

V7-VEGA 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

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 graphics card (e.g. correct bus type and version).
3. Disconnect your computer from the mains power and peripheral equipment.
4. If your system main board incorporates a video adapter deactivate it.
5. 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. Read the relevant section in this manual to be sure.
6. Install your SPEA graphics board in a free extension slot.
7. Reassemble your PC, connect peripheral equipment and reconnect the power cable.
8. Switch on your monitor first, then the computer.
9. At the DOS prompt insert the SPEA disk 'Utilities' and start the software installation with:

```
A:  
INSTALL
```

Windows Driver Quick Installation

1. Windows must already be configured for standard VGA (640 x 480) before the SPEA Windows driver can be installed.
 2. Start Windows.
 3. Put the SPEA 'Drivers for Windows' disk in your drive.
 4. Start the Program Manager. Select the options 'File', 'Run' and then select A:\V7SETUP.EXE.
 5. Select a language in the SPEA dialogue box which appears.
 6. Select a screen video mode.
 7. For future sessions: video modes can be set and changed using the V7SETUP dialogue box (SPEA Program Group).
-

Problems?

In the unlikely event of problems ...

1. Check the README file in your C:\SPEA\GDC directory
2. Read *Appendix B: 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 extra pamphlet)

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.

Guide to this Manual

This manual is divided into five parts:

Part 1	Introduction
Part 2	Tells you how to physically install the graphics board.
Part 3	Provides information for installing the application drivers included on the SPEA Superdisk.
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:

```
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 exemplary and written in capital letters. The SPEA Superdisk is delivered on 3,5" format. 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:

- 1x V7-VEGA PRO
- the following 3.5" disks:
 - 1x 'Utilities & Drivers for OS/2
 - 1x 'Drivers for Windows'
- SPEA ExpertLine Info sheet
- this manual

SPEA Superdisk Format

The SPEA software is supplied on high density (1.4 MB) 3,5" floppy disks. The current utility software and various drivers are available around the clock and can be downloaded from the SPEA Bulletin Board (Mailbox).

Last-Minute Changes - README file

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

The README file appears on the screen automatically at the end of the software installation. You can also read this file at any time from your hard disk (after the installation) with the command:

```
SHOW README
```

or from your diskette with:

```
A:  
SHOW README.ENG
```

Warranty

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

Support

The following support services are offered by SPEA Software AG:

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

Further information concerning these support services can be found in the 'SPEA ExpertLine' pamphlet (colored info sheet) enclosed with your board.

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.

The VESA Local Bus was introduced in 1992 by the Video Electronic Standards Association. It is a low-cost, fast bus system which works with a 32-bit wide data bus.

PCI is Intel's patented local bus standard which is supported by over 100 manufacturers. It offers compatibility, continuity and flexibility in local bus systems. It was designed with future developments in mind and is independent of the system processor. It enables 64 bit extensions.

Features of the V7-VEGA PRO

- Trident 9440 processor with integrated 24 bit DAC
- compatible to the PCI local bus version 2.0 and VESA local bus 2.0 standards
- VGA/SVGA compatible
- 1 MB DRAM
- complies to the VESA DPMS power management specification
- up to 1280x1024 pixels with 16 colors
- 65536 colors with 800x600 resolutions for fast, photorealistic images
- 16.7 million simultaneous colors with 640x480 resolutions (TrueColor)
- Text display in 132 columns allows 200-400% more on-screen data
- up to 75 Hz vertical frequency (1024x768, 256 colors)

Part 2

Hardware Installation

Graphics Card Installation

Requirements

- IBM compatible computer (80386/486/586) with PCI (2.0) or VL Local bus
- One free 32 bit PCI or VL Bus system expansion slot
- MS-DOS operating system, version 5.0 or later
- Screwdriver

Warning!

Prevent static electric damage. Static 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 fre-

quency 50 kHz; max. vertical frequency (refresh rate) 90 Hz.

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

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

Warning!

If you permanently use your monitor with frequencies that are too high you may damage the monitor. Therefore before you start to change the refresh rate with programs described in this manual (e.g.V7SETUP), have a look in your monitor manual about 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 2185 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, 16 colors) on your system prior to using the SPEA software. It is a good idea to do this before removing an existing graphics adapter as not every application permits the configuration of the video mode used from the DOS plane.

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!

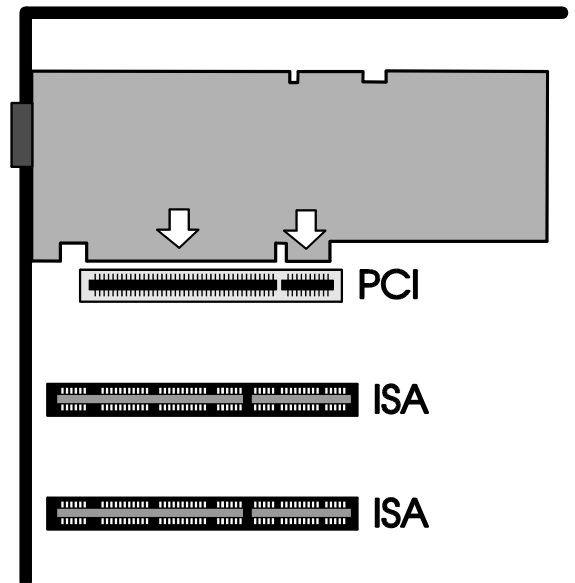
If your system doesn't have to be re-jumpered for a VGA board then first proceed with the following installation steps and then run your BIOS SETUP program and select 'VGA' (else 'IBM VGA') as your graphics board type. Check your PC manual for information on its BIOS SETUP.

1. Switch off your computer and all peripheral devices (printer, display, and others).
2. If it is necessary to disconnect peripheral equipment cables from the back of the computer, be sure to note cable positions for proper reconnection later.
3. Remove the cover from your computer. Save the mounting screws for reinstalling the cover.

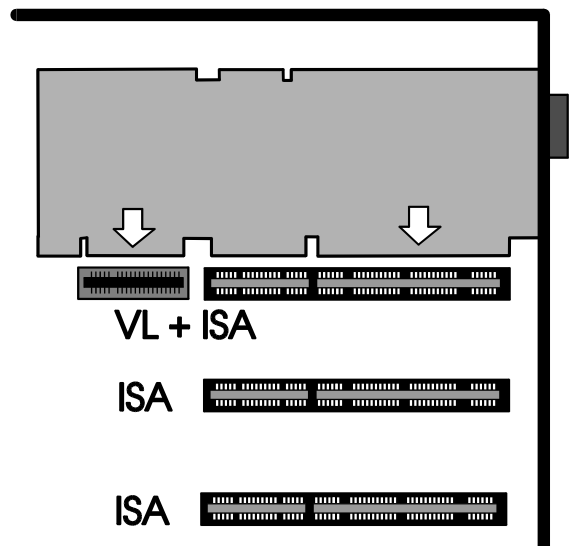
Installing the SPEA Card

The SPEA card (VL bus or PCI bus) is installed in a corresponding VL bus or PCI bus expansion slot.

1. Remove - if present - the metal slot cover. Save the screw for fixing the graphics card.
2. Hold the SPEA board by the edges and press the connector firmly into the expansion slot.



Installation in a PCI expansion slot



Installation in a VL expansion slot

Warning!

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. Reassemble the computer. Secure the cover 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 video connector. The other end of the cable must be connected to the monitor (as described in your monitor manual).

Additional Installation Instructions

Always switch the monitor on before the PC in order to avoid possible damage to the monitor.

The SPEA board has been designed to 'plug & play' without any modifications being made to the switch or jumper settings. If it appears that the card is not performing optimally, you can change the settings using the utility software described in this manual (see Part 3).

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 40 MHz and PCI bus mainboards with a clock rate of 66 Mhz.

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 it should, check again to see that the installation instructions were properly followed, or refer to *Appendix C (Troubleshooting)*.

Important!

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

Part 3

Software Installation

Warning!

Please note, that the applications you want to install software drivers for have to be already completely installed on your system.

Note:

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

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

1. Put the SPEA Superdisk 'Utilities' in drive A:.
2. Make drive A: active and start the installation program by the following commands:
A:
INSTALL
3. Choose a language for the installation program.
4. Follow the instructions on the screen. You will be presented a menu for selecting the desired software applications.
5. Make your selection of software drivers and also select the option 'Utilities'.
6. After you have made your choice, confirm it by pressing the ENTER key. You will be asked about the disk drive and directory names where the SPEA drivers should be copied.
7. Enter the disk drive and directory names and follow the instructions on the screen.

All files are copied into the defined directories automatically now.

Warning!

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

Before you start to configure the software applications you may wish to change the monitor settings, resolutions or colors. Therefore you can e.g. use the program SVM or V7SETUP. These utilities are described on the next pages.

Description of the Utilities

SVM.EXE

SVM is a menu driven program designed to select and test all video modes available to the adapter.

How to use SVM

The SVM program can be executed in one of two ways: by calling up the menu and selecting from the menu choices, or by entering the desired mode directly with a specific command line.

How to use SVM from The Menu

Go to the SPEA directory where the utilities are installed and call the program with the following call:

SVM

The top bar shows the available color depths. This is traversed through by the use of right/left arrow keys.

The program provides all the different resolutions supported by the chip under each color depth. These resolutions are traversed by the up/down keys.

The graphics adapter can be tested for each resolution/mode by first highlighting the section, then pressing the F5 key.

The graphics adapter can be run at a selected mode by first selecting the mode and then pressing ENTER.

How to use SVM from the Command Line

The SVM program may be used to select a mode directly from the command line following two simple steps:

1. Go to the SPEA directory where the utilities are installed.
2. Enter the following command:

SVM mode number

mode number is the corresponding hex mode visible when you start the program menu driven.

SMONITOR

SMONITOR is a program used to inform your graphics board of the maximum refresh rate and boot mode of your monitor.

The syntax for the command is as follows:
SMONITOR *Parameter*

The parameters:

Group Identification number for your monitor type (see table below). The default is group 4.

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.

Group	Resolution / Frequency			
	640 x 480	800 x 600	1024 x 768	1280 x 1024
0	60 Hz	--	--	--
1	60 Hz	87i Hz	--	--
2	60 Hz	56 Hz	87i Hz	--
3	72 Hz	56 Hz	87i Hz	--
4*	72 Hz	72 Hz	60 Hz	87i Hz
5	72 Hz	72 Hz	70 Hz	87i Hz
6	--	--	75 Hz	--

* Default

i = interlaced

Color mode:

C Set Color Monitor

M Set Monochrome Monitor.

By using one of the parameters you can force the board to boot in color or monochrome.

Some monitors (most notably Samsung monitors manufactured before 2/8/91) do not adhere to the standard IBM pinout definitions, which causes the VGA card to boot up in monochrome instead of color. This utility may be used to correct the problem.

Example:

SMONITOR 3

SMONITOR C

Selects a monitor in group 3 and boots in color.

TVGACRTC

The TVGACRTC program allows the adjustment of video display parameters so that images are optimally sized and centered on the screen. Adjustable parameters include:

- Horizontal size and position
 - Vertical size and position
 - Pixel frequency
1. The program is started from the DOS prompt by typing in TVGACRTC from the SPEA directory.
 2. The first section of the program is used to define a given name for the adjustments to be made.
 3. Press ENTER to add a new monitor entry and type in the name of the manufacturer, followed by ENTER keystroke.
The program will allow any name to be typed in.
 4. Type in the associated comments for the monitor settings and press ENTER.
 5. A mode table will be displayed, presenting all the adjustable modes.
 6. This table is traversed through the use of the up/down arrow keys. The mode highlighted is the selected mode for the adjustment.
 7. Select the mode to be adjusted and press ENTER.
 8. Select the desired pixel rate by scrolling the list using the up/down arrow keys and press ENTER **twice**.
The screen alignment test pattern will then be displayed. The up/down arrow keys are used to adjust the vertical positioning of the screen.
 9. The left/right arrow keys are used for horizontal alignment of the screen. The home/end keys are used for horizontal screen sizing and the page up/down keys are used for vertical screen sizing. Once the screen position and size is adjusted, press ENTER, followed by the ESC keystroke.
 10. To save the settings, type Y and press ENTER. The program will then modify the CONFIG.SYS file.
 11. At this point press ESC and reboot the system to enable the parameter changes.

Windows 3.x

Warning!

The SPEA graphics card must be installed in your system before you can install the SPEA driver.

Installation of the Windows Driver

1. If Windows is **not** installed on your system yet, install it with the user defined setup and select Standard VGA as the display resolution.
2. When Windows is installed on your system, select the options 'File' and then 'Run'. Put the SPEA disk 'Drivers for Windows' in drive A:.
3. Enter the command line A:\V7SETUP.EXE and click on OK.
4. Select a language from the dialog that appears.
5. After a short while the V7SETUP menu appears. Select a screen resolution a.s.o. (note that the test button is disabled).
6. From now on you can configure your graphics display with the V7SETUP menu.

SPEA Windows Tools/V7SETUP

What is V7SETUP?

V7SETUP is a program with various options to set up the resolution and number of colors used for Windows.

How Can V7SETUP be Used?

Double click on the SPEA icon located in the SPEA program group, the dialog box then will appear.

Warning!

You can damage your monitor if you select a refresh rate that is too high for it! Consult your monitor manual about possible refresh rates.

Changes made in V7SETUP are only activated after Windows has been restarted.

SPEAenergy

What is SPEAenergy?

SPEAenergy is a utility to work with the DPMS functionality within 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 circuit elements which reduce the power consumption level in stages (e.g. from 120 W to 100 W to 30 W to 5 W).

Warning!

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?

1. Put the disk 'Drivers for Windows' in drive A: and start Windows.
2. In the Program Manager select 'File' and 'Run'.
3. Set the path to drive B: and select the file SPENERGY.EXE. Confirm your selection with OK.

The SPEAenergy icon will be placed in the SPEA program group.

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 resolutely placed at the bottom of your monitor display.

OS/2 (2.1x & 3.0)

Requirement:

- OS/2 is installed properly on your system and runs with a V7-VEGA PRO in Standard VGA mode.

Installation:

1. Start OS/2.

Warning!

Close all open OS/2 and Windows programs before you start the Installation.

2. Insert the SPEA Superdisk 'Utilities & Drivers for OS/2' in drive A: and enter the following command:

A:\V7SETOS2
3. Follow the installation program; additional information is available via the online help.

After you have finished the installation and restarted Windows, OS/2 Desktop and Seamless Window is available in the resolution and refresh rate you selected.

Changing the Resolution under OS/2

After the installation the new folder 'SPEA V7' with the program icon V7SETOS2 exists on your system. When you start this program, you can modify color depth and resolution. The changes will be effective after you have restarted your system.

Note:

With the V7-VEGA PRO the settings for the OS/2 WPS will automatically be taken over to the Win OS/2 full screen session.

Other Application Drivers

The drivers for Windows and OS/2 are included on the disks supplied with the board. Many additional drivers are available free of charge via SPEA's mailbox (BBS) service.

Further information about the installation of these drivers can be found in the README files included with the driver software.

More information about the SPEA BBS you can find in the attached info sheet about the SPEA ExpertLine.

The following list shows you examples of applications for which drivers are also available per BBS.

- Lotus 1-2-3 (2.1, 2.2)
- Symphony 2.x
- GEM Desktop 3.xx
- Ventura Publisher
- Wordperfect
- MicroSoft Word for DOS
- AutoCAD TurboDLD
- Quattro Pro 2.x (for DOS)
- Windows NT

Please note, that this list contains the current available drivers. Changes may be possible.

Appendix A

Technical Details

Bus system

V7-VEGA PRO VL for VESA Local Bus
V7-VEGA PRO PCI for PCI Local Bus

Compatibility

VGA and EGA register-compatible

Video memory

1 MByte DRAM

Memory addresses of the V7-VEGA PRO

To ensure that your board functions properly 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 board uses the following addresses:

I/O addresses:

Standard VGA I/O 3B0-3DF

Memory addresses:

Video RAM A000-BFFF

Video BIOS-ROM C000-C7FF

Jumper

The description of the jumpers on the V7-VEGA PRO is written in the README file in the SPEA directory (C:\SPEA\VEGAPRO).

Video timings

A list of all horizontal, vertical and pixel frequencies can be found in the file BIOS.TXT in the SPEA directory.

VGA Connector Pin-Out

Pin	Function
1	Red signal
2	Green signal
3	Blue signal
4	Not connected
5	Ground
6	Ground Red
7	Ground Green
8	Ground Blue
9	Not connected
10	Ground Sync
11	Monitor ID (not used)
12	Monitor ID2
13	Horizontal Sync (+)
14	Vertical Sync (-)
15	Not connected

Appendix B

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. Recheck your computer's switch and jumper settings.

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

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 a network occur.

A: Check again, that all the connections are correct and if the graphics board is fitted securely in the extension slot.

Be sure that you have installed the most current 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.
BIOS system setup:
Install SHADOW RAM for the Video BIOS.

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:

The drivers HIMEM.SYS / EMM386.EXE, 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 size of your hard disk cache
from 2048kB to 1024kB.

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: 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 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 your system SETUP, DEQUOPLE REFRESH, REFRESH=HIDDEN, REFRESH=AT-STYLE 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

Appendix C

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 Board: A device used to expand a computer's capability. Your new graphics board is an expansion board.

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

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. 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.

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 board supports the VESA standards.

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