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option. The settings are described on the following pages.

```
                              BIOS Setup Utility
        Main      Advanced    PCI/PnP    Boot    Security    Chipset    Exit
    Advanced PCI/PnP Settings
                                                    Clear NVRAM during
                                                    System Boot.
    WARING: Setting wrong values in below sections may
    cause system to malfunction.
                                                    ← → Select Screen
    Clear NVRAM
    Plug & Play O/S                  [No]           ↑ ↓  Select Item
    PCI Latency Timer                [Yes]          +/-    Change Option
    Allocate IRQ to PCI VGA          [64]           F1     General Help
    Palette Snooping                 [Yes]          F10   Save and Exit
    PCI IDE BusMaster                [Disabled]     ESC  Exit
                                     [Disabled]
```

| Feature | Option | Description |
|---|---|---|
| **Advanced PCI/PnP Settings** | | |
| Clear NVRAM | **No**<br>Yes | Clears NVRAM during system Boot. |
| Plug & Play OS | **Yes**<br><br>No | No: lets the BIOS configure all the devices in the system.<br>Yes: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system. |
| PCI Latency Timer | 32<br>**64**<br>96<br>128<br>160<br>192<br>224<br>248 | This setting controls how many PCI clocks each PCI device can hold the bus before another PCI device takes over. When set to higher values, every PCI device can conduct transactions for a longer time and thus improve the effective PCI bandwidth.<br>Values in units of PCI clocks for PCI device latency timer register. |
| Allocate IRQ to PCI VGA | **Yes**<br>No | Yes: assigns IRQ to PCI VGA card if card requests IRQ. |
| Palette Snooping | **Disabled**<br><br>Enabled | This is the default setting and should not be changed unless the VGA card manufacturer requires Palette Snooping to be Enabled.<br>Enabled: informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly. |
| PCI IDE BusMaster | **Disabled**<br>Enabled<br>Reserved | Enabled: BIOS uses PCI bus mastering for reading / writing to IDE drives. |

**3.7 – BIOS Boot Menu**

You can display Boot Setup option by highlighting it using the Arrow (↑/↓) keys and pressing Enter.  The settings are described on the following pages.

```
                           BIOS Setup Utility
        Main    Advanced    PCI/PnP   Boot    Security    Chipset    Exit

   Boot Settings                                 Configures settings
                                                 during System Boot.

   ▸ Boot Settings Configuration                 ← → Select Screen
                                                 ↑ ↓ Select Item
   ▸ Boot Device Priority                        Enter Go to Sub Screen
   ▸ Removable Drives                            F1    General Help
                                                 F10  Save and Exit
                                                 ESC  Exit
```

**3.7.1 – Boot Settings Configuration Sub-Menu**

Use this screen to select options for the Boot Settings Configuration. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.

```
                           BIOS Setup Utility
        Main    Advanced    PCI/PnP   Boot    Security    Chipset    Exit

   Boot Settings Configuration                   Allows BIOS to skip
                                                 certain tests while
   Quick Boot                 [Disabled]         booting.  This will
   Quiet Boot                 [Disabled]         decrease the time
   Add On ROM Display Mode    [Force BIOS]       needed to boot the
   Boot up Num-Lock           [On]               system.
   PS/2 Mouse Support         [Enabled]
   Wait for 'F1' if Error     [Enabled]          ← → Select Screen
   Hit 'DEL' Message Display  [Enabled]          ↑ ↓ Select Item
   Interrupt 19 Capture       [Disabled]         +/-    Change Option
                                                 F1    General Help
                                                 F10  Save and Exit
                                                 ESC  Exit
```

