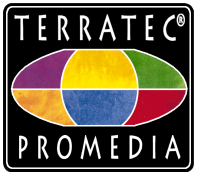
Base Series

Manual



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Preface.

Congratulations.

On your decision to buy a TerraTec sound card - and join the steadily growing group of quality-conscious multimedia users. You have made the right choice, and you will find that this User Guide contains the information you need to get your Base Series sound card up and running in the shortest possible time. We know that no-one enjoys ploughing through manuals (we certainly don't), so a quick-reference guide has been included for experienced users. Remember, though, that it might be worthwhile glancing through the rest of the User Guide, particularly if you run into difficulties or if a problem arises, or simply if you would like some background facts and figures. You never know what useful snippets of information you might find.

Enjoy your Base Series product!

Your Terratec team

Introduction.

This chapter will give you a clear overview of the differences between the various Base Series products.

SoundSystem Base1.

The SoundSystem Base64 is a sound card for the ISA bus. Its state-of-the-art chip technology places it right in step with the latest BIOS and operating-system developments. This is ensured by “Plug and Play” technology. Your PnP BIOS and/or WIN95 automatically recognizes and configures the sound card in your system. IRQ, DMA or I/O address conflicts are thus a thing of the past. Even if you are running a less than cutting-edge system, you will find that the wholly software-controlled procedure makes installation a lot easier.

Digital audio recording and playback are largely the job of the very-large-scale-integrated CODEC. You can record and play back in stereo at sampler frequencies up to a maximum 55.2 kHz, with 16 bit resolution. The card also offers enhanced full duplex capability, in other words you can record and play back simultaneously at different frequencies. This is a feature you can use for computer-aided telephony applications (such as InternetPhone) or multi-track hard-disk recording. VSpace 3D Sound simulates all-around sound using two loudspeakers, an acoustic experience that you won’t want to miss.

The Base 1 SoundSystem is equipped with a radio connector and a Waveblaster-compatible expansion port. The radio connector may be used for the optional Terratec ActiveRadio upgrade module for FM stereo reception with complete RDS support.

The Waveblaster-compatible port also permits the upgrade of the SoundSystem Base 1 to a fully functional wavetable sound card. The MPU-401-compatible interface naturally also ensures full General MIDI (GM) compatibility under DOS.

Games are also pure pleasure with compatibility to Adlib, Soundblaster and SoundblasterPro standards and an interface for two joysticks (optional Y-cable required). In addition, the sound card offers MIDI In/Out (gameport), as well as a LINE-In and MIC-In. A jumper (JP1) can be used to set the output to amplified or non-amplified modes, permitting the use of the sound card with passive or active loudspeakers, or with a stereo amplifier.

To install the SoundSystem Base 1 (hardware), please continue with the chapter “General hardware installation” on page 35

SoundSystem Base64.

The SoundSystem Base 64 consists of a SoundSystem Base 1 and a Wavesystem 64.

A genuinely unique feature of the Base 64 is its support for a high-grade (hardware) wavetable synthesizer from Dream. The outstanding points of this wavetable are its close to 300 sounds and an integrated effects processor for distortion-free music playback. You can use special MIDI signals for flexible programming of the wavetable's built-in effects processor. For further details, see the Wavetable & MIDI User Guide.

The effects include 8 echo and chorus types, as well as an additional parameterizable 4-band equalizer. The integrated MPU-401 interface ensures full GM compatibility under DOS as well.

Games are also pure pleasure, with compatibility to Adlib, Soundblaster and SoundblasterPro standards and an interface for two joysticks (optional Y-cable required). In addition, the sound card offers MIDI In/Out (gameport), as well as a LINE-In and MIC-In. A jumper can be used to set the output to amplified or non-amplified modes, permitting the use of the sound card with passive or active loudspeakers, or with a stereo amplifier.

To install the SoundSystem Base 64 (hardware), please continue with the chapter "Wavetable" on page 43.

ReceiverSystem ActiveRadio upgrade.

SoundSystem BaseStation (Base 1 + ActiveRadio upgrade)

SoundSystem BaseStation 64 (Base 64 + ActiveRadio upgrade)

You're always "on the air" with our ActiveRadio upgrade module. It includes RDS (RadioDataSystem) so that you can actually see which station you're tuned into and the track that's being played. Its range of user interfaces, from an antique tube radio to a modern tuner, presents the full range of ActiveRadio functions in a clear and intuitive manner. Store up to 40 of your favorite stations for instant access, or use the scan function instead of tedious hand tuning.

If you purchased the ActiveRadio upgrade module together with the SoundSystem Base 1 or Base 64, or you would like to upgrade these systems with the ActiveRadio module at a later date, please read the chapter "ActiveRadio upgrade" on page 52 first and continue with either the introduction to the SoundSystem Base 1 on page 9 or the SoundSystem Base 64 on page 10 as appropriate.

Technical data.

SoundSystem Base1.

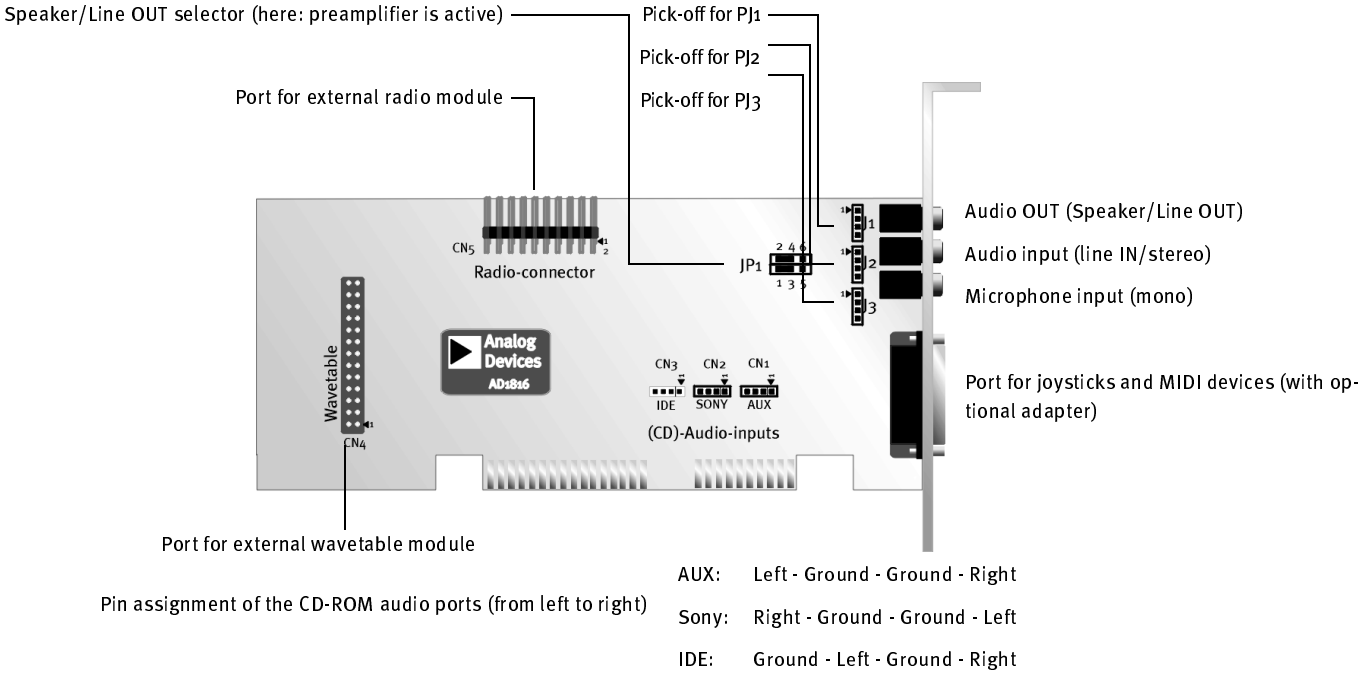

Figure 1: SoundSystem Base1 sound card.

Compatible with the following standards.

- Plug and Play
- General MIDI (GM)
- MPU-401™ (UART mode)
- Adlib™
- SoundBlaster™
- SoundBlasterPro™
- Multimedia PC (MPC Level II)
- DirectX™ (Direct Sound)

Audio features.

- 8/16-bit audio stereo/mono for hardware-supported recording and playback with 4 kHz – 55.2 kHz
- Simultaneous enhanced full duplex recording and playback (Dual DMA)
- 4-bit hardware compression ADPCM
- Record and playback all audio sources
- VSpace™ for realistic 3D sound
- MPC Level III mixer

FM synthesizer.

- OPL3-compatible FM synthesizer
- 20 parts, stereo

Stereo digital / analog mixer.

Mix a wide variety of audio sources:

- CD audio
- MIC in
- LINE in
- Digital Audio (.wav)
- FM synthesizer (OPL3)
- ActiveRadio upgrade module
- Wavetable

MIDI interface.

- MPU-401™ MIDI interface (UART mode)
- Standard Soundblaster™ MIDI interface
- 64-byte FIFO
- Duplex MIDI interface for simultaneous record & playback gameport
- Supports max. two standard PC joysticks (requires Y-adapter)

Radio Connector.

- Adapter for optional TerraTec ActiveRadio upgrade module (FM stereo RDS tuner)

WaveBlaster™ compatible port.

- Compatible to all TerraTec WaveSystems
- Compatible to most wavetable upgrades from other manufacturers (WaveBlaster™ pin-compatible)

Onboard amplifier.

- Stereo amplifier for headphones or passive loudspeakers 2 x 1 watt

Driver support.

- MS-DOS™ 5.0 or higher
- Windows™ 3.1x
- Windows™ 95
- Windows™ NT 4.0
- OS/2 Warp™ 4

Scope of delivery.

- Sound card
- CD-ROM containing drivers, software and multilingual documentation
- Quick reference guide (multilingual)
- Registration card

System requirements.

- IBM™ PC AT, 386, 486 or higher
- 480 kb RAM for DOS installation
- 4 MB RAM for Windows applications
- VGA or SVGA
- MS-DOS™ 5.0 or higher
- Windows™ 3.1 or higher
- Free 16-bit ISA slot

SoundSystem Base64.

