IMBA-967

Intel® Core™ i3/i5/i7 Desktop Processor

Dual View VGA, DVI, HDMI

Four 240-pin DDR3 1066/1333 MHz DIMM

6 SATA 3/2, 1 PCI-Express[x16],

1 PCI-Express[x4], 1 PCI-Express[x1], 4 PCI

12 USB 2.0, 6 COM, 1 LPT

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Packing List

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

- 1   IMBA-967 ATX Main Board

- 4   SATA Signal Cable

- 1   COM Port Cable with DB-9

- 1   USB Cable

- 1   I/O Shield

- 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.

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Chapter

1

General Information

1.1 Introduction

The IMBA-967 supports Intel® Core™ i3/i5/i7 Desktop processor.
Moreover it supports DDR3 1066/1333MHz memory up to 32GB.
This model accommodates two Intel® PCI-Express Gigabit Ethernet
controllers that those are controlled by Intel® 82579LM and Intel®
82574L/82583V.   This configuration provides outstanding
computing ability, fast network connections and multi-task data
transmission.

The graphic controller is integrated on Intel® Gen 6.0 that support
dual view with VGA, DVI, and HDMI to meet the demand of the
media and high definition.   In addition, IMBA-967 deploys 12 USB
2.0, 6 COMs, two PS/2 ports, and multiple extended bus for a
flexible expansion selection.   The storage of IMBA-967 supports
four SATA 3.0 Gb/s and two SATA 6.0 Gb/s to support RAID 0, 1, 5,
10 function.

The IMBA-967 provides an ideal combination of high performance,
widely expandable interfaces and compact size that is easy to apply
for multiple applications.   The IMBA-967 will be an ideal product
for your requirement.

1.2 Features

- Intel® 4C/2C 32nm Core™ i7/i5/i3 LGA1155 CPU Integrated Graphics & Memory Controller
- Intel® Q67
- Dual-Channel DDR3 1066/1333 MHz Memory up to 32 GB
- Intel® Gigabit Ethernet x 2 Support Intel® AMT 7.0
- Intel® Integrated Graphics Engine Supports Dual View With VGA, DVI, HDMI
- SATA 3.0 Gb/s x 4 And SATA 6.0 Gb/s x 2 Support RAID 0, 1, 5, 10
- USB 2.0 x 12, COM x 6, LPT x 1, TPM 1.2 (Optional)
- PCI-Express [x16] x 1, PCI-Express [x4] x 1, PCI-Express [x1] x 1, PCI x 4
- 24-Pin ATX Power Connector x 1, 4-Pin +12V Connector x 1

1.3 Specifications

System

- Form Factor   ATX
- Processor   Intel® 4C/2C 32nm Core™ i3/i5/i7 Hi-K CPU, TDP: 4C 95W/65W, 2C 65W
- System Memory   Supports Dual Channel with 4 x 240-pin DDR3 1066/1333MHz, up to 32 GB
- Chipset   Intel® Q67
- Ethernet   Intel® PCI-Express 10/100/ 1000Base-TX, RJ-45 x 2 LAN1: Intel® 82579LM PHY(supports Intel® AMT 7.0); LAN2: Intel® 82574L/82583V
- Audio   Realtek ALC662
- BIOS   AMI BIOS 64Mb SPI Flash ROM
- I/O Chip   Winbond W83627UHG
- Storage   SATA 3.0 Gb/s x 4, SATA 6.0 Gb/s x 2, support RAID 0,1,5,10 by riser card
- DIO   Programmable 16-bit digital I/O interface (8 input/8 output)
- Watchdog Timer   Reset: 1 ~255 steps by software

programming

- TPM — Infineon SLB9635 TT 1.2 (Optional)

- H/W Status Monitor — Monitoring system temperature, voltage, and cooling fan status

- Expansion Interface — PCI-Express[x16] x 1, PCI-Express[x4] x 1, PCI-Express[x1] x 1, PCI x 4

- Power Requirement — Standard ATX 24-pin connector, 4-pin +12V connector

- Board Size (L x W) — 12" x 9.6" (305 x 244 mm)

- Gross Weight — 1.76(0.8 Kg)

- 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

- EMC — CE & FCC Class A

Display

- Chipset — Intel® Core™ i3/i5/i7 + Q67
- Graphic Engine — Intel® integrated Graphics Engine
- Resolution — Analog up to 2048x1536 @ 75 Hz; Flat panels up to 1920x1080 @ 60 Hz
- Output Interface — VGA x 1, DVI-D x 1, HDMI x 1

I/O

- Serial Port   COM x 6,

  COM1/COM2: RS-232

  COM3: RS-232/422/485

  COM4~6: RS-232 (Optional

  RS-422/485)

- Keyboard & Mouse   PS/2 with Keyboard & Mouse x 2

- Universal Serial Bus   USB 2.0 x 12 (pin header x 8,

  Type A port x 4)

- Audio   Audio Jack x 3 (Mic-in, Line-in,

  Line-out)

- Ethernet   RJ-45 x 2 (with LED)

- Parallel   LPT x 1 (onboard header)

- IrDA   Tx/Rx x 1 (onboard header)

