SBC86800 Series

Socket 478 All-in-One
Mini-FlexATX (Mini-ITX) Form Factor

User's Manual

Disclaimers

The information in this manual has been carefully checked and is believed to be accurate. AXIOMTEK Co., Ltd. assumes no responsibility for any infringements of patents or other rights of third parties which may result from its use.

AXIOMTEK assumes no responsibility for any inaccuracies that may be contained in this document. AXIOMTEK makes no commitment to update or to keep current the information contained in this manual.

AXIOMTEK reserves the right to make improvements to this document and/or product at any time and without notice.

No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of AXIOMTEK Co., Ltd.

ESD Precautions

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.

Trademarks Acknowledgments

AXIOMTEK is a trademark of AXIOMTEK Co., Ltd.

IBM is a registered trademark of International Business Machines Corporation.

MS-DOS, and Windows 95/98/NT/2000 are trademarks of Microsoft Corporation.

Award is a trademark of Award Software, Inc.

IBM, PC/AT, PS/2, VGA are trademarks of International Business Machines Corporation.

Intel and Celeron, Pentium III are trademarks of Intel Corporation.

C&T is a trademark of Chips and Technologies, Inc.

Realtek is a registered trademark of Realtek Semiconductor Corporation.

Other brand names and trademarks are the properties and registered brands of their respective owners.
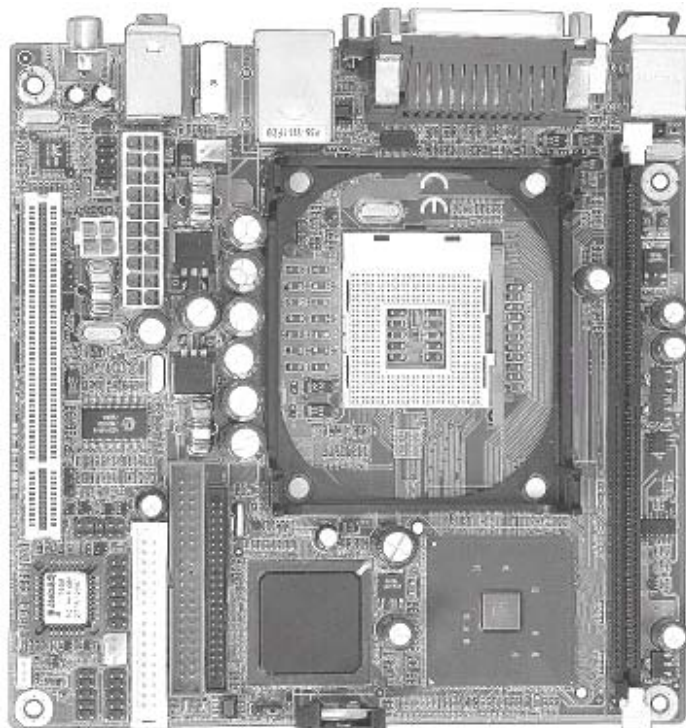
This page does not contain any information.

Table of Contents

Chapter 1
Introduction

1.1   General Description

The SBC86800VEA is an all-in-one industrial compact Pentium 4 level motherboard based on Mini-FlexATX (Mini-ITX) form factor at 170 x 170 mm of dimension. Based on Intel 845GV and ICH*4 chipset, SBC86800 offers the compact, embedded, value and high performance solution with Intel Pentium 4 CPU, 533/400 MHz of FSB, 1 GBytes DDR200/266 SDRAM, Intel 845GV series GMCH built-in Intel Extreme Graphics, Intel PRO/100+ LAN, Hi-Speed USB 2.0, IEEE 1394, 5.1 channel and S/P DIF 3D audio, TV-out and embedded flash disk interfaces.

Compact Mini-FlexATX / Mini-ITX Form Factor @ 170 x 170 mm

SBC86800VEA is based on the ultra compact mini-FlexATX form factor at only 170 x 170 mm of dimension, meets the demand of compact and powerful computing platform. With this feature, SBC86800VEA should be the ideal solution for the high-end, Pentium 4 level book-size, slim type and other embedded PC systems.

Powerful Pentium 4 Computing Platform

With Intel Socket 478 Pentium 4 / Celeron CPU at 533/400 MHz FSB and 1 GBytes DDR200/266 SDRAM of system memory, SBC86800 offers the high-end industrial computing platform with low cost Intel integrated solutions.

Value / High Performance Multi-media Solution

The Intel 845GV GMCH chipset built-in Intel Extreme Graphics, 6 channel and S/P DIF AC97 3D audio make SBC86800 be the high performance but low cost multi-media AV platform. With this feature, SBC86800VEA should be the ideal solution for VoD (Video on Demand), DVR (Digital Video Recorder), digital video broadcasting (DVB), streaming, surveillance, compression (MPEG), interaction server, POS, Kiosk, ATM, Panel PC, transaction workstation and terminal applications.

Hi-Speed USB 2.0 and IEEE 1394 Interface

Intel ICH*4 built-in Hi-Speed USB 2.0 controller and onboard IEEE 1394 chipset let SBC86800VEA offer up to 480 Mbps of Hi-Speed USB 2.0 and 100/200/400 Mbps of IEEE 1394 interfaces.

1.2   Specification

- **Form Factor**
  Mini-FlexATX / Mini-ITX at 170 x 170 mm (L x W)

- **Processor**
  Intel Socket 478 Pentium 4 / Celeron @ 533/400MHz FSB Support Northwood / Willamette Pentium 4 / Celeron CPU

- **Chipset**
  Intel 82845GV GMCH and 82801DB ICH*4 Support 533/400 MHz FSB CPU and DDR200/266 SDRAM

- **BIOS**
  Phoenix-Award 4Mb PnP flash BIOS

- **Memory**
  1GBytes DDR200/266 SDRAM on one 184-pin DIMM socket

- **Green Function**
  Power saving mode includes doze, standby and suspend modes. ACPI version 1.0 and APM version 1.2 compliant

- **Watchdog Timer**
  System reset programmable watchdog timer with 1 ~ 255 sec/min. of timeout value

- **Real Time Clock**
  Intel ICH*4 built-in RTC with lithium battery

- **Enhanced IDE**
  PCI enhanced IDE interface supports dual channels and up to 4 ATAPI devices at UltraATA/100.

