HSB-800I

AMD LX800 Processor
ISA Half-size CPU Card
With DDR, Ethernet,
CompactFlash™ & PC/104

HSB-800I Manual Rev. A 3rd Ed.
October 2012

Copyright Notice

Acknowledgments

Packing List

Before you begin installing HSB-800I, please make sure that the following items have been shipped:

- 1701340704 Flat Cable
- 1701400453 ATA-100 Cable
- 1700060192 PS/2 Keyboard & Mouse Cable
- 1709140302 Cable
- 1701200301 Flat Cable
- 170910020A USB Cable
- 1703030501 Wire
- 1701010302 Flat Cable
- HSB-800I CPU Card
- Quick Installation Guide
- CD-ROM for manual (in PDF format) and drivers

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

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Chapter

1

General Information

1.1 Introduction

AAEON releases the economic half-size Single Board Computer (SBC) – HSB-800I, which is designed to target the industrial control and automation market. HSB-800I is based on AMD LX800 processor, which features the low power consumption and faster heat spreading to ensure the performance of the product.

HSB-800I supports onboard DDR400 system memory up to 128MB and the chipset of HSB-800I is AMDLX800 +CS5536. For the display function, the VGA controller is integrated to the AMD LX 800 processor that supports CRT and LCS simultaneous display. Moreover, 2D/3D graphics accelerator has been integrated to provide higher performance to graphic processing. The LCD interface is up to 24-bit and support LVDS/TTL LCD.

HSB-800I targets the common industrial applications include factory automation systems and production process control devices. If you are looking for a cost-effective and reliable solution for your essential application, HSB-800I definitely is your first choice. For more detailed product information and instruction, please read the manual before the installation.

1.2 Features

- AMD LX 800 Processor
- Onboard 128MB DDR 400 Memory
- Integrated 2D/3D Graphics Accelerator, VGA Support CRT/TFT
- 10/100/1000Base-TX Ethernet x 1 (10/100 & GbE Optional)
- USB2.0 x 4/ RS-232 x 3, RS-232/422/485 x 1/ Parallel x 1/ IrDA Port x 1
- Ultra ATA 33 x 1
- Digital I/O
- AC97
- PC/104
- CompactFlash Type II Socket
- Watchdog Function 1~255 Sec.

1.3 Specification

System

● Processor	AMD LX800
● System Memory	Onboard 128MB DDR 400 Memory
● Chipset	AMD LX800 + CS5536
● Ethernet	PCI 10/100Mbps or 10/100/1000Mbps LAN x 1 (optional), RJ-45 x 1, Realtek 8100C/8110S controller optional
● BIOS	Award Plug & Play FWH BIOS – 8Mb ROM
● IDE Interface	ATA-33 x 1 channel
● CompactFlash	CompactFlash Type II connector
● Expansion Interface	ISA, PC/104
● Battery	Lithium battery
● Power Requirement	AT 5V, 12V
● Operating Temperature	32°F~140°F (0°C~60°C)
● Board Size	7.3”(L)x 4.8”(W) (185mmx121mm)
● Gross Weight	0.71lb (0.3Kg)

Display: Supports CRT and LCD Simultaneous Display

- VGA Controller — AMD LX800
- Memory — Shared memory up to 16M
- Resolutions — 1600x1200 @ 32bpp at 100MHz for CRT; 1600x1200 @ 24bpp for LCD
- LCD Interface — Up to 24-bit, LVDS/TTL LCD support

I/O: CS5536

- Serial Port — COM x 4 (Internal Pin Header x 4)
  COM1, COM3, COM4: RS-232
  COM2: RS-232/422/485
- Parallel Port — Supports SPP/EPP/ECP mode
- Universal Serial Bus — USB2.0 x 4
  5x1 pin header x 3
  Type A connector x 1
- Floppy Drive Interface — Standard FDD port x 1, support up to one floppy device
- Keyboard & Mouse — Mini-DIN PS/2 K/B and Mouse Connector x 1; Internal keyboard pin header x 1
- IrDA — Supports one IrDA header
- Audio — Realtek ALC203 AC97 Codec/ MIC-in/ Line-in/ Line-out/ CD-in

