



miroCONNECT

USER'S GUIDE



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miroCONNECT

User's Guide

Version 1.0/D/GB/F/E/I June 1996

VDOK-MEON-000

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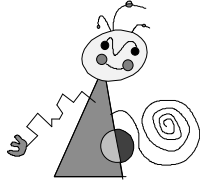
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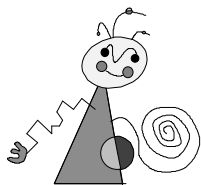
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For your own safety

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

Before opening the computer make sure that the power plug is disconnected from the main socket.

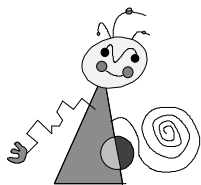
Computer components are sensitive to static charge. Divert any electrostatic charge from your person before touching the components with your hands or any tools.

Make sure that the components you want to add to the computer are in compliance with the computer's characteristics.

Avoid address conflicts!



For changes that have occurred after the manual has been printed, refer to the README file/s on the disk/s supplied with your system! In the Windows File Manager double-click the README file to get the latest information.



About the manual

This manual explains how to install and use the miroCONNECT hardware and systemsoftware.

miroCONNECT is a part of miro products e.g. miroCONNECT 34 Office and miroMEDIA Online.

Subheadings

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



Important text passages are marked with the “notepad” and this format.

Numbers mark step by step instructions:

1. Start Windows.

Bullets mark instructions for optional steps the order of which is not important:

- Connect the miro board to the microphone.

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*.



Overview

Thank you for purchasing the miroCONNECT 34 (hereafter referred to as “miroCONNECT”).

Your miroCONNECT is an all-in-one communication system—it provides:

- ♦ Complete telephony functionality
- ♦ Extensive fax/modem features
- ♦ Exceptional sound reproduction
- ♦ Access to on-line services and Internet
- ♦ High performance
- ♦ ... and more.

You can take full advantage of all miroCONNECT functions, or use only those that interest you for now.

This miroCONNECT 34 User's Manual explains how to install your hardware and software to use your miroCONNECT. Even if you don't like reading manuals, we strongly recommend you take the time to browse the chapters so that you can decide which components you want to install. You should also be aware that your existing computer configuration dictates how you should install and configure the miroCONNECT.

This manual contains several terms with which you might not be familiar. Refer to the Glossary at the end of the manual for definitions of terms.

PRODUCT OVERVIEW

Your miroCONNECT provides numerous functions that would otherwise be available only by purchasing several different circuit boards. On a single board, miro has incorporated a fax machine, modem, telephone, telephone answering device, and 16-bit wave table sound board. You can use your miroCONNECT to record and play back sounds and music, thereby enhancing the realism of game software.

Your miroCONNECT utilizes the Mwave technology developed by IBM. The board contains the MWAVE MDSP-2780 (DSP is an abbreviation for Digital Signal Processor).

Mwave Technology

Mwave is a modular technology for use with telecommunications and sound applications. The Mwave architecture consist of integrated hardware and software that offers open, industrial-standard interfaces and standardized system-independent signal processing.

Mwave's modular architecture makes it easy to expand the functionality of your miroCONNECT simply by adding new software.

Your miroCONNECT provides significant features and functions for telecommunication as well as sound and games.

Features

- Tele-communications**
 - ♦ Modem support with a data transfer rate up to 28,800 bps, V.34
 - ♦ Fax support with a data transfer rate up to 14,400 bps
 - ♦ Connection to existing telephone lines
 - ♦ Parallel operation with your existing telephone
 - ♦ Telephone and data transmission over one telephone line (DSVD = Voice over data function (see page XI in the Appendix)
 - ♦ Call answering functions
 - ♦ Full duplex speaker phone for hands-free operation
 - ♦ Automatic discrimination between modem, fax, and voice data (DSVD)
- Sound and Games**
 - ♦ Wave Table sound with 32 parallel voices
 - ♦ Soundblaster Pro compatibility
 - ♦ MIDI-MPU-401 (under DOS and Windows)
 - ♦ Qsound for 3D sound effects
 - ♦ Data and audio possibilities of switching over and mixing the audio inputs and outputs
 - ♦ Stereo Line-In input with CD recording quality
 - ♦ Stereo Line-Out output with CD playback quality
 - ♦ Microphone input with gain control for dynamic and electret microphones
 - ♦ Connector for two joysticks (adapter cable for two joysticks not included)
 - ♦ MPC3-compatible

For the technical data of miroCONNECT, refer to chapter 4 “Technical data”.

SYSTEM REQUIREMENTS

The following table shows minimum hardware and software requirements for using your miroCONNECT hardware and software. If your systems does not meet the minimum requirements, contact your reseller for upgrade information.

Component	Minimum Requirement	Note
Computer System	386 processor operating at 40 mHz	486 processor is recommended
RAM	4 MB	8 MB recommended
Expansion Slot	One free 16-bit ISA or EISA slot	
Operation systems	DOS 5.0 or Windows 3.1	DOS 6.0 or Windows 95 is recommended
Hard Disk Space	100MB	Can vary depending on components you install
recommended: CD-ROM Drive	IDE-compatible	Required for software installation*

* If you do not have nor intend to use a CD-ROM drive, you can purchase floppy disks at an additional charge.

PACKAGE CONTENTS

Your package contains the following items*.

- ♦ miroCONNECT board**
- ♦ Microphone
- ♦ System software
- ♦ Application software
- ♦ Telephone Cable
- ♦ Telephone Adapter Cable***
- ♦ User's Guide
- ♦ Application Manual

***not included for all countries

Accessories (optional): miroMEDIA Radio upgrade: FM Stereo tuner with RDS functions

If anything is missing, contact your reseller for replacements.



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

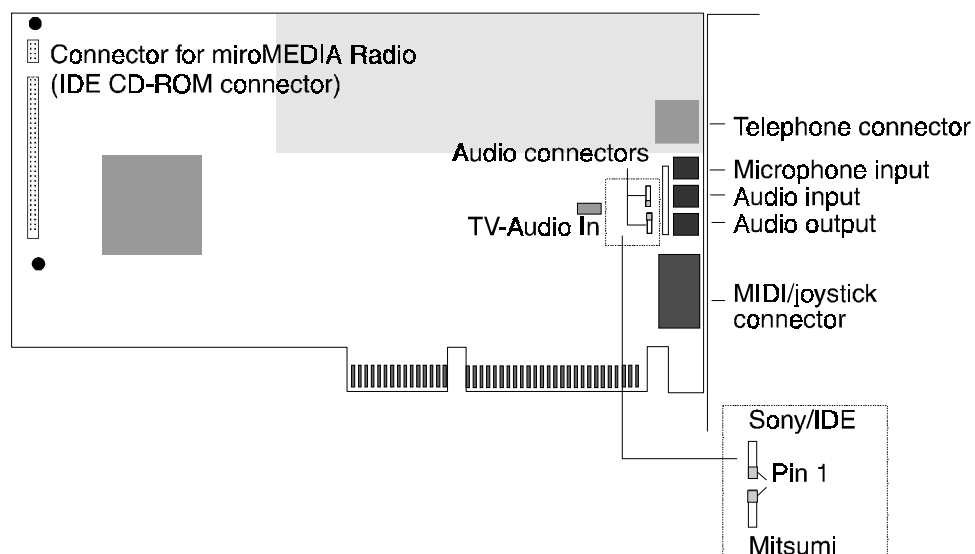
* Depending on the delivery scope, the actual package contents may be different from the package contents listed in the manual.

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

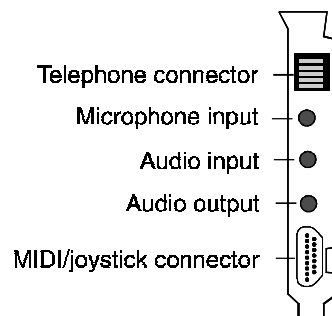
miroCONNECT BOARD DIAGRAM

The following diagram identifies the important components on your miroCONNECT circuit board. Take a few moments to study the diagram and familiarize yourself with the components and their respective names

Side view



Rear view





Installation

This chapter contains step-by-step instructions for installing your miroCONNECT hardware and software. Please read this entire chapter before beginning installation procedures. Your systems configuration might require that you perform special steps during installation. The whole process will be easier if you are aware of such requirements before you begin.

You need some or all of the following (none of which are provided in your miroCONNECT package):

- ♦ A screwdriver for removing and re-installing your computer's cover and expansion slot screws.
- ♦ Your computer system's documentation so that you know what devices are installed and how they are configured.
- ♦ The documentation for your CD-ROM drive.
- ♦ If you plan to connect your audio devices (such as a set of speakers), you need suitable cables.
- ♦ If you plan to connect two joysticks, you need a joystick Y-adapter.
- ♦ If you plan to connect a MIDI device, you need a MIDI adapter cable.
- ♦ You might need different data and audio cables for connecting your CD-ROM drive to your miroCONNECT circuit board. However, if your existing cables are compatible, you can use them to make the connections. You need to connect the data cable only if a CD-ROM drive is connected to miroCONNECT. In most cases, CD-ROM drives are connected directly to the IDE connector of the PC motherboard.

If you already have a fax or modem card installed, we recommend you to remove it. Although you can use two fax/modems if you have a free COM port, you might experience problems in Windows or other applications.

For your information, the miroCONNECT fax/modem is fully Hayes-compatible.

INSTALLING THE miroCONNECT BOARD

It is extremely important that you always discharge any static electricity from your body before handling any of your computer components, including your miroCONNECT. To do so, touch any bare metal surface, such as the power supply unit inside your computer after removing its case. Failure to discharge static electricity can damage your computer system components.

The following steps summarize what you must do to install your CD-ROM drive and your miroCONNECT hardware and software. For detailed information about each step, consult the referenced sections.

Please read all steps in this section before you begin installing your miroCONNECT circuit board.

To install your miroCONNECT circuit board:

1. If your computer system is turned on, shut it down completely, and turn off all peripheral devices.
2. Disconnect the power cord and any cables connected to the back of your computer.



If you have several cables connected to your computer, you might find it helpful to identify them prior to disconnecting. Use colored pens, masking tape, or whatever method will help you reconnect each cable to its correct location.

3. Remove the cover from your computer system.
Refer to your computer system manuals if you need help with this step.
4. Carefully touch the computer's power supply unit, or any bare metal surface, to discharge all electrostatic energy stored in your body.
5. Select an empty 16-bit ISA or EISA expansion slot to insert the miroCONNECT board. If you don't have a slot available, remove one of your existing boards to make room.
6. Remove the expansion slot shield at the back of your computer.
7. Remove your miroCONNECT board from its antistatic package.
8. Carefully insert the miroCONNECT board into the expansion slot you've selected.

Do this step carefully. Hold the board with both hands at its top edge. Use a gentle, end-to-end rocking motion to work the board connectors into the expansion slot. When you think the board is firmly seated, check it one last time.



If you have trouble seating the board in the slot, don't force it. Instead, remove the board and check it visually for bent or broken connectors. Then reinstall the board slowly and carefully.

9. Fasten the miroCONNECT board's bracket to the expansion slot opening at the back of your computer. Use the screw that held the expansion slot shield or the board you removed from the slot.
10. Replace the cover on your computer and reconnect all cables you disconnected earlier.

If you want to install a CD-ROM drive, install it consulting the CD-ROM drive's documentation and then reassemble the computer.