| Feature | Option | Description |
|---|---|---|
| **Boot Settings Configuration** | | |
| Quick Boot | Enabled | This option allows user bypass BIOS self test during POST. |
| | **Disabled** | |
| Quiet Boot | **Disabled** | Disabled: displays normal POST messages. |
| | Enabled | Enabled: displays OEM log instead of POST messages. |
| Add On ROM Display Mode | **Force BIOS** | Allows user to force BIOS/Option ROM of add-on cards to be displayed during quiet boot. |
| | Keep Current | |
| Boot up Num-Lock | **On** | Selects Power-on state for Numlock. |
| | Off | |
| PS/2 Mouse Support | **Enabled** | Selects support for PS/2 Mouse. |
| | Disabled | |
| | Auto | |
| Wait for 'F1' If Error | **Enabled** | Waits for F1 key to be present if error occurs. |
| | Disabled | |
| Hit 'DEL' Message Display | **Enabled** | Displays "Press DEL to run Setup" in POST. |
| | Disabled | |
| Interrupt 19 Capture | **Disabled** | Enabled: allows option ROMs to trap interrupt 19. |
| | Enabled | |

**3.7.2 – Boot Device Priority Sub-Menu**

Use this screen to select options for the Boot Device Priority. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.

```
                       BIOS Setup Utility
      Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit
                                               Specifies the boot
  Boot Device Priority                         sequence from the
                                               available devices.
                                               A device enclosed in
  1st Boot Device            [xx,xxx-xxxxx:xxx]  parenthesis has
  2nd Boot Device            [xx,xxx-xxxxx:xxx]  been disabled in the
  3rd Boot Device            [xx,xxx-xxxxx:xxx]  corresponding type
                                               menu.

                                               ←  → Select Screen
                                               ↑ ↓  Select Item
                                               +/-    Change Option
                                               F1     General Help
                                               F10  Save and Exit
                                               ESC  Exit
```

| Feature | Option | Description |
|---|---|---|
| **Boot Device Priority** | | |
| 1st Boot Device<br>2nd Boot Device<br>3rd Boot Device | **xx,xxx-xxxxx:xxx**<br><br>xx,xxx-xxxxx:xxx<br><br>Disabled | Settings for boot priority. These can be customized depending on your preference. |

**3.7.3 – Removable Drives Sub-Menu**

Use this screen to select options for the Removable Drives. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.

```
                          BIOS Setup Utility
        Main      Advanced     PCI/PnP    Boot    Security     Chipset     Exit

  Removable Drives                                   Specifies the boot
                                                     sequence from the
  1st Drive                      [1st FLOPPY DRIVE]   available devices.


                                                     ← → Select Screen
                                                     ↑ ↓ Select Item
                                                     +/-    Change Option
                                                     F1     General Help
                                                     F10  Save and Exit
                                                     ESC  Exit
```

| Feature | Option | Description |
|---|---|---|
| **Removable Drives** | | |
| 1st Drive | **1st FLOPPY DRIVE**<br><br>xxxxxxxxxx<br><br>Disabled | Specifies the boot sequence for removable drive booting. This option will show all removable devices. |

**3.8 – BIOS Security Menu**

   The system can be configured so that all users must enter a password every time the system boots or when BIOS Setup is entered, using either the Supervisor password or User password. The Supervisor and User passwords activate two different levels of password security. If you select password support, you are prompted for a one to six character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must clear CMOS and reconfigure.

| BIOS Setup Utility | |
|---|---|
| Main   Advanced   PCI/PnP   Boot   **Security**   Chipset   Exit | |
| **Security Settings** | Install or change the password. |
| Supervisor Password :   Not Installed<br>User Password       :   Not Installed<br><br>Change Supervisor Password<br>Change User Password<br><br>Boot Sector Virus Protection     [Disabled] | ← → Select Screen<br>↑ ↓ Select Item<br>+/-   Change Option<br>F1   General Help<br>F10   Save and Exit<br>ESC   Exit |

| Feature | Option | Description |
|---|---|---|
| **Security Settings** | | |
| Supervisor Password: | **Not Installed** | If the password has been set, Installed displays. If no password is set, Not Installed displays. |
| | Installed | |
| User Password: | **Not Installed** | If the password has been set, Installed displays. If no password is set, Not Installed displays. |
| | Installed | |
| Change Supervisor Password | | Selects this option to change or install Supervisor Password. |
| Change User Password | | Selects this option to change or install User Password. |
| Boot Sector Virus Protection | **Disabled** | When it is set to [Enabled], BIOS will issue a virus warning message and beep if a write to the boot sector or the partition table of the HDD is attempted. |
| | Enabled | |

