AR-B1656

VIA Eden PadLock inside, No VGA

with DDR, 3 Port built in Bypass LAN, 1 Mini PCI, 1 CF

Edition: 1.0
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Trademarks

Contents

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Introduction

1.1   Specifications:

- **CPU** : VIA Eden ESP 7000

- **Chipset** : VIA Pro266T and VIA VT8235

- **RAM memory** : 1 DDR SO-DIMM Socket up to 512MB/133MHz.

- **Ultra DMA 133 IDE Interface** : Two PCI Enhance IDE channel.

- **CompactFlash^{TM} interface** : Supports CompactFlash^{TM} Type II socket for Compact Flash Disk or IBM Micro Drive.

- **Series ports** : Two high-speed 16C550 compatible UARTs ports

- **USB port :** Support two USB 2.0 compatible ports.

- **Watchdog timer** : Time setting form 1 second to 255 second System Reset generate when CPU did not periodically trigger the timer.

- **Broadcom 4401 Embedded LAN:** 3 ports IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX. Built-In Watch-Dog Timer for Bypass function between port 1 and port 2. Connected to your LAN through RJ45 connector.

- **Power Consumption** : 12V/2A

- **Operating Temperature** : $0\circ \sim 55\circ$ C (CPU needs Cooler)

1.2 What You Have

In addition to this *User's Manual*, the AR-B1656 package includes the following items:

- AR-B1656 board

- One IDE Cable

- Keyboard / Mouse Adapter Y Cable

- One RS-232 serial ports Cable with bracket

- One power button cable

2

Installation

This chapter describes how to install the AR-B1656. At first, the layout of AR-B1656 is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the AR-B1656's configuration

2.1 AR-B1656's Layout
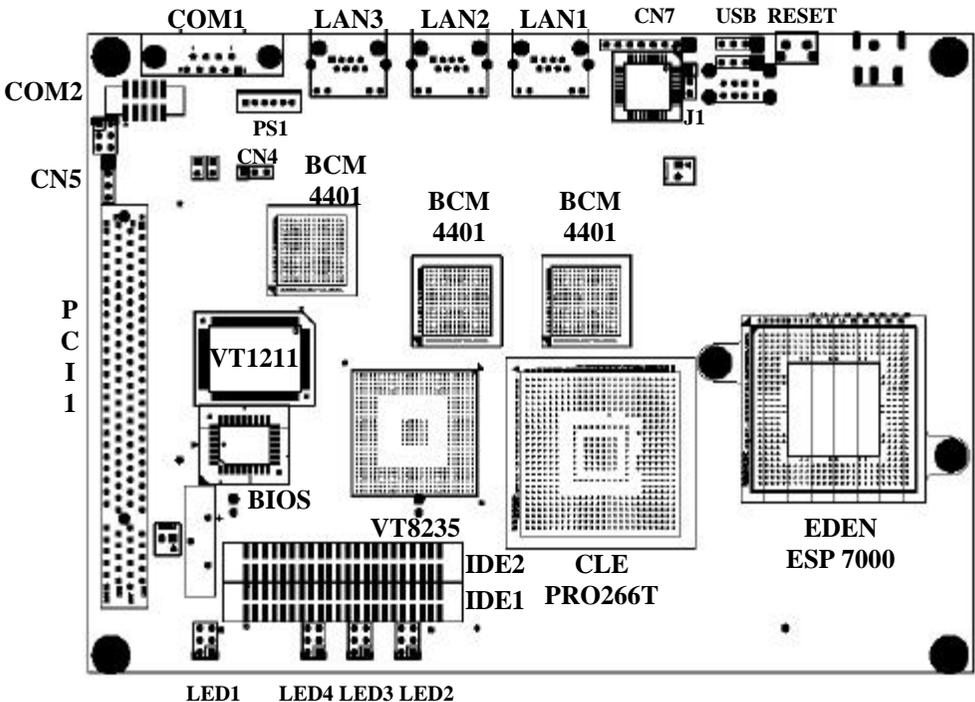
2.2 Power Button Setting

You can only choose 1 between 2 option, Mechanical Power Button and Trigger Power Button to powered AR-B1656.

- **Place power button cable on CN2 if you use Mechanical Power Button.**
- Place power button cable on CN3 if you use Trigger Power Button.

2.3 ByPass Setting

To protect the initial port from bypassing, place the cap on the location 2-3.

● **J1 : ByPass setting**

J1	DESCRIPTION
2-3	Normal
1-2	Bypass

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the AR-B1656 board.

3.1 Ultra ATA33/66/100 IDE Disk Drive Connector

You can attach two IDE(Integrated Device Electronics) hard disk drives to the AR-B1656 IDE controller.

IDE 1 : Secondary IDE Connector
IDE 2 : Primary IDE Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
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	N/C
21	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	+5V LOGIC	42	+5V MOTOR
43	GROUND	44	TYPE

1 **2**

43 **44**

3.2   Serial Ports

The AR-B1656 offers two high speeds NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports.

COM1 : COM1 RS-232
COM2 : COM2 for RS-232
CN5　 : COM2 for RS-485 or RS-422

● COM1 : DB-9 Male

PIN NO.	DESCRIPTION	
1	DATA CARRIER DETECT	(DCD)
2	RECEIVE DATA	(RXD)
3	TRANSMIT DATA	(TXD)
4	DATA TERMINAL READY	(DTR)
5	GROUND	
6	DATA SET READY	(DSR)
7	REQUEST TO SEND	(RTS)
8	CLEAR TO SEND	(CTS)
9	RING INDICATOR	(RI)
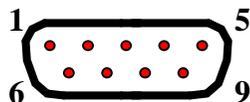
● COM2 : 10-pin Connector

PIN NO.	DESCRIPTION	
1	DATA CARRIER DETECT	(DCD)
2	DATA SET READY	(DSR)
3	RECEIVE DATA	(RXD)
4	REQUEST TO SEND	(RTS)
5	TRANSMIT DATA	(TXD)
6	CLEAR TO SEND	(CTS)
7	DATA TERMINAL READY	(DTR)
8	RING INDICATOR	(RI)
9	GROUND	
10	GROUND	
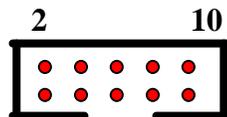
● **JRS2 : 6-pin Connector**

JRS2	DESCRIPTION
1-2	RS422
3-4	RS485
5-6	RS232

Default : 5-6

● **CN5 : 4-pin Connector**

PIN NO.	For RS-422	For RS-485
1	TX+	RTX+
2	TX-	RTX-
3	RX+	
4	RX-	
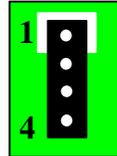
3.3 Keyboard Connector

The AR-B1656 provides 6-PIN keyboard/mouse connector.

● **PS1 : 6-pin Mini-DIN Keyboard/Mouse Connector**

PIN NO.	DESCRIPTION
1	MOUSE DATA
2	KEYBOARD DATA
3	GROUND
4	+5V
5	MOUSE CLOCK
6	KEYBOARD CLOCK
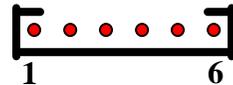
3.4 USB Port Connector

The AR-B1656 provides Two USB port, port 0 and port 1.

USB1 :

1.	VCC
2.	USB0-
3.	USB0+
4.	VCC
5.	GROUND
6.	USB1-
7.	USB1-
8.	GROUND
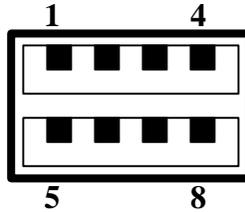
3.5 Fan Connector

The AR-B1656 provides CPU cooling fan connector can supply 5V/500mA to the cooling fan. The Fan's rotation is in full speed.

● **CN6 : Fan Connector**

PIN NO.	DESCRIPTION
1	5V
2	Ground
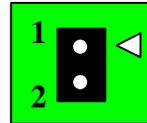
3.6 LAN RJ45 Connector

AR-B1656 is equipped with built-in 3 10/100Mbps Ethernet Controller. You can connect it to your LAN through RJ45 LAN connector. The pin assignments are as following:

● **LAN1, LAN2 and LAN3 : LAN RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	5.	N/C
2	TX-	6.	RX-
3.	RX+	7.	N/C
4.	N/C	8.	N/C
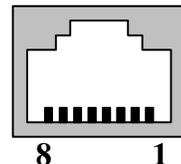
● **LED1, LED2 and LED3 : LAN LED Connector**

COLOR	DESCRIPTION
Green	100 MBps
Green	10MBps
Yellow	Action
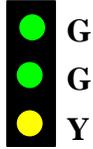
LED	DESCRIPTION
2	For LAN 1
3	For LAN 2
4	For LAN 3

● G

● G

● Y

3.7 Compact Flash Storage Card Socket

The AR-B1656 configures Compact Flash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

● **IDE3 : Compact Flash Storage Card Socket pin assignment**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	CARD DETECT1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	PULL HIGH
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	N/C
19	A1	44	PULL HIGH
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	CARD DETECT2	50	GROUND

3.8 PCI Slot

• **PCI1**

A1   **A62**
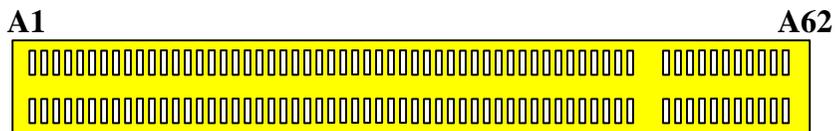
B1   **B62**

AR-B1656 VIA Eden PadLock inside (No VGA)
with DDR, 3 Port built in Bypass LAN, 1 Mini PCI, 1 CF

3.9 Mini PCI Slot

• **PCI2**

2   **124**

1   **123**
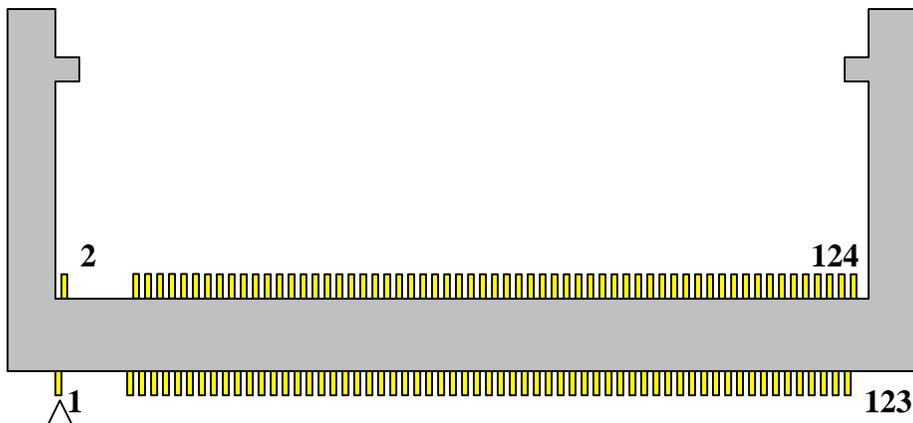
3.10 DDR SODIMM Socket

• **DIMM1**

2   **200**

1   **199**
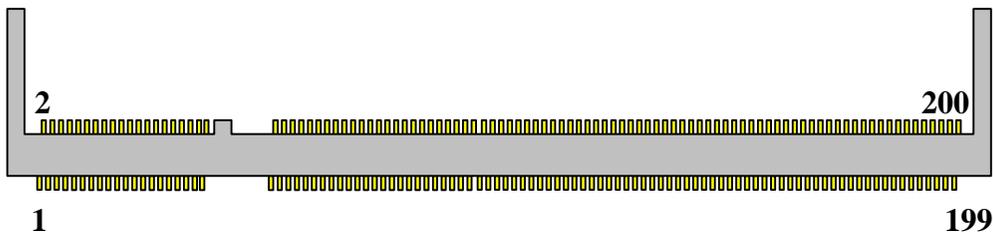
3.11 GPIO

- **CN4**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	D0	6	D5
2	D1	7	D6
3	D2	8	D7
4	D3	9	GROUND
5	D4	10	VCC
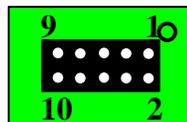
3.12 Internal Buzzer

- **SP1**
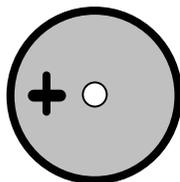
3.13 Power / HD / Watchdog LED

- **LED1**

COLOR	DESCRIPTION
Green	Hard Disk Active
Green	Power OK
Yellow	StandBy(optional to bypass)

3.14 Reset Button

- **CN1**
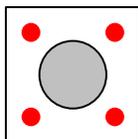
3.15 ISP CPLD Connector

- **CN7**

PIN NO.	DESCRIPTION
1	+3V
2	TDO
3	TDI
4	NC
5	NC
6	TMS
7	GROUND
8	TCK

1   **8**
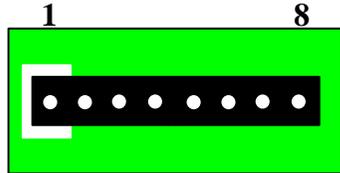
3.16 System Management Bus

- **CN8**

PIN NO.	DESCRIPTION
1	DATA
2	CLOCK
3	GROUND

1   3
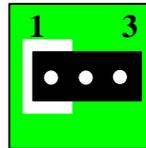
3.17 Power Button

- **CN3 : Mechanical Power Button**
- **CN2 : Trigger Power Button**

CN2 CN3
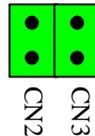
3.18 Power Connector

- **CN9**
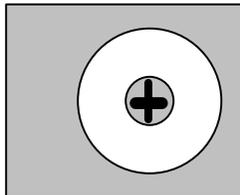
4

Award BIOS Setup

4.1 Introduction

This chapter discusses the Setup program built into the BIOS. The Setup program allows users to configure the system. This configuration is then stored in battery-backed CMOS RAM so that it retains the Setup information while the power is off.

4.2 Starting Setup

The BIOS is immediately active when you turn on the computer. While the BIOS is in control, the Setup program can be activated in one of two ways:
1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

Press DEL to enter SETUP.

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

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

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

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.4 Main

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

> Date (mm:dd:yy)Sun, Jan 5 2003
> Time (hh:mm:ss)2 : 53 : 40
>
> > IDE Primary Master   [None]
> > IDE Primary Slave   [None]
> > IDE Secondary Master   [None]
> > IDE Secondary Slave   [None]
>
> Halt On[All , But Keyboard]
>
> Base Memory   640K
> Extended Memory261120K
> Total Memory262144K

Figure 1: The Main Menu

Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options

IDE Secondary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Table 1 Main Menu Selections

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.
Figure 2 shows the IDE primary master sub menu.

IDE HDD Auto-Detection[Press Enter]

IDE Primary Master[Auto]
Access
Capacity 0MB

Cylinder 0
Head 0
Precomp 0
Landing Zone 0
Sector 0

Figure 2 IDE Primary Master sub menu

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 2 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk

Table 2 Hard disk selections

4.5 Advanced

This section allows you to configure your system for basic operation.

> Quick Power On Self Test [Enabled]
> Full Screen LOGO Show   [Disable]
>
> Console Redirection   [Enabled]
> Baud Rate   [9600]
> Agent after boot   [Enabled]
>
> USB Keyboard Support   [Disabled]
>
> ACPI function   [Enabled]

Figure 3 Advanced menu

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

Enabled	Enable quick POST
Disabled	Normal POST

Full Screen LOGO Show
This item allows you to enable or disable show full screen LOGO.
The Choice: Enabled, Disabled.

Console Redirection
The BIOS redirects console output to COM 1 by default (9600, 8N1, no handshake) until a bootloader program is run from the hard disk drive.
The Choice: Enabled, Disabled.

Baud Rate
This item allows you to setup the data transfer rate for the console port.
The choice: 9600, 19200, 38400, 57600 and 115200

Agent After Boot
This item allows you to enable or disable the agent after boot.
The Choice: Enabled, Disabled.

USB Keyboard Support
This item allows you to enable or disable USB keyboard support.
The Choice: Enabled, Disabled.

ACPI Function
This item allows you to enable or disable Advanced Configuration and
Power Management (ACPI) function.
The Choice: Enabled, Disabled.

4.6 PnP/PCI

Reset Configuration Data[Disabled]

Resources Controlled By[Auto(ESCD)]

x IRQ Resources

Figure 4 PnP/PCI menu

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➢").
The choice: Auto(ESCD), Manual.

IRQ Resources

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

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
 The Choice: PCI Device, Reserved.

4.7 Peripheral

Onboard Serial Port 1[3F8/IRQ4]
Onboard Serial Port 2[2F8/IRQ3]

OnChip USB Controller[Enabled]
OnChip EHCI Controller[Enabled]

GPIO Port1 as[Input]

Figure 5 Peripheral menu

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.
The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto

OnChip USB Controller

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.
The Choice: Enabled, Disabled.

OnChip EHCI Controller

Select *Enabled* if your system contains a Enhanced Host Controller Interface (EHCI) controller
The Choice: Enabled, Disabled.

GPIO Port1 as

Select *GPIO pin* assignment.
The Choice: Input, Output.

4.8 H/W Monitor

CPU Warning Temp.   [Disabled]
Current CPU Temp 31°C/ 87°F
Voltage Tolerance   [Disabled]
Current System Temp. 12.202 V
Current System Temp. 22.202 V
CPU Vcore 1.022 V
3.3V 4.085 V
    +12V 11.066 V
Internal Vcc 3.248 V

Figure 5 H/W Monitor menu

CPU Warning Temp
This item allows you to enable or disable the agent after boot.
The Choice: Enabled, Disabled.

Voltage Tolerance
This item allows you to enable or disable voltage tolerance.
The Choice: Enabled, Disabled.

4.9 Boot

First Boot Device[CDROM]
Second Boot Device[Hard Disk]
Third Boot Device[USB-FDD]
Boot Other Device[Enabled]

Hard Disk Boot Priority

Figure 6 Boot menu

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice:

➢ Hard Disk……….[ ]
➢ CDROM…..…….[ ]
➢ USB-FDD…..…...[ ]
➢ USB-CDROM…..[?]
➢ LAN…..…………[ ]
➢ Disabled…..……..[ ]

Figure 7 Select device submenu

4.10 Exit Selecting

➢ Save & Exit Setup
➢ Load Optimized Defaults

Exit Without Saving

Figure 8 Exit menu

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

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

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

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