SUPERO®

# SUPERO® X6DLP-4G2
# SUPERO® X6DLP-EG2

# USER'S MANUAL

Revision 1.0c

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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 Revision 1.0b

Release Date: June 5, 2007

# Preface

## About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPER® X6DLP-4G2/X6DLP-EG2 motherboard. The SUPER® X6DLP-4G2/X6DLP-EG2 supports single or dual Intel® Sossaman dual core processors at a 667 MHz front side bus. Based upon the Intel Sossaman processor, the SUPER® X6DLP-4G2/X6DLP-EG2 supports dual processing, Intel Architecture with Dynamic Execution, Address/Data/Response Parity on the Front Side Bus, Advanced Power Management, Intel Thermal Management, Enhanced Intel SpeedStep Technology (EIST), and is ideal for high performance, and low power communications infrastructure environments. Please refer to the motherboard specifications pages on our web site (http://www.supermicro.com/products/motherboard/) for updates on supported processors. This product is intended to be professionally installed.

## Manual Organization

**Chapter 1** describes the features, specifications and performance of the motherboard and provides detailed information about the chipset.

**Chapter 2** provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for the video, the memory and the system setup stored in CMOS.

**Chapter 4** includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

**Appendix A** provides BIOS POST Messages.

**Appendix B** lists BIOS POST Codes.

**Appendix C** lists Software Installation Instructions.

## Conventions Used in this Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:


**Danger/Caution:** Instructions to be strictly followed to prevent catastrophic system failure or to avoid bodily injury.


**Warning:** Important information given to ensure proper system installation or to prevent damage to the components.

***Note:** Additional Information given to differentiate various models or to ensure correct system setup.

# Table of Contents

## Preface



## Chapter 1: Introduction



## Chapter 2: Installation

## Chapter 3: Troubleshooting



## Chapter 4: BIOS



## Appendices:

# Chapter 1
# Introduction

## 1-1 Overview

### Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance. Check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer. All included in the Retail Box.

One (1) Supermicro Mainboard

One (1) ribbon cable for IDE devices (CBL-036)

One (1) floppy ribbon cable (CBL-022)

One (1) 9-pin serial port DTK cable (CBL-010)

One (1) SCSI Cable (CBL-034-U320) (*X6DLP-4G2 only)

Two (2) CPU Passive Heatsinks (SNK-P0019)

One (1) I/O backpanel shield (CSE-PT7)

One (1) Supermicro CD containing drivers and utilities (CDR-x6)

One (1) User's/BIOS Manual

# Contacting Supermicro

## Headquarters

Address: SuperMicro Computer, Inc.
980 Rock Ave.
San Jose, CA 95131 U.S.A.
Tel: +1 (408) 503-8000
Fax: +1 (408) 503-8008
Email: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)
Web Site: www.supermicro.com

## Europe

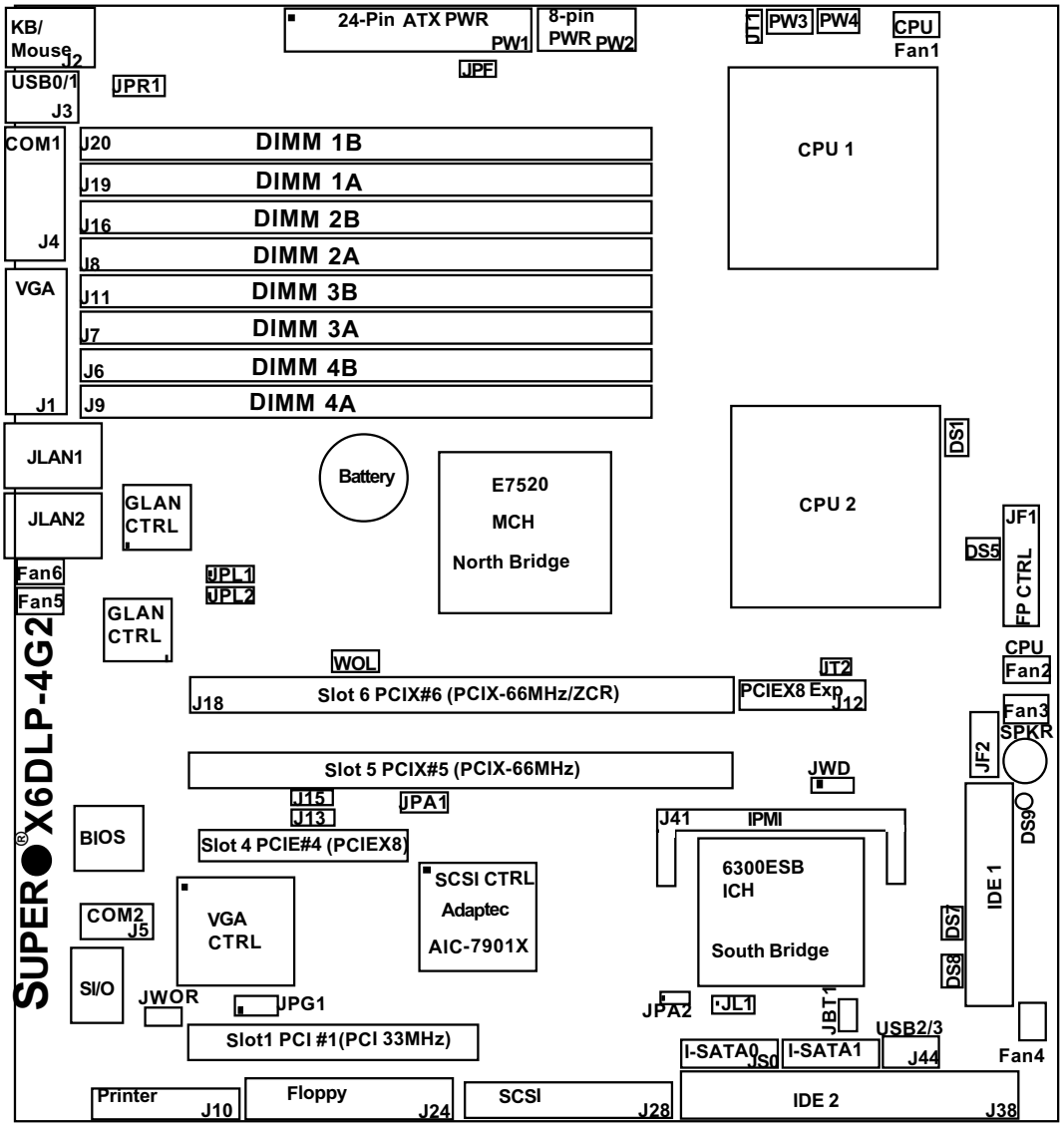
Address: SuperMicro Computer B.V.
Het Sterrenbeeld 28, 5215 ML
's-Hertogenbosch, The Netherlands
Tel: +31 (0) 73-6400390
Fax: +31 (0) 73-6416525
Email: sales@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)

## Asia-Pacific

Address: SuperMicro, Taiwan
SuperMicro, Taiwan
4F, No. 232-1 Liancheng Road
Chung-Ho 235, Taipei Hsien, Taiwan, R.O.C.
Tel: +886-(2) 8226-3990
Fax: +886-(2) 8226-3991
Web Site: www.supermicro.com.tw
Technical Support:
Email: support@supermicro.com.tw
Tel: 886-2-8228-1366, ext.132 or 139

**Figure 1-1. SUPER® X6DLP-4G2/X6DLP-EG2 Image**

**Figure 1-2. SUPER X6DLP-4G2/X6DLP-EG2 Motherboard Layout**
(not drawn to scale)




## Important Notes to the User

- All images and graphics shown in this manual were based upon the latest PCB Revision available at the time of publishing of this manual. The motherboard you've received may or may not look exactly the same as the graphics shown in this manual.
- See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
- "▪" indicates the location of "Pin 1".
- SCSI is available on the X6DLP-4G2 only.
- When the LE1 LED is on, the 5V Standby PWR is on. Maker sure to turn off the power before installing or removing components.

# Quick Reference ( X6DLP-4G2/X6DLP-EG2)

| Jumper | Description | Default Setting |
|---|---|---|
| J13/J15 | PCI #1/PCI-X #5,#6 to System SMB | Open (Disabled) |
| JBT1 | CMOS Clear | See Chapter 2 |
| JPA1 (*Note) | SCSI Controller Enable | Pins 1-2 (Enabled) |
| JPA2 (*Note) | SCSI Channel Term. Enable | Off (Enable) |
| JPF | Power Force on | Open (Disabled) |
| JPG1 | VGA Enable | Pins 1-2 (Enabled) |
| JPL1/JPL2 | LAN1/LAN 2 Enable/Disable | Pins 1-2 (Enabled) |
| JPR1 | Power Fail Alarm Reset | Open (Disabled) |
| JWD | Watch Dog Enable | Pins 1-2 (Enabled) |

| Connector | Description |
|---|---|
| ATX PWR (PW1) | Primary 24-pin ATX PWR Connector (Required) |
| 8-pin PWR (PW2) | 12V 8-pin PWR Connector (Required) |
| Chassis Intru. (JL1) | Chassis Intrusion Header |
| COM1 (J4)/COM2 (J5) | COM1/COM2 Serial Port Connector/Header |
| DIMM 1A-4B (J18-J23) | Memory (RAM) Slots (1A,1B, 2A,2B, 3A,3B, 4A,4B) |
| DS1, DS5, DS7-DS8 | Onboard LED Indicators (*See Chapter 2) |
| | DS7/DS8:POST Code LED (*See Chpt.2 & App.A) |
| DS9 | System LED (*See Chapter 2) |
| FAN 1-6 | CPU/Chassis Fan Headers |
| Floppy (J24) | Floppy Disk Drive Connector |
| FP CTRL (JF1) | Front Control Panel Connector |
| GLAN 1/2 | G-bit Ethernet Ports |
| IDE1 (J44), IDE2 (J38) | IDE1/2 Hard Disk Drive Connectors |
| IPMI (J41) | IPMI 2.0 Socket |
| KB/MS (J2) | Keyboard/Mouse |
| Parallel Port (J10) | Parallel (Printer) Header |
| PWR LED/SPKR (JF2) | PWR LED (Pins1-3), Speaker (Pins 5-7) |
| PW3 | Power SMB (System Management Bus) |
| PW4 | PWR Fault |
| SCSI (J28) | SCSI Connector (*Note) |
| Slot1 | Slot1: PCI#1 32-bit 33MHz |
| Slot5/Slot6 | Slot5: PCIX#5 66MHz/Slot6: PCIX#6 66MHz ZCR |
| Slot4/J12 (PCI-E x8) | PCI-Express x8 Slots |
| I-SATA0/1 (JS0/JS1) | Intel Serial ATA0, Serial ATA1 Connectors |
| VGA (J1) | VGA Connector |
| WOL (JWOL) | Wake-on-LAN Header |
| WOR (JWOR) | Wake-on-Ring Header |
| USB 0/1 (J3) | (Back Panel) Universal Serial Bus Ports |
| USB 2/3 | (Front Panel) Universal Serial Bus Headers |

(*Note: for the X6DLP-4G2 only)

## Motherboard Features

**CPU** ◆ *Latest CPU technology!*

- Intel single or dual Sossaman Dual-Core Processors @ an 667MHz Front Side Bus
- Architecture with Dynamic Execution, Address/Data/Registry Parity on the FSB, Intel Thermal Management, Enhanced Intel SpeedStep (EIST) supported

**Memory**

- Eight 240-pin DIMM sockets supporting up to 16 GB Registered ECC DDRII 400 SDRAM required

  **Note: Interleaved memory: requires memory modules to be installed in pairs. See Section 2-3 for details.**

**Chipset**

- Intel E7520 chipset with support of MCH and 6300ESB ICH

**Expansion Slots**

- Two PCI-Exp slot (x8)
- Two PCI-X slots (*One PCI-X-66 MHz/ZCR slot, one PCI-X 66 MHz slot)
- One Universal slot

**BIOS**

- 8 Mb AMI® Flash ROM
- APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0, Plug and Play (PnP), SMBIOS 2.3, USB Keyboard, BIOS Rescue Hot Keys, and Hardware BIOS Virus protection

**PC Health Monitoring**

- Onboard voltage monitors for CPU cores, chipset voltage, Memory voltage, 3.3V, +5V, +12V,–12V, 3.3V standby, 5V standby, and VBAT
- CPU 3-phase switching voltage regulator
- CPU/chassis temperature monitors
- Environmental temperature monitor and control via Supero Doctor III
- $I^2C$ Temperature sensing logic
- CPU fan auto-off in sleep mode
- CPU slow-down on temperature overheat
- CPU thermal trip support for processor protection, standby power alert LED
- Power-up mode control for recovery from AC power loss
- Auto-switching voltage regulator for CPU core
- System overheat LED and control
- Chassis intrusion detection
- System resource alert via Super Doctor III
- Thermal Management support
- Fan Status Monitor for fan speed/on-off control
- Low noise fan speed with Pulse Width Modulation (PWM)
- VRM Protection Feature ($88^0$C, ***98$^0$C**, $108^0$C) (*Default)

**ACPI/ACPM Power Features**

- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- Wake-on-Ring (WOR)/Wake-on-LAN (WOL) support
- Power-on mode for AC power recovery

**LED Indicators**

- System/CPU Overheat LED
- Suspend State LED
- Standby Alert LED

**Software**

- IPMI 2.0 optional
- Supero DoctorIII
- Watch Dog/NMI

**Onboard I/O**

- Adaptec AIC-7901 Ultra 320 single-channel SCSI (*X6DLP-4G2 only)
- One IPMI 2.0 Socket
- One Intel 82573V and one 82573L single-port gigabit Ethernet controllers
- 2 EIDE Ultra DMA/100 bus master interfaces supports up to 4UDMA/IDE
- IDE supports UDMA Mode 5, PIO Mode 4, ATA/100
- 1 floppy port interface (up to 2.88 MB)
- 1 EPP/ECP Parallel Header
- PS/2 mouse and PS/2 keyboard ports
- Up to 4 USB 2.0 (Universal Serial Bus) (2 ports/2 headers)
- 2 Intel 6300 ESB Serial ATA
- Super I/O (Winbond 83627HF), Hardware Monitoring: W83792D
- 1 Serial port/1 header

**Other**

- Internal/external modem ring-on
- Chassis intrusion detection/header
- Console redirection
- SDDC support

**CD/Diskette Utilities**

- BIOS flash upgrade utility and device drivers

**Dimensions**

- ATX 12" x 9.6" (304.8 x 243.8 mm)

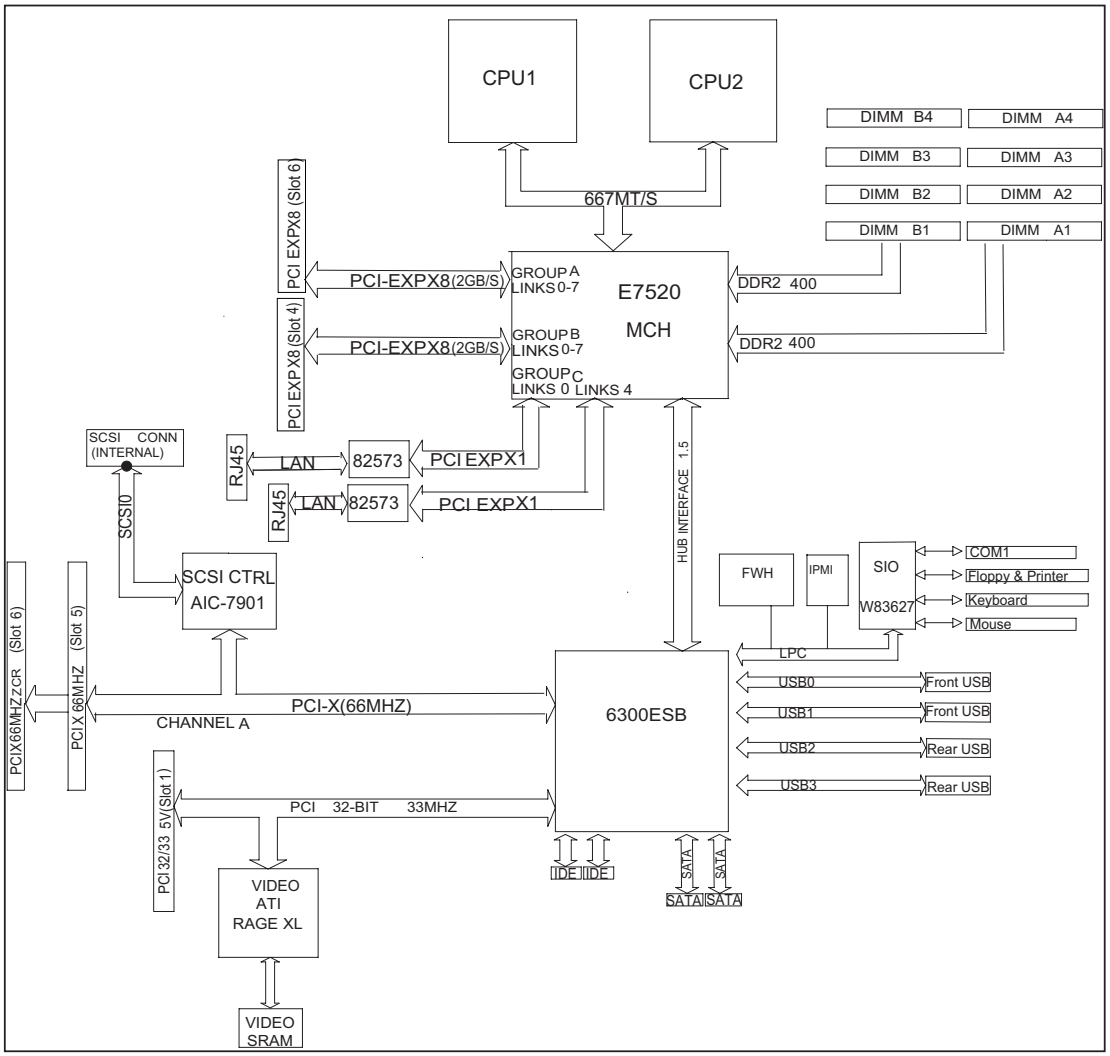



**Figure 1-9. Block Diagram of the E7520 Chipset**

**Note:** This is a general block diagram. Please see the previous Motherboard Features pages for details on the features of each motherboard.

## 1-2 Chipset Overview

### The E7520 Chipset

Built upon the functionality and the capability of the 7520 chipset, the X6DLP-4G2/X6DLP-EG2 motherboard provides the performance and feature set required for dual processor-based servers, with configuration options optimized for communications, presentation, storage, computation or database applications. The Intel E7520 chipset consists of the following components: the E7520 Memory Controller Hub (MCH) and the 6300ESB I/O Controller Hub (6300ESB ICH).

The E7520 MCH supports Intel single or dual processors with Front Side Bus speeds of up to 800 MHz; however, the Sossaman Processor supports FSB speeds of up to 667 MHz. Its memory controller provides direct connection to two channels of registered DDR2 with a marched system bus address and data bandwidths of up to 5.4GB/s. The E7520 also supports the new PCI Express high speed serial I/O interface for superior I/O bandwidth. The MCH provides three configurable x8 PCI Express interfaces. These interfaces support connection of the MCH to a variety of other bridges that are compliant with the PCI Express Interface Specification, Rev. 1.0a.

### 6300ESB System Features

The I/O Controller Hub provides the I/O subsystem with access to the rest of the system. It supports 2-channel Ultra ATA/100 Bus Master IDE Controller, two Serial ATA (SATA) Host Controllers, SMBus 2.0 Controller, LPC/Flash BIOS Interface, PCI 2.3 Interface, and Integrated System Management Controller.

### 6300ESB ICH System Features

The 6300ESB ICH system consists of an I/O Controller Hub, which provides the I/O subsystem with an access to the rest of the system. Additionally, it integrates many I/O functions.

## 1-3 Special Features

### Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power-on state. See the Power Lost Control setting in the Advanced BIOS Setup section (Peripheral Device Configuration) to change this setting. The default setting is Last State.

## 1-4 PC Health Monitoring

This section describes the PC health monitoring features of the SUPER X6DLP-4G2/X6DLP-EG2. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

### Onboard Voltage Monitors for the CPU Cores, +1.8V, +3.3V, +5V, +12V, -12V, +3.3V Standby, and VBAT

An onboard voltage monitor will scan these voltages continuously. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. Users can adjust the voltage thresholds (in SDIII) to define the sensitivity of the voltage monitor.

### Fan Status Monitor with Fan Speed Control

The PC health monitor can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS.

### Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. It can continue to monitor for overheat conditions even when the CPU is in sleep mode. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal control fan to prevent any overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

### CPU Overheat LED and Control

This feature is available when the user enables the CPU overheat warning function in the BIOS. This allows the user to define an overheat temperature.

### Thermal Management/CPU VRM Overheat

When the CPU reaches $70^0$ C and above (Overheat), the CPU will slow down and CPU Voltage will decrease to reduce CPU power consumption. When CPU temperature reaches $78^0$ C (*Default) and above, the system will go into the throttling state. The Overheat LED and the Alarm Buzzer will be turned on. The CPU slows down as well. To resume the CPU speed, please go to the Health Monitor Setting in the BIOS and reset the CPU Overheat Temperature.

### VRM Protection

When the CPU VRM temperature reaches the threshold preset by the user in the BIOS, the system will go into the TM Mode. The CPU will slow down and the VRM current will drop to prevent the VRM from overheating. (The settings are: $88^0$C, ***98$^0$C**, $108^0$C.) (*Default)

### Auto-Switching Voltage Regulator for the CPU Core

The auto-switching voltage regulator for the CPU core can support up to 20A current. This will allow the regulator to run cooler and thus make the system more stable.

## 1-5 ACPI Features

The ACPI (Advanced Configuration and Power Interface) specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows 2000, Windows XP, and Windows Server 2003 .

### Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

### Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button to make the system enter a SoftOff state. The monitor will be suspended, and the hard drive will spin down. Pressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. This option can be set in the Power section of the BIOS Setup routine.

### External Modem Ring-On (WOR)

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the SoftOff state. Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

### Wake-On-LAN (WOL)

Wake-On-LAN is defined as the ability of a management application to remotely power up a computer that is powered off. Remote PC setup, updates and asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboard has a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. Wake-On-LAN must be enabled in the BIOS. Note that Wake-On-LAN can only be used with an ATX 2.01 (or above) compliant power supply.

## 1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The SUPER X6DLP-4G2/X6DLP-EG2 can only accommodate ATX 24-pin power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. You should use one that will supply at least 200W of power and includes the additional +12V, 8-pin power connector - an even higher wattage power supply is recommended for high-load configurations. Also, your power supply must supply 1.5A for the Ethernet ports.

**NOTE: An additional 12V 8-pin power connector (PW2) is required to support Intel Xeon CPUs. Failure to provide this extra power to the CPU may cause it to become unstable even after a few minutes of operation. See Section 2-5 for details on connecting the power supply.**

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant (info. at http://www.ssiforum.org/). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

## 1-7 Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with the industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s.It also provides two high-speed, 16550 compatible serial communication ports (UARTs), one of which supports serial infrared communication. Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with a baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher-speed modems.

The Super I/O supports one PC-compatible printer port (SPP), Bi-Directional Printer Port (BPP) , Enhanced Parallel Port (EPP) or Extended Capabilities Port (ECP).

The Super I/O provides functions that comply with the ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

## Notes

# Chapter 2
# Installation

## 2-1 Static-Sensitive Devices

Electric-Static-Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

### Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

### Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

## 2-2 Processor and Heatsink Installation

*When handling the processor package, avoid placing direct pressure on the label area of the fan. Also, do not place the motherboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.*

**IMPORTANT**:

1. Always connect the power cord last and remove it first before adding, removing or changing any hardware components.

2. Make sure that you install the heatsink bracket(s) on the back of the motherboard first, install the motherboard into the chassis, and then install the processor(s) into the CPU socket(s), and, finally, install the CPU heatsink(s).

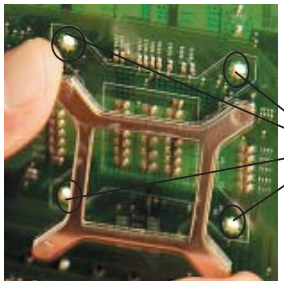
**Tools needed**:

1. A flat head screw driver
2. A Phillips screw driver
3. Thermal Grease

### Installing the Heatsink Bracket on the Reverse Side of the Motherboard

1. Remove the protective film from the heatsink bracket.


2. Turn the motherboard upside down to locate the heatsink bracket mounting holes on the reverse side of the motherboard.