**3.9 – BIOS Chipset Menu**

This menu allows the user to customize functions of the AMD Chipsets. North Bridge configuration contains options for Memory & CPU settings. South Bridge configuration contains options for SM Bus & USB. Additional configuration for the AMD8131 PCI-X Tunnel is available in the PCI-X Configuration Menu. Select a menu by highlighting it using the Arrow (↑/↓) keys and pressing Enter.  The settings are described on the following pages.

```
                         BIOS Setup Utility
     Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

  ▸ NorthBridge Configuration                Options for NB.
  ▸ HT1000 South Bridge Configuration        ← → Select Screen
                                             ↑ ↓ Select Item
                                             +/-    Change Option
                                             Enter Go to Sub Screen
                                             F1    General Help
                                             F10  Save and Exit
                                             ESC  Exit
```

**3.9.1 – North Bridge Chipset Configuration Sub-Menu**

This menu gives options for customizing memory & Hypertransport settings. Select a menu by highlighting it using the Arrow (↑/↓) keys and pressing Enter.  The settings are described on the following pages.

```
                         BIOS Setup Utility
     Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

  NorthBridge Chipset Configuration
                                             ← → Select Screen
                                             ↑ ↓ Select Item
  ▸ Memory Configuration                     Enter Go to Sub Screen
  ▸ ECC Configuration                        F1    General Help
  ▸ IOMMU Option Configuration               F10  Save and Exit
                                             ESC  Exit
  Memory CLK              :XXX MHz
  CAS latency (Tcl)       :XX
  RAS/CAS Delay (Trcd)    :X CLK
  Min Active RAS (Tras)   :X CLK
  Row Precharge Time (Trp) :X CLK
  RAS/RAS Delay (Trrd)    :X CLK
  Row Cycle (Trc)         :X CLK
  Row Refresh Cycle (Trfc) :X CLK
  Read Write Delay (Trwt) :X CLK
  Read Preamble           :X ns
  Asynchronous Latency    :X ns
```

| Feature | Option | Description |
| --- | --- | --- |
| NorthBridge Chipset Configuration | | |
| **Memory CLK** | **Read only** | **It shows the clock frequency of the installed SDRAM.** |
| **CAS Latency (Tcl)** | **Read only** | **This controls the timing delay (in clock cycles) before SDRAM starts a read command after receiving it.** |
| **RAS/CAS Delay (Trcd)** | **Read only** | **When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles, the faster the DRAM performance.** |
| **Min Active RAS (Tras)** | **Read only** | **This setting allows you to select the number of clock cycles allotted for the RAS pulse width, according to DRAM specifications. The less the clock cycles, the faster the DRAM performance.** |
| **Row Precharge Time (Trp)** | **Read only** | **This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its chage before DRAM refresh, refresh may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system.** |
| **RAS/RAS Delay (Trrd)** | **Read only** | **Auto uses hardware compensation values. Other values add to or subtract from hardware generated value. Recommended setting is Auto.** |
| **Row Cycle (Trc)** | **Read only** | **Bits 7-4. RAS#-active to RAS#-active or auto refresh of the same bank.** |
| **Row Refresh Cycle (Trfc)** | **Read only** | **Bits 11-8. Auto-refresh-active to RAS#-active or RAS# auto-refresh.** |

