1 Overview

Congratulation on the purchase of your VGA board! You are now the owner of a state-of-the-art video adapter that offers features and functionality equal to, and beyond any other in the VGA class.

System Requirements

The minimum system requirements for installing the graphics card are as follows:

- ➢ a personal computer with a Pentium, Pentium II or compatible microprocessor and at least 8MB of memory
- ➢ a VGA analog monitor supporting a minimum 60Hz vertical refresh rate
- ➢ a free AGP bus slot
- ➢ a CD-ROM drive

Features

- ➢ 128-bit S3 Savage4 3D/2D/Video Graphics Accelerator
- ➢ 8/16/32 MB SDRAM Display Memory
- ➢ Full 2X/4X AGP @ 4X Speed & Bandwidth (4X AGP function is Savage4 chip dependent)
- ➢ Flat Panel Desktop Monitor Support (Flat Panel monitor dependent)
- ➢ Hardware DVD Motion Compensation Support for DVD playback
- ➢ Integrated 300MHz RAMDAC with Gamma Correction
- ➢ 8M Triangles/second Floating Point Triangle Setup Engine
- ➢ 140M Pixels/sec Trilinear Fill Rate and Brightness, Hue, and Saturation Controls
- ➢ Microsoft DX6.X & S3 S3TC Texture Compression
- ➢ Single Cycle Trilinear Filtering
- ➢ Sprite Anti-Aliasing, Reflection Mapping, Texture Morphing, Shadows, Procedural Textures and Atmospheric Effects
- ➢ High Quality Up/Down Scalar and Maximum Resolution 1600x1200
- ➢ Full Featured 2D Engine for Acceleration of BitBLT, Rectangle Fill, Panning/Scrolling and Hardware Cursor
- ➢ Hardware Support for Individually scalable Dual Video Windows
- ➢ 60MHz VIP Video Port Allows HDTV Resolutions
- ➢ Full Hardware and BIOS Support for VESA Timings and DDC
- ☞ *To execute the Savage4 with 4X AGP mode that was depended on the main board which can support the 4X AGP mode. It is automatic to detect the main board AGP mode and execute in 2X or 4X.*

Software Support

- ➢ Windows 9X
- ➢ Windows NT
- ➢ Windows DirectX
- ➢ OpenGL ICD

2 Hardware Installation

CAUTION !

Static electricity can severely damage electronic parts. Take these precautions:

➢ Before touching any electronic parts, drain the static electricity from your body. You can do this by touching the internal metal frame of your computer while it's unplugged.

➢ Don't remove a card from the anti-static container it shipped in until you're ready to install it. When you remove a card from your computer, place it back in its container.

➢ Don't let your clothes touch any electronic parts.

➢ When handling a card, hold it by its edges, and avoid touching its circuitry.

Before You Begin

Before you process further, make sure your computer system meets the peripheral requirements and switch to the standard VGA display driver.

Prepare Your Computer for Installation

Prior to working on your computer, make sure the power of the computer and any related equipment is turned off.

Select a Vacant Expansion PCI (AGP) Slot

Most AGP (PCI) bus computers have a combination of AGP (PCI) and ISA expansion slots. AGP (PCI) are usually made with plastic of a contrasting brown color (beige color), and are shorter than other slots in your computer. Your system manual should identify the AGP (PCI) slots. Plugging your Graphic card into a non-AGP (PCI) slot could damage the card, your computer, or both.
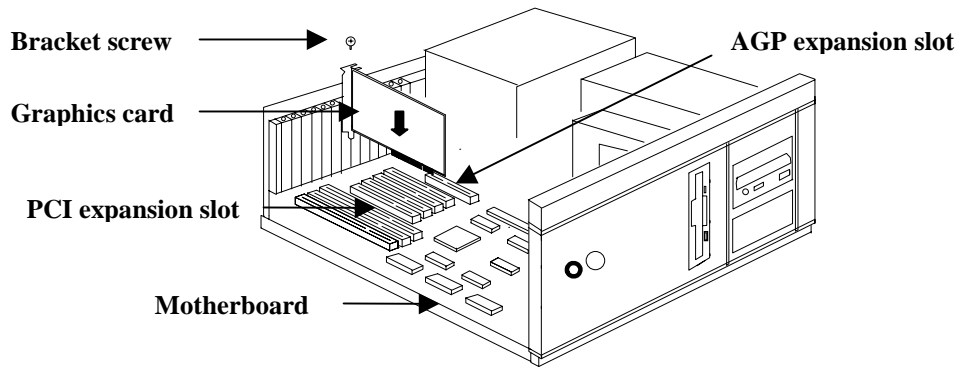
Back of computer →   ← AGP slot   ← PCI slot   ← ISA slot

