TYAN

Thunder K8S Pro / / / S2882

Revision 1.00

Table of Contents

Before you begin…
Check the box contents!

The retail motherboard package should contain the following:

1x Thunder K8S Pro motherboard

1x 34-Pin floppy drive cable

1x LVD SCSI cable (if optional SCSI included)

4 x SATA cable

2 x SATA Drive Power Adapter

2 x Ultra-DMA-100/66 IDE cable

1 x Cable set: 9-pin Serial and 25-pin Parallel

1 x Thunder K8S Pro user's manual

1 x Thunder K8S Pro Quick Reference guide

1 x TYAN driver CD

1 x LSI SCSI driver diskette (if optional SCSI included)

1x Silicon Image SiI3114 SATA RAID driver diskette

1x Silicon Image SiI3114 SATA Link driver diskette

1 x I/O shield

2 x CPU Retention Frame

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

Chapter 1: Introduction

Congratulations

You are now the owner of the ideal solution for rackmount servers, large computer clusters, or pedestal server needs. The Tyan Thunder K8S Pro features support for Dual AMD Opteron processor(s), two channel Gigabit Ethernet, one 10/100 Ethernet and Serial ATA (SATA).

Remember to visit TYAN's Website at http://www.TYAN.com. There you can find information on all of TYAN's products with FAQs, online manuals and BIOS upgrades.

Hardware Specifications

Processor
Dual μPGA 940-pin ZIF sockets
Supports up to two AMD Opteron™ processors
Onboard VRM, 4-phase PWM
128-bit DDR dual-channel memory controller integrated in CPU

Chipset
AMD-8131™ HyperTransport™ PCI-X Tunnel
AMD-8111™ HyperTransport™ I/O Hub
Winbond W83627HF Super I/O chip
Analog Devices ADM1027 Hardware Monitoring IC

Memory
128-bit DDR dual-channel memory bus
Total eight 184-pin 2.5-Volt DDR DIMM sockets (4 on CPU1 and 4 on CPU2)
Supports up to 16 Gigabyte Registered DDR
Supports ECC type memory modules
Supports PC2700, PC2100 and PC1600 DDR

Expansion Slots
2 Independent PCI-X buses from AMD-8131
− PCI-X bridge A supports 64-bit 133 / 100 / 66 / 33 MHz with two 3.3-Volt PCI-X slots
− PCI-X bridge B supports 64-bit 133 / 100 / 66 / 33 MHz with two 3.3-Volt PCI-X slots
One legacy 32-bit 33MHz PCI slot (5v) from AMD-8111
Total of five usable slots

Integrated Enhanced IDE Controller
Provides two IDE dual-drive ports for up to four IDE devices
Supports up to ATA-133 IDE devices

Integrated I/O
One floppy, Two serial (one header and one connector), and one parallel header
PS/2 KB/Mouse connectors
Total four USB connections (2 I/O panel, rear connectors and 2 USB headers)

System Management
Total six 3-pin fan headers with tachometer monitoring
Three fan headers with PWM control
2-pin Chassis Intrusion header
Temperature, voltage and fan monitoring

Integrated SATA Controller
Silicon Image Sil3114 SATA RAID
Supports SATA 1.0 Specification
Supports 4 channel SATA port for up to four SATA devices
Supports RAID 0, 1, 0+1
Connected to legacy 32-bit 33MHz PCI bus

Integrated PCI Graphics
ATI® Rage™ XL PCI graphics controller
8MB Frame Buffer of video memory

Integrated LAN Controllers
Two Broadcom® BCM5704C dual-channel
Gigabit Ethernet controller
Two RJ-45 LAN connectors with LEDs
Connected to PCI-X Bridge A
Three Front Panel LED headers
One Intel® 82551QM 10/100 Ethernet
controller
Stacked USB 1.1 (two) ports and RJ45 LAN
port on top

**Intelligent Platform Management
Interface Header**
Tyan Server Management Daughter cards
(optional); supports features listed below
via IPMI header
QLogic™ Zircon Baseboard Management
Controller (BMC) based on powerful ARM7
technology
Tailored for IPMI highest 1.5 Spec.
Supports KCS and BT styles
Flexible Windows or Linux Management
Solution
Supports RMCP and SNMP protocols
Supports ASF standard and EMP
I²C serial multi-master controllers and
UARTs
Built-in IPMB connector
Remote power on/off and reset support
(IPMI-over-LAN)

**Integrated Dual Channel SCSI
(manufacturing option)**
Adaptec AIC7902W Dual-
Channel U320 SCSI controller
Connects to PCI-X Bridge A
Adaptec® and Intel® Zero-
Channel RAID ready

BIOS
AMI® BIOS 8.0 on 4Mbit LPC
Flash ROM
Supports ACPI 1.0b & 2.0
PnP, DMI 2.0, WfM 2.0 Power
Management
Power Management S1, S4 and
S5 support

Form Factor
ATX footprint (12" x 9.8" 305 x
248 mm)
ATX12V/EPS12V (24pin + 8pin)
power connectors
4-pin auxiliary power connector
Serial (one) and VGA (one)
connectors
Stacked USB 1.1 (two) ports
and RJ45 LAN port on top
Stacked PS/2 keyboard and
mouse connectors
Two RJ-45 side-by-side LAN
connectors with LEDs

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

Software Specifications

OS (Operating System) Support
Microsoft Windows NT 4 Service Pack 6A
Microsoft Windows 2000
Microsoft Windows XP
Microsoft Windows Server 2003
SuSE Server 8.0 for AMD-64
Red Hat 7.3, 8.0, and 9.0
Other distributions of Linux pending validation
TYAN reserves the right to add support or discontinue support for any OS with or without
notice.

Chapter 2: Board Installation

Precaution: The Thunder K8S Pro supports EPS12V power supplies (24-pin/8-pin) and will not operate with any other types.

DO NOT USE ATX 2.x, ATX12V or ATXGES power supplies as they will damage the board and void your warranty.

How to install our products right… the first time

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

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

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

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

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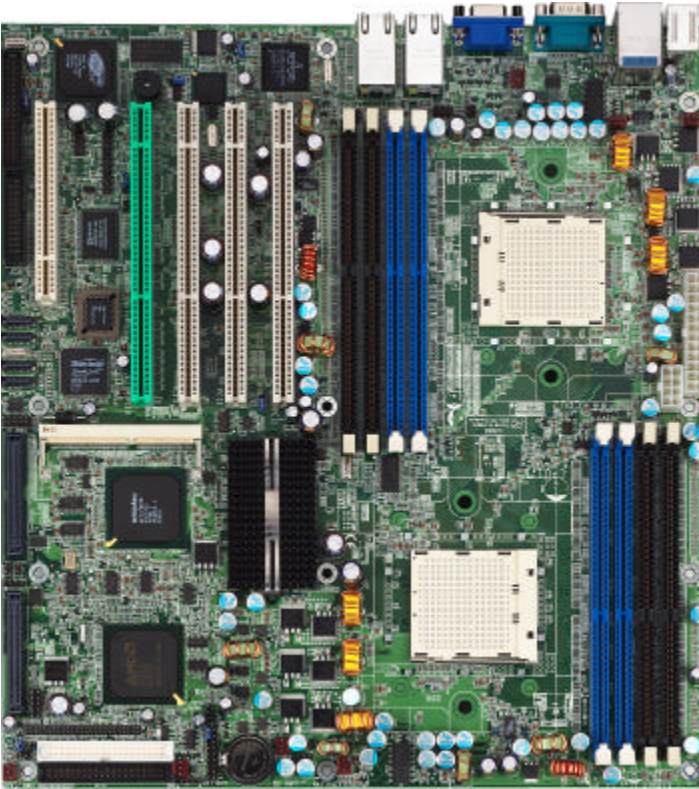
This picture is representative of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the above picture.

