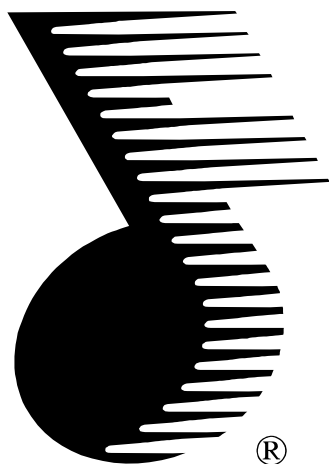


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Appendix



Ad Lib
MultiMedia

ASB 32/64

Version: ASB 64 Wave Pro, ASB 32 Wave Pro,
ASB 32 Wave 4D IDE & ASB 32 Wave IDE

The Ad Lib 16 Bit Audio System

Table of Contents

Introduction	2
General Board Specifications	3
Features	3
Compatibility	3
Mixing	3
Software	3
Hardware	4
Board Description	4
System Requirements	4
Microphone Installation	7
Installing The ASB 32/64 Wave Sound Card	7
Making a Backup	7
DOS Utilities and Drivers Installation	7
Testing Your Sound Board	8
Operating the Diagnostics Program	8
DOS Mixer	9
CD-ROM Player	9
The ASB 32/64 Wave Configuration Program	10
OS/2™ WARP Installation	10
NSP Installation	10
Windows 3.X Installation	11
Configuring the Software	11
Configuring the ASB 32/64 Wave	12
Windows™ 95 installation	13
The Ad Lib Audio Rack	18
The Analog Mixer	19
The Digital Mixer	20
The CD Player	21
The Digital Audio Player	22
The Digital Audio Recorder	23
The MIDI Player	25
The Wavetable Downloader	26
The Bundled Software	31
4DTH™ & Surround Sound Settings	32
Enhanced IDE Interface Settings	33
ASB 32/64 Wave Board Layout	34
Troubleshooting	34
General MIDI Background	36
General MIDI Instrument Requirements	36
General MIDI Painless Upgrade Path	37
Incorporating General MIDI	38
The MIDI Protocol	38
The Installation of the ASB 32/64 WAVE Board	39
For Computers without Plug & Play Bios	39
For Computers with Plug & Play Bios	39
Windows 3.x	39
The MIDI Mapper	40
ASB 64 General MIDI Sample Set	1A
ASB 64 Sound Variations	2A
ASB 64 SFX Variations	3A
ASB 64 Drum Set Table	3A
ASB 64 MT 32 Percussion Map	4A
ASB 64 MT 32 Compatibility Mode	5A
ASB 32 General MIDI Sample Set	10A
ASB 32 Sound Variations	11A
ASB 32 SFX Variations	12A
ASB 32 Drum Set Table	12A
ASB 32 MT 32 Percussion Map	13A
ASB 32 MT 32 Compatibility Mode	14A
Warranty	14A
Technical Support	15A
FCC	15A



Introduction

Ad Lib ASB 64 Wave Pro, ASB 32 Wave Pro, ASB 32 Wave 4D IDE, ASB 32 Wave IDE Audio System

Windows™ 95 is becoming the standard platform for PC mainboards replacing Windows™ 3.X. Plug and Play and Native Audio offered by Intel™ and Microsoft™ are getting forcefully more popular.

Plug and Play specifications by Microsoft™ and Intel™ for simplified installation and set-up are supported by the new generation of Ad Lib ASB Audio Systems as well as Intel™ Native Audio for enabling the Intel™ PENTIUM Processor to perform real-time multimedia audio and video tasks. The ASB 32/64 Audio System is compatible with Windows™ 3.X, Windows™ 95, Microsoft™ Windows™ sound system specifications, Full MPC Level 2, OS/2™ Warp, Sound Blaster™ Pro (for games), General MIDI, Roland™ GS and MPU-401.

Four (4) Layer Hi-Fi Quality Audio Design allows the ASB 32/64 serie to offer Signal to Noise ratio exceeding 85db. The ASB 32/64 in combination with its built-in Crystal chip set is capable of playing a MIDI file using the full potential of the Dream wavetable and the FM synthesizer simultaneously. One of the main features of the AbLib ASB 32/64 Audio System is the single and dual DMA support for simultaneous recording and playback from 5.5KHZ to 48KHz in stereo or mono. Another great feature is its Multi output connector for auto-detecting powered or non-powered speakers or headphones. When powered speakers are connected, the ASB 32/64 Multi-output connector sends a clean signal for best quality; when regular speakers or headphones are connected, the ASB sends 500 mW per channel to produce great sound. The ASB32/64 input connector with the correct jumper setting will record in stereo, mono right, mono left or both channels. Ad Lib made the installation and configuration of the ASB 32/64 Audio System using software so easy that even a child can install it.

Full Duplex and real time compressing and decompressing are features that allow the end users to use the Ad Lib CyberComm or other Fax/Modem with voice for standard or ISDN lines. Now the end user can save money while making international phone calls by using the internet or other similar services.

The Ad Lib Media Connector (AMC) is a new standard in the market from Ad Lib that allows users to upgrade any Ad Lib ASB Audio System to CyberCom for telephony (fax/modem with voice) or CyberISDN. This feature connector is the best way to expand the capabilities of the Audio System to whatever the market may bring, saving your investment for the longest time possible.

Built-in Wavetable Synthesizer, Effects Processor and 8/32 Mbit of PCM Sample Memory are what make the ASB 32/64 Wave/Wave Pro an outstanding audio device. Sound cards traditionally employ a lower quality FM synthesizer technology. These sound cards do not provide adequate sound quality for use in the multimedia world. A higher quality synthesizer device such as wavetable enhances the quality of many applications by providing 190/225 instruments, 107/120 percussion Sounds and 46/48 special effect's.

Downloadable wavetable will be the standard in the future for application softwares and games. Every day that passes, the world of multimedia gets more sophisticated. Games, multimedia presentations, musicians, etc. are all demanding to have more control of the sounds they want to play. The gamers, using downloadable wavetable, can experience the maximum sounds of the games by making them more real. For the expert and novice musicians, this technology allows to download any sample set or sound into RAM and play it as they wish.

Enhanced IDE is becoming more popular each day. Major CD-ROM manufacturers are changing from their own interface to Enhanced IDE interface. This interface gives the user the option to choose from a wide variety of CD-ROM and hard disk drives. Setting the interface as secondary IDE interface allows the user to have two extra IDE CD-ROM or hard disk drives devices in their system.

Surround sound (PRO and 4D series only) with 2 speakers and 4D sound with 4 speakers is the new standard from Ad Lib for Home Theater sound technology, games, multimedia presentations, music, MPEG, etc. This new 4D sound technology will still play in other sound cards, but not 4D sound effect will be heard. In today's technology, natural sound is appealing. can enjoy the full potential of what the multimedia market has to offer.

General Board Specifications

Features:

- Crystal™ Chip set CS4232-KQ
- Dream™ Chip set SAM9233 Wave Table Synthesizer
- Dream™ Chip set SAM8905 Effects Processor (PRO series only)
- Dream™ Chip set GMS9332 - 32 Mbit Sample Set (ASB 64 Wave PRO only)
- Dream™ Chip set GMS9308 - 8 Mbit Sample Set (ASB 32 series only)
- Playback MIDI files with wavetable and FM synthesis simultaneously
- 64X oversampling combined Delta Sigma DAC/ADC
- 16-bit and 8-bit digital sound in stereo and mono
- Record and Playback 5.5KHz-48KHz in stereo or mono
- ADPCM (m-law/μ-law hardware compression/decompression)
- Ultra high quality CODEC for ultimate sound performance
- CODEC capable of signal to noise ratio exceeding 85db
- Single and Dual DMA support for simultaneous recording and playback
- Multi-output (line and headphones output)
- Stereo Microphone (standard or line powered)
- AMC Ad Lib Media Connector (for CyberComm or CyberISDN)
- Enhanced IDE Interface
- 4D & Surround Sound for 4 Speakers (PRO and 4D series only)

Compatible with:

- Ad Lib MSC
- Microsoft™ and Intel™ true Plug and Play specifications
- Intel™ Native Signal Processing (NSP)
- Windows™ 95
- OS/2™ Warp
- Microsoft™ Windows Sound System Version 2.0
- Full MPC Level 2
- Sound Blaster™ Pro (for games)
- Standard Game and MIDI Port (MPU-401 UART)
- Roland™ GS and General MIDI and GM like Sound Canvas™

Mixing:

- DOS and Windows Mixing Utilities
- Playback mixing: Digitized audio, MIDI, CD Audio, line in, stereo or mono microphone and Multi line out for powered - non-powered speakers.

System Software:

- Ad Lib Audio Rack
- DOS Driver-Software incl. CD-ROM-Player and DOS Diagnostic's.
- Windows™ 95 Driver-Software
- OS/2™ Warp Driver-Software
- Windows™ 3.X Driver- Software

Bundled Software:

- Easy Keys Lite, from Blue Ribbon™ Inc.
- Super Jam Preview, from Blue Ribbon™ Inc.
- Score Screen Saver, from Blue Ribbon™ Inc.
- Sound Track Preview, from Blue Ribbon™ Inc.
- Cakewalk Express from Twelve Tone™ Inc.

Hardware

The ASB 32/64 has four external connectors on the right side of the board: a microphone input, a line in input and a line out (front) connector. The PRO & 4D series have an extra connector : a line out (rear) output connector. Internally, 4 groups can be found : a microphone configuration jumper, Ad Lib Cyber RAM Connector, Ad Lib Media Connector, CD audio input and an IDE connector. To see the connector's location, see the Board layout on this manual.

