GCS-1100i

Green Communication Server

2.5" SATA Hard Disk Drive Bay

4 Gigabit Ethernet Ports/

8 COM / 4 USB2.0

VGA x 1, DVI-D x 1

GCS-1100i Manual 2nd Ed.

January 2011

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Packing List

Before you begin operating your PC, please make sure that the following materials are enclosed:

- GCS-1100i Bare Bone

- CD-ROM for manual (in PDF format) and drivers

- Rubber ring

- Phoenix connectors

- Cushion for HDD

- Ear Bracket Module

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

Safety & Warranty

1. Read these safety instructions carefully.

2. Keep this user's manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.

4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a firm surface during installation. Dropping it or letting it fall could cause damage.

7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.

12. Never pour any liquid into an opening. This could cause fire or electrical shock.

13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

14. If any of the following situations arises, get the equipment checked by service personnel:

    a. The power cord or plug is damaged.

    b. Liquid has penetrated into the equipment.

    c. The equipment has been exposed to moisture.

> d. The equipment does not work well, or you cannot get it to work according to the user's manual.

> e. The equipment has been dropped and damaged.

> f. The equipment has obvious signs of breakage.

15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20°C (-4°F) OR ABOVE 65°C (149°F). IT MAY DAMAGE THE EQUIPMENT.

FCC

Warning!

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:
There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

AAEON Boxer/ Industrial System

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	×	○	○	○	○	○
外壳	×	○	○	○	○	○
中央处理器 与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
电源	×	○	○	○	○	○

O：表示该有毒有害物质在该部件所有均质材料中的含量均在
　　SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出
　　SJ/T 11363-2006 标准规定的限量要求。

备注：
一、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。
二、上述部件物质中央处理器、内存、硬盘、电源为选购品。

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Chapter 1   General Information

Chapter 2   Hardware Installation

Chapter 3   Award BIOS Setup

Chapter 4   Driver Installation

Appendix A   Programming The Watchdog Timer

Appendix B   I/O Information

Chapter

1

General Information

1.1 Introduction

GCS-1100i adopts the Intel$^®$ Atom™ N270 1.6GHz Processor. The chipset is equipped with Intel$^®$ 945GSE & ICH7M. Moreover, the system memory features DDR2 400/533/667 DIMM socket up to 2 GB.   It deploys four LAN ports that consist of 10/100/1000Base-TX Ethernet LAN RJ-45 ports.   GCS-1100i condensed appearance features desktop and rackmount form factor that fits nicely into a space-limited environment.

This compact GCS-1100i equipped with one internal 2.5" Hard Disk Drive with SATA 2 interface.   In addition, it features eight isolated COM ports and four USB2.0.

1.2 Features

- 1U 19'' Rackmount, Fanless Design
- Intel$^®$ Atom™ N270 1.6 GHz Processor, TDP 2.5W
- Intel$^®$ 945GSE + ICH7M
- DDR2 400/533 SODIMM Memory x 1, Up To 2 GB
- 10/100/1000Base-TX Ethernet x 4
- VGA x 1, DVI-D Graphic Output x 1
- Serial Port w/ Isolation x 8, USB 2.0 x 4, 8-bit Digital I/O
- Internal 2.5'' Disk Drive Bay x 1
- Wide Range 9-32V DC-In

1.3 Specifications

System

Form Factor	1U 19" Rackmount
Processor	Intel$^®$ Atom™ N270 1.6 GHz Processor Fanless Design CPU TDP 2.5W
System Memory	240-pin DDR2 400/533/667 SODIMM x 1, Up to 2 GB
Chipset	Intel$^®$ 945GSE & ICH7M
Ethernet	10/100/1000Base-TX Ethernet x 4
BIOS	Award Plug & Play SPI BIOS – 2Mb ROM
I/O Chip	IT8712F/KX-L
Hard Disk Drive	2.5" Hard Disk Drive Bay x 1 with SATA 2 interface
Solid Storage Disk	Optional CompactFlash™ Type 2 socket x 1
LED	Power LED x 1 HDD LED x 1 RS-232/422/485 Tx/Rx LED x 8
Watchdog Timer	Reset: 1 sec.~255 min. and 1 sec. or 1 min./step
H/W Status Monitor	Monitoring system temperature, voltage, and cooling fan status
Power Supply	Wide range 9-32V DC-in w/ isolation

Weight   17 lb (7.7 Kg)

Dimension (WxDxH) 16.9" x 11.8" x 1.73" (430mm x 300mm x 44mm)

External I/O

Serial Port   RS-232/422/485 w/ Isolation x 8

KB & Mouse   Keyboard /Mouse Mini-DIN x 1

Universal Serial Bus USB2.0 x 4

Ethernet   RJ-45 x 4

Display   VGA x 1, DVI-D x 1

Digital I/O   8-bit programmable, 4-in/4-out

Environment

Operating Temp. $32^oF \sim 113^oF$ ($0^oC \sim 45^oC$)

Storage Temp. $-4^oF \sim 140^oF$ ($-20^oC \sim 60^oC$)

Storage Humidity   10~80%, non-condensing

Vibration   1 g rms/ 5~500Hz/ Operation (2.5" HDD)

