LP5

User's Guide

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FCC Statement

FCC Class B Radio Frequency Interference Statement

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/television technician for help.

Notice 1:

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2:

Shielded interface cables, if any, must be used in order to comply with emission limits.

About this Manual

Purpose and Scope

This manual tells how to install and configure the system board.

Organization

This manual consists of five chapters and one appendix.

Chapter 1, **Features**, covers the specifications, layout and components of the system board.

Chapter 2, **Hardware Setup**, tells how to set the jumpers, upgrade the CPU and the system memory, install the system board and add expansion cards.

Chapter 3, **AMI BIOS**, explains the system BIOS and tells how to configure the system by setting the BIOS parameters.

Chapter 4, **VGA**, describes the video graphics accelerator on board, and lists the supported applications and display modes.

Chapter 5, **Audio Chip**, discusses the onboard 16-bit sound processor and tells how to install the audio drivers and utilities.

Appendix A, **Jumper Summary**, gives you a tabular summary of the jumper settings discussed in Chapter 2. It also gives a list of the onboard connectors.

About this Manual

Conventions

The following conventions are used in this manual:

`Text entered by user, default settings`	Represent text input by the user, default settings and recommended selections
`message displayed`	Denotes actual messages that appear on screen
a, e, s, etc	Represent the actual keys that you have to press on the keyboard.

NOTE
Gives bits and pieces of additional information related to the current topic.

WARNING
Alerts you to any damage that might result from doing or not doing specific actions.

CAUTION
Suggests precautionary measures to avoid potential hardware or software problems.

IMPORTANT
Reminds you to take specific action relevant to the accomplishment of the procedure at hand.

TIP
Tells how to accomplish a procedure with minimum steps through little shortcuts.

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Chapter

Features 1

The LP5 is an all-in-one Pentium™ -based motherboard that features an onboard video graphics accelerator (VGA) and a 16-bit sound processor. It integrates the Intel Triton 82437FX, 82438FX and 82371FB application-specific integrated circuit (ASIC) chipsets that enable the System Management Mode (SMM) function of the Pentium chip. The board also features the Dark Green power management that extends energy conservation from system components to display monitors.

The system board utilizes the PCI/ISA architecture. The system memory is expandable to 128 MB by adding single in-line memory modules (SIMMs) that support either the Extended Data Out (EDO) or the Fast-page Mode DRAMs. The board may come with a 256-KB/512-KB asynchronous second-level cache or a 256-KB pipeline-burst memory.

A super I/O controller and a PCI mode 4 enhanced-IDE controller with bus master support are incorporated in the design to further enhance system performance. An optional fax/modem module is also available. The board measures 220 mm x 330 mm (LPX size).

Since the board does not have a conventional arrangement of connectors, the board package includes a sticker that serves as port indicator.

Features

Specifications

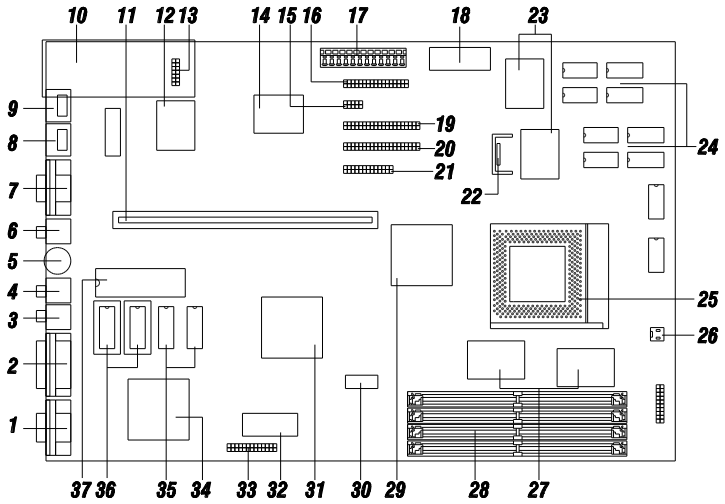
Microprocessor	Pentium™ (3.3V) Processor 75/90/100/120/133/150/166 MHz
Max. Memory	128 MB
SIMM Sockets	Four 72-pin, 32-bit Supports EDO or Fast Page Mode DRAMs
ASICs	Intel Triton 82437FX Intel Triton 82438FX Intel Triton 82371FB
I/O Chip	SMC FDC37C665GT
VGA	S3 Trio64
Audio Chip	Creative CT2504
Bus Architecture	PCI, ISA
Expansion Slot	One riser card slot
Riser Card	Single-sided riser card: Two PCI slots Two ISA slots One PCI-/ISA-shared slot Double-sided riser card: Two PCI slots Two ISA slots
Ports	One parallel port (SPP/ECP/EPP) Two serial ports (UART 16C550) Two-channel PCI mode 4 enhanced IDE One floppy disk port (1.2/1.44/2.88 MB, 3-mode floppy support)
Secondary Cache	256-KB/512-KB asynchronous or 256-KB pipeline-burst cache
BIOS	AMI Plug-and-Play Flash EPROM BIOS
RTC and Battery	Dallas DS12887A
Board Size	220 mm x 330 mm (LPX)

Features

Board Layout

1. *VGA connector*
2. *Game/MIDI port*
3. *Speaker out*
4. *Line in*
5. *Volume control*
6. *Mic in*
7. *COM1 port*
8. *PS/2 mouse connector*
9. *PS/2 keyboard connector*
10. *Fax/modem module (optional)*
11. *Riser card slot*
12. *Creative CT2504 audio chip*
13. *Fax/modem connector*
14. *Super I/O chip*
15. *COM2 port connector*
16. *FDC connector*
17. *Power connector*
18. *RTC and battery*
19. *IDE2 connector*
20. *IDE1 connector*
21. *Parallel port connector*
22. *Voltage regulator with heatsink*
23. *Pipeline-burst cache*
24. *Asynchronous cache*
25. *CPU socket*
26. *CPU fan connector*
27. *Intel 82438FX ASIC (TDP)*
28. *SIMM sockets*
29. *Intel 82437FX ASIC (TSC)*
30. *Clock generator*
31. *Intel 82371FB ASIC (PIIX)*
32. *BIOS*
33. *VGA feature connector*
34. *S3 Trio64 audio chip*
35. *First 1-MB video DRAM*
36. *Second 1-MB video DRAM sockets*
37. *Keyboard controller*

Features



The heatsink becomes very hot when the system is on. NEVER touch the heatsink with any metal or with your hands.

System Board Parts

Microprocessor

The LP5 system board uses an Intel Pentium (3.3V) processor running at speeds of 75, 90, 100, 120, 133, 150 or 166 MHz. Chapter 2 tells details on how to upgrade the Pentium processor.

Features

ASICs

The ASICs onboard are the 82437FX, 82438FX and 82371FB. The 82437 serves as the system memory controller and PCI bus interface.

The two 82438FX ASICs function as PCI local-bus data paths that offer 64-bit DRAM and 32-bit PCI bus interfaces to support the 64-bit Pentium processor data bus.

The 82371FB acts as the PCI-/ISA-bus bridge that translates the PCI bus cycles into ISA bus cycles or vice-versa. It also functions as the PCI fast-IDE interface and the SMM controller.

AMI BIOS

The AMI BIOS (basic input-output system) resides in the flash ROM chip. This contains the program that performs the power-on self-tests (POST) upon booting. During POST, this program activates the peripheral devices, tests onboard memory, and prepares the system for operation. Chapter 3 gives more information on the AMI BIOS.

Local-bus VGA Accelerator

The system board has an onboard S3 Trio64 graphics accelerator and a 1-MB video memory expandable to 2 MB. These enable the LP5 to support VESA Display Power Management Signalling (DPMS) monitors. For more details on the onboard VGA, see Chapter 4.

Features

16-bit Sound Chip

The onboard sound chip is a 16-bit Creative CT2504. It offers true 16-bit audio and is compatible with Sound Blaster Pro and AdLib, enabling the LP5 to serve multimedia purposes. Chapter 5 discusses the features of this audio chip in detail.

Two-channel PCI Mode 4 Enhanced IDE

The board integrates two-channel PCI mode 4 enhanced-integrated drive electronic (E-IDE) interfaces with bus master support. This improves the data transfer rate. The E-IDE interfaces allow the system to support four E-IDE devices, including hard disks with more than 528-MB capacity. This feature offers users increased data storage capacity.

Fax/Modem (Optional)

The LP5 may come with an optional fax/modem module. The module uses the Cirrus Logic chipset and has a fax/data rate of 14.4 kbit/sec. It conforms to the CCITT V.32bis protocol.

For more details on the fax/modem function, refer to the manuals that come with the module.

Features

Super I/O Controller

The onboard super I/O controller chip SMC 37C665GT supports two UART 16450/16550-compatible serial ports and a parallel port (SPP, EPP, ECP)[1]. It also accommodates 1.2-/1.44-/2.88-MB disk drives allowing full-range access to 5.25-inch drives with 360-KB or 1.2-MB format and 3.5-inch drives with 720-KB, 1.44-MB or 2.88-MB format.

The I/O chip also supports the three-mode Japanese floppy drives.

Expansion Slot

The system board has one riser card slot for add-on card connections. Chapter 2 tells how to install a riser card.

DRAM Sockets

The system board has four 72-pin DRAM sockets that expand system memory to a maximum of 128 MB. These sockets accept single- and double-density SIMMs with the EDO or the Fast-page Mode feature. Chapter 2 tells how to install memory modules and lists the possible memory configurations.

Keyboard and Mouse Connectors

The system board accepts PS/2 keyboard and mouse connectors. See Chapter 2 for information on how to install a keyboard and a mouse.

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[1] SPP: Standard Parallel Port
EPP: Enhanced Parallel Port (IEEE 1284 compliant)
ECP: Extended Capabilities Port (IEEE 1284 compliant)

Features

SRAM

The system board may come with either a 256-KB pipeline-burst cache or a 256-KB/512-KB asynchronous cache.

Power Management

The LP5 features a system power-management mode (Dark Green) that conforms to the power-saving standards of the U.S. Environmental Protection Agency (EPA) Energy Star program. See Chapter 3 for more information on the power-management mode.

Chapter

Hardware Setup 2

This chapter tells how to set jumpers, upgrade system memory, add expansion boards, and install the system board.

Install the CPU, memory, and set the jumpers before you install the board inside a housing. You may add the other components after installing the board. Read this chapter to learn about the components before you install them.

ESD Precautions

Electrostatic discharge (ESD) can damage your CPU, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component.

1. Do not remove a component from its protective packaging until you are ready to install it.
2. Wear a wrist grounding strap and attach it to a metal part of the system unit before handling components. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.

Hardware Setup

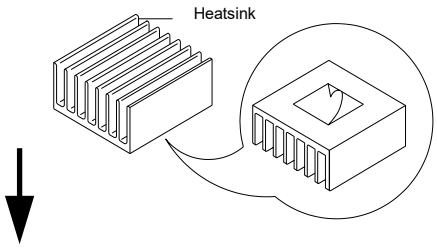
Installing a Microprocessor

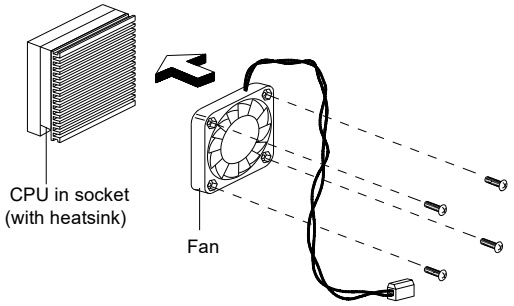
The motherboard has a zero-insertion force microprocessor socket that allows you to install a Pentium CPU without using any tools.

Follow these steps to install a Pentium CPU in a ZIF-type upgrade socket:

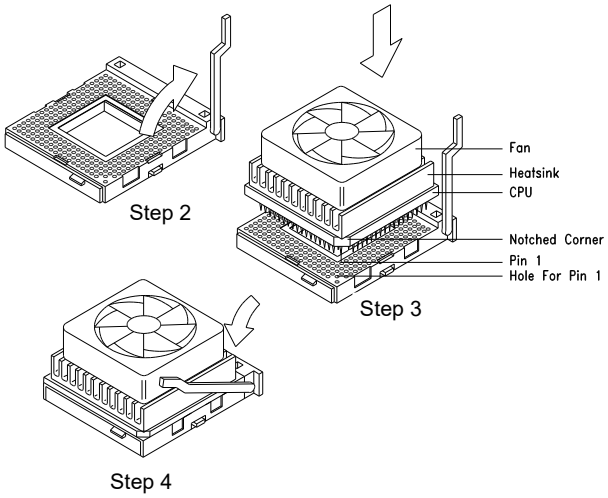
Make sure that the system power is OFF before installing a component.

1. Attach the heatsink and the fan to the CPU.





2. Pull up the socket lever.
3. Insert the CPU with the attached heatsink and fan. Make sure that pin 1 of the CPU aligns with the hole 1 of the socket. The notched corner on the CPU indicates pin 1.
4. Pull down the socket lever to lock the CPU into the socket.



5. Plug the fan cable into the fan connector. See the section *Connectors* for details on the fan connector.
6. Set the jumpers accordingly. See the following sections for the correct jumper settings.

Upgrading the Microprocessor

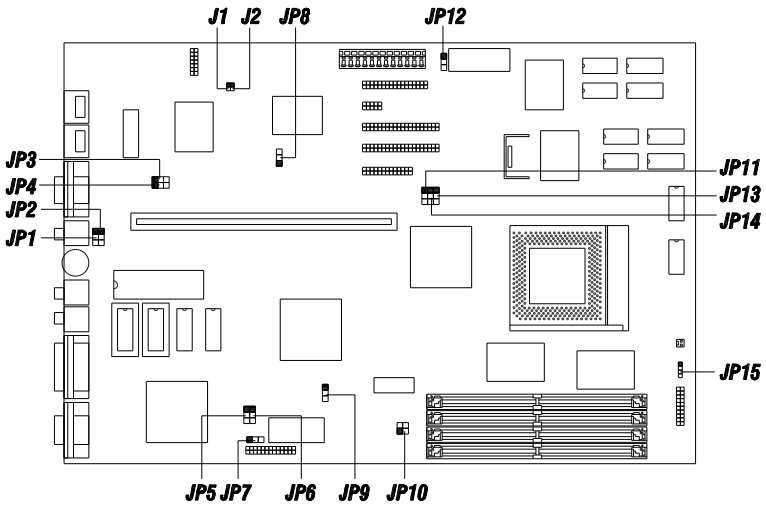
Follow these steps to upgrade the Pentium CPU from 75 MHz to 90,100, 120, 133, 150 or 166 MHz:

1. Turn off the system power.
2. Remove the housing cover and locate the CPU socket on the system board.
3. Pull up the socket lever.
4. Remove the installed CPU.
5. Install the upgrade CPU. Refer to the section *Installing a Microprocessor* for instructions on how to install a Pentium CPU.
6. Set the jumpers accordingly. See the following sections for the correct jumper settings.

Hardware Setup

Jumper Settings

You have to change the jumper settings when you reconfigure the system. This section tells how to set the jumpers. The figure below shows the jumper locations.



Set a jumper switch as follows:

- To close a jumper, insert the plastic jumper cap over two pins of a jumper.
- To open a jumper, remove the jumper cap.

The following conventions are used to represent the proper jumper settings:

Open

Closed (1-2 position)

Hardware Setup

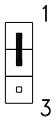
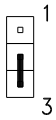
Selecting the CPU Type

The jumpers **JP9, JP10, JP11** and **JP13** let you select the CPU type. The available settings are as follows:

CPU TYPE	JP9	JP10	JP11	JP13
P54C-75				
P54C-90				
P54C-100				
P54C/CS/CQS-120				
P54C/CS/CQS-133				
P54CS/CQS-150				
P54CS/CQS-166				

Selecting the Memory Mode

The system board supports both the EDO and the Fast-page Mode memory features. If you want to install memory with EDO features, you must set jumper **JP6** to 2-3. Otherwise, set the jumper to 1-2 for the Fast-page Mode feature.

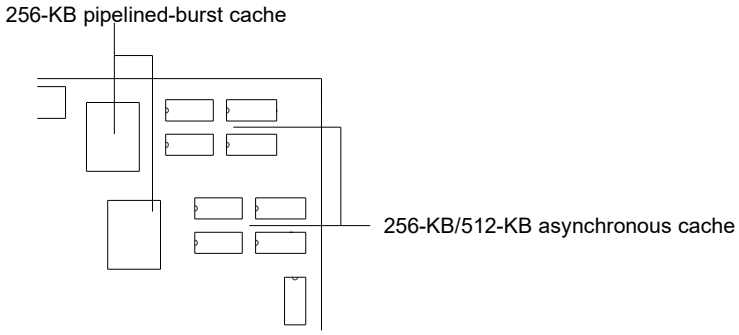
Mode Select	JP6
Fast Page	
EDO	

Hardware Setup

Setting the Cache Size

The motherboard comes either with a 256-KB pipeline-burst cache or a 256-KB/512-KB asynchronous cache. The pipeline-burst cache improves system performance by reducing the standard processing time.

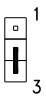
See the following figure for the location of the second-level cache.



See the table below for the various cache configurations.

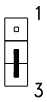
Cache Size	Tag SRAM (U36) (SOJ-type, 15 ns)	Data SRAM (U53, U54, U55, U56, U58, U59, U60, U61)
256 KB	32 Kb x 8 x 1 pc. or 16 Kb x 8 x 1 pc.	32 Kb x 8 x 8 pcs (SOJ type, 15 ns)
512 KB	32 Kb x 8 x 1 pc. or 16 Kb x 8 x 1 pc.	64 Kb x 8 x 8 pcs (SOJ type, 15 ns)
256 KB (p.b.)	32 Kb x 8 x 1 pc or 16 Kb x 8 x 1 pc.	32 Kb x 32 x 2 pcs (QFP type, 8 ns)

Also, you must reset jumper **JP14** if you upgrade the cache. See the figure below for the correct jumper settings.

CACHE SIZE	JP14
256 KB	
512 KB	

Selecting the Flash ROM Type

Set the jumper **JP7** according to the Flash ROM type. If you use a 5V Flash ROM, then you must close pins 2-3 of JP7. For a 12V Flash ROM, the required setting is 1-2. The default setting is 2-3.

