

miro 20SV twin
miro 40SV twin
miro 44SV twin

USER'S GUIDE

miro 20SV/40SV/44SV twin

User's Guide

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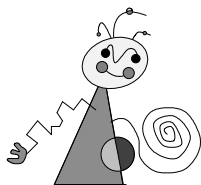
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FCC COMPLIANCE STATEMENT

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:

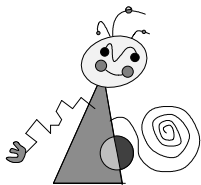
- ♦ Reorient or relocate the receiving antenna.
- ♦ Increase the separation between the equipment and receiver.
- ♦ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ♦ Consult the dealer or an experienced radio/TV technician for help.

Caution

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

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.



About the manual

Subheadings

This manual explains how to install the miro twin hardware and software.

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



Important text passages are marked with this «note-pad» 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.

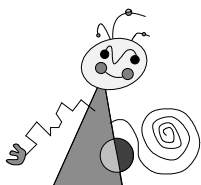
- Connect the miro board to the monitor.

All keyboard commands appear in this font:

install <↵>

<↵> represents the enter key.

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



For 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.



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



FEATURES

With miro 20SV miro 40SV and miro 44SV twin, miro offers graphics boards, which were designed especially for professional use under Windows and DOS: The graphics boards meet all requirements concerning page layout, illustration and color image editing.

☐ **Graphics acceleration**

The operating speed of a graphics system is essential especially for professional purposes. The operating speed is determined by the graphics processor.

The miro twin graphics boards are equipped with S3 graphics processors to improve the performance of applications running under Windows and DOS. The primary boards of miro 20SV/40SV/44 SV are equipped with the Vision968 graphics processor. The daughterboards of miro 20SV/40SV are equipped with the Vision868 graphics processor, the miro 44SV daughterboard is equipped with the Vision968 graphics processor.

☐ **Video memory**

miro 20SV twin has 2 MB of VRAM and miro 40SV/44SV twin has 4 MB of VRAM.

☐ **Fast bus systems**

There is a **P**(eripheral) **C**(omponent) **I**(nterconnect) version of all boards.

☐ **Drivers**

miro 20SV/40SV/44SV twin include all necessary drivers to achieve the maximum performance from your system. In addition, the miro tools are provided.

☐ **Resolution**

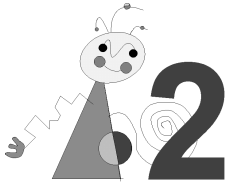
miro 40SV/44SV twin offer a maximum resolution of 1600 x 1280 pixels at 65,536 colors.

☐ **Dual-screen mode for DOS and Windows**

miro twin features two graphics processors and the miroTWINFACE driver allowing to simultaneously control two monitors and to create one large Windows or DOS workspace. You could use your old VGA monitor as the smaller second monitor.

☐ **Monitor plug & play support**

The miro twin boards support the VESA **D**isplay **D**ata **C**hannel (DDC). A monitor complying with this standard transmits its characteristics via this interface and starts up with an appropriate resolution.



Before you start

SYSTEM REQUIREMENTS

To install miro twin, your computer system has to meet the following requirements:

Computer 486 or Pentium computer or compatible with a PCI Local Bus slot.

Monitor *For the single-screen configuration*

To receive all the benefits from miro twin, you need a multifrequency monitor supporting a horizontal scan frequency of 64 kHz or more with separate horizontal and vertical syncs.

For the dual-screen configuration

High-resolution multifrequency monitor and a standard VGA monitor or two high-resolution multifrequency monitors.

To enable the data transfer between the monitor and the miro board, you need a DDC-capable monitor cable.

Software Windows 3.1x, Windows 95 or Windows NT

PACKAGE CONTENTS

Before beginning the miro twin installation, please make sure your miro package is complete^{*}.

- ♦ Graphics board (primary board and daughterboard)^{**}
- ♦ CD-ROM
- ♦ drivers, application and documentation on CD-ROM.

If any part is missing, please contact your dealer.

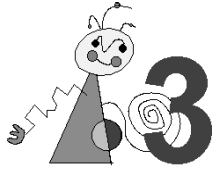
You will find the complete software and documentation on CD-ROM. Diskettes are not included in the package contents. To create installation diskettes, use the miroSETUP-Manager included on the CD-ROM. Diskettes can also be obtained from the miro Support-Mailbox.



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.



Hardware installation

System configurations

miro twin consists of a primary board and a daughterboard.

miro twin can be used in the single-screen and dual-screen configuration.

Single-screen configuration

In this configuration miro twin usually connects to a single multifrequency monitor. The VGA and high-resolution image are displayed on this monitor.

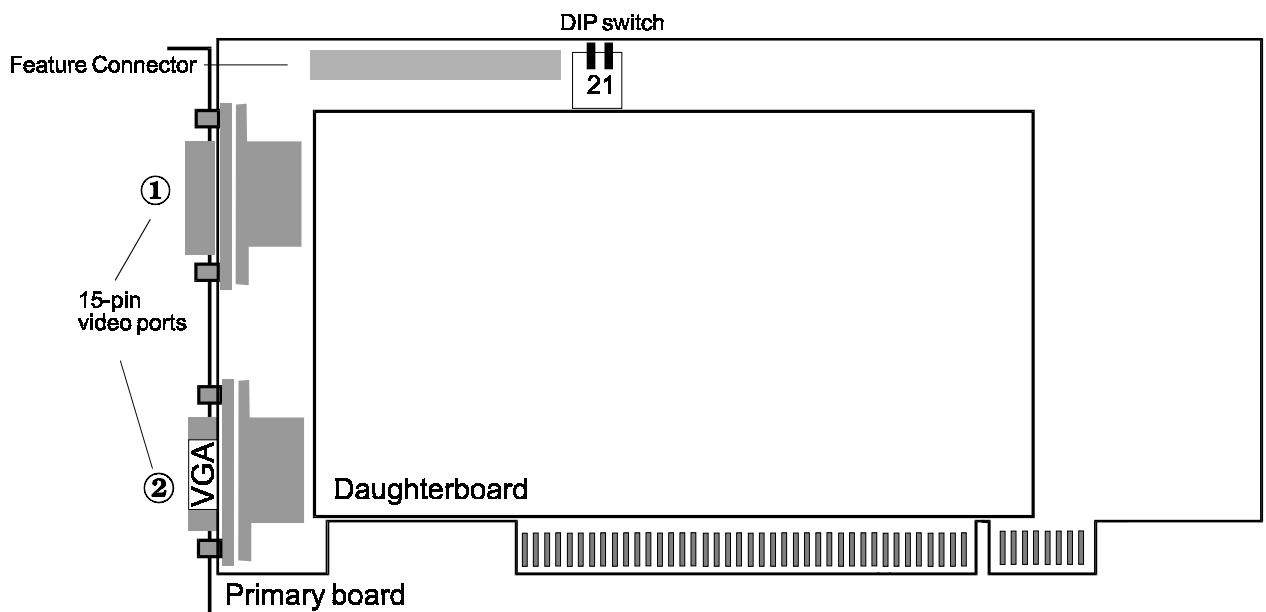
Dual-screen configuration

The dual-screen configuration consists of two high-resolution graphics systems or one high-resolution and one VGA graphics system. Each system has its own monitor.

VGA in the computer

Any existing VGA board or a motherboard VGA have to be removed from the computer or be disabled prior to the installation.

miro twin board layout



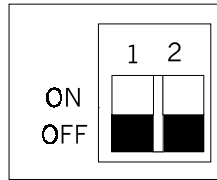
① 15-pin monitor output of the miro twin primary board

② 15-pin monitor of the miro twin daughterboard

Setting the DIP switch

On the miro twin basic board you find a 2fold DIP switch (see board layout). The switch setting sets the miro twin hardware presetting.

Default setting The following illustration shows the default setting done at the factory.



Booting on the daughterboard The setting of DIP switch 2 determines whether the computer boots on the miro twin primary board or on the daughterboard. DIP switch 2 is set to OFF:

The computer boots on the daughterboard and the monitor connected to the daughterboard is enabled after switching the system on.

Booting on the primary board To boot on the primary board, change the setting of DIP switch 2 to ON.

The computer boots on the miro twin primary board and the monitor connected to the primary board is activated after switching the system on.



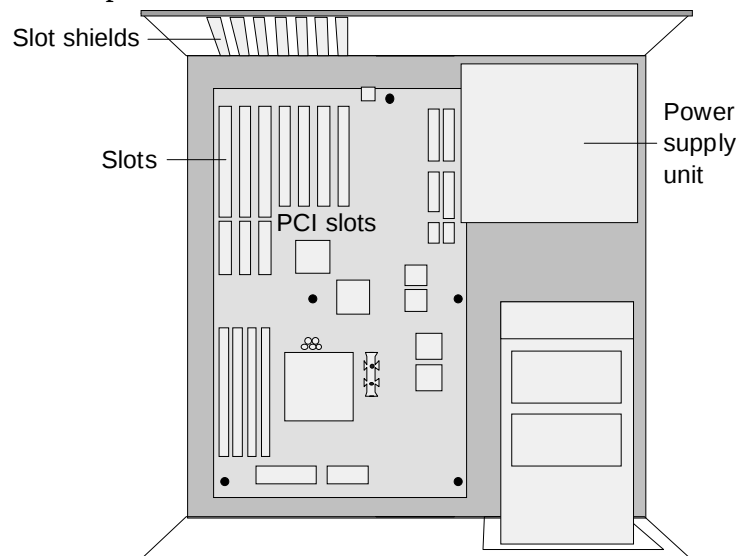
When setting the DIP switch be very carefully. An incorrect setting can lead to malfunctions of the graphics board and the computer.

Switch 1 is reserved. You should not change the setting done at the factory.

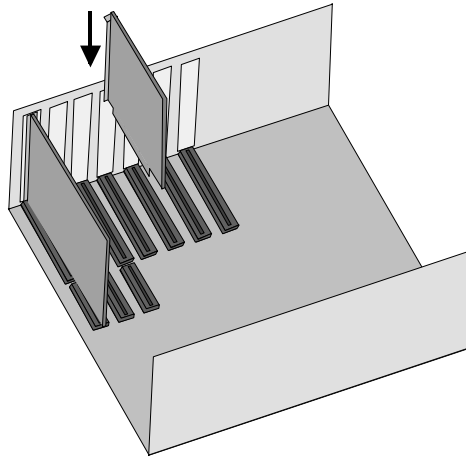
INSTALLING miro twin

After checking and/or changing hardware settings you can install the graphics board. The only tool you need for the installation is a screwdriver. Proceed as follows:

1. Discharge yourself of static charge by touching the power unit casing.
2. Turn off your computer and all peripheral devices. Disconnect the computer from the power supply and all other components.
3. Loosen the screws of the computer's cover and remove it.
4. If necessary, remove the VGA board from the computer or disable the motherboard VGA.
5. Select a free PCI slot. Remove the slot's cover at the back of the computer. Save the screws of the cover.



6. Carefully insert the graphics board into the PCI slot by holding the board at the top and gently pushing both ends into the slot at the same time. Press onto the upper edge of the board to make sure it is firmly seated in the slot.



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

7. Fasten the board's bracket at the back of the computer using the screws you saved from the shield.
8. Put the cover back on the computer and reconnect the peripheral devices.

CONNECTING THE MONITOR(S)

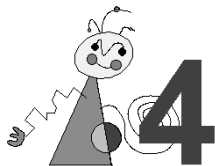
miro twin has two 15-pin D-type monitor outputs. In the board layout (see above) they are marked with 15-pin video ports ① and ②. On the graphics board the video port ② is labelled VGA.

If you want to connect only one monitor, we recommend to connect a high-resolution multifrequency monitor to the primary board, if higher resolutions are available.

1. *Single-screen configuration*
Connect the monitor to the port labelled *Primary board* ①.
1. *Dual-screen configuration*
Connect the high-resolution monitor to the port labelled *Primary board* ①. Connect the second monitor (standard VGA monitor or multifrequency monitor) to the *Daughterboard* port ②.
2. Reconnect the computer and the monitor to the power supply.

How to go on?

After you have installed your graphics board, you can proceed with the software installation and with the configuration of the application drivers.



Software installation (CD-ROM)

Software package

The **CD-ROM** includes drivers for Windows 3.1, Windows 95, Windows NT, and the miroWINTOOLS. Furthermore it includes drivers for CAD applications and the miro3D-VIEWER for DOS and for Windows. miro3D-VIEWER allows the AutoCAD user to view three-dimensional drawings in a 3D window.

You can use two monitors to create one Windows workspace after having installed the suitable Windows drivers. You can move the mouse cursor from one monitor to the other. This is especially useful, if you want to run two or more applications simultaneously and you want to be able to see all running applications.

The miroPINBOARD tool allows to choose the monitor where the full-screen image will appear. A detailed description of miroPINBOARD is contained in the online help of the miroWINTOOLS.

The installation of the Windows drivers which are required for the operation of two monitors under Windows is similar to the installation for the single-screen operation.

miroSETUP-Manager

To install the miro drivers and applications from CD-ROM under Windows, you need the miroSETUP-Manager which is contained on the CD-ROM.

If other installation programs are started during the installation, the miroSETUP-Manager is minimized (Windows 3.1) or placed into the taskbar (Windows 95). To maximize the miroSETUP-Manager again, double-click the icon. After the installation is completed, restart Windows.

Requirements

To install the software correctly, Windows has to be installed for VGA. In addition you need 3 MByte memory.

VIEWING/PRINTING THE DOCUMENTATION

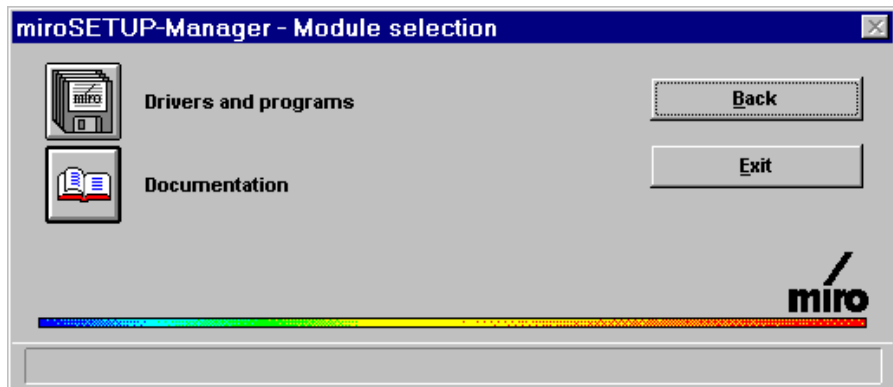
Use the *Documentation* menu item (*miroSETUP-Manager Module Selection*) to install the Adobe Acrobat Reader which allows you to view and print the complete documentation.

