AudioPlus 3200
Wave
User Manual

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Version 1.0

FCC Compliance Statement

Certified to comply with the limits for a Class B computing device according to Subpart J or Part 15 of FCC rules. See instructions if interference to radio reception is suspected.

FCC WARNING

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and, (2) this device must accept any interference received, including interference that may cause undesired operation.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

In order for an installation of this product to maintain compliance with the limits for a Class B device, shielded cables must be used for the connection of any devices external to this product.

PART 1. Hardware/Software Contents

PART 2. Media Rack Contents

1

Hardware Introduction

1.1 Product Overview

The AudioPlus 3200 Wave is a Hi-Fi stereo 16 bit plus 32 voice high performance sound card. It is compatible with Sound Blaster, Microsoft Windows Sound System, Wave Table General MIDI and Roland GS drumsets. Its state-of-the-art design not only fulfills all requirements of Microsoft MPC3 specifications but also realize astonishing dream sound effect when you play PC video game of multimedia CD titles.

AudioPlus 3200 Wave has also build in the MPU-401 MIDI interface. It offers you over 250 high quality wave table sounds on board with GS drumsets and MT32 instrument compatibility. It's the best choice both in multimedia PC education and entertainment applications. It definitely will turn your PC to the most powerful multimedia computer.

We also provide convenient input/output connection to support any audio equipment, eg. line-in jack, micro-phone jack, a volume control knob, audio output jack, and a 15 pin D-SUB multiplexed joystick/MIDI connector. Plus CD-ROM interfaces which support five of the most popular CD-ROM drivers in the market. With PANASONIC or MITSUMI or SONY or WEARNES and IDE-interface drive, you can run thousands of multimedia applications on CD's.

1.2 Product Features

- **Compatibility**
  AdLib / Sound Blaster 2.0/PRO
  Windows Sound System
  GM/GS compatibility
  Roland MPU-401
  Roland Canvas SC-55 sound list
  Meets and exceeds Multimedia PC Level 2 Specifications

- **Digitized Audio**
  Maximum recording sampling rate of up to 44KHz
  Maximum playback sampling rate of up to 44KHz
  16 bit stereo digital-to-analog / analog-to-digital converter

- **Wave Table Synthesis**
  32 voices polyphony
  16 parts multi-timbral (with one or two rhythm parts)
  Compatible with GM standard, drumsets Roland GS compatible
  Professional sound quality: stereo 16 bit oversampling DAC
  Close compatibility with market standards, including special MIDI controls
  Total of 343 sounds (190 instrument sounds, 107 drum sounds, 46 effect sounds)
  8 drum kits, 1 sound effects kit

- **FM Music Synthesizer (OPL3)**

- **16 bit Audio Codec/Mixer**
  Stereo analog mixing from CD-audio, Line-in, FM music, voice
  Mono analog mixing from MIC-In
  Software adjustable volume

- **MIDI Interface**
  Fully compatible with MPU-401 MIDI UART mode

- **Joystick Port**
  IBM PC joystick/game port

- **CD-ROM Interface**
  MITSUMI LU005/FX001/FX001D
  PANASONIC 562B/563
  SONY CDU 31A/33A
  WEARNES CDD110
  SECONDARY IDE

Interfaces available for Windows Sound System

Software configurable I/O Address, IRQ, DMA channel for all interface

1.3 Hardware and Software requirements

The AudioPlus 3200 Wave can be installed in any IBM PC/XT, AT or compatible computer. To successfully install the AudioPlus 3200 Wave, you must have the following hardwares and softwares.

A) Hardwares

IBM PC/XT, AT, 386, 486 or compatible computer with the following:

- One or more 3.5" floppy drive
- One available 16-bit expansion slot
- MGA, CGA, EGA or VGA (VGA recommended)
- Minimum of 40 MB Harddisk with at least 5 MB of free space
- At least 1 MB of RAM (conventional & extended),
  4 MB recommended
- Microsoft or compatible serial mouse
- 80386 or above recommended

B) Software

- MS-DOS 3.1 or greater
- Microsoft Windows 3.1
- Microsoft MSCDEX.EXE if you want to install CD-ROM

NOTE:
Above requirements are minimum requirements. You may be required to acquire more hardwares or softwares to use the AudioPlus 3200 Wave functions to its full extent.

2

Installation of the *AudioPlus 3200 Wave*

WARNING: Before installing the AudioPlus 3200 Wave, you should familiarize yourself with major parts of it. Improper use of it may cause permanent damage to itself and/or your PC and/or external equipment's.

2.1 Installing the AudioPlus 3200 Wave into your Computer

After you adjust hardware jumper settings, you can install the AudioPlus 3200 Wave into your system, please follow the steps carefully for a typical system.

1. Turn off your computer and disconnect all power cords.

2. Remove the cover from your computer. Refer to your computer system user's guide for more details.

3. Choose and empty 16 bit expansion slot. (Preferably away from other cards to cut down on noise and interference).

4. Remove the expansion slot cover by unscrewing slot cover screw. Keep the screw for later use.

5. Pick up your AudioPlus 3200 Wave by its top edge. Firmly slide the AudioPlus 3200 Wave into the slot. Anchor the AudioPlus 3200 Wave's mounting bracket with the screw you kept from step 4.

6. Put the computer cover back on and reconnect the power cords.

   Note: At step 5, If the AudioPlus 3200 Wave will not slide in smoothly, do not force it. Make sure the AudioPlus 3200 Wave is lined up properly, and try again. You may need to loosen the adjacent slot's rear cover to make the AudioPlus 3200 Wave fit properly.

Table 2.1 The AudioPlus 3200 Wave Jumper Setting Description

JPx	Function	Describe Setting		
	Windows Sound	JP2	JP1	base I/O address
JP1	System base I/O	short	short	530-7H (Default)
JP2	address	open	short	E80-7H
		short	open	F40-7H
		open	open	604-BH
	CD-ROM type	JP4	JP3	Type
JP3		short	short	Disable (Default)
JP4		open	short	Panasonic
		short	open	Sony/Mitsumi/Wearnes
		open	open	IDE

Table 2.2 Connector function

Connector	Function
J1	Connect Sony / IDE CD-ROM Audio output
J2	Connect Mitsumi CD-ROM Audio output
J3	Connect Panasonic CD-ROM Audio output
J7	Connect IDE CD-ROM cable
J8	Connect Panasonic CD-ROM cable
J9	Connect Mitsumi CD-ROM cable
J10	Connect Sony CD-ROM cable
Line-in	Connect with the audio output from stereo
Mic-in	Connect with microphone
Volume knob	Volume control
Speaker-out	Output to speaker or audio-in of stereo
MIDI/Joystick	Connect with joystick or MIDI cable (optional)

