

Installation and Operating Instructions

Product Information

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Product Features

150MT2

- 15-inch XGA LCD all-in-one Monitor TV with excellent display performance
- Multiple video input allowing display of PC, TV, HDTV (the US/Canada/Korea/Taiwan), VCD, DVD, Progressive DVD and CamCorder
- Digital High Definition Picture (1080i / 720p / 576P / 480P)
- DCDi™ for superior depiction of motion
- Picture-in-Picture (PIP) function in VGA mode
- Light sensor to automatically adjust brightness
- Teletext (available only in Asia Pacific and Western Europe)
- Digital Nicam/2CS stereo (available only in Asia Pacific and Western Europe)
- Component Video Input (YPbPr/YCbCr) for DVD (available in Asia Pacific and NTSC system areas)
- Euroconnector (SCART) (available in Western Europe)
- MultiSystem TV tuner-PAL/NTSC (available in most of the Asia Pacific area)
- Hotel application available by disabling control key/remote control and using reserved lock port on tuner/AV box

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Technical Specifications*

LCD PANEL	
• Type	TFT LCD
• Screen size	15 inch
• Pixel Pitch	0.297 x 0.297mm
• LCD Panel type	1024 x 768 pixels R.G.B. vertical stripe Anti-glare polarizer
• Effective viewing area	(H) 304.1 x (V) 228.1mm
• Display Colors	8 bits interface (16.7M colors)
PC SCANNING	
• Vertical refresh rate	56Hz-75Hz

• Horizontal frequency	31kHz-63kHz
PC VIDEO	
• Video dot rate	80 MHz
• Input impedance	
- Video	75 ohm
- Sync	2K ohm
• Input signal levels	0.7 Vpp
• Sync input signal	Separate sync
• Sync polarities	Positive and negative
• Input Frequency	XGA Hsync 48- 63 kHz, Vsync 60 - 75 Hz (N.I.) SVGA Hsync 35- 50 kHz, Vsync 56 - 75 Hz (N.I.) VGA Hsync 31- 38 kHz, Vsync 60 - 75 Hz (N.I.)
• Video interface	D-sub, S-Video, TV-RF, SCART (Europe) or composite and components video (others)
AUDIO	
• Input level for PC/SVHS/SCART	500 mV nominal
• Headphone out signal level	4mW max.
• Loudspeaker	5W Stereo Audio (2.5W/channel RMS x2, 200Hz~10kHz, 4 ohm, 10% THD)
OPTICAL CHARACTERISTICS	
• Contrast ratio	500:1 (typ.)
• Brightness	310 cd/m ² (typ.)
• Peak contrast angle	6 o'clock
• White Chromacity	x: 0.281 y: 0.311 (at 9300° K) x: 0.312 y: 0.338 (at 6500° K)
• Viewing Angle (C/R ≥5)	Upper ≥55° (typ.) Lower ≥65° (typ.) Left ≥70 ° (typ.) Right ≥70 ° (typ.)
• Response time	≤25ms (typ.)

* This data is subject to change without notice.

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

15 user definable modes

17 factory preset modes:

Resolution	Mode	H. freq (kHz)	V. freq (Hz)
------------	------	---------------	--------------

PC

640*350	VGA-1	31.469	70.086
640*480	VGA VESA 60	31.469	59.940
640*480	Mac 13	35.000	66.667
640*480	VGA VESA 75	37.500	75.000
720*400	IBM VGA 3H	31.468	70.087
800*600	SVGA VESA 56	35.156	56.250
800*600	SVGA VESA 60	37.879	60.317
800*600	SVGA VESA 75	46.875	75.000
832*624	Mac 16	49.724	74.550
1024*768	XGA VESA 60	48.363	60.004
1024*768	XGA VESA 75	60.023	75.029

Video

Video	60Hz	15.734	59.940
Video	50Hz	15.625	50.000

Progressive Video

HDTV	480P	31.470	60.000
Pr. Component	576P	31.250	50.000
HDTV	1080i	33.750	60.000
HDTV	720P	45.000	60.000

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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 then '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	48W (typ.)	Blue
OFF	Blanked	No	No	< 2W	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

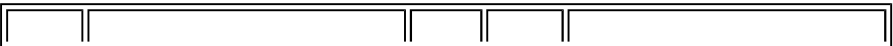
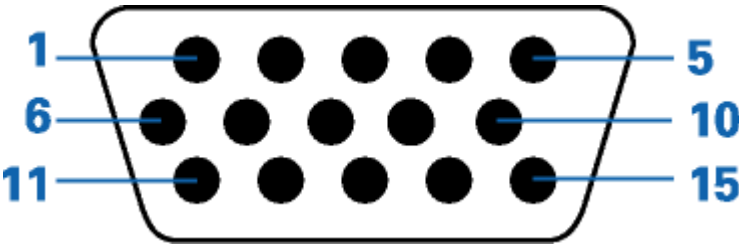
• Dimension (WxHxD)	392 x 374.1 x 167.8 mm (incl. Pedestal)
• Weight	4.1 kg
• Tilt (Forward / Backward)	- 5° / 25°
• Power supply	100 — 240 VAC, 50/60 Hz
• Power consumption	48 W (typ.)
• Temperature (operating)	0° C to 35° C
• Relative humidity	20% to 80%
• System MTBF	50K hrs (excluding CCFL 40Khrs)