  One 40-pin and one 44-pin IDE port

  DiskOnModule (DOM) embedded flash disk up to 1 Gbytes

- **Expansive Slot**
  One PCI slot supports up to 2 bus master PCI bus interface via the additional riser card

- **Multi I/O support**
  Intel 82801DB ICH*4 (USB) and Winbond W83627HF-AW LPC Super I/O controller

  Serial Port:
  One internal RS-232 serial port with 16C550 compatible UART and 16 bytes FIFO

  USB Port:
  Four Hi-Speed USB 2.0 ports with 480 Mbps of data transfer rate

  Two external and two internal USB ports

  Parallel Port:
  One external bi-direction parallel port with SPP/ECP/EPP mode

  Floppy Port:
  One FDD port supports up to two FDD

  IrDA Port:
  One IrDA compliant Infrared interface supports CIR/SIR

  K/B & Mouse:
  External PS/2 keyboard and mouse ports on rear I/O panel

- **Graphics**
  Chipset:
  Intel 845GV GMCH built-in Intel Extreme Graphics

  With 266 MHz VGA core and 256-bit 3D engine

  Memory:
  Intel dynamic video memory up to 64 Mbytes shared with system

Display Type:

CRT, LCD monitor and analog display

Up to 4 textures / pixel on a single pass and 2048x2048 texture size

Connector:

External DB15 female connector on rear I/O panel

- **TV-out Interface**

  Chipset:
  Intel 845GV GMCH built-in Intel Extreme Graphics with Chrontel CH7017 TV-out encoder

  TV Mode:
  Support both of NTSC and PAL mode

  Connector:
  External S-video and RCA Jack on rear I/O panel

- **Ethernet Interface**

  Chipset:
  Intel PRO/100+ LAN interface with Intel ICH*4 and 82562ET Phy

  Type:

  10Base-T / 100Base-TX, auto-switching Fast Ethernet

  Full duplex, IEEE802.3U compliant

  Connector:
  External RJ45 connector with LED on rear I/O panel

- **Audio Interface**

  Chipset:
  Intel ICH*4 with ALC650 AC97 3D audio codec

  Interface:
  5.1 channel 3D audio with front (R/L), rear (R/L), center and bass S/P DIF digital audio encoding signal input and output Line-in, line-out, CD-in and Mic-in

Connector:
External three phone jack for 5.1 channel audio on rear panel

External S/P DIF connector on rear panel:
Internal 10-pin header for line-in/-out, Mic-out, 4-pin header for CD-in

- **IEEE1394 Interface (Optional)**
  Chipset:
  Agere FW323 PCI IEEE1394 controller

  Interface:
  IEEE1394 with 100/200/400 Mbps of data transfer bandwidth

  Connector:
  External IEEE1394 connector on rear I/O panel

- **Power and Environment**
  Power Requirement:
  20-pin ATX power connector

  Additional +12V on 4-pin connector for Pentium 4 PSU

  Temperature:
  Operating within 0 ~ 50°C (32 ~ 122°F)

  Storage within -20 ~ 85°C (-4 ~ 185°F)

Notes: The air flow which is created by the original Intel CPU cooler is not for the components beside the heat sink; such as, capacitors, chokes and etc.

Herein we strongly recommend the customers to adapt the suitable CPU cooler which is alonging with the gutters of the heat sink is perpendicular with the components beside the heat sink.

1.3   Board Dimensions
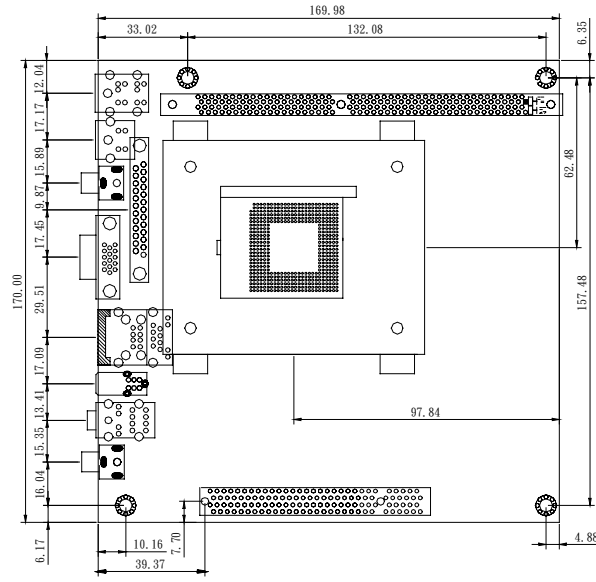
This page does not contain any information.

Chapter 2

Jumpers and Connectors

This chapter contains the information for installation of hardware. The install procedure includes jumper settings, CPU and memory installation, fan, I/O and panel connections.

