TYAN®

Tomcat n3400B /// S2925-E

Version 1.1

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Check the box contents!

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	1x Tomcat n3400B S2925G2NR-E motherboard	1x Tomcat n3400B S2925A2NRF-E motherboard
	1x 34-Pin floppy drive cable	1x 34-Pin floppy drive cable
	6 x SATA cable	6 x SATA cable
	1 x COM port cable	1 x COM port cable
	3 x SATA Drive Power Adapter	3 x SATA Drive Power Adapter
	1 x Ultra-DMA-100/66 IDE cable	1 x Ultra-DMA-100/66 IDE cable
	----	1 x IEEE1394a Cable
	1 x USB2.0 cable	1 x USB2.0 cable
	1 x Tomcat n3400B user's manual	1 x Tomcat n3400B user's manual
	1 x Tomcat n3400B Quick Reference guide	1 x Tomcat n3400B Quick Reference guide
	1 x driver CD	1 x driver CD
	1 x I/O shield	1 x I/O shield
	1 x SLI bridge	1 x SLI bridge
	1x Retention Module	1 x Retention Module

NOTE

Chapter 1: Introduction

1.1 - Congratulations

You have purchased one of the most powerful server solutions. The Tomcat n3400B (S2925-E) is a flexible AMD64 platform for multiple applications, based on NVIDIA nForce Pro3400 and SMSC SCH5017 chipsets.

Designed to support AMD® AM2 Socket processors and 8GB DDRII-533/667/800 memory, the S2925-E with integrated Dual Gigabit Ethernet LAN, built-in 16MB XGI XG20™ video and six serial ATA ports, is ideal for CPU, memory, and video intensive applications such as CAD, Graphics Design, and High Bandwidth Video Editing, etc.

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

1.2 - Hardware Specifications

Processor
- One (1) uPGA 940-pin AM2 socket
- Supports AMD® Opteron™ 1000 Dual-core/Quad-core processor
- Supports AMD® Dual Dynamic Power (Split power plane)

Expansion Slots
- One (1) x16 PCI-E connector for graphics
- One (1) x16 PCI-E with x8 bandwidth
- One (1) PCI-E connector
- Three (3) 32-bit, 33MHz PCI v2.3 slots
- Total six usable expansion slots

Chipset
- nVIDIA nForce Pro 3400
- SMSC SCH5017

System Management
- SMSC SCH5017 w/ hardware monitoring
- Six (6) 4-pin fan headers
- Temperature and voltage

Integrated LAN Controllers
- Two (2) nForce Pro 3400 integrated MAC with Marvell 88E1116-CAA Gigabit Ethernet PHY
- IEEE802.3 compliant, WOL/PXE support
- Pin header for front panel LAN LED

Integrated Audio (S2925A2NRF-E only)
- Realtek ALC262 audio CODEC
- HDA 1.0 specification compliant
- 2x5 pin header for front panel audio connector
- CD-in connector

Integrated PCI 1394 (S2925A2NRF-E only)
- Co-layout VIA VT6307 and VT6308 PCI FireWire (IEEE1394) controller
- Two (2) IEEE1394 ports (via cable)

Back Panel I/O Ports
- Stacked PS/2 mouse & keyboard ports

monitoring
- Watchdog timer
- Port 80 code display LED

Memory
- Dual memory channels
- Supports up to four DDRII-533/667/800 DIMMs
- Up to 8GB of unbuffered, ECC/non-ECC memory

Integrated PCI IDE
- One (1) ATA IDE slot for two IDE devices
- Supports four (4) ATA-133/100/66/33 IDE drives and ATAPI compliant devices

Integrated Serial ATA II
- Serial ATA Host controllers embedded
- Supports six (6) serial ports running at 3.0Gb/s
- Supports NV RAID 0, 1, 0+1, 5 and JBOD
- SATA activity LED connector

Integrated I/O Interface
- One (1) floppy connector
- Four (4) USB 2.0 ports (via cable)
- One (1) COM port (via cable)
- TYAN® 2x9 front panel pin header
- One (1) 2x25 pin SMDC pin header for SMDC
- One (1) ID LED pin header
- One (1) TYFP2 pin header

Integrated 2D PCI Graphics (S2925G2NR-E only)
- XGI XG20 PCI graphics controller
- 16MB Frame Buffer of video memory

- One (1) COM1 connector
- One (1) 15-pin VGA port
- Three (3) audio jacks (from bottom: green line-out, blue line-in, pink MIC)
- Stacked two (2) USB 2.0 ports and one (1) RJ45 (Marvell 88E1116-CAA PHy + nVIDIA MAC) 10/100/1000 Base-T port with link/activity LED
- Stacked two (2) USB 2.0 ports and one (1) RJ45 (Marvell 88E1116-CAA PHY + nVIDIA MAC) 10/100/1000 Base-T port with link/activity LED

Server Management
- Supports TYAN® SMDC M3291, IPMI20 Remote System Mgmt card
- Renesas H8S2167 BMC controller
- BT, KCS, Logging support
- IPMI-over-LAN
- Remote power on/off and reset

BIOS
- AMI BIOS 8Mbit Flash
- Supports ACPI 1.0
- PnP, DMI 2.0, WfM 2.0 power management

Power
- ATX 12V support, on board 4-phase VRD
- Universal 24-pin + 8-pin power connectors
- 4-pin auxiliary power connector

Form Factor
- ATX footprint, 9.6" x 12.0" (244mmx305mm)

Regulatory
- FCC Class B (Declaration of Conformity)
- CE (Declaration of Conformity)

Chapter 2: Board Installation

You are now ready to install your motherboard. The mounting hole pattern of the Tomcat n3400B S2925-E matches the ATX specification. Before continuing with installation, confirm that your chassis supports an ATX motherboard.

How to install our products right… the first time

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

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

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

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

2.1- Board Image
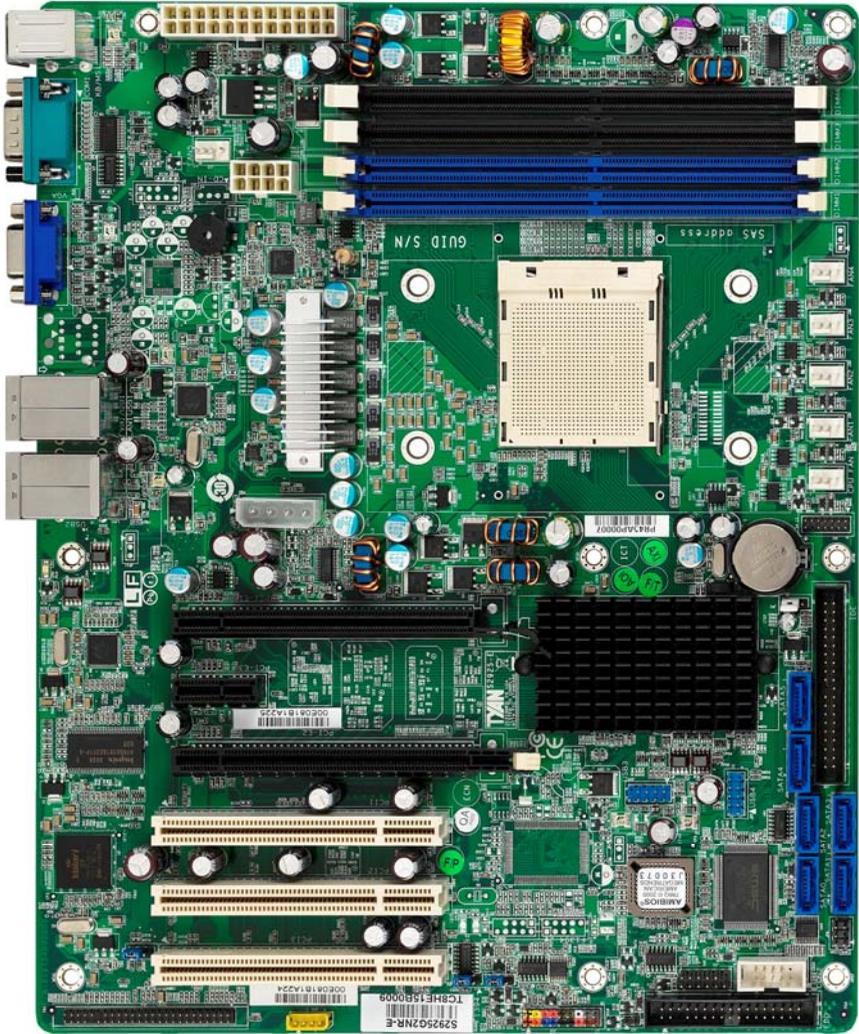
Tomcat n3400B S2925G2NR-E

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.

Tomcat n3400B S2925A2NRF-E

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.

2.2 - Block Diagram

Tomcat n3400B S2925-E Block Diagram

2.3 - Board Parts, Jumpers and Connectors

Jumper Legend

▢▪	**OPEN** - Jumper OFF, without jumper cover
▢▪	**CLOSED** – Jumper ON, with jumper cover

Jumper/Connector	Function
JP2/JP3	SMDC/ASF 1.0 Select Jumper
J19	Front Panel Header
J20/J21	Front Panel IEEE 1394 Header
J22	SATA LED Header
J15	IPMB Pin Header
J13	SMDC Connector
JP9	LCM Module Connector
JP1	VGA Enable/Disable Jumper
J28	COM2 Header
J24/J27	Front Panel USB2.0 Connector
J25	Front Panel LAN1/LAN2/ID LED Header
JP5	Clear CMOS Jumper
JP4	VT6308 (1394) Enable/Disable Jumper
J7	Front Audio Header
J11	External CD-in Header
J34/J35/J36/J37	Fan Connector with Tachometer
J33	CPU Fan Connector with Tachometer
J10	Fan Connector without Tachometer
J41	Fan Tachometer Header for Barebone
SATA 0/1/2/3/4/5	Serial ATA RAID Connectors
PW3	Aux. Power Header for PCI-E Slots

