
miroSOUND PCM12

User's Guide



miroSOUND PCM12

User's Guide

Version 1.0/E. May 1995

VDOK-PCM12-100

© miro Computer Products AG 1995

All rights reserved.

No part of this manual may be reproduced or transferred to other media without explicit written permission from miro Computer Products AG, Braunschweig, Germany.

Cubase™ and Cubase LITE™ are trademarks of Steinberg Soft- und Hardware GmbH.

IBM AT® is a registered trademark of International Business Machines Corp.

MS-DOS® is a registered trademark of Microsoft Corp.

miro® is a registered trademark of the miro Computer Products AG.

Sound Blaster® und Sound Blaster Pro® are a registered trademarks of Creative Technology, Ltd.

Windows™ is a trademark of Microsoft Corp.

miro Computer Products AG has written this manual to the best of its knowledge, but does not guarantee that the programs/systems will fulfill the desires of the user.

No warranty is made as to the specifications of features.

miro retains the right to make alterations to the content of the manual without the obligation to inform third parties.

All tenders, sales, supply and manufacturing contracts from miro, including consultancy, installation and other contractual performance are subject exclusively to the General Sales and Delivery Terms of miro.

Contents

For your own safety iii

About the manual iv

1. Overview 1

2. Before you begin 2

Package contents 2

System requirements 2

What do you need for the installation? 3

3. Hardware installation 4

Installing the sound board 4

Connecting the CD-ROM drive 5

Further internal connections 6

Line In input 6

Line Out output 6

Aux2 6

Waveblaster connector 6

Connecting external devices 6

4. Software installation 8

Installing the software under Windows 8

Configuring the software under Windows 9

Installing the software under DOS 11

Configuring the software under DOS 11

Configuring the CD-ROM drive 13

Installing the miro CD-ROM Interface Setup driver 13

Installing CD-ROM drivers 13

Installing a CD-ROM drive afterwards 13

Speeding the CD-ROM drive access 14

Reconfiguring miroSOUND PCM12 under Windows 14

Removing the miroSOUND PCM12 software 16

5. Using miroSOUND PCM12 17

Using miroSOUND PCM12 under Windows	17
The mixer under Windows	17
Playing CDs under Windows	18
Using miroSOUND PCM12 under DOS	19
DOS environment strings	19
The mixer under DOS	19
Your sound board's Wave Table technology	20
The instruments of the General MIDI standard	21

6. Troubleshooting 23

Installation	23
CD-ROM	23
WAV files	24

7. Technical Data 25

Appendix

Pin allocations	I
Internal audio output on miroVIDEO 10/20TD live	III
Glossary	IV

Index

For your own safety

In the interest of your own safety and the flawless functioning of your new product and computer system please note the following:

- Switch off your PC before you start the installation.
- If your PC is connected to a grounded outlet, touch a metallic surface of your PC to discharge any static charge from your body.
- Pull the sound board out of the antistatic bag only, when you are ready to install it immediately.
- Only hold the sound board at the borders. Avoid touching the electronic components on the board.

About the manual

This manual explains how to install the miroSOUND PCM12 board in your computer.

In the margins are subheadings and ideograms to help you quickly find your way through this manual.



Important text passages are marked with the «hand» and this format.

Bullets mark step-by-step instructions:

- Insert the sound board into the slot.

All keyboard commands appear in this font:

install <↵>

<↵> represents the enter key.

Menus, commands, options or buttons which the user can select are written in *italics*.



For changes that have occurred after the manual has been printed, refer to the README file on the disks supplied with your system!

1. Overview

Congratulations on purchasing the miroSOUND PCM12 sound board!

With miroSOUND PCM12 miro offers the following features:

q *OPL4*

Your miroSOUND PCM12 includes the new OPL4 chip by Yamaha, offering built-in PCM sounds of excellent quality, and compatibility with the earlier OPL3 and OPL2 chips. This ensures that your sound board will support the widest selection of DOS and Windows applications.

q *Compatibility*

Your miroSOUND PCM12 is compatible with all major sound standards, including AdLib, Sound Blaster, Sound Blaster Pro II version 3.01, Microsoft Windows Sound System, and Roland MPU-401 for Windows. The MIDI sound patches are compatible with the General MIDI standard and with its ability to record and playback high quality 16-bit, 48 KHz stereo sound, the board exceeds the multimedia specifications MPC1 and MPC2.

q *Sampling rate*

miroSOUND PCM12 allows a sampling rate up to 48 kHz.

q *CD-ROM interfaces*

miroSOUND PCM12 provides four CD-ROM interfaces: the sound board has built-in interfaces for the CD-ROM standards Sony, Mitsumi, and Panasonic, as well as an interface for the IDE CD-ROM drives.

q *Playing back and recording simultaneously*

miroSOUND PCM12 allows to play back and record sound simultaneously.

q *Upgradeability*

You can upgrade the miroSOUND PCM12 board with a Waveblaster module which adds more PCM sounds to your board.

q *HQ-9000*

HQ-9000 by U-Lead is a home stereo rack on your Windows screen, featuring modules for CD audio, MIDI, playing, editing, and recording samples, and with a mixer for recording and playing of all the board's sound sources.

q *Cubase LITE/Sound Forge*

Together with the miroSOUND PCM12 board you have purchased the sound editing programs Cubase LITE and Sound Forge.

2. Before you begin



Sound boards are sensitive to static charge. To avoid damage that may occur by static charge, leave the sound board in its antistatic packaging until installation. Keep the packaging for possible future transportation.

Package contents

Before beginning the miroSOUND PCM12 installation, please make sure your miroSOUND PCM12 package is complete:

- miroSOUND PCM12 board,*
- installation disk(s),
- documentation,
- HQ-9000 and HQ-9000 documentation,
- Sound Forge and Sound Forge documentation,
- Cubase LITE and Cubase LITE documentation,
- *optionally:*
miroSOUND Line & MIDI Extender Box.

System requirements

To install miroSOUND PCM12, your computer system has to meet the following requirements:

- | | |
|-----------------|--|
| Computer | – at least a 386, 486, Pentium computer or compatible with a free 16-bit slot. |
| Software | – Windows 3.1 or higher. |

* For model and serial number of your miro board, refer to the label on the sound board.

What do you need for the installation?

To install your miroSOUND PCM12 board you need in addition to components included in the package contents:

- a screwdriver,
- connecting cables for the audio devices,
- a connecting cable for the joystick (if you want to install two joysticks a joystick Y-adapter),
- miroSOUND Line & MIDI Extender Box, if you want to connect the MIDI devices to the MIDI connector on the miroSOUND PCM12 board, the miroSOUND Line & MIDI Extender Box can be obtained from miro,
- a MIDI adapter, if you wish to connect MIDI devices to the MIDI/joystick connector on the miroSOUND PCM12 board.

3. Hardware installation

Installing the sound board

The only tool you need for the installation is a screwdriver. Proceed as follows:

- **Turn off the computer, disconnect the cables.**
Turn off your computer and all peripheral devices. Disconnect the computer from the power supply and all necessary components.
- **Open the computer.**
Loosen the screws of the computer's cover and remove it.
- **Locate a slot.**
Locate a free 16-bit ISA or EISA slot.
- **Remove the slot's cover.**
Remove the slot's cover at the back of the computer. Save the screws of the cover.
- **Discharge yourself of static charge.**
Discharge yourself of static charge by touching the power unit casing.
- **Unpack the board.**
Take the board out of its packaging.
- **Insert the board.**
Carefully insert the sound board into the ISA or EISA slot by holding the board at the top and gently pushing both ends into the slot at the same time. Press onto the upper edge of the board to make sure it is firmly seated in the slot.



