HSB-910I

Intel® Celeron® M Processor

ISA Expansion Half-size SBC

Two 200-pin DDRII 400 SODIMM

2 SATA I/ 1 IDE/ 1 FDD/ 1 CompactFlash

5 USB 2.0/ 4 COM/ 1 IrDA

HSB-910 Manual Rev.A 1st Ed.

January 2009

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Packing List

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

- 1 HSB-910I CPU Card
- 1 Floppy Cable
- 1 ATA100 Cable
- 1 USB Cable
- 1 Keyboard & Mouse Cable
- 1 ATX Cable
- 1 Serial + Parallel Cable
- 1 Serial Cable
- 2 SATA 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

The HSB-910I utilizes the Intel® 910GMLE and ICH6M chipset, supporting Intel® Celeron® M 90nm processors with a FSB of 400MHz up to 1.8GHz.   Offering two 200-pin DDR II SODIMM sockets, the HSB-910I supports two 200-pin DDRII 400 SODIMM system memory up to 2GB.

This model offers a multitude of I/O including four COM ports and five USB2.0 ports.   To meet today's increasing storage demands it also supports two SATA I, one IDE, one Type II CompactFlash™ and one standard Floppy Disk Drive sockets.   The flexible expansion and storage makes the HSB-910I a great solution for your vital applications.

In addition to the comprehensive COM and USB offering the HSB-910I can also be configured with two or one (optional) 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-965P is an ideal solution for demanding multimedia based applications.

1.2 Features

- Intel® Celeron® M 90nm Processor Up to 1.8GHz
- Intel® 910GMLE + Intel® ICH6M
- 200-pin DDRII 400 SODIMM x 2, Up to 2GB
- Gigabit Ethernet x 2 or x 1 (Optional)
- Integrated Intel® Enhance Graphics Core, VGA Support
- AC97 Codec Audio Daughter Board Optional
- Ultra ATA100 x 1, SATA I x 2, CompactFlash™ Type II x 1
- USB2.0 x 5, RS-232/422/485 x 1, RS-232 x 3,
- Parallel x 1, IrDA x 1, Digital I/O
- ISA Expansion
- +12V Only Operation, AT

1.3 Specifications

System

- CPU   Intel® Celeron® M 90nm Processor up to 1.8GHz, FSB 400MHz (BGA/ Socket co-lay)
- System Memory   Two DDRII SODIMM, support DDRII 400 up to 2GB
- Chipset   Intel® 910GMLE + Intel® ICH6M
- Ethernet   LAN1/ 2: Intel® 82574L Gigabit Ethernet, RJ-45 x 2 or 1 (optional)
- BIOS   Award Plug & Play LPC BIOS – 8Mb ROM
- Watchdog Timer   1~255 steps, can be set with software on Super I/O
- RTC   Internal RTC
- Expansion Interface   ISA Interface
- Battery   Lithium battery
- Power Requirement   AT, +12V
- Board Size   7.3"(L) x 4.8" (W) (185mm x 121mm)
- Gross Weight   0.71lb (0.3kg)
- Operating Temperature $32^{o}F$~$140^{o}F$($0^{o}C$~$60^{o}C$)
- Power Consumption   18W, onboard Celeron M 600MHz

(Typical)

- EMC   CE/FCC Class A

Display

- VGA Chipset   Enhanced Integrated Graphics
- Memory   Shared memory up to 256M
- Resolutions   Up to 2048 x 1536 @ 32bpp for CRT; 1920 x 1200 @ 18bpp for LCD

I/O

- Storage   SATA I x 2, IDE x 1, CompactFlash Type II x 1, Standard Floppy Disk Drive x 1
- IrDA   One IrDA Tx/Rx header
- Audio   AC97 Codec Audio Daughter Board Optional
- Parallel Port   Supports SPP/EPP/ECP mode
- USB   USB2.0 x 5, 5x2 pin-header x 2 Type A x 1
- Serial Port   COM port x 4 (Internal pin header x 4); COM1, COM3, COM4: RS-232 COM2: RS-232/422/485
- PS/2 Port   Keyboard x 1, Mouse x 1
- Digital I/O   Supports 8-bit (Programmable)

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.