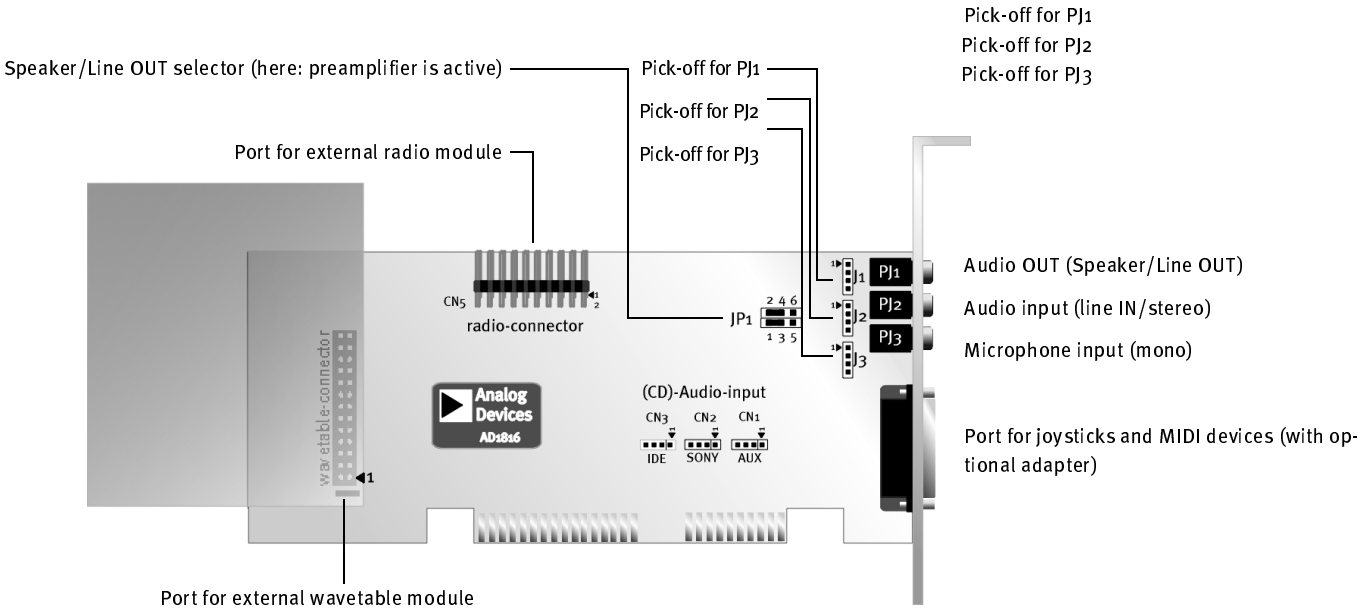

Figure 2: SoundSystem Base64

Compatible with the following standards.

- Plug and Play
- General MIDI (GM)
- MPU-401™ (UART mode)
- Adlib™
- SoundBlaster™
- SoundBlasterPro™
- Multimedia PC (MPC Level II)
- DirectX™ (Direct Sound)

Audio features.

- 8/16-bit audio stereo/mono for hardware-supported recording and playback with 4 kHz – 55.2 kHz
- Simultaneous enhanced full duplex recording and playback (Dual DMA)
- 4-bit hardware compression ADPCM
- Record and playback all audio sources
- VSpace™ for realistic 3D sound
- MPC Level III mixer

FM synthesizer.

- OPL3-compatible FM synthesizer
- 20 parts, stereo

Stereo digital / analog mixer.

Mix a wide variety of audio sources:

- CD audio
- MIC in
- LINE in
- Digital Audio (.wav)
- FM synthesizer (OPL3)
- ActiveRadio upgrade module
- Wavetable

Wavetable.

- (Hardware) synthesizer with 8 Mbit (1MB) ROM
- 287 sounds (incl. variants) + 8 drumkits (incl. 1 SFX kit)
- 64 DSP slots, divided into 48 (hardware) parts and effects processor
- 16-way MIDI multimode (all-channel reception)
- Cutting-edge DAC technology
- MIDI-controllable effects processor

Multi-effects processor.

- MIDI-programmable, wavetable only
- 8 echo types (reverb, echo)
- 8 chorus types
- 4-band parameterizable equalizer (450 Hz, 900 Hz, 4 kHz, 9 kHz; +/- 12 dB)

MIDI interface.

- MPU-401™ MIDI interface (UART mode)
- Standard Soundblaster MIDI interface
- 64-byte FIFO
- Duplex MIDI interface for simultaneous record & playback gameport
- Supports max. two standard PC joysticks (requires Y-adapter)

Radio connector.

- Adapter for optional TerraTec ActiveRadio upgrade module (FM stereo RDS tuner)
- WaveBlaster™ compatible port
- Compatible to all TerraTec WaveSystems
- Compatible to most wavetable upgrades from other manufacturers (WaveBlaster™ pin-compatible)

Onboard amplifier.

- Stereo amplifier for headphones or passive loudspeakers 2 x 1 watt

Driver support.

- MS-DOS™ 5.0 or higher
- Windows™ 3.1x
- Windows™ 95
- Windows™ NT 4.0
- OS/2 Warp™ 4

Scope of delivery.

Sound card

Wavetable module

CD-ROM containing drivers, software and multilingual documentation

Quick reference guide (multilingual)

Registration card

System requirements.

- IBM™ PC AT, 386, 486 or higher
- 480 kb RAM for DOS installation
- 4 MB RAM for Windows applications
- VGA or SVGA
- MS-DOS™ 5.0 or higher
- Windows™ 3.1 or higher
- Free 16-bit ISA slot

ReceiverSystem ActiveRadio upgrade.

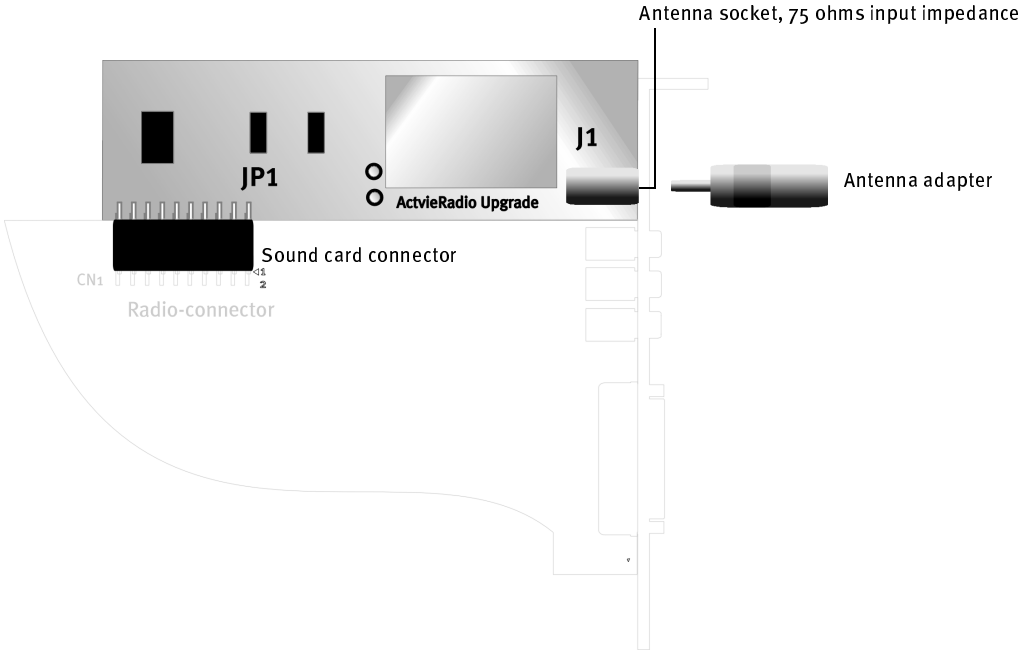

Figure 3: ReceiverSystem ActiveRadio upgrade.

FM tuner, suitable for cable reception. Frequency range: 87.5 - 108 MHz, 50 kHz tuning increments

- RDS (Radio Data System).
- Programmable increase in volume for traffic announcements
- Log file generation for RadioText
- RDS display of
    - Program name, Radio text, Program type
    - Traffic broadcast ID/announcement
    - Date and time (Clock Time)
- AFC (fuzzy-logic automatic frequency control), 12.5 kHz steps
- Attenuator switchable with a mouse click
- Stereo/mono switchable
- Search function
- 40 station memory slots
- Volume control
- Autostore function
- Timer function
- Dipole antenna included
- Plug&Play

Connecting external periphery.

The external peripheral devices you can connect to your sound card include loudspeakers or headphones, a CD-ROM drive, a MIDI keyboard, a microphone, a joystick and external audio unit (cassette recorder, CD player, tuner, mixer, etc.). You can also use an external wavetable module which conforms to the Waveblaster standard.

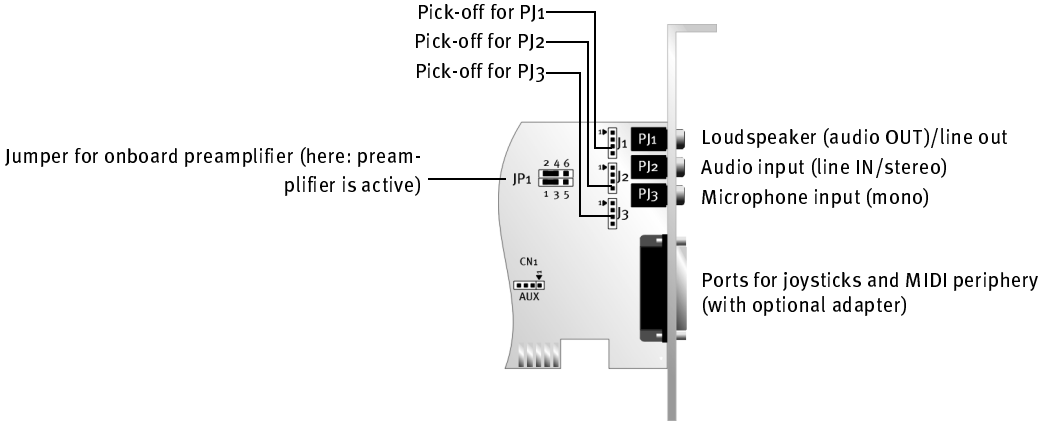

Figure 4: Description of jumpers.