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

Thunder K8S Pro S2882 Block Diagram

2.02 – Board Parts, Jumpers and Connectors

This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram.
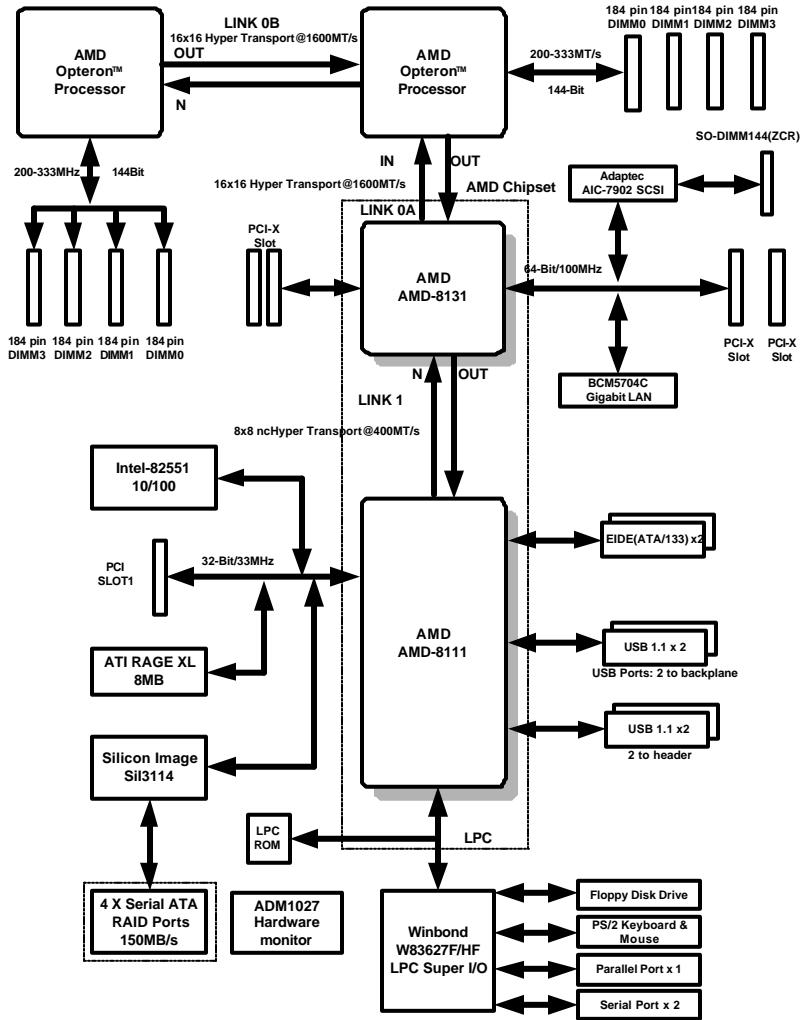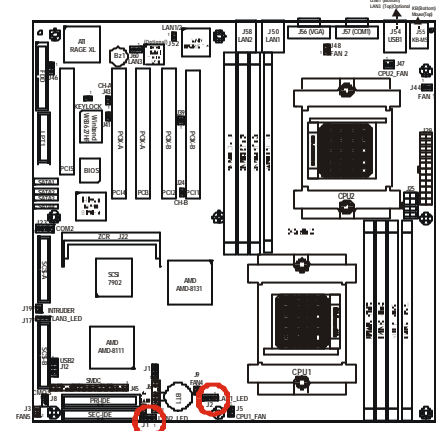
Jumper	Function	Settings
J1 / J2	Gigabit Ethernet LAN_2 & LAN_1 Front Panel LED Header	See Section 2.03 for pinout configuration
J6	Front Panel Connector	See Section 2.04 for pinout configuration
J8	Clear CMOS Jumper	**Close Pin-1 and Pin-2** (Default) Normal mode Close Pin-2 and Pin-3 Clear CMOS mode
J11	SMBus_0 Connector	See section 2.06 for pinout configuration
J12	USB Connector header	For front or rear chassis mount USB connectors
J17	10/100 Ethernet LAN3 Front Panel LED Header	See Section 2.08 for pinout configuration
J19	Chassis Intrusion Connector	See Section 2.09 for pinout configuration
J22	ZCR Connector	
J23	COM2 Header	See Section 2.11 for pinout
J24 / J39	PCI-X Bridge B (PCI 1 & PCI 2) PCI-X Speed Select Jumper	**133MHz: J24 & J39 open (Default)** 100MHz: J24 close J39 open 66MHz: J24 & J39 close
J41	PCI-X Bridge A (PCI3 & PCI4) force PCI Mode Jumper	**Open**: PCI-X mode (Default) Close: PCI mode
J43	PCI-X Bridge A (PCI 3 & PCI 4 & SCSI7902 & BCM5704) PCI-X Speed Select Jumper	**Open**: up to PCI-X 100MHz (Default) Close: PCI-X 66MHz
J45	SMDC Connector	See Appendix II SMDC information
J46	Onboard VGA Enable/Disable Jumper	**1-2 Close**: Enable (Default) 2-3 Close: Disable
J52	Onboard Gigabit Ethernet Enable/Disable Jumper	Open: Disable **Close**: Enable (Default)
J60	Onboard 10/100 Ethernet Enable/Disable Jumper	**1-2 Close**: Enable (Default) 2-3 Close: Disable
P1_FAN (J5)	CPU_1 Fan Connector	With speed, MAX 2.0A
P2_FAN (J47)	CPU_2 Fan Connector	With speed, MAX 2.0A
FAN1 (J44)	Chassis Fan Connector	With speed control, MAX 3.0A
FAN2 (J48)	Chassis Fan Connector	With speed control, MAX 2.0A
FAN3 (J4)	Chassis Fan Connector	With speed control, MAX 3.0A
FAN4 (J9)	Chassis Fan Connector	With speed, MAX 2.0A
FAN5 (J3)	Chassis Fan Connector	With speed, MAX 2.0A

Jumper Legend

■ ■	OPEN - Jumper OFF	without jumper cover
■ ■	CLOSED - Jumper ON	with jumper cover

2.03 –Gigabit LAN_2 Front Panel LED Header (J1) and Gigabit LAN_1 Front Panel LED Header (J2)
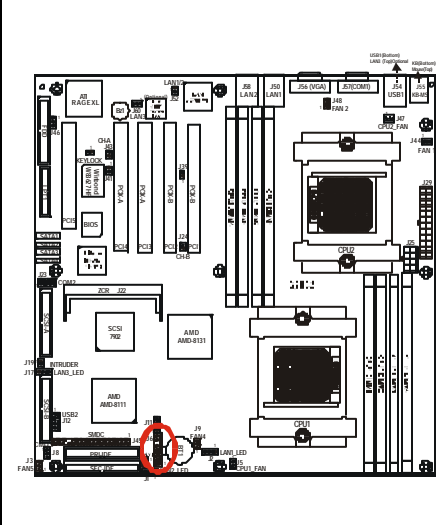
Pin_4	Pin_3	Pin_2	Pin_1
Green -	Green +	Yellow -	Yellow +

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

2.04 – Front Panel Connector (J6)

SPEAKER / BUZZER — INFRARED
POWER — RESET
PWR-LED — HD-LED

Function	PIN	PIN	Function
Speaker- / Buzzer-	18	17	NC
Buzzer+	16	15	IRTX
NONE	14	13	GND
Speaker+	12	11	IRRX
NC	10	9	+5V
GND	8	7	Reset SW+
PWR+	6	5	GND
Power LED-	4	3	HDD LED-
Power LED+	2	1	HDD LED+

2.05 – Clear CMOS Jumper (J8)
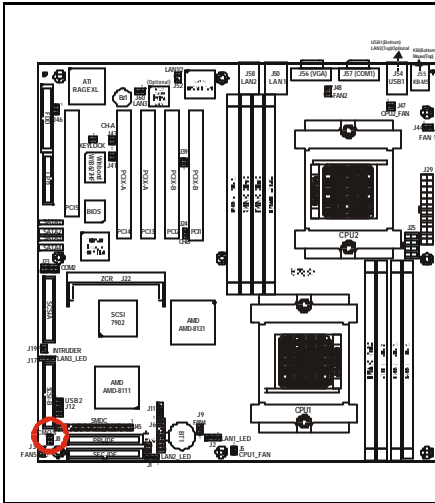
1 ▣ ▣ 3 ▣	**Default**
1 ▣ ▣ 3 ▣	Clear

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

2.06 – SMBus_0 Connector (J11)
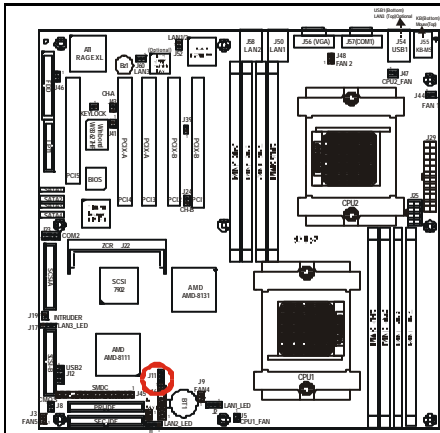
Pin #	Signal Description
4	NC
3	SMBUS_CLK
2	GND
1	SMBUS_DATA

Use this connector to connect external SMBUS devices

2.07 – USB Connector Headers (J12)

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
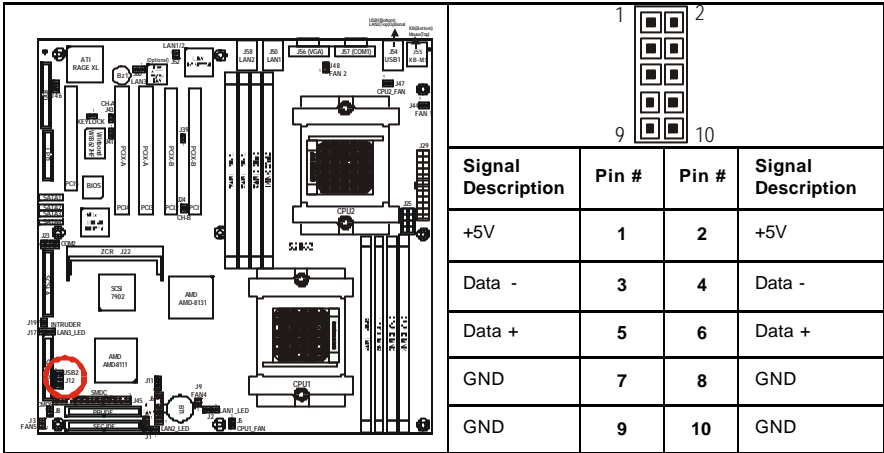
2.08 – 10/100 LAN Front Panel LED Header (J17)

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

2.09 – Chassis Intrusion Connector (J19)

1

Pin-1
Intrusion detection
Pin-2
GND

For use with chassis that support this feature

2.10 – ZCR Connector (J22)

This socket is capable of accepting the LSI Zero Channel RAID card.
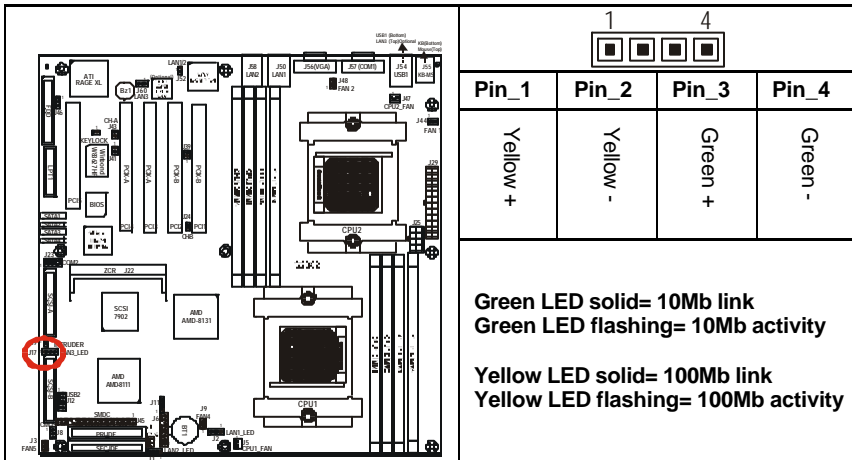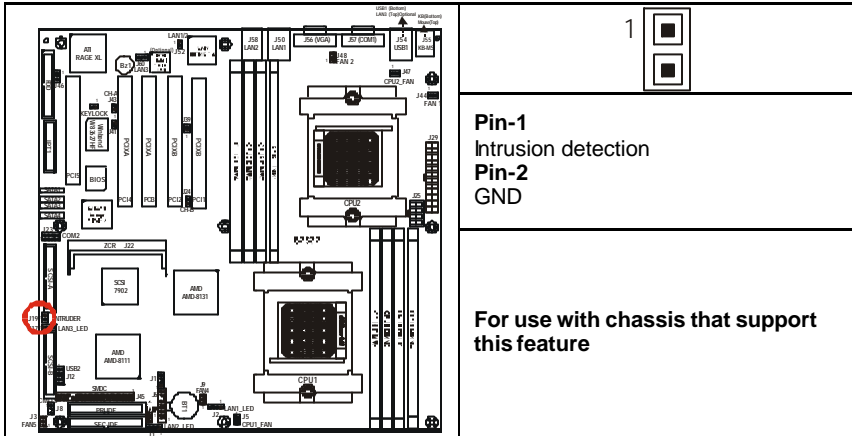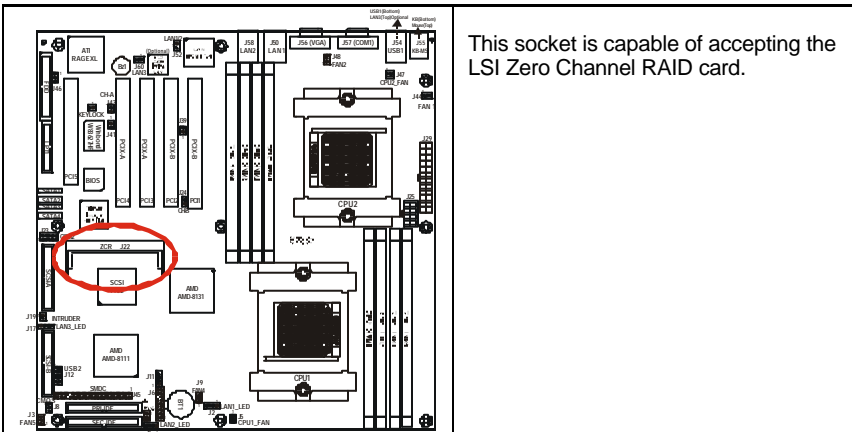
2.11 – COM2 Header (J23)

