

miroCRYSTAL 22SD twin

USER'S GUIDE

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User's Guide

Version 1.0/GB August 1996

700472

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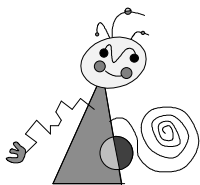
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Contents

OVERVIEW	1
FEATURES	1
BEFORE YOU BEGIN	2
SYSTEM REQUIREMENTS	2
PACKAGE CONTENTS	2
HARDWARE INSTALLATION	3
SYSTEM CONFIGURATIONS	3
VGA IN THE COMPUTER	3
miroCRYSTAL 22SD TWIN BOARD LAYOUT	3
SETTING THE DIP SWITCH	3
INSTALLING miroCRYSTAL 22SD twin	4
CONNECTING THE MONITOR(s)	5
HOW TO GO ON?	6
SOFTWARE INSTALLATION (CD-ROM)	7
WINDOWS 95	7
THE miro INSTALLATION PROGRAM	8
FURTHER SETTINGS	10
WINDOWS 3.1x	11
THE miro INSTALLATION PROGRAM	12
WINDOWS NT 3.5x	14
CAD	15
OVERVIEW	15
CAD FOR WINDOWS 95	15
CAD FOR WINDOWS 3.1x	15
CAD FOR DOS	16
VIEWING/PRINTING THE DOCUMENTATION	17
SOFTWARE INSTALLATION (DISK)	19
WINDOWS 95	19
WINDOWS 3.1x	19
CAD	19
CAD FOR WINDOWS 3.1x/WINDOWS NT/WINDOWS 95	19
CAD UNDER DOS	20

CAD DRIVERS **21**

miroGTI 12	21
OVERVIEW	21
CONFIGURING AUTOCAD FOR miroGTI 12	21
miroGTI 12 MAIN MENU	22
USING miroGTI 12	23
miroGTI 12 COMMANDS	25
miroSPOTVIEW	26
FASTZOOM	26
miroQUICKVIEW	27
miroMULTIVIEW	27
miroGTI 13 Win	29
OVERVIEW	29
SPECIAL FEATURES	29
CONFIGURING AUTOCAD AND miroGTI 13 WIN	29
miroADI	30
INTRODUCTION: miroADI	30
LOADING AND CONFIGURING miroADI	30
MICROSTATION PC	32
OVERVIEW	32
CONFIGURING MICROSTATION	32
USING THE DRIVER	33

TECHNICAL DATA **34**

GENERAL	34
15-PIN D-TYPE VIDEO PORT	36
VESA STANDARD FEATURE CONNECTOR	37
ADDRESS RANGE	38

APPENDIX **I**

GLOSSARY	I
MONITOR SELECTION	V
DOS TOOLS	VI
miroMAT	VI
miroDETECT	VII
INDEX	

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:

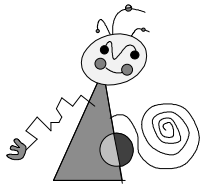
- ♦ Reorient or relocate the receiving antenna.
- ♦ Increase the separation between the equipment and receiver.
- ♦ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ♦ Consult the dealer or an experienced radio/TV technician for help

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.



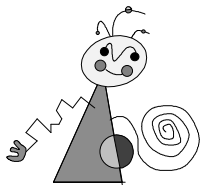
For your own safety

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-ROM supplied with your system!



About the manual

This manual explains how to install and use the miroCRYSTAL 22SD twin hardware and software.

Subheadings

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



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

Numbers mark step by step instructions:

1. Start Windows.

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

- Connect the miro board to the 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*.



FEATURES

The graphics board miroCRYSTAL 22SD twin was designed especially for professional use under Windows and DOS. This graphics board meets 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 miroCRYSTAL 22SD twin graphics board is equipped with two S3 Trio64V+ graphics processors to improve the performance of applications running under Windows.

☐ **Video memory**

The miroCRYSTAL 22SD twin video memory allows to work efficiently under Windows as well as with CAD applications.

Both the miroCRYSTAL 22SD twin primary board and the daughterboard are equipped with 2MB of fast EDO-DRAM.

