HSB-810A

Intel® Pentium® M &
Celeron® M Processors
Half-size CPU Card
With DDR, Ethernet,
CompactFlash™ & Mini PCI

HSB-810A   Rev. A   Manual 1st Ed.
Dec. 2004

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Packing List

Before you begin installing HSB-810A, please make sure that the following items have been shipped:

- 1   HSB-810A CPU Card
- 1   Floppy Cable
- 1   ATA-100 Cable
- 1   USB Cable
- 1   PS/2 K/B & Mouse Cable
- 1   Serial + Parallel Cable
- 1   Serial Cable
- 1   ATX Cable
- 1   CPU cooler
- 1   Quick Installation Guide
- 1   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

Introducing AAEON's new HSB-810A, powered by Intel®
Pentium®M/ Celeron®M processor, APCI half-size form factor single
board computer (SBC) with an onboard VGA, 10/100/1000Mb LAN
optional and five USB 2.0 ports, support LVDS.

The target market of HSB-810A will focus on Shoe-box application
and Digital Video Recorder (DVR).   Releasing the HSB-810A will
complete AAEON's product line in Penitum® 4 level short card
series and provide customers higher performance and better quality
product.

HSB-810A is a high performance with low power consumption SBC
which deployed Intel® Pentium® M/ Celeron® M chipset.   The
chipset supports CPU frequency up to 1.8GHz with front side bus
running at 400MHz.   In addition, HSB-810A is integrated on Intel®
82855GME AGP 4X, supported dual display and AC97 Codec
Audio for optional Audio daughter board.   The lower height and
power consumption the HSB-810A has, the more AAEON can
satisfy industrial customers needs.

HSB-810A also provides high memory capacity up to 2GB DDR
DRAM (DDR 266/333) and support Ultra ATA100 &

CompactFlash™ Type II storage.   In addition to its powerful computing engine, one Mini PCI socket Type III provides flexible application on wireless LAN, Blue tooth…etc.

Five 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 five USB 2.0 by three pin-headers and on Type A connector onboard, offering 480 Mbps high-speed efficiency and value without compromising performance.

Moreover, HSB-810A is also equipped with Intel$^®$ Ethernet controllers.   One of these provides superior 1GB Mbps networking access ability for high speed networking applications such as gateway, VPN and Mini server.

The HSB-810A is a versatile Pentium$^®$ M /Celeron$^®$ M compact board with the best cost-performance for CTI, networking and mini-server markets.

1.2 Feature

- Supports Intel$^®$ Low Power CPU, Pentium$^®$M/ Celeron$^®$M (Banias or Dothan)

- DDR333 Memory Support up to 2GB

- Integrated AGP 4X 2D/3D Graphics Accelerator, LVDS support

- Integrated AC97 Codec Audio (Daughter Board optional)

- Supports 10/100Base-TX Ethernet (10/100/1000Base-T optional)

- Supports Ultra ATA100 & CFD Type-II Storage

- Supports 5 USB 2.0 ports

- Supports 2 COMs

- Supports 1 parallel port

- Supports 1 IrDA port

- Supports 1 Mini-PCI socket Type III

- Watchdog Timer 1~255 step (Sec/Min)

1.3 Specification

System

- CPU: Support Intel$^®$ Pentium$^®$ M and Celeron$^®$ M CPU, FSB:400MHz, supports up to 1.8GHz CPU

- Chipset: Intel$^®$ 82855GME+82801DB (ICH4)

- I/O Chipset: Intel$^®$ 82801DB(ICH4)+ITE 8712F/HX

- Ethernet: 10/100Mb or 10/100/1000Mb LAN optional, RJ-45 x 1; Intel$^®$ 82562EZ or 82541GI controller

- System Memory: 200 pins 2.5V DDR SODIMM Socket x 2, total up 2GB, support DDR memory (DDR266/333)

- BIOS: Award Plug & Play BIOS – 4Mb ROM

- Watchdog Timer: 1~255 step, can be set with software on Super I/O

- Compact Flash: CFD type II connector

- Expansion Interface: APCI; Mini-PCI Type III

                                                socket

- Battery: Lithium battery (BR2335)

- Power Supply Voltage: +12V ATX, Standard ATX Power Connector

- VGA Controller: Integrated on Intel®82855GME, AGP 4X, supports dual display

- LCD Controller: Integrated on Intel®82855GME,LVDS output, supports dual display

- Floppy Drive Interface: Standard FDDx1, supports up to two floppy devices

- Audio Daughter Board: Realtek ALC655 AC97 Codec, MIC-in/ Line-in/ Line-out/ CD-in

- IDE Interface: ATA-100 x 2 channels (Supports two ATAPI devices)

- Universal Serial Bus: USB 2.0 Port x 5 5 x 2 pin header for internal x1; Type-A connector onboard x 3

- IR Interface: Supports IrDA header x 1

- RTC: Internal RTC

- Operation Temp: 0 ~60

Display

- Chip: Intel® 82855GME
- Memory size: Shared memory up to 64MB

I/O

- Enhanced IDE Interface ATA100 x 2 channels (supports two ATAPI devices for each channel)

- FDD Interface: Standard FDD port x 1 (support up to 2 floppy devices)

- Serial Ports: Two COM ports: Internal Pin Header, External D-sub x2 COM 1: RS-232 COM 2: RS-232/422/485

- Parallel Port: Support SPP/EPP/ECP mode

- K/B & Mouse connector: Mini-DIN for PS/2 K/B and Mouse connector x 1 Internal keyboard pin header x 1

- IrDA IrDA Tx/Rx header x 1

- USB 5 x 2 pin header x 1; USB 2.0 ports x 5; Type-A connector onboard x 3

OS Support Request

- Windows$^®$ 2000 Pro
- Windows$^®$ XP Pro
- Linux Red Hat
- Windows$^®$ CE.net (By demand)
- Windows$^®$ XP Embedded (By demand)

