

## EMB-QM77

Intel® 3rd Generation  
Core™ i7/i5/Celeron® QC/DC Processor

Mini-ITX

Gigabit Ethernet

6 USB2.0, 4 USB3.0, 2 COM

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

1 PCI-E[x16], 1 Mini Card, 1 CFast™

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# Packing List

(Standard, not bulk pack)

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

- 1 Jumper Cap
- 1 USB Cable w/Bracket
- 1 COM Cable
- 2 Screws for Mini Card socket
- 1 VGA Cable
- 1 SATA Cable 7P
- 1 SATA PWR Cable 4P
- 1 Back I/O Shield
- 1 Product DVD-ROM
- 1 EMB-QM77

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

# Contents

## Chapter 1 General Information

1.1 Introduction.....	1-2
1.2 Features .....	1-3
1.3 Specifications .....	1-4

## Chapter 2 Quick Installation Guide

2.1 Safety Precautions .....	2-2
2.2 Location of Connectors and Jumpers .....	2-3
2.3 Mechanical Drawing .....	2-5
2.4 List of Jumpers .....	2-7
2.5 List of Connectors .....	2-7
2.6 Setting Jumpers .....	2-9
2.7 Clear CMOS (CMOS1).....	2-10
2.8 Auto Power Button (JP1).....	2-10
2.9 Clear ME (JP2).....	2-10
2.10 LVDS & Inverter Voltage Selection (JP3) .....	2-10
2.11 +12V/+5V/RING Selection (JP5).....	2-11
2.12 LAN1~LAN2 Active / Link / Speed LED (CN1).....	2-11
2.13 COM1 ~ COM2 TX / RX LED (CN2) .....	2-11
2.14 Front Panel Connector (CN3) .....	2-12
2.15 LVDS Connector (CN5).....	2-12
2.16 LVDS Inverter (CN6) .....	2-13

2.17 LVDS Analyze Degree Selection (CN17).....	2-13
2.18 Digital I/O (DIO1).....	2-14
2.19 SATA Power (PWR1~PWR2) .....	2-15
2.20 RS-232 Box Header (COM 1) .....	2-15
2.21 USB Box Header (USB1 ~ USB3) .....	2-15

## **Chapter 3 AMI BIOS Setup**

3.1 System Test and Initialization. ....	3-2
3.2 AMI BIOS Setup .....	3-3

## **Chapter 4 Driver Installation**

4.1 Installation.....	4-3
-----------------------	-----

## **Appendix A Programming The Watchdog Timer**

A.1 Programming .....	A-2
A.2 ITE8728 Watchdog Timer Initial Program.....	A-6

## **Appendix B I/O Information**

B.1 I/O Address Map .....	B-2
B.2 Memory Address Map .....	B-4
B.3 IRQ Mapping Chart.....	B-5
B.4 DMA Channel Assignments.....	B-7

## **Appendix C Mating Connector**

C.1 List of Mating Connectors and Cables.....	C-2
---	-----

## **Appendix D RAID & AHCI Settings**

D.1 Setting RAID .....	D-2
------------------------	-----

D.2 Setting AHCI .....	D-12
------------------------	------

## Chapter

# 1

## General Information



## **1.1 Introduction**

---

The EMB-QM77 supports Intel® Socket G2 (rPGA988B) 3rd Generation Intel® Core™ i7/i5/Celeron® QC/DC processor which when paired with the Intel® QM77 chipset offers a high performance computing platform with low power consumption. This new product supports two 204-pin dual-channel DDR3 SODIMM at speeds of 1066/1333/1600 MHz, up to 8 GB.

One CFast™, two SATA 6.0Gb/s and two SATA 3.0 Gb/s interfaces provide ample storages. With dual Gigabit Ethernet, two COM ports, four USB3.0, and six USB2.0, the EMB-QM77 meets the requirements of today's demanding applications.

Display requirements are met with an abundance of interfaces such as CRT (with optional CRT cable), DVI, HDMI, DisplayPort™ and LVDS. The graphic engine adopts 3rd generation Intel® Core™i7/ i5/ Celeron® integrated Gfx Gen 5.75 graphics to offer high definition display function.

With all of its integrated features, the EMB-QM77 strikes a balance of performance and price. This versatile product targets Industrial Automation, Entertainment, Networking, KIOSK/POS, Transportation, Banking, Healthcare and Digital Signage applications that require high performance and high reliability.

## **1.2 Features**

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- Socket rPGA988B, Intel® 3<sup>rd</sup> Generation Core™ i7/i5/Celeron® Processor
- Intel® 3<sup>rd</sup> Generation Core™ i7/i5 + QM77
- 204-pin Dual-channel DDR3 1066/1333/1600 MHz SODIMM x 2, Up to 8 GB
- Gigabit Ethernet x 2
- Dual Display Version: CRT, Dual 24-bit LVDS, DVI-D, HDMI, DisplayPort™
- Three Display Version: CRT, Dual 24-bit LVDS, DVI-D, DisplayPort™ x 2 (Optional)
- SATA 6.0Gb/s x 2, SATA 3.0Gb/s x 2, Support RAID 0,1,5,10
- USB2.0 x 6, USB3.0 x 4, COM x 2
- PCI-Express [x16] x 1, Mini Card x 1, CFast™ x 1, TPM

### 1.3 Specifications

---

#### System

- |                         |  |
|-------------------------|--|
| ● From Factor           | Mini-ITX   |
| ● Processor             | Socket G2 (rPGA988B) 3rd Generation Intel® Core™ i7 / i5 / Celeron® QC /DC processor                   |
| ● System Memory         | 204-pin Dual Channel DDR3<br>1066/1333/1600 MHz SODIMM x 2,<br>up to 8GB                               |
| ● Chipset               | Intel® Core i7/i5 + QM77   |
| ● Ethernet              | Intel® PHY WG82579LM, Gigabit Ethernet, RJ-45 x 1;<br><br>Realtek RTL8111E Gigabit Ethernet, RJ-45 x 1 |
| ● BIOS                  | AMI SPI BIOS-128Mb ROM   |
| ● Wake On LAN           | Yes  |
| ● Watchdog Timer        | Reset: 1 sec. ~ 255 steps programmable   |
| ● H/W Status Monitoring | System temperature, voltage, and cooling fan status monitoring   |
| ● Expansion Interface   | PCI-E [x16] x 1, Mini Card x 1, CFast™ x 1, TPM  |
| ● Battery               | Lithium Battery  |
| ● Power Requirement     | 12V DC-IN  |
| ● Board Size            | 6.7" x 6.7" (170mm x 170mm)  |
| ● Gross Weight          | 1.32 lb (0.6Kg)  |
| ● Operating Temperature | 32°F~140°F (0°C~60°C)  |
| ● Storage Temperature   | -4°F~158°F (-20°C~70°C)  |
| ● Operating Humidity    | 0% ~ 90% relative humidity,  |

non-condensing

### Display: Supports CRT/LCD simultaneous / dual view displays

- Chipset Intel® Core i7/i5/Celeron® + QM77 integrated Gen 5.75 graphics
- Memory Shared system memory up to 256MB
- Resolution Up to 2560x1600 @ 60 Hz for 1<sup>st</sup> DisplayPort™;  
Up to 1920x1600 @ 60 Hz for 2<sup>nd</sup> DisplayPort™;  
Up to 1920x1200 @ 60 Hz for VGA, DVI, HDMI
- Output Interface Dual Display Version: CRT, Dual 24-bit LVDS, DVI-D, HDMI, DisplayPort™;  
Three Display Version: CRT, Dual 24-bit LVDS, DVI-D, DisplayPort™x 2

### I/O: ITE IT8728F

- Storage SATA 6.0Gb/s x 2 , SATA 3.0Gb/s x 2, support RAID 0, 1, 5, 10
- Serial Port RS-232 x 1 (box header)  
RS-232/422/485 x 1 (on I/O)
- USB USB2.0 x 6, USB3.0 x 4 (Dock USB w/LAN x 2)
- PS/2 Port Keyboard x 1, Mouse x 1
- Digital I/O 8-bit Programmable (4 in/ 4 out)
- Audio Line-in, Mic-in, Line-out