- Display   VGA x 1, DVI-D x 1, HDMI x 1

Chapter

2

Quick Installation Guide

2.1 Safety Precautions

Warning! *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.*

Caution! *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*

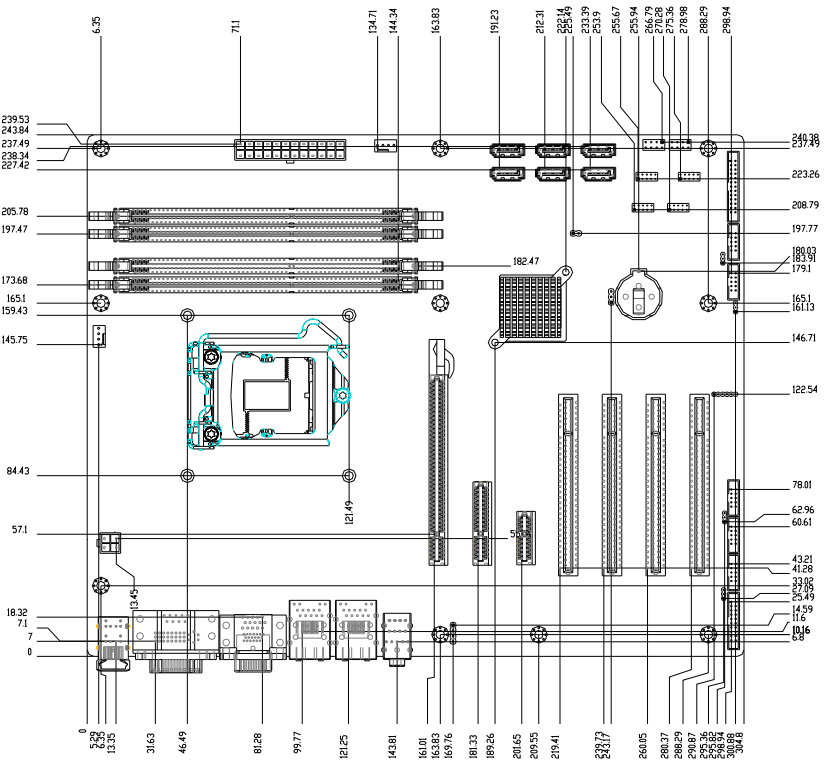## 2.2 Location of Connectors and Jumpers
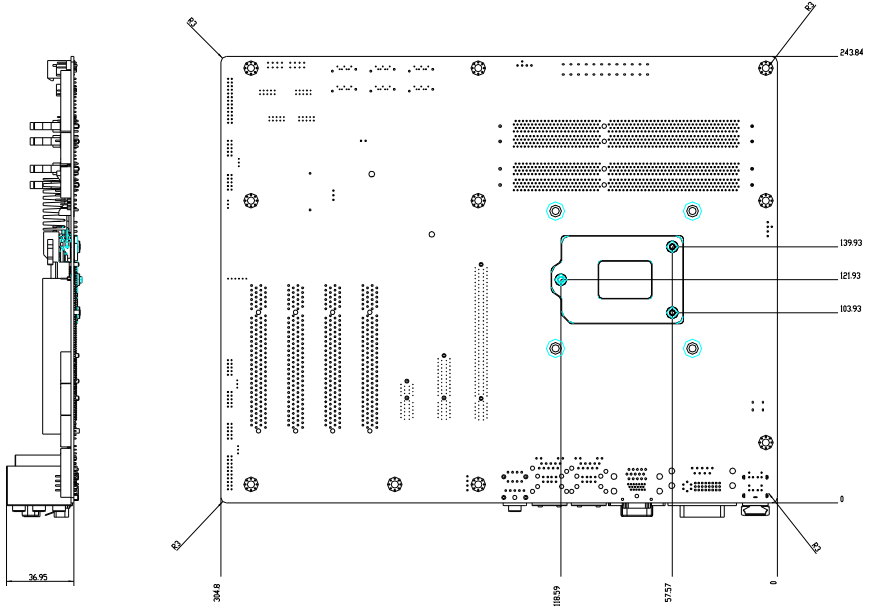
Component Side
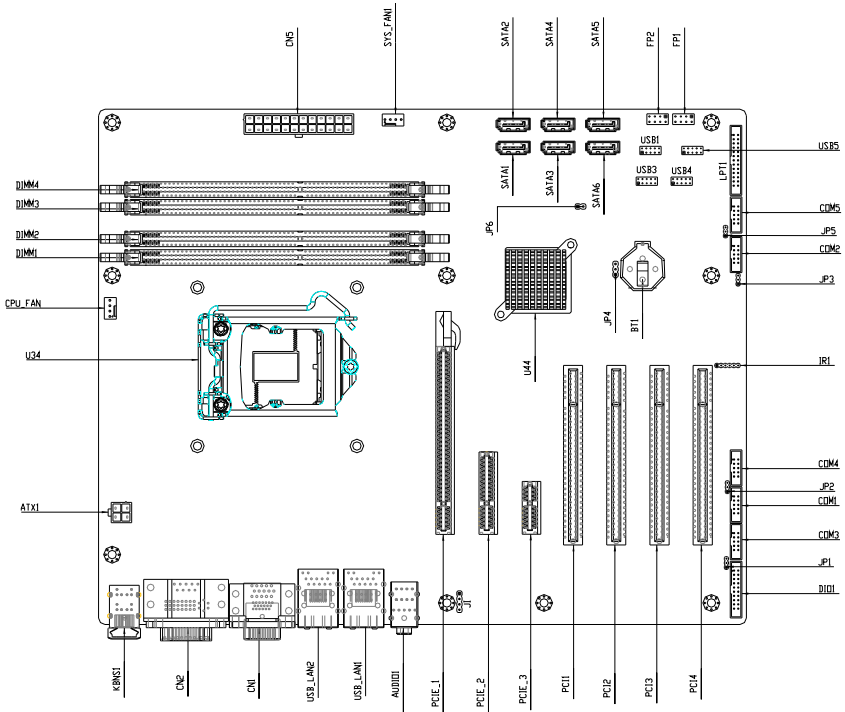
Solder Side
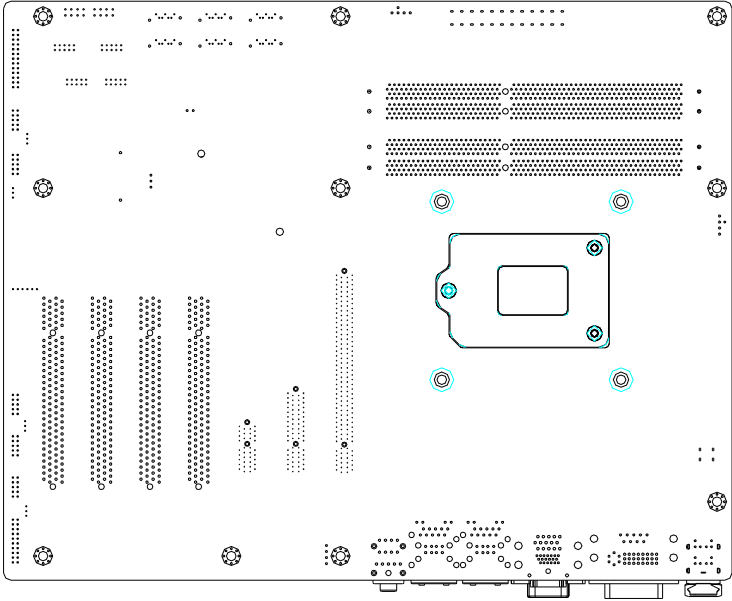
2.3 Mechanical Drawing

Component Side

Solder Side

243.84
139.93
121.93
103.93

36.95
304.8
118.59
57.57

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
JP4	Clear CMOS

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
VGA1	VGA Port Connector
COM	RS-232 Connector
COM2	RS-232 Pin Header
COM3	RS-232/422/485 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
USB3	USB Pin Header
USB4	USB Pin Header
USB5	USB Pin Header
BT1	Battery

IR1	IR Pin Header
SATA1~SATA6	SATA Connector
USB_LAN1	USB & 10/100/1000Base-TX Ethernet Connector
USB_LAN2	USB & 10/100/1000Base-TX Ethernet Connector
DIMM1	DDR3 DIMM Slot
DIMM2	DDR3 DIMM Slot
DIMM3	DDR3 DIMM Slot
DIMM4	DDR3 DIMM Slot
AUDIO1	AUDIO Connector
CPU_FAN	4-Pin Fan Connector
SYS_FAN	4-Pin Fan Connector
CN2	DVI-D / COM1
CN1	HDMI / VGA
KBMS1	PS/2 KB / MS
ATX1	4-Pin ATX 12V
CN5	ATX Connector
PCIE_1	PCIE x16 Connector
PCIE_2	PCIE x4 Connector
PCIE_3	PCIE x1 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**
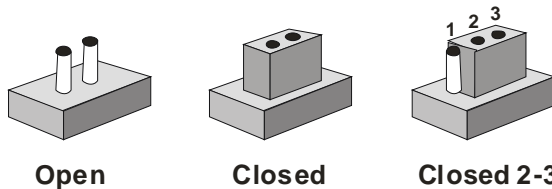
A pair of needle-nose pliers may be helpful when working with jumpers.