2.1 Jumper and Connector Location
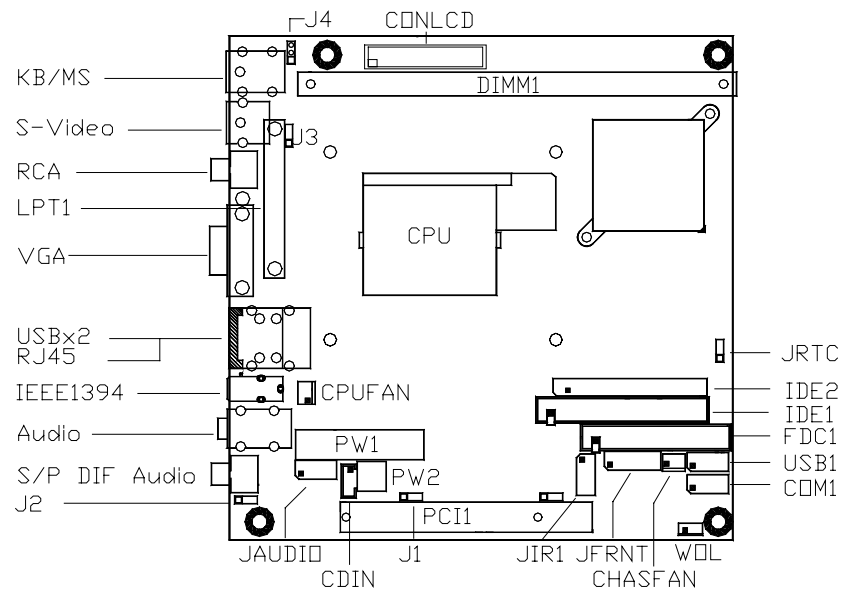
2.1.1   Jumper Reference

Jumper	Description
JRTC	COMS Operate / Clear Setting
J1	IEEE1394 Enable/Disable Setting
J2	S/P DIF Input / Output Setting
J3	Flat Panel Power Selection Header
J4	5-pin Inverter Power Header

● **Jumper Setting Quick Reference**

Jumper	1 -- 2	2 -- 3
JRTC	Clean CMOS	**Normal Operation** *(Default Setting)*
J1	**IEEE1394 Enable** *(Default Setting)*	IEEE1394 Disable
J2	**S/P DIF Input** *(Default Setting)*	S/P DIF Output
J3	Power 5V	**Power 3.3V**

Note: IEEE 1394 is a manufacture optional feature.

2.1.2 Connector Reference

● **Internal Onboard Connector**

Connector	Function	Remark
CPU	MicroPGA478 478 CPU Socket	Standard
DIMM1	184-pin DIMM Socket	Standard
IDE1	40-pin Primary IDE Port	Standard
IDE2	44-pin Secondary IDE Port	Standard
FDC1	34-pin FDD Port	Standard
JCOM1	10-pin COM1 RS-232 Serial Port	Standard
USB1	10-pin 3rd / 4th Hi-Speed USB 2.0 Port	Standard
JIR1	10-pin CIR / SIR IrDA Port	Standard
PW1	20-pin ATX Power Connector	Standard
PW2	4-pin Additional +12V Power Connector	Standard
JFRNT	14-pin Switch and Indicator Connector	Standard
CPUFAN	3-pin +12V CPU Fan Connector	Standard
CHASFAN	3-pin +12V System Fan Connector	Standard
JAUDIO	10-pin Audio Port	Standard
CDIN	4-pin CD-in Interface	Standard
WOL1	3-pin Wake-On-LAN Interface	Standard
CONLCD	Flat Panel LVDS Interface	Standard

● **External Connector on Rear Panel**

Connector	Function	Remark
PS2	PS2 Keyboard / Mouse 6-pin MiniDIN Connector	Standard
LPT1	Parallel Port DB25 Female Connector	Standard
S-Video	S-Video TV-out Connector	Standard
RCA Jack	AV TV-out RCA Jack	Standard
VGA	VGA DB15 Female Connector	Standard
LAN	LAN RJ45 Connector with LED	Standard
USB	Dual USB Connector	Standard
P1	IEEE1394 Connector	Standard
PH1	Audio RCA Connector	Standard
RCA2	S/P DIF Digital Audio Connector	Standard

2.2 CPU and DRAM Setting

The board is based on Intel Socket 478 architecture, supports Intel mPGA478 Pentium 4 / Celeron CPU at 533 / 400 MHz FSB and DDR200/266 SDRAM. The SBC86800VEA is based on Intel 845GV GMCH.

Ordering Code	GMCH Chipset	FSB (MHz)	SDRAM	Condition
SBC86800VEA	Intel 845GV	533/400	DDR200/266	Standard

The system memory of this board supports up to 1 GBytes DDR200/266 (PC1600/2100) SDRAM on one 184-pin DIMM socket. Please notices that Intel 845GV GMCH doesn't support ECC and register DIMM.

2.3 CMOS Setting: JRTC

The data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, it's necessary to reset the CMOS to its default values.

- **Jumper: JRTC**
- **Type: onboard 3-pin (3 x 1) header**

JRTC	Mode
1-2	Clear CMOS
2-3	**Normal Operation (Default setting)**

2.4   Watchdog Timer Setting

The watchdog timer makes the system auto-reset while it stops to work for a period. The integrated watchdog timer can be setup as system reset mode by program.

● **Timeout Value Range**

    -- 1 to 255

    -- Second or Minute

● **Program Sample**

Watchdog timer setup as system reset with 5 second of timeout

2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F5	Set as Second*
2F, 00	
2E, F6	Set as 5
2F, 05	

● **Minute: bit 3 = 0; Second: bit 3 = 1**

2.5   Using the Watchdog Function

Start

↓

Un-Lock WDT   :   **O 02E 87 ; Un-lock super I/O**

                                                     O 02E 87 ; Un-lock super I/O

↓

Select Logic device   :   **O 02E 07**

                                                     O 02F 08

↓

Set Second or Minute   :   **O 02E F5**

                                                                        O 02F 0X; X=0,Second

                                X=8,Minute

↓

Set base timer   :   **O 02E F6**

          O 02F MN ; MN=00,01,02,…FF,Value = 0 to 255

↓

Activate WDT   :   **O 02E 30**

                                                     O 02F 01

↓

WDT counting

↓

re-set timer   :   **O 02E F6**

                                             O 02F MN ; MN=00,01,02,…FF

↓

IF No re-set timer   :   **WDT time-out, generate RESET**

↓

IF to disable WDT   :   **O 02E 30**

                                             O 02F 01 ; Can be disable at any time

2.6 Embedded Solid State Disk

The SBC86800VEA supports the IDE-based, bootable and driver free DiskOnModule (DOM) embedded flash disk. The onboard 40-pin IDE1 and 44-pin IDE2 box header supports normal DOM (DiskOnModule) or M-systems DiskOnChip IDE Pro flash disk with or without the additional Vcc power cable.

