

AR-B1554

**Fanless Internet Security Platform with Geode CPU , 3LAN,
Compact Flash, COM, 128MB SDRAM on-board, mini-PCI,
and 2.5" HDD(option), USB 1.1**

Edition: 2.1

Book Number: AR-B1554-07.06.20

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Manual first edition April 17, 2006

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1

Introduction

1.1 Specifications:

- **CPU** : On Board AMD Geode GX-2 333MHz
- **Chipset** : NS Geode CS5335
- **RAM memory** : On Board 128 SDRAM.
- **IDE Interface** : One Enhance 44-Pin IDE channel.
- **Compact Flash™ interface** : Supports Compact Flash™ Type II socket for Compact Flash Disk or IBM Micro Drive.
- **Series ports** : One high-speed 16C550 compatible UART ports
- **Watch Dog Timer** : Optional.
- **USB port** : Support four USB 1.1 compatible ports.
- **Realtek RT8100BL Embedded LAN**: 3 ports IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX.
- **Power Consumption** : 12V/1A
- **Operating Temperature** : 0° ~ 60° C

1.2 What You Have

In addition to this *User's Manual*, the AR-B1554 package includes the following items:

- AR-B1554 board
- One IDE Cable
- VGA cable

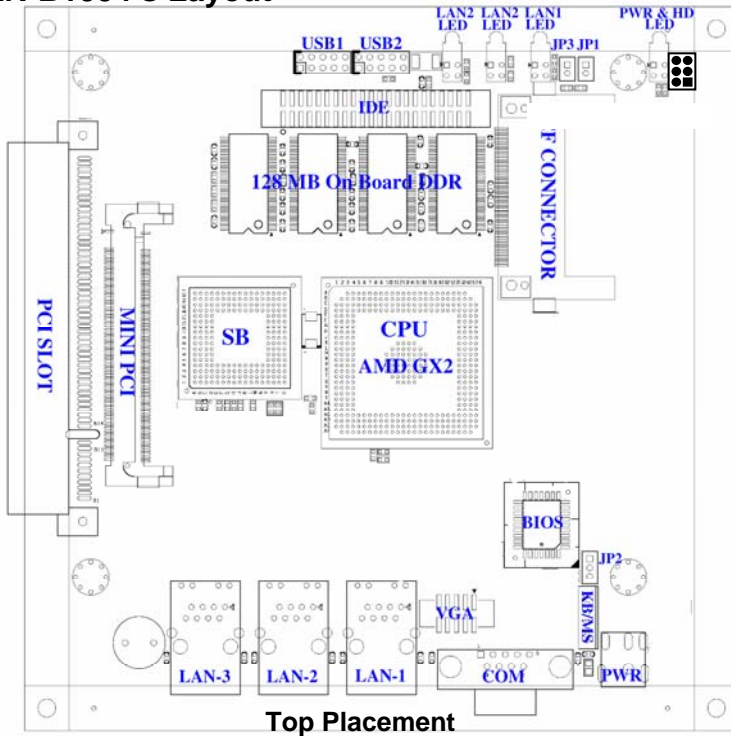
- Keyboard / Mouse Adapter Y Cable
- One RS-232 serial ports Cable with bracket
- One 12V power Adapter

2

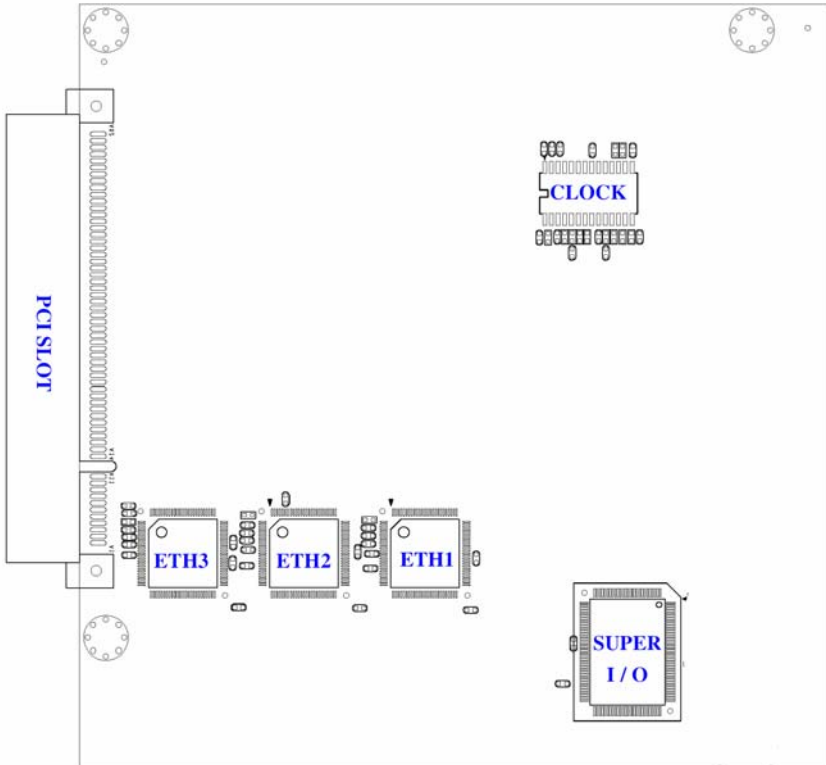
Installation

This chapter describes how to install the AR-B1554. At first, the layout of AR-B1554 is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the AR-B1554's configuration

2.1 AR-B1554's Layout



**AR-B1554 Geode GX-2 (With VGA)
with On Board SDRAM, 3 x LAN, Mini PCI & CF**

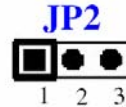


Bottom Placement

2.2 CMOS Reset

- JP2 : CMOS JUMPER

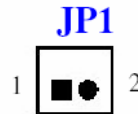
JP2	DESCRIPTION
1-2	Normal Operation
2-3	Reset CMOS



2.3 System Reset

- JP1 : RESET JUMPER

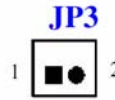
JP1	Description
Close	System Reset
Open	Normal Operation



2.4 CF Jumper

- JP3 : CompactFlash JUMPER

JP3	Description
Close	Slave (default)
Open	Master



3

Connection

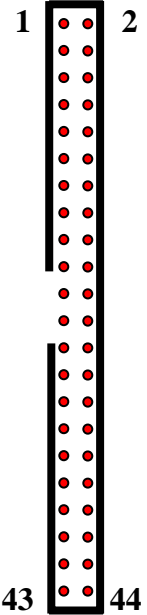
This chapter describes how to connect peripherals, switches and indicators to the AR-B1554 board.

3.1 IDE Disk Drive 44-Pin Connector

You can attach One IDE(Integrated Device Electronics) hard disk drives to the AR-B1554 IDE 44-Pin connector.

IDE : Primary IDE Connector (44 Pins)

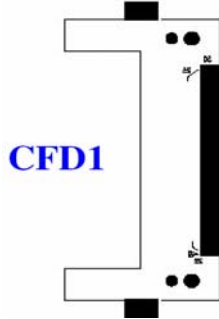
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - 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



3.2 Compact Flash Storage Card Socket

The AR-B1554 configures Compact Flash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

CFD1 : 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

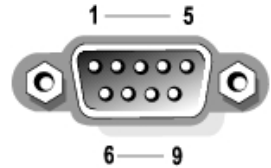
Note: If IDE2 & CFD1 both in used, one must be as "Master" & other is as "Slave".

3.3 Serial Ports (OPTION)

The AR-B1554 offers One high speeds NS16C550 compatible UART with Read/Receive 16 byte FIFO serial ports.

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)



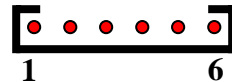
NOTE: AR-B1554TL doesn't have COM1

3.4 Keyboard / Mouse Connector

The AR-B1554 provides PS/2 Mouse & Keyboard 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

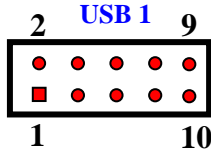


3.5 USB Port Connector

The AR-B1554 provides four USB port, port 0, port 1, port 3 and port 4 .

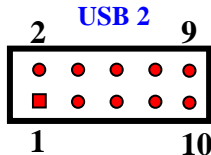
USB1 & USB2

1.	VCC
2.	VCC
3.	USB1-
4.	USB2-
5.	USB1+
6.	USB2+
7.	GROUND
8.	GROUND
9.	GROUND
10.	GROUND



USB3 & USB4

1.	VCC
2.	VCC
3.	USB2-
4.	USB3-
5.	USB2+
6.	USB3+
7.	GROUND
8.	GROUND
9.	GROUND
10.	GROUND

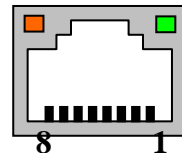


3.6 LAN RJ45 Connector

AR-B1554 is equipped with built-in 3 x 10/100Mbps Ethernet Controller. You can connect it to your LAN through RJ45 LAN connector. The pin assignments are as following:

LAN1, LAN2 : 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



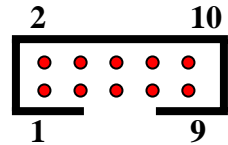
■ : Link LED

■ : Act LED

3.7 VGA Connector

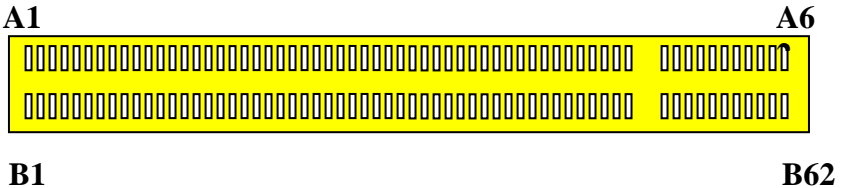
VGA1 : 10-pin Connector

PIN NO.	DESCRIPTION
1	RED (R)
2	GROUND
3	GREEN (G)
4	GROUND
5	BLUE (B)
6	GROUND
7	VERTICAL SYNCHRON (VS)
8	CLOCK (CLK)
9	HORIZONTAL SYNCHRON (HS)
10	DATA (SDATA)



3.8 PCI Slot (3.3V)

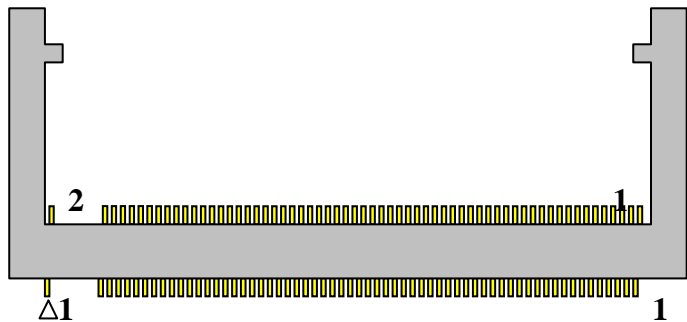
PCI



Note : Please connect only with 3.3V or universal PCI Card

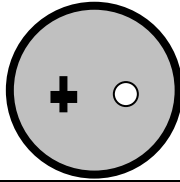
3.9 Mini PCI Slot

MPC11



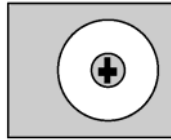
3.10 Internal Buzzer

BZ1



3.11 Power Jack

12V Power Jack



3.12 LED

PWR



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 immediately after switching the system on, or
2. By pressing the 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	Exit 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 Menu

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]

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
Halt On	All Errors No Errors	Select the situation in which you want the BIOS

	All, but Keyboard All, but Diskette All, but Disk/Key	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 Mode [Auto]

Capacity0MB

Cylinder0

Head0

Precomp0

Landing Zone0

Sector0

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 BIOS Features

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

Full Screen LOGO Show [Disable]
 PS/2 Mouse Control [Enable]
 Console Redirection [Enabled]

Baud Rate	[19200]
Agent after boot	[Disable]
Init Display First	[PCI Slot]
Video Memory Size	[8M]
CPU/MEM/PCI Frequency	[Auto]

Figure 3 Advanced menu

Full Screen LOGO Show

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

PS/2 Mouse Control

This item allows you to set PS/2 Mouse controller feature.
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.

Init Display First

This item allows you to choose which Display to be first detected.
The Choice: PCI Slot, On Board.

Video Memory Size

This item allows you to Choose the Sharing Memory size for Display.
The Choice: None, 1MB, 4MB, 8MB, 16MB.

CPU / MEM / PCI Frequency

This item allows you to Choose the Frequency for CPU, Memory and PCI Interface.

The Choice: Auto,200/133/66, 333/222/66,400/266/66,433/289/66.

4.6 PnP/PCI Configuration Setup

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.

4.7 Peripheral

Onboard Serial Port 1 [3F8/IRQ4]

Watchdog Timer Select [Disable] -- Optional

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

4.8 Boot

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

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:

- Floppy.....[]
- LS120.....[]
- Hard Disk[]
- CDROM.....[]
- ZIP100[]
- USB-FDD[]
- USB-ZIP[]
- USB-CDROM .[.]
- On Board LAN..[]
- Disabled..... []

Figure 7 Select device submenu

4.9 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.

Appendix A. Watch-dog sample code

```
int main(int argc, char *argv[])
{
    unsigned char IO_Port_Address=0x2E;
    unsigned char Time;
    int Temp;

    if ( argc != 2 )
        { Show_Help(); return 1; }

    clrscr();

    Time=atoi(argv[1]);

    // Set Watchdog
    outportb(IO_Port_Address,0x87);// Enter configure
    outportb(IO_Port_Address,0x01);
    outportb(IO_Port_Address,0x55);
    outportb(IO_Port_Address,0x55);

    outportb(IO_Port_Address,0x07);// Point to Logical Device Number Reg.
    outportb(IO_Port_Address+1,0x07);// Select logical device 7, (Watchdog Function)

    outportb(IO_Port_Address,0x72);// Select Watchdog use keyboard reset
    outportb(IO_Port_Address+1,0x40);

    outportb(IO_Port_Address,0x72);// Select Watchdog count mode seconds or minutes
    outportb(IO_Port_Address+1,inportb(IO_Port_Address+1)|0x80); // Set Second
```

```
outportb(IO_Port_Address,0x73);// Set Watchdog Timer Value
outportb(IO_Port_Address+1,Time);// 0x00 to disable, max 0xFF

textcolor(YELLOW);
for(Temp=Time;Temp>0;Temp--)
{

    gotoxy(20,10);
    printf(">>> After %3d Second will reset the system. <<<",Temp);

    delay(950);
}

textcolor(LIGHTRED);
gotoxy(18,10);
printf("If you can see this message, Reset system is Fail");

return 0;
}
```