

AIS-E2-CV1

Advanced System Controller

2.5" HDD/SSD x 2

Gigabit Ethernet x 2

COM x 6, USB2.0 x 6

HD Audio Codec

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Packing List

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

- 1 9761E20000 Gift Box (Including 84W Power adapter, CPU Cooler)
- 1 DVD-ROM for manual (in PDF format) and drivers
- 1 AIS-E2-CV1

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 60°C (140°F). IT MAY DAMAGE THE EQUIPMENT.

FCC

Warning!



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	×	○	○	○	○	○
<p>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。</p> <p>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。</p> <p>备注:</p> <p>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。</p> <p>二、上述部件物质中央处理器、内存、硬盘、电源为选购品。</p>						

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Chapter

1

**General
Information**

1.1 Introduction

AIS-E2-CV1 adopts the Intel® Atom™ D2550 Processor and equipped with Intel® NM10 chipset. Moreover, the system memory features two 204-pin dual-channel DDR3 1066/800 MHz SODIMM up to 4 GB. It deploys two LAN ports that consist of 10/100/1000Base-TX Ethernet RJ-45 ports. AIS-E2-CV1 condensed appearance features desktop and wallmount form factor that fits nicely into a space-limited environment.

This AIS-E2-CV1 supports up to two 2.5" HDD/SSD to provide ample storage. Moreover, the flexible expansion interfaces feature one Mini Card socket and one antenna hole. In addition, this model supports one RS-232 and one RS-232/422/485 port (optional up to five RS-232 ports), and six USB2.0 ports (two on front panel and four on rear panel). Furthermore, the AIS-E2-CV1 can support VGA and DVI-D.

With the increasing demands of high performance in audio and video, AAEON released the specific Advanced System Controller to fulfill the needs of the applications, such as Factory Automation, Building Automation, KIOSK, POS, and etc.

1.2 Features

- Intel® Atom™ D2550 Processor
- Intel® NM10 Chipset
- 204-pin Dual-Channel DDR3 1066/800 MHz SODIMM x 2 (Up to 4GB)
- Dual Realtek Gigabit Ethernet Ports
- SATA 3.0Gb/s x 2
- USB 2.0 x 6, COM x 2 (supports up to 5 COM ports)
- Mini Card Socket x 1

1.3 Specifications

● CPU		Intel® Atom™ D2550 Processor
● Chipset		Intel® NM10
● System Memory		204-pin Dual-Channel DDR3 1066/800 MHz SODIMM x 2, up to 4GB
● Display Interface	VGA	DB-15 x 1
	DVI	DVI-D x 1
	Others	—
● Storage Device	SSD/HDD	2.5" HDD/SSD x 2
● Network	LAN	Gigabit Ethernet
	Wireless	Optional by Mini Card
● Front I/O	USB Host	USB2.0 x 2
	Others	Power Switch x 1, Reset button x 1
● Rear I/O	USB Host	USB2.0 x 4
	LAN	RJ-45 x 2
	Serial Port	RS-232/422/485 x 1
	Audio	Mic-in, Line-in, Line-out
	KB/MS	PS/2 x 2
	Others	Power input x 1
● Expansion	Mini Card	Mini Card x 1
● Indicator	Front	PWR, HDD
● Power Requirement		12V DC-in

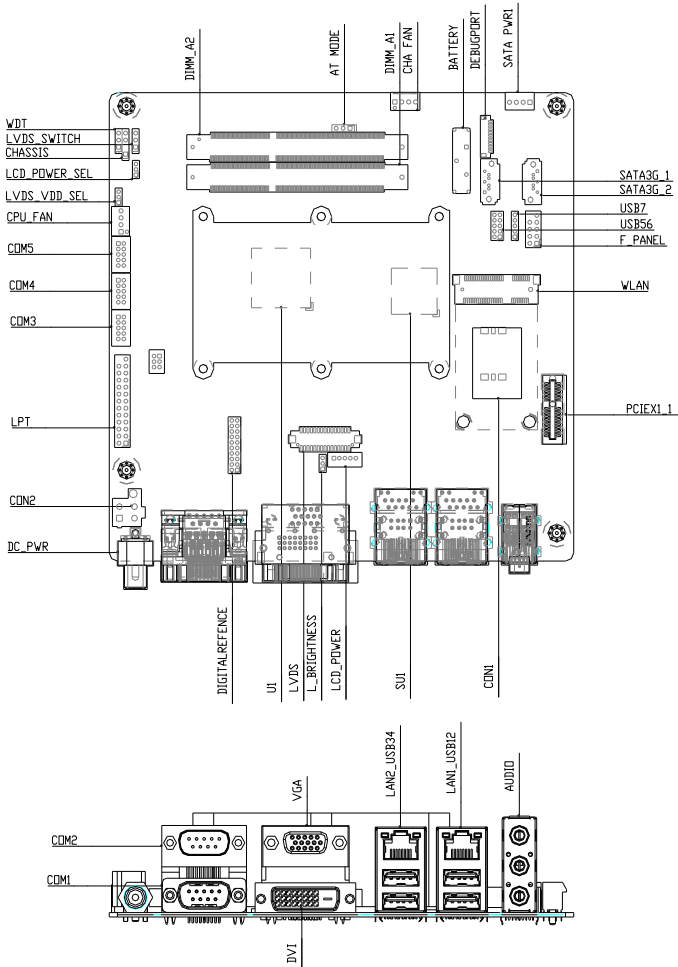
● System Cooling	CPU cooler x 1 System Cooler x 1
● Mounting	Wallmount
● Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)
● Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
● Anti-Vibration	0.5g rms / 5 ~ 500Hz / operation
● Anti-Shock	15 G peak acceleration (11 msec. duration)
● Certification	EMC CE/ FCC class A
● Dimension (W x H x D)	7.68" x 2.76" x 8.66" (195mm x 70mm x 220mm)
● Weight	13.84 lb (6.3Kg)
● OS Support	Windows® XP Pro, Windows® 7, Linux Kernal 2.6.x or higher

