



Thunder K8W

S2885

Revision 1.00

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Before you begin...

Check the box contents!

The retail motherboard package should contain the following:



1 x Thunder K8W motherboard



1 x 34-Pin floppy drive cable



1 x SATA Data Cable



1 x SATA Drive Power Adapter



1 x Ultra-DMA-100/66 IDE cable



1 x Thunder K8W user's manual



1 x Thunder K8W Quick Reference guide



1 x TYAN driver CD



1 x Silicon Image SATA driver disk



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 a stable, high performance solution for powering CAD, digital content creation, 3D modeling, and other multimedia applications.

Powered by the AMD Opteron™ Processor with the scalability of 32-bit and 64-bit support, this platform supports AGP 8X/AGP PRO 110 slot, eight DIMM slots for 16GB of PC2700 DDR memory with ECC, Gigabit Ethernet, integrated Serial ATA, FireWire, and six-channel audio with SPDIF support.

Hardware Specifications

Processor

Dual µPGA 940-pin ZIF sockets
Supports up to two AMD Opteron™ processors
Two onboard 3-phase VRMs
128-bit DDR dual-channel memory controller integrated in CPU

Chipset

AMD-8131™ PCI-X Tunnel
AMD-8151™ AGP Tunnel
AMD-8111™ I/O Hub
Winbond W83627HF Super I/O

Memory

128-bit DDR dual-channel memory bus
Eight DIMM sockets (four per CPU)
Supports a total of 16GB of DDR RAM
Requires registered RAM
Supports ECC or non-ECC
Supports PC2700, PC2100, & PC1600

Integrated I/O

One floppy, Two serial (one header and one connector), and one parallel port connector
PS/2 KB/mouse connectors
Total five USB connections (three rear connectors and two front USB headers)

Expansion Slots

One 8x AGP/AGP-PRO 110W slot
Four PCI-X slots
- Two 64-bit (3.3v) PCI-X slots support up to 133 MHz on Bus B
- Two 64-bit (3.3v) PCI-X slots support up to 100 MHz on Bus A
One legacy 32-bit 33MHz PCI slot (5v)
Total of six usable slots

System Management

Analog Devices ADT7463 monitor IC connected to SMBus 1.0
Total six 3-pin fan headers with tachometer monitoring and PWM
3-pin Chassis Intrusion header

Integrated Enhanced IDE Controller

Two ports for up to four EIDE devices
Supports up to ATA-133 IDE devices

Integrated Audio

AMD-8111 AC97 Audio Controller
Analog Devices AD1981b Audio Codec
One RCA SPDIF digital connector
Line-in, line-out, mic-in, rear connectors
Headphone & MIC front panel headers
Two 4-pin ATAPI Audio headers

Integrated SATA Controller

Silicon Image SIL3114 SATA
Four SATA 1.0 channels
IDE RAID 0, 1, 0+1 (option)
48-bit LBA support

Integrated PCI Firewire

TI TSB43AB22 IEEE 1394A controller
One external and one internal connector

Integrated Gigabit Ethernet

Broadcom[®] BCM5703C Gigabit Ethernet
RJ-45 LAN connectors with LEDs
Connected to PCI-X Bridge A (64-bit 100MHz)

Regulatory

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

BIOS

AMIBIOS[®] on 4Mbit LPC Flash ROM
ACPI 1.0b & 2.0
Serial Console Redirect
PXE via Ethernet
USB device boot
48-bit LBA Support

Form Factor

SSI EEB v3.0 footprint (13 x12" 330.2x304.8 mm) Fits many EATX & SSI-compliant tower chassis
EPS12V SSI Workstation Spec 2.0 (24pin + 8pin + 6pin) power connector
Serial (one) and VGA (one) connector
Stacked USB 1.1 (three) connectors
Stacked PS/2 KB/Mouse connectors
One RJ-45 LAN connectors with LED
Line-in/Out, Mic, & SPDIF Audio Connectors

Software Specifications

OS (Operating System) Support

Microsoft Windows 2000, XP, Server 2003
SuSE Server 8.x for AMD-64
Red Hat 8.0 and 9.0
Turbo Linux for AMD64
Other distributions of Linux pending validation
TYAN reserves the right to add support or discontinue support for any OS with or without notice.

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.

Chapter 2: Board Installation

Precaution: The Thunder K8W supports EPS12V/SSI type power supplies (24pin + 8pin + 6pin) and will not operate with any other types. For proper power supply installation procedures see page 26.

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:

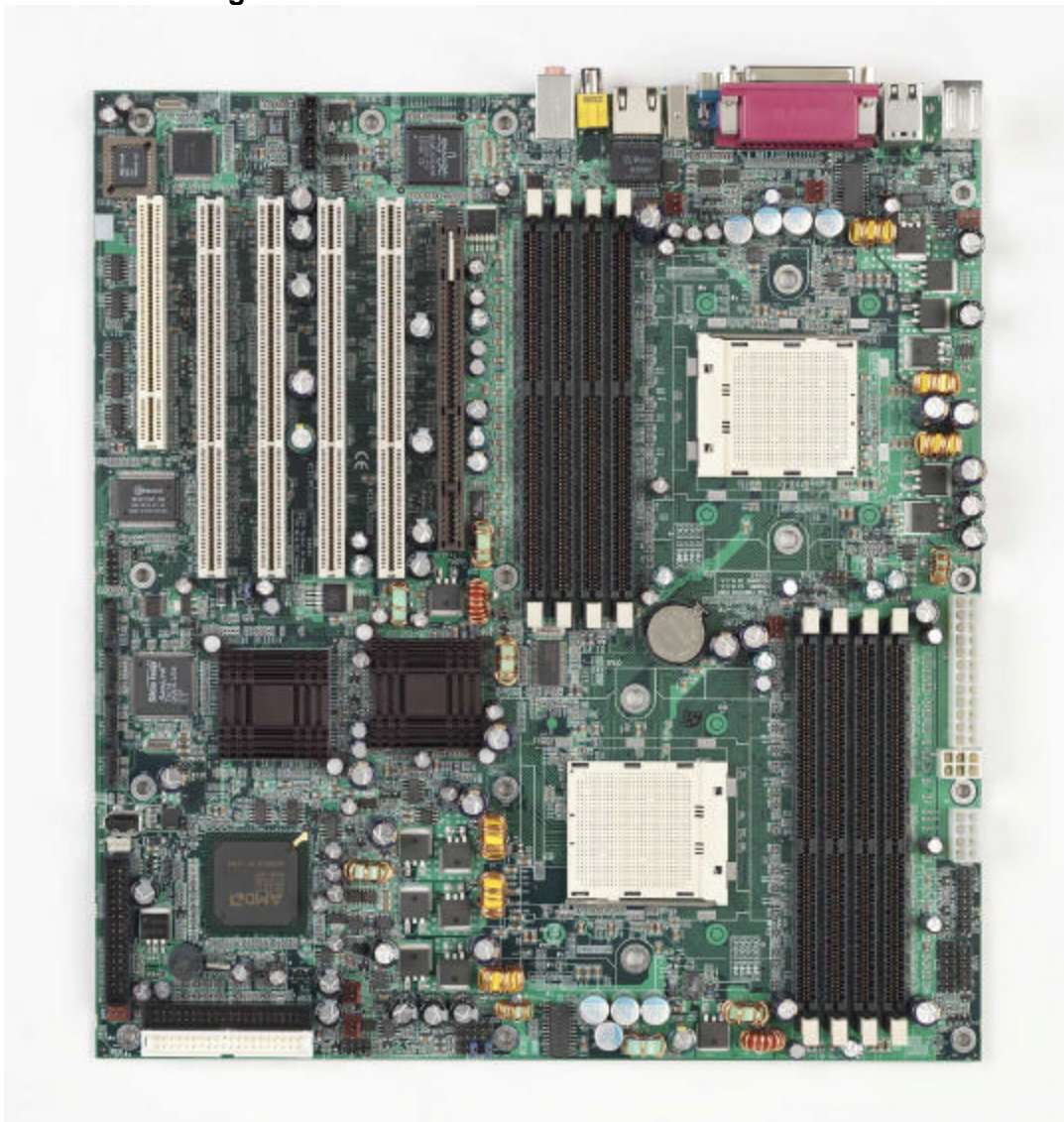
- (1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, TYAN recommends wearing a static safety wrist 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