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

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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	10	Logic ground
3	Blue video input	11	Ground
4	Ground	12	Serial data line (SDA)
5	Ground	13	H. Sync
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

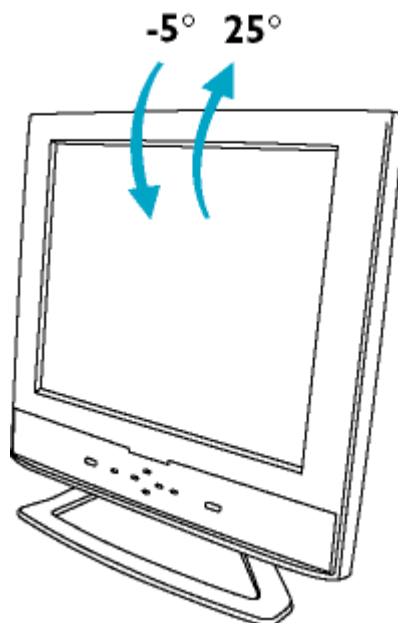
Follow the links to see various views of the monitor and its components.

[Front View Product Description](#)

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Physical Function

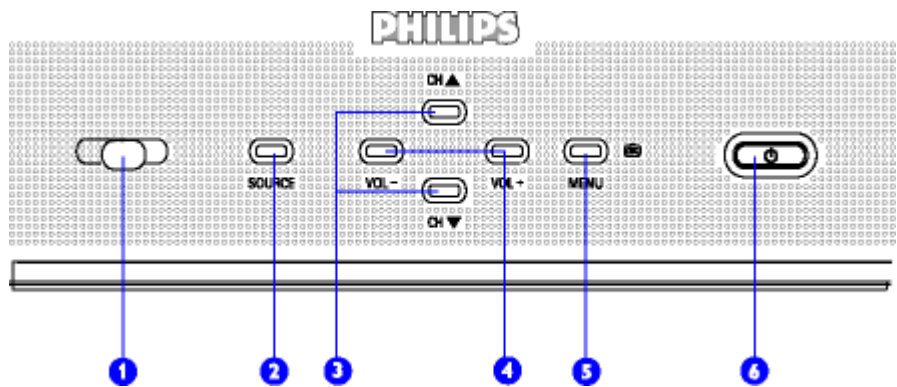
Tilt






Installing your LCD Monitor/TV

[Front View Product Description](#) • [Connecting to Your PC, TV antenna, DVD/VCR etc.](#) • [Rear and Re-installing the Base](#) • [Basic Monitor TV Connections](#) • [Getting Started](#) • [Optimising Performance](#)

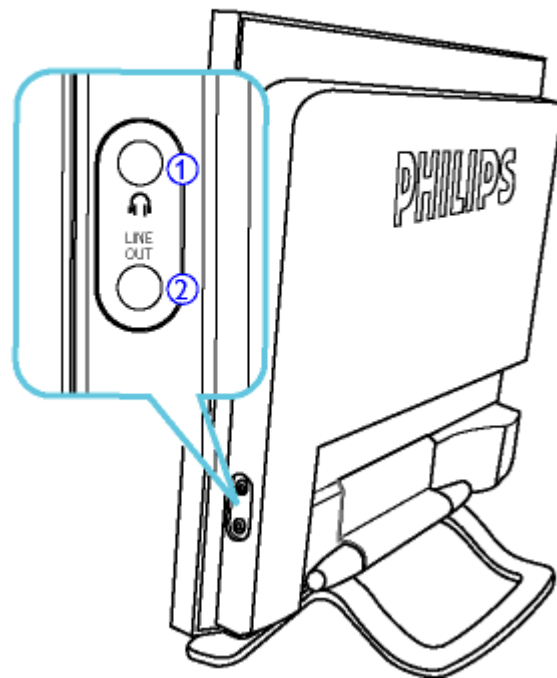
Front View Product Description



- | | | |
|---|---|---|
| 1 | Receiver Window | Receiver for 'remote control' and 'Light Sensor' |
| 2 | SOURCE | TV/Video source selection |
| 3 |  | Increase or decrease the channel number
or
up or down the highlighted function in OSD |
| 4 |  | Increase or decrease the level of audio volume
or
move up or down the highlighted function in OSD |
| 5 | MENU OK | Open the OSD and select the highlighted function |
| 6 |  | Power switch On/Off |