Flash ROM Type	JP7
12 V	
5 V	

Hardware Setup

Enabling the Onboard Super I/O Controller

The onboard super I/O controller is SMC37C665GT. If you want to enable or disable the onboard I/O controller you must reset the jumper marked **JP8** on the system board.

JP8

Enabled 

Disabled 

Selecting the ECP DMA Channel

The jumpers **JP3** and **JP4** let you select the DMA channel for ECP function. The channel selections are DMA 1 and DMA 3.

	JP3	**JP4**
DMA 1		
DMA 3		

Enabling the VGA

The VGA chip onboard is S3 Trio64. To enable the VGA chip, set jumper **JP5** to 1-2. Otherwise, set it to 2-3.

VGA	JP5
Enabled	
Disabled	

Selecting the Audio Output

You may direct your audio output to line out or speaker out. If you select speaker out, the audio signal passes through the onboard amplifier module before output. Selecting line out lets you bypass the amplifier module and allows you to use an external amplifier.

You must set jumpers **JP1** and **JP2** according to the selected audio output. See the figure for the proper jumper settings.

Audio Output	JP1	JP2
Line out		
Speaker out		

Hardware Setup

Selecting the Audio I/O Address

The jumpers **J1** and **J2** let you select the I/O address for audio function. The available selections are 22XH, 24XH, 26XH, and 28XH. See the following figure for the corresponding settings for each address.

Audio I/O Address	J1	J2
22XH		
24XH		
26XH		
28XH		

Clearing the CMOS

The jumper **JP12** clears the values in the CMOS. You need to clear the CMOS if you forget your system password. To do this, shut off the system power and short pins 2-3 of JP12 for a few seconds. Reset the jumper to the normal setting by shorting pins 1-2 with a jumper cap. Enter Setup to specify a new password.

	JP12
Default (Normal)	
Clearing CMOS	

Memory Configuration

The system board supports a maximum memory of 128 MB. The four 72-pin SIMM sockets accommodate 4- and 16-MB single-density SIMMs, and 8- and 32-MB double-density SIMMs - with or without the Extended Data Out (EDO) function. The EDO feature expands data output efficiency (speed), thus improving memory performance. All SIMMs support a DRAM speed of 70/60 ns (or less). Refer to the section *Board Layout* and see the figure for the location of the SIMMs.

The table below lists the SIMM types and their corresponding capacities.

SIMM Type	Capacity
1 Mb x 32/36	4 MB
2 Mb x 32/36	8 MB
4 Mb x 32/36	16 MB
8 Mb x 32/36	32 MB

Hardware Setup

The following are the possible SIMM configurations.

Total Memory	SIMM 0/1	SIMM 2/3
8 MB	4 MB x 2	
16 MB	4 MB x 2	4 MB x 2
16 MB	8 MB x 2	
32 MB	8 MB x 2	8 MB x 2
32 MB	16 MB x 2	
40 MB	16 MB x 2	4 MB x 2
48 MB	16 MB x 2	8 MB x 2
64 MB	16 MB x 2	16 MB x 2
64 MB	32 MB x 2	
72 MB	32 MB x 2	4 MB x 2
80 MB	32 MB x 2	8 MB x 2
96 MB	32 MB x 2	16 MB x 2
128 MB	32 MB x 2	32 MB x 2

Installing a SIMM

Observe the ESD precautions when installing components.

Follow these steps to install a SIMM:

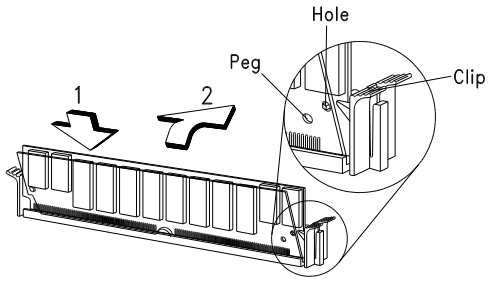
1. Slip a SIMM at a 45^{o} angle into a socket with the component side facing down. Always install SIMMs beginning with SIMM 0.

Be careful when inserting or removing SIMMs. Forcing a SIMM in or out of a socket can damage the socket or the SIMM (or both).

2. Gently push the SIMM up until the pegs of the socket slip into the holes on the SIMM and the holding clips lock the SIMM into a vertical position.

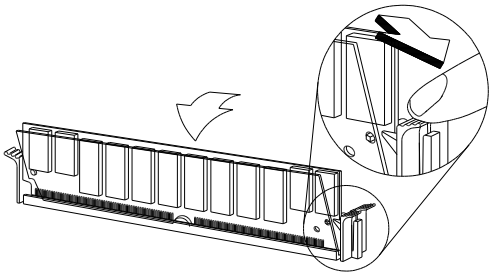
The SIMM should be at a 90^{o} angle when installed.

Hardware Setup



Removing a SIMM

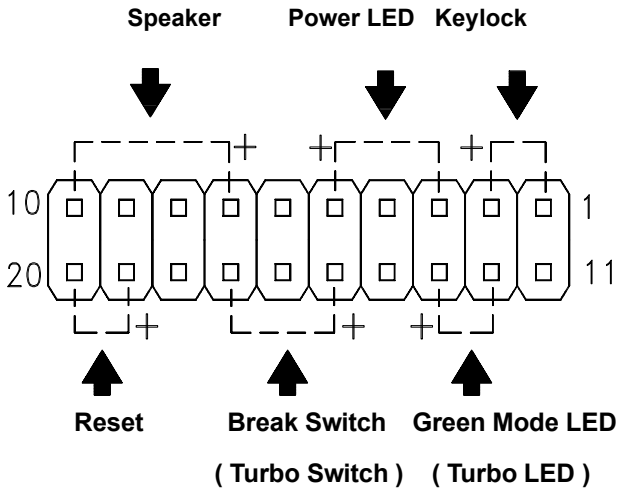
1. Press the holding clips on both sides of the SIMM outward to release it.
2. Press the SIMM downward to about a 45^{o} angle.
3. Gently pull the SIMM out of the socket.



Connectors

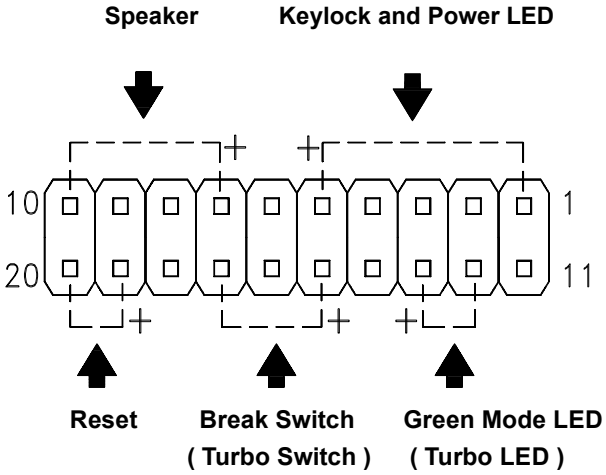
Multifunction Connector

This 20-pin connector is marked **CN21** on the system board. It supports a number of system functions: green mode LED, power LED, break switch, keylock, and speaker. Attach the front panel connectors to the corresponding pins as in the illustration below.

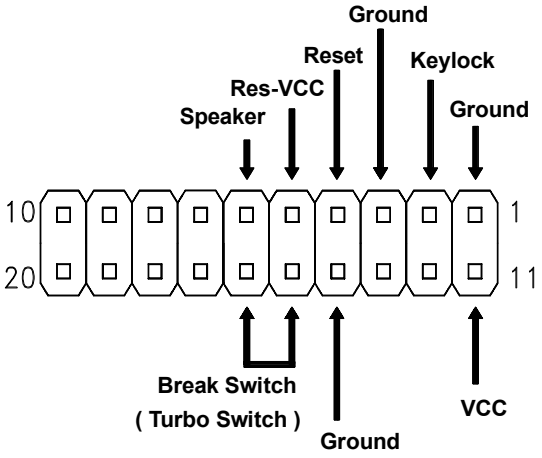


Some housings have a five-pin connector for the keylock and power LED. See the following illustration.

Hardware Setup



Other housings may have a 12-pin connector. If your housing has this type of connector, plug it into CN21 as shown in the following figure. Make sure that the red wire of the connector connects to pin 11.

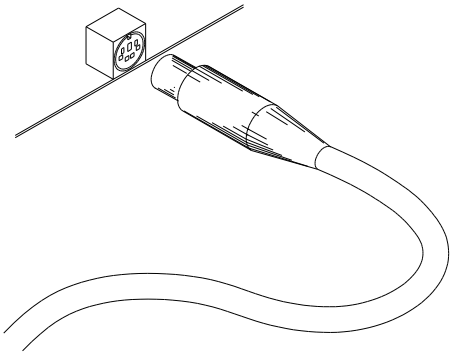


Break Switch

The break switch gives the user the option to directly enter the system suspend mode by setting the switch to the on position. To set, simply press the switch. Make sure that the break switch is in the off position before you set it to the on position. To set it to the off position, simply press the switch to release it from the on position.

Keyboard and Mouse Connectors

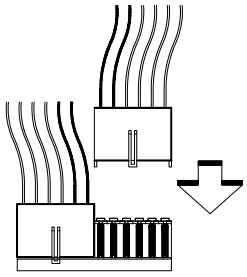
The board accepts PS/2 keyboard and mouse connectors. The following figure shows how to connect a keyboard (or mouse).



Hardware Setup

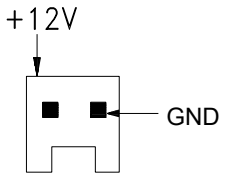
Power Connector

A standard power supply has two cables with six wires each. Attach these cables to the power connector on the board in such a way that all the black wires are in the center. The power connector is marked **CN13** on the system board.



Fan Connector

The 2-pin fan connector is marked **CN20** on the system board. The figure below shows the pin configuration of the connector.



2-pin fan connector (CN20)

Hardware Setup

Installation

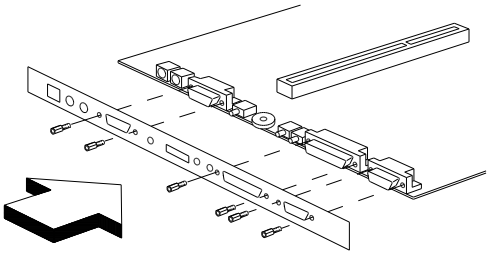
The LP5 board conforms to the LPX standard form factor. It has mounting holes that fit LPX housings. However, before installing the system board, make sure that the housing accommodates a LPX board with long opening in the rear panel for the onboard connectors.

Some housings may differ slightly in design, requiring additional steps to install the board. Read the documentation that comes with the housing.

Make sure that you have already installed the system board components like the CPU and memory, and have set the appropriate jumpers before you proceed.

Installing the System Board

1. Open the system housing.
2. The system board comes with a bracket and hex screws. Attach the bracket to the board with the hex screws. See the figure below.

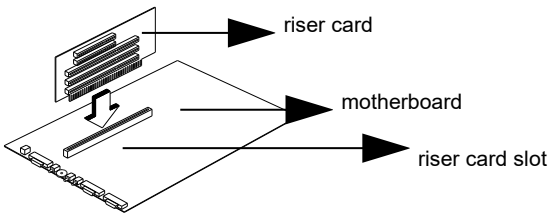


3. Use the screws that come with the housing to secure the board.
4. Attach the power supply cables to the power connector and the front panel connectors to the multifunction connector. See the section *Connectors*.
5. Install any additional components that you have not yet installed.

Installing a Riser Card

Follow these steps to install a riser card:

1. Observe the ESD precautions before removing the riser card from its protective packaging.
2. Locate the riser card slot on the system board. See the section *Board Layout*.
3. Gently insert the golden edge of the riser card into the slot until it fits.



4. Make sure that the riser card is properly seated.

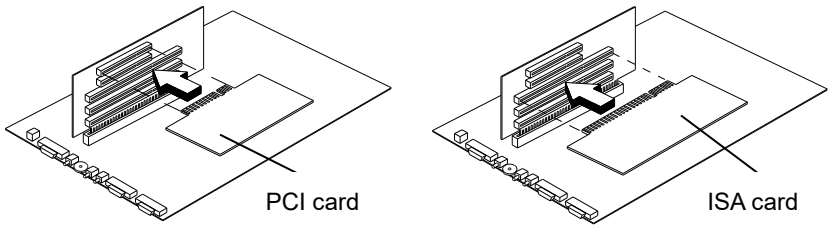
Hardware Setup

Installing Expansion Boards

Install any expansion boards after you have secured the system board and the riser card in the housing.

Follow these steps to install an expansion board.

1. Observe the ESD precautions before removing the expansion card from its protective packaging.
2. Remove the bracket opposite the slot that you want to use. Save the cover for future use. Save the screw to secure the expansion board.
3. Remove the board from its protective packaging.
4. Gently insert the golden edge of the board into the slot on the riser card until it fits into place.



5. Secure the board bracket with the screw.

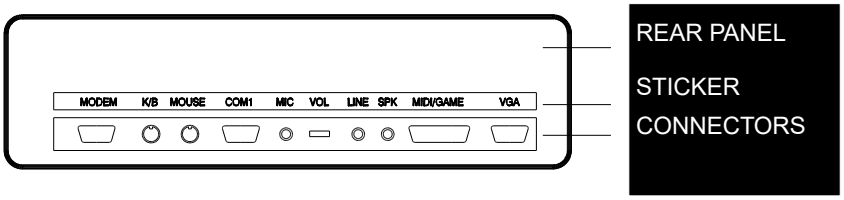
Applying the Port Indicator Sticker

The board comes with a silver sticker that serves as port indicator. It has the following indicators on it.

MODEM	K/B	MOUSE	COM1	MIC	VOL	LINE	SPK	MIDI/GAME	VGA

To apply the sticker:

1. Remove the protective paper backing from the sticker.
2. Position the sticker over the rear panel, just above the connectors. Align each indicator with the connectors on the board. Press the sticker evenly to adhere.

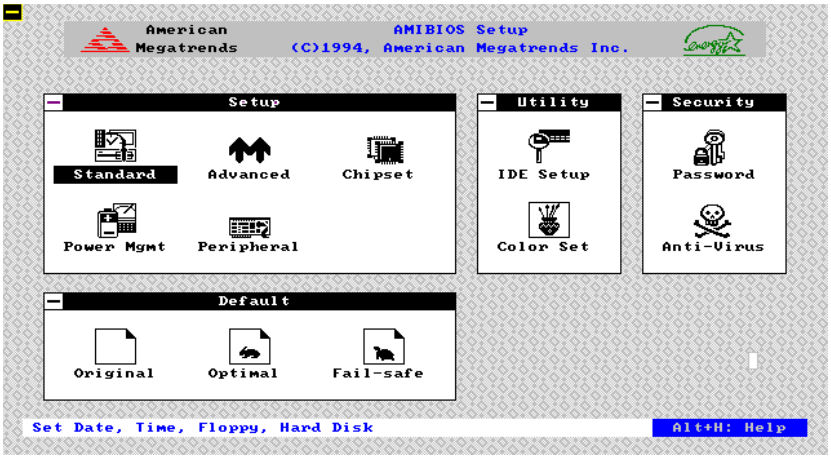


Chapter

AMI BIOS 3

AMI BIOS Setup Main Menu

The AMI BIOS Setup Main Menu appears below. Press c during POST to enter the BIOS Setup.



The AMI BIOS is in Windows form. You can use either the keyboard or a mouse to move between the items. To select among the Setup groups, use v to highlight the selected group or simply click on the icon of the selected Setup menu.

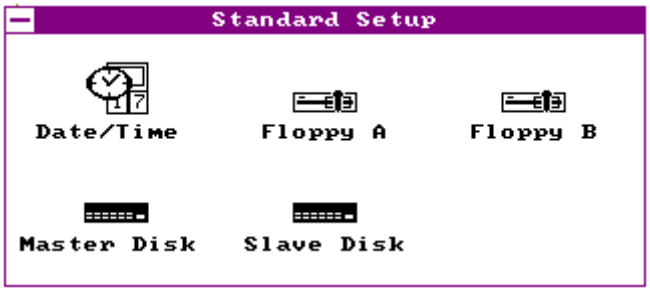
To select among the options, you can either use the arrow keys to move the highlight bar or simply click on the icon of the desired option.

After selecting, press e or double-click on the icon to open the menu.

AMI BIOS

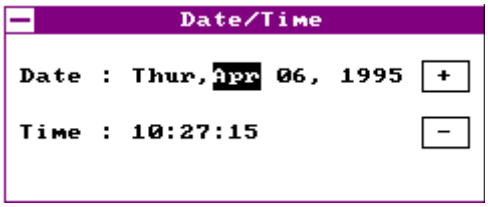
Standard CMOS Setup

Highlight `Setup` using v or simply click on the Setup icon. Select `Standard` to input configuration values such as the date, time, and disk types. The Standard CMOS Setup pop-up window appears below:



Date/Time

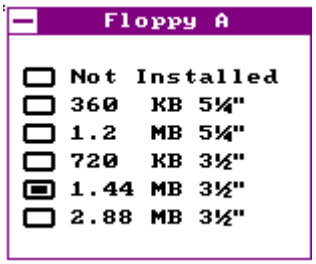
To set the date and time, highlight `Date/Time` and press e or double-click on the Date/Time icon. The following screen appears:



Use the arrow keys to move among the items. Press the + and - keys or click the + and - icons to set the current date and time. Close the window by pressing ^ or double-clicking the Control menu box in the upper-left corner of the window.

Floppy Drives A and B

To configure the floppy drive, select `Floppy A`. The following values appear on the screen:



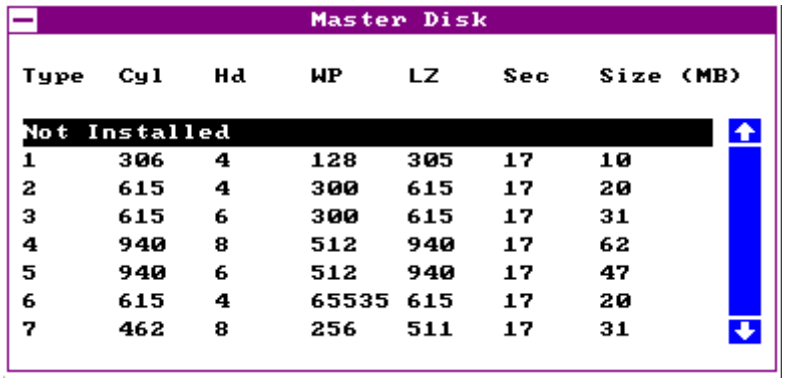
After selecting the proper setting, press ^ or double-click the Control menu box to close the window.

