TYAN

Tiger i7501R /// S2735

Revision 1.00

Table of Contents

Before you begin…

Check the box contents!

The retail motherboard package should contain the following:

1 x Tiger i7501R S2735 motherboard

2 sets CPU retention modules

2 x CPU Back-plates with screws

1 x ATX to SATA power converter

2 x serial ATA cables

1 x 34-Pin floppy drive cable

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

1 x cable set: 9-pin Serial and 25-pin parallel

1 x Tiger i7501R S2735 User's Manual

1 x Tiger i7501R S2735 Quick Reference

1 x Intel ICH5R SATA RAID driver diskette (Option)

1 x TYAN driver CD

1 x I/O shield

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

Chapter 1: Introduction

1.1 – Congratulations!

You have purchased one of the most powerful Dual Intel processor solutions, the Tiger i7501R S2735. Based on Intel's E7501 chipset, the Tiger i7501R S2735 is **Hyper-Threading** ready - utilizing onboard resources so that a second thread of data can be processed in a single processor. Compatible with EPS12V power supplies, this platform offers convenient remote Intelligent Platform Management Interface (IPMI) monitoring through a Server Management Daughter Card. The Tiger i7501R also features an ATX form factor, Gigabit Ethernet port, Fast Ethernet port, and an onboard ATI 8MB PCI RAGE XL VGA, which provides an advanced and versatile solution for your server needs.

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

1.2 – Hardware Specifications

Processors
• Dual mPG604 ZIF Sockets
• Supports one or two Intel Xeon
  processors with 512K L2 cache
  533MHz, 400MHz FSB and 1MB L3
  cache 533MHz FSB
• Onboard 4-phase VRM (VRM 9.1 spec)
• Front-Side Bus support for 533 &
  400MHz

Chipset
• Intel E7501 server chipset
• MCH + **ICH5R** + P64H2 + FWH
• Intel P64H2 supports two PCI-X buses
• Winbond W83627HF Super I/O chip
• Winbond W83782D (or Analog
  ADM1027***) hardware monitoring chip
***NOTE:** ADM1027 chip may be
available on some Tiger i7501R models.
Check the Tyan website for updates:
http://www.tyan.com

Memory
• Six 184-pin 2.5-Volt DDR DIMM sockets
• Supports up to 12GB of Registered
  DDR200/266 (PC1600/PC2100)
• Dual channel memory bus
• Supports Registered ECC type memory
  modules only

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

Integrated IDE (SATA)
• Provides independent DMA operation
  on 2 ports*
• Data transfer rates up to 150MB/s
• Supports RAID 0, 1 (with
  82801ER/ICH5R) (Option)
NOTE: Maximum number of IDE devices
supported with any combination of
Integrated IDE and SATA IDE is four
devices.
For example: 2 SATA and 2 P-ATA
(total=4)

Integrated LAN Controllers
Intel® 82546EB dual-channel Gigabit
Ethernet controller. (Default
configuration.)
• Two RJ-45 connectors with LEDs
• Connected to133MHz PCI-X bus
  Two 4-pin headers for external LED
  output
** **Manufacturing Option:**
Intel® 82551QM Fast Ethernet controller
One RJ-45 LAN connector with LEDs
One 4-pin headers for external LED
output

Integrated IDE (Parallel ATA)
• Provides two PCI bus master channels for up to four UDMA IDE devices*
• Support for UDMA 33/66/100 IDE and ATAPI devices

Integrated I/O
• One floppy connector supports up to two drives
• Two 9-pin serial ports (one connector and one header)
• One 25-pin ECP/EPP/SPP parallel header
• Four USB 2.0 ports (2 rear connectors and 2 headers)
• PS/2 mouse and keyboard connectors

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

Form Factor
• ATX footprint (PCB size: 12" x 10.0")
• EPS12V power connector (24-pin and 8-pin)
• One serial connector, & one VGA connector
• Stacked USB (two) connectors and RJ-45 LAN port on top (Optional)
• Stacked PS/2 mouse and keyboard connectors
• Two RJ-45 Side-by-side connectors with LEDs

Hyper-Threading Support In:
Windows 2000 Server
Windows 2000 Advanced Server
Windows XP Pro
Windows NT 4.0 Server + SP6A
Windows Server 2003
Linux (Kernel 2.4.18) or higher

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

Intelligent Platform Management Interface (Manufacturing Option)
• QLogic Zircon Baseboard Management Controller (BMC) based on powerful ARM7 technology
• Tailored for IPMI highest 1.5 specifications
• Supports KCS and BT styles
• Supports flexible Windows and Linux based Management Solution
• Supports RMCP and SNMP protocols
• Supports ASF standard and EMP
• I^2C serial multi-master controllers and UARTs
• Supports remote Power on/off and reset support (IPMI-over-LAN)
• Server Management Daughter card connection via a built-in 2x25 header
• SCSI Daughter Card (M7902) via built in SO-DIMM socket

Integrated 2D/3D Graphics
• ATI RAGE XL PCI graphics controller
• 8MB Frame Buffer of video memory

System Management*
• Total of nine 3-pin fan headers
• Six fan headers with tachometer monitoring
• One 2-pin Chassis Intrusion header
• Temperature, voltage and fan monitoring
• Watchdog timer

Power Management
• ACPI 2.0 compliant

PCI Bus
• PCI rev 2.3 specifications at 33MHz.

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

Chapter 2: Board Installation

Installation

You are now ready to install your motherboard. The mounting hole pattern of the Tiger i7501R S2735 matches the ATX specification. Before continuing with installation, confirm that your chassis supports a standard ATX motherboard.

How to install our products right…. the first time!

The first thing you should do is read this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

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

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

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

2.1 – Board Image

The following is an image of the Tiger i7501R S2735.
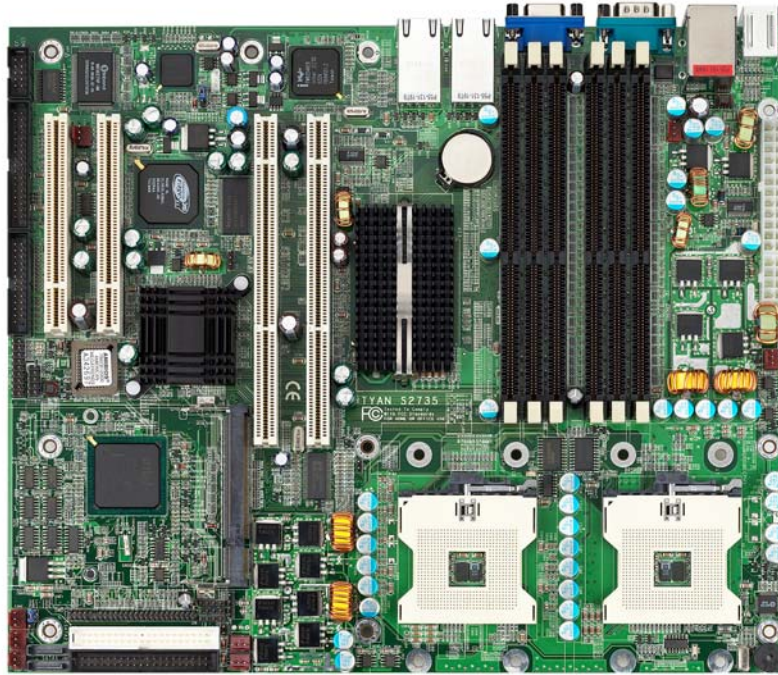
The above photograph is purely representative. Due to engineering updates and new board revisions, certain components may change and or be repositioned. The picture above may or may not look exactly like the board you received.

The following page will shows the S2735 Block Diagram. You can see the PCI-X/PCI bus assignment.

2.2 – Block Diagram of S2735

| GALLATIN OR PRESTONIA | — | VRM | — | GALLATIN OR PRESTONIA |

HOST BUS 400 or 533

SLOT# 2
SLOT#1

BUS #03
133MHz OR
100MHz PCI-X

BUS A

P64H2

BUS #02
HI 2.0

ICH3_PIRQ#A

PLUMAS MCH

MEM CNTRL AND DATA

DDR A DIMMS
DDR DDR DDR

BUS #04
133MHz OR
100MHz PCI-X

BUS B

SO DIMM

SLOT# 1
*Option

MEM CNTRL AND DATA

DDR B DIMMS
DDR DDR DDR

GBIT LAN 82546

HI 1.5   BUS # 00

SLOT# 4
SLOT# 3

BUS # 01
PCI 32/33MHz

RJ45   RJ45

PRIMARY IDE CONN

SECONDARY IDE CONN

SATA CONN

USB CONN

Intel   82801ER ICH5R

8MB DISPLAY MEMORY

ATI Rage XL

10/100 LAN 82551

CRT CONN

RJ45

Winbond 83782D or ADM1027

BIOS 4MB

FIRMWARE HUB

LPC BUS

SERVER MGMT CONN

SUPER-I/O W83627HF

PRINTER PORT | SERIAL PORT | SERIAL PORT | KBD PORT | FLOPPY CONN

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

2.3 – Board Parts, Jumpers, and Connectors
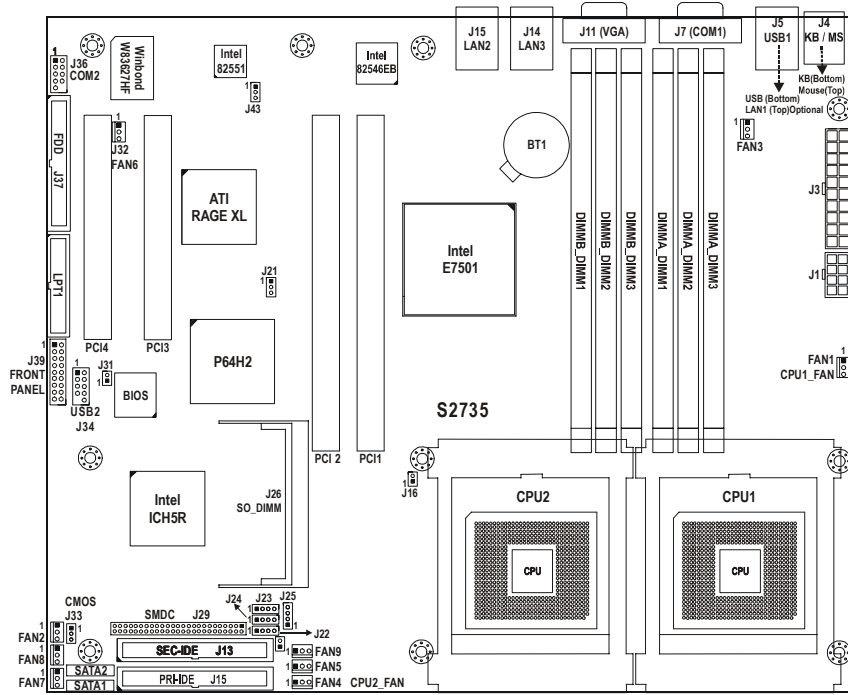
This jumper diagram is only a representation of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the above diagram.

2.4 – Jumper Settings

Jumper	Function	Settings
J16	Force 400MHz FSB instead of 533MHz FSB Header	Page 11
J21	PCI-X A (PCI1) Speed Header	Page 12
J22	10/100 Ethernet LAN1 LED Header	Page 12
J23	Gigabit Ethernet LAN2 (J15) LED Header	Page 12
J24	Gigabit Ethernet LAN3 (J14) LED Header	Page 12
J25	Buzzer (System Speaker)	Page 13
J26	SO-DIMM Socket	Page 13
J29	SMDC (System Management Daughter Card) Connector	Page 13
J31	Hard Disk Activity LED External Input	Page 14
J33	Clear CMOS Jumper	Page 14
J34	Front USB Header	Page 15
J36	COM2 Header	Page 15
J39	Front Panel Connector	Page 16
J43	PCI-X B (PCI2) Speed Header	Page 16

2.5 – Jumper Definitions

Jumper Example

▣▣	Jumper OFF – open
▣▣	Jumper ON – closed

2.6 – Force 400MHz FSB instead of 533MHz FSB Header (J16)

OPEN:
533MHz FSB
(4x 133MHz)

CLOSED:
Force 400MHz FSB
(4x 100MHz)

2.7 – PCI-X A (PCI1) Speed Header (J21)

1 ■ ■ 3 ■	100MHz
1 ■ ■ 3 ■	133MHz (Default)

2.8 – 10/100 Ethernet LAN1 LED Header (J22)

	1 ■ ■ ■ ■ 4		
Pin_1	**Pin_2**	**Pin_3**	**Pin_4**
Yellow +	Yellow -	Green +	Green -

