

GRAVIS

ULTRA

SOUND

EXTREME



User's Guide

How to Use this Guide



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Introduction

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Introduction

The UltraSound Extreme is a full-featured card capable of providing 16-bit, CD quality sound from your desktop personal computer. Whether you plan to use UltraSound sound card to add excitement to business applications, music, or games, this card will meet your sound needs for years to come. The UltraSound Extreme is many products in one:

- A true wavetable music synthesizer with a full, expandable, 16-bit General MIDI sound set.
- A true FM synthesizer, hardware Sound Blaster Pro™ compatible.
- A Microsoft Windows® Multimedia (MPC) sound card for music, multimedia, and business applications.
- A sound card for games, supporting Roland® MT-32 and Sound Canvas, AdLib®, Sound Blaster™, and UltraSound games for the best sound.
- A digital sound card with up to 32 simultaneous digital channels, full mixing capabilities, and built-in interfaces for IDE CD-ROM drives.



Computer Sound—A History

The world of computer sound reproduction began simply as a bit that toggled voltage on and off at a set frequency. Although crude, this served its purpose: to produce a simple beep.

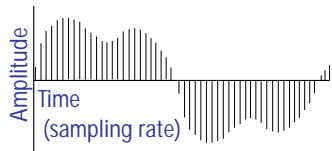
The beep was improved by the development of additive synthesis, or the creation of sound by adding different types of waveforms to create a new sound. Subtractive synthesis, the creation of sound through filtration, followed shortly after. Unfortunately, both techniques produced inaccurate sounding instruments.

FM Synthesis departed from previous technology. FM synthesis creates an instrument by frequency modulating one waveform against another to produce the sound of the desired instrument. Variables like wave shape, wave form, and modulation are manipulated until the sound more closely mimics the sound of the actual instrument.

UltraSound's wavetable synthesizer produces better sound than its FM synthesizer. Wavetable synthesis recreates the sound of an instrument by recording (digitizing) the actual instrument and playing it back. The result of this process is a precise electronic reproduction of real instruments. Your sound card's RAM-based wavetable synthesis lets you reproduce an unlimited number of sounds with incredible accuracy.



Working with Digital Sound



How Digital Recording Works

The end point of each vertical line represents a single sample of the wave's amplitude (loudness) at that time. The computer records this value at a constant rate, many times per second. At a sampling rate (frequency) of 22 kHz, 22,000 samples are taken per second. The computer can then re-construct the recorded wave exactly by converting each sample (one at a time at the same rate as recorded) back into an audio wave.

Sound Basics

Any sound consists of pressure waves moving through the air. These waves move the diaphragm in your ear canal and the connected small pieces of bone that in turn vibrate synaptic tissue. This causes electrical impulses to be sent to the brain that you "hear" as sound. Waves have two important characteristics: *frequency* and *amplitude*.

In the ocean, for example, frequency can be regarded as the number of waves that crash against the shore in a given amount of time. In the case of sound, frequency is measured in waves (called cycles) per second. The frequency of a sound wave determines the pitch of the sound. The higher the frequency (or the more cycles), the higher the pitch. Frequency is measured in units of Hertz (Hz). A Hertz is one cycle per second.

The second characteristic of a wave is amplitude. You can visualize amplitude by thinking about the height of waves in the ocean. On a windy day, the waves are very high. On a calm day, they are small. Amplitude determines volume. The greater the amplitude of a sound wave, the louder it is.



...*Digital Sound, cont'd.*

Recording Sound Waves

Digital recording captures sound by storing a sound wave's amplitude values at regular time intervals.

Computer or digital recording has natural limitations. Sound waves are continuous or *analog* in nature, but the computer can only work with discrete (digital) on/off information. The computer looks at the amplitude of what you record at precise intervals (this is called the *sampling period*) and stores the amplitude data for each interval as a number. The computer re-creates the sound by converting the digital samples back to a smooth analog signal through a DAC (Digital to Analog Converter). The number of samples per second that the computer takes (the *sampling rate*) affects the quality of the recording (more samples per second produce better quality). (This is why your UltraSound sounds better than many other wavetable sound cards—its RAM-based samples can be larger than the compressed samples in another card's ROM chip.)

The UltraSound Extreme can record and play back at sampling rates of up to 44,100 times per second, or 44.1 kHz, the same frequency that compact discs (CDs) use. As a rule, sampled sounds should be recorded



...Digital Sound, cont'd.

at twice the frequency that they occur in nature (or greater). Since humans can hear from 20 Hz to 20 kHz, 44.1 kHz sampling is sufficient to successfully re-create any sound we can hear.

Another factor that influences the accurate reproduction of the original recorded signal is the sampling resolution, or bit depth. Bit depth relates to the number of steps, or levels of sound loudness, that can be measured. An 8-bit sample can achieve up to 256 different levels of sound, and a 16-bit, CD-quality sample can have 65,536 levels.

The UltraSound Extreme is capable of playing both 8-bit and 16-bit WAV and SND digital sound files to ensure the best sound possible from any application.

Recording at 16-bit resolution offers sound reproduction that matches or exceeds the quality of all but the best PC desktop speaker systems.

Digital Recording Limitations

It's important to recognize the limitations of digital recording, and understand *how* you can avoid recording errors with your UltraSound sound card.

Aliasing is unwanted mixing of frequency information that often



...*Digital Sound, cont'd.*

manifests itself as a harsh, high frequency distortion. Recording at 22 kHz or higher virtually eliminates aliasing.

Clipping is distortion that occurs when the recording level is set too high. Loud pops and clicks will be heard when the recorded signal exceeds the limits of the analog to digital circuitry. Reducing the record level eliminates clipping.

Quantization errors may result from the rounding off that the computer may do to store data. The UltraSound sound card greatly reduces these rounding off errors by a process called *interpolation*, where values are generated between each sample, resulting in smoother, more natural sound reproduction. HDD transfer rate limitations may also cause quantization errors.

Noise refers to digital hiss or pops and clicks. Hiss can be greatly reduced by recording near, but never exceeding, the maximum sound level. Most recording software includes recording level VU meters, or another method, to make this easy to accomplish.

A small amount of digital hiss is unavoidable with 8-bit recording, although it is usually masked by the recorded signal when sound is present. As discussed previously, 8-bit resolution allows 256 steps of



...Digital Sound, cont'd.

loudness. The inevitable digital noise caused by stray radio frequencies from your power supply or other computer components can produce a few steps of random digital numbers.

Moving your sound card to a slot as far as possible from the power supply, hard disk controller, and video cards helps to reduce the amount of noise present in your digital recording.

For Best Digital Recording - Read This

Digital recording to hard disk requires very high data transfer speed (throughput). This means there should be no digital road blocks or speed bumps between your sound card and your hard disk. If you are having difficulty getting clean digital recording without pops, clicks, or gaps, try each of these suggestions in any combination, or simply reduce the sampling resolution.

Disk Fragmentation

Run a disk de-fragmenting program to optimize the free space on your hard drive so that your recorded data will be placed in one contiguous area of your hard disk. Norton Utilities' Speed Disk™, PC Tools' Compress™, Golden Bow's V-Opt™, and DOS 6.x's disk defragmenter



...Digital Sound, cont'd.

(DEFRAG) are some commercially available de-fragmenting programs. Note that you only have to optimize the free space on your hard disk, which should not take more than a few minutes. Optimize between takes when using high sampling frequencies and stereo recording.

Disk Compression

DoubleSpace™, Stacker™, or other disk compression schemes limit disk data throughput because data must first be compressed with a software algorithm before writing to disk. At high sampling rates, your disk subsystem may not be fast enough to allow recording without glitches. It's best not to record onto a compressed disk.

Memory Managers

EMM386, QEMM, 386MAX, and other memory managers add processing time to disk reads and writes, which may result in problems getting your data onto the disk fast enough.

Processor Speed

For the best digital recording, the fastest processors are recommended. Some of the above conditions can be compensated for with a faster



...Digital Sound, cont'd.

CPU.

DMA Channel Selection

Because some motherboards do not have working 16-bit DMA channels, the UltraSound sound card's default DMA is an 8-bit channel. (The 8-bit channels are 0–3; the 16-bit channels are 4–7.) The performance, especially stereo recording, will be better if you choose a 16-bit channel. If strange things happen with the 16-bit channel, switch back to a free 8-bit channel.

UltraSound Extreme and Music

The UltraSound Extreme's capacity to play simultaneously up to 32 notes from any combination of 32 real or digitally synthesized voices opens up a whole world of musical expression. Used with music creation and editing software, your sound card allows you to create and mix sounds into studio quality musical arrangements.

MIDI

MIDI, or Musical Instrument Digital Interface, is a digital communication standard created in 1983 by music equipment manufacturers. The MIDI Standard lets you connect any MIDI-equipped music device to



...*Digital Sound, cont'd.*

other MIDI devices for transferring music and performance data. This allows you to control keyboards, synthesizer modules, drum machines, etc., from your computer.

For example, connecting an inexpensive MIDI-equipped keyboard to your sound card via the (optional) MIDI connector port allows you to “play” any of your card’s instruments (patches), from an acoustic piano to a snare drum, to any of the myriad of digitized sounds supplied. Of course, you don’t need a keyboard to “play” your sound card: it is a self-contained music studio you can play with your computer’s MIDI software.

MIDI Files

MIDI is also a file format that records music or sound *events* such as a note being played, what instrument the note is playing, how long the note plays, how loud, etc. These events can then be reproduced exactly as they were entered, with the flexibility to change things such as the instrument, the loudness, or the note. MIDI music files also conserve disk space: only the events are recorded, not the actual sounds.

The sounds that the card uses to play back the MIDI events are full 16-bit, CD-quality voices (patches) digitized from real musical instruments



...Digital Sound, cont'd.

(or synthesized using digital wavetable synthesis) so that what you hear through your stereo or headphones is incredibly real and dynamic.

Important! Before using MIDI software with your UltraSound Extreme, read the section on “Patch Caching” at the end of Chapter 2.



Windows® Software

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Windows Features

- Supports 8 and 16-bit playback in all Windows .WAV formats (i.e., 8-bit, 16-bit, Mono, Stereo, 11025 Hz, 22050 Hz, and 44100 Hz).
- Supports 16-bit recording in all format.
- Supports the onboard 32-voice wavetable synthesizer.
- Provides a full General MIDI patch set comprised of 192 instruments, drums, and sound effects for playing MIDI files.
- Able to cache, or preload, General MIDI patches into its onboard memory. Patch Manager™ has the ability to load, unload, and audition patches.
- Provides an option to conserve patch memory that increases the number of patches you can load by using the space more effectively.
- Supports full MIDI IN and MIDI OUT capabilities.



Windows Utilities

Your sound card came with a number of Windows utilities and software applications.

Mixer

The AudioDrive Mixer (installed in Windows), the Windows 95 Mixer applet, or the ESSVOL.EXE DOS mixer allow you to control the mixer facilities of your sound card.

Mixer facilities include input/ output enable, Wave and MIDI playback volume, plus CD and Microphone volume control.

The Mixers allow you to modify the state of the inputs, output, and playback volumes of the sound card. Select any combination of inputs and outputs you need for mixing.

Note that any combination of inputs is possible. For instance, you are not excluded from simultaneously enabling the Microphone and Line inputs.



...Windows Utilities, cont'd.

By default, the AudioDrive and ESSVOL.EXE mixers mute the CD, Line, and Microphone inputs to eliminate noise during playback. We recommend that you leave these inputs muted when not in use.



Windows Programs

Patch Manager™

Your sound card can play up to 32 digital or instrument sounds (called *voices* or *patches*) simultaneously. A full General MIDI set of patches, and additional patches for use in games are included with your sound card. Patch Manager™ lets you select and load patches easily into the card's onboard memory. Play, or *audition*, the patches on Patch Manager's on-screen synthesizer. Or, if you have a MIDI keyboard and a MIDI Adapter, plug them in and play your sound card through Patch Manager!

Patch Maker Lite™

Patch Maker Lite™ allows you to make your own patches, or edit existing patches.



Windows Drivers

Driver Configuration

The Driver Configuration dialog window lets you customize different aspects of the sound card's Windows driver. Any items in the dialog that are changed will be saved in the Windows SYSTEM.INI file when you press the OK button. The next time you start Windows, the new selections will be in effect. If you change the Base Port, DMA, IRQ, or the Active Voices, you will have to restart Windows. To access the Driver Configuration dialog window, locate and open the Windows Control Panel, usually found in the Main or Accessories program group. Select and click on the Drivers icon. If the sound card driver has been installed, there will be an entry in the Installed Drivers list box named *UltraSound and MIDI Synth* (the audio driver). Activate the Driver Configuration dialog window by double-clicking the left mouse button on Ultra Wave and MIDI Synth.

Setup

In the Drivers box, click on the Setup button to access the following items:



...*Windows Drivers, cont'd.*

Hardware Configuration

The Setup dialog asks you to enter settings for: Base Port, GF1 IRQ, MIDI IRQ, DMA Channel A (Playback), and DMA Channel B (Record).

The selections are programmable, and may be set to any of the available options, as long as there is no conflict with another device in your system. The settings you choose here must match your DOS settings.

Linear Volume. You can set the Linear Volume either on or off. Selecting “off” will base MIDI volumes on a logarithmic scale. By default, Linear Volume is set “on.”

Active Voices. The valid range of active voices is 14 to 32. There are always two voices reserved for playback of stereo wave files; thus, the number of voices available for MIDI is two fewer than the number chosen. Note that a change in the number of active voices will not take effect until after the current Windows session is restarted. For an explanation of the significance of selecting a certain number of voices, see the section “Performance Considerations.”

Verify Patches. When *Verify Patches* is on, all General MIDI patches located in ULTRASND.INI will be verified to make sure that they are



...*Windows Drivers, cont'd.*

present when Windows starts up. Turning off this option speeds up Windows start-up time.

Patch Memory Options

Patch Memory refers to the onboard memory used for storing patches. You may load patches at their original resolution by choosing *High Fidelity* (16-bit), or at a lower resolution by selecting *Conserve Memory* (8-bit). See the next section for more information regarding this option. Patch files contain the sound data used by the driver to play MIDI notes.



Performance Considerations

You can control certain aspects of the sound card's performance via the Performance Options section of the Driver Configuration Dialog Window.

For example, Active Voices affects the number of active voices used by the sound card to play MIDI and Wave files. The number of active MIDI voices in Windows is selectable to allow you to 'reserve' voices for digital playback. In High Fidelity mode there is a barely discernible loss of fidelity from 44.1K starting at 15 voices. Normally, you should set the number of active voices somewhere around the default of 22.

The *Patch Memory* option affects the use of onboard patch memory. Choosing the *Conserve Memory* option effectively doubles the amount of memory available for patches, as the majority of the patches are created at a high resolution. The card always deals with sound internally at a high resolution, so generally the loss of sound quality for choosing to load patch files at a lower resolution is minimal.