Shock   30 G peak acceleration (11 m sec. duration), operation

1.4 General System Information

Front Panel

Rear Panel

Chapter

2

Hardware Installation

2.1 Location of Jumpers and Connectors

EMB-9459T Rev.B

PER-T167

2.2 Mechanical Drawing
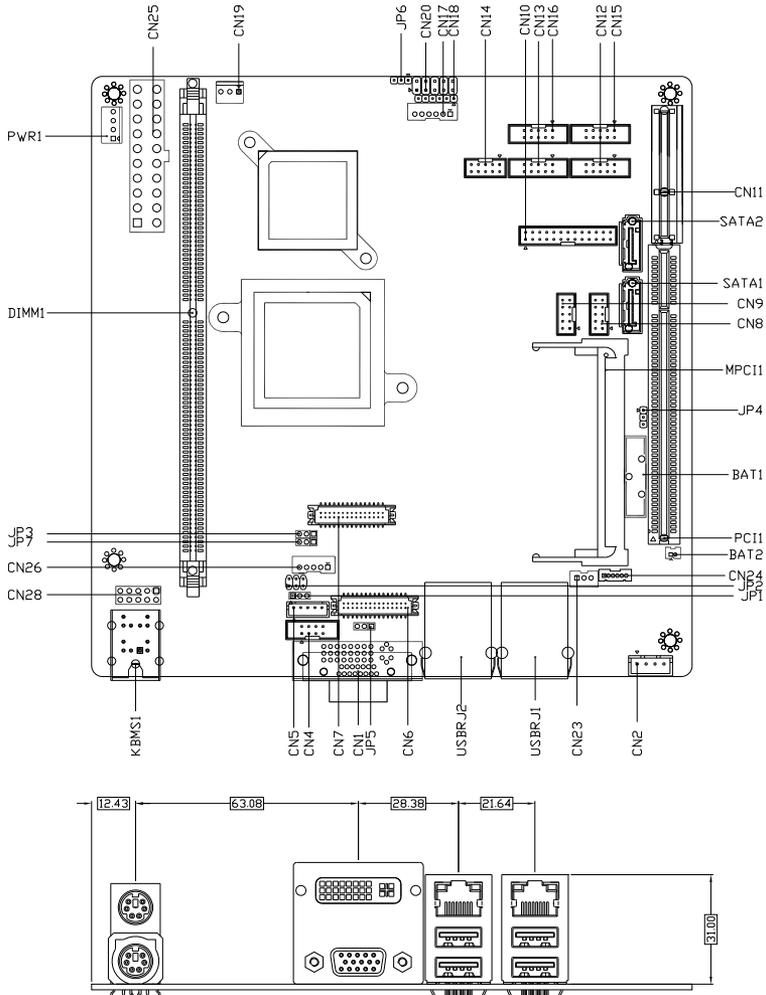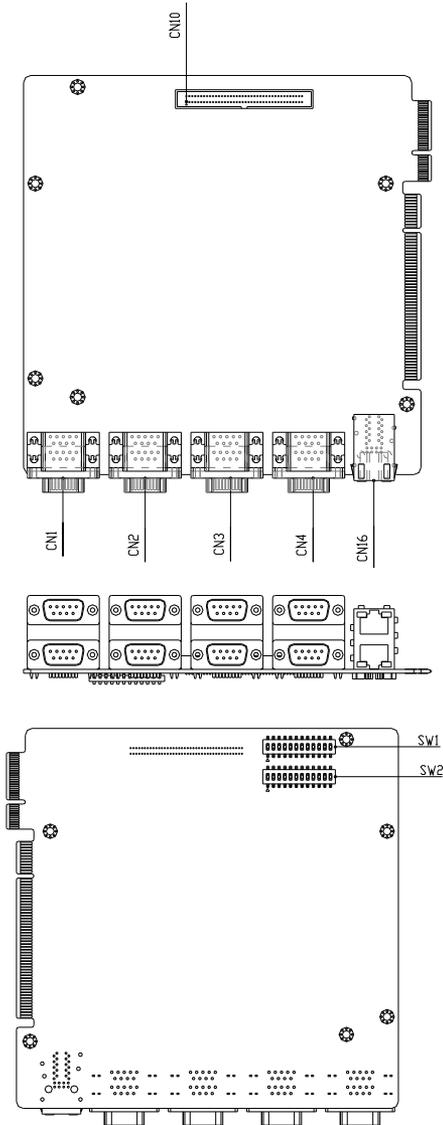
2.3 Setting Jumpers

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

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

Open　　　　**Closed**　　　　**Closed 2-3**
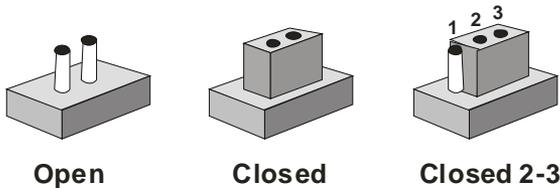
A pair of needle-nose pliers may be helpful when working with jumpers.