Select `Floppy B` and follow the same procedure to configure the second floppy drive, if present.

AMI BIOS

Hard Disk Drives

Select `Master Hard Disk` to configure the first hard disk. The following values appear on the screen:



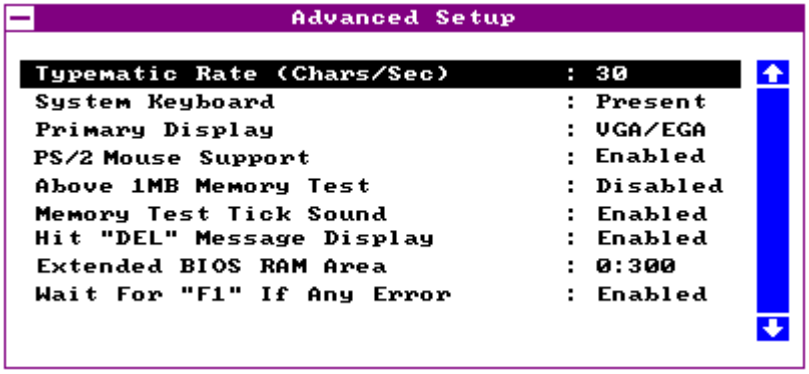
If you cannot find your hard disk drive type on the list, select `User` and enter the disk parameters. You can also select Utility Setup. This automatically configures your hard disk. Refer to the section *Utility Setup* for more information.

Select `ESDI` or `SCSI` depending the device installed.

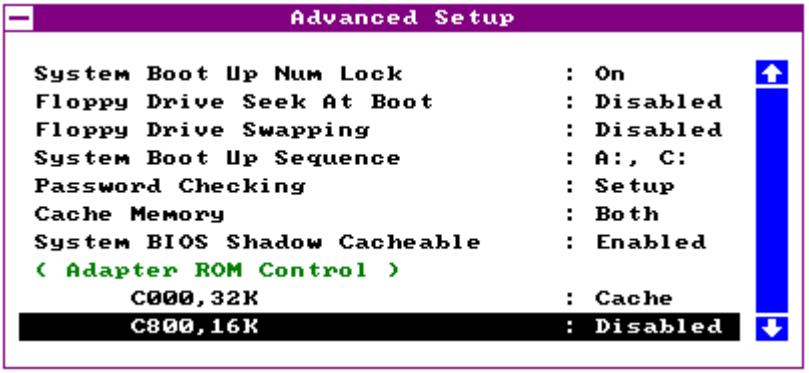
If you have two hard disks installed, select `Slave Disk` and follow the same procedure to configure the second hard disk.

Advanced CMOS Setup

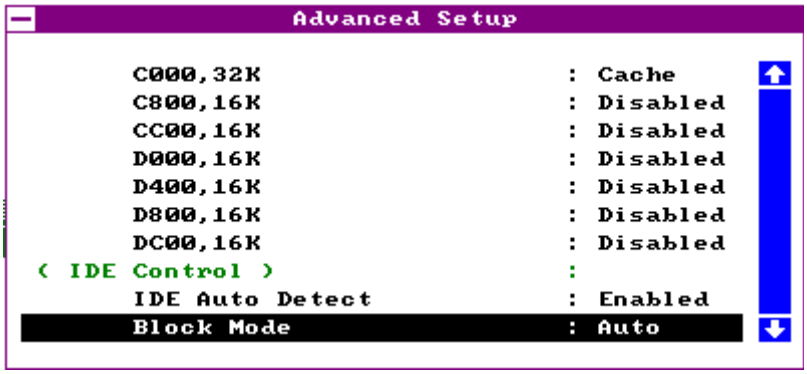
The window below appears if you select the Advanced option.

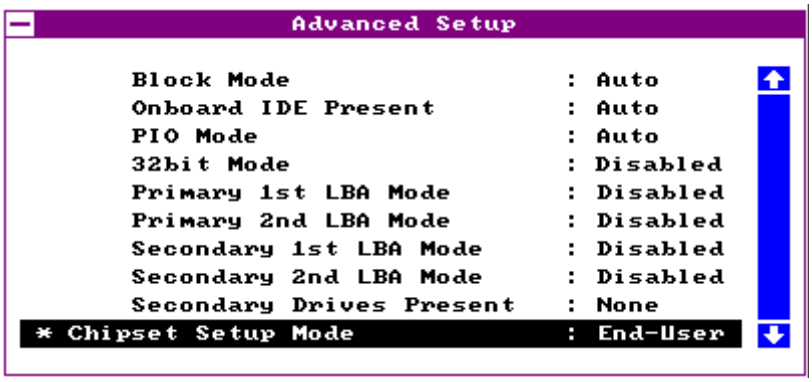


The screen above does not show all the parameters of the Advanced Configuration menu. Use w or y to highlight the desired parameter. Press } to view the rest of the parameters. The following screens appear:



AMI BIOS





Typematic Rate (Chars./Sec.)

This parameter determines the typematic rate. The typematic rate settings are 15, 20, 30 and Disabled. The default setting is `30`. Select `Disabled` to disregard the rate setting.

System Keyboard

Set this parameter to `Present` if there is a keyboard connected to the system. However, some servers may not have keyboards. Select `Absent` if there is no keyboard present.

Primary Display

This function detects the type of VGA in use. The settings are VGA/EGA, CGA 40 x 25, CGA 80 x 25, Mono, and Absent. The default setting is `VGA/EGA`.

PS/2 Mouse Support

Setting this parameter to `Enabled` lets you support a PS/2 mouse. Disable the parameter if you are under the UNIX X-window environment.

Above 1 MB Memory Test

This parameter allows your system to check all available memory. Therefore, setting this parameter to `Enabled` slows down the power-on self-test. The default setting is `Disabled`.

AMI BIOS

Memory Test Tick Sound

Enabling this parameter lets you hear the tick sound during the memory test. Disable the parameter to bypass the function.

Hit "Del" Message Display

This option lets you enable or disable the Hit <Del> if you want Setup message from appearing when the system boots. The default setting is `Enabled`.

Extended BIOS RAM Area

This function allows you to relocate the BIOS from ROM to RAM. Relocating to RAM enhances system performance as information access is faster than ROM. The parameter settings are 0:300 and DOS 1K. The default address is `0:300`.

Wait for F1 If Any Error

When enabled, the BIOS waits for the end user to press l before continuing. If disabled, the BIOS continues the boot process without waiting for l to be pressed. The default setting is `Enabled`.

System Boot-up Num Lock

Setting this parameter to `On` enables the numeric function of the numeric keypad. Set this parameter to `Off` to disregard the function. Disabling the numeric function allows you to use the numeric keypad for cursor control. The default setting is `On`.

Floppy Drive Seek at Boot

When enabled, the BIOS detects whether there is a floppy disk drive installed. Disable the parameter to bypass the function. The default setting is `Disabled`.

Floppy Drive Swapping

This parameter allows you to swap floppy drives. For example, if you have two floppy drives (A and B), you can assign the first drive as drive B and the second drive as drive A or vice-versa. Disable the parameter to bypass the function. The default is `Disabled`.

System Boot-up Sequence

The settings are C:, A: and A:, C: to specify the system search sequence. The default setting is `A:,C:`.

Password Checking

The settings are Setup and Always. The Setup setting allows the system to boot and use the password to protect the Setup Utility Configuration settings from being tampered with. The Always setting requires you to enter the password everytime you boot the system. The default setting is `Setup`.

AMI BIOS

Cache Memory

The available selections for this parameter are Internal, Both and Disabled. Select `Internal` if you want to enable the internal cache memory. Select `Both` if you want to use both the internal and external cache memories. Select `Disabled` to disregard the internal and external cache features.

System BIOS Shadow Cacheable

The default setting for this parameter is `Enabled`. This enhances the system performance. Disabling the parameter prevents the system BIOS from being cached.

Adapter ROM Control

C000, 32 K

This address is for shadowing video ROMs. Select `Shadow` to assign the address for shadowing expansion video card with ROM. Select `Cache` to assign them for cache. The default setting is `Cache`.

C800 ~ DC00, 16 K

These addresses are for shadowing other expansion card ROMs. The default setting for these areas is `Disabled`. Set the addresses to `Shadow` if you want to use them for shadowing expansion cards with ROM. Set the addresses to `Cache` to assign them for cache.

The F000 and E000 addresses are exclusively shadowed for BIOS.

IDE Control

IDE Auto-detect

There are cases wherein the HDD parameters that you entered and those detected by the auto-detection function are mismatched. This causes the system not to boot. If this happens, we recommend that you set this parameter to `Disabled` to bypass the auto-detection function. The default setting is `Enabled`.

Block Mode

This function enhances disk performance depending on the hard disk in use. This parameter is normally set to `Auto`. This setting allows data transfer in block (multiple sectors) by increasing the data transfer rate. The other selections for this parameter are 2 S/B, 4 S/B, 8 S/B, 16 S/B, 32 S/B, 64 S/B and Disabled. Disable the parameter if your hard disk does not support this feature.

Onboard IDE Present

The settings for this function are Auto, Enabled and Disabled. Select `Enabled` if you have an onboard PCI IDE. Select `Auto` to automatically detect the presence of PCI IDE. Select `Disabled` to disregard the PCI-IDE function.

PIO Mode

This parameter lets you set the PIO mode that your onboard PCI IDE supports. The selections are from Mode 0 to Mode 4, Auto and Disabled. Set this parameter either by entering the PIO mode manually or selecting `Auto` to automatically detect the supported PIO mode. Disable the parameter to bypass the feature.

32-bit Mode

Enabling this function improves the hard disk performance by increasing the data transfer rate from 16-bit to 32-bit. The data transfer rate is auto-detected by BIOS.

Primary 1st LBA Mode

This enhanced IDE feature allows you to use a hard disk with a capacity higher than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. This parameter affects the primary IDE hard disk drive connected to the IDE 1 connector. The default setting is `Disabled`.

Primary 2nd LBA Mode

This enhanced IDE feature allows you to use a hard disk with a capacity higher than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. This parameter affects the secondary IDE hard disk drive connected to the IDE 1 connector. The default setting is `Disabled`.

Secondary 1st LBA Mode

This enhanced IDE feature allows you to use a hard disk with a capacity higher than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. This parameter affects the primary IDE hard disk drive connected to the IDE 2 connector. The default setting is `Disabled`.

Secondary 2nd LBA Mode

This enhanced IDE feature allows you to use a hard disk with a capacity higher than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. This parameter affects the secondary IDE hard disk drive connected to the IDE 2 connector. The default setting is `Disabled`.

Secondary Drives Present

This parameter lets you install up to two IDE hard disks in the secondary channel. Select `None` if you do not have any.

Chipset Setup Mode

This function allows you to change the Chipset Setup DRAM control parameters according to the end-user type. The available settings are End-user and Engineer. We recommend that you select `End-user`. See the following section for more details on Chipset Features Setup.

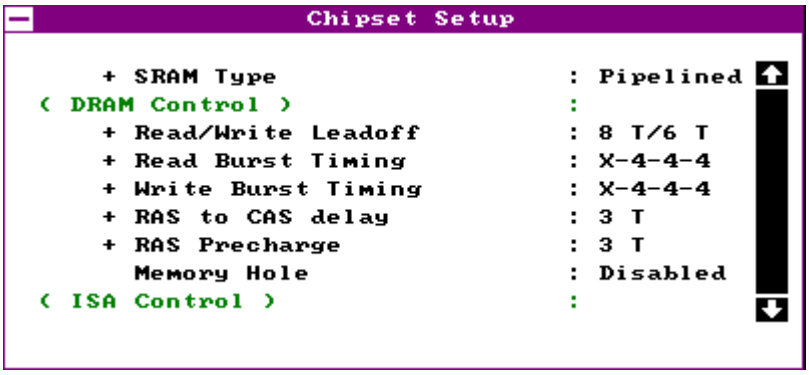
AMI BIOS

Chipset Features Setup

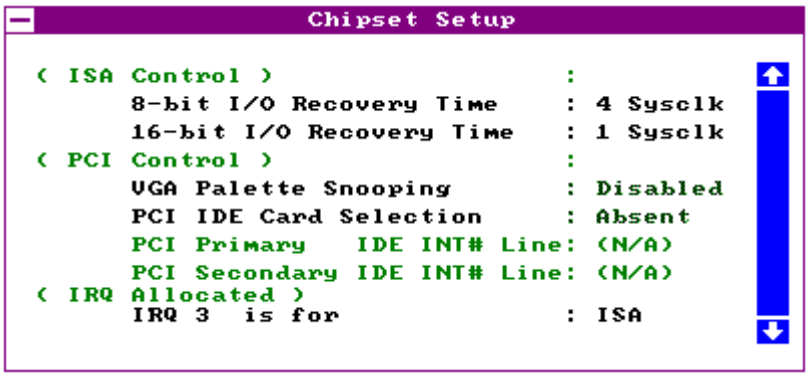
The Chipset Features Setup controls the board's chipset settings. The controls for this menu are the same as for the previous screen.

The Chipset Setup DRAM control parameters differ depending on the Chipset Setup Mode setting in the Advanced CMOS Setup. This screen appears if you select the Chipset option from the Setup menu and if the Chipset Setup Mode parameter setting is `End-user`.

The following screen appears if your Chipset Setup Mode parameter setting is `Engineer`. Take note of the DRAM control parameters.



Both screens do not show all the parameters of the Chipset Setup menu. Use w or y to highlight the desired parameter. Press } to view the rest of the parameters. The following screens appear regardless of the end-user type or the Chipset Setup Mode parameter setting:



AMI BIOS

This manual describes only the End-user setting parameters.

DRAM Control

Speed

This DRAM control parameter lets you set the DRAM speed. The speed settings are 60 ns and 70 ns. The default setting is `70 ns`.

Memory Hole

This option lets you assign the system memory area to avoid memory conflicts. The settings are 512 ~ 640 K, 15 ~ 16 M and Disabled.

ISA Control

8-bit I/O Recovery Time

This parameter allows you to set the response time of the 8-bit I/O connected to your system. The range is from 1~7 SYSCLK. The default setting is `4 SYSCLK`.

16-bit I/O Recovery Time

This parameter allows you to set the response time of the 16-bit I/O connected to your system. The range is from 1~4 SYSCLK. The default setting is `1 SYSCLK`.

PCI Control

VGA Palette Snooping

PCI devices support the “palette snooping” technique that enables the device to control access to their palette registers.

Set this parameter to `Enabled` to activate the palette snooping function in the PCI VGA devices installed in your system.

PCI-IDE Card Selection

This parameter allows you to select the PCI-IDE card that you want to enable. The board supports a maximum of four PCI-IDE cards. The available selections are Slot 1, Slot 2, Slot 3, Slot 4, and Absent. Select `Absent` if you do not have a PCI card installed.

PCI Primary IDE INT# Line

This parameter lets you assign an INT for the IDE device connected to your primary IDE connector. The settings are INT A, INT B, INT C, INT D, Absent and Not Used. If you do not have a PCI-IDE card installed in your system and your PCI-IDE Card Selection parameter setting is `Absent`, this parameter becomes non-configurable.

PCI Secondary IDE INT# Line

This parameter lets you assign an INT for the IDE device connected to your secondary IDE connector. The settings are INT A, INT B, INT C, INT D, Absent and Not Used. If you do not have a PCI-IDE card installed in your system and your PCI-IDE Card Selection parameter setting is `Absent`, this parameter becomes non-configurable.

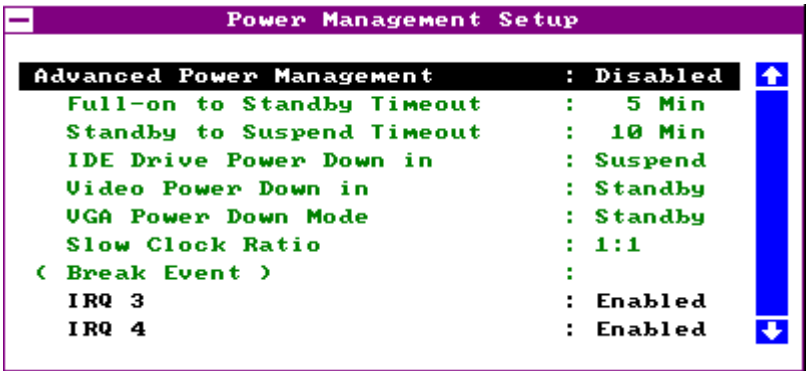
IRQ Allocated

IRQ 3, 4, 5, 7, 9, 10, 11, 14, 15 is for...

These lines allow you to assign the available IRQs to either ISA or PCI/PnP devices.

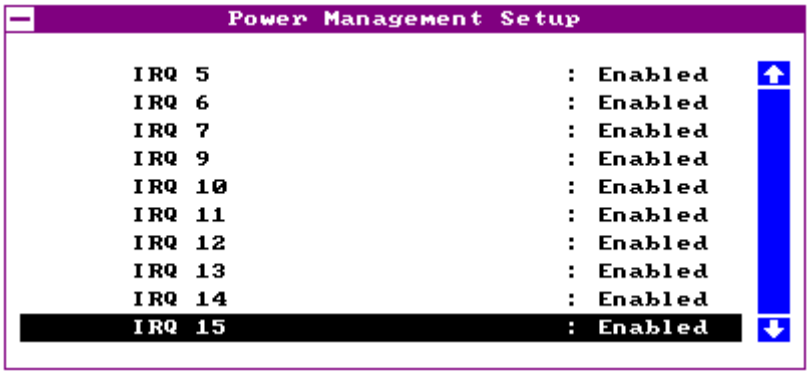
Power Management Setup

To take advantage of the power management features, select `Power Management` from the Setup menu. To select, highlight `Power Mgmt` and press e or double-click on the Power Management icon. The following screen appears:



The screen above does not show all the parameters of the Power Management Setup menu. Use w or y to highlight the desired parameter. Press } to view the remaining parameters. The following screens appear:

AMI BIOS



Advanced Power Management

Set this parameter to `Enabled` to take advantage of the power-saving feature. Disable the parameter to bypass the feature.