☐ **Drivers**

The miroCRYSTAL 22SD twin package includes powerful miro drivers and miro tools.

☐ **Dual-screen configuration**

The high-performance processors integrated on miroCRYSTAL 22SD twin and the miroTWINFACE driver (for Windows) allow you to use two monitors while the board occupies only **one** slot. Both screens create one large workspace. You can continue to use an already existing monitor.

☐ **Resolution**

miroCRYSTAL 22SD twin offers resolutions of up to 1408 x 1024 pixels on each monitor.

☐ **Monitor plug & play support**

The miroCRYSTAL 22SD twin board supports the VESA Display Data Channel (DDC). A monitor complying with this standard transmits its characteristics via this interface and starts up with an appropriate resolution.



Before you begin

SYSTEM REQUIREMENTS

To install miroCRYSTAL 22SD twin, your computer system has to meet the following requirements:

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

Monitor *Single-screen configuration:*

To receive all the benefits from miroCRYSTAL 22SD twin, you need a high-resolution multifrequency monitor supporting a horizontal scan frequency of 64 kHz or more and having separate horizontal and vertical syncs. miro offers suitable monitors.

Dual-screen configuration:

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

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

Software Windows 3.1x, Windows 95 oder Windows NT.

PACKAGE CONTENTS

Before beginning the miroCRYSTAL 22SD twin installation, please make sure your miroCRYSTAL 22SD twin package* is complete:

- ♦ miroCRYSTAL 22SD twin
(primary board and daughterboard)**
- ♦ CD-ROM
- ♦ drivers, applications 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

miroCRYSTAL 22SD twin consists of a primary board and a daughterboard. miroCRYSTAL 22SD twin can be operated in the single-screen and in the dual-screen configuration.

Single-screen configuration:

In this configuration miroCRYSTAL 22SD twin usually connects to a multifrequency monitor. The VGA image as well as the high-resolution image are displayed on this monitor.

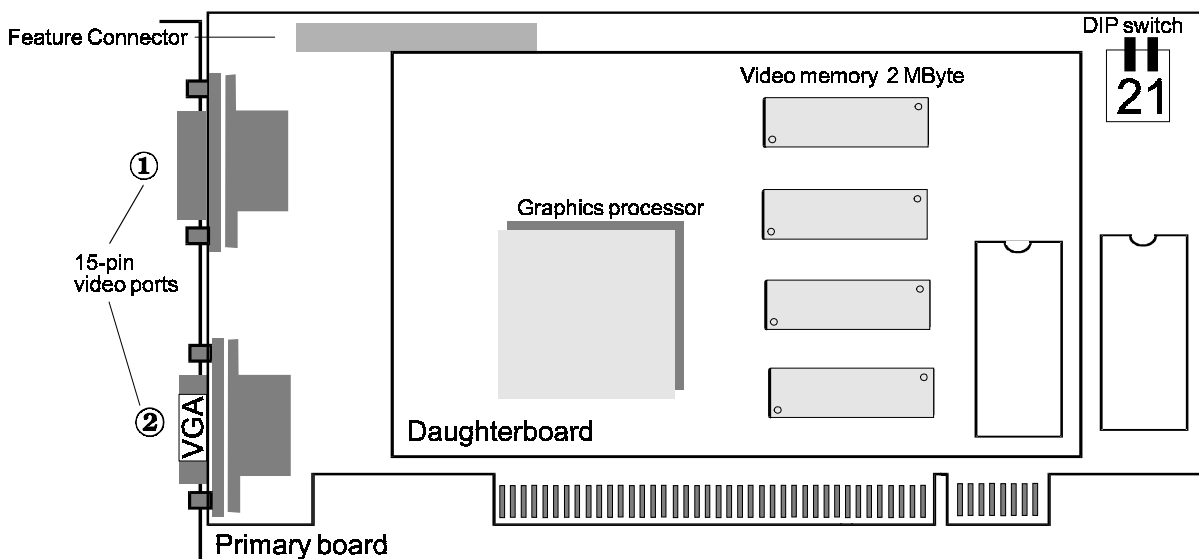
Dual-screen configuration:

The dual-screen configuration consists of two high-resolution graphics systems or one high-resolution and one VGA graphics system. Both systems have a separate 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.

miroCRYSTAL 22SD twin board layout



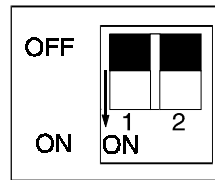
- ① 15-pin monitor output of the miroCRYSTAL 22SD twin primary board
- ② 15-pin monitor output of the daughterboard

Setting the DIP switch

The miroCRYSTAL 22SD twin primary board contains a DIP switch (see board layout above). The switch setting sets the miroCRYSTAL 22SD 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 miroCRYSTAL 22SD 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

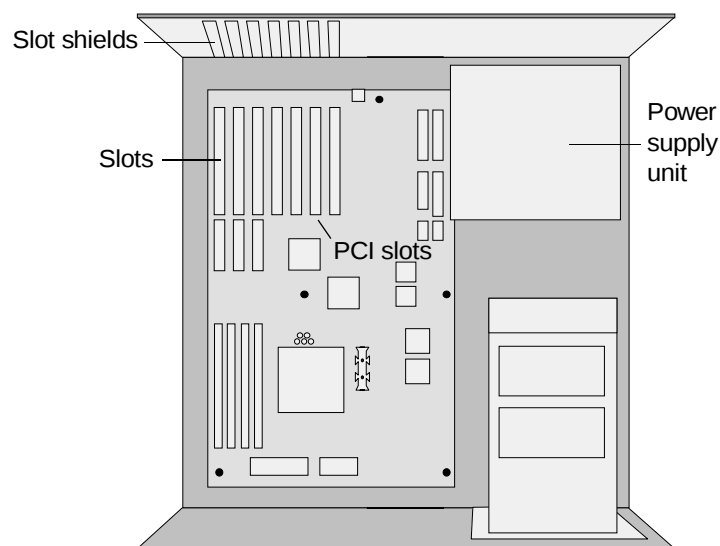
To boot on the primary board, change the setting of DIP switch 2 to ON. The computer boots on the miroCRYSTAL 22SD twin primary board and the monitor connected to the primary board is activated after switching the system on.



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 miroCRYSTAL 22SD twin

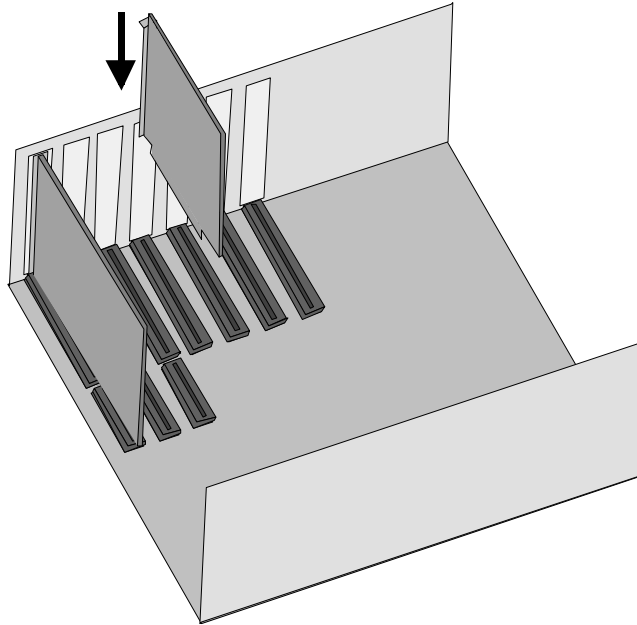
After checking and/or changing hardware settings you can install the graphics board. The only tool you need for the installation is a screwdriver.



Proceed as follows:

1. Turn off your computer and all peripheral devices. Disconnect the computer from the power supply and all other components.
2. Loosen the screws of the computer's cover and remove it.
3. Discharge yourself of static charge by touching the power unit casing.

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)

miroCRYSTAL 22SD twin has two 15-pin D-type monitor outputs. In the board layout (see p. 3) they are marked with 15-pin video ports ① and ②. On the graphics board the video port ② is labelled VGA.

