

AR-B1652
3.5" EBC with VIA Mark Processor,
VGA/ LCD/ LVDS/ LAN/ USB
CPU Board
User' s Guide

Edition: 1.0
Book Number: [AR-B1652-06.0906](#)

Table of Contents

0. PREFACE.....	3
0.1 COPYRIGHT NOTICE AND DISCLAIMER.....	3
0.2 WELCOME TO THE AR-B1652 CPU BOARD.....	3
0.3 BEFORE YOU USE THIS GUIDE.....	3
0.4 RETURNING YOUR BOARD FOR SERVICE.....	3
0.5 TECHNICAL SUPPORT AND USER COMMENTS.....	4
0.6 STATIC ELECTRICITY PRECAUTIONS.....	4
1. INTRODUCTION.....	5
1.1 SPECIFICATIONS.....	6
1.2 PACKING LIST.....	6
2. SETTING UP SYSTEM.....	7
2.1 AR-B1652 OVERVIEW.....	7
2.2 SYSTEM SETTINGS.....	8
2.2.1 Keyboard & Mouse Connector (KM2).....	8
2.2.2 SDRAM SOCKET 144 PIN (DIMM1).....	8
2.2.3 Hard Disk (IDE) Connector (IDE1).....	9
2.2.4 FDD Port Connector (FDD1).....	9
2.2.5 Parallel Port Connector (LPT1).....	10
2.2.6 CRT Connector (VGA1).....	10
2.2.7 USB Connector (USB1).....	10
2.2.8 LVDS Header (LVDS1).....	11
2.2.9 LCD VOLTAGE SELECT (J1).....	11
2.2.10 EXTERNAL BUZZER (BZ1).....	11
2.2.11 Serial Port (COM1, COM2, COM3, COM4).....	12
2.2.12 Clear CMOS (JBAT1).....	12
2.2.13 GPIO Port (CN1).....	13
2.2.14 Touch Screen Connector (TSC1).....	13
2.2.15 26-Pin Audio Connector (AUDIO1).....	13
2.2.16 CPU Fan Power Connector (FAN1).....	14
2.2.17 LCD Inverter Connector (CN2).....	14
2.2.18 Infrared Connector (IR1).....	14
2.2.19 LED (LED1).....	14
2.2.20 Ethernet RJ-45 Connector (LAN1).....	15
2.2.21 Reset Button (RST1).....	15
2.2.22 Power Connector (PWR1).....	15
2.2.23 PC/104 Connector (PC104).....	15
2.2.24 Compact Flash Connector (CF1).....	15
2.2.25 CF Master/Salver Connector (J4).....	16
2.2.26 18-bit LCD Panel Connector (LCD1).....	16
2.2.27 Battery Connector (BT1).....	16
3. WATCHDOG TIMER.....	17
3.1 WATCHDOG TIMER SETTING.....	17
3.2 WATCHDOG TIMER TRIGGER.....	17
4. BIOS CONSOLE.....	18
4.1 BIOS SETUP OVERVIEW.....	18
4.2 ADVANCED.....	19
4.3 PERIPHERAL.....	20
4.4 PNP/PCI.....	22
4.5 H/W MONITOR.....	23
4.6 BOOT.....	24
4.7 BIOS EXIT.....	25
APPENDIX A. MEMORY MAP.....	26
APPENDIX B. INTERRUPT REQUEST (IRQ).....	27

0. PREFACE

0.1 COPYRIGHT NOTICE AND DISCLAIMER

This document is copyrighted, 2006, by Acrosser Technology Co., Ltd. All rights are reserved. No part of this manual may be reproduced, copied, transcribed, stored in a retrieval system, or translated into any language or computer language in any form or by any means, such as electronic, mechanical, magnetic, optical, chemical, manual or other means without the prior written permission or original manufacturer.

Acrosser Technology assumes no responsibility or warranty with respect to the content in this manual and specifically disclaims any implied warranty of merchantability or fitness for any particular purpose. Furthermore, Acrosser Technology reserves the right to make improvements to the products described in this manual at any times without notice. Such revisions will be posted on the Internet (WWW.ACROSSER.COM) as soon as possible. Possession, use, or copy of the software described in this publication is authorized only pursuant to valid written license from Acrosser or an authorized sub licensor.

ACKNOWLEDGEMENTS

Acrosser, AWARD, IBM PC/AT, VIA, Windows 3.1, MS-DOS...are registered trademarks.

All other trademarks and registered trademarks are the property of their respective owners.

0.2 WELCOME TO THE AR-B1652 CPU BOARD

This guide introduces the Acrosser AR-B1652 CPU Board.

Use information provided in this manual describes this card's functions and features. It also helps you start, set up and operate your AR-B1652. General system information can also be found in this publication.

0.3 BEFORE YOU USE THIS GUIDE

Please refer to the Chapter 2, "System Setting," in this guide, if you have not already installed this AR-B1652. Check the packing list before you install and make sure the accessories are completely included.

AR-B1652 CD provides the newest information regarding the CPU card. **Please refer to the files of the enclosed utility CD.** It contains the modification and hardware & software information, and adding the description or modification of product function after manual printed.

0.4 RETURNING YOUR BOARD FOR SERVICE

If your board requires any services, contact the distributor or sales representative from whom you purchased the product for service information. If you need to ship your board to us for service, be sure it is packed in a protective carton. We recommend that you keep the original shipping container for this purpose.

You can help assure efficient servicing for your product by following these guidelines:

1. Include your name, address, daytime telephone, facsimile number and E-mail.
2. A description of the system configuration and/or software at the time of malfunction.
3. A brief description of the problem occurred.

0.5 TECHNICAL SUPPORT AND USER COMMENTS

Users comments are always welcome as they assist us in improving the quality of our products and the readability of our publications. They create a very important part of the input used for product enhancement and revision.

We may use and distribute any of the information you provide in any way appropriate without incurring any obligation. You may, of course, continue to use the information you provide.

If you have any suggestions for improving particular sections or if you find any errors on it, please send your comments to Acrosser Technology Co., Ltd. or your local sales representative and indicate the manual title and book number.

Internet electronic mail to: Sales@acrosser.com

acrosser@tp.globalnet.com.tw

0.6 STATIC ELECTRICITY PRECAUTIONS

Before removing the board from its anti-static bag, read this section about static electricity precautions.

Static electricity is a constant danger to computer systems. The charge that can build up in your body may be more than sufficient to damage integrated circuits on any PC board. It is, therefore, important to observe basic precautions whenever you use or handle computer components. Although areas with humid climates are much less prone to static build-up, it is always best to safeguard against accidents that may result in expensive repairs.

The following measures should be sufficient to protect your equipment from static discharge:

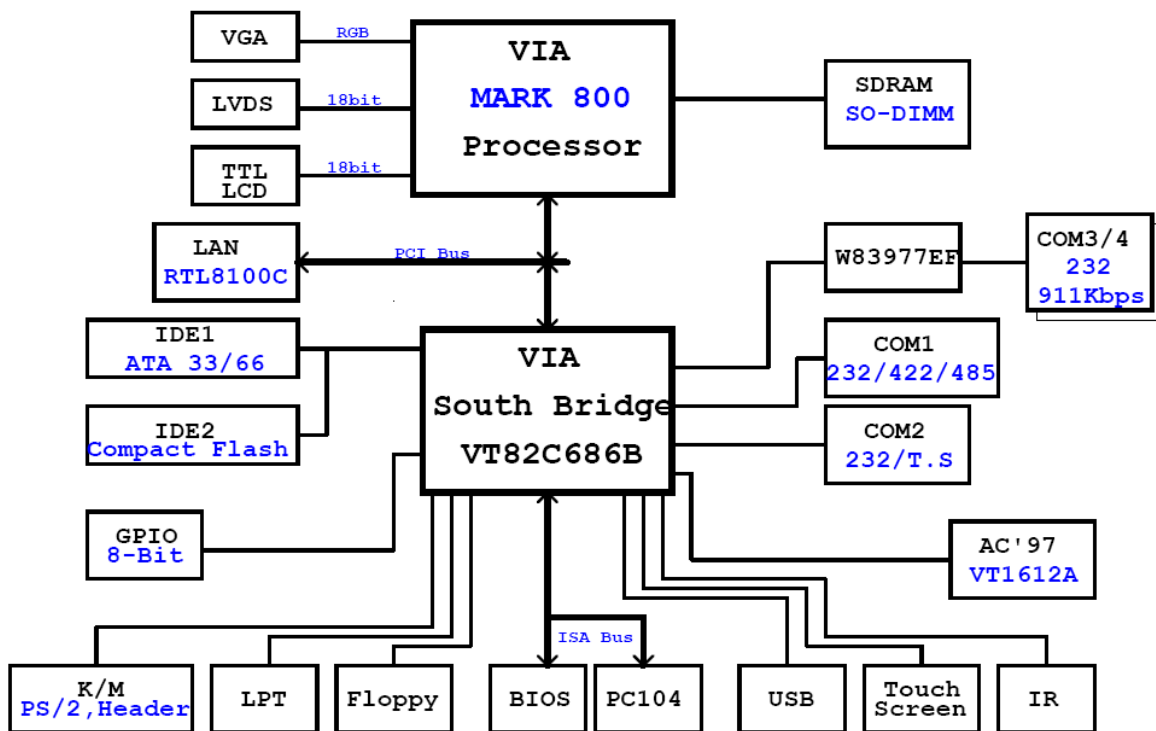
- Touch a grounded metal object to discharge the static electricity in your body (or ideally, wear a grounded wrist strap).
- When unpacking and handling the board or other system components, place all materials on an anti-static surface.
- Be careful not to touch the components on the board, especially the "golden finger" connectors on the bottom of the board.

1. INTRODUCTION

Welcome to the AR-B1652 Single Board Computer. The AR-B1652 board is [EBC board](#), which VIA Mark Corefusion Processors with the VIA ® advanced chipset VT82C686B. This product is designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

In addition, the AR-B1652 provides on chip VGA. The VGA, which provides up to True Color (32 bit) 1024x768. The VGA memory is share main memory (2M, 4M, or 8M). AR-B1652 also has 18-bit LVDS function in the system.

The AR-B1652 is loaded with special on-board features that rival full-size systems. It has one network controller on board, uses RealTek RTL8100C LAN controller, a fully integrated 10/100BASE-TX solution with high performance networking functions. Supports Compact Flash™ Type II interface. Plus optional support for AC97 3D stereo surround sound with CD-input, AR-B9425A-G (line-in, line-out and speaker-out, microphone). The AR-B1652 also includes one 144-pin SO-DIMM sockets for up to 512 MB total on-board memory. The AR-B1652 has Four on-board serial ports; COM1 with RS232C/RS485, COM2 with RS232C share with touch screen COM3/4 with RS232C, one USB connectors for 2 USB ports, watchdog timer and tough industrial grade construction. All these features make the AR-B1652 a very "system integrator friendly" solution, perfect for handling applications in the harshest unmanned environments.



AR-B1652 System Block Diagram

1.1 SPECIFICATIONS

- **CPU:** On-board VIA Mark Corefusion Processor 800MHz
- **Chipset:** VIA® VT82C686B
- **RAM memory:** Supports SDRAM PC133, on-board 144-pin SO-DIMM up to 512MB SDRAM memory module
- **VGA Controller:** Embedded VGA controller, Screen Resolution: up to True Color(32 bit)1024x768.
- **Display Interface:** CRT – D-SUB 15-pin female connector
LCD –for 18 bit TFT LCD Panel, 2x13x2.0mm pin-header connector
LVDS – DF-13 male connector
- **Ultra ATA/33/66/100 IDE Interface:** One PCI Enhance IDE channel. The south bridge VT82C686B supports Ultra ATA/33 IDE interface. To support Ultra ATA66/100 Hard disk, a specified cable must be available.
- **Floppy disk drive interface:** 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drive.
- **C. F.:** Supports Compact Flash Type II interface
- **Series ports:** On-board one D-SUB 9-pin male connector for COM1 with RS-232C /RS-485 .On-board one 2x5x2.0mm pin-header connector for COM2 with RS-232C share with Touch Screen
Touch Screen uses 2.0mm 5-pin header connector
- **Parallel Port:** On-board one 2x13x2.0mm pin-header connector for Parallel port, supports SPP/EPP/ECP modes
- **IrDA port:** Supports IrDA (HPSIR) and ASK (Amplitude Shift Keyed) IR port.
- **USB port:** On-board one 2x4x2.0mm pin-header connector for 2 USB ports
- **Audio: onboard AC'97 Codec,** On-board one 2x13x2.0mm pin-header for Audio interface Supports two channel Left/Right Line IN/OUT, and Left/Right speaker out, MIC IN.
- **Watchdog timer:** Software programmable 1~63sec.
- **Ethernet:** On-board one Realtek RT8100C, supports 10/100Mbps Base-T with RJ-45 connector.
- **K/B & Mouse:** On-board PS/2 Keyboard and Mouse connector
- **Power Req.:** +5V 2.5A and +12V 1A maximum
- **PC Board:** 8 layers, EMI considered
- **Dimensions:** 145mm x 102mm (5.7" x 4")
- **Operating Temperature:** 0° ~ 60°C

1.2 PACKING LIST

These accessories are included with the system. Before you begin installing your AR-B1652 board, please make sure that the following items have been included inside the AR-B1652 package.

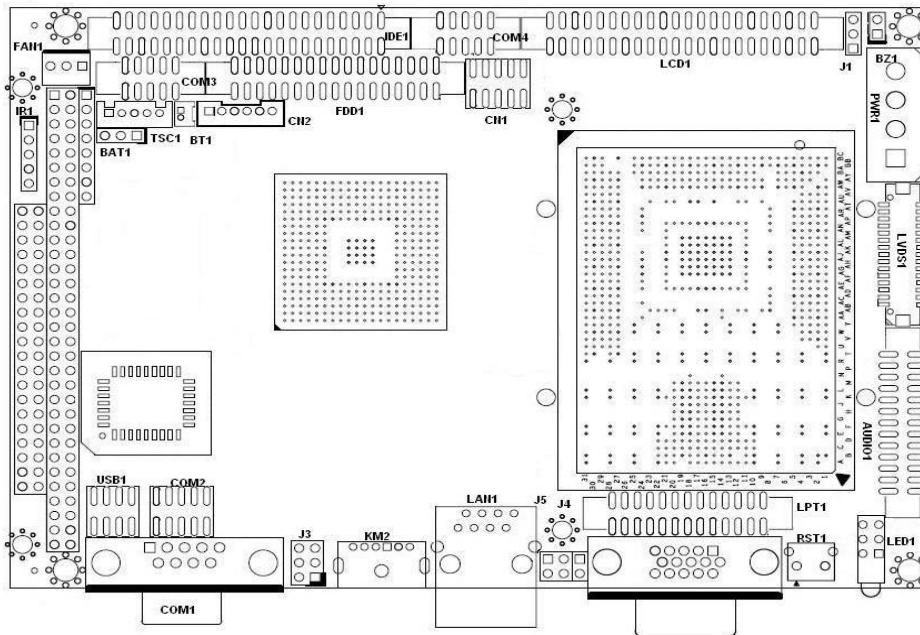
- The quick setup manual
- 1 AR-B1652 CPU board
- 1 AR-B9425A-G SB Transfer (option)
- 1 AR-B9425A-G Audio Cable (option)
- 2 USB port on one bracket cable (option)
- 1 Hard disk adapter (44Pin) (option)
- 1 PS/2 Mouse & Keyboard interface Y-Cable

2. SETTING UP SYSTEM

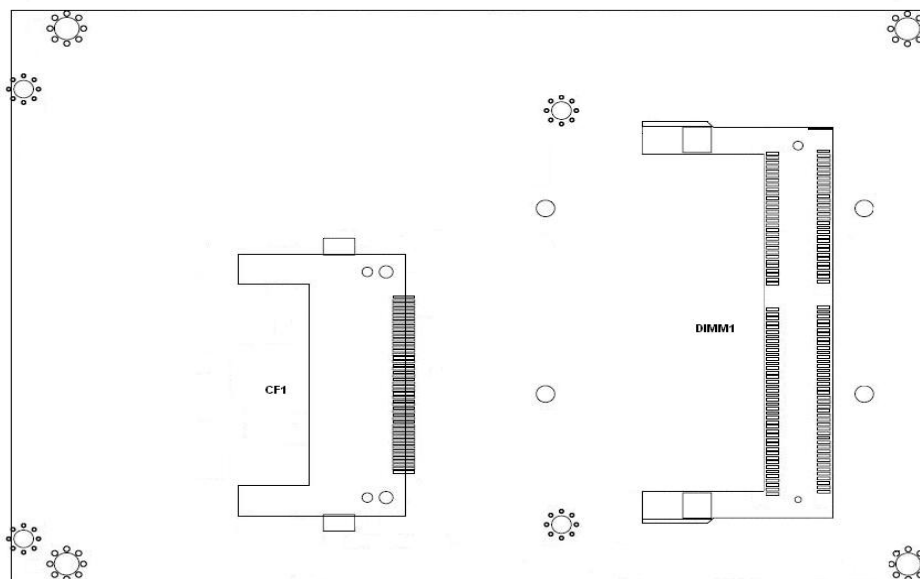
This chapter describes how to install the AR-B1652. At first, the layout of AR-B1652 is shown, and the unpacking information that you should be careful is described.

- Overview
- System Settings

2.1 AR-B1652 OVERVIEW



TOP PLACEMENT



BOTTOM PLACEMENT

2.2 SYSTEM SETTINGS

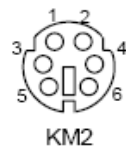
Jumper pins allow you to set specific system parameters. Set them by changing the pin location of the jumper blocks. (A jumper block is a small plastic-encased conductor that slips over the pins.) To change a jumper setting, remove the jumper from its current location with your fingers or small needle-nosed pliers. Place the jumper over the two pins designated for the desired setting. Press the jumper evenly onto the pins. Be careful not to bend the pins.

We will show the locations of the AR-B1652 jumper pins, and the factory-default settings.

CAUTION: Do not touch any electronic components unless you are safely grounded. Wear a grounded wrist strap or touch an exposed metal part of the system unit chassis. The static discharges from your fingers can permanently damage electronic components.

2.2.1 Keyboard & Mouse Connector (KM2)

The KM2 is a 6-pin Mini DIN keyboard & Mouse connector. This keyboard & Mouse connector is PS/2 type connector. This connector is also for a standard IBM-compatible keyboard when used with the included PS/2 keyboard & Mouse adapter cable.



PIN	Signal
1	KBDATA
2	MSDATA
3	GND
4	VCC
5	MSCLK
6	KBCLK

2.2.2 SDRAM SOCKET 144 PIN (DIMM1)

It can assemble 16/32/64/128/256/512MB 144 pin DIMM Module Memory. When you set up 144-pin DIMM Module Memory, AR-B1652 will auto-detect DRAM, and adopt correct save in order to make memory work till the best situation.

Caution: Set up 144-pin DIMM Module Memory, please insert into slot vertical, if the direction is wrong and it leads to failure, please confirm the direction is right.

DRAM Configuration (DIMM1)

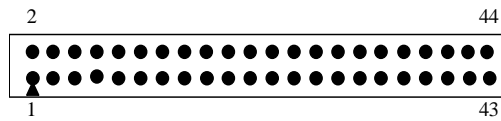


144 pin SO-DIMM

2.2.3 Hard Disk (IDE) Connector (IDE1)

44 Pin Hard Disk Connector (IDE1)

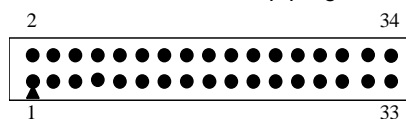
The on-board 44-pin mini-pitched IDE interface is used to let user support either a 3.5" HDD with 44 to 40pin adapter cable.



Pin	Signal	Pin	Signal
1	-RESET	2	GROUND
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	GROUND	20	Not Used
21	IDEDREQ	22	GROUND
23	-IOW A	24	GROUND
25	-IOR A	26	GROUND
27	IDEIORDYA	28	GROUND
29	-DACKA	30	GROUND
31	AINT	32	Not Used
33	SA 1	34	Data33_66
35	SA 0	36	SA 2
37	CS 0	38	CS 1
39	HD LED A	40	GROUND
41	VCC	42	VCC
43	GROUND	44	Not Used

2.2.4 FDD Port Connector (FDD1)

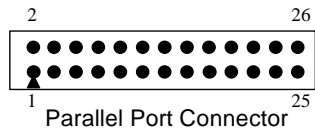
The AR-B1652 provides a 34-pin header type connector for supporting up to two floppy disk drives. To enable or disable the floppy disk controller, please use the BIOS Setup program.



Pin	Signal	Pin	Signal
1-33(odd)	GROUND	18	-DIRECTION
2	DRVEN 0	20	-STEP OUTPUT PULSE
4	NOT USED	22	-WRITE DATA
6	DRVEN 1	24	-WRITE ENABLE
8	-INDEX	26	-TRACK 0
10	-MOTOR ENABLE 0	28	-WRITE PROTECT
12	-DRIVE SELECT 1	30	-READ DATA
14	-DRIVE SELECT 0	32	-SIDE 1 SELECT
16	-MOTOR ENABLE 1	34	DISK CHANGE

2.2.5 Parallel Port Connector (LPT1)

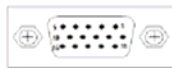
The connector for the parallel port is a 26-pin header connector.



DB-25	Signal	DB-25	Signal
1	-Strobe	14	-Auto Form Feed
2	Data 0	15	-Error
3	Data 1	16	-Initialize
4	Data 2	17	-Printer Select In
5	Data 3	18	Ground
6	Data 4	19	Ground
7	Data 5	20	Ground
8	Data 6	21	Ground
9	Data 7	22	Ground
10	-Acknowledge	23	Ground
11	Busy	24	Ground
12	Paper	25	Ground
13	Printer Select	26	No Used

2.2.6 CRT Connector (VGA1)

VGA1 is a standard 15-pin D-SUB connector commonly used for VGA.



PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	GND	11	N.C
2	GREEN	7	GND	12	SDA
3	BLUE	8	GND	13	HSYNC
4	N.C	9	N.C	14	VSYNC
5	GND	10	GND	15	SCL

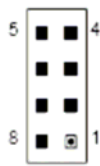
2.2.7 USB Connector (USB1)

The Universal Serial Bus (USB) controller is USB V1.1 and Universal HCI V1.1 compliant. The Universal Serial Bus (USB) standard is a low-to-medium speed interface for the connection of PC peripherals, which gives complete Plug & Play, and hot attach/detach for up to 127 external devices.

USB is a leading edge technology that allows the user to quickly and easily add a wide range of peripheral devices from printers to keyboards and telephony devices to fax/modems. Universal Host Controller Interface (UHCI) and future support for the Open Host Controller Interface (OHCI) ensure USB compatibility and usability well into the future.

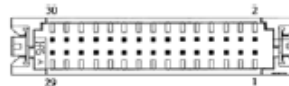
The CPU board supports four Universal Serial Bus ports. An optional external port bracket attaches to the onboard connector via an attached cable. With the optional port bracket installed you can attach USB devices to the external ports. If the USB ports are installed, the USB Controller line in the Integrated Peripherals section of the CMOS Setup utility must be set to "Enabled". USB ports may also require Operating System support for USB devices.

USB1 use an adapter cable to interface with external equipment.



PIN	Signal	PIN	Signal
1	VCC	5	VCC
2	USBD0-	6	USBD1-
3	USBD0+	7	USBD1+
4	GND	8	GND

2.2.8 LVDS Header (LVDS1)



PIN	Signal	PIN	Signal
1	LVDS_PWR	16	LVDS_CLKAP
2	GND	17	LVDS_YBP0
3	LVDS_CLKBM	18	GND
4	LVDS_CLKBP	19	LVDS_YAP2
5	GND	20	LVDS_YAM2
6	LVDS_YBM2	21	N.C
7	LVDS_YBP2	22	LVDS_YAP1
8	GND	23	LVDS_YAM1
9	LVDS_YBM1	24	N.C
10	LVDS_YBP1	25	LVDS_YAP0
11	N.C	26	LVDS_YAM0
12	N.C	27	N.C
13	LVDS_YBP0	28	N.C
14	LVDS_YBM0	29	LVDS_PWR
15	GND	30	LVDS_PWR

2.2.9 LCD VOLTAGE SELECT (J1)



PIN	Indication	Note
1-2	+3.3V	Factory preset
2-3	+5V	

2.2.10 EXTERNAL BUZZER (BZ1)



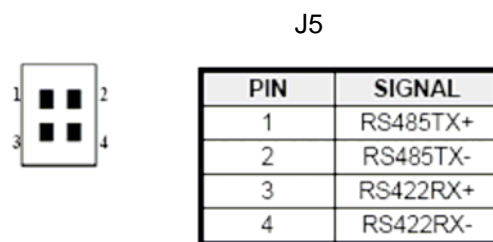
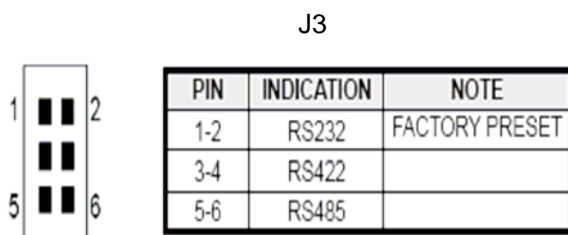
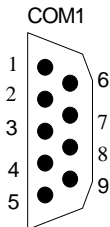
PIN	Signal
1	+
2	-

2.2.11 Serial Port (COM1, COM2, COM3, COM4)

- AR-B1652 is equipped with four serial ports. COM1 is a standard RS-232 interface.
- COM2/3/4 use an adapter cable to interface with external equipment.
- When we are configuring J3 and J5, COM1 can also be configured as an RS-232, RS-485 or RS-422 port.

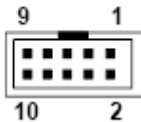
A. COM1

USED RS232 & RS485 & RS422



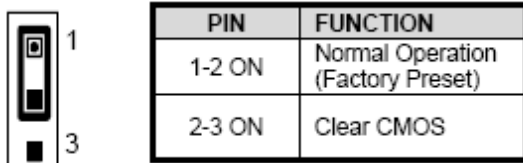
B. COM2/3/4

USED RS232

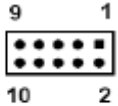


PIN	Signal	PIN	Signal
1	/DCD2	2	/DSR2
3	RXD2	4	/RTS2
5	TXD2	6	/CTS2
7	/DTR2	8	/RI2
9	GND	10	GND

2.2.12 Clear CMOS (JBAT1)




2.2.13 GPIO Port (CN1)



PIN	Signal	PIN	Signal
1	GND	2	+5V
3	GPI0	4	GPO0
5	GPI1	6	GPO1
7	GPI2	8	GPO2
9	GPI3	10	GPO3

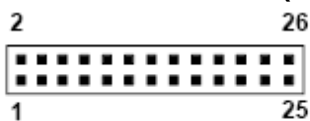
2.2.14 Touch Screen Connector (TSC1)

TSC1 is a serial port, which is parallel with COM2. It provides another choice when user needs a serial port but need to connect from board directly without connecting through a D-type connector. The typical application is a touch screen panel.



PIN	SIGNAL
1	GND
2	+5V
3	GND
4	NRXD2F
5	NTXD2F

2.2.15 26-Pin Audio Connector (AUDIO1)

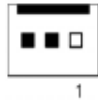


Pin	Signal	Pin	Signal
1	CD_L	2	LINEINL
3	CD_R	4	LINEINR
5	+12V	6	+5V
7	LINEOUTL	8	MIC1
9	LINEOUTR	10	PC_BEEP
11	GND	12	GND
13	Not Used	14	Not Used
15	GND	16	GND
17	Not Used	18	Not Used
19	Not Used	20	Not Used
21	Not Used	22	Not Used
23	Not Used	24	Not Used
25	GND	26	GND

Note: the connector does not contain the GAME (MIDI) port signal. When AR-B1652 audio card is used with this CPU board, the GAME port function is not supported.

2.2.16 CPU Fan Power Connector (FAN1)

FAN1 is 3-pin header for the CPU fan. The fan must be a 12V fan.



PIN	Signal
1	GND
2	+12V
3	SENSE

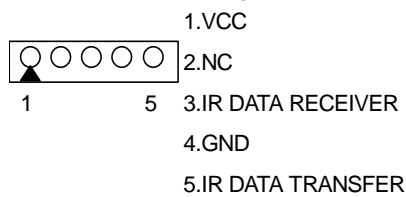
2.2.17 LCD Inverter Connector (CN2)



PIN	Signal
1	+12V
2	+12v
3	GND
4	ENVEE
5	GND
6	GND

2.2.18 Infrared Connector (IR1)

The Infra-red Header pin assignment is as follows:



2.2.19 LED (LED1)



LED	INDICATION
1 RED	System Power
2 GREEN	LAN Active
3 YELLOW	Primary IDE Active

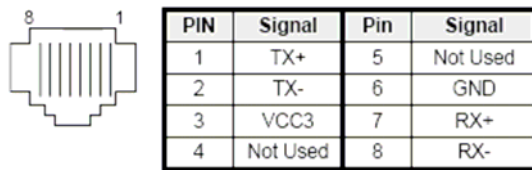
Power LED: External LED connector for Watchdog status indication.

LAN LED: External LED connector for 10/100M LAN

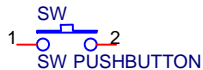
HDD LED (IDE1): External LED connector for primary IDE channel.

2.2.20 Ethernet RJ-45 Connector (LAN1)

The system supports onboard network connectivity. To utilize this function, install the network driver from the utility diskette, and connect the cable to the following RJ-45 header.

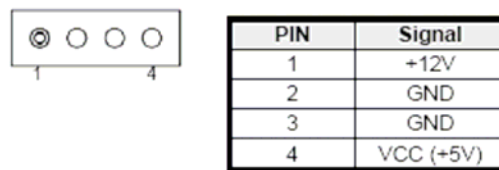


2.2.21 Reset Button (RST1)



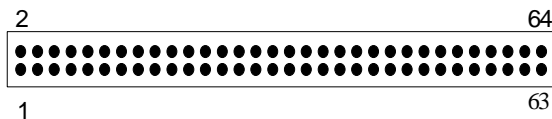
2.2.22 Power Connector (PWR1)

The PWR1 is a 4-pin power connector. It's the standard connector on all Acrosser boards.

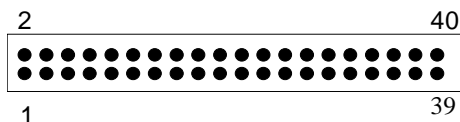


2.2.23 PC/104 Connector (PC104)

(1) 64 Pin PC/104 Connector A&B



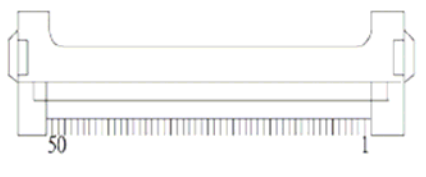
(2) 40 Pin PC/104 Connector C&D



Note:

If the content in setting is inconsistent with the CD-ROM, please refer to the setting as the priority.

2.2.24 Compact Flash Connector (CF1)

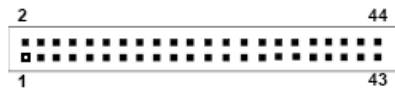


2.2.25 CF Master/Slave Connector (J4)



PIN	INDICATION
1-2 ON	Master
1-2 OFF	Slave

2.2.26 18-bit LCD Panel Connector (JCD1)



PIN	SIGNAL	PIN	Signal	PIN	Signal
1	GND	16	N.C	31	R3
2	FPCLK	17	N.C	32	R4
3	GND	18	G0	33	R5
4	FPHS	19	G1	34	GND
5	FPVS	20	GND	35	LCDVDD
6	GND	21	G2	36	LCDVDD
7	N.C	22	G3	37	+12V
8	N.C	23	G4	38	+12V
9	B0	24	G5	39	GND
10	B1	25	N.C	40	GND
11	B2	26	N.C	41	FPDEN
12	B3	27	GND	42	ENBLT
13	GND	28	R0	43	GND
14	B4	29	R1	44	ENVDD
15	B5	30	R2		

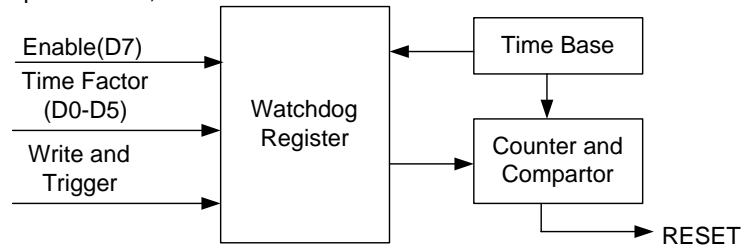
2.2.27 Battery Connector (BT1)



PIN	SIGNAL
1	+
2	-

3. WATCHDOG TIMER

This section describes the use of Watchdog Timer, including disable, enable, and trigger. AR-B1652 is equipped with a programmable time-out period watchdog timer that occupies I/O port 443H. Users can use simple program to enable the watchdog timer. Once you enable the watchdog timer, the program should trigger it every time before it times out. Watchdog Timer will generate a response (system or IRQ) due to system fails to trigger or disable watchdog timer before preset timer, times out.



Watchdog Block Diagram

3.1 WATCHDOG TIMER SETTING

The watchdog timer is a circuit that maybe be used from your program software to detect crash or hang up. The Watchdog timer is automatically disabled after reset. Once you enabled the watchdog timer, your program should trigger the watchdog timer every time before it times out. After you trigger the watchdog timer, the timer will be set to zero and start to count again. If your program fails to trigger the watchdog timer before times out, it will generate a reset pulse to reset the system or trigger the IRQ 9 signal in order to tell your system that the watchdog time is out.

Please refer to the following table in order to properly program Watchdog function

	D7	D6	D5	D4	D3	D2	D1	D0
1	Enable	Reset	Time period					
0	Disable	IRQ 9						

Users could test watchdog function under 'Debug' program as follows:

```

C:>debug
● O 443 C8H
  Generally, watchdog function would reset system after 8 seconds
● O 443 0H
  Disable watchdog function
  
```

```

C:>debug
● O 443 88H
  Generally, watchdog function would generate IRQ 9 after 8 seconds
● O 443 0H
  Disable watchdog function
  
```

3.2 WATCHDOG TIMER TRIGGER

After you enable the watchdog timer, your program must write the same factor as triggering to the watchdog timer at least once during every time-out period. You can change the time-out period by writing another timer factor to the watchdog register at any time, and you must trigger the watchdog during every new time-out period in next trigger.

4. BIOS CONSOLE

This chapter describes the AR-B1652 BIOS menu displays and explains how to perform common tasks needed to get up and running, and presents detailed explanations of the elements found in each of the BIOS menus. The following topics are covered:

- BIOS Setup Overview
- Advanced CMOS Setup
- Peripheral Setup
- Boot
- BIOS Exit

4.1 BIOS SETUP OVERVIEW

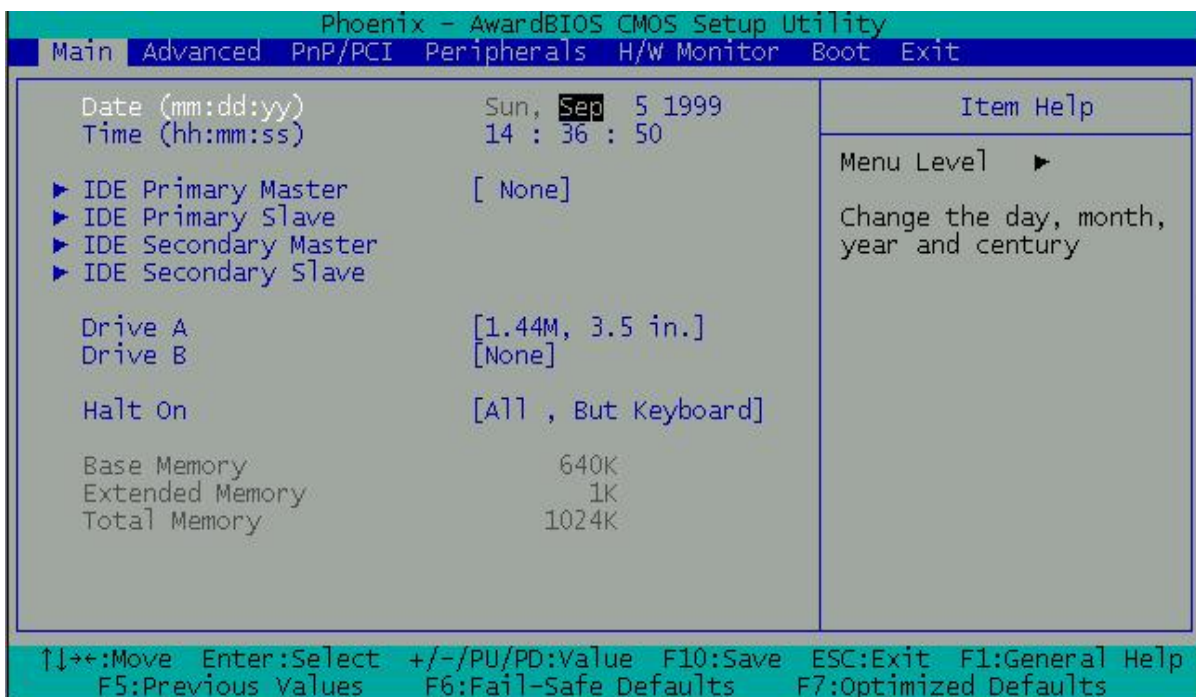
The BIOS is a program used to initialize and set up the I/O system of the computer, which includes the ISA bus and connected devices such as the video display, diskette drive, and the keyboard.

The BIOS provides a menu-based interface to the console subsystem. The console subsystem contains special software, called firmware that interacts directly with the hardware components and facilitates interaction between the system hardware and the operating system.

The BIOS default values ensure that the system will function at its normal capability. In the worst situation the user may have corrupted the original settings set by the manufacturer.

After the computer is turned on, the BIOS will perform diagnostics on the system and display the size of the memory that is being tested. Press the [Del] key to enter the BIOS Setup program, and then the main menu will show on the screen.

The BIOS Setup main menu includes some options. Use the [Up/Down] arrow key to highlight the option that you wish to modify, and then press the [Enter] key to select the option and configure the functions.



Setup Main Menu

The <Main> option allows you to record some basic system hardware configuration and set the system clock and error handling. If the CPU board is already installed in a working system, you will not need to select this option anymore.

Date & Time Setup

Highlight the <Date> field and then press the [Page Up] /[Page Down] or [+]/[-] keys to set the current date. Follow the month, day and year format.

Highlight the <Time> field and then press the [Page Up] /[Page Down] or [+]/[-] keys to set the current date. Follow the hour, minute and second format.

The user can bypass the date and time prompts by creating an AUTOEXEC.BAT file. For information on how to create this file, please refer to the MS-DOS manual.

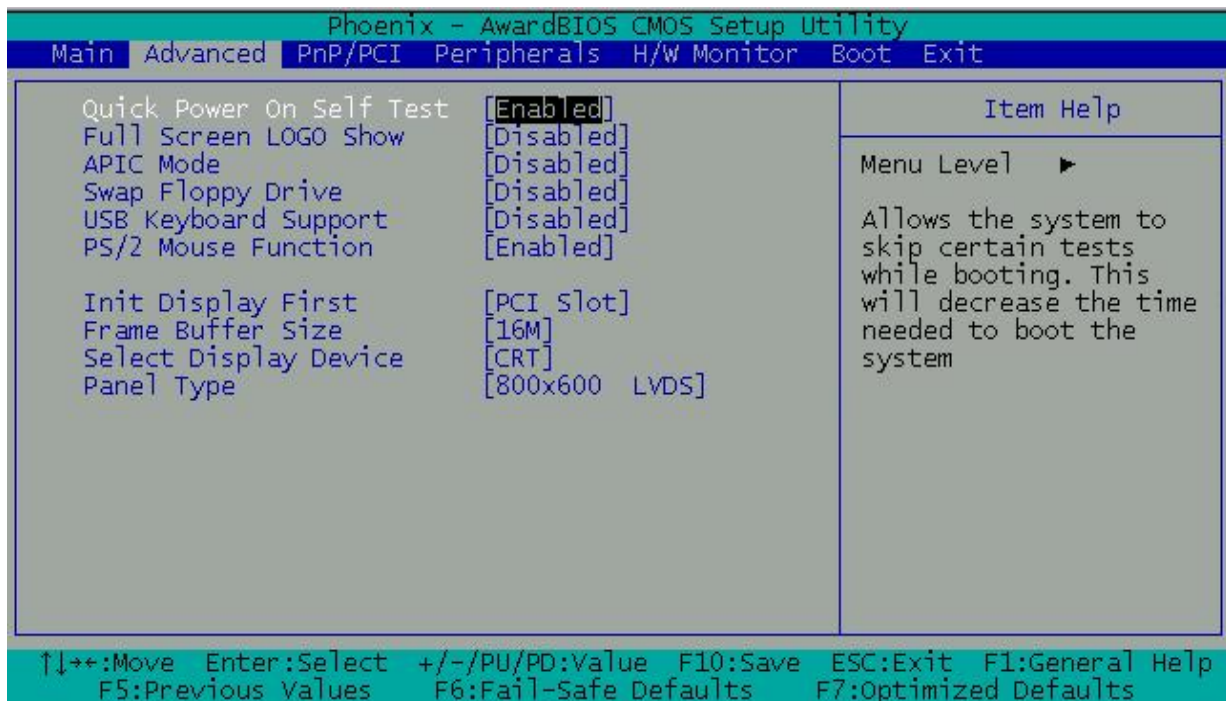
Hard Disk Setup

The BIOS supports various types for user settings, The BIOS supports <Pri Master>, <Pri Slave>, <Sec Master> and <Sec Slave> so the user can install up to two hard disks. For the master and slave jumpers, please refer to the hard disk's installation descriptions and the hard disk jumper settings in section three of this manual.

Floppy Setup

The <Main> option records the types of floppy disk drives installed in the system.

To enter the configuration value for a particular drive, highlight its corresponding field and then select the drive type using the left-or right-arrow key.

4.2 ADVANCED**Standard CMOS Setup****Quick Power On Self Test [Enabled]**

This field enables the power on test. Configuration options: [Enabled] [Disabled]

Full Screen Logo Show [Disable]

This allows you to enable or disable the full screen logo display feature.

Configuration options: [Disabled] [Enabled]

Swap Floppy Drive [Disabled]

This field is effective only in systems with two floppy drives. Selecting Enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

USB Keyboard Support [Disable]

SUPPORT USB KEYBOARD

INIT Display First [PCI SLOT]

Initialize the PCI video display before initializing any other display device on the system. Thus the PCI display becomes the primary display.

Frame Buffer Size [16M]**4.3 PERIPHERALS****Peripherals****Onboard Serial Port 1 [AUTO]****Onboard Serial Port 2 [Auto]****Onboard Serial Port 3 [Auto]****Onboard Serial Port 4 [Auto]**

Choose serial port 1 to 4 I/O address. Do not set port 1 to 4 to the same address except for Disabled or Auto.

UART 2 MODE [Standard]**Select an operating mode for the second serial port:**

Normal	RS-232C serial port
Standard	RS-232C serial port
IrDA 1.0	Infrared port compliant with IrDA 1.0 specification
IrDA SIR	IrDA-compliant serial infrared port
IrDA MIR	1 MB/sec infrared port
IrDA FIR	Fast Infrared standard
FIR	Fast Infrared standard
MIR 0.57M	0.57-MB/sec infrared port
MIR 1.15M	1.15-MB/sec infrared port
Sharp IR	4-Mb/s data transmission
HPSIR	IrDA-compliant serial infrared port
ASK IR	Amplitude shift keyed infrared port

Onboard Parallel Port [378H/IRQ7]

This field allows you to set the address of the onboard parallel port connector. If you disable this field, the Parallel Port Mode and ECP DMA Select configurations are not available. Configuration options: [Disabled] [378H/IRQ7] [278H/IRQ5]

Onboard Parallel Mode [Normal]

This field allows you to set the operation mode of the parallel port. [Normal] allows normal-speed operation but in one direction only; [EPP] allows bidirectional parallel port operation; [ECP] allows the parallel port to operate in bidirectional DMA mode; [ECP+EPP] allows normal speed operation in a two-way mode. Configuration options: [Normal] [EPP] [ECP] [ECP+EPP]

ECP Mode use DMA [3]

This field allows you to configure the parallel port DMA channel for the selected ECP mode. This selection is available only if you select [ECP] or [ECP+EPP] in Parallel Port Mode above. Configuration options: [1] [3]

Parallel port EPP Type [EPP1.9]

The mode depends on your external device that connects to this port.

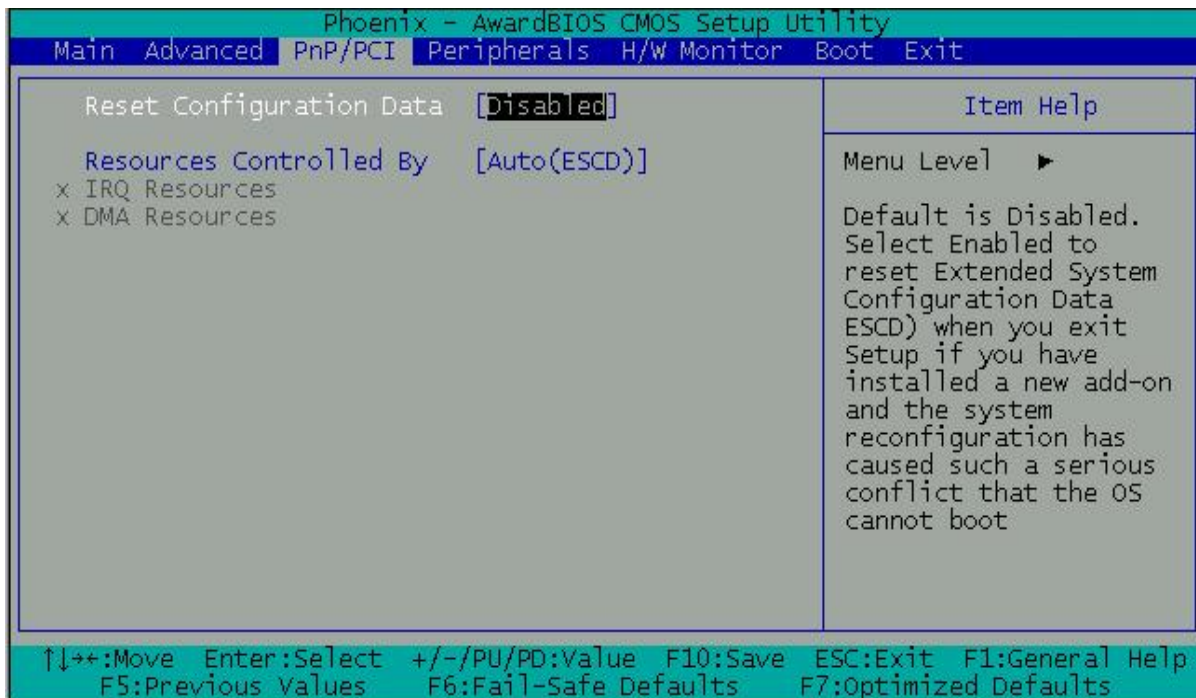
Onboard FDD controller [Enables]

Use the on-board floppy controller

OnChip USB controller [Enables]

This should be enabled if your system has a USB installed on the system board and you want to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

4.4 PNP/PCI



PnP/PCI

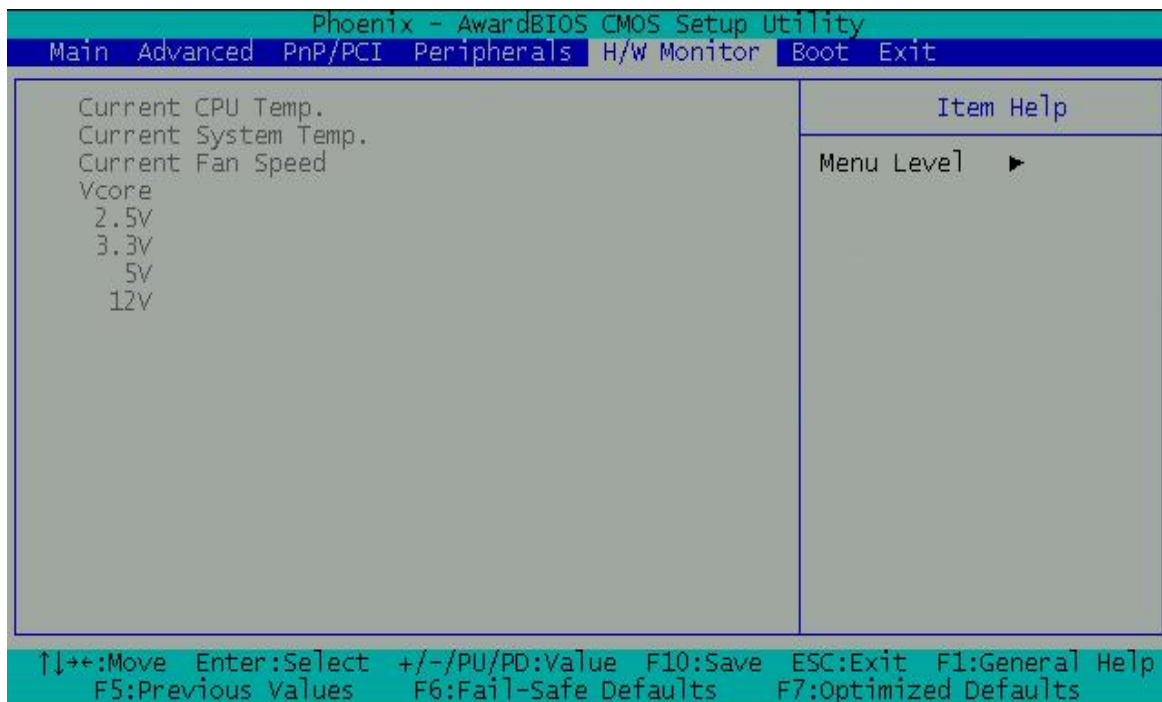
Reset Configuration Data [Disable]

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

Resources Controlled By [Auto (ESCD)]

This field sets control over the IRQ resources by the automatic (ESCD) system or manual assignment of IRQ channels. The default enables automatic (ESCD) control. Configuration options: [Auto(ESCD)] [Manual].

4.5 H/W MONITOR



H/W Monitor

CURRENT CPU TEMP.

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures.

CURRENT SYSTEM TEMP.

The onboard hardware monitor automatically detects and displays the motherboard and System temperatures.

CURRENT FAN SPEED

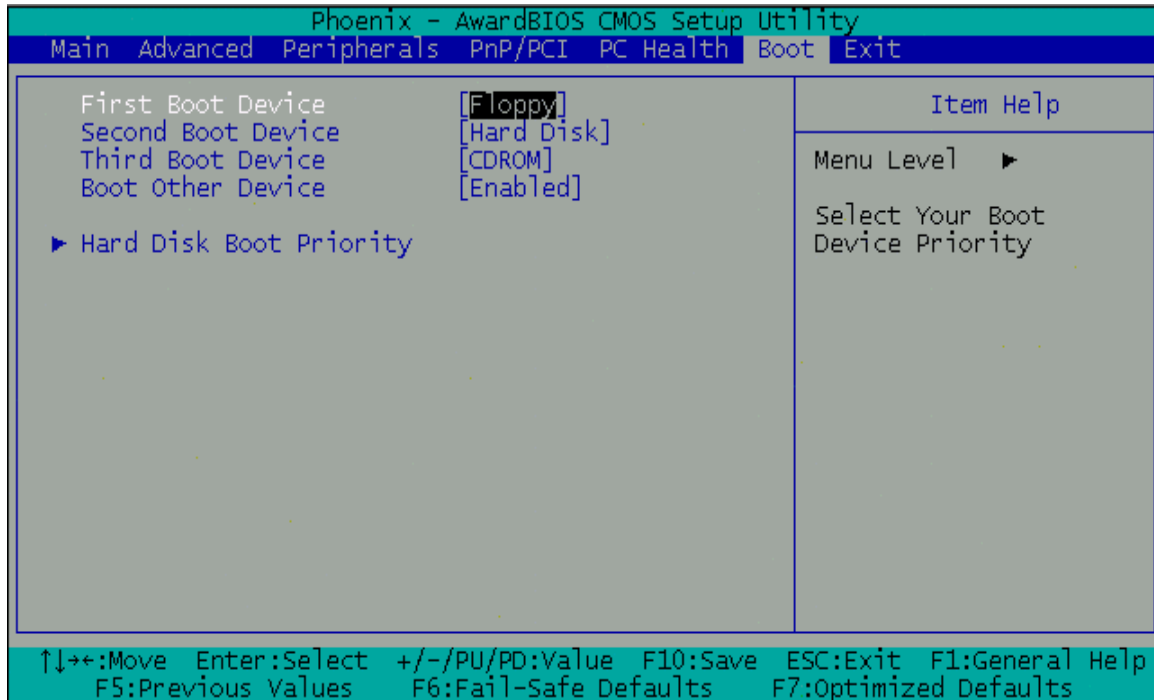
The onboard hardware monitor automatically detects and displays the CPU, chassis, and power fan speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, that field shows N/A.

VCORE

VCORE Voltage, +3.3V Voltage, +5V Voltage, +12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

4.6 BOOT



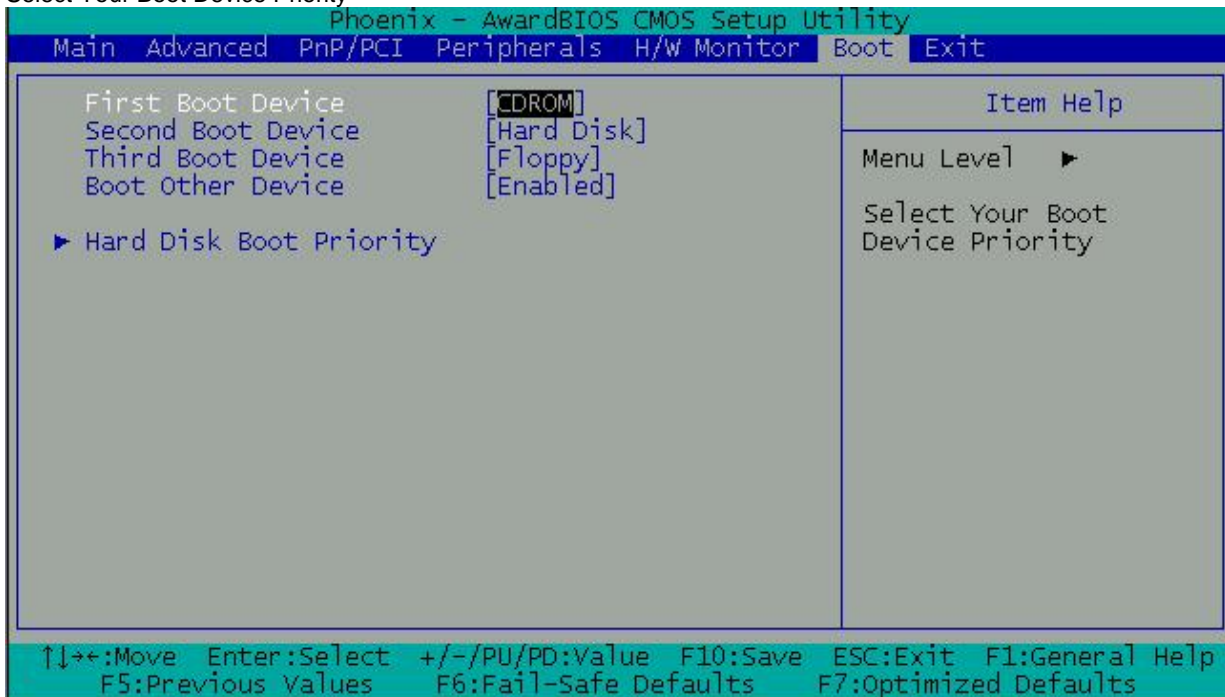
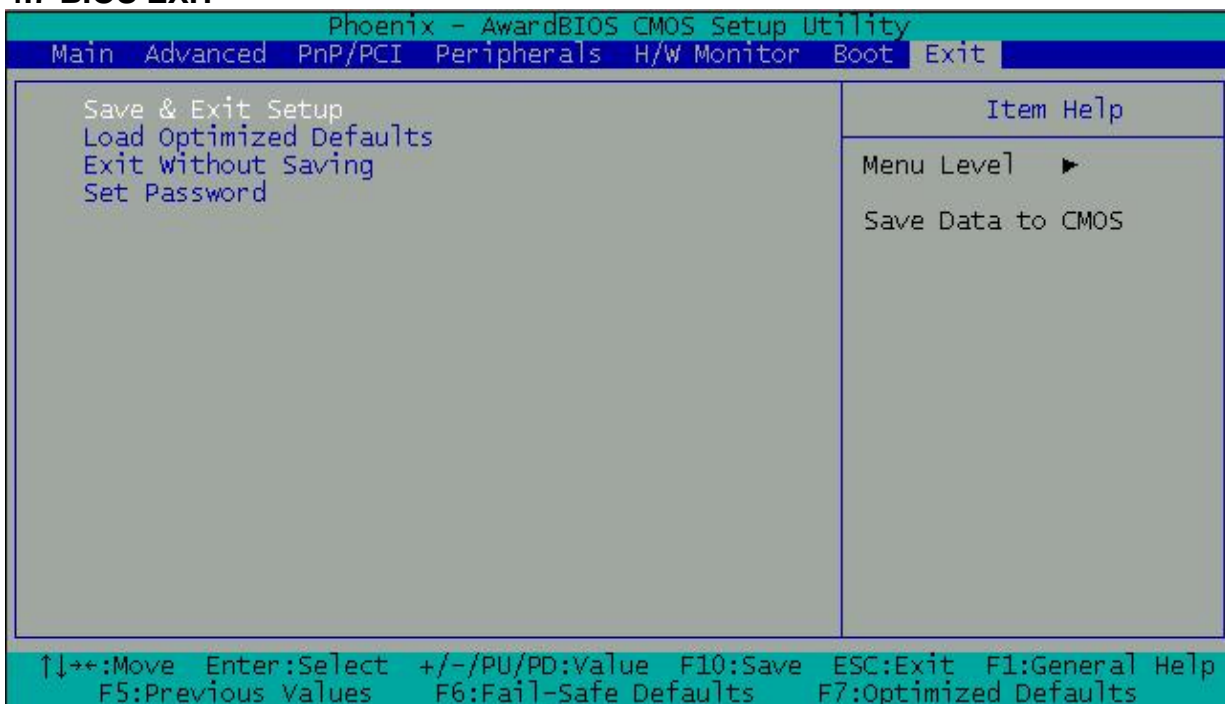
BOOT

First/Second/Third Boot Device

Floppy
 Hard Disk
 CDROM
 USB-FDD
 USB-ZIP
 USB-CDROM
 LAN
 Disabled

Boot Other Device [Enabled]

Select Your Boot Device Priority

**4.7 BIOS EXIT****Exit**

When you have made all of your selections from the various menus in the Setup program, save your changes and exit Setup. Select Exit from the menu bar to display the following menu.

Save & Exit Setup

Type "Y" will quit the Setup Utility and save the user setup value to RTC CMOS. Type "N" will return to Setup Utility.

Load Optimized Defaults

Selecting this field loads the factory defaults for BIOS and Chipset Features, which the System automatically detects.

Exit Without Saving

Type "Y" will quit the Setup Utility without saving to RTC CMOS.

Type "N" will return to Setup Utility.

APPENDIX A. MEMORY MAP

Memory Map:

MEMORY MAP	ASSIGNMENT
00000000-0009FFFF	System board
0009F000-000BFFFF	PCI bus
000A0000-000BFFFF	S3 Graphics Twister+S3Hotkey
000A0000-000BFFFF	VIA CPU to AGP Controller
000CE000-000CFFFF	Motherboard resources
000CE000-000EFFFF	PCI bus
000F0000-000F3FFF	Motherboard resources
000F4000-000F7FFF	Motherboard resources
000F8000-000FFFFFFF	Motherboard resources
00100000-00FFFFFFF	System board
07000000-FEBFFFFF	PCI bus
E0000000-E7FFFFFFF	S3 Graphics Twister+S3Hotkey
E0000000-E7FFFFFFF	VIA CPU to AGP Controller
E8000000-EBFFFFFFF	VIA CPU to AGP Controller
EC000000-EC07FFFF	S3 Graphics Twister+S3Hotkey
EC000000-EC0FFFFFFF	VIA CPU to AGP Controller
EC110000-EC1100FF	Realtek RTL8139 Family PCI Fast Ethernet NIC

FEC0000-FEC0FFFF	System board
FEC01000-FEDFFFFFF	PCI bus
FEE00000-FEE0FFFF	System board
FEE01000-FFFEFFFF	PCI bus
FFFE0000-FFFFFFFF	System board

APPENDIX B. INTERRUPT REQUEST (IRQ)

SETTING	HARDWARE USING THE SETTING
00	System timer
01	PC/AT Enhanced PS/2 Keyboard (101/102-Key)
02	
03	Communications Port (COM2)
04	Communications Port (COM1)
05	Realtek RTL8139 Family PCI Fast Ethernet NIC
05	Vinyl AC'97 Codec Combo Driver (WDM)
06	Standard floppy disk controller
07	
08	System CMOS/real time clock
09	VIA Rev 5 or later USB Universal Host Controller
09	VIA Rev 5 or later USB Universal Host Controller
10	Communications Port (COM3)
11	Communications Port (COM4)
12	Microsoft PS/2 Mouse
13	Numeric data processor
14	Primary IDE Channel
15	Secondary IDE Channel

Note:

If the content in Setting is inconsistent with CD-ROM, please refer to the setting as priority.