

Mainboard User's Manual

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Chapter 1

Introduction

This mainboard has a **Socket-370** processor socket for an **Intel PPGA/FCPGA Celeron** or **FCPGA Pentium III** processor. You can install any one of these processors on the mainboard. The mainboard supports front-side bus speeds of **66MHz**, **100MHz** or **133MHz**.

This mainboard uses the **VIA PM133** chipset which provides **CPU Plug & Play** through firmware, a **4X AGP** slot for highly graphics display, **CPU Plug & Play** through firmware, and integrates a **Savage4 2D/3D/Video Accelerator**. The mainboard has a built-in **AC97 Codec**, provides an **AMR** (Audio Modem Riser) slot to support Audio and Modem application. In addition, the mainboard has an extended set of **ATX I/O Ports** including PS/2 keyboard and mouse ports, two USB ports, a parallel port, a VGA port, a serial port, a game port and audio ports.

This mainboard has all the features you need to develop a powerful multimedia workstation. The board is **ATX** size and has power connectors for an **ATX** power supply.

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Key Features

The key features of this mainboard include:

Socket-370 Processor Support

- ◆ Supports **PPGA/FCPGA Celeron** CPUs which provide Pentium II performance with integrated L1 and L2 cache
- ◆ Supports **FCPGA Pentium III** CPUs
- ◆ Supports 66MHz, 100MHz or 133MHz Front-Side Bus

All processors are automatically configured using firmware and a synchronous Host/DRAM Clock Scheme.

Memory Support

- ◆ Three DIMM slots for 168-pin SDRAM memory modules
- ◆ Support for 100/133 MHz memory bus
- ◆ Maximum installed memory is 3 x 512MB = 1.5GB

Expansion Slots

- ◆ One AMR slot for a special audio/modem riser card
- ◆ One AGP4X slot for AGP 2.0-compliant interface.
- ◆ Four 32-bit PCI slots for PCI 2.2-compliant bus interface.
- ◆ One 8/16-bit ISA slot.

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 33/66 modes

Power Supply and Power Management

- ◆ ATX power supply connector
- ◆ Supports ACPI, previous PMU and suspend switch
- ◆ Supports Wake on LAN and Wake on Alarm

1: Introduction

AC97 Codec

- ◆ Compliant PC97 2.1 specification
- ◆ Supports 18-bit ADC (Analog Digital Converter) and DAC (Digital Analog Converter) as well as 18-bit stereo full-duplex codec

Onboard I/O Ports

- ◆ Provides PC99 Color Connectors for easy peripheral device connections
- ◆ Floppy disk drive connector with 1Mb/s transfer rate
- ◆ Two serial ports with 16550-compatible fast UART
- ◆ One parallel port with ECP and EPP support
- ◆ Two USB ports, optional two USB ports module
- ◆ Two PS/2 ports for keyboard and mouse
- ◆ One infrared port connector for optional module

Hardware Monitoring

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

Onboard Flash ROM

- ◆ Automatic CPU and board configuration
- ◆ Supports Plug and Play configuration of peripheral devices and expansion cards
- ◆ Built-in virus protection using **Trend's ChipAwayVirus** provides boot process virus protection.

Bundled Software

- ◆ **PC-Cillin** provides automatic virus protection under Windows 95/98
- ◆ **MediaRing Talk** provides PC to PC or PC to Phone internet phone communication
- ◆ **Corel WordPerfect Suite 8** is a Microsoft Windows® office application suite (optional)

Dimensions

- ◆ Micro ATX form factor (30.5cm x 19cm)

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Package Contents

Your mainboard package ships with the following items:

- ❑ The mainboard
- ❑ This User's Guide
- ❑ 1 UDMA/66 IDE cable
- ❑ 1 Floppy disk drive cable
- ❑ Support software on CD-ROM disk

Static Electricity Precautions

Components on this mainboard can be damaged by static electricity. Take the following precautions when unpacking the mainboard and installing it in a system.

1. Keep the mainboard and other components in their original static-proof packaging until you are ready to install them.
2. During installation, 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. Handle the mainboard carefully by the edges. Avoid touching the components unless it is absolutely necessary. During installation put the mainboard on top of the static-protection packaging it came in with the component side facing up.

Pre-Installation Inspection

1. Inspect the mainboard for damage to the components and connectors on the board.
2. If you suspect that the mainboard has been damaged, do not connect power to the system. Contact your mainboard vendor and report the damage.

Chapter 2

Mainboard Installation

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

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

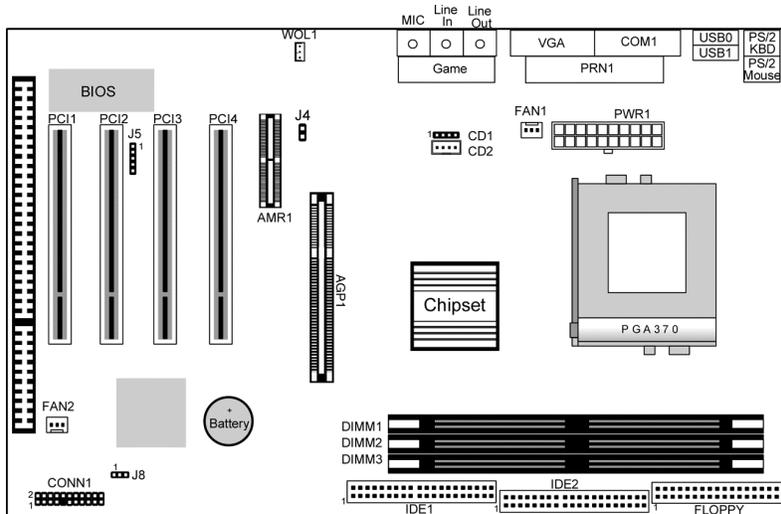
Note:

1. Before installing this mainboard, make sure jumper J8 is set to Normal setting. See this chapter for information on locating J8 and the setting options.
2. Never connect power to the system during installation. Doing so may damage the mainboard.

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Mainboard Components

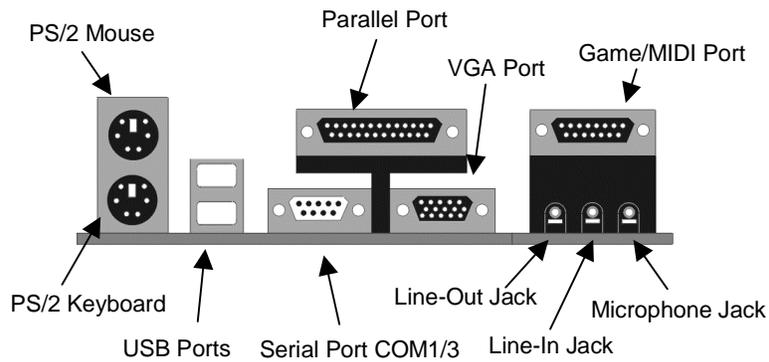
Use the diagram below to identify the major components on the mainboard.



Note: Any jumpers on your mainboard that do not appear in this illustration are for testing only.

I/O Ports

The illustration below shows a side view of the built-in I/O ports on the mainboard.



2: Mainboard Installation

Install A CPU

This mainboard has a Socket-370 which supports PPGA/FCPGA Celeron and FCPGA Pentium III processors.

Do not try to install a Socket 7 processor in the Socket-370. A Socket 7 processor such as the Pentium-MMX, or the AMD K5/K6 does not fit in the Socket 370.

The following list notes the processors that are currently supported by this mainboard.

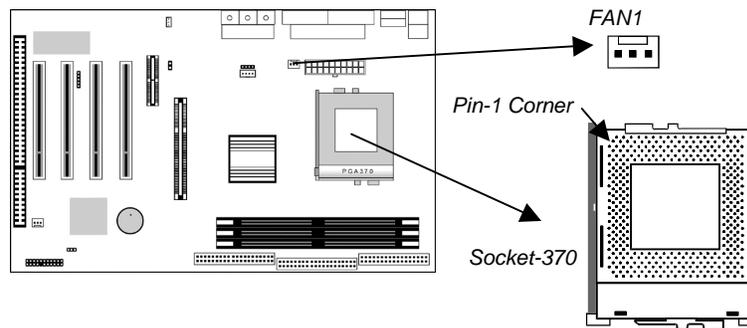
FCPGA Pentium III: 500~933MHz, FSB: 100MHz, 133MHz

PPGA/FCPGA Celeron: 300~600MHz, FSB: 66 MHz

Installing a Socket-370 Processor

A processor installs into the ZIF (Zero Insertion Force) Socket-370 on the mainboard.

1. Locate the Socket-370 and FAN1. Pull the locking lever out slightly from the socket and raise it to the upright position.

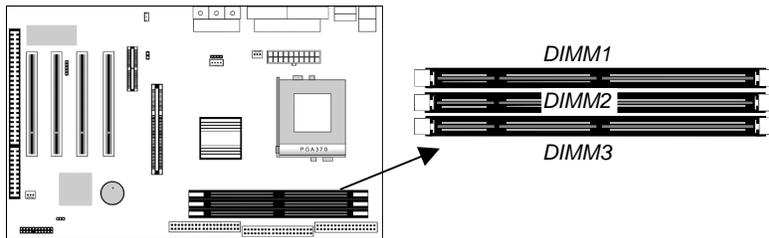


2. On the processor, identify the Pin-1 corner by its beveled edge.
3. On the Socket-370, identify the Pin-1 corner. The Pin-1 corner is at the top of the locking lever when it is locked.
4. Match the Pin-1 corners and insert the processor into the socket. No force is required and the processor should drop into place freely.
5. Swing the locking lever down and hook it under the catch on the side 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 FAN1.

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Install Memory

The mainboard has three DIMM sockets for system memory modules. You must install at least one memory module in order to use the mainboard.



For this mainboard, you must use 168-pin, 3.3V unbuffered PC100 or PC133 SDRAM memory modules. You can install any size memory module from 32 MB to 512MB, so the maximum memory size is $3 \times 512\text{MB} = 1.5\text{GB}$.

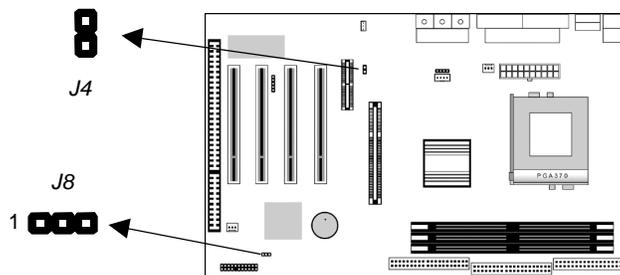
The edge connectors on the memory modules have cut outs, which coincide with spacers in the DIMM sockets so that memory modules can only be installed in the correct orientation.

To install a module, push the retaining latches at either end of the socket outwards. Position the memory module correctly and insert it into the DIMM socket. Press the module down into the socket so that the retaining latches rotate up and secure the module in place by fitting into notches on the edge of the module.

2: Mainboard Installation

Setting Jumper Switches

Jumpers are sets of pins which can be 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 J8: 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
Normal Operation	Short Pins 1-2
Clear CMOS Memory	Short Pins 2-3

Jumper J4: Codec Selector

Use this jumper to select the onboard audio codec or Audio Modem Riser (AMR) slot.

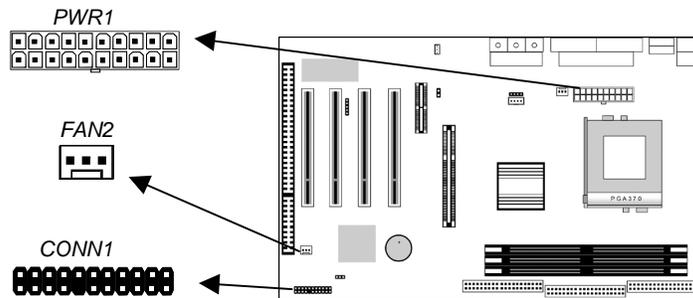
Function	Jumper Setting
Primary codec onboard	Short Pins 1-2
Primary codec on AMR slot	Open Pins 1-2

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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. Ensure that your case has an I/O cover plate that matches the ports on this mainboard.

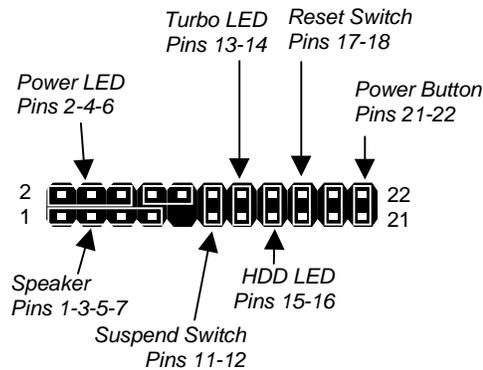
Install the mainboard in a case. Follow the instructions provided by the case manufacturer using the hardware and internal mounting points on the chassis.



Connect the power connector from the power supply to the **PWR1** connector on the mainboard.

If there is a cooling fan installed in the system chassis, connect the cable from the cooling fan to the **FAN2** fan power connector on the mainboard.