Chapter

2

Quick Installation Guide

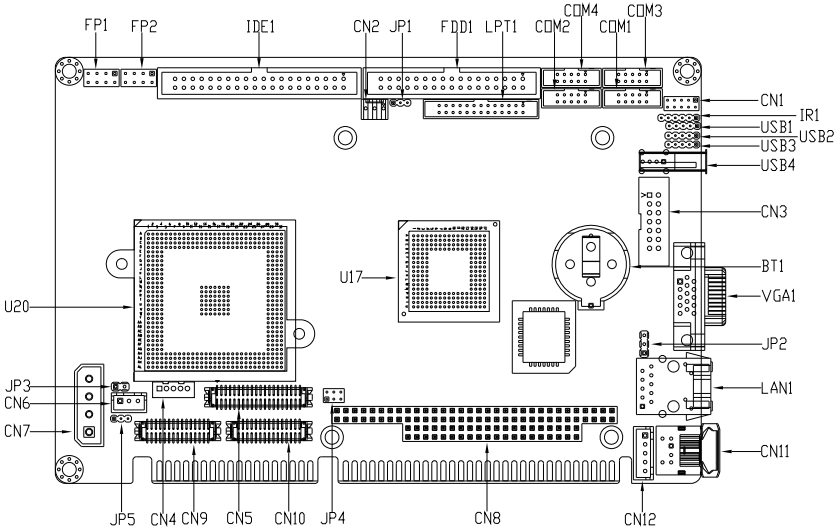
2.1 Safety Precautions

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.

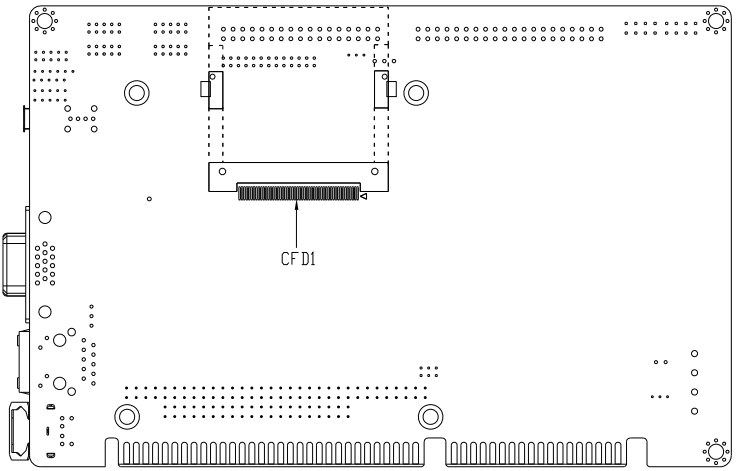
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

Component Side

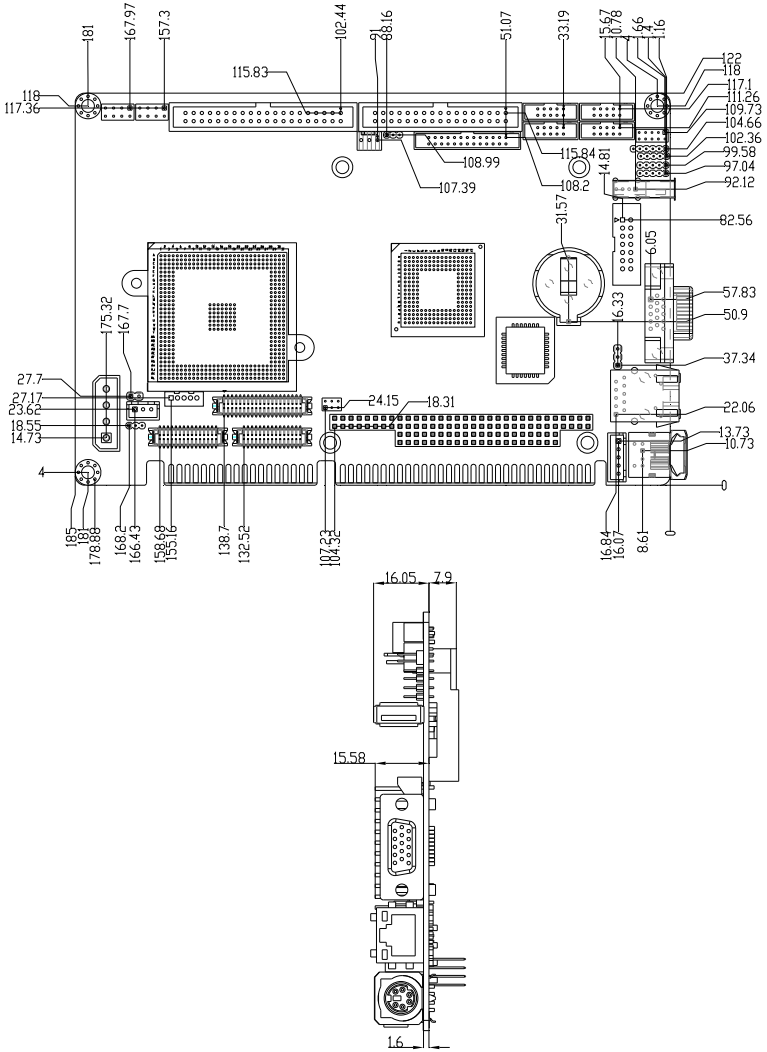


Solder Side

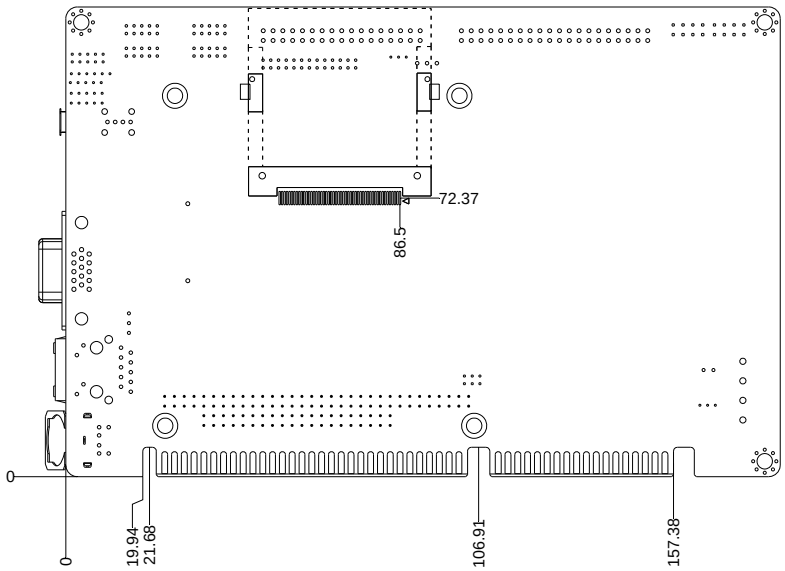


2.3 Mechanical Drawing

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:

Label	Function
JP1	CFD Voltage 3.3V/ 5V Selection
JP2	Clear CMOS
JP3	AT/ATX Power Type Selection
JP4	LCD Clock and Power Selection
JP5	Inverter 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:

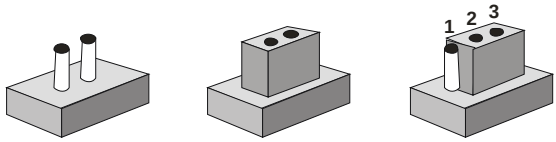
Label	Function
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
VGA1	VGA Display Connector
FDD1	Floppy Connector
IDE1	EIDE Connector (Support one IDE device only)
CFD1	Compact Flash Slot (Always master)
COM1/3/4	RS-232 Serial Port Connector
COM2	RS-232/422/485 Serial Port Connector

IR1	IrDA Connector
LPT1	LPT Port Connector
USB1~3	USB Connector
USB4	USB Connector
LAN1	10/100 or 100/1000 Base-TX Ethernet Connector
DIMM1	DDRII SODIMM Slot (Optional)
CN1	Digital I/O
CN2	Fan Connector
CN3	Audio Input/Output/CDin/MIC
CN4	LCD Inverter Power Connector
CN5	TFT LCD Connector
CN6	+5VSB Power Connector
CN7	AT Power_5V,12V Connector
CN8	PC/104 ISA Interface
CN9	LVDS1 Connector
CN10	LVDS2 Connector
CN11	PS2 Keyboard/Mouse Connector
CN12	Internal Keyboard 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 CFD Voltage 3.3V/5V Selection (JP1)

JP1	Function
1-2	3.3V (default)
2-3	5V

2.8 Clear CMOS (JP2)

JP2	Function
1-2	Normal (default)
2-3	Clear CMOS

2.9 AT/ATX Power Type Selection (JP3)

JP3	Function
1-2	ATX Power Supply (default)
Open	AT Power Supply

Note: Only AT Function w/o Backplanes.