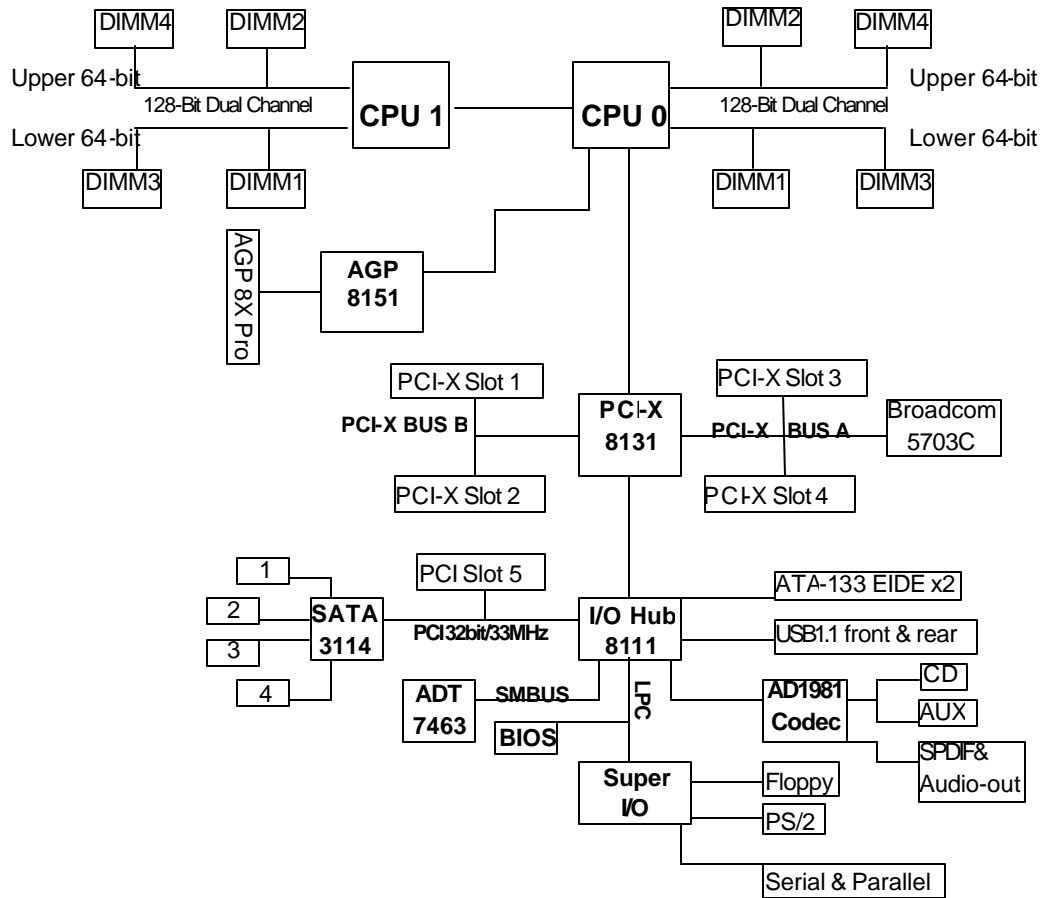


This picture is representative of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the above picture.

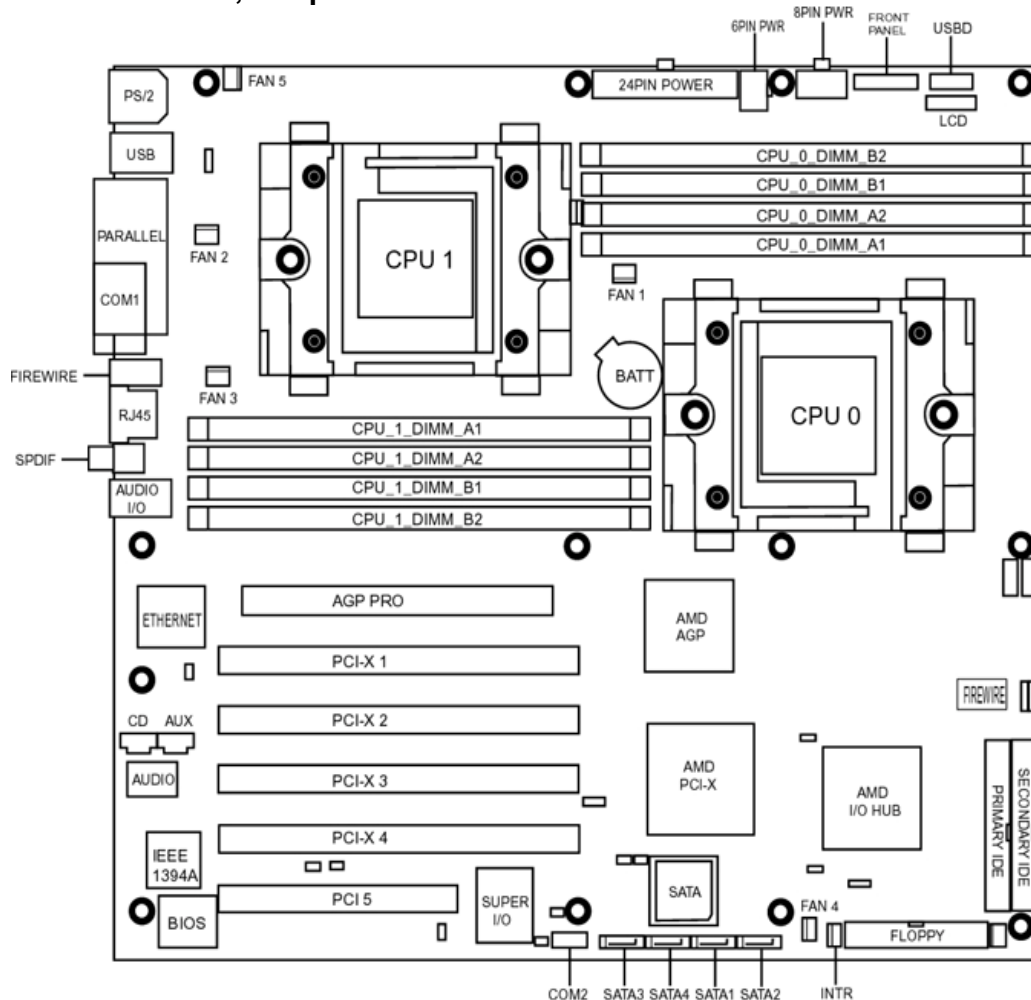
The following page includes details on the vital components of this motherboard.

2.01 – Block Diagram

S2885 Thunder K8W Block Diagram



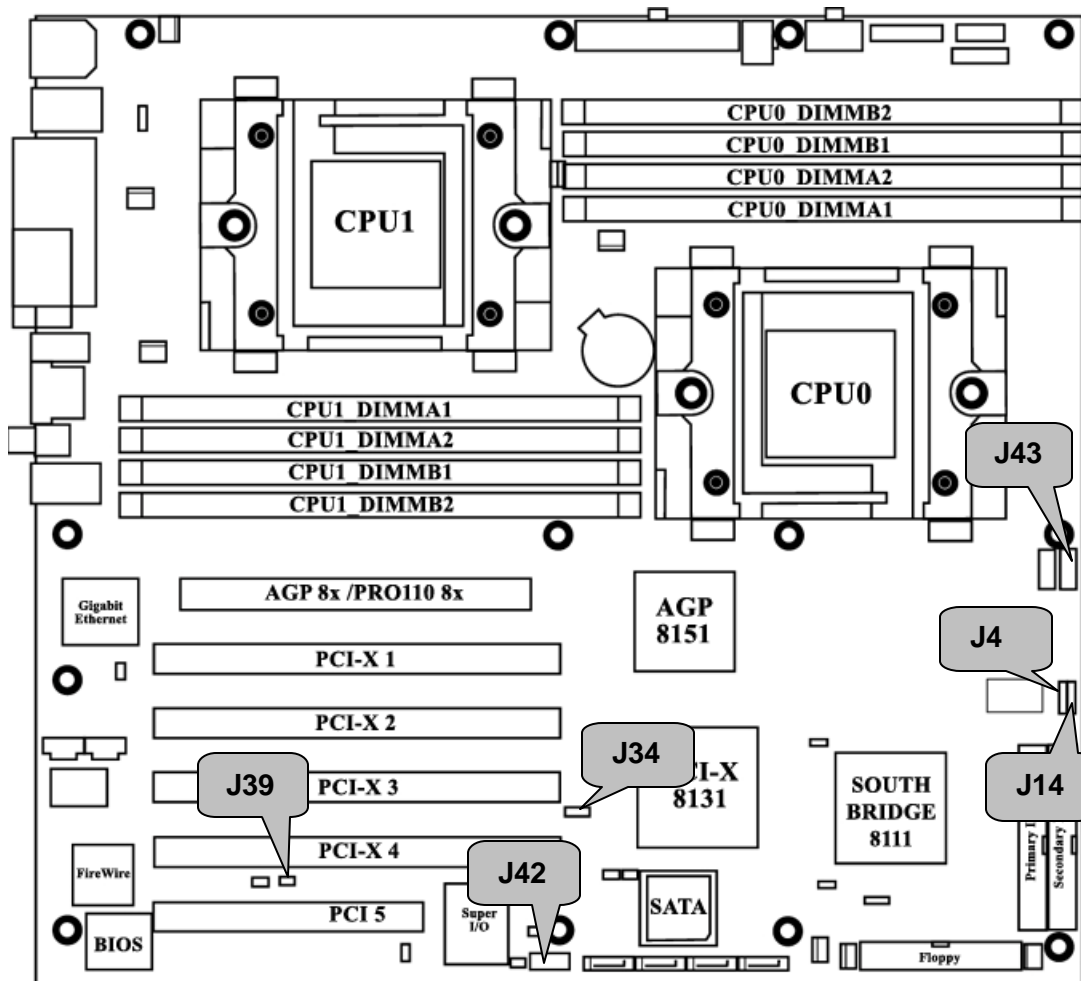
2.02 – Board Parts, Jumpers and Connectors