Patch Caching

Patch caching is one of the distinguishing features of the Windows 3.1 Multimedia capabilities. Patch caching loads patches into the sound



...Performance Considerations, cont'd.

card's DRAM for use in applications. Patch caching allows the most efficient use of onboard memory, since a sequencer, or other application, only needs to load the patches required for a particular set of MIDI data. Patch files contain the sound data used by the driver to play MIDI notes. Patch caching allows you to add additional sounds simply by obtaining new patch files. Many applications already take advantage of this feature, including the Windows Media Player, Power Chords™, Midisoft™ Recording Session™, Studio, Music Mentor®, MCS Stereo Rack™, and DigiVox's Multimedia Sound Studio™.

If, however, you have an application that does not use patch caching, you can load a subset of the General MIDI set before running the application:

1. Click on the Drivers icon under the Control Panel, and select *UltraSound and MIDI Synth* or the sound card's audio driver.
2. Click on the *Setup* button. Then in the Performance Options section, click on the *Conserve Memory* button.
3. Click on the *MIDI Mapper* (also under the Control Panel) to select the appropriate setup for the amount of memory on your sound



...Performance Considerations, cont'd.

card.

4. Using Patch Manager, load patches from the MIDI file that corresponds to the amount of memory on your sound card. The MIDI file is LOAD1024.MID.

You may also load all the patches for a particular MIDI file by using the *Get from MIDI File* option in the File menu of Patch Manager.

To revert to normal operation, select *UltraSound Setup* in the MIDI Mapper, and enable the *High Fidelity* option of the driver.



Patch Manager & Patch Maker Lite

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Patch Manager™

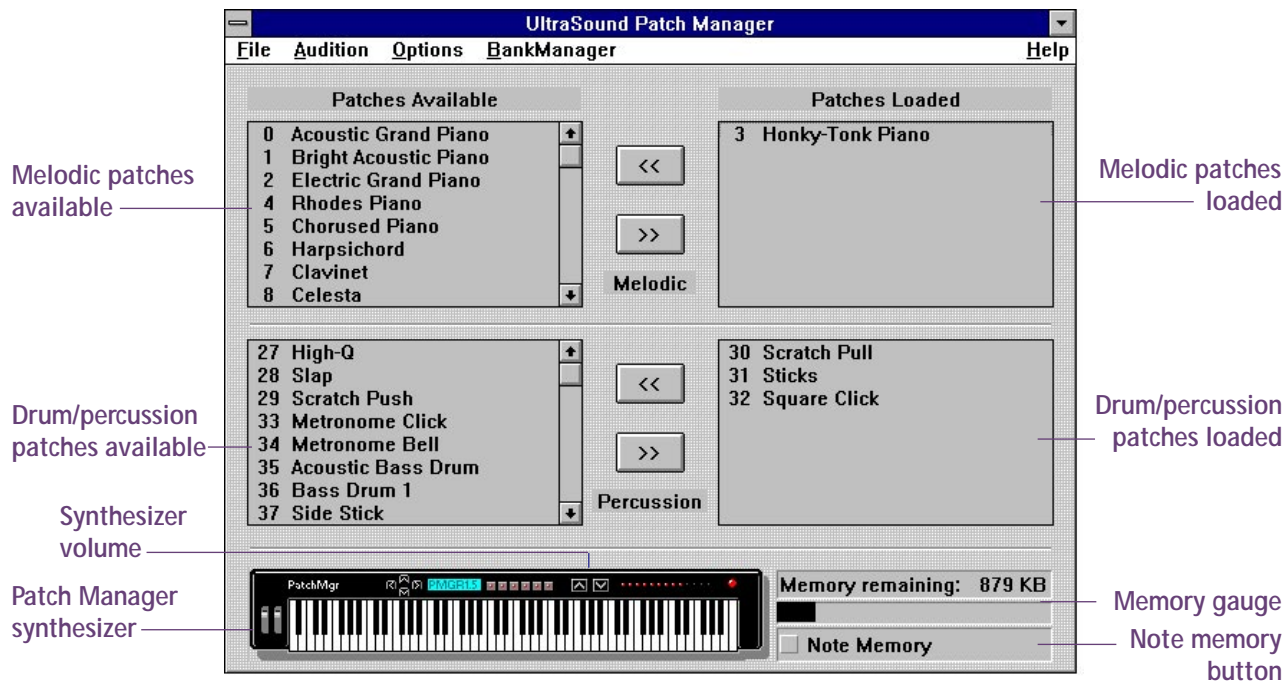
Early synthesizers achieved different sounds by connecting voltage-controlled oscillator filters and amp modules in different ways. Because cables were used to patch together the modules, the resulting sounds were called patches. For this reason, we use the word patch to refer to the sampled sounds and associated data used by UltraSound's internal waveform synthesizer to create instrument sounds.

The patches are stored in disk files that must be loaded into onboard memory before a sound can be produced. This patch loading is normally done automatically by application software, but there may be times when you want to do it yourself. With the Patch Manager™, you can control which instrument patches are loaded into UltraSound's onboard memory, and you can audition them. These patches are then available for use with your favorite Windows music composition or sequencer software. Patch Manager also adds MIDI capability so you can play UltraSound from any MIDI input device.

Program Requirements

A correctly installed UltraSound-compatible sound card, Windows 3.1 in 386 Enhanced Mode, and the Windows driver in the installation CD.



...Patch Manager, cont'd.

...Patch Manager, cont'd.

Patch Manager Usage Notes

- Patch Manager is installed automatically during the UltraSound software installation.
- Patch Manager may not work correctly with earlier versions of the Windows driver. Use it only with the Windows driver supplied on your new CD.
- Run Patch Manager; select Quick Tour in the Help Index menu for an overview of operation.
- Patch Manager comes complete with an on-screen 88-key synthesizer keyboard.
- Patch Manager's "Memory Remaining" gauge shows how much memory is remaining to hold patches.



...Patch Manager, cont'd.

Quick Tutorial

This quick tutorial tour will acquaint you with many of Patch Manager's features. To start Patch Manager, launch Windows and double-click on the Patch Manager icon, found in the Gravis Extreme group in the Program Manager window.

1. Start Patch Manager

When you start Patch Manager, you will see four main windows that display patch numbers and the names of the corresponding General MIDI instruments. (The file names for some percussion instruments are not included in the patch files, so they are listed with a General MIDI number and file size, but no name.)

The two left windows show which patches are available on disk for melodic and percussion instruments. The two right windows show which melodic and percussion patches are currently loaded into the sound card's memory. The two right windows might be empty, unless you have previously loaded patches using Patch Manager or have played a MIDI file with a program such as Media Player.



...Patch Manager, cont'd.

2. Load a patch

Select Acoustic Grand Piano (patch 0) in the upper left window by clicking on it with the mouse. Press the double right arrow button to load the patch (see Fig. 3-1). This patch now appears in the upper right window, indicating that it is loaded. Notice that the Memory Remaining number in the lower right corner has decreased, and the memory gauge below it is starting to fill up.

3. Audition a patch

Select the patch name in the right-hand window by clicking on it with the mouse. Then move the mouse pointer onto the Patch Manager synthesizer. Press the left or right mouse button to play a note. Drag the pointer on the synthesizer keyboard to play several notes. If you have a MIDI device connected to your computer, you can use it to play the notes, too. Just select MIDI Thru from the options menu.

4. Audition a group of notes

Click on the Note Memory button so that it is checked. Play a note on the synthesizer keyboard. Each note auditioned is now highlighted and saved. To deselect a note and remove it from Note Memory, click on it with the right mouse button.



...Patch Manager, cont'd.

Select a few notes, then click on the patch name in the upper right window. The group of selected notes now plays with the patch name selected.

5. Audition other patches

Load a few more melodic patches (as in Step 2) and click on each one in the Patches Loaded window. Each patch will play the notes selected on the synthesizer.

6. Audition drums

Load a few percussion patches as described in Step 2, and click on one of these. The Patch Manager synthesizer keyboard now displays a gray keyboard with some white keys. Each white key corresponds to an individual drum sound. Try some! The Note Memory option does not work for drum patches.

7. Adjust the volume on the synthesizer

Press one of the buttons with an up or down arrow, in the middle top of the synthesizer to adjust the audition volume. Note that the red LEDs to the right of the buttons show the current volume.



...Patch Manager, cont'd.

8. Display several audition keyboards

Choose All... from the Audition menu. A group of audition keyboards is displayed, one for each melodic patch loaded and one that contains all the loaded percussion sounds. Any of the audition keyboards can be played with the left mouse button. Notes will play as long as the left mouse button is held down.

You can control the volume of the currently selected audition window with the Volume control in the toolbar at the top. For melodic patches, you can select a different instrument for the current keyboard by pressing Instruments... on the tool bar.

If you have a MIDI device connected to your computer, you can use it to play notes for the currently selected patch.

Notice that the note value of the note you are playing is displayed in the toolbar. Both the note name (e.g., "C5" for middle C) and the note number (e.g., "60" for middle C) are shown.

9. Load patches used by a MIDI file

Get back to the initial Patch Manager window, the one with the four lists of patches. Choose Get from MIDI File... from the File menu. Select



...Patch Manager, cont'd.

the name of a MIDI file. Patch Manager reads the MIDI file and loads the patches it needs. You can then play the MIDI file with a program that does not know how to load patches.

10. Change the patch names

Choose Names... from the Options menu. Click the checkbox labelled Use Names from Patch File, then click OK. The names shown in the list of patches are now those that are stored in the patch files, rather than the General MIDI names for the corresponding patch number. (See Appendix F for a list of General MIDI instruments, or select General MIDI Names from the Patch Manager Help menu.)

Loading and Unloading Patches

There are three methods for loading patches.

1. Select patch names in one of the left-hand boxes labelled Patches Available. You can select several patches at a time by dragging the mouse, or using <shift>-click or <control>-click to extend a selection. Then press the button labelled >>. The patches loaded will be displayed in the right-hand box labelled Patches Loaded.



...Patch Manager, cont'd.

A single patch can be quickly loaded by double-clicking its name in the Patches Available box.

Note! If there are more patches selected than can fit in memory, the melodic patches will be loaded first, numerically, then the percussion patches, numerically, until memory is full. Sometimes a patch won't fit into memory even though the Memory Remaining display indicates that there is enough room. Your UltraSound's memory is partitioned into segments of 256K, and patches won't load across a segment boundary.

2. The patches required by a MIDI file can be loaded using the Get from MIDI File... command under the File menu.
3. Some Windows programs (such as Media Player) load patches when they play a MIDI file. When you start Patch Manager, these patches will appear in the Patches Loaded window.

To unload patches, select patch names in one of the right-hand boxes labelled Patches Loaded. Press the << button. The selected patches will move to the left-hand box labelled Patches Available.



...Patch Manager, cont'd.

Auditioning Patches

First load the patch you want to audition. Then audition the patch by playing the synthesizer, keyboard, or MIDI device, or by creating audition windows.

You can create one or more audition windows for the loaded patches by selecting Melodic, Percussion, or All from the Audition Menu. In Percussion audition windows, each available patch is assigned to a key (in conformance with MIDI convention). Keys with an available patch are white; the rest are grayed out.

If you select All, audition windows are created for each loaded melodic patch, and a single window is created for all of the percussion patches.

Playing the Patch Manager Synthesizer

First select a patch name in one of the Patches Loaded boxes. Then click the left mouse button on the notes you wish to play. Notes play as long as the mouse button is held down. Drag the mouse across the keys to play several notes.

If Note Memory is on, the notes are colored gray as you click on them and are played when a patch name is selected in the Load Patches box.



...Patch Manager, cont'd.

Click off notes with the right mouse button, or turn off Note Memory to clear all notes.

Adjust the volume by clicking the volume buttons on the synthesizer. The red LEDs indicate the current volume.

Playing Notes on the Computer Keyboard

The row of keys from 'Z' to 'M' and the row from 'Q' to 'U' both represent the white piano keys from 'C' to 'B.' The upper row of keys plays one octave higher. The black piano keys are represented by the rows of keys from 'S' to 'J' and from '2' to '7.'

The <shift> key causes all keys being held down to be restruck as if you lifted them all off and pressed them down again. The right and left arrow keys shift the whole keyboard up and down an octave.

Playing Notes with a MIDI Device

If you have a MIDI input device connected to your computer, you can use it to play the notes for the selected patch. Just select MIDI Thru from the Options menu.



...Patch Manager, cont'd.

Changing Patches Available

The patches available to load and audition with Patch Manager are those that are available in the current Windows session. The ULTRADIR directory contains the file ULTRASND.INI, which lists the names of the patch files for each patch number. See the section on the Bank Manager to learn how to modify ULTRASND.INI to make different patches available.

If there is no patch file listed for a number, or if the patch file name is BLANK.PAT, it will not appear in the list of Patches Available.

Changing Patch Names

By default, the files in the Patches Available and Patches Loaded boxes are displayed with General MIDI standard names. You can choose to view the patch name that is stored in the patch file instead by clicking Use Names from Patch Files, or you can view the patch file name.

Changing Instruments

You can change the instrument patch for a melodic audition window by pressing the Instruments... button on the toolbar. A list of available patches is displayed. Click on one to apply it.



...Patch Manager, cont'd.

MIDI In Velocity

When you use a MIDI keyboard for input (playing notes), Patch Manager, by default, uses the velocity (volume) sent by the MIDI keyboard. If you do not wish to use the velocity sent by the keyboard:

- Remove the checkmark from MIDI In Velocity in the Options menu.

The volume will instead be determined by the volume control on the synthesizer bitmap.

Saving and Loading Configuration

To save the currently loaded patches:

- Choose Save from the File menu. Enter a file name, and press <enter>.

To retrieve a previously saved list of patches:

- Choose Load from the File menu, select a file, and press <enter>. Patch Manager will load all of the patches in the saved file.



...Patch Manager, cont'd.

Unloading All Patches

To unload all patches from the card's memory:

- Select Unload All Patches from the Options menu.

Bank Manager

Patch Manager's Bank Manager lets you create and edit custom instrument sets. This lets you use other patches besides the General MIDI set that is provided with your sound card. You can make such patches yourself with Patch Maker Lite (in the next section), buy them from third-party vendors, or find them for free on bulletin boards and on-line services.

Suppose you want to replace the supplied acoustic nylon guitar patch with one of your own (MYGUITAR.PAT), and have it used by Windows applications. The basic steps are as follows (details for each step follow in the next paragraphs).

1. Copy or move the file MYGUITAR.PAT to C:\GRAVIS\ULTRASND\MIDI (or whatever your sound card's directory is).
2. Start Bank Manager, and create a new bank.



UltraSound Bank Manager

File Options Special PatchManager Help

Selected Bank: 0 Melodic Bank 0 (Melodic)

Patch Directory: c:\ultramax\midi

#	Name	Patch		Patches Available
13	Xylophone	xylophon	↑	acbass.pat
14	Tubular Bells	tubebell		accordn.pat
15	Dulcimer	santur		acguitar.pat
16	Hammond Organ	homeorg		acpiano.pat
17	Percussive Organ	percorg	>>	agogo.pat
18	Rock Organ	rockorg		agogohi.pat
19	Church Organ	church	<<	agogolo.pat
20	Reed Organ	reedorg		altosax.pat
21	Accordion	accordn		applause.pat
22	Harmonica	harmonca		atmosphr.pat
23	Tango Accordion	concrtna		aurora.pat
24	Acoustic Guitar (nylon)	nyguitar		bagpipes.pat
25	Acoustic Guitar (steel)	acguitar		banjo.pat
26	Electric Guitar (jazz)	jazzgtr	↓	barisax.pat

PatchMgr Xylo115

Loaded

Baritone Sax

Load Patch

...Patch Manager, cont'd.