Figure 2.1 The AudioPlus 3200 Wave's I/O Connection and Jumpers.
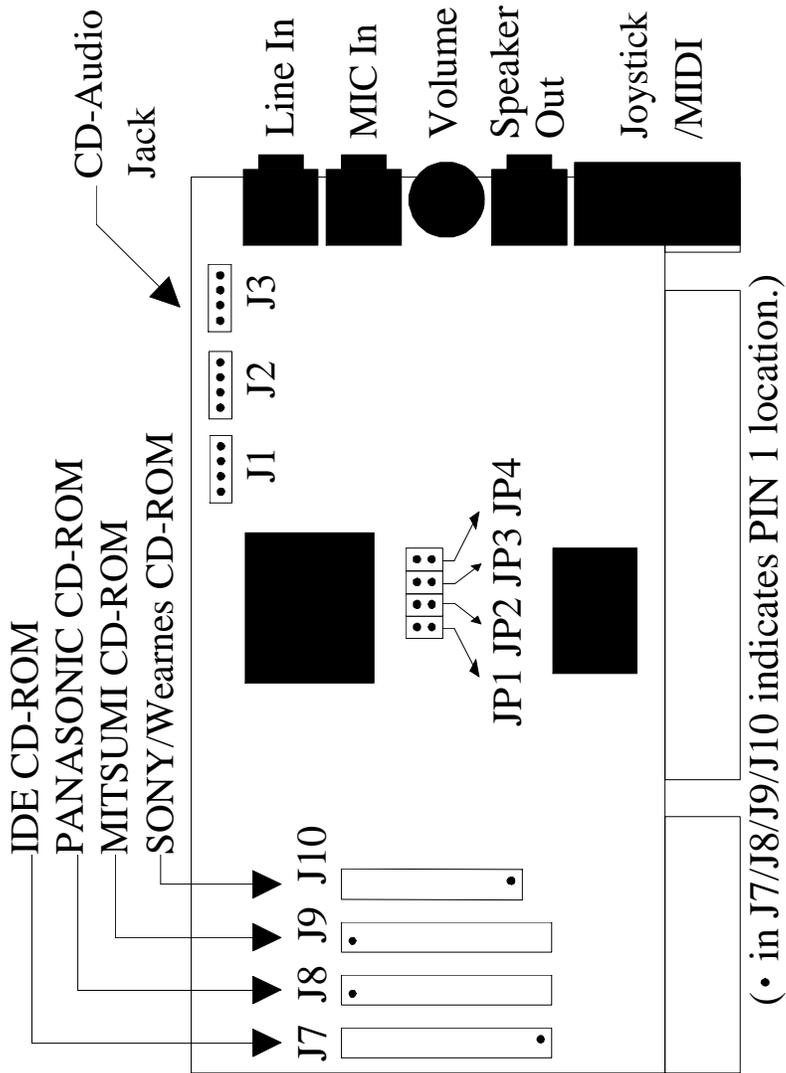
2.2 Software I/O Setting

We also provide software for changing Sound Card's I/O without jumper setting. You can find the program 'APINIT.EXE' in install path. After running you will see all I/O settings in the main menu. Using arrow key to move to the item that you want to change and press ENTER key to execute. To quit or save change, press ESC key and display will show as following:

>   save setting & exit

>   quit without saving

Program will automatically update file "CONFIG.SYS" if selecting 'save setting & exit '. Otherwise, it will remain unchanged. Once you save the change, a new I/O setting will be got ever since.

2.3 DOS Utilities Install

INSTALL.EXE is the program that helps you easily install the AudioPlus 3200 Wave's supported utilities from diskettes to your hard disk.

Insert the AudioPlus 3200 Wave Diskette into drive A:. Change to drive A at DOS prompt, type in

>   A:\ > *INSTALL* [Enter]

It will make directory (AP3200W) on your Harddisk C: driver, and install the utilities programs into C:\AP3200W>.

2.4 Windows 3.1 (Win 95) Application Install

To setup the Media Rack software under Windows , follow these steps:

1. Start Windows 3.1 (Win 95).

2. From Program Manager, select **File (Start)** and then **Run...** from the pull-down menu.

3. At the Command Line:, type in **A:\WINAPP\SETUP.EXE** (A: is the drive you have put the Media Rack Software disk into).

Program will automatic launch Windows and install all of Windows applications and device to hard disk path that you specify.

2.5 OS/2 Driver Install

The following procedures are the setup of OS/2 driver for AudioPlus 3200 Wave:

1. Launch OS/2.

2. Open icon "Multimedia Application Install".

3. Select the source floppy drive that AudioPlus 3200 Wave is in. You will find
   two drivers shown on the screen. that is
         " C-Media Audio Adapter "
         " C-Media Adapter OPL3 "

4. And then follow the indicated steps to add both drivers.

5. After setup, shutdown OS/2 and reboot.

Note: a. Please delete old audio drivers that installed before.
           b. If you do the first time OS/2 installation, OS/2 will detect AudioPlus
               3200 Wave sound card to "Sound Blaster PRO" at "Multimedia
               Device Support" in the "System Configuration". Please remove it and
               choose "none" for a successful setup.

2.6 Set DOS environment variables for Sound Blaster compatible

The AudioPlus 3200 Wave is compatible with Sound Blaster 2.0/PRO, so you
can execute programs which can run with it, but you need to set the DOS
environment variables like below :

$$C:\backslash SET\ BLASTER = A2\mathbf{x}0\ I\mathbf{y}\ D\mathbf{z}\ T4$$

$\mathbf{x}$ = 2 or 4	(This is address number)
$\mathbf{y}$ = 3 or 5 or 7 or 9 or 10 or 11	(This is IRQ number)
$\mathbf{z}$ = 0 or 1 or 3	(This is DMA number)

3

Installation of CD-ROM Drive

3.1 Connecting a CD-ROM Drive

There are five CD-ROM interface connectors on the AudioPlus 3200 Wave: Mitsumi, Wearnes, Panasonic, Sony and IDE. The Mitsumi CD-ROM drive interface is a 40 pin connector which supports Mitsumi LU005, Mitsumi FX001 and Mitsumi FX001D. The Panasonic CD-ROM drive interface is a 40 pin connector and supports model 562B and 563. The Sony CD-ROM drive interface is a 34 pin connector and supports SONY CDU 3lA and CDU 33A. The Wearnes CD-ROM drive interface is a 34 pin connector and supports model CDD-110. The IDE CD-ROM drive interface is a 40 pin connector and supports all type that fits SECONDARY IDE specification.

The default CD-ROM interface on the card is:
I/O port address: 340H-343H
DMA channel: 3
IRQ channel: 11
SECONDARY IDE I/O port address: 170H-177H(or 374H-377H)

Note: If you have a CD-ROM controller card, and you do not wish to use the built-in CD-ROM controller on the AudioPlus 3200 Wave, you must adjust the jumpers setting to avoid I/O address conflict.

To connect a CD-ROM drive:

1. Install the CD-ROM drive into you system. Please refer to the installation guide that was included with your CD-ROM drive unit.

2. Select the CD-ROM I/O port address.

3. Connect the CD-ROM interface cable from the CD-ROM drive to the appropriate CD-ROM interface connector on AudioPlus 3200 Wave, please refer to Figure 2.1 AudioPlus 3200 Wave CD-ROM connector diagram.
   Notice the PIN1 and cable's red mark are at the same side.

4. Connect the audio cable that CD-ROM manufacturer supplied from the CD-ROM drive to the appropriate CD-audio input connector (J1 or J3 or J5) on the AudioPlus 3200 Wave, please refer to your CD-ROM installation guide about audio cable connecting.

5. Installing the CD-ROM device driver provided by the CD-ROM manufacturer. After the installation completed, reboot your system, you'll have your CD-ROM device connected to your computer. You can refer next section to get details.

3.2 Installing CD-ROM Software Driver

You need to install two CD-ROM software drivers:

1. Install CD-ROM's device driver provided by CD-ROM manufacturer in CONFIG.SYS file.

2. Install Microsoft CD-ROM Extensions program (MSCDEX.EXE) in AUTOEXEC.BAT file.

We show the examples for how to set the device driver in CONFIG.SYS file for different CD-ROM's:

MITSUMI

(For LU005)
DEVICE=C:\MITSUMI\MTMCDS.SYS /D:MSCD001 /P:340

(For FX001 and FX001D)
<Polling Mode>
DEVICE=C:\MITSUMI\MTMCDAS.SYS /D:MSCD001 /P:340
<Software Interrupt Mode>
DEVICE=C:\MITSUMI\MTMCDASE.SYS /D:MSCD001 /P:340 /I:11

PANASONIC (For 562B and 563)
DEVICE=C:\PANASONI\CDMKE.SYS /D:MSCD001 /P:340

SONY (For CDU 31A and 33A)
<Polling Mode>
DEVICE=C:\SONY\SLCD.SYS /D:MSCD001 /B:340 /M:P /V /C
<DMA Mode>
DEVICE=C:\SONY\SLCD.SYS /D:MSCD001 /B:340 /M:D /T:3 /T:11 /V /C

WEARNES (For CDD-110)
<Polling Mode>
DEVICE=C:\CDD110\CDD.SYS /D:MSCD001 /P:340 /M:S /V
<DMA Mode>
DEVICE=C:\CDD110\CDD.SYS /D:MSCD001 /P:340 /M:3 /I:11 /V

After you install the device driver, you can add

      C:\DOS\MSCDEX.EXE /D:MSCD001

in AUTOEXEC.BAT or execute on DOS prompt.

3.3 How to play CD-Audio in MS-Windows 3.1 ?

After you did above installation of CD-ROM software driver, you can install
MCI CD audio driver in MS-Windows 3.1 to play general CD audio disk.

1. Launch Windows.

2. Select the "MAIN" group.

3. Click twice on the "CONTROL PANEL" icon.

4. Click twice on the "DRIVERS" icon.

5. Click at the "Add" button.

6. Highlight "[MCI] CD Audio" and then click "OK".

7. And then follow MS-Windows indicate step to add driver.

8. After install O.K., please use "MEDIA PLAYER" to play your CD audio disk.

Note : Please refer MS-Windows user's or reference guide for more details.

4

Utilities Software

It is always a good idea to make backup copy of your original software. Make a backup copy of your "AudioPlus 3200 Wave software disk" now and store your original diskettes in a safe place.

NOTE: In the following paragraphs, Utilities are assumed to be installed in default Drive:\Path directory, which is C:\AP3200W.

4.1 Introduction

The AudioPlus 3200 Wave provides utility software as following :

APINIT.EXE............. I/O setting program
MIX.COM................. Mixer
APTEST.EXE .... AudioPlus 3200 Wave test program
APUTIL.EXE............ Integrated voice utility program
APORGAN.EXE .... Electronics organ and MIDI file playback program
APPLAY.EXE........... Voice play back at DOS command program
APREC.EXE .... Voice record at DOS command program
MPUPLAY.EXE .... Play MIDI file program

4.2 APINIT

The APINIT.EXE can change the AudioPlus 3200 Wave's I/O address, DMA channel, IRQ channel, Game port, MPU-401 MIDI port and CD-ROM type without jumper setting. At DOS prompt, type

APINIT [Enter]

You can see all I/O settings in the main menu (Fig 1). Using arrow key to move to the item that you want to change and press [ENTER] key to execute. To quit or save change, press [ESC] key. Program will automatically update file "CONFIG.SYS" if selecting "save setting & exit". Otherwise, it will remain unchanged. Once you save the change, a new I/O setting will be got ever since.

Fig 1. APINIT environment.
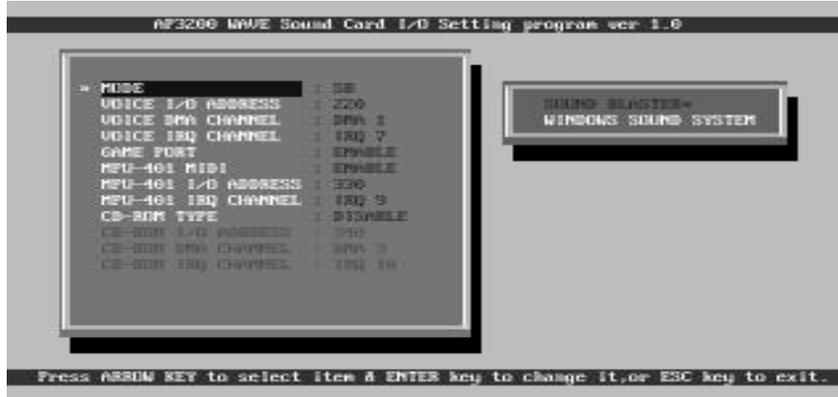
4.3 MIX

MIX.COM is a multi-functional mixer control program. It includes three parts:

1. Window based setting

   At DOS prompt, type

   MIX [Enter]

   You can adjust the volumes of all channels (MASTER,VOICE,FM,CD-ROM) or change recording channel etc.(FIG 2). When exit this program, it will automatically update AUTOEXEC.BAT file for next time reboot (power ON) initialization.

2. Hot key adjustment (TSR)

   If selecting "RESIDENT" in item " save & exit " from window based main menu. Program will reside as a TSR. You can control mixer by using hot key:

   Alt+Shift U ....Raises the MASTER volume
   Alt+Shift D ....Lowers the MASTER volume
   Alt+Shift L.........Set VOICE filter to LOW
   Alt+Shift M ....Set VOICE filter to MID
   Alt+Shift H ....Set VOICE filter to HIGH

   and you can remove TSR from memory, at DOS prompt type

   MIX /U [Enter]

3. DOS command line setting

You can also control mixer under DOS command line by typing

MIX / argument

argument:

/V:l,r.........VOICE volume control
/A:l,r.........CD-ROM volume control
/F:l,r ....FM MUSIC volume control
/L:l,r ....recording level control
/T:x...........set VOICE filter (Low or Mid or High)
/R:x...........set recording channel (Mic or CD-in or Line-in or Post-mixer)
/K:xxx ......MONITOR function (ON or OFF)
/X ....Do not resident

Fig 2. MIX environment.

4.4 APTEST

APTEST.EXE checks the AudioPlus 3200 Wave I/O address, IRQ channel, DMA channel, and tests the AudioPlus 3200 Wave hardware functionality including synthesized music, voice playback and voice recording. At DOS prompt, type

APTEST [Enter]

APTEST scans I/O address, IRQ channel and DMA channel jumper settings on the AudioPlus 3200 Wave.

After I/O settings are tested, you may proceed to choose to test synthesized music, output voice and test recording functions. Speakers connected to the AudioPlus 3200 Wave are necessary for all the tests. Microphone is necessary for test recording.

Synthesized music test generates music output with the AudioPlus 3200 Wave on board synthesizer. Output voice test generates voice with the AudioPlus 3200 Wave digitized output channel. For test recording, you need to speak to the microphone. Your speech will be reproduced on the digitized output channel.

Fig 3. APTEST environment.
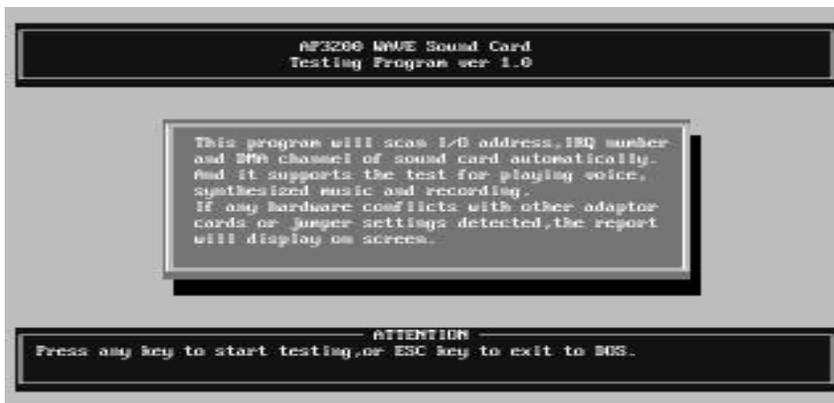
If you can't hear sound during any of the above tests, check connections between the AudioPlus 3200 Wave and speakers, microphone then run the test again.

If your AudioPlus 3200 Wave passes these tests, it is OK for your applications.

According the APTEST shows the I/O address, IRQ and DMA information's, please add the follow setting to your AUTOEXEC.BAT file.

> **SET BLASTER=A220 I7 D1**

Note: A#.......# is the I/O address
        I#........# is the IRQ number
        D#.......# is the DAM channel

This setting in AUTOEXEC.BAT will be helpful to some softwares to recognize the AudioPlus 3200 Wave.

4.5 APUTIL

APUTIL.EXE is an integrated voice utility program to help you create and replay voice files. At DOS prompt, type

APUTIL [Enter]

Integrated environment of APUTIL appears on screen as shown in Fig 4.

Fig 4. APUTIL Integrated Environment

Fig 5. Play voice from disk.

Play voice from disk: Play disk file (.VOC) contents. Fig5.
Use arrow key to highlight and press Enter to activate. You will see the same pop up menu as in LOAD command. You can select a file the same way you do

as in LOAD command. You will hear the sound that is stored in the selected file in digitized form.

Play voice from memory: Play Working Memory contents.
Use arrow key to highlight and press Enter to activate. This command is not executable if Working Memory is not filled. You can hear the sound that is stored in Working Memory in digitized form. Press Esc to stop playing.

