



User Guide

***to graphics software
for CHROME 400 Series
and CHROME 500 Series***

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However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the device and receiver
- Connect the device into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/television technician for help

Conditions of Use

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Caution

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

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SECTION 1 INTRODUCTION

This S3 Graphics User Guide provides instruction for the installation and removal of display drivers and associated utilities for the Windows Vista and Windows XP operating systems using S3 Graphics CHROME 500 Series GPUs.

1.1 How to Use this Guide

This section summarizes the basic conventions used in S3 Graphics User Guide instructions.

Subject to Change: S3 Graphics continues software enhancements throughout the life of a product. The images provided as illustrations of utility and user selection options are always subject to change and may not be identical either in appearance or in options to the software your vendor has provided. This guide is compatible with S3 Graphics software as of the document date.

Installation instructions assume you have a vendor-supplied CD which contains S3 Graphics software customized for your S3 Graphics hardware. The instructions in this document assume that the source drive for the software is a hard drive or CD-ROM drive mapped by the system as drive D:. If installation is from another source, replace D: with the appropriate source drive location.

Instructions also assume that your operating environment is either:

- Windows Vista SP1 or
- Windows XP with SP3 and includes the latest release of DirectX.

These environments provide an optimized user experience with your S3 Graphics' hardware.

Most examples show the appearance and behavior representative of the Windows Vista operating system. Windows XP will behave similarly, but not necessarily identically, unless noted otherwise.



1.2 Technology Summary

The PCI Express™ **CHROME 500 Series** products are S3 Graphics' high performance 3D graphics and video processors that combine hardware acceleration for Microsoft's DirectX™ 10.1 Shaders with the Hi-Def™ high definition display capabilities and the advanced ChromotionHD 2.0 Programmable Video Engine. The **CHROME 500 Series** brings stunning image quality, incredible 3D graphics performance, as well as tremendous flexibility including a wide range of feature rich products for desktop and mobile applications, offering a perfect balance of performance, power, and value. The unified driver support and commercial grade drivers remain true to S3 Graphics' reputation for reliable, high quality graphics solutions.

CHROME 500 Series Features

- ➔ PCIe 2.0 x16/x8/x4/x1 support
- ➔ Shader Model 4.1, Microsoft DirectX 10.1 Unified Shader Architecture
- ➔ Supports Direct3D and OpenGL applications
- ➔ Hi-Def integrated encoder supporting all 18 ATSC DTV formats
- ➔ ChromotionHD 2.0 Programmable Video Engine
- ➔ Enhanced H.264, MPEG-2 HD, VC-1 and WMV9-HD HW acceleration
- ➔ ArtisticEffects™ Video Filters
- ➔ ChromoVision™ full screen video for secondary digital display
- ➔ HDMI/DP/DVI/LCD/CRT integrated display support
- ➔ High performance 400MHz 10-bit DAC
- ➔ Display resolutions up to 2048x1536, 32bpp on CRT
- ➔ Display resolutions up to 2560x1600 with Dual-link DVI
- ➔ Dual DVI or HDMI support for independent DuoView™
- ➔ DuoRotate™ two display Independent rotation

1.3 System Requirements

S3 Graphics requires the following minimum system and software:

- ➔ **Computer** Intel Core2 Duo, Core2 Quad, Pentium 4 or Celeron, AMD Athlon Dual-Core, Single-Core, 64 FX VIA Nano, VIA C7 or later compatible processor
- ➔ **Expansion Slot** PCIe
- ➔ **Operating System** This user guide is compatible with Windows Vista SP1 or Windows XP with SP3
- ➔ **Display Output** DVI, HDMI or CRT capable of displaying at least VGA 800 x 600



1.4 Identification

This guide is compatible with current S3 Graphics CHROME 400 Series and CHROME 500 Series graphics adapters. The graphics chipset Vendor ID is **5333** for S3 Graphics.

S3 Graphics CHROME 500 Series products include the following. The Device ID for desktop products is **9060**.

CHROME 500 Series	CHROME 400 Series
CHROME 530 GT	CHROME 440 GTX
(others in future)	CHROME 430 GT
	CHROME 430 GS

1.5 Modes

Available display resolutions for CHROME 400/500 Series products will depend on the types of devices (DVI, HDMI, and CRT). The device configuration and the signals the GPU receives from the display device also influence available resolutions.

1.5.1 Windows Modes

These Windows desktop modes are supported for most CRT and DVI display devices in both single and dual display configurations, up to the capabilities of the detected devices:

➤ 800 x 600	at 8, 16, 32 bpp	Refresh Max 100
➤ 1024 x 768	at 8, 16, 32 bpp	Refresh Max 100
➤ 1280 x 960	at 8, 15, 32 bpp	Refresh Max 85
➤ 1280 x 1024	at 8, 16, 32 bpp	Refresh Max 100
➤ 1600 x 1200	at 8, 16, 32 bpp	Refresh Max 100

1.5.2 HDMI Compatible Modes

The following default display resolutions are provided for HDMI, assuming the resolutions are reported as supported by the connected HDMI. Additional modes may be available, including wide screen modes, if the detected device reports wide-screen support.

- 640 x 480p
- 720 x 480p
- 720 x 576p
- 1280 x 720p
- 1920 x 1080p



1.5.3 Device Specific Modes

The following additional modes may be accessible if reported as supported by a connected display device. Supported modes are not limited to the list below, and may include wide screen modes, if the detected device reports wide-screen support.

➤	848 x 480	at 8, 16, 32 bpp	Refresh Max 60
➤	1152 x 864	at 8, 16, 32 bpp	Refresh Max 75
➤	1280 x 768	at 8, 16, 32 bpp	Refresh Max 85
➤	1360 x 768	at 8, 16, 32 bpp	Refresh Max 60
➤	1400 x 1050	at 8, 16, 32 bpp	Refresh Max 85
➤	1680 x 1050	at 8, 16, 32 bpp	Refresh Max 85
➤	1920 x 1200	at 8, 16, 32 bpp	Refresh Max 85
➤	1920 x 1440	at 8, 16, 32 bpp	Refresh Max 85
➤	2048 x 1536	at 8, 16, 32 bpp	Refresh Max 75
➤	2560 x 1600	at 8, 16, 32 bpp	Refresh Max 60

SECTION 2 INSTALL HARDWARE

Review documentation provided by your system vendor. Some systems, for example Dual-PCIe slotted systems, may require special configuration.

If your S3 Graphics GPU is integrated into your system's motherboard, skip to section 2.4 to begin attaching video cables to the system.

2.1 Before you Install your Board



DO NOT INSTALL THE SOFTWARE UNTIL YOU INSTALLED THE HARDWARE IN YOUR SYSTEM

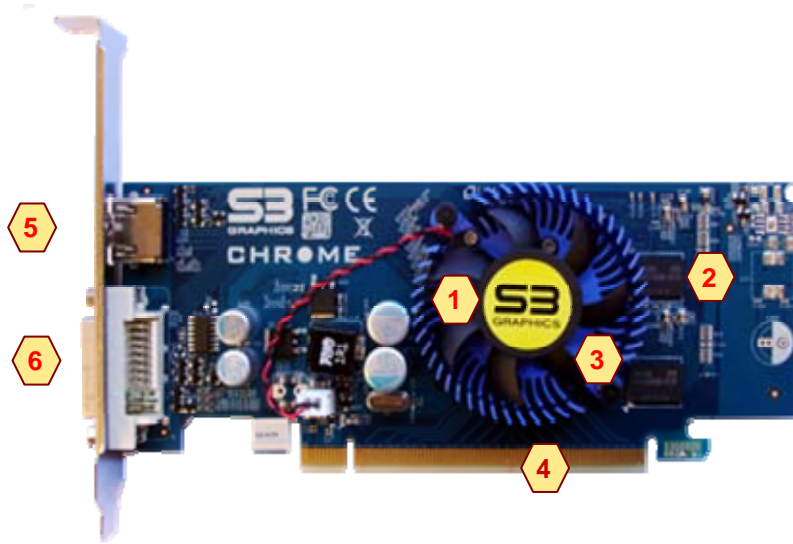
Windows Vista and Windows XP are capable of using Plug and Play detection to assist in the installation of new hardware. Your new S3 Graphics board must be installed before software installation is attempted so that the operating system can detect the presence of the new hardware.



Warning: To avoid accidental electric shock, shut your computer down and unplug the power cord. To avoid damage from static electrical discharge and to ground yourself, touch the metal chassis on your computer before starting any procedures below.

2.2 Your Board Components

The following diagram shows a typical CHROME 500 Series PCIe board layout with its major components and connections.

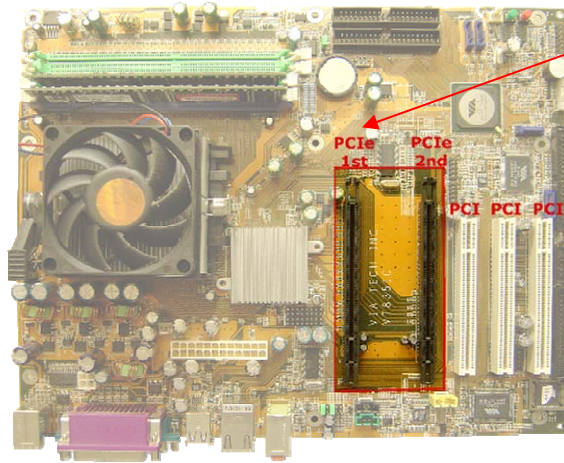


- | | | | |
|---|---|---|------------------------|
| 1 | CHROME 500 Series GPU (under fan-sink) | 5 | HDMI Receptacle |
| 2 | Video RAM (under fan-sink) | 6 | DVI Receptacle |
| 3 | Fan-sink | | |
| 4 | PCIe Interface | | |

Note: Your board may appear different than the above example. For instance, your board may be blue in color instead of green. Or your board may have a different fan-sink. Or your board may have a second HDMI or DVI receptacles, or may have a CRT receptacle.

2.3 Install Your New Board

1. Turn the power off and unplug your system.
2. Remove your computer cover and locate the slot where you will insert your new graphics card in a PCIe (PCI Express) slot (usually dark brown color). For a dual PCIe slot system, a single graphics board is usually installed in the slot closest to the CPU.

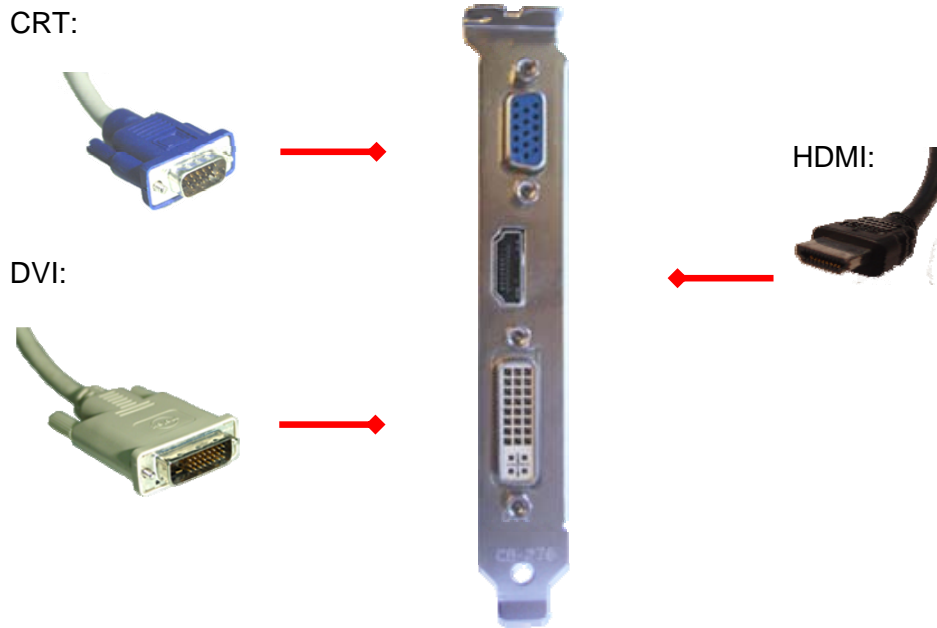


3. Remove any existing VGA card in the slot you want to use. If the slot was empty, remove the bracket plate associated with the slot. You may need to remove the screw which attaches the card or bracket to the case.
4. Ground yourself by touching the metal chassis on your computer before handling your board.
5. Align your S3 Graphics board directly above the slot. Your board is designed to fit only one way.
6. Insert your board firmly into the slot. Take care to press it evenly and snugly into its slot. Do not force.
7. With the board securely in its slot, attach it to the computer frame with the mechanism or screw you removed in Step 3.
8. Secure your computer cover.

2.4 Attach Video Cables

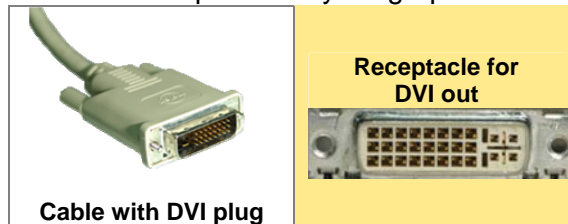
Video output connections must be correctly attached to your system to enable the video display capabilities of your new S3 Graphics board.

The connections available on the bracket of your graphics board may look similar to the following example.

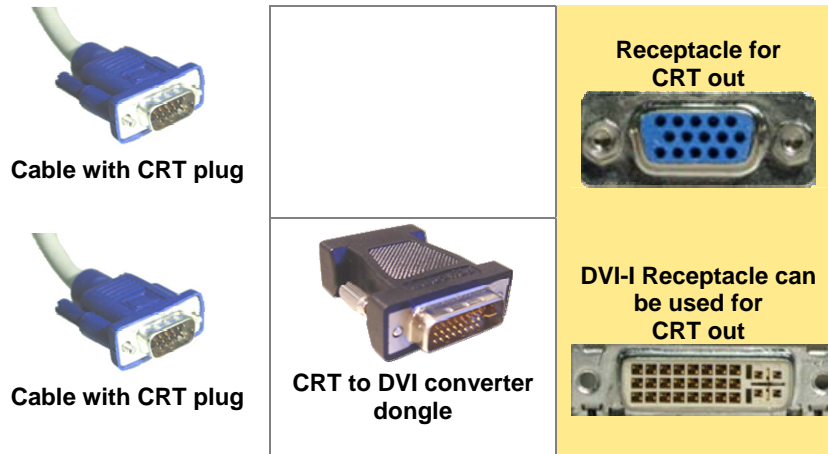


Connect at least one display output device.

9. To output display to a DVI panel device, connect the DVI plug at the end of your monitor cable to the **DVI-I** connector receptacle on your graphics board.



10. To output display to a CRT device, connect your CRT monitor cable to the CRT receptacle if your board has one. Otherwise, use a CRT-DVI converter dongle. Connect the dongle to the DVI-I connector receptacle on your graphics board.



11. To output display to your HDMI Device, connect your HDMI cable to the HDMI connector receptacle located on your board.



Special Notes for HDMI:

- If a HDMI-DVI dongle is used to attach a DVI Display monitor to the HDMI receptacle on the graphics board, the resulting output will be DVI and S3 HD Audio will not be available.
- If a DVI-HDMI dongle is used to attach a HDMI Display monitor to the DVI receptacle on the graphics board, the resulting output will be HDMI and S3 HD Audio will be available for configuration under Windows Vista or Windows XP.

- ➔ Microsoft Windows Vista provides an HD Audio software driver, which must be installed and activated for S3 HD Audio to be available.
- ➔ To use S3 HD Audio with Windows XP, you must have Windows XP Service Pack 3 installed. Additionally, you need to set S3 HD Audio as the default audio device in the Sound page of the Control Panel.

