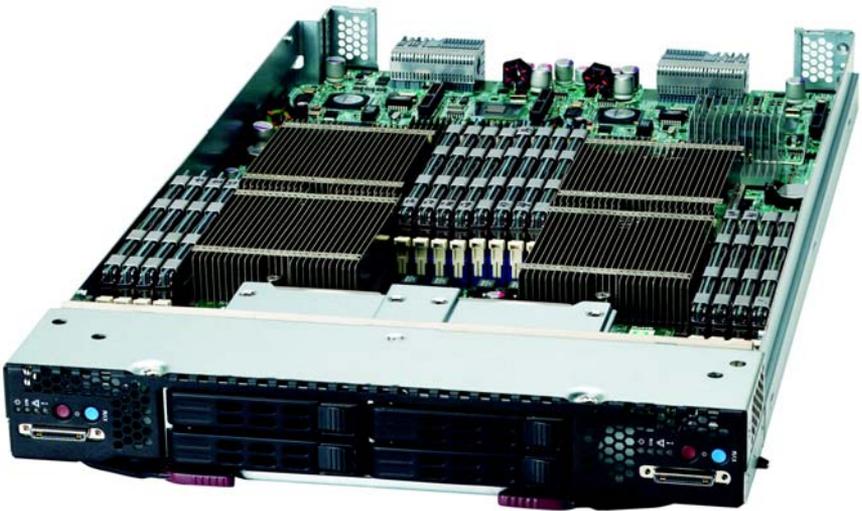# SUPERMICRO®

SBI-7226T-T2
Blade Module

User's Manual

Revison 1.0a

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WARNING: HANDLING OF LEAD SOLDER MATERIALS USED IN THIS PRODUCT MAY EXPOSE YOU TO LEAD, A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM.

Manual Revison 1.0a

Release Date: May 18, 2011

Preface

About this Manual

This manual is written for professional system integrators, Information Technology professionals, service personnel and technicians. It provides information for the installation and use of Supermicro's SBI-7226T-T2 Blade Module. Installation and maintenance should be performed by experienced professionals only.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the SBI-7226T-T2 Blade Module and describes its main features.

Chapter 2: System Safety

You should familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SBI-7226T-T2 Blade Module.

Chapter 3: Setup and Installation

Refer to this chapter for details on installing the SBI-7226T-T2 Blade Module into the SuperBlade chassis. Other sections cover the installation and placement of memory modules and the installation of hard disk drives into the blade module.

Chapter 4: Blade Module Features

This chapter coves features and component information about the SBI-7226T-T2 Blade Module. Included here are descriptions and information for mainboard components, connectors, LEDs and other features of the blade module.

Chapter 5: RAID Setup Procedure

RAID setup and operations for the SBI-7226T-T2 Blade Module are covered in this chapter.

Chapter 6: BIOS

BIOS setup is covered in this chapter for the SBI-7226T-T2 Blade Module.

Appendix A: BIOS POST Codes

BIOS POST Codes for the SBI-7226T-T2 Blade Module are explained in this appendix.

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Chapter 1
Introduction

1-1   Overview

The SBI-7226T-T2 blade module is a compact self-contained server that connects into a pre-cabled enclosure that provides power, cooling, management and networking functions. One enclosure for the SBI-7226T-T2 blade module can hold ten blade units. Each blade module contains two "Nodes" that each are a separate and server system, providing up to the equivalent of 20 blade units in one 10-blade module enclosure.

In this manual, "blade system" refers to the entire system (including the enclosure and blades units), "blade" or "blade unit" refers to a single blade module and "blade enclosure" is the chassis that the blades, power supplies and modules are housed in.

Please refer to our web site for information on operating systems that have been certified for use with the SuperBlade (www.supermicro.com/products/superblade/).

1-2   Product Checklist of Typical Components

Your blade module ships with its mainboard already installed in its chassis. Memory, hard disk drives and the CPU must all be installed by the user after shipment. See Chapter 3: "Setup and Installation" on page 3-1 for details on installation of these components.

Aside from the blade module unit itself, the following optional Mezzanine add-on cards (with Infiniband Switch) may be ordered for your blade module:

• AOC-IBH-XDD
• AOC-IBH-XDS
• AOC-IBH-XQS
• AOC-IBH-XQD

See the Supermicro website and the *SuperBlade Network Modules User's Manual* on your SuperBlade system's CD-ROM for more details on these add-on cards.

1-3   Blade Module Features

Table 1-1 lists the main features of the SBI-7226T-T2 blade module. See the proceeding section for components typically included in a blade system and other optional components. Specific details on the SBI-7226T-T2 blade module is found in Chapter 4: "Blade Module Features" on page 4-1.

Table 1-1. SBI-7226T-T2 Blade Specification Features

Mainboard	B8DTT (proprietary form factor) Chassis Dimensions (HxWxD): 11.32" x 1.67" x 20.5"
Processors	Supports two 1366-pin LGA Socket processors in each node for up to four Intel® 64-bit quad-core Xeon® series processors. Please refer to our web site for a complete listing of supported processors.
FSB Speed	QPI speed	Up to 6.4 GT/s
Chipset	Intel 5500/IOH-24D Tylersburg + ICH10R
Graphics Controller	Onboard Matrox G200eW Graphics chip with 16MB of SDRAM
BIOS	32 Mb AMI® SPI Flash EPROM BIOS
Memory Capacity	Eight 240-pin DIMM sockets per node supporting up to 64 GB of ECC Registered DDR3-1333/1066/800 SDRAM DIMMs or 16 GB of ECC Unbuffered DDR3-1333/1066/800 SDRAM DIMMs in two 3-DIMM and two 1-DIMM memory banks for each node.
SATA Controller	SATA Controller ICH10R on-chip controller for four Serial ATA drives, two for each node
Hard Drive Bays	Four (4) hot-swap drive bays for 2.5" SATA disk drives

Processors

The SBI-7226T-T2 blade module supports up to two 1366-pin Intel Xeon 5500 series processors in each node for a total of four.

Refer to the Supermicro web site for a complete listing of supported processors (http://www.supermicro.com/products/superblade). Please note that you will need to check the detailed specifications of a particular blade module for a list of the CPUs it supports.

Details on installation of the processor into the SBI-7226T-T2 blade module are found in Chapter 3: "Setup and Installation" on page 3-1.

Memory

The SBI-7226T-T2 blade module has eight 240-pin DIMM sockets in each node that can support up to 16 GB of ECC Unbuffered DDR3-1333/1066/800 SDRAM or 64 GB of ECC Registered DDR3-1333/1066/800 SDRAM DIMMs. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots.

Please refer to the Supermicro web site for a list of supported memory (www.supermicro.com/products/superblade). The detailed specifications for a blade module will contain a link to a list of recommended memory sizes and manufacturers.

Details on installation of memory modules into the SBI-7226T-T2 blade module are found in Chapter 3: "Setup and Installation" on page 3-1.

Storage

The SBI-7226T-T2 blade module can have four 2.5" SATA (Serial ATA) hard disk drives in front-mounted easy removable carriers, two for each node. See Chapter 3: "Setup and Installation" on page 3-1 for storage installation details.

Density

A maximum of ten blade modules may be installed into a single blade enclosure with two nodes. Each blade enclosure is a 7U form factor, so a standard 42U rack may accommodate up to six enclosures with 60 blade modules, or the equivalent of 120 1U servers. With the inclusion of six CMM modules, twelve Gigabit Ethernet switches and six InfiniBand switches, this would occupy up to 144U space in a conventional 1U server configuration.

Figure 1-1 displays a view of a full rack with six blade enclosures in it, each with ten blades to an enclosure.

Figure 1-1. Full Rack of Blade Enclosures and Blade Servers

1-4   Contacting Supermicro

Headquarters

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	980 Rock Ave.
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Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
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Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	+886-2-8228-1366, ext. 132 or 139

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Chapter 2
System Safety

2-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperBlade from damage:

- Be aware of how to power on/off the enclosure power supplies and the individual blades as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the blade module when removing or installing such system components as the mainboard, memory modules and processors.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and L line. It must be plugged into grounded electrical outlets. Power input requires 110-240 VAC, depending upon your power supply module.

- Mainboard Battery: This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032 Lithium 3V battery). Dispose of used batteries according to the manufacturer's instructions.

 WARNING: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities.

 WARNING: Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians

only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

2-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperBlade clean and free of clutter.
- Place the blade module cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, replace the blade module's cover before installing it back into the blade enclosure.

2-3 Electrostatic Discharge Precautions

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards.

The following measures are generally sufficient to neutralize this difference **before** contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the mainboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure the blade enclosure provides excellent conductivity between the power supplies, the blade modules and the mainboard.

WARNING: This product may be connected to an IT power system. In all cases, make sure that the unit is also reliably connected to Earth (ground).

2-4   Operating Precautions

Care must be taken to assure that the cover of the blade unit is in place when the blade is operating to assure proper cooling. Out of warranty damage to the blade can occur if this practice is not strictly followed.

Any drive carrier without a hard drive installed must remain fully installed in the drive bay when the blade module is operating to ensure proper airflow.

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Chapter 3
Setup and Installation

3-1   Overview

This chapter covers the setup and installation of the blade module and its components.

3-2   Installing Blade Modules

Up to ten SBI-7226T-T2 blade modules may be installed into a single blade enclosure (depending upon your enclosure and blade). Blade modules with Windows and Linux operating systems may be mixed together in the same blade enclosure.

Powering Up a Blade Unit

Each blade unit may be powered on and off independently from the rest of the blades installed in the same enclosure. A blade unit may be powered up in two ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to apply power using either a CMM module, or by the use of the onboard BMC chip in the blade module.

Powering Down a Blade Unit

A blade unit may be powered down in either of five ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to power down (if you have Operator or Admin privileges on the CMM).
- Use SuperBladeTool when connected to the CMM to power down (if you have Operator or Admin privileges on the CMM).
- Use IPMIview or a browser connected to the onboard BMC chip to power down.
- Use SuperBladeTool to use a Command Line Interface (CLI) to the onboard BMC chip, if you have Operator or Admin privileges.

Removing a Blade Unit from the Enclosure

Although the blade system may continue to run, individual blades should always be powered down before removing them from the enclosure.

Removing a Blade Unit from the Enclosure

1. Power down the blade unit (see "Powering Down a Blade Unit" above).

2. Squeeze both handles to depress the red sections then pull out both handles completely and use them to pull the blade unit from the enclosure.

NOTE: Blade Modules can be Hot-Plugged from the enclosure.

Removing/Replacing the Blade Cover

The blade cover must be removed to access the mainboard when you need to install or remove processors, memory units, the onboard battery and so on.

Removing/Replacing the Blade Cover

1. Remove the blade unit from the enclosure (see "Removing a Blade Unit from the Enclosure" above).

2. Depress the two buttons on the cover while pushing the cover toward the rear of the blade unit. When it stops, lift the cover off the blade unit.

3. To replace the cover, fit the six grooves in the cover into the studs in the sides of the blade, then slide the cover toward the front of the blade to lock it into place.

Installing a Blade Unit into the Enclosure

Make sure the cover of the blade unit has been replaced first before installing a blade unit in the enclosure.

Installing a Blade Unit into the Enclosure

1. Slowly push the blade unit into its bay with the handles fully pulled out (see Figure 3-1).

2. When the blade stops, push the handles back in to their locked position, making sure the notches in both handles catch the lip of the enclosure (see Figure 3-2).

NOTE: Blade Modules can be Hot-Plugged into the enclosure.

WARNING: Use extreme caution when inserting a blade module into the enclosure. If the blade's power connector becomes damaged, it can damage pins on other blade bays that it is inserted into.