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.

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 Seleccion* 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*.

Exit/Back The *Exit* button closes the *miroSETUP-Manager*, with the *Back* button you go to the previous window.

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.

Information... The *Information...* button gives you the required information on the installation of the driver/application you selected.

Install... The *Install...* button starts with the installation of the selected driver/application.

Disk(s)... The *Disk(s)...* button allows you to create installation diskettes.



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

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

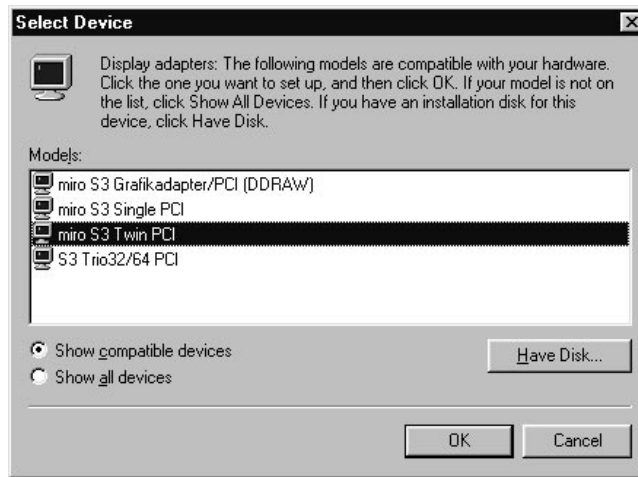
The *miro* installation program is started automatically.

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.

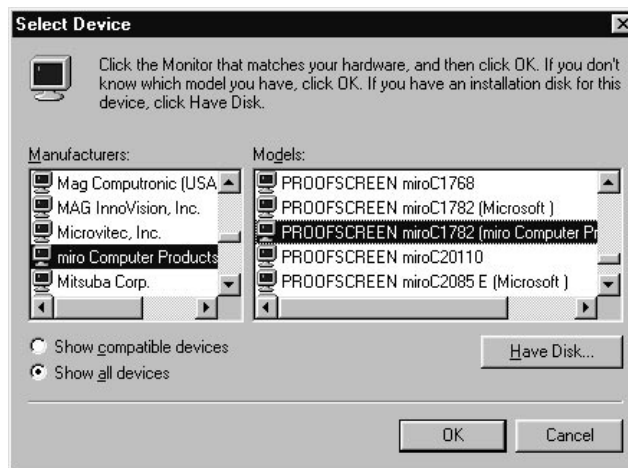


The drivers are copied.

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.).

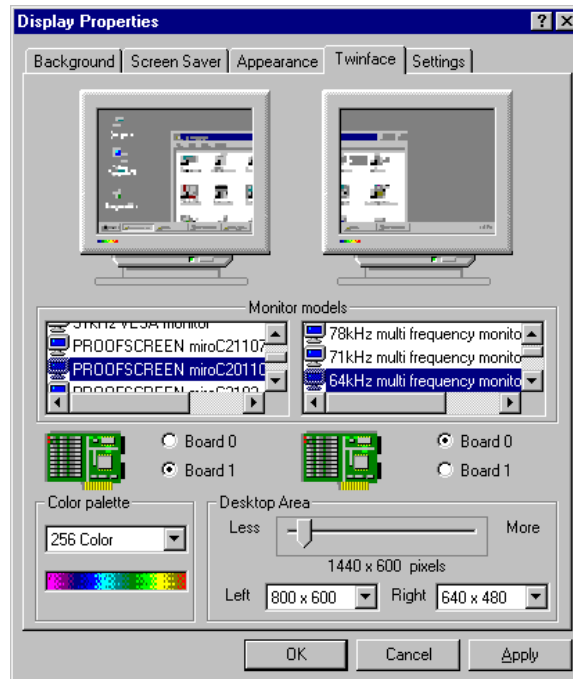
Single-screen configuration

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<.J>

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 **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*.

Exit/Back The *Exit* button closes the miroSETUP-Manager, with the *Back* button you go to the previous window.

