AIS-E1-H61A

Advanced System Controller
3.5” HDD x 1, 2.5” HDD/SSD x 1
or 2.5” HDD/SSD x 2
Gigabit Ethernet x 2
COM x 6, USB2.0 x 8, CF-SATA x 1
Mini PCI-E x 1, PCI-E[x4] x 1
HD Audio Codec

AIS-E1 Manual 1st Ed.
September 2013

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Packing List

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

- 1 COM Port Cable
- 1 CPU Cooler
- 1 84W Adapter
- 1 SATA Cable
- 1 SATA Power Cable
- 4 Rubber Foot
- 1 AIS-E1-H61A
- 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 65°C (149°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。

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Chapter

1

General Information

1.1 Introduction

AIS-E1-H61A adopts the 2nd generation Intel® Core™ i7/ i5/ Celeron® processor up to 35W. The chipset is equipped with Intel® H61. Moreover, the system memory features two DDR3 1066/1333 MHz SODIMM up to 16 GB. It deploys two LAN ports that consist of 10/100/1000Base-TX Ethernet RJ-45 ports. AIS-E1-H61A condensed appearance features desktop and wallmount form factor that fits nicely into a space-limited environment.

This AIS-E1-H61A supports up to two 2.5" HDD/SSD or up to one 3.5" Hard Disk Drive and one 2.5" HDD/SSD. Moreover, the flexible expansion interfaces feature one PCI-Express[x4], one Mini PCIe, and one CF-SATA. In addition, this model supports one RS-232/422/485 port, optional five RS-232 ports, and eight USB2.0 (two ports on the front panel, six with USB2.0 connectors). Furthermore, the Realtek ALC887 supports HD audio codec and the AIS-E1-H61A can support dual displays with VGA, DVI-D, and HDMI.

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, and etc.

1.2 Features

- Mini-ITX based chassis with scalable expansion slots
- Socket LGA 1155 2nd generation for Intel® Core™ i7
- / i5 / Celeron® processors up to 35W
- 2 x 204-pin Dual-channel DDR3 1066/1333 MHz
- SODIMM up to 16GB
- Intel® Integrated Graphics Engine supports dual view by VGA, DVI, HDMI
- Realtek RTL 8111E Gigabit Ethernet x 2
- Up to 2.5” HDD/SSD x 2 or up to 2.5” HDD/SSD x 1 and 3.5” HDD/SSD x 1, support RAID 0,1,5,10
- USB 2.0 x 8, COM x 1 (up to 6 COM port via expanded DB9 holes and expansion slot)
- Mini PCIe socket x 1, CF-SATA socket x 1(optional PCI-E [x4] x 1 riser card)
- Dimension: 315mm(W) x 70mm(H) x 300mm(D)

1.3 Specifications

● CPU		Socket LGA 1155 2nd Generation Intel® Core™ i7 / i5 / Celeron® processors up to 35W
● Chipset		Intel® H61
● System Memory		204-pin Dual Channel DDR3 1066/1333 MHz SODIMM x2, up to 16GB
● Display Interface	VGA	DB-15 x 1
	DVI	DVI-D x 1
	Others	HDMI x 1
● Storage Device	SSD	CF-SATA x 1
	HDD	2.5” SATA HDD bay x 2 (optional 3.5” HDD x 1 + 2.5”HDD/SSD x 1)
	Optical ROM	Up to slim ODD x 1
● Network	LAN	Gigabit Ethernet
	Wireless	—
● Front I/O	USB Host	USB2.0 x 2
	Others	Power Switch x 1
● Rear I/O	USB Host	USB2.0 x 4 (up to 6 x USB2.0 via expansion slot)
	LAN	RJ-45 x 2
	Serial Port	RS-232/422/485 x 1 supports

		5/12V, optional RS-232 x 5
	Audio	Mic-in, Line-in, Line-out
	KB/MS	KB/MS x 1
	Others	Power input x 1
● Expansion	Mini Card	—
	Others	PCI-Express [x4] x 1, Mini-PCIe, CF-SATA x 1, Antenna hole x 2
● Indicator	Front	PWR, HDD
● Power Requirement		100~240V AC to DC 12V power adapter
● System Cooling		CPU cooler x 1 System Cooler x 1
● Mounting		Wallmount
● Operating Temperature		32°F ~ 113°F (0°C ~ 45°C)
● Storage Temperature		-4°F ~ 140°F (-20°C ~ 60°C)
● Storage Humidity		10~80%, non-condensing
● Anti-Vibration		0.5g rms / 5 ~ 500Hz / operation – HDD
● Anti-Shock		15 G peak acceleration (11 msec. duration) – HDD
● Certification	EMC	CE/ FCC class A
● Dimension (W x H x D)		12.4" x 2.76" x 11.81" (315mm x 70mm x 300mm)
● Weight		13.84 lb (6.3 Kg)

● OS Support	Windows® XP Pro, Windows® 7, Windows® 8, Linux Kernal 2.6.x

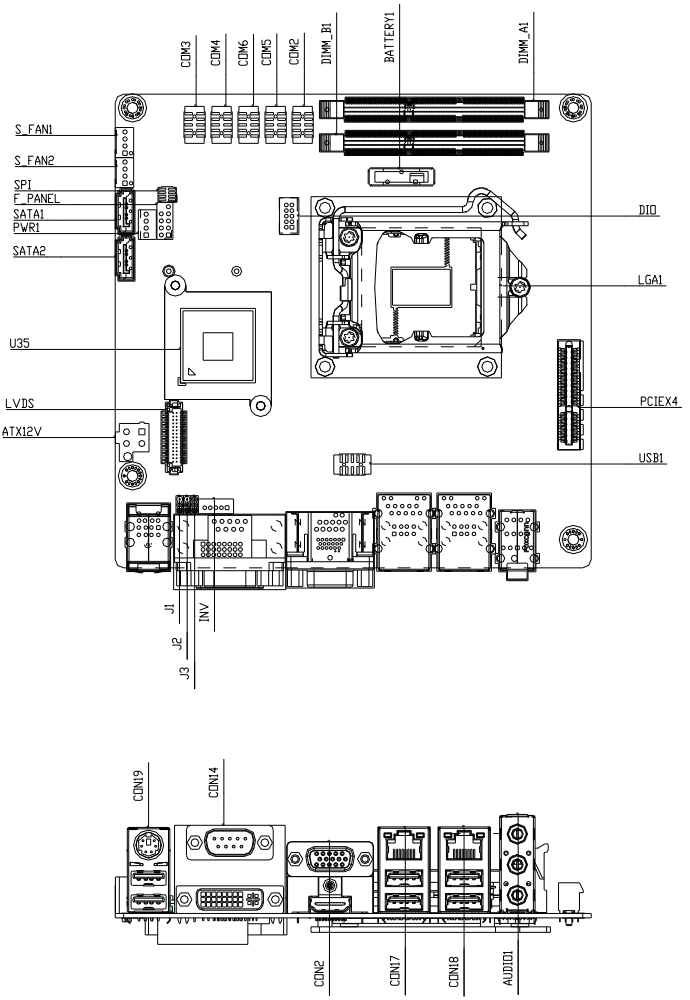
Chapter

2

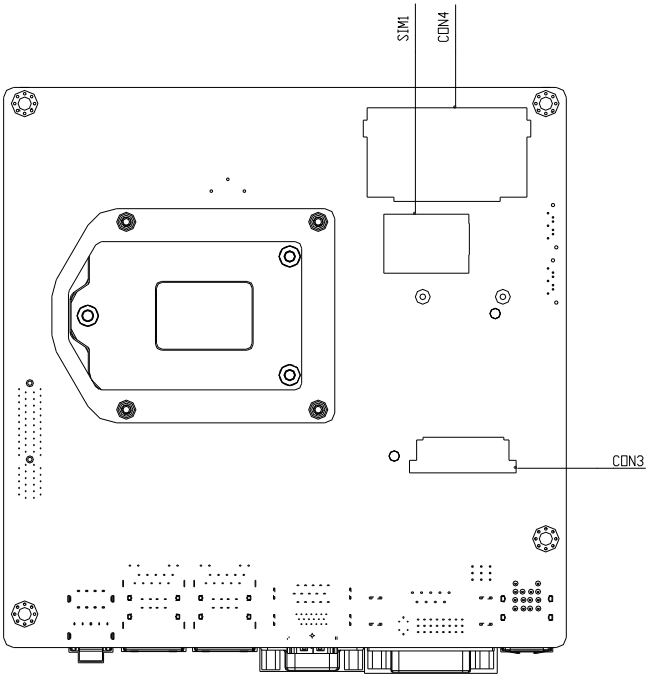
Hardware Installation

2.1 Location of Connectors (Main Board)

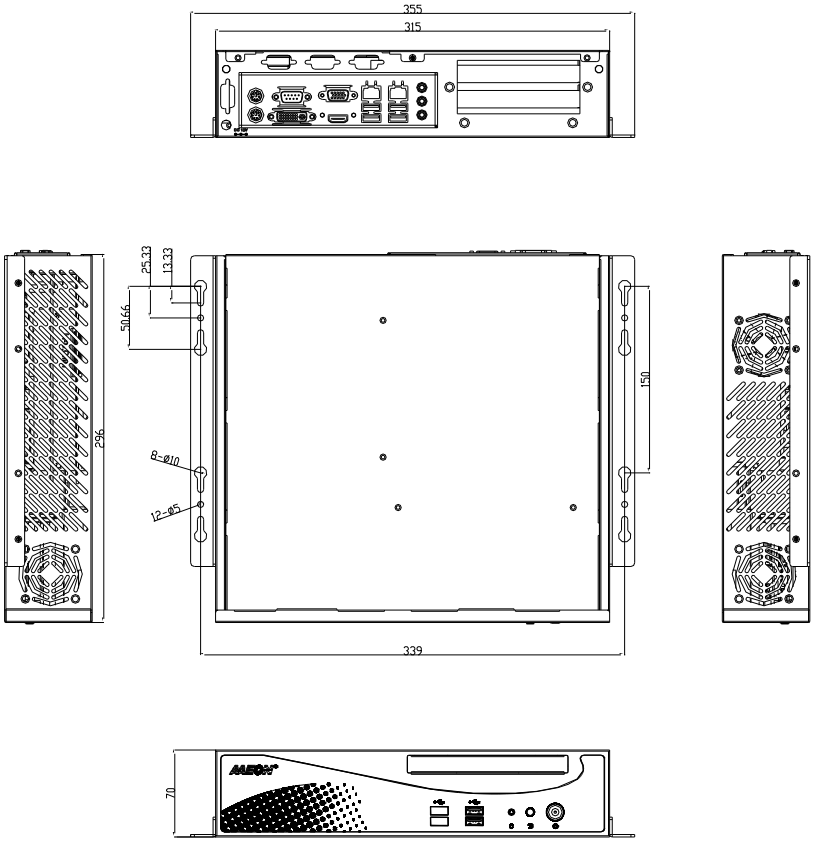
Component Side



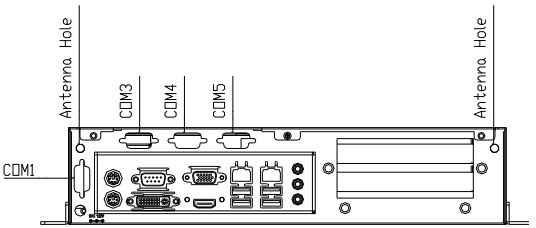
Solder Side



2.2 Mechanical Drawing of AIS-E1-H61A



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
CLRTC1	Clear CMOS
J1	LVDS Panel Voltage Selection
J2	Inverter Voltage Selection
J3	Mode Selection for Back Light Control of Inverter
J4	AT/ATX mode Selection
J5	COM1 Ring/+5V/+12V 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 of the board's connectors:

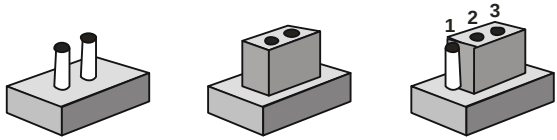
Label	Function
ATX12V	ATX 4P Power Connector
AUDIO1	Audio jack Connector
BATTERY1	RTC - Coin Battery Holder
COM2	COM2 Connector
COM3	COM3 Connector
COM4	COM4 Connector
COM5	COM5 Connector
COM6	COM6 Connector

CON14	COM1 & DVI-D Connector
CON17	LAN1 and USB1/2 Connector
CON18	LAN2 and USB3/4 Connector
CON19	PS/2 KB&MS and USB5/6 Connector
CON2	D-Sub15_VGA Connector with HDMI Connector
CON3	mini PCI-E Slot
CON4	Compact Flash Slot
DEBUG	Debug Connector
DIMM_A1	DIMM1 Slot
DIMM_B1	DIMM2 Slot
DIO	Digital I/O Connector
F_PANEL	Front Panel Connector
INV	Inverter Connector
LGA1	CPU Socket - LGA-1155P
LVDS	LVDS Panel Signal Connector
PCIEX4	PCI Express x4 Slot
PWR1	SATA Power Connector
S_FAN1	System FAN Connector
S_FAN2	System FAN Connector
SATA1	SATA II Connector
SATA2	SATA II Connector
SIM1	SIM Card Socket
SPI	BIOS Programmable Connector
USB1	Int. USB 2.0 Connector

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.



Open **Closed** **Closed 2-3**

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 Clear CMOS (CLRTC1)

CLRTC1	Function
1-2	Protected (Default)
2-3	Clear

2.7 LVDS Panel Voltage Selection (J1)

J1	Function
1-2	+5V
2-3	+3.3V (Default)

2.8 Inverter Voltage Selection (J2)

J2	Function
1-2	+12V
2-3	+5V (Default)

2.9 Mode Selection for Back Light Control of Inverter (J3)

J3	Function
1-2	DC Voltage Control (Default)
2-3	PWM Control

2.10 AT/ATX Mode Selection (J4)

J4	Function
1-2	AT Mode (Default)
Empty	ATX Mode

2.11 COM1 Ring/+5V/+12V Selection (J5)

J5	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.12 Internal COM Serial Port Connector (COM2 ~ COM6)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	(NC)

2.13 PS/2 Keyboard/Mouse Connector with Dock USB 2.0 Connector (CON19)

Pin	Signal	Pin	Signal
1	GND	2	USB2_DP1
3	USB2_DN1	4	+5V
5	GND	6	USB2_DP2
7	USB2_DN2	8	+5V
9	GND	10	KB_DATA
11	MS_DATA	12	+5V
13	KB_CLK	14	MS_CLK
15	GND	16	GND
17	GND	18	GND

2.14 1000Base-T Ethernet Connector with Dock USB 2.0 Connector (CON17/CON18)

Pin	Signal	Pin	Signal
1	+5V	2	USB2_DN2
3	USB2_DP2	4	GND
5	+5V	6	USB2_DN1
7	USB2_DP1	8	GND
9	LAN_CTR	10	LAN_MDI_DP0
11	LAN_MDI_DN0	12	LAN_MDI_DP1
13	LAN_MDI_DN1	14	LAN_MDI_DP2
15	LAN_MDI_DN2	16	LAN_MDI_DP3
17	LAN_MDI_DN3	18	GND
19	LAN_LED_ACT	20	LAN_LED_ACT#
21	LAN_LED_LINK100#	22	LAN_LED_LINK1000#
23	GND	24	GND
25	GND	26	GND
27	GND	28	GND
29	GND	30	GND

2.15 Digital I/O Connector (DIO)

Pin	Signal	Pin	Signal
1	DIO_I#1 (DIO_P#1)	2	DIO_I#2 (DIO_P#2)
3	DIO_I#3 (DIO_P#3)	4	DIO_I#4 (DIO_P#4)
5	DIO_O#1 (DIO_P#5)	6	DIO_O#2 (DIO_P#6)
7	DIO_O#3 (DIO_P#7)	8	DIO_O#4 (DIO_P#8)
9	+5V	10	GND

2.16 Debug Connector (DEBUG)

Pin	Signal
1	LPC_AD0
2	LPC_AD1
3	LPC_AD2
4	LPC_AD3
5	+3.3V
6	LPC_FRAME#
7	PLTRST#
8	GND
9	CLK_33M_LPC
10	LPC_DRQ#0
11	LPC_DRQ#1
12	SERIRQ#

2.17 Front Panel Connector (F_PANEL)

Pin	Signal	Pin	Signal
1	HDLED+	2	PLED+
3	HDLED-	4	PLED-
5	GND	6	PANSWH#
7	HWRST#	8	GND
9	(NC)	10	(kill pin)

2.18 Inverter Connector (INV)

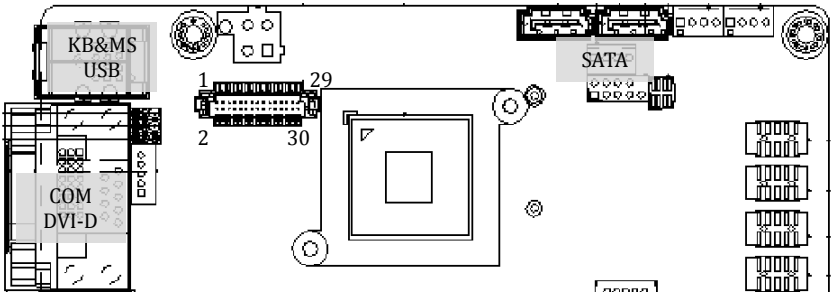
Pin	Signal
1	Inverter VCC

3	Back Light Control
5	GND
7	GND
9	Back Light Enable

2.19 LVDS Panel Signal Connector (LVDS)

Pin	Signal	Pin	Signal
1	LVDS1_CLK-	2	LVDS1_CLK+
3	LVDS VCC	4	GND
5	LVDS1_D3-	6	LVDS1_D3+
7	LVDS1_D2-	8	LVDS1_D2+
9	LVDS1_D1-	10	LVDS1_D1+
11	LVDS1_D0-	12	LVDS1_D0+
13	EDID_Data	14	EDID_Clk
15	LVDS0_D3-	16	LVDS0_D3+
17	LVDS0_D2-	18	LVDS0_D2+
19	LVDS0_D1-	20	LVDS0_D1+
21	LVDS0_D0-	22	LVDS0_D0+
23	LVDS VCC	24	GND
25	LVDS0_CLK-	26	LVDS0_CLK+
27	LVDS VCC	28	GND
29	LVDS Panel Enable	30	Backlight Control for DC mode

NOTE: LVDS connector Vendor: PINREX; Model: 712-76-30GWR8. Please refer the drawing below, notice the location of PIN1, PIN2, PIN29 and PIN30. KB&MS



2.20 SATA Power Connector (PWR1)

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

2.21 FAN Connector (S_FAN1/S_FAN2)

Pin	Signal
1	PWM
2	SENSE
3	VCC
4	GND

2.22 BIOS Programmable Connector (SPI)

Pin	Signal	Pin	Signal
1	+V3.3SPI	2	GND
3	SPI_CS#	4	SPI_CLK

5	SPI_MISO	6	SPI_MOSI
7	(NC)	8	(NC)

2.23 Internal USB 2.0 Connector (USB1)

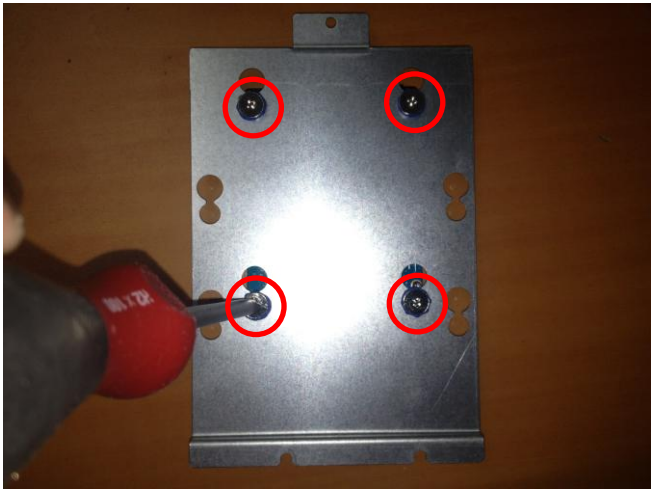
Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USB2_DN1	4	GND
5	USB2_DP1	6	USB2_DP2
7	GND	8	USB2_DN2
9	GND	10	+5V

2.24 Installing the Hard Disk Drive

Step 1: Unfasten the screw of the AIS-E1-H61A

Step 2: Open the upper cover of the AIS-E1-H61A

Step 3: Get the HDD Bracket and fasten the four screws with the HDD



Step 4: Put the HDD and bracket back to the chassis by sliding the HDD bracket and lock to the position.

Step 5: Fasten the screw to finish installing the HDD

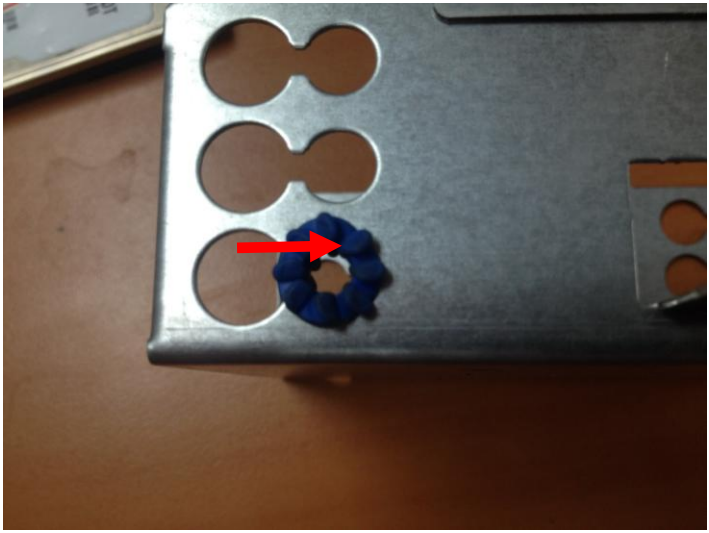
2.25 Installing Three 2.5” Hard Disk Drives

If you have three HDD to install, please refer to the installation below.

Step 1: Unfasten the screw of the AIS-E1-H61A

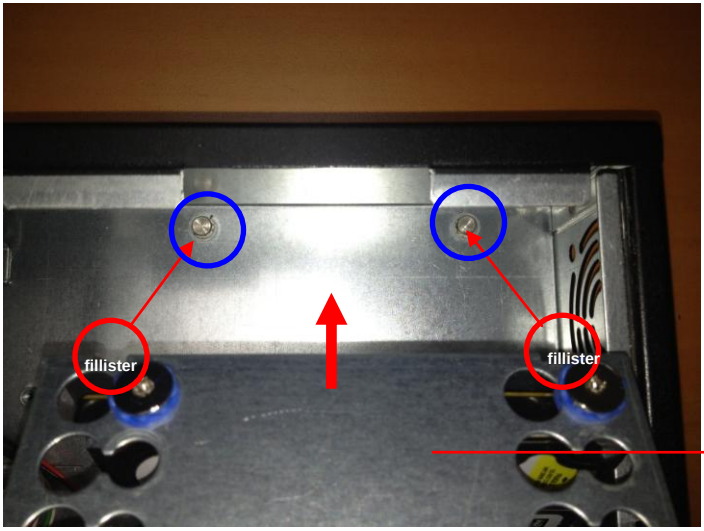
Step 2: Open the upper cover of the AIS-E1-H61A

Step 3: Put the blue rubber damper to the 3-layer HDD bracket and move the damper to the smaller fillister (you have to put 12 blue rubber dampers if you have three HDD to install)



Step 4: Get the four screws ready and pierce to the dampers and lock the HDD (12 screws for three HDD installations)

Step 5: Make sure that the fillisters of the 3-layer HDD bracket has been latched to I-shape nails (blue circles)



Step 6: Fasten the screw to lock the HDD bracket with the Chassis and you've done installing the three HDD

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-E1-H61A 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.

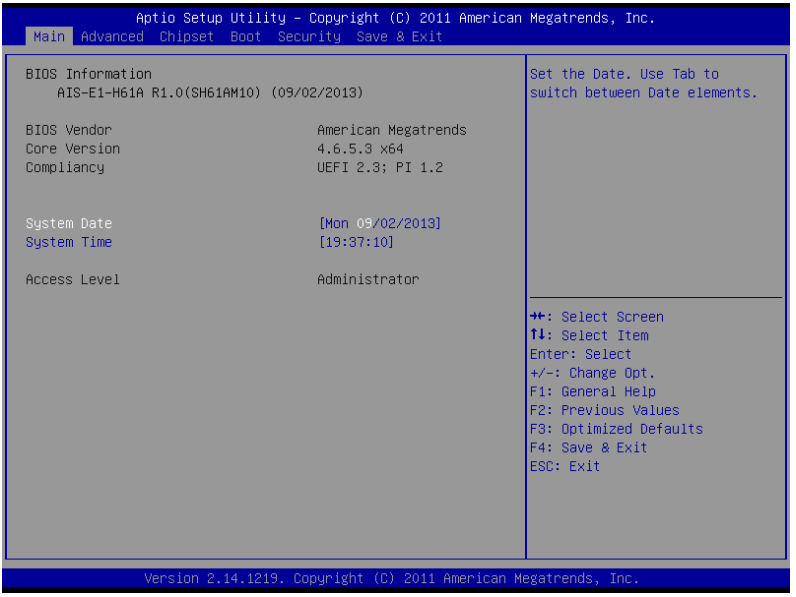
Boot
Enables/disable quiet boot option.

Security
Set setup administrator password.

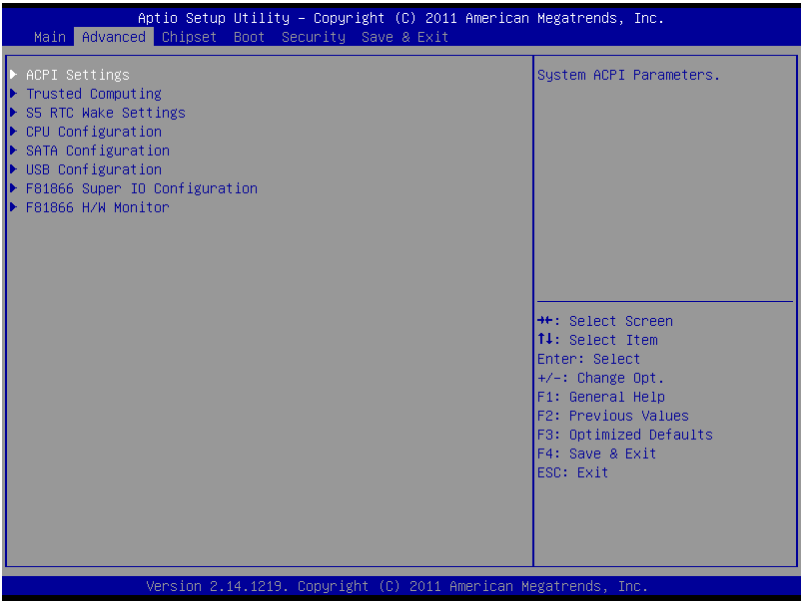
Save&Exit
Exit system setup after saving the changes.