Record voice to disk: Sample voice from microphone to disk file. Fig 6.
Use arrow key to highlight and press Enter to activate. You will be asked to specify the file name with .VOC extension to record. Program will save it to the current directory.

Fig 6. Record voice to disk.

Record voice to memory: Sample voice from microphone to working memory
Use arrow key to highlight and press Enter to activate. Time duration of the recording depends on sampling rate that you use. The higher the sampling rate, the shorter the duration. A pop up menu will tell you the duration in seconds that you have at current sampling rate. Press Esc to quit recording or any other key to begin recording. Press Esc to stop recording when you have done recording.

Note that Working Memory contents will be lost if you record TO MEMORY, so SAVE the last file before you record TO MEMORY.

Data packing (memory): compress working memory data.
Use arrow key to highlight and press Enter to activate. The pop menu let you select 4 bit, 2.6 bit, 2 bit or silence method. This function only activate to working memory, so after compressed you have to ***Save voice to disk*** .

Load voice file to memory: Loads voice file (.VOC type) into memory.
Use arrow key to highlight and press Enter to activate. A pop up menu appears :
At the top, Drive:\Path is shown indicating the current directory for loading
files. In the menu, files with .VOC type in the current directory is listed. Sub
directory under default directory are listed too. Directories are enclosed in [ ]. [
..] is the parent directory. Select it to move up one level from current directory.
If the current directory is a root directory, all logical drives are listed .

Drivers are enclosed in < >. Use arrow keys to highlight on the file you want to
load or driver or directory you want to move to. Press Enter to load it or move.
The file name will appear on Working File window after successful loading.

Save voice (memory) to disk: Saves memory contents to .VOC type file.
Use arrow key to highlight and press Enter to activate. You will be prompted to
enter file name to save. Key in the file name with .VOC extension. VOC is the
standard file type used by APUTIL. The file will be saved in the directory where
you start APUTIL.

Exit to DOS: Quit APUTIL and return to DOS environment. Use arrow key to
highlight on EXIT. Press Enter to activate or press ESC key to quit. You will be
asked to confirm that you want to exit. Type " Y " to exit.

4.6 APORGAN

This program lets you play PC keyboard like an electronic organ. There are 128
tones can be changed by pressing F1. Press F2 can play MIDI file (*.MID).

Fig 7. APORGAN environment.

4.7 APPLAY

APPLAY.EXE lets you play voice file at DOS prompt. Voice is played in a background process. You may specify optionally a foreground process running at the same time voice is playing. To run APPLAY, at DOS prompt, type in

APplay [-Bxx] [-H] [-E"execute-command"] filename [Enter]

example: APPLAY -b16 -h -e "DIR" DEMO.VOC
Note: Items in [ ] are optional. Default values are assigned if they are not specified.

-H sets quiet mode. When specified, no message is displayed during playing. Default is not quiet mode.

-xx is a buffer size in aggregate of 2K bytes. It must fall between 1 and 31. Default value is 16, i.e., 32 K bytes. The bigger buffer, the fewer accesses to disk are necessary during playing.

-E**"execute-command"** is the DOS command to be executed in foreground process. Default is no foreground process.

-**filename** is the name of the file to play. It must be a voice file in .VOC format. To stop playing before it ends, press *Esc* key.

4.8 APREC

APREC.EXE lets you record voice into file at DOS prompt. Voice is recorded in a background process. You may specify optionally a foreground process running at the same time voice is being recorded. To run APREC, at DOS prompt, type in

APrec [-Bxx] [-Syy] [-Mz] [-H] [-E"execute-command"] filename

example: APREC -b16 -s8000 -m1 -h -e"DIR" DEMO.VOC

Note: Items in [ ] are optional. Default values are assigned if they are not specified.

-xx is a buffer size in aggregate of 2K bytes. It must fall between 1 and 31. Default value is 16, i.e., 32 K bytes. The bigger buffer, the fewer accesses to disk are necessary during recording.

-yy is the desired sampling rate for recording. It must fall between 4,000 and 44,100 Hz(mono) or 22,050Hz(stereo). Default is 8,000Hz.

-z is the recording mode. 0 for mono mode and 1 for stereo. Default value is 0, i.e. mono mode

-H sets quiet mode. When specified, no message is displayed during recording. Default is not quiet mode.

-E"**execute-command**" is the DOS command to be executed in foreground process. Default is no foreground process.

-**filename** is the name of the file to record. It must be a voice file in .VOC extension. To stop recording, press *Esc* key.

4.9 MPUPLAY

MPUPLAY.EXE lets you play standard MIDI files at DOS prompt.

MPUPLAY filename [Enter]

-**filename** is the name of the file to play. It must be a MIDI file in .MID format.

To stop playing before it ends, press SPACE key.

Media Rack

User's Guide

1.   Introduction

1.1 Media Rack Overview

Media Rack gives you control over your PC's audio functions through a user interface as simple to use as a home stereo system.
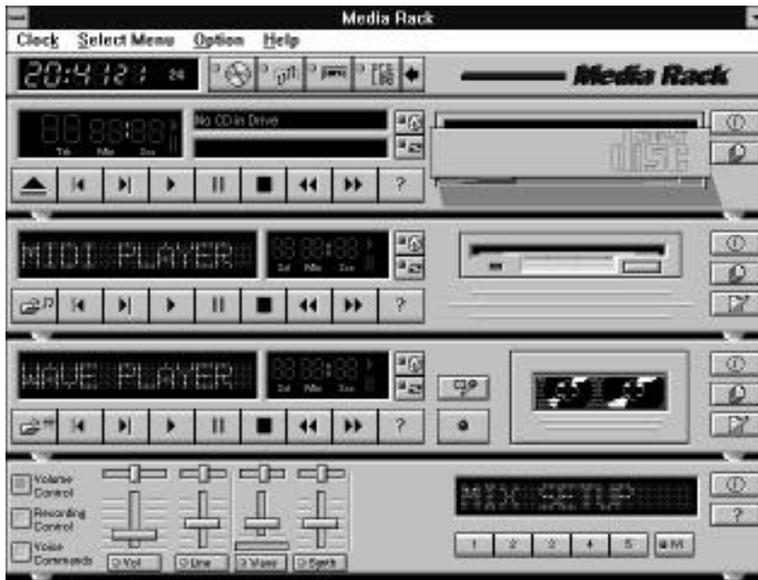
1.2 Media Rack Components

Media Rack consists of several major components:

Control Center: Controls the display of Media Rack's components.

Alarm Clock: Speaks aloud the time and date, and plays your wave files as reminder alarms at times you set.

MIDI Player: Plays MIDI music files. Lets you create song playlists and use MIDI editors to modify the song files.

Wave Player: Records and plays digital audio (wave) files. Lets you create wave file playlists and use editors to modify the wave files.

CD Player: Plays standard audio CDs. Allows you to create playlist collections of CD tracks (songs).

System Mixer: Sets the volume level of your audio inputs and outputs.

1.3 Showing or Hiding Media Rack Components

To remove or add a component from display, click on the component's button on the Control Center's Button Bar or toggle it off using the Select Menu.

1.4 Showing a Media Rack Component's Menu

The left-most menu item changes to be that of the active component. For example, when using the MIDI Player, the left-most menu item will be MIDI. To make a component active, either click on the face of the component, or select the component from the Select Menu.

1.5 Selecting Full or Condensed View

Media Rack has a Full view, which covers a large portion of your PC's screen, and a Condensed view, which uses less space but still gives you access to most capabilities. To switch between them, click on the leftward- or rightward-pointing arrow button on the Button Bar.

2. Alarm Clock

2.1 Alarm Clock Overview

The Alarm Clock announces the time and date in a clear human voice, and can play a digital audio (wave) file at an alarm time you set.

2.2 Alarm Clock Configuration Preferences

The Clock menu offers several choices:

Say Time: Makes Alarm Clock immediately say the current time.

Preferences: The Options portion of the Preferences box lets you select how Alarm Clock tells you the time. The Alarm portion lets you set an audible reminder, using a .WAV file. The Color button lets you select the color in which Alarm Clock will display the time. Options include:

- **Hour Format**: In 12 hour format, Alarm Clock will say, e.g.: "The time is six-twenty-one-PM". In 24 hour format, you will hear "The time is eighteen-twenty-one".
- **Say Date**: If you enable this, Alarm Clock will follow the time by announcing, e.g., "Today is Thursday, January 12, 1995".
- **Say Greeting**: Causes Alarm Clock to precede the time and date with a greeting such as "Good Morning".
- **Only When Asked**: If selected, Alarm Clock will only say the time when you double-click on it or select Say Time from the Clock menu.
- **On the Hour**: Makes Alarm Clock speak at the start of the hour.
- **On the Half Hour**: Causes Alarm Clock to speak at the start of every hour as well as thirty minutes past the hour.
- **On the Quarter Hour**: Causes Alarm Clock to speak at the start of every hour as well as every fifteen minutes after that.

Color: Lets you select the color in which Alarm Clock displays the time.

Save Clock Preference on Exit: If this is not selected, your Preferences changes apply only until you close the program.

Exit: Closes the program.

2.3 Setting Alarms

To set Alarm Clock to play a wave file at a certain time:

1. Click on the On button in Alarm field of the Preferences box.

2. Type in, or Browse to, the wave file you want played.

3. Click on the Test button to hear your file, to make sure that when the time comes to play the file your system will be able to do so.

4. Specify the time you want the file played, by highlighting and typing into the Time fields.

5. Click on the OK button to accept the settings.

2.4 Testing Alarm Clock

Double-click on the clock's face at any time, or select Say Time from the Clock menu, to make Alarm Clock announce the time.

3. MIDI Player, Wave Player, and CD Player

3.1 Controls

MIDI Player (above, similar to Wave Player and CD Player)

Current File or Track: The name of the current MIDI file, wave audio file, or CD track.

Counter: Shows several pieces of information:

- **Sel (or Trk)**: If you have multiple selections in your playlist, this shows the number of the current selection or CD track.

- **Min/Sec**: For a newly loaded selection or one stopped by the Stop button, this displays the total length in minutes and seconds. When a selection is playing or paused, this displays elapsed time.

Shuffle/Repeat Buttons: When the Shuffle button is pressed, the selections in your playlist or CD will play in "shuffled" (random) order.

When the Repeat button is pressed, the selections in your playlist or CD (or the currently loaded file, if there is no playlist) will play repeatedly until stopped.

Choose File: Lets you select and load a single file.

Open/Close CD: Opens or closes the door of your CD drive. Of course your DOS and Windows CD drivers must be properly installed.

Previous/Next Selection: Moves to the beginning of the previous or next selection in your playlist or CD.

Play: Plays the current selection until: 1) the selection, playlist, or CD has finished, 2) you press the Stop or Pause button, 3) you load a different file, 4) you move to another selection, or 5) you close the program.

Pause: Temporarily stops playing the current selection. You can resume playing at the current location by pressing the button again.

Stop: Stops playing the current selection and "rewinds" to the start.

Scan: Moves your position ahead or back one second. Holding down a button shifts the position by ten seconds for every second you hold it.

Help: Shows the On-line User Guide for the selected component.

*Format***:** Shows a list of formats in which you can record wave files.

Record: Lets you record a wave audio file through your microphone or other current input device. (only on Wave Player).

Power: Stops play, and hides the selected component from display.

Playlist: Lets you create your own custom collections of audio selections, and specify the order in which selections play.

Edit: Launches an editor program, if available, so you can edit the current file.

3.2 Playing a Single Audio Selection

1.   Select what you want to play, as follows:

   (For MIDI Player or Wave Player)

   a. Click on the Choose File button or select Choose File from the component's menu, to bring up the Choose Files box.

   b. In the Choose Files box, move among the directories to locate and highlight the file (file with a .MID extension for MIDI Player, or .WAV extension for Wave Player) to play. Click on OK. You should see the name of the file displayed.

   (For CD Player)

   a. Insert an audio CD into your CD drive. If CD Player recognizes it as one which you've previously described, it will display the name of the CD and its first track.

2.   Press the Play button to start playing the selection.

3.3 Playing Multiple Selections Using a Playlist

Note: Playlist *creation* is described later.

1.   Load the desired playlist, as follows:

   (For MIDI Player or Wave Player)

   a. Click on the Playlist button or select Edit Playlist from the player's menu.

   b. Click on the Open button in the Edit Playlist box.

   c. Move among the directories to locate and highlight the desired playlist file (file with a .MPL file extension for MIDI Player, or .WPL extension for Wave Player). Click on OK.

(For CD Player)

    a. Insert an audio CD into your CD drive. If you've previously created a playlist for the CD, CD Player will display the name of the CD and its first track. *If you haven't created a playlist for the CD, CD Player will assume that the playlist consists of all the audio tracks (songs) on the CD, in their normal order.*

2.   To play in shuffled order or repeatedly, click on either or both of the player's Shuffle and Repeat buttons.

3.   Click on the Play button to start playing.

3.4 Creating Playlists (MIDI Player or Wave Player)

With MIDI Player and Wave Player you can create "playlists" of files, letting you create your own "albums" to suit your needs.

To create or load a playlist:

1. Click on the Playlist button, or select Edit Playlist from the component's menu.

2. *To load an existing playlist*, click on the Open button and choose the playlist file you want to use (file with a .MPL extension for MIDI Player, or .WPL extension for Wave Player). Click on OK.

3. *To create or edit a playlist*, in the Edit Playlist window highlight each file you want, and add it by clicking on the Insert button. The file(s) will be added to the end of your playlist, or inserted immediately following any file you've highlighted in your playlist.

    To add all the files, click on Insert All.

    To delete files, highlight them and click on Remove .

    To save your playlist to disk, click on Save As.

    When finished, click on OK.

4. When you click on Play, you will play all the files in the playlist.

3.5 Creating Playlists (CD Player)

To create or load a playlist:

1.   Click on the Playlist button, or select Edit Playlist from the CD menu. You will see CD Playlist window.

2. Type the CD's name in the CD Title field.

3. CD Player detects the tracks on the CD, and initially names them Track 1, Track 2, etc. Enter a more descriptive name for each by highlighting it in the left column, typing a new name in the Track Name field, and clicking on the Update Track Name button.

4. After naming the CD and its tracks you can also change the order in which the tracks play, described below, or finish now by clicking on OK to save this information for future use.

5. Unless you modify it, the playlist consists of all the tracks in the order they appear on the CD. You can create your own playlist for the CD, to skip over some songs or change their order:

    •   To delete tracks, highlight them and click on Remove.

    •   To add a deleted CD track back to the playlist, highlight it in the left column listing CD tracks and click on Insert. The track name will appear in the right column, either at the end of the list or immediately after a highlighted track name.

6. When you click on Play, you will play all the tracks in the playlist.

3.6 Recording Wave Audio

Wave Player lets you record and save your own wave files, as follows:

1. Choose an audio format to use, using the Format button or the Set Record Format menu item from the Wave menu.

2. Click on the Record button, or select Record from the Wave menu.

3. Speak into your microphone. You will see the Counter time indicators moving. When finished, click on the Stop button.

4. To play your new file, just click on the Play button.

5. To save your file, select Save Recording under the Wave menu.

6. After saving, the file name will show in the Current File window.

Note: You can record from sources other than your microphone (your CD drive or a device attached to your Line-In connector, for example). To change the audio source, use the System Mixer's recording controls.

3.7 Choosing Wave Player Record Settings

Wave Player lets you record audio in different data formats, for different uses. Some data formats offer excellent sound quality, while others sacrifice sound quality but require less disk space.

To pick a recording data format:

1. Click on Wave Player's Format button, or select the Set Record Format menu item from the Wave menu.
2. Choose among the audio formats in the Set File Format window.
3. You can create your own audio format by typing a format name into the Name field and clicking on Save As.

4.   System Mixer

4.1 System Mixer Overview

System Mixer lets you control all audio output and input levels.

4.2 The System Mixer's Controls

System Mixer displays the volume controls that your audio drivers make available. *The names for these controls may vary.*

Note: A choice of mixer control styles may be available through the Choose Style menu item of the Mixer menu.
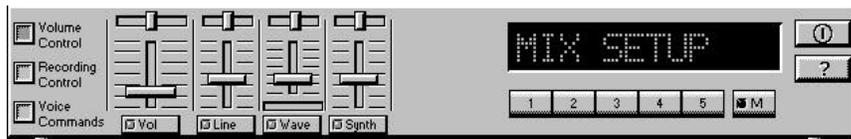
Volume Control: Clicking on this button shows and lets you use the output level controls.

Recording Control: Clicking on this button shows and lets you use the input level controls. (Note: many voice recognition applications use the Voice Commands input levels instead.)

Voice Commands: Clicking on this button displays and lets you use the input level controls reserved for voice recognition programs.

*Input and Output Level Sliders and Buttons***:** For each input or output signal type, a control (for example, a vertical slider, or "fader") controls the loudness, a horizontal slider controls balance between the two speakers, and the mute button temporarily stops input or output without changing slider positions.

> **Note:**   A choice of mixer control styles may be available through the Choose
>   Style menu item of the Mixer menu.

Control types and names vary. Some common types are listed below:

- **Wave**: Controls digital audio (wave) playback or record levels.
- **Synth**: Controls the MIDI music (music synthesis) play level.
- **Line**: Controls the audio hardware's Line In or Line Out levels. Line levels might be for an externally attached cassette player, e.g.
- **CD**: Controls the CD drive output level, for CD drives configured to play their audio output through the PC's audio hardware.
- **Vol**: The master control for all outputs. The strength of an output signal is determined by both the Vol slider and the slider for the individual output. To affect *all* outputs, move the Vol slider. To change the output of an *individual* output type, move *its* slider.
- **Mic**: Controls the microphone input level.

*Mute Buttons***:** Toggle between muting and enabling the signal. A button with a lit LED is enabled, while one with its LED not lit is muted. Several *output* signals can usually be enabled at once, while *input* signal types are often limited to a single active input.

Settings Presets: Clicking on a Preset button loads an previously saved set of mixer settings. Presets buttons are numbered 1 to 5.

Memory Button: To save the current settings as a Preset configuration, press the memory button and then a Preset button.

Current Settings Display: Shows the name of the current Settings Preset, if any, along with the Settings Preset button number.

> **Note:**   Preset buttons and the Current Settings Display may not be shown on
>   systems with a lot of controls, due to lack of space.

Power: Hides the System Mixer component from display.

Help: Shows the System Mixer's On-line User Guide.

4.3 Setting Recording & Playback Levels

The controls for each signal type set that signal's level relative to others. The master Vol control affects *all output* signal types equally, and sets the overall output level. If, for example, the Wave and Vol levels are at half strength, wave audio output will be at one quarter strength.

To change signal levels for output and input:

1. Click on the Volume Control (for output levels), Recording Control (for most input levels), or Voice Commands (for some voice recognition program input levels) button at the left side of System Mixer to display the level controls.

2. Use your mouse or keyboard arrow keys to move each control to adjust the signal level. If you are playing or recording audio of that type, you should hear the volume level change as you move the control. *You can also use keyboard "hotkeys" to control audio output volume at any time. To enable and select hotkeys, use the Hotkeys menu item from the Mixer menu.*

3. Use your mouse or keyboard arrow keys to move the balance controls horizontally, left or right, to set relative level between the left and right channels.

4. To turn off (mute) a signal, click on its mute button. Muted controls do not display a lit LED light. To enable an input signal on systems that allow only a single input at once, click on the button beneath the input type so that its LED lights.

Notes: If you click on a control's movement track, the control moves immediately to that point. To move the keyboard focus to a control, either click on it or use the Tab key. To move a control, use your mouse or your keyboard arrow keys. To center a control, press the spacebar.

4.4 Using Hotkey Output Level Controls

You can use keyboard key combinations to adjust the master output level, without using on-screen mixer controls. This lets you adjust output while keeping Media Rack minimized, e.g.

Using hotkeys, you can *raise*, *lower*, or *mute* the master output level. Each of these actions requires a combination of three keyboard keys pressed simultaneously. In each case, you hold down the [Ctrl] and [Alt] keys while pressing a third key. You can select the keys to represent these actions, and enable or disable the hotkey function, using the Hotkeys menu item from the Mixer menu.

4.5 Using System Mixer Presets

System Mixer stores up to five Preset configurations. Presets allow you to switch instantly to settings you've saved, appropriate for different purposes. For example, you might save one configuration for quietly recording reminders to yourself and another louder configuration for multimedia presentations.

Note: Preset buttons and the Current Settings Display may not be shown on systems with a lot of controls, due to lack of space. You can choose whether to display the preset controls with the Show Mixer Presets menu item from the Mixer menu. You can also choose the color for the Current Settings Display with the Color menu item from the Mixer menu.

To create a mixer configuration and assign it to one of the Presets:

1.   Adjust the mixer settings, both input and output, as desired.

2.   Click on the Memory button. You will see its LED lit, meaning it is ready to store your settings.

3.   Click on one of the five Preset buttons.
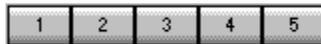
4.   System Mixer will ask you to name the Preset configuration. The configuration name can be up to 10 characters in length.

To restore a settings configuration, just click on the desired Preset button. You should see the sliders move to the appropriate levels.

PART 3. Wave Table

1. Introduction

The AudioPlus 3200 Wave on board supports the Dream Wave Table synthesizer module. It is compatible with General MIDI and Roland GS drumsets. Its state-of-the-art design not only fulfills all requirements of Microsoft MPC3 specifications but also realize astonishing dream sound effect when you play PC video game of multimedia CD titles.
AudioPlus 3200 Wave has also built in the MPU-401 MIDI interface. It offers you over 250 high quality wave table sounds on board with GS drumsets and MT32 instrument compatibility. It's the best choice both in multimedia PC education and entertainment applications. It definitely will turn your PC to the most powerful multimedia computer.

1.1 Feature:

- Uses high integration DREAM wavetable synthesizer
- 32 voices wavetable polyphony
- Total of 343 sounds (190 instrument sounds, 107 drum sounds, 46 effect sounds)
- 16 parts multi-timbral (with one or two rhythm parts)
- 8 drum kits, 1 sound effects kit
- Professional sound quality: stereo 16 bit oversampling DAC
- GM/GS compatibility
- Roland MPU-401 compatibility
- Roland Canvas SC-55 sound list comp

2. Windows MIDI Environment Configuration

In Windows, the MIDI driver is defaulted MPU-401 MIDI when AudioPlus 3200 Wave Windows Driver installed. Following is the indication of how to set MPU-401 MIDI driver in Windows. The MIDI Sound effect can be compared by changing the setting of MIDI driver into OPL3 and MPU-401.