3. Map MYGUITAR.PAT to program number 25.
4. Save the bank to Bank 0. You don't need to map all the other patches; if you don't specify a mapping, the existing mapping (usually a General MIDI instrument) is used.

Starting Bank Manager

Select BankMan from the Patch Manager main screen. The Bank Manager main display appears.

Creating a New Bank

Select *New Bank* from Bank Manager's File menu. A dialog box appears with the following fields:

Bank Number. Enter a unique bank number (a drum bank and melodic bank can have the same number).

Bank Type. Select the type of bank (Drum or Melodic).

Copy Current Bank. If you wish to start the new bank as a copy of the currently selected bank, check this box.

Bank Name. Enter a descriptive name.



...Patch Manager, cont'd.

Patch Directory. Enter the name of the bank's patches' directory. Use Browse if necessary to locate the directory.

When you're finished, press OK to create the new bank.

Selecting a Bank

Click the down arrow of the Selected Bank listbox to display the names of all the banks, then select a bank to view or edit.

Editing a Bank

The patches included in a bank are displayed in the Program Map (the largest window on the Bank Manager display). Patches are identified by program number, General MIDI name, and patch file name. The Patches Available box lists all of the patches available in the patch directory associated with the currently selected bank.

To Load a patch into the bank

Double-click on it, or select it and click Load Patch.

To Map a patch to a program number in the bank

(Do this to replace the standard General MIDI patch with another.)



...Patch Manager, cont'd.

Select the program number from the Program Map listbox. If the program is not visible, press the Expand button (<—>).

From the Patches Available listbox, select the patch file that you want to map to the selected program number. Click on the button marked << to add the program to the Program Map listbox, or double-click on the patch file name.

To Unmap a program

Select the program you wish to unmap in the Program Map listbox. Click on the button marked >> to remove the mapping.

Saving a Bank

Choose *Save* from the File menu to save the current bank. To save the current instrument mapping to the primary bank, choose *Save to Bank 0*.

Save to Bank 0 is useful for maintaining alternate patch sets. For example, you could set up a bank containing a new set of brass instrument patches. Then, when you select Save to Bank 0 from the File menu, the brass instrument patches in the primary bank would be replaced by your new set.



...Patch Manager, cont'd.

Also, if a MIDI playback program doesn't respond to *Continuous Controller 0* (bank change) messages, and you want to play a MIDI file that uses them, you can use the *Get from MIDI File* option to create a bank with the proper instrument patches, then use *Save to Bank 0* to remap the bank-switched instruments.

To restore a primary bank to its original condition, select *Restore Primary Melodic Bank* or *Restore Primary Drum Bank* from the Special menu.

Renaming a Bank

Select *Rename Bank* from the File menu. Enter the new name in the edit box and press OK.

Creating a Bank Based on a MIDI File

Select *Get from MIDI File* from the File menu to create a custom bank containing the instruments used in a MIDI file. In the dialog box that appears, select the MIDI file. After the file has been read, a New Bank dialog box comes up to let you name the bank and assign it a number. Both melodic and drum banks are created.



...Patch Manager, cont'd.

Deleting a Bank

Select *Delete Bank* from the File menu to delete the current program bank.

Showing Patch Information

Select *Show Patch Information* from the Special menu to display the name and size of a selected patch file. Get *Patch Sizes* displays the size of patch files in the current bank's patch directory.

Restoring Primary Banks

The first time you use Bank Manager, it saves a copy of the two primary banks. Select *Restore Primary Melodic or Drum Bank* from the Special menu to restore altered MIDI programs.

Note! You can force Bank Manager to save a new default copy of the Primary Banks by removing the line `SavePrimary=FALSE` from the `BANKMAN.INI` file in your Windows directory.

Technical Note:

The program responds to Continuous Controller #0 messages. When a Program Change message or CC#0 message is received, Bank Manager



...Patch Manager, cont'd.

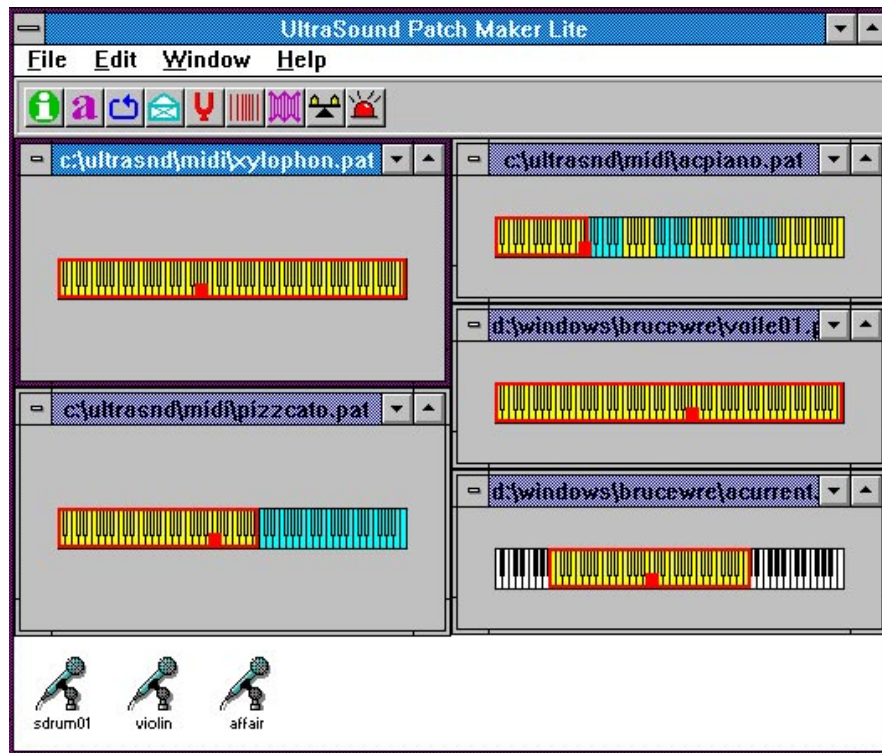
attempts to retrieve the instrument patch from the selected Program/Bank combination. It uses the GS MIDI fallback arrangement if the requested Program/Bank does not exist. User banks (40H–7EH) and special effects programs (70H–7FH) do not use the fallback mechanism.

If a program number is used on more than one channel, and different banks are selected for each channel, Bank Manager will remember only the last bank number selected for that program. Likewise, when on a drum channel, if a key is used with more than one Program Change number, only the last Program Change number selected is remembered.



Patch Maker Lite™

Patch Maker Lite™ lets you create new patches, or modify existing ones, to use in your MIDI music compositions or games. To learn how to use the patches you create with Patch Maker Lite, see the previous section, "Bank Manager."



...Patch Maker Lite, cont'd.

Quick Tutorial

Patch Maker Lite's quick tutorial will acquaint you with many of its features and take you step by step through the creation of a new patch.

You can stop the tutorial at any time and resume it later. Make sure you save the patch you are working on before closing Patch Maker Lite. To resume working on a patch, open the saved patch.

Starting the tutorial

In the tutorial, it is assumed that you have installed Patch Maker Lite in the directory C:\GRAVIS\ULTRASND\PMAKER. If you have chosen to install Patch Maker Lite in a different directory, use your directory name instead whenever you see C:\GRAVIS\ULTRASND\PMAKER.

To start the tutorial, double-click on Patch Maker Lite's icon. When Patch Maker Lite starts, you'll see an empty window with a menu bar at the top and a toolbar just below the menu bar.

In the menu, under the Help file, select *Contents*. Click on *Quick Tour and Tutorial* to start the tutorial.



...Patch Maker Lite, cont'd.

From this point, please follow the tutorial instructions on screen. To keep the instructions handy, reduce the tutorial window so you can interactively read and do the tutorial.

After the tutorial...

By now you should have completed the Quick Tour and Tutorial, and you should be familiar with Patch Maker Lite's features. The tutorial is a great way to get started, but you may need some further instructions to help you out when you are on your own.

Menu Commands

Before you can put the Menu Commands to use, you need to know how to load an existing patch for editing.

There are three methods for loading patch files:

1. Use the *File/Open* command.
2. Drag and drop a patch file from the Windows File Manager into Patch Maker Lite's main window. (See your Windows documentation for information about drag-and-drop.) The patch file extension must be .PAT. You can drop several files at the same time.



...Patch Maker Lite, cont'd.

3. Include the name of the patch file in the command used to start Patch Maker Lite. For example, to load the patch file HELLO.PAT when Patch Maker Lite starts, you could create an icon with the command line PMAKER.EXE HELLO.PAT.

File Menu

New. The *New* command creates an empty patch. Use *New* to create a new patch from scratch using waveforms. To edit an existing patch, use the *File Open...* command.

Open... Brings an existing patch into Patch Maker Lite's window for you to test or modify it. You can also open patches by specifying them on the command line or by dragging and dropping them.

Open .WAV File... Opens a waveform file. Later, this can be added to a patch by dragging and dropping it onto a patch keyboard.

You can also open a waveform file by specifying its name on the command line when you run Patch Maker Lite, or by dragging and dropping a file with the extension .WAV from the File Manager onto Patch Maker Lite.



...Patch Maker Lite, cont'd.

Save. Saves a patch that you've created or modified. After you save your file, any changes you've made to the patch are permanent.

Save As... Lets you save the current patch into a file with a different name, preserving the original patch file.

Exit. Lets you leave Patch Maker Lite.

Edit Menu

Delete. Removes the current waveform from the current patch.

Remove Silence. Eliminates periods of silence from the beginning and end of a waveform. It works on the current waveform by doing an analysis to find the first and last sample points that are louder than a threshold (which is determined automatically). You are then given the option to delete the sample points outside that range.

Maximize Volume. If the current waveform is too quiet, you can use the Maximize Volume command to increase its volume. The sample data is analyzed to find the minimum and maximum values, then all points are multiplied by a factor which ensures that the maximum allowed range is used. At the same time, the average value of the



...Patch Maker Lite, cont'd.

samples is arranged to be zero (i.e., any DC offset is removed). *Maximize Volume* can help the patch sound better and avoid pops and clicks.

Windows Menu

Tile. Arranges the patch windows so that they do not overlap.

Cascade. Arranges the patch windows so they overlap in an orderly fashion.

Arrange Icons. Spaces icons evenly in the main window.

Close All. Closes all patch keyboard windows, patch keyboard icons, and waveform icons.

Help Menu

Contents. Contains the Table of Contents for the Patch Maker Lite on-line help.

About. Tells you the version number of your copy of Patch Maker Lite.



...Patch Maker Lite, cont'd.

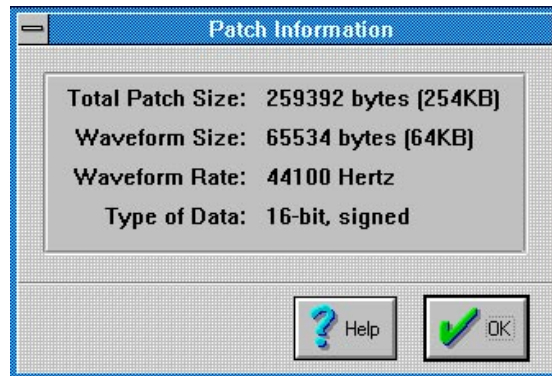
Tool Bar



Display Patch Information

Shows some information about the patch data. None of this information is necessary to make patches, but it is provided for the curious.

Patch Information Dialog



...Patch Maker Lite, cont'd.

Total Patch Size is the amount of sound card memory the patch uses. It is usually a little larger than the sum of the sizes of each waveform in the patch because the size of each waveform is rounded up to the next multiple of 32.

Waveform Size is the size in bytes of the current waveform. *Waveform Rate* is the sampling rate of the current waveform. *Type of Data*. Waveform data can be 8- or 16-bit, signed or unsigned.

Edit Patch Descriptions & Names

This dialog lets you view and modify patch element descriptions.

Patch Description Dialog



...Patch Maker Lite, cont'd.

Patch Description lets you enter text to describe the patch.

Instrument Name holds the name of the instrument for the patch. Instrument Name can be used by other applications (for example, Patch Manager) to help identify the patch.

Waveform Name can hold any name. By default, Patch Maker Lite uses the name of the .WAV file that the waveform came from.



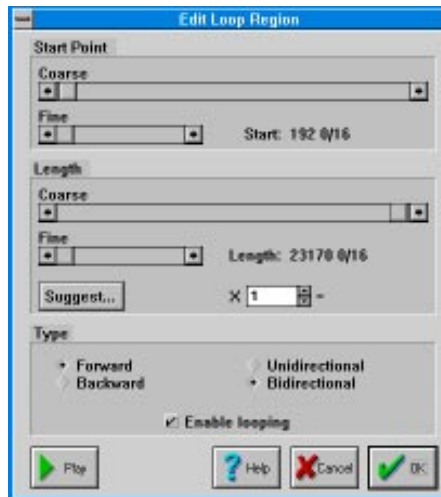
Edit Loop Region

A waveform in a patch often has a loop region defined. A loop region is a portion of a waveform that plays repeatedly. This allows a note to be played for a long time, even if the waveform is short. The Edit Loop Region dialog lets you interactively modify loop region values to get high-quality sound over a long duration.



...Patch Maker Lite, cont'd.

Edit Loop Region Dialog



Defining the Loop Region. A loop region has a start point and a length, which can be set by their respective sliders, marked coarse and fine. Coarse lets you set the value to an approximate position on the loop; Fine lets you fine tune the value more precisely for the best



...Patch Maker Lite, cont'd.

sound. You can't have a start point and loop length combination that would put the end of the loop region past the end of the sample data. Thus the sliders may refuse to move beyond a certain point when you are dragging them to the right.

Choosing loop parameters that result in a good sound can be tricky. For many waveforms, the *Suggest* button can help. When you press this button, the sample data is analyzed (this may take a few seconds), and a minimum loop length is suggested. The *Suggest* button changes to a *Use* button after it is pressed.

Here's an example. Lets say the suggested minimum loop is 127.909. You could use this value, but you can sometimes get better results by using a multiple of the loop's minimum length. For example, a multiplier of 4 will give a loop length of $511^{10}/_{16}$. If you press the *Use* button, the loop length will be set to $511^{10}/_{16}$ samples, and the loop start point will be set as close to the end of the waveform as possible. Some fine tuning may still be needed, but this procedure will often get you into the right ballpark.

Setting the Loop Type. The loop region can be played forward, backward, or in both directions. Check the appropriate box.



...Patch Maker Lite, cont'd.

Enabling looping. When you bring up this dialog, the Enable Looping checkbox is checked by default. If you do not want the patch to play the loop region repeatedly, uncheck this box.



Choose Envelope

The Envelope dialog lets you view or modify the envelope options for the current waveform.

When the sound card plays a patch, three regions of the waveform are treated differently: the part before the loop region, the loop region, and the part after the loop region. There are two possible envelope points for each of those regions. They are called Attack 1, Attack 2, Sustain, Decay, Release 1, and Release 2. The Sustain rate applies when a Note On is being played and looping; the Decay rate applies when a “note off” is received.