Chapter

2

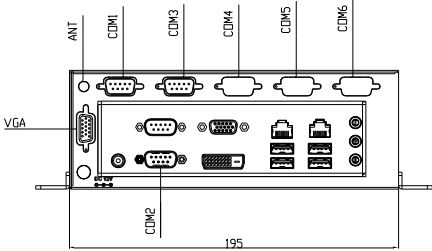
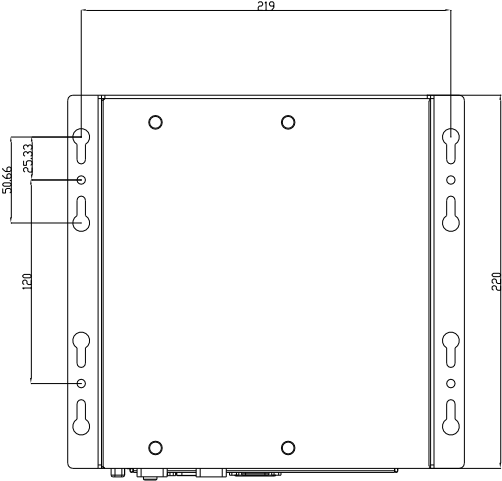
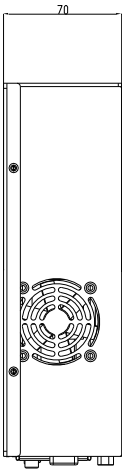
**Hardware
Installation**

2.1 Location of Connectors and Jumpers of the Main Board

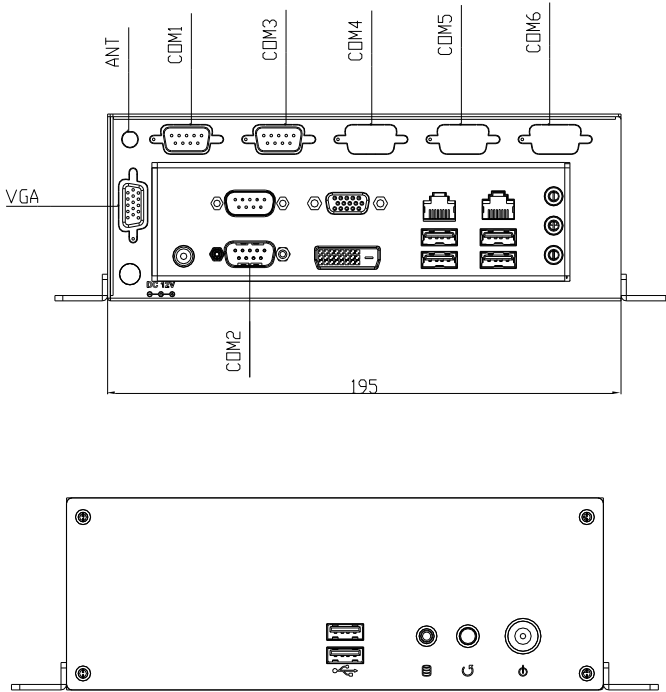


NOTE: If choose m-SATA SKU, SATA3G_2 port, mini card and SIM card slot will be disable.

2.2 Mechanical Drawing of AIS-E2-CV1



I/O Ports



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
ATMODE	AT/ATX Mode Selection
CLRTC	Clear COMS
DIGITALREFERENCE	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

2.4 List of Connectors

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

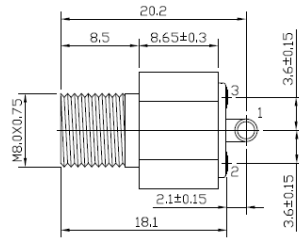
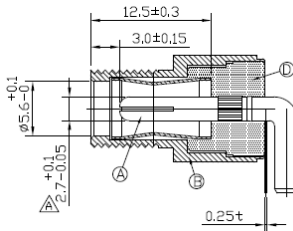
The table below shows the function of each of the board's connectors:

Label	Function
DC_PWR	+12V Power connector
CON2	+12V AUX Power Connector
CHA_FAN	System FAN 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_POWER	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



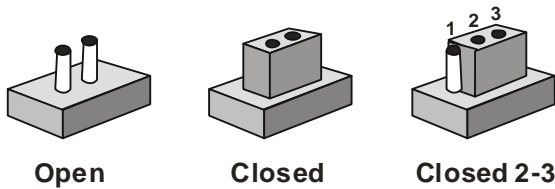
NOTE: The +12V Power connector (Label: DC_PWR) is lockable Jack type with screw. Please refer the inner and outer diameter dimension of connector as below to choose suitable adaptor.