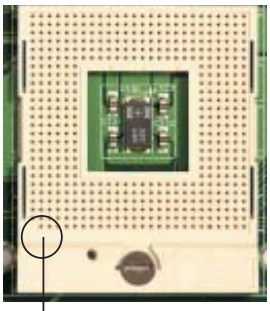

3. Align the 4 pins of the heatsink bracket against the 4 bracket mounting holes on the back of the motherboard.

4. Insert the 4 pins of the bracket into the corresponding mounting holes. Gently press the bracket onto the motherboard until it is properly attached to the back of the motherboard.

## Installing the CPU into the CPU socket

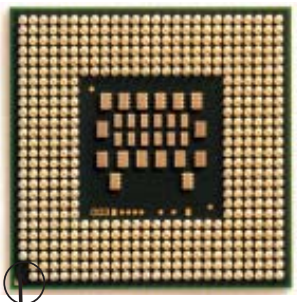
1. Locate Pin 1 on the socket and Pin 1 on the CPU as shown in the pictures.

**CPU Socket**



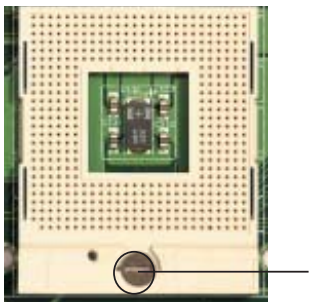
Pin 1 of the CPU Socket (marked with a missing pin hole.)

**Processor**



Pin 1 of the CPU (marked with a triangle.)

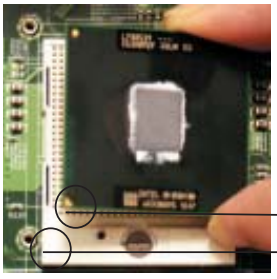
2. The CPU socket should come in the unlocked position. To unlock the CPU socket, using a flat head driver, turn the CPU lock counter-clockwise until it cannot turn further.



CPU Lock. Turn counter-clockwise to unlock it. Turn clockwise to lock it.

3. Align Pin 1 of the CPU against the Pin 1 corner of the Socket.

4. Once aligned, mount the CPU straight-down into the socket.



Align Pin 1 of CPU against Pin 1 of the CPU Socket. Once aligned, mount the CPU straight-down into the socket.

(*Warning: Do not brush the CPU pins against the surface of the socket or install the CPU in an angle to prevent bending or causing damage to the CPU pins.)

5. Once the CPU is properly seated in the socket, use the flat head driver to turn the CPU lock clockwise to lock it.

6. Repeat the steps above to install the second CPU, if needed.

## Heatsink Installation

1. Do not apply any thermal grease to the heatsink or the CPU die-the if the required amount has already been applied.

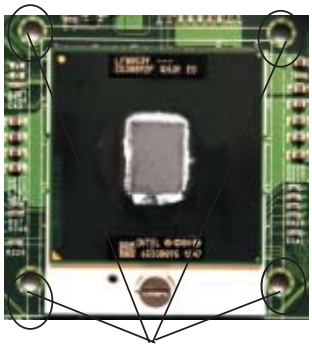
2. Locate the four heatsink mounting holes on the motherboard.

3. Place the heatsink on top of the CPU and insert heatsink's four pegs into the heatsink mounting holes.

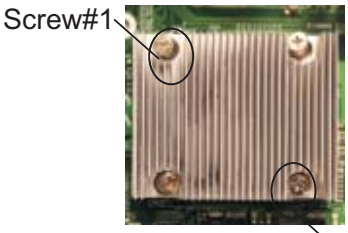
4. Using a Phillips Screw driver, screw in two diagonal screws (ie the #1 and the #2 screws) until just snug (-do not fully tighten the screws to avoid possible damage to the CPU.) Repeat the same step to install the remaining two screws.

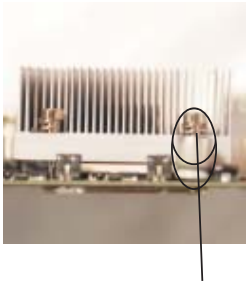
5. Repeat the steps above to install another heatsink, if needed.

**CPU Socket (w/CPU installed)**



4 heatsink mounting holes



**Heatsink (with screws properly installed)**

## To Un-install the Heatsink

1. Using a Phillips Screw Driver to unscrew and remove the heatsink screws from the motherboard in the sequence as show in the picture on the right.

2. Hold the heatsink as show in the picture on the right and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)

3. Once the heatsink is loosened, remove the heatsink from the CPU.

4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the CPU and the heatsink.


## Mounting the Motherboard in the Chassis

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match. Make sure that the metal standoffs click in or are screwed in tightly. Then, use a screwdriver to secure the motherboard onto the motherboard tray. (***Note**: some components are very close to the mounting holes. Please take precautionary measures to prevent damage to these components when installing the motherboard to the chassis.)

## 2-3 Installing DIMMs

***CAUTION!!*** Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step1.)

### DIMM Installation (See Figure 2-2)

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM #1A. The memory scheme is interleaved, so you must install two modules of the same size and of the speed at a time, beginning with DIMM #1A, then DIMM #1B, and so on.
2. When inserting a DIMM module vertically into its slot, pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

**Memory Support**

The X6DLP-4G2/X6DLP-EG2 supports up to 16 GB of Reg. ECC DDRII 400 (PC3200) memory.

**Notes***:*

1. Due to OS limitations, some operating systems may not support more than 4GB of memory.

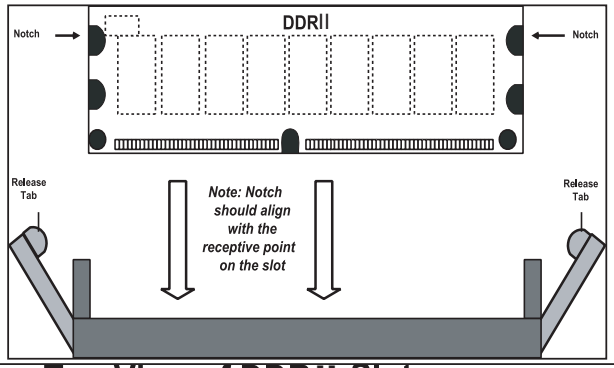
2. Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (Refer to the following Memory Availability Table for details.)

**Possible System Memory Allocation & Availability**

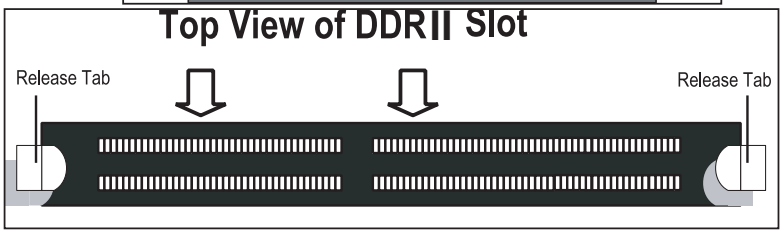
| System Device | Size | Physical Memory Remaining (Available) (4 GB Total System Memory) |
|---|---|---|
| Firmware Hub flash memory (System BIOS) | 1 MB | 3.99 |
| Local APIC | 4 KB | 3.99 |
| Area Reserved for the chipset | 2 MB | 3.99 |
| I/O APIC (4 Kbytes) | 4 KB | 3.99 |
| PCI Enumeration Area 1 | 256 MB | 3.76 |
| PCI Express (256 MB) | 256 MB | 3.51 |
| PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary- | 512 MB | 3.01 |
| VGA Memory | 16 MB | 2.85 |
| TSEG | 1 MB | 2.84 |
| Memory available to OS and other applications | | 2.84 |

**Figure 2-2. Installing and Removing DIMMs**

**To Install:** Insert the module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.




**To Remove:**
Use your thumbs to gently push near the edge of both ends of the module. This should release it from the slot.




## 2-4 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 2-3 below for the colors and locations of the various I/O ports.

### A. Back Panel Connectors/IO Ports

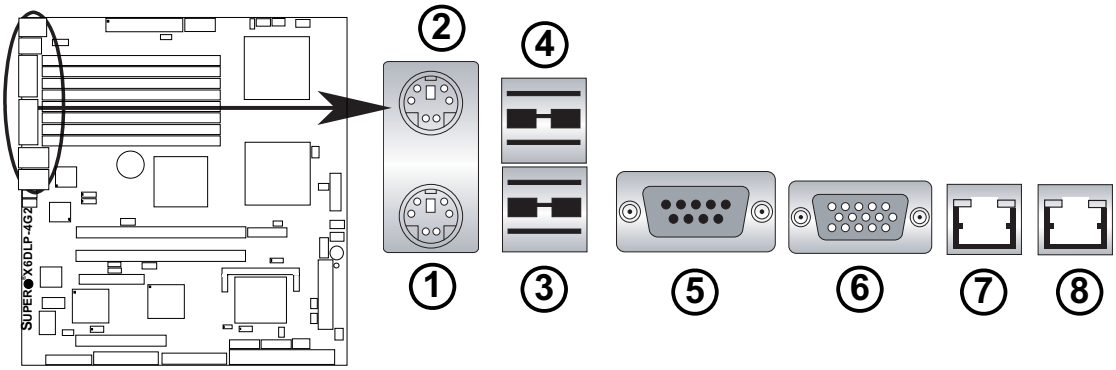



**Figure 2-3. Back Panel I/O Port Locations and Definitions**

### Back Panel Connectors

1. Keyboard (Purple)
2. PS/2 Mouse (Green)
3. Back Panel USB Port 1
4. Back Panel USB Port 2
5. COM Port 1 (Turquoise)
6. VGA Port (Blue)
7. Gigabit LAN 1
8. Gigabit LAN 2

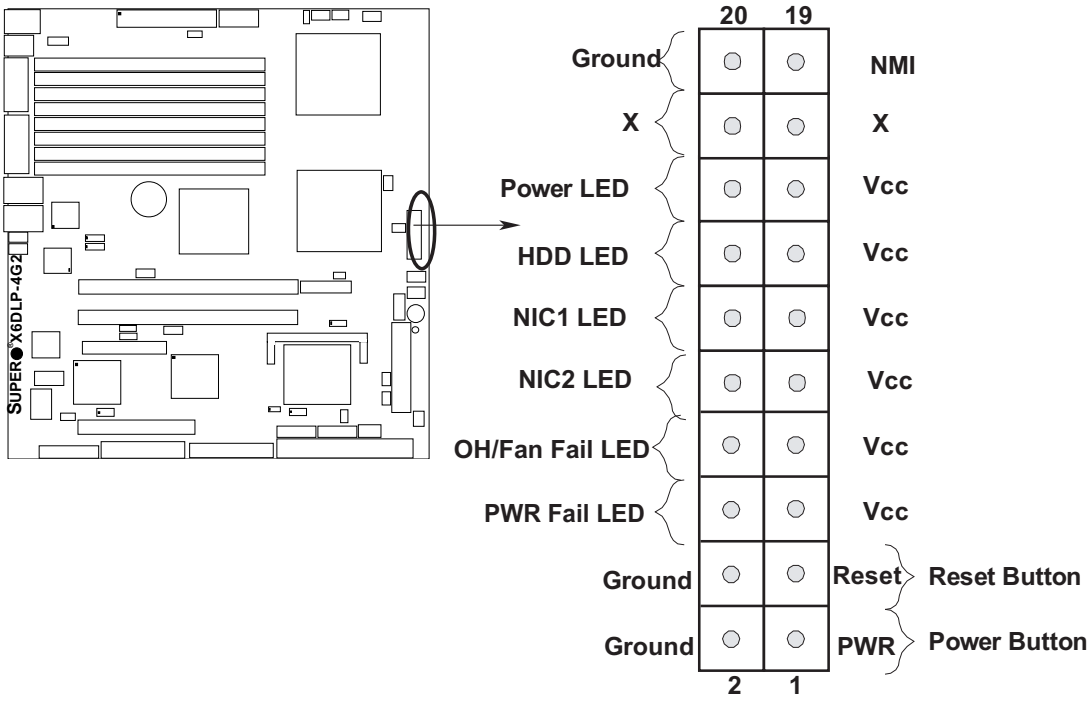
(*See Section 2-6 for details.)

## B. Front Control Panel

### Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro server chassis. See Figure 2-4 for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

**Figure 2-4. JF1 Header Pins**



## C. Front Control Panel Pin Definitions

### NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

| NMI Button Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 19 | Control |
| 20 | Ground |

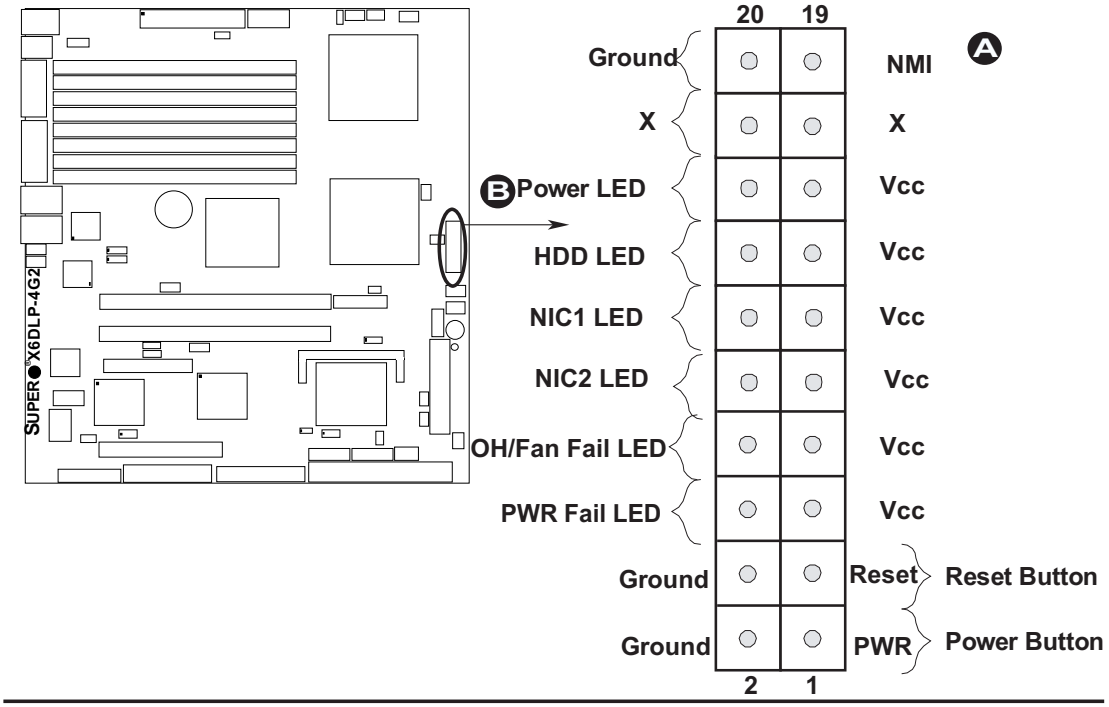
### Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

| Power LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 15 | +5V |
| 16 | Ground |

A. NMI

B. PWR LED



## HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach the hard drive LED cable here to display disk activity (for any hard drives on the system, including SCSI, Serial ATA and IDE). See the table on the right for pin definitions.

| HDD LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 13 | +5V |
| 14 | HD Active |

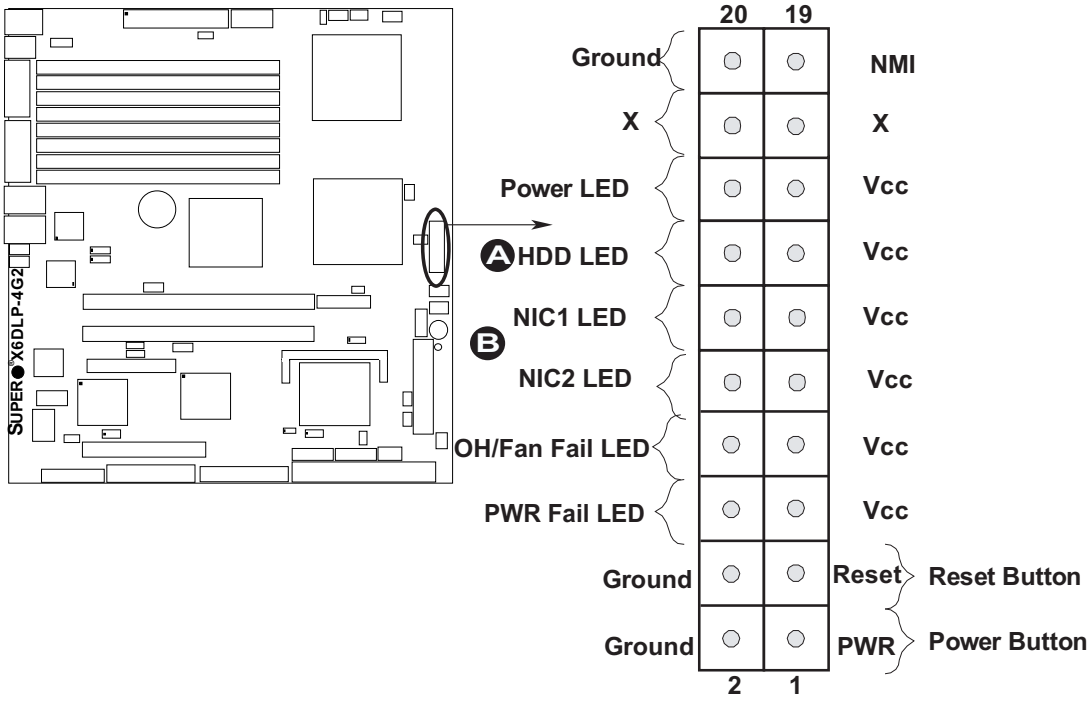
## NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connections for the GLAN port1 is located on pins 11 and 12 of JF1, and for the GLAN port2 is located on pins 9 and 10 of JF1. Attach the NIC LED cables to display network activity. Refer to the tables on the right for pin definitions.

| GLAN1/2 LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 9/10 | Vcc |
| 11/12 | Ground |

A. HDD

B. NIC1/NIC2



## Overheat/Fan Fail LED

Connect an LED to the OH/Fan Fail LED connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating and fan failure. Refer to the table on the right for pin definitions.

| OH/Fan Fail LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 7 | Vcc |
| 8 | Ground |

| OH/Fan Fail Indicator Status | |
|---|---|
| State | Definition |
| Off | Normal |
| On | Overheat |
| Flash-ing | Fan Fail |

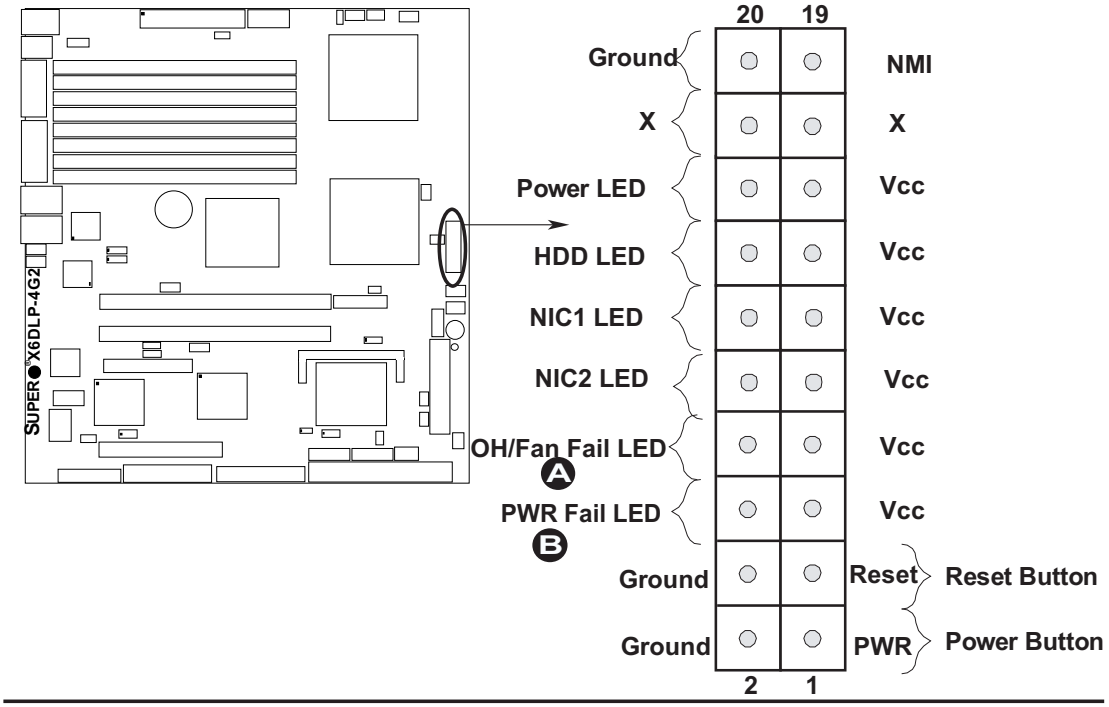
## Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

| PWR Fail LED Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 5 | Vcc |
| 6 | Ground |

A. OH/Fan Fail LED

B. PWR Fail LED



## Reset Button

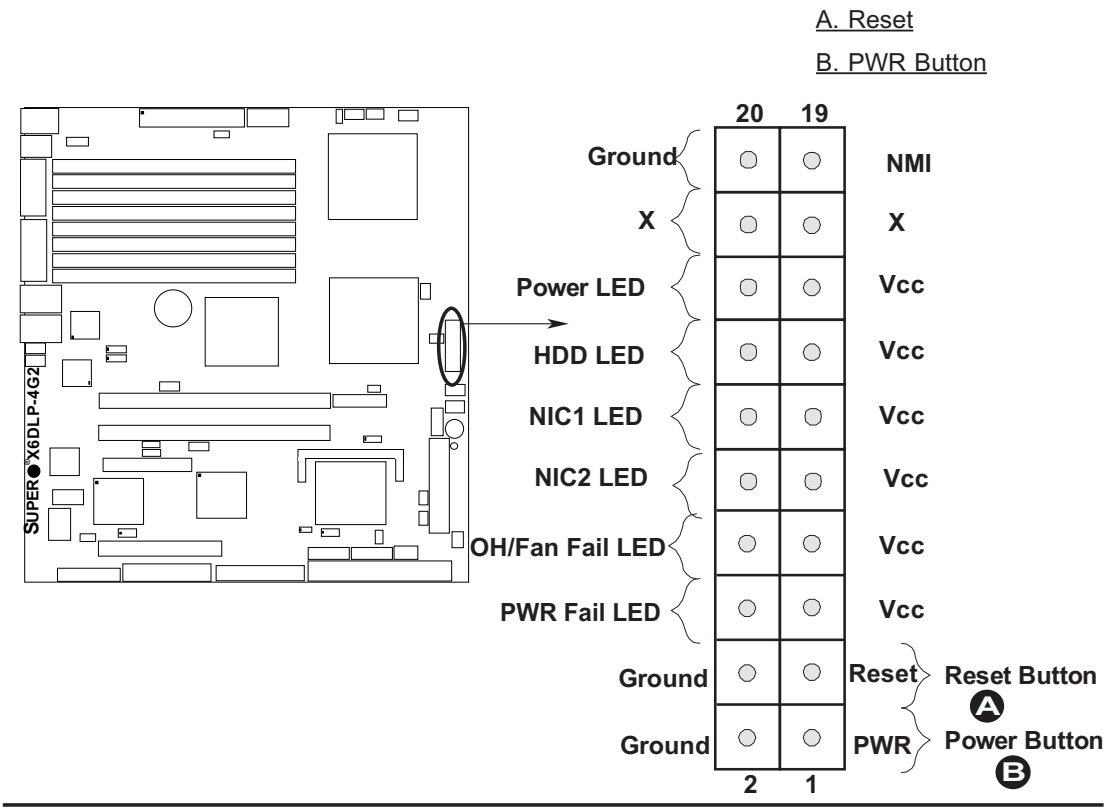
The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

| Reset Button Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 3 | Reset |
| 4 | Ground |

## Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

| Power Button Pin Definitions (JF1) | |
|---|---|
| Pin# | Definition |
| 1 | Signal |
| 2 | +3V Standby |



# 2-5 Connecting Cables

## ATX Power Connector

There is a 24-pin main power supply connector (PW1) and an 8-pin CPU PWR connector (PW2) on the board. This power connector meets the SSI EPS 12V specification. See the table on the right for pin definitions. For CPU PWR (PW2), please refer to the item listed below.