Figure 3-1. Inserting a Blade into the Enclosure
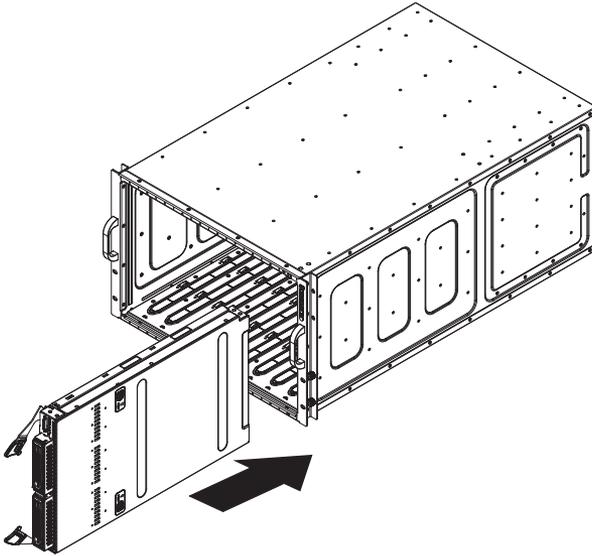
Figure 3-2. Locking the Blade into Position
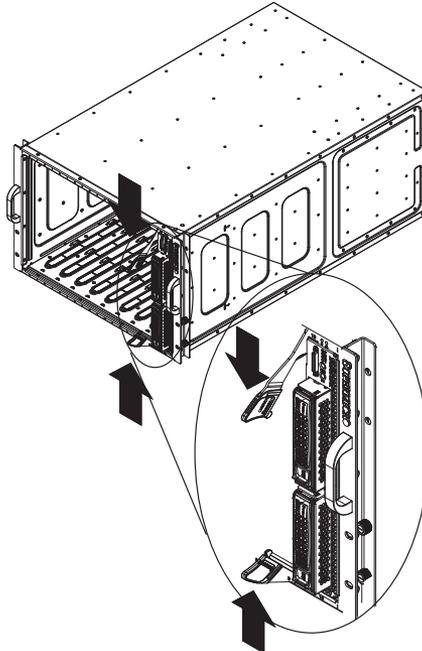
3-3   Processor Installation

One or two processors may be installed to the mainboard of each node. See Chapter 1 for general information on the features of the blade unit and the Supermicro web site for further details including processor, memory and operating system support.

WARNING: This action should only be performed by a trained service technician. Allow the processor heatsink to cool before removing it.

Removing a Processor

1. Power down and remove the blade unit from the enclosure (see Section 3-2: Installing Blade Modules on page 3-1 for details).

2. Remove the cover of the blade unit (see "Removing/Replacing the Blade Cover" on page 3-2).

3. Loosen the two screws that secure the heatsink to the mainboard.

4. Remove the heatsink by *gently* rotating it back-and-forth sideways with your fingers to release it from the processor. Set the heatsink aside and upside-down so that nothing comes into contact with the thermal grease on its underside.

5. Raise the lever of the processor socket up until the processor is released from the socket, then lift the silver cover plate and remove the processor.

WARNING: This action should only be performed by a trained service technician.

Installing a Processor

1. If present, remove the protective black PnP cap from the processor socket.

2. Raise the lever of the processor socket until it reaches its upper limit.

3. Lift the silver cover plate completely up and out of the way.

NOTE: Be careful not to damage the pins protruding from the CPU socket.

4. Align pin 1 of the processor with pin 1 of the socket (both are marked with a small gold triangle) and gently seat the processor into the socket (Figure 3-3).

5. Check to make sure the processor is flush to the socket and fully seated.

6. Lower the socket lever until it locks.

7. To install the heatsink, apply thermal grease to the top of the processor. (If reinstalling a heatsink, first clean off the old thermal grease with a clean, lint-free cloth.)

8. Place the heatsink on the processor then tighten two diagonal screws until snug, then the other two screws.

9. When all four screws are snug, tighten them all to secure the heatsink to the mainboard.

NOTE: Do not overtighten the screws as this may damage the processor or the heatsink.

10. Replace the cover on the blade unit and finish by installing the unit back into the blade enclosure.

Figure 3-3. Installing a Processor in a Socket

Gold dot
Socket key
CPU key
CPU pin
Notched corner
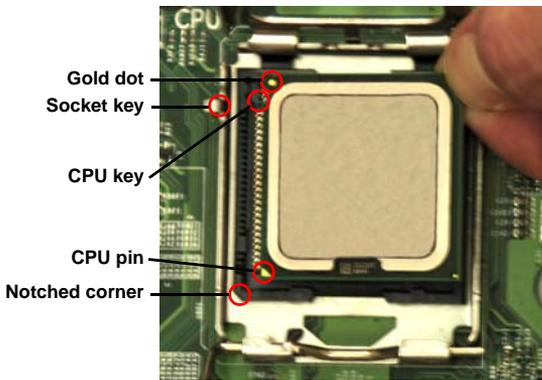
3-4   Onboard Battery Installation

A battery is included on the mainboard to supply certain volatile memory components with power when power has been removed from the blade module. If this battery dies, it must be replaced with an equivalent CR2032 Lithium 3V battery. Dispose of used batteries according to the manufacturer's instructions. See Figure 3-4 for a diagram of installing a new onboard battery.

WARNING: There is a danger of explosion if the onboard battery is installed upside down, which reverses its polarities.

Figure 3-4. Installing the Onboard Battery

Lithium Battery

Battery Holder
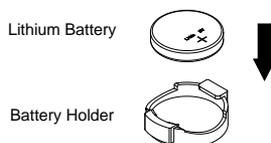
3-5   Memory Installation

The mainboard of each blade unit must be populated with DIMMs (Dual In-line Memory Modules) to provide system memory. **The DIMMs should all be of the same size and speed and from the same manufacturer due to compatibility issues.** See details below on supported memory and our web site (www.supermicro.com/products/ superblade for recommended memory.

Populating Memory Slots

The mainboard of a SBI-7226T-T2 blade module has eight memory slots per node. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots.

Populating slots at the same time with memory modules of the same size and of the same type will result in three-channel, interleaved memory, which is faster than single-channel, non-interleaved memory. See Table 3-1 and Figure 3-5 for details.

For an interleaved configuration, memory modules of the same size and speed must be installed. You should not mix DIMMs of different sizes and speeds.

Table 3-1. Populating Eight Memory Slots per Node for Interleaved Operation

Number of DIMMs	Processor 1				Processor 2			
	Channel 0		Channel 1	Channel 2	Channel 0		Channel 1	Channel 2
2 DIMMs	1A	---	---	---	1A	---	---	---
4 DIMMs	1A	---	2	---	1A	---	2	---
6 DIMMs	1A	---	2	3	1A	---	2	3
8 DIMMs	1A	1B	2	3	1A	1B	2	3

NOTE: The DIMM slot number specified in Table 3-1 equals the DIMM slot to be populated. A "---" indicates that the DIMM slot should be left unpopulated. DIMMs for one board are P1/P2 and P3/P4 for the other board.

NOTE: Though multiple DIMM memory module types and speeds may be supported, you need to use DIMM memory modules of the same speed and type.

Figure 3-5. 8-Slot DIMM Numbering
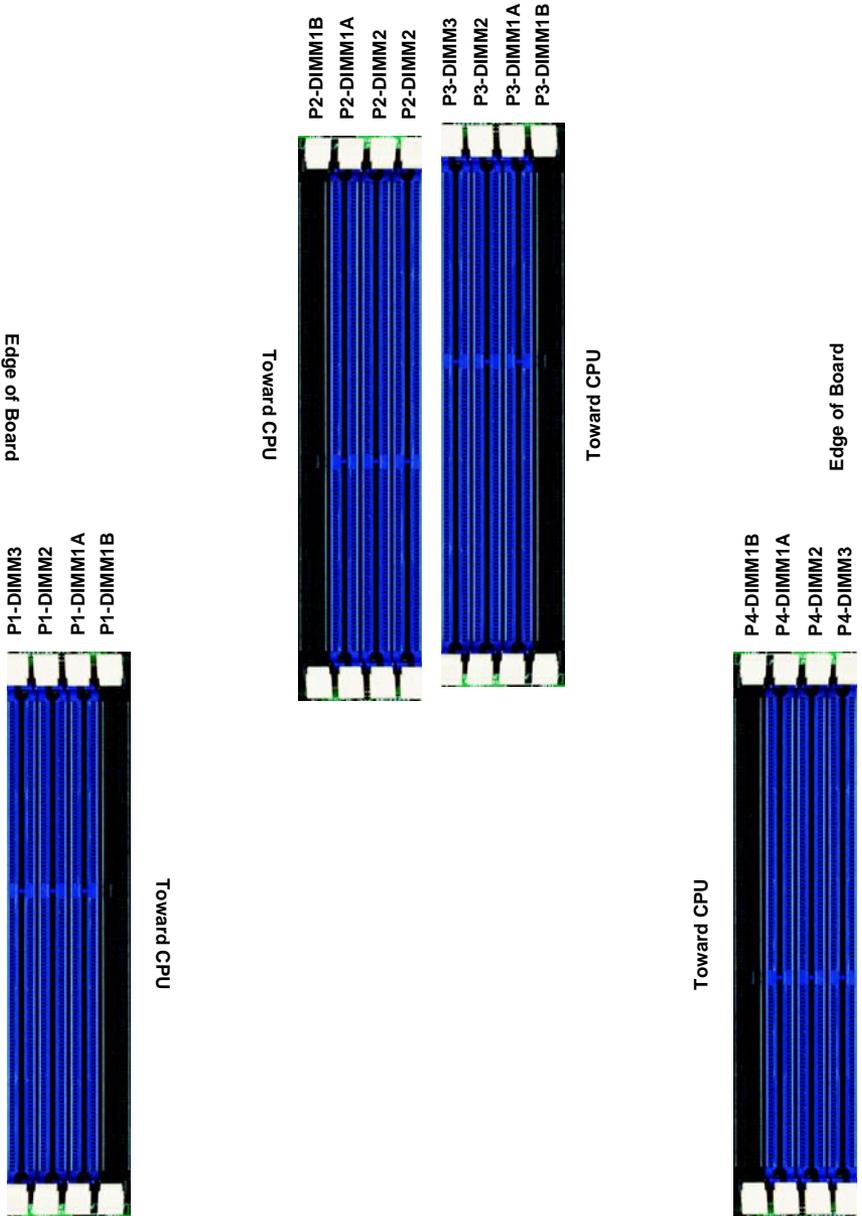
DIMM Installation

WARNING: Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Installing DIMM Memory Modules

1. Power down the blade module (see "Powering Down a Blade Unit" on page 3-1).

2. Remove the blade from the enclosure and the cover from the blade (see "Removing/Replacing the Blade Cover" on page 3-2).

3. Insert each DIMM vertically into its slot, starting with slots 1A and 2A. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM incorrectly (see Figure 3-6).

Figure 3-6. Installing a DIMM into a Memory Slot

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.
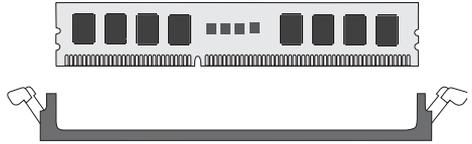
To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

4. Gently press down on the DIMM until it snaps into place in the slot. Repeat for all modules (see Table 3-1 for installing DIMMs into the slots in the correct order).

5. Replace the air shroud and the blade cover and install the blade module back into the enclosure.

6. Power up the blade unit (see "Powering Up a Blade Unit" on page 3-1).

3-6 Hard Disk Drive Installation

Hard disk drives are installed in "carriers" which are hot-swappable and can be removed or replaced without powering down the blade unit they reside in. A blade module needs a hard disk drive with an operating system installed to operate.

> **WARNING:** To maintain proper airflow, both hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the carrier.

To remove a hard drive carrier, do the following:

Removing a Hard Drive Carrier

1. Locate the colored "Open" button at the bottom of the drive carrier and press it with your thumb. This action releases the drive carrier from the drive bay.

2. Pull the release handle out about 45-degrees, then use it to pull the drive carrier out.

To Install a hard drive, use the following procedure:

Installing a Hard Drive

1. Remove a blank drive carrier from the blade (see removal procedure above).

2. Insert a 2.5" drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.

3. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked "SAS/SATA" to aid in correct installation.

4. Secure the drive to the carrier with four screws as shown in Figure 3-7: "Installing a Hard Drive in a Carrier" on page 3-10.