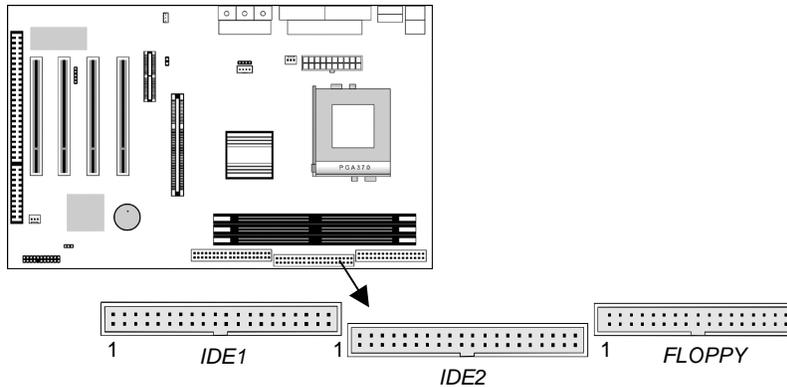
Connect the case switches and indicator LEDs to the **CONN1** switch and LED connector header. See the illustration below for a guide to the header pin assignments.



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Install Other Devices

Install and connect any other devices in the system following the 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 header **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.

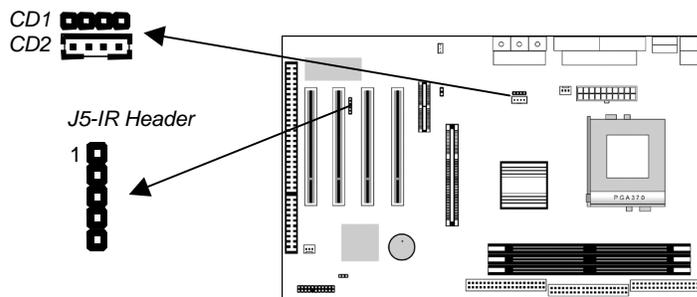
If you want to install more IDE devices, you can purchase a second IDE cable and connect one or two devices to the Secondary IDE

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channel connector **IDE2** on the mainboard. If you have two devices on the cable, one must be Master and one must be Slave.

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.



Infrared Port

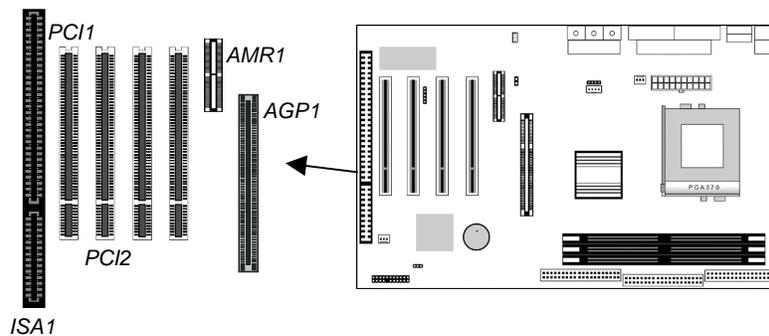
You can connect an infrared port to the mainboard. You can purchase this option from third-party vendors.

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

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Expansion Slots

This mainboard has four 32-bit PCI expansion slots, one AGP, one AMR slot and one 8/16-bit ISA slot.



Follow the steps below to install a PCI/AMR/AGP/ISA expansion card.

1. Locate the AGP, AMR, PCI or ISA slots on the mainboard.
2. Remove the slot cover for this slot from the system chassis.
3. Insert the expansion card edge connector into the slot and press it firmly down into it so that it is fully inserted.
4. Secure the expansion card bracket to the system chassis using the screw that held the slot cover in place.

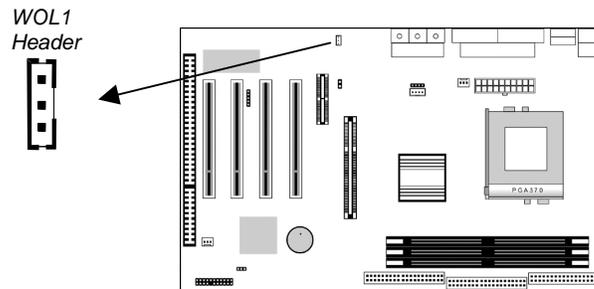
AMR Slot

The AMR (Audio Modem 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 AMR card that is approved in your area and install it directly into the AMR slot.

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Wake On LAN (WOL)

If you have installed a LAN adapter expansion card, connect the card to the Wake On LAN connector **WOL1**. This allows incoming traffic to resume the system from a software power down. You need to enable this feature in the system setup utility.



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, or you can hold down the **Page Up** key while you reboot your computer. Holding down the **Page Up** key also clears the setup 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 “*Press to enter SETUP*”. When you see this message, press the **Delete** key and the Main menu page of the Setup Utility appears on your monitor.

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software

▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Best Performance Defaults
▶ Advanced Chipset Features	Load Optimized Defaults
▶ Integrated Peripherals	Set Password
▶ Power Management Setup	Save & Exit Setup
▶ PnP/PCI Configurations	Exit Without Saving
▶ Hardware Monitor	
Esc : Quit F9: Menu in BIOS ↑ ↓ → ← : Select Item	
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type . . .	

Listed below are explanations of the keys displayed at the bottom of the screens:

Key	Function
Esc	Escape key: Exits the current menu
← ↓ ↑ →	Cursor keys: Scroll through the items on a menu
+/-/PU/P	Plus, minus, Page Up and Page Down keys:
D	Modify the selected field's values
F10	F10 key: Saves the current configuration and exits setup
F1	F1 key: Displays a screen that explains all key functions
F5	F5 key: Loads previously saved values to CMOS
F6	F6 key: Loads a best performance configuration for the normal system.
F7	F7 key: Loads an optimum set of values for peak performance

3: BIOS Setup Utility

Standard CMOS Features Page

Use this page to set basic information such as the date and time, the IDE devices, and the diskette drives.

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
Standard CMOS Features

Date (mm:dd:yy)	Tue, Sep 5 2000	Item Help
Time (hh:mm:ss)	12 : 8 : 59	
▶ IDE Primary Master	Press Enter 4303 MB	Menu Level ▶ Change the day, month, year and century.
▶ IDE Primary Slave	Press Enter None	
▶ IDE Secondary Master	Press Enter None	
▶ IDE Secondary Slave	Press Enter None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All Errors	

↑ ↓ → ← : Move Enter : Select +/-/PU/PD:Value: F10: Save ESC: Exit
F1:General Help F5:Previous Values F6:Fail-Safe
Defaults F7:Optimized Defaults

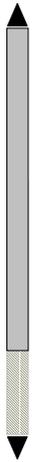
Date & Time	Use these items to set the system date and time
IDE Devices	Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel. Press Enter to display the IDE sub-menu. Press Esc to close the IDE device sub-menu and return to the Standard CMOS Features page.
Floppy Drive A Floppy Drive B	Use these items to set the size and capacity of the floppy diskette drive(s) installed in the system.
Video	This item defines the video mode of the system. This mainboard has a built-in VGA graphics system; you must leave this item at the default value.
Halt On	This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient to halt the system.