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

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

2.4 Pin Definition of EMB-9459T Rev.B

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	1st 18-bit LCD Inverter Voltage selection
JP2	COM2 Ring +5V/+12V selection
JP3	1st 18-bit LCD Voltage selection
JP4	Clear CMOS
JP5	2nd 24-bit LCD Voltage selection
JP6	AT/ATX selection
JP7	2nd 24-bit LCD Inverter Voltage Selection

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
KBMS1	PS/2 Keyboard/Mouse Connector
PWR1	HDD Power Connector (12V/5V)
USBRJ1	USB/LAN1 Connector
USBRJ2	USB/LAN2 Connector
SATA1/SATA2	Serial ATA Connector
DIMM1	DDRII DIMM Slot
PCI1	PCI Slot Connector
MPCI1	Mini PCI Connector
CN1	VGA Display Connector

CN2	Audio 2Watt Speaker Output
CN4	TV Output Connector
CN5	LCD Inverter Connector 18-bit
CN6	2nd LVDS Connector (24-bit)
CN7	1st LVDS Connector (18-bit)
CN8/ CN9	Front USB Connector
CN10	LPT Port Connector
CN11	PCI-Express Slot
CN12	COM 5 RS-232 Serial Port Connector
CN13	COM 6 RS-232 Serial Port Connector
CN14	Digital I/O
CN15	COM 4 RS-232 Serial Port Connector
CN16	COM 3 RS-232 Serial Port Connector
CN19	3-Pin +12V Fan Connector
CN20	Front Panel Connector
CN23	SPDIF Connector
CN24	Audio Connector (Surround)
CN25	ATX power connector
CN26	2nd Inverter connector for 2nd LVDS 24-Bit

LCD Inverter Voltage Selection (JP1-18 bits, JP7-24 bits)

JP1/JP7	Function
1-2	+5V (Default)
2-3	+12V

COM2 Ring/+5V/+12V Selection (JP2)

JP2	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

LCD Voltage Selection (JP3-18 bits, JP5-24 bits)

JP3/JP8	Function
1-2	+5V
2-3	+3.3V (Default)

Clear CMOS (JP4)

JP4	Function
1-2	Normal (Default)
2-3	Clear CMOS

AT/ATX Power Mode Selection (JP6)

JP6	Function
1-2	AT
2-3	ATX (Default)

HDD Power Connector (PWR1)

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

Note:
The max. rating of Pin 1 is 1A @ 12V
The max. rating of Pin 4 is 1A @ 5V

Audio 2Watt Speaker Output (CN2)

Pin	Signal
1	SPK- R+
2	SPK- R-
3	SPK- L+
4	SPK- L-

TV Output Connector (CN4)

Pin	Signal	Pin	Signal
1	Y	2	CVBS
3	GND	4	GND
5	C	6	N.C
7	GND	8	N.C

LCD Inverter Connector (CN5, CN26)

Pin	Signal
1	VCC of LCD inverter (+5V/+12V)
2	Adjust backlight
3	GND
4	GND
5	ENBKL

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

LVDS LCD Connector (CN6, CN7)

Pin	Signal	Pin	Signal
1	ENBKL	2	N.C
3	PPVCC	4	GND
5	LVDS1_TXCLK-	6	LVDS1_TXCLK+
7	PPVCC	8	GND
9	LVDS1_TX0-	10	LVDS1_TX0+
11	LVDS1_TX1-	12	LVDS1_TX1+

13	LVDS1_TX2-	14	LVDS1_TX2+
15	LVDS1_TX3-(CN6-24bit only)	16	LVDS1_TX3+(CN6-24bit only)
17	I2C_DATA	18	I2C_CLK
19	LVDS2_TX0-	20	LVDS2_TX0+
21	LVDS2_TX1-	22	LVDS2_TX1+
23	LVDS2_TX2-	24	LVDS2_TX2+
25	LVDS2_TX3-(CN6-24bit only)	26	LVDS2_TX3+(CN6-24bit only)
27	PPVCC	28	GND
29	LVDS2_TXCLK-	30	LVDS2_TXCLK+

Note:
The max. rating for LCD (Pin 3, Pin 7, Pin 27) is 0.5A @ 5V

USB Connector (CN8, CN9)

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

LPT Port Connector (CN10)

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

COM5, COM6, COM4, COM3 RS-232 Serial Port Connector (CN12, CN13, CN15, CN16)

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

Digital I/O (CN14)

This connector offers 4-pair of digital I/O functions and address is 2A1H. The pin definitions are illustrated below:

Pin	Signal	Pin	Signal
1	Digital- IN/OUT	2	Digital- IN/OUT
3	Digital- IN/OUT	4	Digital- IN/OUT
5	Digital- IN/OUT	6	Digital- IN/OUT
7	Digital- IN/OUT	8	Digital- IN/OUT
9	+5V	10	GND

Note:
The max. rating of Pin 1~ Pin 8 is 8mA@ 5V
The max. rating of Pin 9 is 0.5A @ 5V

The pin definitions and registers mapping are illustrated below:
Address: 2A1H

4 in / 4 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPO 23	GPO 22	GPO 21	GPO 20

MSB							LSB

8 in

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPI 23	GPI 22	GPI 21	GPI 20
MSB							LSB

8 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPO 27	GPO 26	GPO 25	GPO 24	GPO 23	GPO 22	GPO 21	GPO 20
MSB							LSB

Front Panel Connector (CN20)

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

SPDIF Connector (CN23)

Pin	Signal
1	SPDIF Output
2	GND
3	SPDIF Input

Audio Connector (Surround) (CN24)

