

Full-size CPU Card

FSB-868G Rev.B

FSB-868G Rev.B

Intel® Core® 2 Duo/
Pentium®-D/ Pentium®-4

LGA 775 Processor

Full-size CPU Card

With DDRII, Ethernet,
ISA/ PCI/ PCI Express

FSB-868G Rev.B Manual 1st Ed.

Nov. 2007

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Packing List

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

- **1701340704** Floppy Cable
- **1701400453** ATA-100 Cable
- **1700060192** Y Cable for PS/2 Keyboard & Mouse
- **1701260307** Parallel Port & COM Port Cable
- **1701100305** Serial Port Cable
- **1703030501** ATX Power Cable
- **1709100201** USB Cable w/ Bracket
- **1709070780** SATA Cable x 4
- **1759200161** CPU Cooler Fan for LGA 775
Pentium® 4 3.6G
- **Quick Installation Guide**
- **CD-ROM for manual (in PDF format) and drivers**
- **FSB-868G Rev.B CPU Card**

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

Contents

Chapter 1 General Information

1.1 Introduction.....	1-2
1.2 Feature	1-4
1.3 Specification	1-5

Chapter 2 Quick Installation Guide

2.1 Safety Precautions	2-2
2.2 Location of Connectors and Jumpers	2-3
2.3 Mechanical Drawing	2-4
2.4 List of Jumpers	2-5
2.5 List of Connectors	2-6
2.6 Setting Jumpers	2-8
2.7 Clear CMOS (JP1)	2-9
2.8 LCD Voltage Selection (JP2)	2-9
2.9 Front panel Connector (FP1)	2-9
2.10 Front panel Connector (FP2)	2-9
2.11 RS-232 Serial Port Connector (COM1).....	2-10
2.12 RS-232/422/485 Serial Port Connector (COM2).....	2-10
2.13 IrDA Connector (IR1).....	2-10
2.14 LPT Port Connector (LPT1)	2-11
2.15 USB Connector (USB1~3)	2-11
2.16 Fan Connector (FAN1).....	2-12
2.17 ATX Power Control Connector (CN1)	2-12

2.18 LAN LED Connector (CN2, CN5).....	2-12
2.19 PCI-Express 【x 1】 Connector (CN3).....	2-12
2.20 LVDS Channel Connector (CN4)	2-13
2.21 AC97 Connector (CN6)	2-14
2.22 PS2 Keyboard/Mouse Connector (CN7).....	2-14
2.23 Internal Keyboard Connector (CN8).....	2-14

Chapter 3 CPU, Heatsink and Fan Installation

3.1 CPU Installation and motherboard handling.	3-2
---	-----

Chapter 4 Award BIOS Setup

4.1 System Test and Initialization.	4-2
4.2 Award BIOS Setup	4-3

Chapter 5 Driver Installation

5.1 Installation	5-3
------------------------	-----

Appendix A Programming The Watchdog Timer

A.1 Programming	A-2
A.2 W83627EHG Watchdog Timer Initial Program.....	A-6

Appendix B I/O Information

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

Chapter

1

**General
Information**

1.1 Introduction

AAEON announces a new full-size form factor Single Board Computer (SBC) - **FSB-868G Rev.B**, which is based on the use of Intel® Core 2 Duo LGA 775/ Pentium®-D/ Penitum®-4 processors. FSB-868G utilizes Intel® LGA 775 Core 2 Duo CPU with high CPU core frequencies up to 2.66GHz, Pentium® D up to 3.6GHz, Pentium® 4 up to 3.8GHz with the Front Side Bus (FSB) running at 533 to 1066MHz.

FSB-868G Rev.B supports dual channel DDRII 533/667 system memory up to 2GB. The VGA Controller of FSB-868G integrates Intel 945G chipset with core frequency up to 400MHz and integrates GMA950 2D/3D graphics Accelerator to provide higher performance of graphic processing. AAEON's got Intel's long-term supply commitment and will guarantee product's long-life cycle to our precious customers.

In addition to the powerful computing engine, FSB-868G Rev.B equips with USB2.0 ports, one Mini-DIN PS/2 keyboard & mouse connector, one IrDA header and one standard Floppy Disk Drive. Moreover, it also supports Ultra ATA 100, four SATA II and CompactFlash Type II storages. These

versatile expansion interfaces bring FSB-868G Rev.B a great flexibility to serve different application demands. Furthermore, its huge capacity and excellent compatibility are also ideal for system integrators for system planning and devices combination.

