SPEA CRUNCH IT

User Manual

Benutzerhandbuch

Manuel d'emploi

Manual del usuario

SPEA
SOFTWARE AG

Copyright 1995 SPEA

The information furnished in this manual is believed to be accurate and reliable. However, SPEA assumes no responsibility for its use; nor for any infringements of patents or other rights of third parties which may result from its use.

SPEA reserves the right to change the specifications of the products described in this manual in the interests of technical progress at any time without notice. No part of this document may be reproduced by any means, nor translated to any medium without prior, written consent from SPEA.

The installation program used to install the SPEA Superdisk, INSTALL, is based on the licensed software provided by Knowledge Dynamics Corp., Highway Contract 4, Box 185-H, Canyon Lake, Texas 78133-3508 (USA), 1-512-964-3994.

Knowledge Dynamics Corp. reserves all international copyright and protection rights. The INSTALL program is provided for the exclusive purpose of installing the SPEA Superdisk.

SPEA has made modifications to the software as provided by Knowledge Dynamics Corp., and thus the performance and behaviour of the INSTALL program supplied with the SPEA Superdisk may not represent that of INSTALL as supplied by Knowledge Dynamics.

SPEA is exclusively responsible for the support of the SPEA Superdisk, including the support for the installation. SPEA is reponsible for the technical support.

Registered Trademarks

IBM PC and PC-DOS are registered trademarks of International Business Machines Corporation.
MS-DOS is a registered trademark of Microsoft Corporation.
MultiSync is a registered trademark of NEC Corp.
PCI and PCI Local Bus are registered trademarks of the PCI Special Interest Group (SIG).
VESA is a registered trademark of the Video Electronics Standards Association.
Windows is a registered trademark of Microsoft 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: "Switch to the CD drive (e.g. D:) and enter the path of the desired driver, e.g.

    D:\SPEA\INSTALL\MERCURY.P64\WIN

for the Windows driver for the V7-MERCURY P-64 board.
Other subdirectories could be 'DOS&UTIL' (for utilities and DOS tools) and 'OS2' (for OS/2 driver software).

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

Quick Installation

This Quick installation is for **experienced users only!** Other readers should take the time to read the manual.

1. Make a backup copy of the disks supplied with the board.

2. Check that your monitor and system configuration support the SPEA card (e.g. correct bus type and version).

3. Disconnect your computer from the main power and peripheral equipment.

4. Install the SPEA CRUNCH IT in a free extension slot and secure it.

5. Reassemble your PC, connect peripheral equipment and reconnect the power cable.

6. Connect peripheral equipment (e.g. video recorder, video monitor) to the video in and out connections of the SPEA CRUNCH IT.

7. Switch on your monitor first, then the computer.

8. Insert the SPEA installation disk and start the software installation under Windows with the following entry:
   A:
   SETUP

   (**Warning!** If you have additionally installed a SPEA SHOWTIME PLUS in your system, run the software installation of this board BEFORE you install the SPEA CRUNCH IT).

9. Install the additional video editting software.

Problems?

In the unlikely event of problems ...

1. Check the README file on the SPEA Installation disk #1, the Media Gallery CD or after the installation the directory C:\SPEA\CRUNCHIT.

2. Read *Appendix C: Troubleshooting*.

3. If you have installation and application problems with your SPEA graphics board you can obtain technical support via the SPEA Support Mailbox.

4. Take note of your warranty - see *section Introduction.*

5. Contact the SPEA ExpertLine (see last pages in this manual)

Warning!

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.

General Information

- 'Pixel Shrink' manual

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 3-5	Provides information for installing the application drivers included on the SPEA Superdisk or Media Gallery CD.
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 are indicated by this format.
Screen messages are shown in `Courier`.
References to **other parts of the manual** are shown in *italic*.
Directory names mentioned in this manual are examples and are written in capital letters.
The SPEA software is delivered on 3,5" disks. Therefore, the documentation refers to disk drive A:. Please enter B:, if your 3,5" disk drive is addressed with B:.

Delivery Scope Checklist

Your SPEA package should contain the following items:
- 1 SPEA CRUNCH IT board
- 1 SPEA Movie Bus connection cable
- the following 3.5" disks:
    2 SPEA Installation disks
    3 disks (or 1 CD) 'Video Maestro' (Software Dynamics)
    2 disks 'PixelShrink' (CeQuadrat)
- this manual

Last-Minute Changes - README file

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

- software updates on CD via the SPEA Media Gallery CD.

Further information concerning these support services can be found in the 'SPEA ExpertLine' section on the last pages of this manual.

Company Address

SPEA Software AG
Moostr. 18B
D-82319 Starnberg

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

Part 1
Introduction

What is the SPEA CRUNCH IT and what is it used for?

The SPEA CRUNCH IT enables you to transfer videos from your video recorder to your PC and vice versa. You have the possibility to edit the transferred video material on your PC. With the delivered video software, you can cut video sequences, define titles and add a soundtrack to the video and transfer it back to the video recorder. With the corresponding image processing programs, multimedia databases and presentation programs a.s.o. you can re-use the video material.

Features of the SPEA CRUNCH IT

- ZORAN ZR 36050/055 Motion JPEG Controller

- Real time and True Colour digitizing in YUV format

- frame format adjustable from 320 x 240 pixels up to 768 x 576 pixels

- digitizing in full frame rate, 50 fields (25 frames) for PAL and SECAM and 60 fields (30 frames) for NTSC

- ISA bus board, can be combined with any VGA board

- Video Input : (video recorder, laser disk or camcorder in PAL, NTSC or SECAM format)
  - 2 Composite Video in
  - 1 Y/C (S-VHS, Hi-8) Video in

- Video Output (for video monitoring while digitizing and outputting the M-JPEG sequences on video):
  - 1 Composite Video Output
  - 1 Y/C (S-VHS, Hi-8) Video Output

- SPEA Movie Bus (YUV Bus) for transferring the video data to the multimedia boards SPEA SHOWTIME PLUS or SPEA PLAY IT

- variable compression rates from 1:5 up to 1:100 with full resolution

- correction of brightness, contrast, colours a.s.o.

Check the glossary in this manual for a brief description of the abbreviations used here.

Software for your Board

The standard software delivery scope of the SPEA CRUNCH IT contains the following programs:

- Menu driven installation program to easily install the software

- Software drivers for Windows and Video for Windows

- Utilities for the configuration

- Video Software
  Video Maestro (Software Dynamics)
  PixelShrink (CeQuadrat)

Part 2
Hardware Installation

Installation of the board

System Requirements and Considerations

IBM compatible **computer** (486/586) with a free ISA bus expansion slot

MS-DOS **operating system** MS-DOS or PC-DOS, version 5.0 or later

8 MB **RAM**

Hard disk capacity
- about 100 MB free disk space,
  ideally defragmented;
  (recommended: 1 GigaByte or more)
- Transmission rate (write / read) under
  Windows ca. 400 Kbyte/s;
  (recommended: at least 1 MB/s)
- 32 Bit Hard disk driver (Enhanced IDE or
  SCSI)
  (recommended: hard disk with AV (Audio /
  Video) firmware)

Graphics Board and Monitor
- 256 colours
  (recommended: High - or TrueColour)
- 640 x 480 pixels
  (recommended: 800 x 600 or 1024 x 768
  pixels)

Video In
Video source such as a video recorder, video camera a.s.o.)

Video Out
Output device, e.g. video monitor or video recorder + video monitor

Audio
Windows compatible soundboard, if sound should be edited.

Typical System Configuration

A typical configuration environment for your board is described as follows:

- Tower 486DX4, 100 MHz, PCI bus (better: Pentium), 16 MB

- SPEA 2185 MS Monitor

- Video source: video recorder or video camera

- Video output: video monitor or video recorder

- Windows compatible soundboard - if sound should be edited

- Double speed CD ROM drive

Warning!
Prevent damage by static electricity. Static electricity 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 ist 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.

Preparing the Installation

1. Switch off your computer and all external options (printer, display and others) and unplug all power cords from the electrical source.
2. Remove the cover mounting screws and save them for later.
3. Remove the cover of the computer.

Installing the SPEA Card

The SPEA card is installed in a free ISA bus 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.
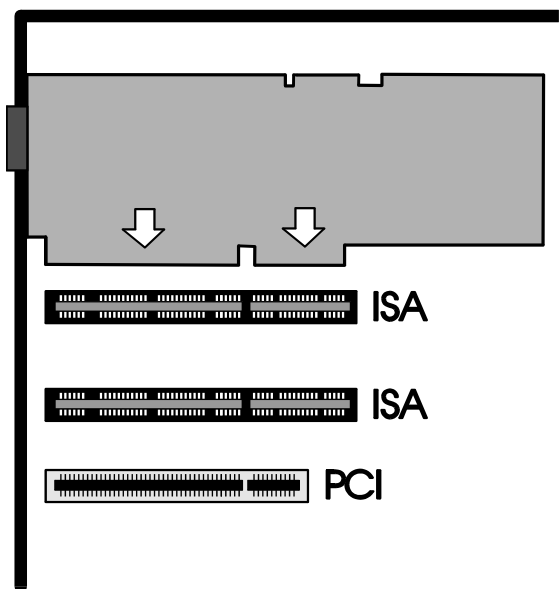
Installing the Card in an ISA Slot

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. Install the multimedia board - if necessary - e.g. the SPEA SHOWTIME PLUS or a Windows compatible Soundboard (e.g. V7-media fx; see the corresponding manual) in your system.

5. This step is only valid for the SPEA SHOWTIME PLUS:
   Connect the SPEA Movie Bus of both boards with the SPEA Movie Bus connection cable supplied with the SPEA CRUNCH IT. Secure the cable on the SPEA Movie Bus so that the red stripe is positioned at pin #1 on both boards (see also the diagram on page 10 of this manual).

6. As soon as you have installed all boards (VGA board or SPEA SHOWTIME PLUS, SPEA CRUNCH IT and possibly a soundboard) in the system, secure ribbon cables and gently push them down and out of the way before you replace the system cover.