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 Legend

	OPEN - Jumper OFF	without jumper cover
	CLOSED - Jumper ON	with jumper cover
	Key Pin	Missing pin to indicate proper orientation



J4 SMBus 1.1 Connector



Use this connector to connect external SMBUS devices

Pin1 : SMBUS_DATA	Pin2 : GND
Pin3 : SMBUS_CLK	Pin4 : NC

J14 Onboard Buzzer/Speaker header



Close Pin-3 and 4 (Default) - Onboard Buzzer Enabled



Open Pin- 3 and 4 - Disable onboard buzzer or connect to chassis speaker

J34 J34 Clear CMOS Jumper

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


(Clear)

There are three easy steps:

Power off system and **disconnect both power connectors from the motherboard**

Use jumper cap to close Pin2 and Pin3 for several seconds to Clear CMOS Put jumper cap back to Pin1 and Pin2 (default setting)



(Default)

Reconnect power & power on system

NOTE: If you do not disconnect the power connectors from the motherboard the CMOS may not clear completely.

J39 PCI-X Slots 3 & 4 Force PCI Mode Jumper

 **Open** - (Default) Allows PCI 3 & 4 to operate in PCI-X mode

 **Closed** - Force PCI slots 3 & 4 to operate in PCI compatibility mode
Close this jumper if the card you are using does not support PCI-X

J42 COM2 Header

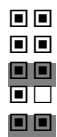
Use these pin definitions to connect a port to COM2



Signal	Pin	Pin	Signal
Data Carrier Detect	1	2	Data-Set-Ready
Receive-Data	3	4	Request-to-Send
Transfer-Data	5	6	Clear-to-Send
Data Terminal Ready	7	8	Ring-Indicator
Ground	9	10	NC/KEY

J43 Front Panel Audio Header

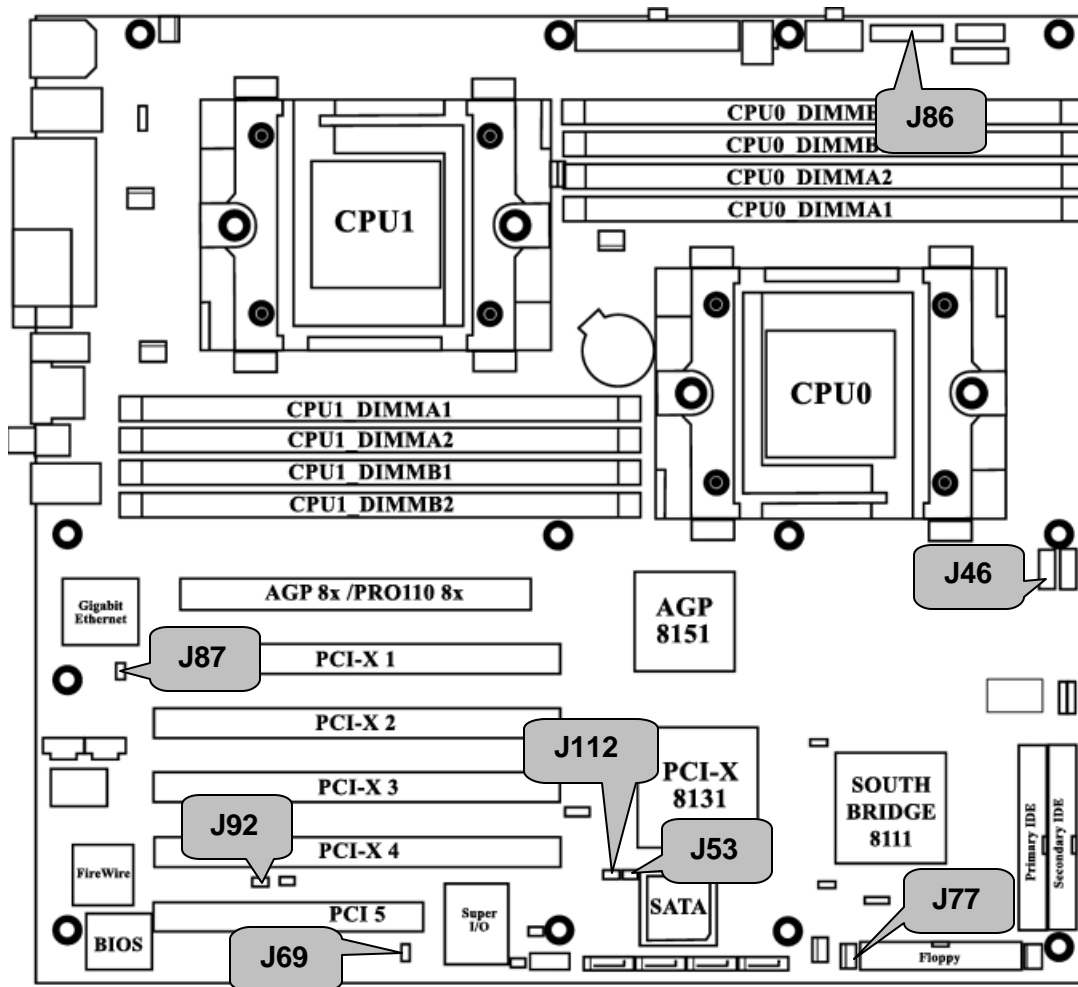
The front panel Audio comes preinstalled with jumpers on pins 5-6 and 9-10. Remove these jumpers to place a front panel audio cable.



Signal	Pin	Pin	Signal
MIC In FP	1	2	Audio GND
MIC BIAS	3	4	Audio Analog
Right Front out	5	6	Right Rear In
No Connect	7	8	Key
Left Front Out	9	10	Left Rear In

WARNING: Do not place jumpers on this header in any other configuration. Doing so could result in damage to the motherboard!

Caution: If you remove the jumpers and do not place the cable from your front panel audio solution on the header, you will not have any audio or microphone signals present on either the front or the back panel audio connections.