Pin	Signal
1	SURROUND-R
2	SURROUND-L
3	GND
4	GND
5	LFEOUT

6	CENOUT

ATX Power Connector (CN25)

Pin	Signal	Pin	Signal
1	N.C.	11	N.C.
2	N.C.	12	N.C.
3	GND	13	GND
4	+5V	14	PS_ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	POWER OK	18	N.C.
9	+5VSB	19	+5V
10	+12V	20	+5V

2.5 Pin Definition of PER-T167

List of Jumpers

Label	Function
SW1	COM1 ~ COM4 Mode Selection
SW2	COM5 ~ COM8 Mode Selection

List of Connectors

Label	Function
CN1	COM4/COM8 Connector
CN2	COM3/COM7 Connector
CN3	COM2/COM6 Connector
CN4	COM1/COM5 Connector
CN10	COM / LAN LED Connector

COM1~COM4 Mode Selection (SW1)

Pin	Signal	ON / OFF	Note
1	ENRS232_1T	ON (Default)	
2	ENRS485#_1T	OFF	COM1 RS-232 Mode
3	ENRS422#_1T	OFF	
4	ENRS232_2T	ON (Default)	
5	ENRS485#_2T	OFF	COM2 RS-232 Mode
6	ENRS422#_2T	OFF	
7	ENRS232_3T	ON (Default)	
8	ENRS485#_3T	OFF	COM3 RS-232 Mode
9	ENRS422#_3T	OFF	
10	ENRS232_4T	ON (Default)	
11	ENRS485#_4T	OFF	COM4 RS-232 Mode
12	ENRS422#_4T	OFF	

Pin	Signal	ON / OFF	Note
1	ENRS232_1T	OFF	
2	ENRS485#_1T	ON	COM1 RS-485 Mode
3	ENRS422#_1T	OFF	
4	ENRS232_2T	OFF	
5	ENRS485#_2T	ON	COM2 RS-485 Mode
6	ENRS422#_2T	OFF	
7	ENRS232_3T	OFF	
8	ENRS485#_3T	ON	COM3 RS-485 Mode
9	ENRS422#_3T	OFF	
10	ENRS232_4T	OFF	
11	ENRS485#_4T	ON	COM4 RS-485 Mode
12	ENRS422#_4T	OFF	

Pin	Signal	ON / OFF	Note
1	ENRS232_1T	OFF	
2	ENRS485#_1T	OFF	COM1 RS-422 Mode
3	ENRS422#_1T	ON	
4	ENRS232_2T	OFF	
5	ENRS485#_2T	OFF	COM2 RS-422 Mode
6	ENRS422#_2T	ON	
7	ENRS232_3T	OFF	
8	ENRS485#_3T	OFF	COM3 RS-422 Mode
9	ENRS422#_3T	ON	
10	ENRS232_4T	OFF	
11	ENRS485#_4T	OFF	COM4 RS-422 Mode
12	ENRS422#_4T	ON	

COM5 ~ COM8 Mode Selection (SW2)

Pin	Signal	ON / OFF	Note
1	ENRS232_5T	ON	
2	ENRS485#_5T	OFF	COM5 RS-232 Mode
3	ENRS422#_5T	OFF	
4	ENRS232_6T	ON	
5	ENRS485#_6T	OFF	COM6 RS-232 Mode
6	ENRS422#_6T	OFF	
7	ENRS232_7T	ON	
8	ENRS485#_7T	OFF	COM7 RS-232 Mode
9	ENRS422#_7T	OFF	
10	ENRS232_8T	ON	
11	ENRS485#_8T	OFF	COM8 RS-232 Mode
12	ENRS422#_8T	OFF	

Pin	Signal	ON / OFF	Note
1	ENRS232_5T	OFF	
2	ENRS485#_5T	ON	COM5 RS485 Mode
3	ENRS422#_5T	OFF	
4	ENRS232_6T	OFF	
5	ENRS485#_6T	ON	COM6 RS485 Mode
6	ENRS422#_6T	OFF	
7	ENRS232_7T	OFF	
8	ENRS485#_7T	ON	COM7 RS4-85 Mode
9	ENRS422#_7T	OFF	
10	ENRS232_8T	OFF	
11	ENRS485#_8T	ON	COM8 RS-485 Mode
12	ENRS422#_8T	OFF	

Pin	Signal	ON / OFF	Note
1	ENRS232_5T	OFF	
2	ENRS485#_5T	OFF	COM5 RS-422 Mode
3	ENRS422#_5T	ON	
4	ENRS232_6T	OFF	
5	ENRS485#_6T	OFF	COM6 RS-422 Mode
6	ENRS422#_6T	ON	
7	ENRS232_7T	OFF	
8	ENRS485#_7T	OFF	COM7 RS-422 Mode
9	ENRS422#_7T	ON	
10	ENRS232_8T	OFF	
11	ENRS485#_8T	OFF	COM8 RS-422 Mode
12	ENRS422#_8T	ON	

COM / LAN LED Connector (CN10)

