AEC-6643

Fanless Embedded Box PC

User's Manual 2nd Ed

Last Updated: September 19, 2016

Copyright Notice

Acknowledgement

Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● BOXER-6643	1
● Screw package	1
● Wall mount brackets	2
● DVD-ROM for manual (in PDF format) and drivers	1

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

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. All cables and adapters supplied by AAEON are certified and in accordance with the material safety laws and regulations of the country of sale. Do not use any cables or adapters not supplied by AAEON to prevent system malfunction or fires.
3. Make sure the power source matches the power rating of the device.
4. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
5. Always completely disconnect the power before working on the system's hardware.
6. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
7. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
8. Always disconnect this device from any AC supply before cleaning.
9. While cleaning, use a damp cloth instead of liquid or spray detergents.
10. Make sure the device is installed near a power outlet and is easily accessible.
11. Keep this device away from humidity.
12. Place the device on a solid surface during installation to prevent falls
13. Do not cover the openings on the device to ensure optimal heat dissipation.
14. Watch out for high temperatures when the system is running.
15. Do not touch the heat sink or heat spreader when the system is running
16. Never pour any liquid into the openings. This could cause fire or electric shock.

17. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
18. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device
19. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

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.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Embedded Box PC/ 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	○	○	○	○	○	○

○：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。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Embedded Box PC/ Industrial System

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	O	O	O	O	O	O
Wires & Connectors for External Connections	O	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	O	O	O	O	O	O
Hard Disk	O	O	O	O	O	O
PSU	O	O	O	O	O	O

O：The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
● CPU	Intel® Atom™ D2550 B3 Processor
● Memory	DDR3 800/1066 Mhz SODIMM x 1, up to 4 GB
● Display Interface	DB-15 x 1
	DVI-D x 1
● Ethernet	Realtek RTL-8111E, 10/100/1000Base-TX x 2
● Storage Device	SATA 3.0Gb/s 2.5" HDD bay x 1
● Expansion	Full-size Mini Card x 1
● I/O	RS-232/422/485 x 1
	RS-232 x 3
	USB 2.0 x 6
	VGA x 1
	DVI-D x 1
	Line-in x 1
	Line-out x 1
	Mic-in x 1
	LAN x 2
	Antenna holes x 2
	Power switch
	Power input
● LED Indicator	Power LED x 1, HDD active LED x 1
● OS Support	Windows® 7
	Windows® XP
	Windows® Embedded Standard
	Linux Fedora 15 / Kernel 2.6.38.6

Mechanical

Construction	Aluminum Alloy Chassis
Color	Dark Gray
Mounting	Wall mounted
Dimension (W x H x D)	11.81" x 3.05" x 7.48" (300mm x 77.5mm x 190mm)
Gross Weight	12.98 lb (5.9 kg)
Net Weight	6.00 lb (2.7 kg)

Environmental

Operating Temperature	Ambient with Airflow: -5°C ~ 45°C (23°F ~ 113°F) – with wide temperature HDD
Storage Temperature	-10 ~ 60°C (14 ~ 140°F)
Storage Humidity	95% @ 40°C, non-condensing
Anti-Vibration	1 G_{rms} / 5~500Hz/ operation –HDD
Anti-Shock	20 G peak acceleration (11msec. duration)
EMC	CE/FCC Class A

Power

Power Requirement	12V with DC Jack

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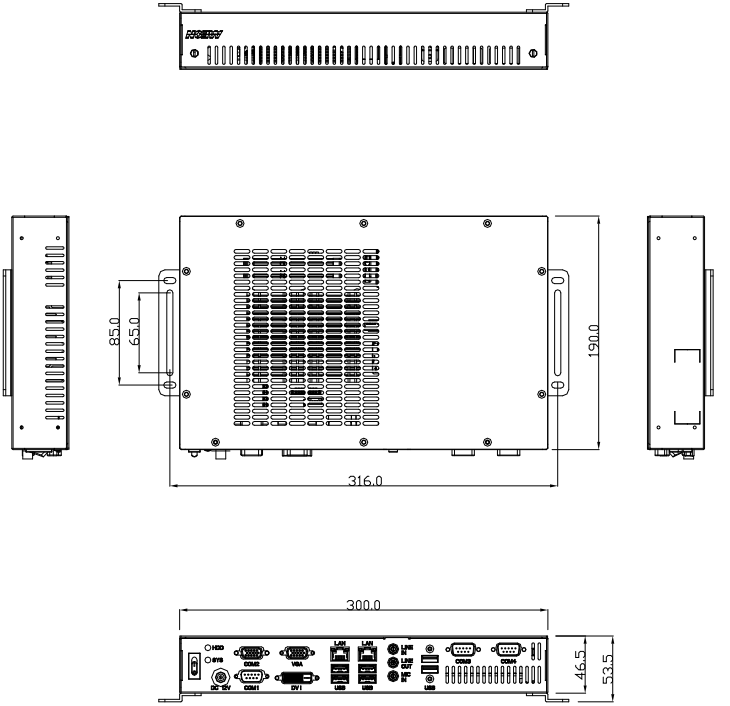
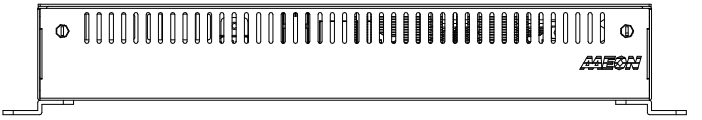
Chapter 2

