GES-5500F

Green Embedded System

2.5" SATA Hard Disk　Drive Bay

2 Gigabit　Ethernet Ports/

4 COM / 8　USB2.0

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Packing List

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

- 1   GES-5500F   Bare Bone

- 1   Product CD for manual (in PDF format) and drivers

- 1   CPU Heatsink

- 1   CPU Heatpipe Bracket

- 4   Memory thermal Pad

- 1   Memory Bracket

- 8   Screws for CPU heatsink and Memory Bracket

- 1   Southbridge (QM57) chip thermal Pad

- 1   Clock Generator thermal Pad

- 1   DIO male connector

- 1   3-pin DC-in male connector

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

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Chapter 2 Quick Installation Guide

Chapter

1

General Information

1.1 Introduction

GES-5500F adopts the Intel® Core™ i7/i5/i3 Processor. The chipset is equipped with Intel® QM57.   Moreover, the system memory features two DDR3 800/1066 SODIMM sockets up to 8 GB. It deploys two LAN ports that consist of 10/100/1000Base-TX Ethernet LAN RJ-45 ports.   GES-5500F condensed appearance features desktop and wallmount form factor that fits nicely into a space-limited environment.

This compact GES-5500F equipped with one internal 2.5" Hard Disk Drive with SATA 3.0 Gb/s interface.   In addition, it features four COM p orts and eight USB2.0 ports. F urthermore, the GES-5500F deploys Intel® Gen 6.0 int egrated Graphics Engine supports dual view by VGA, DVI, and HDMI.

1.2 Features

- Intel$^®$ 32/45nm Core™ i7/i5/i3 rPGA988 Processor With Graphic And Memory Controller
- Fanless Design CPU TDP <35W, Intel$^®$ Core™ i7-620M And i5-520M
- 204-Pin dual-Channel DDR3 800/1066 MHz SODIMM x 2, Up To 8 GB
- Intel$^®$ Gen 6.0 Integrated Graphics Engine Supports Dual View By VGA, DVI, HDMI
- Intel$^®$ PCI-Express 10/100/1000Base-TX x 2 (Support Intel$^®$ AMT 6.0)
- USB 2.0 x 8, COM x 4
- Internal 2.5" Disk Drive Bay x 1
- Industrial Grade Robust Chassis, Fanless Design
- Wide DC Power Input: 10V DC~30V DC

1.3 Specifications

CPU		Intel® Core™ i7/i5/i3
Chipset		Intel® Core™ i7/i5/i3 + QM57
Display Interface	VGA	D-Sub 15 x 1
	DVI	DVI-D x 1
	Others	HDMI x 1
Storage Device	SSD	—
	HDD	2.5" SATA HDD x 1
Network	LAN	10/100/1000Base-TX x 2
	Wireless	Optional Mini-PCIe module x 1
Front I/O	USB Host	USB 2.0 x 2
	LAN	—
	Serial Port	—
	DIO	8-bit Programmable
	Audio	—
	KB/MS	—
	Others	—
Rear I/O	USB Host	USB 2.0 x 6
	LAN	RJ-45 x 2
	Serial Port	RS-232 x 3, RS-232/422/485 x 1
	DIO	—
	Audio	Line-in, Line-out, Mic-in
	KB/MS	Keybarod x 1, Mouse x 1

	Others	Power-in
Expansion	**PCIe**	—
	PCI	—
	Mini Card	1
	Mini PCI	—
	Others	—
Indicator	**Front**	Power LED x 1, HDD LED x 1
	Rear	—
Power Requirement		AC/DC power adapter
Power Consumption		70W
System Cooling		Fanless
Mounting		Desktop/ Wallmount
Operating Temperature		32^oF ~133^oF (0^oC~45^oC) (Automotive HDD)
Storage Temperature		-4^oF ~140^oF (-20^oC~60^oC)
Anti-Vibration		HD: 0.5 g rms/5 ~500 Hz/ rando m operation
Anti-Shock		15 G with 11 m/sec, operating
MTBF		—
Certification	**EMC**	CE/FCC Class A
	Safety	—
Dimension		11.22" x 8.2 7" x 2.95" (285mm x 210mm x 75mm)
Gross Weight		11.16 lb (5.1 kg)
Note		Windows® XP, Windows® 7, Linux support

1.4 General System Information

Front Panel

Rear Panel

Chapter

2

Hardware Installation

2.1 Location of Jumpers and Connectors

Main board

CN11
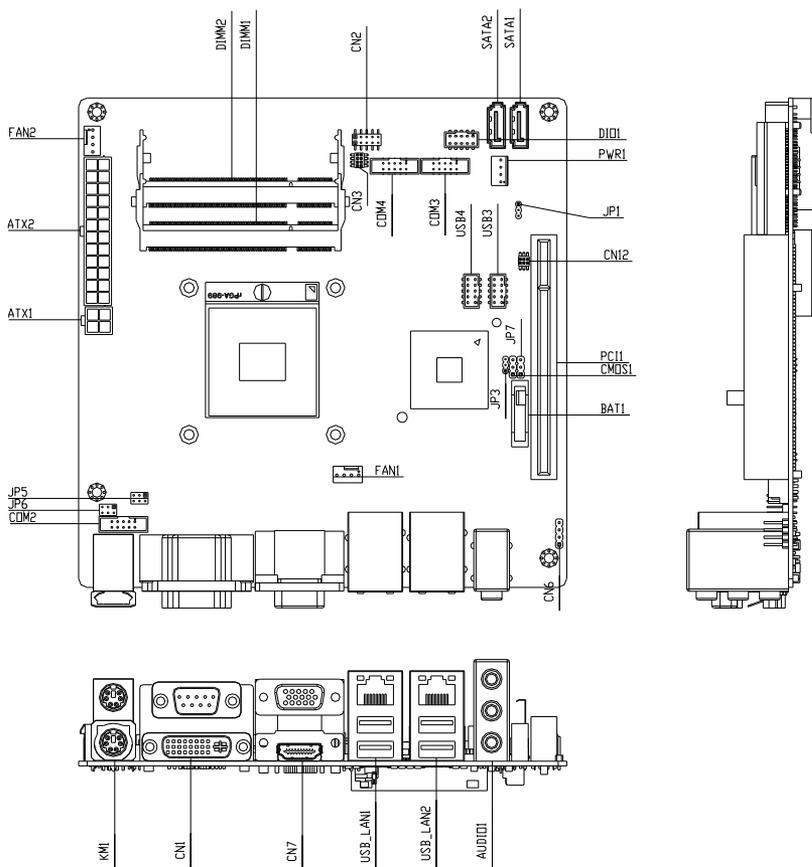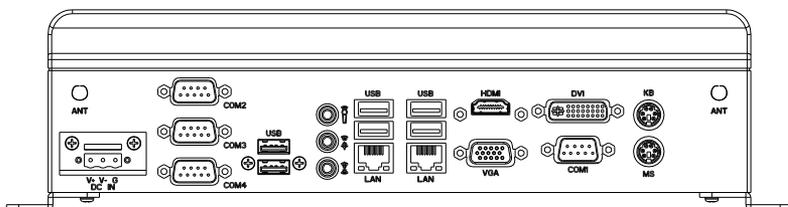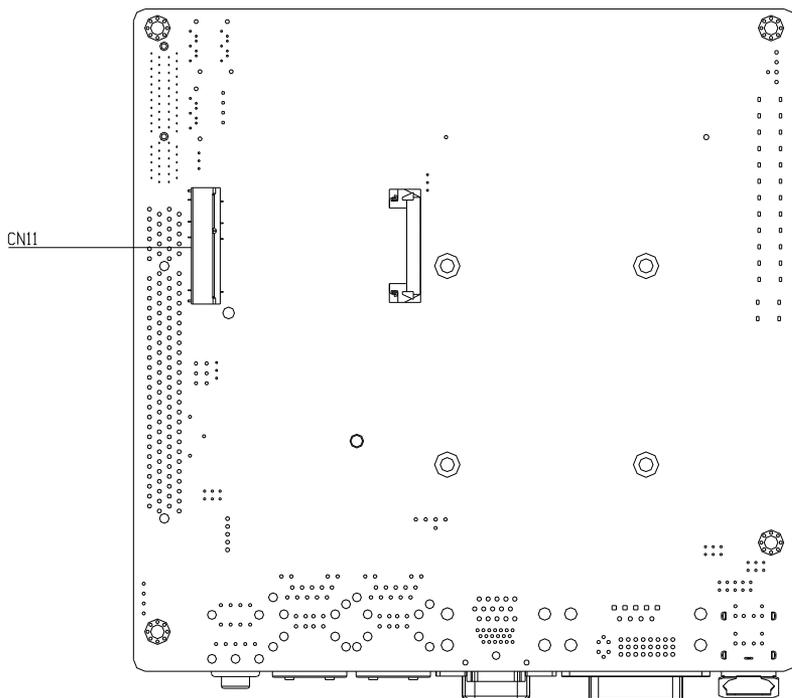
2.2 Mechanical Drawing
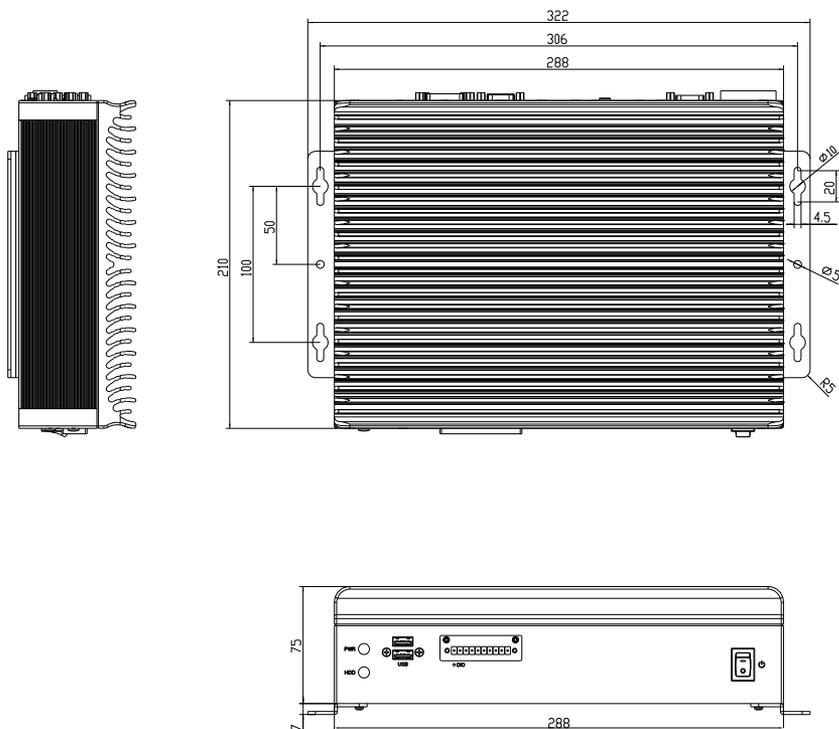
DIO Pin Definition