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 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
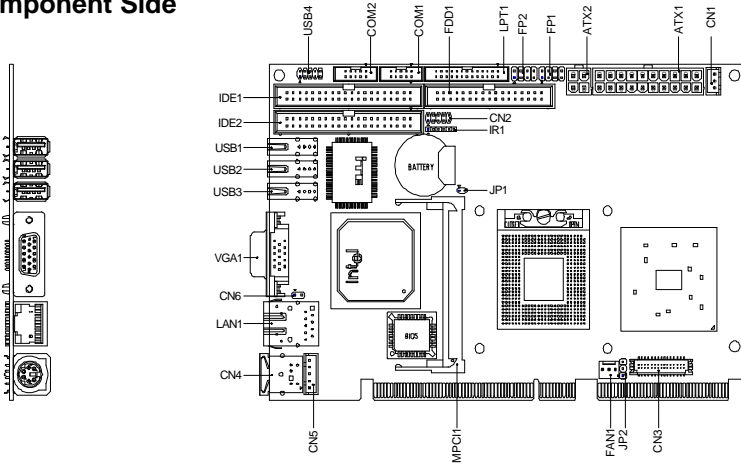
Solder Side
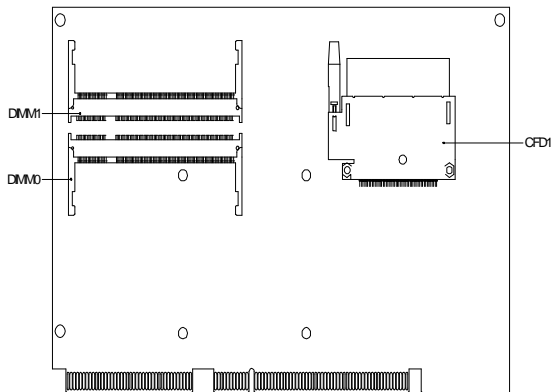
2.3 Mechanical Drawing

Component Side
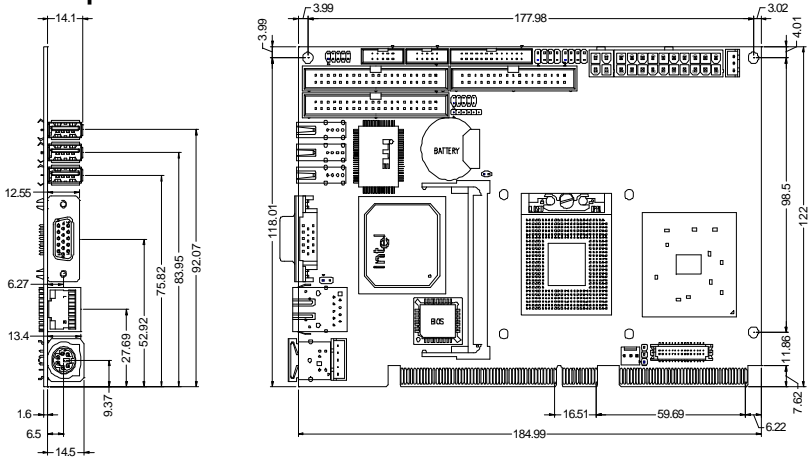
Solder Side
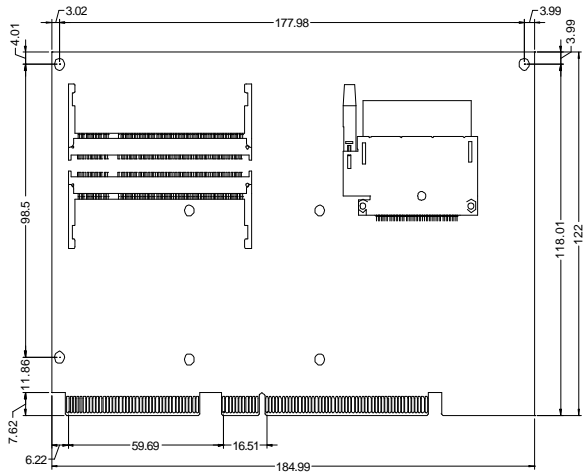
2.4 List of Jumpers

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	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
ATX1	ATX Power Connector
ATX2	ATX Power_12V Connector
VGA1	VGA Display Connector
FDD1	Floppy Connector
IDE1~2	EIDE Connector
CFD1	Compact Flash Slot
COM1	RS-232 Serial Port Connector
COM2	RS-232/422/485 Serial Port Connector
IR1	IrDA Connector
LPT1	LPT Port Connector
USB1~3	USB Connector (Type-A)
USB4	USB Connector (5x2 pin header)
LAN1	10/100 or 100/1000 Base-T Ethernet Connector
MPCI1	Mini PCI Slot
DIMM0~1	DIMM Slot
FAN1	Fan Connector
CN1	ATX Power Control Connector
CN2	AC97 Connector

CN4	PS2 Keyboard/Mouse Connector
CN5	Internal Keyboard Connector
CN3	LVDS Channel Connector
CN6	LAN 1 Active LED 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**
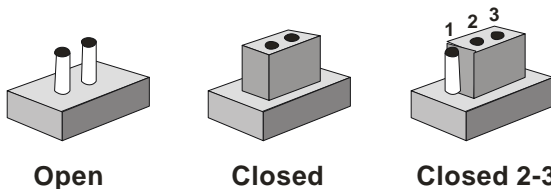
A pair of needle-nose pliers may be helpful when working with jumpers.

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
Open	Protected (Default)

2.8 LCD Voltage Selection (JP2)

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

2.9 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 (-)

2.10 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 (-)	6	I2C Bus SMB Clock
7	External Speaker (-)	8	I2C Bus SMB DATA

2.11 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.