5. Insert the drive carrier into its slot keeping the Open button at the bottom. When the carrier reaches the rear of the bay the release handle will retract.

6. Push the handle in until you hear the carrier click into its locked position.

Figure 3-7. Installing a Hard Drive in a Carrier
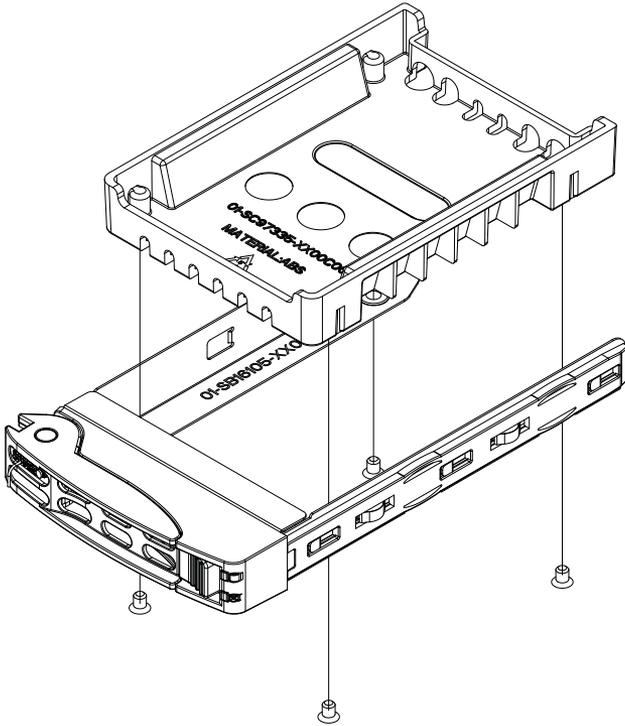
3-7   Installing the Operating System

An operating system (OS) must be installed on each blade module. Blades with Microsoft Windows OS and blades with Linux OS can both occupy and operate within the same blade enclosure. Refer to the SuperMicro web site for a complete list of supported operating systems.

There are several methods of installing an OS to the blade modules.

Installing with an External USB CD-ROM Drive

The most common method of installing the OS is with an external USB CD-ROM drive. Take the following steps to install the OS to a blade module:

> **WARNING:** Installing the OS from an external CD-ROM drive may take several hours to complete.

1. Connect an SUV cable (Serial port/USB port/Video port cable) to the KVM connector on the front of the blade module. You will then need to attach a USB hub to the USB port on this cable to provide multiple USB ports.

2. Connect the external CD-ROM drive, a USB keyboard and a mouse to the USB hub. You will also need to connect a monitor to the video connector on the SUV cable. Turn on the blade module.

3. Insert the CD containing the OS into the CD-ROM drive.

4. Follow the prompts to begin the installation.

Installing via PXE Boot

PXE (Preboot Execution Environment) is used to boot a computer over a network. To install the OS via PXE, the following conditions must be met:

1. The PXE BOOT option in BIOS must be enabled.

2. A PXE server has been configured (this can be another blade in the system).

3. The PXE server must be connected over a network to the blade to be booted.

4. The blade has only non-partitioned/unformatted hard drives installed and no bootable devices attached to it.

Once these conditions are met, make sure the PXE server is running. Then turn on the blade on which you wish to boot and/or install the OS. The BIOS in the blade will look at all bootable devices and finding none will connect to the PXE server to begin the boot/install.

Installing via Virtual Media (Drive Redirection)

You can install the OS via Virtual Media through either the *IPMIview* (Java based client utility), *SuperBladeTool* or the *Web-based Management Utility.* With this method, the OS is installed from an ISO image that resides on another system/blade.

Refer to the manuals on your SuperBlade CD-ROM for further details on the Virtual Media (CD-ROM or Drive Redirection) sections of these two utility programs.

3-8   Management Software

System management may be performed with either of three software packages: *IPMIview*, *SuperBladeTool* or a *Web-based Management Utility.* These are designed to provide an administrator with a comprehensive set of functions and monitored data to keep tabs on the system and perform management activities.

Refer to the manuals on your SuperBlade CD-ROM for further details on the various functions provided by these management programs.

3-9   Configuring and Setting up RAID

Each blade module that supports two or more hard drives may be used to create a RAID array. The procedures for doing this vary depending upon the blade model chosen for your SuperBlade system.

See Chapter 5 for details on how to configure and set up RAID on your blade module.

Chapter 4
Blade Module Features

Figure 4-1. SBI-7226T-T2 Blade Unit Front View
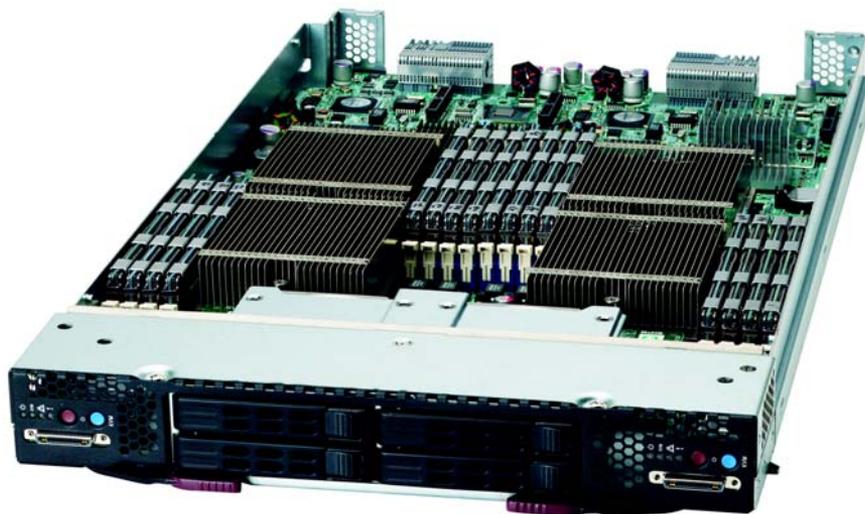
This chapter describes the SBI-7226T-T2 blade unit. Installation and maintenance should be performed by experienced technicians only.

See Figure 4-1 for a front view of the blade unit and Table 4-1 for its features.

Table 4-1. SBI-7226T-T2 Blade Unit Features

Feature	Description
Processors	Supports Dual 1366-pin LGA Socket processors for up to two Intel 64-bit quad-core Xeon series processors.
Memory	Supports up to 64 GB of ECC Registered DDR3-1333/1066/800 SDRAM DIMMs or 16 GB of ECC Unbuffered DDR3-1333/1066/800 SDRAM DIMMs in six DIMM slots
Storage	One or two 2.5" hot-plug SATA hard disk drives per node
Ports	KVM port (1)
Features	Onboard Matrox G200eW Graphics chip with 16 MB of SDRAM, IPMI 2.0, Plug and Play, APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0/2.0, SMBIOS 2.3, Real Time Clock
Power Consumption	Base Power Draw (~35W) / Power per CPU (60W/80W/95W) / Power per DIMM (typically ~7W)

4-1   Control Panel

Each blade has a similar control panel (Figure 4-2) with power on/off button, a KVM connector, a KVM button and four LEDs on the top front of the unit. The numbers mentioned in Figure 4-2are described in Table 4-2.

Figure 4-2. Blade Control Panel
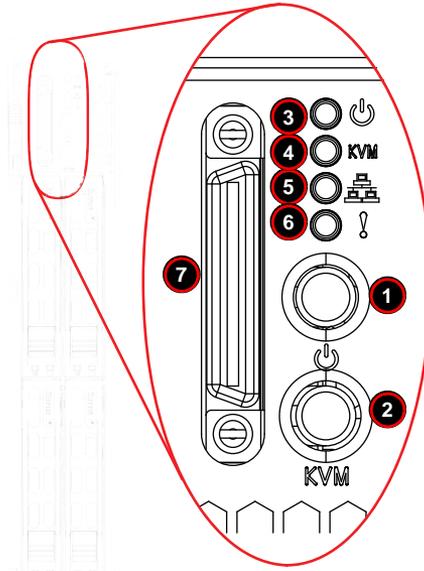
Table 4-2. Blade Control Panel

Item	Function	State	Description
1	Power Button	N/A	Turns blade module on and off
2	KVM Button	N/A	Initiates KVM function
3	Power LED	Green	Indicates power status "On"
		Orange	Indicates power status "Off" (with power cables plugged in)
4	KVM/UID LED	Blue	Indicates KVM being utilized on blade unit
		Flashing Blue	Indicates UID activated on blade module
5	Network/IB LED	Flashing Green	Indicates network activity over LAN
		Flashing Orange	Indicates network activity over InfiniBand module
6	System Fault LED	Red	Indicates a memory error, overheat, VGA error or any error that prevents booting
7	KVM Connector	N/A	Connector for SUV/KVM cable

Power Button

Each blade has its own power button so that individual blade units within the enclosure may be turned on or off independently of the others. Press the power button (#1) to turn on the blade server. The power LED (#3) will turn green. To turn off, press and hold the power button for >4 seconds and the power LED will turn orange.

KVM Button

KVM stands for Keyboard/Video/Mouse. With KVM, a user can control multiple blades with a single keyboard/video/mouse setup. Connect your keyboard, mouse and monitor to the USB and VGA connectors on the CMM module, then push the KVM button on the control panel of the blade module you wish to access.

LED Indicators

Blade module LEDs are described below in Table 4-3.

Table 4-3. Blade Module LED Indicators

LED	State	Description
Power LED	Green	Power On
	Amber	Standby
	Red	Power Failure[a]
KVM/UID LED (Blue)	Steady On	Indicates that KVM has been initialized on this blade module
	Flashing	Serves as a UID indicator (the UID function is activated with a management program)
Network LED (Green)	Flashing	Flashes on and off to indicate traffic (Tx and Rx data) on the LAN connection to this blade module.
System Fault LED (Red)	Steady On	This LED illuminates red when a fatal error occurs. This may be the result of a memory error, a VGA error or any other fatal error that prevents the operating system from booting up.

a. In the event of a power failure, the N+1 Redundant Power Supply (if included in your system's configuration) shares the system load to provide uninterrupted operation. The failed power supply should be replaced with a new one as soon as possible.

KVM Connector

Alternatively, you may connect a KVM cable (CBL-0218L, with a keyboard/video/mouse attached) to the KVM connector (#7) of the blade you wish to access. To switch to another blade, disconnect the cable then reconnect it to the new blade.

See the *Web-based Management Utility User's Manual* on your SuperBlade system CD-ROM for further details on using the KVM function remotely.

4-2   Mainboard

The mainboard of the SBI-7226T-T2 blade unit is a proprietary design, which is based on the Intel 5500/IOH-24D Tylersburg + ICH10R chipset. See Figure 4-4 for a block diagram of this chipset, Figure 4-3 for a view of the B8DTT Mainboard and Figure 4-5 for an exploded view diagram of the blade unit.