PIN	1	2	3	4	5	6	7	8	9	10
Signal	DIO1	DIO2	DIO3	DIO4	DIO5	DIO6	DIO7	DIO8	+5V	GND

DIO Pin Definition

2.3 List of Jumpers

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

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

Label	Function
CMOS1	CMOS Setting Selection
JP1	Auto PWRBTN Selection
JP3	TPM Setting Selection
JP5	COM1 +12V/+5V/RING Selection
JP6	COM2 +12V/+5V/RING Selection

2.4 List of Connectors

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

Label	Function
CN1	DVI-I & COM Port Connector
CN2	Front Panel Connector
CN3	SPI Programming Connector
CN6	CD-IN
COM2	RS-232/422/485 Pin header
COM3~4	RS-232 Pin header
KM1	PS2 Keyboard/Mouse Connector
USB_LAN1	100/1000Base-TX Ethernet & Dual USB Connector
USB_LAN2	100/1000Base-TX Ethernet & Dual USB Connector
AUDIO1	Audio Lin-in/Lin-out/MIC

DIMM1,DIMM2	DDR3 DIMM Slot
USB3,USB4	USB Pin header
FAN1, FAN2	4-pin System Fan Connector
ATX1	4-pin ATX Power +12V Connector
ATX2	24-pin ATX Power
SATA1~SATA2	SATA Connector
DIO1	Digital I/O
PIC1	PCI Slot
PCIE1	PCIE Slot
CN11	Mini-PCIE Slot
PWR1	SATA Power Connector

2.5 Setting Jumpers

You configure your card to match th e needs of your application by setting jumpers. A jumpe r is the simplest kind of el ectric 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 jumpe r 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**
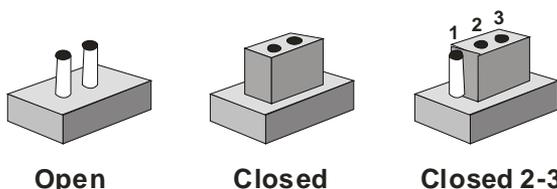
A pair of needle-no se pliers may be helpful wh en working with jumpers.

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

Generally, you simply n eed a sta ndard cable to make m ost connections.

2.6 CMOS Setting (CMOS1)

JP1	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.7 Auto PWRBTN Selection (JP1)

JP1	Function
1-2	Don't use Auto PWRBTN (Default)
2-3	Use Auto PWRBTN

2.8 TPM Setting (JP3)

JP3	Function
1-2	Save ME RTC Register (Default)
2-3	Clear ME RTC Register

2.9 COM1 +12V/+5V/RING Selection (JP5)

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

2.10 COM2 +12V/+5V/RING Selection (JP6)

JP6	Function
1-2	+12V
3-4	Ring (Default)
5-6	+5V

2.11 Front Panel Connector (CN2)

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

2.12 SPI Programming Connector (CN3)

Pin	Signal	Pin	Signal
1	+3.3V_SPI	2	GND
3	SPI_CE#	4	SPI_CLK
5	SPI_SO	6	SPI_SI
7	NC	8	NC

2.13 CD-IN Pin Header (CN6)

Pin	Signal
1	CD-R
2	CD-GND
3	CD-GND
4	CD-L

2.14 RS-232/422/485 Pin Header (COM2)

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

2.15 RS-232 Pin Header (COM3~4)

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

2.16 Pin Header (USB3, USB4)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD1-	4	GND
5	USBD1+	6	USBD2+
7	GND	8	USBD2-
9	GND	10	+5V

2.17 FAN Connector (FAN1, FAN2)

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

2.18 4-pin ATX Power Connector (ATX1)

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

2.19 24-pin ATX Power Connector (ATX2)

Pin	Signal	Pin	Signal
1	+3.3V	2	+3.3V
3	GND	4	+5V

5	GND	6	+5V
7	GND	8	PWROK
9	+5VSB	10	+12V
11	+12V	12	+3.3V
13	+3.3V	14	-12V
15	GND	16	PS_ON
17	GND	18	GND
19	GND	20	NC
21	+5V	22	+5V
23	+5V	24	GND

2.20 SATA Connector (SATA 1~2)

Pin	Signal	Pin	Signal
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

2.21 Digital I/O Pin Header (DIO1)

The Base Address are A40H, A42H, and A43H

Pin	Signal	Pin	Signal
1	IN0 (U5 Pin34)	2	IN1 (U5 Pin33)
3	IN2 (U5 Pin32)	4	IN3 (U5 Pin31)
5	OUT0 (U5 Pin12)	6	OUT1 (U5 Pin11)
7	OUT2 (U5 Pin70)	8	OUT3 (U5 Pin66)
9	+5V	10	GND

