SAMTRON Monitor


# SAMTRON 591S/58V/59E/78E/78DF/78BDF/98PDF




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

Do not disassemble

Do not touch

Important to read and understand at all times

Disconnect the plug from the outlet

Grounding to prevent an electric shock



## Power

When not used for extended period of time, set your computer to DPMS. 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 CDT.

**Do not use a damaged or loose plug.**

- This may cause an electric shock or fire.

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**Do not pull the plug out by the wire nor touch the plug with wet hands.**

- This may cause an electric shock or fire.

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**Use only a properly grounded plug and receptacle.**

- An improper ground may cause electric shock or equipment damage.

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**Do not excessively bend the plug and wire nor place heavy objects upon them, which could cause damage.**

- This may cause an electric shock or fire.

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**Disconnect the plug from the outlet during storms or lightening or if it is not used for a long period of time.**

- This may cause an electric shock or fire.

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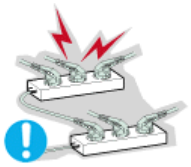

**Do not connect too many extension cords or plugs to an outlet.**

- This may cause fire.

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## Installation

**Do not cover the vents on the monitor cabinet.**

- Bad ventilation may cause a breakdown or fire.

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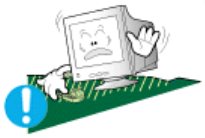
**Put your monitor in a location with low humidity and a minimum of dust.**

- 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.**

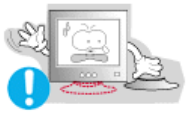
- The monitor may cause injury by falling.

**Set down the monitor carefully.**

- The monitor could be damaged or broken.

**Do not place the monitor face down.**

- The CDT surface may be damaged.



**Do not use the monitor without the monitor stand.**

- It could break down or cause fire due to bad ventilation.
- If the monitor must be used without the supplied stand, take steps to insure proper ventilation.



## Clean

When cleaning the monitor case or the surface of the CDT, wipe with a slightly moistened, soft fabric.
**Do not clean Flat monitor with water. 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 CDT may also be affected.)

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

**Do not spray water or detergent directly on the monitor.**

**Use the recommended detergent with a smooth cloth.**

- You may prevent the coated CDT from being damaged or the monitor cabinet from being dissolved, cracked or discolored.

- You may buy a recommended detergent at any Service Center.

| | |
|---|---|
| | **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 CDT. |

**If the connector between the plug and the pin is dusty or dirty, clean it properly with a dry cloth.**

- A dirty connector may cause an electric shock or fire.

**Do not set a glass of water, chemicals or any small metal objects on the monitor.**

- This may cause damage, electric shock or fire.
- If a foreign substance gets into the monitor, disconnect the plug and then contact a service center.



## Others

**Do not remove cover(or back).**

- This may cause an electric shock or 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 or service.**

- This may cause an electric shock or fire.

**Do not place any heavy objects on the monitor.**

- This may cause an electric shock or 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.

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**Do not try to move the monitor by pulling only the wire or the signal cable.**

- This may cause a breakdown, electric shock or fire due to damage to the cable.

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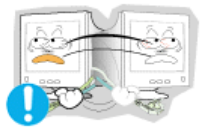

**Do not move the monitor right or left by pulling only the wire or the signal cable.**

- This may cause a breakdown, electric shock or fire due to damage to the cable.

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**Never insert anything metallic into the monitor openings.**

- This may cause an electric shock, fire or injury.

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**Keep the monitor away from any magnetic substances.**

- This may cause discoloring or distortion of the image.

# SAMTRON 591S/58V/59E




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

- **Unpacking**
  - **Monitor**

  - **Manual**

**Quick Setup Guide**

**Warranty Card**
(Not available in all locations)

**User's Guide, Monitor Driver**

  - **Cable**

**Power Cord**

- **Stand**

**Stand**

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- **For Multimedia model (Option)**
  - **Manual**

**User Guide**

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  - **Cable**

**Sound Cables(2each)**

**DC Power Cord**

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  - **Stand**

**Multimedia Speaker Stand**

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- **Front**


| | | |
|---|---|---|
| 1 | **Menu button [MENU]** | Opens the OSD menu. Also used to exit the OSD menu or return to the previous menu. |
| 2 | **Adjust buttons [▼/▲]** | These buttons allow you to highlight and adjust items in the menu. |
| 3 | **Enter button [⏎]** | Used to select the OSD menu. |
| 4 | **Power button** | Use this button for turn the monitor on and off. |
| 5 | **Power indicator** | This light glows green during normal operation, and blinks green once as the monitor saves your adjustments. |

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.



**Rear**

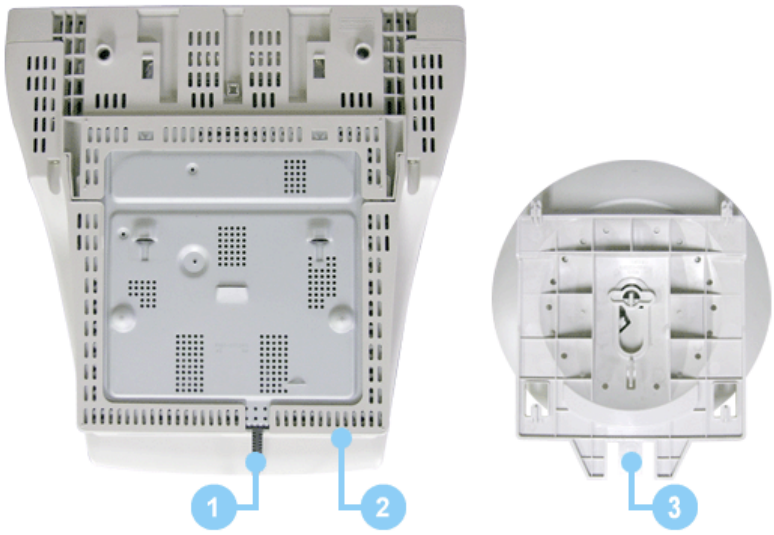
**(The configuration at the back of the monitor may vary from product to product.)**

| | | |
|---|---|---|
| 1 | **Power port** | Connect the power cord for your monitor to the power port on the back of the monitor. |
| 2 | **Signal Cable** | Connect the signal cable to the video port on your computer, video board, video card, or graphics card. |

Note See Connecting the Monitor for further information regarding cable connections.



**Bottom**




| | | |
|---|---|---|
| 1 | **Signal Cable** | Connect the signal cable to the video port on your computer, video board, video card, or graphics card. |
| 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. |

# SAMTRON 78E/78DF/78BDF/98PDF




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

- **Unpacking**
  - **Monitor**

  - **Manual**

**Quick Setup Guide**

**Warranty Card**
(Not available in all locations)

**User's Guide, Monitor Driver**

  - **Cable**

**Power Cord**

- **Stand**

**Stand**

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- **For Multimedia model (Option)**
  - **Manual**

**User Guide**

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  - **Cable**

**Sound Cables(2each)**

**DC Power Cord**

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  - **Stand**

**Multimedia Speaker Stand**

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- **Front**


| | | |
|---|---|---|
| 1 | **Menu button [MENU]** | Opens the OSD menu. Also used to exit the OSD menu or return to the previous menu. |
| 2 | **Adjust buttons [▼/▲]** | These buttons allow you to highlight and adjust items in the menu. |
| 3 | **Enter button [⏎]** | Used to select the OSD menu. |
| 4 | **Power button** | Use this button for turn the monitor on and off. |
| 5 | **Power indicator** | This light glows green during normal operation, and blinks green once as the monitor saves your adjustments. |

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.



**Rear**


**(The configuration at the back of the monitor may vary from product to product.)**

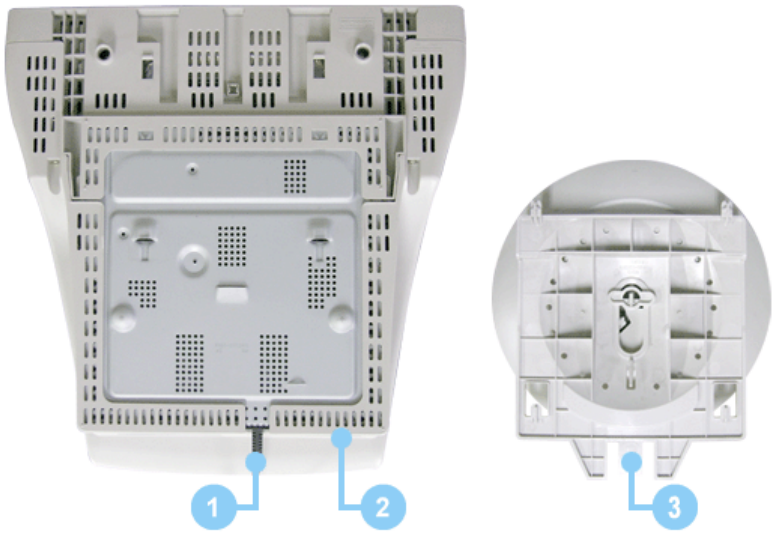
| | | |
|---|---|---|
| 1 | **Power port** | Connect the power cord for your monitor to the power port on the back of the monitor. |

| | | |
|---|---|---|
| 2 | **Signal Cable** | Connect the signal cable to the video port on your computer, video board, video card, or graphics card. |

Note See Connecting the Monitor for further information regarding cable connections.



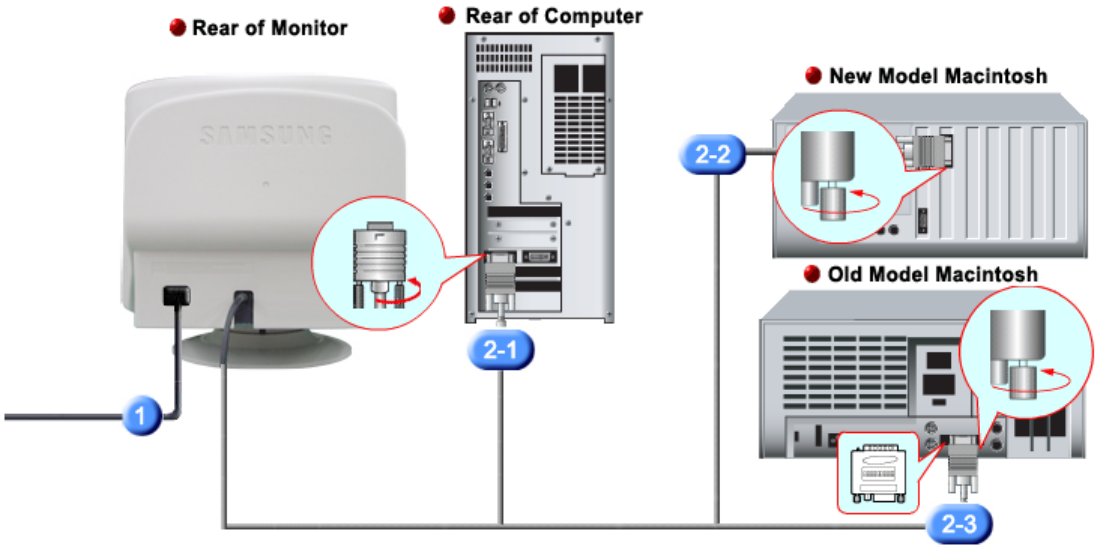
## Bottom




| | | |
|---|---|---|
| 1 | **Signal Cable** | Connect the signal cable to the video port on your computer, video board, video card, or graphics card. |
| 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. |

# SAMTRON 591S/58V/59E




**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.

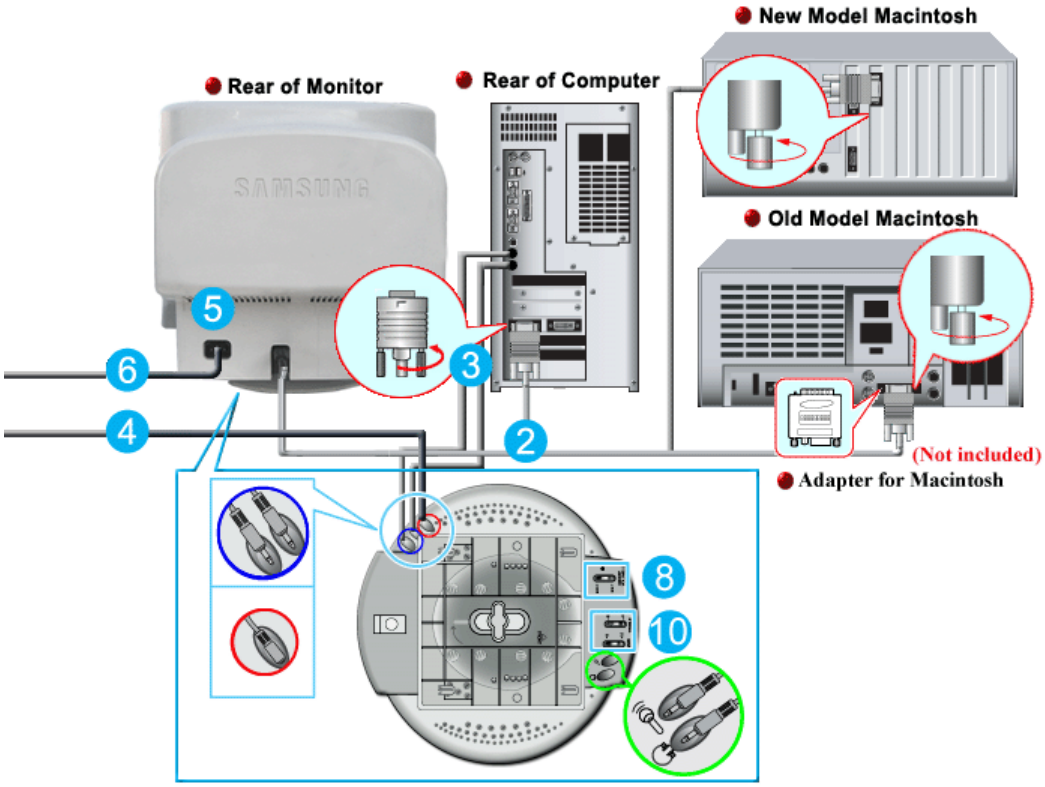
**2-1.** Connecting to a computer
Connect the signal cable to the 15-pin, D-sub connector on the back of your monitor.

**2-2.** Connecting to a new Macintosh
Connect the monitor to the Macintosh computer using the D-SUB connection cable.

**2-3.** Connecting to an old Macintosh
Connect your monitor to the Macintosh using the adapter for Macintosh (sold separately).

**3.** Turn on your computer and monitor. If your monitor displays an image, installation is complete.

**Setup-For Multimedia model**




1. Turn off your computer and unplug the power cord.
2. Connect the end of the signal cable to your computer's video port(video board, video card or graphics card).
3. Connect one end of the other sound cable to the Mic Input jack on your sound card or computer.Connect the other end of this cable to the Mic By-pass jack on the back of the monitor stand.
4. Plug the DC power cord from the stand into a nearby outlet.
5. Connect the power cord for your monitor to the power port on the back of the monitor.
6. Plug the power cord for the monitor and the power cord for your computer into a nearby outlet.
7. Turn on your computer and monitor.
8. Turn up or down the On-Off control terminal on the stand of the monitor until it clicks.
9. Execute a sound program, music or sound effect in your computer and then adjust the volume by turning up or down until the sound volume is appropriate.
10. Adjust the treble and bass.

Note

Sound distortion may occur when the monitor is placed on top of a mostly hollow cabinet such as your computer. If this occurs, place a pad or magazine beneath the monitor stand. High sound volume may also cause sound distortion; lower the volume.

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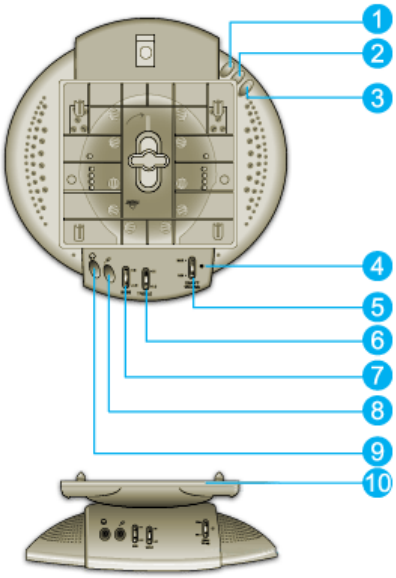
**Multimedia Speaker Stand**

1. **Mic By-pass Jack**
   To transmit your voice,connect a sound cable from the Mic By-pass jack to the mic in jack on the sound card slot in your computer.
2. **Stereo Input Jack**
   Connect a sound cable from the input source(sound card,computer,CD-ROM drive).
3. **DC Power Cord**
   Connect DC power cord to monitor DC 12V output jack.
4. **Power Indicator**
   Glows green when the speakers are turned on.




5. **On/Off Volume**
   Turns On/Off and adjusts the output volume.
6. **Treble Control**
   Use to control high frequencies.
7. **Bass Control**
   Use to control low frequencies.
8. **Mic Input Jack**
   To transmit your voice,connect a microphone to this jack.
9. **Headphone Jack**
   To listen in privacy,connect headphones here.
10. **Detachable Stand Top**



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## Tilt/Swivel Base

**With the built-in pedestal, you can tilt and/or swivel the monitor for the most comfortable viewing angle.**

Note **The base is detachable.**

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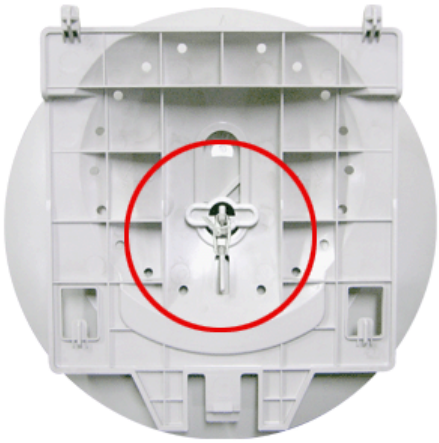
## Attaching and Removing the Base

**If your monitor was supplied with the base detached, attach the base as follows.**



Remove the twist-tie before attaching the base to the monitor.


**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**

5. Squeeze and pull up on the release latch on the base.
6. 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.**



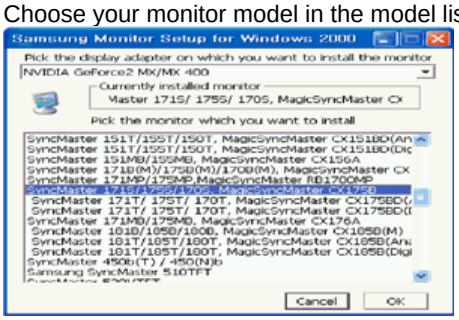
Note **When prompted by the operating system for the monitor driver, insert the CD-ROM included with this monitor. Driver installation is slightly different from one operating system to another. Follow the directions appropriate for the operating system you have.**

Prepare a blank disk and download the driver program file at the Internet web site shown here.

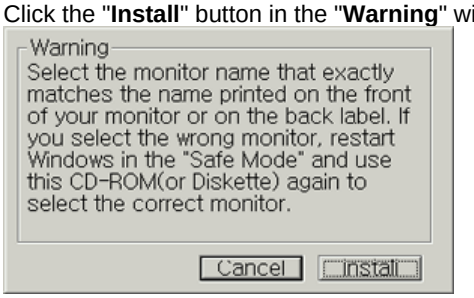
- Internet web site : http://www.samtron.com/

**Windows XP/2000**

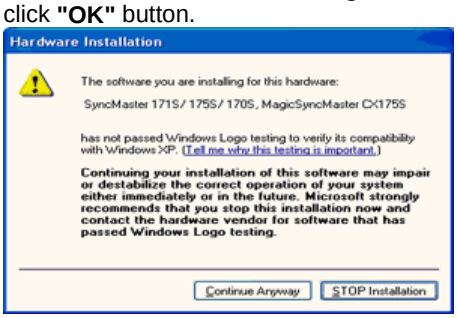
1. Insert CD into the CD-ROM driver.
2. Click **"Windows XP/2000 Driver"**.
3. Choose your monitor model in the model list, then click the **"OK"** button.




4. Click the "**Install**" button in the "**Warning**" window.




5. If you can see following **"Message"** window, then click the **"Continue Anyway"** button. Then click **"OK"** button.




This monitor driver is under certifying MS logo,and this installation don't damage your system.The certified driver will be posted on Monitor Homepage http://www.samtron.com/.

6. Monitor driver installation is completed.



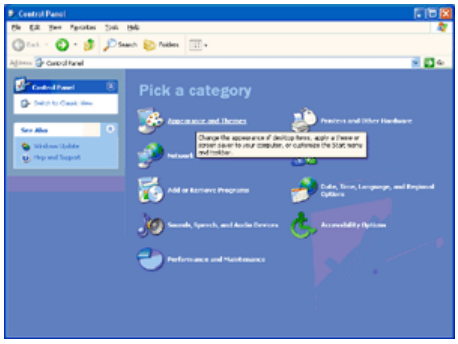
**When prompted by the operating system for the monitor driver, insert the CD-ROM included with this monitor. Driver installation is slightly different from one operating system to another. Follow the directions appropriate for the operating system you have.**

Prepare a blank disk and download the driver program file at the Internet web site shown here.

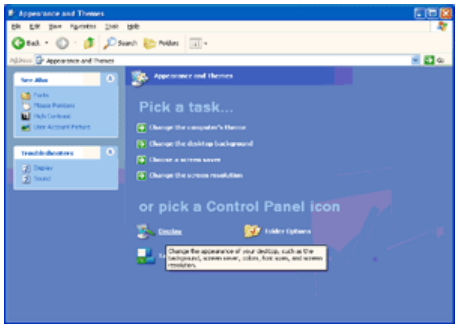
- Internet web site : http://www.samtron.com/

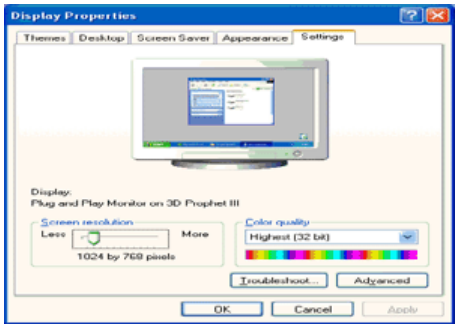
## Microsoft® Windows® XP Operating System

1. Insert CD into the CD-ROM driver.
2. Click "**Start**" —> "**Control Panel**" then click the "**Appearance and Themes**" Icon.

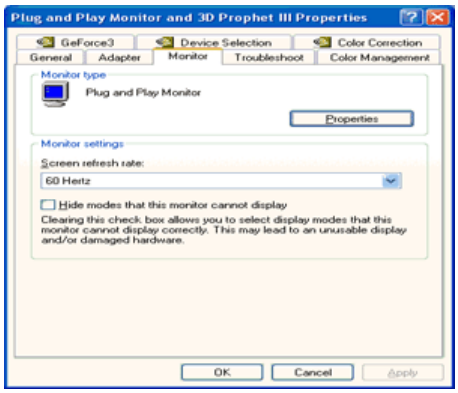



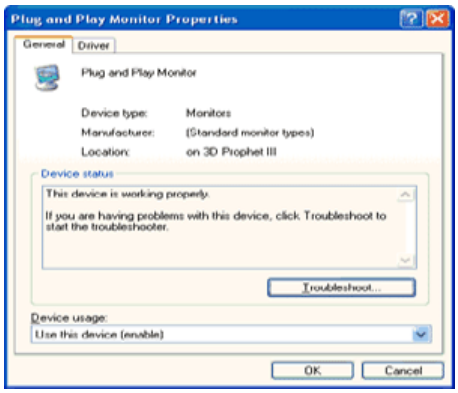

3. Click "**Display**" icon and choose the "**Settings**" tab then click "**Advanced..**".



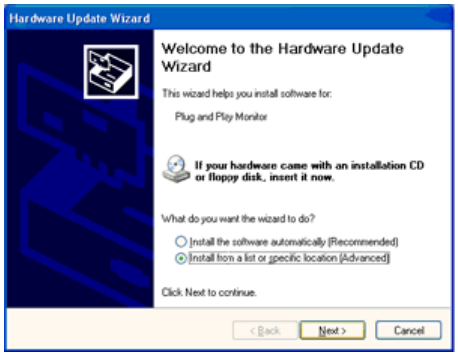




4. Click the "**Properties**" button on the "**Monitor**" tab and select "**Driver**" tab.

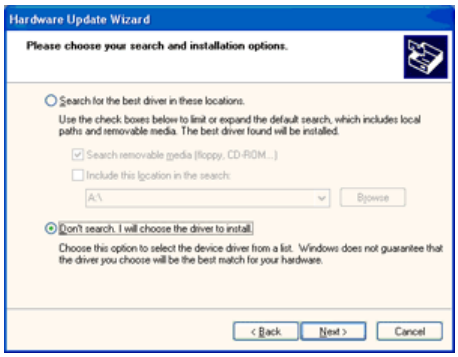


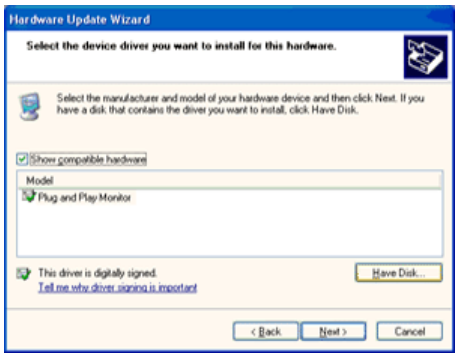




5. Click "**Update Driver..**" and select "**Install from a list or..**" then click "**Next**" button.

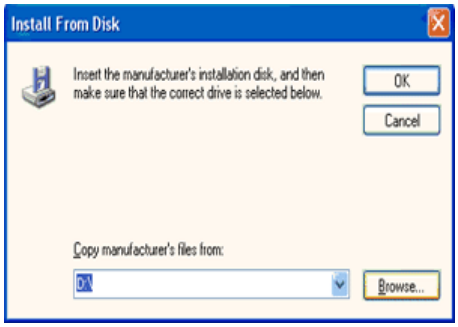



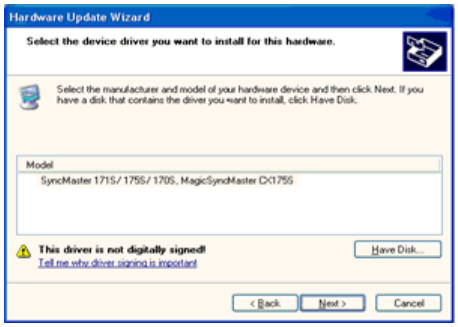

6. Select "**Don't search ,I will..**" then click "**Next**" and then click "**Have disk**".



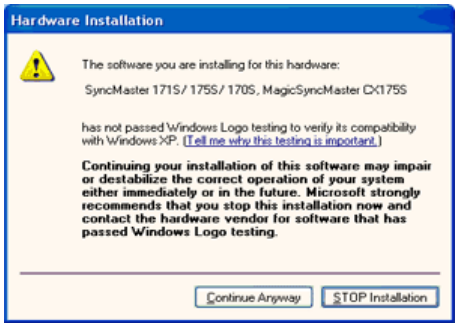




7. Click the "**Browse**" button then choose A:(D:\Driver) and choose your monitor model in the model list and click the "**Next**" button.



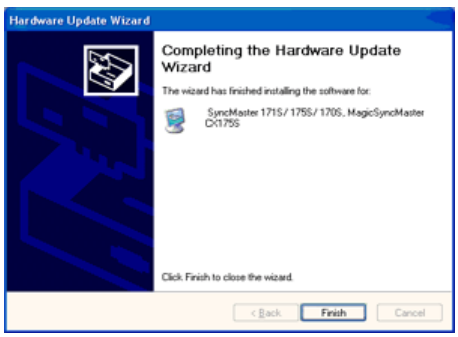



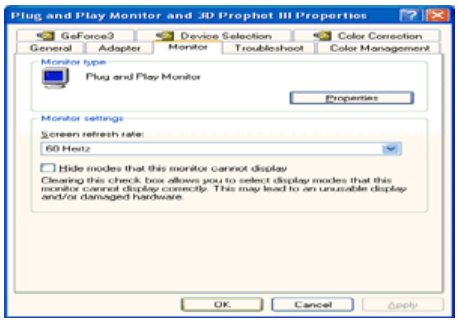

8. If you can see following "**Message**" window, then click the "**Continue Anyway**" button. Then click "**OK**" button.




This monitor driver is under certified MS logo,and this installation doesn't damage your system.The certified driver will be posted on Samtron Monitor homepage.
http://www.samtron.com/

9. Click the "**Close**" button then click "**OK**" button continually.






10. Monitor driver installation is completed.

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### Microsoft® Windows® 2000 Operating System

**When you can see "Digital Signature Not Found" on your monitor, follow these steps.**

1. Choose "**OK**" button on the "**Insert disk**" window.
2. Click the "**Browse**" button on the "**File Needed**" window.
3. Choose A:(D:\Driver) then click the "Open" button and then click "**OK**" button.

**How to install**

1. Click "**Start**" , "**Setting**" , "**Control Panel**".
2. Double click the "**Display**" Icon.
3. Choose the "**Settings**" tab and then click "**Advanced..**".
4. Choose "**Monitor**".
   Case1: If the "Properties" button is inactive, it means your monitor is properly configured. Please stop installation
   Case2: If the "Properties" button is active, click the "Properties" button then follow next steps continually.
5. Click "**Driver**" and then click on "**Update Driver..**" then click on the "Next" button.
6. Choose "**Display a list of the known drivers for this device so that I can choose a specific driver**" then click "**Next**" and then click "**Have disk**".
7. Click the "**Browse**" button then choose A:(D:\Driver).
8. Click the "**Open**" button, then click "**OK**" button.
9. Choose your monitor model and click the "**Next**" button then click "**Next**" button.
10. Click the "**Finish**" button then the "**Close**" button.

    If you can see the "**Digital Signature Not Found**" window then click the "**Yes**"button.
    And click the "**Finish**" button then the "**Close**" button.

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### Microsoft® Windows® NT Operating System

1. Click **Start**, **Settings**, **Control Panel**, and then double-click **Display** icon.
2. In Display Registration Information window, click Settings Tab and then click **All Display Modes**.
3. Select a mode that you wish to use (Resolution, Number of colors and Vertical frequency) and then click **OK**.
4. Click **Apply** button if you see the screen working normally after clicking Test. If the screen is not normal, change to a different mode (lower mode of resolution, colors or frequency).

Note: If there is no Mode at **All Display Modes**, select the level of resolution and vertical frequency by referring to the Preset Timing Modes in the user guide.

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### Linux Operating System

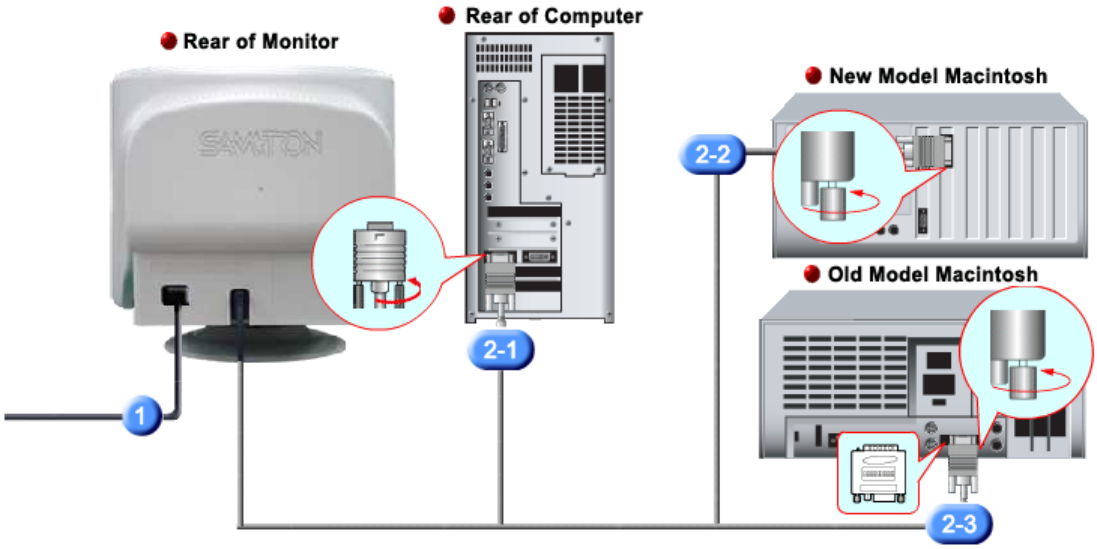
To execute X-Window, you need to make the X86Config file, which is a type of system setting file.

1. Press Enter at the first and the second screen after executing the X86Config file.
2. The third screen is for **setting your mouse**.
3. Set a mouse for your computer.
4. The next screen is for **selecting a keyboard**.
5. Set a Keyboard for your computer.
6. The next screen is for **setting your monitor**.
7. First of all, set a **horizontal frequency** for your monitor. (You can enter the frequency directly.)
8. Set a **vertical frequency** for your monitor. (You can enter the frequency directly.)

9. Enter the **model name of your monitor**. This information will not affect the actual execution of X-Window.
10. You have **finished** setting up your monitor.
    **Execute** X-Window after setting other requested hardware.

# SAMTRON 78E/78DF/78BDF/98PDF




**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.

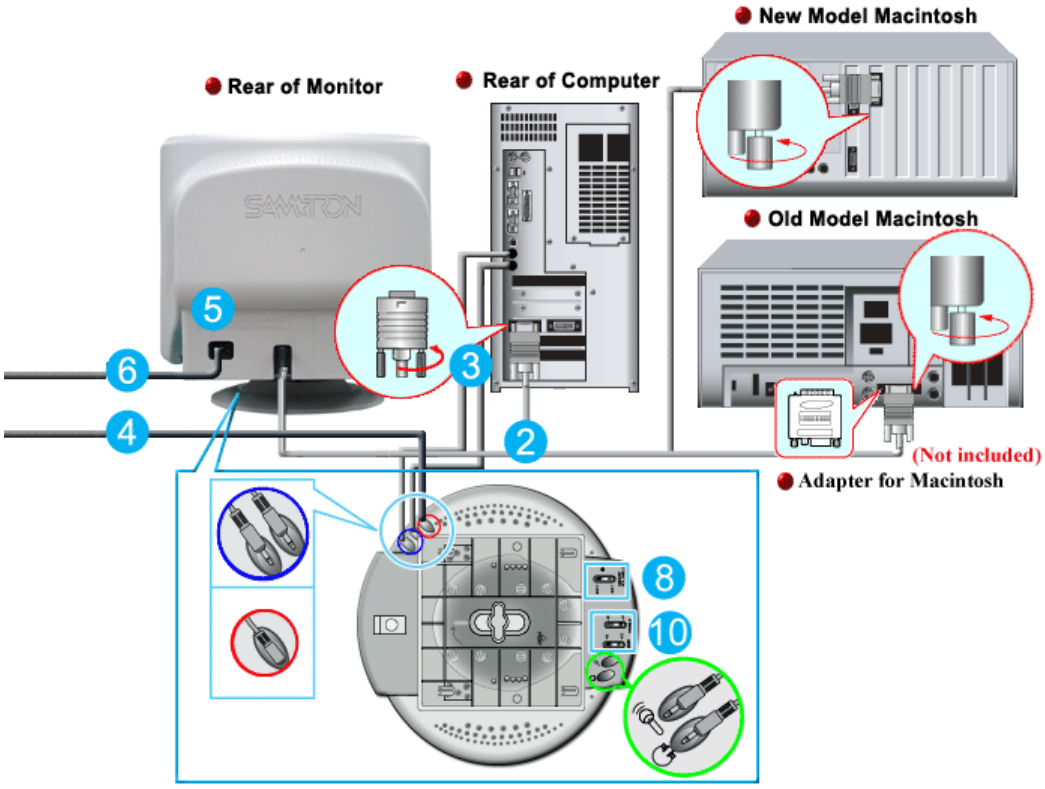
**2-1.** Connecting to a computer
Connect the signal cable to the 15-pin, D-sub connector on the back of your monitor.

**2-2.** Connecting to a new Macintosh
Connect the monitor to the Macintosh computer using the D-SUB connection cable.

**2-3.** Connecting to an old Macintosh
Connect your monitor to the Macintosh using the adapter for Macintosh (sold separately).

**3.** Turn on your computer and monitor. If your monitor displays an image, installation is complete.

- **Setup-For Multimedia model**




1. Turn off your computer and unplug the power cord.
2. Connect the end of the signal cable to your computer's video port(video board, video card or graphics card).
3. Connect one end of the other sound cable to the Mic Input jack on your sound card or computer.Connect the other end of this cable to the Mic By-pass jack on the back of the monitor stand.
4. Plug the DC power cord from the stand into a nearby outlet.
5. Connect the power cord for your monitor to the power port on the back of the monitor.
6. Plug the power cord for the monitor and the power cord for your computer into a nearby outlet.
7. Turn on your computer and monitor.
8. Turn up or down the On-Off control terminal on the stand of the monitor until it clicks.
9. Execute a sound program, music or sound effect in your computer and then adjust the volume by turning up or down until the sound volume is appropriate.
10. Adjust the treble and bass.

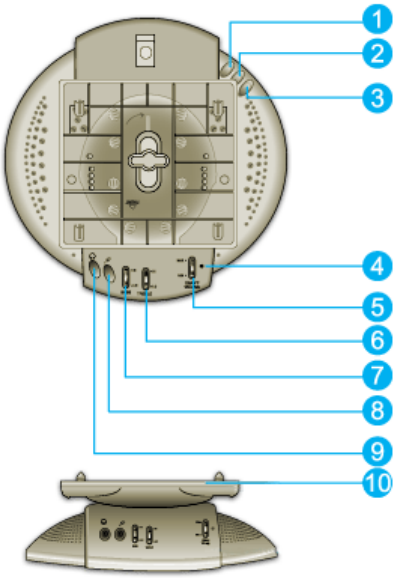
Note

Sound distortion may occur when the monitor is placed on top of a mostly hollow cabinet such as your computer. If this occurs, place a pad or magazine beneath the monitor stand. High sound volume may also cause sound distortion; lower the volume.

---

**Multimedia Speaker Stand**

1. **Mic By-pass Jack**
   To transmit your voice,connect a sound cable from the Mic By-pass jack to the mic in jack on the sound card slot in your computer.
2. **Stereo Input Jack**
   Connect a sound cable from the input source(sound card,computer,CD-ROM drive).
3. **DC Power Cord**
   Connect DC power cord to monitor DC 12V output jack.
4. **Power Indicator**
   Glows green when the speakers are turned on.




5. **On/Off Volume**
   Turns On/Off and adjusts the output volume.
6. **Treble Control**
   Use to control high frequencies.
7. **Bass Control**
   Use to control low frequencies.
8. **Mic Input Jack**
   To transmit your voice,connect a microphone to this jack.
9. **Headphone Jack**
   To listen in privacy,connect headphones here.
10. **Detachable Stand Top**



---

## Tilt/Swivel Base

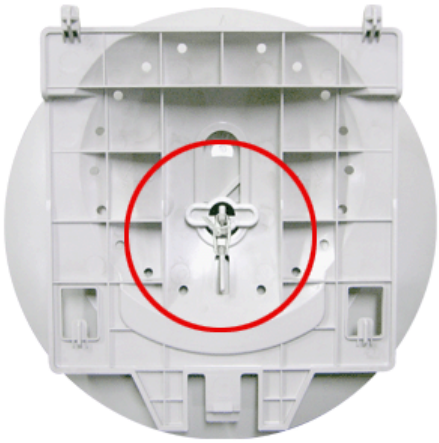
**With the built-in pedestal, you can tilt and/or swivel the monitor for the most comfortable viewing angle.**

Note **The base is detachable.**

---

## Attaching and Removing the Base

**If your monitor was supplied with the base detached, attach the base as follows.**



Remove the twist-tie before attaching the base to the monitor.


**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**

5. Squeeze and pull up on the release latch on the base.
6. 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.**



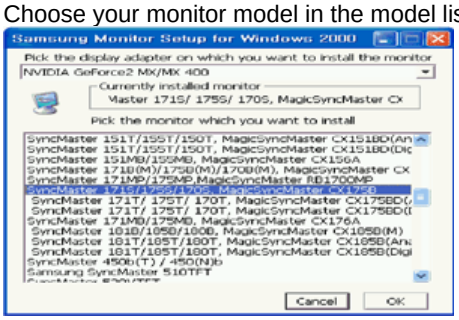
Note **When prompted by the operating system for the monitor driver, insert the CD-ROM included with this monitor. Driver installation is slightly different from one operating system to another. Follow the directions appropriate for the operating system you have.**

Prepare a blank disk and download the driver program file at the Internet web site shown here.

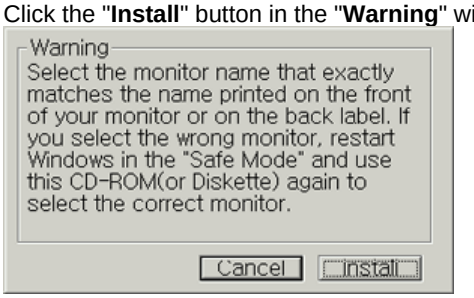
- Internet web site : http://www.samtron.com/

**Windows XP/2000**

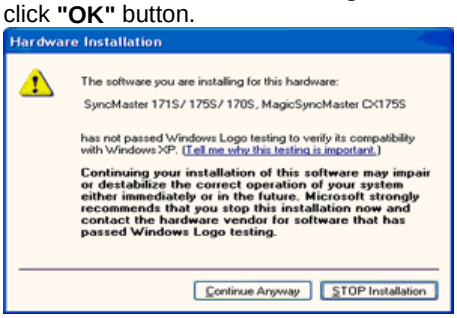
1. Insert CD into the CD-ROM driver.
2. Click **"Windows XP/2000 Driver"**.
3. Choose your monitor model in the model list, then click the **"OK"** button.




4. Click the "**Install**" button in the "**Warning**" window.




5. If you can see following **"Message"** window, then click the **"Continue Anyway"** button. Then click **"OK"** button.




This monitor driver is under certifying MS logo,and this installation don't damage your system.The certified driver will be posted on Monitor Homepage http://www.samtron.com/.

6. Monitor driver installation is completed.



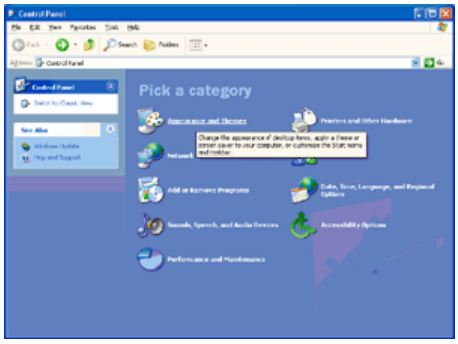
**When prompted by the operating system for the monitor driver, insert the CD-ROM included with this monitor. Driver installation is slightly different from one operating system to another. Follow the directions appropriate for the operating system you have.**

Prepare a blank disk and download the driver program file at the Internet web site shown here.

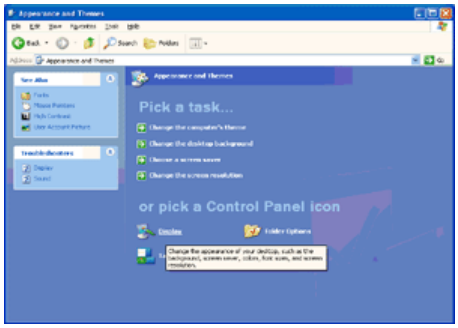
- Internet web site : http://www.samtron.com/

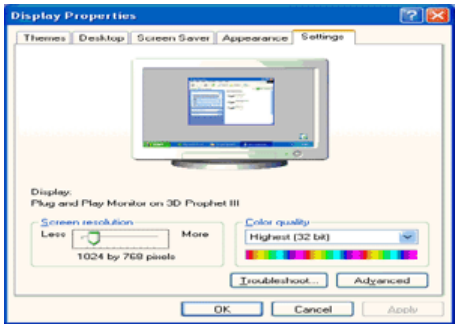
## Microsoft® Windows® XP Operating System

1. Insert CD into the CD-ROM driver.
2. Click "**Start**" —> "**Control Panel**" then click the "**Appearance and Themes**" Icon.

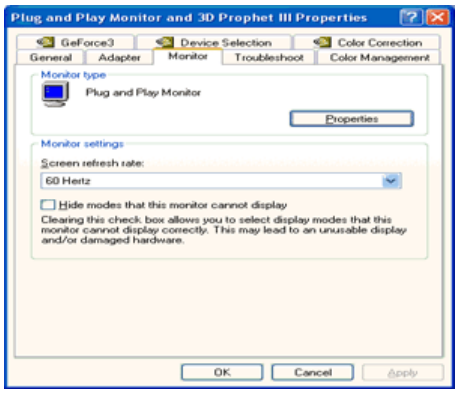



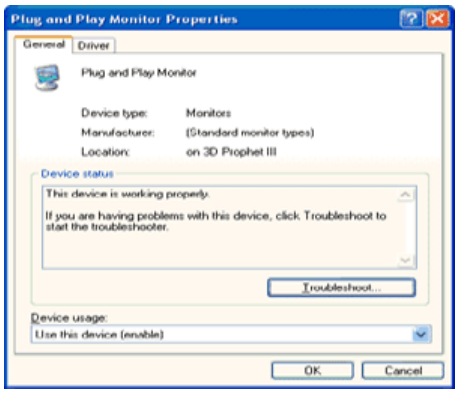

3. Click "**Display**" icon and choose the "**Settings**" tab then click "**Advanced..**".



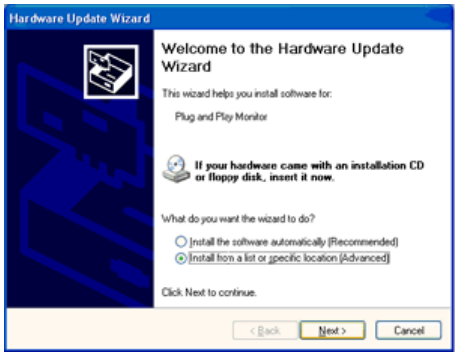




4. Click the "**Properties**" button on the "**Monitor**" tab and select "**Driver**" tab.

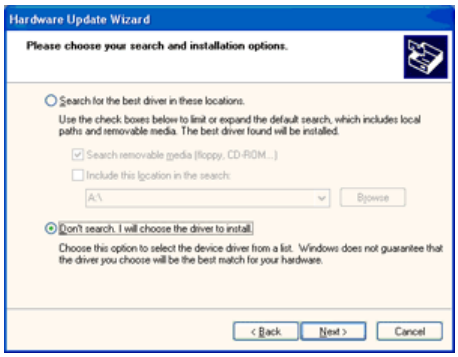


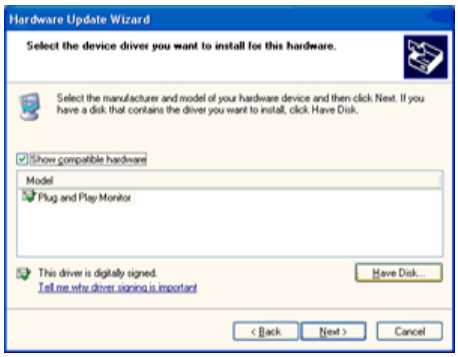




5. Click "**Update Driver..**" and select "**Install from a list or..**" then click "**Next**" button.

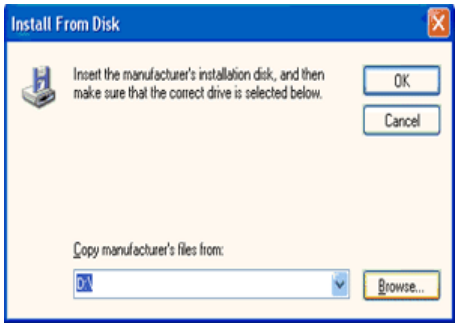



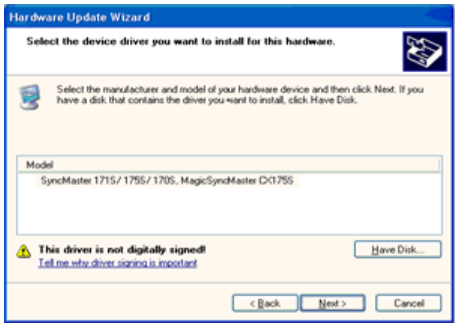

6. Select "**Don't search ,I will..**" then click "**Next**" and then click "**Have disk**".



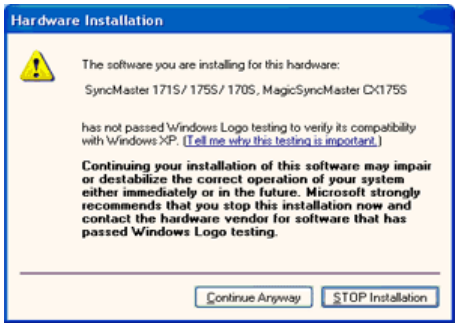




7. Click the "**Browse**" button then choose A:(D:\Driver) and choose your monitor model in the model list and click the "**Next**" button.



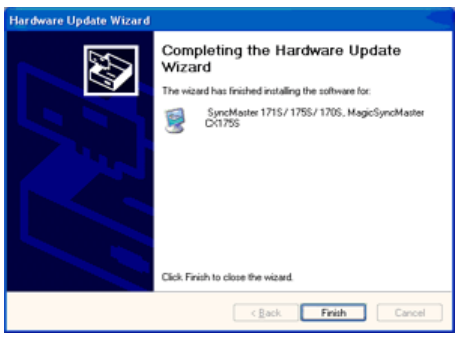



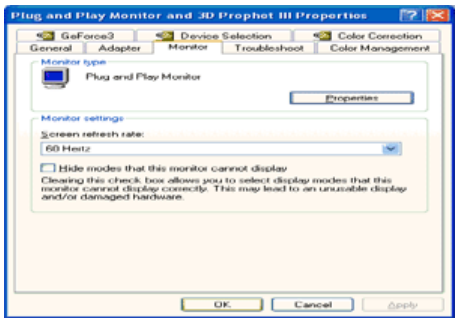

8. If you can see following "**Message**" window, then click the "**Continue Anyway**" button. Then click "**OK**" button.




This monitor driver is under certified MS logo,and this installation doesn't damage your system.The certified driver will be posted on Samtron Monitor homepage.
http://www.samtron.com/

9. Click the "**Close**" button then click "**OK**" button continually.






10. Monitor driver installation is completed.

---

### Microsoft® Windows® 2000 Operating System

**When you can see "Digital Signature Not Found" on your monitor, follow these steps.**

1. Choose "**OK**" button on the "**Insert disk**" window.
2. Click the "**Browse**" button on the "**File Needed**" window.
3. Choose A:(D:\Driver) then click the "Open" button and then click "**OK**" button.

**How to install**

1. Click "**Start**" , "**Setting**" , "**Control Panel**".
2. Double click the "**Display**" Icon.
3. Choose the "**Settings**" tab and then click "**Advanced..**".
4. Choose "**Monitor**".
   Case1: If the "Properties" button is inactive, it means your monitor is properly configured. Please stop installation
   Case2: If the "Properties" button is active, click the "Properties" button then follow next steps continually.
5. Click "**Driver**" and then click on "**Update Driver..**" then click on the "Next" button.
6. Choose "**Display a list of the known drivers for this device so that I can choose a specific driver**" then click "**Next**" and then click "**Have disk**".
7. Click the "**Browse**" button then choose A:(D:\Driver).
8. Click the "**Open**" button, then click "**OK**" button.
9. Choose your monitor model and click the "**Next**" button then click "**Next**" button.
10. Click the "**Finish**" button then the "**Close**" button.

    If you can see the "**Digital Signature Not Found**" window then click the "**Yes**"button.
    And click the "**Finish**" button then the "**Close**" button.

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### Microsoft® Windows® NT Operating System

1. Click **Start**, **Settings**, **Control Panel**, and then double-click **Display** icon.
2. In Display Registration Information window, click Settings Tab and then click **All Display Modes**.
3. Select a mode that you wish to use (Resolution, Number of colors and Vertical frequency) and then click **OK**.
4. Click **Apply** button if you see the screen working normally after clicking Test. If the screen is not normal, change to a different mode (lower mode of resolution, colors or frequency).

Note: If there is no Mode at **All Display Modes**, select the level of resolution and vertical frequency by referring to the Preset Timing Modes in the user guide.

---

### Linux Operating System

To execute X-Window, you need to make the X86Config file, which is a type of system setting file.

1. Press Enter at the first and the second screen after executing the X86Config file.
2. The third screen is for **setting your mouse**.
3. Set a mouse for your computer.
4. The next screen is for **selecting a keyboard**.
5. Set a Keyboard for your computer.
6. The next screen is for **setting your monitor**.
7. First of all, set a **horizontal frequency** for your monitor. (You can enter the frequency directly.)
8. Set a **vertical frequency** for your monitor. (You can enter the frequency directly.)

9. Enter the **model name of your monitor**. This information will not affect the actual execution of X-Window.
10. You have **finished** setting up your monitor.
    **Execute** X-Window after setting other requested hardware.

# SAMTRON 591S/58V/59E





1. Opens the OSD menu. Also use to exit the OSD menu or return to the previous menu.
2. These buttons allow you to highlight and adjust items in the menu.
3. Use to select the OSD menu.



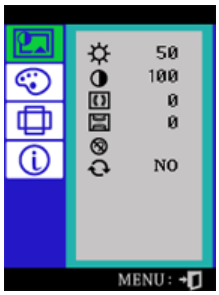
---

**Brightness**


**Contrast**



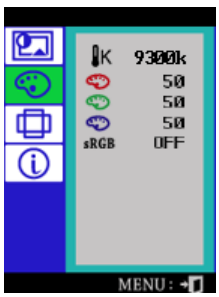

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | K | | | | sRGB | | | |
| | | | | | | | | |
| | | | | | | | | |


| OSD | Description | Play/stop |
|---|---|---|
| | Adjust the Brightness. | |
| | Adjust the Contrast. | |
| | A "Moiré" pattern can appear on your screen, looking like a series of concentric circles or arcs. To eliminate this pattern, use the horizontal moire adjustments. | |
| | A "Moirë" pattern can appear on your screen, looking like a series of concentric circles or arcs. To eliminate this pattern, use the vertical moire adjustments. | |
| | The Degauss feature will remove color impurities caused by magnetic fields. | |
| | Use the recall feature to reset these monitor settings to their original levels: Position, Size, Pincushion, Trapezoid, Parallelogram, Pinbalance, Rotation, H-Moire,and V-Moire.<br>**Note:** If you have selected "Yes", all settings listed above will be reset. All other settings will remain the same. | |

UP

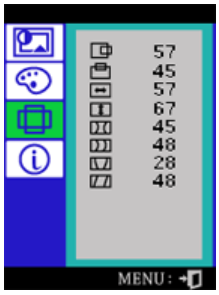
---


| OSD | Description | Play/stop |
|---|---|---|
| | | |

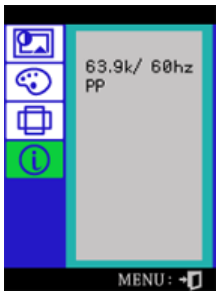
| | |
|---|---|
| K | Color temperature is a measure of the 'warmth' of the image colors. (6500K / 9300K) |
| | Use to adjust the monitor color setting.(Red) |
| | Use to adjust the monitor color setting.(Green) |
| | Use to adjust the monitor color setting.(Blue) |
| sRGB | When you adjust the Brightness and Contrast after sRGB mode is selected, sRGB mode exits. |

UP


| OSD | Description | Play/stop |
|---|---|---|
| | Follow these instructions to change the horizontal position of the monitor's entire display. | |
| | Follow these instructions to change the vetical position of the monitor's entire display. | |
| | Follow these instructions to change the horizontal size of the monitor's entire display. | |
| | Follow these instructions to change the vertical size of the monitor's entire display. | |
| | Adjust the pincushion setting when the sides of the display are bowed in or bowed out. | |
| | Adjust the pinbalance setting when the sides of the display are bowed towards the left or right. | |
| | Adjust the trapezoid setting when the top or bottom of the display is too large or small. | |
| | Adjust the parallelogram setting when the display is leaning left or right. | |

UP


You can see the frequency (user control mode) used by the user, the polarity of the operational signals, the default frequency (default mode) set when you buy the monitor and the resolution level.
**Note**: These screens do not allow any changes to the settings, they are for information only.

UP

# SAMTRON 78E/78DF/78BDF





1. Opens the OSD menu. Also use to exit the OSD menu or return to the previous menu.
2. These buttons allow you to highlight and adjust items in the menu.
3. Use to select the OSD menu.



---

**Brightness**

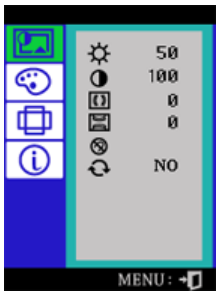

---

**Contrast**


---



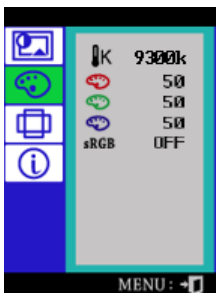
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | K | | | | sRGB | | | | |
| | | | | | | | | | |
| | | | | | | | | | |


| OSD | Description | Play/stop |
|---|---|---|
| | Adjust the Brightness. | |
| | Adjust the Contrast. | |
| | A "Moiré" pattern can appear on your screen, looking like a series of concentric circles or arcs. To eliminate this pattern, use the horizontal moire adjustments. | |
| | A "Moirë" pattern can appear on your screen, looking like a series of concentric circles or arcs. To eliminate this pattern, use the vertical moire adjustments. | |
| | The Degauss feature will remove color impurities caused by magnetic fields. | |
| | Use the recall feature to reset these monitor settings to their original levels: Position, Size, Pincushion, Trapezoid, Parallelogram, Pinbalance, Rotation, H-Moire,and V-Moire.<br>**Note:** If you have selected "Yes", all settings listed above will be reset. All other settings will remain the same. | |

UP

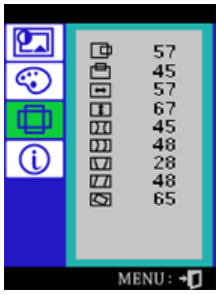
---


| OSD | Description | Play/stop |
|---|---|---|
| | | |

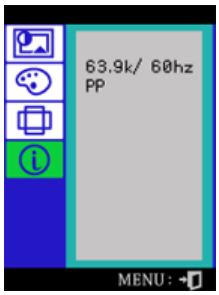
| | | |
|---|---|---|
| K | Color temperature is a measure of the 'warmth' of the image colors. (6500K / 9300K) | |
| | Use to adjust the monitor color setting.(Red) | |
| | Use to adjust the monitor color setting.(Green) | |
| | Use to adjust the monitor color setting.(Blue) | |
| sRGB | When you adjust the Brightness and Contrast after sRGB mode is selected, sRGB mode exits. | |

UP


| OSD | Description | Play/stop |
|---|---|---|
| | Follow these instructions to change the horizontal position of the monitor's entire display. | |
| | Follow these instructions to change the vetical position of the monitor's entire display. | |
| | Follow these instructions to change the horizontal size of the monitor's entire display. | |
| | Follow these instructions to change the vertical size of the monitor's entire display. | |
| | Adjust the pincushion setting when the sides of the display are bowed in or bowed out. | |
| | Adjust the pinbalance setting when the sides of the display are bowed towards the left or right. | |
| | Adjust the trapezoid setting when the top or bottom of the display is too large or small. | |
| | 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. | |

UP


You can see the frequency (user control mode) used by the user, the polarity of the operational signals, the default frequency (default mode) set when you buy the monitor and the resolution level.
**Note**: These screens do not allow any changes to the settings, they are for information only.

UP

# SAMTRON 98PDF





1. Opens the OSD menu. Also use to exit the OSD menu or return to the previous menu.
2. These buttons allow you to highlight and adjust items in the menu.
3. Use to select the OSD menu.



---

**Brightness**

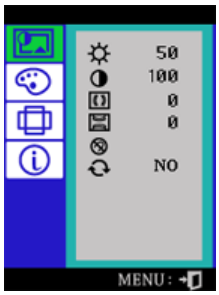

---

**Contrast**


---



| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | K | | | | sRGB | | | | |
| | | | | | | | | | |
| | | | | | | | | | |


| OSD | Description | Play/stop |
|---|---|---|
| | Adjust the Brightness. | |
| | Adjust the Contrast. | |
| | A "Moiré" pattern can appear on your screen, looking like a series of concentric circles or arcs. To eliminate this pattern, use the horizontal moire adjustments. | |
| | A "Moirë" pattern can appear on your screen, looking like a series of concentric circles or arcs. To eliminate this pattern, use the vertical moire adjustments. | |
| | The Degauss feature will remove color impurities caused by magnetic fields. | |
| | Use the recall feature to reset these monitor settings to their original levels: Position, Size, Pincushion, Trapezoid, Parallelogram, Pinbalance, Rotation, H-Moire,and V-Moire.<br>**Note:** If you have selected "Yes", all settings listed above will be reset. All other settings will remain the same. | |

UP

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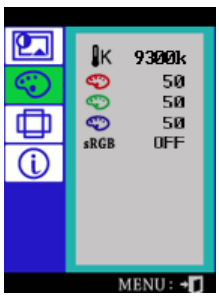
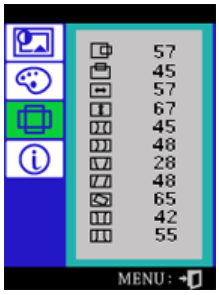


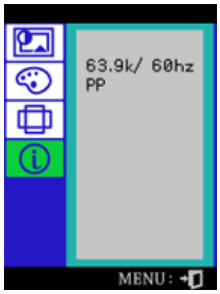

| OSD | Description | Play/stop |
|---|---|---|
| | | |

| | |
|---|---|
| K | Color temperature is a measure of the 'warmth' of the image colors. The available range is between 5000 to 9300K. |
| | Use to adjust the monitor color setting.(Red) |
| | Use to adjust the monitor color setting.(Green) |
| | Use to adjust the monitor color setting.(Blue) |
| sRGB | When you adjust the Brightness and Contrast after sRGB mode is selected, sRGB mode exits. |

UP


| OSD | Description | Play/stop |
|---|---|---|
| | Follow these instructions to change the horizontal position of the monitor's entire display. | |
| | Follow these instructions to change the vetical position of the monitor's entire display. | |
| | Follow these instructions to change the horizontal size of the monitor's entire display. | |
| | Follow these instructions to change the vertical size of the monitor's entire display. | |
| | Adjust the pincushion setting when the sides of the display are bowed in or bowed out. | |
| | Adjust the pinbalance setting when the sides of the display are bowed towards the left or right. | |
| | Adjust the trapezoid setting when the top or bottom of the display is too large or small. | |
| | 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. | |
| | Adjust the side pin corner correction when the top or bottom of the display is too large or small. | |


You can see the frequency (user control mode) used by the user, the polarity of the operational signals, the default frequency (default mode) set when you buy the monitor and the resolution level.
**Note**: These screens do not allow any changes to the settings, they are for information only.




Note

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 call the phone number on the Information section or contact your dealer.

| 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 " ? " on the screen? | Check the signal cable connection. |
| | If the power is on, reboot the computer to see the initial screen (the login screen), which can be seen. | If the initial screen (the login screen) appears, boot the computer in the applicable mode (the safe mode for Windows ME/XP/2000) and then change the frequency of the video card.<br>(Refer to the Preset Timing Modes)<br><br>Note: If the initial screen (the login screen) does not appear, contact the Service Center or your dealer. |
| | Can you see " Hz ? " 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 handle properly.<br><br>Adjust the maximum resolution and frequency that the monitor can handle properly. |
| | 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.<br><br>press any key on the keyboard to activate the monitor and restore the image on the screen. |
| 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, | Move the monitor away from anything that can create a strong magnetic field. |

| | | |
|---|---|---|
| | speaker or a high voltage wire near by? | |
| | 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. | |
| 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. |
| | Have the screen colors become strange after running a program or due to a crash between applications? | Reboot the computer. |
| | 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 on the monitor? | Adjust the resolution and frequency at the video card.<br>(Refer to the Preset Timing 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.<br>(Refer to the Preset Timing 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".<br><br>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 Timing Modes.<br><br>(The maximum frequency per resolution may differ from product to product.) |
| There are only 16 colors shown on the screen.<br>The screen colors have changed after changing the video card. | Have the Windows colors been set properly? | Windows ME/2000/XP:<br>Set the colors properly at the **Control Panel → Display → Settings**. |
| | Has the video card been set properly? | Set the video card by referring to the video card manual. |
| There is a message that reads "Unrecognized monitor, Plug & Play (VESA DDC) monitor found". | Have you installed the monitor driver? | Install the monitor driver according to the Driver Installation Instructions. |
| | See the video card manual to see if the Plug & Play (VESA DDC) function can be supported. | Install the monitor driver according to the Driver Installation Instructions. |

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

1. Check if the power cord and the video cables are properly connected to the computer.
2. Check if the computer beeps more than 3 times when booting.
   (If it does, request an after-service for the main board of the computer.)
3. If you installed a new video card or if you assembled the PC, check if the installed the adapter (video) driver and the monitor driver.

4. Check if the scanning ratio of the video screen is set at 75Hz or 85Hz.
   (Do not exceed 60Hz when using the maximum resolution.)
5. If you have problems in installing the adapter (video) driver, boot the computer in Safe Mode, remove the Display Adapter at the "**Control Panel**, **System**, **Device Administrator**" and then reboot the computer to reinstall the adapter (video) driver.

Note If problems repeatedly occur, contact an authorized Service Center.



## Q & A

| Question | Answer |
|---|---|
| How can I change the frequency? | Frequency can be changed by reconfiguring the video card.<br><br>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.) |
| How can I adjust the resolution? | Windows ME/XP/2000 : Set the resolution at the Control Panel→Display→Settings.<br><br>* Contact the video card manufacturer for details. |
| How can I set the Power Saving function? | Windows ME/XP/2000 : Set the function at BIOS-SETUP of the computer or the screen saver. (Refer to Windows/Computer Manual). |
| The 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? | Disconnect the power cord and then clean the monitor with a soft cloth, using either a cleaning solution or plain water.<br><br>Do not leave any remains of the detergent nor scratch the case. Do not allow any water to go inside the monitor. |



## Self-Test Feature Check

Self-Test Feature Check | Warning Messages | Environment | Useful Tips

**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 the monitor is functioning properly, you will see a box in the illustration below.

SAMTRON 98PDF

SAMTRON 591S/58V/59E/78E/78DF/78BDF

This box 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.

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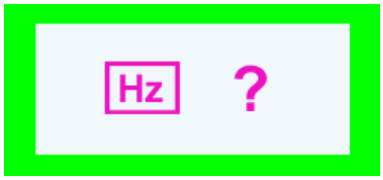
## Warning Messages

If there is something wrong with the input signal, the message below 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.


SAMTRON 98PDF




SAMTRON 591S/58V/59E/78E/78DF/78BDF

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## 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 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.

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## 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, Video mode not supported, etc. In this case, first check the source of the problem, and then contact the Service Center or your dealer.

- **Judging the monitor's working condition**
  If there is no image on the screen or a " Hz ? " 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.




## General

| General | |
|---|---|
| Model Name | SAMTRON 591S/58V/59E |
| **Picture Tube** | |
| Type | 15"(38cm) DynaFlat (35cm viewable) |
| Deflection angle | 90 ° |
| Dot Pitch | 0.24mm (Horizontal) |
| Screen type | Aluminized tri-color phosphor dot trio with black matrix.<br>Anti-doming invar shadow mask.<br>Multi-layer coated with anti-static / Glare. |
| **Resolution** | |
| Optimum resolution | 800 x 600 @ 85Hz |
| Maximum resolution | 1024 x 768 |
| **Active Display** | |
| Horizontal | 267 ± 4 mm |
| Vertical | 200 ± 4 mm |
| **Synchronization** | |
| Horizontal | 30 ~ 55 kHz |
| Vertical | 50 ~ 120 Hz |
| **Input Signal Definition** | |
| Video Signal | RGB, Analog 0.7 Vpp positive at 75 ohms |
| Sync Signal | Separate H/V sync, TTL level, positive or negative |
| **Display Color** | |
| Unlimited | |
| **Maximum Pixel Clock** | |
| 65 MHz | |
| **Power Supply** | |

| | |
|---|---|
| 90 ~ 264VAC rms, 60/50 Hz ± 3Hz | |
| **Power Consumption** | |
| Less than 65W | |
| **Dimensions (WxDxH)** | |
| 361 x 379.2 x 347mm (After installation of Stand) | |
| **Weight** | |
| 11.0kg | |
| **Environmental considerations** | |
| Operating | Temperature: 32°F ~ 104°F(0°C ~ 40°C)<br>Humidity: 10% ~ 80%, non-condensing |
| Storage | Temperature: -4°F ~113°F (-20°C ~ 45°C)<br>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.** | |



## 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 65W | Less than 1W |



## 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 | 37.500 | 85.008 | 36.000 | -/- |
| VESA, 640 x 480 | 43.269 | 75.000 | 31.500 | -/- |
| VESA, 800 x 600 | 53.674 | 85.061 | 56.250 | +/+ |

## 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




## General

| General | |
|---|---|
| Model Name | SAMTRON 78E |
| **Picture Tube** | |
| Type | 17"(43cm) Full square type (40.6cm viewable) |
| Deflection angle | 90 ° |
| Dot Pitch | 0.23mm (Horizontal) |
| Screen type | Aluminized tri-color phosphor dot trio with black matrix.<br>Anti-doming invar shadow mask.<br>Multi-layer coated with anti-static / Glare. |
| **Resolution** | |
| Optimum resolution | 1024 x 768 @ 85Hz |
| Maximum resolution | 1280 x 1024 @ 60Hz |
| **Active Display** | |
| Horizontal | 312 ± 4 mm |
| Vertical | 234 ± 4 mm |
| **Synchronization** | |
| Horizontal | 30 ~ 70 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, TTL level, positive or negative |
| Signal cable | 15-pin D-Sub |
| **Display Color** | |
| Unlimited | |
| **Maximum Pixel Clock** | |
| 110 MHz | |
| | |

| | |
|---|---|
| **Power Supply** | |
| 90 ~ 264VAC rms, 60/50 Hz ± 3Hz | |
| **Power Consumption** | |
| Less than 75W | |
| **Dimensions (WxDxH)** | |
| 401 x 410 x 378mm (After installation of Stand) | |
| **Weight** | |
| 14.3kg | |
| **Environmental considerations** | |
| Operating | Temperature: 32°F ~ 104°F(0°C ~ 40°C)<br>Humidity: 10% ~ 80%, non-condensing |
| Storage | Temperature: -4°F ~113°F (-20°C ~ 45°C)<br>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.** | |



## 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<br>EPA/ENERGY 2000 |
|---|---|---|
| Power Indicator | Green | Green, Blinking |
| Power Consumption | Less than 75W | Less than 1W |

This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPMS functionality.
As an ENERGY STAR® Partner, SAMSUNG 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 | 37.500 | 75.000 | 31.500 | -/- |
| VESA, 800 x 600 | 53.674 | 85.061 | 56.250 | +/+ |
| VESA, 1024 x 768 | 60.023 | 75.029 | 78.750 | +/+ |
| VESA, 1024 x 768 | 68.677 | 84.997 | 94.500 | +/+ |
| VESA, 1152 x 864 | 67.500 | 75.000 | 108.000 | +/+ |

## 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




## General

| General | |
|---|---|
| Model Name | SAMTRON 78DF |
| **Picture Tube** | |
| Type | 17"(43cm) DynaFlat (40.6cm viewable) |
| Deflection angle | 90 ° |
| Dot Pitch | 0.20mm (Horizontal) |
| Screen type | Aluminized tri-color phosphor dot trio with black matrix.<br>Anti-doming invar shadow mask.<br>Multi-layer coated with anti-static / Glare. |
| **Resolution** | |
| Optimum resolution | 1024 x 768 @ 85Hz |
| Maximum resolution | 1280 x 1024 @ 60Hz |
| **Active Display** | |
| Horizontal | 312 ± 4 mm |
| Vertical | 234 ± 4 mm |
| **Synchronization** | |
| Horizontal | 30 ~ 70 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, TTL level, positive or negative |
| Signal cable | 15-pin D-Sub |
| **Display Color** | |
| Unlimited | |
| **Maximum Pixel Clock** | |
| 110 MHz | |
| | |

| | |
|---|---|
| **Power Supply** | |
| 90 ~ 264VAC rms, 60/50 Hz ± 3Hz | |
| **Power Consumption** | |
| Less than 75W | |
| **Dimensions (WxDxH)** | |
| 401 x 410 x 378mm (After installation of Stand) | |
| **Weight** | |
| 14.3kg | |
| **Environmental considerations** | |
| Operating | Temperature: 32°F ~ 104°F(0°C ~ 40°C)<br>Humidity: 10% ~ 80%, non-condensing |
| Storage | Temperature: -4°F ~113°F (-20°C ~ 45°C)<br>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.** | |



## 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<br>EPA/ENERGY 2000 |
|---|---|---|
| Power Indicator | Green | Green, Blinking |
| Power Consumption | Less than 75W | Less than 1W |

This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPMS functionality.
As an ENERGY STAR® Partner, SAMSUNG 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 | 37.500 | 75.000 | 31.500 | -/- |
| VESA, 800 x 600 | 53.674 | 85.061 | 56.250 | +/+ |
| VESA, 1024 x 768 | 60.023 | 75.029 | 78.750 | +/+ |
| VESA, 1024 x 768 | 68.677 | 84.997 | 94.500 | +/+ |
| VESA, 1152 x 864 | 67.500 | 75.000 | 108.000 | +/+ |

## 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




## General

| General | |
|---|---|
| Model Name | SAMTRON 78BDF |
| **Picture Tube** | |
| Type | 17"(43cm) DynaFlat (40.6cm viewable) |
| Deflection angle | 90 ° |
| Dot Pitch | 0.20mm (Horizontal) |
| Screen type | Aluminized tri-color phosphor dot trio with black matrix.<br>Anti-doming invar shadow mask.<br>Multi-layer coated with anti-static / Glare. |
| **Resolution** | |
| Optimum resolution | 1024 x 768 @ 85Hz |
| Maximum resolution | 1600 x 1200 @ 65Hz |
| **Active Display** | |
| Horizontal | 312 ± 4 mm |
| Vertical | 234 ± 4 mm |
| **Synchronization** | |
| Horizontal | 30 ~ 85 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, TTL level, positive or negative |
| **Display Color** | |
| Unlimited | |
| **Maximum Pixel Clock** | |
| 185 MHz | |
| **Power Supply** | |

| | |
|---|---|
| 90 ~ 264VAC rms, 60/50 Hz ± 3Hz | |
| **Power Consumption** | |
| Less than 75W | |
| **Dimensions (WxDxH)** | |
| 401 x 410 x 378mm (After installation of Stand) | |
| **Weight** | |
| 14.3kg | |
| **Environmental considerations** | |
| Operating | Temperature: 32°F ~ 104°F(0°C ~ 40°C)<br>Humidity: 10% ~ 80%, non-condensing |
| Storage | Temperature: -4°F ~113°F (-20°C ~ 45°C)<br>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.** | |



## 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 75W | Less than 1W |


This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPMS functionality.

As an ENERGY STAR® Partner, SAMSUNG 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 | 37.500 | 75.000 | 31.500 | -/- |
| VESA, 1024 x 768 | 68.677 | 84.997 | 94.500 | +/+ |
| VESA, 1280 x 1024 | 79.976 | 75.025 | 135.00 | +/+ |

## 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




## General

| General | |
|---|---|
| Model Name | SAMTRON 98PDF |
| **Picture Tube** | |
| Type | 19"(48cm) DynaFlat (45.8cm viewable) |
| Deflection angle | 90 ° |
| Dot Pitch | 0.20mm (Horizontal) |
| Screen type | Aluminized tri-color phosphor dot trio with black matrix.<br>Anti-doming invar shadow mask.<br>Multi-layer coated with anti-static / Glare. |
| **Resolution** | |
| Optimum resolution | 1280 x 1024 @ 85Hz |
| Maximum resolution | 1600 x 1200 |
| **Active Display** | |
| Horizontal | 352 ± 3 mm |
| Vertical | 264 ± 3 mm |
| **Synchronization** | |
| Horizontal | 30 ~ 96 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, TTL level, positive or negative |
| **Display Color** | |
| Unlimited | |
| **Maximum Pixel Clock** | |
| 250 MHz | |
| **Power Supply** | |

| | |
|---|---|
| 90 ~ 264VAC rms, 60/50 Hz ± 3Hz | |
| **Power Consumption** | |
| Less than 110 W | |
| **Dimensions (WxDxH)** | |
| 445 x 457.5 x 416mm (After installation of Stand) | |
| **Weight** | |
| 18.2kg | |
| **Environmental considerations** | |
| Operating | Temperature: 32°F ~ 104°F(0°C ~ 40°C)<br>Humidity: 10% ~ 80%, non-condensing |
| Storage | Temperature: -4°F ~113°F (-20°C ~ 45°C)<br>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.** | |



## 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 110W | Less than 1W |


This monitor is EPA ENERGY STAR® compliant and ENERGY2000 compliant when used with a computer equipped with VESA DPMS functionality.

As an ENERGY STAR® Partner, SAMSUNG 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 | 37.500 | 75.000 | 31.500 | -/- |
| VESA, 1024 x 768 | 68.677 | 84.997 | 94.500 | +/+ |
| VESA, 1280 x 1024 | 91.146 | 85.024 | 157.50 | +/+ |

## 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




## Service

**The address and phone number of the company can be changed without previous notice.**

**SAMTRON CANADA**

SAMSUNG ELECTRONICS CANADA INC.
7037 FINANCIAL DRIVE
MISSISSAUGA, ONTARIO L5N 6R3
TEL : 1-800-726-7864
FAX : 905-542-1199

**SAMTRON EUROPE**

SAMSUNG ELECTRONICS GMBH
SAMSUNG-HAUS, AM KRONBERGER HANG 6
65824 SCHWALBACH/TS., GERMANY
TEL: 49 (0180) 5121213*
FAX: 49 (0180) 5121214*
* DM 0,24/MIN.

**SAMTRON MÉXICO :**

SAMSUNG ELECTRONICS MÉXICO. S.A. DE C.V.
Vía Lopez Portillo No. 6, Col. San Fco. Chilpan
Tultitlán, Estado de México, C.P. 54940
Tel: 01-55-5747-5100 / 01-800-726-7864
Fax: 01-55-5747-5202 / 01-800-849-1743
RFC: SEM950215S98

IMPORTADO POR: SAMSUNG ELECTRONICS MÉXICO. S.A. DE C.V.
Vía Lopez Portillo No. 6, Col. San Fco. Chilpan
Tultitlán, Estado de México, C.P. 54940
Tel: 01-55-5747-5100 / 01-800-726-7864

EXPORTADO POR: Samsung Electronics CO.,LTD.
416, Mae tan-3dong, Yeongtong - gu,
Suwon City, Gyeonggi-do Korea

**SAMTRON SEOUL**

15TH FL, JOONGANG DAILY NEWS BLDG. 7, SOONHWA-DONG,CHUNG-GU,
SEOUL, KOREA, 100-759
TEL : (82-2) 727-3114

**SAMTRON SWEDEN**

SAMSUNG ELECTRONICS SYENSKA, AB
BOX 713, S- 194 27 UPPLANDS VÄSBY
TEL : 468- 590- 966- 00 FAX : 468- 590- 966- 50

**SAMTRON TOKYO**

17TH, HAMACHO CENTER BLDG. 2-31-1, NIHONBASHI-HAMACHO,
CHOU-KU, TOKYO 103, JAPAN
TEL : (81-3) 5641-9860 FAX : (81-3) 5641-9861

- **SAMTRON U.S.A.**

  SAMTRON COMPUTER PRODUCTS CUSTOMER SERVICE
  400 Valley Road Suite 201, Mt. Arlington, NJ 07856
  TEL : 973-601-6200, FAX : 973-601-6001
  1-800-SAMTRON (1-800-726-8766)



## 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 1024 x 768 , this means the screen is composed of 1024 horizontal dots (horizontal resolution) and 768 vertical lines (vertical resolution).



## Authority

## 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.

## IC Compliance Notice

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

Cet appareil Numérique de classe B respecte toutes les exigences du Règlemont NMB-03 sur les équipements produisant des interférences 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 both 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:

- EN55022:1998+A1:2000 - Radio Frequency Interference
- EN55024:1998 - Electromagnetic Immunity
- EN61000-3-2:1995+A1/A2:1998 - Power Line Harmonics
- EN61000-3-3:1995 - Voltage Fluctuations

## 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.

## TCO'95-Ecological requirements for personal computers (TCO'95 applied model only)

**AB general requirements**
**AB2 Written Eco-document acompanying the products**
Congratulations! You have just purchased a TCO'95 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 to the further development of environmentally-adapted electronic products.

**Why do we have environmentally-labelled monitors?**
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 monitors and other electronic equipment are concerned is that environmentally harmful substances are used both in the products and during their manufacture. Since it has not been possible so far for the majority of electronic equipment to be recycled in a satisfactory way, most of these potentially damaging substances sooner or later enter Nature.

There are also other characteristics of a monitor, such as energy consumption levels, that are important from both the working and natural environment viewpoints. Since all types of conventional electricity generation have a negative effect on the environment (acidic and climate-influencing emissions, radioactive waste, etc.) it is vital to conserve energy. Electronic equipment in offices consumes an enormous amount of energy, since it is often routinely left running continuously.

**What does labelling involve?**
This product meets the requirements for the TCO'95 scheme, which provides for international environmental labelling of monitors. The labelling scheme was developed as a joint effort by the TCO (The Swedish Confederation of Professional Employees), Naturskyddsforeningen (The Swedish Society for Nature Conservation) and NUTEK (The National Board for Industrial and Technical Development in Sweden).

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

The environmental demands concern among other things restrictions on the presence and use of heavy metals, brominated and chlorinated flame retardants, CFCs (freons), and chlorinated solvents. The product must be prepared for recycling and the manufacturer is obliged to have an environmental plan, which must be adhered to in each country where the company conducts its operations policy. The energy requirements include a demand that the monitor 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 monitor shall be reasonable for the user.

Labelled products must meet strict environmental demands, for example in respect of the reduction of electric and magnetic fields, along with physical and visual ergonomics and good usability.

TCO Development Unit 1996-11-29
On the page this folder you will find a brief summary of the environmental requirements met by this product.
The complere environmental criteria document may be ordered from:
TCO Development Unit
S-11494 Stockholm
Sweden
Fax: +46 8 782 92 07
E-mail (Internet): development@tco.se
Current information regarding TCO'95-approved and labelled products may also be obtained via the Internet, using the address:
http://www.tco-info.com/
TCO'95 is a co-operative project between(3 logos)

**Environmental Requirements**
Brominated flame retardants are present in printed circuit boards, cables, wires, casings and housings. In turn, they delay the spread of fire. Up to thirty percent of the plastic in a computer casing can consist of flame retardant substances. These are related to another group of environmental toxins, PCBs, which are suspected to give rise to similar harm, including reproductive damage in fish eating birds and mammals, due to the bioaccumulative processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.
- TCO'95 demand requires that plastic components weighing more than 25 grams must not contain organically bound chlorine and bromine.

**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.

- TCO'95 requirement Permits the inclusion of lead since no replacement has yet been developed.

**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.

- TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of cadmium. The colour-generating layers of display screens must not contain any cadmium.

**Mercury**
Mercury is sometimes found in batteries, relays and switches. Mercury damages the nervous system and is toxic in high doses.

- TCO'95 requirement states that batteries may not contain more than 25 ppm (parts per million) of mercury. It also demands that no mercury is present in any of the electrical or electronics components concerned with the display unit.

**CFCs (freons)**
CFCs (freons) are sometimes used for washing printed circuit boards and in the manufacturing of expanded foam for packaging. CFCs break down ozone and thereby damage the ozone layer in the stratosphere, causing increased reception on Earth of ultraviolet light with consequent increased risks of skin cancer (malignant melanoma).

- The relevant TCO'95 requirement: Neither CFCs nor HCFCs may be used during the manufacturing of the product or its packaging.

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**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 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 issuse: 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.

**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.

**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.

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* Bio-accumulative is defined as substances which accumulate within living organisms.
** Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.

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**TCO'03-Ecological requirements for personal computers (TCO'03 applied model only)**

**Congratulations!**
The display you have just purchased carries the TCO'03 Displays label. This means that your display is designed, manufactured and tested according to some of the strictest quality and environmental requirements in the world. This makes for a high performance product, designed with the user in focus that also minimizes the impact on our natural environment.

Some of the features of the TCO'03 Display requirements:

**Ergonomics**
Good visual ergonomics and image quality in order to improve the working environment for the user and to reduce sight and strain problems. Important parameters are luminance, contrast, resolution, reflectance, colour rendition and image stability.

**Energy**
- Energy-saving mode after a certain time-beneficial both for the user and the environment
- Electrical safety

**Emissions**

- Electromagnetic fields
- Noise emissions

**Ecology**

- The product must be prepared for recycling and the manufacturer must have a certified environmental management system such as EMAS or ISO 14 000
- Restrictions on
  o chlorinated and brominated flame retardants and polymers
  o heavy metals such as cadmium, mercury and lead.

The requirements included in this label have been developed by TCO Development in cooperation with scientists, experts, users as well as manufacturers all over the world. Since the end of the 1980s TCO has been involved in influencing the development of IT equipment in a more user-friendly direction. Our labelling system started with displays in 1992 and is now requested by users and IT-manufacturers all over the world.

For more information, Please visit
www.tcodevelopment.com

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**TCO'03 Recycling Information (TCO'03 applied model only)**

**[European Residents Only]**

For recycling information for TCO'03 certified monitors, for the residents in the following countries, please contact the company corresponding to your region of residence. For those who reside in other countries, please contact a nearest local Samsung dealer for recycling information for the products to be treated in environmentally acceptable way.

| | [U.S.A. Residents Only] | [European Residents Only] | | |
|---|---|---|---|---|
| | U.S.A. | SWEDEN | NORWAY | GERMANY |
| COMPANY | Solid Waste Transfer & Recycling Inc | ELKRETSEN | Elektronikkretur AS | vfw AG |
| ADDRESS | 442 Frelinghuysen Ave Newark, NJ 07114 | ELKRETSEN Box 1357, 111 83 Stockholm Barnhusgatan 3, 4 tr. | 6454 Etterstad 0602 Oslo Fyrstikkalln 3B | Max Plank Strasse 42 50858 Collogne Germany |
| TELEPHONE | 973-565-0181 | 08-545 212 90 | 23 06 07 40 | 49 0 2234 9587 - 0 |
| FAX | Fax: 973-565-9485 | 08-545 212 99 | 23 06 07 41 | |
| E-MAIL | none | info@el-kretsen.se | adm@elektronikkretur.no | vfw.info@vfw-ag.de |
| HOME PAGE | http://www.bcua.org/Solid Waste_Disposal3.htm | http://www.el-kretsen.se/ | http://www.elretur.no/ | |