| Feature | Option | Description |
|---|---|---|
| NorthBridge Chipset Configuration | | |
| **Read Write Delay (Trwt)** | **Read only** | **Bits 6-4.  Specifies the read-to-write delay.  This is not a DRAM-specified timing parameter, but must be considered due to routing latencies on the clock forwarded bus.  It is counted from the first address bus slot that was not associated with part of the read burst.** |
| **Read Preamble** | **Read only** | **Bits 11-8.  The time prior to the max-read DQS-return when the DQS receiver should be turned on.  This is specified in units of 0.5ns.  The controller needs to know when to enable its DQS receiver in anticipation of the DRAM DQS driver turning on for a read.  The controller will disable its DQS receiver until the read preamble time and then enable its DQS receiver while the DRAM asserts DQS.** |
| **Asynchronous Latency** | **Read only** | **Bits 3-0. This filed should be loaded with a 4-bit value equal to the maximum asynchronous latency in the DRAM read round-trip loop.** |

**3.9.1.1 – Memory Configuration Sub-Menu**

This menu has options for memory speed & latency. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.

```
                          BIOS Setup Utility
        Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

    Memory Configuration                              MEMCLK can be set
                                                      by the code using
                                                      AUTO, or if you use
    Memclock Mode                 [Auto]              LIMIT, you can set
    MCT Timing Mode               [Auto]              one of the standard
    User Config Mode              [Auto]              values.
    Burst Length                  [4 Beats]
    SoftWare Memory Hole          [Enabled]           ←  → Select Screen
    HardWare Memory Hole          [Enabled]           ↑  ↓  Select Item
                                                      +/-    Change Option
    CPU1 Mem DQ Driver Strength   [No Reduction]      F1    General Help
    CPU2 Mem DQ Driver Strength   [No Reduction]      F10  Save and Exit
                                                      ESC  Exit
```

| Feature | Option | Description |
|---|---|---|
| **Memory Configuration** | | |
| Memclock Mode | Limit | MEMCLK can be set by the code using AUTO, or if you use LIMIT, you can set one of the standard values. |
| | **Auto** | |
| MCT Timing Mode | Manual | Allows user to configure the MCT Timing Mode manually. |
| | **Auto** | |
| User Config Mode | Manual | Allows user to set the User Config Mode manually. |
| | **Auto** | |
| Burst Length | 8 Beats | Burst length can be set to 8 or 4 beats. 64 bit DQ must use 4 beats. |
| | **4 Beats** | |
| | 2 Beats | |
| SoftWare Memory Hole HardWare Memory Hole | Disabled | Allows user to enable software / hardware memory remapping around memory hole. |
| | **Enabled** | |
| CPU1 Mem DQ Driver Strength CPU2 Mem DQ Driver Strength | **No Reduction** | This field controls the drive strength reduction of the Memory DQ pins. |
| | -15% | |
| | -30% | |
| | -50% | |

### 3.9.1.2 –ECC Configuration Sub-Menu

This menu allows the user to configure ECC setup for system & DRAM. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.

```
                              BIOS Setup Utility
        Main     Advanced    PCI/PnP    Boot    Security    Chipset    Exit

     ECC Configuration                               DRAM ECC allows
                                                     hardware to report and
                                                     correct memory errors
     DRAM ECC Enable                 [Enabled]       automatically
         MCA DRAM ECC Logging        [Enabled]       maintaining system
         ECC Chip Kill               [Disabled]      integrity.
         DRAM SCRUB REDIRECT DRAM    [Disabled]
     BG Scrub                        [Disabled]      ←  → Select Screen
     L2 Cache BG Scrub               [Disabled]      ↑  ↓ Select Item
     Data Cache BG Scrub             [Disabled]      +/-    Change Option
                                                     F1     General Help
                                                     F10  Save and Exit
                                                     ESC  Exit
```

| Feature | Option | Description |
|---|---|---|
| **ECC Configuration** | | |
| DRAM ECC Enable | **Enabled** | DRAM ECC allows hardware to report and correct memory errors automatically maintaining system integrity. |
| | Disabled | |
| MCA DRAM ECC Logging | **Disabled** | Enables MCA DRAM ECC Logging Reporting. |
| | Enabled | |
| ECC Chip Kill | Disabled | ECC Chip Kill |
| | **Enabled** | |
| DRAM SCRUB REDIRECT | **Disabled** | DRAM SCRUB REDIRECT allows the system to correct DRAM ECC errors immediately when they occur, even if background scrubbing is on. |
| | Enabled | |
| DRAM BG Scrub | **Disabled** | DRAM scrubbing corrects memory errors so later reads are correct. Doing this while memory is not being used improves performance. Note: When AMD's node interleave feature is enabled, BIOS will force DRAM scrub off. |
| | 40ns | |
| | 80ns | |
| | 160ns | |
| | 320ns | |
| | 640ns | |
| | 1.28us | |
| | 2.56us | |
| | 5.12us | |
| | 10.2us | |
| | 20.5us | |
| | 41.0us | |
| | 81.9us | |
| | 163.8us | |
| | 327.7us | |
| | 655.4us | |
| L2 Cache BG Scrub | **Disabled** | Allows the L2 Data Cache RAM to be corrected while idle. |
| | 40ns | |
| | 80ns | |
| | 160ns | |
| | 320ns | |
| | 640ns | |
| | 1.28us | |
| | 2.56us | |
| | 5.12us | |
| | 10.2us | |
| | 20.5us | |
| | 41.0us | |
| | 81.9us | |
| | 163.8us | |
| | 327.7us | |
| | 655.4us | |

| Feature | Option | Description |
|---|---|---|
| ECC Configuration | | |
| Data Cache BG Scrub | **Disabled** | Allows the L1 Data Cache RAM to be corrected while idle. |
| | 40ns | |
| | 80ns | |
| | 160ns | |
| | 320ns | |
| | 640ns | |
| | 1.28us | |
| | 2.56us | |
| | 5.12us | |
| | 10.2us | |
| | 20.5us | |
| | 41.0us | |
| | 81.9us | |
| | 163.8us | |
| | 327.7us | |
| | 655.4us | |

### 3.9.1.3 – IOMMU Configuration Sub-Menu

This menu has options for IOMMU. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.

| BIOS Setup Utility | |
|---|---|
| Main    Advanced    PCI/PnP    Boot    Security    **Chipset**    Exit | |
| IOMMU Mode                                                [Disabled] | Set GART size in systems without AGP, or disable altogether. Some OSes require valid GART for proper operation,  If AGP is present, select appropriate option to ensure proper AGP operation.<br>← → Select Screen<br>↑ ↓ Select Item<br>+/-    Change Option<br>F1    General Help<br>F10   Save and Exit<br>ESC  Exit |

| Feature | Option | Description |
|---|---|---|
| **IOMMU Configuration** | | |
| IOMMU Mode | AGP Present | Set GART size in systems without AGP, or disable altogether. Some OSes require valid GART for proper operation, If AGP is present, select appropriate option to ensure proper AGP operation. |
| | **Disabled** | |
| | 32 MB | |
| | 64 MB | |
| | 128 MB | |
| | 256 MB | |
| | 512 MB | |
| | 1 GB | |

**3.9.2 – HT 1000 SouthBridge Chipset Configuration Sub-Menu**

This menu allows the user to enable SM Bus 2.0 controller. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.

```
                         BIOS Setup Utility
      Main    Advanced   PCI/PnP   Boot   Security   Chipset   Exit

 Power Control After Power Fail              [Disabled]   Enabled Former State
 Resume on RTC Alarm                         [Disabled]   ← → Select Screen
 Resume on PME#                              [Enabled]    ↑ ↓ Select Item
                                                          +/-   Change Option
                                                          F1    General Help
                                                          F10  Save and Exit
 Hide XIOAPIC PCI Functions                  [Enabled]    ESC  Exit
 Power Button Install Off                    [Enabled]
```

| Feature | Option | Description |
|---|---|---|
| **Chipset Configuration** | | |
| Power Control After Power Fail | Former State | |
| | **Disabled** | |
| Resume on RTC Alarm | Enabled | |
| | **Disabled** | |
| Resume on PME# | **Enabled** | |
| | Disabled | |

| Feature | Option | Description |
|---|---|---|
| **South ridge Chipset Configuration** | | |
| Hide XIOAPIC PCI Functions | **Enabled** | Hide XIOAPIC PCI functions. |
| | Disabled | |
| Power Button Install Off | **Enabled** | Disable or enable power button instant off. |
| | Disabled | |