## Chapter

# 2

## Quick Installation Guide

## 2.1 Safety Precautions

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**Warning!**

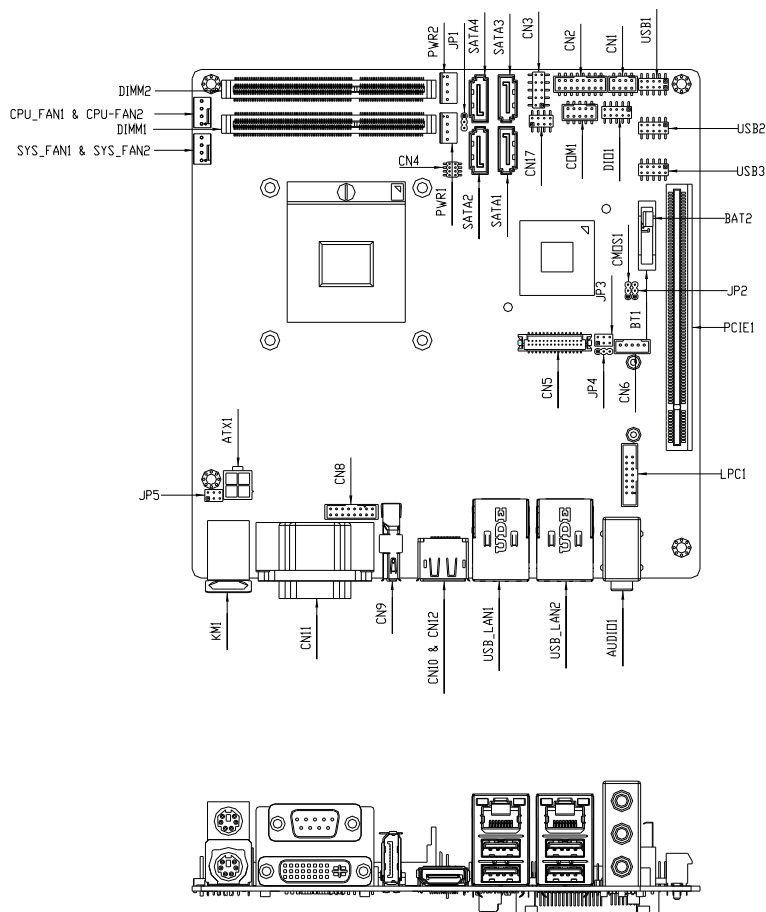
*Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.*

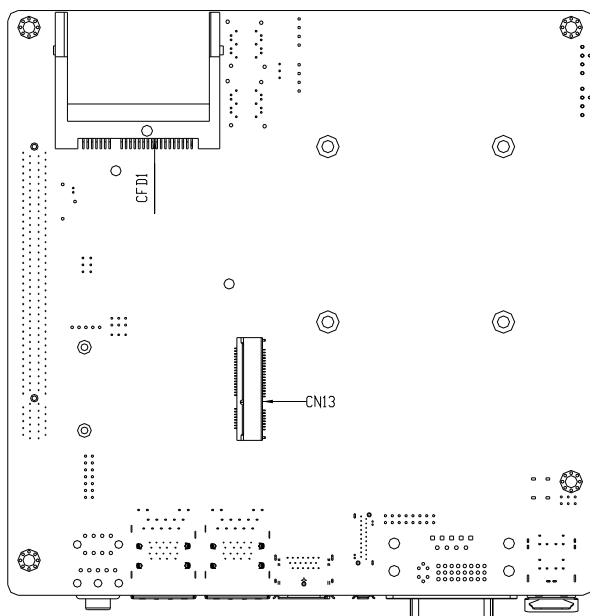
**Caution!**

*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

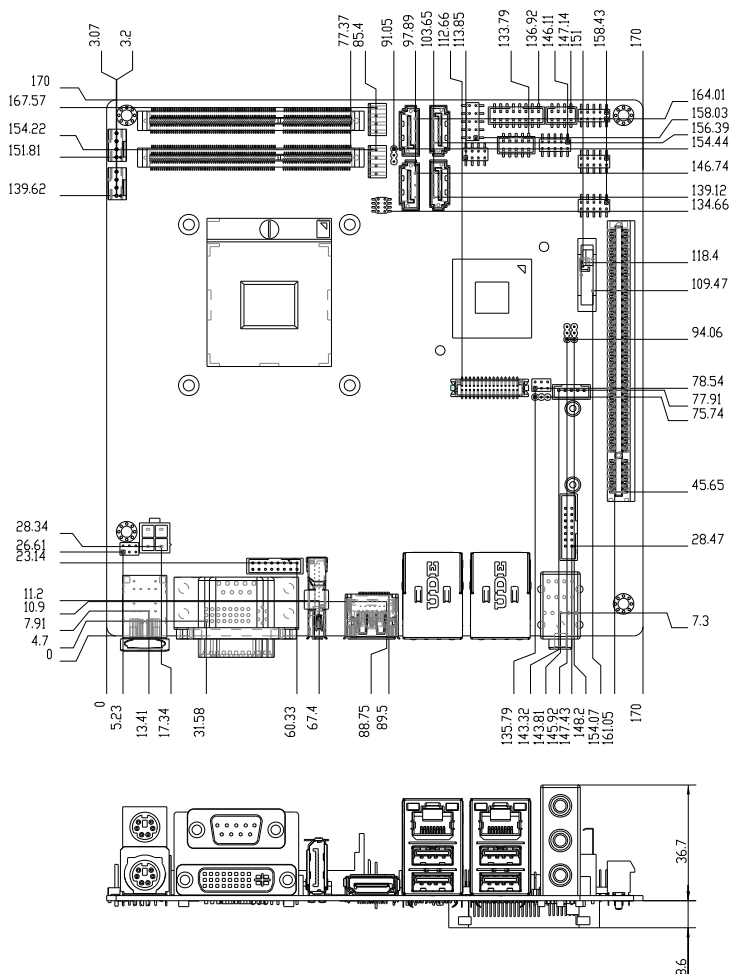


**Solder Side**

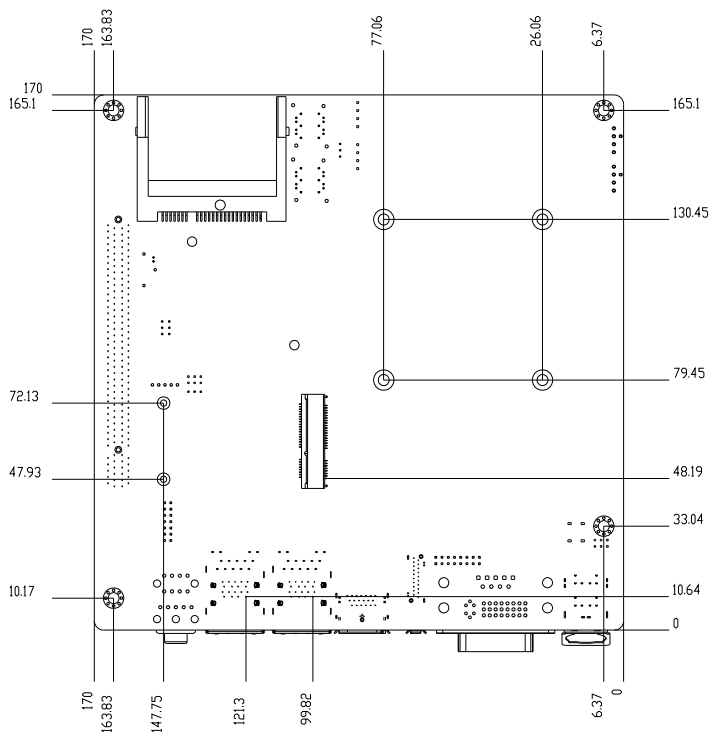


## 2.3 Mechanical Drawing

### Component Side



## Solder Side



## 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
CMOS1	CMOS Setting Selection
JP1	Auto Power Button
JP2	ME Setting Selection
JP3	LVDS Voltage & Inverter Voltage Selection
JP5	+12V/+5V/RING Selection
CN17	LVDS Analyze degree Selection

## 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 of the board's connectors:

Label	Function
DIO1	Digital I/O
PWR1 ~ PWR2	SATA POWER
PCIE1	PCIE*16 Connector
CN1	LAN1~LAN2 Active / Link / Speed LED
CN2	COM1 ~ COM2 TX / RX LED
CN3	Front Panel Connector
CN5	LVDS Connector

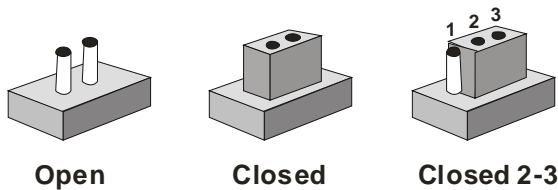
CN6	LVDS Inverter
CN8	VGA Connector
CN9	DP2 Connector
CN10 / CN12	DP1 / HDMI Connector (co-layout)
CN11	COM2 / DVI Connector
CN13	Mini Card Connector
CN14	CFast Connector
KM1	Keyboard/Mouse Connector
COM1	RS-232 Box Header
SATA1~SATA2	SATA 3.0 Connector
SATA3~SATA4	SATA Connector
USB_LAN1 ~ USB_LAN2	LAN / USB Connector
DIMM1,DIMM2	DDR3 DIMM Slot
USB1 ~ USB3	USB Box Header
FAN1~ FAN2	4 Pin Fan Connector
AUDIO1	AUDIO Connector
ATX1	4 pin 12V DC-IN 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.