J11

J20   J21

J15   J22

J19
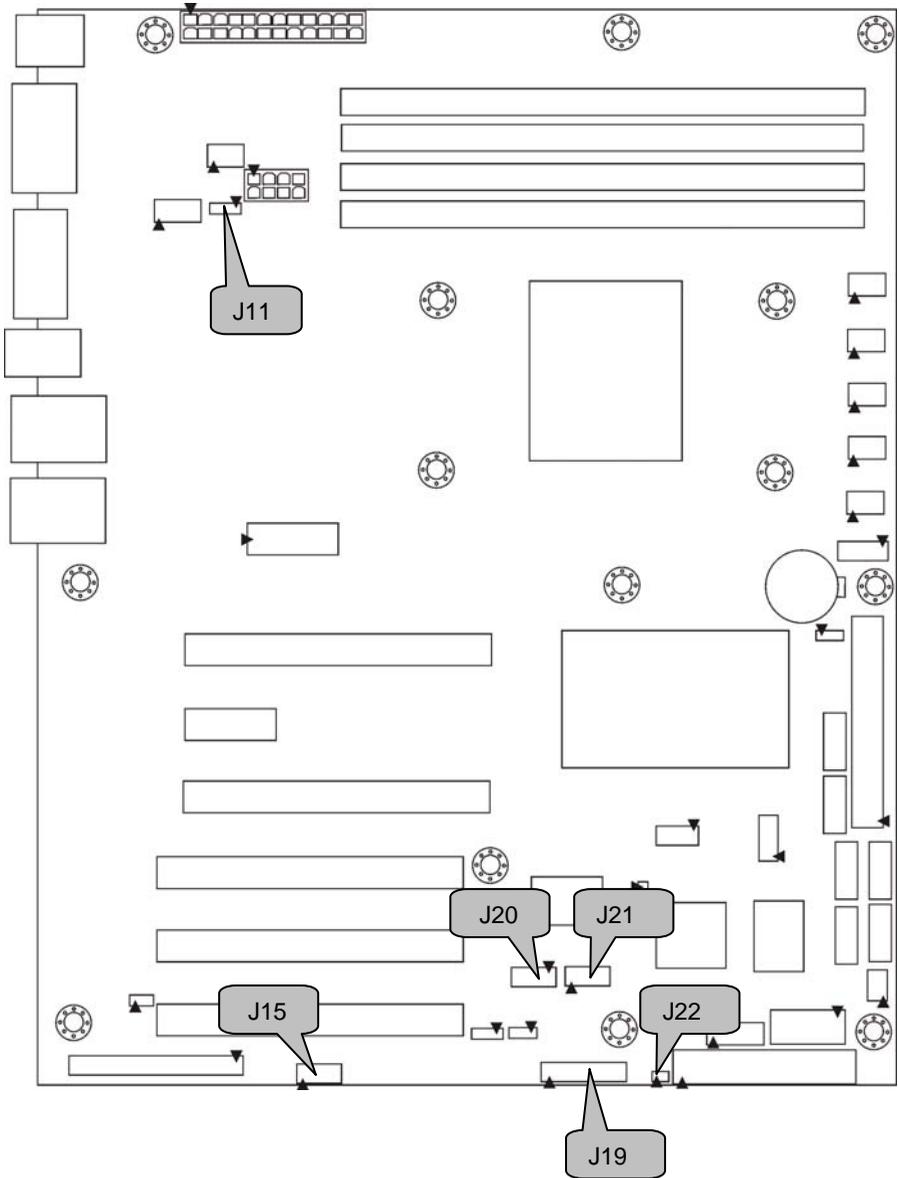
J19: Front Panel Header

The Front Panel Header is used to connect some control or signal wires from motherboard to chassis, such as HDD LED, power LED, power button, and reset button.

HDDLED+	1	2	PWR LED+
HDDLED-	3	4	PWR LED-
Reset Switch	5	6	Power Switch
Reset Switch	7	8	Power Switch
NMI_BTN	9	10	Warning LED+
NMI_BTN	11	12	Warning LED-
5Vsb	13	14	Key
SMBus Data	15	16	GND
SMBus Clock	17	18	INTRU#

J20/J21: Front Panel IEEE1394 Headers
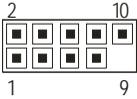
Signal	Pin	Pin	Signal
XTPA+	1	2	XTPA-
GND	3	4	GND
XTPB+	5	6	XTPB-
POWR	7	8	POWR
_	9	10	GND

Use these headers to connect to the external devices of IEEE 1394.   J20: 1394-1, J21: 1394-2

J15: IPMB Pin Header

Use this header to connect to the IPMB device.

Pin 1	Pin 2	Pin 3	Pin 4
IPMB DATA	GND	IPMB CLK	NC

J11: External CD-in Header

Use this header to connect to the external CD-in device.

Pin 1	Pin 2	Pin 3	Pin 4
CDIN_L	CD_GND	CD_GND	CDIN_R

J22: SATA LED Header

Pin 1	Pin 2
SATA_LED+	SATA_ACT-

JP1

JP2

JP3

J28

JP9

J13
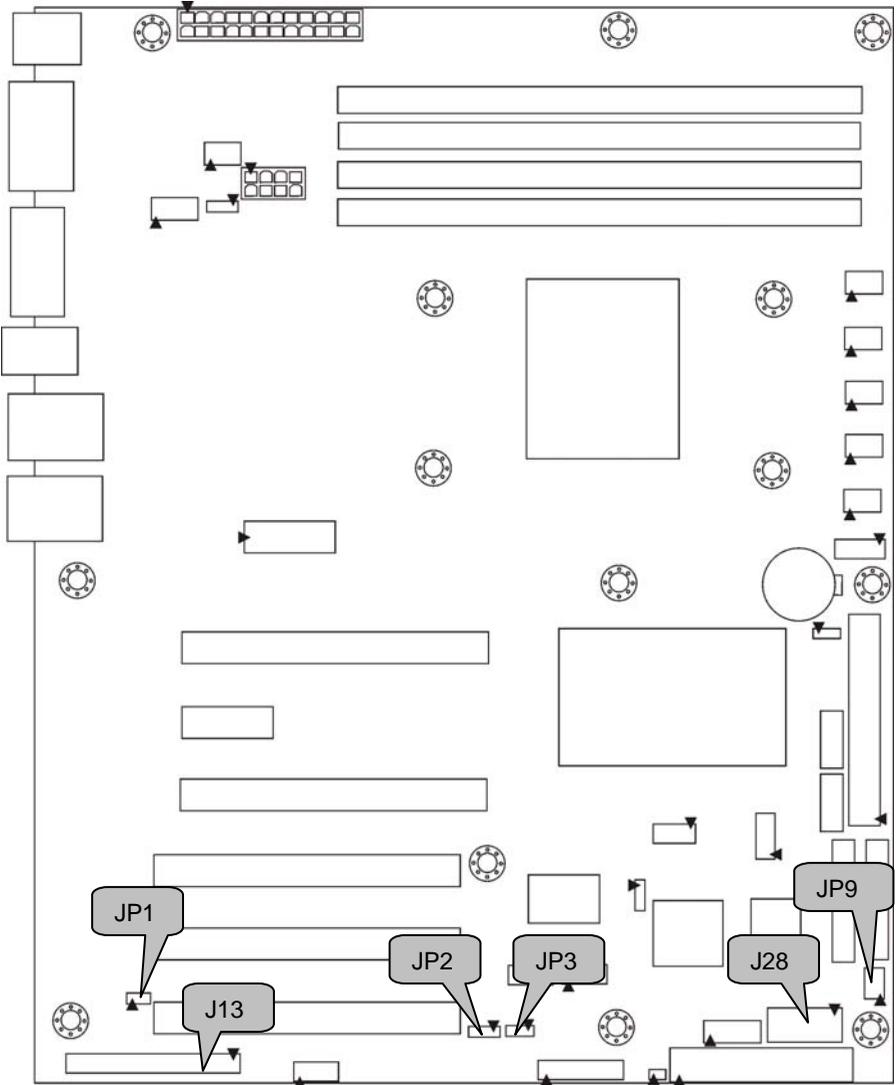
JP9: LCM Module Connector

Signal	Pin	Pin	Signal
VCC	**1**	**2**	RXD2
_	**3**	**4**	GND
5VSB	**5**	**6**	TXD2

Use this header to connect the LCM module with system monitoring function. This header is reserved for barebone use.

JP1: VGA Enable/Disable Jumper

1 3	Enable the onboard VGA function. **(Default)**
1 3	Disable the onboard VGA function.

J28: COM2 Header
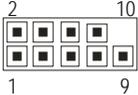
Use these pin definitions to connect a port to COM2. *MiTAC does not provide cable for this header. It is designed for barebone use only.

Signal	Pin	Pin	Signal
DCD	**1**	**2**	DSR
RXD	**3**	**4**	RTS
TXD	**5**	**6**	CTS
DTR	**7**	**8**	RI
GND	**9**	**10**	Key

JP2/JP3: SMDC/ASF1.0 Select Header

3 1 (**Default**) Support ASF1.0 (JP2 & JP3)	JP3
	3 1 Support SMDC Card (JP2 & JP3)

