IB550F

AMD Geode LX
3.5-inch Disk Size SBC

USER'S MANUAL

Version 1.1

Acknowledgments

Award is a registered trademark of Award Software International, Inc.

PS/2 is a trademark of International Business Machines Corporation.

AMD, AMD Geode, and combinations thereof, are trademarks of Advanced Micro Devices, Inc.

Microsoft Windows is a registered trademark of Microsoft Corporation.

All other product names or trademarks are properties of their respective owners.

Table of Contents

This page is intentionally left blank.

Introduction

Product Description

The IB550F 3.5-inch disk size SBC incorporates the AMD Geode LX processor with speeds of 433MHz (LX700) or 500MHz (LX800). It comes with one DDR SO-DIMM socket that has a capacity of 1GB system memory. The board supports one 10/100Mbps Ethernet, using a Realtek RTL8100C controller. A 2D graphics controller comes integrated on the board that supports CRT and TFT LCD displays. Useful interface includes four USB 2.0 ports, 4 COM ports, and one PCI-104 expansion slot. IB550F also support 2 SATA ports.

IB550F FEATURES:

- Embedded AMD Geode LX processor, 433MHz (LX700) / 500MHz (LX800)
- DDR SO-DIMM x 1, Max. 1GB
- Realtek RTL8100C 10/100Mbps Ethernet
- Integrated LX800/LX700 2D VGA controller, supports CRT and TFT LCD display
- 4 x USB 2.0, 4 x COM, CF socket, Watchdog timer, Digital I/O
- 2 x SATA, PCI-104 expansion
- Dimensions: 145mm x 102mm (5.7” x 4”)

Checklist

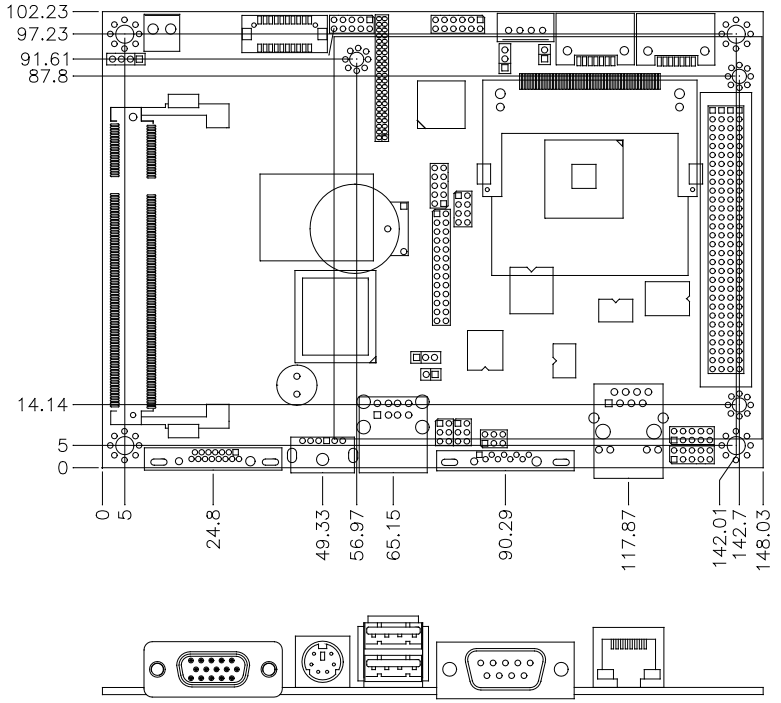
Your IB550F package should include the items listed below.

- The IB550F AMD Geode LX 3.5-inch Disk Size SBC
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Heatsink for AMD Geode LX processor
- Options:
  - IB61 cable kit (SATA, COM, PS/2, LPT, USB, Audio, Power cable)

Specifications

Product Name	**IB550F/ IB550F-24**
Form Factor	3.5"
CPU Type	AMD Geode (BGU481)
CPU Speed	AMD LX800 500MHz / 128KB L2 cache/ SC (3.8W)
BIOS	Award BIOS
Chipset	AMD CS5536 I/O companion multi-function chipset
Memory	DDR SO-DIMM x1 (w/o ECC), Max. 1GB , Single channel
Graphic	LX800 built-in high performance 2D graphic controller Supports TFT LCD & CRT display
LVDS	18-bit one channels LVDS interface w/DF13 socket x1 **[Default]** 24-bit one channel LVDS interface w/DF13 socket x1 **[IB550F-24]**
LAN	Realtek **8100C-LF** 10/100M PCI LAN x1
USB (Universal Serial Bus)	CS5536 built-in USB2.0 controller, support **4** ports
Serial ATA Ports	PCI to SATA controller [Sil3512ECTU], supports **2** ports
Parallel IDE	CS5536 built-in one channel UDMA100 IDE - Compact Flash (type II) connector x1
Audio	Realtek ALC203 AC97 audio codec, Supports 2-CH Line-Out, Line-In & MIC
LPC I/O	Winbond W83627**HF** + Fintek 81216AD COM1 (RS232/422/485), COM2~4(RS232) , KB/Mouse, Parallel, IrDA, Hardware monitor (3 thermal inputs, 4 voltage monitor inputs, VID0-4)
Digital IO	4 in & 4 out
Keyboard/Mouse Connector	Mini DIN connector x1
Expansion Slots	PCI-104 x1 Compact Flash Socket x1
Edge Connector	DB-9 connector x1 for COM1 (RS232/422/485) 6-pins Mini-DIN connector x1 for PS/2 KB & Mouse Dual USB stack connector x1 for USB 1, 2 DB-15 connector x1 for CRT RJ-45 connector x1 for LAN
On Board Header/Connector	2x5 pins header x3 for COM2/3/4 (RS232 only) 2x4 pins header x1 for USB 3,4 2x13 pins header x1 for LPT port 2x6 pins header x1 for Audio 2x22 pins header x1 for TFT LCD panel 4-pin header x1 for IrDA 4-pin power connector x 1 for SATA HDD
Watchdog Timer	Yes (256 segments, 0, 1, 2…255 sec/min)
Power Connector	+12V DC-in
RoHS	Yes
Board Size	102mm x 145mm

Board Dimensions



Installations

This section provides information on how to use the jumpers and connectors on the IB550F in order to set up a workable system. The topics covered are:

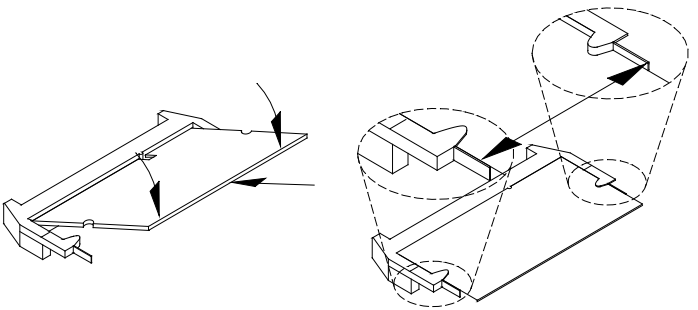
Installing the Memory

The IB550F board supports one SODIMM DDR memory socket for a maximum total memory. The memory module capacities supported are 128MB, 256MB, 512MB and 1GB.