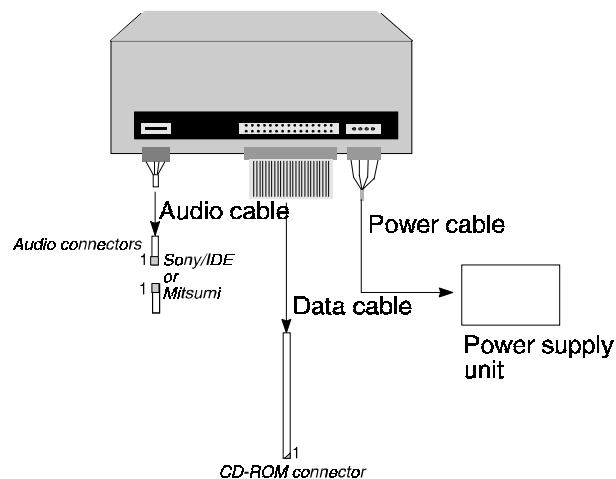
CONNECTING AN IDE CD-ROM DRIVE



Important: If possible, connect the CD-ROM drive to the IDE connector of the PC motherboard

Connecting the cables

- Audio cable**
1. Attach the audio cable to the CD-ROM drive and to the miroCONNECT board.
One end of the Audio Cable connects to the rear of your IDE CD-ROM drive. The other end connects to either the SONY/IDE or Mitsumi Audio Connector on your miroCONNECT.
Normally, the Pin 1 location on this connector is located closest to the Power Cable connector:

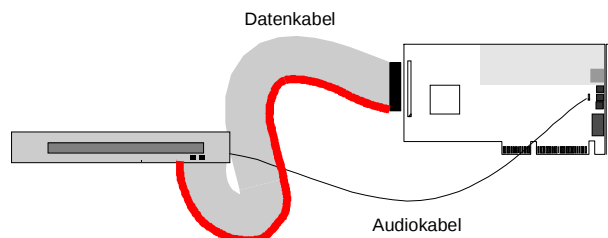


Rear View of Typical CD-ROM Drive showing Cables and Connections

In these diagrams, the Pin 1 location on the Audio and Data Cable Connectors is identified by a grey box or triangle and the number 1.

- Data cable**
2. Connect the Data cable.

The following diagram shows typical connections for a CD-ROM drive.



One end of the Data Cable (a flat, “ribbon” style cable) connects to the rear of your CD-ROM drive. The other end connects to the IDE Data Cable Connector on your miroCONNECT.

- Power cable**
- One end of the Power Cable connects to the rear of your CD-ROM drive. The other end connects to the rear of your computer’s Power Supply unit.



If you examine each connector on the miroCONNECT with a magnifying glass, you can see that the Pin 1 location on each is marked with the numeral “1”. Likewise, the Pin 1 location should also be identified on your CD-ROM drive (normally it is nearest to the power connector). The cables themselves normally use a Red wire to identify Pin 1.

If you want to connect further internal devices to miroCONNECT (TV Audio In, Radio Audio In, ...), refer to the board layout on page 4.

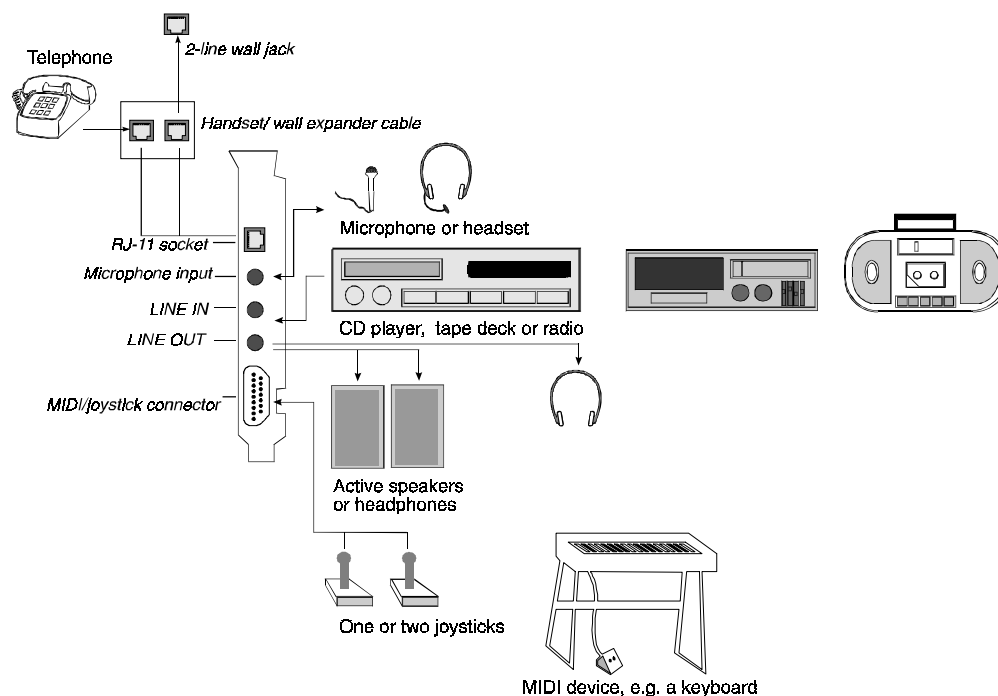
CONNECTING EXTERNAL DEVICES

Once you successfully install your miroCONNECT board, you can connect a wide variety of devices to it, depending upon your needs. The diagram on the next page shows some of the possibilities.

To use the telephone, fax, and/or modem functions available on your miroCONNECT board, use the telephone cable or cables included in your package.

To use a microphone or headset, connect either device to the microphone input connector on your miroCONNECT.

To use a CD Player, Tape Deck, or Radio with your miroCONNECT, attach the device to the Audio Input connector on your miroCONNECT.



To direct audio output to a pair of headphones or to active (self-powered) speakers, attach the device to the Audio Output connector on your miroCONNECT.

To use a MIDI device with your miroCONNECT, attach the device to the MIDI/Joystick connector on your miroCONNECT. This connection requires a suitable cable with a 15-pin, D-type connector.

To connect a MIDI device or a single joystick to your miroCONNECT, you need a cable with a 15-pin D-type

To use a single joystick, connect it to the MIDI/Joystick connector on the miroCONNECT. This also requires a suitable cable with a 15-pin, D-type connector.

To use two joysticks, use a joystick Y-adapter cable in conjunction with a suitable cable with a 15-pin, D-type connector.

INSTALLING YOUR miroCONNECT SOFTWARE

Run the installation program for your CD-ROM drive. This program should be located on a floppy disk included with your drive.

1. If you are under Windows, quit Windows and go to the DOS prompt. You have to run the program under DOS—under Windows this is not possible.
2. Insert the diskette into your disk.
3. Start the program, by entering **a:install** or **b:install** and pressing <↵>.

The program leads you through the installation of the miroCONNECT driver software. Follow the instructions on the screen.



Error messages may appear that will say that your CD-ROM drive cannot be found or is not accessible after restarting the system. In this case, do not worry. The messages will disappear as soon as you executed all installation steps.

4. Press Ctrl+Alt+Del to restart the computer.

After the restart you can install the miroCONNECT system software.

INSTALLING THE miroCONNECT SYSTEM SOFTWARE

Your miroCONNECT package contains one CD (Compact Disc) on which is located the installation program (that is, SETUP.EXE) for installing the required and optional software components for use with your new hardware under DOS, Windows 3.11 or Windows 95.

During installation, you have the opportunity to specify the disk and directory where you want to install various components. We recommend you take a few moments to plan which disk and directory you intend to use. It's best to do your planning ahead of time because once installation begins, you won't be able to explore your disks.

The amount of disk space required can vary greatly depending on which components you decide to install. You can run the setup program up to the point where it tells you disk space requirements then exit the program if you don't have sufficient space to complete installation. If necessary, you then need to free up space on your drive to meet the miroCONNECT requirements.



For maximum efficiency, you might want to defragment the drive you're going to use before installing your miroCONNECT software. If the drive is highly fragmented, your software cannot run at optimum speed. Several utility programs are available for defragmenting disks.

If you want to install miroCONNECT under Windows 3.11, please read the "Installation under Windows 3.1x" section, if you want to install miroCONNECT under Windows 95, please read the "Installation under Windows 95".

Windows 3.11 installation step by step

You installed your miroCONNECT board in your computer following the instructions given in the User's Guide.

The following text describes step-by-step on how to configure the Mwave system software for miroCONNECT on your PC.



IMPORTANT! When updating the system software uninstall the software version you used before.

To do so, click the deinstallation icon in the miroCONNECT program group.

Starting the installation program

1. Start Windows 3.11.
2. Insert WIN 3.11 CONNECT 34 Mwave System CD into the CD-ROM drive.
3. Click *File* menu item and click *Run...*
4. Click *Browse* to switch to the CD-ROM drive; select and start **SETUP.EXE**.

Paths and scope of installation

5. Specify to which subdirectory you want to install the system.
6. If desired, use the *Select* button to specify that the system files for DOS shall not be copied.

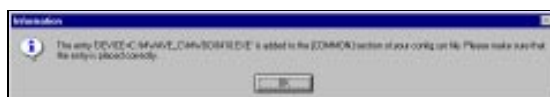
7. Click the mouse to start the installation.



Copy system files

Copy the system files to the hard disk. This takes some time.

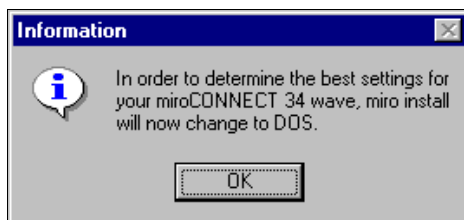
8. Check the entry in the [COMMON] section after the installation has been completed! This is only important if the CD-ROM drive has been copied to the miroCONNECT board!



Configuring the hardware

Due to the extensive miroCONNECT function range, the hardware uses some resources in the PC, such as address ranges, IRQs and DMA channels which may lead to conflicts with other boards which have been installed in the computer already.

For general information on this topic, please refer to the appendix.



The MWCONFIG tool facilitates configuring the miroCONNECT board:

9. Enable automatical configuration. In case your system stops restart the computer and the installation.
10. Eliminate conflicts (messages or red background) by changing the settings (click the T arrow) and restart the test.



Note: Resources which are already used are marked by a star (*). You can use the same IRQ for Soundblaster and General Midi. In your PC BIOS, IRQs should be reserved for miroCONNECT, that means that they must not be available for PCI slots for example.

11. If necessary, enable Joystick and/or CD-ROM I/O Address.



If any problems occur when using miroCONNECT, you can call the MWCONFIG program from the DOS level at any time.



Please note: You can run the automatical configuration test only from the DOS level; not in the DOS box under Windows! After the test has been completed the system has to be restarted.

Check the country settings

Normally, the system detects automatically which country version of miroCONNECT is installed in your PC. Since it may happen that this does not work on some fast PC systems this request will appear.



You always have to specify the country for which the installed board has been designed and approved but not the country where the board is inserted into the PC!



Note: According to the approval regulations only the country-specific certified miroCONNECT may be connected to the telephone network!

Restarting the PC system

12. After having completed the installation, restart the PC system so that all miroCONNECT functions will be enabled.



Note: You can change the default setting for the DOS operation mode at any time by calling FASTCFG on the DOS level. FASTCFG is started automatically by the **wave start** entry in the Autoexec.bat file each time the PC is started.



After you completed all installation steps, you can start working with the miroCONNECT software and hardware under Windows 3.1x and DOS. To do so, install the applications you want to use.

Windows 95 installation step by step

You installed your miroCONNECT board in your computer following the instructions given in the User's Guide.

The following text describes step-by-step on how to configure the Mwave system software for miroCONNECT on your PC.