JP3

Pin 1	Pin 2	Pin 3
SMB_CLK	LAN_BMBCLK	ASFCLK

JP2

Pin 1	Pin 2	Pin 3
SMB_DATA	LAN_SMBDA	ASFDA

J13: SMDC Connector

The SMDC connector allows you to connect with TYAN® Server Management Daughter Card (SMDC). The S2925-E supports TYAN® SMDC M3291. See Appendix for more information on SMDC.
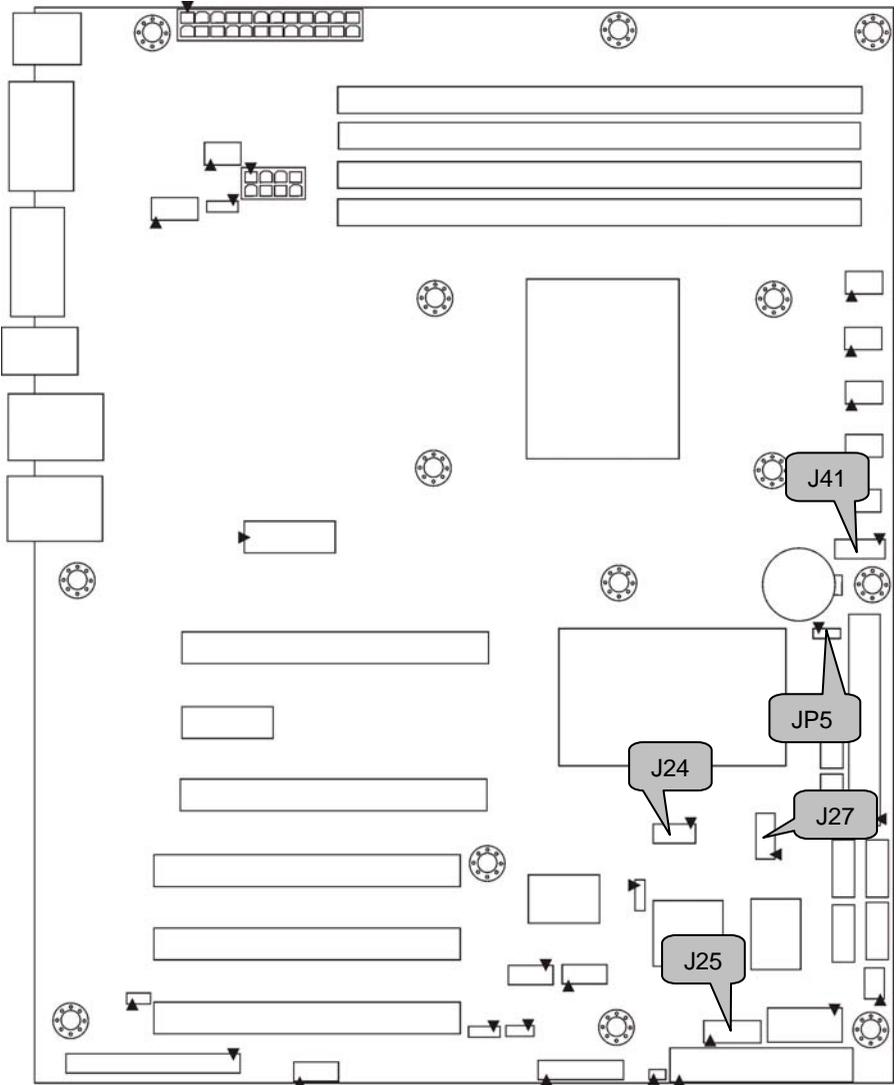
J24/J27: Front Panel USB2.0 Connectors
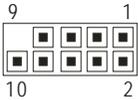
Signal	Pin	Pin	Signal
USB PWR	1	2	USB PWR
USB1-	3	4	USB2-
USB1+	5	6	USB2+
GND	7	8	GND
_	9	10	GND

Use these headers to connect to the USB devices via the enclosed USB cable. J24: USB3, J27: USB4

J25: Front Panel LAN1/LAN2 ID LED Headers
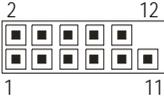
Signal	Pin	Pin	Signal
LAN1 LED+	1	2	LAN1 LED-
LAN2 LED+	3	4	LAN2 LED-
NC	5	6	NC
IDLED+	7	8	IDLED-
ID S/W+	9	10	ID S/W-
NC	11	12	_

Use these headers to connect the front panel dual color LEDs to indicate the speed of LAN1, LAN2 and ID LED.

JP5: Clear CMOS Jumper

Normal (Default)

Clear

Use this jumper when you forgot your system/setup password or need to clear system BIOS setting.

How to clear the CMOS data
- Power off system and **disconnect power supply from AC source**
- Use jumper cap to close Pin_2 and 3 for several seconds to Clear CMOS
- Replace jumper cap to close Pin_1 and 2 Reconnect power supply to AC source

Power on system

J41: FAN Tachometer Header for Barebone
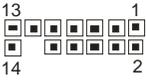
Signal	Pin	Pin	Signal
FAN TACH1	1	2	KEY
FAN TACH2	3	4	KEY
MCP55 FANTACH	5	6	KEY
FAN TACH3	7	8	KEY
FAN TACH4	8	10	KEY
GND	11	12	NC
GND	13	14	FAN_PWM1

J10

J7   J11

SATA5
SATA4

JP4

SATA2/SATA3
SATA0/SATA1
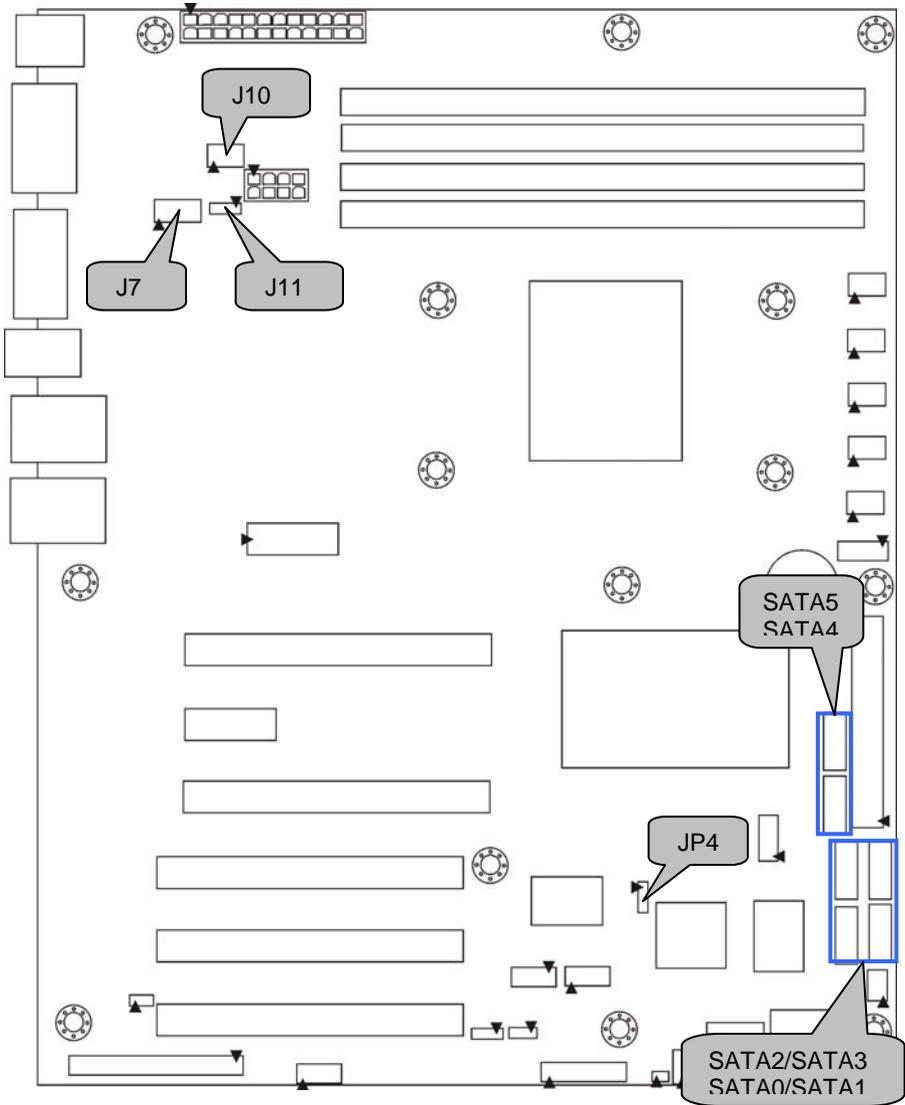
JP4: VT6308(1394) Enable/Disable Jumper

■ ■ ■ 3 1	Enable the integrated 1394a function of VT6308 PCI FireWire controller. **(Default)**
■ ■ ■ 3 1	Disable the integrated 1394a function of VT6308 PCI FireWire controller.

J7: Front Audio Header
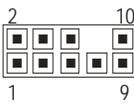
Signal	Pin	Pin	Signal
Mic_L	1	2	GND
Mic_R	3	4	Key
Line_R	5	6	GND
_	7	8	NC
Line_L	9	10	GND

Use this header to connect with the front panel audio outputs.

SATA 0/1/2/3/4/5: Serial ATA RAID Connectors

7	GND	Connects to the Serial ATA ready drives via the Serial ATA cable
6	RXP	
5	RXN	
4	GND	**You may use any two of the six Serial ATA ports to have the support of RAID 0, 1, 0+1, and 5 through the onboard nVIDIA chip.**
3	TXN	
2	TXP	
1	GND	

J33/J34/J35/J36/J37/J10: Fan Connector

J33/J34/J35/J36/J37
+12V Tachometer
GND | PWM
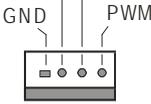
J10
+12V NC
GND | NC
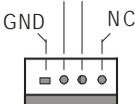
Use these headers to connect the chassis cooling fans to your motherboard to keep the system stable and reliable.

J34: FAN1, J35: FAN2, J36: FAN3, J37: FAN4
J33: CPU Fan

These connectors support the tachometer monitoring and auto fan speed control.

J10: FAN5
Note: J10 does not support auto fan control.

2.4 - Installing the Processor

Your brand new Tomcat n3400B S2925-E supports the latest 64-bit processor technology from AMD®. Only AMD® AM2 socket processors are certified and supported with this motherboard.
Check our website for latest processor support. **http://www.TYAN.com**

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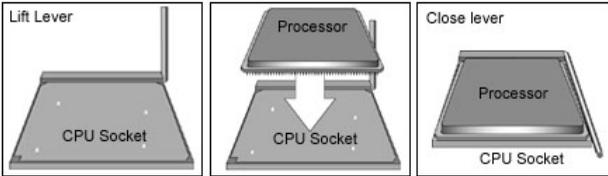
The diagram is provided as a visual guide to help you install the socket processor and may not be an exact representation of the processor you have.

Step 1: Lift the lever on the socket until it is approximately 90° or as far back as possible to the socket.
Step 2: Align the processor with the socket. There are keyed pins underneath the processor to ensure that the processor's installed correctly.
Step 3: Seat the processor firmly into the socket by gently pressing down until the processor sits flush with the socket.
Step 4: Place the socket lever back down until it locks into place. The installation is finished.

