HEWLETT PACKARD

Expanding Possibilities

HP D2842A
HP D2842W

HP 90

19-inch Color Monitors
18-inch Viewable Image
User's Guide

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18 Zoll Bildanzeige
Benutzerhandbuch

Moniteurs couleur 19 pouces
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Manual del Usuario ***Léase esto primero***

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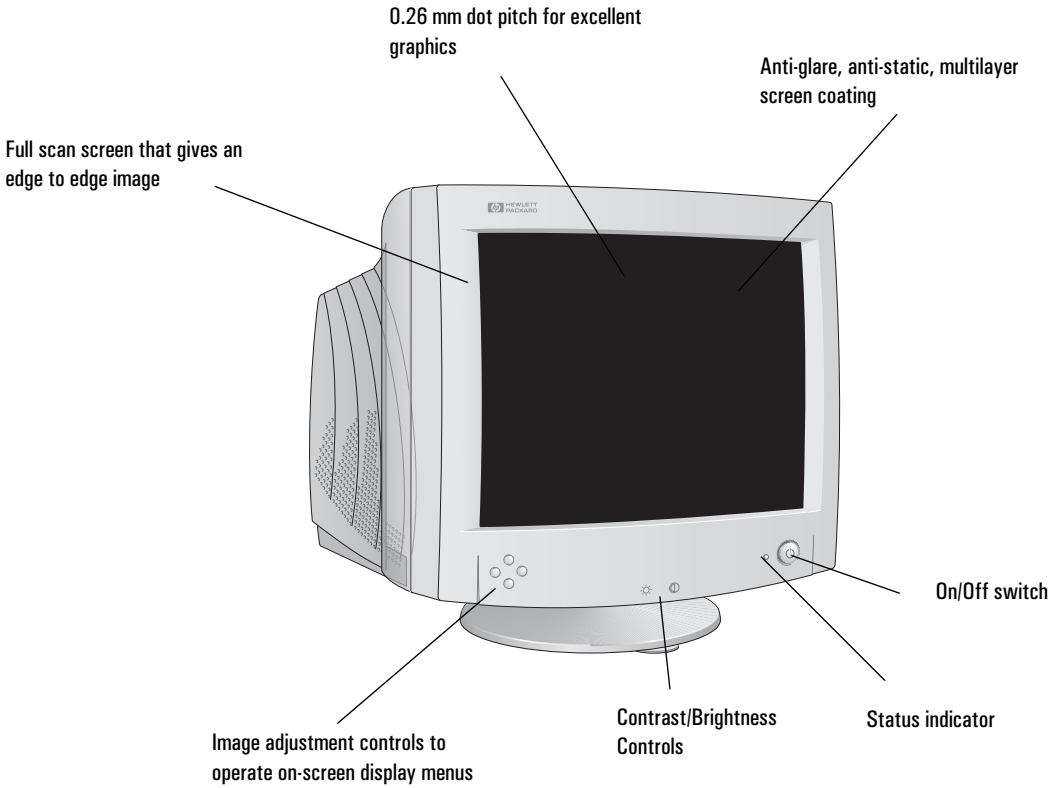


HP D2842A, HP D2842W
HP 90
19-inch Color Monitor
18-inch Viewable Image
User's Guide

Important Safety Instructions

Before you plug in your new monitor, read these important safety instructions.

WARNING

Connect the monitor only to a grounded power outlet. Use the power cord supplied with the monitor or one with a properly grounded plug. Ensure the cable meets your country's standards for safety.

To completely disconnect power at the monitor, remove the power cord from the power outlet. Ensure that the power outlet is easily accessible.

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.

CAUTION

To reduce the risk of electric shock, do not remove cover (or back). No user serviceable parts inside. Refer servicing to qualified service personnel.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that 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.

USA and Canada

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

- USA: use a UL Listed detachable power cord, type SVT.
- Canada: use a CSA certified detachable power cord.

Si le cordon secteur n'est pas livré avec votre moniteur, utiliser un cordon secteur en accord avec votre code électrique national.