Don't force the board into the slot! You run the risk of bending the contacts. If the board does not fit easily, pull it back out, and try again.

- **Connect a CD-ROM drive.**
If you have a CD-ROM drive that can be used with this sound board, you can connect it to the sound board now. For installation instructions, see the section "Connecting a CD-ROM drive".
- *If you want to connect your CD-ROM drive and/or other devices to the internal connectors on the miroSOUND PCM12 board,*
read the "Connecting the CD-ROM drive" and "Further internal connections" sections.
- **Close the computer.**
Put the cover back on the computer and reconnect the peripheral devices.

Connecting the CD-ROM drive

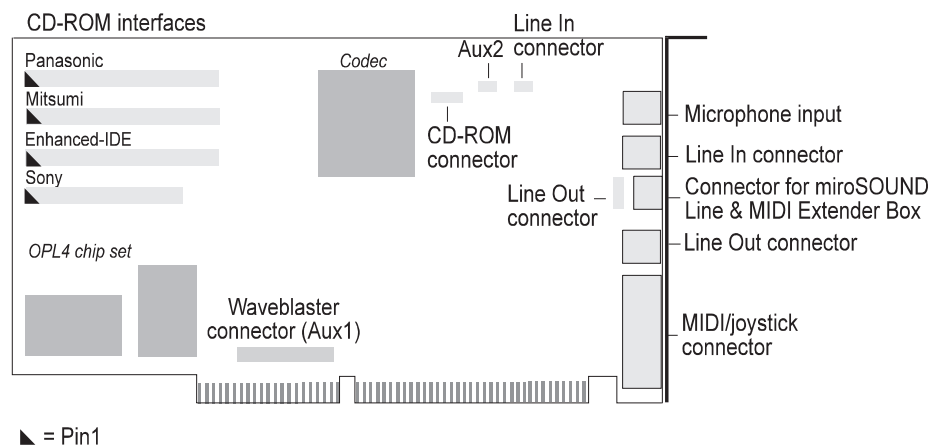
miroSOUND PCM12 allows to control CD-ROM drives from Panasonic, Mitsumi, and Sony and the IDE compatible drives.



If your CD-ROM drive is already connected to a Wave Table in your computer, it is not necessary to connect the ribbon cable (data cable) of your CD-ROM drive to the miroSOUND PCM12 board. If you do connect the data cable of your CD-ROM drive to the miroSOUND PCM12 CD-ROM interface, however, remove an already existing CD-ROM controller. (For information on IDE drives, also read the “Troubleshooting” section.)

If you want to play back audio CDs via miroSOUND PCM12, connect the audio cable to miroSOUND PCM12.

There are four CD-ROM controller connectors and one audio connector on the board. For the location of the connectors, refer to the board layout below.



Board layout

CD-ROM interface

Select the CD-ROM interface which is suitable for your CD-ROM drive's brand and is marked with the manufacturers name or with "IDE" in the diagram above.

CD-ROM audio connector

The CD-ROM audio connector has the appropriate pin allocation for Sony drives. Because the pin allocations vary even for drives of one manufacturer, it is absolutely necessary that you check the pin allocation of your CD-ROM drive's audio connector before connecting the CD-ROM drive's audio connector to the miroSOUND PCM12 audio connector. If necessary, adapt the audio cable to the pin allocation. For information on the pin allocations, refer to Appendix A.

Further internal connections

Line In input

If a second multimedia board (e.g. miroVIDEO 10/20TD live) is installed in your computer, miroSOUND PCM12 allows to connect the audio output of this multimedia board to the miroSOUND PCM12 Line In input. The sound is output via miroSOUND PCM12. For information on the pin allocation and the position of the Line In input, refer to Appendix B.

Line Out output

You can connect internal PC speakers to the miroSOUND PCM12 Line Out output.

Aux2

To the Aux2 connector attaches a further audio input device, e.g. a tape deck, a radio board etc.

Waveblaster connector

You can connect a waveblaster module to the waveblaster connector. This waveblaster module offers further PCM sounds.

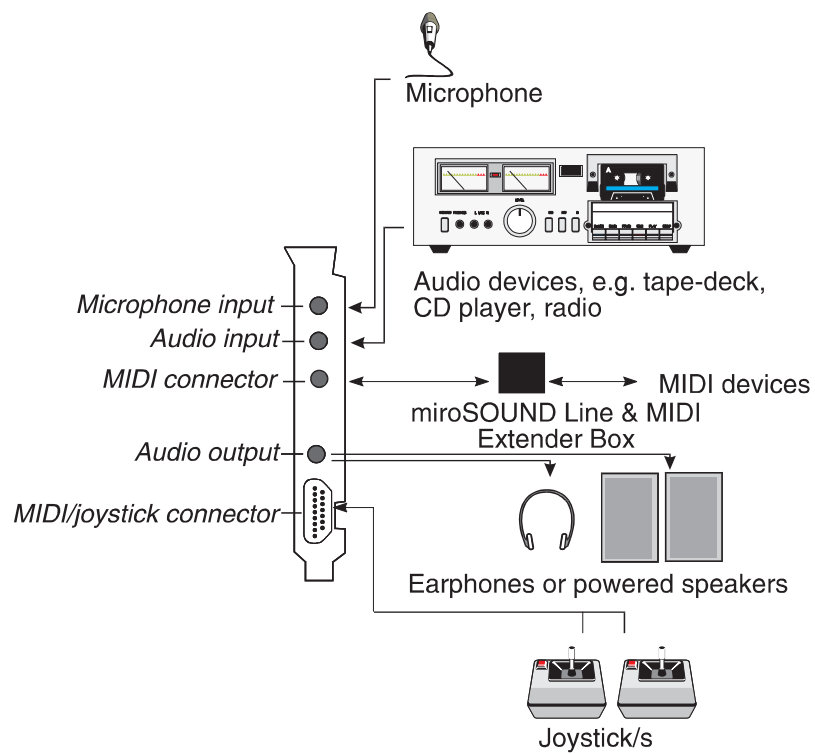
Connecting external devices

After having installed the miroSOUND PCM12 board and connected the internal devices, you can connect the peripheral devices you want to use with miroSOUND PCM12.



The miroSOUND PCM12 package does not contain the cables for connecting the audio devices/joysticks nor the adapter for the connection of two joysticks. You can obtain cables and adapters from electronic stores. The miroSOUND Line & Extender Box is optionally available from miro.

The following diagram shows the connections.



Connect the devices you want to use with the miroSOUND PCM12 board to the corresponding connectors.

4. Software installation

The supplied installation program automatically installs the miro software. You can install the software either under Windows, or, if Windows is not installed on your computer, under DOS. For information on the Windows installation, refer to the following section, for information under DOS refer to “Installing software under DOS”.

Installing the software under Windows



If you have installed any sound drivers in Windows before, first uninstall them and restart Windows before you try to install the miro software.

To install the software, proceed as follows:

- If you have not done so already, start Windows.
- Insert the installation disk into your disk drive.
- In the Program Manager select the *File* menu and the *Run...* command.
- Depending on your disk drive, enter **a:\install** or **b:\install** and click on *OK*.

Operating the program

Click *OK* to go on with the installation program and *Cancel* to exit the program. After starting the installation program the *Language Selection* menu appears.

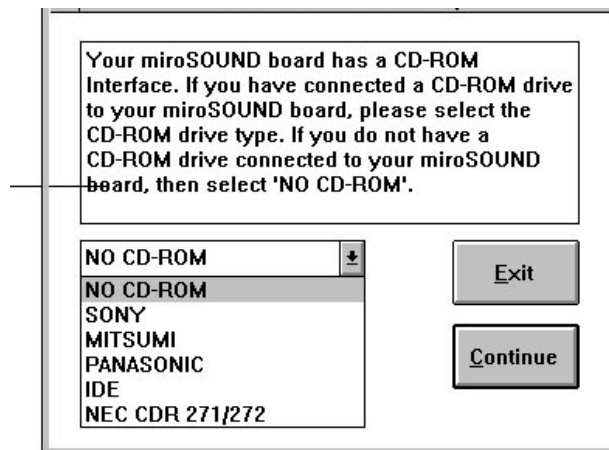
- Select the language you want to use for the installation.
- Select *Sound Card Installation*.



The *Uninstall Software* option deletes all files that have been copied during a previous installation.

- Enter the drive where you want to install the software.
- Specify the directory where you want to install the software.
- If necessary, select the CD-ROM drive you want to install.

This step is only necessary if you use the miro sound board as CD-ROM interface, that is if you connected the wide data cable of your CD-ROM drive to the miroSOUND PCM12 CD-ROM interface. If this is not the case, select *No CD-ROM*.



Result of the installation

The installation program installs the drivers for DOS and Windows and creates the *miroSOUND* program group in the Program Manager group.

Configuring the software under Windows

On first installation of the software under Windows you will see a configuration dialog window.

The configuration program detects the addresses, interrupts, and the DMA channels automatically. These values should be the right ones for almost every PC system.

(Only the free DMA channels cannot be detected due to the PC system hardware, but the installation software will do an estimation based on the most probable values.)

Wave In and Wave Out

Duplex

Half

Select *Half* if you want to use either the wave input or the wave output. In this case, you have only to select one DMA channel. This DMA channel is then used for the input and the output.

Full

Select *Full* if you want to use the wave input and output simultaneously. In this case, you have to select two DMA channels.

I/O Addr

The I/O address for the wave input and output are detected automatically.

DMA Channel

If you selected *Half* under *Duplex*, select one DMA channel. This DMA channel is then used for the input and the output. If you selected *Full* under *Duplex*, select two DMA channels.

IRQ

The interrupt for the wave input and output is detected automatically.

MPU

MPU is an interface for external MIDI devices, e.g. keyboards, sequencers etc. If you wish to connect external MIDI devices, enable the MPU interface. The address and the interrupt used by the MPU interface are detected automatically.

SoundBlaster compatibility

If you want to use SoundBlaster compatible games under DOS, enable *SoundBlaster compatibility*. The address (port), the interrupt, and the DMA channel are selected automatically.

Mixer

If problems occur in your system with the address 344h, you can select another address here.

Game Port

If you wish to connect a joystick to your sound board, enable the game port. If your system has already a game port integrated, do not enable the game port here because only one game port can be active at a time.

- To quit the configuration program, click *Continue*.

Now the installation program notifies you that your AUTOEXEC.BAT, CONFIG.SYS, and SYSTEM.INI files have been modified. Follow the instructions on the screen and end the configuration.

Installing the software under DOS

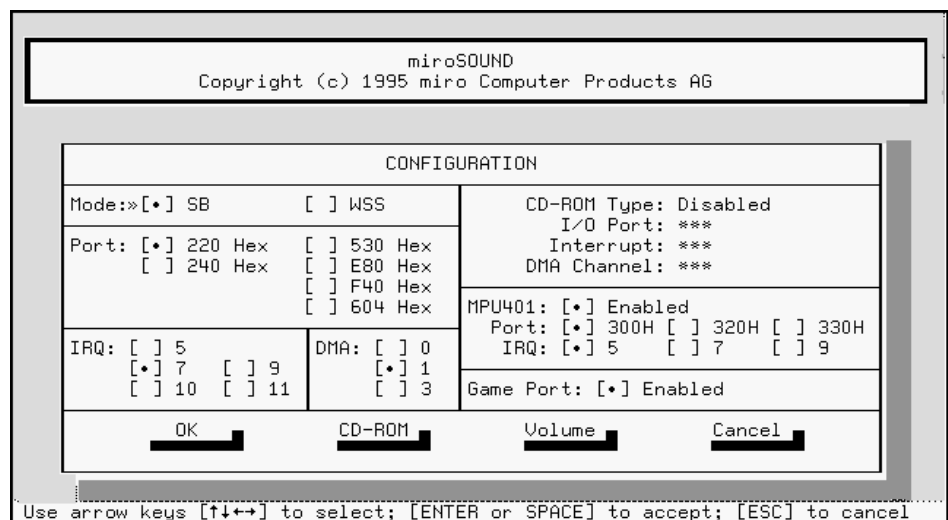
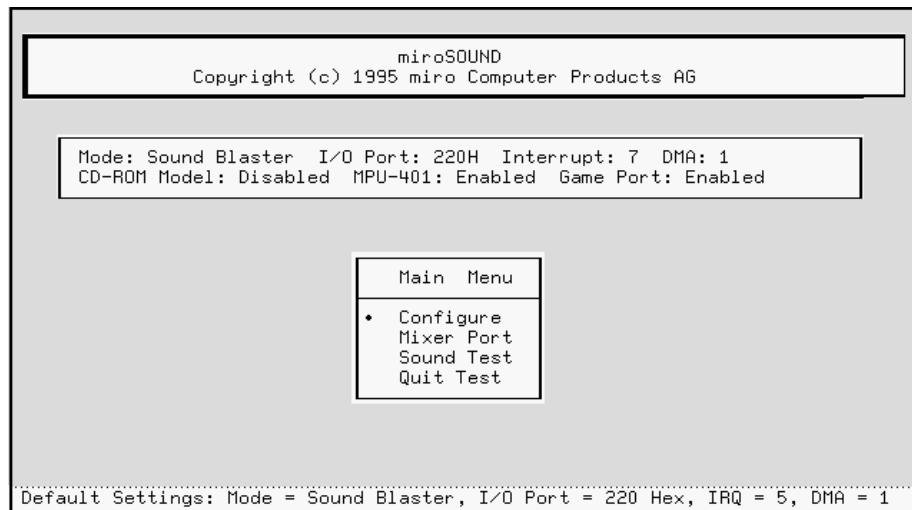
To install the miroSOUND PCM12 software under DOS, proceed as follows:

- Insert the Installation disk in you disk drive.
- Depending on which disk drive you use, enter **a:\dos_inst<↵>** or **b:\dos_inst<↵>**.
- In the following dialog boxes, enter the drive and the directory to which you want to copy the miro software.

Now, the files are automatically copied to the directory you specified. After the files have been copied, the DOS configuration program starts automatically.

Configuring the software under DOS

- Click *Configure* to start the miroSOUND PCM12 configuration program.



You can check all IRQ, DMA channel, I/O address, and other settings in the configuration program. Depending on your configuration, different options are available.

The CONFIG.SYS and AUTOEXEC.BAT files are edited to reflect the selected options, if necessary. Your original files are backed up with the .MIR extension.

- To save the settings and to quit the configuration program, click OK.

The DOS program for configuring the sound board is **SDNINIT.EXE** and can be found in the miroSOUND directory, by default named C:\MI-ROSND. The installation program enters a line into your AUTOEXEC.BAT file to initialize the sound board every time the system is started. The program downloads the configurable data, as stored in the file SOUND16.CFG, to the sound board and exits after that. The program does not stay resident, and will not take away any valuable RAM from your main memory.

You can also use this program to execute a sound test (select *Sound Test* in the main menu) and to select an address for the Mixer (select *Mixer Port* in the main menu).*

- * If you installed the software under DOS and if you want to install the software under Windows afterwards, first start the WIN_INST.BAT file from the installation disk. Then install the software as described under “Installing software under Windows”.

