

LR905-B

Compact (Micro) COM Express Board User's Manual

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Trademarks

Product names or trademarks appearing in this manual are for identification purpose only and are the properties of the respective owners.

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.

Table of Contents

Copyright.....	2
Trademarks.....	2
FCC and DOC Statement on Class B.....	3
About this Manual.....	6
Warranty	6
Static Electricity Precautions.....	7
Safety Measures.....	7
About the Package.....	8
Chapter 1 - Introduction	9
Specifications.....	9
Features	11
Chapter 2 - Hardware Installation	12
Board Layout.....	12
Mechanical Diagram.....	13
System Memory	14
Installing the DIM Module	15
Jumper Settings.....	17
Clear CMOS Data	17
Connectors.....	18
CPU Fan Connector.....	18
Standby Power LED	19
Cooling Option.....	20
Installing LR905-B onto a Carrier Board.....	23

Chapter 3 - BIOS Setup	28
Overview	28
AMI BIOS Setup Utility	30
Main	30
Advanced	31
PCI/PnP	42
Boot	44
Security	49
Chipset	52
Exit	56
Updating the BIOS	59
Chapter 4 - Supported Software	60
Appendix A - NLITE and AHCI Installation Guide	76
nLite	76
AHCI	84
Appendix B - Watchdog Sample Code	88
Appendix C - System Error Message	89
Appendix D - Troubleshooting	90

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 arised 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.

About the Package

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

- ☑ One LR905-B board
- ☑ One heat sink
- ☑ One drivers/utilities disk
- ☑ One QR (Quick Reference)

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance with 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.

Chapter I - Introduction

Specifications

Processor

- LR905-B18D
 - Intel® Atom™ D525
 - Dual core CPU
 - Cooling option: heat sink with cooling fan
- LR905-B18S
 - Intel® Atom™ D425
 - Single core CPU
 - Cooling option: heat sink with cooling fan
- LR905-B18M
 - Intel® Atom™ N455
 - Single core CPU
 - Cooling option: heat sink (fanless solution)

Chipset

- Intel® ICH8M I/O Controller Hub

System Memory

- One 204-pin DDR3 SODIMM socket
- LR905-B18D/B18S
 - Supports DDR3 800MHz only
 - Supports up to 4GB system memory
- LR905-B18M
 - Supports DDR3 667MHz only
 - Supports up to 2GB system memory

	DDR3	Max. Memory
-B18D	800MHz	4GB
-B18S	800MHz	4GB
-B18M	667MHz	2GB

Graphics

- Intel GMA 3150
 - Contains a refresh of the 3rd generation graphics core
- 400MHz render clock frequency (LR905-B18D/B18S)
200MHz render clock frequency (LR905-B18M)
- Supports VGA display
 - Resolution up to 2048x1536 (LR905-B18D/B18S)
 - Resolution up to 1400x1050 (LR905-B18M)
- Supports LVDS display
 - Resolution up to 1366x768, 18bpp
- DirectX 9 compliant Pixel Shader 2.0

Audio

- Supports High Definition Audio interface

LAN

- Intel 82567V Gigabit Ethernet Phy
- Supports 10Mbps, 100Mbps and 1Gbps data transmission
- IEEE 802.3 (10/100Mbps) and IEEE 802.3ab (1Gbps) compliant

IDE

- Supports up to two IDE devices
- DMA mode: Ultra ATA up to 100MB/s
- PIO mode: up to 16MB/s

Serial ATA	<ul style="list-style-type: none"> • Supports 3 Serial ATA interfaces compliant with SATA 1.0 specification • SATA speed up to 3Gb/s (SATA 2.0)
Connectors	<ul style="list-style-type: none"> • COM Express connectors <ul style="list-style-type: none"> - Two 220-pin COM Express 1.0 Type II connectors - Module connector pin: Tyco 4H3-1827231-6
Expansion Interfaces (Type II)	<ul style="list-style-type: none"> • Supports 1 Gigabit LAN interface • Supports LPC (Low Pin Count) interface • Supports SMBus interface • Supports 3 SATA 2.0 interfaces • Supports HDA audio interface • Supports 8 USB 2.0 interfaces • Supports 5 PCIe x1 interfaces • Supports LVDS 18-bit single channel interface • Supports RGB, H-sync/V-sync VGA signals • Supports 8-bit Digital I/O interface • Supports 1 IDE interface • Supports 4 PCI interfaces (PCI 2.3 interface)
BIOS	<ul style="list-style-type: none"> • Award BIOS • 16Mbit SPI BIOS
Energy Efficient Design	<ul style="list-style-type: none"> • Supports ACPI 2.0/1.0 specification • Enhanced Intel® SpeedStep Technology
Power	<ul style="list-style-type: none"> • Input: 12V, 5VSB (option), VCC_RTC
Temperature	<ul style="list-style-type: none"> • 0°C to 60°C
Humidity	<ul style="list-style-type: none"> • 10% to 90%
PCB	<ul style="list-style-type: none"> • Dimensions <ul style="list-style-type: none"> - Compact (Micro) COM Express form factor - 95mm (3.74") x 95mm (3.74") • Compliance <ul style="list-style-type: none"> - PICMG COM Express R1.0 basic form factor, Type 2

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.

DDR3

DDR3 delivers increased system bandwidth and improved performance. The advantages of DDR3 are its higher bandwidth and its increase in performance at a lower power than DDR2.

Graphics

The integrated Intel® HD graphics engine delivers an excellent blend of graphics performance and features to meet business needs. It provides excellent video and 3D graphics with outstanding graphics responsiveness. These enhancements deliver the performance and compatibility needed for today's and tomorrow's business applications. Supports LVDS and VGA display outputs.

Serial ATA

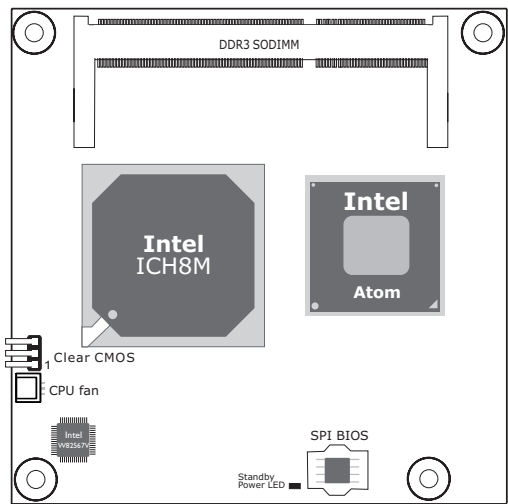
Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 3Gb/s (SATA 2.0), it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The bandwidth of the SATA 3.0 will be limited by carrier board design.

Gigabit LAN

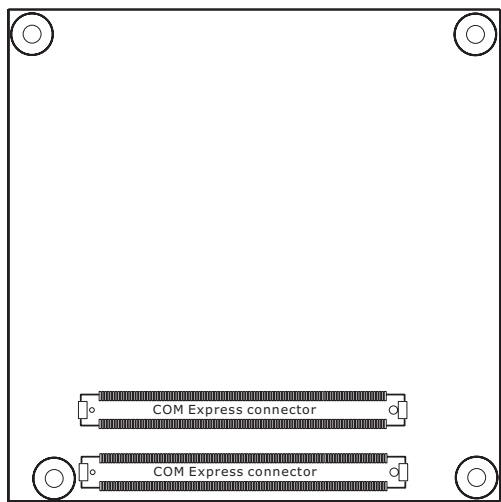
The Intel 82567V Gigabit Ethernet Phy controller supports up to 1Gbps data transmission.

Chapter 2 - Hardware Installation

Board Layout

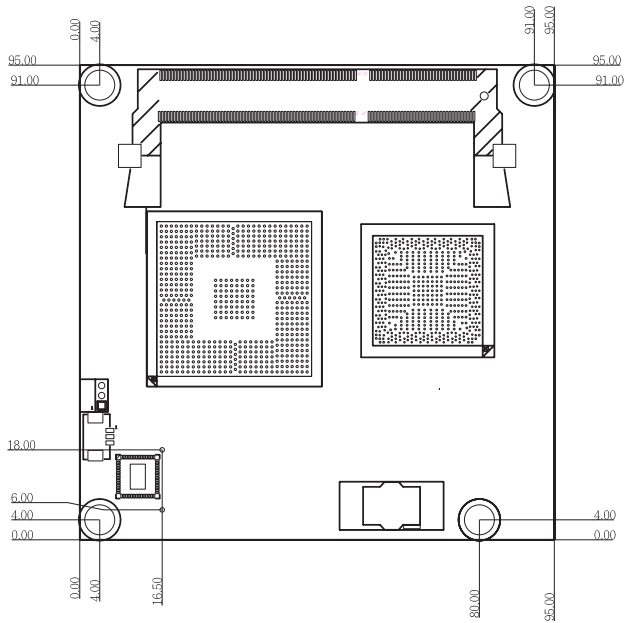


Top View



Bottom View

Mechanical Diagram



**Important:**

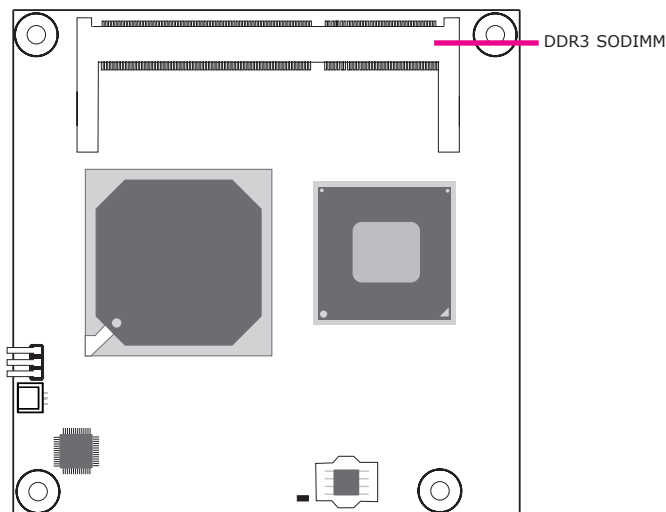
Electrostatic discharge (ESD) can damage your board, processor, disk drives, add-in boards, and other components. Perform installation procedures at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to 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

The system board is equipped with one 204-pin SODIMM socket that support DDR3 memory modules.

**Important:**

When the Standby Power LED lit red, it indicates that there is power on the 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 board and components.

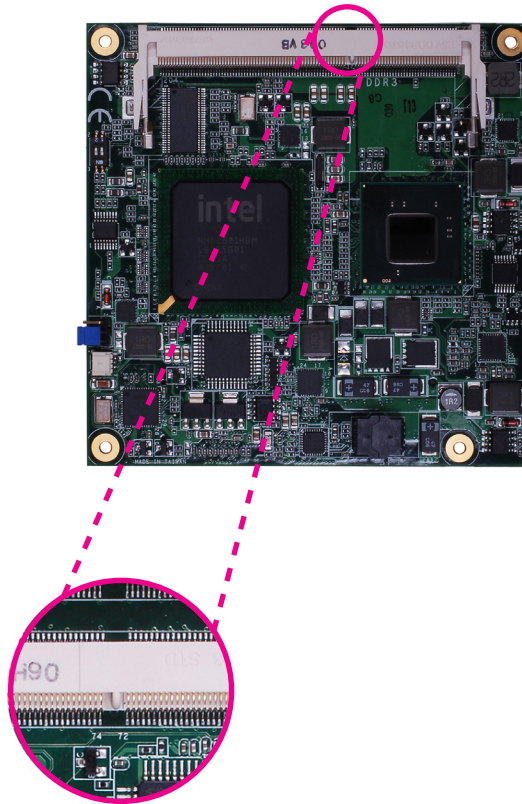


Installing the DIM Module

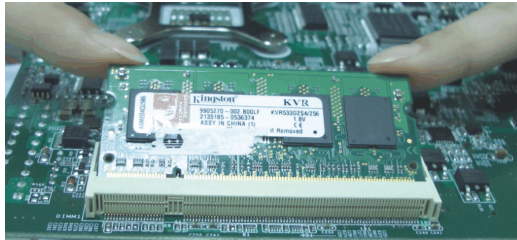
**Note:**

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

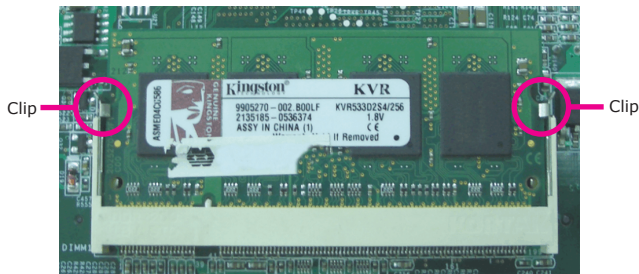
1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the SODIMM socket on the system board.
4. Note the key on the socket. The key ensures the module can be plugged into the socket in only one direction.



