IMBA-Q77

Intel® 3rd Generation Core™ i3/i5/i7

Processor

DDR3 1066/1333 MHz DIMM

2 SATA 6.0Gb/s, 4 SATA 3.0Gb/s

1 PCI-Express[x16], 1 PCI-Express[x4]

2 PCI-Express[x1], 3 PCI

4 USB3.0, 8 USB2.0, 6 COM, 1 LPT

VGA, 1 DVI-D, 2 DisplayPort™

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March 14, 2016

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Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 IMBA-Q77 ATX Main Board
- 2 SATA Cable
- 1 COM Port Cable
- 1 USB2.0 Cable
- 1 DVD-ROM for Manual (in PDF Format) and Drivers
- 1 IO Shield for IMBA-Q77 main board

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

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Chapter 1 General Information

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Chapter

1

General Information

1.1 Introduction

The IMBA-Q77 supports Intel® 3rd generation Core™ i3/i5/i7 LGA1155 processor. Moreover it supports DDR3 1066/1333/1600MHz (1600 for 3rd generation Core i processors) memory up to 32GB. This model accommodates two Intel® Gigabit Ethernet controllers that those are controlled by Intel® 82579 (supports Intel® iAMT 8.0)and Intel® 82583V. This configuration provides outstanding computing ability, fast network connections and multi-task data transmission.

The graphic controller: Intel® HD Graphic supports three independent displays and the output interfaces equip onboard VGA, DVI-D x 1, and DisplayPort™ x 2 (HDMI optional) to meet the demand of the media and high definition. In addition, IMBA-Q77 deploys 8 USB2.0, 4 USB3.0, 6 COM, two PS/2 ports, and multiple extended bus for a flexible expansion selection. The storage of IMBA-Q77 supports four SATA 3.0 Gb/s and two SATA 6.0 Gb/s to support RAID 0, 1, 5, 10 functions.

The IMBA-Q77 provides an ideal combination of high performance, widely expandable interfaces and compact size that is easy to apply for multiple applications. The IMBA-Q77 will be an ideal product for your requirement.

1.2 Features

- Intel® 3rd Generation Core™ i7/ i5/ i3 LGA 1155 Processor
- Intel® Q77
- Dual-Channel DDR3 1066/1333/1600 DIMM (1600 for 3rd Generation Core™ i Processors) x 4, Up to 32 GB
- 10/100/1000Base-TX x 2 (LAN1 Supports Intel® iAMT 8.0)
- Three Independent Displays For 3rd Generation Core™ i Processors With VGA, DisplayPort™, DVI-D
- SATA 3.0Gb/s x 4, SATA 6.0Gb/s x 2, Support RAID 0,1,5,10
- USB2.0 x 8, USB3.0 x 4 , COM x 6, LPT x 1, IrDA Tx/Rx Header x 1
- PCI-Express[x16] x 1, PCI-Express[x4] x 1, PCI-Express[x1] x 2, PCI x 3
- TPM 1.2 (Optional)

1.3 Specifications

System

Form Factor	ATX
Processor	Intel® 3rd generation Core™ i3/i5/i7 LGA 1155 Processor
System Memory	Dual Channel DDR3 1066/1333/1600MHz DIMM (1600 for 3rd Generation Core™ i Processors) x 4, up to 32 GB, Unbuffered memory
Chipset	Intel® Q77
Ethernet	Gigabit Ethernet, RJ-45 x 2 LAN1: Intel® 82579 (supports Intel® iAMT 8.0); LAN2: Intel® 82583V
BIOS	AMI SPI Flash ROM-128Mb ROM
Watchdog Timer	System reset: 1~255 steps by software programming
H/W Status Monitoring	System temperature, voltage and cooling fan status
Battery	Lithium battery
Expansion Interface	PCI-Express[x16] x 1, PCI-Express[x4 x 1, PCI-Express[x1] x 2, PCI x 3, TPM

	1.2 onboard (optional)
● Power Requirement	ATX standard 24-pin connector x 1, 4-pin +12V connector x 1, CPU fan x 1, system fan x 1 with 4-pin wafer, supports SMART FAN control
● Operating Temperature	32°F ~140°F (0°C ~60°C)
● Storage Temperature	-4°F ~158°F (-20°C ~70°C)
● Storage Humidity	5%~90%, non-condensing
● Board Size (L x W)	12" x 9.6" (305 x 244 mm)
● Gross Weight	1.76(0.8 Kg)
● EMC	CE & FCC Class A

Display

● Chipset	Intel® Core™ i3/i5/i7 + Q77
● Graphic Engine	Intel® HD Graphic support, three independent display for 3rd generation Core™ i Processors
● Resolution	Up to 2048x1536 @ 75Hz for CRT; Up to 2560x1600 @ 85Hz for DisplayPort™, 1080P for HDMI (Optional)
● Output Interface	Onboard VGA x 1, DVI-D x 1, DisplayPort™ x 2 (HDMI optional)

I/O: Winbond W83627DHG-P + Fintek F81216AD

● Storage	SATA 3.0 Gb/s x 4, SATA 6.0 Gb/s x 2, support RAID 0,1,5,10
● Serial Port	COM x 6 (box header x 5, external DB-9 x 1), COM1: RS-232/422/485 (external DB-9) COM2~6: RS-232 (box header)
● Keyboard & Mouse	Keyboard x 1, Mouse x 1
● Universal Serial Bus	USB2.0 x 8, USB3.0 x 4
● Audio	Audio Jack x 3 (Mic-in, Line-in, Line-out)
● Digital I/O	8-bit programmable (4-in/ 4-out)
● IrDA	Supports one IrDA header (supports Windows XP only)

Chapter

2

Quick Installation Guide

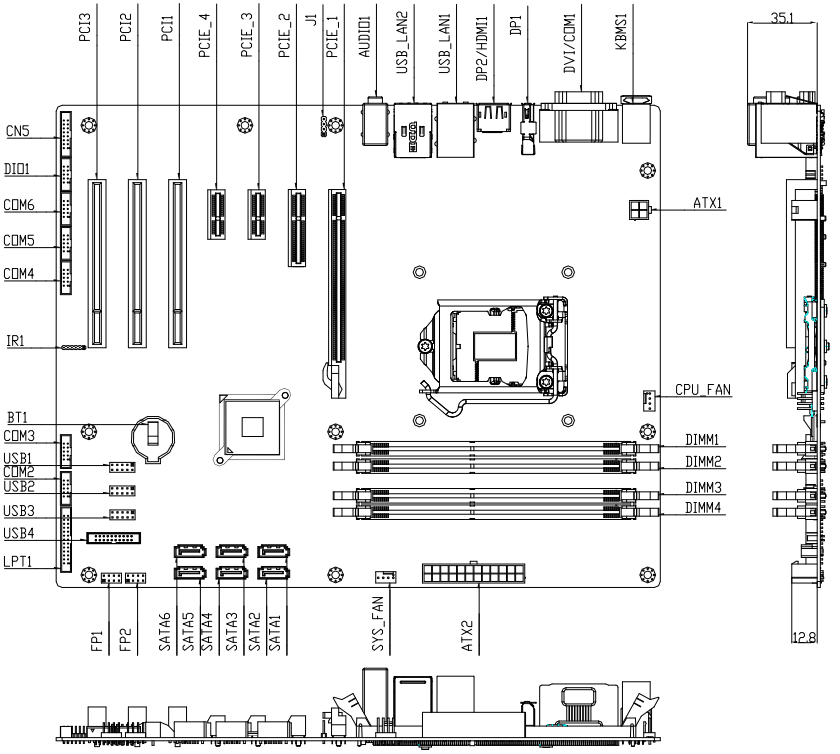
2.1 Safety Precautions

Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

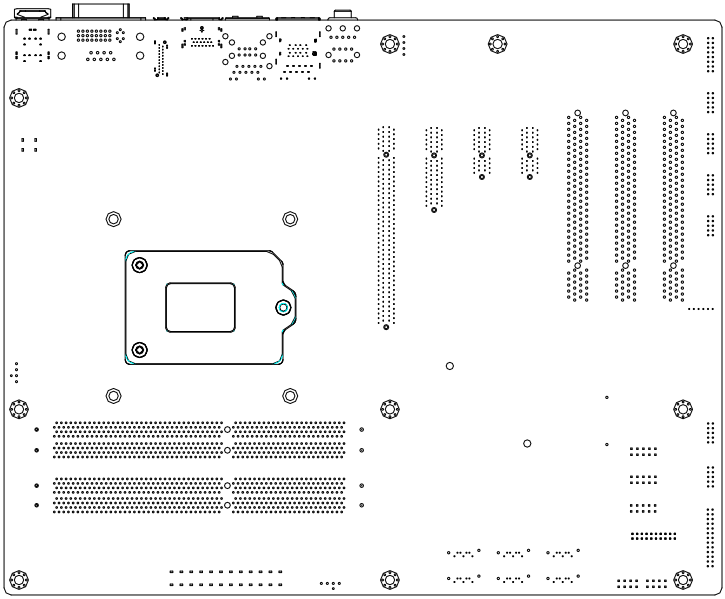
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 Location of Connectors and Jumpers

Component Side

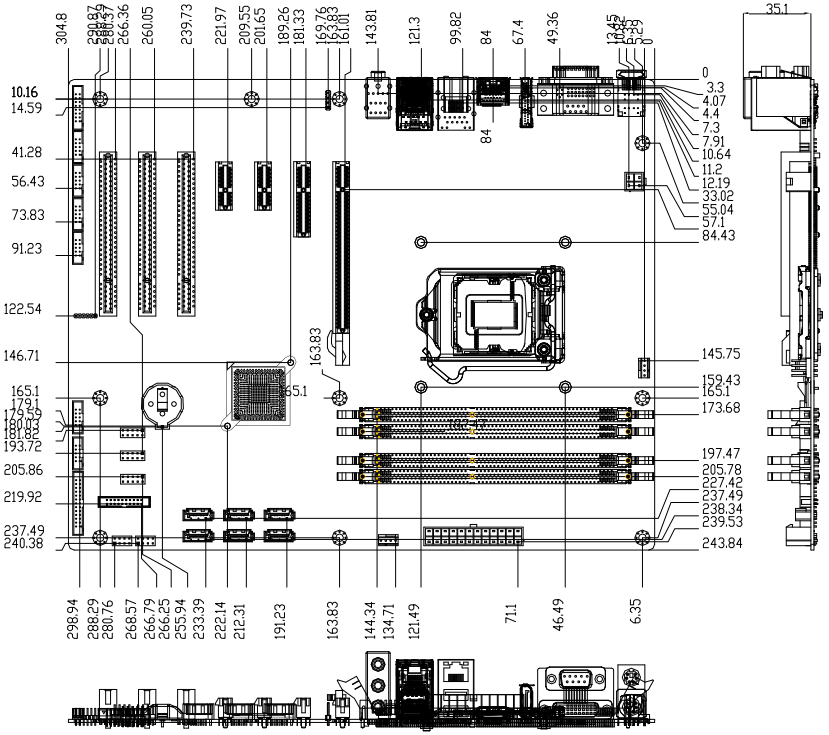


Solder Side

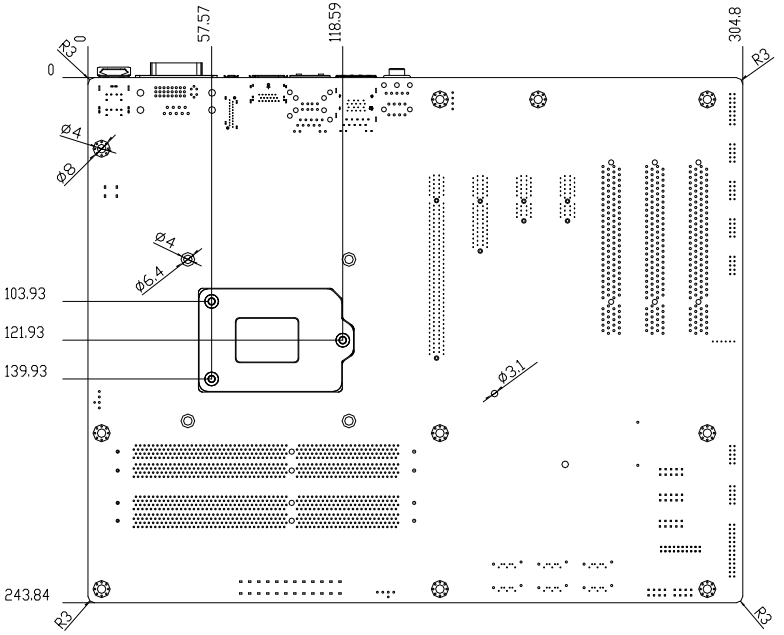


2.3 Mechanical Drawing

Component Side



Solder Side


57.57
118.59
304.8
R3.0
0
R3
Ø4
Ø8
Ø4
Ø6.4
103.93
121.93
139.93
Ø3.1
243.84
R3
R3

2.4 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
JP1	Clear CMOS
JP3	AUTO POWER BUTTOM

2.5 List of Connectors

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

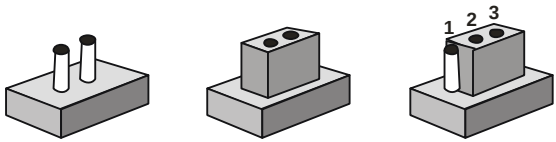
Label	Function
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
CN5	VGA Port Pin Header
COM2	RS-232 Pin Header
COM3	RS-232 Pin Header
COM4	RS-232 Pin Header
COM5	RS-232 Pin Header
COM6	RS-232 Pin Header
DIO1	Digital I/O Pin Header
LPT1	Parallel Port Pin Header
USB1	USB Pin Header
USB2	USB Pin Header
USB3	USB Pin Header
USB4	USB 3.0 Pin Header
BT1	Battery
IR1	IR Pin Header
SATA1~SATA6	SATA Connector
USB_LAN1	USB & 10/100/1000Base-T Ethernet Connector
USB_LAN2	USB3.0 & 10/100/1000Base-T Ethernet Connector
DIMM1	DDR3 DIMM Slot

DIMM2	DDR3 DIMM Slot
DIMM3	DDR3 DIMM Slot
DIMM4	DDR3 DIMM Slot
AUDIO1	AUDIO Connector
CPU_FAN1	4-Pin Fan Connector
CHASSIS_FAN1	4-Pin Fan Connector
SYS_FAN1	4-Pin Fan Connector
CN2	DVI-D / COM1 RS232/422/485
DP1	Display Port1
DP2/HDMI1	Display Port2 / HDMI
KBMS1	PS/2 KB / MS
ATX1	4 PIN ATX 12V
ATX2	ATX Connector
PCIE_1	PCI-E [x16] Connector
PCIE_2	PCI-E [x4] Connector
PCIE_3	PCI-E [x1] Connector
PCIE_4	PCI-E [x1] Connector
PCI1	PCI Connector
PCI2	PCI Connector
PCI3	PCI Connector

2.6 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.

2.7 Clear CMOS (JP1)

JP1	Function
1-2	Protected (Default)
2-3	Clear

2.8 Auto Power Button(JP3)

JP3	Function
1-2	Power ON by Button (Default)
2-3	Auto Power ON

2.9 DVI-D / COM1 RS232/422/485 (CN2)

RS-232			
Pin	**Signal**	**Pin**	**Signal**
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

RS-422			
Pin	**Signal**	**Pin**	**Signal**
1	RS422_TX-	2	RS422_RX+
3	RS422_TX+	4	RS422_RX-
5	GND	6	NC

7	NC	8	NC
9	NC		

RS-485			
Pin	**Signal**	**Pin**	**Signal**
1	485DATA-	2	NC
3	485DATA+	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC		

2.9 Front Panel Connector (FP1)

Pin	Signal	Pin	Signal
1	Power On Button (+)	2	Reset Switch (+)
3	Power On Button (-)	4	Reset Switch (-)
5	HDD LED (+)	6	Power LED (+)
7	HDD LED (-)	8	Power LED (-)

2.10 Front Panel Connector (FP2)

Pin	Signal	Pin	Signal
1	External Speaker (+)	2	Key Board Lock (+)
3	NC	4	GND
5	Internal Buzzer (-)	6	I2C Bus SMB Clock
7	External Speaker (-)	8	I2C Bus SMB Data

Note: Internal Buzzer Enable: Close Pin 5,7

2.11 RS-232 Serial Port Connector (COM2, 3, 4, 5, 6)

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

2.12 IR Pin Header (IR1)

Pin	Signal
1	+5V
2	NC
3	RX
4	GND
5	TX

2.13 Digital I/O Pin Header (DIO1)

Pin	Signal	Pin	Signal
1	DIO_30	2	DIO_31
3	DIO_32	4	DIO_33
5	DIO_34	6	DIO_35
7	DIO_36	8	DIO_37
9	+3.3V	10	GND

2.14 VGA Port PIN Header (CN5)

Pin	Signal	Pin	Signal
1	VGA_RED_C	2	V_VDO_5V
3	VGA_GRE_C	4	GND
5	VGA_BLE_C	6	NC
7	NC	8	VDO_MONID1_R
9	GND	10	V_HSYNC
11	GND	12	V_VSYNC
13	GND	14	VDO_MONID2_R
15	GND	16	NC

2.15 USB2.0 Pin header (USB1~USB3)

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

2.16 USB3.0 Port PIN Header (USB4)

Pin	Signal	Pin	Signal
1	VCC	20	NC
2	USB3_RX1_DN_C	19	VCC

3	USB3_RX1_DP_C	18	USB3_RX2_DN_C
4	GND	17	USB3_RX2_DP_C
5	USB3_TX1_DN_C	16	GND
6	USB3_TX1_DP_C	15	USB3_TX2_DN_C
7	GND	14	USB3_TX2_DP_C
8	USBP_0N_C	13	GND
9	USBP_0P_C	12	USBP_1N_C
10	NC	11	USBP_1P_C

2.17 Parallel Port Pin Header (LPT1)

Pin	Signal	Pin	Signal
1	#STROBE	2	#AFD
3	DATA0	4	#ERROR
5	DATA1	6	#INIT
7	DATA2	8	#SLIN
9	DATA3	10	GND
11	DATA4	12	GND
13	DATA5	14	GND
15	DATA6	16	GND
17	DATA7	18	GND
19	#ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SELECT	26	GND

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

AAEON Main Board/ Daughter Board/ Backplane

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	×	○	○	○	○	○

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：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。

Chapter

3

AMI BIOS Setup

3.1 System Test and Iinitialization

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 stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

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

The IMBA-Q77 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 and BIOS NVRAM 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

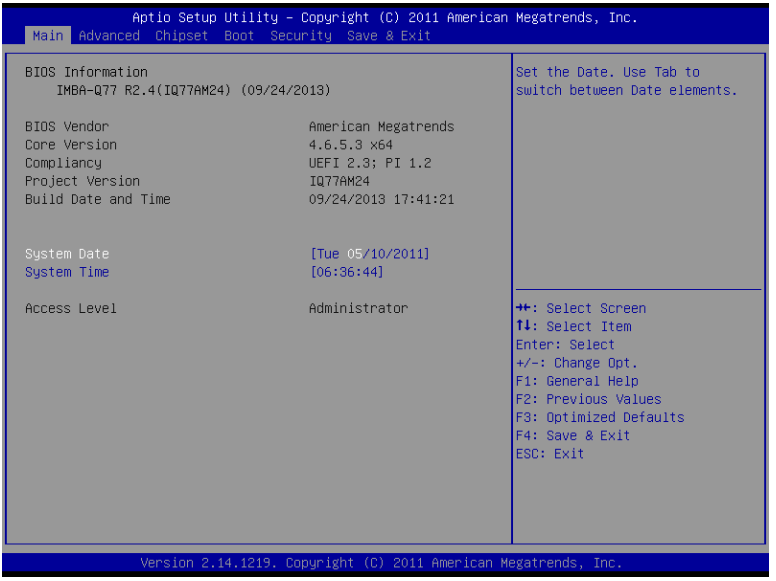
Set setup administrator password.