Board Description

- 1- Stereo/mono Microphone: Stereo or mono, dynamic or electret. (Line powered).
- 2- Line audio input: External devices such as Audio sound system, Cassette-Deck, MPEG card, etc.
- 3- Line output front: For Headphones and powered or non-powered speakers.
- 3a Line output rear: For powered or non-powered speakers. (PRO & 4D series only)
- 4- Joystick and MIDI port: Standard Single or Dual Joystick and MPU 401 MIDI port.
- 5- Microphone jumper settings: Refer to microphone installation
- 6- IDE CD Audio: Connector to all IDE CD-ROM audio.
- 7- Sony™ CD Audio: Connector to Sony™ CD-ROM audio.
- 8- Panasonic™ CD Audio: Connector to Panasonic™ CD-ROM audio.
- 9- Mitsumi™ CD Audio: Connector to Mitsumi™ CD-ROM audio.
- 10-(AMC) Ad Lib Media connector: For Ad Lib add-on boards.
- 11-Ad Lib CyberRam Connector (up to 32 Mbit downloadable Wavetable).
- 12-Enhanced IDE Interface

System requirements

The following equipment is required in order to operate an Ad Lib ASB 32/64 Audio System.

1. IBM/full compatible 386 or higher
2. Monitor
3. Ad Lib ASB 32/64 Audio System board
4. Stereo headphones or speakers
5. DOS 5 or higher or
6. MS Windows™ 3.X or
7. MS Windows™ 95 or
8. OS/2™ Warp

Before you install your board !

Microphone Installation

Because there are a variety of different microphones available from both computer & audio accessory dealers, Ad Lib decided to put a configuration jumper on the ASB 32/64 series of sound boards, to enable the consumer the widest possible choice of microphones. In brief, there are 5 major types of microphones available. The following is a list of these types with an explanatory drawing to help you choose the correct setup for each type of microphone. The microphone jumper (JP4) is located in the upper right corner of the card (see the board layout section) and the pin one is the upper left of JP4, 2 is upper right, 3 is middle left and so on.

Definition of microphone Jumper JP4:

Type (a) Mono Dynamic or Self-Powered Condenser Type

This is the standard microphone most of us have seen or used, usually large and heavy, similar to the ones used by DJ's or TV interviewers.



- the tip of the connector is always the signal pin on this type of microphone.
Please leave the jumper on the default setting i.e Pin 2 - 4

Type (b) Mono Condenser or Mono Electret Requiring Power

This microphone is usually light and small, similar to the ones used by recording Walkman's or Clip on microphones.



- the tip of the connector is always the combined power & signal on this type of mic.
Please place the jumper on the apply primary power setting i.e Pin 5 - 6

Type (c) Stereo Dynamic or Self-Powered Stereo Condenser

This microphone is very similar to type (a). It is usually large and heavy, similar to the ones used as Desktop microphones.



- the tip of the connector is usually the Left signal pin on this type of microphone.
Please leave the jumper on the default setting i.e Pin 2 - 4 to record in stereo



Please leave the jumper on the mix L&R setting i.e Pin 3 - 4 to record in mono..

Type (d) Stereo Condenser or Stereo Electret

This is the other standard microphone most of us have seen or used, usually light and small, similar to the ones used by Camcorder's.



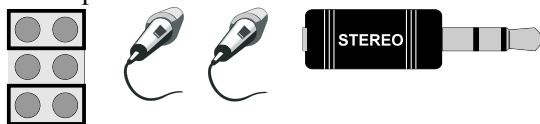
- the tip of the connector is the combined Left signal & main power on this type of micro. Please put the jumper on the apply power to tip setting i.e Pin 5 - 6 to record in stereo.



Please put the jumper on the apply power to tip setting i.e Pin 5-6, 3-4 to record in mono.

Type (e) Dual Mono Condenser or Dual Mono Electret

This is the last type of standard microphone, usually a double version of type (b), similar to the ones used by recording walkman's or TIE microphone, put into an adapter before the sound card.



- the tip of the connector is the combined power & Left audio signal, and the other is the combined power and Right audio signal.

Please place the jumper on the apply secondary power setting i.e Pin 1 - 2

Please place the jumper on the apply primary power setting i.e pin 5 - 6

This will give full stereo recording.



Please place the jumper on the apply secondary power setting i.e Pin 1 - 2

Please place the jumper on the stereo/mono mix jumper setting i.e Pin 3 - 4

Please place the jumper on the apply primary power setting i.e pin 5 - 6

This will give mono recording.

Summary:

JP4 pin 5-6: Primary Power to connect the tip for electret or condenser microphone.

JP4 pin 3-4: Stereo to mono microphone mixer (ONLY USE WITH STEREO PLUGS)

JP4 pin 1-2: Secondary Power to connector ring 1 for electret or condenser microphone

JP4 pin 2-4: default, dummy jumper setting

Installing the ASB 32/64 Audio System

Installing the audio card into your system is very simple. However, to prevent any damage to your equipment, please read the following instructions very carefully:

- 1.) Turn off your computer and all other peripheral devices. Do not disconnect the power cable, this will keep your computer grounded.
- 2.) Discharge any static electricity that might come from you by touching a metal plate on your computer to avoid damaging your equipment.
- 3.) Remove the cover of your computer and set the screws aside (if any.) Find a free 16-bit expansion slot in your system and remove the metal plate from the slot. Don't loose the screw!.
- 4.) Insert the audio card gently into the expansion slot. Do not force.
- 5.) Fasten the audio card to your computer with the screw you removed from the metal plate.
- 6.) Replace the cover of your computer and replace the screws you have removed (if any.)
- 7.) Connect your speakers or audio equipment to the ASB 32/64 Wave sound card and turn on your computer.

DOS Utilities and Drivers Installation

To install your ASB 32/64 board with DOS 5.0 or greater, you first have to run DOSINST.EXE installation program. Check you system configuration to see which letter correspond to your CD ROM drive. Be sure that you have your AdLib CD ROM inserted in your drive then:

At the DOS prompt:

1. Type D:\ and press Enter (Assuming that your CD ROM drive is "D")
2. Type CD\DOS
3. Type DOSINST and press Enter
4. Choose the language of your choice
5. Choose the drive where you want the installation software.
6. Follow the instructions

When the DOS Installation is finished, your system will re-boot automatically and the programs and drivers of your ASB 32/64 will be installed in the directory of: C:\ADLIB\

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Appendix

Testing your sound board

Run the ASB DOS Software Menu, change to the directory you specified when you first installed the ASB DOS installation I.E. C:\ADLIB\ and Enter, then type ASBMENU and Enter. You will see the following menu: (see ASB DOS MENU on figure 1 below.)

Operating the DIAGNOSTICS Program

The diagnostics program provides an end-user system functional test/diagnostic. ASBMENU.EXE queries Plug & Play information to locate the ASB 32/64 Audio System, if available. If the Plug & Play data is not available, the diagnostic will use ASB_16W.INI to configure the CODEC. If the Plug & Play data and the ASB_16W.INI files are not found, ASBDIAGS.EXE will display an error message, indicating a problem found .An example display of the ASB-DIAGS.EXE is shown below:



figure 1.

The DMA, IRQ and I/O settings are not selectable from the ASBDIAGS.EXE. The user can move between fields using the TAB, arrow keys or mouse clicks. When '<Test>' is selected for a device, i.e., CODEC, the diagnostics will run a series of tests to verify the correct operation of the selected device.

On completion of the test, the field between I/O and <Test> will change to reflect pass or fail. In the case of a failure, the failing item will be highlighted.

The Joystick interface test will require a joystick to be attached in order to perform the test. If the test is attempted with no joystick-equivalent device attached, the Escape key can be use to abort the test. The joystick test field will be highlighted to indicate the test failure.

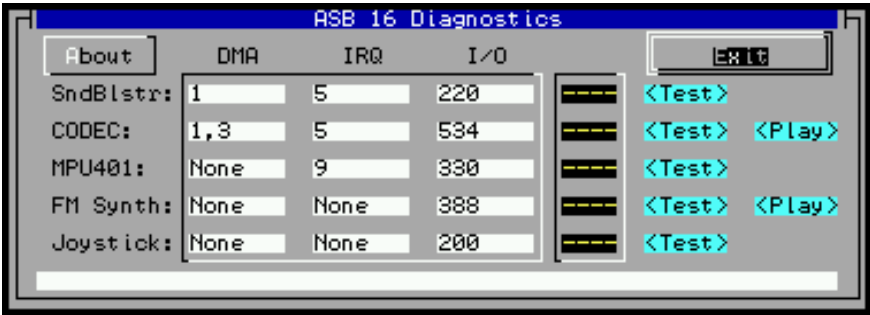


figure 2.

DOS Mixer

The MIXER program (figure 3) allows end-user to adjust the volume level of various audio channels in the ASB 32/64 card. The following are the descriptions of each channel control:

- Master: Main volume control of the ASB 32/64 board
- Wave: Volume control when playing wave files
- Line: Volume control for the Line-in when playing from an outside source like Audio sound system, Cassette-Deck, MPEG card, etc. either to record or playback.
- Mic: Volume control for the microphone when recording
- FM: Volume control when playing MIDI files
- CD: Volume control when playing a music CD on the CD-ROM

The Gang option can be chosen for modifying the left and right volume of each audio channel simultaneously. After modifying the volume of each channel, use the OK button to apply the new values to the ASB 32/64 Wave.

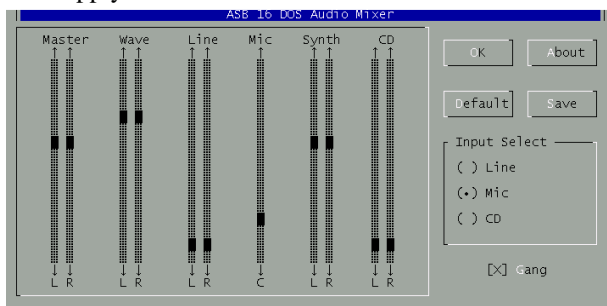


figure 3.

DOS CD-ROM Player

The CD-ROM Player (figure 4), is the program to control the CD-ROM drive to play music CD under DOS.