Full-on to Standby Timeout

This function lets you determine when to put the system into standby mode. In standby mode, the CPU clock slows down and the VGA suspends the video signal. Any events detected returns the system to full power. The settings range from 1~255 Min. and Disabled.

Standby to Suspend Timeout

This function lets you specify when to put the system into suspend mode. In suspend mode. the CPU clock stops, the IDE hard disk spins down and the VGA suspends video signal. This mode conserves the most power. Any events detected returns the system to full power. The settings range from 1~255 Min. and Disabled.

IDE Drive Power Down in

This option allows you to specify the mode when to "spin down" your IDE hard disk. The disk returns to full speed once the system resumes to normal mode. The settings are Standby, Suspend and Disabled.

Video Power Down in

This option allows you to set the mode when to power down your video monitor. The video monitor returns to full power once the system returns to normal mode. The settings are Standby, Suspend and Disabled.

VGA Power Down Mode

This option lets you choose the VGA power down mode. The settings are Standby, Suspend and Off.

Slow Clock Ratio

When the system enters the standby mode, the CPU clock starts to slow down. This parameter lets you set the “slow-down” clock ratio. The settings are 1:2, 1:4, 1:8, 1:16, 1:32, 1:64, and 1:128.

Break Event (IRQ 3~7, 9~15)

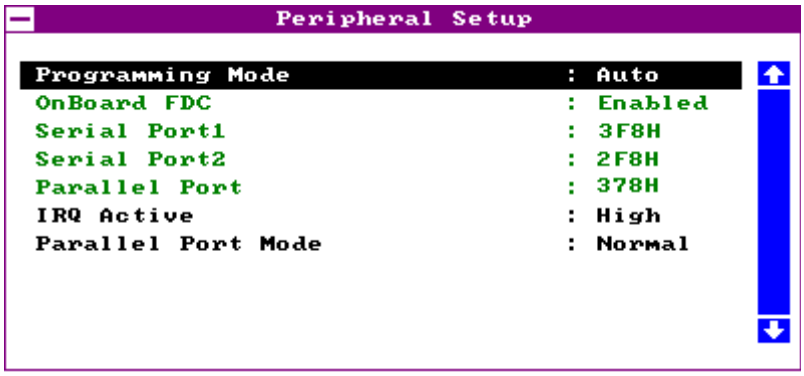
Enabling these parameters allows your system to monitor the IRQ activities. Any activity detected resets the power-management timers and returns the system to normal mode.

You must enable at least one IRQ activity. Otherwise, the system stays in suspend mode.

Under Windows 95, do not disable the parameter IRQ 12. Otherwise, the system disregards any mouse or keyboard activity and stays in power-saving mode.

Peripheral Setup

This screen appears if you select `Peripherals` or double-click on the Peripheral Setup icon from the Setup menu. The Peripheral Setup screen allows you to set up your system peripherals.



Programming Mode

The settings for this option are Auto and Manual. The Manual setting allows you to set up the screen items manually. The Auto setting sets up all the items automatically except for the Parallel Port Mode parameter.

Onboard FDC

Enabling this function allows you to use the onboard floppy disk controller (FDC). The default setting is `Enabled`.

Serial Port 1

This parameter allows you to set the base address of serial port 1. The available settings are 3F8H, 2F8H, 3E8H, 2E8H and Disabled.

Serial Port 2

This parameter allows you to set the base address of serial port 2. The available settings are 3F8H, 2F8H, 3E8H, 2E8H and Disabled.

Parallel Port

This parameter allows you to set the base address of the parallel port. The available settings are 3BCH, 378H, 278H and Disabled.

IRQ Active

This option specifies if the parallel and serial port IRQs are active high or active low. The settings are High and Low.

Parallel Port Mode

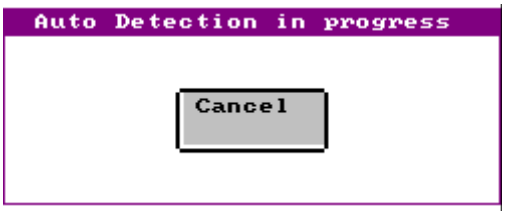
This option lets you set the parallel port mode. The settings are Normal or Extended.

AMI BIOS

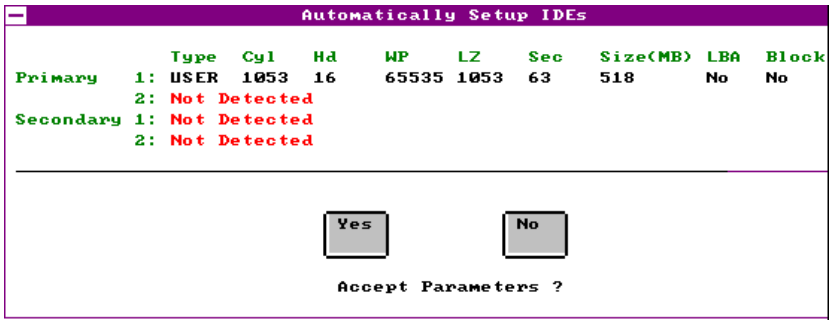
Utility Setup

IDE Setup

This function allows your system to automatically configure your IDE hard disk(s). This screen appears if you select `IDE Setup`.



After a few seconds, the screen below appears showing your disk(s) parameters. Select `Yes` to accept the values.



Color Set

This pop-up window appears if you select `Color Set` from the Utility Setup menu.

Color Set lets you specify the color of your windows background. The selections are LCD, Army, Pastel, and Sky.

Default Setup

Select this option to automatically set your system configuration parameters. To select, highlight `Default` and press e.

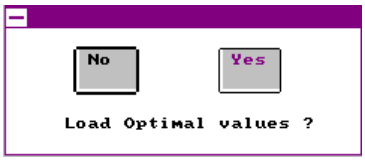
Original

This option loads the values that you saved before shutting off the system. The following prompt appears if you choose `Original` from the Default Setup menu. Select `Yes` to load the original values.

Optimal

Choose this option and the BIOS configures the system using the best-case values to optimize system performance. However, these values may not be applicable to your system. If your system does not boot after choosing this setting, reconfigure it using the Fail-safe settings. Refer to the following section.

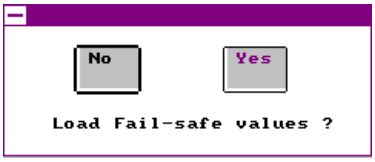
The screen below appears if you choose `Optimal` from the Default Setup menu. Select `Yes` to load the optimum values.



Fail-safe

Choose this option and the BIOS automatically configures the system using the most stable settings. These settings are not necessarily the best settings for system performance, but they are safe and stable enough to guarantee that your system will boot. This is useful if you are having problems with your current system configuration and need to determine the cause.

A prompt appears if you choose `Fail-safe` from the Default Setup menu. Select `Yes` to load the fail-safe values.

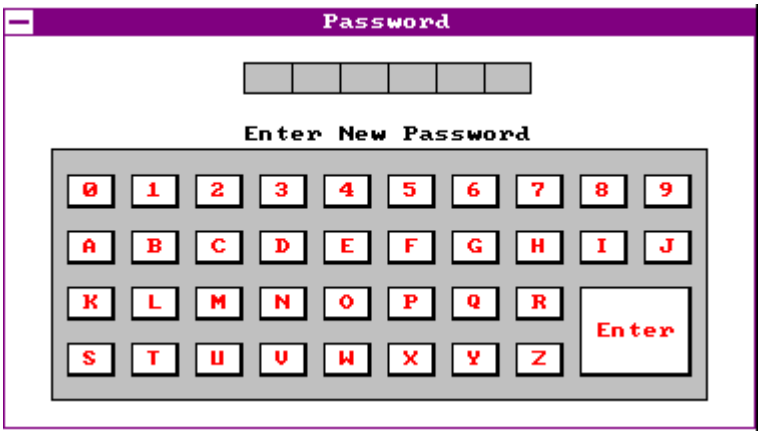


Security Setup

Password

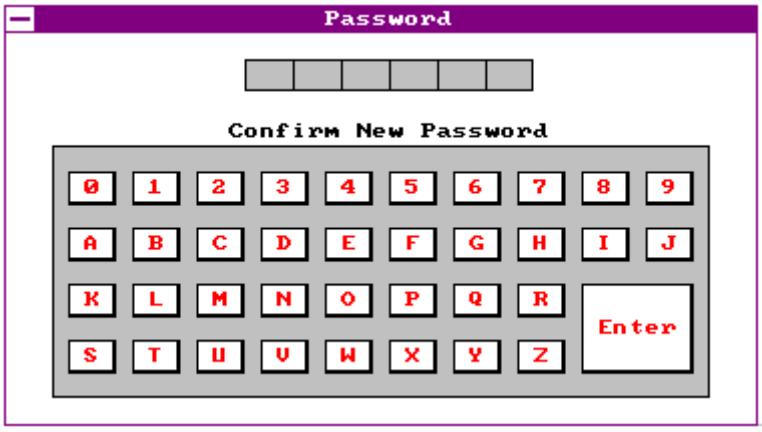
The system password prevents unauthorized use of your computer. If you enabled the password feature, it is impossible to boot the computer without entering the password.

To set a password, highlight `Password` or simply double-click the Password icon. The following screen appears:



Your password can consist of up to six characters. The password does not appear on the screen. WinBIOS prompts you to retype the password. The following screen appears.

AMI BIOS



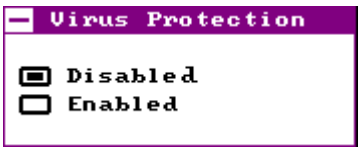
If you forget your password, you must clear the CMOS RAM and reconfigure the system.

To disable the password, press e when prompted for your password. Press e again when prompted to retype the password.

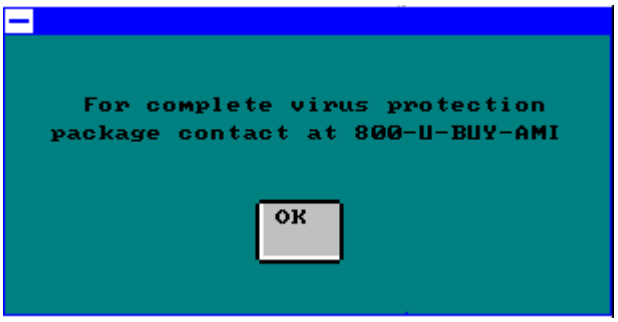
Anti-virus

Set this parameter to `Enabled` to protect the boot sector and partition table of your hard disk from virus intrusion. Set it to `Disabled` to bypass the feature.

A prompt appears when you select `Anti-virus` from the Security Setup menu:



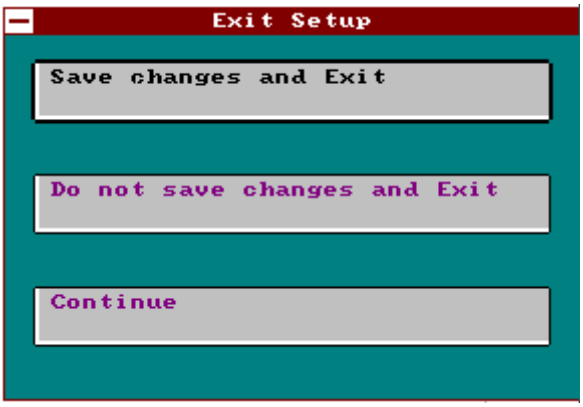
Select `Enabled` and the screen below appears:



AMI BIOS

Exit Setup

To exit Setup, you can either double-click on the Control menu box or simply press ^. A dialog box appears on the screen.



If you select `Save Changes and Exit`, BIOS automatically saves all CMOS values before leaving Setup. Select `Do Not Save Changes and Exit` to exit Setup without saving the CMOS values. Select `Continue` to return to Setup if you want to reconfigure your system.

Chapter

VGA 4

The LP5 comes with an onboard S3 Trio64 high-performance graphics accelerator that greatly enhances display capabilities. It has the following features:

- Support for PCI bus
- Supports GUI (Graphical User Interface) accelerations such as bit-block transfer, line-drawing, rectangle fill, and windows clipping to improve performance in a graphics environment
- Screen refresh rate up to 75 Hz
- 1280 x 1024, 256 colors (non-interlaced) maximum resolution
- Resolutions/colors in graphics mode
  - 1-MB DRAM

    640 x 480 non-interlaced, 64 K colors

    800 x 600 non-interlaced, 64 K colors

    1024 x 768 non-interlaced, 256 colors

    1280 x 1024 non-interlaced, 16 colors
  - 2-MB DRAM

    640 x 480 non-interlaced, 16.7 million colors (true color)

    800 x 600 non-interlaced, 16.7 million colors (true color)

    1024 x 768 non-interlaced, 64 K colors

    1280 x 1024 non-interlaced, 256 colors

    1600 x 1200 interlaced, 256 colors
- Features 132-column text modes
- Register-level compatibility with IBM VGA and backward
- Hardware cursor support

VGA

- Display memory upgradable to 2 MB

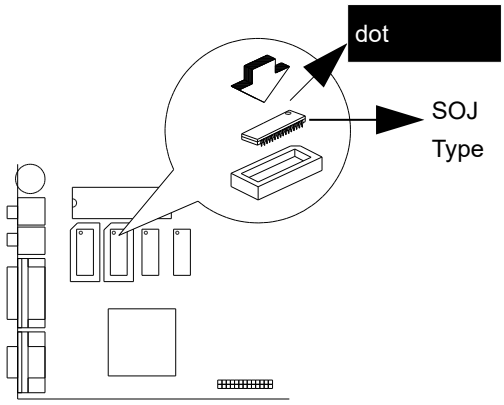
Upgrading Video Memory

You can upgrade the video memory by installing additional memory chips. The added memory allows you to use more colors and display graphics at higher resolutions.

The board comes with 1-MB video display memory. You can upgrade this to 2 MB by installing two 256 Kb x 16 DRAMs with an access speed of 70 nanoseconds or faster. See the section *Board Layout* for the location of the second 1-MB DRAMs.

To upgrade the video memory, follow these steps:

1. Before you upgrade the video memory, check your DRAM type. Make sure that your upgrade DRAMs and the onboard DRAMs are exactly of the same type.
2. Align the dot on the DRAM with the notch on the empty socket.
3. Insert the DRAM into the socket. Make sure the chip orientation is correct. Be careful not to bend any pins.



VGA

The board automatically detects the memory size and tests the memory when you power-on. Check the memory chip installation if you receive an error message.

Drivers and Utilities

Getting Started

See to it that you have the following before you install the drivers:

- DOS 5.0, 6.0, 6.2 (or higher version) or OS/2 2.0, 2.1 (or higher version)
- VGA analog monitor

We recommend that you create backup copies of the original driver diskettes. Store the originals and work from the backups. If the copy gets damaged, use the original to create a new copy. Label the working diskettes properly.

Use the DISKCOPY command to create backup diskettes. Refer to your MS-DOS manual for instructions.

Supported Applications

The board comes with a set of display drivers for various applications. The software drivers for the following applications are contained in the driver diskettes.

- Windows v3.x
- Autodesk ADI 4.2 Protected mode

VGA

  - AutoCAD 11/12
  - 3D Studio 1.0/2.0
  - AutoShade 2.1
- MicroStation PC
  - Protected Mode v4.0
  - Protected Mode v5.0
- OS/2 2.x, 3.0
- Windows NT 3.5
- WESU (Power-Saving Utility)

Refer to the README.TXT file contained in each driver diskette for detailed installation instructions.

After installing the Windows drivers, a Galileo utility icon appears in the Windows control panel. Click-on this icon if you want to use the utility. The Galileo utility allows you to change the resolution and the refresh rates.

Display Modes

Standard Display Modes

The table below lists the standard display modes supported by the S3 video BIOS.

Mode (Hex)	Display Mode	Screen Resolution (Chars)	Colors	Buffer Start	Sweep /Refresh Rate (KHz/Hz)	Dot Clock (MHz)
00	Text	40 x 25	b/w	B8000	31.5/70	25.175
00+	Text	40 x 25	b/w	B8000	31.5/70	28.322
01	Text	40 x 25	16	B8000	31.5/70	25.175
01+	Text	40 x 25	16	B8000	31.5/70	28.322
02	Text	80 x 25	b/w	B8000	31.5/70	25.175
02	Text	80 x 25	b/w	B8000	31.5/70	25.175
02+	Text	80 x 25	b/w	B8000	31.5/70	28.322
03	Text	80 x 25	16	B8000	31.5/70	25.175
03+	Text	80 x 25	16	B8000	31.5/70	28.322
04	Graph	320 x 200	4	B8000	31.5/70	25.175
05	Graph	320 x 200	4	B8000	31.5/70	25.175
06	Graph	640 x 200	2	B8000	31.5/70	25.175
07	Text	80 x 25	Mono	B0000	31.5/70	28.322
0D	Graph	320 x 200	16	A0000	31.5/70	25.175
0E	Graph	640 x 400	16	A0000	31.5/70	25.175
0F	Graph	640 x 350	Mono	A0000	31.5/70	25.175
10	Graph	640 x 350	16	A0000	31.5/70	25.175
11	Graph	640 x 480	2	A0000	31.5/60	25.175
12	Graph	640 x 480	16	A0000	31.5/60	25.175
13	Graph	320 x 200	256	A0000	31.5/70	25.175

"+" Requires more than 1-MB memory

VGA

Extended Video Modes

The following table lists the extended display modes and the corresponding resolutions available for each mode.

Mode No.	Screen Resolution (Chars)	Colors	Refresh Rate (Hz)
10A	132 x 43	16	70
109	132 x 25	16	70
101	640 x 480	256	60
101	640 x 480	256	72
101	640 x 480	256	75
103	800 x 600	256	56
103	800 x 600	256	60
103	800 x 600	256	72
103	800 x 600	256	75
105	1024 x 768	256	43 (I)
105	1024 x 768	256	60
105	1024 x 768	256	70
105	1024 x 768	256	75
106	1280 x 1024	16	45 (I)
+107	1280 x 1024	256	45 (I)
+107	1280 x 1024	256	60
+107	1280 x 1024	256	72
+107	1280 x 1024	256	75
110	640 x 480	32768	60
110	640 x 480	32768	72
110	640 x 480	32768	75
111	640 x 480	16	60
111	640 x 480	16	72
111	640 x 480	16	75
+112	640 x 480	16.7 M	60
+112	640 x 480	16.7 M	72
+112	640 x 480	16.7 M	75
113	800 x 600	32768	60
113	800 x 600	32768	72
113	800 x 600	32768	75
114	800 x 600	65536	60
114	800 x 600	65536	72
114	800 x 600	65536	75

Extended Video Modes (continued)

Mode No.	Screen Resolution (Chars)	Colors	Refresh Rate (Hz)
+115	800 x 600	16.7 M	60
+115	800 x 600	16.7 M	72
+115	800 x 600	16.7 M	75
+116	1024 x 768	32768	43 (I)
+116	1024 x 768	32768	60
+116	1024 x 768	32768	70
+116	1024 x 768	32768	75
+117	1024 x 768	65536	43 (I)
+117	1024 x 768	65536	60
+117	1024 x 768	65536	70
+117	1024 x 768	65536	75
+120	1600 x 1200	256	48.5 (I)
201	640 x 480	256	60
201	640 x 480	256	72
201	640 x 480	256	75
203	800 x 600	256	56
203	800 x 600	256	60
203	800 x 600	256	72
203	800 x 600	256	75
205	1024 x 768	256	43 (I)
205	1024 x 768	256	60
205	1024 x 768	256	70
205	1024 x 768	256	75
207	1152 x 864	256	60
208	1280 x 1024	16	43 (I)
208	1280 x 1024	16	60
208	1280 x 1024	16	72
208	1280 x 1024	16	75

"+" Requires more than 1-MB memory

Extended VGA text modes up to 132 columns by 43 rows are possible as well.

VGA

Chapter

Audio Chip 5

The LP5 system board comes with the Windows and DOS application package for the onboard Creative CT2504 chip. This chapter tells how to use these applications.

Driver Installation

To install the drivers, simply insert the Audio Installation Disk into drive A and type:

```
A:\INSTALL
```

Follow the screen instructions to complete the installation.

Windows Applications

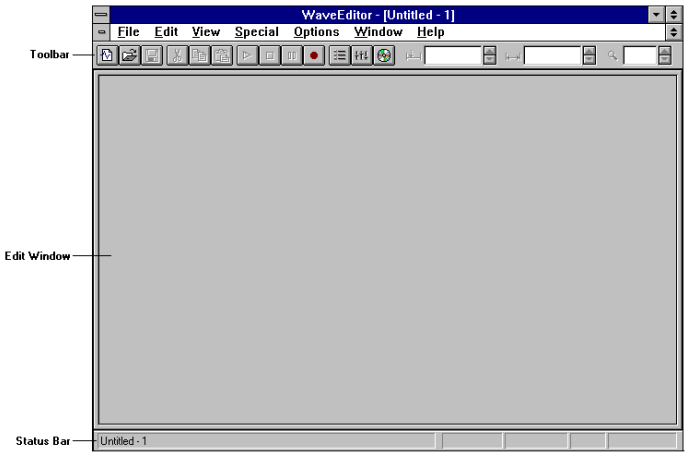
WaveEditor

WaveEditor allows you to record, play, edit and enhance 8-bit (tape quality) and 16-bit (CD quality) wave data in the Windows environment.

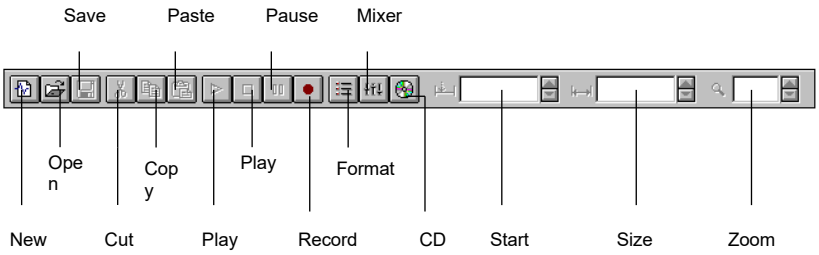
Starting WaveEditor

To start WaveEditor, simply double-click on the WaveEditor icon. The WaveEditor window appears as follows.

Audio Chip



Toolbar Contains the buttons and control boxes for file and wave operations.



Creates a new window without any data.

Loads an existing wave file.

Saves changes made to a wave file.

Cuts the selected data of a wave file.

Copies the selected data of a wave file.

Pastes cut or copied data onto a wave file.

Plays the wave file that is currently active in the WaveEditor.

Stops the playback of a wave file.

Pauses/Resumes the playback of a wave file.

Records a wave file.

Sets the default recording format.

Activates the mixer.

Activates the CD player. (This button appears only if you have a CD-ROM drive installed.)

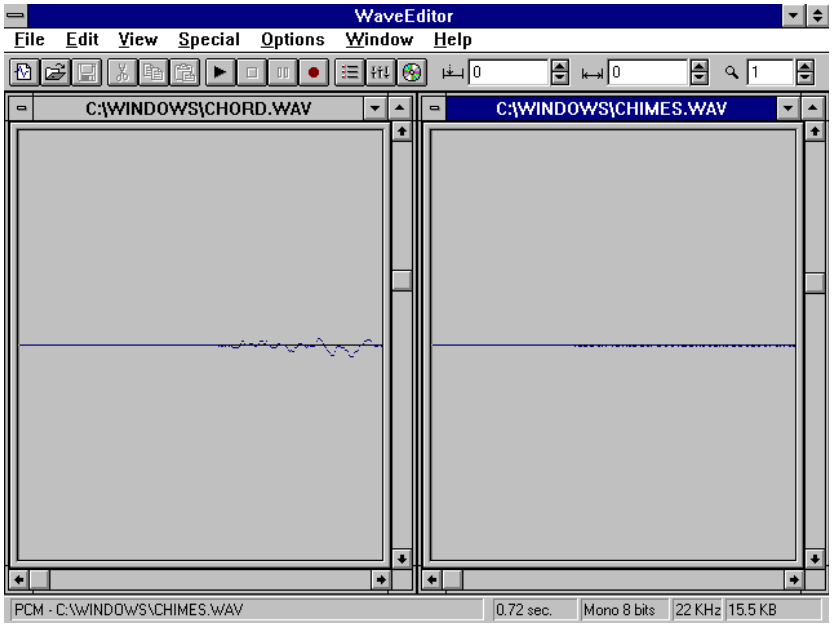
Displays the starting position of the wave data selection. To specify the position, enter the numerical value in the text box or use the scrolls to select the starting position.

Displays the size of the wave data selection. To adjust the size, enter the desired size in the text box or use the scroll arrows.

Displays the zoom ratio of the wave file on display. To adjust the ratio, simply enter the desired ratio in the text box or use the scroll arrows. The smaller the value, the larger the magnification.

Audio Chip

Edit Window Refers to the area where the content of a wave file is displayed. You can open several edit windows at the same time. This allows you to perform editing functions quickly and easily.



Status Bar Displays information related to the wave file in the active edit window and each menu command.

WAVEEDITOR MENUS

WaveEditor has seven menus. It also has a context-sensitive menu that you can activate easily with your mouse.

File

The File menu contains the following commands:

New	Creates a new window without any data.
Open	Loads an existing wave file.
Close	Closes an open wave file.
Close All	Closes all open wave files.
Save	Save changes made to the wave file.
Save As	Saves the wave file with a new name.
Save All	Saves all open wave files.
Exit	Quits WaveEditor.

WaveEditor keeps a record of the last four wave files that you have opened by displaying them on the File menu after the Exit command. To open any of the files, select the file with the left mouse button.

Edit

The Edit menu contains the following commands:

Undo	Restores the wave file to the state last saved.
Cut	Copies and then removes the selected portion of the wave data.
Copy	Copies the selected portion of the data.

Paste Pastes cut or copied wave data into the Edit window.

Paste Mix Mixes cut or copied wave data with the one in the Edit window.

Delete Deletes a selected portion of the data. Unlike the Cut command, the data is not copied first.

Crop to Selection Deletes the entire data except the portion selected.

Select All Selects the entire wave file in the Edit window. You can also do this by double-clicking the mouse anywhere within the Edit window.

View

The View menu allows you to customize the WaveEditor workspace:

Toolbar Toggles the Toolbar on or off.

Status Bar Toggles the Status bar on or off.

Fit Wave In Window Scales (adjusts the zoom ratio) the wave display to fit the size of the Edit window.

Actual Size Resets the zoom ratio of the wave display in the Edit window to its actual size.

Cursor Position Displays the wave file at the starting point of the wave selection.

Cursor End Displays the wave file at the ending position of the wave selection.

Zoom Zooms into the portion of the wave file.

Special Menu

The Special menu allows you to add special effects to the wave files.

Reverse	Reverses the playback of the entire or selected portion of the wave file.
Add Echo	Adds echo effect to the entire or selected portion of the wave file.
Rap!	Repeats the selected portion of the wave file.
Insert Silence	Inserts silence into the selected wave file portion.
Force to Silence	Silences the selected wave file portion.
Fade In	Fades into the entire or selected wave file portion.
Fade Out	Fades out the entire or selected wave file portion.
Amplify Volume	Changes the volume level of the entire or selected wave file portion.

For stereo files, options for editing each channel are available.

Options Menu

The Options menu lets you change the WaveEditor's default settings.

Record Settings	Sets the default record settings.
Mixer Settings	Activates the mixer.
Display in Bytes	Displays the wave selection information in bytes.
Display in Samples	Displays the wave selection information in milliseconds.
Always on Top	Toggles WaveEditor as the topmost window.

Audio Chip

Window Menu

The Window menu allows you to organize the Edit windows when several wave files are open. Refer to your Microsoft Windows manual for more information on Windows menu commands.

Help Menu

The commands on the Help menu are:

Contents Displays the WaveEditor's menu contents.

Search Searches the Help menu based on your selected topic.

System Information Displays the information about Windows and your system such as CPU and available memory.

About WaveEditor Opens a window displaying copyright information.

Context-sensitive Menu

The Context-sensitive menu appears when you click the right mouse button in the Edit window. It contains the following commands:

Play Plays the entire or selected portion of the wave file in the Edit window.

Record Records a wave file. If the current active window in the Edit window is an open file, the recorded file replaces the contents in the open file.

Stop Stops the playback of a wave file.

Mixer Settings Activates the mixer.

Fit Wave in Window Scales the wave display to fit the size of the Edit window.

Cursor Position	Displays the wave file at the starting position of the wave selection.
Zoom	Zoom into the portion of the selected wave file.
New	Creates a new window without any data.
Open	Loads an existing wave file.
Save	Saves changes made to the wave file.

Working with WaveEditor

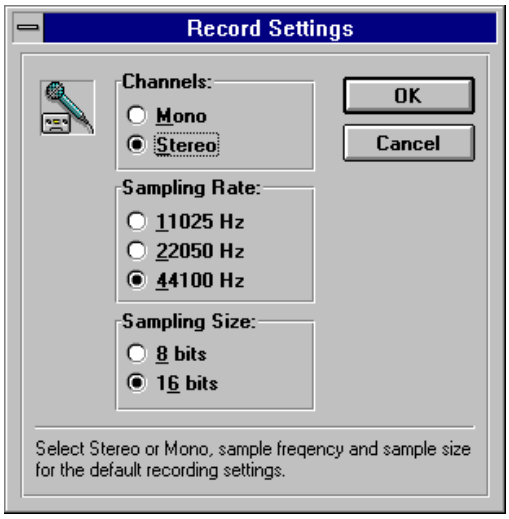
SPECIFYING WAVE FORMATS

Before recording a wave file, make sure that the format of the file is specified correctly. Wave format refers to the sound channel and sampling rate and file size.

To specify the wave format:

1. Select `Record Setting` from the Options menu. See the following figure.

Audio Chip



2. Select the format of the wave file.
   - Select `Mono` for single-channel sound and `Stereo` for dual-channel sound.
   - Select `11025 Hz` for voice-, `22050 Hz` for cassette- and `44100 Hz` for CD-quality recording.
   - Select `8 bits` for cassette and `16 bits` for CD-quality sound.
3. Select `OK`.

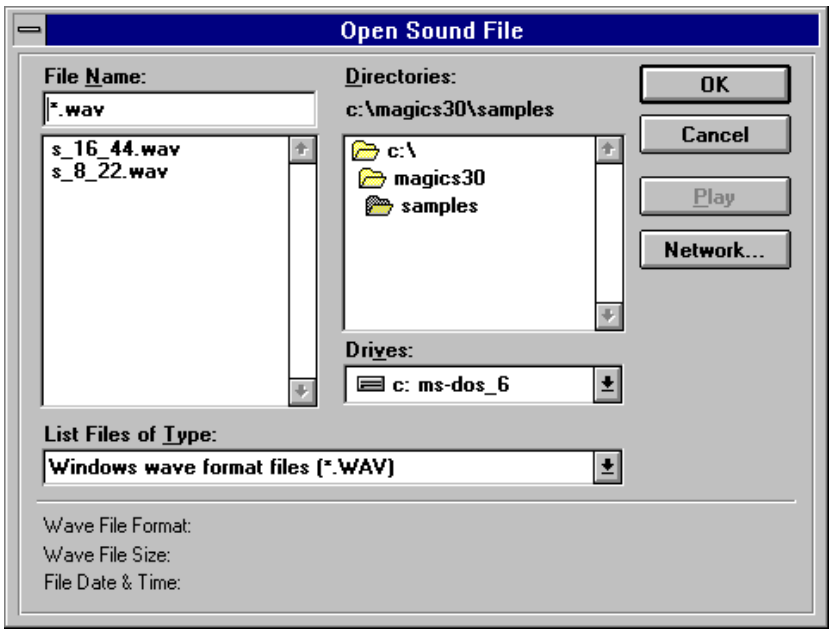
A wave file with better sound quality requires greater space because of its high sampling rate. Therefore, the amount of storage space required for a file depends on the quality of a wave file

Opening Wave Files

You can open a wave file using the Open command from the File menu or the drag-and-drop method.

To use the Open command:

1. Select `Open` from the File menu. The Open Sound File dialog box appears.



2. From the File Name list box, select the file you want to open. You may have to specify the directory that contains your .WAV files. Choose `Play` to listen to the selected wave file.

3. Choose `OK`.

If you select a file with raw data (.RAW) or Creative's Voice format (.VOC), a dialog box prompting you to confirm the conversion of the file to .WAV format appears on screen.

To use the drag-and-drop method:

1. Start File Manager and open the directory containing the wave file.
2. Arrange the windows in such a way that the file and the WaveEditor windows fit the screen.
3. Hold the left mouse button as you drag the file into the WaveEditor window.
4. Drop the file by releasing the mouse button. The file opens automatically.

You may open multiple files using the drag-and-drop method by holding the j key and clicking on the files in the File Manager.

Recording Wave Files

To record a new file:

1. Choose `New` on the Toolbar.
2. Choose `Record` on the Toolbar. The New Recording dialog box appears.

3. Make sure that the settings in the dialog box are properly specified.

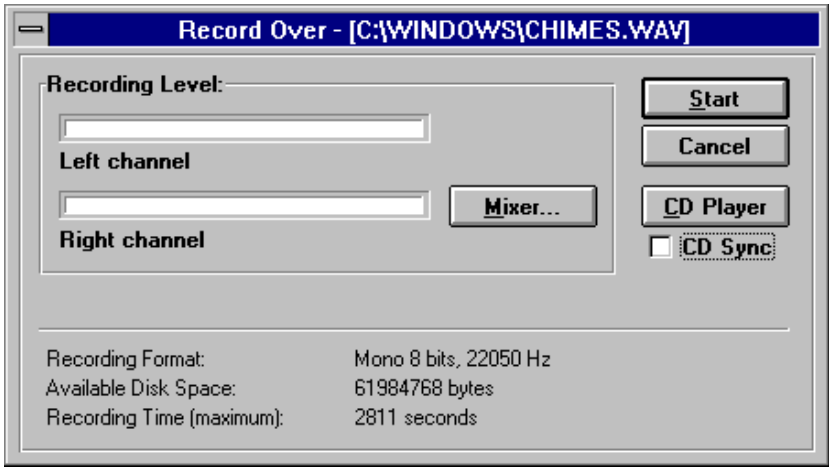
   - Check the record level in the Recording Level group box. Adjust the level using the Mixer button (if necessary).
   - Check the path and the filename created in the Record to File group box. Change the filename and the directory using the Browse button.
   - Check the recording format as shown at the bottom of the dialog box. To change the format, select the Settings button.
   - Check your system's storage space as shown at the bottom of the dialog box. Make sure that you have sufficient storage for your file.

4. Choose `Start`.

If you have a CD-ROM drive installed, select the CD Player button to activate the CD player. Also, select the CD Sync check box to synchronize the start of the recording and playback of audio CDs.

To record over an existing file:

1. Activate the file you want to record over.
2. Choose `Record` on the Toolbar. The Record Over dialog box appears.



3. Choose `Start`.

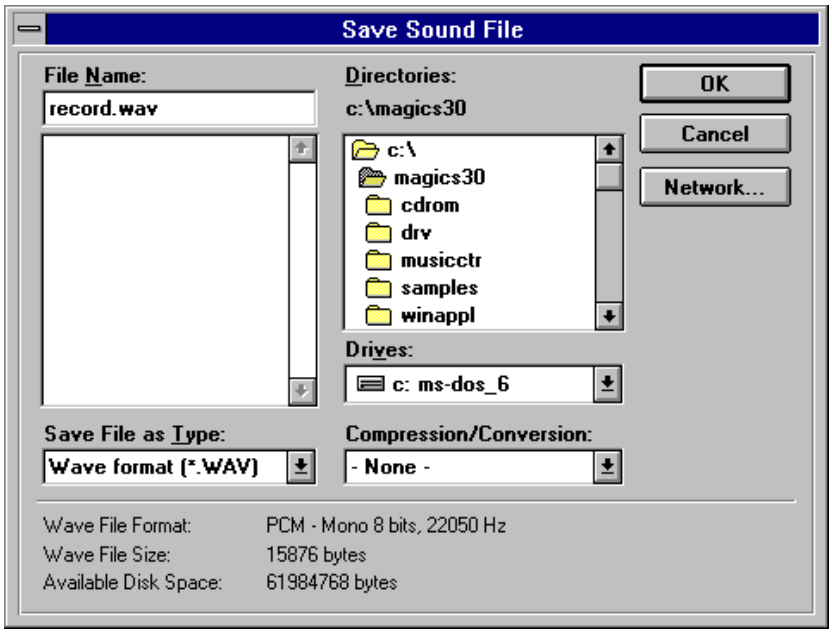
Saving Wave Files

To save a wave file:

1. Choose `Save` on the Toolbar or select `Save` from the File menu.
2. Enter the name of the file and the path, if prompted.
3. Choose `OK`.

To save a wave file with a new name or format:

1. Select `Save As` from the File menu. The Save Sound File dialog box appears.



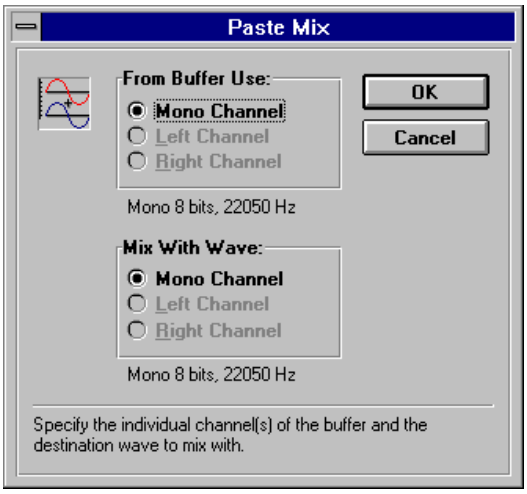
2. Enter a new name for the file and the path, if prompted.

3. Select the desired file format and the compression method from the Save File as Type and Compression/Conversion drop-down list boxes, respectively.
4. Choose `OK`.

Mixing the Data of Different Wave Files

To mix the data contents of two wave files:

1. Activate the first (source) file and select the desired portion of the file for mixing.
2. Select `Copy` from the Edit menu. The data copied is stored in an internal buffer.
3. Activate the second (target) file and select the location where you want to insert the copied data.
4. Select `Paste Mix` from the Edit menu. The Paste Mix dialog box appears.



5. Select the desired channels for copying data from the source file in the From Buffer User group box and for mixing data with the target file in the Mix With Wave group box.
   - Select `Mono Channel` for a mono file.
   - Select `Left Channel`, `Right Channel`, or `Both Channels` for a stereo file.
6. Choose `OK`.

If you did not select a portion of the target file, the data is mixed at the cursor position. If you select a portion of the target file, the copied data in the buffer is mixed with the selected portion.

You cannot mix 8-bit wave data with 16-bit wave data. However, you can convert both files to either 16-bit or 8-bit sampling size before mixing them.

Adding Special Effects

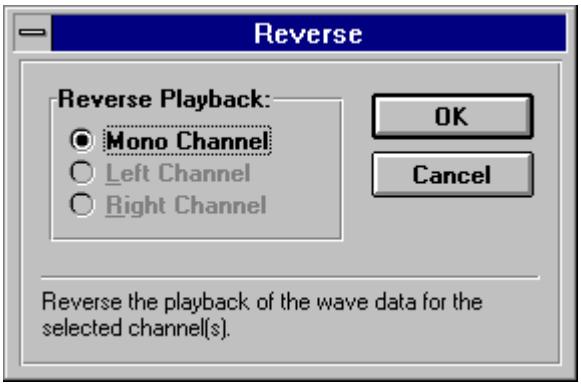
WaveEditor allows you to enhance your wave files with special effects from the Special Menu. These effects are as follows:

REVERSE

This effect reverses the sequence of the data in the wave file such that the sound is played backwards. You must specify the portion of the file that you want to reverse. Otherwise, this effect reverses the entire file.

To reverse a file:

1. Select `Reverse` from the Special menu. The Reverse dialog box appears.



2. Select the desired channels. No options are available for editing a mono file.

   Select `Left Channel`, `Right Channel`, or `Both Channels` for stereo file.

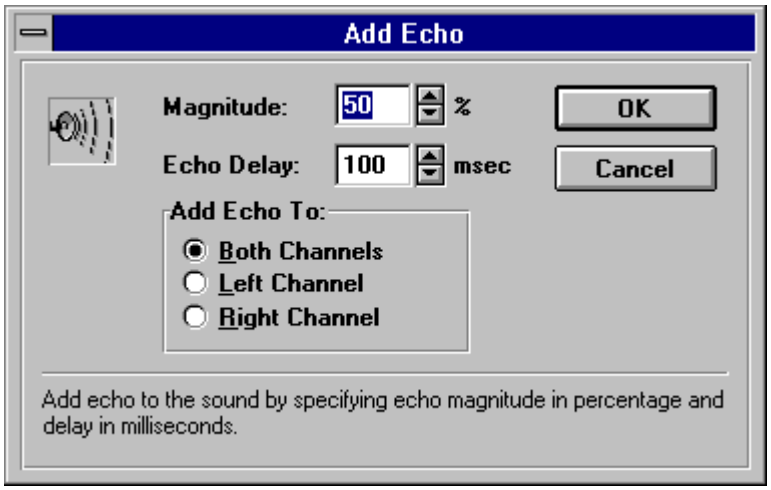
3. Choose `OK`.

ADD ECHO

This effect modifies data in the wave file to give an echo effect.

To add echo to a file:

1. Select `Add Echo` from the Special menu. The Add Echo dialog box appears.



2. Enter the echo magnitude (loudness of the echo) in the Magnitude text box.
3. Enter the echo delay (the time between the actual sound and the echo) in the Echo Delay text box.
4. Select the desired channel for stereo files.
5. Choose `OK`.

RAP!

This feature repeats the selected portion of the wave file. This is useful when you want to create a jerky or stuttering effect for your voice files.

To repeat a selection:

1. Select a portion of a file.
2. Select `Rap!` from the Special menu.

Audio Chip

INSERT SILENCE

This effect inserts silence into a selected portion of a wave file.

To insert silence into a file:

1. Select a portion of the wave file. The length of silence depends on the length of the portion selected.
2. Select `Insert Silence` from the Special menu.

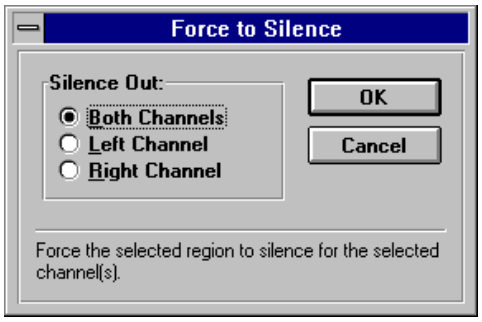
The straight line inserted into the selected portion represents the inserted silence.

FORCE TO SILENCE

This effect mutes the selected portion of a wave file during playback.

To mute a file:

1. Select a portion of the file.
2. Select `Force to Silence` from the Special menu. The Force to Silence dialog box appears.



3. Select the desired channels. No options are available for editing a mono file.

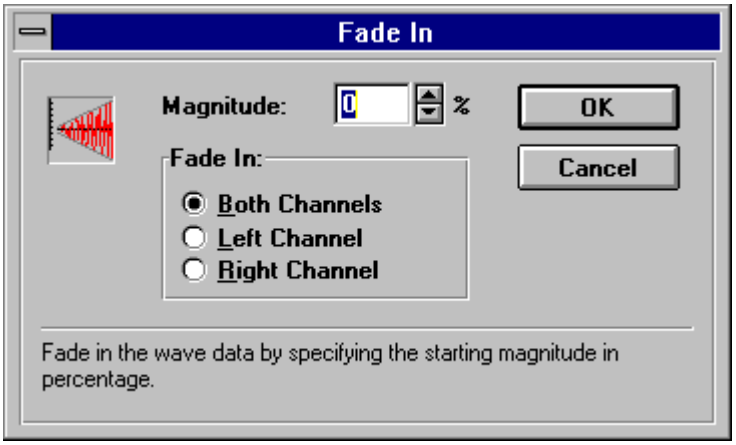
   Select `Left Channel`, `Right Channel`, or `Both Channels` for stereo wave file.

4. Choose `OK`. The selected portion is replaced by a straight line.

FADE IN AND FADE OUT

To use Fade-in or Fade-out:

1. Select `Fade In` from the Special menu. The Fade In dialog box appears.



2. Enter the starting magnitude in the Magnitude text box.
3. Select the desired channels for stereo files.
4. Choose `OK`.

Audio Chip

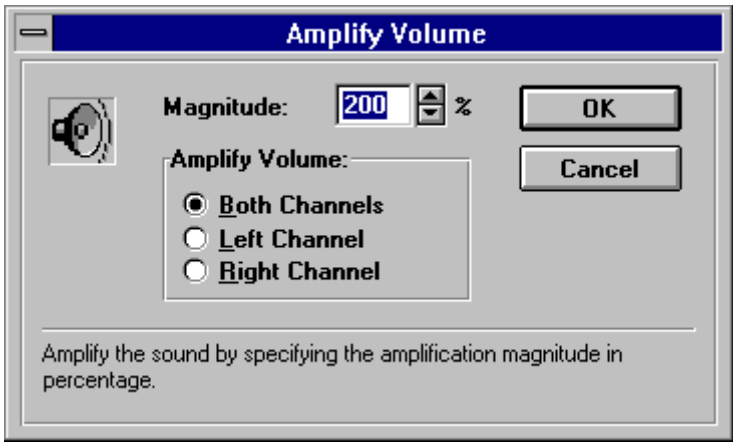
The file is fades in linearly from the starting magnitude (volume) to a 100% magnitude (volume) for Fade In, and from 100% magnitude to the ending magnitude for Fade Out.

AMPLIFY VOLUME

This effect allows you to change the volume of wave files.

To change the volume of a file:

1. Select `Amplify Volume` from the Special menu. The Amplify Volume dialog box appears.



2. Enter the magnitude in the Magnitude text box.
3. Select the desired channels.
4. Choose `OK`.

Customizing the Wave Editor

RECORDING

To customize the record settings:

1. Select `Record Settings` from the Options menu. The Record Settings dialog box appears.
2. Specify the desired settings.
3. Choose `OK`.

MIXER

To adjust the Mixer settings:

1. Choose `Mixer` on the Toolbar. The Mixer window appears.
2. Specify the desired settings.

Using WaveEditor Effectively

To use WaveEditor effectively, you need to know the amount of memory needed to run WaveEditor, how to manage your files and how to work with compressed files.

MEMORY REQUIREMENTS

WaveEditor requires about 1 MB of memory. Memory requirements increase when you playback or record wave files, as sufficient memory is needed for the buffers. We recommend that you run WaveEditor on at least a 386-based system with 4 MB of RAM under Windows 3.1.

Audio Chip

When you open a file for editing, WaveEditor allocates a certain amount of memory for storing the necessary information and does not load the entire file into memory. The file is edited directly from your hard disk. Therefore, you can edit files as large as your hard disk can accommodate.

FILE MANAGEMENT

System Optimizing When you record wave data, WaveEditor stores recorded data directly to the hard disk. High-resolution recording of data, particularly 16-bit data at 44 kHz, takes a longer time to write to your disk if it is not optimized for speed.

To reduce the amount of time your system spends reading and writing data, compact your hard disk using a disk-compaction utility such as DEFRAG and install a hard disk cache such as SMARTDrive.

Number of Open Files WaveEditor does not limit the number of files that you can open. The number of files WaveEditor can open at a time depends on how you configure your operating system. For more information on how to do that, consult your operating system's documentation.

Use of DOS SHARE Utility We recommend that you use the DOS SHARE utility to allow proper file sharing and locking. This prevents accidentally deleting a file while WaveEditor is accessing it. For more information on how to use this utility, consult your DOS documentation.

COMPRESSED WAVE FILES

Opening Compressed Files WaveEditor currently supports five compression formats: Microsoft ADPCM, CCITT A-Law, CCITT μ-Law, IMA/DVI ADPCM, and Creative ADPCM.

When you open a compressed wave file, WaveEditor decompresses the file before displaying it. You must ensure that the file resides on a drive that has sufficient disk space to accommodate the uncompressed data.

The amount of space required depends on the compression format adopted. For CCITT A-Law and μ-Law, the compression ratio is 1:2 (compressed:uncompressed). For ADPCM, the ratio is 1:4. For example, if you are working with a 1 MB ADPCM file, you need to have at least 4 MB of free disk space.

Editing Compressed Files When you open a compressed wave file for editing, WaveEditor automatically compresses the file when you save it. As this can be time consuming for large files, you should save your work as an uncompressed wave (PCM) file first. Once you have finished editing, save the file with the desired compression format.

Audio Chip

Using CD Sync

The CD synch allows you to synchronize the recording and playback of audio CDs. This option is only available if you have a CD-ROM drive installed in your system.

Recording continues even if you have mistakenly placed a CD-ROM disk in your drive. However, the program informs you that there is an error. To stop the recording, select `Stop` on the Toolbar. Insert the correct audio CD and click on `Record` on the Toolbar to record over your file. To disregard the CD Sync option, uncheck it before you proceed with the recording.

Quitting WaveEditor

To quit WaveEditor, simply select `Exit` from the File menu. A dialog box prompts you to save the changes that you have made (e.g., if the changes to the file have not been saved).

QuickCD

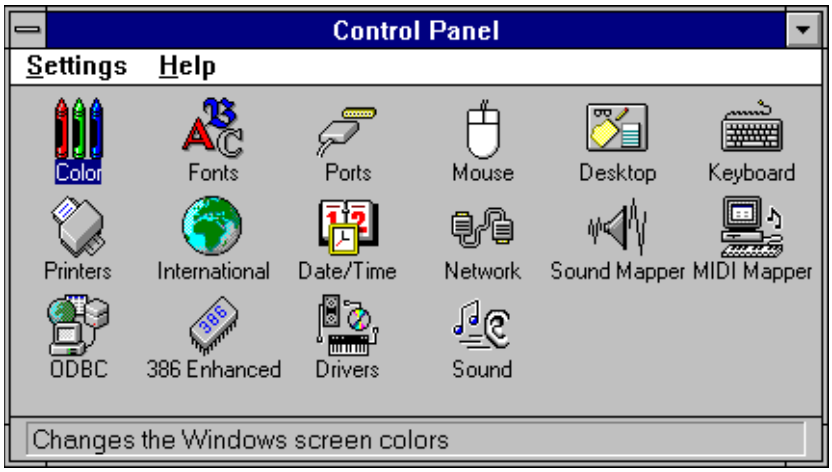
QuickCD allows you to play audio compact discs (CDs) in Windows.

Setting Up QuickCD

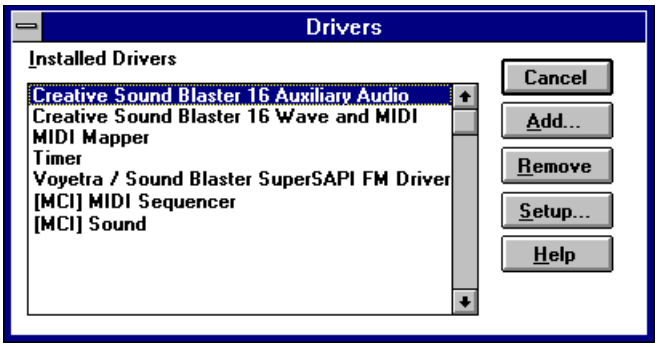
To use the QuickCD, you need to install the MCICDA.DRV driver that comes with your Windows 3.1 package. The MCICDA.DRV is the device driver that allows you to play audio CDs in Windows.

To add the MCICDA.DRV:

1. Double-click on `Control Panel` in the Main group window. The Control Panel group window appears.



2. Double-click on `Drivers` in the Control Panel window. The Drivers dialog box appears.

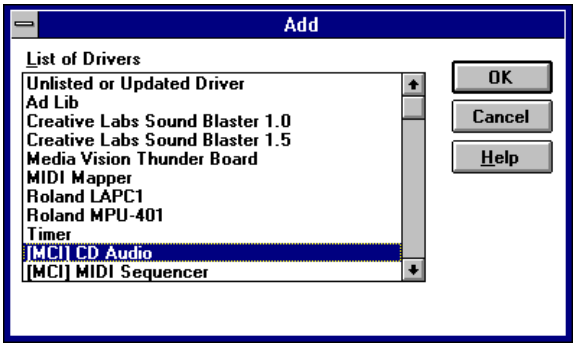


3. Check if the statement [MCI] CD Audio appears in the Installed Drivers list box.

   - If the statement [MCI] CD Audio appears in the Drivers dialog box, choose `Close` to exit the Drivers dialog box. Proceed to run QuickCD.

- If the statement [MCI] CD Audio does not appear in the Drivers dialog box, follow steps 4, 5, 6, and 7 to add this statement.

4. Choose `Add...` from the Drivers dialog box. The Add dialog box appears.

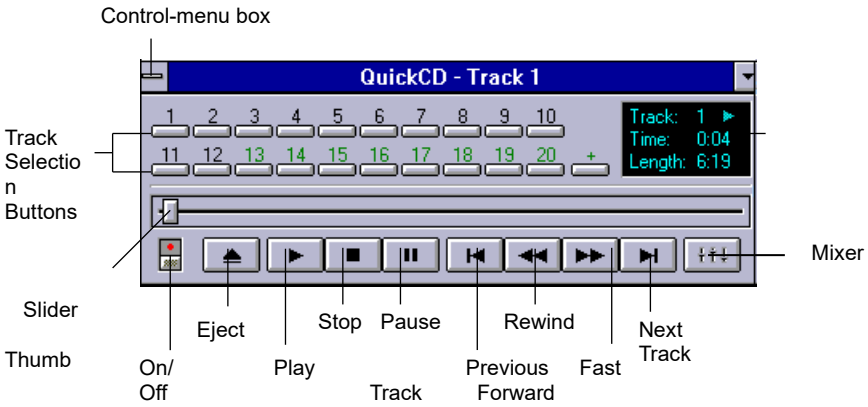


5. Select `[MCI] CD Audio` from the Add dialog box.
6. Choose `OK`.
7. Restart Windows for the changes to take effect.

Starting QuickCD

After you have set up QuickCd, run the program from your Accessories group window.

