PowerStrip for Windows 95/NT

Version 2.17 - English/International Edition - 1998.05.01
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Quick Start

Experienced users who want to get up and running as quickly as possible, follow these steps:

- **Install** the PowerStrip, if you haven't already done so, by either running the supplied **PowerStrip Setup Wizard**, or by right-clicking on the supplied inf installation script file from the Windows Explorer: use **pstrip95.inf** for Windows 95/98 and **pstripNT.inf** for Windows NT.

- **Start** the PowerStrip after installation by following these steps: click the **Start** button → **Programs** folder → **PowerStrip** folder → **PowerStrip**. The PowerStrip monitor icon will appear on the **Task bar** next to the clock.

- **Open** the PowerStrip menu by clicking on the PowerStrip monitor icon.

- **Change language** from the PowerStrip default by following these steps: click the **PowerStrip** icon → **Advanced options** → **About the PowerStrip** → **Appearance**. Select the language you prefer from the drop-down list.

- **Select monitor type** from the PowerStrip menu by following these steps: click the PowerStrip icon → **Advanced options** → **Monitor configuration**. Under Windows 95/98 the PowerStrip default monitor is the monitor you select using the native Windows monitor selection dialog box. Under Windows NT, use the PowerStrip monitor make and model controls to select your monitor type.

- **Configure presets** (display schemes, hot keys, etc.) by following these steps: click the PowerStrip icon → **PowerStrip configuration**. Select color palette, desktop size and refresh rate preferences using the relevant controls, and then drag-and-drop your preferences from the **Display settings** panel on each of the buttons in the **Presets** panel. If you want system-wide hot key access to any of these features, select hot keys in the **Hotkeys** panel (only PowerStrip's "safe mode" hot key is enabled by default and defined as [Ctrl-Alt-S]).

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Document conventions

This manual assumes you're comfortable with basic Windows functions like click, right-click, double-click, and drag-and-drop, and that you're generally familiar with the Windows 95/NT interface. In addition, we use the following conventions:

- **Bold** is used for text that appears on-screen and for **subheads**, **Notes** and **Warnings**.

- *Italics* are used for file and path names, documents, and new terms.

- Keyboard keys are grouped in square brackets, with a plus sign separating keys that you press simultaneously. For example: press [Ctrl+Alt+Del] twice to restart your computer.

- Arrows ("→") to separate ordered directions.
  For example:

    Click the **Start** button → **Programs** folder → **PowerStrip** folder

  is the same as:

    1. Click the **Start** button.
    2. Click the **Programs** folder.
    3. Click the **PowerStrip** folder.

Note: This release of the PowerStrip has been tested with, and contains code optimized for, Microsoft Windows 98 Beta 3, as well as Windows NT 5.0 Beta 1.

Online documentation

- Online documentation (this file) is in the **PowerStrip** folder.

- A file named *pstrip.txt* is also in the **PowerStrip** folder, containing last minute changes and release notes.

- Extensive context-sensitive tool tips in English, Chinese-FianTi, Chinese-JianTi, Dutch, French, German, Italian, Japanese, Korean, Portuguese, Russian and Spanish are available throughout the program. The default language is auto-detected and selected by the PowerStrip the first time it is run, but can be changed instantly and at any time from the **Appearance** page of the program's **About** box.

Overview

The PowerStrip is a display control and desktop enhancement utility for Windows 95/NT, specially designed and optimized for use with your graphics accelerator or monitor. You should think of the PowerStrip as a kind of supplementary "device driver" which works in conjunction with your accelerator's display driver, and allows you to get the most from your monitor.

Note: For maximum compatibility and flexibility, the PowerStrip program and drivers are loaded and unloaded *dynamically*, but note that many of the features the program provides are only available while the PowerStrip is running.

PowerStrip features include:

- **Broad compatibility** with the latest non-proprietary display drivers provided by your board manufacturer and the graphics chip house, as well as drivers provided directly by Microsoft with DirectX releases, service packs, and new 32-bit Windows operating systems.

- **Direct BIOS and register-level hardware support** for Plug and Play monitors, display power management, screen size and position adjustment, and - with some graphics accelerators - system/ memory clock settings, programmable refresh rates and TV output controls.

- **Enhanced Windows API support** for configuring and changing display settings "on-the-fly", the option of associating up to 20 applications with specific display settings, incremental enlargement and reduction of desktop size, special support for screen savers and DirectX/OpenGL applications, optional system-wide hot keys to the most important PowerStrip functions, and much more.

Note: In order to ensure absolute compatibility with the standard **Display Properties** sheets provided by Microsoft and graphics chip houses, now and in the future, access to the PowerStrip is obtained through an unobtrusive Windows **Task bar** icon on the system tray, while access to standard display controls is reserved to the Windows Display Properties dialog box. To open the standard **Display Properties** dialog box, right-click the Windows desktop background, then click the **Properties** menu item. Depending on your version of Windows and graphics accelerator, the controls provided by this dialog box will be different.

Installing the PowerStrip

Installation

If you received the PowerStrip with a new graphics accelerator, the program will normally bundled with new display drivers for Windows 95 and Windows NT, and includes the **PowerStrip Setup Wizard**, which is designed to make installation of both the program and drivers as simple as possible. Powerstrip software bundled with new monitors, as well as PowerStrip updates, are bundled with a small Setup program as well, but do not include drivers.

If you received a full PowerStrip driver pack for your graphics accelerator, click the **Start** button → **Run** and then enter the full path name to the **PowerStrip Setup Wizard**, e.g., *a:\setup.exe* or *d:\ downloads\drivers\setup.exe*. Follow the instructions onscreen.

If the PowerStrip was not bundled with drivers and a Setup program, or if you prefer to install the PowerStrip manually, open the **Windows Explorer** and access the drive and folder which contains the PowerStrip files.

- If you are running Windows 95/98, right-click the **pstrip95.inf** file → **Install**.
- If you are running Windows NT, right-click the **pstripNT.inf** file → **Install**.

Removing the PowerStrip from your system

To subsequently remove the PowerStrip, click the **Start** button → **Settings** folder → **Control Panel** folder → **Add-Remove Programs**. In the **Add/Remove Programs Properties** dialog box that appears on screen, select **PowerStrip (remove only)** from the list of programs on the **Install/Uninstall** page and click the **Add/Remove** button.

Note: Before removing the PowerStrip from your system, it is a good idea to first switch to PowerStrip "safe mode" (see below). When you uninstall the PowerStrip, you remove all program files related to the program.

