● Introduction :

This is the HelpFile for the **WeitekPower Windows95 Display Drivers**.

You will find useful information about installing the drivers and configuring the Display Card.

Please select a Topic Section :

Driver Installation Notes

Selecting RefreshRates

Setting Card, Driver Options

New Features

Installation Procedure :

- **During or Before first Installation of Windows95**

- **Changing from VGA or other Display Card**

- **Upgrading from previous version WeitekPower Driver**

- **Important Notes for PCI Localbus Cards**

- **Important Notes for VESA VL-bus Cards**

If you are installing Windows95 for the first time

1. During Windows95 installation you may be asked to select the drivers for your card. (If not asked then choose VGA and refer to the <u>VGA Procedure</u>.)
2. Click on the **Manufacturer Supplied Drivers** button in the window and then the **Have Disk** button.

Insert the diskette containing the WeitekPower drivers (e.g. the diskette in **A:** drive) and enter the location of the driver diskette e.g. **A:** (if the diskette is in that drive)

3. Choose the appropriate option that matches the description of the card in your system and Click on **OK**.
After installation you can return to the **Display Settings** window where you can select your **Monitor** and then preferred resolution and color depth.

     Click here to start the **Add New Hardware** Wizard

If you have already installed Windows95 with VGA or other Driver

Important Notes for users of VESA LocalBus Cards including :
Diamond ViperVLB,
Weitek Power9000 VLB,
Weitek Power9100 VLB

1. Open the Control Panel folder and choose the **Display** Icon,
or Using the mouse, right-click on an empty space in the main Desktop Window and choose **Properties**.
2. Click on the Tabbed Windows titled **Settings** and then click on the button **Change Display Type**.
3. You should first select the **Monitor** Model to match your system if this is already done skip to the next step.
4. Click on the **Change** button in the Adapter type window and then the **Have Disk** button.

Insert the diskette containing the WeitekPower drivers (e.g. the diskette in **A:** drive) and enter the location of the driver diskette e.g. **A:** (if the diskette is in that drive)

5. Choose the appropriate Card Type that matches the description of the card in your system and Click on **OK**.
6. Double check to make sure that you have selected the correct Monitor for your system since this is used by Windows to interpret the maximum resolution your system is capable of, regardless of the capabilities of the card. Note that this information is also used by the Display Driver if **Auto Detect** Maximum Refresh Rate is enabled.
7. The drivers will be installed and you will be returned to the main **Settings** window where you can select your preferred resolution and color depth.
8. Click on the **Apply** or **Close** buttons *(but not Cancel)* to confirm you choice. Windows will advise that the System needs to be restarted to enable the new Settings.
9. After the system restarts, and the next time you open the **Display Properties** window from Control Panel (or by right-clicking over an empty spot on the Desktop and selecting **Properties**) you can enter by choosing the window tab titled **WeitekPower** to select your Refresh Rate preferrence.

    Click here to open the **Device Manager** settings

If you have already installed a previous version Weitek Driver

    Important Notes for users of VESA LocalBus Cards including :
        Diamond ViperVLB,
        Weitek Power9000 VLB,
        Weitek Power9100 VLB

1. Open the Control Panel folder and choose the **Display** Icon. *or* Using the mouse, right-click on an empty space in the main Desktop Window and choose **Properties**.
2. Click on the Tabbed Windows titled **Settings** and then click on the button **Change Display Type**.
3. You should first select the **Monitor** Model to match your system if this is already done skip to the next step.
4. Click on the **Change** button in the Adapter type window and then the **Have Disk** button.

Insert the diskette containing the WeitekPower drivers (e.g. the diskette in **A:** drive) and enter the location of the driver diskette e.g. **A:** (if the diskette is in that drive)

5. Choose the appropriate option that matches the description of the card in your system and Click on **OK**.
6. The drivers will be installed and you will be returned to the main **Settings** window where you can select your preferred resolution and color depth.
7. Make sure that you have selected the correct Monitor for your system since this is used by Windows to interpret the maximum resolution your system is capable of, regardless of the capabilities of the card. Note that this information is also used by the Display Driver if **Auto Detect** Maximum Refresh Rate is enabled.
8. After the system restarts, and the next time you open the **Display Properties** window from Control Panel (or by right-clicking over an empty spot on the Desktop and selecting **Properties**) you can enter by choosing the window tab titled **WeitekPower** to select your Refresh Rate preferrence.