BIOS Setting	Connector Definition	Address	IT8781F GPIO Setting
DIO_P#1	BC3 Pin 1	Bit 1(A40H)	U5 Pin 34 (GPIO11)

DIO_P#2	BC3 Pin 2	Bit 2(A40H)	U5 Pin 33 (GPIO12)
DIO_P#3	BC3 Pin 3	Bit 3(A40H)	U5 Pin 32 (GPIO13)
DIO_P#4	BC3 Pin 4	Bit 4(A40H)	U5 Pin 31 (GPIO14)
DIO_P#5	BC3 Pin 5	Bit 6(A42H)	U5 Pin 12 (GPIO36)
DIO_P#6	BC3 Pin 6	Bit 7(A42H)	U5 Pin 11 (GPIO37)
DIO_P#7	BC3 Pin 7	Bit 6(A43H)	U5 Pin 70 (GPIO46)
DIO_P#8	BC3 Pin 8	Bit 7(A43H)	U5 Pin 66 (GPIO47)

Note:
1. DIO_P#1, DIO_P#2, DIO_P#3, DIO_P#4 use Base Address: A40H
2. DIO_P#5, DIO_P#6 use Base Address: A42H
3. DIO_P#7, DIO_P#8 use Base Address: A43H

2.22 SATA Power Connector (PWR1)

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

2.23 Installing the Hard Disk Drive

Step 1 : Unfasten the five screws on the bottom case of GES-5500F


Step 2 : Move the bottom case from the GES-5500F, and you will see a HDD Bracket
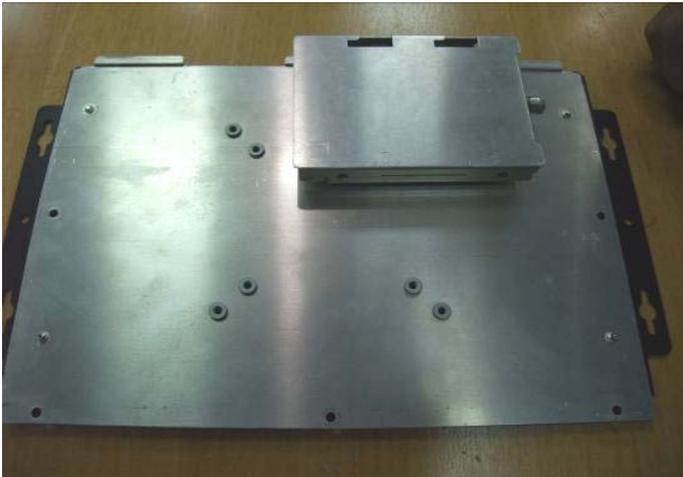
Step 3 : Fasten four screws with the dampers on the 2.5" SATA HDD

Step 4 : Put the 2.5" SATA onto HDD bracket
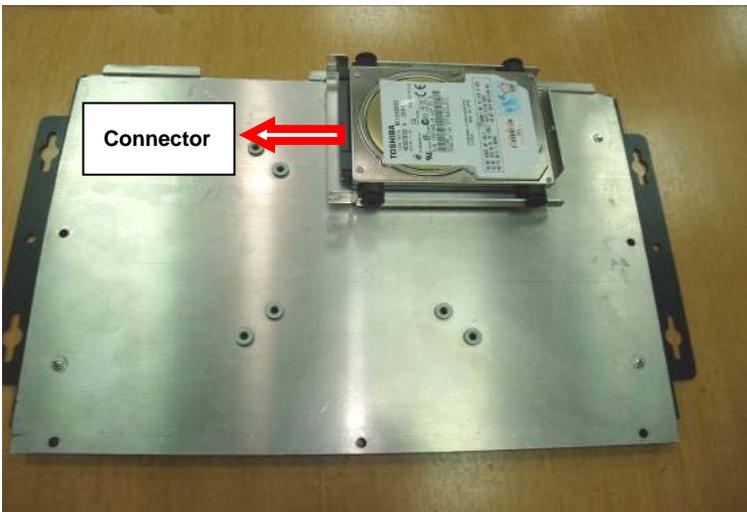
Step 5: Lock the 2.5" HDD to the HDD bracket and close the bracket
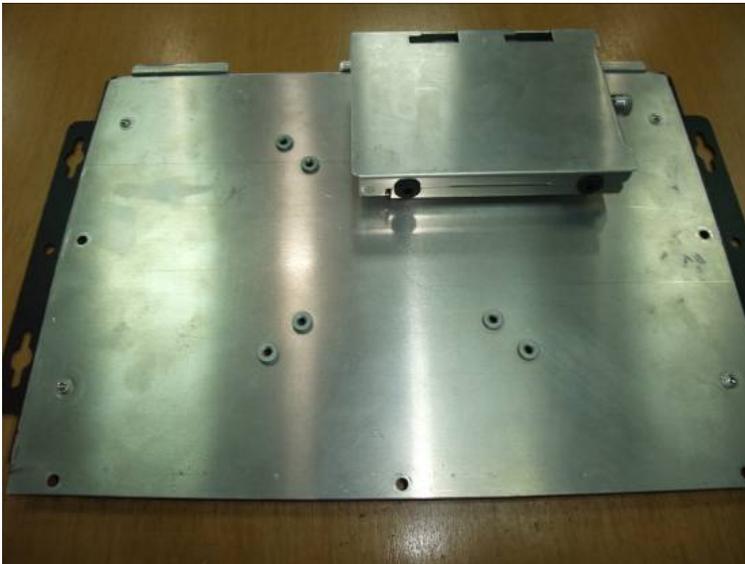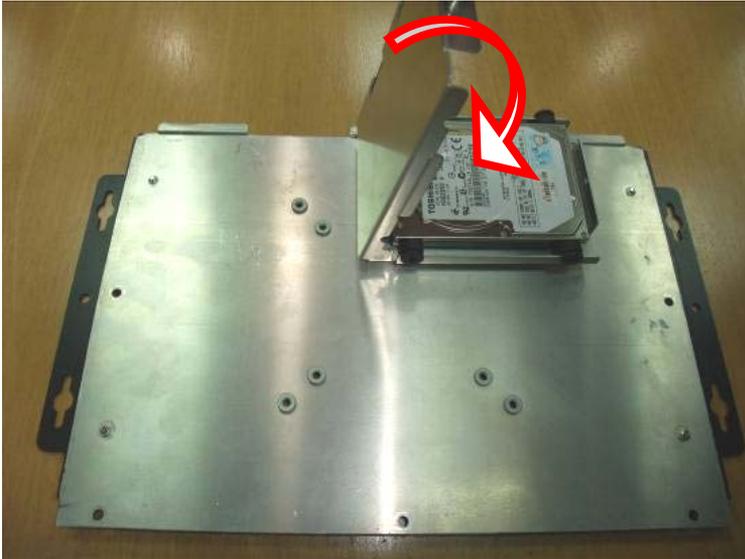
Step 6 : Connect the two SATA cables to the 2.5" HDD

Step 7: Fasten the five screws on the bottom case of GES-5500F
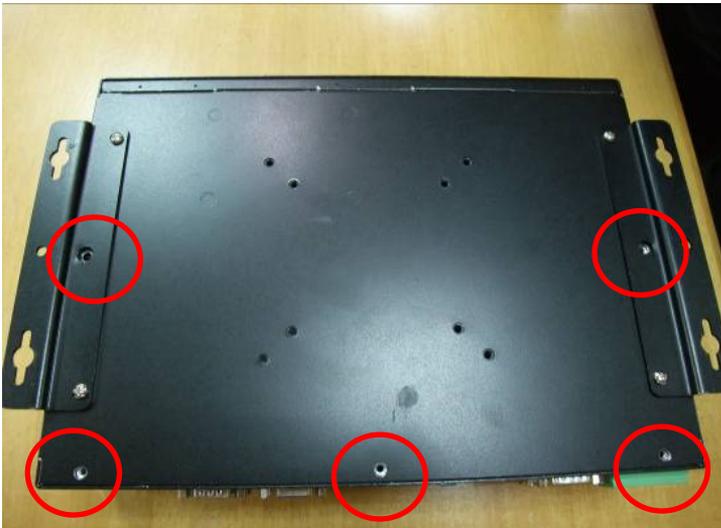
2.24 Installing the Memory

