User's Guide
CRT Monitor p1230

Document Part Number: 346682-001

October 2003

WARNING: Text set off in this manner indicates that failure to
follow directions could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow
directions could result in damage to equipment or loss of information.

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First Edition (October 2003)

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1

Product Features

The CRT monitor p1230 features include:

■ Large 20-inch (51 cm) viewable area display.

■ 1600 × 1200 or 1280 x 1024 @85 Hz are recommended resolutions.

■ Flat aperture grille CRT delivers an unparalleled viewing experience with a virtually flat image, eliminating distortion and reducing glare so that what you see on-screen is what you get on your printed output. The striped phosphor alignment of the CRT delivers superior vertical definition with improved brightness for a more uniform image.

■ Screen surface reduces reflection and glare and increases contrast without sacrificing focus level, clarity or brightness. Along with the flat square technology CRT, a high contrast screen with 0.24 mm grille pitch delivers crisp, clean text and graphics.

■ Dual dynamic beam focus provides precise, continuous focus adjustments of the electron beams resulting in optimum image quality, even to the far edges of the screen.

■ Color control system allows you to change between five color settings on your display to match your personal preference.

■ Tilt and swivel base.

■ Multiple frequency technology automatically adjusts monitor to the display card's scanning frequency.

- ■ Full scan capability allows you to use the entire screen area in most resolutions, significantly expanding image size.

- ■ Corner purity control resulting from the monitor's unique design automatically eliminates picture impurities that may result from stray magnetic fields and allows you to easily adjust impurities in the four corners of your monitor.

- ■ Convergence control allows you to adjust the horizontal and vertical convergence to ensure that the screen image is as crisp and clear as possible.

- ■ Auto adjust automatically adjusts horizontal and vertical size and position settings.

- ■ Constant brightness, when activated, calibrates the brightness and screen color levels over the normal life of the monitor.

- ■ SB (super brightness) mode optimizes screen brightness for different applications.

  - ❏ Super Bright Mode OFF: for text based images (normal use)

  - ❏ Super Bright Mode-1 ON (Picture): for picture images.

  - ❏ Super Bright Mode-2 ON (Movie): for moving images such as DVD movies.

- ■ Dual VGA analog video input.

- ■ VGA analog signal cable included.

- ■ Plug and play capability if supported by your system.

- ■ On-Screen Display (OSD) adjustments in English, French, German, Italian, Spanish, and Japanese for ease of set-up and screen optimization; allows you to adjust all elements of your screen image by simple to use on-screen menus.

- ■ *Software and Reference Library* CD includes an information file (INF), Image Color Matching file (ICM), and product documentation.

- Energy Saver feature for Energy Star compliance.

- AssetControl

- Compliant with the following regulated specifications:

  - EPA ENERGY STAR

  - European Union CE Directives

  - Swedish MPR II 1990

  - Swedish TCO '03 Requirements

2
Safety and Maintenance Guidelines

Important Safety Information

A power cord is included with your monitor. If another cord is used, use only a power source and connection appropriate for this monitor. For information on the correct power cord set to use with your monitor, refer to the "Power Cord Set Requirements" section in Appendix C.

⚠ **WARNING:** To reduce the risk of electric shock or damage to your equipment, do not disable the power cord grounding feature. This equipment is designed to be connected to a grounded (earthed) power outlet that is easily accessible to the operator. The grounding plug is an important safety feature.

⚠ **WARNING:** For your safety, be sure that the power outlet you plug the power cord into is easily accessible and located as close to the equipment as possible. When you need to disconnect the power to the equipment, unplug the power cord from the power outlet by grasping the plug firmly. Never pull on the cord.

△ **CAUTION:** For the protection of your monitor, as well as your computer, connect all power cords for your computer and its peripheral devices (such as a monitor, printer, scanner) to some form of surge protection device such as a power strip or Uninterruptible Power Supply (UPS). Not all power strips provide surge protection; the power strips must be specifically labeled as having this ability. Use a power strip whose manufacturer offers a Damage Replacement Policy so you can replace your equipment if surge protection fails.

Maintenance Guidelines

To enhance the performance and extend the life of your monitor:

■ Do not open your monitor cabinet or attempt to service this product yourself. Adjust only those controls that are covered in the operating instructions. If your monitor is not operating properly or has been dropped or damaged, contact your HP authorized dealer, reseller, or service provider.

