

GES-2200F

Green Embedded System
2.5" SATA Hard Disk Drive Bay
2 Gigabit Ethernet Ports/
10 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-2200F Bare Bone
- 1 Product CD for manual (in PDF format) and drivers
- 1 AC/DC Power Adapter

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

GES-2200F adopts the Intel® Atom™ N450/D410/D510 Processor. The chipset is equipped with Intel® ICH8M. Moreover, the system memory features two DDR2 533/667 DIMM sockets up to 4 GB. It deploys two LAN ports that consist of 10/100/1000Base-TX Ethernet LAN RJ-45 ports. GES-2200F condensed appearance features desktop and wallmount form factor that fits nicely into a space-limited environment.

This compact GES-2200F equipped with one internal 2.5” Hard Disk Drive with SATA 3.0 Gb/s interface. In addition, it features 10 COM ports and eight USB2.0 ports. Furthermore, the GES-2200F deploys single view VGA and optional TPM1.2 function.

With the increasing demands of high performance in audio and video, AAEON released the specific Digital Signage platform to fulfill the needs of multimedia and digital signage applications.

1.2 Features

- Compact Size, Fanless Platform
- Onboard Intel® Atom™ N450/D410/D510 Processor + ICH8M
- 200-Pin DDR2 533/667 DIMM x 2 (Up To 4 GB)
- Realtek RTL 8111C 10/100/1000Base-TX x 2
- Single View With VGA
- Internal 2.5" SATA 3.0Gb/s Hard Disk Drive Bay x 1
- Supports TPM1.2 (Optional)
- USB2.0 x 8, COM x 10
- Powered With 12V DC-in By DC Jack
- Industrial Grade Robust Chassis

1.3 Specifications

CPU		Onboard Intel® Atom™ N450/D410/D510
Chipset		Intel® Atom™ N450/D410/D510 + ICH8M
Display Interface	VGA	D-Sub 15 x 1
	DVI	—
	Others	—
Storage Device	SSD	CompactFlash™ x 1 (Optional)
	HDD	2.5" SATA HDD x 1
Network	LAN	10/100/1000Base-TX x 2
	Wireless	—
Front I/O	USB Host	USB 2.0 x 4
	LAN	—
	Serial Port	RS-232 x 8
	DIO	—
	Audio	—
	KB/MS	—
	Others	—
Rear I/O	USB Host	USB 2.0 x 4
	LAN	RJ-45 x 2
	Serial Port	RS-232 x 1, RS-232/422/485 x 1
	DIO	—
	Audio	Line-in, Mic-in
	KB/MS	Keybarod x 1, Mouse x 1

	Others	Power-in
Expansion	PCIe	—
	PCI	—
	Mini Card	—
	Mini PCI	1
	Others	—
Indicator	Front	Power LED x 1, HDD LED x 1
	Rear	—
Power Requirement		AC/DC power adapter
Power Consumption		40W
System Cooling		Fanless
Mounting		Desktop/ Wallmount
Operating Temperature		32°F ~122°F (0°C~50°C)
Storage Temperature		-4°F ~140°F (-20°C~60°C)
Anti-Vibration		HD: 0.5 g rms/5~500 Hz/ random operation
Anti-Shock		15 G with 11 m/sec, operating
MTBF		—
Certification	EMC	CE/FCC Class A
	Safety	—
Dimension		10.63" x 1.97" x 7.87" (270mm x 50mm x 200mm)
Gross Weight		8.8 lb (4 kg)
Note		Windows [®] XP, Windows [®] 7, Linux support

