

Mainboard User's Manual

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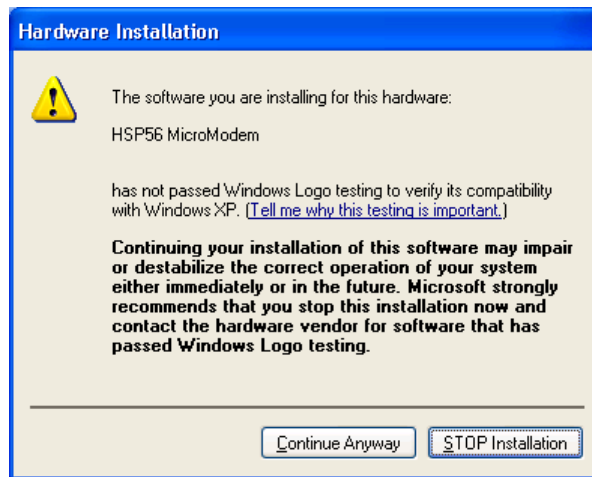
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M947 Series, V1.3A
S648/February 2003**

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Notice:

Owing to Microsoft's certifying schedule is various to every supplier, we might have some drivers not certified yet by Microsoft. Therefore, it might happen under Windows XP that a dialogue box (shown as below) pop out warning you this software has not passed Windows Logo testing to verify its compatibility with Windows XP. Please rest assured that our RD department has already tested and verified these drivers. Just click the "Continue Anyway" button and go ahead the installation.



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Chapter 1

Introduction

This mainboard has a **Socket-478** processor socket for **Intel Pentium 4** type of processors supporting front side bus (FSB) speeds up to **533 MHz**.

This mainboard integrates the **SiS648** Northbridge along with **SiS963** Southbridge chipsets that supports built-in **AC97 Codec** support 6-channel speak-out, **2 DDR400 (by overclocking)** modules up to 2GB system memory. This mainboard has one **CNR** (Communications and Networking Riser) slot to support Audio and Modem application, and built-in **10BaseT/100BaseTX Network Interface (optional)**. It supports the **Xabre200 GPU**, which integrates a **256-bit 3D/2D graphics engine** and a motion compensation MPEG I/MPEGII accelerator.

There is a full set of I/O ports including two PS/2 ports for mouse and keyboard, one serial port, one VGA port, one parallel port, one IEEE1394a port (optional) and six USB ports (**USB2.0**)– four back-panel ports and onboard USB header USB3 providing two extra ports by connecting the Extended USB Module to the mainboard.

This mainboard is an ATX mainboard that uses a 4-layer printed circuit board and measures 305 x 220mm.

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Key Features

The key features of this mainboard include:

Socket-478 Processor

- ◆ The PGA Socket 478
- ◆ Supports **Intel Pentium 4 series** CPU
- ◆ Supports up to **533 MHz** Front-Side Bus

Chipset

There are **SiS648 Northbridge** and **SiS963 Southbridge** in this chipset in accordance with an innovative and scalable architecture with proven reliability and performance.

Memory Support

- ◆ Two 184-pin DIMM slots for DDR memory modules
- ◆ Support DDR up to 400 MHz memory bus

Notice: You can work on DDR400 by overclocking, but it perhaps comes with some risks that no guarantee the normal operation.

- ◆ Maximum installed memory is 2GB

Expansion Slots

- ◆ One CNR(Communications and Networking Riser) slot to insert special riser cards with Audio/Modem functionality
- ◆ Three 32-bit PCI slots for PCI 2.2-compliant bus interface

Onboard IDE channels

- ◆ Primary and Secondary PCI IDE channels
- ◆ Support for PIO (programmable input/output) modes
- ◆ Support for Multiword DMA modes
- ◆ Support for Bus Mastering and Ultra DMA ATA 100/**133** modes

Power Supply and Power Management

- ◆ ATX power supply connector

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- ◆ Meets ACPI 1.0b and APM 1.2 requirements, keyboard power on/off
- ◆ Supports RTC Alarm, Wake On Modem, AC97 Wake-Up and USB Wake-Up

Integrated VGA Specification

- ◆ GPU (Graphics Processing Unit)
 - Xabre 200 AGP8X 256-bit GPU clock runs from 200MHz
- ◆ DISPLAY MEMORY
 - Built-in 64MB DDR onboard runs from 400MHz (DDR400)
- ◆ 3D ENGINE FEATURES
 - Supports Direct 3D version 8.1; pixel shader version 1.3
 - Supports AGP 8X for texture/vertex fetch
 - Built-in 32-bit floating point VLIW Geometry Transform/Lighting (T/L) and triangle setup engine
 - Built-in 4 pixel programmable rendering pipelines and 8 texture units (4P8T)
 - Supports up to 2048x2048 texture size
 - Built-in hardware stereo auto rendering engine
 - Supports 2X/4X full scene anti-aliasing
- ◆ 2D ENGINE FEATURES
 - Built-in Direct Draw Accelerator
 - MPEG-2 MP@ML standards compliant
 - Built-in motion compensation logic
 - Supports up to 20Mbit/sec bit rate decoding
 - Direct DVD to TV playback
 - Supports single video windows with overlay function
 - Supports graphics and video overlay function
 - Supports DVD sub-picture playback overlay
 - Built-in independent Gamma correction RAM

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- ◆ RESOLUTION
 - Supports VESA standards super high resolution graphics modes, up to 2048x1536x32 bpp

AC97 Audio Codec

- ◆ 6-CH hardware architecture allows multi-channel south bridge to playback 6CH audio
- ◆ Intel® AC'97 (REV. 2.2) compatible, meeting Microsoft® PC2001 requirements
- ◆ Built-in earphone buffer and internal PLL, the latter saving additional crystal
- ◆ Line-in/rear out share the same jack; Center/bass share the MIC jack
- ◆ Digital S/PDIF OUT Support
- ◆ CRL® 3D: HRTF based BS3D compatible audio engine

Onboard I/O Ports

The mainboard has a full set of I/O ports and connectors:

- ◆ Two PS/2 ports for mouse and keyboard
- ◆ One serial port
- ◆ One VGA port
- ◆ One parallel port
- ◆ IEEE1394a port (optional)
- ◆ Six USB ports (four back-panel ports, onboard USB headers providing two extra ports)— **USB2.0**
- ◆ Audio jacks for microphone, line-in and line-out

Hardware Monitoring

- ◆ Built-in hardware monitoring for CPU & System temperatures, fan speeds and mainboard voltages.