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

2.5 - Heatsink Retention Frame Installation

After you are done installing the processor, you should proceed to install the retention frame and heatsink. The CPU heatsink will ensure that the processor do not overheat and continue to operate at maximum performance for as long as you own them. The overheated processor is dangerous to 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 methods 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:

1. Mounting screws

2. Heatsink retention frame

3. CPU socket

4. Motherboard PCB

5. Adhesive insulator material

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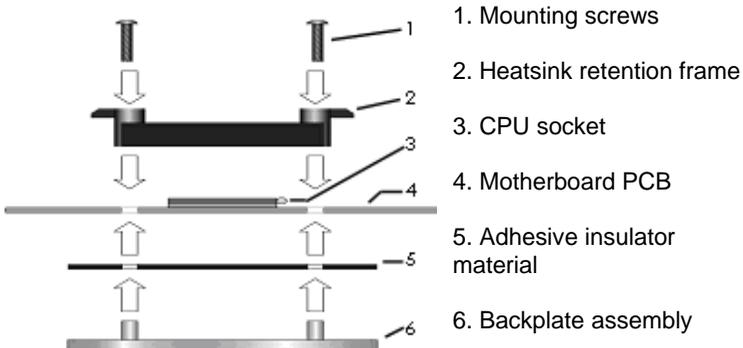
NOTE: Please see next section for specific instructions on how to install mounting bracket.

2.6 - Thermal Interface Material
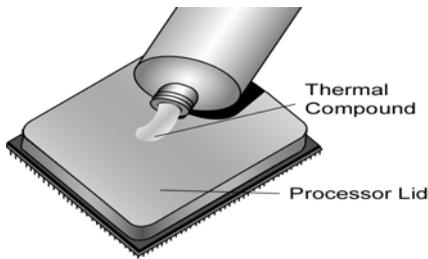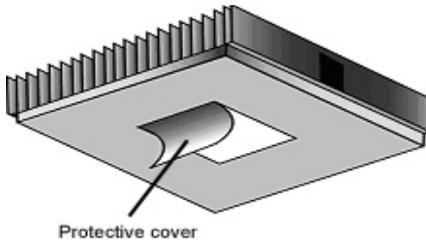
Protective cover

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

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	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

2.7 - Heatsink Installation Procedures
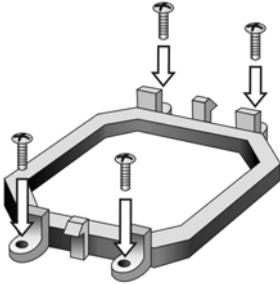
1. After placing backplate and interface material under motherboard place heatsink retention frame on top of motherboard. Align plastic retention bracket screw holes with CPU back-plate standoffs.
Tighten screws to secure plastic retention bracket. Repeat for the other side. **DO NOT OVER TIGHTEN.**
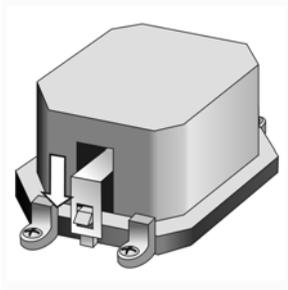
2. After tightening screws secure metal clip to plastic retention bracket center tab. Repeat for the other side of heatsink.
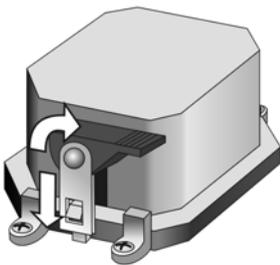
3. After securing metal clip to plastic retention bracket center tab, push down on plastic clip to lock plastic clip to side tab.

2.8 - 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.

CPU VRD Heat Dispersion Notice

INSTALL FAN INTO CHASSIS TO LET AIR FLOW IN!!!
-To ensure that the board runs efficiently and does not overheat, make sure there is air flow around the CPU VRD (as shown) to help disperse the heat generated around the CPU.

CPU VRD
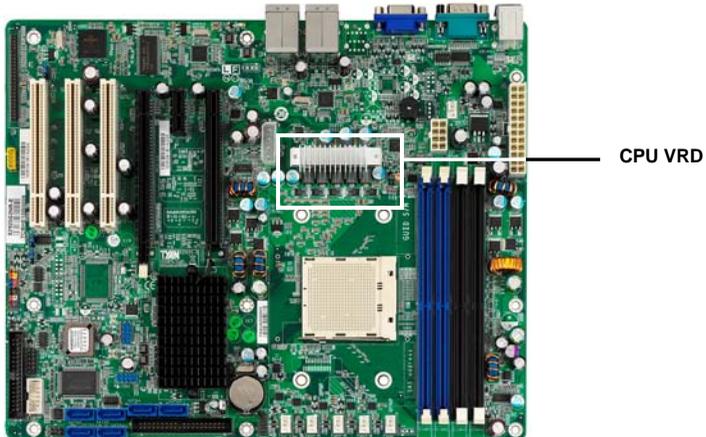
2.9 - Tips on Installing Motherboard in Chassis

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
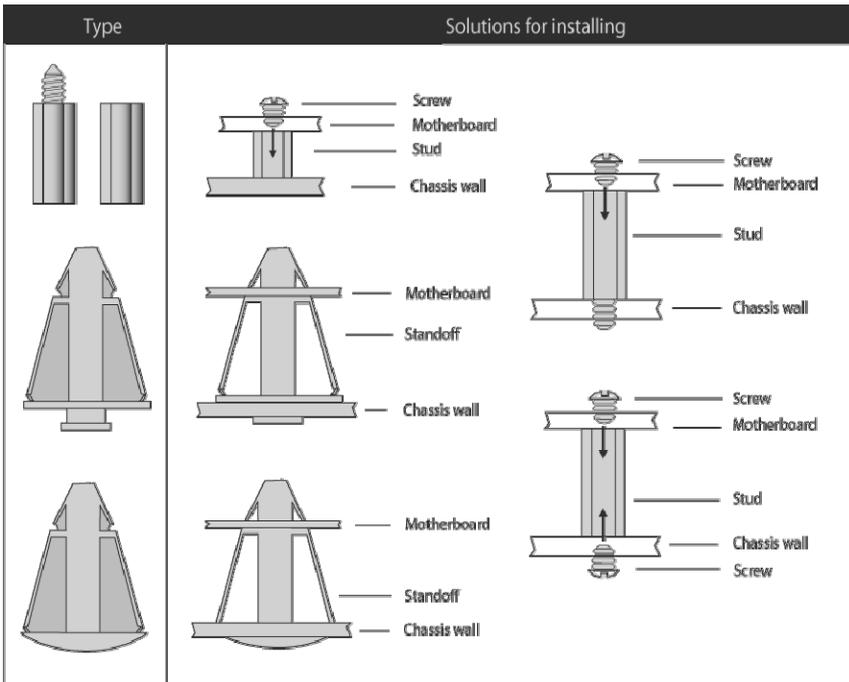
2.10 - Installing the Memory

Before installing memory, ensure that the memory you have is compatible with the motherboard and processor. Only DDR2 unbuffered (Non-Reg)/ECC memory modules are required. Check the TYAN® Web site at: **www.tyan.com** for details of the type of memory recommended for your motherboard.

The following diagram shows common types of DDR2 memory modules.

- All installed memory will automatically be detected and no jumpers or settings need changing.
- The Tomcat n3400B S2925-E supports up to 8GB of memory.

Notes

Standard DDR memory modules are not supported.
Registered Memory Module is NOT supported.

Memory Population Rule
(Note: X indicates a populated DIMM Slot)

DIMM Slot	DIMM1	DIMM2	DIMM3	DIMM4
64 bits support	X			
			X	
	X		X	
128 bits support	X	X		
			X	X
	X	X	X	X

NOTE:
Symmetrical DIMMS must be identical
- Same DRAM technology, eg 128-bit, 256-bit, etc
- Same DRAM bus width, eg x8 or x16
- Matched Sided DIMMs (single-sided or double-sided)

Memory Installation Procedure

Follow these instructions to install memory modules into the Tomcat n3400B.

1. Press the locking levers in the direction shown in the following illustration.
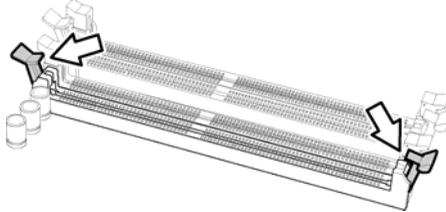
2. Align the memory module with the socket. The memory module is keyed to fit only one way in the socket.

Key slot
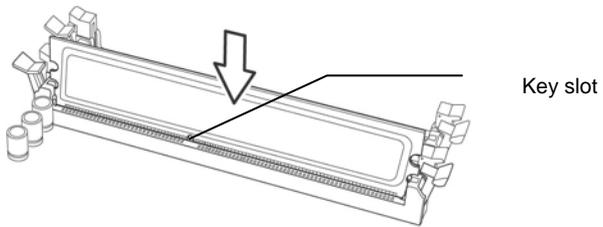
3. Seat the module firmly into the socket by gently pressing down until it sits flush with the socket. The locking levers pop up into place.
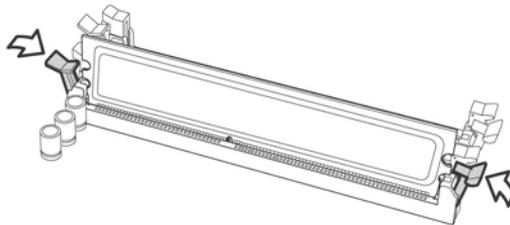
2.11 - Attaching Drive Cables

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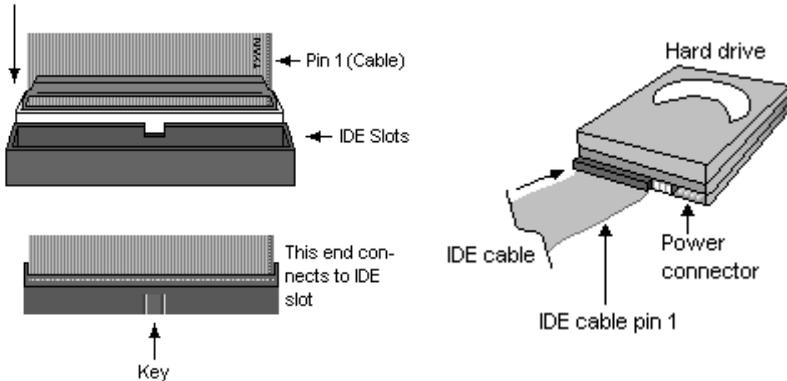
Simply plug in the BLUE END of the IDE cable into the motherboard IDE connector, and the other end(s) into the drive(s). Each standard IDE cable has three connectors, two of which are closer together. The BLUE connector that is furthest away from the other two is the end that connects to the motherboard.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

Attaching Serial ATA Cables
The Tomcat n3400B S2925-E is equipped with **6** Serial ATA (SATA) channels. Connections for these drives are very simple.