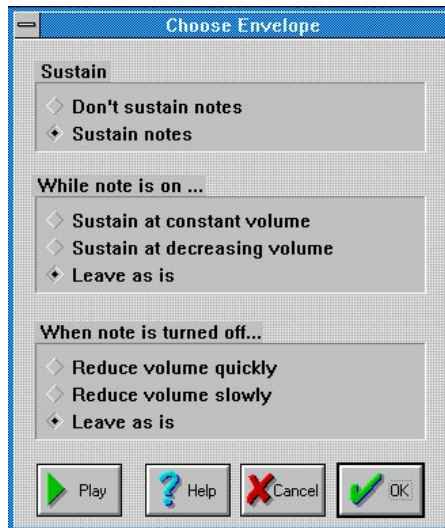
The Choose Envelope dialog offers a simplified set of options for modifying the envelope. You are allowed to modify the Sustain and Decay rates, but defaults are used for Attack and Release rates and the envelope offsets. Also, there are checkboxes for enabling sustaining and sampled release. Although limited, these options should suffice for most of the envelopes you will ever need.



...Patch Maker Lite, cont'd.

Choose Envelope Dialog

Note! Because only certain envelope options are available, if you modify a patch not created with Patch Maker, it may not sound good with the default envelope settings. Reduce the rate of decay to 0 as a starting point for modifying such an envelope.



The Before note is turned off... part of the dialog lets you choose whether you want the note volume to decay while it is looping and if so, by how much. Use the slider and press the Play button to experiment.

The *Sustain* option lets you have control over the volume of a note while it is playing and looping, before you turn it off. For most percussion instruments, the notion of turning the “note off” does not apply; you just



...Patch Maker Lite, cont'd.

want the sample to play through without looping. In this case, do not check *Sustain*.

For melodic instruments, you typically want the note to continue playing (perhaps at decreasing volume) until a "note off" is sent. In this case, check *Sustain*. If you do not, the rate of decay does not apply, and the scroll bar to set the decay rate is disabled.

The *When note is turned off...* options let you choose how quickly the note volume decreases when a "note off" is sent. Sometimes you can achieve an interesting sound by not decaying at all when a "note off" is sent, but instead just playing through whatever is in the waveform. Although you can choose a rate of decay of 0 to achieve this, it is usually better to choose *Sampled Release*.

Note! If looping is not enabled, the note sound will play only for the duration of the sample.

Use the *Play* button to interactively explore the effects of these options. You may need to stop and re-start the note to hear the effect of some options.



...Patch Maker Lite, cont'd.



Adjust Tuning

Adjust Tuning lets you tune the current waveform. When you press the *Adjust Tuning* button, you will hear your waveform and a reference tone (at the correct pitch). Using the reference tone, you can tune your waveform accurately.

You can set the pitch while the note is playing by adjusting the slider labeled *Sample Pitch*. You can play either the waveform note or reference tone alone, or play them together by choosing the appropriate option under the *Play/Stop* button.

In many cases, you can press the Adjust Tuning button to get some help getting the patch in tune. When you press the Adjust Tuning button, the sample data is analyzed (this may take a few seconds), and a frequency is suggested to put the sample in tune. The label of the button changes to Use. Press the Use button to apply the suggested frequency to the patch to affect its pitch.



Edit Vibrato/Tremolo

This dialog lets you view or modify the vibrato (pitch variation) or



...Patch Maker Lite, cont'd.

Edit Vibrato/Tremolo Dialogs

tremolo (volume variation) characteristics of the current waveform. The effects of vibrato and tremolo are determined by the sweep, rate and depth of the effect.



The *sweep* value for vibrato or tremolo determines how soon after the note is turned on that the effect takes place. The larger the value of sweep, the longer the delay.

The *rate* value determines how quickly the pitch or volume varies.

The *depth* value determines how large the variation is.



...Patch Maker Lite, cont'd.

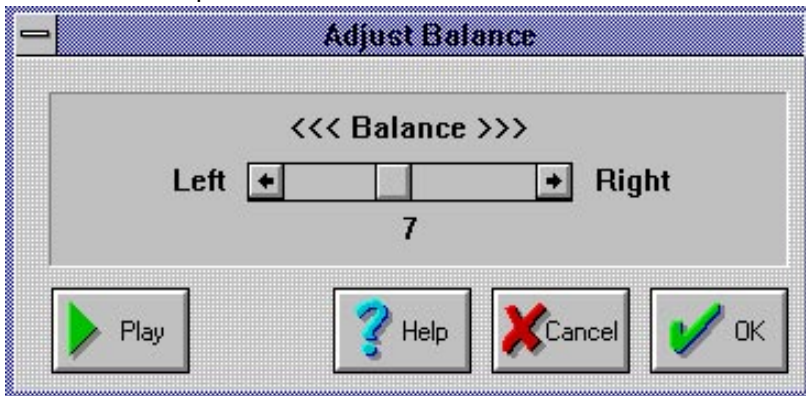
You can set these values interactively by pressing the Edit Vibrato/Tremolo button and adjusting the sliders. In some cases, you'll have to stop and re-start the note in order to hear the effect.



Adjust Balance

This dialog lets you adjust the balance of the current waveform. Each waveform in a patch can have its own balance.

Adjust Balance Dialog



...Patch Maker Lite, cont'd.



Panic Button

The Panic Button reloads all patches that you are working on into the sound card's memory.

There are two situations where you may want to use the Panic Button:

1. A note will not stop playing, no matter what you do. (We've tried to prevent this from happening, but have provided the panic button, just in case.)
2. No sound, or incorrect sound, is heard when you play a patch note. This can happen if you run another program that uses your sound card while Patch Maker Lite is running. The other program may have loaded its own patches.



DOS Software

Click on a Topic or click on the arrow at the bottom of the page to continue reading through the book.

Throughout this book, you can click on green-highlighted text to jump to a related topic.



To return, click the Back button in the tool bar.

[Introduction](#)

[Playfile](#)

[Playmidi](#)

[GravUtil](#)



Introduction

We have provided a number of DOS utilities and software applications for you to use with your sound card.

Playfile

A program for playing and recording digital audio sound files.

Playmidi

A program for playing back MIDI songs or sequences.

Playfile and Playmidi have a full-screen display where you can perform actions with a mouse or keyboard.

Gravutil

A joystick and game card testing and calibration program. Also lets you adjust your sound card's speed compensating game port to the speed of your computer.

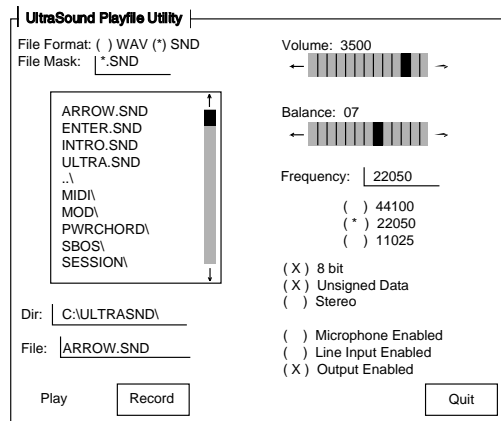
A number of other DOS-based programs and utilities are included on your software CD. For information on using these programs, please read their README files and on-line help files.



Playfile

Figure 4-1. Playfile Screen

Playfile is a stand-alone program for playing and recording digital audio (.SND or .WAV) files on your computer. With Playfile's full-screen display, selection is easy and convenient. Playfile also supports command line instructions and options.



1. File Format: The type of file format you can choose; .WAV, or .SND.
2. File Mask: DOS wildcards supported. The File Mask shows the extension (.SND in this case) of the file you want to play.
3. File Window: Lists the files to choose from.
4. Directory: The files' directory, or the path selected.
5. File: Displays the file you select.
6. Play: Plays the file you select.
7. Record: Records a file.
8. Volume: Adjusts the volume setting.
9. Balance: Sets the balance control.
10. Frequency: Sets the speed for your file; 44100 Hz, 22050 Hz, or 11025 Hz.
11. 8 bit: Set for 8 bit (X) or 16 bit ().
12. Unsigned Data: Sets the type of data required; unsigned (x) or signed ().
13. Stereo: Sets for a stereo file play back, on or off.
14. Microphone Enabled: Enables your microphone to record a sound.
15. Line Input Enabled: Sets your CD or stereo input, on or off.
16. Output Enabled: Sets your amplified output on or off.
17. Quit: Quits Playfile.



To use Playfile:

1. Type: PLAYFILE <enter>
2. On the playfile utility screen, select a File Format: () .WAV or () .SND. The File Mask displays the selection. Selections are made using the mouse or keyboard.
3. Select a sound file (.WAV or .SND) in the file window. Only files with the extension shown in the file mask will appear. The (DIR:) edit box displays the directory for the file. You may type into the DIR edit box to enter a directory. The (FILE:) edit box displays the file.
4. Set the Volume control. You can set this anywhere from 0— 100. The default is 90, and should be loud enough.
5. Select 8-bit (on) or 16-bit (off).
6. Select Unsigned Data if required. (See the Glossary for a definition.)
7. Select Stereo to play a stereo file.



8. Select the Frequency of the .WAV or .SND file (44 kHz, 22 kHz, or 11 kHz).

Frequency means the speed at which the sound file will play, so if you lower the frequency, the sound will play more slowly. The default setting is 22050 Hz, or 22 kHz. You can set the frequency anywhere from 0—44100 Hz. Your sound card's programs use 22 kHz as a default.

9. Select Microphone Enabled to record sound from a micro-phone connected to the microphone jack.
10. Select Line Input Enabled to record from a CD player or stereo device attached to the Line In connector on your sound card.
11. Select Amplified Output Enabled to play back through the speakers.
12. Select Play to play the file.



To Use Playfile from a Command Line

To play a sound using Playfile:

1. Change to the UltraSound software directory.
2. Type: PLAYFILE, then a space, followed by the path and file name for the sound you want to play.

For example, try to play a sound using Playfile and the ENTER.SND sound file, which was put into the directory during installation . Type: `PLAYFILE C:\GRAVIS\ULTRASND\ENTER.SND <enter>`

The sound will play using Playfile's default settings. If you want to change the way the sound plays, you must use a series of parameter switches. The basic parameters are found in the following section. More advanced parameters are found in Appendix B, "Playfile and Playmidi Parameters."

Playfile's Basic Parameters for Command Line Use

If you use the DOS command line for Playfile, the following parameters are probably all you'll need to modify your digital sound files. For a more in depth list of Playfile's commands, see Appendix B.



The previous instructions for Playfile's full-screen interface explained Playfile's basic parameters; therefore, only some of the following commands are defined. The following commands are the same as the parameters located on Playfile's full-screen interface.

To Set: Type Command:

Volume -v [] 0—100; 90 default

Frequency -f [] 0—44100 ; 22050 default

Loop -l [] Loop stands for the number of times the file will repeat, or "loop." The default is once, but you can loop the file as many times as you like. When using Playfile, remember you can't use your computer for anything else, so if you loop a sound many times, all you can do is listen to it until it's finished. You can, however, press the Escape key to exit from Playfile at any time.

Microphone -m1 The -m1 command lets you record sound using a microphone in the microphone jack. In play mode, -m1 defaults to "off," and in record mode, -m1 defaults to "on." Type: -m0 to turn it off.



Line In -n1 Turns on Line In for CD Player or Stereo recording. Type: -n1 into the command line to record a sound from your CD or stereo (attached to the Line In Connector on your sound card). In play mode, this defaults to "off," and in record mode this parameter defaults to "on." Type: -n0 to turn it off.

Try Playfile's parameters. Try playing the ENTER.SND file and experimenting with some of these parameters. The audio may sound strange as you change the default parameters, but it will give you an idea of how you can modify sound using Playfile. You can enter the parameters in any order you like. In both playback and recording mode, enter only the parameters you want to change.

1. Change to the UltraSound software directory.
2. Type: PLAYFILE [parameters], then a space, followed by the path for ENTER.SND.

```
PLAYFILE -v100 -f44100 -l2 C:\GRAVIS\ULTRASND\ENTER.SND  
<enter>
```

Playfile will play the ENTER.SND file at top volume, at twice its normal speed, only out of the left speaker, twice.



Recording with Playfile

Playfile can record and play sound files. To record a file using Playfile:

1. Connect your input device (CD player, microphone, etc.) to the appropriate sound card connector.
2. Change to the UltraSound software directory.
3. Type: `PLAYFILE [parameters], a space, the path where you would like to store your sound on your hard disk, and a name for your sound. It will look something like this:`

```
PLAYFILE -r C:\GRAVIS\ULTRASND\TEST.SND
```

4. Press <enter> and begin recording. The sound card starts to record instantly.
5. Press the space bar to stop recording.

All parameters and commands are the same for recording as they are for playing back sound, so a default sound will be recorded at 22 kHz, 16-bit mono.



Using Playfile to Assign a Start-up Sound

Another way you can use Playfile is to add a start-up sound to your computer. With Playfile, you can add a command that plays your favorite sound through your AUTOEXEC.BAT file. Then, that sound will play every time your machine is turned on or rebooted. This is useful because it shows you whether your sound card is working every time you start your machine. Here's how:

Using any text editor, add the following lines to your AUTOEXEC.BAT file. These lines must be added after the ULTRINIT.EXE line:
PLAYFILE C:\GRAVIS\ULTRASND\ENTER.SND

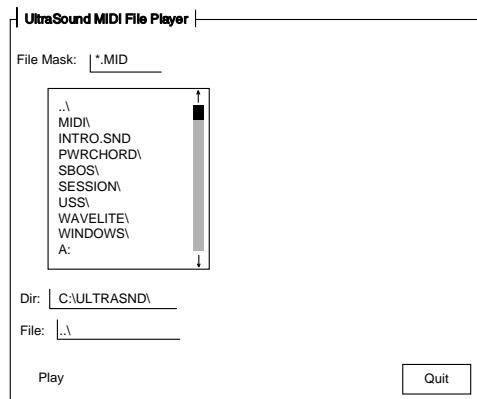
You may use any sound you like, and change any parameters you wish.



Playmidi

Your sound card's software installation program installed your MIDI sound files in a separate directory called MIDI. The MIDI player, called Playmidi, was placed directly into your \GRAVIS\ULTRASND directory. Also located in the MIDI directory are the patches, or individual instruments, that were used to compose the MIDI sounds. The patches are identified by their .PAT extension. Included with your sound card are several songs recorded as MIDI files. These are identified by .MID extensions.

Figure 4-2. Playmidi Screen



1. File Mask: DOS wildcards supported. The File Mask shows the extension (.MID in this case) of the file you want to play.
2. File Window: Lists the MIDI files to choose from.
3. Directory: The files' directory, or the path selected.
4. File: Displays the file you select.
5. Play: Plays the file.
6. Quit: Quits Playmidi.



Playmidi has a full-screen display that is similar to Playfile's. Playmidi also supports command line options.

A demonstration of Playmidi was installed with your sound card software.

If you would like to hear the MIDI demo:

1. Change to the UltraSound software directory
2. Run the Demo: Type: MIDIDEMO

Another MIDI demo is provided for those who have expanded their sound card to its full 1 Megabyte capacity. To Run the 1 Megabyte MIDI demo: Type: MIDI1MB.BAT

To use the MIDI File Player:

1. Type: PLAYMIDI <enter>
2. On the Playmidi screen, the File Mask displays *.MID.
3. Select a sound file in the text window. Selections are made using the mouse or keyboard.



The DIR: displays the directory for the file; (.MID) files are in the MIDI directory. The FILE: displays the file.

4. Select Play to play the file.

To use the MIDI File Player from the Command Line

1. Change to the UltraSound software directory.
2. Type Playmidi, followed by the file name for the MIDI song you want to play. For example:
Type: PLAYMIDI LATINDNC.MID <enter>

3. To stop the MIDI sound from playing, press any key.

The .CFG file for each MIDI song, like LATIN.MID for example, is used to set up the appropriate instruments to their respective channels. MIDI songs without .CFG files will default to the industry standard General MIDI set.

See Appendix B, “Playfile and Playmidi Parameters” for an explanation of the command line parameters available with Playmidi and a discussion of Playmidi.CFG and Default .CFG files.



GravUtil

GravUtil is a useful program for testing your joysticks and game port.

To run GravUtil:

Double-click the GravUtil icon in your Gravis program group. To run the program from DOS, change to your \GRAVIS\GRAVUTIL directory, and type: GRAVUTIL <Enter>.



To Test a Joystick or Game Pad:

1. Click on a controller button on GravUtil's main screen.
2. Follow the instructions on-screen to test the joystick. For detailed instructions, press F1 or click on the Help button.
3. When the test is complete, click the Speed Compensation button.

The Speed Compensation option applies only if you are using the game port on a Gravis UltraSound card. For more information, press F1 to access GravUtil's Help.

If your joystick and game port test OK in GravUtil, but you are having problems with the joystick in a game, the problem is with either:

- the game's joystick setup or calibration; or
- your Windows 95 joystick setup (if it's a Windows 95 game).

To Test Your Game Port:

Click on the Test Gameport button on GravUtil's main screen and read the reports on your screen as GravUtil runs three tests on your game port. Press F1 at any time if you need help.



If your game port fails any portion of the test, press F1 for help, and read the following section on game port conflicts.

Game Port Conflicts

Erratic joystick behavior is often caused by conflicting game ports in a system. All game ports use the same address (201 hex), and a joystick will not work properly if more than one device in your system is using that address. A computer that has two game port circuits will cause a dilemma when a game requests information from the game port because two devices will “talk” at the same time. With two active devices on the same address, you will experience conflicts.

If your games are behaving erratically, you may have a conflicting or malfunctioning game port. Some cards - multi-I/O cards for example - have game card circuits but no external joystick connector. It is the interface circuit that causes problems, so you may have a conflict without actually having another visible joystick connector.

To correct a conflict, remove or disable the conflicting device, or change its base address. See the manuals for the other cards in your computer (e.g. game, scanner, tape backup, or multi-I/O cards) for information on disabling a game port or changing its base address.



Sound Support for Games

Click on a Topic or click on the arrow at the bottom of the page to continue reading through the book.

Throughout this book, you can click on green-highlighted text to jump to a related topic.



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[Introduction](#)

[Step 1 – Choose a Method of Sound Support](#)

[Step 2 – Set Up the Game for Sound](#)



Introduction

Cards that use FM synthesis produce “computery” and indistinct sound. Your sound card uses advanced wavetable synthesis— sampling real instruments to create music and sound effects for games. The result? Clear, natural, realistic sound.

Your sound card can be supported by games in three ways:

- 1) Direct support of UltraSound compatibles;
- 2) Direct support of Sound Blaster or Sound Blaster Pro;
- 3) Mega-Em (software emulation of Roland® MT-32 or SCC1).



Step 1. Choose a Method of Sound Support

Try the following game sound solutions, in order, to get the best sound possible from your games.

A) Direct Support of UltraSound

If the game supports UltraSound and compatibles directly, with no additional software drivers, UltraSound appears in the list of sound cards in the game's Setup program. Games like this produce the best results—fantastic sound using your sound card's 32 digital channels. If your game supports UltraSound directly:

Select UltraSound from the list of supported sound cards, then start the game.

Enjoy the best PC game sound available! Go to Step 2.

Note! More game developers are including direct UltraSound support in their games all the time. Check with the game's manufacturer for information on upgrades to make your game directly compatible with your UltraSound-compatible card. Check your software store for new game titles that support UltraSound.

Go to Step 2.



B) Direct Support of Sound Blaster Pro™ or Sound Blaster™

If the game supports Sound Blaster (8-bit, mono) or Sound Blaster Pro (16-bit, stereo) compatibles directly, with no additional software drivers, SB or SB Pro appears in the list of sound cards in the game's Setup program.

Select Sound Blaster Pro or Sound Blaster from the list of supported sound cards, then start the game.

Go to Step 2.

C) Mega-Em (Emulator) Support

Mega-Em provides good quality music and sound effects for games that do not directly support UltraSound, but use General MIDI, Roland MT-32, or a Roland SCC1 and Sound Blaster combination. Mega-Em's sound quality is often better than the Sound Blaster Pro selection.

To use Mega-Em:

1. At a DOS prompt, type MEGAEM and press Enter.



One benefit of Mega-Em is that it loads completely into expanded memory (EMS). Mega-Em requires a memory manager such as EMM386, QEMM386, or 386MAX.

2. Start the game.
3. If the game asks you to select a sound device, choose one of these:

Roland® Sound Canvas/SCC1

Roland MT-32*

Sound Blaster™

Roland + Sound Blaster

*To emulate the Roland MT-32, quit the game, type: MEGAEM -MT and press Enter, then re-start the game and select MT-32.

Note! If your game will not allow you to use a memory driver, or if it was written in protected mode, Mega-Em may not work.

4. Play the game as usual.
5. When you finish the game, type: MEGAEM -F to unload Mega-Em.

If the game works with sound after loading Mega-Em, go to Step 2.



Step 2. Set Up Your Games for Sound

Games Already Installed on your Computer

You may have to reconfigure games already installed on your computer before you can use them with your sound card. See the game's Setup instructions. You may need to reinstall the game and enter the appropriate settings (IRQ, DMA, Base Port Address) so that the game will work with your sound card.

New Games

When you install a new game, its installation program may ask you what type of sound board you are using.

If UltraSound is in the menu:

Choose UltraSound.

If Sound Blaster Pro or Sound Blaster is in the menu::

Select Sound Blaster Pro or Sound Blaster.

If UltraSound is NOT in the menu:

If General MIDI, Roland MT 32, SCC1, or Sound Canvas are listed, load Mega-Em (see Step 1) and choose General MIDI, Roland MT 32, SCC1, or Sound Canvas.



A game's installation may ask you for the sound card's settings (IRQ, DMA, and Base Port Address).

Refer to your Quick Install guide (if you wrote down your settings), or look in your AUTOEXEC.BAT file for the card's base address, DMA and IRQ settings.

Games Requiring Large Amounts of Memory

If a game you want to install requires a lot of conventional memory (base RAM), your best bet is to clean up your system's memory to make room. Refer to your memory manager's documentation in your DOS manual on how to free conventional memory. If you are using MS-DOS v.6.0 or later, you can use the MEMMAKER command to free memory. With QEMM or 386MAX, use MAXIMIZE.

If you have problems with games that require a lot of memory, please refer to the "DOS Troubleshooting" section in Chapter 6.

If Your Game Doesn't Make Any Sounds

If your game remains silent, look in the game's documentation for answers. Also, refer to "DOS Troubleshooting" in Chapter 6.



Troubleshooting

Click on a Topic or click on the arrow at the bottom of the page to continue reading through the book.

Throughout this book, you can click on green-high-lighted text to jump to a related topic.



To return, click the Back button in the tool bar.

Please refer to the “README” file for the most up-to-date technical information.

DOS Troubleshooting

[Sound card isn't producing sound](#)

[Problems recording from microphone](#)

[Jerky playback](#)

[Game sound problems](#)

[Static](#)

[Printing problems](#)

[16-bit DMA channel problems](#)

[System crashes \(with sound card and CD-ROM installed\)](#)

Windows Troubleshooting

[No MIDI sound in any application](#)

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[Windows initialization error](#)

[Volume increase after using Media Player](#)

[Windows for Workgroups requires more memory](#)

[No sound with a WAV file](#)

[Some WAV files contain unexpected pops and clicks](#)



DOS Troubleshooting

Sound Card isn't producing sound.

Your card may not be connected securely, and may not be seated properly in the bus slot. Reseat the card, or try a different bus slot.

If you are running sound through your stereo, make sure that your stereo is working correctly and connected properly. Make sure that you have selected the correct input at the back of your stereo and that the correct input selector switch is set at the front panel of your stereo. Use any input on your stereo except the phono input—it will sound terrible, and could damage your speakers and phono input!

Is there a conflict with another device or card?

Change the settings of the conflicting card. To identify conflicts, remove all the non-essential cards from your machine one by one. After removing each card, run the software that is giving you trouble, and note whether the problem occurs. When you find the card causing the problem, check its DMA channel, IRQ, and Base (I/O) Port Address. Once you have identified the conflict, change the appropriate setting. Be careful not to cause a conflict with any other card in your system.



...DOS Troubleshooting, cont'd.

Is your card in a 16-bit slot?

Make sure that the sound card is in a 16-bit slot in your computer.

I can't record sounds from my microphone.

Your microphone may be plugged into the wrong connector. Check that it is plugged into the Microphone In connector, that it is a compatible dynamic or condenser microphone, and that it is turned on.

My sound is playing in starts and stops. It sounds jerky.

Your hard disk is probably fragmented or too slow. This is most often a problem when recording at a high sample rate and resolution. To prevent this problem, obtain and run a disk defragmenting utility. (If you have DOS 6.0 or later, you can use DEFRAG.) It is only necessary to optimize the “free space” on your hard disk, so look for this option in your disk optimizing software.

When errors occur in a part of a recording, they can almost always be corrected by simply re-recording the same material—as long as the second recording is no longer than the first.



...DOS Troubleshooting, cont'd.

I'm having trouble with my game. It either makes no sound at all, or it sounds garbled and funny.

Check the game's setup. Did you select a sound card? Most games have a specific configuration step where you have to "tell" the game to use a specific sound card. Usually, this step is called Setup and is available from the game's main menu. Sometimes you select the sound card by running a separate program called Setup or Install. See your game's documentation.

Does your game require an additional parameter?

Some games require you to enter an additional parameter for sound board support when starting the game. For example, you may have to type `C:\KILLERCOWS SBLASTER`. (Killer Cows is not a real game.) If your game requires this, then start the game with this additional parameter.

Some programs require IRQ 7 as the default IRQ. Run Setup to change your MIDI IRQ to 7.

Some programs look only at the BLASTER environment string for IRQ and DMA. Make sure that SET ULTRASND and SET BLASTER commands in your AUTOEXEC.BAT have the same IRQ and DMA channels selected.



...DOS Troubleshooting, cont'd.

Do you have enough free conventional memory?

Check that the application has enough conventional memory to run. You may need to change your system configuration (i.e., by loading drivers high, removing drivers, etc.) to free more memory. See your DOS manual for more information on memory management.

If you are using QEMM, run Optimize to locate more free memory. DOS 6.0 and later versions can use MEMMAKER.

Is your card in a 16-bit slot?

Make sure that the sound card is in a 16-bit slot in your computer.

My sound plays, but it has lots of static.

Check the connections.

Some computers may have “noisy” power supplies or hard drives. These noises are picked up and amplified through your sound card’s amplifier. Either turn down the volume, or use an external amplifier.

I’m having trouble printing a document.

A conflict may occur if you have a printer connected to LPT1 (printer



...DOS Troubleshooting, cont'd.

port 1) because LPT1 also uses IRQ 7. A conflict occurs when two devices try to access the same IRQ at the same time. Disable your sound card while you print, or use another printer port.

I'm having problems with the 16-bit DMA channels.

Your sound card's default DMA channel is an 8-bit channel because some motherboards do not have working 16-bit DMA channels. However, the 16-bit DMA channels may work fine on your computer. Try to run your sound card on a 16-bit channel— performance will be better. Using a 16-bit channel allows the card to transfer data twice as fast.

The 8-bit channels are 0–3; the 16-bit channels are 4– 7. Stereo recording will be better on 16-bit channels.

If strange things happen with the 16-bit channel, switch back to a free 8-bit channel.

I have an sound card and a CD-ROM drive installed, and my computer keeps crashing.

If you have a CD-ROM drive with a port address of 3x0 Hex, and your



...DOS Troubleshooting, cont'd.

sound card's Base Port Address is set at 2x0 ('x' being the same number), your computer may crash. For example, if your sound card's Base Port Address is 240 Hex, and your CD-ROM drive's port address is 340 Hex, you may have problems.

To solve the problem, change the port address of either the CD-ROM drive or your sound card.



Windows Troubleshooting

I get no MIDI sound in any application.

During initialization, the driver scans the ULTRASND.INI file for the names of the patch files that will be used to play MIDI data. Two problems could cause an error:

1. The PATCHDIR entry in the [UltraSound] section of ULTRASND.INI does not point to a directory containing all of the patch files listed in the [Melodic Patches] and [Drum Patches] sections of ULTRASND.INI.

Edit the ULTRASND.INI file, and correct any errors in the PATCHDIR entry. For example: [ULTRASOUND] PATCHDIR=C:\GRAVIS\ULTRASND\MIDI\

2. The patch file listed in the error message, GUITAR.PAT, for example, has been misspelled, damaged, or does not exist.

Check the spelling and existence of the patch identified in the message in the ULTRASND.INI file. Note that the file extension, .PAT, is not included:

```
[MELODIC PATCHES]
0=ACPIANO
[DRUM PATCHES]
27=HIGHQ
```



...Windows Troubleshooting, cont'd.

I have problems playing MIDI and .WAV files.

If no sound occurs when you play MIDI files, or instruments seem to be missing:

- Make sure that the your sound card's setup is selected in the MIDI Mapper.
- Set the MIDI Volume scroll bar to the far right (the highest volume). This scroll bar can be found in the Mixer Options in the Setup section of the Drivers dialog box.
- Pause or stop playing the MIDI file, stop any .WAV file that is playing, and restart the MIDI file.

I get no MIDI sound or inappropriate sound in certain applications.

The application may not be using patch caching. (See "Patch Caching" at the end of Chapter 2.)

If you have an application that does not use patch caching, you can load a subset of the General MIDI set before running that application.



...*Windows Troubleshooting, cont'd.*

Do the following:

- Click on the Drivers icon under the Control Panel, and select the *UltraSound and MIDI Synth* or your sound card's audio driver (whichever one you have).
- Click on the *Setup* button. Then click on *Performance Options* to access the *Conserve Memory* button.
- Click on the MIDI Mapper (also under the Control Panel) to select the appropriate setup for the amount of memory on your sound card (Ultra1024K).
- Load patches from the MIDI file that corresponds to the amount of memory on your sound card: *LOAD1024.MID*.

To revert to normal operation:

Select *UltraSound Setup* in the MIDI Mapper, and enable the *High Fidelity* option of the driver.



...Windows Troubleshooting, cont'd.