1.2 Features

- Supports Intel® Core 2 Duo/ Pentium® 4/ Pentium® D LGA775 CPU up to 2.66GHz (Core 2 Duo CPU)
- DDR2 667 Memory Supports Up To 2GB
- Integrated GMA950 2D/3D Graphics Accelerator, VGA Support
- Supports Dual Channel LVDS Output & Raid Function (Optional)
- Supports Two 10/100/1000Base-TX Ethernet (Optional)
- Supports Ultra ATA100 & 4 x SATA II & CompactFlash™ Type-II Storage
- 7 USB 2.0/ 1 RS-232/422/485/ 1 RS-232/ 1 Parallel/ 1 IrDA Ports
- Watchdog Function 1~255 Sec.

1.3 Specification

System

- CPU: Supports Intel® Core 2 Duo/ Pentium® 4 and Pentium®-D LGA 775 Processors up to 2.66 GHz (FSB 533/800/1066MHz)
- Chipset: Intel® 945G + Intel® 82801 GB (ICH7/ICH7R RAID optional)
- System Memory: 240-pin 1.8V DDRII DIMM Socket x 2, total up to 4GB Support Dual Channel DDR memory (DDRII 533/667)
- VGA Controller: Integrated VGA on Intel® 945G, Core frequency up to 400MHz
- Ethernet: PCI Express 10/100Mb or 10/100/1000Mb LAN with RJ-45 Connector x 2 (Optional), Marvell 88E8036/88E8053 controller
- BIOS: Award Plug & Play FWH

BIOS – 4Mb ROM

- Audio (Daughter board): Realtek ALC655 AC97
Codec, MIC-in/ Line-in/
Line-out/ CD-in optional
- IDE Interface: ATA-100 x 1 channel
(Supports CD-ROM ATAPI
device); SATA 3Gb/s x 4
(Support four SATA devices)
- Expansion Interface: ISA/ PCI/ PCI Express
Connector (DF13-30P)
- ISA Interface: PCI to ISA Bridge Used
- SSD: Supports CompactFlash™
type II connector
- IR Interface: Supports IrDA header x 1
- Universal Serial Bus: USB 2.0 Port x 7; 5x2 pin
header for internal x 3
(support up to 6 USB ports);
Type-A connector onboard x
1
- Watchdog Timer: 1~255 Sec. can be set with
software on Super I/O
- RTC: Internal RTC
- Power Supply Voltage: ATX, ATX +12V
- Battery: Lithium battery
- Operation Temp.: 32°F~140°F (0°C ~60°C)

I/O

- FDD Interface: Standard FDD port x 1
(supports up to 1 floppy device)
- Serial Port: Two COM ports: (Internal pin header x 2)
COM 1: RS-232
COM 2: RS-232/422/485
- Parallel Port: Supports SPP/EPP/ECP mode
- Keyboard & Mouse connector: Mini-DIN for PS/2 Keyboard and mouse connector x 1;
Internal keyboard pin header x 1

Chapter

2

Quick Installation Guide

Notice:

The Quick Installation Guide is derived from Chapter 2 of user manual. For other chapters and further installation instructions, please refer to the user manual CD-ROM that came with the product.



2.1 Safety Precautions

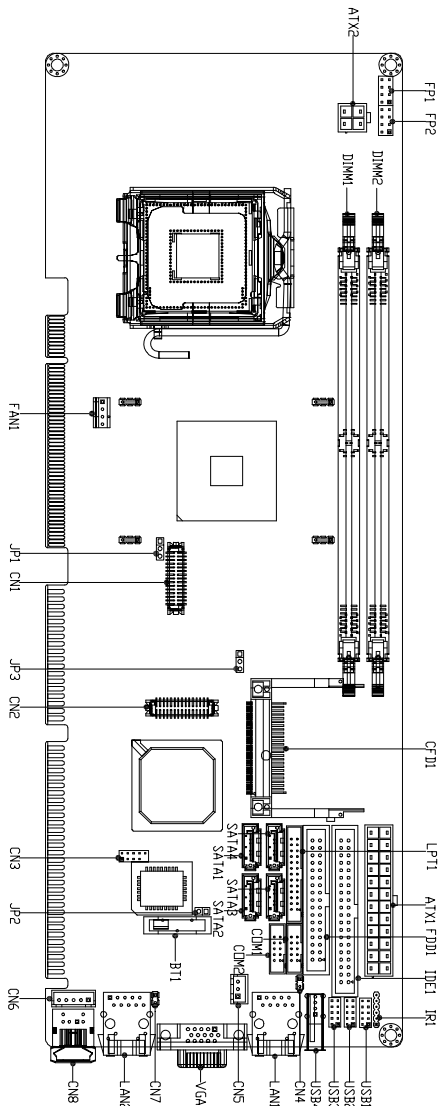
Warning!