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 (CMOS1)

---

CMOS1	Function
1-2	Normal (Default)
2-3	Clear CMOS

## 2.8 Auto Power Button (JP1)

---

JP1	Function
1-2	ATX (Default)
2-3	AT

## 2.9 Clear ME (JP2)

---

JP2	Function
1-2	Save ME RTC Register (Default)
2-3	Clear ME RTC Register

## 2.10 LVDS & Inverter Voltage Selection (JP3)

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### LVDS Voltage

JP3	Function
2-4	+5V
4-6	+3.3V (Default)

### Inverter Voltage

JP3	Function
1-3	+12V (Default)
3-5	+5V

## 2.11 +12V/+5V/RING Selection (JP5)

JP5	Function
1-2	+12V
3-4	Ring (Default)
5-6	+5V

## 2.12 LAN1~LAN2 Active / Link / Speed LED (CN1)

Pin	Signal	Pin	Signal
1	LAN1_LED_D2	2	LAN1_LED_LNK#_ACT
3	LAN1_LED_1000#	4	LAN1_LED_100#
5	LAN2_LED_D2	6	LAN2_LED_LNK#_ACT
7	LAN2_LED_1000#	8	LAN2_LED_100#

## 2.13 COM1 ~ COM2 TX / RX LED (CN2)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	TX_LED_COM1	4	-TX_LED_COM1
5	RX_LED_COM1	6	-RX_LED_COM1
7	COM2_RS232_PWR	8	GND
9	TX_LED_COM2	10	-TX_LED_COM2
11	RX_LED_COM2	12	-RX_LED_COM2
13	COM2_RS485_PWR	14	COM2_RS422_PWR

## 2.14 Front Panel Connector (CN3)

Pin	Signal	Pin	Signal
1	Power On Button (-)	2	Power On Button (+)
3	HDD LED (-)	4	HDD LED (+)
5	SPEAKER(-)	6	SPEAKER(+)
7	Power LED (-)	8	Power LED (+)
9	Reset Switch (-)	10	Reset Switch (+)

## 2.15 LVDS Connector (CN5)

Pin	Signal	Pin	Signal
1	BKL_EN	2	N.C.
3	VLCD	4	GND
5	LA_CLK#	6	LA_CLK
7	VLCD	8	GND
9	LA_DATA0#	10	LA_DATA0
11	LA_DATA1#	12	LA_DATA1
13	LA_DATA2#	14	LA_DATA2
15	LA_DATA3#	16	LA_DATA3
17	LVDS_DDC_DATA	18	LVDS_DDC_CLK
19	LB_DATA0#	20	LB_DATA0
21	LB_DATA1#	22	LB_DATA1
23	LB_DATA2#	24	LB_DATA2
25	LB_DATA3#	26	LB_DATA3
27	VLCD	28	GND
29	LB_CLK#	30	LB_CLK



## 2.16 LVDS Inverter (CN6)

Pin	Signal
1	12V / 5V
2	VCON
3	GND
4	GND
5	INV_EN

## 2.17 LVDS Analyze Degree Selection (CN17)

	PID_3 (GPIO49)	PID_2 (GPIO48)	PID_1 (GPIO39)	PID_0 (GPIO38)
Reserved	0	0	0	0
640x480	0	0	0	1
800x480	0	0	1	0
800x600	0	0	1	1
800x600	0 (7-8)	0 (5-6)	1 (Open)	1 (Open)
Reserved	0	1	0	1
1600x1200	0	1	1	1
1366x768	1	0	0	0
1680x1050	1	0	0	1
1920x1200	1	0	1	0
1440x900	1	0	1	1
1600x900	1	1	0	0
Reserved	1	1	0	1

1280x800	1	1	1	0
1920x1080	1	1	1	1

0 : The PID pin is low level

1 : The PID pin is high level

## 2.18 Digital I/O (DIO1)

This connector offers 4-pair of digital I/O functions and address is 801H. The pin definitions are illustrated below:

Pin	Signal	Pin	Signal
1	Digital- IN/OUT (Port1 Bit 1)	2	Digital- IN/OUT (Port1 Bit 2)
3	Digital- IN/OUT (Port1 Bit 4)	4	Digital- IN/OUT (Port3 Bit 4)
5	Digital- IN/OUT (Port3 Bit 5)	6	Digital- IN/OUT (Port3 Bit 6)
7	Digital- IN/OUT (Port3 Bit 7)	8	Digital- IN/OUT (Port6 Bit 3)
9	+3.3V	10	GND

The pin definitions and registers mapping are illustrated below:

Address: 801H

### 4 in / 4 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 11	GPI 12	GPI 14	GPI 34	GPO 35	GPO 36	GPO 37	GPO 63

### 8 in

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 11	GPI 12	GPI 14	GPI 34	GPO 35	GPO 36	GPO 37	GPO 63

### 8 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 11	GPI 12	GPI 14	GPI 34	GPO 35	GPO 36	GPO 37	GPO 63

## 2.19 SATA Power (PWR1~PWR2)

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

## 2.20 RS-232 Box Header (COM 1)

---

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C

## 2.21 USB Box 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

## 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	×	○	○	○	○	○
<p><b>O:</b> 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 <b>SJ/T 11363-2006</b> 标准规定的限量要求以下。</p> <p><b>X:</b> 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 <b>SJ/T 11363-2006</b> 标准规定的限量要求。</p> <p>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。</p>						

## 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 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 EMB-QM77 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

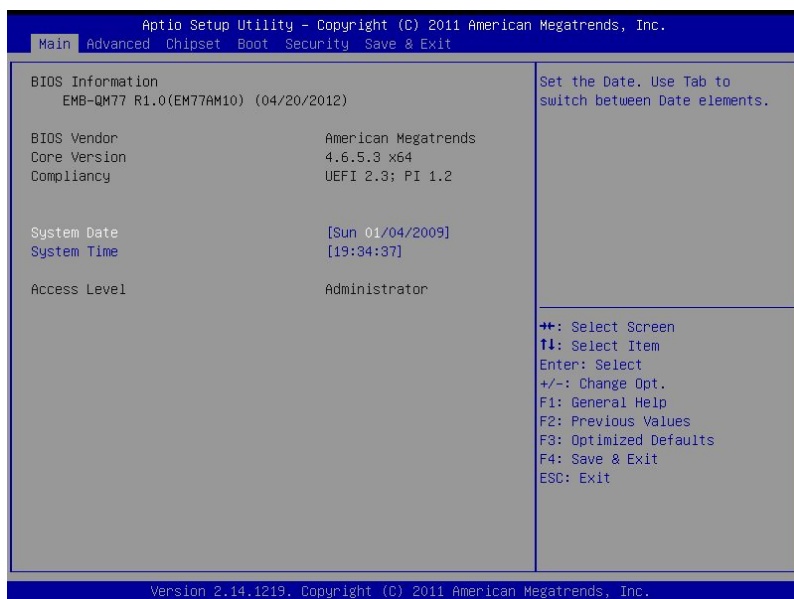
AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM and BIOS NVRAM so that it retains the Setup information when the power is turned off.

### Entering Setup

Power on the computer and press <Del> or <F2> immediately. This will allow you to enter Setup.

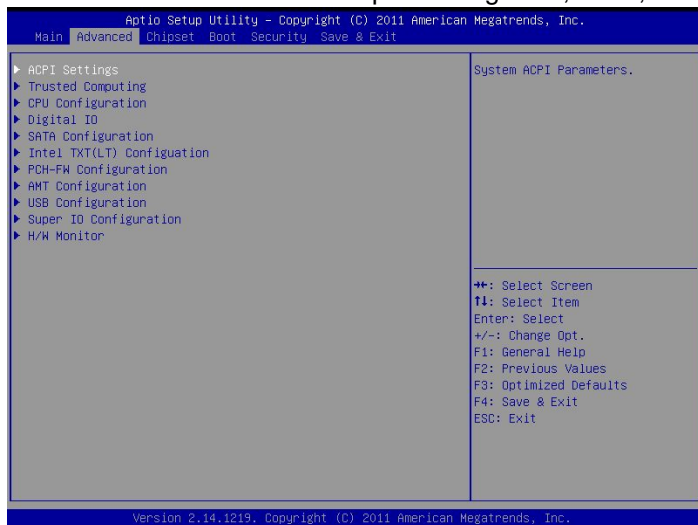
### Main

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



## Advanced

Advanced BIOS Features Setup including TPM, ACPI, etc.



