V7-MIRAGE VIDEO
(PCI)

Manual

Handbuch

SPEA
SOFTWARE AG

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XingMPEG™ is a registered trademark of the Xing Technology Corporation.
All other names are tradenames / trademarks of their respective owners.

FCC Compliance

This board has been tested and found to comply with the limits for a Class B digital device, persuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installation. This device 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.

Installing the Software from the SPEA Media-Gallery CD

It is possible that you have received the SPEA software on CD rather than on diskette. If this is the case, then please note that the descriptions in this manual should be changed accordingly. For example, the instructions "Put the disk 'Drivers for Windows' in drive A:" would be exchanged with the following steps: "Insert the SPEA CD, switch to the CD drive (e.g. D:) and start the Installation with the following command:

SPEA.EXE

Important Note

You **must imperatively** read the README file on your 'Utilities' disk and all the documentation supplied with your graphics board **before** installing it! If you fail to do so SPEA can not accept any responsibility for claims that may be caused as a consequence.
To see the README file, put the 'Utilities' disk in your floppy drive and type:
A:
SHOW README.ENG

Table of Contents

General Information

Guide to this Manual

This manual is divided into five parts:

Part 1	Introduction
Part 2	Tells you how to physically install the graphics board.
Part 3	Provides information for installing the application drivers included on the SPEA CD.
Part 4	Configuration under Windows® 95
Part 5	Option MPEG Module
Appendices	Contain other information that you should review.
Index	To enable you to find subjects in this manual quickly.

Symbols and Conventions

The following symbols and syntax conventions are used in this manual:

> **Warning!**
> This section contains a warning or important information.

Note:
This section contains useful hints.
DOS commands are written in capital letters, example:

> A:
> INSTALL

If not defined in another way, all DOS commands must be confirmed with the ENTER or RETURN key.
Example: Examples e.g. for commands are indicated by this format.
Screen messages are shown in `Courier`.
Cross references to other parts of the manual are shown in *italic*.
Directory names mentioned in this manual are exemplary and written in capital letters.

This document refers to disk **drive E**:. Please enter the corespondig letter your CD ROM drive is addressed with.

Delivery Scope Checklist

Your SPEA package should contain the following items:
- 1x V7-MIRAGE VIDEO
- SPEA CD with installation and driver software as well as documentation
- this manual

Last-Minute Changes - README file

Our software is constantly being improved and updated. This means that it may not have been possible to document the most current software changes. The latest information is contained in a README file.
The README file appears on the screen automatically at the end of the software installation. You can also read this file at any time from your hard disk (after the installation) with the command:

> SHOW README

or from your diskette with:

> A:
> SHOW README.ENG

Warranty

You have a 3 year warranty for your SPEA graphics card. To ensure your warranty, it is necessary that you keep the invoice of the graphics card. If your graphics card is damaged, contact your local retailer first.
Your board is a complex electronic device and can only be repaired by authorized technical personnel with the required equipment. Do **not** attempt to change or repair any parts of this product. Doing so will render your warranty invalid.

Support

The following support services are offered by SPEA Software AG:

- Technical support (telephone, SPEA ExpertLine)
- Online information and software updates per modem (SPEA Mailbox, CompuServe or Internet)
- Software Updates on CD (SPEA CD)

Further information concerning these support services can be found at the end of this manual or on the SPEA CD section 'SPEA Product Information' 'Support'.

Company Address

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Moostr. 18B
D-82319 Starnberg

Tel: +49 81 51 26 60
Fax: +49 81 51 21 258

Part 1
Introduction

Your SPEA board is a VGA, VESA and SVGA compatible graphics board equipped with a multimedia accelerator, specially designed to speed up graphics display.

In an extended version with an upgradeable MPEG module (not part of the Standard delivery scope) you have the additional possibility to playback MPEG files hardware decoded with a sustained frame rate of 30 fps (NTSC) or 25 fps (PAL).

Graphics Board Features

- advanced S3 Trio64V graphics accelerator for PCI 2.0 / 2.1 bus systems
- 2 MB EDODRAM onboard
- TrueColor (16.7 million simultaneous colors displayed) for resolutions up to 800 x 600 and 85 Hz n.i.
- maximum (non-interlaced) display resolution of 1280 x 1024 with 256 colors and 75 Hz n.i.
- Hardware Double Buffering
- enhanced driver software for most major applications
- Green PC and 'Plug and Play' support
- VESA Power Management Support
- Scaling of digital Video like MPEG or Video for Windows
- supports MPEG software playback

Software for your Board

Various software drivers for standard applications as well as useful utilities are supplied with your board. Additional software (drivers for specific applications) are also available, but not a part of the standard delivery scope.

Standard Software Delivery
- Intuitive menu-guided installation program
- SPEA's video remote control software MediaStation
- SPEA utilities (e.g. hardware test program, V7SETUP etc.)

- Driver software for the following applications:
  - Windows 3.1x and Windows® 95
  - MPEG Decoder Software

Optional Software
This software is available free of charge via SPEA's Mailbox (or via CompuServe and Internet)

- SPEA BigFocus driver 12 & 13 (DOS) and AutoCAD for Windows

- drivers for Windows NT

- drivers for OS/2 (Warp)

Optional Hardware
You can purchase an additional MPEG hardware decoder module for your V7-MIRAGE VIDEO. Please consult your dealer.
Advantage of this MPEG Upgrade:
When you playback MPEG files hardware decoded, the processor's workload is reduced and the playback quality is better.

Part 2
Hardware Installation

Graphics Card Installation

Requirements

1. IBM compatible computer (486/586) with PCI version 2.0 / 2.1 bus system.

2. One free PCI Bus system expansion slot

3. MS-DOS version 5.0 or higher or Windows 3.1x or Windows® 95

4. Screwdriver

Warning!

Prevent static electric damage. Static charges can cause severe damage to microcircuits, but here are some easy ways to see that it doesn't happen:

1. Hold the SPEA card on its edges only. Don't touch edge connectors or exposed circuitry.
2. Leave the SPEA card in the anti-static protective bag until ready to install it in your computer.
3. If possible, ground your body when handling the SPEA card. The metal power supply housing is generally considered the best place to ground yourself.
4. Do not place the SPEA card on a metal surface.
5. Make the least possible movement to avoid building up static electricity from your clothing, carpets and furniture.

Monitor Compatibility

The boards of the SPEA series offer high performance in resolutions, refresh rates and colors.
Especially the ergonomic SPEA refresh rates up to 100 Hz give absolutely flicker free performance.
The SPEA boards are optimally configured to be combined with the SPEA MultiSync monitors.
Of course SPEA boards can also be connec-ted to other VGA or high resolution MultiSync monitors.
Please be aware of the fact, that you can only get use of the full power of the graphics board if the horizontal (kHz) and vertical (Hz) refresh rates of your monitor are as high as required by the graphics board.

Example: The technical specifications of a multisync monitor could be as follows: max. resolution 1280 x 1024; max. horizontal fre-quency 50 kHz; max. vertical frequency (refresh rate) 90 Hz.
If you wish to use one of the video modes listed in the file BIOS.TXT included with this product, then all three of the above mentioned para-meters may not exceed the specifications of this monitor.
In our example, the mode 1024 x 768 with a horizontal frequency of 48.5 kHz and a refresh rate of 60 Hz may be selected, whereas the next higher refresh rate of 70 Hz (at the same resolution) is not possible, as the required horizontal frequency is 56.5 kHz in this case, which exceeds the specifications of the monitor.

Warning!

If you permanently use your monitor with frequencies that are too high you may damage the monitor.

Before you start to configure the refresh rate with the configuration menus described in this manual (e.g. V7SETUP) have a look in your monitor's manual about the technical details of your monitor (horizontal and vertical refresh rates, maximal resolution) .

If you're using COM 4

If you are using COM 4, e.g. for a **modem** or another peripheral device, then note that your SPEA graphics board uses the same I/O address, namely 02E8 hex.

For this reason it is **vital** that you reconfigure the other device to another port. Failing to do so will cause an address conflict and problems with both devices up to a system crash.

Typical System Configuration

A typical configuration environment your board is described as follows:

- Colani Tower 486DX2-66, PCI bus, 66 MHz, 8 MB
- SPEA 2185 MS Monitor
- Double Speed CD Rom drive

Preparing the installation

Warning!
Simultaneously using two active VGA units in one PC will inevitably lead to system failure!