Pin	Signal	Pin	Signal
1	RS422_PWR_COM8	2	RS485_PWR_COM8
3	GND	4	RS232_PWR_COM8
5	RS422_PWR_COM7	6	RS485_PWR_COM7
7	GND	8	RS232_PWR_COM7
9	RS422_PWR_COM6	10	RS485_PWR_COM6
11	GND	12	RS232_PWR_COM6
13	RS422_PWR_COM5	14	RS485_PWR_COM5
15	GND	16	RS232_PWR_COM5
17	RS422_PWR_COM4	18	RS485_PWR_COM4
19	GND	20	RS232_PWR_COM4
21	RS422_PWR_COM3	22	RS485_PWR_COM3
23	GND	24	RS232_PWR_COM3
25	RS422_PWR_COM2	26	RS485_PWR_COM2
27	GND	28	RS232_PWR_COM2
29	RS422_PWR_COM1	30	RS485_PWR_COM1
31	GND	32	RS232_PWR_COM1
33	NC	34	NC
35	-TX_LED_COM1	36	TX_LED_COM1
37	-TX_LED_COM2	38	TX_LED_COM2
39	-TX_LED_COM3	40	TX_LED_COM3
41	-TX_LED_COM4	42	TX_LED_COM4
43	-TX_LED_COM5	44	TX_LED_COM5
45	-TX_LED_COM6	46	TX_LED_COM6
47	-TX_LED_COM7	48	TX_LED_COM7
49	-TX_LED_COM8	50	TX_LED_COM7
51	NC	52	NC
53	-RX_LED_COM1	54	RX_LED_COM1

55	-RX_LED_COM2	56	RX_LED_COM2
57	-RX_LED_COM3	58	RX_LED_COM3
59	-RX_LED_COM4	60	RX_LED_COM4
61	-RX_LED_COM5	62	RX_LED_COM5
63	-RX_LED_COM6	64	RX_LED_COM6
65	-RX_LED_COM7	66	RX_LED_COM7
67	-RX_LED_COM8	68	RX_LED_COM8
69	NC	70	NC
71	ACT_L1-	72	ACT_L1+
73	LINK100_L1	74	LINK1000_L1
75	ACT_L2-	76	ACT_L2+
77	LINK100_L2	78	LINK1000_L2
79	NC	80	NC

2.6 Installing the Hard Disk Drive

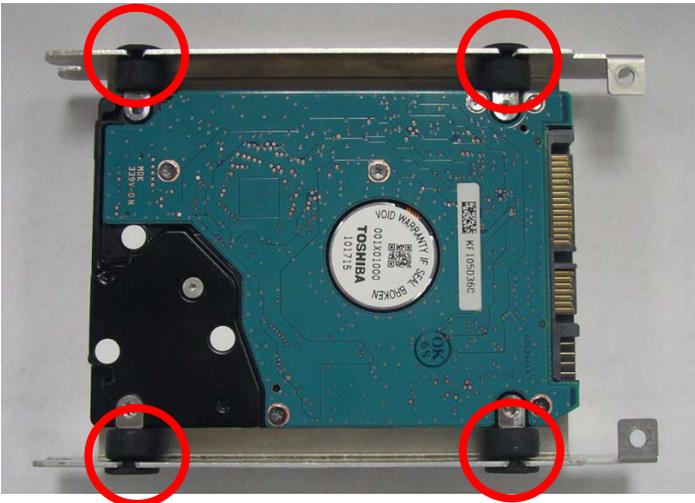Step 1: Unfasten the two screws of the Hard Disk Drive (HDD) Bracket
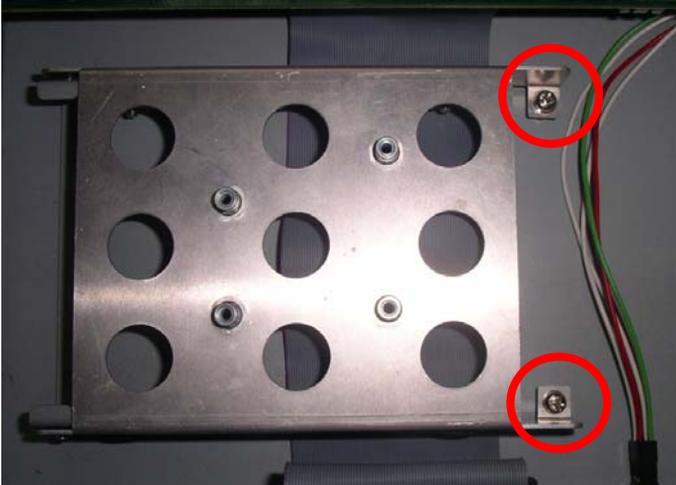
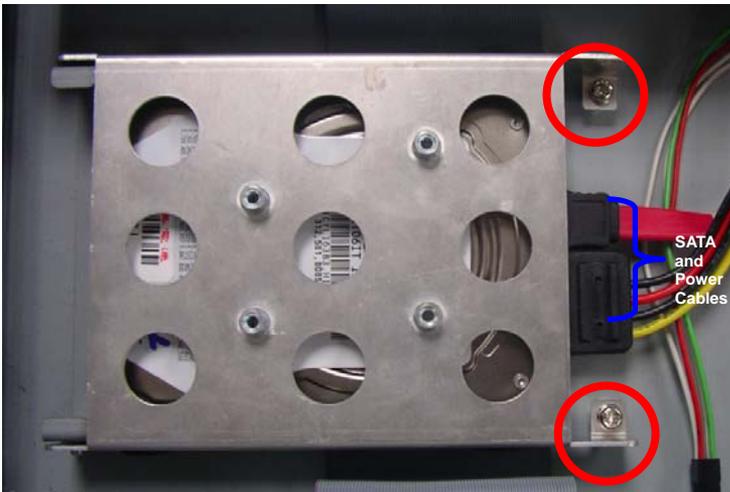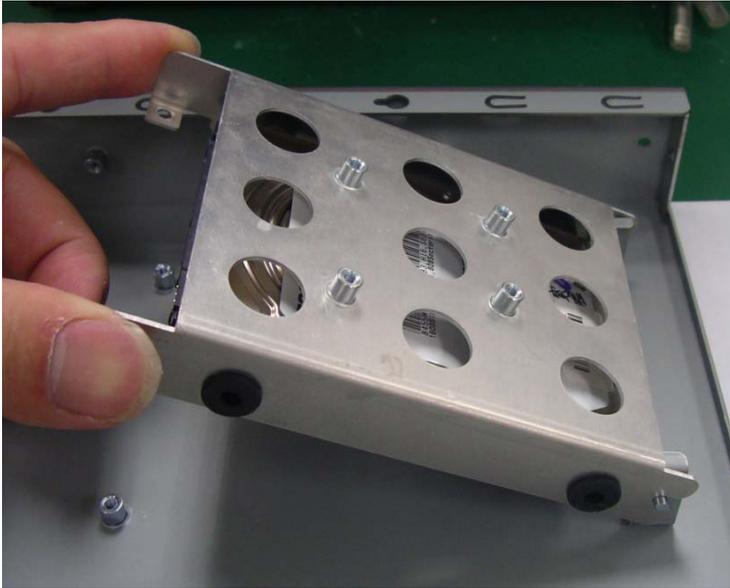Step 2: Get the four dampers from the HDD bracket
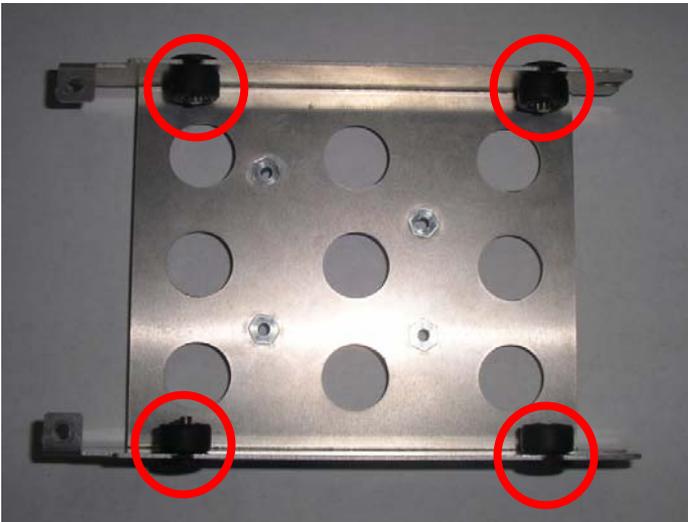
Step 3: Put the dampers covered the four screws on HDD