Onboard Flash ROM

- ◆ Supports Plug and Play configuration of peripheral devices and expansion cards

1: Introduction

Built-in Ethernet LAN (Optional)

- ◆ **10Base-TX/100Base-T Physical Layer Solution**
- ◆ Dual Speed – 100/10 Mbps
- ◆ MII Interface to Ethernet Controller/Configuration & Status
- ◆ Auto Negotiation: 10/100, Full/Half Duplex
- ◆ Meet All Applicable IEEE802.3, 10Base-T and 100Base-TX Standards

USB 2.0

- ◆ Compliant with Universal Serial Bus Specification Revision 2.0
- ◆ Compliant with Intel's Enhanced Host Controller Interface Specification Revision 0.95
- ◆ Compliant with Universal Host Controller Interface Specification Revision 1.1
- ◆ PCI multi-function device consists of two **UHCI Host Controller** cores for full-/low-speed signaling and one **EHCI Host Controller** core for high-speed signaling
- ◆ Root hub consists 4 downstream facing ports with integrated physical layer transceivers shared by **UHCI** and **EHCI** Host Controller
- ◆ Support PCI-Bus Power Management Interface Specification release 1.1
- ◆ Legacy support for all downstream facing ports

IEEE 1394a (Optional)

- ◆ Fully supports provisions of IEEE1394-1995 for high-performance serial bus and the P1394a draft 2.0 standard
- ◆ Provides two fully compliant cables ports at 100/200/400 Mbits/s and available with one or two ports
- ◆ Supports optional 1394 Annex J electrical isolation barrier at PHY-link interface
- ◆ Supports power-down feature to conserve energy in battery powered application
- ◆ Node power-class information signaling for system power management

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Bundled Software

- ◆ **PC-Cillin2002** provides automatic virus protection under Windows 98/ME/NT/2000/XP
- ◆ **MediaRing Talk** provides PC to PC or PC to Phone internet phone communication
- ◆ **3Deep** delivers the precise imagery and displays accurate color in your monitor
- ◆ **PC DJ** is a dual-MP3 player that enables users to actually mix music right on their own personal computers.
- ◆ **Adobe Acrobat Reader V5.0** is the software to help users read .PDF files.
- ◆ **WinDVD creator** is a storyboard interface making the entire DVD-making process as easy as moving pictures around on your screen.
- ◆ **3DNA desktop** transforms the static 2D desktop into a more exciting, intuitive, and useful 3D interface.

Dimensions

- ◆ ATX form factor 305 x 220mm

Note: Hardware specifications and software items are subject to change without notification.

1: Introduction

Package Contents

Attention: This mainboard serial has three models, M947FLU (IEEE1394a, LAN, USB2.0), M947LU(LAN, USB2.0), and M947U(USB2.0).

Please contact your local supplier for more information about your purchased model. Each model will support different specification listed as below:

Model	Specification
M947FLU	Onboard LAN PHY chip (U6), USB 2.0+RJ-45 LAN connector, and IEEE1394a PHY(U7)
M947LU	Onboard LAN PHY chip (U6), USB 2.0+RJ-45 LAN connector
M947U	USB 2.0

Your mainboard package contains the following items:

- The mainboard
- The User's Manual
- One diskette drive ribbon cable and bracket
- One IDE drive ribbon cable and bracket
- Software support CD

Optional Accessories

You can purchase the following optional accessories for this mainboard.

- Extended USB module
- CNR v.90 56K Fax/Modem card

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Static Electricity Precautions

Static electricity could damage components on this mainboard. Take the following precautions while unpacking this mainboard and installing it in a system.

1. Don't take this mainboard and components out of their original static-proof package until you are ready to install them.
2. While installing, please wear a grounded wrist strap if possible. If you don't have a wrist strap, discharge static electricity by touching the bare metal of the system chassis.
3. Carefully hold this mainboard by its edges. Do not touch those components unless it is absolutely necessary. Put this mainboard on the top of static-protection package with component side facing up while installing.

Pre-Installation Inspection

1. Inspect this mainboard whether there are any damages to components and connectors on the board.
2. If you suspect this mainboard has been damaged, do not connect power to the system. Contact your mainboard vendor about those damages.

Chapter 2

Mainboard Installation

To install this mainboard in a system, please follow the instructions in this chapter:

- ❑ Identify the mainboard components
- ❑ Install a CPU
- ❑ Install one or more system memory modules
- ❑ Verify that all jumpers or switches are set correctly
- ❑ Install the mainboard in a system chassis (case)
- ❑ Connect any extension brackets or cables to connecting headers on the mainboard
- ❑ Install other devices and make the appropriate connections to the mainboard connecting headers.

Note:

1. Before installing this mainboard, make sure jumper JP5 is under Normal setting. See this chapter for information about locating JP5 and the setting options.
2. Never connect power to the system during installation; otherwise, it may damage the mainboard.

2: Mainboard Installation

PS/2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS/2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
LPT1	Use LPT1 to connect printers or other parallel communications devices.
COM1	Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1.
VGA	Use the VGA port to connect VGA devices.
IEEE1394a Port (Optional)	Use the IEEE1394a port to connect any Firewire devices.
LAN Port (Optional)	Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
USB Ports	Use the USB ports to connect USB devices.
Audio Ports	<p>Use the three audio ports to connect audio devices. The first jack is for stereo Line-In signal. The second jack is for stereo Line-Out signal. The third jack is for Microphone. Here are the configurations of 2-channel, 4-channel and 6-channel speaker-out for the onboard audio system applications:</p> <ul style="list-style-type: none">* 2-CH system:<ul style="list-style-type: none">Line-InLine-Out → two Front SpeakersMicrophone* 4-CH system:<ul style="list-style-type: none">Line-In → two Front SpeakersLine-Out → two Rear SpeakersMicrophone* 6-CH system:<ul style="list-style-type: none">Line-In → two Rear SpeakersLine-Out → two Front SpeakersMicrophone → Subwoofer/Center

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Install A CPU

This mainboard has a Socket-478 supporting Intel Pentium 4 series processor.

To ensure reliability, ensure that your processor has a heatsink/cooling fan assembly.

Do neither try to install a Socket 370 processor nor a Socket423 in the Socket-478. A Socket 370 processor such as the Pentium III, or Celeron, does not fit in the Socket 478.

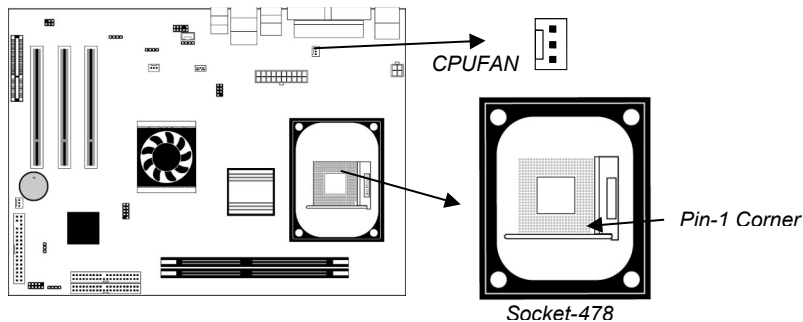
The following processor is currently supported by this mainboard.