2.12 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.

2.13 IrDA Connector (IR1)

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

2.14 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.

2.15 USB Connector (USB4)

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

2.16 Fan Connector (FAN1)

Pin	Signal
1	GND
2	+12V
3	Speed Sense

2.17 ATX Power Control Connector (CN1)

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

2.18 AC97 Connector (CN2)

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 LVDS Channel Connector (CN3)

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

2.20 PS/2 keyboard & Mouse Connector (CN4)

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

2.21 Internal keyboard Connector (CN5)

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

2.22 LAN LED Connector (CN6)

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

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-810A CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it 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 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.

```
                 Phoenix - AwardBIOS CMOS Setup Utility

    ► Standard CMOS Features           ► Frequency/Voltage Control

    ► Advanced BIOS Features            Load Fail-Safe Defaults

    ► Advanced Chipset Features         Load Optimized Defaults

    ► Integrated Peripherals            Set Supervisor Password

    ► Power Management Setup            Set User Password

    ► PnP/PCI Configurations            Save & Exit Setup

    ► PC Health Status                 Exit Without Saving

    Esc : Quit      F9 : Menu in BIOS    ↑ ↓ → ←   : Select Item
    F10 : Save & Exit Setup

                    Time, Date, Hard Disk Type...
```

Standard CMOS Features

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

Advanced BIOS Features

Use this menu to set available advanced features in your system.

Advanced Chipset Features

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

Integrated Peripherals

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

Power Management Setup

Use this menu to specify the settings for power management. (HDD power down, power on by ring etc.)

PnP/PCI Configurations

This entry appears if the 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 defaults for the minimal/stable performance for the system to operate.

Load Optimized Defaults

Use this menu to load the BIOS factory defaults for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the rights 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 changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS changes and exit setup.

3.3 Standard CMOS Features

When you choose the Standard CMOS Features option from the INITIAL SETUP SCREEN menu**,** the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the right box of the Menu screen.

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                          Standard CMOS Features
   Date (mm:dd:yy)          Wed, Sep 22 2004          Item Help
   Time (hh:mm:ss)           18 : 25 : 39
                                                 Menu Level    ▶
 ▶ IDE Primary Master
 ▶ IDE Primary Slave                             Change the day, month,
 ▶ IDE Secondary Master                          year and century
 ▶ IDE Secondary Slave

   Drive A                  [1.44M, 3.5 in.]
   Drive B                  [None]

   Video                    [EGA/VGA]
   Halt On                  [All , But Keyboard]

   Base Memory                   640K
   Extended Memory             64512K
   Total Memory                65536K

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

3.4 Advanced BIOS Features

By choosing the Advanced BIOS Features option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the HSB-810A

```
            Phoenix - AwardBIOS CMOS Setup Utility
                     Advanced BIOS Features
 ►  CPU Feature              [Press Enter]         Item Help
    Virus Warning            [Disabled]
    CPU L1 Cache             [Enabled]         Menu Level    ►
    CPU L2 Cache             [Enabled]
    Quick Power On Self Test [Enabled]
    First Boot Device        [HDD-0]
    Second Boot Device       [Floppy]
    Third Boot Device        [SCSI]
    Boot Other Device        [Enabled]
    Swap Floppy Drive        [Disabled]
    Boot Up Floppy Seek      [Enabled]
    Boot Up NumLock Status   [On]
    Typematic Rate Setting   [Disabled]
 x  Typematic Rate (Chars/Sec) 6
 x  Typematic Delay (Msec)    250
    Security Option          [Setup]
    APIC Mode                [Enabled]
    MPS Version Control For OS[1.4]
    Small Logo(EPA) Show     [Enabled]

↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

●   **CPU Feature**

```
            Phoenix - AwardBIOS CMOS Setup Utility
                         CPU Feature
    Thermal Management     [Thermal Monitor 1]      Item Help
    TM2 Bus Ratio          [ 0 X]
    TM2 Bus VID            [0.700V]           Menu Level    ►►
    Execute Disable Bit    [Enabled]
                                             Thermal Monitor 1 (On
                                             die throtting)

                                             Thermal Monitor 2
                                             Ratio & VID transition
                                             )

↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

3.5 Advanced Chipset Features

By choosing the Advanced Chipset Features option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the HSB-810A.

```
                 Phoenix - AwardBIOS CMOS Setup Utility
                        Advanced Chipset Features

    DRAM Timing Selectable     [By SPD]              Item Help
    CAS Latency Time           [2.5]
    Active to Precharge Delay  [7]            Menu Level    ▶
    DRAM RAS# to CAS# Delay     [3]
    DRAM RAS# Precharge         [3]
    DRAM Data Integrity Mode   [Non-ECC]
    System BIOS Cacheable      [Enabled]
    Video  BIOS Cacheable      [Disabled]
    Memory Hole At 15M-16M     [Disabled]
    Delayed Transaction        [Enabled]
    Delay Prior to Thermal     [16 Min]
    AGP Aperture Size (MB)     [64]

    ** VGA Setting **
    On-Chip VGA                [Enabled]
    On-Chip Frame Buffer Size  [32MB]
    Boot Display               [CRT+LCD]
    Panel Type                 [800X600   18Bit]


 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

3.6 Integrated Peripherals

By choosing the Integrated Peripherals from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the HSB-810A.
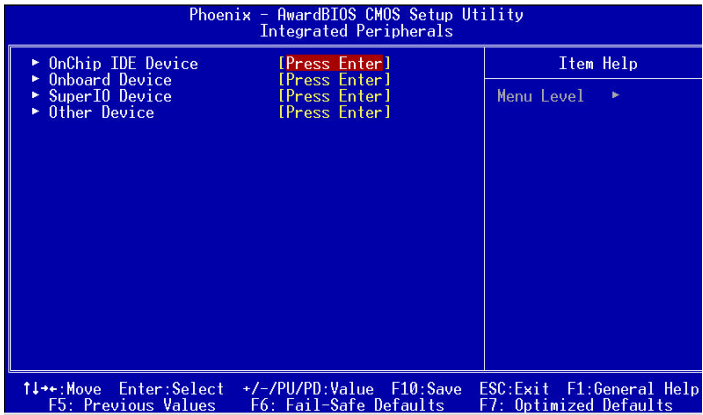
● **OnChip IDE Device**
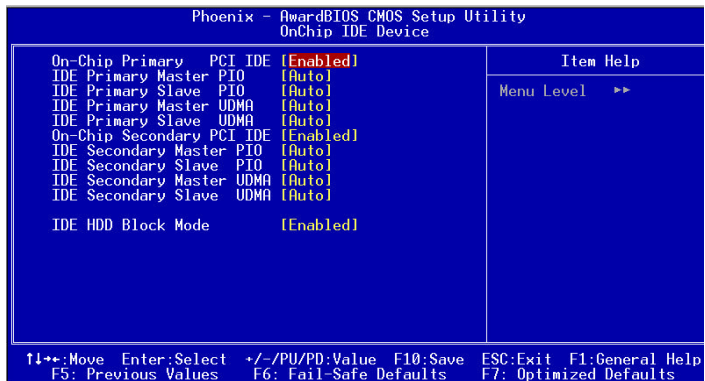
● **Onboard Device**

```
         Phoenix - AwardBIOS CMOS Setup Utility
                  Onboard Device
┌──────────────────────────────────────┬──────────────────────┐
│  USB Controller           [Enabled]  │      Item Help       │
│  USB 2.0 Controller       [Enabled]  ├──────────────────────┤
│  USB Keyboard Support     [Disabled] │  Menu Level    ►►    │
│  USB Mouse Support        [Disabled] │                      │
│  AC97 Audio               [Auto]     │                      │
│  Init Display First       [PCI Slot] │                      │
│  Onboard LAN              [Enabled]  │                      │
│                                      │                      │
│                                      │                      │
│                                      │                      │
│                                      │                      │
│                                      │                      │
├──────────────────────────────────────┴──────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults   │
└──────────────────────────────────────────────────────────────┘
```

● **Super I/O Device**

```
         Phoenix - AwardBIOS CMOS Setup Utility
                  SuperIO Device
┌──────────────────────────────────────┬──────────────────────┐
│  Onboard FDC Controller   [Enabled]  │      Item Help       │
│  Onboard Serial Port 1    [3F8/IRQ4] ├──────────────────────┤
│  Onboard Serial Port 2    [2F8/IRQ3] │  Menu Level    ►►    │
│  COM2 RS232/422/485 Type  [RS-232]   │                      │
│  UART Mode Select         [Normal]   │                      │
│  UR2 Duplex Mode          [Half]     │                      │
│  Onboard Parallel Port    [378/IRQ7] │                      │
│  Parallel Port Mode       [SPP]      │                      │
│  ECP Mode Use DMA         [3]        │                      │
│  PWRON After PWR-Fail     [Off]      │                      │
│                                      │                      │
│                                      │                      │
├──────────────────────────────────────┴──────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults   │
└──────────────────────────────────────────────────────────────┘
```

3.7 Power management Setup

By choosing the Power Management Setup from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the HSB-810A.
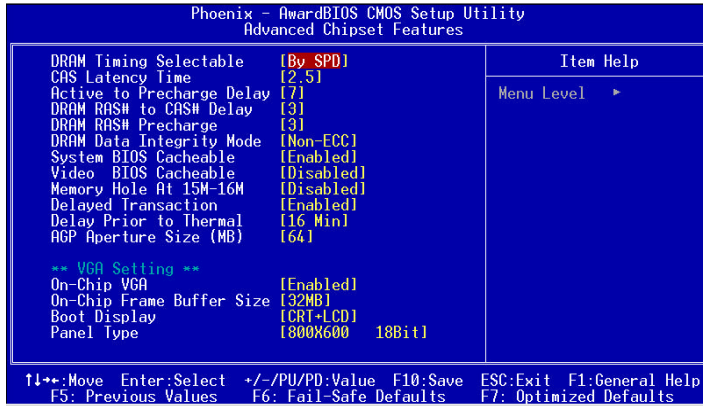
```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Power Management Setup
  Power-Supply Type       [ATX]              ┌─────────────────────┐
  ACPI Function           [Enabled]          │     Item Help       │
  Power Management        [User Define]      ├─────────────────────┤
  Video Off Method        [DPMS]             │ Menu Level    ▶     │
  Video Off In Suspend    [Yes]              │                     │
  Suspend Type            [Stop Grant]       │                     │
  MODEM Use IRQ           [3]                 │                     │
  Suspend Mode            [Disabled]         │                     │
  HDD Power Down          [Disabled]         │                     │
  Soft-Off by PWR-BTTN    [Instant-Off]      │                     │
  Wake-Up by PCI card     [Enabled]          │                     │
  Power On by Ring        [Enabled]          │                     │
  Resume by Alarm         [Disabled]         │                     │
x  Date(of Month) Alarm     0                │                     │
x  Time(hh:mm:ss) Alarm     0 :  0 :  0      │                     │
                                             └─────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

3.8 PnP/PCI configuration

By choosing the PnP/PCI configurations from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the HSB-810A.

