AEC-6636

Fanless Embedded Controller

Intel® Core™ i5-2510E & Celeron® B810

Processor

2 Gigabit Ethernet, 4 USB, 4 COM

1 VGA

AEC-6636 Manual 2nd Ed.
February 2013

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Acknowledgments

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- AMI is a trademark of American Megatrends Inc.
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Packing List

Before you begin operating the product, please make sure that the following materials are enclosed:

- 1 AEC-6636 Embedded Controller
- 2 Wallmount Brackets
- 1 Screw Package
- 4 RAM Thermal Pads (199815003 x 1, 1998666630 x 2, 1998666652 x 1)
- 1 DVD-ROM for manual (in PDF format) and drivers

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

Safety & Warranty

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a firm surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
14. If any of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.

d. The equipment does not work well, or you cannot get it to work according to the user's manual.

e. The equipment has been dropped and damaged.

f. The equipment has obvious signs of breakage.

15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20°C (-4°F) OR ABOVE 70°C (158°F). IT MAY DAMAGE THE EQUIPMENT.

FCC

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:
There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Below Table for China RoHS Requirements
产品中有毒有害物质或元素名称及含量

AAEON Boxer/ Industrial System

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○
外壳	×	○	○	○	○	○
中央处理器与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
电源	×	○	○	○	○	○

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 **SJ/T 11363-2006** 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 **SJ/T 11363-2006** 标准规定的限量要求。

备注：
一、此产品所标示之环保使用期限，系指在一般正常使用状况下。
二、上述部件物质中央处理器、内存、硬盘、电源为选购品。

Contents

Appendix B I/O Information

Appendix C RAID & AHCI Settings

Chapter

1

General Information

1.1 Introduction

The newest Boxer series AEC-6636 has been introduced by AAEON and it utilizes Intel® Core™ i5 2510E 2.5 GHz/ Celeron® B810 1.6 GHz processor. This condensed Embedded Controller is a fanless controller with the latest Intel® processor and chipset. The cutting-edge technology has been equipped to the AEC-6636 to satisfy the versatile demands of Factory Automation, Vehicle, and Digital Signage.

The AEC-6636 offers low power consumption system that while operating temperatures ranging from 0° to 45°C. The AEC-6636 is a standalone high performance controller designed for long-life operation and with high reliability. It can replace traditional methods and become the mainstream controller for the multimedia entertainment market. If you are looking for a multifunctional embedded controller, the AEC-6636 is definitely your best choice to fit into your vital applications.

1.2 Features

- Intel® Core™ i5 2510E/ Intel® Celeron® B810 Processor
- Intel® QM67 Chipset
- COM x 4
- USB x 4
- VGA x 1
- Gigabit Ethernet x 2
- 2.5” SATA Hard Disk Drive Bay
- Fanless Operation

1.3 Specifications

CPU		Intel® Core™ i5 2510E 2.5 GHz/ Intel® Celeron® B810 1.6 GHz
Chipset		Intel® QM67
System Memory		DDR3 1066/1333 SDRAM SODIMM x 1, Max. 8 GB
Display Interface	**VGA**	D-Sub 15 x 1(optional 2nd VGA)
	DVI	Optional extension kit
Storage Device	**SSD**	Onboard CFast™ x 1
	HDD	2.5" SATA Hard Disk Drive Bay x 1
Network	**LAN**	Gigabit Ethernet
Front I/O	**USB Host**	USB2.0 x 2
	Audio	Line-out
	Others	Power ON/OFF Switch x 1, antenna hole x 2
Rear I/O	**USB Host**	USB2.0 x 2
	LAN	RJ-45 x 2
	Serial Port	RS-232/422/485 x 1, RS-232 x 3
	Others	Power input x 1, VGA x 1
Expansion	**Mini Card**	1
Indicator	**Front**	Power LED x 1, Hard Disk Drive LED x 1
Power Requirement		DC-in 12V (A1/A2 version) 9~30V DC (A1M/A2M version)
System Cooling		Passive Cooling
Mounting		Wallmount

Operating Temperature		32°F ~113°F (0°C~45°C)--CFast™ 32°F ~122°F (0°C~50°C)--HDD
Storage Temperature		-4°F ~158°F (-20°C~70°C)
Anti-Vibration		5 g rms/5~500 Hz/ random operation (CFast™); 1 g rms/5~500 Hz/ random operation (HDD)
Anti-Shock		50 G peak acceleration (11 msec, duration)-CFast™ 20 G peak acceleration (11 msec, duration)-HDD
Certification	**EMC**	CE/FCC Class A
Dimension		8.35" (W) x 2.52" (H) x 6.2"(D) (212mm x 64mm x 156mm)
Gross Weight		7.94 lb (3.6 kg)

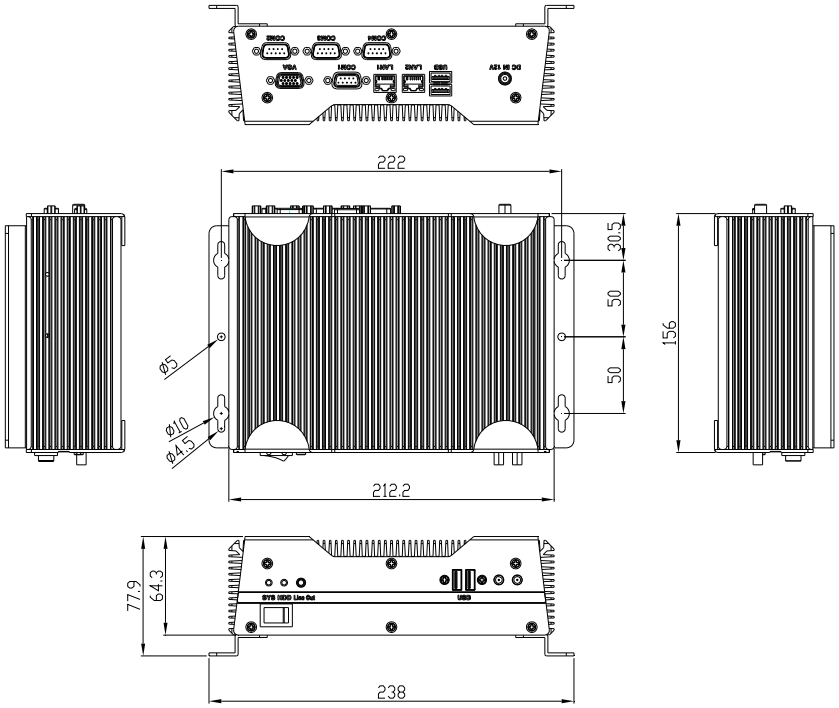
Chapter

2

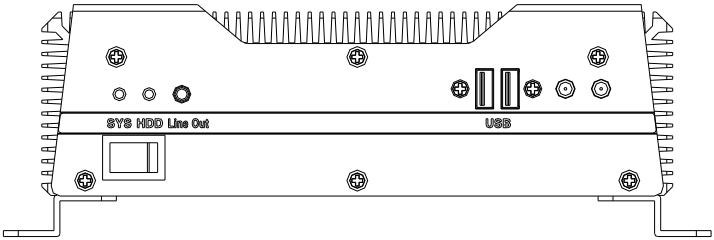
Hardware Installation

2.1 Dimension & Connectors of AEC-6636

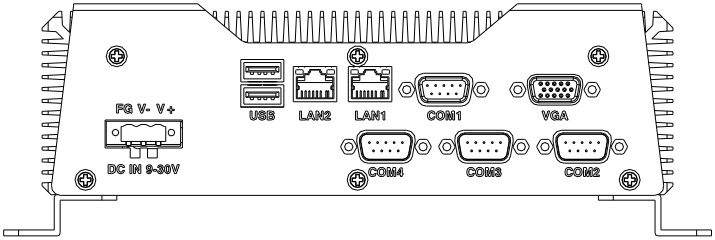
A1/A2 version



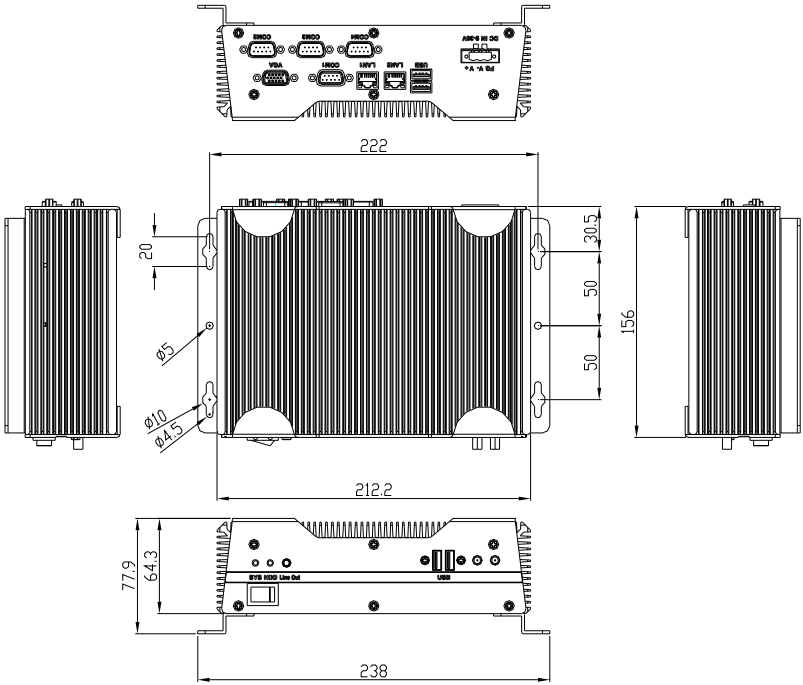
Connectors on the front panel



Connectors on the rear panel

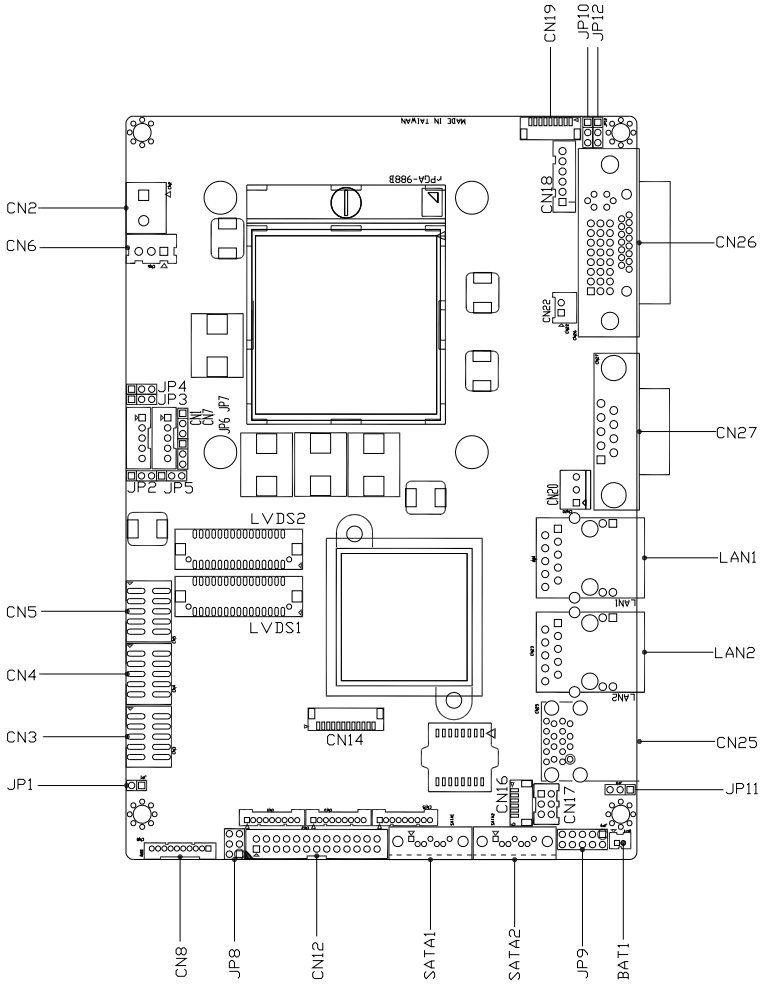


A1M/A2M Version

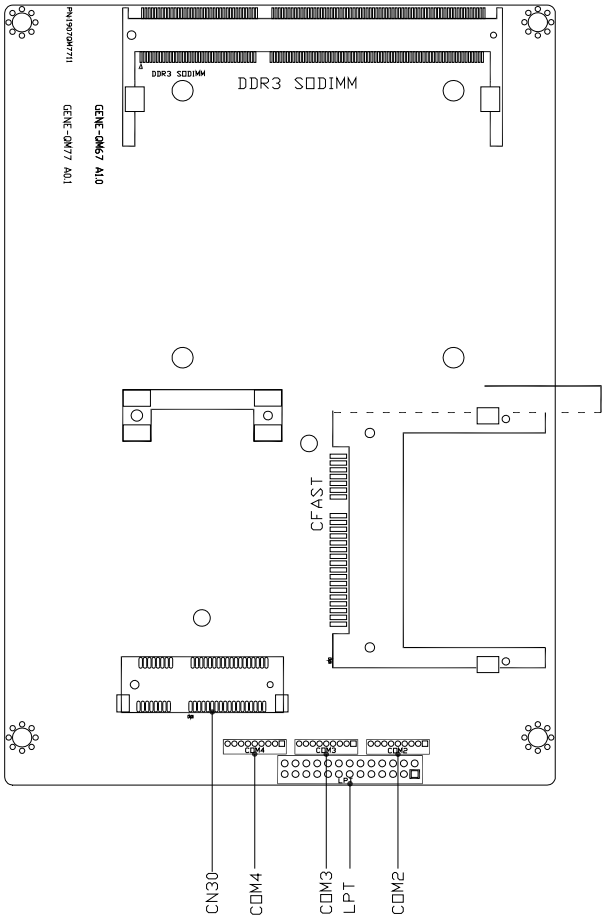


2.2 Connectors and Jumpers of The Main Board

Component Side



Solder Side



2.3 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Label	Function
JP2	LVDS Port 2 Operating VDD Selection
JP3	LVDS Port 1 Backlight Inverter VCC Selection
JP4	LVDS Port 2 Backlight Inverter VCC Selection
JP5	LVDS Port 1 Operating VDD Selection
JP6	LVDS Port 1 Backlight Lightness Control Mode Selection
JP7	LVDS Port 2 Backlight Lightness Control Mode Selection
JP8	COM2 Pin8 Function Selection
JP9	Front Panel Connector
JP10	Touch Screen 4/5/8-wire Mode Selection
JP11	Clear CMOS Selection
JP12	AT/ATX Power Supply Mode Selection

2.4 List of Connectors

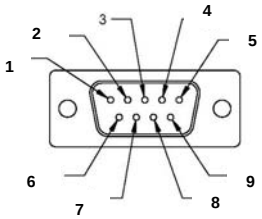
The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

Label	Function
CN1	LVDS Port 1 Inverter / Backlight Connector
CN2	External +12V Input

CN3	USB2.0 Port 7 and 8
CN4	USB2.0 Port 5 and 6
CN5	USB2.0 Port 3 and 4
CN6	External +5VSB Input
CN7	LVDS Port 2 Inverter / Backlight Connector
CN8	Audio I/O Port
CN9	LVDS Port 1
CN10	LVDS Port 2
CN11	COM Port 2
CN12	LPT / Digital IO Port
CN13	COM Port 3
CN15	COM Port 4
CN16	UIM Card Module
CN17	PS/2 Keyboard/Mouse Combo Port
CN18	+5VSB Output with SMBus
CN19	Touch Screen Connector
CN20	CPU FAN
CN22	+5V Output for SATA HDD
CN23	Realtek LAN (RJ-45) Port
CN24	Intel LAN (RJ-45) Port
CN25	USB Ports 1 and 2
CN26	VGA / DVI Ports (depend on hardware configuration)
CN27	COM Port 1 (D-SUB 9)

CN28	CFast™ Slot
CN29	DDR3 SODIMM Slot
CN30	Mini Card Slot
SATA1	SATA Port 1 Connector
SATA2	SATA Port 2 Connector

2.5 RS-232/422/485 Serial Port Connector (COM2)



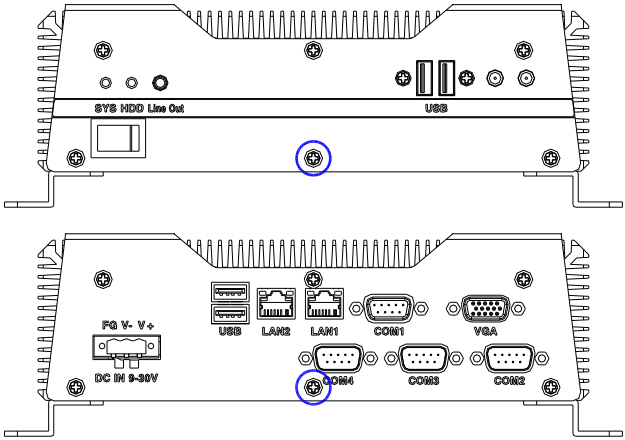
Pin	Signal	Pin	Signal
1	DCD (422TXD-/485DATA-)	2	RXD (422RXD+)
3	TXD (422TXD+/485DATA+)	4	DTR (422RXD-)
5	GND	6	DSR
7	RTS	8	CTS
9	RI/+5V/+12V		

COM2 RI/+5V/+12V Selection (JP8)

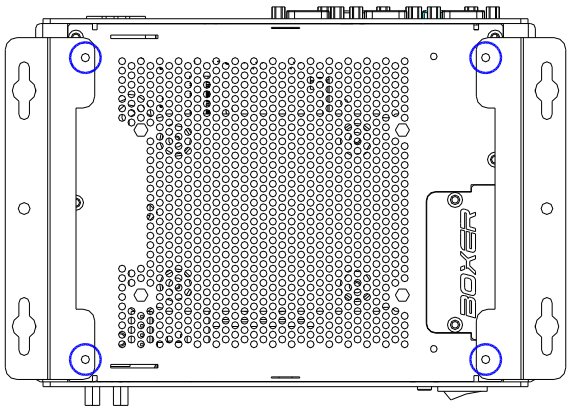
Pin	Signal
1-2	+12V
3-4	RI (Default)
5-6	+5V

2.6 CFast™ Card Installation

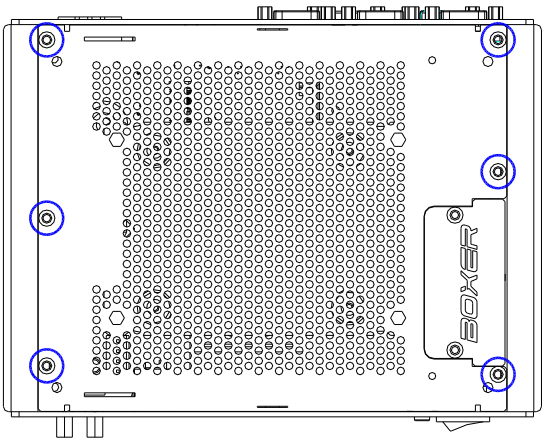
Step 1: Unfasten the two screws of the AEC-6636



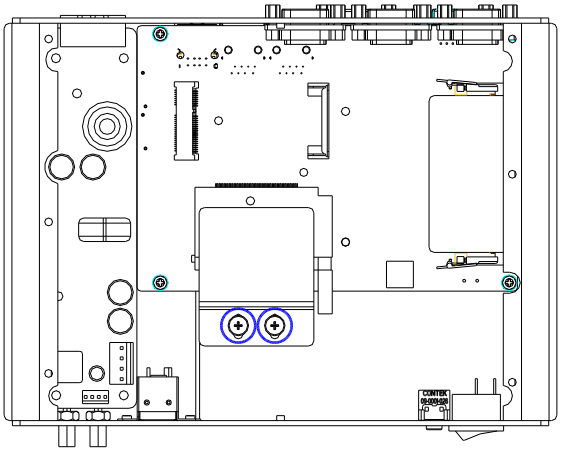
Step 2: Unfasten the four screws of the brackets



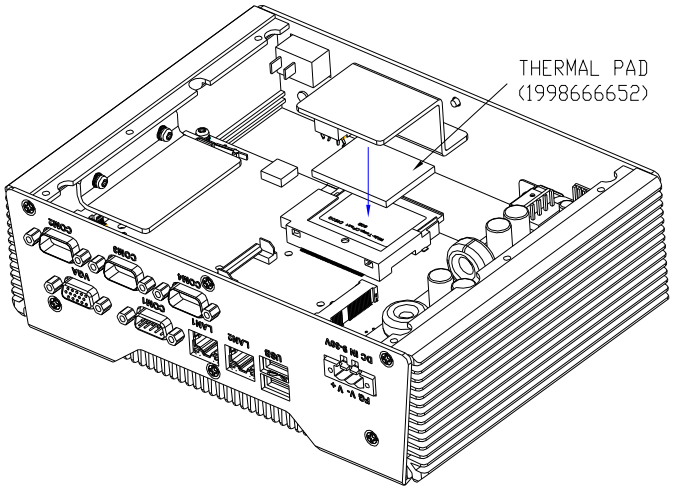
Step 3: Unfasten the six screws of the bottom cover



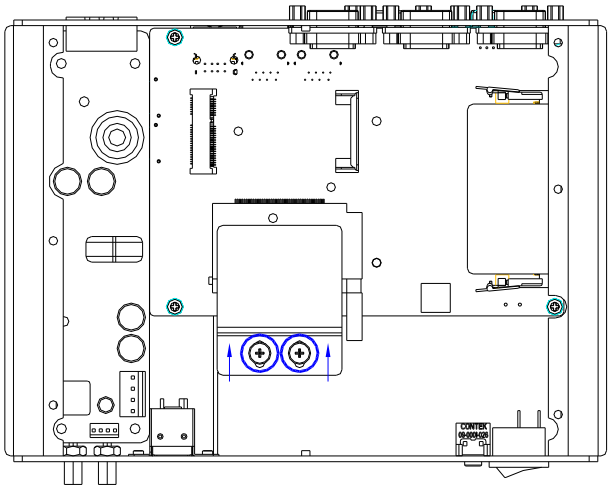
Step 4: Unfasten the two screws of the CFast™ bracket



Step 5: Install the CFast™ Card to the CFast™ slot and adhere the thermal pad onto the CFast™ Card. Then cover with the CFast™ Bracket

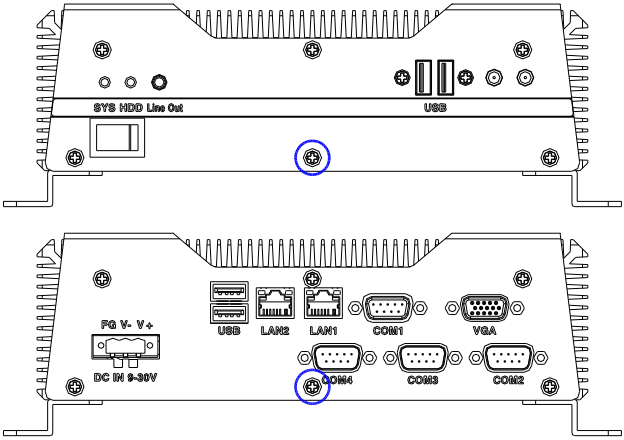


Step 6: Fasten the two screws of the CFast™ bracket and finish the installation

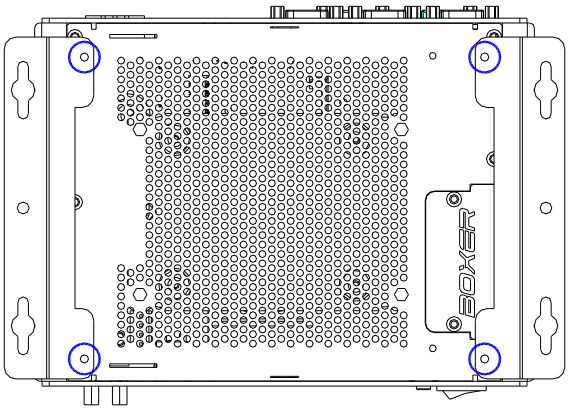


2.7 Hard Disk Drive (HDD) Installation

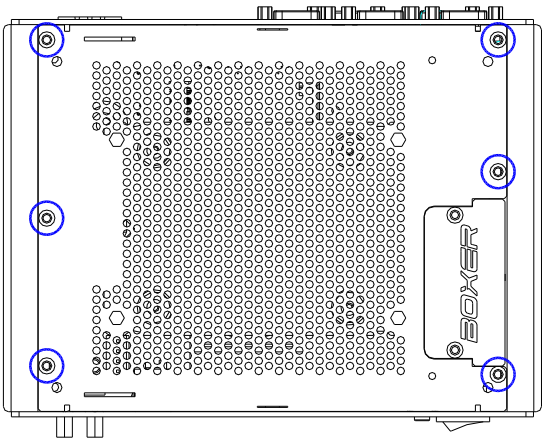
Step 1: Unfasten the two screws of the AEC-6636



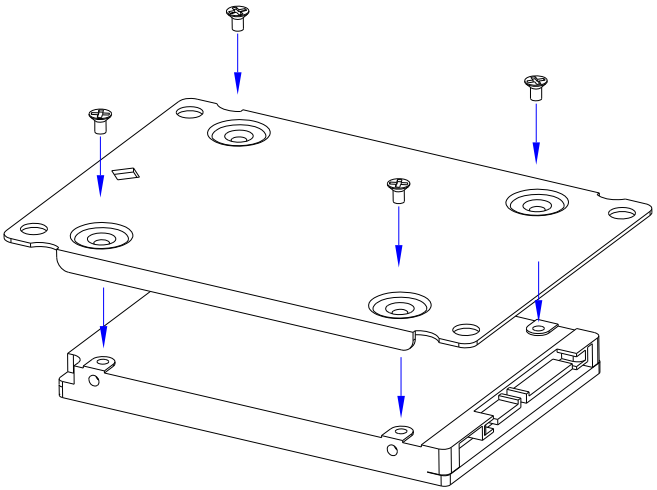
Step 2: Unfasten the four screws of the brackets



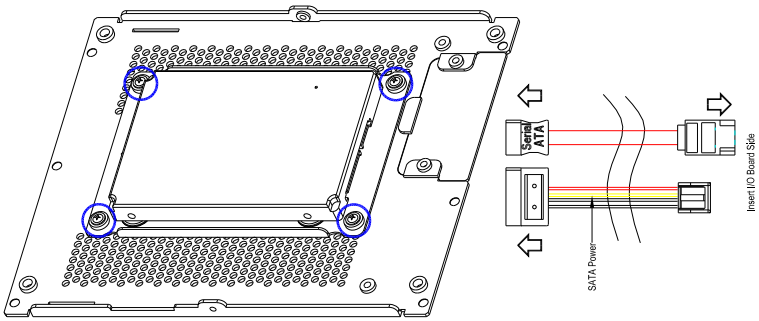
Step 3: Unfasten the six screws of the bottom cover



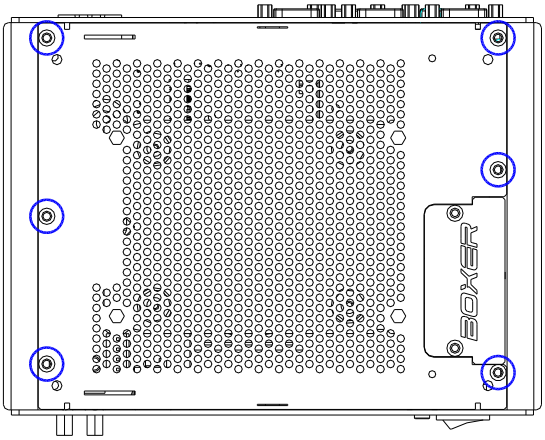
Step 4: Get the HDD and HDD Bracket ready. Fasten the four screws to fix the HDD and HDD bracket



Step 5: Connect the SATA cable to the HDD

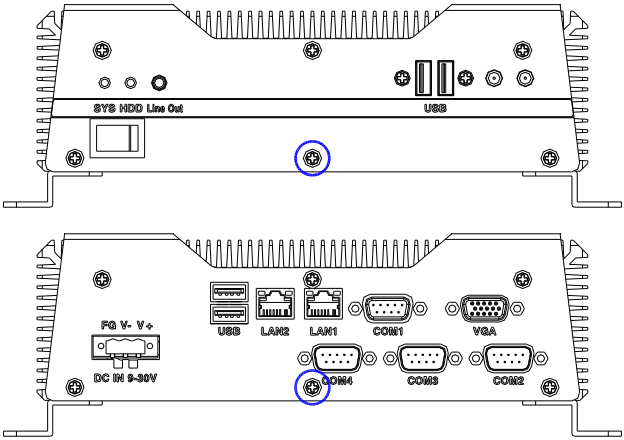


Step 6: Close the bottom cover of the AEC-6636 and fasten the screws

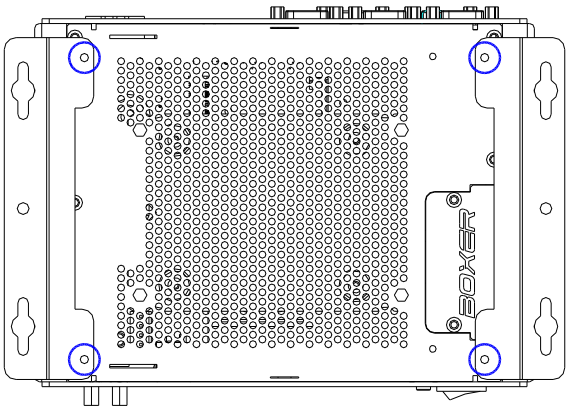


2.8 Memory Card Installation

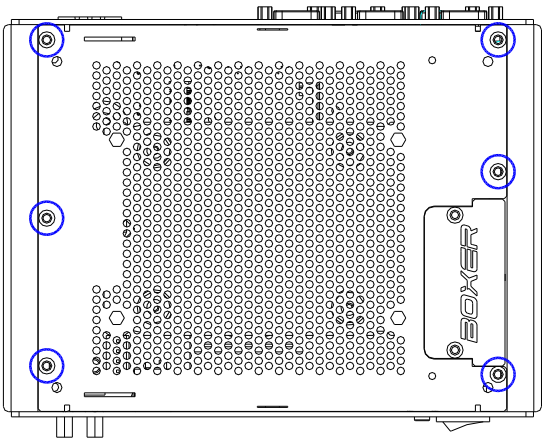
Step 1: Unfasten the two screws of the AEC-6636



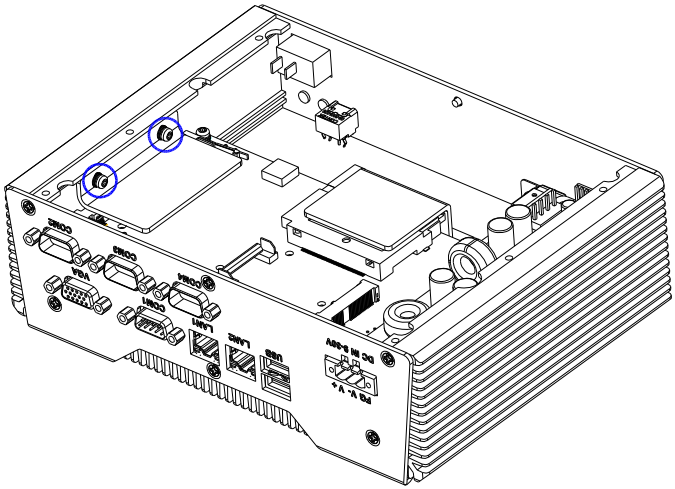
Step 2: Unfasten the four screws of the brackets



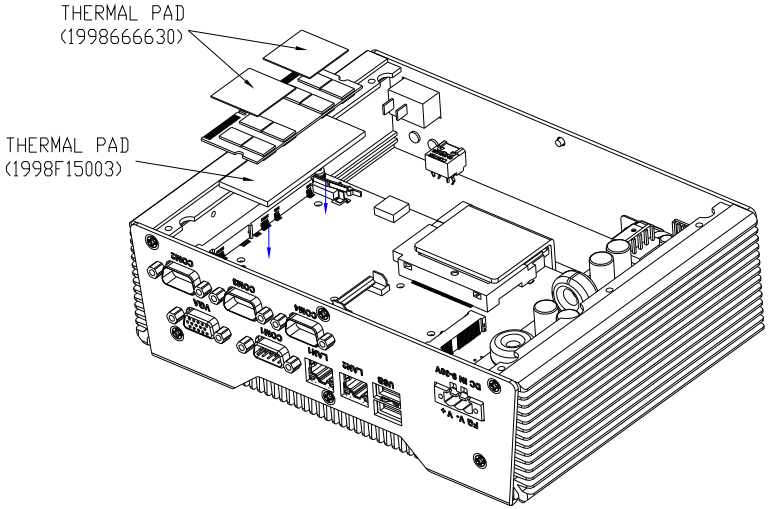
Step 3: Unfasten the six screws of the bottom cover



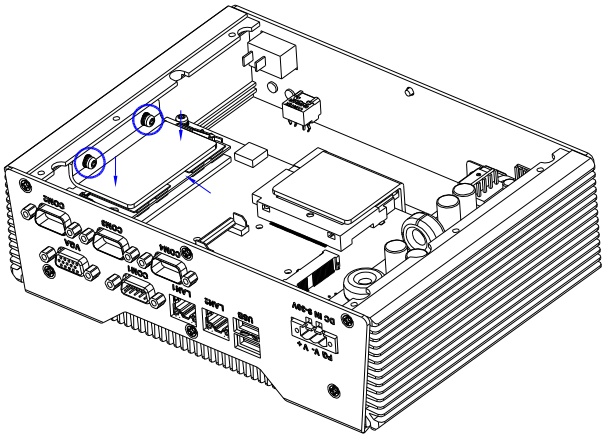
Step 4: Unfasten the screws of the bracket of Memory Card



Step 5: Adhere the Thermal pads onto the top and bottom of the Memory Card, and then insert the RAM at 30-degree angle to the memory slot and press

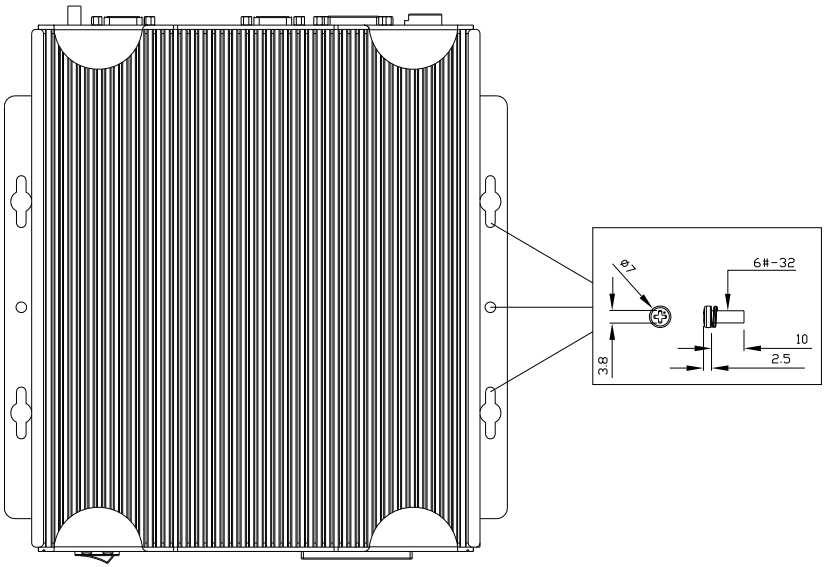


Step 6: Fasten the screws of the bracket of Memory Card and finish the installation



2.9 Wallmount Kit Installation

Get the brackets ready and fasten appropriate four screws on each bracket. After fastening the two brackets on the bottom lid of AEC-6636, the wallmount kit installation has been finished.



Chapter

3

AMI BIOS Setup

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The AEC-6636 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del> or <F2> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

Enable disable boot option for legacy network devices.

Chipset

host bridge parameters.

Boot

Enables/disable quiet boot option.

Security

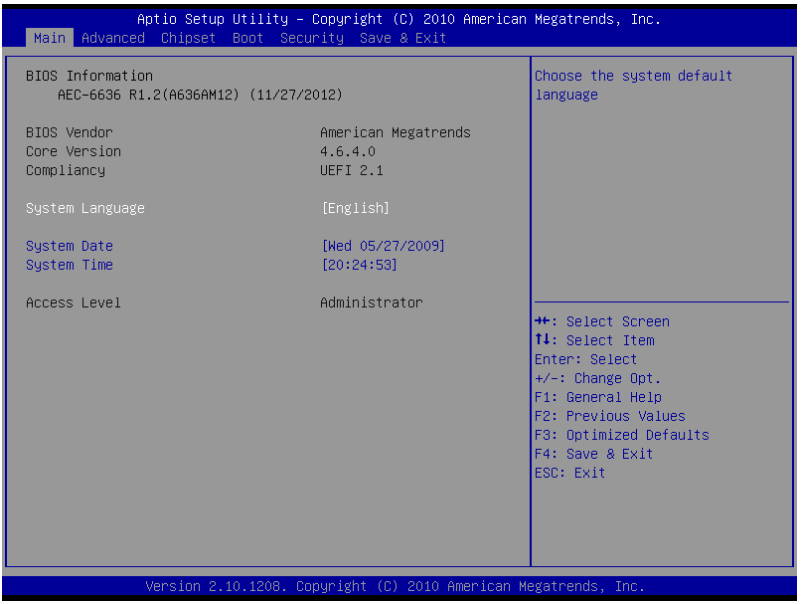
Set setup administrator password.

Save&Exit

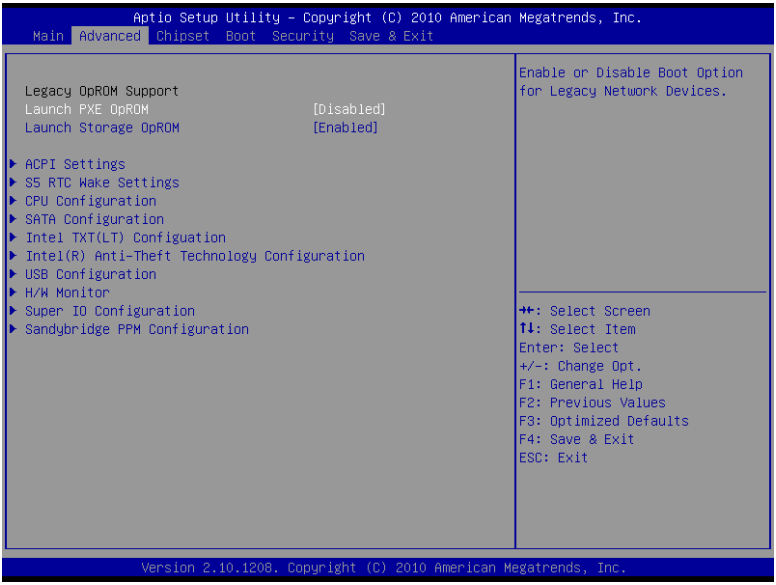
Exit system setup after saving the changes.

Press '*Delete*' Key to enter Setup menu

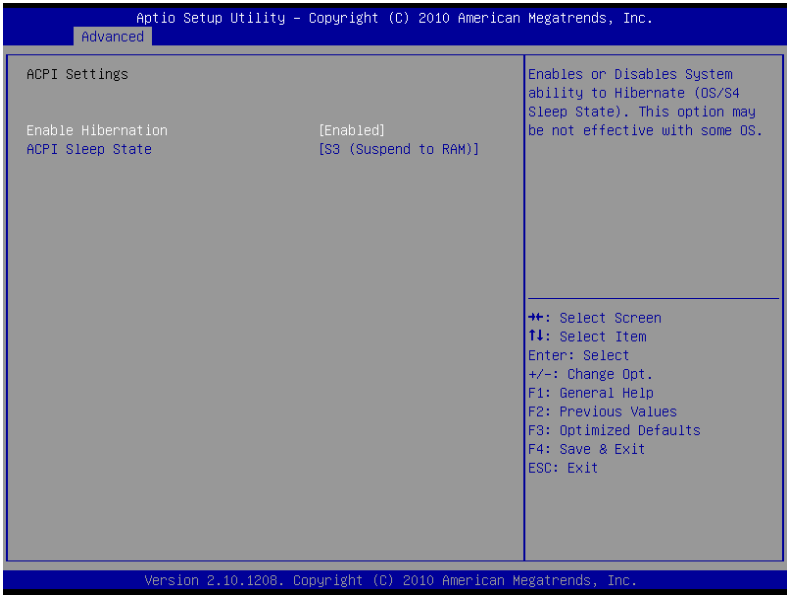
Main



Advanced


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit
Legacy OpROM Support
Launch PXE OpROM [Disabled]
Launch Storage OpROM [Enabled]
ACPI Settings
S5 RTC Wake Settings
CPU Configuration
SATA Configuration
Intel TXT(LT) Configuation
Intel(R) Anti-Theft Technology Configuration
USB Configuration
H/W Monitor
Super IO Configuration
Sandybridge PPM Configuration
Enable or Disable Boot Option for Legacy Network Devices.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

ACPI Settings

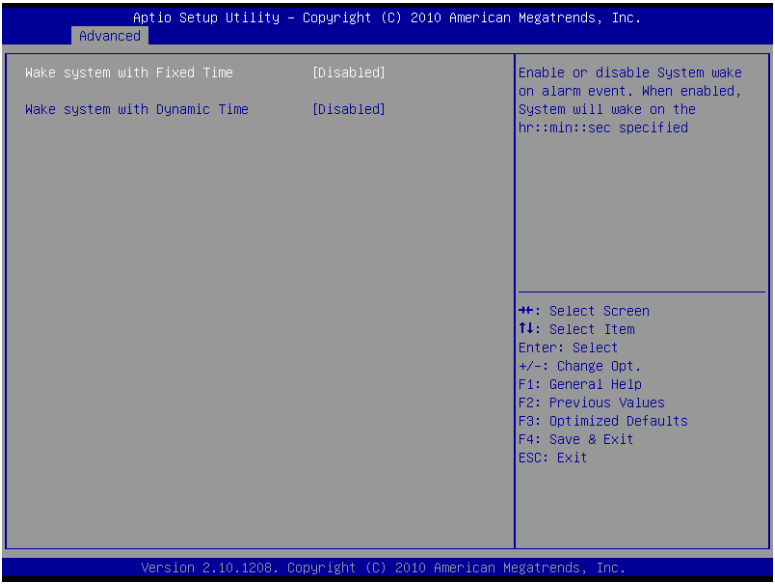


Options summary:

Enable Hibernation	Disable	
	Enable	Optimal Default, Failsafe Default
Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.		
ACPI Sleep State	Suspend Disabled	
	S1 (CPU Stop Clock)	
	S3 (Suspend to RAM)	Optimal Default, Failsafe Default

Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

S5 RTC Wake Settings

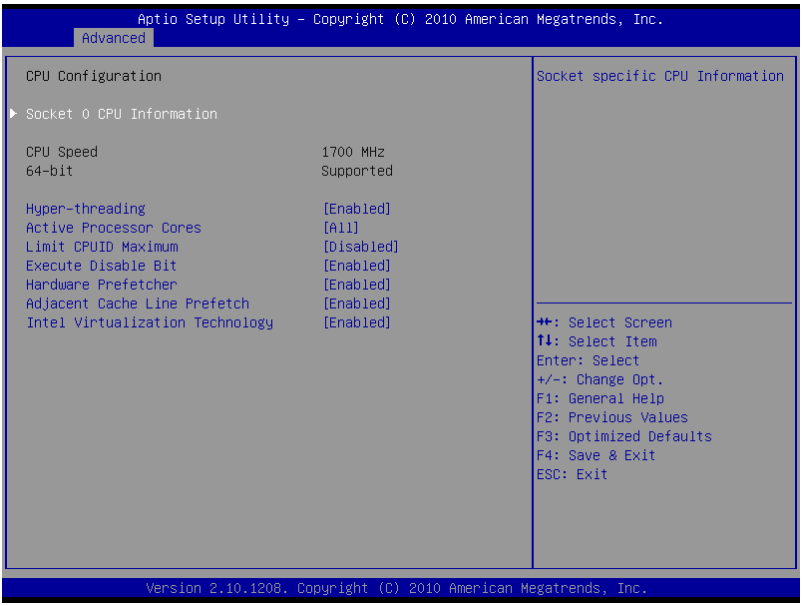


Options summary:

Wake system with Fixed Time		Enable	
		Disable	Optimal Default, Failsafe Default
	Wake up hour	0	
	Wake up minute	0	
	Wake up second	0	

Wake system with Dynamic Time		Enable	
		Disable	Optimal Default, Failsafe Default
	Wake up minute increase	0	
Select RTC wake mode			

CPU Configuration



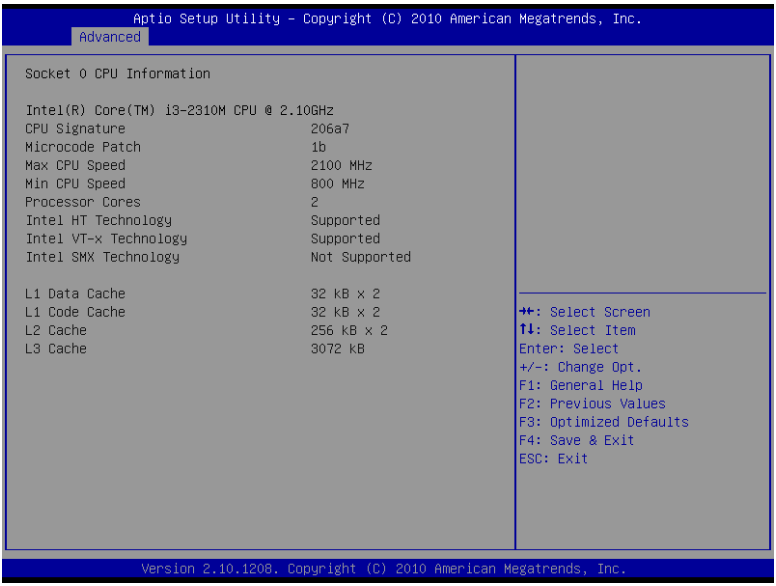
Options summary :

Hyper-Threading	Disabled	

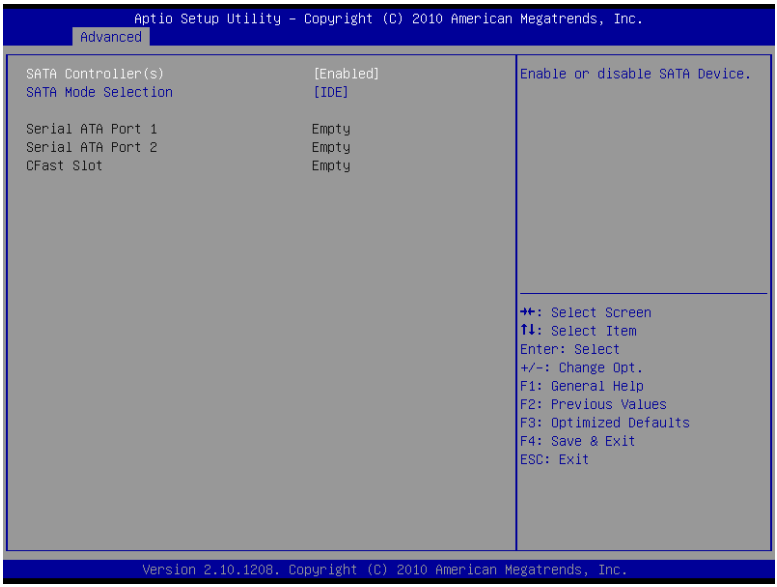
	Enabled	Optimal Default, Failsafe Default
En/Disable CPU Hyper-Threading function		
Active Processor Cores	All	Optimal Default, Failsafe Default
	1	
Number of cores to enable in each processor package.		
Limit CPUID Maximum	Disabled	Optimal Default, Failsafe Default
	Enabled	
Disabled for Windows XP		
Execute Disable Bit	Disabled	
	Enabled	Optimal Default, Failsafe Default
XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)		
Hardware Prefetcher	Disabled	
	Enabled	Optimal Default, Failsafe Default
To turn on/off the Mid Level Cache (L2) streamer prefetcher.		
Adjacent Cache Line Prefetch	Disabled	
	Enabled	Optimal Default, Failsafe Default

To turn on/off prefetching of adjacent cache lines.		
Intel Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology		

Socket 0 CPU Information



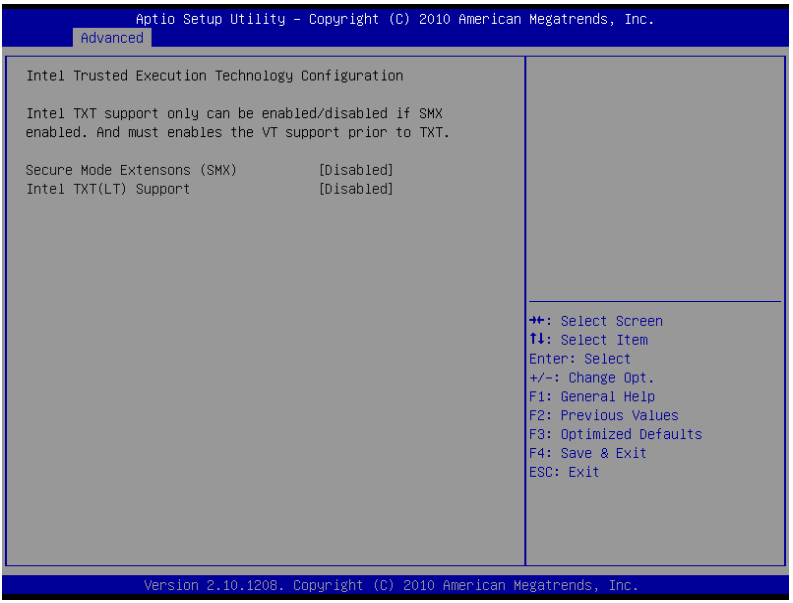
SATA Configuration



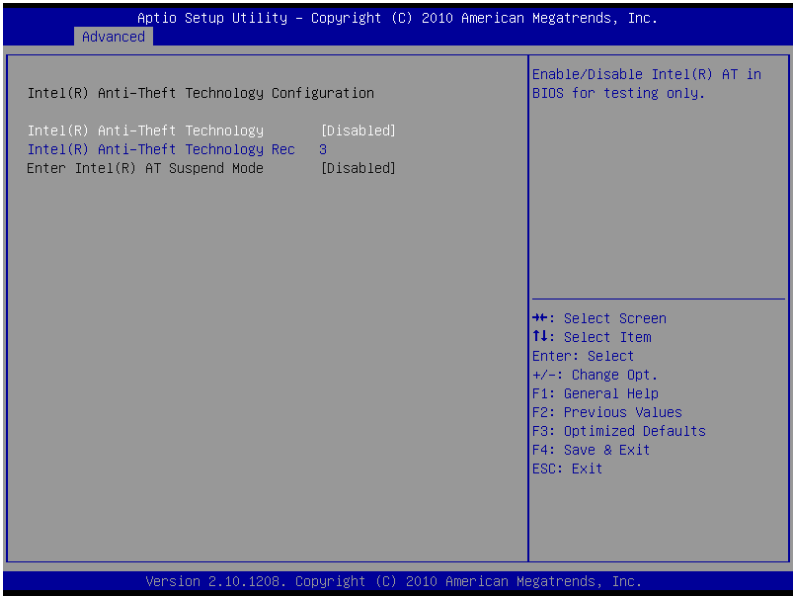
Options summary:

SATA Controller(s)	Enable	Optimal Default, Failsafe Default
	Disable	
Enable or disable SATA Device.		
SATA Mode Selection	IDE	Default
	AHCI	
	RAID	
Determines how SATA controller(s) operate.		

Intel TXT


Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
Advanced
Intel Trusted Execution Technology Configuration
Intel TXT support only can be enabled/disabled if SMX
enabled. And must enables the VT support prior to TXT.
Secure Mode Extensons (SMX) [Disabled]
Intel TXT(LT) Support [Disabled]
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

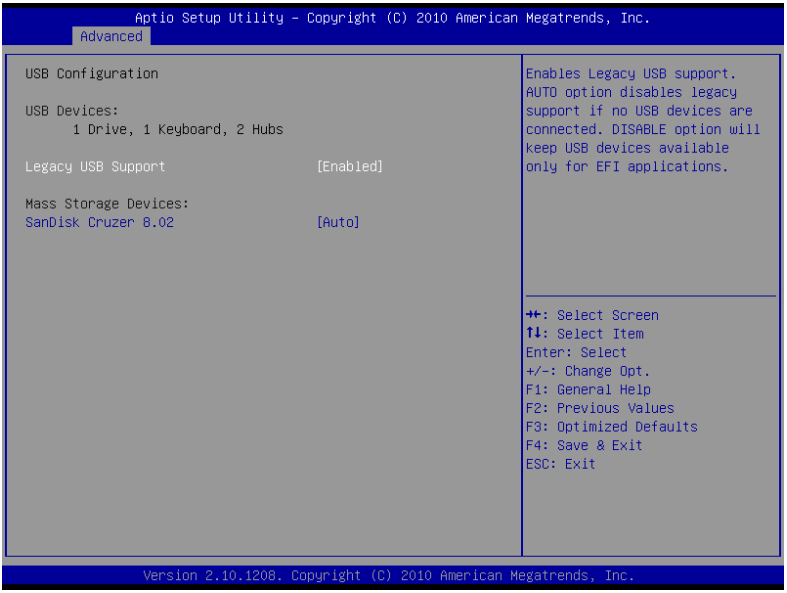
Intel Anti-Theft



Options summary:

Intel(R) Anti-Theft Technology Configuration	Disable	Optimal Default, Failsafe Default
	Enable	
Disabling Intel(R) AT Allow user to login to platform. This is strictly for testing only. This does not disable AT Services in ME.		

USB Configuration

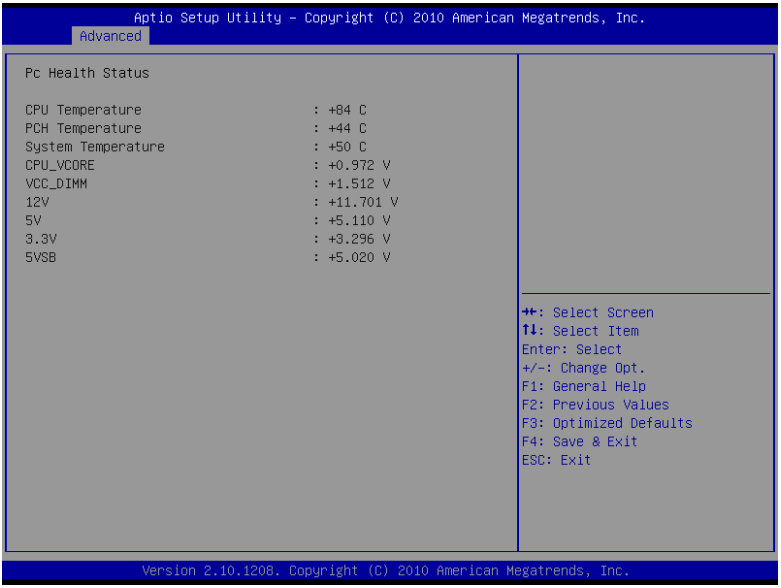


Options summary:

Legacy USB Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. *AUTO option disables legacy support if no USB devices are connected*		
Device Name (Emulation Type)	Auto	Optimal Default, Failsafe Default

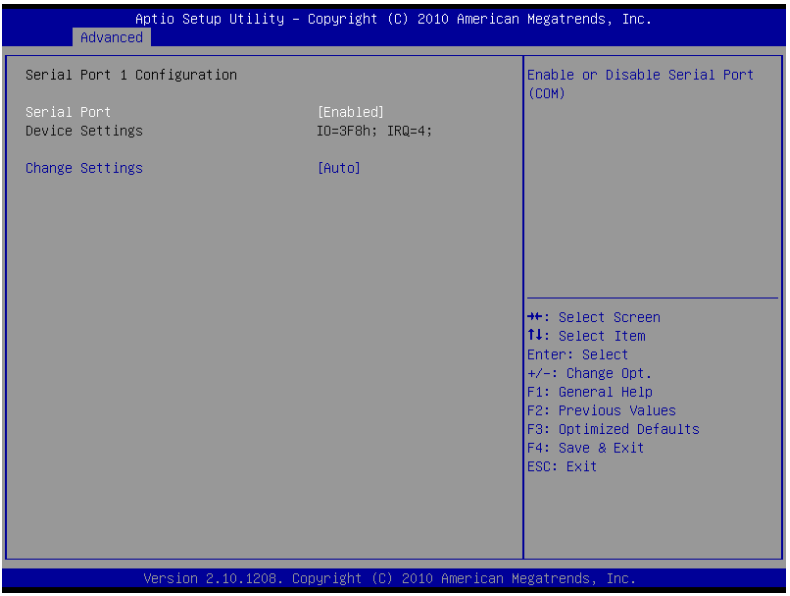
	Floppy	
	Forced FDD	
	Hard Disk	
	CDROM	
If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive)		

H/W Monitor

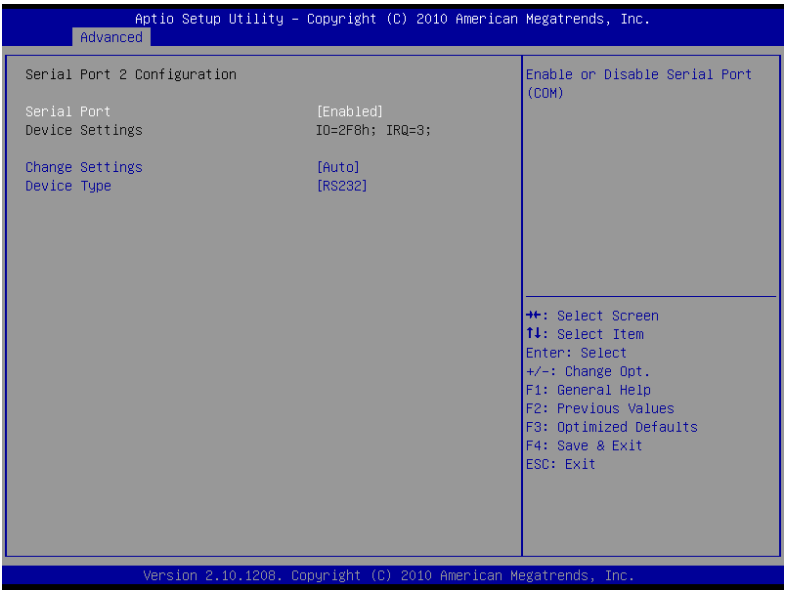


Super IO Configuration

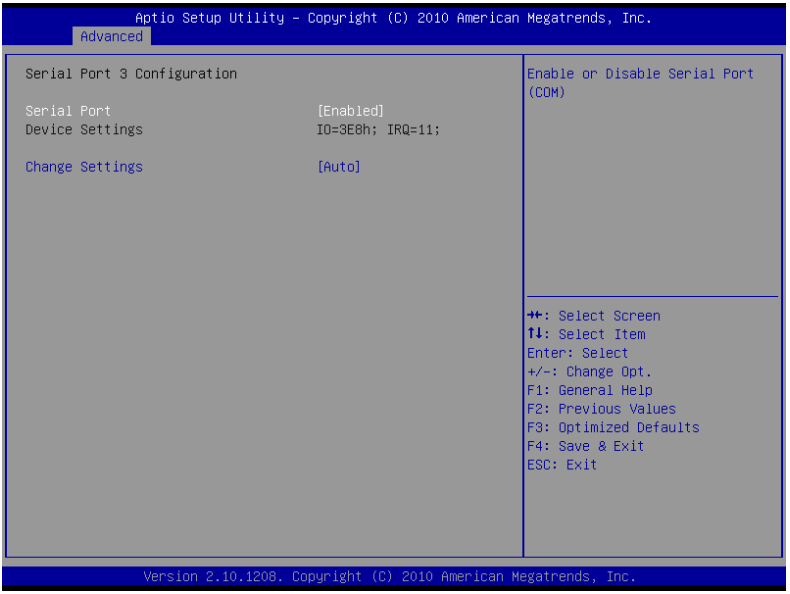
Serial Port 1 Configuration



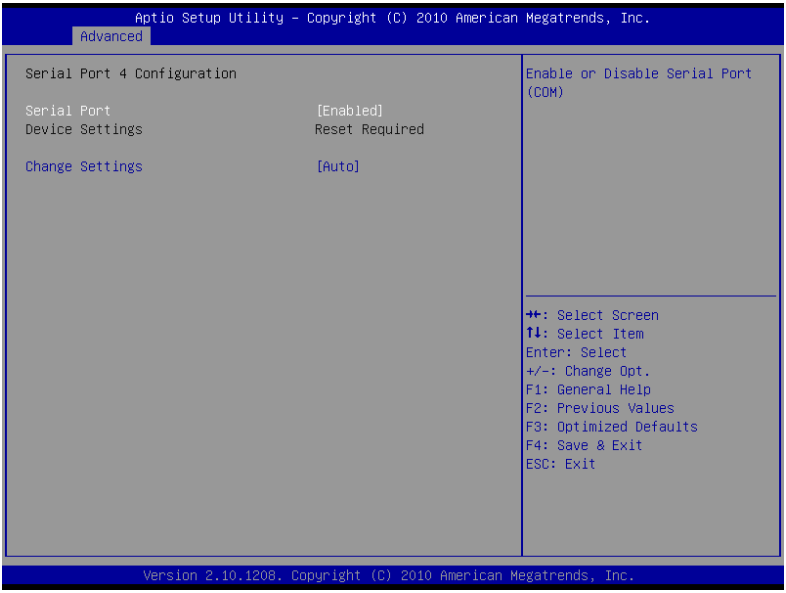
Serial Port 2 Configuration



Serial Port 3 Configuration



Serial Port 4 Configuration



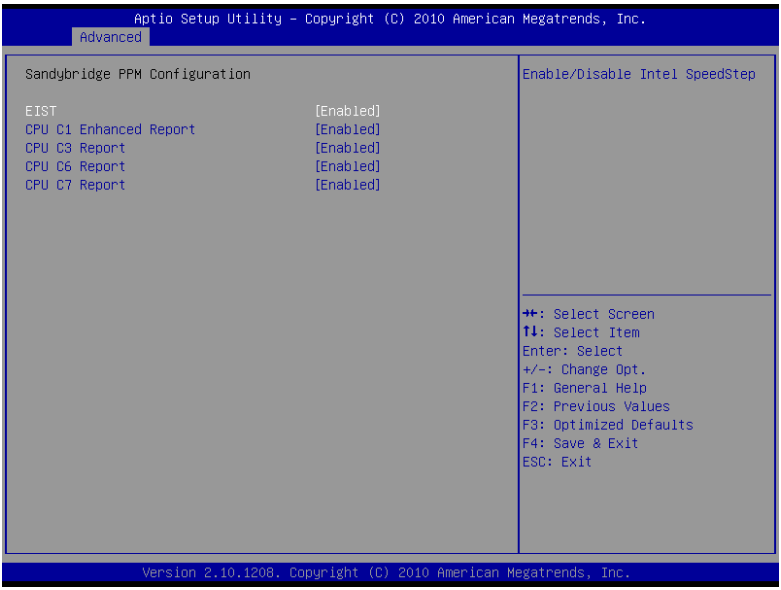
Options summary:

Serial Port	Disabled	
	Enabled	Default
Enable or Disable Serial Port (COM)		
Change Settings	Auto	Default
(Serial Port 1)	IO=3F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;	

	IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	
Select an optimal setting for Super IO device.		
Change Settings	Auto	Default
(Serial Port 2)	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	
COM2 Type Select	RS232	Default
	RS422	
	RS485	
Select RS232, RS422 or RS485		
Change Settings	Auto	Default
(Serial Port 3)	IO=3E8h; IRQ=11;	
	IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;	

	IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	
Select an optimal setting for Super IO device.		
Change Settings	Auto	Default
(Serial Port 4)	IO=2E8h; IRQ=10;	
	IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;	
Select an optimal setting for Super IO device.		

SandyBridge PPM Configuration

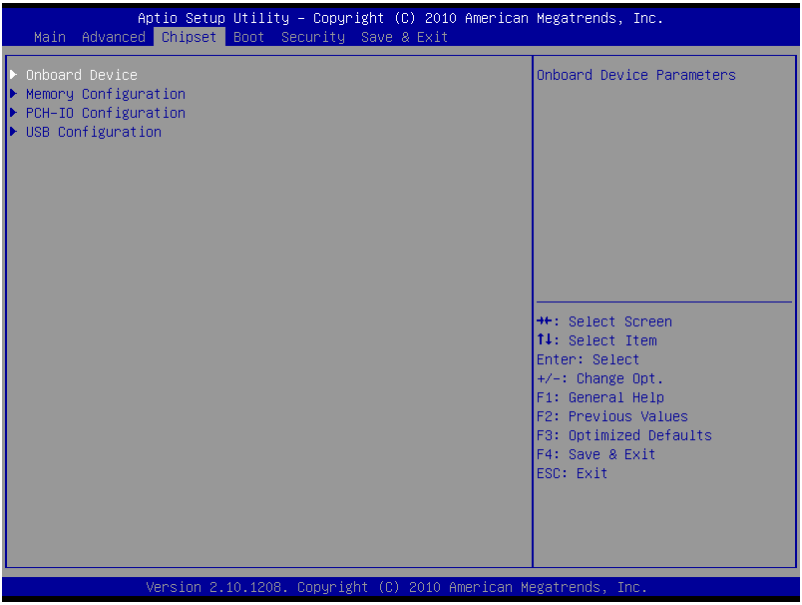


Options summary:

EIST	Disabled	
	Enabled	Default
Enable/Disable Intel SpeedStep		
CPU C1 Enhanced Report	Disabled	
	Enabled	Default
Enable/Disable CPU C1 Enhanced report to OS		
CPU C3 Report	Disabled	
	Enabled	Default
Enable/Disable CPU C3(ACPI C2) report to OS		

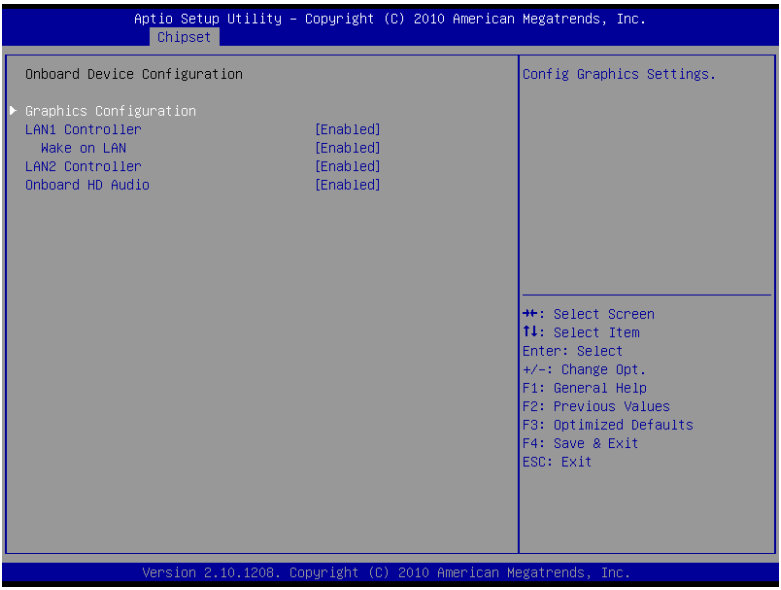
CPU C6 Report	Disabled	
	Enabled	Default
Enable/Disable CPU C6(ACPI C3) report to OS		
CPU C7 Report	Disabled	
	Enabled	Default
Enable/Disable CPU C7(ACPI C3) report to OS		

Chipset



Onboard Device parameters

Onboard Device

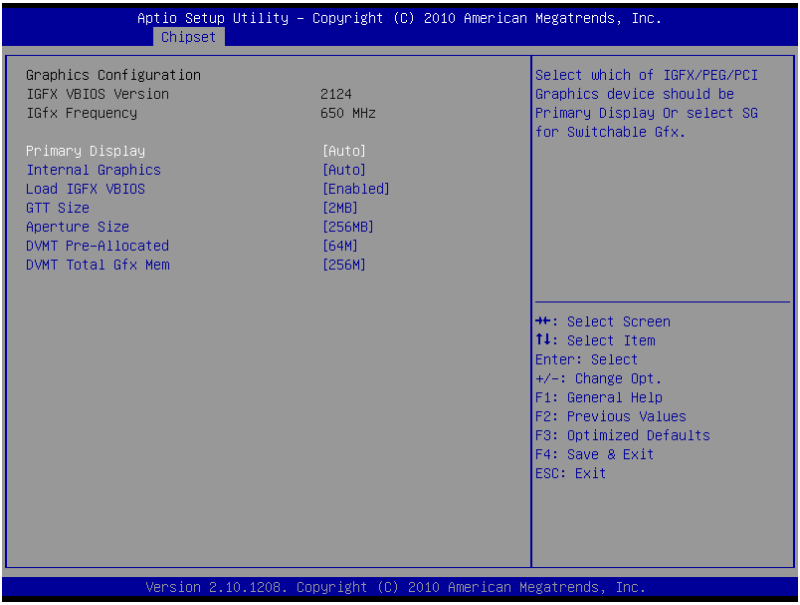


Options summary:

LAN1 Controller	Disabled	
	Enabled	Default
Enable or disable LAN1(Intel i82579).		
Wake on LAN	Disabled	
	Enabled	Default
Enable or disable integrated LAN1 to wake the system.		
LAN2 Controller	Disabled	
	Enabled	Default

Enable or disable LAN2(Realtek RTL8111E). Wake-on-LAN(WOL) function is controlled by PCIe PME.		
Onboard HD Audio	Disabled	
	Enabled	Default
Disable or Enable Onboard HD audio codec.		

Graphic Configuration



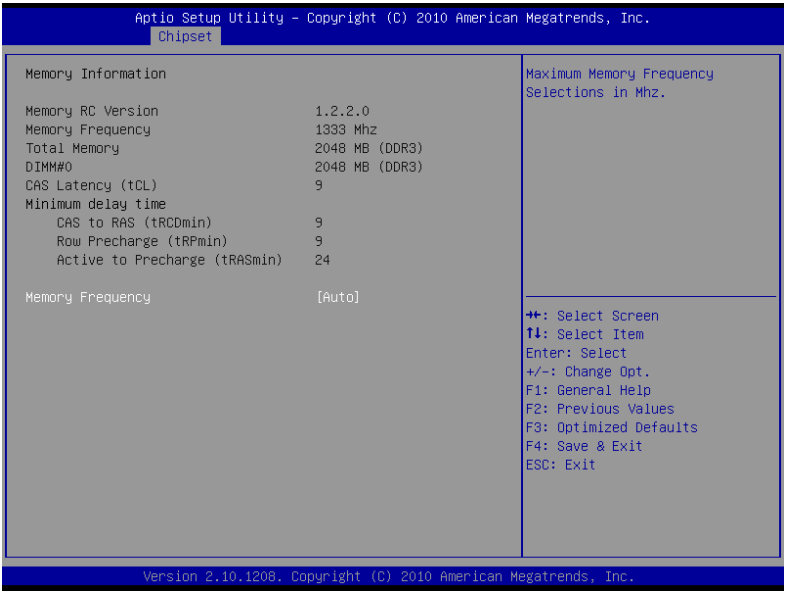
Options summary:

Primary Display	Auto	Default
	IGFX	
	PCI	

Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.		
Internal Graphics	Auto	Default
	Disabled	
	Enabled	
Keep IGD enabled based on the setup options.		
Load IGFX VBIOS	Disabled	
	Enabled	Default
Enable or disable CSM load IGFX VBIOS.		
GTT Size	1MB	
	2MB	Default
Enable or disable CSM load IGFX VBIOS.		
Aperture Size	128MB	
	256MB	Default
	512MB	
Select the Aperture Size		
DVMT Pre-Allocated	0 M	
	32 M	
	64 M	Default
	96 M	
	128 M	
	160 M	
	192 M	
	224 M	

	256 M	
	288 M	
	320 M	
	352 M	
	384 M	
	416 M	
	448 M	
	480 M	
	512 M	
Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.		
DVMT Total Gfx Mem	128M	
	256M	Default
	MAX	
Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.		

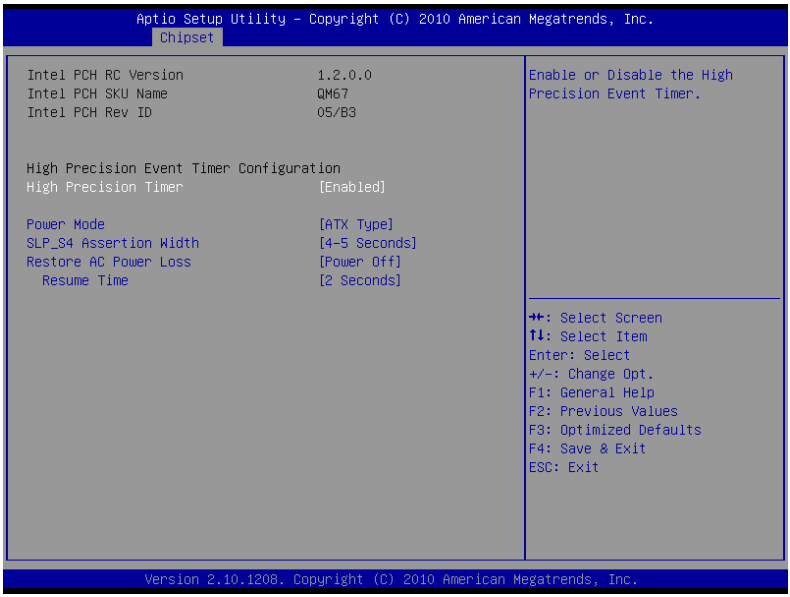
Memory Information



Options summary:

Memory Frequency	Auto	Default
	1067	
	1333	
	1600	
Maximum Memory Frequency Selections in Mhz.		

PCH-IO Configuration

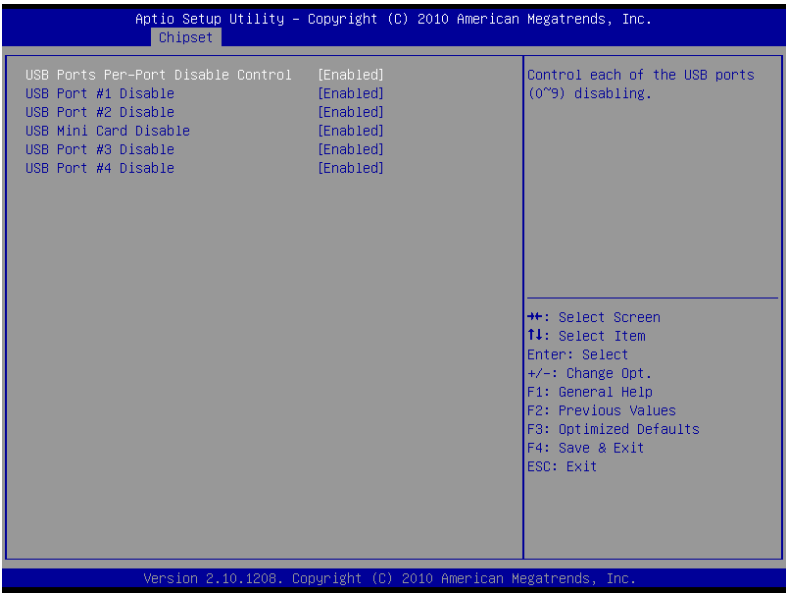


Options summary:

High Precision Timer	Disabled	
	Enabled	Default
Enable or Disable the High Precision Event Timer.		
Power Mode	ATX Type	Default
	AT Type	
Select the power type used on the system		
SLP_S4 Assertion Width	1-2 Seconds	
	2-3 Seconds	
	3-4 Seconds	

	4-5 Seconds	Default
Select a minimum assertion width of the SLP_S4# signal		
Restore AC Power Loss	Power On	
	Power Off	Default
	Last State	
Select AC power state when power is re-applied after a power failure.		
Resume Time	2 Seconds	Default
	4 Seconds	
	8 Seconds	
	12 Seconds	
Resume Time after AC power failure		

USB Configuration

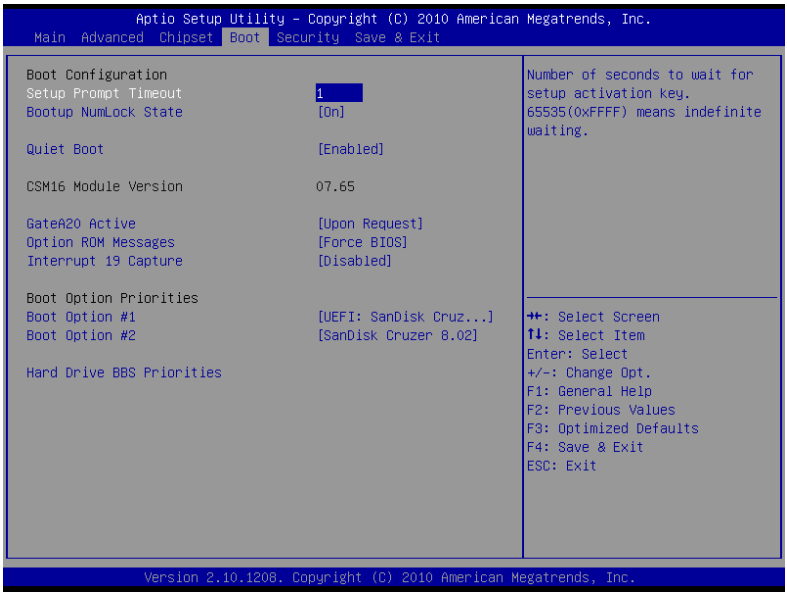


Options summary:

USB Ports Per-Port Disable Control	Disabled	
	Enabled	Default
Control each of the USB ports (0~9) disabling.		
USB Port #1 Disable	Disabled	
	Enabled	Default
Disable USB port.		
USB Port #2 Disable	Disabled	
	Enabled	Default
Disable USB port.		

USB Mini Card Disable	Disabled	
	Enabled	Default
Disable USB port.		
USB Port #3 Disable	Disabled	
	Enabled	Default
Disable USB port.		
USB Port #4 Disable	Disabled	
	Enabled	Default
Disable USB port.		

Boot



Options summary:

Setup Prompt Timeout	Integer	
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.		
Bootup NumLock State	Disabled	
	Enabled	Default
Select the keyboard NumLock state		
Quiet Boot	Disabled	
	Enabled	Default
Enables or disables Quiet Boot option		
GateA20 Active	Upon Request	Default

	Always	
UPON REQUEST - GA20 can be disabled using BIOS services. ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.		
Option ROM Messages	Force BIOS	Default
	Keep Current	
Set display mode for Option ROM		
Interrupt 19 Capture	Disabled	
	Enabled	Default
Enabled: Allows Option ROMs to trap Int 19		

Security

Change User/Supervisor Password

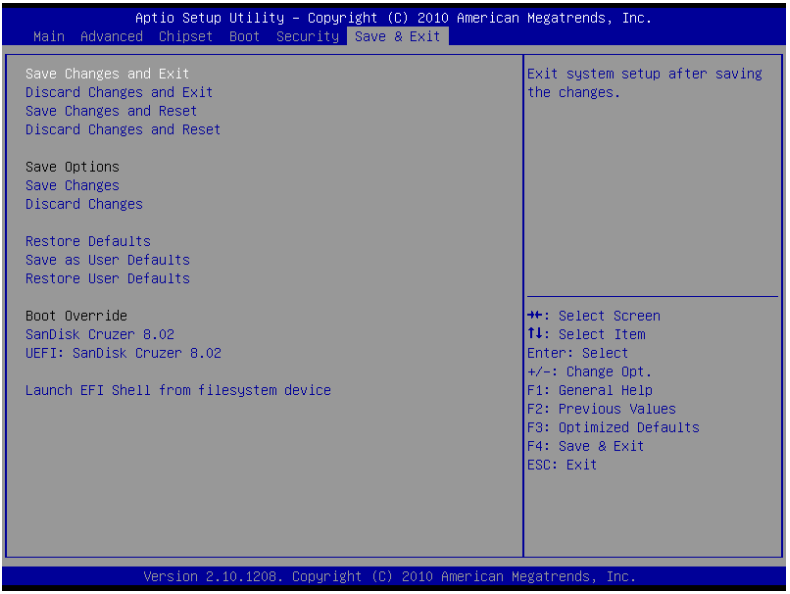
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

Save & Exit



Chapter

4

Driver Installation

The AEC-6636 comes with a DVD-ROM that contains all drivers your need.

Follow the sequence below to install the drivers:

Step 1 – Install Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN 1 Driver

Step 4 – Install LAN 2 Driver

Step 5 – Install Audio Driver

Step 6 – Install ME Driver

Step 7 – Install RAID & AHCI Driver

Please read following instructions for detailed installations.

4.1 Installation

Insert the AEC-6636 DVD-ROM into the DVD-ROM Drive. And install the drivers from Step 1 to Step 7 in order.

Step 1 – Install Chipset Driver

1. Click on the ***STEP1-CHIPSET*** folder and double click on the ***infinst_autol_9.3.0.1026.exe***
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

Step 2 – Install VGA Driver

1. Click on the ***STEP2-VGA*** folder and select the OS your system is
2. Double click on ***Setup.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Step 3 – Install LAN 1 Driver (For Intel LAN Chip)

1. Click on the ***STEP3-LAN1*** folder and select the OS your system is
2. Double click on ***.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Step 4 – Install LAN 2 Driver (For Realtek LAN Chip)

1. Click on the ***STEP4-LAN2*** folder and select the OS your system is
2. Double click on ***setup.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Step 5 – Install Audio Driver

1. Click on the ***STEP5-AUDIO*** folder and select the OS your system is
2. Double click on ***Setup.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Step 6 – Install ME Driver

1. Click on the ***STEP6-ME*** folder and select the OS your system is
2. Double click on ***Setup.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Step 7 – Install RAID & AHCI Driver

Please refer to Appendix C RAID & AHCI Settings

Appendix

A

Programming the Watchdog Timer

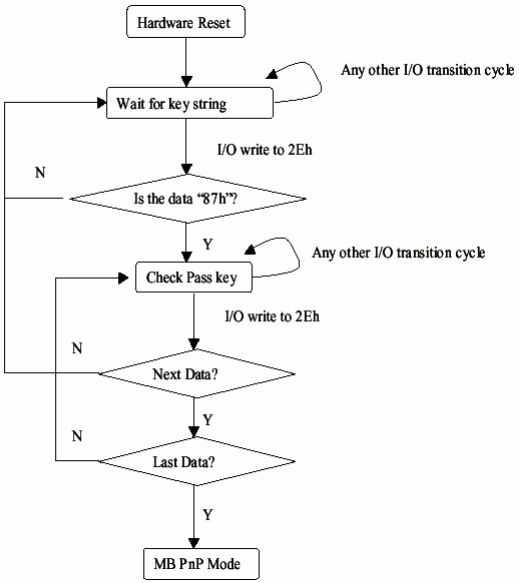
A.1 Programming

AEC-6636 utilizes ITE IT8728F chipset as its watchdog timer controller.

Below are the procedures to complete its configuration and the AAEON intial watchdog timer program is also attached based on which you can develop customized program to fit your application.

Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8728F enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write operations to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN	Index	R/W	Reset	Configuration Register or Action
All	02H	W	N/A	Configure Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	Reserved
1	Returns to the Wait for Key state. This bit is used when the configuration sequence is completed
0	Resets all logical devices and restores configuration registers to their power-on states.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (mouse) interrupt
5	WDT is reset upon a KBC (keyboard) interrupt
4	WDT is reset upon a read or a write to the Game Port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT Status
	1: WDT value reaches 0.
	0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5-4	Reserved
3-0	Select the interrupt level[Note] for WDT

WatchDog Timer Time-out Value Register (Index=73h, Default=00h)

Bit	Description
7-0	WDT Time-out value 7-0

A.2 ITE8728F Watchdog Timer Initial Program

```
        .MODEL SMALL
        .CODE
Main:
        CALL Enter_Configuration_mode
        CALL Check_Chip
        mov cl, 7
        call Set_Logic_Device
        ;time setting
        mov cl, 10 ; 10 Sec
        dec al
Watch_Dog_Setting:
        ;Timer setting
        mov al, cl
        mov cl, 73h
        call Superio_Set_Reg
        ;Clear by keyboard or mouse interrupt
        mov al, 0f0h
        mov cl, 71h
        call Superio_Set_Reg
        ;unit is second.
        mov al, 0C0H
        mov cl, 72h
        call Superio_Set_Reg
```

```
; game port enable
mov cl, 9
call Set_Logic_Device

Initial_OK:
CALL Exit_Configuration_mode
MOV AH,4Ch
INT 21h

Enter_Configuration_Mode PROC NEAR
MOV SI,WORD PTR CS:[Offset Cfg_Port]

MOV DX,02Eh
MOV CX,04h
Init_1:
MOV AL,BYTE PTR CS:[SI]
OUT DX,AL
INC SI
LOOP Init_1
RET
Enter_Configuration_Mode ENDP

Exit_Configuration_Mode PROC NEAR
MOV AX,0202h
CALL Write_Configuration_Data
```

```
        RET
        Exit_Configuration_Mode ENDP

        Check_Chip PROC NEAR

        MOV AL,20h
        CALL Read_Configuration_Data
        CMP AL,87h
        JNE Not_Initial

        MOV AL,21h
        CALL Read_Configuration_Data
        CMP AL,12h
        JNE Not_Initial

Need_Initial:
        STC
        RET
Not_Initial:
        CLC
        RET
        Check_Chip ENDP
        Read_Configuration_Data PROC NEAR
        MOV DX,WORD PTR CS:[Cfg_Port+04h]
        OUT DX,AL
```

```
MOV DX,WORD PTR CS:[Cfg_Port+06h]
IN AL,DX
RET
Read_Configuration_Data ENDP

Write_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
XCHG AL,AH
MOV DX,WORD PTR CS:[Cfg_Port+06h]
OUT DX,AL
RET
Write_Configuration_Data ENDP

Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near
Set_Logic_Device    proc    near
```

```
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp

;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h

DW 02Eh,02Fh
```

END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

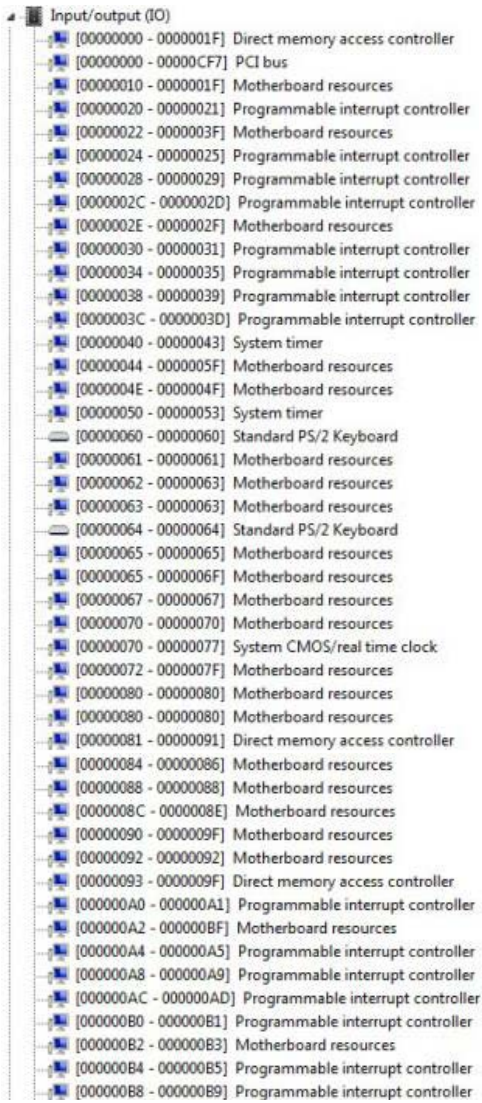
00h: no interrupt selected

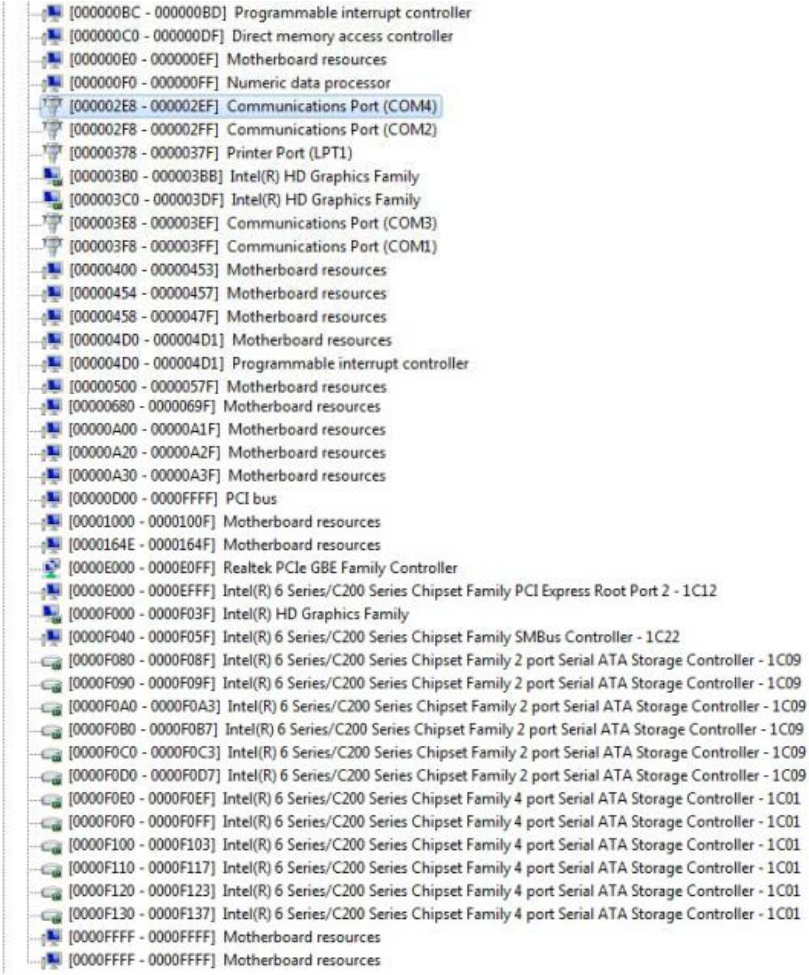
Appendix

B

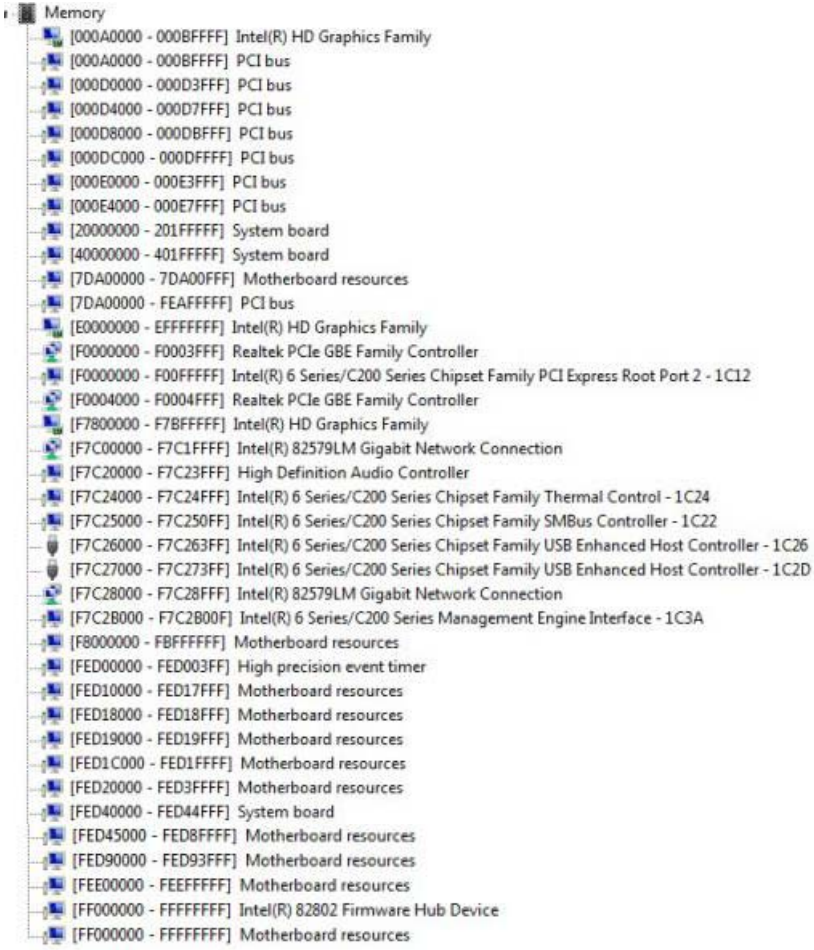
I/O Information

B.1 I/O Address Map

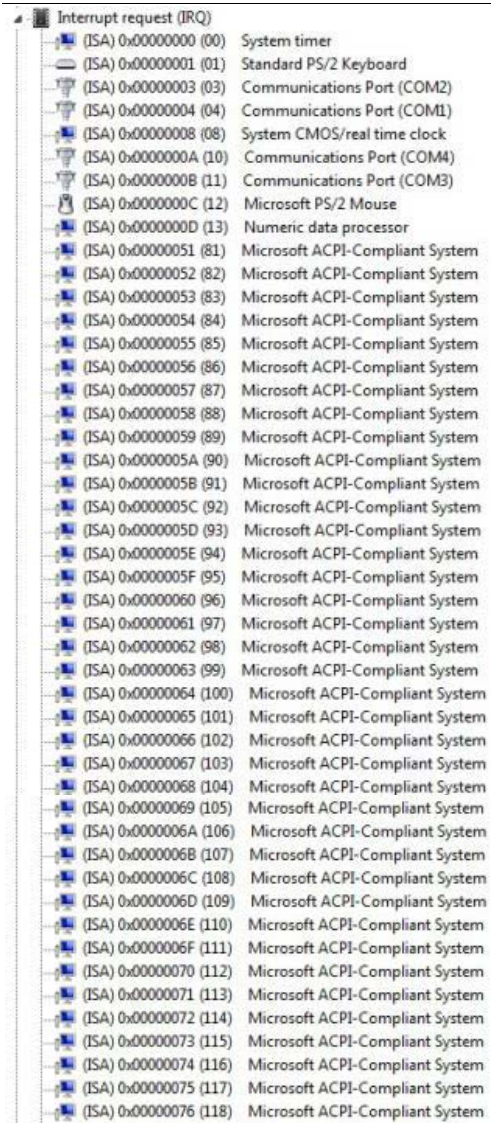


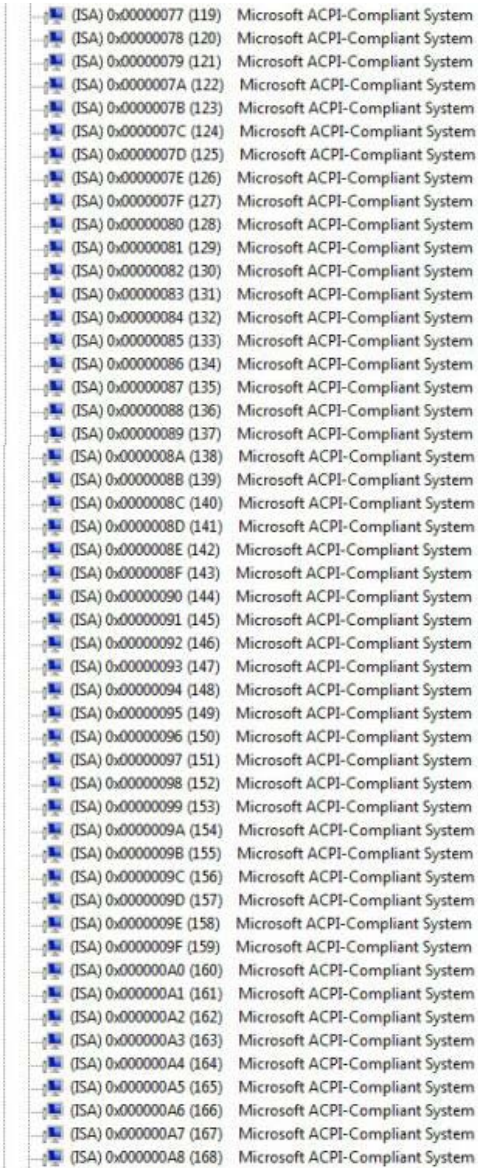

[000000BC - 000000BD] Programmable interrupt controller
[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000FF] Numeric data processor
[000002E8 - 000002EF] Communications Port (COM4)
[000002F8 - 000002FF] Communications Port (COM2)
[00000378 - 0000037F] Printer Port (LPT1)
[000003B0 - 000003BB] Intel(R) HD Graphics Family
[000003C0 - 000003DF] Intel(R) HD Graphics Family
[000003E8 - 000003EF] Communications Port (COM3)
[000003F8 - 000003FF] Communications Port (COM1)
[00000400 - 00000453] Motherboard resources
[00000454 - 00000457] Motherboard resources
[00000458 - 0000047F] Motherboard resources
[000004D0 - 000004D1] Motherboard resources
[000004D0 - 000004D1] Programmable interrupt controller
[00000500 - 0000057F] Motherboard resources
[00000680 - 0000069F] Motherboard resources
[00000A00 - 00000A1F] Motherboard resources
[00000A20 - 00000A2F] Motherboard resources
[00000A30 - 00000A3F] Motherboard resources
[00000D00 - 0000FFFF] PCI bus
[00001000 - 0000100F] Motherboard resources
[0000164E - 0000164F] Motherboard resources
[0000E000 - 0000E0FF] Realtek PCIe GBE Family Controller
[0000E000 - 0000EFFF] Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 2 - 1C12
[0000F000 - 0000F03F] Intel(R) HD Graphics Family
[0000F040 - 0000F05F] Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22
[0000F080 - 0000F08F] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C09
[0000F090 - 0000F09F] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C09
[0000F0A0 - 0000F0A3] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C09
[0000F0B0 - 0000F0B7] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C09
[0000F0C0 - 0000F0C3] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C09
[0000F0D0 - 0000F0D7] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C09
[0000F0E0 - 0000F0EF] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C01
[0000F0F0 - 0000F0FF] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C01
[0000F100 - 0000F103] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C01
[0000F110 - 0000F117] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C01
[0000F120 - 0000F123] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C01
[0000F130 - 0000F137] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C01
[0000FFFF - 0000FFFF] Motherboard resources
[0000FFFF - 0000FFFF] Motherboard resources

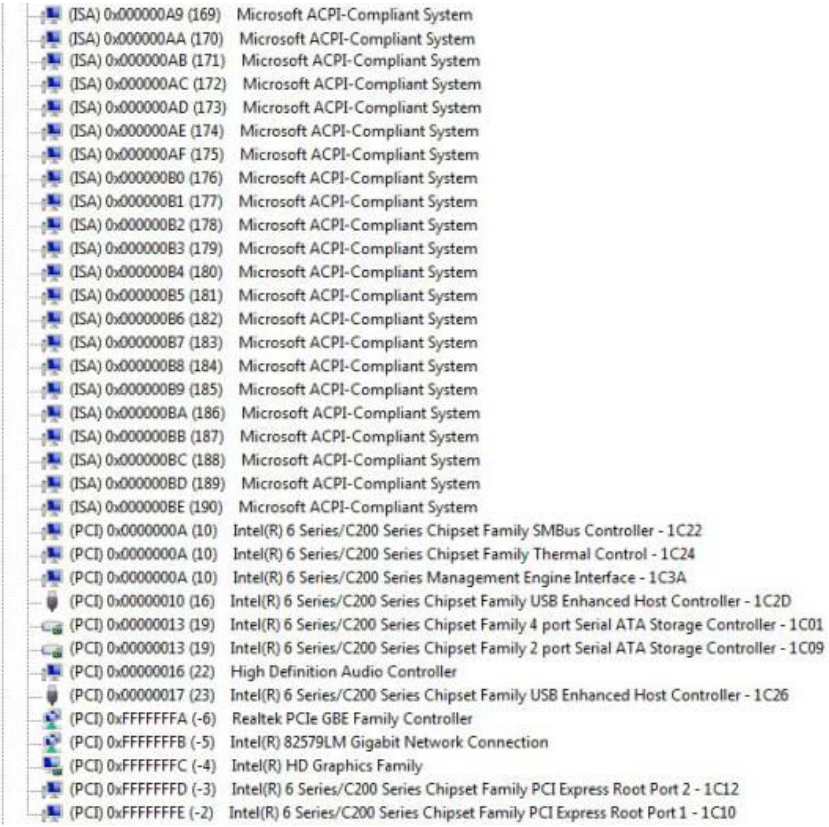
B.2 Memory Address Map



B.3 IRQ Mapping Chart




(ISA) 0x00000077 (119) Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120) Microsoft ACPI-Compliant System
(ISA) 0x00000079 (121) Microsoft ACPI-Compliant System
(ISA) 0x0000007A (122) Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123) Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124) Microsoft ACPI-Compliant System
(ISA) 0x0000007D (125) Microsoft ACPI-Compliant System
(ISA) 0x0000007E (126) Microsoft ACPI-Compliant System
(ISA) 0x0000007F (127) Microsoft ACPI-Compliant System
(ISA) 0x00000080 (128) Microsoft ACPI-Compliant System
(ISA) 0x00000081 (129) Microsoft ACPI-Compliant System
(ISA) 0x00000082 (130) Microsoft ACPI-Compliant System
(ISA) 0x00000083 (131) Microsoft ACPI-Compliant System
(ISA) 0x00000084 (132) Microsoft ACPI-Compliant System
(ISA) 0x00000085 (133) Microsoft ACPI-Compliant System
(ISA) 0x00000086 (134) Microsoft ACPI-Compliant System
(ISA) 0x00000087 (135) Microsoft ACPI-Compliant System
(ISA) 0x00000088 (136) Microsoft ACPI-Compliant System
(ISA) 0x00000089 (137) Microsoft ACPI-Compliant System
(ISA) 0x0000008A (138) Microsoft ACPI-Compliant System
(ISA) 0x0000008B (139) Microsoft ACPI-Compliant System
(ISA) 0x0000008C (140) Microsoft ACPI-Compliant System
(ISA) 0x0000008D (141) Microsoft ACPI-Compliant System
(ISA) 0x0000008E (142) Microsoft ACPI-Compliant System
(ISA) 0x0000008F (143) Microsoft ACPI-Compliant System
(ISA) 0x00000090 (144) Microsoft ACPI-Compliant System
(ISA) 0x00000091 (145) Microsoft ACPI-Compliant System
(ISA) 0x00000092 (146) Microsoft ACPI-Compliant System
(ISA) 0x00000093 (147) Microsoft ACPI-Compliant System
(ISA) 0x00000094 (148) Microsoft ACPI-Compliant System
(ISA) 0x00000095 (149) Microsoft ACPI-Compliant System
(ISA) 0x00000096 (150) Microsoft ACPI-Compliant System
(ISA) 0x00000097 (151) Microsoft ACPI-Compliant System
(ISA) 0x00000098 (152) Microsoft ACPI-Compliant System
(ISA) 0x00000099 (153) Microsoft ACPI-Compliant System
(ISA) 0x0000009A (154) Microsoft ACPI-Compliant System
(ISA) 0x0000009B (155) Microsoft ACPI-Compliant System
(ISA) 0x0000009C (156) Microsoft ACPI-Compliant System
(ISA) 0x0000009D (157) Microsoft ACPI-Compliant System
(ISA) 0x0000009E (158) Microsoft ACPI-Compliant System
(ISA) 0x0000009F (159) Microsoft ACPI-Compliant System
(ISA) 0x000000A0 (160) Microsoft ACPI-Compliant System
(ISA) 0x000000A1 (161) Microsoft ACPI-Compliant System
(ISA) 0x000000A2 (162) Microsoft ACPI-Compliant System
(ISA) 0x000000A3 (163) Microsoft ACPI-Compliant System
(ISA) 0x000000A4 (164) Microsoft ACPI-Compliant System
(ISA) 0x000000A5 (165) Microsoft ACPI-Compliant System
(ISA) 0x000000A6 (166) Microsoft ACPI-Compliant System
(ISA) 0x000000A7 (167) Microsoft ACPI-Compliant System
(ISA) 0x000000A8 (168) Microsoft ACPI-Compliant System



B.4 DMA Channel Assignments

Appendix

C

RAID & AHCI Settings

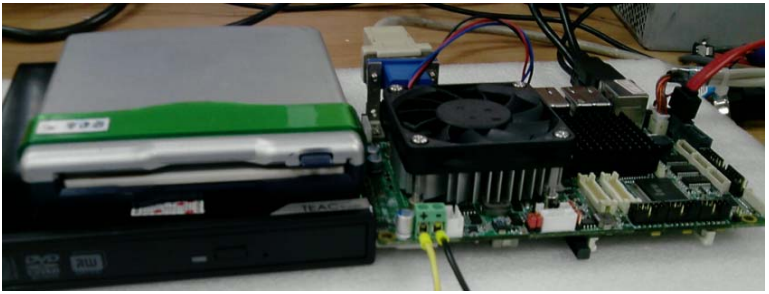
C.1 Setting RAID

OS installation to setup RAID mode

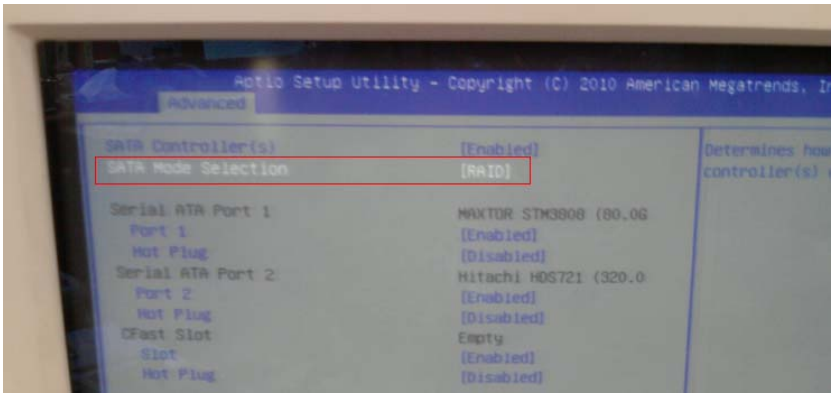
Step 1: Copy the files below from the Driver CD:

STEP7-RAID&AHCI\WINXP_32 to Disk.

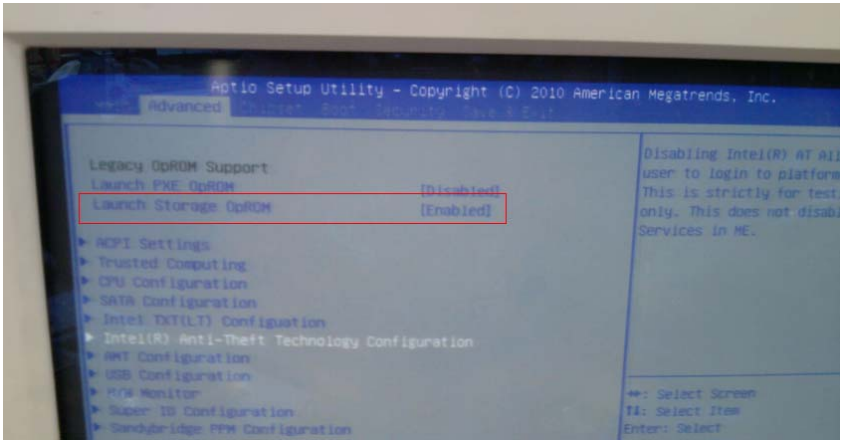
Step 2: Connect the USB Floppy (Disk with the RAID&AHCI files) to the board.



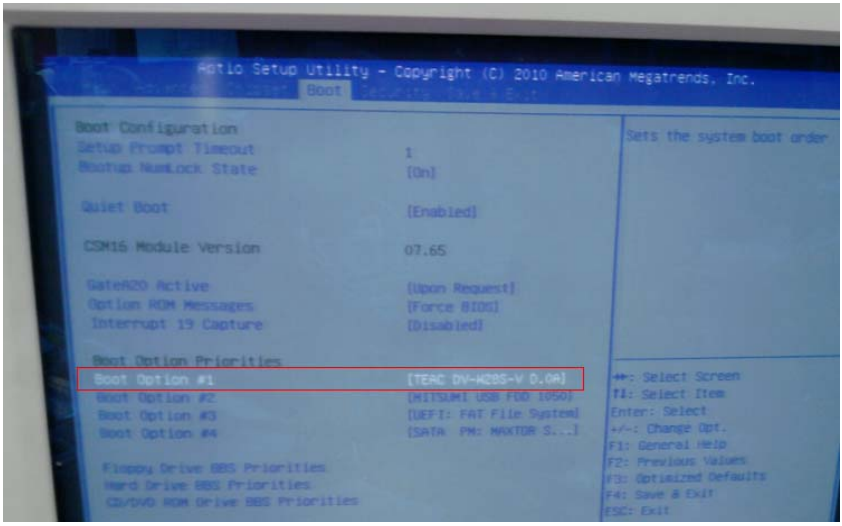
Step 3: The setting procedures "**In BIOS Setup Menu**": Select **Advanced -> SATA Configuration -> SATA Mode Selection -> RAID**



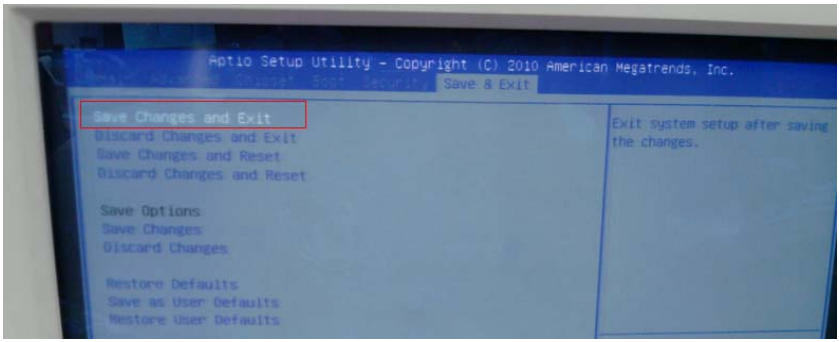
Step 4: Select **Advanced** -> **Launch Storage OpROM** -> **Enabled**



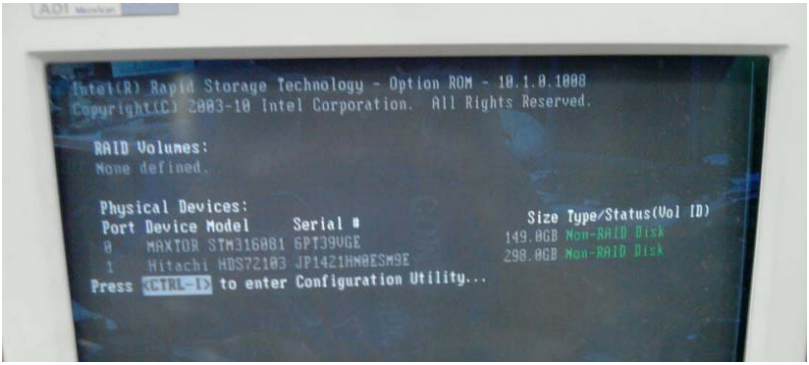
Step 5: Select **Boot** -> **Boot Option #1** -> **DVD ROM Type**



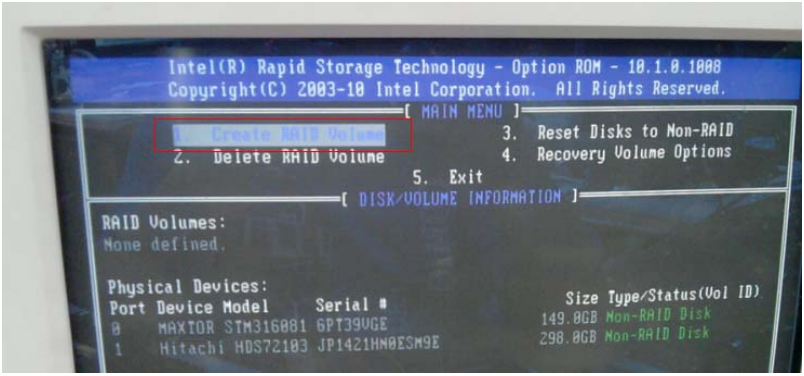
Step 6: Select **Save & Exit** -> **Save Changes and Exit**



Step 7: Press "**Ctrl-I"** to enter MAIN MENU

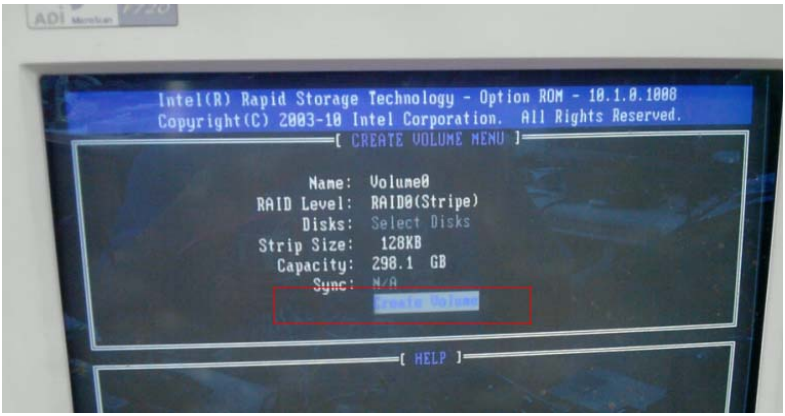


Step 8: Select "**1. Create RAID Volume**"

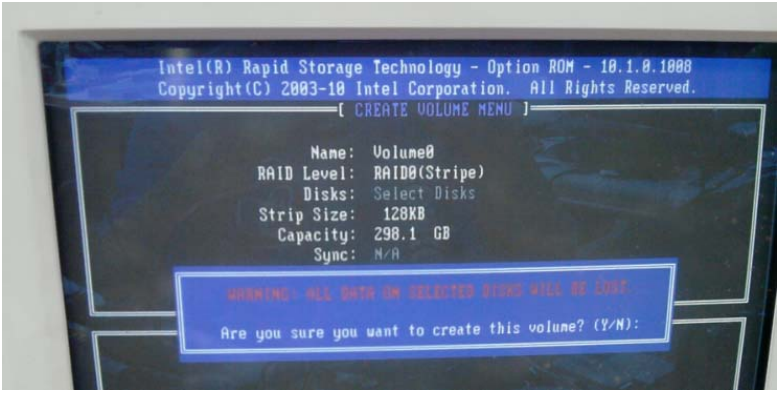


Step 9: Select **RAID Level -> RAID0(Stripe)**

Step 10: Select "**Create Volume**"

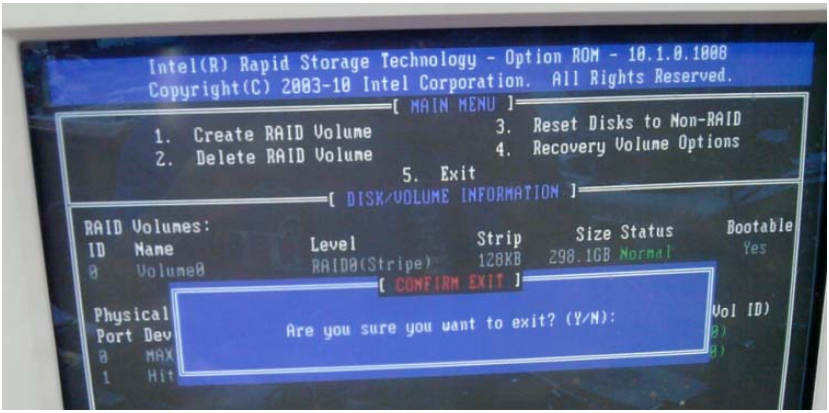


Step 11: Type "**Y**" for confirmation

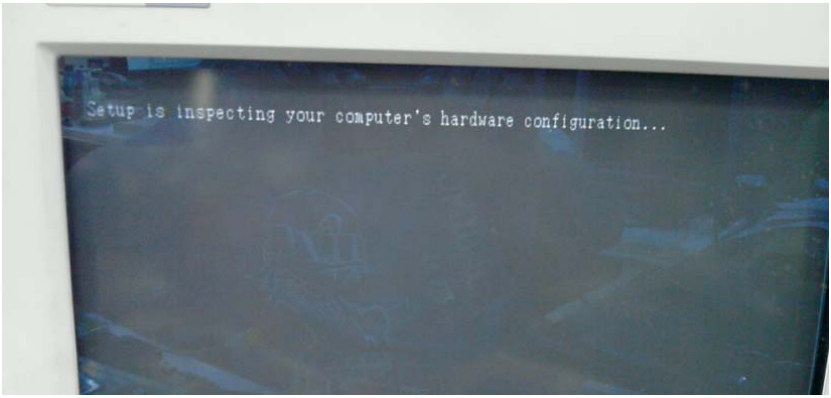


Step 12: Select "**5. Exit**"

Step 13: Choose "**Y**"

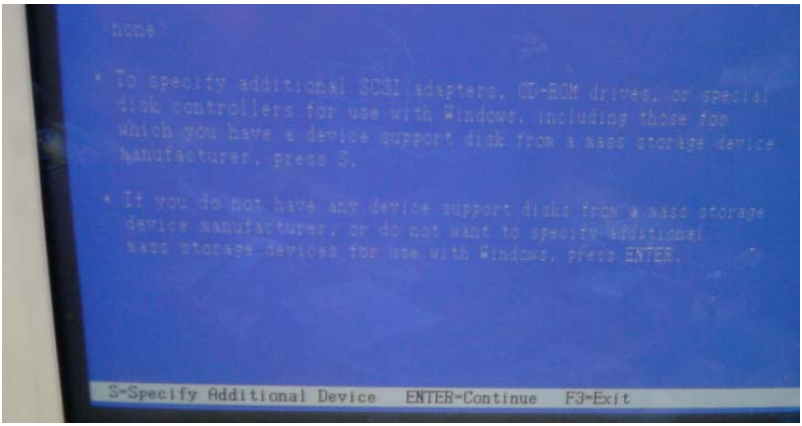


Step 14: Setup OS

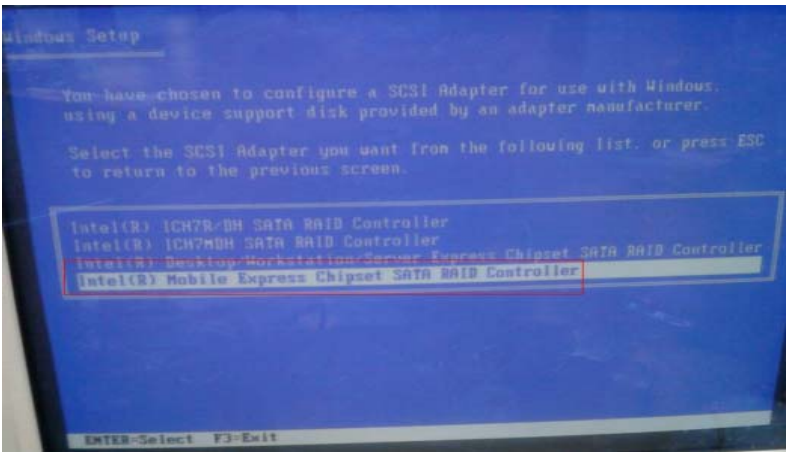


Step 15: Press "**F6**"

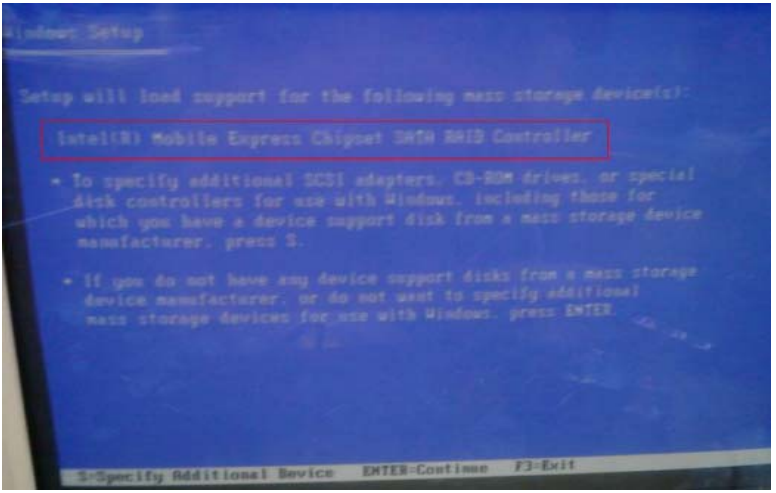
Step 16: Choose "**S**"



Step 17: Select the "**Intel® Mobile Express Chipset SATA RAID Controller**"



Step 18: Select "ENTER" after choosing the model number.



Step 19: Setup is loading files.

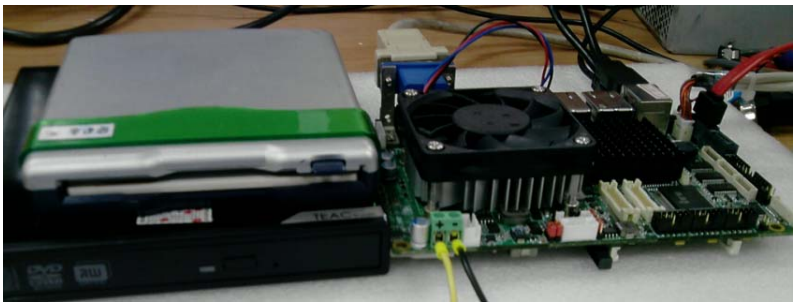
C.2 Setting AHCI

OS Installation to Setup AHCI mode

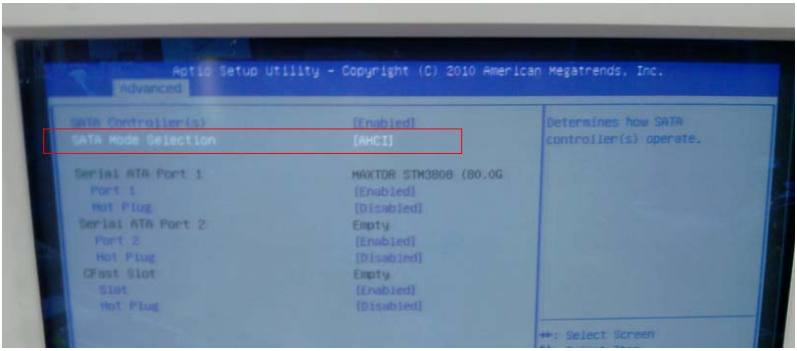
Step 1: Copy the files below from the Driver CD:

STEP7-RAID&AHCI\WINXP_32 to Disk.

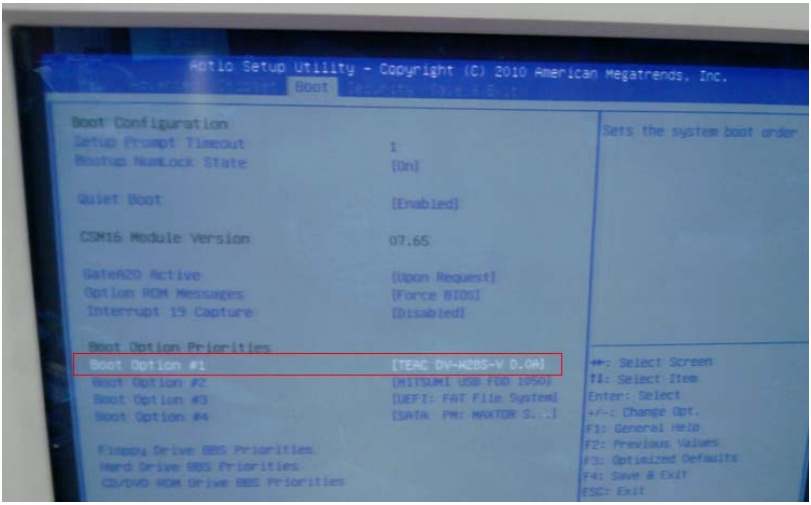
Step 2: Connect the USB Floppy Disk with the RAID&AHCI files to the board.



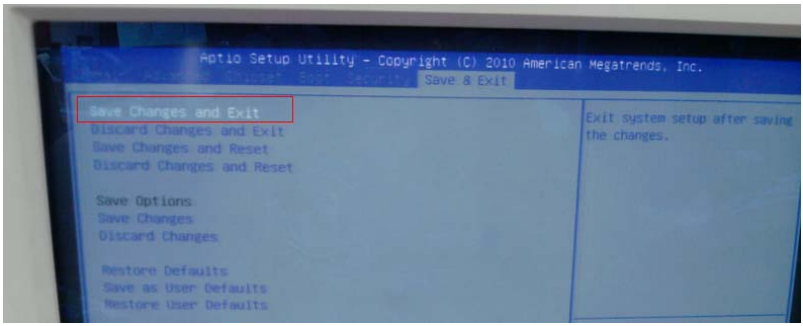
Step 3: To install **"In BIOS Setup Menu"**, select **Advanced** -> **SATA Configuration** -> **SATA Mode Selection** -> **AHCI**



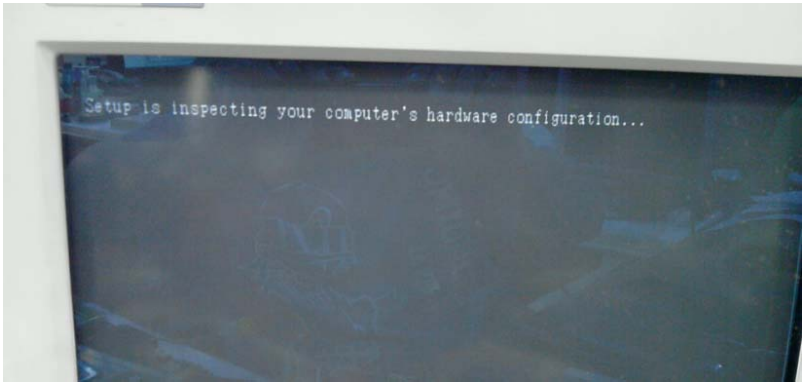
Step 4: Next, select **Boot** -> **Boot Option #1** -> **DVD ROM Type**



Step 5: To save, select **Save & Exit** -> **Save Changes and Exit**

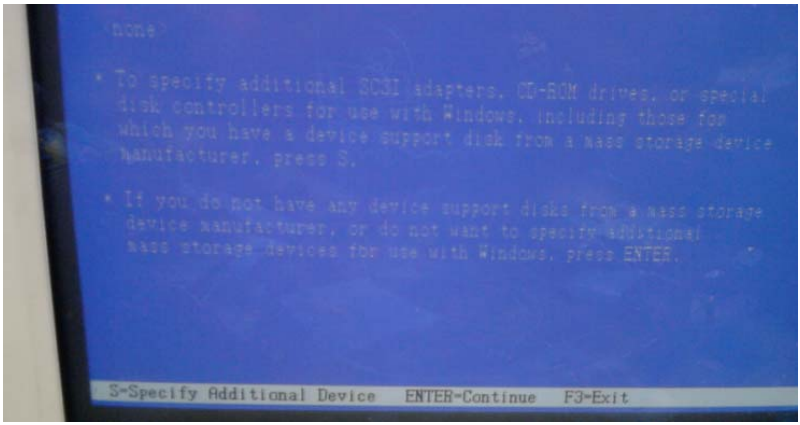


Step 6: Setup OS

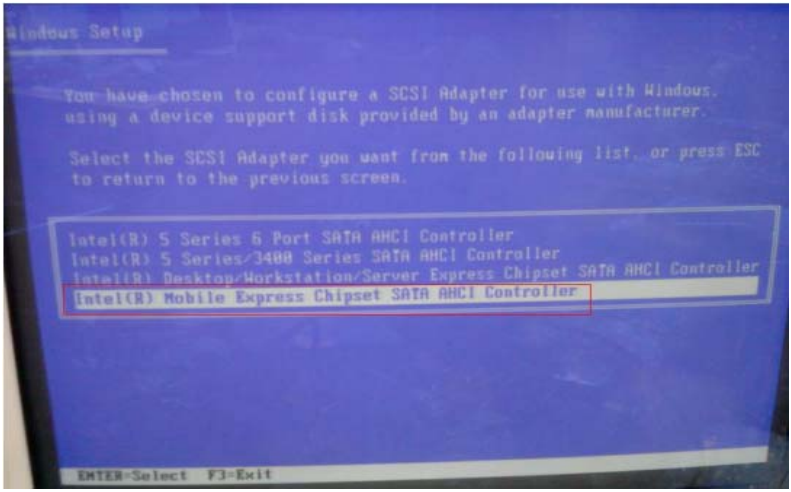


Step 7: Press "**F6**"

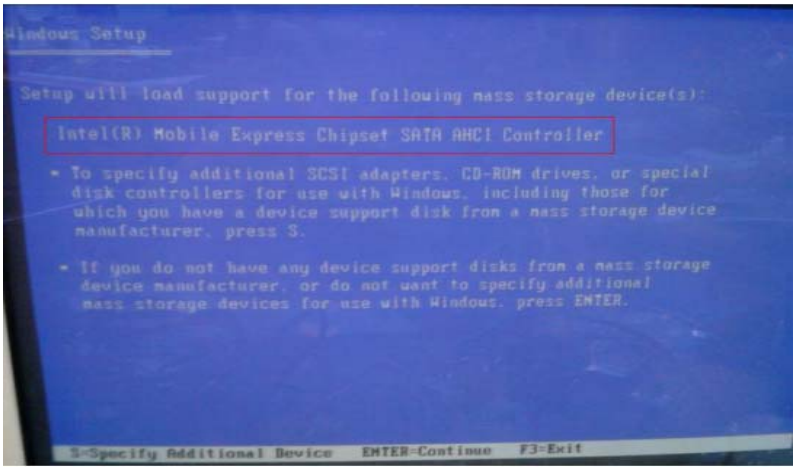
Step 8: Choose "**S**"



Step 9: Choose “Intel® Mobile Express Chipset SATA AHCI Controller



Step 10: Select “ENTER” to choose the model number



Step 11: Setup is loading files