1. If you have not done so already, start Windows 95.
2. Insert the miro-CD in the CD-ROM drive.

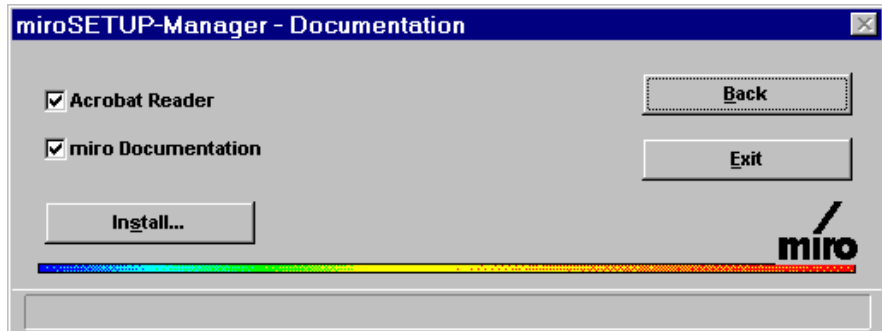
The Setup program is started automatically.

Then you are in the *Language Selection* menu with the default setting *English*.

3. Click *OK*.
4. In the *miroSETUP-Manager Module Selection* window, click *Documentation*.



5. Click *Install...* .



The Adobe Acrobat Reader installation program starts.

6. Follow the installation instructions of the Acrobat Reader.

After restarting the system the program groups *Acrobat Reader* and *miro Documentation* are available.

7. Double-click the icon to open the documentation.

- | | |
|-------------------------|---|
| Bookmarks | Selecting <i>View</i> and the <i>Bookmarks and Page</i> command will show you the contents for the manual. You can click the heading and you go directly to the corresponding chapter. A ▸ sign next to the heading indicates that there are further subheadings which become visible by clicking the ▸ icon. |
| Printing | To print a file, select the <i>File</i> menu and the <i>Print...</i> command. |
| Another language | If you want to View/print the documentation in another language, select the <i>File</i> menu and the <i>Open...</i> command. You recognize the languages by the letters <i>_e</i> (English); <i>_d</i> (German), <i>_f</i> (French). You find all files in the \MANUAL directory. |
| Further module | If you want to install further modules in addition to the Acrobat Reader, restart the miroSETUP-Manager. |

WINDOWS 95

To install the miro drivers and the miroWINTOOLS for Windows 95, proceed as follows:

1. If you have not done so already, start Windows 95.
2. Insert the miro-CD-ROM in the CD-ROM drive.
3. From the Taskbar, select the *Start* menu and the *Run...* command.

4. Depending on your CD-ROM drive enter:

d:\miro_win<↵>

where **d:** is the drive letter for your CD-ROM drive.

Then you are in the *Language Selection* menu with the default setting *English*. By clicking *Information* you get information about the miroSETUP-Manager and its modules.

5. Click on *OK*. You are then in the *miroSETUP-Manager Module Selection*.

You have the possibility to install the miro *drivers and programs* and to View and print the *documentation*.

6. In the *miroSETUP-Manager Module Selection* select *Drivers and Programs*.

Then you are in the *miroSETUP-Manager Drivers and Programs* menu. Here you can select which drivers and/or programs you want to install.

7. Enable the *Drivers for Windows 95* menu item and click *Install...* .

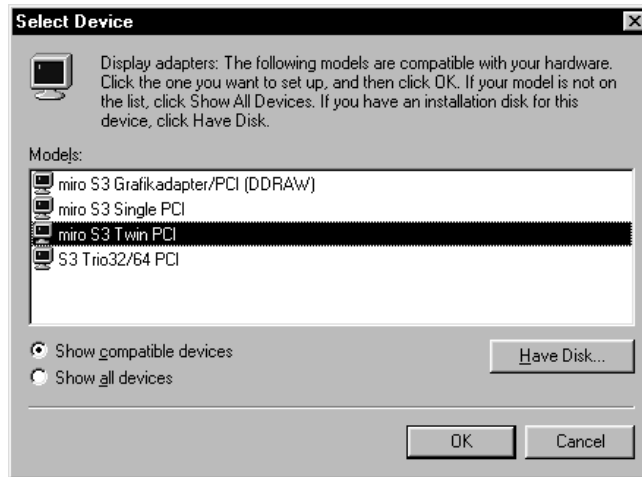
The miro installation program is started automatically.

The miro installation program

At the beginning of the installation program, the *Language Selection* menu appears. Here you can select the language you want to use for the installation. The default setting is the language of your Windows 95 version.



1. Click *Next* to confirm.
2. In the *Select components* window select the drivers and the tool you want to install. Click *Next*, to copy the drivers and the tools.
3. Click *Finish*. The *Setup Complete* dialog box appears. Click *Finish* again.
4. Now the Windows dialog box *Display Properties* appears with the *Settings* tab. Click the *Change display type...* button. Here you can select the graphics board and the monitor type.
5. Click the *Change...* button located beside the graphics board.
6. In the *Select device* dialog box select *miro S3 Single PCI* for the single-screen configuration, for the dual-screen configuration select *miro S3 Twin PCI* and click *OK* to confirm.

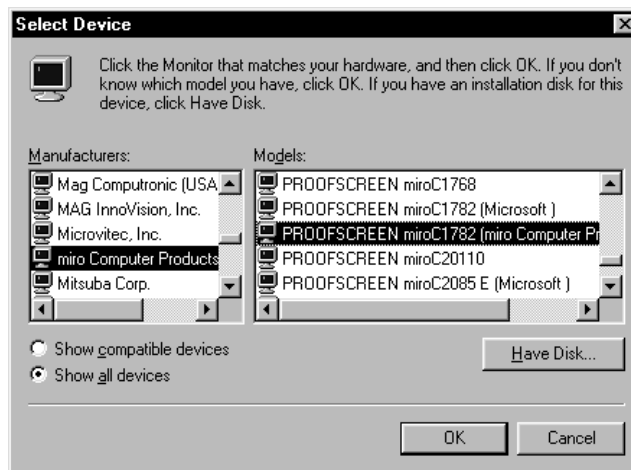


The drivers are copied.

7. To select another monitor, click on the *Change* button located beside the *Change...* button.

Single-screen configuration

8. In the *Select Device; Show all devices* window, select your monitor, and click *OK*.



Dual-screen configuration

8. In the *Select Device; Show compatible device* window, select *miroTWINFACE* and click *OK*.



The dual-screen configuration is only possible if you selected *miroTWINFACE* under *Models*.



A wrong monitor selection can seriously damage your monitor. In case of doubt, refer to your monitor's documentation.
See the Appendix for more information on monitor selection.

9. In the *Change display type* dialog click *Close*.

10. Click *Apply*. When being requested to restart the computer answer *Yes*.

miroWINTOOLS

After the installation has been completed, you will find the miroWINTOOLS in the miroWINTOOLS program groupage. There you also find an option for deinstalling the tools. The miroWINTOOLS are provided with a detailed online help.

As an alternative to the installation procedure described above, you can also install the miro drivers using the *Display Properties* dialog box. For more information on this procedure, refer to the README contained on the CD.



If you want to install the miroCRYSTAL 22SD twin board under Windows 95 using the *Display Properties* dialog box, please read first the README file on the supplied CD-ROM.

Further settings

After restarting Windows make further settings (resolution, color depth, etc.).

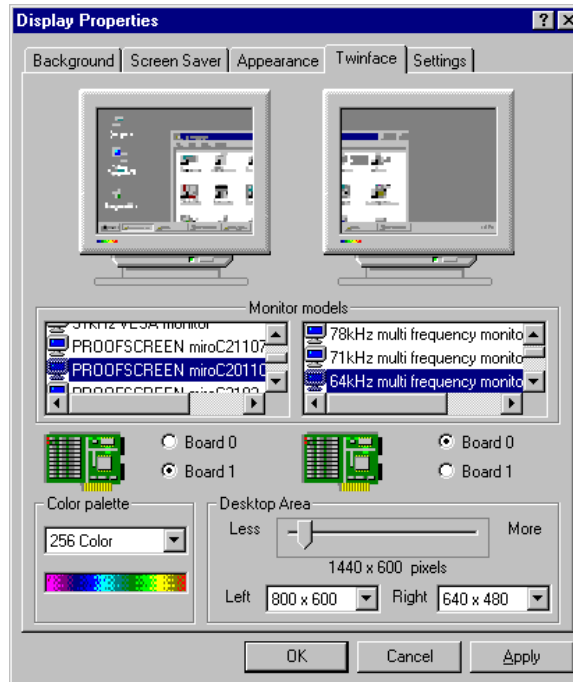
Single-screen configuration

1. Open the *Display Properties* dialog box.
2. Change the desired settings in the *Settings* tab (resolution, color depth, ...).
3. Click *OK*.

Dual-screen configuration

1. Open the *Display Properties* dialog box.
2. Change the desired settings in the *TWINFACE* tab:
 - a) Select the monitor positioned on your left-hand side in the left list box and the monitor positioned on your right-hand side in the right list box.
 - b) Use the option buttons located next to the graphics board illustration, to specify whether your monitor is connected to the primary board (top option button) or to the daughterboard (bottom option button).
 - c) Select the number of colors and the resolution for the left and the right monitors.

The monitor you selected determines which combinations of resolutions are available.



3. Click **OK**, to accept the settings.

Then, the installation of your miro graphics board under Windows 95 is complete.

WINDOWS 3.1X

To install the Windows 3.1x drivers and the miroWINTOOLS, proceed as follows:

1. If you have not done so already, start Windows.
2. Insert the miro CD-ROM in the CD-ROM drive.
3. In the Program Manager select the *File* menu and the *Run...* command.
4. Depending on your CD-ROM drive enter:

d:\miro_win<↵>

where **d:** is the drive letter for your CD-ROM drive.

Then you are in the *Language Selecion* menu with the default setting *English*. By clicking *Information* you get information about the miroSETUP-Manager and its modules.

5. Click **OK**, to proceed with the installation.

You are then in the *miroSETUP-Manager Module Selection*.

You have the possibility to install the miro *drivers and programs* and to view and print the *documentation*.

6. In the miroSETUP-Manager Module Selection select **Drivers and Programs**.



To install the software correctly, **Windows** has to be configured for **VGA**.

7. Enable the *Drivers for Windows 3.1x* menu item and click *Install...*

The miro installation program is started automatically.

The miro installation program

After starting the installation program the *Language Selection* menu appears in English (default setting).

OK/Cancel Click *OK* to go on with the installation program and *Cancel* to exit the program.

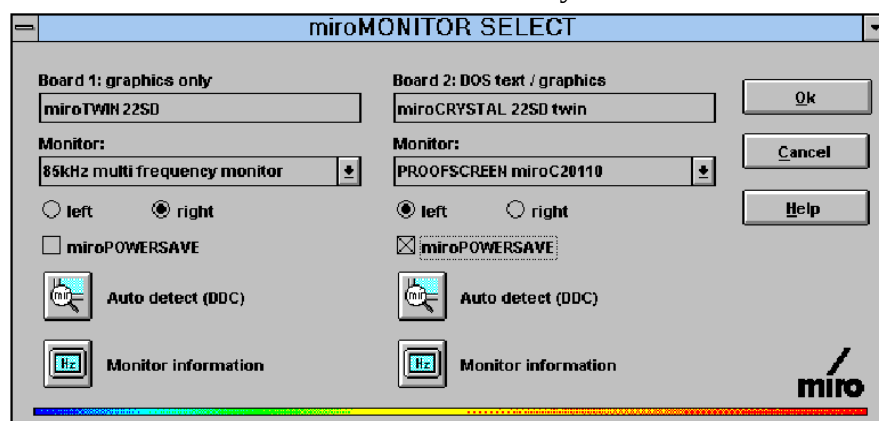
8. Click on *Install...*

9. Select the items you want to install.

After the installation has been completed the miroMONITOR SELECT tool is started allowing you to select your monitors.

miroMONITOR SELECT (Windows)

miroMONITOR SELECT allows to select your monitor.



Board 1/Board2:

Here you see the installed graphics boards (the daughterboard is always board 1).

Monitor:

miroCRYSTAL 22SD twin supports VESA Display Data Channel (DDC).

If your monitor also supports the DDC specification, data can be transferred between monitor and graphics board.

If your monitor supports DDC, you will find your monitor in the Monitor list box during a first-time installation. If this is not the case or if there is a wrong entry in the *Monitor* list box, proceed as follows:

1. Open the *Monitor type* list boxes and select your monitors.
If your monitor is not in the list, select the monitor with the next smaller horizontal scan frequency.



An incorrect selection can seriously damage your monitor. If you are in doubt, refer to your monitor's documentation.
See the Appendix for more information on monitor selection.

2. Specify the *right* and the *left* monitor.

miroPOWERSAVE:

miroCRYSTAL 22SD twin supports VESA DPMS Power Management.
A monitor which also supports Power Management reduces its power consumption when it is not being used until it switches itself off.

3. Activate *miroPOWERSAVE*, if your monitor(s) support(s) this tool.



Only use miroPOWERSAVE, if your monitor has a power saving function complying with the VESA specification!

Auto detect (DDC)



If you click this button and your monitor supports the VESA DDC standard, the miro board tries to detect the connected monitor.

Monitor information



The *Monitor information* button contains a list of all available resolutions and frequencies.

For detailed information on miroPOWERSAVE refer to the online help of the miroWINTOOLS.

4. Accept the settings by clicking *OK*.

miroSUPERSCREEN is automatically started.