Connecting passive or active loudspeakers.

You can connect passive loudspeakers/headphones or active loudspeakers/stereo system to the sound card output. Any external device such as headphones, passive or active loudspeakers or a stereo system can be connected to the output labeled “Speaker / LINE-OUT”. If you want to connect a stereo system or active loudspeakers - units with their own, built-in amplifiers, in other words - you must reset the jumper (J1) to deactivate the onboard preamplifier on the Base 64. Please refer to the quick reference guide for more details.

Connecting a microphone.

Use the input labeled “MIC” if you want to connect a microphone. (see also “Description of jumpers” on page 28) The input sensitivity is adequate for most mainstream commercially available capacitor-type and dynamic microphones.

Connecting an external audio source.

Use the input labeled “LINE-IN” for connecting external periphery such as a mixer, CD player, cassette recorder or similar. These external audio sources can be mixed with the internal audio sources using the software-driven mixer, or digitally recorded.

MIDI PORT.

You need a special cable, available as an optional extra under the name MIDI-KIT, to connect your sound card to a MIDI keyboard, an external synthesizer or an expander (this cable is included with the TerraTec keyboards). This cable connects to the game/MIDI port to provide a combination joystick, MIDI-IN and MIDI-OUT port.

Important: Use only the MIDI cable provided by the sound-card OEM.

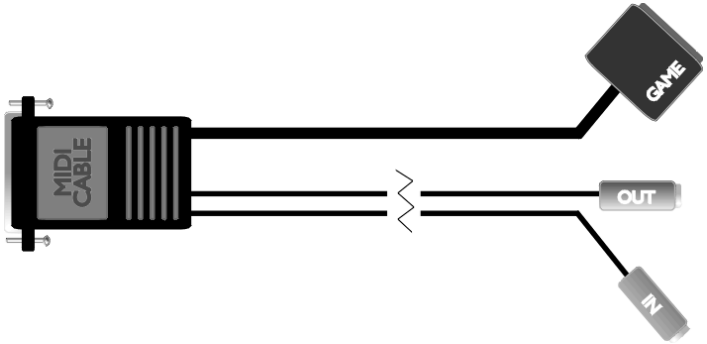

Figure 5: MIDI cable.

Connect your keyboard's MIDI Out port to the MIDI In port of the MIDI-KIT. Once connected in this way, you can use your keyboard to record music in a sequencer program. If you want to play back MIDI files via your external MIDI devices, connect the MIDI Out plug of the MIDI-KIT to the MIDI In socket of your expander, synthesizer or keyboard.

The port labeled "MIDI/Game" is a 15-pin socket to which you can also connect a joystick.

Connecting the joystick.

You can use this 15-pin socket to connect one or two analog joysticks. Bear in mind that you can have only one active joystick port in your PC configuration. If you want to use the port on your sound card you will have to deactivate any other joystick port in the system.

You can use a Y-adapter cable to connect two analog joysticks to a common port. This adapter assigns each of the two joystick channels to a separate connector.

Connecting the CD-ROM audio cable.

Connect the audio cable from your CD-ROM drive to one of the two audio inputs on the sound card. These ports are labeled CN3 and CN2. You can use the port labeled CN3 for most IDE CD-ROM drives. The CD-ROM drive should always be supplied complete with an audio cable. You will find more information in the user documentation you received with your CD-ROM drive and in the section entitled “Troubleshooting” in the Appendix of this User Guide.
(see also “SoundSystem Base1 card” on page 13)

About the hardware.

Internal connections.

The Base Series SoundSystems have several internal pick-offs for interconnecting signal lines between components in the computer.

Two of these internal pick-offs are the CD audio connections for Sony and IDE. This is where the internal audio output of the CD-ROM drive connects. The IDE signal assignment is now the established dominant audio configuration for most IDE drives (including Mitsumi). Each CD-ROM original equipment manufacturer has a free hand to some extent however, and assignments sometimes vary within a product line, so it is very important to read the user documentation you receive with the CD-ROM drive

The sound card has four more internal pick-offs which are connected in parallel with the sockets on the end panel. J1 corresponds to the speaker output, J2 corresponds to the LINE-IN socket and J3 corresponds to the MIC-IN socket. Bear in mind that you cannot use the internal and external input/output simultaneously (see figure).

Assigning the I/O addresses.

The sound card needs the I/O addresses from 2x0H to 2xEH, “x” being the digit 2 or 4 - depending on which base I/O address you selected for the sound card. If the value for the base I/O address is 220, “x” is automatically 2. If the base address is 240, “x” is automatically 4.

I/O table for FM synthesizer.

Port	Function	Status
2x0H	Register/status port (FM sound left)	Write/read
2x1H	Data port (FM sound left)	Read only
2x2H	Register/status port (FM right)	Write/read
2x3H	Data port (FM sound right)	Write only
2x4H	Register address port (mixer chip)	Write only
2x5H	Data port (mixer chip)	Write/read
2x8H	Data/status port (FM sound)	Write/read
2x9H	Register port (FM sound)	Write only

Table 1:

“x” corresponds to switch number 2 or 4, depending on the base I/O address selected for the sound card (in other words “2" for 220 or ”4" for 240).

MPU-401 I/O port.

Port	Function	Status
3x0	MPU-401 data	Write/read
3x1	MPU-401 status	Write/read

Table 2:

"x" stands for switch number 0, 2 or 3, depending on the MPU I/O port you selected: 0-300, 2-320, or 3-330.

Alternative I/O table for FM synthesizer.

Port	Function	Status
388H	Register/status port (FM sound left)	Write/read
389H	Data port (FM sound left)	Write only
38AH	Register/status port (FM right)	Write/read
38BH	Data port (FM sound right)	Write only

Table 3:

The purpose of this I/O port is to ensure compatibility with the AdLib sound card. It discharges the same functions as the port for the FM synthesizer described above.

General hardware installation.

Installation.

IMPORTANT. To maintain CE specifications, it is necessary either to use a joystick with a shielded cable or to place the supplied plastic cap on the gameport.

WARNING! Before opening the case, unplug the mains cable from the wall socket as well as from the PC.

Electrostatic discharge (ESD) can damage drives, circuit boards and other components. Perform the following steps at an ESD-safe workplace only. If such a workplace is not available, protect yourself against electrostatic discharge by wearing an antistatic wrist strap and attaching it to a metal part of the system case.

- Please note that simply opening the case will not void your warranty provided you do not modify the hardware inside. Upgrading the PC yourself may affect the warranty, however. Please consult your dealer beforehand.
- Switch off your PC and all connected periphery, in other words printer, monitor and so on. Leave the AC cord connected for the time being, so that your computer is still grounded.
- Touch the metal chassis at the rear of the PC to ground yourself and discharge static. Now unplug the cord from the AC mains socket.
- Remove the cover from the case of your PC.
- Look for a free 16-bit expansion slot, remove the screw holding the slot blanking plate and remove the plate. To ensure the optimal function of your sound card, look for a 16-bit expansion slot that is not immediately next to an already-installed card. Some cards, such as video adapters, can send out signals which can interfere with the sound card.

- Carefully remove the sound card from its packaging and pick it up by the edges with one hand while your other hand is resting on the metal of the PC case.
- This will ensure that your body is completely discharged via your computer without affecting the sound card. Do not touch the components of the card under any circumstances.
- Set the jumper (JP1) to deactivate the onboard amplifier if you are going to connect loudspeakers with integral amplifiers or your hifi stereo system to the sound card.
- Align the holder at the rear of the sound card in the expansion slot in such a way that the card's gold-colored connectors are directly in line with the slot's socket.
- Carefully seat the card in the slot. You might have to press the card firmly into the slot to make a good contact. Take care to ensure that the contacts are precisely in line, in order to avoid damaging the sound card or the mainboard in your PC.
- Insert and tighten the screw from the slot cover to secure the sound card in its slot.
- Connect the sound card and the CD-ROM drive with the audio cable (normally supplied together with the CD-ROM drive).
- Reinstall the cover of your PC case.
- Reconnect the mains cable as well as all other cables and turn your PC on.
- Please continue with the chapter "General driver installation" on page 37.

General driver installation.

NOTE: In the following instructions, ···⁘X⁘··· stands for the drive letter of your CD-ROM drive.

Installation instructions for DOS (without Windows 3.xx).

- Place the Base Series CD in your CD-ROM drive and go to the directory **X:\DRIVERS\DOS**.
- Start the INSTALL program by typing the word “INSTALL” and pressing Enter.
- When the program starts you are prompted to select your preferred language by entering the digit which corresponds to your choice.
- Confirm all subsequent prompts with “J” for “Ja” (yes) or by hitting the corresponding letter for your chosen language.
- Finish by restarting your system to load the Base Series drivers.

Installation instructions for Windows 3.xx and DOS.

- Click on the “File” menu in the Program Manager and select “Run”.
- Type **X:\DRIVERS\WIN31X\INSTALL** and confirm with Enter.
- When the program starts you are prompted to click on your preferred language.
- C onfirm all subsequent prompts by clicking on the OK button.
- Finish by restarting your system or Windows 3.xx to load the Base Series drivers.

Notes on MS-DOS.

After installing the Windows 3.xx or DOS drivers, you will find that the directory you specified in the installation process contains two files called MIX1816G.EXE and MIX1816T.EXE. The file MIX1816G.EXE allows you to access graphics-based mixer software on DOS level for regulating the various volumes. The file called MIX1816T.EXE is also a DOS mixer, but without the graphical user interface.

Installation instructions for WIN95 (not OSR2).