7. Fix and secure the system cover on the PC again.

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

Read the next sections to see how to proceed with connecting the peripheral devices.

Connecting External Equipment

The connectors on the board are standardized, with the exception of the SPEA Movie Bus (see Appendix B, Technical Details). For this reason, you only need to take note of a few points when making connections to external equipment.

Video Inputs

Composite Video Input #2

Composite Video Input #1

Y/C Video Input

Video Outputs

Composite Video Output
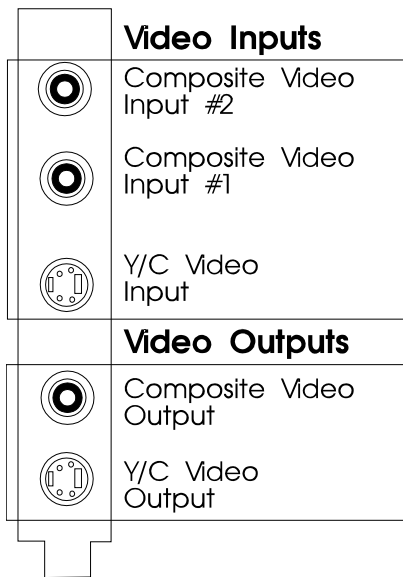
Y/C Video Output

Inputs and Outputs of the SPEA CRUNCH IT

- Composite Video In
  This can be connected to a video source such as a video recorder or a video camera. **Note that the antenna signal from the wall socket is not suitable!**

- Y/C Video In for S-VHS video or Hi-8:
  Use this input if your video device offers this connection (e.g. a S-VHS or Hi-8 video recorder). You'll attain better picture quality.

- Composite Video Output:
  For connecting a controlling monitor or a video recorder.

- Y/C (S-VHS, Hi-8) Video Output:
  For connecting a S-VHS or Hi-8 video recorder.

- SPEA Movie Bus
  This connector is intended for use with SPEA products, e.g. SPEA SHOWTIME PLUS of SPEA PLAY IT. This is **NOT** a Feature Connector.

In the next three sections, three different operating modes of the SPEA CRUNCH IT are described and illustrated.

Installation of the SPEA CRUNCH IT (Stand alone)

- **If you want to use the SPEA CRUNCH IT without an additional board (multimedia board or soundboard), please note that BEFORE you install and run the SPEA CRUNCH IT, a VGA graphics board must either be installed or already integrated in your system.**
- **If you install the SPEA CRUNCH IT without a SPEA SHOWTIME PLUS or a SPEA PLAY IT, you will need (in addition to your VGA monitor) a video monitor to check the video image. This is necessary, because the SPEA CRUNCH IT doesn't use overlay technology and on the PC only a blank window can be seen under Video for Windows. If you work with video editing software under Windows without a video monitor, you can use the preview function, because this feature is software driven. While capturing, only frames (no video) will be displayed.**

After both boards (the VGA board and SPEA CRUNCH IT) are installed in your system, connect the peripheral equipment as follows:
1. Connect the PC monitor cable with the VGA output of the VGA board.
2. Connect your video source to the corresponding video input connection of the SPEA CRUNCH IT.
3. Connect your video output device to the corresponding video output connection (video recorder and monitor) - either separate or the video monitor and the video recorder coupled together.

Note:
Always combine two similar connections, Y/C (S-VHS or Hi-8) with Y/C, and Composite with Composite!

| **Warning!** |
| Be sure to connect any peripheral devices to the computer and switch them on **BEFORE** switching on your computer. This avoids a damaging power surge, and the possibility of electrical discharge damage when live connections meet. |
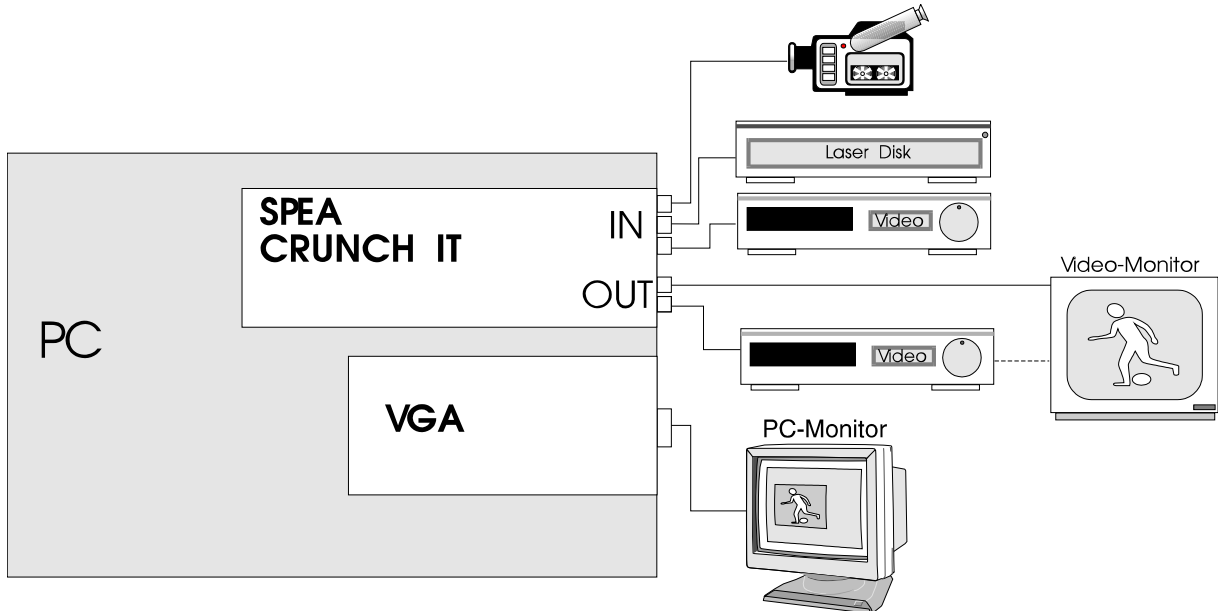
Configuration SPEA CRUNCH IT as a stand alone system

Installation of the SPEA CRUNCH IT with the SPEA SHOWTIME PLUS

There are several possibilities to connect the SPEA CRUNCH IT with external devices. The following example shows a configuration which allows you to use the additional functionality of a multimedia board.

In this operating mode the video image is inserted via the SPEA SHOWTIME PLUS in a window on the PC monitor. In this case a video monitor is not strictly necessary.

Warning!
If you use two activated VGA boards in your PC at the same time you may damage your system!

When you use the SPEA CRUNCH IT together with a SPEA SHOWTIME PLUS, please remove any other VGA boards from the system or deactivate VGA parts that are integrated on the motherboard.

After both boards (VGA and SPEA CRUNCH IT) are installed in your system, connect the peripheral equipment as follows:
1. Connect the PC monitor cable to the VGA output of the VGA board.
2. Connect your video source to one of the video input connections of the SPEA CRUNCH IT.

Warning!
As soon as you have installed the drivers of the SPEA CRUNCH IT, the video input of the SPEA SHOWTIME PLUS will be disabled!

3. Optional (not necessary for video editting): Connect your video output device to one of the video output connections (video recorder and monitor) - either separately or with the video monitor and the video recorder coupled together

Note:
Always combine two similar connections, Y/C (S-VHS or Hi-8) with Y/C and Composite with Composite!

Warning!
Be sure to connect any peripheral devices to the computer and switch them on **BEFORE** switching on your computer. This avoids a damaging power surge, and the possibility of electrical discharge damage when live connections meet.

Note for the Software Installation:
Install the software of the SPEA SHOWTIME PLUS **FIRST,** then the software of the SPEA CRUNCH IT!
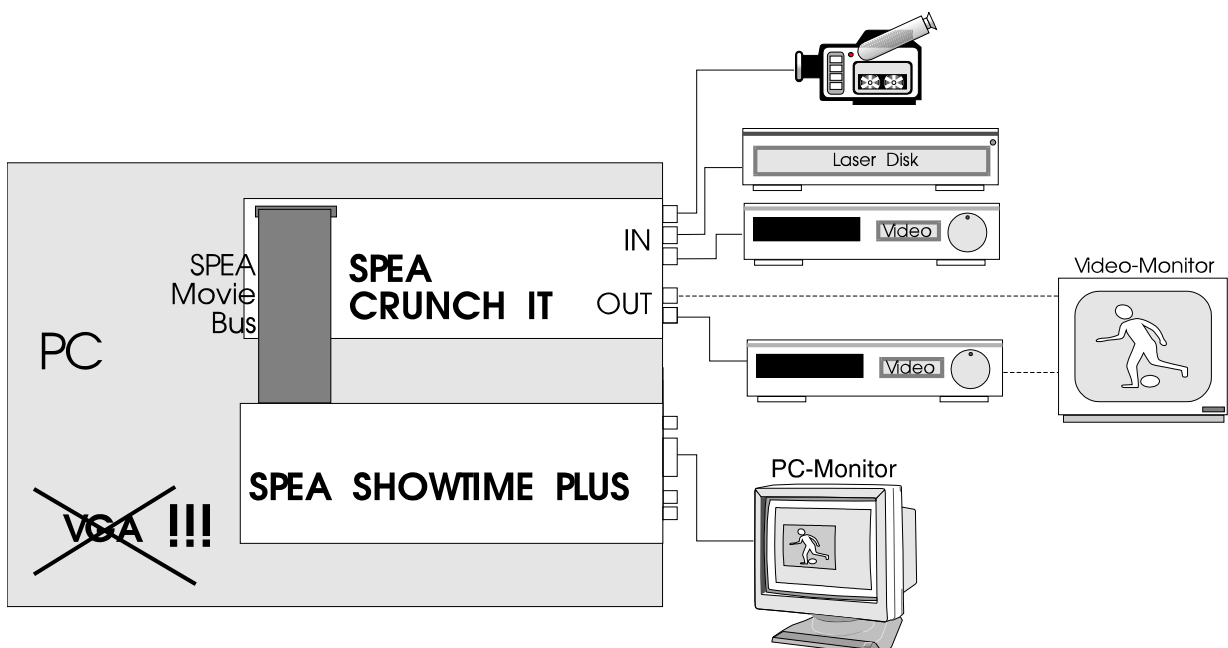
Configuration SPEA CRUNCH IT with SPEA SHOWTIME PLUS

Installation SPEA CRUNCH IT with a Soundboard (V7-media fx)

It is necessary to install a Windows compatible soundboard (e.g. SPEA's V7-media fx) if you also want to edit the sound of your video.

Instead of a SPEA SHOWTIME PLUS, you can also use a graphics board (whereby there is no audio connection between the soundboard and the graphics board).
After all boards are installed in your system, connect the peripheral equipment as follows:

1. Connect your video source and output devices as described in the previous section.

Warning!
As soon as you have installed the drivers of the SPEA CRUNCH IT, the video input of the SPEA SHOWTIME PLUS will be disabled!

2. Connect the audio output of the SPEA SHOWTIME PLUS with the audio input of the V7-media fx.
3. Connect the audio output of the video source with the audio input of the V7-media fx.

Note:
Always combine two similar connections, Y/C (S-VHS or Hi-8) with Y/C, and Composite with Composite!

Warning!
Be sure to connect any peripheral devices to the computer and switch them on **BEFORE** switching on your computer. This avoids a damaging power surge, and the possibility of electrical discharge damage when live connections meet.

Note for the Software Installation:
Install the software of the SPEA SHOWTIME
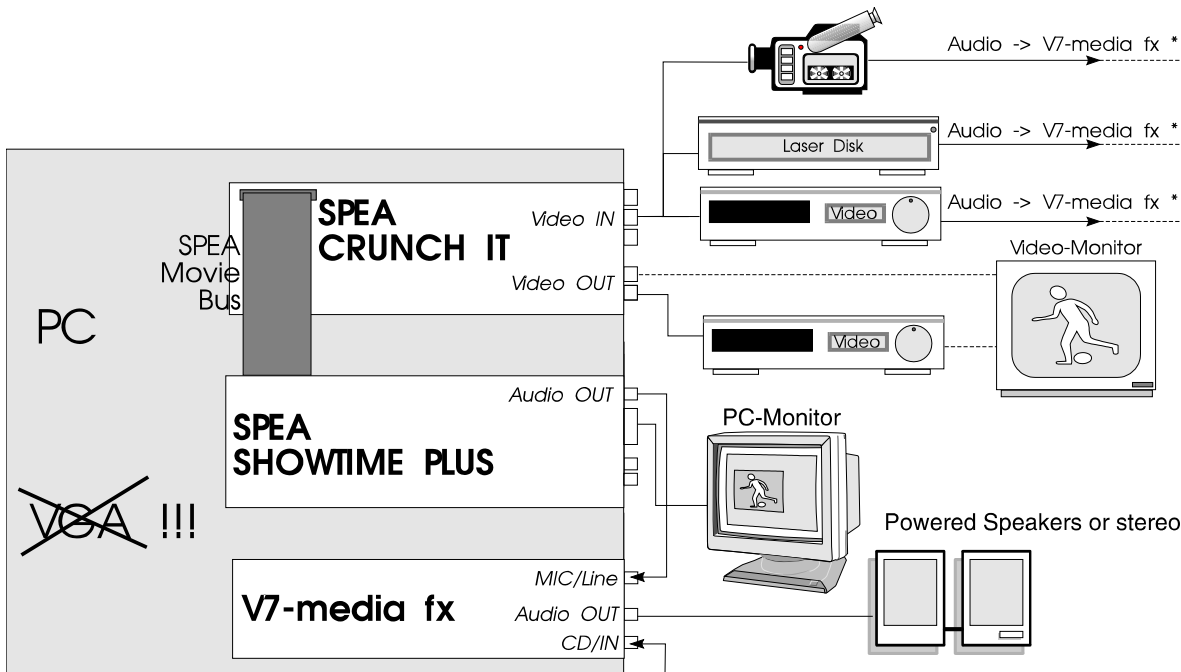
Configuration SPEA CRUNCH IT with the V7-media fx

PLUS **FIRST,** then the software of the SPEA CRUNCH IT!

* In order to play sound alternately from various audio sources it is advisable to use a mixer.

Warning!
Avoid feedback! (loud whistling noise). This can damage your devices and loudspeakers!

After Installing the SPEA Board

If you have correctly installed the SPEA board, the DOS prompt will appear 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)*.

Tips and Tricks for installing the SPEA CRUNCH IT

Defragment your Hard Disk
You can speed up your work if you defragment your hard disk (with the DOS 6.x command DEFRAG) before you begin.

Zone Bit Recording (ZBR)
Modern hard disks record less sectors on the inner tracks (=Zone Bit Recording) than on the outside tracks. Because a disk is filled from the outside to the inside, it will get slower the more it is filled.

Deactivate the Cache Function
If the 'Write Caching' function is activated, the continous dataflow to the hard disk can be interrupted.
Deactivate the 'Write Caching' or switch it off completely. Windows works very slowly with a deactivated cache. It is advisable to reorganize your hard disk into two partitions and to deactivate the cache function for the partition which will contain the stored video sequences.

In some cases (not always) it makes sense to deactivate the read cache for the drive which is used for storing the video sequences. This depends on your individual system configuration. A generalisation is not possible.

Install a permanent swap file
Install a permanent swap file under Windows. This will improve your performance under Windows and the Windows applications used, e.g. the video editing software, Video Maestro.

What you should consider if you buy a new Hard Disk
Check that the hard disk has a **fast access time** and (much more important) that the data transmission rate is as high as possible. If you look for the **data transmission rate,** be sure not to confuse the data for the interface speed (E-IDE 16 MB/s or SCSI 10 MB/s), with the actual transmission rate of the hard disk. A new hard disk should have a **data rate** of 1,0 MB/s. SCSI hard disks normally are faster than IDE hard disks.
It is very important that a **32 bit driver** (.386) for Windows is available for the hard disk (E-

IDE) or the SCSI host adapter used, otherwise Windows will not be capable of using the high speed of the hard disk.
It is advisable to use a **special Audio / Video (AV) hard disk**. These hard disks guarantee a high data rate without interrupts.
You will find more information in the README.ENG file on the installation disk.

Keep it simple to begin with
Although it may be tempting when installing the SPEA CRUNCH IT to connect your soundboard, SPEA SHOWTIME PLUS, video source a.s.o., it is wise not to try to do everything at once. Make sure your VGA board or multimedia board is installed correctly and works properly. The same applies to your soundbard - if installed in your PC.

Make the connections properly
If just one cable is not connected correctly, the flow of data will be broken and one or more parts of your multimedia system will not work properly. As many of the standard cables are very similar, it is possible to make a mistake.

VHS versus S-VHS
VHS video tapes can be played back with a S-VHS recorder, but vice versa there is no possibility to playback a S-VHS video tape with a VHS recorder.
S-VHS delivers significantly superior quality.

Part 3
Windows 3.x
Driver Installation and Configuration

Notes for the Software Installation:
- **If you have also installed a SPEA SHOWTIME PLUS is your system, run this software installation BEFORE you install the software for the SPEA CRUNCH IT!**
- **You must have already installed Windows on your system!**
- **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.**

1. Start Windows and insert the SPEA CRUNCH IT installation disk in drive A:.
2. In the Program Manager select `'File'` `'Run'` and enter the following command in the dialog box:

   A:
   SETUP

3. Follow the instructions on the screen. The necessary drivers for the SPEA CRUNCH IT will be installed onto your system.
4. Next, restart your system so that the changes take effect.

Note:
If you have problems with the installation with a PCI system, you can find more information in *Appendix C: Troubleshooting* in this manual.

Before you start to edit video captures on your PC you have to configure the SPEA CRUNCH IT under Windows as described on the next page.

Software Configuration of the SPEA CRUNCH IT under Windows

Warning!

During the driver configuration, or when you start the video editting software system, software crashes may occur if there is no video signal present at the video input of the SPEA CRUNCH IT.
In this case terminate Windows, activate a video signal and then restart Windows.

1. In the Program Manager's Main Group open the Icon 'Control Panel' .
2. Select the option 'Driver'.
3. In the dialogue box doubleclick on either of the following drivers:

```
'Crunch it-Motion JPEG Capture driver'
'Crunch it-Motion JPEG CoDec driver'
```

You will find yourself in the Board Setup Dialogue. Here you can change the base address and the interrupt number if, the SPEA CRUNCH IT doesn't work properly.

The default settings are:
Base=0x280 / Int=15.

If you use the SPEA CRUNCH IT together with a SPEA SHOWTIME PLUS

If you use the SPEA CRUNCH IT in combination with a SPEA SHOWTIME PLUS, you should switch the dialogue 'PIP' from 'No PIP' to 'Showtime Plus PIP'. This activates the SPEA Movie Bus which makes it possible to see an overlay image of the currently edited video image using video software.
If a SPEA SHOWTIME PLUS is not installed in your system, or if you want to remove it, switch (back) to 'No PIP' to communicate this to the driver.

The SPEA CRUNCH IT driver dialogues

You will have access to the following dialogue boxes when you have installed and configured these drivers and use them within a video edition software such as Video Maestro or Adobe Premiere.