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

2.12 – PCI-X Bridge B (PCI 1 & PCI 2) PCI-X Speed Select Jumper (J24 / J39)

Speed	1	1
133MHz	J24 / J39	
100MHz	J39	J24
66MHz		J24 / J39

Allows PCI-X Bridge B to operate at up to 133MHz (For use with one PCI-X 133 device)

Tyan recommends using PCI-X Slot 1 for 133MHz support

2.13 – PCI-X Bridge A (PCI 3 & PCI 4) force PCI Mode Jumper (J41)

OPEN (Default)
Allows PCI 3 and PCI 4 to operate in PCI-X Mode

CLOSED
To force PCI 3 and PCI 4 to operate in PCI compatible mode. Close this jumper if the card you are using does not support PCI-X.

2.14 – PCI-X Bridge A (PCI 3 & PCI 4 & SCSI7902 & BCM5704) PCI-X Speed Select Jumper (J43)

OPEN (Default)
Allows PCI-X Bridge A (PCI 3 & PCI 4 & SCSI7902 & BCM5704) to operate at up to 100MHz

CLOSED
Sets PCI-X Bridge A (PCI 3 & PCI 4 & SCSI7902 & BCM5704) to operate at a maximum 66MHz

Note: Due to the PCI-X specifications it will be necessary to set this bus to 66MHz if a 133/100MHz PCI-X card is added to this bus.

2.15 –SMDC Connector (J45)

Connect Server Management Daughter Card (SMDC) (Ref. Appendix II) Compatible with Tyan M3289 (SMDC)

2.16 – Onboard VGA Enable/Disable Jumper (J46)

1 ▢
▢
3 ▢

CLOSED: 1 - 2 (Default)
To enable onboard ATI Rage XL Graphic chip

1 ▢
▢
3 ▢

CLOSED: 2 - 3
To disable onboard ATI Rage XL Graphic chip

2.17 – Onboard Gigabit Ethernet Enable/Disable Jumper (J52)

	OPEN To disable onboard Gigabit Ethernet (Both ports)
	CLOSED (Default) To enable onboard Gigabit Ethernet (Both ports)

2.18 – Onboard 10/100 Ethernet Enable/Disable Jumper (J60)

	CLOSED: 1 – 2 (Default) To enable onboard 10/100 Ethernet
	CLOSED: 2 – 3 To disable onboard 10/100 Ethernet

2.19 – CPU_1 Fan Connector (P1_FAN) (J5)

GND

+12V

Speed

Max 2.0A fans supported

without PWM fan control
with fan speed reading
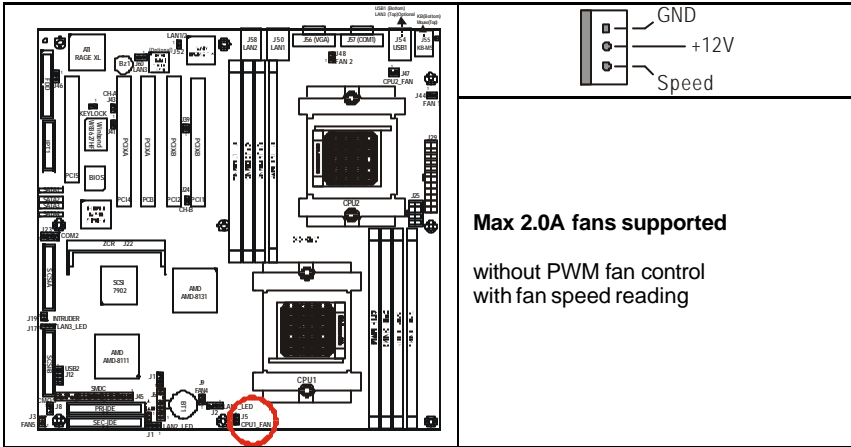
2.20 – CPU_2 Fan Connector (P2_FAN) (J47)

+12V

GND   Speed

Max 2.0A fans supported

without PWM fan control
with fan speed reading
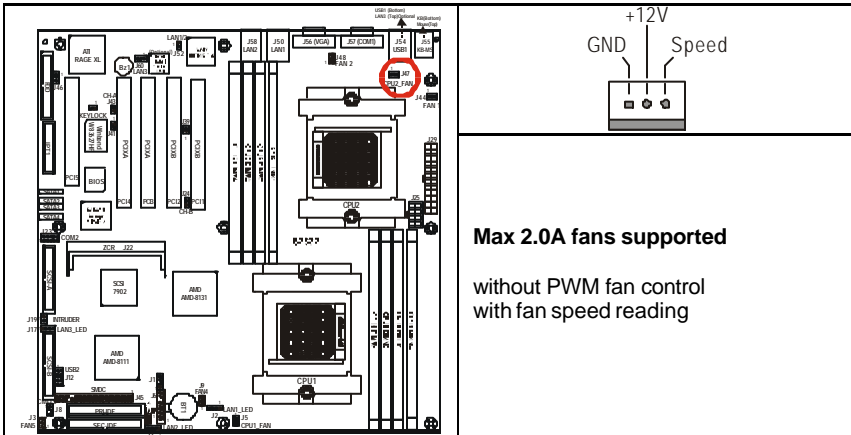
2.21 – FAN 1 Chassis Fan Connector (J44)

+12V

GND   Speed
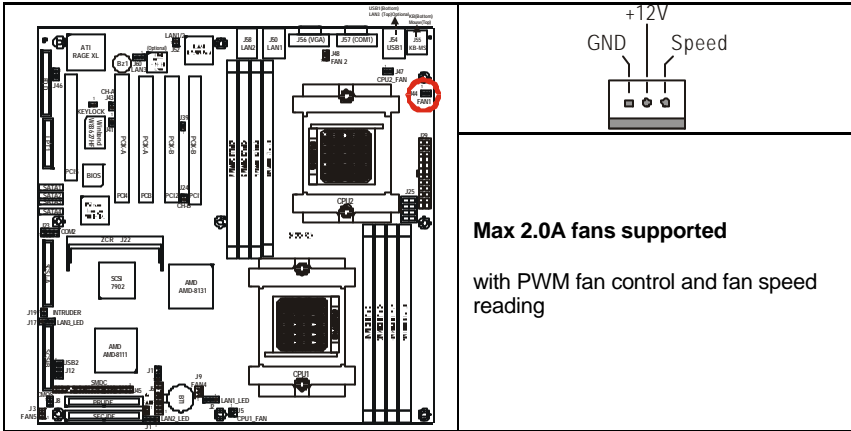
Max 2.0A fans supported

with PWM fan control and fan speed reading

2.22 – FAN 2 Chassis Fan Connector (J48)

Speed

+12V

GND
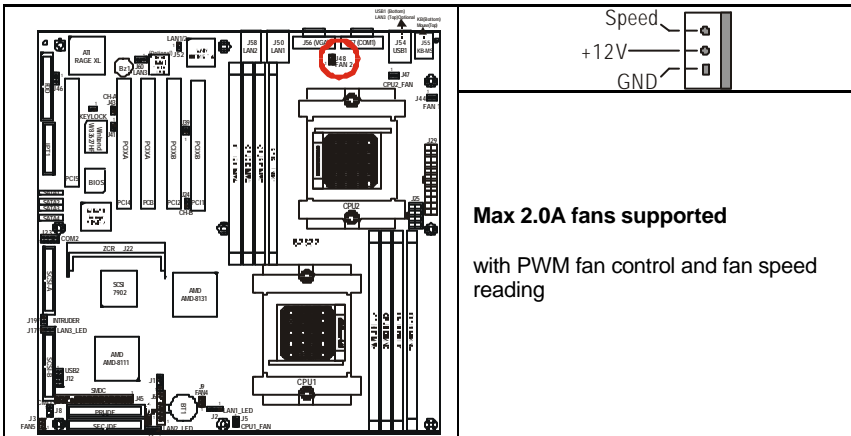
Max 2.0A fans supported

with PWM fan control and fan speed reading

2.23 – FAN3 Chassis Fan Connector (J4)

GND
+12V
Speed

Max 2.0A fans supported

with PWM fan control and fan speed reading
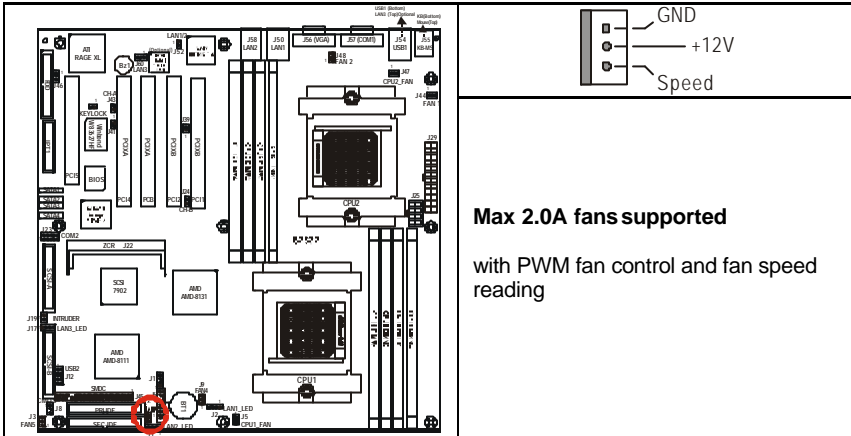
2.24 – FAN 4 Chassis Fan Connector (J9)

Speed
+12V
GND

Max 3.0A fans supported

without PWM fan control
with fan speed reading
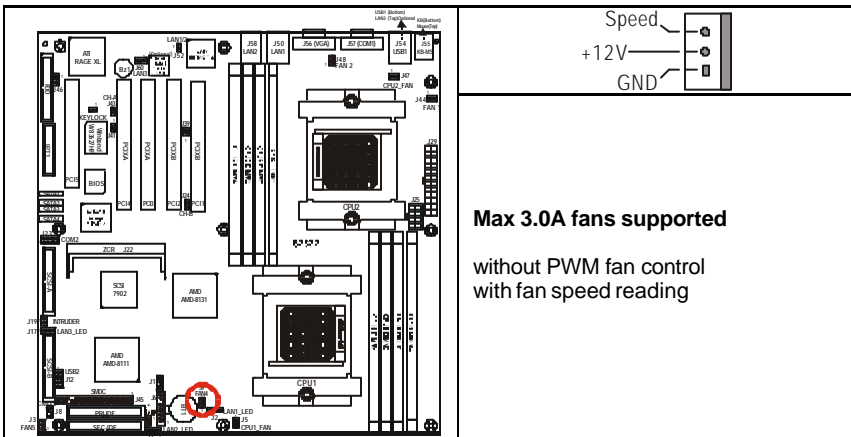
2.25 – FAN 5 Chassis Fan Connector (J3)

Speed
+12V
GND

Max 3.0A fans supported

without PWM fan control
with fan speed reading
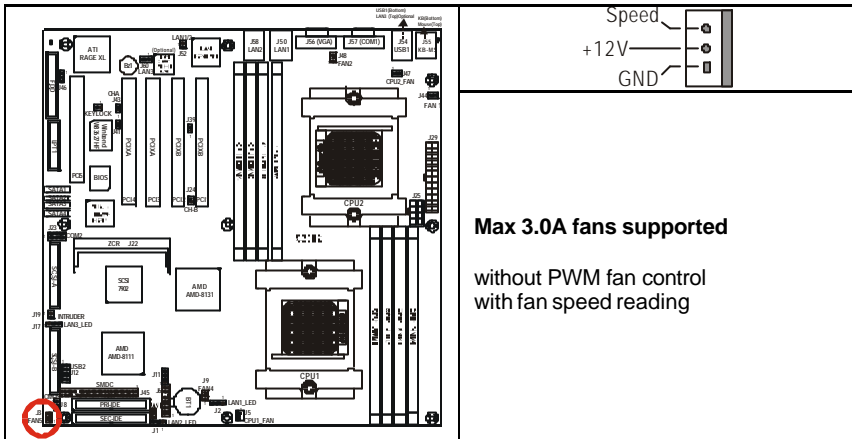
2.26 – OEM Reserved Connectors and Jumpers

These connectors and jumpers which are not listed are reserved for OEM use only.

2.27 – Installing the Processor(s)

Your brand new Thunder K8S Pro supports the latest 64-bit processor technologies from AMD. Only AMD Opteron™ processor 200 series are certified and supported with this motherboard.
Check **our** website for latest processor support. **http://www.tyan.com**

| NOTE | If using a single processor, it MUST be installed in socket CPU1. When using a single processor only CPU1 memory banks are addressable. |

TYAN is not liable for damage as a result of operating an unsupported configuration.
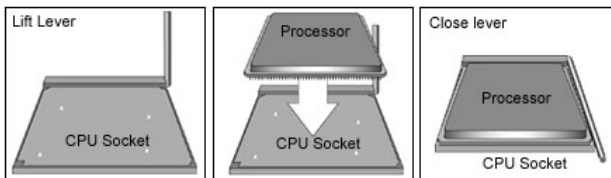
The diagram is provided as a visual guide to help you install socket processors and may not be an exact representation of the processors you have.

Lift the lever on the socket until it is approximately 90° or as far back as possible to the socket.
Align the processor with the socket. There are keyed pins underneath the processor to ensure that the processor's installed correctly.
Seat the processor firmly into the socket by gently pressing down until the processor sits flush with the socket.
Place the socket lever back down until it locks into place.
Your proc essor is installed.
Repeat these steps for the second processor if you are using two processors.

Take care when installing processors as they have very fragile connector pins below the processor and can bend and break if inserted improperly.

2.28– Heats ink Retention Frame Installation

After you are done installing the processor(s), you should proceed to installing the retention frame and heatsink. The CPU heatsink will ensure that the processors do not overheat and continue to operate at maximum performance for as long as you own them. Overheated processors are also dangerous to the health of the motherboard.

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

Because there are many different types of heatsinks available from many different manufacturers, a lot of them have their own method of installation. For the safest method of installation and information on choosing the appropriate heatsink, use heatsinks validated by AMD. Please refer to AMD's website at www.amd.com.
The following diagram will illustrate how to install the most common CPU back plates:

Mounting screws
Heatsink retention frame
CPU socket
Motherboard PCB
Adhesive insulator material
Backplate assembly

NOTE: Please see next section for specific instructions on how to install mounting bracket.
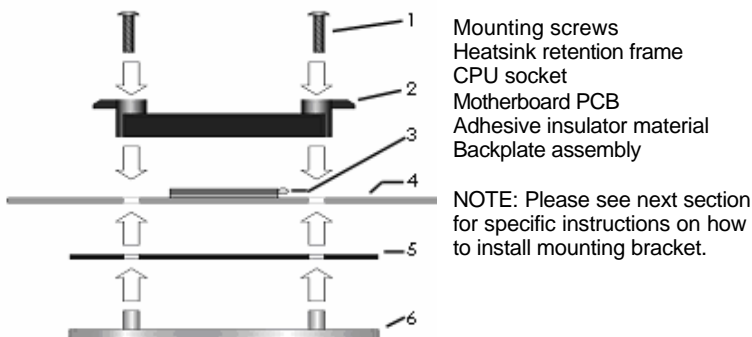
2.29 – Thermal Interface Material
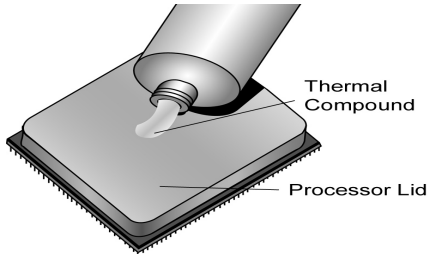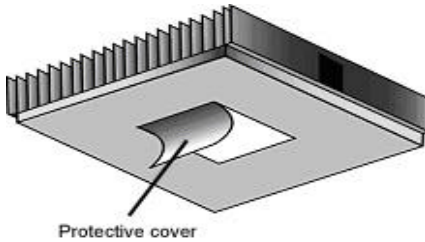
There are two types of thermal interface materials designed for use with the AMD Opteron processor.

Protective cover

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

Thermal Compound

Processor Lid

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

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

2.30 – Heatsink Installation Procedures

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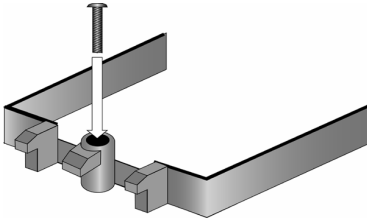
1. After placing backplate and interface material under motherboard place heatsink retention frame on top of motherboard. Align plastic retention bracket screw hole with CPU back-plate standoffs.
Tighten screws to secure plastic retention bracket. Repeat for on other side.
DO NOT OVER TIGHTEN.
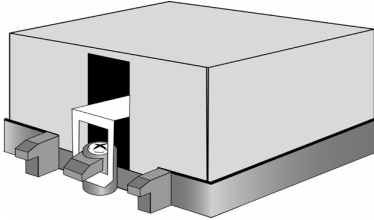
2. After tightening screws secure metal clip to plastic retention bracket center tab. Repeat for on other side of heatsink.
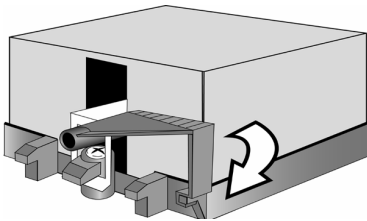
3. After securing metal clip to plastic retention bracket center tab, push down on plastic clip to lock plastic clip to side tab.

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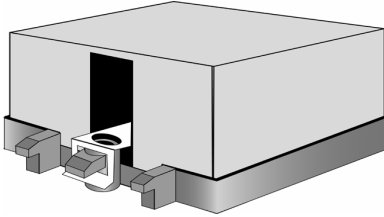
1. After placing CPU back-plate and adhesive interface material under motherboard, place heatsink retention frame on top of motherboard. Align heatsink retention frame screw hole with backplate assembly standoffs. Place heatsink inside plastic retention bracket. Place metal clip over retention frame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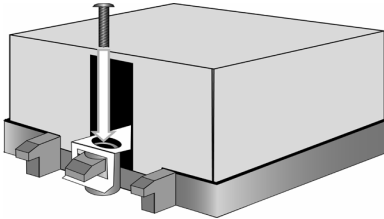
2. Insert screw through metal clip. **BE SURE METAL CLIP IS LOCKED ONTO RETENTION FRAME TAB.**
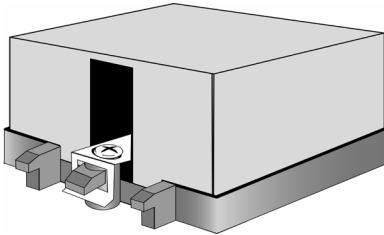
3. Tighten screw through metal clip. Repeat on other side. **DO NOT OVER TIGHTEN.**

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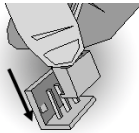
Once you have finished installing all the fans you can connect your drives (hard drives, CD-ROM drives, etc.) to your motherboard.

http://www.TYAN.com

2.32 – Tips on Installing Motherboard in Chassis

Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs. If you are 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
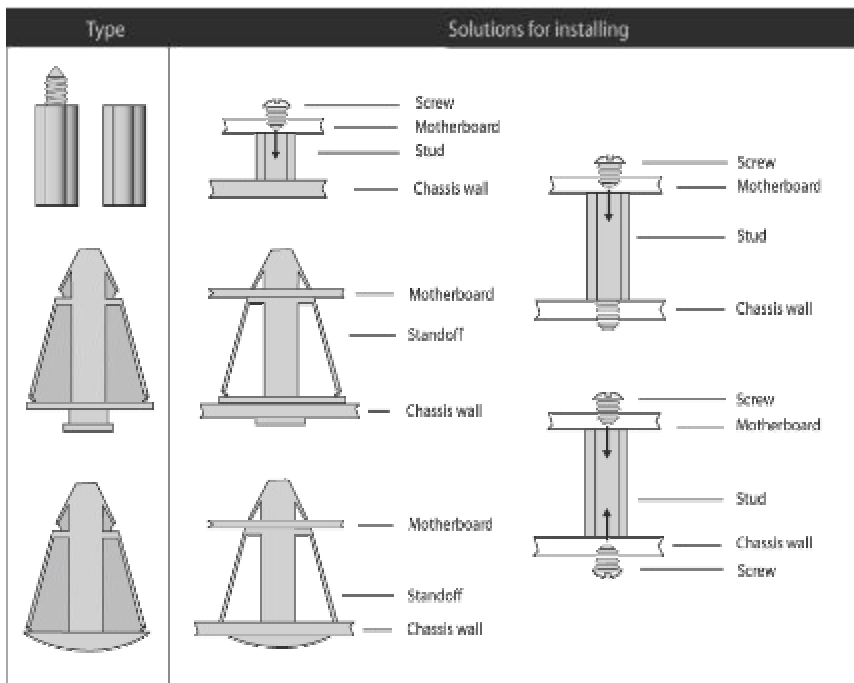
2.33 – Installing the Memory

Before attempting to install any memory, make sure that the memory you have is compatible with the motherboard as well as the processor.
The following diagram shows common types of DDR SDRAM modules:

DDR SDRAM

Registered DDR SDRAM

Registered memory has extra buffer chips near the bottom
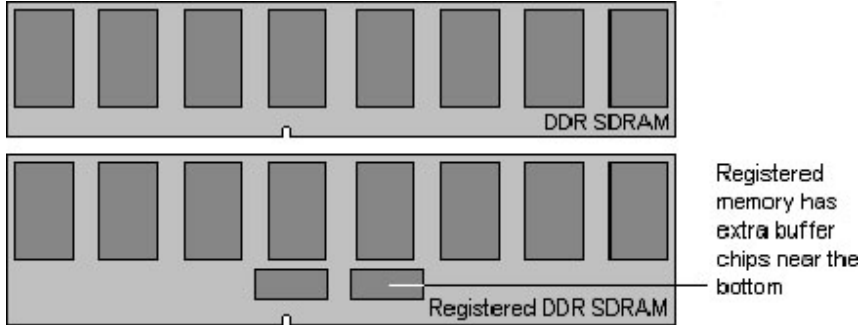
Here are a few key points to note before installing memory into your Thunder K8S Pro:

- **Always install memory beginning with DIMM1**
- **AMD Opteron™ processors support 64bit (non-interleaved) or 128bit (interleaved) memory configurations**
- **At least ONE Registered DDR SDRAM module must be installed for the system to turn on and POST (power on self test)**
- 128MB, 256MB, 512MB, 1GB, and 2GB* Registered PC2700/PC2100/PC1600 DDR SDRAM memory modules are supported
- All installed memory will be automatically detected
- The Thunder K8S Pro supports up to 8GB.*

<p align="center">* Not validated at the time of print; subject to change.</p>

This chart outlines the rules for populating memory

(Note: X indicates a populated DIMM Slot)

DIMM Slot	128Bit support														
CPU1 DIMM1	X				X	X	X				X	X	X		X
CPU1 DIMM2	X				X	X	X				X	X	X		X
CPU1 DIMM3		X			X			X	X		X	X		X	X
CPU1 DIMM4		X			X			X	X		X	X		X	X
CPU2 DIMM1			X			X		X		X	X		X	X	X
CPU2 DIMM2			X			X		X		X	X		X	X	X
CPU2 DIMM3				X		X		X	X		X	X	X	X	X
CPU2 DIMM4				X		X		X	X		X	X	X	X	X

DIMM Slot	64-Bit Support												
CPU1 DIMM1	X				X	X	X				X		X
CPU1 DIMM3		X			X			X	X		X	X	X
CPU2 DIMM1			X			X		X		X	X	X	X
CPU2 DIMM3				X			X		X	X		X	X

Memory Installation Procedure

When you install the memory modules, make sure the module aligns properly with the memory slot. The modules are keyed to ensure that it is inserted only one way. The method of installing memory modules are detailed by the following diagrams.

DDR SDRAM Module

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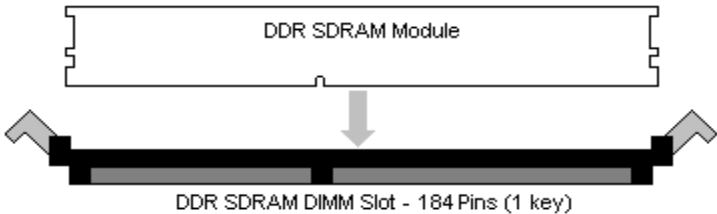
Once the memory modules are firmly seated in the slot, two latches on either side will close and secure the module into the slot. Sometimes you may need to close the latches yourself.

DDR SDRAM Module

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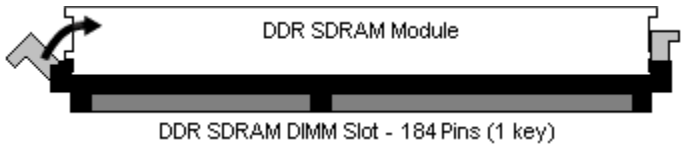
To remove the memory module, simply push the latches outwards until the memory module pops up. Then remove the module.

NOTE	**YOU MUST ALWAYS** unplug the power connector from the motherboard before performing system hardware changes. Otherwise you may damage the board and/or expansion device.

2.34 – Attaching Drive Cables

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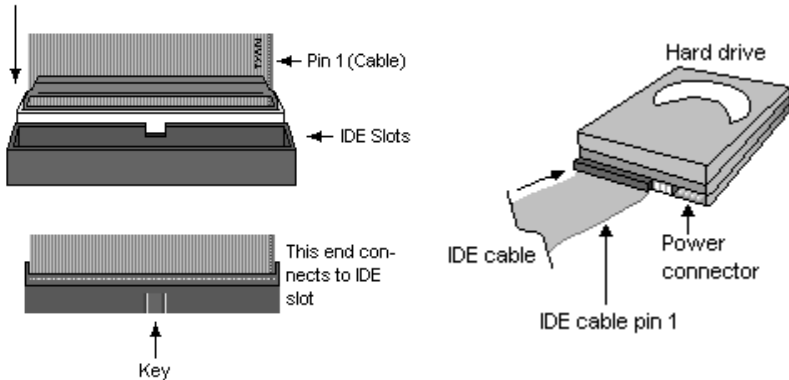
Simply plug in the BLUE END of the IDE cable into the motherboard IDE connector, and the other end(s) into the drive(s). Each standard IDE cable has three connectors, two of which are closer together. The BLUE connector that is furthest away from the other two is the end that connects to the motherboard.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

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

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

The Thunder K8S Pro is also equipped with 4 Serial ATA (SATA) channels. Connections for these drives are also very simple.

There is no need to set Master/Slave jumpers on SATA drives.

Tyan has supplied two SATA cables and one SATA power adapter. If you are in need of other cables or power adapters please contact your place of purchase.

The following pictures illustrate how to connect an SATA drive

1. **SATA drive cable connection**

2. **SATA drive power connection**

3. **SATA cable motherboard connector**

4. **SATA drive power adapter**
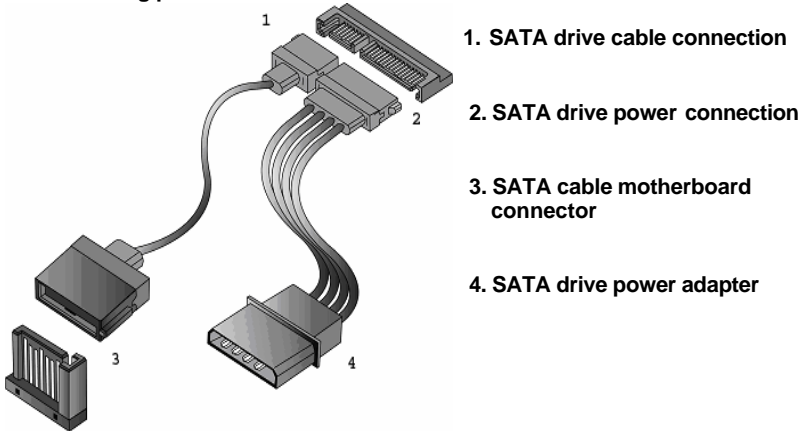
Floppy Drives
Attaching floppy diskette drives are done in a similar manner to hard drives. See the picture below for an example of a floppy cable. Most of the current floppy drives on the market require that the cable be installed with the colored stripe positioned next to the power connector. In most cases, there will be a key pin on the cable which will force a proper connection of the cable.

Twist at the end of the ribbon cable
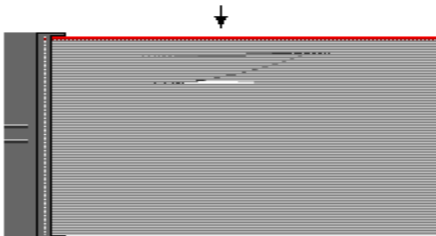
Attach first floppy drive (drive **A:**) to the end of the cable with the twist in it. Drive **B:** is usually connected to the next possible connector on the cable (the second or third connector after you install Drive **A:**).