● Setting RefreshRates :

Included in the drivers is a DisplayProperties **ControlPanel Extension** for supporting the **WeitekPower Windows95 Display Drivers**.

Using this utility you can select the prefered method of selecting the *Refresh Rate*, or change the *Monitor's Sync Polarity* and adjust the *Monitor Alignment*.The utility allows dynamic adjustment of the *Size* and/or *Postion* of the visible screen. Additionally you can change the default settings of your card to improve performance in certain application types, or enable the special features of your card.

Note : You should install a Monitor before using refresh-rate Auto-Detection. This can be done from with the **Display Properties** Dialog

Context Sensitive help is supplied through-out this utility. You can get pop-up help on any control, or setting, by right-clicking with the mouse on that item. Additionally Windows95 also provides a Help Tool, the **?** button at the top right of the window. Click that button and then use the mouse to select the Control, FunctionWindow or StatusMessage that you wish to learn more about.

Click here to open the **Display Properties** settings

● New features :

New Features in the Driver :
- **DOS VESA Games** optional support (default is disabled) is included to enable VESA VBE 2.x acceleration for compatible games running   in a Full-Screen DOS shell (under Windows95). Including great new titles like **Quake™**, **DukeNukem™ 3D** and **11th-Hour™**
- Additional support has been introduced to improve performance of VESA 1.2 classic's like **MechWarrior™** and **Flight Simulator™**.
- **PentiumPro™** optimization is included to increase raw FrameBuffer bandwidth by between 30% and 100% depending on the application.
- **VideoPower** enhancements for *DirectDraw* applications including *ActiveMovie* and *DirectVideo* with accelerated rendering of YUV (video) and RGB, and including Color-Space-Conversion/Scaling in modes 16bpp and greater.
- **More Acceleration** including Geometric functions : Line, n-sided Polygon, PolyLine, Poly/ScanLine.
- **Bug Fixes** (too many to mention) including improved support for utilities like QUICKRES and changing color-depth-on-the-fly in Windows95 OSR-2.

More

New Features in the ControlPanel Extension :

In **Driver Options**
DOS VESA Support enable the high-resolution VESA 2.x support for DOS applications.
PentiumPro optimizations
DirectDraw capabilities the driver reports when accelerating games.
Accelerate GDI enable/disable Graphical functions the driver accelerates.

In **Video Power**
VideoPower features to accelerate video and graphics.

In **Card Options**
PCI BurstMode Improves compatibility with BurstMode PCI MotherBoard chipsets.
Palettized, Greyscale optional format for 8-bit modes
32K,64K Colors selects 15/16bit operation for max compatibility or max color.

 Click here to install now

Options & Settings :

Most features of the cards are quite complicated and so the driver attempts to use acceptable default settings while allowing individual control through the **Registry** or the **SYSTEM.INI** file. The **ControlPanel Extension** provides a simple user interface to these storage areas. Only after the driver has been installed and is running, may you use the control panel to modify these settings and the behavious of the display card. Alternatively some settings are kept in the **SYSTEM.INI** file and can be modified and saved before Windows is started this allows crash recovery in the situation where the settings cannot be modified via the Control Panel because the driver is not functioning or is unusable.

Controlling the Level of Acceleration from Safe Mode
Windows provides a standard method to adjust the level graphics hardware is used to accelerate GDI operations. This is available in the **Graphics** menu under the **Performance** options of the **System Porperties**. Using the slider you can preclude **Hardware Cursors**, **Hardware Acceleration** and ultimately prevent any hardware acceleration at all. While the **ControlPanel Extension** does provide individual control over how the hardware is used to accelerate Windows the perfomance can also be controlled via this method, additionally this control can be used from within **Safe Mode** and will apply even after Windows is re-booted normally. This allows recovery from system critical errors *without modifying INI file settings* via the Safe Mode boot method.

Click here to open the **Performance** settings

Adjusting the INI File Settings from DOS
To adjust the INI values before the driver runs you must boot into DOS and modify the SYSTEM.INI file manually using a Text Editor. Look for the section under the heading **[DISPLAY]** and add or modify entries and values. If this section is not present you must insert it into the file. Note : Mixed Upper and Lower case can be used. A '**1**'denotes enabled, and a '**0**' denotes disabled. If the entry is not present it is set to the 'default', which is usually 'enabled'.

Some of the Settings available from **SYSTEM.INI** include :
       [Display]
       BurstModeFix = 1
; Enable PCI-BurstMode fix (default is '1' on PCI systems)
       MemClkInDecaKHz = 4400
; Enforce a Memory Clock speed in MHz * 100 (the default depends on the Board Vendor)
       CursorFix = 1
; Reduce cursor jumping, but reduce performance (the default is '0')
       CyclesPerRowMiss = 5
; Use slower VRAM (default is '4')
       IBM525PLL = 0
; Disable using the PLL on IBM525 Dacs (default is '1')

NOTE : Modifying these settings manually should only be done as a **last resort**.

Special Note For VL-Bus Cards :

If you have a **VESA LocalBus** card such as a :

> **Diamond ViperVLB**, **Cardinal WarpSpeed**
> **Weitek Power9000 VL-Bus**

After re-booting the system the first time with new Display settings, you may get a warning message, informing you that the **Display Adapter Is Not Configured Properly**. This occurs due to a bug in the way **Windows95 Plug&Play** treats legacy ISA and VL-Bus cards.

To avoid this problem you should not restart the system immediately after installing the driver and selecting a new resolution. Instead you should click on **No** when asked to **Restart** and then move immediately to the **Device Manager** window where you will be able to configure your card settings for the system. Click on the **Display Icon**, then **Propoerties**, and finally **Resources**. There will be a message complaigning *"... the resources used do not match known configurations.."*.
Select the **Set Configuration Manually** button and then **OK** to save the settings.

Note : For users of Weitek P9000 VLBus Cards (**not-including** Diamond ViperVLB) you will have to ensure the **Memory Address** shown in the Resources window matches the Jumper settings on your card. Please consult your hardware manual to confirm these match.

After confirming resources you can click on **OK** and you will then be asked to **Shutdown** the system, and this time you can click on **Yes**.

> Click here to open the **Device Manager** now.

Special Note For PCI-Bus Cards :

If you have a P9000 or P9100 **PCI LocalBus** card such as :

        Diamond ViperPCI,   **DSystems Papilio**, **Quandrant Astro**
        Diamond ViperSE, ViperPro, ProVideo, **DFI Amazon64** ... etc

A new option **Support BurstPCI** is available in the **Card Options** window to enable use of your WeitekPower PCI card with **PCI BurstMode Writes** enabled. This new option is enabled by default if a PCI motherboard is detected, however you must modify your BIOS setup manually. You can still disable this feature if you like, for improved graphics performance.

Background : The Weitek P9001 (PCI interface for P9000) and P9100 chipsets were designed in the very earliest days of PCI standard and do not properly support the target initiated disconnect cycle. This can cause problems while doing PCI burst writes. Previously you may have been instructed by your vendor to disable PCI BurstMode Writes from you MotherBoard's BIOS setup menu. Or you may have received a special BIOS from your vendor which disables BurstMode on certain known-problem PCI chipsets.
Beginning from Driver Version 2.10 this should no longer be necessary. The driver has been modified to enable host memory-to-screen BitBlt acceleration while still retaining BurstMode enabled capability for other PCI cards in the system. After installing the new driver you may wish to try re-enabling PCI-Burst support in your BIOS and try it out !

Note :
1. This feature is not relevant to VESA LocalBus (VLBus) cards.
2. Some motherboards (e.g. Intel™ Plato) do not offer BIOS option for enabling or disabling this feature.
3. Maximum acceleration is still available by disabling the **Support BurstPCI** option in the **Card Options** window.