- USA: utiliser un cordon secteur UL Listé, de type SVT.
- Canada: utiliser un cordon secteur certifié CSA.

What Your New Monitor Offers

Your HP monitor is a 19-inch (18-inch viewable image), high resolution, multi-synchronous color monitor. Multi-synchronous means that the monitor supports a range of video modes. It is optimized to be used with all Hewlett-Packard computers.

Your HP color monitor has the following features:

- A 19-inch flat square tube, with a 18-inch viewable image, and 0.26 mm dot pitch for excellent graphics. Anti-glare, multilayer coating to minimize reflection.
- Support of video modes up to 1280 ×1024 at 85 Hz refresh rate, and up to 1600 ×1200 using a 75 Hz refresh rate.
- Image adjustment using on-screen display menus. Includes color adjustment and image manipulation controls to optimize the quality and position of the image.
- Monitor power management system (VESA[1] 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 the US EPA[2] specification for energy efficient monitors. As an Energy Star Partner, Hewlett Packard has determined that this product meets the Energy Star guidelines for energy efficiency.[3]
- Monitor Plug and Play capability (VESA DDC2B standard) that enables the monitor to identify itself to suitably equipped HP computers.
- Compliance with ISO 9241-3/8 and ZH-1/618 ergonomic standards.
- This monitor complies to TCO 99 requirements. (Refer to "TCO 99 - Ecology Energy Emissions Ergonomics" on page 23)
- Your HP monitor complies with MPRII guidelines for upper limits of electrical and electrostatic emissions, from the Swedish National Board Measurements and Testing.
- Your HP monitor complies with the Swedish Standard SS4361490, level B, (MPRIII) for electric and magnetic field emission.
- Your HP monitor complies with the Blue Angel and E2000 environmental requirements.

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 US EPA.

Setting Up Your Monitor

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

NOTE

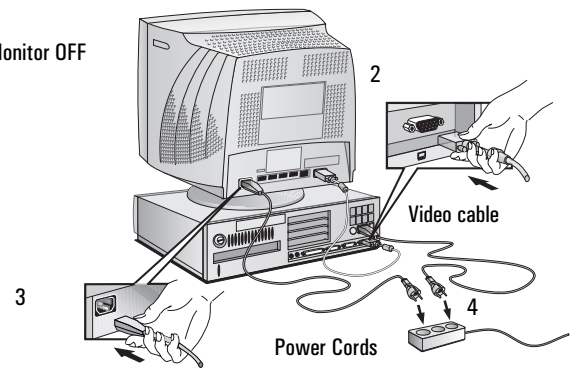
Before you connect any cables, or install your HP monitor, refer to the safety instructions at the beginning of the manual. Refer also to the user manual which accompanies your PC and video adapter to ensure this equipment is correctly installed.

1 Make sure your computer and monitor are switched off.

2 Connect the video cable (it has a 15-pin plug) to the video outlet on your computer and to the video outlet on the rear of your monitor. Tighten the thumbscrews on the plug.