AGP vs. PCI vs. ISA expansion slots

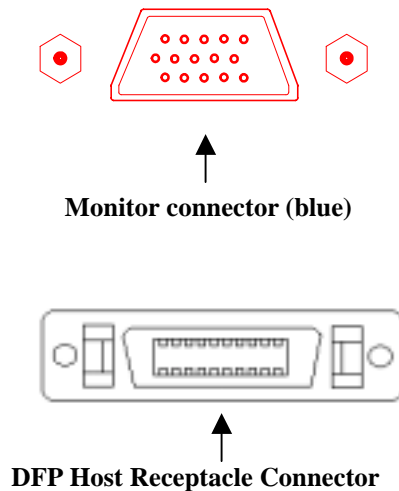# **2** **Hardware Installation**

Insert your Graphic Card

Remove the cover for the slot you intend to use and save the screw for the mounting bracket. Then, pick up the Graphic card and position it over the expansion slot you've chosen. Push the card with firmly and evenly until it's fully seated in the slot. Replace the screw to secure the bracket of the Graphic card to the computer chassis.

Bracket screw

AGP expansion slot

Graphics card

PCI expansion slot

Motherboard

Connect the monitor

Plug your monitor cable into the monitor connector on your Graphic card. Make sure the other end of the monitor cable is properly connected to your monitor.

Monitor connector (blue)

DFP Host Receptacle Connector

3 Software Installation

☞ *Before installing the Display driver, make sure your Windows 95/98/NT is installed in VGA mode and work fine.*

☞ *For Windows 95 system, please install the DirectX before you want to play the MPEG Movie Player.*

☞ **To use an AGP graphics card with NT4.0, you may need to pre-install NT with Service Pack 3 (SP3) or latter version before installing the AGP card.**

☞ *If you are running Windows NT4.0, please note that some drivers are not compatible with earlier releases of Windows NT. Consult your dealer or local support to ensure you have the most recent releases for Windows NT and the drivers.*

Before You Begin

If your system is running Windows 95/98/NT, the **New Hardware Found** dialog box will appear after restart. Select **Driver from disk provided by hardware manufacturer**, click **OK**, then follow all on-screen instructions. If the **New Hardware Found** dialog box does not appear, follow the instructions below.

Setup VGA Mode

Click the right mouse button anywhere on the Windows 95/98/NT desktop and select **Properties** from the pop-up menu that appears on screen. Select **Settings | Change Display Type** (For OSR2 users, please select **Settings│Advanced Properties.** For Windows 98 users, please select **Settings│Advanced.** For Windows NT users, please select **Setting│Display Type**) and then click the **[Change]** button for Adapter Type. When the Select Device dialog box appears on the screen, please select **[Standard display types]** from the manufactures and select **Standard Display Adapter (VGA)** from the Models then click **OK** button.

Install Software Driver

1. Turn on your computer and start Windows 95/98/NT.
2. Insert the **Driver CD** into your CD-ROM driver.
3. Click the **Start** button on the task bar and then select **Run** button.
4. Type D:**Cdssetup.exe** [**Enter**] in the Run dialog box (where **D:** is the location of your CD-ROM drive).
5. The **Expertool VGA Installation** dialog box will appear on the screen, please click **"Continue"** button and follow the instruction on screen to complete installation.
6. Final, restart your computer for the changes to take effect.