Using the PowerStrip under Windows NT

Under Windows NT, the PowerStrip calls a special dynamic device driver which is automatically installed with the program. You must have **Administrator** rights in order to install and load this driver. If you do not have Administrator rights, the PowerStrip will operate in API-only, demo mode, with no hardware support. We do, however, maintain a special installation script for NT administrators who wish to grant **non-administrators** rights to use the PowerStrip, with full hardware support.

Updates

The PowerStrip is designed to be as "platform-independent" as possible, meaning you can safely update display drivers, operating system (e.g., from Windows 95 to NT 4.0), upgrade video memory, and even change your graphics accelerator or monitor (provided the new equipment is from a qualified manufacturer), without changing PowerStrip software. The PowerStrip auto-detects any changes which have been made to your software and hardware configuration each time it starts. However, changes to your graphics software and/or hardware configuration can and often do affect PowerStrip options and any preferences you may have saved.

To update the PowerStrip to a newer version, simply follow the steps outlined under **Installation** above. Most, but not all, of your preferences will be preserved. Refer to the *pstrip.txt* file included with the new release for specific information on changes which have been made to the newer release, and how these may affect your old preferences. The PowerStrip **About** dialog box provides important contact information regarding technical support and software updates.

When you upgrade other components of your graphics software and hardware configuration, however, the PowerStrip will minimally delete - in the interests of safety and compatibility - any hardware-specific preferences you may have saved, specifically those relating to monitor timing parameters.

Starting the PowerStrip

When you install the PowerStrip, the program and on-line documentation is added to the **PowerStrip** folder under the Windows **Start** menu. To start the PowerStrip, click **Start → Programs → PowerStrip → PowerStrip**. If you find the added support and features the program affords highly useful, you can easily add the PowerStrip to the list of programs Windows loads every time you start your computer, by checking the **Autoload** option in the **PowerStrip Configuration** dialog box.

The first time you start the PowerStrip, the **Overview** dialog box will appear, introducing you to the main features of the program. The PowerStrip will also auto-detect the default Windows language. If this language is also supported by the PowerStrip, the PowerStrip interface will appear in the same language as Windows. You can, however, change the PowerStrip interface to the language of your choice at any time, by clicking the **PowerStrip** icon → **Advanced options** → **About the PowerStrip** → **Appearance**. Select the language you prefer from the drop-down list. Note that some of the languages which the PowerStrip supports (e.g., Japanese and Korean) require specific Windows font and code page support.

When the PowerStrip is running, its icon appears on the **Task bar** next to the clock. Pause your mouse cursor over this icon to see a pop-up tool tip identifying what display settings you're currently using. An optional floating toolbar is also available, providing quick access to your saved preferences and the main features of the program.

PowerStrip Properties

PowerStrip properties are organized into dialog boxes accessible from the PowerStrip menu and toolbar. Click the task bar monitor icon to see the PowerStrip menu. The bottom part of this menu lists all your saved display schemes or *presets*. Click a preset scheme to change to its display settings.

The other items in the PowerStrip menu give you quick and easy access to the many other features which the PowerStrip provides. This section describes the multiple dialog box options available to you. The section which follows completes a description of **PowerStrip Commands**, many of which are duplicated on the toolbar and the PowerStrip menu.

PowerStrip Configuration

 The **PowerStrip Configuration** dialog box can be opened in a number of ways - by selecting it from the PowerStrip menu, clicking the relevant icon on the PowerStrip toolbar, or by double-clicking on the PowerStrip icon on the Windows task bar - and is used to select, configure and change your display settings. With this dialog box you can:

- Control your desktop size, color palette, and refresh rate.

- Assign specific display settings to preset buttons on the PowerStrip menu and toolbar for quick access to your preferred display schemes.

- Assign frequently used PowerStrip functions to system-wide hot keys.

- Assign up to 20 applications, shortcuts and registered file types to specific, display settings which are temporarily activated only while the association is running.

This section describes the various parts of the **PowerStrip Configuration** dialog box, which uses the familiar Windows notebook metaphor and is organized into *pages* and *panels*.

Display settings

The **Display settings** panel on the **Settings** page allows you to select color palette, desktop size and refresh rate. You use this panel to configure current display preferences, as well as to select display settings you want to assign to PowerStrip preset buttons and associations on the **Presets** page.

 Click the **Color palette** list box to select your *color depth*. The color depth is the number of simultaneous colors the display driver can show. This number is based on *bits per pixel* – the number of bits used to store the color information for each pixel.

The options listed depend on the version of Windows you are running, your graphics accelerator, display driver and the amount of video memory available. As a general rule, the lower your currently selected color palette, the larger your maximum allowable desktop size and the faster screen updates can be made. Higher (or *deeper*) color depths are more suitable to applications where photo-realistic rendering is critical, while lower color depths are preferable for use in mainstream business applications and where maximum performance is paramount.

Note: Some graphics accelerators only support 3D acceleration at deep color depths. Also if you have the option of selecting either 24 or 32 bit color palettes (which both support 16 million simultaneous colors), chances are the 32 bit color palette will provide better 3D acceleration.

 Move the **Desktop size** slider control to increase or decrease screen resolution. *Resolution* is measured in horizontal by vertical *pixels* (the smallest element that can be drawn on your screen). The options available depend on the selected color palette and your monitor type. As you enlarge or reduce desktop size using the slider control, the monitor image in the top-right corner of the dialog box attempts to reflect the effect your selection will have on the Windows desktop.

 Move the **Refresh rate** slider control to select a vertical refresh rate or double-click the refresh rate icon to measure the current refresh rate. The *vertical refresh rate* is the number of times your graphics accelerator refreshes the entire screen in one second, and is expressed in hertz (cycles per second). The options available depend on the selected color depth, desktop size and your monitor type. You also have the option of enabling PowerStrip refresh rate **Auto**-selection, with a choice of three auto-selection schemes:

- **Preferred** - Allows selection of separate refresh rates for each color depth and resolution, based on the previous choices you have made and which the PowerStrip "remembers", or on preferences you have made using the PowerStrip **Monitor Configuration** dialog box.

- **Safest** - Automatically uses the lowest, and hence safest, refresh rate for each resolution.

- **Optimal** - Automatically selects the highest, and hence optimal, refresh rate for each resolution based on your monitor type.

As a general rule, a higher vertical refresh rate results in less noticeable onscreen flicker, at the cost of a slight drop in raw performance. Use a high refresh rate for applications like desktop publishing and spreadsheets, where a steady flicker-free image is advantageous. Use a lower refresh rate with multimedia and entertainment titles which continuously update the screen, where raw performance is of paramount importance.