Figure 4-3. B8DTT Mainboard
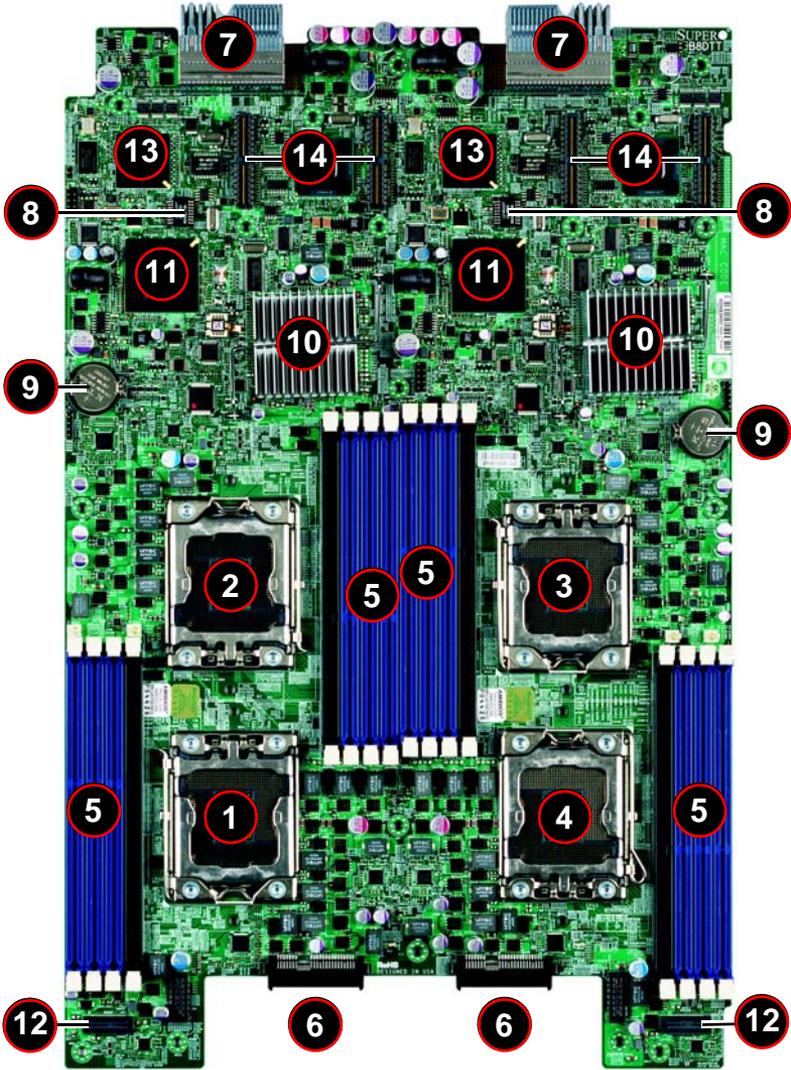
Table 4-4. B8DTT Mainboard Layout

Item	Description
1	CPU1 Socket
2	CPU2 Socket
3	CPU3 Socket
4	CPU4 Socket
5	DIMM Slots (see Figure 3-5: "8-Slot DIMM Numbering" on page 3-7 for details).
6	Space for 2.5" SATA Hard Drive
7	Gbx Connector (for power and logic to backplane)
8	BIOS Chip
9	Onboard Battery
10	Intel 5500 Chip/IOH-24D
11	ICH10R Chip
12	KVM Module
13	Matrox G200eW Graphics chip
14	InfiniBand Daughter Card Connectors

**Figure 4-4. Intel 5500/IOH-24D Tylersburg + ICH10R Chipset: Block Diagram
for SBI-7226T-T2**

Jumpers

The jumpers present on the mainboard are used by the manufacturer only; there are no jumpers used to configure the operation of the mainboard.

CMOS Clear

JBT1 is used to clear CMOS and will also clear any passwords. JBT1 consists of two contact pads located near the BIOS chip (#10 in Figure 4-3).

Clearing CMOS

1. First power down the blade and remove it from the enclosure.

2. Remove the blade cover to access the mainboard (see Section : Removing/ Replacing the Blade Cover on page 3-2 for further details). Short the CMOS pads with a metal object such as a small screwdriver.

3. Replace the cover, install the blade back into the enclosure and power it on.

4-3   Blade Unit Components

Figure 4-5. Exploded View of SBI-7226T-T2 Blade Module
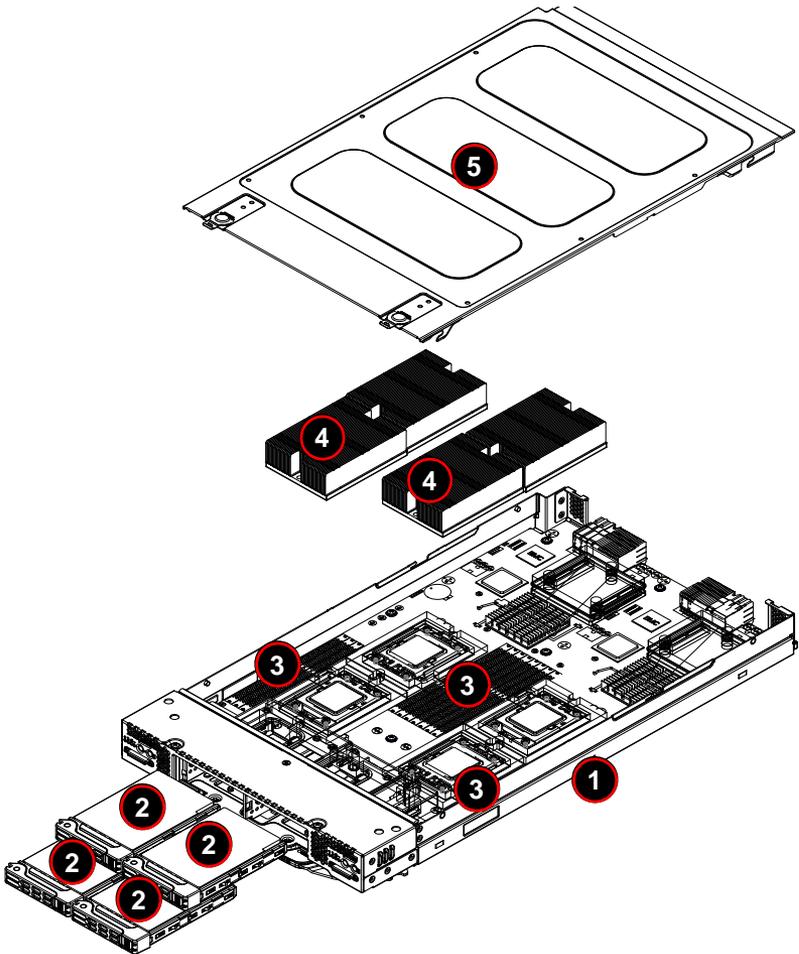
Table 4-5. Main Components of SBI-7226T-T2 Blade Unit

Item	Description
1	Blade Unit/Module
2	SATA Hard Drives (2 per blade node, 4 total)
3	DIMMs (system memory, 8 per node)
4	CPU Heatsinks (4)
5	Top Cover

Memory Support

The SBI-7226T-T2 blade module supports up to 64 GB of ECC Registered DDR3-1333/1066/800 SDRAM or 16 GB of ECC Unbuffered DDR3-1333/1066/800 SDRAM in six DIMM sockets. See Section 3-5 for further details on mainboard memory installation.

Hard Disk Drives

The SBI-7226T-T2 blade unit accommodates up to four 2.5" SATA hard disk drives, two per node, which are mounted in drive "carriers". The drives are hot-swappable and can be removed or replaced without powering down the blade unit they reside in. The four drives can be used to set up a RAID array (SATA RAID 0 or 1 only) or JBOD. These drives use a yellow color for the Blade HDD active LED.

WARNING: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro WEB SITE at http://www.supermicro.com/products/nfo/files/storage/SAS-1-CompList-110909.pdf.

WARNING: To maintain proper airflow, both hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the carrier.

Chapter 5
RAID Setup Procedure

Each SBI-7226T-T2 blade module supports four hard drives, two per node, which may be used to create a RAID array. For the blade's B8DTT mainboard, you may use the BIOS setup to configure for either the Intel or Adaptec RAID controller and utility: use the Intel driver for Windows and the Adaptec driver for Linux - both are included on the CD that ships with the system.

Important Notes

Please read the following notes and warnings before setting up your RAID array.

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

NOTE: If you stop the BUILD or CLEAR process on a RAID 1 from the *ACU*, you can restart it by pressing <CTRL> + <R>.

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

NOTE: The *ACU* allows you to use drives of different sizes in an array. However, during a build operation, only the smaller drive can be selected as the source or first drive.

NOTE: When migrating from single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.

WARNING: Adaptec does not recommend that you migrate or build an array on Windows dynamic disks (volumes), as it will result in data loss.

WARNING: Do not interrupt the creation of a RAID 0 using the MIGRATE option. If you do, you will not be able to restart or to recover the data that was on the source drive.

5-1   BIOS Configuration Utilities

The SBI-7226T-T2 blade module uses either a Intel or Adaptec RAID Configuration Utility to do the final RAID configuration on your system. The choice depends upon which configuration utility you chose in the BIOS setup.

For details and instructions on the use of these utilities see the SuperMicro website at http://www.supermicro.com/support/manuals/ for these RAID Installation Guides.

5-2   BIOS Setup

Use the BIOS setup to configure for either the Intel or Adaptec RAID Utility and to other set RAID options. The BIOS setup procedure is shown below.

See Chapter 6 for information on using your system's BIOS setup.

Setting up the BIOS for RAID

1.   In the ADVANCED SETTINGS screen of the BIOS Setup, select the IDE CONFIGURATION sub-menu (Figure 5-1) and press ENTER.

Figure 5-1. Advanced Settings Screen
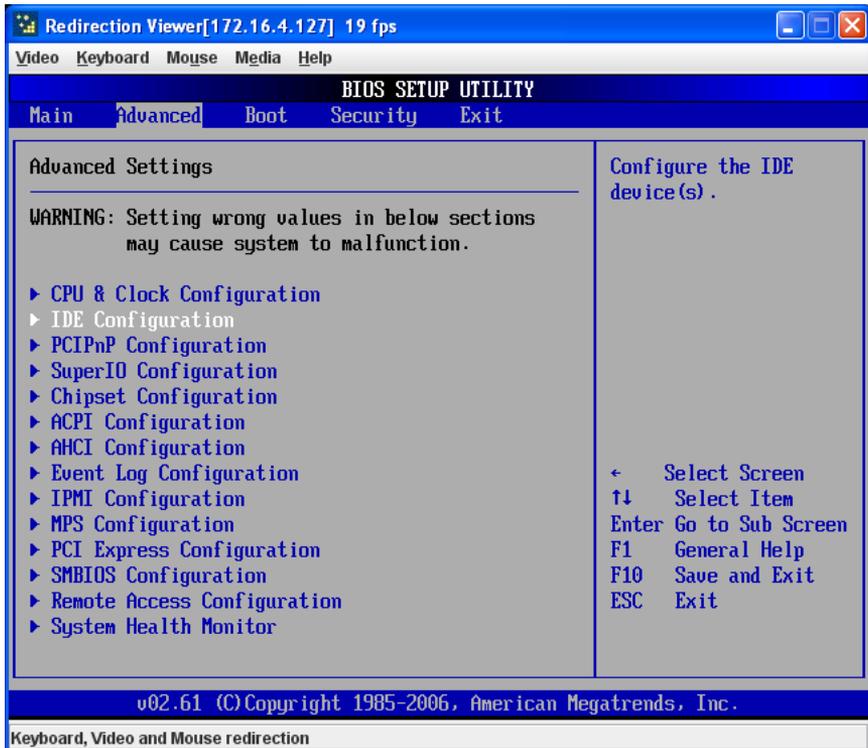
2. In the IDE Configuration screen that appears (Figure 5-2), select the SATA drives you wish to configure as RAID drives. For each drive, select the CONFIGURE SATA# AS menu option and select the RAID option for it.

    The screen will change to reflect your changes and display new menu options.

Figure 5-2. IDE Configuration Screen – Configure RAID Drives

3. In the changed IDE CONFIGURATION screen, select the MAX PORTS ON SATA# option and set your ports selection (Figure 5-3).

Figure 5-3. Selecting Max Ports Option
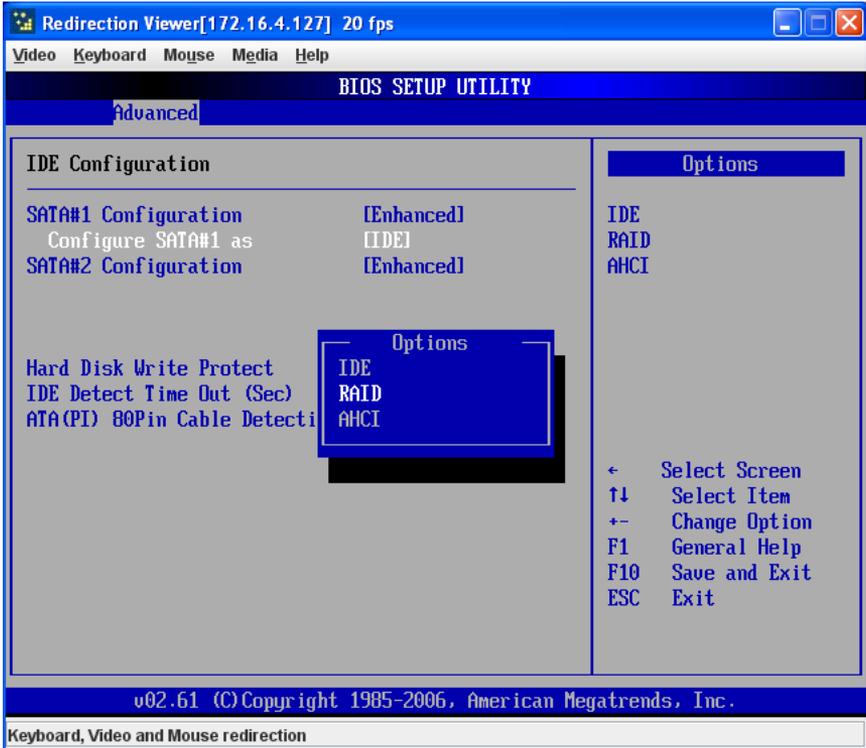
4. For the RAID ID Support menu option (Figure 5-4), select either the Intel or Adaptec utility for configuring your RAID configuration.

Figure 5-4. Selecting RAID Utility
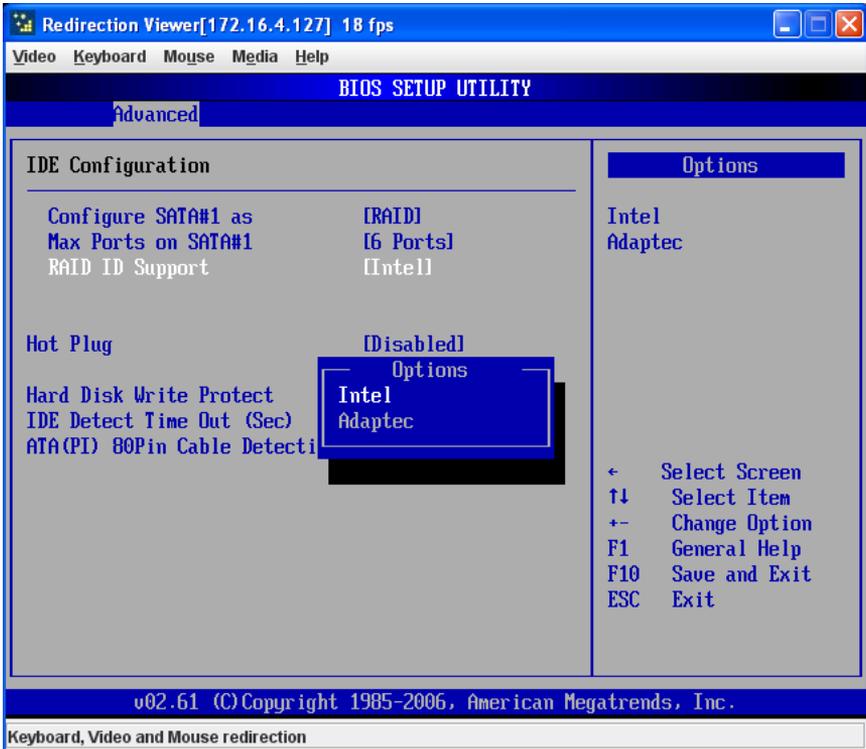
5. The last option is for enabling or disabling Hot Plug support for your RAID configuration using the HOT PLUG menu option (Figure 5-5).

Figure 5-5. Enabling Hot Plug
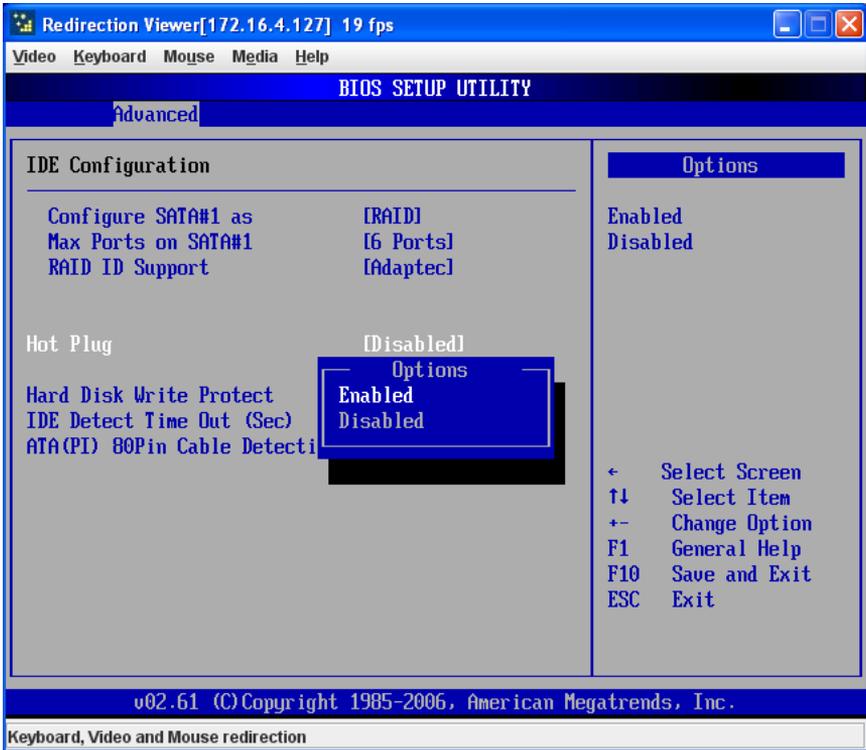
6. Press the Esc key once to exit the IDE CONFIGURATION screen and go to the EXIT menu in the BIOS setup. From the Exit menu, select SAVE CHANGES AND EXIT to confirm your RAID configuration changes and exit the BIOS Setup (Figure 5-6).

Figure 5-6. Exit BIOS Setup
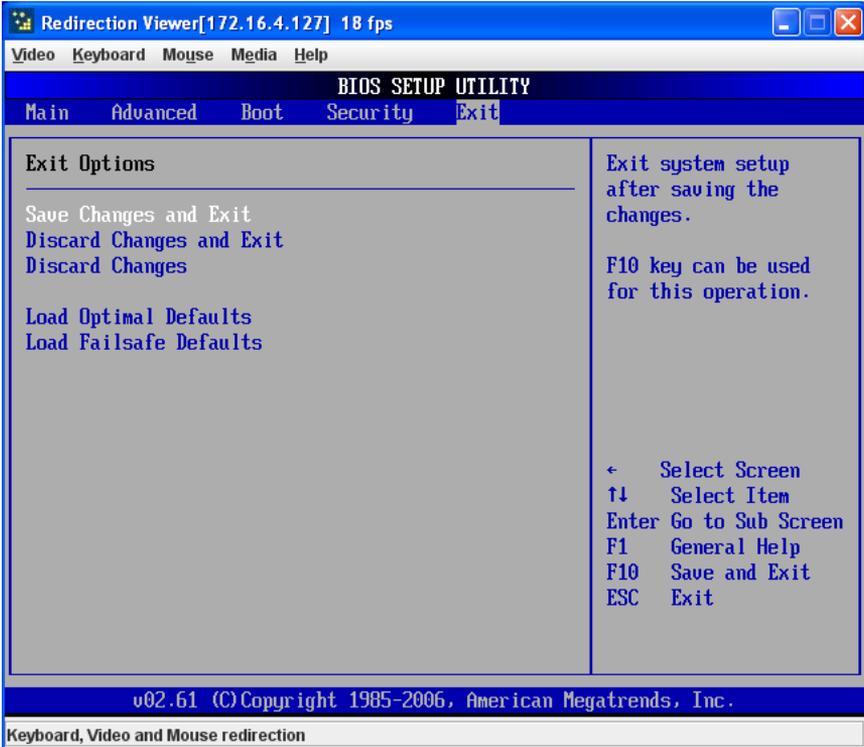
7. Your system will reboot. When the reboot displays the screen message in Figure 5-7 press CTRL-A to bring up the RAID Configuration Utility you chose in step 4 (Intel or Adaptec).

Figure 5-7. Screen Message
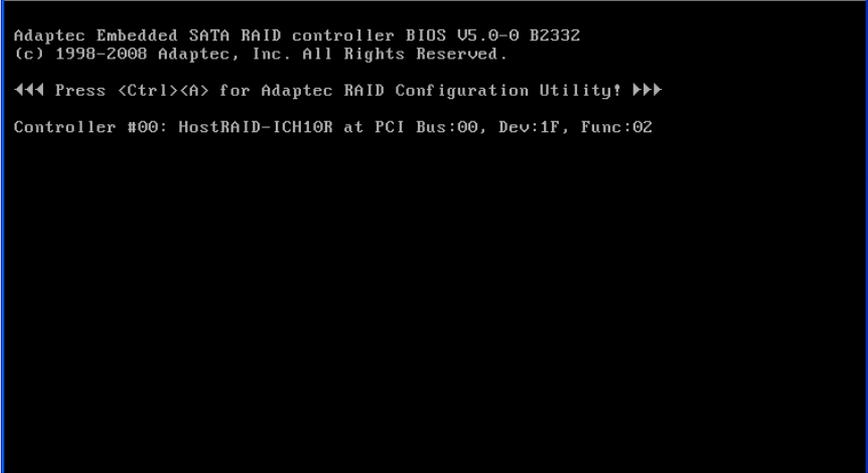
Chapter 6
BIOS

6-1   Introduction

This document describes the AMI® BIOS Setup utility for the SBI-7226T-T2 Blade Module. The AMI ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Running Setup

NOTE: Default settings are in **bold** text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the MAIN BIOS SETUP screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options.

When you first power on the computer, the BIOS is immediately activated. While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <DELETE> immediately after turning the system on, or

2. When the message **Press the <Delete> key to enter Setup** appears briefly at the bottom of the screen during the POST, press the <DELETE> key to activate the main SETUP menu.

6-2   Main BIOS Setup Menu

The MAIN MENU screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. 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.

NOTE: The BIOS has default text messages built in. SuperMicro retains the option to include, omit, or change any of these text messages.

Settings printed in **Bold** are the default values. Use the UP/DOWN arrow keys to move among the different settings in each menu. Use the LEFT/RIGHT arrow keys to change the options for each setting.

Items that use sub-menus are indicated with the ▶ icon. With the item highlighted, press the <ENTER> key to access the submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <ENTER>, <ESC>, <ARROW> keys, and so on) can be used at any time during the setup navigation process. Press the <ESC> key to exit the CMOS SETUP menu.

When you first enter the AMI BIOS Setup utility, you will see the MAIN MENU screen. You can always return to the MAIN MENU by selecting the **Main** tab on the top of the screen with the arrow keys. The MAIN MENU screen provides you with a system overview, which includes the version, built date and ID of the AMIBIOS, the type, speed and number of the processors in the system and the amount of memory installed in the system.

System Time/System Date

You can edit the SYSTEM TIME/SYSTEM DATE field to change the system time and date. Highlight SYSTEM TIME or SYSTEM DATE using the <ARROW> keys. Enter new values through the keyboard. Press the <TAB> key or the <ARROW> keys to move between fields.

The date must be entered in **DAY/MM/DD/YYYY** format. The time is entered in **HH:MM:SS** format. Please note that time is in a 24-hour format. For example, 5:30 A.M. appears as 05:30:00 and 5:30 P.M. as 17:30:00.

6-3   Advanced Settings Menu

Choose **Advanced** from the BIOS Setup Utility main menu with the arrow keys. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <ENTER>. Below is a list of all submenus in the ADVANCED SETTINGS menu:

- CPU & Clock Configuration
- IDE Configuration
- PCI/PnP Configuration
- Super IO Configuration
- Chipset Configuration
- ACPI Configuration
- AHCI Configuration
- Event Log Configuration
- IPMI Configuration
- Intel VT-d Configuration
- MPS Configuration
- PCI Express Configuration
- SMBIOS Configuration
- Remote Access Configuration
- System Health Monitor

CPU & Clock Configuration

The menu options in the CPU CONFIGURATION submenu and their descriptions are shown in Table 6-1.

Table 6-1. CPU Configuration Submenu

Menu Option	Description
CPU Settings (Static)	This menu displays static information for Module Version, Manufacturer, Frequency, BCLK Speed, Cache L1, Cache L2, Cache L3, Ratio Status and Ratio Actual Value.
Ratio CMOS Setting	This setting sets the ratio between CPU Core Clock and the FSB Frequency. The default is **20**.
Hardware Prefetcher	For UP platorms leave this setting enabled. For DP/MP servers, you can use this setting to tune performance to the specific application.Settings are **Enabled** and Disabled.
Adjacent Cache Line Prefetch	For UP platorms leave this setting enabled. For DP/MP servers, you can use this setting to tune performance to the specific application.Settings are **Enabled** and Disabled.
MPS and ACPI MADT Ordering	This setting specifies either MODERN ORDERING for Windows XP or later OS's or **Legacy Ordering** for Windows 2000 or earlier OS's.
Max CPUID Value Limit	This setting is disabled for WindowsXP. Settings are Enabled and **Disabled**.
Intel (R) Virtualization Tech	When enabled, a VMM can utilize the additional HW Caps that are provided by Intel Virtualization Technology. Settings are **Enabled** and Disabled. **NOTE:** A full reset is required to change this setting.
Execute-Disable Bit Capability	When disabled, this setting forces the XD feature flag to always return to 0. Settings are **Enabled** and Disabled.
Intel (R) HT Technology	When Disabled, only one thread per enabled core is enabled. Settings are **Enabled** and Disabled.
Active Processor Cores	This setting specifies the number of cores in each processor package to activate. Settings are **All**, 1 or 2.
A20M	Legacy OSes and APs may need A20M enabled. Settings are Enabled and **Disabled**.
Intel SpeedStep(tm) tech	Use this setting to enable or disable GV3. Settings are **Enabled** and Disabled.
Intel (R) TurboMode Tech	Turbo mode allows the processor cores to run faster than their marked frequency in specific conditions. Settings are **Enabled** and Disabled.
Intel (R) C-State tech	When enabled, the CPU idle is set to C2/C3/C4. Settings are **Enabled** and Disabled.
C3 State	Use this setting to select the Nehalem C-state action. Settings are Disabled, **ACPI C2** and ACPI C3.
C6 State	Use this setting to enable or disable the Nehalem C6 state action. Settings are **Enabled** and Disabled.
C State Package Limit Setting	Use this setting to select the option that will program into C State the package limit register. Settings include **Auto**, C1, C3, C6 and C7.

Table 6-1. CPU Configuration Submenu (Continued)

Menu Option	Description
C1 Auto Demotion	When this setting is enabled, the CPU will conditionally demote C3/C6/C7 requests to C1 based on uncore auto-demote information. Settings are **Enabled** and Disabled.
C3 Auto Demotion	When this setting is enabled, the CPU will conditionally demote C6/C7 requests to C3 based on uncore auto-demote information. Settings are **Enabled** and Disabled.
Spread Spectrum Mode	Use this setting to Enable or **Disable** Spread Spectrum Mode.

IDE Configuration

The menu options in the IDE ConfiguraTION submenu and their descriptions are shown in Table 6-2

Table 6-2. IDE Configuration Submenu

Menu Option	Description
SATA#1 Configuration	This setting allows you to set your SATA#1 Configuration as either **Enhanced**, DISABLED or COMPATIBLE.
Configure SATA#1 as	Use this setting to configure SATA#1. Options include **IDE**, RAID or AHCI.
Max Ports on SATA#1	Use this setting to specify the maximum ports on SATA#1. Options include 4-ports and **6-ports**.
RAID ID Support	If you have selected the RAID setting above, then you may use this setting to specify the RAID ID support used. Options include **Intel** or ADAPTEC.
Hot Plug	If you have selected the RAID setting above, then you may use this setting to enable or disable Hot Plugging. Settings are Enabled and **Disabled**.
Hard Disk Write Protect	Use this setting to Enable or **Disable** device write protection. This will be effective only if device is accessed through the BIOS.
IDE Detect Time Out (Sec)	This setting allows you to select the time out value for detecting ATA/ATAPI devices. Options are 5-second increments between 5 and 35 seconds. Default is **35**.
ATA(PI) 80-Pin Cable Detection	This setting allows you to select the mechanism for detecting an 80-pin ATA(PI) cable. Options include Host, Device or **Host & Device**.

PCI/PnP Configuration

The menu options in the PCI/PNP CONFIGURATION submenu and their descriptions are shown in Table 6-3.

Table 6-3. PCI/PnP Configuration Submenu

Menu Option	Description
Clear NVRAM	Select YES to clear NVRAM during boot-up. The options are YES and **No**.
Plug & Play OS	Select YES to allow the OS to configure Plug & Play devices. **NOTE:** Selecting YES is not required for system boot if your system has an OS that supports Plug & Play. Select **No** to allow AMIBIOS to configure all devices in the system.
PCI Latency Timer	This option sets the latency of all PCI devices on the PCI bus. Select a value to set the PCI latency in PCI clock cycles. Options are 32, **64**, 96, 128, 160, 192, 224 and 248.
Allocate IRQ to PCI VGA	Set this value to allow or restrict the system from giving the VGA adapter card an interrupt address. The options are **Yes** and NO.
Palette Snooping	Select ENABLED to inform the PCI devices that an ISA graphics device is installed in the system in order for the graphics card to function properly. The options are ENABLED and **Disabled**.
PCI IDE BusMaster	When enabled, this allows BIOS to use PCI busmastering for reading/writing to IDE drives. Options include **Enabled** and Disabled.
Offboard PCI/ISA IDE Card	Some PCI cards may require that this setting be set to the PCI slot number that is holding the card. The Auto setting works for most PCI IDE cards. Options include **Auto** and PCI Slot 1 thorugh PCI Slot 6.
IRQ3/IRQ4/IRQ5/ IRQ7/IRQ9/IRQ10/ IRQ11/IRQ14/IRQ15	This feature specifies the availability of an IRQ to be used by a PCI/PnP device. Select RESERVED for the IRQ to be used by a Legacy ISA device. The options are **Available** and RESERVED.
DMA Channel 0/ Channel 1/Channel 3/ Channel 5/Channel 6/ Channel 7	Select **Available** to indicate that a specific DMA channel is available to be used by a PCI/PnP device. Select RESERVED if the DMA channel specified is reserved for a Legacy ISA device. The options are **Available** and Reserved.
Reserved Memory Size	You may set reserved memory with this setting. The options are **Disabled**, 16K, 32K and 64K.

Super IO Configuration

The menu options in the SUPER IO CONFIGURATION submenu and their descriptions are shown in Table 6-4.

Table 6-4. Super IO Configuration Submenu

Menu Option	Description
Serial Port1 Address	This option specifies the base I/O port address and Interrupt Request address of serial port 1. The options are DISABLED, **3F8/IRQ4**, 3E8/IRQ4 and 2E8/IRQ3. • Select DISABLED to prevent the serial port from accessing any system resources. When this option is set to DISABLED, the serial port physically becomes unavailable. • Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address.
Serial Port2 Address	This option specifies the base I/O port address and Interrupt Request address of serial port 2. The options are DISABLED, **2F8/IRQ3**, 3E8/IRQ4 and 2E8/IRQ3. Select DISABLED to prevent the serial port from accessing any system resources. When this option is set to DISABLED, the serial port physically becomes unavailable. Select 2F8/IRQ3 to allow the serial port to use 2F8 as its I/O port address and IRQ 3 for the interrupt address.
Serial Port 2 Mode	This tells the BIOS which mode to select for serial port 2. The options are **Normal**, IRDA and ASKIR.

Chipset Configuration

The CHIPSET CONFIGURATION submenu contains two submenus as shown in Table 6-5.

Table 6-5. Chipset Configuration Submenu

Menu Option	Description
▶ CPU Bridge Configuration	This menu configures the CPU Bridge features. For details see Table 6-6.
▶ NorthBridge Configuration	This menu configures the NorthBridge Chip. For details see Table 6-7.
▶ SouthBridge/ Configuration	This menu configures the SouthBridge Chip. For details see Table 6-8.

CPU Bridge Configuration

The menu options in the NORTHBRIDGE CONFIGURATION submenu and their descriptions are shown in Table 6-6.

Table 6-6. CPU Bridge Configuration Submenu

Menu Option	Description
CPU Information (Static)	Displays for CPU Revision, Current QPI Frequency, Current Memory Frequency, Memory Reference Code Revision and CSI Reference Code Revision are all statically displayed at the top of this menu.
QPI Links Speed	This setting allows you to transition the QPI links to **Full-speed** or leave them in Slow-mode.
QPI Frequency	This setting allows you to transition the links to the specified speed when transitioning the links to full-speed (if supported by all components). Options include **Auto**, 4.800GT, 5.866GT and 6.400GT.
QPI L0s and L1	This setting allows you to **Enable** or Disable QPI L0s and L1.
Memory Frequency	This setting forces a DDR3 frequency slower than the common tCK detected via SPD. Options include **Auto**, Force DDR-800, Force DDR-1066 and Force DDR-1333.
Memory Mode	This setting sets the Memory Mode. Options include **Independent** (independent channel), Channel Mirroring (mirrors channel space between channels), Lockstep (locksteps channel 0 and 1) and Sparing (for sparing mode).
Demand Scrubbing	This setting **Enables** or Disables ECC demand scrubbing.
Patrol Scrubbing	This setting **Enables** or Disables ECC patrol scrubbing.

NorthBridge Configuration

The menu options in the NORTHBRIDGE CONFIGURATION submenu and their descriptions are shown in Table 6-7.

Table 6-7. NorthBridge Configuration Submenu

Menu Option	Description
Static Infomation	This menu displays static information for NB Revision and the Current QPI Frequency.
Crystal Beach / DMA	This setting allows you to **Disable** or Enable the Crystal Beach DMA Configuration.
IOH Max Payload Size	Use this setting to set the IOH Max Payload Size to either **128B** or 256B.

SouthBridge Configuration

The menu options in the SOUTHBRIDGE CONFIGURATION submenu and their descriptions are shown in Table 6-8.

Table 6-8. SouthBridge Configuration Submenu

Menu Option	Description
USB Functions	This setting **Enables** or Disables USB Functions for the system. Disabling this setting allows you to configure the USB 2.0 Controller setting.
USB Port Configure	This setting allows you to specify the USB ports for your system when the USB Functions setting is enabled. Options include **6x6 USB Ports** and 8x4 USB Ports.
USB 2.0 Controller	This setting is only active when the USB Functions setting is disabled. It allows you to **Enable** or Disable the USB 2.0 Controller.
▶ USB Configuration	
USB Configuration Information (Static)	This static display shows Module Version and USB Devices Enabled information.
Legacy USB Support	Select **Enabled** to enable the support for USB Legacy. Disable Legacy support if there are no USB devices installed in the system. AUTO disables Legacy support if no USB devices are connected. The options are DISABLED, **Enabled** and AUTO.
USB 2.0 Controller Mode	Select the controller mode for your USB ports. Options are **HiSpeed** and FULLSPEED. (HiSpeed=480 Mbps, FullSpeed=12 Mbps**)**.
BIOS EHCI Hand-Off	**Enable** or DISABLE a workaround for OS's without EHCI hand-off support.
Legacy USB 1.1 HC Support	This setting allows you to **Enable** or Disable Legacy USB 1.1 HC support.
Hotplug USB FDD Support	This setting allows you to create a dummy FDD device that will be associated with the hotplugged FDD later. The Auto option creates this dummy device only if there is no USB FDD present. Options include **Auto**, Enabled and Disabled.
SMBUS Controller	This setting allows you to **Enable** or Disable the SMBUS controller.
Restore on AC Power Loss	Use this setting to specify the option for restoring on an AC power loss. Options include **Power Off**, Power On and Last State.
Power Button Function	Use this setting to specify the function of the power button when it is turned off. Options include 4-second Override and **Instant Off**.

ACPI Configuration

The menu options in the ACPI CONFIGURATION submenu and their descriptions are shown in Table 6-9.

Table 6-9. ACPI Configuration Submenu

Menu Option	Description
▶ Advanced ACPI Configuration	Use this sub-menu to configure additional ACPI options.
ACPI Version Features	This setting enables RSDP pointers to 64-bit Fixed System Description Tables. Options include ACPI v1.0, **ACPI v2.0** and ACPI v3.0.
ACpl APIC support	Use this setting to include the ACPI APIC table pointer to the RSDT pointer list. Options are **Enabled** and Disabled.
AMI OEMB Table	Use this setting to include the OEMB table pointer to the R(x)SDT pointer lists. Options are **Enabled** and Disabled.
Headless Mode	This setting Enables or **Disables** the Headless operation mode through ACPI.
NUMA Support	This setting **Enables** or Disables NUMA support.
▶ Chipset ACPI Confguration	Use this sub-menu to confgure chipset ACPI related configuration settings.
Energy Lake Feature	Use this setting to Enable or **Disable** the Energy Lake feature.
APIC ACPI SCI IRQ	Use this setting to Enable or **Disable** the APIC ACPI SCI IRQ.
USB Device Wakeup from S3/S4	Use this setting to Enable or **Disable** USB Device Wakeup from S3/S4.
High Performance Event Timer	Use this setting to Enable or **Disable** High Performance Event Timing.

AHCI Configuration

The menu options in the ACPI CONFIGURATION submenu and their descriptions are shown in Table 6-10.

Table 6-10. AHCI Configuration Submenu

Menu Option	Description
AHCI BIOS Support	Use this setting to **Enable** or Disable AHCI BIOS support.
AHCI CD/DVD Boot Time Out	This sets the AHCI CD/DVD Boot time out duration in increments from 5 to **35** seconds. Some SATA CD/DVDs in AHCI mode need to wait longer and therefore need a longer time out setting.
▶AHCI Port0~Port5 Settings	While entering setup, BIOS auto detects the presence of IDE devices and displays the status of auto detection for the device.

Table 6-10. AHCI Configuration Submenu (Continued)

Menu Option	Description
SATA Port 0~5	This setting selects the type of device connected to the system.Options include **Auto** or Not Installed.
S.M.A.R.T.	S.M.A.R.T stands for Self-Monitoring, Analysis and Reporting Technology. This setting **Enables** or Disables the S.M.A.R.T. feature.

Event Log Configuration

The menu options in the EVENT LOG CONFIGURATION submenu and their descriptions are shown in Table 6-11.

Table 6-11. Event Log Configuration Submenu

Menu Option	Description
View Event Log	Highlight this item and press <ENTER> to view the contents of the event log.
Mark All Events as Read	Highlight this item and press <ENTER> to mark all events as read.
Clear Event Log	Select Yes and press <ENTER> to clear all event logs. The options are YES and NO to verify.

IPMI Configuration

The menu options in the IPMI CONFIGURATION submenu and their descriptions are shown in Table 6-12. These options are only available with the SBI-7226T-T2 blade module.

Table 6-12. IPMI Configuration Submenu

Menu Option	Description
IPMI Information Display (Static)	This static display provides information for the Status of BMC and IPMI Firmware Revision.
▶ View BMC System Event Log	This sub-menu allows you to view all events in the BMC Event Log. It will take a maximum of 15 seconds to read all BMC SEL records.
SEL Entry Number	Use the +/- keys to traverse the BMC Event Log.
Clear BMC System Event Log	Use this option to clear all events in the BMC System Event Log.
▶ Set LAN Configuration	This is the input for the SET LAN Configuration command. See IPMI 1.5 Specification Table 19.1 for details. **NOTE:** Each question in this sub-menu may take a considerable amount of time to complete.
▶ IP Address	Use this sub-menu for IP Address configuration.

Table 6-12. IPMI Configuration Submenu (Continued)

Menu Option	Description
IP Address Source	This setting allows you to specify either a **DHCP** or Static IP Address Soruce. If you select Static for the IP Address Source, then the IP Address setting becomes active.
IP Address	This setting allows you to set the IP Address for your LAN Configuration in decimal format of XXX.XXX.XXX.XXX and with values less than 256. The current IP Address is statically displayed below.
▶ MAC Address	Use this sub-menu for MAC Address configuration.
MAC Address	This setting allows you to set the IP Address for your LAN Configuration in hex format of XX.XX.XX.XX.XX.XX. The current MAC Address is statically displayed below.
▶ Subnet Mask	Use this sub-menu forSubnet Mask configuration.
Subnet Mask	This setting allows you to set the Subnet Mask for your LAN Configuration in decimal format of XXX.XXX.XXX.XXX and with values less than 256. The current Subnet Maks is statically displayed below.
▶ Gateway Address	Use this sub-menu for Gateway Address configuration.
Gateway Address	This setting allows you to set the Gateway Address for your LAN Configuration in decimal format of XXX.XXX.XXX.XXX and with values less than 256. The current Gateway Address is statically displayed below.

Intel VT-d Configuration

The menu options in the INTEL VT-D CONFIGURATION submenu and their descriptions are shown in Table 6-13.

Table 6-13. Intel VT-d Configuration Submenu

Menu Option	Description
Intel VT-d	This setting Enables or **Disables** Intel VT-d virtualization in your system.

MPS Configuration

The menu options in the MPS CONFIGURATION submenu and their descriptions are shown in Table 6-14.

Table 6-14. MPS Configuration Submenu

Menu Option	Description
MPS Revision	This setting allows you to set the MPS Revision for your system to either 1.1 or **1.4**.

PCI Express Configuration

The menu options in the PCI Express CONFIGURATION submenu and their descriptions are shown in Table 6-15.

Table 6-15. PCI Express Configuration Submenu

Menu Option	Description
Active State Power Management	This setting allows you to Enable or **Disable** PCI Express L0s and L1 link power states.

SMBIOS Configuration

The menu options in the SMBIOS CONFIGURATION submenu and their descriptions are shown in Table 6-16.

Table 6-16. SMBIOS Configuration Submenu

Menu Option	Description
SMBIOS SMI Support	This setting allows you to **Enable** or Disable the SMBIOS SMI Wrapper support for PnP func 50h-54h.

Remote Access Configuration

The menu options in the REMOTE ACCESS CONFIGURATION submenu and their descriptions are shown in Table 6-17.

Table 6-17. Remote Access Configuration Submenu

Menu Option	Description
Remote Access	Allows you to **Enable** or Disable remote access. If enabled, the settings below will appear.
Serial Port Number	Selects the serial port to use for console redirection. Options are COM1 and **COM2**.
Serial Port Mode	Selects the serial port settings to use. Options are **(115200 8, n, 1)**, (57600 8, N, 1), (38400 8, N, 1), (19200 8, N, 1) AND (09600 8, N, 1).
Flow Control	Selects the flow control to be used for console redirection. Options are **None,** HARDWARE and SOFTWARE.
Redirection After BIOS POST	Options are DISABLE (no redirection after BIOS POST), BOOT LOADER (redirection during POST and during boot loader) and **Always** (redirection always active). Note that some OS's may not work with this set to Always.
Terminal Type	Selects the type of the target terminal: **ANSI**, VT100 and VT-UTF8.
VT-UTF8 Combo Key Support	Allows you to **Enable** or DISABLE VT-UTF8 combination key support for ANSI/ VT100 terminals.
Sredir Memory Display Delay	Use this setting to set the delay in seconds to display memory information. Options are **No Delay**, 1 SEC, 2 SECS and 4 SECS.

System Health Monitor

The SYSTEM HEALTH MONITOR submenu contains systems monitor displays for the following information: CPU1 TEMPERATURE, CPU2 TEMPERATURE, SYSTEM TEMPERATURE, CPU1 VCORE, CPU2 VCORE, 3.3V VCC, +5VIN, +12VIN, CPU1 DDR3 VTT, CPU2 DDR3 VTT, 5V STANDBY and BATTERY VOLTAGE.

6-4   Boot Menu

The menu options for the BOOT menu are shown in Table 6-18.

Table 6-18. Boot Menu

Menu Option	Description
▶ Boot Settings Configuration	This sub-menu allows you to configure setting for system boot.
Quick Boot	If ENABLED, this option will skip certain tests during POST to reduce the time needed for the system to boot up. The options are **Enabled** and DISABLED.
Quiet Boot	If **Disabled**, normal POST messages will be displayed on boot-up. If ENABLED, this display the OEM logo instead of POST messages.
AddOn ROM Display Mode	Set this option to display add-on ROM (read-only memory) messages. The options are **Force BIOS** and KEEP CURRENT. The default setting is **Force BIOS**. • Select **Force BIOS** to allow the computer system to force a third party BIOS to display during system boot. • Select KEEP CURRENT to allow the computer system to display the BIOS information during system boot.
Bootup Num-Lock	Set this value to allow the NUMBER LOCK setting to be modified during boot up. The options are **On** and OFF.
PS/2 Mouse Support	Use this setting to Enable or Disable support for a PS/2 mouse in your system. Options include Enabled, Disabled and **Auto**.
Wait for 'F1' If Error	Select **Enable** to activate the WAIT FOR F1 IF ERROR function. The options are **Enabled** and DISABLED.
Hit 'DEL' Message Display	Select **Enabled** to display message to hit the DEL key to enter SETUP. The options are **Enabled** and DISABLED.
Interrupt 19 Capture	Select **Enabled** to allow ROMs to trap Interrupt 19. The options are **Enabled** and DISABLED.
Onboard NIC Option ROM	This setting allows you to set your Onboard NIC Option ROM. Options include **Disabled**, PXE and iSCSI.
▶ Boot Device Priority	Use this sub-menu to specify the boot device priority sequence for devices installed in your system. .

Table 6-18. Boot Menu

Menu Option	Description
1st ~ Boot Devices	These settings specify the boot sequence from the available devices installed in your system. A device enclosed in parenthesis indicates that it has been disabled in the corresponding type menu. Options for all three of these settings are available boot devices and Disabled. The devices to set are: • 1ST BOOT DEVICE • 2ND BOOT DEVICE • 3RD BOOT DEVICE • 4TH BOOT DEVICE and so on.
▶ Hard Disk Drives	This sub-menu specifies the boot device priority sequence from the available hadrd drives installed in your system.
1st ~ Drive	These settings specify the boot sequence from the available hard disk drives devices installed in your system. The devices to set are: • 1ST DRIVE • 2ND DRIVE • 3RD DRIVE • 4TH DRIVE and so on.

6-5   Security Menu

The menu options for the SECURITY menu are shown in Table 6-19.

The AMI BIOS provides a **Supervisor** and a **User** password. If you use both passwords, the Supervisor password must be set first.

Table 6-19. Security Menu

Menu Option	Description
Change Supervisor Password	Select this option and press <ENTER> to access the sub menu, and then type in the password.
Change User Password	Select this option and press <ENTER> to access the sub menu, and then type in the password.
Boot Sector Virus Protection	This option is near the bottom of the SECURITY SETUP screen. The options are ENABLED and **Disabled**. • Select DISABLED to deactivate the Boot Sector Virus Protection. • Select ENABLED to enable boot sector protection. When ENABLED, the AMI BIOS displays a warning when any program (or virus) issues a *Disk Format* command or attempts to write to the boot sector of the hard disk drive.

6-6   Exit Menu

Select the EXIT tab from AMI BIOS SETUP UTILITY screen to enter the EXIT BIOS SETUP screen. The options for the EXIT menu are shown in Table 6-20. You may also additionally press <ESC> to exit without saving or <F10> to save your settings and exit.

Table 6-20. Exit Menu

Menu Option	Description
Save Changes and Exit	When you have completed the system configuration changes, select this option to leave BIOS Setup and reboot the computer, so the new system configuration parameters can take effect. Select SAVE CHANGES AND EXIT from the EXIT menu and press <ENTER>.
Discard Changes and Exit	Select this option to quit BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select DISCARD CHANGES AND EXIT from the EXIT menu and press <ENTER>.
Discard Changes	Select this option and press <ENTER> to discard all the changes and return to AMI BIOS Utility Program.
Load Optimal Defaults	To set this feature, select LOAD OPTIMAL DEFAULTS from the EXIT menu and press <ENTER>. Then Select OK to allow BIOS to automatically load the OPTIMAL DEFAULTS as the BIOS Settings. The OPTIMAL SETTINGS are designed for maximum system performance, but may not work best for all computer applications.
Load Fail-Safe Defaults	To set this feature, select LOAD FAIL-SAFE DEFAULTS from the EXIT menu and press <ENTER>. The FAIL-SAFE settings are designed for maximum system stability, but not maximum performance.

Notes

Appendix A
BIOS POST Codes

A-1   BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

Table A-1. BIOS POST Messages

BIOS Message	Description
Failure Fixed Disk	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.
Stuck key	Stuck key on keyboard.
Keyboard error	Keyboard not working.
Keyboard Controller Failed	Keyboard controller failed test. May require replacing keyboard controller.
Keyboard locked - Unlock key switch	Unlock the system to proceed.
Monitor type does not match CMOS - Run SETUP	Monitor type not correctly identified in Setup
Shadow Ram Failed at offset: nnnn	Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.
System RAM Failed at offset: nnnn	System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.
Extended RAM Failed at offset: nnnn	Extended memory not working or not configured properly at offset **nnnn.**
System battery is dead - Replace and run SETUP	The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
System CMOS checksum bad - Default configuration used	System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.
System timer error	The timer test failed. Requires repair of system board.
Real time clock error	Real-Time Clock fails BIOS hardware test. May require board repair.
Check date and time settings	BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

Table A-1. BIOS POST Messages (Continued)

BIOS Message	Description
Previous boot incomplete - Default configuration used	Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.
Memory Size found by POST differed from CMOS	Memory size found by POST differed from CMOS.
Diskette drive A error Diskette drive B error	Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.
Incorrect Drive A type - run SETUP	Type of floppy drive A: not correctly identified in Setup.
Incorrect Drive B type - run SETUP	Type of floppy drive B: not correctly identified in Setup.
System cache error - Cache disabled	RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.
CPU ID:	CPU socket number for Multi-Processor error.
EISA CMOS not writeable	ServerBIOS2 test error: Cannot write to EISA CMOS.
DMA Test Failed	ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.
Software NMI Failed	ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).
Fail-Safe Timer NMI Failed	ServerBIOS2 test error: Fail-Safe Timer takes too long.
device Address Conflict	Address conflict for specified **device.**
Allocation Error for: device	Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.
CD ROM Drive	CD ROM Drive identified.
Entering SETUP...	Starting Setup program
Failing Bits: nnnn	The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.
Fixed Disk n	Fixed disk **n** (0-3) identified.
Invalid System Configuration Data	Problem with NVRAM (CMOS) data.
I/O device IRQ conflict	I/O device IRQ conflict error.
PS/2 Mouse Boot Summary Screen:	PS/2 Mouse installed.

Table A-1. BIOS POST Messages (Continued)

BIOS Message	Description
nnnn kB Extended RAM Passed	Where **nnnn** is the amount of RAM in kilobytes successfully tested.
nnnn Cache SRAM Passed	Where **nnnn** is the amount of system cache in kilobytes successfully tested.
nnnn kB Shadow RAM Passed	Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.
nnnn kB System RAM Passed	Where **nnnn** is the amount of system RAM in kilobytes successfully tested.
One or more I2O Block Storage Devices were excluded from the Setup Boot Menu	There was not enough room in the IPL table to display all installed I2O block-storage devices.
Operating system not found	Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.
Parity Check 1 nnnn	Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.
Parity Check 2 nnnn	Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**.
Press <F1> to resume, <F2> to Setup, <F3> for previous	Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.
Press <F2> to enter Setup	Optional message displayed during POST. Can be turned off in Setup.
PS/2 Mouse:	PS/2 mouse identified.
Run the I2O Configuration Utility	One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).
System BIOS shadowed	System BIOS copied to shadow RAM.
UMB upper limit segment address: *nnnn*	Displays the address *nnnn* of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.
Video BIOS shadowed	Video BIOS successfully copied to shadow RAM.

A-2   BIOS POST Codes

This section lists the POST (Power-On Self-Test) codes for the AMI BIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

- **One long and two short beeps** – video configuration error
- **One repetitive long beep** – no memory detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to *port 80h*, attempt to initialize video and write the error in the top left corner of the screen.

The following is a list of codes that may be written to *port 80h*.

Table A-2. Terminal POST Errors

Post Code	Description
02h	Verify Real Mode
03h	Disable Non-Maskable Interrupt (NMI)
04h	Get CPU type
06h	Initialize system hardware
07h	Disable shadow and execute code from the ROM.
08h	Initialize chipset with initial POST values
09h	Set IN POST flag
0Ah	Initialize CPU registers
0Bh	Enable CPU cache
0Ch	Initialize caches to initial POST values
0Eh	Initialize I/O component
0Fh	Initialize the local bus IDE
10h	Initialize Power Management
11h	Load alternate registers with initial POST values
12h	Restore CPU control word during warm boot
13h	Initialize PCI Bus Mastering devices
14h	Initialize keyboard controller
16h	1-2-2-3 BIOS ROM checksum
17h	Initialize cache before memory Auto size
18h	8254 timer initialization
1Ah	8237 DMA controller initialization
1Ch	Reset Programmable Interrupt Controller
20h	1-3-1-1 Test DRAM refresh

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
22h	1-3-1-3 Test 8742 Keyboard Controller
28h	Auto size DRAM
29h	Initialize POST Memory Manager
2Ah	Clear 512 kB base RAM
2Ch	1-3-4-1 RAM failure on address line *xxxx**
2Eh	1-3-4-3 RAM failure on data bits *xxxx** of low byte of memory bus
2Fh	Enable cache before system BIOS shadow
32h	Test CPU bus-clock frequency
33h	Initialize Phoenix Dispatch Manager
36h	Warm start shut down
38h	Shadow system BIOS ROM
3Ah	Auto size cache
3Ch	Advanced configuration of chipset registers
3Dh	Load alternate registers with CMOS values
41h	Initialize extended memory for RomPilot
42h	Initialize interrupt vectors
45h	POST device initialization
46h	2-1-2-3 Check ROM copyright notice
47h	Initialize I20 support
48h	Check video configuration against CMOS
49h	Initialize PCI bus and devices
4Ah	Initialize all video adapters in system
4Bh	QuietBoot start (optional)
4Ch	Shadow video BIOS ROM
4Eh	Display BIOS copyright notice
4Fh	Initialize MultiBoot
50h	Display CPU type and speed
51h	Initialize EISA board
52h	Test keyboard
54h	Set key click if enabled
55h	Enable USB devices
58h	2-2-3-1 Test for unexpected interrupts
59h	Initialize POST display service
5Ah	Display prompt "Press F2 to enter SETUP"
5Bh	Disable CPU cache

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
5Ch	Test RAM between 512 and 640 kB
60h	Test extended memory
62h	Test extended memory address lines
64h	Jump to UserPatch1
66h	Configure advanced cache registers
67h	Initialize Multi Processor APIC
68h	Enable external and CPU caches
69h	Setup System Management Mode (SMM) area
6Ah	Display external L2 cache size
6Bh	Load custom defaults (optional)
6Ch	Display shadow-area message
6Eh	Display possible high address for UMB recovery
70h	Display error messages
72h	Check for configuration errors
76h	Check for keyboard errors
7Ch	Set up hardware interrupt vectors
7Dh	Initialize Intelligent System Monitoring
7Eh	Initialize coprocessor if present
80h	Disable onboard Super I/O ports and IRQs
81h	Late POST device initialization
82h	Detect and install external RS232 ports
83h	Configure non-MCD IDE controllers
84h	Detect and install external parallel ports
85h	Initialize PC-compatible PnP ISA devices
86h	Re-initialize onboard I/O ports.
87h	Configure Motherboard Configurable Devices (optional)
88h	Initialize BIOS Data Area
89h	Enable Non-Maskable Interrupts (NMIs)
8Ah	Initialize Extended BIOS Data Area
8Bh	Test and initialize PS/2 mouse
8Ch	Initialize floppy controller
8Fh	Determine number of ATA drives (optional)
90h	Initialize hard-disk controllers
91h	Initialize local-bus hard-disk controllers
92h	Jump to UserPatch2

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
93h	Build MPTABLE for multi-processor boards
95h	Install CD ROM for boot
96h	Clear huge ES segment register
98h	1-2 Search for option ROMs. One long, two short beeps on check-sum failure
99h	Check for SMART Drive (optional)
9Ah	Shadow option ROMs
9Ch	Set up Power Management
9Dh	Initialize security engine (optional)
9Eh	Enable hardware interrupts
9Fh	Determine number of ATA and SCSI drives
A0h	Set time of day
A2h	Check key lock
A4h	Initialize typematic rate
A8h	Erase F2 prompt
AAh	Scan for F2 key stroke
ACh	Enter SETUP
AEh	Clear Boot flag
B0h	Check for errors
B1h	Inform RomPilot about the end of POST.
B2h	POST done - prepare to boot operating system
B4h	1 One short beep before boot
B5h	Terminate QuietBoot (optional)
B6h	Check password (optional)
B7h	Initialize ACPI BIOS
B9h	Prepare Boot
BAh	Initialize SMBIOS
BBh	Initialize PnP Option ROMs
BCh	Clear parity checkers
BDh	Display MultiBoot menu
BEh	Clear screen (optional)
BFh	Check virus and backup reminders
C0h	Try to boot with INT 19
C1h	Initialize POST Error Manager (PEM)
C2h	Initialize error logging
C3h	Initialize error display function

Table A-2. Terminal POST Errors (Continued)

Post Code	Description
C4h	Initialize system error handler
C5h	PnPnd dual CMOS (optional)
C6h	Initialize note dock (optional)
C7h	Initialize note dock late
C8h	Force check (optional)
C9h	Extended checksum (optional)
CAh	Redirect Int 15h to enable remote keyboard
CBh	Redirect Int 13h to Memory Technologies Devices such as ROM, RAM, PCMCIA, and serial disk
CCh	Redirect Int 10h to enable remote serial video
CDh	Re-map I/O and memory for PCMCIA
CEh	Initialize digitizer and display message
D2h	Unknown interrupt

The following are for the boot block in Flash ROM:

Table A-3. Boot Block Flash ROM Terminal POST Errors

Post Code	Description
E0h	Initialize the chipset
E1h	Initialize the bridge
E2h	Initialize the CPU
E3h	Initialize system timer
E4h	Initialize system I/O
E5h	Check force recovery boot
E6h	Checksum BIOS ROM
E7h	Go to BIOS
E8h	Set Huge Segment
E9h	Initialize Multi Processor
EAh	Initialize OEM special code
EBh	Initialize PIC and DMA
ECh	Initialize Memory type
EDh	Initialize Memory size
EEh	Shadow Boot Block
EFh	System memory test
F0h	Initialize interrupt vectors
F1h	Initialize Run Time Clock

Table A-3. Boot Block Flash ROM Terminal POST Errors (Continued)

Post Code	Description
F2h	Initialize video
F3h	Initialize System Management Manager
F4h	Output one beep
F5h	Clear Huge Segment
F6h	Boot to Mini DOS
F7h	Boot to Full DOS

If the BIOS detects error 2C, 2E, or 30 (base 512K RAM error), it displays an additional word-bitmap (*xxxx*) indicating the address line or bits that failed. For example, "2C 0002" means address line 1 (bit one set) has failed. "2E 1020" means data bits 12 and 5 (bits 12 and 5 set) have failed in the lower 16 bits. The BIOS also sends the bitmap to the port-80 LED display. It first displays the checkpoint code, followed by a delay, the high-order byte, another delay, and then the low order byte of the error. It repeats this sequence continuously.

Notes

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