Intel P4 478: 1.4GHz ~ 2.8GHz and up, FSB: 533MHz

Installing a Socket-478 Processor

A processor installs into the ZIF (Zero Insertion Force) Socket-478 on the mainboard.

1. Locate the Socket-478 and CPUFAN. Unlock the socket by pressing the locking lever slightly sideways, and then lift it to the upright position.



2. On the processor, identify the Pin-1 corner by its beveled edge.
3. On the Socket-478, identify the Pin-1 corner. The Pin-1 corner is at the end of the locking lever when locked.
4. Match the Pin-1 corner of CPU with the one of socket, and insert the processor into the socket. No force is required and the processor should drop into place freely.

2: Mainboard Installation

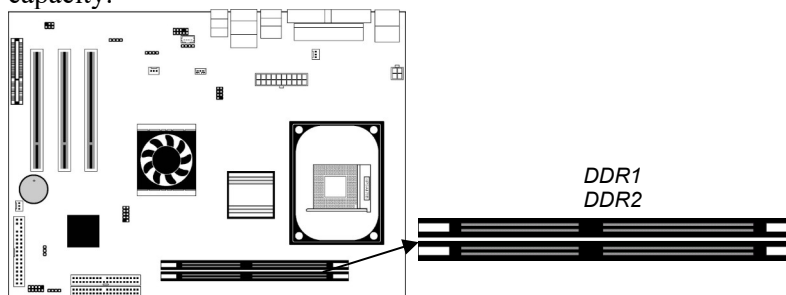
5. Push down the locking lever and hook it under the latch on the edge of the socket. This secures the CPU in the socket.
6. All processors should be installed with a combination heatsink/cooling fan, connect the cable from the fan to the CPU fan power connector CPUFAN.

Installing Memory Modules

This mainboard accommodates two 184-pin 2.5V unbuffered Double Data Rate (DDR) SDRAM DIMM sockets. When you install DDR266/DDR333/DDR400 memory modules, the memory bus can run up to 133/166/200 MHz.

The DDR SDRAM DIMMs can synchronously work with 100 MHz or operates over a 400 MHz (overclock) system bus.

You must install at least one memory module in order to use the mainboard. Each module can be installed with up to 2GB memory capacity.



Installation Procedure

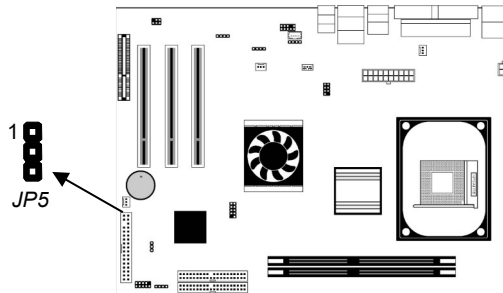
To install a module, please follow these steps:

1. Push down the latches on each side of the DIMM socket.
2. Align the memory module with the socket. The DIMM sockets are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
3. Check the cutouts on the DIMM module edge connector matching the notches in the DIMM socket.
4. Install the DIMM module into the socket and press it firmly down until it is seated correctly. The socket latches are levered upwards and lock the edges of the DIMM.
5. Install any remaining DIMM modules.

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Setting Jumper Switches

Jumpers are sets of pins connected together with jumper caps. The jumper caps change the way the mainboard operates by changing the electronic circuits on the mainboard. If a jumper cap connects two pins, we say the pins are **SHORT**. If a jumper cap is removed from two pins, the pins are **OPEN**.



Jumper JP5: Clear CMOS Memory

Use this jumper to clear the contents of the CMOS memory. You may need to clear the CMOS memory if the settings in the Setup Utility are incorrect and prevent your mainboard from operating. To clear the CMOS memory, disconnect all the power cables from the mainboard and then move the jumper cap into the **CLEAR** setting for a few seconds.

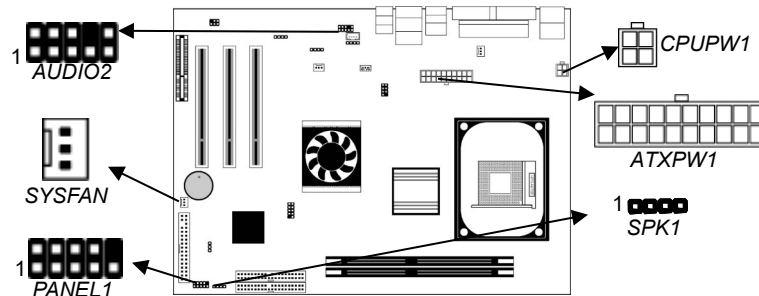
Function	Jumper Setting
Clear CMOS	Short Pins 1-2
Normal Mode	Short Pins 2-3

2: Mainboard Installation

Install the Mainboard

Install the mainboard in a system chassis (case). The board is an ATX size mainboard with a twin-tier of I/O ports. You can install this mainboard in an ATX case. Ensure that your case has an I/O cover plate that matches the ports on this mainboard.

Install the mainboard in a case. Follow the case manufacturer's instructions to use hardware's and internal mounting points on the chassis.



Connect power supply to the **ATXPW1** connector on the mainboard. **CPUPW1** is the P4 CPU power connector. If there is a cooling fan in the system chassis, connect the cooling fan cable to the **SYSFAN** fan power connector on the mainboard. Connect the PC speaker cable to the **SPK1** header on the mainboard.

Pin	Signal	Pin	Signal
1	SPKR	2	NC
3	GND	4	+5V

Connect case switches and indicator LEDs to the **PANEL1** header. Here is a list of **PANEL1** header's pin assignments.

Pin	Signal	Pin	Signal
1	HD_LED_P	2	FP_PWR/SLP_LED_P
3	HD_LED_N	4	FP_PWR/SLP_LED_N
5	RST_SW	6	PWR_BT
7	RST_SW	8	PWR_BT
9	RSVD_DNU	10	KEY

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If there are a headphone jack or/and a microphone jack on the front panel, connect cables to the **AUDIO2** header on the mainboard. Here is a list of AUDIO2 header's pin assignment.

Pin	Signal	Pin	Signal
1	AUD_MIC	2	AUD_GND
3	AUD_MIC_BIAS	4	AUD_VCC
5	AUD_FPOUT_R	6	AUD_RET_R
7	HP_ON	8	KEY
9	AUD_FPOUT_L	10	AUD_RET_L

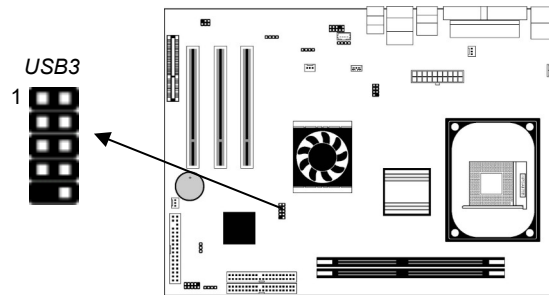
Optional Extension Brackets

For this mainboard, you can also obtain a USB module extension bracket for more USB ports. Install them by following the steps below.