Note: If your monitor does not provide information on the current display frequency, you can have the PowerStrip **Measure** the refresh rate by double-clicking on the refresh rate (camera) icon in either the **Screen Adjustment** or **PowerStrip Configuration** dialog box. Accurate measurement takes approximately 15 seconds and requires that the display hardware be capable of generating a signal after refreshing the screen.

Warning: If no monitor, or an incorrect monitor type, has been selected, you may be able to select a desktop size or refresh rate that is too high for your monitor. See the section on **Monitor Configuration** below.

You can activate new display settings immediately by selecting your preferences and then clicking the **OK** button or by dragging-and-dropping your preferences from the **Display settings** panel on the large monitor image in the top-right corner of the dialog box.

Note: All changes to display settings - even changes in color depth using the original retail release of Windows 95 - are made "on-the-fly", without restarting Windows. In the interests of safety and unless you explicitly disable confirmation of changes to display settings (see **Options** below), you will be given the option of canceling your changes and changes will, in fact, be automatically canceled after 10 seconds if not explicitly accepted.

Presets

The **Presets** panel on the **Presets** page allows you to assign distinct display settings to a set of PowerStrip toolbar buttons and menu items, which include the **ActiveMovie Content Manager** or **Windows Media Player**, five user-defined presets, a sixth user-defined preset which should be reserved as a kind of get-out-of-trouble-fast "safe mode", DirectX and OpenGL display schemes, and a special screen saver preprocessor.

You assign display settings to each of these buttons by selecting your color palette, desktop size and refresh rate preferences in the **Display settings** panel, and then dragging-and-dropping your preferences from the **Display settings** panel on the relevant button in the **Preset** panel. The assignments you make will be immediately saved and reflected in the button's tool tip, as well as in the PowerStrip toolbar and menu.

Several of the buttons in the Presets panel support additional options as well, which you can explore by right-clicking the relevant button. The **Media player button**, for example, allows you to drag-and-drop any application on it, effectively linking your preferred program to that control and the display settings you assigned it.

Associations

 The **Associations** panel on the **Presets** page allows you to assign up to twenty applications, shortcuts or files of registered types to distinct display settings, and have them appear on the PowerStrip menu. When you launch a PowerStrip association from the PowerStrip menu, the PowerStrip will first switch to the display settings you assigned, and then launch the program you selected. When you finally close the associated program, the PowerStrip will restore your previous display settings.

To configure an application with specific display settings, first select an association number; these numbers allow you to subsequently pass the PowerStrip the association number from the Windows **Run** dialog box or through a shortcut, as described in the section below on **PowerStrip Commands**. If the association number is marked "(Unassigned)", click the Browse button to select an application, shortcut or registered file type (e.g., a HTML file registered to a Web browser). Alternately, you can drag-and-drop a file from the **Windows Explorer** on the PowerStrip **Associations** panel. The icon in the panel will reflect the application or registered file type currently associated.

You then assign display settings to the application by selecting your color palette, desktop size and refresh rate preferences in the **Display settings** panel, and then dragging-and-dropping your preferences from the **Display settings** panel on the **Associations** panel. The assignment you make

will be immediately saved and reflected on the right size of the panel, as well as in the PowerStrip menu.

Should you subsequently decide to delete the association or revert the association to default display settings, right-click on the association or panel and select **Delete** from the popup menu that appears onscreen.

Monitor

The **Monitor** panel on the **Options** page allows you to see, at a glance, the type of monitor other PowerStrip configuration options are based on. You select or define your monitor type using the PowerStrip **Monitor Configuration** dialog box, or by using the native Windows monitor selection dialog box under Windows 95/98. If the monitor type listed is incorrect, indeterminate (e.g., a generic Plug and Play monitor), or listed as "Unknown", you should configure the PowerStrip (and Windows if possible) for your specific monitor type before making any other selection.

Hotkeys

The **Hotkeys** panel on the **Options** page allows you to define system-wide *hot keys* or keyboard shortcuts to PowerStrip features and preset display schemes. To assign a feature or preset to a hot key, select the function in the list box, and then select a key to assign to it. All PowerStrip hot keys use the [Ctrl+Alt] combination. For example, by default the PowerStrip "safe mode" function is assigned to [Ctrl+Alt+S]. Functions assigned to [Ctrl+Alt+*None*] are effectively disabled. You also have the option of disabling hot key support altogether.

Options

In this release, the **Options** panel on the **Options** page offers just two options:

- **Auto-load** - This option allows you to add the PowerStrip to the list of programs Windows automatically loads each time it starts. Leave this option disabled if you prefer to start the PowerStrip manually or use it only occasionally. You should also disable this option if you prefer to add the PowerStrip to your **Startup** folder in the Windows **Start** menu.

- **Confirm changes** - If enabled - the default and recommended setting - this option causes the PowerStrip to prompt you for confirmation each time you make permanent changes to display settings. If you do not explicitly accept changes which have been made, they will be automatically canceled after 10 seconds as a safety precaution. You should disable this option only after comprehensively testing the various display settings possible, to ensure compatibility with your monitor.

Note: The PowerStrip's default "safe mode" hot key of [Ctrl+Alt+S] provides an alternate method of getting out of trouble fast (assuming you haven't disabled or reassigned the hot key).

Graphics System Information

The PowerStrip **Graphics System Information** dialog box is opened by clicking the relevant icon on the PowerStrip toolbar or by selecting it from the PowerStrip menu: **Advanced options** →

Graphics system information. (Note that a right-click on this icon in the toolbar opens the PowerStrip **About** dialog box.)

This dialog box uses the familiar Windows notebook methaphor and is organized into *pages* which provide specific information about your graphics hardware and software, including version numbers of critical drivers and support libraries. In addition, it provides you with real-time graphic analysis of system and video memory usage, the DirectX and AGP capabilities provided by the combination of display driver and chipset in hardware and through software emulation, and a list of the display modes specifically supported by Windows - with and without PowerStrip support.

Note: Under Windows 95/98, the list of display modes supported by Windows directly (without the PowerStrip) may not include refresh rates supported by a third-party utility or property sheet. Under Windows NT, the list of display modes supported by Windows (as opposed to the PowerStrip) may also include sub-VGA DirectX modes, and non-standard display modes specifically designed to - for example - provide optimized PAL or NTSC TV output.

Besides providing basic information about your graphics hardware and software, this dialog box is designed to help you select optimal display settings for use with DirectX applications. You will find, for example, that the amount of video memory free as well as the DirectX capabilities supported, varies with resolution and color depth. To facilitate comparative analysis, you can switch display settings by double-clicking on any of the display modes listed in the **Display modes supported** panel, and see the effect the new settings have on these factors in real-time.

