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Trademarks

All trademarks and registered trademarks of products appearing in this manual are the properties of their respective holders.
FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.
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About this Manual

An electronic file of this manual is included in the CD. To view the user’s manual in the CD, insert the CD into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear. Click “User’s Manual” on the main menu.

Warranty

1. Warranty does not cover damages or failures that arise from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

3. Unless otherwise instructed in this user’s manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.
Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.

2. Wear an antistatic wrist strap.

3. Do all preparation work on a static-free surface.

4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.

5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

**Important:**
Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:
- Use the correct AC input voltage range.

To reduce the risk of electric shock:
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
About the Package

The system board package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- One system board
- One IDE cable
- One USB cable
- One Serial ATA cable
- One Serial ATA power cable
- One bracket mounted with a COM port
- One I/O shield
- One CD
- One QR (Quick Reference)

The system board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Before Using the System Board

Before using the system board, prepare basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- Memory module
- Storage devices such as hard disk drive, CD-ROM, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.
## Chapter 1 - Introduction

### Specifications

| Processor | • Intel® Atom™ D510 (Dual Core) - LR100-N16D  
            Intel® Atom™ D410 (Single Core) - LR100-N16S  
            Intel® Atom™ N450 (Single Core) - LR100-N16M  
            Intel® Atom™ D525 (Dual Core) - LR100-N18D  
            Intel® Atom™ D425 (Single Core) - LR100-N18S  
            Intel® Atom™ N455 (Single Core) - LR100-N18M  
            • On die 2 x 512KB (LR100-N16D/N18D), 1 x 512KB (LR100-N16S/N16M/N18S/N18M); 8-way L2 cache  
            • C0 and C1 C-states - LR100-N16D/N16S/N18D/N18S  
              C0/C1(E)/C2(E)/C4(E) C-states - LR100-N16M/N18M  
            • 1.66GHz core frequency (LR100-N16D/N16S/N16M/N18M),  
              1.8GHz core frequency (LR100-N18D/N18S); 1.10V voltage  
            • IA 32-bit and Intel® 64 architecture  
            • Micro-FCBGA8 packaging technologies  
            • Cooling option: heat sink with cooling fan - LR100-N16D/N16S/N18D; heat sink (fanless solution) - LR100-N16S/N16M/N18S/N18M |
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<tr>
<td>Southbridge</td>
<td>• Intel® ICH8M I/O Controller Hub</td>
</tr>
</tbody>
</table>
| System Memory | • Two 200-pin SODIMM sockets  
            • LR100-N16M/N18M - Supports DDR2 667MHz only  
            • LR100-N16D/N16S/N18D/N18S - Supports DDR2 667/800MHz only  
            • LR100-N16M/N18M - Supports up to 2GB system memory  
            • LR100-N16D/N16S/N18D/N18S - Supports up to 4GB system memory  
            • Single channel memory interface  
            • Supports x16 devices |
| Expansion Slots | • 1 PCIe x1 slot  
                  • 1 PCI slot  
                  • 1 CompactFlash socket |
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<th>Graphics</th>
<th>LR100-N16D/N16S/N18D/N18S</th>
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<tbody>
<tr>
<td>• Intel® GMA 3150</td>
<td></td>
</tr>
<tr>
<td>- Contains a refresh of the 3rd generation graphics core</td>
<td></td>
</tr>
<tr>
<td>• 400MHz render clock frequency</td>
<td></td>
</tr>
<tr>
<td>• Display ports: LVDS and RGB</td>
<td></td>
</tr>
<tr>
<td>- Integrated single LVDS channel supports resolution up to 1366x768, 18bpp</td>
<td></td>
</tr>
<tr>
<td>- Analog RGB display output up to resolution 2048x1536 @ 60Hz</td>
<td></td>
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<tr>
<td>• DirectX 9 compliant Pixel Shader 2.0</td>
<td></td>
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<table>
<thead>
<tr>
<th>LR100-N16M/N18M</th>
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<tbody>
<tr>
<td>• Intel® GMA 3150</td>
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<tr>
<td>- Contains a refresh of the 3rd generation graphics core</td>
</tr>
<tr>
<td>• 200MHz render clock frequency</td>
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<tr>
<td>• Display ports: LVDS and RGB</td>
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<tr>
<td>- Integrated single LVDS channel supports resolution up to 1280x800 or 1366x768</td>
</tr>
<tr>
<td>- Analog RGB display output up to resolution 1400x1050 @ 60Hz</td>
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<tr>
<td>• DirectX 9 compliant Pixel Shader 2.0</td>
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<td>• Realtek ALC262 2-channel High Definition Audio</td>
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<td>• High performance DACs with 100dB SNR</td>
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<td>• ADCs with 90dB SNR</td>
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<tr>
<td>• Two stereo DACs support 24-bit PCM format for stereo audio playback</td>
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<td>• Three stereo ADCs support 20-bit PCM format for multiple input streaming</td>
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<td>• S/PDIF audio interface</td>
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<th>LAN</th>
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<tr>
<td>• Intel 82567V Gigabit Ethernet Phy and Realtek RTL8111C PCI Express Gigabit Ethernet controller</td>
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</tr>
<tr>
<td>• Integrated 10/100/1000 transceiver</td>
<td></td>
</tr>
<tr>
<td>• Supports Full Duplex flow control (IEEE 802.3x)</td>
<td></td>
</tr>
<tr>
<td>• Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab</td>
<td></td>
</tr>
<tr>
<td>• Supports power down / link down power saving</td>
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<tr>
<th>Serial ATA</th>
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<tr>
<td>• 3 Serial ATA ports compliant with SATA 1.0 specification</td>
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</tr>
<tr>
<td>• SATA speed up to 3Gb/s (SATA 2.0)</td>
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<tr>
<th>Rear Panel I/O Ports</th>
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<td>• Mini-DIN-6 ports: PS/2 mouse port and PS/2 keyboard port</td>
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<tr>
<td>• 3 DB-9 RS232 serial ports</td>
<td></td>
</tr>
<tr>
<td>- Pins 1 and 9 of COM2 functions as RS232 signal or power (selectable via jumper)</td>
<td></td>
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<tr>
<td>• 1 DB-15 VGA port</td>
<td></td>
</tr>
<tr>
<td>• 2 RJ45 LAN ports</td>
<td></td>
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<tr>
<td>• 4 USB 2.0/1.1 ports</td>
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<tr>
<td>• Mic-in, line-in and line-out</td>
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<td>I/O Connectors</td>
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<td>• 1 connector for an external RS232/422/485 serial port</td>
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<td>• 1 LCD/inverter power connector</td>
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<td></td>
<td>• 1 8-bit DIO connector</td>
</tr>
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<td></td>
<td>• 1 DIO power connector</td>
</tr>
<tr>
<td></td>
<td>• 1 front audio connector for line-out and mic-in jacks</td>
</tr>
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<td></td>
<td>• 1 CD-in connector</td>
</tr>
<tr>
<td></td>
<td>• 1 S/PDIF connector</td>
</tr>
<tr>
<td></td>
<td>• 3 Serial ATA connectors</td>
</tr>
<tr>
<td></td>
<td>• 1 40-pin IDE connector</td>
</tr>
<tr>
<td></td>
<td>• 1 24-pin ATX power connector</td>
</tr>
<tr>
<td></td>
<td>• 1 front panel connector</td>
</tr>
<tr>
<td></td>
<td>• 1 chassis intrusion connector</td>
</tr>
<tr>
<td></td>
<td>• 2 fan connectors</td>
</tr>
<tr>
<td>BIOS</td>
<td>• AMI BIOS</td>
</tr>
<tr>
<td></td>
<td>• SPI BIOS</td>
</tr>
<tr>
<td>Energy Efficient Design</td>
<td>• ACPI 1.0a specification</td>
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<td></td>
<td>• System Power Management</td>
</tr>
<tr>
<td></td>
<td>• Wake-On-Events include:</td>
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<tr>
<td></td>
<td>- Wake-On-USB Keyboard/Mouse</td>
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<td></td>
<td>- Wake-On-LAN</td>
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<td>- Wake-On-Ring</td>
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<td>- RTC timer to power-on the system</td>
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<td>• AC power failure recovery</td>
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<tr>
<td>Damage Free Intelligence</td>
<td>• Monitors CPU/system temperature and overhear alarm</td>
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<tr>
<td></td>
<td>• Monitors 5V/1.05V/1.8V/12V/3VSB/VBAT/VCORE voltages and failure alarm</td>
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<td></td>
<td>• Monitors system fan speed and failure alarm</td>
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<tr>
<td></td>
<td>• Read back capability that displays temperature, voltage and fan speed</td>
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<td></td>
<td>• Watchdog timer function</td>
</tr>
<tr>
<td>Temperature</td>
<td>• 0°C to 60°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>• 10% to 90%</td>
</tr>
<tr>
<td>PCB</td>
<td>• Mini-ITX form factor</td>
</tr>
<tr>
<td></td>
<td>• 170mm (6.7”) x 170mm (6.7”)</td>
</tr>
</tbody>
</table>
Introduction