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.

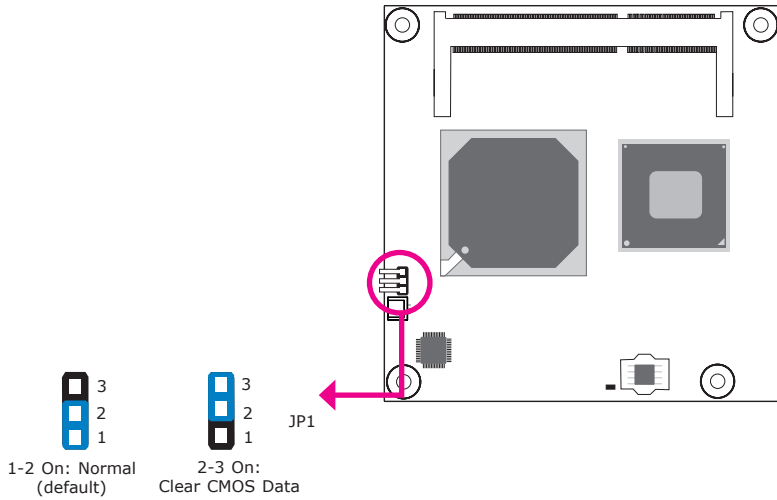


6. Push down the module until the clips at each end of the socket lock into position. You will hear a distinctive "click", indicating the module is correctly locked into position.



Jumper Settings

Clear CMOS Data



If you encounter the following,

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

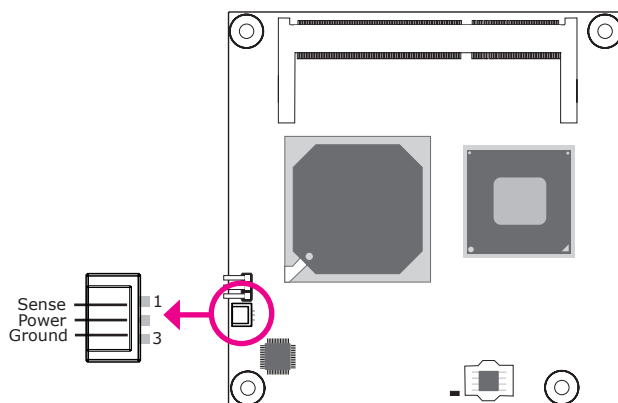
you can reconfigure the system with the default values stored in the ROM BIOS.

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 pins 2 and 3 to On. Wait for a few seconds and set the jumper back to its default setting, pins 1 and 2 On.
3. Now plug the power cord and power-on the system.

Connectors

CPU Fan Connector

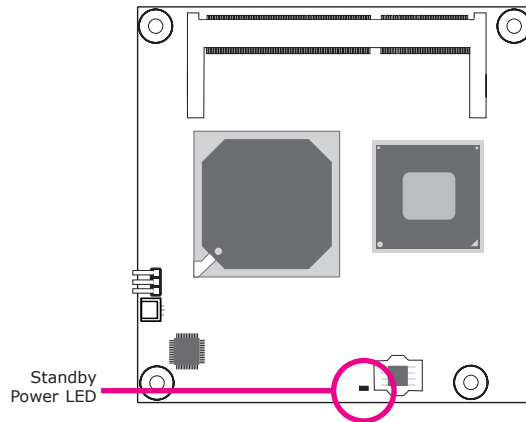


Connect the CPU fan's cable connector to the CPU fan connector on the board. The cooling fan will provide adequate airflow throughout the chassis to prevent overheating the CPU and board components.

BIOS Setting

"Module Board H/W Monitor" submenu in the Advanced menu of the BIOS will display the current speed of the cooling fan. Refer to chapter 3 of the manual for more information.

Standby Power LED



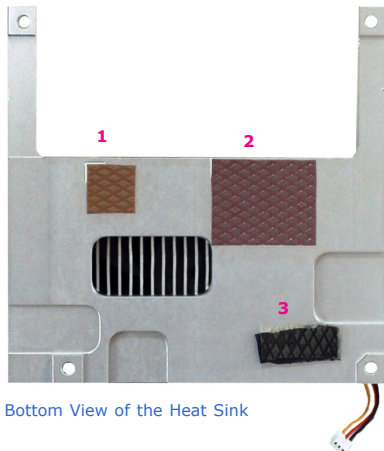
This LED will light when the system is in the standby mode.

Cooling Option

Heat Sink with Cooling Fan



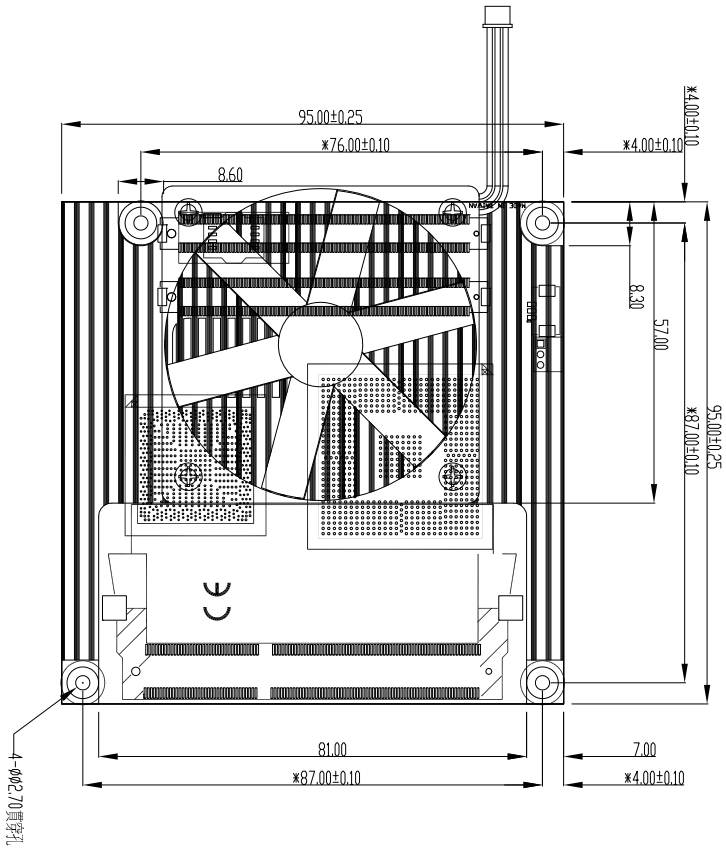
Top View of the Heat Sink

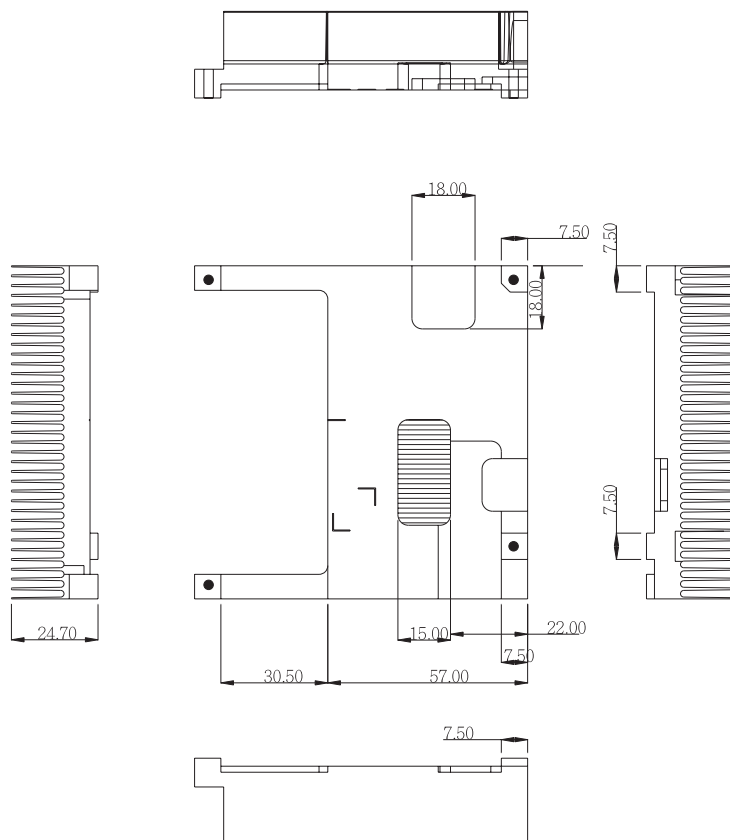


Bottom View of the Heat Sink

- "1", "2" and "3" denote the locations of the thermal pads designed to contact the corresponding components that are on LR905-B.
- Remove the plastic covering from the thermal pads prior to mounting the heat sink onto LR905-B.

Dimensions



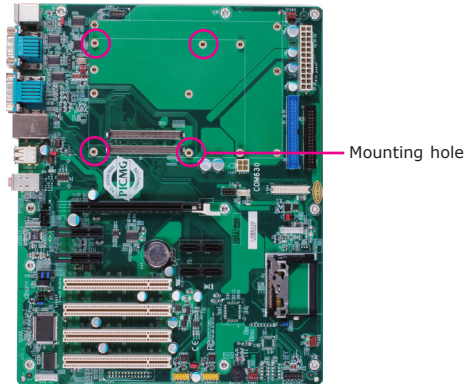


Installing LR905-B onto a Carrier Board

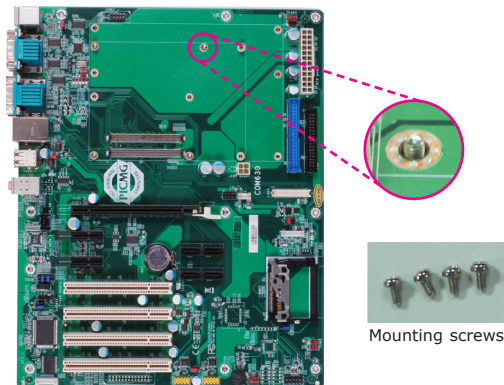
**Important:**

The carrier board used in this section is for reference purpose only and may not resemble your carrier board. These illustrations are mainly to guide you on how to install LR905-B onto the carrier board of your choice.

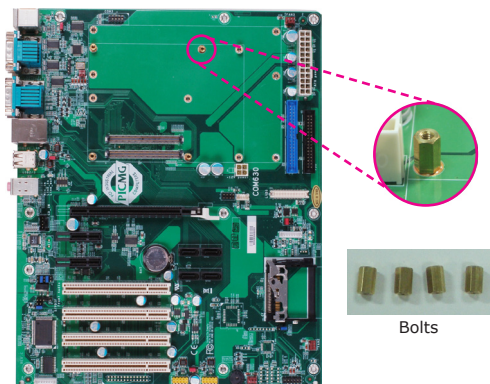
1. The photo below shows the locations of the mounting holes.



