

Half-size CPU Card

HSB-835A

HSB-835A

Intel® Pentium®4 Processor
Half-size CPU Card
With DDR, Ethernet,
CompactFlash™ & SATA

HSB-835A Rev. A Manual 1st Ed.
Jan. 2005

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Packing List

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

- 1 HSB-835A CPU Card
- 1 Floppy Cable
- 1 ATA-100 Cable
- 1 USB Cable
- 1 Keyboard Cable
- 1 Serial + Parallel Cable
- 1 Serial Cable
- 1 ATX Cable
- 1 Quick Installation Guide
- 1 CD-ROM for manual (in PDF format) and drivers

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

Introducing AAEON's new HSB-835A, powered by Intel® Pentium® 4/Prescott processor, half-size form factor single board computer (SBC) with an onboard VGA, 10/100/1000Mb LAN optional and seven USB 2.0 ports.

HSB-835A successfully deployed Intel® most advanced 82865G chipset, which supports high CPU frequency up to 3.2 GHz with front side bus running at 400/533/800MHz. HSB-835A supports Intel® Hyper-Threading Technology gives you the best overall Pentium® 4/Prescott processor performance available. HSB-835A also provides high memory capacity up to 2 GB DDR DRAM (DDR 200/266/333/400) and support Dual-channel (128 bits wide) DDR memory interface.

In addition to its powerful computing engine, the full functional design of the board includes features such as i82865GV on-chip integrated 2D/3D graphics engine, built-in USB 2.0 and on board CompactFlash™ Type I socket. HSB-835A delivers super graphic performance without additional cost on integrated Intel® 82865GV chipset, and provides unique Intel® Extreme Graphics architecture to maximize VGA performance capability.

Seven USB 2.0 ports provide an expandable, Plug and Play serial interface that ensures a standard low-cost connection for peripheral devices. Industrial applications will benefit from the seven USB 2.0 by three pin-headers and one Type A connector onboard, offering 480Mbps high-speed efficiency and value without compromising performance.

Moreover, HSB-835A is also equipped with Intel[®] Ethernet controllers. One of these provides superior 1 GB Mbps networking access ability for high speed networking applications such as gateway, VPN, Mini server.

In short, this product is a versatile Pentium[®] 4/ Prescott compact board with the best cost-performance for CTI, networking and mini-server markets.

1.2 Feature

- Supports Intel® Pentium® 4 CPU up to 3.2GHz (Prescott CPU)
- Integrates AC97 Codec Audio (Daughter Board optional)
- Supports Ultra ATA100 & SATA & CompactFlash™ Type I Storage
- Supports 10/100/1000Base-T Ethernet port x1 (10/100& GbE Optional)
- Supports 7 USB 2.0 Ports
- Supports RS-232 x 1, RS-232/422/485 x 1
- Supports 1 parallel port
- Supports 1 IrDA port
- Integrates AGP 8X 2D/3D Graphics Accelerator, VGA support
- Supports DDR400 Memory up to 2GB
- Watchdog Function 1~255 sec.

1.3 Specification

System

- CPU: Supports Intel® Pentium® 4 and Celeron® processors up to 3.2 GHz (400/533/800 MHz FSB)
- Chipset: Intel® 865G + Intel® 82801EB/ER (ICH5/ICH5R)
- I/O Chipset: Winbond W83627HF
- Ethernet: 10/100Mb or 10/100/1000Mb LAN optional, RJ-45 x 1, Intel® 82562EZ / 82547EI controller
- System Memory: 184 pins 2.5V DDR DIMM Socket x 2, total up to 2GB, supports dual channel DDR memory (DDR266/333/400)
- BIOS: Award Plug & Play Firmware Hub BIOS – 4Mb ROM
- Watchdog Timer: 1~255 step, can be set with software on Super I/O
- CompactFlash: Supports CFD Type I