Therefore it is necessary that you have installed the software completely. The driver dialgoues appear when you have selected the corresponding configuration option from within the software package.
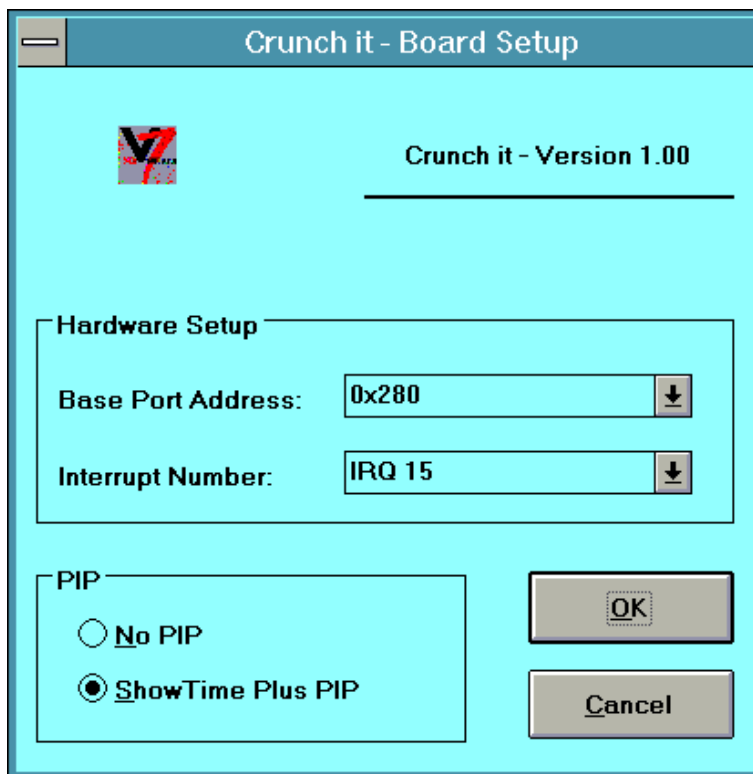
Video Format

•
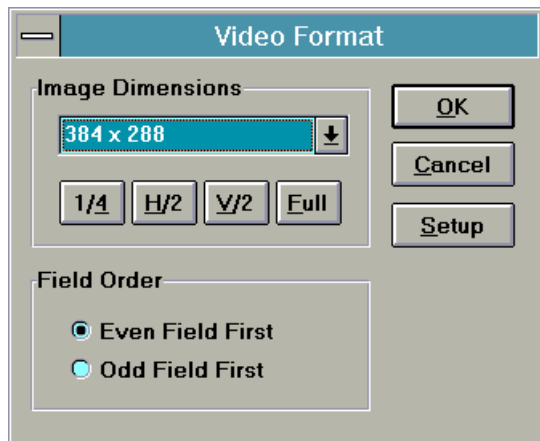
- **Image Dimensions**

Defines the resolution which you want to use for digitizing. Depending on the video standard set, you will have the following resolutions:

1/4   PAL: 384 x 288 pixels,
NTSC: 320 x 240 pixels,
these resolutions are also called SIF (Source Image Format).
With this setting, the digitized frame will be scaled by half on the x - axis. Only every second field will be processed, that means: PAL 25 fps, NTSC 30 fps

H/2   PAL: 384 x 576 pixels,
NTSC: 320 x 480 pixels; in comparison to the 1/4 mode, both fields are processed, that means:PAL: 50 fps, NTSC 60 fps

V/2   PAL: 768 x 288 pixels, NTSC 640 x 240 pixels, only each second frame is processed in full horizontal resolution

Full   PAL: 768 x 576 pixels, NTSC: 640 x 480 pixels; here the full video frame is used. Both fields are processed in full resolution.

- **Setup.Code Volume**

Defines the compression rate:

Note:

Only one setting at once is active. All options have an influence on the compression rate.

```
┌─────────────────────────────────────────────────────────┐
│ ─   Crunch it - Motion JPEG Configuration               │
├─────────────────────────────────────────────────────────┤
│ ┌─Code Volume──────────────────────┐   ┌─────────────┐  │
│ │                                  │   │     OK      │  │
│ │  ○ Bits/Pel          │ 2.000  │  │   └─────────────┘  │
│ │                                  │   ┌─────────────┐  │
│ │  ○ Compression Ratio │  30  │ :1 │   │   Cancel    │  │
│ │                                  │   └─────────────┘  │
│ │  ◉ Compressed Field Size │25000│ Bytes               │
│ │                                  │                     │
│ │  ○ KBytes per Second │  300 │    │                     │
│ │                                  │                     │
│ └──────────────────────────────────┘                     │
└─────────────────────────────────────────────────────────┘
```
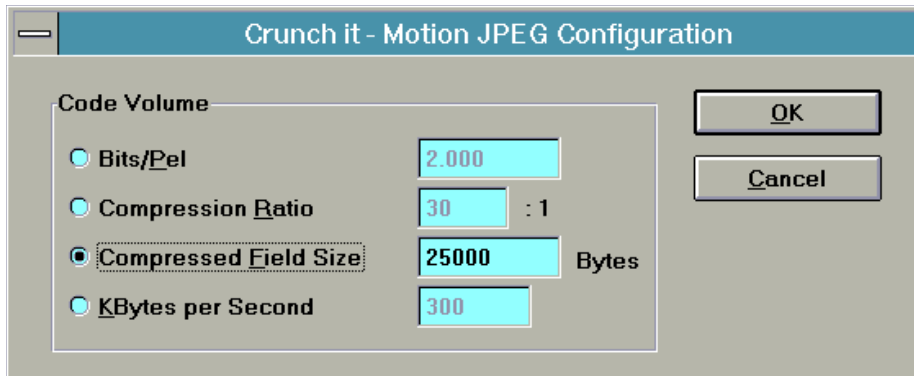
Bits/Pel   [2.0]

Bits per Pixel element (dynamic compression rate)

```
Example:
Frame resolution x (Bits/Pel / 8)=
Size of the compressed frame

384 x 288 x (2.0 /8) = 27648 = 27kB
```

Compression Ratio   [24]:1

Compression rate in the following ratio:
Data volume compressed frame / original data

```
Example:
Frame resolution x 2 x (1/Ratio) =
Size of the compressed frame

384 x 288 x 2 x(1/24) = 9216 = 9 kB
```

Compressed Frame Size   [20000] Bytes

Shows the size of a compressed single frame in Bytes.

KB per second   [300]

Shows the resulting amount of data in KB/s.
The setting assumes 25 (PAL) or 30 (NTSC) fps (frames per second).

Video Source
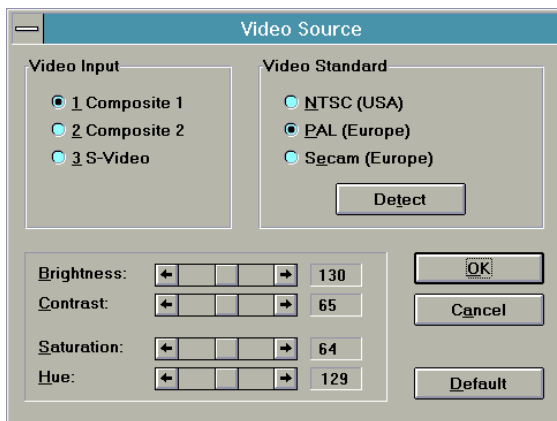
- **Video Input**

Selects one of the video inputs
- **Composite 1** (Video Input #1)
- **Composite 2** (Video Input #2)
- **S-Video** (Y/C Input)

- **Video Standard**

- **NTSC** (USA) {60 Hz}
- **PAL** (Europe) {50 Hz}
- **SECAM** (Europe) {50 Hz., e.g. France}
- Detect discovers which of the three standard video signals is sent to the selected video input.

- **Video Control**

The following settings correct the specific parameter during the digitizing process:
Brightness: controls the light content
Contrast: controls the contrast
Saturation: controls the color saturation
Hue: controls the colors

Default setting:
Video Input: 1
Video Standard: PAL
Brightness, Contrast a.s.o.: the average value for each

Video Display

This dialgoue sets the parameter required for the video output (with Video Encoder).
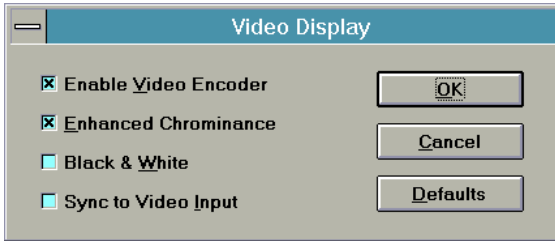
- [X] Enable Video Encoder
If, in a video network, another video device (than the video encoder) should produce a video output on the video output of the SPEA CRUNCH IT, deactivate this button [ ]. By default, the video encoder should be enabled [X] to generate video signals on the video output.

- [X] Enhanced Chromincance
Generates the chrominance (color information) with a higher range than the default range before the color information will be modulated onto the color carrier signal. For full resolution you should set enhanced chrominance, for smaller resolutions you should not use it.

- [ ] Black and White
If this option is activated [X], a black-and-white shot will be generated, while [ ] generates a coloured frame.

- [X] Sync to Video Input
With this setting, the video output can be run parallel to the selected video input.
Thus you can mix the signal generated by the SPEA CRUNCH IT afterwards with a video mixer.This is only possible with a special video equipment and therefore for a simple video output with monitor or recorder this option should be set to '[ ]'.

Part 4
Windows 95 Driver Installation and Configuration

The SPEA CRUNCH IT driver works with Windows 95. As a final Windows 95 version is not available yet, and additional changes and adjustments will be necessary, we would like to refer to the README file on the SPEA installation disk #1 (or after the installation in to the directory C:\SPEA\GDC) with all information about the current status concerning the SPEA CRUNCH IT driver and Windows 95.

Part 5
Video Maestro

VideoMaestro Programs

VideoMaestro is a collection of powerful tools for capturing, creating and editing digitial video.

The following software is included in *VideoMaestro*:

Video Capture

With the *Video Capture* program you can capture and digitize video from a variety of video sources, such as a video recorder, onto your hard disk. All video capture boards which are delivered with a Video for Windows capture driver are supported.

The resulting AVI video file can then be played back in any applications supporting the AVI format (i.e. *MediaMaestro*) or edited using the *Video Editor* software.

The software is extremely user-friendly and intuitive. Setup options such as the video size, color depth, compression rate, frames per second etc. can be made in one dialog box. Click on the *Start* button to start recording and the file will be stored on your hard disk in the AVI file format. A preview function is also provided for playback of the recorded video.

Video Editor

With the *Video Editor* you can edit, splice, add sound or titles to video files. New videos can be created using existing video, animation, image and sound files. Spectacular videos can be created for desktop presentations (e.g. *MediaMaestro*) and home video productions.

The easy-to-use 'drag and drop' interface lets you put your video together in the Construction Window in just minutes. On the File Selector window you can preview all supported file types on a thumbnail view before dragging and dropping selected files onto the Construction Window.

The files are then organized on a time line to accurately define the sequence of events in the resulting video. Existing video files (AVI, FLI/FLC) can be edited to cut out unwanted frames; sound (WAV) files can be edited to adjust their duration and more than one sound file can be played at once during the video,

thus 'mixing' the audio track (i.e. useful for playing music in the background with spoken commentary overlayed).
Image files can be inserted inbetween video sequences or two video sequences can be 'spliced' together to create a new video file. Transition effects can be used between the two video sequences to provide a smooth change-over from one video to the other.

An extensive Text function is provided for titling video clips. The font, size and color of the text can be selected and then the text block can be placed anywhere on the screen. The ability to create multiple text blocks allows for creative titling.

Flexible options are provided for previewing the newly created video sequence and for storing the final version in AVI format. The size of the video, color depth (256 or full color), compression and number of frames per second can be defined for the final AVI output file.

Video Morph

With *Video Morph* you can create your own morph videos as AVI files. Start with 2 image files or capture frames from an existing AVI video. Select the areas and contours to be morphed with the easy-to-use grid.
Options are available to set the size, color depth and the number of frames of the resulting video. The video can be previewed before writing it to the hard disk as an AVI file. Videos created with *Video Morph* are great for use in desktop presentations, screen savers and home video productions.

Video Logo Generator

With the *Video Logo Generator* you can create font logos which fly 3-dimensionally over the computer screen. Save your creation to disk as an AVI video file for use in desktop presentations (i.e. in *MediaMaestro*), screen savers or for inclusion in your own home video productions.

The *Video Logo Generator* is easy to use. Text can be added in the font, size and color of your choice. Animate the text using transitions to rotate it, zoom in or out or to move it in any direction across the screen. A selected color or an image file can be used as a background to make the 'flying font' more effective.

Once the transitions have been defined, a preview can be made. To create the final AVI video file, settings for the size, color, number of frames etc. can be made.

Video Screen Saver

The *Video Screen Saver* lets you display your favorite videos from the hard disk or from a CD-ROM drive when the computer is not in use. A playlist of video files can be created by 'dragging and dropping' from the Windows File Manager.

Flexible options for setting up the screen saver such as display size, position, start and end points as well as password protection are provided. To play the screen saver, select the display order, loop and sound on/off functions.

AVI, MOV, MPEG and the newest Video CD titles can be included in the *Video Screen Saver*!

Media File Finder

The fast and easy way to locate and display any media files on your computer system, network or CD collection. Enter the search criteria - drive, path, media type and media files in the File Finder window. All media files found are displayed in thumbnail view where they can be previewed or exported to associated applications.

Flexible options are provided for configuration of the file selector window. Image files can be displayed as full image previews or as time-saving placeholder icons.

File formats supported include: AVI, MOV, MPG, Video CD, FLI, FLC, MIDI, WAV, BMP, EPS, GIF, JPG, PCD, PCX, RAW, RIF, TGA, TIF and WPG.

Samples

Sample media in various formats is provided in the *Media* subdirectory. Sample project files (for the *Video Morph* and *Video Logo Generator* programs) are provided in the *Samples* subdirectory.

The sample project files for the *Video Logo Generator* can be used as templates to create your own video logos. Just open an existing project file, replace the text and save the logo as an AVI video file.

MediaMaestro Demo Software

Also included on the *VideoMaestro* CD is a demo version of Software Dynamic's popular multimedia presentation software *MediaMaestro*.

With *MediaMaestro* you can create full-featured interactive multimedia presentations for personal, business and home office use. Make impressive presentations containing video, animation, images, text, sound and music.

MediaMaestro is intuitive and easy to use. The 'drag and drop' interface lets you put stunning presentations together in just minutes. Interactive presentations can be created for use in point of sale, training etc.

Standard business presentations can be made more interesting by adding video sequences and still images along with text, sounds and music. Video formats supported include avi, mpg* and dat (Video CD)* (*requires MPEG decoder board). Image formats supported are bmp, tif, pcx, gif, jpg and Photo CD. Sound and music files in wav, midi and CD Audio format can be added to presentations.

A flexible text function, screen underlays, transition effects, pre-defined templates and backgrounds, ready-made sample presentations as well as a complete media clip library are included in *MediaMaestro*.

A runtime version of *MediaMaestro* is provided for distribution with presentations.

To install the *MediaMaestro LE* demo software:

1. Insert the CD into the CD-ROM drive.
2. From the Windows Program Manager, select Run from the File menu. In the Run dialog box, type "(d):\mm_le\setup.exe". Click on OK.
   Note: (d) is the location of the CD-ROM drive and may vary depending on your system configuration.
3. The Setup program appears on the screen.
4. Select the destination path where you want to install the software by typing in the text box. Alternatively, use the default destination path "c:\maestro.le".
5. Select the software modules you want to install or use the default settings.
6. Select the language the software should be installed in by making the appropriate selection from the Language list box.
7. Click on the Install button to begin the installation procedure.
8. If "Build Program Group" was selected, the *MediaMaestro LE* program group appears

on the screen. Click on the Readme icon to read the latest release notes before starting the software.

To view a sample presentation with *MediaMaestro LE*:

1. From the *MediaMaestro LE* program group, double-click the *Runtime Player* icon. The Open dialog box will appear.
2. Select the desired demo from the MM_LE>Demos subdirectory.
3. Double-click the desired filename to start.

To test the *MediaMaestro LE* software*:*

1. From the *MediaMaestro LE* program group, double-click the *MediaMaestro* icon. The *MediaMaestro LE* program window will appear on the screen.
2. To order your full version of *MediaMaestro* software, please contact us at the address given below.

System Requirements

Hardware Requirements

- IBM compatible PC/AT 80486
- 4 Mb RAM (minimum)
- 8-16 Mb RAM (recommended)
- VGA or Super VGA video adapter
- 40-120 MB hard disk
- Mouse
- XA compatible CD-ROM drive

To take advantage of the functionality of the software, the following optional hardware is recommended:

- Windows compatible sound card
- SPEA Showtime board
- SPEA CrunchIt board

Software Requirements

- MICROSOFT-DOS 3.1 or higher
- MICROSOFT-Windows 3.1 or higher
- MCI (Media Control Interface)-Drivers for:
  - optional installed hardware
  - Video für Windows
  - Autodesk Animator

User Registration

To become a registered user, fill out the registration form included on the *VideoMaestro* disc.

Registered users are entitled to product support and will be sent information about software updates and new products when they become available.

To fill out the Registration Form:

1. The Registration Form is located in the subdirectory entitled: Software\English\ Readme.
2. Copy the file from the CD to your hard disk.
3. Open the file in Windows Write.
4. Fill in the requested information and print it out.
5. Send it to us at the following address:

In Europe:
Software Dynamics GmbH
Am Fallturm 5
28359 Bremen
Germany
Fax: (49) (0)(421) 216718

In the United States:
Software Dynamics North America, Inc.
16135 New Ave., Suite 12
Lemont, IL 60439
U.S.A.
Fax: (708) 243-0622

Technical Support

Should you require technical support - for the software only - we can be contacted from 10:00 - 15:00 on our support hotline at the following telephone and fax numbers:

Telephone: 0421/219884
Fax: 0421/216718

User's Guide - Online Help

The User's Guide has been provided on CD for your convenience in the form of an on-line Help document which can be viewed by calling the "Help" function from within each application.

Copyright Notice

VideoMaestro is a trademark of Software Dynamics GmbH.
MediaMaestro is a trademark of Software Dynamics GmbH.

© Software Dynamics GmbH, 1995

VideoMaestro Getting Started

Video Editor

Playing Media Clips in the Video Editor

Multimedia components such as video, sound, music, images and text can be combined in the Video Editor to create exciting video clips.

The Video Editor supports some multimedia files through hardware, for example, a sound card is needed to play sound and music files. A software driver, which can be installed under the Windows Desktop, must be installed in order for the software to communicate with the hardware.

Note:
Make sure that all hardware and associated drivers are installed correctly before creating a video project with the Video Editor.

Other media file types such as Autodesk Animator and Video für Windows are supported through a standard Windows MCI driver. This MCI drivers must be installed before a file of that media type can be played in the Video Editor.

Note:
To find out which MCI drivers are installed on your system, double-click the Drivers icon in the Windows Control Panel. A list of all the currently installed drivers will appear. To install a new driver, follow the instructions outlined in the Windows User's Guide.

Creating a Video with the Video Editor

Basics of Video Editing

The first steps when planning a video (project) with the Video Editor are:

- Decide on an idea for your video.
- Decide on the message you want to get across with your video.
- Locate the appropriate media in the form of videos, animations, sounds and images that will help you to get your message across
- Use the many possibilites of overlay effects for image and sound files·
- Develop a text title or rolling credits for the end of the video clip.

Creating a Simple Video Clip

The following steps describe how to create a simple video clip in the Video Editor using existing video files.

1. When you open the Video Editor program, an empty Construction window will appear.
2. The filename (untitled) will appear in the title bar of the Construction window.
3. Click on the Video icon on the Tool panel to open a video file.
4. Select a video file (*AVI-file) from any drive/directory and open it with a double-click.
5. The video preview window will open automatically.
6. Click on the Play button to preview the video files. This way you can be sure that you have selected the correct file.
7. Click on the image in the Preview window and drag the mouse over to Video Track 1 on the Construction window. Release the mouse button. The file will be loaded into the video track and the Preview window will close.
8. Click on the video file with the mouse and while holding the mouse button down, move the video file to the desired location in the Construction window.
9. Open a second video file, preview it and then drag and drop it into Video Track 2 in the Construction window.
10. Move the video file to the desired location using the method described previously.

Note:
To move more than one video file, use the Ctrl-key to select multiple files. To select all files, use the Select All command from the Edit menu.

11. Edit the video file in Video Track 2.
12. Click on the right hand edge of the video file. Holding the mouse button down, move the double-headed arrow mouse cursor to the left until the desired position is reached. Release the mouse button. The video has now been 'cut'.
13. Change the time scale to a low scale (for example, to 1 frame for a short video file) to see the effect of the 'cut' which was carried out.

Note:
Double-click the edited file to re-open the Preview window. The cut made to the video can be seen on the gray bar underneath the play buttons.

14. Only one track can be edited at a time. If a video file contains a sound track, then the sound track must be edited separately. Select the sound file in the Audio Track by clicking in the blue area on the right hand side of the file. Holding the mouse button down, move the double-headed arrow mouse cursor to the left until the desired position is reached. Release the mouse button. The sound track has now been 'cut'.
15. Should you click in the yellow area of the sound track by mistake, a blue square will appear on the middle line. The yellow area of the sound track is for modifying the transition and the volume of a sound track. To move the blue square back to the neutral position, click on the square and while holding the mouse button down, drag it back to the middle line and release.
16. Add a transition between the two videos in Video Track 1 and Video Track 2.
17. Click on the Transitions button on the Tool panel to open the Transitions window.
18. Select a transition effect and drag it to the Transitions Track in the Construction window. Close the Transitions window.

Note:
When a transition is dropped into the Construction window, the duration of the transition is always the same as the scale which is set in the time scale list box. The direction of the transition can be changed by clicking on the gray area on the transition.

19. Make the transition the desired length dragging the edge in the desired direction.
20. Save the video project file by clicking on the Save button on the Tool panel.
21. To define the preview area for making a preview of the video, move the gray bar at the top of the Construction window in the desired direction. Alternatively, click on the red area at the end of the gray bar to make the selection area larger or smaller.
22. Select Preview Options from the Options menu. Set the size for the preview in the Size list box to 160 x 120 and frames per second to 5.
23. Click on the Video Preview button on the Tool panel to start the video preview.
24. The preview window will appear and the progress will be displayed on the status line.

Creating a Complex Video

The following steps describe how to create a complex video containing video, sound, images, spoken commentary and text titles.

1. Select New from the File menu or click on the New icon on the Tool panel.
2. A new Construction window will appear on the screen. The filename [Untitled] will appear in the title bar.
3. Click on the File Selector button on the Tool panel to open the File Selector window.
4. In the File Finder dialog, select the various media types which you would like to include in your video. (e.g. AVI videos, WAV files, image files) by making the appropriate selections in the file type, drive, directory and file format list boxes.

Note:
Alternatively you can search for media files of different types separately - for example, for video files, for image files or for sound files only.

5. An overview window will appear displaying all the media files found matching the search criteria. Media files can be displayed as image previews or as placeholder icons.
6. All selected files appear highlighted to show that they are selected.

Note:
When a file is selected on the File Selector window, click on the Preview button. The Preview window will appear. Click on the Play button to preview the file before dragging and dropping it into the Construction window. Using this method, you can be sure that the correct files have been selected before including them in your video.

7. Select Tile Vertical or Tile Horizontal from the Window menu.
8. Select the desired media files and drag and drop them to the appropriate tracks on the Construction window.
9. Made any edits to the media files.
10. Move all the media files to the desired location in their respective tracks. Use Select All from the Edit menu to select all files and to move them all at the same time.

Note:
Make sure you save your video project to disk at regular intervals!

11. Load a sound file and drag it to Audio Track 1. This sound track should fade out as soon as the spoken commentary begins and then fade in again once the commentary is finished.

12. Load a sound file with spoken commentary and drag it to Audio Track 2.
13. Select both sound files and move them to the correct position.
14. Lower the volume of the sound on Audio Track 1. To do this, click in the yellow area and drag the blue square which appears downwards. Click several times on the middle line to add more blue squares. Move each blue square down to achieve the desired fade out effect. At the end of the spoken commentary file (Audio Track 2) increase the volume by following the procedure described previously.

Note:
Sound files can be loaded multiple times to create interesting overlay effects or to repeat the sound.

15. Add transition effects between the two video tracks.
16. Click on the Transitions button on the Tool panel to open the Transitions window.
17. Select the desired transition effects and drop them onto the Transition track on the Construction window. Close the Transitions window.

Note:
When a transition is dropped into the Construction window, the duration of the transition is always the same as the scale which is set in the time scale list box.

18. Lengthen or shorten the transition effect to the desired length.
19. Create a first preview of the video.
20. To define the preview area, move the gray bar at the top of the Construction window in the desired direction. Alternatively, click on the red area at the end of the gray bar to make the selection area larger or smaller.
21. Select Preview Options from the Options menu. Set the size for the preview in the Size list box to 160 x 120 and frames per second to 5.
22. Click on the Video Preview button on the Tool panel to start the video preview.
23. The preview window will appear and the progress will be displayed on the status line.
24. Choose Select All from the Edit menu to select all files in the Construction window. Move all the files together to the right.
25. Add a text title at the beginning of your video project.
26. Click on the Text button on the Tool panel and enter the desired text.
27. Select the size, font, foreground and background color for the text. Click on OK.

28. The Text Preview window will open. If the text display is correct, click inside the text area and drag the text over to the beginning of the Text Track on the Construction window.
29. The text window will close automatically.
30. Adjust the gray preview bar at the top of the window so that a preview of the text and the first frames of the video can be made.

Note:
To delete files from the Construction window, select each file using the Ctrl + mouse before clicking on the Delete button on the Tool panel.

Tip:
A text title can be edited to change the text or to include additional text blocks.

31. Click on the text in the Text Track.
32. The Text window will appear. Click on the Add button to add another text block.
33. The new text will appear automatically in the Construction window.
34. To add credits at the end of a video, click again on the Text button on the Tool panel. Enter the desired text and drag the text block to the appropriate location on the Text Track at the end of the video.
35. Adjust the gray preview bar at the top of the window to include the complete length of the video so that a preview can be made.

Note:
Alternatively, select the option Whole Project from the Preview Options dialog box.

36. Open the Preview Options dialog box from the Options menu to adjust any settings for the video preview.
37. Click on the Video Preview button on the Tool panel to view the complete preview of your video.
38. After making sure that the video is the way you want it with the video preview, it can be written to the hard disk as an AVI (Video for Windows) file.
39. Select Output Options from the Options menu. Make any necessary setting for generating the final video file.
40. Click on the Save Video button on the Tool panel. Your video will now be saved to disk in the AVI file format.

Video Morph

Creating a Morph Video

With Video Morph you can create a video file from two images or captured frames from an existing AVI file. A special transition - the morph transition - is used to create interesting video clips.

The first step when creating a morph video is to load the source file and the destination file. The source file is the starting point of the morph; the destination image is the end point of the morph.

Note:
To achive the best results, the source file and the destination file should be approximately the same size and of the same proportion. Ideally, both images should have the proportion 4:3 or 3:4.

1. When the Video Morph program is first opened, an empty window will appear.
2. The filename [Untitled] will appear in the title bar.
3. Click on the Load Source Image button to load a source file.
4. Select the desired file format.
5. Change the drive and directory if necessary to locate the desired file.
6. Double-click the filename to open it. If a video file was selected, a preview dialog box will appear where a single frame from the video can be selected.
7. The selected image will appear in the window.
8. Click on the Load Destination Image button to load the destination file. Proceed as described previously.
9. The selected image will appear in the window.
10. Set the horizontal and vertical grid lines to define the areas which are to be transformed, i.e. morphed.

Note:
The number of grid lines required depends on the images chosen. As a general rule, the more detailed the image, the more lines required. A higher number of lines also generates a smoother morph effect.

11. Click on the Vertical Line button and move the mouse over the source image. The mouse cursor will turn into a cross.
12. Move the cross to the desired position and click on the mouse to draw the line. A line will appear in the same position on the destination image.

13. Click on the Horizontal Line button on the Control panel.
14. Move the cross to the desired position and click on the mouse to draw the line. A line will appear in the same position on the destination image.

Note:
Once positioned, lines cannot be moved. To move a line, it must be deleted and a new line placed at the desired location.

15. The first grid lines should be set to trace the contour or outline of an object. More lines can then be added within the object to refine the grid and to define focal points.
16. Move the resulting intersection points to achieve a smoother morph effect.

Note:
Intersection points can be divided into two types: Contour Points and Focal Points. Contour Points are used to define the contour or outline of an object. Typical Contour Points are placed at the edges of an object, thus tracing the shape of the desired area. Focal Points are used to define the central or prominent features of an object. Typical Focal Points are, e.g., the eyes, nose and mouth of a face.

17. Click on the Move Points icon on the Control panel.
18. Click on the intersection point that you want to move by holding the mouse down and moving the point to the new position.

Note:
The intersection point can only be moved within the square image display area.

19. When a point is selected on one image, the corresponding point on the other image will be highlighted in red.
20. If necessary, lines can be deleted.
21. Click on the Delete button on the Control panel.
22. Move the cross icon to the line that you want to delete. Click on the mouse to delete the line. The corresponding line in the other image will also be deleted.
23. Save the Morph project file by selecting Save from the File menu. The project will be saved to the hard disk with the file extension *.mph.

Note:
If necessary, the complete grid can be deleted so that a new grid with new intersection points can be created.

