

miroCRYSTAL 8S/16Si
Hardware Manual
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VDOK-CHSI-000

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About the manual

This manual explains how to install the miroCRYSTAL 8S/16Si graphics board in your computer.

Conventions of the manual

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



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

You will recognize instructions telling you step by step what to do by the bullet:

- Insert the graphics board into the slot.

All keyboard commands appear in this font:

install <↵>

<↵> represents the enter key

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

Text passages, which only apply to miroCRYSTAL 8S for ISA Bus, start with this sign  and end with .

Text passages, which only refer to miroCRYSTAL 8S/16Si for VESA Local Bus start with  and end with .

Text passages, which only apply to miroCRYSTAL 8S/16Si for PCI Local Bus, start with  and end with .

Quick installation chart

The following quick installation chart gives you an overview over the hardware and software installation.

Hardware

1. Check the system requirements, make copies of the supplied disks.
2. Check and, if necessary, change the jumper settings:
 - ↳ *Dual-screen/multiscreen configuration with one miroCRYSTAL 16Si and one miroCRYSTAL 8S:*
Set DIP switch on miroCRYSTAL 16Si.
Check jumper setting on miroCRYSTAL 16Si.
Set DIP switch on miroCRYSTAL 8S.
Check jumper setting on miroCRYSTAL 8S.
 - ↳ *Multiscreen configuration with two miroCRYSTAL 16Si:*
Set DIP switch on miroCRYSTAL 16Si.
Set jumper on one miroCRYSTAL 16Si.
Set DIP switch on the other miroCRYSTAL 16Si.
Check factory-set jumper setting on the other miroCRYSTAL 16Si.
3. Open computer.
4. Depending on its bus type install graphics board into the ISA, EISA, VL or PCI slot.
5. Connect monitor(s).

Software

6. Install miro drivers for miroCRYSTAL 8S/16Si. The order of the installation is not obligatory.
 - ↳ *Windows in single-screen configuration:*
You need the miroWIN Disk 1 and the miroWIN Disk 2.
Insert miroWIN Disk 1.
In the Windows Program Manager in the *File* menu select *Run...*
Depending on your disk drive enter **a:install** or **b:install**.
Follow the instructions given by the installation program.
 - ↳ *Windows in multiscreen configuration:*
You need the miroTWINFACE Disk 1 and the miroWIN Disk 1 and 2.
Insert miroTWINFACE Disk 1.
In the Windows Program Manager in the *File* menu select *Run...*
Depending on your disk drive enter **a:install** or **b:install**.
Follow the instructions given by the installation program.



- ↳ **Windows NT:**
You need the miroWIN NT Disk.
Insert miroWIN NT Disk.
In the Windows NT Program Manager start the Program Group *Main*.
In the *Windows NT Setup* select the desired resolution and color.
Restart the system.
- ↳ **CAD:**
You need the miroCAD Disk 1.
Insert miroCAD Disk 1.
Depending on your disk drive enter **a:install** or **b:install**.
Follow the instructions given by the installation program.
If necessary, configure installed drivers.



1. Overview

Features

With miroCRYSTAL 8S and miroCRYSTAL 16Si miro offers extremely fast graphics boards, which were especially designed for professional use under Windows and DOS. The graphics boards meet all requirements concerning page layout, illustration and color image editing.

- ☐ **Video memory**
2 MB video memory (high-speed DRAM)* allow to work efficiently with Windows and CAD applications.
- ☐ **Graphics acceleration**
For professional use the operating speed of a graphics system is important: The S3 graphics processor (86C801/86C805 for miroCRYSTAL 8S and 86C805i for miroCRYSTAL 16Si) was especially designed to improve the performance of applications running under Windows and DOS.
- ☐ **Fast bus systems**
miroCRYSTAL 8S is available for the bus standards ISA, VL and PCI, and miroCRYSTAL 16Si for the bus standards VL and PCI.
- ☐ **System configurations**
The miroCRYSTAL 16Si graphics board runs in the single-screen or multi-screen mode. Combined with a miroCRYSTAL 8S miroCRYSTAL 16Si can be used in the dual-screen mode.
- ☐ **Drivers**
The delivery scope of your miroCRYSTAL 8S/16Si includes various powerful miro drivers and miro tools.

* For miroCRYSTAL 8S optional available as miroUPGRADE KIT.



System requirements

To install miroCRYSTAL 8S/16Si, your computer has to meet the following requirements:

Computer

-  for ISA Bus (only miroCRYSTAL 8S): 286, 386, 486, Pentium computer or compatible with ISA/EISA slot .
-  for VL Bus: 386, 486, Pentium computer or compatible with VL Local Bus slot .
-  for PCI Bus: 486 or Pentium computer or compatible with PCI Local Bus slot .

Monitor..

... for miroCRYSTAL 8S

- VGA monitor supporting a vertical scan frequency of at least 35 kHz
- Multifrequency monitor supporting a vertical scan frequency from 35 to 85 kHz.