Windows 95/98/NT Display Properties

Windows 95/98/NT allows you to select resolution, color depth, refresh frequency and font size using the standard Windows 95/98/NT Display Properties sheet, which can be accessed by right clicking anywhere on the Windows 95/98/NT desktop, and then selecting Properties from the pop-up menu that appears on screen.

4   Display Properties for Windows

☞ *The pictures in this chapter are only for reference.*
☞ *If the S3 Gamma item doesn't appear, please adjust the color palette to high color or true color.*

The Display Properties is described as below:
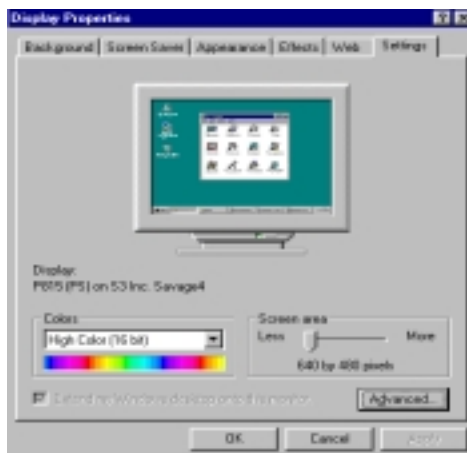

Figure 4-1 for Win95   **Figure 4-2 for Win98**

Click the right mouse button anywhere on the Windows desktop and select **Properties** from the pop-up menu that appears on screen. For Win95, please select **S3 Gamma** item. For Win98, please select **Settings│Advanced** button then choose **S3 Gamma** item as Figure 4-3.
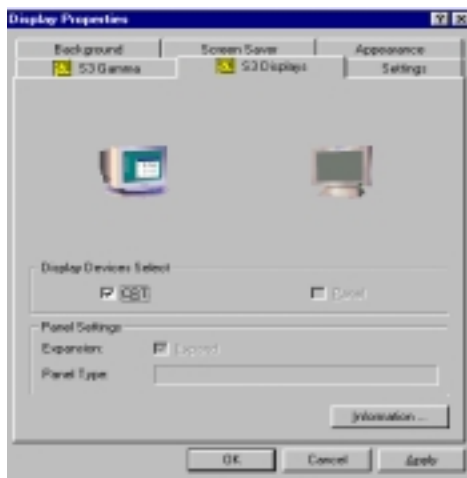

Figure 4-3   **Figure 4-4**

4 | Display Properties for Windows

(As Figure 4-3)

S3 Gamma is a utility that allows you to adjust the gamma on the output from your S# graphics chip. Simply put, gamma is like a brightness adjustment.

Schemes: Lists schemes that you can use to change the gamma adjustments being applied on your system.

Color channel: Move the red/green/blue slider to adjust the gamma blue for the red/green/blue component. The farther you slide this to the right, the higher the gamma value, and the brighter your red/green/blue will be. The more you slide this to the left, the lower the gamma value, and the dimmer your red/green/blue will be.

Link RGE: This check box determines whether the red/green/blue gamma adjustments are liked together.

(As Figure 4-4)

CRT/Panel Bitmap: Shows CRT/Flat Panel status. If no CRT/Flat Panel is attached, the CRT/Flat Panel shows a gray screen. If the CRT/Flat Panel is attached but not active, the CRT/Flat Panel bitmap shows a gray screen. If the CRT/Flat Panel is attached and is active, the image shows a representation of the desktop.

Display Devices Select: Show and select the active display devices.

CRT check box: Select to turn on the display on the CRT monitor.

Panel check box: Select to turn on the display on the flat panel.

Panel Settings: Shows the current expansion setting, type and physical screen size information of the attached panel.

Expansion: The source image can be centered or expanded when the desktop resolution is smaller than the panel resolution.

Expand check box: Select this to expand the desktop source image on the panel.

Panel Type: Shows the type and physical screen size of the panel.

Information: Click this to show the information about the S3 chip, the BIOS, the display driver and the S3 Switch2 utility installed on your system.