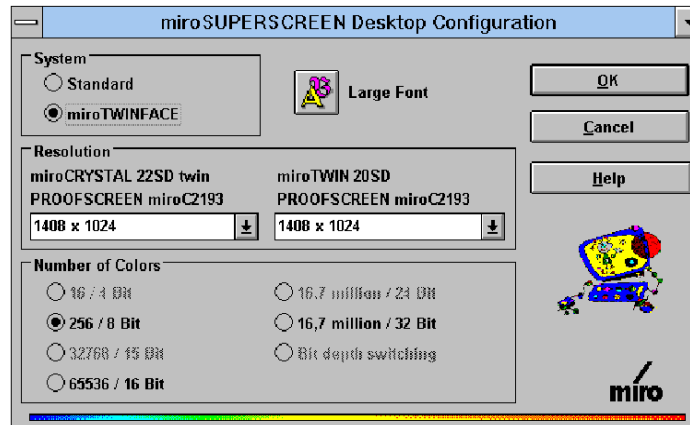
miroSUPERSCREEN

For a detailed description of **all** miroSUPERSCREEN functions refer to the miroWINTOOLS online helpage

Standard

If you select *Standard* (under *System*), the resolution can only be selected for one monitor and only this monitor displays an image.

If you have installed a miroCRYSTAL 22SD twin, the image appears on the monitor connected to the board on which the computer boots which you determined using DIP switch 2 (see page 4).



- Select the desired number of colors.
- Select the desired resolution in the *Resolution* list box.

Twintface

If you selected *Twintface* (under *System*), you can specify the resolution for both graphics boards.

You can select several combinations of resolutions for the same number of colors. Only certain combinations are available. The resolution of the monitor connected to the daughterboard is always equal to or lower than the resolution of the monitor connected to the primary board.

- Select the desired number of colors.
- Specify the desired resolutions in the *Resolution* list box.

After specifying all settings, quit miroSUPERSCREEN with *OK* and restart Windows.

miroWINTOOLS During the installation of the miro drivers the miroWINTOOLS have been copied to the hard disk and the miroWINTOOLS Program Group has been created. The miroWINTOOLS are provided with a detailed online help page.

miro DRIVERS FOR WINDOWS NT 3.5x

The CD-ROM also contains miro Windows NT 3.5x drivers. You cannot install these drivers using the miroSETUP-Manager.

Create installation disks using the miroSETUP-Manager.

Creating installation diskette(s)

To create installation diskettes, you need a formatted 3,5" diskette. Proceed as follows:

1. If you have not done so already, start Windows 95.
2. Insert the miro CD-ROM into the CD-ROM drive.

The Setup program starts automatically.

3. Select the language you want to do the installation in and click *OK*.
4. In the *miroSETUP-Manager Module Selection* window, select the *Drivers and Programs* item.
5. Select the driver you want to install and click *Disk(s)*.
8. Insert the required diskette(s) into the disk drive: the installation diskette(s) will be created.

Use the *Quit* button to quit the miroSETUP-Manager.

Installing drivers for Windows NT 3.5x



For detailed information on the installation and the configuration, refer to the README.TXT file on the CD-ROM.

It is required that you have installed Windows NT 3.5x with a graphics driver for your VGA board.

If this is not the case, install Windows NT 3.5x for VGA. After you restarted the system, you can install the miro drivers.

Proceed as follows:

1. Select *Control Panel* from the *Main Group* and double-click the *Display Tool*.
2. In the *Display Settings* window click *Change Display Type*.
3. Click the *Change...* button.
4. The *Select Device* window offers you an overview over all installed drivers that are already installed. Select *Other...* .

You are now requested to insert another disk.

5. Insert the installation disk into the disk drive. Depending on the disk drive you use, enter **a:** or **b:** and click *OK*.
6. The *Select Device* window shows you the driver for your board at the end of the driver list.

7. Select the graphics board installed in your computer.
8. Confirm the following message.
9. If you had already installed the driver, you are asked whether you want to install the old or the new driver. Start the installation of a new driver by clicking the *New* button.
11. Click the *Continue* button to proceed with the installation.
12. Confirm the message telling you that the driver is only available after restarting the computer.
13. Also confirm the question requesting you to restart Windows NT.

After the restart the driver which has just been installed is active with the lowest resolution.

You can use the miroMONITOR SELECT tool to select a monitor (page 16) and then select a resolution (page 16).

miro DRIVERS FOR WINDOWS NT 4.0

The miro drivers for Windows NT 4.0 cannot be installed with the miroSETUP-Manager.



For more details on the installation and configuration, refer to the README.TXT file on the CD-ROM in the WINNT40 directory.

For a successful installation of the drivers it is vital that Windows NT 4.0 has been installed on your computer with a Standard VGA driver.

If this is not the case, install Windows NT 4.0 in the VGA mode after the hardware installation. After restarting the system, install the miro drivers.

Proceed as follows:

1. Click the *My Computer* icon to open the *My Computer* window to start the *Control Panel* program.
2. Start the *Display* tool to adjust/select the video display and switch to the *Settings* section.
3. In the *Display Properties* window, select the *Change Display Type* button.
4. The *Display Type* window offers an overview of the currently active display driver. Please activate the *Change...* button.
5. The *Select Device* window offers you an overview of all display drivers supplied with your Windows NT 4.0 Installation. Please select the *Have Disk...* button.
6. In the *Install from Disk* window overwrite the default setting with **d:\disksets\winnt40**, where **d:** is the letter of your disk drive containing your installation software. You can search your drivers by using the *Browse* button. Only files with the file name extension **.inf** are displayed. The file you have to look for is named **mirosing.inf**.
7. After selecting the proper file you choose the installed graphics board from the *Change Display* window. Select your board and press *OK* or double-click the appropriate entry in the list.

8. Select *YES* in the *Third-party Drivers* message box. The driver files are now being copied to your hard disk.
9. Close the *Display Type* and the *Display Properties* windows and reboot the computer.

After the restart the driver which has just been installed is active with the lowest resolution. You can now select a monitor and change the resolution.

miro Monitor Select - Control Panel extension

Proceed as follows:

1. By using the *Icon My Computer*, you can start the *Control Panel* program..
2. To select a monitor, start the *miro Monitor Select* tool.
The title is the name of your graphics board.
3. Select your monitor from the *Monitor* list. If your monitor is not listed, select the monitor from the *Multi Frequency* monitors with the frequency which comes close to the frequency of your monitor.
4. After a short while you see the *Available Resolutions* list which gives you an overview of all resolutions supported by your monitor.
5. To confirm your selection, click *OK* or click *Cancel* to keep the selected monitor.
6. In the *Monitor Settings Change* window you can restart your computer immediately by pressing the *Restart Now* button. You can also click the *Don't Restart Now* button to get back to the *Control Panel* program.
7. Restart the system using the taskbar.
8. After the restart the selected monitor is active. If the resolutions and refresh rates differ from the settings of the previous monitor, the system will notify you.



PLEASE NOTE: The *miro Monitor Select* icon is only available in the *Control Panel* program, if a driver installed from this disk is currently active.

Changing the resolutions

To change the resolution, proceed as follows:

1. By using the *My Computer* icon, you can start the *Control Panel* program..
2. Start the *Display* tool to select/change the video display.
3. The *List All Modes* button lists the resolutions your board and your monitor support and the number of colours and frequencies. Double-click to select a resolution.
4. You can also use the *Desktop area* slider, the *Color Palette* and the *Refresh Frequency* windows to select a resolution. Keep in mind that the settings are interdependent. If you select an invalid setting, the other options change so that a valid setting is restored.
5. To check the selected resolution in a testscreen, click the *Test* button and confirm.

- ♦ Is the selected resolution/frequency displayed on the monitor?
- ♦ Is the correct resolution specified?
- ♦ Are the arrows in the testscreen margins visible?
- ♦ Are the coloured and the hatched areas displayed correctly?

After five seconds the testscreen disappears and you see the workspace again.

6. If the resolution on the testscreen is *OK*, confirm the *Testing Mode* window with *Yes*.

7. *Windows NT 3.5x*:
Restart the system.

Windows NT 4.0:

The new graphics mode will be displayed immediately.

CAD

Overview

The CAD drivers for DOS are installed from the DOS level, the CAD drivers for Windows are installed under Windows and from floppy disk.

The CD-ROM includes the following drivers:*

Application	miro driver
AutoCAD 9-10	miroADI
AutoCAD 11/DOS	miroGTI 12
AutoCAD 12/DOS	miroGTI 12
AutoCAD 13/DOS	miroGTI 12
AutoCAD 12/Windows	miroGTI 12 Win
AutoCAD 13/Windows	miroGTI 13 Win
AutoCAD 13/Windows NT	miroGTI 13 Win
AutoCAD 13/Windows 95	miroGTI 13 Win
Microstation PC	Microstation driver

After having installed the miro drivers, these have to be configured.

miroGTI 12 Refer to the “miroGTI 12” chapter (page 21) for the configuration and description of the functions.

miroGTI 13 Win General information on miroGTI 13 Win can be found in this manual (page 29). Detailed information on the configuration and a detailed description of the functions are contained in the online help page

miroADI To configure miroADI, read the “miroADI” chapter (page 30).

MicroStation PC If you installed the miroMicrostation PC driver, the configuration is described in the “MicroStation PC” chapter (page 32).

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

CAD for Windows 95

To install the miro CAD drivers for Windows 95, proceed as described in the “Windows 95” section in steps 1. to 6. on page **Fehler! Textmarke nicht definiert.**

1. In the *miroSETUP-Manager Module Selection* window enable the *Drivers for CAD (Windows 95)* menu item and click *Install...* . The miro installation program is started automatically. For detailed installation instructions, also refer to the “Windows 95” section as of page 8.

CAD for Windows 3.1x

To install the miro CAD drivers for Windows 3.1x, proceed as described in the “Windows 3.1” section in steps 1. to 6. on page 11.

1. In the *miroSETUP-Manager Module Selection* window enable the *Drivers for CAD (Windows 95)* menu item and click *Install...* . The miro installation program is started automatically. For detailed installation instructions, also refer to the “Windows 3.1x” section as of page 12.

CAD for DOS

The CAD drivers for DOS are installed from the DOS level. Use the *miroSETUP-Manager* included in the software to create installation disks. To do so, you need a formatted 3.5" diskette.

1. In the *miroSETUP-Manager Drivers and Programs* window select the *Disk(s)...* button to create an installation disk.
2. Close the *miroSETUP-Manager* and quit Windows.
3. Insert the installation disk into a disk drive.
4. Depending on your disk drive, enter **a:\install<↵>** or **b:\install<↵>**.

The miro installation program is started automatically.

The miro installation program

After starting the installation program the *Language Selection* menu appears in English (default setting). Accept the default setting with the enter key or overwrite it. Now, you are in the Main Menu.

The installation program is operated via the keyboard. The bottom line shows the keys to operate the installation program.

To mark a menu item, move the cursor bar to the menu item using the arrow keys and press the space key. To perform the action, press <↵>. Presettings (YES/NO) can be changed using the space key.

<↵>/<ESC>

Press <↵> to proceed in the installation program, press <ESC> to end the program.

1. Select the miro graphics board for which you want to install the CAD drivers.



Make sure to select the correct board.

2. By clicking the enter key you go to the *Driver Selection* menu.



3. Select the desired drivers for your applications (e.g. AutoCAD 9 - 10); change the presettings from *NO* to *YES* using the space key.

The *only system software* option installs the system files for your miro graphics board.

The *only uninstall all software* option deletes all files copied to the hard disk during a previous installation.

Do not forget to set the presettings of the desired miro drivers from *NO* to *YES*. To install the desired drivers, press the enter key after you have changed the presettings of all selected drivers.

4. Accept or overwrite the default settings for the drive and directory.

By default, the system software is copied to the system directory of your miro graphics board, the miro application drivers are copied to the drive of the applications.

The installation program modifies the AUTOEXEC.BAT file. The original version is saved under AUTOEXEC.BAK.

After installing the system software and the drivers, miroMONITOR SELECT is started.

miroMONITOR SELECT (DOS)

The miroMONITOR SELECT tool allows to select your monitor. Operate miroMONITOR SELECT using the mouse or the keyboard. If no mouse is installed for DOS, consult the following table.

Selecting elements/list boxes/buttons:

<Alt>+<Letter>	Selects a list box/a command.
<Tab>	Selects the next list box/element/control button.
<Shift>+<Tab>	Selects the previous list box/element/control button.
<Alt>+<Arrow up>	Opens a list box.
<Alt>+<Arrow down>	Closes a list box.
<Alt>+<Space>	Activates the system control menu.

Selecting in list boxes:

<Arrow up/down>	Selects next/previous entry .
<Enter>	Accepts an entry.

Selecting/activating/deactivating control buttons:

<Arrow up/down>	Selects control buttons one after the other.
<Arrow left/right>	
<Space>	Activates/deactivates an element.

Performing actions:

<Enter>	Performs an action.
<Esc>	Aborts an action.
<Alt>+<F4>	Quits miroMONITOR SELECT.

1. Check, if you have selected the correct board in the installation program. If this is not the case, start the installation program again.
2. Open the *Monitor type* list box and select your monitor. If your monitor is not in the list, select the monitor with the next smaller horizontal scan frequency.



An incorrect selection can seriously damage your monitor. If you are in doubt, refer to your monitor documentation.

See the Appendix for more information on monitor selection.

The *Info* button gives you a list of all resolutions and frequencies.

3. Accept the settings by clicking *OK*, to end the installation of the miro graphics board.

After quitting miroMONITOR SELECT, an information screen appears.

The information is the same as the README file which has been copied to the system directory of your miro graphics board. The file can always be called from this directory by entering **readme** <↵>.



miroGTI 12

Overview

miroGTI 12 is a display and rendering driver which stores the picture sent by AutoCAD in a displaylist. miroGTI 12 is compatible with the Autodesk Device Interface (ADI) 4.2 including the Advanced Modeling Extension (AME) and the Advanced Visualization Extension Render (AVE). miroGTI 12 supports **AutoCAD 11/12/13**.

A variety of enhanced features contributes to even more user-friendliness:

- ♦ 32-bit support in the displaylist **,
- ♦ menu-driven driver configuration **,
- ♦ Color Manipulation Tool **,
- ♦ font selection, hotkey configuration, palette configuration, miroTEXTSCREEN (configurable) **,
- ♦ screensaver,
- ♦ miroSPOTVIEW (magnifying glass),
- ♦ FASTZOOM,
- ♦ possibility to set the display and rendering resolution *,
- ♦ *dual-screen mode only*:
miroMULTIVIEW (display of the overview of the drawing on a second monitor).