... for miroCRYSTAL 16Si

- For the *single-screen configuration*:
High-resolution multifrequency monitor supporting a vertical scan frequency of at least 35 kHz with separate horizontal and vertical syncs. To use all the possibilities of miroCRYSTAL 16Si, you need a multifrequency monitor, which supports a vertical scan frequency of 64 kHz or more. miro offers suitable monitors (e.g. miroC2071).
- For the *dual-screen configuration*:
High-resolution multifrequency monitor and a standard VGA monitor.
- For the *multiscreen configuration*:
 - With one miroCRYSTAL 16Si and one miroCRYSTAL 8S/ISA:
A high-resolution multifrequency monitor and a monitor supported by miroCRYSTAL 8S
 - With two miroCRYSTAL 16Si:
Two high-resolution multifrequency monitors.

Delivery scope

Before you begin the installation of miroCRYSTAL 8S/16Si, please make sure your miroCRYSTAL 8S/16Si package is complete.

miroCRYSTAL 8S

- miroCRYSTAL 8S graphics board
- Installation disk(s)
- Documentation
- *optional*
Monitor, shielded monitor cable
- *optional*
miroUPGRADE KIT*.

miroCRYSTAL 16Si

- miroCRYSTAL 16Si graphics board
- Installation disk(s)
- Documentation
- *optional*:
Monitor, shielded monitor cable, miroTWINFACE.

If parts are missing, please contact your dealer.



Graphics boards are sensitive to static charge. To avoid damage that may occur by static charge, you should leave the graphics board in its antistatic packaging until you install it. Keep the packaging for possible transports.

* The miroUPGRADE KIT for upgrading the miroCRYSTAL 8S with 1 MB additional video memory is **optional**; it is only part of the package contents if you purchased it together with the graphics board. You can purchase the miroUPGRADE KIT and upgrade your graphics board any time!

Only miroCRYSTAL 16Si...

System configurations

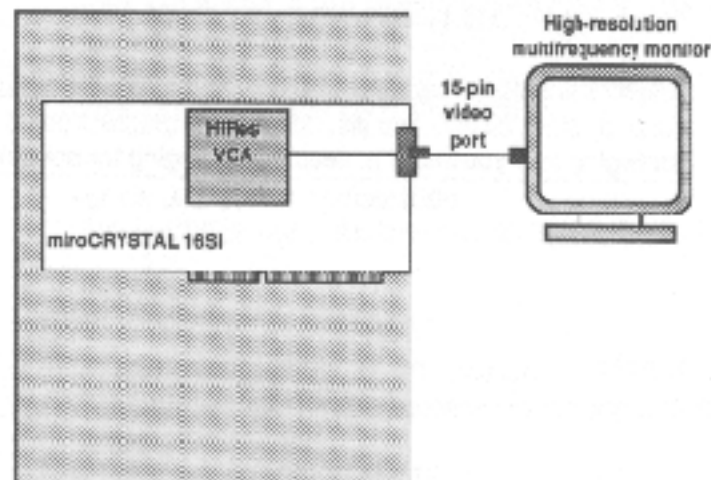
miroCRYSTAL 16Si can be used in the single-screen, dual-screen and multi-screen configuration. The following table shows which monitors are part of the individual system configurations.

	Single-screen	Dual-screen	Multiscreen
miro graphics board(s)	miroCRYSTAL 16Si	miroCRYSTAL 16Si + miroCRYSTAL 8S/ISA (in VGA mode)	2 miroCRYSTAL 16Si
monitor(s)	high-resolution multifrequency monitor	high resolution multifrequency monitor + standard VGA monitor	2 high-resolution multifrequency monitors

Single-screen configuration

The following text describes the system configurations in more detail.

In this configuration one miroCRYSTAL 16Si is connected to a single multifrequency monitor. The graphics chip includes a VGA; VGA and high-resolution image is displayed on this monitor. Switching between VGA presentation and high-resolution graphics presentation modes is done automatically.

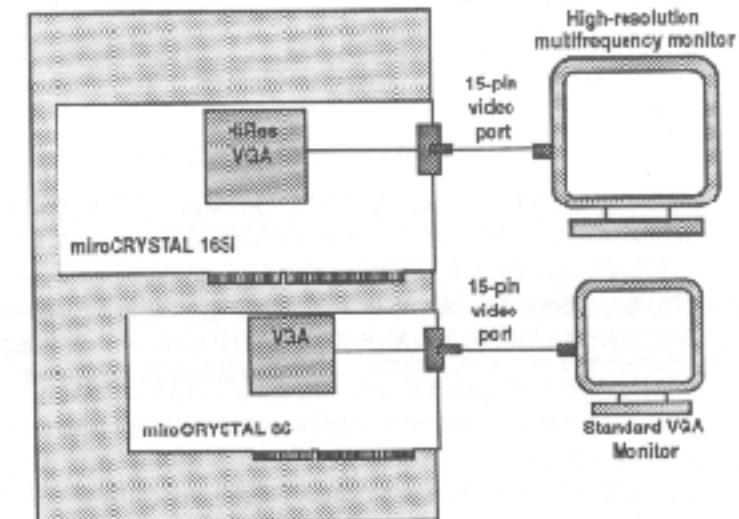


Single-screen configuration: miroCRYSTAL 16Si

Dual-screen configuration

In the dual-screen configuration a VGA system is operated in addition to the high-resolution graphics system (miroCRYSTAL 16Si and high-resolution