Save & Exit

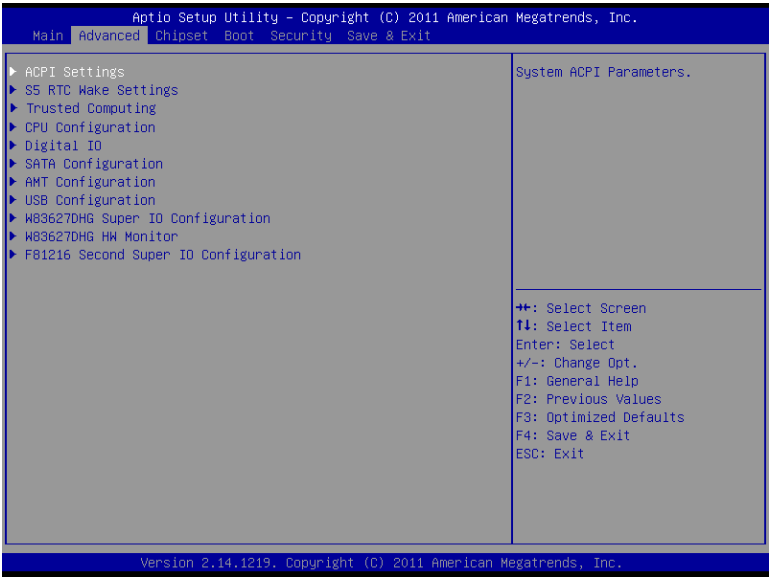
Exit system setup after saving the changes.

Setup Menu

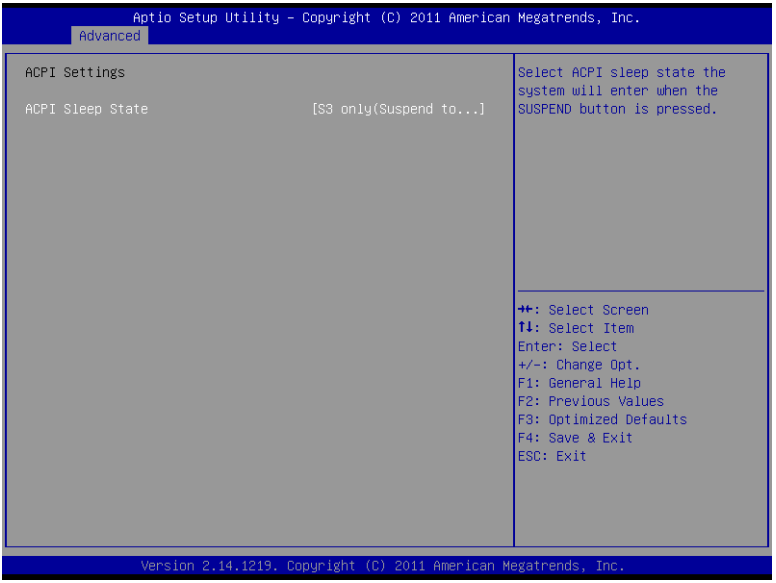
Setup submenu: Main



Setup submenu: Advanced



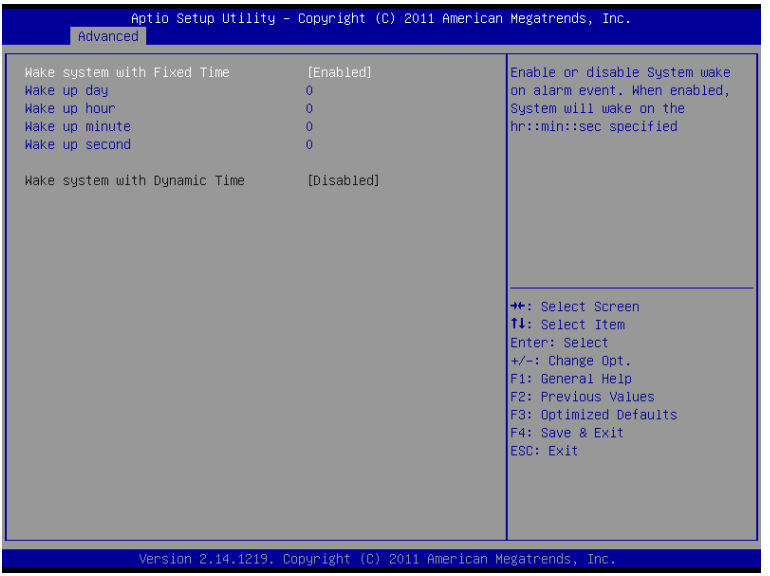
ACPI Settings



Options Summary :

ACPI Sleep State	S1 only(CPU Stop Clock)	
	S3 only(Suspend to RAM)	Default
Select the ACPI sleep state the system will enter when the SUSPEND button is pressed.		

S5 RTC Wake Settings



Options Summary :

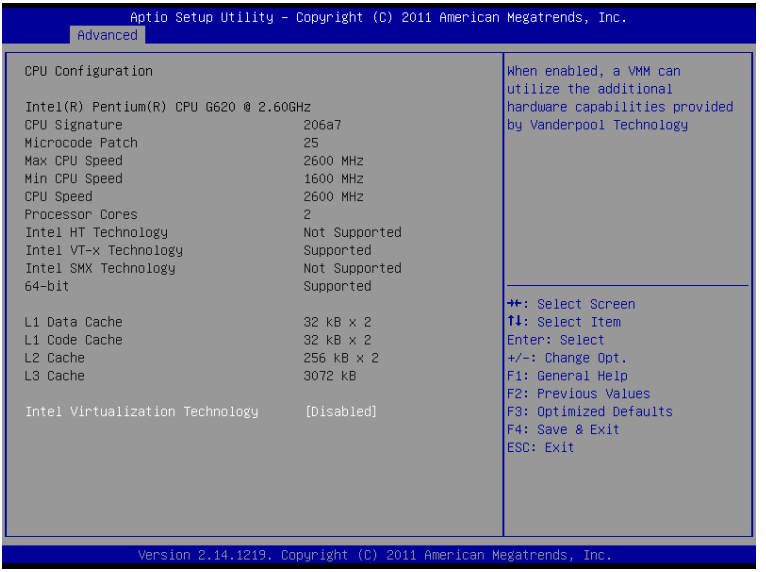
Wake system with Fixed Time	Disabled	Default
	Enabled	
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.		
Wake system with Dynamic Time	Disabled	Default
	Enabled	
Enable or disable System wake on alarm event. When enabled, System will wake on the current time + Increase minute(s).		

Trusted Computing

Options Summary :

Security Device Support	Disable	Default
	Enable	
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.		

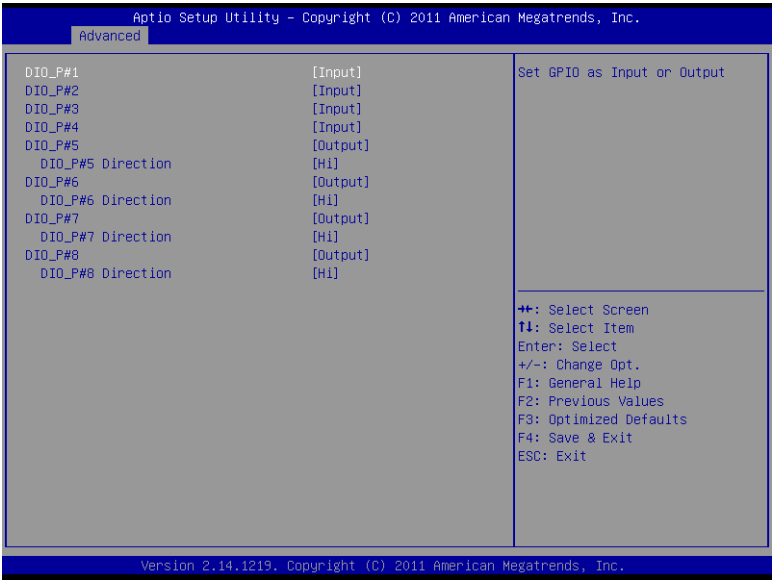
CPU Configuration



Options Summary :

Intel Virtualization Technology	Disabled	Disabled
	Enabled	
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology		

Digital IO

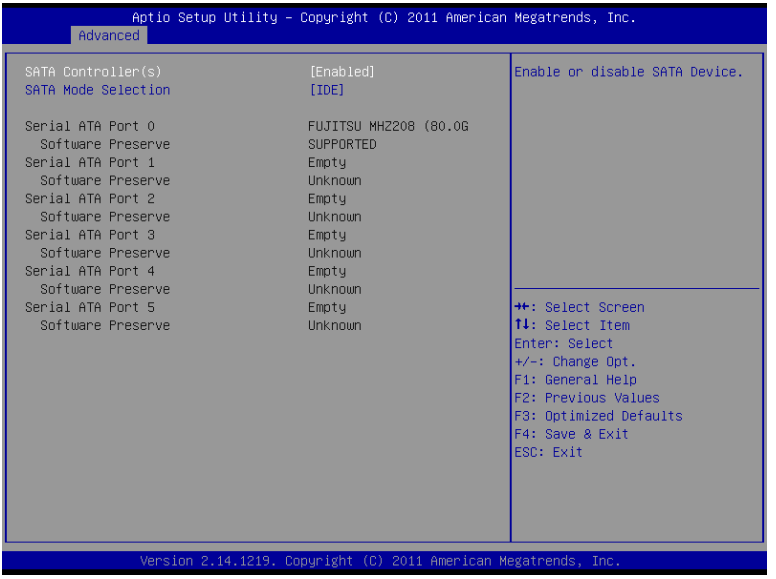


Options Summary :

DIO_P#1	Input	Default
	Output	
DIO_P#2	Input	Default
	Output	
DIO_P#3	Input	Default
	Output	
DIO_P#4	Input	Default
	Output	
DIO_P#5	Input	
	Output	Default
DIO_P#5 Direction	Low	
	Hi	Default
DIO_P#6	Input	
	Output	Default
DIO_P#6 Direction	Low	
	Hi	Default
DIO_P#7	Input	
	Output	Default
DIO_P#7 Direction	Low	
	Hi	Default

DIO_P#8	Input	
	Output	Default
DIO_P#8 Direction	Low	
	Hi	Default
Set GPIO Output as Hi or Low		

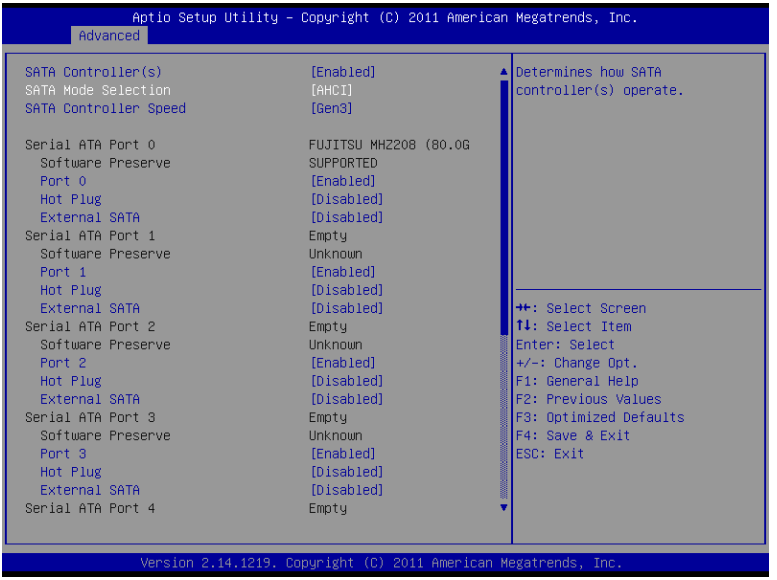
SATA Configuration (IDE)

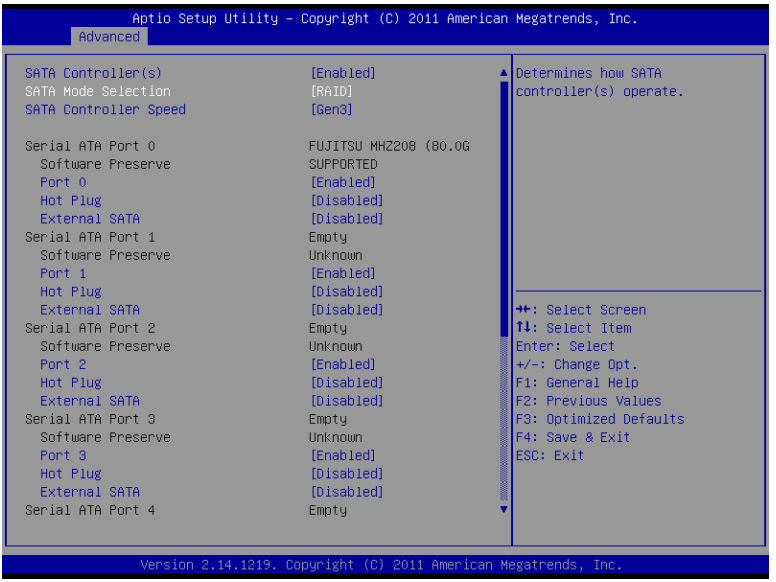


Options Summary :

SATA Controller(s)	Enabled	Default
	Disabled	
Enable or disable SATA Device.		
SATA Mode Selection	IDE	Default
	AHCI	
	RAID	
Determines how SATA controller(s) operate.		

SATA Configuration (AHCI&RAID)

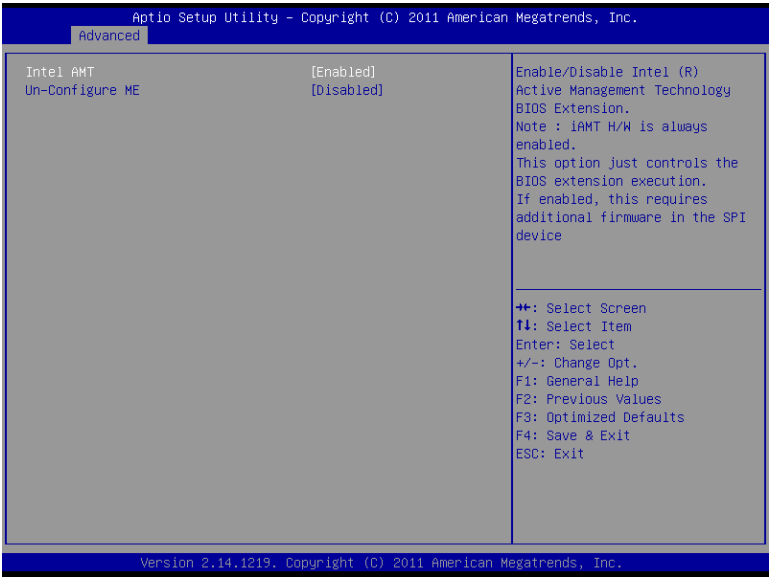




Options Summary :

SATA Controller(s)	Enabled	Default
	Disabled	
Enable or disable SATA Device.		
SATA Mode Selection	IDE	Default
	AHCI	
	RAID	
Determines how SATA controller(s) operate.		
SATA Controller Speed	Gen1	
	Gen2	
	Gen3	Default
Indicates the maximum speed the SATA controller can support.		
Pot 0 ~ Port 5	Disabled	
	Enabled	Default
Enable or Disable SATA Port		
Serial ATA Port 0 ~ Port 5 Hot Plug	Disabled	Default
	Enabled	
Designates this port as Hot Pluggable.		
External SATA	Disabled	
	Enabled	
External SATA Support.		