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 (JP4)

JP4	Function
1-2	Protected (Default)
2-3	Clear

2.8 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 (-)

2.9 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

2.10 RS-232/422/485 Serial Port Connector (COM3)

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

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

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)

The DIO Address is 0X9C.

Pin	Signal	Pin	Signal
1	DIO2_0	2	DIO2_1
3	DIO2_2	4	DIO2_3
5	DIO2_4	6	DIO2_5
7	DIO2_6	8	DIO2_7
9	+3.3V	10	GND
11	+3.3V	12	GND
13	DIO1_0	14	DIO1_1
15	DIO1_2	16	DIO1_3
17	DIO1_4	18	DIO1_5
19	DIO1_6	20	DIO1_7

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 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 IMBA-967 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.

Chapter

4

Driver Installation

The IMBA-967 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 ME Driver

　　　Step 6 – Install RAID & AHCI Driver

　　　Step 7 – Install TPM Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the IMBA-967 DVD-ROM into the DVD-ROM Drive. And install the drivers from Step 1 to Step 7 in order.

Step 1 – Install Chipset Driver

> 1. Click on the *Step1 - Chipset* folder and then double click on the *infinst_autol.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 *Step 2 - VGA* 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 *Step 3 - 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 *Step 4 - Audio* folder and select the *Win7_XP_32_64* folder

2. Double click on ***Setup.exe*** file

3. Follow the instructions that the window shows

4. The system will help you to install the driver automatically

Step 5 – Install ME Driver

1. Click on the ***Step 5 - 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 6 – Install RAID & AHCI Driver

Please refer to Appendix D RAID & AHCI Settings

Step 7 – Install TPM Driver

1. Click on the ***Step 7 - TPM DRIVER*** 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

Appendix

A

Programming the Watchdog Timer

A.1 Programming

IMBA-967 utilizes W83627UHG 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

Unlock W83627UHG

Select register of

watchdog timer

Enable the function of

the watchdog timer

Use the function of the

watchdog timer
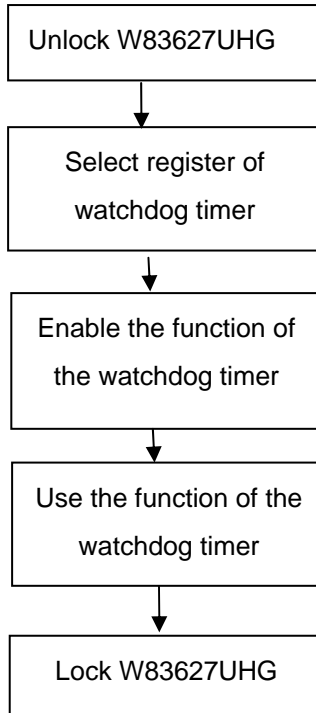
Lock W83627UHG

There are three steps to complete the configuration setup:

     (1) Enter the W83627UHG config Mode

     (2) Modify the data of configuration registers

(3) Exit the W83627UHG config Mode. Undesired result may occur if the config Mode is not exited normally.

(1) Enter the W83627UHG config Mode

To enter the W83627UHG 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 W83627UHG 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 resiger 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 W83627UHG Watchdog Timer Initial Program

Example: Setting 10 sec. as Watchdog timeout interval

```
#include <stdio.h>

#include <conio.h>


#define EFER_Port 0x2E

#define Entry_Key 0x87


void main (void)

{

// Set Entry Key

outportb(EFER_Port,Entry_Key);

outportb(EFER_Port,Entry_Key);



// Enable WatchDog function

outportb(EFER_Port,0x07);

outportb(EFER_Port+1,0x08);

outportb(EFER_Port,0x30);

outportb(EFER_Port+1,0x01);
```

```
// Set WatchDog time is 10 sec

outportb(EFER_Port,0xf6);

outportb(EFER_Port+1,0x0A);     time is 10 sec

outportb(EFER_Port,0xAA);       exit

}
```

Appendix

B

I/O Information

B.1 I/O Address Map

```
Input/output (IO)
    [00000000 - 0000000F]  Direct memory access controller
    [00000000 - 000003AF]  PCI bus
    [00000010 - 0000001F]  Motherboard resources
    [00000020 - 00000021]  Programmable interrupt controller
    [00000022 - 0000003F]  Motherboard resources
    [00000040 - 00000043]  System timer
    [00000044 - 0000005F]  Motherboard resources
    [00000060 - 00000060]  Standard PS/2 Keyboard
    [00000061 - 00000061]  System speaker
    [00000062 - 00000063]  Motherboard resources
    [00000064 - 00000064]  Standard PS/2 Keyboard
    [00000065 - 0000006F]  Motherboard resources
    [00000070 - 00000071]  System CMOS/real time clock
    [00000072 - 0000007F]  Motherboard resources
    [00000080 - 00000080]  Motherboard resources
    [00000081 - 00000083]  Direct memory access controller
    [00000084 - 00000086]  Motherboard resources
    [00000087 - 00000087]  Direct memory access controller
    [00000088 - 00000088]  Motherboard resources
    [00000089 - 0000008B]  Direct memory access controller
    [0000008C - 0000008E]  Motherboard resources
    [0000008F - 0000008F]  Direct memory access controller
    [00000090 - 0000009F]  Motherboard resources
    [000000A0 - 000000A1]  Programmable interrupt controller
    [000000A2 - 000000BF]  Motherboard resources
    [000000C0 - 000000DF]  Direct memory access controller
    [000000E0 - 000000EF]  Motherboard resources
    [000000F0 - 000000FF]  Numeric data processor
    [00000290 - 0000029F]  Motherboard resources
    [000002E0 - 000002E7]  Communications Port (COM6)
    [000002E8 - 000002EF]  Communications Port (COM4)
    [000002F0 - 000002F7]  Communications Port (COM5)
    [000002F8 - 000002FF]  Communications Port (COM2)
    [00000378 - 0000037F]  Printer Port (LPT1)
    [000003B0 - 000003BB]  Intel(R) HD Graphics Family
    [000003B0 - 000003DF]  PCI bus
    [000003C0 - 000003DF]  Intel(R) HD Graphics Family
    [000003E0 - 00000CF7]  PCI bus
```