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

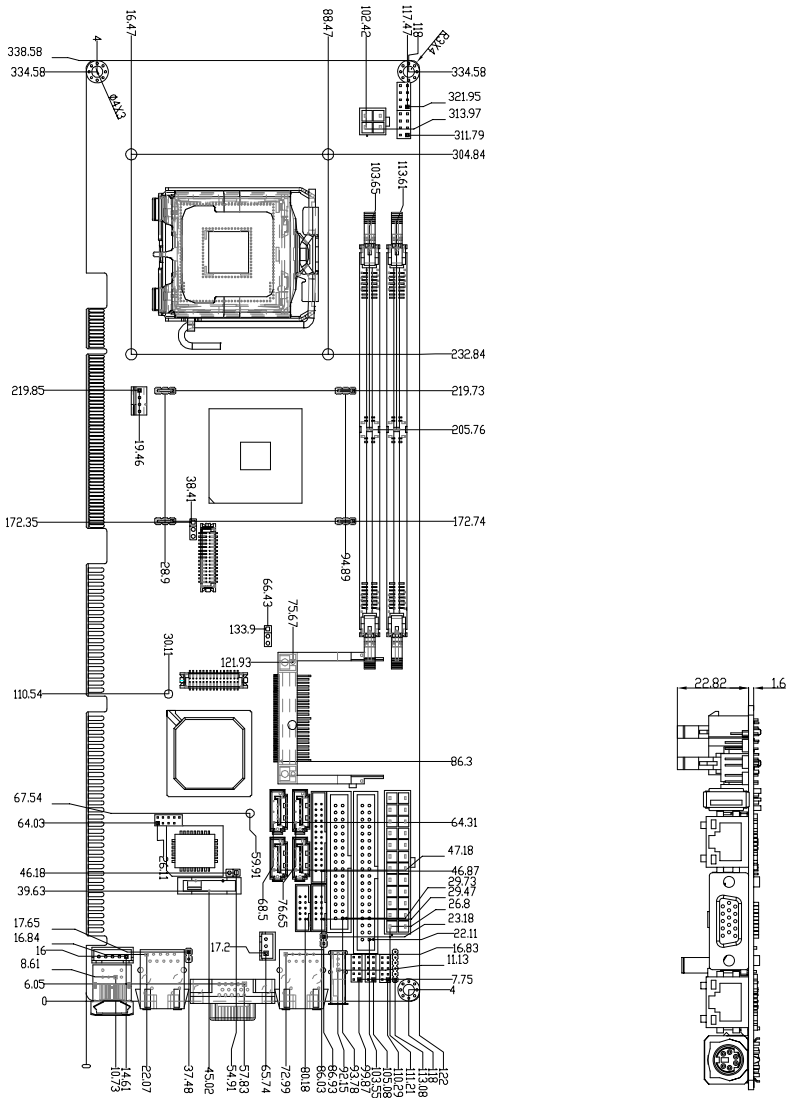
Caution!

Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 Location of Connectors and Jumpers



2.3 Mechanical Drawing



2.4 List of Jumpers

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

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

Jumpers

Label	Function
JP1	LCD Voltage Selection
JP2	Clear CMOS
JP3	CF Voltage Selection

2.5 List of Connectors

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

Connectors

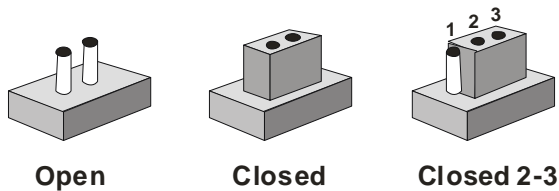
Label	Function
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
ATX1	24-pin ATX Power
ATX2	4 pin ATX Power +12V Connector
VGA1	VGA Display Connector
FDD1	Floppy Connector
IDE1	EIDE Connector
SATA1~4	Serial ATA Connector
CFD1	Compact Flash Slot
COM1	RS-232 Serial Port Connector
COM2	RS-232/422/485 Serial Port Connector
IR1	IrDA Connector
LPT1	LPT Port Connector
USB1~3	USB x 2 PIN HEADER
USB4	USB Connector
LAN1	10/100 or 100/1000 Base-TX Ethernet Connector
LAN2	10/100 or 100/1000 Base-TX Ethernet Connector

DIMM1, 2	DDRII Memory Slot
FAN1	4-pin Fan Connector
CN1	LVDS Channel Connector
CN2	PCI Express x1 Connector
CN3	AC97 Connector
CN4	LAN 1 Active LED Connector
CN5	ATX Power Control Connector
CN6	Internal Keyboard Connector
CN7	LAN 2 Active LED Connector
CN8	PS2 Keyboard/Mouse Connector

