

SPEA CRUNCH IT

User Manual

Benutzerhandbuch

Manuel d'emploi

Manual del usuario



Part Number 1740 4040.2
Rel. 0695
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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.

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FCC Compliance

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

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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 editing 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)
 - 3 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

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

Preparing the Installation

Warning!

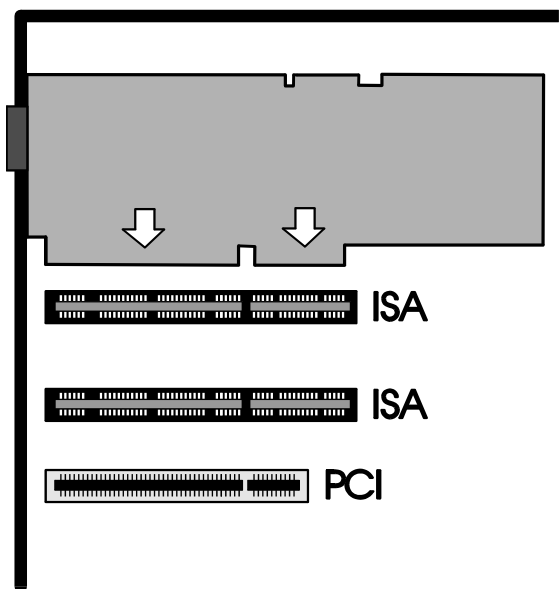
Please note that, before you install the SPEA CRUNCH IT, a VGA board or multimedia board (e.g. SPEA SHOWTIME PLUS (see the section after the next one) has to be installed and configured in your system. Start the installation of the SPEA CRUNCH IT after you have installed the VGA or multimedia board. Additional information can be found in the manual of the corresponding board.

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

Warning!

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

3. Align the slot in the mounting bracket of the SPEA card with the screw hole in the rear panel of the computer case. Use the screw you removed from the expansion slot cover or the previously installed video adapter to secure the SPEA card in place.
4. 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.

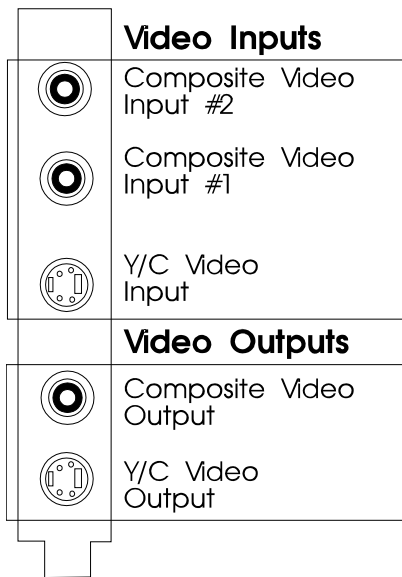
Read the next sections to see how to proceed with connecting the peripheral devices.

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.

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.



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 or 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:

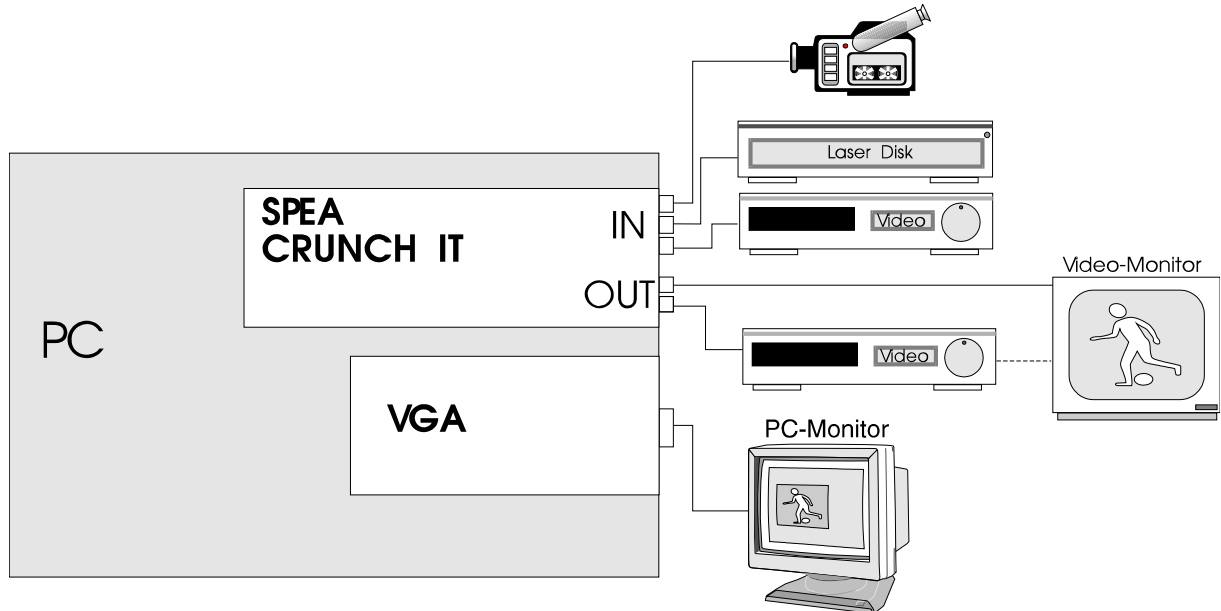
1. Connect the PC monitor cable with the VGA output of the VGA board.
2. Connect your video source to the corresponding video input connection of the SPEA CRUNCH IT.
3. Connect your video output device to the corresponding video output connection (video recorder and monitor) - either separate or the 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 editing): 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:

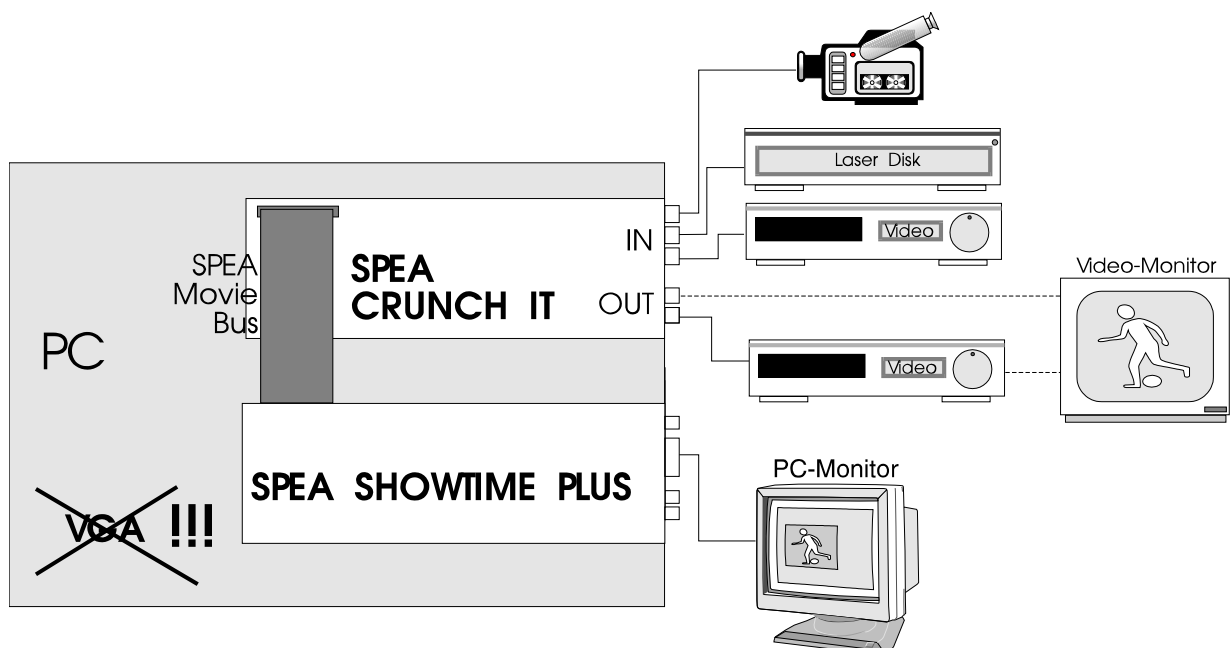
Always combine two similar connections, Y/C (S-VHS or Hi-8) with Y/C and Composite with Composite!