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.

Information... The *Information...* button gives you the required information on the installation of the driver/application you selected.

- Install...** The *Install...* button starts with the installation of the selected driver/application.
- Disk(s)...** The *Disk(s)...* button allows you to create installation diskettes. You have to do this, if you want to install the miro-CAD drivers.



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.

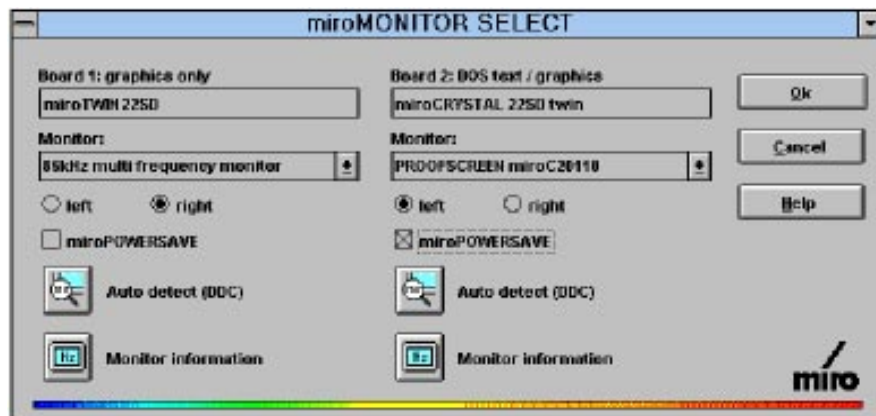
8. Click on *Install...* .

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.

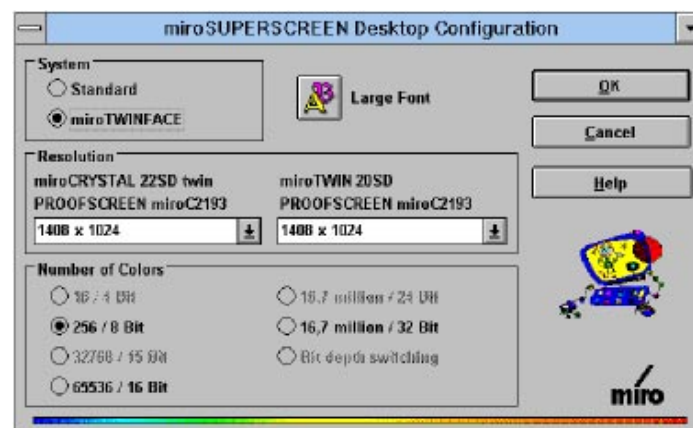
miroSUPERSCREEN

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

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.

Twinface If you selected *Twinface* (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

WINDOWS NT 3.5x

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

To install the miro drivers for Windows NT 3.5x,

1. start the *Control Panel* from the *Main* group and double-click the *Display Tool* icon.
2. In the *Display Settings* window, click on *Change Display Type*.
3. Click *Change...*
4. Windows NT 3.5x shows you an overview of all installed drivers. Select *Other*.
5. You are requested to insert a diskette. To install the drive from CD-ROM overwrite the default with **d:\disksets\win_nt** where **d:** is the drive letter of your CD-ROM drive.
6. Follow the instructions Windows NT gives you.

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

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).

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 7.

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.

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

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.
<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** <↵>.

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.

If you clicked *Documentation* in the miroSETUP-Manager Module Selection window, the Adobe Acrobat Reader installation program starts.

1. To install Acrobat Reader, follow the instructions of the installation program.

After restarting the computer the Acrobat Reader Program Group is available which includes an icon for the detailed documentation in addition to the program icon.

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

Printing To print a file, select the *File* menu and the *Print...* command.

Another language If you want to View/print the documentation in another language, select the *File* menu and the *Open...* command. You recognize the languages by the letters _e (English); _d (German), _f (French). You find all files in the \MANUAL directory.

Further modules If you want to install further modules in addition to the Acrobat Reader, restart the miroSETUP-Manager.



Software installation (Disk)

Requirements

To create installation disks, use the miroSETUP-Manager included on the CD-ROM. Disks can also be obtained from the miro Support-Mailbox.