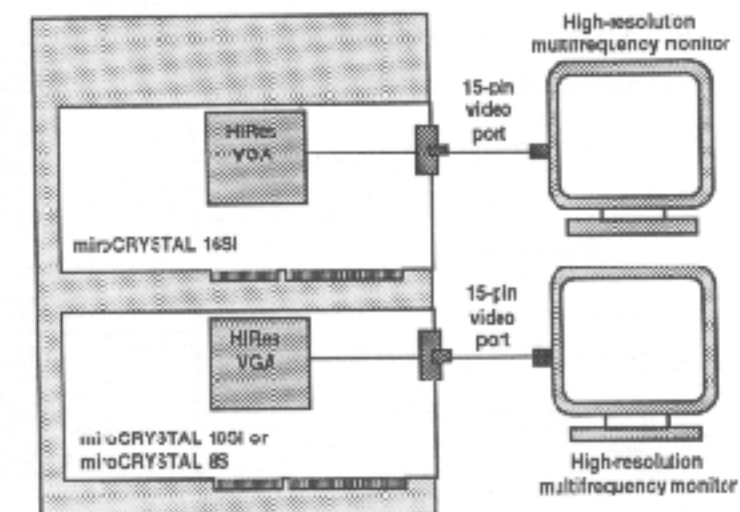
multifrequency monitor): here miroCRYSTAL 8S/ISA runs in the VGA mode and is connected to a standard VGA monitor. The dual screen configuration is only possible with a miroCRYSTAL 8S/ISA but not with a standard VGA.



Dual-screen configuration: miroCRYSTAL 16Si and miroCRYSTAL 8S/ISA

Multiscreen configuration

In the multiscreen configuration two miroCRYSTAL 16Si graphics boards of the same bus type or one miroCRYSTAL 16Si and one miroCRYSTAL 8S/ISA have to be installed in the computer. Here miroCRYSTAL 8S runs in a high-resolution mode and is connected to a multifrequency monitor.



Multiscreen configuration: two miroCRYSTAL 16Si or miroCRYSTAL 16Si and miroCRYSTAL 8S/ISA

Some system configurations require changing the jumper setting on one of the boards installed. For more detailed information refer to the chapter «Installation of miroCRYSTAL 16Si».

Presettings

On your miroCRYSTAL 16Si you will find a jumper to configure the graphics board for the single-screen, dual-screen or multiscreen configuration. For the exact location, please refer to the chapter «Installation of miroCRYSTAL 16Si».



The default setting for miroCRYSTAL 16Si is the single-screen configuration.

Dual-screen/multiscreen configuration with miroCRYSTAL 16Si and miroCRYSTAL 8S:
Before the installation of the miroCRYSTAL 16Si graphics board together with a miroCRYSTAL 8S, the jumper setting on the miroCRYSTAL 16Si has to be changed. miroCRYSTAL 8S is automatically **board one**. The computer boots on this board and the image appears first on the monitor connected to this board.

Multiscreen configuration with two miroCRYSTAL 16Si:
Before you install two miroCRYSTAL 16Si graphics boards the jumper has to be removed and set on one board. The board where the jumper setting has been changed is automatically **board two**. The computer boots on **board one** and the image appears first on the monitor connected to this board.

VGA in the computer

If a VGA is already installed in the computer it must be removed before the installation of the miroCRYSTAL 16Si.

