Audiotrix Pro
Professional Sound Board

User's Guide

Copyright

Limited Warranty

Mediatrix Peripherals Inc. warrants the Audiotrix Pro professional sound board to be free of any defects in materials or workmanship for a period of twelve (12) months from the date of purchase. Mediatrix Peripherals Inc. warrants Audiotrix Pro software programs to be free of any defects in material or workmanship for a period of ninety (90) days from the date of purchase. These warranties are limited to the original purchaser of the product and are not transferable.

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Warning

This equipment generates and uses radio frequency energy, and if not installed and used properly (i.e. in strict accordance with the manufacturer's instructions), may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class B device in accordance with the specifications in Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation.

The user is cautioned that changes or modifications not expressly approved by Mediatrix, could void the user's authority to operate this equipment.

This device complies with Part 15 of the 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.

Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the class B limits may be attached to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception. Furthermore, the use of a non-shielded I/O cable with this device will not enable the device to meet the minimum emission limits mandated by U.S. federal law.

There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception (this 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 the receiving antenna.
- Move the computer away from the receiver.
- Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user is hereby notified that changes or modifications not expressly approved by Mediatrix Peripherals Inc. could void the user's rights under the limited warranty.

The user may find it helpful to consult the booklet: "How to Identify and Resolve Radio-TV Interference Problems," prepared by the Federal Communications Commission. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Technical Support

Mediatrix Peripherals Inc. is firmly committed to providing the highest level of customer service and product support. If you experience any difficulties when using our product, or if it fails to operate as described, we suggest you first consult the User's Guide, and then, if you are still in need of assistance, call our Technical Support Department:

- Telephone: (819) 829-TRIX

  (800) 820-TRIX
- Hours, Monday to Friday:
  - North American Eastern Time: 9:00 a.m. to 5:00 p.m.
- Fax: (819) 829-5100
- BBS: (819) 829-5101

Notice

Mediatrix Peripherals Inc. reserves the right to make changes or improvements in the product described in this manual at any time and without notice.

WARNING: Your Audiotrix Pro sound board is packaged in a special plastic clamshell designed to protect it against static electricity. We recommend that you keep it in this package until you are ready to install it in your computer. Electronic boards can be easily damaged with static electricity and must be handled with care. Users should ground themselves before handling the card. Please read the User's Guide before beginning installation.

IMPORTANT

Before reading this User's Guide and returning your registration card, please note below the serial number of your Audiotrix Pro card (which can be found on the back of the card), the version number of the Audiotrix Pro software (which can be found on the Audiotrix Pro Program Disks), and the date of purchase. This information will be needed when calling for service.

Serial Number _____

Software Version _____

Date Purchased _____

Mediatrix Peripherals Inc.
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1st edition

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Introduction

Wavetable & FM Synthesis Break the Sound Barrier

The audio performance standard for the PC has been raised again with the introduction of the Audiotrix Pro. This brand new sound card is based on the Yamaha OPL4 chip set which contains Wavetable and FM synthesis. Wavetable synthesis is based on the digitized recordings of actual instrument sounds while FM synthesis is based on the manipulation of sine waves. The Audiotrix Pro permits 24 voices of Wavetable sound and 20 voices of FM sound to be output simultaneously. The result is a new height in audio performance that has no equal in the PC marketplace today!

The Audiotrix Pro

In addition to Wavetable and FM synthesis the Audiotrix Pro also features:

- A standard general MIDI voice bank on a 2 megabyte mask ROM.
- A 16-bit audio codec which provides a complete MPC and Microsoft Windows Sound System solution while remaining backward compatible with the original industry standards Ad Lib and Sound Blaster.
- An optional Effects Processor is also available as a daughter board to the Audiotrix Pro which provides even higher quality sound with the addition of such effects as echo, reverb, flange, distortion, panning and surround processing.

The Manual

This manual describes Audiotrix Pro hardware and installation, and explains how to use the software included to help you get the most out of your audio adapter. Be sure to read the sections on:

- Mixer utilities, which controls mixing functions such as volume and balance of the various audio sources.
- Jukebox, a music playback program that includes a music clip library in a variety of styles, and that lets you listen to songs you want from standard MIDI files, wave files and CD tracks.
- PLAYMIDI, a utility program used for playing back MIDI files from the DOS command line or from a batch file.
- PLAYWAVE, a utility program used for playing back digitized sound files from the DOS command line or from a batch file.

The Bottom Line

You'll quickly come to appreciate Audiotrix Pro for its unrivalled quality, flexibility and usefulness. For complete information on Mediatrix products, call us today on our customer service line at (800) 820-TRIX, or write Mediatrix Peripherals Inc., 4229 Garlock Street, Sherbrooke, Québec, Canada J1L 2C8.

Quick Start

This Quick Start is intended for the experienced PC user who has already installed and used various hardware devices and software applications. Do not attempt a quick start installation if you are not familiar with the PC environment; installation errors could occur that will be difficult to correct afterwards. This Quick Start includes references to the User's Guide for those who need complete information on a particular hardware or software installation step.

Installing the Hardware

Installing the hardware involves two main steps:

- Install the Audiotrix Pro Card
- Connect the Other Peripherals

Install the Audiotrix Pro

1. Make sure that the on-board jumpers — the joystick selector jumpers and the microphone selector jumpers, are in the desired position.

❑ See "Description of the Audiotrix Pro Card: Layout of the Card," and "Getting Installed: Hardware Installation."

2. Plug the Audiotrix Pro card into the computer in a free slot as far as possible from the video adapter card.

NOTE: *Certain cards, such as video adapters, produce high-frequency signals that can interfere with the sound quality of the sound card.*

❑ See “Getting Installed: Hardware Installation.”

Connect the Other Peripherals

- Plug external speakers into the main audio output of the card, or connect the output to the input of a stereo system.
- Connect a low impedance dynamic microphone, or an electret microphone, to the microphone input of the card (making sure that the microphone selector jumpers are in the position corresponding to the microphone).
- Connect the output of the stereo source (CD player, CD-ROM drive, synthesizer or cassette player) to the stereo auxiliary input of the card, using a stereo cable.
- Connect your joystick to the DB-15 game port of the card. If you plan to use the MIDI interface, connect your MIDI device with the Audiotrix adapter cable.

❑ See “Getting Installed: Hardware Installation.”

Installing the Software

Installing the software involves two main steps:

- Install the Setup Disk
- Install Audiotrix Applications and other bundled programs

Install the Setup Disk

When you begin the installation procedure, a text file (INSTALL.TXT) is displayed on the screen. Read this file carefully and refer to it later, if necessary. Another text file (README.TXT) is also included on the Setup Disk. This file

contains a list of all files copied to your hard disk during the installation procedure.

- Insert the Setup Disk into the floppy drive, set the current drive to A (or B, depending on which drive you are using), and type the following command:

```
A:\>INSTALL
```

Install Audiotrix Applications and other Bundled Programs

To install any of the other applications included with the Audiotrix Pro, follow the instructions listed on each diskette label and read very carefully the additional instructions that will be displayed on the screen.

Using the Audiotrix Pro

The Audiotrix Pro can be used for:

- Running Audiotrix Applications
- Running Third Party Applications

Running Audiotrix Applications

Once the Audiotrix hardware and software are installed, you can run an Audiotrix application by proceeding as follows:

1. Set the current directory to the one where you placed the Audiotrix programs during the installation process. For the DOS applications, type the following command:

```
C:\>CD \TRXPRO\DOS
```

2. Run the Audiotrix application you want by typing the corresponding command

   - To run **Jukebox**, a program used for playing back MIDI files and wave files, type:

     ```
     C:\TRXPRO\DOS>JUKEPRO
     ```

     or choose the following icon under Windows:

   - To run **PLAYMIDI**, a utility used for playing back MIDI files in DOS, type:

     ```
     PLAYMIDI <FileName>.MID
     ```

     from the C:\TRXPRO\DOS prompt, where `<FileName>` is the complete name of the MIDI file (including drive and path) to be played, i.e.:

     ```
     PLAYMIDI C:\TRXPRO\MIDI\BLUES.MID
     ```

   - To run **PLAYWAVE**, a utility used for playing back digitized sound files in DOS, type:

     ```
     PLAYWAVE <FileName>.WAV
     ```

     from the C:\TRXPRO\DOS prompt, where `<FileName>` is the complete name (including drive and path) of the digitized sound file (.WAV) to be played, i.e.:

     ```
     PLAYWAVE C:\TRXPRO\WAVE\INTRO.WAV
     ```

Running Third Party Applications

To run a third party application supporting the Audiotrix Pro card, proceed as follows:

1. Make sure the Audiotrix hardware and software are correctly installed and working properly.

2. Install the third party application or game according to the manufacturer's instructions. Make sure you choose Audiotrix or Sound Blaster as the sound board in the installation options, if requested.