3.9 PC Health Status

By choosing the PC Health Status from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the HSB-810A.

```
         Phoenix - AwardBIOS CMOS Setup Utility
                    PC Health Status

   (+)Vcore                           ┌──────────────────┐
   (+) 1.5V                           │    Item Help     │
   (+) 3.3V                           ├──────────────────┤
   (+)   5V                           │ Menu Level    ►  │
   (+)  12V                           │                  │
   (-)  12V                           │                  │
   (+) 2.5V                           │                  │
   CPU    Temp                        │                  │
   System Temp (RT1)                  │                  │
   System Temp (RT2)                  │                  │
   CPU Fan Speed                      │                  │
                                      │                  │

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```
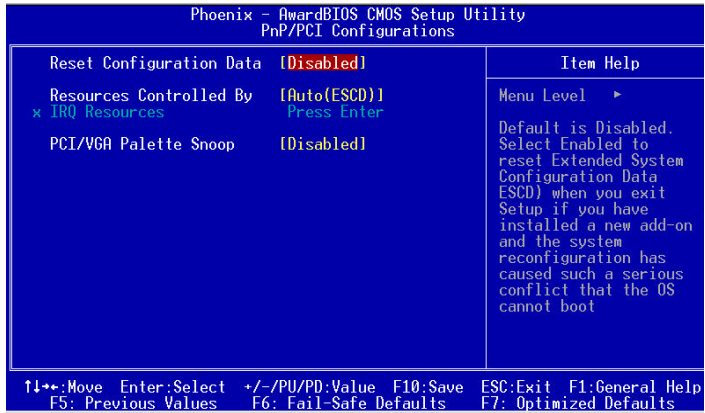
3.10 Frequency / Voltage control

By choosing the Frequency/Voltage Control from the Initial
Setup Screen menu, the screen below is displayed. This
sample screen contains the manufacturer's default values for
the HSB-810A.

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                          Frequency/Voltage Control
┌───────────────────────────────────────────┬─────────────────────────┐
│  Auto Detect PCI Clk        [Enabled]      │       Item Help         │
│  Spread Spectrum            [Disabled]     ├─────────────────────────┤
│  CPU Clock                  [100MHz]       │  Menu Level     ►       │
│                                            │                         │
│                                            │                         │
│                                            │                         │
│                                            │                         │
│                                            │                         │
│                                            │                         │
│                                            │                         │
│                                            │                         │
├────────────────────────────────────────────────────────────────────┤
│  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│     F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults │
└────────────────────────────────────────────────────────────────────┘
```
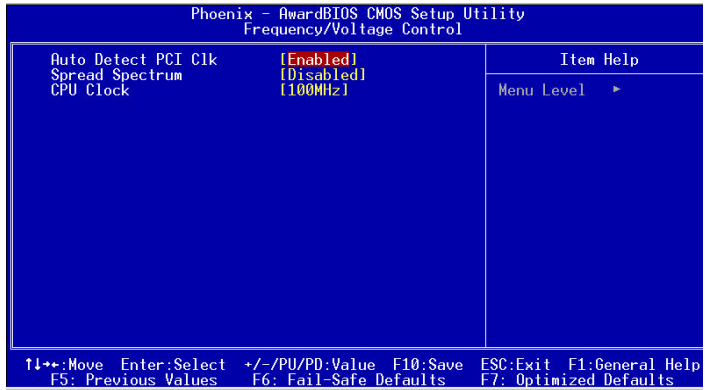
3.11 Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Default (Y/N)?

Pressing "Y" loads the BIOS default values for the most stable, minimal performance system operations.

```
            Phoenix - AwardBIOS CMOS Setup Utility
  ▶ Standard CMOS Features       ▶ Frequency/Voltage Control
  ▶ Advanced BIOS Features         Load Fail-Safe Defaults
  ▶ Advanced Chipset Features      Load Optimized Defaults
  ▶ Integrated Peripherals         Set Supervisor Password
  ▶ Power Management                             word
  ▶ PnP/PCI Configura  Load Fail-Safe Defaults (Y/N)? N  etup
  ▶ PC Health Status                            Saving

  Esc : Quit      F9 : Menu in BIOS    ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

                    Load Fail-Safe Defaults
```
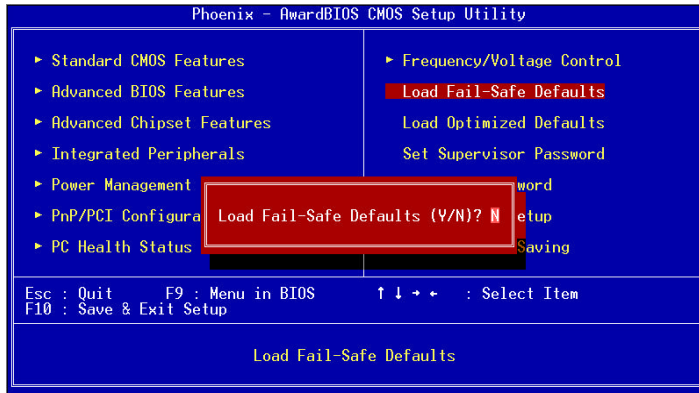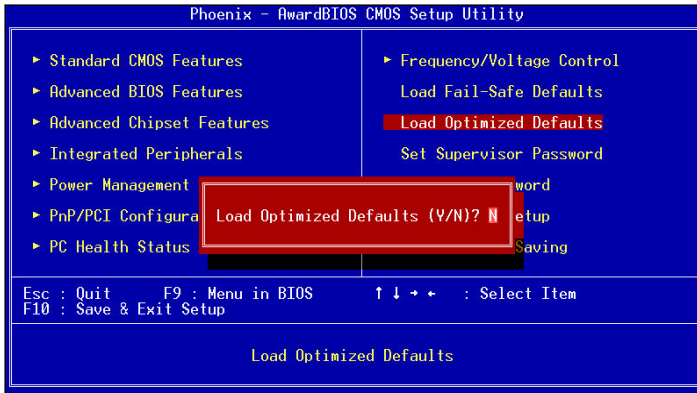
3.12 Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing "Y" loads the default values that are manufacturer's settings for optimal performance system operations.

```
            Phoenix - AwardBIOS CMOS Setup Utility
  ► Standard CMOS Features        ► Frequency/Voltage Control
  ► Advanced BIOS Features          Load Fail-Safe Defaults
  ► Advanced Chipset Features       Load Optimized Defaults
  ► Integrated Peripherals          Set Supervisor Password
  ► Power Management              ┌─────────────────────────┐word
  ► PnP/PCI Configura             │Load Optimized Defaults (Y/N)? N│etup
  ► PC Health Status              └─────────────────────────┘Saving

  Esc : Quit      F9 : Menu in BIOS      ↑ ↓ → ←  : Select Item
  F10 : Save & Exit Setup

                    Load Optimized Defaults
```

3.13 Set Supervisor / User Password

You can set either SUPERVISOR or USER PASSWORD, or both of them. The difference between the two is that the supervisor password allows unrestricted access to enter and change the options of the setup menus, while the user password only allows entry to the program, but not modify options.
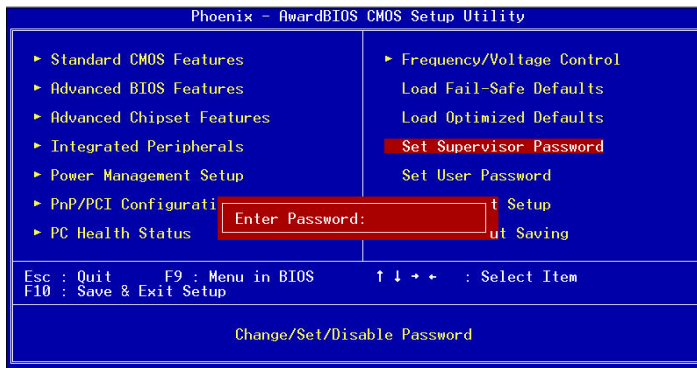
To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System   Enter a password each time the system boots

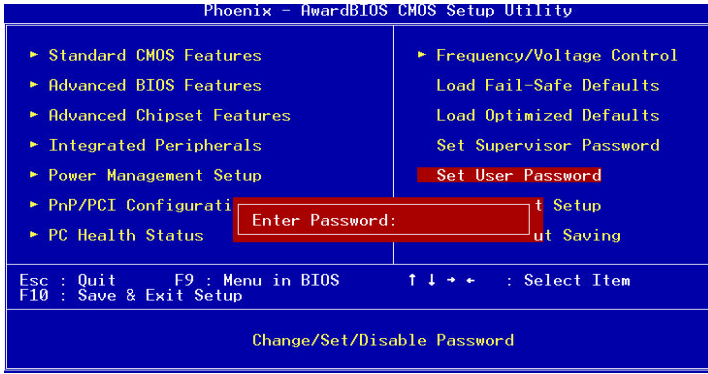and whenever you enter Setup.

Setup   Enter a password whenever you enter Setup.

NOTE: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.

● **Set Supervisor Password**


```
              Phoenix - AwardBIOS CMOS Setup Utility
  ► Standard CMOS Features          ► Frequency/Voltage Control
  ► Advanced BIOS Features             Load Fail-Safe Defaults
  ► Advanced Chipset Features          Load Optimized Defaults
  ► Integrated Peripherals             Set Supervisor Password
  ► Power Management Setup             Set User Password
  ► PnP/PCI Configurati                        t Setup
  ► PC Health Status     Enter Password:        ut Saving

  Esc : Quit      F9 : Menu in BIOS     ↑ ↓ → ←  : Select Item
  F10 : Save & Exit Setup

              Change/Set/Disable Password
```

● **Set User Password**

```
        Phoenix - AwardBIOS CMOS Setup Utility

  ► Standard CMOS Features        ► Frequency/Voltage Control
  ► Advanced BIOS Features           Load Fail-Safe Defaults
  ► Advanced Chipset Features        Load Optimized Defaults
  ► Integrated Peripherals           Set Supervisor Password
  ► Power Management Setup            Set User Password
  ► PnP/PCI Configurati┌───────────────┐t Setup
  ► PC Health Status    │ Enter Password: │ut Saving
                        └───────────────┘
  Esc : Quit      F9 : Menu in BIOS    ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

              Change/Set/Disable Password
```
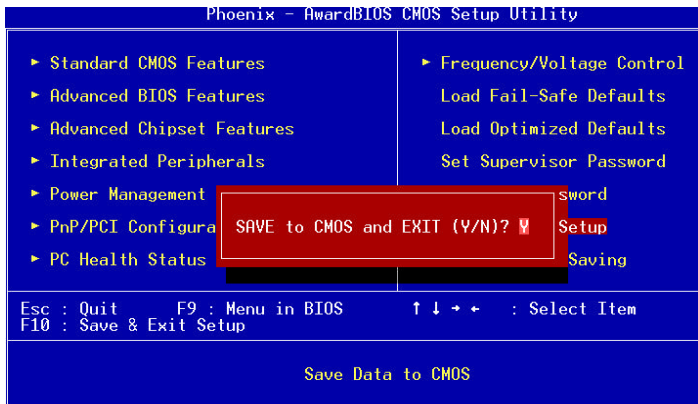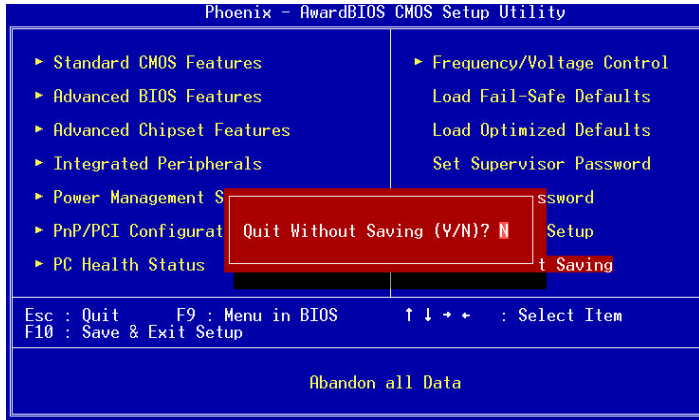
3.14 Save & Exit Setup

If you select this option and press <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn on your system and compare this to what it finds as it checks the system. This record is required for the system to operate.

```
        Phoenix - AwardBIOS CMOS Setup Utility

  ► Standard CMOS Features        ► Frequency/Voltage Control
  ► Advanced BIOS Features           Load Fail-Safe Defaults
  ► Advanced Chipset Features        Load Optimized Defaults
  ► Integrated Peripherals           Set Supervisor Password
  ► Power Management         ┌─────────────────────────┐sword
  ► PnP/PCI Configura        │ SAVE to CMOS and EXIT (Y/N)? Y │ Setup
  ► PC Health Status         └─────────────────────────┘ Saving

  Esc : Quit      F9 : Menu in BIOS    ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

              Save Data to CMOS
```

3.15 Exit without saving

Selecting this option and pressing <Enter> allows you to exit the Setup program without recording any new value or changing old one.

```
              Phoenix - AwardBIOS CMOS Setup Utility

   ▶ Standard CMOS Features        ▶ Frequency/Voltage Control
   ▶ Advanced BIOS Features           Load Fail-Safe Defaults
   ▶ Advanced Chipset Features        Load Optimized Defaults
   ▶ Integrated Peripherals           Set Supervisor Password
   ▶ Power Management S                       ssword
   ▶ PnP/PCI Configurat  Quit Without Saving (Y/N)? N  Setup
   ▶ PC Health Status                          t Saving

   Esc : Quit      F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup

                     Abandon all Data
```

Chapter

4

Driver
Installation

The HSB-810A comes with a CD-ROM that contains all drivers your need.

Follow the sequence below to install the drivers:

Step 1 – Intel® Chipset Software Installation Utility

Step 2 – Intel® Extreme Graphics Driver

Step 3 – Intel® LAN Driver

Step 4 – Realtek AC97 Codec Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the HSB-810A CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 4 in order.

Step 1 - Intel® Chipset Software Installation Utility

1. Click on the Intel® Chipset Software Installation Utility folder and then double click on the *infinst_autol.exe.*

2. Follow the instructions that the window shows.

3. The system will help you install the driver automatically.

4. Please re-start your computer.

Step 2 - Intel® Extreme Graphics Driver

1. Click on the Intel® Extreme Graphics Driver folder.

2. Choose the OS your system is

   For the OS of Win 2000/XP:

   a. Double click on the *win2k_xp149.exe*
      Follow the instructions that the window shows.

   b. The system will help you install the driver automatically.

   c. Please re-start your computer.

Step 3 - Intel® LAN Driver

1. Click on the Intel® LAN Driver folder

2. Double click on the *pro2kxp.exe*

3. The system will help you install the driver automatically

Step 4 - Realtek AC97 codec Driver (For Audio Daughter Board Only)

1. Click on the Realtek AC97 codec Driver folder.

2. Choose the OS your system is.

    For the OS of Win 2000/XP:

    a. Double click on the ***wdm_a367.exe***

    Follow the instructions that the window shows.

    b. The system will help you install the driver

    automatically.

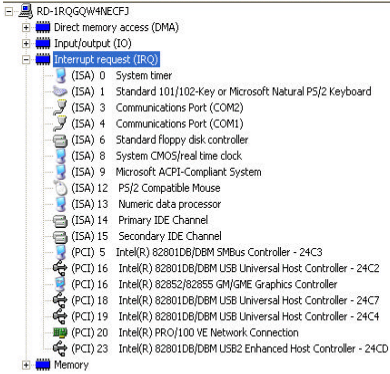   c. Please re-start your computer.

Appendix

A

I/O Information

A.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 - 00000073] System CMOS/real time clock
   ▪ [00000074 - 0000007F] Motherboard resources
   ▪ [00000080 - 00000090] Direct memory access controller
   ▪ [00000091 - 00000093] Motherboard resources
   ▪ [00000094 - 0000009F] Direct memory access controller
   ▪ [000000A0 - 000000A1] Programmable interrupt controller
   ▪ [000000A2 - 000000BF] Motherboard resources
   ▪ [000000C0 - 000000DF] Direct memory access controller
   ▪ [000000E0 - 000000EF] Motherboard resources
   ▪ [000000F0 - 000000FF] Numeric data processor
   ▪ [00000170 - 00000177] Secondary IDE Channel
   ▪ [000001F0 - 000001F7] Primary IDE Channel
   ▪ [00000274 - 00000277] ISAPNP Read Data Port
   ▪ [00000279 - 00000279] ISAPNP Read Data Port
   ▪ [00000290 - 0000029F] Motherboard resources
   ▪ [000002F8 - 000002FF] Communications Port (COM2)
   ▪ [00000376 - 00000376] Secondary IDE Channel
   ▪ [00000378 - 0000037F] Printer Port (LPT1)
   ▪ [000003B0 - 000003BB] Intel(R) 82852/82855 GM/GME Graphics Controller
   ▪ [000003C0 - 000003DF] Intel(R) 82852/82855 GM/GME 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) 82801DB/DBM SMBus Controller - 24C3
   ▪ [00000800 - 0000087F] Motherboard resources
   ▪ [00000A79 - 00000A79] ISAPNP Read Data Port
   ▪ [00000D00 - 0000FFFF] PCI bus
   ▪ [0000D000 - 0000D03F] Intel(R) PRO/100 VE Network Connection
   ▪ [0000E000 - 0000E01F] Intel(R) 82801DB/DBM USB Universal Host Controller - 24C2
   ▪ [0000E100 - 0000E11F] Intel(R) 82801DB/DBM USB Universal Host Controller - 24C4
   ▪ [0000E200 - 0000E21F] Intel(R) 82801DB/DBM USB Universal Host Controller - 24C7
   ▪ [0000E300 - 0000E307] Intel(R) 82852/82855 GM/GME Graphics Controller
   ▪ [0000F000 - 0000F00F] Intel(R) 82801DB Ultra ATA Storage Controller - 24CB
☐ ▓▓ Interrupt request (IRQ)
☐ ▓▓ Memory
```
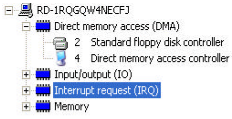
A.2 1ˢᵗ MB Memory Address Map

```
□ 🖳 RD-1RQGQW4NECFJ
  ⊞ ▦ Direct memory access (DMA)
  ⊞ ▦ Input/output (IO)
  ⊞ ▦ Interrupt request (IRQ)
  □ ▦ Memory
      [00000000 - 0009FFFF]  System board
      [000A0000 - 000BFFFF]  Intel(R) 82852/82855 GM/GME Graphics Controller
      [000A0000 - 000BFFFF]  PCI bus
      [000C0000 - 000DFFFF]  PCI bus
      [000D1800 - 000D3FFF]  System board
      [000E0000 - 000EFFFF]  System board
      [000F0000 - 000F7FFF]  System board
      [000F8000 - 000FBFFF]  System board
      [000FC000 - 000FFFFF]  System board
      [00100000 - 1DFEFFFF]  System board
      [1DFF0000 - 1DFFFFFF]  System board
      [1E000000 - FEBFFFFF]  PCI bus
      [D8000000 - DFFFFFFF]  Intel(R) 82852/82855 GM/GME Graphics Controller
      [E0000000 - E7FFFFFF]  Intel(R) 82852/82855 GM/GME Graphics Controller
      [EC000000 - EC000FFF]  Intel(R) PRO/100 VE Network Connection
      [EC100000 - EC17FFFF]  Intel(R) 82852/82855 GM/GME Graphics Controller
      [EC180000 - EC1FFFFF]  Intel(R) 82852/82855 GM/GME Graphics Controller
      [EC200000 - EC2003FF]  Intel(R) 82801DB/DBM USB2 Enhanced Host Controller - 24CD
      [FEBFFC00 - FEBFFFFF]  Intel(R) 82801DB Ultra ATA Storage Controller - 24CB
      [FEC00000 - FECFFFFF]  System board
      [FEE00000 - FEEFFFFF]  System board
      [FFB00000 - FFB7FFFF]  System board
      [FFB80000 - FFBFFFFF]  Intel(r) 82802 Firmware Hub Device
      [FFF00000 - FFFFFFFF]  System board
```

A.3 IRQ Mapping Chart

```
⊟ 🖥 RD-1RQGQW4NECFJ
  ⊞ 🏢 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) 5    Intel(R) 82801DB/DBM SMBus Controller - 24C3
       🖴 (PCI) 16   Intel(R) 82801DB/DBM USB Universal Host Controller - 24C2
       🖳 (PCI) 16   Intel(R) 82852/82855 GM/GME Graphics Controller
       🖴 (PCI) 18   Intel(R) 82801DB/DBM USB Universal Host Controller - 24C7
       🖴 (PCI) 19   Intel(R) 82801DB/DBM USB Universal Host Controller - 24C4
       🖧 (PCI) 20   Intel(R) PRO/100 VE Network Connection
       🖴 (PCI) 23   Intel(R) 82801DB/DBM USB2 Enhanced Host Controller - 24CD
  ⊞ 🏢 Memory
```

A.4 DMA Channel Assignments

```
RD-1RQGQW4NECFJ
  Direct memory access (DMA)
      2    Standard floppy disk controller
      4    Direct memory access controller
  Input/output (IO)
  Interrupt request (IRQ)
  Memory
```

Appendix

B

Programming the Watchdog Timer

B.1 Programming

HSB-810A utilizes ITE 8712 chipset as its watchdog timer controller.

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. The

initial state (enable bit) of this logical device (KBC) is determined

by the state of pin 121 (DTR1#) at the falling edge of the system

reset during power-on reset.
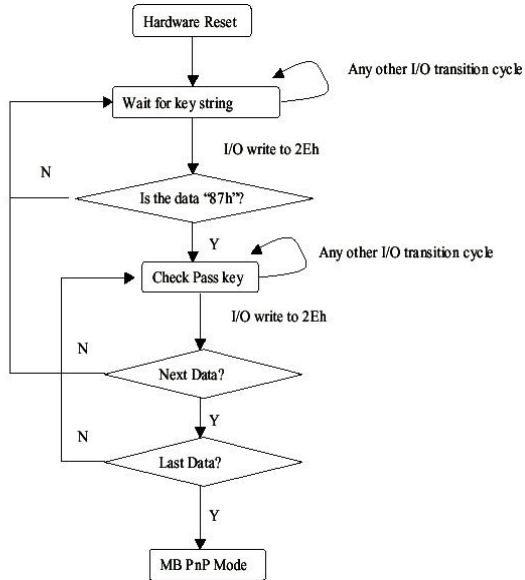
There are three steps to complete the configuration setup: (1) Enter

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	Configure 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 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
5-4	Reserved
3-0	Select the interrupt level[Note] for WDT

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

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

B.2 IT8712 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