- controller
- Expansion Interface: APCI interface
- Power Supply Voltage: +12V ATX, other supply from Backplane
- VGA Controller: Integrated on Intel[®] 865G, AGP 8X, Core frequency up to 266MHz
- Audio (Daughter board): Realtek ALC655 AC97 (Optional) Codec, MIC-in/Line-in /Line-out/CD-in
- IDE Interface: ATA-100 x 1 channel (Supports two ATAPI devices) SATA-150 x 2 (Supports two SATA devices, Raid function optional)
- Universal Serial Bus: USB 2.0 Port x 7, dual 5 x 2 pin headers for internal, Type-A connector onboard x 3
- IR Interface: Supports IrDA header x 1
- RTC: Internal RTC
- Power Supply Request: ATX12V, other from Backplanes
- Operation Temp: 0 ~60

I/O

- IDE Interface: ATA-100 x 1 channel
(support 2 ATAPI devices)
- FDD Interface: Standard Floppy Disk Drive
port x 1 (supports up to 2
floppy devices)
- Serial Ports: Two COM ports: (Internal
pin header, external D-sub x
2)
COM 1: RS-232/422/485
COM 2: RS-232
- Parallel Port: Supports SPP/EPP/ECP
mode
- KB & Mouse connector: Mini-DIN for PS/2 keyboard
and mouse connector x 1,
Internal keyboard pin
header x 1
- IrDA: IrDA Tx/Rx header x 1
- USB Dual 5 x 2 pin headers for
internal, supports 7 USB 2.0
ports

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 Precaution

Warning!

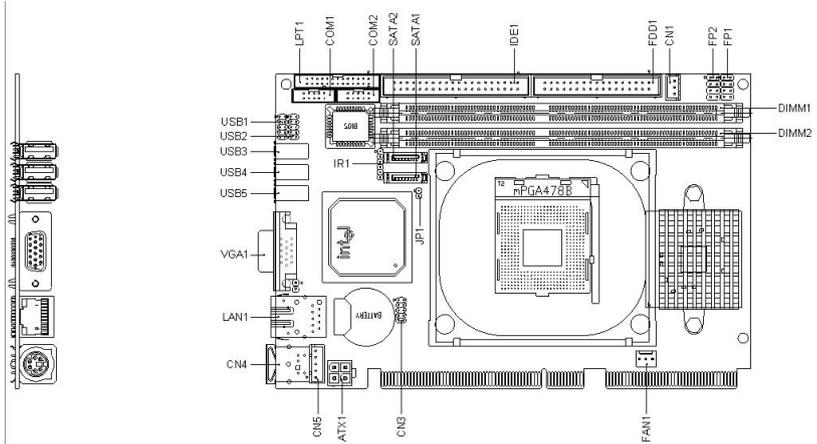
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

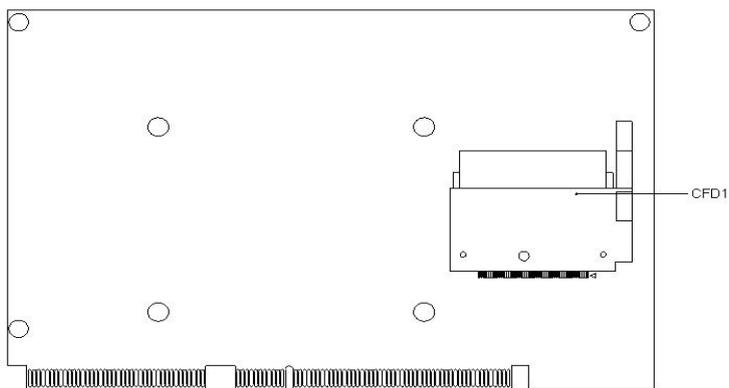
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

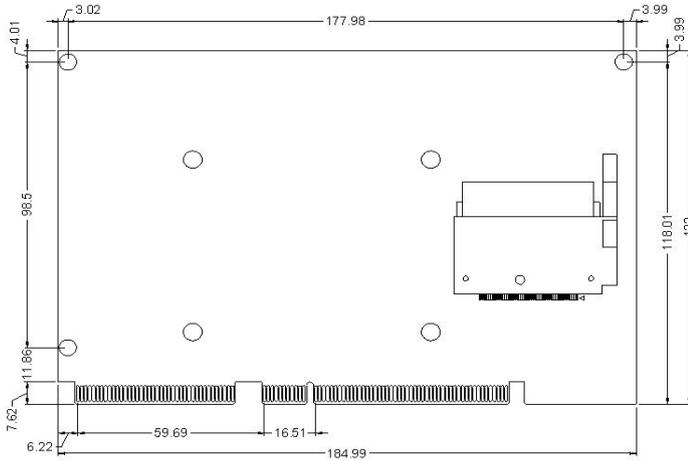
Component Side



Solder Side



Solder Side



2.4 List of Jumpers

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

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

Jumpers

Label	Function
JP1	Clear CMOS

2.5 List of Connectors

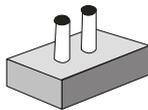
The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

Label	Function
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
ATX1	ATX Power +12V Connector
VGA1	VGA Display Connector
FDD1	Floppy Connector
IDE1	EIDE Connector
CFD1	Compact Flash Slot
COM1	RS-232/422/485 Serial Port Connector
COM2	RS-232 Serial Port Connector
IR1	IrDA Connector
LPT1	LPT Port Connector
USB1~2	USB Connector
USB3~5	USB Connector
LAN1	10/100 or 100/1000 Base-T Ethernet Connector
DIMM1~2	DIMM Slot
FAN1	Fan Connector
CN1	ATX Power Control Connector
CN2	LAN 1 Active LED Connector
CN3	AC97 Connector
CN4	PS2 Keyboard/Mouse Connector
CN5	Internal Keyboard Connector
SATA1 ~ 2	SATA connector

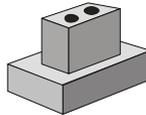
2.6 Setting Jumpers

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.

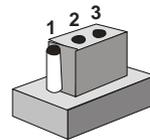
To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



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.

2.7 Clear CMOS (JP1)

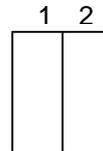
JP1	Function
Close	Clear CMOS
Open	Protected (Default)

2.8 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 (-)

2.9 Front Panel Connector (FP2)

Close Pin 5-7: Internal Buzzer Enable



Pin	Signal	Pin	Signal
1	External Speaker (+)	2	Keyboard Lock (+)
3	N.C.	4	GND
5	Internal Buzzer (-) (Default)	6	I2C Bus SMB Clock
7	External Speaker (-) (Default)	8	I2C Bus SMB DATA

2.10 RS-232/422/485 Serial Port Connector (COM1)

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.

2.11 RS-232 Serial Port Connector (COM2)

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.

2.12 IrDA Connector (IR1)

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

5	IRTX
6	N.C.

2.13 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.

2.14 USB Connector (USB1~2)

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

2.15 Fan Connector (FAN1)

Pin	Signal
1	GND
2	+12V
3	Speed Sense

2.16 ATX Power Control Connector (CN1)

AT Power Use: Close Pin 2, 3

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

2.17 LAN LED Connector(CN2)

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

2.18 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
---	------	----	-------

2.19 PS/2 keyboard & Mouse Connector (CN4)

Pin	Signal
1	KB_DATA
2	MS_DATA
3	GND
4	+5V
5	KB_CLK
6	MS_CLK

2.20 Internal Keyboard Connector (CN5)

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

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 HSB-835A 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 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 HSB-835A comes with a CD-ROM that contains all drivers and utilities that meet your needs.

Follow the sequence below to install the drivers:

Step 1 – Install Intel INF Update

Step 2 – Install Graphic Driver

Step 3 – Install Ethernet Driver

Step 4 – Install AC97 Audio Driver

Step 5 – Install Application Accelerator Driver

Note: Please clarify the chipset of south bridge on the board to proceed the step 5.

Step 6 – Utility (Optional)

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the HSB-835A CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 6 in order.