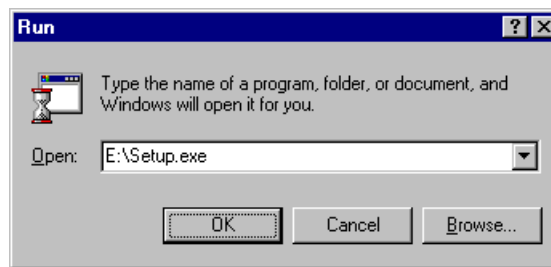
IMPORTANT! When updating the system software uninstall the software version you used before.

To do so, click the deinstallation icon in the miroCONNECT program group.

Preparation of installation

1. Start Windows 95.
2. Insert the CD-ROM with the CONNECT Mwave System for Windows 95 in your CD-ROM drive.
3. From the *Start* menu, select the *Run...* command.

4. Enter **d:\setup** in the command line where **d:** is the drive letter of your CD-ROM drive and click *OK*.

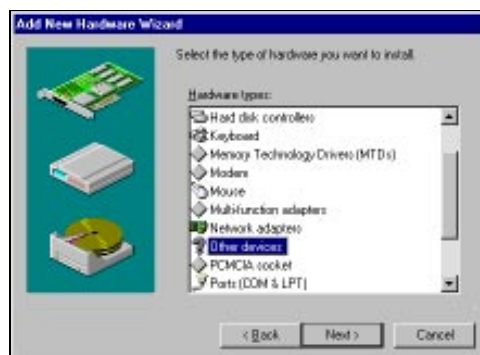


Activation of Add New Hardware Wizzard

5. Make sure that the hardware is not detected automatically and click *Next*.



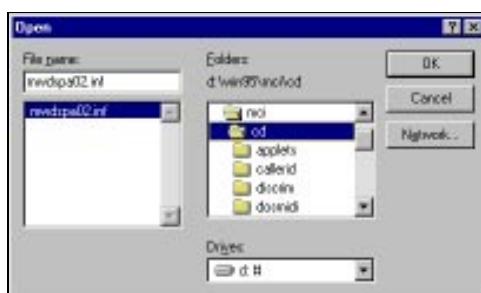
6. Choose *Other devices* as the hardware to be installed and click *Next* button



7. Do not select one of the listed device types but click the *Have disk* button.
8. Indicate the drive and path:

d:\win95\mci\cd

9. Click *OK* and the file description **MWDSPA02.INF** will be stated in the window.



10. Click the *OK* button.
11. Confirm the model indication *miroCONNECT Adapter* by clicking on *Next* button. Do not click the *Have Disk* button!



12. Do not change the hardware configurations! Proceed with the installation by clicking *Next* button.
13. Define in which subdirectory the system files have to be copied.

Copy of system files



Setting up of the device driver

14. Shut down the Windows 95 system.
15. Switch the computer off and on.
16. Start Windows 95.

Windows recognizes several times an unknown device and sets up the corresponding driver



- Restart PC system**
17. Shut down Windows 95 system
 18. Switch the computer off and on



Now all functions of the miroCONNECT are available under Windows 95 and DOS

**Verify/
Deactivate
Device Driver**

Device drivers of the miroCONNECT can be verified and deactivated in the Device Manager (*Start/Settings/Control Panel/System*).



For PCs having a CD-ROM drive which is connected to the second IDE interface of the motherboard the IDE interface of miroCONNECT has to be disabled.

**Deactivation of
device driver**

19. Click the *Properties* button
20. Remove mark for the field *Original Configuration (Current)* in the *Device usage* section



Disabled device driver are marked by a red cross in the Device Manager.

Never delete the device driver via *Remove* as these are set up automatically when restarting Windows 95!

21. Solve occurring conflicts with other devices according to the Windows Online Help.

Conflicts occur when two devices share the same PC resources, such as IRQs, DMAs or address ranges and Windows 95 cannot handle this. Conflicts are marked in the Device Manager by a yellow circle.

The complete **Deinstallation of the Mwave System** can be done by clicking the *Add/Remove Programs* button in the Windows 95 Control Panel (*Start* menu, *Settings* and *Control Panel*).



Troubleshooting

This section describes problems you might encounter when using your miroCONNECT. The probable cause and possible solutions for each problem are provided.

INSTALLATION PROBLEMS

Generally for Windows 3.1x and DOS

DIAG.EXE If you have problems with miroCONNECT, install first the DOS drivers. The C:\MWD\UTILS contains a test application called DIAGS.EXE. Please call this program. It will show you possible conflicts. Make sure that you disconnect the audio cables before calling the program, because otherwise an error message concerning the “Audio Logic” will appear.

AUTOEXEC.BAT Because the installation software enters some SET commands in the AUTOEXEC.BAT, make sure these are set and that enough free memory is available. You can check this by entering the **set** command in the DOS prompt. The following variables should be shown:

BLASTER=A220 I5 D1 T4

PATH= XXX; C:\MWW\DLL;C:\MWD\MANAGER

MWRUN=TRUE

MWPATH=C:\MWD\MANAGER;C:\MWD\MWGAMES

LIBPATH=C:\MWD\MANAGER

MWROOT=C:\MWD

XXX stands for the rest of the path.

If not all SET variables are set, enter these in the AUTOEXEC.BAT and increase the memory, if necessary. To do so, enter the following in the CONFIG.SYS:

CONFIG.SYS

SHELL=C:\COMMAND.COM /E:2048 /P

This should be the last line in the CONFIG.SYS file.

EMM386 If you use the Memory Manager EMM386, please do not use the HIGHSCAN option. You also should not optimize the memory with the MEMMAKER. If you use QEMM, do not use the “Stealth” option. Under Windows 95 you should never use EMM386!

Motherboard On some mother boards there may be problems due to memory optimization.

BIOS Please make sure that the required IRQs (especially the DSP IRQ of miroCONNECT) will not be used for the automatical management of the PCI slots—if present—. If necessary, disable the automatical allocation of the IRQs. This is absolutely necessary for Windows 3.1x and DOS.

ISA slot Please make sure that miroCONNECT is seated firmly in the ISA slot on your mainboard.

Bus clock Please check, if the ISA bus clock of your computer is 8.33 MHz at the most. If the ISA bus clock is higher the miroCONNECT may not function properly. On older mainboards you can change the ISA bus clock using the jumper on your mainboard, for new mainboards only the BIOS has to be changed. For more information, refer to the manual of your mainboard.

Mouse driver The message telling you that to the AUX device cannot be written is possibly provoked by an old mouse driver. Please remove all mouse drivers of third party suppliers from your system and use the original Microsoft mouse driver during the installation.

Update from miroCONNECT 34 wave to the miroCONNECT 34 Office version

This message only concerns users which used the installation disk labelled “miroCONNECT 34 wave”. This CD does not include the data code or the version number.

Users having an installation disk labelled “Datecode 09/95” (or higher) can skip this chapter.



Before copying the Office update, remove the out-dated miroCONNECT 34 wave driver software completely. Use the DEINSTALL tool supplied with the Wave software.

If you did not do the step mentioned above, delete the MWD, MWW, and MWAVE_C directories from the hard disk. Remove all entries from the CONFIG.SYS and AUTOEXEC.BAT files which the WAVE software has entered. If necessary delete the MWAVE.INI file from the Windows directory.

GENERAL PROBLEMS

Your systems reports address conflicts.

Indicates an address conflict between your miroCONNECT and another device used by your computer.

Please make sure that the I/O address, the interrupt and the DMA channel used by miroCONNECT is not also used by another device on your system. To do so, execute the miroCONNECT configuration program MWCONFIG for Windows 3.1x and DOS, or check the settings in the Windows 95 device driver. If necessary, change the setting.

Refer to the Appendix "DMAs, IRQs, and Addresses" for detailed information.

Your system cannot detect your miroCONNECT board, but there is no address conflict.

Normally indicates that your miroCONNECT board is not properly seated in the its expansion slot.

Shut your computer system down and check the installation of your miroCONNECT board. Refer to "Installing miroCONNECT Circuit Board" on page 6 for instructions on installing your board.

Your system reports a COM interface conflict, but the COM interface is not in use.

Your computer is using a COM interface assignment of its own with the same number as the COM interface used by your miroCONNECT.

You need to deactivate the COM interface that is being used by your computer. You can normally accomplish this by running the BIOS Setup program when starting your computer. See your computer documentation for complete instructions.

Under Windows 95, you can also disable the COM interface using the Device Manager.

Your CD-ROM drive does not function.

The entries in your CONFIG.SYS file are not in the correct sequence.

Use the DOS Editor program or Windows Write to display your CONFIG.SYS file.

Make sure the line that calls the MWDD0410.EXE driver precedes the line that calls your CD-ROM drive in your CONFIG.SYS file. If this is not the case, rearrange the lines accordingly.

Or:

First, install the CD-ROM driver for the corresponding disk drive. Then the installation program is started from the miro CD-ROM installation diskette.

In the CONFIG.SYS file the CDSETUP.SYS entry has to preceed the CD-ROM driver.

If an IDE-CD-ROM drive does not work when attached to the miroCONNECT 34 board, it may be that your system includes an EIDE

controller with a secondary IDE port which is enabled. In this case, attach the drive directly to the controller.

If you do not have a IDE-CD-ROM drive, install the Non-DMA driver (software polling driver) for your CD-ROM.

One of your disk drives is not functioning.

Normally indicates an I/O Address or DMA Channel conflict between the disk drive and your miroCONNECT.

Run the miroCONNECT configuration program for Windows 3.1x / the Device Manager for Windows 95 and look for any address or channel conflicts. If present, assign different values to your miroCONNECT. Refer to the Appendix “DMAs, IRQs, and Addresses” for further details.

Your network functions have ceased to work.

Normally indicates an I/O Address conflict between your network and your miroCONNECT.

Run the miroCONNECT Configuration program for Windows 3.1x / the Device Manager for Windows 95 and look for any address or channel conflicts. If present, assign different values to your miroCONNECT. Refer to the Appendix “DMAs, IRQs, and Addresses” for further details.

MODEM PROBLEMS

Your modem is not functioning—it starts, but the communication program does not run.

Normally due to a conflict between assignments for the COM interface or interrupts.

Check if the COM interface and interrupt assignments of the modem and of the application program correspond. If a conflict exists, make the necessary re-assignments.

Modem does not answer/is not accessed by the application.

Please check, if the COM port specified during the configuration is free and has not been used yet. In general, you should use COM port 4 and assign COM1 to the mouse. (Note: This could lead to problems with older graphics boards containing the S3 chip set because those use the I/O port 02E8h, this however, is already used by COM4).

You can also assign COM3 to miroCONNECT, then you have to assign the mouse to COM 2. COM1 and COM2 are mostly occupied so that they cannot be selected.



Note: Windows 95 manages the IRQs and address ranges of the COM interfaces dynamically as far as the PC BIOS admits this. This avoids conflicts. It may happen that the COM interface of miroCONNECT receives, e.g. the interrupt **IRQ 9**.

Please check to make sure if your communications or fax program permits this setting. With some old programs this is not possible. In this case, use the Windows 95 device manager to allocate the differently.

If an EIDE controller having a secondary IDE port is installed in your computer, the Mwave system IRQ must not be 15 because it is already used by the secondary IDE interface of your.

When installing the graphics drivers, it may happen that the installation program deletes entries in the WIN.INI file. For miroCONNECT to be detected as modem, the RUN line in the WIN.INI file has to include the following entries:

**RUN = C:\MWW\MANAGER\MWS.EXE;
C:\MWW\MODEM\MWMWIN.EXE**

If this entry is missing, please enter it manually.