Step1: Put four thermal pads (1998666644) on the memory
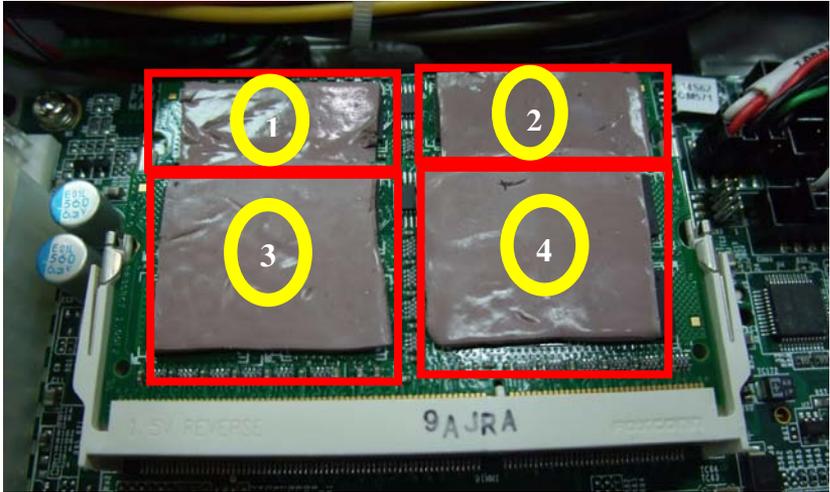
Step 2: Lock two screws to fix the memory bracket (M10500F020) onto PCB
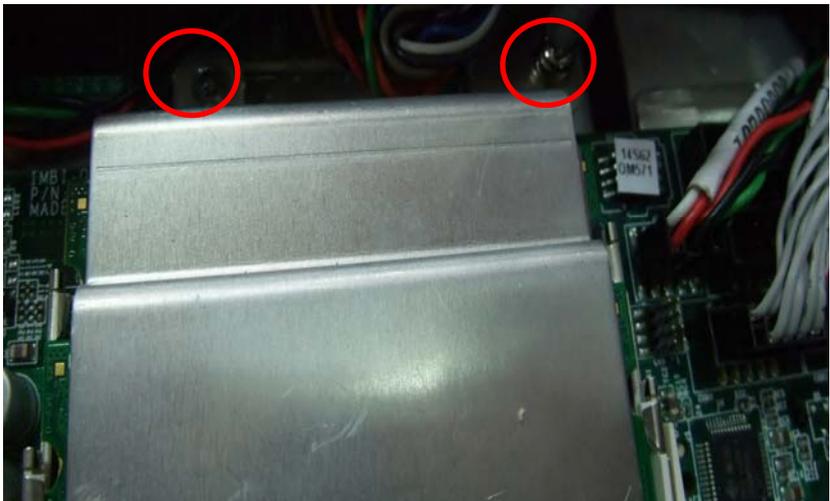
Chapter

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 GES-5500F 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 GES-5500F comes with a CD-ROM that contains all drivers your need.

Follow the sequence below to install the drivers:

Step 1 – Install INF 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 Driver

Please read following instructions for detailed installations.

4.1 Installation

Insert the GES-5500F CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 6 in order.

Step 1 – Install INF Driver

1. Click on the *Step1 - INF* folder and then double click on the *Setup.exe*

2. Follow the instructions that the window shows

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

Step 2 – Install VGA Driver

1. Click on the *Step2 - VGA* folder and select the OS your system is

2. Double click on *Setup.exe* file located in each OS folder

3. Follow the instructions that the window shows

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

Step 3 – Install LAN Driver

1. Click on the *Step3 - LAN* folder and double click on *Autorun.exe* file

2. Follow the instructions that the window shows

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

Step 4 – Install AUDIO Driver

1. Click on the *Step4 - AUDIO* folder and select the OS your system is

2. Double click on *.exe* file located in each OS folder

3. Follow the instructions that the window shows

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

Step 5 – Install ME Driver

1. Click on the *Step5 - 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 Driver

Please refer to Appendix C RAID & AHCI Settings

Appendix

A

Programming the
Watchdog Timer

A.1 Programming

GES-5500F utilizes ITE 8781F chipset as i ts watchdog timer controller. Below are the procedures to complete its configuration and the initial watchdog timer program is also atta ched 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 8781 enters the normal mode with all logical d evices 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.
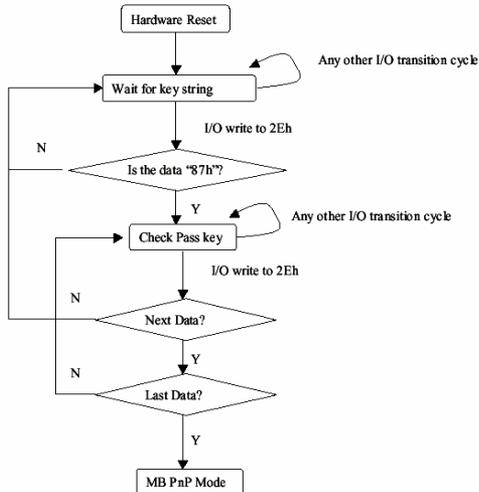
There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

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

Configure Control (Index=02h)

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

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

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

Bit	Description
7	**WDT Timeout Enable (WTE)** 1: Disable. 0: Enable.
6	**WDT Reset upon Mouse Interrupt (WRKMI)** 1: Disable. 0: Enable.
5	**WDT Reset upon Keyboard Interrupt (WRKBI)** 1: Disable.

	0: Enable.
4	**Reserved**
3-2	**Reserved**
1	**Force Time-out (FTO)** This bit is self-clearing.
0	**WDT Status (WS)** 1: WDT value reaches 0. 0: WDT value is not 0.

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

Bit	Description
7	**WDT Time-out Value Select 1 (WTVS)** 1: Second 0: Minute
6	**WDT Output through KRST (Pulse) Enable (WOKE)** 1: Enable 0: Disable
5	**WDT Time-out Value Extra select (WTVES)** 1: 64ms x WDT Timer-out value (default = 4s) 0: Determined by WDT Time-out value select 1 (bit 7 of this register)
4	**WDT Output through PWROK (Pulse) Enable (WOPE)** 1: Enable 0: Disable During LRESET#, this bit is selected by JP7 power-on strapping option
3-0	**Select interrupt level [note1] for WDT(SIL)**

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

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

Watch Dog Timer 1,2,3 Time-Out Value (MSB) Register

(Index=74h,84h,94h Default=00h)

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

A.2 ITE8781 Watchdog Timer Initial Program

```
.MODEL SMALL
.CODE
Main:
CALL Enter_Configuration_mode
CALL Check_Chip
mov cl, 7
call Set_Logic_Device
;time setting
mov cl, 10 ; 10 Sec
dec al
Watch_Dog_Setting:
;Timer setting
mov al, cl
mov cl, 73h
call Superio_Set_Reg
;Clear by keyboard or mouse interrupt
mov al, 0f0h
mov cl, 71h
call Superio_Set_Reg
;unit is second.
mov al, 0C0H
mov cl, 72h

call Superio_Set_Reg
```