Configuring the CD-ROM drive

miroSOUND PCM12 allows to control CD-ROM drives by Panasonic, Mitsumi, Sony, and IDE compatible drives.

Installing the miro CD-ROM Interface Setup driver

When your CD-ROM drive is installed and connected to the miroSOUND PCM12, and you have selected the CD-ROM drive in the miro installation program, the installation software enters the *miro CD-ROM Interface Setup driver* into the CONFIG.SYS file. If you install e.g. a Sony CD-ROM drive, the following line is inserted into the file Config.sys:

```
DEVICE=C:\MIROSND\cdsetup.sys /T:S /P:340 /I:10 /D:3 (line1)
```

Installing CD-ROM drivers

Below this line there has to be the line to start your CD-ROM driver (*.SYS), which is supplied with your CD-ROM drive, e.g.:

```
DEVICE=c:\xxxxxxx.SYS /D:MSCD001 /P:340 (line 2)
```

In this example, the Sony CD-ROM is configured to use address 340. The miro CD-ROM Interface Setup driver (line 1) is set up by the miro installation program. In line 2 you must enter the address yourself, if it differs from the manufacturer's default address for his drive. In the example shown above, the parameter /P:340 entered the address. Other drivers may need the parameter /B:340 instead. Refer to the drive's documentation, when the CD-ROM installation using default values does not succeed.

The line calling the *.SYS driver has to include the logical drive name (e.g. MSCD001). The /D:MSCD001 parameter enters this name into the PC's RAM, where it is found by the Microsoft MSCDEX.EXE driver.

Installing a CD-ROM drive afterwards

If you install the CD-ROM drive after the miroSOUND PCM12 board has been installed, start SNDINIT.EXE again and configure miroSOUND PCM12 for your CD-ROM drive.

Speeding the CD-ROM drive access

The miroSOUND PCM12 installation program has entered the following line into the AUTOEXEC.BAT file:

M/:xx

The parameter /M:xx can speed up the CD-ROM drive access. A line like this

C:\DOS\MSCDEX.EXE /D:MSCD001 /M:16

will reserve 16 buffer blocks in the PC's RAM, that will buffer the last read data from the CD-ROM. The data will be immediately available, if a program wants to read them again and if the data is still in the buffer memory.

You can see more options for MSCDEX, as for most DOS programs, if you call it with the parameter /?.



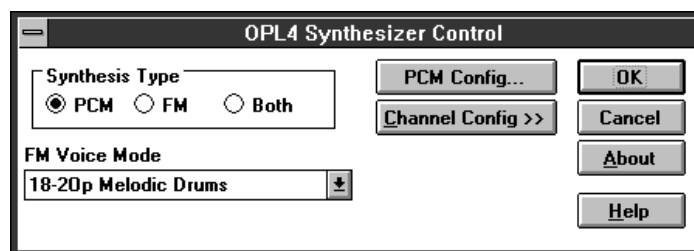
Since MS DOS version 6 and later the MSCDEX.EXE is part of the DOS files; use that file from your DOS directory. If you use an older version of DOS, copy the driver MSCDEX.EXE from the disk that was supplied with your CD-ROM drive into your DOS directory.

Reconfiguring miroSOUND PCM12 under Windows

To change the miroSOUND PCM12 configuration under Windows, proceed as follows:

FM synthesis

- Under Windows open the *Main Group* and the *Control Panel*.
- If you want to control the OPL4 chip's FM synthesis, click at the *OPL4 Synth* icon in the *Control Panel*:



Here you can toggle your sound board from PCM sounds using the Wave Table ROM to the older FM synthesis. Select the appropriate option called

Synthesis Type. In the list *FM Voice Mode* you can define how to share the 20 voices available in FM mode between melodic and percussive instruments. The exact number of available instruments and drum sounds depends on the quality, e.g. 2 operator mode or 4 operator mode. Just lea-

ve the *Synthesis Type* as *PCM*, and you will hear instruments and drum sounds in optimal quality. Click on *Help* to display more information about these options.

With *OK/Cancel* you go back to the Control Panel.

Wave settings

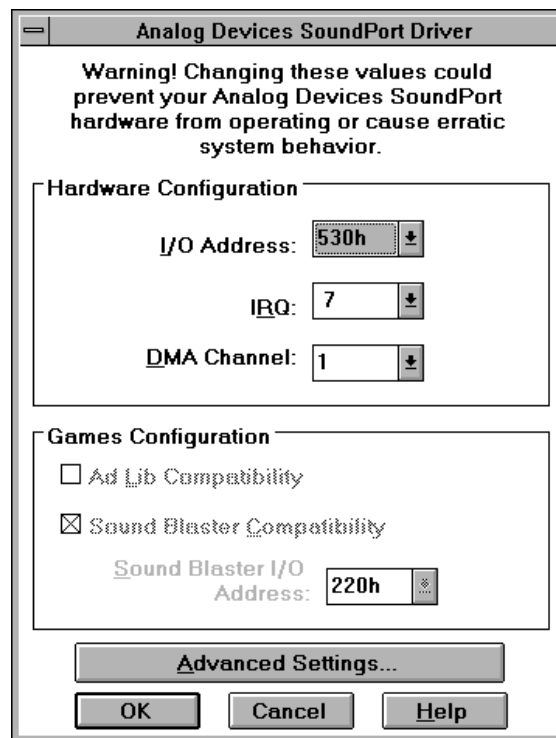


- To change the Wave setting, double-click the *Drivers* icon.

If you open the *miro OPL4 Synth* by double-clicking the driver **please do not change** the values. In this dialog box the topmost options have to be selected.

- In the list of all installed drivers, double-click on the Analog Devices SoundPort Driver.*

The following window appears, where you can find the current settings of your sound board, and where you can edit them.

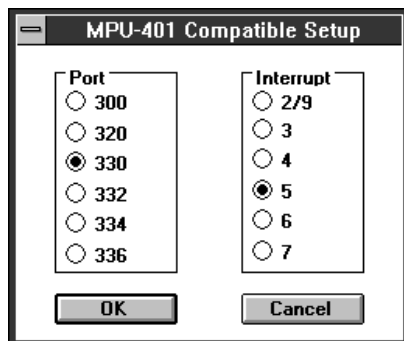


The *Advanced Settings* button allows you further settings.

* If the driver mentioned above is not contained in the list, select the CS31BA11 driver. Accordingly, the following dialog boxes look different from the ones shown above.

MPU compatibility

- To change the address and/or the interrupt, double-click on *Roland LAPC1* in the driver list. If necessary, change the address and/or the interrupt.



Removing the miroSOUND PCM12 software

If you decide to remove the miroSOUND PCM12 from your system, first run the installation program from the miro installation disk and select the *Uninstall Software* option. After that you can then safely remove the sound board from your system.

5. Using miroSOUND PCM12

Using miroSOUND PCM12 under Windows

During the installation the miroSOUND program group has been created under Windows.



The mixer under Windows

Volume

The Windows mixer utility is called **MIROMIX.EXE**. You will find an icon in the miroSOUND group in the Program Manager. Double-click this icon to open the mixer window:



Sliders

All sliders can be controlled by dragging the mouse.

Gang

With *Gang* you can lock the left and right stereo channels, so you can control both channels by just dragging one of the sliders.

Mute

Mute immediately mutes all sound outputs at once. Click this button again to switch on the sound again.

Wave

You may want to toggle between Wave Table music and FM synthesized music with the button *Wave* while playing a MIDI song. You will hear the difference at once, because you have purchased one of the most advanced Wave Table sound boards.