Step 1 – Install Intel INF Update

1. Click on the **Intel Chipset Software Installation Utili.0 Pre-Alpha Build 1002** folder and then double click on the **infinst_autol.exe**.
2. Follow the instructions that the window shows you.
3. The system will help you install the driver automatically.
4. Please re-start your computer.

Step 2 – Install Graphic Driver

1. Click on the **Intel Extreme Graphics 2 Ver 6.14.10.3722** folder
2. Choose the OS folder that meets your system
3. Double click on the **setup.exe**. located in each OS folder.
4. Follow the instructions that the window shows you.
5. The system will help you install the driver automatically.
6. Please re-start your computer.

Step 3 – Install Ethernet Driver

1. Click on the **Intel PRO Network Connections Ver 8.3** folder and then double click on the **Autorun.exe**.
2. Follow the instructions that the window shows you.
3. The system will help you install the driver automatically.
4. Please re-start your computer.

Step 4 – Install AC97 Audio Driver

1. Click on the **Realtek_ALC65X_AudioDriver_Windows(RevA3.61)** folder and then enter **ALC655** folder.
2. Choose the OS folder that meets your system and execute on the **wdm_a357.exe. or vxd_a357.exe** in terms of the OS you choose.
3. Follow the instructions that the window shows you.
4. The system will help you install the driver automatically.
5. Please re-start your computer.

Step 5 – Install Application Accelerator driver

Note:

If the chipset of south bridge on the board is ICH5, please ignore the step 5 and go to step 6 directly; if the chipset of south bridge is ICH5-R, please follow the procedures of step 5.

1. Click on the **Intel Application Accelerator 4.5 Ver 4.5.0.6515** folder and then enter **IAA** folder.
2. Double click on the **iaar45_multi.exe.**
3. Follow the instructions that the window shows you.
4. The system will help you install the driver automatically.
5. Please re-start your computer.

Step 6 – Utility driver (Optional)

1. Execute on the **setup.exe** after entering Utility driver folder.
2. Follow the instructions that the window shows you.

3. The system will help you install the driver automatically.
4. Please re-start your computer.

Note:

Under the Window OS environment, if the CRT connector is connected to display monitor by the data switch device, the user need to set the color and resolution from Intel Graphic utility (VGA driver) instead of setting from the control panel in case of the wrong display appearance.

Appendix

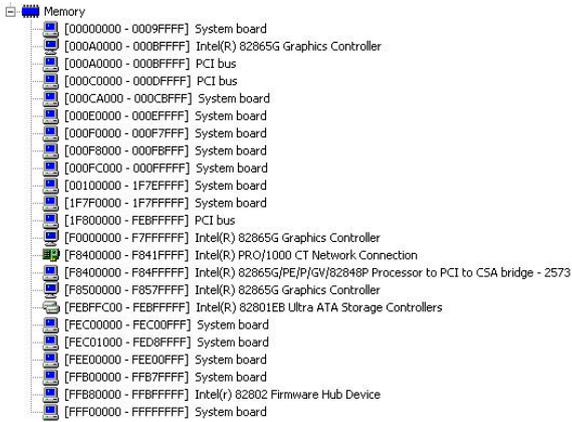
A

I/O Information

A.1 I/O Address Map

Address Range	Device Name
[00000000 - 0000000F]	Direct memory access controller
[00000000 - 000000CF]	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 - 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 - 000000CF]	Direct memory access controller
[000000E0 - 000000E7]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[00000170 - 00000177]	Secondary IDE Channel
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISA/PNP Read Data Port
[00000279 - 00000279]	ISA/PNP Read Data Port
[00000294 - 00000297]	Motherboard resources
[000002F8 - 000002FF]	Communications Port (COM2)
[00000376 - 00000376]	Secondary IDE Channel
[00000378 - 0000037F]	Printer Port (LPT1)
[00000380 - 0000038B]	Intel(R) 82865G Graphics Controller
[000003CD - 000003DF]	Intel(R) 82865G Graphics Controller
[000003F0 - 000003F5]	Standard floppy disk controller
[000003F6 - 000003F6]	Primary IDE Channel
[000003F7 - 000003F7]	Standard floppy disk controller
[000003F8 - 000003FF]	Communications Port (COM1)
[00000400 - 000004BF]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources
[00000500 - 0000051F]	Intel(R) 82801EB SMBus Controller - 24D3
[00000778 - 0000077B]	Printer Port (LPT1)
[00000800 - 0000087F]	Motherboard resources
[00000A78 - 00000A7B]	Motherboard resources
[00000B78 - 00000B7B]	Motherboard resources
[00000B7C - 00000B7F]	Motherboard resources
[00000B80 - 00000B83]	Motherboard resources
[00000B84 - 00000B87]	Motherboard resources
[00000B88 - 00000B8B]	Motherboard resources
[00000B8C - 00000B8F]	Motherboard resources
[00000D00 - 0000FFFF]	PCI bus
[00000E78 - 00000E7B]	Motherboard resources
[00000F78 - 00000F7B]	Motherboard resources
[00000F7C - 00000F7F]	Motherboard resources
[00000F78 - 00000F7B]	Motherboard resources
[00000F7C - 00000F7F]	Motherboard resources
[00000F80 - 00000F83]	Motherboard resources
[00000F84 - 00000F87]	Motherboard resources
[00000F88 - 00000F8B]	Motherboard resources
[00000F8C - 00000F8F]	Motherboard resources
[00000D00 - 00000D1F]	Intel(R) PRO/1000 CT Network Connection
[00000D00 - 00000DFF]	Intel(R) 82865G/PE/P/GV/82848P Processor to PCI to CSA bridge - 2573
[0000E000 - 0000E007]	Intel(R) 82865G Graphics Controller
[0000E100 - 0000E11F]	Intel(R) 82801EB USB Universal Host Controller - 24D2
[0000E200 - 0000E21F]	Intel(R) 82801EB USB Universal Host Controller - 24D4
[0000E300 - 0000E31F]	Intel(R) 82801EB USB Universal Host Controller - 24D7
[0000E400 - 0000E41F]	Intel(R) 82801EB USB Universal Host Controller - 24DE
[0000E500 - 0000E507]	Intel(R) 82801EB Ultra ATA Storage Controllers
[0000E600 - 0000E603]	Intel(R) 82801EB Ultra ATA Storage Controllers
[0000E700 - 0000E707]	Intel(R) 82801EB Ultra ATA Storage Controllers
[0000E800 - 0000E803]	Intel(R) 82801EB Ultra ATA Storage Controllers
[0000E900 - 0000E90F]	Intel(R) 82801EB Ultra ATA Storage Controllers
[0000F000 - 0000F00F]	Intel(R) 82801EB Ultra ATA Storage Controllers
[00000000 - 0000000F]	Interrupt request (IRQ)
[00000000 - 0000000F]	Memory

A.2 1st MB Memory Address Map



The image shows a screenshot of a memory address map. The title is "Memory". Below the title, there is a list of memory addresses and their corresponding hardware components. Each entry consists of a memory range in brackets, followed by the component name. The components include System board, Intel(R) 82865G Graphics Controller, PCI bus, Intel(R) 82865G/PE/P/GW/82848P Processor to PCI to CSA bridge - 2573, Intel(R) 82865G Graphics Controller, Intel(R) 82801EB Ultra ATA Storage Controllers, Intel(R) PRO/1000 CT Network Connection, and Intel(R) 82802 Firmware Hub Device.