To start QuickCD, simply double-click on the QuickCD icon. The QuickCD window appears.



The QuickCD Window

The QuickCD window has the following features:

On/Off switch Quits QuickCD.

Eject button Opens or closes the tray. Disregard the function if your drive does not support software eject.

Play button Plays the track shown in the Display box.

Stop button Stops the track.

Pause button Pauses or resumes play.

Previous Track button Plays the previous track.

Rewind button Rewinds the current track by 10 seconds. If the current track is the first track, this feature does not function.

Fast Forward button Forwards the current track by 10 seconds. If the current track is the last track, this feature does not function.

Audio Chip

Next Track button Plays the next track.

Mixer button Starts the mixer.

Slider thumb Shows the progress of the playing track. It also allows you to rewind or forward the current track.

Track Selection buttons Allow you to select the desired track. If there are more than 20 tracks, choose  to display the rest of the tracks.

Display box Displays the current track and duration of the track.

Control-menu box Activates the Control menu.

You may use a mouse or a keyboard to select an option. To select an option with a mouse, simply click on the button of the desired option. To play the selected track, simply click on the Track Selection button. To forward or rewind the current track, drag the slider thumb.

To select an option using a keyboard, press v then e to activate the selected option. To move the slider thumb, use the left or right arrow key. To select the Control-menu box, press a-k.

Using the Control Menu

The Control menu includes commands that enable you to perform various operations such as move, restore, and close the window.

To activate the Control menu:

1. Click on the Control-menu box. The Control menu appears onscreen.

MENU COMMANDS

Restore	Restores QuickCD icon to its control window.
Move	Allows you to move QuickCD around the desktop.
Minimize	Reduces QuickCD to an icon.
Close	Quits QuickCD.
Switch To	Opens the Task List dialog box which allows you to select another application.
Play	Plays the current track.
Stop	Stops the track.
Pause	Pauses or resumes play.
Skip	Selects the next track and plays it.
Always on Top	Displays QuickCD on top of the active window.
Preferences	Allows you to customize QuickCD.
Mixer Settings	Activates the mixer.

Audio Chip

About QuickCD Displays the copyright information about QuickCD.

Help Displays QuickCD Help menu contents.

Customizing QuickCD

To customize QuickCD:

1. Select `Preferences` from the Control menu. The Preferences dialog box appears onscreen.

2. Select the desired options:

   - `Automatically play when CD is inserted`
     Plays an audio CD automatically if it is loaded in the disk tray when you start QuickCD.
   - `Continuous playback`
     Repeats from track 1 after the final track is played.
   - `Minimize on play`
     Minimizes QuickCD to an icon when playing audio CDs.
   - `Stop playback on exit`
     Stops an audio CD when you exit QuickCD.

3. Choose `OK`.

Quitting QuickCD

To quit QuickCD, do any of the following:

- Click on the On/Off switch.
- Select `Close` from the Control menu.
- Press a-o.

Wave'OLE

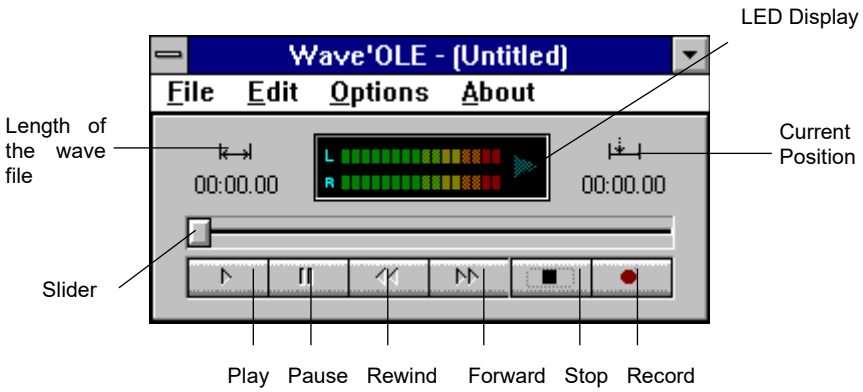
Wave'OLE plays and records wave data. It has play, pause, rewind, forward, stop and record buttons that allow you to control the wave files.

Wave'OLE supports Object Linking and Embedding (OLE) that enables you to insert sound into other applications such as write by linking or embedding them. Refer to the Microsoft Windows manual for more information about object linking and embedding.

Starting Wave'OLE

To start Wave'OLE, simply double-click on the Wave'OLE icon. The Wave'OLE window appears onscreen.

Audio Chip



WAVE'OLE MENUS

The File Menu

The commands on the File menu are:

New	Creates a new wave file.
Open	Opens an existing wave file.
Save	Saves the wave file.
Save As	Saves the wave file with a new name.
Exit	Quits Wave'OLE.

Wave'OLE keeps a record of the last four files that you have opened. These appear at the end of the pull-down list in the File menu. To open one of these files, click the file with the left mouse button.

The Edit Menu

The command on the Edit menu is:

Copy Sound as an Object Copies the sound data and OLE information to the clipboard. You can pass the sound data onto an OLE client as an embedded or linked object.

The Options Menu

The commands on the Options menu are:

Wave Info... Displays information about the sound data such as the sampling rate and size.

Mixer Settings... Runs the Mixer application. See the chapter on Windows mixer for more information.

Recording Settings... Lets you set the sampling size, frequency, and mono or stereo mode for recording.

Always on Top... Toggles Wave'OLE as the topmost window.

The Help Menu

The commands on the Help menu are:

Contents Displays Wave'OLE Help menu's contents.

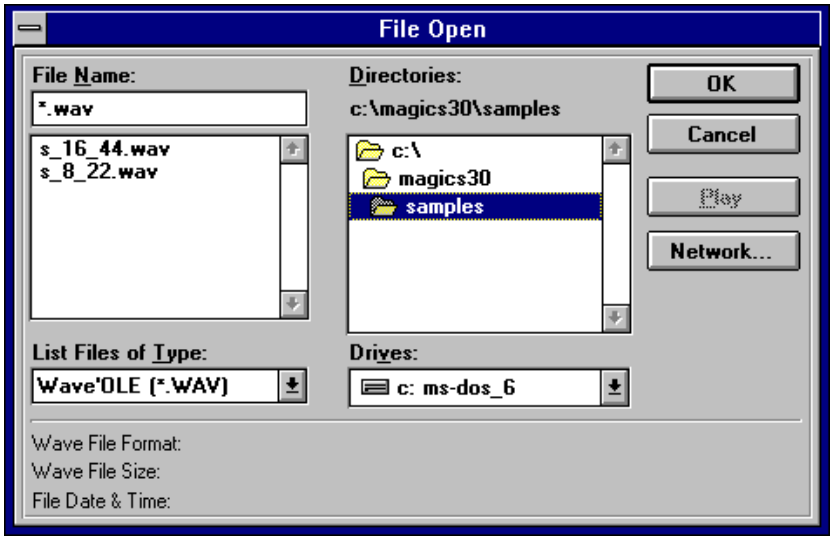
About Wave'OLE Opens a window displaying copyright information.

Audio Chip

Opening a Wave File

To open a wave file:

1. Select `Open` from the File menu. The File Open dialog box appears.



2. Type or select the wave file that you want to open. Choose Play to preview the file before opening it. The dialog box also gives you the wave format, data size and file date information.
3. Choose `OK`.

Playing a Wave File

To play a wave file:

1. Open the wave file.

2. Click on Play.

To stop playing the wave file, select Stop.

You may control the operations in the Wave'OLE windows with either a mouse or a keyboard. To move around the Wave'OLE windows, use the v or the left and right arrow keys, or simply drag the slider thumb with a mouse. To select a button, press k or click on the desired button.

Recording a Wave File

To record a wave file:

1. Select New from the File menu.
2. Choose Record. The Recording dialog box appears.

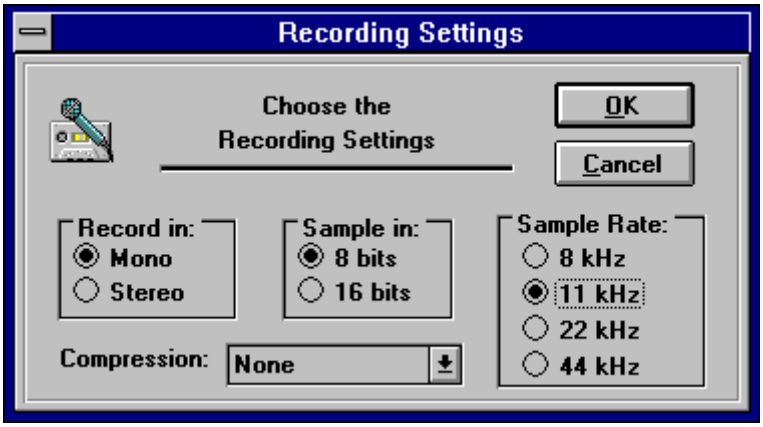
To stop the recording, choose Stop.

Audio Chip

Setting Recording Characteristics

To set recording characteristics:

1. Select `Recording Settings` from the Options menu. The Recording Settings dialog box appears.



2. Select the desired settings.

   - Select `Mono` for a single-sound channel and `Stereo` for dual-sound channels. Mono is suitable if you want to perform voice recording, while stereo is more suitable for music recording.

- If you do not select a compression method, select the 8-bits option for normal recording and 16 bits for high-quality recording.

  If you select a compression method from the Compression drop-down list, the 8-bit and 16-bit options are grayed out.

- Select `8 KHz` or `11 KHz` frequency for voice-quality sampling rate, `22 KHz` for tape-quality sampling rate, and `44 KHz` for CD-quality sampling rate.
- Choose `OK`.

Embedding a Wave File

When you embed a wave file, you load a copy of the wave file in Wave'OLE and transfer it to an application such as Write that supports object linking and embedding (OLE). If you edit the wave file in Wave'OLE, the wave file in Write is not affected because you no longer have any connection to the file in Write.

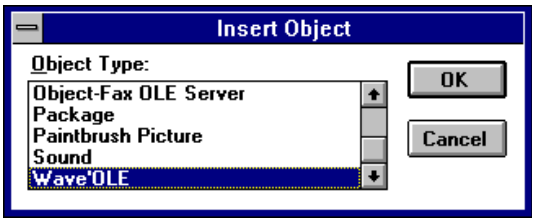
You can embed a wave file using two methods:

- From a document
- From Wave'OLE

To embed a wave file starting from Write:

1. Open the Write document where you want to embed a wave file.
2. Select `Insert Object` from the Edit menu. The Insert Object dialog box appears onscreen.

Audio Chip



3. Select `Wave'OLE`.
4. Choose `OK`. The Wave'OLE application opens.
5. Select `Open` from the File menu to select an existing wave file (or you can do a recording and save it into a new file before you include the file in the document).
6. Choose `OK`.
7. Select `Update Write` from the File menu. This embeds the wave file into the Write document and an icon representing the wave file is placed in Write.
8. Select `Exit and Return to Write` from the File menu. This returns to the Write document.

To embed a wave file starting from Wave'OLE:

1. Open Wave'OLE.
2. Record a new wave file or open an existing wave file that you want to embed.
3. Choose `Copy Sound as an Object` from the Edit menu. This places the wave file into the clipboard.
4. Open the Write document where you want to embed the wave file.

5. Select `Paste Special` from the Edit menu in Write. The icon representing the embedded wave file appears.

Audio Chip

Linking a Wave File

When you link a wave file, you are not making a copy of the wave file. You are only making a reference to the wave file. If you edit the wave file in Wave'OLE, the wave file in an application such as Write reflects those changes.

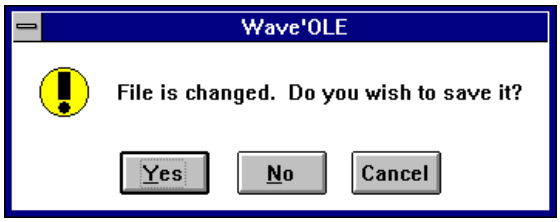
To link a wave file in Write:

1. Open Wave'OLE.
2. Create a new wave file or open an existing file that you want to link.
3. Save the wave file.
4. Choose `Copy sound as an object` from the Edit menu.
5. Open the Write document where you want to link the wave file.
6. Select `Paste Link` from the Edit menu in Write. The icon representing the wave file appears.

Quitting Wave'OLE

To quit Wave'OLE:

1. Select `Exit` from the File menu. The Wave'OLE dialog box appears if you have not yet saved the latest changes.



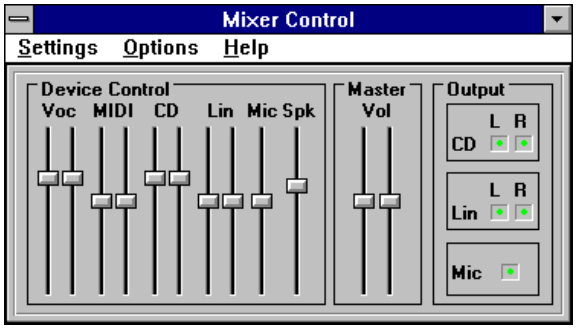
2. Choose `Yes` to save the changes, `No` to quit without saving the changes, or `Cancel` to continue working in Wave'OLE.

Mixer Control

Mixer Control is a Windows-based audio mixer that allows you to combine and manipulate sound from various audio sources. With the mixer, it is possible to control the volume of an audio source while running other Windows applications, select and mix different audio sources during record and playback.

Starting the Mixer

To start the mixer, simply double-click on the Mixer control icon. The Mixer Control window appears onscreen.

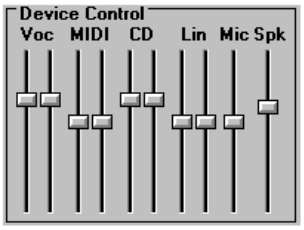


Audio Chip

The Mixer Control Window

DEVICE CONTROL GROUP BOX

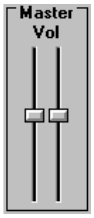
The Device Control group box contains sliders that control the volume of various sources that your audio chip supports.



All of the above sources are in stereo except Microphone and PC Speaker. Stereo sources have two sliders to control the volume from the left and right channels. Mono sources have one slider to control one channel.

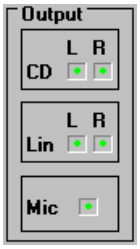
MASTER VOLUME GROUP BOX

The Master Volume group box contains sliders that control the overall volume from your external speakers.



OUTPUT GROUP BOX

The Output group box contains check boxes that allow you to listen to or mute the audio from the CD-audio, line-in, and microphone.



You cannot mute the other mixer sources. For example, if you play audio from a MIDI source, you can hear the audio if the volume is at an audible level.

Menu Bar

The Menu bar consists of three drop-down menus.

SETTING

The Settings menu contains the following commands:

Recording	Displays the Recording Control window.
Exit	Quits the mixer.

Audio Chip

OPTIONS

The Options menu contains the following commands:

Lock L/R Vol. Locks both left and right channels of all stereo sources, so that both channels move at the same time when you drag the slider thumb.

Always on Top Displays the mixer as the top-most window.

Save Setting on Exit Saves all the changes made to the mixer. The new setting becomes the default setting when you run the mixer.

HELP

The Help menu contains the following:

Contents Displays the Mixer Control Help menu contents.

About Mixer Control States the copyright and credit information about the mixer.

You can select the options on mixer with a mouse or a keyboard. To use a mouse, simply click the option if it is in a check box. To adjust the volume, drag the slider thumb or click the top or the bottom of the slider.

To select an option with a keyboard, simply press v. To adjust the volume, press the up or down arrow key. To move through the option backwards, press j-v.

Selecting a Record Source

The mixer allows you to select one or combination of the following audio sources for recording:

- Microphone
- Line-in
- MIDI device
- CD-audio

To select a record source:

1. Select `Recording` from the Setting menu. The Recording dialog box appears onscreen.

2. Click the desired check boxes in the Left Iin and Right In group boxes. These group boxes allow you to record selected sources to the left and right channels.

   The selected audio source is marked with a red dot. To get stereo recording, click the check boxes.

3. To automatically adjust input from the microphone to a level suitable for recording, click the AGC check box. You need to select at least one of the Microphone check boxes before the AGC check box is effective for recording.

Saving the Mixer Settings

To save the settings before you exit, select `Save Setting On Exit` from the Options menu.

Quitting the Mixer

To quit the mixer, do one of the following:

- Select `Exit` from the Settings menu.
- Double-click on the Control-menu box.

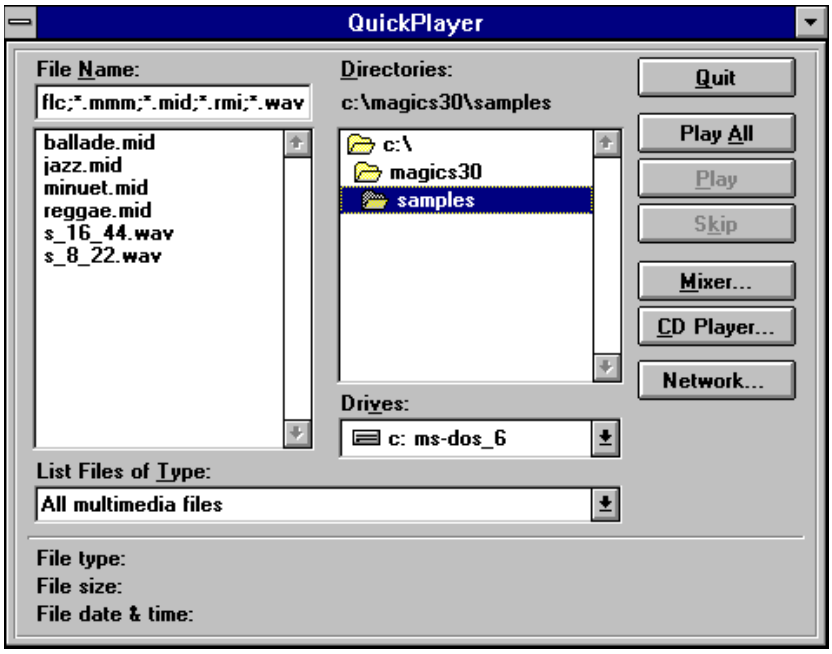
QuickPlayer

QuickPlayer allows you to play a wide range of multimedia files consisting of sound, animation, movie and video files. However, before you play a file, make sure that your appropriate software setup supports the type of file that you want to play.