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Advanced BIOS Features Page

Use this page to set more advanced information about your system. Take some care with this page. Making changes can affect the operation of your computer.

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
Advanced BIOS Features

Trend ChipAway Virus	Enabled		Item Help
CPU Internal Cache	Enabled		
External Cache	Enabled		
CPU L2 Cache ECC Checking	Enabled		
Processor Number Feature	Enabled		
Quick Power On Self Test	Enabled		
First Boot Device	HDD-0		
Second Boot Device	Floppy		
Third Boot Device	CDROM		
Boot Other Device	Enabled		
Swap Floppy Drive	Disabled		
Boot Up Floppy Seek	Disabled		
Boot Up NumLock Status	On		
Gate A20 Option	Fast		
Typematic Rate Setting	Disabled		
x Typematic Rate (Chars/Sec)	6		
x Typematic Delay (Msec)	250		
Security Option	Setup		
OS Select For DRAM > 64MB	Non-OS2		

↑ ↓ → ← : Move Enter : Select +/-/PU/PD: Value: F10: Save ESC: Exit
 F1: General Help F5: Previous Values F6: Fail-Safe
 Defaults F7: Optimized Defaults

Trend ChipAway Virus	This mainboard has built-in virus protection in the firmware. Use this item to enable or disable the built-in virus protection.
CPU Internal Cache	All the processors that can be installed in this mainboard use internal (level 1) cache memory to improve performance. Leave this item at the default value <i>Enabled</i> for better performance.
External Cache	Most processors that can be installed in this system use external (L2) cache memory to improve performance. The exceptions are older SEPP Celeron CPUs running at 266 or 300 MHz. Enable this item for all but these two processors.
CPU L2 Cache ECC Checking	This item enables or disables ECC (Error Correction Code) error checking on the CPU cache memory. We recommend that you leave this item at the default value.

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Processor Number Feature	When enabled, the CPU will show its processor number (ID code).
Quick Power On Self Test	You can enable this item to shorten the power on testing (POST) and have your system start up a little faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.
1st/2nd/3rd Boot Device	Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time.
Boot Other Device	If you enable this item, the system will search all other possible locations for an operating system if it fails to find one in the devices specified under the first, second, and third boot devices.
Swap Floppy Drive	If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A.
Boot Up Floppy Seek	If this item is enabled, it checks the geometry of the floppy disk drives at start-up time. You don't need to enable this item unless you have an old diskette drive with 360K capacity.
Boot Up NumLock Status	This item defines if the keyboard Num Lock key is active when your system is started.
Gate A20 Option	This item defines how the system handles legacy software that was written for an earlier generation of processors. Leave this item at the default value.
Typematic Rate Setting	If this item is enabled, you can use the following two items to set the typematic rate and the typematic delay settings for your keyboard.
Typematic Rate (Chars/Sec)/ Delay (Msec)	If the item Typematic Rate Setting is enabled, you can use these items to define how many characters per second are generated by a held-down key and how many milliseconds must elapse before a held-down key begins generating repeat characters.
Security Option	If you have installed password protection, this item defines if the password is required at system start up, or if it is only required when a user tries to enter the Setup Utility.
OS Select For DRAM > 64 MB	This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default Non-OS2.
Video BIOS	When enabled this item copies the VGA BIOS into

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Shadow	system DRAM.
C8000-CBFFF to DC000-DFFFF Shadow	When enabled, the ROM with the specified address is copied into system DRAM. It will also reduce the size of memory available to the system.

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Fast R-W Turn Around	When this is enabled, the chipset will insert one extra clock to the turn-around of back-to-back DRAM cycles.
System BIOS Cacheable	When enabled, the System BIOS will be cached for faster execution.
Video RAM Cacheable	When enabled, the graphics card's local memory will be cached for faster execution. However, if any program writes to this memory area, a system error may result.
Frame Buffer Size	This option determines the frame buffer size shared from the main memory for use by the onboard VGA display.
AGP Aperture Size	This option determines the effective size of the AGP Graphic <i>Aperture</i> , where memory-mapped graphic data structures are located.
AGP 4X Mode	This item allows you to enable or disable the caching of display data for the video memory of the processor. Enabling can greatly improve the display speed. If your graphics display card does not support this feature, you need to disable this item.
AGP Driving Control	This item can be used to signal driving current on AGP cards to auto or Manual. Some AGP cards need stronger than normal driving current in order to operate. We recommend that you set this item to Auto by default.
AGP Driving Value	When the previous item AGP Driving Control is set to Manual, you can use this item to set the AGP current driving value.
OnChip USB	This item allows you to enable the USB port, if you have installed a USB device on the system board.
USB Keyboard Support	Enables function when the USB keyboard is being used. Disabled (default) when an AT keyboard is used.
OnChip Sound	Disabling this function turns off the onboard audio chip.
OnChip Modem	This should be enabled if your system has a modem installed on the system board and you wish to use it.
CPU to PCI Write Buffer	When enabled, up to four words of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus signals that it is ready to receive the

3: BIOS Setup Utility

	data.
PCI Dynamic Bursting	When enabled, every write transaction goes to the write buffer. "Burstable" transactions then burst on the PCI bus and "nonburstable" transactions do not.
PCI Master 0 WS Write	When enabled, writes to the PCI bus are executed with zero wait states.
PCI Delay Transaction	The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Enable to support compliance with PCI specification version 2.1.
PCI#2 Access #1 Retry	When enabled, the AGP Bus (PCI#1) access to PCI Bus (PCI#2) is executed with the error retry feature.
AGP Master 1 WS Write	This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.
AGP Master 1 WS Read	This implements a single delay when reading to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.

