

# **QB700-B Series**

## **Qseven Board User's Manual**

## Copyright

This publication contains information that is protected by copyright. No part of it may be reproduced in any form or by any means or used to make any transformation/adaptation without the prior written permission from the copyright holders.

This publication is provided for informational purposes only. The manufacturer makes no representations or warranties with respect to the contents or use of this manual and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. The user will assume the entire risk of the use or the results of the use of this document. Further, the manufacturer reserves the right to revise this publication and make changes to its contents at any time, without obligation to notify any person or entity of such revisions or changes.

© 2012. All Rights Reserved.

## 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
<b>Chapter 1 - Introduction.....</b>	<b>9</b>
Specifications.....	9
Features.....	11
<b>Chapter 2 - Hardware Installation.....</b>	<b>12</b>
Board Layout.....	12
Mechanical Diagram.....	13
System Memory.....	14
Cooling Option.....	15
Jumper Settings.....	17
Auto power-on Select.....	17
MXM Connector.....	18
Installing QB700-B Series onto a Carrier Board.....	21
<b>Chapter 3 - BIOS Setup.....</b>	<b>23</b>
Overview.....	23
<b>AMI BIOS Setup Utility.....</b>	<b>25</b>
Main.....	25
Advanced.....	26
Chipset.....	33
Boot.....	37
Security.....	38
Save & Exit.....	39
Updating the BIOS.....	40
<b>Chapter 4 - Supported Software.....</b>	<b>41</b>

Appendix A - NLITE and AHCI Installation Guide .....	58
nLite .....	58
AHCI.....	66
Appendix B - System Error Message .....	70
Appendix C - Troubleshooting.....	71

## 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 QB700-B Series board
- One heat sink
- One DVD
- One QR (Quick Reference)

## Optional Items

- Q7-951 carrier board kit
- Cable kit for carrier board
- Two standoff bolts
- Two sets of nut and bolt
- One bracket

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	<ul style="list-style-type: none"><li>• Intel® Atom™ E680: QB700-B680</li><li>• Intel® Atom™ E660: QB700-B660</li><li>• Intel® Atom™ E640: QB700-B640</li><li>• Intel® Atom™ E620: QB700-B620</li></ul>
Chipset	<ul style="list-style-type: none"><li>• Intel® EG20T PCH (Platform Controller Hub)</li></ul>
System Memory	<ul style="list-style-type: none"><li>• Supports memory down (single 32-bit channel)</li><li>• Supports DDR2 800MHz</li><li>• Supports up to 1GB system memory (default: 512MB)</li></ul>
Expansion Interfaces	<ul style="list-style-type: none"><li>• Supports 6 USB ports (USB1.1/2.0 host controllers)</li><li>• Supports 1 USB Client Interface</li><li>• Supports LPC Interface</li><li>• Supports SMB and I<sup>2</sup>C interfaces</li><li>• Supports 3 PCIE x1 interfaces</li><li>• Supports CAN-bus (Controller-Area Network) interface</li></ul>
Graphics	<ul style="list-style-type: none"><li>• Intel® GMA 600</li><li>• Supports up to 400MHz graphics frequency</li><li>• Ultra low power integrated 3D graphics</li><li>• High definition hardware video decoder and encoder engine</li><li>• Supports LVDS and SDVO interfaces<ul style="list-style-type: none"><li>- LVDS: Supports pixel clock depths of 18/24-bit, single channel, max. pixel clock of 80MHz, equates to 1280x768 @ 60Hz</li><li>- SDVO: Up to 160MHz pixel clock, equates to 1280x1024 @ 85Hz</li></ul></li></ul>
Audio	<ul style="list-style-type: none"><li>• Supports High Definition Audio interface</li></ul>
LAN	<ul style="list-style-type: none"><li>• Integrated Intel® PCH GbE MAC</li><li>• One Micrel KSZ9021RNI Ethernet PHY</li><li>• Supports 10Mbps, 100Mbps and 1Gbps data transmission</li><li>• IEEE 802.3 (10/100Mbps) and IEEE 802.3ab (1Gbps) compliant</li></ul>
SD/SDIO/MMC	<ul style="list-style-type: none"><li>• Supports 1 SD/SDIO/MMC</li><li>• Supports SDA Standard Ver 1.0, SD memory card specification Ver 2.0, SDIO card specification Ver 1.0, MMC System specification Ver 4.1</li><li>• Conforms to Secure Digital Host Controller (SDHC) speed class 6</li></ul>
Serial ATA	<ul style="list-style-type: none"><li>• Supports two Serial ATA interfaces</li><li>• SATA speed up to 3Gb/s (SATA 2.0)</li></ul>
BIOS	<ul style="list-style-type: none"><li>• 16Mbit SPI Flash BIOS (UEFI BIOS)</li></ul>
Energy Efficient Design	<ul style="list-style-type: none"><li>• Supports ACPI 2.0/1.1 specification</li><li>• Enhanced Intel® SpeedStep Technology</li></ul>
Power	<ul style="list-style-type: none"><li>• Input: VCC_RTC, 5V standby, 5V</li></ul>

Temperature	<ul style="list-style-type: none"><li>• 0°C to 60°C</li></ul>
Humidity	<ul style="list-style-type: none"><li>• 10% to 90%</li></ul>
PCB	<ul style="list-style-type: none"><li>• Dimensions<ul style="list-style-type: none"><li>- Qseven form factor</li><li>- 70mm (2.76") x 70mm (2.76")</li></ul></li><li>• Compliance<ul style="list-style-type: none"><li>- Qseven specification revision 1.2</li></ul></li></ul>

## Features

### 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 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 SDVO display outputs.

### Serial ATA

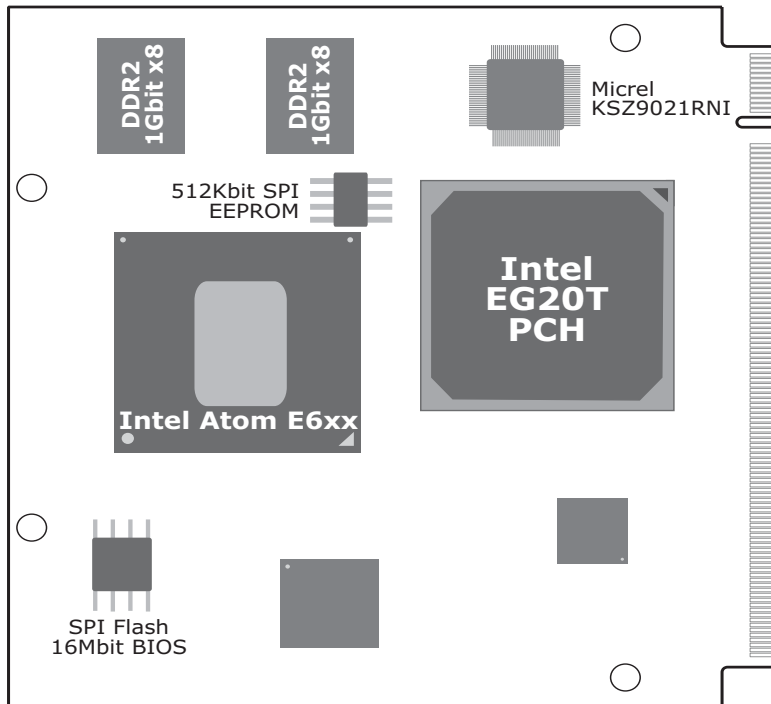
Serial ATA is a storage interface that is compliant with SATA 2.0a specification. With speed of up to 3Gb/s (SATA 2.0), it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The bandwidth of the SATA 3.0 will be limited by carrier board design.

### Gigabit LAN

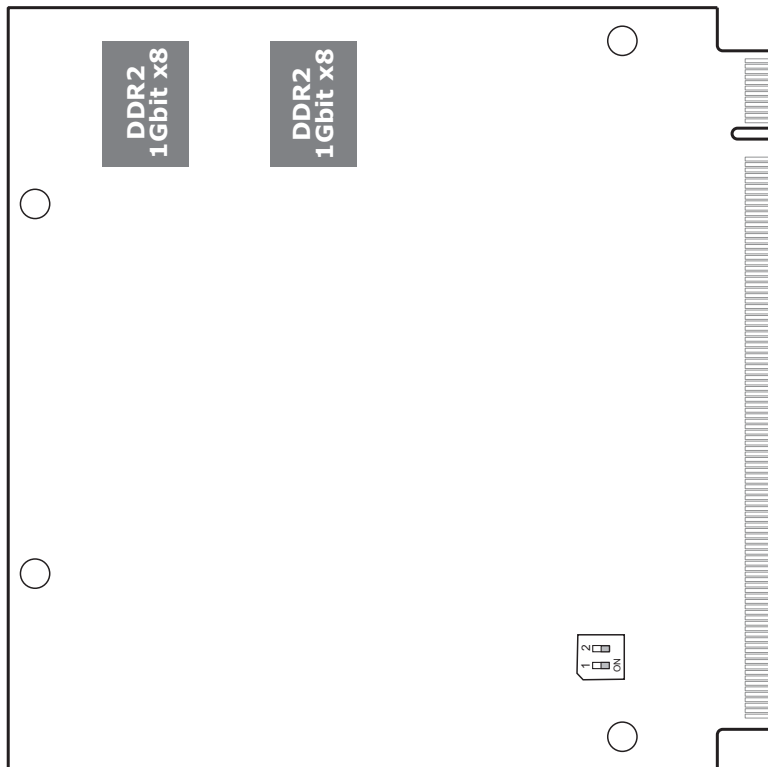
The Micrel KSZ9021RNI Ethernet Phy controller supports up to 1Gbps data transmission.

# Chapter 2 - Hardware Installation

## Board Layout

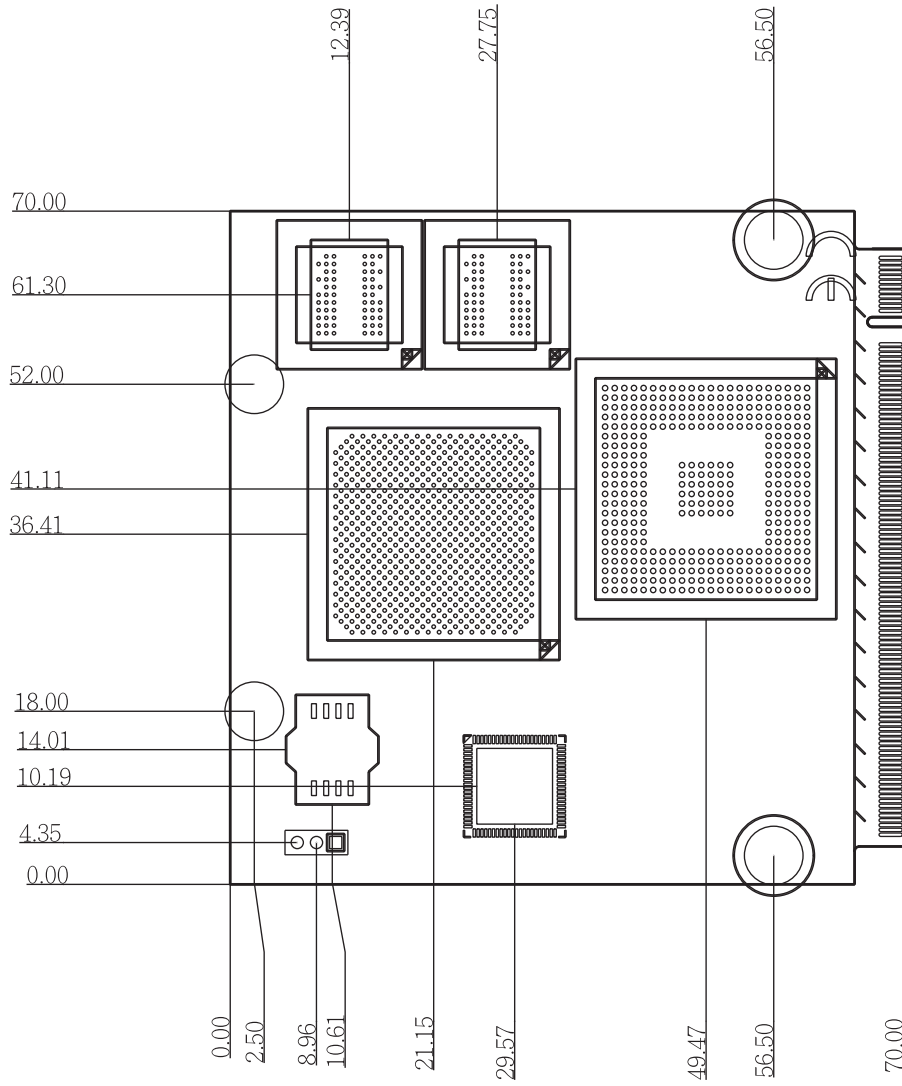


Top View



Bottom View

# Mechanical Diagram

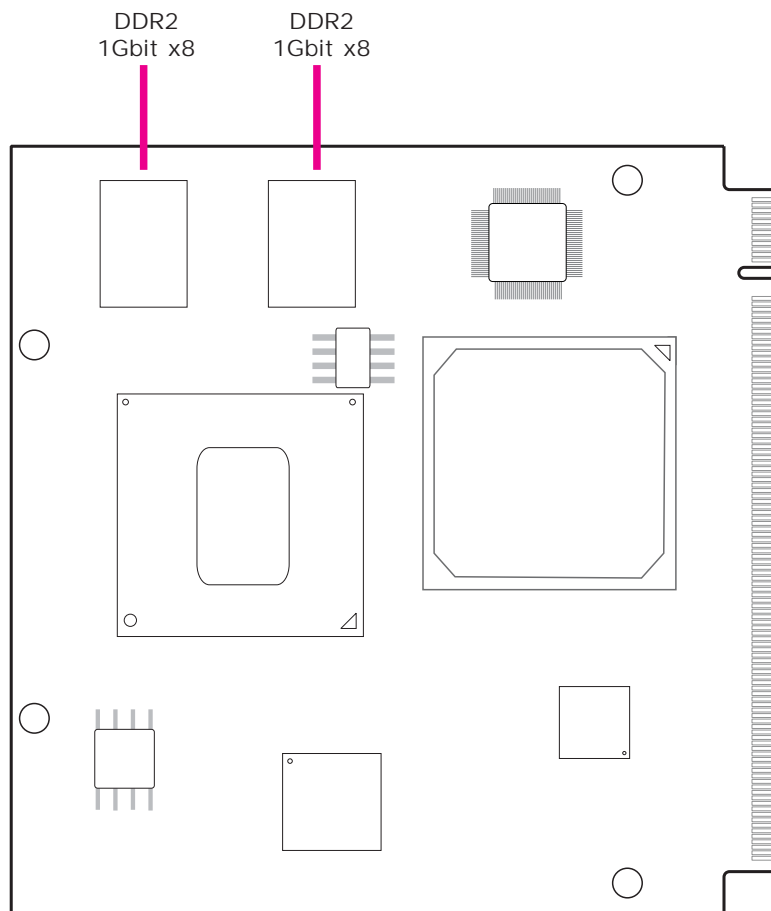


**Important:**

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 memory down (single 32-bit channel) that support DDR2.