## Chipset

Host bridge parameters.





## Boot

Enables/disables quiet boot option.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Main	Advanced	Chipset
Boot Security Save & Exit		
Boot Configuration Quiet Boot [Enabled] Launch I82579LM PXE OpROM [Disabled] Launch RTL8111E PXE OpROM [Disabled]  Boot Option Priorities Boot Option #1 [UEFI: InnostorInno...] Boot Option #2 [SATA SM: ST916041...]  Hard Drive BBS Priorities		Enables or disables Quiet Boot option          ++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

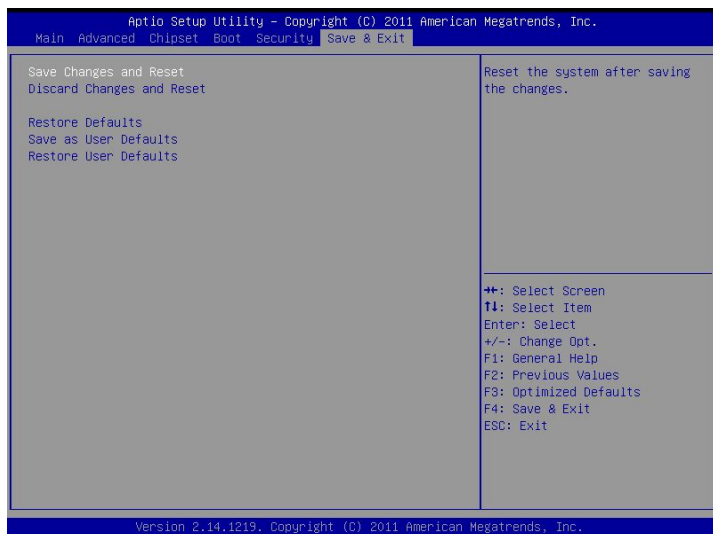
## Security

Set setup administrator password.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Main	Advanced	Chipset
Boot Security Save & Exit		
Password Description  If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. The password length must be in the following range: Minimum length 3 Maximum length 20  Administrator Password User Password  HDD Security Configuration: HDD0:ST9160412AS		Set Administrator Password          ++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

## Save&Exit

Exit system setup after saving the changes.



## Chapter

# 4

## Driver Installation

The EMB-QM77 comes with an AutoRun DVD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

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

***Follow the sequence below to install the drivers:***

- Step 1 – Install Chipset Driver
- Step 2 – Install VGA Driver
- Step 3 – Install LAN Driver
- Step 4 – Install Audio Driver
- Step 5 – Install USB3.0 Driver
- Step 6 – Install RAID & AHCI Driver
- Step 7 – Install ME Driver

Please read instructions below for further detailed installations.

## 4.1 Installation:

---

Insert the EMB-QM77 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 **Step 1-Chipset** folder and double click on the ***infinst\_autol.exe*** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

### Step 2 – Install VGA Driver

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

### Step 3 –Install LAN Driver

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

#### Step 4 –Install Audio Driver

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

#### Step 5 – Install USB3.0 Driver

1. Click on the **Step 5-USB3.0** folder and double click on the **Setup.exe** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

#### Step 6 – Install RAID & AHCI Driver

Please refer to the **Appendix D RAID & AHCI Settings**

#### Step 7 – Install ME Driver

1. Click on the **Step 7-ME** folder and double click on the **setup.exe** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

## Appendix

# A

## Programming the Watchdog Timer

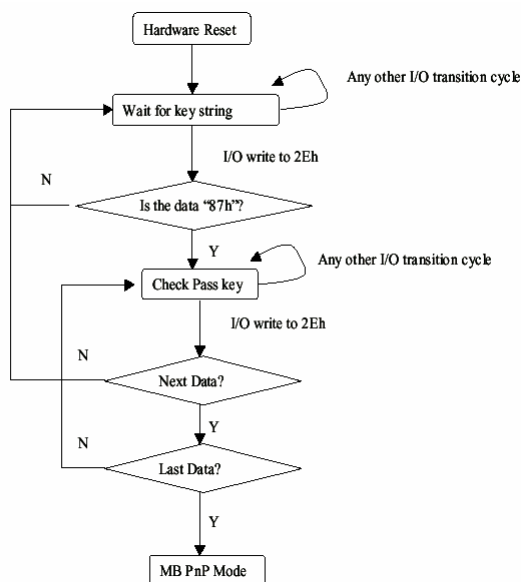
## A.1 Programming

EMB-QM77 utilizes ITE IT8728 chipset as its watchdog timer 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.

### Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8728 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit ) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.





There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

### (1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write operations to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

### (2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

### (3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

### WatchDog Timer Configuration Registers

LDN Index R/W Reset Configuration Register or Action				
All	02H	W	N/A	Configure Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value Register

### Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	Reserved
1	Returns to the Wait for Key state. This bit is used when the configuration sequence is completed
0	Resets all logical devices and restores configuration registers to their power-on states.

**WatchDog Timer Control Register (Index=71h, Default=00h)**

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (mouse) interrupt
5	WDT is reset upon a KBC (keyboard) interrupt
4	WDT is reset upon a read or a write to the Game Port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT Status
	1: WDT value reaches 0.
	0: WDT value is not 0

**WatchDog Timer Configuration Register (Index=72h, Default=00h)**

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5-4	Reserved
3-0	Select the interrupt level <sup>Note</sup> for WDT

**WatchDog Timer Time-out Value Register (Index=73h, Default=00h)**

Bit	Description
7-0	WDT Time-out value 7-0

## A.2 ITE8728 Watchdog Timer Initial Program

---

.MODEL SMALL

.CODE

Main:

CALL Enter\_Configuration\_mode

CALL Check\_Chip

mov cl, 7

call Set\_Logic\_Device

;time setting

mov cl, 10 ; 10 Sec

dec al

Watch\_Dog\_Setting:

;Timer setting

mov al, cl

mov cl, 73h

call Superio\_Set\_Reg

;Clear by keyboard or mouse interrupt

mov al, 0f0h

mov cl, 71h

call Superio\_Set\_Reg

;unit is second.

mov al, 0C0H

mov cl, 72h

call Superio\_Set\_Reg

```
; game port enable  
mov cl, 9  
call Set_Logic_Device
```

```
Initial_OK:  
CALL Exit_Configuration_mode  
MOV AH,4Ch  
INT 21h
```

```
Enter_Configuration_Mode PROC NEAR  
MOV SI,WORD PTR CS:[Offset Cfg_Port]
```

```
MOV DX,02Eh  
MOV CX,04h  
Init_1:  
MOV AL,BYTE PTR CS:[SI]  
OUT DX,AL  
INC SI  
LOOP Init_1  
RET  
Enter_Configuration_Mode ENDP
```

```
Exit_Configuration_Mode PROC NEAR  
MOV AX,0202h  
CALL Write_Configuration_Data
```

RET

Exit\_Configuration\_Mode ENDP

Check\_Chip PROC NEAR

MOV AL,20h

CALL Read\_Configuration\_Data

CMP AL,87h

JNE Not\_Initial

MOV AL,21h

CALL Read\_Configuration\_Data

CMP AL,12h

JNE Not\_Initial

Need\_Initial:

STC

RET

Not\_Initial:

CLC

RET

Check\_Chip ENDP

Read\_Configuration\_Data PROC NEAR

MOV DX,WORD PTR CS:[Cfg\_Port+04h]

OUT DX,AL

```
MOV DX,WORD PTR CS:[Cfg_Port+06h]
IN AL,DX
RET
Read_Configuration_Data ENDP
```

```
Write_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
XCHG AL,AH
MOV DX,WORD PTR CS:[Cfg_Port+06h]
OUT DX,AL
RET
Write_Configuration_Data ENDP
```

```
Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near
Set_Logic_Device  proc  near
```

```
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp

;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h

DW 02Eh,02Fh
```