Configuring AutoCAD for miroGTI 12

Before using miroGTI 12 with your AutoCAD program, you have to reconfigure AutoCAD in a way that the application uses the driver.

1. Start AutoCAD with the **-r** parameter (only for the initial configuration).
2. In the configuration menu select the item for the video configuration.
3. In the video configuration menu select the miroGTI 12 driver.
4. Answer AutoCAD's default questions concerning the driver configuration.

If you want to configure your digitizing tablet under AutoCAD, turn off the *Zoom* and the *Pan* menu.

After the configuration the AutoCAD screen menu appears. The menu is complemented by some additional miroGTI 12 functions. Among others the miroGTI 12 main menu can be called up there (not for AutoCAD 11) giving you access to all driver features. miroGTI 12, installed with a default configuration, can be configured individually to your liking. AutoCAD 11 is configured after the video configuration in the miroGTI 12 dialog.

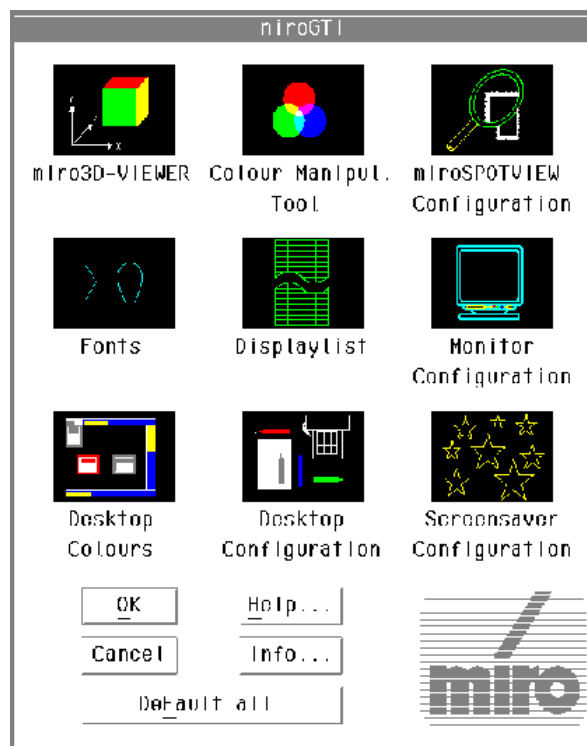
* available as an option, ** not available for AutoCAD 11

miroGTI 12 main menu

Calling the main menu

You can call the driver's main menu in different ways:

- ♦ by clicking *miroGTI* in the AutoCAD/miroGTI 12 screen menu,
- ♦ by simultaneously pressing the <CTRL> and <L> keys,
- ♦ by typing the commands **ami_gti**, **ami_local** or **ami_menu**.



The miroGTI 12 main menu allows to

- ♦ call the miro tool miro3D-VIEWER (see “miro3D-VIEWER”),
- ♦ call the Color Manipulation Tool (see “Color Manipulation Tool”),
- ♦ configure the driver as you desire (see “Additional configuration”).

The miroGTI 12 is configured with the help of dialog boxes. Concerning the design and functionality these boxes correspond to the AutoCAD dialog boxes.

Help

Each dialog box has a *Help* button. When clicking on this button, a help window appears which explains all components of the dialog box.

The settings done in the miroGTI 12 configuration take effect without system restart.



Not all miro graphics boards can utilize the complete range of miroGTI 12 functions. The functions which are not supported are dimmed and cannot be selected.

Default configuration

The *Default all* button resets the values to the defaults. These are:

- ♦ Displaylist: activated
- ♦ Number of monitors: automatically detected
- ♦ Birdeye: deactivated
- ♦ Color scheme emulation: deactivated
- ♦ Scroll area: 1 line
- ♦ Zoom and Pan in side menu: activated
- ♦ Hotkeys: activated (default configuration)
- ♦ Dynamic pan: deactivated
- ♦ Rendering resolution: *As Resolution*



In case you want to replace miroGTI 12 by a newer driver version, this has to be configured again.

Using miroGTI 12

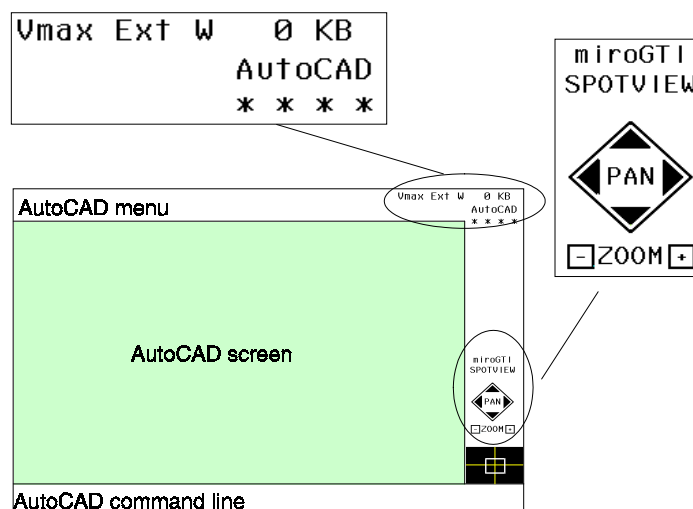
Overview

The miroGTI 12 driver offers additional functions increasing the efficiency when working with AutoCAD:

- ♦ miroSPOTVIEW is a function which enlarges the area where the cursor is located in a split second and avoids having to perform a time-consuming zoom;
- ♦ FASTZOOM allows you to edit zoomed drawing details;
- ♦ miroQUICKVIEW: due to the implementation of two display buffers (Double Buffering) miroQUICKVIEW makes absolutely flicker-free zooming and panning possible (depending on hardware and resolution).
- ♦ miroMULTIVIEW (dual-screen mode only): Use this option to permanently display an overview (Birdeye) of AutoCAD drawings on the second monitor independently of the detail you want to edit on the high-resolution screen.

AutoCAD/miroGTI 12 screen menu

After you have started the program the AutoCAD screen you are used to will have some additional functions.



The menu items miroGTI 12 offers allow you to control the program and to check its status.

Status check *Displaylist size indicator*

In the upper right-hand corner of the screen you see the *displaylist size indicator* which tells you what amount of memory is occupied by the displaylist.

Display of the current detail

In the bottom part of the screen you will see either the miro logo or the size and position of the current detail. In this case a white frame states the maximum expansion of the current display list. A crosshair shows the middle, a white rectangle the size of the current viewport.



The miro logo is shown instead of the current detail if the displaylist ZOOM factor equals 1. The same holds true when you are dealing with a so-called non-zoomable viewport.

Function control

Vmax

The zoom command *Vmax* corresponds to the AutoCAD command **Zoom Vmax** (Zoom to Virtual Screen Maximum).

This command lets you zoom out as far as possible on the current viewport's virtual screen without regenerating your drawing completely.

Ext

The zoom command *Ext* corresponds to the AutoCAD command **Zoom Extents** (but without triggering a regen). In opposition to the *Vmax* command which displays the whole drawing area even if only a small portion of it has any entities the command *Ext* uses only the drawing extents and not the limits. In this way, the largest possible section including all entities can be displayed on the screen.

W

The zoom command *W* is analog to the AutoCAD command **Zoom Window**. You can specify the area you want to be displayed enlarged in a bird's eye window.

After activating the command, you will see a birdeye window.

Select the detail like with the Zoom Window AutoCAD command.

You can abort the zoom function with the key combination <CTRL> and <L>.

In the Birdeye window the four zoom details selected last are saved and marked with a white frame. If you want to activate a detail selected before again, click with the right mouse key into the corresponding white frame and this detail is shown.

You can also activate the *ami_zoomw* command by clicking onto the miro logo in the *AutoCAD/miroGTI screen menu*.



If the cursor is located in the status line of the *AutoCAD/miroGTI 12 screen menu*, you cannot enter AutoCAD commands.

miroGTI

By clicking this menu item you call the *main menu*.

Pan

When you point the cursor to the arrow symbols and press the pick button the detail is moved 1/3 in the direction of the arrow.

Zoom-

When you point the cursor to the (-) symbol and press the *pick* button, the driver goes to the next lower zoom level. To get the new zoom factor, the old zoom factor is multiplied by 0.7. The reference point for decreasing is the center of the drawing.

Zoom+

When you point the cursor to the (+) symbol and press the *pick* button, the driver goes to the next higher zoom level. To get the new zoom factor, the old zoom factor is multiplied by 1.4. The reference point for increasing is the center of the drawing.

miroGTI 12 commands

There are different ways to control miroGTI 12: selecting the commands directly from the AutoCAD/miroGTI 12 screen menu, using the hotkeys, or entering the commands over the keyboard.

Keyboard commands

The following table lists the keyboard commands and their equivalents:

Keyboard command	Equivalent to ...	Description
ami_default	-	Resets all configuration parameters to their defaults
ami_clean oder ami_cleanlist	-	Displaylist is compressed
ami_gti or ami_local ami_menu	<CTRL> + <L> keys AutoCAD side menu: miroGTI	Opens miroGTI 12 main menu
ami_down; ami_up; ami_right; ami_left	AutoCAD-Screen menu: PAN	Pan down; Pan up; Pan to the right; Pan to the left
ami_in	ZOOM+ in AutoCAD side menu	Zoom with next higher zoom level around the drawing's center
ami_out	ZOOM- in AutoCAD side menu	Zoom with next lower zoom level around the drawing's center
ami_redraw	AutoCAD: 'REDRAW	Regeneration of the screen (only current viewport)
ami_zoom<factor>	AutoCAD: 'ZOOM number	Zoom with certain zoomfactor; examples: ami_zoom1, ami_zoom3, ami_zoom15
ami_zoomext	AutoCAD: 'ZOOM extents; AutoCAD status line: Ext	Zoom onto the drawing extents (without REGEN)
ami_zoomvmax	AutoCAD: 'ZOOM Vmax AutoCAD status line: Vmax	Zoom into the virtual screen (only current viewport; without REGEN)
ami_zoomw	AutoCAD: 'ZOOM window; AutoCAD status line: W	Area of the drawing to be zoomed (overview at cursor position) is specified
ami_spton	-	Starting miroSPOTVIEW
ami_spotoff	-	Quitting miroSPOTVIEW
ami_birdclean	-	Redraw on second monitor (miroMULTIVIEW)
ami_panon	miroGTI 12 main menu/ Desktop Configuration Dynamic Pan	Activating Dynamic Pan
ami_panoff	miroGTI 12 main menu/ Desktop Configuration Dynamic Pan	Deactivating Dynamic Pan
ami_fastzoom	<CTRL> +<F1>	Switching FASTZOOM on/off
ami_miro3d	miroGTI 12 main menu/ miro3D-VIEWER	Switches miro3D-VIEWER on (optional)
ami_hoton	miroGTI 12 main menu/ Desktop Configuration Hotkey	Switches on hotkeys

miroSPOTVIEW

miroSPOTVIEW allows to enlarge a part of a drawing without having to call the ZOOM command.

Turning on/off

You can turn miroSPOTVIEW on/off in three different ways (using the <F2> key is only possible when it has been enabled during the configuration):

- ♦ use the AutoCAD/miroGTI 12 screen menu
- ♦ use the defined hotkey (default <F2>)
- ♦ use the **ami_spoton** (on) or **ami_spotoff** (off) keyboard commands.



If **FASTZOOM** is enabled, you cannot call up miroSPOTVIEW via the AutoCAD/miroGTI 12 screen menu, instead press the hotkey.

Moving miroSPOTVIEW

You can move the miroSPOTVIEW window like any other AutoCAD dialog box.

Each time AutoCAD loads the miroSPOTVIEW window will appear at the default position specified during the configuration.

Changing the zoom factor

When the cursor is located in the miroSPOTVIEW window, you can use the following keys:

<F3> key	Zoom factor decreases: to get the new zoom factor the old zoom factor is multiplied by 0.7
<F4> key	Zoom factor increases: to get the new zoom factor the old zoom factor is multiplied by 1.4

When zooming within the miroSPOTVIEW window the zoom factor always depends on the current viewport.

Selecting/ pasting/deleting

miroSPOTVIEW is not active for a short while while selecting, pasting, and deleting objects.

FASTZOOM

With FASTZOOM you can work on a small detail of your drawing and still use all AutoCAD functions.



You need a three-button device (e.g. a mouse) to use FASTZOOM, because the middle button activates FASTZOOM.

1. Activate FASTZOOM by pressing the defined hotkey (default <CTRL> and <F1>).

This combination has a toggle function, that is you can turn FASTZOOM on and off. When FASTZOOM is on, the SPOTVIEW display in the *AutoCAD/miroGTI screen menu* changes to FASTZOOM.

2. Move the cursor to the middle of the segment you want to maximize.
3. Press the middle mouse button once to determine the center of the segment you want to maximize.
4. Now, use the mouse to open the square until the area is marked (the square will be shown as an *AutoCAD box* with crossing lines).

5. Click the left mouse button once to confirm your selection.

Now you can make the changes you want; all AutoCAD functions are available.

6. After you have made all your changes, return to the original position by clicking the center button a second time.



FASTZOOM remains on until you press <CTRL> and <F1> again.

miroQUICKVIEW

miroQUICKVIEW makes panning and zooming possible without any flicker. The prerequisite for miroQUICKVIEW is the Double Buffering feature. miroQUICKVIEW switches between both buffers practically without any delay. Thus, zooming and panning is performed without any flicker. To use the functions of miroQUICKVIEW, the function keys (hotkeys) have to have been activated during the configuration.

Zooming with miroQUICKVIEW

The miroQUICKVIEW zoom is operated using the function keys <F3> and <F4>. By pressing <F3> and moving the mouse you can zoom out of the drawing and no flicker occurs. By pressing <F4> and moving the mouse, you can zoom into the drawing. The miroQUICKVIEW zoom is turned off by pressing the keys <F3> or <F4> or by clicking the mouse.

Panning with miroQUICKVIEW

To pan with miroQUICKVIEW, the real time pan function (Dynamic pan) must be enabled. Move the crosshair cursor to the sensitive marginal area of the viewport. After you are in this sensitive area for nearly one second the crosshair cursor becomes a compass cursor for a short while. The compass cursor tells you that you can now start to pan by pressing the pick button or by moving out of the sensitive area. After one second the compass cursor becomes a crosshair cursor again, and you can work in the sensitive area as usual. If you want to abort panning, press the pick button. If you want to pan once more, first move the cursor out of the sensitive area, then into it, and proceed as is described.

miroMULTIVIEW

Activating miroMULTIVIEW

If you wish to activate miroMULTIVIEW, you have to have chosen this option during the installation. In addition, you need another AutoCAD driver.