[000003E8 - 000003EF] Communications Port (COM3)
[000003F8 - 000003FF] Communications Port (COM1)
[00000400 - 00000453] System board
[00000454 - 00000457] Motherboard resources
[00000458 - 0000047F] System board
[000004D0 - 000004D1] Motherboard resources
[00000500 - 0000057F] System board
[00000778 - 0000077F] Motherboard resources
[00000D00 - 0000FFFF] PCI bus
[00001180 - 0000119F] System board
[0000E000 - 0000EFFF] Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 7 - 1C1C
[0000F000 - 0000F03F] Intel(R) HD Graphics Family
[0000F040 - 0000F05F] Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22
[0000F080 - 0000F08F] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
[0000F090 - 0000F09F] 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 - 0000F0C3] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
[0000F0D0 - 0000F0D7] Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
[0000F0E0 - 0000F0EF] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
[0000F0F0 - 0000F0FF] 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
[0000F120 - 0000F123] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
[0000F130 - 0000F137] Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
[0000F140 - 0000F147] Intel(R) Active Management Technology - SOL (COM7)
[0000F150 - 0000F15F] Standard Dual Channel PCI IDE Controller
[0000F160 - 0000F163] Standard Dual Channel PCI IDE Controller
[0000F170 - 0000F177] Standard Dual Channel PCI IDE Controller
[0000F180 - 0000F183] Standard Dual Channel PCI IDE Controller
[0000F190 - 0000F197] Standard Dual Channel PCI IDE Controller

B.2 1st MB Memory Address Map

```
Memory
    [000A0000 - 000BFFFF]  Intel(R) HD Graphics Family
    [000A0000 - 000BFFFF]  PCI bus
    [000C0000 - 000DFFFF]  PCI bus
    [3DA00000 - FFFFFFFF]  PCI bus
    [D0000000 - DFFFFFFF]  Intel(R) HD Graphics Family
    [E0000000 - EFFFFFFF]  System board
    [FE000000 - FE3FFFFF]  Intel(R) HD Graphics Family
    [FE400000 - FE4FFFFF]  Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 7 - 1C1C
    [FE440000 - FE45FFFF]  Intel(R) Gigabit CT Desktop Adapter
    [FE460000 - FE463FFF]  Intel(R) Gigabit CT Desktop Adapter
    [FE500000 - FE51FFFF]  Intel(R) 82579LM Gigabit Network Connection
    [FE520000 - FE523FFF]  High Definition Audio Controller
    [FE524000 - FE5240FF]  Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22
    [FE525000 - FE5253FF]  Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C26
    [FE526000 - FE5263FF]  Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C2D
    [FE527000 - FE527FFF]  Intel(R) 82579LM Gigabit Network Connection
    [FE528000 - FE528FFF]  Intel(R) Active Management Technology - SOL (COM7)
    [FE529000 - FE52900F]  Intel(R) Management Engine Interface
    [FEC00000 - FECFFFFF]  System board
    [FED00000 - FED003FF]  High precision event timer
    [FED08000 - FED08FFF]  System board
    [FED10000 - FED19FFF]  System board
    [FED1C000 - FED1FFFF]  System board
    [FED20000 - FED3FFFF]  System board
    [FED40000 - FED44FFF]  Trusted Platform Module 1.2
    [FED90000 - FED93FFF]  System board
    [FEE00000 - FEE0FFFF]  System board
    [FF000000 - FFFFFFFF]  System board
```

B.3 IRQ Mapping Chart

```
▲ 🖳 Interrupt request (IRQ)
    🖳 (ISA) 0x00000000 (00)    System timer
    ⌨ (ISA) 0x00000001 (01)    Standard PS/2 Keyboard
    📟 (ISA) 0x00000003 (03)    Communications Port (COM2)
    📟 (ISA) 0x00000004 (04)    Communications Port (COM1)
    📟 (ISA) 0x00000007 (07)    Communications Port (COM3)
    📟 (ISA) 0x00000007 (07)    Communications Port (COM4)
    🖳 (ISA) 0x00000008 (08)    System CMOS/real time clock
    📟 (ISA) 0x0000000A (10)    Communications Port (COM5)
    📟 (ISA) 0x0000000B (11)    Communications Port (COM6)
    🖱 (ISA) 0x0000000C (12)    Microsoft PS/2 Mouse
    🖳 (ISA) 0x0000000D (13)    Numeric data processor
    🖳 (ISA) 0x00000051 (81)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000052 (82)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000053 (83)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000054 (84)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000055 (85)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000056 (86)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000057 (87)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000058 (88)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000059 (89)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000005A (90)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000005B (91)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000005C (92)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000005D (93)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000005E (94)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000005F (95)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000060 (96)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000061 (97)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000062 (98)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000063 (99)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000064 (100)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000065 (101)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000066 (102)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000067 (103)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000068 (104)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000069 (105)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000006A (106)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000006B (107)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000006C (108)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000006D (109)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000006E (110)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x0000006F (111)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000070 (112)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000071 (113)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000072 (114)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000073 (115)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000074 (116)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000075 (117)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000076 (118)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000077 (119)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000078 (120)    Microsoft ACPI-Compliant System
    🖳 (ISA) 0x00000079 (121)    Microsoft ACPI-Compliant System
```

(ISA) 0x0000007A (122)	Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123)	Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System
(ISA) 0x0000007D (125)	Microsoft ACPI-Compliant System
(ISA) 0x0000007E (126)	Microsoft ACPI-Compliant System
(ISA) 0x0000007F (127)	Microsoft ACPI-Compliant System
(ISA) 0x00000080 (128)	Microsoft ACPI-Compliant System
(ISA) 0x00000081 (129)	Microsoft ACPI-Compliant System
(ISA) 0x00000082 (130)	Microsoft ACPI-Compliant System
(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) 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) 0x0000000A (10)	Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22
(PCI) 0x00000010 (16)	Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C2D
(PCI) 0x00000010 (16)	Intel(R) Management Engine Interface
(PCI) 0x00000011 (17)	Intel(R) Active Management Technology - SOL (COM7)
(PCI) 0x00000012 (18)	Standard Dual Channel PCI IDE Controller
(PCI) 0x00000013 (19)	Intel(R) 6 Series/C200 Series Chipset Family 4 port Serial ATA Storage Controller - 1C00
(PCI) 0x00000013 (19)	Intel(R) 6 Series/C200 Series Chipset Family 2 port Serial ATA Storage Controller - 1C08
(PCI) 0x00000016 (22)	High Definition Audio Controller
(PCI) 0x00000017 (23)	Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C26
(PCI) 0xFFFFFFF5 (-11)	Intel(R) Gigabit CT Desktop Adapter
(PCI) 0xFFFFFFF6 (-10)	Intel(R) Gigabit CT Desktop Adapter
(PCI) 0xFFFFFFF7 (-9)	Intel(R) Gigabit CT Desktop Adapter
(PCI) 0xFFFFFFF8 (-8)	Intel(R) Gigabit CT Desktop Adapter
(PCI) 0xFFFFFFF9 (-7)	Intel(R) Gigabit CT Desktop Adapter
(PCI) 0xFFFFFFFA (-6)	Intel(R) Gigabit CT Desktop Adapter
(PCI) 0xFFFFFFFB (-5)	Intel(R) 82579LM Gigabit Network Connection
(PCI) 0xFFFFFFFC (-4)	Intel(R) HD Graphics Family
(PCI) 0xFFFFFFFD (-3)	Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 7 - 1C1C
(PCI) 0xFFFFFFFE (-2)	Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 1 - 1C10