OZONE SAFE

RECYCLABLE

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

FP1 FP2   IDE1   ATX1   FDD1 LPT1   COM1 COM3 COM2

COM4
USB3
USB2
IR1
USB1

JP2 JP1

SATA2   SATA1

CN1
BT1

LAN1

CN2

VGA1

CN5
LAN2

CN3

CN7

JP4 CN6 JP3

CN8 CN4

Solder Side

CFD1

DIMM2
DIMM1
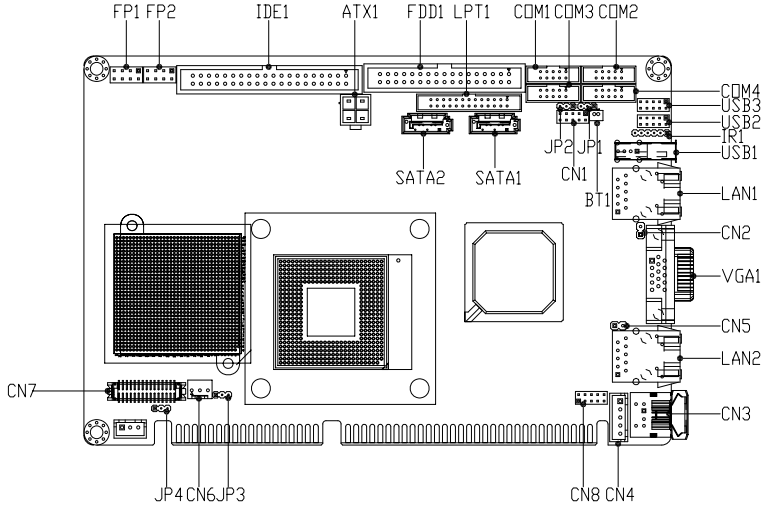
2.3 Mechanical Drawing

Component Side
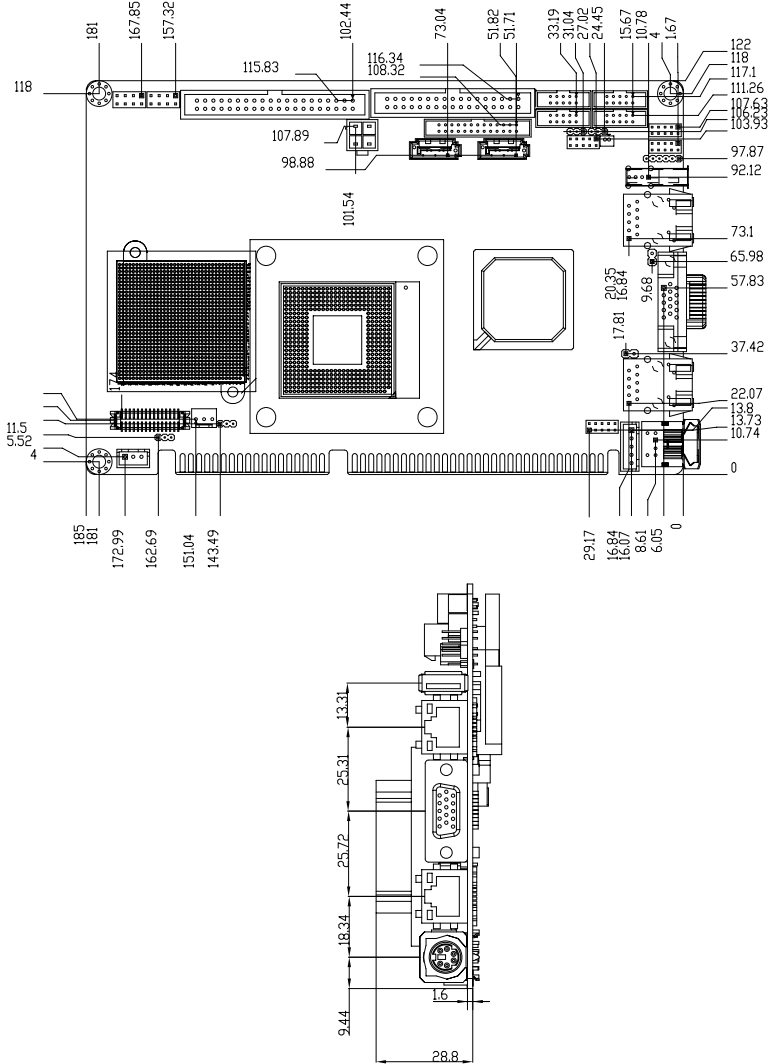
Solder Side
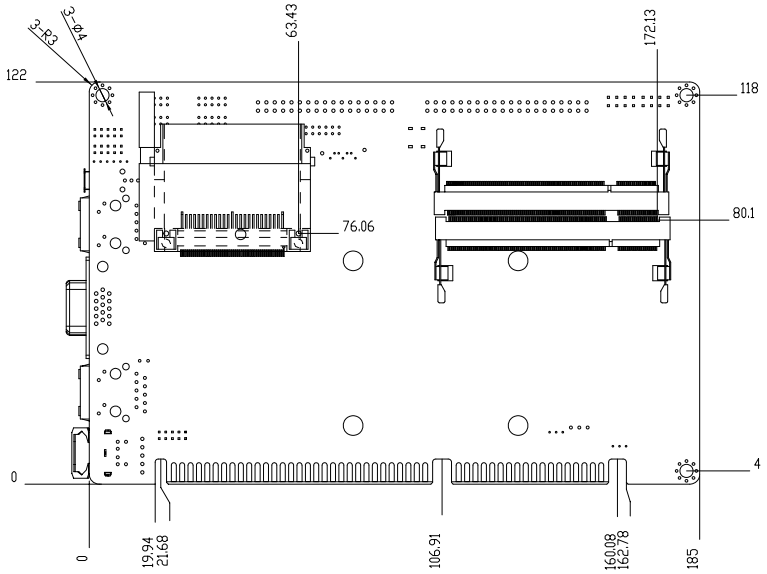
2.4 List of Jumpers