## END Main

*Note: Interrupt level mapping*

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected



















































































## Appendix

# B

## I/O Information

## B.1 I/O Address Map














































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


























































	[000000AC - 000000AD] Programmable interrupt controller
	[000000B0 - 000000B1] Programmable interrupt controller
	[000000B2 - 000000B3] Motherboard resources
	[000000B4 - 000000B5] Programmable interrupt controller
	[000000B8 - 000000B9] Programmable interrupt controller
	[000000BC - 000000BD] Programmable interrupt controller
	[000000C0 - 000000DF] Direct memory access controller
	[000000E0 - 000000EF] Motherboard resources
	[000000F0 - 000000FF] Numeric data processor
	[00000200 - 0000020F] Motherboard resources
	[000002F8 - 000002FF] Communications Port (COM2)
	[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
	[00000A00 - 00000A1F] Motherboard resources
	[00000A20 - 00000A2F] Motherboard resources
	[00000A30 - 00000A3F] Motherboard resources
	[00000D00 - 0000FFFF] PCI bus
	[0000164E - 0000164F] Motherboard resources
	[0000E000 - 0000E0FF] Realtek PCIe GBE Family Controller
	[0000E000 - 0000EFFF] Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
	[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 - 1E03
	[0000F0A0 - 0000F0A3] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
	[0000F0B0 - 0000F0B7] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
	[0000F0C0 - 0000F0C3] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
	[0000F0D0 - 0000F0D7] Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
	[0000F0E0 - 0000F0E7] Intel(R) Active Management Technology - SOL (COM5)
	[0000FFFF - 0000FFFF] Motherboard resources
	[0000FFFF - 0000FFFF] Motherboard resources





























## B.2 Memory Address Map

Memory	
[000A0000 - 000BFFFF]	Intel(R) HD Graphics 4000
[000A0000 - 000BFFFF]	PCI bus
[000D0000 - 000D3FFF]	PCI bus
[000D4000 - 000D7FFF]	PCI bus
[000D8000 - 000DBFFF]	PCI bus
[000DC000 - 000DFFFF]	PCI bus
[000E0000 - 000E3FFF]	PCI bus
[000E4000 - 000E7FFF]	PCI bus
[20000000 - 201FFFFFF]	System board
[3DA00000 - 3DA00FFF]	Motherboard resources
[3DA00000 - FEAF0FFF]	PCI bus
[40004000 - 40004FFF]	System board
[E0000000 - EFFFFFFF]	Intel(R) HD Graphics 4000
[F0000000 - F003FFFF]	Realtek PCIe GBE Family Controller
[F0000000 - F00FFFFF]	Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
[F7800000 - F7BFFFFF]	Intel(R) HD Graphics 4000
[F7C00000 - F7C0FFFF]	Realtek PCIe GBE Family Controller
[F7C00000 - F7CFFFFF]	Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
[F7D00000 - F7D1FFFF]	Intel(R) 82579LM Gigabit Network Connection
[F7D20000 - F7D2FFFF]	Intel(R) USB 3.0 eXtensible Host Controller
[F7D30000 - F7D33FFF]	High Definition Audio Controller
[F7D35000 - F7D350FF]	Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
[F7D36000 - F7D367FF]	Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
[F7D37000 - F7D373FF]	Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E26
[F7D38000 - F7D383FF]	Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E2D
[F7D39000 - F7D39FFF]	Intel(R) 82579LM Gigabit Network Connection
[F7D3A000 - F7D3AFFF]	Intel(R) Active Management Technology - SOL (COM5)
[F7D3C000 - F7D3C00F]	Intel(R) Management Engine Interface
[F8000000 - FBFFFFFF]	Motherboard resources
[FED00000 - FED003FF]	High precision event timer
[FED10000 - FED17FFF]	Motherboard resources
[FED18000 - FED18FFF]	Motherboard resources
[FED19000 - FED19FFF]	Motherboard resources
[FED1C000 - FED1FFFF]	Motherboard resources
[FED20000 - FED3FFFF]	Motherboard resources
[FED40000 - FED44FFF]	System board
[FED45000 - FED8FFFF]	Motherboard resources
[FED90000 - FED93FFF]	Motherboard resources
[FEE00000 - FEEFFFFFF]	Motherboard resources
[FF000000 - FFFFFFFF]	Intel(R) 82802 Firmware Hub Device
[FF000000 - FFFFFFFF]	Motherboard resources



## 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) 0x00000008 (08)	System CMOS/real time clock
	(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) 0x000000B2 (178)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B7 (183)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BA (186)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BB (187)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BC (188)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BD (189)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
	(PCI) 0x0000000B (11)	Intel(R) 7 Series/C216 Chipset Family SMBus Host Controller - 1E22
	(PCI) 0x00000010 (16)	Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E2D
	(PCI) 0x00000010 (16)	Intel(R) Management Engine Interface
	(PCI) 0x00000013 (19)	Intel(R) 7 Series/C216 Chipset Family SATA AHCI Controller - 1E03
	(PCI) 0x00000013 (19)	Intel(R) Active Management Technology - SOL (COM5)
	(PCI) 0x00000016 (22)	High Definition Audio Controller
	(PCI) 0x00000017 (23)	Intel(R) 7 Series/C216 Chipset Family USB Enhanced Host Controller - 1E26
	(PCI) 0xFFFFFFF9 (-7)	Realtek PCIe GBE Family Controller
	(PCI) 0xFFFFF9FA (-6)	Intel(R) 82579LM Gigabit Network Connection
	(PCI) 0xFFFFF9FB (-5)	Intel(R) USB 3.0 eXtensible Host Controller
	(PCI) 0xFFFFF9FC (-4)	Intel(R) HD Graphics 4000
	(PCI) 0xFFFFF9FD (-3)	Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 2 - 1E12
	(PCI) 0xFFFFF9FE (-2)	Intel(R) 7 Series/C216 Chipset Family PCI Express Root Port 1 - 1E10

## 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.		
CN5	LVDS Connector	E-call	0110-01-553-300	N/A	N/A
CN6	LVDS Inverter Connector	Catch	1192-700-05S	N/A	N/A
CN8	CRT Connector	Astron	26-4101-208-1G-R	N/A	N/A
CN9	DP Connector	Foxconn	3VD21203-H7U0-4H	N/A	N/A
CN10	DP Connector	Kortak	9S020F-03AS-00H	N/A	N/A
CN11	COM2 Port / DVI Connector	Kortak	8H0380-065C-00H	N/A	N/A
CN12	HDMI Connector	Lotes	GSP-ABA-HDM-013-K09	N/A	N/A
CN13	MiniCard Connector	Kortak	EM052H-0850-2R	N/A	N/A
CN14	CFast Connector	3M	N7G24-A0B2RA-10-0HT-DY	N/A	N/A
PCIE1	PCIEx16 Connector	Kortak	EE082C0-Y3Z	N/A	N/A
ATX1	+12V V-IN Connector	Catch	1121-700-04S	N/A	N/A
CPU_FAN1	CPU_FAN Connector	Pinrex	744-81-04TG20	N/A	N/A
SYS_FAN1	SYS_FAN Connector	Pinrex	744-81-04TG20	N/A	N/A
PWR1	SATA PWR Connector	Ho-base	P201-04	SATA PWR Cable	1702151200
PWR2	SATA PWR Connector	Ho-base	P201-04	SATA PWR	1702151200

## Mini-ITX

## EMB-QM77

				Cable	
COM1	COM1 Port Connector	Pinrex	52C-90-10G BE0	N/A	N/A
DIO1	Digital I/O Connector	Astron	27-24041-20 5-1G-TB1-R	N/A	N/A
USB1	USB Port Connector	Astron	27-24041-20 5-1G-TB1-R	USB Cable	1709100201
USB2	USB Port Connector	Astron	27-24041-20 5-1G-TB1-R	USB Cable	1709100201
USB3	USB Port Connector	Astron	27-24041-20 5-1G-TB1-R	USB Cable	1709100201
SATA1	SATA Connector	Lotes	ABA-SAT-04 6-K12	SATA Cable	1709070800
SATA2	SATA Connector	Lotes	ABA-SAT-04 6-K12	SATA Cable	1709070800
SATA3	SATA Connector	Lotes	ABA-SAT-04 6-K12	SATA Cable	1709070800
SATA4	SATA Connector	Lotes	ABA-SAT-04 6-K12	SATA Cable	1709070800
KM1	Keyboard / Mouse Connector	Foxconn	MH11061-P 36-4F	N/A	N/A
USB_LAN 1	RJ-45 Ethernet#1 / USB3.0 Connector	Ude	05-000939M 23-1	N/A	N/A
USB_LAN 2	RJ-45 Ethernet#2/ USB3.0 Connector	Ude	05-000939M 23-1	N/A	N/A
Audio1	Audio In/Out/CD-in and MIC Connector	Kortak	JZ013M-10F D-B0H	N/A	N/A

## Appendix

# D

## RAID & AHCI Settings

## D.1 Setting RAID

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OS installation to setup RAID Mode

Step 1: Copy the files below from “**Driver CD ->Step 6 - RAID&AHCI -> F6 Floppy - x86**” to Disk

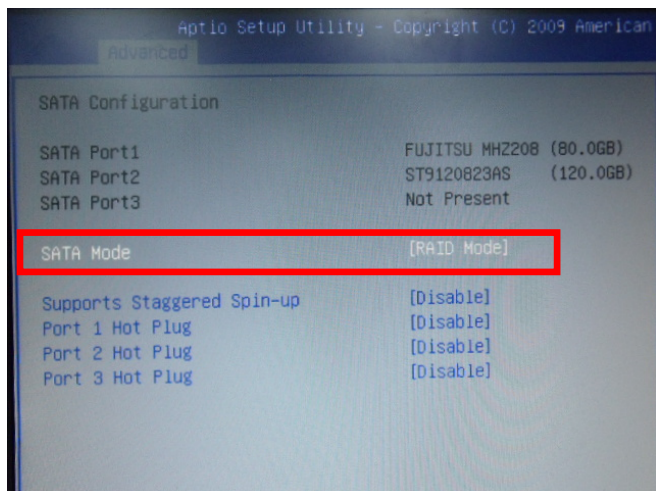


Step 2: Connect the USB Floppy (disk with RAID files) to the board



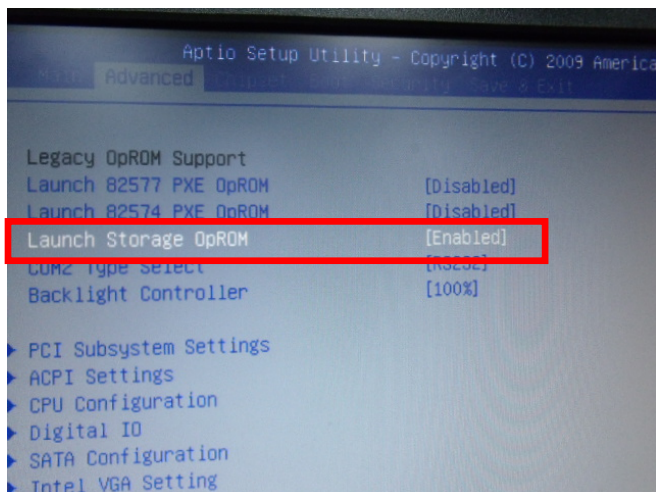
Step 3: The setting procedures “In BIOS Setup Menu”

**A: Advanced -> SATA Configuration -> SATA Mode -> RAID Mode**



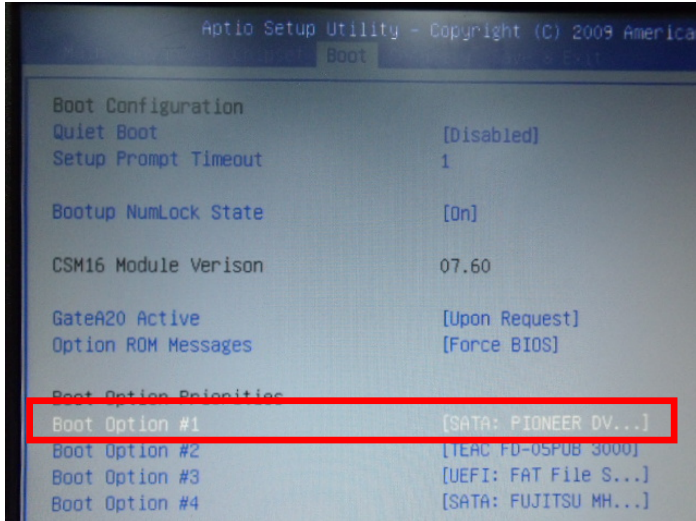
Step 4: The setting procedures “In BIOS Setup Menu”

**B: Advanced -> Launch Storage OpROM -> Enabled**



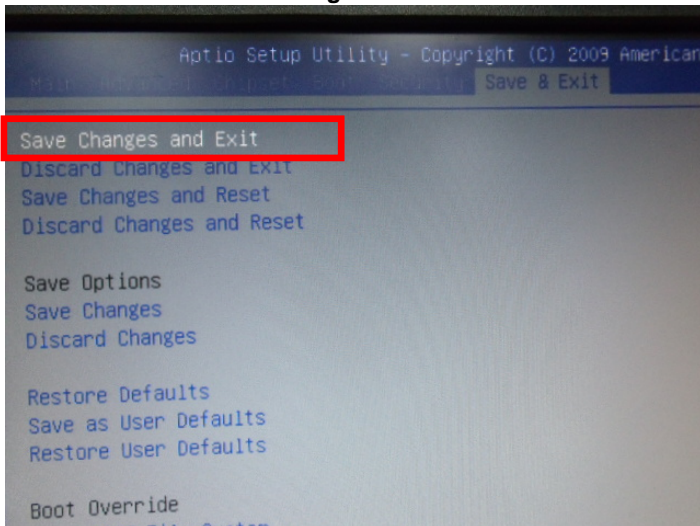
Step 5: The setting procedures "In BIOS Setup Menu"

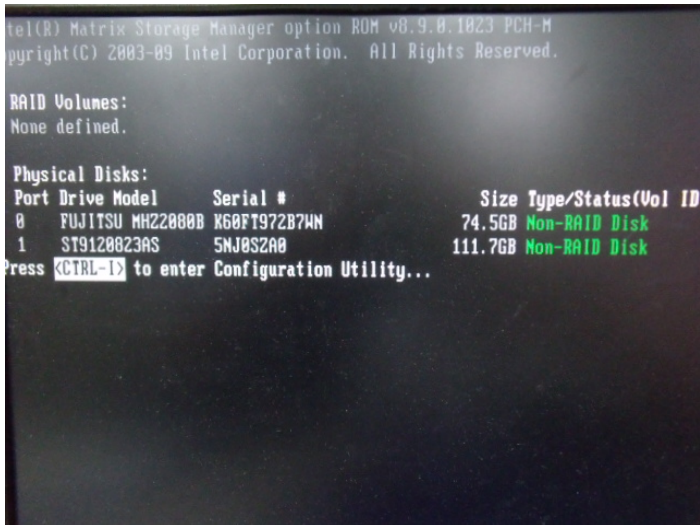
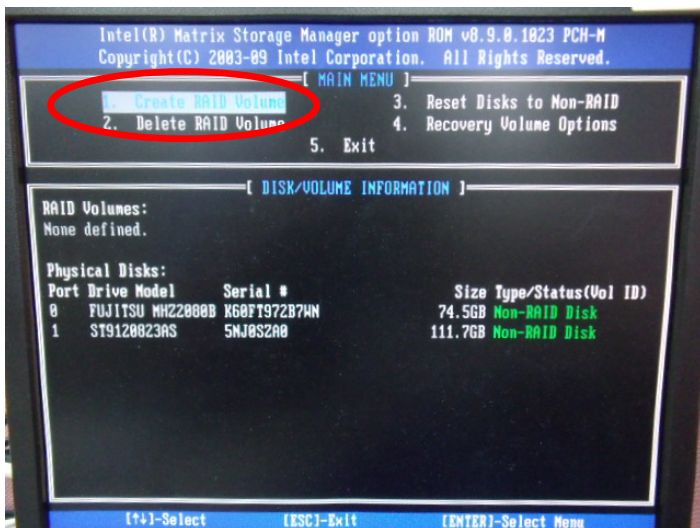
**C: Boot -> Boot Option #1 -> DVD-ROM Type**



Step 6: The setting procedures "In BIOS Setup Menu"

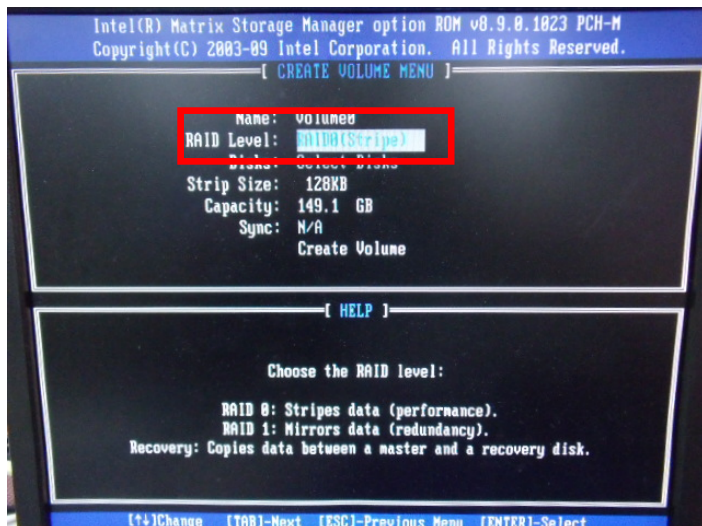
**D: Save & Exit -> Save Changes and Exit**



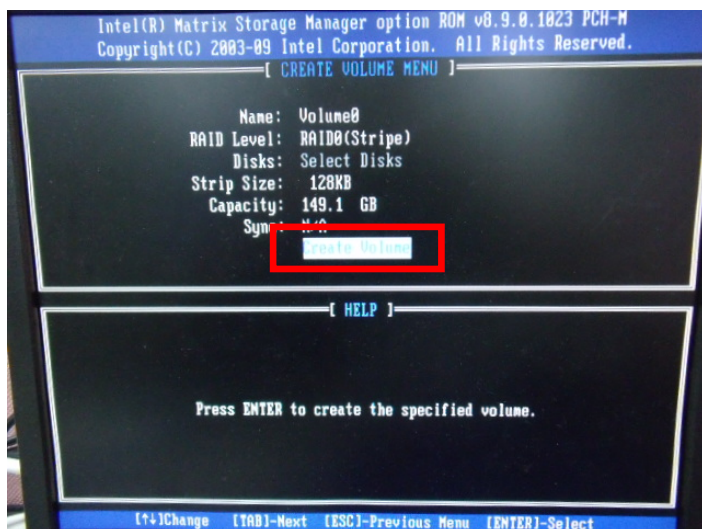
Step 7: Press **Ctrl-I** to enter **MAIN MENU**Step 8: Choose **"1.Create RAID Volume"**



Step 9: RAID Level -> RAID0(Stripe)

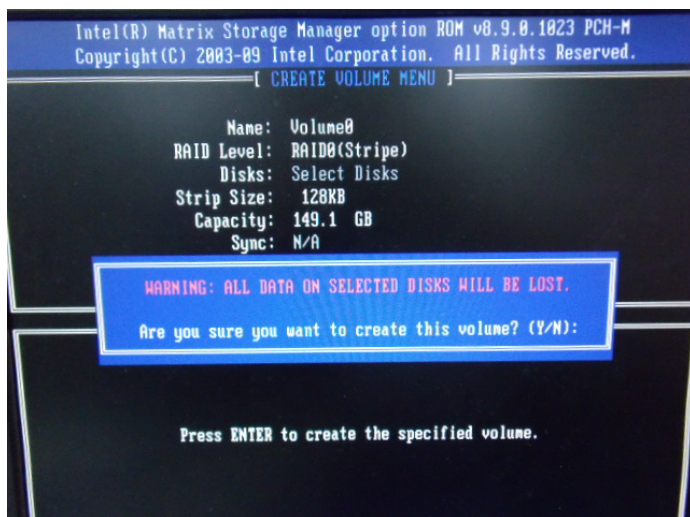


Step 10: Choose "Create Volume"

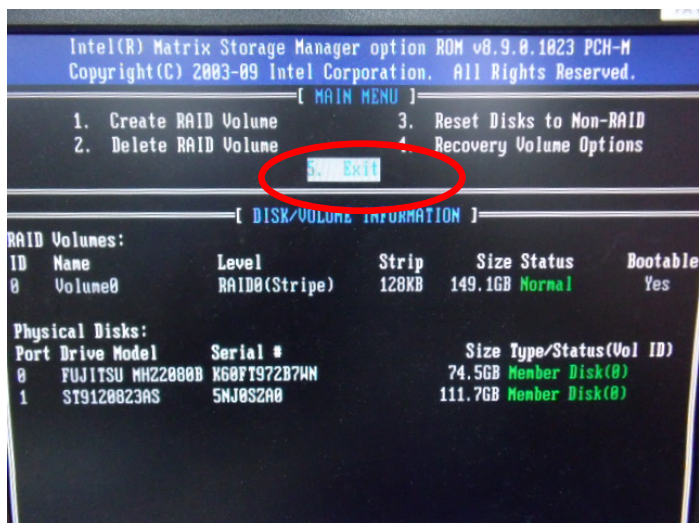




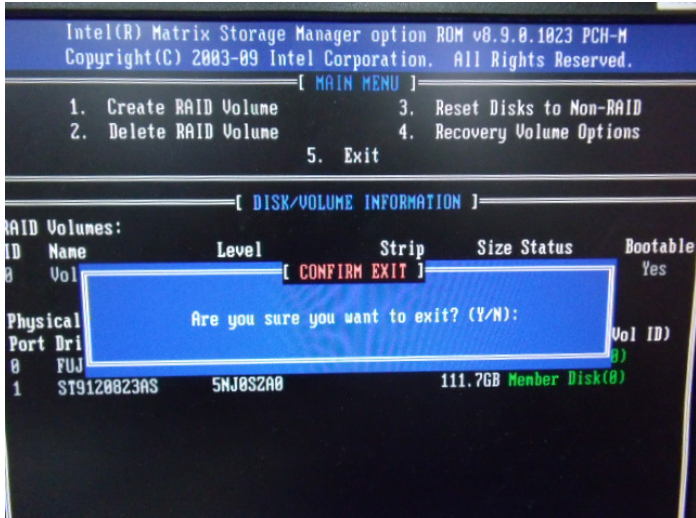
Step 11: Choose “Y”



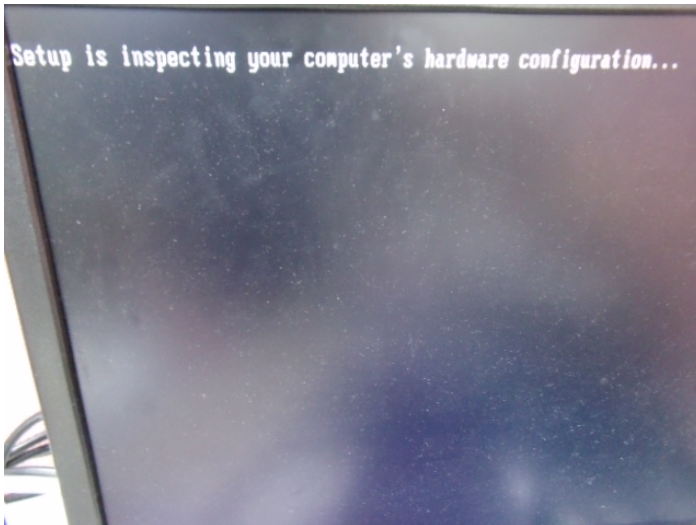
Step 12: Choose “5. Exit”



Step 13: Choose “Y”



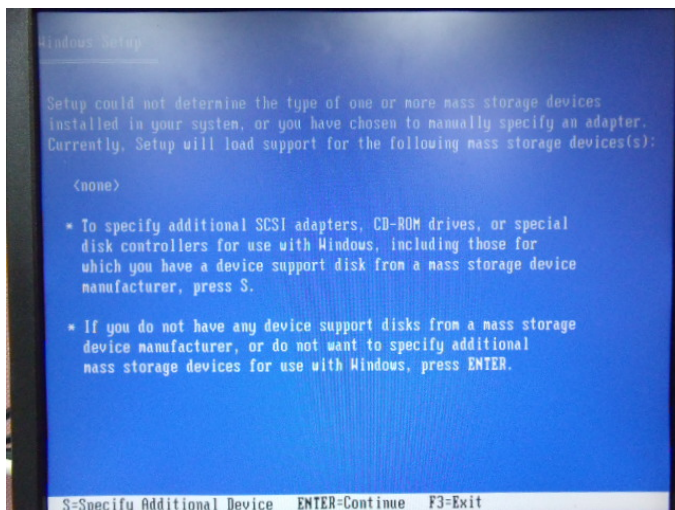
Step 14: Setup OS



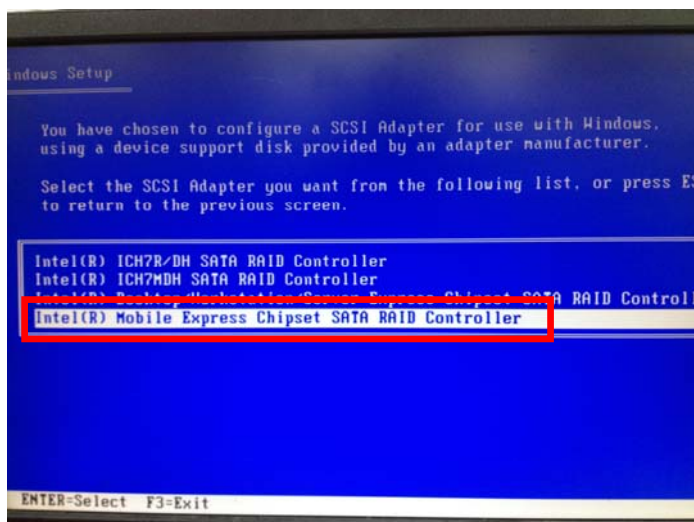
Step 15: Press “F6”