2.7 Power and Fan Connector

The SBC86800VEA offers onboard standard 20-pin ATX and 4-pin additional P4 +12V power connectors. The necessary power input includes +5V, -5V, +12V, -12V and 3.3V.

- **Connector: CPUFAN, CHASFAN**

- **Type: 3-pin Fan Power Wafer Connector**

Pin	Description
1	Ground
2	+12V
3	Fan Control

2.8　Display Interface

2.8.1　VGA Interface

The SBC86800VEA is integrated with Intel 845GV GMCH built-in Extreme Graphics with 266 MHz VGA Core, 256-bit 3D engine and Intel dynamic video memory up to 64 MBytes shared with system memory. Based on Intel's latest technology, theSBC86800VEA supports CRT, LCD monitor and analog display with up to 4 textures / pixel on a single pass and 2048x2048 texture size.

The CRT / analog VGA interface of SBC86800VEA is an external DB15 female connector on the rear I/O panel.

2.8.2　TV-out Interface

The SBC86800VEA offers the TV-out interface with Intel 845GV GMCH and Chrontel CH7017 TV-out encoder.

The TV-out interface on SBC86800VEA supports both of PAL and NTSC mode on external AV RCA and S-video connector.

2.9   Ethernet Interface

The SBC86800VEA is integrated with Intel PRO/100+ Fast Ethernet interface at the type of 10Base-T/100Base-TX auto-switching Fast Ethernet with full duplex and IEEE 802.3U compliant. The SBC86800VEA's LAN interface is controlled by the Intel 82801DB ICH*4 and 82562ET Phy, and connect with the external RJ45 connector on rear I/O panel.

● **Connector: JWOL1**

● **Type: onboard 3-pin header Wake-On-LAN connector**

Pin	1	2	3
Description	WOL-Ctrl	Ground	+5V Standby

2.9.1 Digital VGA Interface

The board's digital video interface provides LVDS flat panel. The built-in 40-bit dual channel LVDS interface offers the economical solution for LVDS-based LCD display.

- **Connector: J3**
- **Type: 3-Pin LCDVCC Power Select Header**

Pin	Descripton
1	VCC
2	LCDVCC
3	VCC3

- **Connector: J4**
- **Type: 5-Pin Inverter Power Header**

Pin	Descripton
1	ENABKL
2	GND
3	GND
4	GND
5	+12V

2.9.2 Digital VGA Connector

● **Connector: CONLCD**

● **Type: Onboard 40-Pin LVDS connector**

Pin	Signal	Pin	Signal
1	LCDVCC	2	LCDVCC
3	GND	4	GND
5	ATX0-	6	BTX0-
7	ATX0+	8	BTX0+
9	GND	10	GND
11	ATX1-	12	BTX1-
13	ATX1+	14	BTX1+
15	GND	16	GND
17	ATX2-	18	BTX2-
19	ATX2+	20	BTX2+
21	GND	22	GND
23	ATXC-	24	BTX3-
25	ATXC+	26	BTX3+
27	GND	28	GND
29	ATX3-	30	BTXC-
31	ATX3+	32	BTXC+
33	GND	34	GND
35	PANELCLK	36	PANELCLK
37	PANELDATA	38	PANELDATA
39	HPD	40	HPD

2.10 Audio Interface

The SBC86800VEA offers the AC97 3D audio with 5.1-channel and S/P DIF

Interface based on Intel ICH*4 and ACL650 codec.

● **Connector: JAUDIO**

● **Type: onboard 10-pin (5 x 2) header**

Pin	Description	Pin	Description
1	Line – Right	2	Ground
3	Line – Left	4	MIC
5	MIC	6	Ground
7	N/C	8	Line Out – Left
9	Line Out – Right	10	Ground

● **Connector: CDIN**

● **Type: onboard 4-pin (4 x 1) header**

Pin	Description
1	CD – Left
2	Ground
3	Ground
4	CD – Right

2.10.1 S/P DIF Audio Interface

The SBC86800VEA offers the advanced S/P DIF audio interface.

- **Jumper: J2**
- **Type: onboard 3-pin (3 x 1) header**

J2	Mode
1-2	S/P DIF Output (Default setting)
2-3	S/P DIF Input

2.11 Hi-Speed USB 2.0 and IEEE1394 Interface

- **Jumper: J1**
- **Type: onboard 3-pin header**

J1	IEEE1394 Enable / Disable Setting
1-2	Enable (Default setting)
2-3	Disable

- **Connector: JUSB1**
- **Type: onboard 10-pin (5 x 2) header for dual USB Ports (USB 3/4)**

Pin	Description	Pin	Description
1	Vcc	6	Vcc
2	Data2-	7	Data3-
3	Data2+	8	Data3+
4	Ground	9	Ground
5	Ground	10	Ground

2.12 Switch and Indicator

- **Connector: JFRNT**

- **Type: onboard 14-pin (7 x 2) header**

Function	Signal	Pin		Signal	Function
IDE LED	Vcc (+)	1	2	(+) Vcc	Power LED
	Active	3	4	N/C	
Reset	Reset	5	6	GND	
	GND	7	8	Vcc	Speaker
	N/C	9	10	N/C	
Power Button	PWRBT	11	12	N/C	
	GND	13	14	SPKIN	

Chapter 3

Award BIOS Utility

The different settings are available in the Award BIOS and along with the **SBC86800VEA** board. Also contained here are instructions on how to set up the BIOS configuration.

3.1   BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in the computer system's ROM supports Intel Celeron processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices such as disk drives, serial and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

3.2   BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When the computer is turned ON, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows the enterance to the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system OFF and back ON again. The following message will appear on the screen:

Press <DEL> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Phoenix – AwardBIOS CMOS Setup Utility	
▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power Management Setup	Save & Exit Setup
▶ PnP/PCI Configurations	Exit Without Saving
▶ PC Health Status	
Esc : Quit F9: Menu in BIOS F10 : Save & Exit Setup	↑ ↓ →← : Select Item
Time, Date, Hard Disk Type…	

The section below the setup items of the Main Menu displays the control keys for this menu. Another section located at the bottom of the Main Menu, just below the control keys section, displays information on the currently highlighted item in the list.

NOTE: *If you find that your computer cannot boot after making and saving system changes with Setup, the Award BIOS, via its built-in override feature, resets your system to the CMOS default settings.*

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

3.3 Standard CMOS Setup

"Standard CMOS Setup" allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Phoenix – AwardBIOS CMOS Setup Utility		
Standard CMOS Features		
Date (mm:dd:yy)	Tue, Mar 11 2003	Item Help
Time (hh:mm:ss)	13 : 9 : 11	
		Menu Level ▶
▶ IDE Primary Master	None	
▶ IDE Primary Slave		Change the
▶ IDE Secondary Master	None	Day, month,
▶ IDE Secondary Slave		Year and
		Century
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt on	All, But keyboard	
Base Memory	640K	
Extended Memory	65472K	
Total Memory	1024k	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help		
F5: Previous Values F7: Optimized Defaults		

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following pages describe each item of this menu.

● **Date**

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
month	The month, Jan through Dec.
year	The year, depends on the year of BIOS

● **Time**

The time format is <hour> <minute> <second> accepting either function key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

● **IDE Primary Master/Primary Slave/Secondary Master/Secondary Slave**

The categories identify the types of one channel that have been installed in the computer. There are 45 predefined types and 2 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.

Press <PgUp>/<+> or <PgDn>/<−> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information within this category. If your hard disk drive type does not match or is not listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, select "Type 1".

If the controller of HDD interface is SCSI, select "None".

If the controller of HDD interface is CD-ROM, select "None".

CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	HDD access mode

If there is no hard disk drive installed, select NONE and press <Enter>.

● **Drive A type/Drive B type**

The category identifies the types of floppy disk drive A or drive B installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5.25 inch PC-type standard drive; 360Kb capacity
1.2M, 5.25 in	5.25 inch AT-type high-density drive; 1.2MB capacity
720K, 3.5 in	3.5 inch double-sided drive; 720Kb capacity
1.44M, 3.5 in	3.5 inch double-sided drive; 1.44MB capacity
2.88M, 3.5 in	3.5 inch double-sided drive; 2.88MB capacity

● **Vedio**

This item selection only EGA/VGA

● **Halt On**

This field determines whether the system will halt if an error is detected during power up.

No errors	The system boot will halt on any error detected. (default)
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

3.4   Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Phoenix – AwardBIOS CMOS Setup Utility Advanced BIOS Features		
Virus Warning	Disabled	Item Help
CPU L1&L2 Cache	Enabled	
Hyper-Threading Technology	Enabled	Menu Level ▶
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	Allows you to
Second Boot Device	HDD-0	choose the VIRUS
Third Boot Device	LS120	warning feature
Boot Other Device	Enabled	for IDE Hard disk
Onboard Lan boot Rom	Disable	boot sector
Swap Floppy Drive	Disabled	protection. If this
Boot Up Floppy Seek	Enabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	function is enable
Typematic Rate Setting	Disabled	and someone
Typematic Rate (Chars/Sec)	6	attempts to write
Typematic Delay (Msec)	250	data into this area,
Security Option	Setup	BIOS will show
APIC Mode	Enable	a warning
MPS Version Control For OS	1.4	message on
OS Select For DRAM > 64MB	Non-OS2	screen and alarm
Report No FDD For WIN95	No	beep
Small Logo(EPA) Show	Disabled	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F7: Optimized Defaults		

● **Virus Warning**
   This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

   NOTE: *Many disk diagnostic programs, which attempt to access the boot sector table, can cause the virus warning. If you will run such a program, disable the Virus Warning feature.*

● **Quick Power On Self Test**
   This option speeds up Power On Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is *"Enabled"*.

Enabled	Enable Quick POST
Disabled	Normal POST

● **First/Second/Third Boot Device**
   These items allow the selection of the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.

● **Boot Other Device**
   This item allows the user to enable/disable the boot device not listed on the First/Second/Third boot devices option above. The default setting is *Enabled*.

● **Onboard Lan boot**
   Choice Enable when you need boot on Lan Funtion, Like PXE, RPL.

● **Swap Floppy Drive**
   This allows you to determine whether to enable Swap Floppy Drive or not. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to *Disabled.*

● **Boot Up Floppy Seek**

During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks, installed in the system. 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is *"Enabled"*.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the drive installed is 360K.

● **Boot Up NumLock Status**

This option enables and disables the numberlock function of the keypad. The default value is *"On"*.

On	Keypad functions confine with numbers
Off	Keypad functions convert to special functions (i.e., left/right arrow keys)

● **Gate A20 Option**

The default value is *"Fast"*.

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

● **Typematic Rate Setting**

This determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Enabled	Enable typematic rate and typematic delay programming
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default is controlled by keyboard.

● **Typematic Rate (Chars/Sec)**

This option refers to the number of characters the keyboard can type per second. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

● **Typematic Delay (Msec)**

This option sets the display time interval from the first to the second character when holding a key. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

● **Security Option**

This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	The system will not boot and access to Setup will be denied if the incorrect password is entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

NOTE: *To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything, just press <Enter> and it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

● **OS Select for DRAM > 64MB**

This segment is specifically created for OS/2 when DRAM is larger than 64MB. If your operating system is OS/2 and DRAM used is larger the 64MB, you have to select "OS 2", otherwise (under non-OS2), default is NON-OS2. The default value is *"Non-OS2"*.

3.5   Advanced Chipset Features

Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.

Phoenix – AwardBIOS CMOS Setup Utility		
Advanced Chipset Features		
DRAM Timing Selectable	By SPD	Item Help
DRAM Latency time	1.5	
Active to Precharge Delay	7	Menu Level ▶
DRAM RAS# to CASH Delay	3	
DRAM RAS# Precharge	3	
Turbo Mode	Disabled	
Memory Ffrequency For	Auto	
System BIOS Cacheable	Enable	
Vedio BIOS Cacheable	Disabled	
Memory Hole At 15M-16M	Disabled	
Delayed Transaction	Enabled	
Delay Prior to Thermal	16 Min	
AGP Aperture Size (MB)	64	
* * On-Chip VGA Setting * *		
On-Chip VGA	Enable	
On-Chip Frame Buffer Size	8MB	
Boot Display	Auto	
TV Standard	NTSC	
Video Connector	Automatic	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help		
F5: Previous Values F7: Optimized Defaults		

3.6   Integrated Peripherals

This option sets your hard disk configuration, mode and port.

Phoenix – AwardBIOS CMOS Setup Utility		
Integrated Peripherals		
On-Chip Primary PCI IDE	Enabled	Item Help
IDE Primary Master PIO	Auto	
IDE Primary Slave PIO	Auto	Menu Level ▶
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	
USB Controller	Enabled	
USB 2.0 Controller	Enabled	
USB Keyboard Support	Disabled	
USB Mouse Support	Dsable	
AC97 Audio	Auto	
AC97 Modem	Auto	
Init Display First	Onboard/AGP	
IDE HDD Block Mode	Enabled	
POWER ON Funtion	BUTTON ONLY	
KB Power ON Password	Enter	
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	
EPP Mode Select	EPP1.7	
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 F7: Optimized Defaults		

3.7   Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.

Phoenix – AwardBIOS CMOS Setup Utility		
Power Management Setup		
ACPI Function	Enabled	Item Help
ACPI Suspend Type	S1 (POS)	
Run VGABIOS if S3 Resume	Auto	Menu Level ▶
Power Management	Min Saving	
Video Off Method	DPMS	
Video Off In Suspend	Yes	
Suspend Mode	1 Hour	
HDD Power Down	15Min	
Soft-Off by PWR-BTTN	Instant-off	
CPU THEM-Throttling	50.0%	
Wake-Up by PCI card	Enabled	
Power On by Ring	Enabled	
Wake Up on LAN	Enabled	
USB KB Wake-up From S3	Disabled	
Resume by Alarm	Disabled	
Date(of Month) Alarm	0	
Time(hh:mm:ss)	0 : 0 : 0	
** Reload Global Timer Events **		
Primary IDE 0	Disabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	
PCI PIRQ(A –D)#	Disabled	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help		
F5: Previous Values F7: Optimized Defaults		

● **ACPI Function**

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The choice: Enabled, Disabled.

● **ACPI Suspend Type**

This item allows you to select the APCI suspend type.

S1 (POS) => Power On Suspend, S3 (STR) => Suspend To DRAM

The choice: S1 (POS), S3 (STR).

3.8   PNP/PCI Configuration

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which 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		
PNP OS Installed	No	Item Help
Reset Configuration Data	Disabled	
		Menu Level ▶
Resources Controlled By	Auto (ESCD)	
X IRQ Resources	Press Enter	Select Yes if you are using a Plug and play capable operating system select No if you need the BIOS to configure non-boot devices
PCI/VGA Palette Snoop	Disabled	
INT Pin 1 Assignment	Auto	
INT Pin 2 Assignment	Auto	
INT Pin 3 Assignment	Auto	
INT Pin 4 Assignment	Auto	
INT Pin 5 Assignment	Auto	
INT Pin 6 Assignment	Auto	
INT Pin 7 Assignment	Auto	
INT Pin 8 Assignment	Auto	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F7: Optimized Defaults		

● **PNP OS Installed**

This item allows you to determine install PnP OS or not. The options available are Yes and No.

● **Reset Configuration Data**

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The options available are Enabled and Disabled.

● **Resource controlled by**

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®98. The options available are Auto and Manual.

● **IRQ Resources**

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

● **PCI/VGA Palette Snoop**

Leave this field at *Disabled*.

The choice: Enabled, Disabled.

3.9   PC Health Status

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

Phoenix – AwardBIOS CMOS Setup Utility		
PC Health Status		
CPU Waring Temperature	Disabled	
Current System Temp		Menu Level ▶
Current CPU Temperature		
Current CPUFAN Speed		
Current CHASFAN Dpeed		
Vcore(V)		
Vcc3(V)		
+ 5 V		
+ 12 V		
- 12 V		
- 5 V		
VBAT(V)		
5VSB(V)		
Shutdown Temperature	Disabled	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help		
F5: Previous Values F7: Optimized Defaults		

3.10 Frequency/Voltage Control

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

CMOS Setup Utility-Copyright © 1984-2001 Award Software Frequency/Voltage Control		
CPU Clock Ratio	8 X	
Auto Detect PCI CLK	Enabled	Menu Level ▶
Spread Spectrum	Disabled	
CPU Host/PCI Clock	Default	
↑↓→← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help		
F5: Previous Values	F7: Optimized Defaults	

- **Spread Spectrum**

    This item allows you to enable/disable the spread spectrum modulate.

    The choice: Enabled, Disabled.