Hardware Information

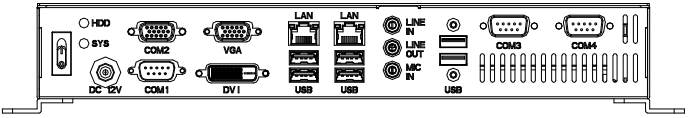
2.1 Dimensions



Connectors on the front panel

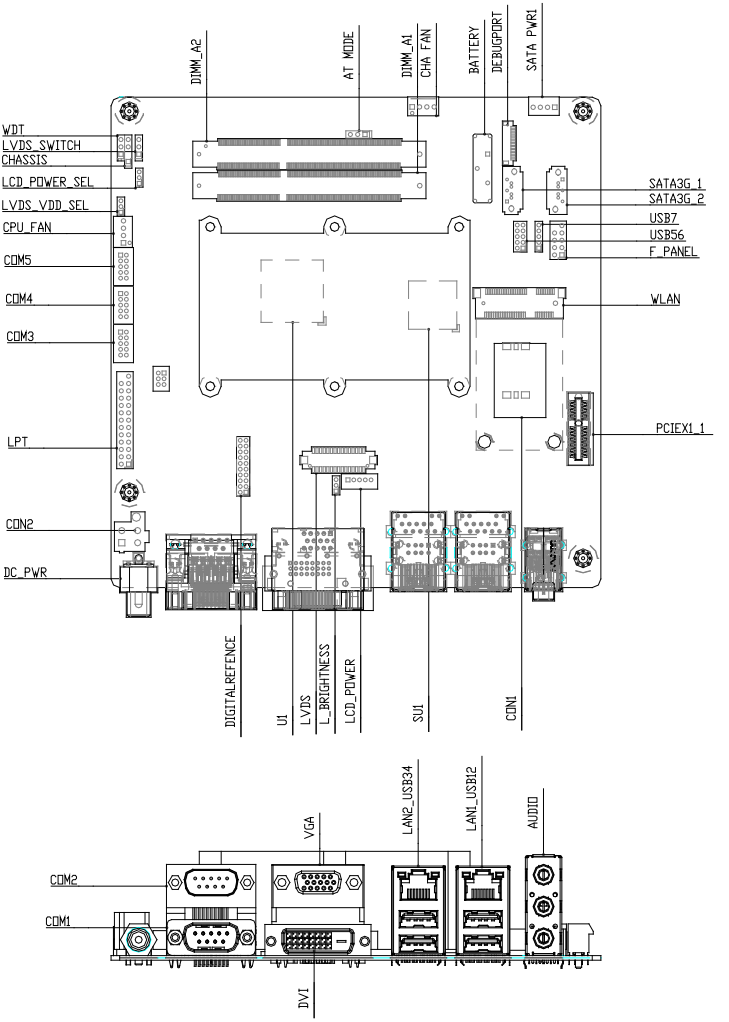


Connectors on the rear panel

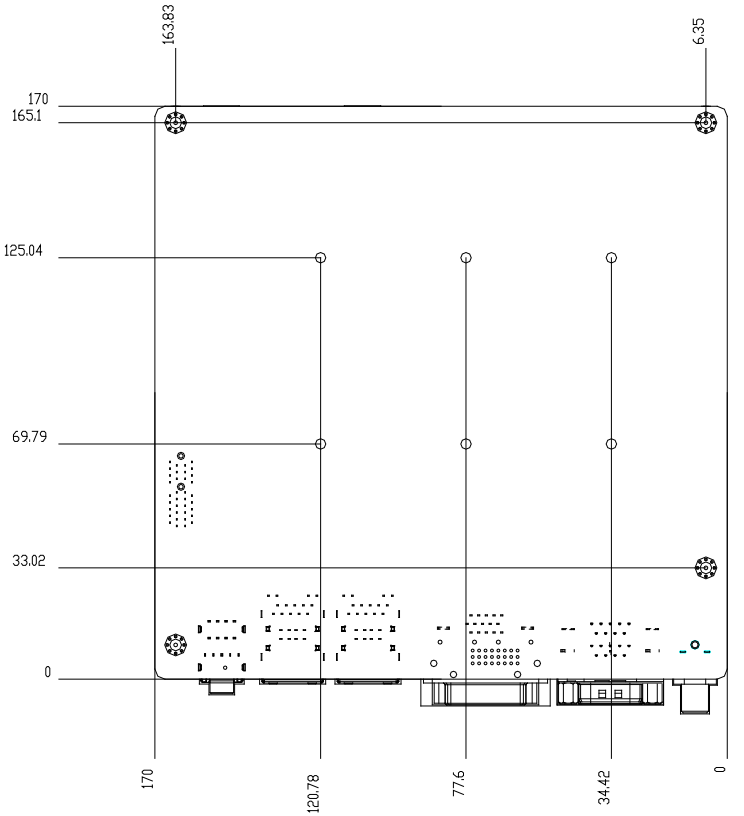


2.2 Jumpers and Connectors

Component Side



Solder Side



2.3 List of Jumpers

Please refer to the table below for all of the system's connectors that you can configure for your application.

Label	Function
ATMODE	AT/ATX Mode Selection
CLRTC	Clear COMS
DIGITALREFENCE	COM2 External Power Selection
LVDS_VDD_SEL	LVDS Panel Power Selection
L_BRIGHTNESS	LVDS Brightness Control Type Selection
LVDS_SWITCH	LVDS Function Enable
LCD_POWER_SEL	LVDS Panel Backlight Power Selection
WDT	Watchdog Timer Function Switch

2.3.1 AT/ATX Mode Selection (ATMODE)

ATMODE	Function
Close 1-2	AT
Close 2-3	ATX Mode (Default)

2.3.2 Clear COMS (CLRTC)

CLRTC	Function
Close 1-2	Protected (Default)
Close 2-3	Clear

2.3.3 COM2 External Power Selection (DIGITALREFENCE)

DIGITALREFENCE	Function
Close 15-16	+12V
Close 17-18	RI# (Default)
Close 19-20	+5V

2.3.4 Watchdog Timer Function Switch (WDT)

WDT	Function
Close 1-2	Disable (Default)
Close 2-3	Enable

2.4 List of Connectors

Please refer to the table below for all of the system's connectors that you can configure for your application.

Label	Function
CON2	+12V AUX Power Connector
CHA_FAN	System FAN Connector
COM2	COM 2 Connector
COM3	COM 3 Connector
COM4	COM 4 Connector
COM5	COM 5 Connector
CON1	SIM Card Socket
CPU_FAN	CPU FAN Connector
DIGITALREFENCE	GPIO/SM BUS/COM2/ COM2 External Power Selection
F_PANEL	Front Panel Pin Header
KB/Ms	PS/2 Keyboard / Mouse Connector
LCD_POWE	LVDS Panel Power Connector
LPT	Parallel Port Connector
LVDS	LVDS Panel Connector
PCIEX1_1	PCI-E [x1] Slot
SATA_PWR1	Serial ATA Power Connector
SATA3G_1	SATA 0 Connector
SATA3G_2	SATA 1 Connector
USB56	USB 5 & 6 Pin Header
USB7	USB 7 Pin Header
WLAN	Mini PCI-E Slot

2.4.1 COM2 RS-232/422/485 Connector

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/+12V/+5V	10	N.C.

2.4.2 COM3/COM4/COM5 RS-232 Serial Port PIN HEADER (COM3/COM4/COM5)

PIN	Signal	PIN	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

2.4.3 Serial ATA Power Connector (SATA_PWR1)

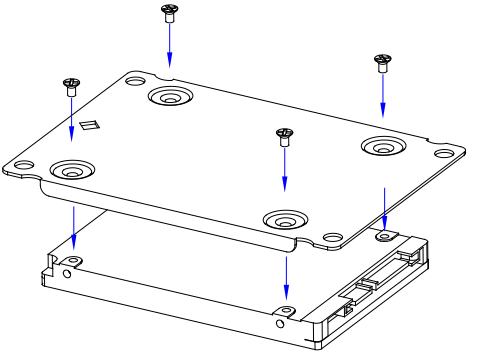
PIN	Signal	PIN	Signal
1	+5	2	GND
3	GND	4	+12V

2.5 Hard Disk Drive Installation

Step 1: Unfasten the four screws of the AEC-6643.

Step 2: Get the HDD and HDD Bracket ready. Fasten four shock washers to the HDD Bracket.

Step 3: Fasten the four screws to fix the HDD and HDD bracket.



Step 4: Fasten the four screws to install the HDD and HDD Bracket to the chasis, then connect the SATA cable to the HDD.

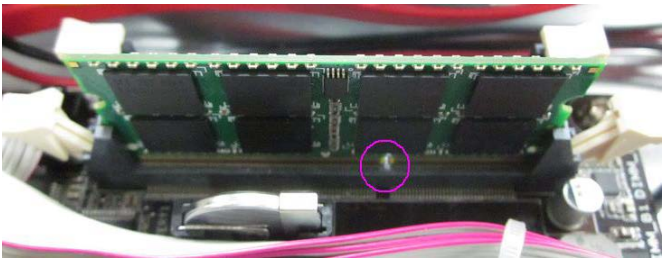
Step 5: Close the cover of the AEC-6643 and fasten the screws and copper cylinders.

2.6 Memory Installation

Step 1: Unfasten the four screws of the AEC-6643.

Step 2: Gently push down on the tabs on either side of the DIMM slot in tandem.

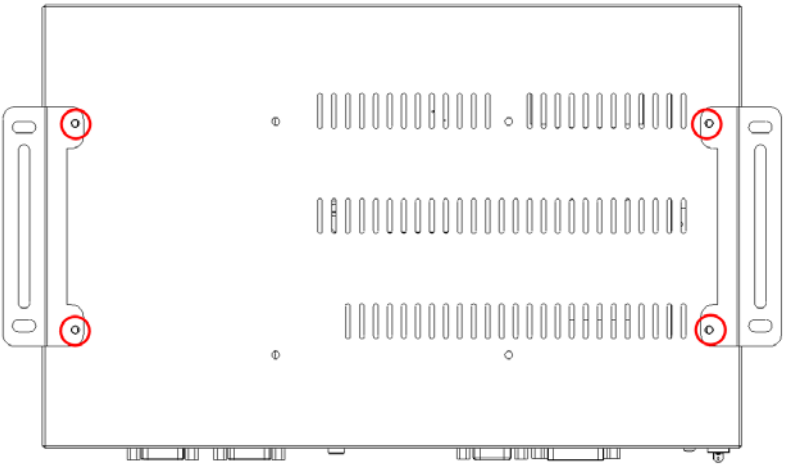
Step 3: Line up the pins and firmly (but not roughly) press on the outside of Memory Card to install.



Step 4: Snap the DIMM slot tabs shut, locking the Memory Card in place.

2.7 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-6643, the wallmount kit installation has been finished.



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The system uses certain routines to perform testing and initialization. If an error, fatal or non-fatal, is encountered, a few short beeps or an error message will be outputted. The board can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be outputted, in which case you will 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:

- You are starting your system for the first time
- You have changed your system's hardware
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention, which is to be replaced once emptied.

