



P4815

hp92

19-inch Color Monitor
18.0-inch Viewable Image
User's Guide



Notice

The information contained in this document is subject to change without notice.

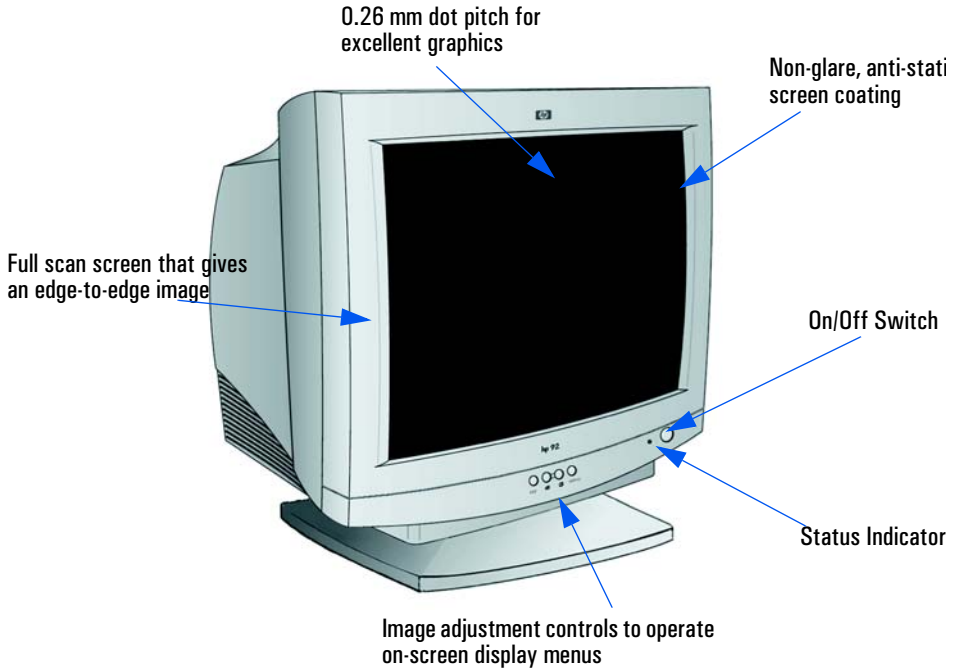
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hp 92 P4815 19-inch Color Monitor (18.0-inch Viewable Image)

User's Guide

Important Safety Instructions

WARNING

For your safety always connect equipment to a grounded wall outlet. Always use a power cord with a properly grounded plug, such as the one provided with the equipment, or one in compliance with your national safety standards. This equipment can be disconnected from the power by removing the power cord from the power outlet. This means the equipment must be located close to an easily accessible power outlet.

To avoid electrical shock, do not open the monitor's cover. There are no user-serviceable parts inside. Only qualified service personnel should service these parts.

Make sure your computer is powered off before connecting or disconnecting a display peripheral.

Working in Comfort

Thank you for selecting HP monitor equipment.

To optimize your comfort and productivity, it's important that you set up your work area correctly and use your HP equipment properly. With that in mind, we have developed some setup and user recommendations for you to follow based on established ergonomic principles.

You can consult the online version of Working in Comfort preloaded on the hard disk of HP computers, or visit HP's Working in Comfort web site at:

<http://www.hp.com/ergo/>

CAUTION

The monitor is quite heavy (the weight is shown in the technical specifications). We recommend you ask the assistance of a second person when lifting or moving it.



The lightning flash with arrowhead symbol, situated within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" which may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and servicing instructions in the literature accompanying the appliance.

What Your New Monitor Offers

Your HP monitor is a 19-inch (18.0-inch viewable image), high resolution, multi-synchronous color monitor. Multi-synchronous means that the monitor supports a range of video modes. It is optimized for use with all Hewlett-Packard computers.