Note: All the ribbon cables used on the extension brackets have a red stripe on the Pin-1 side of the cable.

Extended USB Module

This module bracket has two USB ports for more USB devices (USB port 3-4).



Pin	Signal	Pin	Signal
1	VERG_FP_USBPWR0	2	VERG_FP_USBPWR0
3	USB_FP_P0-	4	USB_FP_P1-
5	USB_FP_P0+	6	USB_FP_P1+
7	GROUND	8	GROUND
9	KEY	10	USB_FP_OC0

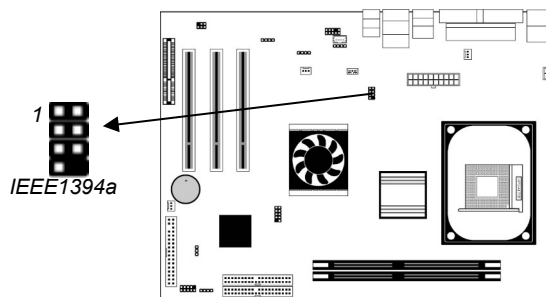
1. Locate the USB3 header on the mainboard.
2. Plug the bracket cable onto the USB3 header.

2: Mainboard Installation

3. In the system chassis, remove the blanking plate from the corresponding expansion slot you want to use, and install an extension bracket in there. Secure the extension bracket in the chassis with a screw.

Extended IEEE1394a Header (Optional)

You can obtain one IEEE1394a header. Install them by following the steps below.



IEEE1394a

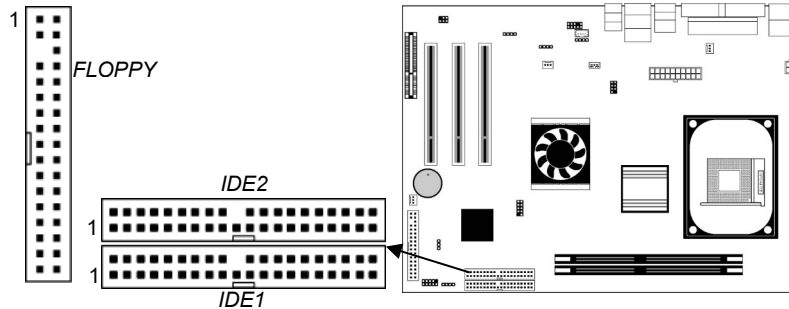
Pin	Signal	Pin	Signal
1	CPWR	2	GND
3	XTPB0M	4	XTPB0P
5	XTPA0M	6	XTPA0P
7	SHIELD	8	KEY

1. Locate the IEEE1394a header on the mainboard.
2. Plug the bracket cable onto the IEEE1394a header.
3. In the system chassis, remove the blanking plate from the corresponding expansion slot you want to use, and install an extension bracket in there. Secure the extension bracket in the chassis with a screw.

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Install Other Devices

Install and connect other devices in the system as steps below.



Floppy Disk Drive

The mainboard ships with a floppy disk drive cable that can support one or two drives. Drives can be 3.5" or 5.25" wide, with capacities of 360K, 720K, 1.2MB, 1.44MB, or 2.88MB.

Install your drives and connect power from the system power supply. Use the cable provided to connect the drives to the floppy disk drive connector **FLOPPY**.

IDE Devices

IDE devices include hard disk drives, high-density diskette drives, and CD-ROM or DVD-ROM drives, among others.

The mainboard ships with an IDE cable that can support one or two IDE devices. If you connect two devices to a single cable, you must configure one of the drives as Master and one of the drives as Slave. The documentation of the IDE device will tell you how to configure the device as a Master or Slave device. The Master device connects to the end of the cable.

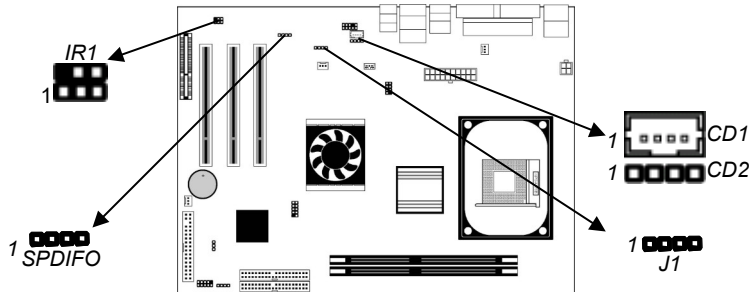
Install the device(s) and connect power from the system power supply. Use the cable provided to connect the device(s) to the Primary IDE channel connector **IDE1** on the mainboard.

If you want to install more IDE devices, you can purchase a second IDE cable and connect one or two devices to the Secondary IDE channel connector **IDE2** on the mainboard. If you have two devices on the cable, one must be Master and one must be Slave.

2: Mainboard Installation

Internal Sound Connections

If you have installed a CD-ROM drive or DVD-ROM drive, you can connect the drive audio cable to the onboard sound system.



On the mainboard, locate the two 4-pin connectors **CD1** and **CD2**. There are two kinds of connector because different brands of CD-ROM drive have different kinds of audio cable connectors. Connect the cable to the appropriate connector.

CD1

Pin	Signal
1	GND
2	CD IN R
3	GND
4	CD IN L

CD2

Pin	Signal
1	CD IN L
2	GND
3	GND
4	CD IN R

Infrared Port

You can connect an infrared port to the mainboard. You can purchase this option from third-party vendors.

Pin	Signal	Pin	Signal
1	NC	2	KEY
3	+5V	4	GND
5	IRTX	6	IRRX

1. Locate the infrared port **IR1** header on the mainboard.
2. If you are adding an infrared port, connect the ribbon cable from the port to the IR header and then secure the port to an appropriate place in your system chassis.

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SPDIF Out Header

You can purchase an optional 24-bit digital audio extension bracket from a third-party vendor. You can use the audio RCA jacks to connect to digital audio devices. If your CD-ROM/DVD drive has digital audio output, you can connect it to the input pins of the SPDIF connector-- **SPDIF0**.

Pin	Signal	Pin	Signal
1	SPDIF signal Out	2	+5V VCC
3	NC	4	Ground

Onboard LAN LED Connections

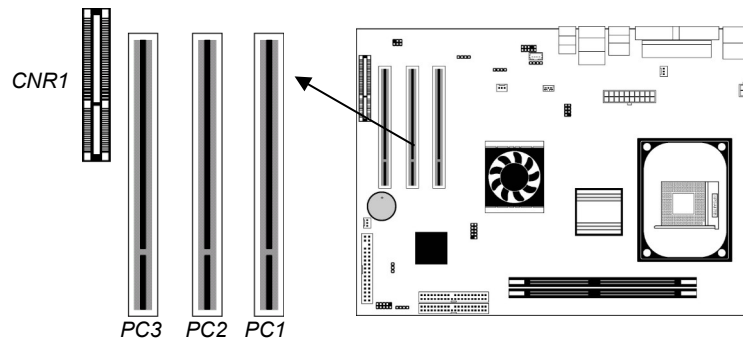
If you have a set indicator LEDs for the onboard LAN communication, you can connect the LED cable to the header **J1**.

Function	Jumper Setting
Link LED	1, +2
ACT LED	+3, 4

Note: The plus sign (+) indicates the pin must be connected to positive voltage.

Expansion Slots

This mainboard has three 32-bit PCI slots and one CNR slot.



Follow the steps below to install a PCI/CNR expansion card.

1. Locate the PCI or CNR slot on the mainboard.
2. Remove the slot cover from the system chassis.
3. Insert the expansion card edge connector into the slot and press it firmly down until fully inserted.
4. Secure the expansion card bracket in the system chassis with a screw.

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CNR (Communications Networking Riser) Slot

The CNR (Communications Networking Riser) slot is an industry standard slot that allows for the installation of a special audio/modem riser card. Different territories have different regulations regarding the specifications of a modem card. You can purchase an approved CNR card in your area and install it directly into the CNR slot.

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Chapter 3

BIOS Setup Utility

Introduction

The BIOS Setup Utility records settings and information about your computer such as the date and time, the kind of hardware installed, and various configuration settings. Your computer uses this information to initialize all the components when booting up and functions as the basis for coordination between system components.

If the Setup Utility configuration is incorrect, it may cause the system to malfunction. It can even stop your computer from booting properly. If this happens, you can use the clear CMOS jumper to clear the CMOS memory used to store the configuration information.

You can run the setup utility and manually make changes to the configuration. You might need to do this to configure some of the hardware that you install on or connect to the mainboard, such as the CPU, system memory, disk drives, etc.

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Running the Setup Utility

Each time your computer starts, before the operating system loads, a message appears on the screen that prompts you to “Hit if you want to run SETUP”. When you see this message, press the **Delete** key and the Main menu page of the Setup Utility appears on your monitor.

AMIBIOS SIMPLE SETUP UTILITY – VERSION 1.21.12
(C) 2000 American Megatrends, Inc. All Rights Reserved

Standard CMOS Setup	Features Setup
Advanced Setup	CPU PnP Setup
Power Management Setup	Hardware Monitor
PCI / Plug and Play Setup	Change Password
Load Optimal Settings	Exit
Load Best Performance Settings	
Esc : Quit ↑ ↓ ← →: Select Item (Shift)F2 : Change Color F5 : Old Values F6 : Optimal values F7 : Best performance values F10 : Save&Exit	
Standards CMOS setup for changing time, date, hard disk type, etc.	

You can use the cursor arrow keys to highlight any of the options on the main menu page. Press **Enter** to select the highlighted option. To leave the setup utility, press the **Escape** key. To cycle through the Setup Utility's optional color schemes hold down the **Shift** key and press **F2**.

Some of the options on the main menu page lead to tables of items with installed values. In these pages, use the cursor arrow keys to highlight the items, and then use the **PgUp** and **PgDn** keys to cycle through the alternate values for each of the items. Other options on the main menu page lead to dialog boxes requiring you to answer Yes or No by hitting the **Y** or **N** keys.

If you have already made changes to the setup utility, press **F10** to save those changes and exit the utility. Press **F5** to reset the changes to the original values. Press **F6** to install the setup utility with a set of default values. Press **F7** to install the setup utility with a set of high-performance values.

3: BIOS Setup Utility

Standard CMOS Setup Page

This page sets up basic information such as the date, the time, the IDE devices, and the diskette drives. If you press the F3 key, the system will automatically detect and configure the hard disks on the IDE channels.

AMIBIOS SETUP – STANDARD CMOS SETUP										
(C) 2000 American Megatrends, Inc. All Rights Reserved										
Date (mm/dd/yy) : Thu Oct 24, 2002										
Time (hh/mm/ss) : 16:33:18										
	Type	Size	Cyln	Head	WPcom	Sec	Mode	LBA Blk Mode	PIO Mode	32Bit Mode
Pri Master	: Auto									On
Pri Slave	: Auto									On
Sec Master	: Auto									On
Sec Slave	: Auto									On
Floppy Drive A : 1.44 MB 3 1/2										
Floppy Drive B : Not Installed										
Month : Jan – Dec							ESC : Exit			
Day : 01 – 31							↑↓ : Select Item			
Year : 1901 – 2099							PU/PD/+/- : Modify			
							(Shift)F2 : Color			
							F3 : Detect All HDD			

Date & Time	Use these items to set the system date and time
Pri Master	Use these items to configure devices connected to the Primary and Secondary IDE channels. To configure an IDE hard disk drive, choose <i>Auto</i> . If the <i>Auto</i> setting fails to find a hard disk drive, set it to <i>User</i> , and then fill in the hard disk characteristics (Size, Cyls, etc.) manually. If you have a CD-ROM drive, select the setting <i>CDROM</i> . If you have an ATAPI device with removable media (e.g. a ZIP drive or an LS-120) select <i>Floptical</i> .
Pri Slave	
Sec Master	
Sec Slave	
Floppy Drive A	Use these items to set the size and capacity of the floppy diskette drive(s) installed in the system.
Floppy Drive B	

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Advanced Setup Page

This page sets up more advanced information about your system. Take care of this page with more caution. Any changes can affect the operation of your computer.

AMIBIOS SETUP – ADVANCED SETUP			
(C) 2000 American Megatrends, Inc. All Rights Reserved			
Quick Boot	Enabled	Spread Spectrum	Disabled
Card Reader Boot Function	Enabled	DOS Flat Mode	Disabled
1 st Boot Device	IDE-0		
2 nd Boot Device	Floppy		
3 rd Boot Device	CDROM		
Try Other Boot Devices	Yes		
S.M.A.R.T. for Hard Disks	Disabled		
BootUp Num-Lock	On		
Floppy Drive Swap	Disabled		
Floppy Drive Seek	Disabled		
Password Check	Setup	ESC : Quit	↑↓←→ : Select Item
Boot To OS/2 > 64MB	No	F1 : Help	PU/PD/+/- : Modify
L2 Cache	Enabled	F5 : Old Values (Shift)	F2 : Color
System BIOS Cacheable	Disabled	F6 : Load BIOS Defaults	
Graphic Win Size	4M	F7 : Load Setup Defaults	
DRAM CAS# Latency	3T		
Timing Setting Mode	Normal		
MA 1T/2T Select	MA 2T		
Hyper Threading Function	Disabled		
Auto Detect DIMM/PCI Clk	Enabled		