2.35 – 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.
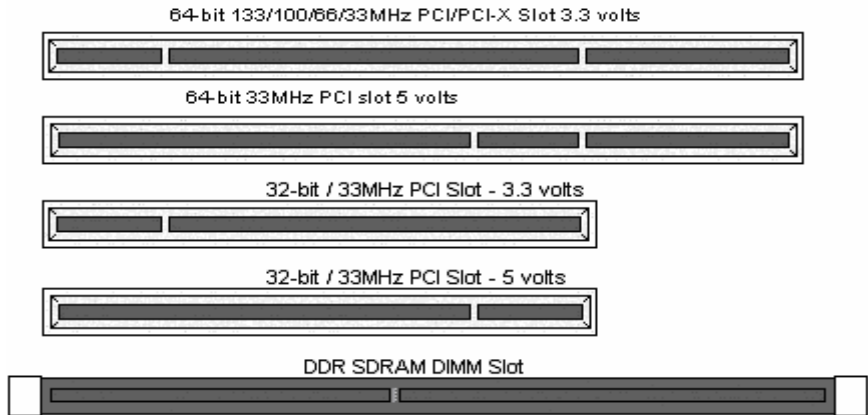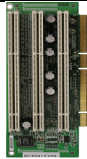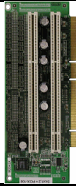
Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

NOTE	**YOU MUST ALWAYS** unplug the power connector from the motherboard before performing system hardware changes. Otherwise you may damage the board and/or expansion device.

2.36 – PCI Riser Cards Supported on S2882 K8S

Model Number	M2037	M2043	M2043X	M2044
What speeds can support	ALL SPEEDS	66MHz 33MHz	100MHz 66MHz 33MHz	133MHz 100MHz 66MHz
Form Factor	1U	2U	2U	2U
What kind of Gold Finger	3.3V and 5V	3.3V and 5V	3.3V and 5V	3.3V and 5V
How many slots	1	3	2	3
What kinds of slots	5V	3.3V	3.3V	3.3V
UPC Code	635872-007255	635872-006906	635872-007095	635872-008368

2.37 – Connecting External Devices

Connecting external devices to the motherboard is an easy task. The following diagrams will detail the rear port stack for this S2882 motherboard:

10/100 Mbit Ethernet Port (Optional)

PS/2 Mouse

PS/2 Keyboard

USB1.1 Ports   COM1   VGA Port   10/100/1000 Mbit Ethernet Ports

Left   Right

LAN Link/Activity LED Scheme		
Speed	Link LED (left side)	Activity LED (right side)
10Mbps	Green (Blink)	Off
100Mbps	Off	Yellow (Blink)

Left   Right

LAN Link/Activity LED Scheme		
Speed	Link LED (left side)	Activity LED (right side)
10Mbps	Green (Blink)	Off
100Mbps	Off	Yellow (Blink)
1000Mbps	Green (Blink)	Yellow (Blink)

2.38 – Installing the Power Supply

There are two power connectors on your Thunder K8S Pro S2882. The Thunder K8S Pro S2882 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

EPS12V (24-pin) Power Connector   1   EPS12V (8-pin) Power Connector
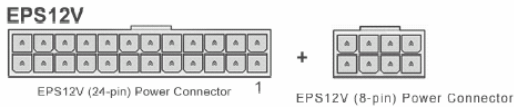
Disconnect power supply from electrical outlet
1. Connect the EP12V 8-pin power connector
2. Connect the EP12V 24-pin power connector
3. Connect power cable to power supply to power outlet
   Make sure you have connected both connectors before attempting to apply power to the board.

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

2.39 – 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

3.00 – 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   Power   Exit

 System Overview                                   Use [ENTER], [TAB]
                                                   or [SHIFT_TAB] to
 AMIBIOS                                           select a field
 Version    : 08.00.xx
 Build Date : 7/17/2003                            Use [+] or [-] to
 ID         : 0AAAA000                             configure system time.

 Processor
 Type     : AMD Opteron(tm) Model xxx
 Speed    : xxxx MHz
 Count    : x
                                                   ? ?  Select Screen
 System Memory                                     ?? Select Item
 Size     : xxxx MB
                                                   +/-    Change Option
 System Time              [12:59:59]               F1     General Help
 System Date              [07/17/2003]             F10  Save and Exit
                                                   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>.

3.01 – 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

3.02 – 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 <Pg Dn>	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

3.03 – 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    Power    Exit
 ┌──────────────────────────────────────────┬──────────────────────────────┐
 │ System Overview                            │  Use [ENTER], [TAB] or       │
 │                                            │  [SHIFT_TAB] to select       │
 │                                            │  a field                     │
 │ AMIBIOS                                    │                              │
 │ Version   : 08.00.xx                       │  Use [+] or [-] to           │
 │ Build Date : 7/17/2003                     │  configure system time.      │
 │ ID         : 0AAAA000                       │                              │
 │                                            │                              │
 │ Processor                                  │                              │
 │ Type     : AMD Opteron(tm) Model xxxx      │                              │
 │ Speed    : xxxx MHz                        │                              │
 │ Count    : x                               │                              │
 │                                            │  ? ? Select Screen           │
 │ System Memory                              │                              │
 │ Size      : xxxx MB                        │  ?? Select Item              │
 │                                            │  Enter Go to Sub Screen      │
 │ System Time            [12:59:59]          │  F1    General Help          │
 │ System Date            [07/17/2003]        │  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

3.04 – 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	Power	Exit

Advanced Settings WARING: Setting wrong values in below sections may cause system to malfunction. ▸ IDE Configuration ▸ Floppy Configuration ▸ Super I/O Configuration ▸ Hardware Health Configuration ▸ ACPI Configuration ▸ Event Log Configuration ▸ Hyper Transport Configuration ▸ Device & PCI Slots Configuration ▸ Remote Access Configuration ▸ USB Configuration	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field 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
Advanced Settings		
IDE Configuration	**Menu Item**	Configures devices connected to AMD8111 IDE controller
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
Hardware Health Configuration	**Menu Item**	Configures & views Hardware Monitor
ACPI Configuration	**Menu Item**	Section for Advanced ACPI Configuration
Event Log Configuration	**Menu Item**	Views & controls Event Log
Hyper Transport Configuration	**Menu Item**	Configure HT links
Device & PCI Slots Configuration	**Menu Item**	Allows control of integrated devices & cards plugged into PCI slots
Remote Access Configuration	**Menu Item**	Configures Console Redirect
USB Configuration	**Menu Item**	Configures USB controller & legacy device support

3.04.1 – 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	Power	Exit

IDE Configuration		
IDE Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Onboard PCI IDE Controller	[Both]	
▶ Primary IDE Master	[xxxx]	Use [+] or [-] to configure system time.
▶ Primary IDE Slave	[xxxx]	
▶ Secondary IDE Master	[xxxx]	
▶ Secondary IDE Slave	[xxxx]	? ? Select Screen
Hard Disk Write Protect	[Disable]	?? Select Item
IDE Detect Time Out (Sec)	[xx]	+/- Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit

Feature	Option	Description
IDE Configuration		
Onboard PCI IDE Controller	**Both**	This setting determines whether the AMD 8111 primary and secondary IDE channels are activated.
	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)	**35** ~ 0	Configure the time (in Seconds) before the BIOS times out on detecting an IDE Device.

3.04.2 – 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 v alue of the selected option. The settings are described on the following pages.

```
                              BIOS Setup Utility
  Main     Advanced    PCI/PnP    Boot    Security    Chipset    Power    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 51/4"	
	1.2 MB 51/4"	
	720 KB 31/2"	
	1.44 MB 31/2"	
	2.88 MB 31/2"	
Floppy B	**Disabled**	This setting selects the type of the floppy disk drive installed in system.
	360 KB 51/4"	
	1.2 MB 51/4"	
	720 KB 31/2"	
	1.44 MB 31/2"	
	2.88 MB 31/2"	

3.04.3 – 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	Power	Exit

Configure Win627 Super IO 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	[2F8/IRQ3]	? ? Select Screen
Serial Port2 Mode	[Normal]	
Parallel Port Address	[378]	?? Select Item
Parallel Port Mode	[Normal]	+/- Change Option
Parallel Port IRQ	[IRQ7]	F1 General Help
		F10 Save and Exit
		ESC Exit

Feature	Option	Description
Configure Win627 Super IO 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	

Parallel Port DMA Channel	**0~3**	Assigns DMA channel for port.

3.04.4 – Hardware Health Event Monitoring Sub-Menu

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

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

   Hardware Health Event Monitoring                    Use [ENTER], [TAB] or
                                                       [SHIFT_TAB] to select
                                                       a field
   CPU2 Ambient Temperature         :xx C/ xxx F
   DIMM 2.5V VRM  Temperature       :xx C/ xxx F
   CPU VRM Temperature              :xx C/ xxx F       Use [+] or [-] to
                                                       configure system time.
   CPU1 Temperature                 :xx C/ xxx F
   CPU2 Temperature                 :xx C/ xxx F
   System Temperature               :xx C/ xxx F

   CPU1 Fan Speed                   :xxxx RPM
   CPU2 Fan Speed                   :xxxx RPM
   FAN1 Speed                       :xxxx RPM
   FAN2 Speed                       :xxxx RPM
   FAN3 Speed                       :xxxx RPM          ? ?  Select Screen
   FAN4 Speed                       :xxxx RPM
   FAN5 Speed                       :xxxx RPM          ? ?  Select Item
                                                       +/-     Change Option
   ▶ Mainboard Voltages Report                         Tab   Select Field
   Auto FAN 1, 2, 3 Speed Control       [Disabled]     F1      General Help
   Chassis Intrusion Detect             [Disabled]     F10   Save and Exit
                                                       ESC   Exit
```

Feature	Option	Description
Hardware Health Event Monitoring		
CPU2 Ambient Temperature		Displays CPU Ambient & VRM Temperatures.
DIMM 2.5V VRM Temperature		
CPU VRM Temperature		
CPU1 Temperature		Displays CPU & Ambient System Temperatures.
CPU2 Temperature		
System Temperature		
CPU1 Fan Speed		Displays speed of fans connected to appropriate Fan headers.
CPU2 Fan Speed		
FAN1 Speed		
FAN2 Speed		
FAN3 Speed		
FAN4 Speed		

FAN5 Speed		

Feature	Option	Description
Hardware Health Event Monitoring		
Mainboard Voltages Report		Displays Voltage for CPU, memory, & other devices.
Auto FAN 1, 2, 3 Speed Control	**Disabled**	FAN power duty cycle is auto dynamic programmed in selected temperature range or be set at a fixed percentage.
	Enabled	
Chassis Intrusion Detect	**Disabled**	Enabled / Disabled: when chassis open event is detected, BIOS will record the event.
	Enabled	