Your HP color monitor has the following features:

- A 19-inch flat square tube with a 18.0-inch viewable image. 0.26mm dot pitch for excellent graphics and anti-static and anti-glare coating to minimize reflection.
- Support for Ultra VGA 1600 x 1200 at 75 Hz refresh rate.
- Image adjustment using on-screen display menus. Includes color adjustment to optimize the quality of the image.
- Monitor power management system (VESA¹ standard) controlled from suitably equipped HP computers to automatically reduce the power consumption of the monitor. Complies with the Energy Star Computers Program initiated by US EPA². As an ENERGY partner, HP has determined that this product meets the ENERGY STAR guidelines for energy efficiency³.
- Monitor Plug and Play capability (VESA DDC1/2B standard) that enables the monitor to identify itself to suitably equipped HP computers.
- Compliance with ISO 9241-3/-7/-8 ergonomic standards.
- Complies with MPRII and MPRIII level B guidelines for upper limits of electrostatic and magnetic field emissions from the Swedish National Board for Measurement and Testing.
- Your monitor complies with TCO99 requirements. (Refer to "TCO99 Ecology Energy Emission Ergonomics" on page 17).
- Your monitor is Blue Angel compliant. Its cathode ray tube does not contain cadmium.
- HP guarantees the availability of spare parts for a period of 5 years after production stop of the model.

1. VESA is the Video Electronics Standards Association.

2. The US EPA is the United States Environmental Protection Agency.

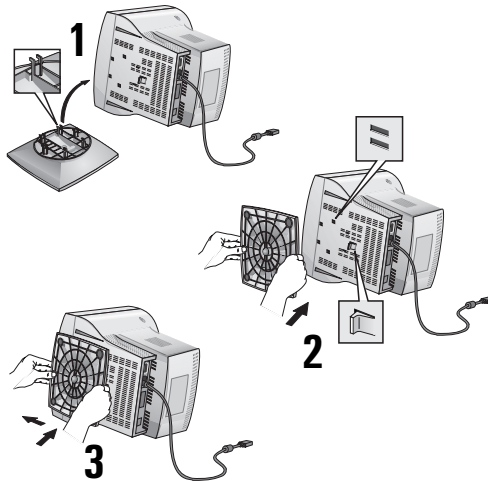
3. ENERGY STAR is a US-registered service mark of the USEPA.

Setting Up Your Monitor

Attaching the Tilt and Swivel Base

Your display has a tilt and swivel base. To fit the swivel base:

- 1 Turn the monitor on its side (never on the screen). Identify the front of the base.
- 2 Locate the slots in the underside of the monitor.
- 3 Slide the base towards the front of the monitor until the locking tab on the base clicks into place.



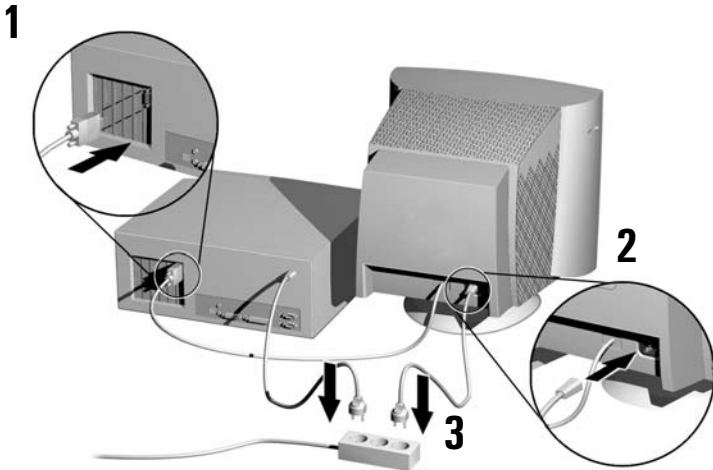
Where to Place the Monitor

Place your monitor on a flat sturdy surface. Ensure the operating site is free from excessive heat, moisture, dust and sources of electromagnetic fields. Sources of electromagnetic fields include transformers, motors, and other monitors. Avoid exposing the monitor to direct sunlight.

Connecting the Cables

CAUTION

Before you connect any cables or install your HP monitor, refer to the safety instructions at the beginning of this manual. Refer to the user manual which accompanies your computer and video adapter to ensure this equipment is correctly installed.