DirectX display settings

The **Display modes supported** panel of the PowerStrip **Graphics System Information** dialog box allows you to list and preview the display modes supported by DirectX. DirectX display modes may typically include sub-VGA resolutions that are not normally suitable for Windows itself (e.g., 320x240 pixels). When you double-click on any of the DirectX display modes listed in the **Display modes supported** panel, a full-screen DirectX window is opened, where you have the option of adjusting the screen for size and position, and - in some cases - defining a custom refresh rate.

3D accelerater configuration

If a dedicated 3D accelerater is detected, an additional page will be available in the PowerStrip **Graphics System Information** dialog box, which allows you to configure features supported by the accelerater. These controls are likely to duplicate those available under **Display Properties**, and are provided for the sake of convenience only.

Monitor Configuration

 The PowerStrip **Monitor Configuration** dialog box is opened by clicking the relevant icon on the PowerStrip toolbar or by selecting it from the PowerStrip menu: **Advanced options → Monitor configuration**.

The **Monitor Configuration** dialog box is divided into panels which allow you to inform the PowerStrip of your monitor's capabilities, select default preferred refresh rates for each desktop size, and query your Plug and Play monitor for the manufacturer's recommendations. If you are running Windows NT 4.0 or 5.0 Beta, you must select a **PowerStrip monitor definition**. If you are running Windows 95/98, the PowerStrip will automatically use the native Windows monitor information (see

Selecting a Windows monitor definition below), but you do have the option of overriding this information by using a **PowerStrip monitor definition**.

- The **Monitor type** panel allows you to select a Windows or PowerStrip monitor definition. If the latter is selected, you select your monitor **Make** and **Model** from the extensive lists provided, or choose **(Custom types)** for **Make**, and then enter a name in the **Model** edit box. When you choose to define a custom type of monitor, the spin controls for maximum horizontal and vertical frequency are enabled, and you can enter the correct figures after consulting your monitor manual. The PowerStrip uses these figures to calculate the range of desktop sizes and refresh rates that are compatible with your monitor. If you have an older monitor that requires this, you can also force vertical and horizontal sync polarity on or off, by clicking on the **+ / -** button.

- The **Preferred refresh rates** panel allows you to see the range of refresh rates available for each supported desktop size, based on the currently selected monitor make and model. If saved, the choices you make here are used by the PowerStrip for initial reference only; the program continuously updates your preferences based on selections you may make elsewhere in the PowerStrip.

- If you have a Plug and Play monitor, the **Plug and Play** support panel allows you to query the monitor for the manufacturer's recommendations by clicking the **Capabilities** button. If the monitor is a Plug and Play device, and is recognized by the PowerStrip, the **Monitor Configuration** dialog box will expand and provide with more information than you probably care to know about your monitor and its characteristics. Some of this information, such as serial number and manufacturer's ID, could prove useful if you need to obtain technical support for your monitor (as opposed to your graphics card or the PowerStrip).

Note: In response to a VESA DDC query, Plug and Play monitors return information about the monitor manufacturer's recommended refresh rates at each recommended resolution. Since these recommended refresh rate settings are themselves often a subset of VESA recommendations, which in turn tend to be a subset of the refresh rates supported by your graphics accelerator, a "literal" interpretation of DDC information may not, in fact, deliver optimal settings. For example, the highest recommended VESA refresh rates returned by a simple DDC query are fixed at 75Hz, but the PowerStrip and your display driver may support much higher, non-VESA refresh rates at a given resolution. Because of the limited number of VESA standard refresh rates, the PowerStrip takes a somewhat unorthodox approach to DDC information, computing and comparing the monitor manufacturer's recommendations with the full range of refresh rate settings supported by your graphics accelerator and the PowerStrip.

Selecting a Windows monitor definition:

If Windows 95/98 does not auto-detect your monitor type and you need to manually select your monitor type, you can do so by following these steps:

- Right-click the Windows desktop background, then click the **Properties** menu item → **Monitor** tab → **Windows 95 Monitor** option button, and then click the **Settings** tab.

- The next step varies depending on your version of Windows. If you see the **Change Display Type** button, click the **Change Display Type** button → **Change** (**Monitor Type**) button → **Show all devices** option button. If you see the **Advanced Properties** button, click the **Advanced Properties** button → **Monitor** tab → **Change** button → **Show all devices** option button.

- Click the manufacturer of your monitor in the **Manufacturers** list box. If you have a Plug-and-Play monitor, or the manufacturer of your monitor does not appear in the list box, click "**(Standard monitor types)**".

- Click the model of your monitor in the **Models** list box. If you have a Plug-and-Play monitor, click "**Plug and Play Monitor (VESA DDC)**". If the manufacturer of your monitor doesn't appear in the manufacturers list box, click a Super VGA monitor with a resolution that matches your monitor's maximum capabilities. For more information, see your monitor manual.

- Click **OK** → **Close** → **OK** to apply and close.

Screen Adjustment

If supported by your graphics accelerator, the PowerStrip **Screen Adjustment** dialog box is opened by clicking the relevant icon on the PowerStrip toolbar or by selecting it from the PowerStrip menu: **Advanced options** → **Screen adjustment**.

Depending on the capabilities of your graphics accelerator, this dialog box allows you to fine-tune refresh rates, screen size and screen position.

- **Refresh rate** - With some graphics accelerators, the PowerStrip independently supports an exceptionally wide range of refresh rates. The manufacturer will have carefully selected a number of recommended refresh rates for each combination of color depth and desktop size, and these appear as options in the **PowerStrip Configuration** dialog box. However, if enabled, you can use the **Refresh rate** slide control to "fine-tune" refresh rates to more closely match your monitor's capabilities, and optionally **Save** your preferences so that they appear as standard options in the **PowerStrip Configuration** dialog box.

  Note: While the refresh rate slide control allows you to adjust the refresh rate in increments of 1 Hz, there may, in practice, be no effective difference between, for example, 136Hz and 137Hz. As a general rule, the difference between the refresh rate you select and your monitor's actual vertical frequency will be ± 3 Hz. Again, if your monitor does not provide information on the current display frequency, you can have the PowerStrip **Measure** the refresh rate by double-clicking on the refresh rate (camera) icon in either the **Screen Adjustment** or **PowerStrip Configuration** dialog box.

- **Position and Size** - If you want to adjust the screen image, it is highly recommended that you use the adjustment controls on your monitor before using the PowerStrip controls; use the PowerStrip controls only if your monitor does not have hardware controls to adjust screen size or position. Click the **Size** buttons to horizontally or vertically expand or shrink the screen. Click the **Position** buttons to adjust the position of the screen.