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

WINDOWS 95

If you created installation disks for Windows 95 using the miroSETUP-Manager, you have to copy those into a directory on your hard disk.

1. If you have not done so already, start Windows 95.
2. In the Explorer double-click the SETUP.EXE file from the corresponding directory.

The miro installation program is started automatically.

For a detailed description of the installation program refer to chapter “Software installation (CD-ROM)” and to the section “Windows 95” as of page 8.

WINDOWS 3.1X

If you want to install miro drivers for Windows 3.1x, proceed as follows:

1. Start Windows.
2. Insert the first disk from the installation disk set into the disk 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.

The miro installation program is started automatically.

For a detailed description of the installation program refer to chapter “Software installation (CD-ROM)” and to the section “Windows 3.1” as of page 12.

CAD

For general information on the CAD drivers, refer to the “Software installation (CD-ROM)” in the “CAD” section as of page 14.

CAD for Windows 3.1x/Windows NT/Windows 95

If you created installation disks using the miroSETUP-Manager, you have to copy those into a directory on your hard disk.

**CAD for
Windows NT
only**

To be able to use miroGTI 13 for Windows NT, install the windows extension WinG first from the AutoCAD 13 CD. WinG is located in the \WinG\Disk and is installed by calling Setuppage

To install the drivers, proceed as follows:

1. Start Windows.
2. Insert the first disk from the installation disk set into your disk drive.
3. *Windows 95:*

In the Explorer double-click the SETUPAGEEXE file from the corresponding directory.

The miro installation program is started automatically.

For a detailed description of the installation program refer to chapter “Software installation (CD-ROM)” and to the section “Windows 3.1” as of page 12.

Windows 3.1:

In the *File Manager* double-click the INSTALL.EXE file from the corresponding directory.

The miro installation program is started automatically.

For a detailed description of the installation program refer to chapter “Software installation (CD-ROM)” and to the section “Windows 95” as of page 8.

CAD UNDER DOS

1. Insert the first disk from the installation disk set into the disk drive.
2. Depending on your disk drive, enter **a:\install<↵>** or **b:\install<↵>**.

The miro installation program is started automatically.

For a detailed description of the installation program refer to section “CAD for DOS” on page 16.



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

^{*} available as an option, ^{**} not available for AutoCAD 11

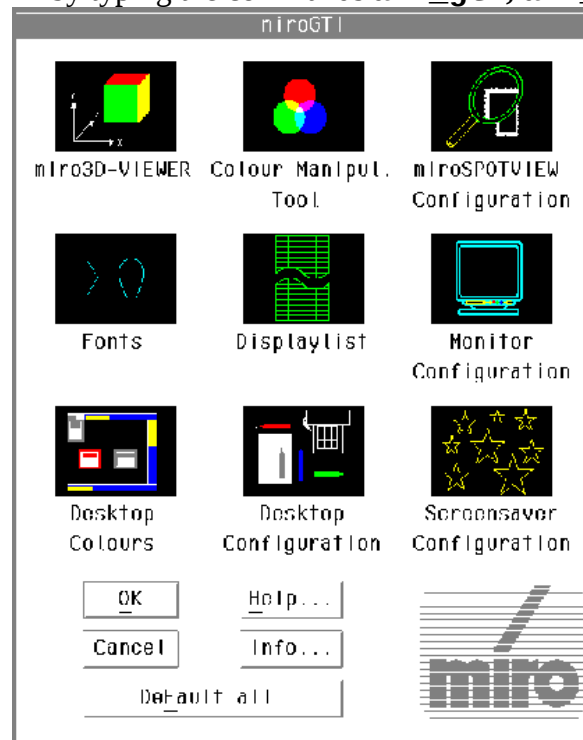
configuration, can be configured individually to your liking. AutoCAD 11 is configured after the video configuration in the miroGTI 12 dialog.

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.