1.4 General System Information

Front Panel



Rear Panel



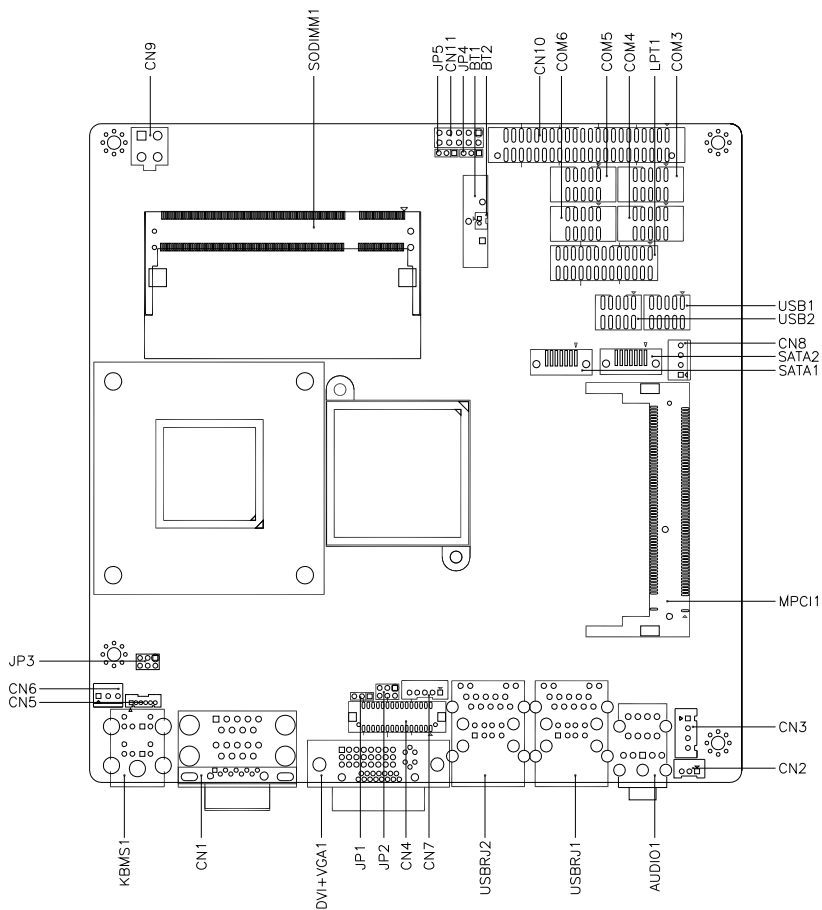
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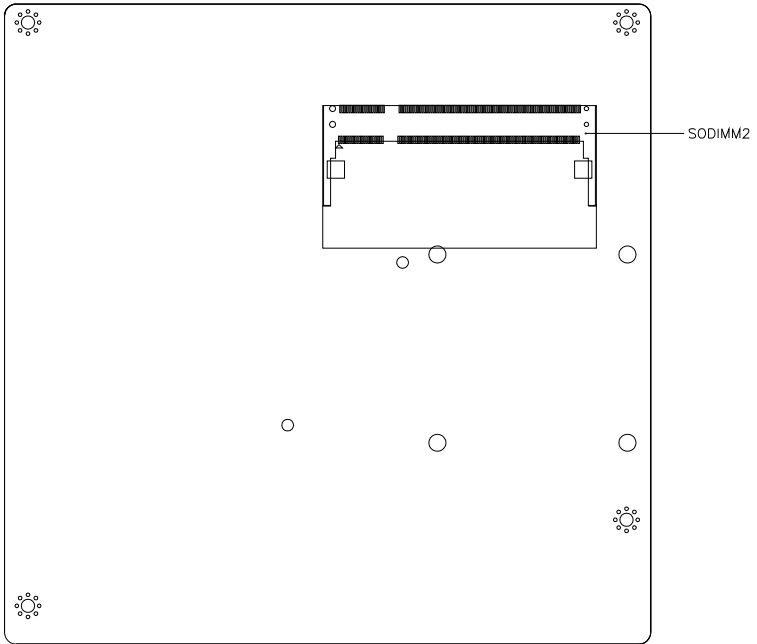
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Hardware Installation