2.5 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

2.6 AT/ATX Mode Selection (ATOMODE)

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

2.7 Clear COMS (CLRTC)

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

2.8 COM2 External Power Selection (DIGITALREFENCE)

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

2.9 LVDS Panel Power Selection (LVDS_VDD_SEL)

LVDS_VDD_SEL	Function
Close 1-2	+3.3V (Default)
Close 2-3	+5V

2.10 LVDS Brightness Control Type Selection

(L_BRIGHTNESS)

L_BRIGHTNESS	Function
Close 1-2	Voltage Control (Default)

Close 2-3	PWM Control
-----------	-------------

2.11 LVDS function Enable (LVDS_SWITCH)

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

2.12 LVDS Panel Backlight Power Selection (LCD_POWER_SEL)

LCD_POWER_SEL	Function
Close 1-2	+12V
Close 2-3	+5V (Default)

2.13 Watchdog Timer Function Switch (WDT)

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

2.14 +12V AUX Power Connector (CON2)

Pin	Signal	Pin	Signal
1	GND	2	GND
3	+12V	4	+12V

2.15 CPU/SYSTEM FAN Connector (CPU_FAN/CHA_FAN)

Pin	Signal	Pin	Signal
1	FAN Control	2	FAN Sense
3	+12V	4	GND

2.16 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	10	NC

2.17 GPIO/SM BUS/COM2/ COM2 External Power Selection (DIGITALREFERENCE)

Pin	Signal	Pin	Signal
1	GP50	2	GP51
3	GP52	4	GP53
5	GP54	6	GP55
7	GP56	8	GP57
9	+5V	10	GND
11	SMB_CLOCK	12	SMB_DATA
13	+5V	14	GND
15	COM2_RI#	16	+12V
17	COM2_RI#	18	RI#
19	COM2_RI#	20	+5V

2.18 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.

2.19 Front Panel Pin Header (F_PANEL)

Pin	Signal	Pin	Signal
1	HDDLED+	2	POWERLED+
3	HDDLED-	4	POWERLED-
5	RESET-	6	PWRBTN+
7	RESET+	8	PWRBTN-
9	N/C		

2.20 PS/2 Keyboard/Mouse Connector (KB/MS)

Pin	Signal	Pin	Signal
1	KB_DATA	2	KB_CLK
3	GND	4	+5V
5	MS_DATA	6	MS_CLK

2.21 LVDS Panel Power Connector (LCD_POWER)

Pin	Signal	Pin	Signal
1	Panel Power	2	Panel brightness control

3	GND	4	GND
5	Panel backlight control		

2.22 Parallel Port Connector (LPT)

Pin	Signal	Pin	Signal
1	STB#	2	AFD#
3	DATA 0	4	ERROR#
5	DATA 1	6	INIT#
7	DATA 2	8	SLIN#
9	DATA 3	10	GND
11	DATA 4	12	GND
13	DATA 5	14	GND
15	DATA 6	16	GND
17	DATA 7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT		

2.23 LVDS Panel Connector (LVDS)

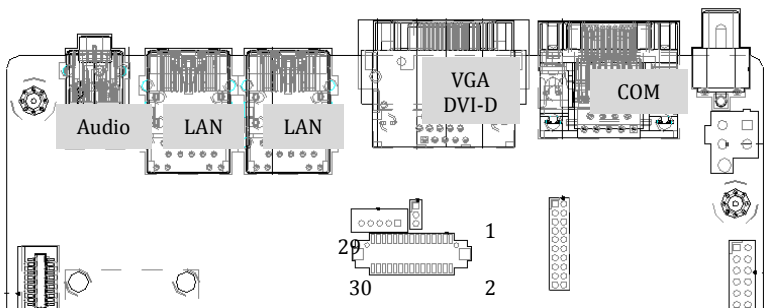
Pin	Signal	Pin	Signal
1	NC	2	NC
3	Panel power	4	GND
5	NC	6	NC

7	NC	8	NC
9	NC	10	NC
11	NC	12	NC
13	DDC_DATA	14	DDC_CLOCK
15	DATA3-	16	DATA3+
17	DATA2-	18	DATA2+
19	DATA1-	20	DATA1+
21	DATA0-	22	DATA0+
23	Panel power	24	GND
25	LVDS_CLOCK-	26	LVDS_CLOCK+
27	Panel power	28	GND
29	Backlight enable	30	Brightness control



NOTE: LVDS connector Vendor:

PINREX; Model: 712-76-30GWR8. Please refer the drawing below, notice the location of PIN1, PIN2, PIN29 and PIN30.



2.24 Serial ATA Power Connector (SATA_PWR1)

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

2.25 USB 5 & 6 PIN HEADER (USB56)

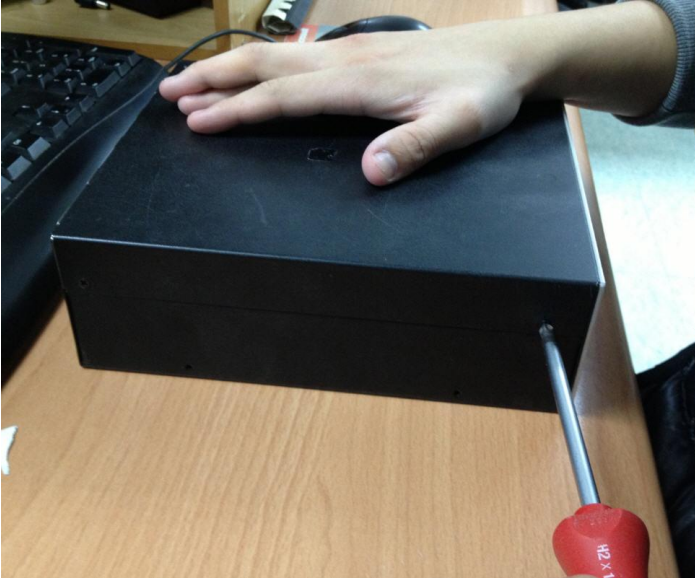
Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD-	4	GND
5	USBD+	6	USBD+
7	GND	8	USBD-
9	GND	10	+5V