Expertool for Windows

5

☞ **For maximum compatibility and flexibility, the Expertool can be loaded and unloaded dynamically, but note that many of the features it provides are only available while the Expertool is running.**

☞ *The pictures in this chapter are only for reference.*

The Expertool is a display control and desktop enhancement utility for Windows 95/98/NT, specially designed and optimized for use with your graphics accelerator. You should think of the Expertool as a kind of supplementary **"device driver"** which works in conjunction with your accelerator's display driver.

Installation

The Expertool is automatically installed when you use the Setup program under windows 95/98/NT (refer to Chapter 3). Then click **Programs│Expertool│Expertool** (Figure 5-1) or click on the "**Expertool**" (Figure 5-3) icon in the System tray to show the Expertool Properties on your screen. (Figure 5-2)

Uninstall

1. Click **Close** button to close the Expertool. (Figure 5-2)
2. Then click **Start** button on the task bar and select **Settings│Control Panel│add/Remove Programs**.
3. Choice **Expertool** item for Install/Uninstall and click **add/Remove** button.
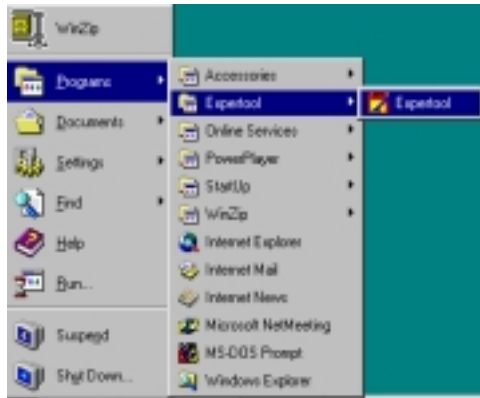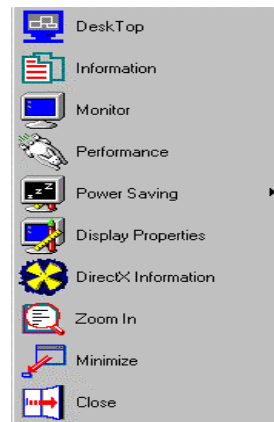4. Click **OK** to uninstall the Expertool.
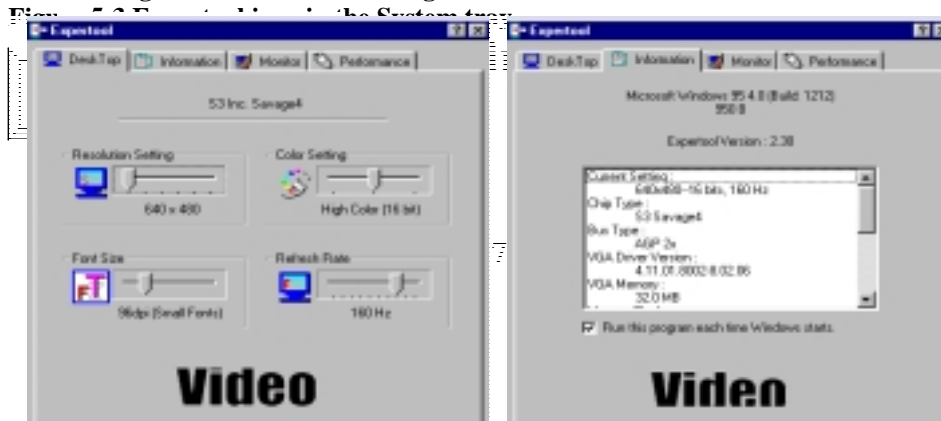
Figure 5-1   **Figure 5-2**

Figure 5-3 Expertool icon in the System tray

Figure 5-4   **Figure 5-5**

(As Figure 5-4)
Desk Top: Displays the current Resolution Setting, Color Setting, Font Size and Refresh Rate for the monitor whose video adapter in Desk Top. Drag the slider to specify the each one you want and click **OK** button to take effect.
(As Figure 5-5)
Information: Appears the current settings and information of your computer.
Run this program each time Windows starts check box: Select this option to run the Expertool immediately each time when Windows starts.