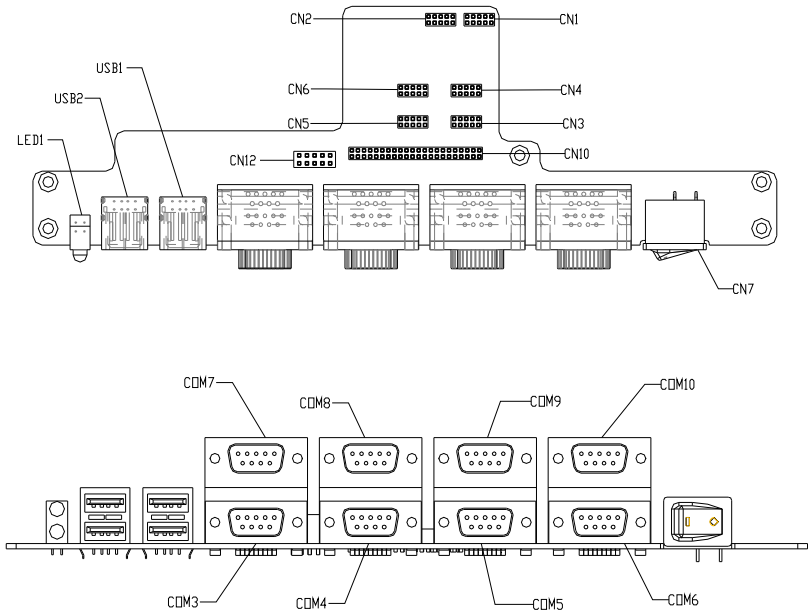
2.1 Location of Jumpers and Connectors

Main board

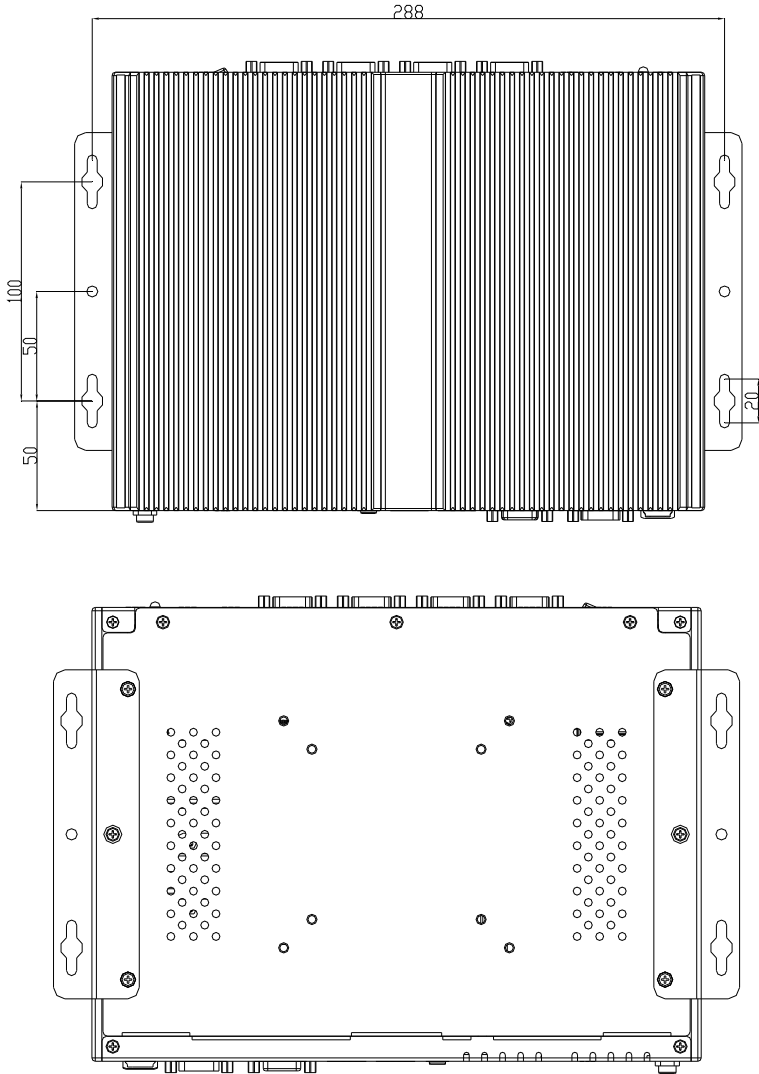


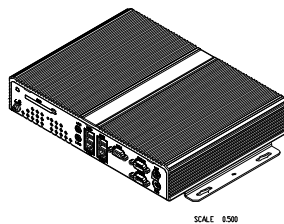
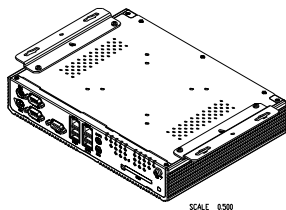
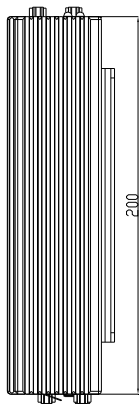
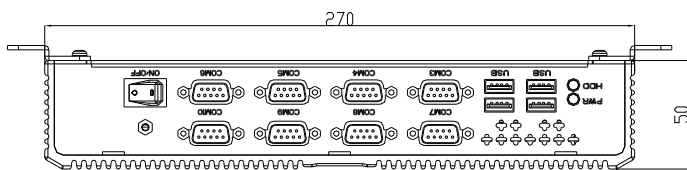
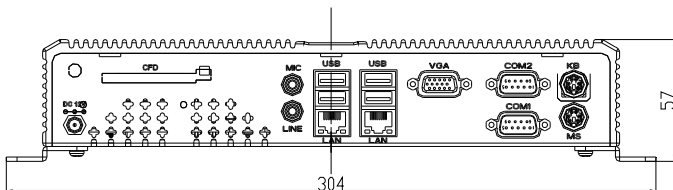