3.11 Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

Phoenix – AwardBIOS CMOS Setup Utility	
▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power Man	**Load Optimized Defaults (Y/N)? N**
▶ PnP/PCI Co	
▶ PC Health Status	Exit Without Saving
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	
Load Optimized Defaults	

To load SETUP defaults value to CMOS SRAM, enter "Y". If not, enter "N".

3.12 Set Supervisor/User Password

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

1. **supervisor password:** can enter and change the options of the setup menus.
2. **user password:** just can 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 with eight characters at most, and press <Enter>. The password typed will now 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 password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password is enabled, you have to type it every time you enter Setup. This prevents any unauthorized person from changing your system configuration.

Additionally when a password is enabled, you can also require the BIOS to request a password every time the system reboots. 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. If the Security option is set to "System", the password is required during boot up and entry into Setup. If set as "Setup", prompting will only occur prior to entering Setup.

3.13 Save & Exit Setup

This allows you to determine whether or not to accept the modifications. Typing "Y" quits the setup utility and saves all changes into the CMOS memory. Typing "N" brigs you back to Setup utility.

Phoenix – AwardBIOS CMOS Setup Utility	
▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power Man	**SAVE to CMOS and EXIT (Y/N)? Y**
▶ PnP/PCI Con	
▶ PC Health Status	Exit Without Saving
Esc : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item
Save Data to CMOS	

3.14 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.

Phoenix – AwardBIOS CMOS Setup Utility	
▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power Man	**Quit Without Saving (Y/N)? N**
▶ PnP/PCI Con	
▶ PC Health Status	Exit Without Saving
Esc : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item
Abandon all Datas	

This page does not contain any information.

Chapter 4
Driver Installation

4.1   Connector table

The driver CD offers auto-run menu. It will detect and select the type of single board computer and helps you install the drivers automatically.

- **Install Board's Software**

  The selection helps you install the drivers of chipset. It will detect your version of OS automatically.

- **Install Intel Chipset INF Driver**

  The selection helps you to install the driver of IDE interface.

- **Install VGA Driver**

  The selection helps you to install the driver of onboard VGA interface.

- **Install LAN Driver**

  The selection helps you to install the driver of onboard LAN interface.

- **Install Audio Driver**

  The selection helps you to install the driver of onboard audio interface.

- **Install USB 2.0 Driver**

  The selection helps you to install the driver of onboard Hi-Speed USB 2.0 interface.

- **Install IEEE1394 Driver**

  The selection helps you to install the driver of onboard IEEE1394 interface.

- **Install TV-out Driver**

  The selection helps you to install the driver of onboard TV-out interface.

- **Link to < Website > Homepage**

  The selection helps you to link to the website to find the updated technical documents and download directly.
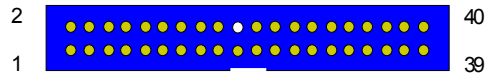
- **Browse this CD**

  The selection helps you to find the drivers in this CD directly.

<div align="right">

Appendix A

I/O Port Pin Assignment

</div>

A.1   IDE Port

● **Connector: IDE1**

● **Type: 40-pin (20 x 2) box header**

Pin	Description	Pin	Description
1	Reset	2	Ground
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	Ground	20	N/C
21	REQ	22	Ground
23	IOW-/STOP	24	Ground
25	IOR-/HDMARDY	26	Ground

Pin	Description	Pin	Description
27	IORDY/DDMARDY	28	IDESEL
29	DACK-	30	Ground
31	IRQ	32	N/C
33	A1	34	CBLID
35	A0	36	A2
37	CS0 (MASTER CS)	38	CS1 (SLAVE CS)
39	LED ACT-	40	Ground

- **Connector: IDE2**
- **Type: 44-pin (22 x 2) box header**
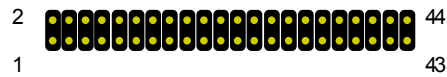
Pin	Description	Pin	Description
1	Reset	2	Ground
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15

Pin	Description	Pin	Description
19	Ground	20	N/C
21	REQ	22	Ground
23	IOW-/STOP	24	Ground
25	IOR-/HDMARDY	26	Ground
27	IORDY/DDMARDY	28	Ground
29	DACK-	30	Ground
31	IRQ	32	N/C
33	A1	34	SD
35	A0	36	A2
37	CS1	38	CS3
39	ASP1	40	Ground
41	Vcc	42	Vcc
43	Ground	44	Ground

A.2 Floppy Port

- **Connector: FDC1**

- **Type: 34-pin (17 x 2) header**
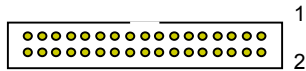
Pin	Description	Pin	Description
1	Ground	2	DRIVE DENSITY SELECT 0
3	Ground	4	DRIVE DENSITY SELECT 1
5	Ground	6	N/C
7	Ground	8	INDEX-
9	Ground	10	MOTOR ENABLE A-
11	Ground	12	DRIVER SELECT B-
13	Ground	14	DRIVER SELECT A-
15	Ground	16	MOTOR ENABLE B-
17	Ground	18	DIRECTION-
19	Ground	20	STEP-
21	Ground	22	WRITE DATA-
23	Ground	24	WRITE GATE-
25	Ground	26	TRACK 0-
27	Ground	28	WRITE PROTECT-
29	Ground	30	READ DATA-
31	Ground	32	HEAD SELECT-
33	Ground	34	DISK CHANGE-

A.3   Serial Port

- **Connector: JCOM1**
- **Type: 10-pin (5 x 2) header**
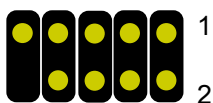
Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	Ground	6	DSR
7	RTS	8	CTS
9	RI	10	N/C

A.4   USB Port

- **Connector: JUSB1**
- **Type: 10-pin (5 x 2) header for dual USB Ports**

Pin	Description	Pin	Description
1	Vcc	6	Vcc
2	Data0-	7	Data1-
3	Data0+	8	Data2+
4	Ground	9	Ground
5	Ground	10	Ground

A.5   IrDA Port

- **Connector: JIR1**
- **Type: 10-pin (5 x 2) header for SIR/CIR Ports**
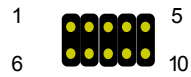
Pin	Description	Pin	Description
1	Vcc	6	N/C
2	N/C	7	CIRRX
3	IRRX	8	5V Standby
4	Ground	9	N/C
5	IRTX	10	N/C

Appendix B
Flash the BIOS

B.1   BIOS Auto Flash Tool

The board is based on Award BIOS and can be updated easily by the BIOS auto flash tool. You can download the tool online at the address below:

http://www.award.com

File name of the tool is "awdflash.exe", it's the utility that can write the data into the BIOS flash ship and update the BIOS.