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:

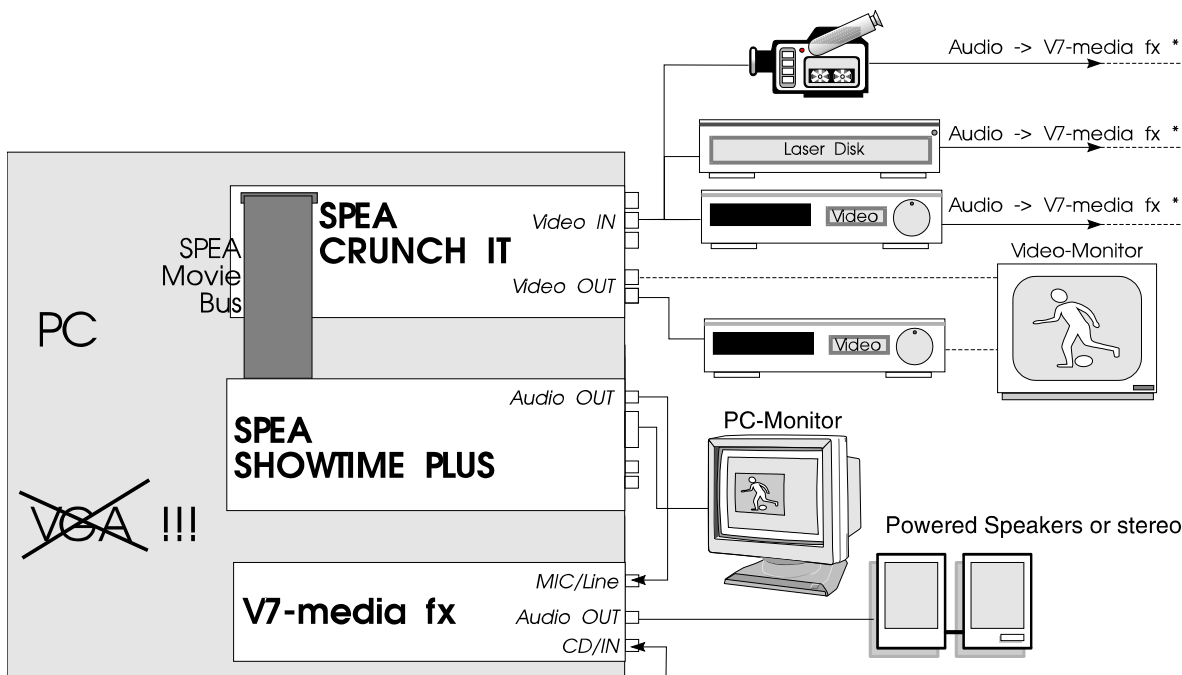
Always combine two similar connections, Y/C (S-VHS or Hi-8) with Y/C, and Composite with Composite!

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 continuous 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 soundboard - 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 editing 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

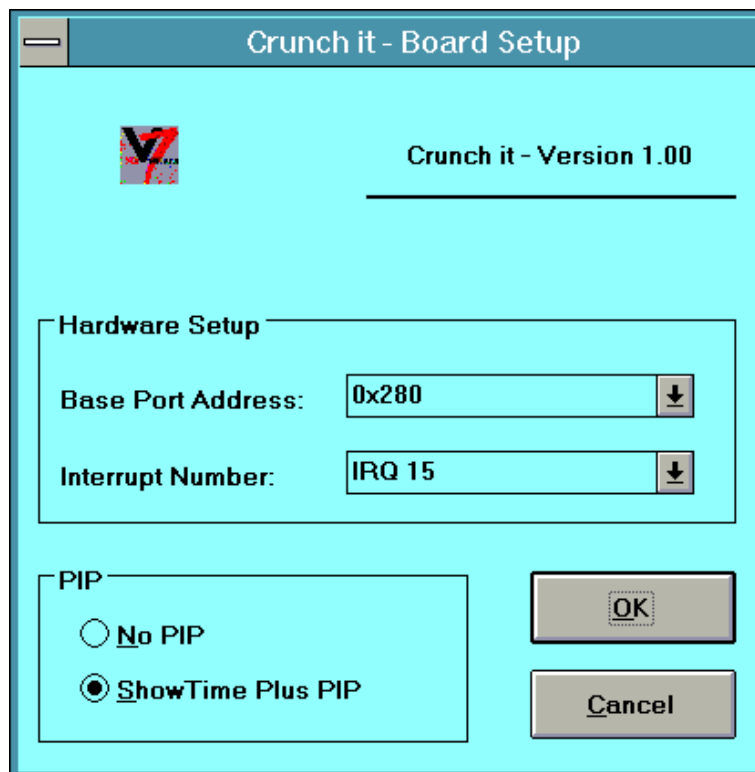
If you use the SPEA CRUNCH IT in combination with a SPEA SHOWTIME PLUS, you should switch the dialogue 'PIP' from 'No PIP' to 'Showtime Plus PIP'. This activates the SPEA Movie Bus which makes it possible to see an overlay image of the currently edited video image using video software.

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.

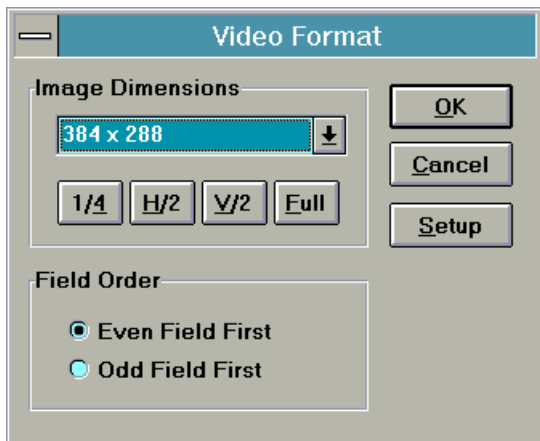
The SPEA CRUNCH IT driver dialogues

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 dialogues 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:

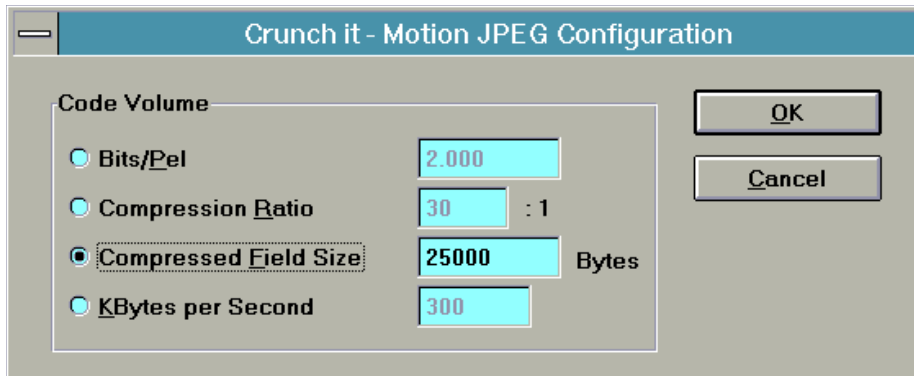
- 1/4** PAL: 384 x 288 pixels, NTSC: 320 x 240 pixels, these resolutions are also called SIF (Source Image Format). With this setting, the digitized frame will be scaled by half on the x - axis. Only every second field will be processed, that means: PAL 25 fps, NTSC 30 fps
- H/2** PAL: 384 x 576 pixels, 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.