By using these control you can make small adjustments in the visible screen's Horizontal or Verical size and position.
Note : If, after effecting an adjustment, your monitor loses sync or starts jittering or becomes unstable you can press the **<ESC>** key to return to default settings.

By using these control you can make small adjustments in the visible screen's Horizontal or Verical size.
Note : If, after effecting an adjustment, your monitor loses sync or starts jittering or becomes unstable you can press the **<ESC>** key to return to default settings.

By using these control you can make small adjustments in the visible screen's Horizontal or Verical position.
Note : If, after effecting an adjustment, your monitor loses sync or starts jittering or becomes unstable you can press the **<ESC>** key to return to default settings.

Shows the current Display Mode and the preferred method of choosing Refresh Rates.

Displays the Display Mode the card is currently in, showing the Resolution and Color Depth.
Note : If changed, the selected refresh rate and all screen settings will apply to this mode only, by default.

This determines the polarity of the Vertical Sync signal sent to the monitor.
Note : Please consult your Monitor User's Manual before changing these settings.

This determines the polarity of the Horizontal Sync signal sent to the monitor.
Note : Please consult your Monitor User's Manual before changing these settings.

Enables support for Plug and Play Monitors. You must also install a **"Plug and Play Monitor (VESA DDC)"** in the **Settings** window, click on **Change Display Type**.
The Display Card will use the **VESA DisplayDataChannel** (DDC) to ask the Monitor for the best Refresh Rate it is capable. The driver will try detecting DDC2 and then fallback to DDC1, however DDC1-only Monitors will require the screen be blanked while communicating.
Note : This feature is not available on all cards.

The display driver will use only the lowest Refresh Rate available for that mode, this is usually about 60Hz.

Note : This does not mean the mode will work on any monitor.

The display driver will make it's own determination on the best Refresh Rate suitable for your monitor.
Note : You should install the correct Monitor Type for this feature to work effectively.

Changes you make will be saved along with the current display Resolution and Color Depth and will only apply to that mode.

The Refresh Rate you select will be forced on all Modes regardless of Resolution or Color Depth. This preference should only be used if you have choosen a setting that later doesn't work in a particular mode and you wish to re-enter that mode to re-set that preference.
Note : Even when forced the display driver will not allow a refresh rate that the card is not capable of, **however** there is no way of knowing if the Monitor also can support it.

These are the details of the vendor hardware and card specific chips, as detected by the driver.

 Click here to open the **Device Manager** now.

These are the **Refresh Rates** supported by the Display Card in the current Resolution and Color Depth.

Allows you specifically enable/disable chip, card and driver options, features and settings.

Enable or Disable card-specific features and settings.

Enable or Disable features and settings for cards with The Weitek **VideoPower** video-coprocessor installed.

Enable using the DAC's palette in 256 Color Modes.
Note : The only recommended setting is **Enabled**

Set the Dac to work in GreyScale in 8bit mode. All 256 colors will be represented in shades of Grey.

Use 5:5:5 (15 bit) pixels in Hi-Color color modes, giving a maximum of 32,768 colors.
Note : This mode has better compatiblity but less colors.

Use 5:6:5 (16 bit) pixels in Hi-Color color modes, giving a maximum of 65,535 colors.
Note : This mode has better more colors and will not use any more memory.

You can select a maximum hardware cursor size of 32x32 or 64x64.
Note : 64x64 hardware cursors are only available on certain cards.

Enable or Disable using hardware accelerated cursors.
Note : Changing this setting will **NOT** affect your ability to also use software color and animated cursors.

Enabling using Graphics Double Buffering may improve Video, Game and/or 3D performance. It will not improve normal Windows applications performance.
Note : Enabling Double Buffering does not work for all **DirectX** applications and may actually decrease performance for those applications which do not know how to work with only 2 buffers.

Enabling using hardware interrupts may improve Video, Game and/or 3D performance.
Note : Not all cards support using vertical refresh interrupts. Consult your card users manual.