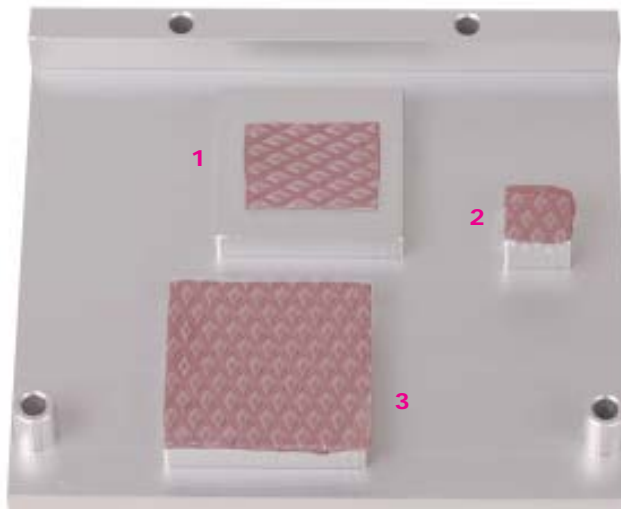


## Cooling Option

### Heat Sink with Cooling Fan



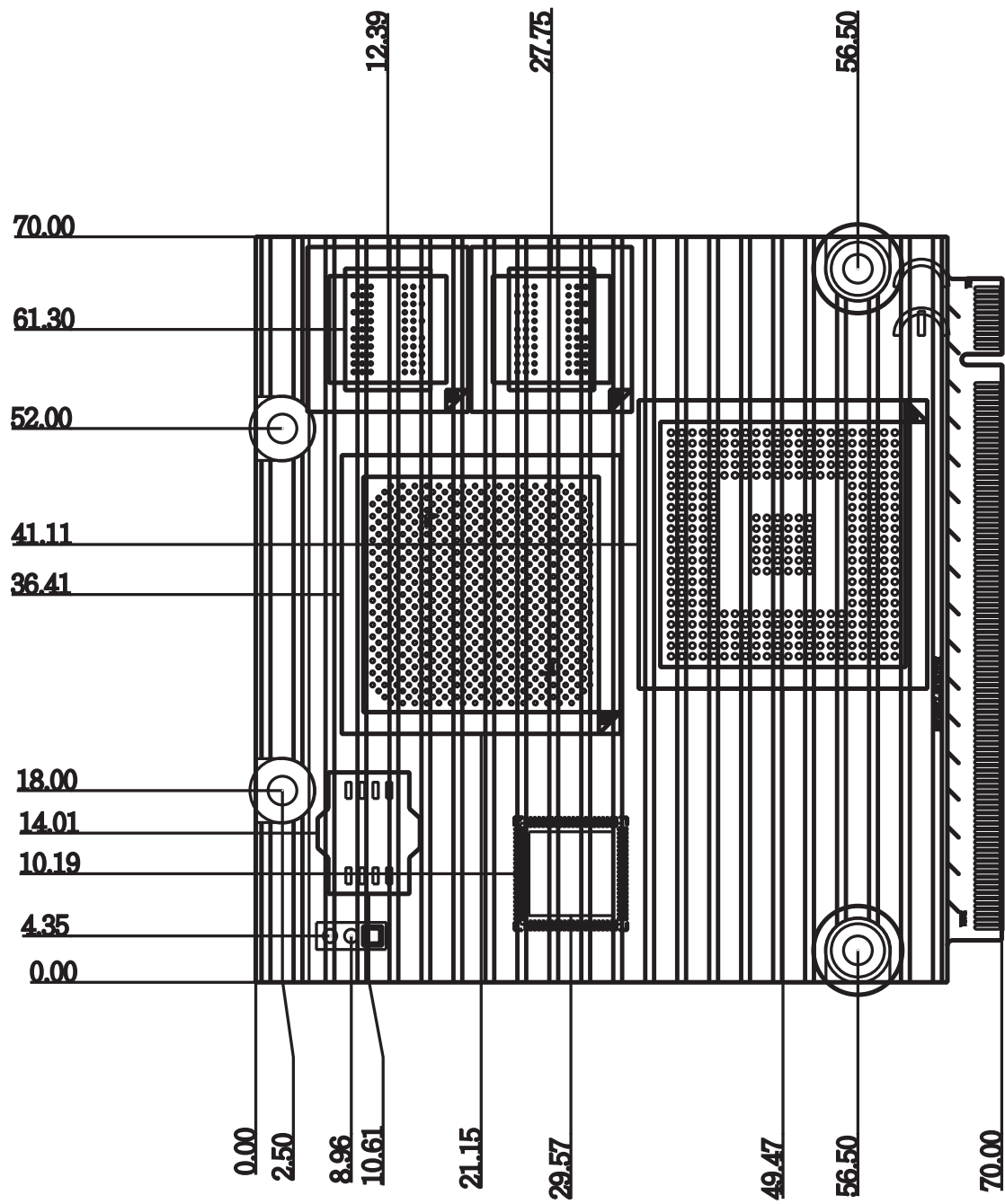
Top View of the Heat Sink



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 QB700-B Series.
- Remove the plastic covering from the thermal pads prior to mounting the heat sink onto QB700-B Series.

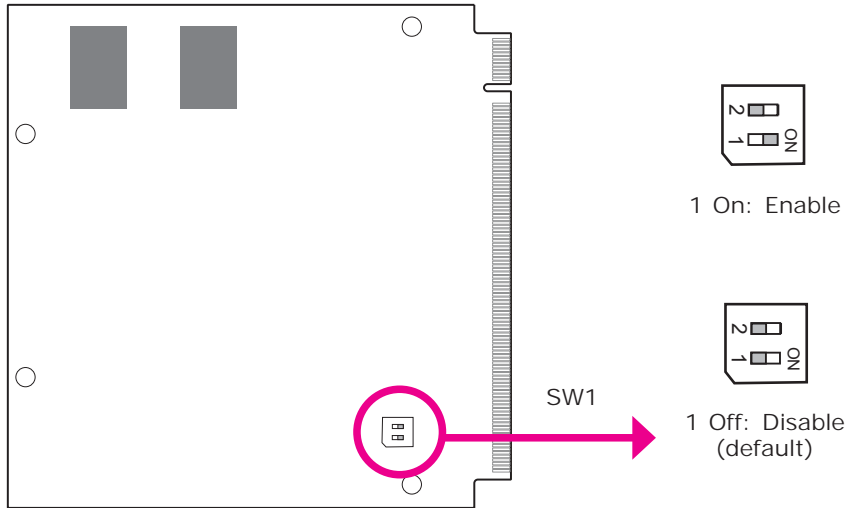
### Dimensions





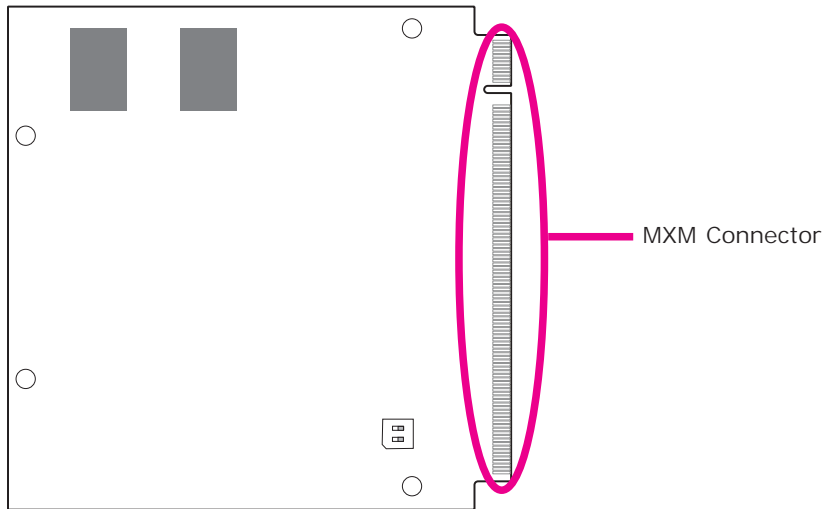
# Jumper Settings

## Auto Power-on Select



SW1 is used to select the auto power-on function.

## MXM Connector



The MXM connector is used to interface with the carrier board. Insert QB700-B series to the MXM connector on the carrier board. Refer to the following page for the pin function of this connector.

Refer to “Installing QB700-B Series onto a Carrier Board” section for more information.

1	GND	2	GND
3	GBE MDI3-	4	GBE MDI2-
5	GBE MDI3+	6	GBE MDI2+
7	(NC)	8	(NC)
9	GBE MDI1-	10	GBE MDI0-
11	GBE MDI1+	12	GBE MDI0+
13	GBE LINK-	14	GBE ACT-
15	(NC)	16	SUS S5-
17	WAKE-	18	SUS S3-
19	(NC)	20	PWRBTN-
21	(NC)	22	LID BTN-
23	GND	24	GND
KEY			
25	GND	26	PWGIN
27	(NC)	28	RSTBTN-
29	SATA0 TX+	30	SATA1 TX+
31	SATA0 TX-	32	SATA1 TX-
33	SATA ACT-	34	GND
35	SATA0 RX+	36	SATA1 RX+
37	SATA0 RX-	38	SATA1 RX-
39	GND	40	GND
41	(NC)	42	SDIO CLK
43	SDIO CD-	44	SDIO LED
45	SDIO CMD	46	SDIO WP
47	SDIO PWR-	48	SDIO DATA1
49	SDIO DATA0	50	SDIO DATA3
51	SDIO DATA2	52	SDIO DATA5
53	SDIO DATA4	54	SDIO DATA7
55	SDIO DATA6	56	RSVD
57	GND	58	GND
59	HDA SYNC	60	SMB CLK
61	HDA RST-	62	SMB DATA
63	HDA BITCLK	64	SMB ALERT-
65	HDA SDI	66	I2C CLK
67	HDA SDO	68	I2C DATA
69	THRM-	70	WDTRIG-
71	THRMTRIP-	72	WDOUT
73	GND	74	GND
75	(NC)	76	USB P6-
77	(NC)	78	USB P6+
79	(NC)	80	USB 4 5 OC-
81	USB P5+	82	USB P4-
83	USB P5+	84	USB P4+
85	USB 2 3 OC-	86	USB 0 1 OC-
87	USB P3-	88	USB P2-
89	USB P3+	90	USB P2+
91	USB CC	92	(NC)
93	USB P1-(Client)	94	USB P0-
95	USB P1+(Client)	96	USB P0+
97	GND	98	GND
99	LVDS A0+	100	(NC)
101	LVDS A0-	102	(NC)
103	LVDS A1+	104	(NC)
105	LVDS A1-	106	(NC)
107	LVDS A2+	108	(NC)
109	LVDS A2-	110	(NC)
111	LVDS PPEN	112	LVDS BLEN

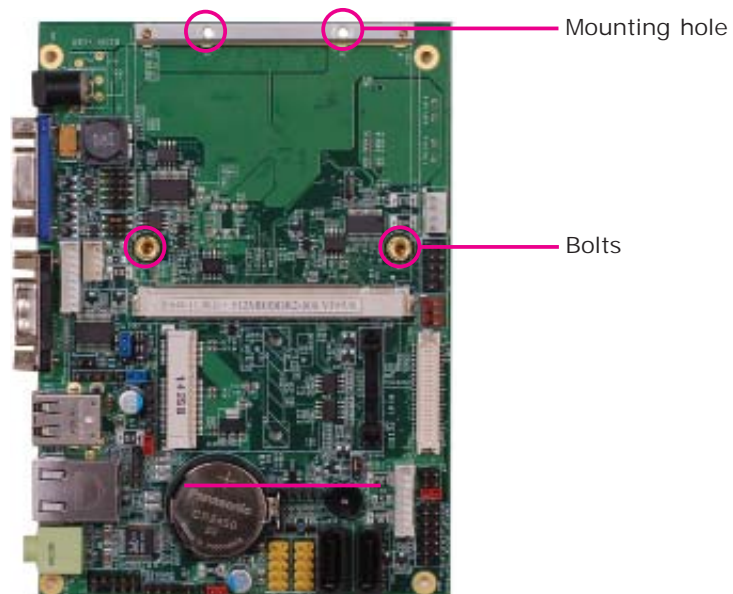
113	LVDS A3+	114	(NC)
115	LVDS A3-	116	(NC)
117	GND	118	GND
119	LVDS A CLK+	120	(NC)
121	LVDS A CLK-	122	(NC)
123	LVDS BLT_CTRL	124	RSVD
125	LVDS DID_DAT	126	(NC)
127	LVDS DID_CLK	128	(NC)
129	CAN0_TX	130	CAN0_RX
131	SDVO_BCLK+	132	SDVO_INT+
133	SDVO_BCLK-	134	SDVO_INT-
135	GND	136	GND
137	SDVO_GREEN+	138	SDVO_FLDSTALL+
139	SDVO_GREEN-	140	SDVO_FLDSTALL-
141	GND	142	GND
143	SDVO_BLUE+	144	SDVO_TVCLKIN+
145	SDVO_BLUE-	146	SDVO_TVCLKIN-
147	GND	148	GND
149	SDVO_RED+	140	SDVO_CTRL_DAT
151	SDVO_RED-	152	SDVO_CTRL_CLK
153	(NC)	154	(NC)
155	PCIE_CLK_REF+	156	PCIE_WAKE-
157	PCIE_CLK_REF-	158	PCIE_RST-
159	GND	160	GND
161	(NC)	162	(NC)
163	(NC)	164	(NC)
165	GND	166	GND
167	PCIE2_TX+	168	PCIE2_RX+
169	PCIE2_TX-	170	PCIE2_RX-
171	(NC)	172	(NC)
173	PCIE1_TX+	174	PCIE1_RX+
175	PCIE1_TX-	176	PCIE1_RX-
177	(NC)	178	(NC)
179	PCIE0_TX+	180	PCIE0_RX+
181	PCIE0_TX-	182	PCIE0_RX-
183	GND	184	GND
185	LPC_AD0	186	LPC_AD1
187	LPC_AD2	188	LPC_AD3
189	LPC_CLK	190	LPC_FRAME-
191	SERIRQ	192	(NC)
193	VCC_RTC	194	SPKR
195	FAN_TACHOIN/GP_TIMER_IN	196	FAN_PWMOUT/GP_PWM_OUT1
197	GND	198	GND
199	(NC)	200	(NC)
201	(NC)	202	(NC)
203	(NC)	204	(NC)
205	VCC_5VSB	206	VCC_5VSB
207	(NC)	208	(NC)
209	(NC)	210	(NC)
211	VCC	212	VCC
213	VCC	214	VCC
215	VCC	216	VCC
217	VCC	218	VCC
219	VCC	220	VCC
221	VCC	222	VCC
223	VCC	224	VCC
225	VCC	226	VCC
227	VCC	228	VCC
229	VCC	230	VCC

## Installing QB700-B Series 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 QB700-B Series onto the carrier board of your choice.

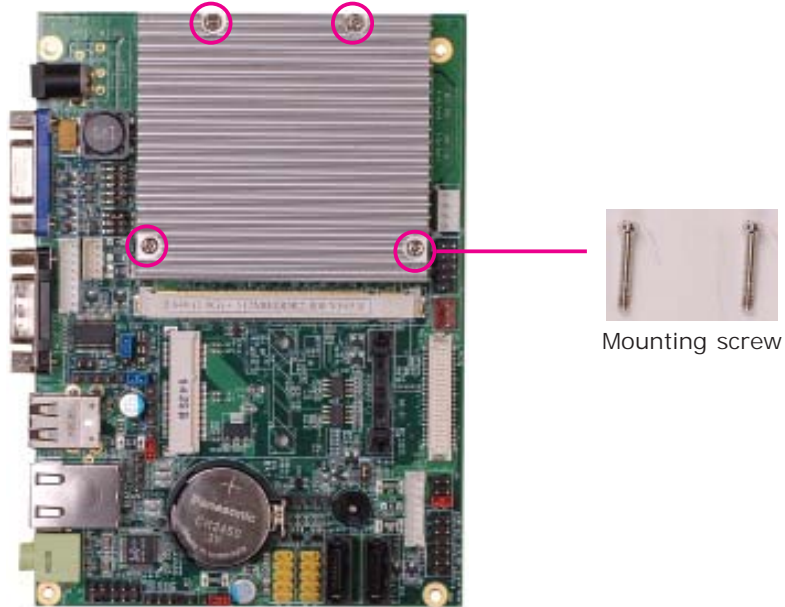
1. The photo below shows the locations of the mounting holes and the bolts already fixed in place.



2. Grasping QB700-B Series by its edges, insert it into the carrier board, and you will hear a distinctive "click" indicating QB700-B Series is correctly locked into position.



3. Press down QB700-B Series and put on the heat sink on top of QB700-B Series with its mounting holes and bolts aligned on the carrier board. Use the mounting screw to fix QB700-B Series and heat sink on place.



# 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

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

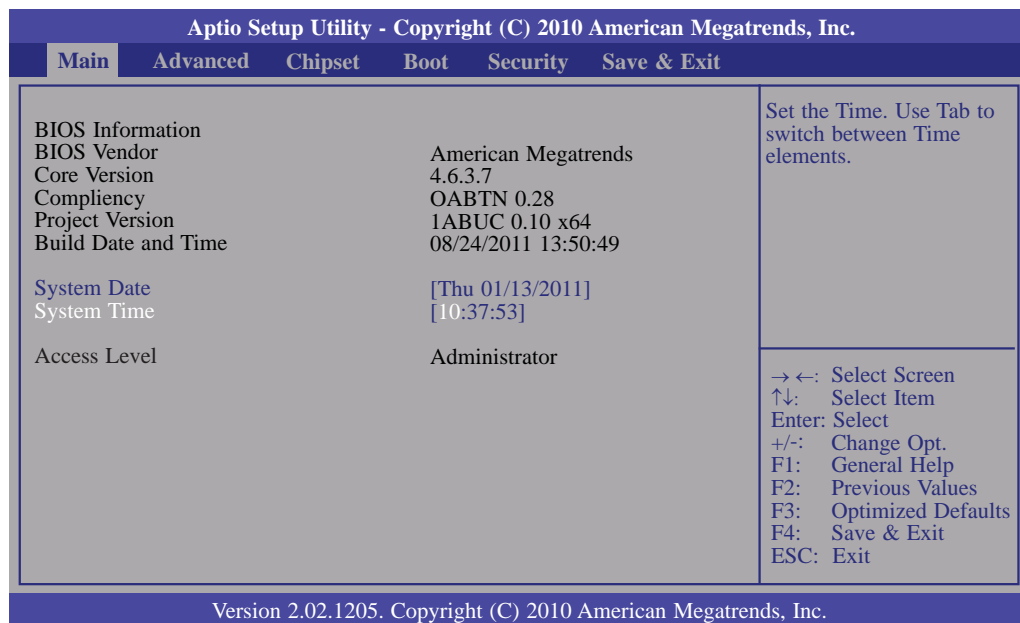
When "►" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.



## AMI BIOS Setup Utility

### Main

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



### 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.

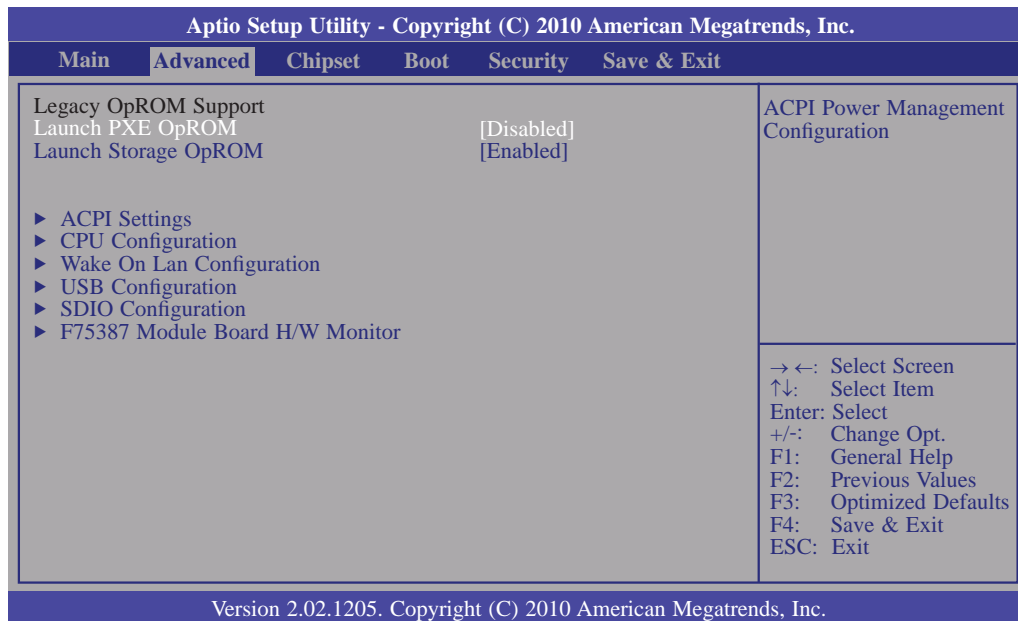
## Advanced

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.



### Launch PXE OpROM

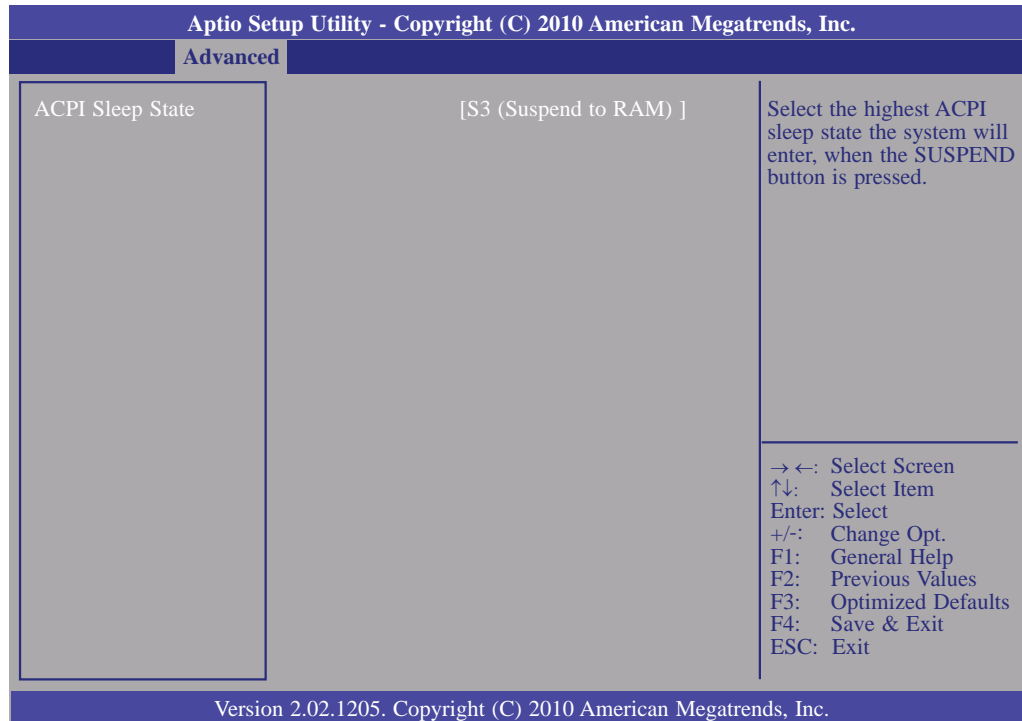
Enables or disables the boot option for legacy network devices.

### Launch Storage OpROM

Enables or disables the boot option for legacy mass storage devices with option ROM.

## ACPI Power Management Configuration

This section is used to configure the ACPI Power Management.



### ACPI Sleep State

Selects the highest ACPI sleep state the system will enter when the Suspend button is pressed.

- S1(POS)            Enables the Power On Suspend function.
- S3(STR)           Enables the Suspend to RAM function.

## CPU Configuration

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

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.		
Advanced		
CPU Configuration		Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.  → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Processor Type	Genuine Intel (R) CPU	
EMT64	Supported	
Processor Speed	1300 MHz	
System Bus Speed	400 MHz	
Ratio Status	13	
Actual Ratio	13	
System Bus Speed	400 MHz	
Processor Stepping	20661	
Microcode Revision	260	
L1 Cache RAM	56 k	
L2 Cache RAM	512 k	
Processor Core	Single	
Hyper-Threading	Supported	
Intel SpeedStep	[Enabled]	
Hyper-Threading	[Enabled]	
Execute Disable Bit	[Enabled]	
Limit CPUID Maximum	[Disabled]	
Intel Virtualization Technology	[Disabled]	

Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.