Installing and Removing Memory Modules

To install the DDR modules, locate the memory slot on the board and perform the following steps:

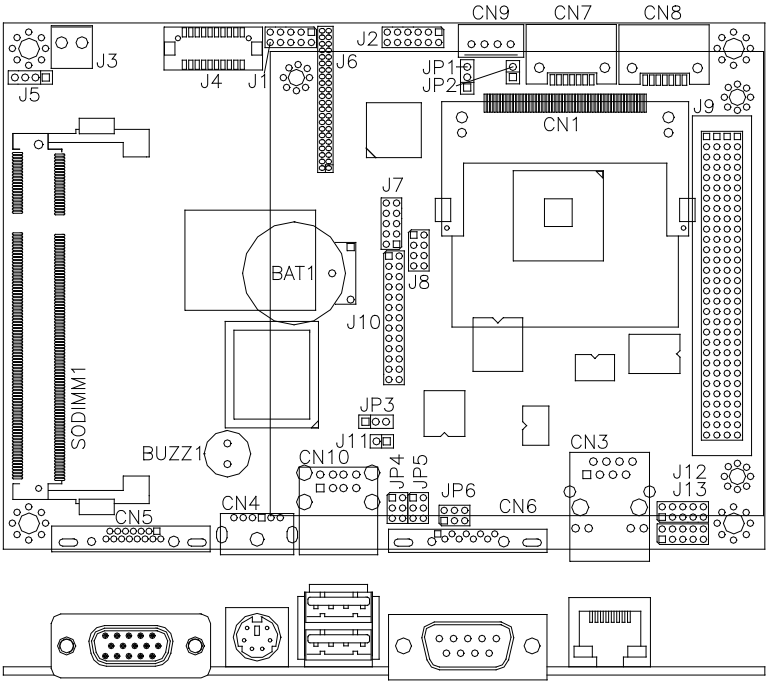
1. Hold the DDR module so that the keys of the DDR module align with those on the memory slot. Insert the module into the socket at a slight angle (approximately 30 degrees). Note that the socket and module are both keyed, which means that the module can be installed only in one direction.
2. To seat the memory module into the socket, apply firm and even pressure to each end of the module until you feel it slip down into the socket.
3. With the module properly seated in the socket, rotate the module downward. Continue pressing downward until the clips at each end lock into position.
4. To remove the DDR module, press the clips with both hands.



Setting the Jumpers

Jumpers are used on IB550F to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IB550F and their respective functions.

Jumper Locations on IB550F



JP1: LVDS VDD Select (5V / 3.3V)

JP1	VDD Setting
	3.3V
	5V

JP2: CF Connector master/Slave Setting

JP2	Setting	Function
	Short/Closed	Master
	Open	Slave

JP3: Clear CMOS Setting

Use JP3 to clear the CMOS contents. *Note that the power connector should be disconnected from the board before clearing CMOS.*

JP3	Function
	Normal (default)
	Clear CMOS

JP4, JP5, JP6: RS232/422/485 (COM1) Selection

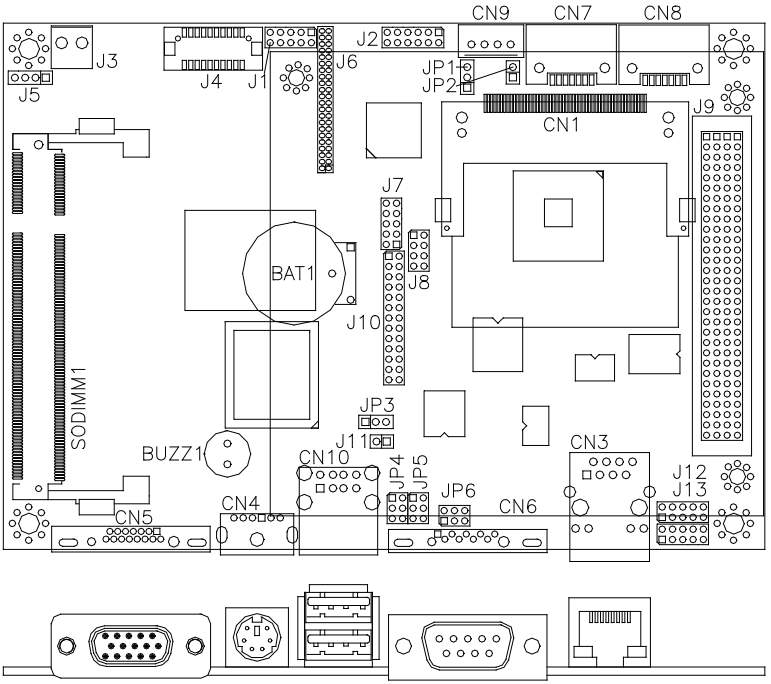
COM1 is selectable for RS232, RS-422 and RS-485.
The following table describes the jumper settings for COM1 selection.

COM1 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	JP4: 1-2 JP5: 3-5 & 4-6 JP6: 3-5 & 4-6	JP4: 3-4 JP5: 1-3 & 2-4 JP6: 1-3 & 2-4	JP4: 5-6 JP5: 1-3 & 2-4 JP6: 1-3 & 2-4

Connectors on IB550F

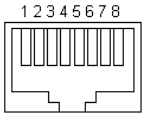
The connectors on IB550F allow you to connect external devices such as keyboard, hard disk drives, printers, etc. The following table lists the connectors on IB550F and their respective functions.

