

# V7-STORM PRO

**User Manual**

Benutzerhandbuch

Manuel d'emploi

Manual del usuario



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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

You have received the SPEA software on CD. It is also possible that your package also includes 3.5" diskettes. This manual describes the installation from the Media Gallery CD as this is the most common method. If you intend to install from the diskettes, please take note of the README files on these disks and the starting instructions on the diskette labels.

### Important Note

You **must imperatively** read the README file on the Media Gallery CD 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 CD in your drive and change to the ...\\SPEA\\INSTALL\\STORMPRO directory. Then type:

```
SHOW README.ENG
```

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# Quick Installation (Hardware)

This quick installation is **for experienced users only**. Detailed installation information can be found in the respective sections of this manual.

1. Check that your monitor and system configuration support the SPEA graphics card (e.g. correct bus type and version).
2. Disconnect your computer from the mains power and peripheral equipment.
3. If your system main board incorporates a video adapter deactivate it.
4. Change the jumper settings if required. The jumper settings on the board can normally remain unchanged. There are however conditions (e.g. if combining boards in a system) when changes should or must be made.
5. Install your SPEA graphics board in a free extension slot.
6. Reassemble your PC, connect peripheral equipment and reconnect the power cable.
7. Switch on your monitor first, then the computer.

# Quick Installation (Software)

The respective application (e.g. Windows) must already be configured for standard VGA (640 x 480) before the corresponding SPEA driver can be installed.

1. Insert the Media Gallery CD and start the software installation (from the CD drive) as follows:

**DOS:**

Enter SPEA.BAT at the DOS prompt

**Windows 3.x:**

Enter SPEA.BAT at the DOS prompt

**Windows NT:**

Open a DOS window, call SPEA.BAT

**OS/2:**

Open an OS/2 window, change to the CD drive and start SPEAOS2.CMD

2. Follow the instructions on the screen and select `English (E)` as the language for the installation.
3. A window will be displayed with a list of the boards on the left and the options `'Installation'` and `'Manuals'` on the right. Select your board, if not already automatically selected.
4. Click on the option `'Installation'` (you may have to confirm your board once more).
5. You will next see a list of software for installation. You must select the first option (`'Utilities'`).
6. Select other drivers as necessary (e.g. Windows 3.x driver).
7. Some drivers (e.g. Windows 3.x) require a batch file (called after this program) to continue the installation. If this file is necessary, you will be asked to confirm the default name `CONTINUE.BAT`. Accept the name and follow the instructions on the screen.

# Problems with the Installation?

In the unlikely event of problems ...

1. Check the README file on your CD (see page 2) or in your C:\SPEA\GDC directory after the installation.
2. Read *Appendix C: Troubleshooting*.
3. Check the technical support information on offer via the SPEA Support Mailbox
4. Contact the SPEA ExpertLine

## **Important:**

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

## Guide to this Manual

This manual is structured in the following way:

Part 1	Introduction
Part 2	Tells you how to physically install the graphics board.
Part 3	Provides information for installing the application drivers.
Appendices A-D	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:

```
E:  
SPEA.BAT
```

If not defined in another way, all DOS commands must be confirmed with the ENTER or RETURN key.

**Example:** Examples e.g. for commands are indicated by this format.

**Screen messages** are shown in *Courier*.

**Cross references** to other parts of the manual are shown in *italic*.

**Directory names** mentioned in this manual are exemplary and written in capital letters.

This document refers to your CD drive as E: Please enter the relevant letter for your system.

## Delivery Scope Checklist

Your SPEA package should contain the following items:

- 1x V7-STORM PRO
- the Media Gallery CD
- this manual

## SPEA Media Gallery CD

The SPEA software is supplied the Media Gallery CD. The current utility software and various drivers are available around the clock and can be downloaded from the SPEA Bulletin Board (Mailbox) or CompuServe (GO SPEA).

## Last-Minute Changes - README file

Our software is constantly being improved and updated. This means that it may not have been possible to document the most current software changes. The latest information is contained in a file README.

The README file appears on the screen automatically during the software installation. You can also read this file at any time from your CD with the command:

```
E:\SPEA\INSTALL\STORMPRO  
SHOW README.ENG
```

## Warranty

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

## Support

The following support services are offered by SPEA Software AG:

- technical support (telephone, SPEA ExpertLine)
- Online information and software updates per modem (SPEA Mailbox, CompuServe)
- software updates on disk via the SPEA Media Gallery CD

Further information concerning these support services can be found in the 'SPEA ExpertLine' information at the end of this manual.

## Company Address

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# Part 1

## Introduction

Your SPEA board is a high-resolution, VGA compatible graphics accelerator specially designed to speed up applications running in graphics-intensive environments such as Windows and OS/2.

### Graphics Board Features

- advanced Weitek P9100 64 bit graphics processor for VESA Local Bus and PCI 2.0 bus systems
- 4 MB VRAM onboard
- TrueColor (16.7 million simultaneous colors displayed) at 1280 x 1024
- maximum (non-interlaced) display resolution of 1600 x 1200 up to 80 Hz
- chip-integrated drawing functions to optimize graphics oriented applications
- Power management (DPMS) software included to use the VESA specified modes to reduce power consumption
- enhanced driver software for most major applications
- high-frequency RAMDAC for very high refresh rates
- jumperless installation (PCI)

### Software for your Board

Various software drivers for standard applications as well as useful utilities are supplied with your board. Additional software (drivers for specific applications) are also available, but not a part of the standard delivery scope. These can be obtained from the BBS or CompuServe.

#### Standard Software Delivery

- Intuitive menu-guided installation program
- SPEA DOS and Windows tools
- Driver software for the following applications:
  - AutoCAD 12 & 13
  - AutoCAD for Windows
  - MicroStation 4.x/5.x
  - OS/2 2.1x & 3.0
  - Windows 3.1x
  - Windows NT 3.5

#### Optional Software

This software is available free of charge via SPEA's Mailbox (and partially via CompuServe)

- AutoCAD 11 driver
- Windows NT 3.1

# Part 2

## Hardware Installation

### Graphics Card Installation

---

#### Requirements

1. IBM compatible computer (80386/486/586) with PCI version 2.0 or VESA local bus system.
2. One free PCI or VL Bus system expansion slot
3. MS-DOS operating system, version 5.0 or higher or Windows NT or OS/2.
4. Screwdriver

#### Warning!

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

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

#### Monitor Compatibility

The boards of the SPEA series offer high performance in resolutions, refresh rates and colors. Especially the ergonomic SPEA refresh rates up to 100 Hz give absolutely flicker free performance. The SPEA boards are optimally configured to be combined with the SPEA MultiSync monitors.

Of course SPEA boards can also be connected to other VGA or high resolution MultiSync monitors. Please be aware of the fact, that you can only get use of the full power of the graphics board if the horizontal (kHz) and vertical (Hz) refresh rates of your monitor are as high as required by the graphics board.

**Example:** The technical specifications of a multisync monitor could be as follows: max. resolution 1280 x 1024; max. horizontal frequency 50 kHz; max. vertical frequency (refresh rate) 90 Hz.

If you wish to use one of the video modes listed in the file BIOS.TXT included with this product, then all three of the above mentioned parameters may not exceed the specifications of this monitor.

In our example, the mode 1024 x 768 with a horizontal frequency of 48.5 kHz and a refresh rate of 60 Hz may be selected, whereas the next higher refresh rate of 70 Hz (at the same resolution) is not possible, as the required horizontal frequency is 56.5 kHz in this case, which exceeds the specifications of the monitor.

#### Warning!

If you permanently use your monitor with frequencies that are too high you may damage the monitor. Therefore before you start to change the refresh rate with programs described in this manual (e.g. SPMODE, V7SETUP), have a look in your monitor manual for its technical data (horizontal and vertical refresh rate, possible resolutions).

Set your monitor to analog mode. You may need a new cable or a 9- to 15-pin cable adapter to use this mode.

Check your monitor owner's manual for further information.

#### Typical System Configuration

A typical configuration environment your board is described as follows:

- Colani Tower 486DX-40, VL bus, 40 MHz, 4 MB or Colani Tower 486DX2-66, PCI bus, 66 MHz, 8 MB
- SPEA 2085 MS Monitor

## Preparing your Computer

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

### Changing your PC's BIOS SETUP

If a board other than a VGA board was previously installed, it is necessary to change the PC's hardware configuration. This is sometimes done by changing a jumper on the motherboard after removing the old board (check your motherboard or PC manual) although it more common to change your PC's BIOS SETUP.

#### Exception:

If you have a system with a EGA/VGA display adapter built onto the motherboard. In this case, the on-board EGA/VGA display adapter **must** be disabled before installing the SPEA card.

Please check your PC manual to find the location of the corresponding switch.

#### Warning

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

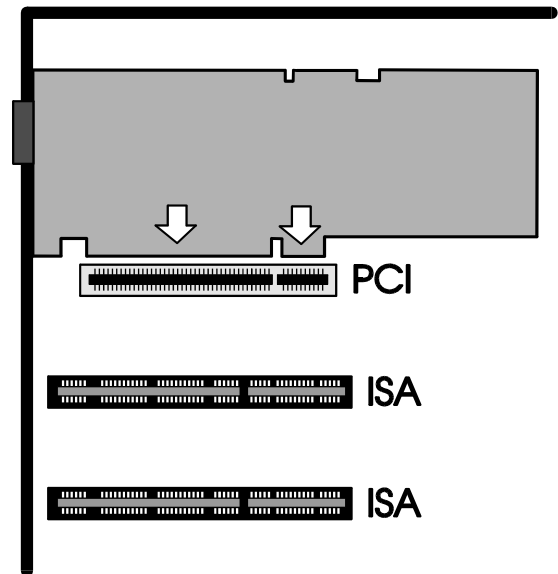
If your system doesn't have to be re-jumpered for a VGA board then first proceed with the following installation steps and then run your BIOS SETUP program and select 'VGA' (else 'IBM VGA') as your graphics board type. Check your PC manual for information on its BIOS SETUP.

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.

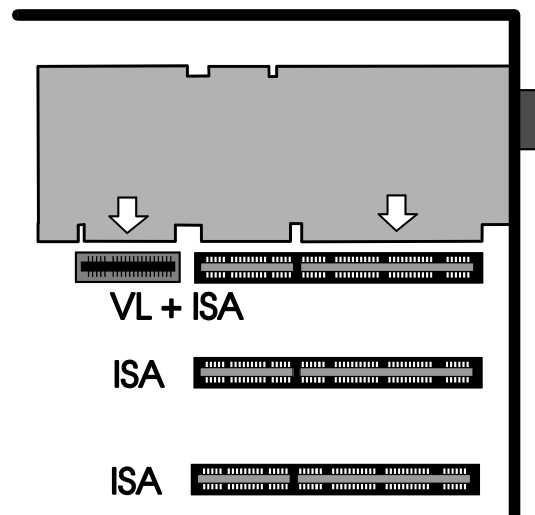
## Installing the SPEA Board

The SPEA card is installed in an expansion slot corresponding to the bus type (VL local bus or PCI bus).

1. Select a free expansion slot and remove its metal slot cover. Save the screw to secure the graphics card later.
2. Hold the card by the edges and press it firmly into the expansion slot.



Installation in a PCI expansion slot



Installation in a VESA Local Bus expansion slot

#### Important!

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

3. Align the slot in the mounting bracket of the SPEA card with the screw hole in the rear panel of the computer case. Use the screw you removed from the expansion slot cover or the previously installed video adapter to secure the SPEA card in place.
4. Secure ribbon cables and gently push them down and out of the way before you replace the system cover.
5. Replace the computer cover. Secure it with the screws you removed earlier.
6. Reconnect any peripheral equipment cables you may have disconnected.
7. Securely attach your monitor cable to the 15-pin VGA output connector on the board. The other end is hooked up to the monitor as described in the manual of the monitor manufacturer.

### Additional Instructions

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

The SPEA board has been designed to 'plug & play' without any modifications being made to the default switch or jumper settings. If however, it appears that the card is not performing optimally, you can change the settings. Refer to *Appendix B: Technical Details* for more information.

Note that your monitor is running in standard modes and that higher refresh rates etc. are not available at this stage of the installation! It is necessary to run the programs SPMODE.EXE (for DOS applications) and V7SETUP.EXE (for Windows) in order to optimize the board's output signals for use with specific monitors. These programs are described further on in this manual.

### Hardware Compatibility: the VL/PCI Bus and the Graphics Board

The functionality of a graphics system depends mainly on two components: the graphics board and the mainboard.

If either the design of the VL bus or the PCI mainboard is not compliant with the approved VESA or PCI specifications you may experience problems with the graphics board.

SPEA has successfully tested the SPEA VL bus graphics boards in VL bus mainboard with a clock rate of 66 MHz and PCI bus mainboards with a clock rate of 90 Mhz.

### After Installing the SPEA Board

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

## Part 3

# Software Installation and Configuration

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

### Note:

Our software is constantly being improved and updated. This means that it may not have been possible to document the most current changes in this manual. The latest information is contained in the README file previously described.

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

## Installing the Basic Software and Utilities (all Operating Systems)

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In order to use your board in your PC it is necessary to install a package of basic programs, regardless of the operating system in use. Please execute the following steps in order to install the basic software.

1. Put the Media Gallery CD in drive E: and start the installation (from E:) as follows:

### DOS:

call SPEA.BAT from the DOS prompt

### Windows 3.x:

call SPEA.BAT from the DOS prompt

### Windows NT:

open a DOS box and enter SPEA.BAT

### OS/2:

open an OS/2 window, change to drive E: and then call SPEAOS2.CMD

2. Choose `English (E)` as your language for the installation.
3. A new desktop is displayed. The board is normally automatically detected (see the left of the screen). If not, click on the button for your board.

4. Click on the `Installation` button (on the right of the screen).
5. Confirm your hardware.
6. You will see a list software drivers available for installation.
7. Select the first option '`Utilities`'.
8. You will now be asked for the disk drive and directory names where the SPEA software should be copied (default: `C:\SPEA\GDC`).
9. Accept the default name and follow the instructions on the screen. The installation program will automatically copy all the necessary files onto your hard disk.
10. A README file appears on the screen during the installation. Please read this file!

The basic software is now installed. To install and configure the drivers you need for the different operating systems and applications you are using, please read the relevant sections that follow (in this chapter).

Please note that the respective applications will still be shown in 640x480 resolution. Higher resolutions or color depths are set using a corresponding tuning program (`SPMODE.EXE` for DOS applications, `V7SETUP.EXE` for Windows applications).

## Windows 3.1x Driver

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If Windows is not installed on your system yet, install it for standard VGA with the user defined setup (from the DOS command prompt) before continuing.

1. Put your Media Gallery CD in drive E:
2. Change to this drive and type:  
SPEA.BAT  
from the DOS command prompt.
3. If not already marked, select your board in the list which appears.
4. Click on the `Installation` button (on the right).
5. Confirm your board again.
6. Select the Windows driver option shown.
7. Accept the name `CONTINUE.BAT` for the batch file as proposed.
8. End the primary installation and change to the root of your hard disk.
9. Type `CONTINUE.BAT`. Windows and the installation program `V7SETUP` are automatically started.
10. Select a monitor and screen video mode and when finished, click on `OK`.
11. Restart Windows as suggested in the next dialogue box. This ends the installation.

You can reconfigure your graphics display from now on using the `SPEA V7SETUP` menu and various Windows tools.

## SPEA V7SETUP

### What is SPEA V7SETUP?

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

### How is SPEA V7SETUP used?

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

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

#### **Warning**

You can damage your monitor if you select a refresh rate that is too high for it! Read your monitor manual refresh rate information. Changes made via `SPEA V7SETUP` are only activated after Windows has been restarted. The test button is only active for the current mode. If you change the settings it will be deactivated. Restart Windows with the new settings and call `SPEA V7SETUP` again, the button will be active again.

## SPEA WinTools

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SPEA offers its customers various tools which can be used to simplify or enhance the use of Windows.

### SPEAenergy (DPMS)

#### What is SPEAenergy?

SPEAenergy is a power management utility (DPMS) for Windows.

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

#### Note:

You must have a monitor that supports DPMS. Via a dialog box you can activate 4 different DPMS modes.

The 4 DPMS modes are: ON, STAND-BY, SUSPEND and OFF.

#### How can you install SPEAenergy?

The SPEAenergy icon will be automatically placed in the SPEA program group during the Windows installation routine.

#### How can you work with SPEAenergy?

Start SPEAenergy by double clicking on the SPEAenergy icon. A self-explanatory dialog box appears for defining your settings. If you need help, consult the online help integrated in this program.

If you want to finish SPEAenergy you have to close the SPEAenergy icon that is residentally placed at the bottom of your monitor display.