Within the Quickplayer, you can start the mixer to adjust the volume and tone of multimedia files. If you have installed a CD-ROM drive in your system, you can also start QuickCD to play audio CDs.

Starting QuickPlayer

To start QuickPlayer, simply double-click on the QuickPlayer icon. The Quickplayer window appears on the screen.



Playing Multimedia Files

To play a multimedia file:

1. Drop the Drives list box and select the drive that contains the desired file.
2. Drop the List Files of Type list box and select the type of file to be played.
3. Select the directory path where you stored the file from the Directories list box.

   The available multimedia files for that path appear in the File Name list box.

4. Select a file in the list box. The selected file appears in the File Name text box.
5. Click on `Play`. Alternatively, double-click the file in the File Name list box.
6. Click on `Stop` when you want to stop the file.

You can also play all or a selection of multimedia files in the File Name list box in sequence.

If you want to play a selection of the multimedia files in the File Name list box, replace Step 4 with the following:

- Press and hold b while you select the desired files with the mouse.

When you play a sequence of multimedia files, you can skip a file and go to the next one if you desire. To skip a file in sequence, choose `Skip`.

Playing Audio CDs

If you have a CD-ROM drive, you can play audio CDs using QuickCD.

To start QuickCD, select the CDPlayer button to display the QuickCD window. For more information, refer to the section on QuickCD.

Adjusting the Volume and Tone

You can adjust the volume and tone with the Windows mixer. To start the mixer, choose the Mixer button to display the Mixer Control window. For more information, refer to the section on Mixer Control.

Quitting QuickPlayer

To quit QuickPlayer, do one of the following:

- Click on `Quit`.
- Double-click on the Control-menu box.

DOS Utilities

Play Utility

The Play utility allows you to play audio CDs and a wide range of sound files such as Microsoft Wave (.WAV), Creative Voice (.VOC), MIDI (.MID) and Creative Music (CMF) files by simply entering a command. Also, the utility gives you the flexibility to play a set of files with the same extension in sequence without requiring you to specify each file individually.

Knowing the Play Command

You must be familiar with the Play command line before you play sound files or audio CDs.

Command Line for Playing Sound Files

The command line for playing sound files is:

```
PLAY file1 [file2...] [/Q] [/H] [/?]
```

where:

`file1` is the name of the first file you want to play.

`file2` is the name of additional files of the same type to play.

`/Q` Disables display of playback information (file format, play time, filenames, key menu, and the copyright messages) while a file is playing.

`/H or /?` Displays description for using Play.

Take note of the following when using Play:

- If you enter Play without any parameters, a description for using Play appears.
- If you enter a filename without specifying an extension, Play searches the current directory for that filename. If more than one extension for the filename exists, the utility plays only one file in the following order of preference: .WAV, .VOC, MID and CMF.
- Before you play a Creative Music (.CMF) file, you must load the SBFMDRV.COM driver into memory. To do this, simply type SBFMDRV in the directory where the driver is found.
- When you enter a filename, you can specify part of the filename and use the * or ? characters to represent the remaining missing characters. The * character represents one or more characters while the ? character represents only a single character.

  For example, the PLAY *.WAV line plays all wave files. The PLAY TEST*.WAV line plays all wave files with filename beginning with TEST. The PLAY TEST?.WAV line plays all wave files with filenames containing five characters and beginning with TEST.

*PLAY *.* or PLAY TEST.* lines do not work because PLAY only works with files of one type collectively.*

- When you play a MIDI file, the program searches for the MIDI environment variable.

  The MIDI environment variable specifies the MIDI file format used and where MIDI data is sent to. The MIDI data can be sent to the FM chip, Sound Blaster MIDI, or MPU-401 port. Generally, there are three MIDI file formats available: General MIDI, Extended MIDI and Basic MIDI.

  The command for setting the MIDI environment is:

  `SET MIDI=SYNTH:`*x* `MAP:`*y* `MODE:`*z*

  `SYNTH:`*x*

  x = 1 Specifies internal synthesizer (default).

  x = 2 Specifies MIDI port.

  `MAP:y`

  y = G Specifies General MIDI file format.

  y = E Specifies Extended MIDI file format (default).

  y = B Specifies Basic MIDI file format.

  `MODE:z`

  z = 0 Supports General MIDI (default).

  z = 1 Supports Roland Sound Canvas GS.

z = 2 Supports Roland MT32.

MODE: z only applies to Sound Blaster AWE32.

Command Line for Playing Audio CDs

The command line for playing audio CDs is:

```
PLAY CD [/T:xx] [/Q] [/H] [/?]
```

where:

CD	Enables the CD-ROM Drive.
/T:xx	Specifies the CD track that you wish to start playing at (*xx* is the track number).
/Q	Disables display of playback information (current track, total tracks, playing time, and the key menu) while a track is playing.
/H or /?	Displays description for using PLAY.

If you do not specify the track number (/T:xx) option, you must press P to start playing the CD.

Using Play

The following are some examples of how you can play sound files and audio CDs in DOS:

- To play a Creative Music File (SONG.CMF):

1. Make sure SBFMDRV.COM is loaded in memory.
2. Type `PLAY SONG.CMF` and press e.

- To play three voice files (TEST1.VOC, TEST2.VOC, and TEST3.VOC) in sequence, type `PLAY TEST1.VOC TEST2.VOC TEST3.VOC` and press e.

The command does not function if a file specified does not exist in the directory.

- To play a voice file (TEST1.VOC) without displaying the playback information, type `PLAY TEST1.VOC /Q` and press e.
- To play a CD without specifying the starting track, type `PLAY CD` and press e.
- To play a CD starting at track 5, type `PLAY CD /T:5` and press e.
- To play a CD starting at track 5 without displaying the CD hot keys, type `PLAY CD /T:5 /Q` and press e.

Controlling Playback

You can control the playback of files using hot keys. A menu of the available hot keys appears when you enter PLAY without the /Q switch.

WAVE FILE CONTROL HOT KEYS

The following are the hot keys you can use while playing wave files:

C	Resumes playing a wave file after a pause.
^	Stop playing a wave file and exits the program.

N	Plays the next wave file in a specific set.
P	Plays the previous wave file in a specified set.
k	Pauses the playing wave file.
<, > and press e	Selects and plays another wave file if more than one file is specified.

VOICE FILE CONTROL HOT KEYS

The following are the hot keys you can use while playing voice files:

B	Stops a repeating section of the voice file and proceeds to the next section.
C	Resumes playing a paused voice file.
^	Stops playing the voice file and exits the program.
N	Plays the next voice file in a specified set.
P	Plays the previous voice file in a specified set.
k	Pauses the playing voice file.
<, > and press e	Selects and plays another voice file if more than one file is specified.

MIDI FILE CONTROL HOT KEYS

The following are the hot keys you can use while playing MIDI files:

C	Resumes playing a paused MIDI file.
^	Stops the MIDI file (if one is playing) and exits the program.
x, z	Reproduces the sound in a different key by raising or lowering the pitch.

M	Changes to a different set of musical instruments based on the basic, general, and extended standards on the MIDI mapper.
N	Plays the next MIDI file in a specified set.
P	Plays the previous MIDI file in a specified set.
^	Pauses the playing MIDI file.
w, y	Changes the tempo of the MIDI file.
<, > and press e	Selects and plays another MIDI file if more than one file is specified.

CMF FILE CONTROL HOT KEYS

The following are the hot keys you can use while playing CMF files:

C	Resumes playing a paused CMF file.
^	Stops the CMF file (if one is playing) and exits the program.
x, z	Reproduces the sound in a different key by raising or lowering the pitch.
N	Plays the next CMF file in a specified set.
P	Plays the previous CMF file in a specified set.
k	Pauses the playing CMF file.
<, > and press e	Selects and plays another CMF file if more than one file is specified.

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AUDIO CD CONTROL HOT KEYS

The following are the hot keys you can use while playing audio CDs:

C	Resumes playing a track.
^	Stops the track (if one is playing) and exits the program.
F	Fast-forwards the track.
L	Plays the previous track in a specified set.
N	Plays the next track in a specified set.
P	Plays a track.
R	Rewinds a track.
S	Stops a track.
k	Pauses a playing track.
X	Exits the program.

Record Utility

The Record utility allows you to record sound to a file by specifying the file type and recording parameters such as the sampling rate and the recording mode.

Sound is recorded into a sound file in Microsoft Wave (.WAV) or Creative Voice (.VOC) file format.

Knowing the Record Command

Before you record a sound file in wave or voice format, you should be familiar with the command line syntax of Record.

The command line for recording wave or voice files is:

```
RECORD file [/A:xx] [/C:xx] [/M:xx] [/R:xx] [/S:x]
[/Q] [/H] [/?]
```

where:

`file` Specifies the name of the file and its extension, .WAV or .VOC you want to record sound data into.

`/A:xx` Sets the record source.
`xx` = MIC, CD, LINE or FM

You can record from more than one source.

`/C:xx` Sets the compression format.
`xx` = ALAW, MULAW or CTADPCM

`/M:xx` Sets the record mode.
`xx` = MONO or STEREO

`/R:xx` Sets the sample size.
`xx` = 8 or 16 bits

The higher the sampling resolution, the better is the recording quality.

`/S:xx` Sets the sampling rate.
For .VOC format: `xx` = 5000 to 44100 Hz
For .WAV format: `xx` = 11025, 22050 or 44100 Hz

The higher the sampling resolution, the better is the recording quality.

`/Q` Disables display of record information.

`/H or /?` Displays a description on using Record.

Take note of the following when using Record:

- If you enter Record without any parameters, the online description for using Record appears.
- If you did not specify the recording mode, sampling rate and sample size, sound recording is in mono 8–bit wave file format with 11025 Hz sampling rate.
- If you want to stop the recording, press ^.
- Recording stops automatically when the disk is full.
- Record creates a new file or overwrites an existing file for recording.

Using Record

The following are some examples of how you can record sound files in DOS:

- To record from a CD to a sound file (SONG.VOC) in .VOC format:
  1. Play your CD.

2. Type `RECORD SONG.VOC /A:CD` and press e.

- To record a sound file without displaying the recording information, type `RECORD SONG.VOC /A:CD /Q` and press e.
- To record a stereo sound file from a line-in source in .WAV format with MULAW compression, type `RECORD SONG.WAV /A:LINE /M:STEREO /C:MULAW` and press e.

Mixerset Utility

The Mixerset utility allows you to control the Mixer settings interactively. With the mixer, you can control the volume of various audio sources supported by the card.

You can use the utility as a command at the DOS prompt or invoke the Mixerset interface to control the Mixer settings through a full-screen window consisting of check boxes and sliders.

Knowing the Mixerset Command

The mixer is configured using switches that follow the Mixerset command.

To use the Mixerset command:

1. Change to your sound directory.
2. Type `MIXERSET [switches] ...` and press e

where `[switches]` can be one or a combination of any of the following:

`/? or /H` Displays help messages.

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`/Q`	Runs Mixerset without displaying the setting information.
`/P`	Sets the mixer according to the PRESET settings in the CTMIX.CFG file.
`/MA:n;x`	Sets the master volume and balance of the left and right channels.
`/VO:n;x`	Sets the voice volume and balance of the left and right channels.
`/MI:n;x`	Sets the MIDI volume and balance of the left and right channels.
`/CD:n;x`	Sets the CD volume and balance of the left and right channels.
`/LI:n;x`	Sets the Line-in volume and balance of the left and right channels.
`/MIC:n`	Sets the microphone volume.
`/SP:n`	Sets the PC speaker volume.

`n` specifies the volume level and ranges from 0 to 255.

`x` specifies the balance of the left and right channels and ranges from -5 to +5. `x` must be preceded by ';'.

For example, /MA:200;5 sets the master volume at 200 and the balance at 5 (this means that the volume will be reduced in the left channel). /MA:;-5 setting reduces the volume in the right channel.

/OPS:ss Sets the audio output switches (OPSW) on or off. ss represents one or a combination of CD*z*, LI*z* and MIC*z*, where z is + (on) or - (off).

For example, /OPS:CD+ MIC- allows you to receive CD-audio output. It does not allow any sound passed through the microphone to be sent to the speakers.

/IPL:ss Turns Left Input switches (IPLSW) on or off. ss represents one or a combination of CDRz, CDLz, MDLz, MDRz, LIRz, LILz, and MICz, where z is + (on) or - (off).

/IPR:ss Turns Right Input switches (IPRSW) on or off. Same as /IPL.

/AGC:+|- Turns Automatic Gain Control (AGC) on (+) or off (-).

Using the Mixerset Command

The following are some examples on how you can use Mixerset:

- To set the PC speaker volume to 200, type MIXERSET /SP:200 and press e.
- To set the master volume to 200 with balanced output through the left and right channels, type MIXERSET /MA:200 and press e. If balance is not specified, both channels are set equally.
- To set all of the above in one command, type MIXERSET /SP:200 /MA:200;0 and press e.

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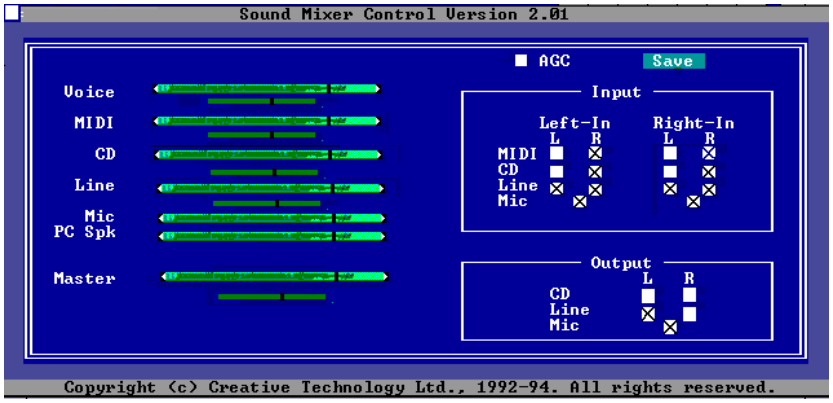
Starting the Mixerset Control Screen

To start the Mixerset Control Screen:

1. Change to your sound directory.
2. Type `MIXERSET` and press e. The Mixerset Control Screen appears.



Knowing the Mixerset Control Screen

The Mixerset Control Screen consists of the following components:

- Volume slider
- Balance slider
- Automatic Gain Control check box
- Save button
- Input box
- Output box

VOLUME SLIDER

Controls the volume levels of the input sources.

BALANCE SLIDER

The sliders control the balance of the left and right speakers for audio sources with stereo capability. Moving the slider to the left decreases the volume of the right speaker but the left speaker volume unaffected. The opposite applies when you move the slider to the right.

AUTOMATIC GAIN CONTROL CHECK BOX

The Automatic Gain Control (AGC) check box automatically adjusts input gain from the microphone to a level suitable for recording.

SAVE BUTTON

The Save button saves all changes made to the mixer to the CTMIX.CFG file. The new setting takes effect the next time you preset the mixer with the command MIXERSET /P.

INPUT BOX

The Input Box enables you to select the audio sources you want to control as input to the mixer. The audio sources available are MIDI, line and microphone input, and CD-audio. You can direct these audio sources through the left or/and right input channels of your mixer.

To get a stereo sound effect, make sure that the left channel signal of the audio source is directed to the left-in channel and the right signal to the right-in channel.

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OUTPUT BOX

The Output Box enables you to select the audio sources you want to control as output from the microphone, line-in, and CD-audio to the left and right speakers. You can select one or a combination of the above audio sources playing through the card.

Configuring the Mixer

Using the Mixerset interface, the mixer can be configured with a mouse or a keyboard.

Using a mouse:

- Choose the option if it is a check box.
- Move the slider by the click and drag method or click at the extreme end of the slider to increase or decrease the volume.
- To quit Mixerset, click on the Control-menu box.

Using a keyboard:

- Press v to move from one group to another.
- Press j v to move to a previous group.
- Press w, y to move from one option to another within a group.
- Press x, z to adjust volume.
- Press k or e to select or deselect a check box.
- To quit Mixerset, press ^.

Appendix

Jumper Summary A

CPU Type

CPU Type	JP9	JP10	JP11	JP13
P54C-75	1-2	1-2, 3-4	1-2	1-2
P54C-90	2-3	1-2	1-2	1-2
P54C-100	2-3	3-4	1-2	1-2
P54C/CS/CQS-120	2-3	1-2	2-3	1-2
P54C/CS/CQS-133	2-3	3-4	2-3	1-2
P54CS/CQS-150	2-3	1-2	2-3	2-3
P54C/CQS-166	2-3	3-4	2-3	2-3

Memory Mode

Mode	JP6
Fast Page	1-2
EDO	2-3

Cache Size

Cache Size	JP14
256 KB	2-3
512 KB	1-2

Flash ROM Type

Flash ROM	JP7
12V	1-2
5V	2-3

Onboard Super I/O Controller

SMC 665GT	JP8
Enabled	1-2
Disabled	2-3

Jumper Summary

ECP DMA Channel

ECP DMA Channel	JP3	JP4
DMA 1	2-3	2-3
DMA 3	1-2	1-2

VGA

Function	JP5
Enabled	1-2
Disabled	2-3

Audio Output

Selection	JP1	JP2
Line out	1-2	1-2
Speaker out	2-3	2-3

Audio I/O Address

Selection	J1	J2
22XH	Closed	Closed
24XH	Open	Closed
26XH	Closed	Open
28XH	Open	Open

CMOS

Function	JP12
Default (normal)	1-2
Clear CMOS	2-3

Jumper Summary

Onboard Connectors

Connector	Function
CN1	PS/2-keyboard connector
CN2	PS/2-mouse connector
CN3	COM1 port
CN4	MIDI/game port
CN5	VGA connector
CN6	Wave table
CN7	CD-in connector
CN9	Mic-in (for sound amplifier module)
CN10	Line-out (for sound amplifier module)
CN13	Power connector
CN15	FDC connector
CN16	COM2 port connector
CN17	IDE2 connector
CN18	IDE1 connector
CN19	Parallel port connector
CN20	2-pin fan connector
CN21	Multifunction connector
JK1	Mic-in
JK2	Line-in
JK3	Speaker-out
JP15	HDD LED connector
VR1	Volume control