MIDI Environment Configuration of the AudioPlus 3200 Wave for Sound Blaster and its compatible Sound Cards are as follows:

1. Double Click Windows Control Panel to open Control Panel window. Select MIDI Mapper.
2. The MIDI Mapper Dialog Box will appear.
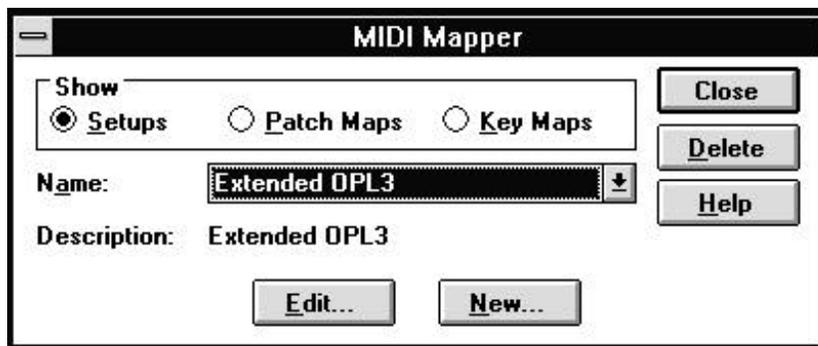
3. Configure the MIDI Mapper.
    The default value of Windows MIDI Mapper is OPL3. For the MIDI to be directly outputted to the AudioPlus 3200 Wave, the MIDI Mapper must be set to the **MPU-401 MIDI** .
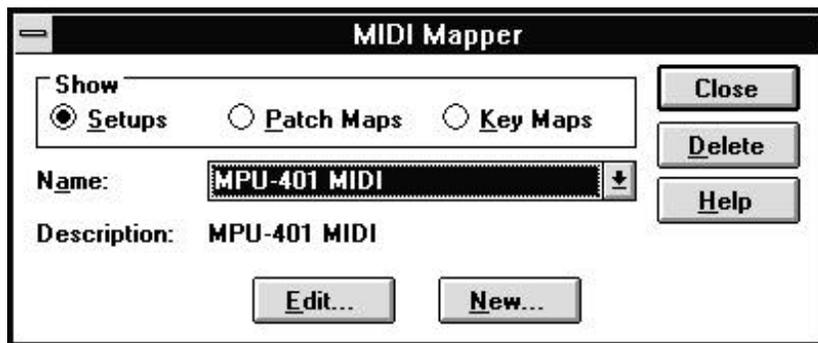
MIDI Environment Configuration of the AudioPlus 3200 Wave for other types of sound cards:

1. Double click the Windows **Control Panel** to open the Control Panel Window. Double click the **Drivers** icon and click the **ADD** buttom to open the ADD dialogue box. Select **Roland MPU-401** and click OK button.
2. From the Control Panel Window. Select **MIDI Mapper**.
3. The MIDI Mapper Dialog Box will appear. Click the **New Button** .

```
┌─────────────────────────────────────────────┐
│               New MIDI Setup ...             │
├─────────────────────────────────────────────┤
│                                              │
│  Name:       │AP3200W│                       │
│                                              │
│  Description: │                     │         │
│                                              │
│      ┌────────┐  ┌────────┐  ┌────────┐      │
│      │   OK   │  │ Cancel │  │  Help  │      │
│      └────────┘  └────────┘  └────────┘      │
└─────────────────────────────────────────────┘
```

4. Type in **AP3200W** (or any name) in the Box designated for item **Name** and click **OK** Button.

5. The MIDI Setup "AP3200W" Dialogue Box will appear.
Type in or Select **Roland MPU-401** in the **Port Name Section** of the MIDI Setup "AP3200W" Dialogue Box.

| | | MIDI Setup: 'AP3200W' | | |

Src Chan	Dest Chan	Port Name	Patch Map Name	Active
1	1	Roland MPU-401	[None]	☒
2	2	Roland MPU-401	[None]	☒
3	3	Roland MPU-401	[None]	☒
4	4	Roland MPU-401	[None]	☒
5	5	Roland MPU-401	[None]	☒
6	6	Roland MPU-401	[None]	☒
7	7	Roland MPU-401	[None]	☒
8	8	Roland MPU-401	[None]	☒
9	9	Roland MPU-401	[None]	☒
10	10	Roland MPU-401	[None]	☒
11	11	Roland MPU-401	[None]	☒
12	12	Roland MPU-401	[None]	☒
13	13	Roland MPU-401	[None]	☒
14	14	Roland MPU-401	[None]	☒
15	15	Roland MPU-401	[None]	☒
16	16	Roland MPU-401	[None]	☒

[OK]   [Cancel]   [Help]

3. DOS Environment.

From the Sound Source Option of your game or multi-media package, please select the **General MIDI** or **MT32**. In this way, your AudioPlus 3200 Wave Table will be activated replacing the FM Sound of OPL3.

4. Playing MIDI Files from Windows

To play MIDI Files from Windows, please follow the procedures below:

1. From the Program Manager, Double Click the Accessories Button to open the Accessories Window. Double Click the Media Player Icon to open the Media Player Window.

2. From the **File** menu, select **Open.** The Open Dialogue Box will appear. From the **List Type of Files** Item, select **MIDI Sequencer**. Type in the MIDI File Name at the box indicated **File Name**.

3. Press the **Play** Button ▶ (located in the Media Player Window) to play your MIDI File.

5. General MIDI Overview

The General MIDI or GM system is a set of standard shared tone generator specifications specially designed for MIDI usage that was jointly formulated by the Japan MIDI Standard Committee and the U.S. MMA for the purpose of allowing performance data with a high level of compatibility to be created using any type of tone generator.

The basic specifications of GM Tone Generators as specified by the GM System are as follows: the number of voices (performances), sound mapping (sound set), and mapping of rhythm sounds on the keyboard (percussion maps).

The Tone Generator Manufacturer has the liberty to determine what kind of sound will be produced with respect to the sound name of a particular tone generator. The different kinds of built-in effects and effect configurations differ from one tone generator to the other. In this way, performances will sound differently to a certain extent on different tone generators.

For the Tone Generator manufacturers to maintain sufficient compatibility with the GM sound generators, the sounds and specifications must be determined to some degree. It should also be noted that programmers play a vital role in this matter. The programmers must cooperate in the quest for high grade compatibility, examining different kinds of GM Tone Generators and giving in if necessary during the creation of their sequences. For anybody who programs their own MIDI sequence data that are to be issued out as GM system data, maintaining sufficient amount of compatibility with the existing GM sound generators should be taken into consideration.

For cases when the MIDI data was produced for copyrighted pieces, the data cannot be distributed without proper authorization from the person owning the copyright.

5.1 Drum Preset Map

	Prog 1/33: Standard Set/ Jazz set	Prog 9: Room set	Prog 17: Power set	Prog 25: Electr. set	Prog 26: TR-808 set	Prog 41: Brush set	Prog 49: Orchestr set
27 - D#1	High Q						Close Hi Hat
28 - E1	Slap						Pedal Hi-Hat
29 - F1	Scratch Push						Open Hi Hat
30 - F#1	Scratch Pull						Ride Cymbal
31 - G1	Sticks						
32 - G#1	Square Click						
33 - A1	Metronome Click						
34 - F1	Metronome Bell						
35 - B1	Kick drum2						
36 - C2	Kick drum1		Power Kick		808 Bass Drum		
37 - C#2	Side Stick				808 Rim shot		
38 - D2	Snaree Drum 1		Gated Snare		808 snare Drum	Brush Tap	Concert SD
39 - D#2	Hand Clap					Brush Slap	Castanets
40 - E2	Snare Drum 2			Gated Snare		Brush Swirl	Concert SD
41 - F2	Low Floor Tom	Room Low Tom2	Room Low Tom2	Elec. Low Tom2	808 Low Tom2		Timpani F
42 - F#2	Closed Hi Hat [Exc1]						Timpani F#
43 - G2	High Floor Tom	Room Low Tom1	Room Low Tom1	Elec. Low Tom1	808 Low Tom1		Timpani G
44 - G#2	Pedal Hi-Hat [Exc1]						Timpani G#
45 - A2	Low Tom	Room Mid Tom2	Room Mid Tom2	Elec. Mid Tom2	808 Mid Tom2		Timpani A
46 - A#2	Open Hi-Hat [Exc1]						Timpani A#
47 - B2	Low-Mid Tom	Room Mid Tom1	Room Mid Tom1	Elec. Mid Tom1	808 Mid Tom1		Timpani B
48 - C3	Hi Mid Tom	Room Hi Tom2	Room Hi Tom2	Elec. Hi Tom2	808 Tom2		Timpani c
49 - C#3	Crash Cymbal 1						Timpani c#
50 - D3	High Tom	Room Hi Tom1	Room Hi Tom1	Elec. Hi Tom1	808 Hi Tom1		Timpani d
51 - D#3	Ride Cymbal 1						Timpani d#
52 - E3	Chinese Cymbal			Reverse Cymbal			Timpani e
53 - F3	Ride Bell						Timpani f
54 - F#3	Tambouring						
55 - G3	Splash Cymbal						
56 - G#3	Cowbell						
57 - A3	Crash Cymbal 2						
58 - A#3	Vibraslap						
59 - B3	Ride Cymbal 2						
60 - C4	Hi Bongo						
61 - C#4	Low Bongo						
62 - D4	Mute Hi Conga				808 High Conga		
63 - D#4	Open Hi Conga				808 Mid Conga		
64 - E4	Low Conga				808 Low Conga		
65 - F4	High Timbale						
66 - F#4	Low Timbale						
67 - G4	High Agogo						
68 - G#4	Low Agogo						
69 - A4	Cabasa						
70 - A#4	Maracas						
71 - B4	Short Whistle [Exc2]						
72 - C5	Long Whistle [Exc2]						
73 - C#5	Short Guiro [Exc3]						
74 - D5	Long Guiro [Exc3]						
75 - D#5	Claves						
76 - E5	Hi Wood Block						
77 - F5	Low Wood Block						
78 - F#5	Mute Cuica [Exc4]						