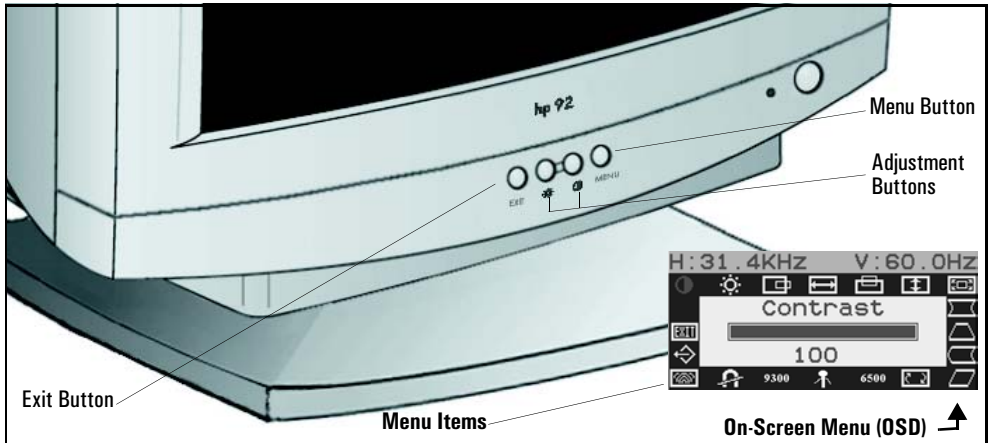


- 1 Ensure your computer is switched off.
- 2 Connect the video cable (it has a 15-pin plug) to the video outlet on your computer. Tighten the thumbscrews on the plug.
- 3 Connect the power cord to the monitor.
- 4 Plug the power cord into the power outlet.

NOTE



The location of your computer's video cable connector may be different to the one shown. Refer to the manual that came with your computer, if necessary.

Using Your Monitor



- 1 Press the **Menu** button to activate the on-screen display (OSD).
- 2 Use the **Adjustment buttons** to scroll to the menu item you require. To choose a menu item press the **Menu** button.
- 3 To adjust the setting of your chosen menu item, use the **Adjustment buttons**. Your settings are automatically saved.
- 4 Press the **Exit** button to exit the on-screen display.

Refer to the table on the next page for a description of menu items.

You can directly access the brightness  and contrast  menu by pressing the adjustment button which shows the brightness and contrast icon.

NOTE

Your monitor is automatically demagnetized each time it is switched on. This ensures color purity. To maintain color purity, we recommend that each week you switch the monitor off for at least 30 minutes.

Use the table below to determine which menu item you require:

Menu Item	Use to Adjust...
 Brightness	the brightness (image black level).
 Contrast	the contrast (image white level).
 H-Center	the horizontal position of the displayed image.
 H-Size	the horizontal size of the displayed image.
 V-Center	the vertical position of the displayed image.
 V-Size	the vertical size of the displayed image.
 Zoom	the size of the displayed image.
 Pincushion	the vertical edges if they appear to curl inwards or outwards.
 Trapezoid	the vertical edges if they do not appear to be parallel.
 Pinbalance	the vertical edges if they appear to curl to the left or right.
 Parallelogram	the vertical edges if they appear to tilt to the left or right.
 Rotation	the displayed image if it appears to be rotated.
6500	the recommended color temperature setting (blue level).
 Color Temperature	the color temperature of your monitor.
9300	the recommended color temperature setting (red level).
 Degauss	unwanted magnetism that can result in color impurity.
 Moire	the effects of horizontal screen ripple.
 Recall	geometry settings preset at factory.
Exit Exit	to exit the on-screen display.

Setting the Amount of Displayed Information

It is recommended that you use a resolution of 1280 x 1024 at 85 Hz. This gives easy-to-read characters, a large amount of displayed information and a flicker-free image.

You can make adjustments to the displayed image which are automatically saved for the resolution you are using. For example, if you adjust your monitor when working in SVGA, those settings are saved for SVGA. If you then work in VGA and change the image settings, they are saved for VGA. The next time you switch back to SVGA your previous settings are used automatically.

To find out which resolutions are supported by your monitor, refer to "What Video Modes are Supported" on page 9. To change the screen resolution, please refer to the manual that came with your computer or your operating system documentation.

Your monitor has a Plug and Play capability (VESA DDC1/2B standard) which enables it to identify itself to suitably equipped HP computers. This will automatically give you the best refresh rate for the resolution that you have set. Also, by using the appropriate software (when available) you can adjust the monitor settings directly from your computer.

Supported Video Modes

Your monitor supports the video modes shown in the table below.