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Integrated Peripherals Page

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

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Integrated Peripherals

On-Chip IDE Channel0		Enabled		Item Help
On-Chip IDE Channel1		Enabled		Menu Level ▶
IDE Prefetch Mode		Enabled		
Primary Master	PIO	Auto		
Primary Slave	PIO	Auto		
Secondary Master	PIO	Auto		
Secondary Slave	PIO	Auto		
Primary Master	UDMA	Auto		
Primary Slave	UDMA	Auto		
Secondary Master	UDMA	Auto		
Secondary Slave	UDMA	Auto		
Init Display First		PCI Slot		
Onboard FDD Controller		Enabled		
Onboard Serial Port 1		3F8/IRQ4		
Onboard Serial Port 2		2F8/IRQ3		
UART 2 Mode		Standard		
x IR Function Duplex		Half		
x TX,RX inverting enable		No, Yes		
Onboard Parallel Port		378/IRQ7		

↑ ↓ → ← : Move Enter : Select +/-/PU/PD:Value: F10: Save ESC: Exit
 F1:General Help F5:Previous Values F6:Fail-Safe
 Defaults F7:Optimized Defaults

On-Chip IDE Channel 0,1	Use these items to enable or disable the PCI IDE channels that are integrated on the mainboard.
Primary/Secondary Master/Slave PIO	Each channel supports a master device and a slave device. These four items let you assign which kind of PIO (Programmed Input/Output) is used by IDE devices. You can choose Auto, to let the system auto detect which PIO mode is best, or you can install a PIO mode from 0-4.
Primary/Secondary Master/Slave UDMA	Each channel supports a master device and a slave device. This motherboard supports UltraDMA and provides faster access to IDE devices. If you install a device that supports UltraDMA, change the appropriate item on this list to Auto. You may have to install the UltraDMA driver.
Init Display First	Use this item to define if your graphics adapter is

3: BIOS Setup Utility

	installed in one of the PCI slots or select Onboard if you have a graphics system integrated on the mainboard.
Onboard FDD Controller	This option enables the onboard floppy disk drive controller.
Onboard Serial Port 1, 2	This option is used to assign the I/O address for the onboard serial ports.
UART2 Mode	This field is available if the Onboard Serial Port 2 field is set to any option but "Disabled." UART Mode enables you to select the infrared communication protocol—Standard (default), HPSIR or ASKIR. HPSIR is Hewlett Packard's infrared communication protocol with a maximum baud rate up to 115.2 Kbps. ASKIR is Sharp's infrared communication protocol with a maximum baud rate up to 57.6 Kbps.
IR Function Duplex	This field is available when UART 2 Mode is set to either ASKIR or HPSIR. This item determines the infrared (IR) function of the onboard infrared chip. Full-duplex means that you can transmit and send information simultaneously. Half duplex is the transmission of data in both directions, but only one direction at a time.
TX, RX inverting enable	Defines the voltage level for Infrared module RxD (receive) mode and TxD (transmit) mode. This setting has to match the requirements of the infrared module used in the system.
Onboard Parallel Port	This option is used to assign the I/O address for the onboard parallel port.
Onboard Parallel Mode	This feature enables you to set the data transfer protocol for your parallel port. Normal allows data output only. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) are bi-directional modes, allowing both data input and output. ECP and EPP modes are only supported with EPP and ECP aware peripherals.
ECP Mode Use DMA	When the onboard parallel port is set to ECP mode, the parallel port has the option to use DMA "3" or DMA "1."
Parallel Port EPP Type	This option sets the Enhanced Parallel Port (EPP) specification.
Onboard Legacy Audio	This option enables the onboard legacy audio function. When enabled the following items

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	become available.
Sound Blaster	This feature is used to enable or disable a Sound Blaster card if installed.
SB I/O Base Address	This item lets you set the I/O base address for the Sound Blaster card.
SB IRQ Select	This item lets you set the Interrupt Request (IRQ) for the Sound Blaster card.
SB DMA Select	This item lets you select the Direct Memory Access (DMA) for the Sound Blaster card.
MPU-401, MPU-401 I/O Address	Use the two items to enable the MPU-401 function and set the I/O address for the game port.
Game Port (200-207H)	This item shows the I/O address for the game port.

3: BIOS Setup Utility

Power Management Setup Page

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

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
Power Management Setup

▶ ACPI Function	Disabled	Item Help Menu Level ▶
▶ Power Management	Press Enter	
ACPI Suspend Type	S1(POS)	
PM Control by APM	Yes	
Video Off Option	Suspend --> Off	
Video Off Method	DPMS Support	
MODEM Use IRQ	3	
Soft-Off by PWRBTN	Delay 4 Sec	
▶ Wake Up Events	Press Enter	

↑ ↓ → ← : Move Enter : Select +/-/PU/PD:Value: F10: Save ESC: Exit
 F1:General Help F5:Previous Values F6:Fail-Safe
 Defaults F7:Optimized Defaults

ACPI Function	Use this item to enable or disable the ACPI function.
Power Management	This item acts like a master switch for the power-saving modes and hard disk timeouts. If this item is set to Max Saving, power-saving modes occur after a short timeout. If this item is set to Min Saving, power-saving modes occur after a longer timeout. If the item is set to User Define, you can insert your own timeouts for the power-saving modes.
ACPI Suspend Type	This item defines how your system suspends. S1(POS), the suspend mode is equivalent to a software power down. If you select S3 (STR), the suspend mode is a suspend to RAM – the system shuts down with the exception of a refresh current to the system memory.
PM Control by APM	This field allows you to control the PC Monitor's power management features via Intel-Microsoft Advanced Power Management software. Once you have enabled the APM interface, some

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	settings made in the BIOS Setup program may be overridden by APM.
Video Off Option	This option defines if the video is powered down when the system is put into suspend mode.
Video Off Method	This item defines how the video is powered down to save power.
MODEM Use IRQ	If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the mainboard Wake On Modem connector for this feature to work.
Soft-Off by PWRBTN	Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the normal power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to "Delay 4 Sec." then you have to hold the power button down for four seconds to cause a software power down.
Wake Up Events	This item opens a submenu that enables you to set events that will resume the system from a power saving mode. Select Wake Up Events and press Enter to display the following items: VGA, LPT & COM, HDD & FDD, PCI Master, PowerOn by PCI Card, Wake Up On LAN/Ring, RTC Alarm Resume, Primary INTR, and IRQs Activity Monitoring.

3: BIOS Setup Utility

PnP/PCI Configurations 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.