2.6 Setting Jumpers

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

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



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

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

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

2.7 LCD Voltage Selection (JP1)

JP1	Function
Close1-2	+5V
Close2-3	+3.3V

2.8 Clear CMOS (JP2)

JP2	Function
Open	Protected
Short	Clear

2.9 CF Voltage Selection (JP3)

JP3	Function
Close1-2	+5V
Close2-3	+3.3V

2.10 Front Panel Connector (FP1)

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

2.11 Front Panel Connector (FP2)

Pin	Signal	Pin	Signal
1	External Speaker(+)	2	KeyBoard Lock (+)
3	NC	4	GND
5	Internal Buzzer(-)	6	I2C Bus SMB Clock

7 External Speaker(-) 8 I2C Bus SMB Data

Note: Pin 5, 7 closed: Internal Buzzer Enable

2.12 RS-232 Serial Port Connector (COM1)

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

2.13 RS-232/422/485 Serial Port Connector (COM2)

Pin	Signal	Pin	Signal
1	DCD(422TXD-/485DATA-)	2	RXD(422RXD+)
3	TXD(422TXD+/485DATA+)	4	DTR(422RXD-)
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C

2.14 IrDA Connector (IR1)

Pin	Signal
1	+5V
2	N.C
3	IRRX
4	GND
5	IRTX
6	N.C

2.15 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

2.16 USB Connector (USB1~3)

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)

Pin	Signal
1	GND
2	+12V or +5V
3	Speed Sense
4	FAN Out Control

2.18 LVDS Channel Connector (CN1)

Pin	Signal	Pin	Signal
1	BKLEN	2	BKLCTL
3	PPVCC	4	GND
5	CH1_CLK#	6	CH1_CLK
7	PPVCC	8	GND
9	CH1_TX0#	10	CH1_TX0
11	CH1_TX1#	12	CH1_TX1
13	CH1_TX2#	14	CH1_TX2
15	CH1_TX3#	16	CH1_TX3
17	I2C_DATA	18	I2C_CLK
19	CH2_TX0#	20	CH2_TX0
21	CH2_TX1#	22	CH2_TX1
23	CH2_TX2#	24	CH2_TX2
25	CH2_TX3#	26	CH2_TX3
27	PPVCC	28	GND
29	CH2_CLK#	30	CH2_CLK

2.19 PCI-Express [x1] Connector (CN2)

Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	PCIe-RX1	4	+3.3V
5	PCIe-RX1#	6	PCIe-WAKE#
7	GND	8	PCIe-RST#
9	PCIe-CLK1	10	+3.3VSB
11	PCIe-CLK1#	12	+3.3VSB
13	GND	14	PCIe_TX2
15	PCIe_TX1	16	PCIe_TX2#
17	PCIe_TX1#	18	GND
19	+12V	20	PCIe-CLK2
21	+12V	22	PCIe-CLK2#
23	SMBDATA	24	GND
25	SMBCLK	26	PCIe-RX2
27	+3.3V	28	PCIe-RX2#
29	+3.3V	30	GND

2.20 AC97 Connector (CN3)

Pin	Signal	Pin	Signal
1	AC_RST-	2	AC_SYNC
3	AC_DAIN2	4	AC_DAOUT
5	GND	6	AC_BCLK
7	GND	8	+5V
9	Lock	10	+3.3V

2.21 LAN LED Connector (CN4, CN7)

Pin	Signal	Pin	Signal
1	Active_LED(+)	2	Active_LED(-)

2.22 ATX Power Control Connector (CN5)

Pin	Signal
1	PS-ON
2	+5V
3	5VSB

Note: AT Power Use: Close Pin 2,3

2.23 Internal Keyboard Connector (CN6)

Pin	Signal
1	KB_CLK
2	KB_DATA
3	N.C
4	GND
5	+5V

2.24 PS2 Keyboard/ Mouse Connector (CN8)

Pin	Signal
1	KB_DATA
2	MS-DATA
3	GND
4	+5V
5	KB_CLK
6	MS_CLK

Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	×	○	○	○	○	○
外部信号 连接器及线材	×	○	○	○	○	○
<p>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。</p> <p>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。</p> <p>备注: 此产品所标示之环保使用期限, 系指在一般正常使用状况下。</p>						

Chapter

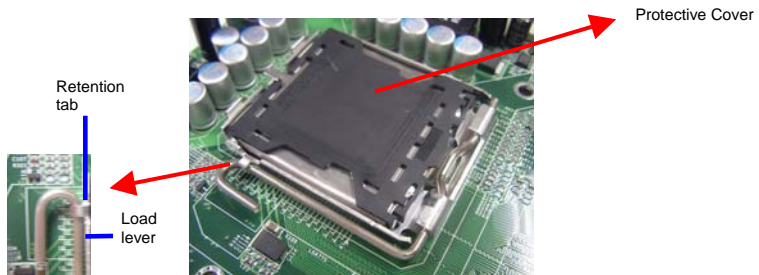
3

**CPU, Heatsink and
Fan Installation**

3.1 CPU installation and motherboard handling

Note: When integrating a Pentium 4 processor-based system, be sure to take the proper electrostatic discharge (ESD) precautions.