2.10 LCD Clock and Power Selection (JP4)

JP4	Function
1-3	Normal (default)
3-5	Inverse
2-4	+5Vlcd
4-6	+3Vlcd (default)

2.11 Inverter Voltage Selection (JP5)

JP5	Function
1-2	+12V
2-3	+5V (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	IDE LED (+)	6	Power LED (+)
7	IDE LED (-)	8	Power LED (-)

2.13 Front Panel Connector (FP2)

Note: Internal Buzzer enable: Close Pin 5,7

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

2.14 RS-232 Serial Port Connector (COM1, COM3, COM4)

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

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
7	RTS	8	CTS
9	RI	10	NC

2.16 IrDA Connector (IR1)

Pin	Signal
1	+5V
2	NC
3	IRRX
4	GND
5	IRTX
6	NC

2.17 Digital I/O (CN1) (Address: 801H)

Pin	Signal	Pin	Signal
1	IN0	2	IN1
3	IN2	4	IN3
5	OUT0	6	OUT1
7	OUT2	8	OUT3
9	+5V	10	GND

2.18 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	GND

2.19 USB Connector (USB1~3)

Pin	Signal
1	+5V
2	USBD1-
3	USBD1+
4	GND
5	GND

2.20 FAN Connector (CN2)

Pin	Signal
1	GND
2	+5V
3	Speed Sense

2.21 Audio Input/ Output/ CD-in/ MIC (CN3)

Pin	Signal	Pin	Signal
1	MIC	2	MIC_Vcc
3	Audio Ground	4	CD_GND
5	LINE_IN L	6	CD_L
7	LINE_IN R	8	CD_GND
9	Audio Ground	10	CD_R
11	LINE_OUT L	12	LINE_OUT R
13	Audio Ground	14	Audio Ground

2.22 LCD Inverter (CN4)

Pin	Signal
1	12V / 5V
2	GND
3	VCON
4	GND
5	BKL_EN

2.23 TFT LCD (CN5)

For 24-bit TFT LCD

Pin	Signal	Pin	Signal
1	+5VLCD	2	+5VLCD
3	GND	4	GND
5	+3.3VLCD	6	+3.3VLCD
7	BKL_EN	8	GND
9	B0	10	B1
11	B2	12	B3
13	B4	14	B5
15	B6	16	B7
17	G0	18	G1
19	G2	20	G3
21	G4	22	G5
23	G6	24	G7
25	R0	26	R1
27	R2	28	R3
29	R4	30	R5
31	R6	32	R7
33	GND	34	GND
35	LCD_CLK	36	LCD_VS
37	LCD_DE	38	LCD_HS
39	NC	40	TP

For 18-bit TFT LCD

Pin	Signal	Pin	Signal
1	+5VLCD	2	+5VLCD
3	GND	4	GND
5	+3.3VLCD	6	+3.3VLCD
7	BKL_EN	8	GND
9	NC	10	NC
11	B0	12	B1
13	B2	14	B3
15	B4	16	B5
17	NC	18	NC
19	G0	20	G1
21	G2	22	G3
23	G4	24	G5
25	NC	26	NC
27	R0	28	R1
29	R2	30	R3
31	R4	32	R5
33	GND	34	GND
35	LCD_CLK	36	LCD_VS
37	LCD_DE	38	LCD_HS
39	NC	40	TP

2.24 +5VSB Power Connector (CN6)