B.4 DMA Channel Assignments

Direct memory access (DMA)
    4   Direct memory access controller

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	1147-000-26S	LPT Cable	1701260307
FP1	Front Panel Connector	JIH VEI Electronics	21B22564-XX S10B-01G-6/3 -VXX		N/A
FP2	Front Panel Connector	JIH VEI Electronics	21B22564-XX S10B-01G-6/3 -VXX		N/A
USB1	USB Connector	JIH VEI Electronics	21B22564-10 S10B-01G-6/3 -V10	USB Cable	1709100204
USB3	USB Pin Header	JIH VEI Electronics	21B22564-10 S10B-01G-6/3 -V10	USB Cable	1709100204
USB4	USB Pin Header	JIH VEI Electronics	21B22564-10 S10B-01G-6/3 -V10	USB Cable	1709100204
USB5	USB Pin Header	JIH VEI Electronics	21B22564-10 S10B-01G-6/3 -V10	USB Cable	1709100204

COM2	COM Port Connector	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305
COM3	COM Port Connector	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305
COM4	COM Port Connector	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305
COM5	COM Port Connector	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305
COM6	COM Port Connector	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305
IR1	IrDA Connector	JIH VEI Electronics	21B12050-XX S10B-01G-4/2 .8		N/A
DIO1	DIO Port Connector	Catch Electronics	1147-000-20S		N/A
CN5	ATX 24PIN Connector	Catch Electronics	1121-700-24S		N/A
ATX1	ATX 4PIN Connector	Catch Electronics	1121-700-04S		N/A
CPU_FAN	FAN Connector	Catch Electronics	1190-700-042		N/A
SYS_FAN	FAN Connector	Catch Electronics	1190-700-042		N/A
PCIE_1	PCIE X 16 Connector	TECHBEST	WPCS-164AN 1B22UWL		N/A
PCIE_2	PCIE X 4 Connector	FOXCONN	2EG03217-D2 D-DF		N/A
PCIE_3	PCIE X 1 Connector	FOXCONN	2EG01817-D2 D-DF		N/A
DIMM1	DDR3 204PIN SKT	KORTAK	AR240H-101B -A0H		N/A
DIMM2	DDR3 204PIN SKT	KORTAK	AR240H-031B -A0H		N/A
DIMM3	DDR3 204PIN SKT	KORTAK	AR240H-101B -A0H		N/A

DIMM4	DDR3 204PIN SKT	KORTAK	AR240H-031B-A0H		N/A
PCI1	PCI Connector	FOXCONN	EH06001-HHW-DF		N/A
PCI2	PCI Connector	FOXCONN	EH06001-HHW-DF		N/A
PCI3	PCI Connector	FOXCONN	EH06001-HHW-DF		N/A
PCI4	PCI Connector	FOXCONN	EH06001-HHW-DF		N/A
KBMS1	Keyboard & Mouse	FOXCONN	MH11061-P36-4F		N/A
CN1	VGA+HDMI	TechBest	D211HA3101012PN		N/A
CN2	COM1+DVI	TechBast	D205D1B01012PN		N/A
USB_LAN1	Dual USB & LAN	FOXCONN.	JFM38U1B-21U5-4F		N/A
USB_LAN2	Dual USB & LAN	FOXCONN.	JFM38U1B-21U5-4F		N/A
AUDIO1	AUDIO Connector	LOTES	ABA-JAK-028-K06		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 -> Raid Driver -> F6 Floppy -***

x86" 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 -> RAID Mode
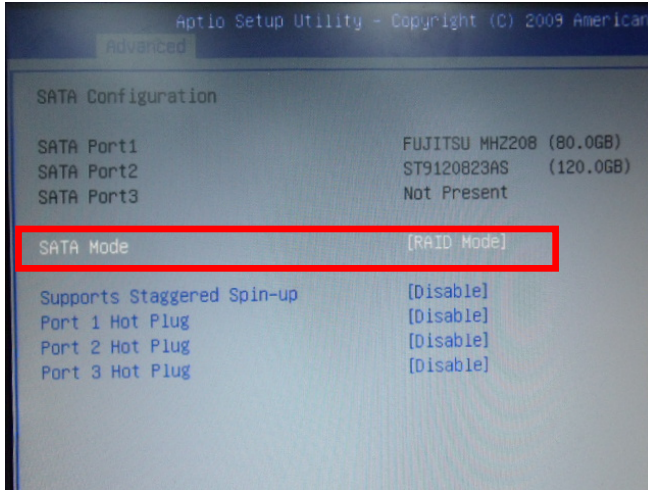
Step 4: The setting procedures "**In BIOS Setup Menu"**
C: Boot -> Boot Option #1 -> DVD-ROM Type
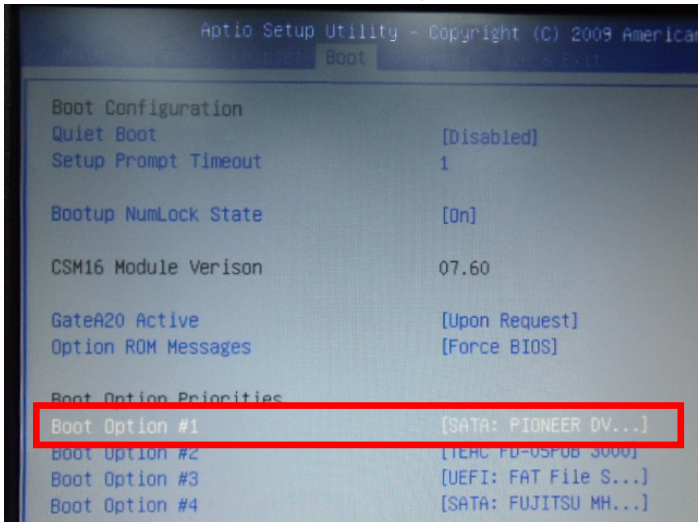
Step 5: The setting procedures "**In BIOS Setup Menu"**
D: Save & Exit -> Save Changes and Exit
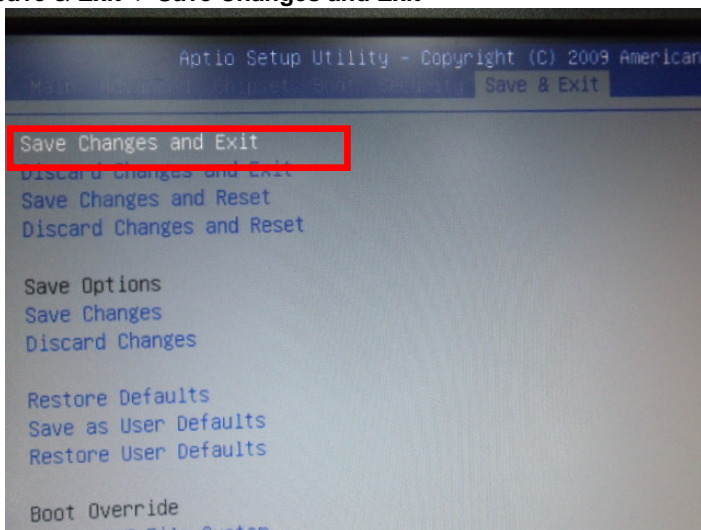
Step 6: Press **Ctrl-I** to enter **MAIN MENU**
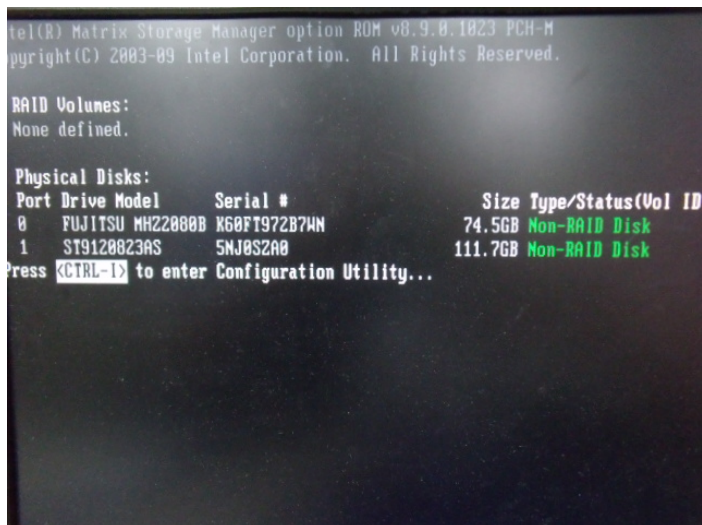
Step 7: Choose "**1.Create RAID Volume**"
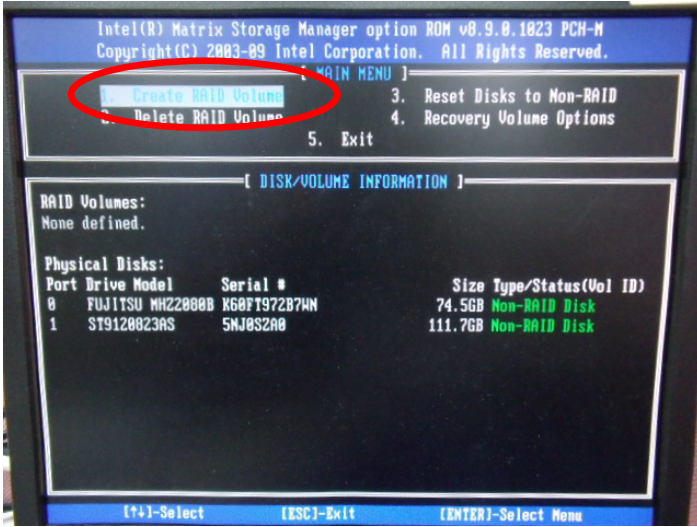
Step 8: RAID Level -> RAID0(Stripe)
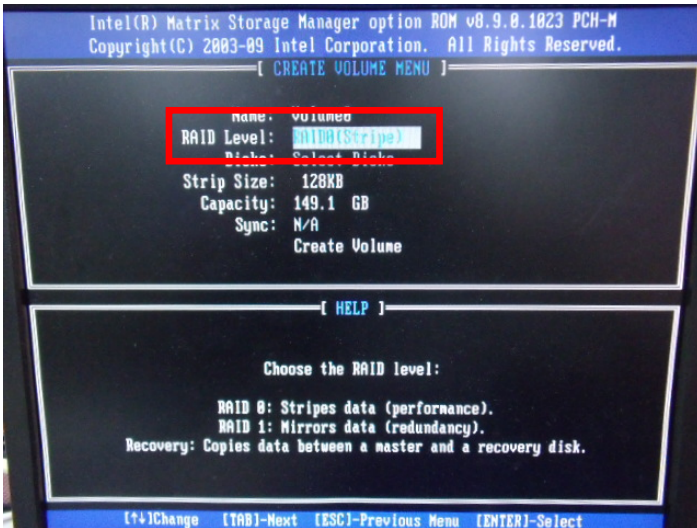
Step 9: Choose "**Create Volume**"
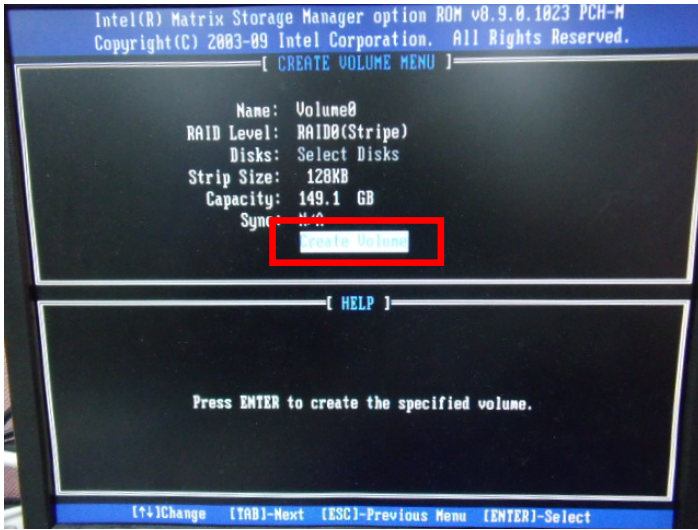
Step 10: Choose "**Y**"
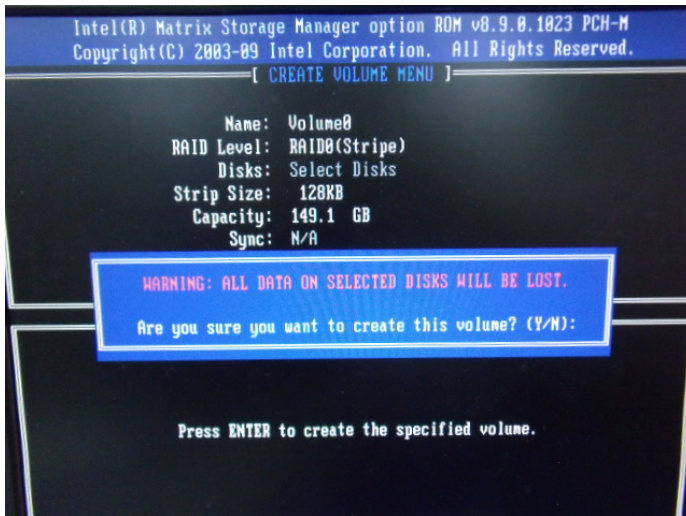
Step 11: Choose "**5. Exit**"
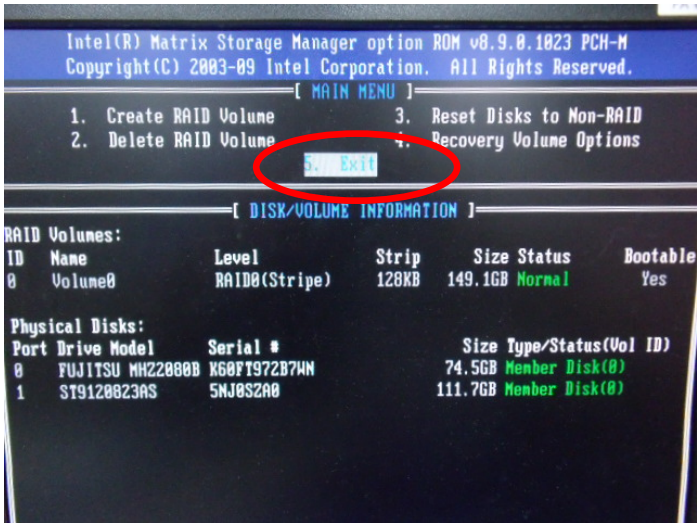
Step 12: Choose "**Y**"
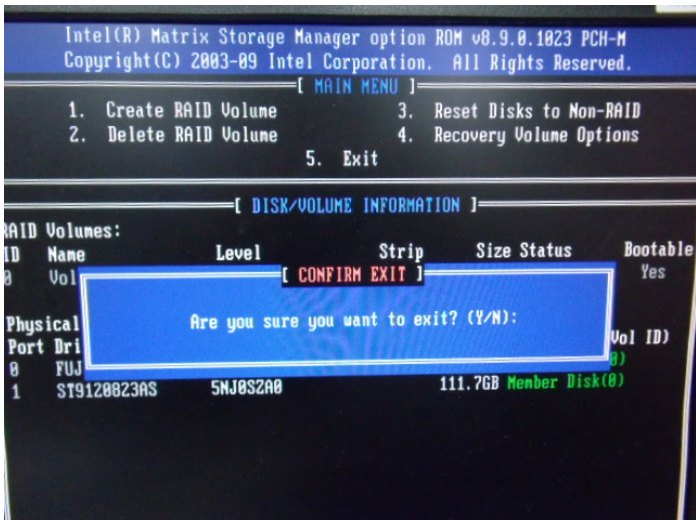
Step 13: Setup OS
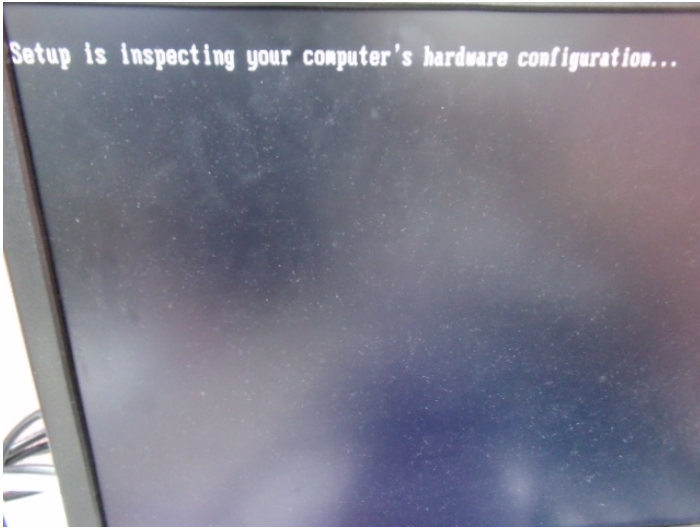
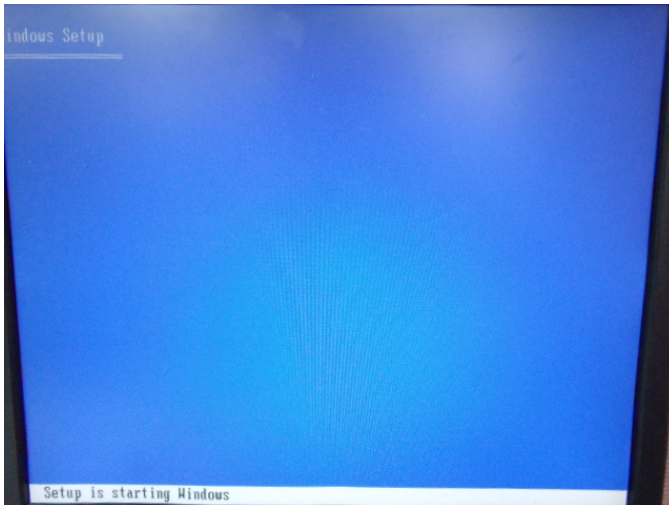Step 14: Press "**F6**"