24. Click on the Delete Mesh button on the Control panel.
25. All grid lines will be deleted.

26. Click on the Options button to set the number of frames for the preview to a low number.
27. Click on the Preview button on the Control panel.
28. The Preview window will appear where various views of the morph video can be seen, for example, only the image, only the mesh or both.
29. The video can be previewed frame by frame with the Frames scroll bar. Each frame will be displayed in the window along with its corresponding frame number.
30. After the mesh has been edited and a preview made, the final video file can be written to disk.
31. Click on the Options button to select the settings for the final video file.

Note:
To create a smoother morph effect a higher number of frames should be selected.

32. Click on the Start button in the Control panel.

Note:
The project must be saved before the video can be saved to disk. If this has not been done, a warning message will appear.

33. The progress dialog will appear while the video is being written to the hard disk.

Note:
The generation of the morph video can be time consuming depending on the options set and on the system configuration being used.

34. The video will be written to the hard disk and an AVI file.
35. Click on the Play button on the Control panel to view the morph video.
36. The Preview window will appear and the video will start to play automatically.

Video Logo Generator

Creating a Video Logo

The first steps when planning a video logo with the Video Logo Generator are:

- Decide on an idea for your logo.
- Decide on the effect you want to create with your video logo.

- Use the many possibilites available for three dimensionally rotating and moving a logo on the screen.
- Decide on the number of transitions required to achieve the desired result.

Creating a Rotating Logo

The Video Logo Generator requires at least two transitions to be able to generate a video file. To create a more complex logo, a higher the number of transitions must be created to achieve the desired effect (see Example 2).

The following steps describe a rotating video logo with two transitions. The logo will rotate on one axis from top left to bottom right and will change in size at the same time.

1. Open the Video Logo Generator. An empty window will appear.
2. The filename [Untitled] will appear in the title bar.
3. Click on the Add button.
4. The transition entitled Transition 1 will be added to the play list.
5. Click on the Edit button.
6. The window entitled Edit - Transition 1 will open.
7. You can now enter your logo text.
8. Click on the button entitled ABC. The Text and Style window will appear.
9. Enter the desired text in the text field and set the font and size.
10. Set the color of the text in the area under Face Color and the shadow color for the text under Side Color. Click on OK.

Note:
The logo text entered always applies to the whole project. Any changes made to the text, such as the text itself, font or style, are global changes which will then take effect in all transitions in the project. In each transition, only the position of the text is changed.

11. Edit the position of the text in Transition 1: Move the scroll bar of the z-axis all the way to the right. The text will be displayed far in the background in the preview window
12. While the logo moves forward into the foreground, it should rotate around the x-axis. Enter the value 2 in the text box beside the "x".
13. Confirm these steps by clicking on OK.
14. Click on the Add button once again. Transition 2 will appear in the play list.
15. Click on the Edit button.
16. The Edit - Transition 2 window will appear.
17. Edit the position of the text in Transition 2: Move the scroll bar of the z-axis back to position 0. Change the value on the x-axis to 200 and on the y-axis to -100. The text will be displayed in the foreground in the preview window.
18. Save the project to disk by clicking on the Save button.

19. You can now use the preview function to make a preview of the logo. To generate a faster preview, it will be displayed in wire mesh mode.

Note:
In the Settings dialog box the contour of the text can be modified. The Points per Curve option defines the form of the text. For example, the higher the number, the better the letter will appear. This is especially noticeable for letters such as C, O or G. When the highest numbewr (9) is set, the generation of each letter is time intensive. Therefore it is recommended that while editing the logo and when generating the first preview video, the value should be set to a low number betwen 1 and 3. The number should then be changed to the highest value (9) just before the final video is written to disk.

20. Select Transition 1 in the play list and then click on the Preview Play button. All transitions in the play list from the selected position will be displayed in the preview.

Note:
It is recommended to check your logo with the preview function before writing the final video file to disk. Writing the final video file can be very time consuming (depending on the options used) and any change made to a transition, either in the text, position etc., means that the output video file must be regenerated.

21. Further edits to the video logo can be made. Select Transition 1, for example, and click on the Edit button.
22. Click on the Horizon button to turn the horizon of the logo on.
23. To change the position of the horizon, click on the grid and while holding the mouse button down, move the grid in the desired direction.
24. Confirm the settings by clicking on the OK button.
25. Click on the Model button to view the logo in solid mode. In this view you can see the 3D effect and the effect of the text colors selected.
26. You can now change the light direction. It might be necessary to change the background color to a darker color to see the position of the light direction.
27. Click on the Light Direction button. The light bulb will appear as if it is switched on. Enter a value in the x, y and z axes to change the position of the light direction.
28. Click on the Settings button and change the Space depth, for example, to a value of 750. Click on OK.

29. Click again on the Light Direction button. The solid model of the logo will be displayed. Set the desired space depth in the Options dialog box.
30. The last step when creating a video logo is to generate the final output video and save it to disk.

Note:
The filename and the directory where the output file will be written is the same as for the project file. The project must therefore be saved to the hard disk before the video file can be generated. If this has not been done, a warning message will appear requesting you to save the project file to disk before attempting to generate the video file.

31. Depending on the options chosen for the output video, the amount of time required to generate the output video file can be very long and the amount of disk space required high. Click on the Options button and select Full Color, the smallest size and for example, with 2 transitions, the value 10 frames.
32. Click on the Start button to start the generation of the video file.
33. Your video logo is now saved to the hard disk in the AVI file format.
34. The final video can be viewed by clicking on the Play button. The preview window will appear.

Note:
Changes the settings for the final video (e.g. frames per second, points per curve) only after all editing has been completed.

A Multiple Rotating Logo with a Background Image

A number of transitions and steps are required to generate movement of the text logo to create the desired effect. For example, your logo could consist of ten transitions, rotating on all 3 axes while moving through the space depth into the foreground.

1. Click on the New button to create a new project.
2. Click on the Image button to load the desired background image.

Note:
The Video Logo Generator supports the BMP graphic file format. All color depths are supported but it is advisable to use the same color depth for the image as the output video to avoid generating huge amounts of data. For example, if the output video is to be written in 256 colors, then the image file loaded should also be in 256 colors.

3. All files in the *BMP file format in the current directory will be displayed.
4. If necessary, change the drive and directory to find the desired image file.
5. Double-click the file to open.

6. The background image will be displayed in the preview window.

Note:

When the image has been loaded into the preview window, the horizon should be adjusted to the image. The Horizon button in the Edit window is used to turn the horizon display on or off. The horizon can be changed by clicking on the mesh with the mouse and while holding the mouse button down, moving in the desired location.

7. Click on the Add button.
8. A new transition entitled Transition 1 will appear in the play list.
9. Click on the Edit button.
10. The Edit - Transition 1 window will appear.
11. Enter your logo text.
12. Click on the ABC button. The Text and Style dialog box will appear.
13. Enter the text and set the style and size.

Note:

In the Settings dialog box the contour of the text can be modified. The Points per Curve option defines the form of the text. For example, the higher the number, the better the letter will appear. This is especially noticeable for letters such as C, O or G. When the highest numbewr (9) is set, the generation of each letter is time intensive. Therefore it is recommended that while editing the logo and when generating the first preview video, the value should be set to a low number betwen 1 and 3. The number should then be changed to the highest value (9) just before the final video is written to disk.

14. The face color of the text can be selected in the Face Color area of the text dialog box. The shadow color of the text can be set in the Side Color area. Once these colors have been selected, click on OK.
15. Enter the position on each axes in Transition 1. The position of the text will be displayed in the Preview window.
16. Click on OK.
17. Add more transitions into the playlist with the Add button and edit them as desired.

Note:

To have a better overview of all the transitions in the play list, each transition can be renamed with the Rename button. The transitions can also be moved within the playlist by using the Up and Down buttons.

18. With the Model button, the text can either be displayed as a wire frame model or as a solid model. For faster text display, the wire frame model should be used.

Note:

For faster display, set the points per curve to 1 in the Points per Curve list box in the Options dialog.

19. The Image button in the Edit window can be used to turn the image display on or off.
20. The logo will be displayed in the Preview window as a wire frame model so that the transition effects can be previewed.
21. To start the preview, click on the Play button. All transitions from the currently selected transition will be displayed. Click on the Stop button to stop the preview.
22. The last step when creating a video logo is to generate the video logo save the video clip to the hard disk.

Note:

The project file must be saved to disk before the video clip can be written. If the project has not been saved, a warning message will appear reminding you to do so.

23. Depending on the options chosen for the output video, the amount of time required to generate the output video file can be very long and the amount of disk space required high. Click on the Options button and select Full Color, the smallest size and for example, with 2 transitions, the value 10 frames.
24. Click on the Start button to start the generation of the video file.
25. The final video can be viewed by clicking on the Play button. The preview window will appear.
26. Your video logo is now saved to the hard disk in the AVI file format.

Note:

Changes the settings for the final video (e.g. frames per second, points per curve) only after all editing has been completed.

Appendix A
Utilities

The SPEA Utilities help you to configure or optimize your system environment to get the full use of all the features supported by SPEA.

CRUNCH IT INIT - Protecting the Video Monitor and TV from damaging Signals

After you switch on or reset your PC, the video output of the SPEA CRUNCH IT finds itself in an undefined state. If this signal is sent to a TV or video monitor for a longer period, the device can be damaged.
To avoid this, the SPEA CRUNCH IT is initialized with the program CRITINIT.EXE.
The syntax for this program is as follows:

<Path>CRITINIT $<Address> <Norm>

<Path>   drive and directory you have copied the file to (C:\SPEA\CRUNCHIT).
<Address>   base address, for which you have configured your SPEA CRUNCH IT under Windows
<Norm>   video format for which the video output of the SPEA CRUNCH IT should be initialized. Possible video formats are PAL and NTSC.

Example:
C:\SPEA\CRUNCHIT\CRITINIT $280 PAL
C:\SPEA\CRUNCHIT\CRITITIT $300 NTSC

Test- / Diagnostics program

This progam will be available with the next software release.