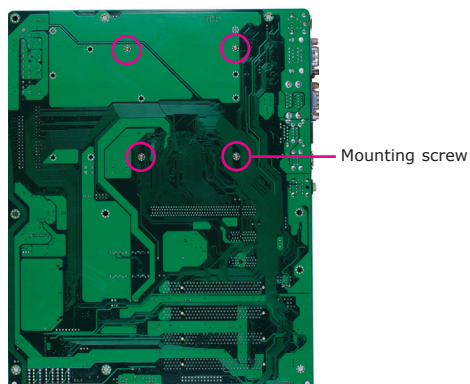
2. Insert the provided mounting screws into the mounting holes - from the bottom through the top of the carrier board.



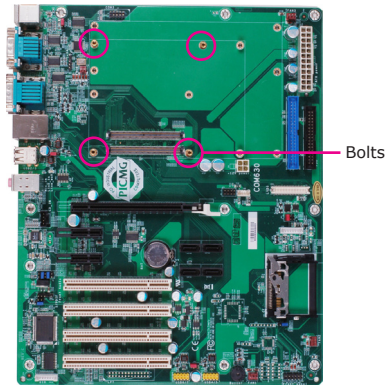
3. While supporting the mounting screw at the bottom, from the top side of the board, fasten a bolt into the screw.



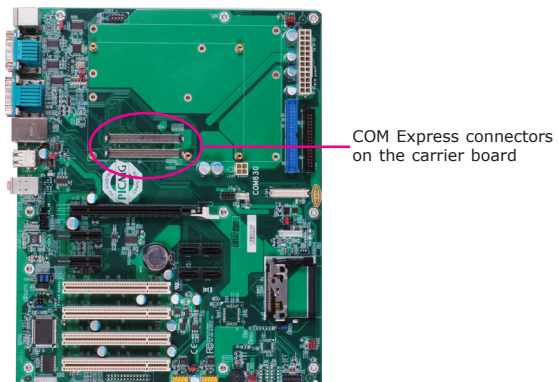
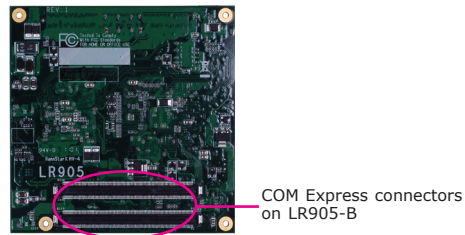
4. The photo below shows the solder side of the board with the screws already fixed in place.



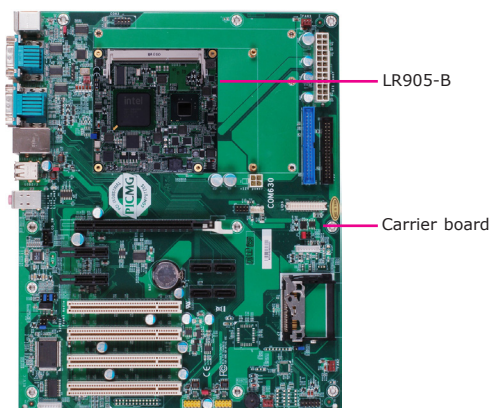
5. The photo below shows the component side of the board with the bolts already fixed in place.



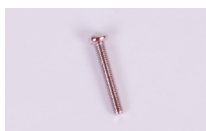
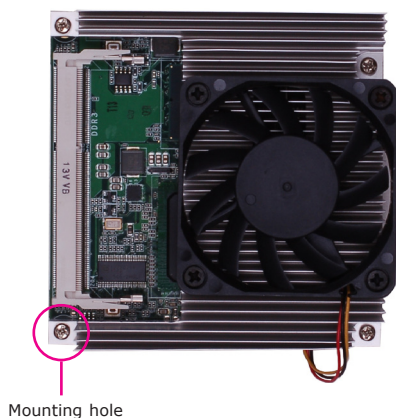
6. Grasping LR905-B by its edges, position it on top of the carrier board with its mounting holes aligned with the bolts on the carrier board. This will also align the COM Express connectors of the two boards to each other.



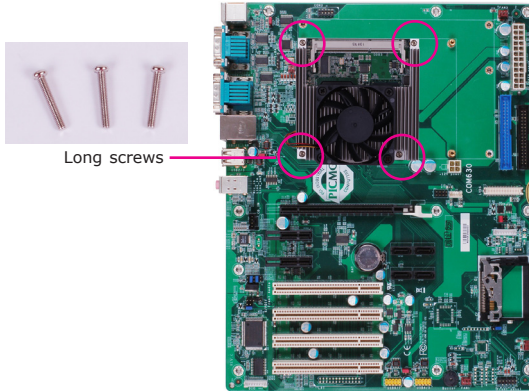
7. Press LR905-B down firmly until it is completely seated on the COM Express connectors of the carrier board.



8. Position the heat sink on top of LR905-B with the heat sink's mounting holes aligned with LR905-B's mounting holes. Insert one of the provided long screws into the mounting hole shown in the photo below.



9. Use the provided mounting screws to secure LR905-B with heat sink to the carrier board. The photo below shows the locations of the long/short mounting screws.



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 keys simultaneously.

Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the highlight up or down between submenus or fields.
<Esc>	Exits to the BIOS Setup Utility.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
Tab	Selects a field.
<F1>	Displays General Help.
<F4>	Saves and exits the Setup program.
<Enter>	Press <Enter> to enter the highlighted submenu.

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>.

AMI BIOS Setup Utility

Main

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

BIOS SETUP UTILITY	
Main	Advanced PCIPnP Boot Security Chipset Exit
System Overview	Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
AMIBIOS	Use [+] or [-] to configure system Time.
Version :08.00.15	
Build Date: :06/24/11	
ID :AE0HE011	
Processor	
Intel(R) Atom(TM) CPU D525 @ 1.80GHz	
Speed :1800MHz	
Count :1	
System Memory	
Size :2033MB	
System Time [12:40:11]	← → Select Screen
System Date [Mon 03/08/2010]	↑ ↓ Select Item
	+ - Change Field
	Tab Select Field
	F1 General Help
	F10 Save and Exit
	ESC Exit
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.	

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.

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.

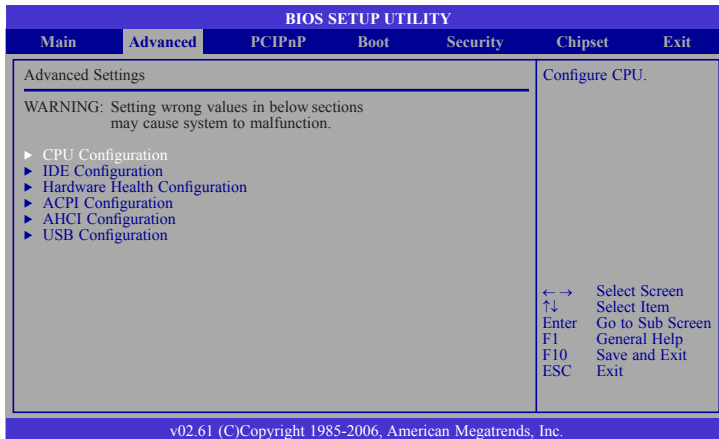
Advanced

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.



CPU Configuration

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

BIOS SETUP UTILITY	
Advanced	
Configure advanced CPU settings Module Version:3F.1C	
Manufacturer : Intel Intel(R) Atom(TM) CPU D525 @ 1.80GHz Frequency : 1.90GHz FSB Speed : 800MHz Cache L1 : 64KB Cache L2 : 1024KB Ratio Actual Value:9.5	For UP platforms, leave it enabled. For DP/MP servers, it may use to tune performance to the specific application.
Max CPUID Value Limit [Disabled]	
Execute-Disable Bit Capability [Enabled]	
Hyper Threading Technology [Enabled]	
Intel (R) Speedstep (tm) Tech [Disabled]	
	← → Select Screen ↑ ↓ Select Item + - Change Option F1 General Help F10 Save and Exit ESC Exit
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.	

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

This field is used to enable the functionality of the Intel® Pentium® 4 Processor with Hyper-Threading Technology and will appear only when using this processor.

Intel (R) SpeedStep(TM) Tech

Enables or disables GV3.

IDE Configuration

This section is used to configure the IDE drives.

BIOS SETUP UTILITY		
Advanced		
IDE Configuration		Options
ATA/IDE Configuration		Disabled
Configure SATA as		Enhanced
▶ Primary IDE Master	: [ST9250827AS]	
▶ Primary IDE Slave	: [Not Detected]	
▶ Secondary IDE Master	: [Not Detected]	
▶ Third IDE Master	: [Not Detected]	
▶ Third IDE Slave	: [Not Detected]	
		← → Select Screen ↑ ↓ Select Item + - Change Option F1 General Help F10 Save and Exit ESC Exit
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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		
Advanced		
Primary IDE Master		Select the type of device connected to the system.
Device	:ATAPI CDROM	
Vendor	:PIONEER DVD-RW DVR-216	
Size	:250.0GB	
LBA Mode	:Supported	
Block Mode	:16 Sectors	
PIO Mode	:4	
Async DMA	:MultiWord DMA-2	
Ultra DMA	:Ultra DMA-4	
S.M.A.R.T	:Supported	
Type	[Auto]	
LBA/Large Mode	[Auto]	
Block (Multi-Sector Transfer)	[Auto]	
PIO Mode	[Auto]	
DMA Mode	[Auto]	
S.M.A.R.T	[Auto]	
32Bit Data Transfer	[Enabled]	
		← → Select Screen ↑ ↓ Select Item + - Change Option F1 General Help F10 Save and Exit ESC Exit
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Type

Selects the type of IDE drive connected to the system.

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

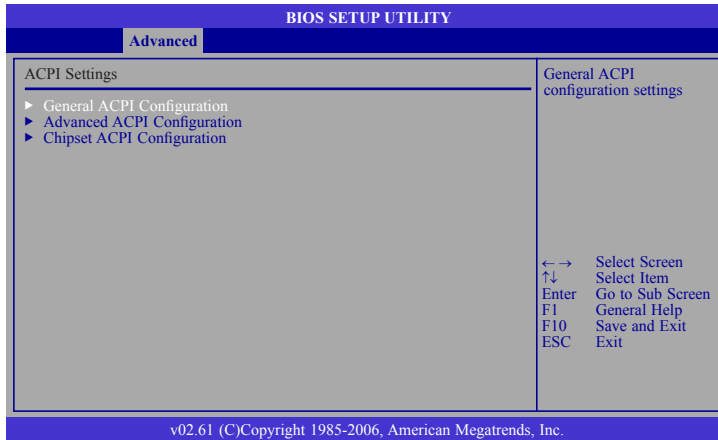
The BIOS will automatically set the system according to your hard disk drive's timing.

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.

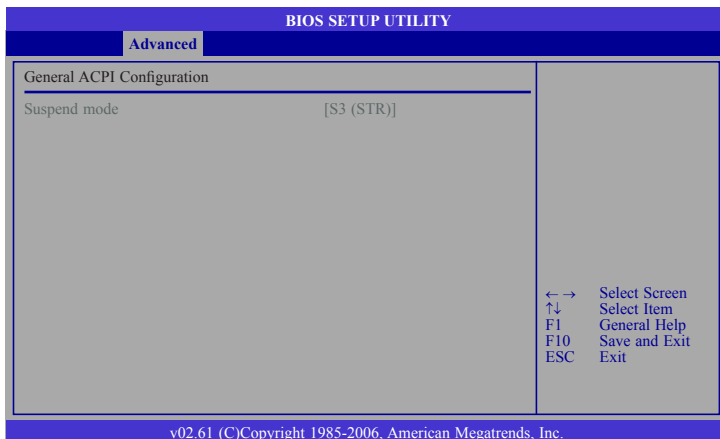
ACPI Power Management Configuration

This section is used to configure the ACPI Power Management.



General ACPI Configuration

Configures the general ACPI settings.



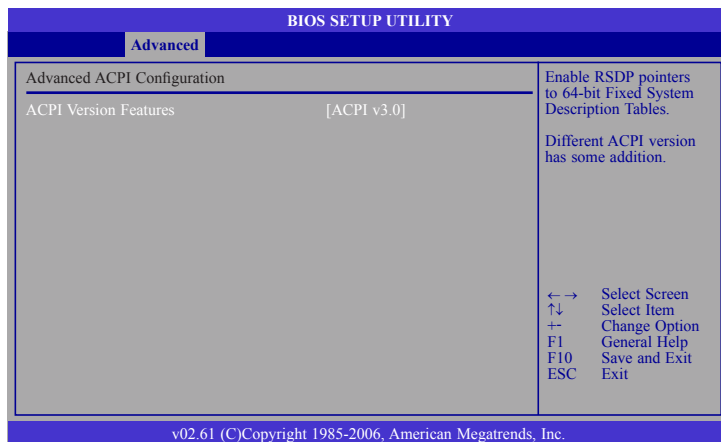
Suspend Mode

S3(STR)

Enables the Suspend to RAM function.

Advanced ACPI Configuration

Configures additional ACPI functions.



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.

BIOS SETUP UTILITY	
Advanced	
South Bridge ACPI Configuration	
APIC ACPI SCI IRQ	[Disabled]
USB Device Wakeup From S3	[Disabled]
<div> <div>Enable/Disable APIC ACPI SCI IRQ.</div> <div> ←→ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit </div> </div>	
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APIC ACPI SCI IRQ

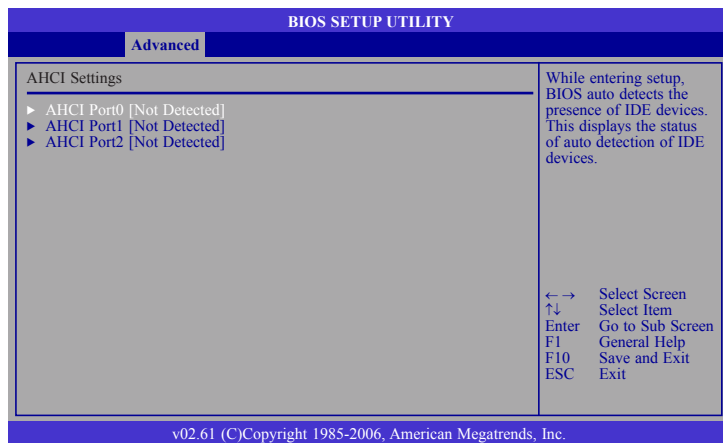
Enables or disables the APIC ACPI SCI IRQ.

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) and S4 state.

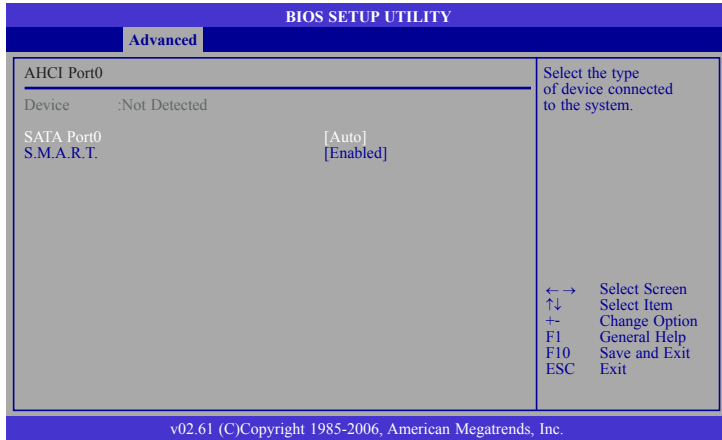
AHCI Configuration

This section is used to configure AHCI.



AHCI Port0 to AHCI Port2

Configures the AHCI port.



SATA Port0

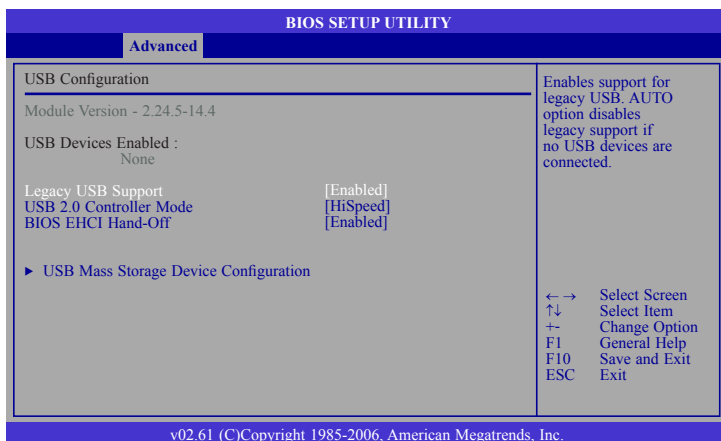
Selects the type of device connected to the system.

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.

USB Mass Storage Device Configuration

This section is used to configure USB mass storage devices.

BIOS SETUP UTILITY	
Advanced	
USB Mass Storage Device Configuration	
USB Mass Storage Reset Delay	[20 Sec]
Device #1 Emulation Type	USB DE/SATA Device [Auto]
Number of seconds POST waits for the USB mass storage device after start unit command.	
← Select Screen ↑↓ Select Item + Change Option F1 General Help F10 Save and Exit ESC Exit	
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USB Mass Storage Reset Delay

Selects the number of seconds POST waits for the USB mass storage device after the start unit command.

Emulation Type

- Auto The USB device will boot according to the device type.
- Forced FDD Uses an HDD formatted drive to boot as FDD (ex. ZIP drive)

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						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Advanced PCI/PnP Settings					Clear NVRAM during System Boot.	
WARNING: Setting wrong values in below sections may cause system to malfunction.						
Clear NVRAM					[No]	
Plug & Play O/S					[No]	
PCI Latency Timer					[64]	
IRQ3					[Available]	
IRQ4					[Available]	
IRQ5					[Available]	
IRQ7					[Available]	
IRQ9					[Available]	
IRQ10					[Available]	
IRQ11					[Available]	
IRQ14					[Available]	
IRQ15					[Available]	
					← → Select Screen ↑ ↓ Select Item + - Change Option F1 General Help F10 Save and Exit ESC Exit	
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Clear NVRAM

This field allows clearing the NVRAM during system boot.

Plug & Play O/S

Yes

The operating system configures 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

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Boot Settings ▶ Boot Settings Configuration ▶ Boot Device Priority ▶ Hard Disk Drives ▶ CD/DVD Drives			Configure settings during system boot. ← → Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit			
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

Boot Settings Configuration

This section is used to configure settings during system boot.

BIOS SETUP UTILITY	
Boot	
Boot Settings Configuration Quick Boot [Enabled] Bootup Num-Lock [On]	
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system. ← → Select Screen ↑↓ Select Item +~ Change Option F1 General Help F10 Save and Exit ESC Exit	
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.	

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.

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.

BIOS SETUP UTILITY	
Boot	
Boot Device Priority	
1st Boot Device	[CD/DVD: PM-PIONEER]
2nd Boot Device	[USB: SONY DVD RW DR]
<p>Specifies the boot sequence from the available devices.</p> <p>A device enclosed in parenthesis has been disabled in the corresponding type menu.</p> <p> ← → Select Screen ↑ ↓ Select Item + Change Option F1 General Help F10 Save and Exit ESC Exit </p>	
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1st Boot Device to 2nd Boot Device

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

Hard Disk Drives

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

BIOS SETUP UTILITY	
Boot	
Hard Disk Drives	Specifies the boot sequence from the available devices.
1st Drive	[RAID: 06: 28-2 SiI R]
<div>← Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit</div>	
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CD/DVD Drives

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

BIOS SETUP UTILITY	
Boot	
CD/DVD Drives	Specifies the boot sequence from the available devices.
1st Drive [USB: SONY DVD RW DR]	
<div>← Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit</div>	
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1st Drive

Selects the boot sequence of the optical devices.

Security

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Security Settings				Install or Change the password.		
Supervisor Password : Not Installed						
User Password : Not Installed						
Change Supervisor Password						
Change User Password						
				← Select Screen ↑↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit		
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

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 six letters/numbers.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Security Settings				Install or Change the password.		
Supervisor Password : Not Installed						
User Password : Not Installed						
Change Supervisor Password						
Change User Password						
Boot Sector Virus Prote						
<div style="border: 1px solid black; padding: 10px; width: fit-content;"> Enter New Password <input style="width: 80px;" type="password"/> </div>				← → Select Screen ↑↓ Select Item Enter Change F1 General Help F10 Save and Exit ESC Exit		
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

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.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Security Settings					Limited: only limited fields to be changed. No Access: prevent user access Setup Utility. View Only: allow access but the fields can not be changed. Full: allow change except Supervisor password. ← → Select Screen ↑ ↓ Select Item + - Change Option F1 General Help F10 Save and Exit ESC Exit	
Supervisor Password		: Installed				
User Password		: Not Installed				
Change Supervisor Password						
User Access Level		[Full Access]				
Change User Password						
Password Check		[Setup]				
Boot Sector Virus Protection		[Disabled]				
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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 six 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.

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.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Advanced Chipset Settings <hr/> WARNING: Setting wrong values in below sections may cause system to malfunction. ▶ North Bridge Configuration ▶ South Bridge Configuration					Configure North Bridge features. ← Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit	
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

North Bridge Configuration

BIOS SETUP UTILITY		
		Chipset
North Bridge Chipset Configuration <hr/> PCI MMIO Allocation: 4GB to 3072MB Initiate Graphic Adapter [IGD] Internal Graphics Mode Select [Enabled, 8MB] PEG Port Configuration ▶ Video Function Configuration		ENABLE: Allow remapping of overlapped PCI memory above the total physical memory. DISABLE: Do not allow remapping of memory. ← Select Screen ↑↓ Select Item +− Change Option F1 General Help F10 Save and Exit ESC Exit
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Initiate Graphic 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.

PEG Port Configuration

The options are Auto and Disabled.

Video Function Configuration

BIOS SETUP UTILITY	
Chipset	
Video Function Configuration	
DVMT Mode Select	[DVMT Mode]
DVMT/FIXED Memory	[256MB]
Boot Display Device	[VBIOS-Default]
Flat Panel Type	[3 : 1024* 768,18bit]
← Select Screen ↑↓ Select Item + Change Option F1 General Help F10 Save and Exit ESC Exit	
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DVMT Mode Select

DVMT Mode (Dynamic Video Memory Technology)

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.

DVMT/FIXED Memory

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

Boot Display Device

This field is used to select the type of display to use when the system boots.

- | | |
|---------|--|
| VBIOS | By default, the VBIOS will automatically detect for the CRT display first then the LCD flat panel display; depending on the display that is available when the system boots. |
| CRT | Select this option if you want the system to boot the CRT display. |
| LFP | Select this option if you want the system to boot the LCD flat panel display. |
| CRT+LFP | Select this option if you want the system to boot both the CRT and LCD flat panel display. |

Flat Panel Type

Selects the type of flat panel connected to the system.

South Bridge Configuration

BIOS SETUP UTILITY		
		Chipset
South Bridge Chipset Configuration		
USB Functions	[8 USB Ports]	Disabled
USB 2.0 Controller	[Enabled]	2 USB Ports
GbE Controller	[Enabled]	4 USB Ports
GbE LAN Boot	[Disabled]	6 USB Ports
GbE Wake Up From S5	[Disabled]	8 USB Ports
HDA Controller	[Enabled]	
PCIE Ports Configuration		
PCIE Port 0	[Auto]	
PCIE Port 1	[Auto]	
PCIE Port 2	[Auto]	
PCIE Port 3	[Auto]	
PCIE Port 4	[Auto]	
PCIE Port0-4 Configuration	[4 x 1s]	
		← Select Screen ↑↓ Select Item + Change Option F1 General Help F10 Save and Exit ESC Exit
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USB Functions

Selects the number of USB ports you want enabled.

USB 2.0 Controller

This field is used to enable or disable USB 2.0

GbE Controller

Enables or disables the GbE controller.

GbE LAN Boot

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

When enabled, it allows the system to wake up from S5 via the network LAN.

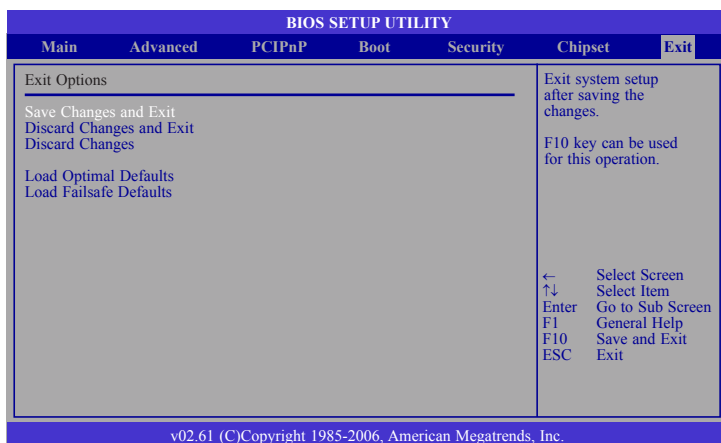
HDA Controller

Enables or disables the HDA controller.

PCIE Ports Configuration

Enables or disables the PCIE ports

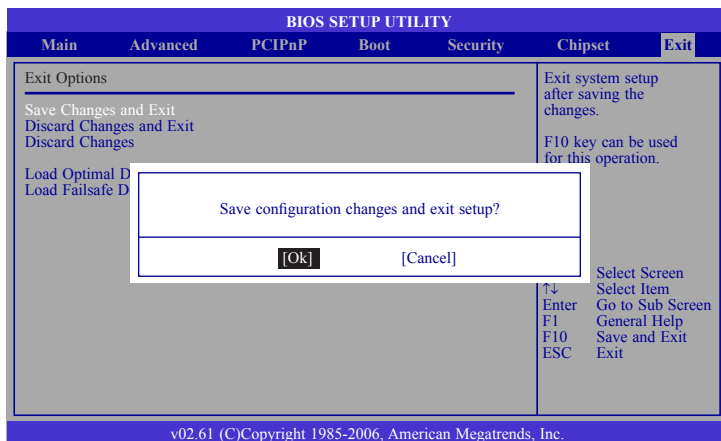
Exit



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.

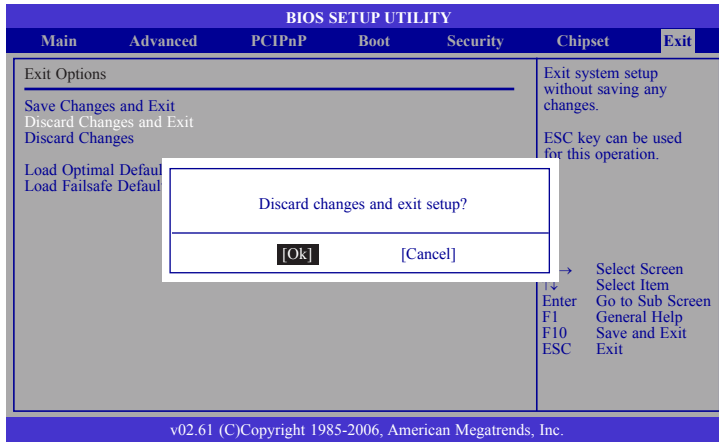
You can also press <F10> to save and exit Setup.



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.

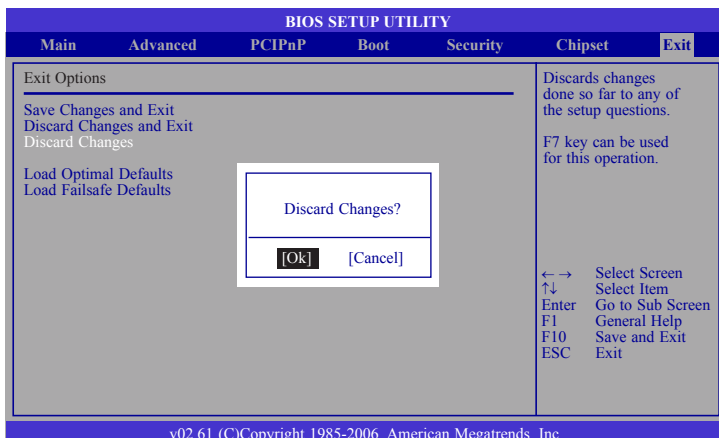
You can also press <ESC> to exit without saving the changes.



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.

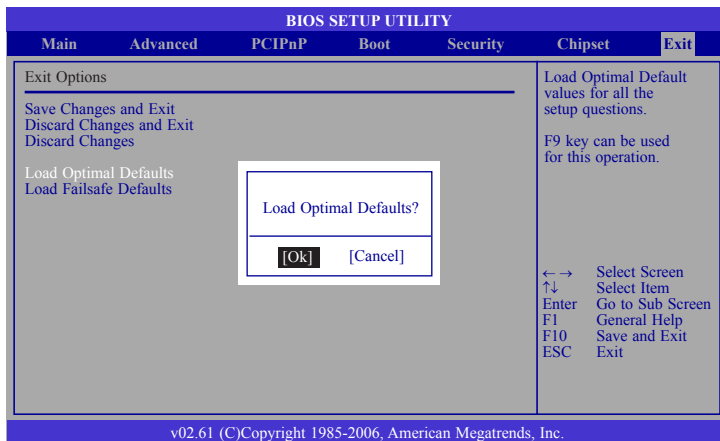
You can also press <F7> to discard the changes.



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.

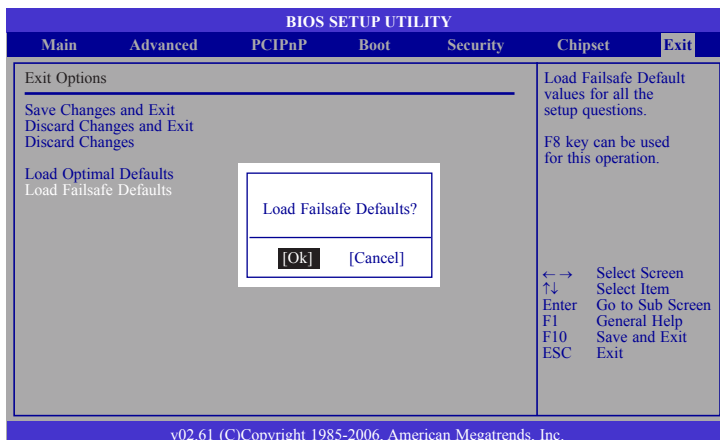
You can also press <F9> to load optimal default values.



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
```

then press <Enter>.

```
C:\AFU\AFUDOS>afudos filename /B /P /N
+-----+
|               AMI Firmware Update Utility(APTIO) v2.25               |
|               Copyright (C)2008 American Megatrends Inc. All Rights Reserved.               |
+-----+
Reading file ..... done
Erasing flash ..... done
Writing flash ..... done
Verifying flash ..... done
Erasing BootBlock ..... done
Writing BootBlock ..... done
Verifying BootBlock ..... done
C:\AFU\AFUDOS>
```

After finishing BIOS update, please turn off the AC power. Wait about 10 seconds and then turn on the AC power again.

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".



Microsoft .NET Framework 3.5 (for Windows XP only)

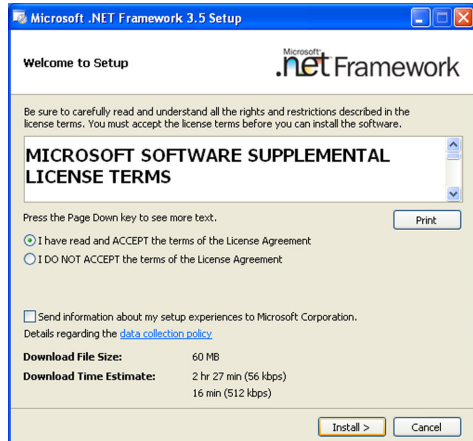
**Note:**

Before installing Microsoft .NET Framework 3.5, make sure you have updated your Windows XP operating system to Service Pack 3.

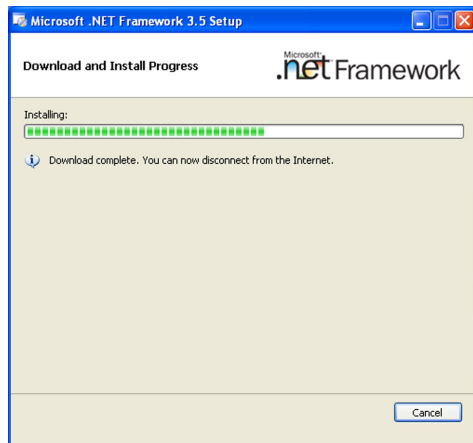
To install the driver, click "Microsoft .NET Framework 3.5" on the main menu.

1. Read the license agreement carefully.

Click "I have read and accept the terms of the License Agreement" then click Install.



2. Setup is now installing the driver.



Intel Chipset Software Installation Utility

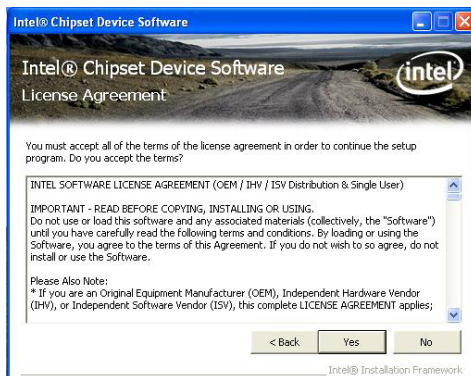
The Intel Chipset Software Installation Utility is used for updating Windows® INF files so that the Intel chipset can be recognized and configured properly in the system.

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

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



2. Read the license agreement then click Yes.



- Go through the readme document for system requirements and installation tips then click Next.



- Setup is now installing the driver. Click Next to continue.



- Click "Yes, I want to restart this computer now" then click Finish.

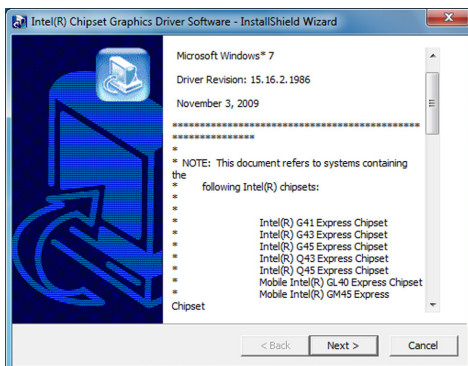
Restarting the system will allow the new software installation to take effect.



Intel Graphics Drivers

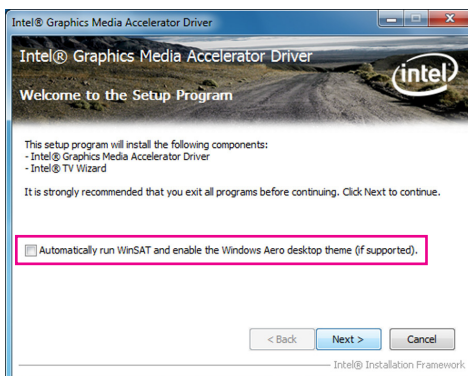
To install the driver, click "Intel Graphics Drivers" on the main menu.

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



By default, the "Automatically run WinSAT and enable the Windows Aero desktop theme" is enabled. With this enabled, after installing the graphics driver and the system rebooted, the screen will turn blank for 1 to 2 minutes (while WinSAT is running) before the Windows 7 / Windows Vista desktop appears. The "blank screen" period is the time Windows is testing the graphics performance.

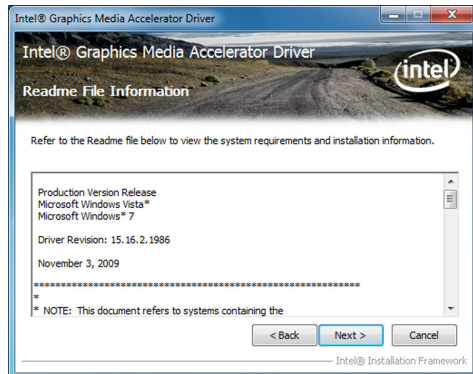
We recommend that you skip this process by disabling this function then click Next.



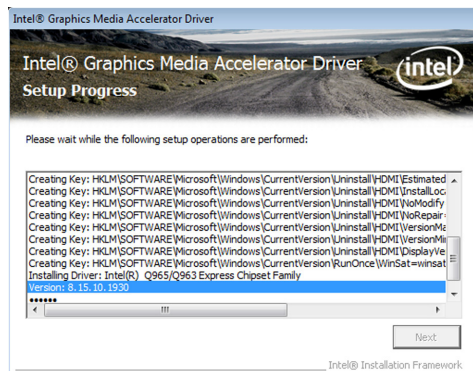
2. Read the license agreement then click Yes.



3. Go through the readme document for system requirements and installation tips then click Next.

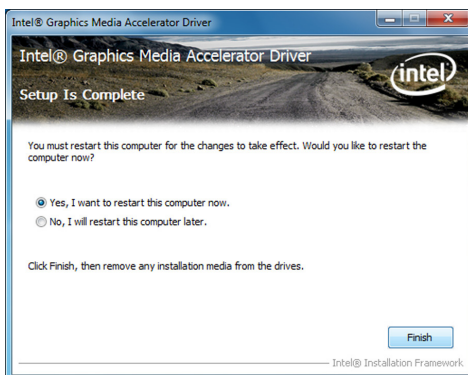


4. Setup is now installing the driver. Click Next to continue.



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.

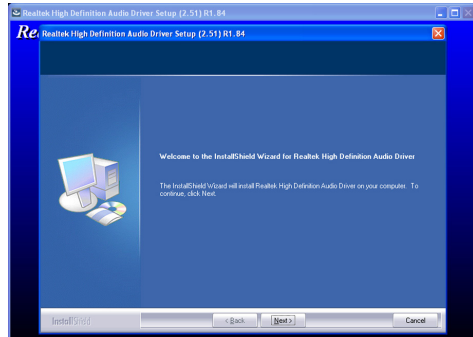
**Note:**

Refer to Configuring Display Devices in chapter 5 for more information.

Audio Drivers

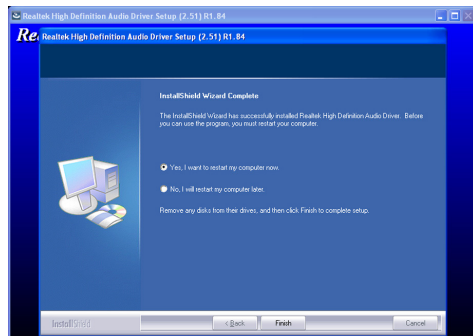
To install the driver, click "Audio Drivers" on the main menu.

1. Setup is now ready to install the audio driver. Click Next.
2. Follow the remainder of the steps on the screen; clicking "Next" each time you finish a step.



3. Click "Yes, I want to restart my computer now" then click Finish.

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



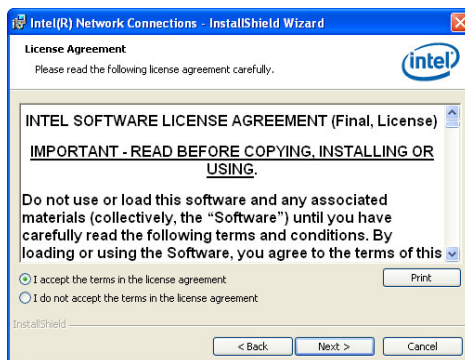
Intel LAN Drivers

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

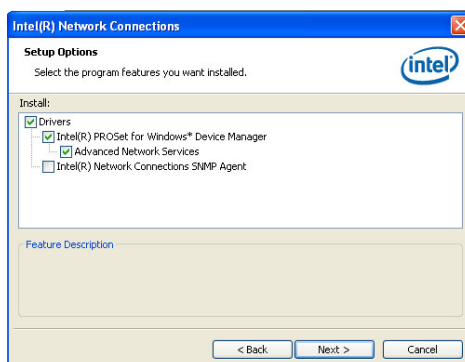
1. Setup is ready to install the driver. Click Next.



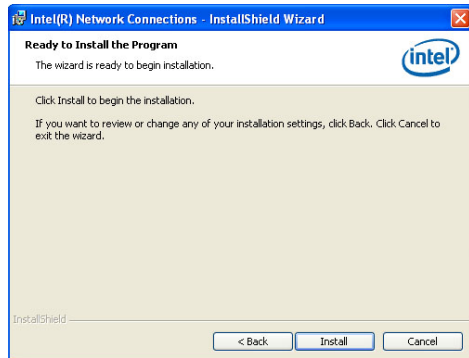
2. Click "I accept the terms in the license agreement" then click "Next".



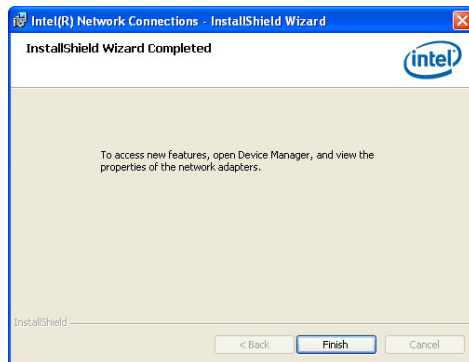
3. Select the program features you want installed then click Next.



- Click Install to begin the installation.



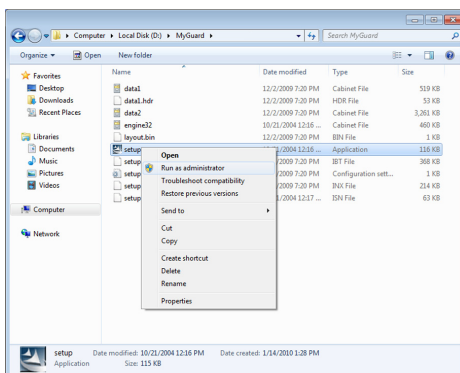
- After completing installation, click Finish.



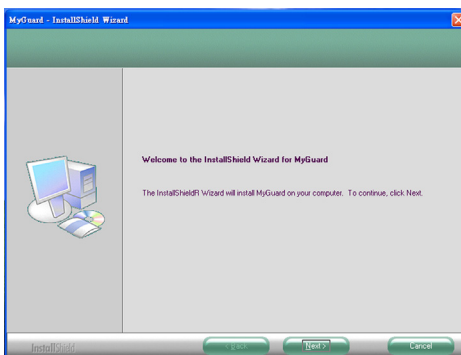
MyGuard Hardware Monitor

1. Locate for the MyGuard folder in the provided disc.
2. In the MyGuard folder, right-click on the "setup" file.
3. Select Run As Administrator.
4. Double-click Setup.

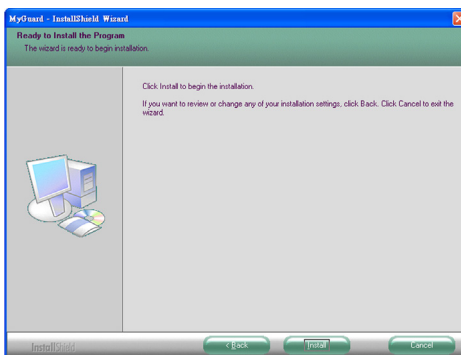
Important:
Perform steps 1-3 only when using Windows 7 or Windows Vista.



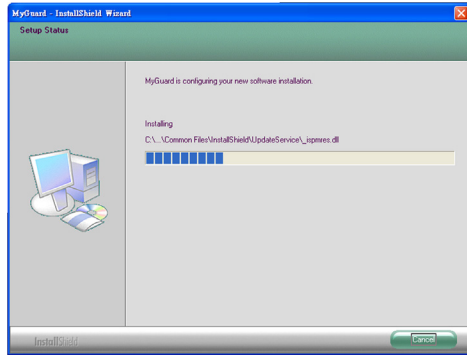
5. Setup is ready to install the utility. Click Next.



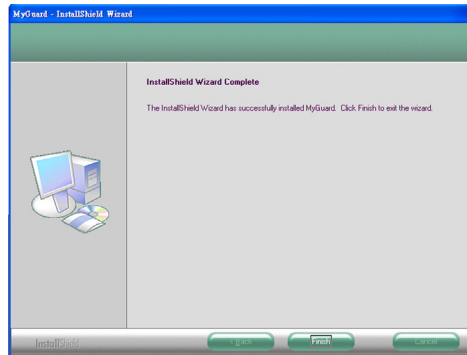
6. Click Install to begin installation.



7. Setup is currently installing the utility.



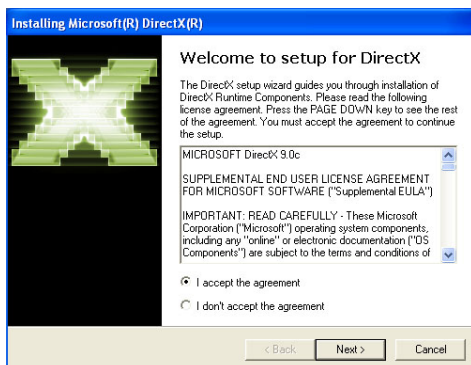
8. After completing installation, click Finish to exit setup.



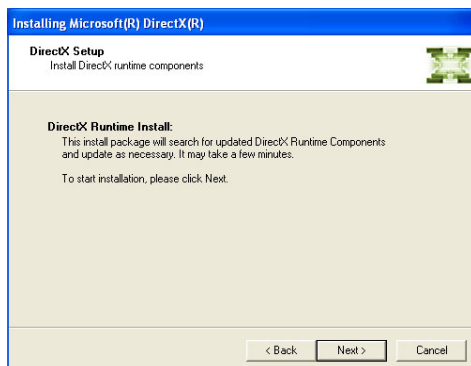
Microsoft DirectX 9.0C Driver (for Windows XP only)

To install the driver, click "Microsoft DirectX 9.0C Driver" on the main menu.

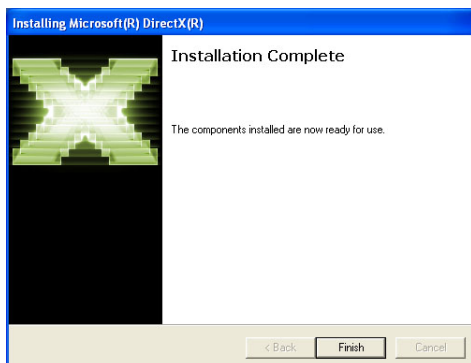
1. Click "I accept the agreement" then click Next.



2. To start installation, click Next.



3. Click Finish. Reboot the system for DirectX to take effect.



Intel Matrix Storage Manager

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.

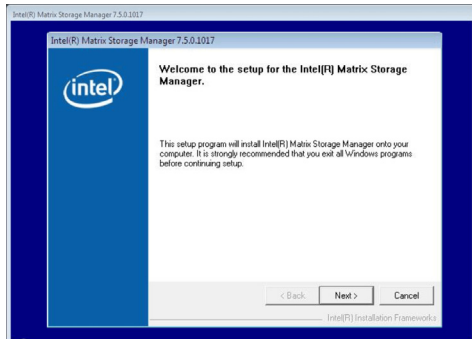


Note:

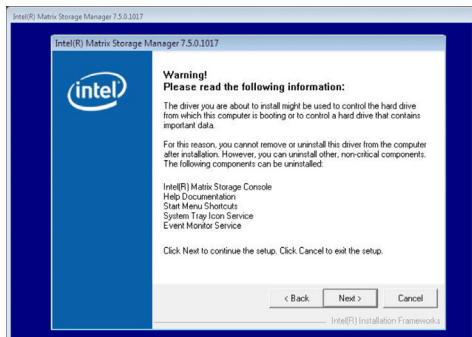
This utility is supported only when the SATA Mode field is set to AHCI. (The SATA Mode field is in the OnChip IDE Device section, Integrated Peripherals submenu of the BIOS utility.)

To install the utility, click "Intel Matrix Storage Manager Utility" on the main menu.

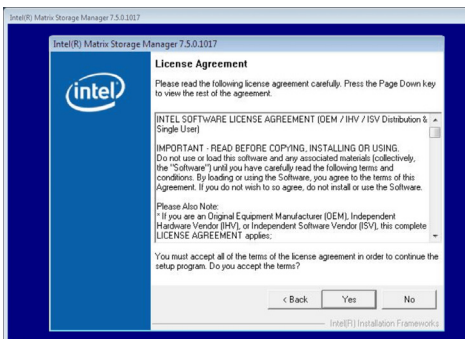
1. Setup is now ready to install the utility. Click Next.



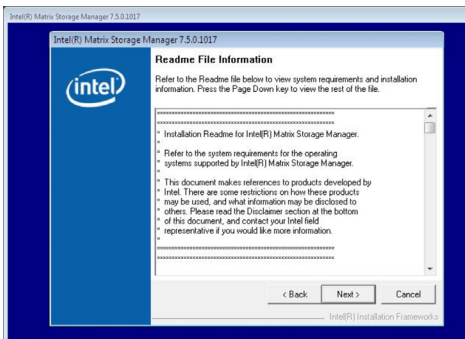
2. Read the Warning information carefully then click Next to begin installation.



3. Read the license agreement then click Yes.

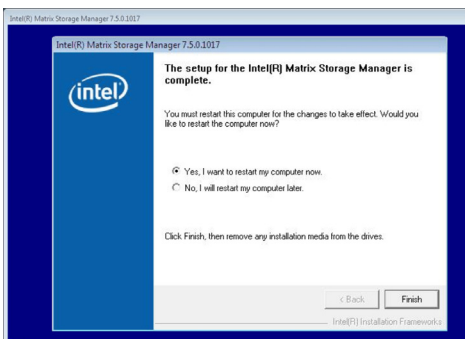


4. Go through the readme document for system requirements and installation tips then click Next.



5. Click "Yes, I want to restart my computer now" then click Finish.

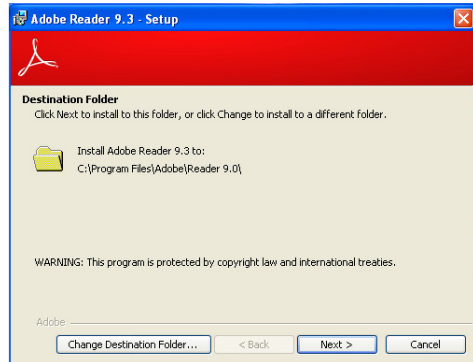
Restarting the system will allow the new software installation to take effect.



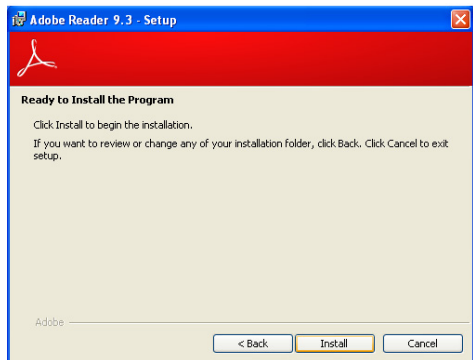
Adobe Acrobat Reader 9.3

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

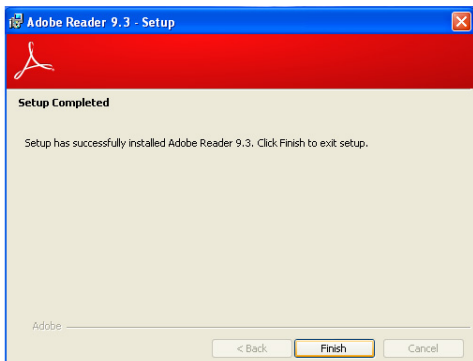
1. Click Next to install or click Change Destination Folder to select another folder.



2. Click Install to begin installation.



3. Click Finish to exit installation.



Appendix A - NLITE and AHCI Installation Guide

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.

<http://www.nliteos.com/download.html>

2. Install nLite.

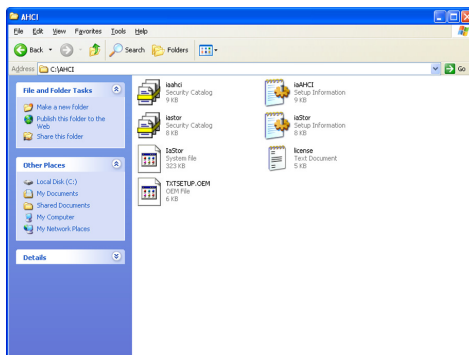


Important:

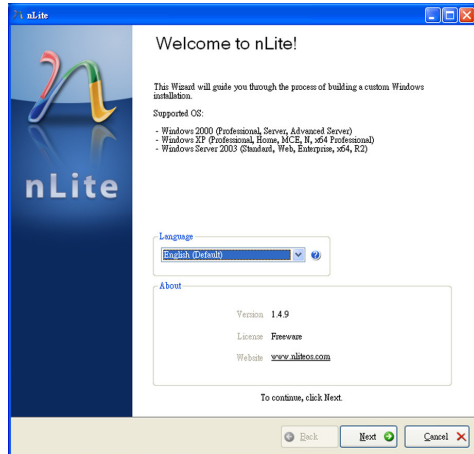
Due to it's coding with Visual.Net, you may need to first install .NET Framework prior to installing nLite.

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.

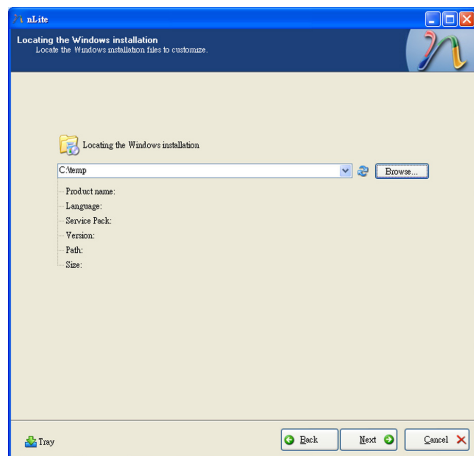


4. Insert the XP installation disc into an optical drive.
5. Launch nLite. The Welcome screen will appear. Click **Next**.

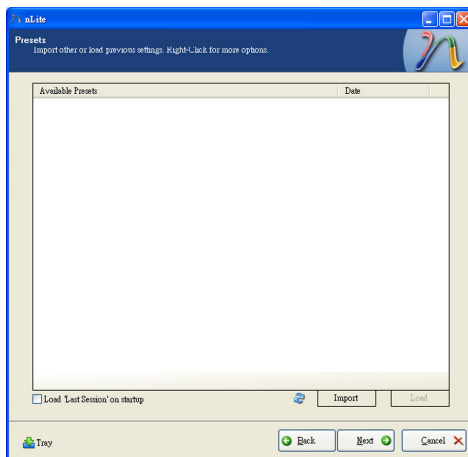


6. Click **Next** to temporarily save the Windows installation files to the designated default folder.

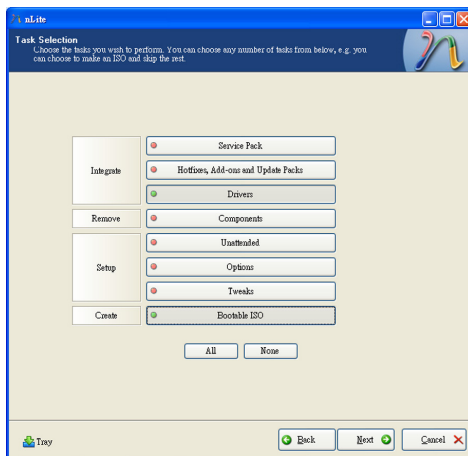
If you want to save them in another folder, click **Browse**, select the folder and then click **Next**.



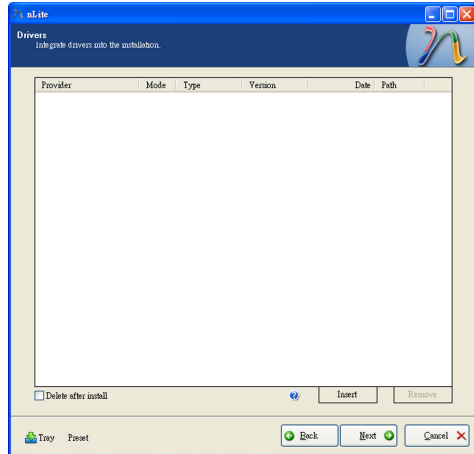
7. Click **Next**.



8. In the Task Selection dialog box, click **Drivers** and **Bootable ISO**. Click **Next**.

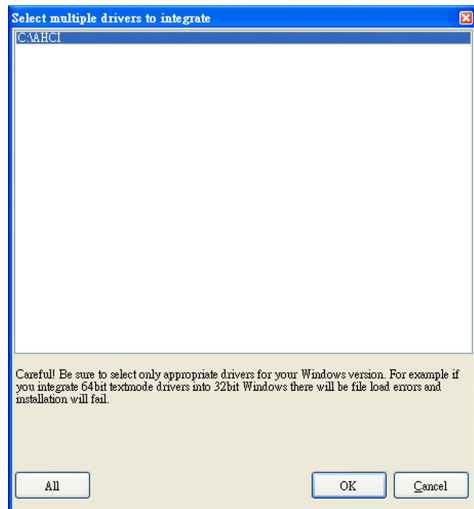


9. Click **Insert** and then select **Multiple driver folder** to select the drivers you will integrate. Click **Next**.

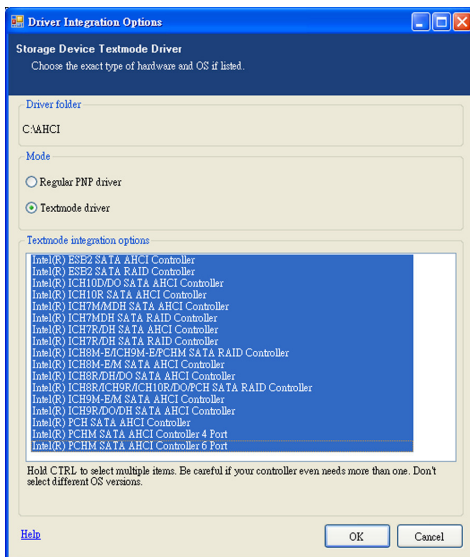


10. Select only the drivers appropriate for the Windows version that you are using and then click **OK**.

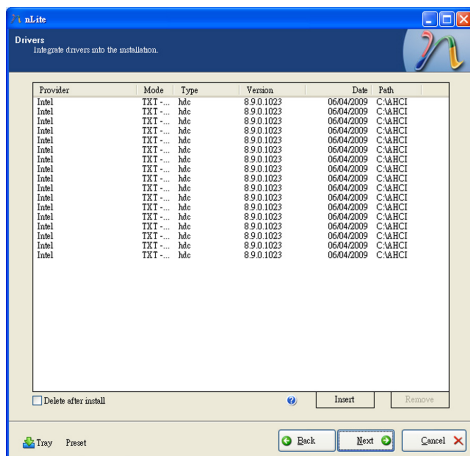
Integrating 64-bit drivers into 32-bit Windows or vice versa will cause file load errors and failed installation.



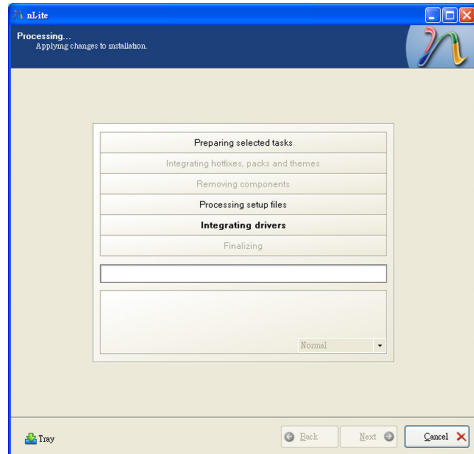
11. If you are uncertain of the southbridge chip used on your motherboard, select all RAID/AHCI controllers and then click **OK**.



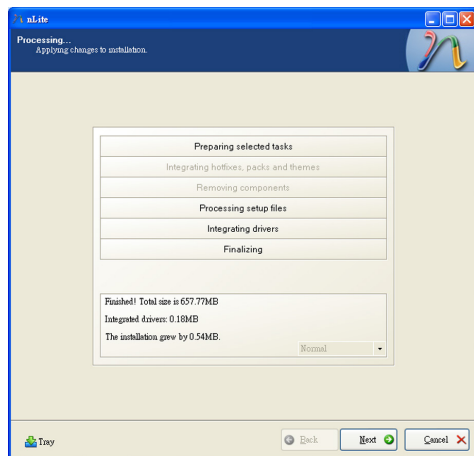
12. Click **Next**.



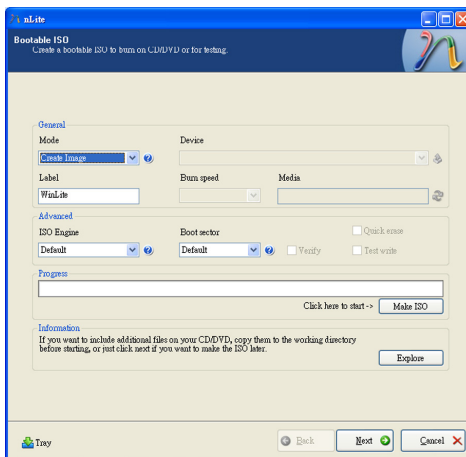
13. The program is currently integrating the drivers and applying changes to the installation.



14. When the program is finished applying the changes, click **Next**.

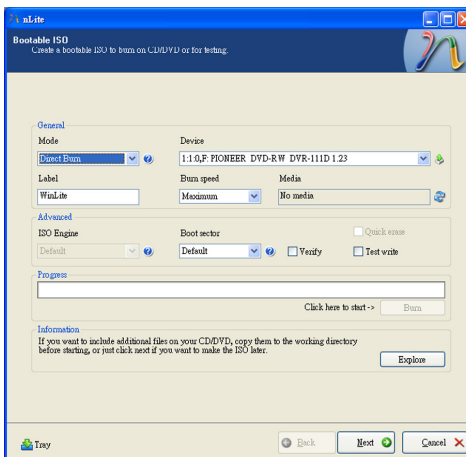


15. To create an image, select the **Create Image** mode under the General section and then click **Next**.



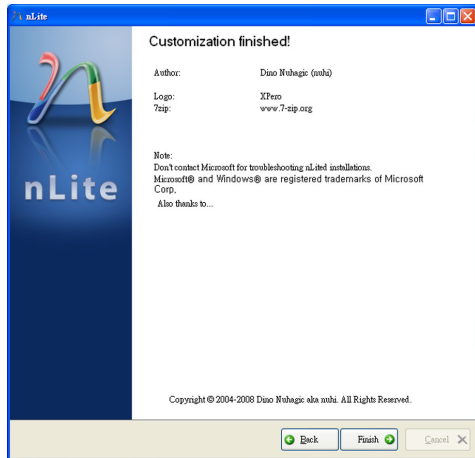
16. Or you can choose to burn it directly to a disc by selecting the **Direct Burn** mode under the General section.

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.

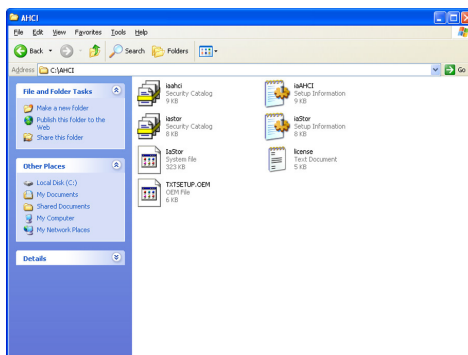


AHCI

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

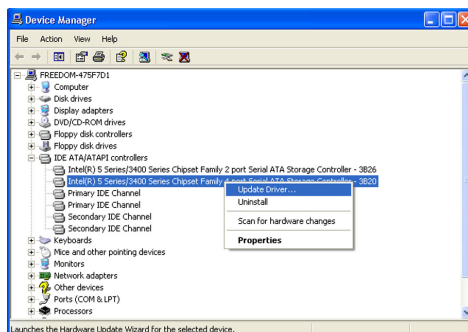
1. Enter the BIOS utility and configure the SATA controller to IDE mode.
2. Install Windows XP but do not press F6.
3. Download relevant RAID/AHCI driver files supported by the motherboard chipset from Intel's website.

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**.

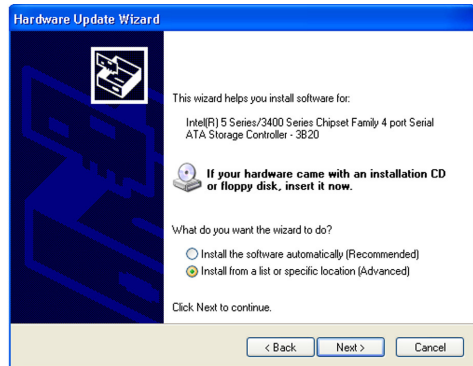
If the controller you selected did not work, try selecting another one.



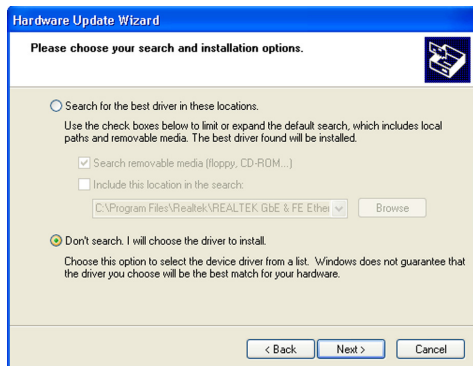
5. In the Hardware Update Wizard dialog box, select **"No, not this time"** then click **Next**.



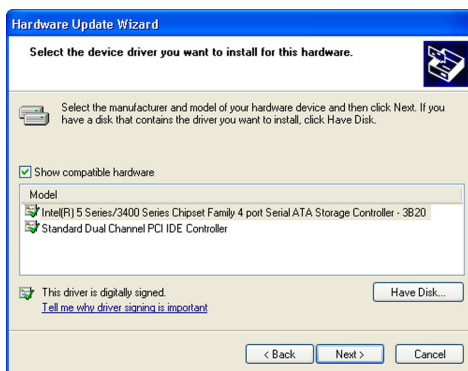
6. Select **"Install from a list or specific location (Advanced)"** and then click **Next**.



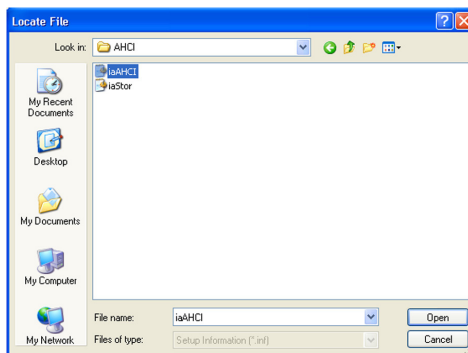
7. Select **"Don't search. I will choose the driver to install"** and then click **Next**.



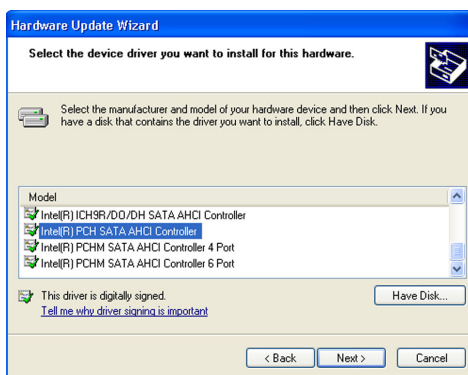
8. Click **"Have Disk"**.



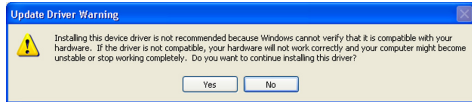
9. Select C:\AHCI\iaAHCI.inf and then click **Open**.



10. Select the appropriate AHCI Controller of your hardware device and then click **Next**.

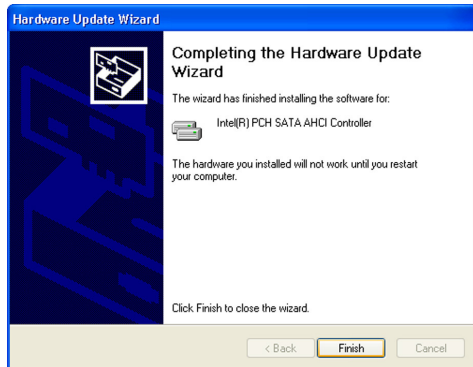


11. A warning message appeared because the selected SATA controller did not match your hardware device.

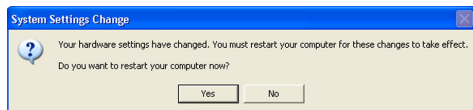


Ignore the warning and click **Yes** to proceed.

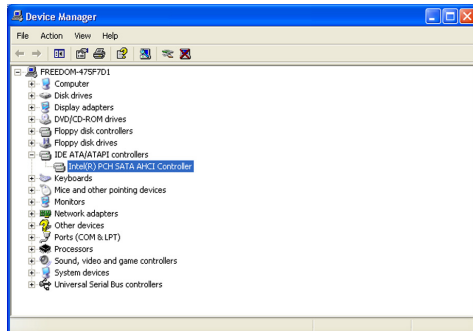
12. Click **Finish**.



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 Sample Code

;Software programming example:

```
;-----  
;(1) Enter Super IO Configuration mode  
;-----  
MOV     DX,2EH  
MOV     AL,87H  
OUT     DX,AL  
OUT     DX,AL  
  
;-----  
;(2) Configuration Logical Device 7, register CRF5/CRF6 (WDT Control /WDT  
timer)  
;-----  
MOV     DX,2EH  
MOV     AL,07H           ;Ready to Program Logical Device  
OUT     DX,AL  
  
MOV     DX,2FH  
MOV     AL,07H           ;Select Logical Device 7  
OUT     DX,AL  
  
MOV     DX,2EH  
MOV     AL, F6H          ;Select watchdog timer register  
OUT     DX,AL  
  
MOV     DX,2FH  
MOV     AL,10H           ;Set watchdog timer value  
OUT     DX,AL  
  
MOV     DX,2EH  
MOV     AL, F5H          ;Select watchdog Control Register  
OUT     DX,AL  
  
MOV     DX,2FH  
MOV     AL,61H           ;Set Watchdog Control Value  
OUT     DX,AL  
  
;-----  
;(1) Exit extended function mode  
;-----  
MOV     DX,2EH  
MOV     AL,AAH  
OUT     DX,AL
```

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.

Appendix 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.

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.

Floppy Drive

The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

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.

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.