Please also note the instructions in the “General” section.

Modem under DOS not found

Under DOS, the FASTCFG tool which starts automatically has to enable the modem. (The entry in the AUTOEXEC.BAT file which calls FASTCFG is **CALL MWAVE START**). Then you can use the terminal program under DOS.

SOUND PROBLEMS

Sound does not play.

Some newer computers, such as Pentium models, offer limited sound functionality. These functions occupy a DMA Channel and an Interrupt.

You need to deactivate your computer's sound functions in its BIOS Setup / in the Device Manager of Windows 95. You can access the functions during systems startup. See your computer's documentation for details.

Your speakers emit a ‘whistling’ sound.

Normally occurs when there is feedback between your speakers and your microphone.

Relocate your microphone so that it does not point directly at your speakers or change the microphone sensitivity in your application.

You do not hear sound when playing CDs, but your CD-ROM drive appears to be functioning.

Your CD-ROM's audio output cable might not be properly connected to your miroCONNECT board.



To make or check the connection, shut down your computer system before proceeding. Refer to “Connecting a CD-ROM Drive“ on page 7 for instructions. Please make sure that the MCI CD-Audio driver has been installed. For further information, refer to your Windows manual.

Simultaneous operation of another sound board together with miroCONNECT under Windows 3.1x

If you want to operate an already existing sound board together with miroCONNECT under Windows 3.1x, first install the drivers of your sound board and make a note of the selected addresses.

Then, install the driver for miroCONNECT and disable the items Soundblaster, General-MIDI, and Gameport in the Hardware configuration window or in the MWCONFIG configuration program.

Please make sure that you do not select addresses which are used by other hardware components.

Then, you can only use miroCONNECT as Highspeed modem.

Under Windows 95, you can disable all sound-specific device drivers of the miroCONNECT board using the Device Manager. (Please refer to the “Installation under Windows 95” section.)

SOFTWARE PROBLEMS

Dialling not possible with modem or FAX

If you operate miroCONNECT together with a PBX, it is required to add “X3” to the initialisation string. In this way, miroCONNECT dials the desired number although you hear the busy tone or the tone of the PBX. Please make sure that you also enter the PBX number.

Board does not recognize incoming calls

If this is the case, you probably use the miroCONNECT board together with a PBX. Some PBXs send tones which are not standardized. These are not recognized by miroCONNECT.

Please consult the person who is in charge of your PBX. He/she should adapt the tones for internal and external calls to the standard signal.

Last but not least

Use the following modem initialisation strings, if miroCONNECT is not listed in the modem list of the application:

Application	Initialisation/modem type	Speed
T-Online	Generic fast Modem with V.32; AT&FS24=1^M	57,600 bps
America Online	AT&F^M	57,600 bps
CompuServe	Hayes Compatible (default)	57,600 bps
DVS operation	AT-SSE=1	57,600 bps

MORE HELP

If you cannot solve the problems although you followed all instructions mentioned above, we need the following data:

CONFIG.SYS

AUTOEXEC.BAT

SYSTEM.INI

[WINDOWS] section in the WIN.INI

List of hardware used in your computer system

Detailed list of all IRQs/DMA's and I/O addresses used

Printout of miroCONNECT configuration

Detailed problem description

Revision number of miroCONNECT (on pcb)

Please send these documents to our support, or send us a fax under 0531/2113-110.



Technical data

Bus System	16-bit ISA or EISA Slot
Processor	Mwave MDSP-2780
CD-ROM Connection	IDE

TELEPHONE SUBSYSTEM

Connector	RJ-11 Socket
Sampling Rate	9.6 kHz
Resolution	13 bits linear
Transmit/Receive Rate	Max. 28.8 bps

AUDIO SUBSYSTEM

Sampling Rate	44.1 kHz/Channel
Resolution	16-bit linear/Channel

MICROPHONE INPUT

Connector	Mono 3.5 mm jack socket
Microphone Types	Mono Dynamic, Electret Battery-Operated
Input Impedance	2 k Ω
Electret mic bias voltage	3.3 V with 3.3 k Ω impedance
Maximum mic input voltage	-26 db
Minimum mic input voltage	-70 db
Microphone input gain	+26 db or +46 db
Microphone frequency response	20 Hz - 20 kHz +/- 3 db with +26 db gain 20 Hz - 13 kHz +/- 3 db with +46 db gain 20 Hz - 13 kHz +/- 3 db with +70 db gain

S/(N+D)	77 db with +26 db gain at 20 Hz - 20 kHz 68 db with +46 db gain at 20 Hz - 20 kHz 60 db with +70 db gain at 20 Hz - 20 kHz
Headphone Output Voltage	1.3 Vrms at 10 k Ω 1.0 Vrms at 600 k Ω
Headphone Output Impedance	33 Ω
Headphone Frequency Response	20 Hz - 20 kHz +/- 2 db at 10 k Ω Headphone S/(N+D) > 70 db at 1 kHz

AUDIO INPUT

Connection	Stereo 3.5 mm jack socket
Maximum input voltage	1 Vrms= + 6 db = 5.6 Vpp
Input impedance	20 k Ω
Signal/(Noise + Distribution)	82 db at 1 kHz 79 db at 20 Hz - 20 kHz
Frequency Response	20 Hz - 20 kHz (+1 db/-1 db)

AUDIO OUTPUT

Connection	Stereo 3.5 mm jack socket
Maximum Input Voltage	1 Vrms= +0 db = 2.8 Vpp at 1 k Ω
Output impedance	33 Ω
Minimum headphone impedance	>30 Ω
S/(N+D)	80 db at 1 kHz at 10 k Ω
Frequency Response	20 Hz - 20 kHz + 1 db/-1 db at 10 k Ω

CD-ROM AUDIO CONNECTION

Connection	4-pole Sony/MPC-compatible 4-pole Mitsumi
Maximum input voltage	2 V _{rms} = +6 db = 5.6 V _{pp}
Input impedance	10 kΩ
S/(N+D)	80 db at 1 kHz
Frequency Response	20 Hz - 20 kHz +/- 1.5 db

CURRENT CONSUMPTION

+5V, app. 1.2 A
+12V, app. 0.08 A
-12V, app. 0.06 A

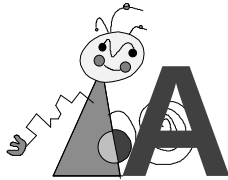
MODEM DATA

- ♦ Asynchronous operation through the COM interface
- ♦ Modem standards:
 - ITU-T V.34 28.8 kbps (default setting)
 - ITU-T V.32bis/14.4 kbps
 - ITU-T V.32/9600 bps
 - ITU-T V.22bis/2400 bps
 - ITU-T V.22/1200 bps
- ♦ Protocol standards:
 - ITU-T V.42 LAPM error correction
 - ITU-T V.42bis data compression
- ♦ MNP Class 2-4 error correction
- ♦ MNP Class 5 data compression
- ♦ Bell 103/212A, CCITT V.21/V.22, V.22 bis protocols with data rates from 50 to 2400 bps.
- ♦ CCITT V.32 protocols with data rates of 4800 bps and 9600 bps uncoded and 9600 bps trellis-coded.
- ♦ CCITT V.32bis protocols with data rates of 4800 bps, 7200 bps, 9600 bps, 12000 bps, and 14400 bps uncoded and 9600 bps trellis-coded.
- ♦ Hayes AT command repertoire-compatibility
- ♦ Call status display, Auto-dial
- ♦ DTMF and pulse dialling *pulse dialling only for Germany
- ♦ Asynchronous error correction protocol
- ♦ Error correction in accordance with MNP 1-4
- ♦ CCITT V.42 error correction
- ♦ MNP class 5
- ♦ CCITT V.42bis data compression

FAX DATA

- ♦ Call status display
- ♦ Auto-dial
- ♦ Supports Windows MCI fax application interface
- ♦ Uses DMA instead of COM port, thus avoiding interrupt allocation
- ♦ Tone and pulse dialling *pulse dialling only for Germany
- ♦ G3 transmission operation
- ♦ V.27ter 2400/4800 bps Send/Receive
- ♦ 7200/9600 bps Send/Receive
- ♦ 12000/14400 bps Send/Receive
- ♦ Sending and receiving with Standard Class 2 fax software
- ♦ Manual sending/receiving

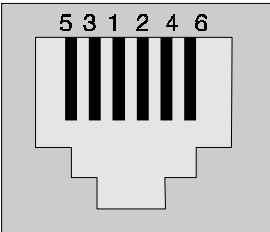
NOTES



PIN ASSIGNMENTS

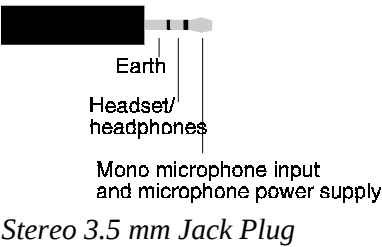
This appendix defines the pin assignment for the various connectors in your miroCONNECT board.

Telephone connection

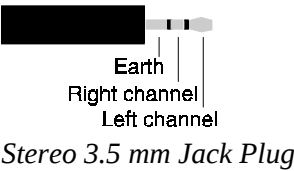


Pin	Assignment	Pin	Assignment
1	line a	2	line b
3	telephone a2	4	telephone b2
5	not used	6	not used

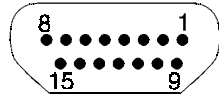
Microphone input



Audio input/output



MIDI/joystick connector



D-Sub 15 Socket

Pin	Assignment	Pin	Assignment
1	+ 5 V	2	Joystick A: button 1
3	Joystick A: x Direction	4	Earth
5	Earth	6	Joystick A: y Direction
7	Joystick A: button 2	8	+ 5 V
9	+ 5 V	10	Joystick B: button 1
11	Joystick B: x Direction	12	MIDI Out
13	Joystick B: y Direction	14	Joystick B: button 2
15	MIDI In		

CD-ROM audio connectors

SONY/IDE

Pin	Assignment
1	Left Channel
2	Earth
3	Earth
4	Right Channel

Mitsumi

Pin	Assignment
1	Left Channel
2	Earth
3	Right Channel
4	Earth

DMAS, IRQS, AND ADDRESSES

IBM Personal Computers, compatible, and clones use DMA (Direct Memory Access) Channels, Interrupts (IRQs), and I/O Addresses in conjunction with installed expansion boards, such as the miroCONNECT. These components are used to exchange information between the expansion board and computer memory.

Each type of computer has a finite number of these components, and only one component can be assigned to any given expansion board (or, device). If two devices are assigned to use the same component, a conflict occurs which normally prevents a device from operating correctly—or operating at all.

The tables in this appendix indicate common assignments of DMAs, IRQs, and I/O Addresses for conventionally configured computer systems. Your system will probably be configured differently due to other devices being already installed. However, the tables might be of use to you in determining how best to configure your miroCONNECT. A chart is also provided to help you keep track of assignments in your particular computer system.

DMA channel

Your computer and your miroCONNECT use special channels through which they exchange information. These are known as DMA (Direct Memory Access) channels. These channels allow your miroCONNECT (and other external devices) to directly access your computer’s memory, rather than going through the CPU. Bypassing the CPU in this manner significantly improves system performance.

The following table shows normal DMA assignments for most MS-DOS-compatible computers.

DMA Channel	Assignment
0	not used
1	not used
2	floppy disk controller
3	restricted availability
4	RAM Controller
5	not used
6	not used
7	not used

Interrupts (IRQs)

Your computer and miroCONNECT use a technique called interrupt request (IRQ) to communicate. For example, your miroCONNECT sends an interrupt request to your computer (to gain its attention) when it is ready to send or receive data through its assigned DMA channel. The following table shows the devices normally assigned to specific interrupts.