No LED = 10Mb link
Green LED flashing= 10Mb activity

Yellow LED solid= 100Mb link
Both LED flashing= 100Mb activity
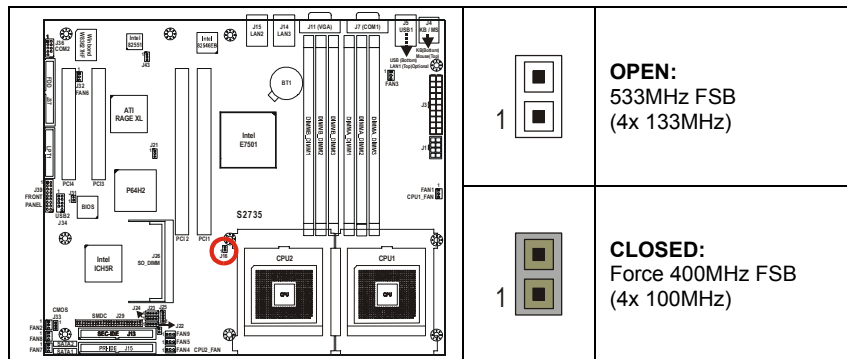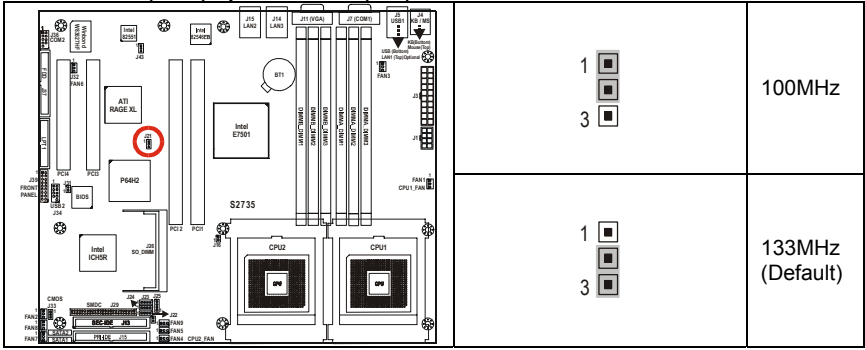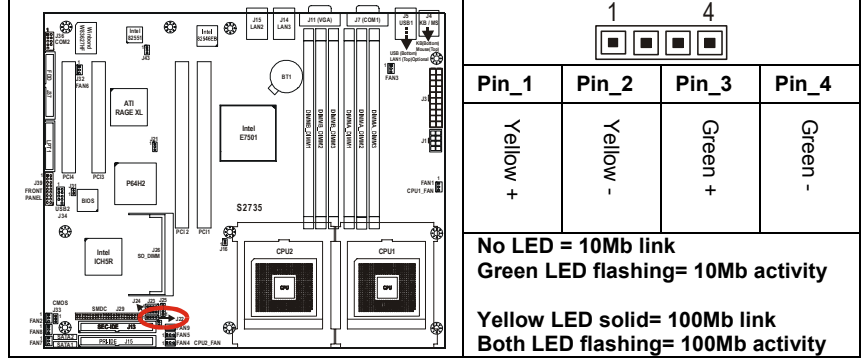
2.9 – Gigabit Ethernet LAN2 (J15) LED Header (J23) and Gigabit Ethernet LAN3 (J14) LED Header (J24)

	1 ■ ■ ■ ■ 4		
Pin_1	**Pin_2**	**Pin_3**	**Pin_4**
Yellow +	Yellow -	Green +	Green -

Green LED solid= 10Mb link
Green LED flashing= 10Mb activity

Yellow LED solid= 100Mb link
Yellow LED flashing= 100Mb activity

Both LED Solid= Gigabit link
Both LED flashing= Gigabit activity
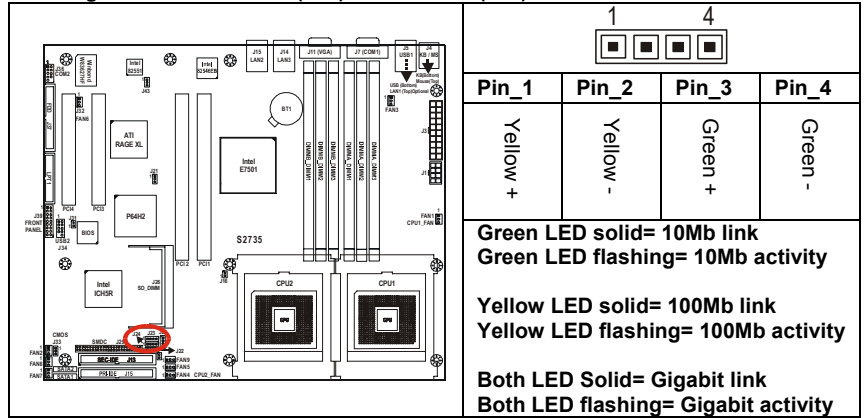
2.10 – Buzzer (System Speaker) (J25)

Pin #	Signal Description
4	Speak
3	NC
2	NC
1	VCC

2.11 – SO-DIMM Socket (J26)

Connect SCSI Daughter Card Compatible with Tyan M7902 (Ref. Appendix IV)
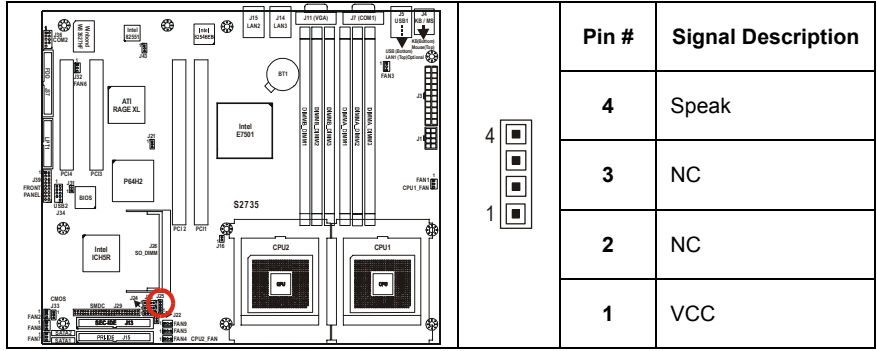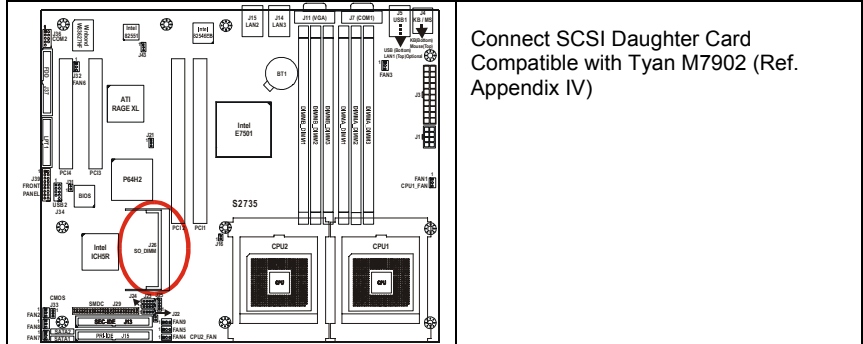
2.12 – SMDC (System Management Daughter Card) Connector (J29)

Connect Server Management Daughter Card (SMDC) (Ref. Appendix II) Compatible with Tyan M3289 (SMDC)
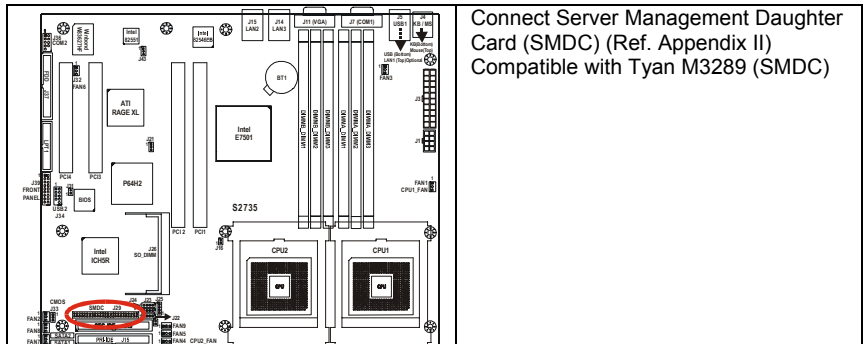
2.13 – Hard Disk Activity LED External Input (J31)

J31 is an LED INPUT. The idea is to run a wire from the activity LED output header of any plug-in HD controller card (e.g. a RAID card) to the motherboard, so that the card's LED can be "combined " with the IDE and SCSI activity indicators on the motherboard and then driven to the J39 HD LED output. In other words, when a card's LED lights up, so will the front-panel hard-disk activity indicator. This is useful for chassis that have only a single LED to indicate HD activity from multiple controller sources. (Pin 1 = negative terminal of the add-on card's LED header, Pin 2 = do not connect.)

2.14 – Clear CMOS Jumper (J33)

1 ■ ■ 3 ■	**Default**
1 ■ ■ 3 ■	Clear

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

- Power off system and **disconnect both power connectors from the motherboard**
- Use jumper cap to close Pin_2 and Pin_3 for several seconds to Clear CMOS
- Put jumper cap back to Pin_1 and Pin_2 (default setting)

Reconnect power & power on system

2.15 – Front USB Header (J34)

Signal Description	Pin	Pin	Signal Description
+5V	1	2	+5V
Data -	3	4	Data -
Data +	5	6	Data +
GND	7	8	GND
GND	9	10	GND

2.16 – COM2 Header (J36)

Signal Description	Pin	Pin	Signal Description
DCD (Data Carrier Detect)	1	2	DSR (Data-Set-Ready)
RX (Receive-Data)	3	4	RTS (Request-to-Send)
TX (Transfer-Data)	5	6	CTS (Clear-to-Send)
DTR (Data-Terminal-Ready)	7	8	RI (Ring-Indicator)
GND (Ground)	9	10	NC/KEY
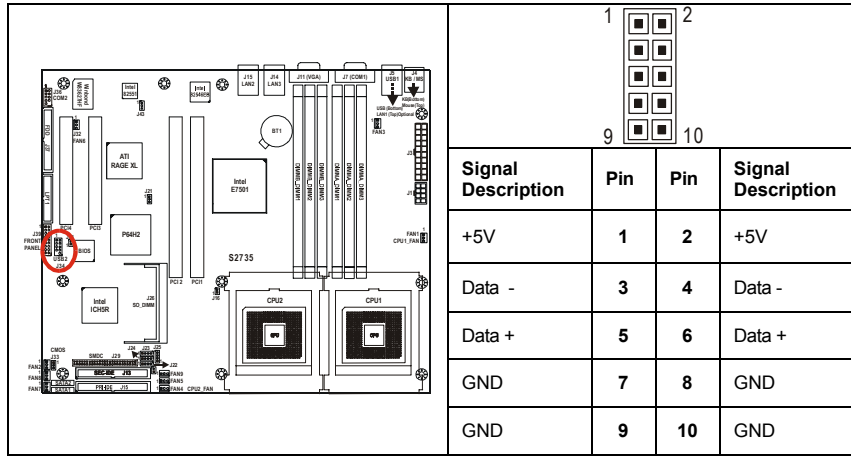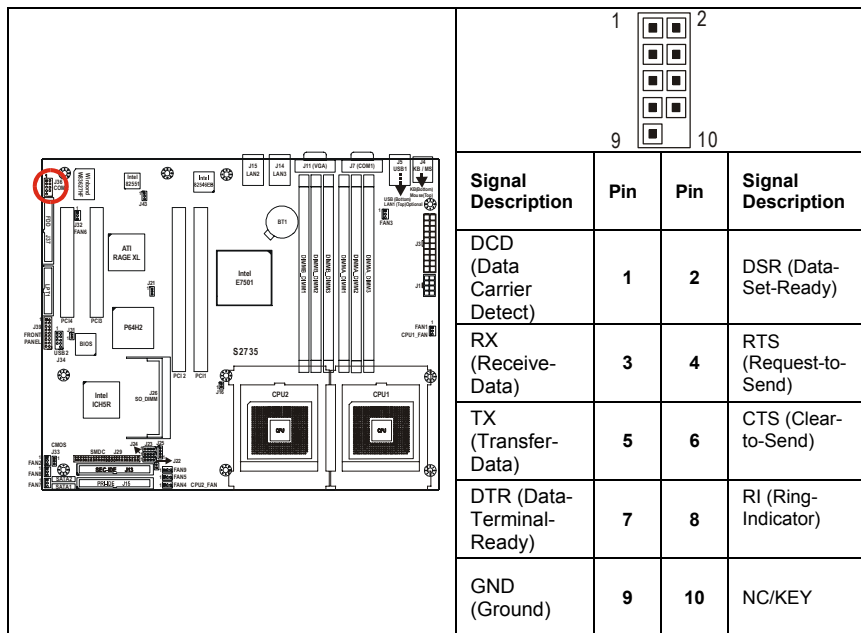
2.17 – Front Panel Connector (J39)

Your chassis will usually come with connectors to install onto the motherboard, such as HD and Power LEDs. The Front Panel Connector (J39) has been implemented for such purposes.

Function	Pin	Pin	Function
HDD_LED+	1	2	Power_LED+
HDD_LED-	3	4	Power LED-
GND	5	6	PWR+
Reset+	7	8	GND
+5V	9	10	Sleep+
IRRX	11	12	GND
GND	13	14	NC
IRTX	15	16	NC
INTRU+	17	18	INTRU-
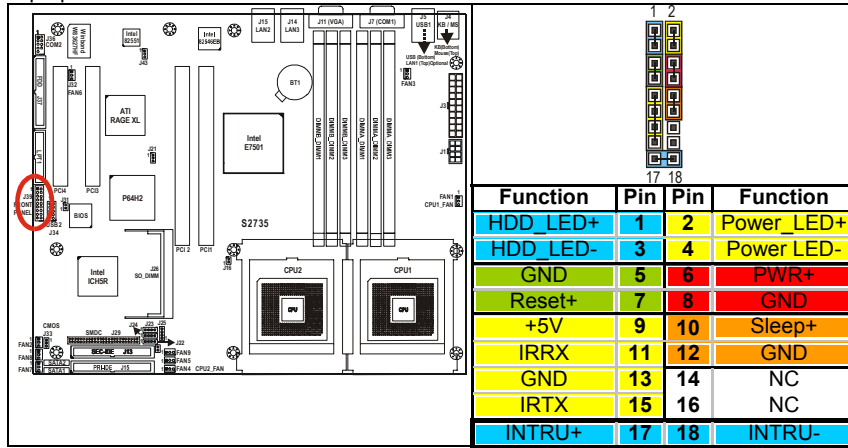
2.18 – PCI-X B (PCI2) Speed Header (J43)