■ Use only a power source and connection appropriate for this monitor, as indicated on the label/back plate of the monitor.

■ Be sure the total ampere rating of the products connected to the outlet does not exceed the current rating of the electrical outlet, and the total ampere rating of the products connected to the cord does not exceed the rating of the cord. Look on the power label to determine the ampere rating (AMPS or A) for each device.

■ Install your monitor near an outlet that you can easily reach. Disconnect the monitor by grasping the plug firmly and pulling it from the outlet. Never disconnect the monitor by pulling the cord.

■ Turn your monitor off when not in use. You can substantially increase the life expectancy of your monitor by using a screen saver program and turning off the monitor when not in use.

■ Unplug your monitor from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning. If the screen requires additional cleaning, use an antistatic screen cleaner.

■ Slots and openings in the cabinet are provided for ventilation. These openings must not be blocked or covered. Never push objects of any kind into cabinet slots or other openings.

■ Do not drop your monitor or place it on an unstable surface.

■ Do not allow anything to rest on the power cord. Do not walk on the cord.

■ Keep your monitor in a well-ventilated area, away from excessive light, heat or moisture.

Cleaning the Monitor

To clean the monitor, follow these steps:

1. Turn off the monitor and the computer.

2. Dust the monitor by wiping the screen and the cabinet with a soft, clean cloth.

If the screen requires additional cleaning, use a clean, damp cloth.

△ **CAUTION:** Do not use alcohol, benzene, thinner, ammonia, or any other volatile substances to clean your monitor or the screen. These chemicals may damage the cabinet finish as well as the screen.

Shipping the Monitor

Keep the original packing box in a storage area. You may need it later if you move or ship your monitor.

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Setting Up the Monitor

To set up the monitor, ensure that the power is turned off to the monitor, computer system, and other attached devices, then follow these steps:

1. Place the monitor in a convenient, well-ventilated location near your computer.

2. Connect one end of the monitor signal cable to the video connector on the rear panel of the computer, and the other end to either video input connector on the back of the monitor.

3. Connect the power cable to the back of the monitor, and the other end of the power cable to an electrical wall outlet.

CAUTION: To reduce the risk of electric shock or damage to your equipment: Do not disable the power cord grounding plug. The grounding plug is an important safety feature.

Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

Disconnect power from the monitor by unplugging the power cord from the electrical outlet.

Do not place anything on power cords or cables. Arrange them so that no one may accidentally step on or trip over them. Do not pull on a cord or cable. When unplugging from the electrical outlet, grasp the cord by the plug.

WARNING: Burn-in image damage may occur on monitors that display the same static image on screen for a prolonged period of time. To avoid burn-in image damage on your monitor screen, you should always activate a screen saver application or turn off the monitor when it is not in use for a prolonged period of time.

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Operating the Monitor

Installing the Information Files

✎ The instructions in the following section are for Microsoft Windows based operating systems.

The CD-ROM included with this monitor contains two information files to be installed onto your computer; an .INF file and an .ICM file.

■ The .INF file defines monitor resources and provides specifications used by most operating systems to install support software for certain hardware devices. The .INF file ensures monitor compatibility and optimization with your computer's graphics adapter. INF files are also downloadable by clicking on: http://www.hp.com/support and selecting the desired monitor.

■ The .ICM file provides color matching consistency from monitor screen to printer and is activated from within graphics programs that have this feature.

To install these files on your computer, insert the *Software and Reference Library* CD in your computer CD-ROM drive. When the CD menu launches, select **"**Install INF and ICM Files" and follow the on-screen instructions.