Step 16: Choose “S”



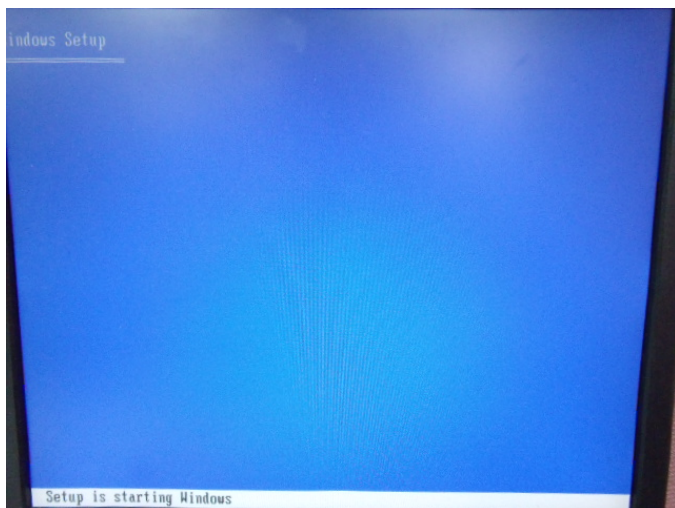
**Step 17: Choose “Intel(R) Mobile Express Chipset SATA RAID Controller”**



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



Step 19: Setup is starting Windows





## D.2 Setting AHCI

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OS installation to setup AHCI Mode

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

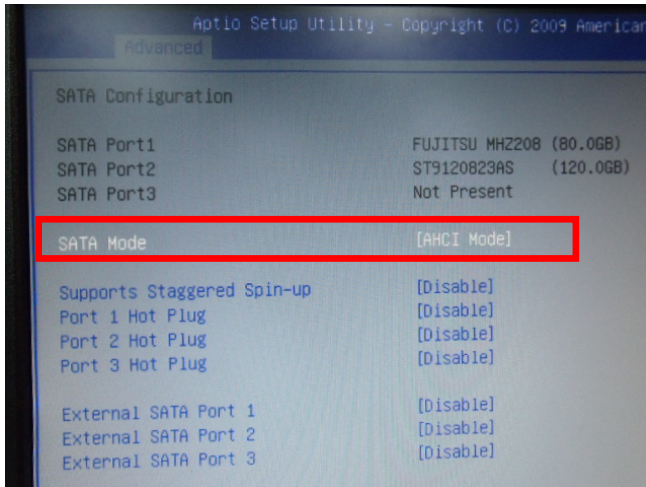


Step 2: Connect the USB Floppy (disk with RAID files) to the board



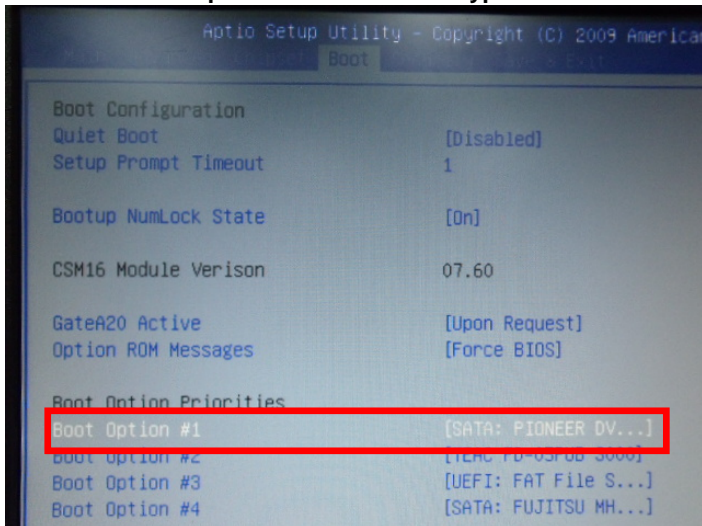
Step 3: The setting procedures “In BIOS Setup Menu”

**A: Advanced -> SATA Configuration -> SATA Configuration -> SATA Mode -> AHCI Mode**



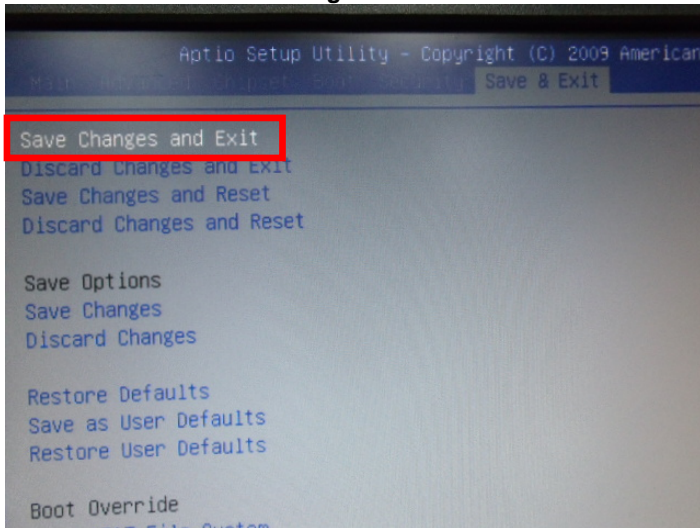
Step 4: The setting procedures “In BIOS Setup Menu”

**B: Boot -> Boot Option #1 -> DVD-ROM Type**

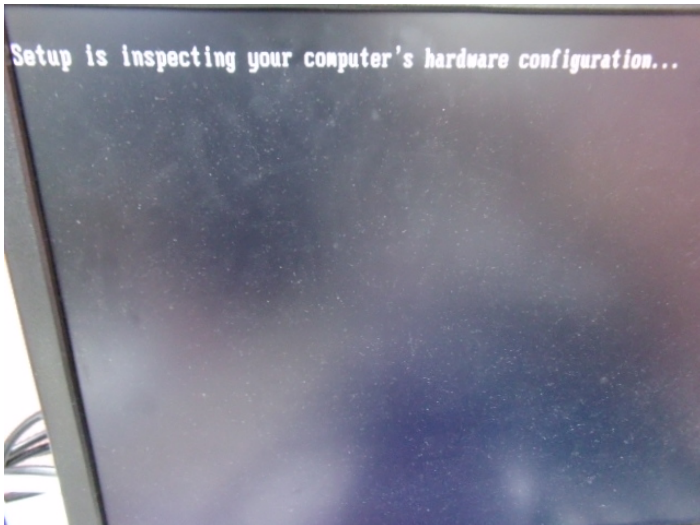


Step 5: The setting procedures “In BIOS Setup Menu”

**C: Save & Exit -> Save Changes and Exit**



Step 6: Setup OS



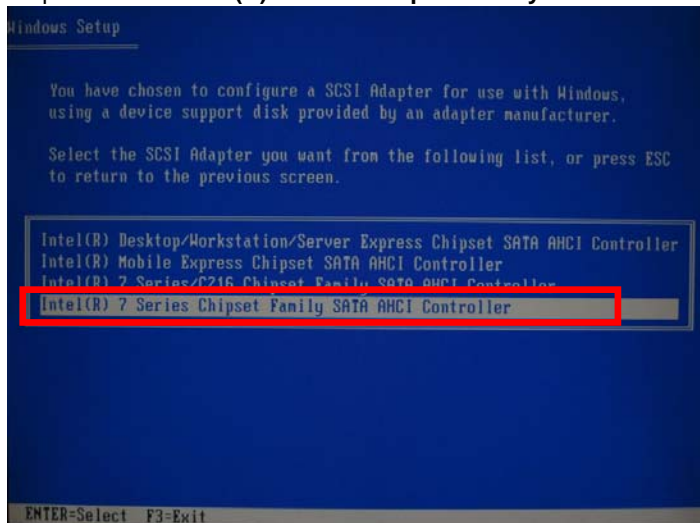


## Step 7: Press "F6"



## 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