Bits/Pel [2.0]

Bits per Pixel element (dynamic compression rate)

Example:

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

$$384 \times 288 \times (2.0 / 8) = 27648 = 27\text{kB}$$

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

$$384 \times 288 \times 2 \times (1/24) = 9216 = 9 \text{ kB}$$

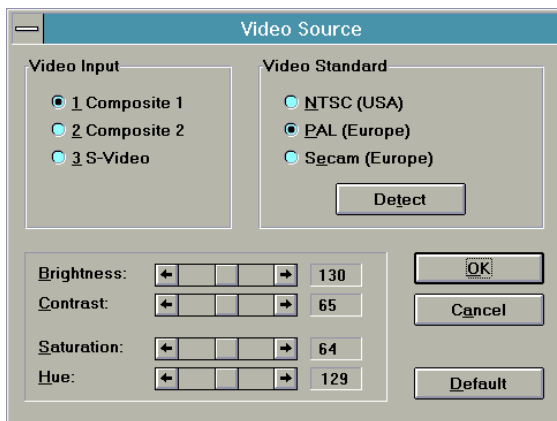
Compressed Frame Size [20000] Bytes

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:

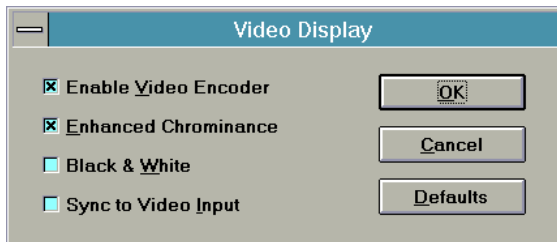
Video Input: 1

Video Standard: PAL

Brightness, Contrast a.s.o.: the average value for each

Video Display

This dialog 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 Chrominance

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

Video Maestro consists of 6 single programs which you can find as icons in the 'Video Maestro' program group after you have successfully installed the software on your system.

In addition you will find two more icons, one for a README file, the other one for a 'Getting started' file which describe how to work with Video Maestro. Both files can be printed so that you have a written documentation available.

Online help

Besides that each program has its separate online help so that you can easily go through Video Maestro.

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 INI - 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 can be initialized with the program CRITINI.EXE.

The syntax for this program is as follows:

<Path>CRITINI \$<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\CRITINI \$280 PAL

C:\SPEA\CRUNCHIT\CRITINI \$300 NTSC

Test- / Diagnostics program

This program 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 SHOWTIME 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

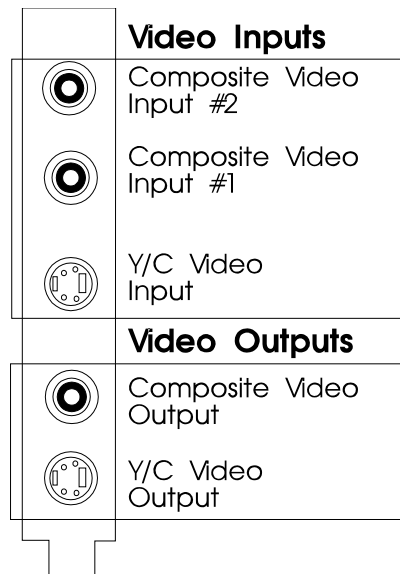
The board has 3 inputs and 2 outputs as seen from the side of the board.

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 Decoder 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 editing 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. sound-board, 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 unter Windows crash.

Mouse functions or icons are not correct. Wrong colors are displayed.

A: Set - depending on the SETUP of your system - DEQUOPLEREFRESH, 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) or 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.

BitBlit

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 original 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 means '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.

select and change options on computer boards, printers, and other peripherals.

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 Control Interface. 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

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 erasable 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-independent 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 as 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 manufacturing) 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 per second. 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-independent 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 means 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 Video. 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-independent. 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 Instrument Digital Interface. 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 Picture Expert Group. 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 scene 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 Television Standards Committee. 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 Alternation Line. 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 ($3 \times 8 \text{ bits} = 24 \text{ bits}$, $2 \text{ to the power of } 24 = 16.7 \text{ million}$). 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 acoustic 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 its 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 its 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.

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