### Hyper-threading

Enabled or disabled Intel(R) SpeedStep(tm).

### Hyper-threading

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.

### Execute Disable Bit

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

### Limit CPUID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or less than 3.

### Intel Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

## Wake-on-Lan Configuration

This section is used to configure wake-on-lan functions.

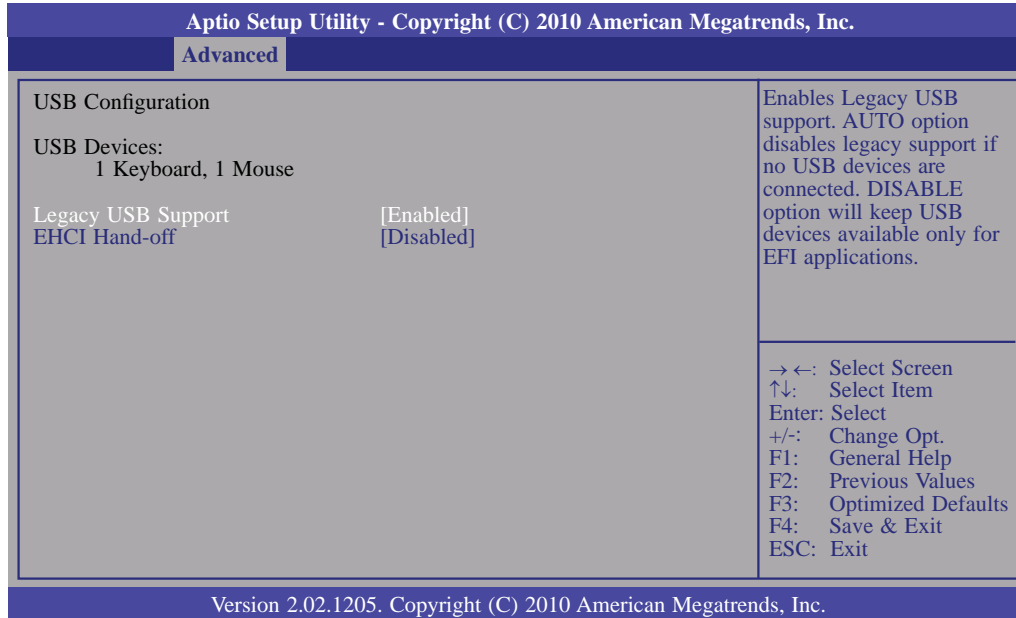
Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.	
Advanced	
Wake On Lan Configuration	Enable/ disable WOL.
Wake On Lan [Disabled]	
	→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.	

### Wake On Lan

Set this field to Enabled to wake up the system via the onboard LAN or via a LAN card that supports the remote wake up function.

## USB Configuration

This section is used to configure USB.



### Legacy USB Support

#### *Enabled*

Enables legacy USB.

#### *Auto*

Disables support for legacy when no USB devices are connected.

#### *Disabled*

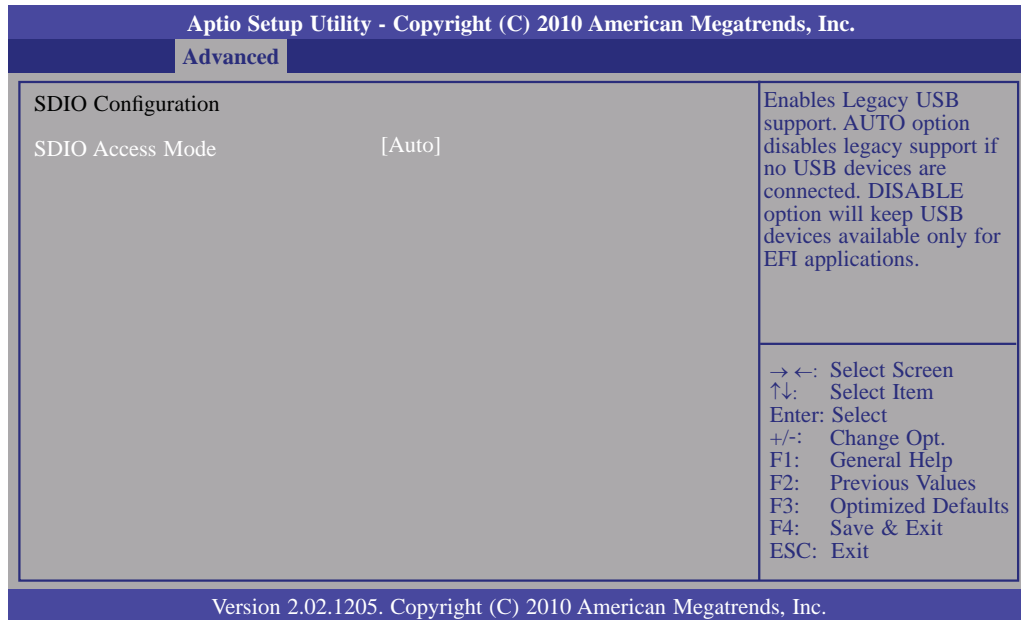
Keeps USB devices available only for EFI applications.

### 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.

## SDIO Configuration

This section is used to configure SDIO.



### SDIO Access mode

*Auto Option: Access SD device in DMA mode if controller supports it, otherwise it is in PIO mode.*

*DMA Option: Access SD device in DMA mode.*

*PIO Option: Access SD device in PIO mode.*

## F75387 Module Board H/W Monitor

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.	
Advanced	
=== Module Board H/W Monitor ===	
Current CPU Temperature	: +52.0 C
Current CPU FAN Speed	: N/A
Vcore	: +0.448 V
VGFX	: +1.520 V
+1.8(V)	: +3.328
+3.3(V)	: N/A
Fan1 Mode Setting	[Manual Mode]
Fan1 Manual Value	255
Enables CPU SmartFan	
→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.	

## CPU Smart Fan Mode Setting

The options are Manual Mode and PWM mode.

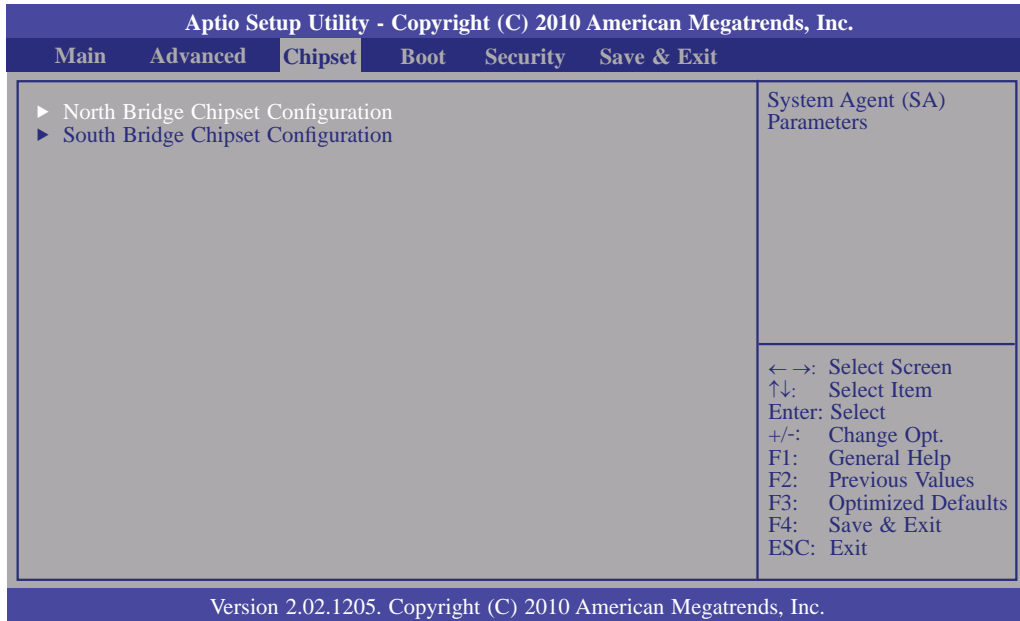
## Manual Value

Allows you to manually enter the CPU fan's speed.



## Chipset

Configures relevant chipset functions.



### North Bridge Chipset Configuration

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.		
Chipset		
North Bridge Chipset Configuration		Configure Intel IGFX Settings.
Memory Information	01.00	
MRC Version	512 MB (DDR2)	
Total Memory	2032	
vBIOS Version		
IGD Mode Select		
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.		

#### IGD Mode Select

Selects the amount of system memory used by the internal graphics device.

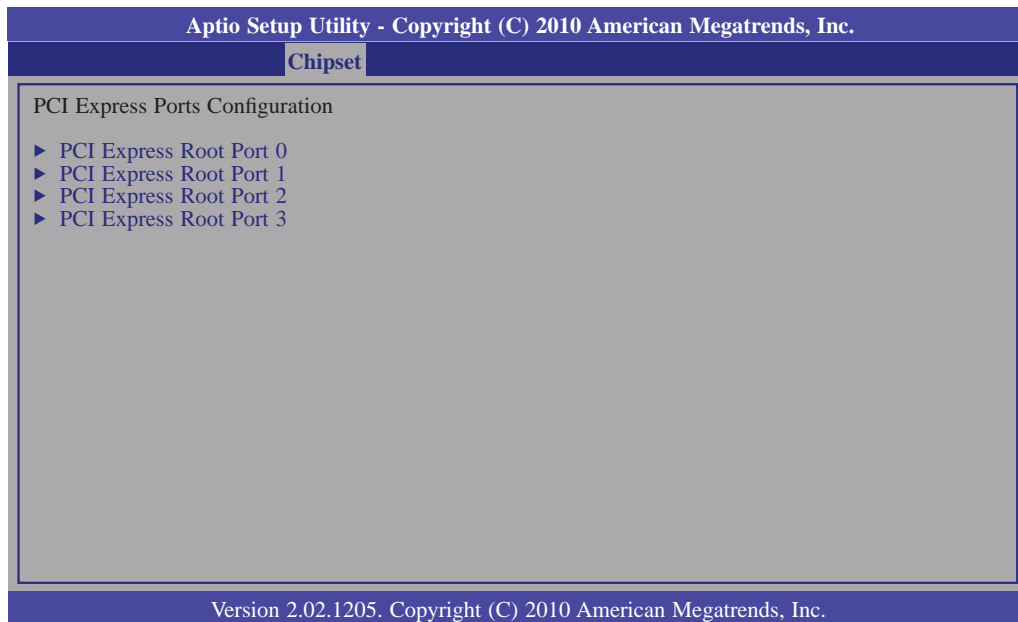
## South Bridge Chipset Configuration

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.	
Chipset	
South Bridge Chipset Configuration	Configure Intel IGFX Settings.
Audio Controller [Auto]	
▶ PCI Express Ports Configuration	
	→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.	

### IGD Mode Select

Selects the amount of system memory used by the internal graphics device.

## PCI Express Ports Configuration



### PCI Express Root Port 0 to PCI Express Root Port 3

Controls the PCI Express Root Port.

## Boot

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Boot Configuration				Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.	
Quiet Boot		[Disabled]			
Setup Prompt Timeout		[1]			
Bootup Numlock State		[On]			
CSM16 Module Version		07.65			
Boot Option Priorities					
Boot Option #1		[PO-WDC WD1200JD-00...]			
Hard Drive BBS Priorities					
				← →: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.					

### Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

### Bootup NumLock State

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.

### Quiet Boot

Enables or disables the quiet boot function.

## Security

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. The password must be 3 to 20 characters long.				Set Setup Administrator Password.	
Administrator Password User Password				→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.02.1205. Copyright (C) 2010 American Megatrends, Inc.					

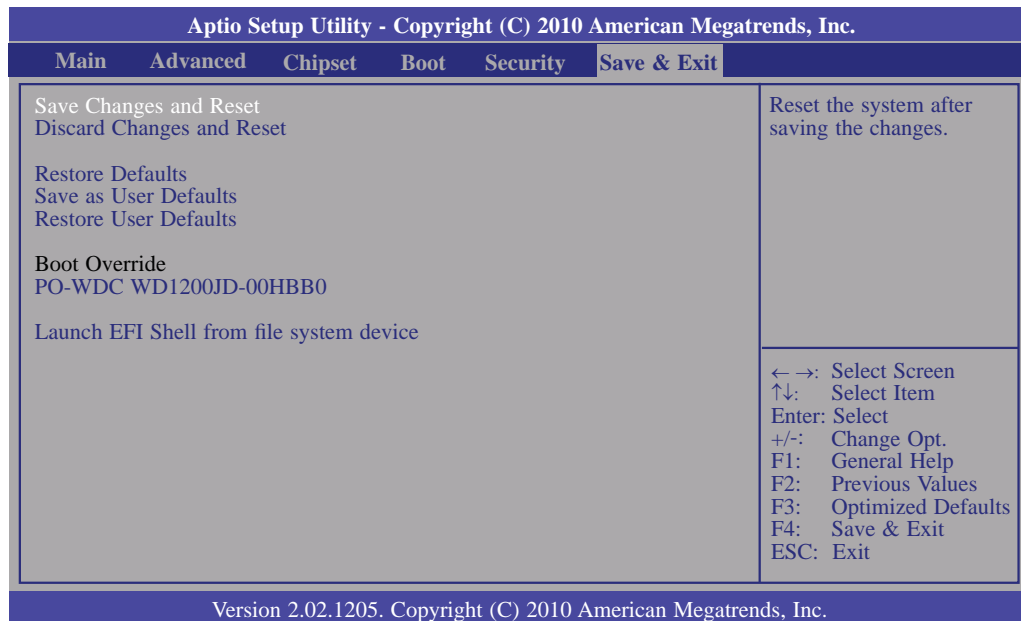
### Administrator Password

Sets the administrator password.

### User Password

Sets the user password.

## Save & Exit



### Save Changes and Reset

To save the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system after saving all changes made.

### Discard Changes and Reset

To discard the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system setup without saving any changes.

### Restore Defaults

To restore and load the optimized default values, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore the default values of all the setup options.

### Save as User Defaults

To save changes done so far as user default, select this field and then press <Enter>. A dialog box will appear. Select Yes to save values as user default.

### Restore User Defaults

To restore user default to all the setup options, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore user default.

## 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.

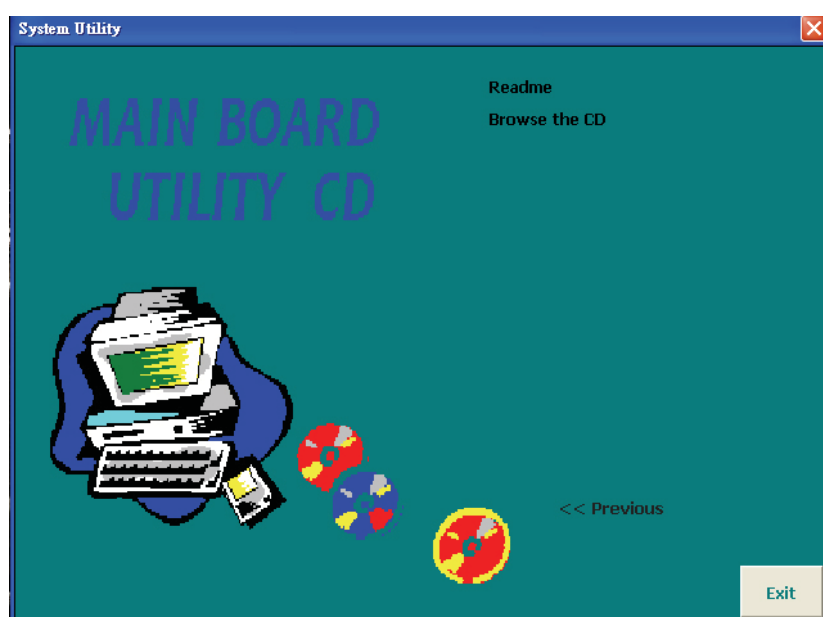
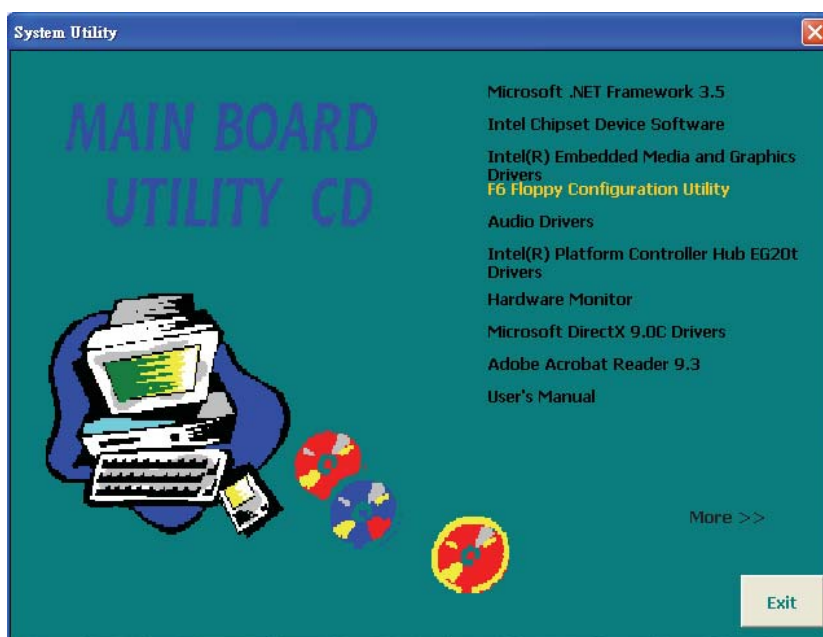


## Chapter 4 - Supported Software

---

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

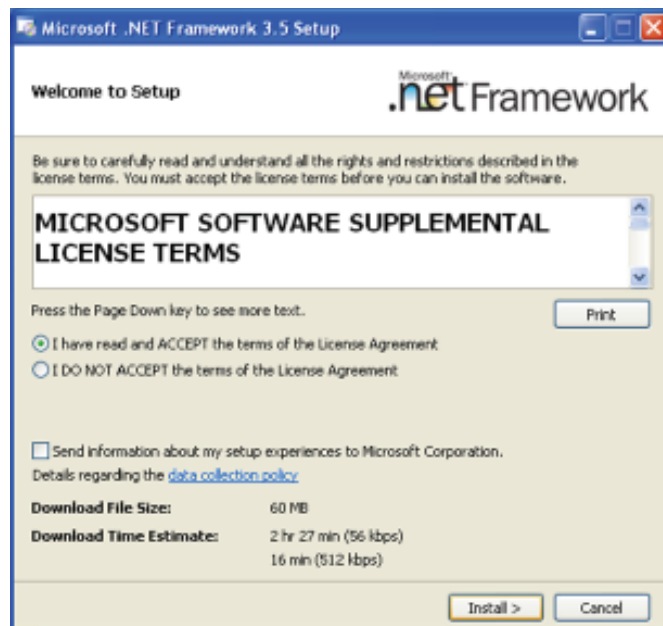
**Note:**

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

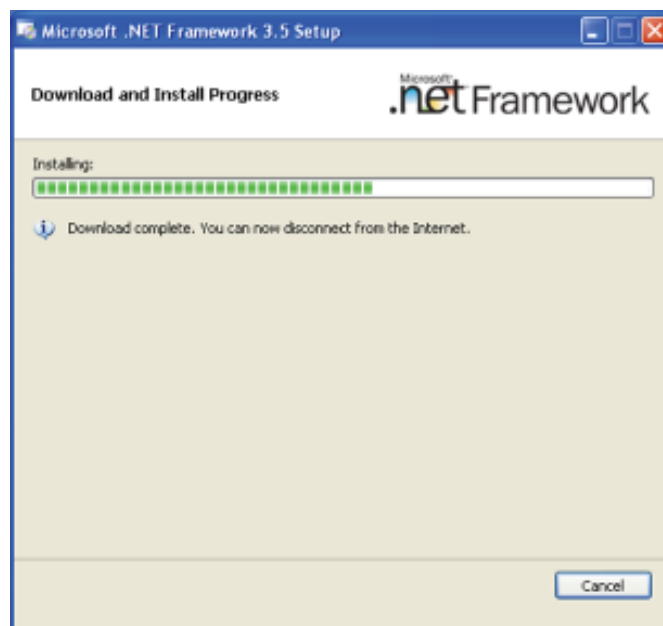
To install the driver, click "Microsoft .NET Framework 3.5" on the main menu.

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 Device Software

The Intel Chipset Device Software 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 Device Software" 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.

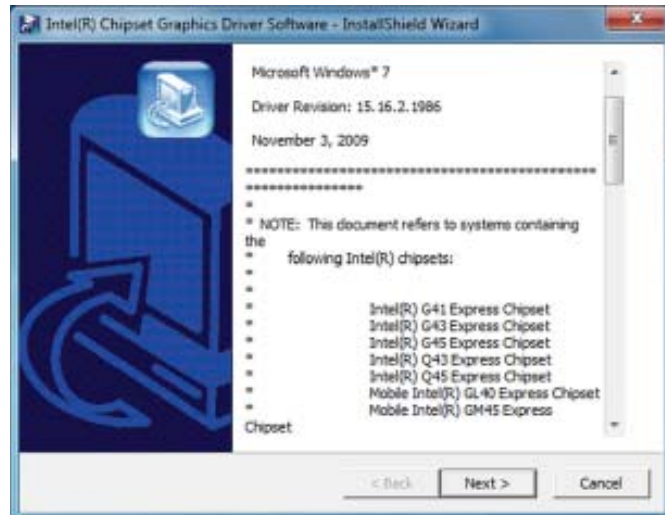
Restarting the system will allow the new software installation to take effect.



## Intel Embedded Media and Graphics Drivers

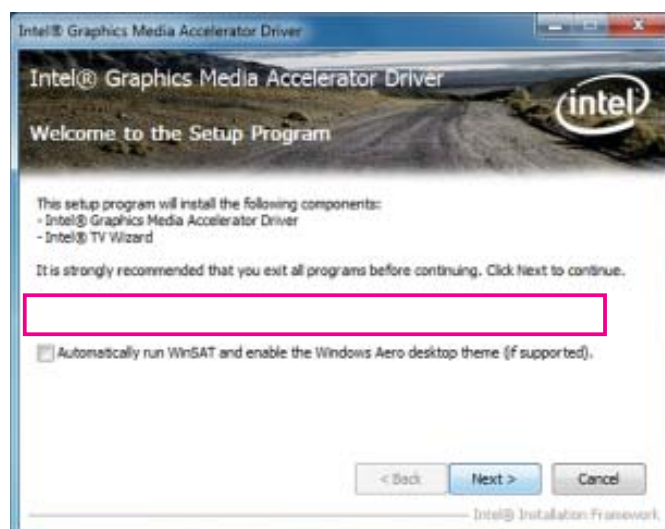
To install the driver, click “Intel Embedded Media and Graphics Drivers” on the main menu.

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.

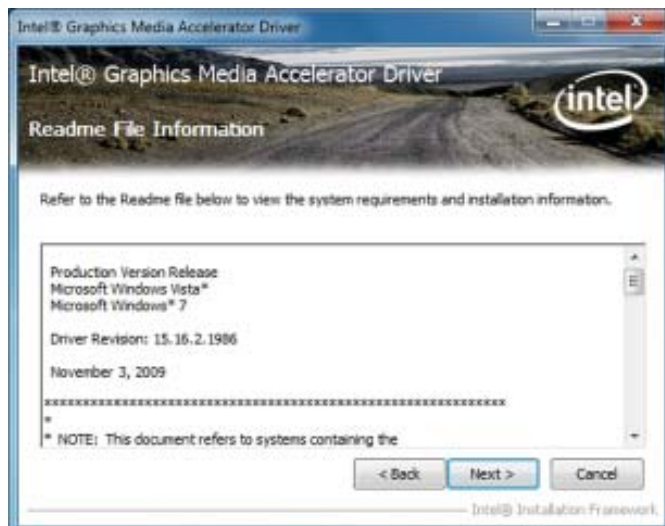
We recommend that you skip this process by disabling this function then click Next.



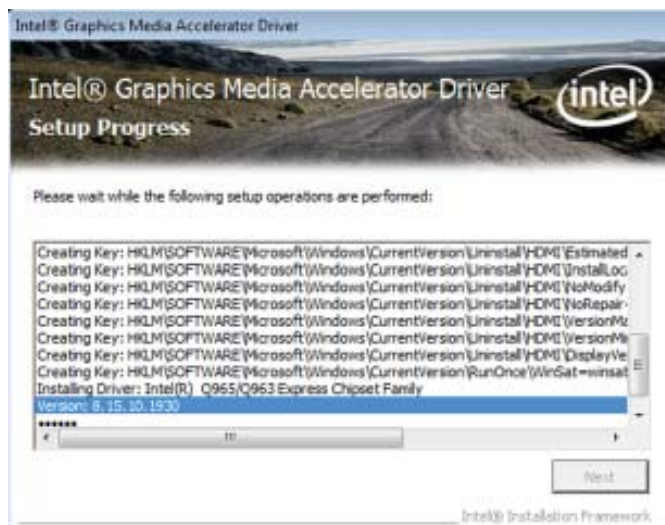
2. Read the license agreement then click Yes.



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.



