AR-B1662L3
VIA Processor for VIA PLE133T with VGA(CRT/LCD), SDRAM PC133, 3 LAN, Compact Flash
User' s Guide

Edition: 1.1
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0. PREFACE

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0.2 WELCOME TO THE AR-B1662L3 CPU BOARD

This guide introduces the Acrosser AR-B1662L3 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-B1662L3. 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-B1662L3. Check the packing list before you install and make sure the accessories are completely included.

AR-B1662L3 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.

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acrosser@tp.globalnet.com.tw

0.6 ORGANIZATION

This information for users covers the following topics (see the Table of Contents for a detailed listing):

Chapter 1, "Introduction", provides specifications and packing list.
Chapter 2, "Setting Up System", describes how to adjust the jumpers and the connector settings.
Chapter 3,"CRT/LCD Flat Panel Display", describes the configuration and installation procedure for using LCD and CRT displays.
Chapter 4, "Watchdog Timer", describes watchdog timer setting and trigger.
Chapter 5, "BIOS Console", provides the BIOS settings options.
Appendix A, Memory & I/O Map
        Appendix B, Interrupt Request (IRQ)

0.7 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-B1662L3 Single Board Computer. The AR-B1662L3 board is Low power VIA Eden series Processors with the VIA ® advanced chipset Apollo PLE133T (VT8601T and 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-B1662L3 provides on chip VGA. The VGA, which provides up to Ture Color (32 bit) 1024x768, or High Color (16 bit) 1280x1024 resolution. The VGA memory is share main memory (2M, 4M, or 8M). AR-B1662L3 also has 24-bit LCD function in the system.

The AR-B1662L3 is loaded with special on-board features that rival full-size systems. It has four networks controller on board, uses National Semiconductor 83816 LAN controller, a fully integrated 10/100BASE-TX solution with high performance networking functions. CompactFlash™. The AR-B1662L3 also includes one 144-pin SO-DIMM sockets for up to 512 MB total on-board memory. The AR-B1662L3 has two on-board serial ports; COM1 with RS232C,COM2 with RS232C, one USB connectors for 2 USB ports, watchdog timer and tough industrial grade construction. All these features make the AR-B1662L3 a very "system integrator friendly" solution, perfect for handling applications in the harshest unmanned environments.
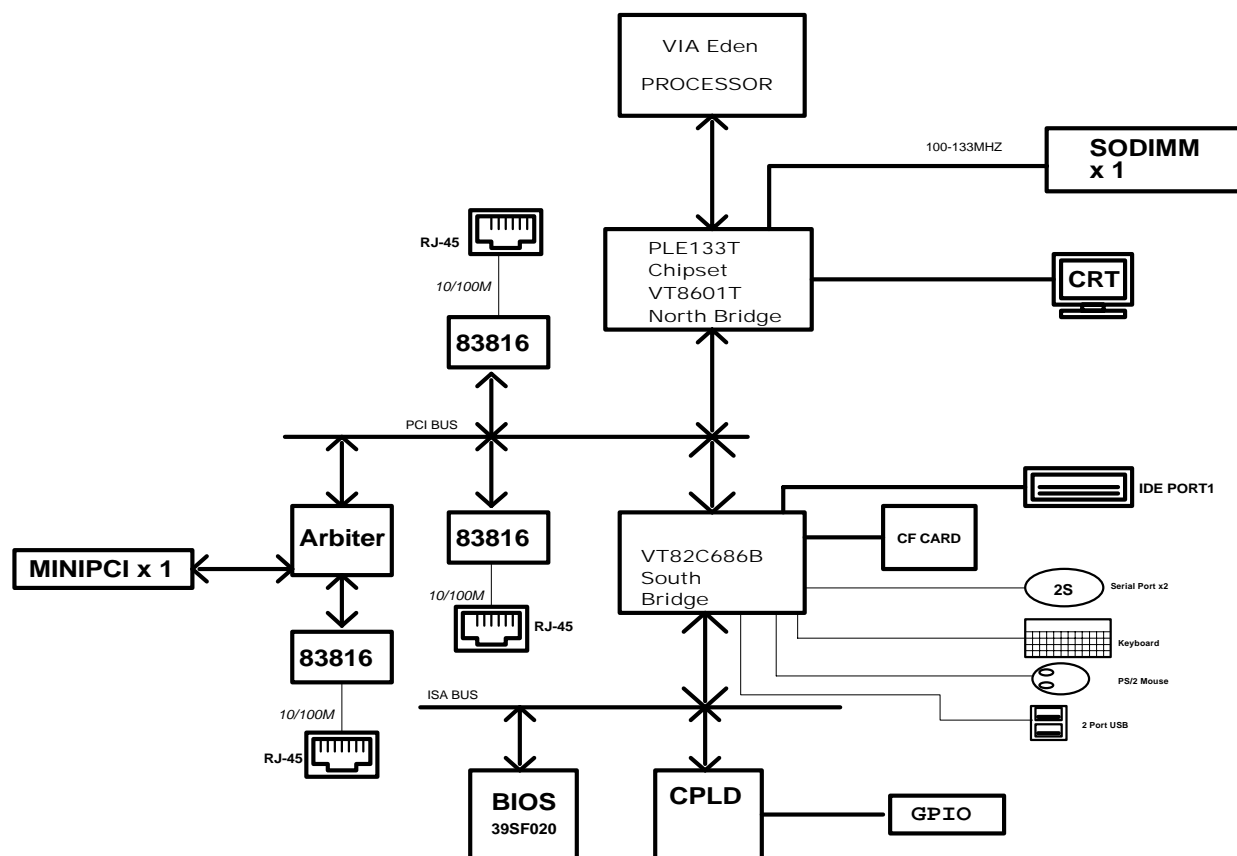
AR-B1662L3 System Block Diagram

1.1 SPECIFICATIONS

- **CPU:** On-board VIA Processor Eden 667 MHz Process<EBGA>
- **DMA channels:** 7
- **Interrupt levels:** 15
- **Chipset:** VIA ® Apollo PLE133T (VT8601T Integrated 2D / 3D graphics accelerator and 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 Ture Color(32 bit)1024x768, or High Color(16 bit) 1280x1024.
- **Display Interface:** CRT – D-SUB 15-pin female connector
- **Ultra ATA/33/66 IDE Interface:** One PCI Enhance IDE channel. The south bridge VT82C686B supports Ultra ATA/33 IDE interface. To support Ultra ATA 66 Hard disk, a specified cable must be available.
- **C. F.:** Supports Compact Flash Type I interface
- **Series ports:** On-board one D-SUB 9-pin male connector for COM1 with RS-232C.On-board one 2x5x2.00mm pin-header connector for COM2 with RS-232C.
- **USB port:** On-board one USB connector for 2 USB ports.
- **Watchdog timer:** Software programmable 1~63sec.
- **Ethernet:** On-board three National Semiconductor 83816, supports 10/100Mbps Base-T with RJ-45 connector.
- **K/B & Mouse:** On-board PS/2 Keyboard and Mouse connector
- **GP I/O:** On-board 2x10x2.00mm pin-header connector for 8-bit input and 8-bit output, TTL level
- **Power Req.:** +5V 3A and +12V 1A maximum
- **PC Board:** 8 layers, EMI considered
- **Dimensions:** 167 mm x 122 mm
- **Operating Temperature:** 0° ~ 60℃

1.2 PACKING LIST

These accessories are included with the system. Before you begin installing your AR-B1662L3 board, please make sure that the following items have been included inside the AR-B1662L3 package.

- The quick setup manual
- 1 AR-B1662L3 CPU board
- 1 Hard disk drive adapter cable for 2.5" hard disk
- 1 Floppy disk drive adapter cable
- 1 Software utility CD
- 1 RS-232 and 1 PS/2 Mouse & Keyboard interface cable mounted on bracket
- 1 VGA cable
- 1 Mini Dim power adapter & cable

2. SETTING UP SYSTEM

This chapter describes how to install the AR-B1662L3. At first, the layout of AR-B1662L3 is shown, and the unpacking information that you should be careful is described.

■ Overview
■ System Settings

2.1 AR-B1662L3 OVERVIEW
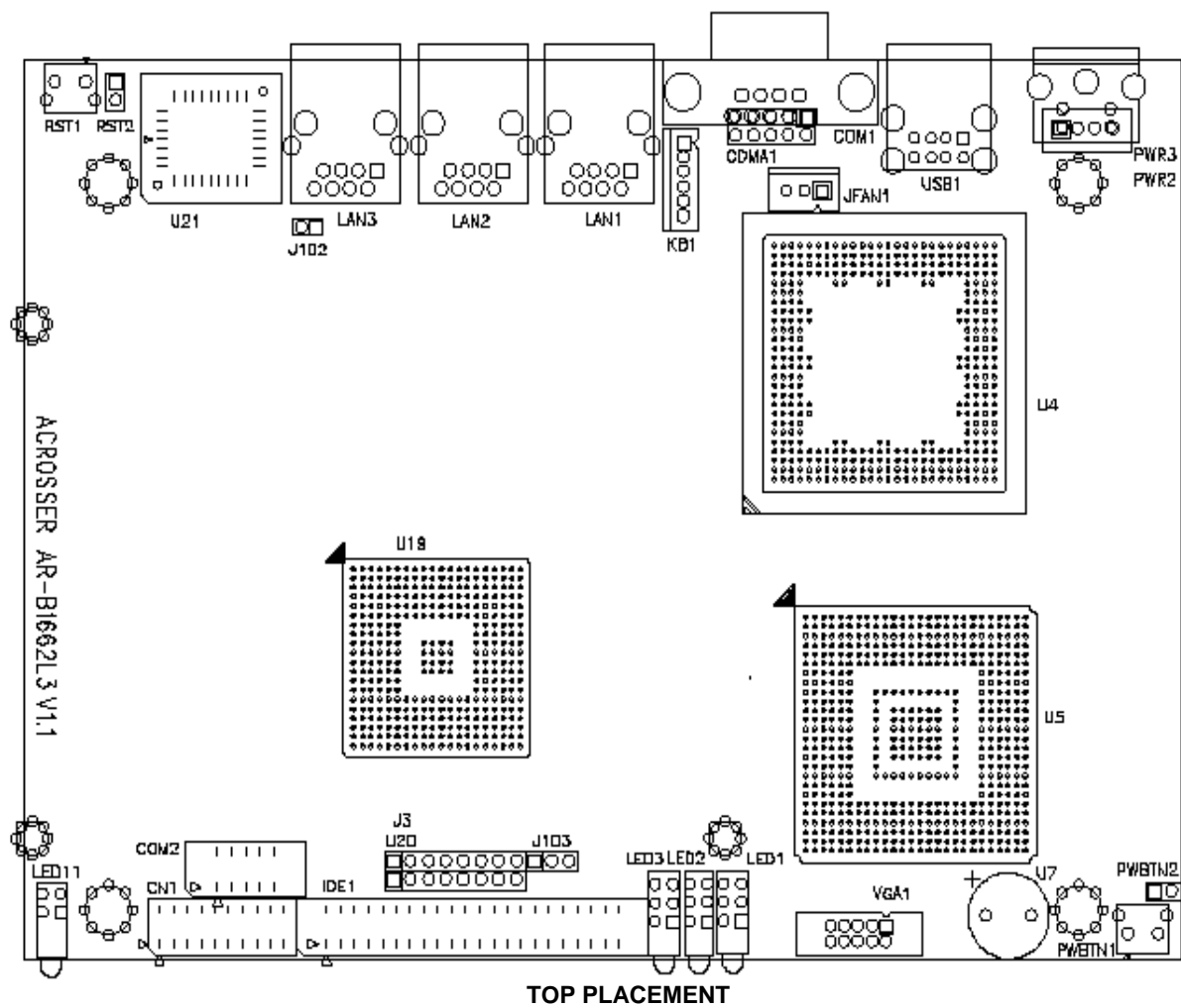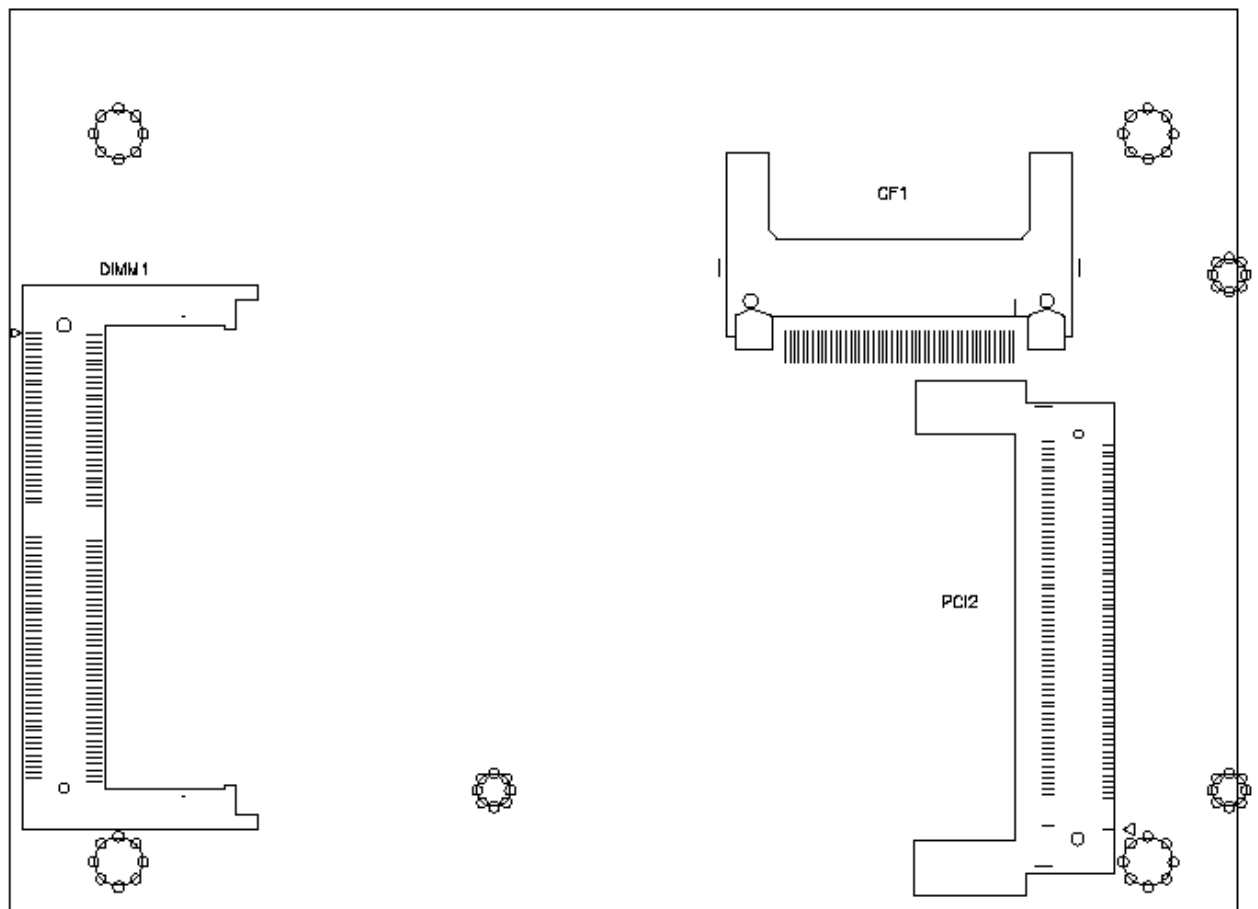
TOP PLACEMENT

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-B1662L3 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 (KB1)

The KB1 is a 6-pin pin header 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 Name
1	MOUSE DATA
2	KB DATA
3	GND
4	VCC
5	MOUSE CLOCK
6	KB CLOCK
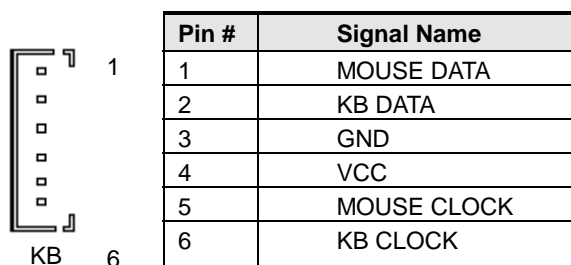
2.2.2 SDRAM SOCKET 144 PIN (DIMM1)

It can assemble 16/32/64/128/256/512MB 144 pin DIMM Module Memory. When you set up 144-pin DIMM Module Memory, AR-B1662L3 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.
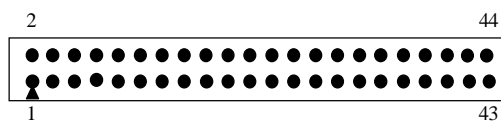
Pin	Signal	Pin	Signal
1	-RESET	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	NOT USED
21	IDEDREQ	22	GROUND
23	-IOW A	24	GROUND
25	-IOR A	26	GROUND
27	IDEIORDYA	28	GROUND
29	-DACKA	30	GROUND
31	AINT	32	GROUND
33	SA 1	34	Not Used
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 CRT Connector (VGA1)

VGA1 is a standard 10-pin header connector commonly used for VGA.
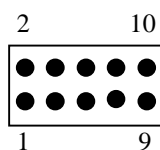
Pin #	Signal Name	Pin #	Signal Name
1	RED	6	AGND
2	AGND	7	V.S
3	GREEN	8	DDCD
4	GND	9	H.S
5	BLUE	10	DDCK

2.2.5 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 two Universal Serial Bus 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**

```
5 6 7 8     1.VCC     5.VCC
┌─────────┐
│ ■ ■ ■ ■ │ 2.DATA0+ 6.DATA1+
├─────────┤
│ ■ ■ ■ ■ │ 3.DATA0- 7.DATA1-
└─────────┘
 1 2 3 4     4.GND     8.GND
```
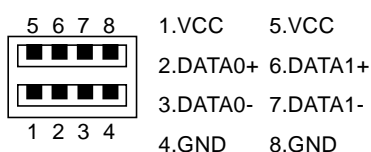
2.2.6 Serial Port (COM1, COM2)

■ AR-B1662L3 is equipped with two serial ports. COM1 is a standard RS-232 interface.

■ COM2 use an adapter cable to interface with external equipment.

A. COM1
USED RS232

COM1

```
1        6
2
3        7
         8
4        9
5
```

B. COM2
USED RS232

```
9          1   1.DCD  5.TX
┌───────────┐
│ ○ ○ ○ ○ ○ │ 2.DSR  6.CTS
│ ○ ○ ○ ○ ○ │ 3.RX   7.DTR
└───────────┘
10         2   4.RTS  8.RI
               9.GND
```
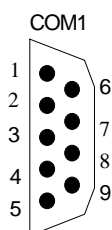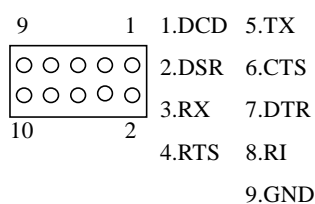
2.2.7 Fan Power Connector (JFAN1)

JFAN1 is 3-pin header for the CPU fan. The fan must be a 12V fan.

```
┌──────────┐  1. GND
│ ▭▭▭▭▭▭ │  2. +12V
│ ○  ○  ○ │  3. Fan Speed
└──────────┘
  3  2  1
```
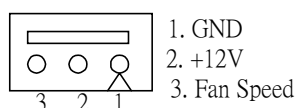
2.2.8 Internal Buzzer (U7)

1+   2-
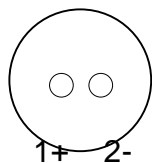
2.2.9 Power/HD LED (LED11)

1   ○   1: Power LED
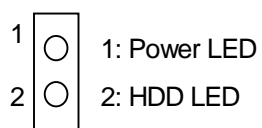
2   ○   2: HDD LED

Power LED: External LED connector for Power On status indication.
HDD LED (IDE1): External LED connector for primary IDE channel.

2.2.10 LAN LED (LED1 LED2 LED3)

1   ○   1:100M

2   ○   2:10M

3   ○   3:ACTIVE
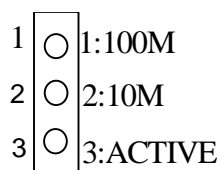
2.2.11 Ethernet RJ-45 Connector (LAN1, LAN2, LAN3)

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.

8   1
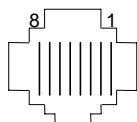
PIN	FUNCTION
1	TPTX+
2	TPTX -
3	TPRX+
4	Not Used
5	Not Used
6	TPRX-
7	Not Used
8	Not Used

2.2.12 Reset Button (RST1)
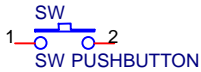
2.2.13 Power Button (PWBTN1)
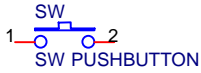
2.2.14 Power Connector (PWR3)

The PWR3 is a 4-pin mini dim power connector.
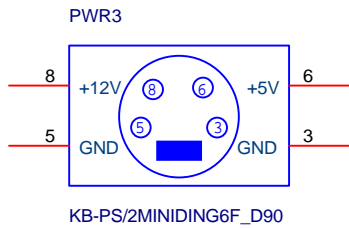
2.2.15 GPIO Port (CN1)
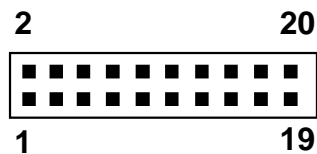
PIN	Signal	PIN	Signal
1	GPIO	2	GPO0
3	GPI1	4	GPO1
5	GPI2	6	GPO2
7	GPI3	8	GPO3
9	GPI4	10	GPO4
11	GPI5	12	GPO5
13	GPI6	14	GPO6
15	GPI7	16	GPO7
17	NONE	18	NONE
19	VCC5	20	GND

Users could test GPIO function under 'Debug' program as follow:

```
C:>debug
O 78 01H
Generally, the CN2 Pin2 will be High Level, others output pin are Low Level.
I 78
FC
Generally, suppose that CN2's Pin1 and Pin3 are High Level then will show "FC"
```

2.2.16 Mini PCI Slot (PCI2)

On board one mini PCI slot (PCI2)

2.2.17 Compact Flash Slot (CF1)

Pin assignment is showed below.

```
                 CF1
-CFCD1  26 ● ● 1    --- GND
  SD11  27 ● ● 2    --- SD3
  SD12  28 ● ● 3    --- SD4
  SD13  29 ● ● 4    --- SD5
  SD14  30 ● ● 5    --- SD6
  SD15  31 ● ● 6    --- SD7
-CFCS1  32 ● ● 7    --- -CFCS0
   -VS1 33 ● ● 8    --- GND
   -IOR 34 ● ● 9    --- GND
   -IOW 35 ● ● 10   --- GND
 -CFWE  36 ● ● 11   --- GND
 IRQ15  37 ● ● 12   --- GND
   VCC  38 ● ● 13   --- VCC
   GND  39 ● ● 14   --- GND
Not Used 40 ● ● 15  --- GND
-CFRST  41 ● ● 16   --- GND
-IORDY  42 ● ● 17   --- GND
Not Used 43 ● ● 18  --- SA2
-CFREG  44 ● ● 19   --- SA1
 -DASP  45 ● ● 20   --- SA0
-PDIAG  46 ● ● 21   --- SD0
   SD8  47 ● ● 22   --- SD1
   SD9  48 ● ● 23   --- SD2
  SD10  49 ● ● 24   --- -IO16
   GND  50 ● ● 25   --- -CFCD2
```
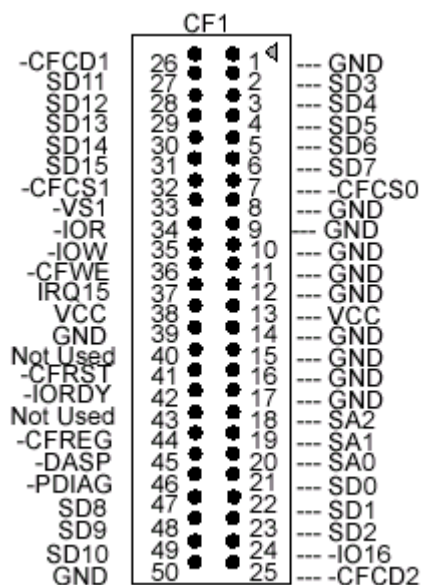
2.2.18 CF Master/Slave Mode Select (J102)

This 2-pins jumper will decide the CF operating in master/slave mode.

Jumper	Function
Open (Factory Preset)	Slave
Short	Master

2.2.19 Clear CMOS Jumper (J103)

```
 1  2  3
 ■ [▯ ▯]
```
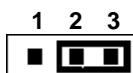
Jumper	Function
Open	Clear Data
2-3(Factory Preset)	Keep Data (Factory Preset)

3. CRT FLAT PANEL DISPLAY

This chapter describes the configuration and installation procedures for CRT displays. The following topics are covered:

- CRT Connector
※ DON´T SUPPORT EXTERNAL VGA CARD

3.1 CRT CONNECTOR (CRT1)

The AR-B1662L3 supports CRT color monitors. It uses an onboard VGA chipset and you can use the VGA RAM 2.4 or 8 MB. For different VGA display modes, your monitor must possess certain characteristics (the right drivers) to display the mode you want.

To connect to a CRT monitor, an adapter cable has to be connected to the VGA connector. VGA is used to connect with a VGA monitor when you are using the on-board VGA controller as a display adapter. Pin assignments for the VGA connector are as follows:
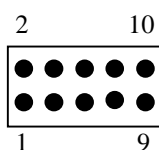
CRT1: CRT Connector

Pin #	Signal Name	Pin #	Signal Name
1	RED	6	AGND
2	AGND	7	V.S
3	GREEN	8	DDCD
4	GND	9	H.S
5	BLUE	10	DDCK

4. WATCHDOG TIMER

This section describes the use of Watchdog Timer, including disable, enable, and trigger. AR-B1662L3 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.

```
Enable(D7) ──────►┌──────────┐◄────────┌──────────┐
                  │          │         │ Time Base │
Time Factor       │          │         └──────────┘
(D0-D5) ─────────►│ Watchdog │              │
                  │ Register │              ▼
Write and         │          │────────►┌──────────┐
Trigger ─────────►│          │         │Counter and│
                  └──────────┘         │ Compartor │
                                       └──────────┘
                                            │
                                            └──────► RESET
```
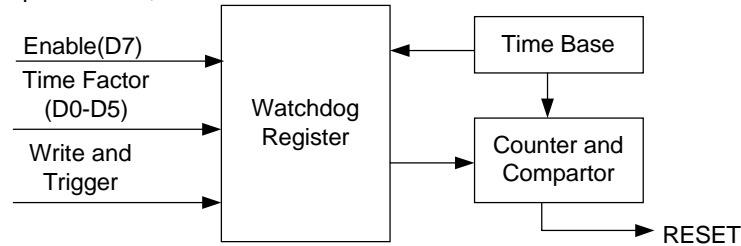
Watchdog Block Diagram

4.1 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
```

4.2 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.

5. BIOS CONSOLE

This chapter describes the AR-B1662L3 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
- Standard CMOS Setup
- Advanced CMOS Setup
- Advanced Chipset Setup
- Power Management Setup
- PCI/Plug and Play Setup
- Peripheral Setup
- Hardware Monitor Setup
- Auto-Detect Hard Disks
- Change User Password
- Auto configuration with Optimal Settings
- Auto configuration with Fail Save Settings
- Save Settings and Exit
- Exit Without Saving

5.1 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.

```
        AMIBIOS HIFLEX SETUP UTILITY - VERSION 1.54
        (C)2001 American Megatrends, Inc. All Rights Reserved

                      Standard CMOS Setup
                      Advanced CMOS Setup
                     Advanced Chipset Setup
                     Power Management Setup
                  PCI / Plug and Play Setup
                        Peripheral Setup
                     Hardware Monitor Setup
                     Auto-Detect Hard Disks
                      Change User Password
                   Change Supervisor Password
             Auto Configuration with Optimal Settings
            Auto Configuration with Fail Safe Settings
                      Save Settings and Exit
                      Exit Without Saving


        Standard CMOS setup for changing time, date, hard disk type, etc.
           ESC:Exit  ↑↓:Sel  F2/F3:Color  F10:Save & Exit
```
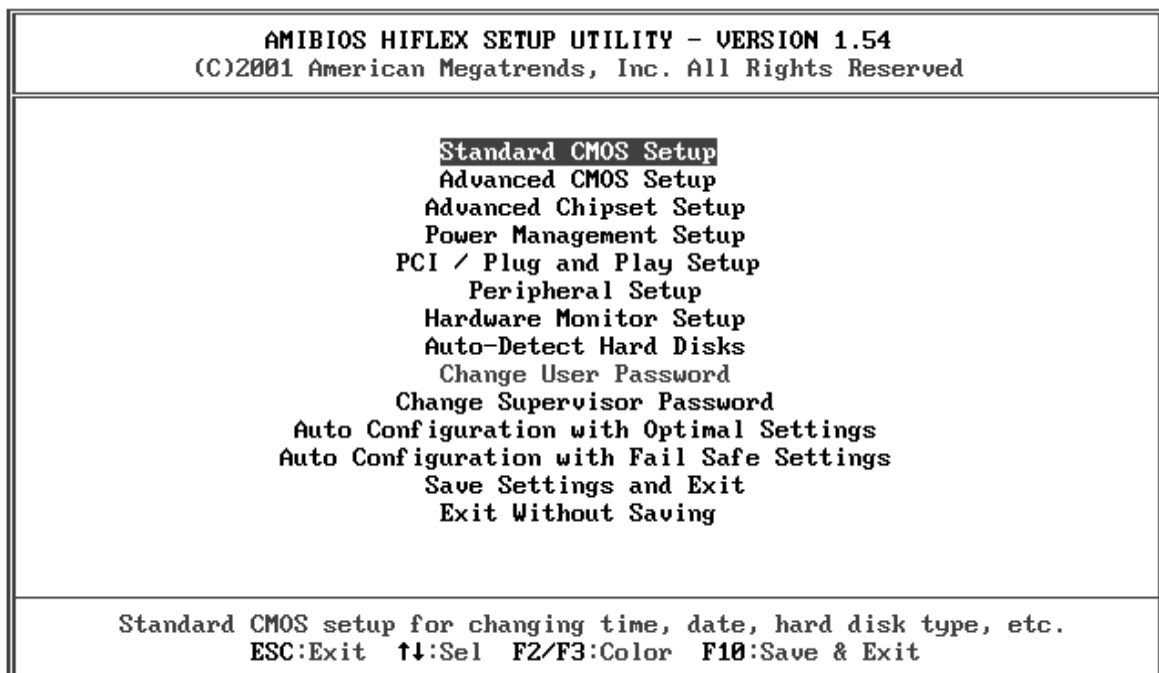
Setup Main Menu

CAUTION:
1. AR-B1662L3 BIOS the factory-default setting is used to the <Auto Configuration with Optimal Settings>. Acrosser recommends using the BIOS default setting, unless you are very familiar with the setting function, or you can contact the technical support engineer.
2. If the BIOS settings are lost, the CMOS will detect the <Auto Configuration with Fail Safe Settings> to boot the operation system, this option will reduce the performance of the system. Acrosser recommends choosing the <Auto Configuration with Optimal Setting> in the main menu. This option gives best-case values that should optimize system performance.
3. The BIOS settings are described in detail in this section.

5.2 STANDARD CMOS SETUP

The <Standard CMOS Setup> 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.

```
                AMIBIOS SETUP - STANDARD CMOS SETUP
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Date (mm/dd/yyyy): Mon Mar 31,2003              Base Memory: 0 KB
Time (hh/mm/ss) : 12:08:34                      Extd Memory: 0 MB

Floppy Drive A:    Not Installed
Floppy Drive B:    Not Installed
                                               LBA  Blk  PIO  32Bit
             Type           Size    Cyln  Head WPcom Sec Mode Mode Mode Mode
Pri Master: Not Installed
Pri Slave : Not Installed
Sec Master: Not Installed
Sec Slave : Not Installed

Boot Sector Virus Protection     Disabled

Month:  Jan - Dec                              ESC:Exit  ↑↓:Sel
  Day:   01 - 31                               PgUp/PgDn:Modify
 Year: 1980 - 2099                             F1:Help F2/F3:Color
```

Standard CMOS Setup

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>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.
<Sec Master>, <Sec Slave> is reserved to Compact Flash, user can set CF in master mode or slave mode by J102 You can select <AUTO> under the <TYPE> and <MODE> fields. This will enable auto detection of your IDE drives during boot-up. This will allow you to change your hard drives (with the power off) and then power on without having to reconfigure your hard drive type. If you use older hard disk drives, which do not support this feature, then you must configure the hard disk drive in the standard method as described above by the <USER> option.

Floppy Setup

The <Standard CMOS Setup> 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.

Boot Sector Virus Protection

This option protects the boot sector and partition table of your hard disk against accidental modifications. Any attempt to write to them will cause the system to halt and display a warning message. If this occurs, you can either allow the operation to continue or use a bootable virus-free floppy disk to reboot and investigate your system. The default setting is *<Disabled>*. This setting is recommended because it conflicts with new operating systems. Installation of new operating systems requires that you disable this to prevent write errors.

5.3 ADVANCED CMOS SETUP

The <Advanced CMOS Setup> option consists of configuration entries that allow you to improve your system performance, or let you set up some system features according to your preference. Some entries here are required by the CPU board's design to remain in their default settings.

```
                AMIBIOS SETUP - ADVANCED CMOS SETUP
            (C)2001 American Megatrends, Inc. All Rights Reserved

   Quick Boot                    Disabled        Available Options:
   1st Boot Device               Disabled        ▶ Disabled
   2nd Boot Device               Disabled          Enabled
   3rd Boot Device               Disabled
   Try Other Boot Devices        Yes
   S.M.A.R.T. for Hard Disks     Disabled
   BootUp Num-Lock               Off
   PS/2 Mouse Support            Disabled
   Primary Display               Absent
   Password Check                Setup
   Boot To OS/2                  No
   L1 Cache                      Disabled
   L2 Cache                      Disabled
   System BIOS Cacheable         Disabled
   C000,32k Shadow               Disabled
   C800,16k Shadow               Disabled
   CC00,16k Shadow               Disabled
   D000,16k Shadow               Disabled        ESC:Exit   ↑↓:Sel
   D400,16k Shadow               Disabled        PgUp/PgDn:Modify
   D800,16k Shadow               Disabled     ▼  F1:Help F2/F3:Color
```

```
           AMIBIOS SETUP - ADVANCED CMOS SETUP
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 1st Boot Device              Disabled      ▲  Available Options:
 2nd Boot Device              Disabled       ▶ Disabled
 3rd Boot Device              Disabled         Enabled
 Try Other Boot Devices       Yes             Cached
 S.M.A.R.T. for Hard Disks    Disabled
 BootUp Num-Lock              Off
 PS/2 Mouse Support           Disabled
 Primary Display              Absent
 Password Check               Setup
 Boot To OS/2                 No
 L1 Cache                     Disabled
 L2 Cache                     Disabled
 System BIOS Cacheable        Disabled
 C000,32k Shadow              Disabled
 C800,16k Shadow              Disabled
 CC00,16k Shadow              Disabled
 D000,16k Shadow              Disabled
 D400,16k Shadow              Disabled     ESC:Exit  ↑↓:Sel
 D800,16k Shadow              Disabled     PgUp/PgDn:Modify
 DC00,16k Shadow              Disabled     F1:Help F2/F3:Color
```

Advanced CMOS Setup

Quick Boot

This category speeds up Power On Self Test (POST) after you power on the computer. If it is set to *Enabled*, BIOS will shorten or skip some check items during POST.

1st Boot Device

2nd Boot Device

3rd Boot Device

These options determine where the system looks first for an operating system.

Try Other Boot Devices

This option can boot from other devices when default setting boot is failed.

S.M.A.R.T for Hard Disks

S.M.A.R.T is abbreviation of Self-Monitoring Analysis and Reporting Technology. It is reliable and precautious technology. When Hard Disk disorder, it prevents Hard Disk from the loss of data.

Boot Up Num-Lock

This item is used to activate the Num-Lock function upon system boot. If the setting is on, after a boot, the Num-Lock light is lit, and user can use the number key.

PS/2 Mouse Support

The setting of *Enabled* allows the system to detect a PS/2 mouse on boot up.   If detected, IRQ12 will be used for the PS/2 mouse.   IRQ 12 will be reserved for expansion cards if a PS/2 mouse is not detected.   *Disabled* will reserve IRQ12 for expansion cards and therefore the PS/2 mouse will not function.

Primary Display

The option is used to set the type of video display card installed in the system.

Password Check

This option enables password checking every time the computer is powered on or every time the BIOS Setup is executed.   If *Always* is chosen, a user password prompt appears every time the computer is turned on.   If *Setup* is chosen, the password prompt appears if the BIOS executed.

Boot to OS/2

When using the OS/2 operating system, you need to *Yes* this option otherwise leave this on the setup default of *No*.

L1 Cache

This option controls to *Enabled* or *Disabled* the CPU's Level 1 built-in catch.

L2 Cache

This option controls to *Enabled* or *Disabled* the CPU's Level 2 built-in catch.

System BIOS Cacheable

Enabled this option to enhance system performance by shadowing and caching system BIOS shadow functions will be ignored.

Shadow Memory

Each of segments provides three options ***Disabled, Enabled***, and ***Cached*** for faster adapter's ROM executions. However this shadow function is Chipset oriented and dependent on system hardware feature. In general, C000 64K will be allocated for VGA BIOS and set to Cached to get higher display performance by shadowing and caching feature. If user chooses Enabled setting, only BIOS shadow function is active.

5.4 ADVANCED CHIPSET SETUP

This option controls the configuration of the board's chipset. Control keys for this screen are the same as for the previous screen.

```
              AMIBIOS SETUP - ADVANCED CHIPSET SETUP
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 ******** DRAM Timing ********                    Available Options:
 Configure SDRAM Timing by SPD    Disabled        ▶ Disabled
   DRAM Frequency                 100Mhz            Enabled
   SDRAM CAS# Latency             3

 Memory Hole                      Disabled
 AGP Aperture Size                256MB
 ISA Bus Clock                    PCICLK/4
 USB Controller                   Disabled
 USB Device Legacy Support        Disabled




                                                  ESC:Exit  ↑↓:Sel
                                                  PgUp/PgDn:Modify
                                                  F1:Help F2/F3:Color
```

Advanced Chipset Setup

Configure SDRAM Timing by SPD

SPD is the abbreviation Serial Presence Detect. SPD takes accord the chip types, capacity, timing, voltage data.
The system can auto adjust memory according to the data to reach the best situation.
The Choice: Enabled, Disabled

DRAM Frequency

PC-100 means the memory bus is running at 100MHz. PC-133 means the memory bus is running at 133MHz.
The Choice: 66Mhz, 100Mhz, 133Mhz

SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.
The Choice: 2, 3

Memory Hole

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

AGP Aperture Size

The item is to set up AGP display to use how much memory to save Texture Data.

ISA Bus Clock

This option is used to select the ISA bus clock rate.

USB Controller

This option can enable ALL USB Port, USB Port 0&1,USB Port 2&3, or Disabled USB function.

USB Device Legacy Support

These options are used to *Enabled* the USB function and it's only useful in the DOS mode. The USB function sets *Enabled* will occupy IRQ10.

5.5 POWER MANAGEMENT

This section is used to configure power management features.   This <Power management Setup> option allows you to reduce power consumption.   This feature turns off the video display and shuts down the hard disk after a period of inactivity.

```
              AMIBIOS SETUP - POWER MANAGEMENT SETUP
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 ACPI Aware O/S                    No            Available Options:
 Power Management/APM              Disabled      ▶ No
 Hard Disk Power Down Mode         Disabled        Yes
 System Thermal                    Disabled
 Thermal Active Temperature        40°C/104°F
 Thermal Slow Clock Ratio          Reserved




                                                ESC:Exit  ↑↓:Sel
                                                PgUp/PgDn:Modify
                                                F1:Help F2/F3:Color
```

Power Management

Power Management / APM

Hard Disk Power Down Mode

System Thermal

If the choice <monitor>is chose, the system will alarm when the system temperature is beyond the critical temperature.

Thermal Active Temperature

Thermal Slow Clock Ratio

This item is to set up the Operating Frequency of system clock in power saving mode, to set a suitable clock frequency ratio, which between standard CPU clock and CPU clock in power saving mode when the temperature is beyond the critical temperature.

5.6 PCI/PLUG AND PLAY

This section is used to configure PCI / Plug and Play features.   The <PCI & PNP Setup> option configures the PCI bus slots.   All PCI bus slots on the system use INTA#, thus all installed PCI cards must be set to this value.

```
           AMIBIOS SETUP - PCI / PLUG AND PLAY SETUP
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Plug and Play Aware O/S          No            Available Options:
Clear NVRAM                      No            ▶ No
OnChip VGA Frame Buffer Size     None            Yes
PCI Latency Timer (PCI Clocks)   32
Primary Graphics Adapter         PCI
DMA Channel 0                    PnP
DMA Channel 1                    PnP
DMA Channel 3                    PnP
DMA Channel 5                    PnP
DMA Channel 6                    PnP
DMA Channel 7                    PnP
IRQ3                             PCI/PnP
IRQ4                             PCI/PnP
IRQ5                             PCI/PnP
IRQ7                             PCI/PnP
IRQ9                             PCI/PnP
IRQ10                            PCI/PnP
IRQ11                            PCI/PnP     ESC:Exit  ↑↓:Sel
IRQ14                            PCI/PnP     PgUp/PgDn:Modify
IRQ15                            PCI/PnP     F1:Help F2/F3:Color
```

PCI / Plug And Play

Plug and Play Aware O/S

Set this option to *Yes* if the operating system installed in the computer is Plug and Play-aware.   The BIOS only detects and enables PnP ISA adapter cards that are required for system boot.   The Windows 95 operating system detects and enables all other PnP-aware adapter cards.   Windows 95 is PnP-aware.   Set this option <*No*> if the operating system (such as DOS, OS/2, Windows 3.x) does not use PnP.   You must set this option correctly or PnP-aware adapter cards installed in your computer will not be configured properly.

Clear NVRAM

This sets the operating mode of the boot block area of the BIOS FLASH ROM to allow programming in the *Yes* setting.

OnChip VGA Frame Buffer Size
PCI Latency Timer (PCI Clocks)

This option sets latency of all PCI devices on the PCI bus.   The settings are in units equal to PCI clocks.

Primary Graphic Adapter

This option is set to use PCI bus or AGP. The AGP mode will get system a faster processing speed.

DMA & IRQ

These options specify the bus that the named IRQs/DMAs lines are used on. These options allow you to specify IRQs/DMAs for use by legacy ISA adapter cards. These options determine if the BIOS should remove an IRQ/DMA from the pool of availability of IRQs/DMAs passed to the BIOS configurable devices.   If more IRQs/DMAs must be removed from the pool, the end user can use these PCI/PnP Setup options to remove the IRQ/DMA by assigning the option to the ISA/EISA setting.   The onboard I/O is configurable with BIOS.

5.7 PERIPHERAL SETUP

This section is used to configure peripheral features.

```
              AMIBIOS SETUP - PERIPHERAL SETUP
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   OnBoard Serial Port1          Auto            Available Options:
   OnBoard Serial Port2          Auto          ▶ Auto
   OnBoard IDE                   Reserved         Disabled
                                                  3F8/COM1
                                                  2F8/COM2
                                                  3E8/COM3
                                                  2E8/COM4




                                                ESC:Exit  ↑↓:Sel
                                                PgUp/PgDn:Modify
                                                F1:Help F2/F3:Color
```

Peripheral Setup

OnBoard Serial Port

This option enables the serial port on the AR-B1662L3.

OnBoard IDE

This option is to set up the operating mode of IDE controller. If the main board offers the enhanced I/O port, the choice should be <*Enabled*>.

5.8 AUTO-DETECT HARD DISKS

This option detects the parameters of an IDE hard disk drive, and automatically enters them into the Standard CMOS Setup screen.

5.9 PASSWORD SETTING

This BIOS Setup has an optional password feature.   The system can be configured so that all users must enter a password every time the system boots or when BIOS Setup is executed.   User can set either a Supervisor password or a User password.

Select the appropriate password icon (Supervisor or User) from the Security section of the BIOS Setup main menu.   Enter the password and press [Enter].   The screen does not display the characters entered.   After the new password is entered, retype the new password as prompted and press [Enter].

If the password confirmation is incorrect, an error message appears.   If the new password is entered without error, press [Esc] to return to the BIOS Main Menu.   The password is stored in CMOS RAM after BIOS completes.   The next time the system boots, you are prompted for the password function is present and is enabled.

```
Enter new supervisor password:
```

5.10 LOAD DEFAULT SETTING

This section permits users to select a group of settings for all BIOS Setup options.   You not only can use these items to quickly set system configuration parameters, but also can choose a group of settings that have a better chance of working when the system is having configuration related problems.

5.10.1 Auto Configuration with Optimal Setting

The user can load the optimal default settings for the BIOS.   The Optimal default settings are best-case values that should optimize system performance.   If CMOS RAM is corrupted, the optimal settings are loaded automatically.

```
Load high performance setting (Y/N) ?
```

5.10.2 Auto Configuration with Fail Safe Setting

The user can load the Fail-Safe BIOS Setup option settings by selecting the Fail-Safe item from the Default section of the BIOS Setup main menu.

The Fail-Safe settings provide far from optimal system performance, but are the most stable settings.   Use this option as a diagnostic aid if the system is behaving erratically.

```
Load failsafe settings (Y/N) ?
```

5.11 BIOS EXIT

This section is used to exit the BIOS main menu. After making your changes, you can either save them or exit the BIOS menu and without saving the new values.

5.12 BIOS UPDATE

The BIOS program instructions are contained within computer chips called FLASH ROMs that are located on your system board. The chips can be electronically reprogrammed, allowing you to upgrade your BIOS firmware without removing and installing chips.

The AR-B1662L3 provides the FLASH BIOS update function for you to easily to update to a newer BIOS version. Please follow these operating steps to update to new BIOS:

Step 1:   Turn on your system and don't detect the CONFIG.SYS and AUTOEXEC.BAT files.

Step 2:   Insert the FLASH BIOS diskette into the floppy disk drive.

Step 3:   In the MS-DOS mode, you can type the FLASH826 program.

               A:\>FLASH826

Step 4:   Press [ALT+F], The <File> box will show the following message, this message will be highlighted.

               BIOS Filename Loading …   . After typing in the File name you must press<ENTER> or press <ESC> to exit.

Step 5:   And then please enter the file name to the <Enter File Name> box.   And the <Message> box will show the following notice.

               Are you sure to write the BIOS into flash ROM?

Step 6:   Press the <Enter> key to update the new BIOS.
               Then the <Message> box will show the <Programming now …>.

Step 7:   When the BIOS update is successful, the message will show <Flash ROM Update Completed - Pass>.

APPENDIX A. I/O & MEMORY MAP

Memory Map:

MEMORY MAP	ASSIGNMENT
0000000-009FFFF	System memory used by DOS and application
00A0000-00BFFFF	Display buffer memory for VGA/ EGA / CGA / MONOCHROME adapter
00C0000-00DFFFF	Reserved for I/O device BIOS ROM or RAM buffer.
00E0000-00EFFFF	Reserved for PCI device ROM
00F0000-00FFFFF	System BIOS ROM
0100000-FFFFFFF	System extension memory

I/O Map:

I/O MAP	ASSIGNMENT
000-01F	DMA controller (Master)
020-021	Interrupt controller (Master)
022-023	Chipset controller registers I/O ports.
040-05F	Timer control registers.
060-06F	Keyboard interface controller
070-07F	RTC ports & CMOS I/O ports
080-09F	DMA register
0A0-0BF	Interrupt controller (Slave)
0C0-0DF	DMA controller (Slave)
0F0-0FF	Math coprocessor
1F0-1F8	Hard Disk controller
250-258	Super I/O
2B0-2DF	Graphics adapter controller
2E8-2EF	Serial port-4
2F8-2FF	Serial port-2
360-36F	Net work ports
378-37F	Parallel port-1
3B0-3BF	Monochrome & Printer adapter
3C0-3CF	EGA adapter
3D0-3DF	CGA adapter
3E8-3EF	Serial port-3
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port-1

APPENDIX B. INTERRUPT REQUEST (IRQ)

SETTING	HARDWARE USING THE SETTING
00	System timer
01	Standard 101/102-Key or Microsoft Natural Keyboard
02	Programmable interrupt controller
03	Serial Port (COM2)
04	Serial Port (COM1)
05	IRQ Holder for PCI Steering
06	Floppy Disk Controller
07	Parallel Port (LPT1)
08	RTC clock
09	ACPI
10	Serial Port (COM4)
11	Serial Port (COM3)
12	PS/2 Compatible Mouse Port
13	Numeric data processor
14	Primary IDE controller
15	Secondary IDE controller

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