Connector Locations on IB550F



CN1: Compact Flash Card Socket

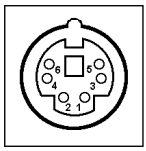
CN3: RJ45 Connector



Pin #	Signal Name
1	TD+
2	TD-
3	RD+
4	RJ45-4A
5	RJ45-5A
6	RD-
7	RJ45-7A
8	RJ45-8A

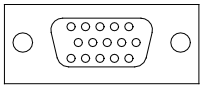
CN4: PS/2 Keyboard and Mouse Connector

CN4 uses a Y-cable with dual D-connectors for a PS/2 keyboard and a PS/2 mouse.



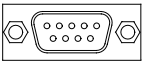
Pin #	Signal Name
1	Keyboard Data
2	Mouse Data
3	Ground
4	Vcc
5	Keyboard Clock
6	Mouse Clock

CN5: VGA CRT Connector

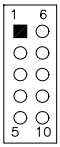


Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	NC
GND	5	6	GND
GND	7	8	GND
Vcc	9	10	GND
N.C.	11	12	DDCDA
HSYNC	13	14	VSYNC
DDCCLK	15		

CN6, J7, J12, J13: Serial Ports


CN6

Pin #	Signal Name		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC
10	NC	NC	NC

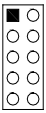


J7/J12/J13

Pin #	Signal Name (RS-232)
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	Ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator
10	No Connect.

CN6 is configurable as RS-232/ RS-422/485 with jumpers JP4/JP5/JP6. J7 (COM2) /J12 (COM3) /J13 (COM4) is fixed as RS-232.

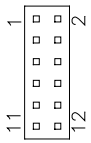
J1: Digital 4-in 4-out Connector



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	Vcc
Out3	3	4	Out1
Out2	5	6	Out0
IN3	7	8	IN1
IN2	9	10	IN0

J2: External Audio Connector

J2 is a 12-pin header that is used to connect to the optional audio cable card that integrates jacks for Line In, Line Out and Mic.

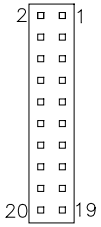


Signal Name	Pin #	Pin #	Signal Name
LINEOUT_R	1	2	LINEOUT_L
Ground	3	4	Ground
LINEIN_R	5	6	LINEIN L
Ground	7	8	Ground
Mic-In	9	10	VREFOUT
Ground	11	12	Protect pin

J3: Power DC-In

Pin #	Signal Name
1	DC In **(12V only)**
2	Ground

J4: LVDS Connectors

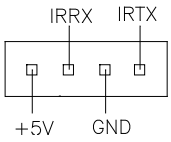


Signal Name	Pin #	Pin #	**Signal Name**
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
+12V	20	19	+12V

***Depends on JP1 setting (1-2 for 3.3V/default, 2-3 for 5V).**

J5: IrDA Connector

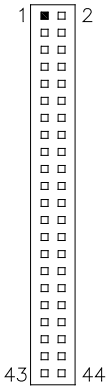
J5 is used for an optional IrDA connector for wireless communication.



Pin #	Signal Name
1	+5V
2	Ir RX
3	Ground
4	Ir TX

J6: TFT Panel Connector (when board supports 24-bit)

Here is the pin definition of J6 when it supports for 24-bit TFT flat panel LCD displays.

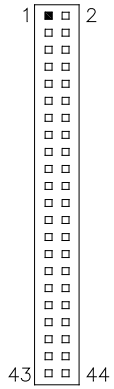


Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+12V
Ground	3	4	Ground
5V/3.3V	5	6	5V/3.3V
N.C.	7	8	Ground
R0	9	10	R1
R2	11	12	R3
R4	13	14	R5
R6	15	16	R7
G0	17	18	G1
G2	19	20	G3
G4	21	22	G5
G6	23	24	G7
B0	25	26	B1
B2	27	28	B3
B4	29	30	B5
B6	31	32	B7
Ground	33	34	Ground
SHFCLK	35	36	FLM(VSYNC)
DISPENA(MDE)	37	38	LP(HSYNC)
Ground	39	40	ENABKL
Ground	41	42	N.C.
ENAVDD	43	44	5V/3.3V

***Depends on JP1 setting (1-2 for 3.3V / default, 2-3 for 5V).**

J6: TFT Panel Connector (when board supports 18-bit)

Here is the pin definition of J6 when it supports for 18-bit TFT flat panel LCD displays.

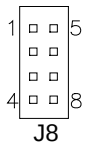


Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+12V
Ground	3	4	Ground
5V/3.3V	5	6	5V/3.3V
N.C.	7	8	Ground
N.C.	9	10	N.C.
R0	11	12	R1
R2	13	14	R3
R4	15	16	R5
N.C.	17	18	N.C.
G0	19	20	G1
G2	21	22	G3
G4	23	24	G5
N.C.	25	26	N.C.
B0	27	28	B1
B2	29	30	B3
B4	31	32	B5
Ground	33	34	Ground
SHFCLK	35	36	FLM(VSYNC)
DISPENA(MDE)	37	38	LP(HSYNC)
Ground	39	40	ENABKL
Ground	41	42	N.C.
ENAVDD	43	44	5V/3.3V

***Depends on JP1 setting (1-2 for 3.3V / default, 2-3 for 5V).**

CN10, J8: USB Connectors

The J8, USB pin header connectors support three USB 2.0 ports via optional USB cables. The IB550F also supports an embedded USB connector, CN10, which supports another USB 2.0 port.



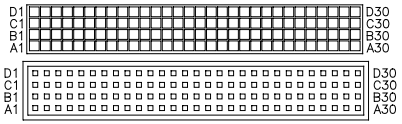
Signal Name	Pin	Pin	Signal Name
+5V	1	5	Ground
USB0-	2	6	USB1+
USB0+	3	7	USB1-
Ground	4	8	+5V