- **If a second VGA board is installed in your system or if a VGA part is integrated on your motherboard, remove the other VGA board or deactivate the VGA part in your PC (more information you will find in your PC manual).**
- **Please note, that the applications you want to install SPEA drivers for have to be already completely installed (for Standard VGA (640 x 480, 16 colors) on your system prior to using the SPEA software. It is a good idea to do this before removing an existing graphics adapter as not every application permits the configuration of the video mode used from the DOS plane.**

Installing the SPEA Board

The SPEA card is installed in a PCI expansion slot.

1. Select a free expansion slot and remove its metal slot cover. Save the screw to secure the graphics card later.

2. Hold the card by the edges and press it firmly into the expansion slot.
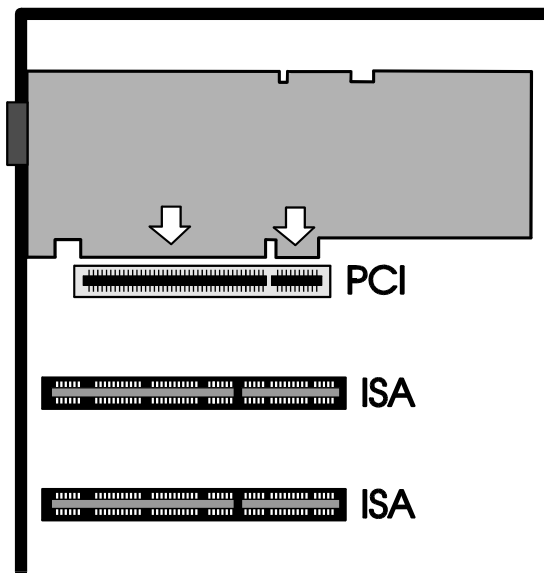
Installation in a PCI expansion slot

Important!
The following step is very important in order to ground your SPEA graphics card properly.

3. Align the slot in the mounting bracket of the SPEA card with the screw hole in the rear panel of the computer case. Use the screw you removed from the expansion slot cover or the previously installed video adapter to secure the SPEA card in place.

4. Secure ribbon cables and gently push them down and out of the way before you replace the system cover.

5. Replace the computer cover. Secure it with the screws you removed earlier.

6. Reconnect any peripheral equipment cables you may have disconnected.

7. Securely attach your monitor cable to the 15-pin VGA output connector on the board. The other end is hooked up to the monitor as decribed in the manual of the monitor manufacturer.

Additional Instructions

Please switch on your monitor **before** you switch on your computer. Doing it the other way around could damage your monitor.

The SPEA board has been designed to 'plug & play' without any modifications being made to the default switch or jumper settings. If however, it appears that the card is not performing optimally, you can change the settings. Refer to *Appendix B: Technical Details* for more information.
Note that your monitor is running in standard modes and that higher refresh rates etc. are not available at this stage of the installation! It is necessary to run the programs SPTUNE.EXE (for DOS applications) and V7SETUP.EXE (for Windows) in order to optimize the board's output signals for use with specific monitors. These programs are described further on in this manual.

Hardware Compatibility PCI Bus and the Graphics Board

The functionality of a graphics system depends mainly on two components: the graphics board and the mainboard.
If either the design of the PCI mainboard is not compliant with the approved PCI specifications you may experience problems with the graphics board.

SPEA has successfully tested 2.0 / 2.1 PCI bus mainboards.

After Installing the SPEA Board

If you have correctly installed the SPEA board, the DOS prompt will appear (except in Windows® 95) on your monitor when the boot procedure is finished.
If your system does NOT boot as it should, check again to see that the installation instructions were properly followed, or refer to *Appendix C (Troubleshooting)*.

Important!

Before installing the supplied software, make a backup of the SPEA installation disks. Use the backup copy for your installation and store the originals in a safe place.

Part 3
Software Installation and Configuration

- **Please note, that the applications you want to install SPEA drivers for have to be already completely installed (for Standard VGA (640 x 480, 16 colors) on your system prior to using the SPEA software. It is a good idea to do this before removing an existing graphics adapter as not every application permits the configuration of the video mode used from the DOS plane.**

Note:
Our software is constantly being improved and updated. The latest information is contained in a file named README.

Please check the exact directory names and paths of your applications, as you will be asked for these during the software installation of the SPEA drivers.

1. Put the SPEA CD in your CD ROM drive, change to the CD drive and start the Software Installation with the following call:

    SPEA

2. Choose a language for the installation program and follow the instructions on the screen.

3. Select the option 'Utilities' and the Applications you want to install the software drivers for.

The installation program automatically copies all files to the chosen directories. During the installation a README file with the most important information concerning the software configuration appears on the screen.

<div style="background:#e0e0e0">

Warning!

Most applications require you to reconfigure them to use your SPEA graphics board. Please refer to the sections of the relevant software application to complete your installation correctly.

</div>

Before you start to configure the software applications, you may wish to change the monitor settings, resolutions or number of colors used. This is handled by the program SPTUNE.EXE for DOS applications and V7SETUP.EXE (within Windows) for Windows applications.

Windows 3.1x

Installation of the Windows driver

1. The Basic Installation with the SPEA CD has already to be terminated (see previous section).
2. If Windows is not installed on your system yet, install it for standard VGA as described in the Windows manual.
3. Insert the SPEA CD in your CD ROM drive, change to the CD ROM directory and from the DOS plane start the installation by entering

    SPEA

4. Select a language for the installation and follow the instructions on the screen.
5. Select the option 'Installation'.
6. Select the Windows driver option in the installation dialogue box.
7. At the end of the installation the SPEA program group with various SPEA programs has been created. These programs are described in the following section.
8. From now on you can optimally adjust your graphics display via the V7SETUP menu.

SPEA V7SETUP

What is SPEA V7SETUP?

SPEA V7SETUP is a program with various options to set the monitor used, resolution, colors, refresh rates etc. for **Windows applications** (the monitor settings used for DOS applications are made using the program SPTUNE).

How is SPEA V7SETUP used?

Double click on the SPEA V7 icon, the dialog box then will appear.

Configure your system keeping the specifications of your monitor in mind.

Do you want to Playback MPEG files?

... then you have to either
- install the hardware MPEG decoder module for the V7-MIRAGE VIDEO (for detailed information see part 5 in this manual)
   or
- if you do not use a hardware MPEG decoder module you have to playback the MPEG files with the Software MPEG decoder supplied with the SPEA CD.

In any case, for playing the MPEG files back use SPEA's menu guided remote control software SPEA MEDIASTATION, described in the next section in this manual.

Hardware MPEG Decoder or Software MPEG Decoder?

- If the V7-MIRAGE VIDEO has no hardware MPEG decoder onboard, the processor's workload is enlarged and the playback quality is not as good as it could be with the hardware MPEG decoder module. Therefore, a Pentium 90 is the minimun system requirement. With a hardware MPEG decoder the **processor's workload is reduced** and you will obtain a sustained frame rate of 30 fps (NTSC) or 25 fps (PAL).
- With the Hardware module the playback of TrueColor Video CDs is possible.
- besides the MPEG playback other applications can be executed (multitasking)
- With the MPEG module the V7-MIRAGE VIDEO will become MPC3 compatible
- Via the SPEA Movie Bus you can connect the V7-MIRAGE VIDEO with other boards (e.g. the Video editing board SPEA CRUNCH IT).
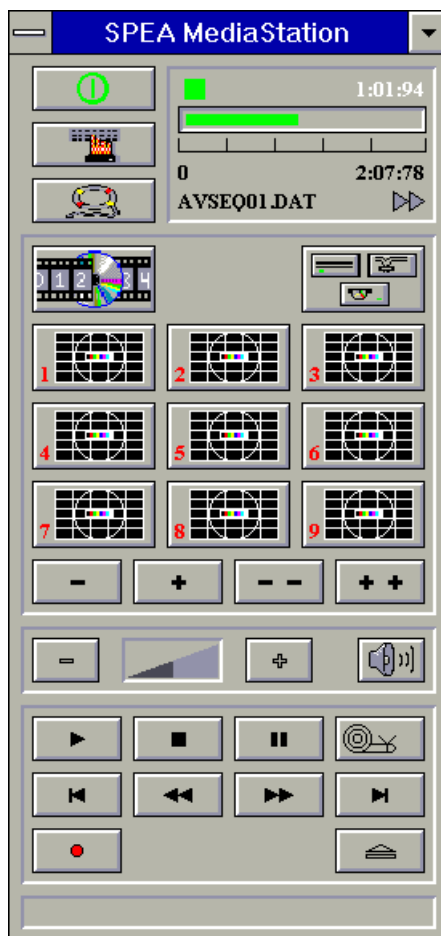
MediaStation

MediaStation is SPEA's easy-to-use control software to playback MPEG 1*[1] (*.MPG), *.VPG, *.AVI and VideoCD *.DAT files under Windows.

The TV's remote control can be used to select and playback files or films (e.g. VideoCDs), program and save film sequences, modify the volume, colours and display size.

When you click on the MediaStation icon in the SPEA program group, the remote control appears on the screen. Click on the power button on the top left side of the remote control to switch on the TV window on the screen.
The functions on the remote control correspond to the ones of a real TV's remote control.
If you click on the two arrows a track bar will be added to the right side of the remote control. This track bar contains a slider to move quickly within a video and a display area for time or frames.

Via MediaStation's online help you can obtain additional information about all the buttons and dialogue boxes of MediaStation. Just click on the 'lifebelt' on the remote control. If you have problems playing back files please refer to the Troubleshooting section at the end of this manual.

Important Notes:
1. You can play Video CD's labelled with 'Video CD' back. But please make sure that your CD-ROM drive supports the format you want to playback.

2. Handle Video Cds with great care. Due to the nature of the data they contain, they are much more sensitive to surface damage than ordinary music CDs.

3. Standard MPEG **1** and AVI files can be played back with MediaStation, however, check your README file for information on the current support status!

---

[1] Requires MPEG Decoder Software or Hardware. Pentium processor recommended!

We've kept the following descriptions very brief as we intend to integrate multimedia features as they come onto the market. Check your README file and the MediaStation online help for the latest information on file playback and recording.

Using the MediaStation Remote Control

Note that the function of a button on the control is displayed in the lower bar of the control when the cursor is positioned over it. If you're unsure about the exact function consult the online help.

Playback Speed & Volume

The playback volume is primarily controlled by the Media Player program (MPLAYER.EXE) supplied with Windows.

If you turn the volume off here, then the remote control volume will have no effect! If you are using a soundboard which has a separate volume control, make sure that this is not muted or turned down! If it is, the MediaStation will not playback with sound. To change the Media Player settings it is necessary to close the MediaStation remote control first!

The speed of film files is fixed and can only be reduced to step mode (the snail button on the control). Changes to the Windows Media Player have no effect.

MPEG / AVI / VideoCD Playback

1. Open the MediaStation remote control

2. Click the right mouse button over a channel on the remote control. The file selection box appears:
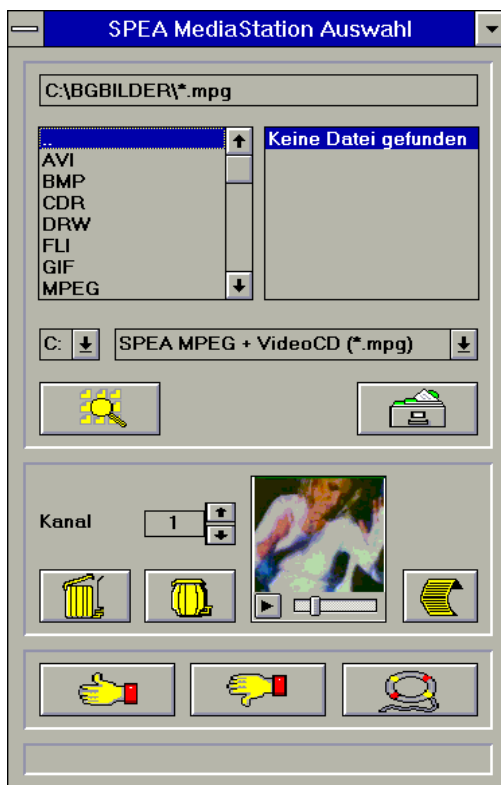
3. Select a channel number, then drive, directory and file type before picking a file

4. Click on the 'Thumbs-up' (OK) button. The selected file is transferred to the selected remote control channel (e.g. 1)

5. Click on the respective channel button on the remote control to open the TV and prepare the film

6. Click on the Play button of the remote control

Tips:

To shortcut the playback procedure, doubleclick on the file in the selection box. It is then played back *without* being saved to the selected remote control channel. The file is only transferred to a channel when you confirm with the OK button.

To see a preview of the film, pick a file with a single click of the right mouse button. A miniature film preview is then loaded which can be played back with the play button under the image.

You can drag & drop a file from the file selection box to a channel of the remote control using the left mouse button!

Single Frame Capture (all formats)

It is possible to capture a single frame of an AVI, MPEG or other playable file in two ways:

With SPEA's MediaStation
Requirement: Video In is active on the TV window.
1. Click on the Pause button when the frame you want to capture appears on the TV.
   With the << and >> buttons or via the track bar you can exactly select the desired frame.
2. As soon as the frame is shown click on the Record button.

> **Note:**
> Instead of clicking on the Pause button and then on the Record button you can also click with the right mouse button ON the active TV, the result is the same.

The following dialogue box appears where you can define the snapshots. More information you'll find in the online help of the dialogue box.
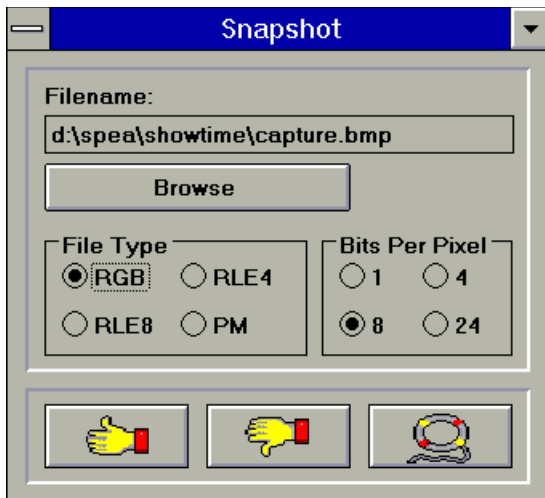
3. As soon as you click on the OK button a snapshot will be saved as BMP file.
You can edit this Bitmap file in programs like e.g. Paintbrush.

With a Windows Hotkey function
1. Start the playback of the file you want to capture a frame of

2. Pause or stop the playback when you reach the frame you need

3. Click on the MediaStation TV window frame

4. Hit the combination ALT + Print

The window is then captured into the Windows Clipboard. Using Paintbrush (for example) you can then edit the picture and if necessary remove the border of the captured image that looks like a TV frame.

SPEAenergy (DPMS)

What is SPEAenergy?
SPEAenergy is a power management utility (DPMS) for Windows.
DPMS is a specification set by VESA which defines modes for reducing the power consumption of monitors and video devices.
You can use SPEAenergy to reduce power consumption by defining timeout values, e.g. for the deactivation of certain circuit elements which reduce the power consumption level in stages (e.g. from 120 W to 100 W to 30 W to 5W).

Note:
You must have a monitor that supports DPMS.
Via a dialog box you can activate 4 different DPMS modes.
The 4 DPMS modes are: ON, STAND-BY, SUSPEND and OFF.

How can you work with SPEAenergy?
Start SPEAenergy by double clicking on the SPEAenergy icon. A self-explanatory dialog box appears for defining your settings. If you need help, consult the online help integrated in this program.
If you want to finish SPEAenergy you have to close the SPEAenergy icon that is residently placed at the bottom of your monitor display.

SPEAview

What is SPEAview?

SPEAview is a SPEA utility for Windows which can be used to setup the graphics display for Windows applications in some aspects. The program is automatically installed in connection with the V7SETUP.
You will find it in the SPEA program group.
To start the program, double click on the SPEAview icon.

How Can SPEAview be Used?
With SPEAview you can:
- change the resolution without leaving Windows (Set button)

- assign various resolution and number of colors to different Windows applications (Set button)

- use the `Virtual` button to activate the virtual screen option. When activated, the visible section can be changed by moving the mouse cursor to one of the edges of the monitor display.

- use the `Camera` button (Bird's eye) to see or control which part of the active image you have displayed on the screen when working with the Virtual Screen feature.

- define which of the offered features you want to display in the menu bar of SPEAview and where the menu bar should appear when the program is activated (with the `Set` button in the menu bar).

- use the ? button to call online help about the program.

Virtual Screen

(1536 x 1024)

SREA

(800 x 600)

1

PC
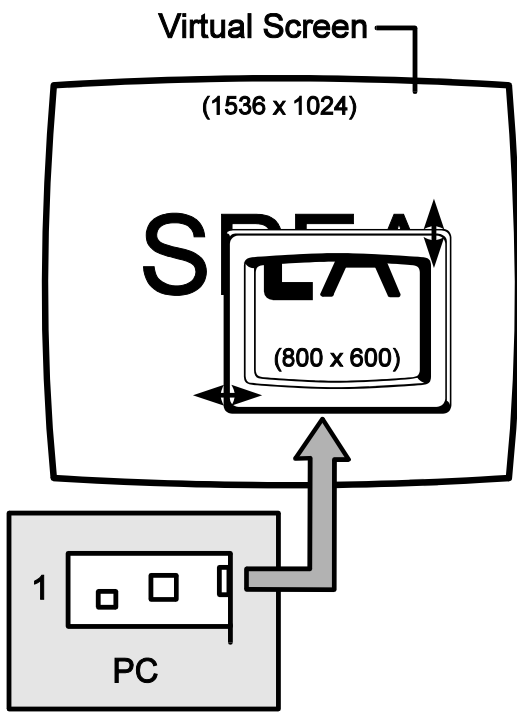
Windows NT

Drivers for Windows NT are optionally available (SPEA Mailbox, CompuServe or Internet). Please also read the last pages in this manual

More information can be found in the README file enclosed to the Windows NT driver.

AutoCAD 12 & 13
AutoCAD for Windows

SPEA's BigFocus driver is available for AutoCAD.

Note:
The BigFocus driver can be obtained optionally via the SPEA Mailbox or Compuserve. Please have a look at the attached info sheet 'SPEA Expert Line!'

The BigFocus driver offers the following features: (for AutoCAD for DOS and Windows)
- Extensive online help

- Hotkeys - a large number of hotkeys can be defined

- Automatic Display list administration

- DOS Fileviewer - simplifies the identification and loading of a DWG file immensely

- New dynamic zoom - mouse controlled zooming and panning

OS/2 (Warp)

Drivers for OS/2 (Warp) are optionally available (SPEA Mailbox, CompuServe or Internet). Please also read the last pages in this manual.

Installation Requirements:
OS/2 must already be installed and functional with the standard VGA driver or a previous version of the OS/2 driver for the V7-MIRAGE VIDEO.

<div align="center">

Warning!

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Before you begin with the installation close any OS/2 or Window applications that may be running!

1. Start OS/2.
2. Open an OS/2 full screen session or an OS/2 window.
3. Put the SPEA CD in drive E:
4. Change to the CD ROM drive and enter:

    SPEAOS2

5. Select a language for the Installation and follow the instructions on the screen. Consult the online help if necessary.

After terminating this program and restarting OS/2, the OS/2 desktop and seamless Windows will be displayed in the selected resolution.

Use the V7SETOS2 program to change the display settings for subsequent sessions (for both OS/2 and Win-OS/2).

Additional information can be found in the README file.

Part 4
Configuration of the V7-MIRAGE VIDEO under Windows® 95

Installation under Windows® 95

To install the V7-MIRAGE VIDEO under Windows® 95 proceed as follows:
It is necessary that Windows® 95 is already installed.
1. Shut down your system and switch it off.
2. Install the V7-MIRAGE VIDEO in your PC.
    The hardware installation of the board is described in Part 2, Hardware Installation in this manual.
3. Restart your Computer. Windows® 95 will automatically detect the new hardware and will ask you, in which directory the driver software for the board is installed.
4. Put the SPEA CD in your CD ROM drive and click on OK.
5. Enter the following command:

    SPEA.EXE

6. Follow the instructions on the screen. At the end of the installation the program V7SETUP is started. Select the entries that match your system configuration and restart Windows, so that the changes can take effect. If you need more information, consult the online help in V7SETUP.

From now on you can configure your graphics display with V7SETUP and several other SPEA tools.

SPEA Tools under Windows® 95

The following SPEA Tools are available under Windows® 95:

*   **V7SETUP** - the program for setting the screen resolution, color depth etc.
*   **SPEAVIEW** - a program to move within a 'virtual' desktop
*   **MEDIASTATION** - SPEA's 'remote control' for MPEG playback.

All these SPEA Tools are also available for Windows 3.1x, they are described in Part 3, Windows 3.1x in this manual.

Besides that, every program is very easy to use and has a detailled online help.

Part 5
Optional MPEG Module

If you want also to intensively use the multimedia features of the V7-MIRAGE VIDEO, it is advisable to upgrade the board with the additional Hardware MPEG Decoder module.
Please contact your dealer for purchasing the module (order nr. at SPEA: M10.2082.000).

What is the MPEG module?

The MPEG module is an upgrade kit you can put on the V7-MIRAGE VIDEO containing:
- the S3 Scenic / MX2 Video / Audio Decoder
- and the SPEA Movie Bus.

What are the advantages of this module?

- If the V7-MIRAGE VIDEO has no hardware MPEG decoder onboard, the processor's workload is enlarged and the playback quality is not as good as it could be with the hardware MPEG decoder module. Therefore, a Pentium 90 is the minimun system requirement. With a Hardware MPEG decoder the **processor's workload is reduced** and you will obtain a sustained frame rate of 30 fps (NTSC) or 25 fps (PAL).
- With the Hardware module the playback of TrueColor Video CDs is possible.
- besides the MPEG playback other applications can be executed (multitasking)
- With the MPEG module the V7-MIRAGE VIDEO will become MPC3 compatible
- Via the SPEA Movie Bus you can connect the V7-MIRAGE VIDEO with other boards (e.g. the Video editing board SPEA CRUNCH IT).

Installation of the MPEG Module on the V7-MIRAGE VIDEO

To install the MPEG module of the V7-MIRAGE VIDEO proceed as follows:

1. If the board has already been installed in your system switch off your computer and all external options and unplug all power cords from the electrical source.
2. Ground your body before handling the module (for example by touching the metal power supply housing of your PC).
3. Remove the PC cover slot and securely remove the V7-MIRAGE VIDEO from its expansion slot.
4. Hold the MPEG module on its edges only, not on its pin connector.
5. Fit the upgrade module on the graphics board as shown below.
6. Now reinstall the board as described in Part 2 in this manual.

After you have installed the board with the module in your system, continue with the Software Installation.

SPEA Movie Bus
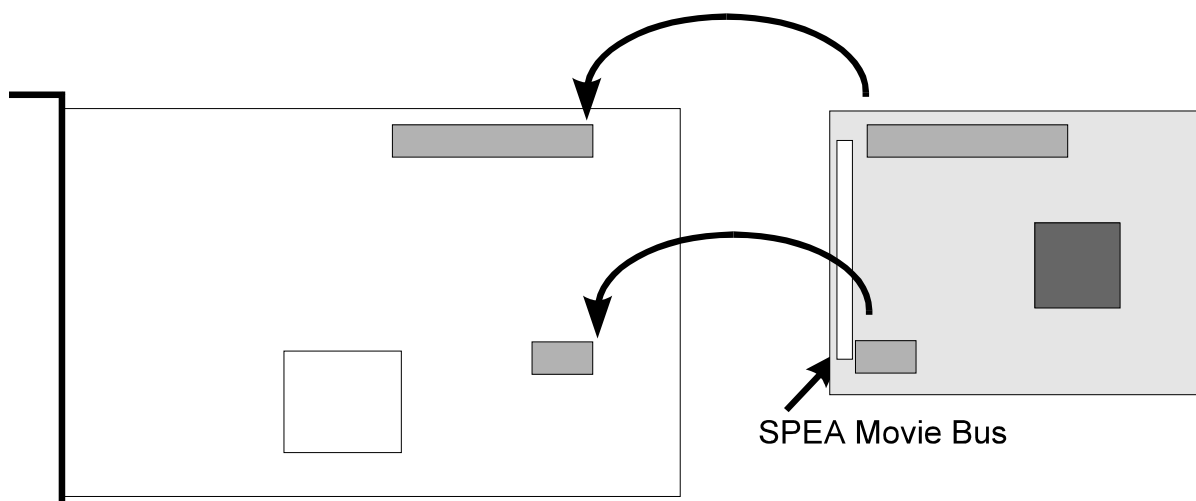
Putting the MOEG-Module on the V7-MIRAGE VIDEO

If you haven't installed the V7-MIRAGE VIDEO in your system yet and you did not work with it, follow the Software Installation instructions in Part 3 (for Windows 3.1x) or Part 4 (for Windows® 95) in this manual. The MPEG module will automatically be registered by the system.

If the V7-MIRAGE VIDEO has already been installed in your system and you have already worked with it, you only have to execute the Software Installation for the MPEG module.
Call the program V7SETUP from the SPEA Program group, the program automatically detects and installs the MPEG module.

Pinout of the SPEA Movie Bus

The V7-MIRAGE VIDEO is equipped with a digital video bus connector. This **is not a Feature Connector**, but the 'SPEA Movie Bus'.
This connector can be connected with the multimedia board SPEA CRUNCH IT.
The default pinout of this connector is:

Pin	Function	Pin	Function
1	SCL (bi)	2	GND
3	SDA (bi)	4	ODD (bi)
5	FEIN (in)	6	FEOUT
7	HREF (bi)	8	GND
9	HS (bi)	10	VS (bi)
11	LLC2 (bi)	12	GND
13	CREF (bi)	14	GND
15	LLC (bi)	16	GND
17	UV0 (bi)	18	UV1 (bi)
19	GND	20	UV2 (bi)
21	UV3 (bi)	22	GND
23	UV4 (bi)	24	UV5
25	GND	26	UV6 (bi)
27	UV7 (bi)	28	GND
29	Y0 (bi)	30	Y1 (bi)
31	GND	32	Y2 (bi)
33	Y3 (bi)	34	GND
35	Y4 (bi)	36	Y5 (bi)
37	GND	38	Y6 (bi)
39	Y7 (bi)	40	GND

The connector pin numbers are marked on the circuit board itself.

Three operation modes are possible with the V7-MIRAGE VIDEO:

1. video in (e.g. video cassette recorder, TV Tuner etc.) is active

2. video decoder is active

3. an external board is active

The function of the pinout of the SPEA Movie Bus changes for each mode.

If you need more detailed information about the pinout (and its changes) of the SPEA Movie bus, you can request a technical specification from SPEA Software AG (address to 'Customer Support').

Appendix A
Utilities

The SPEA Utilities help you to configure or optimize your system environment to get full use of all features supported by SPEA.
These utilities are not mandatory, but very useful in many cases.

SPEAtune - Monitor / Graphics Board Tuning

Who is SPEAtune intended for?
If you use a SPEA graphics board and you do not have a SPEA monitor, you can use SPEAtune to test the display on your multiscan monitor to save up to 6 optimized monitor settings (if your monitor does not offer this facility).
SPEAtune is not needed if you are using a SPEA multiscan monitor as these devices are already optimized (tuned) for harmonized use with a SPEA graphics board and therefore already give the best performance possible.

What can you use SPEAtune for?
SPEAtune enables you to match the maximum screen refresh rate (vertical frequency) of your monitor. You can test the different values (Hz) with a test image to find the best results before saving one value.
You can test and save one monitor frequency value (x kHz horizontal frequency, x Hz vertical frequency) for each video mode the graphics board supports. For example:
- 79.1 kHz (horizontal) / 74 Hz (vertical) for 1280 x 1024 x 256
- 80.8 kHz (horizontal) / 100 Hz (vertical) for 1024 x 768 x 256

Using SPEAtune

1. Start SPtune from the DOS level and the directory C:\SPEA\GDC with the following call:

   SPTUNE

   You will see a menu driven program for selection.

   Via the help button (F1) you can receive context sensitive help to all menu options.

2. Adjust monitor frequency - monitor frequency setup
   Select a vertical refresh rate your monitor is capable of (`Monitors`).
   Use the option `Test image` to check the display quality of various test images and resolutions with the chosen refresh rate.
   Save the new setting and exit the monitor frequency setup.

3. Image tuning - Tuning Setup
   Note:
   This menu item is only necessary if your monitor is not able to store various display settings with different resolutions.

   You may want to modify some of the para-meters that define the display of your monitor (e.g. change sync polarity) or change the display position or increase or decrease the display size. These changes can be done in the Tuning Setup menu.

   Start the Tuning Setup. Select a refresh rate and the number of colors. The optimal refresh rate is selected automatically (shown in yellow), it depends on the monitor frequency you selected in the monitor frequency setup.

   Start the Tuning image via the tuning button. Modify some parameter - if necessary - (e.g. change sync polarity, change display position). Save the new setting by exiting the tuning image via the RETURN key. If you have modified the parameter and saved the new setting this entry appears at the end of the list in yellow with the remark `user`.

Note:
You can store a maximum of 6 user-defined settings.

Proceed as shown above for all resolutions and number of colors you want to work with and exit the Tuning Setup afterwards via the `Save` button to save all modifications.

If you change the monitor
Please note that you have to readjust the vertical refresh rate (via the menu `Monitors`) in case you change your monitor.

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Warning!

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If you permanently activate your monitor with a refresh rate that is too high for your monitor, you may damage it!

If you are not sure about the monitor frequencies your monitor supports, inform yourself about the resolution and refresh capabilities in your monitor manual.

The vertical refresh rates are automatically assigned to the chosen monitor frequencies (see also VGA table in the file BIOS.TXT on the Superdisk or in your SPEA directory).

Delete obsolete settings as follows:
1. activate the Tuning Setup after you have changed the monitor frequency.
2. search the user defined setting and activate the frequencies list.
3. click to the lowest possible frequency in the active list, start the tuning image and save the tuning image without any changes by the RETURN key.
   The user defined setting is now deleted and the optimal refresh rate for your monitor is selected (in yellow).

VESA Modes

VESA support is provided in the on-board BIOS. Applications and games can be executed without any further steps.

V7HFREQ - Higher Refresh Rates under DOS

The utility V7HFREQ.COM allows you to set higher refresh rates than 60Hz under DOS. If you selected the utilities option during the software installation, you will find the program in your SPEA\ GDC directory.
Start the program from this directory with the call:
    V7HFREQ ?
You will be shown an overview of all the possible parameters and options available.

S3TEST.EXE

S3TEST allows you to test your hardware. Start the program with the following call:
    C:\
    CD \SPEA\GDC
    S3TEST
You'll see colored stripes for about 7 seconds, then a list with the checked parts of your system appears.
To continue the program, press the space bar. You receive about 15 different screen displays to show you the various resolution and color abilities of your SPEA graphics card.
To cancel the program at any time press the CTRL + C keys.

Appendix B
Technical Details

Technical Data

- Processor: S3 Trio64V
- 2 MB EDODRAM onboard
- HighColor (65,536 simultaneous colors) up to 1024 x 768, 85 Hz n.i.
- TrueColor (16.7 mill. simultaneous colors) up to 800x600, 85 Hz n.i.
- VGA output connector
- Audio Line out on 3,5 mm mini phone jack to hook up with powered speakers or a soundboard

Memory Addresses of the V7-MIRAGE P-64

It is necessary to make sure that all I/O and memory addresses reserved for the graphics board are not used by other hardware devices.

Your board uses the following addresses:
I/O addresses:

Standard VGA I/O	3B0-3DF
Graphics Engine	x2E8-x2EA

Memory addresses:

Video RAM	A000-BFFF
PCI Bus:	
Video ROM	**C000-C7FF***

* During the boot procedure the board uses a 64k memory block (C000 - CFFF)!

Note:
Please note that some fax and modem cards also use the address 2E8 (COM#4). In this case deactivate COM#4 and use another address for the corresponding hardware device.

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Important!

In contrast to an ISA or VL bus graphics board, the PCI version of the V7-MIRAGE VIDEO requires double the amount of memory (64 kB instead of 32 kB Video ROM) *during the boot procedure*. It may occur that memory areas are occupied which are also addressed by other devices.
If you install devices with an own BIOS-ROM (e.g. SCSI-, ESDI controller or network card) please be aware of the fact that the memory area from C000 - CFFF may not be addressed. In this case it is necessary that you change the BIOS address of the other device (depending on the corresponding device via jumper or DIP switch).

</div>

Video Modes

Tables containing the video modes your board can handle can be found in the file BIOS.TXT on the Superdisk. This file is installed in your new SPEA directory during the software installation if you selected the option `'Utilities'`.

## The Output Connectors of the V7-MIRAGE VIDEO

VGA Output Connector

Pin	Function
1	Red
2	Green
3	Blue
4	Not used
5	ground
6	Red Return (ground)
7	Green Return (ground)
8	Blue Return (ground)

9   Key (no pin)
10   Sync Return (ground)
11   not used
12   not used
13   Horizontal Sync (+)
14   Vertical Sync (-)
15   Not used

Audio Out Connector

Line out to 3,5 mm mini phone jack

Audio Ausgang

VGA Ausgangsstecker
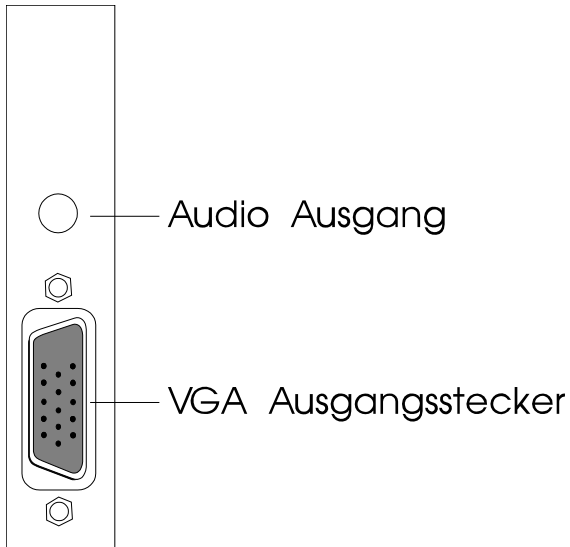
VESA-Compatible Feature Connector

The auxiliary VESA-compatible connector can be used to allow pass-through VGA to a coprocessor card that does not directly support VGA.

Pin	Function	Pin	Function
1	Ground	2	Pixel Data 0
3	Ground	4	Pixel Data 1
5	Ground	6	Pixel Data 2
7	(See Note)	8	Pixel Data 3
9	(See Note)	10	Pixel Data 4
11	(See Note)	12	Pixel Data 5
13	Unused	14	Pixel Data 6
15	Ground	16	Pixel Data 7
17	Ground	18	Pixel Clock
19	Ground	20	Blanking
21	Ground	22	Horizontal Sync
23	Unused	24	Vertical Sync
25	No Pin (key)	26	Ground

Note:
7, 9, and 11 are inputs to the DAC. All are active LOW.
7:    External Pixel data
9:    External Sync and Blanking
11:   External Pixel Clock

Appendix C
Troubleshooting

General Considerations

Make sure the SPEA board is firmly seated in its expansion slot, and that it is not touching other boards in your system.
Be sure your monitor cable is properly connected to the SPEA board and that your monitor power switch is on. You may also need to verify your cable pinout, since some monitors use a non-standard configuration.
Recheck your computer's switch and jumper settings.
Run the SPEA board Diagnostics Program (S3TEST.EXE). It is located in the directory C:\SPEA\ GDC.
Make sure other peripherals such as EMS cards, disk controllers or LAN cards are not using the same memory address as the SPEA board. Check with the manufacturer or your user's manual for information about designating exclusions for memory locations when invoking your device driver.

Some other things to think about
Your AUTOEXEC.BAT or CONFIG.SYS file may contain commands that are interfering with the operation of the SPEA board. Try booting your system without these files. If the SPEA board works properly, identify and remove the conflicting command(s).

Systems with motherboard VGA controllers
If your system has a display controller on the motherboard, be sure to disable it before trying to run the SPEA board. Consult your com-puter's User Manual for the correct switch or jumper settings your motherboard requires.

Problems with CD ROM Drives

If you have problems with your CD ROM drive consider the following general notes:

There are three types of CD-ROM available, that confirm to different standards, and are not therefore compatible with each other. They are as follows:
Yellowbook: Conventional CD-ROM
Greenbook: Used for linear video, typically used in Philips CD-I players (384 lines)
Whitebook: Used for digital video VideoCD (352 lines).

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<div align="center">**Warning!**</div>

To play VideoCDs with the SPEA SHOWTIME PLUS you must have a Whitebook type CD-ROM drive. As the VideoCD format of data is very new, older type CD-ROM drives may not be able to read the data. If you do have problems reading data from a VideoCD, you may find that a software update for your CD-ROM drive will help.

</div>

- Only use CDs explicitly labelled 'VideoCD'.

- Check that SMARTDRV.EXE is being loaded *before* MSCDEX.EXE (AUTOEXEC.BAT)

- Use the latest driver version for your CD ROM drive; it is possible that older driver versions are not able to read the VideoCD format.

- To read CDs you need about 500 KB conventional memory. You may see an error message that the CD cannot be read or messages that the SPEA MCI driver does not work correct. In this case, delete or REM out all drivers you don't need urgently from your CONFIG.SYS and AUTOEXEC.BAT file and restart your system.

- Only use CD ROM drives that support the default reading access and fulfill the ISO 9000 rules. A list of CD ROM drives tested by SPEA can be found in the README file in the SPEA directory.

Problems with VideoCDs

As Video CD is a very new technology, it is likely that many of you are using the format for the first time. In the same way that you encounter picture problems with VHS tape recordings, you can

encounter comparable problems in the VideoCD format. This section describes various symptoms and their causes.

Picture display problems can be internal to the quality of the pictures on the VideoCD. Not all VideoCDs have the same picture quality, and thus the resulting picture quality as playback may not be constant for all VideoCDs.

Macro-blocking: Also known simply as 'blocking' or 'jagging', is caused by a lack of bits (binary digits) to store all the information, and happens when the VideoCD movie is created. The area of the picture for which there is insufficient information (bits) will be displayed as simple 8x8 or 16x16 blocks.

Unreal stillness: This is when an object (such as a tree in the background) appears to absolutely motionless. This can happen during VideoCD creation, where the object is moving so slightly as for the motion to be ignored by the movie conversion process.

Digital rain: This term describes a number of undesirable picture effects. One example of this is a small stationary object that appears in one frame, then disappears for a few frames, then reappears. This and other effects tend to be more apparent in earlier VideoCDs than ones more recently created.

Mosquitoes: This effect can occur especially at the edges of moving objects, due to the number of bits of data concentrated about the point of movement. If can give the impression of a heat-haze or fuzziness in the picture.

The picture quality of VideoCDs made in America can vary from those made in Europe. American manufacturers favour sharper image, which can be clearer but be more prone to the above problems. European manufacturers favour a softer image, which can look more pleasing, and be less prone to the above problems.

Note:
A VideoCD cover that is not marked 'VideoCD' is not suitable for use with the Whitebook CD-ROM standard, and will therefore not be compatible with your system. Unfortunately, VideoCD labelling is not as consistent as it might be, so check with the sales staff before making your purchase.

Software Troubleshooting

May be you have some problems with your operating system, with a SPEA Tool or with other Software applications. If this is the case, we want to refer to the SPEA CD. There is a section 'SPEA Product Information' with a subsection 'Support', where you can find a lot of tips and tricks and troubleshooting for problems with various systems, under Windows, Windows® 95 a.s.o..

Start the SPEA CD from your CD ROM drive, select 'SPEA Product Information', 'Support and Drivers', 'Tips and Tricks from the SPEA ExpertLine'. There select the items suitable for your problem.

Appendix D
Glossary

Analog Display
A monitor that uses variable color control voltages to display a very large number of colors but requires very few inputs.

ANSI
American National Standards Institute.

ASCII
American Standards Committee on Information Interchange. A standard used by IBM and compatible computers to represent numbers and characters in binary form.

Authoring Systems
Authoring systems are used to create multimedia applications. They combine existing presentation information (texts, images and sound) and control the flow of these during the multimedia show. The dialogue with the user is controlled with this software. The individual information must have already been created and saved with special programs.

AUTOEXEC.BAT
A batch file that directs the activities performed by the computer during system startup.

AVI
Audio **V**ideo **I**nterleaved. AVI files are the standard format for digital video films on Pcs.

Bandwidth
The required capacity for the data volume and transmission rate.

BIOS
Stands for Basic Input-Output System. Code in your computer's ROM (Read Only Memory) that provides the power-on self test and other operating functions.

BitBlt
Bit Block Transfer refers to the ability of a system to move pixel blocks (in a rectangular area, e.g. in a window) very quickly. The contents of the rectangular area are rapidly refilled with the orginal contents.

BMP (Windows Bitmap)
This format enables Microsoft Windows to display images on devices with similar capabilities in a consistent way. Save pictures in this format if you wish to continue to process them later under Windows.

Booting/Booting Up
Starting the computer. There are two types. Warm Booting is accomplished by simultaneously pressing the CTRL/ALT/DEL keys and can occur only when the computer is running. A cold boot requires activation of the ON/OFF switch.

Brightness
The brightness of an image is determined by the amount of light emitted by it. No light (black) therefore means 'no brightness', whereas pure white light menas 'maximum brightness'.

CD-I
Compact **D**isc **I**nteractive. A technique developed by Philips in order to playback games, films and music videos on a CDI player.

CD-ROM
High-density medium to store digital data. CD-ROMs have read-only status. There are different CD-ROM formats:

YellowBook: conventional CD-ROM format
GreenBook: used for linear video, this is typical for CD-I's (see below)
WhiteBook: used for Digital Video VideoCDs.

CGA
The IBM Color Graphics Adapter.

Channel Number
A MIDI device can have three connections - MIDI-In, MIDI-Out and MIDI-Through. The last is used to pass on data group information without changing it. This enables the user to cascade several devices. To select a particular device, the MIDI information is passed on to an identifying channel number from 1 to 16.

Cinepak
Software-Codec. Makes fast decoding possible. Good image quality possible as long as the image dimensions are not increased. The video encoding process is time-consuming.

CODEC
Compressor / Decompressor, responsible for the compression and decompression of image data.

Color Display
A type of monitor capable of displaying information in color. It is often called an RGB (red, green, blue) monitor, referring to the signals needed to drive it.

Color Palette Conversion
Conversion of video data from the YUV color model into the RGB color model, or v.v.

CONFIG.SYS
An ASCII file that is created to provide the computer with special information about applications and hardware.

Contrast
The contrast of an image is the difference between light and dark. A contrast-intensive image is one in which contains strong transitions from light to dark. A contrast-weak image contains transitions that are hardly noticeable.

Data Transfer Rate
The data transfer rate describes the amount of data transferred to or from the storage medium (e.g. hard disk) per second. Each data storage medium has a specific data transfer rate which it can handle. Typical values are:
- old hard disks 300 KB/s
- new hard disks 600 KB/s
- standard CD-ROM drives 150 KB/s
- DoubleSpeed CD-ROM drives 300 KB/s

DCI
Display **C**ontrol **I**nterface. An interface defined by the Intel and Microsoft corporations, which enables enhanced graphics performance due to direct access to the video memory.

Default Mode
The capabilities, resolutions and display mode the system operates with when you start your computer.

Digital Display
Also called TTL. A type of monitor that switches signals ON or OFF to determine display color. Types of digital displays include the IBM Enhanced Color Display or Monochrome Display.

Digital Video
Digital videos contain optical information bitwise in a file.

DIP Switch
Dual Inline Package switch; a series of tiny, two position switches which allow users to select and change options on computer boards, printers, and other peripherals.

Driver
Part of a software program that interacts with a particular piece of equipment in your computer system (i.e. video boards, printers, and keyboards). Drivers are often loaded by your config.sys at system boot.

Dropped Frames
The images of a video which are not displayed or recorded when replaying (resp. recording).

EEPROM
Electrically eraseable programmable read only memory; used to replace DIP switches and jumpers on new graphics boards like yours.

EGA
The IBM Enhanced Graphics Adapter.

EMS
Enhanced Memory Specification. Originally developed to break the DOS 640K limit, it is now used as a general term for types of add-in memory.

Enhanced Color Display (ECD)
The IBM Enhanced Color Display capable of 640 x 350 resolution.

EPS (Encapsulated PostScript)
EPS is a device-independant file format, which contains all the information required to reproduce an image directly on a PostScript printer or to use it in suitable applications. A small header section contains the data of the image als a TIFF-format file so that applications that can not display PostScript data directly can still obtain an impression of the file contents.

Expansion Board
A device used to expand a computer's capability.

Expansion Slot
An electrical connection within the computer used for the addition of Expansion Boards.

Fill-in Images
When video data is being saved onto a CD-ROM (during manfacturing) the images are normally 'polstered' with fill-in images so that each video file completely uses the assigned 2KB area. This ensures a constant data rate and a smoother playback appearance. The file size is not changed by doing this.

Fixed Frequency Monitor
An analog monitor which can only sync to a very narrow range of scan frequencies.

fps
frames **p**er **s**econd. Measurement unit for the frame rate.

Frame
Single video image.

Frame Rate
Number of images shown per time unit. Software videos have a fixed frame rate. When playing back the actual frame rate achieved can differ to the rate defined in the video considerably.

Framegrabber
If an overlay board (see below) also contains a realtime video digitizer (= frame grabber), then the user can capture a random frame from the video sequence being replayed and can save this onto his hard disk.

General MIDI
The MIDI Association's MIDI Song File standard has established itself as the General MIDI standard for the exchange of MIDI music data between different PC systems.

GIF (Graphics Interchange Format)
A graphics file format developed by CompuServe to enable the device-independant exchange of images between systems. GIF-format files can be up to 64MB in size with color information up to 256 colors (8 bits). GIF files do not contain information about the image resolution.

Greyscales
A greyscale image consists of different shades of grey (like a black-and-white photograph). This normally menas that 254 different greyscales plus black and white (= 256) are used.

Hardware Cursor
The cursor's movements and display are controlled by the accelerator chip. This means that the CPU only has to pass the mouse co-ordinates to the graphics board, reducing the CPU's workload.

Hercules Graphics Card (HGC)
A video adapter that provides bit mapped single color graphics.

Hexadecimal Notation
A base-16 numbering system that uses numbers and letters. The hexadecimal sequence begins: 1 2 3 4 5 6 7 8 9 A B C D E F, then 10, 11 etc.

Horizontal Frequency
The rate at which a monitor displays each scan line. Usually measured in kilohertz (kHz).

I/O Port
Input/Output port. An address used to access a hardware device.

Image Compression
Technique used to reduce the volume of data in digital image and video files.

INDEO
Intel Vi**deo**. Compression technique developed by Intel. Gives good quality but requires a high level of processing work to decompress.

Indexed 16 and 256 Color Images
Indexed color images contain a color table in the file. This table lists all the colors that could be used in the file. An indexed 16-colour image contains a table with 16 colour entries (4 bits) whereas an indexed 256 colour image 256 colours are listed (8 bits).
Other colors can be simulated in a way similar to using greyscales in a black-and-white image, by simply positioning the pixels in varying densities. The eye then sees color mixtures that are not actually in the color table.
You can transform images into indexed color images in order to load them into programs such as Windows Paintbrush, or just to see them on monitors that can only display 256 or 16 colors.

Interlaced Display
A monitor that refreshes every other scan line every other pass of the screen. A non- interlaced monitor refreshes the entire screen (every scan line) every pass of the screen.

Interleave
A technique used to organize audio and video data so that every audio data segment is followed by video data, e.g. AVAVAV.....

Interrupt Request (IRQ)
Signal used by a device, such as a mouse, to inform the CPU that it is present and functioning.

JPEG
A new compressed file format industry standard developed by the Joint Photographic Experts Group. It enables compression ratios up to 100:1 (original file size to compressed file size). A new feature of this standard is that it is device-independant. These files can be replayed using any application that supports this format. JPEG differs from the LZW compression method in that it works with quality loss. This means that some of the original data is lost during the compression phase. In order to surpass this visual effect JPEG compression attempts to 'lose' information which is less important to the human eye. Use this format if you don't have much memory space available or if you are processing very large image files.

Jumper
A small plastic plug that fits over a pair of pins. When the plug straddles two pins it makes an electrical connection. The computer makes decisions based on whether the connection is made or not. A group of jumper pins is called a jumper block.

Keyframe
Technique used to compress video data whereby certain frames are defined as 'keyframes' and are fully saved during compression. The video data of the frames between two keyframes are only partially stored. During decompression the 'partial frames' use the information stored in the keyframes.

Line Drawing
This is a hardware function of the graphics processor chip. Only the starting and ending co-ordinates of a line are supplied by the CPU. The rest of the work drawing the line is then done by the graphics processor.

M-JPEG
Motion **JPEG**. A codec (see above), which is especially suited to video processing. Hardware decompression is strongly recommendable for this.

MDA
The IBM Monochrome Display Adapter.

MIDI
Musical **I**nstrument **D**igital **I**nterface. A serial interface used to link computers, synthesizers and other electronic sound generating devices.

Monochrome Display
Monitor that displays information in one color only; sometimes called a black & white display.

MPC
Multimedia **PC**. This trademark is intended to help consumers when purchasing hardware and software (similar to the VHS symbol used in the video product market).

MPEG
Motion **P**icture **E**xpert **G**roup. The compression method known as MPEG 1 is suited to digital video playback. A hardware decompressor is necessary.

MPEG
MPEG stands for Motion Pictures Experts Group, a group of the ISO committee for standards. With the MPEG format an international standard for the display of 25 images per second and a transmission rate of between 150 and 300 KByte per second is defined. Through a highly sophisticated compression method MPEG is a way to display full sceen and full motion video with CD sound quality using little memory.
This way, MPEG files can be played back as well as Video CDs, interactive programs and presentations.

MT-32
The MIDI module MT-32 created by Roland.

Multi-frequency Monitor
A type of monitor that supports a wide range of horizontal scanning frequencies and vertical refresh frequencies. This type of monitor accepts inputs from many different video display adapters.

NTSC
National **T**elevision **S**tandards **C**ommittee. The committee responsible for the definition of the north american television standard (with the same name). NTSC creates 30 images per second.

Overlay Boards
Overlay boards are able to digitize video images being input in realtime, to synchronize the data with the random segment of the screen and to show both images (incoming video signal and background screen image) simultaneously on the PC's monitor. The result is a window showing a video film which is placed over a background (e.g. a Windows application).

PAL
Phase **A**lternation **L**ine. PAL is the television standard used in Germany and Great Britain. The video signals are transformed into 25 images per second.

Palette
A selection of colors from which to choose. Your board provides as many as 16.7 million simultaneous colors from a palette of 16.7 million. This capability is sometimes referred to as TrueColor. It is believed that the human eye can discern no more than 16.7 million colors.

PCX (PC Paintbrush)
This file format was developed by Zsoft Corporation for PC Paintbrush, one of the first computer

drawing programs. It is the standard format for many scanners and drawing programs. Some versions of the PCX format don't contain any information about the resolution of the image.

Peripheral Equipment
Auxiliary equipment connected to a computer (e.g. monitor, printer, keyboard, etc.).

Pixel
Short for picture element; the smallest field displayed on the monitor; could be compared to the dots which form images in photos printed in newspapers. Also called pel.

Poligon Fill
A special hardware (chip) routine used to fill polygons with pixel information.

Primary Display
The monitor that is active when you power on your system.

PS/2 Display Adapter
The IBM VGA board for Industry Standard Architecture (AT bus) computers.

RAM
Random Access Memory; memory that can be read from and written to.

Resolution
The number of pixels (from picture cells) in both horizontal and vertical directions.

Resolution
Number of pixels displayed on the monitor. The higher the resolution, the crisper and sharper the images appear.

RGB 8Color
RGB8 color file types are 3 bit types in which each pixel can have one of 8 colors. The RGB8 color images are automatically transformed into indexed 16 color images whereby the 8 colors are retained but space for further 8 colors is created. It is not possible to transform an existing file into an RGB8 color file type.

RGB Color Model
Monitors use additive mixing of the three basic colors red, green and blue to create images on the screen with an infinite number of colors. Image data is therefore processed via data for RGB color combinations. The combinations of the three basic colors create a color model whose origin is the colour black and the opposite value is the color white.

RGB True Color
RGB stands for red - green - blue. All the colors that are used in this file are created additively mixing parts of the three basic colors. The parts of the three basic colors can be varied in 256 steps. If you mix all these colors together a total of 16.7 million possible color combinations is attainable (3x8 bits = 24 bits, 2 to the power of 24 = 16.7 million). As the human eye can not tell the differences between color hues from about this level, such an image is termed 'True Color', i.e. 'as in real life'.

ROM
Read Only Memory; memory space in your computer for storing permanent operating instructions.

Sample Frequency
If the data bandwidth is fixed then the incoming signal to a processing unit can be assigned to a whole number (value). The quantity of such values (samples) that can be taken per second is referred to as the sample rate or frequency.

Sampling Depth
Describes the number of bits used for each sampled value of the sound input. 8 bits are suitable for microphone recordings, 16 bits give higher quality but require twice the memory storage space.

Sampling Rate

Analogue accustic signals are digitized by the analogue/digital converter (ADC) on your sound or video board. The ADC component samples the audio signal in extremely short time intervals and stores the measured values. The number of sampled values per second is the 'sampling rate'. The usual rate for a low-quality recording of speech is 11.025 kHz. Better quality speech recordings or low-quality music recordings are sampled at 22.05 kHz. CD quality is attained at 44.1 kHz.

Saturation

The saturation refers to the purity of a color. A color with a high saturation value is optically very intensive. A color with a low saturation value appears weak (i.e. with less color content).

Scaling

Transformation of image data to different sizes.

Secondary Display

The monitor connected to the graphics card that is co-resident with another card/monitor in your computer system. Is not active upon booting your system.

Sound Files

The most common file type for sound files under Windows are WAV files.

Sync

The stable condition that exists when two repetitive events maintain a constant time relationship; your monitor is in sync with the signals from your board when the display is correct and stable.

Terminate and Stay Resident (TSR)

Programs that are run once then remain in memory in order to be activated by a sequence of key strokes or a 'hotkey.' It is possible that a TSR may take up too much memory and cause conflicts with other programs.

TGA (Targa)

Developed by the company True Vision especially for ist true color video boards (especially the Targa board), this is a format preferred by many specialists.

TIFF (Tagged Image File Format)

This format was developed by Aldus and Microsoft in order to promote the use of desktop scanners and DTP systems. Uncompressed TIFF files are hardware and software-dependant, however there are different incompatible compression methods. Select this format for the maximum compatibility with other applications and to improve the compression level.

TrueColor

The ability to display 16.7 million simultaneous colors. It is believed that the human eye can discern no more than 16.7 million colors. See 'palette'.

Variable Frequency Display (VFD)

A monitor that is capable of displaying a wide range of resolutions through it's ability to sync to a wide range of horizontal and vertical scan frequencies.

Vertical Frequency

The rate at which the monitor screen is refreshed. Usually measured in hertz (Hz).

VGA

The IBM Video Graphics Adapter.

Video CD

The VideoCD specification was published in 1993 by JVC, Matsushita, Sony and Philips as the so-called 'Whitebook' standard. Using this up to 74 minutes of digital video compressed with the MPEG 1 technique can be stored on a CD. The image resolution is 352 x 240 pixels and 30 frames per second for the NTSC standard and 532 x 288 pixels at 25 fps for PAL.

Video Connector

The standard 15-pin monitor output connector located on the board.

Video Electronics Standards Association (VESA)

industry-wide consortium organized to standardize graphic modes. Your board supports the VESA standards.

Video Keying

This term refers to the process of mixing two video and computer graphics signals.

YUV Color Palette

The image information of individual frames is comprised of a brightness part and 2 color parts. The color part is calculated by evaluating the difference to the brightness value. This method was first utilized in television technology.

YUV Signal

A video signal that is comprised of a brightness part (luminescence Y) and two color parts (chrominance U and V). Due to the characteristics of the human eye, it is enough to transfer the color parts with a lower resolution. This mixture is technically achieved by only evaluating 2 chrominance signals U and V compared with the 4 values calculated for the luminescence. This results in statements in the format 4:2:2. Other constellations are possible.

Zooming

Increased display of an image section.

Index