HS-1746

Intel® Pentium® M/Celeron® M processor mITX Board

• 400MHz FSB • PCI Slot • CRT/LVDS Panel •
• Dual Giga LAN • Audio • ATA/33/66/100 •
• IrDA • USB2.0 • WDT • H/W Monitor •
• Industrial mITX Board •

Copyright Disclaimers

The accuracy of contents in this manual has passed thorough checking and review before publishing. BOSER Technology Co., Ltd., the manufacturer and publisher, is not liable for any infringements of patents or other rights resulting from its use. The manufacturer will not be responsible for any direct, indirect, special, incidental or consequential damages arising from the use of this product or documentation, even if advised of the possibility of such damage(s).

This manual is copyrighted and BOSER Technology Co., Ltd. reserves all documentation rights. Unauthorized reproduction, transmission, translation, and storage of any form and means (i.e., electronic, mechanical, photocopying, recording) of this document, in whole or partly, is prohibited, unless granted permission by BOSER Technology Co., Ltd.

BOSER Technology Co., Ltd. reserves the right to change or improve the contents of this document without due notice. BOSER Technology Co., Ltd. assumes no responsibility for any errors or omissions that may appear in this manual, nor does it make any commitment to update the information contained herein.

Table of Contents

Safety Instructions

Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- ■ Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.

- ■ Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.

- ■ Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components. Fasten the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please wear and connect the strap before handling the HS-1746 to protect yourself from the discharge of any static electricity through the strap.

- ■ Please use an anti-static pad when putting down any components or parts or tools outside the computer. You may also use an anti-static bag instead of the pad. Please inquire from your local supplier for additional assistance in finding the necessary anti-static gadgets.

NOTE: *DO NOT TOUCH THE BOARD OR ANY OTHER SENSITIVE COMPONENT WITHOUT ALL NECESSARY ANTI-STATIC PROTECTION.*

Chapter 1

General Description
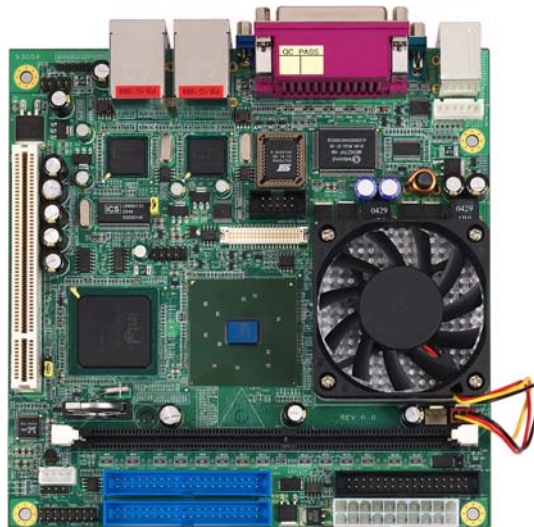
The HS-1746 is an Intel® 855GME GMCH/ICH4 chipset-based board designed mITX board. Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz compatibility. The combination of these features makes the HS-1746 an ideal all-in-one industrial mITX board. Additional features include an enhanced I/O with CRT/LVDS Panel, dual Giga LAN, audio, COM, IrDA and USB2.0 port interface.

Its onboard ATA/33/66/100 connected to IDE drive interface architecture allows the HS-1746 to support data transfers of 33, 66 or 100MB/sec. for each IDE drive connection. Designed with the Intel® 855GME GMCH/ICH4 core logic chipset, the board supports all Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz. The display controller is Intel® 855GME for CRT display, supporting up to 1600 x 1200 UXGA. HS-1746 also provides 18-bit single channel/36-bit dual channel LVDS Panel display interface.

System memory is also sufficient with the one DIMM socket that can support up to 1GB. It also provides one standard PCI slot.

Additional onboard connectors include two internal and four external USB2.0 ports providing faster data transmission, and two external RJ-45 connectors for use of two 10/100/1000 Base-TX Ethernet interfaces.

1.1 Major Features
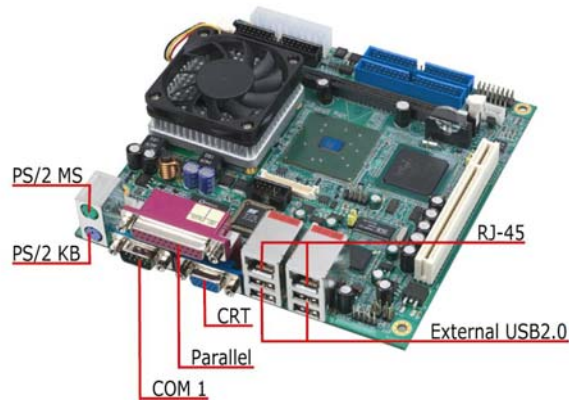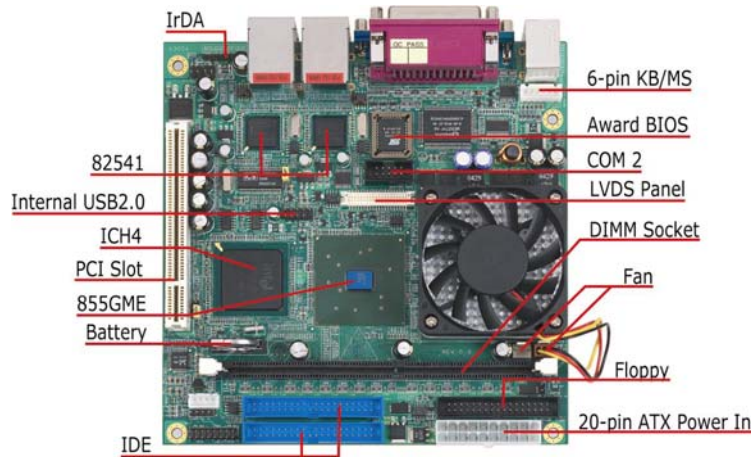
The HS-1746 comes with the following features:

- Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz
- Supports 400MHz FSB
- One DIMM socket with a max. capacity of 1GB
- Intel® 855GME GMCH/ICH4 system chipset
- Winbond W83627HF-AW super I/O chipset
- Intel® 855GME graphic controller
- LVDS Panel display interface
- Dual Intel® 82541 Gigabit Ethernet controller
- AC97 3D audio controller
- Fast PCI ATA/33/66/100 IDE controller
- Two COM, IrDA, six USB2.0 ports
- Hardware Monitor function

1.2 Specifications

- **CPU:**
  Intel® Pentium® M processor 1.6GHz
  Intel® Pentium® M processor 760 2.0GHz
  Intel® Pentium® M processor 745 1.8GHz
  Intel® Celeron® M processor 370 1.5GHz
  Intel® Celeron® M processor 320 1.3GHz

- **Front Side Bus:** Supports 400MHz FSB
- **Memory:** One DIMM socket supporting up to 1GB
- **Chipset:** Intel® 855GME GMCH/ICH4
- **I/O Chipset:** Winbond W83627HF-AW
- **PCI Slot:** One standard PCI slot
- **VGA:** Intel® 855GME for CRT display supporting up to 1600 x 1200 UXGA
- **LVDS Panel:** Supports 18-bit single channel/36-bit dual channel LVDS Panel interface
- **Ethernet:** Dual Intel® 82541 10/100/1000 Based LAN
- **Audio:** AC97 3D audio controller
- **IDE:** Four IDE disk drives supporting ATA/33/66/100 and with transfer rates of 33/66/100MB/sec.
- **FDD:** Supports up to two floppy disk drives
- **Parallel:** One enhanced bi-directional parallel port supporting SPP/ECP/EPP
- **Serial Port:** 16C550 UART-compatible RS-232 x 2 serial ports with 16-byte FIFO
- **IrDA:** One IrDA TX/RX header
- **USB:** Six USB2.0 ports, two internal and four external

3

- ■ **Keyboard/Mouse:** PS/2 6-pin Mini DIN or 6-pin header
- ■ **BIOS:** Award PnP Flash BIOS
- ■ **Watchdog Timer:** Software programmable time-out intervals from 1~256 sec.
- ■ **CMOS:** Battery backup
- ■ **Hardware Monitor:** Winbond W83627HF-AW
- ■ **Board Size:** 17.0(L) x 17.0(W) cm

1.3   Board Dimensions
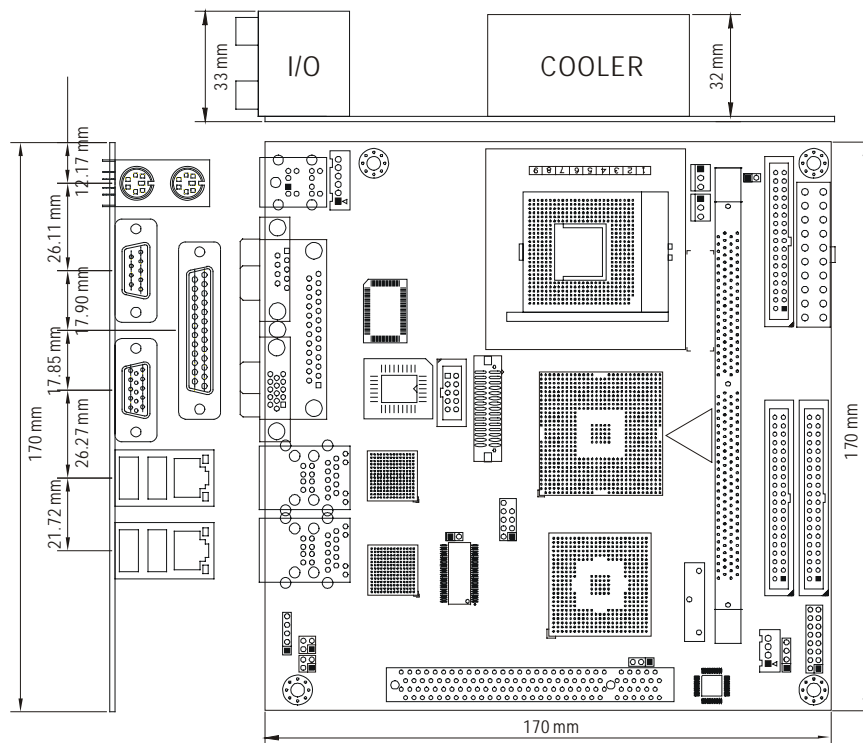
Chapter 2

Unpacking

2.1 Opening the Delivery Package

The HS-1746 is packed in an anti-static bag. The board has components that are easily damaged by static electricity. Do not remove the anti-static wrapping until proper precautions have been taken. Safety Instructions in front of this manual describe anti-static precautions and procedures.

2.2 Inspection

After unpacking the board, place it on a raised surface and carefully inspect the board for any damage that might have occurred during shipment. Ground the board and exercise extreme care to prevent damage to the board from static electricity.

Integrated circuits will sometimes come out of their sockets during shipment. Make sure all integrated circuits, particularly the BIOS, processor, memory modules, ROM-Disk, and keyboard controller chip are firmly seated. The HS-1746 delivery package contains the following items:

- HS-1746 Board x 1
- Utility CD Disk x 1
- Cables Package x 1
- Cooling Fan & Heat Sink x 1
- Jumper Bag x 1
- User's Manual

This page is intentionally left blank.

Chapter 3

Hardware Installation

This chapter provides the information on how to install the hardware using the HS-1746. This chapter also contains information related to jumper settings of switch, watchdog timer etc.