Step 15: Choose "**S**"
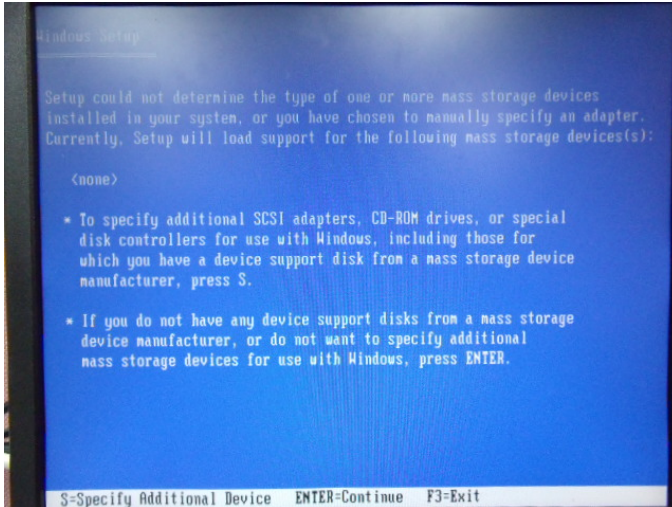
Step 16: Choose "**Intel (R) Desktop/Workstation/Server Express Chipset SATA RAID Controller"**
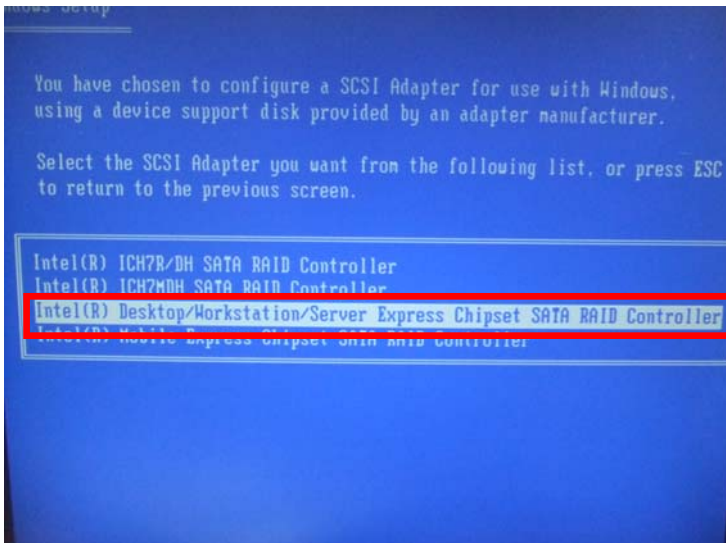
Step 17: It will show the model number you select and then press "**ENTER**"

Step 18: Setup is starting Windows

D.2 Setting AHCI

OS installation to setup AHCI Mode

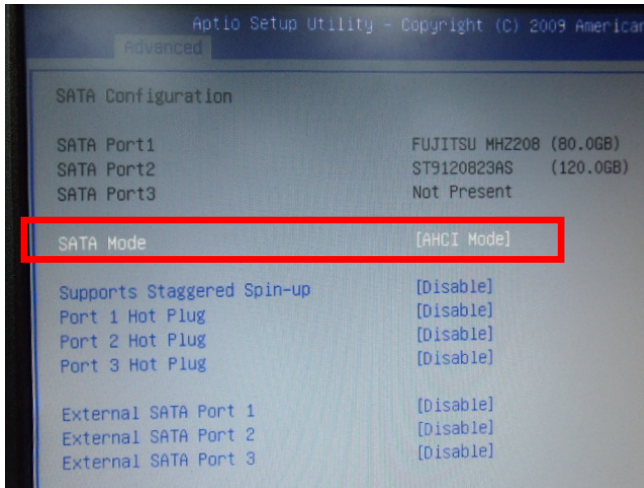Step 1: Copy the files below from "***Driver CD -> Raid Driver -> F6 Floppy -
x86***" to Disk