I received a Windows Initialization Error

An error may have occurred in the GRVSULTR.386 driver. Make certain that the line `DEVICE=GRVSULTR .386` is in the `[386ENH]` section of the `SYSTEM.INI`. Also make sure that the `GRVSULTR.386` file is in your `\WINDOWS\SYSTEM` directory.

The sound card's driver requires Windows 3.1 or better, running in Enhanced mode. Check the Windows User's Guide to make sure that your computer meets the requirements of enhanced mode Windows. (A 386 or greater with at least 4 MB of RAM is recommended.)

The sound card's driver may not have been initialized because of a DRAM failure or a Base (I/O) Address conflict. During Windows initialization, the driver may have been unable to validate the sound card hardware. Exit Windows, and execute `SETUP` in the sound card's installation directory. This diagnostic tool will verify that your hardware settings are correct and report any hardware failures.

Did you receive the message "The following initialization file cannot be opened... \xxx\ ULTRASND.INI"?

- Exit Windows.



...Windows Troubleshooting, cont'd.

- Set the DOS environment variable ULTRADIR to the sound card's installation directory. For example: Type: SET ULTRADIR=C:\GRAVIS\ULTRASND <enter>
(This is only set until you turn off your computer.)
- Verify that the ULTRASND.INI file exists in the sound card's installation directory.
- Restart Windows.

The driver needs the ULTRASND.INI file to locate MIDI patches for use with Windows and to initialize itself to play MIDI files.)

The volume increases after I pause and restart some MIDI files using Media Player.

The Media Player only sends MIDI controller messages the first time a MIDI file begins to play. Since the MIDI controller messages that affect volume are not sent when playback is resumed, a default volume is used, and this may be louder than the composer intended. This is a bug in Media Player.



...Windows Troubleshooting, cont'd.

When I use Windows for Workgroups, I need more PC memory than I did with a standard Windows installation.

If you have installed Windows for Workgroups, note that it typically requires twice as much PC memory to regain the performance that you had with a standard Windows installation. An option is available to disable resource sharing under Windows for Workgroups. This option will conserve memory.

No sound occurs when I play a .WAV file.

A .WAV file uses extended RAM. For example, a 2 MB .WAV file uses 2 MB of extended RAM. If you don't have enough extended RAM available—which varies with the number of applications you have open—you'll have problems.

Quit as many applications as possible to free extended RAM.

Is the Wave Volume set too low?

Set the Wave Volume scroll bar to the far right (highest volume). This scroll bar can be found in the Mixer Options in the Setup section of the Drivers dialog box.



...Windows Troubleshooting, cont'd.

Is another sound card conflicting with your sound card?

If another audio card is installed, check that your new sound card is set up as the first Wave device in the SYSTEM.INI. The [DRIVERS] section of the SYSTEM.INI should have the following line:

```
WAVE=ULTRASND.DRV
```

Other audio cards will be designated as WAVE1, WAVE2, etc.

Some .WAV files seem to contain unexpected pauses and clicks.

386SX class machines are unable to play .WAV files from Video for Windows without pauses in the audio. See the topic "Performance Options" in Chapter 2 for more information.



Technical Support & Warranty

Click on a Topic or click on the arrow at the bottom of the page to continue reading through the book.

[Technical Support Instructions](#)

[Support by Telephone](#)

[Support by Electronic Mail](#)

[Warranty](#)

[Garantie de Advanced Gravis \(Français\)](#)

[Garantie von Advanced Gravis \(Deutsch\)](#)

[Garantia de Advanced Gravis \(Español\)](#)



Technical Support Instructions

Technical support is available to all registered owners of Advanced Gravis products. There is no charge for technical support, except possible long distance charges.

Technical Support Tips

- If only certain programs are affected, read their manuals for information relating to joysticks and game cards.
- Call from a phone where you have access to your computer so you can test suggestions and provide any additional information that may be required.
- Please be prepared to provide the following information:

Name, address and telephone number

The name of the Gravis product

Make and Model of your computer

Your system software and version

The software version number

Names and versions of all affected software programs

Symptoms of the problem, and what led to them



Support By Telephone

Automated 24-Hour Faxback Service (frequently asked questions):
(604) 431-9179 (Please call from a fax machine, or have fax software set to allow manual receive of faxes because you will receive the faxes directly.)

Technical support is available by telephone Monday–Thursday 8:00 AM–4:30 PM Pacific Coast Time, Friday 8:00 AM–3:30 PM.

In the United States, Canada, and Mexico, please call:

Phone: (604) 431-1807 Fax: (604) 451-9358

In Europe, please call one of these numbers:

Austria	0660-5791	Luxembourg	0800-2778
Belgium	0800-16778	Netherlands	31-36-536 4443
Denmark	800-17838	Norway	800-11335
Finland	9800-13228	Portugal	05-05313318
France	05-906053	Spain	900-993129
Germany	0130-810654	Sweden	020-795845
Hungary	00800-11727	Switzerland	155-8605
Ireland	1800-553168	UK	0800-894383

If your country is not listed, please call either (604) 431-1807 (Canada) or +31-36-536-4443 (Netherlands).



Support By Electronic Mail

This Web Site is the hub of Gravis' online support network. For the most current and detailed information and files, look here.

Contact Advanced Gravis at the following addresses:

Internet Web Site:	http://www.gravis.com
Internet E-mail:	sound@gravis.com (Canada) gravis@euronet.nl (Europe)
Internet File Server:	ftp.gravis.com
CompuServe:	Go PCVENB area #14
Advanced Gravis BBS:	(604) 431-5927 V32bis N81
Advanced Gravis Europe BBS:	+31-36-536-0379 V32bis N81
America On-Line:	email gravistec go keyword: Gravis



Advanced Gravis 1-Year Warranty

Advanced Gravis Computer Technology Ltd. (hereinafter referred to as GRAVIS) warrants to the original purchaser of the Gravis UltraSound Extreme (hereinafter referred to as ULTRASOUND) manufactured by GRAVIS that it will be free of defects in materials and workmanship for a period of 1 year from the original date of purchase.

Information on obtaining warranty services is provided in the “Warranty Claim Instructions” section. Proof of purchase must be provided when requesting work be done during the warranty period. All warranty claims must be sent to GRAVIS—do not return your ULTRASOUND to the place of purchase.

In no event will GRAVIS be responsible for any indirect, special, incremental, consequential or similar damages or lost data or profits to you or any other person or entity regardless of the legal theory, even if we have been advised of the possibility of such damage. Some states do not allow the exclusion or limitation of consequential damages, so the above limitation or exclusion may not apply to you. Our liability for any damage to you or any third party in the event that any of the above limitations are held unenforceable shall not exceed three times the fee you paid for the ULTRASOUND regardless of the form of any claim.

During the warranty period, GRAVIS will repair, (or at its option replace with a



...*Warranty, cont'd.*

reconditioned ULTRASOUND) at no extra charge, components that prove to be defective, provided the ULTRASOUND is returned with proof of purchase and shipped prepaid to Advanced Gravis.

Canadian and International Customers
101–3750 North Fraser Way
Burnaby, BC V5J 5E9
Canada

US Customers
3140 Mercer Avenue, Ste. H
Bellingham, WA 98225-8446
USA

Warranty Claim Instructions

Carefully read the warranty section and provide a detailed description of the problem including the make and Model of your computer system and the name, version and publisher of the software you are using.

The means of product shipment to GRAVIS is at your cost and discretion. We suggest that you insure your Gravis ULTRASOUND in case of damage during shipment. GRAVIS is not responsible for product lost or damaged in shipment.



...Warranty, cont'd.

We regret that warranty claims originating in the U.S. that are shipped to the Canadian address must be refused due to customs and importation requirements. To avoid customs charges for warranty claims originating outside the U.S. or Canada, please state on the customs documents that the product is being returned for warranty repair.

Include the following information:

- Your name and address
- Home and business numbers
- Fax number (if applicable)
- A copy of your original sales bill
- A description of the problem



Garantie de Advanced Gravis

Advanced Gravis Computer Technology Ltd. (ci-après désigné sous le nom GRAVIS) garantit à l'acheteur original de la Gravis UltraSound Extreme (ci-après désigné sous le nom ULTRASOUND) fabriqué par GRAVIS, qu'elle ne présente aucun défaut de matériau ou de fabrication, et cela pour une période d'un an à compter de la date d'achat. Pour toute demande de réparation pendant la période de garantie, vous devez fournir une preuve d'achat. Toutes les réclamations doivent être adressées à GRAVIS : ne rapportez pas votre ULTRASOUND au revendeur.

En aucun cas GRAVIS ne saurait être tenu responsable des dommages indirects, spéciaux, marginaux, consécutifs, ou similaires, ou de la perte de données ou de bénéfices à votre compte ou celui d'un tiers, quelle que soit la théorie juridique pouvant s'appliquer et même si nous avons été avertis de la possibilité d'un tel dommage. Certains États n'autorisant pas l'exclusion ou la limite des dommages indirects, les limites ou l'exclusion décrites ci-dessus peuvent ne pas vous concerner. Dans le cas où elles ne sont pas applicables, et en cas de dommages, notre responsabilité vis-à-vis de vous ou d'un tiers ne dépassera pas trois fois le prix d'achat de la ULTRASOUND, quelle que soit la forme de la réclamation.

Pendant la période de garantie, GRAVIS s'engage à réparer les composants



...Garantie de Advanced Gravis

défectueux (ou, à son choix, remplacer sans supplément la ULTRASOUND par une autre ULTRASOUND remise à neuf), sous réserve que la ULTRASOUND, accompagnée d'une preuve d'achat, soit expédiée en port pré-payé à :
Advanced Gravis Computer Technology.

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101-3750 North Fraser Way
Burnaby, B.C. V5J 5E9
Canada

Clients des États-Unis
3140 Mercer Avenue, Ste. H
Bellingham, WA 98225-8446
États-Unis

Instructions pour faire valoir une réclamation sous garantie

Veuillez lire attentivement la section sur la garantie et fournir une description détaillée du problème, en indiquant la marque et le modèle de votre ordinateur, ainsi que le nom, la version et l'éditeur du logiciel utilisé.

Les frais d'expédition d'un produit à GRAVIS sont à votre charge et le choix du



...Garantie de Advanced Gravis

mode de transport vous appartient. Nous vous suggérons d'assurer votre ULTRASOUND contre la perte ou les dommages subis pendant le transport. GRAVIS n'est pas responsable de la perte du produit ou des dommages subis par celui-ci au cours du transport.

Les réclamations de garantie expédiées à l'adresse canadienne à partir des États-Unis seront renvoyées à l'expéditeur en raison des réglementations d'importation et de taxes douanières. Pour les réclamations faites en dehors des États-Unis ou du Canada, veuillez préciser sur les formulaires des douanes que vous retournez pour réparation un produit sous garantie. Vous éviterez ainsi des frais de douane.

Veuillez fournir les informations suivantes :

- Vos nom et adresse.
- Vos numéros de téléphone (domicile et lieu de travail).
- Votre numéro de télécopieur (le cas échéant).
- Une photocopie de la facture originale.
- Une description du problème.



Garantie von Advanced Gravis

Advanced Gravis Computer Technology Ltd. (im folgenden Gravis genannt) garantiert dem Erstbesitzer des von GRAVIS hergestellten Gravis UltraSound Extreme (im folgenden ULTRASOUND genannt) für die Dauer für ein Jahr ab Kaufdatum, daß das Produkt frei von Material- und Verarbeitungsfehlern ist. Alle Garantieansprüche müssen direkt über GRAVIS abgewickelt werden, geben Sie daher den ULTRASOUND nicht an Ihren Händler zurück.

GRAVIS haftet nicht für alle mittelbaren, speziellen, zufälligen oder Folgeschäden bzw. ähnlichen Schäden, einschließlich Daten- oder Vermögensverluste, die Ihnen oder einer anderen Person oder juristischen Person entstehen, unabhängig von der gültigen Rechtsauffassung, selbst dann, wenn GRAVIS von der Möglichkeit solcher Schäden in Kenntnis gesetzt wurde. In

einigen Ländern ist eine Haftungsbeschränkung oder der Ausschluß von Folgeschäden nicht erlaubt. Daher ist es möglich, daß der oben beschriebene Haftungsausschluß bzw. die Haftungsbeschränkung nicht auf Sie zutreffen. In keinem Fall kann Ihr Schadensersatzanspruch oder der eines Dritten gegenüber GRAVIS den dreifachen Betrag, den Sie für den ULTRASOUND bezahlt haben, überschreiten.

Während der Garantiezeit repariert GRAVIS fehlerhafte Komponenten auf



...Garantie von Advanced Gravis

eigene Kosten, vorausgesetzt, der ULTRASOUND wurde zusammen mit einem Kaufnachweis an eine der genannten Adressen von Advanced Gravis Computer Technology Ltd. geschickt. Dabei bleibt es Gravis überlassen, das defekte Gerät zu reparieren oder durch ein generalüberholtes auszutauschen.

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Kanada

Nordamerikanische Kunden (USA)
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USA

Hinweise Zur Garantieabwicklung

Lesen Sie den Abschnitt mit den Garantiebestimmungen sorgfältig durch, und legen Sie beim Einreichen des Garantieanspruchs eine genaue Problembeschreibung bei. Geben Sie dabei Marke und Modell Ihres Computers sowie Namen, Version und Hersteller der von Ihnen verwendeten Software an.



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Hardware Options

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[Gravis Joystick Y-Cable](#)

[Gravis Universal MIDI Adaptor](#)

[Ordering Information](#)



Gravis Joystick Y-Cable

Because the joystick connector on your UltraSound Extreme is also a MIDI connector, regular Y-cable joystick adapters do not work with the card. This is because some of the pins on the joystick port are reserved for MIDI functions. We recommend the special Joystick Y-Cable made by Advanced Gravis that allows you to connect two joysticks to your UltraSound.



Gravis Universal MIDI Adaptor

A full-featured MIDI adaptor with MIDI IN, OUT, and THRU connectors, two 15-pin joystick connectors, 4-foot cable, MIDI activity LEDs, and a bonus 6-foot MIDI cable. Works with any sound card that has a 15-pin "D" connector UART/MPU 401-type MIDI interface, including Sound Blaster™, Pro Audio Spectrum, and of course, UltraSound!



Ordering Information

Please call, write, or fax Gravis or your computer dealer for pricing and availability on these items.

To place orders from the U.S. or Canada, please call the Gravis Mail Order Service at 1-800-257-0061.

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Glossary

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16-bit – Applet

16-bit

A single binary unit (1 or 0) is 1 bit. One byte is 8 bits, and 2 bytes are 16 bits. With 1-bit sound, there are two possibilities: on or off. With 8-bit sound there are 256 possible combinations. With 16 bits, there are more than 65,000 possible digital configurations, resulting in richer and more detailed sound.

32-voice

Your sound card is capable of producing a variety of sounds. These sounds are called voices or patches. Your sound card can play up to 32 voices – or synthesized music notes – at the same time.

ADC

Analog to Digital Converter. The ADC converts electrical signals into digital data. Your sound card has one ADC.

Applet

This is a Windows term for a small program. Applets are visually represented by icons in Windows.



CD Quality – DAC

CD Quality

The standard measure of CD quality is a frequency of 44.1 kHz, at a depth of 16 bits. UltraSound is capable of exceeding these specifications.