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
PnP/PCI Configurations

PNP OS Installed	Yes	Item Help
Reset Configuration Data	Disabled	
Resources Controlled by	Auto(ESCD)	Menu Level ► Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.
x IRQ Resources	Press Enter	
x DMA Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
Assign IRQ For VGA	Enabled	
Assign IRQ For USB	Enabled	

↑ ↓ → ← : Move Enter : Select +/-:PU/PD:Value: F10: Save ESC: Exit
F1:General Help F5:Previous Values F6:Fail-Safe
Defaults F7:Optimized Defaults

PNP OS Installed	Setting this option to "Yes" allows the PnP OS (instead of BIOS) to assign the system resources such as IRQ and I/O address to the ISA PnP device.
Reset Configuration Data	If you enable this item and restart the system, any PnP configuration data stored in the BIOS setup is cleared from memory. New updated data is created.
Resources Controlled By	You should leave this item at the default Auto (ESCD). Under this setting, the system dynamically allocates resources to plug and play devices as they are required. If you cannot get a legacy ISA (Industry Standard Architecture) expansion card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the <i>IRQ Resources</i> and <i>Memory Resources</i> sub-menus. In the <i>IRQ Resources</i> sub-menu, if you change any of the IRQ assignments to Legacy ISA, then

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	that Interrupt Request Line is reserved for a legacy ISA expansion card. Press Esc to close the IRQ Resources sub-menu.
PCI/VGA Palette Snoop	This item is designed to overcome some problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.
Assign IRQ For VGA	Names the interrupt request (IRQ) line assigned to the VGA (if any) on your system. Activity of the selected IRQ always awakens the system.
Assign IRQ For USB	Names the interrupt request (IRQ) line assigned to the USB (if any) on your system. Activity of the selected IRQ always awakens the system.

3: BIOS Setup Utility

Hardware Monitor Page

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

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
Hardware Monitor

Current CPU Temp. Current System Temp. Current CPUFAN1 speed Current CPUFAN2 speed Vcore 2.5V 3.3V 5V 12V	Item Help Menu Level ▶
---	---------------------------

↑↓→← : Move Enter : Select +/-/PU/PD:Value: F10: Save
ESC: Exit F1:General Help F5:Previous Values F6:Fail-Safe
DefaultsF7:Optimized Defaults

System Component Characteristics

These fields provide you with information about the systems current operating status. You cannot make changes to these fields. The following information is displayed:

- CPU Temperature
 - System Temperature
 - CPU FAN (in RPMs)
 - System FAN (in RPMs)
 - Vcore (CPU Core voltage)
 - 2.5V (onboard 2.5 volt)
 - 3.3V (onboard 3.3 volt)
 - 5V (power supply's 5 volt)
 - 12V (power supply's 12 volt).
-

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Frequency/Voltage Control Page

This page sets some of the parameters for the Frequency/Voltages of this mainboard.

CMOS Setup Utility – Copyright (C) 1984 – 2000 Award Software
Frequency/Voltage Control

Auto Detect DIMM/PCI Clk	Enabled	Item Help
Spread Spectrum	Disabled	
CPU Type	Intel PIII	Menu Level ▶
CPU Speed	650 MHz	
CPU Ratio	6.5	
CPU Frequency	100 MHz	
Vcore		

↑ ↓ → ← : Move Enter : Select +/-/PU/PD:Value: F10: Save ESC: Exit
 F1:General Help F5:Previous Values F6:Fail-Safe
 Defaults F7:Optimized Defaults

Auto Detect DIMM/PCI Clk	When this item is enabled, BIOS will disabled the clock signal of free DIMM and PCI slots.
Spread Spectrum	Eables or disables the spread spectrum for the installed processor.
CPU Type, Vcore	These two items show the kind and core voltage of CPU that is installed in your system.
CPU Speed	Use this item to set the clock speed of the installed CPU. If this item is Manual, the CPU speed based on below two items CPU Ratio and CPU Frequency.
CPU Ratio, CPU Frequency	When the previous item CPU Speed is set to Manual, these two items set the multiplier and frequency of the installed CPU. The ratio is a multiplier. The multiplier times the frequency must equal the clock speed of the installed CPU.

3: BIOS Setup Utility

Load Best Performance Defaults

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 defaults are quite demanding and your system might not function properly if you are using slower memory chips or other low-performance components.

Load Optimized Defaults

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.

Set Password

If you highlight this item and press **Enter**, a dialog box appears which lets you enter a password. You can enter no more than eight 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.

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.

Save & Exit Setup

Highlight this item and press **Enter** to save the changes that you have made in the Setup Utility configuration and exit the program.

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When the Save and Exit dialog box appears, press **Y** to save and exit, or press **N** to exit without saving.

Exit Without Saving

Highlight this item and press **Enter** to discard any changes that you have made in the Setup Utility and exit the setup program. When the Exit Without Saving dialog box appears, press **Y** to discard changes and exit, or press **N** to return to the setup main menu.

Chapter 4

Software & Applications

About the Software

The software for this mainboard is supplied on a CD-ROM. The disk has some folders that can be used by many different mainboards, for example the **UTILITY** folders. Some folders can only be used by mainboards which have certain brands of chipsets, for example the **INTEL** and **VIA** folders. In addition, software that is specifically intended for one kind of mainboard is stored in a folder with the name of that board. The software for this mainboard is stored in the **MS7167D** folder.

Note: Never try to install software from a folder that is not specified for use with your mainboard.

Folders for this Mainboard

For this board, you can install software from the following folders:

Utility Folder

You can use the software in the following sub-folders:

- AWDFLASH:** Software to erase and install new revisions of the system BIOS
- PC-CILLIN:** Anti-virus software
- SUPER VIOCE:** Fax/Modem application software
- GAMUT:** Audio rack for built-in sound system
- MediaRing Talk :**PC to PC base Internet phone application software
- Yamaha XG :** Yamaha S-YXG50 Software synthesizer

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Running the Support CD-ROM

1. Place the disk in your CD-ROM drive. If you are running Windows with Autoplay enabled, the opening screen of the CD appears automatically. Click on READ ME to read the latest instructions.
2. Before installing the software, look for a file named README.TXT, or something similar. This file may contain important information to help you install the software correctly.
3. Some software is installed in separate folders for different operating systems, such as DOS, WIN NT, WIN95/98, and so on. Always log on to the correct folder for the kind of OS you are using.
4. To install the software, you usually execute a file named SETUP.EXE or INSTALL.EXE by double clicking on the filename.

Utility Folder Installation Notes

Award Flash Memory Utility

This utility lets you erase the system BIOS stored on a Flash Memory chip on the mainboard, and lets you copy an updated BIOS to the chip. Take care how you use this program. If you erase the current BIOS and fail to write a new BIOS, or write a new BIOS that is incorrect, your system will malfunction.

There are several flash memory utilities. For this mainboard you must use the **AWD753.EXE** utility. To use the utility, you must be in real-mode DOS (not the DOS box that is available in Windows 95/98/NT). If you are using WINDOWS 95/98, shut down your computer and select the option Restart in DOS in the shut-down dialog box. If you are running Windows NT, shut down your computer and boot from a DOS diskette temporarily in order to run the flash memory utility.