On Top

The *On Top* button will cause the Windows mixer application to be visible on top of all other open windows on your screen. This way you can control the volumes any time you want.

Restore

Restore allows you to load the last values which have been saved.

Save

With *Save* you can save the current values to disk.

Small/Big

The *Small/Big* button will help in this case, it toggles the display from a small to a big one and back.

Help

Provides help for using the mixer.

Drum

With your miroSOUND PCM12 you can control the volume of the MIDI drum channel separately from the other volume values. This enables you to set your favorite drums volume setting for all your MIDI files at once, without having to edit each and every MIDI file itself.

Playing CDs under Windows

If you want to play back CDs under Windows, the MCI CD Audio driver has to be installed. If this is not the case, install the driver as follows:

- If you have not done so already, start Windows.
- In the *Main Group* open the *Control Panel*.
- Click on *Driver*.
- Click on *Add* and *[MCI] CD-Audio*.
- Click *OK* and *Close*.

To play back CDs, you can use the CD-Player HQ-9000 included in the miroSOUND PCM12 package or the *Media Player* under Windows. For information on HQ-9000, refer to the corresponding manual.

To use the Media Player:

- select *Media Player* from the *Accessories* group.
- Under *Device* select *CD Player*.
- Click on the play-back button (right arrow).

Using miroSOUND PCM12 under DOS

DOS environment strings

The Sound Blaster compatible DOS applications often look for a DOS environment string named **BLASTER**. In this variable string they find information about the I/O address, the IRQ, the DMA channel, and the type of sound board used. The string should be updated after every change in any of these values. If you have changed the settings of the Sound Blaster compatible module on your sound board, inspect your **AUTOEXEC.BAT** file, and re-write the

SET BLASTER=A220 I7 D1 T4

line if necessary to reflect the new settings.

Another DOS environment string called **SOUND16** is needed by some miro DOS applications. It should contain the full path to the miroSOUND software. The string in the **Autoexec.bat** file is initially set to

SET SOUND16=C:\MIROSND.



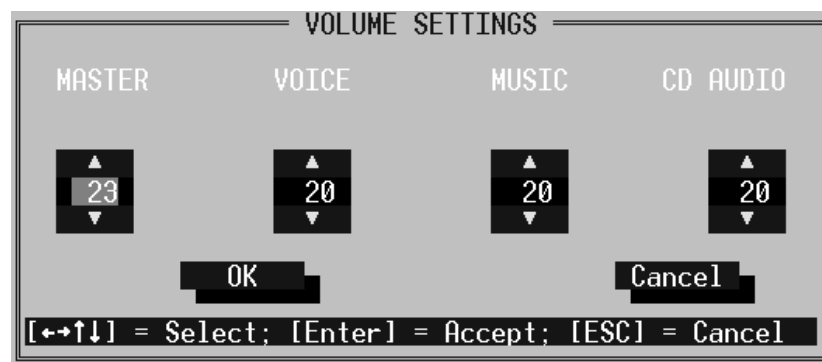
Note that there must be no space character directly before and after the = sign.

The mixer under DOS

The DOS configuration program **SNDDINIT.EXE** has an option to permanently control and store the volume settings of your sound board.

- To control and store the volume settings, start the configuration program and click the *Volume* button.

The following screen appears:



Volume

Control the volumes with your mouse or with your PC keyboard. Click on the cursor buttons, or use the keyboard's cursor buttons and the PageUp / PageDown keys.

Your sound board's Wave Table technology

FM synthesis/ Wave Table

As you have noticed with your own ears in the Wave toggle example above, your miroSOUND PCM12 has two built-in technologies to generate musical sounds: the formerly common and still wide-spread FM synthesis and the new Wave Table sample technology. Both kinds of music are generated by Yamaha's OPL4 chip. This new chip is not only backward compatible to the older OPL3 and OPL2 chips, avoiding any problems with older DOS applications, but it can also generate the optimal sound for all modern applications and for Windows using PCM Wave Table samples.

Wave Table ROM

The OPL4 chip in the miroSOUND PCM12 has access to a Wave Table ROM with 2 MB size, which holds in compressed form all 128 instruments and 47 drums of the General MIDI standard. When you start playing a MIDI music file, the OPL4 chip receives a number of MIDI commands like "Start playing note number 24 using the instrument sound number 21!" (MIDI says it in a somewhat shorter way and compresses this command into 2 bytes.)

Wave Table

The OPL4 chip collects the sample sound number 21, an accordion sound, from the Wave Table ROM, and plays it in the pitch number 24. Many instruments have been sampled more than once, because the low notes with low pitch sound often quite different from the higher notes of the same instrument. The generated sound is best, when the recording engineers have defined well the transfer points between these samples and the looping points for long notes.

The instruments of the General MIDI standard

0 Acoustic Grand Piano	64 Soprano Sax
1 Bright Acoustic Piano	65 Alto Sax
2 Electric Grand Piano	66 Tenor Sax
3 Honky-Tonk Piano	67 Baritone Sax
4 Electric Piano 1	68 Oboe
5 Electric Piano 2	69 English Horn
6 Harpsichord	70 Bassoon
7 Clavi	71 Clarinet
8 Celesta	72 Piccolo
9 Glockenspiel	73 Flute
10 Music Box	74 Recorder
11 Vibraphone	75 Pan Flute
12 Marimba	76 Blown Bottle
13 Xylophone	77 Shakuhachi
14 Tubular Bells	78 Whistle
15 Dulcimer	79 Ocarina
16 Drawbar Organ	80 Lead 1 (square)
17 Percussive Organ	81 Lead 2 (sawtooth)
18 Rock Organ	82 Lead 3 (calliope)
19 Church Organ	83 Lead 4 (cliff)
20 Reed Organ	84 Lead 5 (charang)
21 Accordeon	85 Lead 6 (voice)
22 Harmonica	86 Lead 7 (fifths)
23 Tango Accordeon	87 Lead 8 (bass + lead)
24 Acoustic Guitar (nylon)	88 Pad 1 (new age)
25 Acoustic Guitar (steel)	89 Pad 2 (warm)
26 Electric Guitar (jazz)	90 Pad 3 (polysynth)
27 Electric Guitar (clean)	91 Pad 4 (choir)
28 Electric Guitar (muted)	92 Pad 5 (bowed)
29 Overdriven Guitar	93 Pad 6 (metallic)
30 Distortion Guitar	94 Pad 7 (halo)
31 Guitar Harmonics	95 Pad 8 (sweep)
32 Acoustic Bass	96 FX 1 (rain)
33 Electric Bass (fingered)	97 FX 2 (soundtrack)
34 Electric Bass (picked)	98 FX 3 (crystal)
35 Fretless Bass	99 FX 4 (atmosphere)
36 Slap Bass 1	100 FX 5 (brightness)
37 Slap Bass 2	101 FX 6 (goblins)
38 Synth Bass 1	102 FX 7 (echoes)
39 Synth Bass 2	103 FX 8 (sci-fi)
40 Violin	104 Sitar
41 Viola	105 Banjo
42 Cello	106 Shamisen
43 Contrabass	107 Koto
44 Tremolo Strings	108 Kalimba
45 Pizzicato Strings	109 Bag Pipe
46 Orchestral Harp	110 Fiddle
47 Timpani	111 Shanai
48 String Ensemble 1	112 Tickle Bell
49 String Ensemble 2	113 Agogo
50 SynthStrings 1	114 Steel Drums
51 SynthStrings 2	115 Wood Block
52 Choir Aahs	116 Taiko Drum
53 Voice Oohs	117 Melodic Tom
54 Synth Voice	118 Synth Drum
55 Orchestra Hit	119 Reverse Cymbal
56 Trumpet	120 Guitar Fret Noise
57 Trombone	121 Breath Noise
58 Tuba	122 Seashore
59 Muted Trumpet	123 Bird Tweet
60 French Horn	124 Telephone Ring
61 Brass Section	125 Helicopter
62 SynthBass 1	126 Applause
63 Synth Bas 2	127 Gunshot