Screen Resolution	Image Refresh Rate
640 × 350	70 Hz
640 × 400	70 Hz
640 × 480	75, 85 Hz
800 × 600	75, 85 Hz
1024 × 768	75, 85 Hz,
1280 × 1024	75, 85 Hz
1600 × 1200	75 Hz

CAUTION

Selecting a video mode on your computer with a screen resolution and image refresh rate combination higher than 1600 × 1200 at 75 Hz can damage your monitor. Selecting a video mode not supported by your monitor will cause your monitor screen to go blank.

Minimizing Eye Strain

To avoid screen flicker and minimize eye strain, use the highest supported image refresh rate for the chosen resolution. It is recommended that you use a refresh rate of 85 Hz. The image refresh rate is the number of times per second that the image is refreshed.

Minimizing Energy Consumption

If your computer supports VESA monitor power management (available on many HP computers), you can minimize the power consumed by the monitor. There are two power saving modes:

- Suspend mode¹ (uses less than 5W). In this mode, the monitor's front panel indicator light is amber.
- Active off mode² (uses less than 5W). In this mode, the monitor's front panel indicator light is amber.

To set these power saving modes, refer to the manual that came with your computer. If your screen is not displaying an image, check the front panel indicator light first as your monitor may be in a power saving mode.

1.Suspend mode is activated when vertical sync is cut by the video controller.

2.Active off mode is activated when both vertical and horizontal sync are cut by the video controller.

Troubleshooting

Before calling Hewlett-Packard check the following items:

No picture and LED is off.

- Check if monitor is switched ON.
- Check if power cord is properly connected.
- Check if electrical outlet is connected.
- Test if monitor works on another computer previously set to monitor's supported resolution.

No picture and LED is on.

- Check if monitor is not in power saving mode.
- Adjust contrast and brightness through the On-Screen Menu (OSD) using the control buttons.
- Check if computer is switched on.
- Check if video cable has no bent pins.
- Test if monitor works on another computer previously set to monitor's supported resolution.

Colors are not pure.

- Degauss your monitor
- Shut down your monitor and switch it on after 30 minutes.

Picture is not centered.

- Adjust picture through the On-Screen Menu (OSD) using the control buttons.

Picture is fuzzy.

- Use the Recall function.
- Reduce contrast through the On-Screen Menu (OSD) using the control buttons.
- Adjust moire reduction to zero.

Technical Specifications

PICTURE TUBE	Size	19-inch flat square tube 18.0-inch viewable image (353mm)
	Phosphorous	Red, Green, Blue P22 (medium short persistence)
	Dot pitch	0.26mm
	Face Plate	Anti-glare, anti-static, screen coating
INPUT SIGNAL	Video	0.7V p p analog RGB
	Synchronization	TTL level separate synchronization (negative/positive)
INTERFACE	Input Connector	15-pin mini D-SUB
SCANNING FREQUENCY	Horizontal	30 to 95 kHz
	Vertical	50 to 160 Hz
DISPLAY SIZE	366 x 273 mm ± 1mm maximum viewable size	
MAX RESOLUTION	1600 x 1200 (75Hz)	
RECOMMENDED RESOLUTION	1280 x 1024 (85 Hz)	
WARM-UP TIME	30 minutes to reach optimum performance level	
PIXEL CLOCK	203 MHz	
POWER SOURCE	~ 100 to 240 V, ~ 50 to 60Hz Current 1.5 A (1,5A)	
POWER MANAGEMENT	ON 125W (max)	LED Green
	Standby mode low	LED Amber
	Suspend mode 5W	LED Amber
	Active off mode 5W	LED Off
	Power off mode 1W	LED Off
OPERATING ENVIRONMENT	Temperature	0°C to 40°C
	Humidity	10% RH through 80% RH (without condensation)
DIMENSIONS	436 (H) × 446(W) × 455(D) mm (including pedestal)	
WEIGHT	18.4Kg (18,4Kg)	
TILT/SWIVEL STAND	Tilt Angle	- 5° to + 12.5° (12,5°)
	Swivel Angle	± 45°

NOTE

When the monitor is turned off with the power button on the front panel, the power consumption falls below 1W but is not zero. To reach zero power consumption in "off" mode, either unplug the power outlet or use a power block with a switch.

Care and Cleaning

Do not place anything on top of the monitor. Doing so may block the monitor vents and cause damage to the monitor due to overheating. Do not let liquid get on or into the monitor. To maximize screen life and prevent damage to the picture tube (such as burned phosphor due to leaving the same image on the screen for a long time), it is recommended that you:

- Use the monitor power management system (on HP computers) or a screen saver program.
- Avoid setting contrast and brightness to their maximum levels for prolonged periods.
- If you do not have a power management system or a screen saver program, switch the monitor off or reduce the brightness and contrast to minimum levels when the monitor is not in use.