1 ▪ ▪ 3 ▪	100MHz (Default)
1 ▪ ▪ 3 ▪	133MHz (Gigabit only)
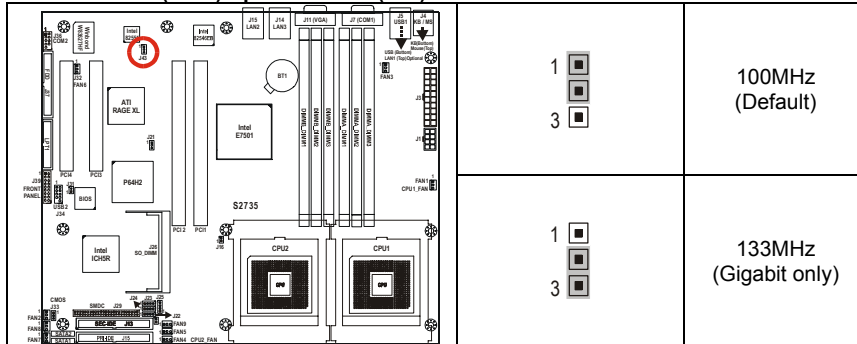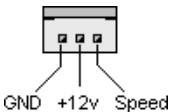
2.19 – Fan Header Information

Fan #	Fan Description	Functions	Amp Rated (Maximum)
FAN1	CPU 1 Fan	RPM Read and controlled	1.5A
FAN2	Chassis Fan	RPM Read	1.2A
FAN3	Chassis Fan	RPM Read	1.2A
FAN4	CPU 2 Fan	RPM Read and controlled	1.5A
FAN5	Chassis Fan	RPM Read and controlled	1.2A
FAN6	Chassis Fan	None	2A
FAN7	Chassis Fan	RPM Read	1.2A
FAN8	Chassis Fan	None	2A
FAN9	Chassis Fan	None	2A

FAN connectors

GND +12v Speed	Use these headers to connect cooling fans, both chassis and processor fans, to your motherboard. Cooling fans help keep the system more stable and operating reliably for its product life. **+12V fans supported**

PCI-X slots

PCI slots
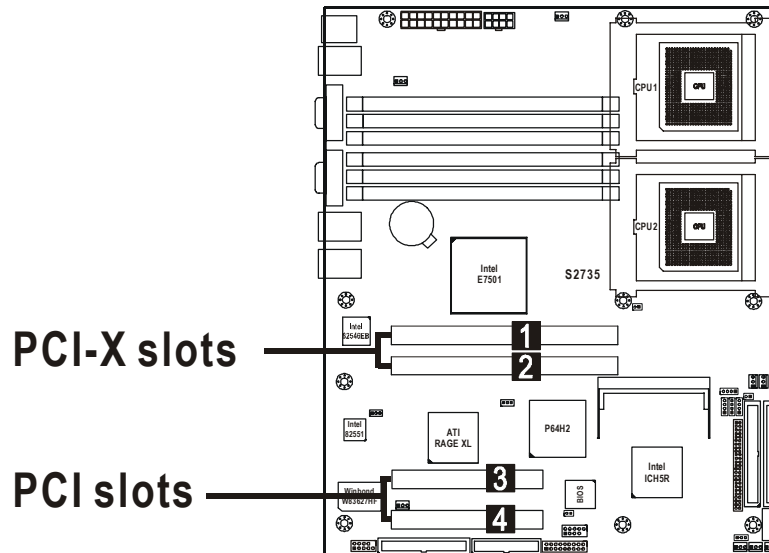
Intel 82870P2 64-bit PCI-X/PCI Controller (P64H2) provides two independent 64-bit 133/100/66MHz PCI-X / PCI bus channels:

First channel:
- **Slot (1, 2): 64-bit 133/100/66MHz (3.3V) PCI-X / PCI**
  - 3.3 volt or universal PCI-X/PCI cards are accepted

Second channel:
- **Onboard Intel's 82546EB 64-bit PCI-X dual gigabit Ethernet controller and SCSI add-on option**
  - Two RJ45 connectors
  - One SO-DIMM connector
  - Optional Intel's 82545EM single channel gigabit Ethernet controller

Intel 82801EB (ICH5) or 82801ER (ICH5R) provides one 32-bit 33MHz (5V) PCI bus:
- **Slot (3, 4): 32-bit 33MHz (5V) PCI**
  - 5 volt and universal cards are accepted

2.21 – Mounting the Motherboard

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

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

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

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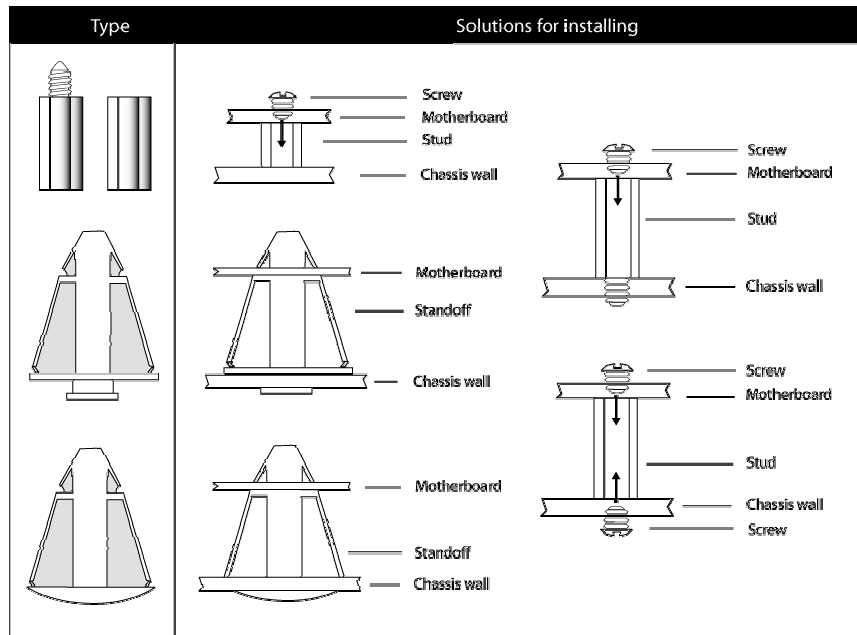
TIP: Use metal studs if possible, as they hold the motherboard into place more securely than plastic standoffs.

2.22 – Installing the Memory

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

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

SDR SDRAM

Registered SDR SDRAM — Registered memory has extra buffer chips near the bottom

DDR SDRAM

Registered DDR SDRAM — Registered memory has extra buffer chips near the bottom
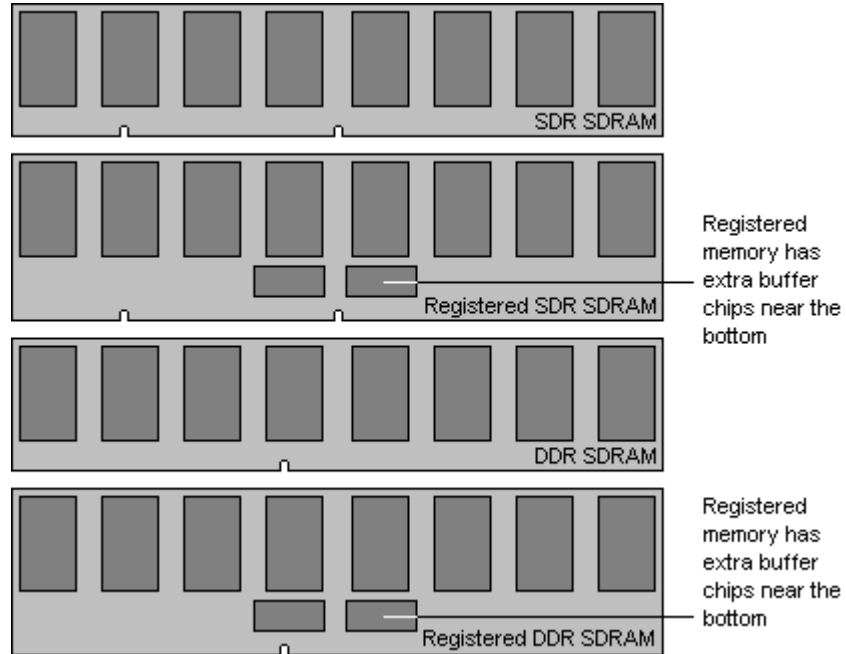
Memory Installation Procedure

The Tiger i7501R S2735 requires that memory modules be installed in pairs. Please refer to the next page for exact details on installing memory modules correctly.

When installing memory modules, make sure the modules align properly with the memory socket. There should be keys (small indents) on your memory modules that fit according to the keys in the memory socket. DDR modules and sockets have only one key, which is slightly near the center of the module/socket. The method of installing memory modules is detailed in the following diagrams.

```
                    DDR SDRAM Module

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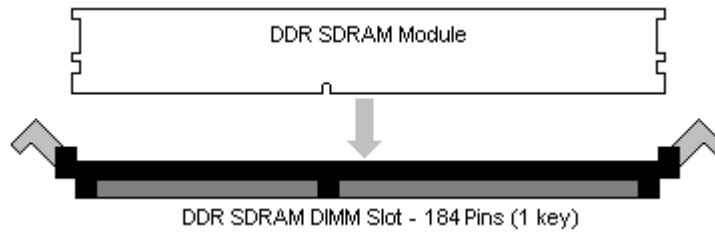
Once the memory modules are firmly seated in the socket, two clamps on either side will close and secure the module into the socket. Sometimes you may need to close the clamps manually.

```
                    DDR SDRAM Module

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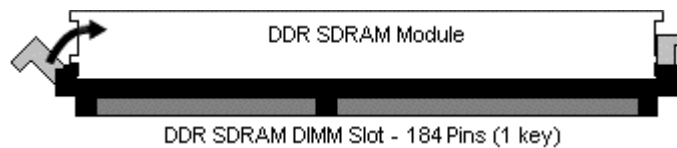
To remove the memory module, simply push the clamps outwards until the memory module pops up. Then simply remove the module.

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

Memory Pair Installation

When installing DIMM modules, you must install the first two memory modules in **DIMMA_DIMM1 and DIMMB_DIMM1**.
Both modules must be the same in both size and density. Modules must also use the same chip configuration, as in each module that is installed must physically have the same number of memory chips on them.
All memory sockets must be populated by the same memory type, either x4 modules or x8 you cannot mix and match x4 and x8 modules together.
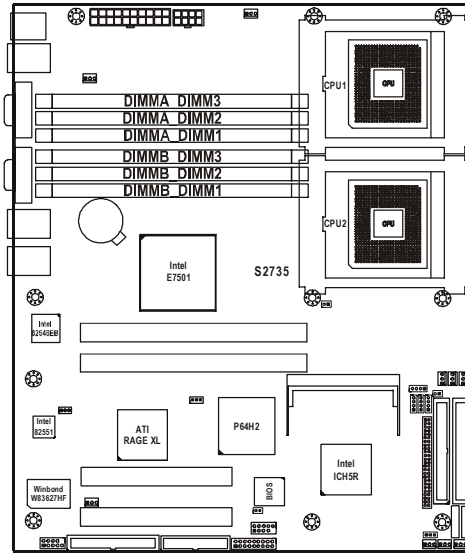
Points to remember:

- At least **two Registered ECC** DDR SDRAM modules must be installed for the system to turn on and POST (Power On Self Test). Single Channel memory support is not currently available. Please check Tyan's website for updates on this topic.

- When installing modules, install them in this order: DIMMA_DIMM1, DIMMB_DIMM1, DIMMA_DIMM2, DIMMB_DIMM2, etc.

- 128MB, 256MB, 512MB, 1GB, and 2GB Registered ECC PC2100/PC1600 DDR SDRAM memory modules are supported in x4 or x8 configuration.

- The Tiger i7501R S2735 supports up to 12GB of memory with 2GB (X4) registered DDR modules.

- Use **ONLY** x8 **OR** x4 type memory modules. Mixing memory types may affect stability.

- RAM chips are organized as x4 bits or x8 bits. On a memory module you're just lining all these chips up in parallel so you have a 64bit wide data bus. All 512MB modules are made using 16 pieces of either 64Mbit x4, or 32Mbit x8. If you use sixteen x8 chips you would get a 128bit data bus, so it has to be split into two separate banks. Each with 64bit bus. That's why 512MB modules based on x8 chips are dual bank. To build 256MB modules you can either use sixteen 32Mx4 chips, or eight 32Mx8 chips. But you can't build a 256MB module using 64Mx4 chips. To build 1GB modules you have to use thirty-two 64Mx4 chips. Two 64Mx4 chips are stacked on top of each other with a lead frame in between. Stacking basically converts two 64Mx4 chips into one 128Mx4 chip or one 64Mx8 chip. Then you stick 16 stacks onto a PCB. Stacking also saves real estate, so you can fit more chips onto a shorter PCB and keep trace lengths in spec.

If you are still unsure whether you are using x4 or x8 memory you can research the memory chip by the SDRAM part numbers, or go to http://www.google.com and search for **jedec 21-c 4.20.4**.

2.23 – Installing the Processor and Heatsink

Your Tiger i7501R S2735 supports the latest processor technologies from Intel. Check the following page on TYAN's website for latest processor support:

http://www.Tyan.com

The following diagrams will detail how to install your processor(s):
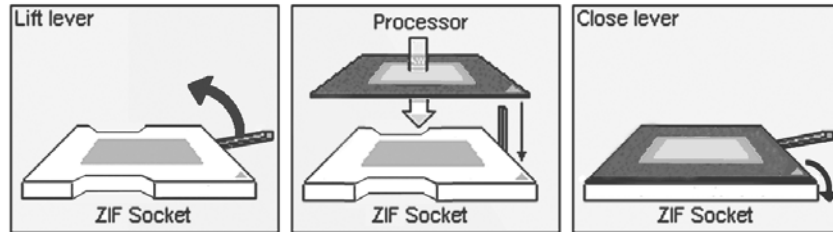
The processors you choose to use may not look exactly like the one pictured above, nor will the socket look exactly the same. The diagram is provided as a visual guide to help you install socket processors.