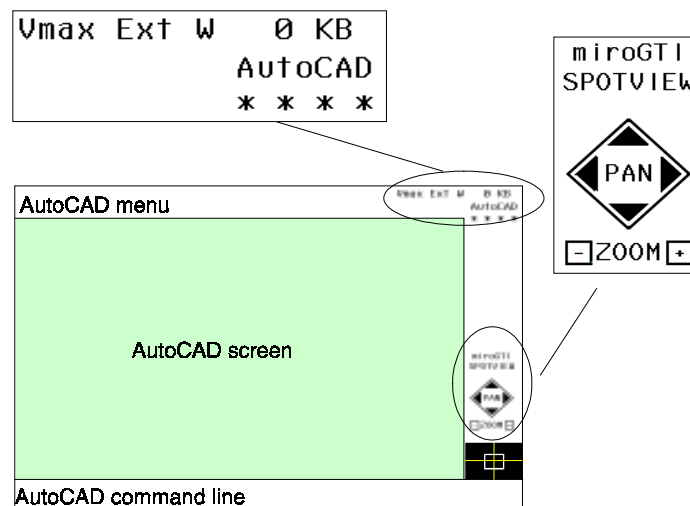
Using miroGTI 12

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 (Birdseye) 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_zoommw	AutoCAD: 'ZOOM window; AutoCAD status line: W	Area of the drawing to be zoomed (overview at cursor position) is specified
ami_spoton	-	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 (= **T**erminate and **S**tay **R**esident) 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 Device Interface (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 Advanced Modelling Extension (AME) and Advanced Visualization Extension Render (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 page

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.



Technical Data

GENERAL

Bus system PCI Local Bus

Compatibility VGA register-compatible

Graphics processor Primary board and daughterboard:
S3 Trio64V+
33 MHz bus clock frequency

Video memory Primary board and daughterboard:
2 MB EDO RAMs 256 Kbit x 16 with 60 ns

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

Video modes **Primary board:**

Resolution	Bit/Pixel	Maximum vertical refresh rate						
		TV	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	-	75 Hz	75 Hz	75 Hz	75 Hz	75 Hz	75 Hz
1024 x 768	8	-	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
800 x 600	16	-	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
800 x 600	8	-	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
768 x 576	32/16/8	x	-	-	-	-	-	-
640 x 480	32	x	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
640 x 480	16	x	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz
640 x 480	8	x	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz	100 Hz

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

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 83 kHz, depending on operating mode
 - ♦ Vertical scan frequency:
60 Hz to 100 Hz, non interlaced, depending on operating mode
 - ♦ Pixel frequency:
25 Mhz to 135 Mhz, depending on operating mode

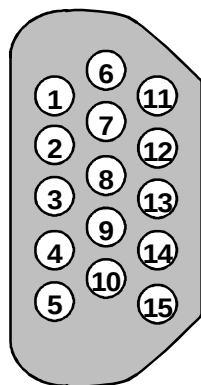
Options Monitor, shielded monitor cable

Other VESA DDC (DDC2B)

15-PIN D-TYPE VIDEO PORT

miroCRYSTAL 22SD 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.

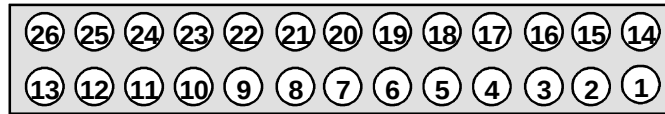
The following illustration and the table show the video output and the pin allocation of the video output, which is designed for data exchange with the monitor:



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	VSycn
15	DDC clock

VESA STANDARD FEATURE CONNECTOR

The micro 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	VSynC
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

ADDRESS RANGE

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

I/O address range

miro 80SV/84SV 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.

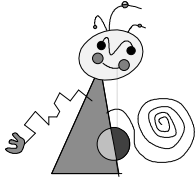
The following table shows the I/O address areas that can be selected and used by miro 80SV/84SV twin.