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

MiTAC 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
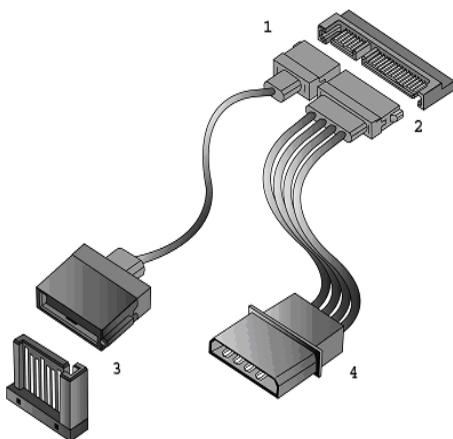
1.SATA drive cable connection

2. SATA drive power connection

3. SATA cable motherboard connector

4. SATA drive power adapter

Attaching Floppy Drive Cables

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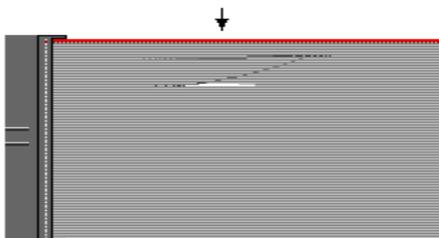
Attach first floppy drive (drive **A:**) to the end of the cable with the twist in it. Drive **B:** is usually connected to the next possible connector on the cable (the second or third connector after you install Drive **A:**).

2.12 - 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.

PCI Express x16 slot (black)
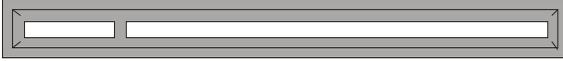
PCI Express x1 slot (black)
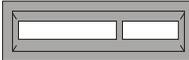
PCI slot (white)
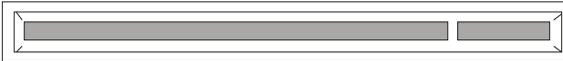
Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

PCI IDESELs and IRQ Assignments

Slot or Device	IDSEL#	Bus#	PIRQ	PIRQ	PIRQ	PIRQ
PCI Slot #1 (32bit)	AD23	PCI Bus	INT_A	INT_B	INT_C	INT_D
PCI Slot #2 (32bit)	AD24	PCI Bus	INT_D	INT_A	INT_B	INT_C
PCI Slot #3 (32bit)	AD25	PCI Bus	INT_C	INT_D	INT_A	INT_B
Onboard IEEE1394a	AD22	PCI Bus	INT_C			
Onboard VGA	AD26	PCI Bus	INT_D			

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.

2.13 - Connecting External Devices

Your motherboard supports a number of different interfaces through connecting peripherals. See the following diagrams for the details.

S2925G2NR-E
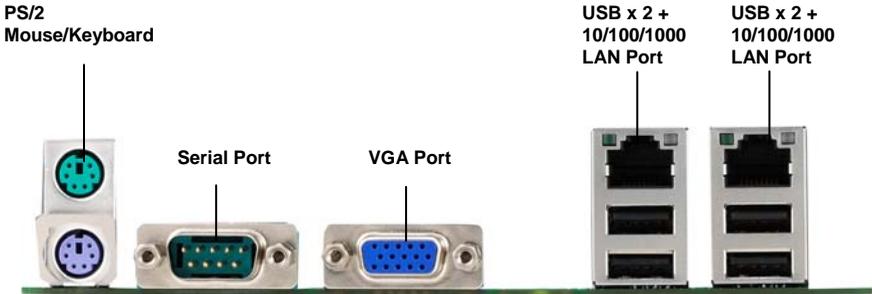
S2925A2NRF-E
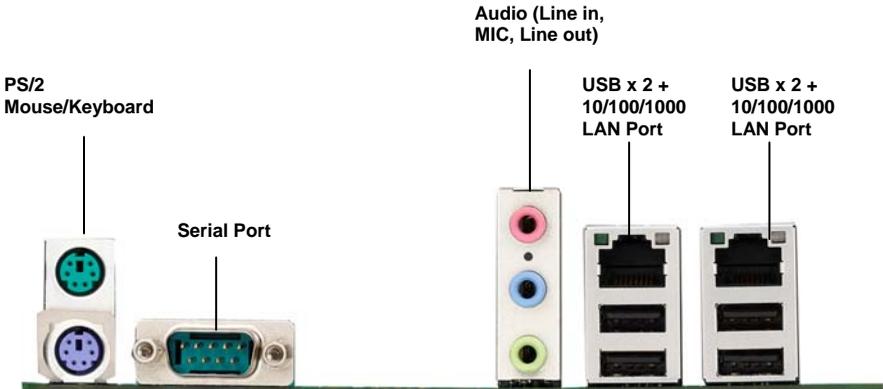
NOTE: Peripheral devices can be plugged straight into any of these ports but software may be required to complete the installation.

Onboard LAN LED Color Definition
The three onboard Ethernet ports have green and yellow LEDs to indicate LAN status. The chart below illustrates the different LED states.

10/100/1000 Mbps LAN Link/Activity LED Scheme			
LEFT RIGHT		Left LED	Right LED
10 Mbps	Link	Green	Off
	Active	Blinking Green	Off
100 Mbps	Link	Green	Green
	Active	Blinking Green	Green
1000 Mbps	Link	Green	Yellow
	Active	Blinking Green	Yellow
No Link		Off	Off

2.14 - Installing the Power Supply

There are two power connectors on your Tomcat n3400B S2925-E. The Tomcat n3400B S2925-E requires that you have an EPS12V power supply that has a 24-pin and an 8-pin power connector.
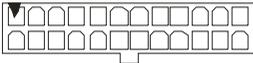
EPS12V (24-pin, PW1)   EPS12V (8-pin, PW2)

Applying power to the board
1. Connect the EPS 12V 8-pin power connector.
2. Connect the EPS 12V 24-pin power connector.
3. Connect power cable to power supply and power outlet

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

2.15 – Finishing Up

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

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

Chapter 3: BIOS Setup

3.1 About the BIOS

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. The BIOS determines what a computer can do without accessing programs from a disk. The BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. This chapter describes the various BIOS settings that can be used to configure your system.

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

This section describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated, battery-backed memory (called NVRAM) that retains the information even when the power is turned off.

To start the BIOS setup utility:
1. Turn on or reboot your system.
2. Press <Del> during POST (<F4> on remote console) to start the BIOS setup utility.

3.2 – BIOS Menu Bar

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

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

3.3 Setup Basics

The table below shows how to navigate in the setup program using the keyboard.

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

3.4 Getting Help

Pressing [**F1**] will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press [**ESC**].

3.5 In Case of Problems

If you have trouble booting your computer after making and saving the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS.
The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of what you are doing. The Chipset defaults have been carefully chosen either by TYAN®® or your system manufacturer for best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

NOTE: The following pages provide the details of BIOS menu. Please be noticed that the BIOS menu are continually changing due to the BIOS updating. The BIOS menu provided are the most updated when this manual is written. Please visit TYAN[®] **website at http://www.TYAN.com for the information of BIOS updating.**

3.6 BIOS Main Menu

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

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

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

  System Overview                              Use [ENTER], [TAB] or
                                               [SHIFT-TAB] to select a
                                               field
  AMIBIOS
  Version   : 08.00.xx                         Use [+] or [-] to
  Build Date : 08/31/05                        configure system time.
  ID        : 0AAAA000

  Processor
  Dual-Core AMD Opteron™ Processor 1216
  Speed    : xxxx MHz
  Count    : x                                 ← → Select Screen
                                               ↑ ↓ Select Item
  System Memory                                Enter Go to Sub Screen
  Size     : xxxx MB                           F1    General Help
                                               F10   Save and Exit
  System Time              [22:21:21]          ESC  Exit
  System Date              [Tue 03/06/2008]
```

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

3.7 Advanced Menu

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

```
                          BIOS Setup Utility
       Main    Advanced    PCI/PnP    Boot    Security    Chipset    Exit
   Advanced Settings
                                                      Options for CPU
      WARING: Setting wrong values in below sections may
                cause system to malfunction.

    ▸ CPU Configuration                               ← → Select Screen
    ▸ IDE Configuration                               ↑ ↓  Select Item
    ▸ Floppy Configuration                            Enter   Go to Sub Screen
    ▸ Super IO Configuration                          F1    General Help
    ▸ ACPI Configuration                              F10   Save and Exit
    ▸ APM Configuration                               ESC  Exit
    ▸ Event Log Configuration
    ▸ Hardware Health Configuration
    ▸ Remote Access Configuration
    ▸ USB Configuration
    ▸ AMD PowerNow Configuration
    ▸ Onboard Devices Configuration
```

Feature	Option	Description
Advanced Settings		
CPU Configuration	**Menu Item**	Options for CPU
IDE Configuration	**Menu Item**	Configure the IDE device(s)
Floppy Configuration	**Menu Item**	Configure the Floppy drive(s)
Super IO Configuration	**Menu Item**	Configures Super IO Chipset SCH5017
ACPI Configuration	**Menu Item**	Section for Advanced ACPI Configuration
APM Configuration	**Menu Item**	Section for APM configuration
Event Log Configuration	**Menu Item**	Mark as read, Clear or View Event Log statistics
Hardware Health Configuration	**Menu Item**	Configure/monitor the Hardware Health
Remote Access Configuration	**Menu Item**	Configure Remote Access

Feature	Option	Description
Advanced Settings		
USB Configuration	**Menu Item**	Configure the USB support
AMD PowerNow Configuration	**Menu Item**	Configure AMD PowerNow support
Onboard Devices Configuration	**Menu Item**	Configure onboard devices

3.7.1 CPU Configuration

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

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

  CPU Configuration                                This option should
  Module Version  :  XX.XX                         remain disabled for
  AGESA Version :   XXXXXX                          normal operation.
  Physical Count   :  X                            The driver
  Logical Count    :  X]                           developer may
                                                   disable it for testing
                                                   purpose.
  Dual Core AMD Opteron (tm) Processor    xxxxxxxx
  Revision :                              xx
  Cache L1:                               xxxx
  Cache L2:                               xxxx
  Speed:                                  xxxx     ← → Select
  Current FSB Multiplier :                xxxx     Screen
  Maximum FSB Multiplier:                 xxxx     ↑ ↓  Select Item
  Able to change Freq.:                   Yes      +/-    Change
  uCode Patch Level:                      xxxx     Option
  GART Error Reporting                    [Disabled]  F1    General Help
  Microcode Update                        [Enabled]   F10  Save and
  Secure Virtual Machine Mode             [Enabled]   Exit
  ▸ AMD Overclocking Configuration                  ESC  Exit
```