4: Software & Applications

GAMUT

The Gamut audio rack software for the built-in sound system is provided for different languages. Log on to the appropriate directory for your language, then run SETUP to install the application software.

MediaRing Talk

To install the MediaRing Talk voice modem software for the built-in modem, run MRTALK99-SETUP.

PC-Cillin Anti-Virus Utility

Anti-virus software is provided for DOS, for WIN95, and WIN 98. Log on to the appropriate directory for your operating system. For DOS, copy all the files in the DOS folder to your hard disk drive. For Windows 95, log on to the Disk 1 folder and run SETUP. For Windows 98, run SETUP.

Super Voice

To install the Super Voice voice, fax, data communication application for use with the built-in fax/modem, run PICSHELL.

Mainboard (MS7167D) Installation Notes

All of the sub-folders in this folder are empty, with a short README file giving directions to alternate folders for the appropriate software.

GAMUT2000

Formosoft, Inc.

<http://www.formosoft.com>

Welcome to GAMUT 2000 Family

Welcome to join the GAMUT2000 family. GAMUT family will transform your personal computers to professional audio and video equipment. GAMUT family provides the most versatile audio/video functions, a unified interface for various audio/video formats, the professional audio/video effect, the visualization for music rhythm, the automatic linking to music database on web, the transformation between various audio formats, the renewable graphical interfaces, and the playback for VCD films.

All parts of GAMUT2000 software and products are copyright protected. No program, code, part, image, video clip, audio sample, text or computer generated sequence of images may be copied or used in any way by the user except as intended within the bounds of the single user program.

1. GAMUT 2000 Family

1.1 LifeAmp—Versatile Audio Playback System



LifeAmp integrates various audio formats, graphical interfaces, audio effects, music visualization, and music database into one unified player. Also, GAMUT2000 family provides the limitless capability by adopting the *Extensible Technology*. This technology enables *LifeAmp* the progressing tools which can progress with the most modern interfaces, new audio formats, new sound processing effects, and new music visualization manners, etc. The features of *LifeAmp* can be summarized as follows:

Versatile supports for Various Audio Formats

LifeAmp provides the uniform interface for various audio formats. The supported formats now include MP3, MP2, WAVE, MIDI, CD Audio, and GM2 formats.

The above six file formats can be mixed together in a Playlist for playing. Other new audio formats can be extended by directly downloading the newest *Input Plugins*.

Thousands of Graphic Interfaces

The graphic interface of *LifeAmp* is changeable. There have been thousands of rectangular graphic interfaces in networks which can be adopted for *LifeAmp*. These graphic interfaces can be just like clothes for changing and is usually referred to as *Skins*.

LifeAmp also supports the nonrectangular interfaces in addition to the rectangular graphic user interfaces. Various cute and modern *Skins* can be downloaded from *LifeAmp* home pages.

Professional DSP Sound Effects

LifeAmp has provided a *DSP Plugin* to enhance the music effects for various listening environments. The *DSP Plugin* has the following functions:

1. Five sound effects, including Hall, Vocal, Rock, Soft, and Bass, are provided to simulate five listening environments.
2. Surrounding effects are included to widen the sound sources limited by the spatial location of speakers.
3. Echo and key shift are provided to enhance the vocal effects of music.
4. All above effects can support all audio formats instead of the MIDI files and the audio CD using MCI.

In addition to the *DSP Plugin* mentioned above, *LifeAmp* also provides the compatibility with the *DSP Plugins* existing at web sites. Users can choose *DSP Plugins* according to users' favor. The related news can refer to the *GAMUT* web site (<http://www.fs-gamut.com>).

Music Visualization

LifeAmp provides the visualization for music rhythm through the *Visual Plugin*. *LifeAmp* has included a *Visual Plugin* and other *Plugins* can be checked from the *GAMUT* web site (<http://www.fs-gamut.com>).

Audio-CD Database

When playing audio-CD, *LifeAmp* can automatically link the audio-CD with the music database (including singer, music title, album, etc) at web sites.

Audio File Conversion

LifeAmp provides the audio conversion from MP3, MP2, CD-audio into WAVE files. The WAVE files can easily used to make him up audio CD through CD-RW. Advanced audio conversion can be achieved through another tool of *GAMUT* family, named for *AudioPort*.

Video Supports

In addition to the versatile audio functions, *LifeAmp* can also extend through *Video Plugins* for the video playback of VCD films. These *Video Plugins* are grouped in another tool of *GAMUT* family, named for *GamutVCD*.

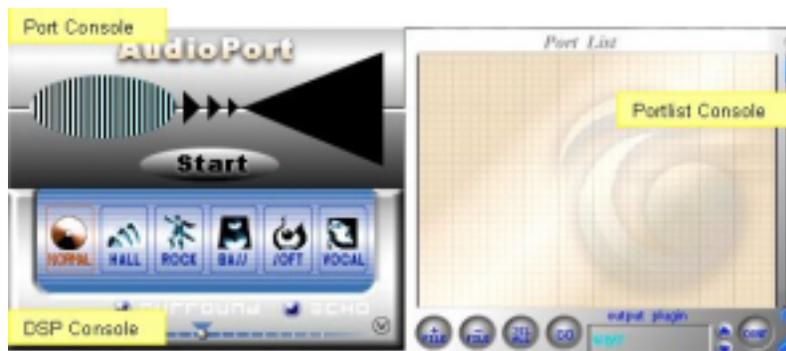
Limitless Extensibility

LifeAmp is never restricted to the functions described above.

LifeAmp is developed with the ability to progress itself with advances of new audio and video technologies. With the increasing numbers of new *Plugins*, *LifeAmp* will evolve itself in the outlook, the music visualization, the DSP effects, the audio decoding, and the video decoding ability.

1.2 AudioPort– Audio Transportation System

AudioPort gives the powerful tool for the conversion among various audio formats and peripherals in addition to the basic function of *LifeAmp*.



Versatile Audio Sources

AudioPort can record or convert audio from versatile audio sources. Audio sources can be from the audio files. Also, audio sources can also be from the optical CDs. The supported CD formats include Audio CD (ACD), and Video CD (VCD).

Destination File Formats

AudioPort gives the conversion from audio sources to various file formats or optical disk. The supported file formats include MP3, GM2, and Wave files.

Audio-CD Creator

In addition to the support of various file formats, one outstanding feature is that *AudioPort* also provides the conversion from the various file formats to Audio-CD through CD-RW or CD-R devices. This feature enables users to create CD-audio following the user interface just like the traditional tap recording without handling the cumbersome procedures of CD-R or CD-RW tools.