Caution: Please follow the steps below to ensure proper installation of your processor. Failure to follow these instructions may result in damage to your CPU and/or your motherboard.



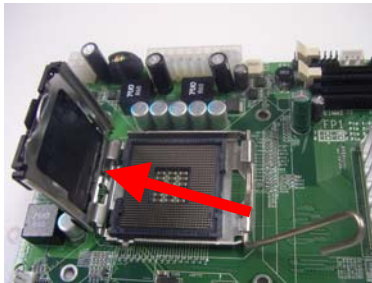
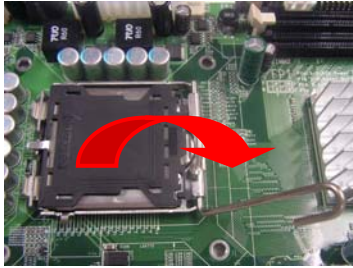
Step 1: (Socket Preparation)

Note: Visually inspect to ensure that the socket protective cover is present and securely fastened.

1. Opening the Socket:

Note: Hold corner of the load plate while opening and closing the load lever. This will prevent the bounce back of the load plate which can cause bent contacts.

- a. Disengage the Load Lever by pressing down and out on the hook allowing the lever to clear the Retention Tab and rotate to the fully open position.



- b. Rotate Load Plate to fully open position.
- c. Remove the Protective Cover

Caution: Do not touch the Socket Contacts. This may result in damage to the contacts.

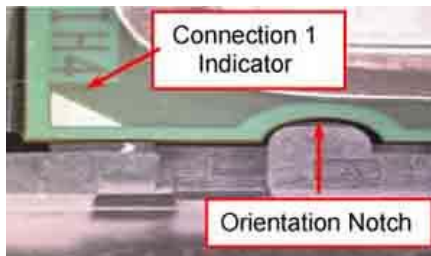
Note: Visually inspect the contact area for bent contacts and foreign material.

Step 2: (Processor Handling)

Note: Handle Processor by substrate edges only.

Caution: Do not touch processor contacts at any time

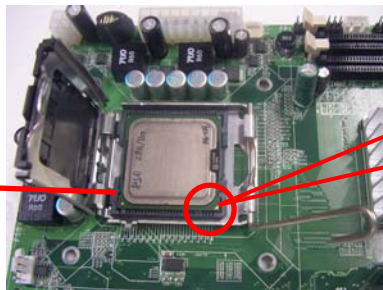
- a. Remove processor from shipping media by grasping substrate edges only
- b. Visually inspect the processor gold pad array for presence of foreign material. If foreign material is present the pads may be wiped clean with a lint-free cloth and isopropyl alcohol.
- c. Locate the connector 1 indicator and the two orientation notches. (See photo)



Step 3: (Positioning the CPU into socket)

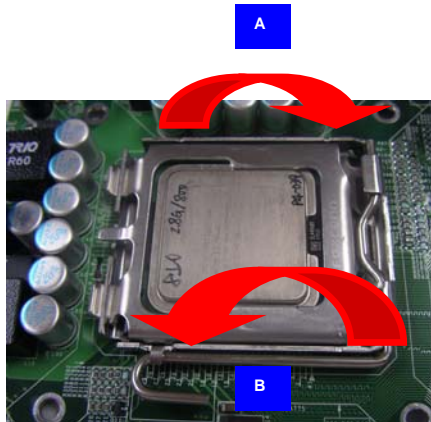
- a. Grasp the processor with your thumb and forefinger on the edges with the orientation notches. The socket has cut-outs for your fingers when handled in this orientation.
- b. Carefully place the CPU into the socket with a purely vertical motion.
- c. Verify that the CPU is in the socket body and properly mated to the orientation keys.

The **Alignment Key** is for you to check if the CPU is aligned with the CPU notch properly.



Yellow Triangle Mark

- d. Close the upper plate (A), place the load lever back to the original position and tightly wedge the lever into the fastening tab. (B)



Step 4: (Heatsink/ Fan Installation).

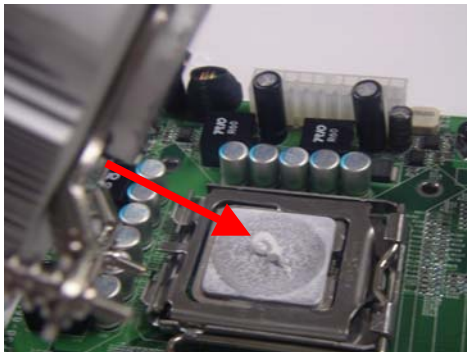
- a. Place bottom bracket underneath the socket making sure that threaded socket is aligned with the holes in the motherboard.