- Insert the Base Series CD and start Windows 95
- New hardware will be found: *"Terratec SoundSystem Base1"*.
- Select *"Driver from disk provided by hardware manufacturer"* and click *"OK"*.
- In the box with the title *"Install from disk"* enter the following path in the field *"Copy files from"*: **X:\DRIVERS\WIN95\ENGLISH**. Click *"OK"*.
- When prompted, insert your Windows 95 CD and click *"OK"*.
- An MPU-401-compatible device will be found in the next dialog box *"New hardware found"*. If the driver for this device has not yet been installed, insert your Windows 95 CD when prompted and click *"OK"*.
- In the next dialog box, enter the appropriate Windows 95 installation path in the *"Source"* field. Generally, this will be **X:\WIN95**. You also have the option of finding the correct directory using the *"Browse"* function. If the MPU-401-compatible device driver is already installed, no further steps are necessary.
- In the next step, the hardware component *"Gameport Joystick"* will be found.
- Continue with the installation of the gameport driver in the same manner as MPU-401 driver described above in the event that the driver is not already on the system. Otherwise, wait until the installation finishes automatically.

Installation instructions for WIN95 (new WIN95 version).

- Insert the Base Series CD in the CD-ROM drive and start Windows 95.
- The *"Update Device Driver Wizard"* will find a "TerraTec SoundSystem Base 1" and will ask for the associated drivers.
- Click on *"Continue"* and then on *"Other Location"*.
- Type **X:\DRIVERS\WIN95\ENGLISH** and click *"OK"*.
- In the next dialog box, click on *"Continue"*. In the dialog box *"Insert Disk"*, click *"OK"*.
- Inthe field *"Copy Files"* enter the following path for the *"Source"* **X:\DRIVERS\WIN95\ENGLISH**. Click *"OK"*.
- An MPU-401-compatible device will be found. In the *"Update Device Driver Wizard"* click on *"Continue"*. In the next dialog box, also click *"Continue"*.
- Proceed in the same manner for the following installation of the *"Gameport Joystick"* device.
- Next, a "TerraTec SoundSystem Base 1" (basic card of the Base 64) is found.
- Click on *"Continue"* and *"Other Location"*. In the field *"Other Location"*, type **X:\DRIVERS\WIN95\ENGLISH**.
- Click on *"OK"* and *"Continue"*. The installation is now complete.

Installation instructions for Windows NT 4.0.

- Insert the Base Series CD in the CD-ROM drive and start Windows NT 4.0.‹
- Click on the *"Start"* button on the taskbar, select *"Settings"*, followed by *"Control Panel"*. In the next Window, double-click on *"Multimedia"*.
- Click on the *"Devices"* tab and select *"Add"* in the following window.
- Select *"Unlisted or Updated Driver"* and click *"OK"*.
- Type **X:\DRIVERS\WINNT40\ENGLISH** and click *"OK"*. You can also find the correct directory using the *"Browse"* button.
- Select "TerraTec SoundSystem Base 1" and click *"OK"*.
- In the next dialog, *"Configure Analog Devices SoundComm"*, click *"Install"*.
- Restart Windows NT when prompted. The installation is complete.

Installation instructions for IBM OS/2 Warp 4.

- If you have not yet installed the *Multimedia Extensions*, please do so now as described in the OS/2 handbook.
- Open the OS/2 *System* folder on the desktop.
- Double-click on the *System Configuration* folder.
- Double-click on *Install/Remove*.
- Next, select *Install Multimedia Applications* and click *OK*.
- Place the Base Series CD in your CD-ROM drive and go to the directory **`X:\DRIVERS\OS2W40`**.
- Select the components that you would like to install (we recommend installing all components) and click on the *Install* button after making your selection.
- Confirm all of the following prompts with the *OK* button.
- After the installation is complete, perform a shutdown and restart your system.

Next, read the appropriate sections on software installation in the chapters “Wavetable” on page 43 and/or “ActiveRadio upgrade” on page 52 to install the software for these components.

Wavetable.

Hardware installation.

Holding the car at the edges only, remove it carefully from the antistatic bag. Do not touch the components or the rear of the card. Handle the wavetable piggyback card just as carefully. Very carefully, seat the wavetable piggyback card on adapter CN4 of the sound card. Make sure that the arrowed PIN1 on the parent board and the wavetable piggyback board are aligned.

Please refer to the online wavetable and MIDI Handbook for further important information pertaining to the hardware wavetable synthesizer.

Installing the software.

No additional software must be installed for this hardware wavetable synthesizer. The following points should be checked, however:

Windows 95.

Double-click on the *My Computer* folder on the Desktop. Next, double-click on the *Control Panel* folder. Find the *Multimedia* folder and open it with a double-click. A tab menu titled *"Multimedia Properties"* now appears. Click on the tab titled *MIDI*. Select the MIDI output in this window. Click on the entry *"SoundSystem Base 1 MPU-401 Compatible"* to instruct the system to play all MIDI files using the wavetable synthesizer. (see also "Multimedia Properties" on page 45)

To finish, click “Apply” followed by “OK”. Now open the System Mixer and check the “Wavetable” volume control to ensure that it is not muted. (see also “Master Volume” on page 46)

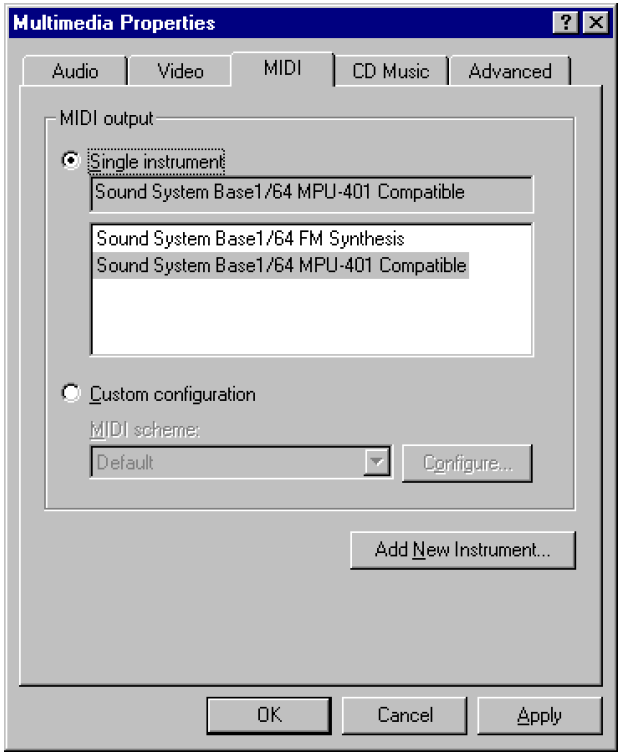

Figure 6: Multimedia Properties.

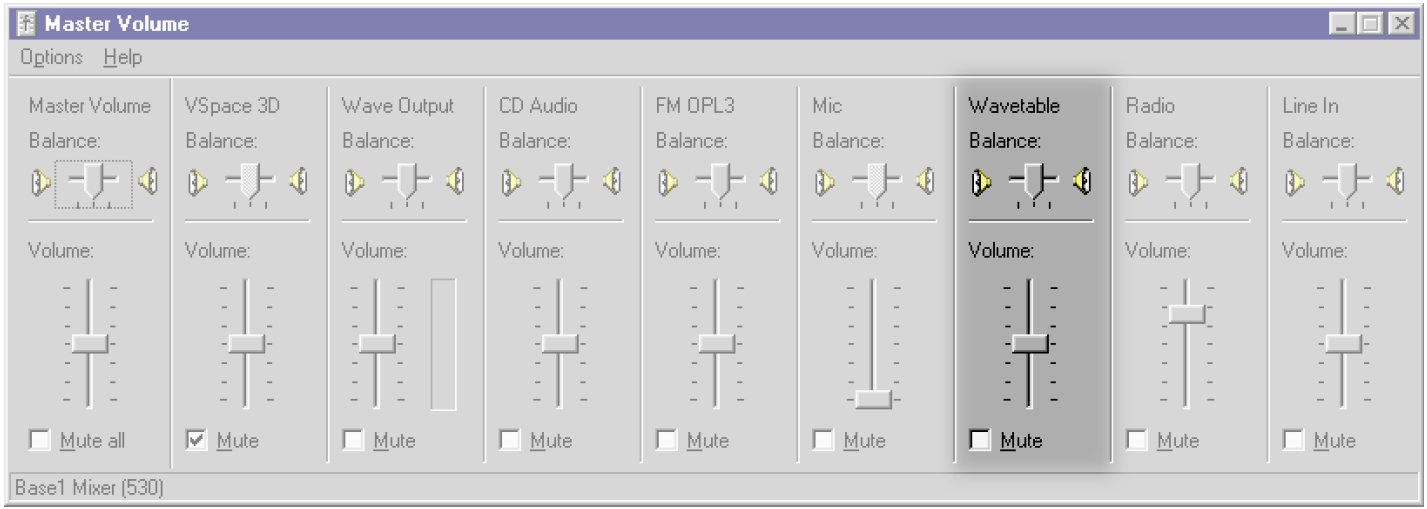

Figure 7: Master Volume.

Windows 3.x.

Double-click on the “*Main*” program group. Find the “*Control Panel*” icon and double-click it. Call up the “*MIDI Mapper*” and set “*General*” for setup. (see also “MIDI Mapper” on page 47)

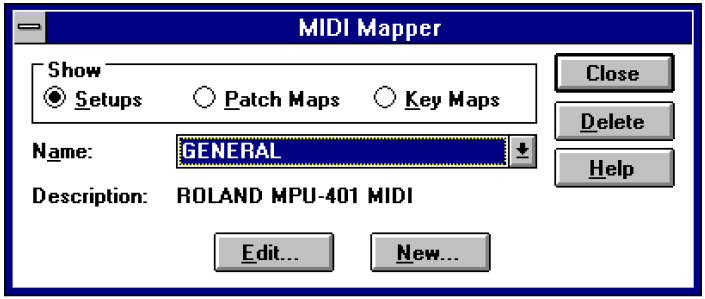

Figure 8: MIDI Mapper.

After installing the Media Rack, please ensure that MIDI Output is activated. (see also “Media Rack” onpage 48)

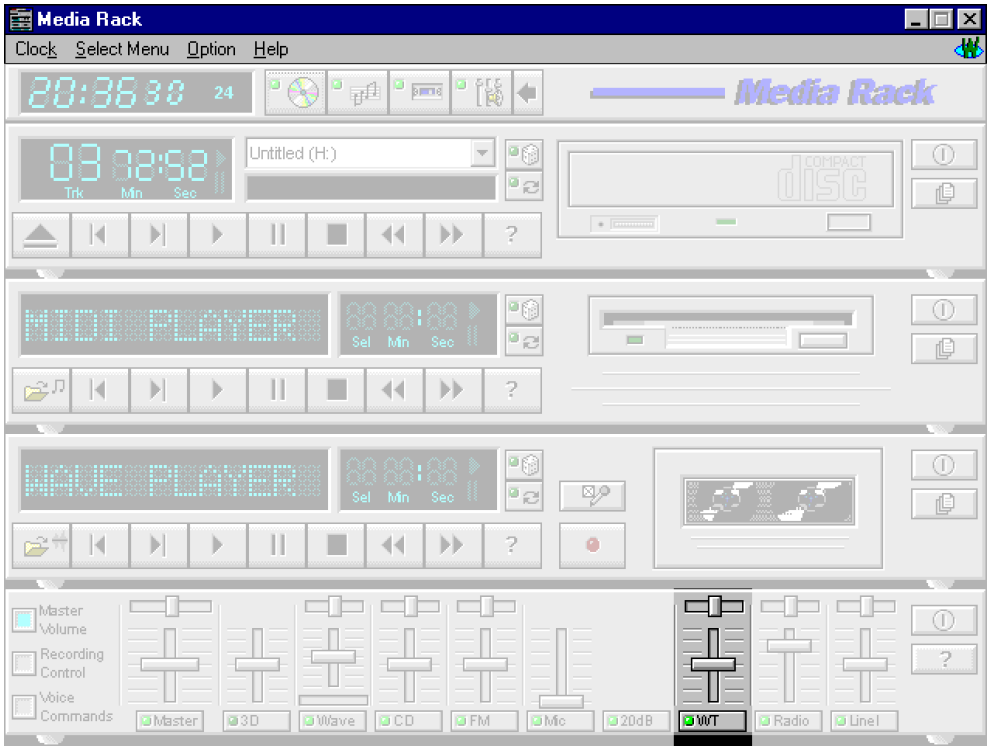

Figure 9: MediaRack.

Windows NT 4.0.

Double-click on the My Computer folder on the Desktop. Next, double-click on the Control Panel folder. Find the Multimedia folder and open it with a double-click. A tab menu titled “Multimedia Properties” now appears. Click on the tab titled MIDI. Select the MIDI output in this window. Click on the entry “MPU-401 Out” to instruct the system to play all MIDI files using the wavetable synthesizer. (see also “Multimedia Properties” on page 45)

Finally, click on “*Apply*” and “*OK*”.

Now open the System Mixer and check the “Wavetable” volume control to ensure that it is not muted. (see also “Master Volume” on page 46)

DOS.

The volume levels can be changed using a choice of DOS mixers. One is a graphical mixer, the other is command-line based. The graphical mixer can be started with mix1816g, the command-line mixer with mix1816t.

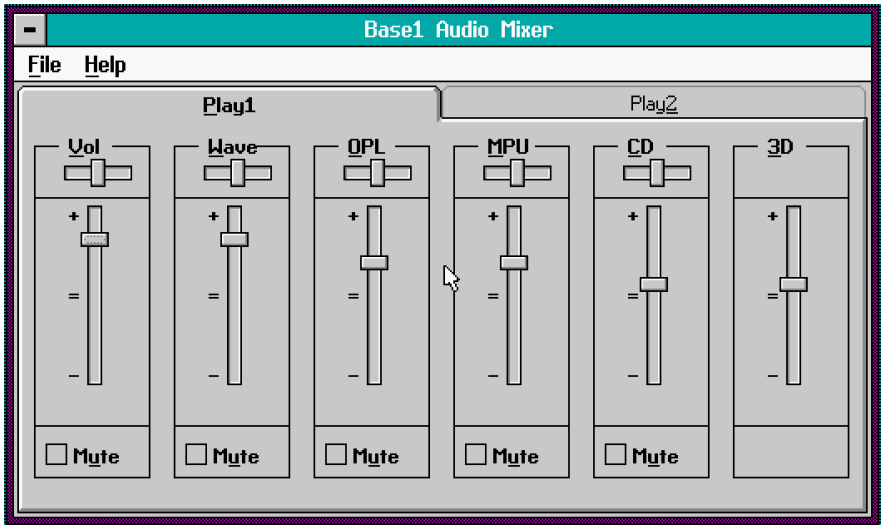

Figure 10: Graphical mixer.

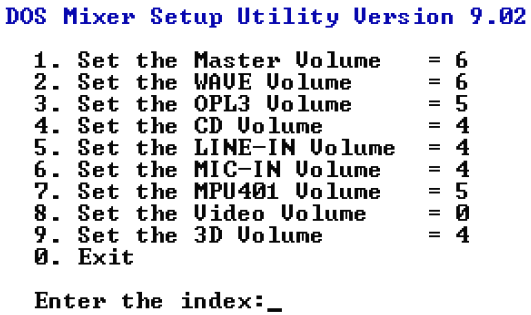

Figure 11: Command-line mixer.

OS/2 Warp 4:

You do not need to make any changes here.

ActiveRadio upgrade.

Hardware installation.

Use a blunt object (such as the blunt end of a pencil) to gently remove the cover from the sound card's antenna socket located next to the Audio Out socket. Insert the antenna socket of the radio module (without adapter attached) in the resulting opening in the sound card's slot bracket and attach the connector strip of the ActiveRadio upgrade module to the connector pin strip of the sound card. Ensure that the connector is properly seated and that the pins are all making contact.

Install the complete sound card as described in the "General Hardware Installation" section. Insert the slotted end of the antenna adapter (see diagram above) into the upgrade module antenna input. Connect the supplied antenna. For the best possible reception, position the antenna in the shape of a large "T", as high as possible and near a window. The antenna feeding line and the dipole should form a right angle if possible. Naturally, you can also use standard HF coaxial cable with 75W impedance to connect the card to the outlet of a cable network which supplies radio broadcasts.

Software installation.

Windows 95. Place the supplied Base Series CD-ROM in your CD drive. The Terratec CD-ROM user interface will start automatically. Select "*ActiveRadio*" and the software as well as the drivers for the ReceiverSystem ActiveRadio upgrade will be installed. Follow the instructions on the screen.

ActiveRadio software description.

The following chapter describes the ActiveRadio user interface:

Main window.

The basic functions of the radio are controlled from the main window: station memory, scanning and volume control. An additional display presents RDS information whenever the tuner identifies an *RDS station*. A click of the right mouse button opens a *pop-up menu* with which you can access further dialogs: *station dialog, timer dialog, options, RDS options*.

Bank.

Display of the current bank number.

AFC.

AFC (Automatic Frequency Control) is displayed whenever the tuner finds a station.

Stereo.

This indicates whether the broadcast is in stereo or mono.

Display.

A variety of status information is shown in the display field. The main field shows either the frequency or the name of the current station.

Tuning.

The frequency can be set using the tuning control:

1. Clicking on the arrow keys changes the frequency in either direction in 50 kHz increments.
2. Clicking on the scale causes the tuning control to jump directly to the corresponding frequency.

Station buttons.

Click on these buttons to jump directly to the preset stations. Double-click to edit the station name.

Bank selector switches.

The station memory is organized in 4 banks with 10 memory buttons each. Use the arrow keys to change banks. The current bank appears in the display.

Recording switch.

Use this switch to start a wave audio recording program.

The Windows Wave Recorder is called up by default. However, you can also associate your favorite wave recorder with this button by entering it into the **TTRADIO.INI** file in the [OPTIONS] section.

Example:

```
[OPTIONS]
RecordApp=C:\Path\exe yyy
```

<C:\Path\exe> must be replaced with the path and program file of your recording program. If your program supports command-line parameters, replace **<yyy>** with the appropriate parameters.

Mute switch.

Toggles between mute and active modes.

Volume control.

Use the slider to adjust the volume.

Store.

Use this key to assign the current frequency to a station button.

1. Click on "*Store*". "*No.?*" appears in the display.
2. Click on the station button to which you would like to assign the frequency. You can also change the station button bank first if you wish.
3. The station button switches to editing mode. Enter the name of the station.

Scanning switch.

Use the arrow keys to scan for the next station (with the current level setting). A message window is displayed if no station can be found.

Autoscan.

This key starts an automatic scan using the current level setting. After a warning message, the complete frequency band is scanned for stations. The stations found are assigned to the station buttons. Caution: this will delete the previous station button assignments!

Level.

Level is used to set the scanning sensitivity. It can be changed by clicking on the level field of the display.

Local / DX switch.

In some cases, reception may be distorted if you have a very powerful radio signal. The signal can be attenuated in the local mode. Use the DX mode for normal reception.

Stereo mode.

If mono is selected, all stations will be presented in mono. All stations broadcasting in stereo will be presented accordingly in stereo mode.

RDS display.

RadioText (RT).

RadioText is displayed here. Click on the RadioText display to expand it and display the previous two lines of RadioText. A single click restores the display to its normal state.

RDS signal strength.

This value is an indication of the quality of the RDS signal.

Traffic announcements (TP/TA).

This display has three states.

1. Display remains dark* Station is not broadcasting traffic announcements.
2. Display lit* Traffic program station, no current announcement.
3. Display flashing* Station currently broadcasting traffic announcement.

Music/speech indicator (M/S).

Indicates whether the station is currently broadcasting music or speech. (Most stations do not support this yet and only broadcast the music signal).

Program type identification (PTY).

The RDS standard defines 15 different program types which can be assigned to a broadcast (e.g. news, pop or classical music, sports, etc.) PTY is not yet supported by all radio stations.

Log file.

When this function is active, a log file is opened in which the RadioText is recorded. The path of the log file and other options can be set in the RDS options. The log file can be displayed in any text editor (e.g. Notepad).

Clock time (CT).

An RDS time signal is broadcast and displayed at the top of every minute. The system time can be set using a pop-up menu as soon as a time signal has been received. The RDS options can also be set to update the system time automatically.

Pop-up menu.

The pop-up menu can be opened by right-clicking in the main window.

Presets.

Use this dialog to edit the station button assignments.

Timer.

Timers can be set or modified in this dialog.

Options.

Use this dialog to configure basic settings for the application.

RDS options.

The operation and display of the RDS decoder can be configured in this dialog.

Set system time.

Click this option to set your system time. This option is available as soon as a station has transmitted an RDS signal. (see also “Set system time automatically” on page 61)

Info.

Displays program information.

Presets.

This dialog can be used to edit the assignment of the station buttons. You can delete button assignment, change their order or assign new stations to the buttons. You can also edit the names of the stations.

The station dialog essentially consists of two lists:

1. Found / deleted stations (left)
2. Selected stations (right)

After calling up the dialog, the current station button assignments can be found in the right-hand list. Initially, the left list is empty. The arrow keys can be used to move the list entries from one window to the other.

The **<New>** button generates a new list entry. The frequency and name can then be entered directly (station names may have a maximum length of ten letters).

Use the **<Scan>** button to scan at the selected level and Local/DX settings. The results are entered in the left-hand list.

All entries in the right-hand list are applied to the station buttons when the dialog is ended with **<OK>.**

A scan is started using the current level and Local/DX settings. The stations found are entered in the left-hand list.

TIMER.

Timers can be set or modified in this dialog. When a timer is activated, the tuner switches to the specified station and sets the volume to the level specified in the Options dialog.

Three modes are available: You can choose between having the timer activated daily, on a selected day of the week, or only on a specific date.

All timer settings can be found in the timer list. To edit the list, click on **<Edit>**. The dialog then expands to the form shown above. Select the station, starting and stopping times, as well as the day of the week or date as required in the editing fields.

Set the marked timer with the new values using **<Add>**.

Use **<Delete>** to reset the marked timer.

Options.

The software can be configured in this dialog. Click **<OK>** to accept the new settings and end the dialog. Click **<Defaults>** to reset all of the settings to their default values.

Volume.

Mute before exit. The radio tuner remains ready to receive after exiting the program. If this option is deactivated, you can continue listening to the current radio program without processor load after the program has been closed. This option can also be set in the pop-up menu.

Volume for timer programs. The volume at which a timer program should start can be set here.

Display.

Precision. The frequency can be displayed with either one or two fractional digits.

Set color. This opens a dialog in which you can select the display color.

RDS options.

The RDS functions can be configured in this dialog. Click **<OK>** to accept the new settings and end the dialog. Click **< Standard>** to reset all of the settings to their default values.

Volume.

Volume for speech. If this option is activated, the value is raised or lowered by the preset dB value while the station broadcasts the speech signal.

Volume for traffic announcements. If this option is activated, the value is raised or lowered by the preset dB value as soon as the station broadcasts a traffic announcement.

The volume is changed relative to the current volume.

Display.

Name. You can choose whether the main display shows the RDS program service name (PS) or a name which you have assigned.

Log file.

Path. A valid path for the log file can be entered here.

Browse. This opens a dialog in which you can select the path and file name.

Overwrite / Append. Select whether the log file should be overwritten at the start of logging or whether the new lines should be appended.

Country.

Europe/USA. As radio data systems differ somewhat in Europe (RDS) and the USA (RBDS), you should specify your region here. (See also “RDS/RBDS” on page 70)

Automatically update system time.

Automatically set system time. The system time and date are automatically synchronized with the RDS time signal when this option is activated. Caution: the RDS signal is not always completely precise!

KEYBOARD LAYOUT.

The software can also operated using the keyboard.

Key	Function
F1	Calls up this help
F2	Changes display mode (frequency/name)
F3	Pop-up menu
F4, ESC	Exit
F5	Minimize
F8	Display info window
L	Level
D	Local / DX switching
S	Stereo / mono switching
R	Record
M	Mute / loud switching
+ / -	Raise / lower volume
←/→	Raise / lower frequency in 50 kHz steps
ALT ← / ALT →	Raise / lower frequency in 500 kHz steps
Home / End	Jump to start / end of scale
0 .. 9	Station buttons
Page up / Page down	Bank selection
↑ / ↓	Scan upwards / downwards

Table 4: Keyboard layout.

Technical notes.

Volume control. The volume is controlled directly by the hardware on the standalone card. Ensure that the sound card input which is connected to the radio is activated in the Windows mixer. The volume control for the upgrade module is handled by the Windows mixer.

Local mode. The signal is attenuated by 20 dB in local mode to prevent distortion from excessively powerful stations.

If a stereo signal of a normal strength is attenuated in local mode, it may result in the signal level dropping below the level required for stereo reproduction. In other words, you will be hearing the broadcast in mono, although the stereo indicator will remain on due to the stereo signal. In this case, switch to the DX mode.

AFC (Automatic Frequency Control). The station scanning principle of this radio card is based on fuzzy logic and is modeled after manual tuning (manual tuning consists of a combination of coarse and fine adjustment to achieve the best reception). “AFC” is displayed once the tuner has achieved the best possible reception.

Level. Level is a measure for the sensitivity of the tuner's search algorithm. The following signal voltage levels must be exceeded for the tuner to identify a station:

Level	Voltage
1	15 mV
2	35 mV
3	75 mV
4	300 mV

Table 5: Level.

RDS / RBDS.

The RDS standard is used in western Europe for the transmission of supplementary digital information, while the RBDS standard is applicable in the USA. The required standard is already set during the installation.

RDS INFORMATION.

The following information is shown in the RDS display:

Abbr.	German	English
PS	Name der Programmkette	Program service name
PTY	Programmartkennung	Program type
RT	Radiotext	RadioText
TP	Verkehrsfunkkennung	Traffic program identification
TA	Verkehrsdurchsagekennung	Traffic announcement identification
CT	Zeitsignal	Clock time and date
M/S	Musik/Sprache-Kennung	Music/speech switch

Table 6: RDS information.

Appendix.

Troubleshooting.

This section contains brief instructions on how to solve problems that may crop up during installation or operation of your sound card.

Sound card does not generate sound.

- Check the connections between sound card and loudspeakers.
- Active loudspeakers or stereo system switched on?
- Check the volume controls of the software mixer. In particular, check that none of the Mute switches have been activated, as this will mute the audio output.
- Check that the drivers for the sound card are installed in your operating system.

How do I record from a stereo system?

Connect the Line output of your stereo system to the LINE-IN port on the sound card. Use the Record Out or Tape Play on the stereo amplifier as the output. Then set LINE IN as the recording source in the mixer software of the sound card. Start the recording software, for example the audio recorder in WIN95 or the MediaRack program supplied with the sound card. Software of this type always has a Record switch. The switch usually has a red dot. Press the switch to start recording.

Do I have to set jumpers and change switch settings before installing my sound card?

All card functions are plug and play and are in compliance with the Intel/Microsoft specification. This means that there are no jumpers or switches on the card for setting IRQs, DMA channels or addresses. The only jumper on the board is for deactivating the onboard preamplifier (ON by default). With the preamplifier deactivated the loudspeaker socket is a non-amplified LINE-OUT port.

I have installed the sound card, but the sound effects of the games I already had installed are still output via the PC's internal loudspeaker.

- Change the configuration of your games.
- Call the game's setup routine and set Soundblaster Pro as the effects and music card. For further details, read the manuals of the games.

Why do the loudspeakers carry background noises all the time?

The sound card was designed for optimized audio quality. Despite all measures to the contrary, it is impossible to exclude the possibility of extraneous noise from graphics cards, video cards, hard-disk controllers or power-supply units disrupting the audio signal in certain computer configurations. The built-in amplifier is usually very sensitive to these interference sources. It is always advisable to use active loudspeakers or a stereo system connected to the Line output. When installing the sound card in your computer, moreover, you should always choose a slot as far as possible from the interference sources mentioned above. If the interference persists, you can purchaser a suppresser from an electronics retailer and connect it to the cable.

Is the sound card's MIDI port compatible with the Roland MPU-401 standard?

The sound card supports the SoundBlaster MIDI mode and the MPU-401 UART mode (SMART mode is not supported, but this has no effect on performance because most programs support the MPU-401 UART mode). Programs designed for the MPU-401 mode therefore directly support your sound card with the piggyback wavetable module.

If I use MPU-401 mode (General MIDI, Roland Sound Canvas, MT32 or similar) my computer, which contains an older SCSI controller, crashes.

Check the I/O address of your SCSI adapter. Some popular SCSI controllers use 330H as their default I/O address. Set this address range to some other, suitable value, because some games, for example, expect the MPU port at address 330H.

How do I get new drivers and utilities for my sound card?

Registered users can download the latest drivers and software versions at the ReActor Mailbox BBS at +49 (2157) 817924 (analog) and +49 (2157) 817942 (ISDN). Current information about our products and the hottest sound card tools are also available.

I have connected the audio cable to the sound card, but I still can't play back audio CDs.

The audio cable might not be connected, or it may be wrongly connected. When you look for the right audio port on the sound card, bear in mind that at this time the majority of IDE CD-ROM drives connect to the IDE interface (for example: Mitsumi FX 400, TEAC CD 56 EK, Sony CDU 55 E...).

Go ahead and try both ports (remember to switch off the PC before swapping from one port to the other). Reboot the computer and start CD playback. You have the right port when you can hear the CD recording. Here's an overview of the pin assignments of CD-ROM audio connections:

Interface standard	Assignment
Mitsumi	Signal - Ground - Signal - Ground
Panasonic	Ground - Signal - Ground - Signal
Sony	Signal - Ground - Ground - Signal

Table 7: Pin assignment

If your operating system is Windows 3.xx, note that a driver called MCI-CD AUDIO has to be installed under Drivers in the Control Panel group. Add this driver to the list if necessary.

Although a the sound card is equipped with a wavetable, MIDI files played with high fidelity by the BASE 1.

In this case you must notify the MIDI Mapper of Windows 3.xx or Windows 95 that there is a wavetable synthesizer on the sound card. Proceed as follows:

- Open Control Panel and double-click on Multimedia icon.
- Click MIDI. Select the SoundSystem Base 1 MPU 401 Compatible driver.
- MIDI output to the wavetable synthesizer is active as soon as you close the MIDI box.
- All you have to do now is make sure that the “Sound off” option is not activated for the wavetable volume control in the mixer software.

Under Windows 3.xx the procedure is as follows :

- Open Control Panel and select MIDI Mapper.
- Set “General” as the setup option, so that the wavetable synthesizer can be addressed.

Once you have done this you MIDI files will be output in high fidelity, because the system now knows that it has a wavetable synthesizer at its disposal.

When I start Windows or WIN95 a recurrent sound is audible from the loudspeakers and the system is unstable.‹

This is a clear sign of an interrupt conflict. Two devices are accessing the same interrupt, thus preventing correct processing. To solve this problem, start by making a list of the cards in your system and the interrupts that they use. Diagnostic utilities which can recognize such conflicts may also be helpful in this situation. The affected cards must be reconfigured once you have discovered the source of the conflict. This can be done by changing the jumper settings or the driver values of the affected devices. A special configuration program sometimes must be used to change the settings of Plug&Play cards.

Windows 95 provides excellent assistance if you start Device Manager, which you reach by clicking the “System” icon under Control Panel. Open Device Manager and double-click “Computer”. All the interrupts in use are listed.

Although General MIDI is set for the background music of a game, the music can’t be heard.

Check for a joystick connected to the gameport of the sound card. Disconnect the joystick and restart the game. If General MIDI sound is now available, the joystick in question is a version which grounds the MIDI lines (which are also carried via the gameport), thus suppressing the sound. In this case you should opt for a MIDI cable with a separate pick-off for the joystick, or else use a game card which supports joysticks with multiple functions.

With which sound-card standards is the Base 1 compatible under MS-DOS?

Under MS-DOS, the Base 1 is compatible with the AdLib, Soundblaster and Soundblaster Pro standards. All you have to do to enjoy audio support is set the corresponding values for address, IRQ and DMA in the Setup routine of you software. Select Soundblaster or Soundblaster Pro by preference as sound card and as music card. Some applications require a BLASTER environmental variable.

For example, add the following line to your AUTOEXEC.BAT file:

```
SET BLASTER = A220 I7 D1 T4

              |    |  |  |

              |    |  |  +-- ID for SoundBlaster Pro model

              |    |  +----- value for the DMA channel

              |    +-------- value for the interrupt

              +-------------- value for the I/O address of the sound card
```

If you set the sound card to other values you must change the line entry in the AUTOEXEC.BAT accordingly. T4 stands for Soundblaster Pro compatibility and should be retained.

A keyboard connected to the sound card does not react when I hit a key.

- Begin by checking whether you have installed the driver for communication with the keyboard. The driver in question for this card is called SoundSystem MPU-401 Compatible and should be listed under System in the Control Panel group of Device Manager. If it is not there, reinstall the Windows 95 drivers.
- With the driver installed, make sure that the appropriate sequencer software is selected as MIDI input device. Consult the user documentation for your sequencer for details. Most sequencer programs have a menu item labeled “Setup/MIDI Devices”, where you can select MIDI input and MIDI output devices.

If these conditions have both been fulfilled and the software still does not respond to the keyboard or no sound is to be heard, the problem is very likely the MIDI connector cable. Experience has shown that a huge variety of MIDI cables are available, which unfortunately are all identical externally. These cables should be equipped with a so-called optocoupler which is adjusted to the levels of the sound card. As this can’t be verified from the outside, always use the sound card manufacturer’s MIDI cable. We have a suitable cable to deal with these difficulties in our product line. Please consult your dealer.

When using the BASE 1 under Windows 3.xx, sound files are either very noisy or cannot be played at all.

To solve the problem, edit *system.ini*. This file is located in your Windows directory and can be edited by running the command "edit system.ini". Search the file for the line **SingleModeDMA=No**. Change the line to **SingleModeDMA=Yes**. This should eliminate difficulties with playing sound files.

When starting Windows 3.xx, I get the message 15_16 W31.386 not found or damaged.

This is a driver problem. Simply order the current driver by e-mail from the address **support@terratec.de** or by sending a self-addressed envelope to

TerraTec Electronic GmbH, Herrenpfad 38, D-41334 Nettetal, Germany

We will send you a new driver to correct this problem as soon as possible.

I can't make recordings with a microphone under Windows 95.

- Right-click on the Volume symbol in the taskbar.
- Select the item *(Lautstärke) Volume Controls*.
- Click on the Options menu and (Eigenschaften) Properties.
- Set the option "(Lautstaerke regeln fuer Aufnahme) Adjust volume for recording".
- Put a check mark on the list next to the option (Microfon) Microphone and click OK.
- Ensure that there is a check mark under the microphone volume slider.

You should now be able to make recordings with no problems.

I can't hear audio CDs under Windows 95, even though the CD player software shows that they are being played.

Right-click on the Volume symbol in the taskbar. Select the item (Lautstärke...) Volume Controls. Click on the Options menu and (Eigenschaften) Properties. Put a check mark on the list next to the option (CD) CD and click OK. Finally, ensure that the (Ton) Mute option under the CD volume slider is not checked.

Wavetable connector: pin assignment.

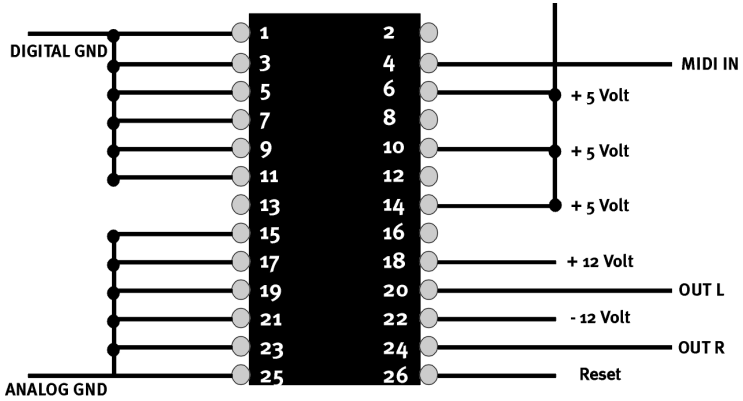

Figure 3: Wavetable connector: pin assignment.

Pin 1,3,5,7,9,11	Digital ground
Pin 15,17,19,21,23,25	Analog ground
Pin 20	Audio out left
Pin 24	Audio out right
Pin 4	MIDI In
Pin 22	- 12 Volt
Pin 18	+ 12 Volt
Pin 6,10,14	+ 5 Volt
Pin 26	Reset

Table 8: Wavetable connector: pin assignment.

MIDI INTERFACE: SIGNALS.

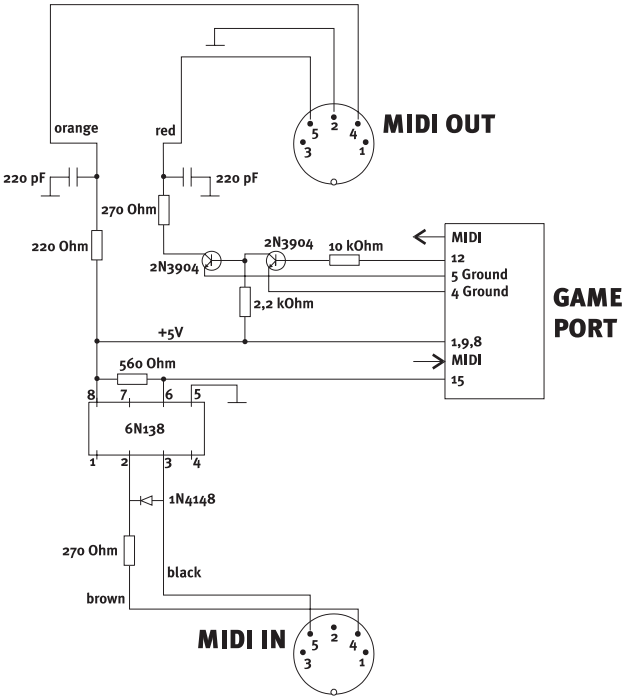

Figure 4: MIDI interface: signals.

GLOSSARY.

µ-law

Compression and decompression algorithm in compliance with US telephone standard. Non-linear compression means that the dynamic range can be extended to 72 dB with a sampling resolution of 8 bits.

16-bit expansion slot

Slot accommodating an expansion card for the ISA bus. Two contact arrays are arranged in parallel to permit parallel 16-bit data transfer via the bus.

4OP+

Special algorithm for generating FM sounds with 4 operators.

8 Mbit

ROM memory for PCM samples for wavetable synthesizing, corresponds to 1 Mbyte.

AdLib

One of the first manufacturers of sound cards. The AdLib standard defines the address for generating FM sounds.

ADPCM

Adaptive Differential Pulse Code Modulation. Compression and decompression algorithm with a 4 : 1 compression ration. In other words, a 16-bit sample is compressed to 16 bits so that samples can be transferred at high quality via networks and telephone lines.

A-law

Compression and decompression standard in compliance with the European telephone standard. Non-linear compression means that the dynamic range can be extended to 72 dB with a sampling resolution of 8 bits.

analog

Stepless transition between two states. All phenomena of the natural environment are analog.

Applications

Another name for programs through which the user communications with the computer.

ATAPI-IDE

AT Attachment Packet Interface. Expansion of the IDE standard for faster data communication between CPU and mass storage media such as hard disks and CD-ROM drives, also known as Enhanced IDE.

BIOS

Basic Input Output System, the program which controls the low-level processes in the computer. The BIOS establishes the means of communication within the computer and thus provides the connections between the individual system components.

BIOS configuration

The BIOS settings parameterized with the aid of one or more screen pages. It is usually possible to access these settings by pressing and holding down the Delete key at some point during the system boot process.