Features

Watchdog Timer

The Watchdog Timer function allows your application to regularly “clear” the system at the set time interval. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.

CompactFlash

The system board is equipped with the CompactFlash™ socket for inserting a CompactFlash™ card. CompactFlash™ card is a small removable mass storage device designed with flash technology - a non-volatile storage solution that does not require a battery to retain data indefinitely. The CompactFlash™ technology is widely used in products such as portable and desktop computers, digital cameras, handheld data collection scanners, PDAs, Pocket PCs, handy terminals and personal communicators.

DDR2

DDR2 is a higher performance DDR technology whose data transfer rate delivers bandwidth of 4.3 GB per second and beyond. That is twice the speed of the conventional DDR without increasing its power consumption. DDR2 SDRAM modules work at 1.8V supply compared to 2.6V memory voltage for DDR modules. DDR2 also incorporates new innovations such as the On-Die Termination (ODT) as well as larger 4-bit pre-fetch against DDR which fetches 2 bits per clock cycle.

Graphics

The Intel® chipset features sophisticated graphics for large display applications. Graphics interfaces such as VGA and LVDS support multiple graphics display options.

PCI Express

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The x1 PCI Express lane supports transfer rate of 2.5 Gigabytes (250MBbps) per second which is nearly 4 times faster than the traditional PCI.

S/PDIF

S/PDIF is a standard audio file transfer format that transfers digital audio signals to a device without having to be converted first to an analog format. This prevents the quality of the audio signal from degrading whenever it is converted to analog. S/PDIF is usually found on digital audio equipment such as a DAT machine or audio processing device. The S/PDIF connector on the system board sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.
Serial ATA

Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 3GB/s, it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s.

Gigabit LAN

The Intel 82567V and Realtek RTL8111C PCI Express Gigabit controllers support up to 1Gbps data transmission.

USB

The system board supports USB 2.0 and USB 1.1 ports. USB 1.1 supports 12Mb/second bandwidth while USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.
Chapter 2 - Hardware Installation

System Board Layout
**Important:**
Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

**System Memory**

**Important:**
When the Standby LED lit red, it indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

![System Board Diagram]

The system board supports two DDR2 SODIMM sockets.
Installing the DIM Module

Note: The system board used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

1. Make sure the PC and all other peripheral devices connected to it has been powered down.

2. Disconnect all power cords and cables.

3. Locate the SODIMM socket on the system board.

4. Note the key on the socket. The key ensures the module can be plugged into the socket in only one direction.
5. Grasping the module by its edges, align the module into the socket at an approximately 30 degrees angle. Apply firm even pressure to each end of the module until it slips down into the socket. The contact fingers on the edge of the module will almost completely disappear inside the socket.

6. Push down the module until the clips at each end of the socket lock into position. You will hear a distinctive “click”, indicating the module is correctly locked into position.
If you encounter the following,

a) CMOS data becomes corrupted.
b) You forgot the supervisor or user password.

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system and unplug the power cord.

2. Set JP5 pins 2 and 3 to On. Wait for a few seconds and set JP5 back to its default setting, pins 1 and 2 On.

3. Now plug the power cord and power-on the system.
JP1 is used to select the power of the PS/2 keyboard/mouse port. Selecting +5V_standby will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.
Hardware Installation

USB Power Select

JP2 (for USB 0-3), JP3 (for USB 4-7) and JP4 (for USB 8-9) are used to select the power of the USB ports. Selecting +5V_standby will allow you to use a USB device to wake up the system.

BIOS Setting

“USB Device Wakeup From S3” in the Advanced menu (“ACPI Configuration” sub-menu) of the BIOS must be set to Enabled. Refer to chapter 3 for more information.

**Important:**

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the +5V_standby power source of your power supply must support ≥2A.
Panel Power Select

J5 is used to select the power supplied to the LCD panel.

**Important:**
Before powering-on the system, make sure J5’s setting matches the LCD panel’s specification. Selecting the incorrect voltage will seriously damage the LCD panel.
Hardware Installation

CompactFlash Card Setting

JP6 is used to set the CompactFlash card to Master or Slave mode.

Note:
We do not recommend using IDE devices and CF card at the same time.
COM 3 RS232/RS422/RS485 Select

JP9 is used to configure COM 3 to RS232, RS422 (Half Duplex) or RS485.

The pin function of COM 3 will vary according to the jumper’s setting.
Hardware Installation

COM 2 RS232/Power Select

1-3, 2-4 On: RS232 standard (default)
3-5 (+12V), 4-6 (+5V) On: RS232 with power
Power-on Select

JP8 is used to select the method of powering on the system. If you want the system to power-on whenever AC power comes in, set JP8 pins 2 and 3 to On. If you want to use the power button, set pins 1 and 2 to On.

When using the JP8 “Power On” feature to power the system back on after a power failure occurs, the system may not power on if the power lost is resumed within 5 seconds (power flicker).

**Note:**
In order to ensure that power is resumed after a power failure that recovers within a 5 second period, JP8 must be set to pins 2-3 and the “PWRON After PWR-Fail” in CMOS is set to “On”.
Rear Panel I/O Ports

The rear panel I/O ports consist of the following:

- PS/2 mouse port
- PS/2 keyboard port
- 3 COM ports
- VGA port
- 2 LAN ports
- 4 USB ports
- Mic-in jack
- Line-in jack
- Line-out jack
Hardware Installation

PS/2 Mouse and PS/2 Keyboard Ports

These ports are used to connect a PS/2 mouse and a PS/2 keyboard. The PS/2 mouse port uses IRQ12. If a mouse is not connected to this port, the system will reserve IRQ12 for other expansion cards.

**Important:**
Make sure to turn off your computer prior to connecting or disconnecting a mouse or keyboard. Failure to do so may damage the system board.

Wake-On-PS/2 Keyboard/Mouse

The Wake-On-PS/2 Keyboard/Mouse function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system. To use this function:

- **Jumper Setting**
  
  JP1 must be set to “2-3 On: 5V_standby”. Refer to “PS/2 Power Select” in this chapter for more information.

**Important:**
The 5V_standby power source of your power supply must support ≥720mA.
COM (Serial) Ports

COM 1, COM 2 and COM 4 are fixed at RS232.

COM 3’s pin definition will vary according to JP9’s settings. Refer to "COM 3 RS232/RS422/RS485 Select" in this chapter for more information.

The serial ports are asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.
Connecting External Serial Ports

Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the serial port cable to the COM connector. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of the COM connector.