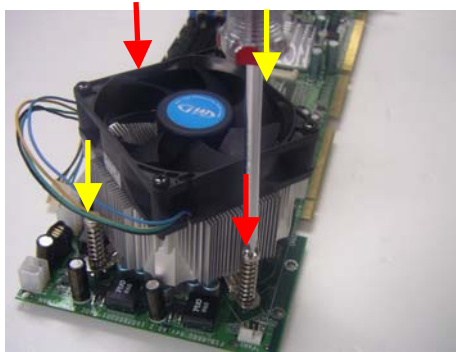
- b. Viewing the board again from the topside make sure the bracket on the solder side has not shifted from its position. Daub thermal compound on the CPU.



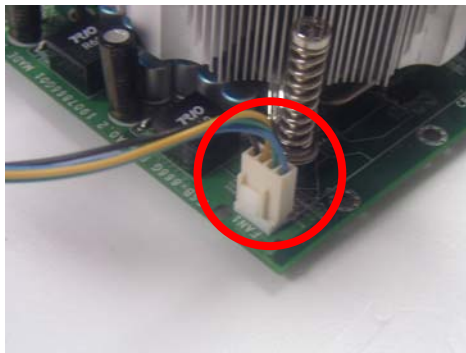
- c. Place the Heatsink on the top of CPU. Please make sure that the four screws are aligned with the holes on the board.



- d. Fasten the four screws. First fasten the two screws (yellow) and then fasten the two screws (red) in sequence to secure the heatsink in place.



- e. Connect the CPU fan cable to the power connector labeled FAN1 on the board.



Chapter

4

**Award
BIOS Setup**

4.1 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 FSB-868G Rev.B 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.

4.2 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 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

5

**Driver
Installation**

The FSB-868G Rev.B comes with a CD-ROM that contains all drivers your need.

In addition, you can activate the installation items through Autorun program which will install each driver directly. If your system do not support Autorun program or you cannot install drivers successfully, please read instructions below for further detailed installations.

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 SATA Driver

Step 5 – Install Hardware Doctor Driver

Please read following instructions for detailed installations.

5.1 Installation:

Insert the FSB-868G Rev.B CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 5 in order.

Step 1 – Install INF Driver

1. Click on the **Step 1 –INF** folder
2. Double click on the **Setup** file
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
2. Choose the OS your system is
3. Double click on the **Setup** file located in each OS folder
4. Follow the instructions that the window shows
5. The system will help you install the driver automatically

Step 3 – Install LAN Driver

1. Click on the **Step 3 --LAN** folder
2. Choose the OS your system is
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 4 – Install SATA Driver

1. Click on the **Step 4--SATA** folder

2. Click on the **Win OS** folder and then double click on **iata61_cd** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 5 –Install Hardware Doctor Driver

1. Click on the **Step 5--Hardware Doctor** folder
2. Double click on the **Setup** file
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Appendix

A

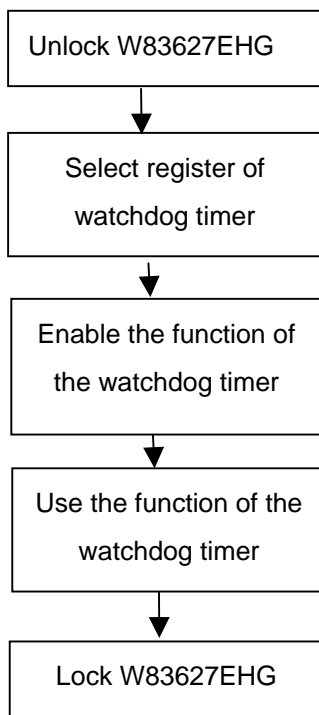
Programming the Watchdog Timer

A.1 Programming

FSB-868G Rev.B utilizes W83627EHG 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 W83627EHG config Mode

- (2) Modify the data of configuration registers
- (3) Exit the W83627EHG config Mode. Undesired result may occur if the config Mode is not exited normally.

(1) Enter the W83627EHG config Mode

To enter the W83627EHG 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 W83627EHG config Mode

The exit key is provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
0aah:	2Eh	2Fh

WatchDog Timer Register I (Index=F5h, Default=00h)

CRF5 (PLED mode register. Default 0 x 00)

Bit 7-6 : select PLED mode

= 00 Power LED pin is tri-stated.

- = 01 Power LED pin is driven low.
- = 10 Power LED pin is a 1Hz toggle pulse with 50 duty cycle.
- = 11 Power LED pin is a 1/4Hz toggle pulse with 50 duty cycle.

Bit 5-4 : Reserved

Bit 3 : select WDTO count mode.

= 0 second

= 1 minute

Bit 2 : Enable the rising edge of keyboard Reset (P20) to force Time-out event.