CD-ROM

A personal computer compact disc drive. CD-ROM is an affordable way to store lots of data.

Contiguous

A file is contiguous if the whole file is located in one area on the disk or hard drive and all blocks are adjacent to each other in order from beginning to end.

DAC

An acronym for Digital to Analog Converter. The DAC converts digital information to electrical signals (voltages), and sends the sound through the speakers. All CD players and synthesizers contain a DAC. Your sound card has one DAC.



Depth – FM Synthesis

Depth

The depth value for tremolo or vibrato determines how large the variation in pitch or volume is.

DMA Channel

An acronym for Direct Memory Access Channel. Your sound card uses Direct Memory Access to transfer sound data directly, without using the CPU. This allows, for example, simultaneous play of sounds and graphics in a game. Your sound card supports full 16-bit DMA transfers if plugged into a 16-bit ISA bus slot.

FM Synthesis

A technology that recreates or mimics an instrument's sound by manipulating a wave (sound) shape or form until the sound is close to that of the actual instrument.



General MIDI – MIDI

General MIDI

A music industry standard that specifies the basic capabilities of a music synthesis device. It maps instruments sounds into standard MIDI codes.

IRQ

An acronym for Interrupt Request. This is how your sound card checks and updates information sent to it through your computer. When you set the IRQ, it tells the sound card how and where to look for information. If another device shares the same IRQ, your sound card will not work properly.

MIDI

Musical Instrument Digital Interface. A digital communication standard that lets electronic musical instruments talk or communicate with each other. Think of MIDI as a language for electronic musical instruments. MIDI conveys many different things at once: for example, when you play a note, MIDI sends the information on what note is being played, how loud, and when it starts and stops.



MIDI Channels – MPC

MIDI Channels

Sixteen separate channels that send or receive MIDI data.

MIDI Files

MIDI files or MIDI song files identified by the .MID extension. MIDI song files contain instructions that allow your PC to play the synthesizer on your sound board, or to control external MIDI synthesizers or sound modules.

MIDI Mapper

A Windows™ tool that allows you to change MIDI data being sent through the Windows MIDI software drivers.

Mixer

Allows you to change audio levels in a sound card. The Mixer lets you control your sound card's audio levels.

MPC

Multimedia PC or MPC is an equipment specification standard for personal computers. MPC currently has two standards: MPC Level 1 or MPC Level 2. MPC Level 2 has stricter specifications than MPC Level 1.



MPU – Root Frequency

MPU-401

A board interface that allows personal computers to connect to MIDI devices like keyboards or drum machines.

Offset

Offset refers, in general, to where information begins.

Patch

A patch is one voice, typically an instrument or a digital sound. Your sound card can play up to 32 voices at once and comes with a number of patches for playing MIDI songs.

Rate

The rate value for vibrato and tremolo determines how quickly the pitch or volume of a sound varies.

Root Frequency

The root frequency of a waveform in a patch determines the pitch at which a note will play. The root frequency is normally the frequency that the note was played at when it was sampled; however, it might be different to allow for fine tuning of the note.



Sample – Sequencing

Sample

A single number representing one point in a digitized sound.

Sampling Rate

The number of digital audio samples recorded per second. A sampling rate of 22 kHz means that 22,000 digital samples are recorded each second of audio. The higher the rate, the better the sound quality. A high rate (e.g. 44 kHz) uses more disk space.

SCSI

Small Computer Systems Interface. A hardware and software standard for sending data between computers or computer peripherals and devices. There are two types of SCSI: SCSI 1 and SCSI 2. The essential difference is that a device with SCSI 2 transfers data faster.

Sequencing

A method whereby a computer, or hardware sequencer, records MIDI information. Sequencing is also achieved by sequencer software like Power Chords™ and Midisoft® Recording Session™, included with your UltraSound software. With sequencer software, you can compose your own MIDI files or modify MIDI songs.



Sustain – Unsigned Data

Sustain

If a waveform's envelope has *sustain* selected, a note will play through the first part of the envelope, then maintain a constant rate of increase or decrease of volume for as long as it is on. When the note is turned off, the note plays through the remainder of the envelope.

Sweep

Sweep determines how soon after a note is turned on that an effect takes place. The larger the value of sweep, the longer the delay.

Twos Complement (Signed) Data

The data format used by most sound cards to store and record digital information. UltraSound's GF1 automatically converts unsigned binary data to Twos Complement data, so if you have REAL twos complement data, you must "tell" the chip to prevent it from attempting conversion.

Unsigned Data

The most common type of digital data for sound. Most Sound Blaster and compatible sounds are unsigned data, as are the sound produced by your sound card and by Macintosh computers.



VOC Files – Wavetable Synthesis

VOC Files

A format for storing digital audio, .VOC files can be converted into .WAV format by software. For example, WinConvert, which came with your sound card software, can convert .VOC files to .WAV.

WAV Files

Waveform audio is digitized sound that is stored in a file with a .WAV extension. A format for storing digital audio, standardized by Microsoft.

Waveform

A collection of samples of a sound. In Windows, waveforms are usually stored in a file with a .WAV extension. A patch contains one or more waveforms, which contain the sampled sounds of an instrument.

Wavetable Synthesis

Also known as waveform synthesis, wavetable synthesis creates sounds by recording the actual instruments to produce natural and realistic sound files, or patches, for applications and games. The result of this process is an accurate electronic reproduction of real instruments.



Playfile & Playmidi Parameters

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Playfile Parameters

Playfile has a number of parameters that let you modify the way you play sounds from the command line.

Don't type the square bracket characters ([]); they are merely a warning that you need to enter a number after the letter.

-h or -? Help. Print on screen help file.

-r Record a file. This parameter lets you record a sound. To record a sound, the command string. (Mono playback only.)

-v[] Set the volume of the digital channel. (Enter 0–100). The default setting is 90.

-l[] Set the number of repeats. The default for this setting is once. If you would like a sound to play more than once, include -l[] plus the number of times you want the sound to repeat, or loop, in the command string. The maximum number of loops is 65,535.

-f[] Set the frequency (speed) of the digital channel in Hz. (Enter 4000–44100 Hz.) The default setting is 22050 Hz, which is usually adequate. If your sound was recorded at a different



...Playfile Parameters, cont'd.

frequency, it may sound strange at this frequency. Increasing the frequency will make it sound faster; decreasing it, slower. Add `-f[]` plus the desired frequency to the command line if a speed other than the default is required. The lowest recommended setting is 4000 Hz, although you can set the frequency lower if you want.

- `-s` Specify a stereo digital file. The default setting is mono, so if you wish to record a sound in stereo, or play a sound recorded in stereo, you must enter `-s` in the command line.
- `-o[]` Supply the starting offset into the digital file. You can tell the program to start playing your sound file X number of bytes into the sound. Enter `-o` plus the number of bytes in the command line.
- `-t[]` Length (in bytes) of how long to play or record. The only limit to this parameter is the size of your hard drive. `-t[]` is also useful when used with `-o`, because by entering a starting offset and a value for `-t`, you can play just a portion of a sound.



...Playfile Parameters, cont'd.

- i Information Display about the status of a channel. The -i switch, when typed while a sound is playing using Playfile, displays the status of your sound card's channels on your monitor. By default there is no display.
- d[1/0] Enables or disables the sound card's GF1 DAC output. Turn on or off the GF1 chip's Digital to Analog Converter by typing -d while a sound is playing; 1 enables output and 0 disables output.
- n[1/0] Enables or disables the line level input. This turns on or off the inputs from the sound card; 1 enables line input and 0 disables line input.
- m[1/0] Microphone enable or disable; 1 enables the microphone and 0 disables the microphone.
- 16 Specify a 16-bit digital file. The default is 8-bit. To play a 16-bit file, be sure to enter -16 into the command line.
- 2 Specify twos complement (signed) data. Most sound files use unsigned (offset binary) data, so this parameter is usually unnecessary. Most Sound Blaster and compatible sound cards,



...Playfile Parameters, cont'd.

UltraSound-compatible boards, and Macintosh sounds use unsigned data. If a sound will not play, and you don't know its source, try entering -2 into the command line.

These parameters do not have to be entered in order, but the way the sound was recorded determines which parameters you enter. The only rule is that you must enter the file name last if it is required. Not all sounds require you to enter all parameters, and most files will play using your sound card's default settings.



Playmidi Parameters

Playmidi, like Playfile, has several options, or parameters, that can be entered to control MIDI playback. These options are:

- c[] Removes a MIDI channel. Enter the channel number you wish to remove in place of the square brackets.
- +c[] Adds a MIDI channel. Enter the channel number you wish to add in place of the square brackets.
- debug Displays debugging and text information.
- +d[] Increases the delay between MIDI events.
- d[] Decreases the delay between MIDI events.
- 8 Forces patches to 8-bit to conserve sound card memory.
- h or -? Help. Type: playmidi -h for Playmidi's on-screen help file.
- ichannel Entering this parameter causes the sound card to ignore channel information and play all channels on channel 0.
- iprogram Entering this parameter causes the sound card to ignore all instrument changes.



...Playmidi Parameters, cont'd.

- | | |
|--------------|--|
| -icontrol | Causes the sound card to ignore all control changes. |
| -ipitchbend | Entering this parameter causes the sound card to ignore all pitchbend information. |
| -iaftertouch | Entering this parameter causes the sound card to ignore aftertouch information. |
| -t[| Removes a track. Enter the track number you wish to remove after the -t. |
| +t[] | Adds a track. Enter the track number you wish to add after the +t. |
| -tsr | Play MIDI files in background. Press both shift keys simultaneously to stop MIDI playback. |
| -debug | Turns on the sound card's debug. |
| -v | Displays the version number of your Playmidi software. |
| -v[] | Sets the master volume anywhere from 0– 127. |
| -verbose | Displays text information about what you are playing. |
| -video | Disables graphic display. |



Playmidi Configuration File

Playmidi will look for a configuration file called xxxxxxxx.CFG in the following way: first, Playmidi looks in your current directory; second, it looks in the MIDI subdirectory for the environment variable called ULTRADIR; and finally, Playmidi goes through your specified path to find the .CFG file.

Playmidi will also look for a default configuration file called DEFAULT.CFG. If it does not find both the .MID and .CFG files, it will quit.

After Playmidi finds the files, it looks for the instrument patch files. Playmidi uses the search pattern noted above to find DEFAULT.CFG. Once it finds all the necessary files, it passes the configuration file, downloads the appropriate patches and starts the MIDI sequence. The .CFG file has different types of lines to aid Playmidi in playing a file. A line starting with a # is ignored.

Here's an example:

```
CHANNEL 10 RYTHM_SET  
or  
CHANNEL 10 TONE_SET
```



...Playmidi Configuration File, cont'd.

Tells a MID channel to pick instruments from either the tone-set or rhythm-set. The configuration file also has lines like the following:

```
[instrument #] [patch name] [% of max volume] [de-tune parameters]
```

```
      :           :           :           :
```

```
      :           :           :           :
```

```
      :           :           :           :
```

The file should have one line per instrument. The instrument number is defined inside the specific MIDI sequence file (xxxxxx.MID). Instrument #0 is the default instrument for the tone set that is used if a patch isn't found. If the correct patch is not found, Instrument #129 is the default instrument for the rhythm set. Instruments #1–128 are the tone instruments for programs #1–128. Instruments #129–256 are the rhythm instruments (drums) for programs #1–128.

The patch name is the file that contains the patch information for that particular instrument. If a patch does not exist for an instrument, choose a patch for a similar instrument. Many sequences do not follow the General MIDI set; for these, you must select a patch file by guess-



...Playmidi Configuration File, cont'd.

ing what instrument the MIDI file was written for. Playmidi makes it easy to play a piece that was written for one instrument on another.

The next parameter raises or lowers the volume of that instrument relative to the others. This is used to lower the volume of a particularly loud instrument, like a percussion, or raise the volume of a softer instrument. The number is a percentage of the maximum volume. Therefore, 100 is 'normal' volume, 50 is half volume, etc. The default setting for this volume parameter is 100. This parameter is optional.

The last parameter "detunes" an instrument. This is the number of semitones that will be added to each note played. This parameter is also optional.

Default.Cfg Files

The configuration files for each MIDI song on your disk tell the computer which instruments to use on what channel. When Playmidi plays a file, it looks for this .CFG file using the ULTRADIR application. You can change instruments by rearranging the instruments assigned to the program numbers. A typical file looks something like this:



...Playmidi Configuration File, cont'd.

1	MIRACLE.PAT
129-256	PERCS.PAT 60
13	MARIMBA.PAT 80
32	ACOUSTIC.PAT
74	WOODFLUT.PAT
66	TENORSAX.PAT 80

The first number is the instrument that will play. The instrument number is defined inside the specific MIDI sequence file. Instrument 0 is the default instrument for the tone set that is used if a patch isn't found. Instrument 129 is the default instrument used for the rhythm set.

The next parameter in the .CFG file is the patch name.

After the patch name is a parameter for changing the volume of a MIDI instrument. The default is 100, and 50 is half volume. This parameter is optional.

The final optional parameter "detunes" the instrument. The number you enter here is the number of semitones that will be added to each note played.



...Playmidi Configuration File, cont'd.

If you swapped the program numbers for flute and marimba, the flute would play where the marimba did in the original version, and vice-versa. You can create interesting effects this way, but remember to note the original configuration or make a copy of it, or you could lose your original song. If no .CFG file is found, Playmidi will use DEFAULT.CFG, a standard MIDI set.

For more information, open one of the .CFG files, using any text editor, and read the information displayed on screen.



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ULTRINIT.EXE is a utility used to initialize your sound card for use. We strongly recommend that you leave the following line in your AUTOEXEC.BAT file after the SET ULTRASND=... line. For example:

```
SET ULTRASND=240, 7, 7, 11, 11
```

```
SET BLASTER=A220,I5,D1,T4
```

```
C:\GRAVIS\ULTRASND\ULTRINIT.EXE
```

The installation program adds these lines automatically.

Most sound card software will work even if ULTRINIT has not been run; however, ULTRINIT is required for some software to be able to use the MIDI port, and it also resets the sound card to stop any continuously playing sounds. Continuously playing sounds may occur if you reboot your computer while the sound card is playing a sound or sound file.



About Shareware

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[Shareware](#)

[Some Definitions](#)



Shareware

Some of the programs bundled with your sound card are share-ware. These programs were written by users like you who were enthusiastic about the product and wished to write programs specifically for our card. Since the shareware and public domain concepts are quite often misunderstood, what follows is an explanation by The Association of Shareware Professionals (ASP) from their article, “What is Share-ware?”.



Some Definitions

You've probably heard the terms public domain, freeware, shareware, and others like them. Your favorite BBS or disk vendor probably has many programs described by one or more of these words. There's a lot of confusion about and between these terms, but they actually have specific meanings and implications. Once you understand them, you'll have an easier time navigating the maze of programs available to you, and understanding what your obligations are, or aren't, with each type of program.

Let's start with some basic definitions:

Public domain has a very specific legal meaning. It means that the creator of a work (in this case, software), who had legal ownership of that work, has given up ownership and dedicated the work "to the public domain." Once something is in the public domain, anyone can use it in any way they choose. The author has no control over the use and cannot demand payment for it.

