PHILIPS

Philips LCD Monitor Electronic User's Manual

Safety and Troubleshooting Information

Safety precautions and maintenance

WARNING: Use of controls, adjustments or procedures other than those specified in this documentation may result in exposure to shock, electrical hazards and/or mechanical hazards.

Read and follow these instructions when connecting and using your computer monitor:

- Unplug the monitor if you are not going to use it for an extensive period of time.
- Unplug the monitor if you need to clean it with a slightly damp cloth. The screen may be wiped with a dry cloth when the power is off. However, never use alcohol, solvents or ammonia-based liquids.
- Consult a service technician if the monitor does not operate normally when you have followed the instructions in this manual.
- The casing cover should be opened only by qualified service personnel.
- Keep the monitor out of direct sunlight and away from stoves or any other heat source.
- Remove any object that could fall into the vents or prevent proper cooling of the monitor's electronics.
- Do not block the ventilation holes on the cabinet.
- Keep the monitor dry. To avoid electric shock, do not expose it to rain or excessive moisture.
- When positioning the monitor, make sure the power plug and outlet are easily accessible.
- If turning off the monitor by detaching the power cable or DC power cord, wait for 6 seconds before attaching the power cable or DC power cord for normal operation.
- To avoid the risk of shock or permanent damage to the set, do not expose the monitor to rain or excessive moisture.
- IMPORTANT: Always activate a screen saver program during your application. If a still image in high contrast remains on the screen for an extended period of time, it may leave an 'after-image' or 'ghost image' on front of the screen. This is a well-known phenomenon that is caused by the shortcomings inherent in LCD technology. In most cases, the after-image will disappear gradually over a period of time after the power has been switched off. Be aware, that the after-image symptom cannot be repaired and is not covered under warranty.

Consult a service technician if the monitor does not operate normally when the operating instructions given in this manual have been followed.

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Installation Locations

- Avoid exposure to heat and extreme cold.

- Do not store or use the LCD monitor in locations exposed to heat, direct sunlight or extreme cold.
- Avoid moving the LCD monitor between locations with large temperature differences. Choose a site that falls within the following temperature and humidity ranges.
  - Temperature: 5-40°C 41-104°F
  - Humidity: 20-80% RH
- Do not subject the LCD monitor to severe vibration or high impact conditions. Do not place the LCD monitor in the trunk of a car.
- Take care not to mishandle this product by either knocking or dropping it during operation or transportation.
- Do not store or use the LCD monitor in locations where there is a high level of humidity or in dusty environments. Do not allow water or other liquids to spill on or into the LCD monitor.

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About This Manual

About This Guide

This electronic user's guide is intended for anyone who uses the Philips LCD Monitor. It describes the LCD monitor's features, setup, operation and other important information. Its contents are identical to the information in our printed version.

It includes the following sections:

- Safety and Troubleshooting Information provides tips and solutions for common problems as well as other related information you may need.
- About This Electronic User's Manual gives an overview of information included, along with notation icon descriptions and other documentation for your reference.
- Product Information gives an overview of the monitor's features as well as the technical specifications for this monitor.
- Installing Your Monitor describes the initial setup process and gives an overview of how to use the monitor.
- On-Screen Display provides information on adjusting the settings on your monitor.
- Customer Care and Warranty contains a list of worldwide Philips Consumer Information Centers along with help desk phone numbers and information on the warranty applicable to your product.
- Glossary defines technical terms.
- Download and Print Option transfers this entire manual to your hard drive for easy reference.

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Notational Descriptions

The following subsections describe notational conventions used in this document.

Notes, Cautions and Warnings

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold or italic type. These blocks contain notes, cautions or warnings. They are used as follows:

NOTE: This icon indicates important information and tips that help you make better use of your computer system.

CAUTION: This icon indicates information that tells you how to avoid either potential damage to hardware or loss of data.

WARNING: This icon indicates the potential for bodily harm and tells you how to avoid the problem.

Some warnings may appear in alternate formats and may not be accompanied by an icon. In such cases, the specific presentation of the warning is mandated by the relevant regulatory authority.

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Product Information

Product Features

150V5

- **Best Total Cost of Ownership solution**
  - Lower power consumption ~ Less cost: up to 20% power savings than industry average
  - Kensington anti-theft lock ~ Added security prevents theft by locking monitor in place
- **Outstanding front of screen performance**
  - Fast response time ~ Get the job done quicker with fast response time
  - XGA, 1024 x 768 resolution ~ Accurate color displaying with high resolution 1024x768 XGA
- **Great Convenience**
  - VESA mounting hole ~ VESA mounting pattern for easy wall mounting your display

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Technical Specifications*

LCD PANEL	
• Type	TFT LCD
• Screen size	15" visual
• Pixel Pitch	0.297 x 0.297 mm
• LCD Panel type	1024 x 768 pixels R.G.B. vertical stripe Anti-glare polarizer
• Effective viewing area	304.1 x 228.1 mm
• Display Colors	16.7M colors
SCANNING	
Vertical refresh rate	56 Hz-75 Hz

Horizontal Frequency	30 kHz-62 kHz

VIDEO

• Video dot rate	80 MHz
• Input impedance	
- Video	75 ohm
- Sync	5K ohm
• Input signal levels	700m Vpp
• Sync input signal	Separate sync Composite sync Sync on green
• Sync polarities	Positive and negative
• Input Frequency	XGA Hsync 48- 61 kHz, Vsync 60 - 76 Hz (N.I.) SVGA Hsync 35- 50 kHz, Vsync 56 - 75 Hz (N.I.) VGA Hsync 31- 38 kHz, Vsync 60 - 76 Hz (N.I.)
• Video interface	Analog (D-Sub)

Optical characteristics

• Contrast ratio	400:1 (typ.), 300:1 (min.)
• Brightness	250 cd/m^2 (typ.), 200 cd/m^2 (min.)
• Peak contrast angle	6 o'clock
• White Chromaticity	x: 0.283 y: 0.297 (at 9300°K) x: 0.313 y: 0.329 (at 6500°K)
• Viewing Angle (C/R>10)	Upper ≥45° (typ.) Lower ≥55° (typ.) Left ≥60° (typ.) Right ≥60° (typ.)
• Response time	25 ms (typ.)

** This data is subject to change without notice.*

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Resolution & Preset Modes

- Maximum 1024 x 768 at 75 Hz
- Recommended 1024 x 768 at 60 Hz

14 user definable modes

14 factory preset modes:

H. freq (kHz)	Resolution	V. freq (Hz)
31.469	640*350	70.086
31.469	720*400	70.087
31.469	640*480	59.940
35.000	640*480	67.000
37.861	640*480	72.809
37.500	640*480	75.000
35.156	800*600	56.250
37.879	800*600	60.317
48.077	800*600	72.188
46.875	800*600	75.000
49.700	832*624	75.000
48.363	1024*768	60.004
56.476	1024*768	70.069
60.023	1024*768	75.029

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Automatic Power Saving

If you have VESA DPMS compliance display card or software installed in your PC, the monitor can automatically reduce its power consumption when not in use. If an input from a keyboard, mouse or other input device is detected, the monitor will 'wake up' automatically. The following table shows the power consumption and signaling of this automatic power saving feature:

Power Management Definition					
VESA Mode	Video	H-sync	V-sync	Power Used	LED color
ON	Active	Yes	Yes	< 20 W	Green
OFF	Blanked	No	No	< 2 W	Amber

This monitor is ENERGY STAR® compliant. As an ENERGY STAR® Partner, PHILIPS has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

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Physical Specifications

• Dimension (WxHxD) *	341 x 317.4 x 140 mm (incl. Pedestal)
• Weight	3.0 Kg
• Tilt	-5° ~ 20°
• Power supply	100 — 240 VAC, 50/60 Hz
• Power consumption	18 W* (typ.)
• Temperature	5° C to 40° C (operating) -20° C to 60° C (storage)
• Relative humidity	20% to 80%
• System MTBF	50K hours (CCFL 30K hours)
• Cabinet color	Light Gray

** This data is subject to change without notice.*

** Resolution 1024x768, standard size, brightness max., contrast 50%, full white pattern.*

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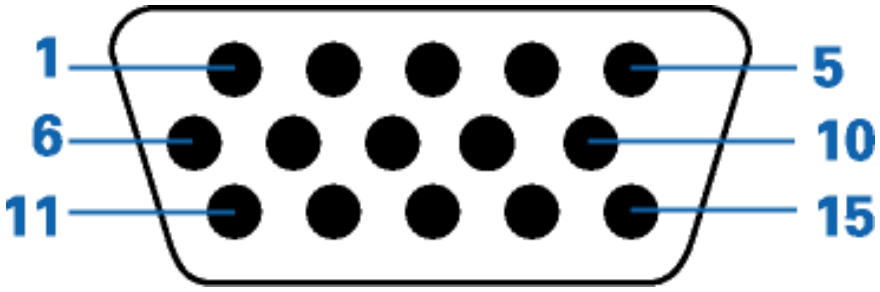
Pin Assignment

The 15-pin D-sub connector (male) of the signal cable:



Pin No.	Assignment		Pin No.	Assignment
1	Red video input		9	DDC +5V
2	Green video input/SOG		10	Logic ground
3	Blue video input		11	Ground
4	Ground		12	Serial data line (SDA)
5	Ground		13	H. Sync / H+V
6	Red video ground		14	V. Sync
7	Green video ground		15	Data clock line (SCL)
8	Blue video ground			

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Product Views

Follow the links to see various views of the monitor and its components.