COM Port Function Board: PER-T204



2.2 Mechanical Drawing





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
JP1	LCD Voltage Selection
JP2	LCD Backlight Control Selection
JP3	COM2 Ring/+5V/+12V Selection
JP4	AT/ATX function Selection
JP5	Clear CMOS

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:

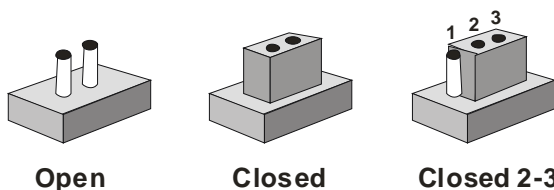
Label	Function
CN1 (Optional)	COM2 RS-232/422/485 Serial Port Connector
CN2	SPDIF Connector
CN3	Internal Audio 2 Channel Connector
CN4	LVDS Connector
CN5	Internal PS2 Keyboard/Mouse Connector
CN6	FAN Connector
CN7	LVDS backlight Connector
CN8	SATA Power Connector
CN9	ATX 4P Power Connector
CN10	COM7~10 RS-232 Serial Port Connector

CN11	Front Panel Connector
KBMS1	PS2 Keyboard/Mouse Connector
COM1	COM1 RS-232 & COM2 RS-232/422/485 Serial Port Connector
COM3	COM3 RS-232 Serial Port Connector
COM4	COM4 RS-232 Serial Port Connector
COM5	COM5 RS-232 Serial Port Connector
COM6	COM6 RS-232 Serial Port Connector
DVI+VGA1	VGA Connector
USBRJ1	USB Connector & 1000Base-TX Ethernet Connector
USBRJ2	USB Connector & 1000Base-TX Ethernet Connector
AUDIO1	Audio 2 Channel Connector
USB1	USB Port Connector
USB2	USB Port Connector
LPT1	LPT Port Connector
SATA1	Primary Serial ATA Connector
SATA2	Secondary Serial ATA Connector
MPC11	Mini PCI Slot
SODIMM1	SODIMM Slot
SODIMM2	SODIMM Slot

2.5 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



A pair of needle-nose pliers may be helpful when working with jumpers.

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

Generally, you simply need a standard cable to make most connections.

2.6 LCD Voltage Selection (JP1)

JP1	Function
1-2	+5V
2-3	+3.3V (Default)

2.7 LCD Backlight Control Selection (JP2)

Backlight Control

JP2	Function
1-3	Chips control
3-5	SMBus control (Default)

Backlight Voltage

JP2	Function
2-4	+5V
4-6	+12V (Default)

2.8 COM2 Ring/+5V/+12V Selection (JP3)

JP3	Function
1-2	+12V
3-4	Ring (Default)
5-6	+5V

2.9 AT/ATX Power Mode Selection (JP4)

JP4	Function
1-2	ATX (Default)
2-3	AT

2.10 Clear CMOS (JP5)

JP5	Function
1-2	Protected (Default)

2-3	Clear
-----	-------

2.11 SPDIF Connector (CN2)

Pin	Signal
1	SPDIF-OUT
2	GND
3	SPDIF-IN

2.12 Internal Audio 2 Channel Connector (CN3)

Pin	Signal
1	SPEAK-OUT R+
2	SPEAK-OUT R-
3	SPEAK-OUT L+
4	SPEAK-OUT L-

2.13 LVDS Connector (CN4)

Pin	Signal	Pin	Signal
1	LVDS_BKLEN	2	LVDS_BKLCTL
3	PPVCC	4	GND
5	LVDS_TXLCLK#	6	LVDS_TXLCLK
7	PPVCC	8	GND
9	LVDS_TXL0#	10	LVDS_TXL0
11	LVDS_TXL1#	12	LVDS_TXL1
13	LVDS_TXL2#	14	LVDS_TXL2
15	LVDS_TXL3#	16	LVDS_TXL3
17	LVDS_DDCPDATA	18	LVDS_DDCPCLK
19	N.C	20	N.C
21	N.C	22	N.C
23	N.C	24	N.C
25	N.C	26	N.C

27	PPVCC	28	GND
29	N.C	30	N.C

Note: For VLCD (pin 3, 7, 27), the max. rating of each pin is 0.5A@5V.