Pin	Signal
1	PS_ON#
2	+5V
3	+5VSB

2.25 AT Power_5V, 12V Connector (CN7)

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

2.26 LVDS1, 2 (CN9, CN10)

Pin	Signal	Pin	Signal
1	BKL_EN	2	NC
3	VLCD	4	GND
5	LVDS_CLK#	6	LVDS_CLK
7	VLCD	8	GND
9	TX0#	10	TX0
11	TX1#	12	TX1
13	TX2#	14	TX2
15	TX3#	16	TX3
17	NC	18	NC
19	NC	20	NC
21	NC	22	NC

23	NC	24	NC
25	NC	26	NC
27	VLCD	28	GND
29	NC	30	NC

2.27 PS2 Keyboard/ Mouse Connector (CN11)

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

2.28 Internal Keyboard Connector (CN12)

Pin	Signal
1	KB_CLK
2	KB_DATA
3	NC
4	GND
5	+5V

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	×	○	○	○	○	○

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：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。

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-800I 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 etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu shows you the status of PC.

Frequency/Voltage Control

This menu shows you the display of frequency/Voltage Control.

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.

For more detailed information, 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-800I comes with a CD-ROM that contains all drivers your need.

Follow the sequence below to install the drivers:

Step 1 – Install LX-Graphics Driver

Step 2 – Install AES Driver

Step 3 – Install PCI to ISA Bridge Driver

Step 4 – Install LAN Driver

Step 5 – Install Audio Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the HSB-800I CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 5 in order.

Step 1 –Install LX-Graphic 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 **Video Controller (VGA Compatible)**
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 **"lx_win"** file from CD-ROM **(Drivers/Step 1 – LX-Graphics)** then click on **Open**
13. Click on **OK**
14. Click on **Next**
15. Click on **Yes**
16. Click on **Finish**

Step 2 –Install AES 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 **"Ixaes"** file from CD-ROM **(Drivers/Step 2 – AES)** then click on **Open**
13. Click on **OK**
14. Click on **Next**
15. Click on **Yes**
16. Click on **Finish**

Step 3 –Install PCI to ISA Bridge Driver

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 **Other PCI Bridge Device**
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 "**Ite**" file from CD-ROM **(Drivers/Step 3- PCI to ISA Bridge)** then click on **open**
13. Click on **OK**
14. Click on **Next**
15. Click on **Yes**
16. Click on **Finish**

Step 4 – Install LAN Driver

1. Click on the ***Step 4 –LAN*** folder and select the folder of ***Windows***
2. Double click on ***Setup.exe***
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 5– Install Audio 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 **Multimedia Audio 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 **"LXWDMAu"** file from CD-ROM **(Drivers/Step 5 – Audio)** 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

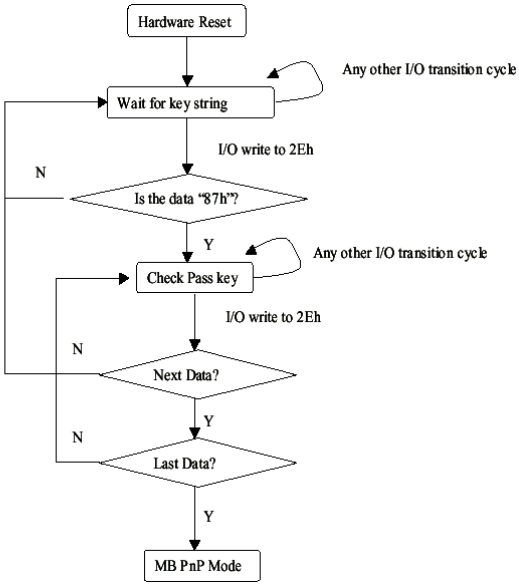
A.1 Programming

HSB-800I utilizes ITE 8712 chipset as its watchdog timer controller. (K version)

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.