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

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

Heatsink Installation

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

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

2.24 – Installing CPU Back-plates and retention modules

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

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

1) Align the heatsink mounting bracket to the holes around the processor socket
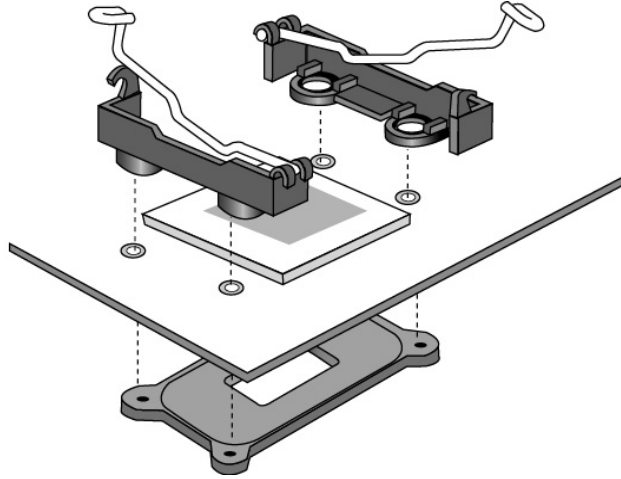
2) Insert screws into bracket holes
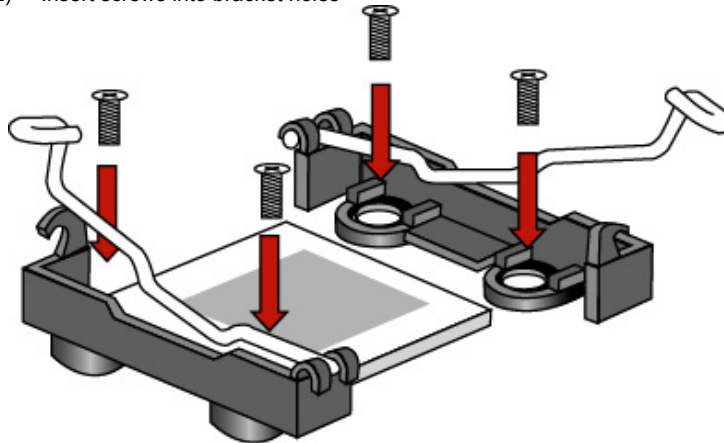
3)   Screws should pass through bracket holes and through the motherboard.
4)   Tighten screws into the CPU back-plates.

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

BOTTOM OF MOTHERBOARD PCB
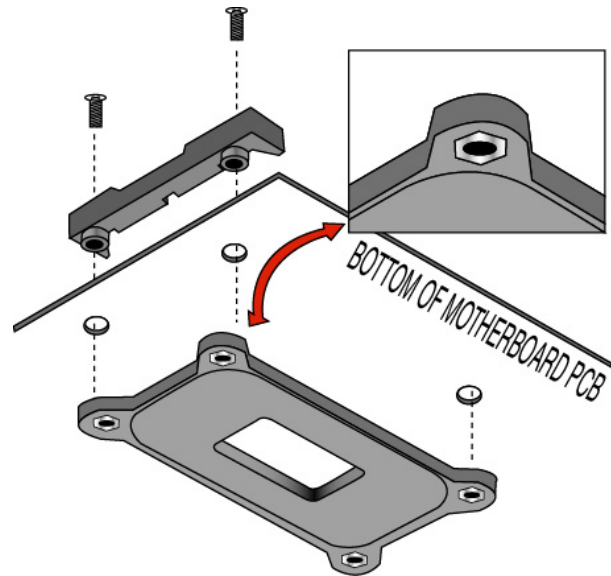
5)   After installing the CPU, seat the heatsink between brackets on processor
6)   Attach heatsink retaining arms by locking them in the hook as shown below.
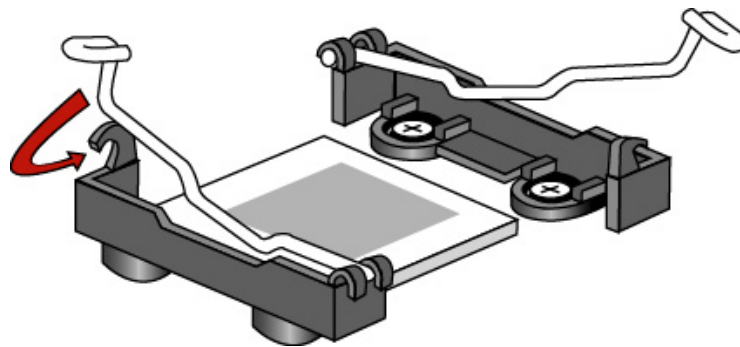
<u>Finishing Installing the Heatsink</u>

After you finish installing the heatsink, attach the end wire of the fan (already be attached to the heatsink) to the motherboard.
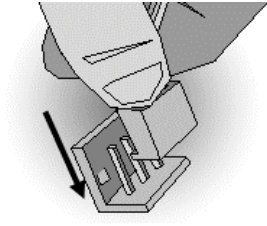
This diagram illustrates how to connect fans onto the motherboard.

After you're finished installing all the fans you can now connect your drives (hard drives, CD-ROM drives, etc.) to your motherboard.

2.25 – Attaching Drive Cables

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

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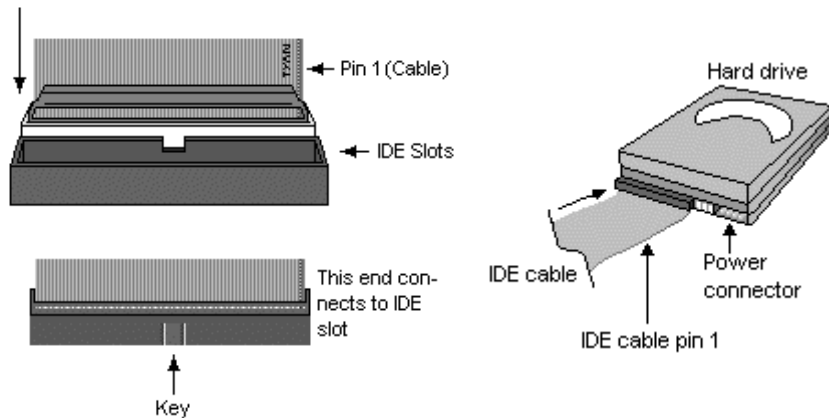
Simply plug in the **BLUE END of the IDE cable** into the motherboard IDE connector, and the other end(s) into the drive(s). Each standard IDE cable has three connectors, two of which are closer together. The BLUE connector that is furthest away from the other two is the end that connects to the motherboard.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

SATA (Serial ATA connectors)

With SATA cables, both ends are the same. You can attach either end to the motherboard or hard drive.
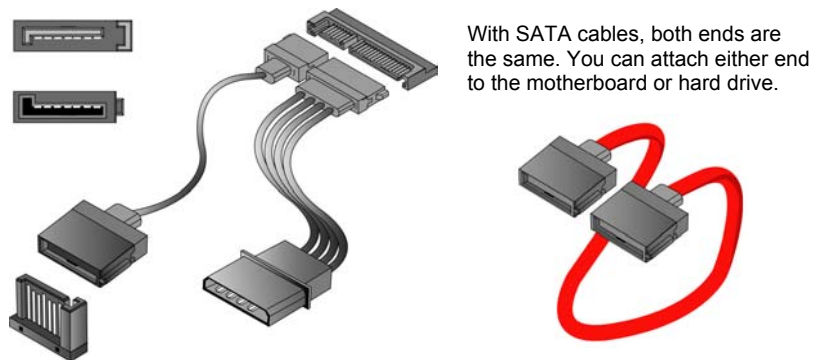
Floppy Drives

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.

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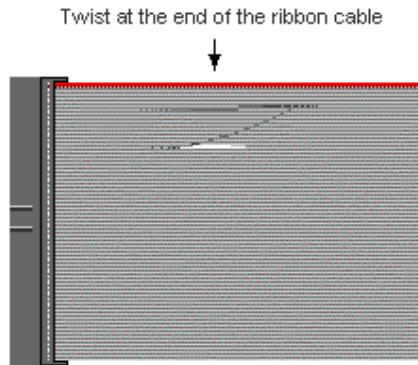
The first floppy drive (commonly denoted as **A:**) is usually attached to the end of the cable with the twist in it. Drive B: is usually connected to the second or third connector in the cable (the second or third connector after you install Drive **A:**).

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.

2.26 – 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.

64-bit / 66MHz PCI Slot - 3.3V

32-bit / 33MHz PCI Slot - 3.3V

32-bit / 33MHz PCI Slot - 5V

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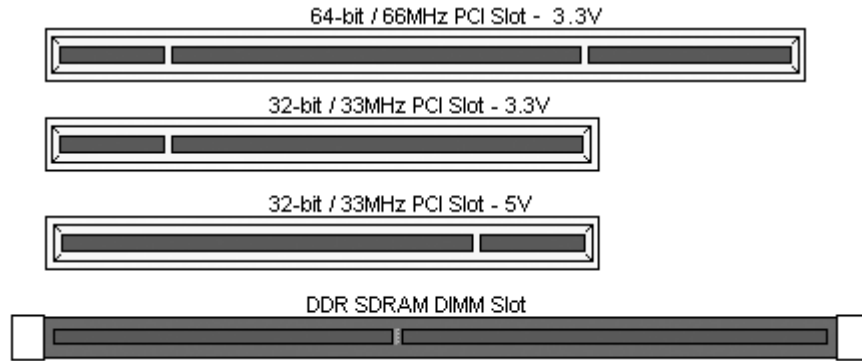
Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards (or anything else) into any slots if they won't seat in place. It's better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

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

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

2.27 – 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 rear port stack for this S2735 motherboard:

Tiger i7501R S2735

10/100 Mbit Ethernet Port (Optional)

PS/2 Mouse

PS/2 Keyboard

USB2.0 Ports

COM1

VGA Port

10/100/1000 Mbit Ethernet Ports
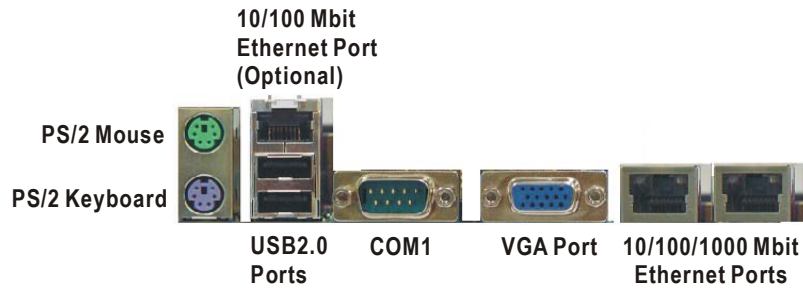
Onboard LAN LED Color Definition

Left   Right

10/100 Mbps LAN Link/Activity LED Scheme		
Speed	**Left LED**	**Right LED**
Link 10Mbps	Off	Off
Activity 10Mbps	Blink Green	Off
Link 100Mbps	Off	Yellow
Activity 100Mbps	Blink Green	Blink Yellow

Left   Right

10/100/1000 Mbps LAN Link/Activity LED Scheme		
Speed	**Left LED**	**Right LED**
Link 10Mbps	Green	Off
Activity 10Mbps	Blink Green	Off
Link 100Mbps	Off	Yellow
Activity 100Mbps	Off	Blink Yellow
Link 1000Mbps	Green	Yellow
Activity 1000Mbps	Blink Green	Blink Yellow

2.28 – Installing the Power Supply

There are two power connectors on your Tiger i7501R S2735. The Tiger i7501R S2735 requires that you have an EPS12V power supply that has a 24-pin and an 8-pin power connector. Please be aware that ATX 2.x, ATX12V and ATXGES power supplies are not compatible with the board and can damage the motherboard and/or CPU(s).

EPS12V (24-pin) Power Connector   1   EPS12V (8-pin) Power Connector

Disconnect power supply from electrical outlet
1.   Connect the EPS12V 8-pin power connector
2.   Connect the EPS12V 24-pin power connector
3.   Connect power cable to power supply to power outlet
    Make sure you have connected both connectors before attempting to apply power to the board.

| NOTE | **YOU MUST** unplug the power supply before plugging the power cables to motherboard connectors. |

2.29 – 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

3.0 – 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
                                               select a field
  AMIBIOS
  Version    : 08.00.09
  Build Date : xx/xx/2003                      Use [+] or [-] to
  ID         : 0ABBP006                        configure system time.