79 - G5	Open Cuica [Exc4]						
80 - G#5	Mute Triangle [Exc5]						
81 - A5	Open Triangle [Exc5]						
82 - A#5	Shaker						
83 - B5	Jingle Bell						
84 - C6	Belltree						
85 - C#6	Castanets						
86 - D6	Mute Surdo [Exc6]						
87 - D#6	Open Surdo [Exc6]						
88 - E6							

Notes: Blank: Same Sound as "Standard Set"

      [Exc]: Sounds with same Exc number are mutually exclusive

5.2 Main Sound - General MIDI (all channels except 10)

PC	General MIDI	PC	General MIDI	PC	General MIDI
1	(Grand) Piano 1	44	Contrabass	87	Lead 7 (fifths)
2	(Bright) Piano 2	45	Tremolo Strings	88	Lead 8 (bass+ lead)
3	(El. Grd) Piano 3	46	Pizzicato Strings	89	Pad 1 (fantasia)
4	Honky-Tonk Piano	47	Orchestral Harp	90	Pad 2 (warm)
5	El. Piano 1	48	Timpani	91	Pad 3 (Polysynth)
6	El. Piano 2	49	String Ensemble 1	92	Pad 4 (choir)
7	Harpsichord	50	String Ensemble 2	93	Pad 5 (bowed)
8	Clavi	51	Synth Strings 1	94	Pad 6 (metallic)
9	Celesta	52	Synth Strings 2	95	Pad 7 (Halo)
10	Glockenspiel	53	Choir Aahs	96	Pad 8 (Sweep)
11	Music Box	54	Voice Oohs	97	FX1 (rain)
12	Vibraphone	55	Synth Voice	98	FX 2 (soundtrack)
13	Marimba	56	Orchestra Hit	99	FX 3 (crystal)
14	Xylophone	57	Trumpet	100	FX 4 (atmosphere)
15	Tubular Bells	58	Trombone	101	FX 5 (brightness)
16	Santur	59	Tuba	102	FX 6 (goblins)
17	Drawbar Organ	60	Muted Trumpet	103	FX 7 (echoes)
18	Percussive Organ	61	French Horn	104	FX 8 (sci-fi)
19	Rock Organ	62	Brass Section	105	Sitar
20	Church Organ	63	Synth Brass 1	106	Banjo
21	Reed Organ	64	Synth Brass 2	107	Shamisen
22	Accordion (French)	65	Soprano Sax	108	Koto
23	Harmonica	66	Alto Sax	109	Kalimba
24	Tango Accordion	67	Tenor Sax	110	Bag Pipe
25	Ac. Guitar (nylon)	68	Baritone Sax	111	Fiddle
16	Ac. Guitar (steel)	69	Oboe	112	Shanai
27	El. Guitar (jazz)	70	English Horn	113	Tinkle Bell

28	El. Guitar (clean)	71	Bassoon	114	Agogo
29	El. Guitar (muted)	72	Clarinet	115	Steel Drums
30	Overdriven Guitar	73	Piccolo	116	Woodblock
31	Distortion Guitar	74	Flute	117	Taiko Drum
32	Guitar Harmonics	78	Recorder	118	Melodic Tom
33	Acoustic Bass	76	Pan Flute	119	Synth Drum
34	Elec. Bass (finger)	77	Blown Bottle	120	Reverse Cymbal
35	Elec. Bass (pick)	78	Shakuhachi	121	Gt. Fret Noise
36	Fretless Bass	79	Whistle	122	Breath Noise
37	Slap Bass 1	80	Ocarina	123	Seashore
38	Slap Bass 2	81	Lead 1 (square)	124	Bird Tweet
39	Synth Bass 1	82	Lead 2 (sawtooth)	125	Teleph. Ring
40	Synth Bass 2	83	Lead 3 (calliope)	126	Helicopter
41	Violin	84	Lead 4 (chiff)	127	Applause
42	Viola	85	Lead 5 (charang)	128	Gunshot
43	Cello	86	Lead 6 (Voice)		

PC: Program change

5.3 MT32 Compatible Mode (MIDI Channels 1-9 11-16) Variation (MIDI control 0):127

PC#	Instrument	PC#	Instrument	PC#	Instrument
1	Piano1	2	Piano 2	3	Piano3
4	Detuned EP1	5	E. Piano 1	6	E. Piano 2
7	Detuned EP2	8	Honky-Tonk	9	Organ 1
10	Organ 2	11	Organ 3	12	Detuned Or.1
13	Church Org. 2	14	Church Org.	15	Church Org.
16	Accordion Fr.	17	Harpsichord	18	Coupled Hps.
19	Coupled Hps.	20	Clav.	21	Clav.
22	Clav.	23	Celesta	24	Celesta
25	Synth Brass 1	26	Synth Brass 2	27	Synth Brass 3
28	Synth Brass 4	29	Synth Bass 1	30	Synth Bass 2
31	Synth Bass 3	32	Synth Bass 4	33	Fantasia
34	Syn Calliope	35	Choir Aahs	36	Bowed Glass
37	Soundtrack	38	Atmosphere	39	Crystal
40	Bag Pipe	41	Tinkle Bell	42	Ice Rain
43	Oboe	44	Pan Flute	45	Saw Wave
46	Charang	47	Tubular Bells	48	Square Wave
49	Strings	50	Tremolo Str.	51	Slow Strings
52	Pizzicato Str.	53	Violin	54	Viola
55	Cello	56	Cello	57	Contrabass
58	Harp	59	Harp	60	Nylon-Str. Gt.
61	Steel-Str. Gt.	62	Chorus Gt.	63	Funk Gt.
64	Sitar	65	Acoustic Bs.	66	Fingered Bs.
67	Picked Bs.	68	Fretless Bs.	69	Slap Bs.1
70	Slap Bs. 2	71	Fretless Bs.	72	Fretless Bs.
73.	Flute	74	Flute	75	Piccolo
76	Piccolo	77	Recorder	78	Pan Flute
79	Soprano Sax	80	Alto Sax	81	Tenor Sax
82	Baritone Sax	83	Clarinet	84	Clarinet
85	Oboe	86	English Horn	87	Bassoon
88	Harmonica	89	Trumpet	90	Muted Trumpet
91	Trombone	92	Trombone	93	French Horn
94	French Horn	95	Tuba	96	Brass 1
97	Brass 2	98	Vibraphone	99	Vibraphone

100	Kalimba	101	Tinkle Bell	102	Glockenspiel
103	Tubular-Bell	104	Xylophone	105	Marimba
106	Koto	107	Taisho Koto	108	Shakuhachi
109	Whistle	110	Whistle	111	Bottle Blow
112	Pan Flute	113	Timpani	114	Melo Tom
115	Concert BD	116	Synth Drum	117	Melo Tom
118	Taiko	119	Taiko	120	Reversed Cym.
121	Castanets	122	Tinkle Bell	123	Orchestra Hit
124	Telephone	125	Bird	126	Helicopter
127	Bowed Glass	128	Ice Rain		

Note: This mode guarantees only the basic compatibility with MT32 by mapping GM instruments with the MT32 sound list.