3.04.4.1 – Mainboard Voltages Report Sub-Menu

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

Board Voltages Event Monitoring

```
CPU1 Vcore                        : x.xxx V
CPU2 Vcore                        : x.xxx V
+3.3 Vin                          : x.xxx V
CPU2 DIMM Vref                    : x.xxx V
CPU2 DIMM Voltage                 : x.xxx V
CPU1-CPU2 Vhtlink                 : x.xxx V
CPU2 DIMM Vref                    : x.xxx V
CPU2 DIMM Voltage                 : x.xxx V
+5 Vin                            : x.xxx V
+3.3VSB                           : x.xxx V
+12 Vin                           : xx.xxx V
```

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

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

? ? Select Screen

?? Select Item
+/-   Change Option
Tab   Select Field
F1   General Help
F10   Save and Exit
ESC Exit

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

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

ACPI Configuration	
ACPI Aware O/S [Yes]	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
▸ Advanced ACPI Configuration	Use [+] or [-] to configure system time.
	? ? Select Screen
	?? Select Item
	+/- Change Option F1 General Help F10 Save and Exit ESC Exit

Feature	Option	Description
ACPI Configuration		
ACPI Aware O/S	**Yes**	Yes allows the system to utilize ACPI (Advanced Configuration and Power Interface) specification.
	No	

3.04.5.1 – 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    Power    Exit
┌──────────────────────────────────────────┬──────────────────────────────┐
│ Advanced ACPI Configuration              │ Use [ENTER], [TAB] or         │
│                                          │ [SHIFT_TAB] to select a       │
│ ACPI 2.0 Support          [No]           │ field                         │
│ ACPI APIC Support         [Enabled]      │                               │
│ Multimedia Timer          [Enabled]      │ Use [+] or [-] to configure   │
│ BIOS → AML ACPI 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	
Multimedia Timer	**Enabled**	To enable/disable HPET timer.
	Disabled	
BIOS → AML ACPI 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 | |
| | **Disabled** | |

3.04.6 – Event Logging details Sub-Menu

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

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

   Event Logging details                          Use [ENTER], [TAB] or
                                                  [SHIFT_TAB] to select
   View Event Log                                 a field
   Mark All Events as Read
   Clease Event Log                               Use [+] or [-] to
   Event Log Statistics                           configure system time.

                                                  ? ?  Select Screen

                                                  ??  Select Item
                                                  +/-    Change Option
                                                  Enter Go to Sub Screen
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC  Exit
```

Feature	Option	Description
Event Logging details		
View Event Log		View all unread events on the Event Log.
Mark All Events as Read		Marks all events as read.
Clear Event Log		Erase all of events.
Event Log Statistics		Displays the storage capacity & usage of the Event Log.

3.04.7 – Hyper Transport Configuration Sub-Menu

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

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

Hyper Transport Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
CPU1: CPU2 HT Link Speed	[Auto]	Use [+] or [-] to configure system time.
CPU1: CPU2 HT Link Width	[Auto]	
CPU1: PCI-X0 HT Link Speed	[Auto]	? ? Select Screen
CPU1: PCI-X0 HT Link Width	[Auto]	?? Select Item
		+/- Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit

Feature	Option	Description
Hyper Transport Configuration		
CPU1: CPU2 HT Link Speed	**Auto**	Specify CPU1 to CPU2 Hyper Transport Link Clock frequency. If CPU2 is absent, the selection item will be hide.
	200MHz	
	400MHz	
	600MHz	
	800MHz	
	1GHz	
CPU1: CPU2 HT Link Width	**Auto**	Specify CPU1 to CPU2 Hyper Transport Link Data width. If CPU2 is absent, the selection item will be hide.
	2 Bit	
	4 Bit	
	8 Bit	
	16 Bit	
CPU1: PCI-X0 HT Link Speed	**Auto**	Specify CPU1 to PCI X Hyper Transport Link Clock frequency.
	200MHz	
	400MHz	
	600MHz	
	800MHz	

	Auto	Specify CPU1 to PCI X Hyper
	2 Bit	Transport Link Data width.
CPU1: PCI-X0 HT Link Width	4 Bit	
	8 Bit	
	16 Bit	

3.04.8 Device & PCI Slots Configuration Sub-Menu

You can use this screen to view Device & PCI Slot Configuration Menu. This menu allows the user to enable or disable integrated devices, option ROM, and PCI cards added. 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	Power	Exit

Onboard Device & PCI Slots Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
USB Host Controllers	[Enabled]	
Onboard ATI Video	[Enabled]	Use [+] or [-] to
Onboard Serial ATA	[Enabled]	configure system time.
Onboard Gigabit LAN	[Enabled]	
Gigabit LAN Option Rom	[Disabled]	
Onboard 100/10Mbit LAN	[Enabled]	
100/10Mbit LAN Option Rom	[Disabled]	
		? ? Select Screen
PCI1 Slot (64bit)	[Enabled]	?? Select Item
PCI2 Slot (64bit)	[Enabled]	+/- Change Option
PCI3 Slot (32bit)	[Enabled]	F1 General Help
PCI4 Slot (32bit)	[Enabled]	F10 Save and Exit
		ESC Exit

Feature	Option	Description
Onboard Device & PCI Slots Configuration		
USB Host Controllers	**Enabled**	
	Disabled	
Onboard ATI, Serial ATA, 100/10Mbit & Gigabit Ethernet	**Enabled**	Allows user to enable or disable onboard ATI video, Serial ATA controller and Onboard Gigabit LAN individually.
	Disabled	
	N/A	
Gigabit LAN Option Rom	Enabled	Allows user to enable or disable onboard Gigabit LAN controller option ROM (BIOS).
	Disabled	
100/10Mbit LAN Option Rom	Enabled	Allows user to enable or disable onboard 100/10Mbit LAN controller option ROM (BIOS).
	Disabled	

PCI1 Slot (64bit)	**Enabled**	Allows user to enable or disable
	Disabled	device in PCI slot 1.
PCI2 Slot (64bit)	**Enabled**	Allows user to enable or disable
	Disabled	device in PCI slot 2.
PCI3 Slot (32bit)	**Enabled**	Allows user to enable or disable
	Disabled	device in PCI slot 3.
PCI4 Slot (32bit)	**Enabled**	Allows user to enable or disable
	Disabled	device in PCI slot 4.

3.04.9 – 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    Power    Exit

  Configure Remote Access type and parameters          Use [ENTER], [TAB]
                                                       or [SHIFT_TAB] to
  Remote Access                        [Disabled]      select a field

                                                       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
	Serial	system through serial port.

3.04.10 – 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	Power	Exit

USB Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Module Version – X.XX.X-X.X		
		Use [+] or [-] to configure system time.
USB Devices Enabled:		
None		
		? ? Select Screen
Legacy USB Support	[Enabled]	
USB Keyboard Legacy Support	[Enabled]	?? Select Item
USB Mouse Legacy Support	[Enabled]	+/- Change Option
USB Storage Device Support	[Enabled]	F1 General Help
		F10 Save and Exit
		ESC Exit

Feature	Option	Description
USB Configuration		

	Auto	Enables support for legacy USB
Legacy USB Support	Disabled	devices such as keyboards,
	Enabled	mice, & bootable USB devices.
USB Keyboard Legacy Support	Disabled	Select "Enabled" if your system contains a USB controller and
	Enabled	you have a USB Keyboard.
USB Mouse Legacy Support	Disabled	Select "Enabled" if your system contains a USB controller and
	Enabled	you have a USB mouse.
USB Storage Device Support	Disabled	Select "Enabled" if your system contains a USB controller and
	Enabled	you have a USB Storage Device.

3.05 – 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	Power	Exit
Advanced PCI/PnP Settings					Use [ENTER], [TAB] or		

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

Plug & Play OS	[Yes]
PCI Latency Timer	[64]
PCI BUS SCAN Order	[Descent]
Allocate IRQ to PCI VGA	[Yes]
Palette Snooping	[Disabled]
PCI IDE BusMaster	[Disabled]
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]

[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	
PCI BUS SCAN Order	Ascent	Ascent: Scan PCI bus from bus 0 to maximum.
	Descent	Descent: Scan PCI bus from maximum to bus 0.
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	

3.06 – 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	Power	Exit

Boot Settings	
▸ Boot Settings Configuration ▸ Boot Device Priority ▸ Hard Disk Drives ▸ Removable Drives ▸ ATAPI CDROM Drives	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field Use [+] or [-] to configure system time. ? ? Select Screen ?? Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit

3.06.1 – 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	Power	Exit

Boot Settings Configuration		
Quick Boot	[Disabled]	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Quiet Boot	[Disabled]	
Add On ROM Display Mode	[Force BIOS]	
Boot up Number-Lock	[On]	Use [+] or [-] to configure system time.
PS/2 Mouse Support	[Enabled]	
Typematic Rate	[Fast]	
Keyboard Error Report	[Disabled]	? ? Select Screen
Boot To OS/2	[No]	?? Select Item
Wait for 'F1' If Error	[Enabled]	+/- Change Option
Hit 'DEL' Message Display	[Enabled]	F1 General Help
Interrupt 19 Capture	[Disabled]	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	
Typematic Rate	**Fast**	Choose the speed at which keys are repeated.
	Slow	
Keyboard Error Report	**Disabled**	Enable / Disable Keyboards error report.
	Enabled	
Boot To OS/2	**No**	Set this option to yes only if booting to OS/2.
	Yes	
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	

3.06.2 – 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    Power    Exit

  Boot Device Priority                              Use [ENTER], [TAB]
  1st Boot 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
Boot Device Priority		
1st Boot Device	**1st FLOPPY DRIVE**	Settings for boot priority. These can be customized depending on your preference.
	Disabled	

3.06.3 – 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	Power	Exit

Hard Disk Drives	
1st Drive [xx,xxx-xxxxx:xxx]	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
Hard Disk Drives		
1st Drive	**xx,xxx-xxxxx:xxx**	
	Disabled	

3.06.4 – 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	Power	Exit

Removable Drives		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
1st Device	[1st FLOPPY DRIVE]	
		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	

3.06.5 – 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	Power	Exit

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

3.07 – 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    Power    Exit

 Security Settings                              Use [ENTER], [TAB]
                                                or [SHIFT_TAB] to
 Supervisor Password:                           select a field
 User Password:
                                                Use [+] or [-] to
 Change Supervisor Password                     configure system time.
 Change User Password
 Clear User Password                            ? ?  Select Screen

 Boot Sector Virus Protection      [Disabled]   ? ?  Select Item
                                                +/-     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	

3.08 – BIOS Chipset Settings Menu

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

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

Chipset Settings	
Chipset Settings ▸ North Bridge Configuration ▸ South Bridge Configuration ▸ PCI-X Configuration Clock Gen. Spread Spectrum [Disabled]	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field Use [+] or [-] to configure system time. ? ? Select Screen ?? Select Item +/- Change Option Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit

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

3.08.1 – North Bridge Chipset Configuration Sub-Menu

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

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

North Bridge Chipset Configuration

▸ Memory Configuration
▸ ECC Configuration

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

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

? ? Select Screen

?? Select Item
Enter Go to Sub Screen
F1   General Help
F10 Save and Exit
ESC Exit

3.08.1.1 – Memory Configuration Sub-Menu

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

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

Memory Configuration

Bank Interleaving   [Auto]
Node Interleaving   [Disabled]
Burst Length   [8 Beats]

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
Memory Configuration		
Bank Interleaving	Disabled **Auto**	Allows memory access to be spread across memory banks.
Node Interleaving	**Disabled** Auto	Allows memory access to be spread across memory nodes.
Burst Length	**8beats** 4beats	Burst length must be set to 8beats for 128bit memory support.

3.08.1.2 –ECC Configuration Sub-Menu

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

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

   ECC Configuration                                Use [ENTER], [TAB]
                                                    or [SHIFT_TAB] to
                                                    select a field
   Master ECC Enable                  [Enabled]
   DRAM ECC  Enable                   [Enabled]     Use [+] or [-] to
   DRAM BG Scrub                      [Disabled]    configure system time.
   DRAM SCRUB REDIRECT                [Disabled]
   ECC Chip Kill                      [Disabled]    ? ? Select Screen
   L2 Cache BG Scrub                  [Disabled]
   Data Cache BG Scrub                [Disabled]    ?? Select Item
                                                    +/-   Change Option
                                                    F1    General Help
                                                    F10  Save and Exit
                                                    ESC  Exit
```