J46 USB Front Panel Header

	Signal	Pin	Pin	Signal
<input type="checkbox"/> <input type="checkbox"/>	VCC	1	2	VCC
<input type="checkbox"/> <input type="checkbox"/>	Data -	3	4	Data -
<input type="checkbox"/> <input type="checkbox"/>	Data +	5	6	Data +
<input type="checkbox"/> <input type="checkbox"/>	GND	7	8	GND
<input type="checkbox"/> <input type="checkbox"/>	KEY	9	10	GND

J53 PCI-X Slots 1 & 2 Bus Speed Override

- Open** – (Default) Allows PCI slots 1 & 2 to operate at up to 133MHz (Maximum one PCI-X 133 device)
- Closed** – Forces PCI slots 1 & 2 to operate at a maximum bus speed of 100 MHz
Close this jumper if using more than one PCI-X 133 card on this bus

J69 Firewire Disable Jumper

- Open** – (Default) Enables onboard FireWire controller
- Closed** – Disables onboard FireWire controller

J77 INTR – Chassis Intrusion Header

Active Low this header connects to Pin 76 of Winbond W83627HF

- | | | |
|--|------------------------|------------------|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> PIN1: Winbond GPIO 1bit3 | PIN2: Case Open | PIN3: GND |
|--|------------------------|------------------|

J86 Front Panel Header

HDDLED+	1	2	PWR LED+
HDDLED-	3	4	PWR LED-
Reset SW	5	6	PWR SW
Reset SW	7	8	PWR SW
NC	9	10	SLEEP SW
NC	11	12	SLEEP SW
GND	13	14	NC
NC	15	16	NC
INTRU# Active low	17	18	INTRU# Ground

J87 Gigabit Ethernet Disable

- Open** – (Default) Enable onboard Gigabit Ethernet
- Closed** – Disable onboard Gigabit Ethernet

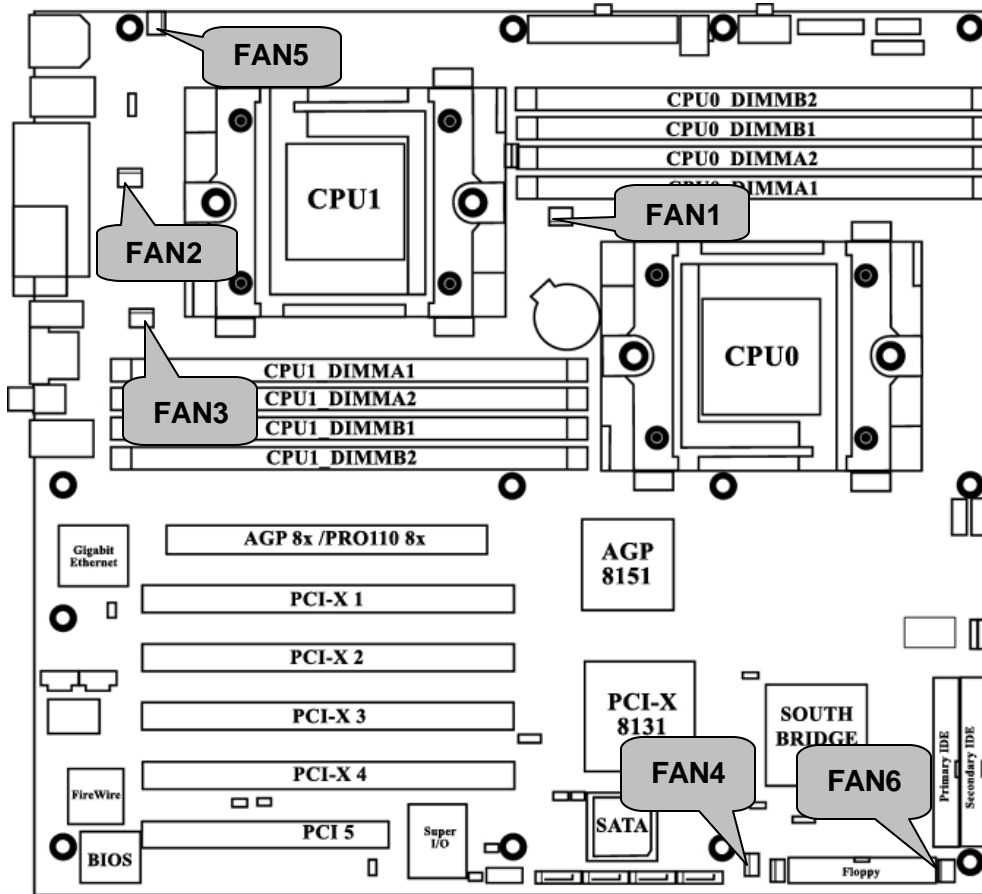
J92 PCI-X Slots 3 & 4 Bus Speed Override

- Open** – (Default) Allows PCI 3 & 4 to operate at up to 100MHz
 - Closed** – Force PCI slots 3 & 4 to operate in at a maximum 66MHz
- Note: This jumper affects integrated Ethernet on the same bus

J112 SATA (Serial ATA) Controller Disable

- Open** – (Default) Enable onboard SATA Controller
- Closed** – Disable onboard SATA Controller

2.03 – CPU and Chassis Fan Connectors



CPU and System Fan Specifications	
	All CPU & System fan headers use the same pinout listed on the right. All fans support speed control & monitoring.
FAN1	Max 1.2 Amp CPU fan Tachometer from ADT7463 pin 9 PWM from ADT7463 pin 13
FAN2	Max 1.2 Amp CPU fan Tachometer from ADT7463 pin 14 PWM from ADT7463 pin 13
FAN3	Max 3.0 Amp fan Tachometer from ADT7463 pin 12 PWM from ADT7463 pin 10

FAN4	Max 2.0 Amp fan
	Tachometer from ADT7463 pin 11 PWM from ADT7463 pin 24
FAN5	Max 2.0 Amp fan
	Tachometer from Winbond W83627HF pin 113 PWM from Winbond W83627HF pin 116
FAN6	Max 3.0 Amp fan
	Tachometer from Winbond W83627HF pin 112 PWM from Winbond W83627HF pin 115

ADT7463 uses I²C Slave Address 0x2E

2.04 – OEM Reserved Connectors and Jumpers

DO NOT MODIFY THESE JUMPERS

The pin definition of these headers are not available

J7	RSVD
J8	RSVD
J89	GPIO
J90	GPIO
J117	RSVD
J118	OEM PS/2 KB-MOUSE (Default pins 2 -3)
USB D	RSVD
LCD	RSVD

2.05 – Installing the Processor(s)

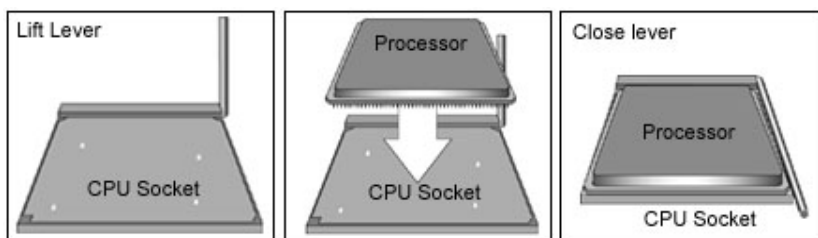
The Thunder K&W supports the latest 64-bit processor technologies from AMD. Only AMD Opteron™ processor 200 series are certified and supported with this motherboard.

Check **our** website for latest processor support. <http://www.tyan.com>

NOT

If using a single processor, it **MUST** be installed in socket CPU0. When using a single processor only CPU0 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 processor 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.

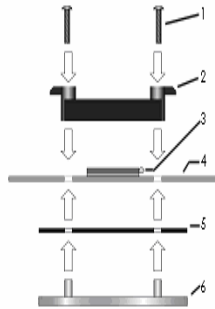
Heatsink Retention Frame Installation

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 back-plate assembly prevents excessive motherboard flexing in the area near the processor and provides a retention bracket for the heatsink.

Because there are many different types of heatsinks available from many different manufacturers, many have their own method of installation. For the safest method of installation and information on choosing the appropriate heatsink, consult the recommended list at www.amd.com.

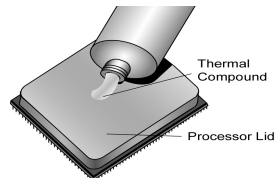
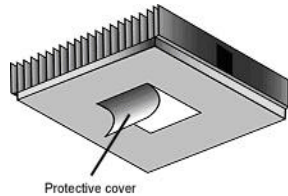
The following diagram will illustrate how to install back-plate and retention frame:



- (1) Mounting screws
- (2) Retention frame
- (3) CPU socket
- (4) Motherboard PCB
- (5) Adhesive insulator material
- (6) Back-plate assembly

NOTE: Please see next section for specific instructions on how to install mounting bracket.

Thermal Interface Material



There are two types of thermal interface materials designed for use with the AMD Opteron processor.

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

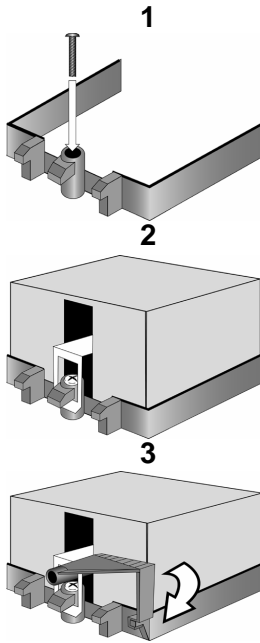
The second type of interface material is usually packaged separately. It is commonly referred to as 'thermal compound' or 'thermal grease'. Apply a thin, even layer on to the CPU lid (applying too much will reduce the effectiveness).