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


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


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

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


Exit_Configuration_Mode PROC NEAR

MOV AX,0202h
```

```
CALL Write_Configuration_Data
RET
Exit_Configuration_Mode ENDP

Check_Chip PROC NEAR

MOV AL,20h
CALL Read_Configuration_Data
CMP AL,87h
JNE Not_Initial

MOV AL,21h
CALL Read_Configuration_Data
CMP AL,81h
JNE Not_Initial

Need_Initial:
STC
RET
Not_Initial:
CLC
RET
Check_Chip ENDP
Read_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
```

```
MOV DX,WORD PTR CS:[Cfg_Port+06h]

IN AL,DX

RET

Read_Configuration_Data ENDP


Write_Configuration_Data PROC NEAR

MOV DX,WORD PTR CS:[Cfg_Port+04h]

OUT DX,AL

XCHG AL,AH

MOV DX,WORD PTR CS:[Cfg_Port+06h]

OUT DX,AL

RET

Write_Configuration_Data ENDP


Superio_Set_Reg proc near

push ax

MOV DX,WORD PTR CS:[Cfg_Port+04h]

mov al,cl

out dx,al

pop ax

inc dx

out dx,al

ret

Superio_Set_Reg endp.Set_Logic_Device proc near
Set_Logic_Device      proc      near
```

```
push ax

push cx

xchg al,cl

mov cl,07h

call Superio_Set_Reg

pop cx

pop ax

ret

Set_Logic_Device endp


;Select 02Eh->Index Port, 02Fh->Data Port

Cfg_Port DB 087h,001h,055h,055h
DW 02Eh,02Fh
```

END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected

Appendix

B

I/O Information

B.1 I/O Address Map

Input/output (IO)
- [00000000 - 0000000F] Direct memory access controller
- [00000000 - 00000CF7] 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 101/102-Key or Microsoft Natural PS/2 Keyboard
- [00000061 - 00000061] System speaker
- [00000062 - 00000063] Motherboard resources
- [00000064 - 00000064] Standard 101/102-Key or Microsoft Natural 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
- [00000274 - 00000277] ISAPNP Read Data Port
- [00000279 - 00000279] ISAPNP Read Data Port
- [000002E8 - 000002EF] Communications Port (COM4)
- [000002F8 - 000002FF] Communications Port (COM2)
- [000003B0 - 000003BB] Intel(R) Graphics Media Accelerator HD
- [000003C0 - 000003DF] Intel(R) Graphics Media Accelerator HD
- [000003E8 - 000003EF] Communications Port (COM3)
- [000003F8 - 000003FF] Communications Port (COM1)
- [00000400 - 0000047F] System board
- [000004D0 - 000004D1] Motherboard resources
- [00000500 - 0000057F] System board
- [00000A00 - 00000A1F] Motherboard resources
- [00000A79 - 00000A79] ISAPNP Read Data Port
- [00000D00 - 0000FFFF] PCI bus
- [00001180 - 0000119F] System board
- [0000E000 - 0000E01F] Intel(R) Gigabit CT Desktop Adapter
- [0000E000 - 0000EFFF] Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 6 - 3B4C
- [0000F000 - 0000F01F] Intel(R) 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
- [0000F020 - 0000F03F] Intel(R) 82577LM Gigabit Network Connection
- [0000F040 - 0000F04F] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
- [0000F050 - 0000F05F] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
- [0000F060 - 0000F063] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
- [0000F070 - 0000F077] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
- [0000F080 - 0000F083] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
- [0000F090 - 0000F097] Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D

B.2 1st MB Memory Address Map

```
□ 💾 Memory
    └ 💻 [000A0000 - 000BFFFF]  Intel(R) Graphics Media Accelerator HD
    └ 💻 [000A0000 - 000BFFFF]  PCI bus
    └ 💻 [3C000000 - FFFFFFFF]  PCI bus
    └ 💻 [D0000000 - DFFFFFFF]  Intel(R) Graphics Media Accelerator HD
    └ 💻 [E0000000 - EFFFFFFF]  System board
    └ 💻 [FE000000 - FE3FFFFF]  Intel(R) Graphics Media Accelerator HD
    └ 💻 [FE400000 - FE4FFFFF]  Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 6 - 3B4C
    └ 🖧 [FE440000 - FE45FFFF]  Intel(R) Gigabit CT Desktop Adapter
    └ 🖧 [FE460000 - FE463FFF]  Intel(R) Gigabit CT Desktop Adapter
    └ 🖧 [FE500000 - FE51FFFF]  Intel(R) 82577LM Gigabit Network Connection
    └ 💻 [FE520000 - FE523FFF]  Microsoft UAA Bus Driver for High Definition Audio
    └ 💻 [FE524000 - FE5240FF]  Intel(R) 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
    └ 🔌 [FE525000 - FE5253FF]  Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B34
    └ 🔌 [FE526000 - FE5263FF]  Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B3C
    └ 🖧 [FE527000 - FE527FFF]  Intel(R) 82577LM Gigabit Network Connection
    └ 💻 [FE528000 - FE52800F]  Intel(R) Management Engine Interface
    └ 💻 [FEC00000 - FECFFFFF]  System board
    └ 💻 [FED00000 - FED003FF]  High Precision Event Timer
    └ 💻 [FED08000 - FED08FFF]  System board
    └ 💻 [FED14000 - FED19FFF]  System board
    └ 💻 [FED1C000 - FED1FFFF]  System board
    └ 💻 [FED20000 - FED3FFFF]  System board
    └ 💻 [FED90000 - FED93FFF]  System board
    └ 💻 [FEE00000 - FEE0FFFF]  System board
    └ 💻 [FF000000 - FFFFFFFF]  System board
```

B.3 IRQ Mapping Chart
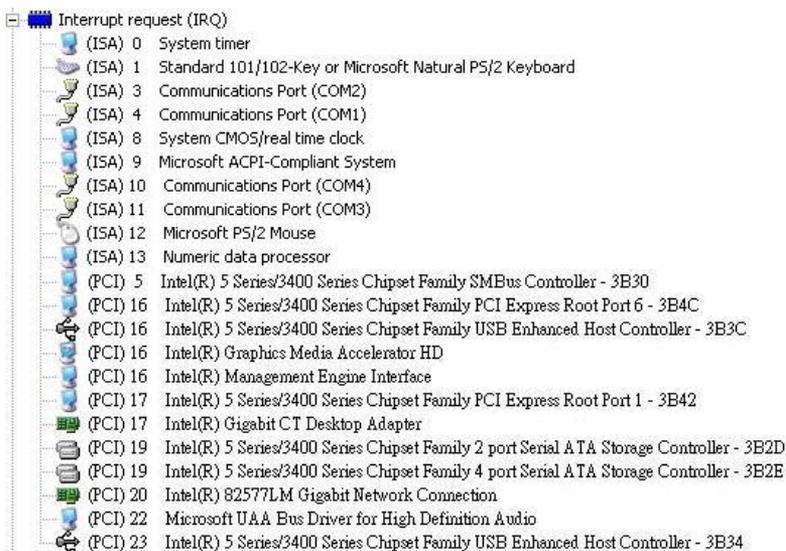
```
Interrupt request (IRQ)
    (ISA) 0    System timer
    (ISA) 1    Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
    (ISA) 3    Communications Port (COM2)
    (ISA) 4    Communications Port (COM1)
    (ISA) 8    System CMOS/real time clock
    (ISA) 9    Microsoft ACPI-Compliant System
    (ISA) 10   Communications Port (COM4)
    (ISA) 11   Communications Port (COM3)
    (ISA) 12   Microsoft PS/2 Mouse
    (ISA) 13   Numeric data processor
    (PCI) 5    Intel(R) 5 Series/3400 Series Chipset Family SMBus Controller - 3B30
    (PCI) 16   Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 6 - 3B4C