BIOS Setting

Configure the serial ports in the Advanced menu ("Super IO Configuration" sub-menu) of the BIOS. Refer to chapter 3 for more information.
The VGA port is used for connecting a VGA monitor. Connect the monitor’s 15-pin D-shell cable connector to the VGA port. After you plug the monitor’s cable connector into the VGA port, gently tighten the cable screws to hold the connector in place.

**BIOS Setting**

Configure the onboard VGA in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

**Driver Installation**

Install the graphics driver. Refer to chapter 4 for more information.
RJ45 LAN Ports

The LAN ports allow the system board to connect to a local area network by means of a network hub.

**BIOS Setting**

Configure the onboard LAN ports in the Chipset menu (“South Bridge Chipset Configuration” submenu) of the BIOS. Refer to chapter 3 for more information.

**Driver Installation**

Install the LAN drivers. Refer to chapter 4 for more information.
USB Ports

USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with four onboard USB 2.0/1.1 ports. The three 10-pin connectors allow you to connect 6 additional USB 2.0/1.1 ports. The USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the USB port cables to a connector.

BIOS Setting

Configure the onboard USB in the Chipset menu ("South Bridge Chipset Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.
Wake-On-USB Keyboard/Mouse

The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state. To use this function:

- **Jumper Setting**

  JP2, JP3 and/or JP4 must be set to “2-3 On: 5V_standby”. Refer to “USB Power Select” in this chapter for more information.

- **BIOS Setting**

  “USB Device Wakeup From S3” in the Advanced menu (“ACPI Configuration” submenu) of the BIOS must be set to Enabled. Refer to chapter 3 for more information.

**Important:**

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V_standby power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5V_standby power source of your power supply must support ≥2A.
Hardware Installation

Audio

Rear Audio

The system board is equipped with 3 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

- **Mic-in Jack (Pink)**
  This jack is used to connect an external microphone.

- **Line-in Jack (Light Blue)**
  This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.

- **Line-out Jack (Lime)**
  This jack is used to connect a headphone or external speakers.

Front Audio

The front audio connector allows you to connect to the second line-out and mic-in jacks that are at the front panel of your system.
BIOS Setting

Configure the onboard audio in the Chipset menu (“South Bridge Chipset Configuration” submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

Install the audio driver. Refer to chapter 4 for more information.
The CD-in connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.
The S/PDIF connector is used to connect an external S/PDIF port. Your S/PDIF port may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the audio cable to the S/PDIF connector. Make sure pin 1 of the audio cable is aligned with pin 1 of the S/PDIF connector.
The system board allows you to connect a LCD Display Panel by means of the LVDS LCD panel connector and the LCD/Inverter power connector. These connectors transmit video signals and power from the system board to the LCD Display Panel.

Refer to the next page for the pin functions of these connectors.

**BIOS Setting**

Configure the LCD panel in the Chipset menu of the BIOS. Refer to chapter 3 for more information.
# LVDS LCD Panel Connector

<table>
<thead>
<tr>
<th>Pins</th>
<th>Function</th>
<th>Pins</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>2</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>N. C.</td>
<td>4</td>
<td>N. C.</td>
</tr>
<tr>
<td>5</td>
<td>N. C.</td>
<td>6</td>
<td>N. C.</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
<td>8</td>
<td>GND</td>
</tr>
<tr>
<td>9</td>
<td>LVDS_Out2+</td>
<td>10</td>
<td>N. C.</td>
</tr>
<tr>
<td>11</td>
<td>LVDS_Out2-</td>
<td>12</td>
<td>N. C.</td>
</tr>
<tr>
<td>13</td>
<td>GND</td>
<td>14</td>
<td>GND</td>
</tr>
<tr>
<td>15</td>
<td>LVDS_Out1+</td>
<td>16</td>
<td>N. C.</td>
</tr>
<tr>
<td>17</td>
<td>LVDS_Out1-</td>
<td>18</td>
<td>N. C.</td>
</tr>
<tr>
<td>19</td>
<td>GND</td>
<td>20</td>
<td>GND</td>
</tr>
<tr>
<td>21</td>
<td>LVDS_Out0+</td>
<td>22</td>
<td>N. C.</td>
</tr>
<tr>
<td>23</td>
<td>LVDS_Out0-</td>
<td>24</td>
<td>N. C.</td>
</tr>
<tr>
<td>25</td>
<td>GND</td>
<td>26</td>
<td>GND</td>
</tr>
<tr>
<td>27</td>
<td>LVDS_CLK1+</td>
<td>28</td>
<td>N. C.</td>
</tr>
<tr>
<td>29</td>
<td>LVDS_CLK1-</td>
<td>30</td>
<td>N. C.</td>
</tr>
<tr>
<td>31</td>
<td>GND</td>
<td>32</td>
<td>GND</td>
</tr>
<tr>
<td>33</td>
<td>LVDS_DDCCLK</td>
<td>34</td>
<td>N. C.</td>
</tr>
<tr>
<td>35</td>
<td>LVDS_DDCDAA</td>
<td>36</td>
<td>N. C.</td>
</tr>
<tr>
<td>37</td>
<td>Panel Power</td>
<td>38</td>
<td>Panel Power</td>
</tr>
<tr>
<td>39</td>
<td>Panel Power</td>
<td>40</td>
<td>Panel Power</td>
</tr>
</tbody>
</table>

# LCD/Inverter Power Connector

<table>
<thead>
<tr>
<th>Pins</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
</tr>
<tr>
<td>3</td>
<td>Panel Inverter Brightness Voltage Control</td>
</tr>
<tr>
<td>4</td>
<td>Panel Power</td>
</tr>
<tr>
<td>5</td>
<td>+3.3V</td>
</tr>
<tr>
<td>6</td>
<td>Panel Backlight On/Off Control</td>
</tr>
<tr>
<td>7</td>
<td>+12V</td>
</tr>
<tr>
<td>8</td>
<td>+12V</td>
</tr>
</tbody>
</table>
The Digital I/O connector provides powering-on function to an external device that is connected to this connector.

### Digital I/O Connector

<table>
<thead>
<tr>
<th>Pins</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIO0</td>
</tr>
<tr>
<td>2</td>
<td>DIO1</td>
</tr>
<tr>
<td>3</td>
<td>DIO2</td>
</tr>
<tr>
<td>4</td>
<td>DIO3</td>
</tr>
<tr>
<td>5</td>
<td>DIO4</td>
</tr>
<tr>
<td>6</td>
<td>DIO5</td>
</tr>
<tr>
<td>7</td>
<td>DIO6</td>
</tr>
<tr>
<td>8</td>
<td>DIO7</td>
</tr>
</tbody>
</table>
SATA (Serial ATA) Connectors

The Serial ATA connectors are used to connect Serial ATA devices. Connect one end of the Serial ATA cable to a SATA connector and the other end to your Serial ATA device.

**BIOS Setting**

Configure the Serial ATA drives in the Advanced menu (“IDE Configuration” sub-menu) of the BIOS. Refer to chapter 3 for more information.
Important:
We do not recommend using IDE devices and CF card at the same time.

The IDE connector is used to connect hard drives. The connector on the IDE cable can be inserted into this connector only if pin 1 of the cable is aligned with pin 1 of this connector.

The IDE connector supports 2 devices, a Master and a Slave. Use an IDE ribbon cable to connect the drives to the system board. An IDE ribbon cable have 3 connectors on them, one that plugs into the IDE connector on the system board and the other 2 connects to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive.

Note:
Refer to your disk drive user’s manual for information about selecting proper drive switch settings.

Adding a Second IDE Disk Drive

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.