  Processor
  Type       : Intel(R) Xeon (TM) CPU x.xx GHz
  Logical Count    : x
                                               ← → Select Screen
  System Memory                                ↑ ↓ Select Item
  Size       : xxxx MB                         +/-   Change Option
                                               F1    General Help
  System Time              [12:59:59]          F10  Save and Exit
  System Date              [xxx xx/xx/2003]    ESC  Exit
```

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>.

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3.1 – 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
Power	To configure power management features
Exit	To exit setup utility

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

3.2 – BIOS Legend Bar

The chart describes the legend keys and their alternates:

Key	Function
<F1> or <Alt-H>	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
<F5> or <->	Select the previous value/setting of the field
<F6> or <+> or <Space>	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

3.3 – 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      │
│ AMIBIOS                                      │ a field                    │
│ Version    : 08.00.09                        │                            │
│ Build Date : xx/xx/2003                      │ Use [+] or [-] to          │
│ ID         : 0ABBP006                        │ configure system time.     │
│                                              │                            │
│ Processor                                    │                            │
│ Type      : Intel (R) Xeon (TM) CPU x.xx GHz │                            │
│ Logical Count    : x                         │                            │
│                                              │                            │
│ System Memory                                │ ← → Select Screen          │
│ Size       : xxxx MB                         │ ↑ ↓ Select Item            │
│                                              │ Enter Go to Sub Screen     │
│ System Time              [12:59:59]          │ F1   General Help          │
│ System Date              [xxx xx/xx/2003]    │ F10  Save and Exit         │
│                                              │ ESC  Exit                  │
└─────────────────────────────────────────────┴────────────────────────────┘
```

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

3.4 – 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                              Use [ENTER], [TAB] or
                                                 [SHIFT_TAB] to select a
                                                 field
  WARING: Setting wrong values in below sections may
          cause system to malfunction.          Use [+] or [-] to configure
                                                 system time.
   ▸ CPU Configuration
   ▸ IDE Configuration
   ▸ Floppy Configuration
   ▸ Super I/O Configuration
   ▸ ACPI Configuration
   ▸ DMI Event Logging            ← → Select Screen
   ▸ Remote Access Configuration  ↑ ↓ Select Item
   ▸ USB Configuration            Enter   Go to Sub Screen
   ▸ Onboard Devices Configuration F1     General Help
   ▸ Hardware Monitor             F10   Save and Exit
                                  ESC  Exit
```

Feature	Option	Description
Advanced Settings		
CPU Configuration	**Menu Item**	Configure CPU
IDE Configuration	**Menu Item**	Configure the IDE device(s)
Floppy Configuration	**Menu Item**	Configures devices connected to the floppy controller
Super I/O Configuration	**Menu Item**	Configures devices connected to the Super I/O Configuration
ACPI Configuration	**Menu Item**	Section for Advanced ACPI Configuration
DMI Event Logging	**Menu Item**	Views & controls Event Log
Remote Access Configuration	**Menu Item**	Configures Console Redirect
USB Configuration	**Menu Item**	Configures USB controller & legacy device support
Onboard Devices Configuration	**Menu Item**	Use this section to Enable / Disable special Onboard Devices
Hardware Monitor	**Menu Item**	Hardware Monitor & Dis

3.4.1 – CPU Configuration Sub-Menu

You can use this screen to select options for the CPU 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.

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

 Configure advanced CPU settings                  Use [ENTER], [TAB]
                                                  or [SHIFT_TAB] to
                                                  select a field
 Manufacturer: Intel
 Brand String : Intel ( R)  Xeon (TM)  CPU x.xxGHz    Use [+] or [-] to
                                                  configure system time.
 Cache L2    : 512 KB
 Cache L3    : 0    KB                             ← → Select Screen
                                                  ↑ ↓  Select Item
 Ratio Status  : Unlocked                          + -   Change Option
 Ratio Actual value   : 15                         F1    General Help
 Ratio CMOS Setting:                    [255]      F10  Save and Exit
                                                   ESC  Exit
 Hyper Threading                     [Enabled]
```

Feature	Option	Description
Configure advanced CPU settings		
Rati Status	**Unlocked**	
Ratio Actual value	**xx**	
Ratio CMOS Setting	**255**	Sets the ratio between CPU Core Clock and the FSB Frequency. NOTE: If an invalid ratio is set in CMOS then actual and set point values may differ.
Hyper Threading	**Enabled**	ENABLE: Enable CPU HyperThreading for HT enabled processor(s).
	Disabled	DISABLE: Disable CPU HyperThreading for HT enabled processor(s).

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3.4.2 – 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.

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

  IDE Configuration                                    Use [ENTER], [TAB]
                                                       or [SHIFT_TAB] to
  IDE Legacy Configuration          [P-ATA Only]       select a field
     S-ATA Running Enhanced Mode    [Yes]
        P-ATA Channel Selection     [Both]             Use [+] or [-] to
        S-ATA Ports Definition      [P0-3rd./P1-4th]   configure system time.
        Configure S-ATA as RAID     [No]

   ▸ IDE channel 0 Master           : [xxxx]
   ▸ IDE channel 0 Slave            : [xxxx]
   ▸ IDE channel 1 Master           : [xxxx]
   ▸ IDE channel 1 Slave            : [xxxx]
   ▸ IDE channel 2 Master           : [xxxx]
   ▸ IDE channel 2 Slave            : [xxxx]
   ▸ IDE channel 3 Master           : [xxxx]    ← → Select Screen
   ▸ IDE channel 3 Slave            : [xxxx]    ↑ ↓ Select Item
                                                +/-    Change Option
  Hard Disk Write Protect           [Disable]   F1    General Help
  IDE Detect Time Out (Sec)         [xx]        F10   Save and Exit
  ATA (PI) 80pin Cable Detection    [Host & Device]   ESC  Exit
```

Feature	Option	Description
IDE Configuration		
IDE egacy Configuration	Disabled	Select combination you wish to use. Note only 4 IDE drives can be used at one time no matter what the combination.
	P-ATA only	
	S-ATA only	
	P-ATA and S-ATA	
S-A A Running Enhanced Mod	Yes	
	No	
P-A A Channel Selection	Primary	
	Secondary	
	Both	
S-A A Ports Definition	**P0-3rd./P1-4th**	
	P0-4th./P1-3rd.	
Con gure S-ATA as RAID	**No**	
	Yes	

Feature	Option	Description
IDE Configuration		
SAT ιport 0/1 Master SAT ιport 0/1 Slave	**Both**	While entering setup, BIOS auto detects the presence of IDE devices. This displays the status of auto detection of IDE devices.
	Primary	
	Secondary	
	Disabled	
Primary/Secondary Master Primary/Secondary Slave	**Auto**	Auto - To determine the IDE drive type by system BIOS User - To set IDE drive type by user ATAPI Removable – Read/write media (e.g. IDE ZIP) CD-ROM - Readable CD-ROM drive
	User	
	ATAPI Removable	
	CD-ROM	
	None	
Hard Disk Write Protect	**Disabled**	This option protects the first sector of the IDE HDD from being written.
	Enabled	
IDE Detect Time Out (Sec)	0	Configure the time (in Seconds) before the BIOS times out on detecting an IDE Device.
	5	
	10	
	15	
	20	
	25	
	30	
	35	
ATA (PI) 80pin Cable Detection	**Host & Device**	Toggles the detection of 80wire IDE cables.
	Host	
	Device	

3.4.2.1 – SATA Port / Primary IDE / Secondary IDE Configuration Sub-Menu
You can use this screen to select options for the SATA Port / Primary IDE / Secondary 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.

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

  SATA Port 0 IDE Master                                Use [ENTER], [TAB]
                                                        or [SHIFT_TAB] to
  Device:                            [P-ATA Only]       select a field

                                                        Use [+] or [-] to
                                                        configure system time.
  Type                               [Auto]
  LBA/Large Mode                     [Auto]             ←→ Select Screen
  Black (Multi – Sector Transfer)    [Auto]             ↑ ↓  Select Item
  PIO Mode                           [Auto]             +/-   Change Option
  S.M.A.R.T.                         [Auto]             F1    General Help
  32Bit Data Transfer                [Disabled]         F10   Save and Exit
                                                        ESC   Exit
```

3.4.3 – 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                     │ Use [ENTER], [TAB]       │
  │                                          │ or [SHIFT_TAB] to        │
  │                                          │ select a field           │
  │ Floppy A                   [1.44 MB 3 1/2"]│                        │
  │ Floppy B                   [Disabled]    │ Use [+] or [-] to        │
  │                                          │ configure system time.   │
  │                                          │                          │
  │                                          │ ← → Select Screen        │
  │                                          │ ↑ ↓ Select Item          │
  │                                          │ +/-   Change Option      │
  │                                          │ F1    General Help       │
  │                                          │ F10  Save and Exit       │
  │                                          │ ESC  Exit                │
  └──────────────────────────────────────────┴──────────────────────────┘
```

Feature	Option	Description
Floppy Configuration		
Floppy A	Disabled	This setting selects the type of the floppy disk drive installed in system.
	360 KB 5¼"	
	1.2 MB 5¼"	
	720 KB 3½"	
	1.44 MB 3½"	
	2.88 MB 3½"	
Floppy B	**Disabled**	This setting selects the type of the floppy disk drive installed in system.
	360 KB 5¼"	
	1.2 MB 5¼"	
	720 KB 3½"	
	1.44 MB 3½"	
	2.88 MB 3½"	

3.4.4 – Super I/O 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

Win627 Super I/O Chipset		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Onboard Floppy Controller	[Enabled]	Use [+] or [-] to configure system time.
Serial Port1 Address	[3F8/IRQ4]	
Serial Port2 Address	[Disabled]	← → Select Screen
Serial Port2 Mode	[Disabled]	↑ ↓ Select Item
Parallel Port Address	[Disabled]	+/- Change Option
Parallel Port Mode	[Normal]	F1 General Help
Parallel Port IRQ	[IRQ7]	F10 Save and Exit
		ESC Exit

Feature	Option	Description
Win627 Super I/O Chipset		
Onboard Floppy Controller	**Enabled**	Enables or Disables the Onboard Floppy Controller.
	Disabled	
Serial Port1 Address	**3F8/IRQ4**	Sets the serial port 1 (COM1) base I/O address and an interrupt number Disabled –turn off port
	3E8/IRQ4	
	2E8/IRQ3	
	Disabled	
Serial Port2 Address	2F8/IRQ3	Sets the serial port 2 (COM2) base I/O address and an interrupt number Disabled –turn off port
	3E8/IRQ4	
	2E8/IRQ3	
	Disabled	
Serial Port2 Mode	**Normal**	Allows BIOS to Select Mode for Serial Port2.
	IrDA	
	ASK IR	
Parallel Port Address	378	Assigns the Parallel Port base I/O address. Disabled –turn off port
	278	
	3BC	
	Disabled	
Parallel Port Mode	Bi-Directional	Configures Parallel port mode. Bi-Directional= send & receive data Normal= can send data EPP= Enhanced Parallel Port ECP=Extended Capability port
	Normal	
	EPP	
	ECP	
Parallel Port Interrupt	**IRQ 7**	Assigns IRQ to parallel port.
	IRQ 5	

3.4.5 –ACPI Settings 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

ACPI Settings

ACPI Aware O/S	[Yes]	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
▸ Advanced ACPI Configuration		Use [+] or [-] to configure system time.
WOL S48S5 Support	[Enabled]	← → Select Screen
Power Button Instant Off	[Enabled]	↑ ↓ Select Item
After Power Failure	[Always Off]	+/- Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit

Feature	Option	Description
ACPI Settings		
ACPI Aware O/S	**Yes**	Yes allows the system to utilize ACPI (Advanced Configuration and Power Interface) specification.
	No	
WOL S48S5 Support	**Enabled**	Enable WOL event before system goes to S4855 mode
	Disabled	
Power Button Instant Off	**Enabled**	The Power Button Instant-off function only supports Non-ACPI O.S.
	Disabled	
After Power Failure	Always On	Determines the mode of operation if an AC power failure occurs.
	Always Off	
	Previous state	

3.4.5.1 – Advanced ACPI Configuration Sub-Menu

Use this screen to select options for the ACPI Advanced 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. 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		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
ACPI 2.0 Support	[No]	
ACPI APIC Support	[Enabled]	Use [+] or [-] to configure
AmI OEMB table	[Enabled]	system time.
Headless mode	[Disabled]	
		← → Select Screen
		↑ ↓ Select Item
		+/- Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit

Feature	Option	Description
Advanced ACPI Configuration		
ACPI 2.0 Support	Yes	Set this value to allow or prevent the system to be complaint with the ACPI 2.0 specification.
	No	
ACPI APIC Support	**Enabled**	This option allows you to define whether or not to enable ACPI management features.
	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 AML code during ACPI O/S operations.
	Disabled	
Headless mode	Enabled	Enable / Disable Headless operation mode through ACPI.
	Disabled	

3.4.6 – DMI Event Logging 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
  ┌────────────────────────────────────────┬──────────────────────────────┐
  │ DMI Event Logging                      │ Use [ENTER], [TAB] or         │
  │                                        │ [SHIFT_TAB] to select         │
  │                                        │ a field                       │
  │ View Event Log                         │                               │
  │ Mark All Events as Read                │ Use [+] or [-] to             │
  │ Clease Event Log                       │ configure system time.        │
  │ 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
DMI Event Logging		
View Event Log		View all unread events on the Event Log.
Mark All Events as Read		Mark all unread events as read.
Clear Event Log		Discard all events in the Event Log.
Event Log Statistics		Displays the storage capacity & usage of the Event Log.

3.4.7 – 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

Configure Remote Access type and parameters        Use [ENTER], [TAB]
                                                   or [SHIFT_TAB] to
                                                   select a field
Remote Access                     [Disabled]
                                                   Use [+] or [-] to
                                                   configure system time.

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

Feature	Option	Description
Configure Remote Access type and parameters		
Remote Access	**Disabled**	Enables remote access to system through serial port.
	Serial	
	SMDC	

3.4.8 – 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                              Use [ENTER], [TAB]
                                                or [SHIFT_TAB] to
 Module Version – X.XX.X-X.X                    select a field

 USB Devices Enabled:                           Use [+] or [-] to
          None                                  configure system time.

 USB Function                   [4 USB Ports]   ← → Select Screen
 Legacy USB Support             [Enabled]       ↑ ↓  Select Item
 USB 2.0 Controller             [Enabled]       +/-    Change Option
 USB 2.0 Controller Mode         [HiSpeed]      F1     General Help
 ▶ USB Mass Storage Device Configuration        F10   Save and Exit
                                                ESC  Exit
```

Feature	Option	Description
USB Configuration		
USB Function	Disabled	Enables USB host controllers.
	2 USB ports	
	4 USB ports	
Legacy USB Support	Auto	Enables support for legacy USB devices such as keyboards, mice, & bootable USB devices.
	Disabled	
	Enabled	
USB 2.0 Controller	Disabled	Select "Enabled" if your system contains a USB controller and you have a USB Keyboard.
	Enabled	
USB 2.0 Controller Mode	FullSpeed	Configures the USB 2.0 controller in HiSpeed (480Mbps) or FullSpeed (12Mbps)
	HiSpeeed	

3.4.8.1 – USB Mass Storage Device Configuration Sub-Menu

You can use this screen to view the USB Mass Storage Device 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 Mass Storage Device Configuration          Use [ENTER], [TAB]
                                                or [SHIFT_TAB] to
 USB Mass Storage Reset Delay        [20 Sec]   select a field

 No USB Mass Storage device detected            Use [+] or [-] to
                                                configure system time.

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

Feature	Option	Description
USB Configuration		
USB Mass Storage Reset Delay	10 Sec **20 Sec** 30 Sec 40 Sec	Number of seconds POST waits for the USB mass storage device after start unit command.

3.4.9 – Onboard Devices Configuration Sub-Menu

Use this screen to select options for the Onboard Devices 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. 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

   Special onboard devices configuration settings      Use [ENTER], [TAB] or
                                                       [SHIFT_TAB] to select a
   Onboard ATI Video              [Enabled]            field
   Onboard 82551 LAN              [Enabled]
     Remote Boot OS by 82551      [Enabled]            Use [+] or [-] to configure
   Onboard 82546 Dualport LAN     [Enabled]            system time.
     Remote Boot OS by 82546      [Enabled]
                                                       ← → Select Screen
                                                       ↑ ↓  Select Item
                                                       +/-   Change Option
                                                       F1    General Help
                                                       F10   Save and Exit
                                                       ESC  Exit
```

Feature	Option	Description
Special onboard devices configuration settings		
Onboard ATI Video	**Enabled**	Toggles the onboard ATI video graphics.
	Disabled	
Onboard 82551 LAN	**Enabled**	Toggles 10/100Mbit LAN port.
	Disabled	
Remote Boot OS by 82551	**Enabled**	Remote boot OS from 82551
	Disabled	
Onboard 82546 Dualport LAN	**Enabled**	Toggles the Gigabit LAN ports.
	Disabled	
Remote Boot OS by 82546	**Enabled**	Remote boot OS from 82546
	Disabled	

3.4.10 – Hardware Monitor Sub-Menu

You can use this screen to view the Hardware Monitor 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

Monitor CPU temperature, Fan speed and Voltage	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
CPU Temperature	
CPU1 :xx C	
CPU2 :xx C	Use [+] or [-] to configure system time.
Fan Speed	
CPU1 Fan :xxxx RPM	
CPU2 Fan :xxxx RPM	
Fan 2 :xxxx RPM	
Fan 3 :xxxx RPM	← → Select Screen
Fan 5 :xxxx RPM	↑ ↓ Select Item
Fan 7 :xxxx RPM	+/- Change Option
	Tab Select Field
Voltage :x.xxx V	F1 General Help
+3.3V :x.xxx V	F10 Save and Exit
+5V :xx.xxx V	ESC Exit
+12V	
Chassis Intrusion Detect [Disabled]	

Feature	Option	Description
Monitor CPU temperature, Fan speed and Voltage		
CPU1 Temperature		Displays CPU Temperatures.
CPU2 Temperature		
CPU1 Fan		Displays speed of fans connected to appropriate Fan headers.
CPU2 Fan		
Fan 2		
Fan 3		
Fan 5		
Fan 7		
+3.3V		Displays Voltage for CPU, memory, & other devices.
+5V		
+12V		
Chassis Intrusion Detect	**Disabled**	Enabled / Disabled: when chassis open event is detected, BIOS will record the event.
	Enabled	

3.5 –Advanced 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

WARING: Setting wrong values in below sections may cause system to malfunction.

Plug & Play OS	[Yes]
PCI Latency Timer	[64]
Allocate IRQ to PCI VGA	[Yes]
Palette Snooping	[Disabled]
PCI IDE BusMaster	[Enabled]
IRQ3	[Available]
IRQ4	[Available]
IRQ5	[Available]
IRQ7	[Available]
IRQ9	[Available]
IRQ10	[Available]
IRQ11	[Available]
IRQ14	[Available]
IRQ15	[Available]
DMA Channel_0	[Available]
DMA Channel_1	[Available]
DMA Channel_3	[Available]
DMA Channel_5	[Available]
DMA Channel_6	[Available]
DMA Channel_7	[Available]
Reserved Memory Size	[Disabled]
Extended BIOS Data Area	[Enabled]

Use [ENTER], [TAB] or [SHIFT_TAB] to select a field

Use [+] or [-] to configure system time.

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

Feature	Option	Description
Advanced PCI/PnP Settings		
Plug & Play OS	**Yes**	The Yes setting allows the operating system to change the interrupt, I/O, and DMA settings. Set this option if the system is running Plug and Play aware operating systems.
	No	Set No for operating systems that do not meet the Plug and Play specifications. It allows the BIOS to configure all the devices in the system.
PCI Latency Timer	32	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.
	64	
	96	
	128	
	160	
	192	
	224	
	248	
Allocate IRQ to PCI VGA	**Yes**	Allows or restricts the system from giving the VGA adapter an IRQ.
	No	
Palette Snooping	**Disabled**	This is the default setting and should not be changed unless the VGA card manufacturer requires Palette Snooping to be Enabled.
	Enabled	
PCI IDE Bus Master	Disabled	ENABLED: BIOS uses PCI bus mastering for reading / writing to IDE drives.
	Enabled	
IRQ3 ~ IRQ15	**Available**	Allows user to reserve a specific IRQ for a legacy device (Note: most hardware devices & OS used do not support manual assigned).
	Reserved	
DMA0 ~ 7	**Available**	Allows user to reserve a specific DMA for a legacy device.
	Reserved	
Reserved Memory Size	Disabled	Size of memory block to reserve for legacy ISA devices.
	16 K	
	32 K	
	64 K	
Extended BIOS Data Area	Enabled	Enable / Disable Extended BIOS Data Area.
	Disabled	

3.6 – BIOS Boot Settings 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                              Use [ENTER], [TAB] or
                                             [SHIFT_TAB] to select
                                             a field
  ‣ Boot Settings Configuration

  ‣ Boot Device Priority                     Use [+] or [-] to
  ‣ Hard Disk Drives                         configure system time.
  ‣ Removable Drives
  ‣ ATAPI CDROM Drives                       ← → Select Screen
                                             ↑ ↓ Select Item
                                             Enter Go to Sub Screen
                                             F1    General Help
                                             F10  Save and Exit
                                             ESC  Exit
```

3.6.1 – 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                Use [ENTER], [TAB] or
                                             [SHIFT_TAB] to select
  Quick Boot              [Disabled]         a field
  Quiet Boot              [Disabled]
  Add On ROM Display Mode  [Force BIOS]      Use [+] or [-] to
  Boot up Number-Lock     [On]               configure system time.
  PS/2 Mouse Support      [Auto]
  Wait for 'F1' If Error  [Enabled]          ← → Select Screen
  Hit 'DEL' Message Display  [Enabled]       ↑ ↓ Select Item
  Interrupt 19 Capture    [Enabled]          +/-    Change Option
  Primary Display Device  [Auto]             F1    General Help
                                             F10  Save and Exit
                                             ESC  Exit
```

Feature	Option	Description
Boot Settings Configuration		
Quick Boot Mode	Enabled	This option allows user bypass BIOS self test during POST.
	Disabled	
Quiet Boot	**Disabled**	Enable this option to hide BIOS Post messages during POST.
	Enabled	
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 Number-Lock	**On**	Choose status of keyboard NUM LOCK key.
	Off	
PS/2 Mouse Support	Enabled	Allows user to choose status of PS/2 mouse support.
	Disabled	
	Auto	
Wait for 'F1' If Error	**Enabled**	Allows user to disable the "Press F1 to Continue" error message when error is detected.
	Disabled	
Hit 'DEL' Message Display	**Enabled**	Allows user to disable the "Press DEL to enter setup" message during POST.
	Disabled	
Interrupt 19 Capture	**Disabled**	Allows devices (such as network card) to capture INT19 for booting.
	Enabled	
Primary Display Device	**Auto**	Display Device is used by BIOS POST.
	Onboard VGA	

3.6.2 – 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

  Boot Device Priority                              Use [ENTER], [TAB]
  1st Boot Device          [1st FLOPPY DRIVE]       or [SHIFT_TAB] to
  2nd Boot Device          [IBA FE Slot 0108 V4110] select a field
  3rd Boot Device          [IBA GE Slot 0409 V1211]
  4th Boot Device          [IBA GE Slot 0408 V1211] Use [+] or [-] to
                                                    configure system
                                                    time.

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

Feature	Option	Description
Boot Device Priority		
1st Boot Device	**1st FLOPPY DRIVE**	Settings for boot priority. These can be customized depending on your preference.
	Disabled	
	IBA FE Slot 0108 V4110	
	IBA GE Slot 0409 V1211	
	IBA GE Slot 0408 V1211	
2nd Boot Device	1st FLOPPY DRIVE	
	Disabled	
	IBA FE Slot 0108 V4110	
	IBA GE Slot 0409 V1211	
	IBA GE Slot 0408 V1211	
3rd Boot Device	1st FLOPPY DRIVE	
	Disabled	
	IBA FE Slot 0108 V4110	
	IBA GE Slot 0409 V1211	
	IBA GE Slot 0408 V1211	
4th Boot Device	1st FLOPPY DRIVE	
	Disabled	
	IBA FE Slot 0108 V4110	
	IBA GE Slot 0409 V1211	
	IBA GE Slot 0408 V1211	

3.6.3 – Hard Disk Drives Sub-Menu

Use this screen to select options for the Hard Disk 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

  Hard Disk Drives                                Use [ENTER], [TAB]
                                                  or [SHIFT_TAB] to
  1st Drive                 [xx,xxx-xxxxx:xxx]    select a field

                                                  Use [+] or [-] to
                                                  configure system
                                                  time.

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

Feature	Option	Description
Hard Disk Drives		
1st Drive	**xx,xxx-xxxxx:xxx**	
	Disabled	

3.6.4 – 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                           │                              │
  │                                            │  Use [ENTER], [TAB]          │
  │ 1st Device              [1st FLOPPY DRIVE] │  or [SHIFT_TAB] to           │
  │                                            │  select a field              │
  │                                            │                              │
  │                                            │  Use [+] or [-] to           │
  │                                            │  configure system time.      │
  │                                            │                              │
  │                                            │  ← → Select Screen           │
  │                                            │  ↑ ↓ Select Item             │
  │                                            │  +/-    Change Option        │
  │                                            │  F1    General Help          │
  │                                            │  F10  Save and Exit          │
  │                                            │  ESC  Exit                   │
  └────────────────────────────────────────────┴──────────────────────────────┘
```

Feature	Option	Description
Removable Drives		
1st Device	**1st FLOPPY DRIVE**	Specifies the boot sequence for removable drive booting. This option will show all removable devices.
	Disabled	

3.6.5 – ATAPI CDROM Drives Sub-Menu

Use this screen to select options for the ATAPI CDROM 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

  ATAPI CDROM Drives                              Use [ENTER], [TAB]
                                                  or [SHIFT_TAB] to
  1st Drive              [xx,xxx-xxxxx:xxx]        select a field

                                                  Use [+] or [-] to
                                                  configure system
                                                  time.

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

Feature	Option	Description
ATAPI CDROM Drives		
1st Drive	**xx,xxx-xxxxx:xxx**	
	Disabled	

3.7 – 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	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Supervisor Password: User Password:	
	Use [+] or [-] to configure system time.
Change Supervisor Password Change User Password Clear User Password	← → Select Screen ↑ ↓ Select Item
Boot Sector Virus Protection [Disabled]	+/- Change Option F1 General Help F10 Save and Exit 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		Select this option to change Supervisor Password.
Change User Password		Select this option to change User Password.
Clear User Password		Select this option to clear User Password.
Boot Sector Virus Protection	**Disabled**	Protects the first sector of the Hard Drive from being written.
	Enabled	

3.8 – BIOS Chipset Settings Menu

   This menu allows the user to customize functions of the Intel Chipsets. 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

Advanced Chipset Settings                        Use [ENTER], [TAB] or
                                                 [SHIFT_TAB] to select
WARNING: Setting wrong values in below sections  a field
         may cause system to malfunction.
 ‣ Intel E7500/E7501 North Bridge                Use [+] or [-] to
 ‣ South Bridge Configuration                    configure system time.
 ‣ Intel PCI-64 Hub 2 Configuration
Clock Gen. Spread Spectrum       [Disabled]      ← → Select Screen
                                                 ↑ ↓ Select Item
                                                 +/-    Change Option
                                                 Enter Go to Sub Screen
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC  Exit
```

Feature	Option	Description
Advanced Chipset Settings		
Clock Gen. Spread Spectrum	**Disabled** Enabled	Enabled/Disabled clock generator spread spectrum feature

3.8.1 – North Bridge Chipset Configuration Sub-Menu

This menu gives options for North Bridge Chipset Configuration 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
  ┌─────────────────────────────────────────────┬──────────────────────┐
  │ Configure advanced settings for North Bridge │ Use [ENTER], [TAB] or │
  │                                              │ [SHIFT_TAB] to select │
  │ Chipset Memory Remap Feature     [Enabled]   │ a field               │
  │ CAS Latency                      [Auto]      │                       │
  │                                              │ Use [+] or [-] to     │
  │                                              │ configure system time.│
  │                                              │                       │
  │                                              │ ← → Select Screen     │
  │                                              │ ↑ ↓ Select Item       │
  │                                              │ Enter Go to Sub Screen│
  │                                              │ F1    General Help    │
  │                                              │ F10  Save and Exit    │
  │                                              │ ESC  Exit             │
  └─────────────────────────────────────────────┴──────────────────────┘
```

Feature	Option	Description
Configure advanced settings for North Bridge		
Chipset Memory Remap Feature	Disabled	ENABLE: Allow remapping of overlapped PCI memory above the total physical memory.
	Enabled	DISABLE: Do not allow remapping of memory.
CAS Latency	**Auto**	CAS Latency Select Choose 2, 2.5 or Auto by SPD
	2	
	2.5	

3.8.2 – South Bridge Chipset Configuration Sub-Menu

This menu gives options for South Bridge Chipset 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.