3.1   Before Installation

After confirming your package contents, you are now ready to install your hardware. The following are important reminders and steps to take before you begin with your installation process.

1. Make sure that all jumper settings match their default settings and CMOS setup correctly. Refer to the sections on this chapter for the default settings of each jumper. (Set JP4 Short 1-2)

2. Go through the connections of all external devices and make sure that they are installed properly and configured correctly within the CMOS setup. Refer to the sections on this chapter for the detailed information on the connectors.

3. Keep the manual and diskette in good condition for future reference and use.

7

3.2 Board Layout
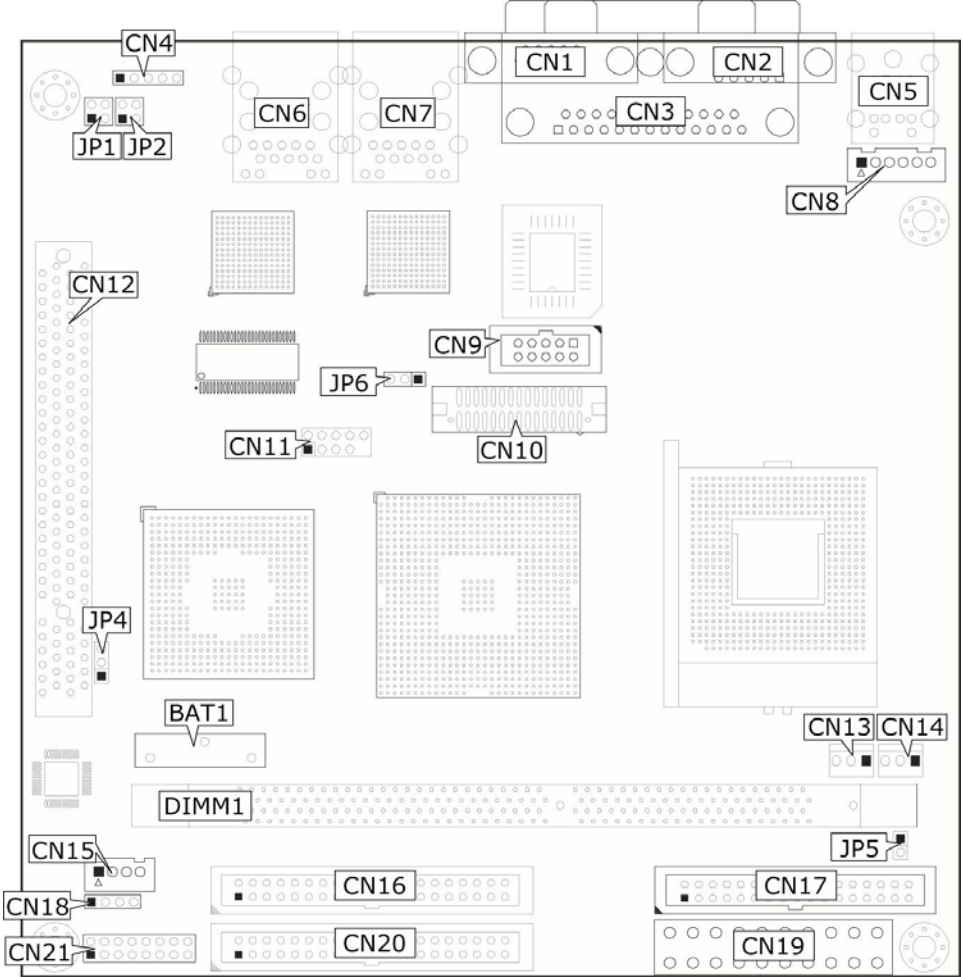
3.3   Jumper List

Jumper	Default Setting	Setting	Page
JP4	Clear CMOS: *Normal Operation*	Short 1-2	17
JP5	AT/Normal Mode Select: *ATX Mode*	Open	17
JP6	Panel Voltage Select: *+3.3V*	Short 1-2	10

3.4   Connector List

Connector	Definition	Page
CN1	15-pin CRT Connector	10
CN2	COM 1 Connector (DB9)	15
CN3	Parallel Connector	14
CN4	IrDA Connector	22
CN5	PS/2 6-pin Mini DIN KB and MS Connector	19
CN6/CN7	RJ-45 + Dual USB2.0 Port	16
CN8	6-pin KB/MS Header	19
CN9	COM 2 Connector (5x2 header)	15
CN10	LVDS Panel Connector	10
CN11	Internal USB2.0 Port	16
CN12	Standard PCI Expansion Slot	----
CN13/ CN14	Fan Power In Connector	17
CN15	Line Out Connector	22
CN20/CN16	Primary/Secondary IDE Connector	12
CN17	Floppy Connector	13
CN18	CD In Connector	22
CN19	20-pin ATX Power In Connector	17
CN21	System Front Panel Connector	20
DIMM1	SO-DIMM Socket	10
JP2/JP1	LAN1/LAN2 LED Connector	16

9

3.5 Configuring the CPU

The HS-1746 provides Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz. It offers the convenience in CPU installation with its auto-detect feature. After installing a new microprocessor onboard, the HS-1746 automatically identifies the frequency and clock speed of the installed microprocessor chip, thereby eliminating the need for user to do additional CPU configuration or hardware settings related to it.

3.6 System Memory
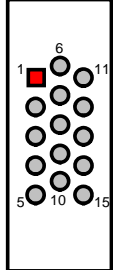
The HS-1746 provides one DIMM socket at location *DIMM1*. The maximum capacity of the onboard memory is 1GB.