Your monitor has an anti-glare, anti-static screen coating. To prevent damage to the monitor screen's coating, use a regular household glass cleaner when cleaning the screen. To clean the screen:

- 1 Switch the monitor off and remove the power plug (pull out the plug, not the cable).
- 2 Wet a soft cotton cloth with the cleaning solution and gently wipe the screen. Do not spray cleaner onto the screen because the cleaner may drip inside the monitor.
- 3 Dry with a clean, soft cotton cloth. Do not use cleaning solutions containing fluoride, acids or alkalis.

Environmental Information

HP has a strong commitment toward the environment. Your HP monitor has been designed to respect the environment as much as possible.

HP can also take back your old monitor for recycling when it reaches the end of its useful life. In fact, HP has a product take-back program in several countries. The collected equipment is sent to one of HP's recycling facilities in Europe or the USA. As many parts as possible are reused. The remainder is recycled. Special care is taken for batteries and other potentially toxic substances, which are reduced to non-harmful components through a special chemical process. If you require more details about HP's product take-back program, contact your dealer or your nearest HP Sales Office.

Hardware Warranty

PART I - HP General Hardware Warranty

General

This HP Monitor Hardware Warranty Statement gives you, the customer, express warranty rights from HP, the manufacturer.

FOR CONSUMER TRANSACTIONS IN AUSTRALIA AND NEW ZEALAND: THE WARRANTY TERMS CONTAINED IN THIS STATEMENT, EXCEPT TO THE EXTENT LAWFULLY PERMITTED, DO NOT EXCLUDE, RESTRICT OR MODIFY AND ARE IN ADDITION TO THE MANDATORY STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.

THE LAWS OF YOUR COUNTRY MAY PROVIDE FOR DIFFERENT WARRANTY RIGHTS. IF SO, YOUR AUTHORIZED HP DEALER OR HP SALES AND SERVICE OFFICE CAN PROVIDE YOU WITH DETAILS.

Warranty repair or replacement.

Warranty Period	Service provided	
3 years - unless original end-user customer has otherwise agreed to a shorter period of warranty at the time of purchase.	US and Canada: Return to HP or repair authorized center for 3 years.	B
	US and Canada: 3 years second next business day on-site exchange (direct replacement).	F
	Europe only: 3 years next business day on-site exchange (swap out).	E
	Rest of the world: On-site service for first year, and return to an HP or repair authorized center for the following two years.	A
1 year.	Japan: Return to HP or a repair authorized service center for one year.	D
	Worldwide except Japan. On-site service.	C

Hewlett-Packard (HP) warrants this monitor hardware product, or accessory against defects in materials and workmanship for the applicable warranty period stated above, commencing from the date of delivery of the product to the end-user customer.

HP does not warrant that the HP hardware will operate uninterrupted or error free.

If, during the product warranty period, HP is unable, within a reasonable time, to repair or replace your product to the condition as warranted, you will be entitled to a refund (in the amount of the product purchase price) upon prompt return of the product to your authorized HP dealer or other HP designate. Unless otherwise stated or agreed upon in writing with HP, all hardware components must be returned for refund with the entire system process unit. HP software is covered by the HP Software Product Limited Warranty located in your HP product manual. Unless otherwise stated, and to the extent permitted by local law, hardware products may contain remanufactured parts (equivalent to new in performance) or parts which may have been subject to prior incidental use. HP may repair or replace hardware products (i) with products which are equivalent in performance to the products being repaired or replaced but which may have been subject to prior use, or (ii) with products which may contain remanufactured parts equivalent to new in performance or parts which may have been subject to prior incidental use.

Proof of Purchase and Warranty Period

In order to receive service or support for your hardware product for the warranty period, proof of the original purchase date of the product may be required in order to establish the delivery date of your product. If the delivery date is not available, either the purchase date or the manufacturer's date (located on the product) becomes the beginning of the warranty period.