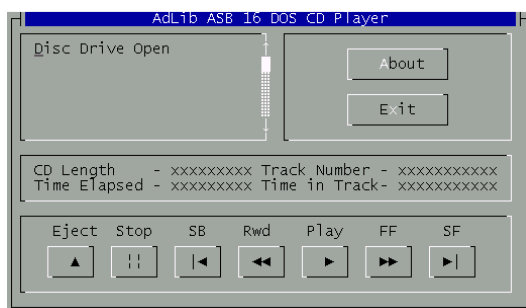


figure 4.

The ASB 32/64 Configuration Program

If you discover any problems during the DOS installation you will find in the directory C:\ADLIB\ the configuration program ASBCNFG.EXE

The ASB 32/64 Configuration Program (figure 5) can run under DOS or Windows environment. This program allows you to change the configuration program where ever you are with the same screen setup. The settings in figure 5 are the factory settings. You can change the settings by clicking your mouse on the box to the right of the chosen parameter (box with the down arrow) and click on the value you want to change to. You can change the other device connected to the ASB 32/64 as well by clicking on the top of the file name. After you have customized the above settings, click on the <OK> box and the program will modify the environment string and start-up files for your DOS and Windows programs automatically.

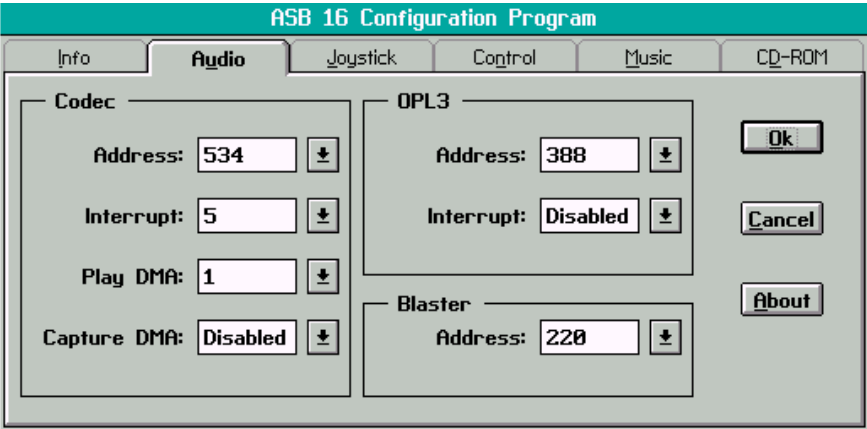


figure 5

OS/2™ Warp Installation

Please read the README.TXT file on the CD ROM to get informations of the latest driver situation for OS/2™ Warp.

Native Audio Installation

Please read the README.TXT file on the CD ROM to get informations of the latest driver situation for NSP.

Windows™ 3.X Installation

To install your ASB 32/64 board with Windows™ 3.1X, you first have to run the ASB 32/64 installation program. Be sure that you have your AdLib CD ROM in your drive.

Start Microsoft Windows 3.1X and:

1. Select “File”
2. Choose “Run”
3. Type D:\WIN\SETUP (You can use the browse button)
4. Click “OK”
5. Follow the screen instructions

Configuring the Software

After the setup program copies the audio files onto the hard disk drive, the setup program displays the configuration screen (figure 6). This screen allows you to select the DMA Duplex mode, the DMA Capture/Playback Channel, The I/O base address and the IRQ, according to the desired configuration for the sound card. The following screen only applies to non- Plug and Play systems.

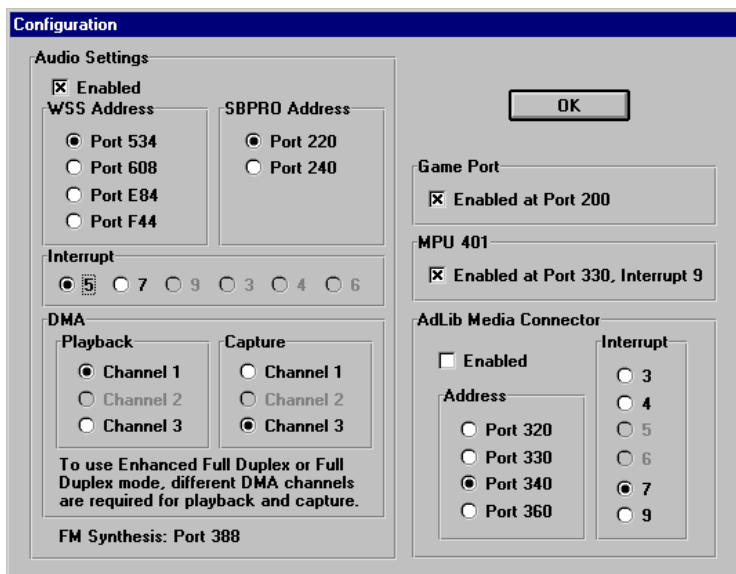


figure 6.

We recommend that you install the ASB 32/64 Wave with the current default specified on your screen by the installation program. If you wish to change the current default go ahead and do so. To ensure proper configuration, determine the direct-memory access (DAM) settings, I/O address settings, and interrupt request (IRQ) settings for the other devices in your systems such as network , fax/modem, SCSI cards, etc.

To configure the ASB 32/64 Wave correctly perform the following steps.

1. Select the appropriate data transfer mode.

Half Duplex allows you to capture and play back audio signals at separate times. Full Duplex allows simultaneous capture and playback of audio signal at the same sample rate. Enhanced Full Duplex allows simultaneous capture and playback of any combination of 11, 22.05 or 48.00 KHz sample rates.

2. Select the appropriate input/output (I/O) address.

The default for the driver is 530h. If this address conflicts with the address of another device in your system, select alternative setting for the driver or the device. Otherwise, use the default setting.

3. Select the appropriate DMA playback and capture channels.

The selections for your system depend on the sound card installed. If the default settings for the DMA channel conflict with another device in your computer, it is recommended that you try to change the setting for the other device. However, if you need to change the ASB 32/64 DMA setting make sure that you change it by trying different combinations until your card is installed properly.

4. Select the appropriate IRQ setting.

The default for the IRQ is 5. If this IRQ conflicts with the IRQ for another device in your system, select an alternate for the driver or the device.

The Installation will ask if you want to install the Bundle software. To read more about the Bundle software read the README file displayed at the end of the installation.

If you encounter any problems, please refer to the troubleshooting section of the manual. After the Windows installation is completed the Windows program will be restarted for the setup to take effect. The Record Input, the Output Mixer, the Digital Audio Recorder and the bundled Program Items will be created in the Ad Lib Program Group. (figure 7)

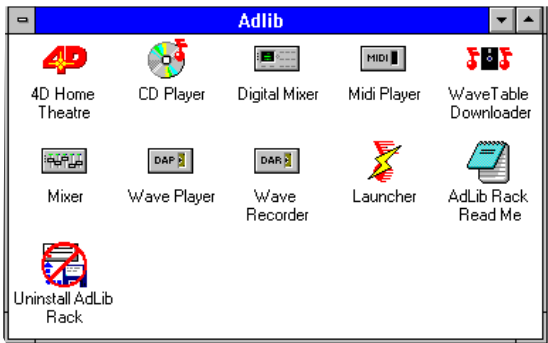


figure 7.

Windows 95™ Installation

We recommend that you fully install Windows 95™ BEFORE installing the Ad Lib ASB 32/64 Audio Card. This will enable you to take advantage of the completely automatic installation routines offered by Windows 95™.

As you can see from figure 8, Windows 95™ automatically finds the Ad Lib ASB 32/64 Audio Card, and prompts you to make a selection. Please choose the 'Driver disk provided' option and click 'OK'.

Next, insert the Ad Lib 'Windows 95™ Driver' CD ROM into your CD ROM drive. If your drive is drive 'D' please type in D:\WIN95 and press 'OK'. See figure 9.



figure 8

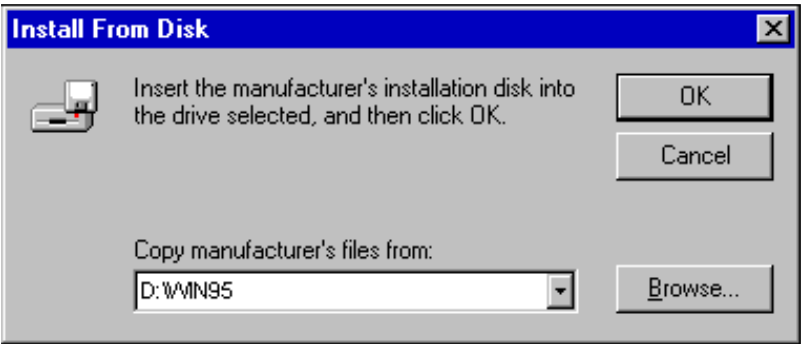


figure 9

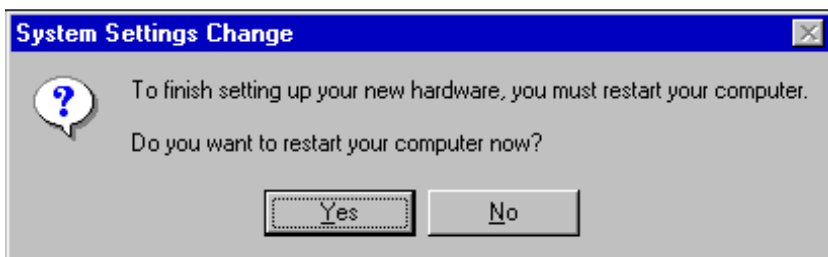


figure 10

When the files have been copied from the AdLib driver CD ROM, Windows 95™ will prompt you with figure 10. Select “Yes” and your machine will now reboot. The remaining devices on the Ad Lib ASB Audio Card will be configured automatically by Windows 95™ when your machine restarts.

If you would like to install the applications that are supplied by ourselves, please run the setup program that is on the directory D:\BUNDLE\ on your AdLib CDROM. You can do this easily in Windows 95™ by opening the control panel, and ‘double clicking’ on “Add/Remove Programs.” See figure 11.



figure 11

When you ‘double click’ on this icon, it will bring up the applications installer applet, see figure 12.

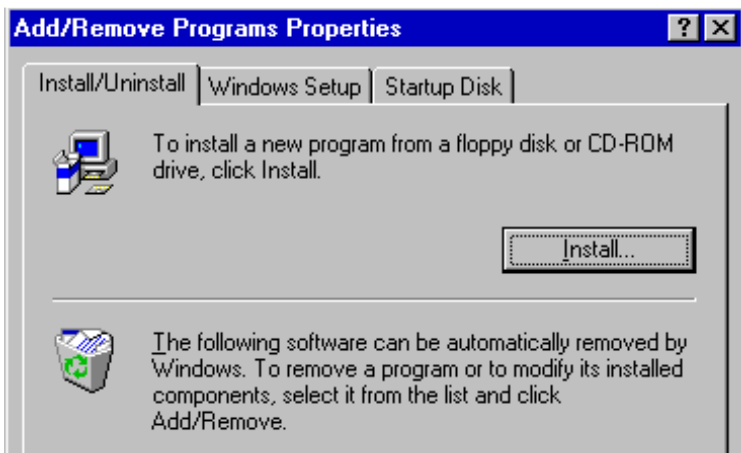


figure 12

Please press the “Install” button. This will then ask you to put the Ad Lib CDROM in your CD ROM drive, see figure 13. After you have placed the CDROM in the drive presse “Next”, please follow the installation instructions on the screen.



figure 13

The installation program will automatically detect that you are running Windows 95™, and prevent you installing drivers or programs designed for other versions of Microsoft Windows.

Well done! You have now installed your Ad Lib ASB 32/64 Audio Card. Please refer to the Windows 95™ manuals for further instructions on using the Microsoft supplied multimedia applications.

During the Ad Lib ASB 32/64 installation, Windows 95™ automatically installed an MPU401 Driver. This driver allows you to use your ‘Wave’ card as a General Midi instrument. However before you can use the superb sounds available, you must first tell Windows 95™ to use the device. From the ‘Control Panel’ in Windows 95™, see figure 11, ‘double click’ on the “Multimedia” icon. This will activate the multimedia control applet, see figure 14.

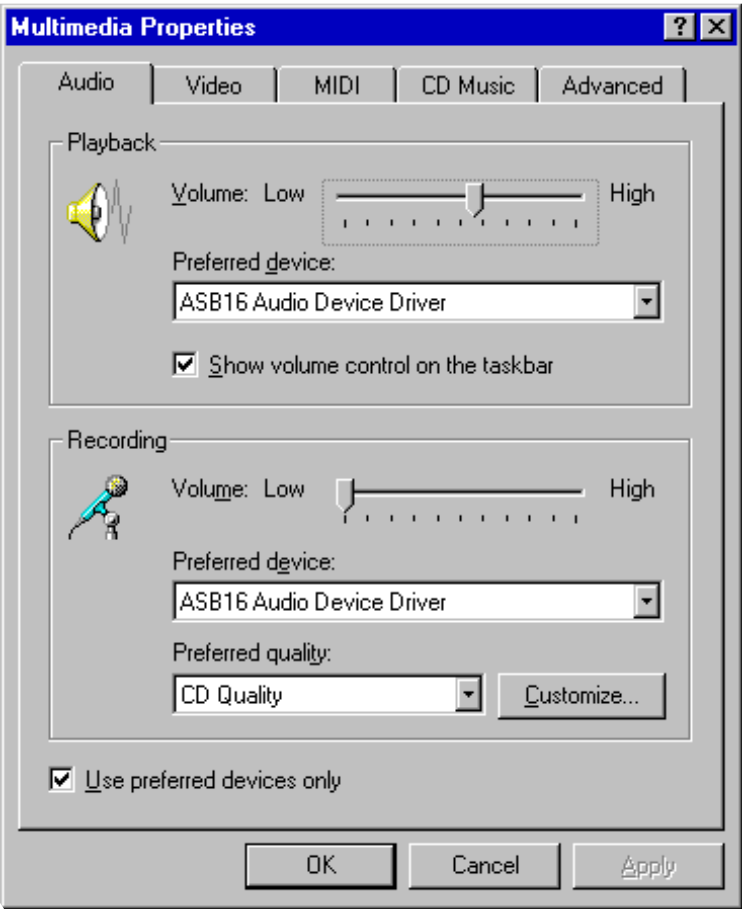


figure 14

Pressing the “MIDI Tab” shows the properties for your computer, and will look like figure 15.

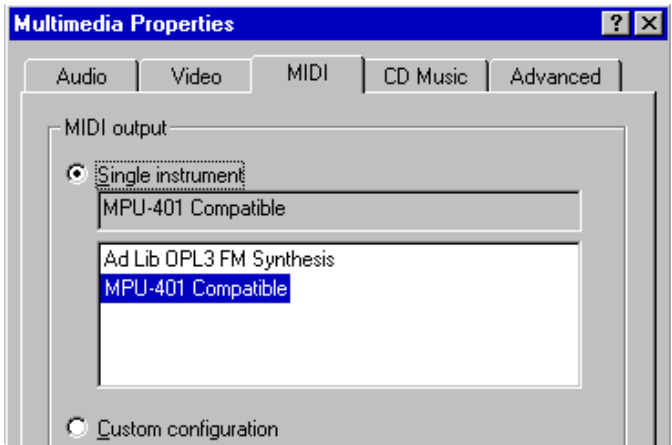


figure 15

Selecting the “Ad Lib OPL3 FM” option will allow Windows 95™ to send MIDI sounds to the Internal FM synthesiser. This is the standard default setting. It allows you to hear the difference your “Wave Table” makes to all MIDI music.

Selecting the “MPU401 Compatible” output allows Windows 95™ to send MIDI data to the ‘Wave Table’ synthesiser.

Please read your Ad Lib ASB 32/64 or other user guide for more information on MIDI sounds and General MIDI.

The Ad Lib Audio Rack

The Ad Lib Audio Rack is made of a set of modules, like a home sound system, which let you play and record music, as well as adjust sound mixing the way you like. All modules of the Audio Rack, may be launched separately from the Launcher Bar (see figure 16). Click on an icon of the Launcher Bar to launch a module of the Audio Rack. Click again the same icon to close it. Each module may be launched or closed in any order.



figure 16

After the installation, the Launcher needs to be configure. To do so, right click anywhere on the Launcher Bar, an select Configure in the pop-up menu. The Configuration window (figure 17) allow you to customize and set up the Audio Rack, depending on your hardware. Select the type of Ad Lib card you own, and main features of the sound card will be listed. If a modem is present on your Ad Lib card, you may as well choose the type.

The "Disable Game Mode Effect" option disables the GAME option in every module that let you choose between 4DHT, GAME, or normal.

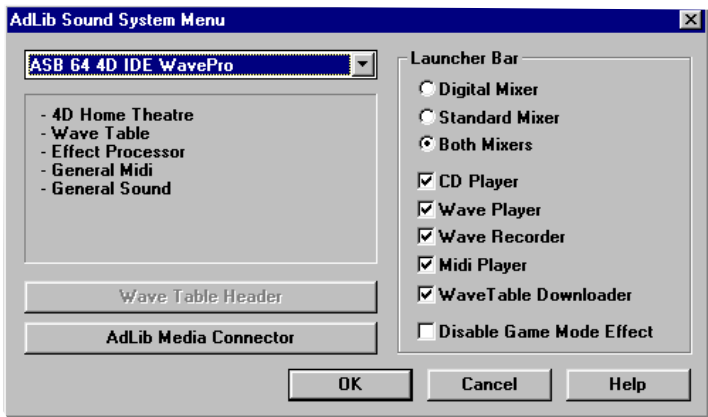


figure 17

Furthermore, you may call any module menu by right-clicking on an unused part of the module, or on the button. The button is used to minimize a module and is the close button.

The Analog Mixer

The Analog mixer (figure 18) let you adjust sound mixing using analog controls: sliders. They set the volume (vertical ones) and panning (horizontal ones) for every sound source. The higher is the slide bar, the louder is the volume. If a slide bar is brought to its minimal level, the corresponding sound source is automatically muted. Inversely, if you select a slide bar, the corresponding source is turned on. In the case of the 4DHT, if the "4DHT" option is selected, the volume level is used as the enhancement level, while it has no effect when set to GAME or normal. To execute the Analog mixer, click on the equivalent icon on the Ad Lib Launcher bar or double click on the Analog mixer icon in the Ad Lib program group

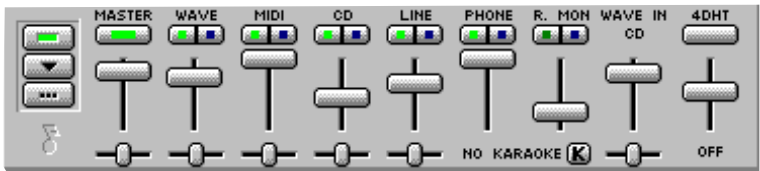


figure 18

You can adjust the Analog mixer Controls as follows:

- Master Atten** This is the global parameter, applied to the sound output, aftermixing has been done according to volume and panning of all sound sources.
- Wave Atten** Adjust the volume of Digital Audio Recording input.
- MIDI Atten** Output of the MIDI sequencer, which deals with music modules, like files having the ".MID" extension.
- CD Atten** Adjust the volume of the sound coming from a music compact disk in your CD-ROM drive.
- Line Atten** Adjust the volume of the Line-in input, which is the main input of you Ad Lib soundcard.
- Phone Atten** If your soundcard is equipped with a modem and telephone interface, you may set the volume level of the conversation on the line.
- Rec. Mon Atten** When recording, digitized (sampled) sound is also sent back to you so you may hear exactly how it will sound after having been recorded. This sound goes through the Record Monitor so you may set volume level without affecting other input and output used in the recording.
- 4DHT Atten** In the case of the 4DHT mode, controls the sound enhancement level.