3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press <Del> or <F2> immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

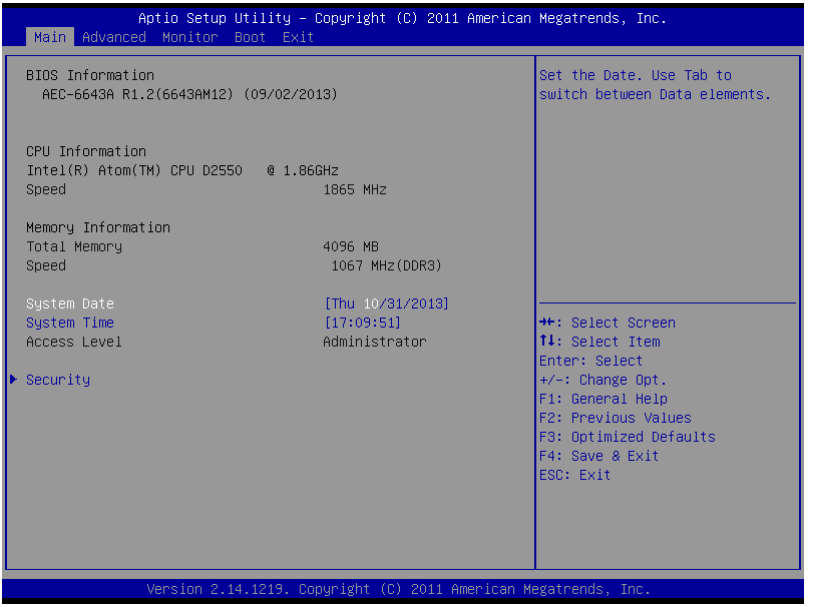
Advanced – Enable/ Disable boot option for legacy network devices

Monitor – Show the environment information

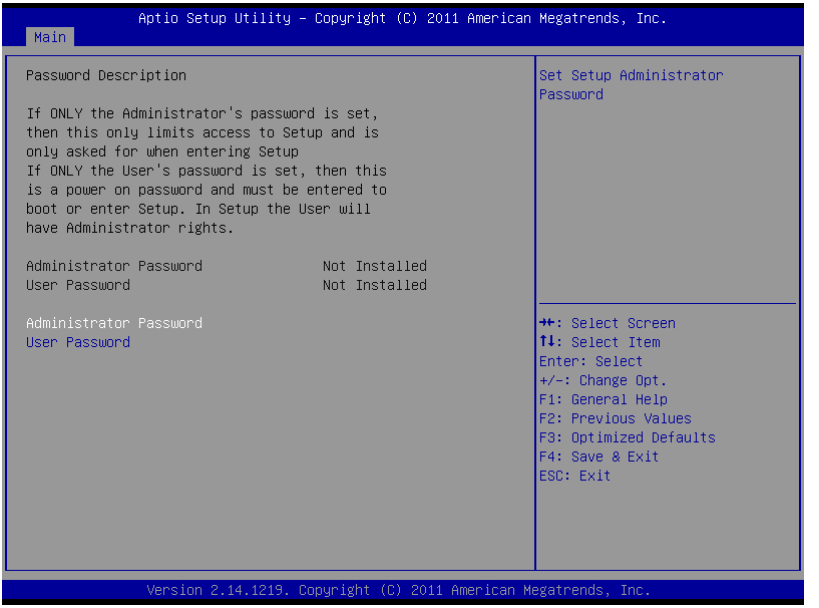
Boot – Enable/ Disable quiet Boot Option

Save & Exit –Save your changes and exit the program

3.3 Setup Submenu: Main



3.3.1 Main: Security



Change User/Administrator Password

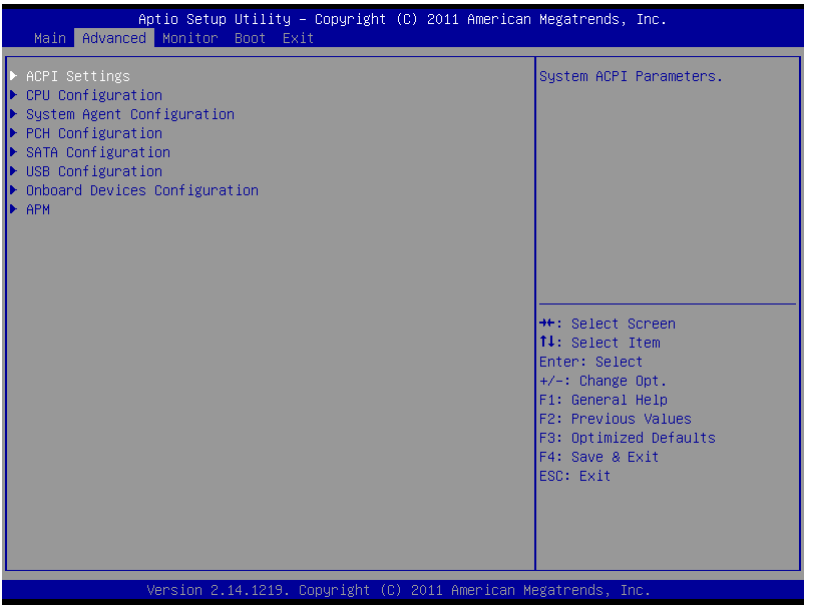
You can set a User Password once an Administrator Password is set. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility.

Select the password you wish to set, press Enter to open a dialog box to enter your password (you can enter no more than six letters or numbers). Press Enter to confirm your entry, after which you will be prompted to retype your password for a final confirmation. Press Enter again after you have retyped it correctly.

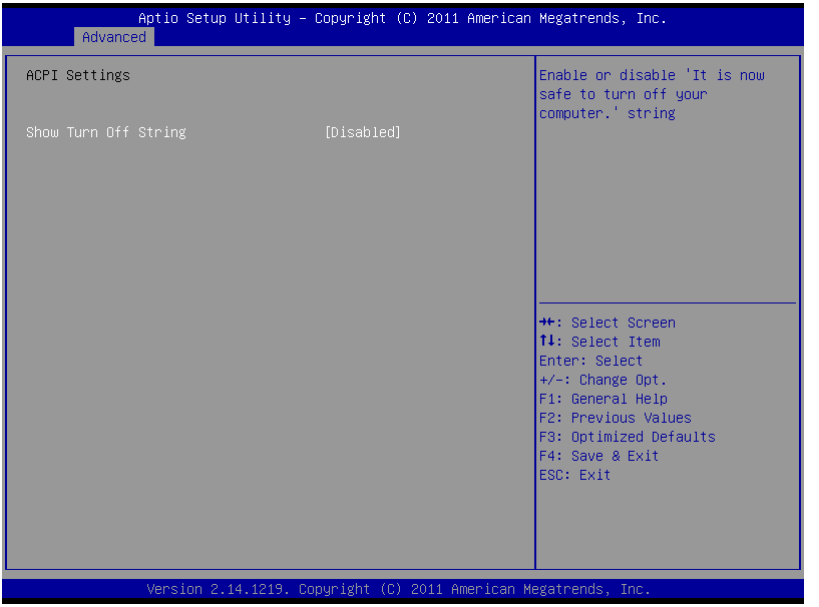
Removing the Password

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

3.4 Setup Submenu: Advanced



3.4.1 Advanced: ACPI Setting



Options summary:

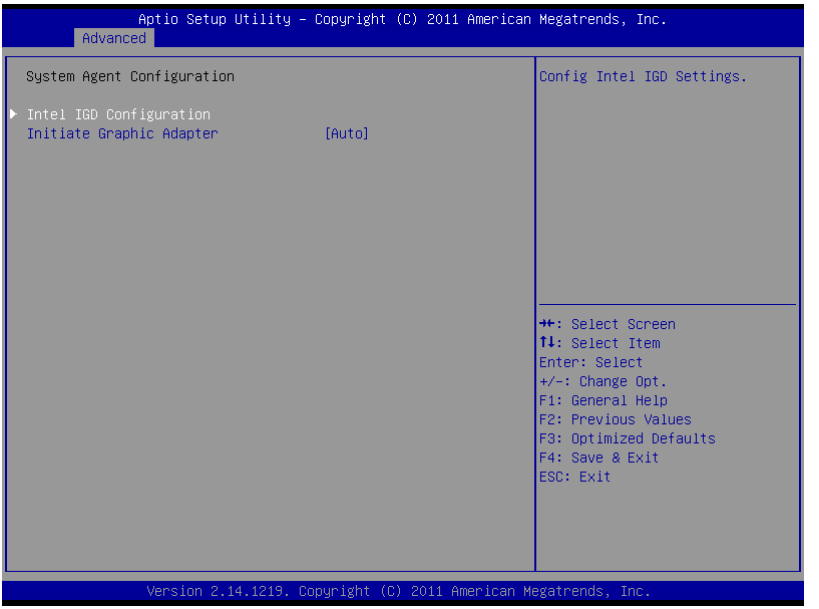
Show Turn Off String	Disabled	Default
	Enabled	
Enable or disable 'It is now safe to turn off your computer." String		

3.4.2 Advanced: CPU Configuration

Options summary:

Hyper-Threading	Disabled	
	Enabled	Optimal Default, Failsafe Default
En/Disable CPU Hyper-Threading function		
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.)		
Limit CPUID Maximum	Disabled	Optimal Default, Failsafe Default
	Enabled	
Disabled for Windows XP		

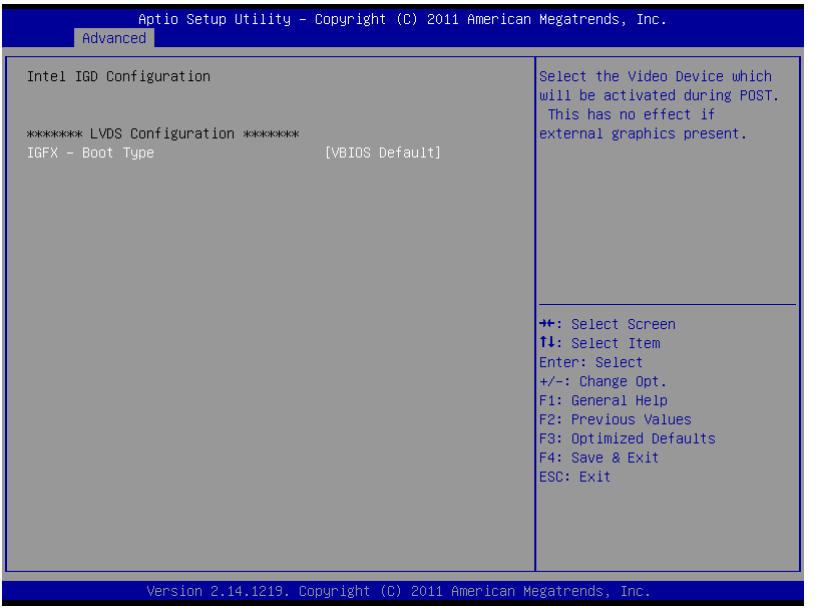
3.4.3 Advanced: Agent Configuration



Options summary:

Initiate Graphic Adapter	Auto	Optimal Default, Failsafe Default
	Enabled	
En/Disable CPU Hyper-Threading function		

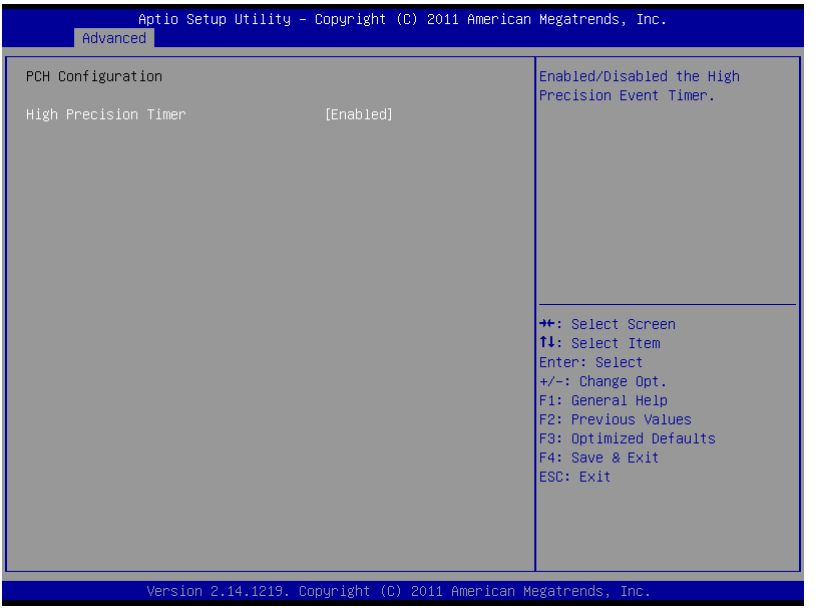
3.4.4 Advanced: Intel IGD Configuration



Options summary:

IGFX – Boot Type	VBIOS Default	Optimal Default, Failsafe Default
	CRT	
	DVI	
Select the video Device which will be activated during POST. This has no effect if external graphics present.		

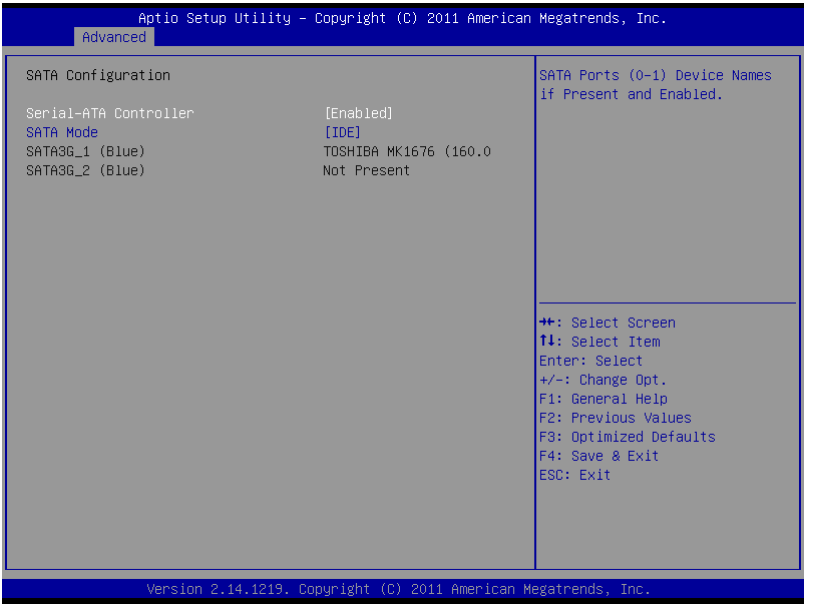
3.4.5 Advanced: PCH Configuration



Options summary:

High Precision Timer	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled/Disabled the High Precision Event Timer.		

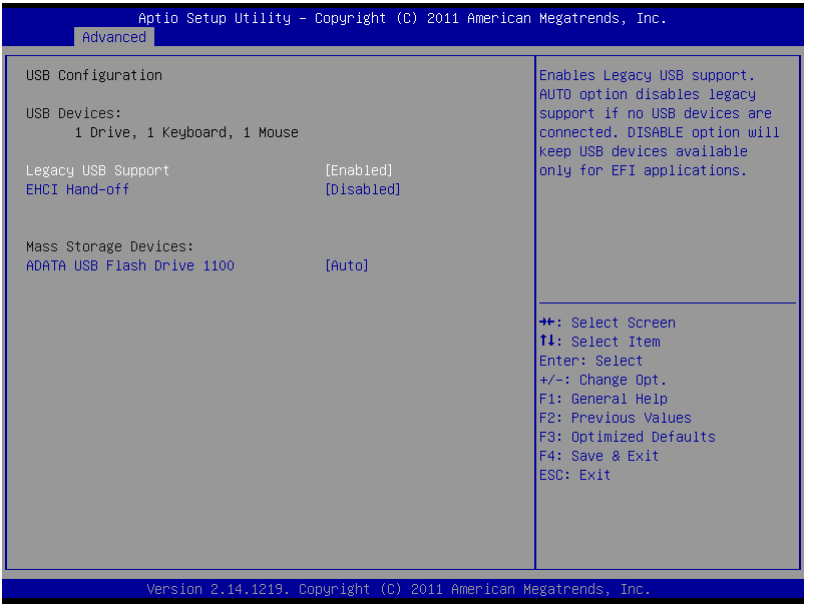
3.4.6 Advanced: SATA Configuration



Options summary:

SATA Controllers	Disabled	
	Enabled	Default
SATA Ports (0-1) Device Names if Present and Enabled.		
SATA Mode	IDE	Default
	AHCI	
(1) IDE Mode. (2) AHCI Mode.		

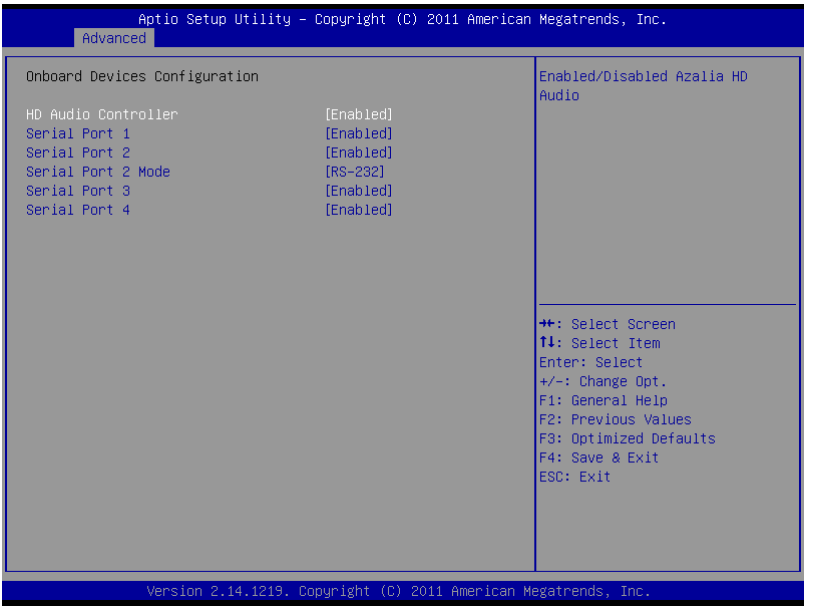
3.4.7 Advanced: USB Configuration



Options summary:

Legacy USB Support	Enabled	Optimal Default, Failsafe Default
	Auto	
Enables Legacy USB support. AUTO option disables legacy support if no USB device are connected. DISABLE option will keep USB devices available only for EFI applications.		
EHCI Hand-off	Disabled	Optimal Default, Failsafe Default
	Enabled	
This is a workaround for OSes without EHCI ownership change should be claimed by EHCI driver.		

3.4.8 Advanced: Onboard Devices Configuration

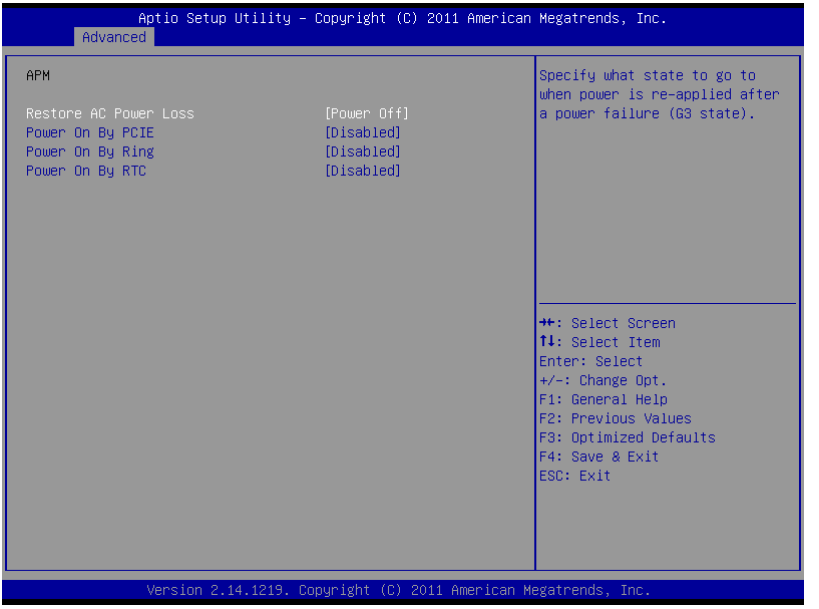


Options summary:

HD Audio Controller	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enabled/Disabled Azalia HD Audio.		
Serial Port 1	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Serial Port		
Serial Port 2	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Serial Port		
Serial Port 2 Mode	RS-232	Optimal Default, Failsafe Default
	RS-422	
	RS-485	
Select COM2 RS-232/RS-422/RS-485		
Serial Port 3	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Serial Port		

Serial Port 4	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Serial Port		

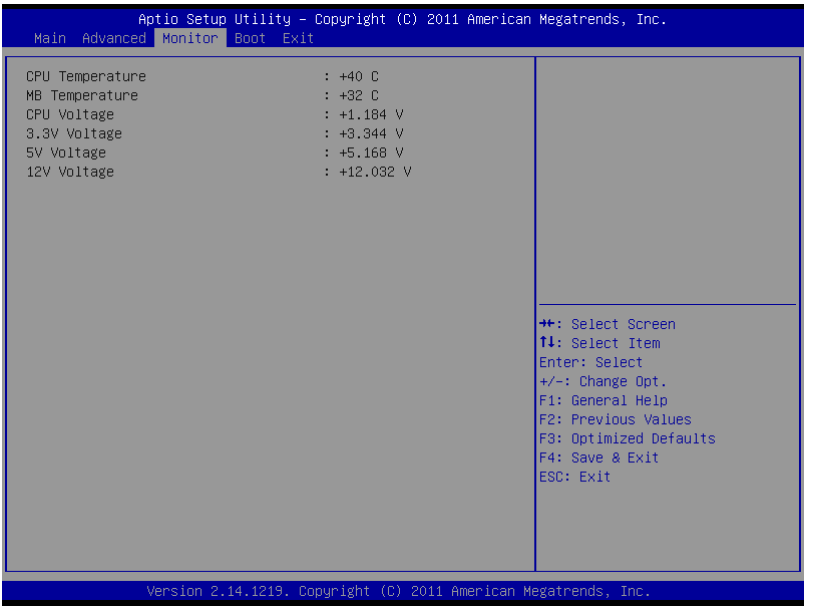
3.4.9 Advanced: APM



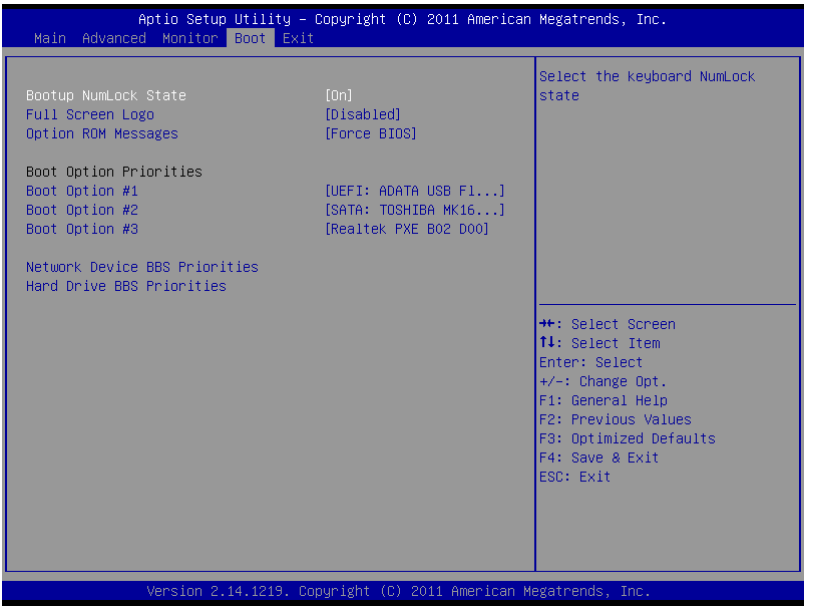
Options summary:

Restore AC Power Loss	Power Off	Optimal Default, Failsafe Default
	Power On	
	Last State	
Specify what state to go when power is re-applied after a power failure (G3 state).		
Power On By PCIE	Disabled	Optimal Default, Failsafe Default
	Enabled	
Power On By PCIE		
Power On By Ring	Disabled	Optimal Default, Failsafe Default
	Enabled	
Power On By Ring Note: This item function only if there is a serial port (COM1) connector on a motherboard.		
Power On By RTC	Disabled	Optimal Default, Failsafe Default
	Enabled	
Power On By RTC		

3.5 Setup submenu: Monitor



3.6 Setup submenu: Boot



Options summary:

Bootup NumLock State	On	Optimal Default, Failsafe Default
	Off	
Select the key board NumLock state		
Full Screen Logo	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enables/Disables Full Screen Logo		
Option ROM Messages	Force BIOS	Set display mode for Option ROM
	Keep Current	
Set display mode for option ROM		

3.6.1 Boot: BBS Priorities

3.7 Setup submenu: Save & Exit

Chapter 4

Drivers Installation

4.1 Product CD/DVD

The AEC-6643 comes with a product DVD that contains all the drivers and utilities you need to setup your product. Insert the DVD and follow the steps in the autorun program to install the drivers.

In case the program does not start, follow the sequence below to install the drivers.

Step 1 – Install INF Driver

1. Click on the **STEP 1-INF** folder and select your OS folder
2. Double click on the infinst_autol.exe file located in each OS folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 2 – Install Graphic Driver

1. Open the **STEP2 - VGA** folder and select your OS
2. Double click on the Setup.exe file located in each OS folder
3. Follow the instructions
4. Drivers will be installed automatically

Note 1: If the OS is Windows® XP, you have to install the driver of dotNet Framework first. Simply click on dotnetfx35.exe located in dotNet Framwork folder.

Step 3 – Install LAN Driver (Realtek Chip)

1. Open the **STEP3 – LAN** folder and select your OS
2. Open the **setup.exe** file in the folder
3. Follow the instructions

4. Drivers will be installed automatically

Step 4 – Install Audio Driver

1. Open the **STEP4 - Audio** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 5 – Install AHCI Driver

Please refer to Appendix C AHCI Settings

Appendix A

Watchdog Timer Programming

A.1 Watchdog Timer Initial Programming

Table 1 : SuperIO relative register table		
	Default Value	Note
Index	0x2E(Note1)	SIO MB PnP Mode Index Register 0x2E or 0x4E
Data	0x2F(Note2)	SIO MB PnP Mode Data Register 0x2F or 0x4F

Table 2 : Watchdog relative register table					
	LDN	Register	BitNum	Value	Note
Timer Counter	0x07(Note3)	0x73(Note4)		(Note24)	Time of watchdog timer (0~255) This register is byte access
Counting Unit	0x07(Note5)	0x72(Note6)	7(Note7)	1(Note8)	Select time unit. 1: second 0: minute
Watchdog Enable (KRST)	0x07(Note9)	0x72(Note10)	6(Note11)	1(Note12)	0: Disable 1: Enable
Timeout Status	0x07(Note13)	0x71(Note14)	0(Note15)	1	1: Clear timeout status

```
**********************************************************************************
// SuperIO relative definition (Please reference to Table 1)
#define byte   SIOIndex   //This parameter is represented from Note1
#define byte   SIOData   //This parameter is represented from Note2
#define   void   IOWriteByte(byte IOPort, byte Value);
#define   byte   IOReadByte(byte IOPort);
// Watch Dog relative definition (Please reference to Table 2)
#define byte   TimerLDN   //This parameter is represented from Note3
#define byte   TimerReg   //This parameter is represented from Note4
#define byte   TimerVal   // This parameter is represented from Note24
#define byte   UnitLDN   //This parameter is represented from Note5
#define byte   UnitReg   //This parameter is represented from Note6
#define byte   UnitBit   //This parameter is represented from Note7
#define byte   UnitVal   //This parameter is represented from Note8
#define byte   EnableLDN   //This parameter is represented from Note9
#define byte   EnableReg   //This parameter is represented from Note10
#define byte   EnableBit   //This parameter is represented from Note11
#define byte   EnableVal   //This parameter is represented from Note12
#define byte   StatusLDN   // This parameter is represented from Note13
#define byte   StatusReg   // This parameter is represented from Note14
#define byte   StatusBit   // This parameter is represented from Note15
**********************************************************************************
```

```
*************************************************************************************
VOID   Main(){
        // Procedure : AaeonWDTConfig
        // (byte)Timer : Time of WDT timer.(0x00~0xFF)
        // (boolean)Unit : Select time unit(0: second, 1: minute).
        AaeonWDTConfig();

        // Procedure : AaeonWDTEnable
         // This procudure will enable the WDT counting.
        AaeonWDTEnable();
}
*************************************************************************************
```

```
*******************************************************************************
// Procedure : AaeonWDTEnable
VOID    AaeonWDTEnable ( ){
        WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 1);
}

// Procedure : AaeonWDTConfig
VOID    AaeonWDTConfig ( ){
        // Disable WDT counting
        WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 0);
        // Clear Watchdog Timeout Status
        WDTClearTimeoutStatus();
        // WDT relative parameter setting
        WDTParameterSetting();
}

VOID    WDTEnableDisable(byte LDN, byte Register, byte BitNum, byte Value){
       SIOBitSet(LDN, Register, BitNum, Value);
}

VOID    WDTParameterSetting(){
        // Watchdog Timer counter setting
       SIOByteSet(TimerLDN, TimerReg, TimerVal);
      // WDT counting unit setting
       SIOBitSet(UnitLDN, UnitReg, UnitBit, UnitVal);
}

VOID    WDTClearTimeoutStatus(){
       SIOBitSet(StatusLDN, StatusReg, StatusBit, 1);
}
*******************************************************************************
```

```
*******************************************************************************
VOID   SIOEnterMBPnPMode(){
       Switch(SIOIndex){
              Case 0x2E:
                     IOWriteByte(SIOIndex, 0x87);
                     IOWriteByte(SIOIndex, 0x01);
                        IOWriteByte(SIOIndex, 0x55);
                        IOWriteByte(SIOIndex, 0x55);
                        Break;
              Case 0x4E:
                     IOWriteByte(SIOIndex, 0x87);
                     IOWriteByte(SIOIndex, 0x01);
                        IOWriteByte(SIOIndex, 0x55);
                        IOWriteByte(SIOIndex, 0xAA);
                     Break;
       }
}

VOID   SIOExitMBPnPMode(){
       IOWriteByte(SIOIndex, 0x02);
       IOWriteByte(SIOData, 0x02);
}

VOID   SIOSelectLDN(byte LDN){
        IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07
       IOWriteByte(SIOData, LDN);
}
*******************************************************************************
```

```
*******************************************************************************
VOID    SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){
        Byte TmpValue;

        SIOEnterMBPnPMode();
         SIOSelectLDN(byte LDN);
        IOWriteByte(SIOIndex, Register);
        TmpValue = IOReadByte(SIOData);
        TmpValue &= ~(1 << BitNum);
        TmpValue |= (Value << BitNum);
        IOWriteByte(SIOData, TmpValue);
        SIOExitMBPnPMode();
}

VOID    SIOByteSet(byte LDN, byte Register, byte Value){
        SIOEnterMBPnPMode();
         SIOSelectLDN(LDN);
        IOWriteByte(SIOIndex, Register);
         IOWriteByte(SIOData, Value);
         SIOExitMBPnPMode();
}
*******************************************************************************
```

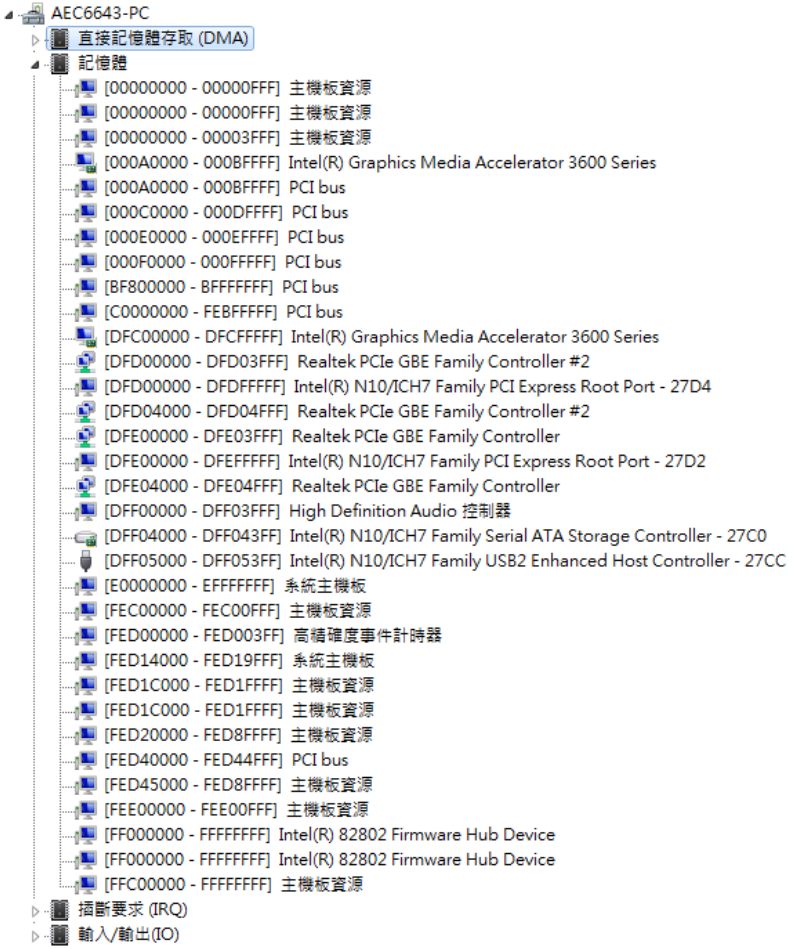
Appendix B

I/O Information

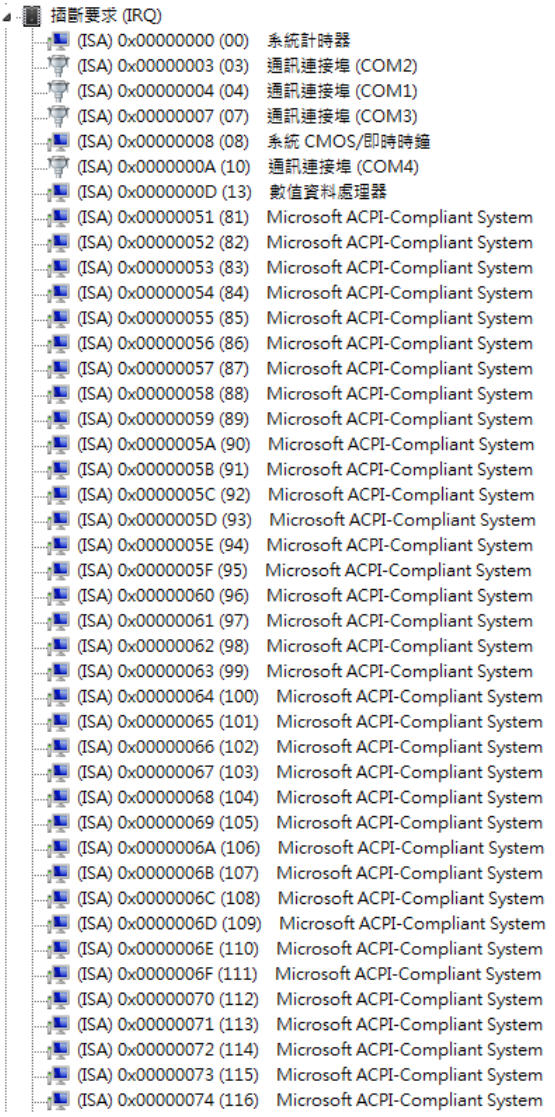
B.1 I/O Address Map


[000000B2 - 000000B3] 主機板資源
[000000B4 - 000000B5] 可程式插斷控制器
[000000B8 - 000000B9] 可程式插斷控制器
[000000BC - 000000BD] 可程式插斷控制器
[000000C0 - 000000DF] 直接記憶體存取控制器
[000000E0 - 000000EF] 主機板資源
[000000F0 - 000000F0] 數值資料處理器
[00000290 - 0000029F] 主機板資源
[000002E8 - 000002EF] 通訊連接埠 (COM4)
[000002F8 - 000002FF] 通訊連接埠 (COM2)
[00000380 - 000003BB] Intel(R) Graphics Media Accelerator 3600 Series
[000003C0 - 000003DF] Intel(R) Graphics Media Accelerator 3600 Series
[000003E8 - 000003EF] 通訊連接埠 (COM3)
[000003F8 - 000003FF] 通訊連接埠 (COM1)
[00000400 - 0000047F] 主機板資源
[00000400 - 0000047F] 主機板資源
[000004D0 - 000004D1] 主機板資源
[000004D0 - 000004D1] 可程式插斷控制器
[00000500 - 0000053F] 主機板資源
[00000500 - 0000057F] 主機板資源
[00000600 - 0000061F] 主機板資源
[00000680 - 0000069F] 主機板資源
[00000800 - 0000081F] Intel(R) N10/ICH7 Family SMBus Controller - 27DA
[00000A00 - 00000A1F] 主機板資源
[00000A20 - 00000A2F] 主機板資源
[00000D00 - 0000FFFF] PCI bus
[0000D000 - 0000D0FF] Realtek PCIe GBE Family Controller #2
[0000D000 - 0000DFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D4
[0000E000 - 0000E0FF] Realtek PCIe GBE Family Controller
[0000E000 - 0000EFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
[0000F000 - 0000F01F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
[0000F020 - 0000F03F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
[0000F040 - 0000F05F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
[0000F060 - 0000F07F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
[0000F080 - 0000F08F] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F090 - 0000F093] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F0A0 - 0000F0A7] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F0B0 - 0000F0B3] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F0C0 - 0000F0C7] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F0D0 - 0000F0D7] Intel(R) Graphics Media Accelerator 3600 Series
[0000FFFF - 0000FFFF] 主機板資源
[0000FFFF - 0000FFFF] 主機板資源

B.2 1st Memory Address Map



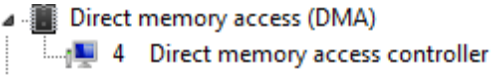
B.3 IRQ Mapping Chart



(ISA) 0x00000075 (117) Microsoft ACPI-Compliant System
(ISA) 0x00000076 (118) Microsoft ACPI-Compliant System
(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
- (ISA) 0x000000A9 (169) Microsoft ACPI-Compliant System
- (ISA) 0x000000AA (170) Microsoft ACPI-Compliant System
- (ISA) 0x000000AB (171) Microsoft ACPI-Compliant System
- (ISA) 0x000000AC (172) Microsoft ACPI-Compliant System
- (ISA) 0x000000AD (173) Microsoft ACPI-Compliant System
- (ISA) 0x000000AE (174) Microsoft ACPI-Compliant System
- (ISA) 0x000000AF (175) Microsoft ACPI-Compliant System
- (ISA) 0x000000B0 (176) Microsoft ACPI-Compliant System
- (ISA) 0x000000B1 (177) Microsoft ACPI-Compliant System
- (ISA) 0x000000B2 (178) Microsoft ACPI-Compliant System
- (ISA) 0x000000B3 (179) Microsoft ACPI-Compliant System
- (ISA) 0x000000B4 (180) Microsoft ACPI-Compliant System
- (ISA) 0x000000B5 (181) Microsoft ACPI-Compliant System
- (ISA) 0x000000B6 (182) Microsoft ACPI-Compliant System
- (ISA) 0x000000B7 (183) Microsoft ACPI-Compliant System
- (ISA) 0x000000B8 (184) Microsoft ACPI-Compliant System
- (ISA) 0x000000B9 (185) Microsoft ACPI-Compliant System
- (ISA) 0x000000BA (186) Microsoft ACPI-Compliant System
- (ISA) 0x000000BB (187) Microsoft ACPI-Compliant System
- (ISA) 0x000000BC (188) Microsoft ACPI-Compliant System
- (ISA) 0x000000BD (189) Microsoft ACPI-Compliant System
- (ISA) 0x000000BE (190) Microsoft ACPI-Compliant System
- (PCI) 0x0000000B (11) Intel(R) N10/ICH7 Family SMBus Controller - 27DA
- (PCI) 0x00000010 (16) Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
- (PCI) 0x00000010 (16) Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
- (PCI) 0x00000011 (17) Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
- (PCI) 0x00000012 (18) Intel(R) N10/ICH7 Family PCI Express Root Port - 27D4
- (PCI) 0x00000012 (18) Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
- (PCI) 0x00000013 (19) Intel(R) N10/ICH7 Family PCI Express Root Port - 27D6
- (PCI) 0x00000013 (19) Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
- (PCI) 0x00000013 (19) Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
- (PCI) 0x00000016 (22) High Definition Audio 控制器
- (PCI) 0x00000017 (23) Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
- (PCI) 0x00000017 (23) Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
- (PCI) 0xFFFFFFFC (-4) Realtek PCIe GBE Family Controller #2
- (PCI) 0xFFFFFFFD (-3) Realtek PCIe GBE Family Controller
- (PCI) 0xFFFFFFFE (-2) Intel(R) Graphics Media Accelerator 3600 Series

B.4 DMA Channel Assignments



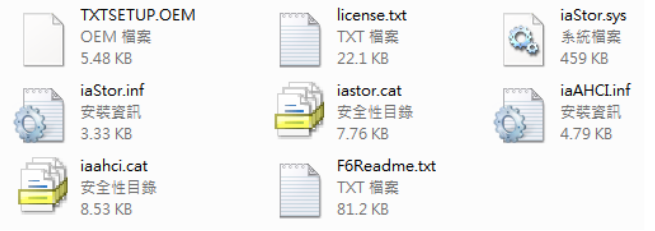
Appendix C

AHCI Settings

C.1 Setting AHCI

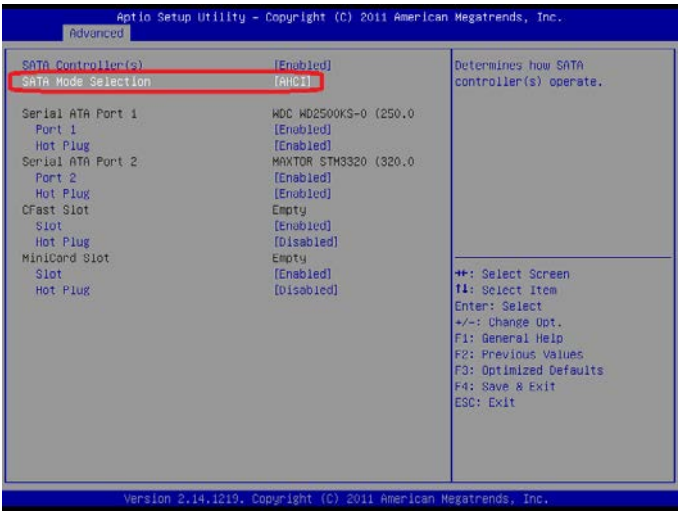
OS installation to setup AHCI mode

Step 1: Copy below files from "Driver CD -> Step7-RAID&AHCI\ WinXP_32" to Disk.

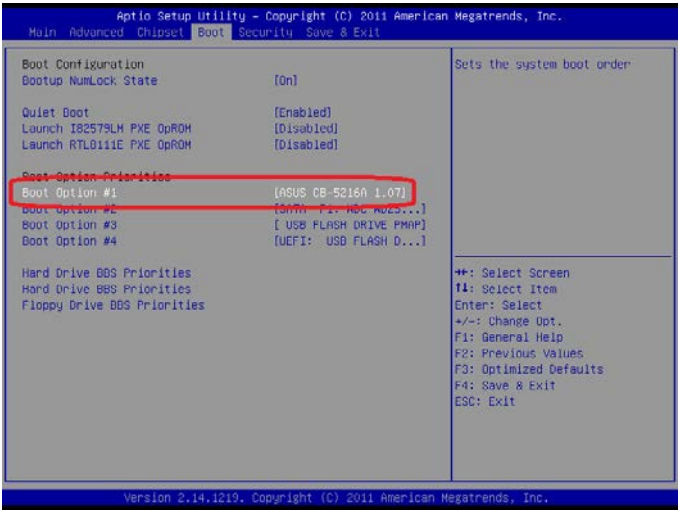


Step 2: Connect the USB Floppy drive to the board and insert the diskette from previous step.

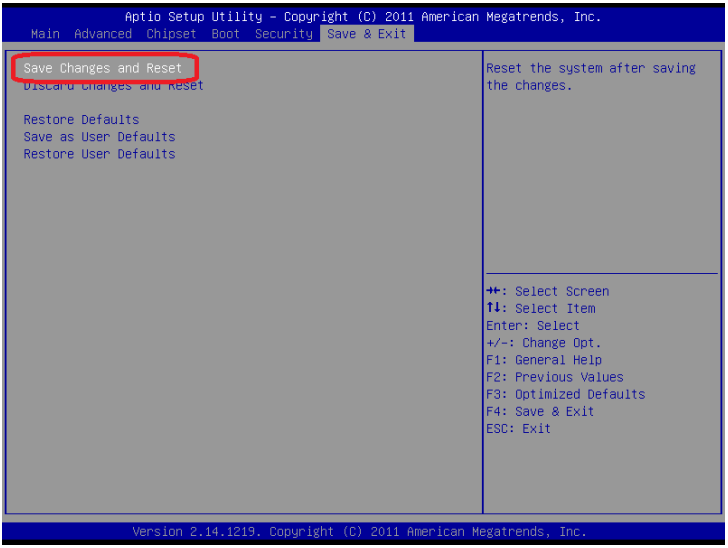
Step 3: Configure SATA Controller to AHCI mode in **BIOS SETUP Menu: Advanced -> SATA Configuration -> SATA Mode -> AHCI Mode**



Step 4: Configure DVD/CD-ROM drive as the first boot device.



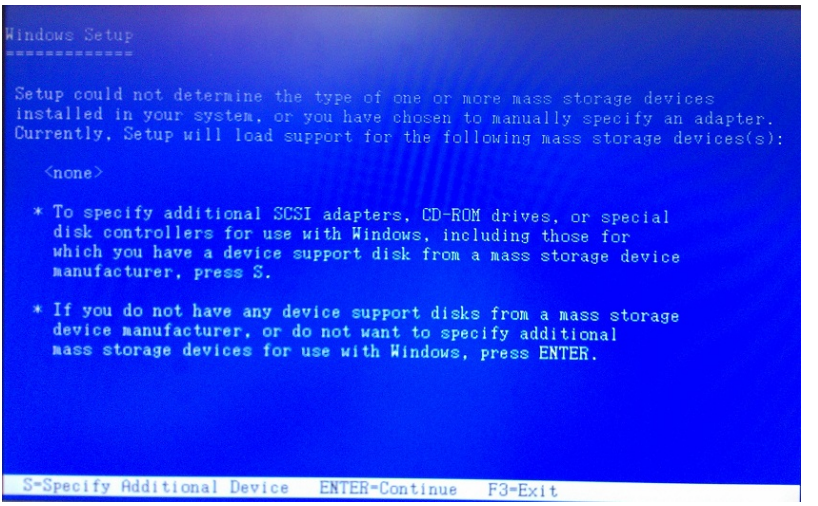
Step 5: Save changes and exit BIOS SETUP



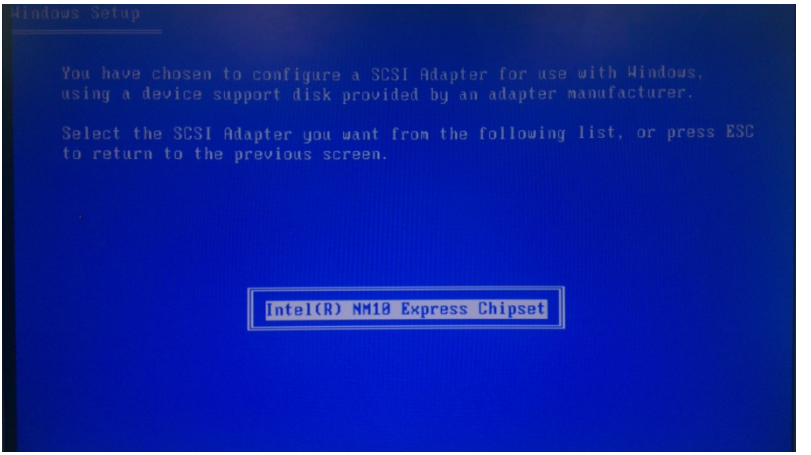
Step 6 – Boot to DVD/CD-ROM device to install OS

Step 7 – Press **"F6"** to install AHCI driver

Step 8 – Press **"S"** to install AHCI driver



Step 9 – Choose **"Intel(R) NM10 Express Chipset".**



Step 10 – The following messages will appear on the screen. Press **"S"** to specify additional SCSI adapters. Press **"ENTER"** and Windows Setup will continue to install OS.