IRQ Number	Device	Interrupt Number
0	System Timer	08h
1	Keyboard	09h
2	EGA/VGA Boards: Connection to the second 8259A component	0Ah
3	COM2/COM4 (serial interface)	0Bh
4	COM1/COM3 (serial interface)	0Ch
5	LPT2 (parallel interface)	0Dh
6	Floppy Drive Controller	0Eh
7	LPT1 (parallel interface)	0Fh
8	Real-time Clock	70h
9	Diverted IRQ2	71h
10	available	72h
11	available	73h
12	normally available (provided PS/2 mouse not in use)	74h
13	Math Coprocessor	75h
14	Hard Disk Controller	76h
15	2nd IDE-Controller	77h

I/O addresses

The following table shows I/O addresses as configured in conventional computers.

Device	I/O Addr
Internal system use	0000h to 00FFh
Hard Disk Controller	01F0h
Joystick Port	0200h
Sound Boards	0220h
LPT2 (if installed)	0278h
COM4 (if installed)	02E8h
COM2 (if installed)	02F8h
CD-ROM interface, video digitizer	0300h
Network Boards	0360h
LPT1	0378h
LPT3 (if installed)	03BCh
COM3 (if installed)	03E8h
Floppy Disk Controller	03F0h
COM1	03F8h

In most cases, between 4 and 32 bytes are occupied from the specified addresses.

Chart your system settings

As mentioned earlier, if you have any problems using your miroCONNECT, the cause is most often conflicting IRQ and/or DMA assignments. The following chart is provided to help you keep track of these assignments in your own Computer system. We recommend you maintain this chart and keep it up-to-date as a way to avoid conflicts.

Device	DMA	IRQ	Address
Mwave System			
Modem/Fax	—		
General MIDI	—		
Sound Blaster			
Joystick	—	—	
CD-ROM I/O Address	—	—	

AT COMMANDS

Command mode vs. on-line state

AT commands are strings of characters that control the modem's actions. When you have started the modem by double clicking the corresponding icon, it is in command mode, i.e. it is capable of receiving commands.

When the D (Dial) or A (Answer) command has been entered, the modem is in the on-line state. When in this state, all characters sent to the modem are transmitted to the computer at the other end of the line.

The modem returns from the on-line state to command mode when a connection is broken. This is the case whenever one of the communication partners hangs up. If you want to send AT commands despite being in the on-line state, enter the characters +++ at the end of the command string. The modem responds with OK and you can enter the AT commands. The connection remains intact. To return to the on-line state, enter ATO.

Syntax of AT commands

Each command line is prefixed by AT. Be sure to enter either AT or at. Mixed notation is invalid. The +++ command is an exception to this rule.

If no parameters are specified for a command that can be used with various parameters, the 0 will be assumed automatically.

Example:

AT X<↵> corresponds to **AT X0<↵>**.

Conventions of the AT command overview

The following conventions apply in the AT command overview:

... can be replaced by any valid command or any command string.

The syntax appears in a different font. Example: AT...Bn...

n stands for a numeric value.

The Enter key (<↵>) must be pressed after every command.



The AT Commands

Function	Description	Syntax	Param.	Param. Description
A	Answer	The A command causes the Mwave Modem to begin the answer process.	AT...A	
B	Standard	Selects the communication standard used by the Mwave Modem at 1200 bps or below.	AT...Bn...	n=0 CCITT standard n=1 Bell standard
C	Carrier Control	The C command enables the transmit carrier.	AT...C1...[CR]	
D	Dial	The modem dials a number and tries to establish a connection.	AT...D {Dig./param.} AT...D {Dig./param.};...	0-9; Numeric dialing digits #, * Special dialing digits P Pulse dial R Force answer mode S=n Dial stored number n, where n=0-3 T DTMF dial W Wait for dial tone , Wait for time specified in register S8 ! Perform hook flash. @ Wait for quiet answer. ; Return to command state
E	Echo	Turns the command echoing On and OFF.	AT...En...	n=0 Turns command echoing off. n=1 Turns command echoing on.
F	On-line Echo	The F command is used by some modems to determine whether characters are echoed to the DTE (i.e. the PC) while the modem is in the on-line state.	AT...F1...	n=0 On-line character echo enabled. Not supported, returns "ERROR". n=1 On-line character echo disabled.
H	Hook control		AT...Hn...AT...	n=0 Places the line on-hook (hangs up) and causes a transition to the off-line command state.
I	Info Request	The I command presents modem identification information.	AT...In...	n=0 Returns: "Mwave Modem x.xx" where "x.xx" is the version of the modem. n=1 Returns: "OK". n=2 Verifies that the correct modem files are installed. Returns "OK" if all file versions are correct. Returns the names of the incorrect file(s) if any are incorrect n=3 Returns the version number of the installed modem files. n=4 Returns the modem capabilities string GENERIC Mwave.
L	Speaker Volume	The L command controls the volume of the speaker output.	AT...Ln...	n=0 Sets the speaker volume to the minimum level. n=1 Sets the speaker volume to a low level. n=2 Sets the speaker volume to a medium level. n=3 Sets the speaker level to a high level.
M	Speaker Control	The M command controls the operation of the speaker.	AT...Mn...	n=0 Sets the speaker off. n=1 Sets the speaker on until the data carrier is present during the hand shaking mode. Then it is turned off. n=2 Sets the speaker always on. n=3 Sets the speaker off during dialing and then on until the data carrier is detected.
O	On-line	The O command causes the modem to return to the on-line state for a previously established connection.	AT...On	n=0 Causes the modem to return to the on-line state.
P	Pulse Dial	The P command causes the modem to use pulse dialing for all subsequent numbers.	AT...P	
Q	Quiet	The Q command controls the result codes generated by the modem.	AT...Qn...	n=0 Enables result codes. n=1 Disables result codes.

Function	Description	Syntax	Param.	Param. Description
S	Select Register	The S command selects one of the modem internal registers for future operations (also see the »S-Register Settings«, the »=« and the »?« command.	AT...S... AT...Sn...	n=0-29 If n is omitted, then 0 is assumed.
T	Tone Diall	The T command causes the modem to use DTMF (tone) dialing for all subsequent numbers.	AT...T	
V	Verbose Response	The V command controls the display of result codes.	AT...Vn...	n=0 Result codes are returned as digits. n=1 Result codes are returned as text messages.
X	Extended Results	The X command enables the call progress tone detection capabilities and effects the associated result codes.	AT...Xn...	n=0 Busy and dial tone detection are disabled. Result codes 0-4 are enabled. n=1 Busy and dial tone detection are disabled. Result codes 0-4, and line speed reporting via the "CONNECT xxxx" messages are enabled. Busy detection is disabled. n=2 Dial tone detection is enabled. Result codes 0-4, and line speed reporting via the "CONNECT xxxx" messages are enabled. Busy detection is disabled. n=3 Dial tone detection is disabled. Result codes 0-4, and line speed reporting via the "CONNECT xxxx" messages are enabled. Busy and dial tone detection are enabled. n=4 Result codes 0-4, and line speed reporting via the "CONNECT xxxx" messages are enabled.
Y	Space Disconnect	The Y command controls the long-space disconnect capabilities of the modem. If enabled, when a continuous BREAK of at least 1.6 seconds is received, disconnect from line. When ATH0 command is received or DTR goes low, generate a 4-second BREAK before going on-hook.	AT...Yn	n=0 Disables the long-space disconnect feature. n=1 Enables the long-space disconnect feature.
Z	Software Reset	The Z command causes the modem to reload a stored profile.		n=1 Recall stored profile 0. n=2 Recall stored profile 1. n=3 Recall factory defaults.
,	Wait	The comma command causes the modem to wait for the time specified by the contents of register S8 in seconds before processing any more characters in the command buffer.	AT...,...	
=	Set Register	The = command is used to set the value of the modem's internal registers (S0-S28). The = command is usually coupled with the Sn command.	AT...Sn=x... AT...=x...	n=0-28 x=0-255
&D	DTR Options	The &D command controls the modem's to the DTR (Data Terminal Ready) control bit.	AT...&Dn...	n=0 Ignores DTR. n=1 Return to command state when ON-to-OFF transition is detected on DTR. Hang-up, disable auto-answer, and return to command state when ON-to-OFF transition is detected on DTR. n=2 Perform a software reset when ON-to-OFF reansition is detected on DTR, and loads the profile as specified in &Y. n=3
&F	Factory Defaults Command	Loads the factory defaults into the internal registers.	AT...&F...	Factory defaults.

	Function	Description	Syntax	Param.	Param. Description
&G	Guard Tone	Controls the guard tone selection for the V.22bis datapump.	AT...&Gn...	n=0 n=2	Disables the V.22bis guard tones. Enables the 1800 Hz V.22bis guard tone.
&L	Leased Line Mode	The Mwave Modem is designed to work only on the public switched telephone network. Support for leased line operation is not provided.	AT...&Ln...	n=0	Selects switched-network line mode.
&M	Comm Mode	Selects the communications mode. For this modem, only asynchronous mode is supported.	AT...&Mn...	n=0	Selects asynchronous communications.
&N	Force Speed	Selects the force speed mode. This command only applies to the V.32 and V.32bis modem. This command will force the modem to only connect at the speed specified in the S28 register.	AT...&Nn...	n=0 n=1	Support maximum allowable rate The modem selects the maximum allowable rate specified by the S28 register. If S28 = 0, then the modem will connect at the speed specified by the UART port speed (set by the application program). If S28 ≠ 0, then the modem will connect at the rate as specified in the description of the S28 register.
&P	Pulse Ratio	The &P commands is present for compatibility purposes. It does not change the make/break ratios.	AT...&Pn...	n=0 n=1	Returns "OK", but has no effect on timings. Returns "OK", but has no effect on timings.
&Q	Comm Mode	Selects the communications mode. For this modem, only asynchronous mode is supported.	AT...&Qn...	n=0	Selects asynchronous communications.
&S	DSR Options	Controls the operation of the DSR status bit. The DSR status bit is found in the UART modem status register.	AT...&Sn...	n=0 n=1	DSR is always ON while the modem is loaded. DSR is turned on just after handshaking is completed and turned off when the hangup process is started.
&U	Enable Trellis Coding	Enables or disables the trellis coded data scheme in the V.32 and V.32bis modems. If issued while on-line command state, it does not take effect until the next connection is established.	AT...&Un...	n=0 n=1	Enable Trellis coding in V.32/V.32bis. Disable Trellis coding in V.32/V.32bis.
&V	View Active Configuration and User Profiles	Displays active & stored profiles and stored telephone numbers. Inputs from the DTE are ignored while the view information is being sent to the DTE.	AT...&Vn...		
&W	Write Configuration	Saves the active modem configuration. The following registers are saved in nonvolatile storage: S0, S2-S12, S14, S18, S21-S23, S25, S27, S28. In addition, the following command parameters are stored: \A, \K, \L, \N, \T, %A, %C, "Hn, "Nn, On. The initial value of each of these profiles is defined by the &F command.	AT...&Wn...	n=0 n=1	Store profile 0. Store profile 1.
&Y	Select Stored Profile on Power up Option	Determines which stored profile is established upon modem power up.	AT...&Yn...	n=0 n=1 n=2	Select stored profile 0 on power up. Select stored profile 1 on power up. Select factory defaults on power up.