3.7 VGA Controller

The display controller is Intel® 855GME for CRT display supporting up to 1600 x 1200 UXGA. HS-1746 also provides 18-bit single channel or 36-bit dual channel LVDS Panel display interface. The HS-1746 provides two methods of connecting VGA device. *CN1* offers a single standard CRT connector (DB15), or *CN10* offers 18-bit/36-bit LVDS panel connectors.
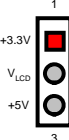
● **CN1: 15-pin CRT Connector (DB15)**

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	N/C	12	DDData
13	HSYNC	14	VSYNC
15	DDCLK		

● **JP6: Panel Voltage Select**

Options	Settings
+3.3V (default)	Short 1-2
+5V	Short 2-3

● **CN10: LVDS Panel Connector**

PIN	Description	PIN	Description
1	N/C	2	N/C
3	GND	4	GND
5	YAM0	6	YAM1
7	YAP0	8	YAP1
9	GND	10	GND
11	YAM2	12	CLKAM
13	YAP2	14	CLKAP
15	GND	16	GND
17	YAM3	18	YBM0
19	YAP3	20	YBP0
21	GND	22	GND
23	YBM1	24	YBM2
25	YBP1	26	YBP2
27	GND	28	GND
29	CLKBM	30	YBM3
31	CLKBP	32	YBP3
33	N/C	34	+12V
35	N/C	36	+12V
37	N/C	38	VCC_LCD
39	LCD_BKL	40	VCC_LCD
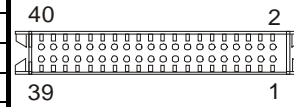
3.8 PCI E-IDE Drive Connector

CN20 and *CN16* are standard 40-pin daisy-chain driver connector that serves the PCI E-IDE drive provisions onboard the HS-1746. A maximum of four ATA/33/66/100 IDE drives can be connected to the HS-1746 via *CN20* and *CN16*.

● **CN20/CN16: Primary/Secondary IDE Connector**

PIN	Description	PIN	Description
1	RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	DRQ0	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IOCHRDY	28	PD1-
29	DACK0	30	ALE
31	IRQ 14	32	N/C
33	Address 1	34	GND
35	Address 0	36	Address 2
37	Chip Select 0	38	Chip Select 1
39	HDD Active	40	GND
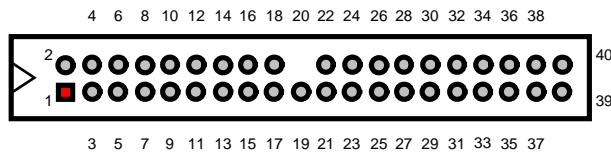
3.9 Floppy Disk Drive Connector

The HS-1746 uses a 26-pin connector, *CN17* for two floppy disk drives connection.

● **CN17: FDD Connector**

PIN	Description	PIN	Description
1	GND	2	Drive Density Selection
3	GND	4	N/C
5	GND	6	Drive Density Selection
7	GND	8	Index
9	GND	10	Motor Enable 0
11	GND	12	Drive Select 1
13	GND	14	Drive Select 0
15	GND	16	Motor Enable 1
17	GND	18	Direction
19	GND	20	Step
21	GND	22	Write Data
23	GND	24	Write Gate
25	GND	26	Track 00
27	GND	28	Write Protect
29	N/C	30	Read Data
31	GND	32	Head Select
33	N/C	34	Diskette Change

13
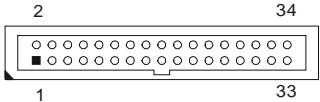
3.10 Parallel Connector

CN3 is a DB-25 connector designed to accommodate parallel port connection onboard the HS-1746.

- **CN3: Parallel Connector**

PIN	Description	PIN	Description
1	Line Printer Strobe	14	Auto Feed
2	PD0	15	Error
3	PD1	16	Initialize
4	PD2	17	Select
5	PD3	18	GND
6	PD4	19	GND
7	PD5	20	GND
8	PD6	21	GND
9	PD7	22	GND
10	ACK	23	GND
11	Busy	24	GND
12	Paper Empty	25	GND
13	Select		

```
        13                  1
      ┌──────────────────────┐
   ◎  │ ○○○○○○○○○○○○○ │  ◎
      │  ○○○○○○○○○○○○  │
      └──────────────────────┘
        25                 14
```
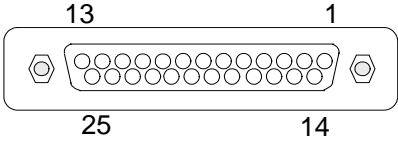
3.11 Serial Port Connectors

The HS-1746 offers NS16C550 compatible UARTs with Read/Receive 16-byte FIFO serial ports.

● **CN2: COM 1 Connector (DB9)**

PIN	Description
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
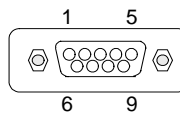
● **CN9: COM 2 Connector (5x2 header)**

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	5V
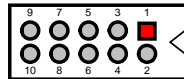
3.12 Ethernet Connector

The HS-1746 provides two 10/100/1000 Base-TX LAN interface connectors. Please refer to the following for its pin information.

● **CN6/CN7: RJ-45 Connector**

PIN	Description
1	Transmit Output (+)
2	Transmit Output (-)
3	Receive Input (+)
4	N/C
5	N/C
6	Receive Input (-)
7	N/C
8	N/C
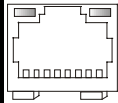
● **JP2/JP1: LAN 1/LAN 2 LED Connector**

PIN	Description	PIN	Description
1	LINK_LED	2	VCC_3V
3	ACT_LED	4	VCC_3V

3.13 USB Connector

The HS-1746 provides one 8-pin internal connector at location *CN11* and four 4-pin external connectors, at locations *CN7/CN6*, for four USB2.0 connections to the HS-1746.