2.14 Internal PS2 Keyboard and Mouse Connector (CN5)

Pin	Signal
1	KBDATA
2	KBCLK
3	GND
4	+5V
5	MSDATA
6	MSCLK

2.15 Fan Connector (CN6)

Pin	Signal
1	GND
2	Power control
3	Speed detection

2.16 LVDS Backlight Connector (CN7)

Pin	Signal
1	LVDS Voltage select
2	LVDS Backlight control
3	GND
4	GND
5	LVDS Backlight Enable

Note: The max. rating of Pin 1 is 0.5A @ 12V.

2.17 SATA Power Connector (CN8)

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

Note: The max. rating of Pin1 is 1A @ 12V; the max. rating of Pin4 is 1A @ 5V.

2.18 ATX Power +12V Connector (CN9)

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

2.19 COM7~10 RS-232 Serial Port Connector (CN10)

Pin	Signal	Pin	Signal
1	DCD#7	2	DSR#7
3	RXD7	4	RTS#7
5	TXD7	6	CTS#7
7	DTR#7	8	RI#7
9	GND	10	N.C
11	DCD#8	12	DSR#8
13	RXD8	14	RTS#8
15	TXD8	16	CTS#8
17	DTR#8	18	RI#8
19	GND	20	N.C
21	DCD#9	22	DSR#9
23	RXD9	24	RTS#9

25	TXD9	26	CTS#9
27	DTR#9	28	RI#9
29	GND	30	N.C
31	DCD#10	32	DSR#10
33	RXD10	34	RTS#10
35	TXD10	36	CTS#10
37	DTR#10	38	RI#10
39	GND	40	N.C
41	+5V	42	+5V
43	GND	44	N.C

2.20 Front Panel Connector (CN11)

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

2.21 SIM Socket Connector (CN13)

Pin	Signal	Pin	Signal
1	UIM Power	6	UIM DATA
2	UIM RESET	5	UIM Vpp
3	UIM CLK	4	GND

2.22 RS-232 Serial Port Connector (COM3)

Pin	Signal	Pin	Signal
1	DCD#3	2	RXD3
3	TXD3	4	DTR#3
5	GND	6	DSR#3

7	RTS#3	8	CTS#3
9	RI#3	10	N.C

2.23 RS-232 Serial Port Connector (COM4)

Pin	Signal	Pin	Signal
1	DCD#4	2	RXD4
3	TXD4	4	DTR#4
5	GND	6	DSR#4
7	RTS#4	8	CTS#4
9	RI#4	10	N.C

2.24 RS-232 Serial Port Connector (COM5)

Pin	Signal	Pin	Signal
1	DCD#5	2	RXD5
3	TXD5	4	DTR#5
5	GND	6	DSR#5
7	RTS#5	8	CTS#5
9	RI#5	10	N.C

2.25 RS-232 Serial Port Connector (COM6)

Pin	Signal	Pin	Signal
1	DCD#6	2	RXD6
3	TXD6	4	DTR#6
5	GND	6	DSR#6
7	RTS#6	8	CTS#6
9	RI#6	10	N.C

2.26 USB Port Connector (USB1)

Pin	Signal	Pin	Signal
1	+5V	2	GND

3	USBD4-	4	GND
5	USBD4+	6	USBD5+
7	GND	8	USBD5-
9	GND	10	+5V

2.27 USB Port Connector (USB2)

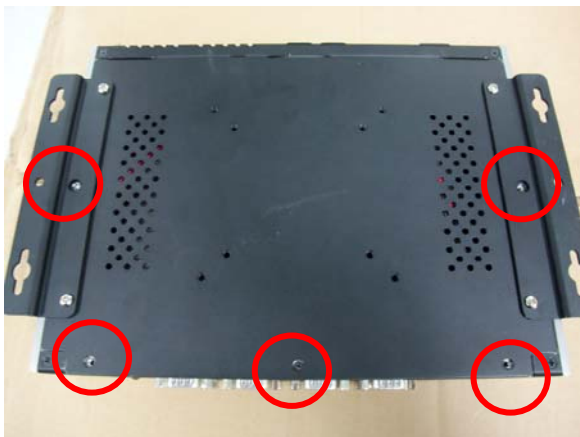
Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD6-	4	GND
5	USBD6+	6	USBD7+
7	GND	8	USBD7-
9	GND	10	+5V

2.28 LPT Port Connector (LPT1)

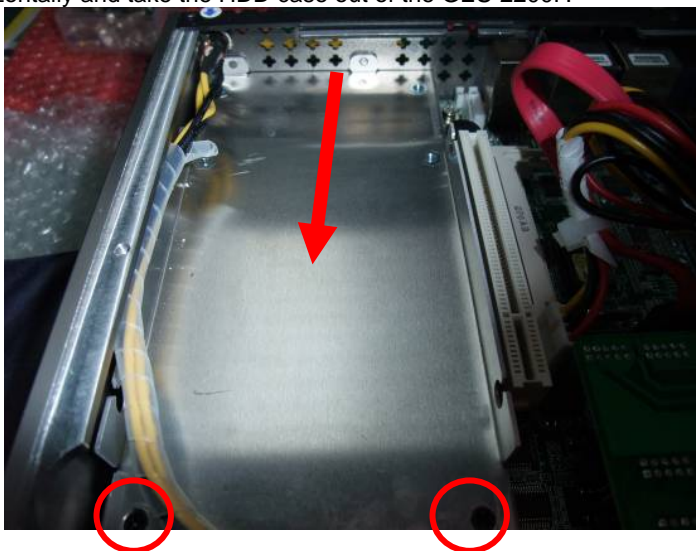
Pin	Signal	Pin	Signal
1	#STROBE	2	#AFD
3	DATA0	4	#ERROR
5	DATA1	6	#INIT
7	DATA2	8	#SLIN
9	DATA3	10	GND
11	DATA4	12	GND
13	DATA5	14	GND
15	DATA6	16	GND
17	DATA7	18	GND
19	#ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SELECT	26	N.C

2.29 Installing the Hard Disk Drive

Step1: Unfasten the five screws on the bottom case of the GES-2200F.



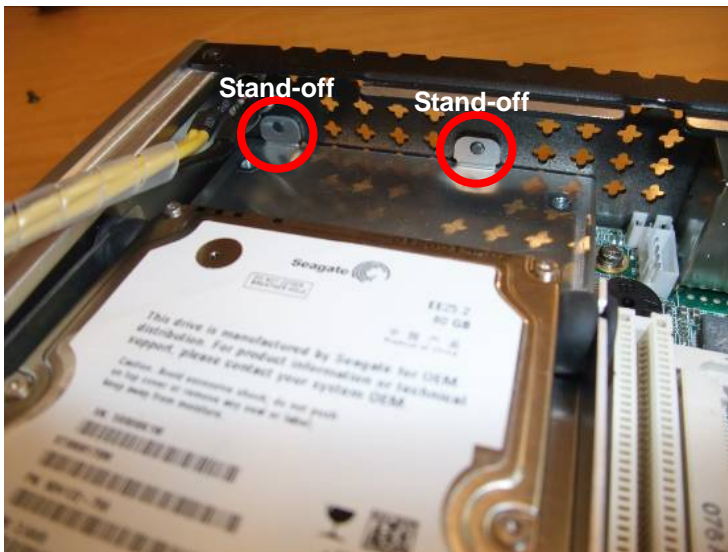
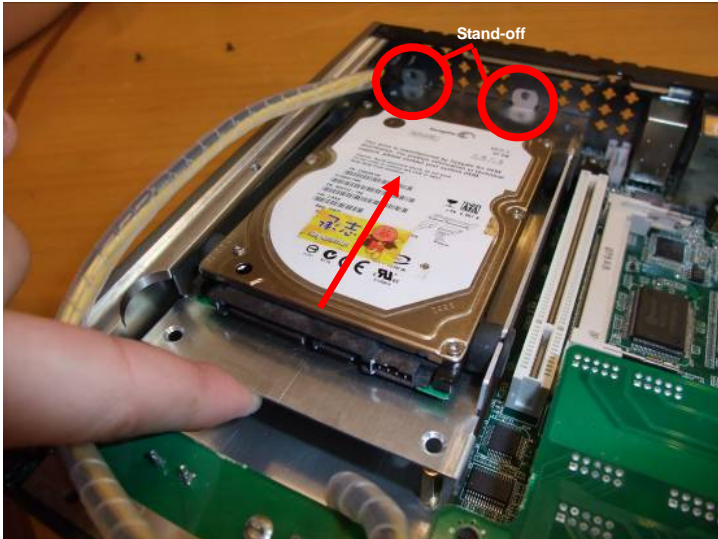
Step 2: Take the two screws out of the case, and shift the HDD case horizontally and take the HDD case out of the GES-2200F.



Step 3: Fasten the four screws covered by damper on HDD and put the HDD back to the case



Step 4: Insert the HDD case to the GES-2200F horizontally and lock the HDD case by stand-off.



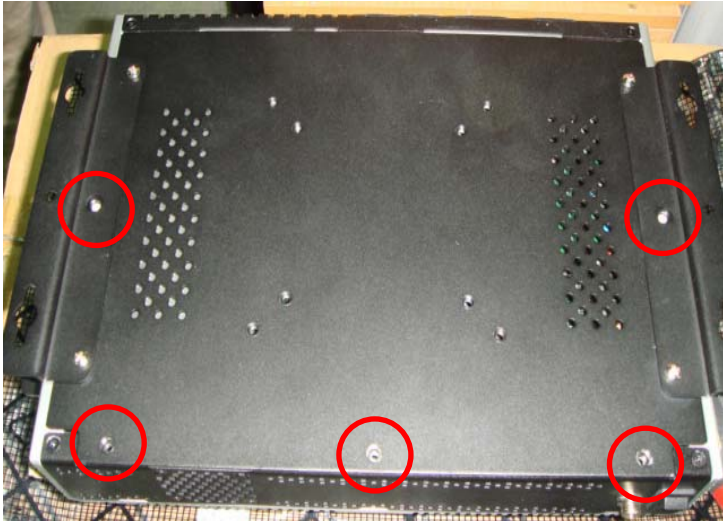
Step 5: Fasten the two screws to fix the HDD case



Step 6: Plug the SATA cable and power cables



Step 7: Fasten the five screws on the bottom case of the GES-2200F.



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-2200F 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 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/disables quiet boot option.

Security

Set setup administrator password.

Save&Exit

Exit system setup after saving the changes.

Chapter

4

Driver Installation

The GES-2200F comes with a CD-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 Audio Driver

Step 4 – Install LAN Driver

Please read following instructions for detailed installations.

4.1 Installation

Insert the GES-2200F CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 4 in order.

Step 1 – Install Chipset Driver

1. Click on the **Step 1 - 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 – Intel Graphics** 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 Audio Driver

1. Click on the **Step 3 - Audio** 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 4 – Install LAN Driver

1. Click on the **Step 4 - LAN** 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

Appendix

A

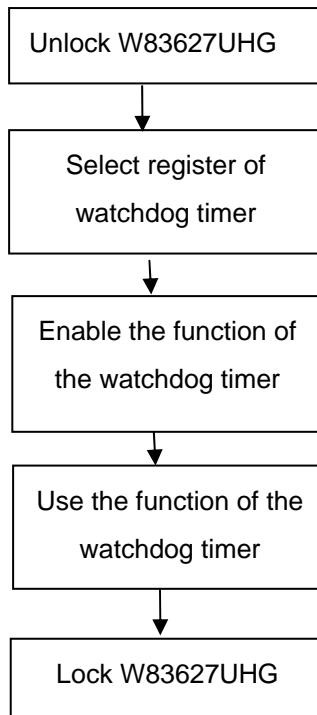
Programming the Watchdog Timer

A.1 Programming

GES-2200F utilizes W83627UHG 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



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 register 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 keyboard 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 - 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
[00000170 - 00000177]	Secondary IDE Channel
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[00000295 - 00000296]	Motherboard resources
[000002B0 - 000002B7]	Communications Port (COM7)
[000002B8 - 000002BF]	Communications Port (COM8)
[000002C0 - 000002C7]	Communications Port (COM9)
[000002C8 - 000002CF]	Communications Port (COM10)
[000002E0 - 000002E7]	Communications Port (COM5)

	[000002E8 - 000002EF]	Communications Port (COM4)
	[000002F0 - 000002F7]	Communications Port (COM6)
	[000002F8 - 000002FF]	Communications Port (COM2)
	[00000376 - 00000376]	Secondary IDE Channel
	[000003B0 - 000003BB]	Intel(R) Graphics Media Accelerator 3150
	[000003C0 - 000003DF]	Intel(R) Graphics Media Accelerator 3150
	[000003E8 - 000003EF]	Communications Port (COM3)
	[000003F6 - 000003F6]	Primary IDE Channel
	[000003F8 - 000003FF]	Communications Port (COM1)
	[00000480 - 000004BF]	Motherboard resources
	[000004D0 - 000004D1]	Motherboard resources
	[00000800 - 0000087F]	Motherboard resources
	[00000A79 - 00000A79]	ISAPNP Read Data Port
	[00000D00 - 0000FFFF]	PCI bus
	[0000D000 - 0000D0FF]	Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC #2
	[0000D000 - 0000DFFF]	Intel(R) ICH8 Family PCI Express Root Port 2 - 2841
	[0000E000 - 0000E0FF]	Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC
	[0000E000 - 0000EFFF]	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
	[0000F000 - 0000F01F]	Intel(R) ICH8 Family SMBus Controller - 283E
	[0000F020 - 0000F03F]	Intel(R) ICH8 Family USB Universal Host Controller - 2832
	[0000F040 - 0000F05F]	Intel(R) ICH8 Family USB Universal Host Controller - 2831
	[0000F060 - 0000F07F]	Intel(R) ICH8 Family USB Universal Host Controller - 2830
	[0000F080 - 0000F09F]	Intel(R) ICH8 Family USB Universal Host Controller - 2835
	[0000F0A0 - 0000F0BF]	Intel(R) ICH8 Family USB Universal Host Controller - 2834
	[0000F0C0 - 0000F0CF]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F0D0 - 0000F0DF]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F0E0 - 0000F0E3]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F0F0 - 0000F0F7]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F100 - 0000F103]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F110 - 0000F117]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F120 - 0000F12F]	Intel(R) ICH8M Ultra ATA Storage Controllers - 2850
	[0000F170 - 0000F177]	Intel(R) Graphics Media Accelerator 3150