Appendix B
Technical Details

Technical Data

- ZORAN ZR 360/055 Motion JPEG Controller
- Video Decoder: Philips SAA7110
- Video Encoder: Philips SAA7199B
- Video Standards: PAL, NTSC, SECAM
- Video Inputs: 2 x FBAS, 1 x Y/C
- Video Outputs: 1 x FBAS, 1 x Y/C
- Audio Input and Output: No
- Digitizing: YUV 4:2:2
- Frames per second: 25 (PAL), 30 (NTSC)
- Sampling Rate: 14,75 Mhz (PAL), 12,27 MHz (NTSC)
- max. display resolution (pixels): 768 x 576 (PAL), 640 x 480 (NTSC)
- max. compression resolution (pixels): 768 x 576 (PAL), 640 x 480 (NTSC)
- Compression,
  dynamic: 1:5 (8) - 1:100 (full resolution), static: Data rate per frame free adjustable
- Overlay: No (optional via SPEA SHOW-TIME PLUS or SPEA PLAY IT)
- TV Tuner: No
- SPEA Movie Bus (see next section in this manual)

Pinout of the SPEA Movie Bus

The SPEA CRUNCH IT 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 SHOWTIME PLUS or with the SPEA PLAY 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 SPEA CRUNCH IT:

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').

I/O Addresses of the SPEA CRUNCH IT

In order for your system to function properly it is necessary to make sure that all the I/O addresses reserved for the SPEA CRUNCH IT are not used by other hardware devices.

Normally the board should be configured automatically, the **default** is:
280 - 28F (hex)

However, the board can be reconfigured in freely selectable steps (+10 (hex)):

200 (hex) - 20F (hex)
    :   :
3F0 (hex) - 3FF (hex)

IRQ setting of the SPEA CRUNCH IT

A free IRQ has to be assigned to the SPEA CRUNCH IT.
Default for the SPEA CRUNCH IT is **IRQ 15**.
You can also use IRQ 10, 11 or 12 instead.
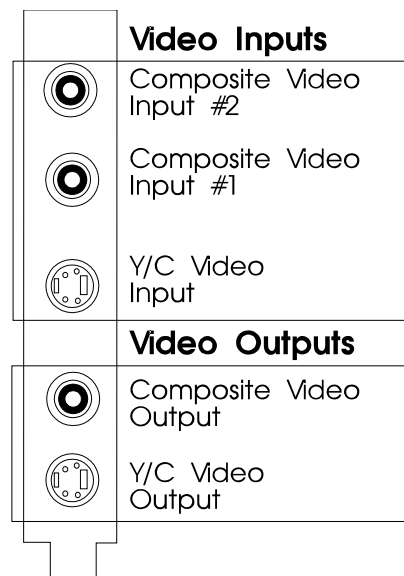
The Connections of the SPEA CRUNCH IT

The board has 3 inputs and 2 outputs as seen from the side of the board.

Video Inputs
- Composite Video In #1 and #2:
  These inputs are connected with a Video recorder or Camcorder output. **Please note, that the antenna signal from the wall socket is not suitable!**
- Y/C Video In for e.g. S-VHS or Hi-8:
  See description 'Composite Video In' above.

Video Outputs
- Composite Video output: for connecting a video monitor or a video recorder
- Y/C (S-VHS, Hi-8) Video output:
  For connecting a S-VHS or Hi-8 video recorder.

Video inputs and outputs of the SPEA CRUNCH IT

Appendix C
Troubleshooting

General Considerations

Make sure the SPEA board is firmly seated in its 16 bit ISA 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.
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 (e.g. if an elder graphics board or an MPEG Deocoder was installed before). Try booting your system without these files. If the SPEA board works properly, identify and remove the conflicting command(s).

Hardware settings

When installing the SPEA CRUNCH IT, you should beware of possible hardware conflicts with other adapter cards in the computer. It is possible that two or more cards in the computer are contending for the same resources. These conflicts can involve:
• IRQ line (Interrupt Request)
• I/O port address (Input / Output)

Devices to be wary of:
When setting up IRQ and I/O ports, be especially aware of the following hardware: scanner card, SCSI drive, tape streamer, additional sound card, hard/floppy disk drives, modems, serial ports, mice, networks and others.

IRQ settings
The computer is likely to be using various IRQ lines already, through hardware handlers for disk drives, printer ports, keyboard, co-processor, and others. MS-DOS 6 ships with the utility MSD, which shows you what IRQs are/aren't being used. Once you know this information, you can set the IRQs of the SPEA CRUNCH IT correctly.
Here is an example for likely IRQ usage:

IRQ 4	active serial port
IRQ 3+4	two active serial ports
IRQ 7	print spooler or SoundBlaster
IRQ 2, 3 or 12	mouse
IRQ 15	E-IDE interface 2

I/O port address
This is the address via which a particular driver or device can be communicated with.
Reserved I/O addresses for example are :

3F8 - 3FF	COM 1
2F8 - 2FF	COM 2
3E8 - 3EF	COM 3
2E8 - 2EF	COM 4
378 - 3FF	LPT1:
300 - 31F	various network cards

Input Video Signal
During the driver configuration or when you start the video editting software system software crashes may occur if there is no video signal present at the video input of the SPEA CRUNCH IT.
In this case terminate Windows, activate a video signal and then restart Windows.

System Performance
The quality of your edited video depends on the single components of your system environment. Besides a quick processor, the type of hard disk used is very important (see also 'Part 2, Tips and Tricks for installing the SPEA CRUNCH IT).
No general rule can be given for setting a compression rate . To find out the optimal setting for your sytem simply try various alternatives.

Configuration Problems with PCI Motherboards

On PCI boards problems may occur while configuring the interrupts in the event that the PC's BIOS assigns each interrupt for PCI boards automatically. In this case, find out (before you configure the SPEA CRUNCH IT) which interrupts will be reserved by the PCI bus or in the system setup definition, which interrupts should be available for the ISA bus

Frequently Asked Questions

General problems

Q: The system does not work properly, some problems occurred while the graphics board has been installed.

The system beeps when booting.

The graphics board cannot be initialized.

Problems with the network occur.

A: Check again, if all connections are correct and if the graphics board is placed secure in the expansion slot.
Be sure that you have installed the most up to date software driver. (You can find them in the SPEA mailbox. If you don't have a modem, please contact your local dealer).

Remove all other hardware (e.g. soundboard, networking card) from your system in order to find out possible hardware conflicts.

Install the SPEA CRUNCH IT in another slot (more outwards) or - if available- in another system.

Minimize the clock rate of your system.

Q: DOS 6.0 (5.0): General Problems with Windows

A: Check the following entries in the CONFIG.SYS file:

HIMEM.SYS, QEMM386.SYS or 386MAX.SYS must stand at the first position.

Q: The installation program of the SPEA CRUNCH IT does not work correct.

A: Add the following entry to the AUTOEXEC.BAT file and restart your system:
SET COMSPEC=C:\DOS\ COMMAND.COM

Problems with Windows

Q: The Windows startup lasts very long.

A: Create a permanent swap file.

Defragment your hard disk regularly (e.g. with Norton SpeedDisk).

Remove unnecessary entries from your WIN.INI file (e.g. fonts, programs).

Q: Windows or applications under Windows crash.
Mouse functions or icons are not correct.
Wrong colors are displayed.

A: Set - depending on the SETUP of your system - DEQUOPLE REFRESH, REFRESH=HIDDEN, REFRESH=AT-STYLE or REFRESH to 'disabled'.
Use COM port #2 for your mouse.

Problems with the Playback and Editing of Video Sequences

Q: When recording a video sequence, the capture software always reports, that xx frames have been dropped during the recording.

A: **Settings in the Video Software:**
You have chosen the settings for the video data stream (video format, compression, frames per second and sound quality) in a way, that the system was unable to follow it. Reduce the data quantity, so that the system can handle it.
A / V hard disks:
Hard disks with a special Audio / Video Firmware provide a constant data flow and avoid this problem.
Zone Bit Recording:
Modern hard disks record less sectors on the inner tracks (=Zone Bit Recording) than on the outside tracks. Because it is filled from the outside to the inside, it will get slower the more it is filled.
Defragment your hard disk:
Defragment the hard disk you save the video data on. MS-DOS provides the utility DEFRAG for this purpose.
Deactivate the Cache function:
Switch off the option 'write caching' for the drive where you are storing the video data.
Install 32 bit driver:
Install a 32 bit driver for the hard disk under Windows, if not already installed. You can find additional information about this in your Windows manual or in the operating instructions of your hard disk (IDE) of of your hard disk controller (SCSI, ESDI).

Q: It seems that the video playback is not smooth.

A: Please consider all notes for the question before. Besides that:

Changing the settings:

If the video data stream contains dropped frames, the video is not played back smoothly. Please take note of the steps described above. If the data flow defined is very close to the maximum data rate, it may occur that Video for Windows doesn't receive the necessary data in time. Reduce the data flow as far as possible until the effect disappears.

Read Cache:

It can also help to add a read cache for the drive with the video sequences.

Swap file:

Set up a permanent swap file with double the size of the available RAM of your PC, the minimum should be 20 MB!

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.

AV Hard disks
Hard disks with a special audio / video firmware which ensures a constant data flow. Recalibrations that could interrupt the data flow are suppressed and an internal recording format is used on the hard disk.

AVI
Audio Video Interleaved. 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 Disc Interactive. 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.

Polygon 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.

Zone Bit Recording (ZBR)
Recording procedure where the default amount of bytes per sector is identical, but the amount of sectors varies, depending on the circumference of the hard disk. The bigger the circumference, the more sectors can be found. By this way there are different zones with a different number of sectors on the hard disk (inner track with less sectors, outside track with more sectors). Thus, the capacity of the hard disk is used in the most profitable manner. The result is a higher data rate on the outer tracks than on the inner tracks. In general, the more the hard disk is filled, the slower it becomes.

Zooming

Increased display of an image section.

Index