Setup Menu

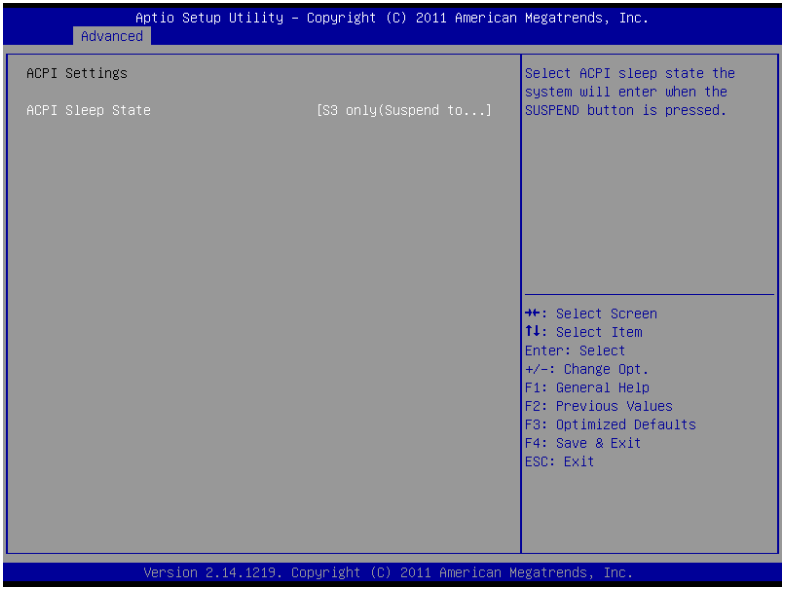
Setup submenu: Main



Setup submenu: Advanced



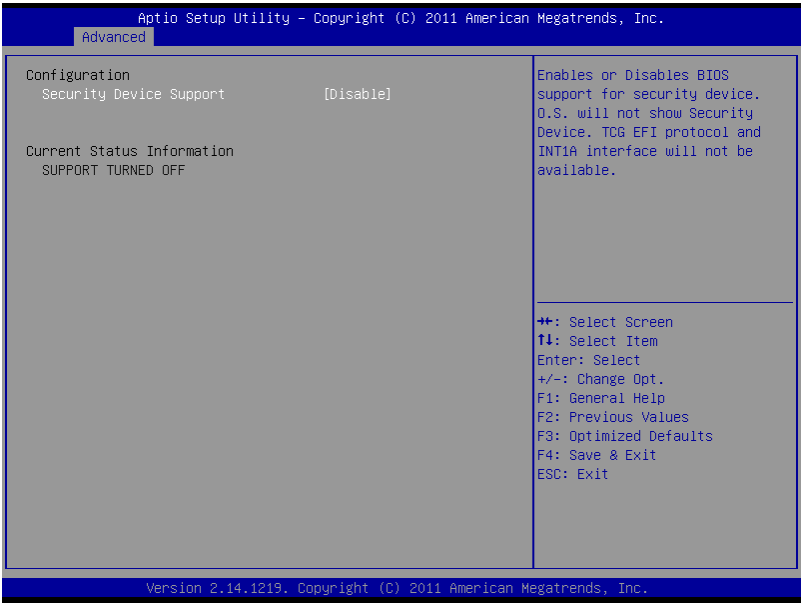
ACPI Settings



Options summary :

Suspend mode	S1 (CPU Stop Clock)	
	S3 (Suspend to RAM)	Optimal Default, Failsafe Default
Select the ACPI state used for System Suspend		

Trusted Computing

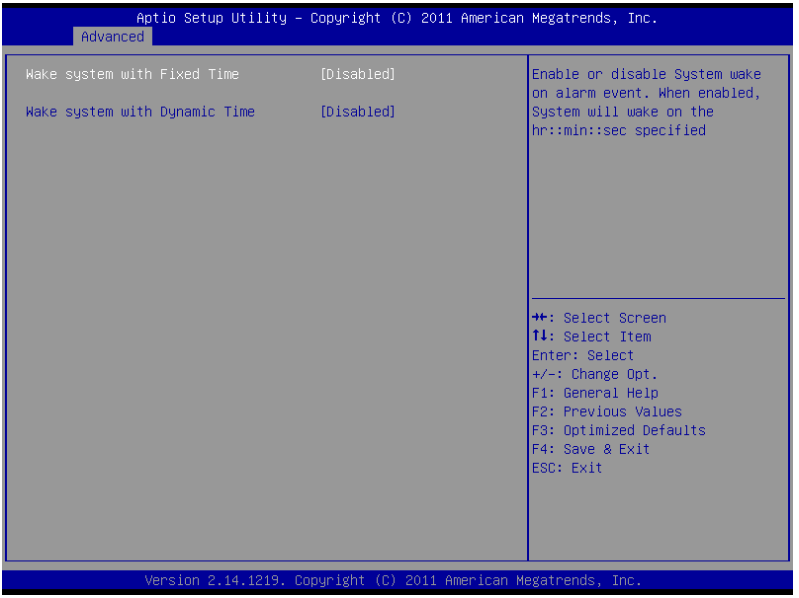


Options summary:

Security Device Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable TPM support.		
TPM State	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable TPM State.		

Pending Operation	None	Optimal Default, Failsafe Default
	Enable Take Ownership	
	Disable Take Ownership	
	TPM Clear	
Select one-time TPM operation. Item value returns to 'None' after next POST.		

S5 RTC Wake Settings

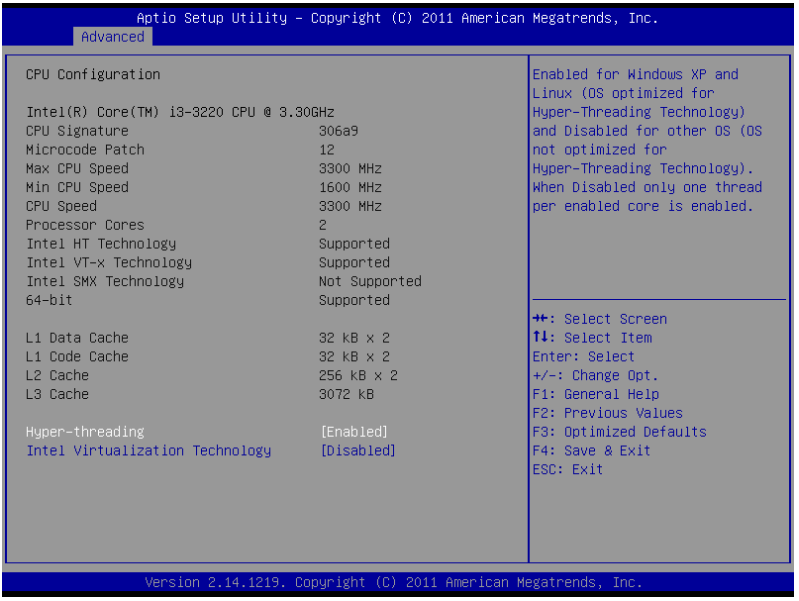


Options summary :

Wake system with Fixed Time	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disabled system wake on alarm event. When enabled, System will wake on the hr::min::sec specified.		
Wake system with Dyamic Time	Disabled	Optimal Default, Failsafe Default
	Enabled	

En/Disabled system wake on alarm event. When enabled, System will wake on the current time + Increase minute(s).

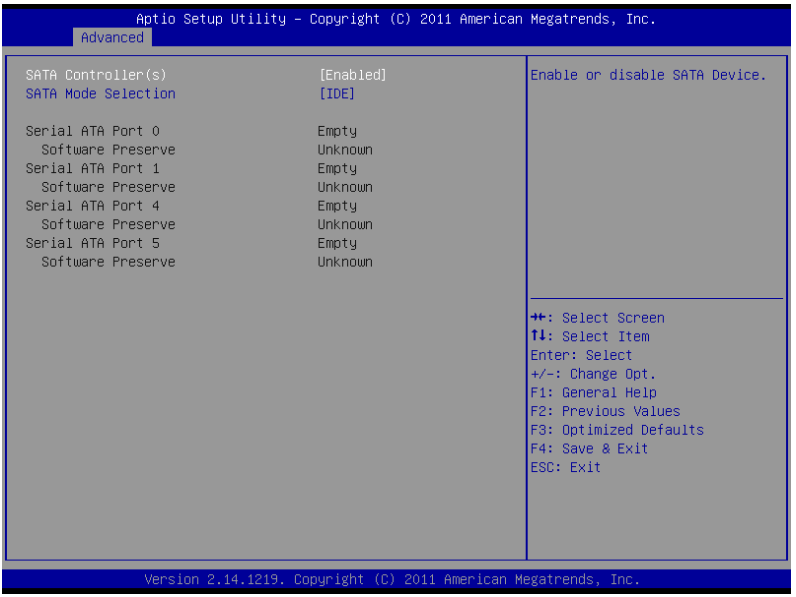
CPU Configuration



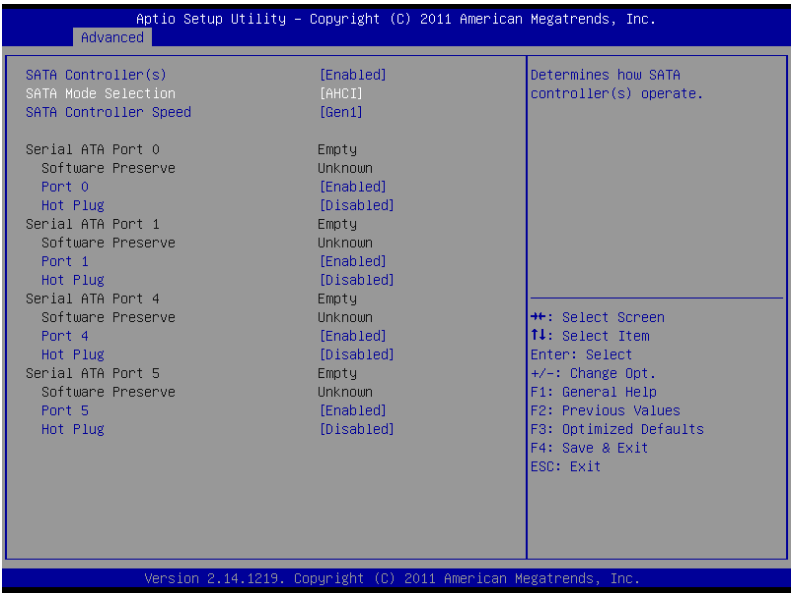
Options summary :

Hyper-Threading	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable CPU Hyper-Threading function		
Intel Virtualization Technology	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable Intel VT-x function		

SATA Configuration



SATA Configuration (AHCI)

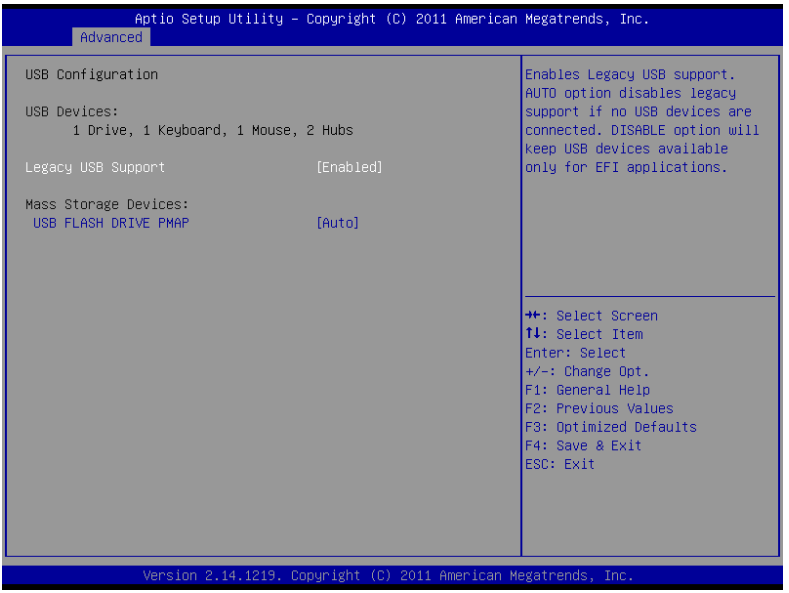


Options summary :

SATA#1 IDE Configuration	Disabled	Default
	Enabled	
Compatible: Configure SATA controller #1 as a legacy compatible controller. Enhanced: Configure SATA controller #1 as a Intel enhanced controller.		
SATA Mode	IDE	Default
	AHCI	
IDE: Configure SATA controllers as legacy IDE AHCI: Configure SATA controllers to operate in AHCI mode		

Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable Hot Plug feature.		