Front View Product Description

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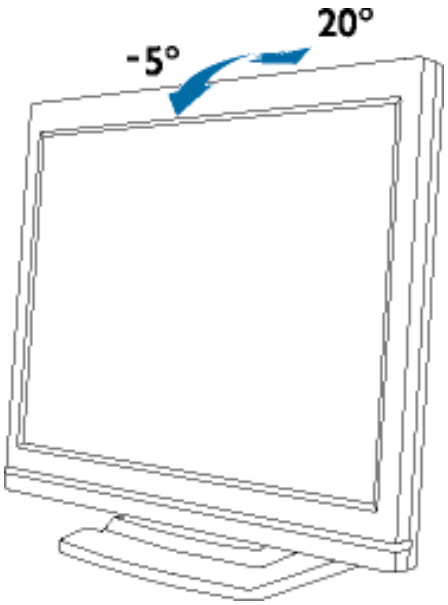
Physical Function

1) Tilt



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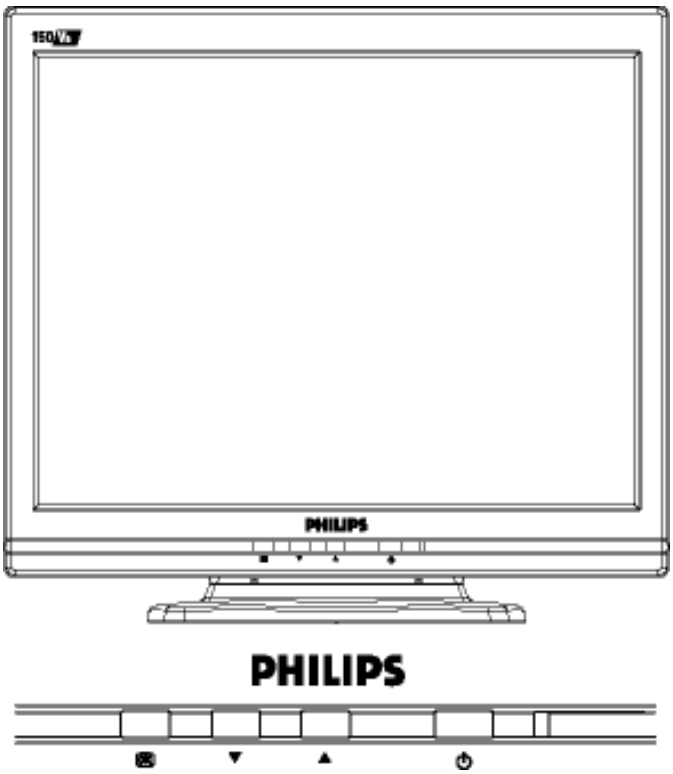
Installing Your LCD Monitor

Front View Product Description




UP and DOWN buttons are used when adjusting the OSD of your monitor.

OK button which when pressed will take you to the OSD controls.


POWER button switches your monitor on.

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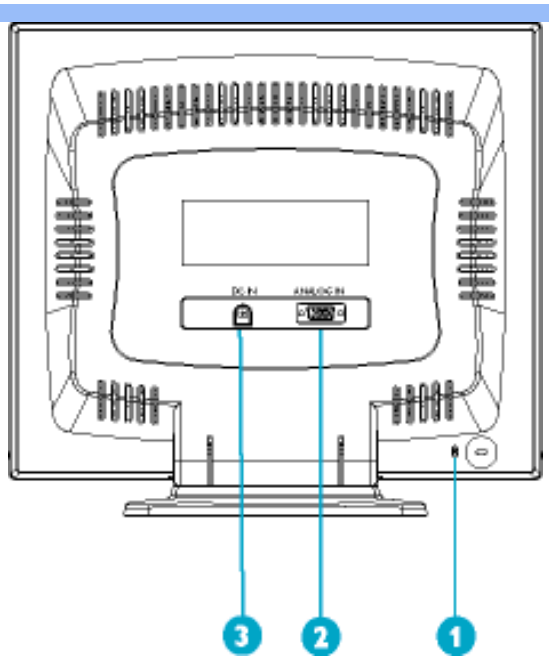
Rear View



1 Kensington anti-thief lock
2 VGA input
3 DC power input

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Optimizing Performance

- For best performance, ensure that your display settings are set at 1024x768, 60Hz.

Note: ***You can check the current display settings by pressing the 'OK' button once. Go into the Product Information. The current display mode is shown on the item called RESOLUTION.***

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On-Screen Display

Description of the On Screen Display

What is the On-Screen Display?

This is a feature in all Philips LCD monitors. It allows an end user to adjust screen performance of the monitors directly through an on-screen instruction window. The user interface provides user-friendliness and ease-of-use when operating the monitor.

Basic and simple instruction on the control keys.

When you press the OK button on the front control of your monitor, the On-Screen Display (OSD) Main Menu window will pop up and you can then start making adjustments to your monitor's various features. Use the ▲▼ keys to make your adjustments.

The following table briefly describes each of the items in the OSD "Main Menu".

Item	Description
Auto Setup	Performs the "Auto Setup" function.
Management	Opens the "Management" submenu for selection of Brightness, Contrast or Image Position adjustments.
Clock/Phase	Opens the "Clock/Phase" submenu for selection of Clock or Phase adjustments.
Color	Opens the "Color" submenu for selection of Color Temperature, RGB and Black Level adjustments.
OSD Display	Opens the "OSD Display" submenu for selection of horizontal or vertical position adjustment of the OSD display.
Factory Recall	Restores original factory settings.
Language	Opens the "Language" submenu where you can select your preferred language from five available languages in "Display OSD Messages."
Exit	Clears and exits the OSD main menu.

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Making adjustments in the OSD menu

Auto Setup

To perform Auto Setup functions, follow these steps:

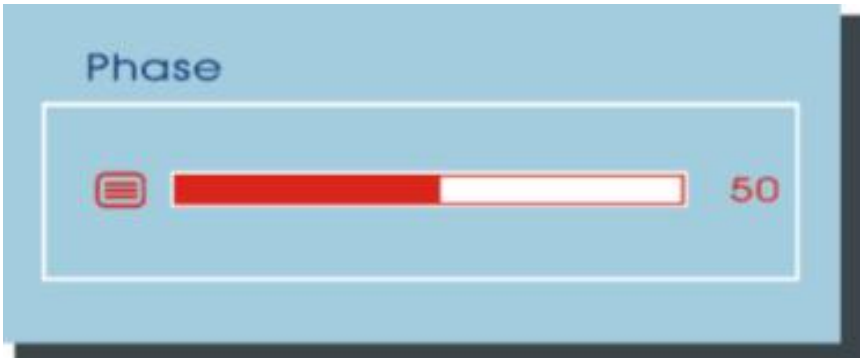
1. Bring up the OSD "Main Menu".
2. The 'Auto' icon is highlighted.

3. Use the OK key to select and execute Auto Setup. After Auto Setup is completed, the following message appears:

If the image looks correct, choose Yes.

OR

If the image requires further adjustment, choose No. The 'Phase' bar will appear for manual adjustment. Adjust phase using the ▲ or ▼ buttons. When all text appears well focused and there is no instability in the image, press the OK key to complete the adjustment.



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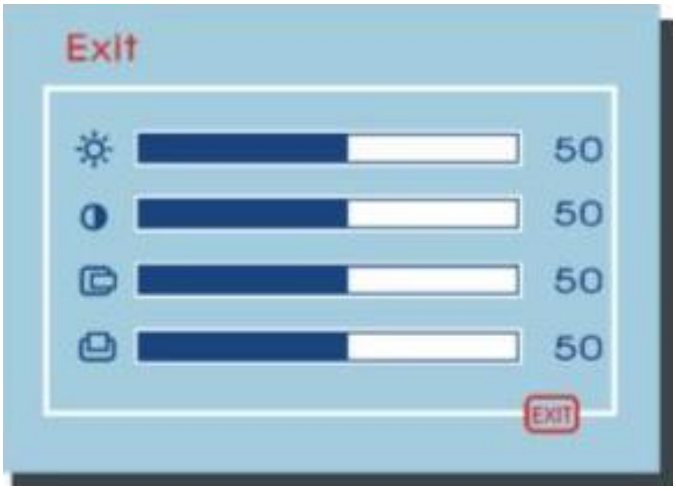
Making adjustments in the "Management" submenu

To make adjustment in the "Management" submenu, follow these steps:

1. Bring up the OSD "Main Menu."
2. Use the ▲ or ▼ buttons to move forward or backward to the management icon and highlight it.