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



GLOSSARY

This glossary contains the most important concepts from the field of computer hardware and software. 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 directly. Some addresses are reserved for certain  hardware components and must not be used. If two hardware components use the same address, there is a address conflict.
- ANSI** American National Standards Institute. ANSI character set ( Font): used by Microsoft Windows and Windows applications. The character assignation only differs slightly from the assignation 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) or load programs automatically.
- 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, buses provide 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).
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.
Color depth	Number of  bits used to represent the color information for each  pixel. At a black and white display 1 bit color depth displays $2^1=2$ 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.
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.
DIP switch	D ual I ndline P ackage switch. A row of small switches designed to make certain hardware presettings.
DOS	D isk O perating S ystem. The most common  operating system for PCs (P ersonal C omputer). 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)- D RAM 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  MByte 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 are 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	International Standard Architecture. 16-bit bus which transfers 8 MByte 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”.
MByte	1 MByte (Megabyte) equals 1024 KB.
MDA	Monochrome Display Adapter. Monochrome (black and white) graphics board.
Multifrequency monitor	A multifrequency monitor adapts itself automatically to different frequencies supplied by the graphics board (fixed-frequency monitor) and can display different resolutions.
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	Peripheral Component Interconnect. Local Bus concept by IBM: 32-bit bus, a PCI bus can transfer 132 MB per second at a clock frequency of 33 MHz.
Pixel	Picture element. Pixels are the smallest elements of a monitor image (resolution).
RAM	Random Access Memory. An 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 horizontal pixels and 1024 vertical pixels are displayed on the monitor. The higher the resolution the more details the monitor can display.

ROM	Read Only Memory. 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 (Erasable P ROM) and EEPROMs (E lectric E PROM).
Serial interface	Also RS232. The serial interface transfers data through a data line bit by bit (all 8 bits of a byte one after the other). The serial data transfer is considerably slower than the transfer through the 8 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, 8 drivers etc.) and files.
TrueColor	16.7 million colors can be displayed at a time (24 color depth).
VESA	V ideo E lectronic S tandards A ssociation. Committee founded in 1988 in the USA which establishes common standards for the computer technology.
VESA Local Bus	Bus concept defined by the 8 VESA committee: 32-bit bus operating at a 33 clock frequency of up to 50 MHz. At a clock frequency of 33 MHz the VL bus transfers up to 132 8 MB per second.
VGA	V ideo G raphics A rray (IBM), graphics board which displays 256 colors in the graphics mode.

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

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

Windows and DOS tools

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 CRYSTAL 22SD 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:

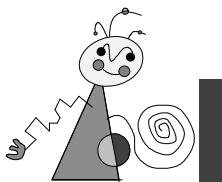
EN 55022:1987
EN 50082-1:1992

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.PAGE Engineering



Index

—1—

15-pin D-type connector 36

—A—

Address range 38
AutoCAD/miroGTI 12 screen
menu 23

—B—

Board layout 3

—C—

CAD
Overview 15
CAD for DOS 16
miro installation program 16
CAD for Windows 3.1x 15
CAD for Windows 95 15
Connecting the monitor(s) 5

—D—

DDC 1; 12
DIP switch 3
DOS tools
miroDETECT VII
miroTEST VI
Dual-screen configuration 1; 3

—E—

Electrostatic charge iv

—F—

Features 1

—G—

Glossary I
Graphics processor 1

—H—

Hardware installation 4

—I—

Installing CAD drivers under
Windows 20

—M—

MicroStation PC 32
miroADI 30
miroGTI 12
Commands 25
FASTZOOM 26
Keyboard commands 25
miroMULTIVIEW 27
miroQUICKVIEW 27
miroSPOTVIEW 26
Overview 21
miroGTI 13 Win
Overview 29
Special features 29
System requirements 29
miroMONITOR SELECT 17
miroMONITOR SELECT
(Windows) 12
miroSETUP-Manager 7
miroSUPERSCREEN 13
miroWINTOOLS 10
Monitor selection V

—P—

Package contents 2

—S—

Safety iv
Single-screen configuration 3
Software installation (CD-ROM)
7
Software installation (Disk) 19
System configurations 3
System requirements 2

—T—

Technical Data 34

—V—

VESA Standard Feature
Connector 37
VGA 3
Video memory 1
Video modes 34

—W—

Windows 3.1x 11
miro installation program 12
Windows 95 7
miro installation program 8

NOTES