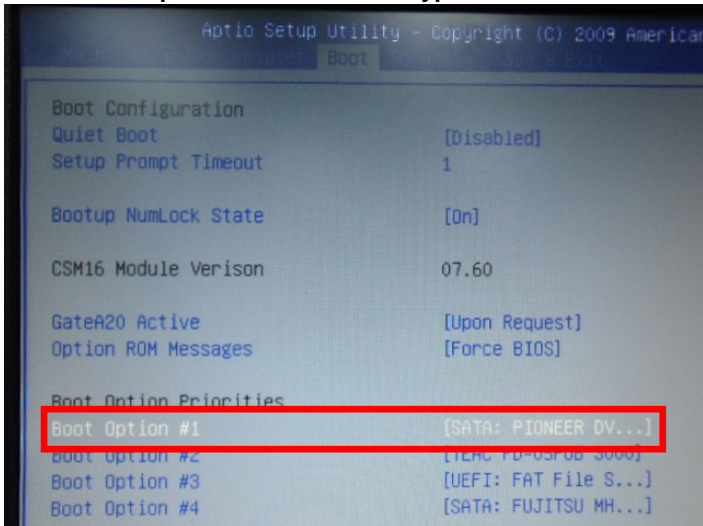Step 2: Connect the USB Floppy (disk with RAID files) to the board

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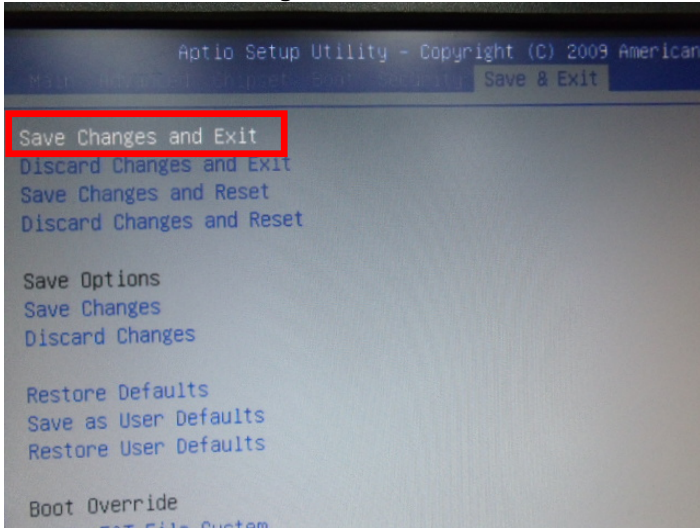Mode -> AHCI Mode**

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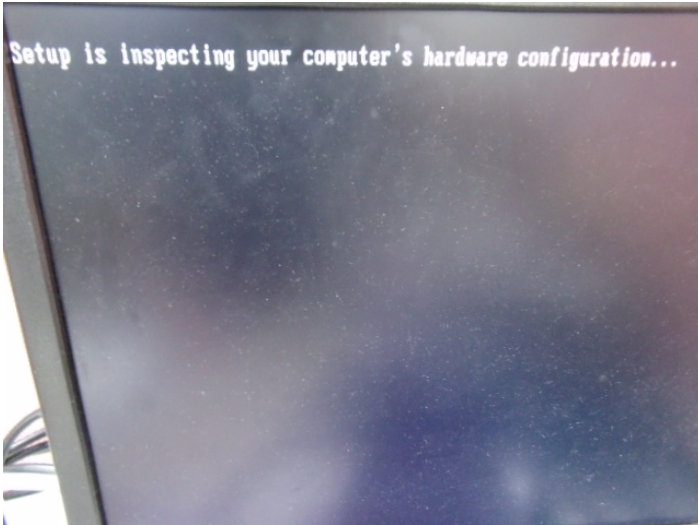**B: Boot -> Boot Option #1 -> DVD-ROM Type**

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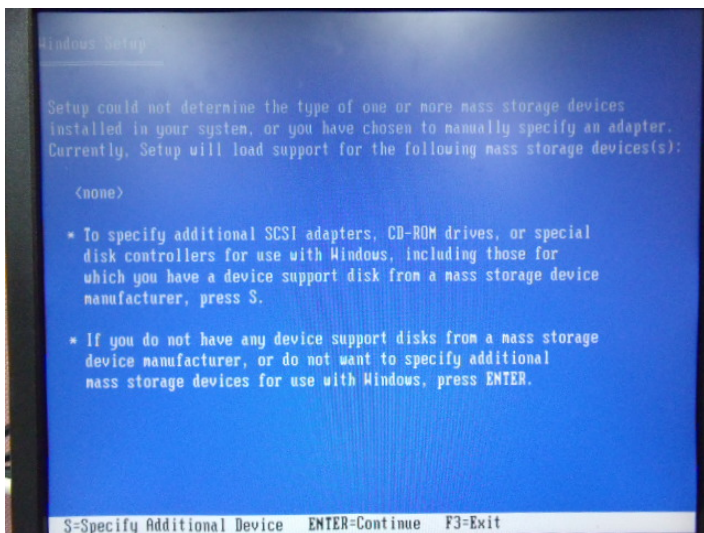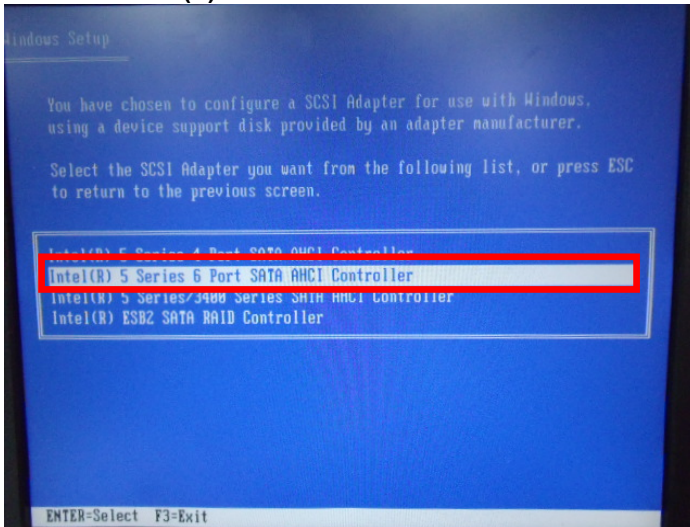**C: Save & Exit -> Save Changes and Exit**

Step 6: Setup OS

Step 7: Press "**F6**"

Press F6 if you need to install a third party SCSI or RAID driver...

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

Setup is loading files (Compaq Drive Array)...