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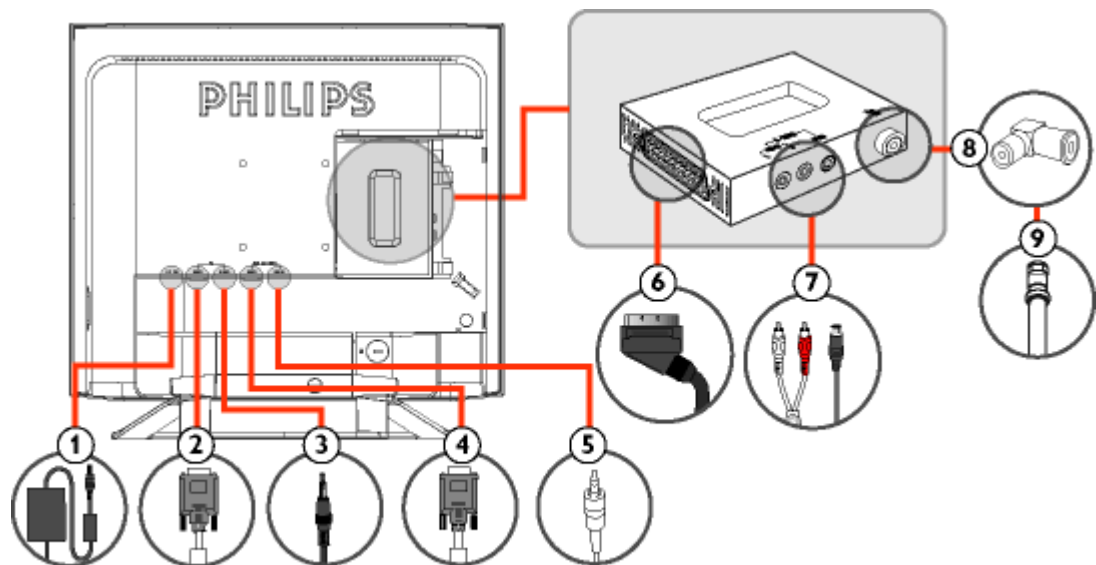
Side View



1. Headphone Jack
2. LINE OUT Jack

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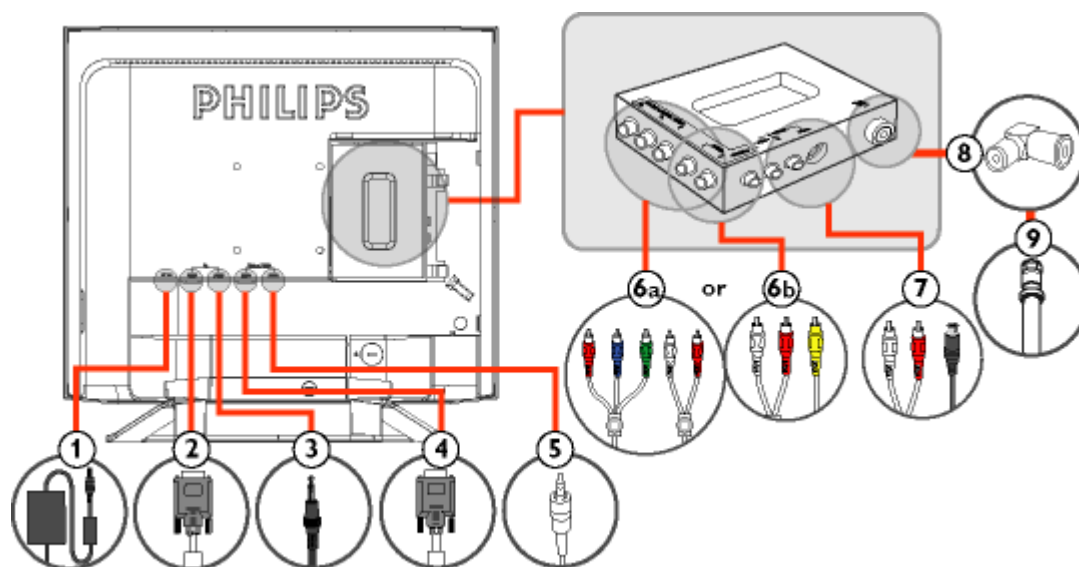
Rear View



(Europe)


1	DC 12V	DC 12V power in
2	PC - Video	D-Sub input
3	PC - Audio	PC Stereo input
4	Progressive - Video	D-Sub input
5	Progressive - Audio	Audio input
6	EXTERNAL/ EURO-AV	SCART connection (for Europe only)
7	S-VIDEO (L) S-VIDEO (R)	AV audio (L) AV audio (R)
8	Tuner adapter	
9	75 Ω	TV Antenna or CATV cable in

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(Americas and Asia Pacific)

1	DC 12V	DC 12V power in
2	PC - Video	D-Sub input
3	PC - Audio	PC Stereo input
4	Progressive - Video	D-Sub input
5	Progressive - Audio	Audio input
6a	L R - AV IN Y-Pb-Pr Component	AV input

6b	CVBS	AV input
7	S-VIDEO (L)	AV audio (L)
	S-VIDEO (R)	AV audio (R)
8	Tuner adapter	
9	75 	TV Antenna or CATV cable in

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Optimizing Performance

- For best performance, ensure that your display settings are set at 1024x768@60Hz (for 15") or 1280x1600@60Hz (for 18").



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

- You can also install the [Flat Panel Adjust \(FP Adjust\) program](#), a program for getting the best performance of your monitor. This is included on this CD. Step-by-step instructions are provided to guide you through the installation process. Click on the link to find out more about this program.

More about



[FP_setup03.exe](#)

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Connecting to Your PC, TV Antenna, DVD/VCR etc.

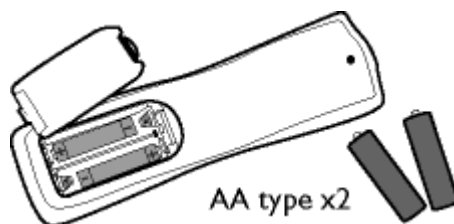
[Front View Product Description](#) • [Accessory Pack](#) • [Connecting to Your PC, TV Antenna, DVD/VCR etc.](#) • [Removing and Re-installing the Base](#) • [Basic Monitor TV Connections](#) • [Getting Started](#) • [Optimising Performance](#)

Accessory Pack

Unpack all the parts.



Power cable



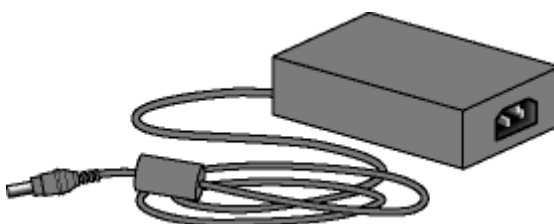
Remote control & batteries



PC audio-in cable



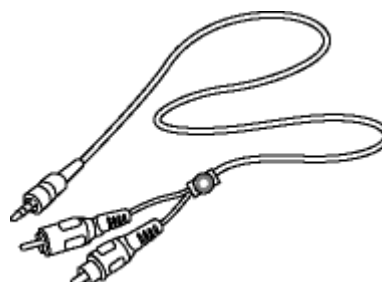
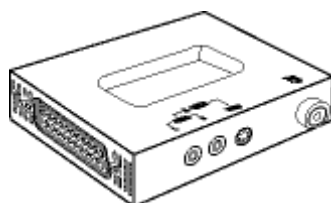
VGA signal cable



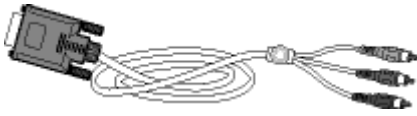
Power adapter
(Use only AC/DC adapter
model 0218B1255)



E-DFU pack



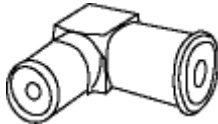
TV/AV module



Mini jack to RCA audio-in cable



D-sub to YPbPr adapter cable



Bracket



Tuner adapter

Security screw

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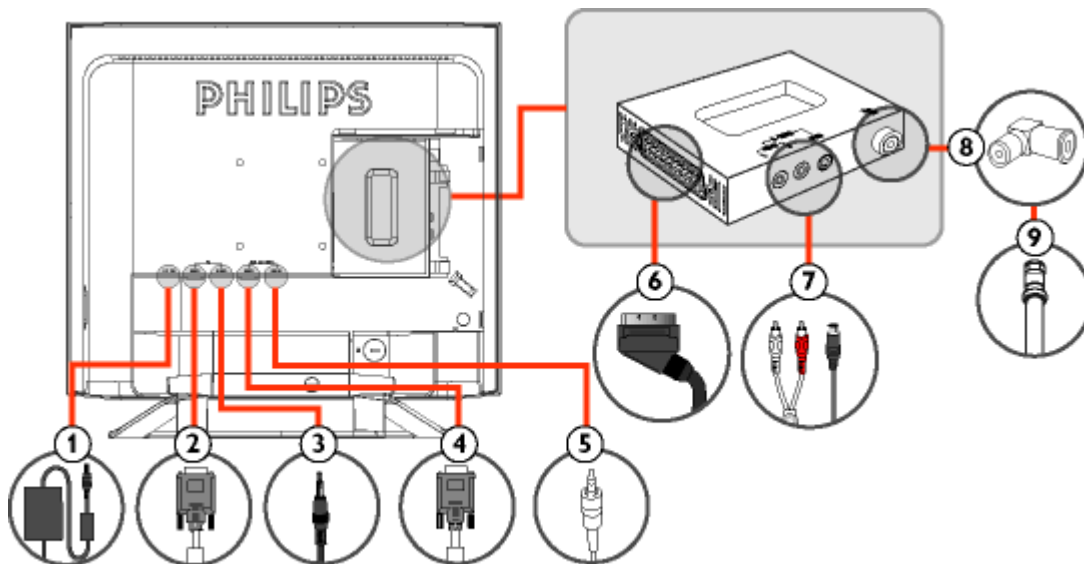
Setting up and connecting your monitor/TV

Ensure that the power to the monitor/TV is switched off before the installation.