3 Connect the power cord to the monitor.

4 Plug the power cord into a grounded power outlet.



NOTE

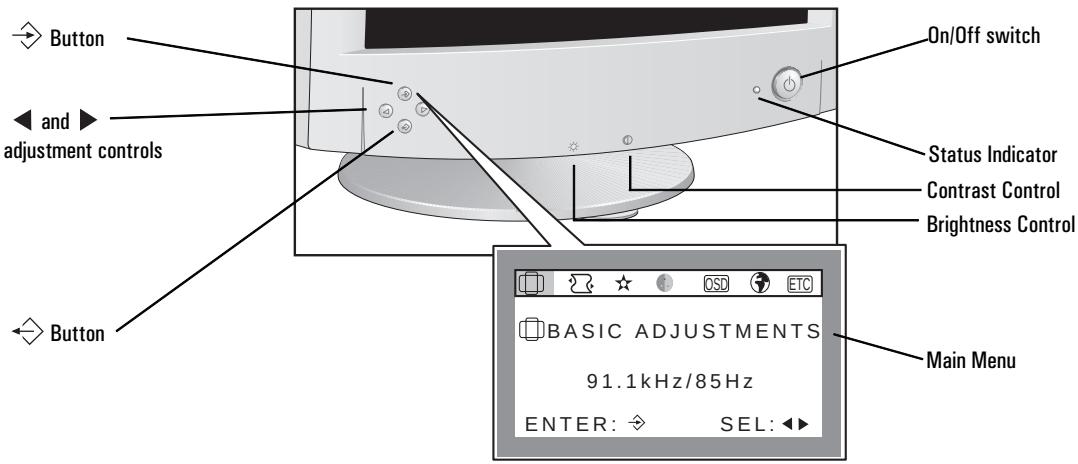
The location of your computer's video outlet may be different to the one shown in the diagram. Refer to the manual that came with your computer, if necessary.

Using Your Monitor

The on/off switch is on the front of the monitor.

Contrast and brightness can be adjusted directly.

Use the controls underneath the front panel of the monitor to obtain the required adjustment.



You can adjust the size, position, shape and quality of the displayed image using the controls on the front of the monitor to operate the on-screen menus.

1 Press the button to activate the monitor's on-screen main menu.

2 Use the ◀ and ▶ adjustment controls to select the sub-menu you require.

3 Press to make your selection.

Changing the Language of your On Screen Menu

Your on screen display operates in seven different languages: English, Deutsch, Français, Espanõl, Italiano, Svenska and Suomi.

To change the language of your on screen menu:

1 Select and press to enter the **LANGUAGE** sub-menu.

2 Use the ◀ and ▶ adjustment controls to select the language you require.

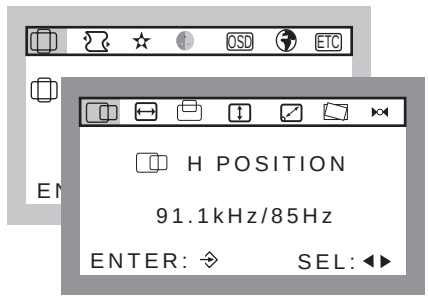
3 Press to exit.

Adjusting the Size and Position of the Displayed Image

To adjust the size and position of the displayed image:

1 Select and press to enter the **BASIC ADJUSTMENTS** sub-menu.

2 Select the feature you wish to modify using the ◀ and ▶ adjustment controls, then press to confirm your selection.



The following table lists the adjustment options available:

Adjustment Menu Item	Use to Adjust
H POSITION	The horizontal position of the displayed image.
H SIZE	The horizontal size of the displayed image.
V POSITION	The vertical position of the displayed image.
V SIZE	The vertical size of the displayed image.
ZOOM	The overall size of the displayed image.
TILT	The displayed image if it appears to be rotated.[1]

1. Depending on the orientation of your monitor, you may experience rotation of the image. This is due to the influence of the earth's magnetic field and is normal for all monitors.

3 Use the ◀ and ▶ adjustment controls to make your adjustments.

4 Press to exit.

NOTE

To revert to the default position and size settings, select ⋈ from this sub-menu.

Adjusting the Shape the Displayed Image

To adjust the shape of the displayed image:

1 Select and press to enter the **GEOMETRY** sub-menu.

2 Select the feature you wish to modify using the ◀ and ▶ adjustment controls, then press to confirm your selection.

The following table lists the adjustment options available:

Adjustment Menu Item	Use to Adjust the displayed image
PINCUSHION	If the vertical edges appear to bow in or out.
TRAPEZOID	If the vertical edges do not appear parallel.
PIN BALANCE	If the vertical edges appear to bow to the left or right.
PARALLELOGRAM	If the vertical edges appear to be tilted to the left or right.
PIN S ADJUST	If the vertical edges appear to have an irregular distortion.
PIN W ADJUST	If the vertical edges appear to have an irregular distortion.