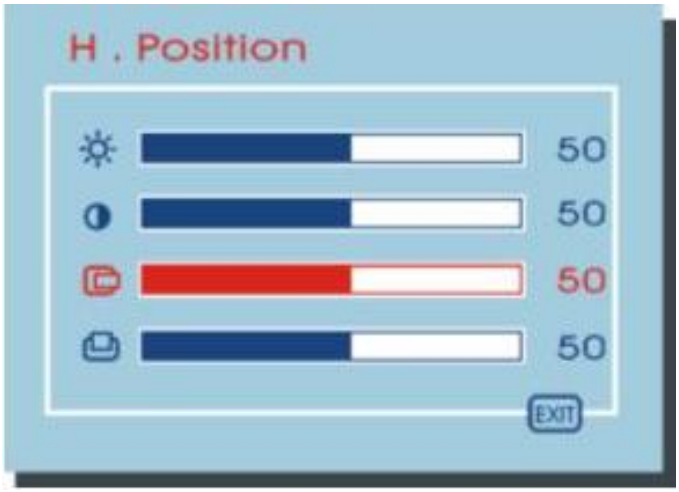
3. Use OK key to enter the "Management" submenu. Four items will be displayed for selection.
   To adjust 'Brightness' settings, use the ▲ or ▼ buttons. The graphic bar and the numerical value in the right corner will change in accordance with selected settings.



To adjust 'Contrast' settings, use the ▲ or ▼ buttons. The graphic bar and the numerical value in the right corner will change in accordance with selected settings.

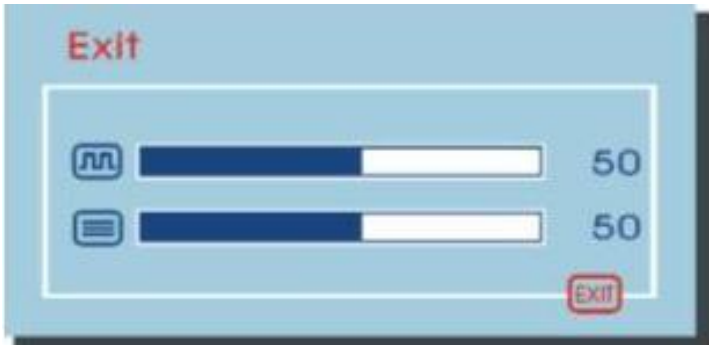
NOTE: We recommend you perform Auto Setup before adjusting the contrast setting.

To adjust the horizontal position ('H. position') of the image, use the ▲ or ▼ buttons. The graphic bar and the numerical value in the right corner will change in accordance with selected settings.



To adjust the vertical position ('V. position') of the image, use the ▲ or ▼ buttons. The graphic bar and the numerical value in the right corner will change in accordance with selected settings.

Select 'Exit' to leave the "Management" submenu and return to the "Main Menu."



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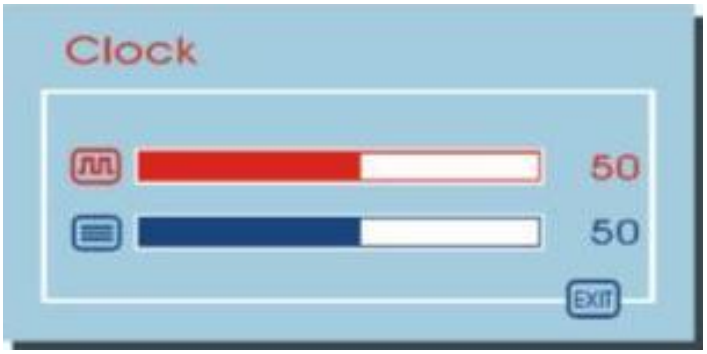
Making adjustments in the "Clock/Phase" submenu

To make adjustments in the "Clock/Phase" submenu, follow these steps:

1. Bring up the OSD "Main Menu".
2. Use ▲ or ▼ buttons to move forward or backward to the clock/phase icon and highlight it.

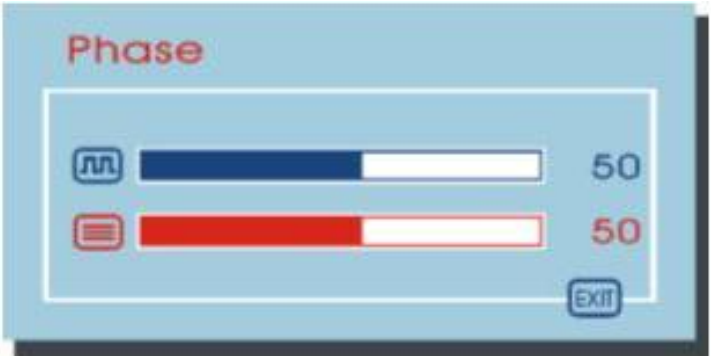
3. Use the OK key to enter the "Clock/Phase" submenu. Two items will be displayed for your selection.

   To adjust 'Clock' settings, use ▲ or ▼ buttons. The graphic bar and the numerical value in the right corner will change in accordance with selected settings.



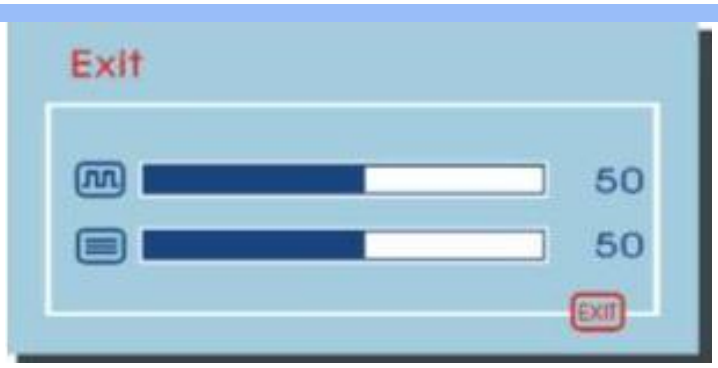
NOTE: We recommend you perform Auto Setup first, adjusting clock settings only if the image looks incorrect.

To adjust 'Phase' settings, use the ▲ or ▼ buttons. The graphic bar and the numerical value in the right corner will change in accordance with selected settings.



NOTE: We recommend you perform Auto Setup to determine whether or not phase requires adjustment.

Select 'Exit' to leave the "Clock/Phase" submenu and return to the "Main Menu."



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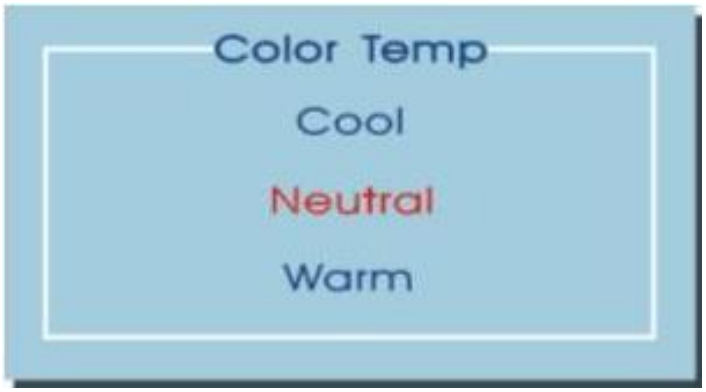
Making adjustments in the "Color" submenu

To make adjustments in the "Color" submenu, follow these steps:

1. Bring up the OSD "Main Menu".
2. Use the ▲ or ▼ buttons to move forward or backward to the color icon and highlight it.

3. Use the OK key to enter the "Color" submenu. Three items will be displayed for your selection.

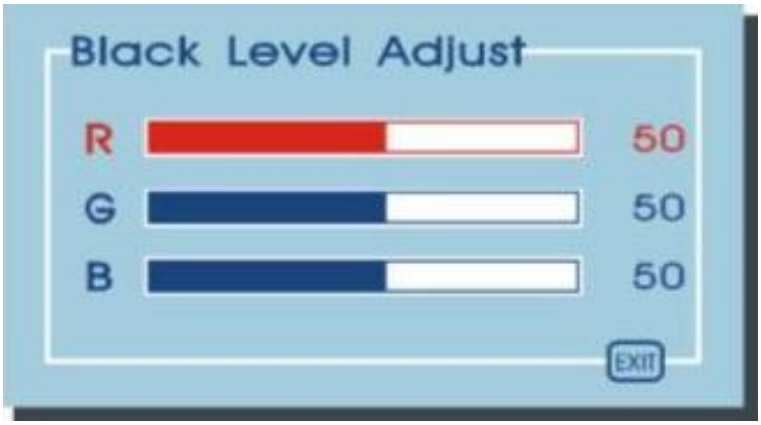
To adjust 'Color Temp' settings, use the ▲ or ▼ buttons to select one of the three setting options. When adjustments are complete, press the OK button to return to the "Color" submenu.



NOTE: As you choose an item, your screen will immediately update to reflect the selected setting.

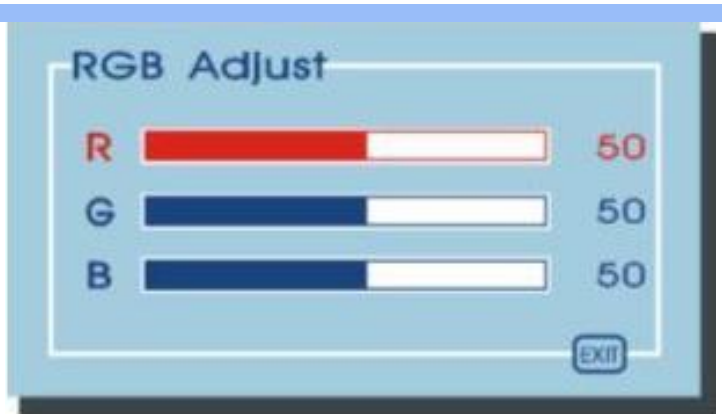
For Black Level Adjustments, select the "Back Level Adjust" submenu. Use the ▲ or ▼ buttons to and highlight one of the three options: Red, Green or Blue. Use the OK button to choose the desired option. Your selection will appear on the menu bar.

To adjust settings, use the ▲ and ▼ buttons. This control may be helpful in achieving a more natural appearance in graphic images and closer color matching between the printer and the display.



To adjust RGB settings, select the 'RGB Adjust' submenu. Use the ▲ or ▼ buttons to and highlight one of the three options: Red, Green or Blue. Use the OK button to choose the desired option. Your selection will appear on the menu bar.

To adjust settings, use the ▲ and ▼ buttons.



Select 'Exit' to leave the exit the "Color" submenu and return to the "Main Menu."

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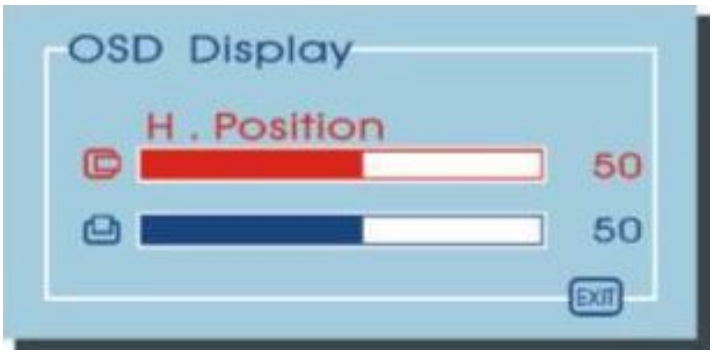
Making adjustments in the "OSD" submenu

To adjust OSD horizontal and vertical positions you should follow these steps:

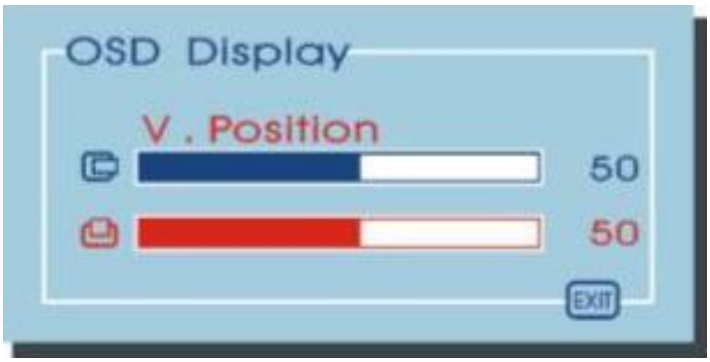
1. Bring up the OSD "Main Menu".
2. Use ▲ or ▼ buttons to move forward or backward to the OSD display icon and highlight it.

3. Use OK button to enter the "OSD Display" submenu. Two items will be displayed for your selection.

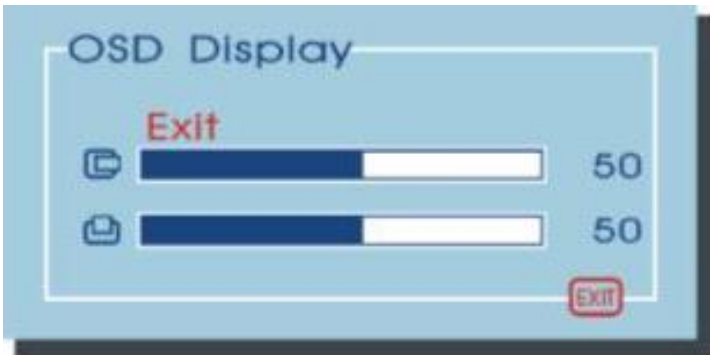
To adjust the horizontal position ('H. position') of the OSD display, use the ▲ or ▼ buttons. The graphic bar and the numerical value in the right corner will change in accordance with selected settings.



To adjust the vertical position ('V. position') of the OSD display, use the ▲ or ▼ buttons. The graphic bar and the numerical value in the right corner will change in accordance with selected settings.



Select 'Exit' to leave the "Clock/Phase" submenu and return to the "Main Menu."



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Factory Recall

To revert to factory settings, follow these steps:

1. Bring up the OSD "Main Menu."
2. Use the ▲ or ▼ buttons to move forward or backward to the factory recall icon and highlight it.

3. Use the OK button to revert to factory settings.

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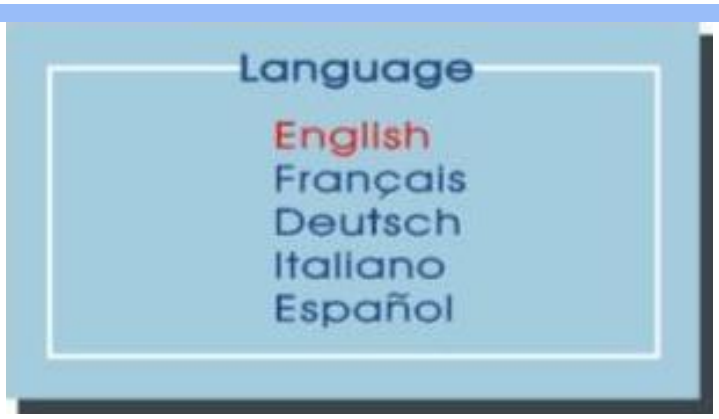
Selecting your preferred language

To select your preferred language from the five available languages follow these steps:

1. Bring up the OSD "Main Menu".
2. Use the ▲ or ▼ buttons to move forward or backward to the languages icon and highlight it.

3. Use OK button to enter the "Language" submenu. Five items will be displayed for your selection. Use the ▲ or ▼ buttons to move forward or backward to your preferred language. Press the OK button.



NOTE: When you choose an item, your OSD information will be immediately displayed in the selected language.

To exit and clear the OSD Menu

To exit and clear the OSD menu, use the ▲ or ▼ buttons to move forward or backward to the exit icon. Press the OK button.

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Customer Care & Warranty

PLEASE SELECT YOUR COUNTRY/AREA TO REVIEW DETAILS OF YOUR WARRANTY COVERAGE

ASIA: Bangladesh • Hong Kong • India • Pakistan

MIDDLE EAST: Dubai

Glossary

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

C

Color temperature

A way of describing the color of a radiating source in terms of the temperature (in degrees Kelvin) of a black body radiating with the same dominant frequency as the source.

Most Philips monitors offer the possibility of setting the color temperature to any desired value.

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D

D-SUB

Your monitor comes with a D-Sub cable.

Digital Visual Interface (DVI)

The Digital Visual Interface (DVI) specification provides a high-speed digital connection for visual data types that is display technology independent. The interface is primarily focused at providing a connection between a computer and its display device. The DVI specification meets the needs of all segments of the PC industry (workstation, desktop, laptop, etc.) and will enable these different segments to unite around one monitor interface specification.

The DVI interface enables:

1. Reduce signal loss and video noise in signal due to less signal conversion.
2. Independent from display technology, and can be used on LCD, Plasma, LCOS, etc.
3. Plug and play through hot plug detection, EDID and DDC2B.
4. Digital and Analog support in a single connector (DVI-I only).

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E

Energy Star Computers Program

An energy conservation program launched by the US Environmental Protection Agency (EPA), promotes the manufacture and marketing of energy-efficient office automation equipment. Companies joining this program, must be willing to commit themselves to manufacture one or more products capable of going into a low -power state (< 30 W) either after a period of inactivity, or after a predetermined time selected by the user.

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L

LCD Liquid Crystal Display

An alphanumeric display, using the unique properties of liquid crystal, to form characters. The latest flat-panel displays, contains a matrix of hundreds or thousands of individual LCD cells that generate text and colorful graphics on a screen. They consume little power, though they do require external lighting to make them legible to the user.

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V

Vertical refresh rate

Expressed in Hz, it is the number of frames (complete pictures) written to the screen every second.

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Download and Print

Installing Your LCD monitor driver

System requirements:

- PC running Windows 95, Windows® 98, Windows® 2000 , Windows® Me, Windows® XP or later
- Find your driver ".inf/.icm/.cat" at : /PC/drivers/

Read the "Driver_install02.txt" file before installing.

This page provides an option to read the manual in .pdf format. PDF files can be downloaded into your hard disk, then viewed and printed with Acrobat Reader or through your browser.

If you do not have Adobe® Acrobat Reader installed, click on the link to install the application. Adobe® Acrobat Reader for PC / Adobe® Acrobat Reader for Mac.

Download instructions:

To download the file:

1. Click-and-hold your mouse over the icon below. (Windows® 95/98/2000/Me/XP users right-click)

Download  150V5.pdf

2. From the menu that appears, choose 'Save Link As...', 'Save Target As...' or 'Download Link to Disk'.

3. Choose where you would like to save the file; click 'Save' (if prompted to save as either 'text' or 'source', choose 'source').

Printing instructions:

To print the manual:

1. With the manual file open, follow your printer's instructions and print the pages you need.

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FAQs (Frequently Asked Questions)

General FAQs

Q: When I install my monitor what should I do if the screen shows 'Cannot display this video mode'?

A: Recommended video mode for Philips 15": 1024x768 @60Hz.

1. Unplug all cables, then connect your PC to the monitor that you used previously.
2. In the Windows Start Menu, select Settings/Control Panel. In the Control Panel Window, select the Display icon. Inside the Display Control Panel, select the 'Settings' tab. Under the setting tab, in box labeled 'desktop area', move the slidebar to 1024x768 pixels (15").
3. Open 'Advanced Properties' and set the Refresh Rate to 60Hz, then click OK.
4. Restart your computer and repeat step 2 and 3 to verify that your PC is set at 1024x768@60Hz (15").
5. Shut down your computer, disconnect your old monitor and reconnect your Philips LCD monitor.
6. Turn on your monitor and then turn on your PC.

Q: What does 'refresh rate' mean in connection with an LCD monitor?

A: The refresh rate is of much less relevance for LCD monitors. LCD monitors display a stable, flicker-free image at 60Hz. There is no visible difference between 85Hz and 60Hz.

Q: What are the .inf and .icm files on the CD-ROM? How do I install the drivers (.inf and .icm)?

A: These are the driver files for your monitor. Follow the instructions in your user manual to install the drivers. Your computer may ask you for monitor drivers (.inf and .icm files) or a driver disk when you first install your monitor. Follow the instructions to insert the driver disk (either floppy or CD-ROM) included in this package. Monitor drivers (.inf and .icm files) will be installed automatically.

Q: How do I adjust the resolution?

A: Your video card/graphic driver and monitor together determine the available resolutions. You can select the desired resolution under Windows® 95/98 with the 'Display properties/Settings' control panel.

Q: What if I get lost when I am making monitor adjustments?

A: Simply press the OSD button, then select 'Reset' to recall all of the original factory settings.

Q: What is the Auto function?

A: The *AUTO adjustment* key restores the optimal screen position, phase and clock settings at the press of a single button – without the need to navigate through OSD menus and control keys.

Q: My Monitor has no power (Power LED does not light up). What should I do?

A: Make sure the AC power cord is connected to the Monitor.

Q: Will the LCD monitor accept an Interlace signal?

A: No. If an Interlace signal is used, the screen displays both odd and even horizontal scanning lines at the same time, thus distorting the picture.

Q: What does the Refresh Rate mean for LCD?

A: Unlike CRT display technology, in which the speed of the electron beam is swept from the top to the bottom of the screen determines flicker, an active matrix display uses an active element (TFT) to control each individual pixel and the refresh rate is therefore not really applicable to LCD technology.

Q: Will the LCD screen be resistant to scratches?

A: A protective coating is applied to the surface of the LCD, which is durable to a certain extent (approximately up to the hardness of a 2H pencil). In general, it is recommended that the panel surface is not subject to any excessive shocks or scratches. An optional protective cover with greater scratch resistance is also available.

Q: How should I clean the LCD surface?

A: For normal cleaning, use a clean, soft cloth. For extensive cleaning, please use isopropyl

alcohol. Do not use other solvents such as ethyl alcohol, ethanol, acetone, hexane, etc.

Q: Can the Philips LCD Monitor be mounted on the wall or used as a touch panel?

A: Yes. Philips LCD monitors have this optional feature. The standard VESA mount holes on the back cover allows the user to mount the Philips monitor on any VESA standard ARM or accessories. Touch panels are being developed for future applications. Check with your Philips sales representative for more information.

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Screen Adjustments

Q: How do LCDs compare to CRTs in terms of radiation?

A: Because LCDs do not use an electron gun, they do not generate the same amount of radiation at the screen surface.

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Compatibility with other Peripherals

Q: Can I connect my LCD monitor to any PC, workstation or Mac?

A: Yes. All Philips LCD monitors are fully compatible with standard PCs, Macs and workstations. You may need a cable adapter to connect the monitor to your Mac system. Please contact your dealer/retailer for more information.

Q: Are Philips LCD monitors Plug-and-Play?

A: Yes, the monitors are Plug-and-Play compatible with Windows® 95, 98, 2000 and the PC98/99 platforms.

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LCD Panel Technology

Q: What is a Liquid Crystal Display?

A: A Liquid Crystal Display (LCD) is an optical device that is commonly used to display ASCII characters and images on digital items such as watches, calculators, portable game consoles, etc. LCD is the technology used for displays in notebooks and other small computers. Like light-emitting diode and gas-plasma technologies, LCD allows displays to be much thinner than cathode ray tube (CRT) technology. LCD consumes much less power than LED and gas-displays because it works on the principle of blocking light rather than emitting it.

Q: How are LCDs made?

A: LCDs are created from two glass plates separated from each other at a distance of a few microns. The plates are filled with liquid crystal and then sealed together. The top plate is colored with an RGB pattern to make the color filter. Polarizers are then glued to both plates. This combination is sometimes called 'glass' or 'cell.' The LCD cell is assembled into a 'module' by adding the backlight, driver electronics and frame.

Q: What is polarization ?

A: Polarization is basically directing light to shine in one direction. Light is electromagnetic waves. Electric and magnetic fields oscillate in a direction perpendicular to the propagation of the light beam. The direction of these fields is called the 'polarization direction'. Normal or non-polarized light has fields in several directions; polarized light has a field in only one direction.

Q: What differentiates passive matrix LCDs from active matrix LCDs?

A: An LCD is made with either a passive matrix or an active matrix display grid. An active matrix has a transistor located at each pixel intersection, requiring less current to control the luminance of a pixel. For this reason, the current in an active matrix display can be switched on and off more frequently, improving the screen refresh time (your mouse pointer will appear to move more smoothly across the screen, for example). The passive matrix LCD has a grid of conductors with pixels located at each intersection in the grid.

Q: How does a TFT LCD Panel work?

A: On each column and row of the TFT LCD panel, a data source drive and a gate drive are attached, respectively. The TFT drain of each cell is connected to the electrode. The molecular arrangement of liquid crystal elements differ according to whether it is impressed with voltage or not. It varies the direction of polarized light and the amount of light by letting it through different arrays of liquid

crystal elements. When two polarized filters are arranged vertically on a polarized light pole, the light that passes through the upper polarized panel is turned 90 degrees along with the spiral structure of the liquid crystal molecules and goes through the polarized filter at the bottom. When impressed with voltage, liquid crystal molecules are arranged vertically from the original spiral structure and the direction of the light is not turned through 90 degrees. In this case, light that comes through the top polarized panel may not go through the polarized panel at the bottom.

Q: What are the advantages of TFT LCD compared with CRT?

A: In a CRT monitor, a gun shoots electrons and general light by colliding polarized electrons on fluorescent glass. Therefore, CRT monitors basically operate with an analog RGB signal. A TFT LCD monitor is a device that displays an input image by operating a liquid crystal panel. The TFT has a fundamentally different structure than a CRT: Each cell has an active matrix structure and independent active elements. A TFT LCD has two glass panels and the space between them is filled with liquid crystal. When each cell is connected with electrodes and impressed with voltage, the molecular structure of the liquid crystal is altered and controls the amount of inlet lighting to display images. A TFT LCD has several advantages over a CRT, since it can be very thin and no flickering occurs because it does not use the scanning method.

Q: Why is vertical frequency of 60Hz optimal for an LCD monitor?

A: Unlike a CDT monitor, the TFT LCD panel has a fixed resolution. For example, an XGA monitor has 1024x3 (R, G, B) x 768 pixels and a higher resolution may not be available without additional software processing. The panel is designed to optimize the display for a 65MHz dot clock, one of the standards for XGA displays. Since the vertical/horizontal frequency for this dot clock is 60Hz/48kHz, the optimum frequency for this monitor is 60Hz.

Q: What kind of wide-angle technology is available? How does it work?

A: The TFT LCD panel is an element that controls/displays the inlet of a backlight using the dual-refraction of a liquid crystal. Using the property that the projection of inlet light refracts toward the major axis of the liquid element, it controls the direction of inlet light and displays it. Since the refraction ratio of inlet light on liquid crystal varies with the inlet angle of the light, the viewing angle of a TFT is much narrower than that of a CDT. Usually, the viewing angle refers to the point where the contrast ration is 10. Many ways to widen the viewing angle are currently being developed and the most common approach is to use a wide viewing angle film, which widens the viewing angle by varying the refraction ratio. IPS (In Plane Switching) or MVA (Multi Vertical Aligned) is also used to give a wider viewing angle.

Q: Why is there no flicker on an LCD Monitor?

A: Technically speaking, LCDs do flicker, but the cause of the phenomenon is different from that of a CRT monitor -- and it has no impact of the ease of viewing. Flickering in an LCD monitor relates to usually undetectable luminance caused by the difference between positive and negative voltage. On the other hand, CRT flickering that can irritate the human eye occurs when the on/off action of the fluorescent object becomes visible. Since the reaction speed of liquid crystal in an LCD panel is much slower, this troublesome form of flickering is not present in an LCD display.

Q: Why is an LCD monitor virtually free of Electro Magnetic Interference?

A: Unlike a CRT, an LCD monitor does not have key parts that generate Electro Magnetic Interference, especially magnetic fields. Also, since an LCD display utilizes relatively low power, its power supply is extremely quiet.

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Ergonomics, Ecology and Safety Standards

Q: What is the CE mark?

A: The CE (Conformité Européenne) mark is required to be displayed on all regulated products offered for sale on the European market. This 'CE' mark means that a product complies with the relevant European Directive. A European Directive is a European 'Law' that relates to health, safety, environment and consumer protection, much the same as the U.S. National Electrical Code and UL Standards.

Q: Does the LCD monitor conform to general safety standards?

A: Yes. Philips LCD monitors conform to the guidelines of MPR-II standards for the control of radiation, electromagnetic waves, energy reduction, electrical safety in the work environment and recyclability. The specification page provides detailed data on safety standards.

More information is provided in the Regulatory Information section.

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Troubleshooting

This page deals with problems that can be corrected by the user. If the problem still persists after you have tried these solutions, contact your nearest Philips dealer.

Common Problems

Having this problem?	Check these items
No Picture (Power LED not lit)	• Make sure the power cord is plugged into the power outlet and into the back of the monitor. • First, ensure that the power button on the front of the monitor is in the OFF position, then press it to the ON position.
No Picture (Power LED is amber or yellow)	• Make sure the computer is turned on. • Make sure the signal cable is properly connected to your computer. • Check to see if the monitor cable has bent pins. • The Energy Saving feature may be activated
AUTO function not working properly	• The Auto Function is designed for use on standard Macintosh or IBM-compatible PCs running Microsoft Windows. • It may not work properly if using nonstandard PC or video card.

Imaging Problems

Display position is incorrect	• Perform the Auto function in OSD Main Controls. • Adjust the image position using the Horizontal Position and/or Vertical Position in OSD Main Controls.
Image vibrates on the screen	• Check that the signal cable is properly connected to the graphics board or PC.

Vertical flicker appears 	• Perform the Auto function in OSD Main Controls. • Eliminate the vertical bars using the Clock Adjustment in OSD Main Controls.
Horizontal flicker appears  	• Perform the Auto function in OSD Main Controls. • Eliminate the horizontal bars using the Phase Adjustment in OSD Main Controls.
The screen is too bright or too dark	• Adjust the contrast and brightness of Management in OSD Main Controls. (The backlight of the LCD monitor has a fixed life span. When the screen becomes dark or begins to flicker, please contact your dealer).
An after-image appears	• If an image remains on the screen for an extended period of time, it may be imprinted in the screen and leave an afterimage This usually disappears after a few hours
An afterimage remains after the power has been turned off.	• This is characteristic of liquid crystal and is not caused by a malfunction or deterioration of the liquid crystal. The afterimage will disappear after a period of time.
Green, red, blue, dark, and white dots remains	• The remaining dots are normal characteristic of the liquid crystal used in today's technology.

For further assistance, refer to the Consumer Information Centers list and contact your local Philips distributor.

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Regulatory Information

CE Declaration of Conformity

Philips Consumer Electronics declare under our responsibility that the product is in conformity with the following standards
- EN60950:2000 (Safety requirement of Information Technology Equipment)
- EN55022:1998 (Radio Disturbance requirement of Information Technology Equipment)
- EN55024:1998 (Immunity requirement of Information Technology Equipment)
- EN61000-3-2:1995 (Limits for Harmonic Current Emission)
- EN61000-3-3:1995 (Limitation of Voltage Fluctuation and Flicker)

following provisions of directives applicable
- 73/23/EEC (Low Voltage Directive)
- 89/336/EEC (EMC Directive)
- 93/68/EEC (Amendment of EMC and Low Voltage Directive)

and is produced by a manufacturing organization on ISO9000 level.

The product also comply with the following standards
- ISO9241-3, ISO9241-7, ISO9241-8 (Ergonomic requirement for Visual Display)
- ISO13406-2 (Ergonomic requirement for Flat panels)
- GS EK1-2000 (GS specification)
- prEN50279:1998 (Low Frequency Electric and Magnetic fields for Visual Display)
- MPR-II (MPR:1990:8/1990:10 Low Frequency Electric and Magnetic fields)

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Energy Star Declaration

PHILIPS
150V5FG

This monitor is equipped with a function for saving energy which supports the VESA Display Power Management Signaling (DPMS) standard. This means that the monitor must be connected to a computer which supports VESA DPMS to fulfill the requirements in the NUTEK specification 803299/94. Time settings are adjusted from the system unit by software.

NUTEK	VESA State	LED Indicator	Power Consumption
Normal operation	ON	Green	< 20 W
Power Saving Alternative 2 One step	OFF	Amber	< 2 W

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

We recommend you switch off the monitor when it is not in use for quite a long time.

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Federal Communications Commission (FCC) Notice (U.S. Only)

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 reception, 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Use only RF shielded cable that was supplied with the monitor when connecting this monitor to a computer device.

To prevent damage which may result in fire or shock hazard, do not expose this appliance to rain or excessive moisture.

THIS CLASS B DIGITAL APPARATUS MEETS ALL REQUIREMENTS OF THE CANADIAN INTERFERENCE-CAUSING EQUIPMENT REGULATIONS.

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Commission Federale de la Communication (FCC Declaration)

Cet équipement a été testé et déclaré conforme auxlimites des appareils numériques de class B,aux termes de l'article 15 Des règles de la FCC. Ces limites sont conçues de façon à fourir une protection raisonnable contre les interférences nuisibles dans le cadre d'une installation résidentielle. CET appareil produit, utilise et peut émettre des hyperfréquences qui, si l'appareil n'est pas installé et utilisé selon les consignes données, peuvent causer des interférences nuisibles aux communications radio. Cependant, rien ne peut garantir l'absence d'interférences dans le cadre d'une installation particulière. Si cet appareil est la cause d'interférences nuisibles pour la réception des signaux de radio ou de télévision, ce qui peut être décelé en fermant l'équipement, puis en le remettant en fonction, l'utilisateur pourrait essayer de corriger la situation en prenant les mesures suivantes:

- Réorienter ou déplacer l'antenne de réception.
- Augmenter la distance entre l'équipement et le récepteur.
- Brancher l'équipement sur un autre circuit que celui utilisé par le récepteur.
- Demander l'aide du marchand ou d'un technicien chevronné en radio/télévision.

Toutes modifications n'ayant pas reçu l'approbation des services compétents en matière de conformité est susceptible d'interdire à l'utilisateur l'usage du présent équipement.

N'utiliser que des câbles RF armés pour les connections avec des ordinateurs ou périphériques.

CET APPAREIL NUMERIQUE DE LA CLASSE B RESPECTE TOUTES LES EXIGENCES DU REGLEMENT SUR LE MATERIEL BROUILLEUR DU CANADA.

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BSMI Notice (Taiwan Only)

符合乙類資訊產品之標準

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Ergonomie Hinweis (nur Deutschland)

Der von uns gelieferte Farbmonitor entspricht den in der "Verordnung über den Schutz vor Schäden durch Röntgenstrahlen" festgelegten Vorschriften.

Auf der Rückwand des Gerätes befindet sich ein Aufkleber, der auf die Unbedenklichkeit der Inbetriebnahme hinweist, da die Vorschriften über die Bauart von Störstrahlern nach Anlage III ¤ 5 Abs. 4 der Röntgenverordnung erfüllt sind.

Damit Ihr Monitor immer den in der Zulassung geforderten Werten entspricht, ist darauf zu achten, daß

1. Reparaturen nur durch Fachpersonal durchgeführt werden.
2. nur original-Ersatzteile verwendet werden.

3. bei Ersatz der Bildröhre nur eine bauartgleiche eingebaut wird.

Aus ergonomischen Gründen wird empfohlen, die Grundfarben Blau und Rot nicht auf dunklem Untergrund zu verwenden (schlechte Lesbarkeit und erhöhte Augenbelastung bei zu geringem Zeichenkontrast wären die Folge).

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 beträgt 70dB (A) oder weniger.

ACHTUNG: BEIM AUFSTELLEN DIESES GERÄTES DARAUF ACHTEN, DAß NETZSTECKER UND NETZKABELANSCHLUß LEICHT ZUGÄNGLICH SIND.

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End-of-Life Disposal

Your new monitor contains materials that can be recycled and reused. Specialized companies can recycle your product to increase the amount of reusable materials and to minimize the amount to be disposed of.

Please find out about the local regulations on how to dispose of your old monitor from your local Philips dealer.

(For customers in Canada and U.S.A.)
This product may contain lead and/or mercury. Dispose of in accordance to local-state and federal regulations.
For additional information on recycling contact www.eia.org (Consumer Education Initiative)

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•Safety and Troubleshooting
•FAQs

•Troubleshooting

•Regulatory Information
•Information for Users in the U.S
•Information for Users Outside the U.S

Other Related Information

Information for Users in the U. S.

For units set at 115 V :

Use a UL Listed Cord Set consisting of a minimum 18 AWG, Type SVT or SJT three conductor cord a maximum of 15-feet long and a parallel blade, grounding type attachment plug rated 15 A, 125 V.

For units set at 230 V:

Use a UL Listed Cord Set consisting of a minimum 18 AWG, Type SVT or SJT three conductor cord a maximum of 15-feet long and a tandem blade, grounding type attachment plug rated 15 A, 250 V.

Information for Users outside the U.S.

For units set at 230 V:

Use a Cord Set consisting of a minimum 18 AWG cord and grounding type attachment plug rated 15 A, 250 V. The Cord Set should have the appropriate safety approvals for the country in which the equipment will be installed and / or be marked HAR.

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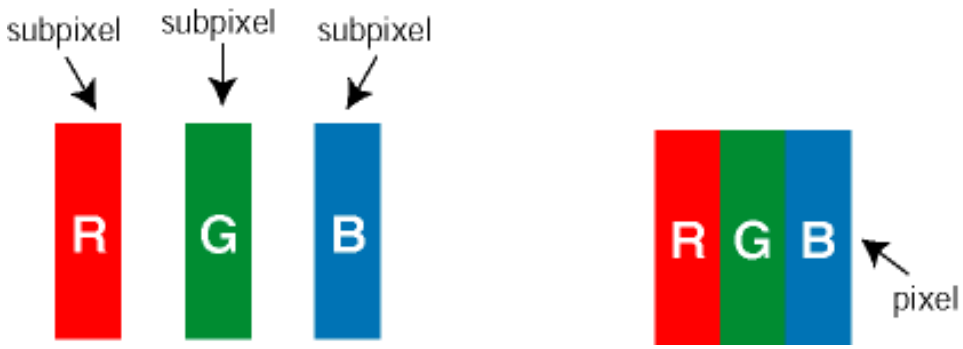
•Product Features
•Technical Specifications
•Resolution & Preset Modes
•Automatic Power Saving
•Physical Specification
•Pin Assignment
•Product Views

Philips Pixel Defect Policy

Philips' Flat Panel Monitors Pixel Defect Policy

Philips strives to deliver the highest quality products. We use some of the industry's most advanced manufacturing processes and practice stringent quality control. However, pixel or sub pixel defects on the TFT LCD panels used in flat panel monitors are sometimes unavoidable. No manufacturer can guarantee that all panels will be free from pixel defects, but Philips guarantees that any monitor with an unacceptable number of defects will be repaired or replaced under warranty. This notice explains the different types of pixel defects and defines acceptable defect levels for each type. In order to qualify for repair or replacement under warranty, the number of pixel defects on a TFT LCD panel must exceed these acceptable levels. For example, no more than 0.0004% of the sub pixels on a 15" XGA monitor may be defective. Furthermore, Philips sets even higher quality standards for certain types or combinations of pixel defects that are more noticeable than others. This policy is valid worldwide.



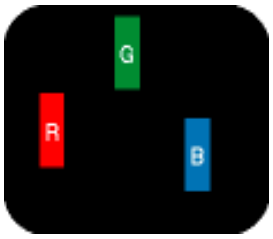
Pixels and Sub pixels

A pixel, or picture element, is composed of three sub pixels in the primary colors of red, green and blue. Many pixels together form an image. When all sub pixels of a pixel are lit, the three colored sub pixels together appear as a single white pixel. When all are dark, the three colored sub pixels together appear as a single black pixel. Other combinations of lit and dark sub pixels appear as single pixels of other colors.

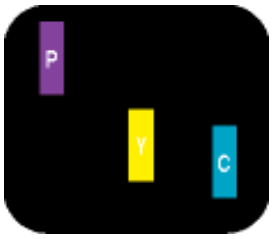
Types of Pixel Defects

Pixel and sub pixel defects appear on the screen in different ways. There are two categories of pixel defects and several types of sub pixel defects within each category.

Bright Dot Defects Bright dot defects appear as pixels or sub pixels that are always lit or 'on'. These are the types of bright dot defects:



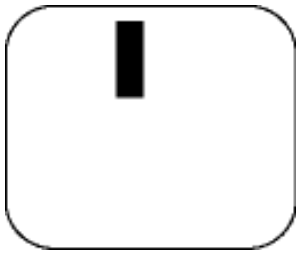
One lit red, green or blue sub pixel



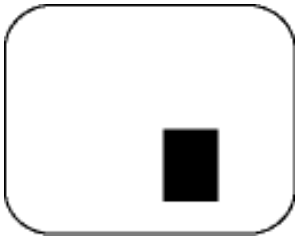
Two adjacent lit sub pixels:
- Red + Blue = Purple
- Red + Green = Yellow
- Green + Blue = Cyan (Light Blue)

Three adjacent lit sub pixels (one white pixel)

Black Dot Defects Black dot defects appear as pixels or sub pixels that are always dark or 'off'. These are the types of black dot defects:



One dark sub pixel



Two or three adjacent dark sub pixels

Proximity of Pixel Defects

Because pixel and sub pixels defects of the same type that are near to one another may be more noticeable, Philips also specifies tolerances for the proximity of pixel defects.

Pixel Defect Tolerances

In order to qualify for repair or replacement due to pixel defects during the warranty period, a TFT LCD panel in a Philips flat panel monitor must have pixel or sub pixel defects exceeding the tolerances listed in the following tables.

BRIGHT DOT DEFECTS	ACCEPTABLE LEVEL
MODEL	**150V5**
1 lit subpixel	4 or fewer
2 adjacent lit subpixels	2 or fewer

3 adjacent lit subpixels (one white pixel)	0
Distance between two bright dot defects*	15 mm or more
Total bright dot defects of all types	4 or fewer

BLACK DOT DEFECTS	ACCEPTABLE LEVEL
MODEL	**150V5**
1 dark subpixel	4 or fewer
2 adjacent dark subpixels	2 or fewer
3 adjacent dark subpixels	0
Distance between two black dot defects*	15 mm or more
Total black dot defects of all types	4 or fewer

TOTAL DOT DEFECTS	ACCEPTABLE LEVEL
MODEL	**150V5**
Total bright or black dot defects of all types	5 or fewer

Note:

** 1 or 2 adjacent sub pixel defects = 1 dot defect*

All Philips monitors are ISO13406-2 Compliant

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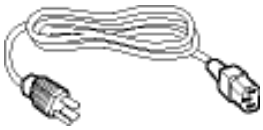
Connecting to Your PC

Accessory Pack

Unpack all the parts.

Item	Description
	**1)** Power Cable (socket may differ for different countries)
	**2)** VGA Signal Cable
	**3)** E-DFU package with Quick Setup Guide and CD-ROM.

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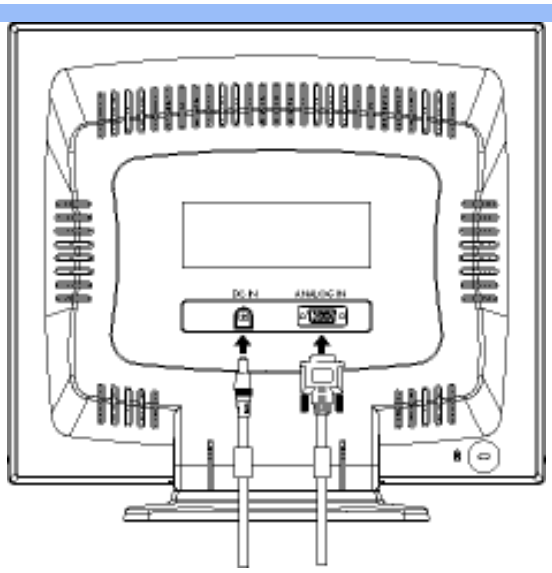
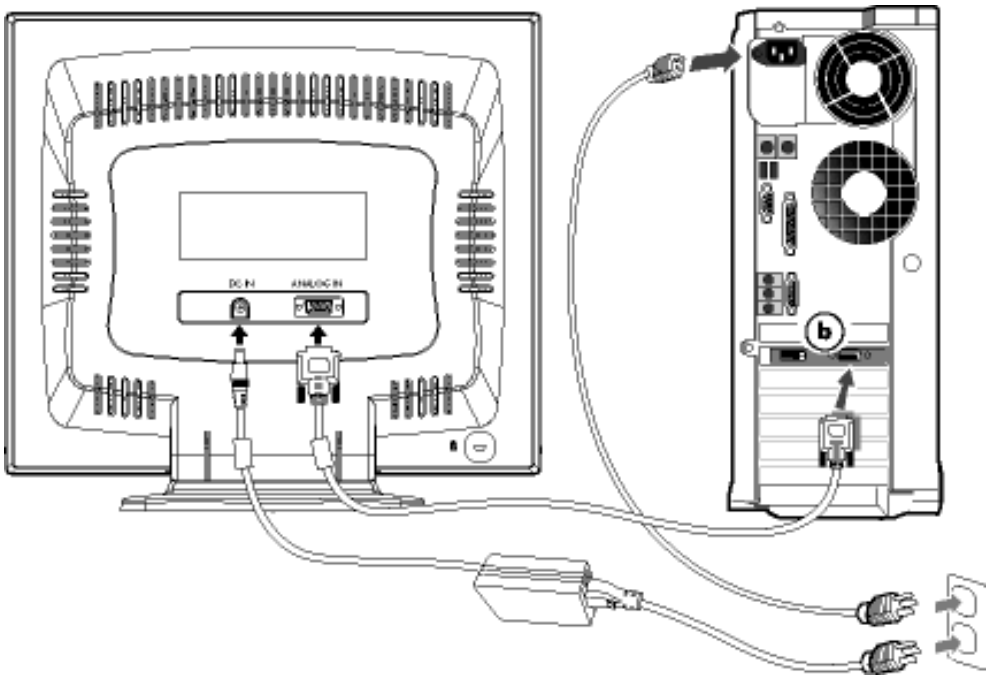
Connecting to Your PC



1) Plug the power cord into monitor firmly.

2) Connect to PC



(a) Turn off your computer and unplug its power cable.

(b) Connect the monitor signal cable to the video connector on the back of your computer.

(c) Plug the power cord of your computer and your monitor into a nearby outlet.

(d) Turn on your computer and monitor. If the monitor displays an image, installation is complete.

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Getting Started

Getting Started

Use the information file (.inf) for Windows® 95/98/2000/Me/XP or later

The built-in VESA DDC2B feature in Philips Monitors supports Plug & Play requirements for Windows® 95/98/2000/Me/XP. This information file (.inf) should be installed in order that your Philips monitor can be enabled from the 'Monitor' dialog box in Windows® 95/98/2000/Me/XP and the Plug & Play application can be activated. The installation procedure based on Windows® '95 OEM Release 2 , 98 , Me, XP and 2000 is specified as follows.

For Windows® 95

1. Start Windows® '95
2. Click on the 'Start' button, point to 'Settings', and then click on 'Control Panel'.
3. Double click on the 'Display' Icon.
4. Select the 'Settings' tab then click on 'Advanced...'.
5. Select the 'Monitor' button, point to 'Change...' then click on 'Have Disk...'.
6. Click on the 'Browse...' button, select the appropriate drive F: (CD-ROM Drive) then click on the 'OK' button.
7. Click on the 'OK' button then select your monitor model and click on 'OK'.
8. Click on the 'Close' button.

For Windows® 98

1. Start Windows® 98
2. Click on the 'Start' button, point to 'Settings', and then click on 'Control Panel'.
3. Double click on the 'Display' Icon.
4. Select the 'Settings' tab then click on 'Advanced...'.
5. Select the 'Monitor' button, point to 'Change...' then click on 'Next'
6. Select 'Display a list of all the drivers in a specific location, so you can choose the driver you want.' then click on 'Next' and then click on 'Have Disk...'.
7. Click on the 'Browse...' button, select the appropriate drive F: (CD-ROM Drive) then click on the 'OK' button.
8. Click on the 'OK' button then select your monitor model and click on the 'Next' button.
9. Click on the 'Finish' button then the 'Close' button.

For Windows® Me

1. Start Windows® Me
2. Click on the 'Start' button, point to 'Settings', and then click on 'Control Panel'.
3. Double click on the 'Display' Icon.
4. Select the 'Settings' tab then click on 'Advanced...'.
5. Select the 'Monitor' button, then click on 'Change...' button.
6. Select 'Specify the location of the driver(Advanced)' and click on the 'Next' button.

7. Select 'Display a list of all the drivers in a specific location, so you can choose the driver you want', then click on 'Next' and then click on 'Have Disk...'.
8. Click on the 'Browse...' button, select the appropriate drive F: (CD-ROM Drive) then click on the 'OK' button.
9. Click on the 'OK' button, select your monitor model and click on the 'Next' button.
10. Click on 'Finish' button then the 'Close' button.

For Windows® 2000

1. Start Windows® 2000
2. Click on the 'Start' button, point to 'Settings', and then click on 'Control Panel'.
3. Double click on the 'Display' Icon.
4. Select the 'Settings' tab then click on 'Advanced...'.
5. Select 'Monitor'
   - If the 'Properties' button is inactive, it means your monitor is properly configured. Please stop installation.
   - If the 'Properties' button is active. Click on 'Properties' button. Please follow the steps given below.
6. Click on 'Driver' and then click on 'Update Driver...' then click on the 'Next' button.
7. Select 'Display a list of the known drivers for this device so that I can choose a specific driver', then click on 'Next' and then click on 'Have disk...'.
8. Click on the 'Browse...' button then select the appropriate drive F: (CD-ROM Drive).
9. Click on the 'Open' button, then click on the 'OK' button.
10. Select your monitor model and click on the 'Next' button.
11. Click on the 'Finish' button then the 'Close' button.
    If you can see the 'Digital Signature Not Found' window, click on the 'Yes' button.

For Windows® XP

1. Start Windows® XP
2. Click on the 'Start' button and then click on 'Control Panel'.
3. Select and click on the category 'Printers and Other Hardware'
4. Click on the 'Display' Item.
5. Select the 'Settings' tab then click on the 'Advanced' button.
6. Select 'Monitor' tab
   - If the 'Properties' button is inactive, it means your monitor is properly configured. Please stop installation.
   - If the 'Properties' button is active, click on 'Properties' button.
   Please follow the steps below.
7. Click on the 'Driver' tab and then click on 'Update Driver...' button.
8. Select the 'Install from a list or specific location [advanced]' radio button and then click on the 'Next' button.
9. Select the 'Don't Search. I will choose the driver to install' radio button. Then click on the 'Next' button.
10. Click on the 'Have disk...' button, then click on the 'Browse...' button and then select the appropriate drive F: (CD-ROM Drive).
11. Click on the 'Open' button, then click the 'OK' button.
12. Select your monitor model and click on the 'Next' button.
    - If you can see the 'has not passed Windows® Logo testing to verify its compatibility with Windows® XP' message, please click on the 'Continue Anyway' button.
13. Click on the 'Finish' button then the 'Close' button.
14. Click on the 'OK' button and then the 'OK' button again to close the Display_Properties dialog box.

If your Windows® 95/98/2000/Me/XP version is different or you need more detailed installation

information, please refer to Windows® 95/98/2000/Me/XP user's manual.

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