Feature	Option	Description
ECC Configuration		
Master ECC	**Enabled** Disabled	Enables support on all nodes for ECC error checking and correction.
DRAM ECC	Disabled **Enabled**	Enables support on all banks for ECC error checking and correction.
DRAM BG Scrub	**Disabled** 40ns 80ns 160ns 320ns 640ns	

http://www.TYAN.com

	1.28us	

Feature	Option	Description
DRAM BG Scrub	2.56us	
	5.12us	
	10.2us	
	20.5us	
	41.0us	
	81.9us	
	163.8us	
	327.7us	
	655.4us	
DRAM SCRUB REDIRECT	**Disabled**	
	Enabled	
ECC Chip Kill	**Disabled**	
	Enabled	
L2 Cache BG Scrub	**Disabled**	
	40ns	
	80ns	
	160ns	
	320ns	
	640ns	
	1.28us	
	2.56us	
	5.12us	
	10.2us	
	20.5us	
	41.0us	
	81.9us	
	163.8us	
	327.7us	
	655.4us	
Data Cache BG Scrub	**Disabled**	
	40ns	
	80ns	
	160ns	
	320ns	
	640ns	
	1.28us	
	2.56us	
	5.12us	
	10.2us	
	20.5us	
	41.0us	
	81.9us	
	163.8us	
	327.7us	

	655.4us

3.08.2 – South Bridge Chipset Configuration Sub-Menu

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

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

South Bridge Chipset Configuration               Use [ENTER], [TAB]
                                                 or [SHIFT_TAB] to
                                                 select a field
2.0 SM Bus Controller              [Enabled]
                                                 Use [+] or [-] to
HT Link 0 P-Comp Mode              [Auto]        configure system time.
HT Link 0 N-Comp Mode              [Auto]
HT Link 0 RZ-Comp Mode             [Auto]
                                                 ? ? Select Screen

                                                 ?? Select Item
                                                 +/-    Change Option
                                                 F1     General Help
                                                 F10    Save and Exit
                                                 ESC   Exit
```

Feature	Option	Description
South Bridge Chipset Configuration		
2.0 SM Bus Controller	**Enabled**	Enables/disables the SM Bus 2.0 controller in the AMD8111 I/O Hub
	Disabled	
HT Link 0 P-Comp Mode	**Auto**	Auto uses hardware compensation values. Other values add to or subtract from hardware generated value. Recommended setting is **Auto**.
	Data	
	CalComp +Data	
	CalComp -Data	
HT Link 0 N-Comp Mode	**Auto**	Auto uses hardware compensation values. Other values add to or subtract from hardware generated value. Recommended setting is **Auto**.
	Data	
	CalComp +Data	
	CalComp -Data	
HT Link 0 RZ-Comp Mode	**Auto**	Auto uses hardware compensation values. Other values add to or subtract from hardware generated value. Recommended setting is **Auto**.
	Data	
	CalComp +Data	
	CalComp -Data	

3.08.3 – PCI-X Chipset Configuration Sub-Menu

This menu allows the user to configure HyperTransport data compensation. Changing these options can result in major performance loss & is not recommended. 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

PCI-X Chipset Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
HT Link 0 P-Comp Mode	[Auto]	Use [+] or [-] to configure system time.
HT Link 0 N-Comp Mode	[Auto]	
HT Link 0 RZ-Comp Mode	[Auto]	
HT Link 1 P-Comp Mode	[Auto]	? ? Select Screen
HT Link 1 N-Comp Mode	[Auto]	
HT Link 1 RZ-Comp Mode	[Auto]	?? Select Item
		+/- Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit

Feature	Option	Description
PCI-X Chipset Configuration		
HT Link 0 P-Comp Mode	**Auto**	Auto uses hardware compensation values. Other values add to or subtract from hardware generated value. Recommended setting is Auto.
	Data	
	CalComp +Data	
	CalComp -Data	
HT Link 0 N-Comp Mode	**Auto**	Auto uses hardware compensation values. Other values add to or subtract from hardware generated value. Recommended setting is Auto.
	Data	
	CalComp +Data	
	CalComp Data	
HT Link 0 RZ-Comp Mode	**Auto**	Auto uses hardware compensation values. Other values add to or subtract from hardware generated value. Recommended setting is Auto
	Data	
	CalComp +Data	
	CalComp -Data	
HT Link 1 P-Comp Mode	**Auto**	Auto uses hardware compensation values. Other values add to or subtract from hardware generated value. Recommended setting is Auto.
	Data	
	CalComp +Data	
	CalComp -Data	
HT Link 1 N-Comp Mode	**Auto**	Auto uses hardware compensation values. Other values add to or subtract from hardware generated value. Recommended setting is Auto.
	Data	
	CalComp +Data	
	CalComp -Data	
HT Link 0 RZ-Comp Mode	**Auto**	Auto uses hardware compensation values. Other values add to or
	Data	

| | CalComp +Data | subtract from hardware generated |
| | CalComp -Data | value. Recommended setting is Auto. |

3.09 – BIOS Power Menu

Use this screen to select options for power management. 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    Power    Exit

 APM Configuration                                    Use [ENTER], [TAB]
                                                      or [SHIFT_TAB] to
 Power Management/APM              [Enabled]          select a field

                                                      Use [+] or [-] to
 Resume On Ring                    [Disabled]         configure system time.
 Resume On PME#                    [Disabled]
 Resume On RTC Alarm               [Disabled]         ? ?  Select Screen

 Power Button Mode                 [On/Off]           ?? Select Item
 Restore AC Power Loss             [Last State]       +/-   Change Option
                                                      F1    General Help
                                                      F10   Save and Exit
                                                      ESC   Exit
```

Feature	Option	Description
APM Configuration		
Power Management/APM	**Disabled**	Disabled prevents the chipset power management and APM (Advanced Power Management) features. Enabled allows the chipset power management and APM features
	Enabled	
Resume On Ring	**Disabled**	When set to Enabled, any event occurring to the COM Ring will awaken a system which has powered down.

	Enabled	
Resume On PME#	**Disabled**	An input signal from PME on the PCI card awakens the system from a sof t off state.
	Enabled	
Resume On RTC Alarm	**Disabled**	When set to Enabled RTC Alarm resume, you could set the date (of month) and timer (hh:mm:ss), any event occurring at will awaken a system which has been powered down.
	Enabled	
Power Button Mode	**On / Off**	Specifies how the externally mounted power button on the front of the chassis is used.
	Standby	
	Suspend	

Feature	Option	Description
APM Configuration		
Restore on AC/Power Loss	Power On	Configures how the system board responds to a power failure
	Power Off	
	Last State	

3.10 – BIOS Exit Menu

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

```
                              BIOS Setup Utility
 Main    Advanced    PCI/PnP    Boot    Security    Chipset    Power    Exit
 ---------------------------------------------------------------------------
 Exit Options                              |  Use [ENTER], [TAB] or
                                           |  [SHIFT_TAB] to select a
                                           |  field
 Save Changes and Exit                     |
 Discard Changes and Exit                  |  Use [+] or [-] to configure
 Discard Charges                           |  system time.
                                           |
 Load Optimal Defaults                     |  ? ? Select Screen
 Load Failsafe Defaults                    |
                                           |  ?? 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: Diagnostics

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

CPU, Memory, Video

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

4.01 Beep Codes

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

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

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

4.2 Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, 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 only at 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DRAM (Dynamic RAM): widely available, very affordable form of RAM which looses data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

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

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

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

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

Form factor: an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX.

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

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

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

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

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

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

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

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

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

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

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

Parallel port: transmits the bits of a byte on eight different wires at the same time.

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

PCI PIO (PCI Programmable Input/Output) modes: the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

PCI-to-PCI bridge: allows you to connect multiple PCI devices onto one PCI slot.

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

PnP (Plug-n-Play): a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

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

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

RAIDIOS: RAID I/O Steering (Intel)

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

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

SDRAM (Synchronous Dynamic RAM): called as such because it can keep two sets of memory addresses open simultaneously. By transferring data alternately from one set of addresses and then the other, SDRAM cuts down on the delays associated with non-synchronous RAM, which must close one address bank before opening the next.

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

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

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

SDRAM (Static RAM): unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster and more expensive.

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

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

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

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

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

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

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

Appendix II: SMDC Information Technical Support

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^{TM} (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

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. Furthermore, if you purchased your system from a dealer near you, you can 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.
      2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: http://www.tyan.com
      3. Contact your dealer for help BEFORE calling TYAN.
      4. Check the TYAN user group: alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

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

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

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

Operation is subject to the following conditions:

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

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

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

$C \epsilon$ 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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