3 Use the ◀ and ▶ adjustment controls to make your adjustments.

4 Press to exit.

NOTE

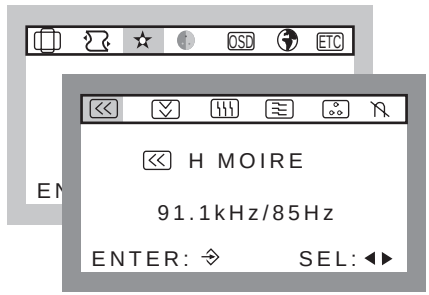
To revert to the default shape settings of the displayed image, select ⋈ from this sub-menu.

Improving the Image Quality

To improve the quality of the displayed image:

1 Select ☆ and press ⇨ to enter the **IMAGE** sub-menu.

2 Select the feature you wish to modify using the ◀ and ▶ adjustment controls, then press ⇨ to confirm your selection.



The following table lists the options available:

Adjustment Menu Item	Use to
H MOIRE	Reduce the effects of horizontal moire (horizontal screen ripple)
V MOIRE	Reduce the effects of vertical moire (vertical screen ripple)
H CONVERGENCE	Adjust the alignment of red and blue horizontal fields.
V CONVERGENCE	Adjust the alignment of red and blue vertical fields.
PURITY	Adjust the overall purity of the image if the color appears uneven.
DEGAUSS	Keep the monitor free from unwanted magnetism that can result in color impurity.[1] It is recommended that you degauss at least every week.

1. Degaussing is accompanied by brief instability of the displayed image and a slight humming sound.

3 Use the ◀ and ▶ adjustment controls to improve the quality of the image.

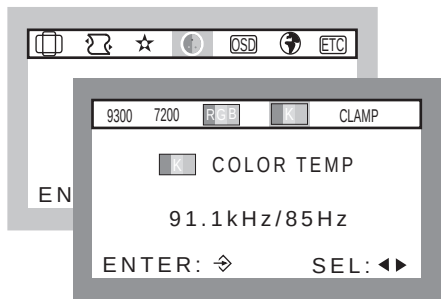
4 Press ⇦ to exit.

Adjusting the Color of the Displayed Image

Your monitor displays a combination of red, blue and green to show a full color image. If you want to change the proportions of red, blue and green used by your monitor you need to change the color temperature. To adjust the color of the displayed image:

1 Select and press to enter the **COLOR** sub-menu.

2 Select the feature you require using the ◀ and ▶ adjustment controls, then press to confirm your selection



The following table explains the color adjustment options available:

Adjustment Menu Item	Use to	Action
9300K/7200K	Select a Preset Color Temperature	Select 9300K or 7200K.
RGB USER	Adjust the levels of red, green and blue.	Press to confirm your selection, press to select red, green and blue, then use the ◀ and ▶ adjustment controls to adjust the color level.
K COLOR TEMP	Select your own color temperature.	Press to confirm your selection, then use the ◀ and ▶ adjustment controls to select a temperature.
CLAMP	Enable SOG (Sync On Green) when there is SOG Video Signal input.	Press to confirm your selection, then use the ◀ and ▶ adjustment controls to enable/disable SOG.

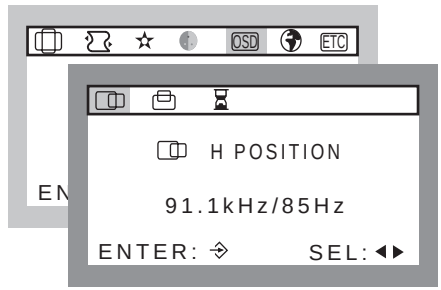
3 Press to exit.

Changing the OSD Setting

To adjust the position or timing of your on screen display menu:

1 Select OSD and press ⇨ to enter the **OSD ADJUST** sub-menu.

2 Select the feature you require using the ◀ and ▶ adjustment controls, then press ⇨ to confirm your selection.



The following table lists the options available.