## Windows NT 3.5

---

Make sure that Windows NT version 3.5 is installed on your hard disk. The drivers in this release are written to run only with version 3.5, and not with any other version of this operating system.

The driver consists of 2 files:

WEITEKP9.DLL

WEITEKP9.SYS

(situated in the directory \SPEA\INSTALL\STORMPRO\NT35 of the CD).

### Installation

1. Boot Windows NT with "Windows NT Workstation Version 3.5 [VGA mode]".
2. Insert the Media Gallery CD drive E:
3. Please copy WEITEKP9.DLL into directory \WINNT35\SYSTEM32 and WEITEKP9.SYS into directory \WINNT35\SYSTEM32\DRIVERS
4. In the window labelled MAIN run the Windows NT Setup by double-clicking on that icon.
5. In the Setup window, click on Display.
6. Click on 'Change Display Type'.
7. Click on Change ...
8. In the displayed list box, select the driver 'Weitek P9000 Graphics Adapter' and click 'Install'
9. In the window 'Installing Driver' click 'Yes'
10. Please answer the question whether to take the actual driver or to install a new driver with 'Current'
11. Choose in the window 'Device Base Address' a suitable address for your system and click 'Continue' (Normally the given address should be correct)
12. Click on OK
13. Click on OK
14. Click on the 'Restart Now' checkbox.



## AutoCAD 12 & 13 (DOS) AutoCAD for Windows

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Two drivers are currently available for AutoCAD.

- SPEA BigFocus (see separate manual) for AutoCAD 12 and 13 (DOS) and AutoCAD for Windows.
- ADI driver 4.2 (for DOS only, available by download from the BBS or CompuServe).

The BigFocus driver offers the following features: (AutoCAD for DOS and AutoCAD for Windows)

- extensive Online help
- automatic Display list administration
- Hotkeys - a large number of hotkeys can be defined
- New dynamic zoom - mouse controlled zooming and panning
- 3D-Win, 3D-Viewer for Windows

### Notes:

Our Software is permanently being improved. Please note that the current status may not be documented. Changes concerning the manual and the current software status are documented in the README file.

### Installation

1. Execute the basic installation (described at the beginning of this chapter) and select the BigFocus driver for the version of AutoCAD you are using.
2. At the end of the installation a file named RCSETUP.BAT is created in your SPEA\GDC directory. This file sets the necessary environment variable (SPEAPOP) needed by the BigFocus tools.
3. Call RCSETUP.BAT before you reconfigure AutoCAD itself.
4. **Windows:**  
Start ACADWIN, Select "File", "Configure" and when selecting the display driver choose:

```
SPEA .... Display/Rendering -  
by SPEA AG
```

5. **DOS:**  
Start AutoCAD again and select the following driver when choosing the display driver:

```
SPEA P9100 3D ADI 4.2  
Display/Rendering - by SPEA AG
```

## 3D-Win (3D-Viewer for Windows)

---

### Access

1. Put the Media Gallery CD in drive E: and run the basic software installation (described at the beginning of this chapter).
2. Select the 3D-Viewer for Windows option.
3. Accept the proposed name CONTINUE.BAT and call this after ending the primary installation program.
4. Windows is automatically started with the 3D-Win installation program SETUP.EXE (located in the directory ...\\SPEA\\PRODUKTE\\WIN3D on the CD).

### Use

Open the Program Manager and doubleclick on the 3D icon:



The 3D-Viewer for Windows is virtually self-explanatory. If you have problems understanding some of the dialogue boxes or effects created, consult the online help via the menu item (top left) 'Help' or the help buttons located in the various menus.

## MicroStation 4.0x & 5.0

---

1. Put the Media Gallery CD in drive E: and run the basic software installation described at the beginning of this chapter.
2. Select the driver according to the version of MicroStation you are using. This will create one of two batch files in your SPEA\GDC directory:  
WTKCFG.BAT (for version 4.x) or  
WTKCFG5.BAT (for version 5.0)
3. Leave the current program and call the respective batch file for your version of MicroStation.
4. Next, change to the directory \USTATION on your hard disk.
5. Start the configuration program USCONFIG and select a new driver as follows.
6. Select `Display Adapters`
7. Select `Vendor Supplied Driver`
8. Select `'Weitek MicroStation x.0`
9. Skip the next item for secondary adapters
10. Select `Swap screen status`  
Note:  
You will be asked if you wish to disable the virtual graphics page. If you disable the second graphics page you can choose resolutions up to 256 colors. If you enable it all resolutions will use 16 colors only.
11. Select `Exit and Save`  
Note:  
You must reboot your system for the changes to take effect.

The first time you use the driver you will be asked which video mode should be used for MicroStation (a list will be shown for selection). Make your choice. The software then creates a configuration file that the driver will use for subsequent MicroStation sessions.

### Changing Modes/Settings

To change the driver operating modes or settings: it is not necessary to run USCONFIG to change the driver operating mode or settings after the driver has been selected using the above procedure. If desired, you may enter the 'DRIVERS' subdirectory of MicroStation and type:

WTKCFG (for version 4.x) or  
WTKU50 (for version 5.0)

This will allow you to avoid running USCONFIG to adjust your driver settings

## OS/2 2.1x & 3.0

---

### Installation Requirements

OS/2 has to be installed for the standard VGA driver (640x480).

The OS/2 drivers installation program installs both the OS/2 drivers and the Windows drivers to run Seamless or Full Screen Windows. Do not perform a separate installation of the Windows drivers. To do so can cause problems; for example, Seamless Windows support may no longer work, and the version of Full Screen Windows drivers installed may not be compatible with Full Screen WIN-OS/2.

### Installation

As the OS/2 driver installation is initiated by running the INSTALL.CMD batch file (copies installation files to the OS/2 installation directory and executes the OS/2 DSPINSTL program from the hard drive) from a diskette, the installation from the Media Gallery CD automatically creates this with the label P91DRV 1. Make sure that you have a freshly formatted 1.44 MB disk at hand before starting the installation.

1. Execute the basic installation (described at the beginning of this chapter) and select the OS/2 driver.
2. Create the OS/2 installation disk as prompted.
3. Bring up OS/2 as you would normally (with the VGA driver installed).
4. Make sure you have closed any Windows Full Screen session and any Seamless Windows session.
5. Insert the new OS/2 installation diskette into drive A.
6. Select either an OS/2 Window or OS/2 Full Screen session from the command prompts folder.
7. Select drive A:
8. Start the installation by typing  
INSTALL *bootdrive*:  
  
whereby:  
*bootdrive* is the disk drive designator for the drive on which OS/2 is installed. For example, if OS/2 is installed on drive C:, then you would enter the command:  
INSTALL C:
9. In the Display Driver Install dialog box, select  
Primary Display  
and click on the OK button.

10. In the Display Adapter Type dialog box, select  
Power 9100 Display Driver  
and click on the `OK` button.
11. In the Source Directory dialog box, ensure that the drive indicated is the drive the installation diskette is in. Change it if necessary. Click on the `Install` button.
12. The installation utility copies files into the appropriate directories and modifies the `CONFIG.SYS`, `SYSTEM.INI`, and `OS2.INI` files.
13. When the files have been copied, the Power 9100 Configuration Utility dialog box will be displayed. You can then select the specific driver configuration that you would like to run. Either:
  - a. Make selections in the Monitor, Color Depth, Resolution, Refresh Rate and Resource Size list boxes; after specifying the desired configuration, click on the `Save` button, or
  - b. Select the default (640x480 8 bits per pixel) by clicking on the `Cancel` button.
14. The Power 9100 Configuration Utility saves the configuration information in the `OS2.INI` file. It also creates a Weitek Display Driver Utilities folder on the OS/2 desktop. This folder contains utilities for configuring the Power 9100 OS/2 display driver as well as the Power 9100
15. Full Screen WIN-OS/2 display driver.  
The Full Screen WIN-OS/2 drivers are installed using the default configuration of 640x480 8-bits-per-pixel configuration. Upon restarting OS/2 you may change this configuration by running the Power 9100 Full Screen Windows display driver configuration utility from the Weitek Display Driver Utilities folder.
16. The Display Driver Install dialog box informs you that changes have been made to your system configuration and you must shut down your system. Click on the `OK` button.
17. Exit the OS/2 or Full Screen command prompt by typing:  
`EXIT`
18. Remove the installation diskette from the diskette drive.
19. Shut down the system by selecting `Shut Down` from the OS/2 desktop menu.
20. Press `Ctrl/Alt/Del`.
21. Restart OS/2. The selected driver configuration is now installed and running.