● **CN7: External USB2.0 Connector**

PIN	Description	PIN	Description
1a	VCC	1b	VCC
2a	USB0-	2b	USB1-
3a	USB0+	3b	USB1+
4a	GND	4b	GND
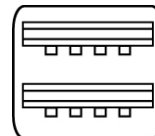
● **CN6: External USB2.0 Connector**

PIN	Description	PIN	Description
1a	VCC	1b	VCC
2a	USB2-	2b	USB3-
3a	USB2+	3b	USB3+
4a	GND	4b	GND
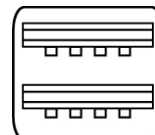
● **CN11: Internal USB2.0 Connector**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	BD4-	4	BD5-
5	BD4+	6	BD5+
7	GND	8	GND
9	----	10	N/C
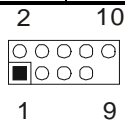
3.14 CMOS Data Clear

The HS-1746 has a Clear CMOS jumper on *JP4.*

● **JP4: Clear CMOS**

Options	Settings
Normal Operation (default)	Short 1-2
Clear CMOS	Short 2-3

IMPORTANT: *Before you turn on the power of your system, please set JP4 to short 1-2 for normal operation.*

3.15 Power and Fan Connectors

HS-1746 provides AT or normal mode, jumper setting at *JP5.*

● **JP5: AT/Normal Mode Select**

Options	Settings
AT Mode	Short
Normal Mode (default)	Open

17

HS-1746 provides one 20-pin ATX power in connector at *CN19*.

● **CN19: 20-pin ATX Power In Connector**

PIN	Description	PIN	Description
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS_ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	N/C	18	-5V
9	+5Vsb	19	+5V
10	+12V	20	+5V
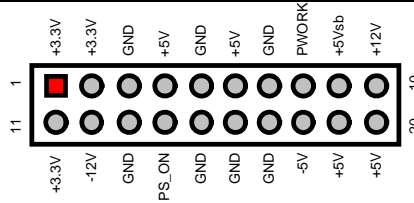
CN13/CN14 onboard HS-1746 is 3-pin fan power connector.

● **CN13/CN14: Fan Power Connector**

PIN	Description
1	GND
2	VCC
3	FAN In 1/FAN In 2
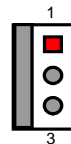
3.16 Keyboard/Mouse Connector

The HS-1746 offers two methods for keyboard and mouse connections. The connections are done via *CN5(Purple)* for external PS/2 type keyboard and *CN5(Green)* for external PS/2 type mouse connection. And *CN8* for 6-pin KB/MS header connector

● **CN5(Purple): PS/2 6-pin Mini DIN Keyboard Connector**

PIN	Description	PIN	Description
1	Keyboard Data	2	N/C
3	GND	4	+5V
5	Keyboard Clock	6	N/C
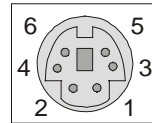
● **CN5(Green): PS/2 6-pin Mini DIN Mouse Connector**

PIN	Description	PIN	Description
1	Mouse Data	2	N/C
3	GND	4	+5V
5	Mouse Clock	6	N/C
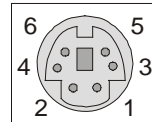
● **CN8: 6-pin Keyboard/Mouse Connector**

PIN	Description	PIN	Description
1	MS Clock	2	MS Data
3	KB Clock	4	KB Data
5	GND	6	VCC
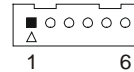
3.17 System Front Panel Connectors

The HS-1746 has one system front panel at location *CN21* that indicates the system front panel status.

- **CN21: System Front Panel Connector**

PIN	Description	PIN	Description
1	VCC	2	5V
3	N/C	4	N/C
5	BZ	6	GND
7	Speaker	8	KBLOCK
9	HDLED +	10	GND
11	HDLED -	12	N/C
13	Reset +	14	5VSB
15	Reset -	16	PWRBT -
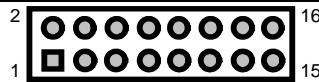
Connector CN21 Orientation
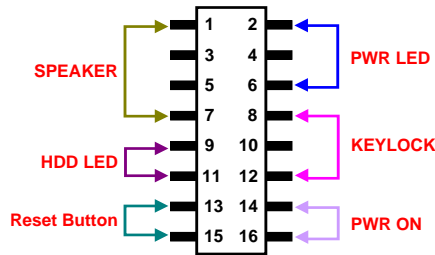
3.18 Watchdog Timer

Once the Enable cycle is active, a Refresh cycle is requested before the time-out period. This restarts counting of the WDT period. When the time counting goes over the period preset of WDT, it will assume that the program operation is abnormal. A System Reset signal will re-start when such error happens.

The following sample programs show how to Enable, Disable and Refresh the Watchdog Timer:

```
;--------------------------------------------------------------------------------
; Enter the WDT function mode, interruptible double-write
;--------------------------------------------------------------------------------
        MOV     DX, 2EH
        MOV     AL, 87H
        OUT     DX, AL
        OUT     DX, AL
        MOV     DX, 2EH
        MOV     AL, 07H
        OUT     DX, AL
        MOV     DX, 2FH
        MOV     AL, 08H
        OUT     DX, AL
        MOV     DX, 2EH
        MOV     AL, F5H
        OUT     DX, AL               ; select CRF0
        MOV     DX, 2FH
        MOV     AL, 80H
        OUT     DX, AL
        MOV     DX, 2EH
        MOV     AL, F7H
        OUT     DX, AL
        MOV     DX, 2FH

        MOV     AL, 00H
        OUT     DX, AL
        MOV     DX, 2EH
        MOV     AL, F6H
        OUT     DX, AL
        MOV     DX, 2FH
        MOV     AL, 00H              ; * 00H=Disabled
        OUT     DX, AL
;--------------------------------------------------------------------------------
; Exit extended function mode
;------------ --------------------------------------------------------------------
        MOV     DX, 2EH
        MOV     AL, AAH
        OUT     DX, AL
```

User can also use AL, 00H's defined time for reset purposes, e.g.00H for Disable, 01H = 1sec, 02H = 2sec to FFH = 255sec.

