

Owner's Guide

21-inch Flat CRT Monitor

Moniteur CRT à écran plat de 21 pouces

21-Zoll-CRT-Flachbildschirm

Monitor de CRT plano de 21 pulgadas

Monitor CRT a schermo piatto da 21 pollici

21 tums platt CRT-skärm

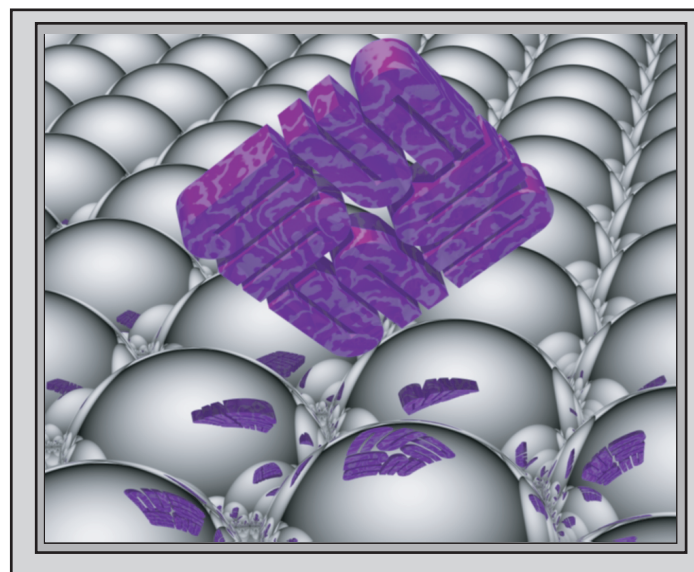
21-дюймовый монитор ЭЛТ с плоским экраном

21 형 평면 CRT 모니터

21 インチフラット CRT モニタ

21 英寸平面 CRT 显示器

21 英寸平面 CRT 顯示器



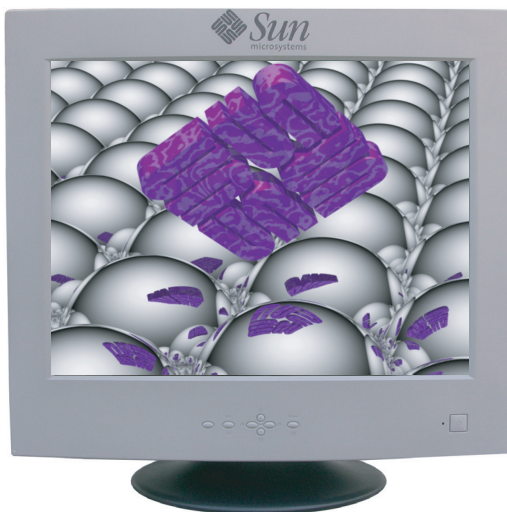


21-inch Flat CRT Monitor

X7199A

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Safety Instructions

Notational

Please read the following safety instructions as they are designed to prevent damage to property and harm to the user.

Warning / Caution



Failure to follow directions noted by this symbol could result in bodily harm or damage to equipment.

Notational Conventions



Prohibited



Important to read and understand at all times



Do not disassemble



Disconnect the plug from the outlet



Do not touch



Grounding to prevent an electric shock



Safety Instructions

Power

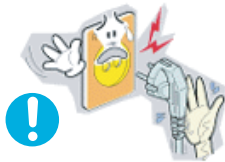


When not used for extended periods of time, set your computer to DPMS (Digital Power Management System). If using a screen saver, set it to the active screen mode.

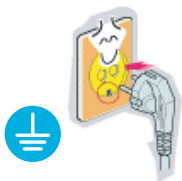
- If the size of your monitor is small, or if the same image is present for long periods of time, you may see afterimages due to damage to the fluorescent substance on the inside of the CRT.



- **Do not use a damaged or loose plug.**
 - This may cause an electric shock or fire.



- **Do not pull the plug out by the wire nor touch the plug with wet hands.**
 - This may cause an electric shock or fire.



- **Use only a properly grounded plug and receptacle.**
 - An improper ground may cause electric shock or equipment damage.



- **Do not excessively bend the plug and wire nor place heavy objects upon them, which could cause damage.**
 - Failure to do so may cause an electric shock or fire.

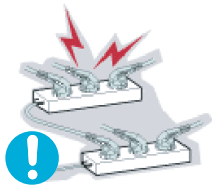


Safety Instructions

Power



- **Disconnect the plug from the outlet during storms or lightening or if it is not used for a long period of time.**
 - Failure to do so may cause an electric shock or fire.



- **Do not connect too many extension cords or plugs to an outlet.**
 - This may cause a fire.



Safety Instructions

Installation



- **Do not cover the vents on the monitor cabinet.**
 - Bad ventilation may cause a breakdown or fire.



- **Put your monitor in a location with low humidity and a minimum of dust.**
 - An electric shock or fire could result inside the monitor.



- **Do not drop the monitor when moving it.**
 - This may cause damage to the product or human body.



- **Place the monitor on a flat and stable surface.**
 - The monitor can cause injury if it falls.



- **Set down the monitor carefully.**
 - Use care when handling product to prevent damaged or injury.



Safety Instructions

Installation



- **Do not place the monitor face down.**
 - The CRT surface may get damaged.



- **Do not use the monitor without the monitor stand.**
 - It could break down or cause a fire due to bad ventilation.
 - If the monitor must be used without the supplied stand, take steps to insure proper ventilation.



Safety Instructions

Clean



When cleaning the monitor case or the surface of the CRT, wipe with a slightly moistened, soft fabric.

Do not clean monitor with soap/heavy detergent. Use a water-diluted mild detergent.

(Some detergents contain significant amounts of alcohol-based solvents, which can damage (color change) or crack the monitor case. The antiglare/anti-static surface coating on the CRT may also be affected.)

Dilute the detergent (1:10 ratio) with water before using.



- **Do not spray detergent directly on the monitor.**



- **Use the recommended cleaning solution with a smooth cloth.**
- You can prevent the coated CRT from being damaged or the monitor cabinet from being dissolved, cracked or discolored.



Caution: Use a recommended detergent only, as other surfactants containing large amounts of alcohol, solvent or other strong substances, can discolor or crack the monitor or damage the coated CRT.



- **If the connector between the plug and the pin is dusty or dirty, clean it properly with a dry cloth.**
- A dirty connector can cause an electric shock or fire.



Safety Instructions

Other



- **Do not remove cover (or back). No user serviceable parts inside.**
 - This may cause an electric shock or a fire.
 - Refer servicing to qualified service personnel.



- **If your monitor does not operate normally - in particular, if there are any unusual sounds or smells coming from it - unplug it immediately and contact an authorized dealer.**
 - This may cause an electric shock or a fire.



- **Do not place any heavy objects on the monitor.**
 - This may cause an electric shock or a fire.



- **For each hour of looking at the monitor, you should let your eyes rest for 5 minutes.**
 - This will reduce eye fatigue.



- **Do not use or store inflammable substances near the monitor.**
 - This may cause an explosion or fire.

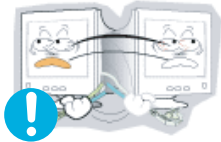


Safety Instructions

Other



- **Do not try to move the monitor by pulling on the wire or the signal cable.**
 - This may cause a breakdown, electric shock or a fire due to cable damage to the cable.



- **Do not move the monitor right or left by pulling only the wire or the signal cable.**
 - This may cause a breakdown, electric shock or a fire due to cable damage to the cable.



- **Never insert anything metallic into the monitor openings.**
 - This may cause an electric shock, fire or injury.



- **Keep the monitor away from any magnetic substances.**
 - This may cause discoloring or distortion of the image.



Introduction

Unpacking

Monitor and Stand

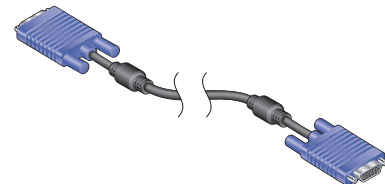


Please make sure the following items are included with your monitor. If any items are missing, contact your dealer.

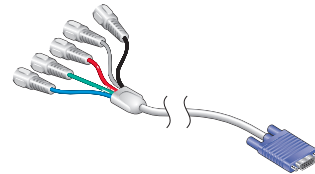
● Stand



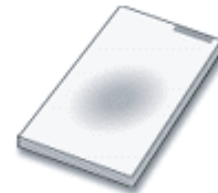
● Signal Cable - HD15/HD15



● Signal Cable - BNC/HD15



● Quick Setup Guide



● Warranty Card (Not available in all locations)