The system board supports Enhanced IDE or ATA-2, ATA/33, ATA/66 and ATA/100 hard drives. We recommend that you use hard drives from the same manufacturer. In a few cases, drives from two different manufacturers will not function properly when used together. The problem lies in the hard drives, not the system board.
Important:
If you encountered problems while using an ATAPI CD-ROM drive that is set in Master mode, please set the CD-ROM drive to Slave mode. Some ATAPI CD-ROMs may not be recognized and cannot be used if incorrectly set in Master mode.

BIOS Setting

Configure the onboard IDE in the Advanced menu ("IDE Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.
Hardware Installation

Cooling Fan Connectors

The fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

The Advanced menu (“Hardware Health Configuration” submenu) of the BIOS will display the current speed of the cooling fan. Refer to chapter 3 for more information.
Chassis Intrusion Connector

The board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to this connector. When the system’s power is on and a chassis intrusion occurred, an alarm will sound. When the system’s power is off and a chassis intrusion occurred, the alarm will sound only when the system restarts.

Hardware Monitor for Windows

Install the “Hardware Monitor for Windows” utility. By default, the chassis intrusion detection function is disabled. When enabled, a warning message will appear when the chassis is open. The utility can also be configured so that a beeping alarm will sound when the chassis is open. Refer to the “Hardware Monitor for Windows” section in chapter 4 for more information.
Connect a 24-pin ATX main power connector from the power supply unit to the 24-pin power connector. The connector from the power supply unit is designed to fit the 24-pin connector in only one orientation. Make sure to find the proper orientation before plugging the connector.

The system board requires a minimum of 120 Watt power supply to operate. We recommend that you use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1.

**Important**

The system board consumes a minimal amount of power. Due to its low power consumption, you only need a 120W to 150W power supply. Every power supply has its minimum load of power. If you use a greater than 150W power supply, the power consumed by the system board may not attain its minimum load causing instability to the entire system.
This LED will lit red when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.
Hardware Installation

Front Panel Connectors

HDD-LED - HDD LED
This LED will light when the hard drive is being accessed.

RESET SW - Reset Switch
This switch allows you to reboot without having to power off the system.

PWR-BTN - Power Switch
This switch is used to power on or off the system.

PWR-LED - Power/Standby LED
When the system’s power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) state, it will blink every second. When the system is in the S3 (STR - Suspend To RAM) state, it will blink every 4 seconds.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Pin Assignment</th>
<th>Pin</th>
<th>Pin Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. C.</td>
<td>1</td>
<td>N. C.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HDD-LED</td>
<td>3</td>
<td>HDD Power Signal</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESET SW</td>
<td>7</td>
<td>Ground RST Signal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N. C.</td>
<td>11</td>
<td>N. C.</td>
<td></td>
</tr>
</tbody>
</table>
Expansion Slots

PCI Express x1

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x1 slot.

PCI Slot

The PCI slot supports expansion cards that comply with PCI specifications. You can install a PCI expansion card or a customized riser card designed for 1, 2 or 3 PCI slots expansion (for low profile PCI card only) into the PCI slot.
Hardware Installation

Battery

The lithium ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

Safety Measures

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
Hardware Installation

CompactFlash Socket

The CompactFlash™ socket is used for inserting a CompactFlash™ card. CompactFlash™ card is a small removable mass storage device designed with flash technology - a non-volatile storage solution that does not require a battery to retain data indefinitely. The CompactFlash™ technology is widely used in products such as portable and desktop computers, digital cameras, handheld data collection scanners, PDAs, Pocket PCs, handy terminals and personal communicators.

Important:
We do not recommend using IDE devices and CF card at the same time.
Chapter 3 - BIOS Setup

Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.

Note: The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message "Press DEL to run setup" will appear on the screen. If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.
## Legends

<table>
<thead>
<tr>
<th>Keys</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right and Left arrows</td>
<td>Moves the highlight left or right to select a menu.</td>
</tr>
<tr>
<td>Up and Down arrows</td>
<td>Moves the highlight up or down between submenus or fields.</td>
</tr>
<tr>
<td>&lt;Esc&gt;</td>
<td>Exits to the BIOS Setup Utility.</td>
</tr>
<tr>
<td>+ (plus key)</td>
<td>Scrolls forward through the values or options of the highlighted field.</td>
</tr>
<tr>
<td>- (minus key)</td>
<td>Scrolls backward through the values or options of the highlighted field.</td>
</tr>
<tr>
<td>Tab</td>
<td>Selects a field.</td>
</tr>
<tr>
<td>&lt;F1&gt;</td>
<td>Displays General Help.</td>
</tr>
<tr>
<td>&lt;F10&gt;</td>
<td>Saves and exits the Setup program.</td>
</tr>
<tr>
<td>&lt;Enter&gt;</td>
<td>Press &lt;Enter&gt; to enter the highlighted submenu.</td>
</tr>
</tbody>
</table>

### Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

### Submenu

When “►” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>. 
BIOS Setup

AMI BIOS Setup Utility

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

<table>
<thead>
<tr>
<th>BIOS SETUP UTILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main</strong></td>
</tr>
<tr>
<td>AMIBIOS Overview</td>
</tr>
<tr>
<td>Version</td>
</tr>
<tr>
<td>Build Date</td>
</tr>
<tr>
<td>Processor</td>
</tr>
<tr>
<td>Speed</td>
</tr>
<tr>
<td>Count</td>
</tr>
<tr>
<td>System Memory</td>
</tr>
<tr>
<td>Size</td>
</tr>
<tr>
<td>System Time</td>
</tr>
<tr>
<td>System Date</td>
</tr>
</tbody>
</table>

AMI BIOS

Displays the detected BIOS information.

Processor

Displays the detected processor information.

System Memory

Displays the detected system memory information.

System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1980 to 2099.
Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

**Important:**
Setting incorrect field values may cause the system to malfunction.

<table>
<thead>
<tr>
<th>BIOS SETUP UTILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Advanced Settings</td>
</tr>
<tr>
<td>WARNING: Setting wrong values in below sections may cause system to malfunction.</td>
</tr>
<tr>
<td>▶ CPU Configuration</td>
</tr>
<tr>
<td>▶ IDE Configuration</td>
</tr>
<tr>
<td>▶ Super IO Configuration</td>
</tr>
<tr>
<td>▶ Hardware Health Configuration</td>
</tr>
<tr>
<td>▶ ACPI Configuration</td>
</tr>
<tr>
<td>▶ AHCI Configuration</td>
</tr>
<tr>
<td>▶ USB Configuration</td>
</tr>
</tbody>
</table>

Configure CPU.

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CPU Configuration

This section is used to configure the CPU. It will also display the detected CPU information.

Max CPUID Value Limit

Set this field to Disabled when using Windows XP. Set this field to Enabled when using legacy operating systems so that the system will boot even when it doesn’t support CPUs with extended CPUID function.

Execute Disable Bit Capability

When this field is set to Disabled, it will force the XD feature flag to always return to 0.

Hyper Threading Technology

Enable this field for Windows XP and Linux which are optimized for Hyper-Threading technology. Select disabled for other OSes not optimized for Hyper-Threading technology. When disabled, only one thread per enabled core is enabled.
BIOS Setup

IDE Configuration

This section is used to configure the IDE drives.

<table>
<thead>
<tr>
<th>ATA/IDE Configuration</th>
<th>Configure SATA as</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[Enhanced]</td>
<td>Disabled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compatible</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enhanced</td>
</tr>
<tr>
<td>Primary IDE Master</td>
<td>[Not Detected]</td>
<td></td>
</tr>
<tr>
<td>Primary IDE Slave</td>
<td>[Not Detected]</td>
<td></td>
</tr>
<tr>
<td>Secondary IDE Master</td>
<td>[Not Detected]</td>
<td></td>
</tr>
<tr>
<td>Secondary IDE Slave</td>
<td>[Not Detected]</td>
<td></td>
</tr>
<tr>
<td>Third IDE Master</td>
<td>[Not Detected]</td>
<td></td>
</tr>
<tr>
<td>Third IDE Slave</td>
<td>[Not Detected]</td>
<td></td>
</tr>
</tbody>
</table>

ATA/IDE Configuration

This field is used to configure the IDE drives. The options are Disabled, Compatible and Enhanced.

Configure SATA as

**IDE**

This option configures the Serial ATA drives as Parallel ATA storage devices.

**AHCI**

This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).
Primary IDE Master to Third IDE Slave

When you enter the BIOS Setup Utility, the BIOS will auto detect the existing IDE devices then displays the status of the detected devices. To configure an IDE drive, move the cursor to a field then press <Enter>.

![BIOS Setup Utility Screenshot]

**Type**

Selects the type of IDE drive connected to the system.

**LBA/Large Mode**

*Auto*

The LBA mode will automatically be enabled, that is, if the LBA mode was not previously disabled.

*Disabled*

Disables the LBA mode.

**Block (Multi-Sector Transfer)**

*Auto*

Data transfer to and from the device occurs multiple sectors at a time.

*Disabled*

Data transfer to and from the device occurs one sector at a time.
**PIO Mode**

Selects the data transfer mode. PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. Your system supports five modes, 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

*Auto*

The BIOS will automatically set the system according to your hard disk drive’s timing.

*Mode 0-4*

You can select a mode that matches your hard disk drive’s timing. Caution: Do not use the wrong setting or you will have drive errors.

**DMA Mode**

Selects the DMA mode.

*Auto*

Automatically detects the DMA mode.

*SWMAn*

SingleWord DMA.

*MWMAn*

MultiWord DMA.

*UDMAn*

Ultra DMA.

**S.M.A.R.T.**

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive’s failure. SMART is supported in ATA/33 or later hard drives. The options are Auto (default), Enabled and Disabled.

**32Bit Data Transfer**

Enables or disables 32-bit data transfer.
Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.

<table>
<thead>
<tr>
<th>Configure Super IO Chipset</th>
<th>Allows BIOS to select Serial Port 1 base address.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Port1 Address</td>
<td>[3F8]</td>
</tr>
<tr>
<td>Serial Port1 IRQ</td>
<td>[4]</td>
</tr>
<tr>
<td>Serial Port2 Address</td>
<td>[2F8]</td>
</tr>
<tr>
<td>Serial Port2 IRQ</td>
<td>[3]</td>
</tr>
<tr>
<td>Serial Port3 Address</td>
<td>[3E8]</td>
</tr>
<tr>
<td>Serial Port3 IRQ</td>
<td>[10]</td>
</tr>
<tr>
<td>Serial Port4 Address</td>
<td>[2E8]</td>
</tr>
<tr>
<td>Serial Port4 IRQ</td>
<td>[11]</td>
</tr>
<tr>
<td>PWRON After PWR-Fail</td>
<td>[00F]</td>
</tr>
<tr>
<td>W83627DHGWDT Time</td>
<td>[000]</td>
</tr>
</tbody>
</table>

**Serial Port1 Address to Serial Port4 Address**

*Auto*

The system will automatically select an I/O address for the onboard serial ports.

*3F8, 2F8, 3E8, 2E8*

Allows you to manually select an I/O address for the onboard serial ports.

*Disabled*

Disables the onboard serial port 1 and/or serial port 2.

**Serial Port1 IRQ to Serial Port4 IRQ**

Select an IRQ for the onboard serial ports. This is not configurable if the Serial Port Address fields are set to Disabled.
**PWRON After PWR-Fail**

*Off*
When power returns after an AC power failure, the system’s power is off. You must press the Power button to power-on the system.

*On*
When power returns after an AC power failure, the system will automatically power-on.

*Former-Sts*
When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system’s power is off when AC power failure occurs, it will remain off when power returns. If the system’s power is on when AC power failure occurs, the system will power-on when power returns.

**W83627DHG.WDT Time**

This field is used to select the time interval of the Watchdog timer. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.
Hardware Health Configuration

This section is used to configure the hardware monitor function.

<table>
<thead>
<tr>
<th>BIOS SETUP UTILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Health Configuration</td>
</tr>
<tr>
<td>System Temperature</td>
</tr>
<tr>
<td>CPU Temperature</td>
</tr>
<tr>
<td>System Fan Speed</td>
</tr>
<tr>
<td>CPU Fan Speed</td>
</tr>
<tr>
<td>Vcore</td>
</tr>
<tr>
<td>+5(V)</td>
</tr>
<tr>
<td>+1.05(V)</td>
</tr>
<tr>
<td>+1.8(V)</td>
</tr>
<tr>
<td>+12(V)</td>
</tr>
<tr>
<td>3VSB (V)</td>
</tr>
<tr>
<td>VBAT (V)</td>
</tr>
<tr>
<td>Case Open Detection</td>
</tr>
<tr>
<td>CPU Fan Mode Setting</td>
</tr>
<tr>
<td>CPU FAN PWM Control</td>
</tr>
</tbody>
</table>

System Temperature to VBAT (V)

These fields will show the temperature, fan speed and output voltage of the monitored devices or components.

Case Open Detection

Set this field to Enabled to allow the system to alert you of a chassis intrusion event.

CPU Fan Mode Setting

Selects the CPU fan’s mode. The options are Manual Mode and Thermal Cruise Mode.

CPU Fan PWM Control

This is the PWM’s duty cycle control. Enter the CPU fan’s speed in this field. The higher the value, the faster the CPU fan’s speed.
ACPI Configuration

This section is used to configure ACPI.

**General ACPI Configuration**

Configures the general ACPI settings.

**Suspend Mode**

This field is used to select the type of Suspend mode.

**S3(STR)**
Enables the Suspend to RAM function.
**Advanced ACPI Configuration**

Configures additional ACPI functions.

### Advanced ACPI Configuration

<table>
<thead>
<tr>
<th>ACPI Version Features</th>
<th>[ACPI v3.0]</th>
</tr>
</thead>
</table>

Enable RSDP pointers to 64-bit Fixed System Description Tables. Different ACPI version has some addition.

### ACPI Version Features

Selects the ACPI version. The options are ACPI v1.0, ACPI v2.0 and ACPI v3.0.
### Chipset ACPI Configuration

Configures relevant chipset ACPI functions.

<table>
<thead>
<tr>
<th>BIOS SETUP UTILITY</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Bridge ACPI Configuration</td>
<td>Enable/Disable APIC ACPI SCI IRQ.</td>
</tr>
<tr>
<td>APIC ACPI SCI IRQ</td>
<td>[Disabled]</td>
</tr>
<tr>
<td>USB Device Wakeup From S3</td>
<td>[Disabled]</td>
</tr>
</tbody>
</table>

#### APIC ACPI SCI IRQ

Enables or disables the APIC ACPI SCI IRQ.

#### USB Device WakeUp From S3

This field, when enabled, allows you to use a USB keyboard to wake up a system that is in the S3 (STR - Suspend To RAM) state.
# AHCI Configuration

This section is used to configure AHCI.

<table>
<thead>
<tr>
<th>AHCI Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHCI Port0 [Not Detected]</td>
</tr>
<tr>
<td>AHCI Port1 [Not Detected]</td>
</tr>
<tr>
<td>AHCI Port2 [Not Detected]</td>
</tr>
</tbody>
</table>

While entering setup, BIOS auto detects the presence of IDE devices. This displays the status of auto detection of IDE devices.
AHCI Port0 to AHCI Port2

Configures the AHCI port.