3.19 Audio Connectors

The HS-1746 has an onboard AC97 3D audio interface. The following tables list the pin assignments of the MIC In/Line Out connectors.

● **CN15: Line Out Connector**

PIN	Description
1	LOUT_L
2	GND
3	GND
4	LOUT_R
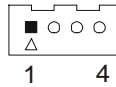
● **CN18: CD In Connector**

PIN	Description
1	CD_IN_L
2	GND
3	GND
4	CD_IN_R

3.20 IrDA Connector

CN4 is a 5-pin internal IR communication connector for connection of an IrDA device.

● **CN4: IrDA Connector**

PIN	Description
1	+5V
2	FIRTX
3	IRRX
4	GND
5	IRTX
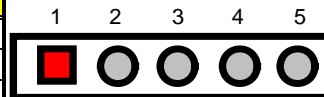
Chapter 4

Award BIOS Setup

The HS-1746 uses Award BIOS for the system configuration. The Award BIOS setup program is designed to provide the maximum flexibility in configuring the system by offering various options that could be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

4.1   Starting Setup

The Award BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

 1. By pressing <Del> immediately after switching the system on, or
 2. By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.2 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the <PageUp> and <PageDown> keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate the Setup program using the keyboard.

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift)F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Calendar, only for Status Page Setup Menu
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the default
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

4.2.1 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

4.3   Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to enter the sub-menu.

Phoenix – AwardBIOS CMOS Setup Utility

▶ Standard CMOS Feature	▶ Frequency/Voltage Control
▶ Advanced BIOS Feature	Load Fail-Safe Defaults
▶ Advanced Chipset Feature	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...	

NOTE: *A brief description of the highlighted choice appears at the bottom of the screen.*

4.4   Standard CMOS Features

The Standard Setup is used for the basic hardware system configuration. The main function is for Data/Time and Floppy/Hard Disk Drive settings. Please refer to the following screen for the setup. When the IDE hard disk drive you are using is larger than 528MB, you must set the HDD mode to **LBA** mode. Please use the IDE Setup Utility in BIOS SETUP to install the HDD correctly.

```
              Phoenix – AwardBIOS CMOS Setup Utility
                       Standard CMOS Features
┌──────────────────────────────────────────────┬───────────────────────┐
│   Date (mm:dd:yy)      Mon, Aug 9 2004         │       Item Help       │
│   Time (hh:mm:ss)      10 : 32 : 57            │ Menu Level      ▶     │
│                                                │                       │
│ ▶ IDE Primary Master        13579 MB           │ Change the day, month,│
│ ▶ IDE Primary Slave         None               │ year and century      │
│ ▶ IDE Secondary Master      None               │                       │
│ ▶ IDE Secondary Slave       None               │                       │
│                                                │                       │
│   Drive A                   1.44M, 3.5in.      │                       │
│   Drive B                   None               │                       │
│                                                │                       │
│   Video                     EGA/VGA            │                       │
│   Halt On                   All, But Keyboard  │                       │
│                                                │                       │
│   Base Memory                      640K        │                       │
│   Extended Memory              252928K         │                       │
│   Total Memory                 253952K         │                       │
├──────────────────────────────────────────────┴───────────────────────┤
│  ↑↓→←: Select Item   +/-/PU/PD: Value   F10: Save   ESC: Quit   F1: General Help │
│       F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults      │
└──────────────────────────────────────────────────────────────────────┘

              Phoenix – AwardBIOS CMOS Setup Utility
                        IDE Primary Master
┌──────────────────────────────────────────────┬───────────────────────┐
│                                                │       Item Help       │
│   IDE HDD Auto-Detection    Press Enter        │ Menu Level      ▶     │
│                                                │                       │
│   IDE Primary Master        Auto               │ Change the day, month,│
│   Access Mode               Auto               │ year and century      │
│                                                │                       │
│   Capacity                  13579 MB           │                       │
│                                                │                       │
│   Cylinder                  26310              │                       │
│   Head                      16                 │                       │
│   Precomp                   0                  │                       │
│   Landing Zone              26309              │                       │
│   Sector                    63                 │                       │
├──────────────────────────────────────────────┴───────────────────────┤
│  ↑↓→←: Select Item   +/-/PU/PD: Value   F10: Save   ESC: Quit   F1: General Help │
│       F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults      │
└──────────────────────────────────────────────────────────────────────┘
```

26

4.5　Advanced BIOS Features

This section allows you to configure your system for the basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

```
          Phoenix – AwardBIOS CMOS Setup Utility
                  Advanced CMOS Features
┌────────────────────────────────────────┬──────────────────────────┐
│►CPU Feature              Press Enter    │        Item Help         │
│  Virus Warning           Disabled       │ Menu Level       ►       │
│  CPU L1 & Cache          Enabled        │                          │
│  Quick Power On Self Test Enabled       │                          │
│  First Boot Device       CDROM          │                          │
│  Second Boot Device      HDD-0          │                          │
│  Third Boot Device       LS120          │                          │
│  Boot Other Device       Enabled        │                          │
│  Swap Floppy Drive       Disabled       │                          │
│  Boot Up Floppy Seek     Enabled        │                          │
│  Boot Up NumLock Status  On             │                          │
│  Gate A20 Option         Fast           │                          │
│  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        │                          │
│  OS Select For DRAM > 64MB  Non-OS2     │                          │
│  Report No FDD For WIN95 No             │                          │
├────────────────────────────────────────┴──────────────────────────┤
│ ↑↓→←: Select Item  +/-/PU/PD: Value  F10: Save  ESC: Quit  F1: General Help │
│    F5: Previous Values  F6: Fail-Safe Defaults  F7: Optimized Defaults │
└────────────────────────────────────────────────────────────────────┘

          Phoenix – AwardBIOS CMOS Setup Utility
                       CPU Feature
┌────────────────────────────────────────┬──────────────────────────┐
│ Thermal Management    Thermal Monitor 1 │        Item Help         │
│                                         │ Menu Level       ►       │
│                                         │                          │
├────────────────────────────────────────┴──────────────────────────┤
│ ↑↓→←: Select Item  +/-/PU/PD: Value  F10: Save  ESC: Quit  F1: General Help │
│    F5: Previous Values  F6: Fail-Safe Defaults  F7: Optimized Defaults │
└────────────────────────────────────────────────────────────────────┘
```