Enabling this option will improve compatibility with PCI MotherBoards that support Burst-Mode e.g. Intel™ **Triton** Chipsets.
Note : Disabling this option improves performance for VL-Bus MotherBoards, and and older PCI Motherboards.

Enabling this option will enable the card to use the default Memory Clock as programmed by the BIOS at boot time. When disabled it implies the Driver will use a pre-set speeds for the Accelerator and the VGA which may or may not be the best choice for your card/memory.

Select the interrupt line used by the display card. Please consult your Display Card users manual.
Note-1 : Not all cards support using vertical refresh interrupts.
Note-2 : PCI card users do not need to change this setting.

Enable using the Weitek **VideoPower** video-coprocessor to accelerate Video Playback.

Enabling using double buffering for Capturing will grealy improve performance when both Capturing and Displaying (preview) Live-Video. It will not improve normal Windows applications performance and may decrease overall video performance since more memory is used.
Note : This feature is only available if you have a Capture-option or Daughter-Card for interfacing live-video to VideoPower.

Enable using the Bi-Linear Interpolative Scaler engine in the Weitek **VideoPower** video-coprocessor.
Note : Enabling this feature will improve video playback quality when the image is scaled above the original size.

Instructs the Weitek **VideoPower** video-coprocessor to co-ordinate drawing with the Monitor Sync signals so that video tearing is reduced. This feature is useful when rendering a large video or into a scaled-up window.
Note : Enabling this feature may decrease video playback performance when the image is small.

Changes the speed at which the Weitek **VideoPower** video-coprocessor runs. Higher speed means faster rendering of video, however there are many early versions of VideoPower that cannot run at the same speed as the P9100, and if incorrectly set will corrupt the video and possibly other regions of the frame buffer.
Note : If video playback is corrupted choose a lower speed.

Determine the desired priority when using **VideoPower** to accelerate video playback.
Note : This setting only affects priorities when both Video and Graphics tasks perform simultaneously.

This is the version number of the Display Driver and components.

Controls which GDI functions or groups of functions will be accelerated by hardware.Enabling an option will improve performance. Disabling an option may possibly fix an application compatibility problem.

Controls how the hardware is used to accelerate DirectDraw.

Enabling the use of multiple buffers (e.g. Triple Buffering) if requested. Slower but more compatible.
Note : This will decrease the available memory as a temporary swap buffer needs to be allocated.

Sets the maximum number of surfaces to two. This works best with the double buffered design of the P9100 & P9000.
Note : Some DirectX software demands more than two buffers and will default to full software emulation.

Emulates multiple flipping surfaces by using the hardware Blt'er.
Note : This will decrease the available memory as a temporary swap buffer needs to be allocated.

Selecting this button prevents this dialog from being shown again.

Selecting this button enables support for VESA VBE 2.x compatible DOS applications to use the high-resolution modes and acceleration features of your card. The support only works while the display driver is running i.e only for applications run in DOS Full-Screen mode under Windows.
Note : Disabling this option will revert to BIOS level VESA support - only.

Selecting this button overrides the standard BIOS VESA support, using this driver's VBE 2.x modes only.
WARNING ! Most older DOS software is NOT compatible with VBE 2.x Linear Frame Buffers and may crash.

Will enable optimizations for Windows and DOS VESA applications running on the PentiumPro™ family processors that use the linear FrameBuffer. Examples being Video, Color Images and VESA 2.x Games.
Note : Enabling this feature may not improve all Graphics performance. Windows already utilizes the high-level drawing functions to reduce bandwidth.

Will enable optimizations for DOS applications running on the PentiumPro™ family processors that draw directly to the VGA buffer. Examples being DOS VESA 1.2 applications and older Games.
Note : Enabling this feature will not improve Windows performance at all since the Windows driver uses the Linear Frame Buffer.

Selecting this button enables smooth scrolling in Win32 applications using tree-view or list-view controls, improving the readability and aesthetics, especially if there are many branches.

These drivers, by Weitek Corporation, are designed to work on the WeitekPower Family of graphics accelerators and video co-processors. This includes the Power9000, Power9100 and VideoPower chipsets.