**ATX Power 24-pin Connector Pin Definitions (PW1)**

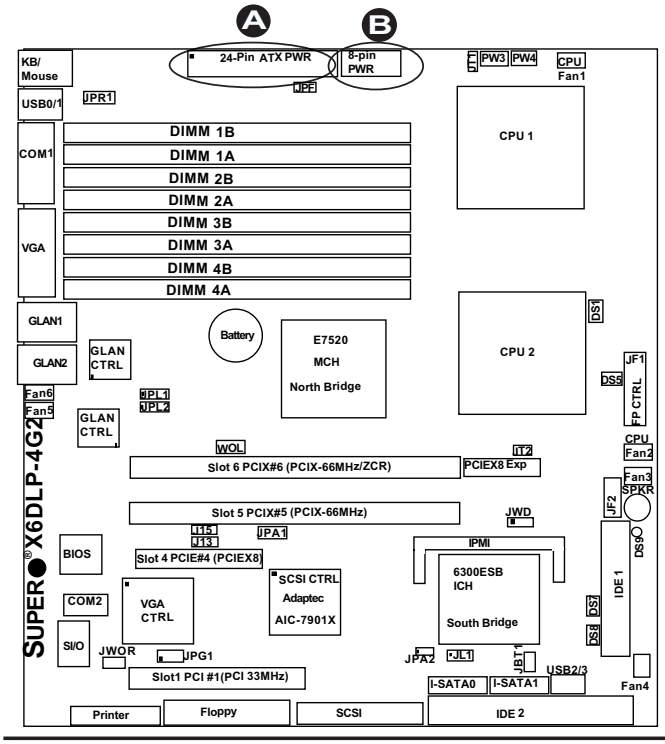
| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 13 | +3.3V | 1 | +3.3V |
| 14 | -12V | 2 | +3.3V |
| 15 | COM | 3 | COM |
| 16 | PS_ON | 4 | +5V |
| 17 | COM | 5 | COM |
| 18 | COM | 6 | +5V |
| 19 | COM | 7 | COM |
| 20 | Res (NC) | 8 | PWR_OK |
| 21 | +5V | 9 | 5VSB |
| 22 | +5V | 10 | +12V |
| 23 | +5V | 11 | +12V |
| 24 | COM | 12 | +3.3V |

## Processor Power Connector

In addition to the Primary ATX power connector (above), the 12v 8-pin Processor connector at PW2 must also be connected to your power supply. See the table on the right for pin definitions.

**Secondary Power Connector Pin Definitions (PW2)**

| Pins | Definition |
|---|---|
| 1 through 4 | Ground |
| 5 through 8 | +12V |




A. 24-Pin PWR

B. 8-Pin PWR

## Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

**Chassis Intrusion Pin Definitions (JL1)**

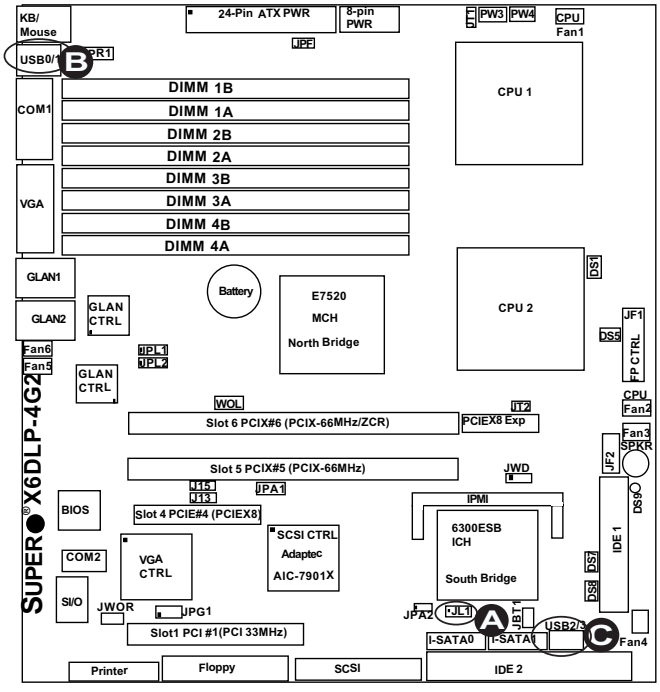
| Pin# | Definition |
|---|---|
| 1 | Intrusion Input |
| 2 | Ground |

## Universal Serial Bus (USB)

There are two Universal Serial Bus ports (USB 0/1) located on the I/O panel and additional two USB ports (USB 2/3) on the motherboard. These two USB (USB 2/3) ports can be used to provide front side chassis access (cables not included). See the tables on the right for pin definitions.

**Universal Serial Bus Pin Definitions**

| USB 0/1 Pin # | Definition | (FP) USB 2/3 Pin # | Definition |
|---|---|---|---|
| 1 | +5V | 1 | +5V |
| 2 | PO- | 2 | PO- |
| 3 | PO+ | 3 | PO+ |
| 4 | Ground | 4 | Ground |
| 5 | N/A | 5 | Key |




A. Chassis Intrusion

B. USB 0/1

C. USB 2/3

## Wake-On-LAN

The Wake-On-LAN header is designated JWOL on the motherboard. See the table on the right for pin definitions. You must enable the LAN Wake-Up setting in BIOS to use this function. (You must also have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

**Wake-On-LAN Pin Definitions (JWOL)**

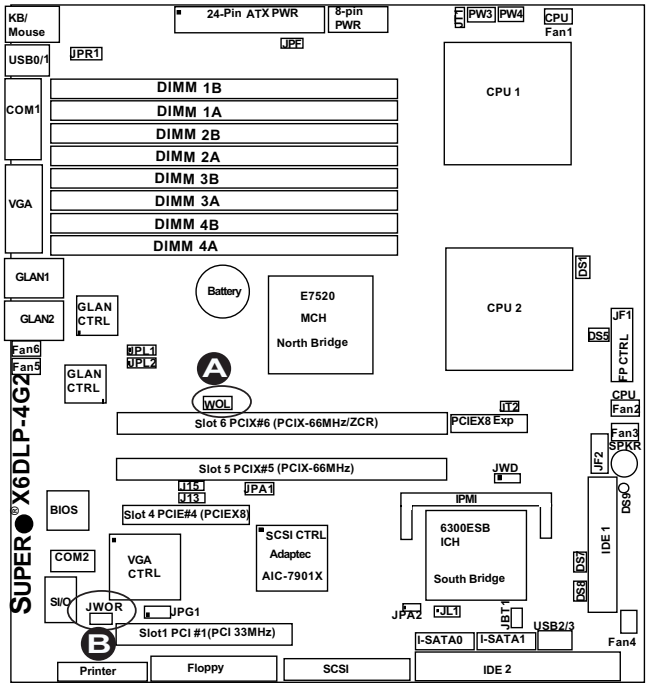
| Pin# | Definition |
|---|---|
| 1 | +5V Standby |
| 2 | Ground |
| 3 | Wake-up |

## Wake-On-Ring

The Wake-On-Ring header is designated JWOR. This function allows your computer to receive and to be awakened by an incoming call to the modem when in suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

**Wake-On-Ring Pin Definitions (JWOR)**

| Pin# | Definition |
|---|---|
| 1 | Ground (Black) |
| 2 | Wake-up |




A. WOL

B. WOR

## Serial Ports

There are one Serial Port-COM1 (J4) and one Serial Header-COM2 (J5) on the X6DLP-4G2/EG2. See the table on the right for pin definitions.

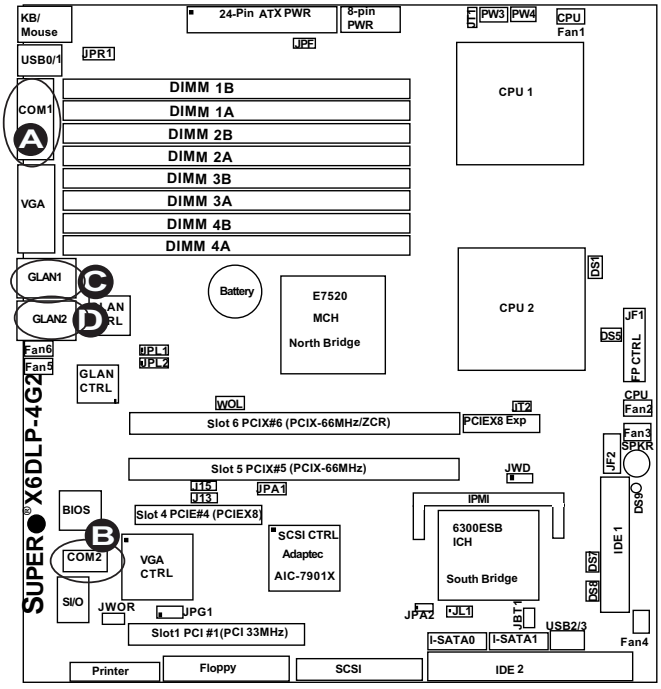
**Serial Port Pin Definitions (COM1/COM2)**

| Pin # | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | CD | 6 | DSR |
| 2 | RD | 7 | RTS |
| 3 | TD | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | Ground | 10 | NC |

**Note:** Pin 10 is included on the header but not on the port. NC indicates no connection.

## GLAN (Giga-bit Ethernet) Ports

A G-bit Ethernet port (designated JLAN1/JLAN2) is located beside the VGA port on the IO backplane. This port accepts RJF1 type cables.




A. COM1
B. COM2
C. GLAN1
D. GLAN2

## ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and PS/2 mouse are located at J2. See the table at right for pin definitions. (See Figure 2-3 for the locations of these ports.)

**PS/2 Keyboard and Mouse Port Pin Definitions**

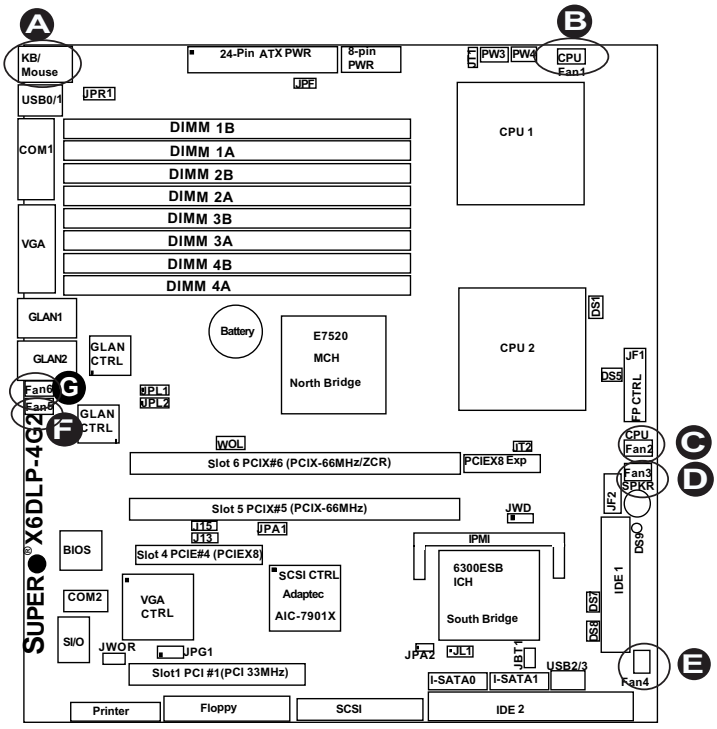
| Pin# | Definition |
|---|---|
| 1 | Data |
| 2 | NC |
| 3 | Ground |
| 4 | VCC |
| 5 | Clock |
| 6 | NC |

## Fan Headers

There are six fan headers (Fan 1 to Fan 6) on the X6DLP-4G2/X6DLP-EG2. Fan1 and Fan 2 are CPU fans, Fan3 to Fan6 are system cooling fans. See the table on the right for pin definitions. (*Note: These fan headers are 4-pin fans. Pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans.) Please refer to "Health Monitoring" in the BIOS Advanced Setting for fan speed control settings.

**Fan Header Pin Definitions (Fan1-5)**

| Pin# | Definition |
|---|---|
| 1 | Ground (Black) |
| 2 | +12V (Red) |
| 3 | Tachometer |
| 4 | PWM_Control |




A. Keyboard/Mouse
B. Fan1 (CPU Fan1)
C. Fan2 (CPU Fan2)
D. Fan3
E. Fan4
F. Fan5
G. Fan6

## VGA Connector

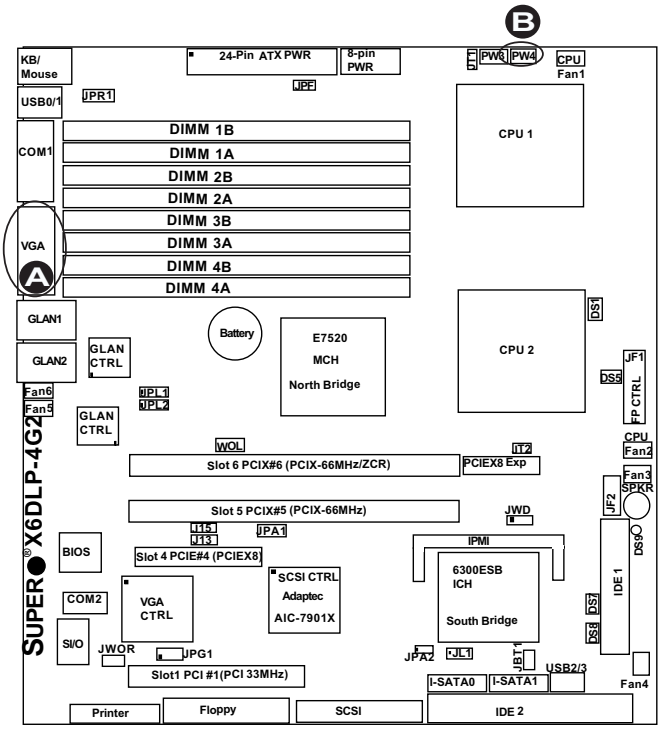
A VGA connector (J1) is located next to the GLAN1 on the IO backplane. Refer to the board layout below for the location.

## Power Fault

Connect a cable from your power supply to the PW4 header to provide warning of power supply failure. This warning signal is passed through the PWR_LED pin to indicate of a power failure on the chassis. See the table on the right for pin definitions.

| PWR Fail Pin Definitions | |
|---|---|
| Pin# | Definition |
| 1 | PWR 1 Fail Signal |
| 2 | PWR 2 Fail Signal |
| 3 | PWR 3 Fail Signal |
| 4 | PWR 4 Fail Signal |

**Note:** This feature is only available when using redundant Supermicro power supplies.




A. VGA

B. PWR Fault

## SMB Power ($I^2C$) Connector

$I^2C$ Connector (PW3), located next to the ATX 24-pin PWR Connector, monitors the status of PWR Supply, Fan and system temperature.

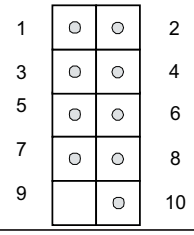
| PWR SMB Pin Definitions | |
|---|---|
| Pin# | Definition |
| 1 | Clock |
| 2 | Data |
| 3 | N/A |
| 4 | N/A |
| 5 | N/A |

## Speaker/Power LED/Keylock

On the JF2 header, pins 1/3/5/7 are for the Speaker, and Pins 2/4/6 are for the Power LED and pins 8/10 are for Keylock. See the table on the right for speaker pin definitions. Note: The speaker connector pins are for use with an external speaker. If you wish to use the onboard speaker, you should close pins 5-7 with a jumper.

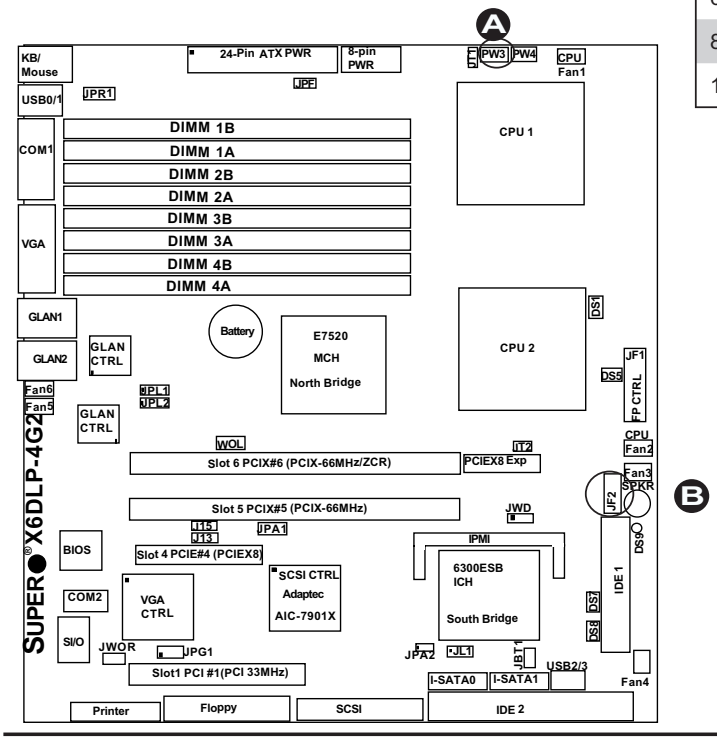
Speaker/PW LED/Keylock Header

Pin Locations




| Speaker Connection Pin Definitions | |
|---|---|
| 1 | Red Wire, Speaker Data |
| 3 | No Connection |
| 5 | Key |
| 7 | Speaker Data |

| PWR LED/Keylock Connection Pin Definitions | |
|---|---|
| 2 | +Vcc |
| 4 | -Vcc |
| 6 | -Vcc |
| 8 | Keylock |
| 10 | Keylock |




A. SMB PWR

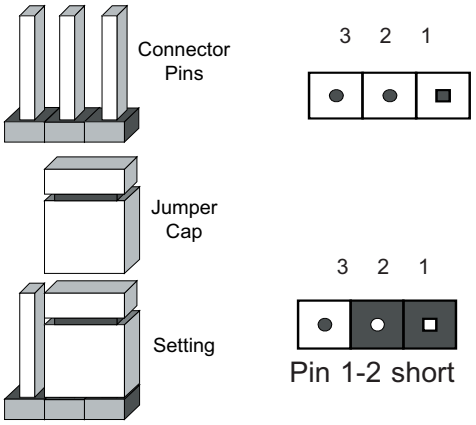
B. Speaker/PW LED/ Keylock

# 2-6 Jumper Settings

## Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

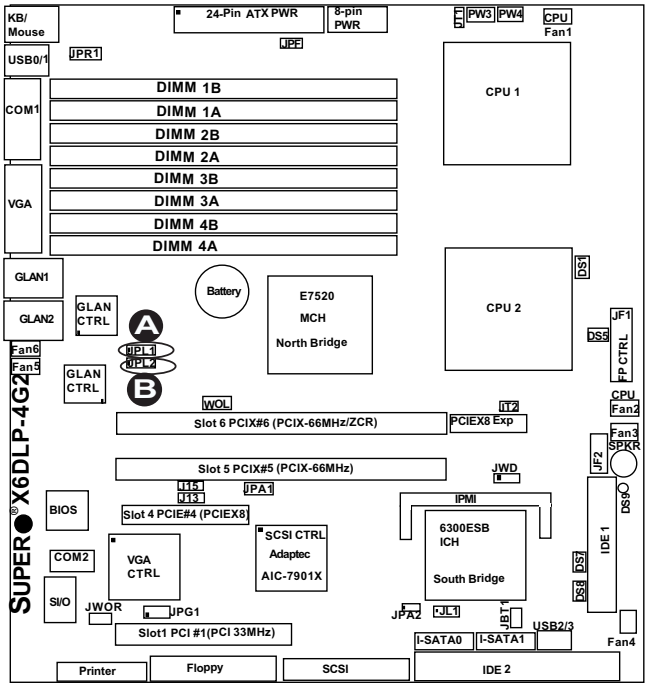
**Note:** On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.




## LAN1/LAN2 Enable/Disable

JPL1 and JPL2 enable or disable the GLAN ports: LAN1 (JPL1), and LAN2 (JPL2) on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

| GLAN Enable Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |




A. LAN1 Enable

B. LAN2 Enable

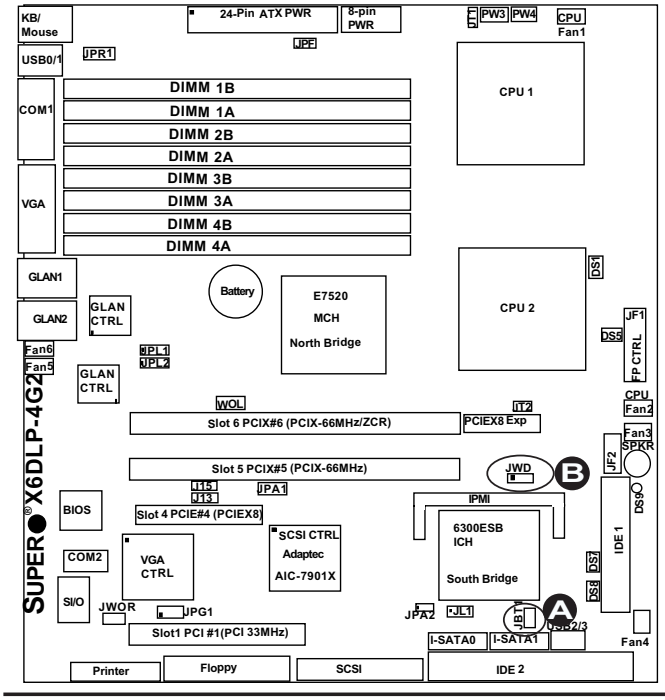
## CMOS Clear

JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS. **Note:** For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS. ***Do not use the PW_ON connector to clear CMOS***.

## Watch Dog

JWD controls Watch Dog, a system monitor that takes action when a software application hangs. Close pins 1-2 to reset the system if a program hangs. Close pins 2-3 to generate a non-maskable interrupt for the program that hangs (*This requires software implementation). Watch Dog must also be enabled in the BIOS.

| Watch Dog Jumper Settings (JWD) | |
|---|---|
| Jumper Setting | Definition |
| Pins 1-2 | Reset |
| Pins 2-3 | NMI |
| Open | Disabled |




A. Clear CMOS
B. WD

## VGA Enable/Disable

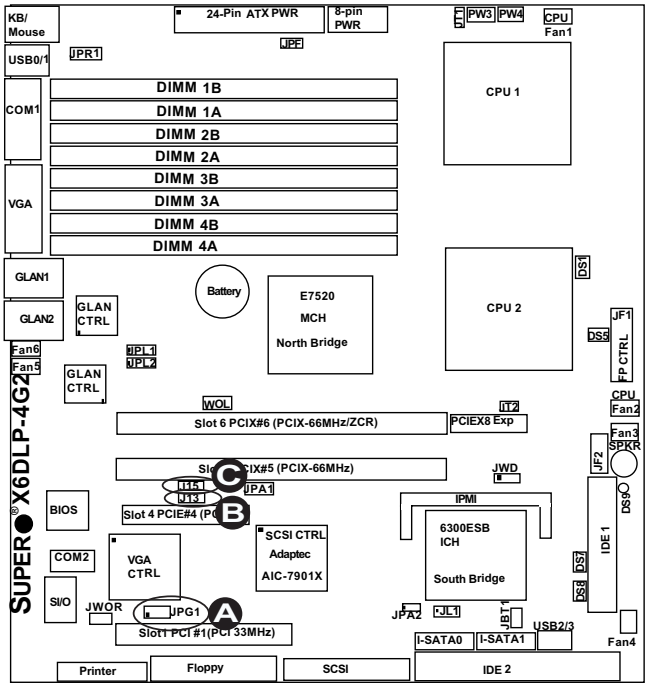
JPG1 enables or disables the VGA Connector on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

| VGA Enable/Disable Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |

## SMB Data/SMB CLK to PCI

Jumpers J13, J15 allow you to connect PCI Slot1/PCI-X Slot5/PCI -X Slot6 to the System Management Bus. The default setting is to close pins 1-2 to enable the connection. See the table on the right for jumper settings.

| SMBus to PCI/PCI/Exp Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| Closed | Enabled |
| Open | Disabled (*Default) |




A. VGA Enable

B. J13

C. J15

## SCSI Controller Enable/ Disable (*ForX6DLP-4G2 only)

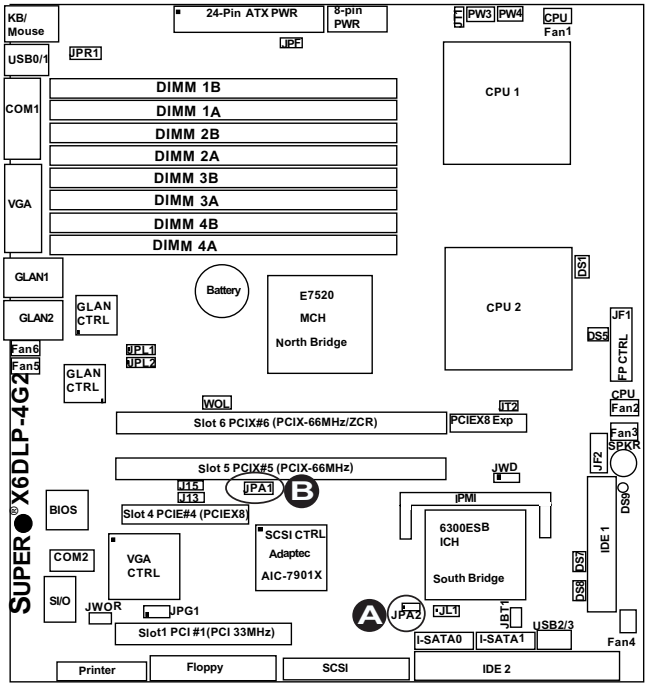
Jumper JPA1 allows you to enable or disable the SCSI Controller. The default setting is pins 1-2 to enable all four headers. See the table on the right for jumper settings.

| SCSI Enable/Disable Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| Pins 1-2 | Enabled |
| Pins 2-3 | Disabled |

## SCSI Termination Enable/ Disable (*ForX6DLP-4G2 only)

Jumper JPA2 allows you to enable or disable termination for the SCSI connector. The default setting is **open** to enable the termination of the SCSI Controller. (*Note: In order for the SCSI drives to function properly, please do not change the default setting set by the manufacturer.) See the table on the right for jumper settings.

| SCSI Termination Enable/ Disable Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| Open (*Default) | Enabled |
| Closed | Disabled |




A. SCSI Enable

B. SCSI Term. Enable

## Power Force-On

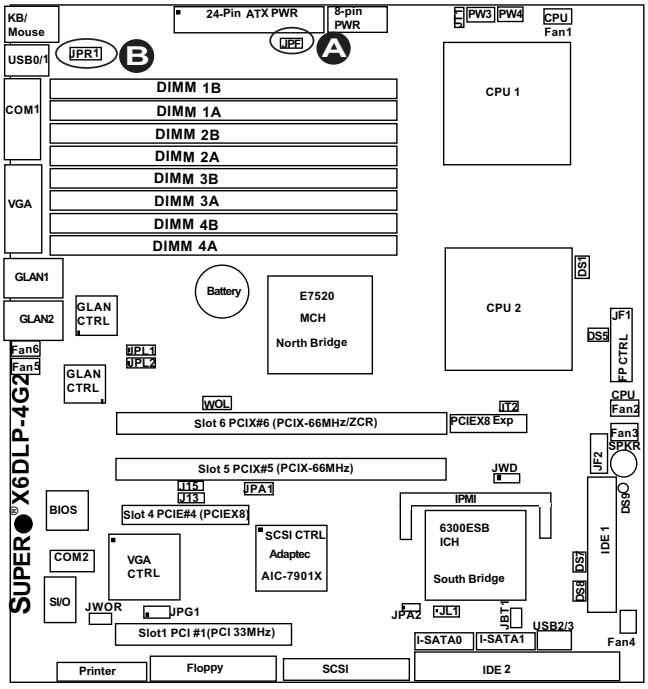
Jumper JPF allows you to enable or disable the function of Power Force-On. If enabled, the power will always stay on automatically. If this function disabled, the user needs to press the power button to power on the system.

| Power Force-On Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| Off | Normal |
| On | Force-On |

## Alarm Reset

The system will notify you in the event of a power supply failure. This feature assumes that Supermicro redundant power supply units are installed in the chassis. If you only have a single power supply installed, you should not connect anything to this header (JPR1) to prevent false alarms. See the table on the right for jumper settings.

| Alarm Reset Jumper Settings | |
|---|---|
| Jumper Setting | Definition |
| Open | Enabled |
| Closed | Disabled |



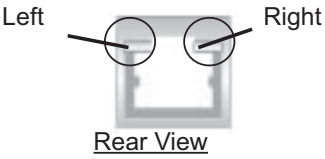

A. PWR Force-On

B. Alarm Reset

# 2-7 Onboard Indicators

## GLAN LEDs

The Gigabit Ethernet LAN ports (located beside the Video port) has two LEDs. The yellow LED indicates activity, while the other LED may be green, orange or off to indicate the speed of the connection. See the table at right for the functions associated with the second LED.




Rear View
(when viewing it from the rear side of the chassis)

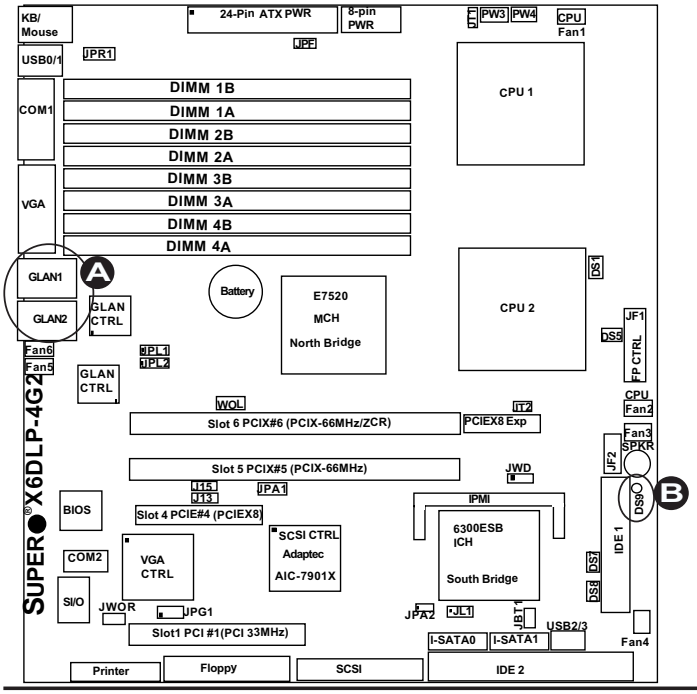
| GLAN Left LED Connection Speed Indicator | |
|---|---|
| LED Color | Definition |
| Off | 10Mbps or No Connection |
| Green | 100 Mbps |
| Amber | 1 Gbps |

| GLAN Right LED Connection Speed Indicator | |
|---|---|
| LED Color | Definition |
| Yellow | Flashing: 10Mbps/ 100Mbps/1 Gbps |

## System LED (DS9)

There is a system LED (DS9) on the motherboard. DS9 (System LED) indicates the status of the system. Refer to table on the right for information. Please refer to Appendix A for more information.

| System Alert LED Indicator Pin Definitions | |
|---|---|
| DS9 | Definition |
| Green | System: On, Normal |
| Amber | System: Off, PWR Cable Connected |
| Red | PWR or CPU Failure, CPU Overheat |



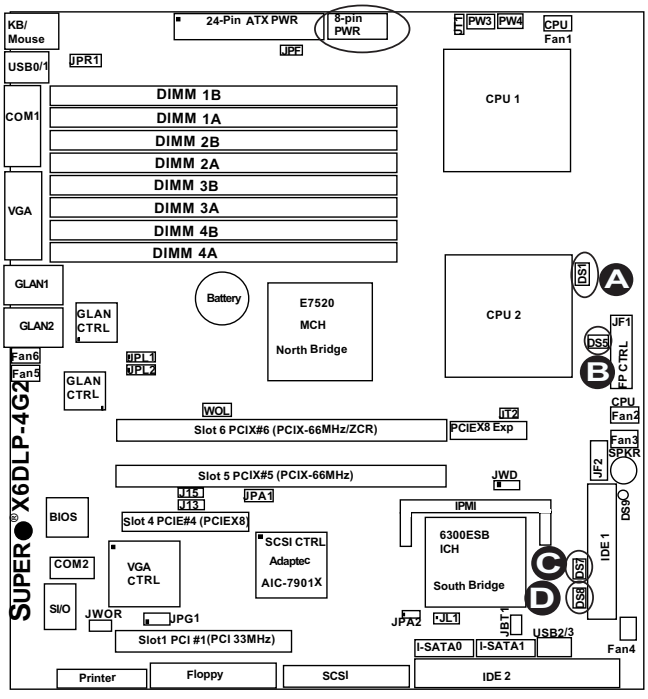

A. GLAN LEDs

B. System LED

## Onboard LED Indicators (DS1-DS5, DS7-DS8)

In addition to the LAN LEDs and SATA LED, there are other LED indicators (DS1, DS5, DS7-DS8) on the X6DLP-4G2/EG2. DS7 and DS8 are POST Codes LEDs. See the table on the right for Onboard LED pin definitions. (*Note: Please refer to Appendix A for DS7 and DS8 LED POST Codes.)

| Onboard LED Indicator Pin Definitions | |
|---|---|
| DS# | Definition |
| DS1 | CPU PWR bad or CPU +12V PWR cable must be connected |
| DS5 | PWR LED |
| DS7-8 | POST LED |




A. DS1
B. DS5
C. DS7
D. DS8

# 2-8 Parallel Port, Floppy, IPMI, Hard Disk Drive and SCSI

## Connections

Note the following when connecting the floppy and hard disk drive cables:

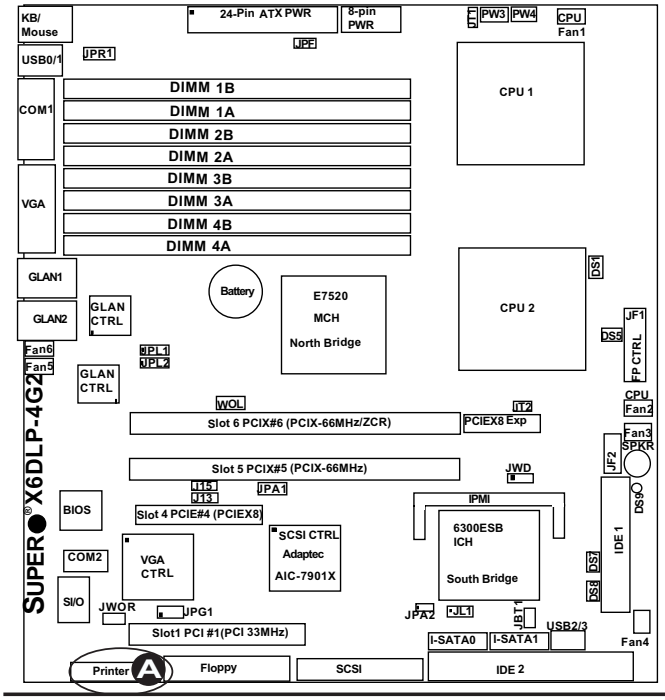
- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

### Parallel (Printer) Port Connector

The parallel (printer) port is located at J10. See the table on the right for pin definitions. (*Cable CBL-081 is required.)

**Parallel (Printer) Port Connector Pin Definitions**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | Strobe- | 2 | Auto Feed- |
| 3 | Data Bit 0 | 4 | Error- |
| 5 | Data Bit 1 | 6 | Init- |
| 7 | Data Bit 2 | 8 | SLCT IN- |
| 9 | Data Bit 3 | 10 | GND |
| 11 | Data Bit 4 | 12 | GND |
| 13 | Data Bit 5 | 14 | GND |
| 15 | Data Bit 6 | 16 | GND |
| 17 | Data Bit 7 | 18 | GND |
| 19 | ACK | 20 | GND |
| 21 | BUSY | 22 | Write Data |
| 23 | PE | 24 | Write Gate |
| 25 | SLCT | 26 | NC |




A. Parallel Port

## Floppy Connector

The floppy connector is located at J24. See the table below for pin definitions.

**Floppy Drive Connector Pin Definitions (Floppy)**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | Ground | 2 | FDHDIN |
| 3 | Ground | 4 | Reserved |
| 5 | Key | 6 | FDEDIN |
| 7 | Ground | 8 | Index |
| 9 | Ground | 10 | Motor Enable |
| 11 | Ground | 12 | Drive Select B |
| 13 | Ground | 14 | Drive Select B |
| 15 | Ground | 16 | Motor Enable |
| 17 | Ground | 18 | DIR |
| 19 | Ground | 20 | STEP |
| 21 | Ground | 22 | Write Data |
| 23 | Ground | 24 | Write Gate |
| 25 | Ground | 26 | Track 00 |
| 27 | Ground | 28 | Write Protect |
| 29 | Ground | 30 | Read Data |
| 31 | Ground | 32 | Side 1 Select |
| 33 | Ground | 34 | Diskette |

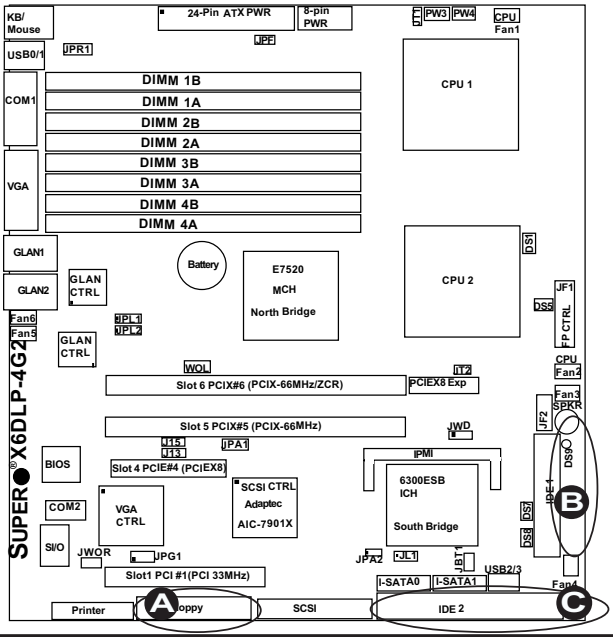
## IDE Connectors

There are no jumpers to configure the onboard IDE#1 (J44) and IDE #2 (J38). See the table on the right for pin definitions.

A. Floppy

B. IDE 1

C. IDE 2




**IDE Drive Connectors Pin Definitions (IDE)**

| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | Reset IDE | 2 | Ground |
| 3 | Host Data 7 | 4 | Host Data 8 |
| 5 | Host Data 6 | 6 | Host Data 9 |
| 7 | Host Data 5 | 8 | Host Data 10 |
| 9 | Host Data 4 | 10 | Host Data 11 |
| 11 | Host Data 3 | 12 | Host Data 12 |
| 13 | Host Data 2 | 14 | Host Data 13 |
| 15 | Host Data 1 | 16 | Host Data 14 |
| 17 | Host Data 0 | 18 | Host Data 15 |
| 19 | Ground | 20 | Key |
| 21 | DRQ3 | 22 | Ground |
| 23 | I/O Write | 24 | Ground |
| 25 | I/O Read | 26 | Ground |
| 27 | IOCHRDY | 28 | BALE |
| 29 | DACK3 | 30 | Ground |
| 31 | IRQ14 | 32 | IOCS16 |
| 33 | Addr1 | 34 | Ground |
| 35 | Addr0 | 36 | Addr2 |
| 37 | Chip Select 0 | 38 | Chip Select 1 |
| 39 | Activity | 40 | Ground |

## Ultra320 SCSI Connector (*X6DLP-4G2 Only)

Refer to the table below for the pin definitions of the Ultra320 SCSI connector located at J28.

**Ultra320 SCSI Drive Connector Pin Definitions**

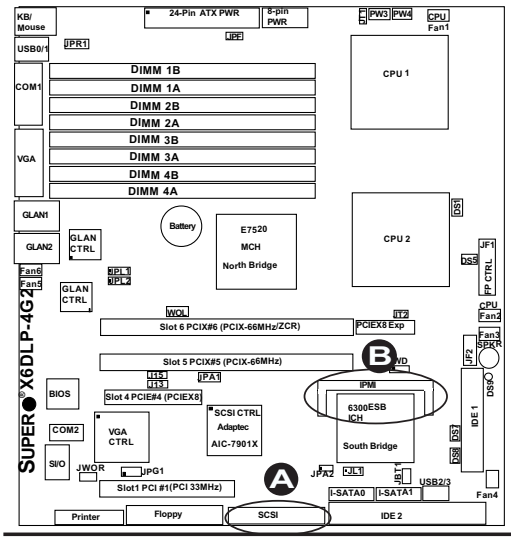
| Pin# | Definition | Pin # | Definition |
|---|---|---|---|
| 1 | +DB (12) | 35 | -DB (12) |
| 2 | +DB (13) | 36 | -DB (13) |
| 3 | +DB (14) | 37 | -DB (14) |
| 4 | +DB (15) | 38 | -DB (15) |
| 5 | +DB (P1) | 39 | -DB (P1) |
| 6 | +DB (0) | 40 | -DB (0) |
| 7 | +DB (1) | 41 | -DB (1) |
| 8 | +DB (2) | 42 | -DB (2) |
| 9 | +DB (3) | 43 | -DB (3) |
| 10 | +DB (4) | 44 | -DB (4) |
| 11 | +DB (5) | 45 | -DB (5) |
| 12 | +DB (6) | 46 | -DB (6) |
| 13 | +DB (7) | 47 | -DB (7) |
| 14 | +DB (P) | 48 | -DB (P) |
| 15 | Ground | 49 | Ground |
| 16 | DIFFSENS | 50 | Ground |
| 17 | TERMPWR | 51 | TERMPWR |
| 18 | TERMPWR | 52 | TERMPWR |
| 19 | Reserved | 53 | Reserved |
| 20 | Ground | 54 | Ground |
| 21 | +ATN | 55 | -ATN |
| 22 | Ground | 56 | Ground |
| 23 | +BSY | 57 | -BSY |
| 24 | +ACK | 58 | -ACK |
| 25 | +RST | 59 | -RST |
| 26 | +MSG | 60 | -MSG |
| 27 | +SEL | 61 | -SEL |
| 28 | +C/D | 62 | -C/D |
| 29 | +REQ | 63 | -REQ |
| 30 | +I/O | 64 | -I/O |
| 31 | +DB (8) | 65 | -DB (8) |
| 32 | +DB (9) | 66 | -DB (9) |
| 33 | +DB (10) | 67 | -DB (10) |
| 34 | +DB (11) | 68 | -DB (11) |

## IPMI 2.0 Socket

There is an IPMI 2.0 Socket on the motherboard. Refer to the layout below for the IPMI Socket location.

A. SCSI

B. IPMI 2.0 Socket



## Notes

# Chapter 3
# Troubleshooting

## 3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter.

***Note: Always disconnect the power cord before adding, changing or installing any hardware components.**

### Before Power On

1. Make sure no short circuits exist between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install one CPU (making sure it is fully seated) and connect the chassis speaker and the power LED to the motherboard. (Check all jumper settings as well.)
5. Use only the correct type of CMOS battery as recommended by the Manufacturer. Do not install the battery upside down to avoid possible explosion.

### No Power

1. Make sure no short circuits exist between the motherboard and the chassis.
2. Verify that all jumpers are set to their default positions.
3. Check that the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

### No Video

1. If the power is on but you have no video, remove all the add-on cards and cables.
2. Use the speaker to determine if any beep codes exist. Refer to Appendix A and Appendix B for details on beep codes.

### Losing the System's Setup Configuration

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup. Refer to Section 1-6 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

***NOTE***

If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to Appendix B.

**Memory Errors**

1. Make sure that all DIMM modules are properly and fully installed.
2. Determine if different speeds of DIMMs have been installed and verify that the BIOS setup is configured for the fastest speed of RAM used. It is recommended to use the same RAM speed for all DIMMs in the system.
3. Make sure that you are using the correct type of Registered, ECC DDRII 400 SDRAM (*recommended by the manufacturer.)
4. Check for bad DIMM modules or slots by swapping a single module between two slots and noting the results.
5. Make sure that all memory modules are fully seated in their slots. As an interleaved memory scheme is used, you must install two modules at a time, beginning with DIMM #1A, then DIMM #1B, and so on (see Section 2-3).
6. Check the position of the 115V/230V switch on the power supply.

## 3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Super Micro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our web site (http://www.supermicro.com/support/faqs/) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our web site at (http://www.supermicro.com/support/bios/).

***Note: Not all BIOS can be flashed depending on the modifications to the boot block code.***

*3. If you still cannot resolve the problem, include the following information when contacting Super Micro for technical support:*

- Motherboard model and PCB revision number
- BIOS release date/version (this can be seen on the initial display when your system first boots up)
- System configuration

An example of a Technical Support form is on our web site at (http://www.supermicro.com/support/contact.cfm).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com, by phone at:(408) 503-8000, option 2, or by fax at (408)503-8019.

## 3-3 Frequently Asked Questions

**Question: What are the various types of memory that my motherboard can support?**

**Answer:** The X6DLP-4G2/X6DLP-EG2 has eight 240-pin DIMM slots that support registered ECC DDRII 400 SDRAM modules. It is strongly recommended that you do not mix memory modules of different speeds and sizes.

**Question: How do I update my BIOS?**

**Answer:** It is recommended that you **do not** upgrade your BIOS if you are not experiencing any problem with your system. Updated BIOS files are located on our web site at http://www.supermicro.com. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Also, check the current BIOS revision and make sure it is newer than your BIOS before downloading.

(***Warning**: There is no BIOS Recovery function available for the motherboard. Should a problem occur after you flash the BIOS, you will need to change all six BIOS chips. Do not shut down or reset the system while updating BIOS to prevent possible system boot failure!)

**Question: What's on the CD that came with my motherboard?**

**Answer:** The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for Windows and security and audio drivers.

## 3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover any damage incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

## Notes

# Chapter 4
# AMIBIOS

## 4-1 Introduction

This chapter describes the AMIBIOS Setup Utility for the X6DLP-4G2/X6DLP-EG2. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily upgraded using a floppy disk-based program. This chapter describes the basic navigation of the AMIBIOS Setup Utility setup screens.

### Starting BIOS Setup Utility

To enter the AMIBIOS Setup Utility screens, hit the <Delete> key while the system is booting up.

(***Note**: In most cases, the <Delete> key is used to invoke the AMIBIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.)

Each main BIOS menu option is described in this user's guide. 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 configured by the user. 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 AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMIBIOS Setup Utility uses a key-based navigation system called hot keys. Most of the AMIBIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys etc. (***Note**: Options printed in **Bold** are default settings.)

### How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

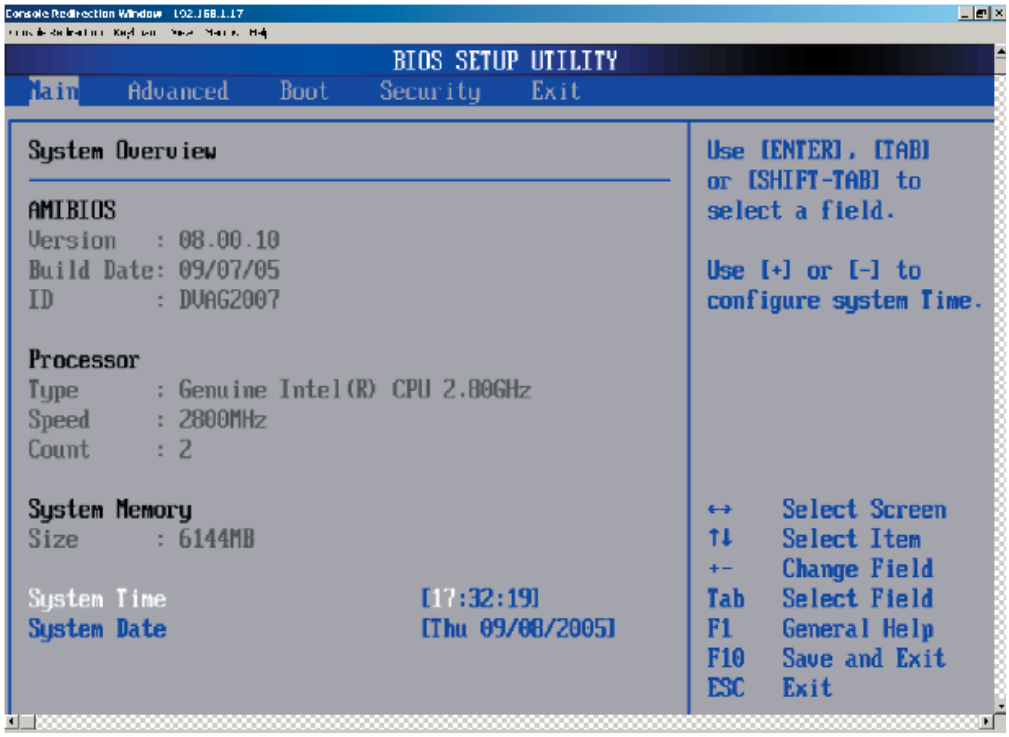
### Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMIBIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

**Warning!!** Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

## 4-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the ***Main*** tab on the top of the screen. The Main BIOS Setup screen is shown below.




When you select the Main Setup, the following items will be automatically displayed:

**System Overview:** The following BIOS information will be displayed:

**AMIBIOS**

**Version**

**Build Date**

**ID**

### Processors

When you select this option, the AMI BIOS will automatically display the status of processors as shown below:

**Type**

**Speed**

**Counts**

### System Memory

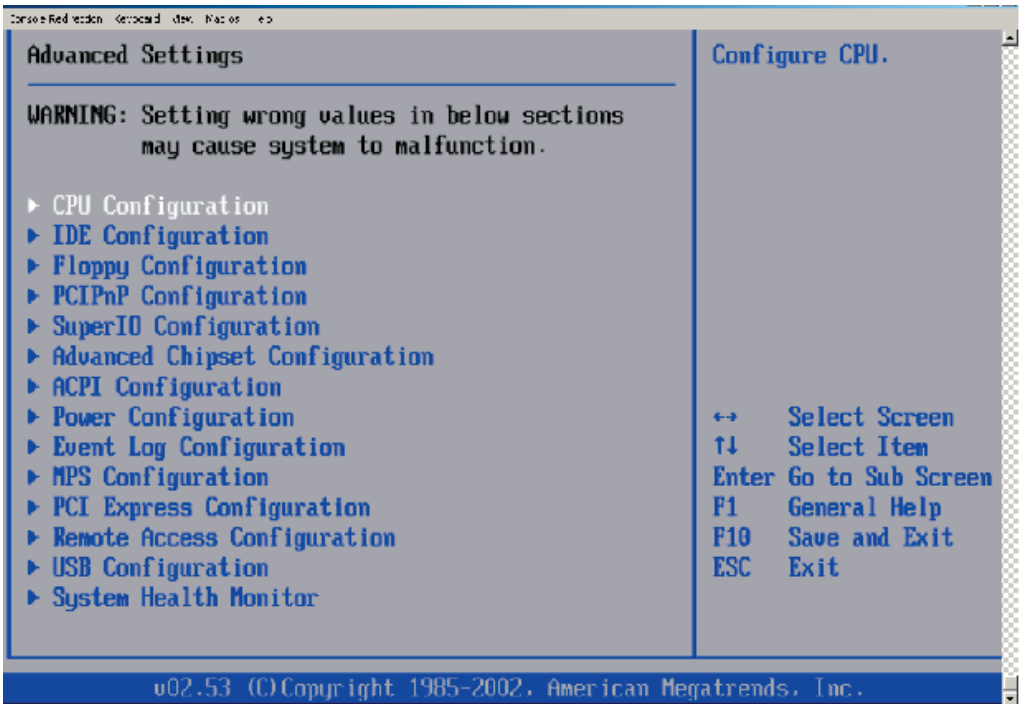
This option allows the AMI BIOS to display the status of memory installed in the system.

### System Time/System Date

Use this option 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/YY format. The time is entered in HH:MM:SS format.(***Note:*** The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30P. M. as 17:30:00.)

## 4-3 Advanced Settings

The Advanced Settings screen and sub menus are listed below:




### Warning

When you first enter the Advanced Setup screen, the Setup Warning will be displayed. Please follow the instruction and set the correct value for each item to prevent the system from malfunctioning.

### ▶CPU Configuration Sub-Menu

#### Configure Advanced CPU Settings

This option allows the user to configure the Advanced CPU settings for the processor(s) installed in the system.

**Execute Disable Bit** (*Available when supported by the OS and the CPU.)

Set to **Enabled** to enable the Execute Disable Bit to allow the processor to classify areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from creating a flood of codes to overwhelm the processor or damage the system during an attack. (Note: For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.

**Core Multi-Processing** (*Available when supported by the CPU.)

Select **Enabled** to enable the function of multiple CPU core processing. if Disable, one CPU execution core will be disabled.

**CPU TM Function** (*Available when supported by the CPU.)

This feature allows the user to activate the CPU thermal monitor mechanism. TM1 allows the CPU to regulate its power consumption based upon the modulation of the CPU Internal clock when the CPU temperature reaches a pre-defined overheat threshold. The options are Disabled and **Enabled**. (***Note**: Select Enabled to allow the CPU to reduce its power consumption by lowering the CPU frequency and the CPU voltage when the CPU temperature reaches a pre-defined overheat threshold. TM2 is available only when it is supported by the CPU.

## ▶IDE Configuration Sub-Menu

When this sub-menu is selected, the AMI BIOS automatically displays the following items:

### IDE Configuration

This feature allows the user to configure the IDE mode. The options are Disabled, P-ATA (Parallel ATA) only, S-ATA (Serial ATA) only and **P-ATA & S-ATA**.

### Combined Mode Operation

This feature allows the user to select the IDE Combined Mode. The options are **P-ATA 1st Channel** and S-ATA 1st Channel.

### S-ATA Ports Definition

This feature allows the user to configure the Serial ATA Ports. The options are **P0-Master/P1-Slave** and P0-Slave/P1-Master.

### Primary IDE Channel Master/Slave, Secondary IDE Channel Master/Slave, Third IDE Master/Slave, Fourth IDE Channel Master/Slave

These settings allow the user to set the parameters of Primary IDE Channel Master/Slave, Secondary IDE Channel Master/Slave, Third IDE Master/Slave, Fourth IDE Channel Master/Slave slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:

### Type

Select the type of device connected to the system. The options are Not Installed, **Auto**, CDROM and ARMD.

### LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing. If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and **Auto**.

### Block (Multi-Sector Transfer)

Block Mode boosts the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if Block Mode is not used. Block Mode allows transfers of up to 64 KB per interrupt. Select "Disabled" to allow the data to be transferred from and to the device one sector at a time. Select "Auto" to allows the data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

### PIO Mode

The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4. Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined. Select 0 to allow the AMI BIOS to use PIO mode 0. It has a data transfer rate of 3.3 MBs. Select 1 to allow the AMI BIOS to use PIO mode 1. It has a data transfer rate of 5.2 MBs. Select 2 to allow the AMI BIOS to use PIO mode 2. It has a data transfer rate of 8.3 MBs. Select 3 to allow the AMI BIOS to use PIO mode 3. It has a data transfer rate of 11.1 MBs. Select 4 to allow the AMI BIOS to use PIO mode 4. It has a data transfer rate of 16.6 MBs. This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.

### S.M.A.R.T. For Hard disk drives

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select "Auto" to allow the AMI BIOS to auto detect hard disk drive support. Select "Disabled" to prevent the AMI BIOS from using the S.M.A.R.T. Select "Enabled" to allow the AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

### 32Bit Data Transfer

Select "Enabled" to activate the function of 32-Bit data transfer. Select "Disabled" to disable this function. The options are Enabled and **Disabled**.

### Hard Disk Write Protect

Select Enabled to enable the function of Hard Disk Write Protect to prevent data from being written to HDD. The options are Enabled or **Disabled**.

### IDE Detect Time Out

This feature allows the user to set the time-out value for detecting ATA, ATA PI devices installed in the system. The options are 0 (sec), 5, Mode 1.0, 15, 20, 25, 30, and **35**.

### ATA(PI) 80Pin Cable Detection

This feature allows the AMI BIOS to auto-detect 80Pin ATA(PI) Cable. The options are **Host & Device**, Host and Device.

## ▶Floppy Configuration

This option allows the user to configure the settings for the Floppy Drives installed in the system.

### Floppy A

Move the cursor to these fields via up and down arrow keys to select the floppy type. The options are Disabled, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3½", **1.44 MB 3½"**, and 2.88 MB 3½".

### OnBoard Floppy Controller

Select "Enabled" to enable the Onboard Floppy Controller. The options are Disabled and **Enabled**.

## ▶PCI/PnP Configuration

This feature allows the user to set the PCI/PnP configurations for the following items:

### Plug & Play OS

Select Yes to allow the OS to configure Plug & Play devices. (*This is not required for system boot if you system has an OS that supports Plug & Play.) Select **No** to allow the AMI BIOS to configure all devices in the system.

### PCI Latency Timer

This option sets the latency of all PCI devices on the PCI bus. The default setting is "64." Select **"32"** to set the PCI latency to 32 PCI clock cycles. Select "64" to set the PCI latency to 64 PCI clock cycles. Select "96" to set the PCI latency to 96 PCI clock cycles. Select "128" to set the PCI latency to 128 PCI clock cycles. Select "160" to set the PCI latency to 160 PCI clock cycles. Select "192" to set the PCI latency to 192 PCI clock cycles. Select "224" to set the PCI latency to 224 PCI clock cycles. Select "248" to set the PCI latency to 248 PCI clock cycles.

### 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

Set this value to allow or prevent the use of PCI IDE busmastering. Select "Enabled" to allow the BIOS to use the PCI busmaster for reading and writing to IDE drives. The options are **Disabled** and Enabled.

### Offboard PCI/ISA IDE Card

This option allows the user to assign a PCI slot number to an off-board PCI/ISA IDE card in order for it to function properly. The options are **Auto**, PCI Slot1, PCI Slot2, PCI Slot3, PCI Slot4, PCI Slot5, and PCI Slot6.

### 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 an 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 a DMA channel specified is reserved for a Legacy ISA device.

### Reserved Memory Size

This feature specifies the size of memory block to be reserved for Legacy ISA devices. The options are **Disabled**, 16K, 32K, 64K.

## ▶Super IO Configuration Sub-Menu

### Serial Port1 Address

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1. 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. The options are Disabled, **3F8/IRQ4**, 3E8/IRQ4, 2E8/IRQ3.

### Serial Port2 Address

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 2. 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. The options are Disabled, **2F8/IRQ3**, 3E8/IRQ4 and 2E8/IRQ3.

### Parallel Port Address

This option specifies the I/O address used by the parallel port. Select Disabled to prevent the parallel port from accessing any system resources. When the value of this option is set to Disabled, the printer port becomes unavailable. Select **378** to allow the parallel port to use 378 as its I/O port address. The majority of parallel ports on computer systems use IRQ7 and I/O Port 378H as the standard setting. Select 278 to allow the parallel port to use 278 as its I/O port address. Select 3BC to allow the parallel port to use 3BC as its I/O port address.

### Parallel Port Mode

This feature allows the user to specify the parallel port mode. The options are Normal, Bi-Directional, EPP and **ECP**.

### ECP Mode DMA Channel

This feature allows the BIOS to select the ECP DMA mode for the parallel port. The options are DMA0, DMA1 and **DMA3**.

### Parallel Port IRQ

This feature allows the user to select the IRQ (interrupt request) for the parallel port. The options are IRQ5 and **IRQ7**.

## ▶Advanced Chipset Settings

This item allows the user to configure the Advanced Chipset settings for the system.

## ▶NorthBridge Configuration

This feature allows the user to configure the settings for the Intel E7520 NorthBridge chipset.

### Memory Remap Feature

Select Enabled to allow remapping of the overlapped PCI memory above the total physical memory. The options are **Enabled** and Disabled.

### Memory Mirroring/Sparing

This feature allows the user to enable the function of Memory Mirroring and Sparing if memory configuration supports this function. The options are **Disabled** and Sparing.

### DMA Controller

This feature allows the user to enable or disable DMA Controller. The options are **Disabled** and Enabled.

## ▶SouthBridge Configuration

This feature allows the user to configure the settings for the Intel ICH SouthBridge chipset.

### CPU B.I.S.T. Enable

Select Enabled to enable the function of CPU Built In Self Test. The options are Enabled and **Disabled**.

### ICH Delayed Transaction

Select Disabled to set the South Bridge P2P Bridge Secondary Discard Timer to 32 micro-seconds for the PCI 32-bit bus. Select **Enabled** to set the South Bridge P2P Bridge Secondary Discard Timer to 4 micro-seconds for the PCI 32-bit bus.

### ICH DCB

Select **Enabled** to activate the ICH DMA Collection Buffer to provide Type-F DMA performance for all DMA channels, allowing the DMA controllers located in the FPGA to move data between the CPU memory and the coprocessor. It is ideal for systems whose CPU main memory can be directly accessed from the FPGA.

## ▶APCI Configuration

This item allows the user to enable or disable the ACPI support for the operating system.

### ACPI Configuration

Use this feature to configure additional ACPI options. Select Yes if the operating system supports ACPI. Select No if the operating system does not support ACPI. The options are No and **Yes**.

#### ACPI 2.0 Features

Select Yes to allow the RSDP pointers to point to the Fixed System Description Tables. Select No to deactivate this function. The options are Yes and **No**.

#### ACPI APIC Support

Select Enabled to allow the ACPI APIC Table Pointer to be included in the RSDP pointer list. The options are **Enable** and Disabled.

#### AMI OEMB Table

Select Enabled to allow the OEMB Table Pointer to be included in the R(x)SDT pointer lists. The options are **Enabled** and Disabled.

#### Headless Mode

Select Enabled to activate the Headless Operation Mode through the ACPI and will allow the BIOS to boot up the system without any keyboard, mouse and video. The options are Enabled and **Disabled**.

## ▶Power Configuration

This feature allows the user to configure PnP settings.

### Power Button

If set to Instant-Off, the system will power off immediately as soon as the user hits the power button. If set to 4-sec., the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant-Off** and 4-sec override.

### Restore on AC Power Loss

This setting allows the user to decide how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On and **Last State**.

### Watch Dog Timer

This setting is used to activate and de-activate the Watch Dog Timer. It must be used in conjunction with the WD jumper (see Chapter 2 for details). The options are **Disabled** and Enabled.

## ▶Event Log Configuration

Highlight this item and press <Enter> to view the contents of the event log.

### View Event Log

This feature allows the user to view all unread events.

**Mark All Events as Read**

Highlight this item and press <Enter> to mark the DMI events as read.

### Clear Event Log

This setting will clear all event logs when set to OK. The options are OK and **Cancel**.

### ECC Event Logging

This setting allows you to enable or disable the function of ECC Event logging. The options are Enabled or **Disabled**.

### Hub Interface Event Logging

This setting allows you to enable or disable the function of Hub Interface Event logging. The options are Enabled or **Disabled**.

### System Bus Event Logging

This setting allows you to enable or disable the function of System Bus Error Event logging. The options are Enabled or **Disabled**.

### Memory Buffer Event Logging

This setting allows you to enable or disable the function of Memory Buffer Event logging. The options are Enabled or **Disabled**.

### PCI/PCI Error Logging

This setting allows you to enable or disable the function of PCI Error logging. The options are Enabled or **Disabled**.

### PCI/PCI Express Error Logging

This setting allows you to enable or disable the function of PCI Express Error logging. The options are Enabled or **Disabled**.

## ▶MPS Configuration

This section allows the user to configure the multiprocessors table.

**MPS Revision**

This feature allows the user to select the MPS Revision. Please follow the instructions given on the screen to select the MPS Revision Number. The options are 1.1 and **1.4.**

## ▶PCI Express Configuration

This section allows the user to configure the PCI Express slots.

**Active State Power Management**

Select Enabled to activate the function of power management for signal transactions between the PCI Express L0 and L1 Links. The options are Enabled and **Disabled**.

**I/O Expander Mode**

This feature allows the user to set the IO Expand Mode for Hot Plug support. The options are **PCA9555**, Two PCA9554, One PCA9554 (Low), One PCA9554 (High), Two PCA9554A, One PCA9554A (Low), and Two PCA9554.

**PCI Express PortA (Slot4)/PCI Express PortB (Slot6)/PCI Express PortC0 (NIC1)/PCI Express PortC1 (NIC2)**

This feature allows the user to configure the PCI Express slot specified. If set to Auto, the slots with IO cards installed will be visible. If Enabled, the IO slots will always be displayed. If set to Disabled, the IO slots will not displayed. The options are Auto, **Enabled**, and Disabled.

**PCI Express Compliance Mode**

Select Enabled to enable MCH to activate the PCI Express Compliance Mode. The options are **Disabled** and Enabled.

**Spread Spectrum**

Select Enabled to enable the function of Spread Spectrum and allows the BIOS to monitor the level of electromagnetic interference caused by the components installed in the system and to attempt to reduce the electromagnetic interference when needed. The options are **Disabled** and Enabled.

## ▶Remote Access Configuration

You can use this screen to select options for the Remote Access Configuration. Use the up and down arrow keys to select an item. Use the <+> and <-> keys to change the value of the selected option.

### Remote Access

This feature allows the user to disable the function of Remote Access. If Disabled is not selected, then you can select a Remote Access type. The options are Enabled and **Disabled**.

### Remote Access

This feature allows the user to enable the function of Remote Access. The Options are Enabled and **Disabled**.

If the item "Remote Access" is set to Enabled, you can select a Remote Access type and configure the following settings:

#### Serial Port Number

This feature allows the user to select the serial port for Console Redirection.

The options are **COM1** and COM2.

#### Serial Port Mode

This feature allows the user to set the serial port mode for Console Redirection. The options are **115200 8, N, 1**, 57600 8, N, 1, 38400 8, N, 1, 19200 8, N, 1 and 9600 8, N, 1.

#### Flow Control

This feature allows the user to set the flow control for Console Redirection.

The options are **None,** Hardware, and Software.

#### Redirection After BIOS POST

This feature allows the user to select Disabled to turn off Console Redirection after POST. Select **Always** to keep Console Redirection active all the time. (*Note: this setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader.

#### Terminal Type

This feature allows the user to select the target terminal type for Console Redirection.The options are **ANSI**, VT100, and VT-UTF8.

#### VT-UTF8 Comb Key Support

This feature allows the user to select Enabled to enable the VT-UTF8 Combination Key support for the ANSI/VT100 Terminals. The options are **Enabled** and Disabled.

#### Sredir Memory Display Delay

This feature allows the user to decide how many seconds the BIOS shall wait before memory information is displayed. The Default setting is **No Delay**.

## ▶USB Configuration

This feature allows the user to configure the USB settings.

### USB Function

This feature allows you to enable the USB Ports. The options are Disabled and **Enabled.**

### Legacy USB Support

Select Enabled to enable USB Legacy support. Disable legacy support if there are no USB devices installed in the system. The options are Disabled, **Enabled**, and Auto.

### USB 2.0 Controller

This setting allows you to enable or disable the USB 2.0 Controller. The options are Disabled and **Enabled**.

### USB 2.0 Controller Mode

This setting allows you to configure the USB 2.0 Controller Mode. The options are **Hi-Speed (480 Mbps)** and Full Speed-(12Mbps).

## ▶USB Mass Storage Device Configurations

#### USB Mass Storage Reset Delay

This setting allows you to decide how long the system should wait in an attempt to detect the presence of a USB Mass Storage Device before it issues a start command the system to proceed with the next operation during POST. The options are 10 Seconds, **20 Seconds**, 30 Seconds and 40 Seconds.

#### Emulation Type

If set to **Auto**, USB devices that are smaller than 530MB will be emulated as floppy and the remaining will be emulated as an HDD. The Forced FDD option will allow you to configure an HDD formatted drive to boot as an FDD (eg. Zip Drive). The options are Auto, Floppy, Forced FDD, Hard Disk, and CD ROM.

## ▶System Health Monitor

This feature allows the AMI BIOS to automatically display the status of the following items:

### CPU Overheat Temperature

This feature allows the user to set the CPU Overheat temperature threshold. The options range from 65°C to 90°C. Use the <+> and <-> keys to set the desired setting. The default setting is **78°C**. ***Note:** In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

**The AMI BIOS will automatically monitor and display the following information:**

**CPU1 Temperature, CPU2 Temperature, System Temperature**

**CPU1 VCORE/CPU2 VCORE (*for 2U systems)**

**3.3V Vcc(V), +5 Vin, 12V Vcc(V), -12V Vcc (V), DRAM VTT, 1.2V Vcc, DIMM Voltage, 1.5V Voltage, 5V Standby, 3.3V Standby.**

### ▶System Fan Monitor

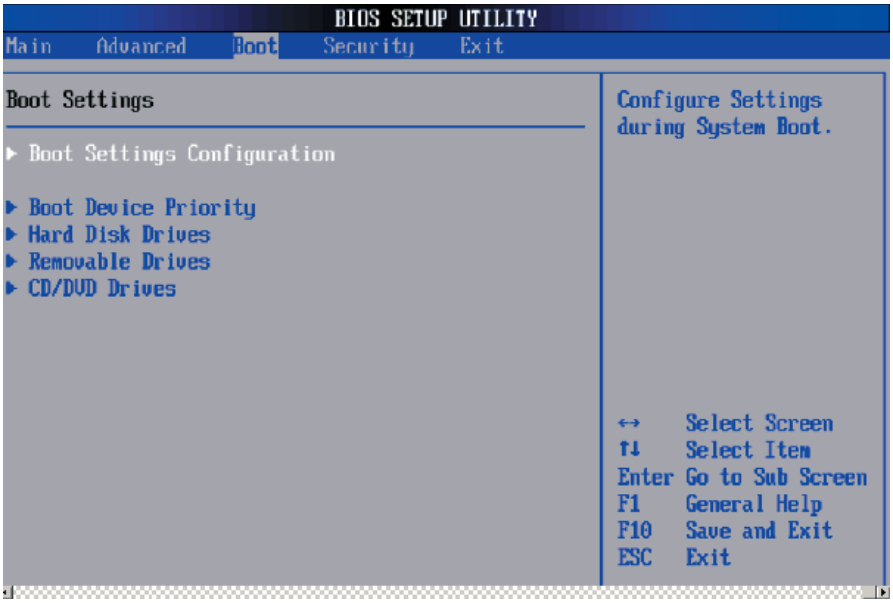
**Fan Speed Control Modes:**

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vise versa. If the option is set to "3-pin fan," the fan speed is controlled by voltage. If the option is set to "4-pin," the fan speed will be controlled by Pulse Width Modulation (PWM). Select "3-pin" if your chassis came with 3-pin fan headers. Select "4-pin" if your chassis came with 4-pin fan headers. Select "Workstation" if your system is used as a Workstation. Select "Server" if your system is used as a Server. Select "Disable" to disable the fan speed control function to allow the onboard fans to run at full speed (12V) at all the time. The options are **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

**Fan1 Speed to Fan6 Speeds**

## 4-4 Boot Settings

This feature allows the user to configure the following items:



## ▶BIOS Settings Configuration

### Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for system bootup. The options are **Enabled** and Disabled.

### Quiet Boot

This option allows the boot up screen options to be modified between POST messages or the OEM logo. Select Disabled to allow the computer system to display the POST messages. Select **Enabled** to allow the computer system to display the OEM logo.

### Add-On ROM Display Mode

This option allows the BIOS to display add-on ROM (read-only memory) messages. Select **Force BIOS** to display a third party BIOS during system boot. Select "Keep Current" to display the current BIOS information during system boot.

### Boot up Num-Lock

This option allows the Number Lock setting to be modified during boot up. The default setting is **On**. The options are On and Off.

### PS/2 Mouse Support

This option allows the PS/2 mouse support to be modified. The options are **Auto**, Enabled and Disabled.

### Wait for 'F1' If Error

Select Enable to activate the function of Wait for F1 if Error. The options are **Enabled** and Disabled.

### Hit 'DEL' Message Display

Select Enabled to display the Setup Message when the user hits the DEL key. The options are **Enabled** and Disabled.

### Interrupt 19 Capture

Select Enabled to allow ROMs to trap Interrupt 19. The options are Enabled and **Disabled**.

### Quiet Boot Progress Bar

Select Enabled to display a graphic bar that shows the progress of POST if the feature of Quiet Boot is enabled. The options are Enabled and **Disabled**.

## ▶Boot Device Priority

This feature allows the user to specify the sequence of priority for the Boot Device.

The settings are 1st Floppy Drive, CD ROM, ATAPI CDROM and Disabled. The default settings are:

· 1st boot device – 1st Floppy Drive

· 2nd boot device – SM-Sony CD-ROM CDU

· 3rd boot device – 00, AIC-0791A: 1MA

· 4th boot device – IBA GE Slot 0300V

· 5th boot device – IBA GE Slot 0400V

## ▶Hard Disk Drives

This feature allows the user to specify the boot sequence from available Hard Drives.

### 1st Drive/2nd Drive/3rd Drive

· 1ST boot device – #328 ID01 LUN0 LSI

## ▶Removable Drives

This feature allows the user to specify the boot sequence from available Removable Drives.

### 1st Drive

This option allow the user to specify the boot sequence for 1st Removable Drive.

The options are **1st Floppy Drive** and Disabled.

## ▶CD/DVD Drives

This feature allows the user to specify the boot sequence from available CD/DVD-Drives.

### 1st Drive

This option allows the user to specify the boot sequence for the 1st CD/DVD Drive. The options are **SM-Sony CD-ROM CDU**, AMI Virtual CDROM and Disabled.

### 2nd Drive

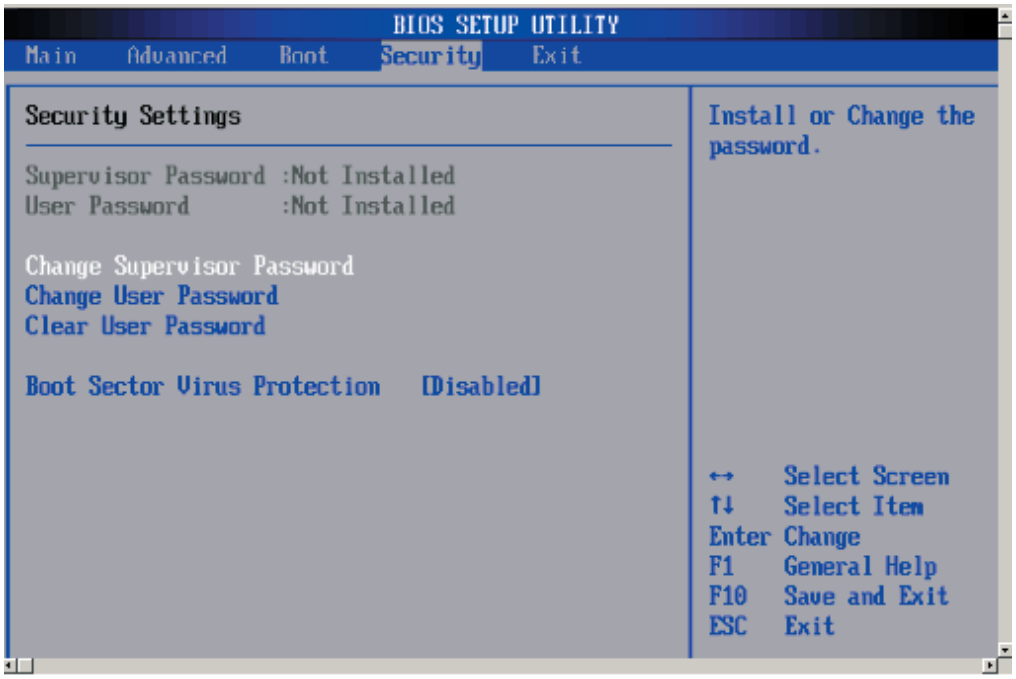
This option allows the user to specify the boot sequence for the 2nd CD/DVD Drive. The options are SM-MATSHITA CR-176, **AMI Virtual CDROM** and Disabled.

### PCI-X Slot5 Option ROM/PCI-X Slot6 Option ROM

Select Enabled to display the Option ROMs stored in the add-on cards installed on PCI-X Slot5/PCI-X Slot6. The options are **Enabled** and Disabled.

## 4-5 Security Settings

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




### 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.

### Clear User Password

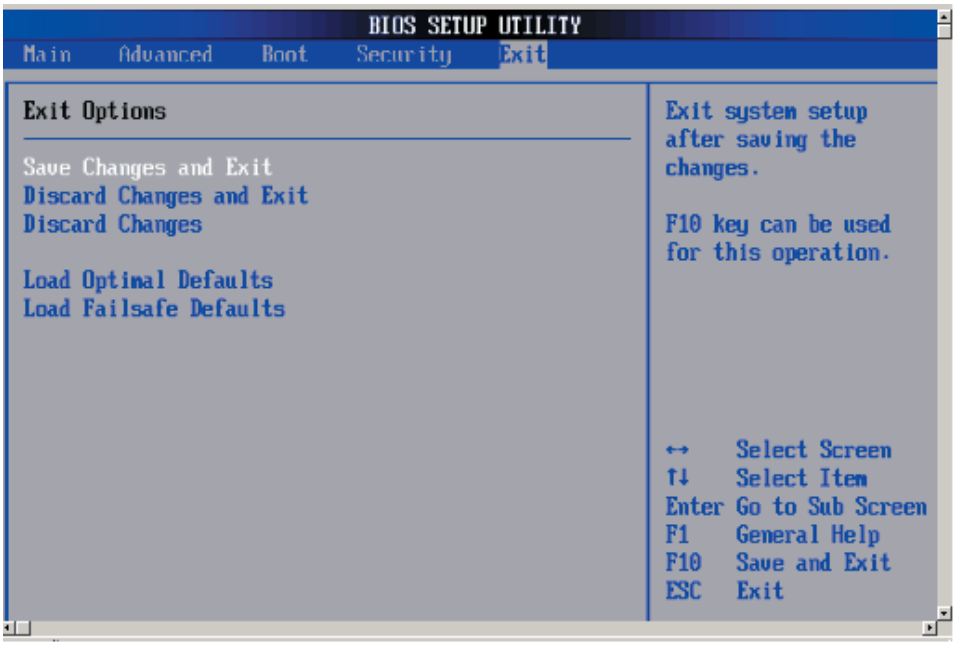
Select this option and press <Enter> to access the sub menu. You can use the sub menu to clear the user password.

### Boot Sector Virus Protection

This option is near the bottom of the Security Setup screen. Select "Disabled" to deactivate the Boot Sector Virus Protection. Select "Enabled" to enable boot sector protection. When Enabled, AMIBOIS 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. The options are Enabled and **Disabled**.

## 4-6 Exit Options

Select the Exit tab from the AMIBIOS Setup Utility screen to enter the Exit BIOS Setup screen.




### Saving Changes and Exit

When you have completed the system configuration changes, select this option to leave the 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>.

### Discarding Changes and Exit

Select this option to quit the 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>.

### Discarding Changes

Select this option and press <Enter> to discard all the changes and return to the AMIBIOS 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 the AMI BIOS to automatically load Optimal Defaults to 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 for maximum performance.

# Appendix A
# BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

**Non-fatal errors** are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

**Fatal errors** are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list, on the following page, correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

POST codes may be read on the debug LEDs located beside the LAN port on the motherboard backplane. See the description of the Debug LEDs (LED1 and LED2) in Section 2-6.

## A-1 AMIBIOS Error Beep Codes

| Beep Code | Error Message | Description |
|---|---|---|
| 1 beep | Refresh | Circuits have been reset. (Ready to power up.) |
| 5 short, 1 long | Memory error | No memory detected in system |
| 8 beeps | Display memory read/write error | Video adapter missing or with faulty memory |

## A-2 DS7/DS8 LED Post Codes

| LED Indicators | | Description/Message |
|---|---|---|
| **DS7** | **DS8** | |
| On | On | PWR On |
| On | Off | SPD Read OK |
| Off | On | Memory Size-OK |
| Off | Off | Starting Bus Initialization |

# Appendix B
# BIOS POST Checkpoint Codes

When AMIBIOS performs the Power On Self Test, it writes checkpoint codes to I/O port 0080h. If the computer cannot complete the boot process, diagnostic equipment can be attached to the computer to read I/O port 0080h.

## B-1 Uncompressed Initialization Codes

The uncompressed initialization checkpoint codes are listed in order of execution:

| Checkpoint | Code Description |
|---|---|
| D0h | The NMI is disabled. Power on delay is starting. Next, the initialization code checksum will be verified. |
| D1h | Initializing the DMA controller, performing the keyboard controller BAT test, starting memory refresh and entering 4 GB flat mode next. |
| D3h | Starting memory sizing next. |
| D4h | Returning to real mode. Executing any OEM patches and setting the Stack next. |
| D5h | Passing control to the uncompressed code in shadow RAM at E000:0000h. The initialization code is copied to segment 0 and control will be transferred to segment 0. |

## B-2 Bootblock Recovery Codes

The bootblock recovery checkpoint codes are listed in order of execution:

| Checkpoint | Code Description |
|---|---|
| E0h | The onboard floppy controller if available is initialized. Next, beginning the base 512 KB memory test. |
| E1h | Initializing the interrupt vector table next. |
| E2h | Initializing the DMA and Interrupt controllers next. |
| E6h | Enabling the floppy drive controller and Timer IRQs. Enabling internal cache memory. |
| Edh | Initializing the floppy drive. |
| Eeh | Looking for a floppy diskette in drive A:. Reading the first sector of the diskette. |
| Efh | A read error occurred while reading the floppy drive in drive A:. |
| F0h | Next, searching for the AMIBOOT.ROM file in the root directory. |
| F1h | The AMIBOOT.ROM file is not in the root directory. |
| F2h | Next, reading and analyzing the floppy diskette FAT to find the clusters occupied by the AMIBOOT.ROM file. |
| F3h | Next, reading the AMIBOOT.ROM file, cluster by cluster. |
| F4h | The AMIBOOT.ROM file is not the correct size. |
| F5h | Next, disabling internal cache memory. |
| FBh | Next, detecting the type of flash ROM. |
| FCh | Next, erasing the flash ROM. |
| FDh | Next, programming the flash ROM. |
| FFh | Flash ROM programming was successful. Next, restarting the system BIOS. |

## B-3 Uncompressed Initialization Codes

The following runtime checkpoint codes are listed in order of execution. These codes are uncompressed in F0000h shadow RAM.

| Checkpoint | Code Description |
|---|---|
| 03h | The NMI is disabled. Next, checking for a soft reset or a power on condition. |
| 05h | The BIOS stack has been built. Next, disabling cache memory. |
| 06h | Uncompressing the POST code next. |
| 07h | Next, initializing the CPU and the CPU data area. |
| 08h | The CMOS checksum calculation is done next. |
| 0Ah | The CMOS checksum calculation is done. Initializing the CMOS status register for date and time next. |
| 0Bh | The CMOS status register is initialized. Next, performing any required initialization before the keyboard BAT command is issued. |
| 0Ch | The keyboard controller input buffer is free. Next, issuing the BAT command to the keyboard controller. |
| 0Eh | The keyboard controller BAT command result has been verified. Next, performing any necessary initialization after the keyboard controller BAT command test. |
| 0Fh | The initialization after the keyboard controller BAT command test is done. The keyboard command byte is written next. |
| 10h | The keyboard controller command byte is written. Next, issuing the Pin 23 and 24 blocking and unblocking command. |
| 11h | Next, checking if <End or <Ins> keys were pressed during power on. Initializing CMOS RAM if the Initialize CMOS RAM in every boot AMIBIOS POST option was set in AMIBCP or the <End> key was pressed. |
| 12h | Next, disabling DMA controllers 1 and 2 and interrupt controllers 1 and 2. |
| 13h | The video display has been disabled. Port B has been initialized. Next, initializing the chipset. |
| 14h | The 8254 timer test will begin next. |
| 19h | Next, programming the flash ROM. |
| 1Ah | The memory refresh line is toggling. Checking the 15 second on/off time next. |
| 2Bh | Passing control to the video ROM to perform any required configuration before the video ROM test. |
| 2Ch | All necessary processing before passing control to the video ROM is done. Looking for the video ROM next and passing control to it. |
| 2Dh | The video ROM has returned control to BIOS POST. Performing any required processing after the video ROM had control |
| 23h | Reading the 8042 input port and disabling the MEGAKEY Green PC feature next. Making the BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors. |
| 24h | The configuration required before interrupt vector initialization has completed. Interrupt vector initialization is about to begin. |

| Checkpoint | Code Description |
|---|---|
| 25h | Interrupt vector initialization is done. Clearing the password if the POST DIAG switch is on. |
| 27h | Any initialization before setting video mode will be done next. |
| 28h | Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next. |
| 2Ah | Bus initialization system, static, output devices will be done next, if present. See the last page for additional information. |
| 2Eh | Completed post-video ROM test processing. If the EGA/VGA controller is not found, performing the display memory read/write test next. |
| 2Fh | The EGA/VGA controller was not found. The display memory read/write test is about to begin. |
| 30h | The display memory read/write test passed. Look for retrace checking next. |
| 31h | The display memory read/write test or retrace checking failed. Performing the alternate display memory read/write test next. |
| 32h | The alternate display memory read/write test passed. Looking for alternate display retrace checking next. |
| 34h | Video display checking is over. Setting the display mode next. |
| 37h | The display mode is set. Displaying the power on message next. |
| 38h | Initializing the bus input, IPL, general devices next, if present. See the last page of this chapter for additional information. |
| 39h | Displaying bus initialization error messages. See the last page of this chapter for additional information. |
| 3Ah | The new cursor position has been read and saved. Displaying the Hit <DEL> message next. |
| 3Bh | The Hit <DEL> message is displayed. The protected mode memory test is about to start. |
| 40h | Preparing the descriptor tables next. |
| 42h | The descriptor tables are prepared. Entering protected mode for the memory test next. |
| 43h | Entered protected mode. Enabling interrupts for diagnostics mode next. |
| 44h | Interrupts enabled if the diagnostics switch is on. Initializing data to check memory wraparound at 0:0 next. |
| 45h | Data initialized. Checking for memory wraparound at 0:0 and finding the total system memory size next. |
| 46h | The memory wraparound test is done. Memory size calculation has been done. Writing patterns to test memory next. |
| 47h | The memory pattern has been written to extended memory. Writing patterns to the base 640 KB memory next. |
| 48h | Patterns written in base memory. Determining the amount of memory below 1 MB next. |
| 49h | The amount of memory below 1 MB has been found and verified. |
| 4Bh | The amount of memory above 1 MB has been found and verified. Checking for a soft reset and clearing the memory below 1 MB for the soft reset next. If this is a power on situation, going to checkpoint 4Eh next. |

| Checkpoint | Code Description |
|---|---|
| 4Ch | The memory below 1 MB has been cleared via a soft reset. Clearing the memory above 1 MB next. |
| 4Dh | The memory above 1 MB has been cleared via a soft reset. Saving the memory size next. Going to checkpoint 52h next. |
| 4Eh | The memory test started, but not as the result of a soft reset. Displaying the first 64 KB memory size next. |
| 4Fh | The memory size display has started. The display is updated during the memory test. Performing the sequential and random memory test next. |
| 50h | The memory below 1 MB has been tested and initialized. Adjusting the displayed memory size for relocation and shadowing next. |
| 51h | The memory size display was adjusted for relocation and shadowing. |
| 52h | The memory above 1 MB has been tested and initialized. Saving the memory size information next. |
| 53h | The memory size information and the CPU registers are saved. Entering real mode next. |
| 54h | Shutdown was successful. The CPU is in real mode. Disabling the Gate A20 line, parity, and the NMI next. |
| 57h | The A20 address line, parity, and the NMI are disabled. Adjusting the memory size depending on relocation and shadowing next. |
| 58h | The memory size was adjusted for relocation and shadowing. Clearing the Hit <DEL> message next. |
| 59h | The Hit <DEL> message is cleared. The <WAIT...> message is displayed. Starting the DMA and interrupt controller test next. |
| 60h | The DMA page register test passed. Performing the DMA Controller 1 base register test next. |
| 62h | The DMA controller 1 base register test passed. Performing the DMA controller 2 base register test next. |
| 65h | The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next. |
| 66h | Completed programming DMA controllers 1 and 2. Initializing the 8259 interrupt controller next. |
| 67h | Completed 8259 interrupt controller initialization. |
| 7Fh | Extended NMI source enabling is in progress. |
| 80h | The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next. |
| 81h | A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next. |
| 82h | The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next. |
| 83h | The command byte was written and global data initialization has completed. Checking for a locked key next. |
| 84h | Locked key checking is over. Checking for a memory size mismatch with CMOS RAM data next. |
| 85h | The memory size check is done. Displaying a soft error and checking for a password or bypassing WINBIOS Setup next. |

| Checkpoint | Code Description |
|---|---|
| 86h | The password was checked. Performing any required programming before WINBIOS Setup next. |
| 87h | The programming before WINBIOS Setup has completed. Uncompressing the WINBIOS Setup code and executing the AMIBIOS Setup or WINBIOS Setup utility next. |
| 88h | Returned from WINBIOS Setup and cleared the screen. Performing any necessary programming after WINBIOS Setup next. |
| 89h | The programming after WINBIOS Setup has completed. Displaying the power on screen message next. |
| 8Ch | Programming the WINBIOS Setup options next. |
| 8Dh | The WINBIOS Setup options are programmed. Resetting the hard disk controller next. |
| 8Fh | The hard disk controller has been reset. Configuring the floppy drive controller next. |
| 91h | The floppy drive controller has been configured. Configuring the hard disk drive controller next. |
| 95h | Initializing the bus option ROMs from C800 next. See the last page of this chapter for additional information. |
| 96h | Initializing before passing control to the adaptor ROM at C800. |
| 97h | Initialization before the C800 adaptor ROM gains control has completed. The adaptor ROM check is next. |
| 98h | The adaptor ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control. |
| 99h | Any initialization required after the option ROM test has completed. Configuring the timer data area and printer base address next. |
| 9Ah | Set the timer and printer base addresses. Setting the RS-232 base address next. |
| 9Bh | Returned after setting the RS-232 base address. Performing any required initialization before the Coprocessor test next. |
| 9Ch | Required initialization before the Coprocessor test is over. Initializing the Coprocessor next. |
| 9Dh | Coprocessor initialized. Performing any required initialization after the Coprocessor test next. |
| 9Eh | Initialization after the Coprocessor test is complete. Checking the extended keyboard, keyboard ID, and Num Lock key next. Issuing the keyboard ID command next. |
| A2h | Displaying any soft errors next. |
| A3h | The soft error display has completed. Setting the keyboard typematic rate next. |
| A4h | The keyboard typematic rate is set. Programming the memory wait states next. |
| A5h | Memory wait state programming is over. Clearing the screen and enabling parity and the NMI next. |
| A7h | NMI and parity enabled. Performing any initialization required before passing control to the adaptor ROM at E000 next. |
| A8h | Initialization before passing control to the adaptor ROM at E000h completed. Passing control to the adaptor ROM at E000h next. |

| Checkpoint | Code Description |
|---|---|
| A9h | Returned from adaptor ROM at E000h control. Performing any initialization required after the E000 option ROM had control next. |
| Aah | Initialization after E000 option ROM control has completed. Displaying the system configuration next. |
| Abh | Uncompressing the DMI data and executing DMI POST initialization next. |
| B0h | The system configuration is displayed. |
| B1h | Copying any code to specific areas. |
| 00h | Code copying to specific areas is done. Passing control to INT 19h boot loader next. |

## Notes

# Appendix C
# Installing Software Drivers and Windows Operating System

After all the hardware has been installed, you must first configure the Adaptec Embedded Serial ATA RAID Driver before you install the Windows operating system. The necessary drivers are all included on the Supermicro bootable CDs that came packaged with your motherboard. *(*The following section provides information on Adaptec's SATA RAID Driver based on the Intel ICH5R/6300 ESB Controller.)*

## C-1 Introduction to the Adaptec Embedded Serial ATA RAID Controller Driver

### Serial ATA (SATA)

Serial ATA(SATA) is a physical storage interface. It uses a single cable with a minimum of four wires to create a point-to-point connection between devices. It is a serial link which supports SATA Transfer rates from 150MBps. Because the serial cables used in SATA are thinner than the traditional cables used in Parallel ATA(PATA), SATA systems have better airflow and can be installed in smaller chassis than Parallel ATA. In addition, the cables used in PATA can only extend to 40cm long, while Serial ATA cables can extend up to one meter. Overall, Serial ATA provides better functionality than Parallel ATA.

### Introduction to the Intel 6300 ESB I/O Controller Hub

Located in the South Bridge of the Intel E7520 Chipset, the 6300 ESB I/O Controller Hub provides the I/O subsystem with access to the rest of the system. It supports 2-channel Ultra ATA/100 Bus Master IDE controller (PATA) and two Serial ATA (SATA) Host Controllers, which support up to two Serial ATA ports and up to two RAID drives. The 6300 ESB I/O Controller Hub supports the following Parallel ATA (PATA) and Serial (SATA) device configuration:

P-ATA only: Detects drives both on SATA and PATA ports,

S-ATA only: Detects drives on SATA ports only,

S-ATA & P-ATA: Detects drives on SATA ports and the Primary IDE Connector

**To configure SATA RAID for Operating Systems that support RAID functions(--Windows, Red Hat & SuSe, Linux)**

1. Select "Advanced Setting" from the AMI BIOS menu.

2. Select the IDE Configuration menu.

3. Change the IDE Configuration to "P-ATA Only."

4. Under the item-"Configure S-ATA as RAID", select "Yes".

5. Tap the <Esc> key and scroll down to "Exit". Select "Save and Exit" from the "Exit" menu. Press the <Enter> key to save the changes and exit the BIOS.

6. Once you've exited the BIOS Utility, the system will re-boot.

7. During the system startup, press the <Ctrl> and the <A> keys simultaneously to run the Adaptec RAID Configuration Utility when prompted by the following message:

Press <Ctrl><A> for the Adaptec RAID Configuration Utility.

## The Adaptec Embedded Serial ATA with HostRAID Controller Driver

Adaptec's Embedded Serial ATA RAID with HostRAID controller adds RAID functionality to the Serial ATA I/O controller and enhances the performance of the PCI-Express based products. RAID striping (RAID 0) allows data to be written across multiple drives, greatly improving hard disk I/O performance. RAID mirroring (RAID 1) allows data to be simultaneously written to two drives, improving data security even if a single hard disk fails. By incorporating the Adaptec Embedded Serial ATA into the motherboard design, Supermicro's X6DLP-4G2/X6DLP-EG2 offers the user with the benefits of SATARAID without the high costs associated with hardware RAID applications.

(***Note**: For Adaptec's RAID Driver Installation Instructions, please refer to the Adaptec RAID Controller User's Guide: "Emb_SA_RAID_UG.pdf" in the CD that came with this motherboard. You can also download a copy of Adaptec's User's Guide from our web site at www.supermicro.com.)

## Using the Adaptec RAID Configuration Utility (ARC)

The Adaptec RAID Configuration Utility, an embedded BIOS Utility, includes the following:

*Array Configuration Utility: Use this utility to create, configure and manage arrays.

* Disk Utilities: Use this option to format or verify disks.

To run the Adaptec RAID Configuration Utility, you will need to the following:

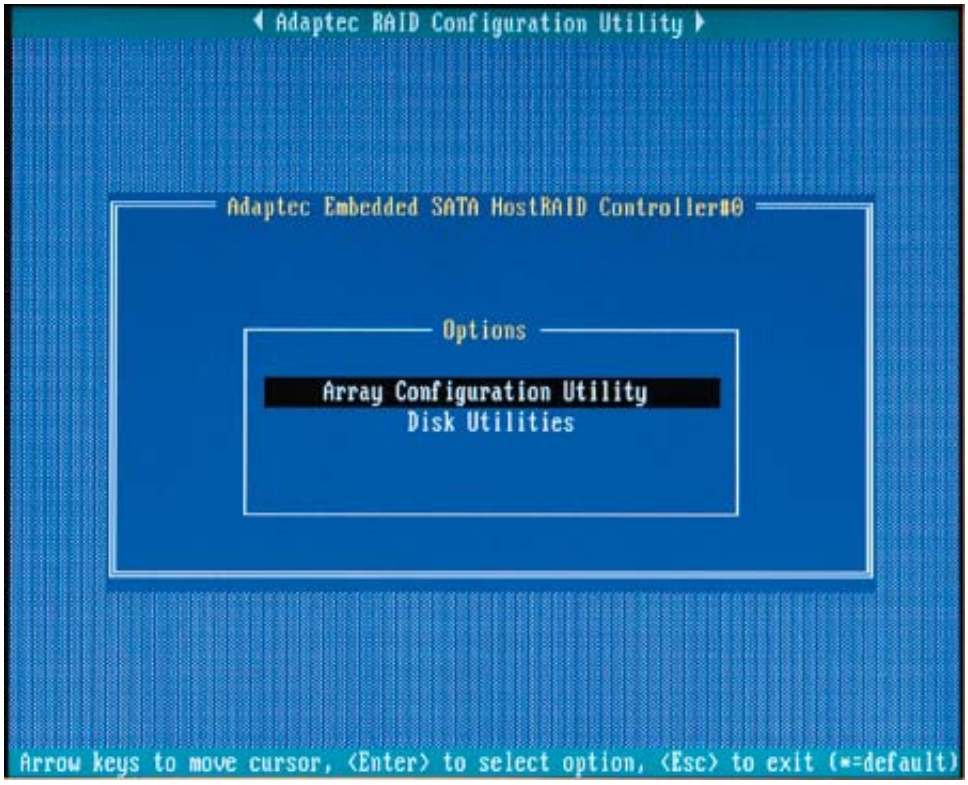
1. Enable the RAID function in the system BIOS (refer to Chapter 4 for System BIOS Configurations).

2. Press the <Ctrl> and <A> keys simultaneously when prompted to do so during system boot. (Refer to the previous page for detailed instructions.)

### A. Using the Array Configuration Utility (ACU)

When you press <Ctrl> and <A> keys simultaneously at the prompt during system bootup, the main menu will appear.

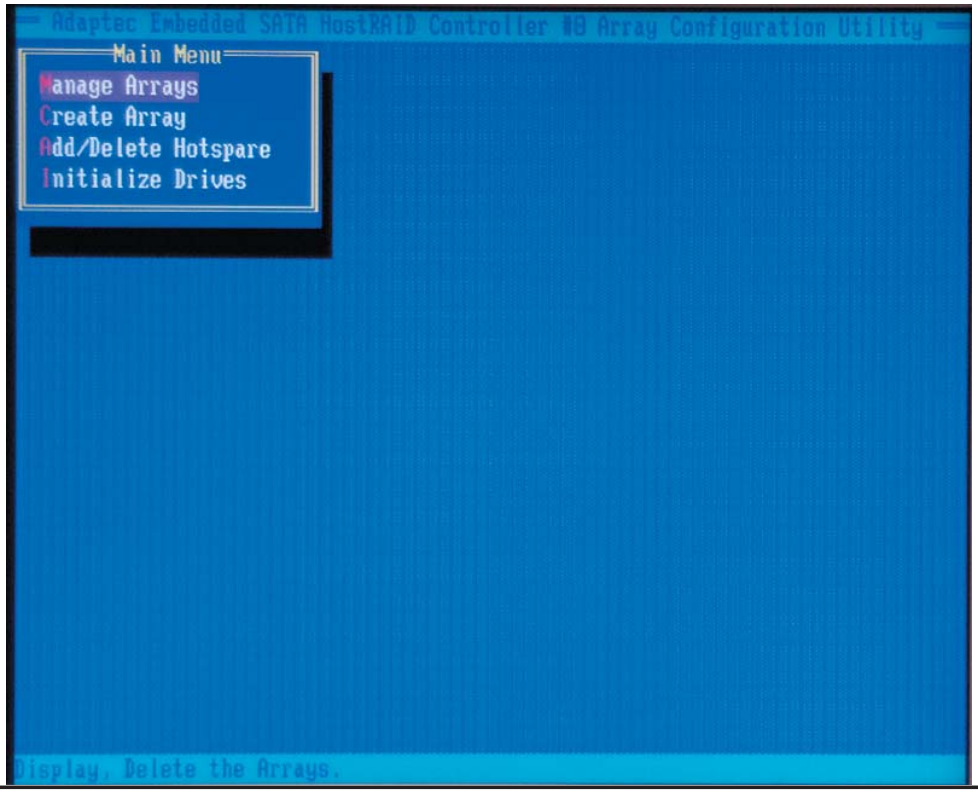
**(*Note:** To select an option, use the arrow keys to highlight the item and then press the <Enter> key to select it. To return to the previous menu, press the <ESC> key.)




## Managing Arrays

Select this option to view array properties, and configure array settings.

To select this option, using the arrow keys and the <enter> key, select "Managing Arrays" from the main menu (as shown above).



**Viewing Array Properties**

To view the properties of an existing array:

1. At the BIOS prompt, press Ctrl+A.

2. From the ARC menu, select Array Configuration Utility (ACU).

3. From the ACU menu, select Manage Arrays (as shown on the previous page.)

4. From the List of Arrays dialog box, select the array you want to view and press Enter.

The Array Properties dialog box appears, showing detailed

information on the array. The physical disks associated with the array are displayed here.

5. Press Esc to return to the previous menu.

**Deleting Arrays**

***Warning**: Back up the data on an array before you delete it to prevent data loss Deleted arrays cannot be restored.

To delete an existing array:

1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility.

2. From the ARC main menu, select Array Configuration Utility (ACU).

3. From the ACU menu, select Manage Arrays.

4. Select the array you wish to delete and press Delete.

5. In the Array Properties dialog box, select Delete and press Enter. The following prompt is displayed:

*Warning!! Deleting the array will render array unusable. Do you want to delete the array?(Yes/No):

RAID 1 only—the following prompt is also displayed:

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

6. Press Yes to delete the array or partition or No to return to the previous menu.

7. Press Esc to return to the previous menu.

## Creating Arrays

Before you create arrays, make sure that the disks for the array are connected and installed in your system. Note that disks with no usable space, or disks that are un-initialized are shown in gray and cannot be used. See Initializing Disk Drives.

**To create an array:**

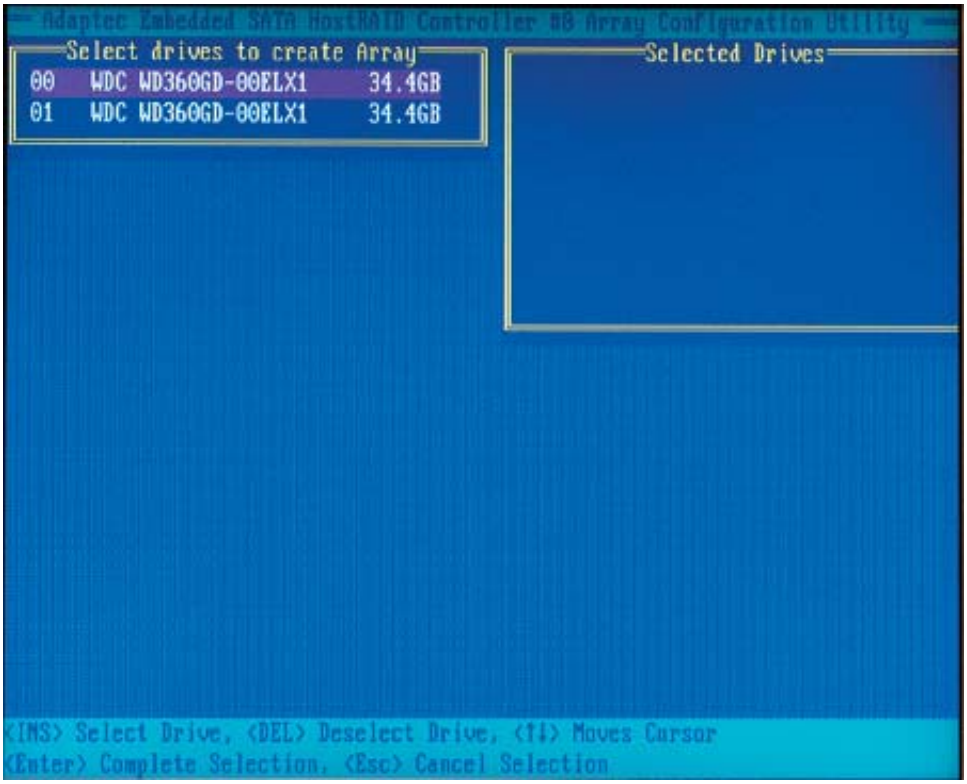
1 Turn on your computer and press Ctrl+A when prompted to access the ARC utility.

2 From the ARC menu, select Array Configuration Utility Main Menu (ACU) (as shown on the first screen on page C-5).

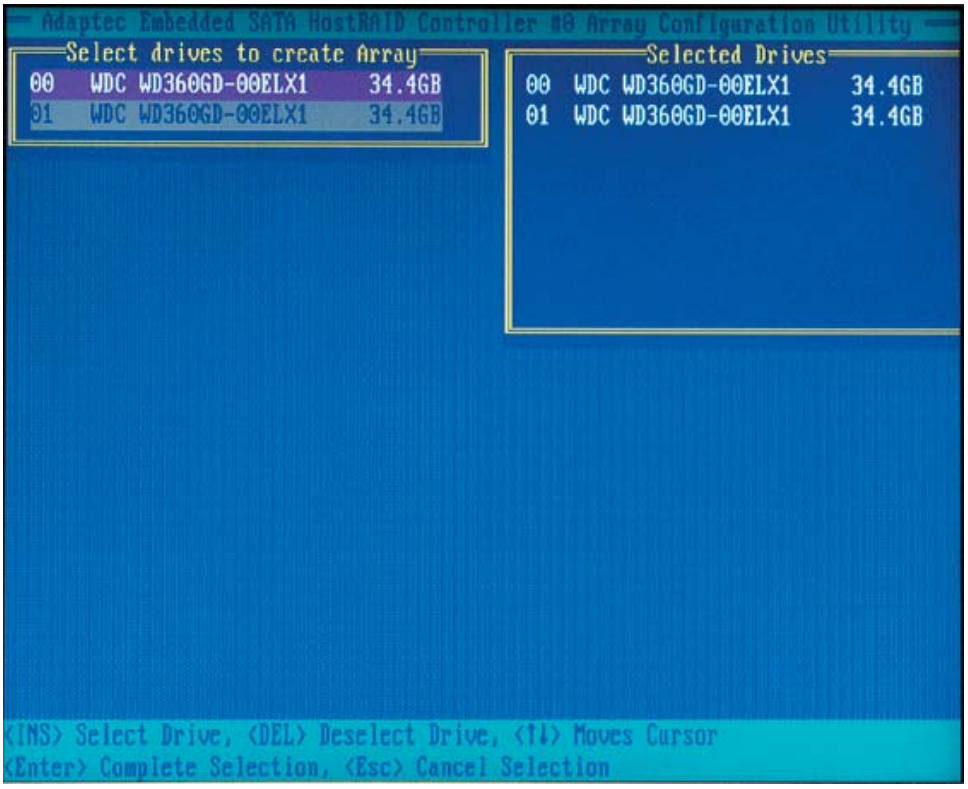
3 From the ACU menu, select Create Array.

4 Select the disks for the new array and press Insert (as the screen shown below).

(*Note: To de-select any disk, highlight the disk and press Delete.)




5 Press Enter when both disks for the new array are selected. The Array Properties menu displays (as the screen shown on the next page).




**Assigning Array Properties**

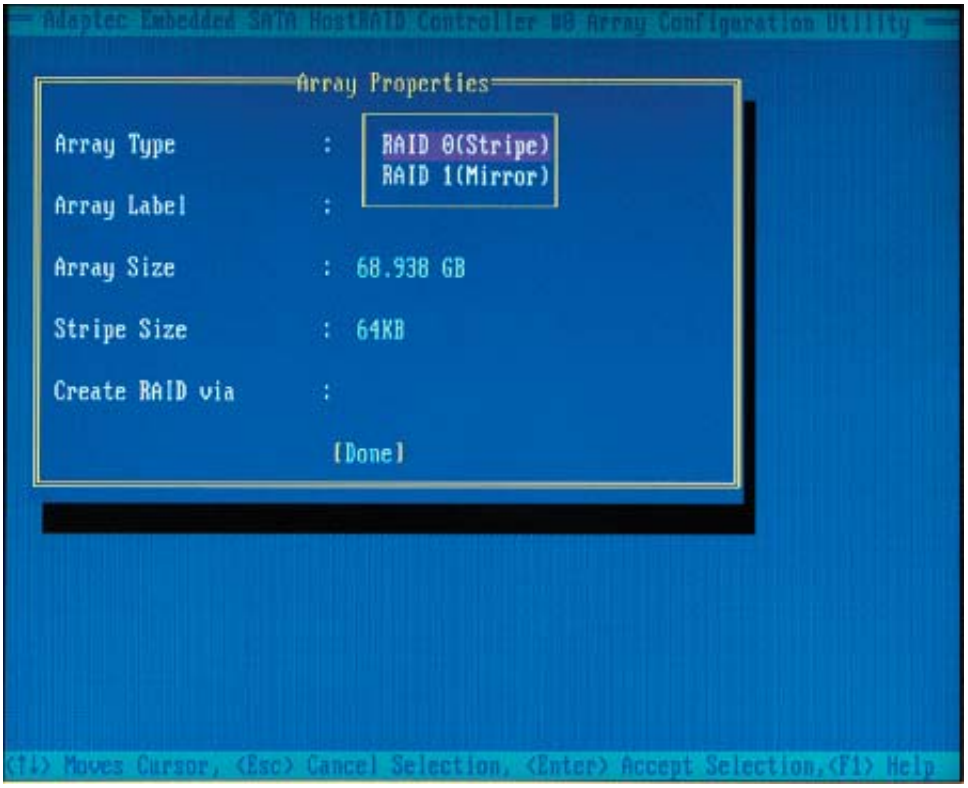
Once you've create a new array, you are ready to assign the properties to the array.

*Caution: Once the array is created and its properties are assigned, and you cannot change the array properties using the ACU.

**To assign properties to the new array:**

1. In the Array Properties menu (as shown in the following screen), select an array type and press Enter.

Only the available array types will be displayed on the screen. (*RAID 0 or RAID 1 requires two drives.)




2. Under the item "Arrays Label", type in an label and press Enter. (*Note: The label shall not be more than 15 characters.)

3. For RAID 0, select the desired stripe size. (*Note: Available stripe sizes are 16, 32, and 64 KB-default. It is recommended that you do not change the default setting.)

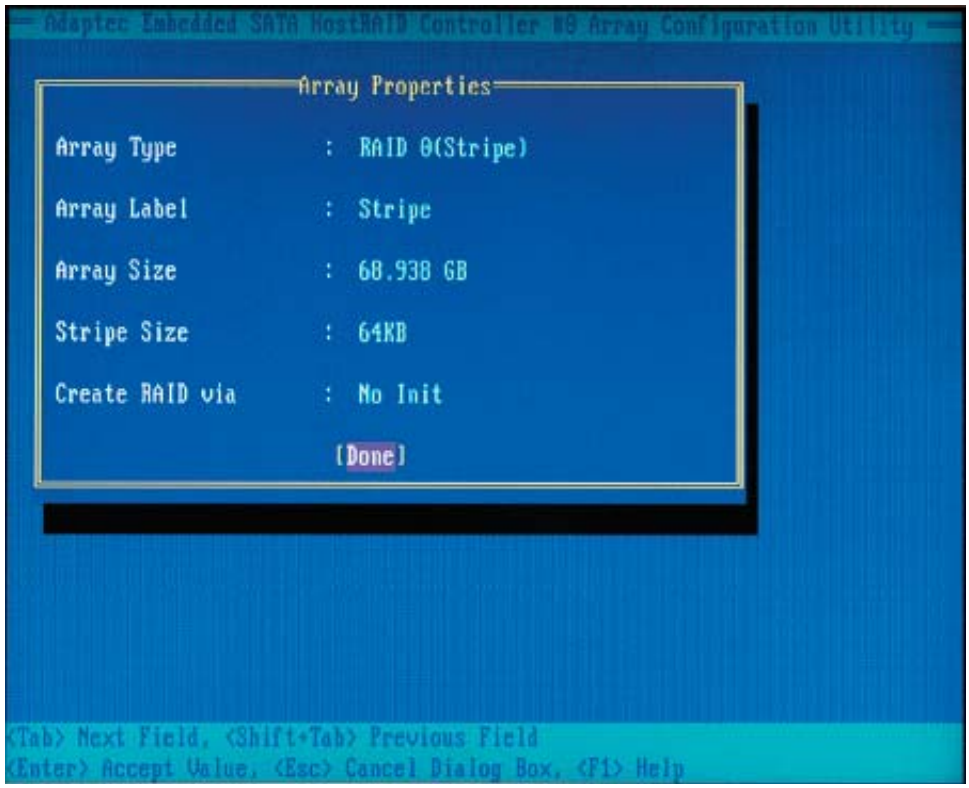
4. The item: "Create RAID via" allows you to select between the different ways of creating methods for RAID 0 and RAID 1.

The following table gives examples of when each is appropriate.

5. When you are finished, press Done (as the screen shown below).

| Raid Level | Create Via | When Appropriate |
|---|---|---|
| RAID 0 | No Init | Creating a RAID 0 on new drives |
| RAID 0 | Migrate (*Note) | Creating a RAID 0 from one new drive and one drive with data you wish to preserve |
| RAID 1 | Build1 | Any time you wish to create a RAID 1, but especially if you have data on one drive that you wish to preserve |
| RAID 1 | Clear | Creating a RAID 1 on new drives, or when you want to ensure that the array contains no data after creation. |
| RAID 1 | Quick & Init | Fastest way to create a RAID 1. Appropriate when using new drives |

**(*Note:** If you select Migrate for RAID 0, or Build for RAID 1, you will be asked to select the source drive. The contents of the source drive will be preserved. However, the data on the new drive will be lost.)




**Notes:**

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

2. If you stop the Build or Clear process on a RAID 1 from ACU, you can restart it by pressing Ctrl+R.

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

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

5. 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.

6. 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.

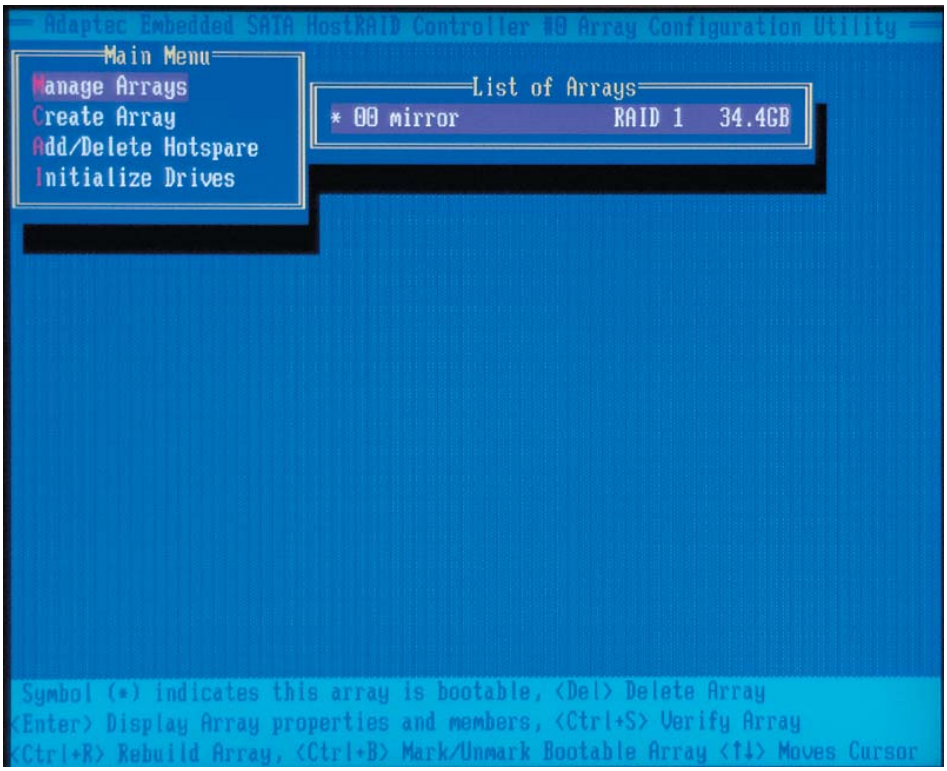
**Adding a Bootable Array**

**To make an array bootable:**

1. From the Main menu, select Manage Arrays.

2. From the List of Arrays, select the array you want to make bootable, and press Ctrl+B.

3. Enter Y to create a bootable array when the following message is displayed: "This will make all other existing bootable array non-bootable. Do you want to make this array bootable? (Yes/No):" Then, a bootable array will be created. An asterisk will appear next to the bootable array (as shown in the picture below:)




**Deleting a Bootable Array**

**To delete a bootable array:**

1. From the Main menu, select Manage Arrays.

2. From the List of Arrays, select the bootable array (*) you want to delete, and press Ctrl+B. (* a bootable array is the array marked with an asterisk (as shown in the picture above.)

3. Enter Y to delete a bootable array when the following message is displayed: "The array is already marked bootable. Do you want to make this array as not bootable? (Yes/No):" Then, the bootable array will be deleted and the asterisk will disappear.

**(*Note:** do not use the delete key to delete the bootable array.)

## Initializing Disk Drives

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

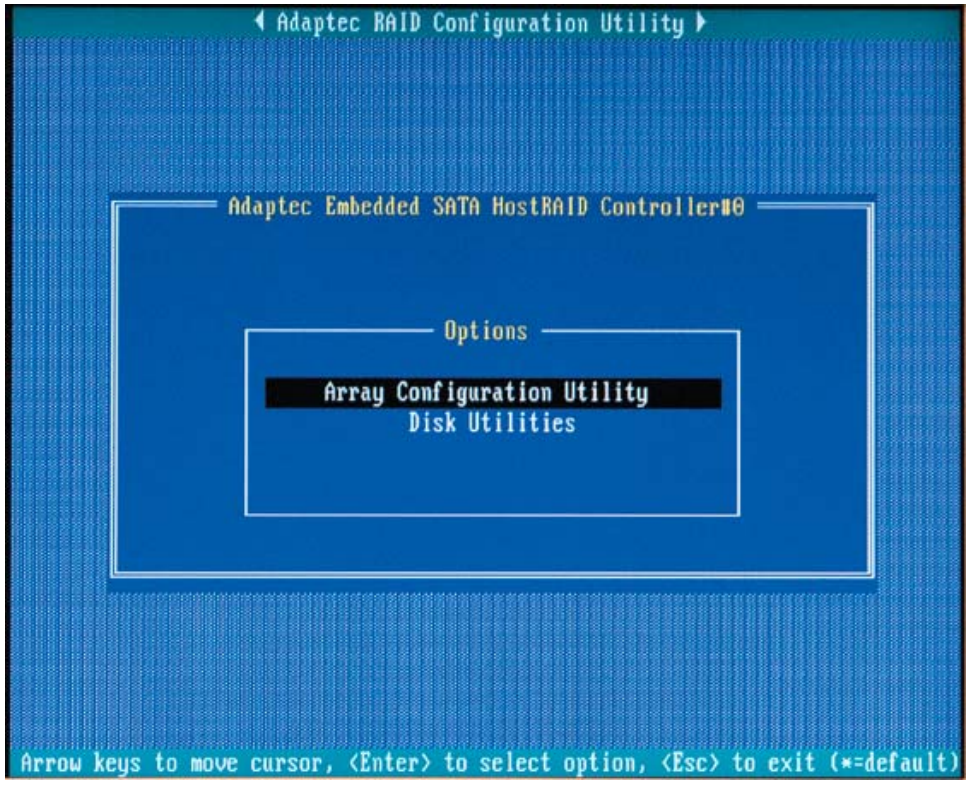
Caution: Initializing a disk overwrites the partition table on the disk and makes any data on the disk inaccessible. If the drive is used in an array, you may not be able to use the array again.

Do not initialize a disk that is part of a boot array. To determine which disks are associated with a particular array, please refer to Viewing Array Properties.

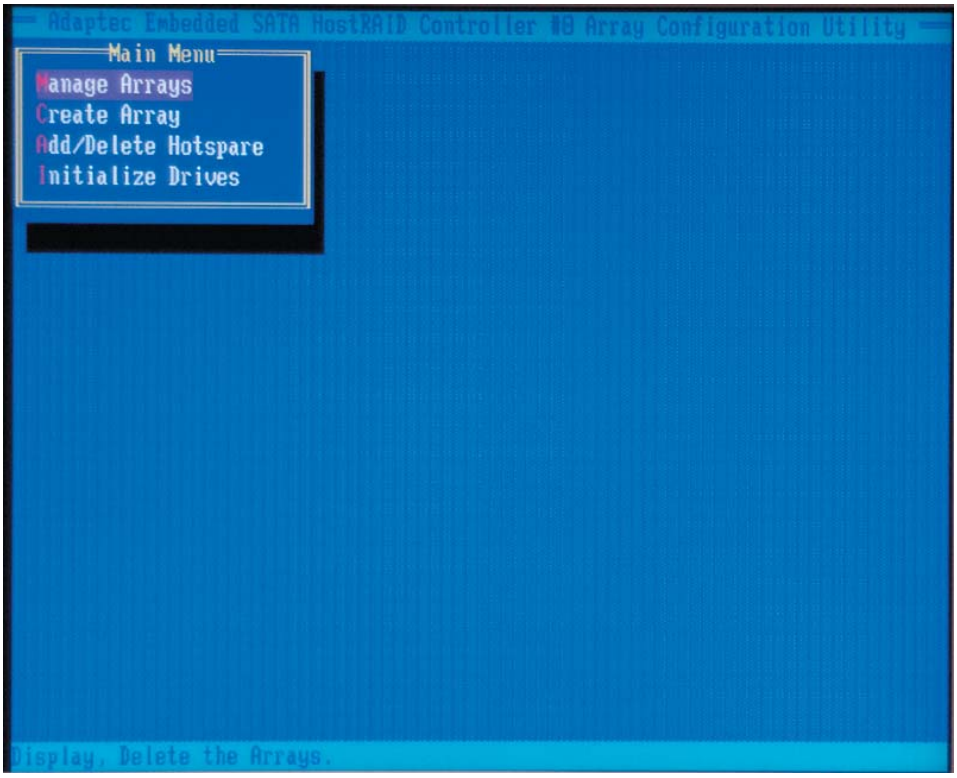
**To initialize drives:**

1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility.

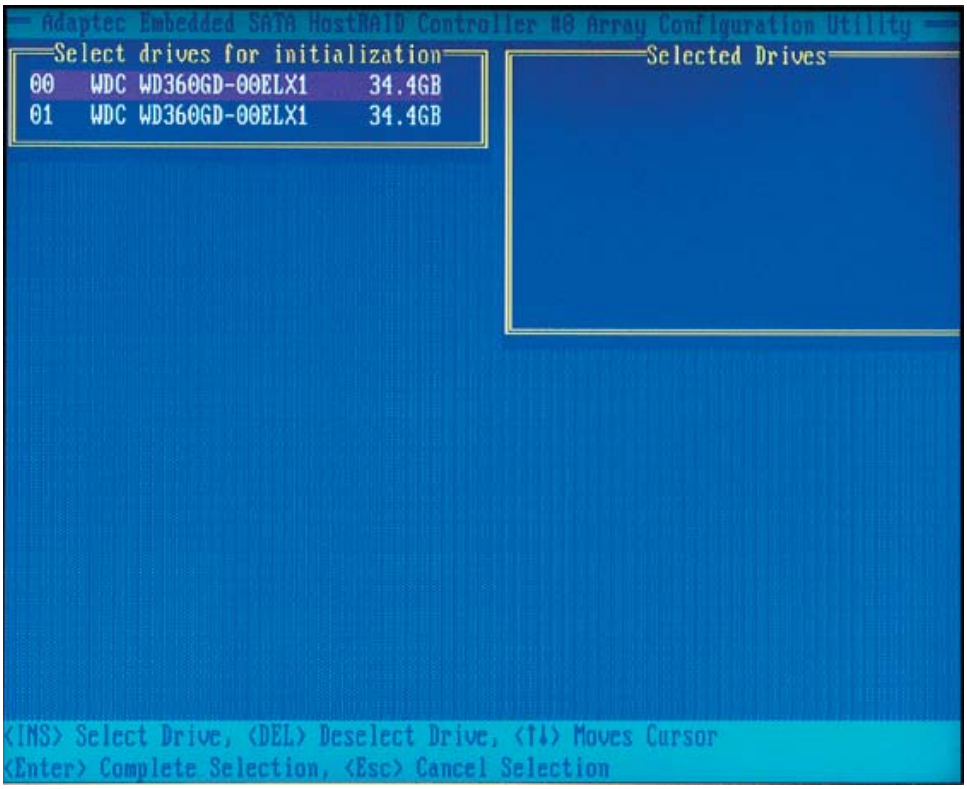
2. From the ARC menu, select Array Configuration Utility (ACU) (as shown in the screen below).



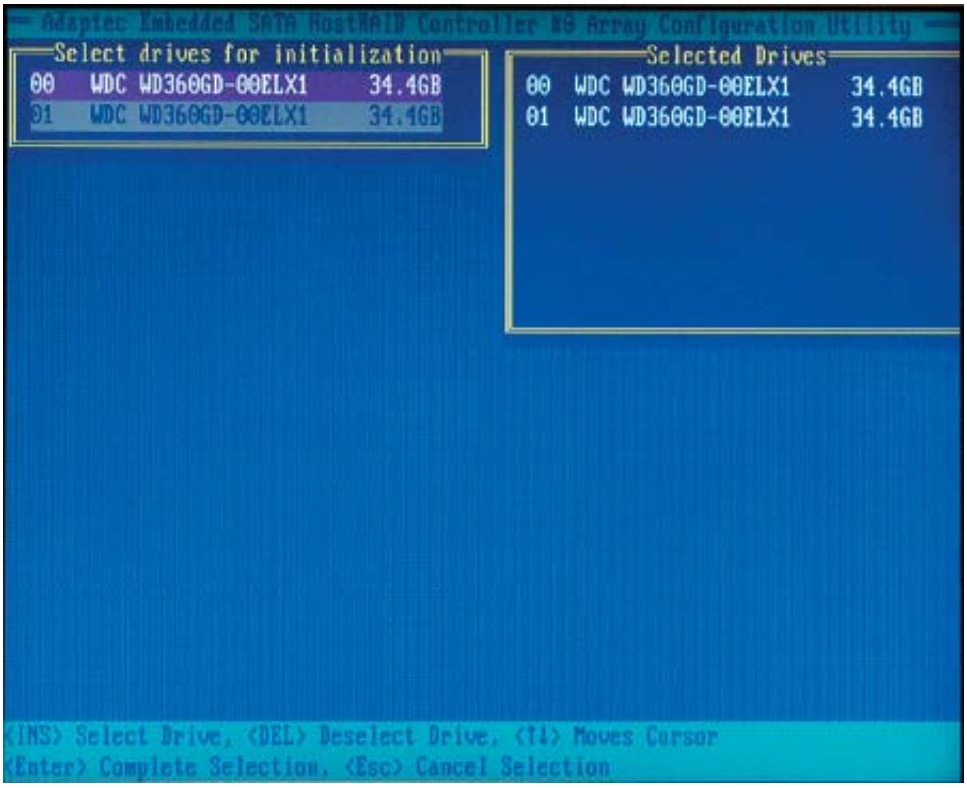

3. Select Initialize Drives (as shown in the screen below).




4. Use the up and down arrow keys to highlight the disk you wish to initialize and press Insert (as shown in the screen below).

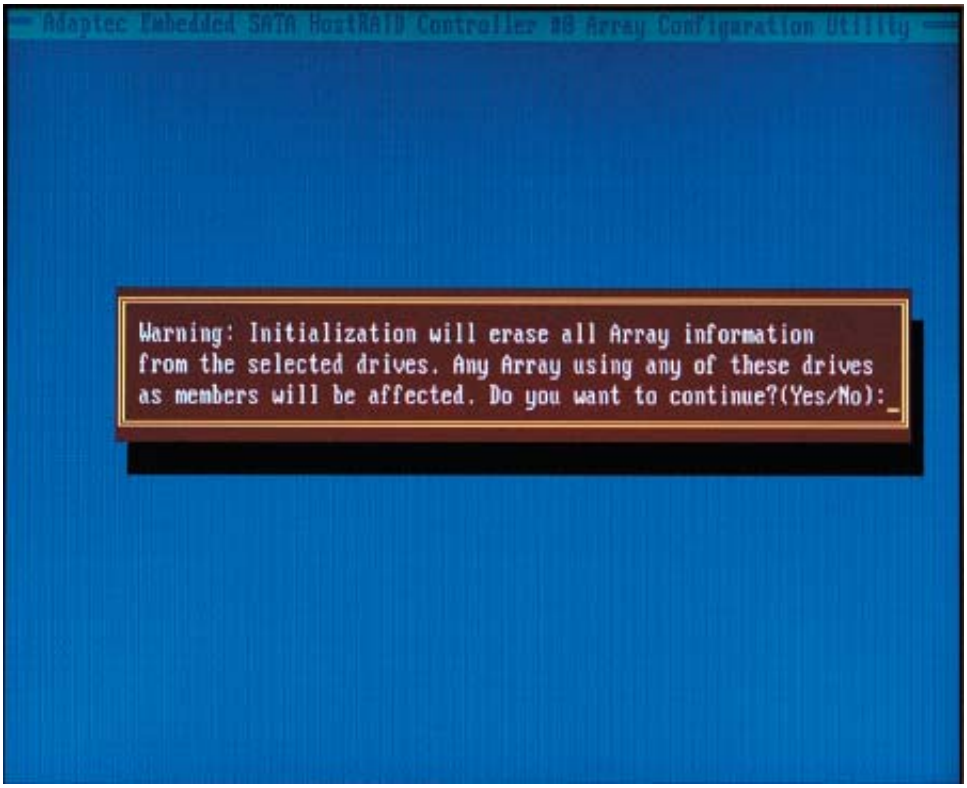


5. Repeat Step 4 so that both drives to be initialized are selected (as shown in the screen below).




6. Press Enter.

7. Read the warning message as shown in the screen.




8. Make sure that you have selected the correct disk drives to initialize. If correct, type Y to continue.

## Rebuilding Arrays

***Note 1:** Rebuilding applies to Fault Tolerant array (RAID 1) only.

If an array Build process (or initialization) is interrupted or critical with one member missing, you must perform a Rebuild to optimized its functionality. For a critical array Rebuild operation, the optimal drive is the source drive.

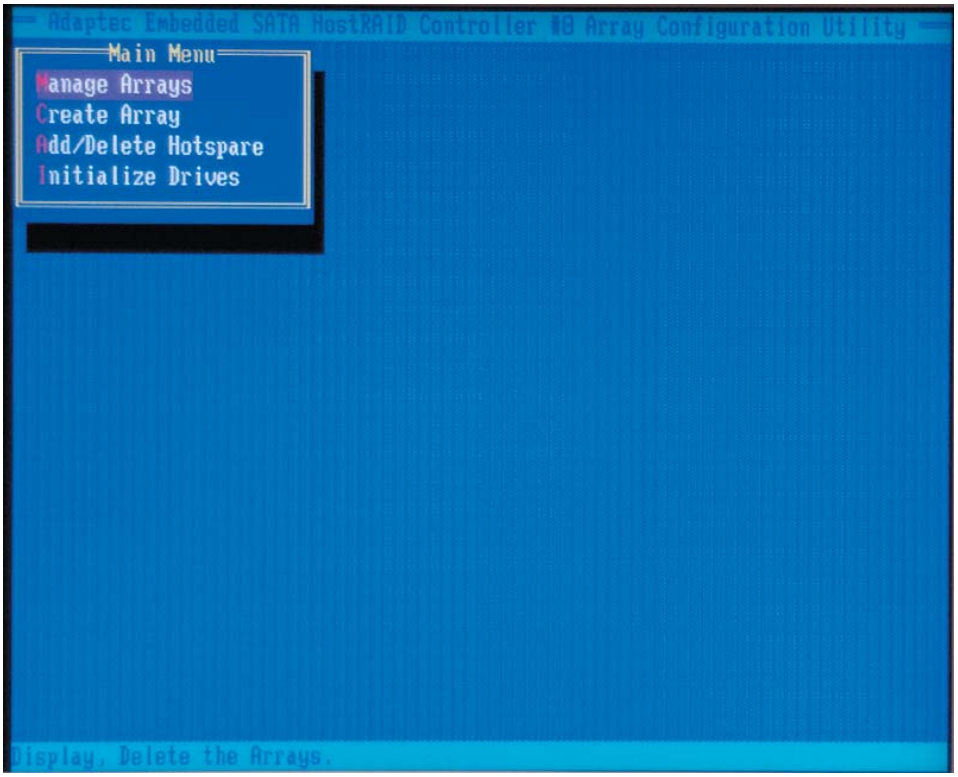
***Note 2:** If no spare array exists and a hard disk drive fails, you need to

create a spare before you can rebuild an array.

**To Rebuild an array:**

1 From the Main Menu, select Manage Arrays (as shown in the screen below). From the List of Arrays, select the array you want to Rebuild.

2 Press Ctrl+R to Rebuild.

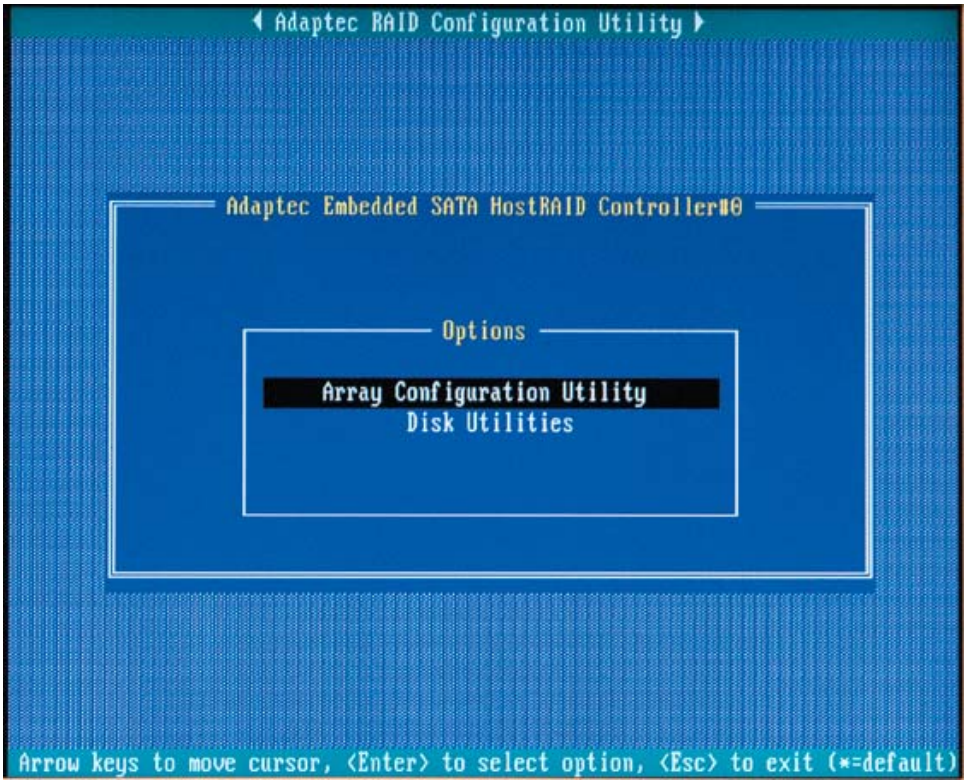


## Using the Disk Utilities

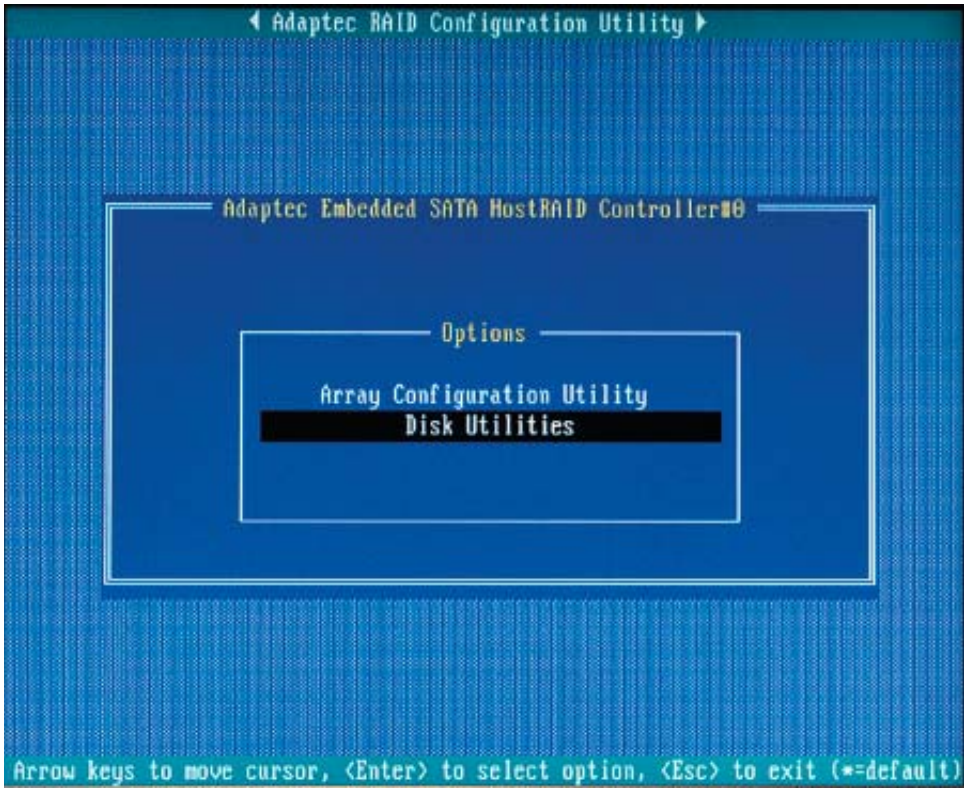
The Disk Utilities enable you to format or verify the media of your Serial ATA hard disks.

**To access the disk utilities:**

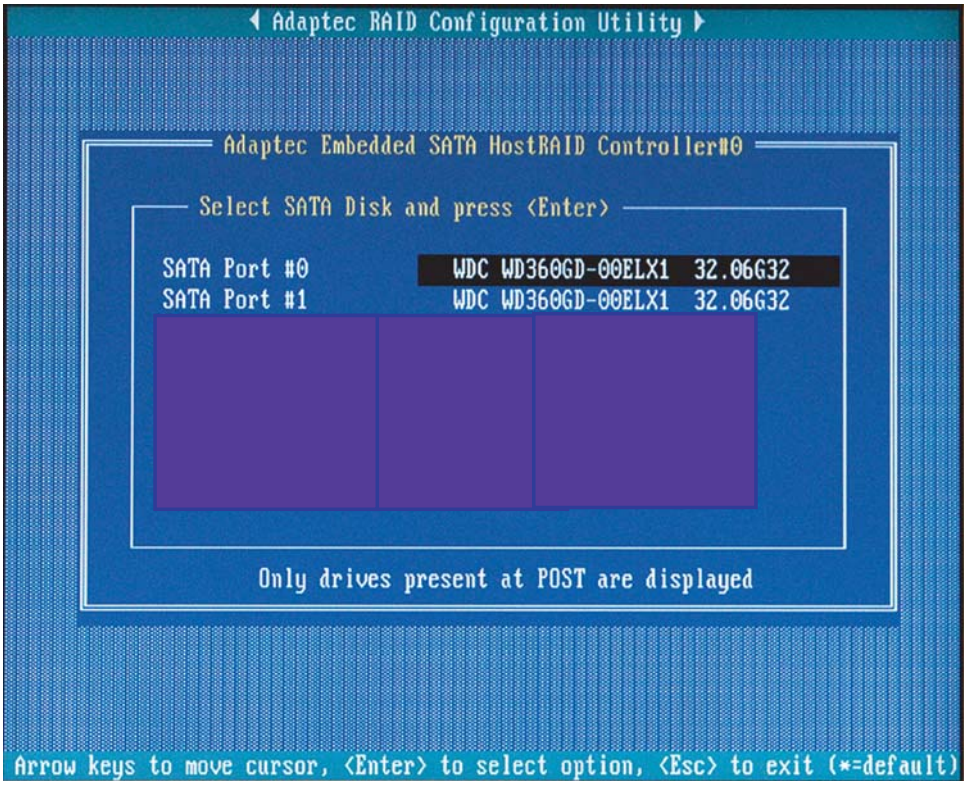
1. Turn on your computer and press Ctrl+A when prompted to access the ARC utility (as shown in the screen below.)



2. From the ARC menu, select Disk Utilities as shown in the screen below.




3 Select the desired disk and press Enter (as shown in the screen below.)



**You can choose from the following options:**

1. Format Disk—Simulates a low-level format of the hard drive by writing zeros to the entire disk. Serial ATA drives are low-level formatted at the factory and do not need to be low-level formatted again.

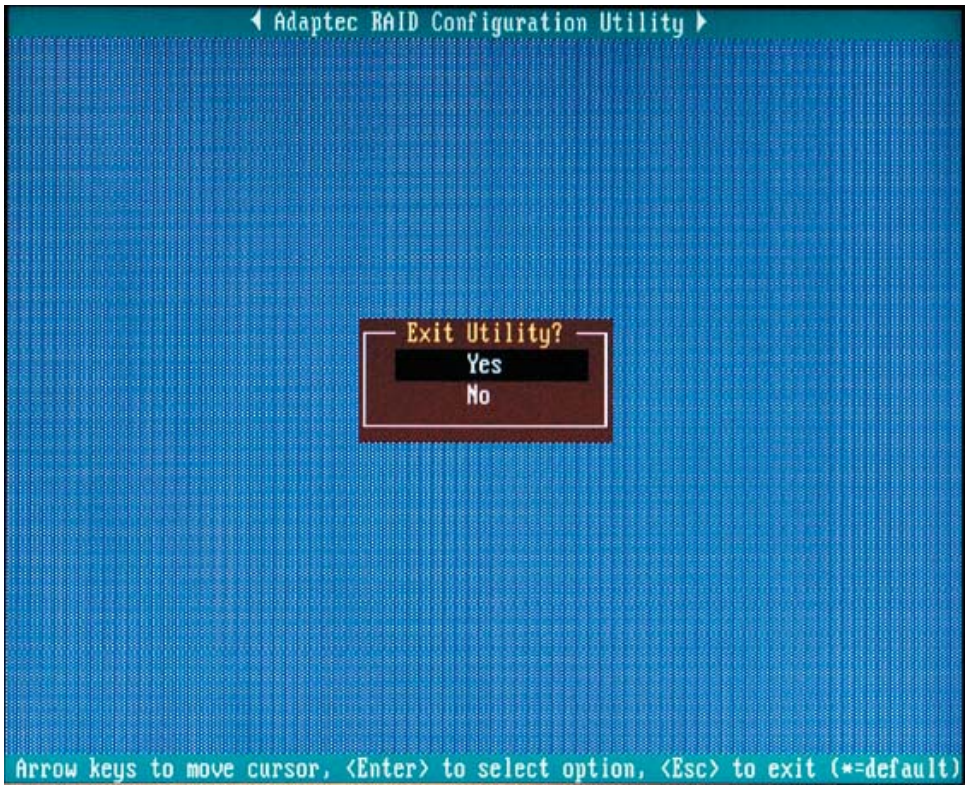
(*Caution: Formatting destroys all data on the drive. Be sure to back up your data before performing this operation.)

2. Verify Disk Media—Scans the media of a disk drive for defects.

**To Exit Adaptec RAID Configuration Utility**

1. Once you have completed RAID array configurations, press ESC to exit. The following screen will appear.

2. Press Yes to exit the Utility.



## C-2 Installing Intel's ICH5R/6300 ESB Driver by Adaptec and Installing the OS

a. Insert Supermicro's bootable CD that came with the package into the CD Drive during the system reboot, and the screen:"Super Micro Driver Diskette Maker" will appear.

b. Choose from the list the item: "Intel ICH5R/6300 ESB Driver by 3rd Party (Adaptec)" and press <Enter>.

c. From the next screen displayed, choose the OS driver you want to install and press <Enter>.

d. Insert a formatted diskette into drive A: and press <Enter> as prompted.

e. Exit the program after the process is completed. Then, reboot the system.

f. Insert the Microsoft Windows OS Setup CD in the CD Driver, and the system will start to boot up from CD.

g. Press the <F6> key when the message-"Press F6 if you need to install a third party SCSI or RAID driver" displays.

h. When the Windows OS Setup screen appears, press "S" to specify additional device(s).

i. Insert the driver diskette-"Adaptec Embedded Serial ATA Raid Controller Driver" into Drive A: and press the <Enter> key.

j. Choose the Adaptec Embedded Host Serial ATA Raid Controller from the list indicated in the Windows OS Setup Screen, and press the <Enter> key.

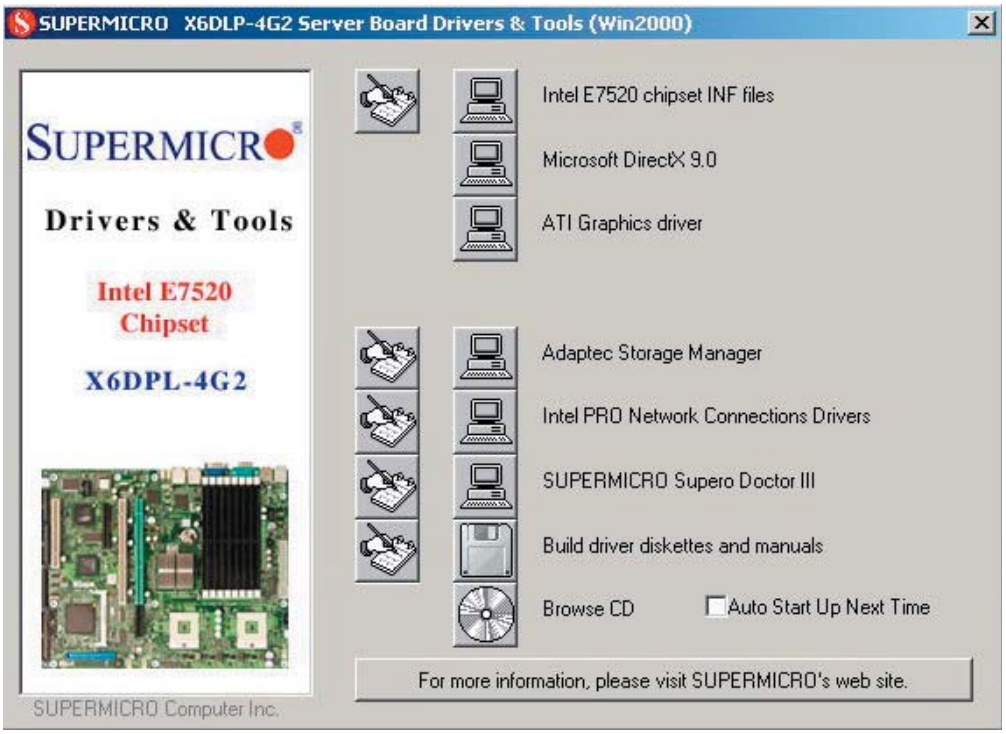
k. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

l. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files, and, then, continue the Windows OS installation.

m. After the Windows OS Installation is completed, the system will automatically reboot.

## C-3 Installing Other Software Programs and Drivers

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.




**Driver/Tool Installation Display Screen**

(***Note**: Click the icons showing a hand writing on the paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. After installing each item, you must re-boot the system before moving on to the next item on the list. The bottom icon with a CD on it allows you to view the entire contents of the CD.)

## Supero Doctor III

The Supero Doctor III program is a Web-base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included on the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

***Note 1**: The default user name and password are ADMIN.

***Note 2:** In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

**Supero Doctor III Interface Display Screen-I (Health Information)**

**Supero Doctor III Interface Display Screen-II (Remote Control)**


(***Note**: SD III Software Revision 1.0 can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend Supero Doctor II.)

## Notes