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

South Bridge Chipset Configuration		
South Bridge Chipset Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
MPS Revision	[1.1]	
		Use [+] or [-] to configure system time.
		← → Select Screen
		↑ ↓ Select Item
		+/- Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit

Feature	Option	Description
South Bridge Chipset Configuration		
MPS Revision	**1.1**	
	1.4	

3.8.3 – Intel PCI-64 Hub 2 Configuration Sub-Menu

This menu gives options for Intel PCI-64 Hub 2 Configuration 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

Intel PCI-64 Hub 2 Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
PCI Bus Frequency	[Auto]	Use [+] or [-] to configure system time.
		← → Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit

Feature	Option	Description
Configure advanced settings for North Bridge		
PCI Bus Frequency	**Auto**	This question will allow to select the maximum PCI bus speed to be programmed. Default will always be set to AUTO where bus speed will be decided based on the capabilities of the device on that bus.
	33MHz	
	66MHz	
	100MHz	
	133MHz	

3.9 – 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	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Save Changes and Exit Discard Changes and Exit Discard Charges Load Optimal Defaults Load Failsafe Defaults	Use [+] or [-] to configure system time. ← → Select Screen ↑ ↓ Select Item 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

Chapter 4: SATA/RAID Setup (Option)

The motherboard supports RAID 0 or 1 for Serial ATA drives through the Intel® ICH5-R chipset. The Serial ATA as RAID option must be enabled in the BIOS before the system can load the Adaptec® RAID option ROM code for Intel® RAID. The Adaptec® RAID option ROM is a standard PnP (Plug and Play) option ROM that provides a pre-operating system user interface for the Intel® RAID implementation. It also allows the boot order to be selected from within the BIOS setup utility.

For this information, please check Tyan's web site at: **www.tyan.com**

	Warning
⚠️	Before installing the driver into an existing system, backup any important or useful data. Failure to follow this accepted PC practice could result in data loss. The Intel RAID feature is available in Win2000 and WinXP.

4.1 BIOS Configuration

- Enter the BIOS setup program by pressing the <Del> key after the Power-On Self Test (POST) memory test begins.
- Select the **Integrated Peripherals** menu, then the **On Chip IDE Configuration** menu.
- Switch the **SATA Mode** option from **IDE** to **RAID**
- Switch the **Configure S-ATA as RAID** option from **[No]** to **[Yes]**
- Press <F10> to save the BIOS setting and exit the BIOS setup program.

4.2 Installing Serial ATA (SATA) hard disks

Installing Serial ATA (SATA) hard disks requires the use of a new SATA data cable (4-conductor) which supports the Serial ATA protocol and a SATA power cable. Either end of the SATA data cable can be connected to the SATA hard disk or the SATA connector on the motherboard.

	Note
📝	• Both the data and power SATA cables are new cables. You cannot use older 40-pin 80-conductor IDE or regular IDE power cables with SATA hard drives. • Carefully follow any technical instructions that come from the hard disk manufacturer.

Follow the given steps for correct cable installation:
1. Attach either cable end to the SATA connector on the motherboard.
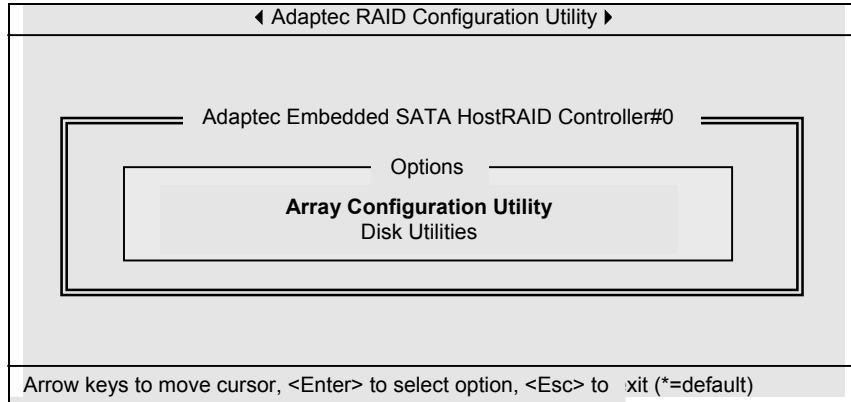2. Attach the other cable end to the SATA hard disk.

4.3 Adaptec RAID Configuration Utility

The Serial ATA RAID sets must be configured in the RAID Configuration utility. This configuration can be done by the Adaptec® RAID Option ROM. During the Power-On Self Test (POST), the following message will appear for a few seconds: Press **<Ctrl-A>** to enter RAID Configuration Utility. After this message appears, press the **<Ctrl>** and **<A>** keys simultaneously, the following screen menu appears.
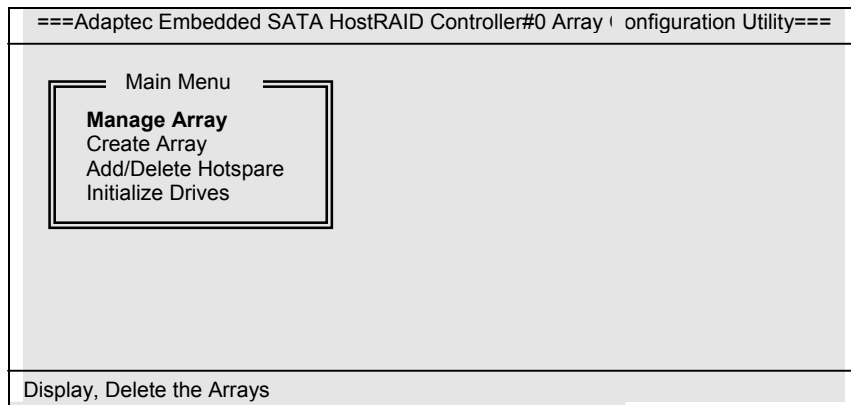
Note

The 'Drive Model', 'Serial #', and 'Size' listed in your system can differ from the following example.

```
◄ Adaptec RAID Configuration Utility ►



        Adaptec Embedded SATA HostRAID Controller#0

                      Options
              Array Configuration Utility
                    Disk Utilities




Arrow keys to move cursor, <Enter> to select option, <Esc> to  xit (*=default)
```

4.4 Manage Array

Use the Manage Arrays option to view array properties and members, and delete arrays. The following sections describe these operations in greater detail.

```
===Adaptec Embedded SATA HostRAID Controller#0 Array  onfiguration Utility===

        Main Menu
    Manage Array
    Create Array
    Add/Delete Hotspare
    Initialize Drives




Display, Delete the Arrays
```

Display array properties and members

1. From the **Adaptec Embedded SATA HostRAID Controller#0 Array Configuration Utility** menu, select **Manage Array.**
2. From the **List of Arrays** dialog box, select the array you want to view and press **Enter**.
   The **Array Properties** dialog box appears, showing detailed information on the array. The physical disks associated with the array are displayed here.
3. Press **Esc** to return to the previous menu.

Deleting Arrays

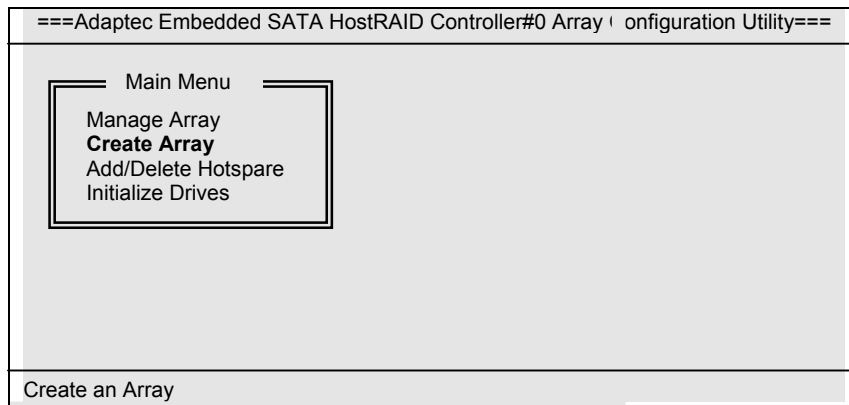|	**Warning**
⚠	Take caution in using this option; All data on the RAID drives will be lost! Deleted arrays cannot be restored.

1. From the **Adaptec Embedded SATA HostRAID Controller#0 Array Configuration Utility** menu, select **Manage Array.**
2. Select the array you wish to delete and press **Delete**.
3. In the **Array Properties** dialog box, select Delete and press **Enter**. The following prompt is displayed:

   WARNING: Deleting the array will result in data loss!
   Do you want to delete the array? (Yes/No):

4. Press **Yes** to delete the array or **No** to return to the previous menu.
5. Press **Esc** to return to the previous menu.

4.5 Create Array
Before creating arrays, make sure the disks for the array are connected and installed in your system. Note that disks with no usable space, or disks that are uninitialized are shown in gray and cannot be used.

```
===Adaptec Embedded SATA HostRAID Controller#0 Array Configuration Utility===

       ═══  Main Menu  ═══
      Manage Array
      Create Array
      Add/Delete Hotspare
      Initialize Drives




Create an Array
```

Follow the given steps to create a RAID 0 or RAID 1 Volume

1. From the **Adaptec Embedded SATA HostRAID Controller#0 Array Configuration Utility** menu, select option **Create Array** and press the <Enter> key.

2. Select the disks for the new array and press <Ins> key. To deselect any disk, highlight the disk and press **Delete**.

3. Press Enter when both disks for the new array are selected. The **Array Properties** menu displays.

To assign properties to the new array:

1. In the Array Properties menu, select an array type and press Enter. Note that only the available array types, RAID 0 and RAID 1, are displayed. Each of these types requires two drives.

2. Type in an optional label for the array and press Enter.

3. For RAID 0, select the desired stripe size. Available stripe sizes are 16KB, 32KB and 64KB (default)

4. Create RAID via allows you to select between the different creation methods for RAID 0 and RAID 1. The following table gives examples of when each is appropriate.

RAID level	Create RAID via	When appropriate
RAID 0	No Init	Creating a RAID 0 on new drives.
RAID 0	Migrate*	Creating a RAID 0 from one new drive and one drive with data you wish to preserve.
RAID 1	Build*	Any time you wish to create a RAID 1, but especially if you have data on one drive that you wish to preserve.
RAID 1	Clear	Creating a RAID 1 on new drives, or when you want to ensure that the array contains no data after creation.
RAID 1	Quick Init	Fastest way to create a RAID 1. Appropriate when using new drives.
* If you select Migrate for RAID 0, or Build for RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved. However, the data on the new drive will be lost.		

Note

Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.

A RAID 1 created using the Quick Init option may return some data miscompares if you later run a consistency check. This is normal and is not a cause for concern.

The Adaptec RAID Configuration Utility allows you to use drives of different sizes in a RAID 1. If you choose the smaller drive as the second drive, you will be warned about the risk of data loss.
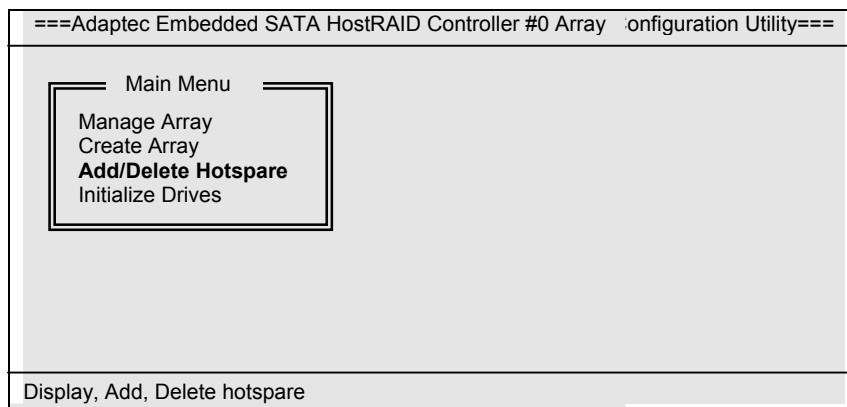
Warning

Do not interrupt the creation of a RAID 0 using the Migrate option. If you do, there is no way to restart and no way to recover the data that was on the source drive.

5. When you are finished, press **Done**.

4.6 Add/Delete Hotspare

```
===Adaptec Embedded SATA HostRAID Controller #0 Array  :onfiguration Utility===


        ═══ Main Menu ═══

        Manage Array
        Create Array
        Add/Delete Hotspare
        Initialize Drives




Display, Add, Delete hotspare
```
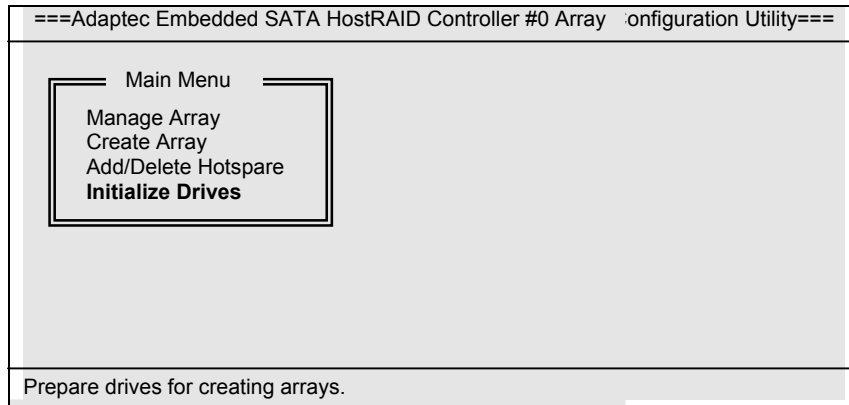
Create a drive spare:
1. Select option Add / Delete Hotspare and press the <Enter> key to create the drive spare.
    The following prompt is displayed:
    Do you want to create a spare? (Yes/No):

2. Press **Y** to create the drive spare.
3. Press **Esc** to return to the previous menu.

Delete a drive spare:

4. Select option Add / Delete Hotspare and press the <Enter> key to delete the drive spare.
   The following prompt is displayed:
   Do you want to delete the spare? (Yes/No):

5. Press **Y** to delete the drive spare.
6. Press **Esc** to return to the previous menu.

4.7 Initialize Drives

If an installed disk does not appear in the disk selection list for creating a new array or if it appears grayed out, you may have to initialize it before you can use it as part of an array. Drives attached to the controller must be initialized before they can be used in an array.

```
===Adaptec Embedded SATA HostRAID Controller #0 Array  onfiguration Utility===

    ┌───── Main Menu ─────┐
    │ Manage Array         │
    │ Create Array         │
    │ Add/Delete Hotspare  │
    │ Initialize Drives    │
    └──────────────────────┘




  Prepare drives for creating arrays.
```
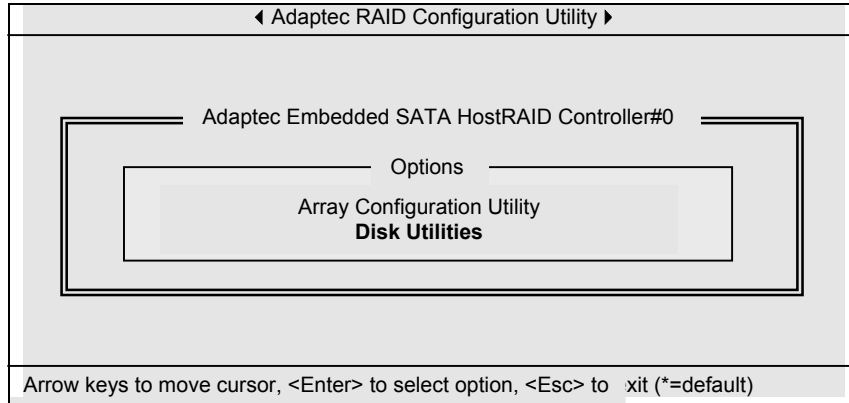
Warning

Take caution in using this option; Initialization will erase all Array information from the selected drives. Any away using any of these drives as members will be affected.