<table>
<thead>
<tr>
<th>BIOS SETUP UTILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advanced</strong></td>
</tr>
<tr>
<td>AHCI Port0</td>
</tr>
<tr>
<td>Device</td>
</tr>
<tr>
<td>SATA Port0</td>
</tr>
<tr>
<td>S.M.A.R.T.</td>
</tr>
</tbody>
</table>

Select the type of device connected to the system.

**SATA Port0**

Selects the type of device connected to the system.

**S.M.A.R.T.**

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive’s failure. The default is Disabled. If you are using hard drives that support S.M.A.R.T., set this field to Enabled. SMART is supported in ATA/33 or later hard drives. The options are Auto, Enabled and Disabled.
USB Configuration

This section is used to configure USB devices.

**Legacy USB Support**

*Enabled*
Enables Legacy USB.

*Auto*
Disables support for Legacy when no USB devices are connected.

*Disabled*
Keeps USB devices available only for EFI applications.

**USB 2.0 Controller Mode**

Configures the USB 2.0 controller in HiSpeed (480Mbps) or FullSpeed (12Mbps).

**BIOS EHCI Hand-Off**

This is a workaround for OSes that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.
**PCIPnP**

The PCIPnP menu is used to configure PCI Plug and Play devices.

**Important:**
Setting incorrect field values may cause the system to malfunction.

---

**BIOS SETUP UTILITY**

<table>
<thead>
<tr>
<th>Main</th>
<th>Advanced</th>
<th>PCIPnP</th>
<th>Boot</th>
<th>Security</th>
<th>Chipset</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Advanced PCI/PnP Settings**

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

<table>
<thead>
<tr>
<th>Clear NVRAM</th>
<th>Plug &amp; Play O/S</th>
<th>PCI Latency Timer</th>
</tr>
</thead>
<tbody>
<tr>
<td>[No]</td>
<td>[No]</td>
<td>[64]</td>
</tr>
</tbody>
</table>

| IRQ3        | Available       | Select Screen     |
| IRQ4        | Available       | Select Item       |
| IRQ5        | Available       | Change Option     |
| IRQ7        | Available       | F1 General Help   |
| IRQ9        | Available       | F10 Save and Exit |
| IRQ10       | Available       | ESC Exit          |
| IRQ11       | Available       |                   |
| IRQ14       | Available       |                   |
| IRQ15       | Available       |                   |

---

**Clear NVRAM**

This field allows clearing the NVRAM during system boot.

**Plug & Play O/S**

*Yes*

The operating system onfigures Plug and Play (PnP) devices that are not required to boot in a Plug and Play supported operating system.

*No*

The BIOS configures all the devices in the system.

**PCI Latency Timer**

This feature is used to select the length of time each PCI device will control the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus. Since each access to the bus comes with an initial delay before any transaction can be made, low values for the PCI Latency Timer will reduce the effectiveness of the PCI bandwidth while higher values will improve it.

**IRQ3 to IRQ15**

*Available*

The specified IRQ is available for PCI/PnP devices.

*Reserved*

The specified IRQ is reserved for Legacy ISA devices.
Boot Settings Configuration

This section is used to configure settings during system boot.

Quick Boot

When Enabled, the BIOS will shorten or skip some check items during POST. This will decrease the time needed to boot the system.
**Full Screen Logo Display**

This field is applicable only if you want a particular logo to appear during system boot-up.

*Enabled*
Displays OEM logo instead of the POST messages.

*Disabled*
Displays normal POST messages.

**Bootup Num-Lock**

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.
### Boot Device Priority

This section is used to select the boot priority sequence of the devices.

<table>
<thead>
<tr>
<th>BIOS SETUP UTILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boot Device Priority</strong></td>
</tr>
<tr>
<td>1st Boot Device</td>
</tr>
<tr>
<td>2nd Boot Device</td>
</tr>
</tbody>
</table>

Specifies the boot sequence from the available devices.

A device enclosed in parenthesis has been disabled in the corresponding type menu.

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

### 1st Boot Device and 2nd Boot Device

Selects the drive to boot first and second in the “1st Boot Device” and “2nd Boot Device” field respectively. The BIOS will boot the operating system according to the sequence of the drive selected.
Security

**Change Supervisor Password**

This field is used to set or change the supervisor password. To set a new password:

1. Select the Change Supervisor Password field then press <Enter>.
2. Type your password in the dialog box then press <Enter>. You are limited to eight letters/numbers.

**Change User Password**

This field is used to set or change the user password. To set a new password:

1. Select the Change User Password field then press <Enter>.
2. Type your password in the dialog box then press <Enter>. You are limited to eight letters/numbers.
3. Press <Enter> to confirm the new password.

4. When the Password Installed dialog box appears, select OK.

To change the password, repeat the same steps above.

To clear the password, select Change Supervisor Password then press <Enter>. The Password Uninstalled dialog box will appear.

If you forgot the password, you can clear the password by erasing the CMOS RTC (Real Time Clock) RAM using the Clear CMOS jumper. Refer to the Jumper Settings section in chapter 2 for more information.

After you have set the supervisor password, the User Access Level field will appear.

### User Access Level

Selects the access level to the fields in the Setup utility.

**Limited**
Allows you to change settings to some fields such as Date and Time.

**No Access**
Prevents access to the Setup utility.

**View Only**
Allows you to view the settings but does not allow you to change the settings.

**Full Access**
Allows you to change settings to all the fields in the utility.
Change User Password

This field is used to set or change the user password.

To set a new password:

1. Select the Change User Password field then press <Enter>.

2. Type your password in the dialog box then press <Enter>. You are limited to eight letters/numbers.

3. Press <Enter> to confirm the new password.

4. When the Password Installed dialog box appears, select OK.

To change the password, repeat the same steps above.

After you have set the user password, the Clear User Password and Password Check fields will appear.

Clear User Password

To clear the password, select Clear User Password then press <Enter>. The Password Uninstalled dialog box will appear.

Password Check

*Setup*

The BIOS checks for the user password whenever accessing the Setup utility.

*Always*

The BIOS checks for the user password when accessing the Setup utility and booting the system.
BIOS Setup

Boot Sector Virus Protection

Enables or disables the boot sector virus protection function.
## Chipset

This section is used to configure the system based on the specific features of the chipset.

**Important:**
Setting incorrect field values may cause the system to malfunction.

### North Bridge Configuration

<table>
<thead>
<tr>
<th>BIOS SETUP UTILITY</th>
<th>Chipset</th>
<th>Exit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>Advanced</td>
<td>PCIPnP</td>
</tr>
<tr>
<td>Advanced Chipset Settings</td>
<td>WARNING: Setting wrong values in below sections may cause system to malfunction.</td>
<td></td>
</tr>
<tr>
<td>North Bridge Configuration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Bridge Configuration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **PCI MMIO Allocation:** 4GB to 3072MB
- **Initiate Graphic Adapter:** [IGD]
- **Internal Graphics Mode Select:** [Enabled, 8MB]

### Video Function Configuration

- Select Screen
- Select Item
- Go to Sub Screen
- General Help
- Save and Exit
- Exit

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**Initiate Graphics Adapter**

Selects the graphics controller to use as the primary boot device.

**Internal Graphics Mode Select**

Selects the amount of system memory used by the internal graphics device.
# Video Function Configuration

<table>
<thead>
<tr>
<th>Video Function Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVMT Mode Select</td>
</tr>
<tr>
<td>DVMT/FIXED Memory</td>
</tr>
<tr>
<td>Boot Display Device</td>
</tr>
<tr>
<td>Flat Panel Type</td>
</tr>
</tbody>
</table>

## Chipset Options

- Fixed Mode
- DVMT Mode

### DVMT Mode Select

**DVMT Mode**

Memory that is dynamically allocated based on memory requests made by an application and are released back to the system once the requesting application has been terminated.

**Fixed Mode**

Non-contiguous pagelocked memory allocated during driver initialization to provide a static amount of memory.