## F6 Floppy Configuration Utility

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

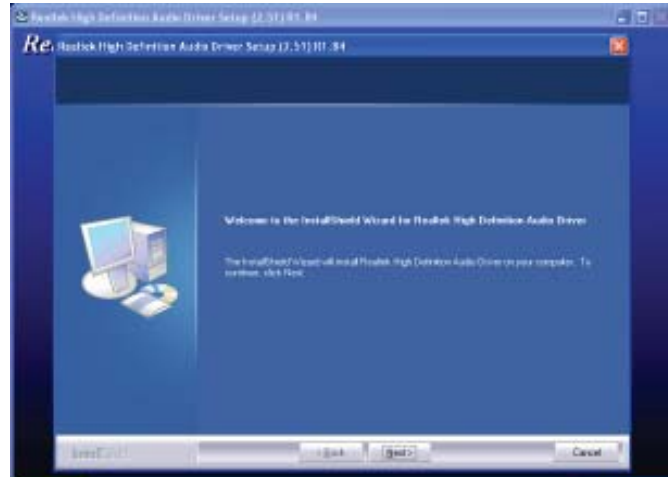
CD Drive: \AHCI\_RAID\F6FLOPPY\f6flpy64



## Audio Drivers

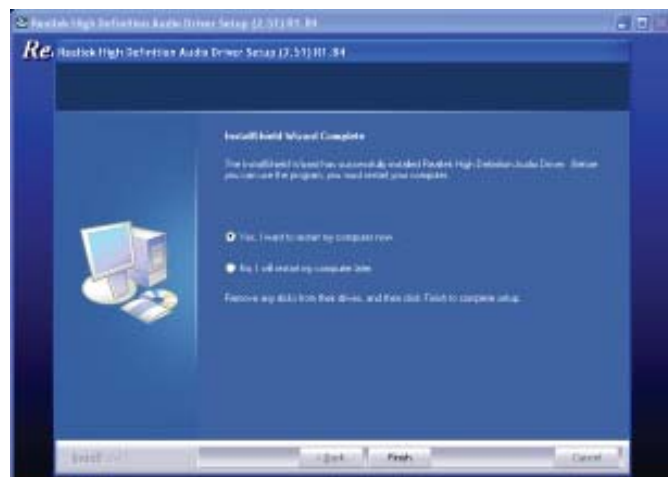
To install the driver, click “Audio Drivers” on the main menu.

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 Platform Controller Hub EG20t Drivers

To install the driver, click “Intel Platform Controller Hub EG20t Drivers” on the main menu.

1. Setup is now preparing to install the driver.



2. Setup is now ready to install the driver. Click Next.



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





7. Click Continue Anyway or Stop Installation.



8. Click Finish to exit installation.

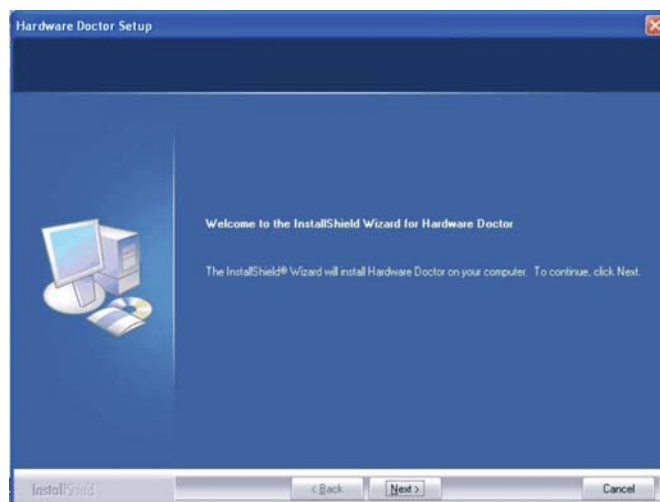


## Hardware Monitor

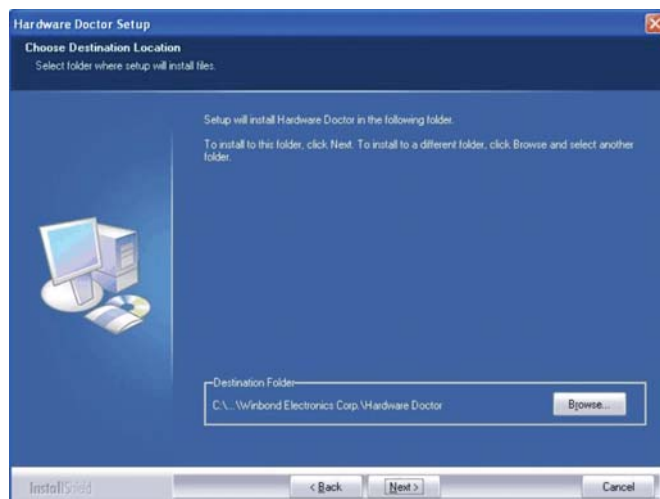
The Hardware Monitor utility is capable of monitoring the system's temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, a warning message will pop-up. The utility can 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" on the main menu.

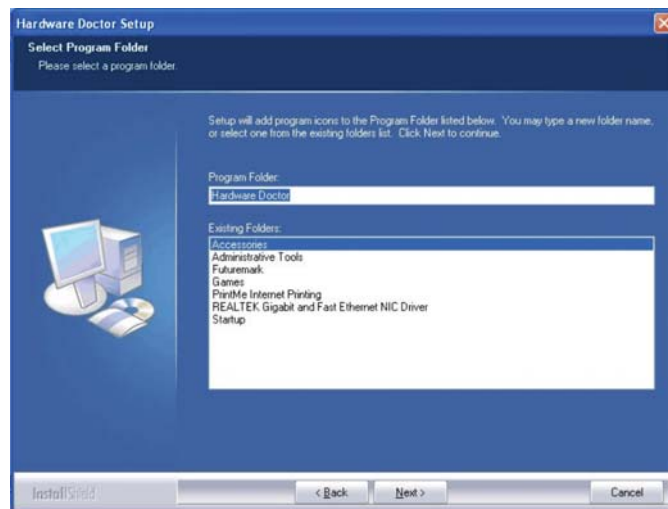
1. Setup is now ready to install the utility. Click Next.



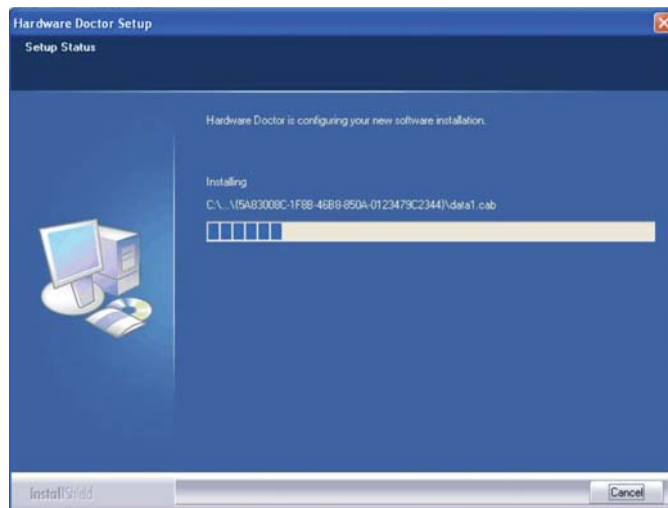
2. Click Next to install or click Browse to select another folder.



3. Click Next to add the program icon to the Program Folder.

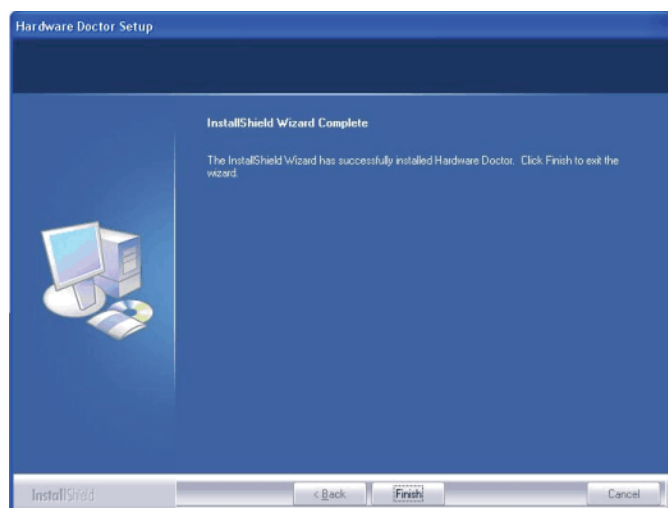


4. Hardware Doctor is configuring the new software installation.



5. Follow the prompts on the screen to complete the installation then click Finish.

Restarting the system will allow the driver to take effect.



## Installation Notes

1. "Autorun" ONLY supports the Windows® 2000 and Windows® XP operating systems. If after inserting the CD, "Autorun" did not automatically start (which is, the Main Board Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".
2. The drivers for Windows® XP Professional x64 Edition are also included in the CD however "Autorun" is not supported for this operating system. Therefore you must manually install the drivers from the respective folders of each driver.
3. All steps or procedures to install software drivers are subject to change without notice as the softwares are occasionally updated. Please contact technical support or your sales representative for the latest version of the drivers or software applications.

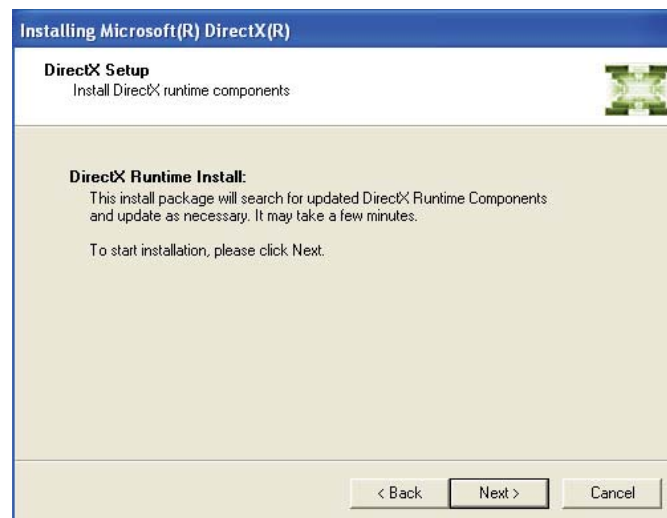
## Microsoft DirectX 9.0C Driver

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

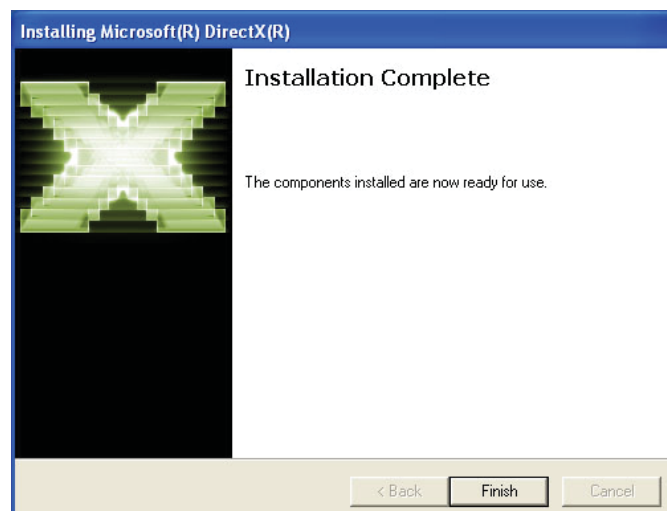
1. Click "I accept the agreement" then click Next.



2. To start installation, click Next.



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

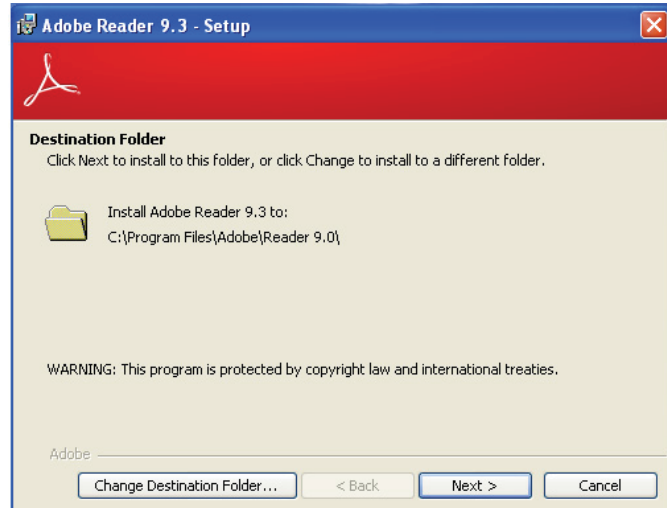




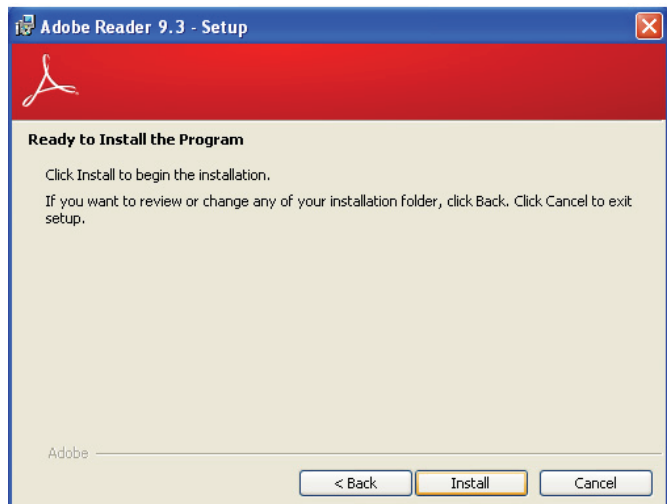
## Adobe Acrobat Reader 9.3

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

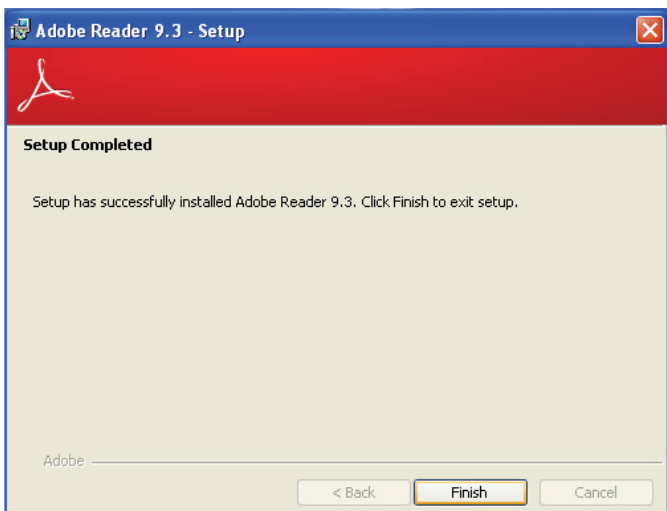
1. Click Next to install or click Change Destination Folder to select another folder.



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.

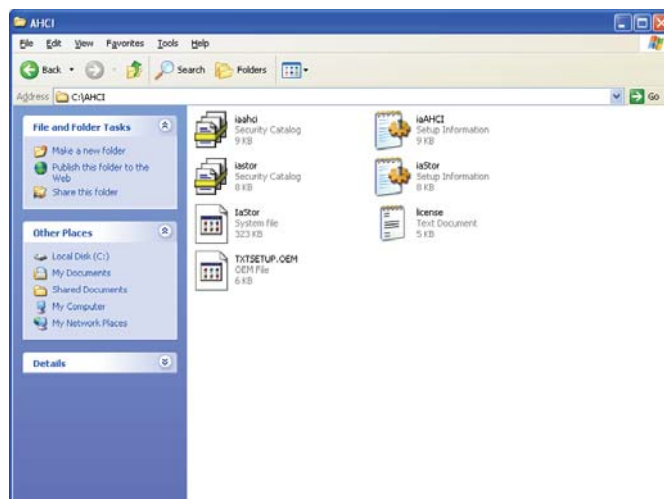


**Important:**

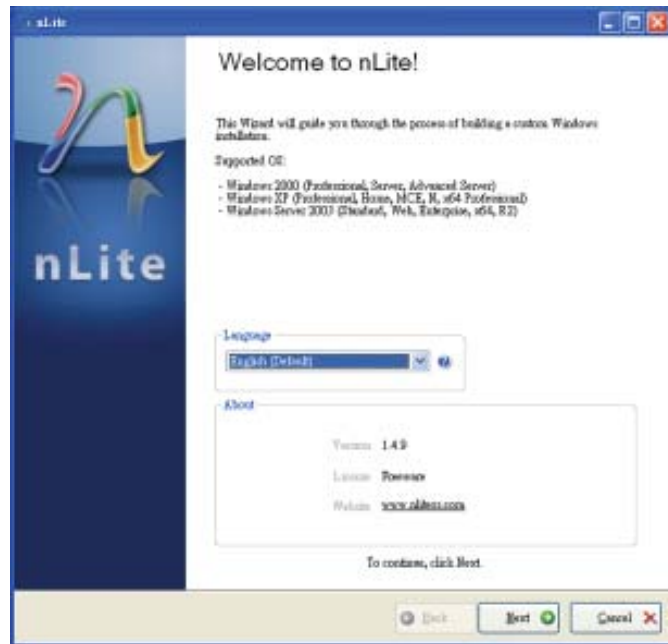
Due to its coding with Visual.Net, you may need to first install .NET Framework prior to installing nLite.

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.

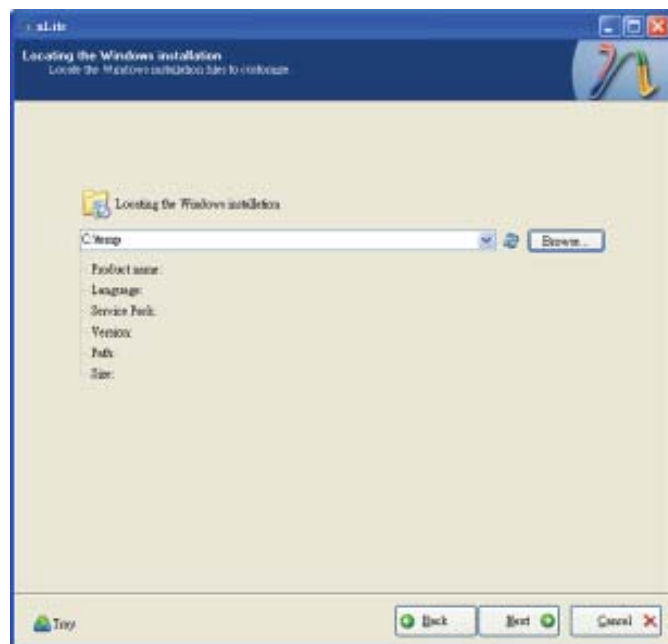


4. Insert the XP installation disc into an optical drive.
5. Launch nLite. The Welcome screen will appear. Click **Next**.

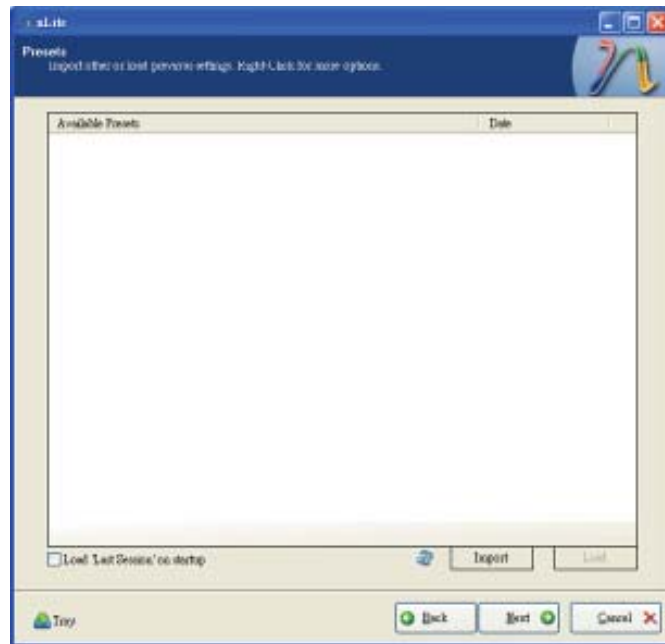


6. Click **Next** to temporarily save the Windows installation files to the designated default folder.

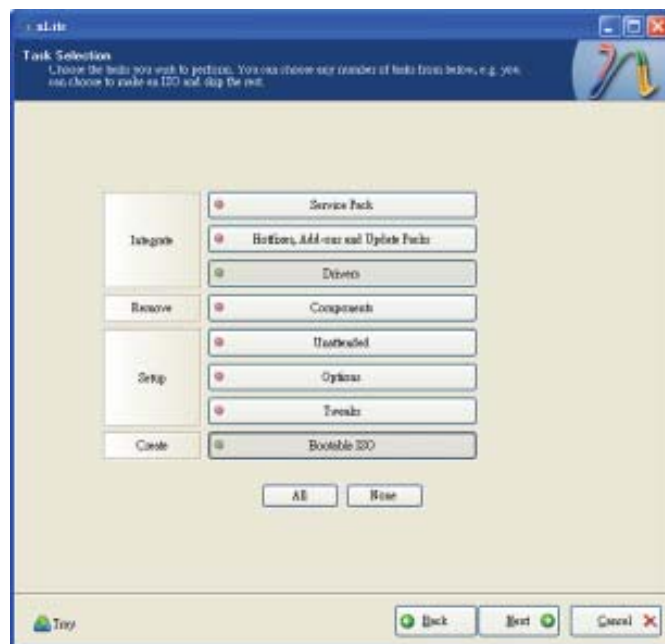
If you want to save them in another folder, click **Browse**, select the folder and then click **Next**.



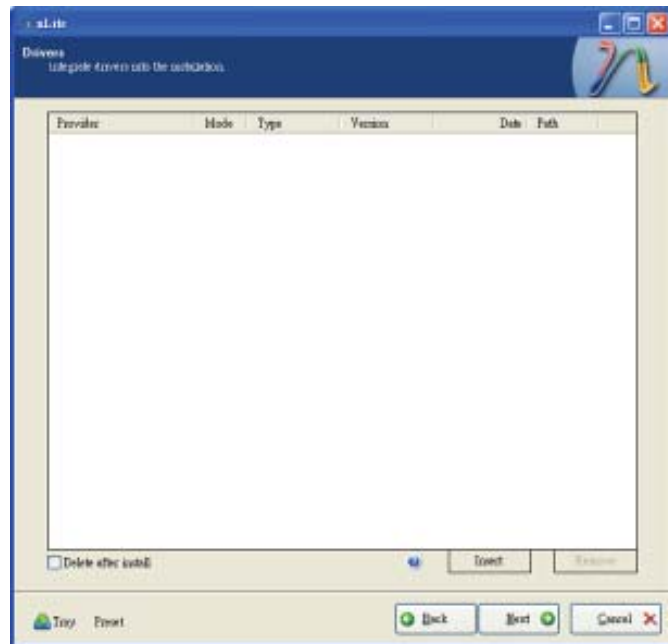
7. Click **Next**.



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

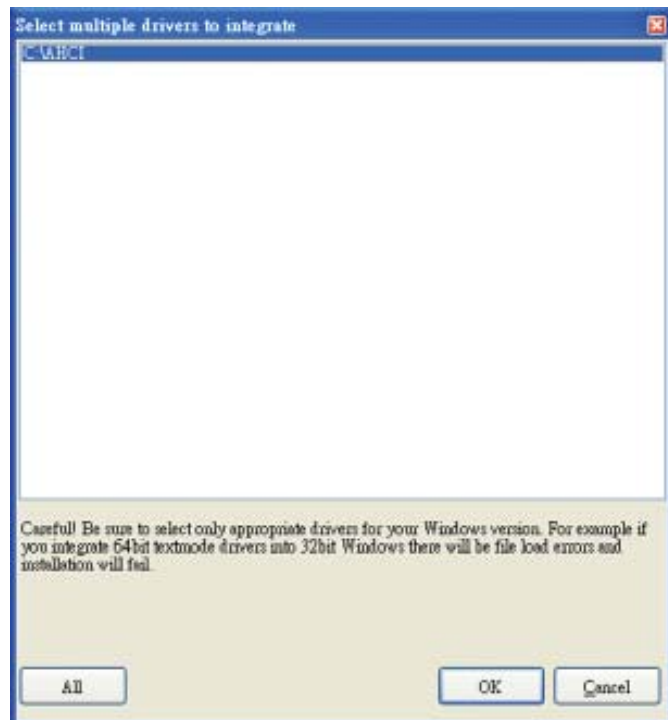


- Click **Insert** and then select **Multiple driver folder** to select the drivers you will integrate. Click **Next**.



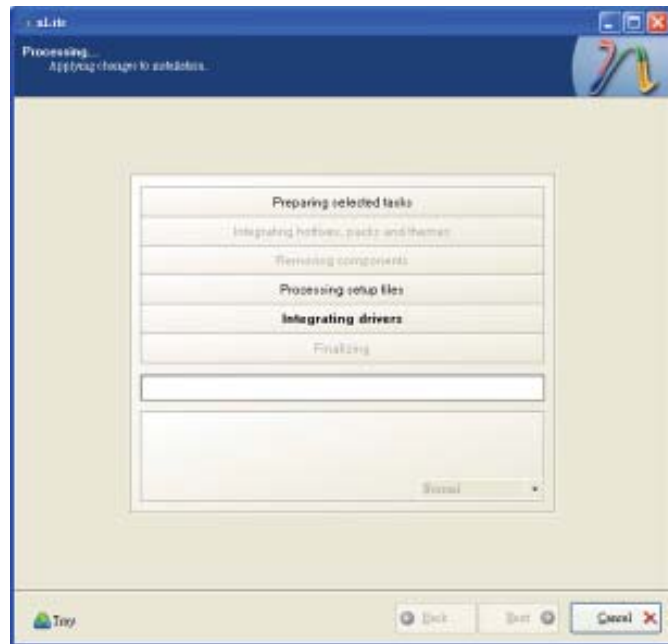
- Select only the drivers appropriate for the Windows version that you are using and then click **OK**.

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

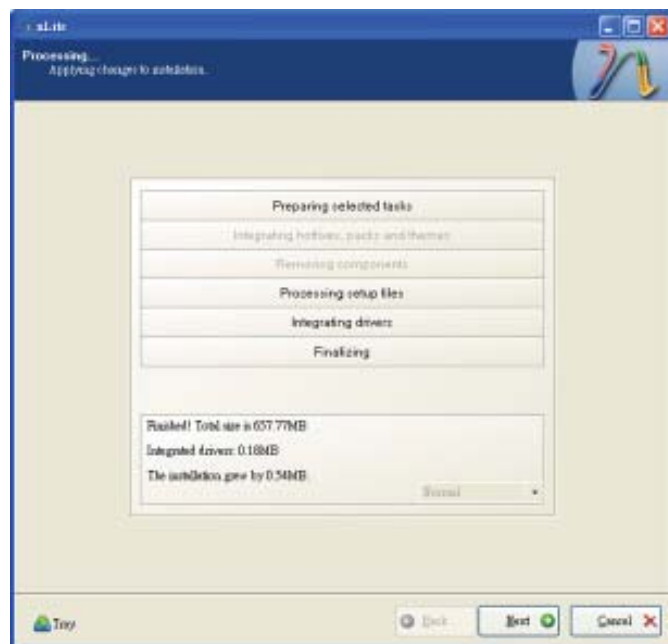




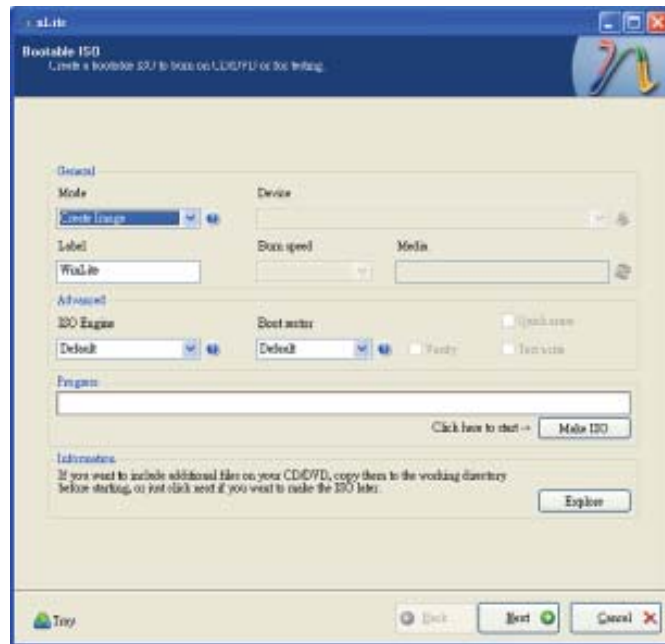
13. The program is currently integrating the drivers and applying changes to the installation.



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

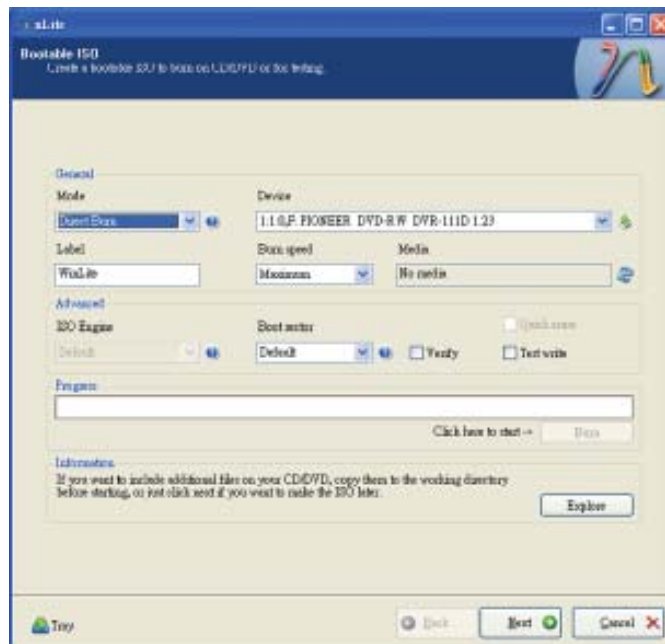


15. To create an image, select the **Create Image** mode under the General section and then click **Next**.



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

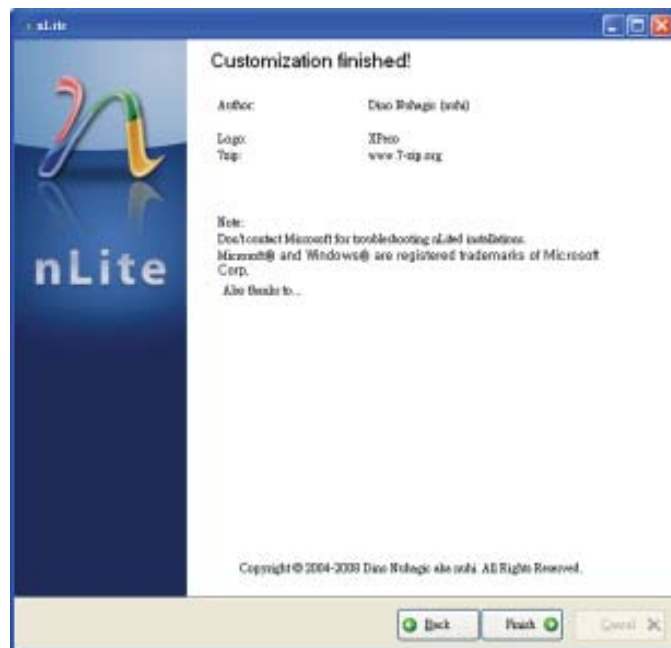
Select the optical device and all other necessary settings and then click **Next**.





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.

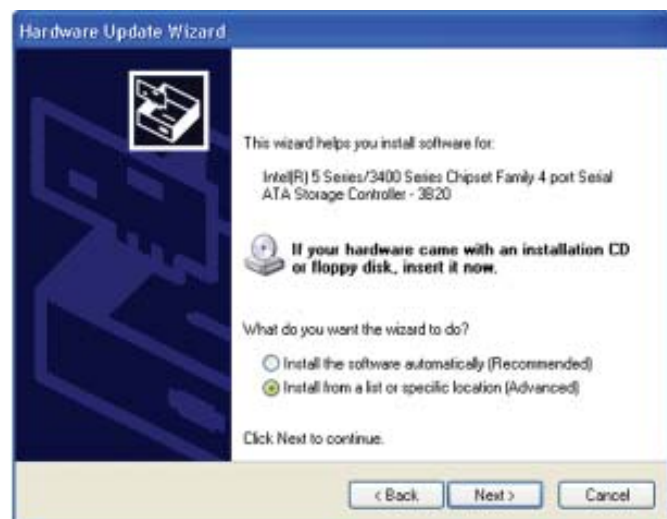




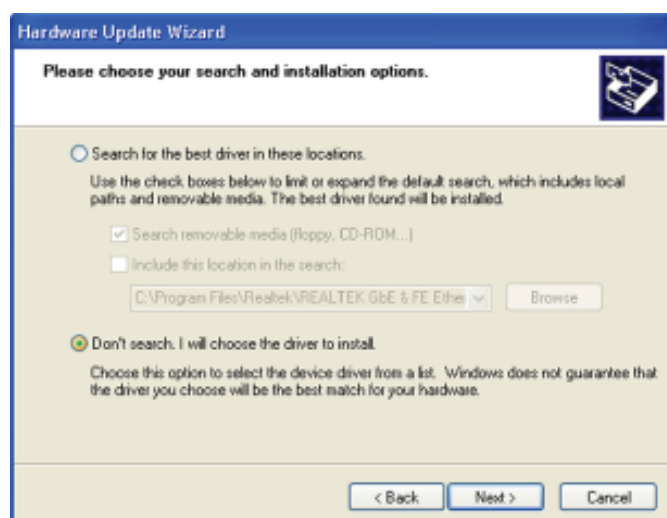
5. In the Hardware Update Wizard dialog box, select **“No, not this time”** then click **Next**.



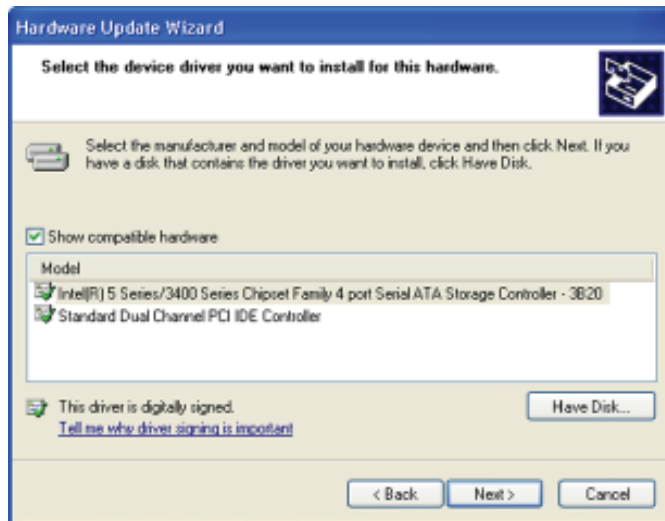
6. Select **“Install from a list or specific location (Advanced)”** and then click **Next**.



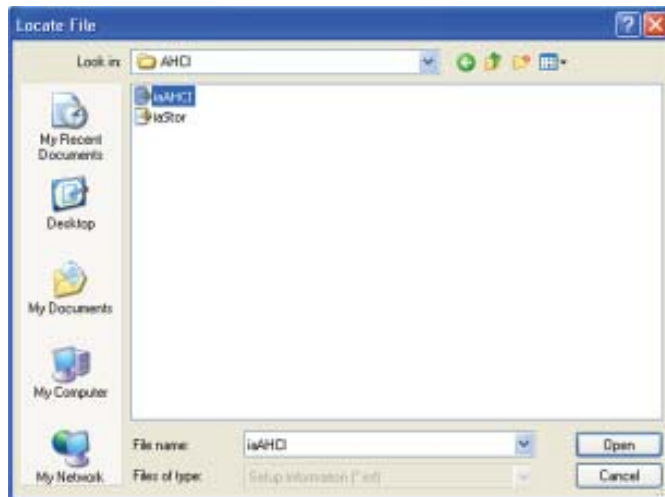
7. Select **“Don't search. I will choose the driver to install”** and then click **Next**.



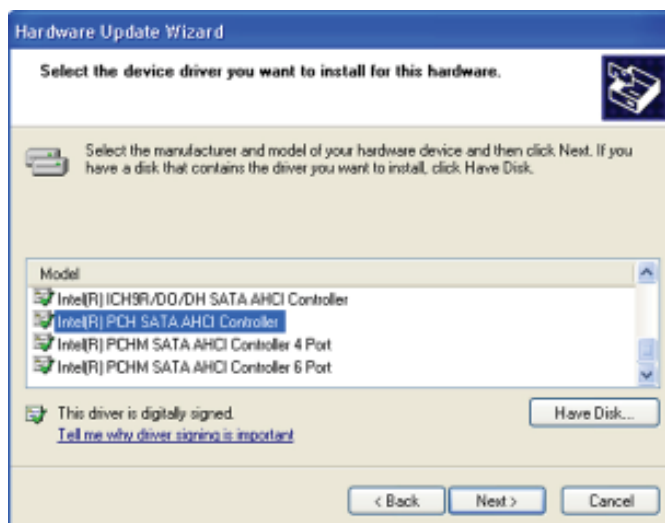
- Click **"Have Disk"**.



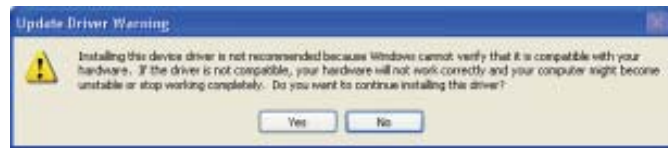
- Select C:\AHCI\iaAHCI.inf and then click **Open**.



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

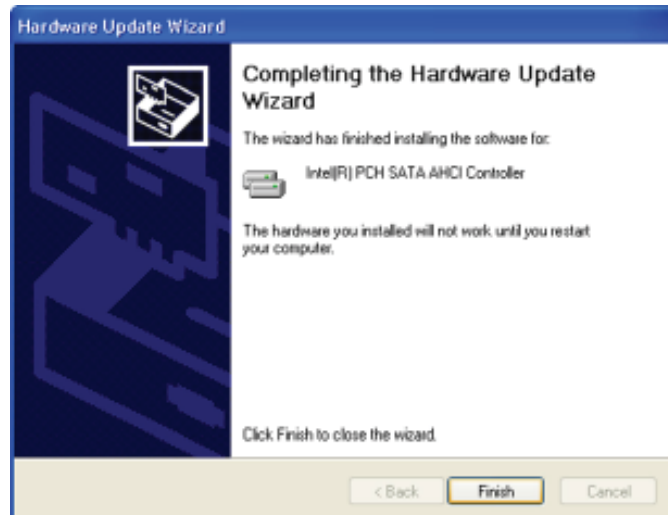


11. A warning message appeared because the selected SATA controller did not match your hardware device.

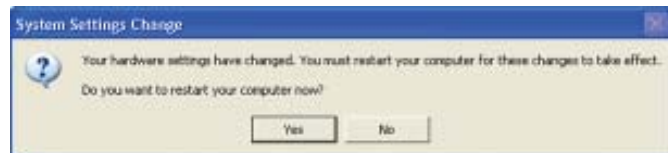


Ignore the warning and click **Yes** to proceed.

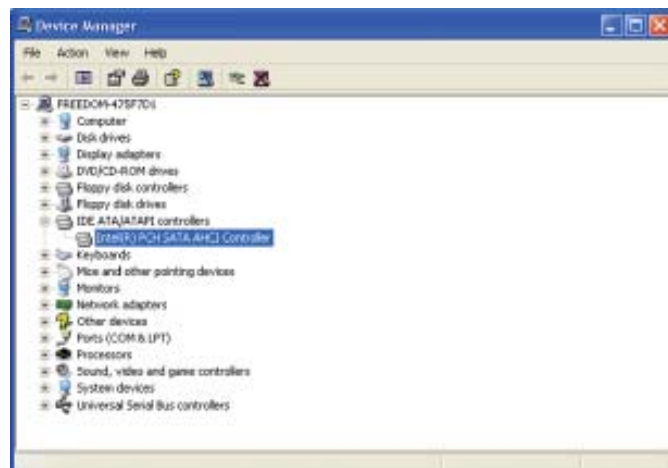
12. Click **Finish**.



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 - 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 C - 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.

## 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.