Feature	Option	Description
CPU Configuration		
Module Version	Read only	Displays information about CPU
AGESA Version		
Physical Count		
Logical Count		
Revision	Read only	Displays information about CPU
Cache L1		
Cache L2		
Speed		
Current FSB Multiplier		
Maximum FSB Multiplier		
Able to change Freq.		
uCode Patch Level		
GART Error Reporting	**Disabled**	This option should remain disabled for normal operation. The driver developer may enable it for the purpose of testing.
	Enabled	
Microcode Update	**Enabled**	Enable CPU Microcode update
	Disabled	
Secure Virtual Machine Mode	**Enabled**	Enable/disable Secure Virtual Machine Mode (SVM)
	Disabled	

3.7.1.1 AMD Overclocking Configuration Sub-Menu

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

AMD Overclocking Configuration

Processor Frequency Multiplier   [Auto]
Processor Voltage   [Auto]

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

Feature	Option	Description
AMD Overclocking Configuration		
Processor Frequency Multiplier	**Auto**	Select processor frequency multiplier
	x4.0 800MHz	
	x4.5 900MHz	
	x5.0 1000MHz	
	x5.5 1100MHz	
	Reserved	
	x6.5 1300MHz	
	Reserved	
	x7.5 1500MHz	
	x8.0 1600MHz	
	x8.5 1700MHz	
	x9.0 1800MHz	
	X9.5 1900MHz	
	x10.0 2000MHz	
	x10.5 2100MHz	
	x11.0 2200MHz	

Processor Voltage	1.350V	Select processor voltage
	1.325V	
	1.300V	
	1.275V	
	1.250V	
	1.225V	
	1.200V	
	1.175V	
	1.150V	
	1.125V	
	1.100V	
	1.075V	
	1.050V	
	1.025V	
	1.000V	
	0.975V	
	0.950V	
	0.925V	
	0.900V	
	0.875V	
	0.850V	
	0.825V	
	0.800V	
	Auto	

3.7.2 IDE Configuration Sub-Menu

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

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

IDE Configuration                                   While entering setup,
                                                    BIOS auto detects the
                                                    presence of IDE
Onboard IDE Controller              [Enabled]       devices. This displays
Serial-ATA Devices                  [Device 0/1/2]  the status of auto
                                                    detection of IDE
 ▸ nVidia RAID Setup                                devices.

 ▸ Primary IDE Master                               ← → Select Screen
 ▸ Primary IDE Slave                                ↑ ↓ Select Item
 ▸ SATA0  (Dev5, Func0)                             +/-   Change Option
 ▸ SATA1  (Dev5, Func0)                             F1    General Help
 ▸ SATA2  (Dev5, Func1)                             F10  Save and Exit
 ▸ SATA3  (Dev5, Func1)                             ESC  Exit
 ▸ SATA4  (Dev5, Func2)
 ▸ SATA5  (Dev5, Func2)

Hard Disk Write Protect             [Disabled]
IDE Detect Time Out (Sec)           [35]
```

Feature	Option	Description
IDE Configuration		
Onboard IDE Controller	**Enabled**	Enable/Disable onboard IDE controller.
	Disabled	
Serial-ATA Devices	**Device 0/1/2**	Configure serial ATA devices.
	Disabled	
	Device 0	
	Device 1/1	
Hard Disk Write Protect	**Disabled**	Enable/Disable device write protection. This will be effective only if device is accessed through BIOS.
	Enabled	
IDE Detect Time Out (Sec)	**0~35** (at 5 interval)	Select the time out value for detecting ATA/ATAPI device(s).

3.7.2.1 nVidia RAID Setup

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

RAID Setup

nVidia RAID Function   [Disabled]

While entering setup, BIOS auto detects the presence of IDE devices. This displays the status of auto detection of IDE devices.

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

Feature	Option	Description
nVidia RAID Setup		
nVidia RAID Function	**Disabled**	While entering setup, you can choose enabled/disabled RAID mode for each ATA channel.
	Enabled	

3.7.2.2 Primary IDE Master/Slave Sub-Menu

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

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

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

3.7.2.3 SATA0/1/2/3/4/5 Sub-Menu

```
                          BIOS Setup Utility
         Main      Advanced    PCI/PnP    Boot    Security    Chipset    Exit
   Third IDE Master
                                                     ← → Select Screen
   Device: Not Detected                              ↑ ↓ Select Item
                                                     +/-    Change Option
                                                     Tab   Select Field
   LBA /Large Mode                        [Auto]     F1    General Help
   Block (Multi-Sector Transfer)          [Auto]     F10   Save and Exit
   PIO Mode                               [Auto]     ESC   Exit
   DMA Mode                               [Auto]
   S.M.A.R.T.                             [Auto]
   32 Bit Data Transfer                   [Enabled]
```

Feature	Option	Description
SATA 0/1/2/3//4/5		
LBA/Large Mode	**Auto**	Auto: Enabled LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.
	Disabled	Disabled: Disabled LBA Mode.
Block (Multi-Sector Transfer)	**Auto**	Disabled: The Data transfer from and to the device occurs one sector at a time.
	Disabled	Auto: The Data transfer from and to the device occurs multiple sectors at a time if the device supports it.
PIO Mode	**Auto**	Selects the PIO Mode. Select Auto to enhance hard disk performance by optimizing the hard disk timing.
	0~4 (at 1 interval)	
DMA Mode	**Auto**	Selects DMA Mode. Auto: Auto detected.
S.M.A.R.T.	**Auto**	S.M.A.R.T (Self-Monitoring Analysis and Reporting Technology) is a utility that monitors your disk status to predict hard disk failure.
	Disabled	
	Enabled	
32Bit Data Transfer	**Enabled**	Enables 32-bit to maximize the IDE hard disk data transfer rate.
	Disabled	

3.7.3 Floppy Configuration Sub-Menu

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

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

Floppy Configuration		Select the type of floppy drive connected to the system.
Floppy A	[1.44MB 31/2"]	
Floppy B	[Disabled]	
		← → Select Screen ↑ ↓ Select Item +/- Change Option F1 General Help F10 Save and Exit ESC Exit

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

3.7.4 Super IO Configuration Sub-Menu

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

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

Configure SCH5017 Super IO Chipset		Allows BIOS to enable or disable Floppy Controller.
Onboard Floppy Controller		
Serial Port1 Address	[Enabled]	← → Select Screen
Serial Port2 Address	[3F8/IRQ4]	↑ ↓ Select Item
Chassis Intrusion Detect	[2F8/IRQ3]	+/- Change Option
Watchdog Mode	[Disabled]	F1 General Help
Watchdog Timer	[Disabled]	F10 Save and Exit
	[2]	ESC Exit

Feature	Option	Description
Configure SCH5017 Super IO Chipset		
Onboard Floppy Controller	Disabled	Allow BIOS to enable or disable the floppy controller.
	Enabled	
Serial Port1 Address	**3F8 IRQ4**	Allow BIOS to select Serial Port1 Base Addresses.
	3E8 IRQ4	
	2E8 IRQ3	
	Disabled	
Serial Port2 Address	**2F8 IRQ3**	Allow BIOS to select Serial Part2 Base Addresses.
	3F8 IRQ4	
	2E8 IRQ3	
	Disabled	
Chassis Intrusion Detect	**Disabled**	Enable/Disable the function of chassis intrusion detection. When chassis open event is detected, BIOS will record the event.
	Enabled	
Watchdog Mode	**Disabled**	POST: BIOS POST Watchdog timer counting. Start at PowerON. Stop at OS boot.
OS: OS boot Watchdog. Start at OS boot.
PowerON: Start at PowerON.
	POST	
	OS	
	Power ON	
Watchdog Timer	2	Watchdog timer sets 2/4/6/8/10/12 minutes. When WD time-out occurs, system will auto reboot.
	4	
	6	
	8	
	10	
	12	

3.7.5 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	Exit

ACPI Settings	Enable ACPI Configuration settings
‣ General ACPI Configuration ‣ Advanced ACPI Configuration ‣ Chipset ACPI Configuration	← → Select Screen ↑ ↓ Select Item +/- Change Option F1 General Help F10 Save and Exit ESC Exit

3.7.5.1 General ACPI Configuration Sub-Menu

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

General ACPI Configuration		Enable ACPI Configuration settings
Suspend Mode	[Auto]	
Repost Video on S3 Resume	[No	← → Select Screen ↑ ↓ Select Item +/- Change Option F1 General Help F10 Save and Exit ESC Exit

Feature	Option	Description
General ACPI Configuration		
Suspend Mode	**Auto**	Select the ACPI state used for system suspend.
	S1 (POS)	
	S3 (STR)	
Report Video on S3 Resume	**NO**	Determine whether to invoke VGA BIOS POST on S3/STR resume.
	Yes	

3.7.5.2 Advanced ACPI Configuration Sub-Menu

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

Advanced ACPI Configuration

ACPI Version Features   [ACPI v2.0]
ACPI APIC support   [Enabled]
AMI OEMB Table   [Enabled]
Headless mode   [Disabled]
ACPI SRAT Table   [Enabled]

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

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

3.7.5.3 Chipset ACPI Configuration Sub-Menu

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

  MCP55 ACPI HPET TABLE                    [Disabled]


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

Feature	Option	Description
Chipset ACPI Configuration		
MCP55 ACPI HPET TABLE	**Disabled**	ACPI High Precision Event Timer description table.
	Enabled	

3.7.6 APM Configuration

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