2.5 Finish Connections and Power On

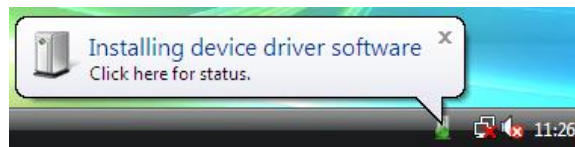
12. Re-connect any other detached cables.
13. Plug your system into its electrical source. Confirm the display output devices (DVI, CRT, HDMI) you want to use are powered.
 - Tip:** Even when you have connected multiple output devices, your system will reboot on a single display. Dual display will not be available until you have are in Windows and have initialized a dual display configuration.
14. Reboot your system. Continue with software installation.

SECTION 3 INSTALL SOFTWARE

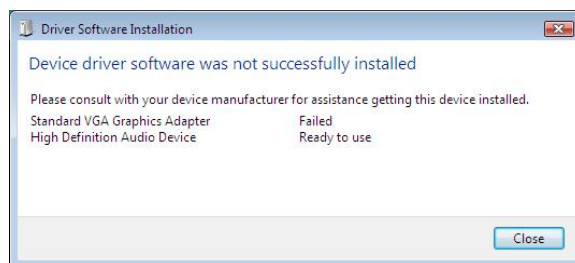
Driver packages for S3 Graphics GPUs (from CD or download) should always include a companion set of display drivers and multi-language utilities. Depending on the source of your download package, the package may be compressed, and a driver install tool may also be included.

These instructions detail an initial installation of S3 Graphics driver software.

- Step 1.** Have your CD with S3 Graphics software available. You will need it later.
- Step 2.** Install your board with a S3 Graphics GPU by following the Hardware Installation instructions in [Section 2](#).
- Step 3.** Turn on the system.
- Step 4.** **For Vista:** Because your CHROME 400/500 Series GPU is newer than Windows Vista, the operating system will not be able to recognize the GPU. As Windows Vista launches, follow any on-screen prompts as the operating system initially installs a generic low resolution Microsoft-provided device driver. (Rarely, the operating system may prompt you for an install location.)



Installation status will be reported.



As the installation finishes, a Windows Vista message box will tell you if a restart is required. **Restart** as requested.

To install your vendor- or S3 Graphics-provided software with **S3 ScreenToys** utilities, proceed from Step 5, below.



(Alternate method: see instructions in the Driver Maintenance section under [Installing Driver Updates.](#))

Step 4. For Windows XP: As Windows XP launches, a **Found New Hardware Wizard** message window appears.



Continuing for both Windows Vista and Windows XP:

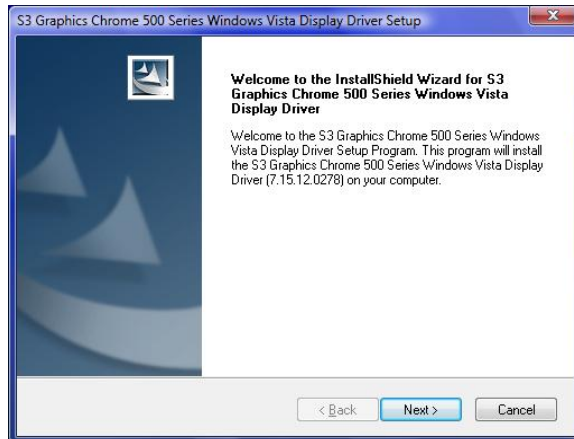
Step 5. Insert your CD with S3 Graphics software in your CD-ROM drive. The CD should auto-run and launch the install tool.

Tip: If your CD does not auto-run an install program, Click **Start**, **Run** and **Browse** to **D:\S3G_CHROME5x_Vista_xxxxxx.exe** (where D: is your CD-ROM drive) and the exe filename includes the S3 Graphics product abbreviation, the name of the operating system and version number. (This filename is the typical format for a compressed package.) Click **Open**. Installation from the compressed package should proceed similar to the method described below, except that the files will first be expanded to a local folder.

If your package is already uncompressed, it may be located in a local subdirectory, called **S3Graphics/S3Graphics_CHROME5x...** To launch the tool, navigate into the desired folder and Click **Open** on the appropriate "setup.exe" file, for example, **C:\S3Graphics\S3Graphics_CHROME5x... \SETUP.EXE.**

Tip: The wizard cannot find a driver in a compressed file. If your driver is already expanded, you can alternately, click **Next** to **Install the software automatically**. The Wizard will look for the appropriate drivers, copy drivers and related software to your system, and proceed automatically with the installation. The screen will report **Please wait while the wizard installs the software...**

If you cannot find any install program or do not want to locate the drivers automatically, select **Install from a list or specific location (Advanced)**, click **Next**, and browse to the directory where the uncompressed **S3 Graphics** display adapter driver files reside.



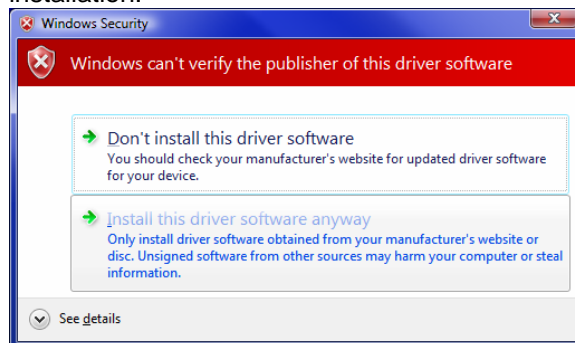
Step 6. Proceed with the installation by responding to any on screen prompts that appear.

Step 7. If a window appears asking you to accept the S3 Graphics license agreement, click **I accept** and then click **Next** to continue the installation.

In the Windows Security dialog, click **Install**.



Tip: If a message window appears indicating your software “has not passed Windows Logo testing”, click **Continue Anyway** to force the installation.



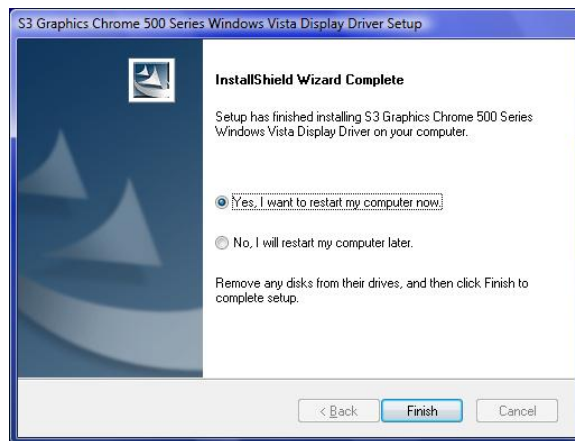
Step 8. Note that the screen may go blank for a second or two during the driver installation process. This is normal.

Step 9. The install process may take a few minutes.



Step 10. If the **Completing the Found New Hardware Wizard** window appears, click **Finish**.

Tip: Depending on the current state of the system and the software installed, a reboot may be required to fully initialize the software.



Step 11. Congratulations. Your S3 Graphics software is now installed.


SECTION 4 DISPLAY SETTINGS BASICS

Windows operating systems give you the ability to customize your graphics desktop through the Display Settings pages and controls. This section outlines the basic controls provided by the operating system, some of which are also accessible from S3 ScreenToys links. Subsequent sections of this manual will detail the use of the additional controls which are available through the S3 Graphics ScreenToys utilities.

Basic display driver settings can be configured through the **Display Settings** dialog window (XP: **Display Properties** dialog window, **Settings** tab).

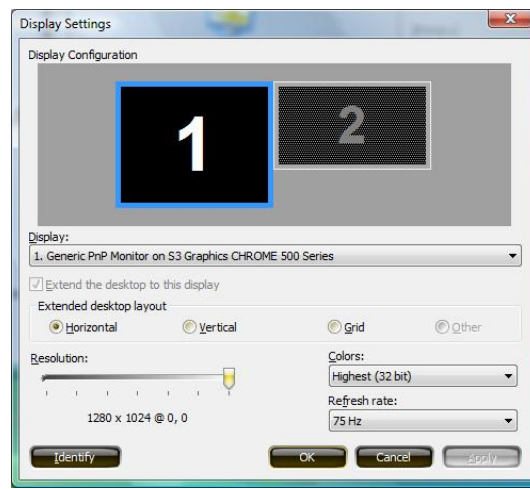
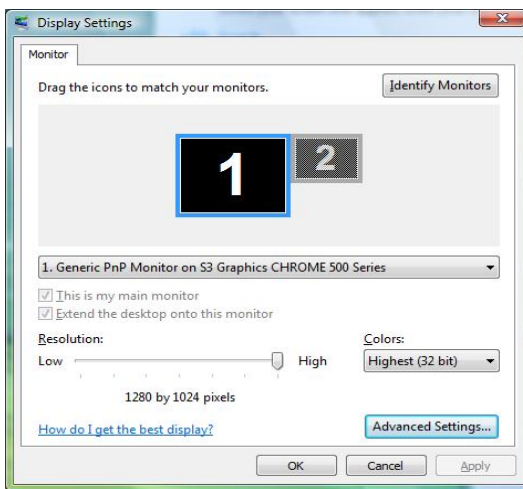
To open the **Display Settings** page:

- ➔ Right click in any unpopulated area of the **Desktop**.
 - Vista: Click **Personalize**. Click **Display Settings**.
 - XP: Click **Properties**.
- or
- ➔ Click **Start**, then **Settings**, then **Control Panel**.
 - Vista: Click **Appearance and Personalization**. In the **Personalization** area, click **Adjust screen resolution**.
 - XP: Double-click the **Display** icon in the **Control Panel** folder.

Some, but not all, of the basic display setting adjustments can also be accessed on a **Display Settings Display configuration** dialog which can be launched from the **Options** dropdown list menu on the  **ScreenToys Device management** page.

Windows Vista
Display Settings Monitor
(access from **Control Panel Personalize Display Settings**)

Windows Vista
Display Settings Display configuration (access from **S3 ScreenToys Device management Options** dropdown list menu)

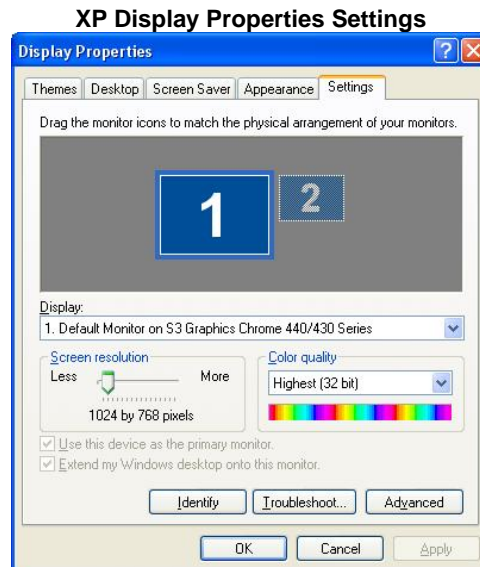
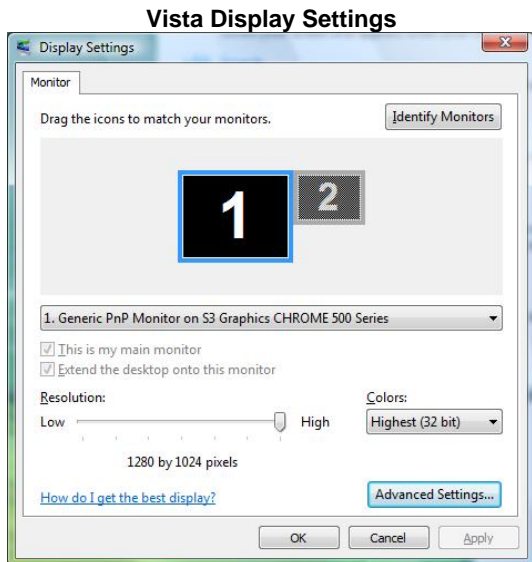


4.1 Screen Resolution and Color Quality

Control the desktop's screen resolution and color quality through the Windows Vista **Display Settings** dialog or the Windows XP **Display Properties Settings**.

ACCESS: The basic display settings window is accessible when you:

- ➔ Vista: right click on any unpopulated area of the **Desktop**. Click **Personalize**. Click **Display Settings**. The **Display Settings** window appears open on the Monitor tab.
- ➔ XP: right click on any unpopulated area of the **Desktop**. Click **Properties**. The **Display Properties** window appears. Click the **Settings** tab.



OPTIONS:

Settings for Basic Display

Use these settings to adjust basic settings for each display device. Each display output device can be configured with independent settings. If you have multiple displays, use the dropdown list to select the display for which you wish to configure basic settings.

Resolution
(XP Screen resolution) **area**

Slide the **Resolution** slider bar to the desired resolution.

Sliding the bar to the right selects a higher resolution, which will display the image using more pixels per inch of screen area. This produces a sharper image with more detail.

Tip: If you change to a high resolution and find the desktop fonts and icons are too small, they can be adjusted by clicking **Personalization**, then **Change desktop icons** or **Adjust font size (DPI)** in the left menu column (XP: **Display Properties**, then clicking **Appearance** tab) and selecting your preferences.

Colors (XP Color quality) **area**

Color quality or color depth is usually measured in bits per pixel (BPP), and indicates the size of the color palette of available colors for use in the screen image:

Windows	Description
Highest (32 bit)	True Color
Medium (16 bit)	High Color (65536 colors)

Click the down arrow to the right of the color dropdown list to view the available options for **Colors**. Click on your desired color depth.

Tip: Use of 32 bit color is preferred by most users. However, for some applications or with very high resolution configurations, selection of 16 bit color will provide better performance.



4.2 Basic Display Settings

General Display Settings

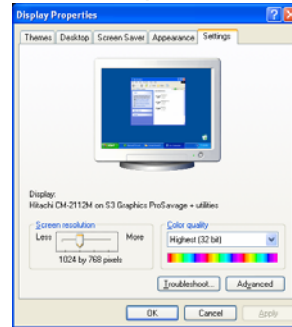
For Windows Vista these settings appear on the **Display Settings/Monitor** tab. For Windows XP these settings appear on the **Display Properties/Settings** tab.

Use these settings to identify and adjust the relationships between your monitors when you have multiple display output devices.

Display Monitor Icon area

This area contains the Monitor icons which represent the relationships between your displays.

If only one output device is supported by your configuration (as in the Windows XP example at right), only one monitor icon will appear and the display selection and dragging options described below will not be available.

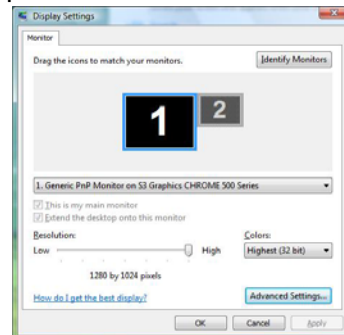


If two devices are supported, two rectangles will be visible (as in the Windows Vista example below). The rectangle with the number 1 will correspond to the display device associated with the 1 in the Display dropdown list below the monitor icon area. The 1 also identifies the Primary Monitor (monitor showing the Primary View, see Using Multiple Monitor section below for further detail).

If the configuration can support two display devices, but there is no device detected as a second display, then the number 2 icon will be grayed out as in the example at the right.

The device that is selected under the **Display** list section (just below the monitor icon area) is shown as a bright icon, indicating that it represents the display now being configured.

The size of the display icons will change to reflect their current resolution (adjustable in the **Resolution** (XP Screen resolution) area).



Drag the icons to match your monitors.

(XP Drag the monitor icons to match the physical arrangement of your monitors.)

Position the cursor over a monitor icon, depress the left mouse button and hold it to drag the icon to a position that reflects the relative position of your display devices.

The display monitor icons can be positioned side by side or up and down. The position should reflect how you want to move items between monitors, and does not have to reflect the true physical arrangement.