3. Load the third party application or game by typing the appropriate command.

Chapter 2

Description of the Audiotrix Pro

Functionality

Your Audiotrix Pro is a multifunction card with digital recording, playback of digitized and synthesized sounds, analog audio mixing, MIDI recording and playback, game port, and SCSI/CD-ROM through an optional add-on interface.

Digital Recording

With the Audiotrix Pro, you can record from:

- A low impedance dynamic microphone, or an electret microphone
- An audio tape or a compact disk.

Digitized and Synthesized Sound Playback

With the Audiotrix Pro card, you can playback:

- Digitized sounds: The Audiotrix Pro card has two channels for digitized sounds. These channels can be used for recording and playing back wave files in a variety of ways.
- Synthesized sounds: The Audiotrix Pro card has a 20-voice FM and 24-voice Wavetable

synthesizer, which is used for Jukebox and PLAYMIDI songs, as well as third party software.

Analog Audio Mixing

The sound capabilities of the Audiotrix Pro also feature:

- Audio mixing: The internal analog mixer of the Audiotrix Pro card controls the volume of various audio sources, through software, such as within third party applications, or manually using the Audiotrix Mixer utilities.
- Volume control: The output volume of the Audiotrix Pro card is software controlled.
- Full compatibility: A 16-bit audio codec provides a complete MPC and Microsoft Windows Sound System solution, while remaining backward compatible with the original industry standards Ad Lib and Sound Blaster.

MIDI Recording and Playback

The MIDI interface of the Audiotrix Pro allows standard MIDI files to be recorded using a MIDI adapter cable and any external MIDI instrument. MIDI files can also be played back using any of the several MIDI utilities bundled with the Audiotrix Pro.

Game Port

The Audiotrix Pro allows a standard IBM compatible joystick to be connected.

SCSI Interface

The Audiotrix Pro has on-board connectors for adding an optional SCSI interface, which allows a CD-ROM drive or any SCSI (*Small Computer System Interface*) type peripheral to be connected.

Layout of the Audiotrix Pro

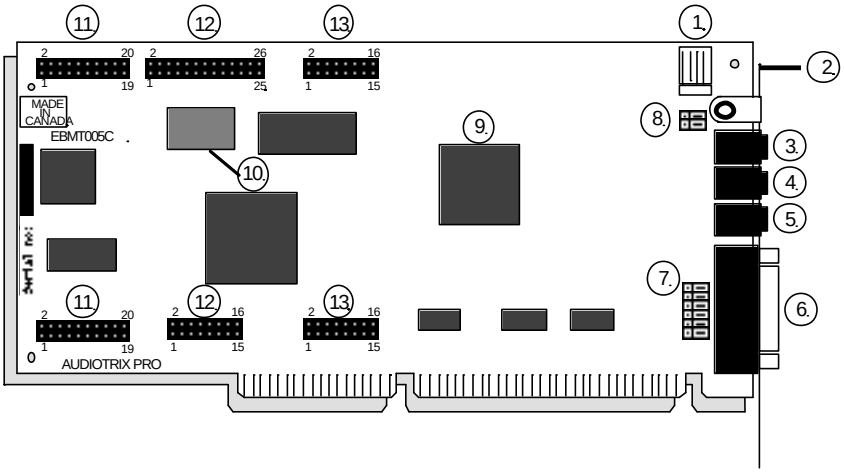


Figure 1. Audiotrix Pro Diagram

1. Internal stereo auxiliary input
2. Bracket
3. Low impedance dynamic microphone/electret microphone input (mono)
4. Stereo auxiliary input
5. Main audio output
6. Game port/MIDI connector
7. Joystick selector jumpers
8. Microphone selector jumpers
9. Sampling chip
10. OPL4 chip
11. SCSI module connectors
12. Wave Table RAM/ROM module connectors
13. Sound effects module connectors

Bracket Connectors

Audiotrix Pro has three 1/8" connectors and one DB-15 connector on the support brackets, as shown on the diagram (Figure 1, page 11).

These connectors are:

- The low impedance dynamic microphone/electret microphone input (Figure 1, No. 3, page 11), for sampling and/or mixing with other audio sources.
- The stereo auxiliary input (Figure 1, No. 4, page 11), for connecting an external source such as a CD or cassette player, a synthesizer or any audio source, in order to sample and/or mix with other audio sources.
- The main stereo audio output (Figure 1, No. 5, page 11), for connecting to loudspeakers, standard headphones or a stereo system.
- The Game Port/MIDI connector (Figure 1, No. 6, page 11), for using a standard PC joystick and/or a MIDI device. This requires an optional MIDI cable adapter available from Mediatrix.

On-board Connectors and Main Components

The Audiotrix Pro card has on-board connectors to support exciting options to stretch the limits of PC sound even further. These connectors are shown on the diagram (Figure 1, page 11).

These connectors are:

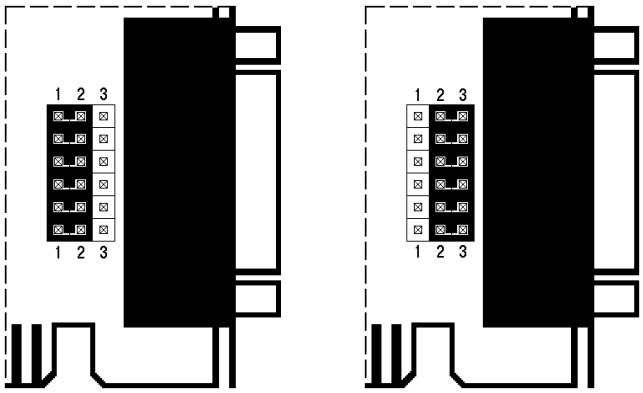
- The SCSI module connectors (Figure 1, No. 11, page 11), to snap on SCSI and other proprietary CD-ROM interface daughter boards.
- The Wavetable RAM/ROM module connectors (Figure 1, No. 12, page 11), to snap on an additional RAM/ROM daughter board to download special sounds for custom sound processing.
- The sound effects module connectors (Figure 1, No. 13, page 11), to snap on an Effects Processor daughter board. This module provides echo, reverb, flange, distortion, panning, chorus, pitch, and surround sound processing.
- The karaoke effects module. This can be used in place of the sound effects module noted above.

The On-board Jumpers

To make it easier to configure the Audiotrix Pro, we have made the Interrupt lines (IRQ) and Direct Memory Access (DMA) channels software selectable. The two remaining jumpers set are the joystick selector jumpers, and the microphone selector jumpers.

Joystick Selector Jumpers

The *joystick selector jumpers* (Figure 1, No. 7, page 11) let the user change the factory-set "dual joystick without MIDI" option (all jumper pins 1–2) to the "single joystick with MIDI" option (all jumper pins 2–3). All jumpers in this selector must be changed to the same position, as shown in the following illustrations. The "dual joystick without MIDI" option is the preferred option even if you only have a single joystick, so long as you do not use any MIDI device.



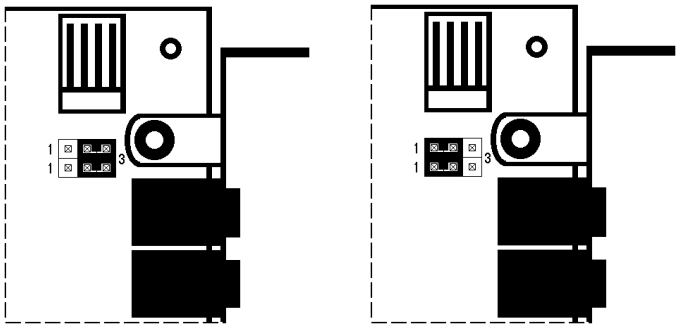
Dual joystick without MIDI (factory-set) option

Single joystick with MIDI option

Figure 2. Joystick Jumper Selection

Microphone Selector Jumpers

The *microphone selector jumpers* (No. 8) let the user change the factory-set "low impedance dynamic microphone" option (all jumper pins 2–3) to the "electret microphone" option (all jumper pins 1–2). The two jumpers in this selector must be changed to the same position, as shown in the following illustrations.



Low impedance dynamic microphone (factory-set) option

Electret microphone option

Figure 3. Microphone Jumper Selection

WARNING: Do not change the microphone selector jumpers to the "electret microphone" option (all jumpers on pins No. 1–2) if you plan to use a standard dynamic microphone. In the "electret microphone" option, the microphone input connector supplies a current which could damage a non-electret type microphone. On the other hand, if you leave the microphone selector jumpers in the "low impedance dynamic microphone" option (all jumpers on pins No. 2–3), an electret type microphone will simply not work.

Available Interrupt Lines and DMA Channels

- There are eight software selectable interrupt lines: IRQ 3, 4, 5, 7 10, 11, 12, and 15.
- DMA channels 0, 1, 2, and 3 are software selectable on the Audiotrix Pro.

See Appendices C, D and E for more information on these settings.

Chapter 3

Getting Installed

System Requirements

To use the Audiotrix Pro and the Audiotrix software, you need the following:

1. IBM AT or compatible (80386 or higher CPU recommended) with a disk drive (1.4 MB 3 1/2")
2. Available 16-bit slot
3. 640 KB RAM (2 MB for Windows)
4. Hard disk recommended
5. DOS 3.1 or higher
6. EGA or VGA (VGA recommended)
7. Windows 3.1 or Windows 3.0 with Multimedia Extension (for Windows software)

Hardware Installation

We suggest that you read this section thoroughly before you begin. This will familiarize you with the standard installation procedure.

These instructions are for installing your Audiotrix Pro in your computer. We recommend that you read the owner's manual supplied with your computer for instructions specific to your model of computer.

Hardware Configuration Settings

To install the Audiotrix Pro, there are two types of configuration settings: hardware settings and software settings. The Pro uses software for most of the configuration settings (see the sections on installation and configuration below). Only two hardware settings, made with jumpers, are necessary: joystick selection and microphone selection. This should be made before installing the Audiotrix Pro card in your computer.

Joystick Selection

The joystick selector jumpers let the user change the factory-set "dual joystick without MIDI" option to the "single joystick with MIDI" option. All jumpers in this selector must be changed to the same position, as shown in Figure 2, page 14.

To set a single joystick selector jumper:

1. Locate the joystick selector jumpers (refer to Figure 1, No. 7, page 11).
2. If you wish to use the Audiotrix Pro game port in the "dual joystick without MIDI" option, leave the jumpers in the factory-set position (i.e., plugged away from the bracket side of the card, pins No. 1–2) as shown in Figure 2, page 14.
3. If you wish to use the Audiotrix Pro game port in the "single joystick with MIDI" option, unplug all six jumpers and replug them onto the bracket side (pins No. 2-3), as shown in Figure 2, page 14.

Microphone Selection

The microphone selector jumpers let the user change the factory-set "low impedance dynamic microphone" option to the "electret microphone" option. The two jumpers in this selector must be changed to the same position, as shown in Figure 3, page 15.

To set the microphone selector jumpers:

1. Locate the microphone selector jumpers (refer to Figure 1, No. 8, page 11).
2. If you plan to use a standard low impedance dynamic microphone with your Audiotrix Pro, leave the jumpers in the factory-set position (i.e., plugged onto the bracket side of the card, pins No. 2–3) as shown in Figure 3, page 15.
3. If you plan to use an electret microphone with your the Audiotrix Pro, unplug the two jumpers and replug them onto the opposite side (pins No. 1–2), as shown in Figure 3, page 15.

WARNING: Do not change the microphone selector jumpers to the "electret microphone" option (all jumpers on pins No. 1–2) if you plan to use a standard dynamic microphone. In the "electret microphone" option, the microphone input connector supplies a current which could damage a non-electret type microphone. On the other hand, if you let the microphone selector jumpers in the "low impedance dynamic microphone" option (all jumpers on pins No. 2–3), an electret type microphone will simply not work.

Removing the Computer Cover

To remove the computer cover:

1. Switch off the computer.

2. Disconnect the power cord and all peripheral devices and cables.
3. Set the computer on a flat, clear surface.
4. Remove the mounting screws that hold the computer cover.
5. Remove the computer cover.

Removing the Slot Cover

To remove the slot cover:

1. Choose a free 16-bit slot as far as possible from the video adapter card.

   NOTE: *Certain cards, such as video adapters, produce high-frequency signals which can interfere with the sound quality of the sound card.*

2. Remove the screw that holds the slot cover in place.
3. Lift the slot cover to remove it.

WARNING: If a screw falls into the computer, you absolutely must remove it before switching your system back on. If a metal object is left loose inside the casing of your computer, it may cause a short circuit that will damage your system.

Installing the Audiotrix Pro Card

To install the Audiotrix Pro card:

1. Place the card immediately above the slot without inserting it into the socket.

2. Make sure that the bracket is inserted in the groove previously occupied by the slot cover.
3. Press the card down into the socket.
4. Put the card's bracket screw back on and tighten it.
5. Put the computer cover back on and tighten the screws.
6. Reconnect the power cord and other cables.

Connecting Other Peripherals

The card is equipped with jacks and plugs for connecting various peripherals. These allow devices to be connected to:

- Stereo Audio Output
- Microphone Input
- Stereo Auxiliary Input
- MIDI/Game Port

Stereo Audio Output

The Audiotrix Pro card is equipped with three 1/8" jacks for connecting audio equipment. The main audio output is the lowermost of the three jacks, located above the DB-15 connector (refer to Figure 1, No. 5, page 11). This jack can be connected to headphones, external speakers or a stereo system using stereo adapters and cables. To avoid distortion when connecting to a stereo system, connect the card to an auxiliary-type input.

Microphone Input

The low impedance dynamic microphone/electret microphone input is the uppermost of the three audio jacks on the card's bracket (refer to Figure 1, No. 3, page 11). This connector lets the audio signal from a standard dynamic microphone or from an electret microphone be mixed with other audio sources or to be used as a source for sampling sounds. (See Figure 3, page 14, for related jumper settings.)

NOTE: *The microphone input impedance of the Audiotrix Pro card is 10 KW. The dynamic microphone used should have a maximum impedance of 10 KW otherwise you may lose too much input due to an impedance mismatch.*

Stereo Auxiliary Input

The stereo auxiliary input connector is located in the center of the three audio jacks on the card's bracket (refer to Figure 1, No. 4, page 11). This connector lets audio signals from a stereo source (such as a CD player, CD-ROM drive, synthesizer or cassette player) be mixed with the other audio sources or to be used as a source for sampling sounds.

WARNING: To avoid distortion, it is important to keep the audio level of the device you are connecting to this input jack at low volume and to adjust the volume using the software controls explained in the next chapter. Also, make sure that you are using the auxiliary output of the device you are connecting to the card, instead of using the speaker output which may overload the card's amplifier.

MIDI/Game Port

The Audiotrix Pro card features a standard DB-15 connector at the bottom of its supporting bracket (refer to Figure 1, No. 6, page 11). This connector lets the user connect one of the following three options:

1. An IBM compatible joystick.
2. A MIDI device. (This requires an adapter cable.)
3. Dual joystick. (This requires a special adapter, which is usually supplied by the joystick manufacturer. — See Figure 2, page 14, for related jumper settings.)

Software Installation and Configuration

The running and using of the Audiotrix Pro card's drivers and programs require hard disk space of approximately 2 megabytes. They must be installed onto the hard disk following a precise procedure. For this purpose, the Audiotrix software package includes special Install and Setup utility programs. These utilities enable you to install the drivers and all associated programs, and to configure the Audiotrix Pro.

Installing the Audiotrix Software

The Audiotrix diskettes are not copy-protected. We recommend that you make a backup copy before installing the software. Put the originals away in a safe place. This way, if a diskette is lost or damaged, then you will have a replacement. We suggest that you use the DISKCOPY command. (For all details concerning the copy commands, refer to your DOS manual.)

The Install utility provided on the Audiotrix Pro diskettes performs the following operations:

- Copies all files needed to run the Audiotrix Pro.
- Edits the AUTOEXEC.BAT file.
- Edits the WINDOWS\SYSTEM.INI configuration file.
- Installs the Windows drivers if the Windows option was selected.

The precise operations are all explained before beginning the installation by means of the INSTALL.TXT file which is displayed automatically on the screen.

To Load the Install Utility

To load the Audiotrix Pro Install utility:

1. Insert the Setup Disk in drive A.

2. Set the current drive to A (or B, depending on the drive you are using):

```
C:\>A:
```

3. Load the Install utility by typing the following command at the DOS prompt:

```
A:\>INSTALL
```

The *Audiotrix Pro Install* utility opens, displaying the different install options of the Audiotrix Pro (see Figure 4).

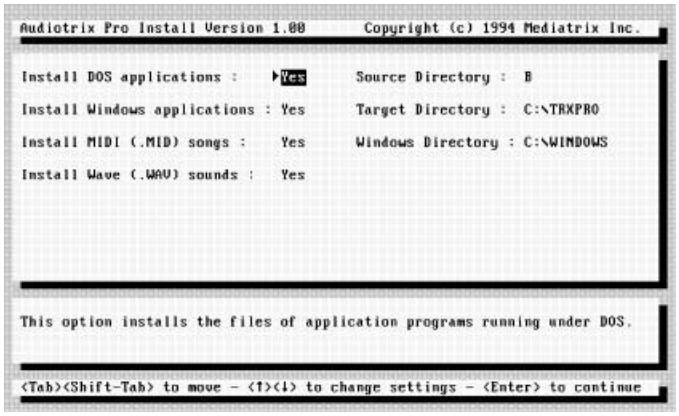


Figure 4. Audiotrix Pro Install Utility

To Choose Options from the Install Utility

To select or unselect one of the software options from the Audiotrix Pro Install utility:

1. Choose the software option you want by using the V (Tab) or j-V (Shift-Tab) keys to move between fields.
2. After this, you can toggle between the Yes and No settings with the arrow keys.

The Install utility allows choosing the following options:

Install DOS applications

This option installs the files of application programs running under DOS: Jukepro, PLAYMIDI utility and PLAYWAVE utility.

Install Windows applications

This option installs the files of the application programs running under Windows: Jukebox, Audiotrix Pro Input Audio Mixer, Audiotrix Pro Output Audio Mixer, and Windows drivers. See the next section, "Windows Audio Drivers," for details.

Install MIDI (.MID) songs

This option installs additional MIDI song files, which can be played using the Jukebox or the PlayMIDI utility.

Install Wave (.WAV) sounds

This option installs additional sample files, which can be played using the Jukebox or the Playwave utility.

Once you have chosen your install options, press the f key. A status box will then appear on screen allowing you to continue or exit the install process. At any moment, you can interrupt the install process by pressing the ^ key. Doing this will abort the installation and cancel the last step you have made.

NOTE: *When interrupting the install process, files already copied will remain installed. To cancel the entire operation, you will have to delete the unwanted copied files, and re-run the Install utility if so desired. Consult the INSTALL.TXT and the README.TXT for the list of installed files and file modifications.*

Configuring the Audiotrix Software

Once the installation of the Audiotrix software is completed, you must configure your Audiotrix Pro card by using the Setup utility. This Setup utility is automatically displayed on the screen during the installation procedure. However, these setup parameters can be changed at any time after installation by the following procedure:

1. Type in the drive and directory specifications that contain the Audiotrix Pro Setup utility:

```
C:\>CD \TRXPRO
```

2. Load the Setup utility by typing the following command at the DOS prompt:

```
C:\TRXPRO>SETUPPRO
```

The *Audiotrix Pro Setup* utility opens, displaying the different configuration parameters of the Audiotrix Pro software (see Figure 5).

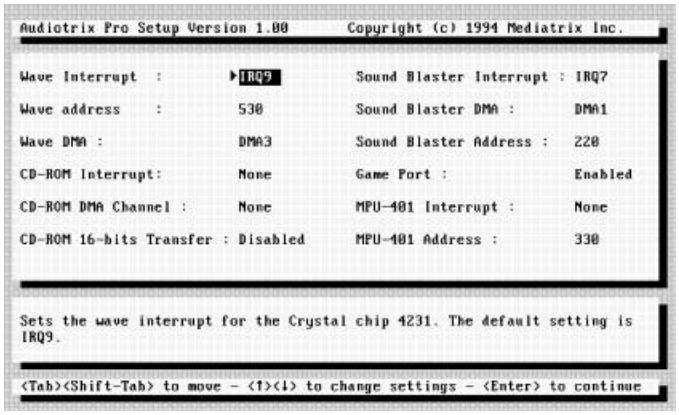


Figure 5. Audiotrix Pro Setup Utility

To Set Configuration Parameters from the Setup Utility

To set one of the configuration parameters from the Audiotrix Pro Setup utility:

1. Choose the configuration parameter you want by using the V (Tab) or j-V (Shift-Tab) keys to move between fields.
2. After this, you can change settings with the arrow keys.

The Setup utility allows setting the following configuration parameters:

Wave Interrupt

Sets the wave interrupt for the Crystal chip 4231. The default setting is IRQ9.

Wave Address

Sets the wave address for the Crystal chip 4231. The default setting is 530.

Wave DMA

Sets the wave DMA channel for the Crystal chip 4231. The default setting is DMA3.

CD-ROM Interrupt

Sets the optional daughterboard CD-ROM interrupt. The default setting is IRQ10. If you do not have a CD-ROM or an Audiotirx CD-ROM interface card, choose None.

CD-ROM DMA Channel

Sets the optional daughterboard CD-ROM DMA channel. The default setting is DMA0. If you do not have a CD-ROM or an Audiotrix CD-ROM interface card, choose None.

CD-ROM 16-bits Transfer

Sets the optional daughterboard CD-ROM 16-bits transfer mode. The default setting is Disabled. If you do not have a CD-ROM or an Audiotrix CD-ROM interface card, choose Disabled.

Sound Blaster Interrupt

Sets the Sound Blaster interrupt. The default setting is IRQ7.

Sound Blaster DMA

Sets the Sound Blaster DMA channel. The default setting is DMA1.

Sound Blaster Address

Sets the Sound Blaster address. The default setting is 220.

Game Port

Sets the game port. The default setting is Enabled.

MPU-401 Interrupt

Sets the MPU-401 interrupt. The default setting is None.

MPU-401 Address

Sets the MPU-401 address. The default setting is 330.

At any moment, you can exit the Setup utility and return to DOS by pressing the **f** key. You then must answer the question “Should these parameters be used at startup?” ”Yes” will enable the card settings and modify the startup parameter file. “No” will only enable the settings on the card.

Windows Audio Drivers

The Audiotrix Pro package includes Windows 3.1 multimedia drivers. These drivers are used by several of the Windows utilities and software bundled with your sound card. These drivers are by default installed during the installation of the sound card's software (unless you unselected the corresponding option in order to install them separately).

The Windows drivers may also be used by other third-party software developers to write multimedia programs running under the Windows environment. For detailed information on developing multimedia applications with these drivers, please refer to the Mediatrix Windows Software Development Kit.

The Windows drivers include:

- Crystal CS31BA11 Wave Driver 1.04

  This is a Windows driver that allows you to play back wave format audio files.

- Yamaha OPL4 MIDI Synthesis Driver

  This is a Windows driver that allows you to playback MIDI format files using FM, Wavetable or a combination of both types of sound.

Installing the Windows Audio Drivers

If you did not install your Windows drivers at first and you want to install them later, proceed as follows.

WARNING: To avoid any driver conflicts, you may need to remove any other audio drivers before installing the Audiotrix Pro Windows audio drivers.

To set up the Windows audio drivers:

1. Start the Windows 3.1 application.

2. From the Main program group, double-click the Control Panel icon. The control panel window will be displayed.

3. In the *Control Panel* window, double-click the Drivers icon. The *Drivers* window will be displayed, showing a list of drivers currently installed in Windows 3.1.

4. In the *Drivers* window, click the *Add* button.

5. Type in the drive and directory specifications that contain the Audiotrix Pro Windows audio drivers:

`C:\TRXPRO\WINDOWS`

NOTE: *This drive and directory specifications assume you have installed the sound card's software on drive C: in the TRXPRO directory. If not, use the appropriate drive and directory.*

---

6. Click the *OK* button. The *Add Unlisted or Updated Driver* window appears, showing the various Audiotrix Pro Windows audio drivers.

7. Click on the *Crystal CS31BA11 Wave Driver 1.04* option, and click the *OK* button. If the *Driver Exists* dialog box appears, select the *New* option to ensure proper installation.

   Windows will now prompt you for the confirmation to restart you Windows application. Click on the *Don't Restart Now* button to return to the Drivers window.

8. Repeat steps 4 and 5, then select the *YAMAHA OPL4 Midi Synthesis* option and click the *OK* button. If the *Drivers Exists* dialog box appears, select the New option to ensure proper installation.

9. Click the *OK* button. Windows 3.1 will now prompt you for the confirmation to restart your Windows application. Click the *Restart Now* button to restart the Windows application.

NOTE: *For the newly installed Audiotrix Pro Windows audio drivers to take effect, you must restart Windows.*

Configuring the MIDI Mapper for the FM Synthesis Driver

If you are using a Windows application that uses the MIDI Mapper to play .MID files, you need to select the MIDI Mapper for the synthesizer that will be playing the file.

The *MIDI Mapper* icon should be shown in the *Control Panel* window if you have a sound card installed in your computer.

To select the MIDI setup:

1. Choose the *MIDI Mapper* icon to display the *MIDI Mapper* dialog box.
2. Pull down the Name list and select the *Yamaha OPL4* setup option. This option serves to play synthesized sounds of MIDI channels out to the main audio output of the sound card.
3. Choose the *Close* button.

NOTE: *For more information on the* MIDI Mapper, *please refer to the* Microsoft Windows User's Guide.

Chapter 4

Mixer Utilities

The Audiotrix Pro card has an on-board analog mixer that permits the volume of different audio sources to be controlled, as well as overall output volume and balance. These features can be accessed using the Audiotrix Pro Mixer or the Audiotrix Pro TSR Mixer (DOS utilities), and the Audiotrix Pro Input Mixer and the Audiotrix Output Mixer (Windows utilities).

Audiotrix Pro Mixer

The Audiotrix Pro Mixer is a small utility program that permits you to set the volume of different audio sources, as well as the overall output volume and balance of the Audiotrix Pro card.

Loading the Audiotrix Pro Mixer

To load the Audiotrix Pro Mixer, set the current directory to the one where you placed the utility at installation and type the following command:

```
C:\TRXPRO>MIXERPRO
```

Upon loading, the Audiotrix Pro Mixer will appear as shown in Figure 6.

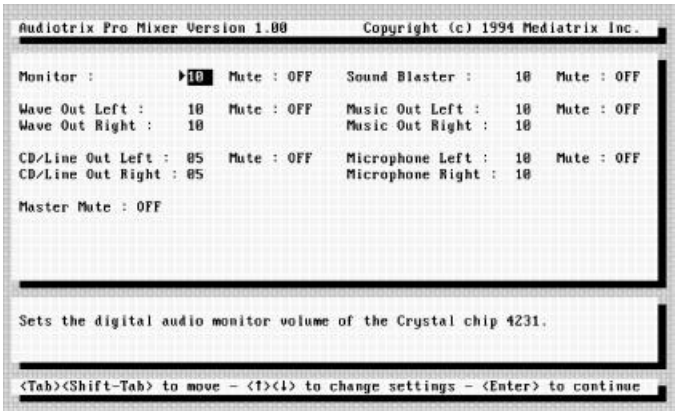


Figure 6. Audiotrix Pro Mixer

Using the Audiotrix Pro Mixer

To change the volume settings on the Audiotrix Pro Mixer:

1. Select the item you want using the V (Tab) or j-V (Shift-Tab) keys.
2. After this, you can change the chosen item in one of the following ways:
   - Increase the value of the chosen item by using the up or right arrow keys (W or X).
   - Decrease the value of the chosen item by using the down or left arrow keys (Y or Z).

The following describes the features of the Audiotrix Pro Mixer.

Monitor

Sets the digital audio monitor volume of the Crystal chip 4231.

Wave Out Left
Wave Out Right

Sets the wave left and right volume of the Crystal chip 4231.

CD/Line Out Left
CD/Line Out Right

Sets the CD/Line left and right volume.

Sound Blaster

Sets the Sound Blaster speech/effects volume.

Music Out Left
Music Out Right

Sets the music/synthesis volume of the Yamaha OPL4 synthesizer.

Microphone Left
Microphone Right

Sets the left and right microphone volume.

Mute

Mutes the corresponding source.

Master Mute

Mutes all outputs.

Exiting the Audiotrix Pro Mixer

To exit the Audiotrix Pro Mixer:

- Press the f key to leave the utility program and return to DOS.

Audiotrix Pro TSR Mixer

The Audiotrix Pro TSR Mixer is a simple TSR utility that permits you to change the master volume and balance of the Audiotrix Pro card at anytime while you are in an application.

***TSR** stands for Terminate-and-Stay Resident program, which is also called a memory resident program. It is a utility program designed to remain in the computer's memory at all times after loading so the user can activate it with a keystroke at any time, even while running another program.*

Loading the Audiotrix Pro TSR Mixer

To load the Audiotrix Pro TSR Mixer, set the current directory to the one where you placed the utility at installation and type the following command:

```
C:\TRXPRO\DOS>MIXTSR
```

When the Audiotrix Pro TSR Mixer is loaded, it will display a message indicating that the utility has been successfully loaded. It will also indicate which keys must be used to activate the Audiotrix Pro TSR Mixer.

Activating the Audiotrix Pro TSR Mixer

a-M are the default activation keys for activating the Audiotrix Pro TSR Mixer. In order to avoid conflicts with other programs, you may change the combination of keys used to activate the Audiotrix Pro TSR Mixer by using the following command:

```
C:\TRXPRO\DOS>MIXERTSR/Kx/KALT
```

You can replace the ***X*** character with any character from A to Z, and you can replace ***ALT*** with ***CONTROL*** as the modifier key.

To activate the Audiotrix Pro TSR Mixer, press the activation keys down at the same time and release them. Upon releasing the keys, the utility will appear on screen as shown in Figure 7.

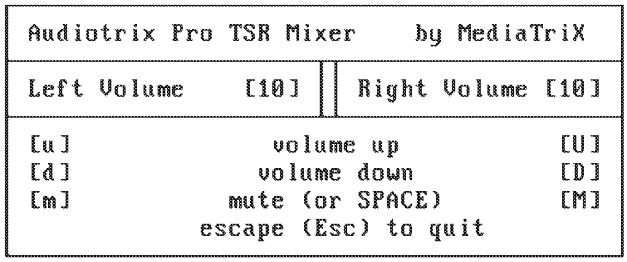


Figure 7. Audiotrix Pro TSR Mixer

This TSR can be activated at any time with applications supporting the Audiotrix Pro. The screen will be returned to its original state when you exit the Mixer window.

NOTE: *The Audiotrix Pro TSR Mixer will be displayed only in text mode. If you activate the Audiotrix Pro TSR Mixer while in graphics mode, keys will still work, even though the screen will not be displayed.*

Using the Audiotrix Pro TSR Mixer

To change the volume settings while in the Audiotrix Pro TSR Mixer:

- Press U for left master volume up.
- Press D for left master volume down.
- Press M or k for left master volume mute.
- Press j-U for right master volume up.
- Press j-D for right master volume down.
- Press j-M or j-k for right master volume mute.

Exiting the Audiotrix Pro TSR Mixer

To exit the Audiotrix Pro TSR Mixer:

- Press the ^ key to leave the Audiotrix Pro TSR Mixer and return to where you were when the TSR utility was activated.

Unloading the Audiotrix Pro TSR Mixer

When the Audiotrix Pro TSR Mixer is already installed but you no longer wish to use it, you can unload the program by typing the following command:

```
C:\TRXPRO\DOS>MIXTSR
```

Once this command is entered, the program will display a message indicating that the Audiotrix Pro TSR Mixer has been removed from the computer's memory.

Audiotrix Pro Input/Output Mixers

The Audiotrix Pro Input Mixer and the Audiotrix Pro Output Mixer are small Windows utilities that permit you to set the volume of different audio sources, as well as the overall output volume and balance of the Audiotrix Pro card.

Using the Audiotrix Pro Input Mixer

To load the Audiotrix Pro Input Mixer, go to the Mediatrix program group in Windows and choose the following icon:

Upon loading, the Audiotrix Pro Input Mixer will appear as shown in Figure 8.

Figure 8. Audiotrix Pro Input Mixer

The following describes the features of the Audiotrix Pro Input Mixer.

About

Clicking this button brings up a dialog window describing the utility and its version.

Mixer

Clicking this button spawns the Audiotrix Pro Output Mixer. The path to, and name of the output mixer must be located in the APPLETS section of CS31BA11.INI.

Save

Clicking this button saves the current settings to the CS31BA11.INI file to be used as initial settings when Windows is loaded.

OK

Clicking this button exits the Audiotrix Pro Input Mixer and keeps the current device settings.

Cancel

Clicking this button exits the Audiotrix Pro Input Mixer and restores the values which were present when the utility was opened. If the values have been saved while in the utility, then restores the values which were saved.

Input volume

This slider allows setting the input gain for the source specified in the *Input Selector* section. Each channel can be controlled separately by unchecking the *Gang* box.

Gang

Clicking this button allows the slider pair to be adjusted individually or in unison.

Line

Clicking this option selects the music level input.

Aux

Clicking this option selects the CD input.

Loop

Clicking this option selects the internal loop back input.

Mic

Clicking this option selects the microphone input.

Boost

When checked, this option adds 20 dB additional gain to the microphone input.

Dither

This option allows turning on and off dither for 8-bit PCM audio.

VU On

When selected, this option allows monitoring the selected input on the *Volume Meter*.

Vrms/db

Clicking this button toggles the *Full Scale* window between Vrms and dB modes. The *Full Scale* window shows the input signal amplitude which will cause clipping at the D/A converter.

Using the Audiotrix Pro Output Mixer

To load the Audiotrix Pro Output Mixer, go to the Mediatrix program group in Windows and choose the following icon:

Upon loading, the Audiotrix Pro Output Mixer will appear as shown in Figure 9.

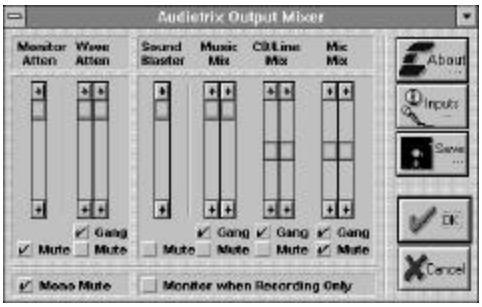


Figure 9. Audiotrix Pro Output Mixer

The following describes the features of the Audiotrix Pro Output Mixer.

About

Clicking this button brings up a dialog window describing the utility and its version.

Inputs

Clicking this button spawns the Audiotrix Pro Input Audio Mixer. The path to, and name of the input mixer must be located in the APPLETS section of CS31BA11.INI.

Save

Clicking this button saves the current settings to the CS31BA11.INI file to be used as initial settings when Windows is loaded.

OK

Clicking this button exits the Audiotrix Pro Output Audio Mixer and keeps the current device settings.

Cancel

Clicking this button exits the Audiotrix Pro Output Audio Mixer and restores the values which were present when the utility was opened. If the values have been saved while in the utility, then restores the values which were saved.

Monitor Atten

This slider allows setting the monitor volume.

Wave Atten

This slider allows setting the left and right output volume for the wave source.

Sound Blaster

This slider allows setting the volume for the Sound Blaster output.

Music Mix

This slider allows setting the volume for the OPL4 synthesizer.

CD/Line Mix

This slider allows setting the volume for the CD/Line source.

Mic Mix

This slider allows setting the volume for the microphone source.

Gang

Clicking this button allows the slider pair to be adjusted individually or in unison.

Mute

When checked, this option mutes the corresponding source.

Mono Mute

When checked, this option mutes the mono output.

Monitor when Recording Only

When checked, this option enables the monitor loop back only when capturing data. This is a convenient feature when recording source material. It allows hearing the material being recorded and then, when playing back, the source is not heard.

Chapter 5

Playback Utilities

The Audiotrix software includes three playback utility programs that can be used with the Audiotrix Pro card:

- Jukebox Playback Program
- PLAYMIDI Utility
- PLAYWAVE Utility

Jukebox Playback Program

Jukebox is a playback program specially designed to use the sound capabilities of the Audiotrix Pro card. It enables you to play MIDI song files and samples provided with the card, or any .MID and .WAV files you want from a music clip library, and CD musical selections from an audio CD.

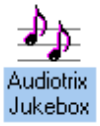
Loading Jukebox

To load the Jukebox playback program under DOS, set the current directory to the one in which you placed the Jukebox at installation and type:

```
C:\TRXPRO\DOS>JUKEPRO
```

NOTE: *Using the Jukebox playback program under DOS requires HIMEM.SYS or equivalent.*

To load the Jukebox playback program under Windows, go to the Mediatrix program group in Windows and choose the following icon:



Once the program is loaded, the Jukebox window will appear as shown in Figure 10.

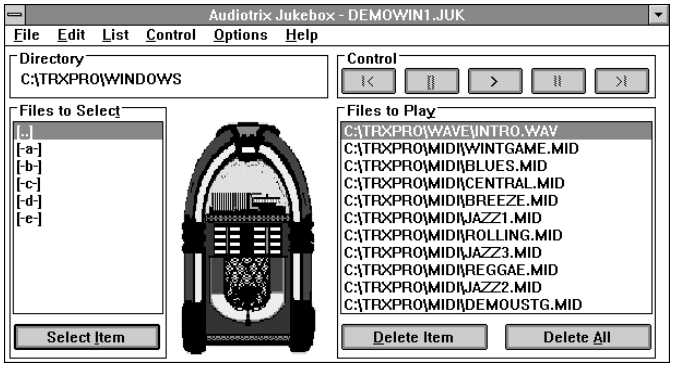


Figure 10. Audiotrix Jukebox

This window displays the various menu titles and command buttons (see Figure 10). Other possible options are contained in the menus. To activate a menu or command, use one of the following methods:

- Using a mouse: To activate the menu or command you want, click the menu or button command with the mouse.
- Using the keyboard shortcuts: To activate the menu or command you want, press the a key and the letter underlined in its name. To activate a command in an open menu, press the underlined letter.

Selecting Songs

The Jukebox window contains two large boxes for music file selection. The box located at the left of the screen, entitled *Files to Select*, displays the contents of current directory. This is a list of files, subdirectories and drives through which you can navigate by selecting the appropriate name and pressing the e key, or by double clicking with the mouse. The name of the current directory is displayed above the box at the left. When the program is loaded, the default directory is the directory where the Jukebox program is located.

The box at the right of the screen, entitled *Files to Play*, displays the selection of files that will be played.

To Create a Selection of Music Files

To create a selection of music files, go to any directory containing MIDI (.MID) files or digitized sound (.WAV) files, highlight the file and click the Select Item button, or press a-I, or press e, or double click with the mouse, for each music file you wish to add to the selection. As each music file is selected, its DOS file name will be displayed in the *Files to Play* box at the right of the screen in its order of selection. You may select as many music files as you wish. If you want to add a CD track, choose CD Track to Play from the List menu at the top of the screen.

To Remove Music Files from the Selection

The box at the right of the screen displays the list of music files contained in the selection you have made. To remove a music file from the selection, highlight its name and click the Delete Item button, or press a-D, or press e, or double click with the mouse.

To Clear a Music File Selection

To remove all the music files contained in the selection at once, simply click the Delete All button, or press a-A.

To Save a Music File Selection

To save a music file selection you just created:

1. Choose the Save As command from the File menu. A dialog box will open on the screen prompting you to name your selection file.

2. Enter the name you want for your selection file, making sure you specify .JUK as the DOS extension. The default selection file furnished with the Jukebox program is entitled DEMODOS1.JUK or DEMOWIN1.JUK.

3. If necessary, change the current directory, subdirectory and/or drive using the directory paths.

4. Click OK or press e to confirm your choice. The selection file will be saved under the name you have entered.

To save changes you made to a selection file already named:

- Choose the Save command from the File menu. If the selection file has already been named, it will automatically be saved. If not, the program will open the Save As dialog box prompting you to name your selection file (see above).

To Open a Music File Selection

To open an existing selection file:

1. Choose the Open command from the File menu. A dialog box will open on the screen listing the .JUK files in the current directory.

2. Choose a .JUK file from this list, or open another directory, subdirectory and/or drive and choose a .JUK file from that directory. You can also type the file name directly into the edit field.

3. Click OK or press e to confirm your choice. This will close any open selection file to make room for the new one.

To create a new selection file:

1. Choose the New command from the File menu. This will close any open file and will open an empty and untitled selection file.

2. Create your selection of music files as explained above.

3. Save your music file selection under a new name with the Save As command from the File menu (see above).

Playing Music Files

The commands for playing back music files are found in the *Control* bar located at the upper right corner of the screen, and in the Control menu. The standard playback buttons can be activated by using the following method:

- Using a mouse: Click the button command you want with the mouse.

To Play Music Files

To play your selection of music files, activate the Play button (), or press a-P. Each music file in the *Files to Play* list will be played in order. Once the music begins

playing, the name of the music file currently playing is highlighted in the list. If you highlight a music file in the *Files to Play* list prior to activating the Play button, then the list will be played from the highlighted music file (the previous music files will be played at the end however).

To repeat continuously the playback of your selection of music files, choose Repeat from the Options menu.

To play and repeat continuously your selection of music files in a random order, choose Shuffle from the Options menu.

To Stop Playback

To stop music playback, activate the Stop button (), or press a-S.

To Pause and Resume Playback

To pause music playback, activate the Pause button (), or press a-U. When the music pauses, the Pause button is grayed out.

To continue music playback at the exact place where it stopped, re-activate the Pause button. Once the music starts up again, the Pause button is no longer grayed out.

To Scan Music Files

To skip to the next music file during playback, activate the Next button (), or press a-N. This will immediately start the next music file in the selection list if there are any left.

To return to the previous music file during playback, activate the Previous button (), or press a-R. This will immediately start the previous music file.

Asking for Help

When you choose the Help command from the Help menu, a window opens up on the screen containing summarized information on how to operate the Jukebox program and how to use the various features.

Choosing the About command from the Help menu opens a window giving the date and version number of the Jukebox program.

Exiting the Jukebox Program

To leave the program and return to DOS, use one of the following methods:

- Activate the Exit command from the File menu.

  OR

- Click on the System menu box at the upper left corner of the window and activate the Close command.

PLAYMIDI Utility

The PLAYMIDI utility is a small program that allows the user to play MIDI files from the DOS command line or from a batch file.

The format of the command running the PLAYMIDI utility is the following:

```
PLAYMIDI <FileName>.MID
```

Where <FileName> is the complete name (including drive and path) of the MIDI file (.MID) to be played, i.e.:

```
PLAYMIDI C:\TRXPRO\MIDI\BLUES.MID
```

If you enter "**PLAYMIDI**" alone, the program displays help lines giving summarized information on program parameters.

PLAYWAVE Utility

The PLAYWAVE utility is a small program that allows to play back digitized sound files (recorded in the .WAV format) from the DOS command line or from a batch file. The program features direct-to-disk capabilities that allows playing unlimited file size.

The format of the command running the PLAYWAVE utility is the following:

```
PLAYWAVE <FileName>.WAV
```

Where <FileName> is the complete name (including drive and path) of the digitized sound file (.WAV) to be played, i.e.:

```
PLAYWAVE C:\TRXPRO\WAVE\INTRO.WAV
```

If you enter "**PLAYWAVE**" alone, the program displays help lines giving summarized information on program parameters.

Appendix A

Troubleshooting

In this appendix, you will find solutions to problems you may encounter when installing and using the Audiotrix Pro Card. The following list of usual problems is addressed in detail afterwards.

Usual Problems

1. The Setup utility seems to indicate that the Audiotrix Pro card is properly installed but does not produce any sound.
2. When trying to save a sample created with a sampling program, the computer locks up.
3. The serial mouse does not work properly with the Audiotrix Pro card installed.
4. The FM synthesis, MIDI, or sampling does not work.
5. When running software for the Audiotrix Pro card, the computer hangs.
6. The FM synthesis and the digital sampling work fine, but the MIDI does not work.
7. The joystick does not work.
8. Hard disk or floppy disk does not work when the Audiotrix Pro card is present in the computer.
9. When recording with a microphone, the level is too low.
10. The sound is distorted when recording from a CD player or other electronic audio device.

1. Problem:

The Setup utility seems to indicate that the Audiotrix Pro card is properly installed but does not produce any sound.

Possible cause:

- The headphones, external speakers or stereo system are incorrectly connected.
- The volume in the mixer is set too low.
- There is no musical program running.

Solution:

- Make sure that all connectors are securely inserted.
- Disconnect any external loudspeaker or stereo system and try the card with headphones.
- Open the mixer (type `MIXERPRO` from `C:\TRXPRO`) and make sure that the volume is set high enough.
- Type `TEST` from the `C:\TRXPRO` directory to check the new settings.

2. Problem:

When trying to save a sample created with a sampling program, the computer locks up.

Possible cause:

- The controller card for the hard disk is using the same DMA channel as the Audiotrix Pro card.

Solution:

- Run the Setup utility (type SETUPPRO from \TRXPRO) and change the setting of the DMA channel for the wave part of the card. (Be aware that DMA channel 3 is frequently used by the hard drive controller card.)

3. Problem:

The serial mouse does not work properly with the Audiotrix Pro card installed.

Possible cause:

- The serial mouse is using the same interrupt line as the Audiotrix Pro card.

Solution:

- Run the Setup utility (type SETUPPRO from \TRXPRO), then change the IRQ interrupts. Note that COM2, which is used quite often by a mouse or a modem, is frequently assigned to IRQ3, and COM1 to IRQ4.

4. Problem:

The FM synthesis, MIDI, or sampling does not work.

Possible cause:

- This problem could be caused by a parallel printer port which is using hardware IRQ7. The Audiotrix Pro card can share this interrupt with the parallel printer in most cases. However, on some PCs the

parallel port may prevent the Audiotrix Pro card from receiving this interrupt.

Solution:

- Run the Setup utility (type SETUPPRO from \TRXPRO), then change the IRQ interrupts.

5. Problem:

When running software for the Audiotrix Pro card, the computer hangs.

Possible cause:

- This could be caused by an interrupt or port address conflict with another board.

Solution:

- Remove the drivers for all the boards, and reinstall them one by one, trying the application every time until the conflict occurs.

6. Problem:

The FM synthesis and the digital sampling work fine, but the MIDI does not work.

Possible cause:

- The software does not support the MIDI interface.
- The joystick selector jumpers are not set properly.
- The MIDI cables are not properly connected.
- The MIDI interface is not set to the proper port address or interrupt.
- The appropriate drivers are not loaded.

Solution:

- Make sure that the MIDI software does support the Audiotrix Pro card. If not certain, you should contact the manufacturer.
- Set the joystick selector jumpers in the “single joystick with MIDI” position. Refer to the section “Hardware Installation: Hardware Configuration Settings” in Chapter 3, for the complete procedure.
- The MIDI cables should not be inverted, the MIDI Out of the interface must go into the MIDI In of the device, and vice versa.
- If the port address or interrupts must be changed, run the Setup utility.
- Make sure that the appropriate drivers are loaded for the MIDI application.

7. Problem:

The joystick does not work.

Possible cause:

- The joystick selector jumpers on the Audiotrix Pro card are improperly set.
- You are trying to use a joystick with another game card.
- You are trying to use the game port on the Audiotrix Pro card with another game card installed.

Solution:

- Set the joystick selector jumpers in the position corresponding to the joystick (single or dual) you are using. Refer to the section "Hardware Installation: Hardware Configuration Settings" in Chapter 3, for the complete procedure.
- If you want to use your former game card, you must disable the game port on the Audiotrix Pro card. To do this, run the Setup utility (type `SETUPPRO` from `\TRXPRO`), then set the *Game Port* parameter to "Disabled."
- Should you want to use the game port on the Audiotrix Pro card, then you should remove the conflicting game card or disable it if possible.

8. Problem:

Hard disk or floppy disk does not work when the Audiotrix Pro card is present in the computer.

Possible cause:

- The hard disk or floppy disk is using the same DMA channel as the Audiotrix Pro card.

Solution:

- To change a DMA channel used by the Audiotrix Pro card, run the Setup utility (type SETUPPRO from \TRXPRO) and set the appropriate parameter. If no DMA channels are available for the Audiotrix Pro card, you can choose a configuration that lets you use the audio and the SCSI (CD-ROM) by interrupt.

9. Problem:

When recording with a microphone, the level is too low.

Possible cause:

- The microphone is not properly connected or it is connected to the wrong connector on the card.
- The microphone input impedance of the Audiotrix Pro card is 10 KΩ. The dynamic microphone used should have a maximum impedance of 10 KΩ otherwise you may lose too much input due to an impedance mismatch.

NOTE: *The* ***impedance*** *is the equivalent of the electrical resistance in a circuit. The impedance of the source should be smaller than the impedance of the input it is feeding, in order not to reduce the voltage involved, thus the output level.*

- The microphone input level is too low.

Solution:

- Make sure that the microphone is correctly plugged into the microphone input on the card (No. 3 on Figure 1, page 11), and not the auxiliary input (No. 4) nor the audio output (No. 5).
- If possible, try another microphone.
- Go into the input mixer (Audiotrix Pro Input Mixer for Windows) and increase the microphone input level. You may also check the *Boost* option. When checked, this option adds 20 dB additional gain to the microphone input.

10. Problem:

The sound is distorted when recording from a CD player or other electronic audio device.

Possible cause:

- The output of the audio device is plugged into the microphone input rather than the auxiliary input.
- The input level is set too high.

Solution:

- Make sure that the audio device is correctly plugged into the auxiliary input on the card (No. 4 on Figure 1, page 11), and not the microphone input (No. 3) nor the audio output (No. 5).
- Go into the input mixer (Audiotrix Pro Input Mixer for Windows) and decrease the CD input level.

Technical Support

Each Audiotrix Pro card is systematically checked prior to shipping in order to ensure that it is free from technical problems. However, if you encounter a problem that you are not able to solve after following the directions in this guide, do not hesitate to call our technical support department. Our technical support number is: (800) 820-TRIX. You will need the following information on hand when you call:

- the serial number located on the back of your Audiotrix Pro card;
- this User's Guide.

Appendix B

Technical Specifications

In this appendix, you will find a general reference guide that details the capabilities of the Audiotrix Pro card, and the parameter values of its different components.

Stereo Wave Table and FM Synthesizer by Yamaha

- **Wave Table Synthesizer**
- Stereo output of up to 24 simultaneous Wave Table voices with 16 levels of pan for each voice
- Sampling frequency of voice data is 44.1 KHz
- Waveform data length is 8-, 12- or 16-bit
- 2 megabytes ROM standard general MIDI voice bank including 128 melodic sound and 47 percussive sounds

- **Advanced Algorithm FM Synthesizer**
- Stereo sound generators
- Register compatible with YM3812 synthesizer LSI
- 18 simultaneous instrument sounds, or 15 instruments and 5 drum sounds
- Eight modulation waveforms
- Four additional algorithms

- Low frequency oscillator (LFO) for vibrato and tremolo effects
- Two programmable timers
- Faster register access than YM3812 with an architecture that is optimized for the new PC BUS
- CMOS low power technology

Stereo Digital-to-Audio Converter by Yamaha

- **YAC513 stereo serial 16-bit DAC**

Stereo Multimedia Audio 16-bit Codec by Crystal

- **CS4231 Parallel Interface, Multimedia Audio Codec**
- Stereo 16-bit audio record
- Stereo 16-bit audio playback
- Selectable PCM (16-bit) or compressed ADPCM (4-bit) modes with 4:1 compression on record and playback
- Supports variable sampling rates (44.1 KHz, 22.05 KHz, 11.025 KHz, 5.5125 KHz, and 12 other)
- 16 byte FIFO’s on record and playback channels
- Selectable CPU (polling interrupt) mode and DMA mode
- One or two DMA channels (for multiplexed stereo data path or individual DMA assigned to the L and R channels)
- Hardware timers for audio/visual synchronization

- Software selectable DMA (0, 1, 2, 3) and IRQ (3, 4, 5, 7, 9, 10, 11, 12, 15)
- Selectable I/O addresses (530, 604, E80, F40)
- CMOS low power technology

Standard IRQ Usage

An IRQ (interrupt request line) is a signal path that leads from a hardware device through an interrupt controller to the CPU. For example, the keyboard generates an IRQ every time you press or release a key. The following is a list of standard IRQ assignments for IBM AT compatible computers.

AT (80286, 386 and 486 Computers)

IRQ	Usage
0	System Timer
1	Keyboard
2	Cascade IRQ8 Through IRQ15
3	COM2 (selectable for SB)
4	COM1 (selectable for SB)
5	LPT2 (selectable for SB)
6	Floppy-Disk Controller
7	**LPT1 (sharable) (selectable for SB, Wave) (SB default)**
8	Real Time Clock
9	**Redirected as IRQ2 (selectable for Wave) (Wave default)**
10	Available (selectable for Wave)
11	Available (selectable for Wave)
12	Available (PS/2 Mouse)
13	Math Coprocessor
14	Hard-Disk Controller
15	Unassigned

Standard I/O Ports

I/O addresses are the pathways the CPU uses to communicate with peripheral devices and controllers. Most of the available I/O ports are reserved for standard assignments to such devices as the keyboard, timers, and video cards. Add-in sound cards that need I/O addresses have only a few from which to choose. The following is a partial list of the standard I/O port assignment for sound cards on IBM compatible computers.

AT (80286, 386 and 486 Computers)

	I/O Address	**Usage**
Sound Blaster	200	Selectable for SB
	210	Selectable for SB
	220	**Selectable for SB (Default)**
	230	Selectable for SB
	240	Selectable for SB
	250	Selectable for SB
	260	Selectable for SB
	270	Selectable for SB
MIDI	**330**	**Selectable for MPU-401 (Default)**
	370	Selectable for MPU-401
	3B0	Selectable for MPU-401
	3F0	Selectable for MPU-401
Wave	**530**	**Selectable for Wave (Default)**
	604	Selectable for Wave
	E80	Selectable for Wave
	F40	Selectable for Wave

Appendix E

Standard DMA Usage

The DMA (direct memory access) controller is used to move blocks of data quickly from one memory address to another or between memory and an I/O port without going through the computer's CPU. An XT compatible computer has four DMA channels, of which three are reserved by the system. An AT compatible computer has eight DMA channels and reserves only two for the standard system. The following is a list of the standard DMA assignments for IBM AT compatible computers.

AT (80286, 386 and 486 Computers)

DMA Channel	Usage
0	Selectable for Wave
1	**Selectable for SB, Wave (SB default)**
2	Floppy-Disk Controller
3	**Selectable for SB, Wave (Wave default)**
4	Cascade DMA0 Through DMA3
5	Unassigned
6	Unassigned
7	Unassigned

General MIDI Patches

1 Acoustic Grand Piano
2 Bright Acoustic Piano
3 Electric Grand Piano
4 Honky-Tonk Piano
5 Electric Piano 1
6 Electric Piano
7 Hapsichord
8 Clavi
9 Celesta
10 Glockenspiel
11 Music Box
12 Vibraphone
13 Marimba
14 Xylophone
15 Tubular Bells
16 Dulcimer
17 Drawbar Organ
18 Percussive Organ
19 Rock Organ
20 Church Organ
21 Reed Organ
22 Accordion
23 Harmonica
24 Tango Accordion
25 Acoustic Guitar (Nylon)
26 Acoustic Guitar (steel)
27 Acoustic Guitar (Jazz)
28 Acoustic Guitar (Clean)
29 Acoustic Guitar (Muted)
30 Overdriver Guitar
31 Distortion Guitar
32 Guitar Harmonics
33 Acoustic Bass
34 Electric Bass (Finger)
35 Electric Bass (Pick)
36 Fretless Bass
37 Slap Bass 1
38 Slap Bass 2
39 Synth Bass 1
40 Synth Bass 2
41 Violin
42 Viola
43 Cello
44 Contrabass
45 Tremolo Strings
46 Pizzicato Strings
47 Orchestral Harp
48 Timpani
49 String Ensemble 1
50 String Ensemble 2
51 Synth Strings 1
52 Synth Strings 2
53 Choir Aahs
54 Voice Oohs
55 Synth Voice
56 Orchestra Hit
57 Trumpet
58 Trombone
59 Tuba
60 Muted Trumpet
61 French Horn
62 Brass Section
63 Synth Brass 1
64 Synth Brass 2
65 Soprano Sax
66 Alto Sax
67 Tenor Sax
68 Baritone Sax
69 Oboe
70 English Horn

71 Bassoon
72 Clarinet
73 Piccolo
74 Flute
75 Recorder
76 Pan Flute
77 Blown Bottle
78 Shakuhachi
79 Whistle
80 Ocarina
81 Lead 1 (Square)
82 Lead 2 (Sawtooth)
83 Lead 3 (Calliope)
84 Lead 4 (Chiff)
85 Lead 5 (Charang)
86 Lead 6 (Voice)
87 Lead 7 (Fifths)
88 Lead 8 (Bass + Reed)
89 Pad 1 (New Age)
90 Pad 2 (Warm)
91 Pad 3 (Polysynth)
92 Pad 4 (Choir)
93 Pad 5 (Bowed)
94 Pad 6 (Metallic)
95 Pad 7 (Halo)
96 Pad 8 (Sweep)
97 FX1 (Rain)
98 FX2 (Soundtrack)
99 FX3 (Crystal)
100 FX4 (Atmosphere)
101 FX5 (Brightness)
102 FX6 (Goblins)
103 FX7 (Echoes)
104 FX8 (Sci-Fi)
105 Sitar
106 Banjo
107 Shamisen
108 Koto
109 Kalimba
110 Bagpipe
111 Fiddle
112 Shanai
113 Tinkle Bell
114 Agogo
115 Steel Drums
116 Woodblock
117 Taiko Drum
118 Melodic Tom
119 Synth Drum
120 Reverse Cymbal
121 Guitar Fret Noise
122 Breath Noise
123 Seashore
124 Bird Tweet
125 Telephone Ring
126 Helicopter
127 Applause
128 Gunshot

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