# Appendix A

## Utilities

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

### SPmode - Choosing a Monitor

#### Who is SPmode intended for?

If you intend to use a DOS application such as MicroStation or AutoCAD 12, you will need to run SPmode.

#### What can you use SPmode for?

SPmode enables you to set the monitor you are using.

#### Using SPmode

1. Start SPmode from the DOS level and the directory C:\SPEA\GDC with the following call:  
SPMODE  
This opens a self-explanatory menu.
2. Select your monitor from the list shown. If your specific monitor type is not listed, then select a global type, e.g. 'Multiscan monitor 48kHz' which corresponds to the refresh rate limit of your monitor.

#### **Attention!**

If you permanently use your monitor with a refresh rate that is too high for your monitor, you may damage it!  
If you are not sure about the monitor frequencies your monitor supports, inform yourself about the resolution and refresh capabilities in your monitor manual.

#### If you change the monitor

Please note that you have to readjust the monitor set in case you change your monitor - especially for one with a lower frequency.

#### **Attention!**

Please inform yourself about the refresh rate your monitor supports as you may damage your monitor if you use a refresh rate that is too high for your monitor.

## VESA Modes

---

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

### V7HFREQ - Higher Refresh Rates under DOS

---

The utility V7HFREQ.COM allows you to set higher refresh rates than 60Hz under DOS. If you selected the utilities option during the software installation, you will find the program in your SPEA\GDC directory.

Start the program from this directory with the call:

V7HFREQ ?

You will be shown an overview of all the possible parameters and options available.

# Appendix B Technical Details

## Technical Data

---

Graphic processor:  
Weitek Power 9100

Bus system:  
PCI Local Bus (Version 2.0)  
VESA Local Bus

Video memory:  
4 MB VRAM

TrueColor (16.7 mill. simultaneous colors)  
up to 1280 x 1024, 60-75 Hz n.i.

HighColor (65.536 simultaneous colors)  
up to 1600 x 1200, 65-80 Hz n.i.

Dotclock:  
Depends on video mode in use (see BIOS.TXT  
in your SPEA\GDC directory)

## V7-STORM PRO (VL) Jumpers

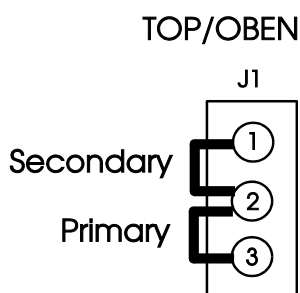
---

The V7-STORM PRO VL has five jumpers:

**Jumper No. 1** (= JP1 on the board)  
determines whether the board is used as a  
primary board (boot board) or a secondary  
board (currently not supported).

Jumper position 1-2:  
sets the board as secondary board.

Jumper position 2-3 (default):  
sets the board as primary board.



*Jumper 1 on the V7-STORM PRO (VL)*

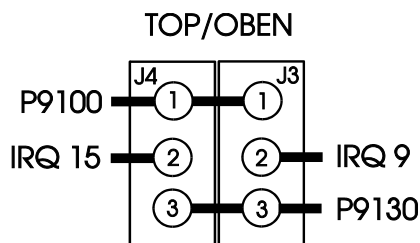
**Jumpers No. 3 + 4** (=JP3/4 on the board)  
These jumpers allow you to connect the P9100  
to either IRQ 15 or IRQ 9 (redirected IRQ 2).  
In the default setting, pin 1 of both jumpers are  
connected (no IRQ). Pin 3 is currently not  
connected on both jumpers.

Jumper 3 position 1-2:  
connect P9100 to IRQ 9 (redirected IRQ 9)

Jumper 4 position 1-2:  
connect P9100 to IRQ 15

### Warning!

Do not connect the P9100 to IRQ 15 and IRQ  
9 at the same time!



*Jumpers 3 + 4 on the V7-STORM PRO (VL)*

Pins 3 of J3 and J4 are connected to each  
other and should remain in this default setting  
(reserved function).