B.2   Flash Method

Get the ".bin" file including the image of new BIOS you want to update.

Power on the system and flash the BIOS.

Re-star the system.

Any question about the BIOS re-flash please contact your distributors or visit the web-site at below:

http://www.axiomtek.com.tw/support.php

Appendix C
System Resources

C.1   I/O Port Address Map

Address Range	Device
0000-000F	PC Compatible Eisa/Isa HAL
0020-0021	PC Compatible Eisa/Isa HAL
0040-0043	PC Compatible Eisa/Isa HAL
0048-0048	PC Compatible Eisa/Isa HAL
0060-0060	i8042prt
0061-0064	PC Compatible Eisa/Isa HAL
0064-0064	i8042prt
0070-0071	PC Compatible Eisa/Isa HAL
0080-008F	PC Compatible Eisa/Isa HAL
0092-0092	PC Compatible Eisa/Isa HAL
00A0-00A1	PC Compatible Eisa/Isa HAL
00C0-00CF	PC Compatible Eisa/Isa HAL
00F0-00FF	PC Compatible Eisa/Isa HAL
01CE-01CF	VgaSavve
01F0-01F7	atapi
02F8-02FE	Serial
0378-037A	Parport
03B0-03BB	VgaSavve
03C0-03DF	VgaSavve

Address Range	Device
03F0-03F5	Floppy
03F6-03F6	atapi
03F7-03F7	Floppy
03F8-03FE	Serial
E000-E0FF	alcxnt
E400-E43F	alcxnt

C.2   Memory Address Map

Range	Device
0xCBA00-0xCBFFF	System board
0xF0000-0xF7FFF	System board
0xF8000-0xFBFFF	System board
0xFC000-0xFFFFF	System board
0xF7F0000-0xF7FFFFF	System board
0x0000-0x9FFFF	System board
0x100000-0xF7EFFFF	System board
0xFEC00000-0xFEC00FFF	System board
0xFEE00000-0xFEE00FFF	System board
0xFFB00000-0xFFBFFFFF	System board
0xFFF00000-0xFFFFFFFF	System board
0xE0000-0xEFFFF	System board
0xA0000-0xBFFFF	PCI bus
0xA0000-0xBFFFF	Intel(R) 82845G Graphics Controller
0xC0000-0xDFFFF	PCI bus
0xF800000-0xFEBFFFFF	PCI bus
0xE0000000-0xE7FFFFFF	Intel(R) 82845G Graphics Controller
0xEC100000-0xEC17FFFF	Intel(R) 82845G Graphics Controller
0xEC180000-0xEC1803FF	Intel (R) USB Enhanced Host Controller (ICH*4)

Range	Device
0xEC000000-0xEC000FFF	Intel(R) PRO/100 VE Network Connection
0xEC001000-0xEC001FFF	OHCI Compliant IEEE 1394 Host Controller
0xFEBFFC00-0xFEBFFFFF	Intel(R) 82801DB Ultra ATA Storage Controller - 24CB
0xEC181000-0xEC1811FF	Avance AC'97 Audio
0xEC182000-0xEC1820FF	Avance AC'97 Audio

C.3   System IRQ and DMA Resource

C.3.1   IRQ

IRQ Number	Device
0	System timer
1	Standard 101/102-Key or Microsoft Natural Keyboard
2	Programmable Interrupt Controller
3	Communications Port (COM2)
4	Communications Port (COM1)
5	ACPI IRQ Holder for PCI IRQ Steering
5	Advance AC97 Audio
5	Intel(R) 82801DB/DBM SMBus Controller - 24C3
5	PCI OHCI Compliant IEEE 1394 Host Controller
6	Standard Floppy Disk Controller
7	Parallel Port (LPT1)
8	System CMOS / Real Time Clock
9	Microsoft ACPI-Compliant System
9	Intel(R) USB Enhanced Host Controller (ICH*4)
9	SCI IRQ Used by ACPI Bus
10	ACPI IRQ Holder for PCI IRQ Steering
10	ACPI IRQ Holder for PCI IRQ Steering
10	Intel(R) 82801DB/DBM USB Universal Host Controller – 24C4
10	Intel(R) 82801DB/DBM USB Universal Host Controller – 24C2

IRQ Number	Device
10	Intel(R) 82845G/GL Graphics Controller
11	ACPI IRQ Holder for PCI IRQ Steering
11	Intel(R) PRO/100 VE Network Connection
11	Intel(R) 82801DB/DBM USB Universal Host Controller – 24C7
12	PS/2 Compatible Mouse Port
13	Numeric Data Processor
14	Intel(R) 82801DB Ultra ATA Storage Controller – 24CB
14	Primary IDE Controller (Dual FIFO)
15	Intel(R) 82801DB Ultra ATA Storage Controller – 24CB
15	Secondary IDE Controller (Dual FIFO)

C.3.2 DMA

Channel	Device
0	(free)
1	(free)
2	Standard Floppy Disk Controller
3	(free)
4	Direct Memory Access Controller
5	(free)
6	(free)
7	(free)