2.26 USB 7 PIN HEADER (USB7)

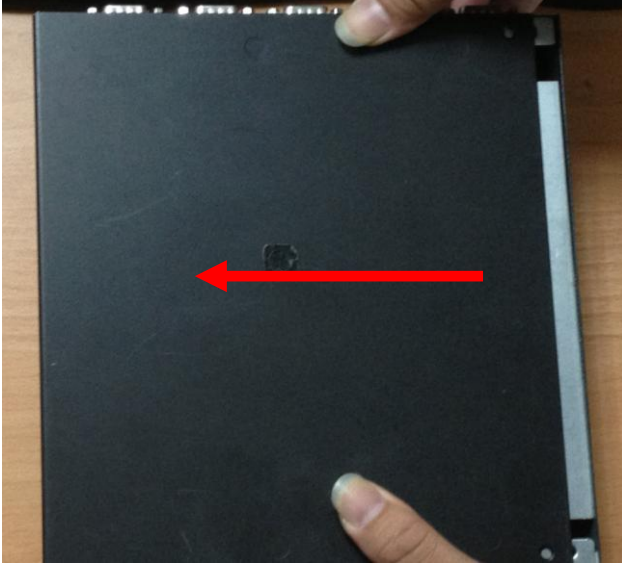
Pin	Signal
1	+5V
2	USBD-
3	USBD+
4	GND
5	GND

2.27 Installing the 2.5" Hard Disk Drive

Step 1: Unfasten the screws on the right and left sides of AIS-E2-CV1



Step 2: Push back the upper lid of AIS-E2-CV1 and open it

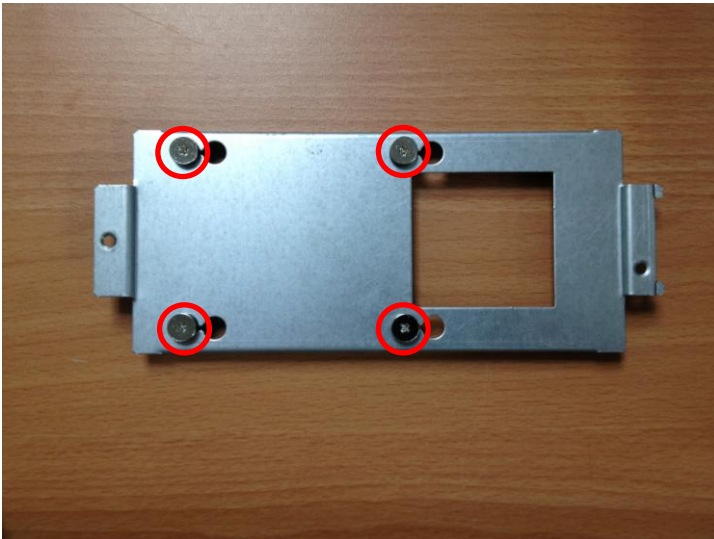


Step 3: Get the HDD bracket ready and insert the dampers to the holes on the bracket





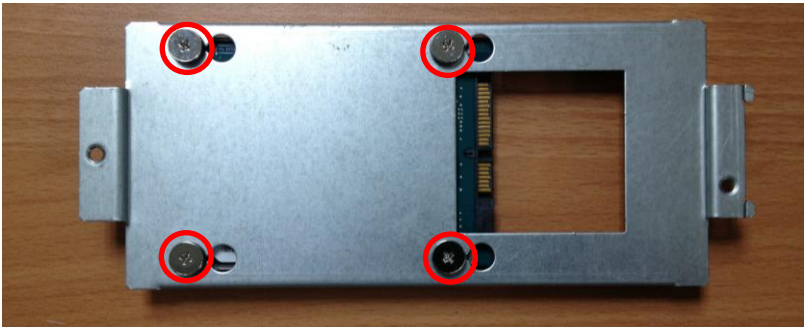
Step 4: Pierce the four screws to the dampers



Step 5: Get the 2.5" HDD ready



Step 6: Put the HDD to the HDD bracket and fasten the four screws



Step 7: Connect the SATA and Power cables



Step 8: Close the HDD bracket and finish the installation



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 AIS-E2-CV1 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it 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 or <F2> immediately. This will allow you to enter Setup.

Main

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

Advanced

Advanced BIOS Features Setup including TPM, ACPI, etc.

Chipset

Host bridge parameters.

Boot

Enabled / disabled quiet boot option.

Security

Set setup administrator password.

Save & Exit

Exit system setup after saving the changes.

Chapter

4

**Driver
Installation**

The AIS-E2-CV1 comes with an AutoRun DVD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver DVD, the driver DVD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

Follow the sequence below to install the drivers:

Step 1 – Install Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

Step 5 – Install AHCI Driver

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the AIS-E2-CV1 DVD-ROM into the DVD-ROM drive. And install the drivers from Step 1 to Step 5 in order.

Step 1 – Install Chipset Driver

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

Step 2 – Install VGA Driver

For Windows® 7

1. Click on the **Step 2 - VGA** folder and select the folder of **WIN7**
2. Double click on the **Setup.exe** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

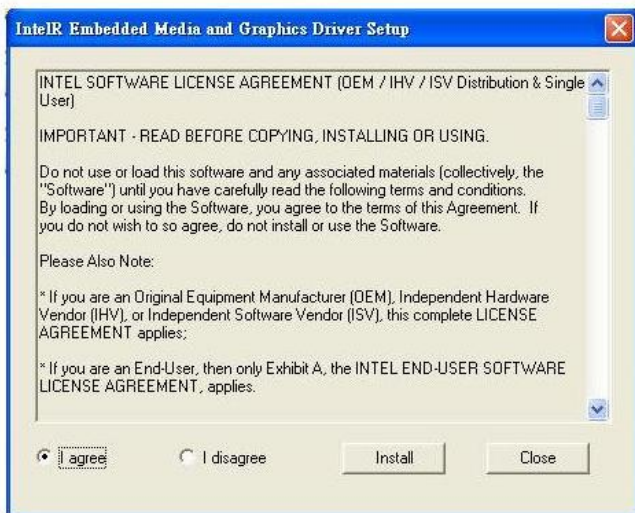
For Windows® XP

1. Install Framework 3.5
 - Select the **dotNet Framework** folder and double click on the **dotnetfx35.exe**
 - Follow the instructions that the window shows
 - The system will help you install the driver automatically

2. Install IEMGD

- Select the **WINXP** folder and double click on the **IEMGDInstall.exe**
- Select the configuration
- Follow the instructions that the window shows
- The system will help you install the driver automatically





If you want to update driver, please uninstall driver first.

Uninstall IEMGD

1. Double click on the **IEMGDInstall.exe**
2. Follow the instructions that the window shows
3. The system will help you uninstall the driver automatically



Step 3 – Install LAN Driver

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

Step 4 – Install Audio Driver

1. Click on the **Step 4 - AUDIO** folder and select the OS folder your system is
2. Double click on the **SETUP.exe** file located in each OS folder
3. Follow the instructions that the window shows

4. The system will help you install the driver automatically

Step 5 – Install AHCI Driver

Please refer to Appendix C AHCI Setting

Appendix

A

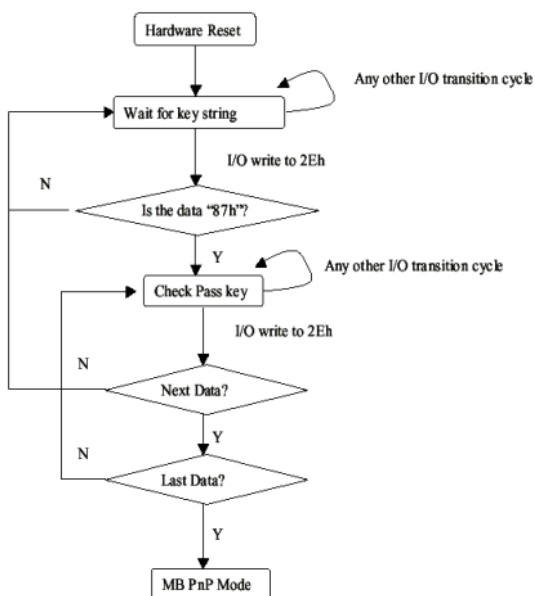
Programming the Watchdog Timer

A.1 Programming

AIS-E2-CV1 utilizes ITE 8783 chipset as its watchdog timer controller. Below are the procedures to complete its configuration and this initial 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 8783 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	NA	Configure Control

07h	71h	R/W	00h	Watch Dog Timer Control Register
07h	72h	R/W	001s0000b	Watch Dog Timer Configuration Register
07h	73h	R/W	38h	Watch Dog Timer Time-out Value (LSB) Register
07h	74h	R/W	00h	Watch Dog Timer Time-out Value (MSB) 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.

Watch Dog Timer 1, 2, 3 Control Register (Index=71h,81h,91h Default=00h)

Bit	Description
7	WDT Timeout Enable(WTE) 1: Disable. 0: Enable.
6	WDT Reset upon Mouse Interrupt(WRKMI) 0: Disable. 1: Enable.
5	WDT Reset upon Keyboard Interrupt(WRKBI) 0: Disable. 1: Enable.
4	Reserved
3-2	Reserved
1	Force Time-out(FTO) This bit is self-clearing.
0	WDT Status(WS) 1: WDT value reaches 0. 0: WDT value is not 0.

**Watch Dog Timer 1, 2, 3 Configuration Register (Index=72h,
82h, 92h Default=001s0000b)**

Bit	Description
7	WDT Time-out Value Select 1 (WTVS) 1: Second 0: Minute
6	WDT Output through KRST (Pulse) Enable(WOKE) 1: Enable 0: Disable
5	WDT Time-out value Extra select(WTVES) 1: 64ms x WDT Timer-out value (default = 4s) 0: Determined by WDT Time-out value select 1 (bit 7 of this register)
4	WDT Output through PWROK (Pulse) Enable(WOPE) 1: Enable 0: Disable During LRESET#, this bit is selected by JP7 power-on strapping option
3-0	Select interrupt level^{Note1} for WDT(SIL)

**Watch Dog Timer 1,2,3 Time-Out Value (LSB) Register
(Index=73h,83h,93h, Default=38h)**

Bit	Description
7-0	WDT Time-out Value 7-0(WTV)

**Watch Dog Timer 1,2,3 Time-Out Value (MSB) Register
(Index=74h,84h,94h Default=00h)**

Bit	Description
7-0	WDT Time-out Value 15-8(WTV)

A.2 ITE8783 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,81h

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

Input/output (IO)	
[00000000 - 0000001F]	Direct memory access controller
[00000000 - 00000CF7]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000024 - 00000025]	Programmable interrupt controller
[00000028 - 00000029]	Programmable interrupt controller
[0000002C - 0000002D]	Programmable interrupt controller
[0000002E - 0000002F]	Motherboard resources
[00000030 - 00000031]	Programmable interrupt controller
[00000034 - 00000035]	Programmable interrupt controller
[00000038 - 00000039]	Programmable interrupt controller
[0000003C - 0000003D]	Programmable interrupt controller
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[0000004E - 0000004F]	Motherboard resources
[00000050 - 00000053]	System timer
[00000060 - 00000060]	Standard PS/2 Keyboard
[00000061 - 00000061]	Motherboard resources
[00000062 - 00000063]	Motherboard resources
[00000063 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard PS/2 Keyboard
[00000065 - 00000065]	Motherboard resources
[00000065 - 0000006F]	Motherboard resources
[00000067 - 00000067]	Motherboard resources
[00000070 - 00000070]	Motherboard resources
[00000070 - 00000077]	System CMOS/real time clock
[00000072 - 0000007F]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000081 - 00000091]	Direct memory access controller
[00000084 - 00000086]	Motherboard resources
[00000088 - 00000088]	Motherboard resources
[0000008C - 0000008E]	Motherboard resources
[00000090 - 0000009F]	Motherboard resources
[00000092 - 00000092]	Motherboard resources
[00000093 - 0000009F]	Direct memory access controller
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000A4 - 000000A5]	Programmable interrupt controller
[000000A8 - 000000A9]	Programmable interrupt controller
[000000AC - 000000AD]	Programmable interrupt controller
[000000B0 - 000000B1]	Programmable interrupt controller
[000000B2 - 000000B3]	Motherboard resources
[000000B4 - 000000B5]	Programmable interrupt controller
[000000B8 - 000000B9]	Programmable interrupt controller
[000000BC - 000000BD]	Programmable interrupt controller
[000000C0 - 000000DF]	Direct memory access controller

	[000000E0 - 000000EF]	Motherboard resources
	[000000F0 - 000000F0]	Numeric data processor
	[000002E0 - 000002E7]	Communications Port (COM6)
	[000002E8 - 000002EF]	Communications Port (COM4)
	[000002F0 - 000002F7]	Communications Port (COM5)
	[000002F8 - 000002FF]	Communications Port (COM2)
	[00000378 - 0000037F]	Printer Port (LPT1)
	[000003B0 - 000003BB]	Intel(R) Graphics Media Accelerator 3600 Series
	[000003C0 - 000003DF]	Intel(R) Graphics Media Accelerator 3600 Series
	[000003E8 - 000003EF]	Communications Port (COM3)
	[000003F8 - 000003FF]	Communications Port (COM1)
	[00000400 - 0000047F]	Motherboard resources
	[00000400 - 0000047F]	Motherboard resources
	[000004D0 - 000004D1]	Motherboard resources
	[000004D0 - 000004D1]	Programmable interrupt controller
	[00000500 - 0000053F]	Motherboard resources
	[00000500 - 0000057F]	Motherboard resources
	[00000600 - 0000061F]	Motherboard resources
	[00000680 - 0000069F]	Motherboard resources
	[000006A0 - 000006AF]	Motherboard resources
	[000006B0 - 000006EF]	Motherboard resources
	[00000A00 - 00000A1F]	Motherboard resources
	[00000A20 - 00000A2F]	Motherboard resources
	[00000A30 - 00000A3F]	Motherboard resources
	[00000D00 - 0000FFFF]	PCI bus
	[00001000 - 0000100F]	Motherboard resources
	[0000D000 - 0000D0FF]	Realtek PCIe GBE Family Controller #2
	[0000D000 - 0000DFFF]	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
	[0000E000 - 0000E0FF]	Realtek PCIe GBE Family Controller
	[0000E000 - 0000EFFF]	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
	[0000F000 - 0000F01F]	Intel(R) N10/ICH7 Family SMBus Controller - 27DA
	[0000F020 - 0000F02F]	Intel(R) NM10 Express Chipset
	[0000F040 - 0000F05F]	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
	[0000F060 - 0000F07F]	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
	[0000F080 - 0000F09F]	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
	[0000F0A0 - 0000F0BF]	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
	[0000F0C0 - 0000F0C3]	Intel(R) NM10 Express Chipset
	[0000F0D0 - 0000F0D7]	Intel(R) NM10 Express Chipset
	[0000F0E0 - 0000F0E3]	Intel(R) NM10 Express Chipset
	[0000F0F0 - 0000F0F7]	Intel(R) NM10 Express Chipset
	[0000F100 - 0000F107]	Intel(R) Graphics Media Accelerator 3600 Series
	[0000FFFF - 0000FFFF]	Motherboard resources
	[0000FFFF - 0000FFFF]	Motherboard resources

B.2 1st MB Memory Address Map

Address Range	Device Name
[00000000 - 00000FFF]	Motherboard resources
[00000000 - 00000FFF]	Motherboard resources
[00000000 - 00003FFF]	Motherboard resources
[000A0000 - 000BFFFF]	Intel(R) Graphics Media Accelerator 3600 Series
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[000E0000 - 000EFFFF]	PCI bus
[000F0000 - 000FFFFF]	PCI bus
[3F800000 - 3FFFFFFF]	PCI bus
[40000000 - FEBFFFFF]	PCI bus
[DFC00000 - DFCFFFFF]	Intel(R) Graphics Media Accelerator 3600 Series
[DFD00000 - DFD03FFF]	Realtek PCIe GBE Family Controller #2
[DFD00000 - DFD0FFFF]	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
[DFD04000 - DFD04FFF]	Realtek PCIe GBE Family Controller #2
[DFE00000 - DFE03FFF]	Realtek PCIe GBE Family Controller
[DFE00000 - DFE0FFFF]	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
[DFE04000 - DFE04FFF]	Realtek PCIe GBE Family Controller
[DFF00000 - DFF03FFF]	High Definition Audio Controller
[DFF04000 - DFF043FF]	Intel(R) NM10 Express Chipset
[DFF05000 - DFF053FF]	Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
[E0000000 - EFFFFFFF]	System board
[FEC00000 - FEC00FFF]	Motherboard resources
[FED00000 - FED003FF]	High precision event timer
[FED14000 - FED19FFF]	System board
[FED1C000 - FED1FFFF]	Motherboard resources
[FED1C000 - FED1FFFF]	Motherboard resources
[FED20000 - FED8FFFF]	Motherboard resources
[FED45000 - FED8FFFF]	Motherboard resources
[FEE00000 - FEE00FFF]	Motherboard resources
[FF000000 - FFFFFFFF]	Intel(R) 82802 Firmware Hub Device
[FF000000 - FFFFFFFF]	Intel(R) 82802 Firmware Hub Device
[FFC00000 - FFFFFFFF]	Motherboard resources

B.3 IRQ Mapping Chart

Interrupt request (IRQ)	Device
(ISA) 0x00000000 (00)	System timer
(ISA) 0x00000001 (01)	Standard PS/2 Keyboard
(ISA) 0x00000003 (03)	Communications Port (COM2)
(ISA) 0x00000004 (04)	Communications Port (COM1)
(ISA) 0x00000005 (05)	Communications Port (COM5)
(ISA) 0x00000007 (07)	Communications Port (COM6)
(ISA) 0x00000008 (08)	System CMOS/real time clock
(ISA) 0x0000000A (10)	Communications Port (COM3)
(ISA) 0x0000000B (11)	Communications Port (COM4)
(ISA) 0x0000000C (12)	Microsoft PS/2 Mouse
(ISA) 0x0000000D (13)	Numeric data processor
(ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
(ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
(ISA) 0x00000053 (83)	Microsoft ACPI-Compliant System
(ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System
(ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System
(ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System
(ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
(ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System
(ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
(ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
(ISA) 0x0000005B (91)	Microsoft ACPI-Compliant System
(ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
(ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System
(ISA) 0x0000005E (94)	Microsoft ACPI-Compliant System
(ISA) 0x0000005F (95)	Microsoft ACPI-Compliant System
(ISA) 0x00000060 (96)	Microsoft ACPI-Compliant System
(ISA) 0x00000061 (97)	Microsoft ACPI-Compliant System
(ISA) 0x00000062 (98)	Microsoft ACPI-Compliant System
(ISA) 0x00000063 (99)	Microsoft ACPI-Compliant System
(ISA) 0x00000064 (100)	Microsoft ACPI-Compliant System
(ISA) 0x00000065 (101)	Microsoft ACPI-Compliant System
(ISA) 0x00000066 (102)	Microsoft ACPI-Compliant System
(ISA) 0x00000067 (103)	Microsoft ACPI-Compliant System
(ISA) 0x00000068 (104)	Microsoft ACPI-Compliant System
(ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
(ISA) 0x0000006A (106)	Microsoft ACPI-Compliant System
(ISA) 0x0000006B (107)	Microsoft ACPI-Compliant System
(ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
(ISA) 0x0000006D (109)	Microsoft ACPI-Compliant System
(ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
(ISA) 0x0000006F (111)	Microsoft ACPI-Compliant System
(ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
(ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
(ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116)	Microsoft ACPI-Compliant System
(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

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Microsoft ACPI-Compliant System	(188)
Microsoft ACPI-Compliant System	(189)
Microsoft ACPI-Compliant System	(190)

B.4 DMA Channel Assignments

- Direct memory access (DMA)
- 4 Direct memory access controller

Appendix

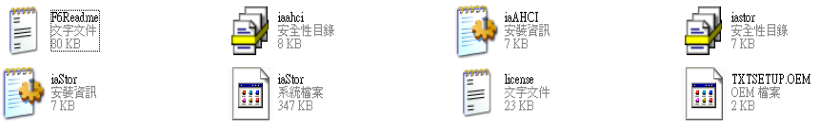
C

AHCI Setting

C.1 Setting AHCI

OS installation to SETUP AHCI Mode

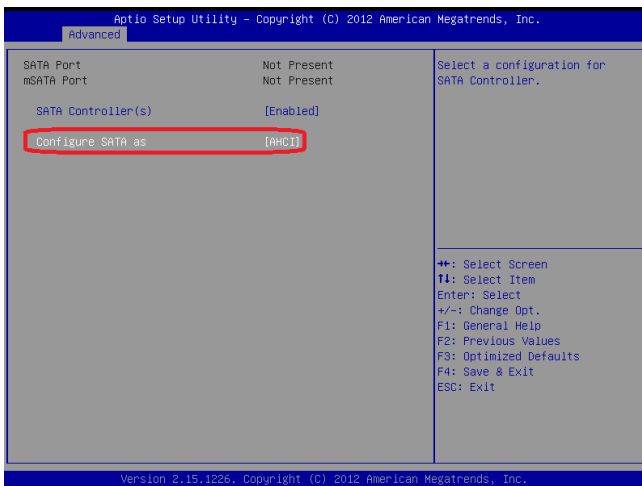
Step 1: Copy below files from “Driver CD -> Step 5 – AHCI\Floppy” and to diskette.



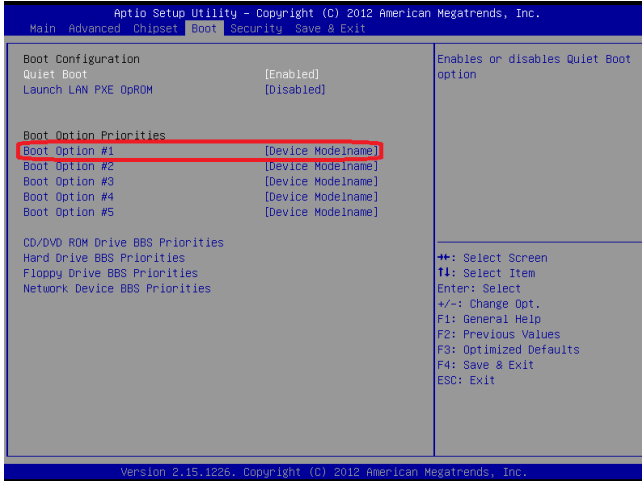
Step 2: Connect the USB Floppy drive to the system and insert the diskette from previous step.

Step 3: Configure SATA Controller to AHCI mode in **BIOS SETUP Menu**:

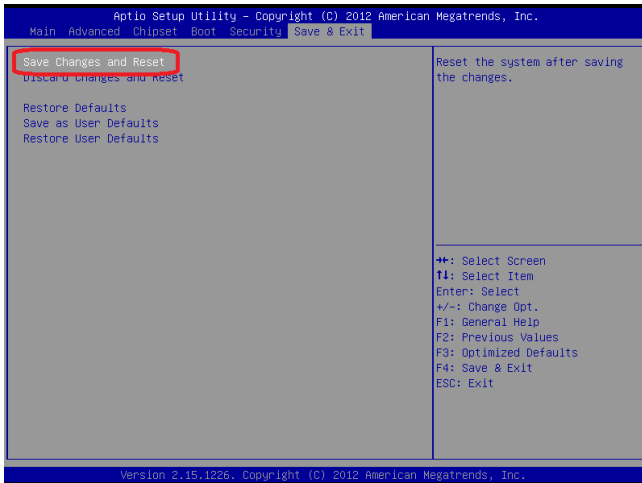
Advanced -> IDE Configuration -> SATA Mode -> AHCI Mode



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

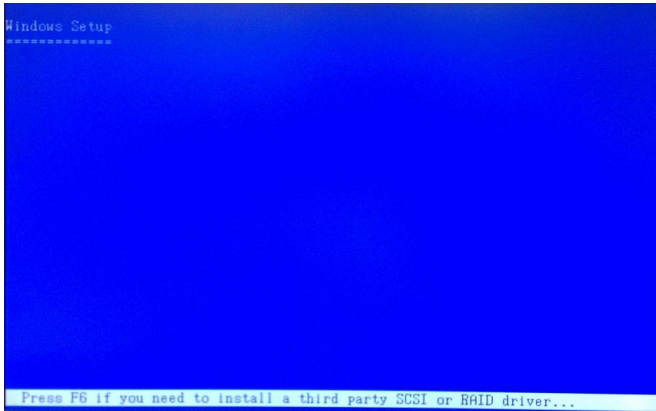


Step 5: Save changes and exit BIOS SETUP

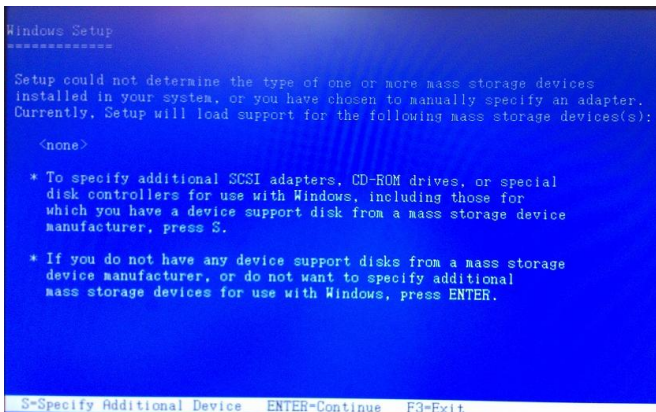


Step 6 – Boot to DVD/CD-ROM device to install OS

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 – Windows Setup will display the controller name you selected in previous step and continue to install OS when “ENTER” pressed.