NOTE

Always 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

Heatsink Installation Procedures

Type A: CAM LEVER (TYPE) INSTALLATION

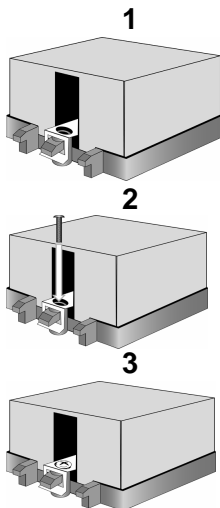


1. Once you have completed installing the back-plate and interface material; align the retention bracket screw hole with CPU back-plate standoffs. Tighten screws to secure retention bracket. Repeat for on other side.
DO NOT OVERTIGHTEN.

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. Align the heatsink retention frame screw hole with back-plate assembly standoffs. Place heatsink inside retention bracket. Place metal clip over retention frame tab.

2. Insert screw through metal clip. Check that the heatsink's metal clip is and the tab on the retention frame are as illustrated.

3. Tighten screw through metal clip. Repeat on other side.
DO NOT OVER TIGHTEN.

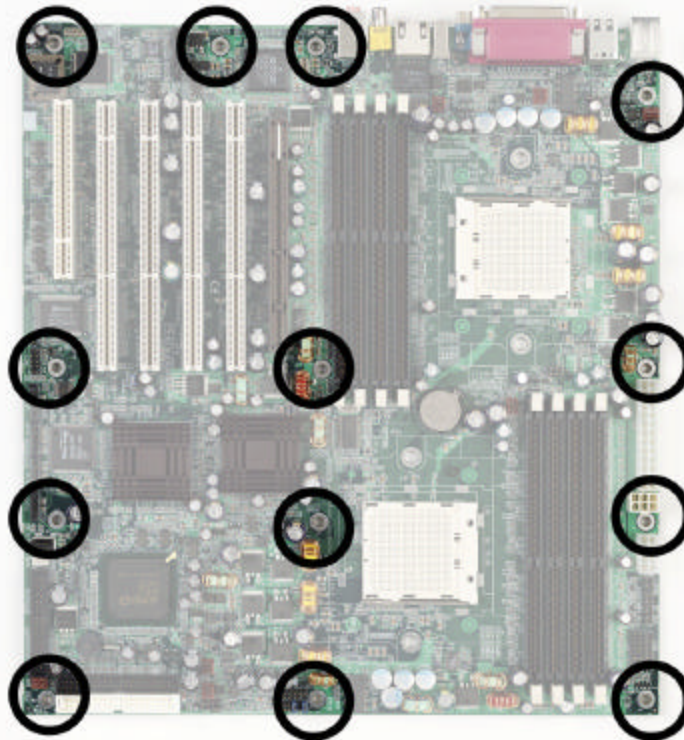
Finishing Installing the Heatsink

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.



2.06 – Installing Motherboard in Chassis

Before installing your motherboard, make sure your chassis is designed to support SSI or Extended ATX motherboards. The S2885 has 13 mounting holes to secure it in the chassis. These mounting holes are highlighted in the image below.



NOTE

Be sure to use all of the mounting holes available
Do not overtighten the screws as this can damage the motherboard

2.07 – 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:



Here are a few key points to note before installing memory into your ThunderK 8W

- **Always install memory beginning with CPU0/DIMMA1**
- **In order to access memory on CPU2; both processors must be installed**
- **Configure memory symmetrically for each CPU for best performance**
- **AMD Opteron™ processors support 64bit (non-interleaved) or 128bit (interleaved) memory configurations (See chart on next page)**
- **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 K8W supports up to 16GB with two CPU's installed**

*2GB Registered PC2700 modules not available at time of print

This chart outlines the rules for populating memory

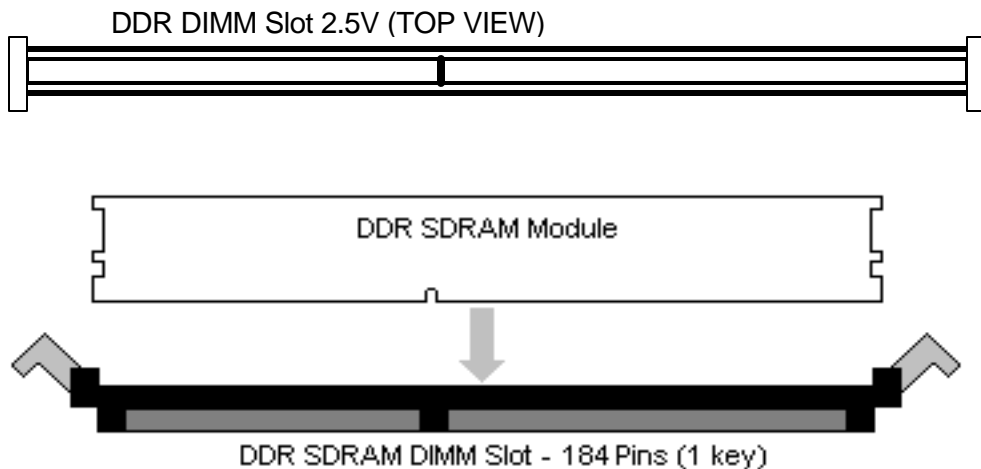
(Note: X indicates a populated DIMM Slot)

DIMM Slot	64-Bit Support (non-interleaved)							128Bit support (Interleaved)						
CPU0/DIMM A1 (Lower 64-bit)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CPU0/DIMM A2 (Upper 64-bit)								X	X	X	X	X	X	X
CPU0/DIMMB1 (Lower 64-bit)		X		X	X		X	X		X		X	X	
CPU0/DIMM B2 (Upper 64-bit)								X		X		X	X	
CPU1/DIMM A1 (Lower 64-bit)			X	X	X	X	X			X	X	X	X	X
CPU1/DIMM A2 (Upper 64-bit)										X	X	X	X	X
CPU1/DIMMB1 (Lower 64-bit)					X	X	X					X	X	X
CPU1/DIMMB2 (Upper 64-bit)												X	X	X

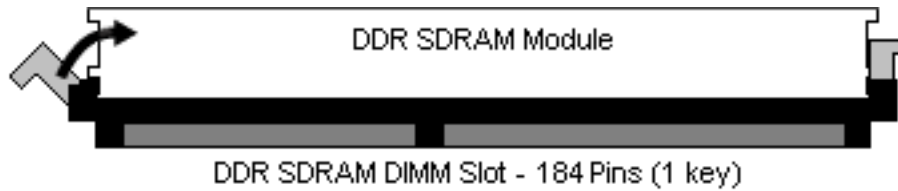
Populate both lower and upper 64-bit DIMM slots for 128-bit support

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.



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.



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.

2.08 – 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.**

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 ATA-133 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.

Notes:

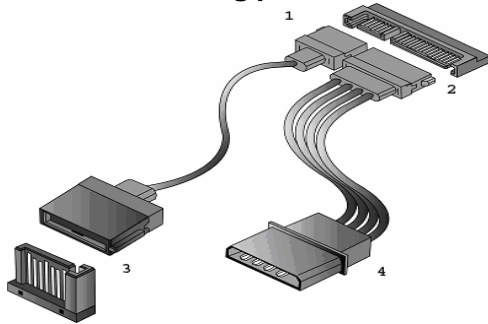
- Always remember to properly set the drive jumpers.
- If only using one device on a channel, it should be set as Master.
- The maximum supported length of an IDE cable is 18”.

The Thunder K8W is also equipped with four Serial ATA (SATA) channels.

There are no 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



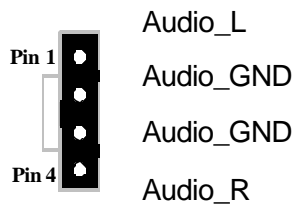
- 1.SATA drive cable connection
- 2.SATA drive power connection
- 3.SATA cable motherboard connector
- 4.SATA drive power adapter

Floppy Drives

Attaching floppy diskette drives are done in a similar manner to hard drives. In most cases, there will be a key pin on the cable which will force a proper connection of the cable. Attach floppy drive (drive **A:**) to the end of the cable with the twist in it.

2.09 – Connecting AUX/CD Sound Cables & Speakers

There are two connectors available for CD audio AUX audio. Both connectors are 4-pin. See the illustration below for pinouts



Rear Audio Connectors

Digital SPDIF COAX

 Digital interface Supports 5.1 Digital Surround Sound

Analog Connectors

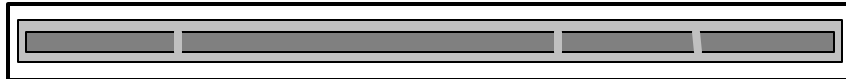
-  Line in
-  Speaker out
-  Microphone In

2.10 – Installing Add-In Cards

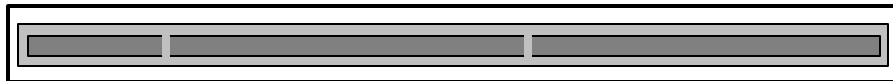
Before installing add-in cards, you should ensure that they are fully compatible with your motherboard. If in doubt, check the specifications with the manufacturer.

In order to illustrate the most common slots and what they support; we have provided the illustrations below.

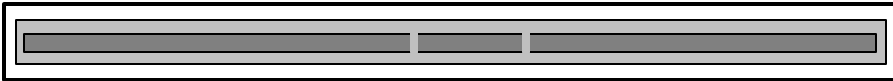
AGP 8x/PRO 110W (3.0 spec.)*



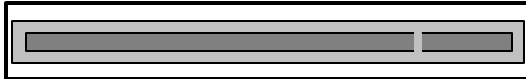
64-bit 3.3v PCI/PCI-X support from 33 to 133MHz



64-bit 5V PCI support from 33 to 66MHz



32-bit 5v Universal PCI supports 33MHz



Simply find the appropriate slot for your add-in card and insert the card firmly. Never force any add-in cards into any slots if they do not seat in place. Doing so will damage the motherboard and void your warranty.

* The AGP slot supports AGPPRO & 1.5v(4x/8x) AGP cards only

PCI Interrupt Routing Table

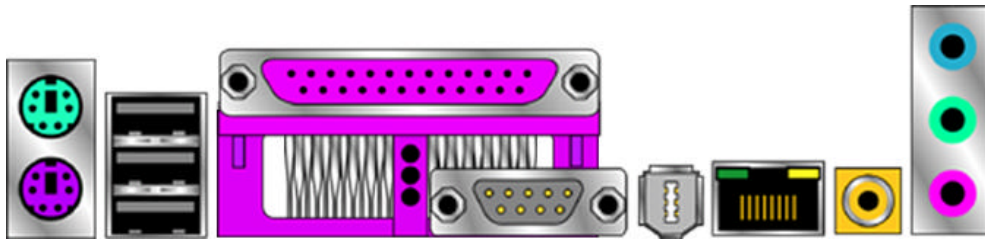
Slot or Device	IDSEL#	Bus#	INTA	INTB	INTC	INTD
AGP SLOT	N/A	N/A	INTA	INTB		
PCI Slot #1 (64bit)	AD19	PCIX-B	INTA	INTB	INTC	INTD
PCI Slot #2 (64bit)	AD22	PCIX-B	INTB	INTC	INTD	INTA
PCI Slot #3 (64bit)	AD23	PCIX-A	INTC	INTD	INTA	INTB
PCI Slot #4 (64bit)	AD24	PCIX-A	INTD	INTA	INTB	INTC
PCI Slot #5 (32bit)	AD26	PCI Bus0	INTA	INTB	INTC	INTD
Onboard SATA	AD27	PCI Bus0	INTB			
Onboard GB LAN	AD25	PCIX-A	INTA			
Onboard FireWire	AD28	PCI Bus0	INTD			

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.

2.11 – Connecting External Devices

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



2.12 – Installing the Power Supply

There are three power connectors on your Thunder K8W.

The Thunder K8W **requires** an EPS12V (24-pin + 8pin) power supply to boot.

You also have an option of using an SSI V3.0 spec. Workstation power supply. This is only necessary when an AGP PRO110W card is used. (For more information see www.ssiforum.org)

WARNING

NEVER plug the 8-pin power connector into the 6-pin motherboard connector. Doing so will damage the motherboard and/or other components

Please be aware that ATX 2.x and ATXGES power supplies are **not compatible** with the board and can damage the motherboard and/or CPU(s).

SSI Main Power 24-pin (Chipset & Components)				
+3.3V	12		24	GND
+12V2	11		23	+5V
+12V2	10		22	+5V
+5VSB	9		21	+5V
PWR OK	8		20	RESVD
GND	7		19	GND
+5V	6		18	GND
GND	5		17	GND
+5V	4		16	PSON#
GND	3		15	GND
+3.3V	2		14	-12v
+3.3V	1		13	+3.3V

EPS12V 8-pin (CPU Power)				
GND	4		8	+12V3
GND	3		7	+12V3
GND	2		6	+12V3
GND	1		5	+12V3

SSI Workstation 6-pin (AGP PRO)				
+12V2	3		6	+12V2
3.3VDC	2		5	GND
3.3VDC	1		5	GND

Disconnect power supply from electrical outlet

1. Connect the EPS12V 8-pin power connector
2. Connect the SSI Workstation 6-pin power connector (if needed).
3. Connect the EPS12V 24-pin power connector
4. Connect power cable to power supply to power outlet

Make sure you have connected both connectors before attempting to apply power to the board.

2.13 – 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:

- Turn on or reboot your system
- Press during POST (F4 on remote console) to start BIOS setup utility

BIOS Setup Utility						
Main	Advanced	PCI/PnP	Boot	Security	Chipset	Power
System Overview				Exit		
AMIBIOS				Use [ENTER], [TAB] or [SHIFT_TAB] to select a field		
Version : 08.00.xx						
Build Date : 08/01/2003						
ID : 0ABCF006						
Processor				Use [+] or [-] to configure system time.		
Type : AMD Opteron Model xxx						
Speed : xxxx MHz						
Count : x						
System Memory				+/- Change Field		
Size : xxxx MB				Tab Select Field		
				F1 Help		
				F10 Save and		
				Exit		
				ESC Exit		
System Time		[12:59:59]				
System Date		[08/01/2003]				

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>.

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

BIOS Legend Bar

The chart describes the legend keys and their alternates:

Key	Function
<F1> or <Alt-H>	General help window
<ESC>	Exit current menu
← → arrow keys	Select a different menu
↑ or ↓ arrow keys	Move cursor up/down
<Tab> or <Shift-Tab>	Cycle cursor up/down
<Home> or <End>	Move cursor to top/bottom of the window
<PgUp> or <PgDn>	Move cursor to next/previous page
<F5> or <->	Select the previous value/setting of the field
<F6> or <+> or <Space>	Select the next value/setting of the field
<F8>	Load Fail Safe default configuration values of the menu
<F9>	Load the Optimal default configuration values of the menu
<F10>	Save and exit
<Enter>	Execute command or select submenu

3.01 – 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 Build Date : 4/01/2003 ID : 0ABCF006 Processor Type : AMD Opteron(tm) Model xxxx Speed : xxxx MHz Count : x System Memory Size : xxxx MB System Time [12:59:59] System Date [04/01/2003]	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit

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

3.02 – 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	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
<ul style="list-style-type: none"> ▶ IDE Configuration ▶ Floppy Configuration ▶ Super I/O Configuration ▶ Hardware Health Configuration ▶ Event Log Control ▶ Device & PCI Slots Configuration ▶ Remote Access Configuration ▶ USB Configuration 	

Feature		Description
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
Event Log Control	Menu Item	Views & controls Event Log
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

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		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Onboard PCI IDE Controller	[Both]	Use [+] or [-] to configure system time.
▶ Primary IDE Master	[xxxx]	
▶ Primary IDE Slave	[xxxx]	
▶ Secondary IDE Master	[xxxx]	
▶ Secondary IDE Slave	[xxxx]	
Hard Disk Write Protect	[Disable]	+/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
IDE Detect Time Out (Sec)	[xx]	
ATA(PI) 80Pin Cable Detection	[Host & Device]	

Feature	Option	Description
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
ATA(PI) 80Pin Cable Detection	Host	Configures how the BIOS detects an 80pin IDE cable is attached. Host = Use chipset to detect Device = Use IDE Device to detect
	Device	
	Host & Device	

Floppy Configuration Sub-Menu

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

BIOS Setup Utility		
Main	Advanced	PCI/PnP Boot Security Chipset Power Exit
Floppy Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Onboard Floppy Controller	[Enabled]	Use [+] or [-] to configure system time.
Floppy A	[1.44 MB]	+/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
Floppy B	[1.44 MB]	

Feature	Option	Description
Onboard Floppy Controller	Enabled	Enables or Disables the Onboard Floppy Controller
	Disabled	
Floppy A Floppy B	Disabled	This setting selects the type of the floppy disk drive installed in system.
	1.3 MB	
	720 KB	
	1.44/1.25 MB	
	2.88 MB	

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		
Super I/O Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Serial Port_1 Address	[3F8/IRQ4]	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
Serial Port_2 Address	[3E8/IRQ3]	
Parallel Port Address	[378]	
Parallel Port Mode	[Normal]	
Parallel Port IRQ	[IRQ7]	

Feature	Option	Description
Serial Port1 Address	3F8/IRQ4	Sets the serial port 1 (COM1) base I/O address and an interrupt number Disabled –turn off port 2F8/IRQ3
	2F8/IRQ3	
	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	
	3F8/IRQ4	
	Disabled	
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
	Normal	
	EPP	

	ECP Disabled	EPP= Enhanced Parallel Port ECP=Extended Capability port
Parallel Port Interrupt	7 5	Assigns IRQ to parallel port
Parallel Port DMA Channel	0~3	Assigns DMA channel for port
EPP version	1.9 1.7	Assigns EPP version used by parallel port

Hardware Health Configuration Sub-Menu

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

BIOS Setup Utility		
Main	Advanced	PCI/PnP Boot Security Chipset Power
Exit		
Hardware Health Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
CPU1 Temperature	xx C/ xx F	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
CPU2 Temperature	xx C/ xx F	
System Temperature	xx C/ xx F	
CPU1 Fan Speed	xx RPM	
CPU2 Fan Speed	xx RPM	
Fan1 Speed	xx RPM	
Fan2 Speed	xx RPM	
Fan3 Speed	xx RPM	
Fan4 Speed	xx RPM	
CPU1 V_core	xx V	
CPU2 V_core	xx V	
CPU1 Vdimm	xx V	
CPU2 Vdimm	xx V	
+5V	xx V	
+3.3Vin	xx V	
+12Vin	xx V	

Feature	Option	Description
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		
CPU1 V_core		Displays Voltage for CPU, memory, & other devices
CPU2 V_core		
CPU1 DIMM Voltage		
CPU2 DIMM Voltage		
+5V		
+3.3Vin		
3.3VSB		
+12V		

Event Log Control 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 Log Control	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
View Event Log Mark All Event Log as Read Event Log Statistics	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit

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

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		
Remote Access Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Remote Access	[Serial]	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
Terminal Type	[ANSI]	
Serial Port Number	[COM1]	
Serial Port Mode	[115200 8,n,1]	
Flow Control	[Hardware]	
Post-Boot Support	[Disabled]	

Feature	Option	Description
Remote Access	Disabled	Enables remote access to system through serial port
	Serial	
Terminal Type	ANSI	Sets the type of terminal used for remote access
	VT100	
Serial Port Number	COM1	Determines which serial port will be used for remote access
	COM2	
Serial Port Mode	115200 8n1	Sets the speed of data to terminal
	57600 8n1	
	19200 8n1	
	9600 8n1	
Flow Control	Hardware	Enables hardware flow control to protect buffer overflow
	None	
Post-Boot Support	Disabled	Keeps redirection active after booting to DOS
	Enabled	

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 Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
USB Function	[Enabled]	
Legacy USB Support	[Auto]	
USB ZIP Emulation Type	[Auto]	
USB Beep Message	[Disabled]	

Feature	Option	Description
USB Function	Enabled	Enables or Disables the USB 1.1 controller in the AMD8111
	Disabled	
Legacy USB Support	Auto	Enables support for legacy USB devices such as keyboards, mice, & bootable USB devices
	Disabled	
	Enabled	
USB ZIP Emulation Type	Auto	Sets the type of device USB ZIP drive will emulate
	Floppy	
	Hard Disk	
USB Beep Message	Disabled	Enables beep during USB Device Enumeration
	Enabled	

Onboard Device 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		
Device & PCI Slots Configuration		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Onboard Serial ATA	Enabled	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
Onboard Gigabit LAN	Enabled	
PCI1 Slot (64bit)	Enabled	
PCI2 Slot (64bit)	Enabled	
PCI3 Slot (64bit)	Enabled	
PCI4 Slot (64bit)	Enabled	
PCI5 Slot (32bit)	Enabled	
Onboard Gigabit LAN PXE	Enabled	
Onboard Serial ATA Option ROM	Enabled	

Feature	Option	Description
Onboard Serial ATA, & Gigabit Ethernet	Enabled	Allows user to enable or disable onboard ATI video, Serial ATA controller, LSI SCSI controller, and Onboard Gigabit LAN individually
	Disabled	
PCI1 Slot (64bit)	Enabled	Allows user to enable or disable device in PCI slot 1
	Disabled	
PCI2 Slot (64bit)	Enabled	Allows user to enable or disable device in PCI slot 2
	Disabled	
PCI3 Slot (64bit)	Enabled	Allows user to enable or disable device in PCI slot 3
	Disabled	
PCI4 Slot (64bit)	Enabled	Allows user to enable or disable device in PCI slot 4
	Disabled	
PCI5 Slot (32bit)	Enabled	Allows user to enable or disable device in PCI slot 5
	Disabled	
Onboard Gigabit LAN PXE	Enabled	Allows user to enable or disable onboard Ethernet controller PXE support
	Disabled	
Onboard Serial ATA Option ROM	Enabled	Allows user to enable or disable onboard Serial ATA controller option ROM (BIOS)
	Disabled	

3.03 – BIOS PCI/PnP Menu

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

BIOS Setup Utility		
Main	Advanced	PCI/PnP
	Boot	Security
	Chipset	Power
		Exit
PCI/PnP Setting		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Plug & Play OS	[No]	Use [+] or [-] to configure system time.
PCI Latency Timer	[64]	
Allocate IRQ to PCI VGA	[Yes]	+/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
Palette Snooping	[Disabled]	
PCI IDE BusMaster	[Disabled]	
Offboard PCI/ISA IDE Card	[Auto]	
IRQ3	[Available]	
IRQ4	[Available]	
IRQ5	[Available]	
IRQ7	[Available]	
IRQ9	[Available]	
IRQ10	[Available]	
IRQ11	[Available]	
IRQ14	[Available]	
IRQ15	[Available]	
DMA Channel_0	[Available]	
DMA Channel_1	[Available]	
DMA Channel_3	[Available]	
DMA Channel_5	[Available]	
DMA Channel_6	[Available]	
DMA Channel_7	[Available]	
Reserved Memory Size	[Disabled]	

Feature	Option	Description
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

	No	Play aware operating systems. 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	96	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.
	128	
	160	
	192	
	224	
	248	
Allocate IRQ to PCI VGA	Yes	Allows or restricts the system from giving the VGA adapter an IRQ.
	No	
Palette Snooping	Disabled	This is the default setting and should not be changed unless the VGA card manufacturer requires Palette Snooping to be Enabled.
	Enabled	
IRQ3 ~ IRQ15	Available	Allows user to reserve a specific IRQ for a legacy device (Note: most hardware devices & OS used do not support manual assigned)
	Reserved	
DMA0 ~ 7	Available	Allows user to reserve a specific DMA for a legacy device
	Reserved	
Reserved Memory Size	Disabled	Allows user to reserve a specific size in memory for a legacy device
	16K ~64K	
Reserved Memory Address	Disabled	Allows user to reserve a specific address in memory for a legacy device
	C0000 ~ DC000	

3.04 – BIOS Boot Menu

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

BIOS Setup Utility	
Main	Advanced PCI/PnP Boot Security Chipset Power
Exit	
Boot Setting	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
<ul style="list-style-type: none"> ▶ Boot Settings Configuration ▶ Boot Device Priority ▶ Removable Drives 	Use [+] or [-] to configure system time.
	+/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit

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	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Quick Boot [Disabled]	Use [+] or [-] to configure system time.
Quiet Boot [Disabled]	
Quick Boot [Enabled]	+/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
Add On ROM Display Mode [Force BIOS]	
Boot up Number-Lock [On]	
PS/2 Mouse Support [Enabled]	
Typematic Rate [Fast]	
System Keyboard [Present]	
Parity Check [Disabled]	
Boot To OS/2 [No]	
Wait for "F1" If Error [Enabled]	
Hit "Del" Message Display [Enabled]	
Interrupt 19 Capture [Disabled]	