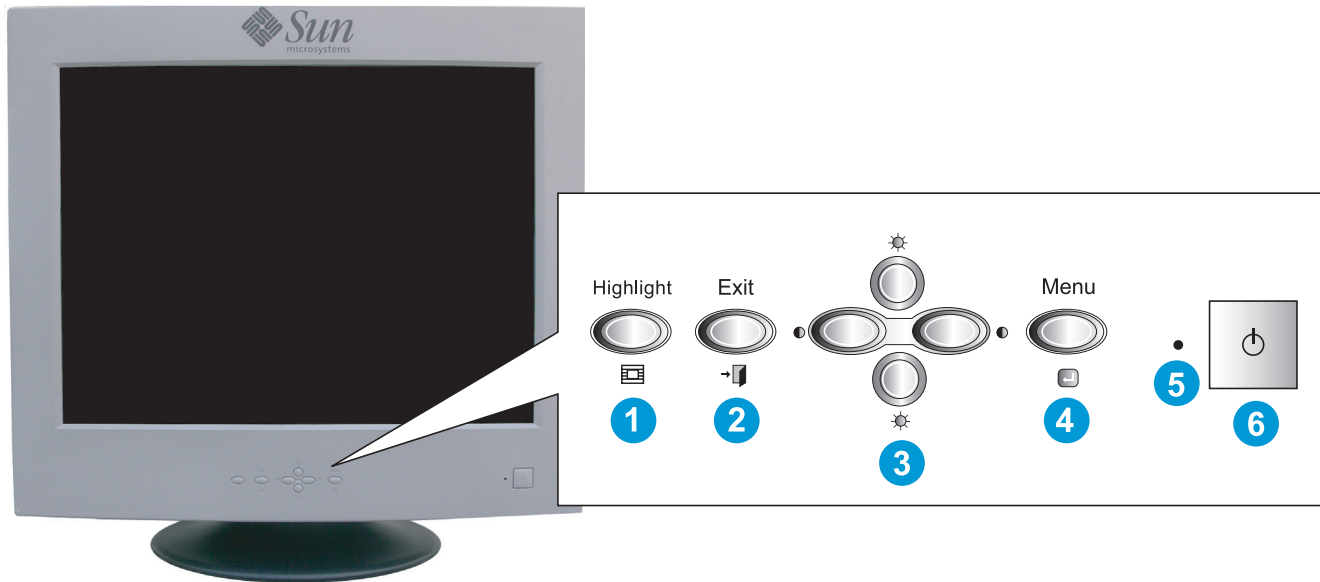
● User's Guide CD





Introduction

Front



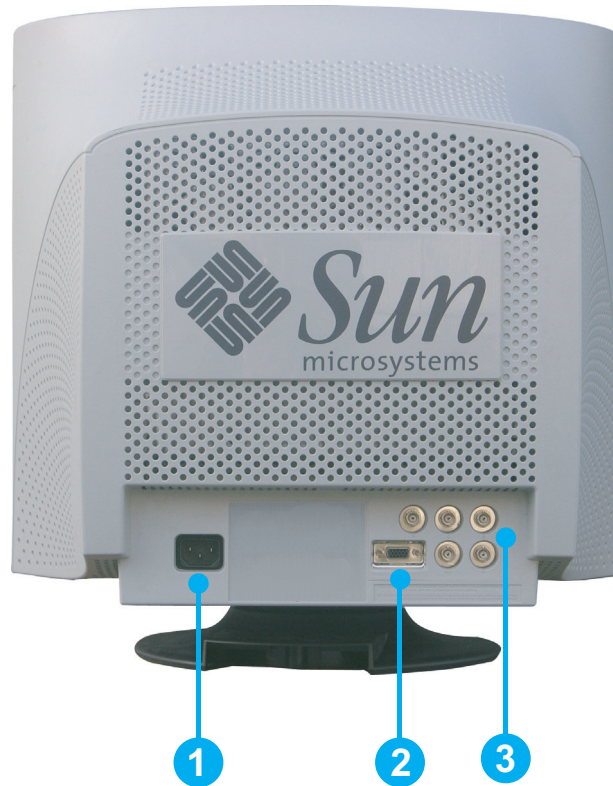
- | | |
|----------------------------|---|
| 1. Highlight button | The Highlight Zone enhances video on certain areas of the screen by providing a clearer picture of video or photo images. |
| 2. Exit button | Use this button to Exit the active menu or the OSD (On-Screen Display). |
| 3. Adjust buttons | These buttons allow you to highlight and adjust items in the menu. |
| 4. Menu button | Use this button to open the OSD and activate a highlighted menu item. |
| 5. Power indicator | This light glows green during normal operation, and blinks green once as the monitor saves your adjustments. |
| 6. Power button | Use this button to turn the monitor on and off. |

Note: See [PowerSaver](#) described in the manual for further information regarding power saving functions. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods.



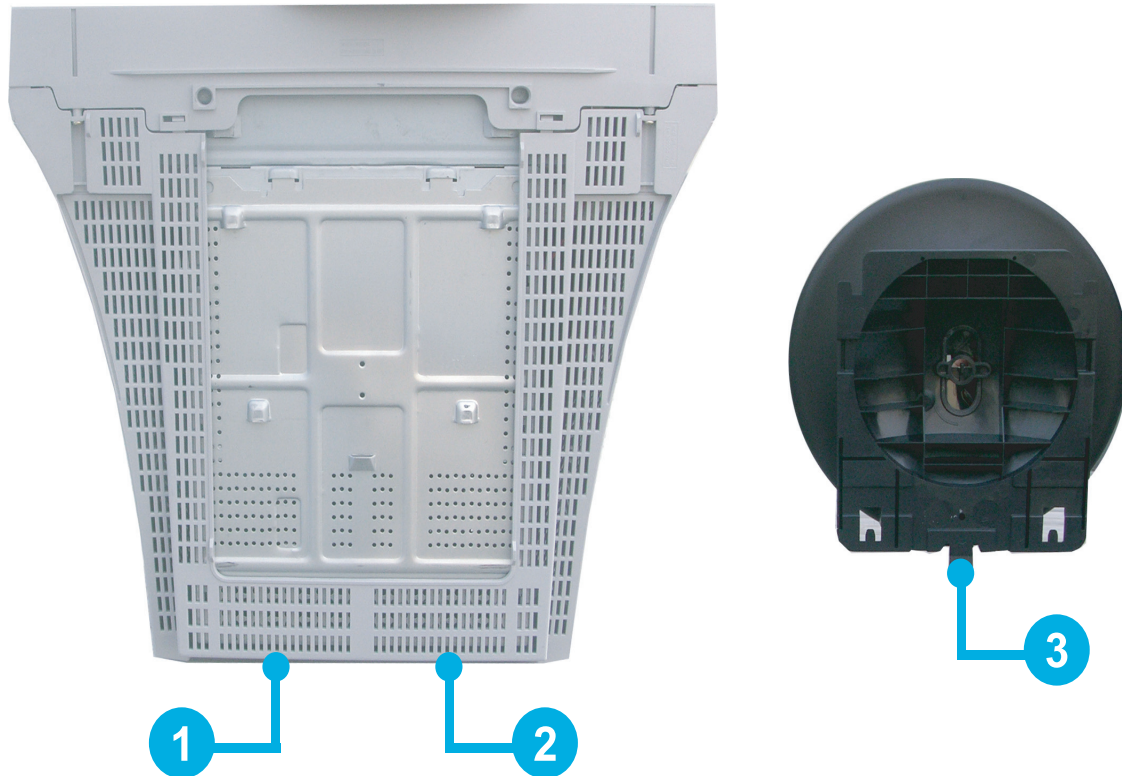
Introduction

Rear



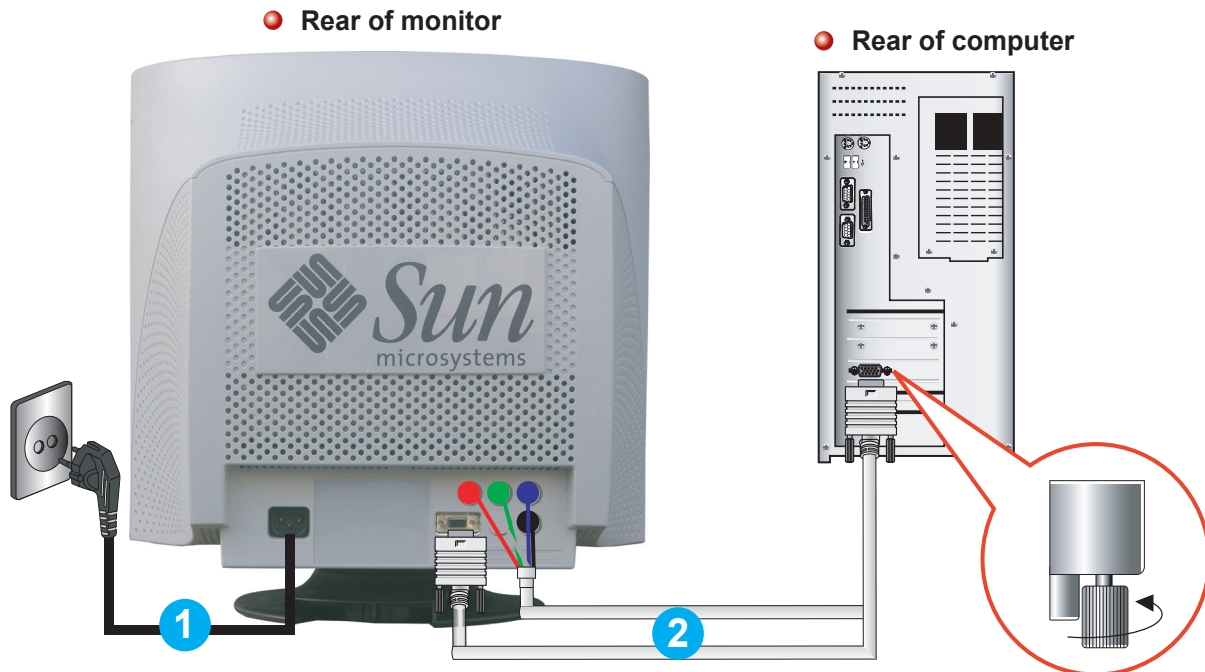
- 1. Power port** Connect the power cord for your monitor to the power port on the back of the monitor.
- 2. Signal port** Connect the signal cable to the 15-pin D-sub connector on the back of your monitor.
- 3. BNC Connectors** Connect the signal cable to the BNC signal port on the back of your monitor.

Note: See [Connecting Your Monitor](#) for further information regarding cable connections.

Bottom

- 1. Signal port** Connect the signal cable(s) to the input connector(s) on the back of your monitor.
- 2. Power port** Connect the power cord for your monitor to the power port on the back of the monitor.
- 3. Tilt/Swivel Base** You can separate the base from the monitor.

Connecting Your Monitor



1. Connect the power cord for your monitor to the power port on the back of the monitor. Plug the power cord for the monitor into a nearby outlet.
2. Connect the signal cable to the BNC signal port or D-sub port on the back of your monitor/computer.
3. Turn on your monitor then computer. If your monitor displays an image, installation is complete.

Base Installation

Tilt/Swivel Base

With the detachable base stand installed, you can tilt and/or swivel the monitor for the most comfortable viewing angle.



Note: The base is detachable.

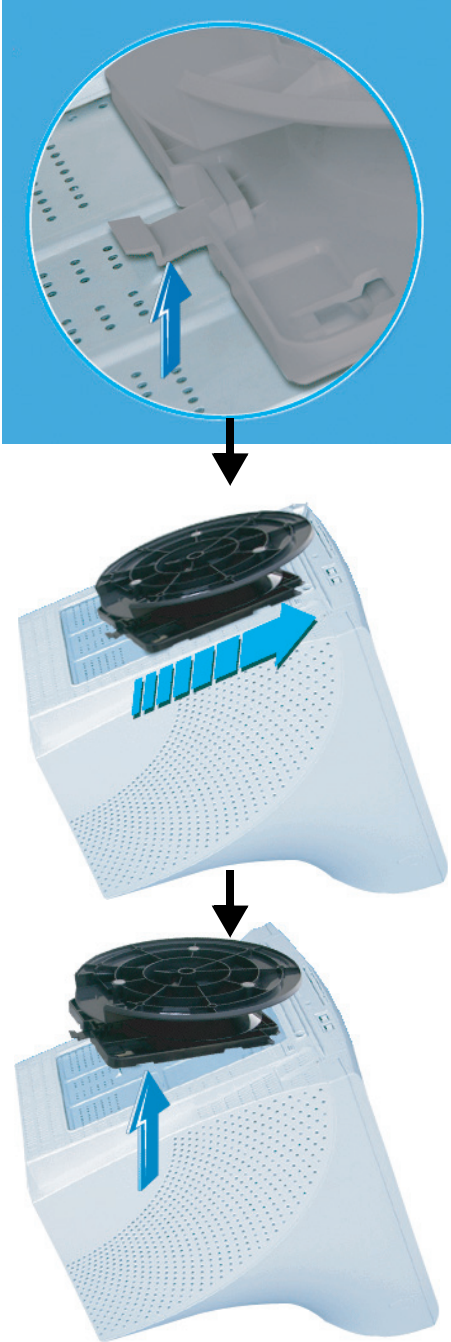
Base Installation

Attaching and Removing the Base

Attaching the Base



Removing the Base





Base Installation

Attaching the Base

1. Place the monitor upside-down on a flat work surface.
2. Align the tabs on the base with the corresponding slots on the bottom of the monitor.
3. Press the base onto the monitor until the tabs are fully engaged in the slots.
4. Push the base toward the front of the monitor until the release latch clicks into the locked position.
* Do not bend the snap.

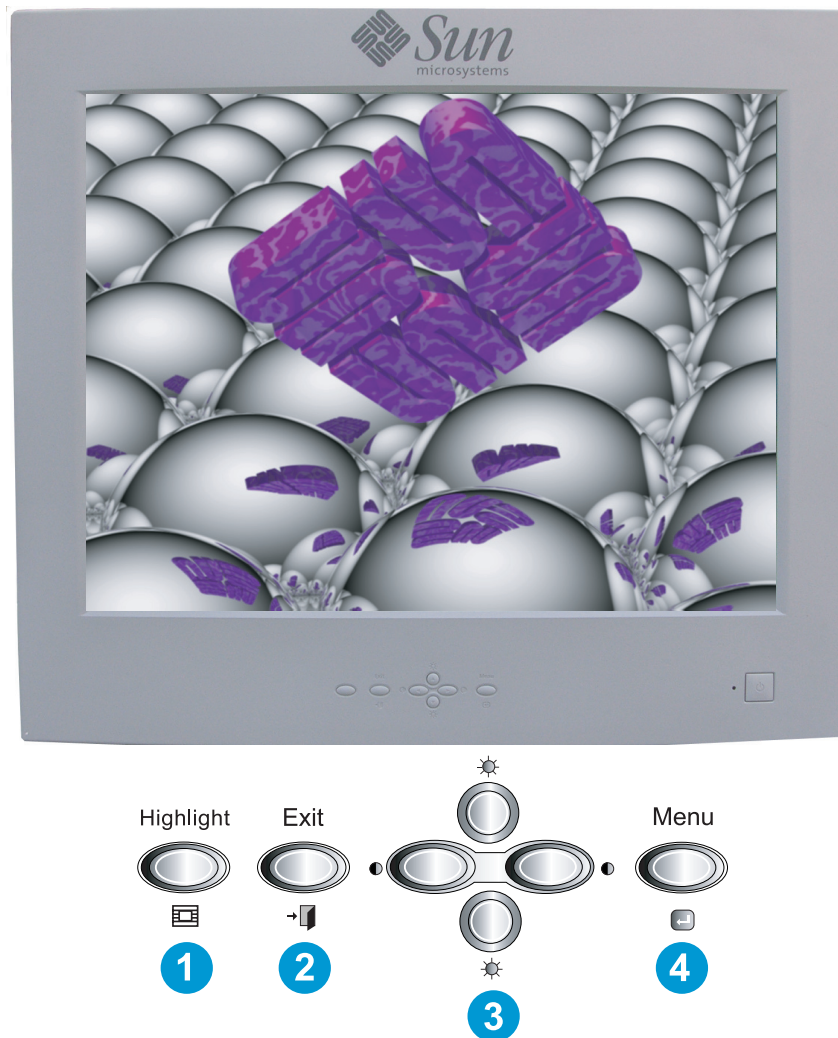
Removing the Base

1. Squeeze and pull up on the release latch on the base.
2. Push the base toward the back of the monitor and lift up to remove the base.

Note: The base will align with the monitor slots in only one position.



On-Screen Display



1. The Highlight Zone enhances video on certain areas of the screen by providing a clearer picture of video or photo images.
2. Use this button to Exit the active menu or the OSD.
3. These buttons allow you to highlight and adjust items in the menu.
4. Use this button to open the OSD and activate a highlighted menu item.



On-Screen Display

Brightness/Contrast

OSD

How to adjust

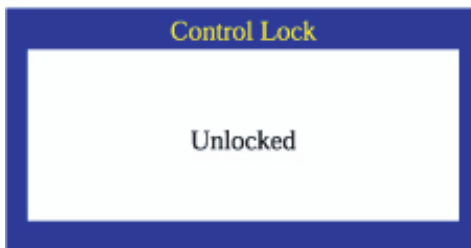
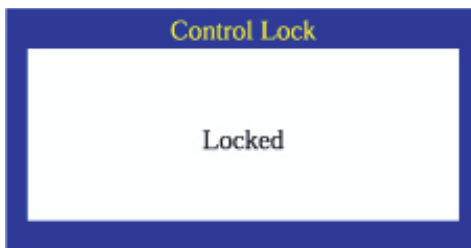


Brightness/Contrast

Adjust Brightness and Contrast.

1. Push the ◀ ▶ (**Contrast**) or ▲ ▼ (**Brightness.**) button. The brightness/contrast display will appear.
2. Push the ▲ button to increase the brightness or the ▼ button to decrease the brightness.
3. Push the ◀ button to decrease the contrast or the ▶ button to increase the contrast.

OSD lock/unlock



OSD lock/unlock

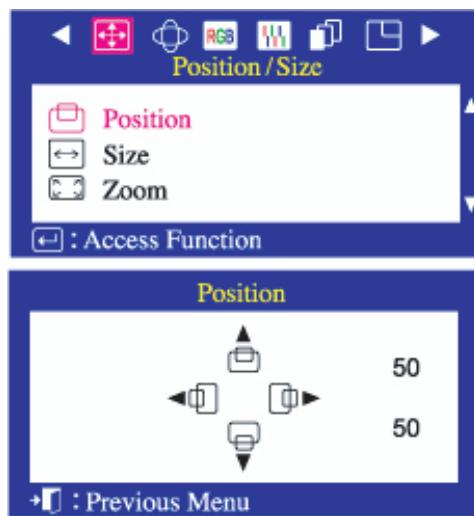
Follow these instructions to Lock/Unlock OSD.

1. Push and hold in the **Menu** button for 10 seconds or more to Lock the OSD.
(In this case, even if you click the Menu button, the control screen will not be displayed.)
2. Push and hold in the **Menu** button for 10 seconds or more to UnLock the OSD.

Position/Size

OSD

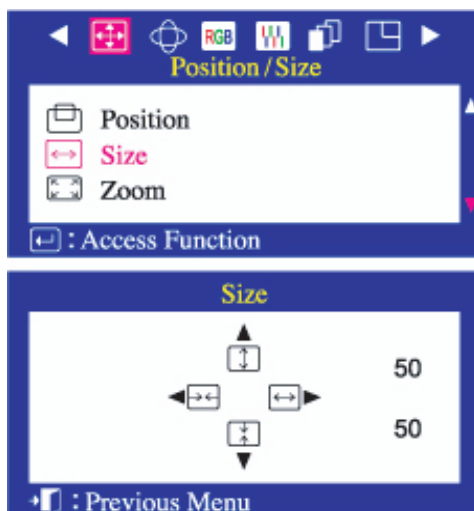
How to adjust



Position

Follow these instructions to change the **Position** of the monitor's entire display.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Position/Size** screen is displayed.
3. Push the ▲ button or ▼ button to select **Position**.
4. Push the **Menu** button to open the **Position** adjustment screen.
5. Use the ▲ and ▼ buttons to change the vertical position of the monitor's viewing area; use the ◀ and ▶ buttons to change the horizontal position of the monitor's viewing area.



Size

Follow these instructions to change the **size** of the monitor's entire display.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Position/Size** screen is displayed.
3. Push the ▲ button or ▼ button to select **Size**.
4. Push the **Menu** button to open the **Size** adjustment screen.
5. Use the ▲ and ▼ buttons to change the vertical size of the monitor's viewing area; use the ◀ and ▶ buttons to change the horizontal size of the monitor's viewing area.

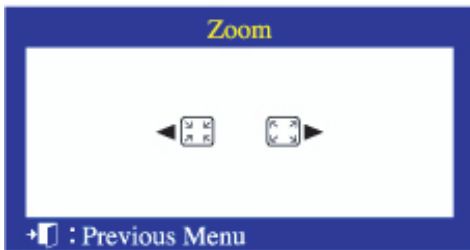


On-Screen Display

Position/Size

OSD

How to adjust

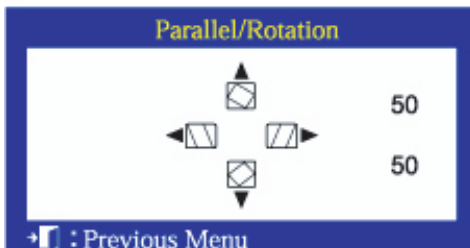
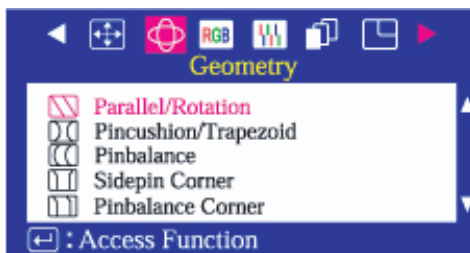


Zoom

Follow these instructions to get a close-up or a longshot view of the monitor's viewing area.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Position/Size** screen is displayed.
3. Push the ▲ button or ▼ button to select **Zoom**.
4. Push the **Menu** button to open the **Zoom** adjustment screen.
5. Use the ◀ button to decrease the screen viewing area. Use the ▶ button to enlarge the screen viewing area.

Geometry



Parallel/Rotation

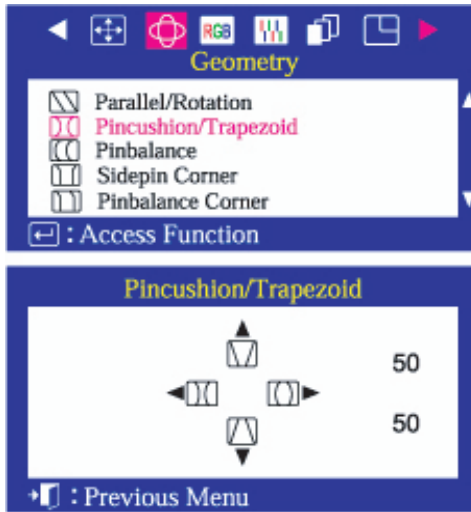
Adjust the parallelogram setting when the display is leaning left or right; adjust the rotation setting when the entire display is tilted left or right.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Geometry** screen is displayed.
3. Push the ▲ button or ▼ button to select **Parallel/Rotation**.
4. Push the **Menu** button to open the **Parallel/Rotation** adjustment screen.
5. Use the ◀ button or ▶ button to adjust the parallel setting; use the ▲ button or ▼ button to adjust the rotation setting.

Geometry

OSD

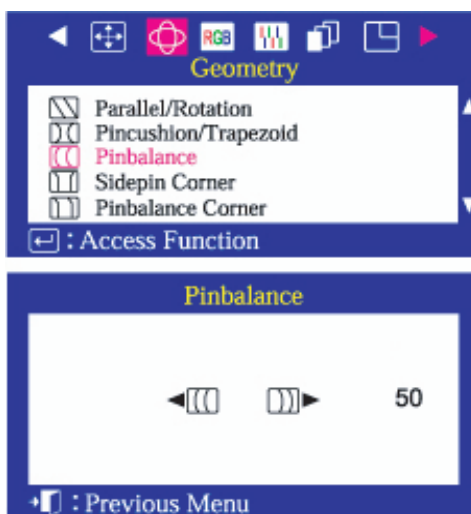
How to adjust



Pincushion/Trapezoid

Adjust the pincushion setting when the sides of the display are bowed in or bowed out; adjust the trapezoid setting when the top or bottom of the display is too large or small.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Geometry** screen is displayed.
3. Push the ▲ button or ▼ button to select **Pincushion/Trapezoid**.
4. Push the **Menu** button to open the **Pincushion/Trapezoid** adjustment screen.
5. Use the ◀ button or ▶ button to adjust the pincushion setting; use the ▲ button or ▼ button to adjust the trapezoid setting.



Pinbalance

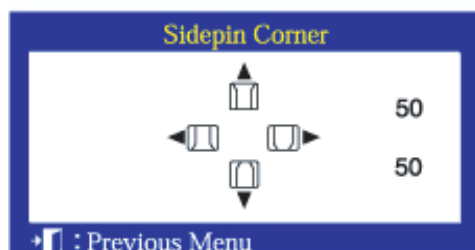
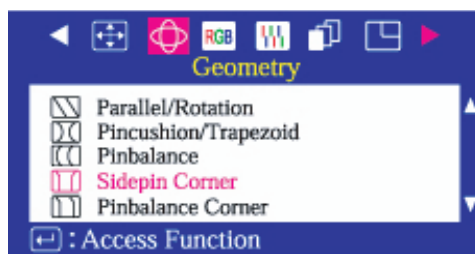
Adjust the pinbalance setting when the sides of the display are bowed towards the left or right.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Geometry** screen is displayed.
3. Push the ▲ button or ▼ button to select **Pinbalance**.
4. Push the **Menu** button to open the **Pinbalance** adjustment screen.
5. Use the ◀ button or ▶ button to adjust the Pinbalance setting.

Geometry

OSD

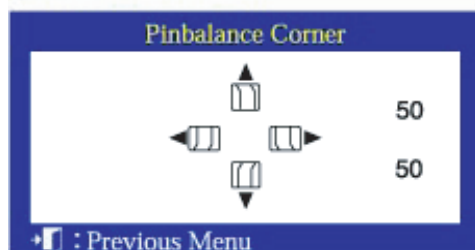
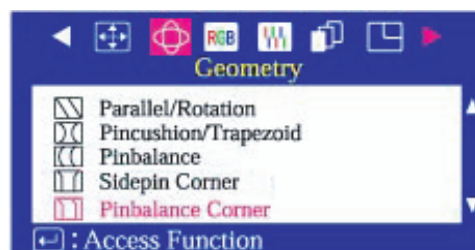
How to adjust



Sidepin Corner

Adjust the sidepin corner correction when the corners of the display curve out or in at the top or bottom of the display.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Geometry** screen is displayed.
3. Push the ▲ button or ▼ button to select **Sidepin Corner**.
4. Push the **Menu** button to open the **Sidepin Corner** adjustment screen.
5. Use the ◀ ▶ or ▲ ▼ buttons to adjust the SidePin Corner correction.



Pinbalance Corner

Adjust the pinbalance corner correction when the corners of the display curve to the left or right at the top or bottom of the screen.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Geometry** screen is displayed.
3. Push the ▲ button or ▼ button to select **Pinbalance Corner**.
4. Push the **Menu** button to open the **Pinbalance Corner** adjustment screen.
5. Use the ◀ ▶ or ▲ ▼ buttons to adjust the Pinbalance Corner correction.



On-Screen Display

Color

OSD

How to adjust



Color 1 / Color2

Color temperature is a measure of the 'warmth' of the image colors. The available range is between 5000 to 9300K. Follow these steps to change the color temperature and adjust individual R,G,B color balance.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Color** screen is displayed.
3. Push the ▲ button or ▼ button to select **Color1/Color2**.
4. Push the **Menu** button to open the **Color1/Color2** adjustment screen.
5. Adjust the color temperature as close to the desired temperature as possible using only the ◀ and ▶ buttons. To fine tune the color hue, use the ▲ button or ▼ button to select **R**(ed), **G**(reen) or **B**(lue), then use the ◀ and ▶ buttons until you reach the desired color.



sRGB

When you adjust the Brightness and Contrast after sRGB mode is selected, sRGB mode exits.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Color** screen is displayed.
3. Push the ▲ button or ▼ button to select **Color1, Color2** or **sRGB**

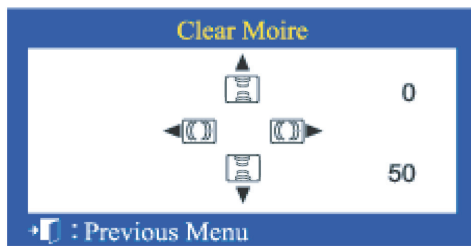
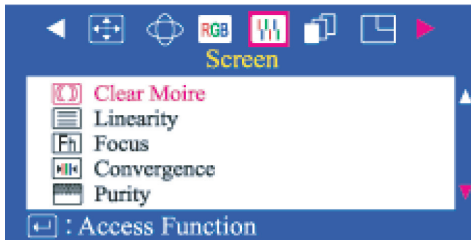


On-Screen Display

Screen

OSD

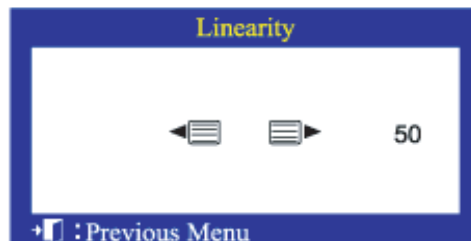
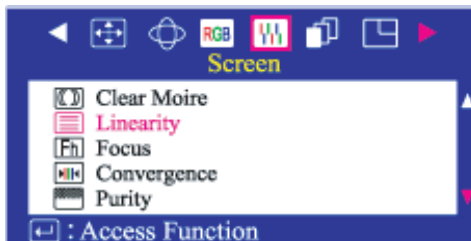
How to adjust



● Clear Moire

A 'moire' pattern can appear on your screen, looking like a series of concentric circles or arcs. To eliminate this pattern, use the clear moire adjustments.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Screen** menu is displayed.
3. Push the ▲ button or ▼ button to select **Clear Moire**.
4. Push the **Menu** button to open the **Clear Moire** adjustment screen.
5. Use the ◀ button or ▶ button to adjust horizontal moire; use the ▲ button or ▼ button to adjust vertical moire.



● Linearity

Adjust the linearity setting when the displayed image is compressed at the top or bottom.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Screen** menu is displayed.
3. Push the ▲ button or ▼ button to select **Linearity**.
4. Push the **Menu** button to open the **Linearity** adjustment screen.
5. Use the ◀ button or ▶ button to adjust the vertical Linearity.

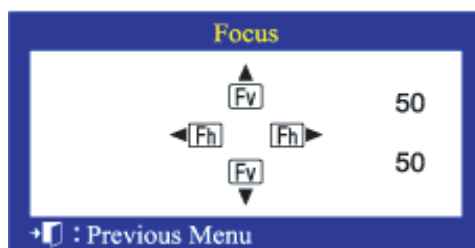
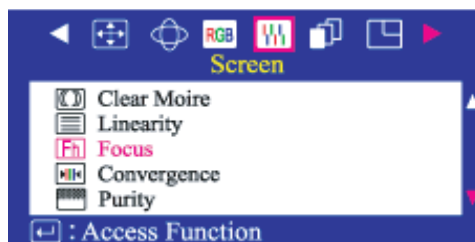


On-Screen Display

Screen

OSD

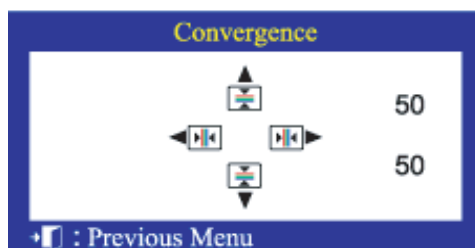
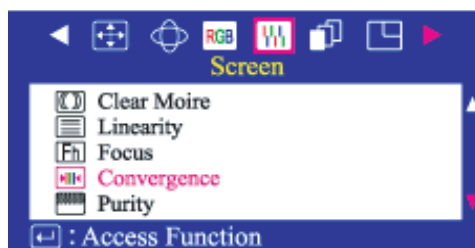
How to adjust



● Focus

Use the focus control when the image displayed on the screen is not sharp in all areas.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Screen** menu is displayed.
3. Push the ▲ button or ▼ button to select **Focus**.
4. Push the **Menu** button to open the **Focus** adjustment screen.
5. Use the ◀ button or ▶ button to adjust the focus along the left and right areas of the screen. Use the ▲ button or ▼ button to adjust the center area of the screen.



● Convergence

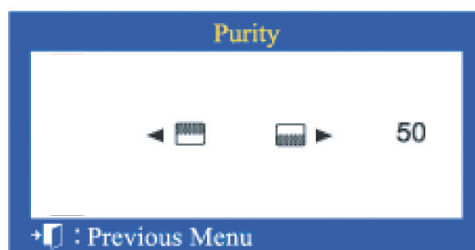
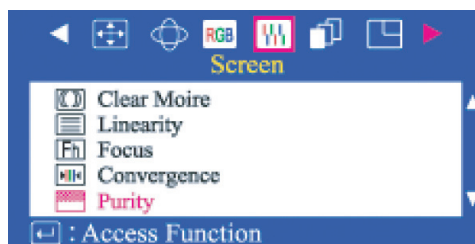
Convergence affects picture clarity. Adjust the horizontal or vertical convergence to properly align the color dots that make up the image.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Screen** menu is displayed.
3. Push the ▲ button or ▼ button to select **Convergence**.
4. Push the **Menu** button to open the **Convergence** adjustment screen.
5. Use the ◀ button or ▶ button to adjust the horizontal convergence. Use the ▲ button or ▼ button to adjust the vertical convergence.

Screen

OSD

How to adjust

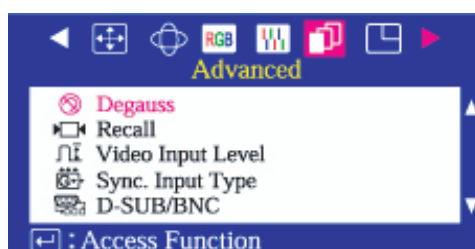


Purity

Adjust the color purity of the picture.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Screen** menu is displayed.
3. Push the ▲ button or ▼ button to select **Purity**.
4. Push the **Menu** button to open the **Purity** adjustment screen.
5. Use the ◀ button or ▶ button to perform the adjustment.

Advanced



Degauss

The Degauss feature will remove color impurities caused by magnetic fields. Do not use the Degauss feature more than once within a 30-minute period.

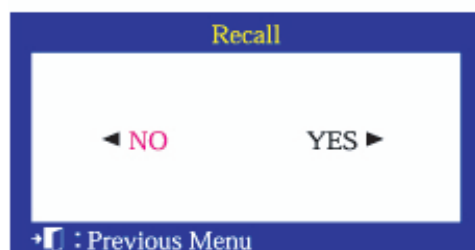
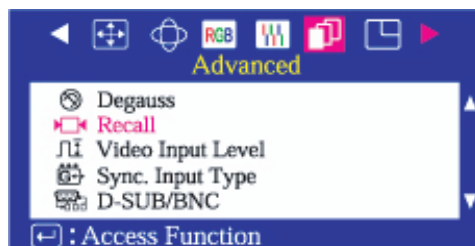
Note: The monitor may buzz momentarily, the image colors may change and the image will jiggle for a few seconds. These effects are normal.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Advanced** screen is displayed.
3. Push the ▲ button or ▼ button to select **Degauss**.
4. Push the **Menu** button to execute the degauss function. The degaussing screen will appear. After a few seconds, the degauss main menu will return.

Advanced

OSD

How to adjust



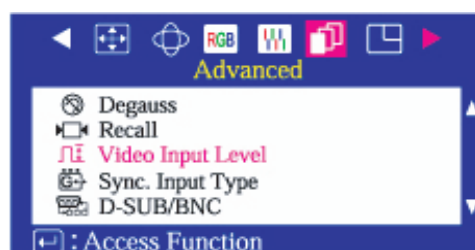
Recall

Use the recall feature to reset these monitor settings to their original levels: **Position, Size, Pincushion, Trapezoid, Parallelogram, Pinbalance, Rotation, Clear Moire.**

Note: If you have selected "Yes", all settings listed above will be reset. All other settings will remain the same.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Advanced** screen is displayed.
3. Push the ▲ button or ▼ button to select **Recall**.
4. Push the **Menu** button to open the **Recall** adjustment screen.
5. Push the ▶ button to select **Yes**. If you don't want to reset the monitor, use the ◀ button to select **No**.

Note: Push and hold the Exit button for about 5 seconds to reset the monitor to full factory default settings.



Video Input Level

Some video cards use video signals higher than 1.0V which causes the display to be very bright.

For those video cards, use this feature to select the 1.0 V Level.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Advanced** screen is displayed.
3. Push the ▲ button or ▼ button to select **Video Input Level**.
4. Push the **Menu** button to open the **Video Input Level** adjustment screen.
5. Use the ◀ button or ▶ buttons to select **0.7 V** or **1.0 V**.

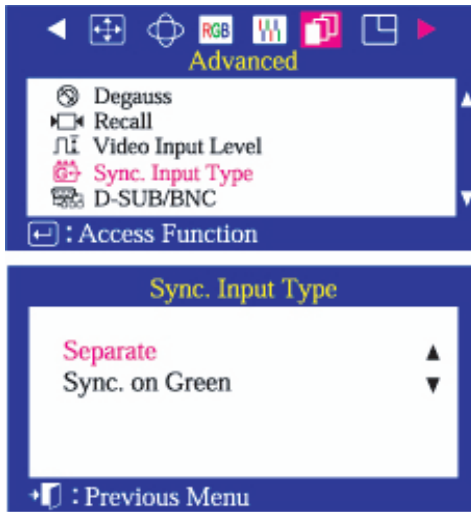


On-Screen Display

Advanced

OSD

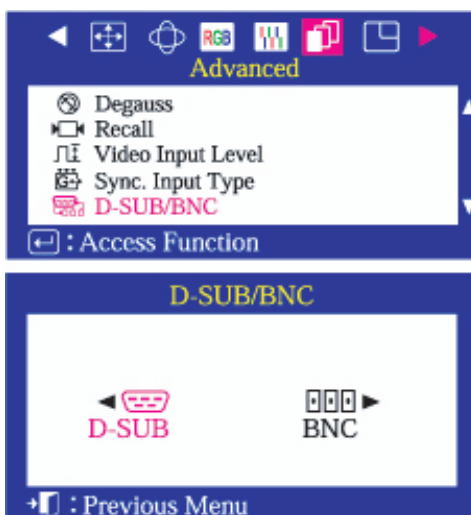
How to adjust



● Sync. Input Type

Use this menu to set your monitor to the correct type of synchronization. Select 'Separate' if the computer is sending a separate synchronization signal. Select 'Sync. on Green' if the computer expects the monitor to synchronize with the green signal it sends. Refer to your computer or video card user's manual to determine the correct setting.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Advanced** screen is displayed.
3. Push the ▲ button or ▼ button to select **Sync. Input Type**.
4. Push the **Menu** button to open the **Sync. Input Type** adjustment screen.
5. Use the ▲ button or ▼ button to select **Separate** or **Sync. on Green**.



● D-SUB/BNC

Use this menu to choose between the signal source connected to the BNC connector input and the signal source connected to the D-SUB connector input. **Note: When you are finished, wait for a few seconds and the screen will blank then display the image from the new signal source (other computer). A cable must be connected to both inputs to use this function.**

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Advanced** screen is displayed.
3. Push the ▲ button or ▼ button to select **D-SUB/BNC**.
4. Push the **Menu** button to open the **D-SUB/BNC** selection screen.
5. Use the ◀ button or ▶ button to select **D-SUB** or **BNC**.

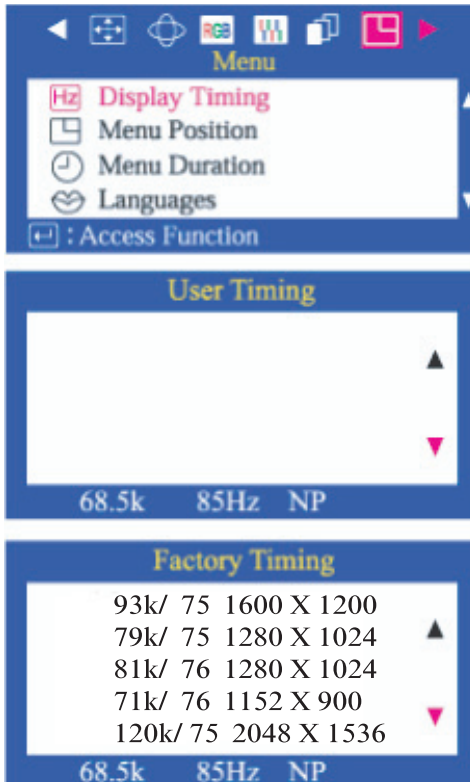


On-Screen Display

Menu

OSD

How to adjust



Display Timing

Display timing provides information about the display timing and sync signals polarity(user mode) and display resolution(default mode).

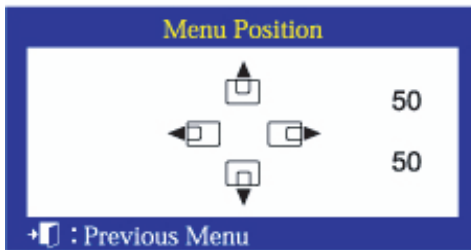
Note: These screens do not allow any changes to the settings, they are for information only.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Menu** screen is displayed.
3. Push the ▲ button or ▼ button to select **Display timing**.
4. Push the **Menu** button to open the **Display timing** adjustment screen.
5. Use the ▼ button to see the user control mode and the default mode.

Menu

OSD

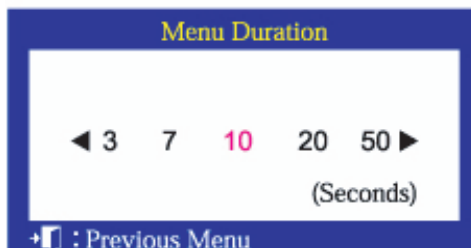
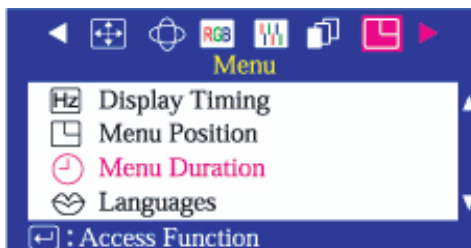
How to adjust



● Menu Position

You can change the position where the OSD menu appears on your monitor.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Menu** screen is displayed.
3. Push the ▲ button or ▼ button to select **Menu Position**.
4. Push the **Menu** button to open the **Menu Position** adjustment screen.
5. Use the ◀ ▶ or ▲ ▼ button to place the menu in the position you prefer.



● Menu Duration

The menu will automatically turn off if no adjustments are made for a certain time period. You can set the amount of time the menu will wait before it turns off.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Menu** screen is displayed.
3. Push the ▲ button or ▼ button to select **Menu Duration**.
4. Push the **Menu** button to open the **Menu Duration** selection screen.
5. Use the ◀ button or ▶ buttons to select 3, 7, 10, 20 or 50 seconds. 10 seconds is the default value.

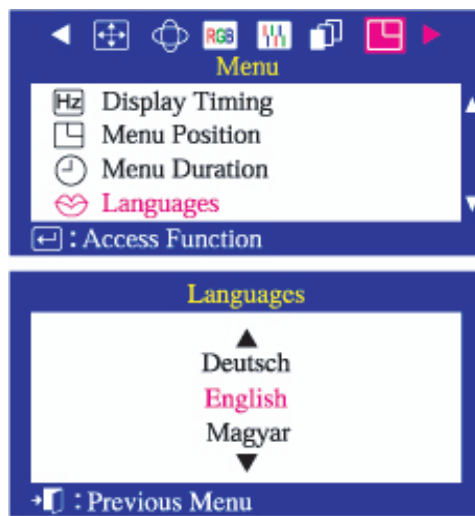


On-Screen Display

Menu

OSD

How to adjust



Languages

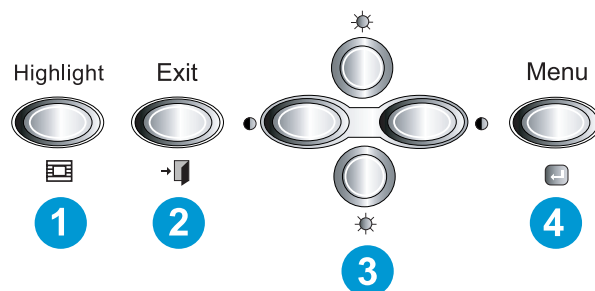
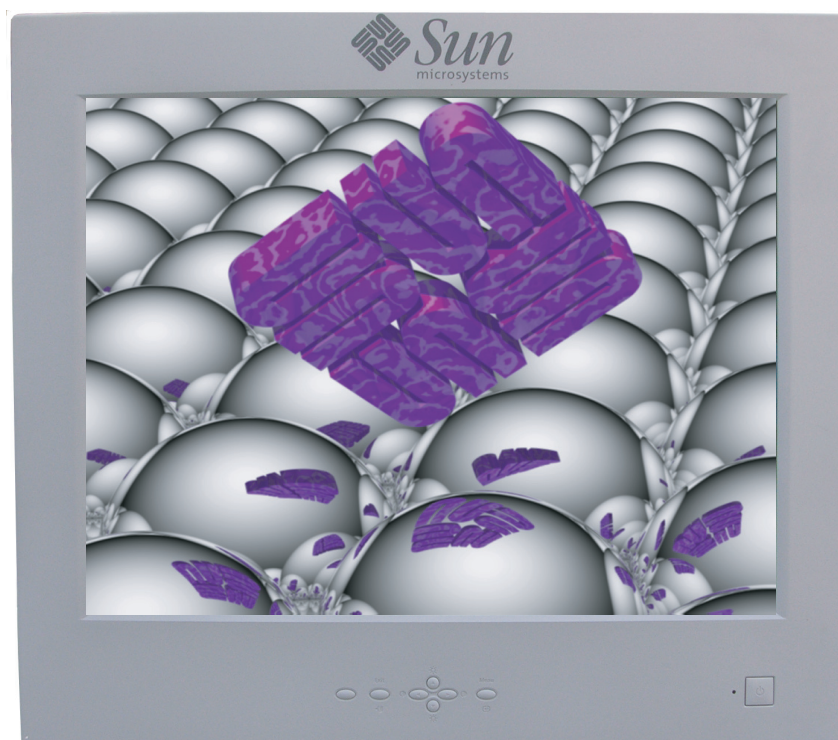
Follow these steps to change the language used in the menu. You can choose one of ten languages. English, German, French, Italian, Portuguese, Spanish, Swedish, Russian, Polish, or Magyar.

The language chosen affects only the language of the OSD. It has no effect on any software running on the computer.

1. Push the **Menu** button.
2. Push the ◀ button or ▶ button until the **Menu** screen is displayed.
3. Push the ▲ button or ▼ button to select **Language**.
4. Push the **Menu** button to open the **Language** selection screen.
5. Use the ▲ button or ▼ button to select the language you would like to use.



On-Screen Display



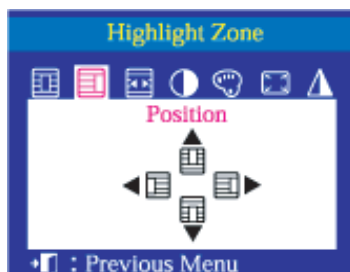
1. The Highlight Zone enhances video on certain areas of the screen by providing a clearer picture of video or photo images.
2. Use this button to Exit the active menu or the OSD (On-Screen Display).
3. These buttons allow you to highlight and adjust items in the menu.
4. Use this button to open the OSD and activate a highlighted menu item.

**The Highlight Zone function can be optimized for moving images.
Use it when viewing moving images on the screen.**

Highlight Zone

OSD

How to adjust



● Highlight Zone

This function is to execute or cancel the Highlight Zone.

1. Push the **Highlight** button.
2. Push the **Menu** button.
3. Push the ◀ button or ▶ button to cancel, apply or enlarge the entire screen.

● Position

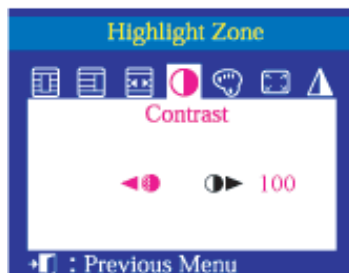
This function is to move the Highlight Zone horizontally or vertically.

1. Push the **Highlight** button.
2. Push the ◀ button or ▶ button to select the Screen **Position** Adjustment and then push the **Menu** button.
3. Push the ◀ button or ▶ button to move the position of the Highlight Zone horizontally and push the ▲ button or ▼ button to move it vertically.

Highlight Zone

OSD

How to adjust



● Size

This function is to adjust the size of the Highlight Zone.

1. Push the **Highlight** button.
2. Push the ◀ button or ▶ button to select the Screen **Size** Adjustment and then push the **Menu** button.
3. Push the ◀ button or the ▶ button to change the size of the Highlight Zone horizontally and push the ▲ button or the ▼ button to change it vertically.

● Contrast

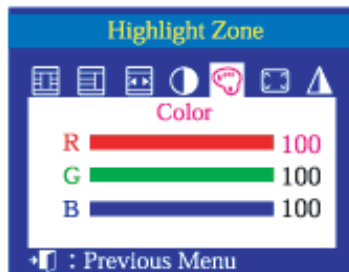
This function is to use the Contrast of the Highlight Zone.

1. Push the **Highlight** button.
2. Push the ◀ button or ▶ button to select select the **Contrast** Adjustment and then push the **Menu** button.
3. Push the ◀ button or ▶ button to adjust the Contrast of the Highlight Zone.

Highlight Zone

OSD

How to adjust



Color

This function is to adjust the color of the Highlight Zone.

1. Push the **Highlight** button.
2. Push the ◀ button or ▶ button to select the **Color** Adjustment and then push the **Menu** button.
3. Push the ▲ button or ▼ button to select a color from R, G or B. Push the ◀ button or ▶ button to adjust the R, G or B color of the Highlight Zone.

Zoom

This function is to enlarge or reduce the Highlight Zone.

1. Push the **Highlight** button.
2. Push the ◀ button or ▶ button to select the **Zoom** Adjustment and then push the **Menu** button.
3. Push the ◀ button or ▶ button to enlarge or reduce the Highlight Zone.

Highlight Zone

OSD

How to adjust



Sharpness

This function is to adjust the sharpness of the Highlight Zone.

1. Push the **Highlight** button.
2. Push the ◀ button or ▶ button to select the **Sharpness** Adjustment and then push the **Menu** button.
3. Push the ◀ button or ▶ button to adjust the sharpness of the Highlight Zone.



General Q & A

| Question | Answer |
|--|---|
| How can I change the frequency? | <p>Frequency can be changed by reconfiguring the video card.</p> <p>Note that video card support can vary, depending on the version of the driver used. (Refer to the computer or the video card manual for details.)</p> |
| How can I adjust the resolution? | Contact the video card manufacturer for details. |
| How can I set the Power Saving function? | Refer to Computer Manual |
| Monitor makes a sound when it is turned on. | This is normal as some sound may be generated when the metal case and the electromagnet, which are installed to block any electromagnetic waves, interact with each other. |
| How can I clean the outer case/ Picture tube? | <p>Disconnect the power cord and then clean the monitor with a soft cloth, using either a cleaning solution or plain water.</p> <p>Do not leave any remains of the detergent nor scratch the case. Do not allow any liquids to go inside the monitor.</p> |



Highlight Zone Q & A

| Question | Answer |
|---|---|
| Started a multimedia program but the Highlight Zone function does not automatically activate. | Check the color settings and see if sRGB is selected. When sRGB is selected, the Highlight Zone function remains de-activated in order to maintain the sRGB color attributes. |
| Changed the setting to Highlight Zone in Manual Detect mode but the Highlight Zone feature has not been activated. | Check the color setting of the monitor and see if sRGB is selected. When sRGB is selected, the Highlight Zone function remains de-activated in order to maintain the sRGB color attributes. |
| When a Highlight Zone is on, the rest of the screen dims. | Monitors with the Highlight Zone feature are equipped with an Automatic Beam Control function. When activated, this may cause slight dimming of the surrounding screen. However, this does not indicate a malfunction of any kind, and it is safe to continue to use the product. |
| The Highlight Zone appears too dark. | Check the Contrast value in Picture Setting and adjust it for your ideal viewing. You can also check the RGB values and increase the values for a brighter Highlight Zone image. |
| Want to adjust the position and size of the Highlight Zone. | You can change the position and/or the size of the Highlight Zone easily using the Manual Detect function. See (Highlight Zone functions) |
| Cannot select Picture Setting. | The Picture Setting feature can be selected only when the Highlight Zone function is on. Turn the Highlight Zone function on before selecting Picture Setting. |



Troubleshooting

Check List



Before calling for service, check the information in this section to see if you can remedy any problems yourself. If you do need assistance, please contact an authorized service center.

| Symptom | Check List | Solutions |
|---|---|--|
| No images on the screen. I cannot turn on the monitor. | Is the power cord connected properly? | Check the power cord connection and supply. |
| | Can you see " No Connection, Check Signal Cable " on the screen? | Check the signal cable connection. |
| | Can you see " Sync. Out of Range, 68.7kHz 168Hz PP " on the screen? | You can see this message when the signal from the video card exceeds the maximum resolution and frequency that the monitor can properly handle. Adjust the maximum resolution and frequency that the monitor can properly handle at the video source. |
| I cannot see the On Screen Display. | There is no image on the screen. Is the power indicator on the monitor blinking at 1 second intervals? | The monitor is in PowerSaver mode. Press a key on the keyboard to activate the monitor and restore the image on the screen. |
| | Have you locked the On Screen Display (OSD) Menu to prevent changes? | Unlock the OSD by pressing the MENU button for at least 10 seconds. |
| The image on the screen is shaking. | Check the monitor configuration to see if it is in Interlace Mode. (Interlace Mode: Vertical frequency 43Hz, 87Hz(i), etc) | The signal from the video card exceeds the maximum resolution and frequency of the monitor. |
| | Are there any magnetic products such as a power adapter, speaker or a high voltage wire near by? | Move the monitor away from anything that can create a strong magnetic field. |
| | Is the voltage stable? | The screen image can appear to shake or vibrate at a particular time of day due to low supply voltage. |
| | The screen image can also appear to shake or vibrate if there is a problem with the video card or the computer's main board. | |



Troubleshooting

Check List

| Symptom | Check List | Solutions |
|---|--|---|
| The screen shows strange colors or just black and white. | Is the screen displaying only one color as if looking at the screen through a cellophane paper? | Check the signal cable connection. Make sure the video card is fully inserted in it's slot. |
| | Has the video card been set properly? | Set the video card by referring to the video card manual. |
| The screen suddenly has become unbalanced. | Have you changed the video card or the driver? | Adjust screen image position and size using the OSD. |
| | Have you adjusted the resolution or frequency to the monitor? | Adjust the resolution and frequency at the video card. (Refer to the Preset Display Modes). |
| | The screen can be unbalanced due to the cycle of the video card signals. Readjust Position by referring to the OSD. | |
| The screen is out of focus or OSD cannot be adjusted. | Have you adjusted the resolution or frequency on the monitor? | Adjust the resolution and frequency of the video card. (Refer to the Preset Display Modes). |
| The screen is partially distorted. | Are there any magnetic products such as an adapter, speaker or a high voltage wire near the monitor? | Enter the OSD and perform a "Degauss". Keep the monitor away from any magnetic products. |
| LED is blinking but no images on the screen. | Is the frequency properly adjusted when checking the Display Timing on the menu? | Adjust the frequency properly by referring to the video card manual and the Preset Display Modes. (The maximum frequency per resolution may differ from product to product.) |



Check List

Check the following items if there is trouble with the monitor.

1. Check if the power cord and the video cable(s) are properly connected to the computer.
2. If you installed a new video card, check the installed adapter (video card) driver.
3. Check if the scan rate of the video screen is set at 75Hz or 85Hz. (Do not exceed 75Hz when using the maximum resolution.)

Tips for Highlight Zone

1. To protect CRT against the screen brightness, the Highlight Zone function persists for three hours and then automatically stops. So please reset it to continue.
2. When the Highlight Zone function is operated, the surrounding brightness of screen will appear darker.
3. Depending on the video card you use, a color saturation phenomenon may occur in the Highlight Zone. In this case, slightly lower the contrast of the Highlight Zone and the color saturation will be reduced.

Note: If problems repeatedly occur, contact an authorized service center.



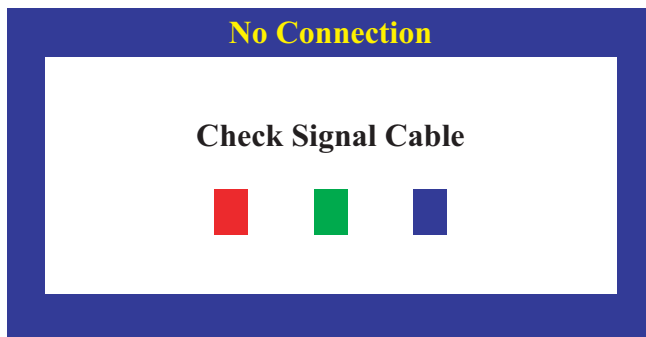
Self-Test Feature Check

Your monitor provides a self test feature that allows you to check whether your monitor is functioning properly.

Self-Test Feature Check

1. Turn off both your computer and the monitor.
2. Unplug the video cable from the back of the computer.
3. Turn on the monitor.

If your monitor works normally, the following screen appears.



Failure of any of the boxes to appear indicates a problem with your monitor. This box also appears during normal operation if the video cable becomes disconnected or damaged.

4. Turn off your monitor and reconnect the video cable; then turn on both your computer and the monitor.

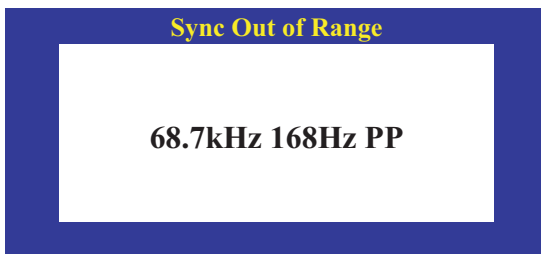
If your monitor screen remains blank after using the previous procedure, check your video controller and computer system; your monitor is functioning properly.



Self-Test Feature Check

Warning Messages

If there is something wrong with the input signal, a message appears on the screen or the screen goes blank although the power indicator LED is still on. The message may indicate that the monitor is out of scan range or that you need to check the signal cable.



Environment

The location and the position of the monitor may influence the quality and other features of the monitor.

1. If there are any sub-woofer speakers near the monitor, unplug and relocate the sub-woofer to another room.
2. Remove all electronic devices such as radios, fans, clocks and telephones that are within 3 feet (one meter) of the monitor.
3. Degauss the monitor if any devices were removed from the area.

Useful Tips

- ◆ A monitor recreates visual signals received from the computer. Therefore, if there is trouble with the computer or the video card, this can cause the monitor to become blank, have poor coloring, noise, Sync. Out of Range, etc. In this case, first check the source of the problem, and then contact a service center or your dealer.
- ◆ **Judging the monitor's working condition**
If there is no image on the screen or a "**Sync. Out of Range, 68.7kHz 168Hz PP**" message comes up, disconnect the cable from the computer while the monitor is still powered on.
 - If there is a message coming up on the screen or if the screen goes white, this means the monitor is in working condition.
 - In this case, check the computer for trouble.



Specification

General

General

Model Name PN21MS

CRT

Size 21" (53cm) DynaFlat (20" (50.8cm) viewable)

Deflection angle 90°

Dot Pitch 0.20mm (Horizontal)

Screen type Aluminized tri-color phosphor dot trio with black matrix.
Anti-doming invar shadow mask.
Multi-layer coated with anti-static, anti-glare

Maximum Resolution

2048 Dots, 1536 Lines

Resolution (Standard)

1600 Dots, 1200 Lines

Active Display

Horizontal 393 ± 3 mm

Vertical 295 ± 3 mm

Synchronization

Horizontal 32 ~ 121 kHz

Vertical 50 ~ 160 Hz

Input Signal Definition

Video Signal RGB, Analog 0.7 Vpp positive at 75 ohms

Sync Signal Separate H/V sync, Composite, TTL level, positive or negative, SOG

Signal cable 15-pin 3-row mini D-Sub connector, 5 X BNC

Display Color

Unlimited

Maximum Pixel Clock

340MHz

Power Supply

90 ~ 264VAC, 60/50 Hz ± 3Hz



Specification

General

Power Consumption

Less than 130W

Dimensions (WxDxH) / Weight

504 x 500 x 508mm (with Stand) / 28.0 kg

Regulations

UL (USA), CSA (Canada), TUV (Germany), NEMKO (Norway), MIC/EK (Korea)
CCIB (China), GOST (Russia), IRAM (Argentina) SASO (Saudi Arabia)
DHHS (USA), PTB (Germany), MPR II (Sweden), VCCI (Japan),
BSMI (Taiwan), C-Tick (Australia), TUV GS (Germany), TCO'99 (Sweden)

Environmental considerations

| | |
|------------------|--|
| Operating | Temperature: 32°F ~ 104°F (0°C ~ 40°C) Humidity: 10% ~ 80%, non-condensing |
| Storage | Temperature: -4°F ~ 113°F (-20°C ~ 45°C) Humidity: 5% ~ 95%, non-condensing |

Plug and Play Capability

This monitor can be installed on any Plug & Play compatible system. Interaction of the monitor and computer systems will provide the best operating conditions and monitor settings. In most cases, monitor installation will proceed automatically, unless the user wishes to select alternate settings.

Note: Design and specifications are subject to change without prior notice.



Specification

PowerSaver

This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor into a low-power mode when it has not been used for a certain amount of time. The monitor automatically returns to normal operation when you press a key on the keyboard. For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods. The PowerSaver system operates with a VESA DPMS compliant video card installed in your computer. Use a software utility installed on your computer to set up this feature.

| State | Normal Operation | Power-off Mode EPA/ ENERGY 2000 |
|-------------------|------------------|------------------------------------|
| Power Indicator | Green | Green, Blinking |
| Power Consumption | Less than 130W | Less than 2W |



This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPMS (Digital Power Management System) functionality.

As an ENERGY STAR® Partner, Sun Microsystems has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

Preset Timing Modes

If the signal transferred from the computer is the same as the following Preset Timing Modes, the screen will be adjusted automatically. However, if the signal differs, the screen may go blank while the power LED is on. Refer to the video card manual and adjust the screen as follows.

| Display Mode | Horizontal Frequency (kHz) | Vertical Frequency (Hz) | Pixel Clock (MHz) | Sync Polarity (H/V) |
|-------------------|----------------------------|-------------------------|-------------------|---------------------|
| VESA, 640 x 480 | 43.269 | 85.008 | 36.000 | -/-, Sep. |
| VESA, 800 x 600 | 53.674 | 85.061 | 56.250 | +/, Sep. |
| VESA, 1024 x 768 | 60.023 | 75.029 | 78.750 | +/, Sep. |
| SUN, 1152 x 900 | 61.8455 | 66.0038 | 94.50 | -/-, Comp. |
| SUN, 1152 x 900 | 71.81 | 76.15 | 108.0 | -/-, Comp. |
| SUN, 1280 x 1024 | 81.13 | 76.11 | 135.0 | -/-, Comp. |
| VESA, 1280 x 1024 | 79.976 | 75.025 | 135.0 | +/, Sep. |
| SUN, 1280 x 1024 | 120.9406 | 111.982 | 216.00 | +/, Sep. |
| VESA, 1600 x 1200 | 93.75 | 75.00 | 202.5 | +/, Sep. |
| VESA, 2048 x 1536 | 120.384 | 74.959 | 339 | +/, Sep. |



Horizontal Frequency

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called Horizontal Cycle and the inverse number of the Horizontal Cycle is called Horizontal Frequency. Unit: kHz

Vertical Frequency

Like a fluorescent lamp, the screen has to repeat the same image many times per second to display an image to the user. The frequency of this repetition is called Vertical Frequency or Refresh Rate. Unit: Hz



Terms

- **Dot Pitch**

The image on a monitor is composed of red, green and blue dots. The closer the dots, the higher the resolution. The distance between two dots of the same color is called the 'Dot Pitch'. Unit: mm

- **Vertical Frequency**

The screen must be redrawn several times per second in order to create and display an image for the user. The frequency of this repetition per second is called Vertical Frequency or Refresh Rate. Unit: Hz

Example: If the same light repeats itself 60 times per second, this is regarded as 60 Hz.

- **Horizontal Frequency**

The time to scan one line connecting the right edge to the left edge of the screen horizontally is called Horizontal Cycle. The inverse number of the Horizontal Cycle is called Horizontal Frequency. Unit: kHz

- **Interlace and Non-Interlace Methods**

Showing the horizontal lines of the screen from the top to the bottom in order is called the Non-Interlace method while showing odd lines and then even lines in turn is called the Interlace method. The Non-Interlace method is used for the majority of monitors to ensure a clear image. The Interlace method is the same as that used in TVs.

- **Plug & Play**

This is a function that provides the best quality screen for the user by allowing the computer and the monitor to exchange information automatically. This monitor follows the international standard VESA DDC for the Plug & Play function.

- **Resolution**

The number of horizontal and vertical dots used to compose the screen image is called 'resolution'. This number shows the accuracy of the display. High resolution is good for performing multiple tasks as more image information can be shown on the screen.

Example: If the resolution is 1280 X 1024, this means the screen is composed of 1280 horizontal dots (horizontal resolution) and 1024 vertical lines (vertical resolution).

- **Highlight Zone**

The Highlight Zone ensures clear and sharp display of animated multimedia or photo images by enhancing the brightness of a certain area on the screen.



Regulatory

● **FCC Information**

User Instructions

The Federal Communications Commission Radio Frequency Interference Statement includes the following warning:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television receptions, which can be determined by turning the equipment 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 equipment and receiver.
- ◆ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ◆ Consult the dealer or an experienced radio/TV technician for help.

User Information

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. If necessary, consult your dealer or an experienced radio/television technician for additional suggestions. You may find the booklet called How to Identify and Resolve Radio/TV Interference Problems helpful. This booklet was prepared by the Federal Communications Commission. It is available from the U.S. Government Printing Office, Washington, DC 20402, Stock Number 004-000-00345-4.

The party responsible for product compliance:

SAMSUNG ELECTRONICS CO., LTD
America QA Lab of Samsung
3351 Michelson Drive,
Suite #290, Irvine, CA92612 USA
Tel) 949-975-7310
Fax) 949-922-8301

Warning

User must use shielded signal interface cables to maintain FCC compliance for the product.

Provided with this monitor is a detachable power supply cord with IEC320 style terminations. It may be suitable for connection to any UL Listed personal computer with similar configuration. Before making the connection, make sure the voltage rating of the computer convenience outlet is the same as the monitor and that the ampere rating of the computer convenience outlet is equal to or exceeds the monitor voltage rating.

For 120 Volt applications, use only UL Listed detachable power cord with NEMA configuration 5-15P type (parallel blades) plug cap. For 240 Volt applications use only UL Listed Detachable power supply cord with NEMA configuration 6-15P type (tandem blades) plug cap.



Regulatory

- **IC Compliance Notice**

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations of ICES-003.

Cet appareil Numerique de classe B respecte toutes les exigences du Reglement NMB-03 sur les equipements produisant des interferences au Canada.

- **MPR II Compliance**

This monitor complies with SWEDAC(MPR II) recommendations for reduced electric and magnetic fields.

- **European Notice (Europe Only)**

Products with the CE marking comply with the EMC Directive(89/336/EEC), (92/31/EEC), (93/68/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms:

- ◆ EN55022 - Radio Frequency Interference
- ◆ EN55024 - Electromagnetic Immunity of Information Technology Equipment
- ◆ EN61000-3-2 - Power Line Harmonics
- ◆ EN61000-3-3 - Voltage Fluctuations
- ◆ EN60950 - Safety

- **PCT Notice**



- **VCCI**

This is a Class B product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Regulatory

- **TCO'99-Ecological requirements for personal computers (TCO'99 applied model only)**



Congratulations!

You have just purchased a TCO'99 approved and labelled product! Your choice has provided you with a product developed for professional use. Your purchase has also contributed to reducing the burden on the environment and also to the further development of environmentally adapted electronics products.

This product meets the requirements for the TCO'99 scheme which provides for an international environmental and quality labelling of personal computers. The labelling scheme was developed as a joint effort by the TCO(The Swedish Confederation of Professional Employees), Svenska Naturskyddsforeningen(The Swedish Society for Nature Conservation), Statens Energimyndighet(The Swedish National Energy Administration) and SEMKO AB.

The requirements cover a wide range of issues: environment, ergonomics, usability, reduction of electric and magnetic fields, energy consumption and electrical safety.

Why do we have environmentally labelled computers?

In many countries, environmental labelling has become an established method for encouraging the adaptation of goods and services to the environment. The main problem, as far as computers and other electronics equipment are concerned, is that environmentally harmful substances are used both in the products and during their manufacture. Since it is not so far possible to satisfactorily recycle the majority of electronics equipment, most of these potentially damaging substances sooner or later enter nature.

There are also other characteristics of a computer, such as energy consumption levels, that are important from the viewpoints of both the work (internal) and natural (external) environments. Since all methods of electricity generation have a negative effect on the environment (e.g. acidic and climate-influencing emissions, radioactive waste), it is vital to save energy. Electronics equipment in offices is often left running continuously and thereby consumes a lot of energy.



Regulatory

What does labelling involve?

The environmental demands has been developed by Svenska Naturskyddsforeningen (The Swedish Society for Nature Conservation). These demands impose restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs(freons)and chlorinated solvents, among other things. The product must be prepared for recycling and the manufacturer is obliged to have an environmental policy which must be adhered to in each country where the company implements its operational policy.

The energy requirements include a demand that the computer and/or display, after a certain period of inactivity, shall reduce its power consumption to a lower level in one or more stages. The length of time to reactivate the computer shall be reasonable for the user.

Below you will find a brief summary of the environmental requirements met by this product. The complete environmental criteria document may be ordered from:

TCO Development

SE-114 94 Stockholm, Sweden

Fax: +46 8 782 92 07

Email (Internet): development@tco.se

Current information regarding TCO'99 approved and labelled products may also be obtained via the Internet, using the address: <http://www.tco-info.com/>

Environmental requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. Their purpose is to prevent, or at least to delay the spread of fire. Up to 30% of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride, and those flame retardants are chemically related to another group of environmental toxins, PCBs. Both the flame retardants containing bromine or chloride and the PCBs are suspected of giving rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative* processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

The relevant TCO'99 demand requires that plastic components weighing more than 25 grams must not contain flame retardants with organically bound bromine or chlorine. Flame retardants are allowed in the printed circuit boards since no substitutes are available.



Regulatory

Cadmium**

Cadmium is present in rechargeable batteries and in the colour-generating layers of certain computer displays. Cadmium damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries, the colour-generating layers of display screens and the electrical or electronics components must not contain any cadmium.

Mercury**

Mercury is sometimes found in batteries, relays and switches. It damages the nervous system and is toxic in high doses. The relevant TCO'99 requirement states that batteries may not contain any mercury. It also demands that mercury is not present in any of the electrical or electronics components associated with the labelled unit. There is however one exception. Mercury is, for the time being, permitted in the back light system of flat panel monitors as today there is no commercially available alternative. TCO aims on removing this exception when a Mercury free alternative is available.

CFCs (freons)

The relevant TCO'99 requirement states that neither CFCs nor HCFCs may be used during the manufacture and assembly of the product. CFCs (freons) are sometimes used for washing printed circuit boards. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on earth of ultraviolet light with e.g. increased risks of skin cancer (malignant melanoma) as a consequence.

Lead**

Lead can be found in picture tubes, display screens, solders and capacitors. Lead damages the nervous system and in higher doses, causes lead poisoning. The relevant TCO'99 requirement permits the inclusion of lead since no replacement has yet been developed.



Authority

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