2. Hardware Installation

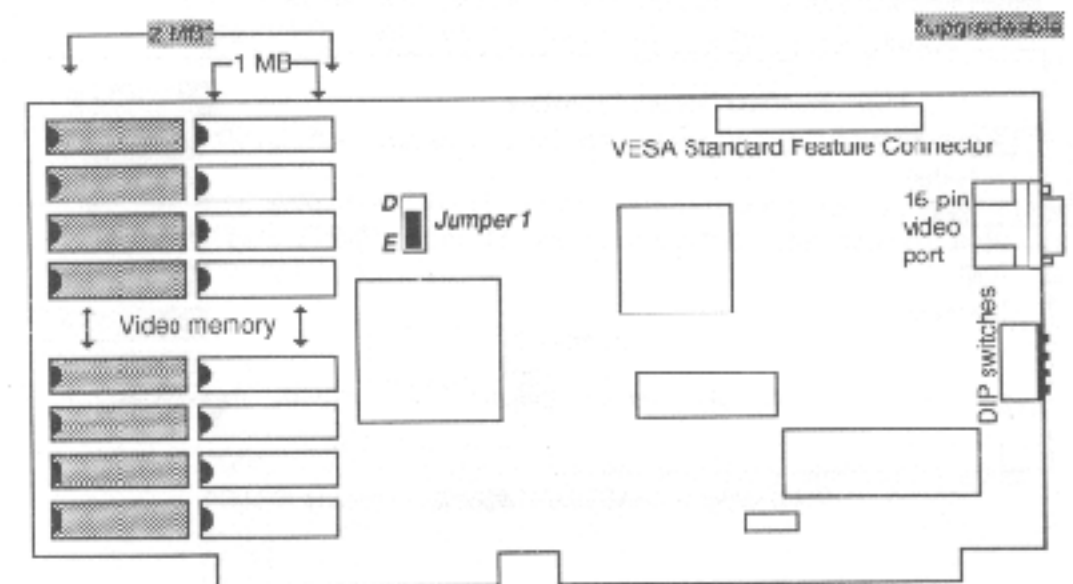
Installation of miroCRYSTAL 8S

Preparing the installation

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

- Power off your computer and all peripheral devices. Disconnect the computer from the mains supply and also disconnect all other cables.
- Loosen the screws of the computer's cover and remove it.
- Discharge yourself of static charge by touching the power unit casing.
- According to your graphics board select a free ISA, EISA, VL or PCI slot. Remove the slot's cover at the back of the computer. Save the screws of the cover.
- ☒ ISA Look at your miroCRYSTAL 8S/ISA and locate the DIP switches and jumper 1 (small plastic connector) ☒ ISA.

ISA

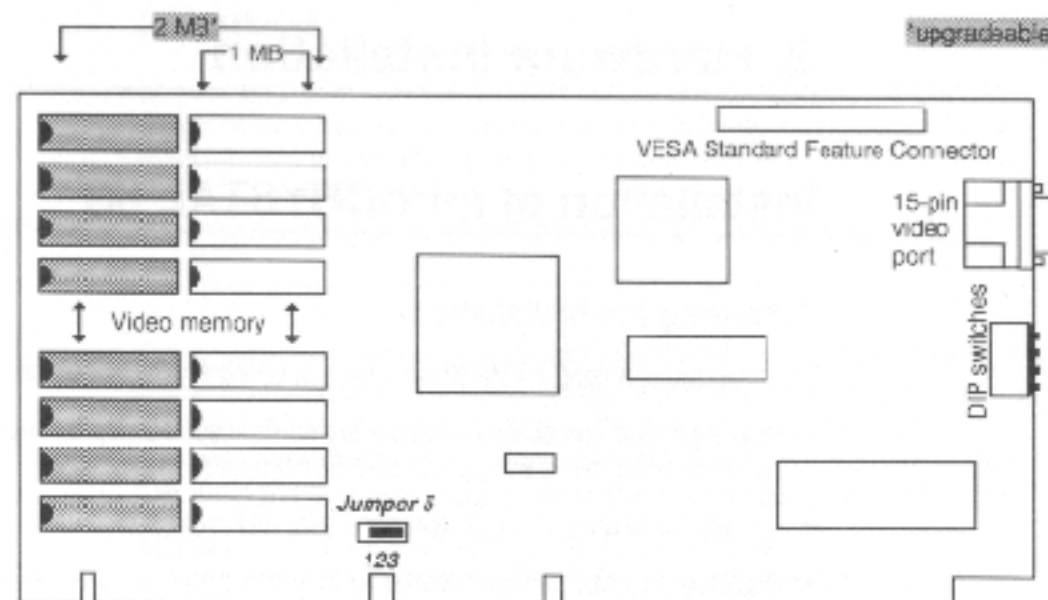


Board layout of miroCRYSTAL 8S/ISA

VL

- ☒ VL Look at your miroCRYSTAL 8S/VL and locate the DIP switches and jumper 5 (small plastic connector) ☒ VL.

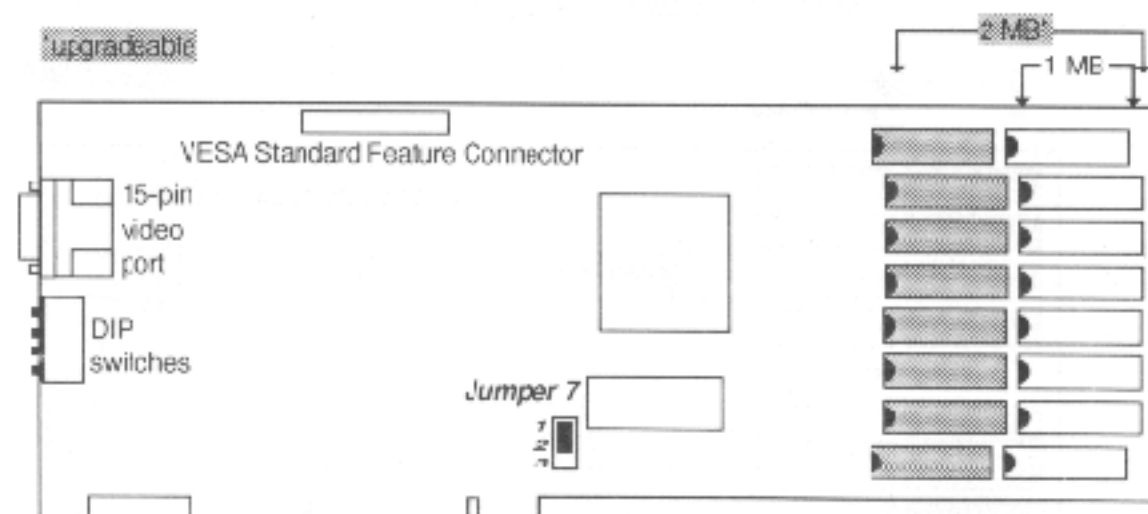




Board layout of miroCRYSTAL 8S/VL

PCI

- Look at your miroCRYSTAL 8S/PCI and locate the DIP switches and jumper 1 (small plastic connector).

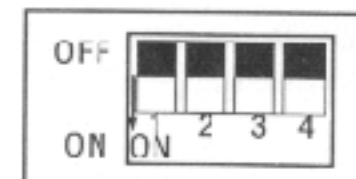


Board layout of miroCRYSTAL 8S/PCI

Selecting the monitor

With the DIP switches you adjust the miro graphics board to your monitor.

All switches are factory-set to «OFF»: The graphics board is set to a 64 kHz monitor.



Default setting of the DIP switches

- Adjust the graphics board to your monitor. If you use a standard VGA monitor, select the switch position of a 35 kHz multifrequency monitor.

Switch Position				Monitor
1	2	3	4	
OFF	OFF	OFF	OFF	64-85 kHz multifrequency
ON	OFF	OFF	OFF	56 kHz multifrequency
OFF	ON	OFF	OFF	reserved *
ON	ON	OFF	OFF	reserved *
OFF	OFF	ON	OFF	48 kHz multifrequency
ON	OFF	ON	OFF	reserved *
OFF	ON	ON	OFF	reserved *
ON	ON	ON	OFF	35 kHz multifrequency

* For new resolutions

A wrong switch position can damage your monitor seriously. If you are in doubt about the correct setting, consult the manual of your monitor. Change the DIP switch setting only when the computer is turned off.

Setting the jumpers and installing miroCRYSTAL 8S

You can preset miroCRYSTAL 8S by means of jumpers. You can easily change these settings: just remove the plastic connector cautiously and insert it once again.

ISA

- Jumper 1 (JP 1)** enables/disables the No Wait State in the memory read/write cycles. miroCRYSTAL 8S is factory-set to «No Wait State», enabling the fastest possible access to the video memory.



Jumper setting E: No Wait State enabled

- Check, and if necessary, change the jumper setting.



Jumper setting 1: No Wait State disabled



There may be difficulties with some computers if you install miroCRYSTAL 8S together with a monochrome graphics board. This problem does not occur if jumper 1 «No Wait State» is disabled. If you do have difficulties, please **disable** jumper 1 (JP 1).

VL

-  **Jumper 5 (JP 5)** allows you to adjust your miroCRYSTAL 8S/VL to the clock pulse of the VESA Local Bus of your computer.

Factory-set miroCRYSTAL 8S/VL is set to a clock frequency ≤ 33 MHz: Position 2-3



Jumper setting 2-3: Clock frequency ≤ 33 MHz

- Check and, if necessary, change the jumper setting.



Jumper setting 1-2: Clock frequency > 33 MHz



You should be very cautious when changing the setting of the jumpers. A wrong setting may lead to malfunction of the graphics board and computer. Therefore you should **always** consult the manual of your computer .

PCI

 **Jumper 7 (JP 7)** allows you to adjust the miroCRYSTAL 8S/PCI to the motherboard of your computer.

The default jumper setting of miroCRYSTAL 8S/PCI: Position 1-2.

- Check and, if necessary, change the jumper setting.



Jumper setting 1-2

- If you install the miroCRYSTAL 8S/PCI on a Classic/PCI 486 Baby-A1 Motherboard the jumper has to be set to position 2-3.



Jumper setting 2-3



In case of image incorrections or problems under Windows when running miroCRYSTAL 8S/PCI with new motherboards, set the jumper to **position 2-3** .

Installing the graphics board



- Depending on the bus type carefully insert the graphics board into the ISA, EISA, VL or 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.

- Fasten the board's bracket at the back of the computer using the screws you saved from the shield.
- Put the cover back on the computer and reconnect the peripheral devices.
- Connect the monitor with the 15-pin D-type socket. If you are in doubt about how to connect your monitor, refer to the monitor documentation.
- Reconnect the computer and the monitor to the mains supply.

How to go on?

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

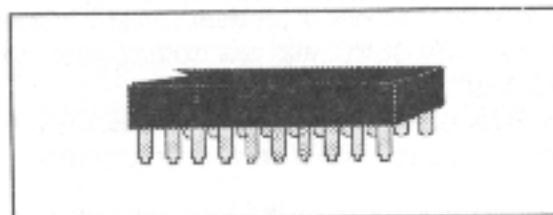
For the detailed description of the miro drivers and miro tools please refer to the corresponding Software Manuals.



Installation of the miroUPGRADE KIT

The optional miroUPGRADE KIT allows you to easily upgrade the video memory of the miroCRYSTAL 8S, expanding it from 1MB to 2 MB. After you have upgraded the video memory, you can take advantage of all video modes a miroCRYSTAL 8S board offers.

The miroUPGRADE KIT consists of eight High-Speed-DRAMs 256K x 4 with only 45/50 ns, which will be inserted in the free sockets.



DRAM memory component

 For the location of the video memory on your miroCRYSTAL 8S/ISA, refer to the board layout on page 7 .

 Refer to the board layout on page 8 for the location of the video memory on your miroCRYSTAL 8S/VL .

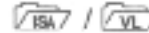
 For the location of the video memory on your miroCRYSTAL 8S/PCI, refer to the board layout on page 8 .

Removing miroCRYSTAL 8S

- If you have already installed the miroCRYSTAL 8S in your computer, you have to remove it for upgrading the graphics board.
- Power off your computer and all peripheral devices.
- Disconnect the computer from the mains supply and also disconnect all other cables.
- Loosen the screws of the computer's cover and remove it.
- Discharge yourself of static charge by touching the power unit casing.
- Remove the cover of the miroCRYSTAL 8S at the back of the computer. Save the screws.
- Remove the graphics board **carefully** from the slot.



Upgrading and installing miroCRYSTAL 8S

- Remove the High-Speed-DRAMs from the packaging.
- Locate the crescent-shaped gap at the front of the memory components.
-  Insert the memory components carefully into the free sockets. The small crescent-shaped gaps **must not** face the 15-pin video output but the **opposite** side of the board .
-  Insert the memory components carefully into the free sockets. The small crescent-shaped gaps **must face** the 15-pin video output .



Make sure that you don't bend the pins of the memory components. The memory components must be firmly seated in their sockets!

- Reinstall the miroCRYSTAL 8S as described in the chapter «Installation of miroCRYSTAL 8S».
- Install and configure the application drivers.

For the detailed description of the miro drivers and miro tools please refer to the corresponding Software Manuals.



Installation of miroCRYSTAL 16 Si

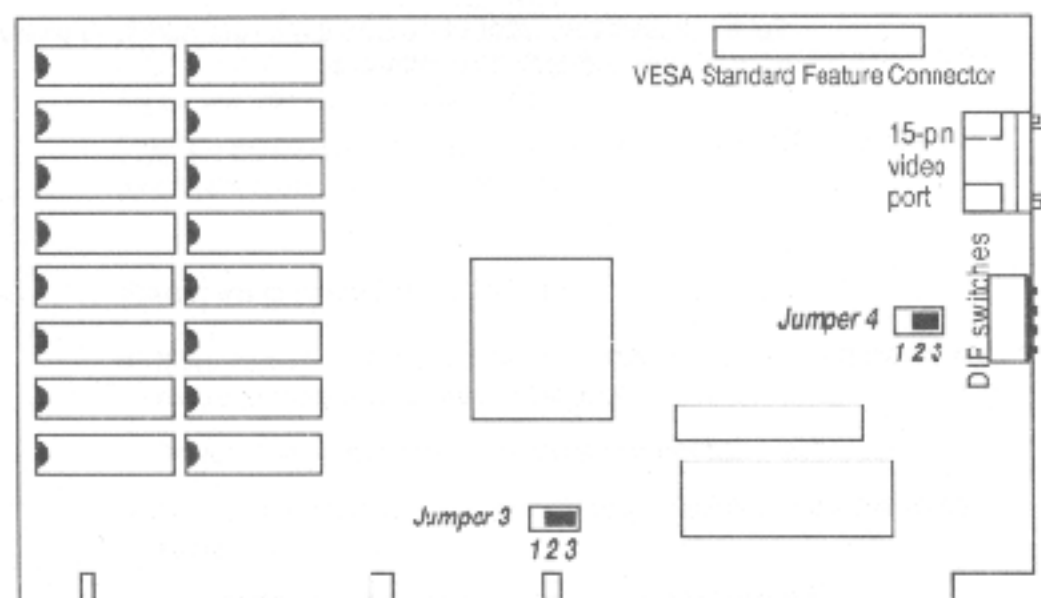
Preparing the installation

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

- Power off your computer and all peripheral devices. Disconnect the computer from the mains supply and also disconnect all other cables.
- Loosen the screws of the computer's cover and remove it.
- Discharge yourself of static charge by touching the power unit casing.
- According to your graphics board select a free VL or PCI slot. Remove the slot's cover at the back of the computer. Save the screws of the cover.

VL

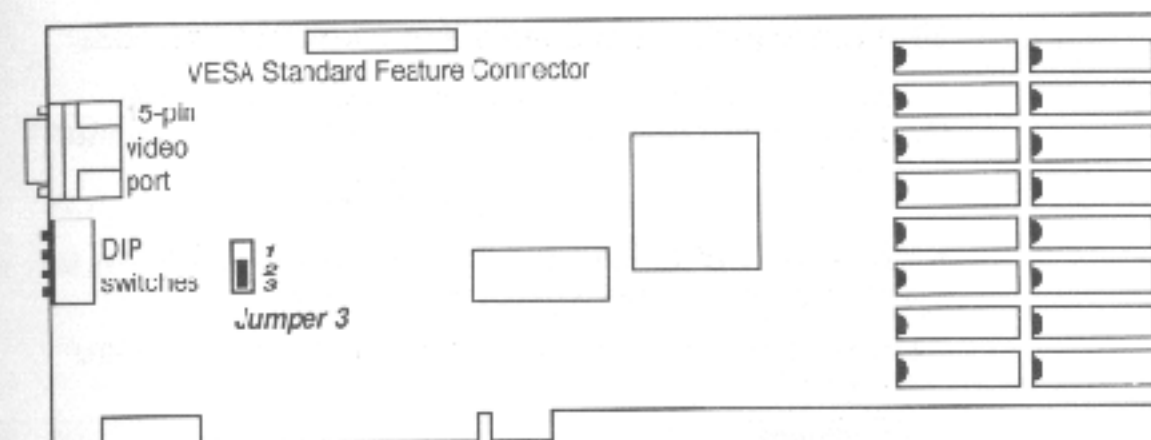
-  Look at your miroCRYSTAL 16 Si/VL and locate the DIP switches, jumper 3 and jumper 4 (small plastic connectors) .



Board layout of miroCRYSTAL 16Si/VL

PCI

-  Look at your miroCRYSTAL 16 Si/PCI and locate the DIP switches and jumper 3 (small plastic connector) .

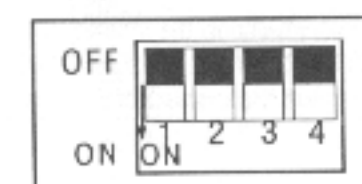


Board layout of miroCRYSTAL 16Si/PCI

Selecting the monitor

With the DIP switches you adjust the miro graphics board to your monitor.

All switches are factory-set to «OFF». The graphics board is set to a 85 kHz monitor.



Default setting of the DIP switches

- Adjust the graphics board to your monitor. If you use a standard VGA monitor, select the switch position of a 35 kHz multifrequency monitor.

Switch Position				Monitor
1	2	3	4	
OFF	OFF	OFF	OFF	82-85 kHz multifrequency
OFF	OFF	ON	OFF	78 kHz multifrequency
OFF	ON	OFF	OFF	64 kHz multifrequency
OFF	ON	ON	OFF	35-48 kHz multifrequency

A wrong switch position can damage your monitor seriously. If you are in doubt about the correct setting, consult the manual of your monitor. Change the DIP switch setting only when the computer is **turned off**.

Setting the jumpers and installing miroCRYSTAL 16Si

You can preset miroCRYSTAL 16Si by means of jumpers. You can easily change these settings: just remove the plastic connector cautiously and insert it once again.

VL

-  **Jumper 3 (JP 3)** allows you to adjust your miroCRYSTAL 16Si/VL to the clock pulse of the VESA Local Bus of your computer.

Factory-set miroCRYSTAL 16Si/VL is set to a clock frequency ≤ 33 MHz: Position 2-3.



Jumper setting 2-3: Clock frequency ≤ 33 MHz

- Check, and if necessary, change the jumper setting.



Jumper setting 1-2: Clock frequency > 33 MHz



You should be very cautious when changing the setting of the jumpers. A wrong setting may lead to malfunction of the graphics board and computer. Therefore you should **always** consult the manual of your computer .

Jumper 4 (JP 4) allows you to configure miroCRYSTAL 16 Si/VL for the single-screen, dual-screen or multiscreen configuration.

Single-screen configuration

miroCRYSTAL 16 Si/VL is factory-set to the single-screen configuration (position 2-3):



Jumper setting 2-3: Single-screen configuration

- Check and, if necessary, change the jumper setting.
- *Dual-screen/multiscreen configuration (miroCRYSTAL 16 Si/miroCRYSTAL 8S):*
In this configuration jumper 4 on the miroCRYSTAL 16 Si/VL has to be set to position 1-2:



Jumper setting 1-2: Dual-screen/multiscreen configuration

- Change the jumper setting.



- *Multiscreen configuration with two miroCRYSTAL 16 Si graphics boards:*
The jumper setting on **one** of the two graphics boards has to be set to position 1-2.



Jumper setting 1-2: Multiscreen configuration

- Check and, if necessary, change the jumper setting .

PCI

 **Jumper 3 (JP 3)** allows you to configure miroCRYSTAL 16 Si/PCI for the single-screen, dual-screen or multiscreen configuration.

Single-screen configuration

miroCRYSTAL 16 Si/PCI is factory-set to the single-screen configuration (position 2-3):



Jumper setting 2-3: Single-screen configuration

- Check and, if necessary, change the jumper setting.
- *Dual-screen/multiscreen configuration (miroCRYSTAL 16 Si/miroCRYSTAL 8S):*
In this configuration jumper 3 on the miroCRYSTAL 16 Si/PCI has to be set to position 1-2:



Jumper setting 1-2: Dual-screen/multiscreen configuration

- Change the jumper setting.



- Multiscreen configuration with two microCRYSTAL 16 Si graphics boards:
The jumper setting on **one** of the two graphics boards has to be set to position 1-2.



Jumper setting 1-2: Multiscreen configuration

Installing the graphics board



- Check and, if necessary, change the jumper setting **PCI**.
- Depending on the bus type carefully insert the graphics board into the VL or 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.

- Fasten the board's bracket at the back of the computer using the screws you saved from the shield.
- Put the cover back on the computer and reconnect the peripheral devices.
- Connect the monitor with the 15-pin D-type socket. If you are in doubt about how to connect your monitor, refer to the monitor documentation.
- Reconnect the computer and the monitor to the mains supply.

How to go on?

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

For the detailed description of the miro drivers and miro tools please refer to the corresponding Software Manuals.



3. Technical Data

In general

Bus system

- microCRYSTAL 8S for ISA Bus
ISA Bus; compatible with 16-bit slot E SA Bus
- microCRYSTAL 8S/16Si for VESA Local Bus
VESA Local Bus
- microCRYSTAL 8S/16Si for PCI Local Bus
PCI Local Bus

Compatibility

- VGA register compatible
- CGA register compatible
- HGC register compatible
- MDA register compatible

Graphics processor

microCRYSTAL 8S

- S3 P86C801 for ISA Bus
8.5 MHz clock frequency
- S3 P86C805 for VESA Local Bus
50 MHz clock frequency
- S3 P86C805 for PCI Local Bus
33 MHz clock frequency

microCRYSTAL 16Si

- S3 P86C805i for VESA Local Bus
50 MHz clock frequency
- S3 P86C805i for PCI Local Bus
33 MHz clock frequency

Videoc memory

- microCRYSTAL 8S
1 MB DRAM
- microCRYSTAL 16Si
2 MB DRAM



Power supply

- +5 V, max. 1 A
- +12 V, max. 0.01 A

Video modes

Resolution	Maximum vertical refresh rate					
	100 kHz	85 kHz	64 kHz	58 kHz	48 kHz	35 kHz
1408 x 1024	70 Hz	70 Hz	-	-	-	-
1280 x 1024	75 Hz	75 Hz	60 Hz	45 Hz i	45 Hz i	-
1280 x 960	75 Hz	75 Hz	65 Hz	45 Hz i	45 Hz i	-
1152 x 1024	94 Hz	90 Hz	70 Hz	-	-	-
1024 x 768	100 Hz	100 Hz	75 Hz	70 Hz	60 Hz	43 Hz i
800 x 600	100 Hz	100 Hz	77 Hz	77 Hz	77 Hz	56 Hz
708 x 576	100 Hz	100 Hz	100 Hz	75 Hz i	80 Hz i	60 Hz
640 x 480	100 Hz	100 Hz	100 Hz	89 Hz	89 Hz	70 Hz

i = This resolution is only possible in the interlaced mode.

Some resolutions are not available for miroCRYSTAL 8S.

Video timing

- Horizontal scan frequency:
31 kHz to 85 kHz, depending on operating mode
- Vertical scan frequency:
60 Hz to 100 Hz, non interlaced, depending on operating mode
- Pixel frequency:
25 MHz to 110 MHz, depending on operating mode (miroCRYSTAL 8S)
- 14.75 MHz to 135 MHz, depending on operating mode (miroCRYSTAL 16Si)

Options

- Monitor, shielded monitor cable
- miroUPGRADE KIT (only miroCRYSTAL 8S)

15-pin D-type video output

The miroCRYSTAL 8S/16Si graphics board is equipped with a 15-pin D-type connector to which you attach the video cable, which is connected to the monitor.

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



15-pin D-type connector

Pin No.	Pin Allocation
1	Red
2	Green
3	Blue
4	Monitor ID bit 2
5	Ground (analog)
6	Ground (red)
7	Ground (green)
8	Ground (blue)
9	Free
10	Ground (sync.)
11	Monitor ID bit 0
12	Monitor ID bit 1
13	HSync
14	VSynC
15	Free

VESA Standard Feature Connector

The miroCRYSTAL 8S/16Si graphics board can be used together with a video overlay board. Therefore you need the VESA Standard Feature Connector.

See also the board layouts on page 7/8 (miroCRYSTAL 8S) and 14/15 (miroCRYSTAL 16Si).

Refer to the following table for an overview of the pin allocation.



VESA Standard Feature Connector

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

Appendix

miroCRYSTAL 8S/16Si Address Range

If you want your miroCRYSTAL 8S/16Si graphics board to run without problems you have to avoid address conflicts; that is, make sure that the addresses used by miroCRYSTAL 8S/16Si are not also assigned to other components of your computer system.

- I/O address range

miroCRYSTAL 8S/16Si occupies besides the address range of standard VGA 03E0h-03DFh parts of the 8514/A I/O address range.

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

The following table shows the I/O address areas that can be used by miroCRYSTAL 8S/16Si.

0E2E8h	
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 memory	VGA BIOS
0A000h - 0BFFFFh	0C000h - 0C7FFFh