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	Clear CMOS
JP2	CF Voltage Selection
JP3	Auto power button
JP4	LCD 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
BT1	Battery Connector
ATX1	4-pin ATX Power +12V Connector
VGA1	VGA Display Connector
FDD1	Floppy Connector
IDE1	EIDE Connector
SATA1~2	Serial ATA Connector
CFD1	Compact Flash Slot
COM1	RS-232 Serial Port Connector
COM2	RS-232/422/485 Serial Port Connector
COM3	RS-232 Serial Port Connector
COM4	RS-232 Serial Port Connector
IR1	IrDA Connector
LPT1	LPT Port Connector
USB1	USB Connector
USB2~3	USB*2 Pin Header
LAN1	100/1000Base-TX Ethernet Connector
LAN2	100/1000Base-TX Ethernet Connector

DIMM1、2	DDRII Memory Slot
CN1	Digital I/O
CN2	LAN1 Active LED Connector
CN3	PS/2 Keyboard/Mouse Connector
CN4	Internal Keyboard Connector
CN5	LAN2 Active LED Connector
CN6	3-pin Fan Connector
CN7	LVDS Channel Connector
CN8	AC97 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**
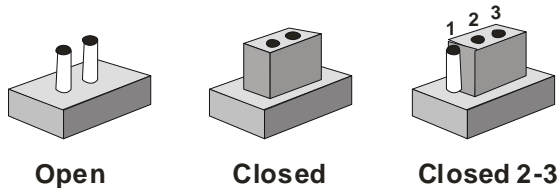
A pair of needle-nose pliers may be helpful when working with jumpers.

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
1-2	Protected (Default)
2-3	Clear

2.8 CF Voltage Selection (JP2)

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

2.9 LVDS Voltage Selection (JP4)

JP4	Function
1-2	+5V
2-3	+3.3V (Default)

2.10 Front Panel Connector (FP1)

Pin	Signal	Pin	Signal
1	N.C.	2	Reset Switch (+)
3	N.C.	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	N.C.	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

2.12 Battery Connector (BT1)

Pin	Signal	Pin	Signal
1	VBAT(+)	2	GND(-)

2.13 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	N.C.

2.14 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.

2.15 IrDA Connector (IR1)

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

2.16 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.

2.17 USB Connector (USB2~3)

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

2.18 Digital I/O (CN1)

Pin	Signal	Pin	Signal
1	DIO1-1	2	DIO1-2
3	DIO1-3	4	DIO1-4
5	DIO1-5	6	DIO1-6

| 7 | DIO1-7 | 8 | DIO1-8 |

2.19 LAN LED Connector (CN2, CN5)

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

2.20 Internal Keyboard Connector (CN3)

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

2.21 PS/2 Keyboard/ Mouse Connector (CN4)

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

2.22 Fan Connector (CN6)

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

2.23 LVDS Channel Connector (CN7)

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	N.C.	16	N.C.
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	N.C.	26	N.C.
27	PPVCC	28	GND
29	CH2_CLK#	30	CH2_CLK

2.24 AC97 Connector (CN8)

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

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-910I CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2   Award BIOS Setup

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

Entering Setup

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

Standard CMOS Features

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

Advanced BIOS Features

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

Advanced Chipset Features

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

Integrated Peripherals

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

Power Management Setup

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

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

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

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-910I comes with a CD-ROM that contains all drivers your need.