**3.10 – BIOS Exit Menu**

   You can display an Exit BIOS Setup option by highlighting it Arrow (↑/↓) keys and pressing Enter.

```
                           BIOS Setup Utility
         Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit

  Exit Options                                    Exit system setup after
                                                  saving the changes.

  Save Changes and Exit                           F10 key can be used for
  Discard Changes and Exit                        this operation.
  Discard Charges
                                                  ← → Select Screen
  Load Optimal Defaults                           ↑ ↓ Select Item
  Load Failsafe Defaults                          Enter Go to Sub Screen
                                                  F1    General Help
                                                  F10  Save and Exit
                                                  ESC  Exit
```

**Save Changes and Exit**
Use this option to exit setup utility and re-boot.
All new selections you have made are stored into CMOS.
System will use the new settings to boot up.

**Discard Changes and Exit**
Use this option to exit setup utility and re-boot.
All new selections you have made are not stored into CMOS.
System will use the old settings to boot up.

**Discard Changes**
Use this option to restore all new setup values that you have made but not saved into CMOS.

**Load Optimal Defaults**
Use this option to load default performance setup values.
Use this option when system CMOS values have been corrupted or modified incorrectly.

**Load Failsafe Defaults**
Use this option to load all default failsafe setup values.
Use this option when troubleshooting

http://www.tyan.com

# Chapter 4: Diagnostics

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

**CPU, Memory, Video**

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.

**4.00 Beep Codes**

Fatal errors which halt the boot process are communicated through a series of audible beeps.

(1)   Memory  module initialization failed
      (a)   memory modules might not be plugged in correct configuration
      (b)   wrong type of memory
      (c)   bad memory modules
(2)   Graphics initialization failed

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.

**4.01 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: 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 only at 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 results in greater speed.

**BBS (BIOS Boot Specification):** 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. 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, which 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 to a disk drive. While this improves system performance (reading to or writing from a disk drive a single time is much faster than doing so repeatedly) there is the possibility of losing your data should the system crash. Information 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 information is stored in SRAM instead of slower DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

**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):** 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 socket 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.

**DRAM (Dynamic RAM):** widely available, very affordable form of RAM which looses 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, it 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.

**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.

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

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

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

**HyperTransport™:** a high speed, low latency, scalable point-to-point link for interconnecting ICs on boards. It can be significantly faster than a PCI bus for an equivalent number of pins. It provides the bandwidth and flexibility critical for today's networking and computing platforms while retaining the fundamental programming model of PCI.

**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.)

**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.

**Latency:** the amount of time that one part of a system spends waiting for another part to catch up. This occurs most commonly when the system sends data out to a peripheral device and has to wait for the peripheral to spread (peripherals tend to be slower than onboard system components).

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

**Parallel port:** transmits the bits of a byte on eight different wires 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.

**PnP (Plug-n-Play):** a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. 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 with 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 and 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 and is often referred 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.  SISL: SCSI Interrupt Steering Logic ( LSI )  (only on LSI SCSI boards)

**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.

**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.

**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 shifts the processor over and down, guiding it into the board and locking it into place.

# Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assitance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then Tyan Computer Corporation can help. Besides designing innovative and quality products for over a decade, Tyan has continuously offered customers service beyond their expectations. Tyan's website (**www.tyan.com**) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. Tyan also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, Tyan serves multiple market segments with the industry's most competitive services to support them.

**"Tyan's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general" - Anandtech.com**

Please feel free to contact us directly for this service at **techsupport@tyan.com**

Help Resources:

> 1. See the beep codes section of this manual.
> 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:

This device may not cause harmful interference, and
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.

# Document #: D1725-110