AR-B9638
INDUSTRIAL GRADE
CPU BOARD
User' s Guide

Table of Contents

0.PREFACE

0.1 COPYRIGHT NOTICE AND DISCLAIMER

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0.2 WELCOME TO THE AR-B9638 CPU BOARD

This guide introduces the Acrosser AR-B9638 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-B9638. General system information can also be found in this publication.

0.3 BEFORE YOU USE THIS GUIDE

Please refer to the Chapter 3, "Setting System," in this guide, if you have not already installed this AR-B9638.
Check the packing list before you install and make sure the accessories are completely included. AR-B9638 CD provides the newest information regarding the CPU card. Please refer to the README.DOC file of the enclosed utility diskette. 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 ORGANIZATION

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

■ Chapter 1," Introduction", notifies you how to avoid the damages against this CPU Card as well as describes the background of this manual and the specification of AR-B9638.
■ Chapter 2,"Hardware Configuration" outlines the components' locations and their functions.   From this part, you can find how to set jumper and configure this card, as you need.
■ Chapter 3,"Software Utilities" provide helpful information about the proper installations of the VGA and LAN function.
■ Chapter 4," AMI BIOS Setup," indicates you how to set up the BIOS configurations.

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. OVERVIEW

This chapter provides an overview of your system features and capabilities.   The following topics are covered:

- Specification
- Packing List

1.1 SPECIFICATION

- **CPU:** Supports Intel Socket 370 Pentium III up to 850 MHz or Celeron up to 800 MHz
- **CHIPSET:** INTEL 443 BX
- **RAM MEMORY:** Supports 1 168-pin DIMM (PC-100 SDRAM) sockets, 256Mb max.
- **CACHE SIZE:** Internal 128KB L2 cache inside the CPU.
- **ETHERNET:** Uses RT8139C chipset, supports 10/100M Base T with RJ-45 connector built-in LED.
- **SUPER I/O:** 2 PCI IDE---with one 2.54 mm 40-pin connectors, and one 2.0mm 44pin connector.
  1 FDC---with 2.54mm 34 -pin connector.
  1 Parallel--- with 2.0 mm 26-pin connector. Supports SPP/EPP/ECP mode.
  4 RS-232C-COM ports with 2.54mm 40-pin connector located at bracket.
  RS-232C/RS485 is selected by jumper and use the same connector.
  IrDA uses 2.54mm 5-pin header.
- **BIOS:** *AMI flash BIOS* (256KB, including VGA/LCD/LAN BIOS) Supports utility program for easy to update new version of BIOS.
- **KEYBOARD/MOUSE:** PS/2 compatible with 2.0mm 6-pin JST connector
- **BUS INTERFACE**: PC-104, PCI slot
- **VGA/LCD DISPLAY:**   SMI SM721G4 with 2MB VRAM internally.
  CRT-with 2.0mm 10-pin connector
  LCD-with DF9 1.0mm 44-pin connector.(IIDA   DF9-51P-1V)
- **SYSTEM POWER REQUIREMENT:** +5V,4.35A   & +12V,0.15A   (typical).
- **USB:** Built-in 2 ports USB interface with 2.54mm 8-pin headers.
- **RTC:** Chipset included. Supports ACPI Function with 10 years data retention.
- **SPEAKER:** Supports on-board buzzer.
- **FLASH DISK:** Supports 1 DiskOnChip Socket 144MB.
- **H/W MONITORING:** Built-in (Winbond W83977TF-AW) hardware monitoring chipset.
- **HEADERS:**   2-pin Reset, hard disk LED, and power.
  3-pin CPU fan connector
- **CPU SP:** Separated Vcore and Vio.
- **CE DESIGN-IN:** Add EMI components to COM ports, Parallel port, CRT, USB, Keyboard, and PS/2 mouse. Designed in accordance with EMC requirements.
- **PC BOARD:** 6 layers, EMI considered, especially in switching power layout.
- **BOARD DIMENSION:** Compact size 203mm x 146mm(7.99" x 5.74")

1.2 PACKING LIST

- The quick setup manual
- 1 AR-B9638 CPU board
- 1 Hard disk drive adapter cable
- 1 Floppy disk drive adapter cable
- 1 Parallel port adapter cable mounted on one bracket
- 1 software utility CD
- 4 RS-232 interface cable
- 1 CRT adapter cable
- 1 Video out adapter cable

2. HARDWARE CONFIGURATION

Four parts are included:

- Jumper & Connector Quick Reference Table
- Components' Locations
- Configuration and Jumper settings
- Connector Pin Assignments

## 2.1 JUMPER & CONNECTOR QUICK REFERENCE TABLE

SWITCH & JUMPER:

SERIAL PORT A~D Voltage Select .... JP1~JP4

DOC Mapping Address... JP5

RS232/RS422/RS485 Select .... JP6, JP22~JP24

Clear CMOS Jumper JP7

LVDS Rising or Falling Select JP8

LCD Panel Voltage Select.. JP10

CONNECTOR:

Floppy Disk Drive Connector CN1, CN3

Serial Port A~D (A: RS-232/422/485(COM1), B~D: RS-232 (COM2-4)) CN2

Reset Switch CN9

IR Connector CN5

PC/104 BUS CN6, CN7

CRT Connector CN8

Video In CN12

Video Out Connector CN13

Hard Disk Drive Connector (2.0mm 44pin) IDE1

Front Panel Connector J1

LCD Panel Connector CN11

LVDS Connector CN10

Ethernet RJ-45 Connector LAN1

Audio1 & Audio2.. AUDIO

External Audio Connector J3

CD-IN Connector J2

Watch Dog LED Connector J5

Printer Connector LPTA1

External Keyboard & Mouse Connector KM1

USB Connector USB1

Disk On Chip Socket DOC1

2.2. COMPONENT LOCATIONS

AR-B9638 Connector, Jumper and Component Locations
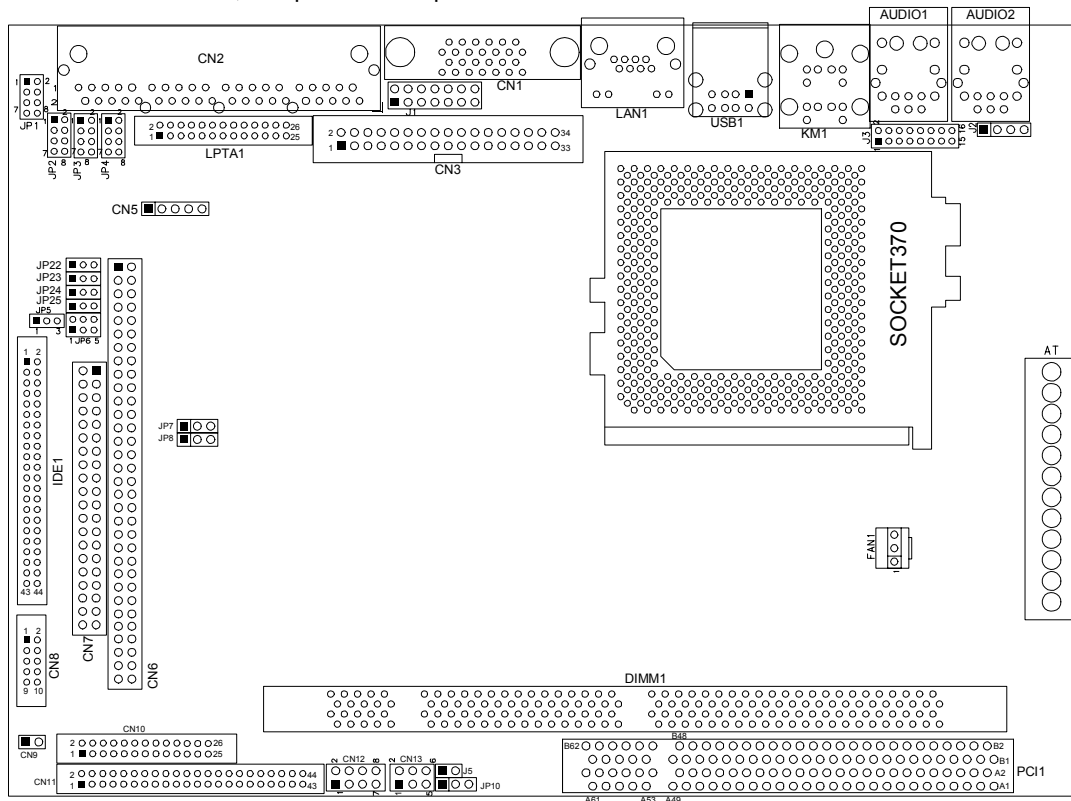
2.3. HOW TO SET JUMPERS

A jumper consists of two or three metal pins with a plastic base mounted on the card, and a small plastic cap (with a metal contact inside) to connect the pins, so you can set up your hardware configuration by "open" or close the pins. The jumper can be combined into sets, which called jumper blocks. When the jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows how it looks.
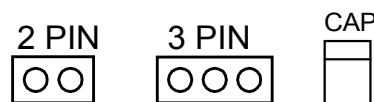

JUMPERS AND CAP

If a jumper has three pins, for example, labeled PIN1, PIN2, and PIN3, you can either connect PIN1 & PIN2 to create one setting and shorting or connect PIN2 & PIN3 to create another setting. The jumper setting rules are applied throughout this manual.
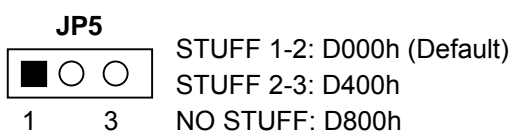
2.3.1 SERIAL PORT A~D Voltage Select (JP1~JP4)

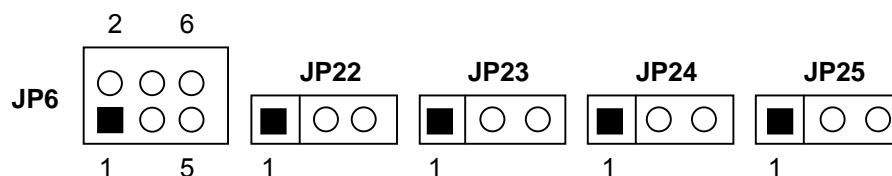JP1: Port A   JP2: Port B   JP3: Port C   JP4: Port D

JP1~JP4 Header   Serial Port Real View
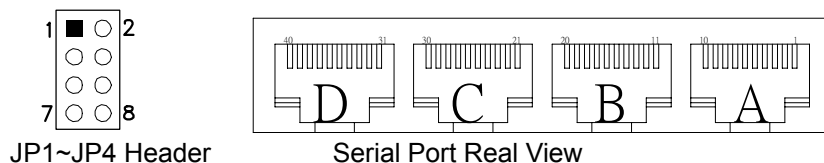
Pin 1-2→+5V(Default)
Pin 3-4→+12V
Pin 5-6→+12V
Pin 7-8→GND

2.3.2 DOC Mapping Address (JP5)

JP5

STUFF 1-2: D000h (Default)
STUFF 2-3: D400h
NO STUFF: D800h

2.3.3 RS232/RS422/RS485 Select (COM1)

JP6, JP22~JP24

	JP6	JP22	JP24	JP23	JP25
RS-232	1-2	1-2	1-2	1-2	1-2
RS-422	3-4	2-3	2-3	2-3	2-3
RS-485	5-6	2-3	2-3	2-3	2-3

2.3.4 Clear CMOS Jumper (JP7)

JP7

1-2: Normal (default)
2-3: Clear CMOS

2.3.5 LVDS Rising or Failing Select (JP8)

JP8

1-2: Rising Edge (default)
2-3: Failing Edge
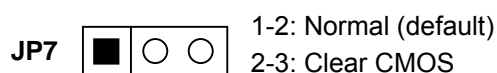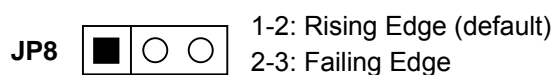
2.3.6 LCD Panel Voltage Select (JP10)

JP10

1-2: +5V
2-3: +3.3V (default)

2.3.7 Floppy Disk Drive Connector (CN1, CN3)

AR-B9638 has two FDD connectors. "CN3" is standard 34-pins box header;"CN1" is propriety external connectors.

CN1 Pin definition:

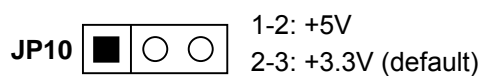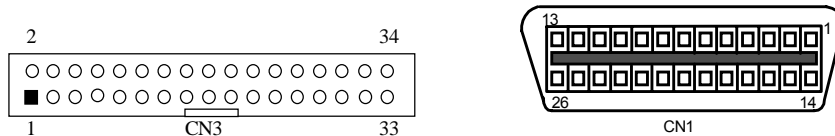| Pin No	Pin definition	Pin No	Pin definition
1	INDEX#	14	VCC
2	VCC	15	DSB#
3	VCC	16	DSKCHG#
4	DSA#	17	DRVEN0
5	DRVEN1	18	MOA#
6	MOB#	19	DIR#
7	GND	20	STEP#
8	WD#	21	GND
9	GND	22	GND
10	GND	23	WE#
11	GND	24	+12V
12	RDATA#	25	TRACK0#
13	HEAD	26	WP#

CN3 Pin definition:

Pin No	Pin definition	Pin No	Pin definition
1	GND	2	DRVEN0
3	GND	4	NC
5	GND	6	DRVEN1
7	GND	8	INDEX#
9	GND	10	MOA#
11	GND	12	DSB#
13	GND	14	DSA#
15	GND	16	MOB#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WD#
23	GND	24	WE#
25	GND	26	TRACK0#
27	GND	28	WP#
29	GND	30	RDATA#
31	GND	32	HEAD#
33	GND	34	DSKCHG#

2.3.8 Serial Port A~D (A: RS-232/422/485 (COM1), B~D: RS-232 (COM2~4))
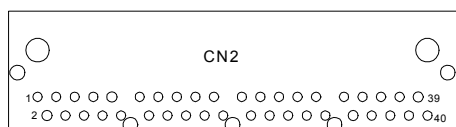
TOP View
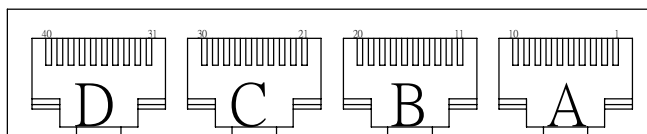
Real View

CN2 Pin Definition

No	Definition	No	Definition
1	DCD1# / 485_TXD-	2	CTS1#
3	RTS1#	4	DSR1#
5	RXD1 / 485_TXD+	6	TXD1 / 485_RXD+
7	DTR1# / 485_RXD-	8	GND
9	VIN1	10	RI1#
11	DCD2#	12	CTS2#
13	RTS2#	14	DSR2#
15	RXD2	16	TXD2
17	DTR2#	18	GND
19	VIN2	20	RI2#
21	DCD3#	22	CTS3#
23	RTS3#	24	DSR3#
25	RXD3	26	TXD3
27	DTR3#	28	GND
29	VIN3	30	RI3#
31	DCD4#	32	CTS4#
33	RTS4#	34	DSR4#
35	RXD4	36	TXD4
37	DTR4#	38	GND
39	VIN4	40	RI4#

2.3.9 Reset Switch (CN9)

2. RESET

1. GND

2.3.10 IR Connector (CN5)

1. +5

2. NC

3. RX

4. GND

5. TX
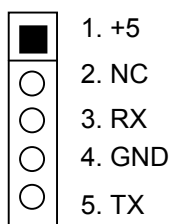
2.3.11 PC/104 BUS (CN6, CN7)

CN6 Pin definition

Pin No	Signal	Pin No	Signal	Pin No	Signal	Pin No	Signal
1	–IOCHCK	2	GND	33	SA14	34	–DACK1
3	SD7	4	RSTDRV	35	SA13	36	DREQ1
5	SD6	6	VCC	37	SA12	38	–REFRESH
7	SD5	8	IRQ9	39	SA11	40	SYSCLK
9	SD4	10	Not Used	41	SA10	42	IRQ7
11	SD3	12	DREQ2	43	SA9	44	IRQ6
13	SD2	14	Not Used	45	SA8	46	IRQ5
15	SD1	16	–ZEROWS	47	SA7	48	IRQ4
17	SD0	18	(+12V)	49	SA6	50	IRQ3
19	IOCHRDY	20	GND	51	SA5	52	–DACK2
21	AEN	22	–SMEMW	53	SA4	54	TC
23	SA19	24	–SMEMR	55	SA3	56	BALE
25	SA18	26	–IOW	57	SA2	58	VCC
27	SA17	28	–IOR	59	SA1	60	OSC
29	SA16	30	–DACK3	61	SA0	62	GND
31	SA15	32	DREQ3	63	GND	64	GND

CN7 Pin definition

Pin No	Signal	Pin No	Signal
1	GND	2	GND
3	–SBHE	4	–MEMCS16
5	LA23	6	–IOCS16
7	LA22	8	IRQ10
9	LA21	10	IRQ11
11	LA20	12	IRQ12
13	LA19	14	IRQ15
15	LA18	16	IRQ14
17	LA17	18	–DACK0
19	–MEMR	20	DREQ0
21	–MEMW	22	–DACK5
23	SD8	24	DREQ5
25	SD9	26	–DACK6
27	SD10	28	DREQ6
29	SD11	30	–DACK7
31	SD12	32	DREQ7
33	SD13	34	VCC
35	SD14	36	–RMASTER
37	SD15	38	GND
39	Not Used	40	GND

2.3.12 CRT Connector (CN8)

Pin definition

No	Definition	No	Definition
1	R	2	GND
3	G	4	GND
5	B	6	GND
7	VSYNC	8	DDCDATA
9	HSYNC	10	DDCLK

2.3.13 Video-in Connector (CN12)

The SAA7111A offers four analog signal inputs, two analog main channels with source switch, clamp circuit, analog amplifier, anti-alias filter and video CMOS ADC. Fully programmable static gain for the main channels or automatic gain control for the selected CVBS or Y/C channel.

No	Definition	No	Definition
1	AI22	2	GND
3	AI21	4	GND
5	AI12	6	GND
7	AI11	8	GND

2.3.14 Video-out Connector (CN13)

No	Definition	No	Definition
1	CVBS	2	GND
3	Y	4	GND
5	C	6	GND

2.3.15 HDD Drive Connector (IDE1)

Pin No	Signal	Pin No	Signal	Pin No	Signal	Pin No	Signal
1	RESET#	2	GND	23	SA14	24	–DACK1
3	DATA7	4	DATA8	25	SA13	26	DREQ1
5	DATA6	6	DATA9	27	SA12	28	–REFRESH
7	DATA 5	8	DATA10	29	SA11	30	SYSCLK
9	DATA 4	10	DATA11	31	SA10	32	IRQ7
11	DATA 3	12	DATA12	33	SA9	34	IRQ6
13	DATA 2	14	DATA13	35	SA8	36	IRQ5
15	DATA 1	16	DATA14	37	SA7	38	IRQ4
17	DATA 0	18	DATA15	39	SA6	40	IRQ3
19	GND	20	NC	41	SA5	42	–DACK2
21	DDRQ	22	GND	43	SA4	44	TC

2.3.16 Front Panel Connector (J1)

Pin No	Signal	Pin No	Signal
1	ACTLED#	2	VCC3
3	SPDLED#	4	VCC3
5	HDLED#	6	VCC
7	GND	8	PWRLED
9	ESPK	10	VCC
11	KEYLOCK	12	GND
13	RESET#	14	GND

2.3.17 LCD Panel Connector (CN11)

Pin No	Signal	Pin No	Signal	Pin No	Signal	Pin No	Signal
1	GND	2	CLK	23	D12/G4	24	D13/G5
3	GND	4	HS	25	NC	26	NC
5	VS	6	GND	27	GND	28	D16/R0
7	NC	8	NC	29	D17/R1	30	D18/R2
9	D0/B0	10	D1/B1	31	D19/R3	32	D20/R4
11	D2/B2	12	D3/B3	33	D21/R5	34	GND
13	GND	14	D4/B4	35	VDD	36	VDD
15	D5/B5	16	NC	37	+12V	38	+12V
17	NC	18	D8/G0	39	GND	40	GND
19	D9/G1	20	GND	41	FPEN	42	DE
21	D10/G2	22	D11/G3	43	GND	44	VDDEN

2.3.18 LVDS Connector (CN10)

Pin No	Signal	Pin No	Signal
1	TX0-	2	GND
3	TX0+	4	GND
5	TX1-	6	VCC3
7	TX1+	8	VCC3
9	TX2-	10	TX1+
11	TX2+	12	GND
13	TCLK-	14	GND
15	TCLK+	16	+12V
17	TX3-	18	+12V
19	TX3+	20	GND
21	NC	22	NC
23	VCC3	24	NC
25	VCC3	26	NC

2.3.19 RJ-45 (LAN1)
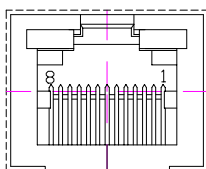
1: TPTX+
2: TPTX-
3: TPRX+
4: GND
5: GND
6: TPRX-
7: GND
8: GND

2.3.20 Audio1 & Audio2

AUDIO 1 — L in / L out
AUDIO 2 — Mic / Spk
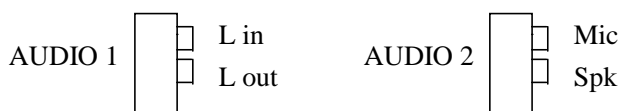
2.3.21 External Audio Connector (J3)
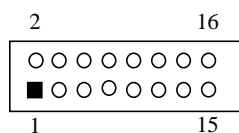
Pin No	Signal	Pin No	Signal
1	LINE_R	2	GND
3	GND	4	NC
5	MIC	6	ENAVEE
7	TX0-	8	TX0+
9	TX1-	10	TX1+
11	TX2-	12	TX2+
13	TCLK-	14	TCLK+
15	TX3-	16	TX3+

2.3.22 CD-IN Connector (J2)

1. CD_L   3. GND
2. GND   4. CD_R

2.3.23 Printer Connector (LPTA 1)
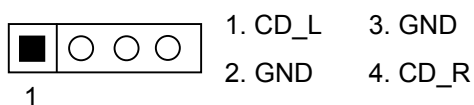
Printer Connector (LPTA 1)
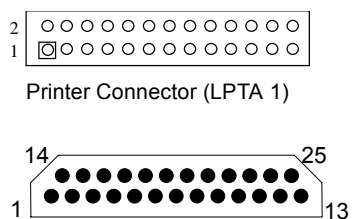
2.3.24 External Keyboard & Mouse (KM1)

Green: Mouse

Purple: Keyboard
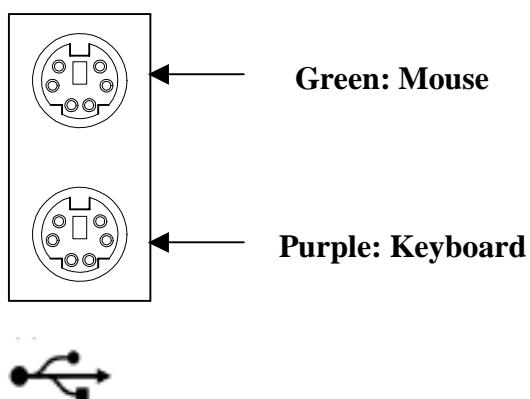
2.3.25 Double Type A USB port (USB1)

Second USB port

First USB port
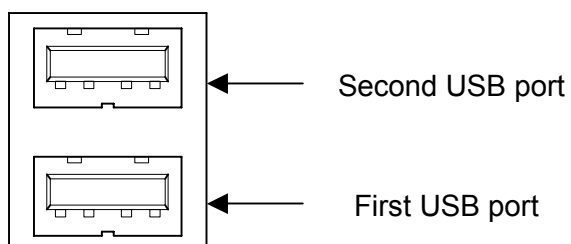
2.3.26 Disk On Chip Socket (DOC1)

DOC: 32 pin Disk-on-chip socket
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	NC	17	SD3
2	NC	18	SD4
3	NC	19	SD5
4	SA12	20	SD6
5	SA7	21	SD7
6	SA6	22	CE
7	SA5	23	SA10
8	SA4	24	OE
9	SA3	25	SA11
10	SA2	26	SA9
11	SA1	27	SA8
12	SA0	28	NC
13	SD0	29	NC
14	SD1	30	VCC
15	SD2	31	WR
16	GND	32	VCC

3. SOFTWARE UTILITIES

Sections includes:
- Utility CD File List
- Setup

3.1 UTILITY CD FILE

9638_DRV#1	9638_DRV 2	9638_DRV#3	9638_DRV#4	9638_DRV#5	9638_DRV#6
FREEBSD	WFW311	DMI	INTEL/95	SCSIDRV	MANUAL.PDF
LINUX	NT351	WINDIAG/WIN4	INTEL/NT	W95VGA	
NDIS2DOS	MSLANMAN.DOS	BROM		WINNTVGA	
NDIS2OS2	MSLANMAN.OS2	MACOS		WD	
NWCLIENT	NWSERVER/311	RTOS			
NWSERVER/4X	NWSERVER/312	W98600.EXE			
NWSERVER/500	NWSERVER/40				
RTSPKT	CLIENT32				
SCO	UW7				
TXT	WIN95A				
WIN2000	WINDIAG/WIN2000				
W95OSR2	WINDIAG/WIN9X				
WIN98					
WINNT4					
FILEPATH.LST					
MAINNENU.TXT					
RSET8139.EXE					
VERSION.TXT					
HELP8139.EXE					
NETRTS.INF					
OEMSETUP.INF					
README.TXT					
RELEASE.DOC					

Remark:

1.W98600.EXE is a WIN98 DRIVER for VGA.

2.DRV#1~DRV#2 is ETHERNET DRIVER disk.

3.DRV#4 DISK is INTEL CHIPSET 440BX PIIX4 SETUP DRIVER

4.DRV#5 DISK is SCSI DRIVER FOR WIN95, NT AND WIN98, NT DRIVERS

3.2. SETUP

WIN95 VGA SETUP

To update display driver by choosing display interface card, put disk#5 in driver A, the driver of 65548 will be found, and reboot your system after setup will be ok.

PIIX4 DRIVER SETUP

WIN95: The first step is to execute the INTEL\95\SETUP.EXE in DISK#4, the system will update the driver automatically, the next step is to reboot the system, and then the driver of PIIX4 CHIPSET will be installed to the system correctly.

WINNT: The first step is to execute the INTEL\NT\SETUP.EXE in DISK#4, the system will update the driver automatically, the next step is to reboot the system, and then the driver of PIIX4 CHIPSET will be installed to the system correctly.

4. AMI BIOS SETUP

The following topics are covered:
- BIOS Setup Overview
- Standard CMOS Setup
- Advanced CMOS Setup
- Advanced Chipset Setup
- Power Management
- PCI/Plug and Play
- Peripheral Setup
- Hardware Monitor Setup
- Auto-Detect Hard Disks
- Password Setting
- Load Default Setting
- BIOS Exit
- BIOS Update

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 PCI 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 1.30
(C) 2000 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 Defaults
                   Save Settings and Exit
                     Exit Without Saving


          Exit without saving the current settings
     ESC: Exit   ↑↓: Sel   F2/F3: Color   F10: Save & Exit
```
BIOS: Setup Main Menu

CAUTION:

1. The factory-default setting of AR-B9638 is the <Auto Configuration with Optimal Settings>. Acrosser recommends you using the BIOS default settings unless you are very familiar with the settings function.   Or you can contact the technical support engineers (FAE).

2. If the BIOS loses the settings, the CMOS will detect the <Auto Configuration with Fail Safe Settings> to boot the operating system. This option will reduce the performance of the system.   Acrosser recommends you choosing the <Auto Configuration with Optimal Settings> 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.

4.2. STANDARD CMOS SETUP

The <Standard CMOS Setup> option allows you to record some basic system hardware configurations 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									
(C) 2000 American Megatrends, Inc. All Rights Reserved									

Date (mm:dd:yyyy): Tue, Jul 03, 2001   Base Memory: 640 KB
Time (hh:mm:ss):   15:07:14   Extd Memory: 127 MB

Floppy Drive A: 1.44MB   3 1/2
Floppy Drive B: Not Installed

					LBA	BLK	PIO	32 Bit
Type	Size	Cyln	Head	Wpcom	Sec Mode	Mode	Mode	Mode

Pri Mater: 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: 1901 – 2099   F1: Help   F2/F3: Color

BIOS: 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 about how to create this file, please refer to the MS-DOS manual.

Floppy Setup
The <Standard CMOS Setup> option records the types of floppy disk drives installed in the system.   The available options for drives A and B are:
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.

Hard Disk Setup

The BIOS supports various types for user settings, The BIOS supports <Pri Master> and <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.

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.

Please set as "Auto" if slave IDE device, which carries FAT16 partition, is used to boot up system.

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.

4.3. 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) 2000 American Megatrends, Inc.   All Rights Reserved
    Quick Boot              Enabled   │ Available Options:
    1st Boot Device         IDE-1     │       Disabled
    2nd Boot Device         CDROM     │    → Enabled
    3rd Boot Device         Disabled  │
    4th Boot Device         Disabled  │
    Try Other Boot Devices  Yes       │
     Floppy Access Control   Read-Write│
     Hard Disk Access Control Read-Write│
     S.M.A.R.T. for Hard Disks Disabled │
    BootUp Num- Lock        On        │
    Floopy Drive Swap       Disabled  │
    Floopy Drive Seek       Disabled  │
    PS/2 Mouse Support      Enabled   │
    Typematic Rate          Fast      │
    System Keyboard         Absent    │
    Primary Display         VGA/ EGA  │
    PASSWORD Check          Setup     │
    Boot TO OS/ 2 > 64 MB   No        │ ESC: Exit     ↑↓: Sel
    Wait For 'F1' If Error  Disabled  │ PgUp/ PgDn: Modify
    Hit 'DEL' Message Display Enabled │ F1: Help   F2/F3: Color
```

Advanced CMOS Setup

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

1st Boot Device
2nd Boot Device
3rd Boot Device
4th Boot Device
These options determine where the system looks first for an operating system.

Try Other Boot Devices
If you have other boot up device other than the above mentioned devices, such as IDE-0, IDE-1, IDE-3, IDE-4, Floppy.

Floppy Access Control
This option determines the floppy access method, which can be either read only or normal (read/write). When it is set, the data in the floppy is to be read instead of being written." Normal" allows the floppy to be read or written.

HDD Access Control
This option determines the hard disk access method, which can be either read only or normal (read/write). When it is set to read only, the data in the hard disk is to be read instead of being written." Normal" allows the floppy to be read or written.
Available options: Disabled, Enabled

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 is in 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 the user can automatically use the number keys.

Floppy Drive Swap
The option reverses the drive letter assignments of your floppy disk drives in the Swap A, B setting, otherwise you leave the setting to *Disabled* (No Swap). This works separately from the BIOS Features and floppy disk swap feature. It is functionally the same as physically interchanging the connectors of the floppy disk drives. When <*Enabled*>, the BIOS swaps the floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A under DOS.

Floppy Drive Seek
If the <Floppy Drive Seek> item is set to *Enabled*, the BIOS will seek the floppy <A> drive one time upon boot up.

PS/2 Mouse Support
The setting of *Enabled* allows the system to detect a PS/2 mouse on boot up. If it is 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.

Typematic Rate
This item specifies the speed at which a keyboard keystroke is repeated.

System Keyboard
The setting of <*Absent*> allows the system to boot without a keyboard attached to the computer, while the setting of <Present> is in the contrary.
Primary Display
The setting of <*Absent*> allows the system to boot without a Primary Display attached to the computer, while the setting of <Present> is in the contrary.

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 are executed.

Boot to OS/2 >64MB

When using the OS/2 operating system with DRAM of greater than 64MB installed, you need to *Enabled* this option; otherwise leave this on the setup default of *Disabled*.

Wait for 'F1' If Error

AMIBIOS POST error messages are followed by:

```
Press <F1> to continue
```

If this option is set to *Disabled*, the AMIBIOS does not wait for you to press the <F1> key after an error message.

Hit 'DEL' Message Display

Set this option to *Disabled* to prevent the following message:

Hit 'DEL' if you want to run setup

It will prevent the message from appearing on the first BIOS screen when the computer boots.

Internal Cache

This option specifies the caching algorithm used for the L1 internal cache memory. The settings are:

Setting	Description
Disabled	Neither L1 internal cache memory on the CPU or L2 secondary cache memory is enabled.
WriteBack	Use the write-back caching algorithm.
WriteThru	Use the write-through caching algorithm.

Internal Cache Setting

External Cache

This option specifies the caching algorithm used for the L2 secondary cache memory. The settings are:

Setting	Description
Disabled	Neither L1 internal cache memory on the CPU or L2 secondary cache memory is enabled.
WriteBack	Use the write-back caching algorithm.
WriteThru	Use the write-through caching algorithm.

External Cache Setting

Shadow

These options control the location of the contents of the 16KB of ROM beginning at the specified memory location. If no adapter ROM is using the named ROM area, this area is made available to the local bus. The settings are:

SETTING	DESCRIPTION
Disabled	The video ROM is not mapped to RAM. The contents of the video ROM cannot be read from or written to cache memory.
Enabled	The contents of C000h - C7FFFh are written to the same address in system memory (RAM) for faster execution.
Cached	This option specifies the size of the memory area reserved for legacy ISA adapter cards.

Shadow Setting

4.4. ADVANCED CHIPSET SETUP

```
┌─────────────────────────────────────────────────────────────────┐
│           AMIBIOS SETUP – ADVANCED CHIPSET SETUP                  │
│      (C) 2000 American Megatrends, Inc.   All Rights Reserved     │
├──────────────────────────────────────────┬──────────────────────┤
│   Configure SDRAM Timing by SPD   Enabled │ Available Options:   │
│      SDRAM RAS#   to   CAS# delay  2 SCLKS │    Disabled          │
│      SDRAM RAS#   Percharge        2 SCLKS │  → Enabled           │
│      SDRAM CAS#   Latency          2 SCLKS │                      │
│      SDRAM Leadoff Cmd Timing      Auto    │                      │
│   DRAM Integrity Mode              Non-ECC │                      │
│   DRAM Refresh Rate                15.6 us │                      │
│   Memory Hole                      Disabled│                      │
│   Graphics Aperture Size           64 MB   │                      │
│   8 bit  I / O Recovery Time       1 Sysclk│                      │
│   16 bit  I / O Recovery Time      1 Sysclk│                      │
│   Assign IRQ for USB               Enabled │                      │
│   ATX Power Supply Controller      Disabled│                      │
│   LCD CRT Selection                Both    │                      │
│   LCD Type                  #6 640x480 18  │                      │
│                                            │                      │
│                                            │ ESC: Exit    ↑↓: Sel │
│                                            │ PgUp/ PgDn: Modify   │
│                                            │  F1: Help  F2/F3: Color│
│                                            │                      │
└──────────────────────────────────────────┴──────────────────────┘
```

BIOS: 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                  │
│       (C) 1999 American Megatrends, Inc.  All Rights Reserved     │
├──────────────────────────────────────────┬──────────────────────┤
│                                           │ Available Options :  │
│                                           │    Disabled          │
│   Configure SDRAM Timeing by SPD  Enabled │    Enabled           │
│   SDRAM RAS# to CAS# delay        2 SCLKs │                      │
│         RAS# Precharge            2 SCLKs │                      │
│         CAS# Latency              3 SCLKs │                      │
│         Loadoff Cmd Timing        Auto    │                      │
│   DRAM Integrity Mode             Non-ECC │                      │
│   Memory Hole                     Disabled│                      │
│   Graphics Aperture Size          64MB    │                      │
│   8bit I/O Recovery Time          1 Sysclk│                      │
│   16bit I/O Recovery Time         1 Sysclk│                      │
│   USB Function                    Enabled │                      │
│   USB Keyboard / Mouse Legacy Support Enabled│                   │
│   ATX Power Supply Controller     Disabled│   ESC:Exit  ↑ ↓ :Sel │
│   LCD CRT Selection               Both    │                      │
│   LCD Type                  #5 640x480 TFT│ PgUp/PgDn:Modify     │
│                                           │ F2/F3:Color          │
└──────────────────────────────────────────┴──────────────────────┘
```

BIOS: 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.

SDRAM RAS# to CAS# delay:
When CPU saves data from memory, it has to deliver RAS single first, and then CAS single. The item is to set up the interval between two singles.

RAS# Pre charge:
This item is the time when RAS has to re-locate.

CAS# Latency:
This item is to set up a certain period of time for the memory to start writing and reading data when memory receives one CAS single.

Load off Cmd Timing:
It is the first read-write action under burst pattern

Memory Hole:
This reserves the 15MB to 16MB memory address space for use of ISA expansion cards.

Graphics Aperture Size:
The item is to set up AGP display to use a certain amount of memory to save Texture Data.

8 bit I/O Recovery Time:
The item is to set up CPU to demand ISA Bus 8 bit for the time it recovers.

16 bit I/O Recovery Time:
The item is to set up CPU to demand ISA Bus 16 bit for the time it recovers.

Memory Hole at 15-16 MB
This option specifies the range 15MB to 16MB in memory that cannot be addressed on the ISA bus.

USB Function
This option can enable or disable USB function

USB Keyboard/Mouse Legacy Support
These options are used to <*Enabled*> the USB function and it's only useful in the DOS mode.

ATX Power Supply Controller
If the ATX Power Supply Controller function is <*Enabled*>, the system will get more functions such as shutting down the power by using software.

LCD CRT Selection
This item determines to either use LCD Monitor or CRT Monitor in the system.

LCD Type
This option specifies the resolution of LCD.

4.5. POWER MANAGEMENT

This section is used to configure the 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 (C) 2000 American Megatrends.Inc. All Rights Reserved			
Power Management/APM	Disabled	Available	Options
Green PC Monitor Power State	Enabled	Disabled	
Video Power Down Mode	Enabled	Enabled	
Hard Disk Power Down Mode	Disabled		
Hard Disk Time Out (Minute)	Disabled		
Standby Time Out (Minute)	Monitor		
Suspend Time Out (Minute)	Monitor		
Display Activity	Monitor		
Device 6 (Serial port 1)	Ignore		
Device 7 (Serial port 2)	Monitor		
Device 8 (Parallel port)	Monitor		
Device 5 (Floppy disk)	Monitor		
Device 0 (Primary master IDE)	Monitor		
Device 1 (Primary slave IDE)	ON		
Device 2 (Secondary master IDE)	Last State	ESC:Exit ↑ ↓ :Sel	
Device 3 (Secondary slave IDE)	Disabled	PgUp/PgDn:Modify	

BIOS: Power Management Setup

Power Management /APM
Enabled this option is to enable the power management and APM (Advanced Power Management) features.

Video Power Down Mode
This option specifies the power management, which states the video subsystem enters after a specific period of display inactivity has expired.

Hard Disk Power Down Mode
This option specifies the power management, which states that the hard disk drive enters after the specified period of display inactivity has expired.

Hard Disk time out (minute)
This item is used to set up the initial value of the waiting timer. The Hard Disk will turn into the suspend mode when the time is out if no operation applied to Hard Disk.

Power Down Time Out (minute)
This item is used to set up the initial value of the waiting timer. The System will turn into the Power Down mode when the time is out if no operation applied to system.

Device
These options enable event monitoring. When the computer is in a power saving mode, the activity on the named interrupt request line is monitored by BIOS. When any activity occurs, the computer enters Full On mode.

Restore on AC/Power Loss
This item is to set up the system to restore the last setting after the AC\Power Loss.

Ring Resume From Soft Off
This item is to set up the function of waking up the system from suspend mode and a ring bell while any access coming from Modem.

Lan Resume From Soft Off
This item is to set up the function of waking up the system from suspend mode.   When encountering an access, the function will be available if system is fixed with an Ethernet card.

4.6. 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		
(C) 2000 American Megatrends, Inc. All Rights Reserved		
Plug and Play Aware O/S	NO	Available Options
Reset Configuration Data	NO	NO
PCI Latency Timer (PCI Clocks)	64	YES
Primary GraphicS Adapter	PCI	
PCI VGA Palette Snoop	Disabled	
DMA Channel 0	PnP	
DMA Channel 1	PnP	
DMA Channel 3	PnP	
DMA Channel 5	PnP	
DMA Channel 6	PnP	
DMA Channel 7	PnP	
IRQ 3	ISA/EISA	
IRQ 4	ISA/EISA	
IRQ 5	PCI/PnP	
IRQ 7	ISA/EISA	
IRQ 9	PCI/PnP	
IRQ 10	ISA/EISA	
IRQ 11	ISA/EISA	
IRQ 12	PCI/PnP	
IRQ 14	ISA/EISA	
IRQ 14	PCI/PnP	ESC:Exit ↑↓:Sel
IRQ 15	PCI/PnP	PgUp/PgDn:Modify
Reserved Memory Size	32K	F2/F3:Color
Reserved Memory Address	CC000	

BIOS: PCI / Plug and Play Setup

Plug and Play Aware O/S
Set this option to <*No*> 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 (and above) operating system detects and enables all other PnP-aware adapter cards. Windows 95 (and above) is PnP-aware. Set this option to <*yes*> 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.

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

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.

PCI VGA Palette Snoop
This item is for BIOS to snoop the appearance of VGA palette, and modify it when it is necessary.

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.

Reserved Memory Size

This option specifies the size of the memory area reserved for legacy ISA adapter cards.

Reserved Memory Address

This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards. The specified ROM memory area is reserved for use by legacy ISA adapter

4.7. PERIPHERAL SETUP

This section is used to configure the peripheral features.

AMIBIOS SETUP - PERIPHERAL SETUP		
(C) 2000 American Megatrends, Inc. All Rights Reserved		
On Board FDC	Enabled	Available Options:
On Board Serial Port A	3F8h/COM1	Disabled
On Board Serial Port B	2F8h/COM2	Enabled
Serial Port B Mode	Normal	
IR Duplex Mode	N/A	
IrDA Protocol	N/A	
On Board Serial Port C	3E8h/COM3	
On Board Serial Port D	2E8h/COM4	
On Board Parallel Port	378h	
Parallel Port Mode	Normal	
EPP Version	N/A	
Parallel Port IRQ	N/A	
Parallel Port DMA Channel	N/A	
On Board IDE	Both	
		ESC:Exit ↑↓:Sel
		PgUp/PgDn:Modify
		F1: Help F2/F3:Color

BIOS: Peripheral Setup Defaults

On Board FDC
This option enables the floppy drive controller on the AR-B9638.

On Board Serial Port
This option enables the serial port on the AR-B9638.

IR Port support
This item is to activate the function of infrared.

On Board Parallel Port
This option enables the parallel port on the AR-B9638.

Parallel Port Mode
This option specifies the parallel port mode. ECP and EPP are both bi-directional data transfer schemes that adhere to the IEEE1284 specifications.

Parallel Port DMA Channel
This option is only available if the setting for the parallel Port Mode option is ECP.

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

4.8. 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.

4.9. 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. The user can set either a Supervisor password or a User password.

4.10. SETTING THE 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 the BIOS is exited and saved. Next time the system boots, you are prompted for the password function presented and enabled.

```
Enter new supervisor password:
```

4.11. PASSWORD CHECKING

The password check option is enabled in Advanced Setup by choosing either *Always* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when BIOS runs). The password is stored in CMOS RAM. The user can enter a password by typing on the keyboard. As the user selects Supervisor or User, the BIOS prompt for a password. Then the user must set the Supervisor password before he can set the User password. Enter a 1 to 6 characters password. The password does not appear on the screen when being typed. Make sure you write it down.

4.12. 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 has a better chance of working when the system is having configuration related problems.

4.12.1. 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) ?
```

4.12.2. 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 systems behave erratically.

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

4.13. 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 without saving the new values.

4.13.1. Save Settings and Exit

This item is in the <Standard CMOS Setup>, <Advanced CMOS Setup>, <Advanced Chipset Setup> and the new password (if it has been changed) will be stored in the CMOS.   The CMOS checksum is calculated and written into the CMOS.

When you select this function, the following message will appear at the center of the screen to assist you to save data to CMOS and Exit the Setup.

```
Save current settings and exit (Y/N) ?
```

4.13.2. Exit Without Saving

When you select this option, the following message will appear at the center of the screen to help to abandon all the modified data and Exit Setup.

```
Quit without saving (Y/N) ?
```

4.14. 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-B9638 provides the FLASH BIOS update function for you to easily update a newer BIOS version. Please follow these operating steps to update 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 FLASH812 program.

A:\>FLASH812

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:   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 this 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>.

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