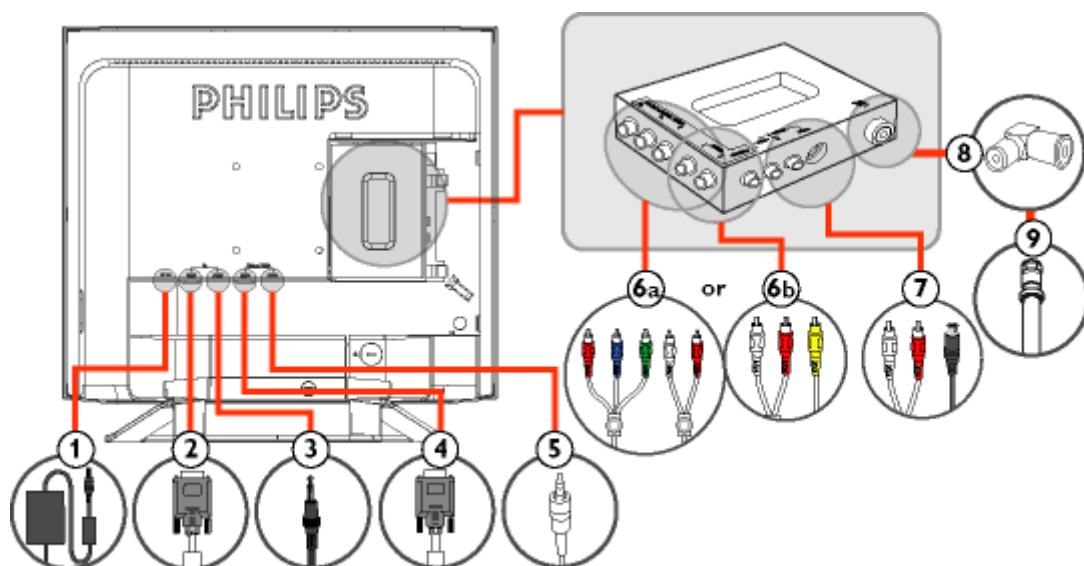
- Connecting the monitor/TV

- Connect the cables to the back of your monitor/TV by following step 1~9:

(Europe)



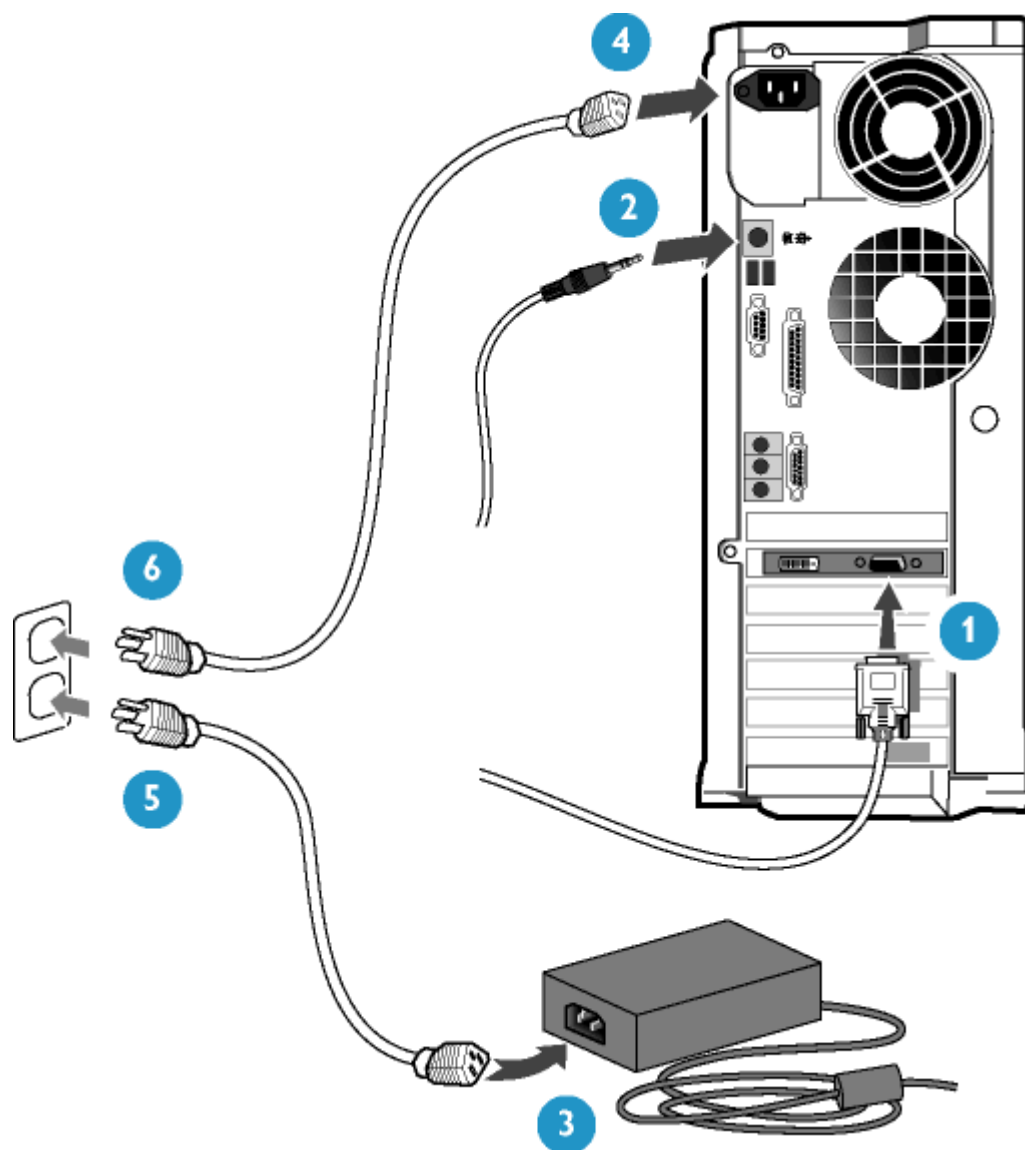
(Americas and Asia Pacific)