USB Configuration

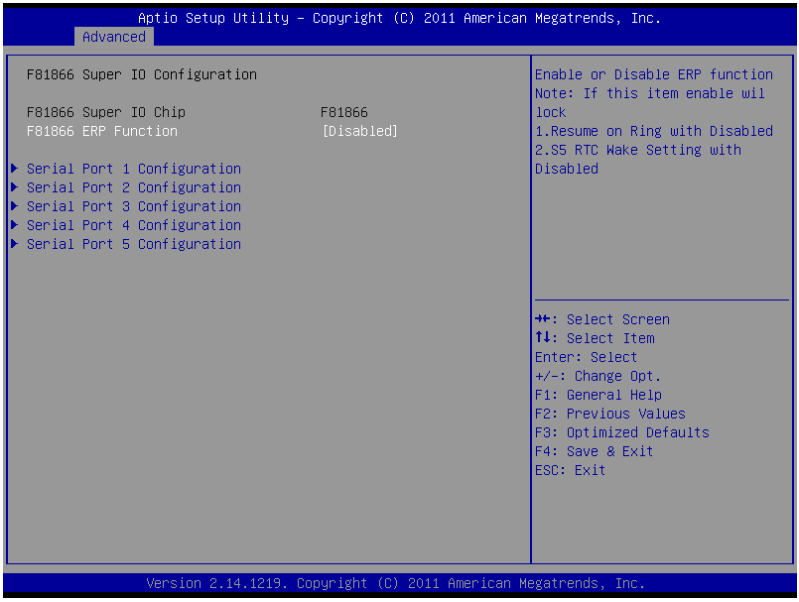


Options summary:

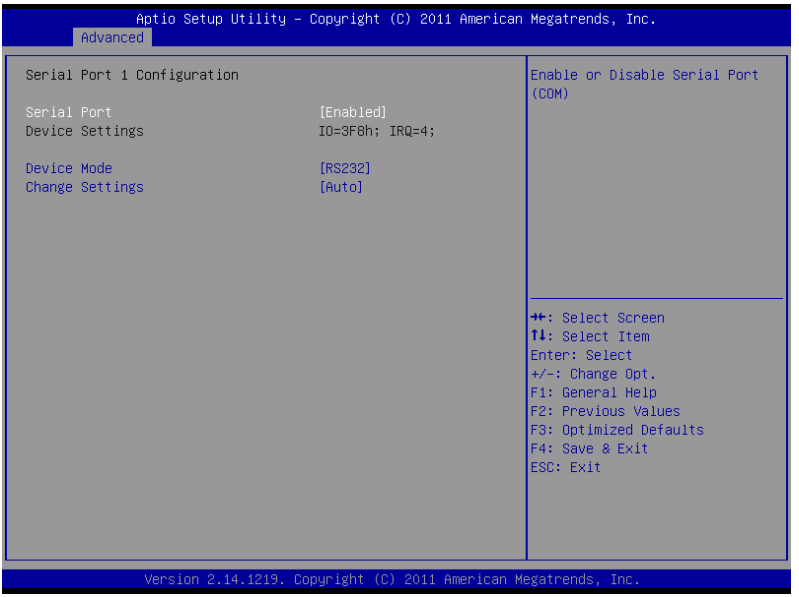
Legacy USB Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected		
Device Name (Emulation Type)	Auto	Optimal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

F81866 Supoer IO Configuration



Serial Port Configuration



Options summary :

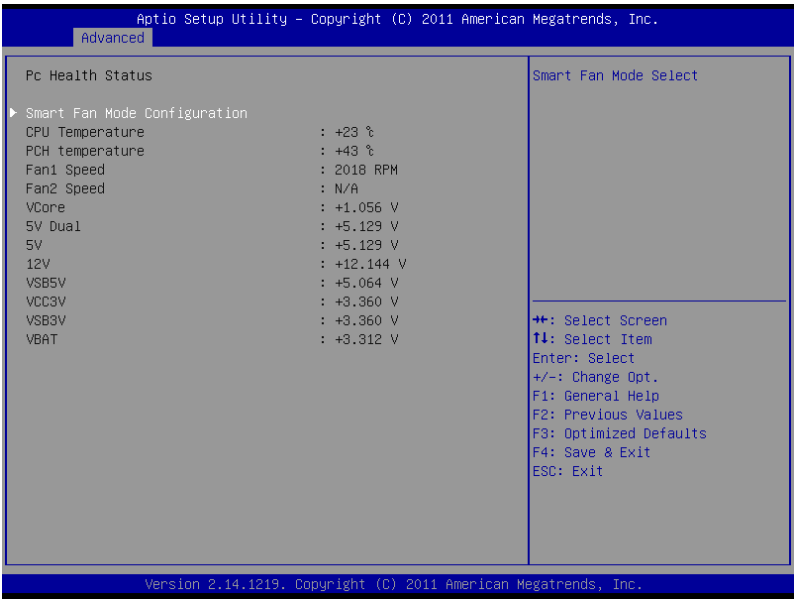
F81866 ERP Function	Disabled	Default
	Enabled	
Enable or Disable ERP function.		
Serial Port	Disabled	
	Enabled	Default
Allows BIOS to En/Disable correspond serial port.		
Device Mode	RS232	Default

	RS422	
	RS485	
Select working model.		
Change Settings (Serial Port 1)	Auto	Default
	IO=3F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4;	
	IO=2F8h; IRQ=3,4;	
	IO=3E8h; IRQ=10,11;	
	IO=2E8h; IRQ=10,11	
Allows BIOS to Select Serial Port resource.		
Change Settings (Serial Port 2)	Auto	Default
	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4;	
	IO=2F8h; IRQ=3,4;	
	IO=3E8h; IRQ=10,11;	

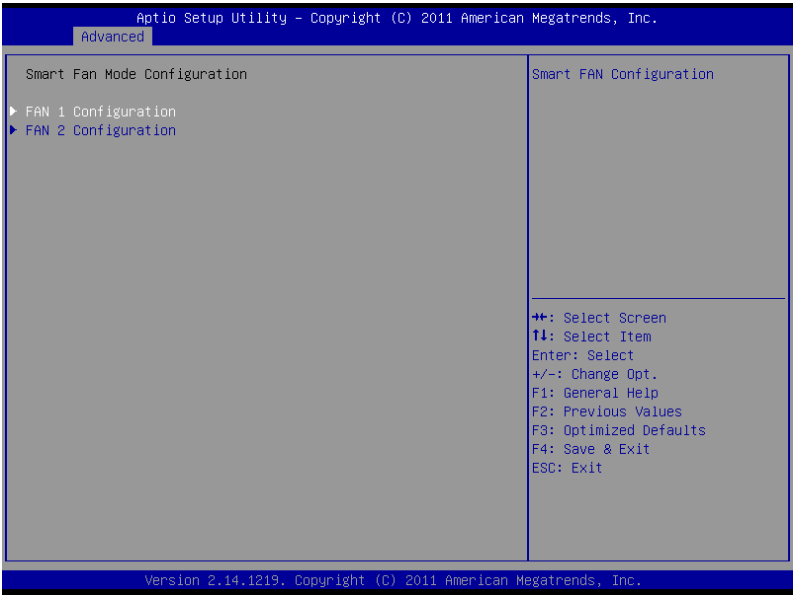
	IO=2E8h; IRQ=10,11	
Allows BIOS to Select Serial Port resource.		
Change Settings (Serial Port 3)	Auto	Default
	IO=3E8h; IRQ=10,11;	
	IO=2E8h; IRQ=10,11;	
	IO=2D0h; IRQ=10,11;	
	IO=2D8h; IRQ=10,11	
Allows BIOS to Select Serial Port resource.		
Change Settings (Serial Port 4)	Auto	Default
	IO=2E8h; IRQ=10,11;	
	IO=3E8h; IRQ=10,11;	
	IO=2D0h; IRQ=10,11;	
	IO=2D8h; IRQ=10,11;	

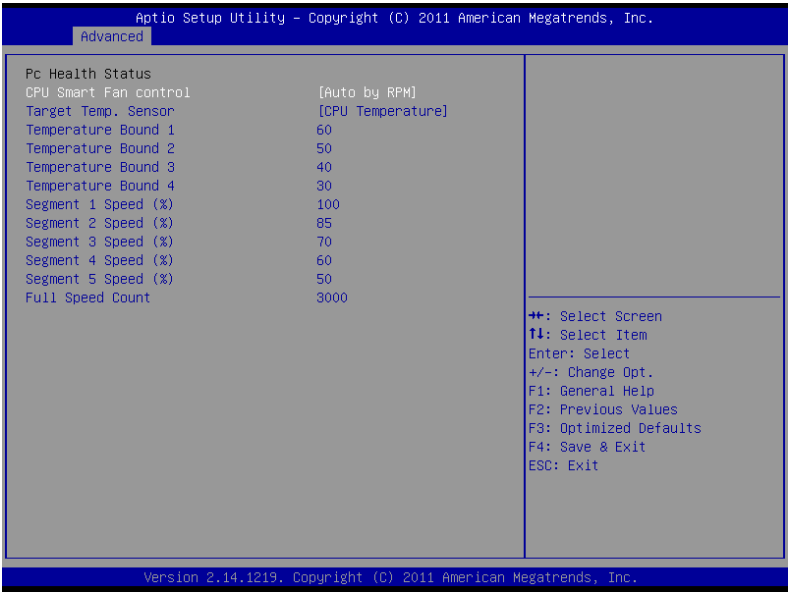
Allows BIOS to Select Serial Port resource.		
Change Settings (Serial Port 5)	Auto	Default
	IO=2D0h; IRQ=10,11;	
	IO=3E8h; IRQ=10,11;	
	IO=2E8h; IRQ=10,11;	
	IO=2D8h; IRQ=10,11	
Allows BIOS to Select Serial Port resource.		

On-Module H/W Monitor



Smart Fan Mode Configuration



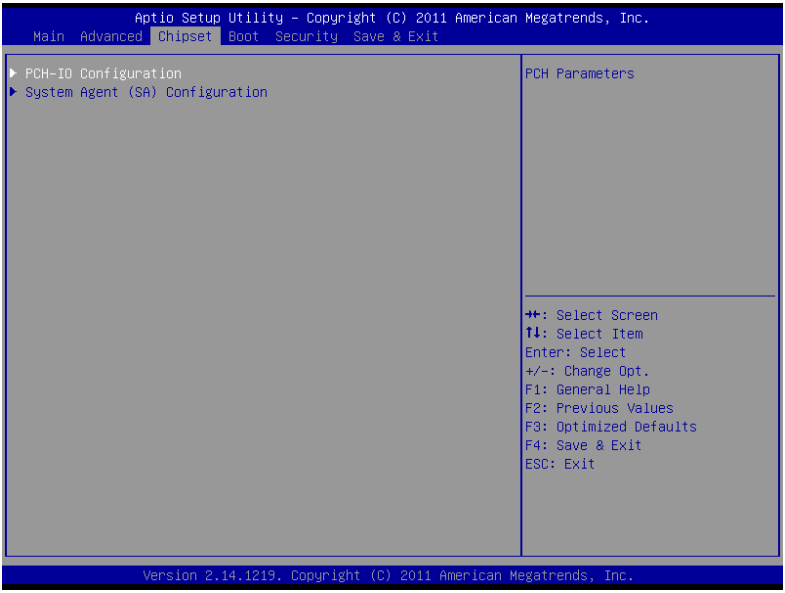


Options summary :

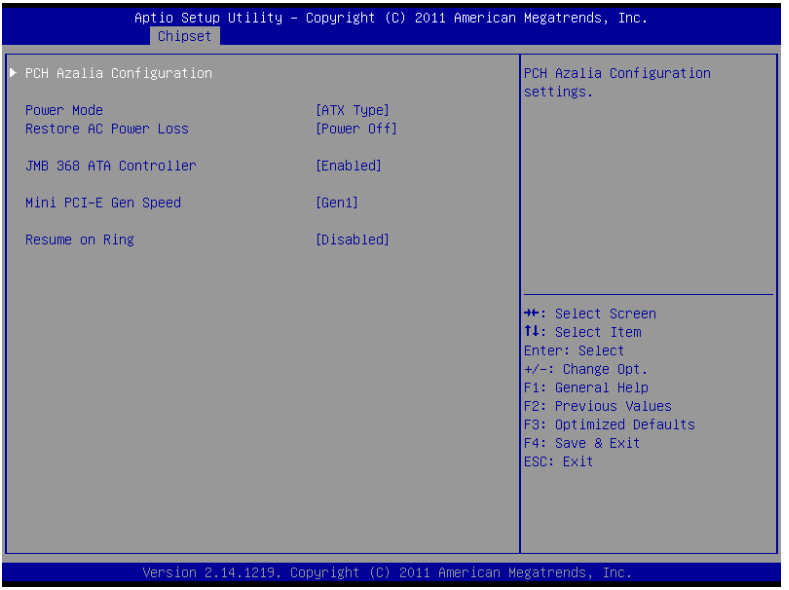
SYS/CPU Smart Fan Control	Auto by RPM	Default
	Auto by Duty-Cycle	
	Manual by RPM	
	Manual by Duty-Cycle	

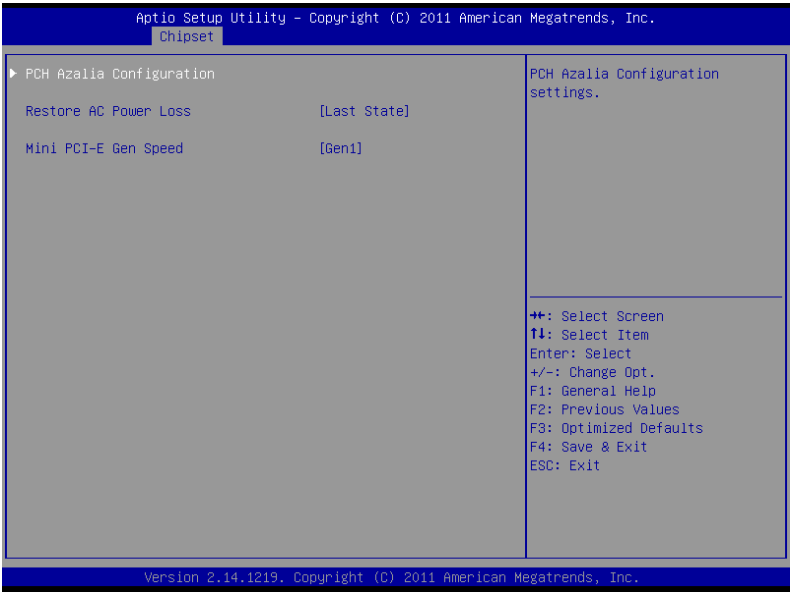
Select CPU Smart FAN mode Auto by RPM: Automatically controlling the fan to maintain target Fan Speed. Auto by Duty-Cycle: Automatically controlling the fan to maintain target temperature. Manual by RPM: Manually controlling the fan with a given Fan Speed. Manual by Duty-Cycle: Manually controlling the fan with a given control PWM.		
Target Temp. Sensor	CPU Temperature	Default
	PCH Temperature	
Select target temperature source.		

Setup submenu: Chipset



PCH-IO Configuration



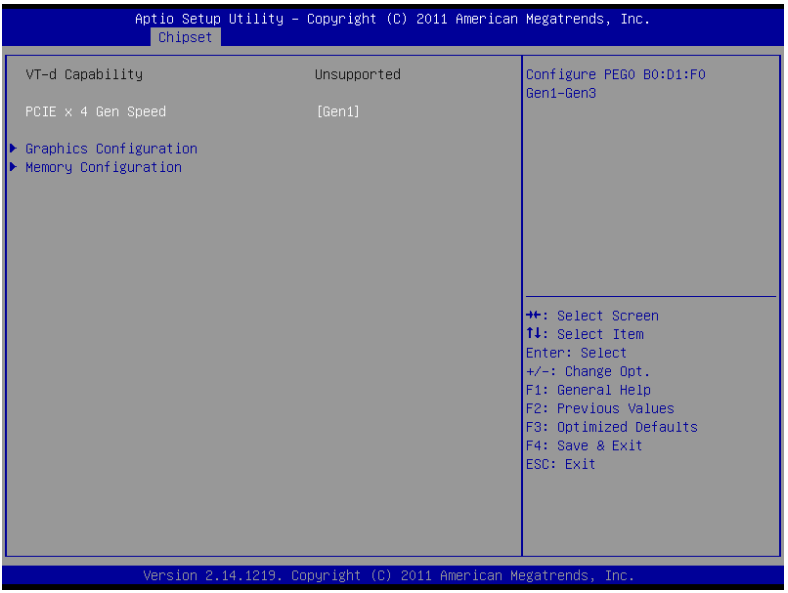


Options summary :

Azalia	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enabling/Disabling HD Audio controller.		
Azalia internal HDMI Codec	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabling/Disabling internal HDMI codec.		
Power Mode	ATX Type	Default
	AT Type	

Select power supply mode.		
Restore on AC Power Loss	Power Off	
	Power On	
	Last State	Default
Select the action system to take when restoring from power loss.		
JMB 368 ATA Controller	Disabled	
	Enabled	Default
En/Disable JMB 368 ATA Controller.		
Mini PCI-E Gen Speed	Gen1	Optimal Default, Failsafe Default
	Gen2	
Select PCI Express Gen speed.		
Resume on Ring	Disabled	Default
	Enabled	
En/Disabled resuming from RI# signal.		

System Agent(SA) Configuration

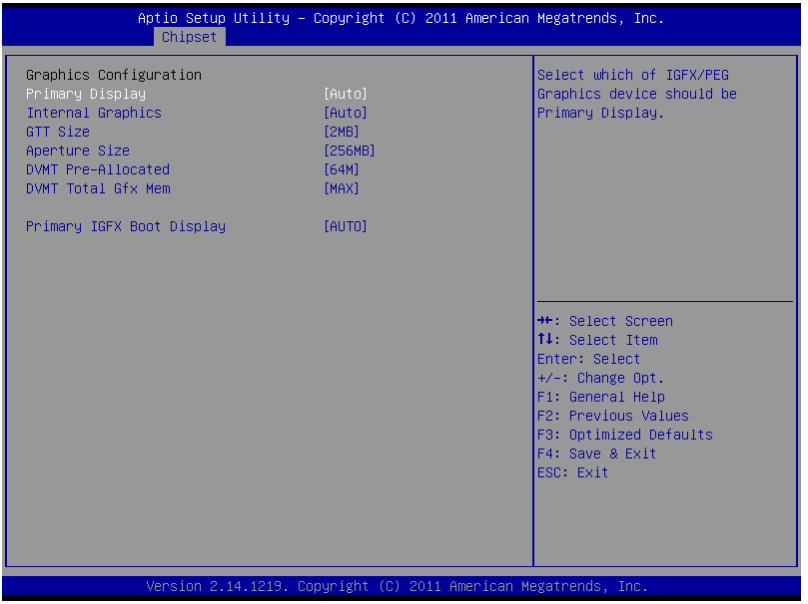


Options summary :

VT-d	Disabled	
	Enabled	Default
En/Disable chipset Virtualization Technology function.		

PCIE x 4 Gen Speed	Gen1	Optimal Default, Failsafe Default
	Gen2	
Select PCI Express Gen speed.		

Graphics Configuration



Options summary :

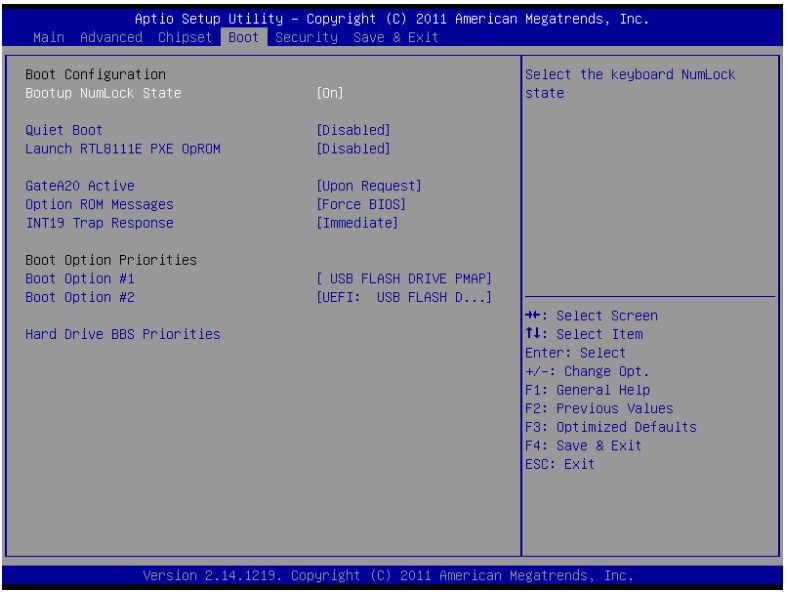
Primary Display	Auto	Default
	IGFX	
	PEG	
Select which of IGFX/PEG Graphics device should be Primary Display.		
Internal Graphics	Auto	Default
	Disable	
	Enable	
Keep IGD enabled based on the setup options.		
GTT Size	1MB	

	2MB	Default
Select the GTT Size.		
Aperture Size	128MB	Default
	256MB	
	512MB	
Select the Aperture Size.		
DVMT Pre-Allocated	32M	Default
	64M	
	96M	
	128M	
	160M	
	192M	
	224M	
	256M	
	288M	
	320M	
	352M	
	384M	
	416M	
	448M	
	480M	
	512M	
	1024M	

Select DVMT 5.0 Pre-Allocated(Fixed) Graphics Memory size used by the Internal Graphics Device.

Primary IGFX Boot Display	AUTO	Default
	CRT	
	HDMI	
	LVDS	
	DVI	
Select the Video Device which will be activated during POST. For dual-display, select “Auto”. Note: The platform only supports single display in legacy environment (DOS).		

Setup submenu: Boot



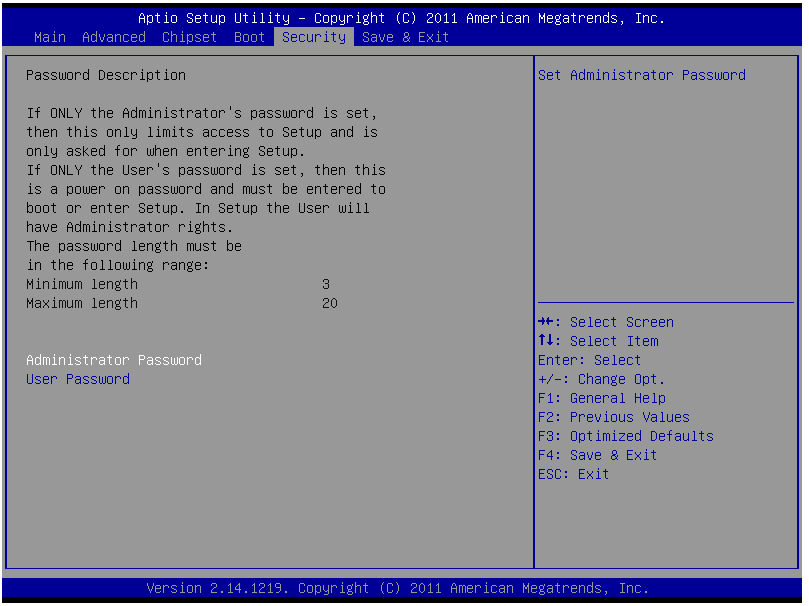
Options summary :

Bootup NumLock State	On	Default
	Off	
Select the keyboard NumLock state.		
Quiet Boot	Disabled	Default
	Enabled	
En/Disable showing boot logo.		
Launch RTL8111E PXE OpROM	Disabled	Default
	Enabled	
Enable or Disable Legacy Boot Option for RTL811E.		

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.		
INT19 Trap Response	Immediate	Default
	Postponed	
BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.		

Setup submenu: 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.

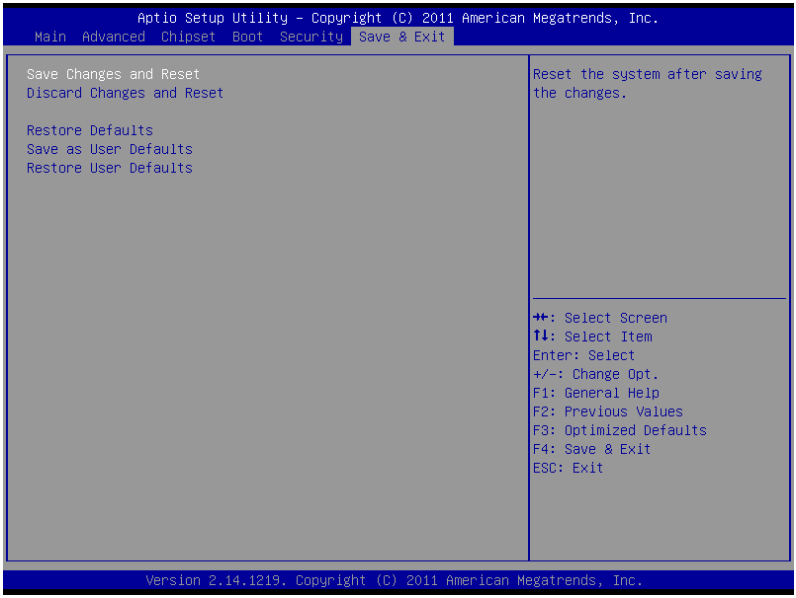
If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped 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.

Setup submenu: Exit



Chapter

4

Driver Installation

The AIS-E1-H61A 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 TPM Driver

Step 6 – Install ME Driver

Step 7 – Install AHCI Driver

Step 8 – Install Serial Port Driver (Optional)

Note: If you got compatible issue for COM port, please find its driver under STEP 8 folder and then install it by administrative login permission.

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the AIS-E1-H61A DVD-ROM into the DVD-ROM drive. And install the drivers from Step 1 to Step 8 in order.