```
Resume On PME#                [Disabled]
Resume On PCIE Wake#          [Disabled]       ← → Select Screen
Resume On LAN (MAC)           [Disabled]       ↑ ↓ Select Item
Resume On RTC Alarm           [Disabled]       +/-    Change Option
                                               F1    General Help
Restore on AC Power Loss      [Last State]     F10   Save and Exit
                                               ESC  Exit
```

Feature	Option	Description
APM Configuration		
Resume On PME#	**Disabled**	Disable/Enable PME to generate a wake event.
	Enabled	
Resume On PCIE Wake#	**Disabled**	Disable/Enable PME to generate a wake event.
	Enabled	
Resume On LAN (MAC)	**Disabled**	Enable/Disable LAN (MAC) to generate a wake event.
	Enabled	
Resume On RTC Alarm	**Disabled**	Enable/Disable RTC event to wake after a power failure.
	Enabled	
Restore on AC Power Loss	**Last State**	Configures how the system board responds to a power failure.
	Power on	
	Power off	

3.7.7 Event Log Configuration Sub-Menu

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

BIOS Setup Utility	
Main **Advanced** PCI/PnP Boot Security Chipset Exit	
Event Logging details	View all unread events on the Event Log.
View Event Log Mark All Events as Read Clear Event Log	← → Select Screen ↑ ↓ Select Item +/- Change Option Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit

Feature	Option	Description
Event Logging details		
View Event Log	—	Views all unread events on the Event Log.
Mark All Events as Read	OK	Marks all unread events as read.
	Cancel	
Clear Event Log	OK	Erases all of events.
	Cancel	

3.7.8 Hardware Health Configuration Sub-Menu

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

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

Hardware Health Configuration			Enables Hardware Health Monitoring Device.	
H/W Health Function	[Enabled]			
FAN Select	[3Pin FAN]			
Auto FAN Power Control	[Disabled]			
PWM Minimal Duty Cycle	[30% Duty Cycle]			
FAN Fail LED Indicator	[Disabled]			
Hardware Health Event Monitoring			← → Select Screen	
			↑ ↓ Select Item	
▸ Mainboard Voltages Report			+/- Change Option	
			Tab Select Field	
CPU Temperature	:xx C/ xxx F		F1 General Help	
Ambient (Near SATA0) Temp	:xx C/ xxx F		F10 Save and Exit	
Ambient (Near MCP55) Temp	:xx C/ xxx F		ESC Exit	
CPU FAN Speed	:xxxx RPM			
FAN Speed 1	:xxxx RPM			
FAN Speed 2	:xxxx RPM			
FAN Speed 3	:xxxx RPM			

Feature	Option	Description
Hardware Health Configuration		
H/W Health Function	**Enabled**	Enables Hardware Health Monitoring Device.
	Disabled	
FAN Select	4Pin FAN	Selects the FAN type.
	3Pin FAN	
PWM Minimal Duty Cycle	50% Duty Cycle	Configure PWM minimal duty cycle.
	40% Duty Cycle	
	30% Duty Cycle	
	0% Duty Cycle	
Auto FAN Power Control	Enabled	FAN power duty cycle is auto dynamic programmed in selected temperature range. Disabled: Fan Power On. Enabled: Fan Power Duty Cycle=30%(40°C)- 100%(60°C), see max (CPU, MCP55) temperature
	Disabled	
FAN Fail LED Indicator	Enabled	Enabled: Any FAN speed less than 800 RPM, the FAN Fail LED will be lighted.
	Disabled	

3.7.8.1 Mainboard Voltages Report Sub-Menu

You can use this screen to monitor mainboard's voltages. Use the up and down arrow (↑/↓) keys to select an item. Use the Plus and Minus (+/-) keys to change the value of the selected option.

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

  Board Voltages Event Monitoring
                                                    ← → Select Screen
                                                    ↑ ↓ Select Item
  Vdimm                          : x.xxx V          +/-   Change Option
  Vcore                          : x.xxx V          Tab   Select Field
  +3.3 Vin                       : x.xxx V          F1    General Help
  +5 Vin                         : x.xxx V          F10  Save and Exit
  +12 Vin                        : x.xxx V          ESC  Exit
                                 :
```

3.7.9 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    Exit
                                                    Select remote access
  Configure Remote Access type and parameters      type.

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

Feature	Option	Description
Configure Remote Access type and parameters		
Remote Access	**Enabled**	Enables remote access to system through serial port.
	Disabled	
Serial Port Number	**COM1**	Select Serial Port for console redirection. Make sure the selected port is enabled.
	COM2	
Base Address, IRQ	Read only	
Serial Port Mode	**115200 8,n,1**	Select Serial Port settings.
	57600 8,n,1	
	19200 8,n,1	
	9600 8,n,1	
Flow Control	**None**	Select Flow Control for console redirection.
	Hardware	
	Software	
Redirection After BIOS POST	Disabled	Disable: Turns off the redirection after POST Boot Loader:

Feature	Option	Description
Configure Remote Access type and parameters		
	Boot Loader	Redirection is active during POST and during Boot Loader. Always:
	Always	Redirection is always active. <Some OSs may not work if set to Always>
Terminal Type	**ANSI**	Select the target terminal type.
	VT100	
	VT-UTF8	
VT-UTF8 Combo Key Support	**Enabled**	Enable VT-UTF8 Combination key Support for ANSI/VT100 terminals.
	Disabled	
Sredir Memory Display Delay	**No Delay**	Gives the delay in seconds to display memory information
	Delay 1 Sec	
	Delay 2 Sec	
	Delay 4 Sec	

3.7.10 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	Exit

USB Configuration	Enables USB host controllers.
Module Version – X.XX.X-XX.X	
USB Devices Enabled:	← → Select Screen
None	↑ ↓ Select Item
	+/- Change Option
Legacy USB Support [Enabled]	F1 General Help
USB 2.0 Controller Mode [HiSpeed]	F10 Save and Exit
BIOS EHCI Hand-Off [Enabled]	ESC Exit

Feature	Option	Description
USB Configuration		
Legacy USB Support	Disabled	Enables support for legacy USB.
	Enabled	
USB 2.0 Controller Mode	**Hi Speed**	Configure the USB 2.0 controller in Hi Speed (480Mbps) or Full Speed (12Mbps).
	Full Speed	
BIOS EHCI Hand-Off	**Enabled**	This is a work around for OSes without EHCI hand-off support. The EHCI ownership change should claim by EHCI driver.
	Disabled	

3.7.11 AMD PowerNow Configuration Sub-Menu

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

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

AMD PowerNow Configuration

Power Now   [Enabled]

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

Feature	Option	Description
AMD PowerNow Configuration		
Power Now	**Enabled**	Enable/Disable PowerNow
	Disabled	

3.7.12 Onboard Devices Configuration Sub-Menu

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

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

Onboard Device and PCI Slots Configuration		Select remote access type.
		← → Select Screen
Onboard VGA	[Enabled]	↑ ↓ Select Item
Primary Graphics Adapter	[PCI Express → PCI]	+/- Change Field
		F1 General Help
PMU	[Disabled]	F10 Save and Exit
USB 1.1 Controller	[Enabled]	ESC Exit
USB 2.0 Controller	[Enabled]	
LAN1	[Auto]	
LAN2	[Auto]	
Onboard LAN OPROM	[Enabled]	

Feature	Option	Description
Onboard Device and PCI Slots Configuration		
Onboard VGA	Disabled	Enabled/Disabled VGA controller
	Enabled	
Primary Graphics Adapter	**PCI Express → PCI**	Configure primary graphics adapter.
	PCI → PCI Express	
PMU	**Disabled**	Load PMU firmware
	Enabled	
USB 1.1/2.0 Controller	Auto	Enabled/Disabled LAN controller
	Disabled	
LAN1/LAN2	**Auto**	Configure LAN1/LAN2
	Disabled	
Onboard LAN OPROM	Disabled	Enable/Disable LAN PXE ROM
	Enabled	

3.8 PCI PnP Menu

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

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

Advanced PCI/PnP Settings

Clear NVRAM during System Boot.

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

Clear NVRAM	[No]
Plug & Play O/S	[No]
PCI Latency Timer	[64]
PCI Bus Scan Order	[Absent]
Allocate IRQ to PCI VGA	[Yes]
Palette Snooping	[Disabled]
PCI IDE BusMaster	[Disabled]

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

Feature	Option	Description
Advanced PCI/PnP Settings		
Clear NVRAM	**No**	Clears NVRAM during system Boot.
	Yes	
Plug & Play OS	Yes	No: lets the BIOS configure all the devices in the system. Yes: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
	No	
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. Values in units of PCI clocks for PCI device latency timer register.
	64	
	96	
	128	
	160	
	192	
	224	
	248	
PCI Bus Scan Order	**Absent**	Change PCI Bus Scan Order
	Descent	
Allocate IRQ to PCI VGA	**Yes**	Yes: assigns IRQ to PCI VGA card if card requests 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: informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly.
	Enabled	
PCI IDE BusMaster	Disabled	Enabled: BIOS uses PCI bus mastering for reading / writing to IDE drives.
	Enabled	
	Reserved	

3.9 Boot Menu

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

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

Boot Settings	Configures settings during System Boot.
▸ Boot Settings Configuration	← → Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
▸ Boot Device Priority	

3.9.1 Boot Settings Configuration Sub-Menu

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

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

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

Feature	Option	Description
Boot Settings Configuration		
Quick Boot	Enabled	This option allows user bypass BIOS self test during POST.
	Disabled	
Quiet Boot	**Disabled**	Disabled: displays normal POST messages. Enabled: displays OEM log instead of POST messages.
	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 Num-Lock	**On**	Selects Power-on state for Numlock.
	Off	
PS/2 Mouse Support	Enabled	Selects support for PS/2 Mouse.
	Disabled	
	Auto	
Keyboard Error Report	Enabled	Enable / Disable Keyboard error report
	Disabled	
Wait for 'F1' If Error	**Enabled**	Waits for F1 key to be present if error occurs.
	Disabled	
Hit 'DEL' Message Display	**Enabled**	Displays "Press DEL to run Setup" in POST.
	Disabled	
Interrupt 19 Capture	Disabled	Enabled: allows option ROMs to trap interrupt 19.
	Enabled	
Endless Boot	Enabled	Enable/Disable endless loop boot from BBS table.
	Disabled	

3.9.2 Boot Device Priority

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

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

Boot Device Priority		Specifies the boot sequence from the available devices.
1st Boot Device	[xx,xxx-xxxxx:xxx]	
2nd Boot Device	[xx,xxx-xxxxx:xxx]	A device enclosed in parenthesis has been disabled in the corresponding type menu.
		← → Select Screen ↑ ↓ Select Item +/- Change Option F1 General Help F10 Save and Exit ESC Exit