Warning: If you run into trouble adjusting your screen using PowerStrip controls, hit the [Esc] key immediately to restore the default settings for size and position. In the unlikely event that this does not restore your screen to a readable state, resort to the PowerStrip "safe mode" hot key (again, the key is assigned to [Ctrl+Alt+S] by default, unless you have changed or disabled it).

The changes you make using the **Refresh rate** fine-tune control, if saved, apply to the current color depth and desktop size only. The changes you make using the **Size** and **Position** controls are relative to the current display settings (inclusive of current refresh rate), and are automatically saved and recalled every time you switch to these display settings.

Note: Custom monitor adjustment and refresh rates are PowerStrip features. In fact, if the fine-tune **Refresh rate** slider is enabled, you should assume that all non-VESA refresh rates (e.g., 65 or

150Hz) are provided directly by the PowerStrip, and not by Windows or your display driver. In other words, monitor adjustments and non-standard refresh rates are supported and available only *while the PowerStrip is running*.

DTP Font Controls

The PowerStrip **DTP Font Controls** dialog box is opened by clicking the relevant icon on the PowerStrip toolbar or by selecting it from the PowerStrip menu: **Advanced options → DTP font controls**.

This dialog box allows you to select your system font size. You can select **96 dpi** (small) or **120 dpi** (large) fonts. You can also select a custom font size, in a similar fashion to using the native Windows 95 **Custom Font Size** dialog box under **Display Properties**. Under Windows 95/98, however, the PowerStrip offers separate vertical and horizontal slider controls for defining a custom font size, giving you a bit more flexibility. A sample bitmap text screen shows a preview of the size you're defining.

PowerStrip **DTP Font Controls** should be used with caution; many applications do not appear correctly when Windows is configured for a non-standard font size. However, the added flexibility afforded by these PowerStrip controls can be useful in situations where an accurate screen preview is important, and screen measurement must closely approximate final printed output.

Note: You must **restart** your computer for a change in your system font size to take effect (which is one reason why font controls are separated off from other PowerStrip display controls).

Cursor Controls

The PowerStrip **Cursor Controls** dialog box is opened by selecting it from the PowerStrip menu: **Advanced options → Cursor controls**. The options presented in the dialog box are self-evident: the different mouse pointers are provided as a simple convenience for those working on small LCDs or with high-resolution display settings.

Power management

Because Windows NT 4.0 provides no native support for display power management services (DPMS) and Energy Star-compliant monitors, the PowerStrip provides you with it own DPMS support, which works in conjunction with a Windows screen saver. Under all versions of Windows except Windows NT 5.0, the PowerStrip provides you with a set of commands that can instantly instruct your monitor to enter a power saving state.

PowerStrip **Power management** controls are accessed by selecting **Advanced options → Power management** from the PowerStrip menu. The sub-menu that appears onscreen offers four commands:

- **Configure** - Under Windows 95/98 or NT 5.0, this option takes you to the **Screen saver** page of the Windows **Display Properties**, where you have the option of configuring the **Energy saving features of monitor**. Under Windows NT 4.0, however, which provides no DPMS services, this

option opens the PowerStrip **Power Management** dialog box, which allows you to configure power management parameters. PowerStrip DPMS support is designed to work in conjunction with the screen saver of your choice, and the power management parameters you select are activated only after your screen saver starts.

Note: NT screen saver password protection must be **disabled** or DPMS configuration settings will be ignored.

- **Low-power standby** - This option instantly places your monitor in *standby* mode, which delivers minimal power savings but provides the fastest recovery time.

- **Low-power suspend** - This option instantly places your monitor in *suspend* mode, which delivers maximum savings but requires a somewhat longer recovery time than standby mode. (Suspend mode is not supported directly by Windows 95.)

- **Shut-off monitor** - This option effectively turns your monitor off, and recovery time is practically equivalent to turning the monitor on using the monitor's power switch.

Note: If you do not have an Energy Star-compliant monitor, these commands will have no effect.

TV Controls

If supported by your graphics accelerator, the PowerStrip **TV Controls** dialog box is opened by selecting **TV controls** from the PowerStrip menu. Depending on the capabilities of your graphics accelerator, this dialog box allows you to select and configure output devices, and optionally define and enable additional hot keys.

- **Devices** - Output devices (i.e., your TV and monitor) are selected or de-selected by simply clicking on the relevant icon in the **Devices** panel. When active, the icon will have a colored screen; if unavailable or disabled, icons will display a gray screen. With some graphics accelerators, an additional switch may be available which allows you to enable discrete, separate timings for each device (the preferred and default setting); and under Windows 98 and NT 5.0, a **Virtualize** option may also be available, which allows you to configure your TV to act as a virtual desktop extension to your primary monitor.

- **TV standard and output** - Although the PowerStrip will attempt to auto-detect the type of TV connected to your graphics card, under certain circumstances you may find it necessary to override the default setting using the **TV standard** and **TV output** controls. For example, the PowerStrip may be unable to correctly detect whether a PAL or NTSC TV is connected.

- **Options** - The **Options** panel features low-resolution and gray scale switches that provide additional control over TV output. Note that the low-resolution switches only affect display resolutions that fall within the tolerable limits of your television (640x480 pixels for NTSC and up to 800x600 pixels for PAL).

- **Startup** - The **Startup** panel has a **Restore settings…** check box which, if enabled, instructs the PowerStrip to activate TV configuration settings each time the program is started.

- **Flicker filter** - If supported by your graphics accelerator, a flicker filter slider control will be enabled, which allows you to fine-tune the degree of filtering applied to video output. Under normal circumstance, maximum filtering is the default and recommended setting.

- **Hot keys** - Additional hot keys available on the **TV Controls** dialog box allow you to assign hot keys for TV and monitor-only output, as well as for simultaneous output to both TV and monitor. Note that these hot keys are *extensions* to standard PowerStrip hot key support; while you can

enable and disable PowerStrip hot key support from the **TV Controls** dialog box, you should keep in mind that this affects **all** PowerStrip hot keys, not just the TV hot keys.

The configuration settings you make using the **TV Controls** dialog box are automatically saved and restored by the PowerStrip whenever you use the program to activate TV output. However, because the configuration settings you select may differ from your graphics card's default settings, the PowerStrip **TV Controls** dialog box always displays the *active hardware state* when it is first opened. If you wish to check your saved preferences, click the **Restore** button.

PowerStrip Overview

The PowerStrip **Overview** dialog box is opened by selecting it from the PowerStrip menu: **Advanced options → PowerStrip overview**. Designed to briefly introduce new users to the main features of the program, the Overview appears automatically the first time you run the PowerStrip.