    (PCI) 16   Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B3C
    (PCI) 16   Intel(R) Graphics Media Accelerator HD
    (PCI) 16   Intel(R) Management Engine Interface
    (PCI) 17   Intel(R) 5 Series/3400 Series Chipset Family PCI Express Root Port 1 - 3B42
    (PCI) 17   Intel(R) Gigabit CT Desktop Adapter
    (PCI) 19   Intel(R) 5 Series/3400 Series Chipset Family 2 port Serial ATA Storage Controller - 3B2D
    (PCI) 19   Intel(R) 5 Series/3400 Series Chipset Family 4 port Serial ATA Storage Controller - 3B2E
    (PCI) 20   Intel(R) 82577LM Gigabit Network Connection
    (PCI) 22   Microsoft UAA Bus Driver for High Definition Audio
    (PCI) 23   Intel(R) 5 Series/3400 Series Chipset Family USB Enhanced Host Controller - 3B34
```

B.4 DMA Channel Assignments

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

Appendix

C

RAID & AHCI Settings

C.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**
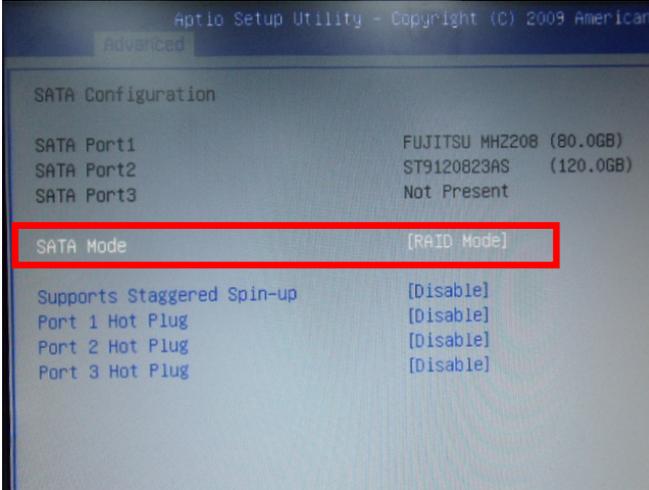
Step 4: The setting procedures "**In BIOS Setup Menu**"
**B: Advanced -> Launch Storage OpROM -> Enabled**
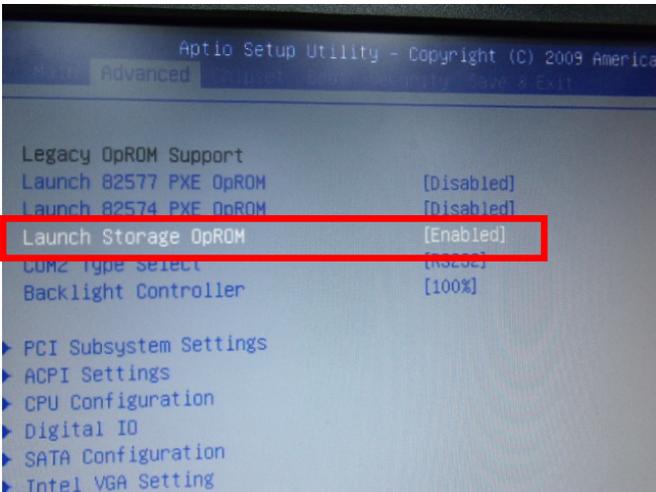
Step 5: The setting procedures "**In BIOS Setup Menu"**
**C: Boot -> Boot Option #1 -> DVD-ROM Type**
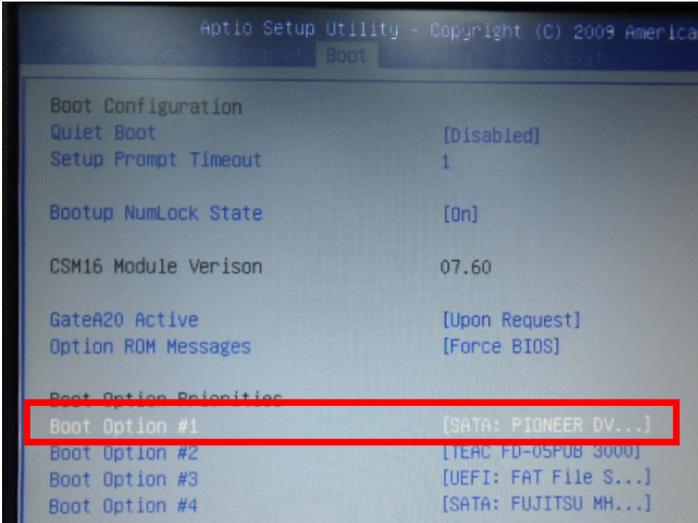
Step 6: The setting procedures "**In BIOS Setup Menu"**
**D: Save & Exit -> Save Changes and Exit**
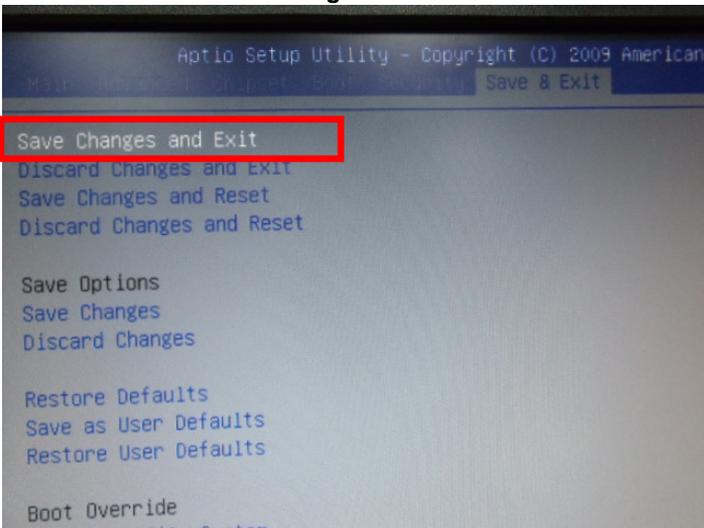
Step 7: Press **Ctrl-I** to enter **MAIN MENU**
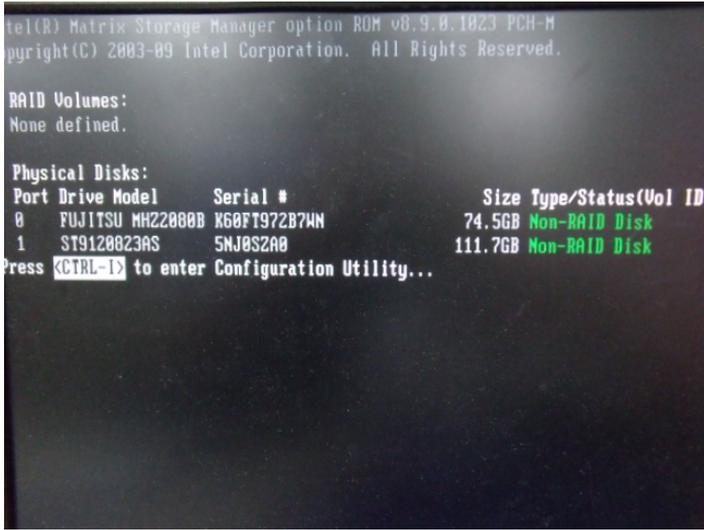
Step 8: Choose "**1.Create RAID Volume**"
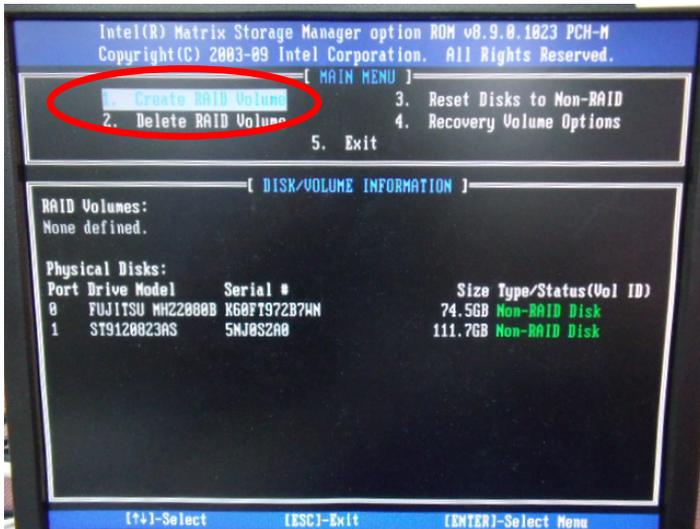
Step 9: RAID Level -> RAID0(Stripe)
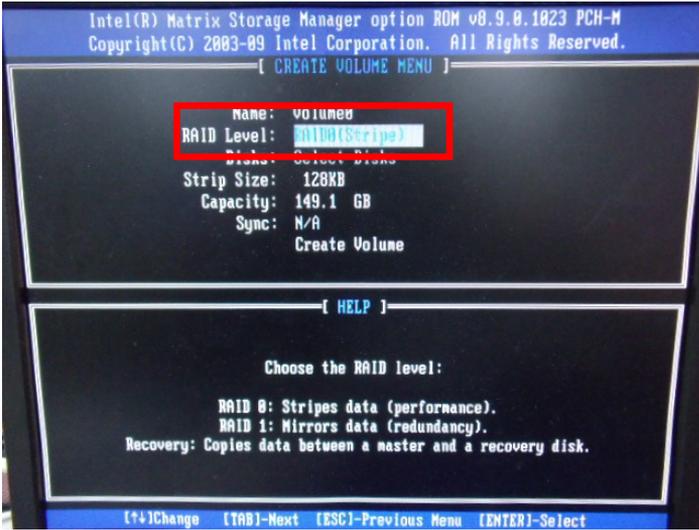

Step 10: Choose "**Create Volume**"
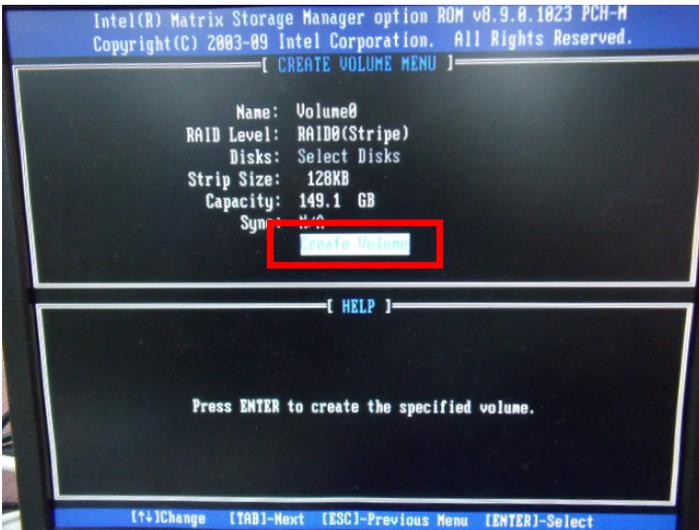
Step 11: Choose "**Y**"
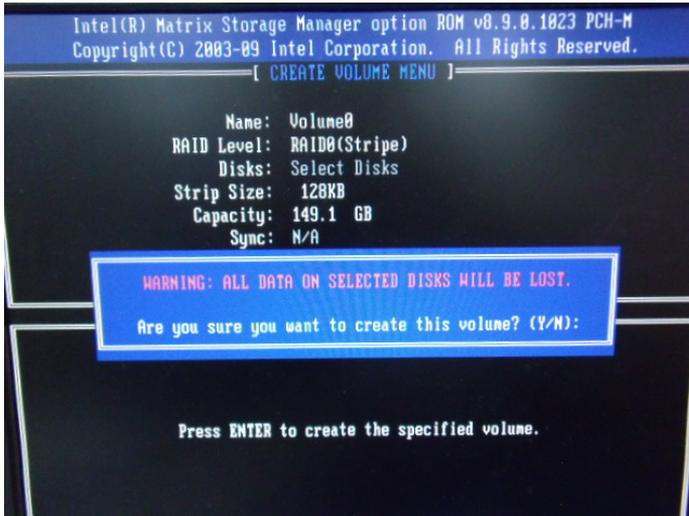

Step 12: Choose "**5. Exit**"
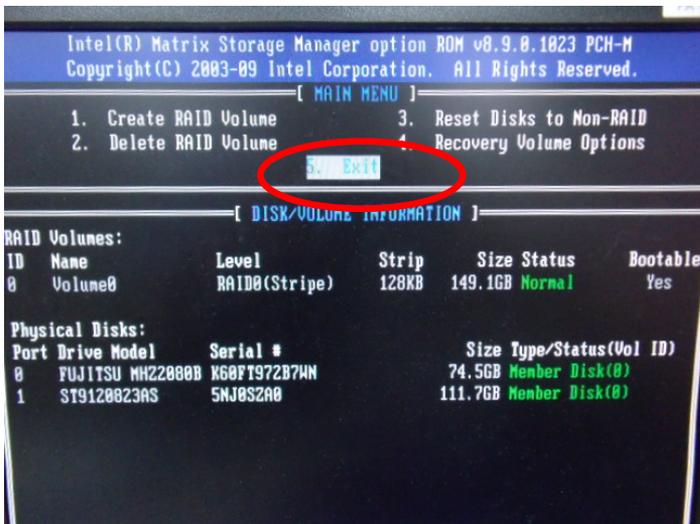
Step 13: Choose "**Y**"
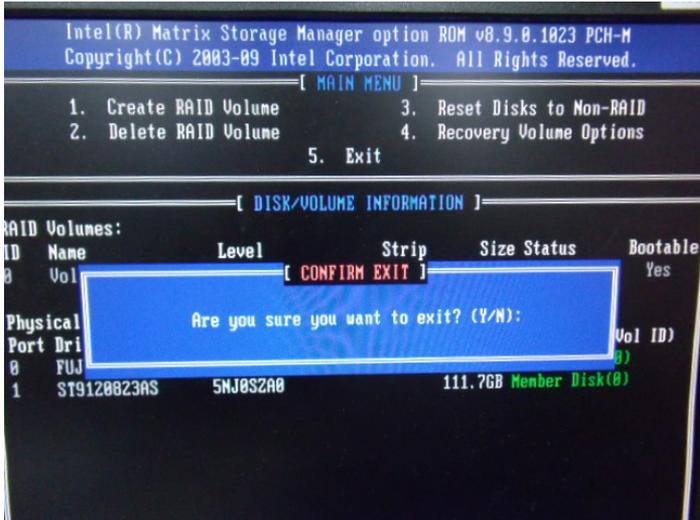
Step 14: Setup OS

Step 15: Press "**F6**"

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

Step 16: Choose "**S**"

Windows Setup

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices(s):

   <none>

* To specify additional SCSI adapters, CD-ROM drives, or special
  disk controllers for use with Windows, including those for
  which you have a device support disk from a mass storage device
  manufacturer, press S.

* If you do not have any device support disks from a mass storage
  device manufacturer, or do not want to specify additional
  mass storage devices for use with Windows, press ENTER.

S=Specify Additional Device   ENTER=Continue   F3=Exit

Step 17: Choose "**Intel(R) ICH8M-E/ICH9M-E/5 Series SATA RAID Controller**"
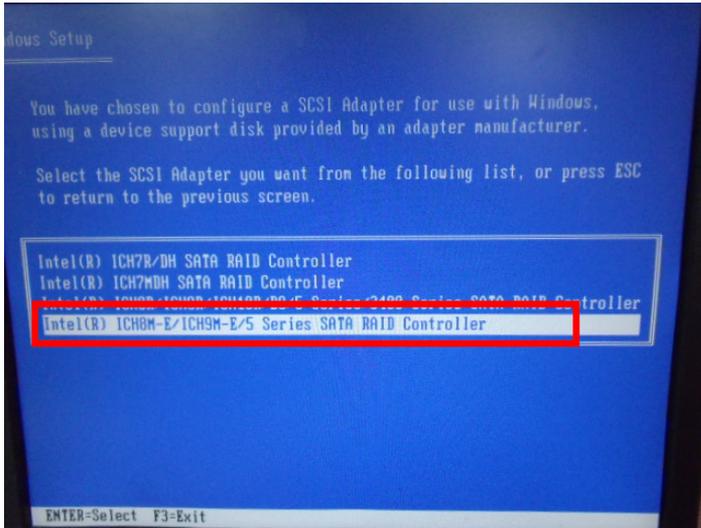
Step 18: It will show the model number you select and then press "**ENTER**"

Step 19: Setup is starting Windows
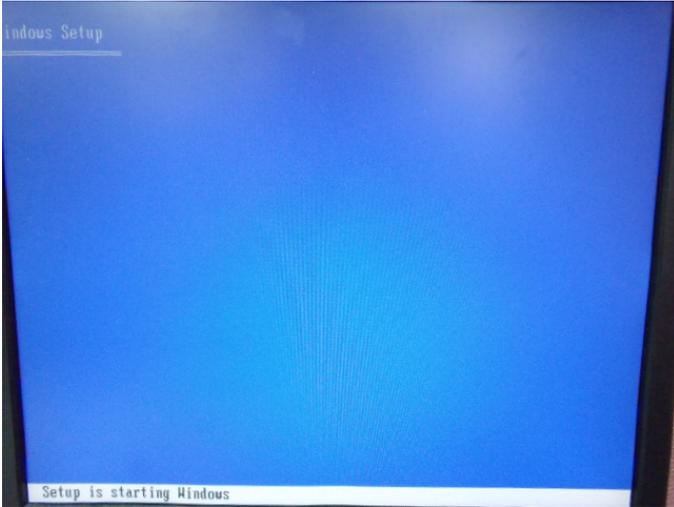
C.2 Setting AHCI

OS installation to setup AHCI Mode

Step 1: Copy the files below from "*Driver CD -> 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
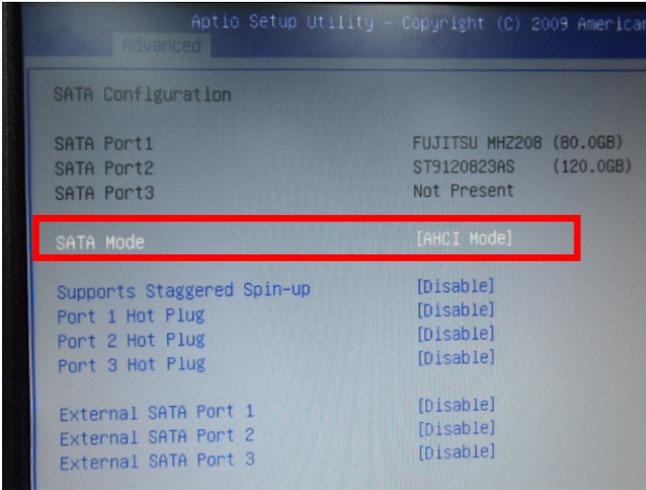

Step 4: The setting procedures "**In BIOS Setup Menu**"
**B: Boot -> Boot Option #1 -> DVD-ROM Type**
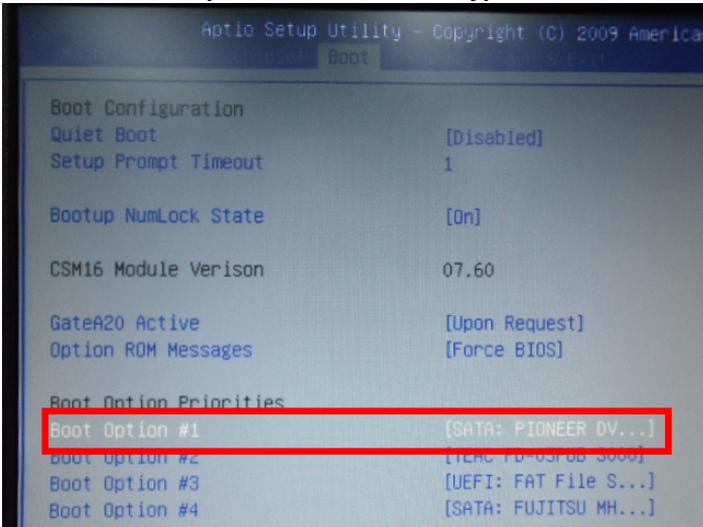
Step 5: The setting procedures "**In BIOS Setup Menu"**
**C: Save & Exit -> Save Changes and Exit**
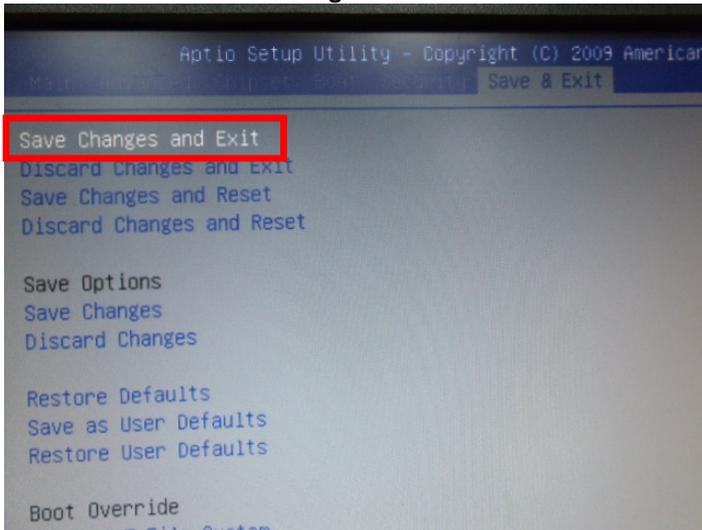
Step 6: Setup OS

Step 7: Press "**F6**"

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

Step 8: Choose "**S**"

Windows Setup

Setup could not determine the type of one or more mass storage devices
installed in your system, or you have chosen to manually specify an adapter.
Currently, Setup will load support for the following mass storage devices(s):

    <none>

* To specify additional SCSI adapters, CD-ROM drives, or special
  disk controllers for use with Windows, including those for
  which you have a device support disk from a mass storage device
  manufacturer, press S.

* If you do not have any device support disks from a mass storage
  device manufacturer, or do not want to specify additional
  mass storage devices for use with Windows, press ENTER.

S=Specify Additional Device   ENTER=Continue   F3=Exit

Step 9: Choose "**Intel(R) 5 Series 6 Port SATA AHCI Controller**"
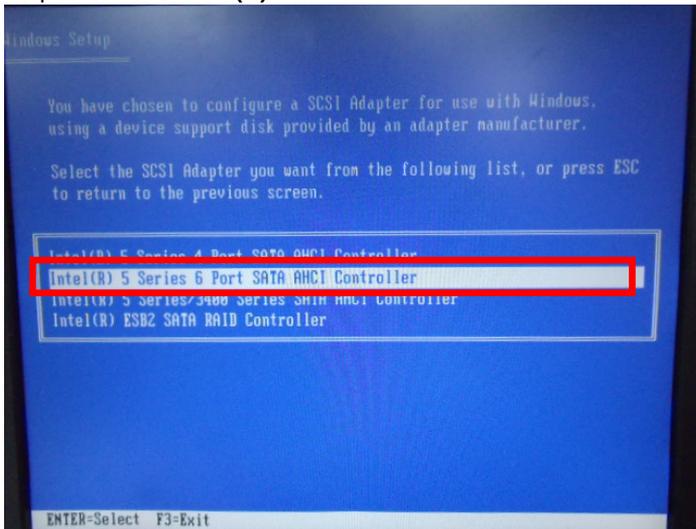
Step 10: It will show the model number you select and then press "**ENTER**"

Step 11: Setup is loading files

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