Function	Description	Syntax	Param.	Param. Description
&Z	Store Number	Saves up to four separate phone numbers (dial strings) to permanent storage. The &Z command may be followed by the dial string (36 characters max) or by the identifier (0-3) for the phone number to save. This command may not be followed by additional commands.	AT...Z {dig./param.)} AT...Zn= {dig./param.)};...	0-9; #, * P Pulse dial R Force answer mode. Must be entered as the last character. T DTMF dial W Wait for dial tone. Wait for time specified in register S8. , Hook flash; the modem switches itself off for 90 ms (e. g. expedient for forwarding telephone calls in telephone systems.) ! Modem waits for 5 seconds (quiet answer). @ Return to command state after number is dialed.
VA	Maximum MNP Block Size	The VA extended command sets the maximum MNP stream mode block size to be used by the modem during an MNP session.	AT...\An...	n=0 max. block size of 64 bytes n=1 max. block size of 128 bytes n=2 max. block size of 192 bytes n=3 max. block size of 256 bytes variable n=4 block size
B	Send Break	Causes the modem to transmit a break signal. This command is valid only in on-line command mode.	AT...\B...	
L	MNP Data Mode	Selects the MNP and V.42/V.42bis operational behavior. Whenever an Error Corrected Link is established, the session will attempt to also get a compressed link if possible. A V.42bis compressed link will be attempted first. If that fails or if a "H0 command" has been issued, then an MNP5 compressed link will be attempted. If that fails or if a "%C0 command" has been issued, a non-compressed link will be established.	AT...\Ln...	n=1 variable mode n=2 block mode
L	MNP Data Mode	Selects the MNP and V.42/V.42bis operational behavior. Whenever an Error Corrected Link is established, the session will attempt to also get a compressed link if possible. A V.42bis compressed link will be attempted first. If that fails or if a "H0 command" has been issued, then an MNP5 compressed link will be attempted. If that fails or if a "%C0 command" has been issued, a non-compressed link will be established.	AT...\Ln...	n=1 variable mode n=2 block mode
T	Set Timer	Controls the operation of the inactivity timer.	AT...\Tn...	n=0 The timer is disabled. n=1-90 The timer is set to 1 - 90 minutes.
V	MNP Result Codes	Sets the MNP result codes.	AT...\Vn...	n=0 Disables MNP result codes. n=1 Enables MNP result codes.
%A	Auto Fallback Character	The %A extended command defines a character to be used to abort the MNP** negotiation process. The auto fallback character is a 7-bit character with no parity. The auto fallback character should not be set to the ASCII SYN character (decimal 22). This causes the MNP negotiation to be aborted for valid MNP frames. The default is %A0, which disables the auto fallback feature.	AT...%C n...	n=0 No data compression. n=1 Data compression is enabled for MNP class five.

Function	Description	Syntax	Param.	Param. Description
%E	Fast Rate Renegotiation Control	The %E command controls the modem's response to a change in line quality and to requests for retrain or fallback/fall forward by the other end. This command only affects V.32 and V.32bis. When %E2 is active, the modem monitors the line quality. When line quality is insufficient to sustain the current connect speed, the modem will initiate a rate renegotiation to a lower speed within the V.32bis/V.32 modulation speeds (4800, 7200, 9600, 12000 and 14400 bps). The modem will keep falling back as needed until the speed reaches 4800 bps. If the line quality deteriorates further while connected at 4800 bps, the modems will hangup the telephone line. If the quality of the line increases, the modem will initiate a rate renegotiation to a higher speed if the modem currently has a V.32bis connection with the modem at the other end of the phone line. The rate renegotiation will be done without a retrain in this case. The modem will not increase the line speed if the modem is connected via V.32 to the other end of the phone line. Fall forward via Fast Rate Renegotiation is not supported in the V.32 specification.	AT...%E n...	n=0 Disable Auto-Retrain and Fast Rate Renegotiation. n=1 Enable Auto-Retrain. n=2 Enable Fast Rate Renegotiation and Auto-Retrain
H	V.42bis Compression Control	The "H extended command controls the data compression to be negotiated for with V.42bis. This command may be issued at anytime but will only take effect on the next connection.	AT..."H n...	n=0 V.42bis Disabled n=1 V.42bis enabled for transmission only n=2 V.42bis enabled for reception only n=3 V.42bis enabled for both transmission and reception
N	V.42bis Dictionary Size	The "N extended command controls the dictionary size to be negotiated for with V.42bis. This command may be issued at anytime, but will take effect only on the next connection.	AT..."N n...	n=0 512 Entries n=1 1024 Entries n=2 2048 Entries
O	V.42bis Maximum String Length	The "O extended command controls the maximum string length to be negotiated for with V.42bis. This command may be issued at anytime, but will take effect only on the next connection.	AT..."O n...	n=0, 32 character maximum string length n= 6... 6 to 250 character maximum string length 250
SS	DSVD	The -SSE command controls the Mwave Digital Simultaneous Voice over Data (DSVD) function. When this function is enabled, a call is placed (via ATDT) to another Mwave Modem that is also enabled for Mwave DSVD, and a connection is established, the users can talk to each other over their microphone and speakers while still maintaining their normal data traffic.	AT...-SSE[=] n...	n=0, 32 Disable Mwave DSVD n= 6... Enable Mwave DSVD 250

Function	Description	Syntax	Param.	Param. Description
%T		AT...%TT6 R, S, C, P... R must be between 0 and B (hexidecimal value). S must 0, 3, or 4. All other values are invalid. A is the auxilliary channel option. It is not yet supported. Any value is ignored. P is the pre-emphasis index. Valid values are 0 to A hexadecimal.	R=0 R=1 R=2 R=3 R=4 R=5 R=6 R=7 R=8 R=9 R=A R=B S=0 S=3 S=4 C<=0 C>0	2400 bps (may not be selected unless S=0) 4800 bps 7200 bps 9600 bps 12000 bps 14400 bps 16800 bps 19200 bps 21600 bps 24000 bps (may not be selected if S=0) 26400 bps (may not be selected if S=0) B 28800 bps (may not be selected if S=0 or S=3) 2400 symbols per second 3000 symbols per second 3200 symbols per second Select V.34 low carrier Select V.34 high carrier

S REGISTERS

The following table contains a summary of the S registers with their defaults, possible values and units.

S-Register	Default	Range	Units	Description
S0	0	0-5	Number of rings	This register contains an integer representing the number of rings to allow before going off-hook. When S0 contains a non-zero value, the Modem DSP software is in auto answer mode.
S1	0	0-255	Number of rings	This register contains the ring count.
S2	43	0-255	ASCII character	S2 contains the ASCII code for the escape character. If S2 contains a value greater than 127, then the escape sequence (+++) is disabled. The default is the "+" character.
S3	13	0-127	ASCII character	Contains the ASCII code for the carriage return.
S4	10	0-127	ASCII character	Contains the ASCII code for the line feed.
S5	10	0-127	ASCII character	Contains the ASCII code for the backspace key.
S6	2	3-5	Seconds	S6 contains the amount of time to wait (in seconds) after going off-hook, before dialing.
S7	30	0-58	Seconds	S7 contains the amount of time to wait for a data carrier in seconds. If a carrier is detected, a CONNECT result is returned, otherwise a NO CARRIER result occurs.
S8	2	0-255	Seconds	Contains the amount of time to wait for a comma command or dial modifier.
S9	6	1-255	1/10 seconds	S9 contains the amount of time to wait between a return of the carrier in the on-line state and the acceptance of the carriers.
S10	14	0-65	1/10 seconds	S10 contains the amount of time to wait between loss of the carrier and hang-up.
S11	95	50-255	Milli seconds	Contains the duration (ms) and inter-digit delay for DTMF tone dialing.
S12	50	0-255	1/50 seconds	Contains the guard time delay for recognition of the escape sequence (+++).
S24	0	0-1		S24 enables/disables modem calling tone. ATS24=1 enables tone, ATS24=0 disables tone. Enabling calling tone may make it easier for the modem you are calling to detect that this is a data call if the remote modem uses a voice/data/fax discriminator.
S25	5	0-255	1/10 seconds	S25 specifies the delay time threshold for which DTR must be active in order to be recognised. If DTR remains at a state for less than 25 seconds, it is ignored.
S28	0	0-12	–	Contains the user's desired line connection speed. The connection speed will be the maximum speed supported by both modems not exceeding the speed specified by this register.
S31	0	–	–	By setting various bits in the S31 register, you can disable some or all of the "symbol rates" or "baud rate" (which is different than a bit rate) that the V.34 modem will request for reception. Only the receiving modem can disable transmit symbol rates. 01 Bit 0 Disables 2400 baud receive symbol rate. 02 Bit 1 Disables 2743 baud receive symbol rate. 04 Bit 2 Disables 2800 baud receive symbol rate. 08 Bit 3 Disables 3000 baud receive symbol rate. 16 Bit 4 Disables 3200 baud receive symbol rate. 32 Bit 5 Disables 3429 baud receive symbol rate. 64 Bit 6 Disables asymmetric symbol rates 1 . 128 Bit 7 Reserved.

Parameters for S28:

Param.	Description
00	UART setting
01	50 bps connection; Bell 103/V.21 protocol
02	75 bps connection; Bell 103/V.21 protocol
03	110 bps connection; Bell 103/V.21 protocol
04	134.5 bps connection; Bell 103/V.21 protocol
05	150 bps connection; Bell 103/V.21 protocol
06	300 bps connection; Bell 103/V.21 protocol
07	Reserved
08	1200 bps connection; V.22 <i>bis</i> /Bell-212 protocol
09	2400 bps connection; V.22 <i>bis</i> protocol
10	4800 bps connection; V.32/V.32 <i>bis</i> protocol
11	7200 bps connection; V.32 <i>bis</i> protocol
12	9600 bps connection; V.32/V.32 <i>bis</i> protocol
13	12000 bps connection; V.32 <i>bis</i> protocol
14	14400 bps connection; V.32 <i>bis</i> protocol

MODEM MESSAGES

No.	Text	Explanation
0	OK	Acknowledges the execution of a command.
1	CONNECT	Indicates that a connection has been established with a remote modem at a speed of 0-300 bps.
2	RING	Indicates that an incoming call has been detected.
3	NO CARRIER	Indicates a failure to connect (handshake state) or a loss of carrier (on-line state).
4	ERROR	Error. Possible causes: Invalid command or command line too long.
5	CONNECT 1200	Indicates that a connection has been established with a remote modem at a speed of 1200 bps.
6	NO DIALTONE	Indicates that dial tone detection was attempted but not recognized. Enabled by X2 and X4.
7	BUSY	Indicates that a busy signal was detected during the call establishment. Enabled by X2 and X4.
8	NO ANSWER	Indicates that the required period of silence was not detected during the "wait for quiet answer" time period specified by modem register 7. This occurs when an @ dial modifier is used.
10	CONNECT 2400	Indicates that a connection has been established with a remote modem at a speed of 2400 bps.
15	HOST DRIVER TIMEOUT	Indicates that the PC is not responding to interrupts from the board.
19	CONNECT ECL	Indicates that a connection has been established with an ECL (Error Correction Link), with data compression, using MNP.
20	CONNECT ECLC	Indicates that a connection has been established with an ECL (Error Correction Link) using MNP.
25	CONNECT 1200/ECL	Indicates that a connection has been established with an ECL (Error Correction Link) using MNP at 1200 bps.
26	CONNECT 1200/ECLC	Indicates that a connection has been established with an ECL (Error Correction Link), with data compression, using MNP at 1200 bps.
30	CONNECT 2400/ECL	see examples above
31	CONNECT 2400/ECLC	see examples above
32	BLACKLISTED	No further selection for desired numbers possible.
33	CONNECT 4800	see examples above
34	CONNECT 4800/ECL	see examples above
35	CONNECT 4800/ECLC	see examples above
37	CONNECT 7200	see examples above
38	CONNECT 7200/ECL	see examples above
39	CONNECT 7200/ECLC	see examples above
41	CONNECT 9600/ECLC	see examples above
42	CONNECT 9600/ECL	see examples above
43	CONNECT 9600/ECLC	see examples above
45	CONNECT 12000	see examples above
46	CONNECT 12000/ECL	see examples above
47	CONNECT 12000/ECLC	see examples above
49	CONNECT 14000	see examples above
50	CONNECT 14000/ECL	see examples above
51	CONNECT 14000/ECLC	see examples above
53	CONNECT 16800	see examples above
54	CONNECT 16800/ECL	see examples above
55	CONNECT 16800/ECLC	see examples above
57	CONNECT 19200	see examples above
58	CONNECT 19200/ECL	see examples above
59	CONNECT 19200/ECLC	see examples above
61	CONNECT 21600	see examples above
62	CONNECT 21600/ECL	see examples above
63	CONNECT 21600/ECLC	see examples above
64	CONNECT 24000	see examples above
65	CONNECT 24000/ECL	see examples above
66	CONNECT 24000/ECLC	see examples above
67	CONNECT 26400	see examples above
68	CONNECT 26400/ECL	see examples above
69	CONNECT 26400/ECLC	see examples above
71	CONNECT 28800	see examples above
72	CONNECT 28800/ECL	see examples above
73	CONNECT 28800/ECLC	see examples above