J9: PCI-104 Connector
PCI-104 Bus Signal Assignments

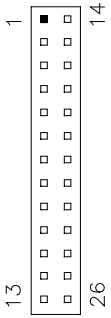
J3/P3				
Pin	**A**	**B**	**C**	**D**
1	GND/5.0V KEY[2]	Reserved	+5	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	GND	AD04	AD03
4	C/BE0*	AD07	GND	AD06
5	GND	AD09	AD08	GND
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	GND	AD12
8	+3.3V	C/BE1*	AD15	+3.3V
9	SERR*	GND	SB0*	PAR
10	GND	PERR*	+3.3V	SDONE
11	STOP*	+3.3V	LOCK*	GND
12	+3.3V	TRDY*	GND	DEVSEL*
13	FRAME*	GND	IRDY*	+3.3V
14	GND	AD16	+3.3V	C/BE2*
15	AD18	+3.3V	AD17	GND
16	AD21	AD20	GND	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	GND	IDSEL1	IDSEL2
19	AD24	C/BE3*	VI/O	IDSEL3
20	GND	AD26	AD25	GND
21	AD29	+5V	AD28	AD27
22	+5V	AD30	GND	AD31
23	REQ0*	GND	REQ1*	VI/O
24	GND	REQ2*	+5V	GNT0*
25	GNT1*	VI/O	GNT2*	GND
26	+5V	CLK0	GND	CLK1
27	CLK2	+5V	CLK3	GND
28	GND	INTD*	+5V	RST*
29	+12V	INTA*	INTB*	INTC*
30	-12V	Reserved	Reserved	GND/3.3V KEY[2]

* The shaded area denotes power or ground signals.

* The KEY pins are to guarantee proper module installation. Pin-A1 will be removed and the female side plugged for 5.0V I/O signals and Pin-D30 will be modified in the same manner for 3.3V I/O. It is recommended that both KEY pins (A1 and D30) be electrically connnected for GND for shielding.



J10: Parallel Port Connector



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

J11: Reset Switch

Pin #	Signal Name
1	Reset
2	Ground

SODIMM1: SODIMM Socket

This page is intentionally left blank.

BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the board. The topics covered in this chapter are as follows:

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports various processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL>  to  Enter  Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Phoenix - AwardBIOS CMOS Setup Utility

Standard CMOS Features Advanced BIOS Features Advanced Chipset Features Integrated Peripherals Power Management Setup PnP/PCI Configurations PC Health Status	Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item
Time, Date, Hard Disk Type…	

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section, which displays information on the currently highlighted item in the list.

***Note**: If the system cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

***Warning:** It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

Standard CMOS Features

"Standard CMOS Setup" choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Sat, Jul 3, 2010	Item Help
Time (hh:mm:ss)	00 : 00 : 00	Menu Level >
IDE Primary Master	None	Change the day, month,
IDE Primary Slave	None	year and century
Video	EGA/VGA	
Halt On	All, But keyboard	
Base Memory	640K	
Extended Memory	514816K	
Total Memory	515584K	

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

Date

The date format is:

Day : **Sun to Sat**
Month : **1 to 12**
Date : **1 to 31**
Year : **1999 to 2099**

To set the date, highlight the "Date" field and use the PageUp/ PageDown or +/- keys to set the current time.

Time

The time format is: **Hour : 00 to 23**
Minute : 00 to 59
Second : 00 to 59

To set the time, highlight the "Time" field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

IDE Primary HDDs / IDE Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the "Master" and the second is the "Slave".

Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select 'Manual' to define the drive information manually. You will be asked to enter the following items.

Capacity :	Capacity/size of the hard disk drive
Cylinder :	Number of cylinders
Head :	Number of read/write heads
Precomp :	Write precompensation
Landing Zone :	Landing zone
Sector :	Number of sectors

The Access Mode selections are as follows:

CHS	(HD < 528MB)
LBA	(HD > 528MB and supports Logical Block Addressing)
Large	(for MS-DOS only)
Auto	

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

Halt On

This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all others.

Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Virus Warning	Disabled	ITEM HELP
CPU Internal Cache	Enabled	Menu Level >
First Boot Device	USB-FDD	
Second Boot Device	SCSI	
Third Boot Device	HDD-0	
Boot Other Device	Enabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM>64MB	Non-OS2	
Small Logo (EPA) Show	Disabled	

Virus Warning

If this option is enabled, an alarm message will be displayed when trying to write on the boot sector or on the partition table on the disk, which is typical of the virus.

CPU Internal Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU.

First/Second/Third Boot Device

These fields determine the drive that the system searches first for an operating system. The options available include *LS120*, *HDD-0*, *SCSI*, *CDROM*, *HDD-1*, *USB-FDD*, *USB-ZIP*, *LAN*, *USB-CDROM*, *USB-HDD* and *Disabled*.

Boot Other Device

These fields allow the system to search for an OS from other devices other than the ones selected in the First/Second/Third Boot Device.

Boot Up NumLock Status
This allows you to activate the NumLock function after you power up the system.

Gate A20 Option
This field allows you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1 MB.

Typematic Rate Setting
When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to ***Disabled.***

Typematic Rate (Chars/Sec)
When the typematic rate is enabled, the system registers repeated keystrokes speeds. Settings are from 6 to 30 characters per second.

Typematic Delay (Msec)
When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to ***250msec.***

Security Option
This field allows you to limit access to the System and Setup. The default value is ***Setup***. When you select *System*, the system prompts for the User Password every time you boot up. When you select *Setup*, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

OS Select for DRAM > 64MB
This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is ***Non-OS/2***.

Small Logo (EPA) Show
The EPA logo appears at the right side of the monitor screen when the system is boot up.

Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

		ITEM HELP
CPU Frequency	Auto	
Video Memory Size	8M	
Output Display	CRT	
Flat Panel Configuration	Press Enter	
Onboard Audio	Enabled	
Onboard USB1.1	Enabled	
Onboard USB2.0	Enabled	
Onboard IDE	Enabled	
Overcurrent Reporting	Disabled	
Port 4 Assignment	Host	
Memory Hole At 15M-16M	Disabled	
Onboard SATA chip mode	SATA mode	

CPU Frequency

This options for this field are ***Auto***, ***433MHz*** and ***500MHz***.

Video Memory Size

The default setting for this field is ***8M***. The options are from ***8M*** to ***254M***.

Flat Panel Configuration

This options for this field are ***Flat Panel***, ***CRT*** and ***Panel & CRT***. For flat panel, configuration settings include Flat Panel Type, Resolution (320x240 up to 1600x1200), Data Bus Type, Refresh Rate (60~100Hz), HSYNC Polarity, VSYNC Polarity, SHFCLK Active Period and LP Active Period.

Onboard Audio

The options for this field are *Enabled* and *Disabled*. By default, this field is set to ***Enabled***.

Onboard USB 1.1

The options for this field are *Enabled* and *Disabled*. By default, this field is set to ***Enabled***.