B.2 1st MB Memory Address Map

Address Range	Device
[000A0000 - 000BFFFF]	Intel(R) Graphics Media Accelerator 3150
[000A0000 - 000BFFFF]	PCI bus
[3F700000 - FFFFFFFF]	PCI bus
[D0000000 - DFFFFFFF]	Intel(R) Graphics Media Accelerator 3150
[E0000000 - E000FFFF]	Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC #2
[E0000000 - E000FFFF]	Intel(R) ICH8 Family PCI Express Root Port 2 - 2841
[E0200000 - E020FFFF]	Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC
[E0200000 - E020FFFF]	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
[F0000000 - F3FFFFFF]	System board
[FE700000 - FE7FFFFFFF]	Intel(R) Graphics Media Accelerator 3150
[FE800000 - FE8FFFFFFF]	Intel(R) ICH8 Family PCI Express Root Port 2 - 2841
[FE820000 - FE820FFF]	Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC #2
[FE900000 - FE9FFFFFFF]	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
[FE920000 - FE920FFF]	Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC
[FEA00000 - FEA7FFFF]	Intel(R) Graphics Media Accelerator 3150
[FEA80000 - FEAFFFFFFF]	Intel(R) Graphics Media Accelerator 3150
[FEB00000 - FEB03FFF]	Microsoft UAA Bus Driver for High Definition Audio
[FEB04000 - FEB040FF]	Intel(R) ICH8 Family SMBus Controller - 283E
[FEB05000 - FEB053FF]	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
[FEB06000 - FEB063FF]	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A
[FEC00000 - FEC00FFF]	Motherboard resources
[FED00000 - FED003FF]	High precision event timer
[FED14000 - FED19FFF]	System board
[FED1C000 - FED1FFFF]	Motherboard resources
[FED20000 - FED8FFFF]	Motherboard resources
[FEE00000 - FEE00FFF]	Motherboard resources
[FFE00000 - FFFFFFFF]	Motherboard resources

B.3 IRQ Mapping Chart

Interrupt request (IRQ)	
(ISA) 0	High precision event timer
(ISA) 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 7	Communications Port (COM3)
(ISA) 7	Communications Port (COM4)
(ISA) 8	High precision event timer
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 10	Communications Port (COM5)
(ISA) 10	Communications Port (COM6)
(ISA) 11	Communications Port (COM10)
(ISA) 11	Communications Port (COM7)
(ISA) 11	Communications Port (COM8)
(ISA) 11	Communications Port (COM9)
(ISA) 12	Microsoft PS/2 Mouse
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(ISA) 15	Secondary IDE Channel
(PCI) 7	Intel(R) ICH8 Family SMBus Controller - 283E
(PCI) 16	Intel(R) Graphics Media Accelerator 3150
(PCI) 16	Intel(R) ICH8 Family USB Universal Host Controller - 2834
(PCI) 16	Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC
(PCI) 17	Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC #2
(PCI) 18	Intel(R) ICH8 Family USB Universal Host Controller - 2832
(PCI) 18	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A
(PCI) 18	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
(PCI) 19	Intel(R) ICH8 Family USB Universal Host Controller - 2831
(PCI) 21	Intel(R) ICH8 Family USB Universal Host Controller - 2835
(PCI) 21	Microsoft UAA Bus Driver for High Definition Audio
(PCI) 22	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
(PCI) 23	Intel(R) ICH8 Family PCI Express Root Port 2 - 2841
(PCI) 23	Intel(R) ICH8 Family USB Universal Host Controller - 2830
(PCI) 23	Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836

B.4 DMA Channel Assignments

Direct memory access (DMA)	
4	Direct memory access controller