### DVMT/FIXED Memory

Selects the graphics memory size used by the DVMT/Fixed mode.

### Boot Display Device

Selects the type of display to use when the system boots.

### Flat Panel Type

Selects the type of flat panel connected to the system.
USB Functions

Selects the number of USB ports you want enabled.

USB 2.0 Controller

Enables or disables the Enhanced Host Controller Interface (USB 2.0).

GbE Controller (for Intel LAN controller)

Enables or disables the Intel Gigabit LAN controller.

GbE LAN Boot (for Intel LAN controller)

Enable this field if you want to use the boot ROM (instead of a disk drive) to boot-up the system and access the local area network directly. If you want to change the boot ROM’s settings, type the <Shift> and <F10> keys simultaneously when prompted during boot-up. Take note: you will be able to access the boot ROM’s program (by typing <Shift> + <F10>) only when this field is enabled.

GbE Wake Up From S5 (for Intel LAN controller)

When enabled, it allows the system to wake up from S5 via the network LAN.
**HDA Controller**
Enables or disables the High Definition audio controller.

**PCIE1 Port**
Enables or disables the PCIE x1 slot.

**Onboard LAN**
Enables or disables the Realtek LAN controller.
Exit

Save Changes and Exit

To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <F10> to save and exit Setup.
Discard Changes and Exit

To exit the Setup utility without saving the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <ESC> to exit without saving the changes.

---

**Discard Changes**

To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK to discard all changes made and restore the previously saved settings.

You can also press <F7> to discard the changes.
Load Optimal Defaults

To load optimal default values from the BIOS ROM, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <F9> to load optimal default values.

Load Failsafe Defaults

To load the fail-safe default values from the BIOS ROM, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <F8> to load the fail-safe default values.
Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AFUDOS. EXE. Please contact technical support or your sales representative for the files.

To execute the utility, type:

A:> AFUDOS BIOS_File_Name /b /p /n /c

then press <Enter>.
Chapter 4 - Supported Software

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, “Autorun” did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click “Setup”.

![System Utility]

- Intel Chipset Software Installation Utility
- Intel Graphics Drivers
- Audio Drivers
- Realtek LAN Drivers
- Intel LAN Drivers
- Hardware Monitor for Windows
- Intel Matrix Storage Manager Utility
- AHCI for F6 during windows setup Floppy Driver
- Infineon TPM driver
- Infineon TPM Utility

More >>
Intel Chipset Software Installation Utility

The Intel Chipset Software Installation Utility is used for updating Windows® INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click “Intel Chipset Software Installation Utility” on the main menu.

1. Setup is ready to install the utility. Click Next.

2. Read the license agreement then click Yes.
3. Go through the readme document for more installation tips then click Next.

4. After all setup operations are done, click Next.

5. Click Finish to exit setup.
Intel Graphics Drivers

To install the driver, click “Intel Graphics Drivers” on the main menu.

1. Setup is ready to install the graphics driver. Click Next.

2. Read the license agreement then click Yes.

3. Go through the readme document for more installation tips then click Next.
4. Setup is currently installing the driver. After installation has completed, click Next.

5. Click “Yes, I want to restart this computer now.” then click Finish.

Restarting the system will allow the new software installation to take effect.
Audio Drivers

To install the driver, click “Audio Drivers” on the main menu.

1. Setup is ready to install the driver. Click Next.

2. Click “Yes, I want to restart my computer now” then click Finish.

Restarting the system will allow the new software installation to take effect.
Realtek LAN Drivers

To install the driver, click "Realtek LAN Drivers" on the main menu.

1. Setup is ready to install the driver. Click Next.

2. Click Install to begin the installation.

3. After completing installation, click Finish.
Intel LAN Drivers

To install the driver, click “Intel LAN Drivers” on the main menu.

1. Setup is ready to install the driver. Click Next.

2. Click “I accept the terms in the license agreement” then click “Next”.

3. Select the program features you want installed then click Next.
4. Click Install to begin the installation.

5. After completing installation, click Finish.
hardware Monitor for Windows

The Hardware Monitor for Windows utility is capable of monitoring the system’s temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, a warning message will pop-up. The utility can also be configured so that a beeping alarm will sound whenever an error occurs. We recommend that you use the “Default Setting” which is the ideal setting that would keep the system in good working condition.

To install, click “Hardware Monitor for Windows” on the main menu.

1. Setup is now ready to install the utility. Click Next.

2. Click Next to install or click Change to select another folder.
3. Click Install to begin the installation.

4. After completing installation, click Finish.
Intel Matrix Storage Manager Utility

Intel Matrix Storage Manager is a utility that allows you to monitor the current status of the SATA drives. It enables enhanced performance and power management for the storage subsystem.

To install, click “Intel Matrix Storage Manager Utility” on the main menu.

1. Setup is ready to install the utility. Click Next.

2. Read the warning carefully then click Next.
3. Read the license agreement then click Yes.

4. Go through the readme document to view system requirements and installation information then click Next.

5. Click “Yes, I want to restart my computer now” then click Finish.
AHCI for F6 During Windows Setup Floppy Driver

This is used to create a floppy driver diskette needed when you install Windows® XP using the F6 installation method. This will allow you to install the operating system onto a hard drive when in AHCI mode.

1. Insert a blank floppy diskette.

2. Locate for the drivers in the CD then copy them to the floppy diskette. The CD includes drivers for both 32-bit and 64-bit operating systems. The path to the drivers are shown below.

   32-bit
   CD Drive:\AHCI_RAID\F6FLOPPY\f6flpy32

   64-bit
   CD Drive:\AHCI_RAID\F6FLOPPY\f6flpy64
Infineon TPM Driver

To install, click “Infineon TPM Driver” on the main menu.

1. The setup program is preparing to install the driver.

2. The driver has been successfully installed. Click Finish.
Infineon TPM Utility

To install, click “Infineon TPM Utility” on the main menu.

1. TPM requires installing the Microsoft Visual C++ package prior to installing the utility. Click Install.

2. The setup program is currently installing the Microsoft Visual C++ package.

3. The setup program is now ready to install the utility. Click Next.
4. Click "I accept the terms in the license agreement" and then click "Next".

5. Enter the necessary information and then click Next.

6. Select a setup type and then click Next.
7. Click Install.

8. Click Finish.
**Supported Software**

**Microsoft DirectX 9.0C Driver**

To install, click “Microsoft DirectX 9.0C Driver” on the main menu.

1. Click “I accept the agreement” then click Next.

2. You are now ready to install DirectX. Click Next.

3. Click Finish. Reboot the system for DirectX to take effect.
Adobe Acrobat Reader 9.3

To install the reader, click “Adobe Acrobat Reader 9.3” on the main menu.

1. Click Next to install or click Change Destination Folder to select another folder.

2. Click Install to begin installation.
3. Click Finish to exit installation.
nLite

nLite is an application program that allows you to customize your XP installation disc by integrating the RAID/AHCI drivers into the disc. By using nLite, the F6 function key usually required during installation is no longer needed.

Note:
The installation steps below are based on nLite version 1.4.9. Installation procedures may slightly vary if you’re using another version of the program.

1. Download the program from nLite’s official website.

   [hyperlink: http://www.nliteos.com/download.html]

2. Install nLite.

   Important:
   Due to it’s coding with Visual.Net, you may need to first install .NET Framework prior to installing nLite.

3. Download relevant RAID/AHCI driver files from Intel’s website. The drivers you choose will depend on the operating system and chipset used by your computer.

   The downloaded driver files should include iaahci.cat, iaAHCI.inf, iastor.cat, iaStor.inf, IaStor.sys, license.txt and TXTSETUP.OEM.
4. Insert the XP installation disc into an optical drive.