Adjustment Menu Item	Use to Adjust
H POSITION	The horizontal position of the on screen menu.
V POSITION	The vertical position of the on screen menu.
OSD TIME	The duration that your on screen menu appears on screen.

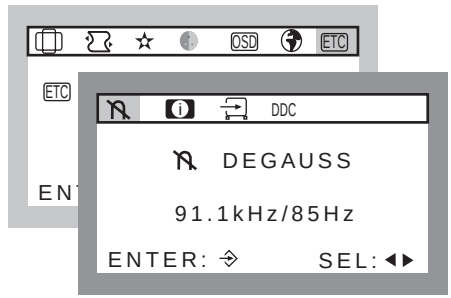
3 Use the ◀ and ▶ adjustment controls to make the required adjustment to the on screen menu.

4 Press ⇦ to exit.

Adjusting the Advanced Options

1 Select ETC and press → to enter the **MISCELLANEOUS** sub-menu.

2 Select the feature you require using the ◀ and ▶ adjustment controls, then press → to confirm your selection.



The following table indicates the options available.

Adjustment Menu Item	Use To	Action
DEGAUSS	(Refer to "Improving the Image Quality" on page 8)	
INFORMATION	Obtain information on video resolutions and refresh rates supported by your monitor.	Press ▶ for information on User Settings.[1] Press ◀ for information on Preset Settings[2].
VIDEO LEVEL	Set Video Solution to 0.7V or 1.0V.(For all HP computers select 0.7V)	Select the Video Level using the ◀ and ▶ adjustment controls.
DDC	Enable or disable Plug and Play capability (Refer to Setting the Amount of Displayed Information, on page 12").	Select ON or OFF using the ◀ and ▶ adjustment controls.

1. Contains record of any adjustments that the user makes in the main menu system.
2. Standard configurations pre-loaded at the factory.

3 Press ← to exit.

Setting the Amount of Displayed Information

To set the amount of displayed information, change the *screen resolution* of your computer. The higher the screen resolution, the more information you can see on the screen. It is recommended that you use a resolution of 1280×1024 at 85Hz. 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 and they 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 and refresh rates are supported by your monitor,refer to "What Video Modes are Supported" on page 14. To change the screen resolution, please refer to the manual that came with your computer or your operating system documentation, if necessary. To set the image refresh rate (also known as the *vertical frequency*), refer to the manual that came with your computer or your operating system.

Your monitor has a Plug and Play capability (VESA DDC2B standard) that enables it to identify itself to suitably equipped HP computers. This will automatically give you the best refresh rate for the resolution you have set. Also, by using the appropriate software (when available), you can adjust the monitor's settings directly from your computer.

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 mode[1] (uses less than 8W). In this mode, the monitor's front panel indicator light is amber.
- Sleep mode[2] (uses less than 3W). 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 — your monitor may be in a power saving mode.

1. Suspend mode is activated when horizontal sync is cut by the video controller.
2. Sleep mode is activated when both vertical and horizontal sync are cut by the video controller.

What Video Modes are Supported

Your monitor comes with the preset modes shown in the table below. It also supports intermediate video modes. With the intermediate modes, the displayed image may need to be optimized using the adjustment controls. All modes are non-interlaced.

Screen Resolution	Image Refresh Rate	Video Solution
640×400	70 Hz	VGA/DOS
640×480	75 Hz, 85 Hz	Ergonomic VGA
800×600	75 Hz, 85 Hz	Ergonomic Super VGA
1024×768	75 Hz, 85 Hz	Ergonomic Ultra VGA 1024
1280×1024	75 Hz, 85 Hz	Ultra VGA 1280
1600×1200	75 Hz	Ultra VGA 1600

CAUTION

Selecting a screen resolution/image refresh rate combination higher than 1600×1200 at 75Hz can damage your monitor.

Selecting a video mode not supported by your monitor will cause your monitor screen to blank.