Follow the sequence below to install the drivers:

Step 1 – Install INF Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the HSB-910I CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 3 in order.

Step 1 – Install INF Driver

1. Click on the ***Step 1-ICH6-M INF*** 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-VGA*** folder and then double click on the ***win2k_xp142550.exe***

2. Follow the instructions that the window shows

3. 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

Appendix

A

Programming the Watchdog Timer

A.1 Programming

HSB-910I 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.

```
                    ┌──────────────────┐
                    │  Hardware Reset  │
                    └──────────────────┘
                             │
                             ▼                    Any other I/O transition cycle
                    ┌──────────────────┐ ───┐
                    │ Wait for key string │ ◄──┘
                    └──────────────────┘
                             │
                             │   I/O write to 2Eh
          N                  ▼
                    ╱ Is the data "87h"? ╲
                    ╲                     ╱
                             │ Y              Any other I/O transition cycle
                             ▼          ───┐
                    ┌──────────────────┐ ◄──┘
                    │  Check Pass key  │
                    └──────────────────┘
                             │   I/O write to 2Eh
          N                  ▼
                    ╱    Next Data?     ╲
                    ╲                    ╱
                             │ Y
          N                  ▼
                    ╱    Last Data?     ╲
                    ╲                    ╱
                             │ Y
                             ▼
                    ┌──────────────────┐
                    │   MB PnP Mode    │
                    └──────────────────┘
```
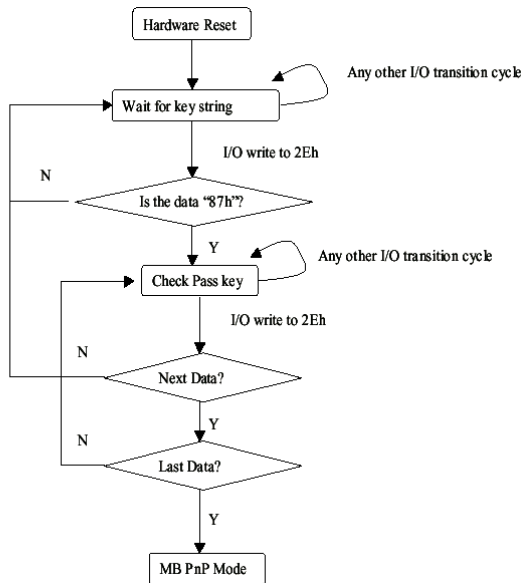
There are three steps to complete the configuration setup: (1) Enter
the MB PnP Mode; (2) Modify the data of configuration registers; (3)
Exit the MB PnP Mode. Undesired result may occur if the MB PnP
Mode is not exited normally.

(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
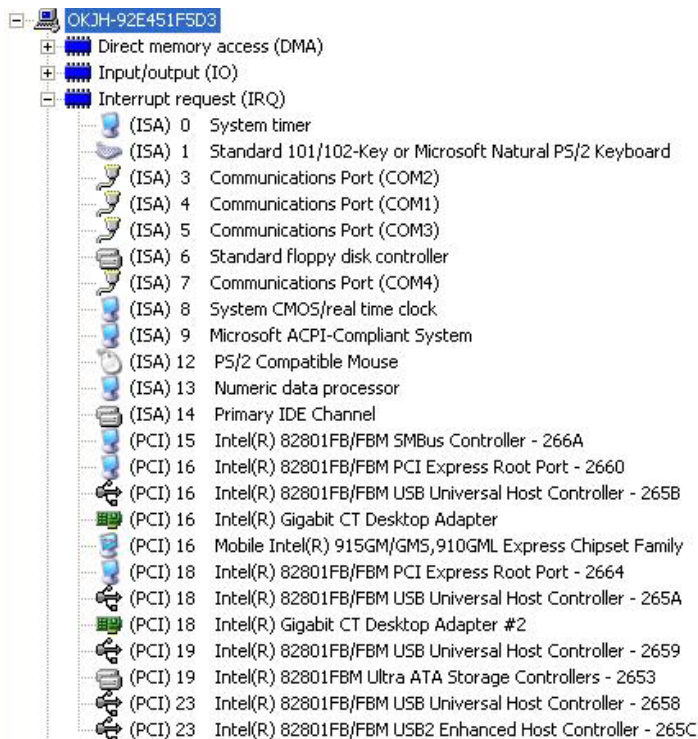
Appendix

B

I/O Information

B.1 I/O Address Map

```
OKJH-92E451F5D3
├ Direct memory access (DMA)
├ 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 - 00000073] System CMOS/real time clock
│  ├ [00000074 - 0000007F] Motherboard resources
│  ├ [00000080 - 00000090] Direct memory access controller
│  ├ [00000091 - 00000093] Motherboard resources
│  ├ [00000094 - 0000009F] Direct memory access controller
│  ├ [000000A0 - 000000A1] Programmable interrupt controller
│  ├ [000000A2 - 000000BF] Motherboard resources
│  ├ [000000C0 - 000000DF] Direct memory access controller
│  ├ [000000E0 - 000000EF] Motherboard resources
│  ├ [000000F0 - 000000FF] Numeric data processor
│  ├ [000001F0 - 000001F7] Primary IDE Channel
│  ├ [00000274 - 00000277] ISAPNP Read Data Port
│  ├ [00000279 - 00000279] ISAPNP Read Data Port
│  ├ [00000280 - 00000287] Communications Port (COM3)
│  ├ [00000288 - 0000028F] Communications Port (COM4)
│  ├ [00000290 - 0000029F] Motherboard resources
│  ├ [000002F8 - 000002FF] Communications Port (COM2)
│  ├ [00000378 - 0000037F] Printer Port (LPT1)
│  ├ [000003B0 - 000003BB] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
│  ├ [000003C0 - 000003DF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
│  ├ [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) 82801FB/FBM SMBus Controller - 266A
│  ├ [00000A79 - 00000A79] ISAPNP Read Data Port
│  ├ [00000D00 - 0000FFFF] PCI bus
│  ├ [0000C000 - 0000CFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2660
│  ├ [0000CF00 - 0000CF1F] Intel(R) Gigabit CT Desktop Adapter
│  ├ [0000E000 - 0000EFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2664
│  ├ [0000EF00 - 0000EF1F] Intel(R) Gigabit CT Desktop Adapter #2
│  ├ [0000F500 - 0000F50F] Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
│  ├ [0000F600 - 0000F603] Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
│  ├ [0000F700 - 0000F707] Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
│  ├ [0000F800 - 0000F803] Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
│  ├ [0000F900 - 0000F907] Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
│  ├ [0000FA00 - 0000FA0F] Intel(R) 82801FB/FBM Ultra ATA Storage Controllers - 266F
│  ├ [0000FB00 - 0000FB1F] Intel(R) 82801FB/FBM USB Universal Host Controller - 265B
│  ├ [0000FC00 - 0000FC1F] Intel(R) 82801FB/FBM USB Universal Host Controller - 265A
│  ├ [0000FD00 - 0000FD1F] Intel(R) 82801FB/FBM USB Universal Host Controller - 2659
│  ├ [0000FE00 - 0000FE1F] Intel(R) 82801FB/FBM USB Universal Host Controller - 2658
│  └ [0000FF00 - 0000FF07] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
├ Interrupt request (IRQ)
└ Memory
```

B.2 Memory Address Map

Memory
- [00000000 - 0009FFFF] System board
- [000A0000 - 000BFFFF] PCI bus
- [000C0000 - 000DFFFF] PCI bus
- [000E0000 - 000EFFFF] System board
- [000F0000 - 000FFFFF] System board
- [00100000 - 7F6DFFFF] System board
- [7F6E0000 - 7F6FFFFF] System board
- [7F700000 - FEBFFFFF] PCI bus
- [D0000000 - DFFFFFFF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
- [E0000000 - EFFFFFFF] Motherboard resources
- [FD900000 - FD9FFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2660
- [FDC00000 - FDCFFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2660
- [FDCC0000 - FDCDFFFF] Intel(R) Gigabit CT Desktop Adapter
- [FDCFC000 - FDCFFFFF] Intel(R) Gigabit CT Desktop Adapter
- [FDD00000 - FDDFFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2664
- [FDE00000 - FDEFFFFF] Intel(R) 82801FB/FBM PCI Express Root Port - 2664
- [FDEC0000 - FDEDFFFF] Intel(R) Gigabit CT Desktop Adapter #2
- [FDEFC000 - FDEFFFFF] Intel(R) Gigabit CT Desktop Adapter #2
- [FDF00000 - FDF7FFFF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
- [FDF80000 - FDFBFFFF] Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
- [FDFFE000 - FDFFE3FF] Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
- [FDFFF000 - FDFFF3FF] Intel(R) 82801FB/FBM USB2 Enhanced Host Controller - 265C
- [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
- [FFF00000 - FFFFFFFF] System board

B.3 IRQ Mapping Chart

```
OKJH-92E451F5D3
  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) 5    Communications Port (COM3)
    (ISA) 6    Standard floppy disk controller
    (ISA) 7    Communications Port (COM4)
    (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
    (PCI) 15   Intel(R) 82801FB/FBM SMBus Controller - 266A
    (PCI) 16   Intel(R) 82801FB/FBM PCI Express Root Port - 2660
    (PCI) 16   Intel(R) 82801FB/FBM USB Universal Host Controller - 265B
    (PCI) 16   Intel(R) Gigabit CT Desktop Adapter
    (PCI) 16   Mobile Intel(R) 915GM/GMS,910GML Express Chipset Family
    (PCI) 18   Intel(R) 82801FB/FBM PCI Express Root Port - 2664
    (PCI) 18   Intel(R) 82801FB/FBM USB Universal Host Controller - 265A
    (PCI) 18   Intel(R) Gigabit CT Desktop Adapter #2
    (PCI) 19   Intel(R) 82801FB/FBM USB Universal Host Controller - 2659
    (PCI) 19   Intel(R) 82801FBM Ultra ATA Storage Controllers - 2653
    (PCI) 23   Intel(R) 82801FB/FBM USB Universal Host Controller - 2658
    (PCI) 23   Intel(R) 82801FB/FBM USB2 Enhanced Host Controller - 265C
```

B.4 DMA Channel Assignments

```
OKJH-92E451F5D3
  Direct memory access (DMA)
    2   Standard floppy disk controller
    4   Direct memory access controller
  Input/output (IO)
  Interrupt request (IRQ)
  Memory
```

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	Catch Electronics	1137-020-40S A	IDE Cable	1701400453
SATA1	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
SATA2	SATA Connector	TECHBEST	161S01-025A	SATA Cable	1709070800
FDD1	Floppy Connector	Catch Electronics	1137-000-34S A	Floppy Disk Drive Cable	1701340704
LPT1	Parallel Port Connector	Catch Electronics	1147-000-26S	LPT Cable	1701260307
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
USB1	USB Connector	HO-BASE	KS-001V-AN W		N/A
USB2	USB Pin Header	JIH VEI Electronics	21B22050-XX S10B-01G-4/2 .8	USB Cable	1709100201
USB3	USB Pin Header	JIH VEI Electronics	21B22050-XX S10B-01G-4/2 .8	USB Cable	1709100201
ATX1	4P Power Connector	Catch Electronics	1121-700-04S	AT big 4P to ATX +12V Cable	1702040351
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	3125-000-15SB		N/A
IR1	IrDA Connector	JIH VEI Electronics	21B12050-XXS10B-01G-4/2.8		N/A
CN1	Digital I/O	JIH VEI Electronics			N/A
CN2	LAN 1 Active LED Connector	JIH VEI Electronics			N/A
CN3	PS2 Keyboard/ Mouse Connector	CONTEK	MAN3061F1G401	KB/MS Cable	1700060192
CN4	KB Pin Header	HO-BASE	2503-WS-5		N/A
CN5	LAN 2 Active LED Connector	JIH VEI Electronics			N/A
CN6	FAN Connector	Catch Electronics	1190-700-042		N/A
CN7	LVDS Channel Connector	W/Reinforcem	E-call.0110-01-553-300		N/A
CN8	Audio Pin Header	JIH VEI Electronics	21N22050-10S10B-01G-4/2.8-V1-G	Audio cable	1703100302
COM1	Serial Port Box Header	Catch Electronics	1147-000-10S	Serial Port Cable	1701260307
COM2	Serial Port Box Header	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305
COM3	Serial Port Box Header	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305
COM4	Serial Port Box Header	Catch Electronics	1147-000-10S	Serial Port Cable	1701100305