Onboard USB 2.0

The options for this field are *Enabled* and *Disabled*. By default, this field is set to ***Enabled***. In order to use USB 2.0, necessary OS drivers must be installed first. ***Please update your system to Windows 2000 SP4 or Windows XP SP1.***

Onboard IDE

The options for this field are *Enabled* and *Disabled*. By default, this field is set to ***Enabled***.

Overcurrent Reporting

The options for this field are *Enabled* and *Disabled*. By default, this field is set to ***Disabled***.

Port 4 Assignment

This options for this field are ***Host***, ***Device*** and ***Not Used***.

Memory Hole At 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB. The choices are *Enabled* and *Disabled*.

Onboard SATA chip Mode

The field determines the behavior of Serial ATA.The default setting is SATA mode.Choosing RAID mode enables Serial ATA drives to work as RAID 0,1.

Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals. The first screen shows three main items for user to select. Once an item selected, a submenu appears. Details follow.

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

		ITEM HELP
Master Drive PIO Mode	Auto	Menu Level >
Slave Drive PIO Mode	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	
IDE DMA transfer access	Enabled	
IDE HDD Block Mode	Enabled	
Onboard Lan Boot ROM	Disabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
RxD , TxD Active	Hi, Lo	
IR Transmission Delay	Enabled	
UR2 Duplex Mode	Half	
Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	387/IRQ7	
Parallel Port Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	
**** 2nd SuperIO Device ****		
Onboard Serial Port 3	3E8	
Serial Port 3 Use IRQ	IRQ11	
Onboard Serial Port 4	2E8	
Serial Port 4 Use IRQ	IRQ10	

IDE Primary/Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary/Secondary Master/Slave UDMA

These fields allow your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

IDE HDD Block Mode

This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

Onboard Lan Boot ROM

This feature allows users to enable or disable the onboard LAN boot ROM. The default setting is ***Disabled.***

Onboard Serial/Parallel Port

These fields allow you to select the onboard serial and parallel ports and their addresses. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Serial Port 3	3E8/IRQ11
Serial Port 4	2E8/IRQ10
Parallel Port	378H/IRQ7

UART Mode Select

This field determines the UART 2 mode in your computer. The default value is ***Normal***. Other options include *IrDA* and *ASKIR*.

Parallel Port Mode

This field allows you to determine parallel port mode function.

SPP	Standard Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port
ECP+EPP	Combination of ECP and EPP capabilities
Normal	Normal function

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively.

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

Power Management	Disabled	ITEM HELP
** PM Timers **		Menu Level >
IRQ Wakeup Events	Press Enter	

Power Management

The options for the power management setting are ***Disabled***, ***Legacy*** and ***APM***.

PM Timers and IRQ Wakeup Events

The HDD, FDD, COM, LPT Ports, and PCI PIRQ are I/O events that can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

PNP/PCI Configurations

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

		ITEM HELP
PNP OS Installed	No	Menu Level
Init Display First	PCI Slot	
Reset Configuration Data	Disabled	
Resources Controlled By	Auto (ESCD)	
IRQ Resources	Press Enter	
Memory Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	

PNP OS Installed

If your OS supports Plug & Play (PnP), select **Yes** so that it can take over the management of device resources. If you are using a non-PnP-aware OS or not all of the operating systems you are using support PnP, select **No** to let the BIOS handle it instead.

Init Display First

This field refers to the primary video or primary video adapter. The default setting is ***PCI Slot***.

Reset Configuration Data

This field allows you to determine whether to reset the configuration data or not. The default value is ***Disabled.***

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically with the use of a use a PnP OS system such as Windows 95.

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA card.

PC Health Status

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds and voltages.

Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status

		ITEM HELP
CPU Warning Temperature	Disabled	Menu Level >
Current System Temp.	50°C/122°F	
Current CPU Temp	61°C/141°F	
Vcore(V)	1.31 V	
Vmem	2.70V	
Vcc3	3.47V	
+5V	5.08 V	
+12V	11.30 V	
5VSB(V)	5.04 V	

CPU Warning Temperature

This field allows the user to set the temperature so that when the temperature is reached, the system sounds a warning. This function can help prevent damage to the system that is caused by overheating.

Temperatures/Voltages

These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

Load Fail-Safe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

Set Supervisor/User Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

To disable a password, just press the <Enter> key when you are prompted to enter the password. A message will confirm the password to be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type “Y”, you will quit the setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

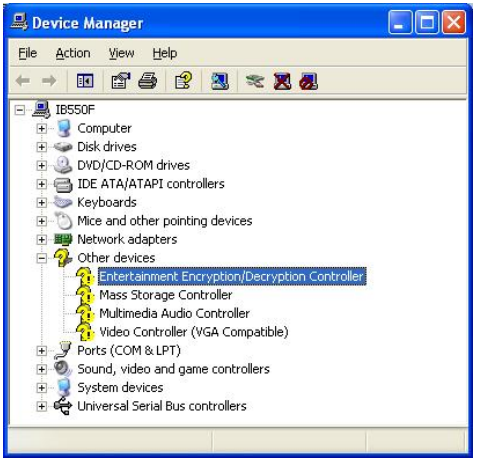
Drivers Installation

This section describes the installation procedures for software and drivers under the Windows XP. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

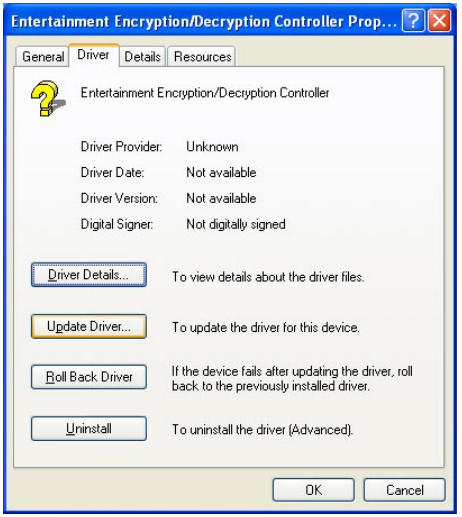
IMPORTANT NOTE:
How to install Windows XP on your Serial ATA hard drive:
1. Assuming the drivers DVD is in D drive, the path for the relevant files is D:\ SataRaid\SiliconImage\SIL3512\Non-RAID or D:\ SataRaid\SiliconImage\SIL3512\RAID, please copy the file to the floppy disk.
2. Windows XP installation needs to use USB floppy drive.
3. When the Windows XP Setup screen appears, press F6 and follow the proceeding instructions.
4. When the Windows XP Setup screen stops, press S (Specify Additional Device), then insert the SATA device driver into the floppy disk drive. Press Enter, then choose the driver --- Silicon Image Sil 3x12 SATALink Controller for Windows XP/Server 2003. Press Enter and follow the proceeding instructions.

Entertainment Encryption/Decryption Controller Driver

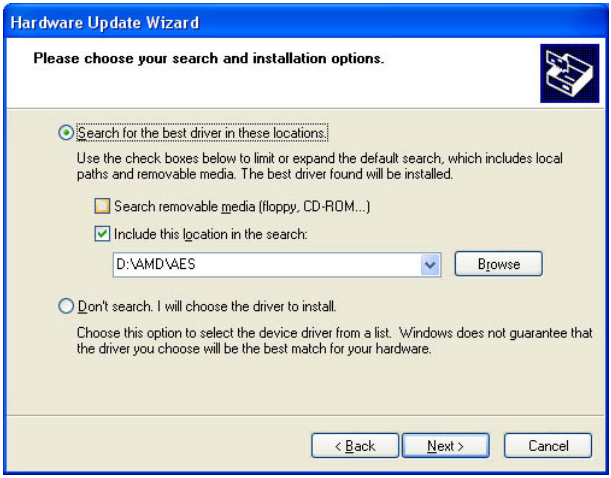
1. In the Windows operating system, go to the Device Manager.
2. As shown below, click the **Entertainment Encryption/Decryption Controller** under **Other devices**.



3. In the following window, click the **Driver** tab and click **OK** to continue.

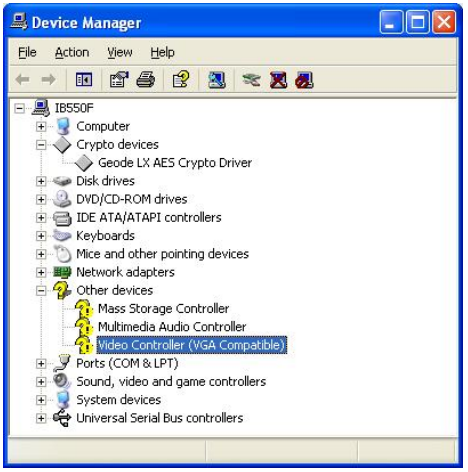


4. In the Hardware Update Wizard, select **No, not this time** and click **Next** to continue. Then select **Install from a list of specific location (Advanced)**. Click **Browse** to find the driver's path in the CD provided - **\AMD\AES**. Then, click **Next** to start the drivers installtion. Then click **Finish** after the wizard has finished installing the software for ***Geode LX AES Crypto Driver***.

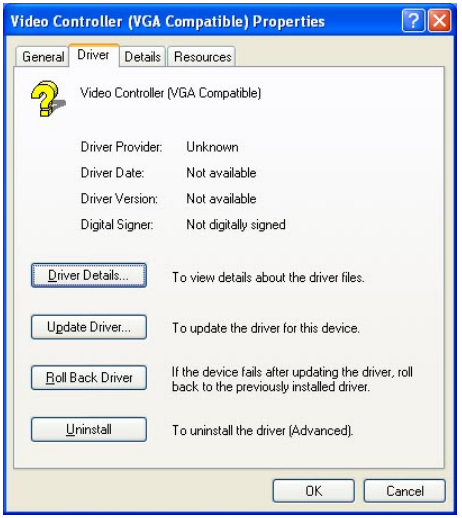


VGA Drivers Installation

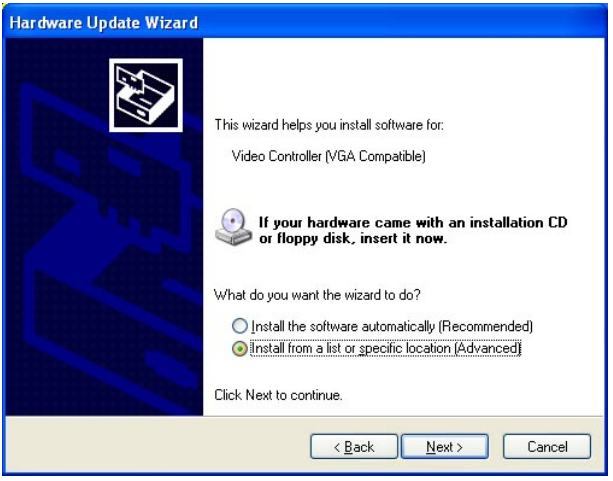
1. In the Windows operating system, go to the Device Manager.
2. As shown below, click the **Video Controller (VGA Compatible)** under **Other devices**.



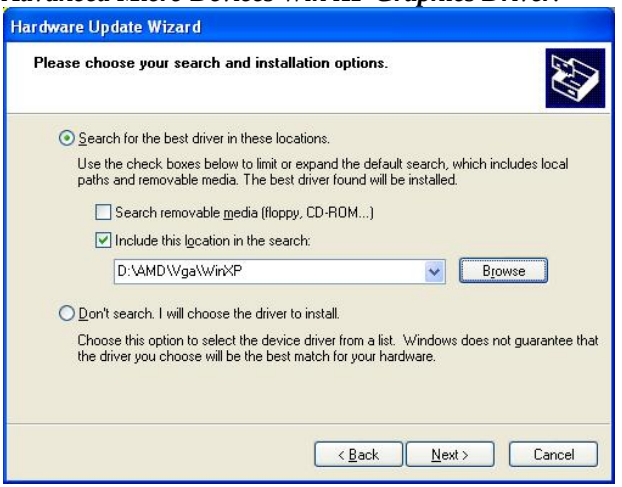
3. In the following window, click the **Driver** tab and click **OK** to continue.



4. In the Hardware Update Wizard, select **No, not this time** and click **Next** to continue. Then select **Install from a list of specific location (Advanced)**.

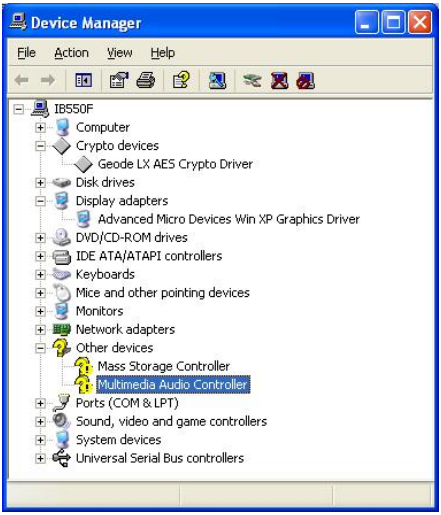


5. In the next screen, click **Search for the best driver in these** locations. Check **Include this location in the** search. Click **Browse** to find the driver's path in the CD provided or enter the path directly - **AMD\Vga\WinXP**. Then, click **Next** to start the drivers installtion. Then click **Finish** after the wizard has finished installing the software for ***Advanced Micro Devices Win XP Graphics Driver***.

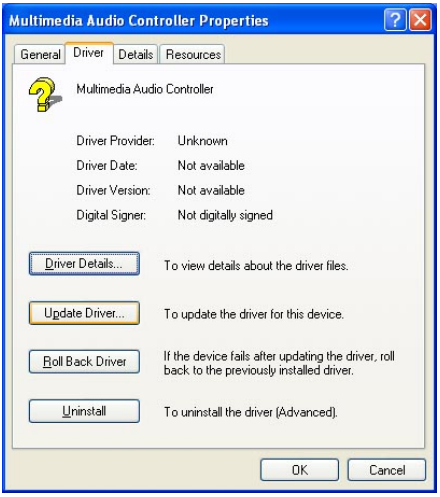


Audio Driver Installation

1. In the Windows operating system, go to the Device Manager.
2. As shown below, click the **Multimedia Audio Controller** under **Other devices**.

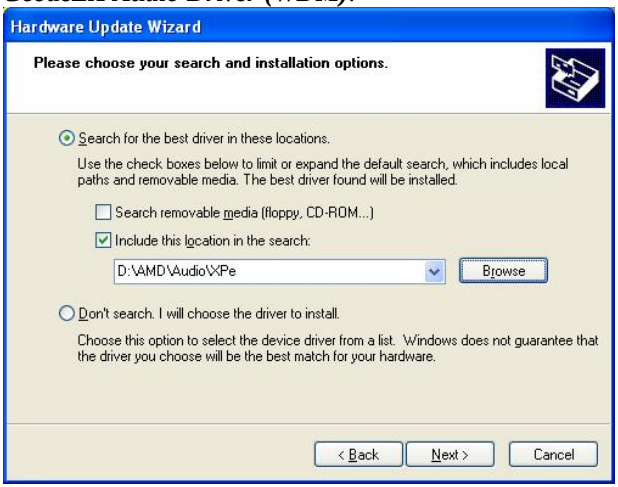


3. In the following window, click the **Driver** tab and click **OK** to continue.



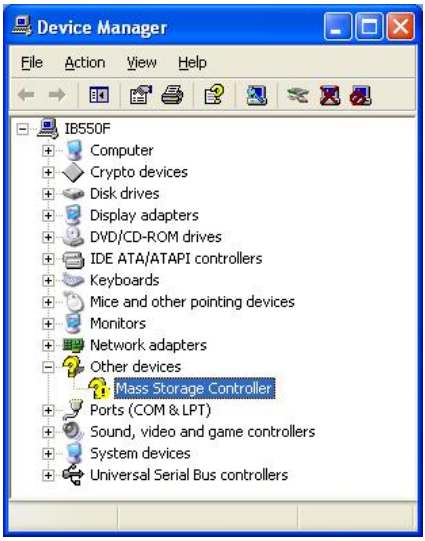
4. In the Hardware Update Wizard, select **No, not this time** and click **Next** to continue. Then select **Install from a list of specific location (Advanced)**.

5. In the next screen, click **Search for the best driver in these** locations. Check **Include this location in the** search. Click **Browse** to find the driver's path in the CD provided or enter the path directly - **\AMD\Audio\XPe**. Then, click **Next** to start the drivers installtion. Then click **Finish** after the wizard has finished installing the software for ***GeodeLX Audio Driver (WDM)***.

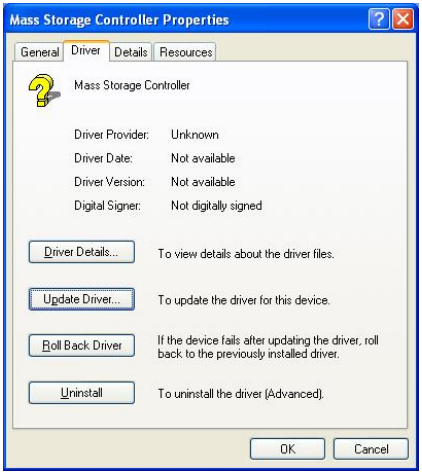


Silicon Image Sil3512ECTU Driver Installation

1. In the Windows operating system, go to the Device Manager.
2. As shown below, click the **Mass Storage Controller** under **Other devices**.

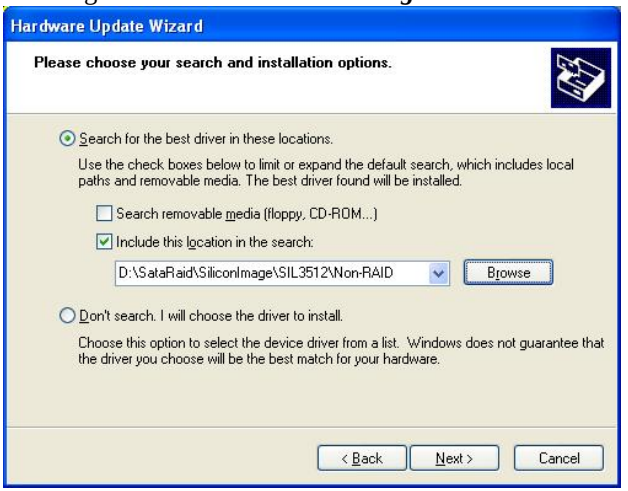


3. In the following window, click the **Driver** tab and click **OK** to continue.



4. In the Hardware Update Wizard, select **No, not this time** and click **Next** to continue. Then select **Install from a list of specific location (Advanced)**.