Front Panel Components
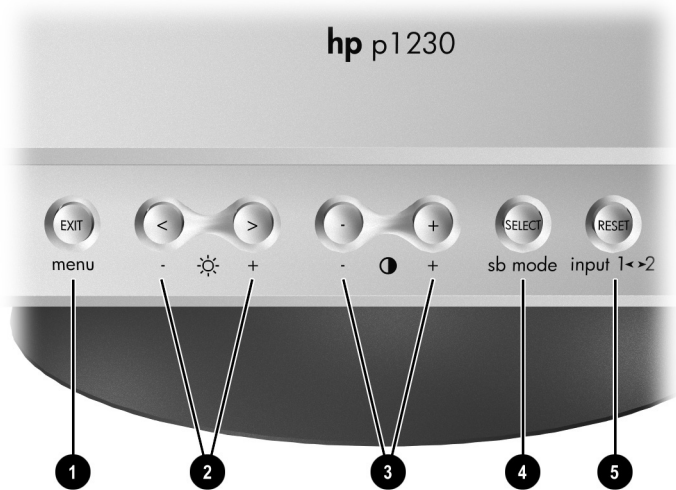
No.	Icon	Control	Function
❶	EXIT menu	EXIT/menu button	Exits the OSD menu Launches the On-Screen Display (OSD) menu when the OSD is turned off.
❷	< > - ☼ +	Left/right controls	Moves the highlighted OSD item left or right to select one of the sub-menu items When the OSD menu is off, it can function as a Hot key for Brightness
❸	- + - ◐ +	Adjustment buttons	Decreases or increases OSD adjustments When the OSD menu is off, it can function as a Hot key for Image Contrast

No.	Icon	Control	Function
❹	SELECT sb mode	SuperBright	Opens OSD sub-menu When the OSD is off, acts as the SuperBright (SB) function key.*
❺	RESET input 1<>2		Resets all the controls within the highlighted menu to the factory setting. When RESET is pressed in the main and sub-menu, a warning window will appear allowing you to select the reset function. When the OSD menu is off, it functions as a Hot key for signal input connector.

*The first time this key is pressed, the current SB mode is indicated. If the key is selected within 3 seconds, the monitor will change to the next SB mode.

Adjusting Monitor Settings

Press the exit/menu button on the front panel of the monitor to view the On Screen Display (OSD) Menu. The main menu window is displayed and you can make adjustments to your monitor's various features. Use the left, right, up, and down arrow keys to make your adjustments within the menu.
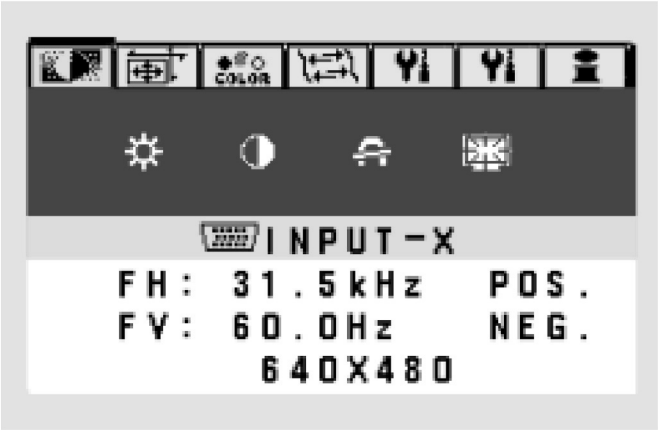
The following table shows the menus and their functions at each level:

OSD Menu Levels

Menu Level 1	Menu Level 2	Menu Level 3
Brightness/ Contrast	Brightness	
	Contrast	
	Degauss	
	Constant Brightness	
Size and Position	Auto Adjust	
	Left/Right	
	Down/Up	
	Narrow/Wide	
	Short/Tall	

OSD Menu Levels

Menu Level 1	Menu Level 2	Menu Level 3
Color Control System	1 - 9300 K	Color temperature Red, Green, Blue
	2 - 8300 K	Color temperature Red, Green, Blue
	3 - 7500 K	Color temperature Red, Green, Blue
	sRGB (6500 K)	
	5 - 5000 K	Color temperature Red, Green, Blue
Geometry Controls	In/Out (pincushion)	
	Left/Right (pincushion balance)	
	Tilt (parallelogram)	
	Align (trapezoidal)	
	Rotate (raster rotation)	
	Top Corner Correction	
	Top Balance	
	Bottom Corner Correction	
	Bottom Balance	
Tools	Moire Canceler	
	Convergence Horizontal	
	Convergence Vertical	
	Convergence Vertical Top	

OSD Menu Levels

Menu Level 1	Menu Level 2	Menu Level 3
	Convergence Vertical Bottom	
	Linearity Vertical	
	Linearity Vertical Balance	
	Corner Purity (Top Left)	
	Corner Purity (Top Right)	
	Corner Purity (Bottom Left)	
	Corner Purity (Bottom Right)	
	Purity (Left/Right)	
Tools 2	Language	English
		German
		French
		Spanish
		Italian
		Japanese
	OSD Position	
	OSD Turn Off	
	OSD Lock Out	
	Off Mode	
	Clamp Pulse Position Control	
	Hot Key	

OSD Menu Levels

Menu Level 1	Menu Level 2	Menu Level 3
	Factory Preset	
Information	Display Mode	
	Monitor Info	

Identifying Special OSD Messages

Special OSD messages appear on the monitor screen when identifying the following monitor conditions:

■ Attention, Signal Frequency is out of range—indicates the monitor is unable to display the current input signal resolution.