Drums

These are the 47 drums of the miroSOUND PCM12

35 Acoustic Bass Drum	59 Ride Cymbal 2
36 Bass Drum 1	60 Hi Bongo
37 Side Stick	61 Low Bongo
38 Acoustic Snare	62 Mute Hi Conga
39 Hand Clap	63 Open Hi Conga
40 Electric Snare	64 Low Conga
41 Low Floor Tom	65 High Timbale
42 Closed Hi-Hat	66 Low Timbale
43 High Floor Tom	67 High Agogo
44 Pedal Hi-Hat	68 Low Agogo
45 Low Tom	69 Cabasa
46 Open Hi-Hat	70 Maracas
47 Low Mid Tom	71 Short Whistle
48 Hi Mid Tom	72 Long Whistle
49 Crash Cymbal 1	73 Short Guiro
50 High Tom	74 Long Guiro
51 Ride Cymbal 1	75 Claves
52 Chinese Cymbal	76 High Wood Block
53 Ride Bell	77 Low Wood Block
54 Tambourine	78 Mute Cuica
55 Splash Cymbal	79 Open Cuica
56 Cowbell	80 Mute Triangle
57 Crash Cymbal 2	81 Open Triangle
58 Vibraslap	

The drum instruments in MIDI channel 10 are represented by the respective notes: the low B to the left is number 35, the C next to it is 36 and so on to the A for number 81.

If you cannot imagine what instrument is meant with uncommon names, just try to play them! *Cubase Lite* is the best program for this purpose. Play some long notes with the effect instruments—you will be surprised to hear the fantastic sounds included with your sound board.

6. Troubleshooting

Installation

Files or components cannot be found.

If any files or components cannot be found during the installation or when the software is installed, there is an I/O address, DMA, or an interrupt conflict.

In this case, use the SNDINIT.EXE (C:\MIROSND) configuration program to set the address, DMA channel, or the interrupt to values which are not used. (Network adapters often occupy the values which sound board use).

CD-ROM

CD-ROM drive cannot be found.

If you use the miroSOUND PCM12 board as CD-ROM interface, check to make sure that the data cable connected to the CD-ROM drive is connected to the right CD-ROM interface on your miroSOUND PCM12 board. See also p. 5.

The CONFIG.SYS file has to include the following entries:

```
DEVICE=C:\MIROSND\CDSETUP.SYS /T:S /P:320 /I:10 /D:3  
DEVICE=C:\xxxxxx.SYS /D:MSCD001 /P:320
```

(These parameters depend on the configuration and can be different!) Make sure that the I/O address (/P:xxx) is identical in both entries.

The AUTOEXEC.BAT file has to include the following entry:

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

Audio-CD cannot be played back.

Make sure that the CD-ROM drive has been installed correctly. To play back Audio-CDs under Windows, the *MCI CD-Audio* driver has to be installed. See also p. 18.

Make sure that the sliders in the miroMIXER application are not set to *Mute*. Check to make sure that the pin allocation of the miroSOUND PCM12 CD-ROM audio output is the same as the one on the CD-ROM drives audio output. See also "Appendix A: Pin allocations".

IDE-CD-ROM drives

If an Enhanced IDE controller is installed in your computer which supports up to 4 hard disks, you cannot connect the IDE-CD-ROM drive to the miro-SOUND board. In this case, connect the CD-ROM drive directly to the hard disk controller. If you connect the CD-ROM drive to the hard disk controller, please check to make sure that the jumper on your hard disk is set to "MASTER/SLAVE PRESENT". For further information, refer to the documentation of your hard disk and your CD-ROM drive.

WAV files

WAV files are played back too fast or are distorted.

Possibly the ISA bus clock is not 8.33 MHz (default). In this case, set the ISA bus clock in the BIOS of your computer to 8.33 MHz.

7. Technical data

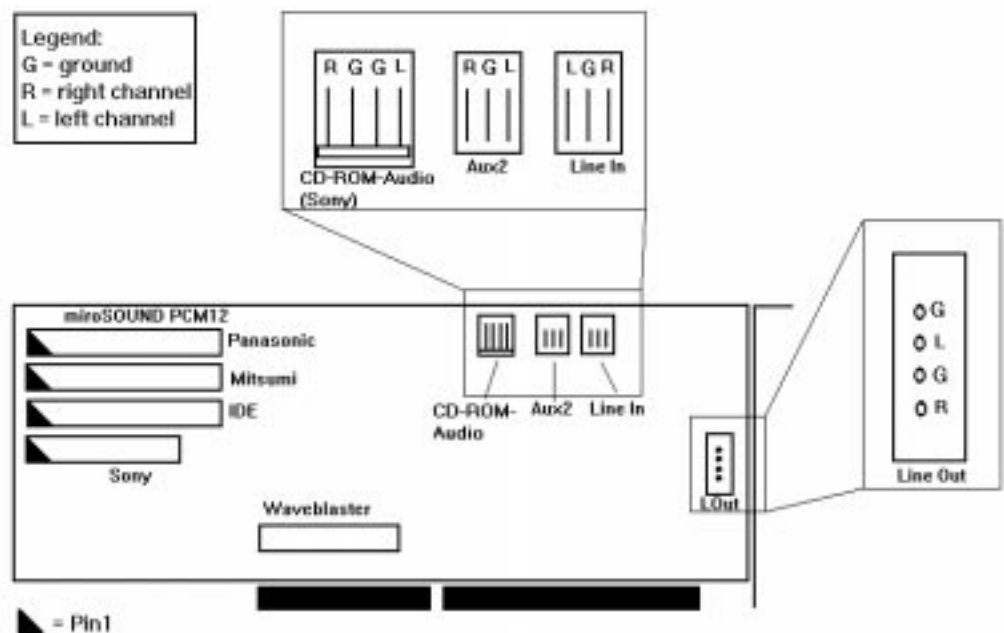
Sound processor	Yamaha OPL4, 24 PCM wave voices, 20 FM voices
Bus system	16-bit ISA
Wave Table ROM	2 MB, 128 instruments, 47 drums
Compatibility	AdLib, Sound Blaster, Sound Blaster Pro II, Microsoft Windows Sound System, Roland MPU-401 (Windows and DOS)
Sampling	16-bit stereo, 48 kHz, maximum 44 simultaneous voices, record and playback at the same time
MIDI interface	Sound Blaster compatible, 8 byte FIFO, MIDI time stamp, MPU-401 compatible (Windows and DOS), General MIDI instrument set
CD-ROM interfaces	Sony, Mitsumi, Panasonic, IDE
External connectors	Stereo microphone input, stereo Line In, Line Out output, combined standard Game Port/MIDI connector
Connectors on board	40-pin CD-ROM for Panasonic, Mitsumi, and IDE, 34-pin CD-ROM, Sony, CD audio for Panasonic, Mitsumi, and Sony, internal PC speaker input, stereo Aux input, stereo Line In, internal MPC stereo speaker output
Electrical	Microphone input 600 Ohms Line In, CD audio, Aux inputs 47 kOhms Line Out 220 Ohms

Notes

Appendix A: Pin allocations

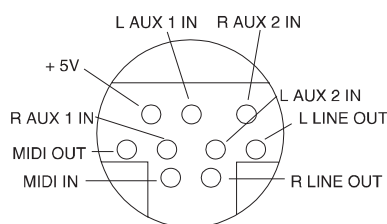
The following diagrams shows the pin allocations of the miroSOUND PCM12 connectors:

Internal connectors

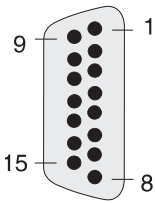


When connecting the internal miroSOUND PCM12 connectors (e.g. the CD-ROM connector), please make sure that you connect the right (left) channels to the right (left) channels and the ground channels to each other. If necessary, modify the cable.

Line In connector



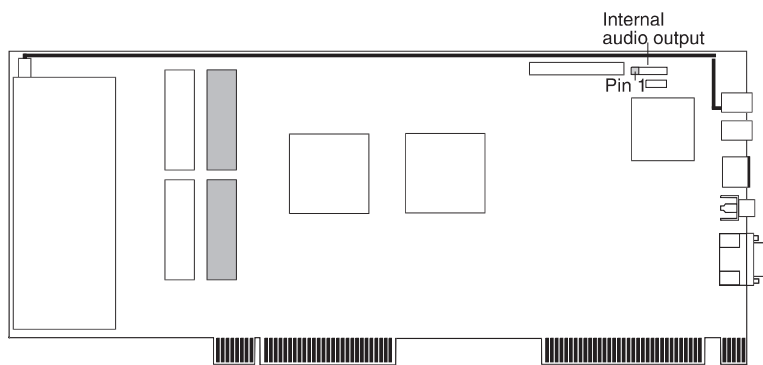
**MIDI/joystick
connector**



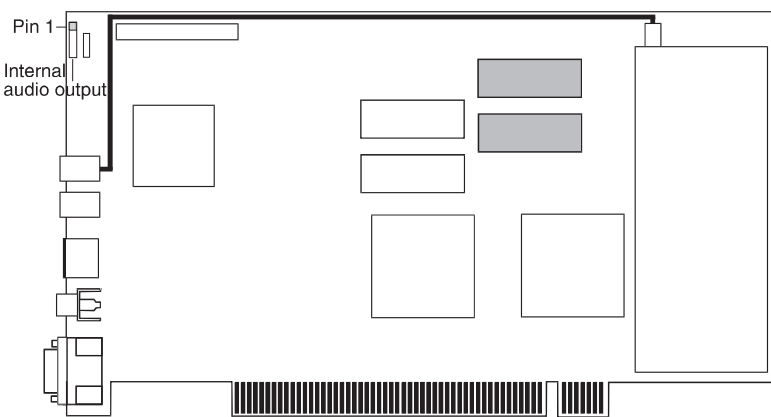
Pin number	
1	+5V
2	In4 key1
3	IN0
4	ground
5	ground
6	In 1
7	In 5 key2
8	+5V
9	+5V
10	In6 key3
11	In2
12	MIDI Out
13	In3
14	In7 key4
15	MIDI In

Appendix B: Internal audio output on miroVIDEO 10/20TD live

The following illustrations show the internal audio output on the miroVIDEO 10/20TD live board.



miroVIDEO 10/20TD live/VL: Internal audio output



miroVIDEO 10/20TD live/PCI: Internal audio output

The following tables show the pin allocation of the internal audio connector on the miroVIDEO 10/20TD live board and the Line In input of the miroSOUND PCM12 board.

1	Left channel
2	Ground
3	Right channel
4	Ground

1 (left)	Left channel
2	Ground
3	Right channel



If you connect the Line Out input of the miroVIDEO 10/20TD live board with the Line In input of the miroSOUND PCM12 board, make sure that you connect the right (left) channels to the right (left) channels and the ground channels to each other. You do not have to connect the ground channel on the miroVIDEO 10/20 TD live board.

Appendix C: Glossary

This glossary explains the most important terms occurring in this manual and in the field of sound boards in general. Cross-references are marked by this icon .

Address	All memory positions in a computer have numbers (addresses). Through these addresses each memory position can be addressed directly. Some addresses are reserved for certain hardware components and must not be used. If two hardware components use the same address, there is an address conflict.
AdLib	Standard for generating  FM sounds. Adlib—originally a sound board manufacturer—was the first sound board standard for PCs.
Analog	Opposite of  digital. Analog signals can take on continuous values.
AUTO-EXEC.BAT	A special DOS  batch file which is processed automatically after the computer has been started. The file contains among other things commands which load the country-specific keyboard driver ( Driver), set the time or load programs automatically.
Batch file	A  DOS file where a sequence of commands is processed one after the other ( AUTOEXEC.BAT).
CD-ROM	C ompact D isk- R ead O nly M emory. CD-ROMs are mass storage media for digital data which are read by a laser beam.
Codec	Device for c oding and d ecoding signals. A codec converts analog signals into digital signals (coding) and converts digital signals back into analog signals (decoding).
CONFIG.SYS	A  DOS configuration file which is processed automatically when the system is starting. The CONFIG.SYS file includes  drivers which control the output to the monitor and the keyboard and the mouse.
Controller	All drives in a PC (floppy disk drives, hard disk drives, CD-ROM disk drives) require a controller which serves as an electrical link between the PC and the drive and which controls the drive's functions (e.g. positioning the head on the disk).
Digital	Literal meaning: represented by numbers. Opposite of  analog. In data processing technology numbers are usually represented by binary signals. Binary signals can take on only two values 0 and 1.
DMA channel	Through D (irect) M (emory) A (ccess) channels data is transferred between hardware components (e.g. expansion boards) and the computer's memory directly and rapidly avoiding the CPU. Each DMA channel has a number and can be used by only one hardware component.
DOS	D isk O perating S ystem. The most common operating system for PCs. MS-DOS is Microsoft's DOS version.
Driver	Programs which integrate the hardware in the computer (e.g. drivers for CD-ROM drives) and which adapt the software to the hardware (e.g. drivers for graphical user interfaces, such as Microsoft Windows).

Dynamic microphone	In dynamic 📖 microphones a diaphragm is attached to a small coil which swings in a magnet. The power generated by the coil is amplified.
Electret microphone	In electret 📖 microphones, the diaphragm consists of electrically polarized matter (electret).
FM	Frequency modulation. Modulation technique used for example for broadcasting VHF radio programs. The signal to be transmitted modulates the frequency of a constant amplitude carrier signal. On sound boards, instrumental sounds are generated synthetically using the FM technique.
Frequency modulation	📖 FM.
General MIDI	Standard, specified by the synthesizer manufacturer Roland, which ensures that MIDI sound files are compatible with each other. The General MIDI standard assigns fixed MIDI instrumental numbers to real instruments (📖 MIDI). GM files should sound the same on any output device.
GS	General Synthesizer , extension of the 📖 General MIDI standard developed by the synthesizer manufacturer Roland. The GS standard includes additional instruments and special effects, such as Hall and Chorus.
IDE	Common standard for connecting CD-ROM drives.
Interface	Link between two parts of a system or between two systems where information, pulses and signals are adapted in a way that the receiving part can understand the sending part. For example, signals which the computer sends to the printer have to be adapted by an interface so that the printer "understands" what it has to print.
Interrupt	An interrupt is a signal used by expansion boards and other hardware components to request the CPU. Each hardware component should use a separate interrupt.
I/O address	📖 Address.
IRQ	📖 Interrupt.
Joystick	Input device mainly used for computer games which converts the movements of a handle into movements on the screen.
Microphone	A microphone is an electroacoustic converter, which converts acoustic vibrations taken up by a diaphragm into electrical power (📖 electret microphone, 📖 dynamic microphone).
Microsoft Windows Sound System	Sound standard by Microsoft.
MIDI	Musical Instruments Digital Interface : standardized 📖 interface developed by synthesizer manufacturers in 1983 for the data transfer between electronic musical instruments, computers etc. MIDI devices interconnect via 5-pin MIDI connectors. In a computer, music is often stored in the MIDI format. The MIDI files consist of command sequences, e.g. "select instrument 4", "note A on", "note A off". The sound generated depends on the synthesizer of the sound board.