Memory Range	Component
[00000000 - 0009FFFF]	System board
[000A0000 - 000BFFFF]	Intel(R) 82865G Graphics Controller
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[000CA000 - 000CBFFF]	System board
[000E0000 - 000EFFFF]	System board
[000F0000 - 000F7FFF]	System board
[000F8000 - 000FBFFF]	System board
[000FC000 - 000FFFFF]	System board
[00100000 - 1F7EFFFF]	System board
[1F7F0000 - 1F7FFFFF]	System board
[1F800000 - FEBFFFFF]	PCI bus
[F0000000 - F7FFFFFF]	Intel(R) 82865G Graphics Controller
[F8400000 - F841FFFF]	Intel(R) PRO/1000 CT Network Connection
[F8400000 - F84FFFFF]	Intel(R) 82865G/PE/P/GW/82848P Processor to PCI to CSA bridge - 2573
[F8500000 - F857FFFF]	Intel(R) 82865G Graphics Controller
[FEBFFC00 - FEBFFFFF]	Intel(R) 82801EB Ultra ATA Storage Controllers
[FEC00000 - FEC00FFF]	System board
[FEC01000 - FED8FFFF]	System board
[FEE00000 - FEE00FFF]	System board
[FFB00000 - FFB7FFFF]	System board
[FFB80000 - FFBFFFFF]	Intel(R) 82802 Firmware Hub Device
[FFF00000 - FFFFFFFF]	System board

A.3 IRQ Mapping Chart

-
- The screenshot displays the Windows Device Manager for a system named 'TEST-4PXQEP82U3'. The 'Interrupt request (IRQ)' category is expanded, showing a list of devices and their assigned IRQs. The devices are categorized by bus type: ISA, PCI, and Memory.
- Direct memory access (DMA)
 - Input/output (IO)
 - Interrupt request (IRQ)
 - (ISA) 0 System timer
 - (ISA) 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
 - (ISA) 3 Communications Port (COM2)
 - (ISA) 4 Communications Port (COM1)
 - (ISA) 6 Standard Floppy disk controller
 - (ISA) 8 System CMOS/real time clock
 - (ISA) 9 Microsoft ACPI-Compliant System
 - (ISA) 12 PS/2 Compatible Mouse
 - (ISA) 13 Numeric data processor
 - (ISA) 14 Primary IDE Channel
 - (ISA) 15 Secondary IDE Channel
 - (PCI) 10 Intel(R) 82801EB SMBus Controller - 24D3
 - (PCI) 16 Intel(R) 82801EB USB Universal Host Controller - 24D2
 - (PCI) 16 Intel(R) 82801EB USB Universal Host Controller - 24DE
 - (PCI) 16 Intel(R) 82865G Graphics Controller
 - (PCI) 17 Intel(R) PRO/1000 CT Network Connection
 - (PCI) 18 Intel(R) 82801EB Ultra ATA Storage Controllers
 - (PCI) 18 Intel(R) 82801EB USB Universal Host Controller - 24D7
 - (PCI) 19 Intel(R) 82801EB USB Universal Host Controller - 24D4
 - Memory

A.4 DMA Channel Assignments



Appendix

B

Programming the Watchdog Timer

B.1 Programming

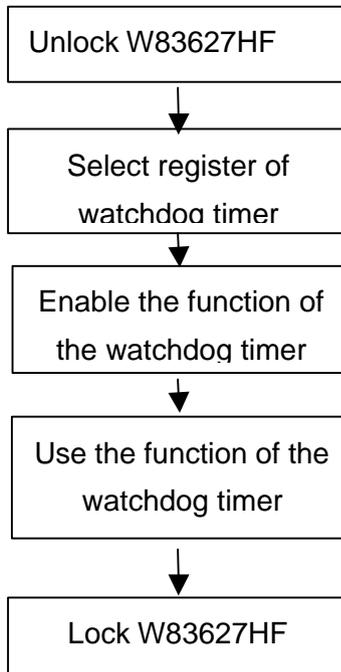
HSB-835A utilizes W83627HF chipset as its watchdog timer controller.

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 W83627HF config Mode
- (2) Modify the data of configuration registers
- (3) Exit the W83627HF config Mode. Undesired result may occur if the config Mode is not exited normally.

(1) Enter the W83627HF config Mode

To enter the W83627HF 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 W83627HF 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.

B.2 W83627HF Watchdog Timer Initial Program

Example: Setting 10 sec. as Watchdog timeout interval

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

```
Mov dx,2eh           ;Enter W83627HF 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 W83627HF config mode
```

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

```
Out dx,al
```

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