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

3.10 Security Menu

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

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

Security Settings	Install or change the password.
Supervisor Password : Not Installed User Password : Not Installed Change Supervisor Password Change User Password Boot Sector Virus Protection [Disabled]	← → Select Screen ↑ ↓ 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	—	Selects this option to change or install Supervisor Password.
Change User Password	—	Selects this option to change or install User Password.
Boot Sector Virus Protection	**Disabled**	When it is set to [Enabled], BIOS will issue a virus warning message and beep if a write to the boot sector or the partition table of the HDD is attempted.
	Enabled	

3.11 Chipset Menu

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

BIOS Setup Utility	
Main Advanced PCI/PnP Boot Security **Chipset** Exit	
Advanced Chipset Settings	Options for NB
WARNING: Setting wrong values in below sections may cause system to malfunction. ▸ Northbridge Configuration	← → Select Screen ↑ ↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit

3.11.1 Northbridge Configuration Sub-Menu

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

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

  NorthBridge Chipset Configuration
                                              ← → Select Screen
                                              ↑ ↓  Select Item
  ▶ Memory Configuration                      Enter Go to Sub Screen
  ▶ ECC Configuration                         F1    General Help
  ▶ DRAM Timing Configuration                 F10   Save and Exit
  ▶ IOMMU Option Menu                         ESC  Exit

  Alternate VID                 [Auto]


  Memory CLK                    :XXX MHz
  CAS latency (Tcl)             :XX
  RAS/CAS Delay (Trcd)          :XX CLK
  Row Precharge Time (Trp)      :XX CLK
  Min Active RAS (Tras)         :XX CLK
  RAS/RAS Delay (Trrd)          :XX CLK
  Row Cycle (Trc)               :XX CLK
```

Feature	Option	Description
NorthBridge Chipset Configuration		
Alternate VID	0.850V	Specify the alternate VID while in low power status.
	1.050V	
	1.025V	
	1.000V	
	0.975V	
	0.950V	
	0.925V	
	0.900V	
	0.875V	
	0.825V	
	0.800V	
	Auto	
Memory CLK	Read only	It shows the clock frequency of the installed SDRAM.

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

3.11.1.1 Memory Configuration Sub-Menu

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

```
                          BIOS Setup Utility
      Main     Advanced    PCI/PnP    Boot    Security    Chipset    Exit
                                                    MEMCLK can be set by
  Memory Configuration                              the code using AUTO, or
                                                    if you use LIMIT, you can
                                                    set one of the standard
                                                    values.
  Bank Interleaving                    [Auto]
  Enable Clock to All DIMMs            [Disabled]   ← → Select Screen
  MemClk Tristate C3/ATLVID            [Disabled]   ↑ ↓ Select Item
  Memory Hole Remapping                [Enabled]    +/-    Change Option
  DCT Unganged Mode                    [Always]     F1     General Help
  Power Down Enable                    [Enabled]    F10   Save and Exit
    Power Down Mode                    [Channel]    ESC  Exit
```

Feature	Option	Description
Memory Configuration		
Bank Interleaving	Disabled	Enable Bank Memory Interleaving
	Auto	
Enable Clock to All DIMMs	**Disabled**	Enable unused clocks to DIMMs Even Memory slots are not populated.
	Enabled	
MemClk Tristate C3/ATLVID	**Disabled**	Enable/Disable MemClk Tri-Stating during C3 and Alt VID
	Enabled	
Memory Hole Remapping	**Enabled**	Enable Memory Remapping around Memory Hole
	Disabled	
	Enabled	
DCT Unganged Mode	**Always**	Always: Configured to two single-channel DRAM controllers
	Auto	Auto: Configured to a single dual-channel DRAM Controller
Power Down Enable	**Enabled**	Enable or disable DDR power down mode
	Disabled	
Power Down Mode	**Channel**	Set DDR power down mode
	Chip Select	

3.11.1.2 ECC Configuration Sub-Menu

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

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

ECC Configuration	DRAM ECC allows hardware to report and correct memory errors automatically maintaining system integrity.
ECC Mode [Good]	
DRAM ECC Enable [Enabled]	
DRAM SCRUB REDIRECT [Enabled]	← → Select Screen
4-Bit ECC Mode [Enabled]	↑ ↓ Select Item
DRAM BG Scrub [1.31ms]	+/- Change Option
Data Cache BG Scrub [Disabled]	F1 General Help
L2 Cache BG Scrub [Disabled]	F10 Save and Exit
L3 Cache BG Scrub [Disabled]	ESC Exit

Feature	Option	Description
ECC Configuration		
ECC Mode	Disabled	Select the level of ECC protection. Note: The "Super" ECC mode dynamically sets the DRAM scrub rate so all of memory is scrubbed in 8 hours.
	Basic	
	Good	
	Super	
	Max	
	User	
DRAM ECC Enable	**Enabled**	DRAM ECC allows hardware to report and correct memory errors automatically maintaining system integrity.
	Disabled	
DRAM SCRUB REDIRECT	**Disabled**	DRAM SCRUB REDIRECT allows the system to correct DRAM ECC errors immediately when they occur, even if background scrubbing is on.
	Enabled	
4-Bit ECC Mode	**Disabled**	Enable 4-Bit ECC Mode. Note: Also known as CHIPKILL ECC Mode
	Enabled	

DRAM BG Scrub	Disabled	DRAM scrubbing corrects memory errors so later reads are correct. Doing this while memory is not being used improves performance. Note: When AMD's node interleave feature is enabled, BIOS will force DRAM scrub off.
	40ns	
	80ns	
	160ns	
	320ns	
	640ns	
	1.28us	
	2.56us	
	5.12us	
	10.2us	
	20.5us	
	41.0us	
	81.9us	
	163.8us	
	327.7us	
	655.4us	
	1.31ms	
	2.62ms	
	5.24ms	
	10.49ms	
	20.97ms	
	42.00ms	
	84.00ms	
Data Cache BG Scrub	**Disabled**	Allows the L1 Data Cache RAM to be corrected while idle.
	40ns	
	80ns	
	160ns	
	320ns	
	640ns	
	1.28us	
	2.56us	
	5.12us	
	10.2us	
	20.5us	
	41.0us	
	81.9us	
	163.8us	
	327.7us	
	655.4us	

	Disabled	
	40ns	
	80ns	
	160ns	
	320ns	
	640ns	
	1.28us	Allows the L2/L3 Data Cache RAM
L2 /L3 Cache BG Scrub	2.56us	to be corrected while idle.
	5.12us	
	10.2us	
	20.5us	
	41.0us	
	81.9us	
	163.8us	
	327.7us	
	655.4us	

3.11.1.3 DRAM Timing Configuration Sub-Menu

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

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

	Auto Limit Manual
DRAM Timing Configuration	
Memory Clock Mode [Auto]	← → Select Screen
DRAM Timing Mode [Auto]	↑ ↓ Select Item
	+/- Change Option
	F1 General Help
	F10 Save and Exit
	ESC Exit

Feature	Option	Description
DRAM Timing Configuration		
Memory Clock Mode	**Auto**	Select the DRAM Frequency programming method. If Auto, the DRAM speed will be based on SPDs. If Limit, the DRAM speed will not exceed the specified value. If Manual, the DRAM speed specified will be programmed by users.
	Limit	
	Manual	
DRAM Timing Mode	**Auto**	Allow users to configure the DRAM Timing manually.
	DCT 0	
	DCT 1	
	Both	

3.11.1.4 IOMMU Option Menu

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

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

IOMMU Mode   [128MB]

Set GART size in systems without AGP, or disable altogether. Some OSes require valid GART for proper operation, If AGP is present, select appropriate option to ensure proper AGP operation.

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

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

3.12 Exit Menu

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

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

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

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

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

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

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

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

Chapter 4: Diagnostics

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

Memory, Video, CPU

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

4.1 Beep Codes

Fatal errors, which halt the boot process, are communicated through two kinds of audible beeps.
• A single long beep followed by eight short beeps: It indicates that a video error has occurred.
• A single long beep repeatedly: It indicates that a DRAM error has occurred.
The most common type of error is a memory error.

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.

4.3 AMIBIOS Post Code

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

Checkpoint	Description
03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable "wCMOSFlags."
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer.Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to "POSTINT1ChHandlerBlock."
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.
0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Early POST initialization of chipset registers.
24	Uncompress and initialize any platform specific BIOS modules.
30	Initialize System Management Interrupt.
2A	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.

Checkpoint	Description
38	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, … etc.) successfully installed in the system and update the BDA, EBDA…etc.
50	Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7A	Initializes remaining option ROMs.
7C	Generate and write contents of ESCD in NVRam.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested.
8C	Late POST initialization of chipset registers.
8E	Program the peripheral parameters. Enable/Disable NMI as selected
90	Late POST initialization of system management interrupt.
A0	Check boot password if installed.
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module.
A7	Displays the system configuration screen if enabled. Initialize the CPU's before boot, which includes the programming of the MTRR's.
A8	Prepare CPU for OS boot including final MTRR values.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector. Deinitializes the ADM module.
AB	Prepare BBS for Int 19 boot.
AC	End of POST initialization of chipset registers.
B1	Save system context for ACPI.
00	Passes control to OS Loader (typically INT19h).

NOTE

Appendix: SMDC Information

Overview

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

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

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

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

More detailed information on TYAN® SMDC card can be found on our website: http://www.TYAN.com

Features of TYAN® Server Management

Monitor various system components remotely
-such as fans, processor temperature, and more

Remote power on and power off

Console redirect
-the ability to view system remotely

Alert and error actions
-such as audible beep, e-mail, power down and reboot

SMDC runs on stand-by power
-the SMDC will continue to function, even if the system is not powered on

How SMDC and TSO Work

The brief descriptions below will help explain how these items function.

	Agent – a system with SMDC installed The SMDC is installed in the Agent system that uses a compatible/supported TYAN® motherboard.
	Manager – manages the Agent The Manger is set up to manage the Agent that has the SMDC. The Manager and Agent should be located in the same place.
	Console – communicates with Manager The Console is used to monitor and control the Agent through the Manager.

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.

SLI (Scalable Link Interface): NVIDIA SLI technology links two graphics cards together to provide scalability and increased performance. NVIDIA SLI takes advantage of the increased bandwidth of the PCI Express bus architecture, and features hardware and software innovations within NVIDIA GPUs (graphics processing units) and NVIDIA MCPs (media and communications processors). Depending on the application, NVIDIA SLI can deliver as much as two times the performance of a single GPU configuration.

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'ineteference radio.)

C E   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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