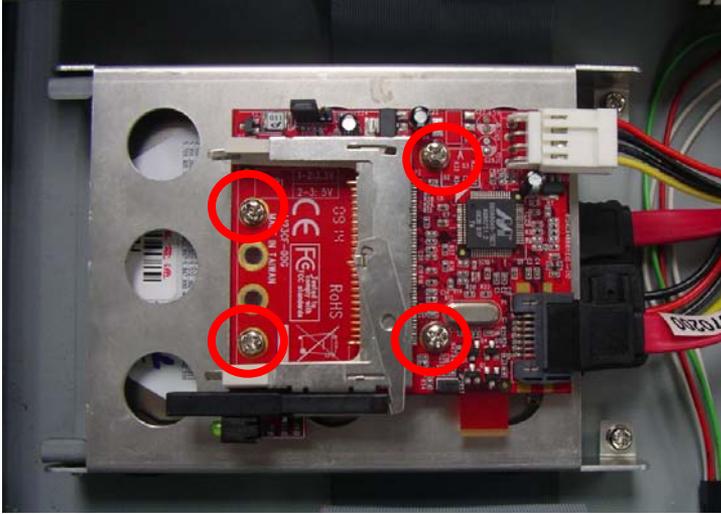Step 4: Put the HDD back to the HDD bracket and lock the dampers

Step 5: Place the HDD bracket to the GCS-1100i

SATA and Power Cables

2.7 Installing the CompactFlash Disk

Fasten the four screws to lock the CompactFlash Disk with the HDD bracket

Chapter

3

Award
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. Non-fatal error messages usually appear on the screen along with the following instructions:

　　　Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

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 GCS-1100i 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 Award BIOS Setup

Awards 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> immediately. This will allow you to enter Setup.

Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

Use this menu to specify your settings for auto detect DIMM/PCI clock and spread spectrum.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

You can refer to the "AAEON BIOS Item Description.pdf" file in the CD for the meaning of each setting in this chapter.

Chapter

4

Driver Installation

The GCE-1100i comes with an AutoRun CD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver CD, the driver CD-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 Chip Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install System Base Driver

Please read instructions below for further detailed installations.

4.1   Installation:

Insert the GCS-1100i CD-ROM into the CD-ROM drive and install

the drivers from Step 1 to Step 4 in order.

Step 1 – Install Chip Driver

1.   Click on the *Step 1-INF* folder and select the OS folder your system is

2.   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 2 – Install VGA Driver

1.   Click on the *Step 2 –VGA* folder and select the OS your system is

2.   Double click on *Setup.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 3 – Install LAN Driver

1.   Click on the *Step 3-LAN* folder and double click on the *setup.exe*

2.   Follow the instructions that the window shows

3.   The system will help you install the driver automatically

Step 4 – Install System Base Driver

Place the Driver CD-ROM into your CD-ROM drive and follow the steps below to install.

1. Click on **Start** button
2. Click on **Settings** button
3. Click on **Control Panel** button
4. Click on **System** button
5. Select **Hardware** and click on **Device Manager…**
6. Double click on **Entertainment Encryption/Decryption Controller**
7. Click on **Update Driver…**
8. Click on **Next**
9. Select **Search for a suitable driver…**, then click on **Next**
10. Select **Specify a location**, then click on **Next**
11. Click on **Browse**
12. Select **"**Sbserial.inf**"** file from CD-ROM **(Driver/Step 5 – System Base)** then click on **Open**
13. Click on **OK**
14. Click on **Next**
15. Click on **Yes**
16. Click on **Finish**

Appendix

A

Programming the Watchdog Timer

A.1 Programming

GCS-1100i utilizes ITE 8712 chipset as its watchdog timer controller.

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

Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8712 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.
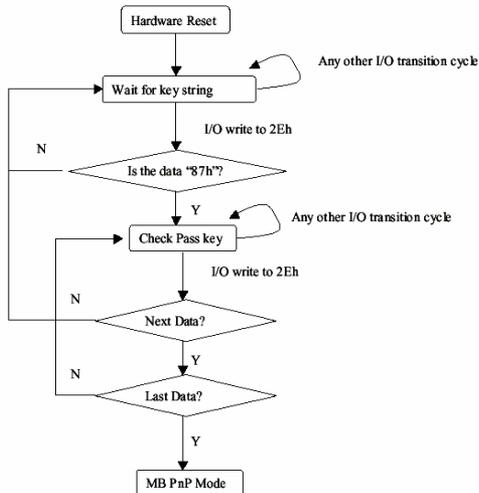
There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(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 opera-tions 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[Note] for WDT

WatchDog Timer Time-out Value Register (Index=73h,

Default=00h)

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

A.2 IT8712 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 - 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 - 0000004D] Motherboard resources
    [00000050 - 0000005E] Motherboard resources
    [00000061 - 00000061] System speaker
    [00000062 - 00000063] Motherboard resources
    [00000065 - 0000006F] Motherboard resources
    [00000070 - 00000073] System CMOS/real time clock
    [00000074 - 0000007F] Motherboard resources
    [00000080 - 00000090] Direct memory access controller
    [00000091 - 00000093] Motherboard resources
    [00000094 - 0000009F] Direct memory access controller
    [000000A0 - 000000A1] Programmable interrupt controller
    [000000A2 - 000000BF] Motherboard resources
    [000000C0 - 000000DF] Direct memory access controller
    [000000E0 - 000000EF] Motherboard resources
    [000000F0 - 000000FF] Numeric data processor
    [000001F0 - 000001F7] Primary IDE Channel
    [00000274 - 00000277] ISAPNP Read Data Port
    [00000279 - 00000279] ISAPNP Read Data Port
    [00000290 - 0000029F] Motherboard resources
    [000003B0 - 000003BB] Mobile Intel(R) 945 Express Chipset Family
    [000003C0 - 000003DF] Mobile Intel(R) 945 Express Chipset Family
    [000003F6 - 000003F6] Primary IDE Channel
    [00000400 - 000004BF] Motherboard resources
    [000004D0 - 000004D1] Motherboard resources
    [00000500 - 0000051F] Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
    [00000880 - 0000088F] Motherboard resources
    [00000A79 - 00000A79] ISAPNP Read Data Port
    [00000D00 - 0000FFFF] PCI bus
    [00009000 - 00009FFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
    [00009E00 - 00009EFF] Realtek PCIe GBE Family Controller #4
    [0000AE00 - 0000AE3F] Enhanced Serial Multi-8/PCI
    [0000AF00 - 0000AF3F] Enhanced Serial Multi-8/PCI
    [0000B000 - 0000BFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D6
    [0000BE00 - 0000BEFF] Realtek PCIe GBE Family Controller #2
    [0000C000 - 0000CFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D4
    [0000CE00 - 0000CEFF] Realtek PCIe GBE Family Controller
    [0000D000 - 0000DFFF] Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
    [0000DE00 - 0000DEFF] Realtek PCIe GBE Family Controller #3
    [0000F300 - 0000F30F] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F400 - 0000F403] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F500 - 0000F507] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F600 - 0000F603] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F700 - 0000F707] Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    [0000F800 - 0000F80F] Intel(R) 82801G (ICH7 Family) Ultra ATA Storage Controllers - 27DF
    [0000FB00 - 0000FB1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
    [0000FC00 - 0000FC1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
    [0000FD00 - 0000FD1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
    [0000FE00 - 0000FE1F] Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
    [0000FF00 - 0000FF07] Mobile Intel(R) 945 Express Chipset Family
```

B.2 Memory Address Map