Step 1 – Install Chipset Driver

1. Click on the ***Step 1 - INF*** folder and double click on the ***Setup.exe*** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install VGA Driver

1. Click on the ***Step 2 - VGA*** 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

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

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*** 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 TPM Driver

1. Click on the ***Step 5 - TPM*** folder and select the folder of OS folder your system is
2. Double click on the ***Setup.exe*** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 6 – Install ME Driver

1. Click on the ***Step 6 - ME*** folder and select the folder of OS folder your system is
2. Double click on the ***Setup.exe*** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver

automatically

Step 7 – Install AHCI Driver

Please refer to the ***Appendix C AHCI Setting***

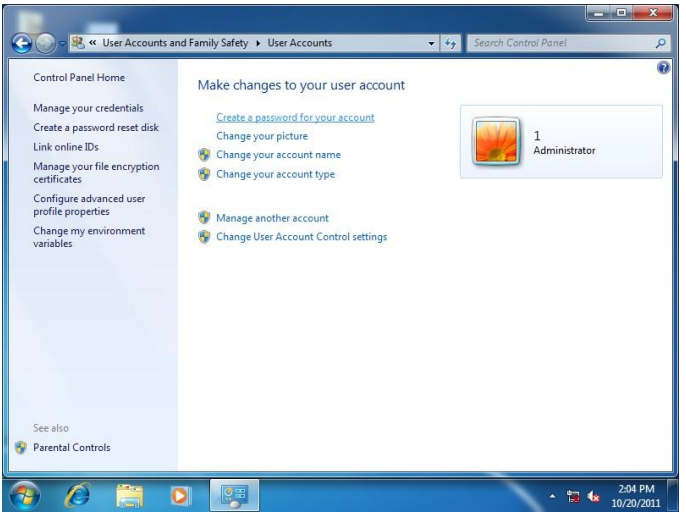
Step 8 –Install Serial Port Driver (Optional)

For Windows® XP 32-bit

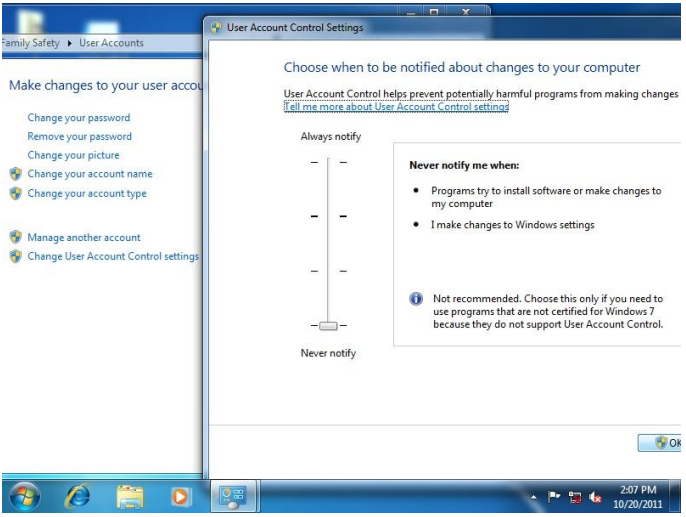
1. Click on the ***Step 8 - Serial Port Driver (Optional)*** folder and select the folder of ***WINXP_32***
2. Double click on the ***patch.bat***
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

For Windows® 7 32-bit/ 64-bit

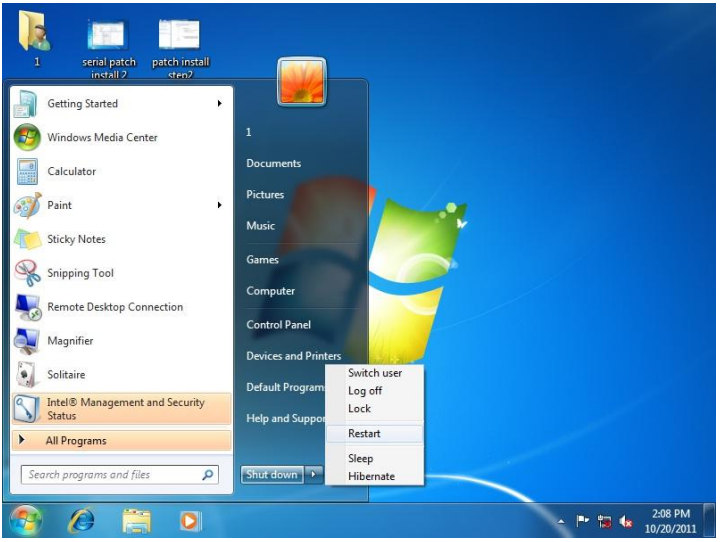
1. Create a password for Administrator account.



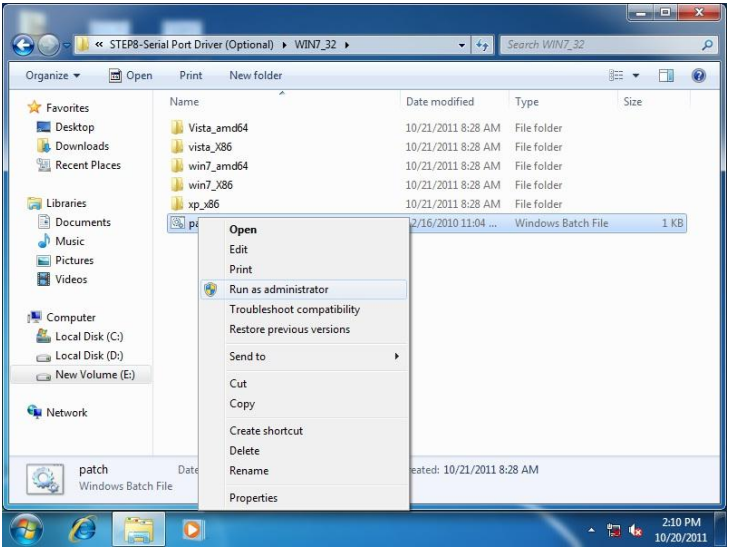
2. Change User Account Control Settings to [Never notify]

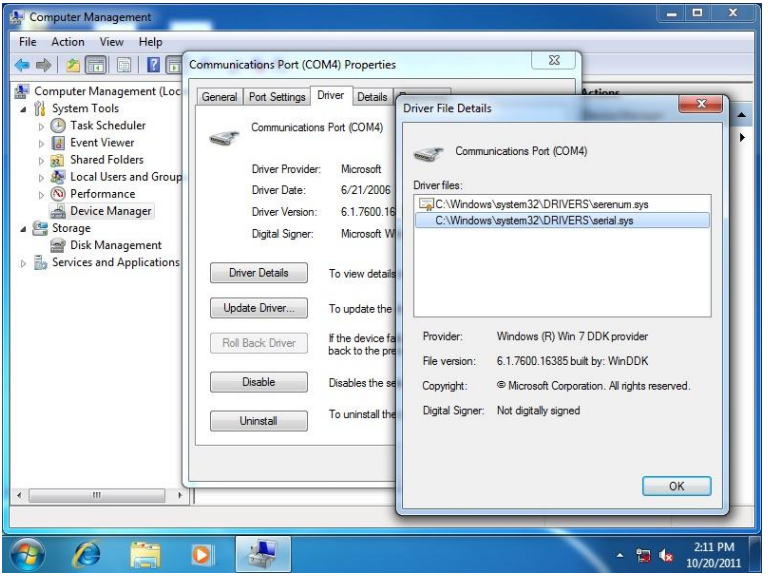


3. Reboot and Administrator login.



4. To run patch.bat with [Run as administrator].





You also can install the serial port driver for Windows 7 by the

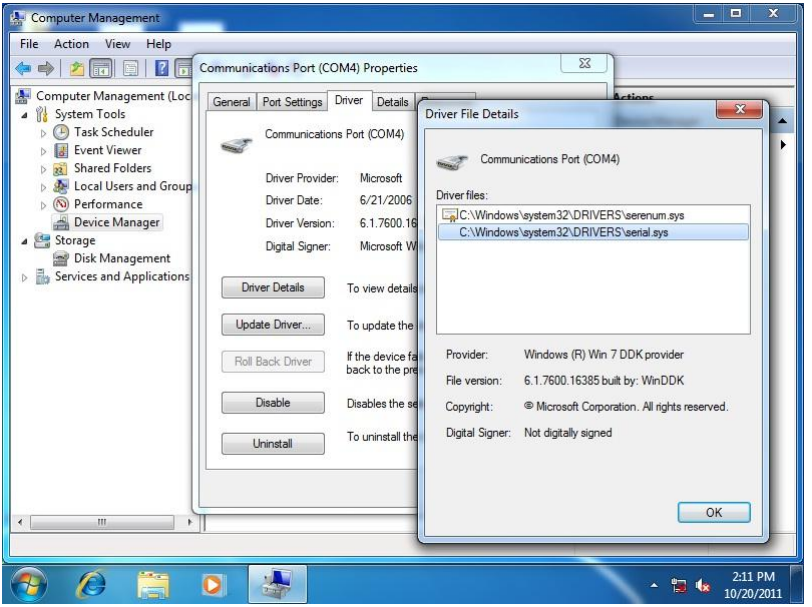
Installation Procedure 2 below:

-Win7 32-bit

Copy the Driver CD\Serial Port Driver (Optional) \WIN7_32\ win7_X86 \serial.sys to C:\WINDOWS\system32\drivers\

-Win7 64-bit

Copy the Driver CD\Serial Port Driver (Optional) \WIN7_64 \win7_amd64\serial.sys to C:\WINDOWS\system32\drivers\


Computer Management
File Action View Help
Computer Management (Loc
System Tools
Task Scheduler
Event Viewer
Shared Folders
Local Users and Group
Performance
Device Manager
Storage
Disk Management
Services and Applications
Communications Port (COM4) Properties
General
Port Settings
Driver
Details
Communications Port (COM4)
Driver Provider: Microsoft
Driver Date: 6/21/2006
Driver Version: 6.1.7600.16
Digital Signer: Microsoft W
Driver Details
To view details
Update Driver...
To update the
Roll Back Driver
If the device fa
back to the pre
Disable
Disables the se
Uninstall
To uninstall the
Driver File Details
Communications Port (COM4)
Driver files:
C:\Windows\system32\DRIVERS\serenum.sys
C:\Windows\system32\DRIVERS\serial.sys
Provider: Windows (R) Win 7 DDK provider
File version: 6.1.7600.16385 built by: WinDDK
Copyright: © Microsoft Corporation. All rights reserved.
Digital Signer: Not digitally signed
OK
2:11 PM
10/20/2011

Appendix

A

Programming the Watchdog Timer

A.1 Watchdog Timer Initial Program

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)	**0xF6**(Note4)		(Note24)	Time of watchdog timer (0~255) This register is byte access
Counting Unit	**0x07**(Note5)	**0xF5**(Note6)	**3**(Note7)	**0**(Note8)	Select time unit. 0: second 1: minute
Watchdog Enable	**0x07**(Note9)	**0xF5**(Note10)	**5**(Note11)	**1**(Note12)	0: Disable 1: Enable
Timeout Status	**0x07**(Note13)	**0xF5**(Note14)	**6**(Note15)	**1**	1: Clear timeout status
Output Mode	**0x07**(Note16)	**0xF5**(Note17)	**4**(Note18)	**1**(Note19)	Select WDTRST# output mode 0: level 1: pulse
WDTRST output	**0x07**(Note20)	**0xFA**(Note21)	**0**(Note22)	**1**(Note23)	Enable/Disable time out output via WDTRST# 0: Disable 1: Enable

****

// 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
#define byte   ModeLDN   // This parameter is represented from Note16
#define byte   ModeReg   // This parameter is represented from Note17
#define byte   ModeBit   // This parameter is represented from Note18
#define byte   ModeVal   // This parameter is represented from Note19
#define byte   WDTRstLDN   // This parameter is represented from Note20
#define byte   WDTRstReg   // This parameter is represented from Note21
#define byte   WDTRstBit   // This parameter is represented from Note22
#define byte   WDTRstVal   // This parameter is represented from Note23
********************************************************************************
```

```
**********************************************************************************
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);
        // WDT output mode setting, level / pulse
        SIOBitSet(ModeLDN, ModeReg, ModeBit, ModeVal);
        // Watchdog timeout output via WDTRST#
        SIOBitSet(WDTRstLDN, WDTRstReg, WDTRstBit, WDTRstVal);
}