1. Select **Initialize Drives**.
2. Use the <↑> and <↓> keys to highlight the disk you wish to Initialize and press **Insert**.
3. Repeat step 2 so that both drives to be initialized are selected.
4. Press <Enter>
5. Read the warning message and ensure that you have selected the correct disk drives to initialize. Type **Y** to continue.
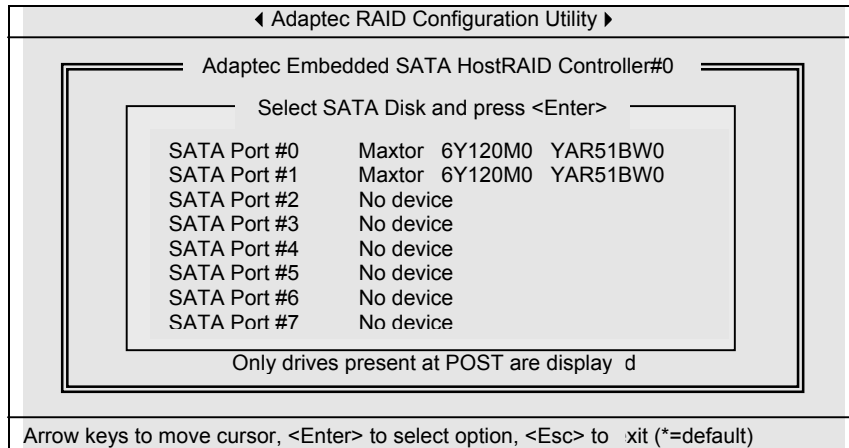
4.8 Disk Utilities

The Disk Utilities enable you to low-level format or verify the media of your Serial ATA hard disks.

From the **Adaptec RAID Configuration Utility** menu, select **Disk Utilities**.

```
                      ◀ Adaptec RAID Configuration Utility ▶

          ┌──────── Adaptec Embedded SATA HostRAID Controller#0 ────────┐
          │                                                             │
          │      ┌─────────────── Options ────────────────┐            │
          │      │          Array Configuration Utility      │            │
          │      │          Disk Utilities                   │            │
          │      │                                           │            │
          │      └───────────────────────────────────────────┘            │
          │                                                             │
          └─────────────────────────────────────────────────────────────┘

   Arrow keys to move cursor, <Enter> to select option, <Esc> to  xit (*=default)
```

1. Press the <Enter> key to select SATA Disk.

```
                      ◀ Adaptec RAID Configuration Utility ▶

          ┌──────── Adaptec Embedded SATA HostRAID Controller#0 ────────┐
          │                                                             │
          │      ┌───────── Select SATA Disk and press <Enter> ────────┐ │
          │      │                                                     │ │
          │      │   SATA Port #0      Maxtor  6Y120M0  YAR51BW0       │ │
          │      │   SATA Port #1      Maxtor  6Y120M0  YAR51BW0       │ │
          │      │   SATA Port #2      No device                      │ │
          │      │   SATA Port #3      No device                      │ │
          │      │   SATA Port #4      No device                      │ │
          │      │   SATA Port #5      No device                      │ │
          │      │   SATA Port #6      No device                      │ │
          │      │   SATA Port #7      No device                      │ │
          │      │                                                     │ │
          │      └───── Only drives present at POST are display  d ───┘ │
          │                                                             │
          └─────────────────────────────────────────────────────────────┘

   Arrow keys to move cursor, <Enter> to select option, <Esc> to  xit (*=default)
```

Warning

Take caution in using this option;

Format Disk-This drive is about to be formatted. All data on the disk will be erased.

Verify Disk Media- This drive will be scanned for media defects. All recoverable defects will be remapped.
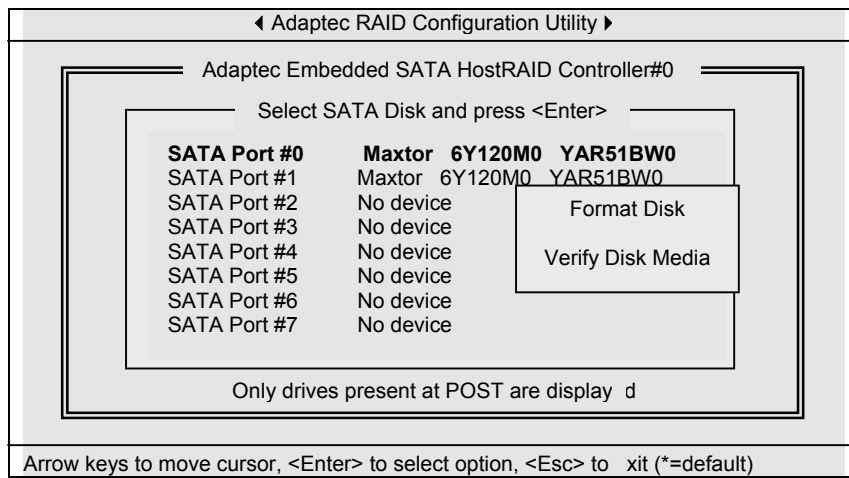
2. Select options **Format Disk** or **Verify Disk Media** and press the <Enter> key.

You are offered the following options:

Format Disk— Simulates a format of the hard drive by writing zeros to the entire disk.

Verify Disk Media— Scans the media of a disk drive for defects. Any errors found are corrected.

3. Press **Esc** to return to the previous menu.

```
◀ Adaptec RAID Configuration Utility ▶
═══ Adaptec Embedded SATA HostRAID Controller#0 ═══
────── Select SATA Disk and press <Enter> ──────

   SATA Port #0      Maxtor  6Y120M0   YAR51BW0
   SATA Port #1      Maxtor  6Y120M0   YAR51BW0
   SATA Port #2      No device       ┌──────────────────┐
   SATA Port #3      No device       │   Format Disk    │
   SATA Port #4      No device       │                  │
   SATA Port #5      No device       │ Verify Disk Media│
   SATA Port #6      No device       └──────────────────┘
   SATA Port #7      No device

        Only drives present at POST are display  d

Arrow keys to move cursor, <Enter> to select option, <Esc> to   xit (*=default)
```

Chapter 5: Diagnostics

5.1 – Hardware Monitor Information

ICH5 SMBus base address = EC80h

Winbond83782D hardware Monitor Information

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

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

W83627HF Super IO hardware Monitor Information

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

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

On chip Xeon Thermal Sensor for 400Mhz FSB Xeon

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

Sensor Name	Bank	Register
CPU1 temperature	0	0x01h

On chip Xeon Thermal Sensor for 400Mhz FSB Xeon

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

Sensor Name	Bank	Register
CPU2 temperature	0	0x01h

Programming CPU thermal sensors for custom Hardware Monitoring requirements (the GPIO pins are on ICH5)

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

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

Memory, Video, CPU

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

5.2 Beep Codes

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

Beep codes that are used by AMIBIOS:

Number of Beeps	Description
1	Memory refresh timer error
2	Parity error
3	Main memory read / write test error
4	Motherboard timer not operational
5	Processor error
6	Keyboard controller BAT test error / No memory inserted
7	General exception error / Non Reg / ECC DIMMs inserted
8	Display memory error
9	ROM checksum error
10	CMOS shutdown register read/write error
11	Cache memory bad

Troubleshooting BIOS Beep Codes

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

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.

5.3 Flash Utility

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

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

Appendix I: Glossary

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

AGP (Accelerated Graphics Port): a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs at only 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

ATAPI (AT Attachment Packet Interface): also known as IDE or ATA; a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like HDDs.

ATX: the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, USB, serial, and parallel ports are built-in.

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

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

BIOS (Basic Input/Output System): the program that resides in the ROM chip, and provides the basic instructions for controlling your computer's hardware. Both the operating system and application software use BIOS routines to ensure compatibility.

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

Bus: a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

Bus mastering: allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

Cache: a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times, since the needed information is stored in the SRAM instead of in the slow DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

Cache size: refers to the physical size of the cache onboard. This should not be confused with the cacheable area, which is the total amount of memory, which can be scanned by the system in search of data to put into the cache. A typical setup would be a cache size of 512KB, and a cacheable area of 512MB. In this case, up to 512KB of the main memory onboard is capable of being cached. However, only 512KB of this memory will be in the cache at any given moment. Any main memory above 512MB could never be cached.

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

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

COM port: another name for the serial port, which is called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

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

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

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

DMA (Direct Memory Access): channels that are similar to IRQs. DMA channels allow hardware devices (like soundcards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other tasks. As with IRQs, it is vital that you do not double up devices on a single line. Plug-n-Play devices will take care of this for you.

Doze mode: in this mode, only the CPU's speed is slowed.
DRAM (Dynamic RAM): widely available, very affordable form of RAM, which has the unfortunate tendency to lose data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

IPL: see Initial Program Load.

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

IRQ (Interrupt Request): an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one device hooked up to each IRQ line; doubling up devices on IRQ lines can lock up your system. Plug-n-Play operating systems can take care of these details for you.

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

Latency: the amount of time that one part of a system spends waiting for another part to catch up. This is most common when the system sends data out to a peripheral device, and it waiting for the peripheral to send some data back (peripherals tend to be slower than onboard system components).

Mirroring: see RAID.

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

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

Parallel port: transmits the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

PCI (Peripheral Component Interconnect): a 32 or 64-bit local bus (data pathway), which is faster than the ISA bus. Local buses are those, which operate within a single system (as opposed to a network bus, which connects multiple systems).

PCI PIO (PCI Programmable Input/Output) modes: the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU. **PCI-to-PCI bridge:** allows you to connect multiple PCI devices onto one PCI slot.

Pipeline burst SRAM: a fast secondary cache. It is used as a secondary cache because SRAM is slower than SDRAM, but usually larger. Data is cached first to the faster primary cache, and then, when the primary cache is full, to the slower secondary cache.

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

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

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

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

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

RAIDIOS: RAID I/O Steering (Intel)

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

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

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)

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.

SRAM (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.

Serial ATA: Often abbreviated *SATA* or *S-ATA*, an evolution of the Parallel ATA physical storage interface. Serial ATA is a serial link -- a single cable with a minimum of four wires creates a point-to-point connection between devices. Transfer rates for Serial ATA begin at 150MBps. One of the main design advantages of Serial ATA is that the thinner serial cables facilitate more efficient airflow inside a form factor and also allow for smaller chassis designs. In contrast, IDE cables used in parallel ATA systems are bulkier than Serial ATA cables and can only extend to 40cm long, while Serial ATA cables can extend up to one meter.

Serial port: Called such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (the data is transmitted in serial form, one bit after another).

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

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

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

Standby mode: in this mode, the video and hard drives shut down; all other devices continue to operate normally.

Striping: see RAID

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

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

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

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

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

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

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

ZIF Socket (Zero Insertion Force socket): these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and a lever is pulled down. This shift the processor over and down, guiding into the board and locking it into place.

Appendix II: SMDC Information

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

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

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

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

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

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

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

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

Appendix III: Riser Cards

	M2033	M2037	M2044
UPC Code	635872-008474	635872-007255	635872-008368
Form Factor	1U	1U	**2U**
Gold Finger Type	Universal	Universal	Universal
Number of Slots	1	1	3
Slot Type	3.3V	5V	3.3V
Slot Speed	133MHz 100MHz 66MHz 33MHz	133MHz 100MHz 66MHz 33MHz	133MHz 100MHz 66MHz
Supported Products	**ALL**	**ALL**	**S2735** S2726 (R02) S2721-533 (R03) S2725 S2850 S2880

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

Appendix IV: SCSI Daughter Card Information

Tyan SCSI daughter card M7902 is a dual-channel 64-bit, 133MHz PCI-X SCSI card that delivers fast, reliable performance for enterprise servers and external storage using Ultra320 SCSI technology.

Tyan SCSI daughter card M7902 offers the following basic and advanced features:
- Up to 320 MByte/sec SCSI data transfer rates
- 133MHz, 64bit, PCI-X interface that provides 1066 MByte/sec bandwidth
- PCI 2.3 and PCI-X 1.0A compliant
- Supports up to 15 Ultra 320 devices per channel on a standard cable configuration up to 12 meters

Please check with your distributor for SCSI daughter card M7902 or check http://www.etyan.com to purchase the desired card(s).

Technical Support

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

Help Resources:
1. See the beep codes section of this manual on pg 38.
2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: http://www.TYAN.com
3. Contact your dealer for help BEFORE calling TYAN.
4. Check the TYAN user group: alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you.

Notice for the USA
Compliance Information Statement (Declaration of Conformity Procedure) DoC
FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

1) This device may not cause harmful interference, and
2) This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Plug the equipment into an outlet on a circuit different from that of the receiver.
- Consult the dealer on an experienced radio/television technician for help.

Notice for Canada
This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conforme aux norms de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'ineteference radio.)

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

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

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