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- Connect to PC

- Connect the cables to the back of your computer by following step 1~6
- If your monitor displays the computer image the installation has been completed successfully.
- If installation was not successful, see the [Troubleshooting](#) section.
- For installation of the monitor driver for Microsoft Windows, see the Monitor Driver Installation section ([Getting Started](#)).

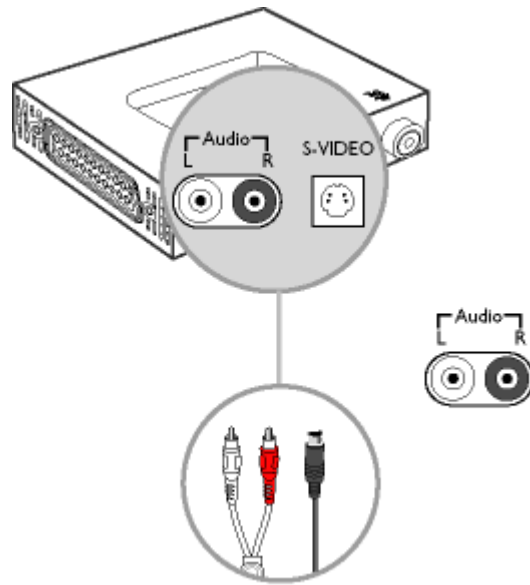


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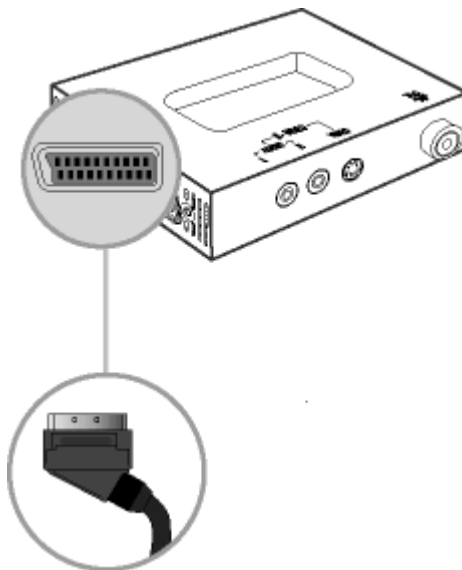
- Connect to DVD/VCD/VCR

Connect to DVD/VCR/VCD through S-VIDEO

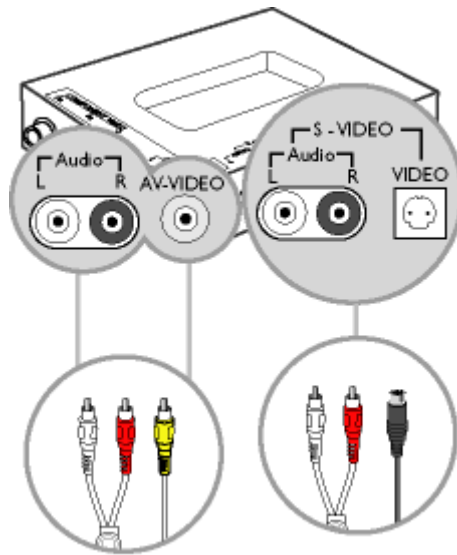
- Connect to DVD/VCR/VCD through S-VIDEO



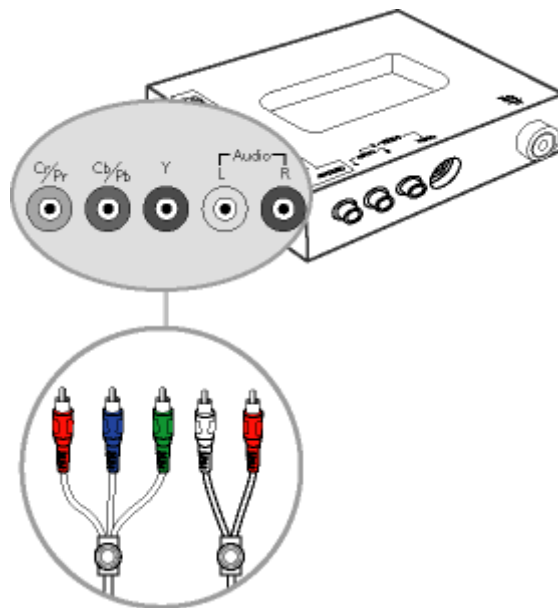
- Connect to DVD/VCR /VCD through SCART (for Europe)



- Connect to DVD/VCR /VCD through composite video & S-video (for AP and Americas)



- Connect to DVD/VCR /VCD through component video (for AP and Americas)



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Regulatory Information

[TCO '99 Information](#) • [TCO Environmental Requirements](#) • [CE Declaration of Conformity](#) • [Energy Star Declaration](#) • [Federal Communications Commission \(FCC\) Notice \(U.S. Only\)](#) • [Commission Federale de la Communication \(FCC Declaration\)](#) • [EN 55022 Compliance \(Czech Republic Only\)](#) • [VCCI Class 2 Notice \(Japan Only\)](#) • [MIC Notice \(South Korea Only\)](#) • [Polish Center for Testing and Certification Notice](#) • [North Europe \(Nordic Countries\) Information](#) • [BSMI Notice \(Taiwan Only\)](#) • [Ergonomie Hinweis \(nur Deutschland\)](#) • [Philips End-of-Life Disposal](#) • [Information for UK only](#)

[Safety and Troubleshooting](#) • [Troubleshooting](#) • [Other Related Information](#) • [Frequently Asked Questions \(FAQs\)](#)

TCO '99 Information



Congratulations! You have just purchased a TCO '99 approved and labeled 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.

Why do we have environmentally labeled computers?

In many countries, environmental labeling 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 labeling involve?

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

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

The environmental 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

Energy Star Declaration

PHILIPS 150MT2

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	Blue	48 W (typical)
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 aux limites des appareils numériques de class B, aux termes de l'article 15 Des règles de la FCC. Ces limites sont conçues de façon à fournir 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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EN 55022 Compliance (Czech Republic Only)

Brief Description of Circuit Functions

1. General Description

This LCD monitor TV support analog PC VGA signal up to 1024X768 75HZ XGA mode for 15" model and 1280X1024 75Hz SXGA mode for 18" model.

And it can also support TV, YC, CVBS or Y Cb Cr signal input (from Cinch I/O) , CVBS or R G B signal (from SCART I/O). And it can also support 480I, 480P, 720P, 1080i 60Hz HDTV input and 576I, 576P, 720P, 1080I 50Hz HDTV input. Official HD timing: 480P 60, 576P 50, 720P 60, 1080i 60.

The PIP function allows user to watching TV while using the PC.

This LCD monitor TV use two CPU one is for Scaler engine and the other is for TV signal Control.

One Philips CPU P87C51MC2BA CPU is used for the scaling control. It is used to control PC VGA input signal, display OSD, back light control. P87C51MC2BA is an standard 8051 base MCU. The program code is stored in one 256K (64K X 4 banks) flash ROM.

The other CPU is Philips Painter I SAA5564. It is used for Teletext, C.C., V-chip, RC keypad input processing. TV tuning control, sound system detect and sound control, SAA7118 color decoding are all controlled by painter I. This CPU will detect the PC H, V input for PC mode power saving control.

These two CPU are connected via I2C for communication. Scaler CPU is Master, and painter CPU is slave.

PC video is connected to scaller. This scaler has internal ADC. So no external ADC Is needed.

Video decoder SAA7118 is used for TV video processing and convert it with CCIR 656 8bits digital format and send to De-interlace IC S2300 for de-interlace process, then S2300 will send RGB format digital signal to scaler IC JAGASM is used for picture Scaling process, Finally, JAGASM will output 48 bits TTL RGB signals to LCD panel for picture display.

One audio decoder MSP34XXG is used for TV sound processing.

Followings are the key devices and function that scaler CPU and Painter I have to control.

Scaler CPU:

1. Sage JASM Scaler IC with A/D converter>digitized the VGA RGB signal. And format the digitized RGB signal to the data Format that LCD panel can accept.
2. Size and phase clock auto adjustment.
3. Back light brightness and on-off control.
4. VGA mode detection and IC register setting.
5. S2300 de-interlace IC...>de-interlace the video signal.
6. PIP function. The MCU control the PIP picture size and position.
7. Panel power on/off.
8. Interrupt request from painter for OSD and other function control
9. Backlight Brightness control range 0 - 4.7V from JASM's PWM.
10. Factory alignment command receiver.
11. Control AD9883 A/D converter for HDTV input.

Painter I:

1. RC remote control
2. Keyboard control :
Up , Down , Left , Right , Enter , Auto
3. TV source select and small signal process control.
4. Power LED control.
5. Power management for PC and TV
6. Video decoder SAA7118....> decode CVBS, S-video, RGB, YUV, and Teletext,CC.
Mixer
7. Multimedia tuner control (Philips MK3 family)
8. TV sound decoder (Micronas MSP34X5G family) for TV sound process.
9. CC, Teletext, V-chip decoding and OSD for CC and Teletext.
10. Sound mute, volume and sound effect control
11. Light sensor ADC.

2. COLOR ADJUSTMENT

VGA mode :

Control JAGASM Scaler for contrast, brightness, R,G,B gain and R,G,B CUT-OFF adjustment .

TV / Video mode :

TV white balance was adjust by scaler color lookup table.

For normal, warm, cool color setup is done by color lookup table.

Normal set to original panel color, warm set to 6500, cool set to 9300.

User Brightness and contrast, color, tint, are adjusted by SAA7118 via painter .

HDTV mode:

User Brightness and contrast, color, are adjusted by S2300 via painter .

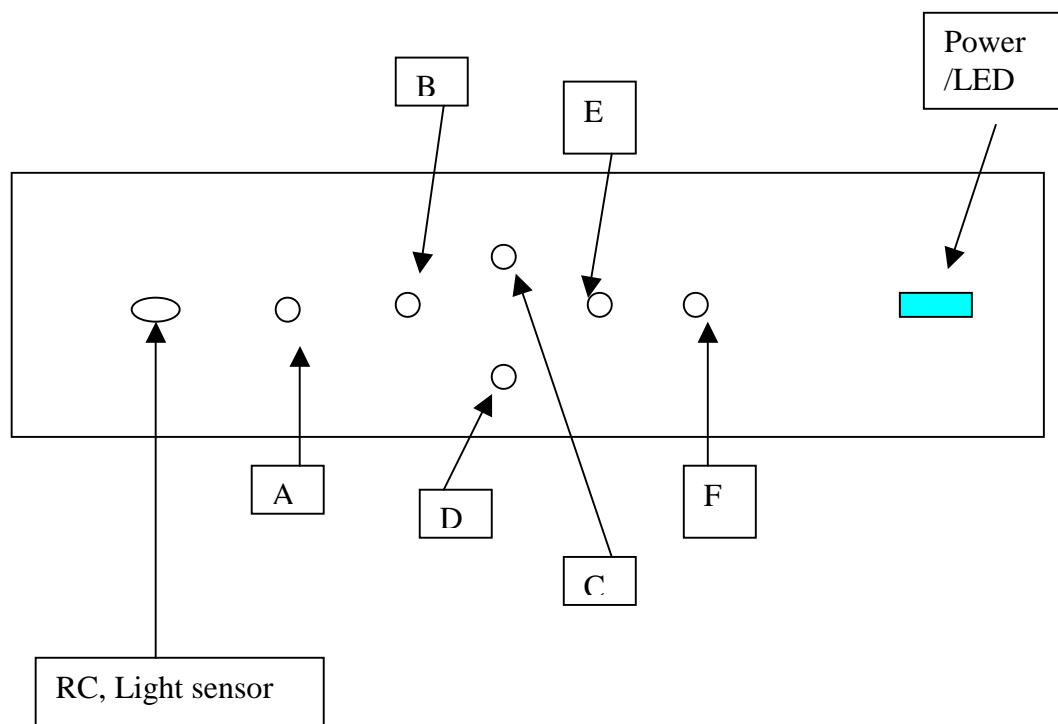
For normal, warm, cool color setup is done by color lookup table.

3. Factory alignment and DDC dada

VGA and TV factory alignment use HDTV interface cable .

4. Keyboard definition

4.1 Control Board touch control keys



4.2 Control Key Definition

There are 7 keys used in LCD monitor TV.

<A> <C> <D> <E> <F> <Power/with LED>

Key name	Function	VGA mode	TV/video mode
<A>	Source select DTV, TV,AV..		
	left/Volume down	Left/Volume down	Left/Volume down
<C>	Up/Channel up	Up	Up/Channel up
<D>	Down/channel down	Down	Down/Channel Down
<E>	Right/Volume up	Right/Volume up	Right/Volume up
<F>	Enter	Enter	Enter

PC mode Auto adjustment hot key press <C> and <D> and the same time for 2 secs.

Power LED:

Normal working ON.

Power saving Amber LED on.

5. Power Management Remark :

1. S1 DC power switch is used to cut all supply.
2. Soft Power off mode :
When remote controller power key was pressed.
S2 will be open and set enter sleeping mode .
3. Monitor power saving :
Normal working mode: PC H-Sync and V-Sync present.
Painter stand-by pin , output “H” to turn on S2

Sleeping mode

(Suspend, standby, off mode):

At PC mode:

When PC H-Sync or V-Sync do not present for 3 sec. painter

Will tell the scaler and then Scaler will send

“ No Signal Input “ message to Panel to display .

2 second later stand-by pin output “Low “ signal to turn off S2 for Monitor DPMS .

At PIP mode:

Same as PC mode

6. HDTV input

HD input connector:

One VGA 15 pin D-sub connector is used for HDTV video input.

PIN No.	SIGNAL
1	Red/ Pr
2	Green/ Y
3	Blue/ Pb
4	Gnd
5	Gnd
6	Red/Pr GND
7	Green/Y GND
8	Blue/Pb GND
9	NA
10	Sync GND
11	Sense (GND)
12	Factory Txd
13	H-sync(H+V)
14	V-sync
15	Factory Rxd