5. In the next screen, click **Search for the best driver in these** locations. Check **Include this location in the** search. Click **Browse** to find the driver's path in the CD provided or enter the path directly - **\SataRaid\SiliconImage\SIL3512\Non-RAID or \SataRaid\SiliconImage\SIL3512\RAID**. Then, click **Next** to start the drivers installtion. Then click **Finish** after the wizard has finished installing the software for ***Silicon Image Sil 3512 SATALink Controller.***



Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
0000h-000Fh	Direct memory access controller
0020h-0021h	Programmable interrupt controller
0022h-003Fh	PCI bus
0040h-0043h	System timer
0044h-0047h	PCI bus
004Ch-006Fh	PCI bus
0060h-0060h	PC/AT Enhanced PS/2 Keyboard (101/102-Key)
0061h-0061h	System speaker
0064h-0064h	PC/AT Enhanced PS/2 Keyboard (101/102-Key)
0070h-0071h	System CMOS/real time clock
0072h-007Fh	PCI bus
0081h-0083h	Direct memory access controller
0087h-0087h	Direct memory access controller
0089h-008Bh	Direct memory access controller
008Fh-0091h	Direct memory access controller
0090h-0091h	PCI bus
0093h-009Fh	PCI bus
00A0h-00A1h	Programmable interrupt controller
00A2h-00BFh	PCI bus
00C0h-00DFh	Direct memory access controller
00E0h-00EFh	PCI bus
00F0h-00FFh	Numeric data processor
0100h-0CF7h	PCI bus
0170h-0177h	Secondary IDE Channel
01F0h-01F7h	Primary IDE Channel

Address	Device Description
0274h-0277h	ISAPNP Read Data Port
0279h-0279h	ISAPNP Read Data Port
02E8h-02EFh	Communications Port (COM4)
02F8h-02FFh	Communications Port (COM2)
0376h-0376h	Secondary IDE Channel
0378h-037Fh	Printer Port (LPT1)
03B0h-03BAh	Advanced Micro Devices Win XP Graphics Driver
03C0h-03DFh	Advanced Micro Devices Win XP Graphics Driver
03E8h-03EFh	Communications Port (COM3)
03F0h-03F1h	Motherboard resources
03F6h-03F6h	Primary IDE Channel
03F8h-03FFh	Communications Port (COM1)
0778h-077Bh	Printer Port (LPT1)
0A79h-0A79h	ISAPNP Read Data Port
0D00h-FFFFh	PCI bus
F600h-F6FFh	Realtek RTL8139/810x Family Fast Ethernet NIC
F900h-F97Fh	GeodeLX Audio Driver (WDM)
FA00h-FA0Fh	Standard Dual Channel PCI IDE Controller
FB00h-FB0Fh	Silicon Image SiI 3512 SATALink Controller
FC00h-FC03h	Silicon Image SiI 3512 SATALink Controller
FD00h-FD07h	Silicon Image SiI 3512 SATALink Controller
FE00h-FE03h	Silicon Image SiI 3512 SATALink Controller
FF00h-FF07h	Silicon Image SiI 3512 SATALink Controller

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 0	System timer
IRQ 1	PC/AT Enhanced PS/2 Keyboard (101/102-Key)
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 5	Advanced Micro Devices Win XP Graphics Driver
IRQ 5	Geode LX AES Crypto Driver
IRQ 5	Silicon Image SiI 3512 SATALink Controller
IRQ 5	Realtek RTL8139/810x Family Fast Ethernet NIC
IRQ 5	GeodeLX Audio Driver (WDM)
IRQ 5	Standard OpenHCD USB Host Controller
IRQ 5	Standard Enhanced PCI to USB Host Controller
IRQ 8	System CMOS/real time clock
IRQ 10	Communications Port (COM4)
IRQ 11	Communications Port (COM3)
IRQ 12	Microsoft PS/2 Mouse
IRQ 13	Numeric data processor
IRQ 14	Primary IDE Channel

C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sort of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:
This code and information is provided "as is" without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and/or fitness for a particular purpose.

```
;[]================================================
; Name      : Enable_And_Set_Watchdog
; IN   : AL - 1sec ~ 255sec
; OUT       : None
;[]================================================
Enable_And_Set_Watchdog       Proc  Near
            push ax                 ;save time interval
            call   Unlock_Chip

            mov  cl, 2Bh
            call   Read_Reg
            and   al, NOT 10h
            call   Write_Reg        ;set GP24 as WDTO

            mov  cl, 07h
            mov  al, 08h
            call   Write_Reg        ;switch to LD8
            mov  cl, 0F5h
            call   Read_Reg
            and   al, NOT 08h
            call   Write_Reg        ;set count mode as second

            pop   ax
            mov  cl, 0F6h
            call   Write_Reg        ;set watchdog timer

            mov  al, 01h
            mov  cl, 30h
            call   Write_Reg        ;watchdog enabled
```

```
            call   Lock_Chip
            ret
Enable_And_Set_Watchdog      Endp

;[]=============================================
; Name     : Disable_Watchdog
; IN   : None
; OUT      : None
;[]=============================================
Disable_Watchdog    Proc  Near
            call   Unlock_Chip

            mov  cl, 07h
            mov  al, 08h
            call   Write_Reg        ;switch to LD8

            xor    al, al
            mov  cl, 0F6h
            call   Write_Reg        ;clear watchdog timer

            xor    al, al
            mov  cl, 30h
            call   Write_Reg        ;watchdog disabled

            call   Lock_Chip
            ret
Disable_Watchdog    Endp
;[]=============================================
; Name     : Unlock_Chip
; IN   : None
; OUT      : None
;[]=============================================
Unlock_Chip    Proc  Near
            mov  dx, 4Eh
            mov  al, 87h
            out    dx, al
            out    dx, al
            ret
Unlock_Chip    Endp
;[]=============================================
; Name     : Lock_Chip
; IN   : None
; OUT      : None
```

```
;[]=============================================
Unlock_Chip     Proc  Near
                mov  dx, 4Eh
                mov  al, 0Aah

                out   dx, al
                ret
Unlock_Chip     Endp
;[]=============================================
; Name      : Write_Reg
; IN  : CL - register index
;         AL - Value to write
; OUT       : None
;[]=============================================
Write_Reg Proc  Near
                push ax
                mov  dx, 4Eh
                mov  al,cl
                out   dx,al
                pop   ax
                inc   dx
                out   dx,al
                ret
Write_Reg Endp
;[]=============================================
; Name      : Read_Reg
; IN  : CL - register index
; OUT       : AL - Value to read
;[]=============================================
Read_Reg Proc  Near
                mov  al, cl
                mov  dx, 4Eh
                out   dx, al
                inc   dx
                in     al, dx
                ret
Read_Reg Endp
;[]=============================================
```