= 0 Disable

= 1 Enable

Bit 1-0 : Reserved

WatchDog Timer Register II (Index=F6h, Default=00h)

- Bit 7-0** = 0 x 00 Time-out Disable
- = 0 x 01 Time-out occurs after 1 second/minute
- = 0 x 02 Time-out occurs after 2 second/minutes
- = 0 x 03 Time-out occurs after 3 second/minutes
-
- = 0 x FF Time-out occurs after 255

second/minutes

WatchDog Timer Register III (Index=F7h, Default=00h)

- Bit 7** : Mouse interrupt reset Enable or Disable
- = 1 Watchdog Timer is reset upon a Mouse interrupt
 - = 0 Watchdog Timer is not affected by Mouse interrupt
- Bit 6** : Keyboard interrupt reset Enable or Disable
- = 1 Watchdog Timer is reset upon a Keyboard interrupt
 - = 0 Watchdog Timer is not affected by Keyboard interrupt
- Bit 5** : Force Watchdog Timer Time-out. Write Only
- = 1 Force Watchdog Timer time-out event: this bit is self-clearing
- Bit 4** : Watchdog Timer Status. R/W
- = 1 Watchdog Timer time-out occurred
 - = 0 Watchdog Timer counting
- Bit 3-0** : These bits select IRQ resource for Watchdog. Setting of 2 selects SMI.

A.2 W83627EHG Watchdog Timer Initial Program

Example: Setting 10 sec. as Watchdog timeout interval

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
Mov dx,2eh           ;Enter W83627EHG config mode
```

```
Mov al,87h          (out 87h to 2eh twice)
```

```
Out dx,al
```

```
Out dx,al
```

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
Mov al,07h
```

```
Out dx,al
```

```
Inc dx
```

```
Mov al,08h          ;Select Logical Device 8 (GPIO Port  
2)
```

```
Out dx,al
```

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
Dec dx
```

```
Mov al,30h          ;CR30 (GP20~GP27)
```

```
Out dx,al
```

```
Inc dx
```

```
Mov al,01h          ;Activate GPIO2
```

```
Out dx,al
```

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
Dec dx
```

```
Mov al,0f5h ;CRF5 (PLED mode register)
```

```
Out dx,al
```

```
Inc dx
```

```
In al,dx
```

```
And al,not 08h ;Set second as counting unit
```

```
Out dx,al
```

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
Dec dx
```

```
Mov al,0f6h ; CRF6
```

```
Out dx,al
```

```
Inc dx
```

```
Mov al,10 ;Set timeout interval as 10 sec.
```

```
Out dx,al
```

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

```
Dec dx ;Exit W83627EHG config mode
```

```
Mov al,0aah (out 0aah to 2eh once)
```

```
Out dx,al
```

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

Appendix

B

I/O Information

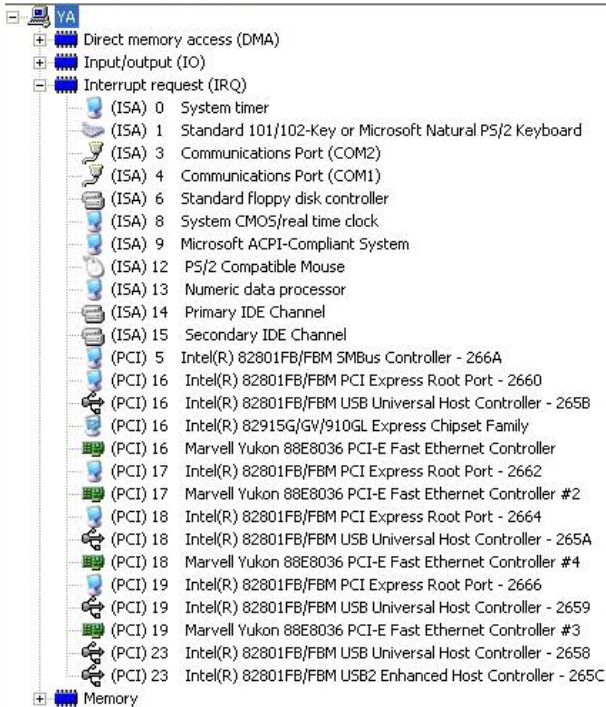
B.1 I/O Address Map

Address Range	Device Name
[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 P5/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural P5/2 Keyboard
[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
[00000170 - 00000177]	Secondary IDE Channel
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[000002F8 - 000002FF]	Communications Port (COM2)
[00000376 - 00000376]	Secondary IDE Channel
[00000378 - 0000037F]	Printer Port (LPT1)
[000003B0 - 000003BB]	Intel(R) 82915G/GV/910GL Express Chipset Family
[000003C0 - 000003DF]	Intel(R) 82915G/GV/910GL Express Chipset Family
[000003F0 - 000003F5]	Standard floppy disk controller
[000003F6 - 000003F6]	Primary IDE Channel
[000004D0 - 000004D1]	Motherboard resources
[00000500 - 0000051F]	Intel(R) 82801FB/FBM SMBus Controller - 266A
[00000778 - 0000077B]	Printer Port (LPT1)
[00000800 - 0000087F]	Motherboard resources
[00000A78 - 00000A7B]	Motherboard resources
[00000B78 - 00000B7B]	Motherboard resources
[00000B8C - 00000B8F]	Motherboard resources
[00000D00 - 0000FFFF]	PCI bus
[00000E78 - 00000E7B]	Motherboard resources
[00000F78 - 00000F7B]	Motherboard resources
[00000F8C - 00000F8F]	Motherboard resources
[0000A000 - 0000A0FF]	Marvell Yukon 88E8036 PCI-E Fast Ethernet Controller
[0000A000 - 0000AFFF]	Intel(R) 82801FB/FBM PCI Express Root Port - 2660
[0000B000 - 0000B0FF]	Marvell Yukon 88E8036 PCI-E Fast Ethernet Controller #2
[0000B000 - 0000BFFF]	Intel(R) 82801FB/FBM PCI Express Root Port - 2662
[0000C000 - 0000C0FF]	Marvell Yukon 88E8036 PCI-E Fast Ethernet Controller #4
[0000C000 - 0000CFFF]	Intel(R) 82801FB/FBM PCI Express Root Port - 2664
[0000D000 - 0000D0FF]	Marvell Yukon 88E8036 PCI-E Fast Ethernet Controller #3
[0000D000 - 0000DFFF]	Intel(R) 82801FB/FBM PCI Express Root Port - 2666
[0000E000 - 0000E007]	Intel(R) 82915G/GV/910GL Express Chipset Family
[0000E100 - 0000E11F]	Intel(R) 82801FB/FBM USB Universal Host Controller - 2658
[0000E200 - 0000E21F]	Intel(R) 82801FB/FBM USB Universal Host Controller - 2659
[0000E300 - 0000E31F]	Intel(R) 82801FB/FBM USB Universal Host Controller - 265A
[0000E400 - 0000E41F]	Intel(R) 82801FB/FBM USB Universal Host Controller - 265B
[0000F000 - 0000F00F]	Intel(R) 82801FB/FBM Ultra ATA Storage Controllers - 266F

B.2 1st MB Memory Address Map

+	Direct memory access (DMA)
+	Input/output (IO)
+	Interrupt request (IRQ)
-	Memory
	[00000000 - 0009FFFF] System board
	[000A0000 - 000BFFFF] Intel(R) 82915G/GV/910GL Express Chipset Family
	[000A0000 - 000BFFFF] PCI bus
	[000C0000 - 000DFFFF] PCI bus
	[000D3800 - 000D3FFF] System board
	[000E0000 - 000EFFFF] System board
	[000F0000 - 000F7FFF] System board
	[000F8000 - 000FBFFF] System board
	[000FC000 - 000FFFFF] System board
	[00100000 - 0F6DFFFF] System board
	[0F6E0000 - 0F6FFFFF] System board
	[0F700000 - FEBFFFFF] PCI bus
	[C0000000 - CFFFFFFF] Intel(R) 82915G/GV/910GL Express Chipset Family
	[D0000000 - D0003FFF] Marvell Yukon 88E8036 PCI-E Fast Ethernet Controller
	[D0000000 - D00FFFFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2660
	[D0100000 - D0103FFF] Marvell Yukon 88E8036 PCI-E Fast Ethernet Controller #2
	[D0100000 - D01FFFFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2662
	[D0200000 - D0203FFF] Marvell Yukon 88E8036 PCI-E Fast Ethernet Controller #4
	[D0200000 - D02FFFFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2664
	[D0300000 - D0303FFF] Marvell Yukon 88E8036 PCI-E Fast Ethernet Controller #3
	[D0300000 - D03FFFFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2666
	[D0400000 - D047FFFF] Intel(R) 82915G/GV/910GL Express Chipset Family
	[D0480000 - D04BFFFF] Intel(R) 82915G/GV/910GL Express Chipset Family
	[D04C0000 - D04C03FF] Intel(R) 82801FB/FBM USB2 Enhanced Host Controller - 265C
	[E0000000 - EFFFFFFF] Motherboard resources
	[FEC00000 - FEC00FFF] System board
	[FED13000 - FED1DFFF] System board
	[FED20000 - FED8FFFF] System board
	[FEE00000 - FEE00FFF] System board
	[FFB00000 - FFB7FFFF] System board
	[FFB80000 - FFBFFFFF] Intel(r) 82802 Firmware Hub Device

B.3 IRQ Mapping Chart



B.4 DMA Channel Assignments