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

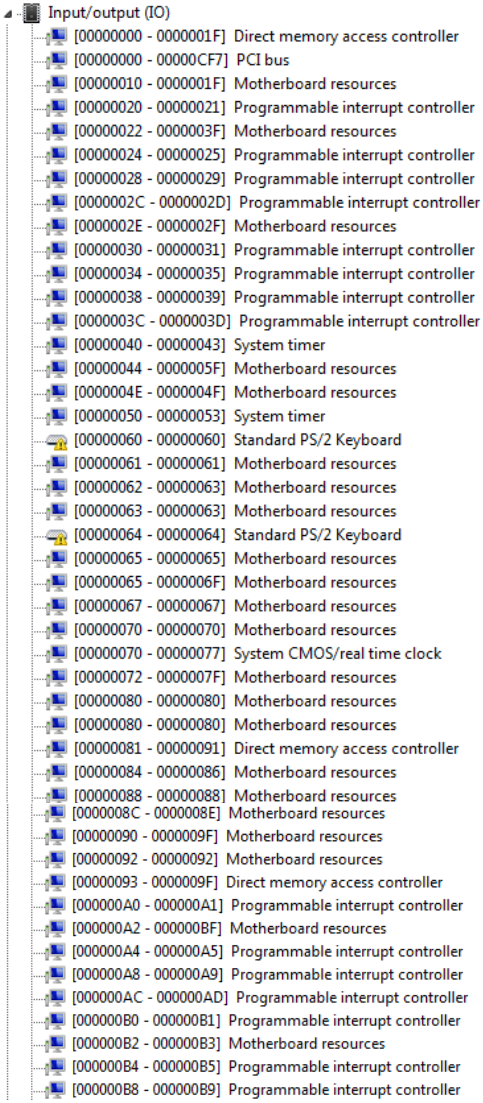
```
*****************************************************************************
VOID   SIOEnterMBPnPMode(){
        IOWriteByte(SIOIndex, 0x87);
        IOWriteByte(SIOIndex, 0x87);
}

VOID   SIOExitMBPnPMode(){
        IOWriteByte(SIOIndex, 0xAA);
}

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

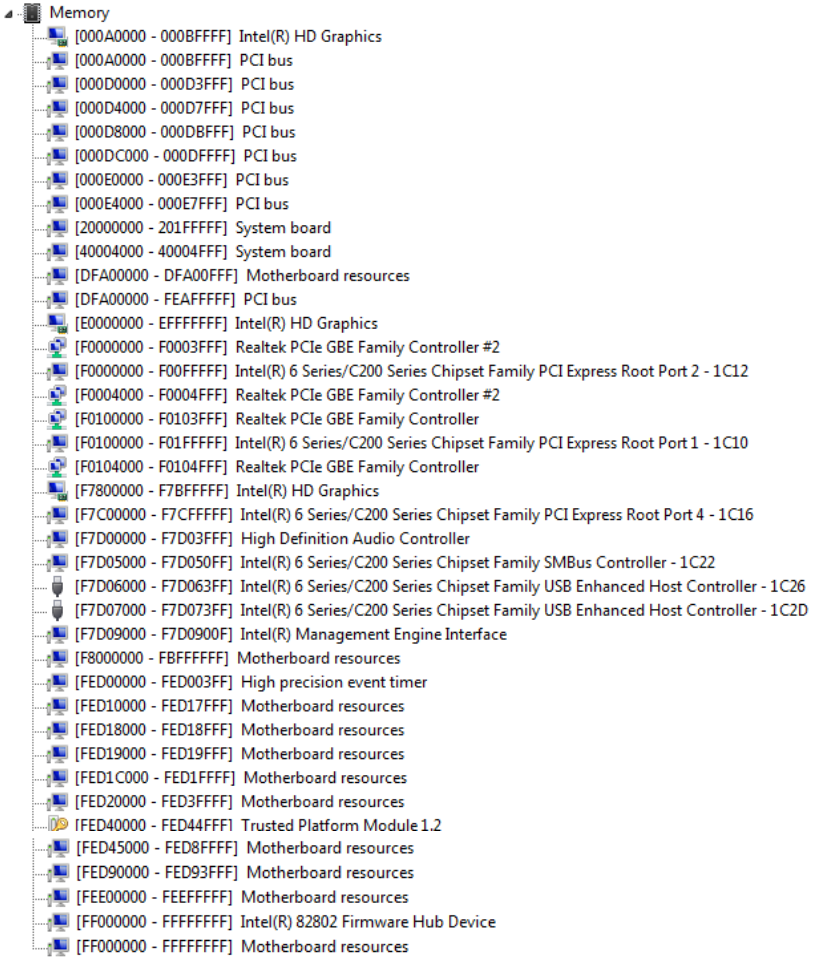
I/O Information

B.1 I/O Address Map

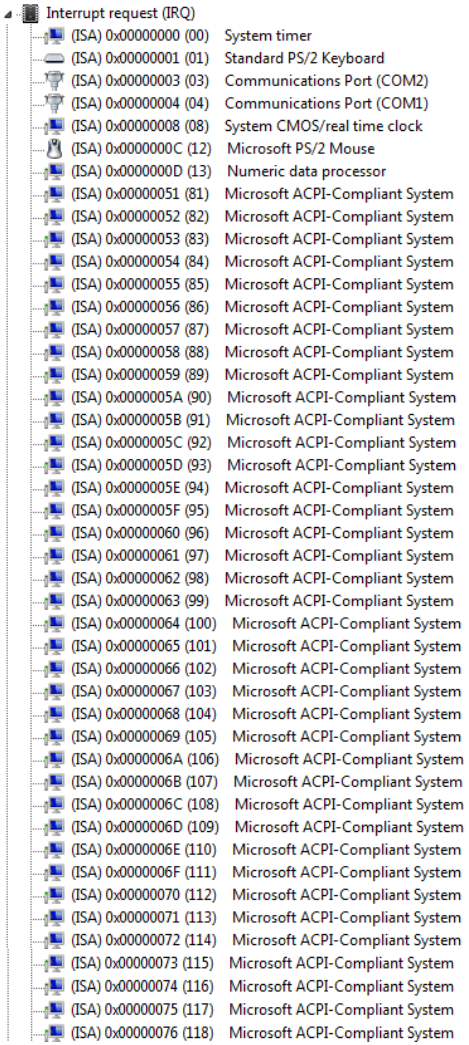


- [000000BC - 000000BD] Programmable interrupt controller
- [000000C0 - 000000DF] Direct memory access controller
- [000000E0 - 000000EF] Motherboard resources
- [000000F0 - 000000FF] Numeric data processor
- [00000290 - 0000029F] Motherboard resources
- [000002D0 - 000002D7] Communications Port (COM5)
- [000002D8 - 000002DF] Communications Port (COM6)
- [000002E8 - 000002EF] Communications Port (COM4)
- [000002F8 - 000002FF] Communications Port (COM2)
- [000003B0 - 000003BB] Intel(R) HD Graphics
- [000003C0 - 000003DF] Intel(R) HD Graphics
- [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 - 00000A0F] Motherboard resources
- [00000A10 - 00000A1F] Motherboard resources
- [00000D00 - 0000FFFF] PCI bus
- [00001000 - 0000100F] Motherboard resources
- [0000164E - 0000164F] Motherboard resources
- [0000C000 - 0000C00F] Standard Dual Channel PCI IDE Controller
- [0000C000 - 0000CFFF] Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 4 - 1C16
- [0000C010 - 0000C013] Standard Dual Channel PCI IDE Controller
- [0000C020 - 0000C027] Standard Dual Channel PCI IDE Controller
- [0000C030 - 0000C033] Standard Dual Channel PCI IDE Controller
- [0000C040 - 0000C047] Standard Dual Channel PCI IDE Controller
- [0000D000 - 0000D0FF] Realtek PCIe GBE Family Controller #2
- [0000D000 - 0000DFFF] Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 2 - 1C12
- [0000E000 - 0000E0FF] Realtek PCIe GBE Family Controller
- [0000E000 - 0000EFFF] Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 1 - 1C10
- [0000F000 - 0000F03F] Intel(R) HD Graphics
- [0000F040 - 0000F05F] Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22
- [0000F060 - 0000F06F] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
- [0000F070 - 0000F07F] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
- [0000F080 - 0000F083] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
- [0000F090 - 0000F097] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
- [0000F0A0 - 0000F0A3] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
- [0000F0B0 - 0000F0B7] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
- [0000F0C0 - 0000F0CF] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
- [0000F0D0 - 0000F0DF] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
- [0000F0E0 - 0000F0E3] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
- [0000F0F0 - 0000F0F7] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
- [0000F100 - 0000F103] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
- [0000F110 - 0000F117] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
- [0000FFFF - 0000FFFF] Motherboard resources
- [0000FFFF - 0000FFFF] Motherboard resources

B.2 1st MB Memory Address Map



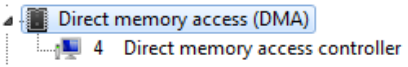
B.3 IRQ Mapping Chart



(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
(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) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
(PCI) 0x00000010 (16) Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E2D
(PCI) 0x00000010 (16) Intel(R) Management Engine Interface
(PCI) 0x00000013 (19) Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
(PCI) 0x00000013 (19) Intel(R) Active Management Technology - SOL (COM5)
(PCI) 0x00000016 (22) High Definition Audio Controller
(PCI) 0x00000017 (23) Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E26
(PCI) 0xFFFFFFF9 (-7) Realtek PCIe GBE Family Controller
(PCI) 0xFFFFFFFA (-6) Intel(R) 82579LM Gigabit Network Connection
(PCI) 0xFFFFFFFB (-5) Intel(R) USB 3.0 eXtensible Host Controller
(PCI) 0xFFFFFFFC (-4) Intel(R) HD Graphics 4000
(PCI) 0xFFFFFFFD (-3) Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
(PCI) 0xFFFFFFFE (-2) Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 1 - 1E10

B.4 DMA Channel Assignments



Appendix

C

AHCI Setting

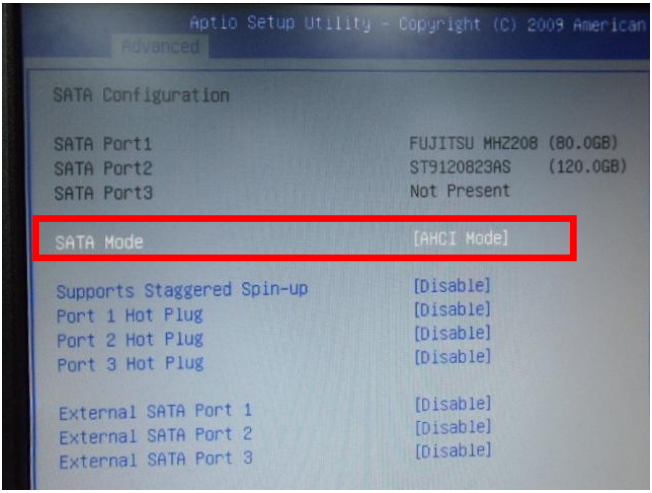
C.1 Setting AHCI

OS installation to setup AHCI Mode

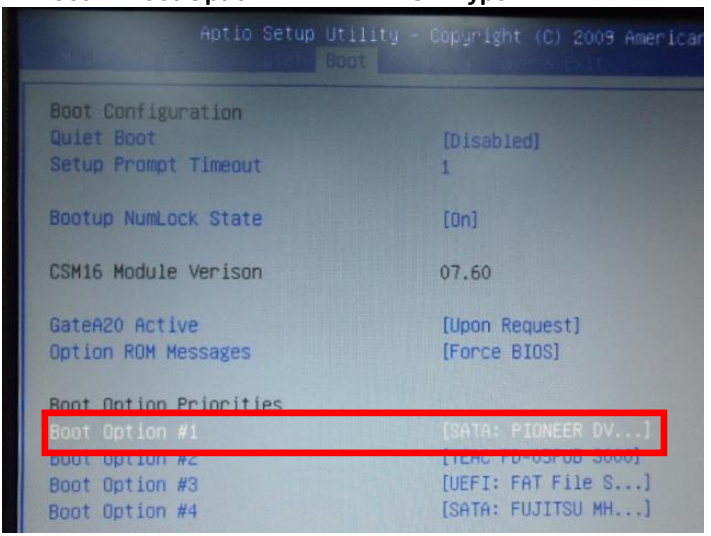
Step 1: Copy the files below from "***Driver CD -> Step 7 - AHCI -> Floppy - x86***" to Disk

Step 2: Connect the USB Floppy (disk with AHCI files) to the AIS-E1-H61A

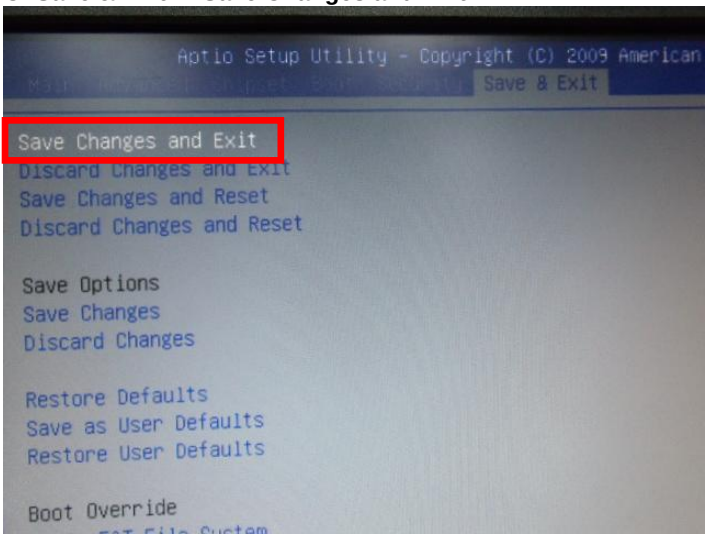
Step 3: The setting procedures " **In BIOS Setup Menu**"
A: Advanced -> SATA Configuration -> SATA Configuration -> SATA Mode -> AHCI Mode



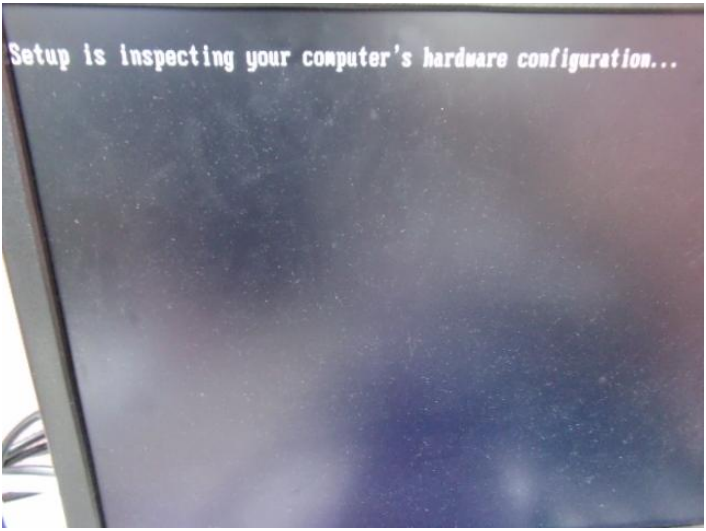
Step 4: The setting procedures "**In BIOS Setup Menu"**
B: Boot -> Boot Option #1 -> DVD-ROM Type



Step 5: The setting procedures "**In BIOS Setup Menu"**
C: Save & Exit -> Save Changes and Exit

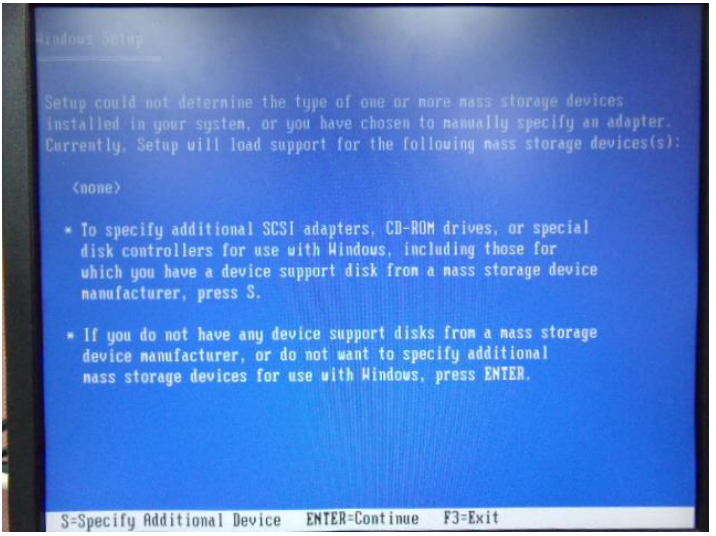


Step 6: Setup OS

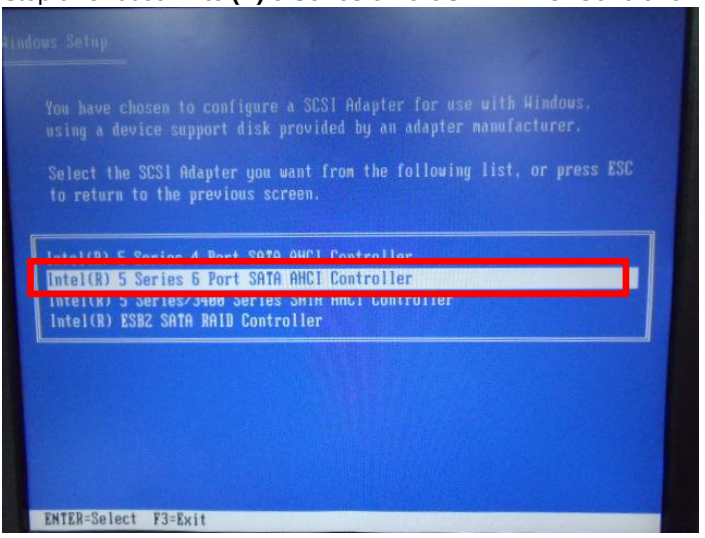


Step 7: Press "**F6**"

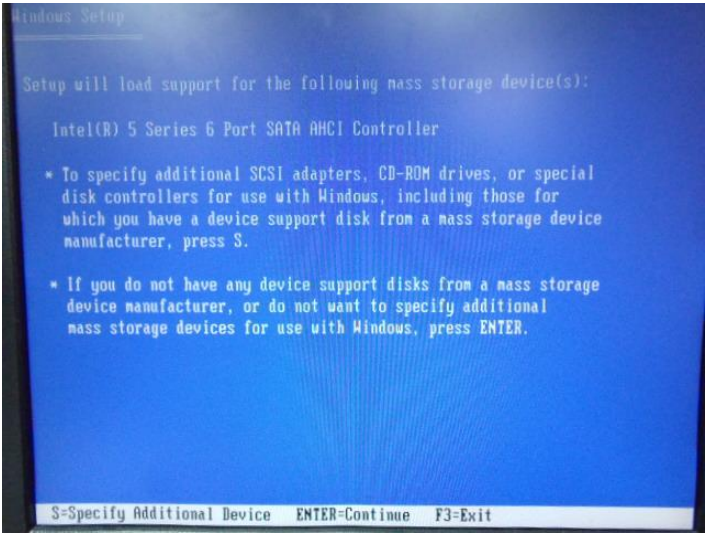
Step 8: Choose "**S**"



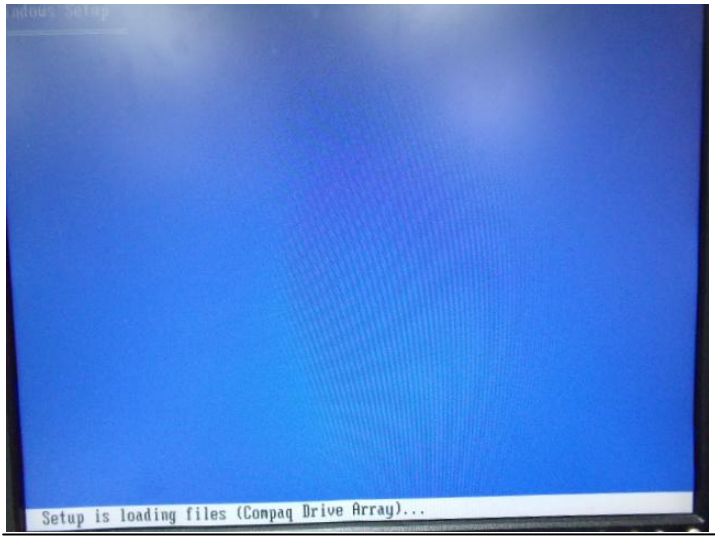
Step 9: Choose "**Intel(R) 5 Series 6 Port SATA AHCI Controller**"



Step 10: It will show the model number you select and then press "**ENTER**"



Step 11: Setup is loading files



Appendix

D

Electrical Specifications For I/O Ports

D.1 DIO Programming

AIS-E1-H61A utilizes FINTEK 81866 chipset as its Digital I/O controller.

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

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.(These three steps are the same as programming WDT)

D.2 Digital I/O Register

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 : Digital Input relative register table					
	LDN	**Register**	**BitNum**	**Value**	**Note**
DIO-1 Pin Status	**0x06**(Note3)	**0x8A**(Note4)	**0**(Note5)		GPIO80
DIO-2 Pin Status	**0x06**(Note6)	**0x8A**(Note7)	**1**(Note8)		GPIO81
DIO-3 Pin Status	**0x06**(Note9)	**0x8A**(Note10)	**2**(Note11)		GPIO82
DIO-4 Pin Status	**0x06**(Note12)	**0x8A**(Note13)	**3**(Note14)		GPIO83
DIO-5 Pin Status	**0x06**(Note15)	**0x8A**(Note16)	**4**(Note17)		GPIO84
DIO-6 Pin Status	**0x06**(Note18)	**0x8A**(Note19)	**5**(Note20)		GPIO85
DIO-7 Pin Status	**0x06**(Note21)	**0x8A**(Note22)	**6**(Note23)		GPIO86
DIO-8 Pin Status	**0x06**(Note24)	**0x8A**(Note25)	**7**(Note26)		GPIO87

Table 3 : Digital Output relative register table					
	LDN	**Register**	**BitNum**	**Value**	**Note**
DIO-1 Output Data	**0x06**(Note27)	**0x89**(Note28)	**0**(Note29)	(Note30)	GPIO80
DIO-2 Output Data	**0x06**(Note31)	**0x89**(Note32)	**1**(Note33)	(Note34)	GPIO81
DIO-3 Output Data	**0x06**(Note35)	**0x89**(Note36)	**2**(Note37)	(Note38)	GPIO82
DIO-4 Output Data	**0x06**(Note39)	**0x89**(Note40)	**3**(Note41)	(Note42)	GPIO83
DIO-5 Output Data	**0x06**(Note43)	**0x89**(Note44)	**4**(Note45)	(Note46)	GPIO84
DIO-6 Output Data	**0x06**(Note47)	**0x89**(Note48)	**5**(Note49)	(Note50)	GPIO85
DIO-7 Output Data	**0x06**(Note51)	**0x89**(Note52)	**6**(Note53)	(Note54)	GPIO86
DIO-8 Output Data	**0x06**(Note55)	**0x89**(Note56)	**7**(Note57)	(Note58)	GPIO87

D.3 Digital I/O Sample Program

```
**********************************************************************************
// 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);
// Digital Input Status relative definition (Please reference to Table 2)
#define byte   DInput1LDN   // This parameter is represented from Note3
#define byte   DInput1Reg   // This parameter is represented from Note4
#define byte   DInput1Bit   // This parameter is represented from Note5
#define byte   DInput2LDN   // This parameter is represented from Note6
#define byte   DInput2Reg   // This parameter is represented from Note7
#define byte   DInput2Bit   // This parameter is represented from Note8
#define byte   DInput3LDN   // This parameter is represented from Note9
#define byte   DInput3Reg   // This parameter is represented from Note10
#define byte   DInput3Bit   // This parameter is represented from Note11
#define byte   DInput4LDN   // This parameter is represented from Note12
#define byte   DInput4Reg   // This parameter is represented from Note13
#define byte   DInput4Bit   // This parameter is represented from Note14
#define byte   DInput5LDN   // This parameter is represented from Note15
#define byte   DInput5Reg   // This parameter is represented from Note16
#define byte   DInput5Bit   // This parameter is represented from Note17
#define byte   DInput6LDN   // This parameter is represented from Note18
#define byte   DInput6Reg   // This parameter is represented from Note19
#define byte   DInput6Bit   // This parameter is represented from Note20
#define byte   DInput7LDN   // This parameter is represented from Note21
#define byte   DInput7Reg   // This parameter is represented from Note22
#define byte   DInput7Bit   // This parameter is represented from Note23
#define byte   DInput8LDN   // This parameter is represented from Note24
#define byte   DInput8Reg   // This parameter is represented from Note25
#define byte   DInput8Bit   // This parameter is represented from Note26
**********************************************************************************
```

```
**********************************************************************************
// Digital Output control relative definition (Please reference to Table 3)
#define byte   DOutput1LDN   // This parameter is represented from Note27
#define byte   DOutput1Reg   // This parameter is represented from Note28
#define byte   DOutput1Bit   // This parameter is represented from Note29
#define byte   DOutput1Val   // This parameter is represented from Note30
#define byte   DOutput2LDN   // This parameter is represented from Note31
#define byte   DOutput2Reg   // This parameter is represented from Note32
#define byte   DOutput2Bit   // This parameter is represented from Note33
#define byte   DOutput2Val   // This parameter is represented from Note34
#define byte   DOutput3LDN   // This parameter is represented from Note35
#define byte   DOutput3Reg   // This parameter is represented from Note36
#define byte   DOutput3Bit   // This parameter is represented from Note37
#define byte   DOutput3Val   // This parameter is represented from Note38
#define byte   DOutput4LDN   // This parameter is represented from Note39
#define byte   DOutput4Reg   // This parameter is represented from Note40
#define byte   DOutput4Bit   // This parameter is represented from Note41
#define byte   DOutput4Val   // This parameter is represented from Note42
#define byte   DOutput5LDN   // This parameter is represented from Note43
#define byte   DOutput5Reg   // This parameter is represented from Note44
#define byte   DOutput5Bit   // This parameter is represented from Note45
#define byte   DOutput5Val   // This parameter is represented from Note46
#define byte   DOutput6LDN   // This parameter is represented from Note47
#define byte   DOutput6Reg   // This parameter is represented from Note48
#define byte   DOutput6Bit   // This parameter is represented from Note49
#define byte   DOutput6Val   // This parameter is represented from Note50
#define byte   DOutput7LDN   // This parameter is represented from Note51
#define byte   DOutput7Reg   // This parameter is represented from Note52
#define byte   DOutput7Bit   // This parameter is represented from Note53
#define byte   DOutput7Val   // This parameter is represented from Note54
#define byte   DOutput8LDN   // This parameter is represented from Note55
#define byte   DOutput8Reg   // This parameter is represented from Note56
#define byte   DOutput8Bit   // This parameter is represented from Note57
#define byte   DOutput8Val   // This parameter is represented from Note58
**********************************************************************************
```

```
**********************************************************************************
VOID   Main(){
        Boolean PinStatus ;

        // Procedure : AaeonReadPinStatus
        // Input :
        //        Example, Read Digital I/O Pin 3 status
        // Output :
        //        InputStatus :
        //                0: Digital I/O Pin level is low
        //                1: Digital I/O Pin level is High
        PinStatus = AaeonReadPinStatus(DInput3LDN, DInput3Reg, DInput3Bit);

        // Procedure : AaeonSetOutputLevel
        // Input :
        //        Example, Set Digital I/O Pin 6 level
        AaeonSetOutputLevel(DOutput6LDN, DOutput6Reg, DOutput6Bit, DOutput6Val);
}
**********************************************************************************
```

```
**********************************************************************************
Boolean    AaeonReadPinStatus(byte LDN, byte Register, byte BitNum){
        Boolean PinStatus ;

        PinStatus = SIOBitRead(LDN, Register, BitNum);
        Return PinStatus ;
}
VOID    AaeonSetOutputLevel(byte LDN, byte Register, byte BitNum, byte Value){
        ConfigToOutputMode(LDN, Register, BitNum);
        SIOBitSet(LDN, Register, BitNum, Value);
}
**********************************************************************************
```

```
*********************************************************************************
VOID   SIOEnterMBPnPMode(){
        IOWriteByte(SIOIndex, 0x87);
        IOWriteByte(SIOIndex, 0x87);
}

VOID   SIOExitMBPnPMode(){
        IOWriteByte(SIOIndex, 0xAA);
}

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();
}
*********************************************************************************
```

```
*****************************************************************************
Boolean    SIOBitRead(byte LDN, byte Register, byte BitNum){
        Byte TmpValue;

        SIOEnterMBPnPMode();
        SIOSelectLDN(LDN);
        IOWriteByte(SIOIndex, Register);
        TmpValue = IOReadByte(SIOData);
        TmpValue &= (1 << BitNum);
        SIOExitMBPnPMode();
        If(TmpValue == 0)
                Return 0;
        Return 1;
}
VOID    ConfigToOutputMode(byte LDN, byte Register, byte BitNum){
        Byte TmpValue, OutputEnableReg;

        OutputEnableReg = Register-1;
        SIOEnterMBPnPMode();
        SIOSelectLDN(LDN);
        IOWriteByte(SIOIndex, OutputEnableReg);
        TmpValue = IOReadByte(SIOData);
        TmpValue |= (1 << BitNum);
        IOWriteByte(SIOData, OutputEnableReg);
        SIOExitMBPnPMode();
}
*****************************************************************************
```