Feature	Option	Description
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	
Quick Boot 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	
System Keyboard	Present	Allows user to disable all system keyboards
	Not-Present	
Parity Check	Disabled	Enables system parity check
	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	

3.05 – 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 Setting	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Supervisor Password: User Password:	Use [+] or [-] to configure system time.
Change Supervisor Password Change User Password Clear User Password	
Boot Sector Virus Protection	[Disabled]
	+/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit

Feature	Option	Description
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		Protects the first sector of the Hard Drive from being written
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3.06 – BIOS Chipset Setting 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
<p>Chipset Setting</p> <ul style="list-style-type: none"> ▶ North Bridge Configuration ▶ South Bridge Configuration ▶ AGP Configuration ▶ PCI-X Configuration 	<p>Use [ENTER], [TAB] or [SHIFT_TAB] to select a field</p> <p>Use [+] or [-] to configure system time.</p> <p>+/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit</p>

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	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
<ul style="list-style-type: none"> ▶ Memory Configuration ▶ ECC Configuration ▶ IOMMU Configuration ▶ PCI-X Configuration 	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit

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	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Bank Interleaving [Disabled] Node Interleaving [Disabled] Burst Length [Disabled]	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit

Feature	Option	Description
Bank Interleaving	Disabled Enabled	Allows memory access to be spread across memory banks
Node Interleaving	Disabled Enabled	Allows memory access to be spread across memory nodes
Burst Length	8beats 4beats	Burst length must be set to 8beats for 128bit memory support

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	[Enabled]
DRAM ECC	[Disabled]
L2 Cache BG Scrub	[Disabled]
Data Cache BG Scrub	[Disabled]
	Use [+] or [-] to configure system time.
	+/- Change Field
	Tab Select Field
	F1 Help
	F10 Save and Exit
	ESC Exit

Feature	Option	Description
Master ECC	Enabled	Enables support on all nodes for ECC error checking and correction
	Disabled	
DRAM ECC	Disabled	Enables support on all banks for ECC error checking and correction
	Enabled	
L2 Cache BG Scrub	Disabled	Enables support for ECC when L2 cache is idle
	Enabled	
Data Cache BG Scrub	Disabled	Enables support for ECC when L1 cache is idle
	Enabled	

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]	
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]	
		+/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit

Feature	Option	Description
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	

AGP Chipset Configuration Sub-Menu

This menu allows the user to configure AGP transfer settings and the HyperTransport settings of the AMD-8151. These options have been configured for a balance of performance and stability. Changing these options 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	
AGP Chipset Configuration	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
AGP Transfer Rate	[1x 2x 4x 8x]
AGP Aperture	[128MB]
FW Enable	[Enable]
P Data Drive Strength	[Auto]
N Data Drive Strength	[Auto]
P Strobe Drive Strength	[Auto]
N Strobe Drive Strength	[Auto]
	Use [+] or [-] to configure system time.
	+/- Change Field
	Tab Select Field
	F1 Help
	F10 Save and Exit
	ESC Exit

Feature	Option	Description
AGP Transfer Rate	4x 8x	Change this option only if the AGP card you are using requires the change.
	4x	
AGP Aperture	128MB	Allows an range of system memory to be used by the AGP card
	32MB~2048MB	
FW Enable	Enabled	Allows user to disable AGP Fastwrite support.
	Disabled	
P Data Drive Strength	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	
P Strobe Drive Strength	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	
N Strobe Drive Strength	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	

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	
HT Link 0 P-Comp Mode	[Auto]
HT Link 0 N-Comp Mode	[Auto]
HT Link 0 RZ-Comp Mode	[Auto]
HT Link 1 P-Comp Mode	[Auto]
HT Link 1 N-Comp Mode	[Auto]
HT Link 1 RZ-Comp Mode	[Auto]
Use [ENTER], [TAB] or [SHIFT_TAB] to select a field Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit	

Feature	Option	Description
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.
	Data	
	CalComp +Data	

	CalComp -Data	Recommended setting is Auto.
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	

3.07 – Power Menu

Use this screen to select options for power management & 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
Power Setting		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
ACPI Aware O/S	[Yes]	Use [+] or [-] to configure system time.
▶ Advanced ACPI		
Restore on AC/Power	[Stay Off]	+/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
Power Management/APM	[Enabled]]	
▶ Global Timer Reload		
▶ Wakeup Events		
Power Button Mode	[On/Off]	
Suspend Power Saving Type	[S1]	
Restore AC Power Loss	[Last State]	
Manual Throttle Ratio	[50%]	
Suspend Time Out	[Disabled]	
Hard Disk Time Out (Minute)	[Disabled]	
Green PC Monitor Power State	[Suspend]	
Video Power Down Mode	[Suspend]	
Hard Disk Power Down Mode	[Suspend]	

Feature	Option	Description
ACPI Aware O/S	Yes	Yes allows the system to utilize ACPI (Advanced Configuration and Power Interface) specification
	No	
Restore on AC/Power	Stay off	Configures how the system board responds to a power failure
	Power On	
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	
Power Button Mode	On/Off	Specifies how the externally mounted power button on the front of the chassis is used
	Standby	
	Suspend	
Suspend Power Saving Type	S1	S1: In this state, the CPU is not executing instructions, RAM context is maintained, devices that reference power resources that are on, are actually on, and devices that can wake the system can cause the CPU to continue to execute from where it left off C3: Allows the CPU to be put in a low power state. In this state, incoming interrupts wake the CPU
	C3	
Suspend Time Out	Disabled	Specifies the length of time the system waits before it enters suspend mode
	0 ~ 60	
Hard Disk Time Out (Minute)	Disabled 0~15	Specifies the amount of time the hard disk drive can be inactive before the computer enters a power-conserving state specified in the Hard Disk Drive Power Down Mode
Green PC Monitor Power	Suspend	Specifies the power state that the Green PC-compliant video monitor enters when the BIOS places it in a power saving state after the specified period of display inactivity has expired
	Standby	
	Off	
Video Power down Mode	Suspend	Specifies the Power State that the video subsystem enters when the BIOS places it in a power saving state after the specified period of display inactivity has expired
	Standby	
	Off	
HDD Power down Mode	Suspend	Specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired
	Standby	
	Off	

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 field
ACPI 2.0 Support [Yes]	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
ACPI APIC Support [Enabled]	
BIOS → AML ACPI table [Enabled]	

Feature	Option	Description
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	
	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	

Global Timer Reload Sub-Menu

BIOS Setup Utility		
Main	Advanced	PCI/PnP
		Boot
		Security
		Chipset
		Power
		Exit
Global Timer Reload		Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Monitor IRQ 3	[Monitor]	Use [+] or [-] to configure system time. +/- Change Field Tab Select Field F1 Help F10 Save and Exit ESC Exit
Monitor IRQ 4	[Ignore]	
Monitor IRQ 5	[Ignore]	
Monitor IRQ 6	[Ignore]	
Monitor IRQ 7	[Monitor]	
Monitor IRQ 8	[Ignore]	
Monitor IRQ 9	[Ignore]	
Monitor IRQ 10	[Ignore]	
Monitor IRQ 11	[Ignore]	
Monitor IRQ 12	[Ignore]	
Monitor IRQ 13	[Ignore]	
Monitor IRQ 14	[Monitor]	
Monitor IRQ 15	[Ignore]	

Feature	Option	Description
Monitor IRQ 3 ~15	Ignore	When set to Monitor, this option allows BIOS to monitor devices assigned to these specific IRQ for a PME# Event. Defaults IRQ 3,7,15 are set to monitor all others are ignored.
	Monitor	

3.08 – 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 Setting	Use [ENTER], [TAB] or [SHIFT_TAB] to select a field
Save Changes and Exit Discard Changes and Exit Discard Charges	Use [+] or [-] to configure system time.
Load Optimal Defaults Load Failsafe Defaults	+/- Change Field Tab Select Field F1 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.
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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 loses 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 respond (peripherals tend to be slower than onboard system components).

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

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

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

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

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

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

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

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

RAID (Redundant Array of Independent Disks): a way for the same data to be stored in different places on many hard drives. By using this method, the data is

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

RAIDIOS: RAID I/O Steering (Intel)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Technical Support

If a problem arises with your system, you should 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'interference radio.)



Notice for Europe (CE Mark)

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

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

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