You can call the miroBIRD driver or TRIOBIRD driver which are supplied with your miro graphics system.

miroBIRD

miroBIRD supports the standard VGA resolution of 640 x 480 pixels with 4 or 16 colors.

- Call the miroBIRD driver by entering **mirobird**<↵>.

A standard configuration with the default interrupt vector 7Ah is used.

If you want another interrupt vector, e. g. 7Bh, call the driver by entering **mirobird /v7B**<↵>.

TRIOBIRD

- Call the TRIOBIRD driver by entering **triobird**<↵>.

TRIOBIRD can be called with the following parameters:

triobird -vx -ry -fz -bq<↵>

♦ *Interrupt*

The parameter **x** specifies the interrupt. The interrupts from 7Ah to 0D7h are available. Default is 7Ah.

♦ *Font size*

The parameter **f** and a number between 0 and 2 specify which of the three available fonts are selected. **0** selects the 8 x 8, **1** the 8 x 16 and **2** the 12 x 24 font size.

♦ *Resolution*

The parameter **r** and a number between 0 and 2 specify which of the three available resolutions are selected. **0** selects the 800 x 600, **1** the 1024 x 768 and **2** the 1280 x 1024 resolution.

♦ *Background color*

If you want to choose another background color, e. g. yellow, Call the driver entering another parameter after **b**.

The AutoCAD background colors 00h - 07FFh are available.

Number (hex)	00	01	02	03	04	05	06	07
Color	Black	Red	Yellow	Green	Cyan	Blue	Magenta	White

The default configuration is the following:

triobird -v7A -r1 -f1 -b0

That means, the interrupt vector is 07A (hex), the background color black, the font size 8 x 16 and the resolution 1024 x 768 pixels.

When entering **triobird -?** the syntax is displayed.



Load the miroBIRD or TRIOBIRD driver before calling AutoCAD. It is recommended to add the driver call to the AutoCAD batch file.

miroBIRD and TRIOBIRD are so-called TSR (= Terminate and Stay Resident) programs. That is, they reside in the memory after you have finished working with AutoCAD. They can then be removed from the memory:

- Switch to the subdirectory where the driver is located and enter **rmadi<↵>**.

Using miroMULTIVIEW

When you have activated the miroBIRD driver or TRIOBIRD driver and have started AutoCAD, the overview of the drawing is generated on the second monitor.

A rectangle with a white frame (with color monitors a grey frame) marks the current view you are working on.

Press the <F1> key to switch back and forth between the miroMULTIVIEW and the text mode.

miroGTI 13 Win

Overview

miroGTI 13 Win is a powerful display and rendering driver compatible with the Autodesk **D**evice **I**nterface (ADI) 4.2. miroGTI 13 Win operates as a displaylist driver that stores the picture sent by AutoCAD in a displaylist. miroGTI 13 Win supports AutoCAD 13. miroGTI 13 Win runs in the Protected Mode of the 80386/80486 processors, offering maximum speed. Some enhanced features contribute to even more user-friendliness:

- ♦ 32-bit support in the displaylist
- ♦ miroBIRDEYE
- ♦ miroSPOTVIEW

miroGTI 13 Win adds more speed to working with AutoCAD for Windows by using 32 Bit code for all drawing operations, regens etc. Windows processes displays menus, dialog boxes etc. with 16 bit. This provides miroGTI 13 Win a PC with Workstation processing speed. miroGTI 13 Win supports AutoCAD 13 for Windows, including the **A**dvanced **M**odelling **E**xtension (AME) and **A**dvanced **V**isualization **E**xtension **R**ender (AVE).

System requirements

To take full advantage of all features the miroGTI 13 Win has to offer, you need a 386/486 computer with at least 8 MByte RAM. We recommend 16 MB RAM or more. You have to install Windows 3.1x or the Windows 3.1 or Windows NT and the drivers delivered by miro.

Special features

32-bit support

The miroGTI 13 Win displaylist use 32-bit entries to perform zoom operation with factors up to 1.5 million without regenerating the drawing.

miroBIRDEYE

miroBIRDEYE is a powerful tool for users to zoom a drawing or to enlarge details. It makes it easier to keep a clear overview of large drawings with easy panning for any viewport.

miroSPOTVIEW

miroSPOTVIEW is a kind of magnifying glass. Due to miroSPOTVIEW the part of a drawing where the cursor is located can be enlarged in a split second.

Configuring AutoCAD and miroGTI 13 Win

Before using miroGTI 13 Win with your AutoCAD program, you have to reconfigure AutoCAD to recognize the driver. Proceed as follows:

1. Start Windows.
2. Start AutoCAD. Now you see the Drawing Editor.
3. From the *FILE* menu select *configure*.
4. Switch to the configuration menu and select from the video displays miroGTI 13 Win.

The miroGTI 13 Win toolbar appears.

A detailed description of the functions is contained in the online help.

Introduction: miroADI

miroADI is a powerful Real Mode driver. You can use this driver with a multitude of Autodesk applications and take advantage of the functions of conventional ADI drivers on your miro graphics system. miroADI is compatible with Autodesk Device Interface (ADI) version 4.1 and higher. miroADI supports:

- ♦ AutoCAD 9
- ♦ AutoCAD 10
- ♦ AutoShade 2.0
- ♦ AutoSketch 3.0.



The miroADI driver on the installation disk which came with your miro graphics system is named **TRIOADI.EXE**.

Loading and configuring miroADI

1. Loading miroADI.

To call the driver enter: **trioadi**<↵>. The default configuration set by miro is the interrupt vector 07A (hex), the background color black, the font size 8 x 16 and the resolution 1024 x 768 pixels.

2. Configuring miroADI.

To select other settings than the default settings, call miroADI with the following parameters:

Interrupt

To use another interrupt, e.g. 7Bh, call the driver in the following way: **trioadi /v7B**<↵>. The interrupts from 7Ah to 0D7h are available. Default is 7Ah.

Background color

If you want to choose another background color, e. g. yellow, call the driver entering: **trioadi /b02**<↵> The AutoCAD background colors 00h - 07FFh are available.

Number (hex)	00	01	02	03	04	05	06	07
Color	Black	Red	Yellow	Green	Cyan	Blue	Magenta	White

Font size

The parameter **/f** and a number between 0 and 2 specify which of the three available fonts are selected. **0** selects the 8 x 8, **1** the 8 x 16 and **2** the 12 x 24 font size.

Resolution

The parameter **/r** and a number between 0 and 2 specify which of the three available resolutions are selected. **0** selects the 800 x 600, **1** the 1024 x 768 and **2** the 1280 x 1024 resolution.

When entering **trioadi /?** the syntax is displayed.



After you have configured the driver, you may have to reconfigure your Autodesk application which has already been configured—especially if the display driver and/or the interrupt vector have been changed.

Proceed as follows:

1. If you work with AutoCAD 9/10, switch to the configuration menu.
2. Select the item *Configure video display*. Select *ADI display v4.1*. Answer the questions.

Enter the interrupt you used for trioadi/v. By default, TRIOADI.EXE uses 7Ah.

After you have completed the configuration, you can use your Autodesk program together with your miro graphics system.

Removing miroADI

miroADI is a so-called TSR (= **T**erminate and **S**tay **R**esident) program. That is, it can be removed from the memory of the computer after you have finished working with your Autodesk application.

- **Remove miroADI from the memory after quitting your application.**
Switch to the directory containing the system software of your graphics board and enter:
rmadi<↵>

Functions

The function range of miroADI is the same as of a standard ADI driver, so that you don't have to get used to new functions.

The high speed of miroADI is due to the Fast Draw mode. In addition, miroADI takes full advantage of the Packet Mode Interface.

MICROSTATION PC

Overview

The disks supplied with your miro graphics board include driver software for **MicroStation PC version 4.0** and **version 5.0**. The **Protected Mode** driver allows to use the miro graphics board features when using MicroStation, for example:

- ♦ maximum resolutions of 1600 x 1280 pixels (depending on the board),
- ♦ ergonomics: the high refresh rates and the non-interlaced mode prevent eye-strain,
- ♦ single-screen configuration: two screen sides are supported.

During the installation the driver files are copied to the C:\USTATION\DRIVERS subdirectory. The MIROMAT.EXE program is copied to the miro graphics board system file.

Configuring MicroStation

After having installed the drivers on your hard disk, configure MicroStation for your graphics board using the USCONFIG.EXE program. This program is part of the MicroStation software and is usually located in the C:\USTATION directory. For general information on the USCONFIG program, refer to the MicroStation documentation.

MicroStation 4.0 If you use MicroStation 4.0, proceed as follows:

1. To start the configuration program, enter: **usconfig**<↵>.
2. When the current configuration is displayed select *DISPLAY ADAPTERS*.
3. First, select *VENDOR SUPPLIED DRIVER*, then *MS 4.0 miroVIDEO/twin (Board 1)* for the first board.
Two miro graphics boards:
If you have installed two miro graphics boards or one miro graphics board with a daughterboard, select *MS 4.0 miroVIDEO/twin (Board 2)* for second board.
4. To save the configuration, quit the configuration program with *EXIT AND SAVE*.

Microstation 5.0 If you use MicroStation 5.0, proceed as follows:

1. To start the configuration program, enter: **usconfig**<↵>.
2. Select the DOS or the Windows installation program.
3. When the current configuration is displayed select the *DISPLAY ADAPTERS* option.
4. Select *MS 5.0 miroVIDEO/twin (Board 1)* for the first miro board.
Two miro graphics boards:
If you have installed two miro graphics boards or one miro graphics board with a daughterboard, select *MS 5.0 miroVIDEO/twin (Board 2)* for the second board.
5. To quit the configuration program, enter *EXIT AND SAVE*.

Using the driver

After having installed the driver on the hard disk and having configured MicroStation, you can use the driver.

To change the resolution, use the MIROMAT.EXE program which has been copied to the hard disk during the installation.

With MicroStation 4.0, the driver supports 256 colors and all resolutions supported by your micro graphics board and your monitor.

With MicroStation 5.0, all video modes offered by your board are supported.



miro3D-VIEWER for AutoCAD under Windows

INTRODUCTION

The miro3D-VIEWER is a software expansion developed by miro for miroGTI 13 Win (driver for AutoCAD 13 under Windows) allowing the AutoCAD user to view three-dimensional drawings in a 3D window. The drawings can be displayed in perspective as a wireframe or using different shading methods. The miro3D-VIEWER is suited for simulating technical processes, visualizing architectural plans, and presentations.

The miro3D-VIEWER is an ADS (**A**utoCAD **D**evelopment **S**ystem) application; the drawing data is read directly from the AutoCAD data base.

Hardware requirements

To work with the miro3D-VIEWER, you need a **386 PC** at least with **8 Mbytes of memory** (16 Mbytes are recommended). In addition, you need a **mouse**.

Software requirements

Windows 3.1x, Windows 95 or Windows 95;
AutoCAD 13 for Windows 3.1x/95/NT has to be installed.

Features

To manipulate AutoCAD drawings, the 3D-VIEWER offers a number of powerful features:

Display types

AutoCAD drawings can be shown in a window in perspective as a wireframe, with or without hidden lines, or using Flat shading or Gouraud shading. To achieve smoother color transitions, shading is supported by color dithering.

Positioning the camera/the object

The camera functions allow to set the camera's angle of vision and to adjust parameters such as the focal length (zoom factor) and the distance between the camera and the object interactively and dynamically. You can also move the object in space. Rotations around the object or the camera can be performed directly using the mouse.

Zoom/Pan

The mouse allows to zoom and pan in real time.

More speed

The miro3D-VIEWER computes Gouraud shading or hidden lines faster than AutoCAD's "Render" function.

Clipping planes

The miro3D-VIEWER has a number of functions to activate and move clipping planes (right, left, above, below, in front of, behind the object). In doing so, parts can be cut off the object so the inner parts become visible.

Projections

There are two projection types for three-dimensional representations: the

parallel projection and the *perspective projection*. The simpler projection type is the *parallel projection*. The parallel projection is not as computation-intensive and is therefore suited to provide quick overviews. The *perspective projection* where the lines meet at vanishing points is closer to reality since it simulates a person's natural way to see things.

Layer Control

This sub-menu switches off all or individual layers which then are not displayed.

Light

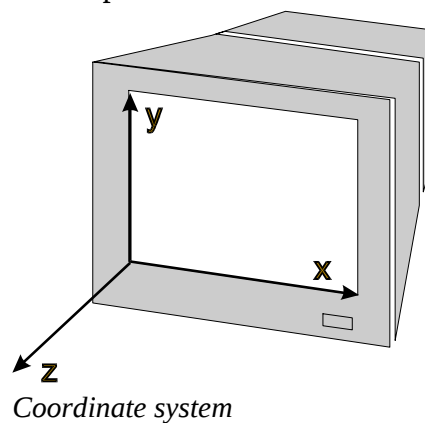
This sub-menu allows you to specify the position of a light source, to fix the light source or to illuminate the backface in addition to the front of an object.

Displaying Objects in 3D

Polygons (surfaces which are flat and bounded by straight lines) play an important role when creating 3D drawings. A polygon is the most common element to form a surface. Every object can be defined by polygons. In this way, round objects such as spheres can be reproduced using a mesh of polygons.

Depending on the amount of stored information about an object there are three main categories: the wireframe, the surface model and the volume model. The last one is the most complex one to compute.

For representing objects in the computer a three-dimensional coordinate system consisting of an x, a y and a z axis serves as reference model. The screen forms the xy plane, the z axis is located vertically relative to the screen plane.



LOADING THE miro3D-VIEWER

Before calling the miro3D-VIEWER an AutoCAD drawing should be loaded.

1. Start AutoCAD.
2. Load a drawing with the **Open** command.
3. Enter **ami_miro3d** in the AutoCAD command line.

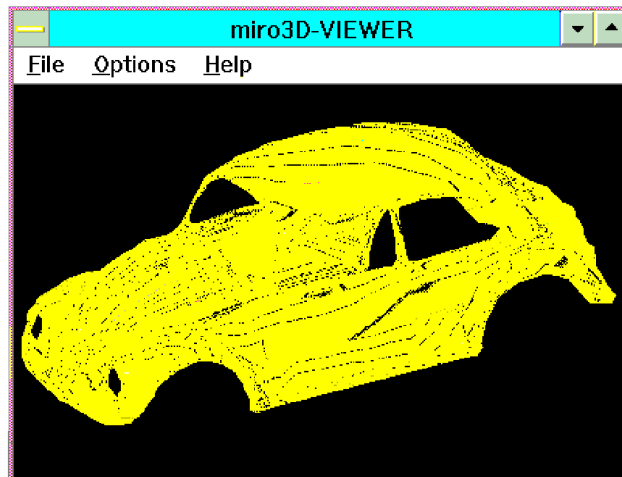
After loading the miro3D-VIEWER, the miro3D-VIEWER window appears and contains the drawing loaded under AutoCAD.



AutoCAD can be loaded several times, the miro3D-VIEWER can only be loaded once.

miro3D-VIEWER WINDOW

The miro3D-VIEWER window remains open together with the AutoCAD window and can be maximized, minimized and shrunk to an icon as is usual for Windows.



This window contains three menus: **File**, **Options** and **Help**.

File:

This menu contains the **Copy** command, which copies the miro3D-VIEWER window content to the Clipboard. When doing so it is important that the complete miro3D-VIEWER window is visible. The **Exit** command ends the miro3D-VIEWER.

Options:

This menu contains the **Settings** command, which calls the miro3D-VIEWER dialog box. This dialog box can also be called using the <> key.

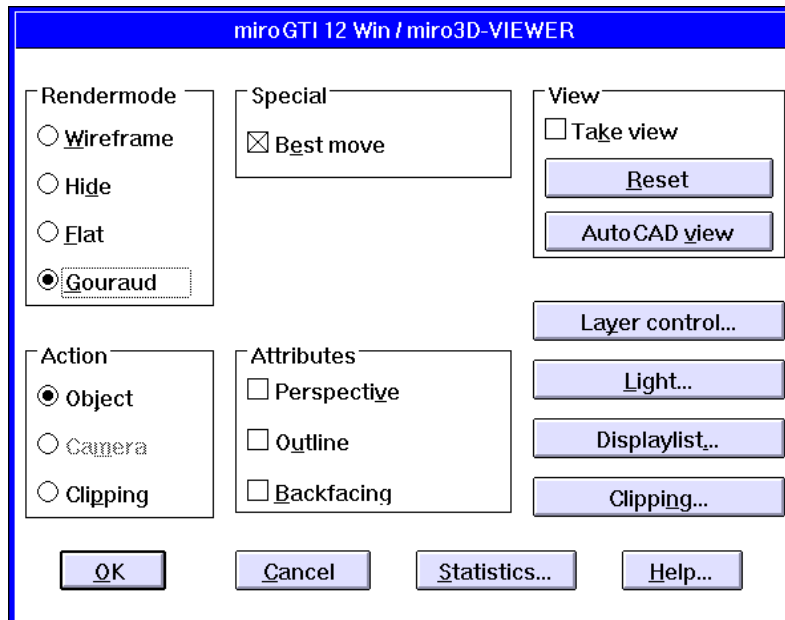
Help:

This menu contains the **Info...** command giving information about the miro3D-VIEWER version.

miro3D-VIEWER DIALOG BOX

Calling the dialog box The dialog box can be called in different ways depending on whether the - AutoCAD or the miro-3D-VIEWER window is active:

- a) AutoCAD window:
Enter **ami_3dmenu** in the AutoCAD command line.
- b) miro3D-VIEWER window:
Under **Options** select **Settings** or press the <F3> key.



The miro3D-VIEWER dialog box is divided into the **Rendermode**, **Special**, **View**, **Action** and **Attributes** column. Besides the option buttons **Layer Control**, **Light**, **Displaylist** and **Clipping** are available. The columns contain option buttons, check boxes and command buttons. As usual under Windows, option buttons represent mutually exclusive items, in contrast, as many check boxes as are appropriate can be selected.

The following sections explain the miro3D-VIEWER functions. To become familiar with the program as quickly as possible, we recommend that you perform the steps described as you read the manual.

If no appropriate drawing is available load the standard drawing delivered by miro. To do so, select **Displaylist** in the Control column and click **Demo** in the submenu.

Rendermode

In this column different display methods for your drawing can be activated. The choices are: wireframe, surface with hidden lines, and volume model.

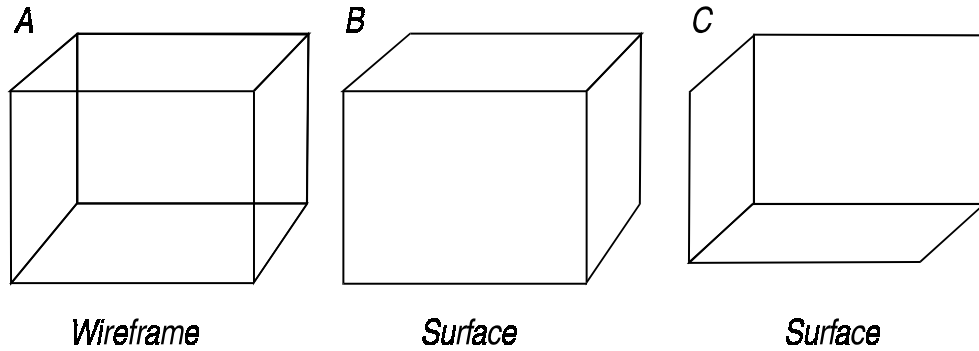
Wireframe

It is the simplest display method: all outlines of the polygons are drawn without allowing for light and shadow. It is the quickest method and well suited for swiftly rotating models around a given angle.

Hide (surface model with hidden lines)

This 3D model is also a wireframe model. The hidden lines are, however, not shown which makes this model clearer than a wireframe model where all lines are shown.

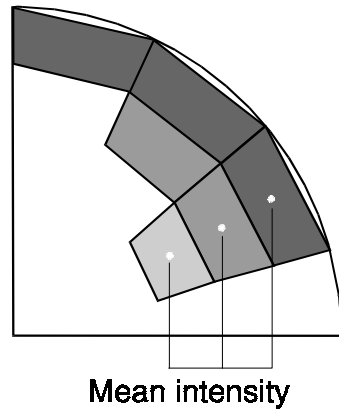
It is a general problem with the wireframe model that it is not always easy to distinguish the front view from the rear view. As an explanation: Is the following model A seen from the top or from the bottom? The illustrations of the wireframe model with "hidden lines" (B and C) make things more clear.



The shading methods represent the transition from the surface model to the volume model:

Flat

With the flat shading method the color transitions which correspond to the facets of the objects are abrupt. The object appears faceted since for each surface polygon the mean intensity is calculated and each polygon is filled with one color. Flat shading is the fastest shading algorithm and is well suited for checking design drawings.

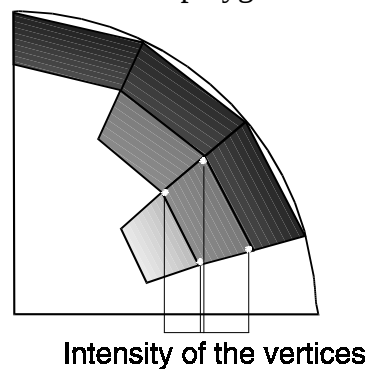


Flat shading

Gouraud

If an object is shaded using the Gouraud method, its surface is represented more realistically than with the flat shading method.

There are smooth color transitions, round edges appear round and not angular. With Gouraud shading the intensity is calculated at the vertices of the polygon and interpolated for the points between these vertices. Thus, each surface polygon has varying intensities creating smooth transitions.



Gouraud shading

Attributes

Perspective

Here you can switch the perspective projection on and off. If you have selected *Camera* in the **Action** column, the perspective projection is automatically switched on.

Outline

The outlines of the individual object surfaces are shown independently of the render mode.

Backfacing

This technique omits drawing the surfaces at the back of objects. This technique not only eliminates elements which are not visible but also accelerates the rendering process considerably. Objects that are shaded using the Flat or the Gouraud shading technique can thus rotate smoother.

Special

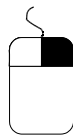
Best Move

As long as you press any mouse key, the objects in the drawing are always drawn as wireframe model to achieve the best performance possible. By releasing the mouse key the shading method selected before is enabled.

Action

Object

This button enables rotating the object and zooming and panning operations with reference to the object. You can enable the functions by clicking a mouse key or clicking two mouse keys simultaneously. After clicking this option key and the *OK* button you get back to the *miro3D-VIEWER* window.



Rotating

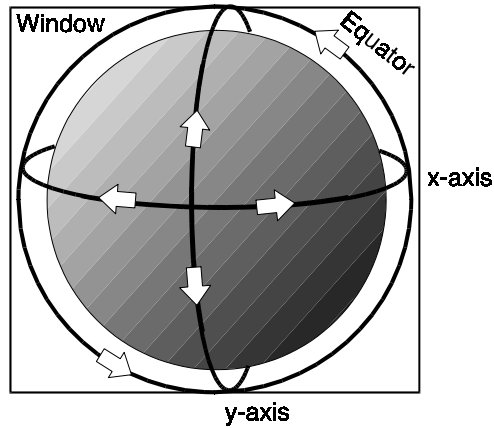
This function rotates the object in space. The mouse guides the movement of the object. The object always rotates around its rotation centre (usually this is the object's centre). To enable this function hold down the right mouse key.

The *miro3D-VIEWER* rotates in two steps:

1. It calculates the rotation axis and the angle around which the object shall be rotated.
2. It applies the calculated rotation axis and angle to the object.

As to 1.:

The following model shows the principle behind the calculation of the rotation axis: Imagine the window is surrounded by a sphere the centre of which is the window's centre. The rotation axis and the angle is calculated on the basis of the cursor movement.



Rotating object

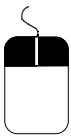
As to 2.:

The calculated axis and the angle are displaced in parallel into the rotation centre of the object. The object is rotated around the calculated angle and the axis.

This becomes especially clear if the rotation centre of the object is the same as the centre of the window. In this case the rotation movement of the object follows the mouse cursor. Rotating around the three main axis is achieved in the following way:

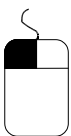
- ♦ Moving the cursor vertically through the centre of the window causes a rotation around the **x axis**.
- ♦ Accordingly, moving the cursor horizontally through the centre causes a rotation around the **y axis**.
- ♦ Moving the cursor along the “equator” that is along the boundaries of the window causes a rotation around the **z axis**.

Moving the cursor in any other direction rotates the object around another axis (see model).



Zoom

This zoom function has the same effect as changing the focal length of a camera. To zoom press the left and the right mouse key simultaneously and move the mouse. By moving the mouse upward the object becomes larger, moving the mouse downward makes the object smaller.



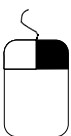
Pan

When you press the left mouse key and move the mouse, the object follows the movement of the mouse. The object moves in x or y direction.

Camera

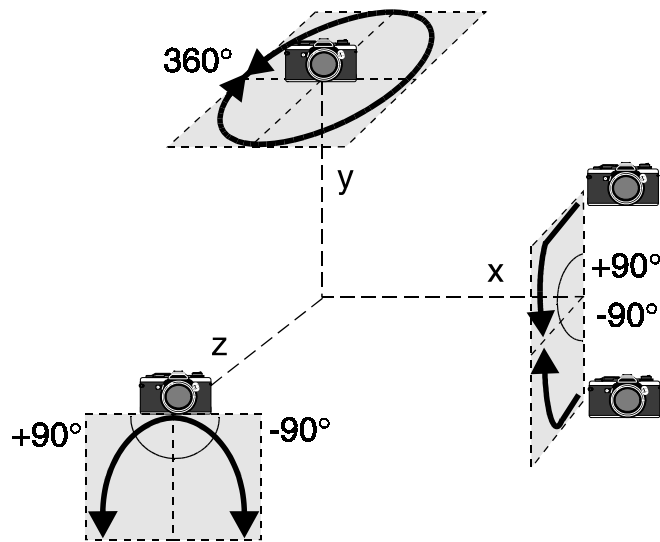
This option rotates the camera, and performs zoom and pan operations with reference to the camera.

You can perform these functions by pressing one mouse key or by pressing two mouse keys simultaneously. After clicking this option and the OK button you get back to the miro3D-VIEWER window.



Rotating

With this operation the camera is the center of rotation. This function is comparable to a camera located at a fixed position which rotates, tilts or swivels around its axis. You can use this function by holding down the right mouse key. The following illustration shows the rotation, tilt and swivel movements the camera can perform:



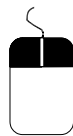
Rotating the camera

The rotating movements around the axes equal the following camera movements:

y axis: the camera rotates around its own axis

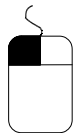
x axis: the camera tilts up and down

z axis: the camera tilts to the side



Changing the distance between camera and object

This function allows to increase and to decrease the distance between the camera and the object. To do so, press the right and the left mouse key simultaneously and move the mouse. Moving the mouse upward moves the camera towards the object. Moving the mouse downward increases the distance between the camera and the object. This function makes it possible to “walk through” objects.

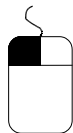


Pan

By pressing the left mouse key and moving the mouse the camera follows the movement of the mouse.

Clipping

In clipping mode you can select and move a clipping plane that is colored. After clicking this radio button and clicking the OK button in the main menu the object enclosed by a clipping box appears on the screen. One clipping plane is colored. This means, that it has been selected and can be moved.

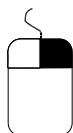


Selecting another clipping plane:

If you want to select another clipping plane, click with the right mouse key into its centre. If the centre is covered up, it is enough to click the mouse as closely to the desired plane as possible.

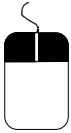
Moving of the clipping plane:

By pressing the left mouse key you can move the clipping plane, that is always towards or away from the opposite plane.



Rotating:

To facilitate selecting the clipping planes (in case the desired plane is covered), the object can be rotated using the right mouse key.



Zoom:

To zoom press the left and the right mouse key simultaneously. Moving the mouse upwards enlarges the object, moving the mouse downward decreases the object.

View

Take View

After selecting this button and quitting the miro3D-VIEWER main menu with the *OK* button the current 3D-VIEWER view is given to AutoCAD.

Reset

Displays a top view of the drawing.

AutoCAD View

If you got lost once in 3D space this function also helps you to find your way again: you will see the view you saw when the drawing was loaded. In doing so, the render mode which has been switched on remains the same. The perspective is taken from AutoCAD.

Following up the option buttons *Layer Control*, *Light*, *Displaylist* and *Clipping* are described. When pressing these buttons submenus appear.

Layer Control

The **Layer Control** submenu allows to control the drawing layers defined in AutoCAD.

Layer name/State

In the *Layer name* column, the layer names given by AutoCAD are listed. The *State* column shows, whether the elements of a layer will be displayed in a drawing (= ON) or not (= OFF). In a complex drawing switching off layers you don't want, considerably increases the redraw speed. When starting the miro3D-VIEWER the current layer state is taken from AutoCAD, when quitting the miro3D-VIEWER the layer state is given back to AutoCAD (*Take View* has to be switched on).

Control

ALL Layer on Select this option to display all layers on the screen.

ALL Layer off Select this option to display no layers on the screen.

Switching individual layers on/off

When double-clicking a layer name with the left mouse key, the corresponding layer is switched on/off.

Reset Layer This option restores the layer state that has originally been created in AutoCAD.

Layer Pattern All layers which match the input made in the *Layer Search Pattern* edit box are toggled on in the *Layer* column. Here you can enter wildcard characters (?, *, [], !), which can be combined freely. The names can contain upper and lower case characters.

Input	Meaning
*	...matches any number of characters
?	...matches any single character
[abc]	...matches the characters 'a', 'b' or 'c' in a string
[a - z]	...matches any character from 'a' to 'z' in a string
[a - fx]	...matches the characters from 'a' to 'f' and 'x' in a string
[0 - 9a - f]	...matches the characters from '0' to '9' and 'a' to 'f' in a string
[!abc]	...matches a character that is not 'a', 'b' or 'c'

Example:

Entering **?[abc]*[!y]** lists all layer names fulfilling the following conditions: The first character can be any character, the second character is an 'a', 'b', or 'c', then, a free number of characters follows, the last character is not a 'y'.

Light

This submenu allows to position and to fix a light source and to illuminate the backface of an object.

XYZ

The radio buttons in the X, Y, Z columns specify the rough direction of the light source.

Light Attributes

Fix light This check box fixes the light source. The light does not rotate with the object but remains in its position. A camera move is more realistic when *Fix light* is turned off.

Backface Light When this function is on, the back of the object is illuminated as well.

Default

When clicking the *Default* button, the light comes from the lower left front corner.

Displaylist

This sub-menu allows to load and delete the displaylist.

Synchronize DL

Here the AutoCAD data base is loaded. After quitting the miro3D-VIEWER the data is preserved. In addition, the layers switched on in AutoCAD are taken over by the miro3D-VIEWER.

Clean DL

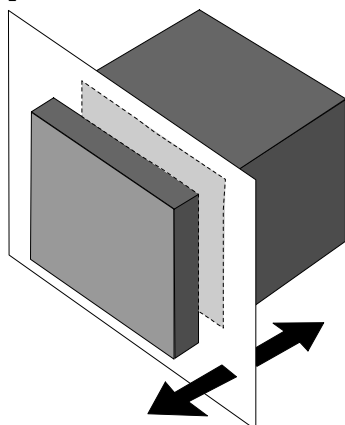
All 3D data in the display list is deleted, the memory is released.

Demo

By selecting this option a default drawing is loaded.

Clipping

The clipping function allows you to select and to move six clipping planes. The image information outside the planes can be cut off. In this way, it is possible to look at certain parts of the object.



Clipping

Plane

Here you can select the clipping planes where the object shall be cut. If the clipping function is disabled for one plane, the object is not cut at this side.

Visible

With a check box you can switch between visible and invisible clipping planes.

Transparency

Here you can specify the degree of transparency with which the clipping planes are to be shown.

All planes on/off

With this button all clipping planes can be activated/deactivated.

All visible/invisible

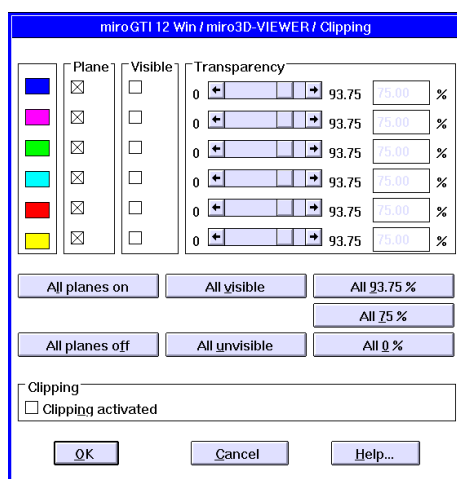
This button sets all clipping planes to be visible/invisible.

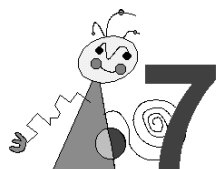
All 93.75 %/75 %/0 %

These buttons set the transparency for all clipping planes to 93.75 % (maximum transparency), to 75 % or to 0 % (no transparency).

Clipping

This check box enables the settings which have been set in the column *Plane*.





Technical Data

GENERAL

Bus system PCI Local Bus

Compatibility VGA register-compatible

Graphics processor **miro 20SV/40SV twin:**

Basic board:

S3 VISION968

33 MHz bus clock frequency

Daughterboard:

S3 Vision868

33 MHz bus clock frequency

miro 44SV twin:

Basic board:

S3 VISION968

33 MHz bus clock frequency

Daughterboard:

S3 VISION968

33 MHz bus clock frequency

Video memory **miro 20SV/40SV twin:**

Basic board:

2 or 4 MB VRAM

Daughterboard:

2 MB DRAM

miro 44SV twin:

Basic board:

4 MB VRAM

Daughterboard:

4 MB VRAM

Power supply +5 V, max. 2.7 A
+12 V, max. 0.01 A

Video modes miro 20SV/40SV/44SV twin basic board/miro 44SV twin daughterboard:

Resolution	Bit/Pixel	Maximum vertical refresh rate								
		TV	48 kHz	58 kHz	64 kHz	78 kHz	85 kHz	93 kHz	100 kHz	107 kHz
1600 x 1280	16	-	-	-	-	-	64 Hz	70 Hz	75 Hz	75 Hz
1600 x 1200	16	-	-	-	-	-	68 Hz	75 kHz	80 Hz	80 Hz
1408 x 1024	16	-	-	-	60 Hz	70 Hz	75 Hz	75 Hz	90 Hz	100 Hz
1280 x 1024	16	-	-	-	60 Hz	70 Hz	75 Hz	75 Hz	90 Hz	100 Hz
1152 x 864	32	-	-	-	70 Hz	75 Hz	90 Hz	100 Hz	100 Hz	100 Hz
1024 x 768	32	-	60 Hz	70 Hz	75 Hz	75 Hz	100 Hz	100 Hz	100 Hz	100 Hz
800 x 600	32	-	75 Hz	75 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
768 x 576	32	x	-	-	-	-	-	-	-	-
640 x 480	32	x	75 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz

x = TV timing for miroVIDEO XTV only, single screen mode only

miro 20SV/40SV twin daughterboard:

Resolution	Bit/Pixel	Maximum vertical refresh rate							
		TV	48 kHz	64 kHz	78 kHz	85 kHz	93 kHz	100 kHz	107 kHz
1408 x 1024	8	-	-	60 Hz	70 Hz	70 Hz	70 Hz	70 Hz	70 Hz
1280 x 1024	8	-	-	60 Hz	70 Hz	75 Hz	75 Hz	75 Hz	75 Hz
1152 x 864	16	-	-	70 Hz	75 Hz	75 Hz	75 Hz	75 Hz	75 Hz
1152 x 864	8	-	-	70 Hz	75 Hz	90 Hz	90 Hz	90 Hz	90 Hz
1024 x 768	16	-	60 Hz	75 Hz	75 Hz	75 Hz	75 Hz	75 Hz	75 Hz
1024 x 768	8	-	60 Hz	75 Hz	75 Hz	100 Hz	100 Hz	100 Hz	100 Hz
800 x 600	32	-	75 Hz	75 Hz	75 Hz	75 Hz	75 Hz	75 Hz	75 Hz
800 x 600	16/8	-	75 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
768 x 576	32/16/8	x	-	-	-	-	-	-	-
640 x 480	32/16/8	x	75 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz

x = TV timing for miroVIDEO XTV only, single screen mode only

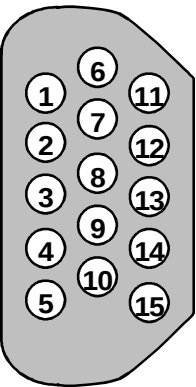
- Video timings**
- ♦ Horizontal scan frequency:
31 kHz to 107 kHz, depending on operating mode
 - ♦ Vertical scan frequency:
60 Hz to 100 Hz, non interlaced, depending on operating mode
 - ♦ Pixel frequency:
25 MHz to 220 MHz, depending on operating mode

Options Monitor, shielded monitor cable

Other VESA DDC:
miro 20SV twin/40SV twin: DDC 1
miro 44SV twin: DDC2B

15-PIN D-TYPE VIDEO PORT

miro twin is equipped with two 15-pin D-type connectors to which the video cable attaches. The other end of the video cable connects to the monitor.

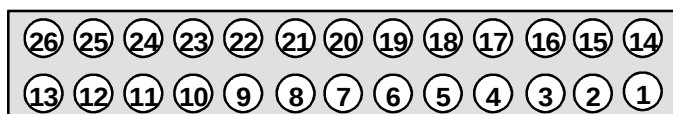


The following illustration and the table show the video output and the corresponding pin allocation:

Pin No.	Pin allocation
1	Red
2	Green
3	Blue
4	Free
5	Ground (analog)
6	Ground (red)
7	Ground (green)
8	Ground (blue)
9	+5V
10	Ground (sync.)
11	Free
12	DDC data
13	HSync
14	VSync
15	DDC clock

VESA STANDARD FEATURE CONNECTOR

The miro twin graphics board can be used together with a video overlay board. To do so, you need the VESA Standard Feature Connector.



The following table provides a pin allocation overview.

Pin No.	Pin allocation
1	Pixel data P0
2	Pixel data P1
3	Pixel data P2
4	Pixel data P3
5	Pixel data P4
6	Pixel data P5
7	Pixel data P6
8	Pixel data P7
9	Clock
10	Reserved
11	HSync
12	VSycn
13	Ground
14	Ground
15	Ground
16	Ground
17	Enabling signal
18	Enabling signal
19	Enabling signal
20	Free
21	Ground
22	Ground
23	Ground
24	Ground
25	Free
26	Free

miro twin ADDRESS RANGE

For the miro twin graphics board to run without problems you have to avoid address conflicts. Make sure that the addresses used by miro twin are not also assigned to other components of your computer system.

I/O address range

miro twin occupies the address range of standard VGA **03B0h-03DFh** and parts of the 8514/A I/O address range.

These address ranges are normally not used by standard system hardware and therefore address conflicts are unlikely to happen.

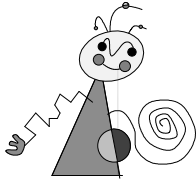
The following table shows the I/O address areas that can be selected and used by miro twin.

From	To
0E2E8h	
073C8h	
042E8h	04AE8h
082E8h	08AE8h
092E8h	09AE8h
0A2E8h	0AAE8h
0B2E8h	0BAE8h
046E8h	04EE8h
086E8h	08EE8h
096E8h	09EE8h
0A6E8h	0AAE8h
0B6E8h	0BAE8h

Additional VGA addresses

In addition the following addresses are used:

VGA video memory	VGA BIOS
0A0000h - 0BFFFFh	0C0000h - 0C7FFFh



Appendix

GLOSSARY

This glossary contains the most important concepts from the field of computer hardware, software and video.

Cross-references are marked by this symbol .

- Address** All memory positions in a computer have numbers (addresses). Through these addresses each memory position can be addressed. Some addresses are reserved for certain  hardware components and must not be used. If two hardware components use the same address, there is an address conflict.
- ANSI** **American National Standards Institute.** ANSI character set ( Font): used by Microsoft Windows and Windows applications. The character assignment only differs slightly from the assignment of the  ASCII character set.
- ASCII** **American Standards Committee of Information Interchange.** ASCII character set ( Font): standard character set used by IBM and compatible computers. The ASCII character set consists of 256 characters, the first 128 of which are standardized.
- AUTOEXEC.BAT** A special DOS  batch file which is processed automatically after the computer has been started. The file contains among other things commands which load the country-specific keyboard driver ( Driver), set the time or load programs automatically.
- AVI** Abbreviation for **Audio Video Interleaved**, standard format for digital video ( Video for Windows).
- Batch file** A  DOS file where a sequence of commands is processed one after the other.
- BIOS** **Basic Input Output System.** Number of basic input and output commands stored in a  ROM, PROM or EPROM. The  operating system uses these commands. The basic task of the BIOS is to control the data input and output. After starting the system the ROM BIOS performs some tests (checking the  interfaces, the disk drives, etc.).
- Bit** **Binary Digit.** Smallest information unit in a computer. One bit can take on two states: “0” and “1”, two bits can take on $2^2=4$ states and three bits $2^3=8$, etc. In a computer those states are realized by “0 V” (no current = 0) and “5 V” (current = 1). To display a character (letter, number etc.), 8 bits = 1  byte are required.
- Bus** In a computer, the bus provides for the communication between the  processor and the installed hardware (hard disk, graphics board, etc.). Depending on the bus width, the bus transfers a different amount of information. An 8-bit bus can transfer 8  bits (=  byte = one character) at a time.

Byte	One byte consists of eight  bits. One byte represents exactly one character (letter, number etc.). The characters are binary-coded with “zero” (0) and “one” (1). The character “E” has the  ASCII code “01000101” or “45h” (hexadecimal).
CD-I	A  CD-ROM standard designed for the field of entertainment which is independent of and not compatible with the conventional CD-ROM standard. Interactive components (e.g. for games) can only be played back with an original CD-I playback device.
CD-ROM	CD-ROMs are mass storage media for digital data, such as  digital video. CD-ROMs can only be read.
CGA	C olor G raphics A dapter (IBM). Graphics board which displays four colors in the graphics mode.
Clock frequency	Rate at which individual commands are processed in a processor. The higher the  clock frequency, the quicker the commands are processed.
CLUT	C olor L ook U p T able. Color table which contains all indexed color values.
CODEC	Acronym for C ompressor/ D ecompressor, compresses (packs) and decompresses (unpacks) image data.
Color depth	Number of  bits containing color information for each  pixel. A color depth of 1 bit displays only black and white ($2^1=2$ colors). At a color depth of 8 bits $2^8=256$ colors are available and at 24 bits $2^{24}=16,777,216$ ( TrueColor) colors are available.
Composite video	Composite video encodes all image information in one signal.
CONFIG.SYS	A  DOS configuration file which is processed automatically when the system starts. The CONFIG.SYS file includes  drivers which control the output to the monitor and the keyboard and the mouse.
Data rate	Data per second, e.g. amount of data which a mass storage medium (hard disk or CD-ROM) saves/plays back per second or the amount of data of a video sequence per second.
Digital video	Digital video stores information bit by bit in a file (in contrast to analog storage media).
DIP switch	D ual I ndline P ackage switch. A row of small switches designed to make certain hardware presettings.
Dithering	Method to avoid extreme color contrasts, which occur with a reduced number of colors.
DOS	D isk O perating S ystem. The most common  operating system for PCs (Personal Computer). MS DOS is the M icrosoft version of DOS.
Driver	Programs which integrate the hardware (e.g. driver for a CD-ROM drive) in the computer and which adapt the software to the hardware (e.g. driver for a graphical user interface, such as Microsoft Windows). The software then uses the features of the graphics board.
EDO-DRAM	E (xtended) D (ata) O (ut)-DRAM is a new, significantly faster variant of DRAM.
EGA	E nhanced G raphics A dapter (IBM), graphics board which displays 16 colors in the graphics mode.
EISA bus	E xtended I ndustry S tandard A rchitecture. 32-bit bus: The EISA bus can transfer an amount of data of 33  MB per second at a  clock frequency of 8.33 Mhz.

Fixed-frequency monitor	Monitor operating at a very small frequency range (📖 multifrequency monitor).
Font	Character set in a certain type, size and style, e.g. Times New Roman 11, normal; Times New Roman 11, italics; Times New Roman 11, bold; Times New Roman 11, bold, italics.
Graphics board	Graphics boards are the “link” between the computer and the monitor. Without a graphics board no image appears on the screen. Graphics boards operate in two modes: the text mode and the graphics mode. In the text mode only 📖 ASCII characters are displayed. The ASCII character set includes some simple “graphical” characters to display simple graphics. The graphics mode uses individual 📖 pixels. The more pixels available (the higher the 📖 resolution) the more detailed characters and graphics can be displayed.
Hardware	The hardware includes all computer components which are “hard”, such as the monitor, the hard disk, the keyboard, the mouse and the printer.
HGC	H ercules G raphics C ard, monochrome (black and white) graphics board.
Horizontal scan rate	Number of horizontal scans of the electron beam per second required to create a new line. The higher the 📖 resolution the higher the required horizontal scan rate.
Interface	Link between two parts of a system or between two systems where information, pulses and signals are adapted in a way that the receiving part can understand the sending part. For example, signals which the computer sends to the printer have to be adapted by an interface so that the printer “understands” what it has to print.
Interlaced	Image refreshing technique: the screen is subdivided into lines. When refreshing the image first all even lines and then all odd lines are refreshed.
ISA bus	I nternational S tandard A rchitecture. 16-bit bus which transfers 8 📖 MB of data per second at a 📖 clock frequency of 8 MHz.
Jumper	Jumpers can set up or interrupt electrical leads. To establish electrical leads with a jumper, the jumper has to be mounted, to interrupt the lead the jumper has to be removed.
KB	1 KB (Kilobyte) is equal to 1024 📖 bytes. Here “K” (kilo) is always equal to “1024”.
MB	1 MB (Megabyte) equals 1024 📖 KB.
MDA	M onochrome D isplay A dapter. Monochrome (black and white) graphics board.
MPEG	Abbreviation for M otion P ictures E xperts G roup. Standard for the compression of moving images.
Multifrequency monitor	A multifrequency monitor adapts itself automatically to different frequencies supplied by the graphics board (📖 fixed-frequency monitor) and can display different 📖 resolutions.
Non-interlaced	Image refresh method, where the complete image is generated without skipping lines. A non-interlaced image flickers much less than an 📖 interlaced image.
Operating system	The operating system provides for the communication between 📖 hardware, 📖 software and the user. The tasks of the operating system are among others the file and the program management.

Parallel interface	The parallel or Centronics  interface transfers data through an 8-bit data line. This means that 8  bits (1  byte) can be transferred at a time. The transfer through the parallel interface is considerably faster than the transfer through the  serial interface, over long distances the parallel data transfer is, however, more susceptible to interference. Parallel interfaces are designated by LPT and a number (e.g. LPT1).
PCI Local Bus	P eripheral C omponent I nterconnect. Local Bus concept by Intel: 32-bit bus, a PCI bus can transfer 132 MB per second (max.) at a  clock frequency of 33 MHz.
Pixel	Picture element. Pixels are the smallest elements of a monitor image ( resolution).
Pixel frequency	Rate at which the pixels appear on the screen.
RAM	R andom A ccess M emory. A RAM is a read-write memory component from which data can be read and to which data can be written any time. The computer memory is equipped with RAM components. The memory is a so-called “volatile” memory meaning that the memory contents are removed as soon as the computer is switched off.
Refresh rate	Also vertical scan rate. Number of image refreshes per second measured in Hertz (Hz). The higher the vertical scan rate the less flicker.
Resolution	Number of  horizontal and vertical pixels. 1408 x 1024 means that 1408 pixels are displayed horizontally and 1024 pixels are displayed on the monitor vertically. The higher the resolution the more details the monitor can display.
RGB	Abbreviation for R ed, G reen and B lue, the basic colors of additive color mixing. RGB describes the method used in computer technology where image information is transferred by dividing it into the three basic colors.
ROM	R ead O nly M emory. A ROM is a memory component which can only be read but which cannot be modified. The ROM's contents remain in the component also after the computer has been switched off. All functions which have to be available immediately after switching the computer on, e.g. the data for the system test, the character output on the screen, etc. are stored in ROM components. There are also PROMs (P rogrammable R OM) EPROMs (E rasable P ROM) and EEPROMs (E lectric E PROM).
Scaling	Adaptation of an image to a different size.
Serial interface	Also RS232. The serial interface transfers data through a data line bit by bit (all  bits of a  byte one after the other). The serial data transfer is considerably slower than the transfer through the  parallel interface but it is less susceptible to interference. Serial interfaces are designated by COM and a number (e.g. COM1).
Software	General term for all programs a computer can run (system programs, application programs,  drivers etc.) and files.
S-Video	With S-Video signals the brightness (luminance) and the color information (chrominance) are transferred separately.
TrueColor	16.7 million colors can be displayed at a time ( color depth).
Vertical scan rate	 Refresh rate.

VESA	Video Electronic Standards Association. Committee founded in 1988 in the USA which establishes common standards for the computer technology.
VESA Local Bus	Bus concept defined by the  VESA committee: 32-bit bus operating at a  clock frequency of up to 50 MHz. At a clock frequency of 33 MHz the VL bus transfers up to 132  MB per second (max.).
VGA	Video Graphics Array (IBM), graphics board which displays 256 colors in the graphics mode.
Video-CD	CD-ROM standard with  MPEG videos you can play back using a CD-ROM drive and an MPEG decoder board.
Video decoder	Converts analog signals into digital information.
Video encoder	Converts digital information into analog signals.
Video for Windows	Video for Windows is a Microsoft Windows system extension which allows to record, to store and to play back video sequences from hard disk ( digital video).
YUV	Color model where Y delivers the brightness information and U and V the color information.

MONITOR SELECTION

The following instructions will help you to select the right monitor during the software installation.

If you use a miro monitor If you use a miro monitor, you will find the monitor name in the monitor selection list. For miro monitors, always the maximum vertical scan rate is selected (=100 Hz).

If you use a monitor that is listed twice, with the addition of *Microsoft* or. *miro Computer Products AG*, choose the later of the two listings. This will ensure that the system uses the latest monitor timings.

If you do not use a miro monitor If you do not use a miro monitor and therefore you do not find your monitor in the list, you can select a monitor from the monitor classes *xx kHz multifrequency monitor* or *xx kHz VESA multi frequency monitor*.

xx kHz multifrequency monitor:

Monitors belonging to this monitor class include timings with the maximum possible horizontal frequency and a maximum vertical scan rate of 100 Hz.

xx kHz VESA multi frequency monitor:

These monitors only include VESA-compatible timings which do not always use the monitor's capabilities to the fullest but which, however, offer the correct synchronization.

Select the VESA timings, if your monitor image is not synchronized correctly, the image position is wrong, etc.



Operating your monitor at a refresh rate which is too high may lead to serious damage. If you do not know which horizontal frequency your monitor supports, please refer to your monitor's documentation.

DOS TOOLS

Windows and DOS tools

The package contents of your miro board includes DOS tools which help you to adjust and optimize the monitor image.

Call the DOS tools only in the MS-DOS mode, using the MS-DOS prompt under Windows does not work.

miroMAT

CAD drivers under DOS, which do not allow you to select the resolution, can be configured using the miroMODE function of miroMAT. You can also view a test picture which helps you to adjust some image parameters. miroMAT will be copied to the \MIRO\COMMON directory during the installation and can be called up using additional suffix parameters.

miroMODE

To get an overview over the possible parameters, change to the \MIRO\COMMON directory and enter **miromat**<↵>. The options depend on the board/s you installed.

Example:

MIROMODE	MODE	XRES x YRES x BPP	H. frequ.	V. frequ.
0	-PC0	640 x 480 x 8	51.9 kHz	100.9 Hz
1	-HC0	640 x 480 x 15	51.9 kHz	100.9 Hz
2	-RC0	640 x 480 x 16	51.9 kHz	100.9 Hz
3	-TC0	640 x 480 x 24	51.9 kHz	100.9 Hz
4	-PC2	800 x 600 x 8	63.5 kHz	100.1 Hz
5	-HC2	800 x 600 x 15	63.5 kHz	100.1 Hz
6	-RC2	800 x 600 x 16	63.5 kHz	100.1 Hz
7	-TC2	800 x 600 x 24	46.9 kHz	75.0 Hz
8	-PC3	1024 x 768 x 8	60.0 kHz	75.0 Hz
9	-HC3	1024 x 768 x 15	60.0 kHz	75.0 Hz
10	-RC3	1024 x 768 x 16	60.0 kHz	75.0 Hz
11	-PC4	1152 x 864 x 8	67.8 kHz	75.0 Hz
12	-HC4	1152 x 864 x 15	67.8 kHz	75.0 Hz
13	-RC4	1152 x 864 x 16	67.8 kHz	75.0 Hz
14	-PC5	1280 x 1024 x 8	70.0 kHz	66.0 Hz
15	-PC6	1408 x 1024 x 8	70.0 kHz	66.0 Hz

Syntax:

To select a resolution, enter the following:

miromat -miromode [mode1] [mode2]<↵>

Options:

mode1 is the desired mode for board 1, *mode 2* is the desired mode for board 2.

Example:

If your miro graphics system operates at a resolution of 640 x 480 with a color depth of 8 bit, enter:

miromat -miromode 0<↵>.

When calling miroMAT again, the resolution you selected is marked as the current resolution.

Test picture

Maybe you want to or you have to change some parameters concerning the image geometry (e. g. image position or image size).

Call a test picture for this purpose. Enter:

miromat -mode [-G] [-E]<↵>

The *-G* and *-E* options let you select German or English menus.

mode is the selected resolution mode (see table above).

Ex.:

miromat -PC3 -G<↵>

Use the following keys:

<←>, <→>, <↑>, <↓>: change the image position,

<Ctrl> and <←>, <→>, <↑>, <↓>: change the image size,

<F3>: save settings,

: delete settings,

<Esc>, space bar: reject settings.



The horizontal frequency and the vertical scan rate only increase by making the image wider or higher.

You can enlarge the image until the maximum horizontal frequency of the monitor you selected has been reached. If you selected the right monitor, the maximum permissible horizontal frequency cannot be exceeded.

miroDETECT

miroDETECT is a DOS tool which offers a graphics board detection. If you need help from the miro support, you can use this tool to gather all information concerning your board.

miroDETECT is copied to the \MIRO\COMMON directory and is called by entering **detect** <↵>.

The following data appear on the screen (example: miroCRYSTAL 22SD twin in the dual-screen operation):

① miroCRYSTAL 22SD twin

② Booting CARD 1: ③ CARD0810.INI = miroTWIN 22SD (V) 20

④ Rev.4

⑤ RAM: 2

⑥ Graphics Controller: 765

① Non-boot CARD 2: ③ CARD0411.INI = miroCRYSTAL 22SD twin

④ Rev. 4

⑤ RAM: 2

⑥ Graphics Controller: 765

Explanation:

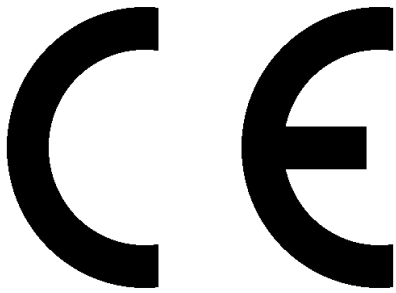
①: Board type

②: The PC boots on the base board (board 1)/board 2 is the daughterboard

③: Name of the initialization file

④: RAM on the graphics board

⑤: Graphics processor



KONFORMITÄTSERKLÄRUNG DECLARATION OF CONFORMITY

Geräteart: **Grafik-Board**
Type of equipment: Graphics board

Produkt / Product : **miro 20SV/40SV/44SV twin**

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

89/336/EWG

Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit
Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility

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

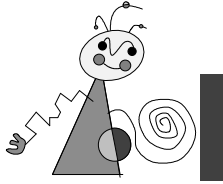
EN 55022:1987
EN 50082-1:1992

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, 29.04.1996
(Ort / Place) (Datum / Date)

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



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