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	Configuration 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 (LSB) Register
07H	74H	R/W	00H	WatchDog Timer Time-out Value (MSB) 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	WDT Time-out value Extra select 1: 4s. 0: Determine by WDT Time-out value select (bit7 of this register)

4	WDT output through PWROK1/PWROK2 (pulse) enable
3	Select the interrupt level[note] for WDT

WatchDog Timer Time-out Value (LSB) Register (Index=73h, Default=00h)

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

WatchDog Timer Time-out Value (MSB) Register (Index=74h, Default=00h)

Bit	Description
7-0	WDT Time-out value 15-8

A.2 ITE8712 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

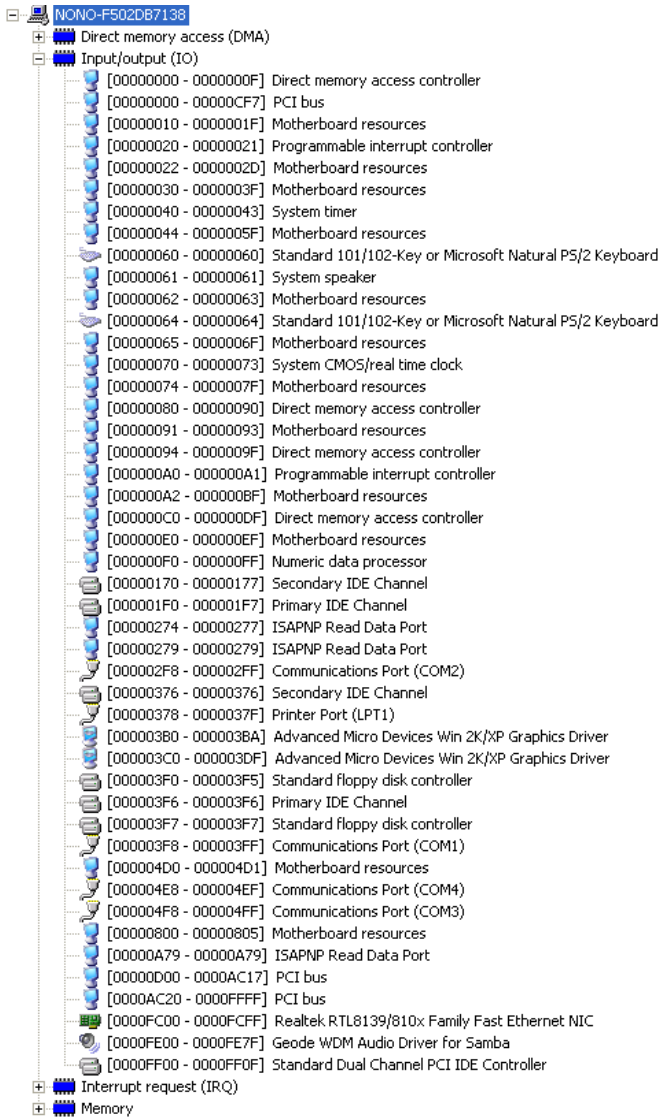
00h: no interrupt selected

Appendix

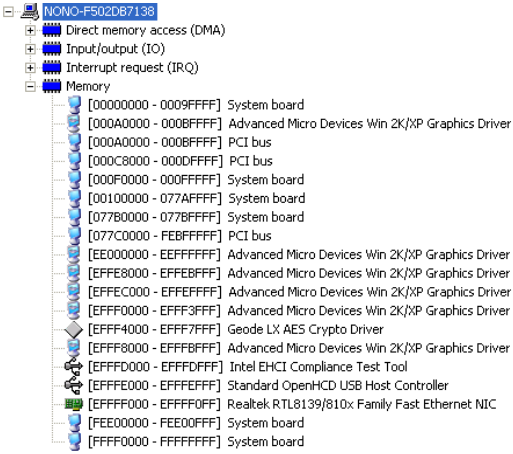
B

I/O Information

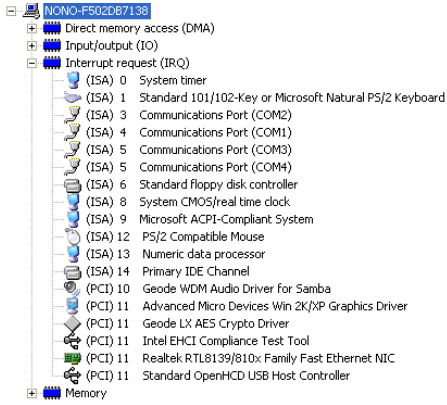
B.1 I/O Address Map



B.2 Memory Address Map



B.3 IRQ Mapping Chart



B.4 DMA Channel Assignments