Technical Specifications

PICTURE TUBE	Size	19-inch flat screen/ 18-inch viewable image
	Phosphorous	Red, Green, Blue short persistence
	Dot pitch	0.26 mm
	Face Plate	Anti-glare, multilayer coating
INPUT SIGNAL	Video	0.7 Vp p analog RGB
	Synchronization	Separated H/V (TTL level), H/V mixed (TTL level), sync-on. green
INTERFACE	Input Connector	15-pin mini D-SUB
SCANNING FREQUENCY	Horizontal	30 to 96 kHz
	Vertical	50 to 200Hz
MAX. RESOLUTION (H × V)	1600 ×1200 (75 Hz)	
WARM-UP TIME	30 minutes to reach optimum performance level	
PIXEL CLOCK	203 MHz	
IMAGE SIZE	Standard size[1]:350(H) x 262(V) mm Maximum size: 365(H) x 274(V) mm	
POWER SOURCE	AC 90 to 264 V, 47 to 63 Hz, 140W (max), less than 8W in Suspend mode, less than 3W in Sleep mode, less than 3W when switched Off.	
OPERATING ENVIRONMENT	Temperature	10 °C to 40 °C (operating) - 20 °C to + 60 °C (storage)
	Humidity	10% RH through 80% RH (without condensation)
CABINET DIMENSIONS	468(H) × 458(W) × 479(D) mm (with stand)	
NET WEIGHT	24,3 kg (53.57 lbs)	
TILT/SWIVEL STAND	Tilt Angle	- 5° to + 13.5°
	Swivel Angle	±45°

1. Use the standard image sizes to avoid distortion of the displayed image.

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 PCs) 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 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.

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.

The cathode ray tube used in this monitor does not contain cadmium.

Hardware Warranty

This is your HP Monitor Hardware Warranty Statement. Warranty terms may be different in your country. If so, your Authorized HP Dealer or Hewlett-Packard Sales and Service Office can give you details.

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.

Limited Monitor Hardware Warranty

Model	Warranty Period	Service provided
Model D2842A Model D2842W	3 years—unless original end-user customer has otherwise agreed to a shorter period of warranty at the time of purchase.	On-site service for first year, and return to an HP or repair-authorized reseller service-center for the following two years.

Hewlett-Packard (HP) warrants this monitor hardware product against defects in materials and workmanship for the applicable warranty period stated above, commencing from the date of purchase by you, the original end-user customer. If you return this monitor hardware product with a defect as defined above, during the warranty period, to an HP-authorized reseller or service center, HP will either, at its option, repair or replace the defective product with a new or equivalent-to-new unit of the same or equivalent model. Should HP be unable to repair or replace the product within a reasonable amount of time, your alternate exclusive remedy shall be a refund of the purchase price upon return of the product.

If you purchased this monitor hardware product for use with an HP personal computer (Vectra, Brio or Kayak), please refer to the terms and conditions of the HP Hardware Warranty statement provided with your HP personal computer (Vectra, Brio or Kayak), including limitations, your responsibilities and method for obtaining warranty service.

If you purchased this monitor hardware product for use with an HP Workstation, please refer to the terms and conditions of the HP warranty statement provided with your HP workstation, including limitations, your responsibilities and method for obtaining warranty service.

Limitation of Warranty

The above warranty shall not apply to defects resulting from: misuse (including "burned" screens); unauthorized modification; operation or storage outside the environmental specifications for this monitor product; in-transit damage; improper maintenance; or defects resulting from use of non-HP software, accessories, media, supplies, consumables, or such items not designed for use with this product.

HP MAKES NO OTHER EXPRESS WARRANTY, WHETHER WRITTEN OR ORAL, WITH RESPECT TO THIS PRODUCT. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY SET FORTH ABOVE.

Some states or provinces do not allow limitations on warranty, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state, or province to province.

Limitation of Liability and Remedies

THE REMEDIES PROVIDED ABOVE ARE YOUR SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL HP BE LIABLE FOR ANY OTHER DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, 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; provided, that in no event shall HP's liability for property damage exceed the greater of $50,000 or the purchase price of the specific product that caused such damage.

Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Regulatory Information

DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name:	**HEWLETT-PACKARD**
Manufacturer's Address:	5, Avenue Raymond Chanas - EYBENS 38053 GRENOBLE CEDEX 09 FRANCE

declares, that the product:

Product Name:	HP 90 19-inch Color Monitor
Model Number:	D2842*(See Note)

conforms to the following Product Specifications:

SAFETY International: IEC 60950:1991 + A1 + A2 +A3 +A4
Europe: EN 60950:1992 + A1 + A2 +A3 +A4

EMC CISPR 22:1993+A1 / EN 55022:1994 - Class B 1)
EN 50082-1:1992
IEC 801-2:1992 / prEN 55024-2:1992 - 4kV CD, 8 kV AD
IEC 801-3:1984 - 3V/m
IEC 801-4:1988 / prEN 55024-4:1992 - 1 kV Power Lines

IEC 555-2:1982 + A1:1985 / EN 60555-2:1987
IEC 1000-3-3:1994 / EN 61000-3-3:1995

Supplementary information: The product herewith complies with the requirements of the following Directives and carries the CE mark accordingly:
the EMC Directive 89/336/EEC, the Low Voltage Directive 73/23/EEC both amended by the Directive 93/68/EEC.

NOTE: * can be alphanumeric character, including blank.

Jean Marc JULIA
Quality Manager

Grenoble, December 1998.

Notice for the USA: FCC Statement

Federal Communications Commission (FCC) Radio

Frequency Interference Statement (USA 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 protections 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 separation between the equipment and the 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.

WARNING

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

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

X-Ray Radiation Notice

When operating, this product emits x-rays; however, it is well shielded and meets the safety and health requirements of various countries, such as the Radiation Act of Germany and the Radiation Control for Health and Safety Act of the United States.

Radiation emitted by this product is less than 0.1 mR/hr (1uSv/hr) at a distance of 10 centimeters from the surface of the cathode ray tube. The x-ray radiation primarily depends on the characteristics of the cathode ray tube and its associated low voltage and high voltage circuitry. Internal controls have been adjusted to ensure safe operation. Only qualified personnel should perform any internal adjustments as specified in the service manual for this product.

Replace the cathode ray tube with an identical CRT only.

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.

General Notice

The HP D2842A/W 19-inch Color Monitor has been tested according to MPR 1990:8 for Emission properties and meets the guidelines as given by MPR 1990:10 (2.01 - 2.04).

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。

『当社は国際エネルギースタープログラムの参加事業者として、本製品が国際エネルギースタープログラムの基準に適合していると判断します。』

TCO 99 - Ecology Energy Emissions Ergonomics

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.

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

TCO Development
SE-114 94 Stockholm, Sweden
Fax: +46 8 782 92 07
Email (Internet): development@tco.se

Current information regarding TCO'99 approved and labelled products may also be obtained via the Internet, using the address:

http://www.tco-info.com/

Environmental requirements

Flame retardants

Flame retardants are present in printed circuit boards, cables, wires, casings and housings. Their purpose is to prevent, or at least to delay the spread of fire. Up to 30% of the plastic in a computer casing can consist of flame retardant substances. Most flame retardants contain bromine or chloride, and those flame retardants are chemically related to another group of environmental toxins, PCBs. Both the flame retardants containing bromine or chloride and the PCBs are suspected of giving rise to severe health effects, including reproductive damage in fish-eating birds and mammals, due to the bio-accumulative[1] processes. Flame retardants have been found in human blood and researchers fear that disturbances in foetus development may occur.

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

Cadmium[2]

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

Mercury[2].

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.

Lead[2].

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 accommodate within living organisms.
2. Lead, Cadmium and Mercury are heavy metals which are Bio-accumulative

HEWLETT PACKARD

Expanding Possibilities *

Paper not bleached with chlorine

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Printed 12/98 in Korea

* HP. Et tout devient possible.