The Digital Mixer

The Digital mixer (figure 19) allows you to adjust sound mixing parameters of only one sound source at once. To choose this source, use buttons in the rightmost part of the module. To set parameters, use arrow buttons in the center, as well as mute, solo and effect on the bottom. Of course, when you select any source, parameters of the source you were previously working on are left the way you set them, though they are not visible anymore. To execute the Digital mixer, click on the equivalent icon on the Ad Lib Launcher bar or double click on the Digital mixer icon in the Ad Lib program group



figure 19

You can adjust the Digital mixer Controls as follows

- Mute** This mutes the selected sound source. Click again on the mute button to turn it back on.
- Solo** The selected source becomes the only one to remain on and all others are temporary turned off, without affecting their parameters (volume level and panning). Click on the "solo" button again to turn back on every source that was previously on.
- Effect** This button selects between 4DTH, GAME, or normal modes.
- Master** This is the global parameter, applied to the sound output, after mixing has been done according to volume and panning of all sound sources.
- 4DHT** This button selects 4DHT as the current source, although it is not really a sound source. You may however adjust the sound enhancement level using volume controls. Panning buttons have no effect.
- WaveIN** Globally affects incoming sound, after all sound inputs (microphone, line-in, CD, etc.) have been mixed.
- Line** Controls the Line-In, which is the main input of you Ad Lib soundcard.
- CD** Controls the sound coming from a music compact disk in your CD-ROM drive.
- RecMon** When recording, digitized (sampled) sound is also sent back to you so you may hear exactly how it will sound after having been recorded. This sound goes through the Record Monitor so you may set volume level without affecting other input and output used in the recording.
- Wave** Output of digital sound, like .WAV sound files for example.
- MIDI** Output of the MIDI sequencer, which deals with music modules, like files having the ".MID" extension.
- Phone** If your soundcard is equipped with a modem and telephone interface, you may set the volume level of the conversation on the line.










The CD Player

With the CD player (figure 20), you may enjoy your favorite CD titles using your CD-ROM drive, with the features of a conventional CD player. Insert a CD into your CD-ROM drive, and use the playback control buttons to listen to your favorite songs. To execute the Cd player, click on the equivalent icon on the Ad Lib Launcher bar or double click on the CD player icon in the Ad Lib program group



figure 20

You can adjust the CD player Controls as follows

-  Stops the currently playing sequence. If you're within a list of songs, clicking on the "play" button will resume playback with the first sequence in the list.
-  Start playing the current sequence. If more than one sequences are selected in the list, playback will continue with following sequences.
-  Halts playback of the current sequence. Click on this button again to resume playing. This button is also used to put a module in stand-by when doing synchronous recording.
-  Jumps to the previous sequence in the list. If the current sequence was not at its beginning, this button rewinds the current sequence.
-  Rewinds the current sequence. Hold the button down to rewind faster.
-  Quickly moves forward. Holding the button moves faster.
-  Jumps to the beginning of the next sequence in the list.
-  Opens the CD-ROM drive door, to insert or change the CD.
-  Loop mode, selected sequences, may be played in different ways: one after the other, once or continuously looping, or only one sequence looping indefinitely. Simply click the change mode button to cycle modes. Current mode is shown by indicators in the information display of the CD Player module.

The information display informs you on the currently playing song, the time since its beginning, and the song looping mode.

The Digital Audio Player




The Digital Audio Player (figure 21) plays digital sounds, like WAV, that may be from anywhere or like those you may record with the Ad Lib Digital Audio Recorder. Click on the open button  to open the selection window, and use playback control buttons as well as the loop mode button  to listen to the selected sequence the way you like. To execute the Digital Audio Player, click on the equivalent icon on the Ad Lib Launcher bar or double click on the Digital Audio Player icon in the Ad Lib program group.



figure 21

You can adjust the DAP Controls as follows

The playback control of the Digital Audio Player remain the same as the CD player except for the open control describe as follow:

-  This opens a dialog window where you may choose one or many music tiles. Use appropriate boxes to navigate through drives and directories to select the desired files. You may also choose between list and single mode.

In the single mode, you may only choose a single file which will be played immediately. However, in the list mode, you may define custom lists, which will be kept until you delete them. To do so, click on "New", enter a new list name, and click on "Insert". Every selected file will then be added to this list. To get back a previously built list, select it from the "File lists" box. You may also delete a list by clicking on "Delete".

The information display provides information about the current sound, its name, the elapsed time since it began to play, and other information like sampling rate, sound quality (8 or 16 bits) and the number of used channels (mono or stereo). You'll also find the loop mode indicators.

The Digital Audio Recorder














The Digital Audio Recorder (figure 22) let you record (sample, digitize) sound in a WAV format from different sources. For complete explanation on how to record, see the Recording topic on the help file. Briefly, to record, choose a recording source, set up sound parameters (sampling rate, quality, etc.). Click on the  button to put the Recorder into Monitor mode. Then start a music playback, or talk into the microphone, and adjust recording volume levels, following the VU-meter. Then click on "pause" button , to start recording and on "stop"  to stop recording. You may then click on "play"  to listen what you just recorded. Don't forget to click on "Save"  to save your recorded sequence onto your disk. To execute the Digital Audio Recorder, click on the equivalent icon on the Ad Lib Launcher bar or double click on the Digital Audio Recorder icon in the Ad Lib program group.



figure 22

You can adjust the DAR Controls as follows

-  Saves the recorded sequence on the disk.
-  Opens a dialog window where you may set the number of channels (mono or stereo), sound quality (8 or 16 bits), the sampling rate and sound compression.
-  Stops playback or recording.
-  Plays back the recorded sequence.
-  Click on this button to switch the Recorder into Monitor mode, and eventually to record. See the Recording topic for recording instructions.
-  Temporarily halts recording or playback. When recording is paused, the Recorder switch to Monitor mode. In this case, nothing is recorded but the VU-meter remains active.
-  Rewinds the playback of the recorder sequence. Keep the button down to rewind faster.
-  Quickly moves forward the playback of the recorded sequence. Hold the button down to move more quickly.

The information display informs you about the recorded sound, its name, the elapsed time since playback or recording started, as well as other information like sampling rate, sound quality (8 or 16 bits), and number of used channels (mono or stereo). The display also integrate a two lights bars VU meter which shows the volume intensity of the currently playing sound. The VU meter is active only in Monitor mode or when recording, and only is the "VU meter" option of the module menu is set. See the Recording topic for more information on how to use it.

Recording sources

You may choose, for recording source, between the following:

- MIDI:** This is the sound produced by a Midi module player (like the Ad Lib MIDI Player)
- CD:** To record music from a compact disk.
- LINE:** This is the main input of the Ad Lib card, into which you may plug a tape player for example.
- MICRO:** Selects the microphone as the recording source.
- OUTPUT:** The recorded sound will be the output of the mixer (see sound mixing) which is sent back into the sampler. If you wish to record from many sources at once, or if the desired source is not directly available (eg: CD), you must select Master Output.

Note: If you wish to resample digitized sound that is playing in the Wave Player, be sure that the soundcard is configured with "Enhance Full Duplex", or "Full Duplex". However, in this last case, recording parameters (quality, rate, etc.) must be those of the playing sound.

The MIDI Player






This module (figure 32) plays MIDI music files. Click on the  button (Edit play list) to select which music you'd like to hear, and use playback control buttons as well as the loop mode button  to listen to the selected sequence the way you like. Furthermore, you may select the MIDI device that will be used to play music by clicking on the  button. To execute the MIDI player, click on the equivalent icon on the Ad Lib Launcher bar or double click on the MIDI player icon in the Ad Lib program group.



figure 23

You can adjust the MIDI player Controls as follows

The playback control of the MIDI Player remain the same as the CD player except for the following control:

-  This opens a dialog window where you may choose one or many music files. Use appropriate boxes to navigate through drives and directories to select the desired files.
-  The Ad Lib ASB 32/64 provide many ways for Windows to play MIDI music. You may choose between one of the following:

Midi Mapper:

Music processing goes through a Windows utility which allows to redefine instruments and channels configuration. In this case, hardware elements of the soundcard used depend on the Midi Mapper configuration.

Roland MPU-401:

Music is played through the MIDI port of the Ad Lib ASB 32/64 soundcard.

FM OPL3 Synthesizer:

The FM Synthesizer can generate artificial sounds as well as a fairly good imitation of real orchestra instrument.

Wavetable Downloader (light version)

With this module (see figure 24), you can download you own instruments into the Ad Lib board. This last must however have Ad Lib Cyber RAM to host them. These new sounds are added to the on-board Wavetable and may be used as melodic or percussion instruments, or as special effects within you MIDI music compositions. This module is therefore intended for those who write MIDI music and would like to use custom instruments, and that's why we are assuming that you already know MIDI music base principles.

The Wavetable Downloader allows to download sounds individually, manage multipatch instruments, save and load complete projects, and also provides a test mode to test instruments.



figure 24

Base elements on MIDI instruments

Instrument definition:

A MIDI instrument is made from a base sound which is modified by several parameters, like loops, different envelopes and filters to nuance sounds, etc. These parameters will not be explained here in details since the light version of the Wavetable Downloader may only modify a few of them: pitch, volume and panning.

Volume and panning modify the sound internally, they have no relation with volume and panning commands which could appear in a MIDI music module. However, it may be useful to lower the volume of an instrument to prevent distortion if may effects (reverb, chorus, etc.) are applied to an instrument in the music. Volume within music module should then be raised if you want the instrument sound as loud as before.

The pitch parameter is used to tune the sound. It is essential if we want all instruments to be correctly tuned together. Furthermore, you may select variable or fixed pitch. In the first case, the instrument will be played normally, and its pitch will depend on the note on which it is played as well as on the pitch parameter. This last is expressed in the way "note +-tuning" where "note" is the note that is actually played when the instrument is played on C-5 (middle C), and "tuning" is a number between -127 and +128 128th of semi-tones. In the second case, the instrument will always be played at the same pitch, regardless of the note, depending only on pitch tuning, expressed in Hz (number of samples per second).

There is also instruments that are made up of many sounds, each of them having their own range of keys on the music keyboard. A good example would be a percussion set, where each key is associated with an instrument. You may also think of a piano. It is not enough to have a sample of a piano note and to play it at different pitch to reproduce the sound of a real piano. In fact, by splitting the piano keyboard in a few sections and having a sample sound for each of those sections, we achieve better fidelity since pitch is not excessively modified, and the timber is quite the same within short ranges on the keyboard.

Furthermore, those sounds share the same set of parameters, but the pitch, volume and panning parameters. All of the remaining parameters are from a single sound instrument, called Master sound, which is another instrument to which a base son may or may not be associated. In the first case, it is a normal instrument, and its parameters are used for every sound of the multipatch instrument. In the second case, it is not a real instrument since no base sound is associated to it. It only contains a parameter set to be used by the multipatch instrument. Note that is the master sound is of the fixed pitch type, then every patch will also have the fixed pitch type, and inversely if the master sound is a variable pitch instrument.

There is therefore to types of instrument: single sound, and multipatch instruments.

Instruments numbering:

In accordance with the General MIDI standard, when composing music, we may choose our instruments from 128 predefined instruments (also called programs), which are the same on every hardware device or peripheral compliant with General MIDI. While the quality of the instruments samples may vary from one device to another, the instrument #73, for example, is always "Piccolo".

Being quite limited, this standard was superseded by, among others, the Roland General Sound (Roland GS) standard which, besides providing several parameters and effects to modify the timbre of existing sounds, allows many variations of an instrument. We way also talk about banks since variations may be totally different instruments. It is possible to have 128 different banks, each of them containing up to 12 instruments. However, in practice, MIDI devices only use bank 8, 16, 32 and 127, and other more sophisticated devices use a larger number of variations.

In the case of custom instruments that you may download on your Ad Lib board, they are found, for single sound instruments, in bank #64, and available programs range from 1 to 127. For multipatch instruments, you may define up to four of them, on bank #65 to #68 inclusively, which may each contain up to 63 patches. In this case, the master sound must be chosen among single sound instruments of bank #64. To that end, the Wavetable Downloader reserves programs 123 to 127 in bank #64 to be used as mastersound for multipatch sounds of bank #65 to #68 respectively.

When you use those multipatch instrument within your compositions, you must select the appropriate bank, as well as a program (instrument) to be its mastersound, taken from one of the 127 possible instruments of bank #64. You may consequently choose another sound that the one reserved by the Wavetable Downloader. Furthermore, since a range on the keyboard is assigned to each of the patches, the patch that is played, selected among different patch of the current bank, depends only on the note on which the instrument is played.

Downloading a sound into the board

The Wavetable Downloader may download any WAV type sound with however a few restrictions:

- Downloaded sounds must be monophonic and have 8 bits sound quality. If this is not the case, the Wavetable Downloader will convert the sound at load time, without affecting the original file. The stereo to mono conversion as well as from 16 bits to 8 bits, halve the size of the sound in each of these cases.
- Size of a sound, after conversion, must not exceed 128K (approximately 131000 bytes). Otherwise, sound is automatically truncated. Note that 512 more bytes will be truncated in this case for internal processing.



During download, for technical reason, digital sound playing and recording, if there is, are stopped, and if the MIDI Player use the GM OPL3 device, we recommend you to stop music playback if it is playing, since it may interfere with the Wavetable Downloader. However, the Wavetable Downloader is only effective within the scope of the Audio Rack, which means that any external program playing or recording digital sound, or using the FM OPL3 device, must be stopped when downloading a sound to the board.

When a sound is downloaded, it is given default attributes, and frequency tuning is done so that the instrument is played on its original pitch (frequency) when played on middle C (C-5). If you download a sound into bank #64, it deletes the instrument that was previously on that program, while in bank #65 to #68, it inserts itself in the patch list of the instrument. (For more information, see the managing multipatch instruments section.)

Managing multipatch instruments

The Wavetable Downloader offer necessary functions to build and manage multipatch instruments.

Building an instrument

When a first sound is loaded (button ), it is given all the keyboard (from C-0 to G-10). Then, every other sound is inserted in the patch list, between the previous patch, if there is, and the currently displayed patch. Furthermore, the range on the keyboard that was previously assigned to the current patch is split into two parts, the first one being assigned to the new patch. Since there's a limit of 63 patch per instrument, inserting a 64th patch automatically deletes the last patch. To delete a patch use the  button. This patch is then removed from the list and the next patch, or the previous one if it is the last patch, inherit the range of the deleted patch.

Note that the number of each of those patches may change without affecting the use of the instrument in a MIDI music. In fact, this is only the order of the patch on the keyboard, from left to right. Therefore, the patch #1 always begins on C-0, and the last patch always ends on G-10.

Setting ranges

The keyboard section assigned to every patch may be modified by changing split points, which are the boundaries of those sections. Using the "SPLIT" buttons, you may decrease or increase the upper boundary of a range, which is included in the latter. The upper boundary is always between upper boundaries of the previous and the next patch. Furthermore, the last patch ends with G-10 and it can't be changed.

Modifying parameters

Volume and balance parameter, as well as pitch tuning, apply to each patch, while toggling between variable and fixed pitch affects the whole instruments, i.e all of the patches.



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Appendix

Save and Load projects

It is possible to save all current instruments and parameters in a project file, which might be reloaded later, without having to redo every operations you did. Use the  button to save the current project, and the  button to bring back an old project. To start a new project, close and restart the Wavetable Downloader.

Using these project functions you may, for example, have one or many MIDI modules which use the same custom instruments, and when you want to play them back or modify them, you only have to load the corresponding project.

Warning: the Wavetable Downloader does not save instruments sounds. It only keeps, in the project file, their name on the disk. Therefore, it may not find them anymore if you move these files elsewhere on your disk.

Test Mode

The test mode allows you to "test" sounds that you download onto your Ad Lib board. You may therefore, for example, tune the instrument according to a reference sound, whether it is another MIDI instrument, a CD, etc.


To turn the test mode on and off, click on the  button. The red led is lit when test mode is on. You may use the normal keyboard to play with this instrument as you would do with a music keyboard, like shown in the figure 25 (keys displayed may vary slightly depending on your keyboard configuration):



figure 25

The note is played when you hit the key, and stopped when you release the key or when the sound come to its end. Furthermore, you may change the base octave, which always begin on the green note above, with the "-" and "+" keys of the numeric keypad (the right part of your keyboard). The base octave is displayed in the information screen. However, if you keep the key pressed, change the octave and then release the key, the note will not be released since it is not the same note anymore. This may be useful to play many notes while having your hands free to do something else, but if you wish to stop those notes immediately, press the "Escape" key.

To add a fancy feature, you may change the scale to a "blues scale" by pressing the "*" key on the numeric keypad. Press the "/" key, on the numeric keypad, to get back the normal scale. While only the "white" notes are used in the blues scale, "black" notes may also be useful, though they do not correspond to the conventional ones. When "blues scale" is turned on, the base octave number in the information screen turns yellow. Of course, it is advisable to get back to the normal scale to play MIDI music.

The Bundled-Software



EASYKEYS *Lite*
SUPERJAM! PREVIEW

SOUNDTRACK
EXPRESS PREVIEW

EasyKeys transforms your PC into a fully-functioning MIDI keyboard for the cost of one music lesson! From the hobbyist to the professional, everyone will enjoy the music they produce using EasyKeys. Choose from one of ten musical styles, add a sound effect, introduction, or ending, and use the one-touch chord playing and automatic melody maker to create your favorite tunes. Control everything from tempo, to musical key, to the instrument playing the melody.

Score Saver

- Watch psychedelic shapes dance to the music
- Choose from 32 different musical styles
- Select from one of 5 graphical elements

SuperJAM! is an automated composition package which allows musicians and non-musicians alike to utilize a set of intelligent band members to quickly generate complete musical compositions in a wide variety of styles from jazz to classical to pop. No prior musical training is required. All scores are copyright-free, and can be saved in standard MIDI file format and exported into other applications.

Soundtrack Express enables the corporate user and home videographer to easily create sophisticated background music for multimedia presentations and videos. Music is created by pushing one button and selecting the musical style, mood, band configuration, and length of performance in minutes and seconds. The user can easily enhance the song by asking for musical accents at specific points in time so that the music complements visual aspects of a presentation. The ability to create unique soundtracks is limitless. Soundtrack Express' OLE 2.0 and MIDI file allow it to work with dozens of multimedia and business presentations packages.

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Appendix

The Ad Lib 4D Sound

The 4DHT™ from Ad Lib (by using Spatializer technology™) is a real new world of Multimedia sound, game, video and MPEG quality. The 4DHT™ SDK allows the game manufacturer to take his existing sounds and convert them easily to be used with the new 4D sound for Ad Lib Sound Boards. The new sounds will still play on any other ordinary sound cards.

Imagine you are watching a Star Trek movie and you are able to hear things flying around you, coming from the front-left and disappearing to the right back. You have to experience it for yourself to be able to appreciate it.

The real 4D Sound appears when you switch on the 4DHT™ mode on the mixer and use 4 speakers. After the 4D Module switches to 4DHT™ Mode the control slider for the 4D Space Effect will appear and you can adjust the Hot-Spot in your room. With a little adjustment by using the Ad Lib Mixer (analog or digital), you are able to position the sound around you .

What is 4DHT™ sound ?

Real sound. It's not only all around you, it moves. It's alive. That's what 4DHT™ audio processing does for music, computer sound and effects. And it's ready for the revolution in digital Multimedia and the new breed of interactive communications.

Compatibility

All the special effects designed by game manufacturers or by yourself, using the 4DHT™ Generator from Ad Lib together with the 4DHT™ standard sound cards from Ad Lib, can be used to be played on any other ordinary sound board. The file format is still compatible, but you will of course hear no 4D or surround sound.

How does it work ?