If you find a program that the author has explicitly put into the public domain, you are free to use it however you see fit without paying for the right to use it. But use care –due to the confusion over the meaning of the words, programs are often described by authors as being



...Some Definitions, cont'd.

public domain when, in fact, they are shareware or free, copyrighted software. Look for an explicit statement from the author to be sure a program is public domain.

Copyrighted is the opposite of public domain. A copyrighted program means the author has asserted his or her legal right to control the program's use and distribution, by placing the legally required copyright notices in the program and documentation.

The law gives copyright owners broad rights to restrict how their work is distributed, and provides for penalties for those who violate these restrictions. When you find a copyrighted program, you must use it in accordance with the copyright owner's restrictions regarding distribution and payment. Usually, these are clearly stated in the program documentation.

Maintaining a copyright does not necessarily imply charging a fee, so it is possible and perfectly legal to have copyrighted programs which are distributed free of charge. The fact that a program is free, however, does not mean it is in the public domain –though this is a common confusion.



...Some Definitions, cont'd.

Shareware is copyrighted software which is distributed by authors through bulletin boards, on-line services, disk vendors, and copies passed among friends. It is commercial software which you are allowed to use and evaluate before paying for it. This makes shareware the ultimate in money back guarantees.



The Shareware Concept

Most money back guarantees work like this: You pay for the product and then have some period of time to try it and see whether or not you like it. If you don't like it or find that it doesn't do what you need, you return it (undamaged) and at some point -which may take months - you get your money back. Some software companies won't even let you try their product! In order to qualify for a refund, the diskette envelope must have an unbroken seal. With these "licensing" agreements, you only qualify for your money back if you haven't tried the product. How absurd!

Shareware is very different. With shareware you get to use it for a limited time, without spending a penny. You are able to use the software on your own system(s), in your own special work environment, with no sales people looking over your shoulder. If you decide not to continue using it, you throw it away and forget all about it. No paperwork, phone calls, or correspondence to waste your valuable time. If you do continue using it, then – and only then –do you pay for it. Shareware is a distribution method, NOT a type of software. Shareware is produced by accomplished programmers, just like retail software. There is good and bad shareware, just as there is good and bad retail software. The primary difference between shareware and retail



...The Shareware Concept, cont'd.

software is that with shareware you know if it's good or bad BEFORE you pay for it.

As a software user, you benefit because you get to use the software to determine whether it meets your needs before you pay for it, and authors benefit because they are able to get their products into your hands without the hundreds of thousands of dollars in expenses it takes to launch a traditional retail software product. There are many programs on the market today which would never have become available without the shareware marketing method.

The shareware system and the continued availability of quality shareware products depend on your willingness to register and pay for the shareware you use. The registration fees you pay allow us to support and continue to develop our products.

Please show your support for shareware by registering those programs you actually use and by passing them on to others.

Shareware is kept alive by YOUR support!



Contacting ASP Members Via CompuServe

There is an easy and convenient way to speak directly to many ASP Members (both authors and vendors). Visit the shareware forum on CompuServe. Simply type "GO SHAREWARE," "GO SHARE," or "GO ASPFORUM" from any CompuServe ! prompt.

Here you will be able to talk to the authors of your favorite shareware programs, learn about other programs, ask questions, make suggestions, and much more. We'd love to meet you on-line, please come visit us today!

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General MIDI Instruments

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[UltraSound General MIDI Drum Set](#)

[UltraSound General MIDI Instrument Set](#)



UltraSound General MIDI Drum Set

Program Number	Note	General MIDI Name	UltraSound Name	Size (K)
27	D#1	High Q	HIGHQ	3.9
28	E1	Slap	SLAP	12.1
29	F1	Scratch Push	SCRATCH1	9.1
30	F#1	Scratch Pull	SCRATCH2	4.9
31	G1	Sticks	STICKS	8.8
32	G#1	Square Click	SQRCLICK	0.6
33	A1	Metronome Click	METCLICK	0.6
34	A#1	Metronome Bell	METBELL	0.6
35	B1	Acoustic Bass	KICK1	9.6
36	C2	Bass Drum 1	KICK2	10.4
37	C#2	Side Stick	STICKRIM	6.0
38	D2	Acoustic Snare	SNARE1	17.5
39	D#2	Handclap	CLAPS	11.8
40	E2	Electric Snare	SNARE2	8.6
41	F2	Low Floor Tom	TOMLO2	19.6
42	F#2	Closed High Hat	HIHATCL	9.5
43	G2	High Floor Tom	TOMLO1	13.5
44	G#2	Pedal High Hat	HIHATPD	4.0
45	A2	Low Tom	TOMMID2	18.5



...UltraSound General MIDI Drum Set, cont'd.

Program Number	Note	General MIDI Name	UltraSound Name	Size (K)
46	A#2	Open High Hat	HIHATOP	40.4
47	B2	Low-Mid Tom	TOMMID1	13.5
48	C3	Hi-Mid Tom	TOMHI2	13.5
49	C#3	Crash Cymbal 1	CYMCRSH1	63.4
50	D3	High Tom	TOMHI1	13.5
51	D#3	Ride Cymbal 1	CYMRIDE1	35.7
52	E3	Chinese Cymbal	CYMCHINA	48.6
53	F3	Ride Bell	CYMBELL	34.9
54	F#3	Tambourine	TAMBORIN	18.3
55	G3	Splash Cymbal	CYMSPLSH	63.4
56	G#3	Cowbell	COWBELL	6.7
57	A3	Crash Cymbal 2	CYMCRSH2	62.4
58	A#3	VibraSlap	VIBSLAP	19.3
59	B3	Ride Cymbal 2	CYMRIDE2	35.7
60	C4	Hi Bongo	BONGOHI	7.3
61	C#4	Low Bongo	BONGOLO	9.2
62	D4	Mute High Conga	CONGAHI1	8.8
63	D#4	Open High Conga	CONGAHI2	9.8
64	E4	Low Conga	CONGALO	9.8



...UltraSound General MIDI Drum Set, cont'd.

Program Number	Note	General MIDI Name	UltraSound Name	Size (K)
65	F4	High Timbale	TIMBALEH	10.9
66	F#4	Low Timbale	TIMBALEL	19.8
67	G4	High Agogo	AGOGOHI	7.3
68	G34	Low Agogo	AGOGOLO	7.3
69	A4	Casaba	CASABA	17.2
70	A#4	Maracas	MARACAS	9.4
71	B4	Short Whistle	WHISTLE1	4.3
72	C5	Long Whistle	WHISTLE2	2.2
73	C#5	Short Guiro	GUIRO1	8.6
74	D5	Long Guiro	GUIRO2	18.9
75	D#5	Claves	CLAVES	5.1
76	E5	High Wood Block	WOODBK1	5.1
77	F5	Low Wood Block	WOODBK2	7.7
78	F#5	Mute Cuica	CUICA1	19.0
79	G5	Open Cuica	CUICA2	26.1
80	G#5	Mute Triangle	TRIANG1	4.8
81	A5	Open Triangle	TRIANG2	31.9
82	A#5	Shaker	SHAKER	6.6
83	B5	Jingle Bell	JINGLES	34.3



...UltraSound General MIDI Drum Set, cont'd.

Program Number	Note	General MIDI Name	UltraSound Name	Size (K)
84	C6	Bell Tree	BELLTREE	64.1
85	C#6	Castinets	CASTINET	12.4
86	D6	Mute Surdo	SURDO1	19.6
87	D#6	Open Surdo	SURDO2	19.6



UltraSound General MIDI Instrument Set

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
Pianos	0	Acoustic Grand	AcPiano1	7	65.3
	1	Bright Acoustic Piano	BritePno	6	72.7
	2	Electric Grand Piano	SymPiano	5	11.5
	3	Honky-Tonk Piano	Honky	7	128.0
	4	Rhodes Piano	Epiano1	1	15.0
	5	Chorused Piano	Epiano2	1	44.2
	6	Harpsichord	Hrpschrd	4	7.7
Chromatic	7	Clavinet	Clavinet	4	3.4
	8	Celesta	Celeste	1	20.2
Percussion	9	Glockenspiel	Glocken	1	10.7
	10	Music Box	Musicbox	1	31.0
	11	Vibraphone	Vibes	1	21.0
	12	Marimba	Marimba	1	4.5
	13	Xylophone	Xylophon	1	19.0
	14	Tubular Bells	Tubebell	2	18.6
	15	Dulcimer	Santur	1	43.8
Organ	16	Hammond Organ	Homeorg	1	2.0
	17	Percussive Organ	Percorg	1	15.4



...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
Guitar	18	Rock Organ	Rockorg	1	60.8
	19	Church Organ	Church	1	4.6
	20	Reed Organ	Reedorg	1	3.5
	21	Accordion	Accordn	2	19.6
	22	Harmonica	Harmonca	3	15.3
	23	Tango Accordion	Concrtna		17.9
	24	Acoustic Guitar (nylon)	NyGuitar	1	39.2
	25	Acoustic Guitar (steel)	AcGuitar	2	52.6
	26	Electric (jazz)	Jazzgtr	3	55.9
	27	Electric (clean)	Cleangtr	3	46.0
	28	Electric (muted)	MuteGtr	2	34.5
	29	Overdriven Guitar	Odguitar	4	25.8
	30	Distortion Guitar	Distgtr	4	38.2
	31	Guitar Harmonics	Gtrharm	1	10.1
Bass	32	Acoustic Bass	AcBass	1	11.0
	33	Electric (finger)	FngrBass	1	19.8
	34	Electric (pick)	Pickbass	2	33.2
	35	Fretless Bass	Fretless	2	5.6
	36	Slap Bass 1	Slapbas1	2	56.1



...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
Strings & Orchestral	37	Slap Bass 2	Slapbas2	2	41.5
	38	Synth Bass 1	Synbass1	1	12.6
	39	Synth Bass 2	Synbass2	1	6.1
	40	Violin	Violin	3	25.0
	41	Viola	Viola	4	56.4
	42	Cello	Cello	3	18.8
	43	ContraBass	Contraba	1	9.7
	44	Tremolo Strings	Tremstr	2	122.9
	45	Pizzicato Strings	Pizzicato	2	40.2
	46	Orchestral Harp	Harp	3	23.9
Ensemble	47	Timpani	Timpani	1	14.4
	48	String Ensemble 1	Marcato	2	122.9
	49	String Ensemble 2	Slowstr	1	36.7
	50	Synth Strings 1	SynStr1	1	62.8
	51	Synth Strings 2	SynStr2	1	29.4
	52	Choir Aahs	Choir	1	45.3
	53	Voice Oohs	Doo	2	17.3
	54	Synth Voice	Voices	1	30.2
	55	Orchestra Hit	OrchHit	1	28.8



...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
Brass	56	Trumpet	Trumpet	2	13.6
	57	Trombone	Trombone	2	26
	58	Tuba	Tuba	1	11.9
	59	Muted Trumpet	Mutetrum	5	19.0
	60	French Horn	Frenchhrn	2	28.6
	61	Brass Section	Hitbrass		63.3
	62	Synth Brass 1	Synbras1	1	61.7
	63	Synth Brass 2	Synbras2	1	60.6
	64	Soprano Sax	Sprnosax	4	14.7
	65	Alto Sax	AltoSax	3	11.7
Reed	66	Tenor Sax	TenorSax	3	17.4
	67	Baritone Sax	Barisax	1	10.2
	68	Oboe	Oboe	15	9.3
	69	English Horn	Englhorn	3	24.7
	70	Bassoon	Bassoon	6	16.8
Pipe	71	Clarinet	Clarinet	7	19.2
	72	Piccolo	Piccolo	1	8.9
	73	Flute	Flute	1	12.3
	74	Recorder	Recorder	1	5.6



...UltraSound General MIDI Instrument Set, cont'd.

	Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
		75	Pan Flute	WoodFlut	1	4.2
		76	Blow Bottle	Bottle	1	25.0
		77	Shakuhachi	Shakazul	1	62.6
		78	Whistle	Whistle	1	12.0
		79	Ocarina	Oscarina	1	3.5
	Synth Lead	80	Lead 1 (square)	Sqrwave	1	30.4
		81	Lead 2 (sawtooth)	Sawwave	2	54.5
		82	Lead 3 (Calliope lead)	Calliope	1	46.3
		83	Lead 4 (Chiff lead)	Chiflead	1	63.4
		84	Lead 5 (Charang)	Charang	4	80.6
		85	Lead 6 (voice)	Voxlead	1	30.3
		86	Lead 7 (fifths)	lead5th	1	13.2
		87	Lead 8 (bass + lead)	Bass & Lead	2	53.4
	Synth Pad	88	Pad 1 (new age)	Fantasia	1	47.2
	etc.	89	Pad 2 (warm)	Warmpad	1	36.5
		90	Pad 3 (polysynth)	Polysyn	1	60.7
		91	Pad 4 (choir)	Ghostie	1	63.3
		92	Pad 5 (bowed)	Bowglass	1	50.5
		93	Pad 6 (metallic)	Metalpad	1	60.9



...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
Synth SFX	94	Pad 7 (halo)	Halopad	1	60.3
	95	Pad 8 (sweep)	Sweeper	1	62.7
	96	FX 1 (rain)	Aurora	1	62.5
	97	FX2 (soundtrack)	Soundtrk	1	40.0
	98	FX 3 (crystal)	Crystal	1	60.8
	99	FX 4 (atmosphere)	Atmosphr	1	63.0
	100	FX 5 (brightness)	Freshair	1	58.3
	101	FX 6 (goblin)	Unicorn	1	60.5
Ethnic	102	FX 7 (echoes)	Echovox		30.2
	103	FX 8 (sci-fi)	Startrak	1	55.1
	104	Sitar	Sitar	2	37.0
	105	Banjo	Banjo	3	64.5
	106	Shamisen	Shamisen	2	26.7
	107	Koto	Koto	2	42.0
	108	Kalimba	Kalimba	1	4.7
	109	BagPipe	BagPipes	4	16.0
	110	Fiddle	Fiddle	3	12.3
	111	Shanai	Shannai	4	20.1



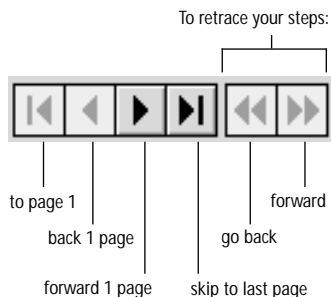
...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
Percussive	112	Tinkle Bell	Carillion	1	12.0
	113	Agogo	Agogo	1	27.7
	114	Steel Drums	Steeldrm	1	24.2
	115	Woodblock	Woodblk	1	7.7
	116	Taiko	Taiko	1	37.7
	117	Melodic Tom	Toms	1	13.5
	118	Synth Drum	Syntom	1	61.0
	119	Reverse Cymbal	Revcym	1	27.4
SFX	120	Guitar Fret Noise	Fx-fret	1	27.5
	121	Breath Noise	Fx-blow	1	57.7
	122	Seashore	Seashore	1	62.4
	123	Bird Tweet	Jungle	1	27.5
	124	Telephone Ring	Telephone	1	9.2
	125	Helicopter	Helicptr	1	50.3
	126	Applause	Applause	1	60.5
	127	Gunshot	Pistol	1	31.1





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