3: BIOS Setup Utility

Quick Boot	If you enable this item, the system starts up more quickly by elimination of some of the power on test routines.
Card Reader Boot Function	If this item is enabled, you can use this device to boot up the system.
1st Boot Device 2nd Boot Device 3rd Boot Device	Use these items to determine the device order the computer uses to look for an operating system to load at start-up time.
Try Other Boot Device	If you enable this item, the system will also search for other boot devices if it fails to find an operating system from the first two locations.
S.M.A.R.T. for Hard Disks	Enable this item if any IDE hard disks support the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) feature.
BootUp Num-Lock	This item determines if the Num Lock key is active or inactive at system start-up time.
Floppy Drive Swap	If you have two diskette drives installed and you enable this item, drive A becomes drive B and drive B becomes drive A.
Floppy Drive Seek	If you enable this item, your system will check all floppy disk drives at start up. Disable this item unless you are using an old 360KB drive.
Password Check	If you have entered a password for the system, use this item to determine, if the password is required to enter the Setup Utility (<i>Setup</i>) or required both at start-up and to enter the Setup Utility (<i>Always</i>).
Boot to OS/2 > 64MB	Enable this item if you are booting the OS/2 operating system and you have more than 64MB of system memory installed.
L2 Cache	Leave these items enabled since all the processors that can be installed on this board have internal L2 cache memory.
System BIOS Cacheable	If you enable this item, a segment of the system BIOS will be copied to main memory for faster execution.
Graphic Win Size	This item defines the size of aperture if you use a graphic adapter.

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DRAM CAS# Latency	This item determines the operation of DRAM memory CAS (column address strobe). It is recommended that you leave this item at the default value. The 3T setting requires faster memory that specifically supports this mode.
Timing Setting Mode	This item determines the timing setting mode of the memory. We recommend you leave this item at the default value.
MA 1T/2T Select	This item adjusts timing 1T/2T latency. We recommend you to leave this item at the default value.
Hyper Threading Function	If your P4 CPU is not HT CPU, this item will be hidden. If your P4 CPU is HT CPU, BIOS will show this item. You can set "Disabled" or "Enabled" to control HT CPU support in O.S. Set "Enabled" to test HT CPU function.
Auto detect DIMM/PCI Clk	When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.
Spread Spectrum	If you enable spread spectrum, it can significantly reduce the EMI(Electro-Magnetic Interference) generated by the system.
DOS Flat Mode	This item enables BIOS to enter the DOS protected mode without other software supporting under the DOS operating system. We recommend you leave this item at the default value.

Power Management Setup Page

This page sets some of the parameters for system power management operation.

AMBIOS SETUP – POWER MANAGEMENT SETUP (C) 2000 American Megatrends, Inc. All Rights Reserved		
ACPI Aware O/S	Yes	
Power Management	Enabled	
Suspend Time out	Disabled	
Hard Disk Time out	Disabled	
Resume On RTC Alarm	Disabled	
RTC Alarm Date	15	ESC : Quit ↑↓←→ : Select Item
RTC Alarm Hour	12	F1 : Help PU/PD/+/- : Modify
RTC Alarm Minute	30	F5 : Old Values (Shift)F2 : Color
RTC Alarm Second	30	F6 : Load BIOS Defaults
LAN/Ring Power On	Disabled	
Keyboard Power On	Disabled	

3: BIOS Setup Utility

F7 : Load Setup Defaults

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ACPI Aware O/S	Enable this item if you are using an O/S that supports ACPI function such as Windows 98/ME /2000.
Power Management	Use this item to select a power management scheme. Both APM and ACPI are supported.
Suspend Time Out	This sets the timeout for Suspend mode in minutes. If the time selected passes without any system activity, the computer will enter power-saving Suspend mode.
Hard Disk Time Out	This sets the timeout to power down the hard disk drive, if the time selected passes without any hard disk activity.
Resume On RTC Alarm Date / Hour / Minute / Second	The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.
LAN/Ring Power On	The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the Modem. You must use an ATX power supply in order to use this feature.
KeyBoard Power On	If you enable this item, you can turn the system on and off by pressing hot keys on the keyboard. You must enable the Keyboard Power On jumper and use an ATX power supply in order to use this feature.

PCI / Plug and Play Setup Page

This page sets some of the parameters for devices installed on the PCI bus and devices that use the system plug and play capability.

AMIBIOS SETUP - PCI / PLUG AND PLAY SETUP (C) 2000 American Megatrends, Inc. All Rights Reserved	
Plug and Play Aware O/S	Yes
Primary Graphics Adapter	PCI
Allocate IRQ for PCI VGA	Yes
PCI IDE BusMaster	Disabled
ESC : Quit ↑↓←→ : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color	

3: BIOS Setup Utility

	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

Plug and Play Aware O/S	Enable this item if you are using an O/S that supports Plug and Play such as Windows 95/98/ME.
Primary Graphics Adapter	This item indicates if the primary graphics adapter uses the PCI or the AGP bus. The default PCI setting still lets the onboard display work and allows the use of a second display card installed in a PCI slot.
Allocate IRQ to PCI VGA	If this item is enabled, an IRQ will be assigned to the PCI VGA graphics system. You set this value to No to free up an IRQ.
PCI IDE BusMaster	This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

Load Optimal Settings

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the Setup Utility loads a set of fail-safe default values. These default values are not very demanding and they should allow your system to function with most kinds of hardware and memory chips.

Note: It is highly recommended that users enter this option to load optimal values for accessing the best performance.

Load Best Performance Settings

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the Setup Utility loads a set of best-performance default values. These default values are quite demanding and your system might not function properly if you are using slower memory chips or other low-performance components.

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Features Setup Page

This page sets some of the parameters for peripheral devices connected to the system.

AMIBIOS SETUP - FEATURES SETUP (C) 2000 American Megatrends, Inc. All Rights Reserved		
OnBoard FDC	Enabled	ESC : Quit ↑↓←→ : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults
OnBoard Serial Port	3F8h/COM1	
OnBoard IR Port	Disabled	
OnBoard Parallel Port	378h	
Parallel Port Mode	ECP	
Parallel Port IRQ	7	
Parallel Port DMA	3	
OnBoard PCI IDE	Both	
Audio Device	Enabled	
Modem Device	Enabled	
Ethernet Device	Enabled	
IEEE1394 Device	Enabled	
Onboard USB Function	Enabled	
USB Function for DOS	Disabled	
ThumbDrive for DOS	Disabled	

OnBoard FDC	Use this item to enable or disable the onboard floppy disk drive interface.
OnBoard Serial Port	Use these items to enable or disable the onboard COM1 serial port, and to assign a port address.
OnBoard IR Port	Use this item to enable or disable the onboard infrared port, and to assign a port address.
Onboard Parallel Port	Use this item to enable or disable the onboard LPT1 parallel port, and to assign a port address. The Auto setting will detect and available address.
Parallel Port Mode	Use this item to set the parallel port mode. You can select SPP (Standard Parallel Port), ECP (Extended Capabilities Port), EPP (Enhanced Parallel Port), or ECP + EPP.
Parallel Port IRQ	Use this item to assign either IRQ 5 or 7 to the parallel port.

3: BIOS Setup Utility

Parallel Port DMA	Use this item to assign a DMA channel to the parallel port. The options are 0, 1 and 3.
Onboard PCI IDE	Use this item to enable or disable either or both of the onboard Primary and Secondary IDE channels.
Audio Device	This item enables or disables the onboard AC'97 audio chip.
Modem Device	This item enables or disables the onboard AC'97 modem chip.
Ethernet Device	This item enables or disables the onboard Ethernet LAN.
IEEE1394 Device	This item enables or disables the onboard IEEE1394 chip.
Onboard USB Function	Enable this item if you plan to use the USB ports on this mainboard.
USB Function for DOS	Enable this item if you plan to use the USB ports on this mainboard in a DOS environment.
ThumbDrive for DOS	Enable this item to make a small portion of memory storage device for the USB ports.

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CPU PnP Setup Page

This page lets you manually configure the mainboard for the CPU. The system will automatically detect the kind of CPU that you have installed and make the appropriate adjustments to the items on this page.

AMIBIOS SETUP - CPU PnP SETUP	
©2000 American Megatrends, Inc. All Rights Reserved	
CPU Type	Intel P4
Auto Detect CPU/DRAM Freq	Enabled
CPU Frequency	100 MHz
CPU Over-Clocking Freq.	100 MHz
CPU/DRAM Frequency Ratio	[1 : 1]
DRAM Frequency	100 MHz
CPU Ratio	H/W Trap
Post Shutdown for CPU Fan	Disabled
ESC : Quit ↑↓←→ : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift)F2 : Color F6 : Load Optimal values F7 : Load Best performance values	

CPU Type/ Frequency Ratio	These items show the type, frequency and ratio the installed CPU in your system.
CPU/DRAM Frequency/Ratio	These items decide CPU/DRAM frequency/ratio installed in your system.
CPU Over-Clocking Frequency	This item decides CPU over-clocking frequency installed in your system. If the over-clocking fails, please turn off the system power. And then, hold the PageUp key (similar to the Clear CMOS function) and turn on the power, the BIOS will recover the safe default.
Auto Detect CPU/DRAM Freq	When this item is enabled, BIOS will decide the CPU/DRAM frequency in your system.
Post Shutdown for CPU Fan	When this item is Enabled, the system will automatically shut down if the CPU fan is disconnected with the power.

3: BIOS Setup Utility

Hardware Monitor Page

This page sets some of the parameters for the hardware monitoring function of this mainboard.

AMIBIOS SETUP – HARDWARE MONITOR (C) 2000 American Megatrends, Inc. All Rights Reserved		
*** System Hardware ***		
Vcore	1.632V	
Vcc 1.8V	2.496V	
Vcc 3.3V	3.392V	
Vcc 5V	4.945V	
+12V	12.032V	
SB3V	3.472V	
-12V	-11.885V	
SB5V	5.026V	
VBAT	3.472V	
VGA Fan Speed	0 RPM	ESC : Quit ↑↓←→ : Select Item
SYSTEM Fan Speed	0 RPM	F1 : Help PU/PD/+/- : Modify
CPU Fan Speed	1298 RPM	F5 : Old Values (Shift)F2 : Color
SYSTEM Temperature	31°C/87°F	F6 : Load BIOS Defaults
CPU Temperature	19°C/66°F	F7 : Load Setup Defaults

CPU / System Temperature	These items display CPU and system temperature measurement.
FANS & Voltage Measurements	These items indicate cooling fan speeds in RPM and the various system voltage measurements.

Change Password

If you highlight this item and press **Enter**, a dialog box appears which lets you enter a Supervisor password. You can enter no more than six letters or numbers. Press **Enter** after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press **Enter** after you have retyped it correctly. The password is then required to access the Setup Utility or for that and at start-up, depending on the setting of the Password Check item in Advanced Setup.

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Change or Remove the Password

Highlight this item, press **Enter** and type in the current password.
At the next dialog box, type in the new password, or just press **Enter** to disable password protection.

Exit

Highlight this item and press **Enter** to save the changes that you have made in the Setup Utility configuration and exit the program.
When the Save and Exit dialog box appears, press **Y** to save and exit, or press **N** to exit without saving.

3: BIOS Setup Utility

Chapter 4

Software & Applications

Introduction

This chapter describes the contents of the support CD-ROM that comes with the mainboard package.

The support CD-ROM contains all useful software, necessary drivers and utility programs to properly run our products. More program information is available in a README file, located in the same directory as the software.

To run the support CD, simply insert the CD into your CD-ROM drive. An Auto Setup screen automatically pops out, and then you can go on the auto-installing or manual installation depending on your operating system.

If your operating system is Windows 98/ME/2000/XP, it will automatically install all the drivers and utilities for your mainboard; if Windows NT or manual installation, please follow the instructions described as the Installing under Windows NT or Manual Installation section.

4: Software & Applications

Installing Support Software

1. Insert the support CD-ROM disc in the CD-ROM drive.
2. When you insert the CD-ROM disc in the system CD-ROM drive, the CD automatically displays an Auto Setup screen.
3. The screen displays three buttons of **Setup**, **Browse CD** and **Exit** on the right side, and three others **Setup**, **Application** and **ReadMe** at the bottom. Please see the following illustration.



The **Setup** button runs the software auto-installing program as explained in next section.

The **Browse CD** button is a standard Windows command that you can check the contents of the disc with the Windows 98 file browsing interface.

The **Exit** button closes the Auto Setup window. To run the program again, reinsert the CD-ROM disc in the drive; or click the CD-ROM driver from the Windows Explorer, and click the Setup icon.

The **Application** button brings up a software menu. It shows the bundled software that this mainboard supports.

The **ReadMe** brings you to the Install Path where you can find out path names of software driver.

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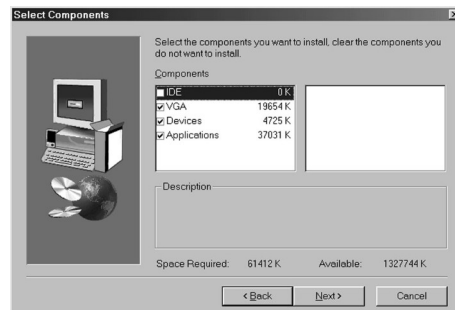
Auto-Installing under Windows 98/ME/2000/XP

If you are under Windows 98/ME/2000/XP, please click the **Setup** button to run the software auto-installing program while the Auto Setup screen pops out after inserting the support CD-ROM:

1. The installation program loads and displays the following screen. Click the **Next** button.



2. Select the items that you want to setup by clicking on it (the default options are recommended). Click the **Next** button to proceed.