(Note: this feature is not available from a Display Settings dialog which has been launched from the Options dropdown list menu on the S3 ScreenToys Device management page.)

Display list area

Click the down arrow to the right of the **Display** dropdown list to view the list of detected monitors. Click the line containing the number and description of the monitor you wish to configure in subsequent actions.

When you configure multiple monitor support, you can select which display is the “current” one for any settings you want to configure through **Display Settings Monitor** tab (XP Display Properties Settings tab).

This is my main monitor

(XP: Use this device as the primary monitor)

The Main or Primary Monitor provides the Primary View and is the monitor which displays logon, pop-up and message windows.

This checkbox will be grayed out and not available when:

- Only one display is available.
- Two displays are available and the currently selected Monitor is already the Primary or Main monitor.
- Two displays are available and you have selected **Extend the desktop onto this monitor** (XP Extend my Windows desktop).

When you have more than one display device enabled and all devices show the same view, you are in SingleView mode and the other devices are said to be a clone of the PrimaryView. The **Display** list area should report **(Multiple Monitors)** associated with Display 1. If you wish to designate the currently selected monitor as the Primary Monitor, check the checkbox. If you wish to designate another display as your Primary Monitor, you must first click on the display Monitor Icon associated with that display device. The **This is my main monitor** checkbox should then be available to designate the



newly selected display as your Primary Monitor.

Extend the desktop onto this monitor

(XP Extend my Windows desktop onto this monitor)

If only one display is available, this checkbox will be checked but grayed out and not available for adjustment.

If you have two display devices detected, click the **Extend the desktop onto this monitor** checkbox to use both monitors in tandem as a single desktop image. After you enable **Extend the desktop onto this monitor**, you will be able to drag windows and icons across your screen onto the other monitors. You will also be able to stretch a window so that it shows on more than one display.

For example, you can view many columns of a spreadsheet stretched across two monitors, or you can easily view your web browser on one display and edit a document on a second display.

When you have extended the desktop, settings are specific to each view of the desktop. For each display, select resolution and color quality, just as you did previously for single displays.

Clear this checkbox if you have two monitors enabled and you want both monitors to display the same image (SingleView clone mode).

Refer to the Fine Tuning section on [Using Multiple Monitors](#) and [Enabling a Multiple Monitor Clone Display](#) for additional information on Multiple Displays.

Identify Monitors

(XP Identify)

Click **Identify Monitors** to post a large number 1 and 2 on your active displays to help identify which display is associated with which monitor icon.

How do I get the best display?

(XP Troubleshoot)

Click **How do I get the best display?** to launch Help windows (XP: Click **Troubleshoot** to launch the **Help and Support Center** window for the **Video Display Troubleshooter**) provided by the operating system. The information and dialogs will help you diagnose and resolve problems.



Advanced Settings

(XP Advanced)

Click on **Advanced Settings** to access operating system controls for display including at least:

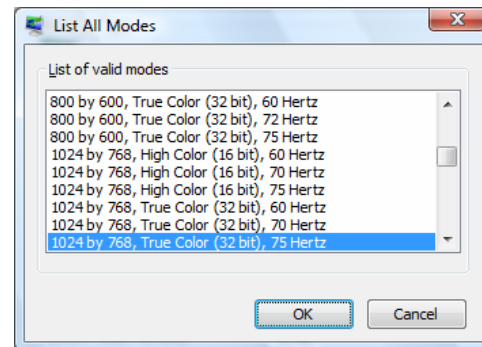
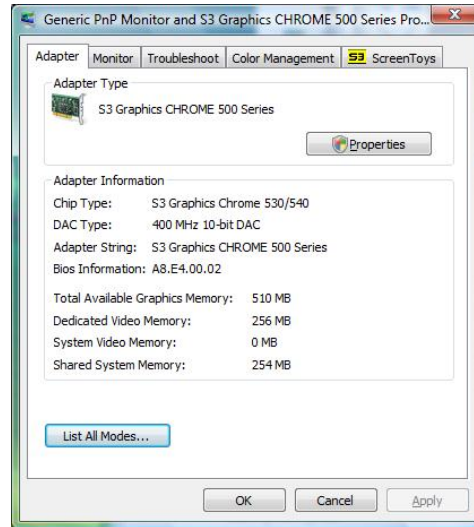
- General (XP only)
- Adapter
- Monitor
- Troubleshoot
- Color Management
- and
- S3 ScreenToys: The **S3 ScreenToys** tab includes the **CHROME Information** page with an **S3 Graphics ScreenToys** button which provides access to the tools and utilities.

4.3 Adjust Resolution, Color Quality and Refresh at the Same Time

The **Display Settings Advanced Adapter** page is provided by the operating system and provides access to general information about your Display Adapter.

Additionally, the **Adapter** tab provides a **List All Modes** box. You can use this box to change desktop graphics resolution, color quality and refresh rate simultaneously.

Click on **List All Modes**. A window will appear which lists all the combinations of screen resolution, colors, and refresh rates available for the selected video adapter.



4.4 Specify a Lower Color Quality for Older Applications

Selection of a 8 bit per pixel (256 color) mode is not recommended for the Windows Vista or Windows XP desktop. Many advanced applications require at least 16 bit per pixel for proper color rendering in applications for multimedia and gaming.

Windows Vista and Windows XP provide a **Program Compatibility Wizard** which allows you to set lower color quality or resolutions for older programs that may requires such.

To manually adjust program compatibility for older applications, right-click the application's program icon or name on your desktop or in the **Start** menu, then click **Properties**. Click the **Compatibility** tab, and then select the **Run in 256 colors** check box. Your monitor will revert to your default color setting when you close the program.

SECTION 5 MONITOR CONFIGURATION BASICS

This section details monitor related settings to configure for optimal use with your S3 Graphics display adapter, including:

- ➔ Monitor definition change
- ➔ Refresh rate adjustment
- ➔ Multiple monitor considerations
- ➔ Display device attachment and reconnection

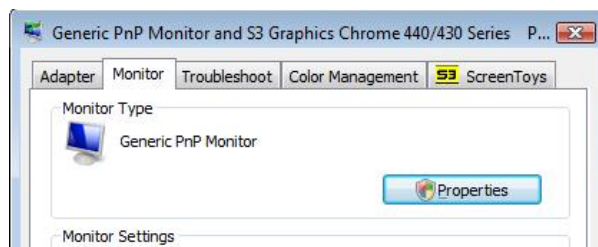
5.1 Monitor Definition

Windows should automatically detect your monitor or other display device. If Windows has identified your monitor as a PNP VESA DDC or an UNKNOWN monitor type, then you will not have access to the full capabilities of your monitor. Change the monitor definition to a definition that is compatible with your monitor model. Select a new definition from the list of monitor drivers provided by Windows or by downloading the latest **monitor.inf** file from your monitor manufacturer.



Caution: If the capabilities of your device are not reported to your S3 Graphics adapter, then you may not be able to manipulate some of the features discussed below. To take full advantage of your CRT, HDMI and DVI capabilities and to avoid the possible loss of transmission of configuration data between your monitor and your graphics board, whenever possible avoid switch boxes, BNC cables, or dongles when connecting your devices to your graphics board.

- Step 1.** Right click on any unpopulated area of the **Desktop**.
- Step 2.** Vista: Click **Personalize**. Click **Display Settings**. The **Display Settings** window appears open on the Monitor tab.
XP: Click **Properties**. The **Display Properties** window appears. Click **Settings** tab,
- Step 3.** Click **Advanced** button.
- Step 4.** Click **Monitor** tab, then click **Properties** button. Vista Administrator rights are required to proceed.



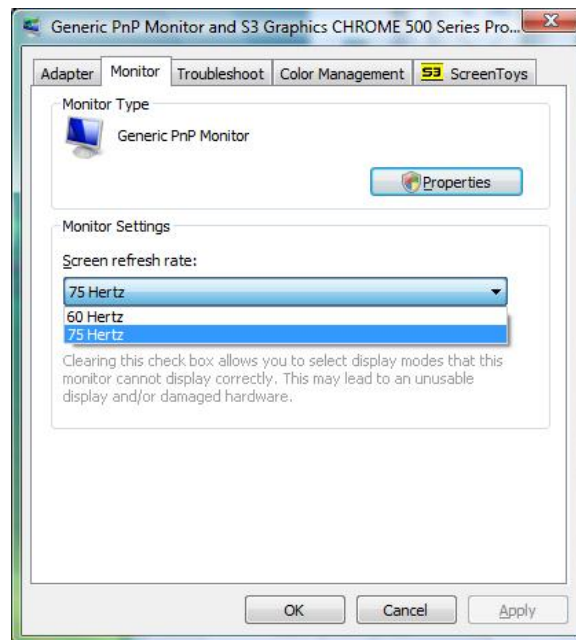
Step 5. Click **Driver** tab.

Step 6. Click **Update Driver** button. This launches the Windows **Hardware Update Wizard**. Follow the Windows Wizard directions to update your monitor software.

5.2 Refresh Rate Adjustment

Once your screen resolution, color quality and monitor settings are established, you can adjust your monitor's refresh rate to provide an optimized display with minimal screen flicker.

ACCESS: To adjust refresh rate, right click on the desktop, select **Personalize**. Click **Display Settings**. On the **Monitor** tab, click the **Advanced** button, then click the **Monitor** tab.



OPTIONS:

Monitor Settings area

Use this area to select a monitor refresh rate, and to control the availability of modes for selection.

Screen refresh rate dropdown list

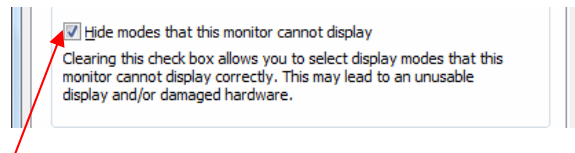
Click on the down arrow at the right of the screen refresh drop down list to view a list of refresh rates available. Click on the desired rate.

A higher rate will refresh your display more frequently, reducing screen flicker.

If you have a fixed frequency display, only one default refresh rate is usually available for selection.

Hide modes that this monitor cannot display

Click to select the checkbox labeled **Hide modes that this monitor cannot display**. When you select this checkbox (recommended), only modes and refresh rates supported by both the display output device and the display adapter are available for selection.



Read the important Windows caution message before selecting this checkbox. Administrator rights are required to change this checkbox.

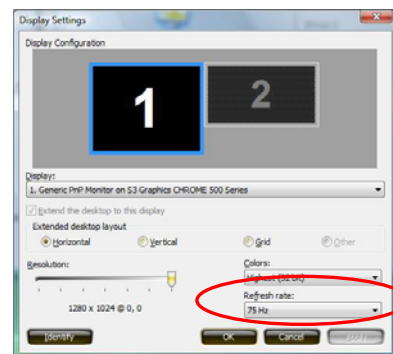
OK, Apply

To test your selection, click **Apply**. Make any necessary adjustments and click **Apply** again. When you are satisfied with your selections, click **OK** to exit.

Screen refresh rate, alternate access

REFRESH RATE NOTE: S3 Graphics ScreenToys provides enhanced refresh rate control designed especially for multiple display configurations.

ACCESS: To access this control, right click on an empty area of the desktop, select **S3 ScreenToys** tab. From the menu options on the left select **Device Management**. From the **Options** dropdown list on the right, select **Display settings....** This page has a **Refresh rate...** droplist which can be used to adjust refresh for the selected (blue outlined) display.



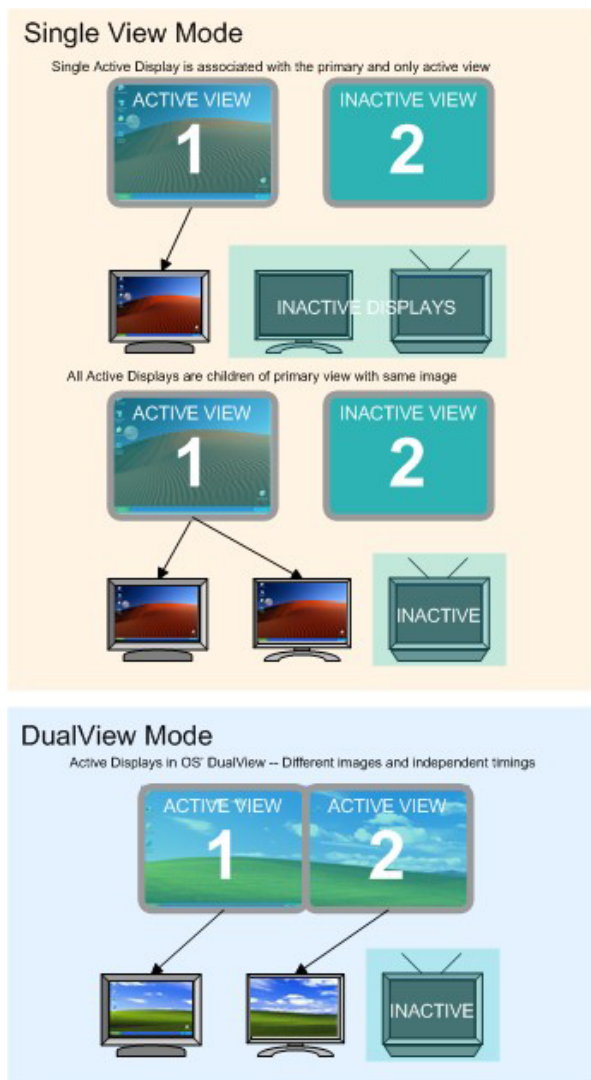
5.3 Using Multiple Monitors

The multiple monitor features available with Windows Vista and Windows XP allow multiple video cards to be active with each one displaying a different area of the entire desktop. S3 Graphics discrete GPUs are Dual Head devices. This means each device has two graphics engines, each of which is capable of providing independent display output. Windows Vista and Windows XP support the use of a single adapter to drive a multiple monitor configuration.

When the Windows operating system is in **SingleView**, there is a single view of the desktop image displayed, regardless of the number of monitors enabled. This single view of the desktop is sometimes referred to as the **Primary View**. There may be one (**Primary Monitor** or **Main Monitor**) or more display output devices (**Multiple Monitors**) associated with this single Primary View. These monitors are said to be “child devices” of the Primary View and provide a duplicate view, or clone view of the **Primary View**.

When in **SingleView**, the Primary View owns all of the child devices, and the (inactive) **Secondary View** owns none.

When you select **Extend the desktop onto this monitor**, DualView mode is enabled. The Windows desktop image is divided into two parts or views, the **Primary View** and the **Secondary View**. The **Display Settings** window shows you which output devices are associated with each desktop view. Windows **This is my main monitor** (XP: Use this device...) option allows you to specify which device you wish to display the **Primary View**.



5.3.1 Typical Display Device Combinations

Because S3 Graphics products are Dual Head devices, the single adapter can drive more than one output device. The following output devices and device combinations are those typically supported by S3 Graphics adapters and software on desktop configurations. Additional combinations may be possible with specialized hardware. Your hardware will not have connections to detect and support all these combinations:

- ➔ CRT
- ➔ DVI
- ➔ HDMI
- ➔ Dual display combinations (board-dependent), for example, DVI + CRT, DVI + HDMI, HDMI + CRT, DVI + DVI, HDMI + HDMI, and others
- ➔ Multiple adapter multiple display combinations to the extent supported by the operating system.

Mobile systems include at least a LCD display output device. Additional output devices that could be supported for mobile environments by your S3 Graphics adapter and software include: DVI, HDMI, CRT. Your hardware may not have connections to detect and support all these devices.

The operating system provides some configuration controls for multiple display devices through the **Display Settings** page. Additional control is provided by the S3 Graphics **S3 ScreenToys Device Management** tool which provides independent setting control for each connected monitor. Your selected settings are saved automatically on exit. When you resume from power down, suspend/standby, or monitor off, the settings will remain the same.

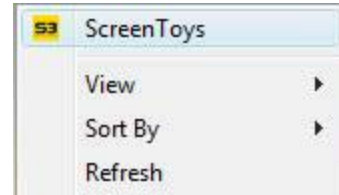
5.3.2 Enabling a Multiple Monitor Clone Display

To extend the desktop onto a second monitor, use the operating system **Display Settings** page [Extend the desktop option](#).

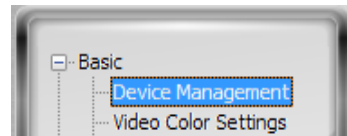
To enable a Multiple Monitor Clone desktop, where the secondary display shows an image duplicate of the primary screen, you must use **S3 ScreenToys**. This configuration is required for [ChromoVision](#) full screen video.

To enable a Multiple Monitor Clone desktop,

Step 1. Right click on the desktop. Select **S3 Screen Toys**.



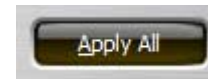
Step 2. From the left panel menu, select **Device Management**



Step 3. In the **Display Devices:** area click on the checkbox below the display device you want to become the Child or Clone copy of the current desktop. In the example below the second CRT2 device is going to be added as a Clone child of the primary CRT display device.



Step 4. Click the **Apply All** button at the bottom of the window.



Step 5. Two messages to confirm your change will appear. Click **OK** and **Yes** to confirm.



Step 6. After the clone display is enabled, S3 Screen Toys Device Management Display Devices will report the following:



Step 7. To revert to a single desktop display device, uncheck the box below the clone device. The Status will report **“will be disabled.”** Click **Apply All** to complete the action.



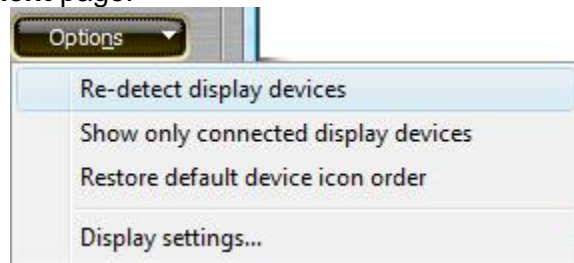
5.3.3 Display Device Attachment and Detection

A device must be detected as connected and enabled before it can be configured through **S3 ScreenToys Device Management**.

Devices can be added or removed in a hot-plug or hot unplug manner.

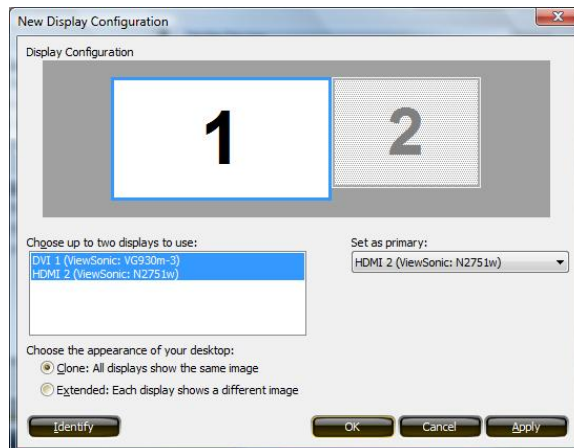
5.3.3.1 Force a re-enumeration

A re-enumeration of display devices can be done at any time by checking the **Re-detect display devices** under **Options** dropdown list on the **S3 ScreenToys Device Management** page.



5.3.3.2 New Display Device Configuration

If a device is removed or attached while the system is active, S3 Graphics software will attempt to restore a previously saved configuration that matches the new connected devices. However, if the S3 Graphics software has no existing record of your preferences for a newly attached configuration, it may pop up a **New Display Configuration** dialog.



5.3.3.3 Step by Step Display Device Attachment

Windows XP has a less robust detection scheme than Windows Vista. If a re-enumeration fails, and you wish to attach a new or second display output device to your Windows XP system, use of the following procedure is recommended.

- Step 1.** While the system is powered off and unplugged, attach a new or second display output device to your graphics board.
- Step 2.** Reconnect your cables. Power the new display device.
- Step 3.** Reboot the system.
- Step 4.** Install any display or monitor drivers needed.



SECTION 6 S3 SCREENTOYS BASICS

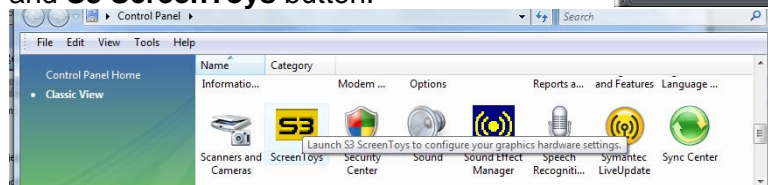
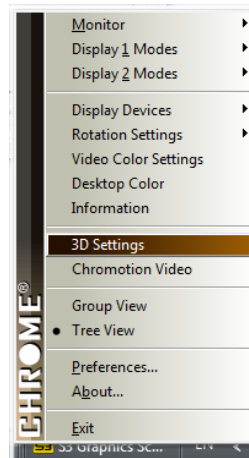
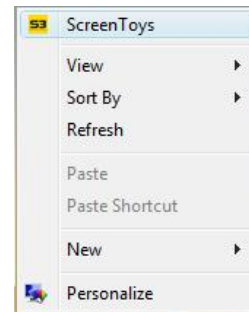
For advanced option adjustments for your display adapter, the **S3 Graphics ScreenToys** dialogs should be used.

This section details basic access and navigation for the S3 ScreenToys tools. Also, typical page layout and common controls are outlined for the S3 ScreenToys dialog pages.

6.1 Basic Navigation to S3 ScreenToys

ACCESS: There are many ways to open the **S3 ScreenToys** dialog pages:

- ➔ Right click in any unpopulated area of the **Desktop**. A pop-up menu will appear. Click **S3 ScreenToys**.
or
- ➔ Double-click on the S3 **CHROME®** taskbar icon  to launch the **S3 ScreenToys** utility control dialog window. or
- ➔ Right click on the S3 **CHROME®** taskbar icon  to show the S3 **CHROME®** menu. Select the desired option to launch a **S3 ScreenToys** utility control, for example, select **Desktop Color**.
or
- ➔ Click **Start**.
 - Vista: Click **Control Panel**,
 - From **Control Panel Home**, click **Appearance and Personalization**, (or from **Classic View**), click **Personalization**, then **Display Settings**. Click **Advanced Settings**. Then click **S3 ScreenToys** tab and **S3 ScreenToys** button.



- XP: Click **Settings**, then **Control Panel**. Double-click the **Display** icon in the Control Panel folder. or
- ➔ Right click in any unpopulated area of the **Desktop**. Click **Personalize** (XP: Properties). Click **Display Settings** (XP: Settings). Click **Advanced Settings...** (XP: Advanced), then click the **S3 ScreenToys** tab. Click the button in the lower portion of the dialog window labeled **S3 ScreenToys** to access the S3 Graphics utility software.



6.2 S3 ScreenToys Dialog Basics

This section discusses the many elements of the S3 ScreenToys dialog windows which are consistent across all the S3 ScreenToys pages.



OPTIONS: The S3 ScreenToys window has the following key components.

6.2.1 Title Bar and Banner

Title bars and Banner

The **S3 Graphics ScreenToys** banners identify the tool with text and graphics.

Window title

The window title bar will contain a logo bitmap and the phrase **S3 Graphics ScreenToys**.

S3 ScreenToys logo

The application banner will contain text and graphics. A S3 ScreenToys bitmap will appear in the upper left corner of the banner. Click on the bitmap to launch your browser and hyperlink to www.s3graphics.com.

Banner title

The large font text in the banner area will contain the name of the currently selected utility. Short descriptive text for that utility will appear below the larger text.



6.2.2 Monitors List

The area just below the banner contains access to important configuration aids.