```
☐ 🖳 Memory
    ├─ 🖳 [00000000 - 0009FFFF]  System board
    ├─ 🖳 [000A0000 - 000BFFFF]  Mobile Intel(R) 945 Express Chipset Family
    ├─ 🖳 [000A0000 - 000BFFFF]  PCI bus
    ├─ 🖳 [000C0000 - 000DFFFF]  PCI bus
    ├─ 🖳 [000E0000 - 000EFFFF]  System board
    ├─ 🖳 [000F0000 - 000FFFFF]  System board
    ├─ 🖳 [00100000 - 1F6DFFFF]  System board
    ├─ 🖳 [1F6E0000 - 1F6FFFFF]  System board
    ├─ 🖳 [1F750000 - FEBFFFFF]  PCI bus
    ├─ 🖳 [D0000000 - DFFFFFFF]  Mobile Intel(R) 945 Express Chipset Family
    ├─ 🖳 [E0000000 - EFFFFFFF]  Motherboard resources
    ├─ 🖳 [FD400000 - FD4FFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
    ├─ 🖳 [FD4F0000 - FD4FFFFF]  Realtek PCIe GBE Family Controller #3
    ├─ 🖳 [FD500000 - FD5FFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
    ├─ 🖳 [FD5FF000 - FD5FFFFF]  Realtek PCIe GBE Family Controller #3
    ├─ 🖳 [FD600000 - FD6FFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
    ├─ 🖳 [FD6F0000 - FD6FFFFF]  Realtek PCIe GBE Family Controller #4
    ├─ 🖳 [FD900000 - FD9FFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
    ├─ 🖳 [FD9FF000 - FD9FFFFF]  Realtek PCIe GBE Family Controller #4
    ├─ 🖳 [FDA00000 - FDAFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D6
    ├─ 🖳 [FDAF0000 - FDAFFFFF]  Realtek PCIe GBE Family Controller #2
    ├─ 🖳 [FDB00000 - FDBFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D6
    ├─ 🖳 [FDBFF000 - FDBFFFFF]  Realtek PCIe GBE Family Controller #2
    ├─ 🖳 [FDC00000 - FDCFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D4
    ├─ 🖳 [FDCF0000 - FDCFFFFF]  Realtek PCIe GBE Family Controller
    ├─ 🖳 [FDD00000 - FDDFFFFF]  Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D4
    ├─ 🖳 [FDDFF000 - FDDFFFFF]  Realtek PCIe GBE Family Controller
    ├─ 🖳 [FDF00000 - FDF7FFFF]  Mobile Intel(R) 945 Express Chipset Family
    ├─ 🖳 [FDF80000 - FDFBFFFF]  Mobile Intel(R) 945 Express Chipset Family
    ├─ 🖳 [FDFFC000 - FDFFC3FF]  Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
    ├─ 🖳 [FDFFF000 - FDFFF3FF]  Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
    ├─ 🖳 [FEB80000 - FEBFFFFF]  Mobile Intel(R) 945 Express Chipset Family
    ├─ 🖳 [FEC00000 - FEC00FFF]  System board
    ├─ 🖳 [FED13000 - FED1DFFF]  System board
    ├─ 🖳 [FED20000 - FED3FFFF]  System board
    ├─ 🖳 [FED40000 - FED44FFF]  PCI bus
    ├─ 🖳 [FED45000 - FED8FFFF]  System board
    ├─ 🖳 [FEE00000 - FEE00FFF]  System board
    ├─ 🖳 [FFB00000 - FFB7FFFF]  System board
    ├─ 🖳 [FFB80000 - FFBFFFFF]  Intel(R) 82802 Firmware Hub Device
    └─ 🖳 [FFF00000 - FFFFFFFF]  System board
```

B.3 IRQ Mapping Chart

```
├─ ▦ Interrupt request (IRQ)
│     ▨ (ISA) 0    System timer
│     ▨ (ISA) 8    System CMOS/real time clock
│     ▨ (ISA) 9    Microsoft ACPI-Compliant System
│     ▨ (ISA) 13   Numeric data processor
│     ▤ (ISA) 14   Primary IDE Channel
│     ▨ (PCI) 15   Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
│     ▨ (PCI) 16   Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
│     ⮑ (PCI) 16   Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
│     ▨ (PCI) 16   Mobile Intel(R) 945 Express Chipset Family
│     ▦ (PCI) 16   Realtek PCIe GBE Family Controller #4
│     ▨ (PCI) 17   Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
│     ▦ (PCI) 17   Realtek PCIe GBE Family Controller #3
│     ▨ (PCI) 18   Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D4
│     ⮑ (PCI) 18   Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
│     ▦ (PCI) 18   Realtek PCIe GBE Family Controller
│     ◇ (PCI) 19   Enhanced Serial Multi-8/PCI
│     ▨ (PCI) 19   Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D6
│     ⮑ (PCI) 19   Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
│     ▤ (PCI) 19   Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
│     ▦ (PCI) 19   Realtek PCIe GBE Family Controller #2
│     ⮑ (PCI) 23   Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
│     ⮑ (PCI) 23   Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
```

B.4 DMA Channel Assignments

```
├─ ▦ Direct memory access (DMA)
│     ▨ 4    Direct memory access controller
```