4.6 Advanced Chipset Features

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and the access to the system memory resources, such as DRAM and the external cache. It also coordinates the communications between the conventional ISA and PCI buses. It must be stated that these items should never be altered. The default settings have been chosen because they provide the best operating conditions for your system. You might consider making any changes only if you discover that the data has been lost while using your system.

```
               Phoenix – AwardBIOS CMOS Setup Utility
                     Advanced Chipset Features
 ┌─────────────────────────────────────────────────┬──────────────────────┐
 │   DRAM Timing Selectable      By SPD             │      Item Help       │
 │ X CAS Latency Time            2.5                │ Menu Level      ▶    │
 │ X Active to Precharge Delay   7                  │                      │
 │ X DRAM RAS# to CAS# Delay     3                  │                      │
 │ X DRAM RAS# Precharge         3                  │                      │
 │   DRAM Data Integrity Mode    Non-ECC            │                      │
 │   MGM Core Frequency          Auto Max 266MHz    │                      │
 │   System BIOS Cacheable       Enabled            │                      │
 │   Video BIOS Cacheable        Disabled           │                      │
 │   Memory Hole At 15M-16M      Disabled           │                      │
 │   Delayed Transaction         Enabled            │                      │
 │   Delay Prior to Thermal      16Min.             │                      │
 │   AGP Aperture Size (MB)      64                 │                      │
 │   ** ON-chip VGA Setting **                      │                      │
 │   On-chip VGA                 Enabled            │                      │
 │   On-chip Frame Buffer size   32MB               │                      │
 │   Boot Display                CRT                │                      │
 │   Panel Number                Auto               │                      │
 ├─────────────────────────────────────────────────┴──────────────────────┤
 │ ↑↓→←: Select Item   +/-/PU/PD: Value   F10: Save   ESC: Quit   F1: General Help │
 │      F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults │
 └─────────────────────────────────────────────────────────────────────────┘
```

4.7   Integrated Peripherals

The IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship that is determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers--a primary and a secondary--so you can install up to four separate hard disks.

PIO means Programmed Input/Output. Rather than having the BIOS issue a series of commands to affect the transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. This is much simpler and more efficient (also faster).

```
             Phoenix – AwardBIOS CMOS Setup Utility
                     Integrated Peripherals
┌─────────────────────────────────────────────┬───────────────────────┐
│▶OnChip IDE Device          Press Enter        │       Item Help        │
│▶Onboard Device             Press Enter        │Menu Level      ▶       │
│▶SuperIO Device             Press Enter        │                        │
│  Onboard Lan Boot ROM      Disabled           │                        │
│                                               │                        │
│                                               │                        │
│                                               │                        │
│                                               │                        │
│                                               │                        │
├───────────────────────────────────────────────────────────────────────┤
│  ↑↓→←: Select Item   +/-/PU/PD: Value   F10: Save   ESC: Quit   F1: General Help │
│     F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults │
└───────────────────────────────────────────────────────────────────────┘
             Phoenix – AwardBIOS CMOS Setup Utility
                       OnChip IDE Device
┌─────────────────────────────────────────────┬───────────────────────┐
│  On-Chip Primary PCI IDE    Enabled           │       Item Help        │
│  IDE Primary Master PIO     Auto              │Menu Level      ▶       │
│  IDE Primary Slave PIO      Auto              │                        │
│  IDE Primary Master UDMA    Auto              │                        │
│  IDE Primary Slave UDMA     Auto              │                        │
│  On-Chip Secondary PCI IDE  Enabled           │                        │
│  IDE Secondary Master PIO   Auto              │                        │
│  IDE Secondary Slave PIO    Auto              │                        │
│  IDE Secondary Master UDMA  Auto              │                        │
│  IDE Secondary Slave UDMA   Auto              │                        │
│                                               │                        │
│  IDE HDD Block Mode         Enabled           │                        │
├───────────────────────────────────────────────────────────────────────┤
│  ↑↓→←: Select Item   +/-/PU/PD: Value   F10: Save   ESC: Quit   F1: General Help │
│     F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults │
└───────────────────────────────────────────────────────────────────────┘
```

Phoenix – AwardBIOS CMOS Setup Utility
Onboard Device

		Item Help
USB Controller	Enabled	Menu Level ▶
USB 2.0 Controller	Enabled	
USB Keyboard Support	Disabled	
USB Mouse Support	Disabled	
AC97 Audio	Auto	
Onboard LAN1 Device	Enabled	
Onboard LAN2 Device	Disabled	
Init Display First	Onboard/AGP.	

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

Phoenix – AwardBIOS CMOS Setup Utility
SuperI/O Device

		Item Help
POWER ON Function	BUTTON ONLY	Menu Level ▶
X KB POWER ON Password	Enter	
X Hot Key Power ON	Ctrl-F1	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
RxD, TxD Active	Hi, Lo	
IR Transmission Delay	Enabled	
UR2 Duplex Mode	Half	
Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
X EPP Mode Select	EPP1.7	
X ECP Mode Use DMA	3	
PWRON After PWR-Fail	Off	

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

30

4.8 Power Management Setup

The Power Management Setup allows user to configure the system for saving energy in a most effective way while operating in a manner consistent with his own style of computer use.

```
            Phoenix – AwardBIOS CMOS Setup Utility
                   Power Management Setup
┌─────────────────────────────────────┬─────────────────────────┐
│ Video Off Method          DPMS       │       Item Help         │
│ Video Off In Suspend      Yes        │ Menu Level      ▶       │
│ Suspend Type              Stop Grant │                         │
│ Suspend Mode              Disabled   │                         │
│ HDD Power Down            Disabled   │                         │
│ Soft-off by PWR-BTTN      Instant-Off│                         │
│ CPU THRM-Throttling       50.0%      │                         │
│ Wake-Up by PCI card       Disabled   │                         │
│ Resume by Alarm           Disabled   │                         │
│ X Date (of Month) Alarm   0          │                         │
│ X Time (hh : mm : ss) Alarm  0 : 0 : 0│                        │
│                                      │                         │
│                                      │                         │
│ ** Reload Global Timer Events **     │                         │
│ Primary IDE 0             Disabled   │                         │
│ Primary IDE 1             Disabled   │                         │
│ Secondary IDE 0           Disabled   │                         │
│ Secondary IDE 1           Disabled   │                         │
│ FDD, COM, LPT Port        Disabled   │                         │
│ PCI PIRQ[A-D]#            Disabled   │                         │
├─────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←: Select Item   +/-/PU/PD: Value   F10: Save   ESC: Quit   F1: General Help │
│      F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults      │
└────────────────────────────────────────────────────────────────┘
```

4.9 PnP/PCI Configurations

This section describes the configuration of the PCI bus system. PCI, or **P**eripheral **C**omponents **I**nterconnect, is a system that allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
              Phoenix – AwardBIOS CMOS Setup Utility
                       PnP/PCI Configurations
┌──────────────────────────────────────────┬─────────────────────────┐
│ Reset Configuration Data       Disabled   │        Item Help        │
│                                           │ Menu Level      ▶       │
│ Resources Controlled By        Auto(ESCD) │                         │
│ X IRQ Resources                Press Enter│                         │
│                                           │                         │
│ PCI/VGA Palette Snoop          Disabled   │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
├──────────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←: Select Item   +/-/PU/PD: Value   F10: Save   ESC: Quit   F1: General Help │
│      F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults      │
└─────────────────────────────────────────────────────────────────────┘

              Phoenix – AwardBIOS CMOS Setup Utility
                          IRQ Resources
┌──────────────────────────────────────────┬─────────────────────────┐
│ IRQ3    assigned to      PCI Device       │        Item Help        │
│ IRQ4    assigned to      PCI Device       │ Menu Level      ▶       │
│ IRQ5    assigned to      PCI Device       │                         │
│ IRQ7    assigned to      PCI Device       │                         │
│ IRQ8    assigned to      PCI Device       │                         │
│ IRQ9    assigned to      PCI Device       │                         │
│ IRQ10   assigned to      PCI Device       │                         │
│ IRQ11   assigned to      PCI Device       │                         │
│ IRQ12   assigned to      PCI Device       │                         │
│ IRQ14   assigned to      PCI Device       │                         │
│ IRQ15   assigned to      PCI Device       │                         │
│                                           │                         │
├──────────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←: Select Item   +/-/PU/PD: Value   F10: Save   ESC: Quit   F1: General Help │
│      F5: Previous Values   F6: Fail-Safe Defaults   F7: Optimized Defaults      │
└─────────────────────────────────────────────────────────────────────┘
```

4.10 PC Health Status

Phoenix – AwardBIOS CMOS Setup Utility
PC Health Status

		Item Help
CPU Warning Temperature	Disabled	Menu Level ▶
SYS Temperature	34°C/93°F	
CPU Temperature	40°C/104°F	
CPU Fan Speed	5010RPM	
SYS Fan Speed	5213RPM	
VCC_2V5	2.48V	
VCORE	1.29V	
3.3V	3.28V	
+5V	4.97V	
+12V	12.03V	
-12V	-11.54V	
-5V	-5.20V	
VBAT (V)	3.02V	
5VSB (V)	4.92V	
Shutdown Temperature	Disabled	

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

4.11 Frequency/Voltage Control

Phoenix – AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

		Item Help
Auto Detect PCI Clk	Enabled	Menu Level ▶
Spread Specturm	Disabled	

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

4.12 Load Fail-Safe Defaults

When you press <Enter> on this item you will get a confirmation dialog box with a message shown below. This option allows you to load/restore the BIOS default values permanently stored in the BIOS ROM. 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	Load Fail-Safe Defaults (Y/N)? N word
▶ 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…

4.13 Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to the figure below. This option allows you to load/restore the default values to your system configuration, optimizing and enabling all high performance features. Pressing 'Y' loads the default values that are factory 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 Manageme Load Optimized Defaults (Y/N)? N word	
▶ 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...	

4.14 Set Supervisor/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 Manageme Enter Password: word	
▶ 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...	

You can set either supervisor or user password, or both of them. The differences between are:

● **supervisor password:** can enter and change the options of the setup menus.

● **user password:** just can only enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message is confirmed and the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.15 Save & Exit Setup

Press <Enter> on this item for confirmation:

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

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 Manageme SAVE to CMOS and EXIT (Y/N)? N   word
▶ 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…

4.16 Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing any change in CMOS. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

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 Manageme   Quit without Saving (Y/N)? N   word
▶ 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...