DSP Effects

AudioPort not only provides the conversion from one audio media to another media, but also enhance the audio effects through the *DSP Plugins*. Hence the converted audio can have the enhanced effects like surrounding, echo, hall, rock, soft, bass, etc. These effects can meet the listening requirements for car, party, living rooms, dining room, etc.

Features Inherent from LifeAmp

AudioPort shares the same design features with *LifeAmp*. These features include changeable *Skins*, *DSP Plugins*, *Visual Plugins*, and limitless extensibility.

2. Installation

2.1 Before Beginning: System Requirements

Please check your hardware and software environment in your personal computers before installing GAMUT2000.

Hardware and Software Issues

The basic hardware requirements are listed as follows:

- CPU: 586 compatible CPUs or above.
- RAM: at least 8M or above.
- Hard disk: 20 Mbytes for program and 50 Mbytes for temporary music storage.
- Windows-compatible the sound cards or sound chips.
- CD-ROM: supports the music extracting ability.
- CD-R or CD-RW (Optional): AudioPort can create audio CD if CD-R or CD-RW is available.
- Stereo speaker for playing music.
- Operation Systems: Windows 95/98.

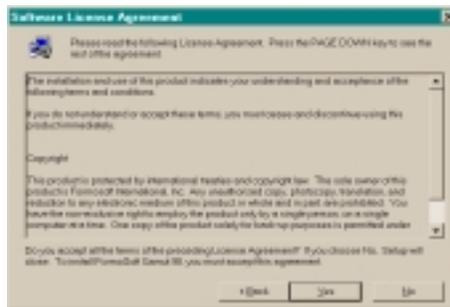
Note on CD-ROM Specification

GAMUT2000 has adopted an audio extracting technology to extract digital music from CD-ROM for further compression and enhancement. Most of CD-ROM devices released in these two years support the extraction technology but the supports are not taken for granted for older devices.

Another method to install GAMUT2000 is to Open My Computer\Open the GAMUT2000 directory. Double-clicking on the Setup.exe icon starts the installation.

Step 2. You will see the welcome screen of GAMUT2000. Click the Next button to continue.

Step 3. If you accept the terms of the license agreement, click Yes button to continue.



3. Main Console

3.1 Introduction

Main Console controls and displays critical elements of song playback, and especially controls are the configuration of the *Plugins* and *Skins* of *LifeAmp*. This chapter describes the control functions on music playback.

3.2 Function and Operation

The four buttons on the *Main Console* of *LifeAmp* are Open, Exit, Minimize, and *Plugins* options as below illustrator.

- Open: Open new files.
- Option: Activate the menu of Plugin Options.
- Exit: Exit *LifeAmp*.
- Minimize: Minimize the screen of *Main Console* on the task bar.



As below illustrator, the control over playback of music is through following button:

- DSP: Activate the *DSP Console*.
- Playlist: Activate the *Playlist Console*.
- Stop: Stop the music playback.
- Previous: Play the previous audio file or track.
- Play/Pause: Play/Pause the music playback.
- Next: Play the next audio file or track.



The music message in below illustrator shows the status of music playback. The information includes music length, title name, music process, volume control, balance control, shuffle and repeat playback as explained below:

- Shuffle: Set up the music playback sequence. When the shuffle is on, all music is playing in a random order.
- Repeat: Decide whether or not the music sequences should be repetitively playback.
- Music playback progress: Show the progress status of music playback. There are two display manners: one for the progress length and another for the residual length. Clicking the number display on the screen can toggle the two displays.
- Title Name: display the file name of title name of the playback file.
- Volume control: Control the volume of the playback.
- Balance control: Control the volume balance between the left and the right channels.
- Position: Display the music playback status on the total length bar.
- About: About LifeAmp.



Open files...	O				
Play	X				
Stop	Y				
Pause	C				
Next	B				
Previous	Z				
Plugin Options	Alt+C				
Skin Browser	Alt+S				
Toggle Visual	ESC				
Toggle DSP/Effect	Alt+D				
Volume	<table border="1"> <tbody> <tr> <td>Volume up</td> <td>UP</td> </tr> <tr> <td>Volume down</td> <td>Down</td> </tr> </tbody> </table>	Volume up	UP	Volume down	Down
Volume up	UP				
Volume down	Down				
PlayList	Alt+P				
Write Playlist file	Alt+W				
Help	F1				
AudioPort	Alt+A				
Song list					

Figure 1: Right-bottom activated menu of *LifeAmp*.

3.3 Main Menu

The buttons on *Main Console* are the basic functions. Advanced function can be referred from the *Main Menu*. *Main Menu* of *LifeAmp* is activated by right button of the mouse. The function items in the menu can be used to control the playback and the configuration of *LifeAmp*. Table 1 illustrates the hot key used in the menu.

Table 1. Shortcut for *LifeAmp Main Console*

Functions	Hot Key	Description
Open Files...	O	Open the new files.
Play	X	Play the current song.
Stop	V	Stop the playback.
Pause	C	Pause the playback.
Next	B	Playback next song.
Previous	Z	Playback last song.
Plugin Options	Alt + C	Open Main Menu.
Skin Browser	Alt + S	Activate the Skin browser.
Toggle Visual	ESC	Turn on/off the <i>Visual Plugin</i> .
Toggle DSP/Eff.	Alt + D	Turn on/off <i>DSP Plugin</i> .
Volume Up	Up Arrow	Increase Volume.
Volume Down	Down Arrow	Decrease Volume.
PlayList	Alt + P	Activate <i>Playlist Console</i> .
Write Playlist file	Alt + W	Save the music sequences in Playlist into a file.
Help	F1	LifeAmp on-line user' guide.
Song list	-	Show the song sequences of the Playlist as shown in Figure 2.

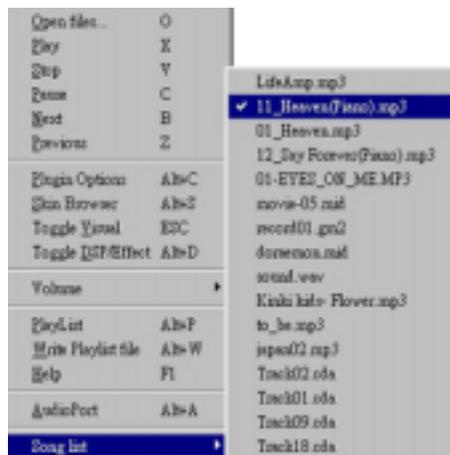


Figure 2: Song List

See detail of Gamut 2000 manual file within your product driver CD.