ERROR MESSAGES

Message	Message Text & Description
MWME0001 Mwave Modem Internal Error.	Record the information in the error dialog box and report it to the service contact listed in your installation manual.
MWME0002 The Mwave phone line is already in use.	Another miroCONNECT 34 application is currently using the phone line. In this case, the user needs to restart the operating environment and try again. If the modem operation ended prematurely this error might be encountered. In this case, restart Windows and try again.
MWME0003 The Mwave phone handset is already in use.	Another application is currently using the phone handset. In this case, the user needs to restart the operating environment and try again. If the modem operation ended prematurely this error might be encountered. In this case, restart Windows and try again.
MWME0004 The Mwave Communications port is already in use.	Another miroCONNECT 34 application is currently using the COM-port. If the modem operation ended prematurely this error might be encountered. In this case, restart Windows and try again.
MWME0005 The Mwave DSP is overcommitted.	There are not enough resources (MIPS, Data Store, Instruction Store) available on the DSP to fulfill the request. Stop another miroCONNECT 34 application and restart the modem.
MWME0006 The Mwave Modem cannot locate the needed DSP files.	Check the MWPATH environment variable in the AUTOEXEC.BAT to make sure the paths to the .DSP files are correct.
MWMI0001 Mwave Modem Help is not available.	The miroCONNECT 34 modem cannot find the MWMOS2.HLP help file.

DOS FUNCTIONS

Your miroCONNECT software includes a special program for configuring your Mwave hardware to operate efficiently in the DOS environment.

The miroCONNECT setup program places the configuration utility in a directory named MWD\UTILS, but only if you select the DOS System Software option while installing your miroCONNECT software.

You can use the utility program (named MWCONFIG.EXE) to examine and/or change configuration values assigned to your Mwave hardware - such as IRQ and DMA settings.

Do not change any settings unless you understand completely what you are doing. Setting an incorrect (that is, conflicting) value could prevent your computer system from operating properly. For more information about IRQ's, DMA's and I/O Address settings, see the Appendix "DMAs, IRQs, and Addresses".

The MWCONFIG program can help you prevent assignment conflicts between Mwave functions. However, the program analyzes Mwave functions only—it is still up to you to prevent conflicts with other devices you might have in your computer system, such as SCSI adapter boards, mouse controller boards, and so forth.



The instructions in this appendix assume you are familiar with the DOS operating environment. If you aren't familiar with such operations as displaying directories, running DOS programs, and similar activities, refer to your DOS manuals before proceeding.

To run the **MWCONFIG** utility:

1. Assuming you accepted the default location for your Mwave software (that is, drive C:) enter the following to start the utility program.
C:\MWD\UTILS\MWCONFIG
The *miroCONNECT 34 wave Hardware Settings* window appears.
2. If you are NOT using a mouse, press Tab or Shift+Tab to move between fields; press <↓> to display the drop lists for the various fields; press your arrow keys to move within the drop lists and select a value; press <↓> to accept a selected value.
3. Click the *Help* button for assistance.
4. Click *Advanced* to access values for Bus Bandwidth, DMA Request Time, and Xfers/Request values.
5. Click *Defaults* to reset all values to their default settings.
6. Click *Test* to test the current settings.
7. Click *Exit* to leave the program. You will be prompted to confirm whether or not you want to save your modified settings.

To run **FASTCFG**:

The DOS System includes audio and communications which can support various types of DOS applications at different times. The FASTCFG program enables you to query and change your DOS application type and associated audio settings.

Using FASTCFG, you can configure Mwave to support the following DOS application types:

- ♦ Games
- ♦ Advanced Audio
- ♦ Telegame
- ♦ Advanced Modem

Each application type corresponds to a specific application setup. The application setup includes sound, music, and modem settings.

1. Click *Hardware* to view your Mwave hardware settings. Use these settings to configure DOS games and communications applications.
2. Then click *AUDIO* to configure audio options for the application type you chose.
3. For general help, click on *Help*. To get help for any field, tab to that field and press F1. To exit without saving changes, click *Cancel*. To save changes and exit, click *OK*.

Games

When you want to play Sound Blaster* games on your system, select *Hardware* to view the Sound Blaster Pro Default settings. These settings should match the settings in the configuration of your game.

Advanced Audio

To play a game that supports General MIDI, select *Advanced AUDIO*. Be sure to configure your game for Sound Blaster Pro sound and General MIDI music. The default for games is usually Sound Blaster sound and Sound Blaster music.

Telegame

To play your game interactively with another user on another system via modem, select Telegame. Sound Blaster games and 14.4 kbps Fax Modem are enabled for DOS.



Make sure that your game supports telegame mode and remember to configure your game for telegaming. When you select *Telegame*, you can also run any DOS application that uses 14.4 kbps Modem or 14.4 kbps Class 2 fax. To use DOS applications that use modem transfer rates greater than 14.4 kbps, select *Advanced Modem*.

Advanced Modem

Select *Advanced Modem* to run DOS applications that uses modem transfer rates greater than 14.4 kbps. 28.8 kbps modem is enabled for DOS. This option also supports 14.4 kbps Class 2 fax applications.

GLOSSARY

The following glossary provides explanations of the most important terms used in this manual.

Cross-references are indicated by .

Active speakers	Active speakers have their own built-in amplifier and need their own power supply (batteries or, in rarer cases, a power supply unit). Active speakers are mainly used to amplify the output signals of sound boards.
Address	All memory locations in the computer are numbered (addressed). Each memory location can be addressed directly in this way. Some addresses are reserved for specific hardware components and must not be used otherwise. We speak of an address conflict if two hardware components use the same address.
analog	The opposite of  digital. Analog quantities may assume any values.
ASCII	American Standards Code for Information Interchange. ASCII character set: the standard character set used by IBM and compatible computers. The ASCII character set consists of 256 characters, of which the first 128 are defined.
asynchronous	In an asynchronous data transfer, the data is transferred character-by-character (one character normally consists of 8 bits). The characters are embraced by control bits (start and stop bits). The control bits signal to the remote station whenever a new character is being sent and whether the last character has been sent completely.
AT commands	Modem control command set, also referred to as the Hayes command set ( Hayes). AT commands are prefixed with AT (=attention).
Auto answer	The ability of a modem to process a call automatically after a defined number of rings.
AUTOEXEC.BAT	A special batch file under  DOS that is run automatically after starting the computer. Among other things, this file contains commands for loading the nationally specific keyboard driver ( Driver), for setting the time or for loading a program automatically.
AVI	Abbreviation for Audio Video Interleaved, the standard format for digital video on PCs.
Batch file	A file under  DOS in which commands are executed from the top down.
Bell standard	Standard of the American Bell Telephone Company.
bis	French for “two” or “second revision”.
Bit	Binary Digit. The smallest information unit of a computer. Two states “0” and “1” can be represented with one bit. Accordingly, 22=4 can be represented with two bits and 23=8 with three bits etc. In a computer, these two states are realised via “0 V” (no current = 0) and “5 V” (current = 1). 8 bits = 1  byte are needed to represent one character (a letter or number etc.).
bps	Bits per second.

Bus	In a computer, buses are used for communication between the processor and the hardware installed in the computer (hard disk or a graphics board etc.). Different amounts of information can be transferred depending on the width of the bus. A 8-bit wide bus can communicate exactly 8  bits (= one  byte = one character) at one time. One byte consists of eight  bits. With one byte, precisely one character (a letter or a number etc.) can be depicted. It is coded in binary, i.e. in “zeroes” (0) and “ones” (1). According to the  ASCII character set, the character “E” is coded as “01000101” or “45h” (hexadecimal).
Carrier	The carrier frequency that modems send. The modulated data is transmitted from one modem to another on the carrier frequency.
Carrier frequency	 Carrier.
CCITT	Comité Consultatif International Télégraphique et Téléphonique. An umbrella organisation of the international telecommunications union that concerns itself with standardization of data and telephone services. The standards for data transfer through telephone networks are set out in the V. standards (e.g. V.32).
CD-ROM	Compact Disk-Read Only Memory. A digital storage disk with a very high storage capacity that is read by a laser beam.
Clock frequency	The speed at which the individual command sequences are run within the processor. The higher the  clock frequency is, the faster the commands run.
CNG tones	Connecting tones that fax devices send to identify themselves as such.
COM interface	Another designation for the serial interfaces in a PC (also: RS232). Through the COM interfaces, data is transferred in a data line bit-by-bit (all  bits of one  byte are transferred in succession). Serial data transfer is slower than through the parallel interface, but is substantially less susceptible to interference. Communication interfaces are identified by COM and a digit (e.g. COM1).
Command mode	In the command mode, the modem interprets received characters as a command ( On-line state).
CONFIG.SYS	A configuration file under  DOS that is run automatically when starting the system. The CONFIG.SYS file contains drivers which, among other things, control output on the monitor, use of the keyboard and of the mouse.
CPU	Central Processing Unit. The CPU controls essential functions.
Data pump	Part of the modem's internal software that is crucial with regard to the quality and speed of a modem's data transfer capacity.
Dedicated line	The opposite of  switched line. A dedicated line is a permanent connection between two communication partners. A dedicated line is always active.
Demodulation	(Back-)conversion of analog signals to digital signals ( Modulation).
digital	Literally: represented by numbers. The opposite of  analog. In data technology, characters are mostly represented by binary signals, i.e. by signals that can only assume two states (“0” and “1”).