4DHT™ technology is actually quite elegant. As children, we learn to recognize sensory cues as they enter our brain. Over time, millions of neural pathways in the brain are formed that memorize this information. The first time we heard a bird chirp, that message creates a new set of neural pathways in the brain where the memory is stored. When a bird chirped again, we recognized the sound and identified it. This pattern recognition helps the mind perceive what scientists call "conceptual image space". In other words, the distance, size and location of sound sources. That's how 4DHT™ technology works. It uses the brain as its processor. The technology recognizes when certain cues are present in recorded sound. It elevates that portion of the recorded signal so that existing neural pathways already present in the brain are triggered. Which gives your ear more information to work with when the sound is heard over stereo loudspeakers.

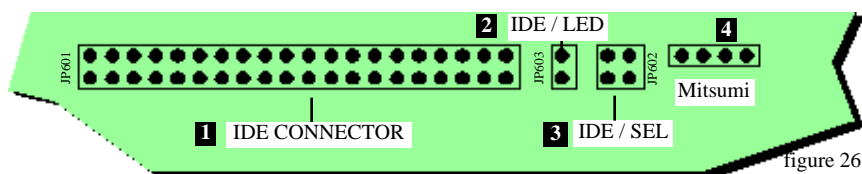
Because the cues are based on the natural model of hearing, your brain

recognizes and instantaneously accepts them as natural, not artificial. If cues were artificial, you'd hear disagreeable artifacts or sonic colorations and your ear would tire quickly of the effect. It just wouldn't sound right. That doesn't happen with 4DHT™ technology. The brain isn't struggling to build new neural pathways to recognize this new sound. That's because the effect isn't fake. Nothing new has been imposed on the sound signal. Yet spatial masking - sounds piled on top of each other - is eliminated.

4DHT™ technology from Ad Lib produces a three-dimensional stereo image that's natural to the brain. And it sends an emotional charge to your ears. Ad Lib is using Spatializer® technology for the new sound standard.

The Ad Lib Enhanced IDE Interface

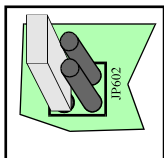
Location of the Connectors and Jumpers for the IDE Interface



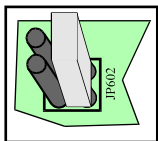
Connecting the Enhanced IDE interface

First connect the 40 Pin IDE Cable to JP601 on the Ad Lib Audio System Board. Insure that the red wire of the cable goes to pin 1 of the IDE Connector on the board (See number 1 in figure 26) If you want to connect a hard disk drive to the sound board, you can connect the LED cable of your computer case to jumper JP603 (See number 2 in figure 26). With the jumper JP602 you can select the setting for Disable or Enable the secondary or primary. See the next three pictures. (figure 27) If you are connecting a IDE CD-ROM Drive on the sound card, you have to install also the CD Audio connector cable. (See number 4 in figure 26)

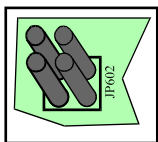
figure 27



To disable the enhanced IDE Interface, you have to set the Jumper like shown in the left drawing.



To enable the primary IDE Interface on the board, you have to set the Jumper like shown in the left drawing.



Factory Default Setting.

To enable the secondary IDE Interface on the board, you have to set the Jumper like shown in the left drawing.

ASB 32/64 Wave board layout

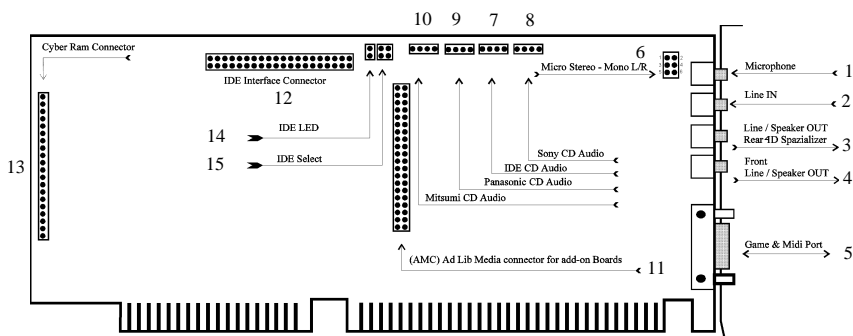


figure 28

- 1- Stereo/mono Microphone.
 - 2- Line audio input.
 - 3- Line/Speaker output - rear*
 - 4- Line/Speaker output - front
 - 5- Joystick and MIDI port.
 - 6- Microphone jumper settings.
 - 7- IDE CD Audio.
 - 8- Sony™ CD Audio.
- *Note : 4D and PRO series only

- 9- Panasonic™ CD Audio.
- 10- Mitsumi™ CD Audio.
- 11- (AMC) Ad Lib Media Connector
- 12- IDE Interface Connector
- 13- CyberRam Connector
- 14- IDE - LED
- 15- IDE Jumper Settings

Troubleshooting

- *Question: When the ASB 32/64 Wave card is in the system and the system does not turn on. What should I do?*

Answer: Call your supplier or the nearest authorized distributor or service center.

- *Question: The system reports a Hard Disk Drive Boot failure after the ASB 32/64 Wave installation. What should I do?*

Answer: Call your supplier or the nearest authorized distributor or service center.

- *Question: After installing the ASB 32/64 Wave DOS drivers, I don't hear the game's music. What should I do?*

Answer: Check to make sure that all the cables are in the proper place as specified in the manual. However, if you do not get any result, make sure that settings in the ASBCNFG.EXE are O.K. .

- *Question: The ASB 32/64 Wave has an interrupt problem with another device under Windows. What should I do?*

Answer: Change or remove the other device or you can change the ASB 32/64 Wave configuration. We recommend that you change the other device first. However, if you do not get results, go to the directory of C:\ADLIB and run the ASBCNFG.EXE under DOS or Windows to change the configuration of the ASB 32/64 Wave.

- *Question: The ASB 32/64 Wave cannot play MIDI files. What should I do?*

Answer: Check the mixer setting under Windows . If this does not solve the problem, check the MIDI mapper and sequencer for the correct installation. Refer to your Windows manual for more details.

- *Question: The microphone does not work. What should I do?*

Answer: Look at the male connector of your microphone, then refer to the page about the "Microphone installation setup".

- *Question: Windows does not recognize the CD-ROM when it is playing a music CD. What should I do?*

Answer: Make sure that you have a Music CD in your CD-ROM and try it again. If this does not solve the problem, then open the Control Panel and select Drivers. Remove the (MCI) CD AUDIO and add the file (MCI) CD AUDIO again. Close Drivers and quit the Control Panel and try to play the CD-ROM again.

- *Question: The CD-ROM is working but, no sound can be produced. What should I do?*

Answer: Make sure that you connected the CD audio cable in the right connector. Refer to the picture on the back of the ASB 32/64 Wave Box or in the Manual for guidance.

The Ad Lib Wave Table

General MIDI's Background

GM was originally intended to expand the market for MIDI “song files” distributed on floppy disk or CD-ROM. These files consist of MIDI data instead of audio, and usually play back through MIDI-compatible sound modules. These generators receive data over MIDI that tells them what notes to play, and which timbres to use.

Typical sound generators contain at least 128 different instrument sounds (called “patches” or “sound programs”), and often more. Although MIDI data can address up to 128 different instrument sounds over 16 different software channels, prior to GM sound assignments were not standardized.

To see why this is a problem, assume a sound generator where sound program #1 is piano, sound #2 is bass, sound #3 is guitar, etc. If a song file sends its piano notes to program #1 and its bass notes to program #2, then all is well. However, the file’s creator might assume that bass is sound #1 and piano is sound #2, meaning you’d hear the bass part played on the piano, and the piano part on bass.

This kind of confusion stunted the growth of the song file market and made the technology appear unnecessarily complicated for consumers. The GM specification was developed to address these problem, as well help overcome the limited musical capabilities of existing computer-compatible sound generators.

General MIDI Instrument Requirements

A GM-compatible device must comply with the following specifications:

- 24 dynamically-allocated voices available for melody and percussion. This allows up to 24 notes to play simultaneously. Alternately, the spec allows for 16 dynamically allocated voices of melody and 8 voices for percussion.
- Dynamic allocation means that at any given moment, synthesizer voices are assigned as needed. For example, out of those 24 voices, at one instant 10 voices might be allocated to playing back a piano sound, 6 to a rhythm guitar part, and 1 to a bass line, leaving 7 voices unused. As the music changes, the allocation might change -- 1 voice for a lead guitar line, 8 voices for piano, 8 voices for organ, etc.
- Multitimbral response to all 16 MIDI channels. Multitimbrality allows a single device to play several polyphonic musical parts simultaneously. Each part appears on its own channel (although it is possible to switch sounds at any time on any channel).
- 128 defined instrument sounds. GM specifies a particular sound for each of MIDI’s 128 available sound programs (see Table 1, “General MIDI Sound Assignments”). Note that these are organized into 16 groups of eight sounds; for example, sounds 1-8 are pianos and other keyboards, 9-16 tuned

percussion, 17-24 organs, 25-32 guitars, 33-40 bass, etc.

- Typically, a GM-compatible MIDI data file (also called a sequence) starts by issuing sound program selection commands on various channels. For example, suppose channel 1 carries the notes for a guitar part, and channel 2, the notes for a sax part. The file would send out a program change command to select one of the available guitar sounds for channel 1, and the desired sax sound for channel 2. The notes played on each channel therefore play back through the correct instrument sounds.
- A dedicated channel (10) for percussion. Each percussion sound is assigned to a different note, so that you don't end up hearing a snare drum when you were supposed to hear a tambourine. Table 2 shows the General MIDI Percussion Mapping assignments.
- Response to important MIDI controllers. These include controllers that can alter volume, modulation, panning (stereo placement), etc. Use of these controllers helps impart more expressiveness to synthesized sound. Table 2 General MIDI Percussion Map (Channel 10)

Incidentally, the General Synthesizer (GS) standard established by the Roland Corporation is compatible with GM but offers additional variations on the main instrument sounds as well as signal processing. The bottom line is that a GM-compatible sound generator provides superior sound quality by offering more polyphony (i.e., the number of notes that can play at once), more parts to allow for more complex musical arrangements, and vastly improved fidelity compared to first-generation sound boards.

GM is fully compatible not only with the MPC spec for the PC, but with every Atari (from ST to Falcon030) and all Macs, PCs, and Amigas with MIDI interfaces. In fact, some forward-thinking companies are already starting to make "bilingual" games and other products with music and drivers for both GM and older sound generators.

General MIDI's Painless Upgrade Path

In the music industry, GM has been widely accepted since its inception. Forget the wheezy synthesizer sounds you've heard before; the latest generation of modules is often based on sampled sounds, recorded using leading recording engineers and studios.

MIDI data can drive internal sound cards (such as those based around the ASB 32/64 Audio System Series) as well as external modules. This also helps forestall obsolescence, since upgrading the sound merely involves changing the GM-compatible board or sound module. Nothing else needs to be altered, either in the computer or the software, because MIDI produces musical data -- not sounds -- that any MIDI instrument can recognize.

MIDI probably won't go out of date until music as we know it goes out of date. MIDI has already proven itself for over a decade in the music and computer industries and continues to grow.

Now that GM modules are becoming the de facto standard for computer sound, it's time for the multimedia, game, CD-ROM, and entertainment developers to start including the MIDI data needed to drive these new modules. Luckily, this isn't hard to do.

Incorporating General MIDI

MIDI is the main development tool for musicians who create musical sequences. When a composer sends a MIDI file to a game developer, it may already be in GM format; if not, adapting any file to GM is generally a trivial process.

The "extended level: MPC spec dedicates MIDI channels 1-10 (and 16 voices of polyphony) to high-quality sound generators. This is certainly enough power to create realistic sounds with a GM-compatible module or board. (Channels 11 and 12 are undefined; channels 13-16 are intended to drive a standard sound card.)

However, GM sound composers aren't limited to using channels 1-10. A composer can create a game soundtrack that sounds acceptable if played back over channels 13-16 to a base level synthesizer, really good if played back over channels 1-10 to an extended level synthesizer, and fabulous if played back through all available channels (1-16) on a GM compatible module.

If you're concerned about using up space for two different types of data, it's not really an issue. Compared to digitized audio, MIDI requires very little memory - - dozens of kilobytes, not megabytes. (It's the sound generators that provide the realistic, digital audio sounds.) The reduction in data is so dramatic that even games distributed on floppy disk can deliver stunning sound by including the GM data needed to drive GM-compatible sound generators.

The Wave(form) of the Future

General Midi is the wave of the future. Its adoption by the music industry will continue to raise the ante for overall sound quality in computers. As games become multimedia experiences, players will demand the same quality of sound as other multimedia titles. Games and CD-ROMs that fail to take advantage of FM will sound as dated as the scratch of a needle on vinyl.

People want to exploit the full potential of their computer, and including General MIDI data in a game or multimedia program gives the consumer a greater value -- not to mention the option to shake the rafters with sound if you're so inclined.

The MIDI Protocol

MIDI was developed to provide a standardized hardware and software interface between computer-based musical devices such as synthesizers, drum programs, and even theater lighting. The hardware uses a serial interface running at 31.25 kilobits/second, with optical coupling to prevent ground loops. Because the interface is so inexpensive, most electronic sound generating equipment now includes MIDI.

The software consists of messages that encode musical performance gestures --

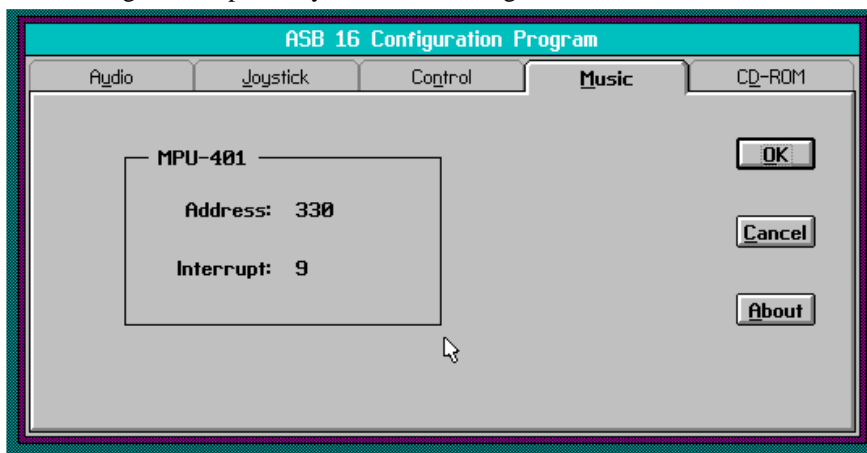
which keyboard keys are held down, sustain pedal motion, dynamics, and the like. The MIDI specification also provides for synchronization and times messages. Feeding these messages to MIDI-compatible sound generators, causes them to create sounds in accordance with the MIDI data. In other words, you can think of a MIDI device as a high-tech player piano, but one that gets its instructions from digital data rather than holes punched in a piece of paper.

Since MIDI data files contain instructions rather than digitally sampled sounds, file sizes are relatively small. Because the sound generator receiving the MIDI commands, upgrading the sound generator also upgrades the overall audio quality; no changes need to be made in the MIDI data file.

The Installation of the Wave Section

For computers that do not have a Plug & Play BIOS

Please run the ASBCNFG.EXE program from your DOS installation directory (Default C:\ADLIB\), see figure (1). For games compatibility please select the default configuration, of Address 330 and Interrupt 9-(2). You may need to change this default if you also have an Adaptec™ SCSI card, or a network adapter. We would suggest however that you change the other adapter card, so maximizing the compatibility with most DOS games.



For computers with a Plug & Play BIOS

The configuration will be set automatically to the best setting for your computer configuration. The ASBCNFG.EXE program can still tell you where your ports are set to, but you will have to run the configuration program that came with your machine to make any changes.

Note for windows 3.X users

We have supplied a number of options in the Windows MIDI Mapper. For

normal use we would suggest that you use the GM MPU401 setting. (figure 2) This will make sure all MIDI data goes to the **ASB 32/64 Board**. Please read the Windows™ user manual for other advanced user settings.

Regarding the MIDI Mapper

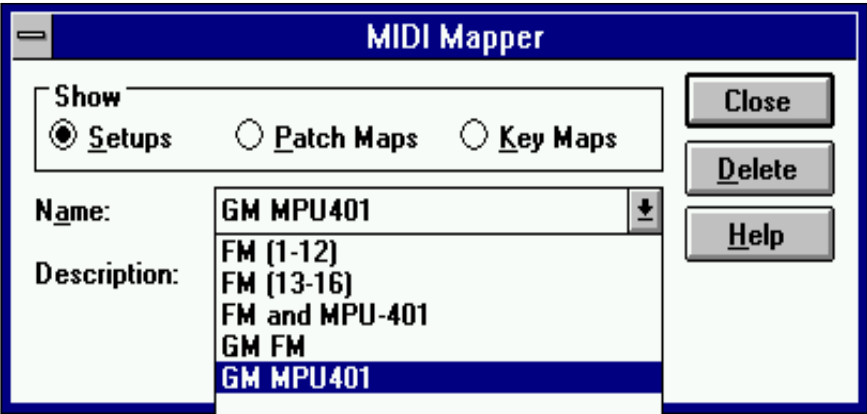
Some Windows applications may send MIDI data directly to the MIDI driver for your sound card, but most send their MIDI data to the Windows™ MIDI Mapper which then routes the data to the driver.

If there are multiple MIDI devices in your system, the MIDI Mapper can be configured to send data on specified MIDI channels to particular MIDI devices. To use the ASB 32/64 synthesizer with Windows™ applications, the MIDI Mapper was configured during setup to send MIDI data to the Roland™ MPU-401 driver interface.

The MIDI Mapper is a part of the Windows™ Control Panel applet, which is found in the Main program group. If the MIDI Mapper does not appear in the Control Panel, then the MPU-401 driver may not be correctly installed. Configure the MIDI Mapper as follows:

- 1. Open the MIDI Mapper.

The MIDI Mapper dialog box appears.



- 2. To examine or modify one of the existing MIDI Maps, choose one of the existing MIDI Map names and then click on the Edit button. The MIDI Setup dialog box appears.
- 3. To add a new MIDI Map, click on the New button, then enter the new MIDI Map name and click on the OK button. The MIDI Setup dialog box appears.
- 4. Select the driver name (or “None”) to be used for each of the 16 MIDI channels.

Most MIDI sequences (song files) will send MIDI data for each instrument used in a musical arrangement on a separate MIDI channel. The ASB 32/64 responds to all 16 MIDI channels and can play **up to 32 notes** or voices selected from **up to 16 musical instruments at one time**. To use the full capability of the **Ad Lib Wave** synthesizer, the driver should be selected on all 16 MIDI channels.

Note that sequences which adhere to Microsoft's MIDI Authoring Standard store two versions of every MIDI composition in the same file. One version of the composition is written for Extended Multitimbral Synthesizers (such as the GM wavetable synthesizers), and this version will be played on MIDI channels 1 through 10. The second version is written Base Multitimbral Synthesizers, normally Yamaha's™ OPL3 synthesizer, and this version will be played on channels 13 through 16. When playing MIDI files which conform to the MPC MIDI Authoring Standard on the ASB 32/64, the best results will be achieved when MIDI channels 1 through 10 are assigned to your sound card's MIDI driver for the ASB 32/64, and MIDI channels 11 through 16 are assigned to "None".

For full GM/GS compatible song files, set all 16 MIDI channels to MPU-401. This setting will be the norm in future Windows multimedia apps making use of MIDI. The dual authoring standard is being abandoned.

5. Play a sample MIDI sequence, such as the CANYON.MID file found in the \windows directory, to ensure that the system is operating correctly. The **CAKEWALK Express Software** or the **Ad Lib Music Rack**, located in the Ad Lib program group, may be used to play the MIDI sequence.