■ Power Save—Indicates the screen display is entering a sleep mode.

A

Troubleshooting

Solving Common Problems

The following table lists possible problems, the possible cause of each problem, and the recommended solutions.

Problem	Possible Cause	Solution
No picture.		
	Power switch is turned off.	Turn on the power.
	Video cable is improperly connected.	Connect the video cable properly. Refer to *Chapter 3, Setting Up the Monitor,* for more information.
	Bent pins on the signal connector.	Check connector for bent or pushed-in pins.
	Display card is loose in slot.	Re-seat the display card.
Image is scrolling or unstable.	Signal cable is loose.	Reconnect the signal cable.
LED on monitor is not lit.	Power switch is turned off.	Turn on the power.
Picture is fuzzy or color looks blotchy.	Moire Canceler, Brightness, Contrast, Degauss, or Corner Purity controls are set incorrectly.	Access the All Reset (Factory Preset) through OSD controls and activate it to restore factory presets.

Problem	Possible Cause	Solution
		If picture is fuzzy, adjust the Moire Canceler control.
		If color is blotchy, adjust the Brightness, Contrast, or Corner Purity controls.
		Use the Clamp Pulse Position control to change modes.
		Access the Degauss control through OSD controls and activate it.
		✎ To achieve optimal degauss, a minimum interval of 20 minutes should elapse before the Degauss Control is used a second time.
Picture bounces or a wavy pattern is present in the picture.	Electrical interference.	Move electrical devices that may be causing electrical interference away from the monitor.

Problem	Possible Cause	Solution
Edges of the display image are not square.	Geometry settings are not adjusted correctly.	Use the OSD Geometry Controls to straighten the edges.
		If possible, position the front of the monitor facing east.
Thin horizontal lines appear on your screen.	Thin horizontal lines are normal for an aperture grille CRT and are not a malfunction. These are shadows from the damper wires used to stabilize the aperture grille and are most noticeable when the screen's background is light (usually white).	No action needed.
Black vertical lines are visible on the screen.	Grille element overlap occurred during shipping.	Position an open white window over the affected area of the screen and maximize the brightness and contrast controls for a few minutes. Readjust the brightness and contrast controls back to the normal viewing level after this procedure.

Using the Worldwide Web

Before contacting customer services, refer to the support Web site at: http://www.hp.com/support

Preparing to call Technical Support

If you cannot solve a problem using the troubleshooting tips in this section, you may need to call technical support. Have the following information available when you call:

■ The monitor

■ Monitor model number (on front and back panel)

■ Serial number for the monitor (on back panel)

■ Purchase date on invoice

■ Conditions under which the problem occurred

■ Error messages received

■ Hardware configuration (found on Windows Control Panel)

■ Hardware and software you are using

B

Specifications

CRT Monitor p1230

Display	22 inches	55 cm
Type	Aperture Grille CRT	
Viewable Image Size	20-inch diagonal	51 cm
Maximum Weight (Unpacked)	66.1 lbs.	30 kg
Dimensions (includes pedestal)		
Height	19.1 inches	48.6 mm
Depth	18.8 inches	47.7 mm
Width	19.5 inches	49.5 mm
Maximum Graphics Resolution	2048 x 1536 (85 Hz)	
Recommended Text Modes	1600 x 1200 or 1280 x 1024 at 85 Hz	
Stripe Pitch	0.24 mm	
Horizontal Frequency	30 to 140 kHz	
Vertical Refresh Rate	50 to 160 Hz	
Environmental Requirements Temperature		
Operating Temperature	41 to 90° F	5 to 35° C
Non-operating Temperature	-4 to +140° F	-20 to +60° C

CRT Monitor p1230

Relative Humidity	
Operating	10 to 90%
Non-Operating	10 to 90%

Altitude (Operating)	Up to 7,200 ft./2,195 meters

Power Source	100-120/220-240 VAC, 50/60 Hz

Power Consumption	<135 watts

Dual Video Input Terminals	15-pin D-type connector

Color Display Values

CIE* Chromaticity Coordinates (Typical)		
Red	0.627	0.341
Blue	0.149	0.072
Green	0.292	0.605
White Chromaticity (6500 K) (9300 K)	0.313 0.283	0.329 0.297
Gamma: 2.2		

* Commission International d'Eclairage, 1931 Standard.