About the PowerStrip

The PowerStrip **About** dialog box is opened by selecting it from the PowerStrip menu: **Advanced options → About the PowerStrip**. In addition to providing information about the PowerStrip program itself, the **About** dialog box provides specific information about your display hardware (as opposed to the generic Windows information provided in the **Graphics System Information** dialog box), and options which allow you to configure the interface and the program for maximum performance and compatibility. The PowerStrip **About** dialog box uses the familiar Windows notebook metaphor, and is organized into "pages".

- **Information** - The first page provides descriptive information about the PowerStrip program and your display hardware, providing more detailed information for certain chipsets, as well as information on the VESA BIOS extensions supported by your graphics accelerator.

- **Appearance** - The second page allows you to dynamically select the language in which text appears throughout the PowerStrip, and to configure bitmap menus and tooltip interface options.

- **Performance** - Options available on the third page of the **About** dialog box depend on both your graphics card and operating system. Under Windows 95/98, **Windows GDI** acceleration options may be available, which essentially duplicate the slider controls provided by the native **Windows System Properties** control panel when you select **Performance → Graphics**. If available, these options are **disabled** by default, and should be left that may for maximum performance. Other options affecting performance and/or compatibility may also be available, and are chipset-specific. These chipset-specific controls typically duplicate those found elsewhere among the **Windows Display Properties** sheets (which have a habit of occasionally "disappearing", especially under Windows 95). Again, PowerStrip convention is that all these switches should be **disabled** by default, per the chip vendor's recommendations.

  In addition, with some graphics accelerators you may find an enabled **Memory clock** slider control that allows you to adjust your video memory clock (measured in megahertz) for peek performance and maximum stability. As a general rule, your manufacturer has selected the default memory clock for very good reasons, and you should use extreme caution when making adjustments, particularly when attempting to increase the memory clock.

  Should you choose to "permanently" adjust the memory clock, the PowerStrip will allow you to test and save your preference, and restore your preference each time the program is started.

Conversely, and in the interests of safety, activating the PowerStrip's "safe mode" hot key, for whatever reason, will cause the memory clock to be restored to the factory default.

Note: Before tuning the memory clock, it is highly recommended that you first switch display settings to the deepest color depth and the highest resolution and refresh rate you plan on using. An increase in the memory clock may appear satisfactory at, say, 640x480 in 256 colors at a refresh rate of 60Hz, but result in severe pixel "noise" at 1024x768 in TrueColor at 120 Hz. After increasing the memory clock, you should also run a prolonged graphics benchmark program to check for pixel garbage at the memory clock you have selected.

- **Trouble shooting** - The fourth page of the About dialog box provides PowerStrip configuration switches, which are described in detail in the **Trouble Shooting** section below, and important contact information regarding technical support and software updates. Assuming you have Internet access and the appropriate software installed, clicking the e-mail contact information will automatically launch your mail program and open a correctly addressed new message should you need technical support, while clicking the Web site information will automatically launch your Web browser and log on to a Web page where you can find software updates.

PowerStrip Commands

Once you have configured PowerStrip features to your preferences, you will find the program provides multiple methods of activating them: in addition to the PowerStrip menu and system-wide hot keys discussed in the previous section, the program features an optional floating toolbar and command-line switches. This section lists and describes additional PowerStrip commands on the menu and toolbar, as well as PowerStrip startup parameters which allow you to activate PowerStrip preferences from elsewhere in the Windows environment.

Using the toolbar

 To display the PowerStrip toolbar, select **Show PowerStrip toolbar** from the PowerStrip menu. If the toolbar is already running, the command will read **Hide PowerStrip toolbar**. The floating toolbar provides an alternative method of accessing frequently used PowerStrip commands, organized in a series of graphic buttons which are described below. The toolbar caption also features pseudo-system buttons, which allow you to keep the toolbar on top of other applications, to "roll" it up to maximize free desktop real estate, to hide the toolbar, and to close the PowerStrip altogether.

PowerStrip associations

 Associations you create and define using the **PowerStrip Configuration** dialog box are available from both the PowerStrip menu and toolbar. To display the **Associations** sub-menu from the PowerStrip toolbar, right-click on the **PowerStrip configuration** button on the toolbar → **PowerStrip associations**, and then select the association you wish to launch from the sub-menu that appears on screen.

Optimizing for 2D or 3D acceleration

Some 3D graphics accelerators supported by the PowerStrip offer the option of *buffering* to improve 3D performance. When buffering is enabled, video memory is divided in half with half allocated as a "back buffer" where offscreen operations can take place. The disadvantage to this is that buffering reduces by half the amount of memory available to the Windows GDI and DirectX applications. For example, if your 3D accelerator has 4MB of memory onboard, and back buffering is enabled, your graphics card effectively has only 2MB of display memory remaining - which, of course, restricts the range of display settings normally available to you.

If supported by your graphics accelerator, the PowerStrip will have an **Optimize for 3D acceleration** item on its menu, which you can select whenever 3D performance, rather than high resolution, is paramount. If your 3D accelerator is already optimized for 3D acceleration, the PowerStrip will have an **Optimize for 2D acceleration** item on its menu, which you can select when high resolution display settings are required.

The PowerStrip can normally switch from 2D to 3D optimization "on-the-fly", without restarting Windows. Switching from 3D to high resolution 2D optimization, however, will require restarting Windows, since video memory can be allocated, but not released, dynamically.

Windows display properties

The native Windows **Display Properties** dialog box can be opened from both the PowerStrip menu and toolbar. From the toolbar, right-click on the **PowerStrip configuration** button on the toolbar → **Windows display properties**. Controls available to you under **Display Properties** vary depending on the version of Windows you are running and your graphics accelerator.

Windows media player

The PowerStrip **Windows media player** menu item and toolbar button is a special type of preset. Originally designed to provide quick access to the native Windows **Media Player** program, it is now associated, by default, with the Windows **ActiveMovie Content Manager** (if ActiveMovie is installed) and supports the assignment of both custom display settings and an alternate program of your choice to it in the **PowerStrip Configuration** dialog box. In other words, you can now assign any program to this button, as well as any display settings you wish, e.g, your Web browser at 256 Colors - 800x600 - 60Hz. (Note that a right-click on this icon in the toolbar opens the native Windows **Multimedia Properties** control panel.)

DirectX properties

If installed, the native Windows **DirectX Properties** control panel can be opened from both the PowerStrip menu and toolbar. From the toolbar, right-click on the **PowerStrip configuration** button on the toolbar → **Advanced options** → **DirectX properties**. Controls available to you under **DirectX Properties** vary depending on the version of Windows you are running, the version of DirectX installed, and the type of DirectX-enabled drivers installed. In addition to extensive information about your system's DirectX capabilities, the DirectX control panel provides debugging switches and controls which experienced users can enable to resolve conflicts and performance problems that may arise.

Direct3D devices

If more than one Direct3D device is available, the **Direct3D devices** menu item allows you to select which device provides Direct3D acceleration. If you have dedicated 3D accelerators based on the 3Dfx Voodoo or PowerVR chips, you will find them listed along with your primary display adapter and can safely switch amongst them *provided* you are *not* currently currently running a Direct3D application.

Enlarging the desktop

The **Enlarge desktop** menu item and toolbar button allow you to instantly increase desktop size (or resolution) in one step, e.g., from a desktop size of 640x480 to 800x600. Color depth remains constant, while refresh rate at the new desktop size is "recalled" by the PowerStrip based on prior choices you have made.

Reducing the desktop

The **Reduce desktop** menu item and toolbar button allow you to instantly decrease desktop size (or resolution) in one step, e.g., from a desktop size of 1024x768 to 800x600. Again, color depth remains constant, while refresh rate at the new desktop size is "recalled" by the PowerStrip based on prior choices you have made.

Refreshing the desktop

The **Refresh desktop** menu item and toolbar button allow you to instantly *refresh* your Windows desktop to the correct color depth, resolution and refresh rate. This can be useful in situations where another program (e.g., an MS-DOS program or DirectX full-screen application) has temporarily modified and then failed to properly restore display settings on closing.

Activating the screen saver

The **Activate screen saver** menu item and toolbar button allow you to instantly activate your screen saver. If you have assigned custom display settings to the screen saver in the **PowerStrip Configuration** dialog box, or enabled power management parameters under NT 4.0 in the **Power Management** dialog box, these take effect as well. (Note that a right-click on this icon in the toolbar opens either the PowerStrip **Power Management** dialog box under NT 4.0, or the **Screen Saver** page of the native Windows **Display Properties** control panel.)

Activating preset display schemes

The five **Preset** menu items and toolbar buttons allow you to instantly activate the display settings you assigned to them in the **PowerStrip Configuration** dialog box. Since this is likely to be

the PowerStrip feature you most frequently use, it bears repeating that these changes to displays settings are made "on-the-fly", without restarting Windows, and that the changes apply to color depth, desktop size and refresh rate (but not font size, which would require restarting Windows).

Activating DirectX display settings

The **DirectX** menu item and toolbar button allow you to instantly activate the display settings you assigned to it in the **PowerStrip Configuration** dialog box. While DirectX display settings are practically equivalent to a sixth preset scheme, we chose to assign it a visually distinct icon for two reasons. First, many DirectX and other entertainment titles often look and run best at lower resolutions and refresh rates, e.g., 640x480 at 60Hz with a 256 color palette (for maximum raw 2D performance). Second, these display settings tend to be most suitable to children's programs and children can more easily identify a distinct icon.

Note: Most recent full-screen DirectX applications have their own ability to change display settings dynamically, and need no special "preprocessing". Direct3D titles will require a deeper color depth than 2D titles.

Activating OpenGL display settings

The **OpenGL** menu item and toolbar button allow you to instantly activate the display settings you assigned to it in the **PowerStrip Configuration** dialog box. Again, OpenGL display settings are practically equivalent to yet another preset scheme, but warrant a visually distinct icon for two reasons. First, OpenGL applications - as compared to 2D DirectX applications - need a deeper color depth (16, 24 or 32bpp) for realistic 3D rendering. Second, while at this time OpenGL is typically the preserve of professional 3D applications, it is possible that in future more mainstream entertainment titles may use the OpenGL API and libraries.

Safe mode hot key

The PowerStrip **Safe Mode** hot key listed in the **PowerStrip Configuration** dialog box provides a fast and convenient way to "get out of trouble fast" in the event that your monitor is unable to sync to new display settings. When the Safe Mode hot key is activated the PowerStrip will turn power management off, disable TV output (if enabled), restore default memory clock settings, and switch display modes to 640x480 pixels in 256 colors at 60Hz. While you do have the option of changing Safe Mode display settings and disabling the Safe Mode hot key, this is not recommended.

Display modes hot key

For situations when PowerStrip presets are insufficient in number and you need to quickly select a specific display mode, the PowerStrip **Display modes** hot key listed in the **PowerStrip Configuration** dialog box provides a complete list of all available display modes supported. Double-clicking on any item in the list immediately switches to that display mode.

Closing the PowerStrip

 While the PowerStrip **Close** menu item and toolbar button on the caption bar should require no special explanation, it bears repeating that many PowerStrip features are just that: features provided by the PowerStrip, **not** Windows or your graphics accelerator's display driver. When you close the PowerStrip, you **disable** these features.

Using command-line parameters

In addition to selecting PowerStrip commands from the menu and toolbar, the program supports command-line parameters which allow you to call PowerStrip functions on start-up and from elsewhere in Windows at any time.

In the absence of special command-line parameters, when the PowerStrip is started it normally checks your current display settings and enables any special settings you may have selected (a non-standard refresh rate, for example). However, the program will also process certain command-line parameters you may choose to pass it, when the PowerStrip is started or while the program is already running. This feature allows parents and administrators to enable custom display settings for specific users on startup, and allows you to create shortcuts anywhere (on the Windows desktop or in the **Start** menu, for example) that call specific PowerStrip functions.

The PowerStrip is normally started with the command *pstrip.exe*. To pass command-line parameters to the program, you add "**/x**" to the command-line, where "**x**" is the function you want the PowerStrip to activate, e.g., *pstrip.exe /x*. The command-line parameters that the PowerStrip recognizes and processes are listed below:

1-5 - activate display settings assigned to this Preset number (1-5)
S - activate PowerStrip "safe mode" display settings
X - activate PowerStrip DirectX display settings
G - activate PowerStrip OpenGL display settings
PD - activate the PowerStrip in "demo" mode, with enhanced support
101-120 - activate PowerStrip association number 1 to 20 (100 is added to distinguish a PowerStrip association from a Preset display scheme)

To begin experimenting with PowerStrip command-line parameters, try the following example which should work under all versions of Windows, regardless of hardware or software configuration:

• Open the **PowerStrip Configuration** dialog box

• In the **Associations** panel, select association number **5**, and then click the **Browse** button.

• Find the Windows **Notepad** program *notepad.exe* or any *txt* file type and select it. The program or file name and icon should appear in the PowerStrip **Associations** panel. (Text files with the extension *txt* are normally registered to the **Notepad** program.)

• Assign the following display settings to **Notepad -** a HiColor (16 bit) color palette, with 640x480 desktop size (for the purposes of this example, refresh rate is irrelevant) - by dragging-and-dropping these settings from the **Display settings** panel on the **Associations** panel.

• Use the controls in the **Display settings** panel to select any *other* combination of display settings (e.g., 256 Colors at 1024x768), and activate these settings by clicking the **OK** button. You can confirm the new display settings by placing the mouse pointer over the PowerStrip monitor icon on the task bar and checking the tool tip that appears.

- Now use PowerStrip command-line parameters to launch the Notepad association you created by clicking the Windows **Start** button → **Run** and then enter the following command in the **Run** dialog box that appears onscreen: ***pstrip.exe /105***. Click the **OK** button.

  Notepad should appear onscreen at the display settings you assigned it - 640x480 in HiColor (16 bit) - which you can again confirm by pausing your mouse pointer over the PowerStrip monitor icon on the task bar and checking the tool tip that appears. If you selected a text file, instead of the Notepad program, this file will be opened as well.

- Finally, close **Notepad**. Windows should return to the display settings you selected before you launched Notepad, which you can again confirm by checking the PowerStrip monitor icon tool tip.

Trouble Shooting

Configuration switches

Many PowerStrip features require extensive control of display hardware, which is shared with the display driver specifically and the operating system generally. In the event that you encounter a problem, the PowerStrip features a number of optional *switches* which you can set from the **Trouble shooting** page of the PowerStrip **About** dialog box, or manually by using the Windows **Notepad** utility to edit the [Options] section of the *pstrip.ini* file, which is created and maintained in the Windows directory. These switches are described below.

Note: Before resorting to use of any of the special configuration switches described below, delete the *pstrip.ini* file, and ensure you are using the latest available version of the PowerStrip, and that you have installed the latest display driver available for your graphics accelerator.

- **No-CRTC = 1** - In order to support screen size and position adjustment, the PowerStrip includes methods to directly manipulate what are collectively known as the VGA "CRTC registers" or their equivalent. If you encounter serious problems with the PowerStrip's screen size and position methods, you can disable CRTC manipulation by setting this switch to 1. The default setting is CRTC support enabled (No-CRTC = 0). In the PowerStrip **About** dialog box, this switch is labeled "Disable screen adjustment support", and the default setting is off.

- **No-ReFlex = 1** - With some graphics cards, the PowerStrip provides flexible and extensive refresh rate support, which goes far beyond the range of options provided by your graphics card's BIOS and display drivers. Should you choose to do so, you can disable PowerStrip advanced refresh rate support by setting this switch to 1. The default setting is refresh rate support enabled (No-ReFlex = 0). In the PowerStrip **About** dialog box, this switch is labeled "Disable advanced refresh rate support", and the default setting is off.

- **API-Only = 1** - This switch prevents almost all hardware access by the PowerStrip. If enabled by a setting of 1, most PowerStrip features that require access to, and control of, display hardware, will be unavailable. The default setting is disabled (API-Only = 0), meaning full hardware access is enabled. In API-Only mode, the PowerStrip has been tested and approved for use with almost every graphics accelerator directly supported by Microsoft. In the PowerStrip **About** dialog box, this switch is labeled "API support only (minimal hardware support)", and the default setting is off.

- **Debug-HW = 1** - If you experience consistent problems when running the PowerStrip, *temporarily* set this switch to 1 to enable a written record of PowerStrip hardware calls. The record is kept in the *pstrip.ini* file, which - when submitted to technical support - assists in trapping the problem. This switch should be enabled only for purposes of generating a record of the problem in the *pstrip.ini* file. The default setting is disabled (Debug-HW = 0). In the PowerStrip

About dialog box, this switch is labeled "Log debug information to pstrip.ini file", and the default setting is off.

- **Force-Refresh = 1** - Under Windows 95/98, some display drivers use proprietary methods to ensure the refresh rate is always set to the highest or optimal value supported by your monitor. If you experience problems with refresh rates, set this switch to 1 to have the PowerStrip attempt to "trick" the display driver into setting the refresh rate of your choice. In the PowerStrip **About** dialog box, this switch is labeled "Force refresh rate", and the default setting depends on your graphics card.

Problems and error messages

Problems and error messages you may encounter when using the PowerStrip, and remedies for them, include the following:

- **Privileged instruction** - This error halts the PowerStrip immediately and typically means another driver (usually the display driver) has refused to *share* access to display hardware. If you receive this message, temporarily set the **Debug-HW = 1** switch, and submit the *pstrip.ini* file to technical support. You can usually continue to use the PowerStrip in "API-only" mode by setting the **API-Only = 1** switch.

- **A required .DLL file, DDRAW.DLL, was not found** - This error can prevent PowerStrip releases prior to 2.00 from running and means that DirectX is either improperly installed, outdated, or not installed. The PowerStrip requires DirectX 2.0 or a later release - preferably DirectX 5.2 under Windows 95, or Service Pack 3 (SP3) under Windows NT 4.0.

- **The procedure entry point FT_Thunk could not be located...** - This error under Windows NT prevents the PowerStrip from running and typically means that a version of DirectX designed for Windows 95/98 has been installed under NT. DirectX updates for NT are included as part of the Service Packs; the latest release to date is part of Service Pack 3 (SP3).

- **Refresh rates are unsteady and/or inaccurate** - This problem is typically caused by a mismatch between the selected monitor type recorded by Windows and the PowerStrip. If Windows only recognizes your monitor as a generic VGA or Plug and Play monitor, select a *specific* Windows monitor type that matches or comes close to matching your specific make and model. Many monitor manufacturers maintain updated monitor *inf* files on their Internet web sites, that allow Windows to more accurately detect a monitor's capabilities. You may also find that setting the **Force-Refresh = 1** switch helps to correct the problem under Windows 95/98.

- **PowerStrip preferences are not saved** - Although not an error, we receive more questions about this than all others combined. Simply stated, if PowerStrip preferences are not saved, this means that your graphics card or monitor is not licensed for use with the PowerStrip. You will either need to contact your dealer or manufacturer to obtain a version of the software that recognizes your display hardware, or order an end-user license.

Technical support

PowerStrip software is typically supplied under license to manufacturers who often customize the program for particular monitors and hardware configurations, and who are always the preferred source for technical support and program updates. Contact information for both technical support and program updates should be listed in the PowerStrip **About** dialog box: click the **PowerStrip** icon → **Advanced options** → **About the PowerStrip** → **Trouble shooting**. However, if you have an end-user license or are unable to obtain satisfactory support from the manufacturer, and are sure the problems you encounter are related to the PowerStrip and not the monitor, your display driver or your

software configuration, please refer the matter by e-mail to support@entechtaiwan.com, with an accompanying copy of your *pstrip.ini* file.