3. The support software will automatically install.

Once any of the installation procedures start, software is automatically installed in sequence. You need to follow the onscreen instructions, confirm commands and allow the computer to restart as few times as needed to complete installing whatever software you selected. When the process is finished, all the support software will be installed and start working.

4: Software & Applications

Installing under Windows NT or Manual Installation

If you are under Windows NT, the auto-installing program doesn't work out; or you have to do the manual installation, please follow this procedure while the Auto Setup screen pops out after inserting the support CD-ROM:

1. Click the **ReadMe** to bring up a screen, and then click the Install Path at the bottom of the screen.
2. Find out your mainboard model name and click on it to obtain its correct driver directory.
3. Install each software in accordance with the corresponding driver path.

Bundled Software Installation

All bundled software available on the CD-ROM is for users' convenience. You can install bundled software as follows:

1. Click the **Application** button while the Auto Setup screen pops out after inserting the support CD-ROM.
2. A software menu appears. Click the software you want to install.
3. Follow onscreen instructions to install the software program step by step until finished.

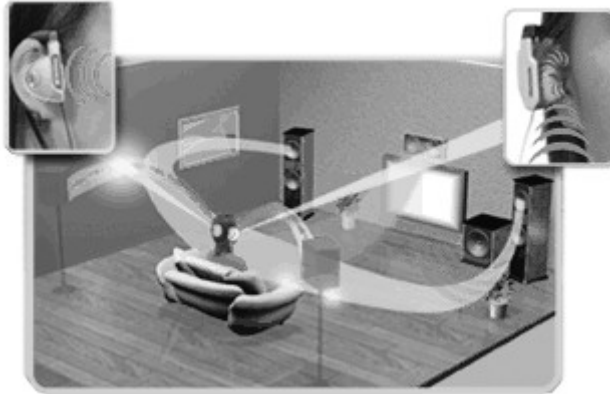
Set Up the Audio System

Set up the Audio configuration of 2-channel, 4-channel and 6-channel speaker-out system through the audio driver. It also provides users with **Xear Technology**, the virtual rear sound effect compensation for any multi-channel audio systems simply by using a pair of open-aired headphones.

- An ear/headphone-like device, capable of delivering the rear audio in a multi-channel audio system.
- Structurally comprising two housing units for receiving the rear signal, wherein the housings are opposite each other. Both housing units may be joined by a headband or other unification device.
- Open-aired design, allowing the listener to perceive the front signal at the same time.

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- Rear output adjustable in position, height, and width via C-Media's user friendly API, capable of offering a freely defined cyberspace to the listener.

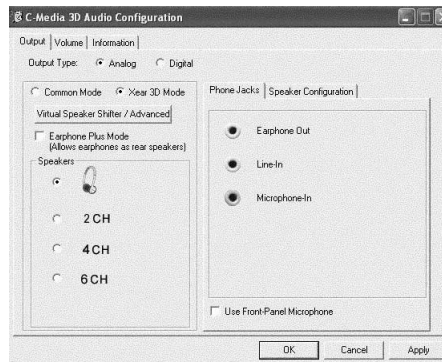


Xear 3D Mode

In Xear 3D Mode, there are Virtual Speaker Shifter/Advance and Earphone Plus Mode options and channel selections. Each channel has a corresponding position of phone jacks and description.

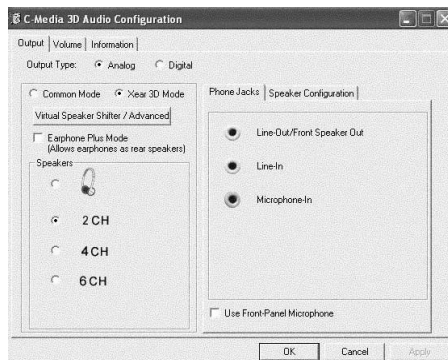
(Three audio jacks on the screen show these colors: top-- lime, middle-- light blue, bottom-- pink)

EARPHONE

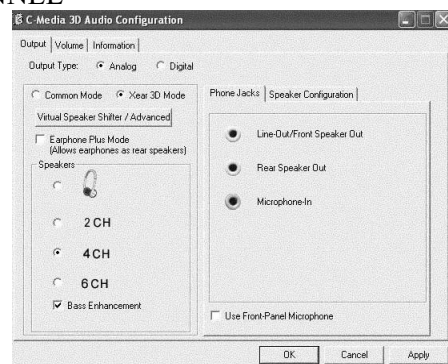


4: Software & Applications

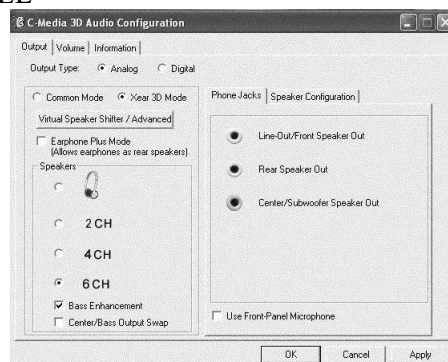
2-CHANNEL



FOUR-CHANNEL



SIX-CHANNEL



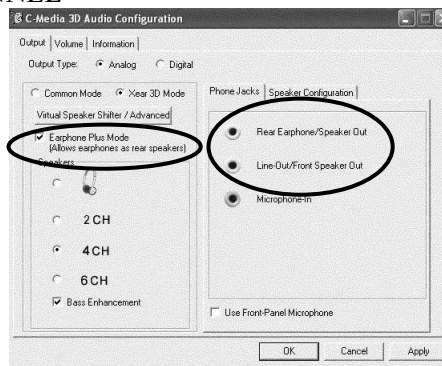
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Earphone Plus Mode

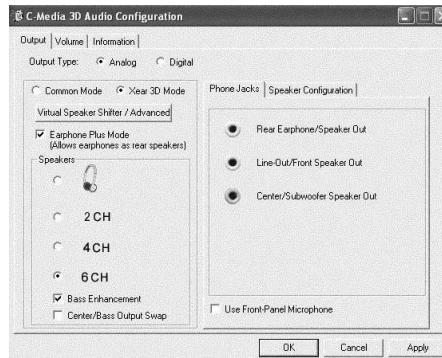
While enabling Earphone Plus Mode, it activates the Xear function; moreover, original Front Out and Rear Out positions will be exchanged in Multi-Channel mode. EARPHONE and 2-CHANNEL don't support Xear function.

(Three audio jacks on the screen show these colors: top-- lime, middle-- light blue, bottom-- pink)

FOUR-CHANNEL



SIX-CHANNEL



4: Software & Applications

Virtual Speaker Shift/Advance

Click the Virtual Speaker Shift/Advance button, it provides some 3D Sound Effect and DEMO program for testing.