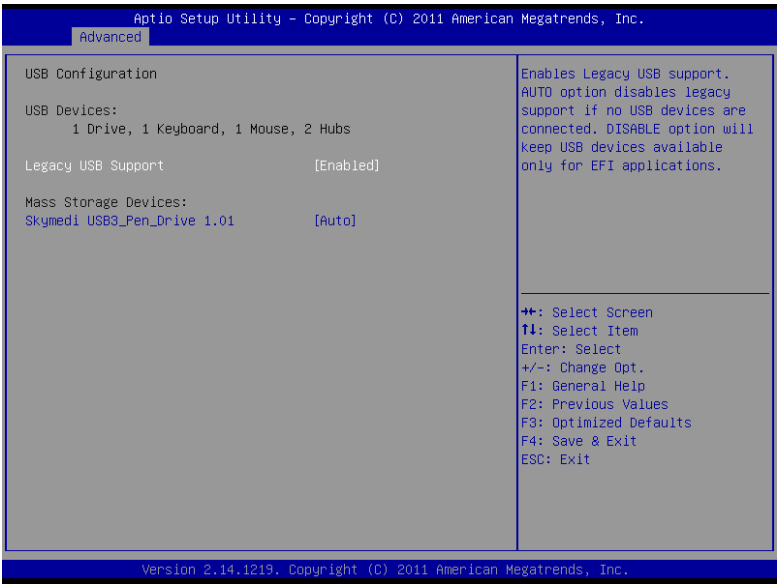
Intel AMT Configuration



Options Summary :

Intel AMT	Disabled	
	Enabled	Default
Enable/Disable Intel ® Active Management Technology BIOS Extension. Note : iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device		
Un-Configure ME	Disabled	Default
	Enabled	
OEMFlag Bit 15: Un-Configure ME without password.		

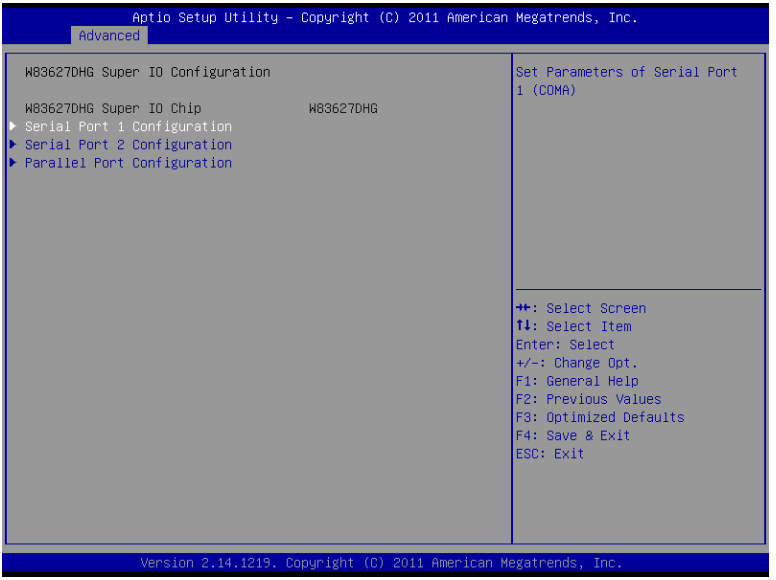
USB Configuration



Options Summary :

Legacy USB Support	Enabled	Default
	Disabled	
	Auto	
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.		

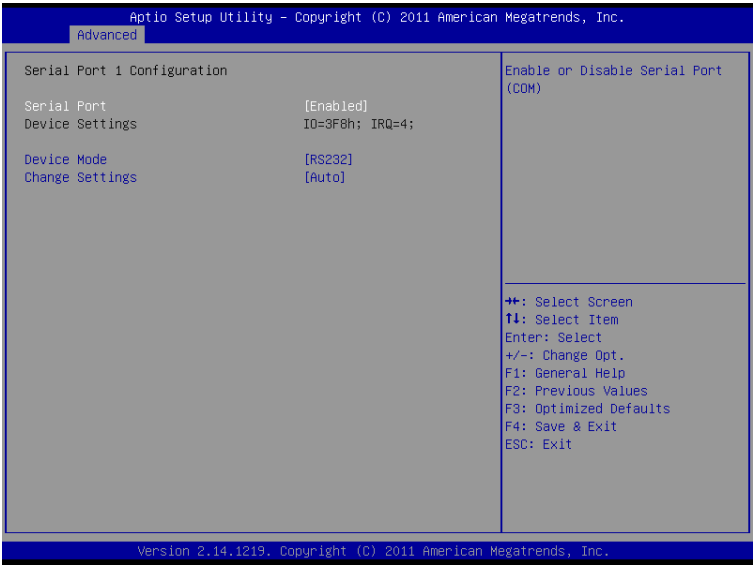
W83627DHG Super IO Configuration



Options Summary :

Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA)
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB)
Parallel Port Configuration	Set Parameters of Parallel Port (LPT/LPTE)

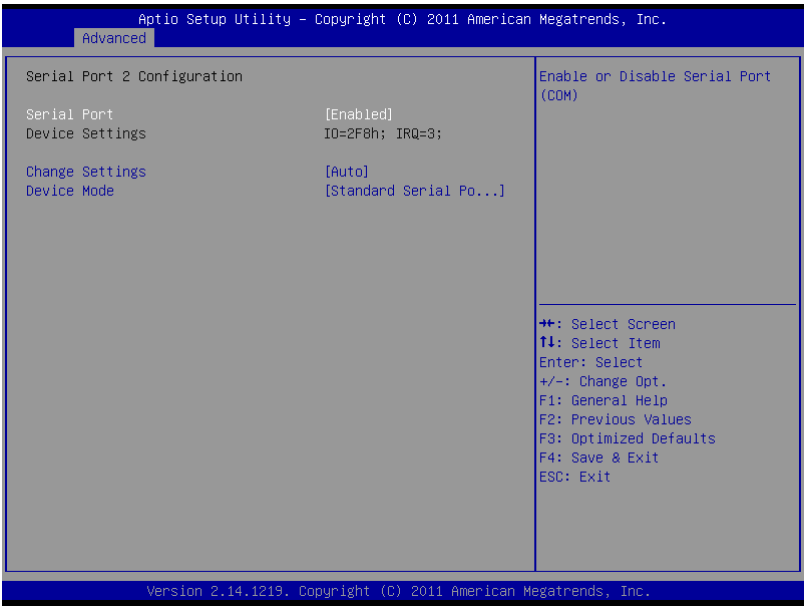
Serial Port 1 Configuration



Options Summary :

Serial Port	Disabled	
	Enabled	Default
Enable or Disable Serial Port (COM)		
Select working model	RS232	Default
	RS422	
	RS485	
Select working model		
Change Settings	Auto	Default
	IO=3F8h;IRQ=4;	
	IO=3F8h; IRQ=3,4;	
	IO=2F8h; IRQ=3,4;	
	IO=3E8h; IRQ=3,4;	
	IO=2E8h; IRQ=3,4;	
Select an optimal setting for Super IO device.		

Serial Port 2 Configuration

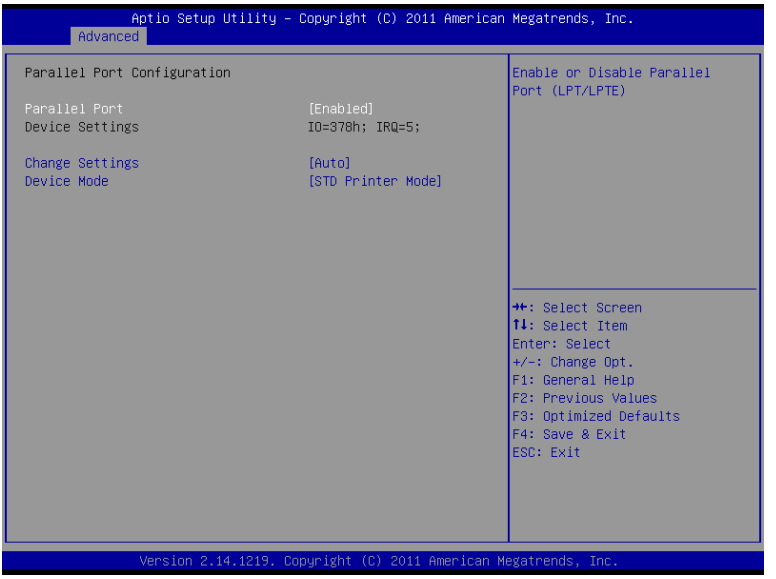


Options Summary :

Serial Port	Disabled	
	Enabled	Default
Enable or Disable Serial Port (COM)		
Change Settings	Auto	Default
	IO=2F8h;IRQ=3;	
	IO=3F8h; IRQ=3,4;	
	IO=2F8h; IRQ=3,4;	
	IO=3E8h; IRQ=3,4;	
	IO=2E8h; IRQ=3,4;	
Select an optimal setting for Super IO device.		
Device Mode	Standard Serial Port Mode	Default
	IrDA Active pulse 1.6 uS	
	IrDA Active pulse 3/16 bit time	

	ASK-IR Inverting IRTX&500KHz, Demodulation to IRRX	
Change the Serial Port mode. Select <High Speed> or <Normal mode> mode		

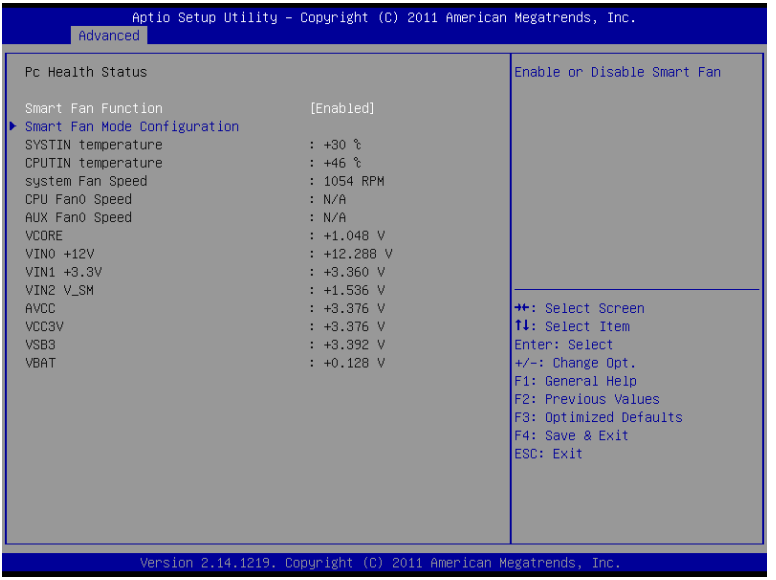
Parallel Port Configuration



Options Summary :

Parallel Port	Disabled	
	Enabled	Default
Enable or Disable Parallel Port (LPT/LPTE)		
Change Settings	Auto	Default
	IO=378h;IRQ=5;	
	IO=378h; IRQ=5,7;	
	IO=278h; IRQ=5,7;	
	IO=3BCh; IRQ=5,7;	
Select an optimal setting for Super IO device.		
Device Mode	STD Printer Mode	Default
	SPP Mode	
	EPP-1.9 and SPP Mode	
	EPP-1.7 and SPP Mode	
	ECP Mode	
	ECP and EPP 1.9 Mode	
	ECP and EPP 1.7 Mode	
Change the Printer Port mode.		

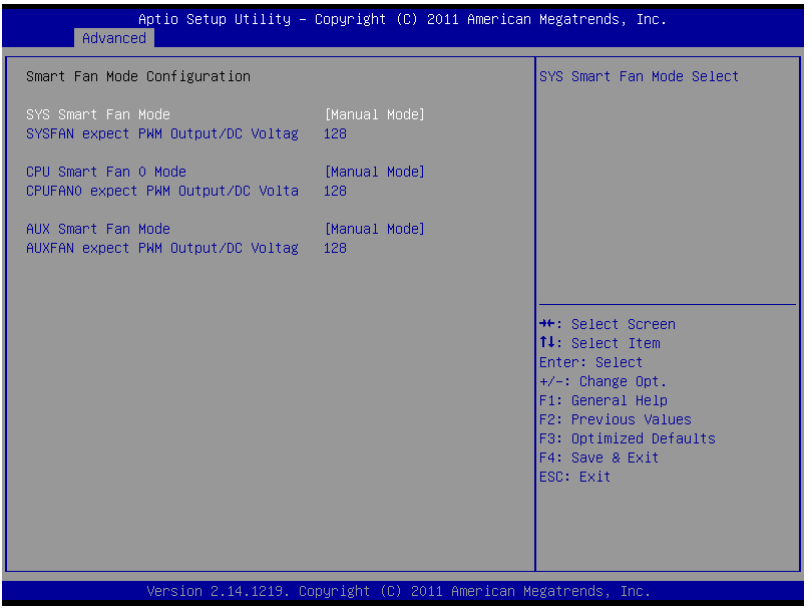
W83627DHG HW Monitor



Options Summary :

Smart Fan Function	Disabled	
	Enabled	Default
Enable or Disable Smart Fan		

Smart Fan Mode Configuration

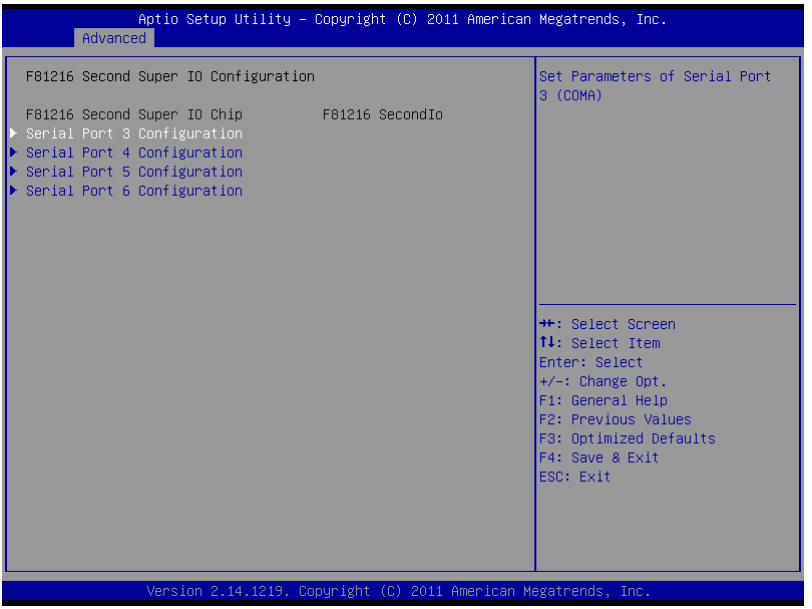


Options Summary :

SYS Smart Fan Mode	Manual Mode	Default
	Thermal Cruise Mode	
	Fan Speed Cruise Mode	
SYS Smart Fan Mode Select		
SYS FAN expect PWM Output/DC Voltage		
Input expect PWM Output Value(Range:0 – 255)		
CPU Smart Fan 0 Mode	Manual Mode	
	Thermal Cruise Mode	
	Fan Speed Cruise Mode	
CPU Smart Fan 0 Mode Select		
CPUFAN0 expect PWM Output/DC Voltage	128	Default
	0~255	
Input expect PWM Output Value(Range:0 – 255)		
AUX Smart Fan Mode	Manual Mode	Default
	Thermal Cruise Mode	

	Fan Speed Cruise Mode	
AUX Smart Fan Mode Select		
AUX FAN expect	128	Default
PWM Output/DC Voltage	0~255	
Input expect PWM Output Value(Range:0 – 255)		

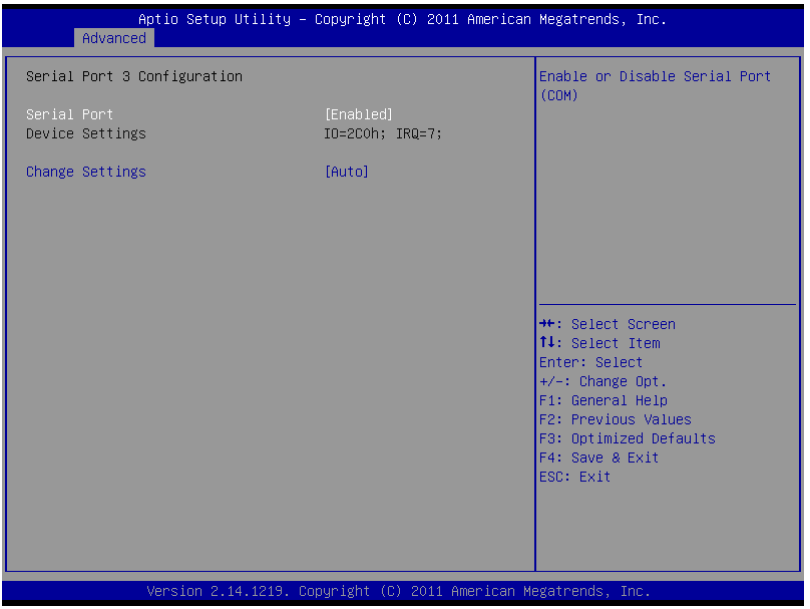
F81216 Second Super IO Configuration



Options Summary :

Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMA)
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMB)
Serial Port 5 Configuration	Set Parameters of Serial Port 5 (COMC)
Serial Port 6 Configuration	Set Parameters of Serial Port 6 (COMD)

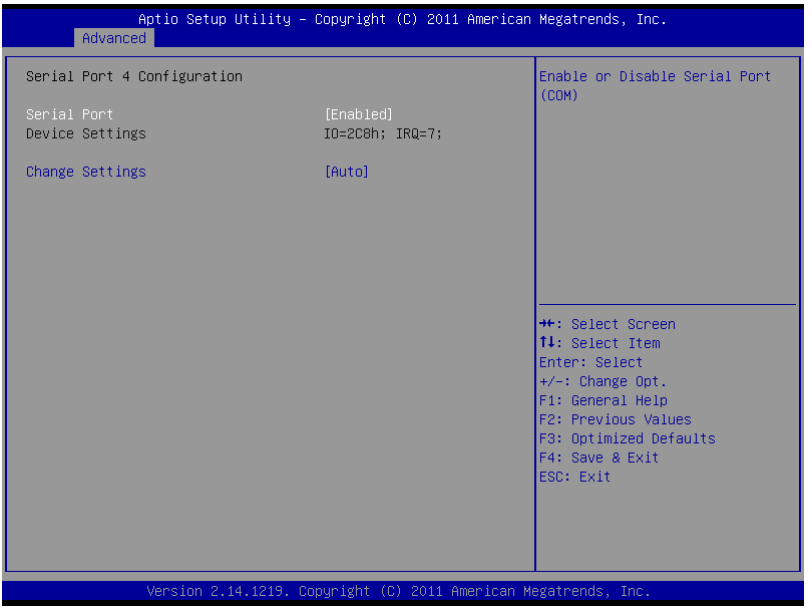
Serial Port 3 Configuration



Options Summary :

Serial Port	Disabled	
	Enabled	Default
Enable or Disable Serial Port (COM)		
Change Settings	Auto	Default
	IO=2C0h; IRQ=7;	
	IO=2C0h; IRQ=7;	
	IO=2C8h; IRQ=7;	
Select an optimal setting for Super IO device.		