Monitors dropdown list

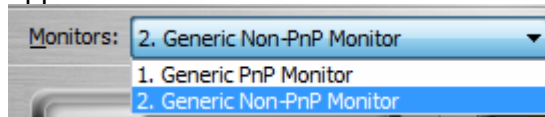
The left side of the S3 ScreenToys window includes a dropdown list for display selection.

Monitors: dropdown list

If you have only one monitor connected and active in your system, or you have two devices acting in duplicate or clone mode, this option will be dimmed and unavailable for selection.



If you have more than one enabled and connected device, this dropdown list allows you to specify to which monitor the new configurations settings should be applied.



Click the ▼ arrow to the right of the **Monitors:** dropdown list menu to show all connected display output devices (monitors). Each display device is shown as “Monitors: N. Display device name”, where N is a number starting from 1. Select the device whose desktop color you wish to configure.

Note: Not all ScreenToys tools and settings are monitor specific. Monitor specific menu items include:

- Device Management
- Rotation
- Desktop Color

Other tools have settings which are applied globally, regardless of which display is currently selected. For these tools the Monitors dropdown list remains available for selection, even though it is may not be relevant for the global setting under adjustment.

6.2.3 Buttons

S3 ScreenToys has many buttons to provide easy access. Buttons can be roughly grouped into four categories:

- **Bottom Buttons:** these buttons appear at the bottom of a dialog window and are used to Apply, Cancel, or Undo setting values, to restore defaults or to close the window.
- **Personalization Setting Buttons:** these buttons appear at the top of the main S3 ScreenToys window and allow you open dialogs which provide customizable options for Hotkeys and S3 ScreenToys menu behaviors. Also, some individual utility pages have **Save as...** buttons which allow you to save a personalized setting profile.
- **Access Buttons:** these buttons provide access to dialog pages or added information which provide additional controls.
- **Slider Reset Buttons:** these small buttons (without text) allow restoration of slider values to their default.

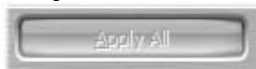
6.2.3.1 Button Appearance

Button color

The color of a button tells whether or not the option identified by the button text is available for selection.

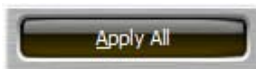


Grey



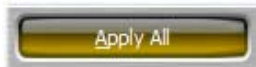
Not available

Black



Available

Light Yellow



Hover

Bright Yellow



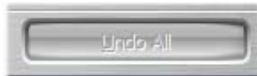
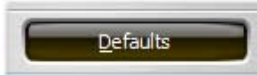
Clicked - active

6.2.3.2 Command Buttons in Footer

Footer area Command buttons The bottom footer area of the S3 ScreenToys window usually contains 4 buttons.



Defaults

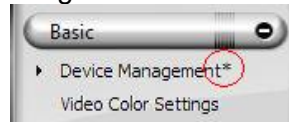


change asterisk

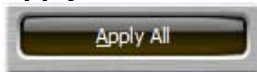
Click **Defaults** to return the status values in the settings area of the current page to the default. This button does not affect settings on the other S3 ScreenToys pages which are not visible.

If **Apply All** or **Undo All** appears dimmed and not selectable, it is unavailable because you have not yet made any changes on any of the utility pages.

If you make changes to any utility menu page an asterisk * will be appended to end of menu page name. The asterisk will disappear when you click **Apply All** to implement your change.



Apply All



Undo All



If you make changes on one or more pages in S3 ScreenToys and you then click **Apply All**, all changes you made on every page will be applied.

Undo All cancels all changes made on any page during this session since the last Apply All. Your settings return to the values last saved or last applied.

6.2.4 Window Exit

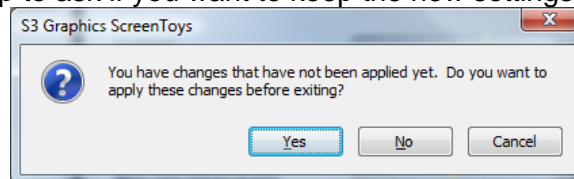
Window control

Exit



(= minimize button)

When you click **Exit** and you have made adjustments but not clicked Apply All to apply them, a dialog box will pop up to ask if you want to keep the new settings.



Click **Yes** and all changes you made on every page




during this session will be applied.

Click **No** and all changes you made (but did not yet Apply) on every page during this session will be canceled and will revert to back to the values last saved or last applied.

Then the S3 ScreenToys window will be minimized. The S3 ScreenToys taskbar icon will remain in the taskbar.

Click **Cancel** to close the dialog but keep the S3 ScreenToys window open on the desktop.

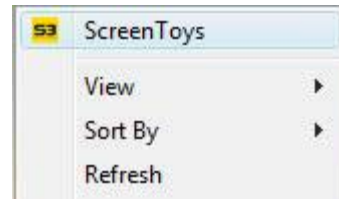
Close

When you click on the white  in the upper right corner of the S3 ScreenToys dialog window and you have un-applied changes, no dialog box will pop. The window will close and unapplied adjustments will be lost.

Restore

To re-open the dialog or to restore the taskbar menu and icon:

Right click on an empty portion of the desktop and click on S3 ScreenToys.



6.2.4.1 Buttons for Hotkeys and Preferences

Customization buttons

The upper right corner of the S3 ScreenToys window includes buttons for preference customizations.

Hotkeys button

Click on the Hotkey button to open the S3Hotkey dialog.

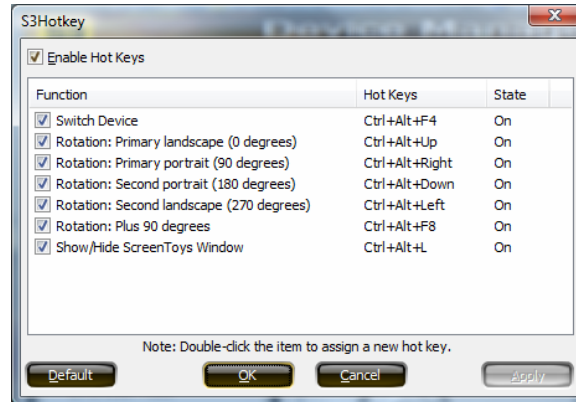


Preferences button

Click on the Preferences button to open the Preferences dialog to set options for the way S3 ScreenToys windows and menus behave. Refer to [CHROME® Menu General Settings](#) for details.

6.2.4.2 Hotkeys Control

S3Hotkeys provide customization of display-related hotkeys.



S3Hotkey window The S3Hotkey dialog window allows control and customization of display-related hotkeys.

Enable Hot Keys checkbox When the **Enable Hot Keys** checkbox is checked (default), hot keys functionality is available to use at any time.

Only those hotkeys whose Status is On will actually be available.

If a hotkey has a status of Off, it will not be available. On double-click the following dialog appears where you can input a new preferred hot key sequence.

Function checkboxes Each hotkey function has a checkbox. By default most hotkeys will be enabled if supported by the configuration.

- When enabled, the checkbox is checked, and the State is On.
- When a checkbox is unchecked, the State for that hotkey will be Off and the hot key will not be available for use.

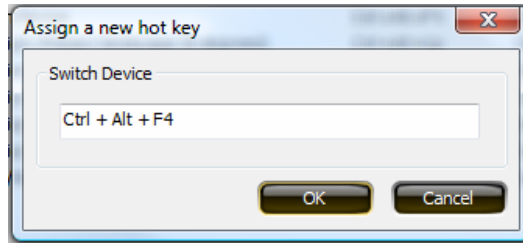
Available hotkeys may vary. Some typical hotkey options include:

- Rotation: 5 hotkeys
- Device Switch: 1 hotkey
- Show/Hide ScreenToys Window: 1 hotkey

Use **OK** or **Apply** to finish a change in state for a hot key.

To change a hotkey sequence

Double-click a hotkey row in the dialog window and the following dialog appears. You can input a new preferred hot key sequence for the hotkey named above the fill in text box.



You must use at least one control key (CTRL, SHIFT and/or ALT) followed by another key.

If the key combination you selected is already in use, a dialog will tell you.

Click **OK** to make your change, or **Cancel** to exit without change.