Figure5-6   **Figure5-7**

5 Expertool for Windows

(As Figure 5-6)
Screen Adjustment: Select **Adjust** button to adjust the screen position with the keyboard. If you want resort the settings you have made, please select **Default** button.
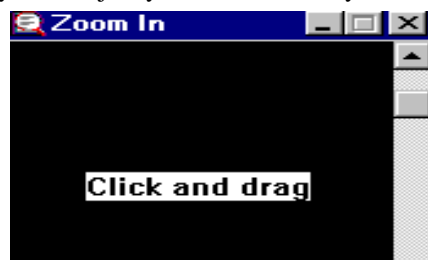**Monitor Information:** Show you the information of your monitor.
Power Saving: Allows you to adjust the Power Saving for Standby, Suspend or Shut-off mode.
Standby check box: This option instantly places your monitor in standby mode, which delivers minimal power savings but provides the fastest recovery time.
Suspend check box: This option instantly places your monitor in Suspend mode, which delivers maximum savings but requires a somewhat longer recovery time than Standby

urns your monitor off, and recovery time is
using the monitor's power switch.

s you to adjust your video memory clock for

peek performance and maximum stability. The higher memory clock setting you select the higher performance shows. But change the value will affect the stability of VGA card. It's better for you to use the original setting value.

Figure 5-8   **Figure 5-9**

(As Figure 5-8)

DirectX: 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 this dialog box will also show you the system's DirectX capabilities, and relative information.
(As Figure 5-9)

Zoom In: Click on the client area and drag the mouse to zoom the desktop.

Minimize: Close the menu and minimizes this application.

Close: Close this application and disables the features it supports.

6 Technical Information

Display Memory Configuration
Memory-Resolution/Color

This table is only for reference.

	8MB			16MB			32MB		
	256 color	64K color	16.7M color	256 color	64K color	16.7M color	256 color	64K color	16.7M color
640x480	200Hz	200Hz	180Hz	200Hz	200Hz	180Hz	200Hz	200Hz	180Hz
800x600	200Hz	200Hz	160Hz	200Hz	200Hz	160Hz	200Hz	200Hz	160Hz
1024x768	160Hz	160Hz	150Hz	160Hz	160Hz	150Hz	160Hz	160Hz	150Hz
1280x1024	120Hz	120Hz	100Hz	120Hz	120Hz	100Hz	120Hz	120Hz	100Hz
1600x1200	100Hz	100Hz	-	100Hz	100Hz	60Hz	100Hz	100Hz	60Hz

DFP Connector Pin Assignments and Description

Pin no.	Signal Name	Description
1	TX1+	TMDS positive differential output, channel 1
2	TX1-	TMDS negative differential output, channel 1
3	SHLD1	Shield for TMDS channel 1
4	SHLDC	Shield for TMDS clock
5	TXC+	TMDS positive differential output, reference clock
6	TXC-	TMDS negative differential output, reference clock
7	GND	Logic Ground
8	+5V	Logic +5V Supply
9	Reserved 9	Reserved do not connect
10	Reserved 10	Reserved do not connect
11	TX2+	TMDS positive differential output, channel 2
12	TX2-	TMDS negative differential output, channel 2
13	SHLD2	Shield for TMDS channel 2
14	SHLD0	Shield for TMDS channel 0
15	TX0+	TMDS positive differential output, channel 0
16	TX0-	TMDS negative differential output, channel 0
17	Reserved 17	Reserved do not connect
18	Reserved 18	Reserved do not connect

| 19 | DDC_DAT | DDC2B Data |
| 20 | DDC_CLK | DDC2B Clock |

6 Technical Information

Monitor Connector Pin Assignments

Pin no.	Function	Pin no.	Function
1	Red Video	9	+5V
2	Green Video	10	Sync Return (ground)
3	Blue Video	11	NC
4	NC	12	DDC DATA
5	Ground	13	Horizontal Sync
6	Red Return (ground)	14	Vertical Sync
7	Green Return (ground)	15	DDC CLOCK
8	Blue Return (ground)		

VIP Interface

The VIP interface is compliant with the Video Interface Port VIP Specification, Version 1.1. Only a single slave device can be active at one time (no concurrency). VIP provides a glueless interface to VIP-complaint devices for example glueless interface to industry standard video digitizers and MPEG decorers.

7 Trouble Shooting

Problem: After installation and restarting, Windows 95 informs me that display setting is still incorrect. What can I do?
There may be conflict between previous and current display drivers. This is caused by not complete removal of previous display driver. Try the following steps to remove it:

Solution:
(1) Use right button of mouse to click on "My Computer" icon on desktop.
(2) Select "Properties" and "System Properties" box appears
(3) Click on "Device Manager" tab
(4) You will see a list of devices on your computer.
(5) Open "Display adapters" in the list (double click it).
(6) You will find two (or more) conflicted adapters listed here.
(7) Remove all previous adapters by selecting them and press "Remove"
(8) Close Device Manager and restart Windows 95.
(9) Now display driver will work correctly.

Problem: After installing the driver, Windows 95 doesn't prompt me for restarting and the driver still doesn't work after I reboot it by myself.
You may have installed similar drivers before. Try the following steps to install:
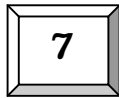
Solution:
(1) Use right button of mouse to click on "My Computer" icon on desktop.
(2) Select "Properties" and "System Properties" box appears
(3) Click on "Device Manager" tab
(4) You will see a list of devices on your computer.
(5) If "Display adapters" appears in the list, click it.
   If "Display adapters" doesn't appear, jump to step 9 and continue.
(6) The name of your card will be listed in the box. Double click it.
(7) The properties box of your card appears. Select "Driver" tab.
(8) Click "Change Driver.." and follow the installation steps.
(9) Click "Other devices" you will see your card is listed.
(10) Click on the name of card, the properties box appears.
   Select "Driver" tab.
(11) Click "Change Driver.." and follow the installation steps.

Problem: When the system is starting up, there is a series of prolonged beeps.
Solution:
The VGA card may not be firmly inserted into the expansion slot. Ensure that the gold-striped bus connector of the graphics card is properly inserted into the expansion slot. Ensure this by pressing the card gently and evenly into the slot. Alternatively, remove the card and re-insert it.

7 Trouble Shooting

Problem: Monitor display flickers after Windows 95 or Windows 98 starts.
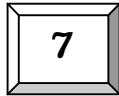
Solution:

Your monitor may not support the resolution or refresh rate that you have set. Use display settings supported by the monitor. To change the display settings:

(1) Restart your system in Windows 95/Windows 98 Safe mode. To do so:

   a. Restart your system and when the message "Starting Windows 95/98…" appears, press F8. A list of options such as Safe Mode and Command Prompt Only Mode appears.

   b. Select Safe Mode and press ENTER.

(2) Lower your monitor's resolution.

   For the resolutions supported by you monitor, refer to its manual.

Problem: The Flat Panel Display is attached and active, but the Flat Panel Monitor is not being shown on the screen.

Solution: This VGA Card does not support every brand of Flat Panel Display. Please check the brand of your Flat Panel Monitor for compatibility. If you have any questions, please contact your dealer.
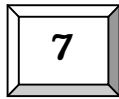
7 Trouble Shooting

When you need advanced technique service, please Complete this form and FAX to your dealer.

Your name: **Phone :**

Product S/N: **P/ N:**

HARDWARE CONFIGURATION	
Mainboard Chipset:	**CPU Clock:** **MHz**
Mainboard CPU:	**VGA Memory Brand:**
Mainboard Memory: **MB**	**VGA Memory** **MB**
Mainboard Brand:	**VGA BIOS:**
CD Version:	**VGA Driver:**
Cache Memory: **KB**	**Resolution:**
Monitor:	**Resolution Rate:**
O.S.:	**Horizontal Freq. :** **kHz to KHz** **Vertical Freq. :** **Hz to Hz**
Other Cards on Mainboard:	
Note:	

7 Trouble Shooting

SOFTWARE CONDITION
CONFIG.SYS:
AUTOEXEC.BAT:
Operation System or Test Program:
Application Software or Test Program:
Problem Description:
Note:

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