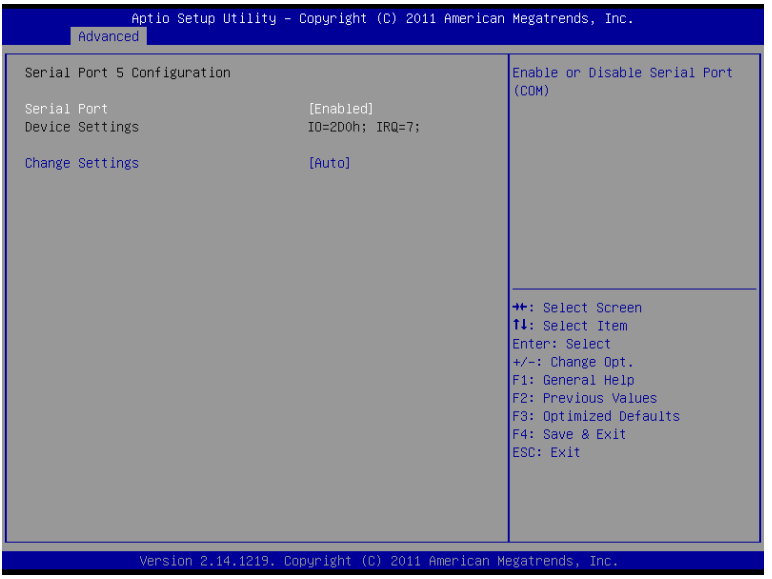
Serial Port 4 Configuration



Options Summary:

Serial Port	Disabled	
	Enabled	Default
Enable or Disable Serial Port (COM)		
Change Settings	Auto	Default
	IO=2C8h; IRQ=7;	
	IO=2C0h; IRQ=7;	
	IO=2C8h; IRQ=7;	
Select an optimal setting for Super IO device.		

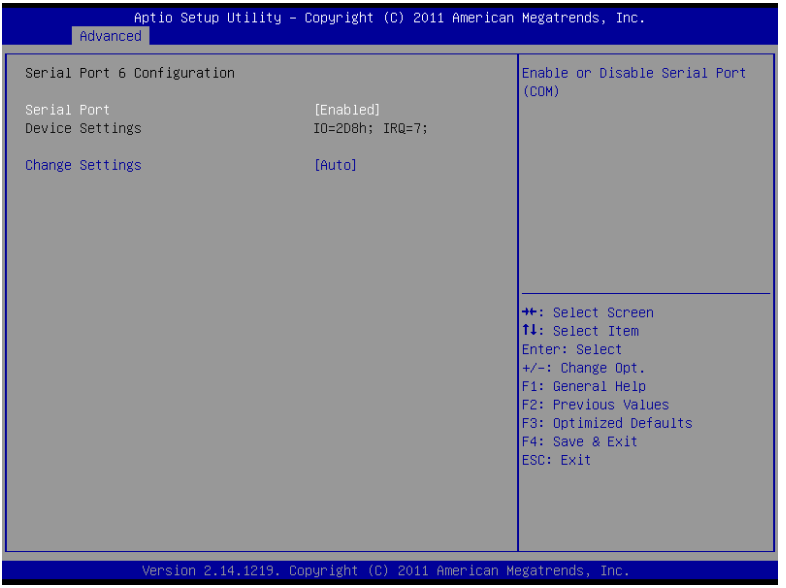
Serial Port 5 Configuration



Options Summary :

Serial Port	Disabled	
	Enabled	Default
Enable or Disable Serial Port (COM)		
Change Settings	Auto	Default
	IO=2D0h; IRQ=7;	
	IO=2D0h; IRQ=7;	
	IO=2D8h; IRQ=7;	
Select an optimal setting for Super IO device.		

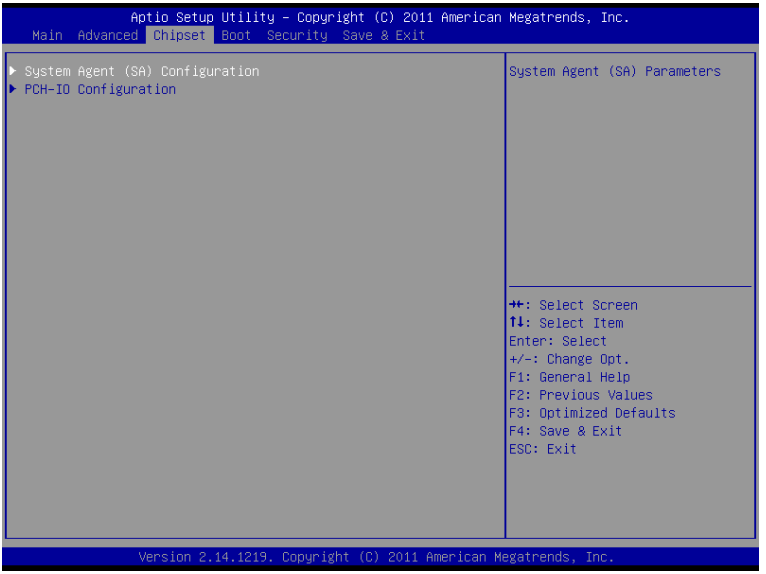
Serial Port 6 Configuration



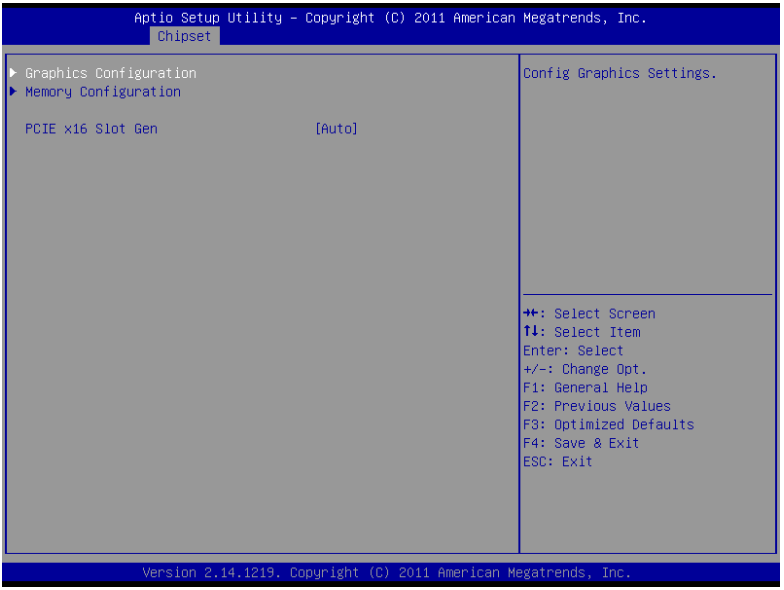
Options Summary :

Serial Port	Disabled	
	Enabled	Default
Enable or Disable Serial Port (COM)		
Change Settings	Auto	Default
	IO=2D8h; IRQ=7;	
	IO=2D0h; IRQ=7;	
	IO=2D8h; IRQ=7;	
Select an optimal setting for Super IO device.		

Setup submenu: Chipset



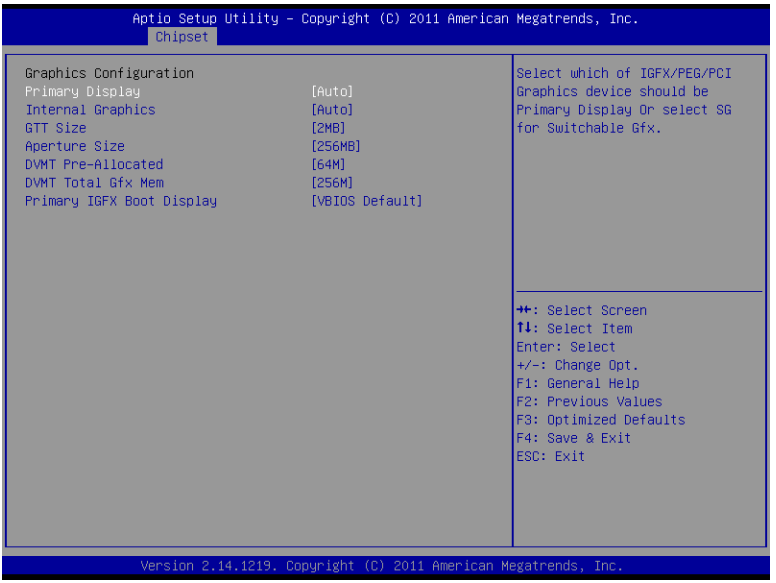
System Agent (SA) Configuration



Options Summary :

Graphics Configuration	Config Graphics Settings.	
Memory Configuration	Config Graphics Settings.	
PCIE x16 Slot Gen	Auto	Default
	Gen1	
	Gen2	
	Gen3	
Configure PEG0 B0:D1:F0 Gen1–Gen3		

Graphics Configuration

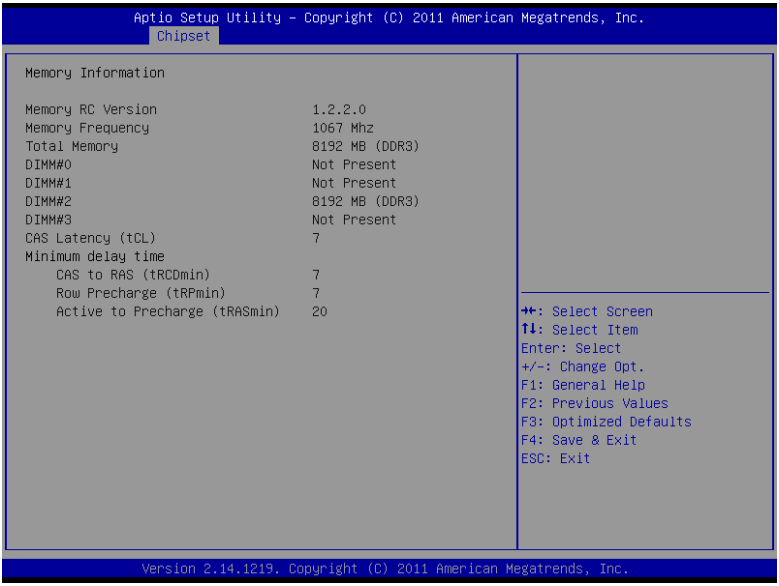


Options Summary :

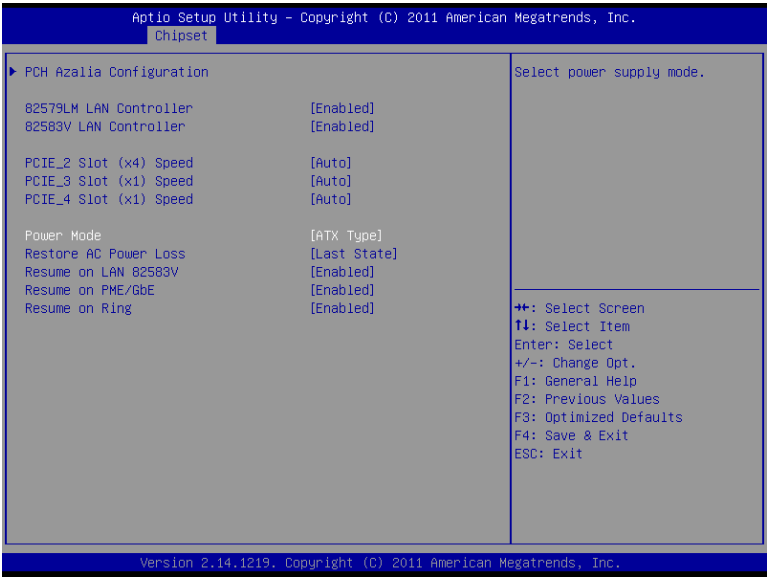
Primary Display	Auto	Default
	IGFX	
	PEG	
	PCI	
Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.		
Internal Gfx	Auto	
	Disabled	
	Enabled	
Keep IGD enabled based on the setup options		
GTT Size	1MB	
	2MB	
Select the GTT Size		
Aperture Size	128MB	
	256MB	
	512MB	
Select the Aperture Size		
DVMT Pre-Allocated	32M	
	64M	Default
	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.		
DVMT Total Gfx Mem	128M	
	256M	Default
	MAX	
Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.		
Primary IGFX Boot Display	VBIOS Default	Default
	CRT	
	HDMI SKU or Display Port SKU	
	Display Port	
	DVI	
Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display		

Memory Configuration



PCH-IO Configuration

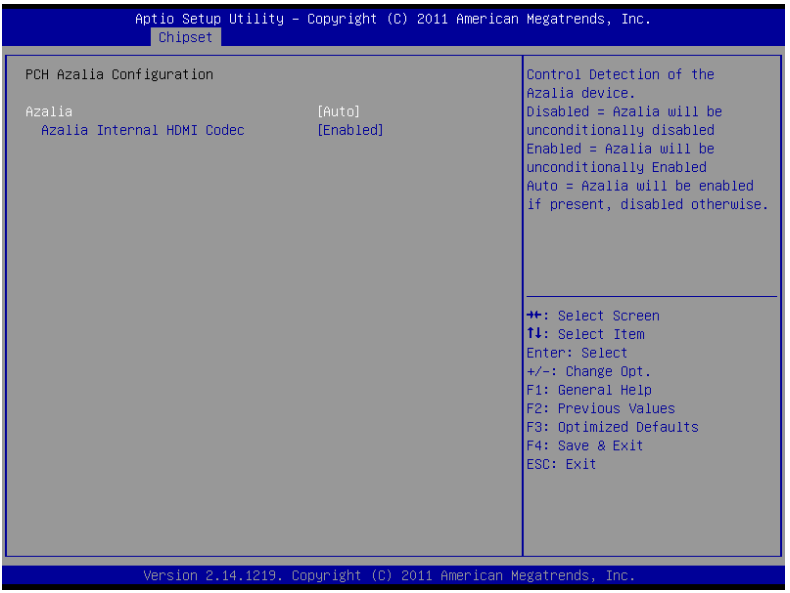


Options Summary :

82579LM LAN Controller	Enabled	Default
	Disabled	
Enable or disable onboard NIC.		
82583V LAN Controller	Disabled	
	Enabled	Default
Control the PCI Express Root Port.		
PCIE_2 Slot (x4) Speed	Auto	Default
	Gen1	
	Gen2	
Select PCI Express port speed.		
PCIE_3 Slot (x1) Speed	Auto	Default
	Gen1	
	Gen2	
Select PCI Express port speed.		
PCIE_4 Slot (x1) Speed	Auto	Default
	Gen1	
	Gen2	
Select PCI Express port speed.		
Power Mode	ATX Type	Default
	AT Type	

Select power supply mode.		
Restore AC Power Loss	Always OFF	
	Always ON	
	Last State	Default
Select AC power state when power is re-applied after a power failure.		
Resume on LAN 82583V	Disabled	
	Enabled	Default
Resume on PME/GbE	Disabled	
	Enabled	Default
Resume on Ring	Disabled	
	Enabled	Default

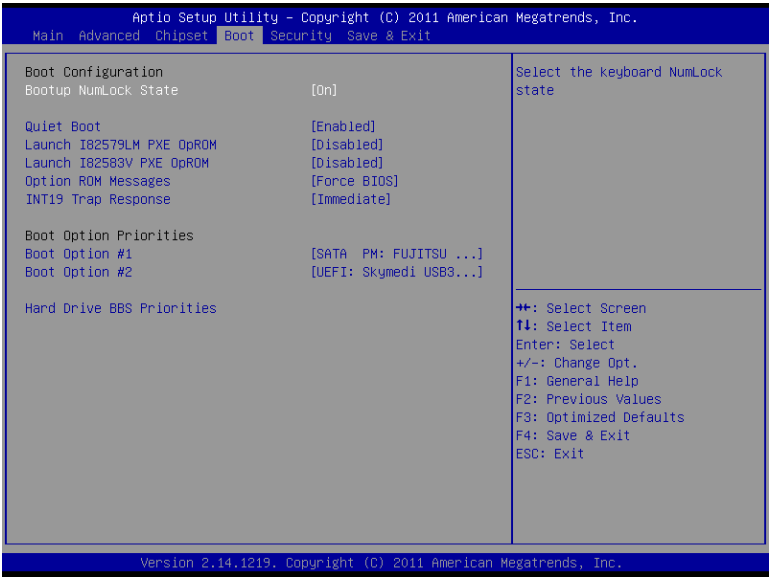
PCH Azalia Configuration



Options Summary :

Azalia	Disabled	
	Enabled	
	Auto	
Control Detection of the Azalia device. Disabled = Azalia will be unconditionally disabled Enabled = Azalia will be unconditionally Enabled Auto = Azalia will be enabled if present, disabled otherwise.		
Azalia Internal HDMI Codec	Disabled	
	Enabled	
Enable or disable internal HDMI codec for Azalia.		

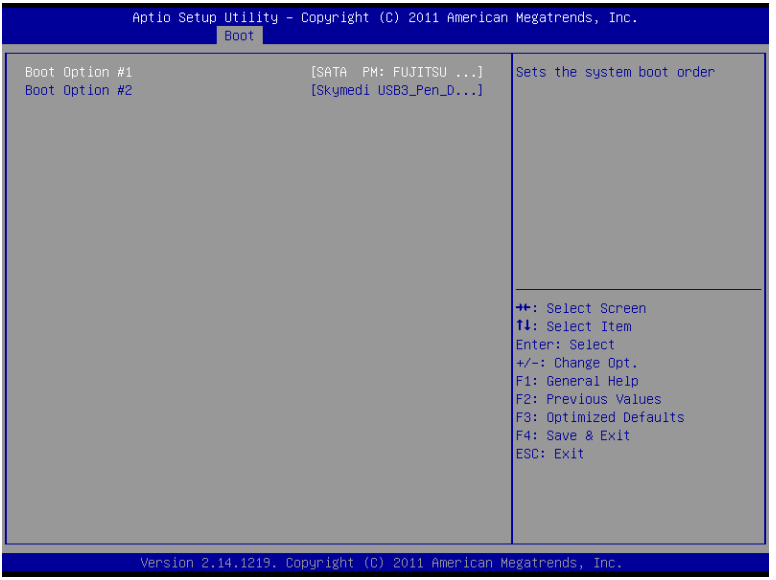
Setup submenu: Boot



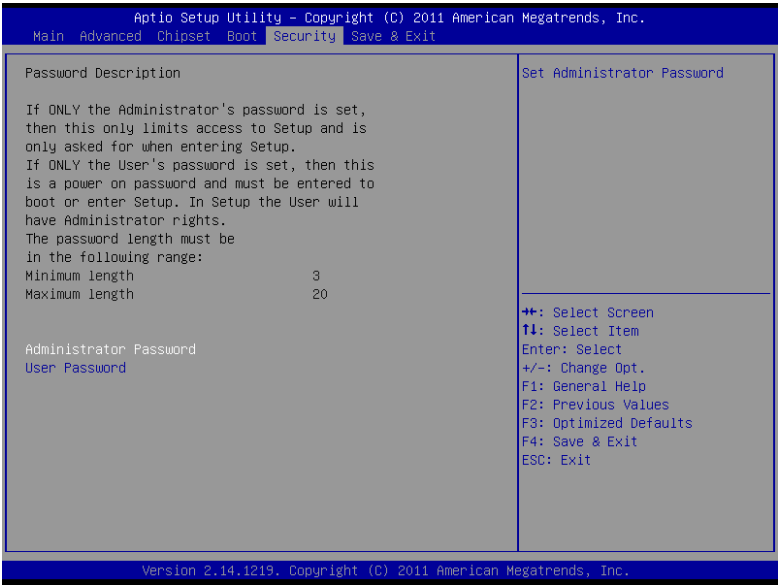
Options Summary :

Bootup NumLock State	On	Default
	Off	
Select the keyboard NumLock state		
Quiet Boot	Disabled	
	Enabled	Default
Enables or disables Quiet Boot option		
Launch I82579LM PXE OpROM	Disabled	Default
	Enabled	
Enable or Disable Legacy Boot Option for I82579LM.		
Launch I82583V PXE OpROM	Disabled	Default
	Enabled	
Enable or Disable Legacy Boot Option for RTL8111E		
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.		
Boot Option #	Your Boot Device(s)	
Sets the system boot order		

Hard Drives BBS Priorities



Submenu: Security



Change User/Supervisor Password

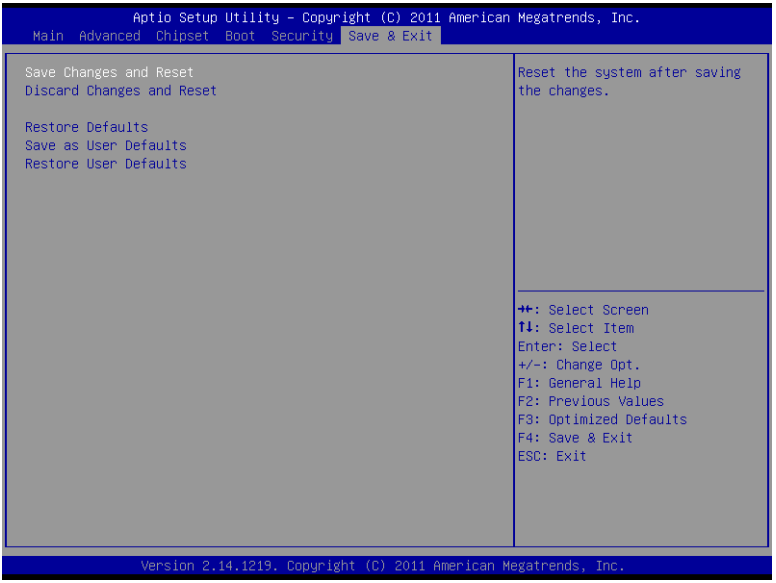
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

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 IMBA-Q77 comes with a DVD-ROM that contains all drivers your need.

Follow the sequence below to install the drivers:

Step 1 – Install Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install AUDIO Driver

Step 5 – Install USB3.0 Driver

Step 6 – Install RAID & AHCI Driver

Step 7 – Install ME Driver

Step 8 – Install TPM Driver

Step 9 – Install UART Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the IMBA-Q77 DVD-ROM into the DVD-ROM Drive. And install the drivers from Step 1 to Step 9 in order.

Step 1 – Install Chipset Driver

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

Step 2 – Install VGA Driver

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

Step 3 – Install LAN Driver

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

Step 4 – Install AUDIO Driver

1. Click on the ***STEP4-Audio*** folder and select the OS your system is

2. Double click on ***.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Step 5 – Install USB3.0 Driver

1. Click on the ***STEP5-USB3.0*** folder and double click on ***Setup.exe*** file
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

Note: USB3.0 only supports the OS of Windows 7 and above.

Step 6 – Install RAID & AHCI Driver

Please refer to Appendix D RAID & AHCI Settings

Step 7 – Install ME Driver

1. Click on the ***STEP7-ME*** folder and double click on ***setup.exe*** file
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

Step 8 – Install TPM Driver

1. Click on the ***STEP8-TPM*** folder and double click on ***Setup.exe*** file
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

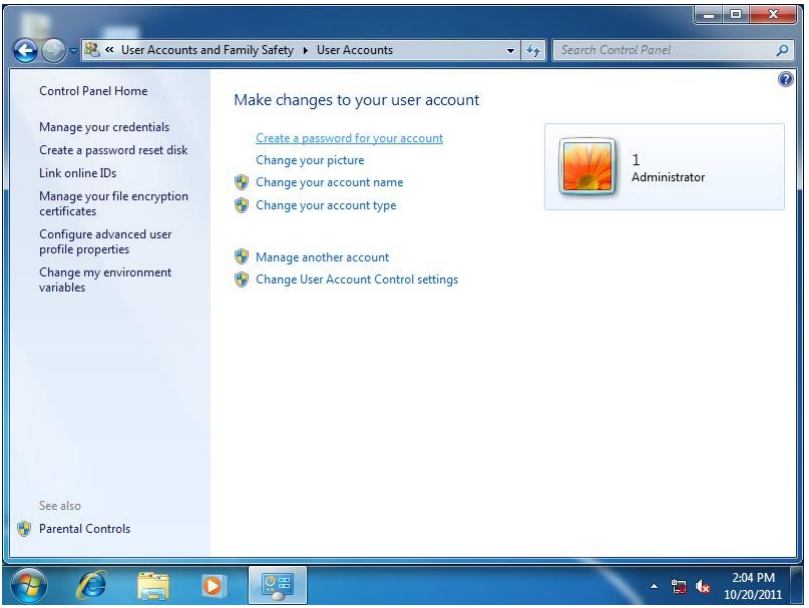
Step 9 – Install UART Driver

For Windows® XP

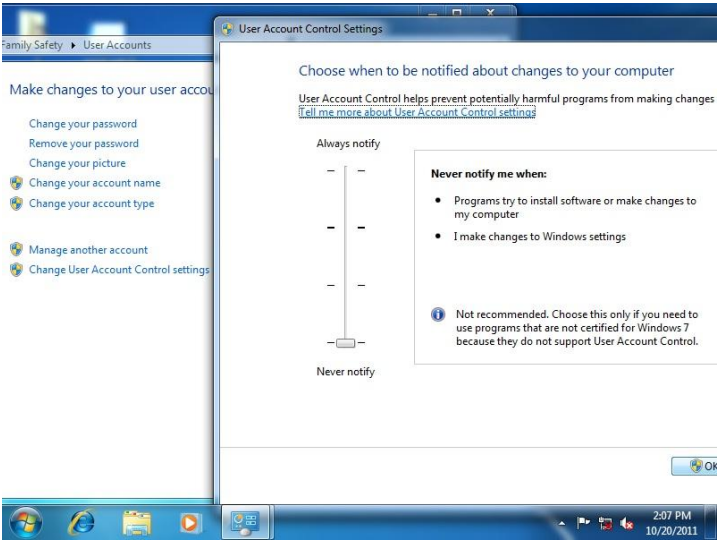
1. Click on the ***STEP9-UART*** folder and double click on ***patch.bat*** file
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

For Windows® 7

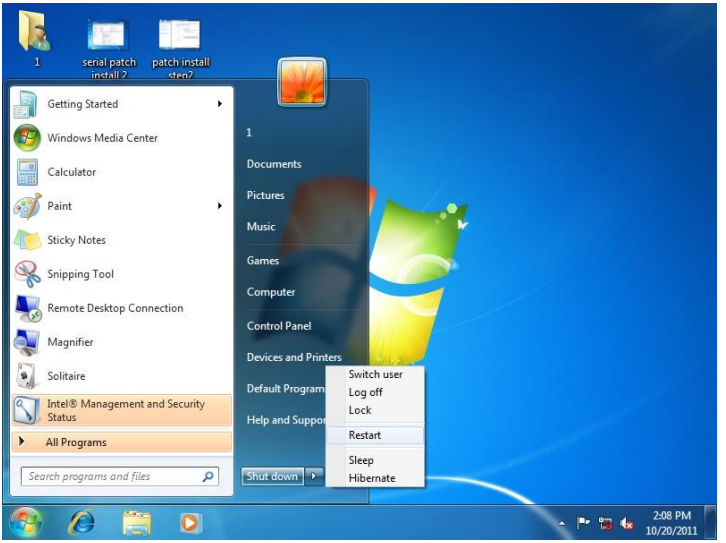
1. Create a password for Administrator account



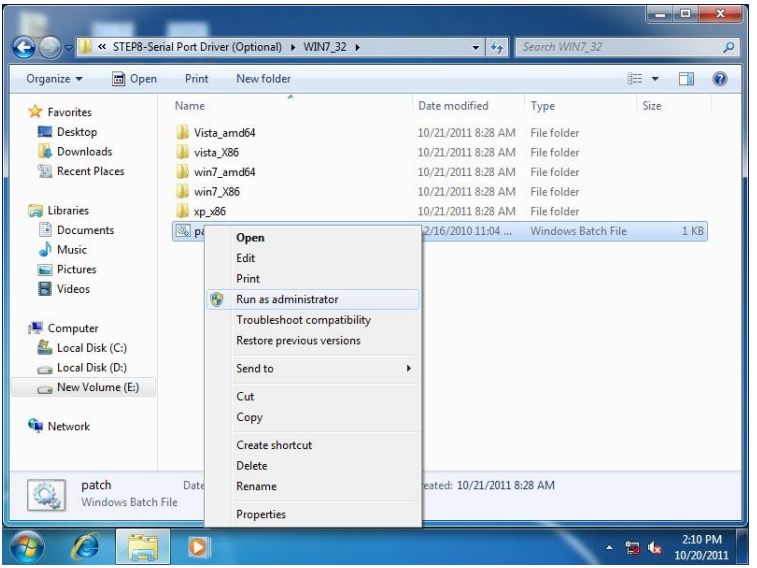
2. Change User Account Control Settings to [Never notify]

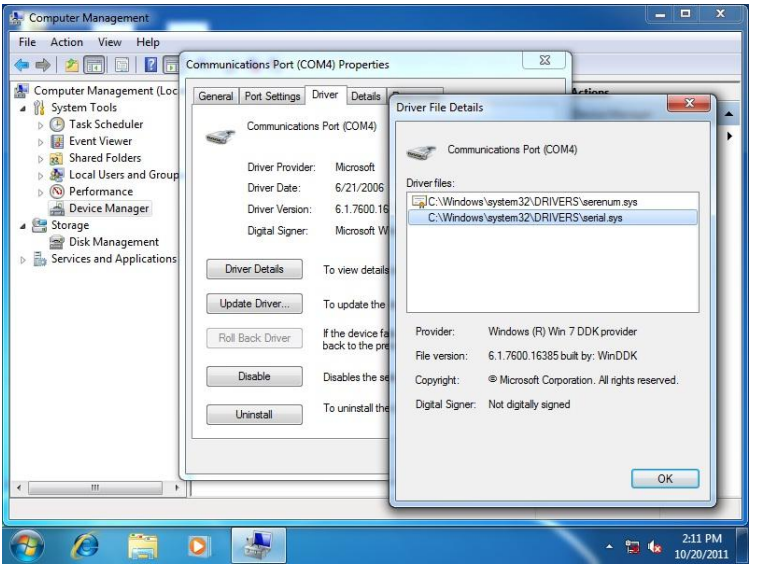


3. Reboot and Administrator login



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





Appendix

A

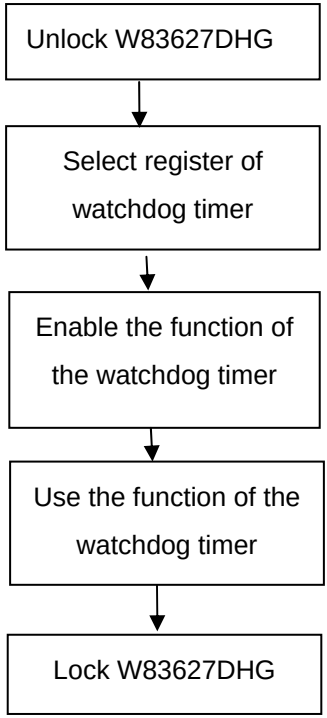
Programming the Watchdog Timer

A.1 Programming

IMBA-Q77 utilizes W83627DHG chipset as its watchdog timer controller.

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

Configuring Sequence Description



There are three steps to complete the configuration setup:

(1) Enter the W83627DHG config Mode

(2) Modify the data of configuration registers

(3) Exit the W83627DHG config Mode. Undesired result may occur if the config Mode is not exited normally.

(1) Enter the W83627DHG config Mode

To enter the W83627DHG config Mode, two 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 two write operations to the Special Address port (2EH). The different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

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

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the config 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 W83627DHG config Mode

The exit key is provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
0aah:	2Eh	2Fh

CR 30h. (Default 02h)

BIT	READ/WRITE	DESCRIPTION
7~3	Reserved.	
2	R/W	0: GPIO6 is inactive. 1: GPIO6 is active.

1	R/W	0: GPIO5 is inactive. 1: GPIO5 is active.
0	R/W	0: WDTO# and PLED are inactive. 1: WDTO# and PLED are inactive.

CR F5h. (WDTO# and KBC P20 Control Mode Register; Default 00h)

BIT	READ/WRITE	DESCRIPTION
7~5	Reserved.	
4	R/W	1000 time faster in WDTO# count mode. 0: Disable. 1: Enable. (If bit-3 is Second Mode, the count mode is 1/1000 Sec.) (If bit-3 is Minute Mode, the count mode is 1/1000 Min.)
3	R/W	Select WDTO# count mode. 0: Second Mode. 1: Minute Mode.
2	R/W	Enable the rising edge of KBC reset (P20) to issue time-out event. 0: Disable. 1: Enable.
1	R/W	Disable/ Enable the WDTO# output low pulse to the KBRST# pin (PIN60) 0: Disable. 1: Enable.
0	Reserved.	

CR F6h. (WDTO# Counter Register; Default 00h)

BIT	READ/WRITE	DESCRIPTION
7~0	R/W	Watch Dog Timer Time-out value. Writing a non-zero value to this register causes the counter to load the value to Watch Dog Counter and start counting down. If bits 7 and 6 of CR F7h are set, any Mouse Interrupt or Keyboard Interrupt event will also cause the reload of previously-loaded non-zero value to Watch Dog Counter and start counting down. Reading this resigter returns current value in Watch Dog Counter instead of Watch Dog Timer Time-out value. 00h: Time-out Disable

		01h: Time-out occurs after 1 second/minute 02h: Time-out occurs after 2 second/minutes 03h: Time-out occurs after 3 second/minutes …… FFh: Time-out occurs after 255 second/minutes

CR F7h. (WDTO# Control & Status Register; Default 00h)

BIT	READ/WRITE	DESCRIPTION
7	R/W	Mouse interrupt reset watch-dog timer enable 0: Watchdog timer is not affected by mouse interrupt. 1: Watchdog timer is reset by mouse interrupt.
6	R/W	Keyboard interrupt reset watch-dog timer enable 0: Watchdog timer is not affected by keyboard interrupt. 1: Watchdog timer is reset by keyboardd interrupt.
5	Write “1” Only	Trigger WDTO# event. This bit is self-clearing.
4	R/W Write“0”Clear	WDTO# status bit 0: Watchdog timer is running. 1: Watchdog timer issue time-out event.
3~0	R/W	These bits select IRQ resource for WDTO#. (02h for SMI# event.)

A.2 W83627DHG Watchdog Timer Initial Program

	LDN	Register	Bit	Description
WDT Timer value	0x07	0xF6	Bit [7-0]	00h: Time-out Disable 01h: Time-out occurs after 1 minute only. 02h: Time-out occurs after 2 second/minutes 03h: Time-out occurs after 3 second/minutes ……..... FFh: Time-out occurs after 255 second/minutes (The deviation is approx 1 second.)
WDT Unit	0x07	0xF5	Bit3	Select WDTO# count mode. 0: Second Mode. 1: Minute Mode.

```
*****************************************************************************
#include <stdio.h>
#include <conio.h>

#define SIOIndex    0x2E  //Modify for project support 2E/4E
#define SIOData     0x2F  //Modify for project support 2F/4F
#define void AaeonWDTConfig(void);
#define void AaeonWDTEnable(Byte Timer, boolean Unit);

void Main(){
        // Procedure : AaeonWDTConfig
        // This procudure will enable the WDT counting.
        AaeonWDTConfig (void);

        // Procedure : AaeonWDTEnable
        // (byte)Timer          : Time of WDT timer.(0x00~0xFF)
        // (boolean)Unit        : Select time unit(0: second, 1: minute).
        AaeonWDTEnable(Byte Timer, boolean Unit);
}
```

```
*************************************************************************************
// Procedure : AaeonWDTConfig
   void AaeonWDTConfig (void){
         Byte val;
         //Super I/O Entry Key
         outportb(SIOIndex,0x87);
         outportb(SIOIndex,0x87);

         //Setting WDT Pin.
         outportb(SIOIndex,0x2D);
         val = inportb((SIOData);
         outportb(SIOIndex,0x2D);
         outportb(SIOData,val & 0xFE);

         // Enable WatchDog function
         outportb(SIOIndex,0x07);
         outportb(SIOData,0x08);
         outportb(SIOIndex,0x30);
         outportb(SIOData, 0x01);
         }
   *************************************************************************************
**
```

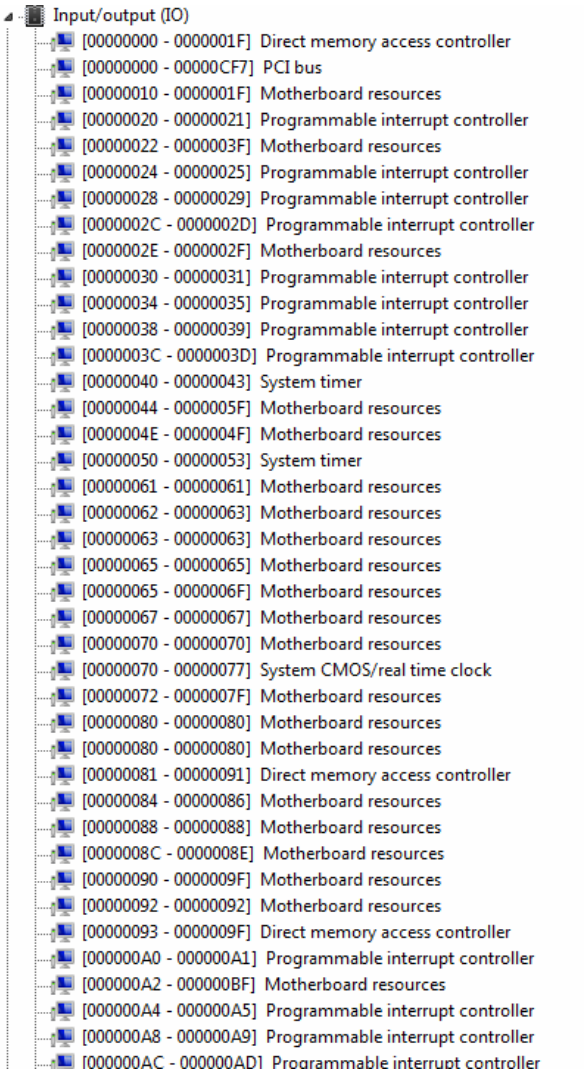
```
*************************************************************************************
// Procedure :
void AaeonWDTEnable (Byte Timer, boolean Unit){
        Byte val;

        //Super I/O Entry Key
        outportb(SIOIndex,0x87);
        outportb(SIOIndex,0x87);

        // Select Logic Device Number Register
        outportb(SIOIndex,0x07);
        outportb(SIOData,0x08);

        // Setting WDT Operation Mode
        outportb(SIOIndex,0xF5);
        val = inportb((SIOData);
        outportb(SIOIndex,0xF5);
        outportb(SIOData, val | Unit << 3 );

        // Setting WDT Counter
        outportb(SIOIndex,0xF6);
        outportb(SIOData,Timer);
        }
*************************************************************************************
```

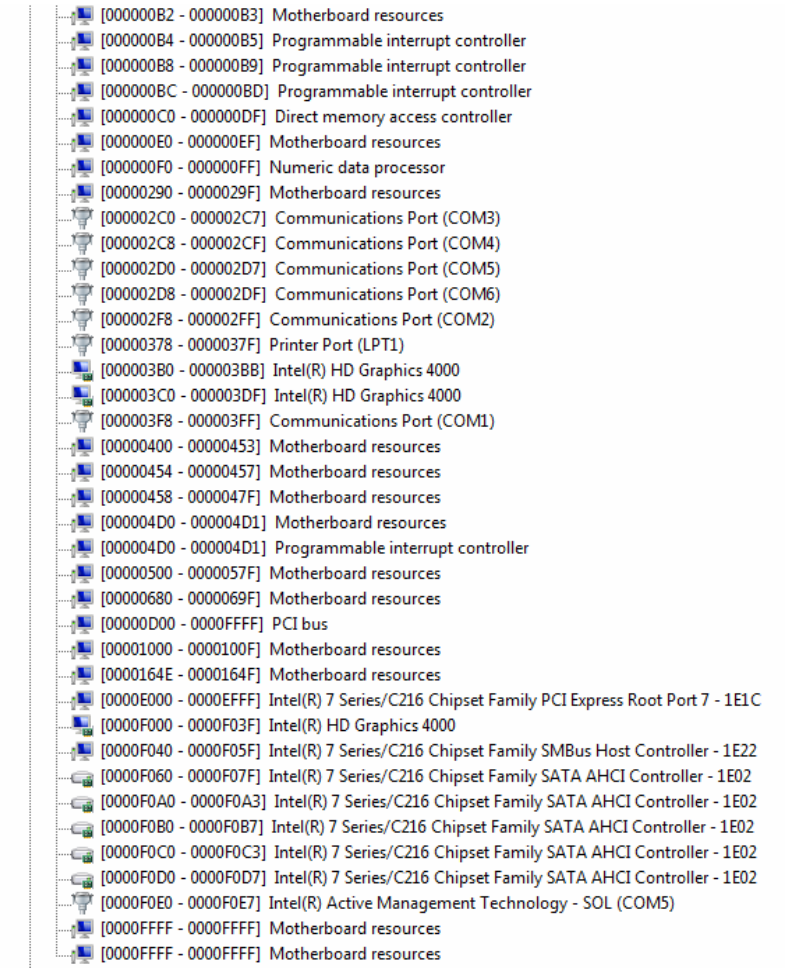
Appendix

B

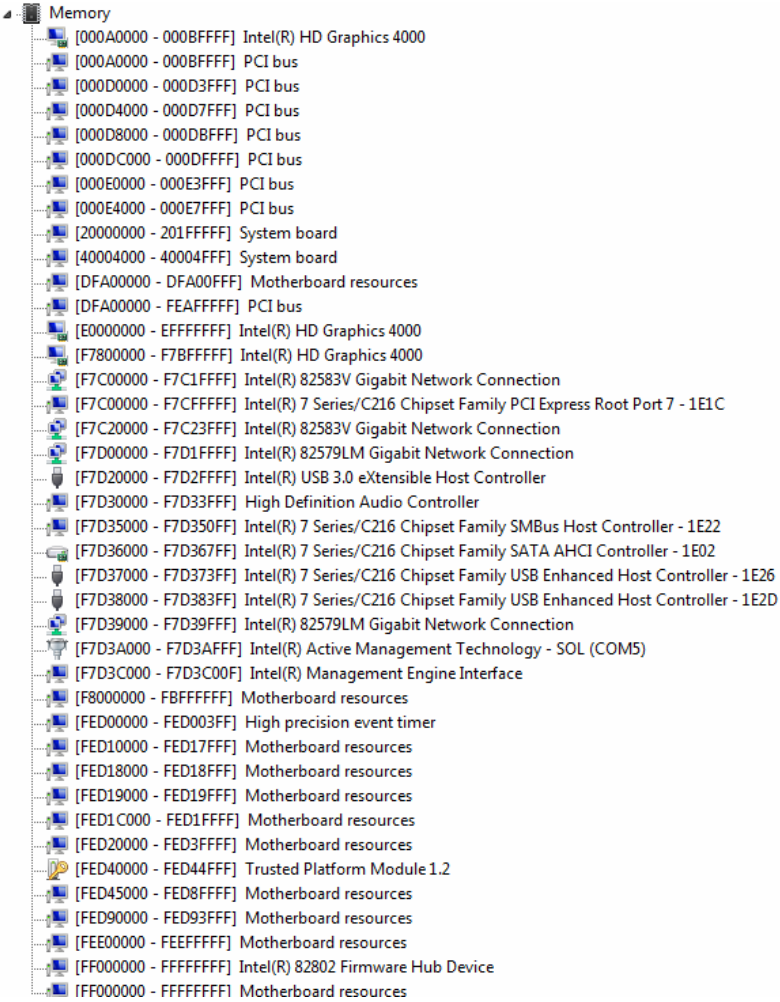
I/O Information

B.1 I/O Address Map

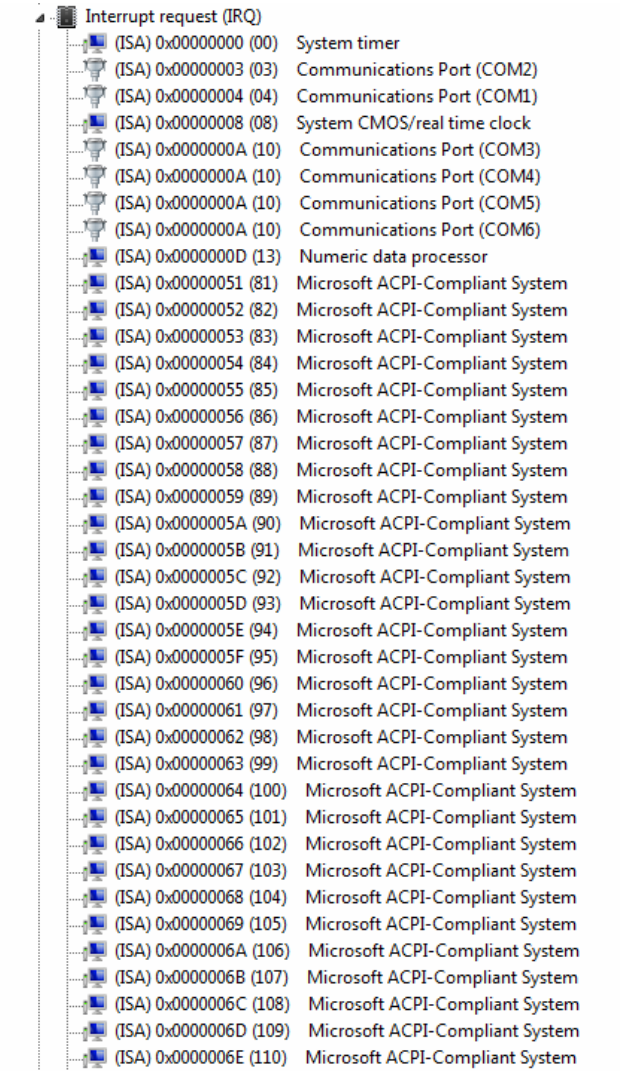



[000000B2 - 000000B3] Motherboard resources
[000000B4 - 000000B5] Programmable interrupt controller
[000000B8 - 000000B9] Programmable interrupt controller
[000000BC - 000000BD] Programmable interrupt controller
[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000FF] Numeric data processor
[00000290 - 0000029F] Motherboard resources
[000002C0 - 000002C7] Communications Port (COM3)
[000002C8 - 000002CF] Communications Port (COM4)
[000002D0 - 000002D7] Communications Port (COM5)
[000002D8 - 000002DF] Communications Port (COM6)
[000002F8 - 000002FF] Communications Port (COM2)
[00000378 - 0000037F] Printer Port (LPT1)
[000003B0 - 000003BB] Intel(R) HD Graphics 4000
[000003C0 - 000003DF] Intel(R) HD Graphics 4000
[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
[00000D00 - 0000FFFF] PCI bus
[00001000 - 0000100F] Motherboard resources
[0000164E - 0000164F] Motherboard resources
[0000E000 - 0000EFFF] Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 7 - 1E1C
[0000F000 - 0000F03F] Intel(R) HD Graphics 4000
[0000F040 - 0000F05F] Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
[0000F060 - 0000F07F] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E02
[0000F0A0 - 0000F0A3] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E02
[0000F0B0 - 0000F0B7] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E02
[0000F0C0 - 0000F0C3] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E02
[0000F0D0 - 0000F0D7] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E02
[0000F0E0 - 0000F0E7] Intel(R) Active Management Technology - SOL (COM5)
[0000FFFF - 0000FFFF] Motherboard resources
[0000FFFF - 0000FFFF] Motherboard resources

B.2 1st MB Memory Address Map

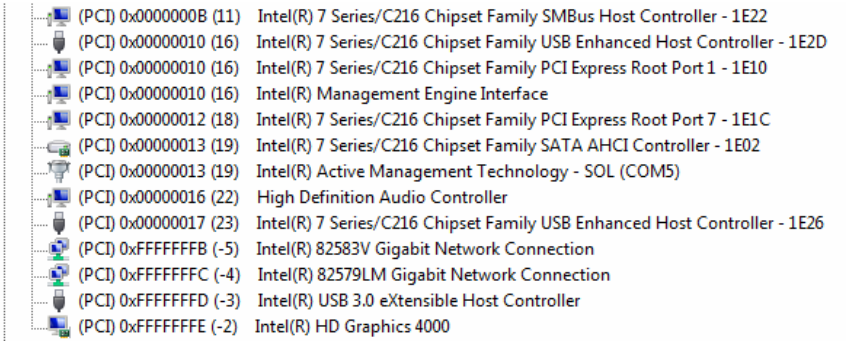


B.3 IRQ Mapping Chart

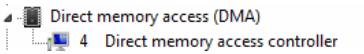


(ISA) 0x0000006F (111) Microsoft ACPI-Compliant System
(ISA) 0x00000070 (112) Microsoft ACPI-Compliant System
(ISA) 0x00000071 (113) Microsoft ACPI-Compliant System
(ISA) 0x00000072 (114) Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115) Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116) Microsoft 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
(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



B.4 DMA Channel Assignments



Appendix

C

Mating Connector

C.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
SATA1	SATA Connector	TECHBEST	161S01-029A-L	SATA Cable	1709070800
SATA2	SATA Connector	TECHBEST	161S01-029A-L	SATA Cable	1709070800
SATA3	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA4	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA5	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA6	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
LPT1	Parallel Port Connector	Catch Electronics	1147-000-26 S	LPT Cable	1701260307
FP1	Front Panel Connector	JIH VEI Electronics	21B22564-X XS10B-01G-6/3-VXX		N/A
FP2	Front Panel Connector	JIH VEI Electronics	21B22564-X XS10B-01G-6/3-VXX		N/A
USB1	USB Connector	JIH VEI Electronics	21B22564-10 S10B-01G-6/3-V10	USB Cable	1709100204
USB2	USB Connector	JIH VEI Electronics	21B22564-10 S10B-01G-6/3-V10	USB Cable	1709100204
USB3	USB Connector	JIH VEI Electronics	21B22564-10 S10B-01G-6/3-V10	USB Cable	1709100204
USB4	USB 3.0 Connector	PINREX	52X-40-20GV 52		

COM2	COM Port Connector	Catch Electronics	1147-000-10 S	Serial Port Cable	1701100305
COM3	COM Port Connector	Catch Electronics	1147-000-10 S	Serial Port Cable	1701100305
COM4	COM Port Connector	Catch Electronics	1147-000-10 S	Serial Port Cable	1701100305
COM5	COM Port Connector	Catch Electronics	1147-000-10 S	Serial Port Cable	1701100305
COM6	COM Port Connector	Catch Electronics	1147-000-10 S	Serial Port Cable	1701100305
IR1	IrDA Connector	JIH VEI Electronics	21B12050-X XS10B-01G-4/2.8		N/A
DIO1	DIO Port Connector	Catch Electronics	1147-000-10 S		N/A
ATX1	ATX 4PIN Connector	Catch Electronics	1121-700-04 S		N/A
ATX2	ATX 24PIN Connector	Catch Electronics	1121-700-24 S		N/A
CPU_FAN	FAN Connector	Catch Electronics	1190-700-042		N/A
SYS_FAN1	FAN Connector	Catch Electronics	1190-700-042		N/A
SYS_FAN2	FAN Connector	Catch Electronics	1190-700-042		N/A
PCIE_1	PCIE X 16 Connector	TECHBEST	WPCS-164A N1B22UWL		N/A
PCIE_2	PCIE X 4 Connector	FOXCONN	2EG03217-D 2D-DF		N/A
PCIE_3	PCIE X 1 Connector	FOXCONN	2EG01817-D 2D-DF		N/A
PCIE_4	PCIE X 1 Connector	FOXCONN	2EG01817-D 2D-DF		N/A
DIMM1	DDR3 204PIN SKT	KORTAK	AR240H-101 B-A0H		N/A

DIMM2	DDR3 204PIN SKT	KORTAK	AR240H-031 B-A0H		N/A
DIMM3	DDR3 204PIN SKT	KORTAK	AR240H-101 B-A0H		N/A
DIMM4	DDR3 204PIN SKT	KORTAK	AR240H-031 B-A0H		N/A
PCI1	PCI Connector	FOXCONN	EH06001-HH W-DF		N/A
PCI2	PCI Connector	FOXCONN	EH06001-HH W-DF		N/A
PCI3	PCI Connector	FOXCONN	EH06001-HH W-DF		N/A
KBMS1	Keyboard & Mouse	FOXCONN	MH11061-P3 6-4F		N/A
DVI/COM1	COM1+DVI	TechBast	D205D1B010 12PN		N/A
DP1	DisplayPort	FOXCONN	3VD21203-H 7U0-4H		N/A
DP2	DisplayPort	KORTAK	9S020F-03A S-00H		N/A
HDMI1	HDMI	LOTES	GSP-ABA-H DM-013-K09		N/A
USB_LAN1	Dual USB & LAN	FOXCONN	JFM38U1B-2 1U5-4F		N/A
USB_LAN2	Dual USB 3.0 & LAN	UDE	05-000939M 23-1		N/A
AUDIO1	AUDIO Connector	FOXCONN	JA33331-211 9-4F		N/A

Appendix

D

RAID & AHCI Settings

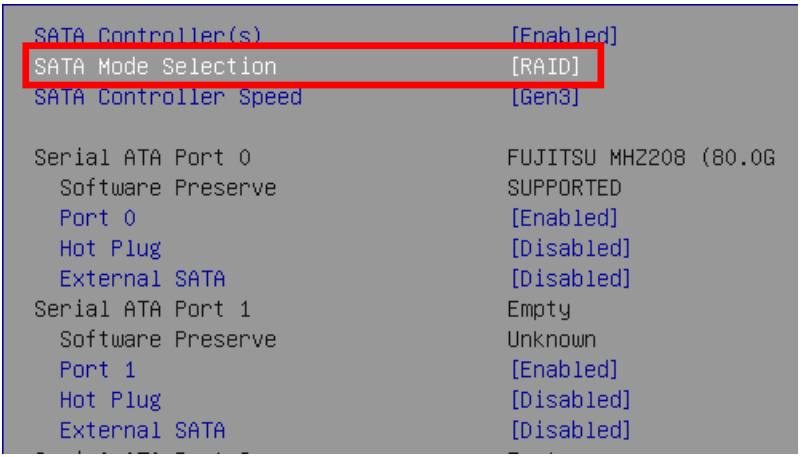
D.1 Setting RAID

OS installation to setup RAID Mode

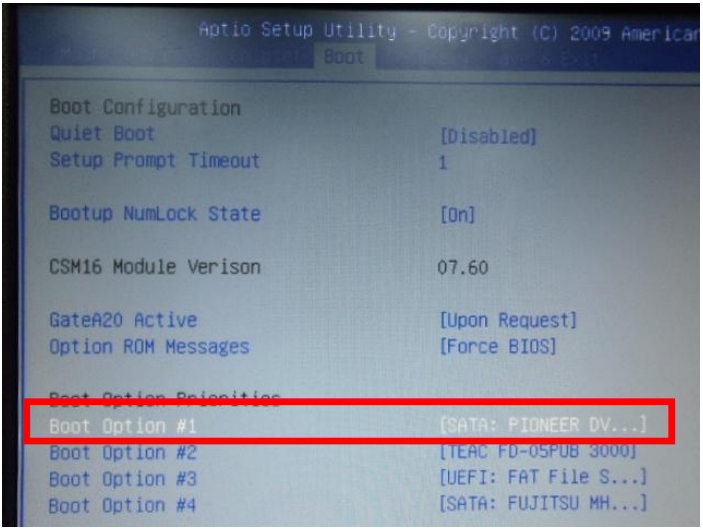
Step 1: Copy the files below from "***Driver CD ->Step 6 - RAID&AHCI"*** to Disk

Step 2: Connect the USB Floppy (disk with RAID files) to the board

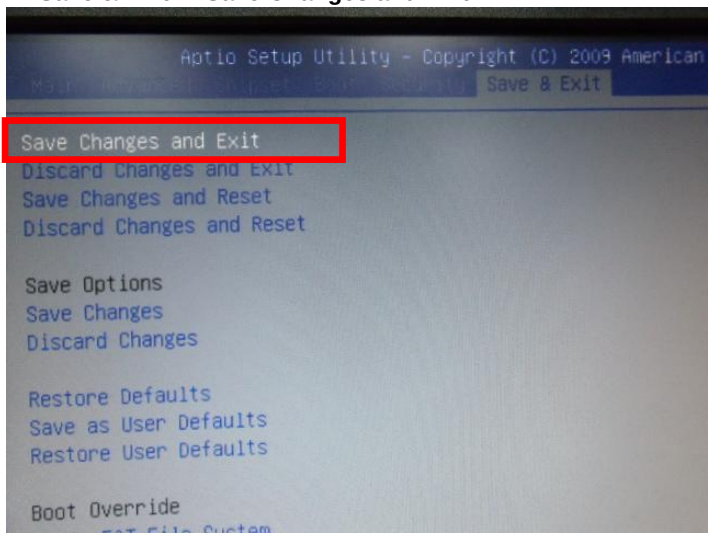
Step 3: The setting procedures " **In BIOS Setup Menu**"
A: Advanced -> SATA Configuration -> SATA Mode Selection -> RAID Mode



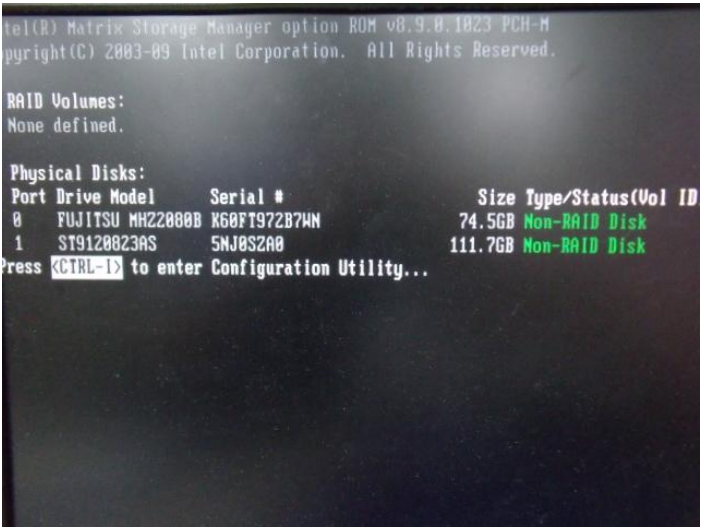
Step 4: The setting procedures "**In BIOS Setup Menu"**
C: Boot -> Boot Option #1 -> DVD-ROM Type



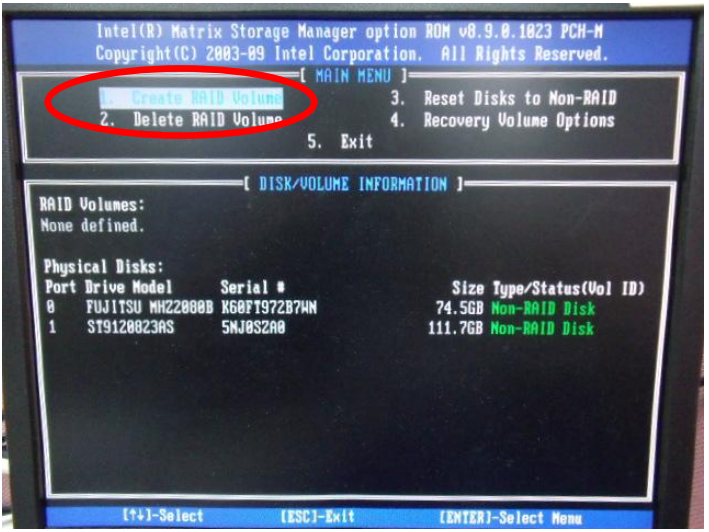
Step 5: The setting procedures "**In BIOS Setup Menu"**
D: Save & Exit -> Save Changes and Exit



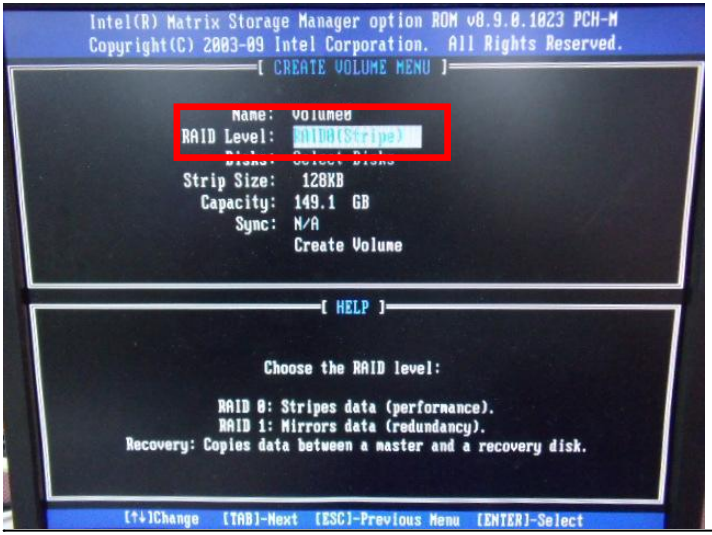
Step 6: Press **Ctrl-I** to enter **MAIN MENU**



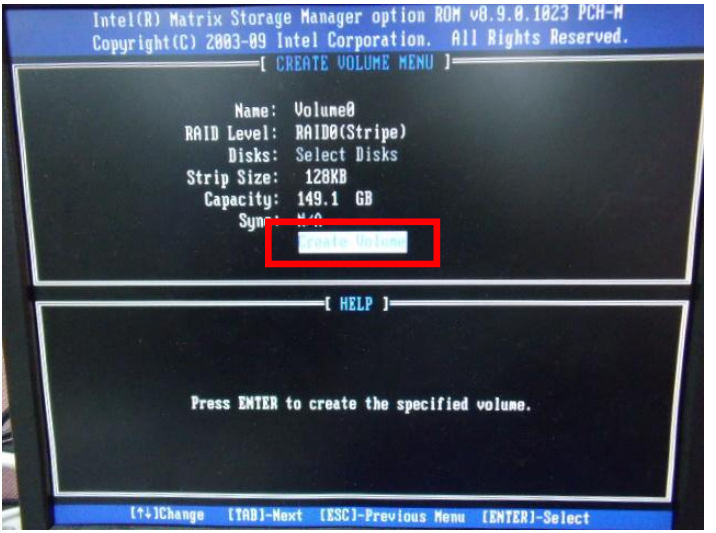
Step 8: Choose "**1.Create RAID Volume**"



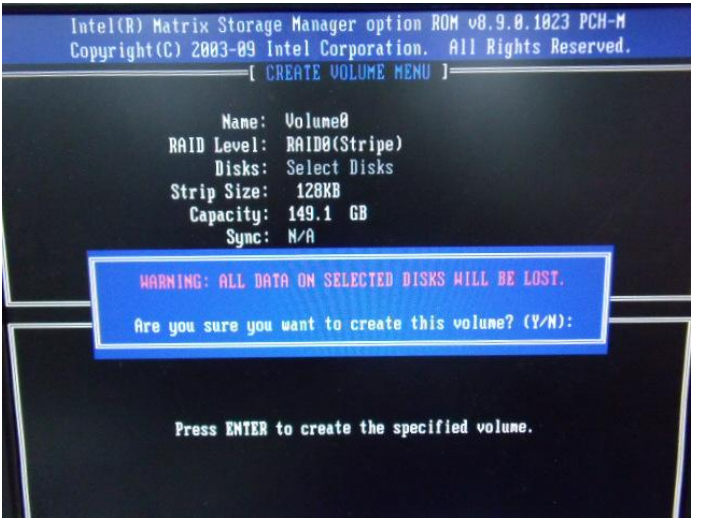
Step 9: RAID Level -> RAID0(Stripe)



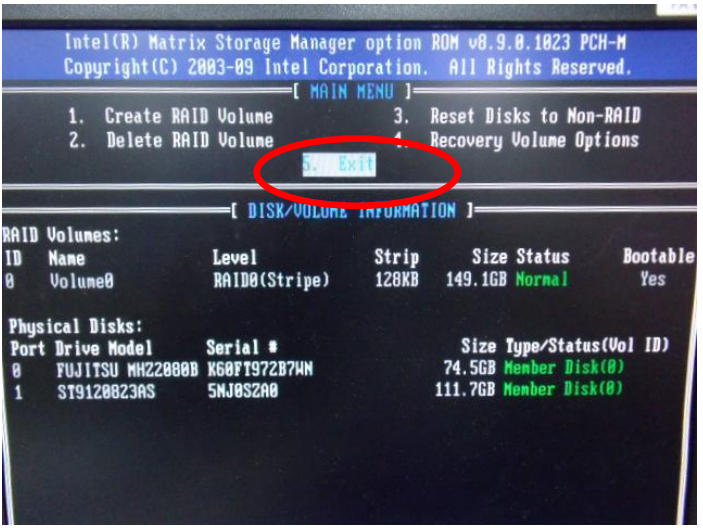
Step 10: Choose "**Create Volume**"



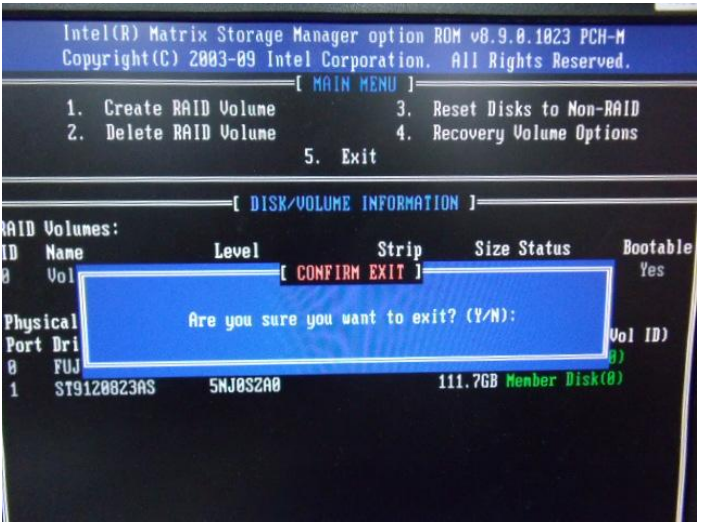
Step 11: Choose "**Y**"



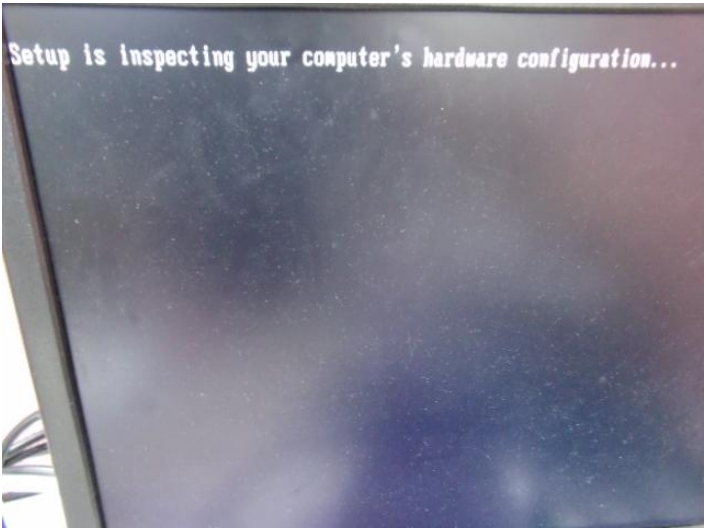
Step 12: Choose "**5. Exit**"



Step 13: Choose "**Y**"

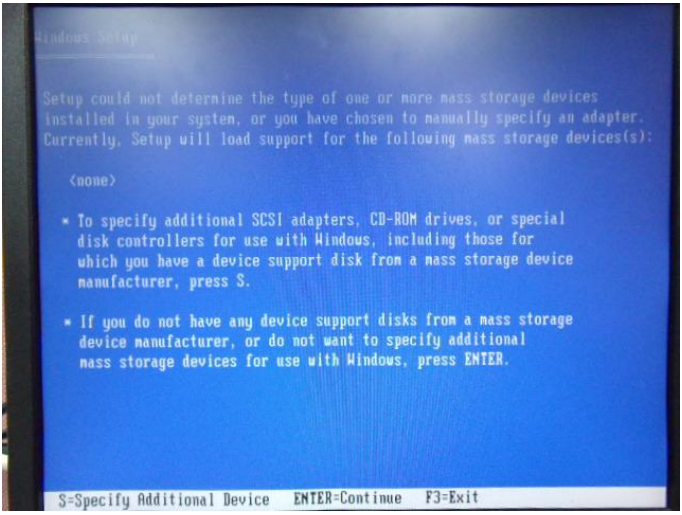


Step 14: Setup OS

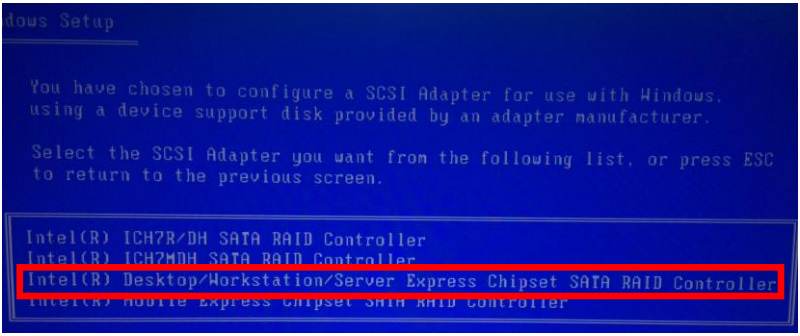


Step 15: Press "**F6**"

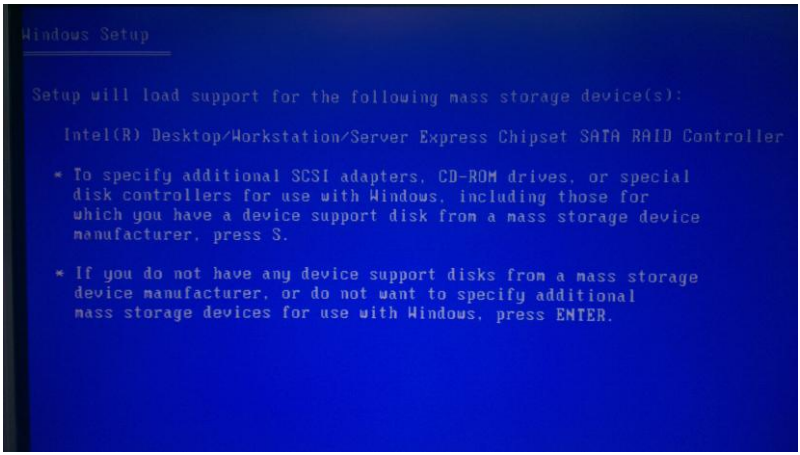
Step 16: Choose "**S**"



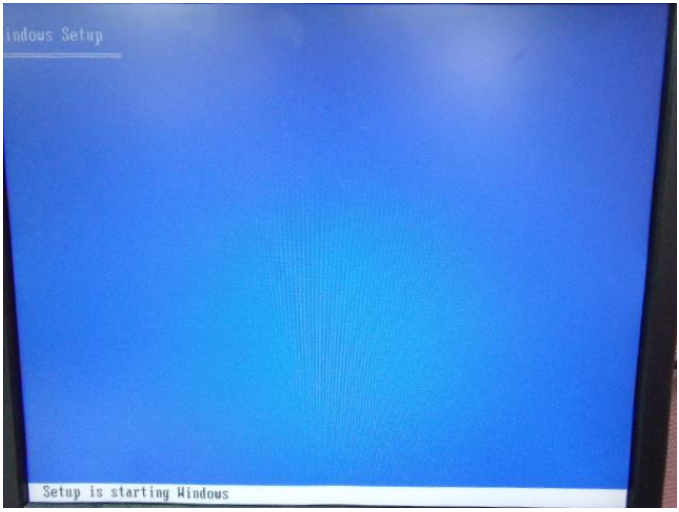
Step 17: Choose "**Intel(R) Desktop/Workstation/Server Express Chipset SATA RAID Controller"**



Step 18: It will show the model number you select and then press "**ENTER**"



Step 19: Setup is starting Windows



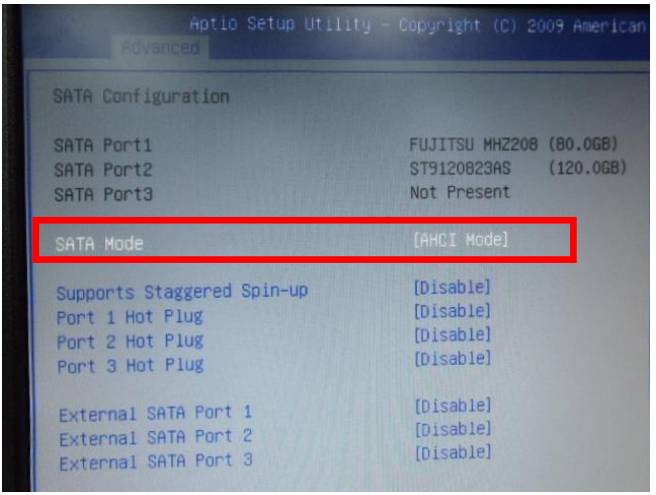
C.2 Setting AHCI

OS installation to setup AHCI Mode

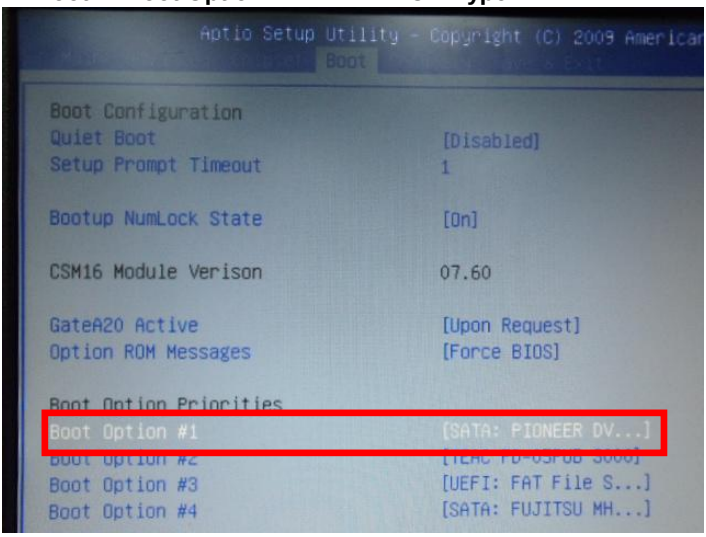
Step 1: Copy the files below from "***Driver CD ->Step 6 - RAID&AHCI"*** to Disk

Step 2: Connect the USB Floppy (disk with AHCI files) to the board

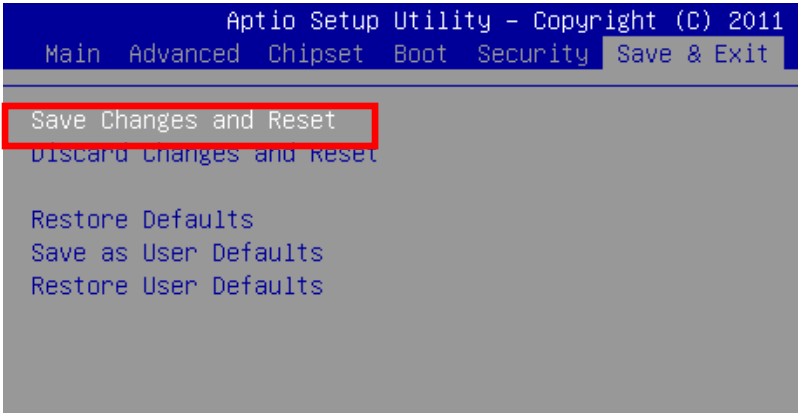
Step 3: The setting procedures " **In BIOS Setup Menu**"
A: Advanced -> SATA Configuration -> SATA Configuration -> SATA Mode -> AHCI Mode



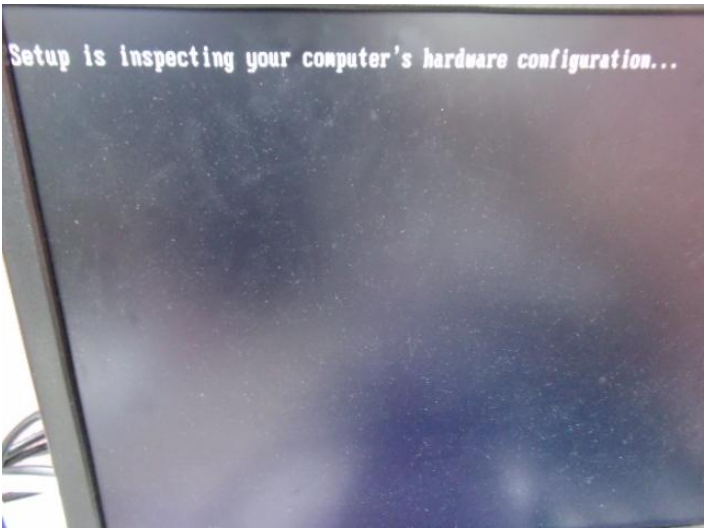
Step 4: The setting procedures "**In BIOS Setup Menu"**
B: Boot -> Boot Option #1 -> DVD-ROM Type



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

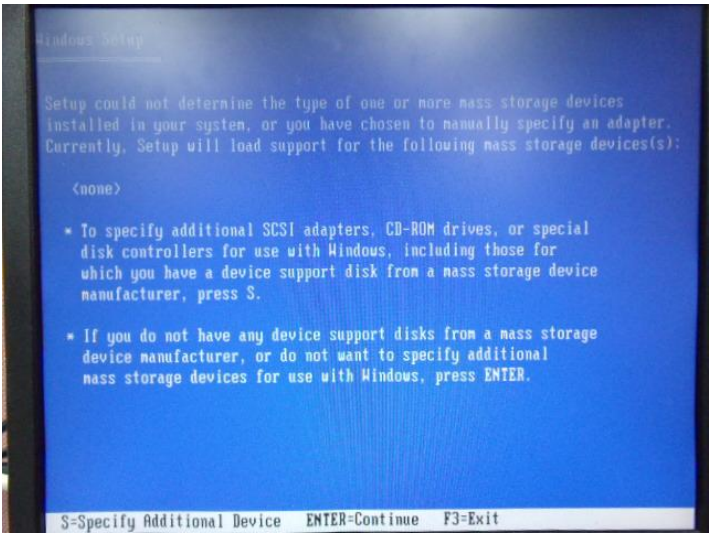


Step 6: Setup OS

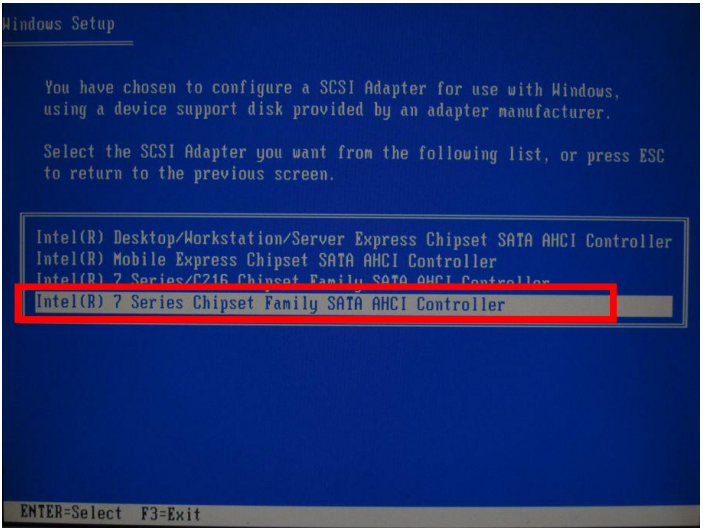


Step 7: Press "**F6**"

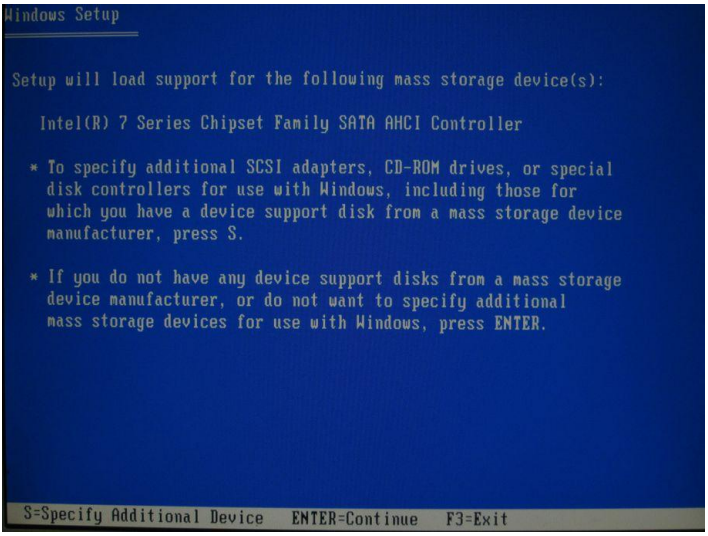
Step 8: Choose "**S**"



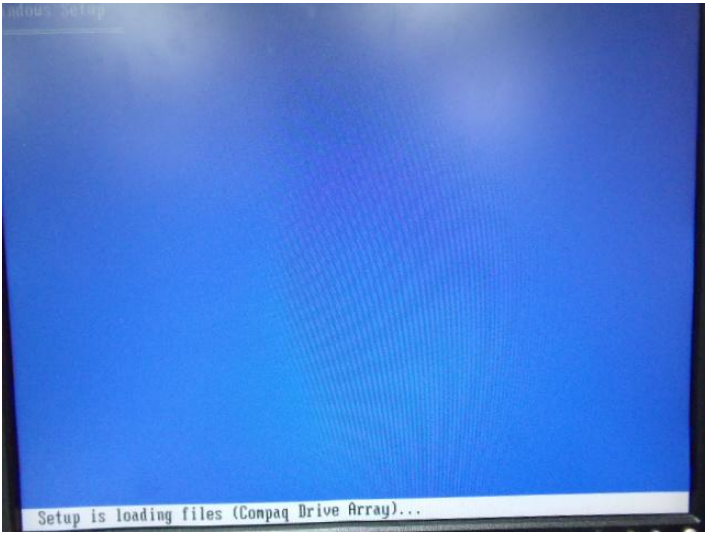
Step 9: Choose "**Intel(R) 7 Series Chipset Family SATA AHCI Controller**"



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



Step 11: Setup is loading files



Appendix

E

Digital Input & Output

E.1 DIO Programming

IMBA-Q77 utilizes W83627DHG 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)

E.2 Digital I/O Register

GPIO Device Configuration Register (LDN 0x09)

Register 0x[HEX]	Register Name
F0	DIO I/O register 0: The respective DIO PIN is programmed as an output port. 1: The respective DIO PIN is programmed as an input port.
F1	GPIO3 Data register For output ports, the respective bits can be read and written by the pins.
	For input ports , the respective bits can only be read by the pins. Write accesses are ignored.

E.3 Digital I/O Sample Program

Digital Input/Output register table

Digital Input Pin Status			
	LDN	Register	Bit
DIO-1(GPIO30)	0x09	0xF0	Bit0
DIO-2(GPIO31)	0x09	0xF0	Bit1
DIO-3(GPIO32)	0x09	0xF0	Bit2
DIO-4(GPIO33)	0x09	0xF0	Bit3
DIO-5(GPIO34)	0x09	0xF0	Bit4
DIO-6(GPIO35)	0x09	0xF0	Bit5
DIO-7(GPIO36)	0x09	0xF0	Bit6
DIO-8(GPIO37)	0x09	0xF0	Bit7

Digital Output Pin output High/Low			
	LDN	Register	Bit
DIO-1(GPIO30)	0x09	0xF1	Bit0
DIO-2(GPIO31)	0x09	0xF1	Bit1
DIO-3(GPIO32)	0x09	0xF1	Bit2
DIO-4(GPIO33)	0x09	0xF1	Bit3
DIO-5(GPIO34)	0x09	0xF1	Bit4
DIO-6(GPIO35)	0x09	0xF1	Bit5
DIO-7(GPIO36)	0x09	0xF1	Bit6
DIO-8(GPIO37)	0x09	0xF1	Bit7

```
**************************************************************************************
#include <stdio.h>
#include <conio.h>

#define SIOIndex    0x2E  //Modify for project support 2E/4E
#define SIOData     0x2F  //Modify for project support 2F/4F
#define boolean AaeonDigitalInput(int byte LDN, int byte RegNum, int byte
BitNum);
#define void AaeonDigitalOutput(int byte LDN, int byte RegNum, int byte
BitNum, boolean Status);
**************************************************************************************
Main(){
// Procedure : AaeonDigitalInput
// Input :
//   (byte)LDN :              Logic Device Number Register
//   (byte)RegNum :  0x00 ~ 0xFF
//                   SuperIO register offset that you want to access
//   (byte)BitNum : 0 ~ 7
//                   Which bit in register that you want to access
// Output :
//   (boolean)Status : When read Digital Input Status, it will return the result
                of Pin
//                     Status.

boolean Status = AaeonDigitalInput(int byte LDN, int byte RegNum, int byte
BitNum);

// Procedure : AaeonDigitalOutput
// Input :
//   (byte)LDN :          Logic Device Number Register
//   (byte)RegNum :     0x00 ~ 0xFF
//                   SuperIO register offset that you want to access
//   (byte)BitNum : 0 ~ 7
//                   Which bit in register that you want to access
//   (boolean)Status :        When write Digital Output Status, this value is
the Pin status
//                   of Digital Output that you want.
```

```
AaeonDigitalOutput(int byte LDN, int byte RegNum, int byte BitNum,
boolean Status);
}
```

```
**************************************************************************************
// Procedure : AaeonDigitalInput
boolean AaeonDigitalInput(int byte LDN, int byte RegNum, int byte
BitNum){
        int byte ByteTempValue0 = 0;

        // Enter SIO MB PnP mode
        outportb (SIOIndex, 0x87);
        outportb (SIOIndex, 0x87);

        // Select Logic Device Number Register
        outportb (SIOIndex, 0x07); // SIO LDN Register Offset = 0x07
        outportb (SIOData, LDN);

        // Select register offset, and read the register value
        outportb (SIOIndex, RegNum);
        ByteTempValue0 = inportb (SIOData);

        // Exit SIO MB PnP mode
        outportb (SIOIndex, 0xAA);

        ByteTempValue0 &= (1 << BitNum);
        if(ByteTempValue0)
        {   return 1;   }
        else
        {   return 0;   }
}
**************************************************************************************
```