**Jumper No. 5** (=JP5 on the board)  
This jumper has a reserved function. Do not  
change the default setting!

## Memory Addresses of the V7-STORM PRO

---

It is necessary to make sure that all I/O and  
memory addresses reserved for the graphics  
board are not used by other hardware devices.  
The V7-STORM PRO uses the following  
addresses:

I/O addresses:

Standard VGA I/O      3B0-3DF

Memory map:

Video RAM      A000-BFFF

Video ROM (32k)      C000-C7FF

## Video Modes

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

## VGA Output Connector

---

Pin	Function
1	Red
2	Green
3	Blue
4	Not used
5	ground
6	Red Return (ground)
7	Green Return (ground)
8	Blue Return (ground)
9	Key (no pin)
10	Sync Return (ground)
11	not used
12	not used
13	Horizontal Sync (+)
14	Vertical Sync (-)
15	Not used

# Appendix C

## Troubleshooting

### General Considerations

---

**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.**

Make sure the SPEA board is firmly seated in its expansion slot, and that it is not touching other boards in your system.

Be sure your monitor cable is properly connected to the SPEA board and that your monitor power switch is on. You may also need to verify your cable pinout, since some monitors use a non-standard configuration.

Make sure other peripherals such as EMS cards, disk controllers or LAN cards are not using the same memory address as the SPEA board. Check with the manufacturer or your user's manual for information about designating exclusions for memory locations when invoking your device driver.

#### Some other things to think about

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

#### Systems with motherboard VGA controllers

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

## Commonly Asked Questions

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### General problems

**Q:** The system does not work properly, some problems occurred during installation.

The system beeps when booting or the graphics board cannot be initialized.

Problems with network systems 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.

The following I/O addresses may not be used from hardware devices as these are the addresses the graphics board uses:

03B0 - 03DF (hex).

Deactivate all other VGA components in your system (in case a VGA part is built onto your motherboard or several graphics boards are installed in your system). Only one VGA part can be active in a system.

Install the graphics board in another slot or - if possible - in another PC.

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.

For memory management no INCLUDE command is allowed. Instead you have to exclude memory areas which are used by other hardware devices (e.g. Scanner, Soundboard a.s.o.) with the EXCLUDE command. For the graphics board this is the area x=A000-C7FF.

Reduce the cache from 2048kB to 1024kB.

Q: Is it possible to run DOS with more than 60 Hz?

A: Yes, using the program V7HFREQ located in your SPEA\GDC directory (if you installed the utilities).

Q: The SPEA Utilities are not available.

A: The SPEA Utilities are packed (and not visible) on the SPEA Media Gallery CD. To use them you have to install them via the SPEA installation program from the CD. Select the option 'Utilities' to copy the utilities into the \SPEA\GDC directory.

## Problems with Windows

Q: The Windows startup lasts very long. Is the V7SETUP logo responsible for that?

A: No, the V7SETUP logo does not have any influence on the Windows startup. 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: Fonts are displayed incorrectly.

Icons or Windows are displayed unclear or not complete.

The image scrolls through when clicking on the scroll bar.

Pixels remain on the screen.

The image flickers.

The system crashes.

A: Reduce the refresh rate via the V7SETUP

Reduce the clock rate of the system via the System-BIOS Setup.

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 - DEQUOPLEREFRESH, REFRESH=HIDDEN, REFRESH=ATSTYLE or REFRESH to 'disabled'.

Use COM port #2 for your mouse.

Q: Working with QEMM 6.x: Windows cannot be started.

A: If you get the message 'no UMBs free' set the following entry into the CONFIG.SYS:

```
C:\QEMM386.SYS R1:ST:M RAM
X=C000-C7FF
```

Q: The Test button of the V7SETUP is not active.

A: The Test button is only active with the actual settings. If you change any



setting in the V7SETUP the Test button becomes inactive. Restart Windows (with the saved new settings) and call V7SETUP again. The Test button is now active for the new setting.

Q: No DOS prompt appears after the termination of Windows.

A: Delete the additional remark 'V7START.DLL' from the entry  
DRIVERS=MMSYSTEM.DLL  
in the boot block [boot] of the SYSTEM.INI file.

# Appendix D

## Glossary

**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.

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

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

**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.

**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.

**CGA:** The IBM Color Graphics Adapter.

**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.

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

**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.

**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.

**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.

**Expansion Slot:** An electrical connection within the computer used for the addition of expansion boards (such as video adapters).

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

**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.

**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.

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

**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.

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

**MDA:** The IBM Monochrome Display Adapter.

**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.

**Palette:** A selection of colors from which to choose. The V7-STORM PRO 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.

**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.

**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.

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

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

**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.

**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.

**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 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 graphics board supports the VESA standards.

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