MIDI adapter	Adapter which allows to connect MIDI devices to the 15-pin joystick connector on sound boards. Sound boards usually do not have 5-pin MIDI connectors. To connect a MIDI device to the MIDI/joystick interface on sound boards, a MIDI adapter is therefore required.
MIDI-In connector	A MIDI device receives signals through the MIDI-In connector.
MIDI-Out connector	A MIDI device sends signals through the MIDI-Out connector.
MIDI sequencer	Software for editing MIDI files which operates like a multi-channel studio mixer.
MIDI songs	As opposed to 📖 samples, MIDI songs consist of the individual notes of a musical piece. To play the music back correctly, MIDI devices or sound boards have to assign the correct instruments to the notes.
MIDI-Thru connector	The MIDI-Thru connector loops through signals which are received through the MIDI-In connector.
MPC	M ultimedia P C standard developed by Microsoft which specifies the minimum equipment of a multimedia PC. A PC complying to the MPC standard is able to run MPC multimedia applications and CDs without any limitations.
MPU-401	Originally a MIDI interface developed by Roland. Acronym for M usic P rocessing U nit. Today: standard for most sound applications and games running under MS-DOS. Under 📖 DOS and Windows the MPU-401 interface transfers MIDI signals (for the most part General MIDI signals) to the Wavetable module. To be able to generate Wavetable sound for games and sequencers (📖 MIDI sequencer) running under DOS and supporting General MIDI, the MPU-401 support under DOS is essential.
MSCDEX.EXE	So-called High-Level driver for CD-ROM drives which prepares the data and the CD-ROM file system for MS-DOS. MSCDEX.EXE is supplied by Microsoft and is identical for all CD-ROM drives. As opposed to the High-Level driver, the Low-Level driver transfers the data between the PC and the CD-ROM controller and calls the control functions for the drive. The Low-Level driver is supplied by the manufacturer of the drive or the 📖 controller.
Operator	Sine oscillator which either generates the carrier signal or modulates the frequency of a second operator (📖 FM). To reproduce the sound of a musical instrument, a sound board needs at least two operators. Percussion instruments (e.g. drums) require only one operator.
OPL2	First sound chip by Yamaha for sound boards which generates 📖 FM sounds. OPL2 could generate 11 mono voices (6 instruments, 5 drums) simultaneously. Each voice consist of 2 📖 operators.
OPL3	OPL3 is a 16-bit stereo chip and can generate 20 voices consisting of 4 📖 operators.

OPL4	OPL4 is a 16-bit stereo chip and can generate 44 voices. There are 24 Wave-table voices (PCM samples) and 20 FM voices consisting of 4  operators (OPL3). The 44 voices can be played back simultaneously ( Wavetable,  PCM,  Sample).
Patch	In computer technology, patching means modifying data which normally are fixed. In the field of sound boards patches are modifications of basic sounds.
PCM	Pulse Code Modulation. Modulation technique for converting analog into digital data.
Powered speakers	Powered speakers have a built-in amplifier and require a power supply or, more frequently, batteries. In most cases, powered speakers are used to amplify output signals of sound boards.
Sample	Digitized audio signals which can be processed by computers. A sample consists for example of a complete musical piece with all voices and instruments. Processing a sample is restricted to cutting, inserting and playing backwards individual parts of a sample. Individual voices cannot be deleted. This is only possible for  MIDI songs with the help of  MIDI sequencers.
Sampling	Digitizing audio signals. Sampling converts sound into digital signals which computers can process.
Sampling rate	Number of  samples generated per second when digitizing ( sampling) analog signals (sound). The lower the sampling rate is, the lower is the sound quality of the played back digital audio signals. The higher the sampling rate is, the truer is the digitized sound to the original. The sampling rate for CDs is 44.1 kHz in stereo (2 x 44,100 samples per second).
Sound Blaster compatibility	The Sound Blaster is a sound board developed by the Creative Labs company that has established itself as a standard as the result of its widespread use. A distinction is made between Soundblaster and Soundblaster Pro compatibility. Soundblaster Pro-compatible boards are fully capable of generating stereo sound.
Synthesizer	Here: generates the sound on a sound board.
WAV	File format for sound files. "WAV" stands for wave form.
Waveblaster connector	Small connector on the sound board to which a wavetable module attaches. Waveblaster is originally an add-on board by Creative Labs.
Wavetable	Digital recording of a natural instrument sound in the ROM (read-only memory) of a sound board. The original sounds are taken from the memory and are not reproduced synthetically as with  FM. The larger the Wave-table ROM, the higher the sound quality.

Index

A

Address IV, 9, 10, 12, 13, 16
AdLib 1, IV, 25
Analog IV
Audio devices 6
Audio input 6
Audio output 6, 23
AUTOEXEC.BAT IV, 11
Aux2 6

B

Batch file IV
Board layout 5

C

CD-ROM IV
CD-ROM drive 4
CD-ROM interface 1, 25
Codec IV
Compatibility 1, 25
CONFIG.SYS IV, 11
Connectors 25
Controller IV, 5
Cubase LITE 1

D

Data cable 5, 9, 23
Deinstall 16
Devices
 external 6
 peripheral 4
Digital IV
DMA 19
DMA channel IV, 9, 12
DOS IV
DOS environment string 19
Driver IV
Dynamic microphone V

E

Effect instruments 22
Electret microphone V
External connectors 25

F

FM V
FM mode 14
Frequency modulation V

G

General MIDI V
GS V

H

HQ-9000 1

I

I/O address V, 12, 19
IDE V
Instrument
 melodic 14
 percussive 14
Interface V
Interrupts V, 16
IRQ 12, 19

J

Joystick V
 adapter 6

L

Line In input 6
Line Out output 25

M

Media Player 18
Microphone V
Microphone input 25
Microsoft Windows Sound System 1, V, 25
MIDI V
MIDI adapter VI
MIDI interface 25
MIDI sequencer VI
MIDI songs VI
MIDI-In VI
MIDI-Out VI
MIDI-Thru VI
miroSOUND GS4 upgrade 2
miroSOUND Line & Extender Box 6
miroSOUND Line & MIDI Extender Box 2, 3
miroVIDEO 10/20TD live III, 6
Mixer 17
MPC 1, VI, 25
MPU-401 1, VI, 25
MSCDEX.EXE VI, 13, 14

O

Operator VI
OPL2 1, VI, 20
OPL3 1, VI, 20
OPL4 1, VI, 20

P

Package contents 2
Patch VII

PC speaker 25
PCM VII
PCM synthesis 14
Pin allocations I, II
Playing back and recording 1
Powered speakers VII

S

Sample VII
Sampling VII, 25
Sampling rate 1, VII
Slot 4
SNDINIT.EXE 12
Sound Blaster compatibility VII
Sound Forge 1
Sound processor 25
Static charge 2, 4
Synthesizer VII
System requirement 2
SYSTEM.INI 11

V

Volume 17, 18, 19

W

WAV VII
Wave Table technology 20
Waveblaster connector VII
Wavetable VII