Boot

The start or run-up procedure of a computer. A distinction is drawn between warm starts, triggered by pressing the key combination Ctrl + Alt + Del, and cold starts triggered by pressing the reset button or switching the computer off and on again.

Buffer

Temporary intermediate memory to facilitate continuous, fast data flows.

Cache

RAM-chip buffer in which command and data are stored temporarily for fast access by the CPU.

Capacitor microphone

Principle of an acoustic converter which converts the soundwaves stimulating a thin diaphragm of an electrically polarized material (electret) into electric voltages.

CD-ROM

Storage medium based on the same technology as audio CDs. The difference is in the structure of the data, to which on a CD-ROM only a computer has access and not a CD player.

Chip

Another name for integrated circuit (IC).

CODEC

An integrated circuit for both analog-to-digital coding and digital-to-analog decoding.

Configuration files

The CONFIG.SYS and AUTOEXEC.BAT boot files and the initialization files SYSTEM.INI and WIN.INI of Windows 3.1x are the files responsible for configuring the computer and the software by loading the appropriate drivers.

Controller

Subprocessor which controls data traffic between various interfaces and the bus. The most popular controllers are those for SCSI and Enhanced-IDE.

CPU

Central Processing Unit, the main processor in a computer.

Creative Labs

Manufacturer of the Soundblaster and Soundblaster Pro sound cards often considered de facto standards by games manufacturers.

DAC

Digital Analog Converter

digital

States represented by means of differentiated digital values. A status change involves a number of steps, with the sampling rate and the resolution defining the size of the steps. A computer can process only digital, in other words coarse-resolution information, but it does so very quickly.

Direct Memory Access

Direct access to RAM bypassing the CPU.

DMA

Direct Memory Access.

DMA channels

Signal lines for direct memory access.

Driver

Driver Software which establishes the connection between the operating system and the hardware. The driver is responsible for resource accessibility and hardware initialization. There is a set of drivers for each operating system.

Double-speed

A measure of speed for CD-ROM drives, twice the speed of an audio CD player. The higher the speed, the faster the data-transfer rate of the CD-ROM drive. 16-speed drives are now common.

download

The process of transferring files from another compute, generally a mailbox, to the local computer.

Drumkit

A set of matched percussion instruments

Dual-DMA

Use of two separate DMA channels for simultaneous recording and playback of audio data in a computer. This mode, also known as full duplex, is important for hard-disk recording and acoustic data transfer via telephone lines or network connections.

dynamic microphone

Principle of an acoustic converter which employs a thin wire coil moving in a magnetic field to convert the soundwaves stimulating a thin diaphragm into electric voltages.

Enhanced Full Duplex

mode which permits a different sampling frequencies to be used for each mode in simultaneous recording and playback of audio data.

Enhanced IDE

Enhancement of the IDE standard for faster data communication between the CPU and mass storage media such as hard disks and CD-ROM drives.

Environment variable

A variable added to the environment memory of the COMMAND.COM command interpreter by means of the DOS command SET. Programs can fetch the value of this variable when needed.

Expander

Unit such as a MIDI generator such as a synthesizer or sampler, or the keyboard. These expanders can be controlled only via MIDI from a separate keyboard or a sequencer/computer.

FM

Frequency Modulation, in this case an algorithm for synthetically generating sounds. Complex waveforms are generated with the aid of sinusoidal generators which can mutually influence their respective frequencies.

Full duplex

Simultaneous recording and playback of audio data in a computer. Important for hard-disk recording and for computer-aided telephony applications.

Gameport

Interface for connecting one or two joysticks to a PC for controlling games.

Game/MIDI port

Combination interface for connecting one or two joysticks and MIDI I/O. This port is usually integrated in the end panel of the sound card.

General MIDI

Roland-developed standard for assigning instruments to the 127 program numbers of a MIDI channel. The standard also defines channel 10 as the percussion channel and assigns the percussion instruments to the MIDI note numbers.

General Synthesizer

Extension of the General MIDI standard to include sounds that can be reached with the aid of the bank change commands and an effects processor for diverse echo and chorus programs.

GM

General MIDI

GS

General Synthesizer

Input/output address

Address of a memory area reserved for input and output devices. Each input/output device requires a defined area addressed directly by means of the I/O address.

Interrupt

Instruction which tells the CPU that a process has to be interrupted so that data from a system component or an external device can be accepted.

IRQ

Interrupt request.

ISA bus

Industry Standard Architecture, the most common bus system in the PC industry for data transfer between expansion boards and the CPU or the storage medium.

Joystick

Device for fast, convenient control of movements in games, usually equipped with diverse fire-control buttons for firing at will.

Jumper

Small, two-pole short-circuit bridge used for configuring the mainboard or expansion cards.

Keyboard

Input device, alphanumeric in the case of a computer, or in musical parlance the piano-like set of keys for generating the MIDI control signals.

Loop

When wavetable sounds are played back the middle pat of the sound is looped so that the sound can be prolonged for any length of time.

Mailbox

Computer accessed by means of a modem and a telephone line. Mailboxes (BBS, Bulletin Board System) are a service provided by companies so that users have fast access to new drivers, utilities and useful information.

Mainboard

Motherboard on which the main components of the computer are mounted, including power supply unit, CPU, RAM, BIOS, bus system and expansion slots.

Main processor

CPU, central processing unit.

MCI

Media Control Interface. A software interface for controlling diverse media devices. This non-device-specific interface provides a command set for indirectly addressing the device drivers from within a program or multimedia application.

Microsoft SoundSystem

A package consisting of a sound card plus diverse applications formerly produced by Microsoft. The 16-bit sound card used special resources now established as a standard especially under Windows. Some games now support MSS for audio output.

MIDI

Musical Instruments Digital Interface. The interface for standardized data interchange between synthesizers, computers, samplers and keyboards. This is usually a serial interface, so the only data carried is the control information which causes the target, signal-producing MIDI devices to play back music in the desired form (which often works).

MIDI-Kit

A special cable for connecting the game/MIDI port and MIDI devices. The cable has special electronics enabling it to emulate the MIDI standard on the one hand and a joystick port on the other.

MIDI keyboard

A piano-like keyboard for driving MIDI sound generators

MPC

Hardware standard for PCs satisfying certain minimum requirements for running multimedia applications.

MPEG

Motion Picture Expert Group. Committee for developing standards for digitizing motion pictures, generally films. Modern films on video CDs are compressed in accordance with the MPEG-1 standard.

MPU-401

Roland-developed hardware interface for MIDI-compatible PCs. Today, this interface is an established standard for GM music playback in games under DOS, because the games require direct access.

MT32

Roland-developed MIDI instrument which was the standard instrument for MIDI playback in many games prior to the introduction of the GM standard. The popularity of this sound generator has since declined.

Multimedia PC

MPC. Hardware standard for PCs satisfying certain minimum requirements for running multimedia applications.

Operating system

The level above BIOS for communication with the computer. The operating system provides the user with basic functions for organizing the workflows on the computer. It is the interface between the BIOS and the applications.

PCI

Peripheral Component Interconnect. Bus system for fast data transfer between the processor and expansion cards. The bus rate is 32- MHz with 32- or 64-bit data blocks.

Plug and Play

A standard developed by Microsoft and Intel which aims at optimized, conflict-free automatic assignment of system resources when the computer boots. Requires increased manufacturing complexity, because the system must be informed which resources are available.

PnP

Plug and Play

Resources

Number and type of data lines and size of memory areas that can be utilized by the system and expansion cards.

Roland Sound Canvas

A GM/GS module used by many musicians who produce MIDI music for games. Also popular among amateur musicians.

ROM

Read Only Memory; memory medium which permits read accesses but not writes.

Sampling

Conversion of analog information to digital. This term is generally used for audio information digitized by means of sampling and then made available for processing in the computer.

Sampler rate

Frequency at which the analog signal is registered and converted into a digital value. The higher the frequency the better the result of subsequent digital-to-analog conversion to restore the original signal.

SB Pro

Soundblaster Pro. A model of the Creative Labs Soundblaster series with digital recording and playback in 8-bit stereo and OPL3 FM synthesis for music playback.

Screenshot

A printout of the screen contents obtained by hitting the Print key on the computer's keyboard.

SCSI

Small Computer System Interface. Internal and external bus system for data transfer between the PC and peripherals such as hard disks and removable media, CD-ROM drivers, scanners, etc.

Sequencer program

Software for recording, editing and playing back MIDI information. In this way music can be composed on a computer.

SFX-Kit

A drumkit program which maps various acoustic effects to keys on the computer keyboard.

Signal-to-noise ratio

The ratio between data signal and interference signal for audio devices. Stated in dB, the higher the value the lower the intrinsic noise level of the device.

Slot

Bay accommodating an expansion card in a PC. Slots are of different types, depending on the bus system.

Soundblaster

One of the first sound cards from Creative Labs which, because of its popularity, established itself as the first de facto standard for sound cards. Even today, the Soundblaster standard is still supported by virtually all manufacturers of games.

Soundblaster Pro

A model of the Creative Labs Soundblaster series with digital recording and playback in 8-bit stereo and OPL3 FM synthesis for music playback.

Start files

Files automatically processed by the operating system when a computer boots and which configure and initialize the computer system. The start files for DOS are the CONFIG.SYS and AUTOEXEC.BAT, for Windows 3.1 and 3.11 they are the SYSTEM.INI and WIN.INI, whereas for WIN95 they are the registration database with the files SYSTEM.DAT and USER.DAT.

Synthesizer

Electronic musical instrument which creates sounds by means of analog or digital synthesis.

TerraTec Electronic GmbH

German manufacturer of professional multimedia products; headquarters in Nettetal. TerraTec played a major role in the rapid spread of wavetable technology for sound cards.

Windows 95

32-bit operating system from Microsoft, which, unlike its predecessors, is no longer based on the DOS operating system.

WSS

Windows SoundSystem. A package consisting of a sound card plus diverse applications formerly produced by Microsoft. The 16-bit sound card used special resources now established as a standard especially under Windows. Some games now support MSS for audio output.

Y-adapter

A cable with three connectors connecting the joystick port to two joysticks and thus enabling two-player mode in games.