5. Launch nLite. The Welcome screen will appear. Click Next.

6. Click Next to temporarily save the Windows installation files to the designated default folder.

   If you want to save them in another folder, click Browse, select the folder and then click Next.
7. Click **Next**.

8. In the Task Selection dialog box, click **Drivers** and **Bootable ISO**. Click **Next**.
9. Click **Insert** and then select **Multiple driver folder** to select the drivers you will integrate. Click **Next**.

10. Select only the drivers appropriate for the Windows version that you are using and then click **OK**.

   Integrating 64-bit drivers into 32-bit Windows or vice versa will cause file load errors and failed installation.
11. If you are uncertain of the southbridge chip used on your motherboard, select all RAID/AHCI controllers and then click **OK**.

12. Click **Next**.
13. The program is currently integrating the drivers and applying changes to the installation.

14. When the program is finished applying the changes, click **Next**.
15. To create an image, select the **Create Image** mode under the General section and then click **Next**.

16. Or you can choose to burn it directly to a disc by selecting the **Direct Burn** mode under the General section.

Select the optical device and all other necessary settings and then click **Next**.
17. You have finished customizing the Windows XP installation disc. Click **Finish**.

Enter the BIOS utility to configure the SATA controller to RAID/AHCI. You can now install Windows XP.
AHCI

The installation steps below will guide you in configuring your SATA drive to AHCI mode.

1. Enter the BIOS utility and configure the SATA controller to IDE mode.
3. Download relevant RAID/AHCI driver files supported by the motherboard chipset from Intel’s website.

   Transfer the downloaded driver files to C:\AHCI.

4. Open Device Manager and right click on one of the Intel Serial ATA Storage Controllers, then select **Update Driver**.

   If the controller you selected did not work, try selecting another one.
5. In the Hardware Update Wizard dialog box, select “No, not this time” then click Next.

6. Select “Install from a list or specific location (Advanced)” and then click Next.

7. Select “Don’t search. I will choose the driver to install” and then click Next.
8. Click “**Have Disk**”.

9. Select `C:\AHCI\iaAHCI.inf` and then click **Open**.

10. Select the appropriate AHCI Controller of your hardware device and then click **Next**.
11. A warning message appeared because the selected SATA controller did not match your hardware device.

Ignore the warning and click Yes to proceed.

12. Click Finish.

13. The system’s settings have been changed. Windows XP requires that you restart the computer. Click Yes.

14. Enter the BIOS utility and modify the SATA controller from IDE to AHCI. By doing so, Windows will work normally with the SATA controller that is in AHCI mode.
Appendix B - Watchdog Timer

Watchdog Timer

The following parameters are references for setting the time interval of the Watchdog Timer function. The system will regularly be “cleared” according to the set time interval. If the system hangs or fails to function, it will also reset according to the time interval so that your system will continue to operate.

.model small
.386

;-------------------
;Port definition
;-------------------
SuperIo_CFG_Port EQU 2Eh ;Super I/O Config port. (2Eh/4Eh)
SuperIo_DAT_Port EQU SuperIo_CFG_Port + 1
WDT_Counter EQU 10 ; 1 to 255 (Sec./Min), 0 means disabled

mSuperio_Enter_Config Macro
    mov dx, SuperIo_CFG_Port
    mov al, 87h
    out dx, al
    NEWIODELAY
    out dx, al
endM

mSuperio.Exit_Config Macro
    mov dx, SuperIo_CFG_Port
    mov al, 0AAh
    out dx, al
endM

mSuperio.GetSet_Reg Macro RegIndex, AndMask, OrValue
    mov dx, SuperIo_CFG_Port
    mov al, RegIndex
    out dx, al
    NEWIODELAY
    mov dx, SuperIo_DAT_Port
    in al, dx
    NEWIODELAY
    mov ah, al
    and al, AndMask
    or al, OrValue
    out dx, al
    NEWIODELAY
endM

mSuperio.Get_Reg Macro RegIndex
    mov dx, SuperIo_CFG_Port
    mov al, RegIndex
    out dx, al
Watchdog Timer

NEWIODELAY
mov dx, SuperIo_DAT_Port
in al, dx
NEWIODELAY
endM

mSuperio_LDN_Select Macro LDN
mSuperio_Set_Reg 07h, LDN
endM

mSuperio_Set_Reg Macro RegIndex, SetValue
mov dx, SuperIo_CFG_Port
mov al, RegIndex
out dx, al
NEWIODELAY
mov dx, SuperIo_DAT_Port
mov al, SetValue
out dx, al
NEWIODELAY
endM

NEWIODELAY Macro
out 0EBh, al ;Dummy I/O output for delay
endM

.code

start:
call W83627Hx_WDT
mov ah, 4ch
int 21h

W83627Hx_WDT Proc near
;LDN8
;CRF5[3] :RW 0/1 = WDTO Second/Minute
;CRF5[2] :RW 0/1 = Keyboard Reset Low/High when WDTO Timeout
;CRF6[7:0]:RW 00h = Disable , 01h~0FFh = 1~255 Sec/Min.
;CRF7[7] :RW 0/1 = Disable/Enable Mouse interrupt reset WDTO counting.
;CRF7[6] :RW 0/1 = Disable/Enable Keyboard interrupt reset WDTO counting.
;CRF7[4] :RW 0/1 = WDTO time status TimeOut/Counting.
;CRF7[3:0]:RW 0~7 = Low IRQ for WDTO (Typical is 2, means SMI).
mSuperio_Enter_Config
mSuperio_LDN_Select 08h
; PLED mode register, WDTO time unit as second, Keyboard reset when WDTO time out

    mSuperio_GetSet_Reg 0F5h, 11110111b, 00000100b

; , Disable MS/KB interrupt reset WDTO counting, IRQ2 for WDTO

    mSuperio_GetSet_Reg 0F7h, 11111111b, 11000010b

; , WDTO Time out Value

    mSuperio_Set_Reg 0F6h, WDT_Counter

mSuperio_Exit_Config

@@:

    ret

W83627Hx_WDT   endP

end start
Appendix C - System Error Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.

Important

Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer’s instructions.

CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

Hard Disk(s) fail (80)

HDD reset failed.

Hard Disk(s) fail (40)

HDD controller diagnostics failed.
Hard Disk(s) fail (20)
HDD initialization error.

Hard Disk(s) fail (10)
Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)
Sector Verify failed.

Keyboard is locked out - Unlock the key
The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

Keyboard error or no keyboard present
Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop
System will repeat POST procedure infinitely while the keyboard controller is pulled low. This is also used for the M/B burn in test at the factory.

BIOS ROM checksum error - System halted
The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail
The BIOS reports memory test fail if the memory has error(s).
Chapter D - Troubleshooting

Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display’s brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

Monitor/Display

If the display screen remains dark after the system is turned on:

1. Make sure that the monitor’s power switch is on.
2. Check that one end of the monitor’s power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system’s display adapter.
4. Adjust the brightness of the display by turning the monitor’s brightness control knob.
Troubleshooting

The picture seems to be constantly moving.
1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card’s output frequencies are supported by this monitor.

The screen seems to be constantly wavering.
1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

Power Supply

When the computer is turned on, nothing happens.
1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a “short” or “open”. Inspect the cord and install a new one if necessary.

Hard Drive

Hard disk failure.
1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

Excessively long formatting period.
If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.
Troubleshooting

Serial Port

The serial device (modem, printer) doesn’t output anything or is outputting garbled characters.

1. Make sure that the serial device’s power is turned on and that the device is on-line.

2. Verify that the device is plugged into the correct serial port on the rear of the computer.

3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.

4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.

2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

System Board

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.

2. Check the jumper settings to ensure that the jumpers are properly set.

3. Verify that all memory modules are seated securely into the memory sockets.

4. Make sure the memory modules are in the correct locations.

5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.

6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.