DMA channel	By way of a D(irect)M(emory)A(ccess) channel, direct and thus very fast data transfer takes place between any hardware component (e.g. an expansion board) and the main memory, circumventing the CPU. The DMA channels are numbered. One DMA channel can only be used by one hardware component at a time.
DOS	Disk Operating System. The commonest operating system for PCs. MS-DOS is the supplied by Microsoft.
Driver	Programs, among other things for integrating hardware (e.g. drivers for a CD-ROM drive) in the computer and for adapting the software to the hardware (e.g. drivers for a graphical user interface such as Microsoft Windows) in order to exploit the possibilities offered by expansion board.
DSP	Digital signal processor. A DSP is a processor that is oriented to the tasks of digital data processing (filtering, amplification, generation of digitally coded analog signals).
DSR signal	The D(ata)S(et)R(eady) signal indicates that the data is ready to be sent.
DTE	Data Terminal Equipment. A device or a system unit for sending and receiving data.
DTMF	Dial Tone Multifrequency (also: tone dialling). When using DTMF, pairs of tones are sent during dialling.
DTR signal	The D(ata)T(erminal)R(eady) signal indicates that the modem is ready to receive.
Dynamic microphone	In dynamic microphones, the diaphragm bears a thin wire coil that oscillates in a magnet. The voltage emitted by the coil is amplified.
Echo	On the one hand, modems can send all characters received directly back to the DTE so they can be seen on the screen. On the other hand, the modem sends back all data received from a remote station. These two operations are referred to as the “Echo”.
Electret microphone	In electret microphones, the diaphragm consists of an electrically polarised material (electret) such as polytetrafluoroethylene.
Error correction	Process for compensating for interferences on the telephone line. Known error correction methods are MNP5 and V.42bis.
Environment variable	Name of the command interpreter, the search paths and alternative names.
Fallback	Switching back to a slower data transfer rate when transmission quality is poor.
Fax	Lat.: fac simile=make equal. When faxing, image data of originals is transmitted.
Full duplex operation	Simultaneous transfer of data on one line in both directions, also referred to as duplex operation (📖 Half duplex operation).
General MIDI	The General MIDI standard assigns MIDI instrument numbers to the instruments to which they actually belong (📖 MIDI).
Guard Tone	Comparison tone for international connections.
Half duplex operation	Transfer of data on one line in both directions. Transfer can only take place alternately in one or the other direction, i.e. not simultaneously (📖 Full duplex operation).

Hands free device	A device that enables the user to talk and listen on the telephone without using the receiver.
Handshake phase	Before data can be sent via a connection, both modems have to define which protocols and speeds are to be used. This “negotiation phase” is also referred to as the handshake phase.
Hayes	An American modem manufacturer who was the first to integrate a command repertoire in modems (📖 AT commands). The Hayes commands have established themselves as the defacto standard.
Headset	A combination of headphones and microphone that is used instead of a telephone receiver.
IDE	A general standard for the connection of a CD-ROM drive.
Image compression	A process for reducing the amount of data in digital image and video files.
Impedance	The apparent resistance of AC components.
Interface	The transition point between two areas of a system or between two systems where information, pulses and signals are adapted so that they can be understood at the receiving end in the same way as at the sending end. For example, signals sent from the computer to the printer have to be adapted by an interface so that the printer will “understand” how to print them.
Interrupt	An interrupt is a signal by means of which expansion boards and other hardware components request the 📖 CPU. Each hardware component should possess its own interrupt.
ISA bus	International Standard Architecture. A bus with a 16-bit width that is capable of transferring a data rate of 8 📖 MBytes at a 📖 clock frequency of 8 MHz.
Joystick	An input device, above all for computer games on which the movements of a lever are transferred to movements on the screen.
KByte	One kbyte (kilobyte) corresponds to 1024 📖 bytes. The “K” (kilo) always corresponds to the number “1024”.
Mailbox	Computer software that is capable of receiving and sending data through one or several modems. Such a program generally runs unsupervised on a computer that has been specially reserved for this purpose (also: BBS=Bulletin Board System).
MByte	On MByte (megabyte) is 1024 📖 Kbytes.
Microphone	A microphone is an electroacoustic converter that converts sound vibrations picked up by a diaphragm to voltages (📖 Electret microphone, 📖 Dynamic microphone).
MIDI	Musical Instruments Digital Interface: a standardised 📖 interface for data exchange between electronic instruments. In a computer, music is mostly stored in MIDI format. In doing so, the files consist of a series of commands such as “select instrument 4”, “note A on”, “note A off” etc. The sound that will be heard depends on the sound board's sound generator (synthesizer).
MIPS	Million Instructions Per Second. A unit of measure that specifies the speed of processors.

MNP	Microcom Networking Protocol, a data transfer process of the Microcom company. There are a total of ten MNP classes, some of which are upwardly compatible. MNP 1 to MNP 4 are pure data transfer protocols; from MNP 5 on, the data is also compressed.
Modem	The word “Modem” is composed of the parts “modulator” (📖 Modulation) and “demodulator” (📖 Demodulation). By means of modems, computers can communicate with each other through analog telephone lines. In doing so, the modem converts the electronic digital signal emitted by the sending computer to acoustic signals (modulation). The analog acoustic signals are then transmitted through the telephone line and arrive at a second modem. The receiving modem converts the analog acoustic signals back to electronic digital signals and forwards these to the computer.
Modulation	Conversion of digital to analog signals.
MPC	Multimedia-PC-Standard that defines the features of a multimedia PC. On a corresponding multimedia PC, the multimedia applications offered for MPCs and CDs are able to run without restriction.
Multitasking	Simultaneous execution of several functions.
Mwave	The Mwave platform is a modular architecture developed by IBM for telecommunications and sound applications.
On-line state	When in this state, all characters are sent from the modem to the distant station (📖 command mode).
Operating system	The operating system allows communication between the hardware, the software and the user. Among other things, the tasks of an operating system include file and program management.
Pulse dialling	Pulse sequences are sent during dialling. The number 0 corresponds to ten pulse, the number 1 corresponds to one pulse and the number 2 to two pulses etc.
Register	A memory.
Remote (distant) station	In this case: the modem with which you are communicating during a connection.
Sampling	Digitisation of audio signals.
Signal/(Noise +Distortion)	The quotient of the signal, noise and distortion. A measure of data transfer quality.
Soundblaster 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 board are fully capable of generating stereo sound.
S register	Status register: a register in which the operating parameters of a modem are stored.
Switched line	The opposite of a 📖 dedicated line. When using a switched line, the other user must be dialled up in order to establish the connection.
Synthesizer	In this case: the sound board's sound generator.
Tele-communications	The generic term used for the information channels provided by the telephone company.

Tone dialling	 DTMF.
Trellis coding	A special coding method with error correction; only used as from V.32.
UART	Universal Asynchronous Receiver and Transmitter: a special component for controlling an asynchronous serial interface.
Voice recognition	Recognition of spoken language by a computer. This has only been partly realised up to now.
V. standards	 CCITT. V.17: Half duplex data transfer at up to 14 400 bps when using fax devices. V.21: Full duplex data transfer at 300 bps. V.22: Full duplex data transfer at 1200 bps. V.22bis: Full duplex data transfer at 2400 bps. V.27ter: Half duplex data transfer at 4800 bps for fax modems. V.29: Half duplex data transfer at 9600 bps for fax modems. V.32: Full duplex data transfer at up to 9600 bps or fallback to 4800 bps. V.32bis: Full duplex data transfer at a data transfer rate of 14400 bps. V.42: Error correction method. V.42bis: Data compression method.
WAV	File format for sound files. “WAV” stands for waveform.

SUPPORT/SERVICE

Support

**miro Support
Hotline** hours: 10 am - 12 am
2 PM - 4 PM
phone: (49) 531 2113 - 666

**miro Support
Fax** fax number: (49) 531 2113 - 110

**miro Support
Mailbox** hours: 24 hours
phone: (49) 531 2113 - 112
protocol: 1.200 - 14.400 Baud,
8 data bit, no parity, 1 stop bit

The miro Support Mailbox has useful information for both Mac and PC users such as technical data, tips and tricks, forms and drivers. All information is in 8-bit ASCII.

**miro in
CompuServe** In addition to Mailbox, VoiceMail, Hotline or Fax you can now also contact miro via CompuServe.

Enter GO MIRO to access the miro section in CompuServe.

In the *Message Area* you find the latest information as well as questions and answers about our products.

The *Library section* contains the latest drivers, tips & tricks, patches and info files about our products.

If you have any questions about CompuServe, please contact the CompuServe Information Service nearest you:

Germany:	Tel.: 0130/86 46 43 (domestic) (49) 89/66 535 222 (internat.) Fax: (49) 89/66 535 241	Switzerland:	Tel.: 155 31 79 (domestic) (49) 89/66 535 222 (internat.) Fax: (49) 89/66 535 241
France:	Tel.: 36 63 81 31 (domestic) (33) 1/ 47 14 21 60 (internat.) Fax: (33) 1/47 14 21 51	GB:	Tel.: 0800/289458 (domestic) (44) 272/760 680 (internat.) Fax: (44) 272/252 210
Hungary:	Tel.: (36) 1/156 53 66 (internat.) Fax: (36) 1 155 92 96	USA:	Tel.: 800 848 8990 (domestic) (001) 614/529 1340 (internat.) Fax: (001) 614/529 1611

**miro in
internet** In World Wide Web you can contact miro via the homepage
www.miro.de.

Service

Repairs If your miro product needs repairs or adjustments, contact your authorized distributor. He will request a repair number (RMA No.) from miro.

Return the product with the warranty card and proof of purchase (receipt with date and serial number) as well as a detailed description of what is wrong with the product. This helps our Service Department to repair and return the product to you as quickly as possible.

Initial installation If you experience problems with your new miro product during the first week after delivery, contact your authorized miro distributor immediately. He will be able to answer your questions because he regularly participates in miro Seminars to be always up to date about our products and other important information.

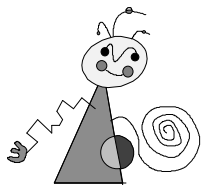


Contact your authorized distributor if you have a question about miro products. Please have all the necessary information ready before you call so the distributor can answer your questions as precisely as possible, i. e. hardware configuration (extension cards and addresses) and software configuration (memory manager, version of the software you are using, etc.).

For more detailed information about our products and our Support and Service, please check our miro Support Mailbox.

miro SUBSIDIARIES

Benelux	miro Computer Products B.V. Science park 5127 Unit 1, left Wing NL-5692 Ed Son En Breugel Tel: 0031/4132-56750 Fax: 0031/4132-56298
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USA	miro Computer Products, Inc. 955 Commercial Street Palo Alto, CA 94303 Tel.: 001/415/855-0940 Fax: 001/415/855-9004



FCC Compliance Statement

FOR YOUR OWN SAFETY

NOTE: Shielded cables should be used for a composite interface. This is to ensure continued protection against radio frequency interference.

FCC WARNING STATEMENT

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Shielded interface cable must be used in order to comply with the emission limits.

LABEL WARNING

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



KONFORMITÄTSERKLÄRUNG DECLARATION OF CONFORMITY

Geräteart: Modem-Sound-Board
Type of equipment: Modem sound board

Produkt / Product : **miroCONNECT**

Das bezeichnete Produkt stimmt mit den Vorschriften folgender(en) EU-Richtlinie(n) überein:
The aforementioned product complies with the following European Council Directive(s):

92/31/EWG EG EMV- Richtlinie / EC EMC directive
72/23/EWG EG Niederspannungsrichtlinie / EC low voltage directive

Zur vollständigen Einhaltung dieser Richtlinie(n) wurden folgende Normen herangezogen:
To fully comply with this (these) directive(s), the following standards have been used:

EN 55022: 1995
EN 50082-1: 1993

EN 41003: 1992
EN 60950: 1992

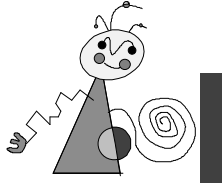
Dieser Erklärung liegt zugrunde: Prüfbericht(e) des EMV-Prüflabors
This certification is based on: Test report(s) generated by EMI-test laboratory

Aussteller / Holder of certificate : **miro Computer Products AG**
Carl-Miele-Str. 4
D - 38112 Braunschweig

Braunschweig, 13.11.1995
(Ort / Place) (Datum / Date)

.....
Dr. Ulrich Schmidt, V.P. Engineering

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