Limitation of Warranty

Warranty does not apply to defects resulting from: (a) improper or inadequate maintenance or calibration; (b) software, interfacing, parts or supplies not supplied by HP; (c) unauthorized repair, maintenance, modification or misuse; (d) operation outside of the published operating specifications for the product; (e) improper site preparation or maintenance; or (f) such other exclusions as may be expressly set forth in this Warranty Statement.

HP MAKES NO OTHER EXPRESS WARRANTY, WHETHER WRITTEN OR ORAL, WITH RESPECT TO THIS PRODUCT.

TO THE EXTENT ALLOWED BY APPLICABLE LOCAL LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY SET FORTH ABOVE.

Limitation of Liability and Remedies

TO THE EXTENT ALLOWED BY APPLICABLE LOCAL LAW, THE REMEDIES IN THIS WARRANTY STATEMENT ARE YOUR SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL HP BE LIABLE FOR LOSS OF DATA OR FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGE, WHETHER BASED ON WARRANTY CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

The foregoing limitation of liability shall not apply in the event that any HP product sold hereunder is determined by a court of competent jurisdiction to be defective and to have directly caused bodily injury, death, or property damage. To the extent allowed by applicable local law, HP's liability for property damage does not exceed the greater of \$50,000 or the purchase price of the specific product that caused such damage.

Regulatory Information

DECLARATION OF CONFORMITY

According to ISO/IEC Guide 22 and CEN/CENELEC EN 45014

Manufacturer's Name: Hewlett-Packard France
Manufacturer's Address: 5, Avenue Raymond Chanas - EYBENS
38053 GRENOBLE CEDEX 09 - FRANCE
Declares, that the product(s): HP 19-inch (crt) Color Monitor P4815**
(* can be any alphanumeric character)

Conform to the following Product Specifications:

SAFETY -International: IEC 60950:1991 + A1 + A2 + A3 + A4 / GB4943-1995
-Europe: EN 60950:1992 + A1 + A2 + A3 + A4 + A11

ELECTRO MAGNETIC COMPATIBILITY

- CISPR 22:1997 / EN55022:1998 Class B
- CISPR 24: 1997 / EN55024:1998
- IEC 61000-3-3:1994 / EN61000-3-3:1995
- GB9254-1998
- FCC Title 47 CFR, Part 15 class B¹⁾
- ICES-003, Issue 3
- VCCI-B
- AS/NZ 3548:1995

Products bearing the CE marking⁽²⁾ also comply with: IEC 61000-3-2:1995 / EN 61000-3-2:1995 + A14

Those products comply with requirements of the following Directives and carry the CE marking accordingly: EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC, both amended by the Directive 93/68/EEC.

1) This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

2) All products sold in the European Economic Area (EEA) bear the CE Marking.



Grenoble
January 2002

Benoit MONTFORT
Display Manufacturing Engineering and Quality Manager

For Compliance Information ONLY, contact:

USA contact: Hewlett-Packard Company, Corporate Product Regulations Manager,
3000 Hanover Street, Palo Alto, CA 94304. (Phone (650) 857-1501).

Notice for the USA: FCC Class B Statement

Federal Communications Commission Radio Frequency Interference Statement Warning:

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 correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to an outlet on a different circuit to the one the receiver is connected to.
- Consult your dealer or an experienced radio/TV technician for help.

Hewlett-Packard's FCC Compliance Tests were conducted using HP-supported peripheral devices and HP shielded cables, such as those you receive with your system. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

Safety Warning for USA

If the power cord is not supplied with your monitor, select the proper power cord according to your national electric specifications.

- USA: use a UL listed SVT detachable power cord.

Hewlett-Packard's system certification tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you received with your system. Cables used with this computer must be properly shielded to comply with the requirements of the FCC.

Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

Notice for Canada

This Class "B" digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.

Notice for Japan

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取り扱い説明書に従って正しい取り扱いをして下さい。

Notice for Korea

사용자 안내문 (B급기기)
이 기기는 비업무용으로 전자파장애 검정을 받은
기기로서, 주거지역에서는 물론 모든 지역에서
사용할 수 있습니다.



TCO 99

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.

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?

This product meets the requirements for the TCO'99 scheme which provides for international and environmental 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) 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 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.

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

HP 19" Color Monitor User's Guide

Regulatory Information

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-accumulative¹ 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.

Cadmium²

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.

Mercury²

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.

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.

Lead²

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.

1. Bio-accumulative is defined as substances which accumulate within living organisms

2. Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative.