

HSB-525I

Intel® Atom™ D525 Processor

ISA Expansion Half-size SBC

Two 204-pin DDR3 800 SODIMM

3 SATA 3.0 Gb/s/ 1 IDE/ 1 CompactFlash™

5 USB2.0/ 2 COM/ 1 VGA/ 1 LVDS

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Packing List

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

- 1 ATA100 Cable
- 1 USB Cable
- 1 Keyboard & Mouse Cable
- 1 Serial + Parallel Cable
- 1 Serial Cable
- 3 SATA Cables
- 1 Product CD (manual in PDF format and drivers)
- 1 HSB-525I CPU Card

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

The HSB-525I utilizes the Intel® Atom™ D525 and ICH8M chipset, supporting Intel® Atom D525 processor with a FSB of 800MHz up to 1.8GHz. Offering two 204-pin DDR3 SODIMM sockets, the HSB-525I supports DDR3 800 SODIMM system memory up to 4 GB.

This model offers a multitude of I/O including two COM ports and five USB2.0 ports. To meet today's increasing storage demands it also supports three SATA 3.0 Gb/s, one Type II CompactFlash™ to share IDE channel, and one ATA100 sockets. The flexible expansion and storage makes the HSB-525I a great solution for your vital applications.

In addition to the comprehensive COM and USB offering the HSB-525I can also be configured with two Gigabit Ethernet ports to meet the needs of high bandwidth connectivity. Supporting CRT & LCD simultaneously along with the optional high definition audio board, the HSB-525I is an ideal solution for demanding multimedia based applications.

1.2 Features

- Intel® Atom™ D525 Processor
- Intel® Atom™ D525 + ICH8M
- 204-Pin 800 MHz DDR3 SODIMM Memory x 2, Up to 4 GB
- Gigabit Ethernet x 2
- Intel® Atom™ D525 Integrated VGA, Shared Memory Up To 324MB With DVMT4.0.
- Optional HD Codec Audio Daughter Board
- SATA 3.0Gb/s x 3, CompactFlash™ Type 2 x 1, ATA100 x 1
- USB2.0 x 5, RS-232/422/485 x 1, RS-232 x 1, Parallel x 1
- ISA Expansion
- +5V, +12V Operation, AT Power

Note: HSB-525I has to be operated with an ISA backplane to supply +5V, +12V, and -12V power inputs to make COM1 work functionally.

1.3 Specification

System

- Form Factor ISA Half-size Board
- CPU Onboard Intel® Atom™ D525 Processor up to 1.8GHz with a 1 MB L2 cache
- System Memory Two 204-pin 800 MHz DDR3 SODIMM, up to 4 GB
- Chipset Intel® Atom™D525 + Intel® ICH8M
- Ethernet Realtek RTL 8111C x 2, Gigabit Ethernet, RJ-45 x 2
- Audio (Optional Daughter Board) HD Audio Codec with Realtek ALC888
- BIOS AMI Plug & Play SPI BIOS – 4 MB ROM
- I/O Chip Winbond 83627DHG-P
- Storage 40-pin IDE slot x 1 (Slave), SATA 3.0 Gb/s x 3,
- SSD CompactFlash™ Type II connector, shares IDE channel (Master)
- Watchdog Timer 1~255 steps, can be set with software on Super I/O
- RTC Internal RTC

- H/W Status Monitor Monitoring system temperature, voltage, and cooling fan status
- Battery Lithium battery
- Power Requirement +5V, $\pm 12V$ by ISA bus, onboard 4-pin power connector (+5V, +12V)

Note: HSB-525I has to be operated with an ISA backplane. Normally, onboard 4-pin power connector can supply power (+5V and +12V) to operate the board. But the COM1 will need +5V and $\pm 12V$ power supplied through the ISA bus.

- Board Size 7.3"(L) x 4.8" (W)
(185mm x 122mm)
- Gross Weight 0.71lb (0.3kg)
- Operating Temperature 32°F~140°F(0°C~60°C)
- Storage Temperature -4°F~158°F(-20°C~70°C)
- Operating Humidity 10%~80%, non-condensing
- EMI CE/FCC Class A

Display

- Chipset Intel® Atom™D525 + ICH8M
- Graphic Engine Intel® Atom™D525 with integrated Graphics Core
- Resolutions Up to 2048x1536 @ 60 Hz for CRT; 1366x768 @ 60 Hz for LCD
- Output Interface VGA x 1, LVDS x 1

I/O

- Serial Port COM1: RS-232
COM2: RS-232/422/485
- Parallel Port Supports SPP/EPP/ECP mode
- Keyboard/Mouse Keyboard/Mouse x 1
- Universal Serial Bus USB2.0 x 5, 5x2-pin header x 2,
Type A x 1
- Audio Audio Jack x 2
- Ethernet RJ-45 x 2
- Display VGA x 1, LVDS x 1

Chapter

2

**Quick
Installation
Guide**

2.1 Safety Precautions

Warning!

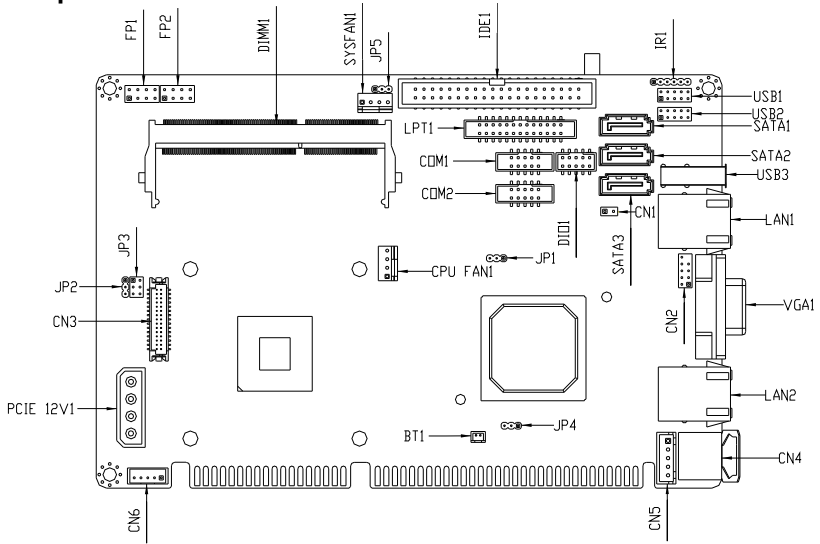
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

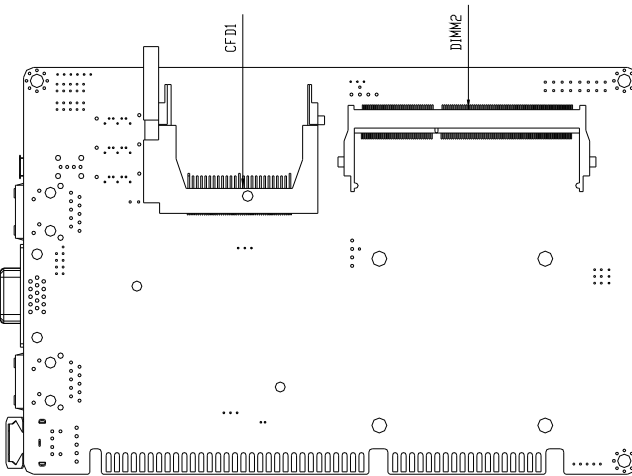
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

Component Side

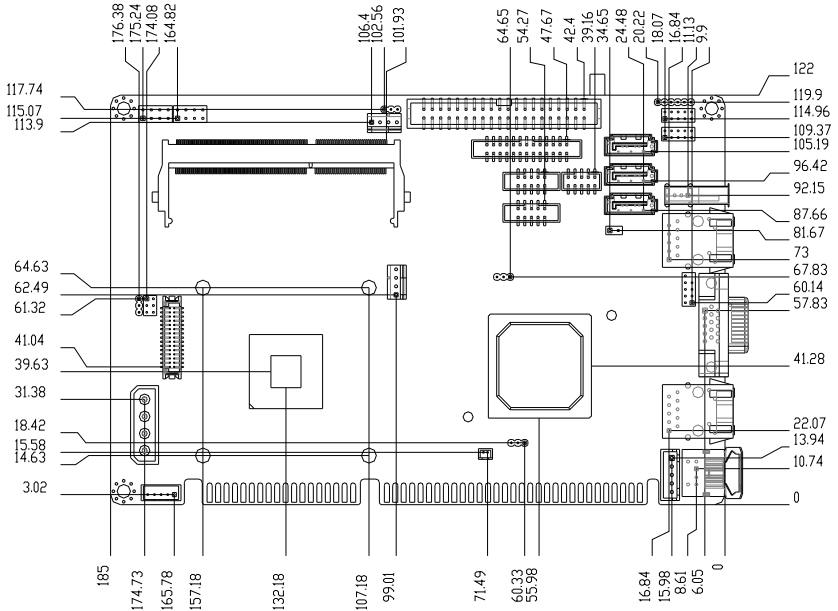


Solder Side

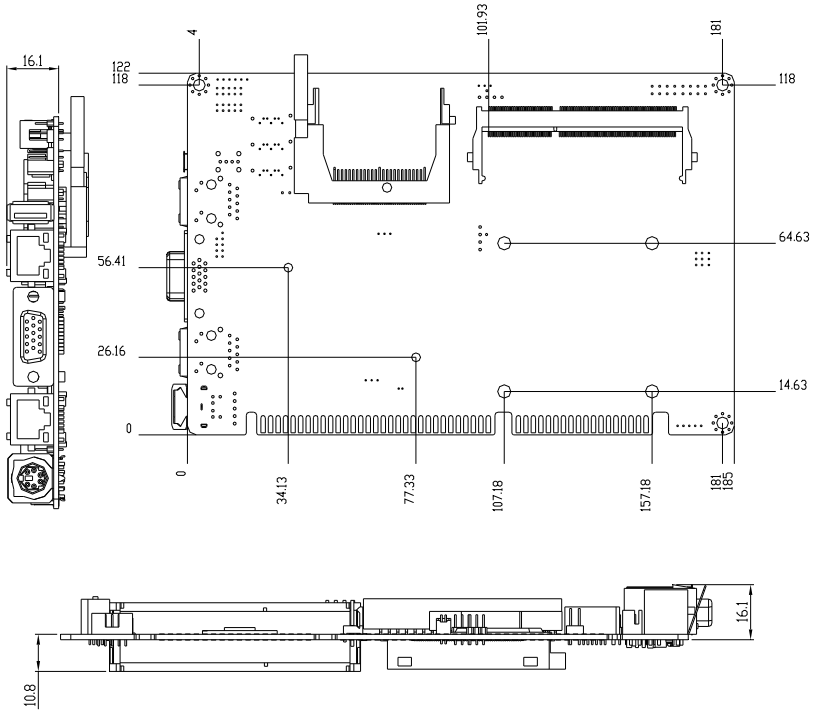


2.3 Mechanical Drawing

Component 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	CF Select
JP2	LCD Panel Voltage Selection
JP3	LCD Backlight Voltage Selection
JP4	Clear CMOS
JP5	Auto power Button

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

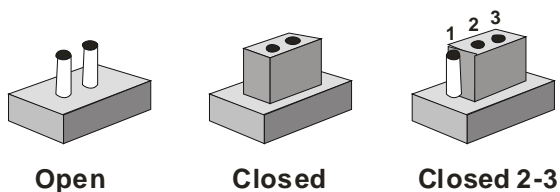
Label	Function
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
VGA1	VGA Port Connector
COM2	RS-232/485/422 Serial Connector
COM1	RS-232 Serial Connector
CN1	Caseopen Pin Header
CN2	HD Audio Codec with Realtek ALC888 (Optional) Connector
CN3	LVDS Connector
CN4	PS2 Keyboard/Mouse Connector
CN5	Keyboard Connector
CN6	LVDS Backlight Connector
LAN1	100/1000Base-TX Ethernet Connector
LAN2	100/1000Base-TX Ethernet connector
DIMM1	DDR3 SODIMM Slot
DIMM2	DDR3 SODIMM Slot
USB1	USB Connector
USB2	USB Connector
USB3	USB Connector
CPU_FAN1,	4-Pin CPU Fan Connector

SYS_FAN1	4-Pin System Fan Connector
PCIE_12V1	4-Pin ATX Power Connector
BT1	Battery
SATA1~SATA3	SATA Connector
SPI1	BIOS DEBUG PORT
IDE1	IDE Connector
LPT1	Parallel Port Connector
CFD1	CF Card 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 CF Selection (JP1)

JP1	Function
1-2	Master(Default)
2-3	Slave

2.8 LVDS Voltage Selection (JP2)

JP2	Function
1-2	+5V
2-3	+3.3V (Default)

2.9 LVDS Backlight Selection (JP3)

JP3	Function
Backlight Control	
1-3	PWM Ctrl
3-5	Voltage Ctrl (Default)
Backlight Voltage	
2-4	+5V
4-6	+12V (Default)

2.10 Clear CMOS (JP4)

JP4	Function
1-2	Protected (Default)
2-3	Clear

2.11 Auto Power Button (JP5)

JP5	Function
1-2	Auto power Button off
2-3	Auto power Button on (Default)

2.12 Front Panel Connector (FP1)

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

2.13 Front Panel Connector (FP2)

Pin	Signal	Pin	Signal
1	External Speaker (+)	2	Key Board Lock (+)
3	NC	4	GND
5	Internal Buzzer (-)	6	I2C Bus SMB Clock
7	External Speaker (-)	8	I2C Bus SMB Data

Note: Internal Buzzer enable: Close Pin 5,7

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 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

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7	RTS	8	CTS
9	RI	10	N.C

2.16 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

2.17 Caseopen Connector (CN1)

Pin	Signal	Pin	Signal
1	CASEOPEN#	2	GND

2.18 HD Audio Codec with Realtek ALC888 (Optional) Connector (CN2)

Pin	Signal	Pin	Signal
1	RST	2	SYNC
3	SDIN	4	SDOUT
5	DET	6	BCLK
7	GND	8	+5V
9	N.C.	10	+3.3V

2.19 LVDS Connector (CN3)

Pin	Signal	Pin	Signal
1	LVDS_BKLEN	2	LVDS_BKLCTL
3	PPVCC	4	GND
5	LVDS_TXLCLK#	6	LVDS_TXLCLK
7	PPVCC	8	GND

9	LVDS_TXL0#	10	LVDS_TXL0
11	LVDS_TXL1#	12	LVDS_TXL1
13	LVDS_TXL2#	14	LVDS_TXL2
15	LVDS_TXL3#	16	LVDS_TXL3
17	LVDS_DDCPDATA	18	LVDS_DDCPCLK
19	N.C	20	N.C
21	N.C	22	N.C
23	N.C	24	N.C
25	N.C	26	N.C
27	PPVCC	28	GND
29	N.C	30	N.C

2.20 Keyboard Connector (CN5)

Pin	Signal
1	KBCLK
2	KBDATA
3	N.C
4	GND
5	VCC

2.21 LVDS Backlight Connector (CN6)

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

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

**AMI
BIOS Setup**

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The HSB-525I CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press or <F2> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

Enable/disable boot option for legacy network devices.

Chipset

host bridge parameters.

Boot

Enables/disables quiet boot option.

Security

Set setup administrator password.

Save&Exit

Exit system setup after saving the changes.

Chapter

4

**Driver
Installation**

The HSB-525I comes with a CD-ROM that contains all drivers your need.

Follow the sequence below to install the drivers:

Step 1 – Install Chipset Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the HSB-525I CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 4 in order.

Step 1 – Install Chipset Driver

1. Click on the **Step 1-Chipset** folder and then double click on the **infinst_autol.exe**
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

Step 2 – Install VGA Driver

1. Click on the **Step 2-Graphics Driver** folder and select the OS 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 to install the driver automatically

Step 3 – Install LAN Driver

1. Click on the **Step 3-LAN** folder and select the OS your system is
2. Double click on **.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Step 4 – Install Audio Driver

1. Click on the **Step 4-Audio** folder and select the OS your system is

2. Double click on **.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Appendix

A

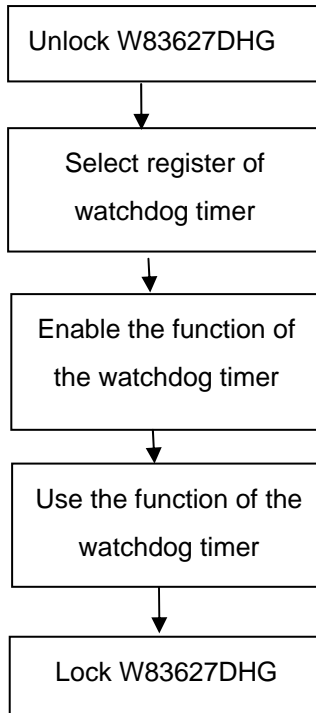
Programming the Watchdog Timer

A.1 Programming

HSB-5251 utilizes W83627DHG-P chipset as its watchdog timer controller.

Below are the procedures to complete its configuration and the AAEMON 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 W83627DHG config Mode
- (2) Modify the data of configuration registers

- (3) Exit the W83627DHG config Mode. Undesired result may occur if the config Mode is not exited normally.

(1) Enter the W83627DHG config Mode

To enter the W83627DHG 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 W83627DHG 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 and KBC P20 Control Mode Register)

Bit 7-5 : select PLED mode

= 000 Power LED pin is driven high.

= 001 Power LED pin outputs 0.5Hz pulse with 50% duty cycle.

= 010 Power LED pin is driven low.

= 011 Power LED pin outputs 2Hz pulse with 50% duty cycle.

= 100 Power LED pin outputs 1Hz pulse with 50% duty cycle.

= 101 Power LED pin outputs 4Hz pulse with 50% duty cycle.

= 110 Power LED pin outputs 0.25Hz pulse with 50% duty cycle.

=111 Power LED pin outputs 0.25Hz pulse with 50% duty cycle..

Bit 4 : WDTO# count mode is 1000 times faster.

= 0 Disable.

= 1 Enable.

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 : Disable / Enable the WDTO# output low pulse to the KBRST# pin (PIN60)

= 0 Disable

= 1 Enable

Bit 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 W83627DHG Watchdog Timer Initial Program

Example: Setting 10 sec. as Watchdog timeout interval

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

```
Mov dx,2eh          ;Enter W83627DHG 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 W83627DHG config mode
Mov al,0aah           (out 0aah to 2eh once)
Out dx,al
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;/
```

Appendix

B

I/O Information

B.1 I/O Address Map

Input/output (IO)	
[00000000 - 0000000F]	Direct memory access controller
[00000000 - 00000CF7]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[00000060 - 00000060]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F]	Motherboard resources
[00000070 - 00000071]	System CMOS/real time clock
[00000072 - 0000007F]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000081 - 00000083]	Direct memory access controller
[00000084 - 00000086]	Motherboard resources
[00000087 - 00000087]	Direct memory access controller
[00000088 - 00000088]	Motherboard resources
[00000089 - 0000008B]	Direct memory access controller
[0000008C - 0000008E]	Motherboard resources
[0000008F - 0000008F]	Direct memory access controller
[00000090 - 0000009F]	Motherboard resources
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[00000170 - 00000177]	Secondary IDE Channel
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[00000295 - 000002A4]	Motherboard resources
[000002F8 - 000002FF]	Communications Port (COM2)
[00000376 - 00000376]	Secondary IDE Channel
[00000378 - 0000037F]	Printer Port (LPT1)
[000003B0 - 000003BB]	Intel(R) Graphics Media Accelerator 3150
[000003C0 - 000003DF]	Intel(R) Graphics Media Accelerator 3150
[000003F6 - 000003F6]	Primary IDE Channel
[000003F8 - 000003FF]	Communications Port (COM1)
[00000480 - 000004BF]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources
[00000800 - 0000087F]	Motherboard resources
[00000A79 - 00000A79]	ISAPNP Read Data Port
[00000D00 - 0000FFFF]	PCI bus

	[0000D000 - 0000D0FF]	Realtek PCIe GBE Family Controller #2
	[0000D000 - 0000DFFF]	Intel(R) ICH8 Family PCI Express Root Port 2 - 2841
	[0000E000 - 0000E0FF]	Realtek PCIe GBE Family Controller
	[0000E000 - 0000EFFF]	Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
	[0000F000 - 0000F01F]	Intel(R) ICH8 Family SMBus Controller - 283E
	[0000F020 - 0000F03F]	Intel(R) ICH8 Family USB Universal Host Controller - 2832
	[0000F040 - 0000F05F]	Intel(R) ICH8 Family USB Universal Host Controller - 2831
	[0000F060 - 0000F07F]	Intel(R) ICH8 Family USB Universal Host Controller - 2830
	[0000F080 - 0000F09F]	Intel(R) ICH8 Family USB Universal Host Controller - 2835
	[0000F0A0 - 0000F0BF]	Intel(R) ICH8 Family USB Universal Host Controller - 2834
	[0000F0C0 - 0000F0CF]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F0D0 - 0000F0DF]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F0E0 - 0000F0E3]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F0F0 - 0000F0F7]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F100 - 0000F103]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F110 - 0000F117]	Intel(R) ICH8M 3 port Serial ATA Storage Controller - 2828
	[0000F120 - 0000F12F]	Intel(R) ICH8M Ultra ATA Storage Controllers - 2850
	[0000F170 - 0000F177]	Intel(R) Graphics Media Accelerator 3150

B.2 Memory Address Map

	Memory
	[000A0000 - 000BFFFF] Intel(R) Graphics Media Accelerator 3150
	[000A0000 - 000BFFFF] PCI bus
	[7F700000 - FFFFFFFF] PCI bus
	[D0000000 - DFFFFFFF] Intel(R) Graphics Media Accelerator 3150
	[E0000000 - E000FFFF] Realtek PCIe GBE Family Controller #2
	[E0000000 - E000FFFF] Intel(R) ICH8 Family PCI Express Root Port 2 - 2841
	[E0100000 - E010FFFF] Realtek PCIe GBE Family Controller
	[E0100000 - E010FFFF] Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
	[F0000000 - F3FFFFFF] System board
	[FE700000 - FE7FFFFFFF] Intel(R) Graphics Media Accelerator 3150
	[FE800000 - FE800FFF] Realtek PCIe GBE Family Controller #2
	[FE800000 - FE800FFF] Intel(R) ICH8 Family PCI Express Root Port 2 - 2841
	[FE900000 - FE900FFF] Realtek PCIe GBE Family Controller
	[FE900000 - FE900FFF] Intel(R) ICH8 Family PCI Express Root Port 1 - 283F
	[FEA00000 - FEA7FFFF] Intel(R) Graphics Media Accelerator 3150
	[FEA80000 - FEAFFFFFFF] Intel(R) Graphics Media Accelerator 3150
	[FEB00000 - FEB03FFF] Microsoft UAA Bus Driver for High Definition Audio
	[FEB04000 - FEB040FF] Intel(R) ICH8 Family SMBus Controller - 283E
	[FEB05000 - FEB053FF] Intel(R) ICH8 Family USB2 Enhanced Host Controller - 2836
	[FEB06000 - FEB063FF] Intel(R) ICH8 Family USB2 Enhanced Host Controller - 283A
	[FEC00000 - FEC00FFF] Motherboard resources
	[FED00000 - FED003FF] High precision event timer
	[FED14000 - FED19FFF] System board
	[FED1C000 - FED1FFFF] Motherboard resources
	[FED20000 - FED8FFFF] Motherboard resources
	[FEE00000 - FEE00FFF] Motherboard resources
	[FFE80000 - FFFFFFFF] Motherboard resources

B.3 IRQ Mapping Chart

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

B.4 DMA Channel Assignments

Direct memory access (DMA)	
4	Direct memory access controller

Appendix

C

Mating Connector

C.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
IDE1	IDE Connector	Astron	26-03-220-1G-ATB1-R	IDE Cable	1701400453
SATA1	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA2	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA3	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
LPT1	Parallel Port Connector	Catch Electronics	1147-000-26M	LPT Cable	1701260307
COM1	Serial Port Pin Header	Astron	27-24041-210-1G-TB1-R	Serial Port Cable	1701100305
COM2	Serial Port Pin Header	Astron	27-24041-210-1G-TB1-R	Serial Port Cable	1701100305
USB1	USB Pin Header	JIH VEI Electronics	21B22050-XX S10B-01G-4/2.8	USB Cable	1709100201
USB2	USB Pin Header	JIH VEI Electronics	21B22050-XX S10B-01G-4/2.8	USB Cable	1709100201
USB3	USB Connector	HO-BASE	KS-001V-ANW		N/A
LAN1	Ethernet Connector	BOTHHAND	LA1T109D-A-D43 LF		N/A
LAN2	Ethernet Connector	BOTHHAND	LA1T109D-A-D43 LF		N/A
VGA1	CRT Display Connector	Catch Electronics	3125-000-15S B		N/A

Half-size SBC

HSB-5251

CFD1	CF Card Connector	Comweal	60328226		N/A
FP1	Front Panel Connector	JIH VEI Electronics	21B22564-XX S10B-01G-6/3 -VXX		N/A
FP2	Front Panel Connector	JIH VEI Electronics	21B22564-XX S10B-01G-6/3 -VXX		N/A
CN1	Caseopen Connector	JIH VEI Electronics	21B12564-XX S10B-01G-6/3		
CN2	Audio Pin Header	JIH VEI Electronics	21N22050-10 S10B-01G-4/2 .8-V1-G		N/A
CN3	LVDS Channel Connector	ECALL	0110-01-553-300		
CN4	PS2 Keyboard/Mouse Connector	TECHBEST	DN-508BS1-6-L	KB/MS Cable	1700060192
CN5	KB Pin Header	JIH VEI Electronics	2503-H-5		N/A
CN6	LVDS BKT Ctrl Connector	Catch Electronics	1192-000-05S		N/A
BT1	BAT Connector	Catch Electronics	120170002S		N/A