Recognizing Preset Display Resolutions

The display resolutions listed below are the most commonly used modes and are set as factory defaults. This monitor automatically recognizes these preset modes and they will appear properly sized and centered on the screen.

Factory Preset Display Modes

Preset	Pixel Format	Horz Freq (kHz)	Vert Freq (Hz)	Video Clock (MHz)	Notes
1*	640 x 480	31.5	60.0	25.2	VGA
2	640 x 480	43.3	85.0	36.0	VESA
3*	720 x 400	31.5	70.0	28.3	VGA
4	800 x 600	46.9	75.0	49.5	VESA
5*	800 x 600	53.7	85.0	56.3	VESA
6	1024 x 768	60.0	75.0	65.0	VESA
7*	1024.768	68.7	85.0	94.5	VESA
8	1152 x 870	68.7	75 MAC	100.0	MAC
9	1280 x 1024	64.0	60.0	108.0	VESA
10*	1280 x 1024	80.0	75.0	135.0	VESA
11*	1280 x 1024	91.2	85.0	157.5	VESA
12*	1600 x 1200	93.8	75.0	202.5	VESA
13* Primary	1600 x 1200	106.3	85.0	229.5	VESA
14	1792 x 1344	83.6	60.0	204.8	VESA
15*	1792 x 1344	106.3	75.0	261.0	VESA
16	1920 x 1440	90.0	60.0	234.0	VESA
17*	1920 x 1440	112.5	75.0	297.0	VESA
18	2048 x 1536	137.0	85.0	388.0	GTF

* Indicates pre-set timing mode

Entering User Modes

The video controller signal may occasionally call for a mode that is not preset if:

■ You are not using a Hewlett Packard standard graphics adapter.

■ You are not using a preset mode.

If this occurs, you may need to readjust the parameters of the monitor screen by using the on-screen display. Your changes can be made to any or all of these modes and saved in memory. The monitor automatically stores the new setting, then recognizes the new mode just as it does a preset mode. In addition to the 10 factory preset modes, there are 15 user modes that can be entered and stored.

Using the Energy Saver Feature

When the monitor is in its normal operating mode, the monitor uses approximately 135 watts of power and the Power light is green.

The monitor also supports a reduced power state. The reduced power state will be entered into if the monitor detects the absence of either the horizontal sync signal and/or the vertical sync signal. Upon detecting the absence of these signals, the monitor screen is blanked, the backlight is turned off, and the Power light is turned amber. When the monitor is in the reduced power state, the monitor utilizes less than 2 watts of power and the Power light is amber. There is a brief warm up period before the monitor will return to its normal operating mode. When the monitor is in the off mode, it utilizes less than 0.2 watts of power and the Power light is unlit.

Refer to your computer manual for instructions on setting energy saver features (sometimes called power management features).

✎ The above energy saver feature only works when connected to computers that have energy saver features.

By selecting settings in the Microsoft Windows Energy Saver utility, you can also program the monitor to enter into the reduced power state at a predetermined time. When the monitor's Energy Saver utility causes the monitor to enter the reduced power state, the Power light illuminates amber.

C

Agency Regulatory Notices

Federal Communications Commission Notice

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 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 or television technician for help.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett Packard may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods to maintain compliance with FCC Rules and Regulations.

Declaration of Conformity for Products Marked with FCC Logo, United States Only

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.

For questions regarding your product, contact:

Hewlett Packard
P. O. Box 692000, Mail Stop 530113
Houston, Texas 77269-2000

Or, call - 1-800- 652-6672 (1-800-OK COMPAQ)

For questions regarding this FCC declaration, contact:

Hewlett Packard
P. O. Box 692000, Mail Stop 510101
Houston, Texas 77269-2000

Or, call - (281) 514-3333

To identify this product, refer to the Part, Series, or Model number found on the product.

Canadian Notice

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

Avis Canadien

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

- EN55022 (CISPR 22) - Electromagnetic Interference
- EN55024 (IEC61000-4-2,3,4,5,6,8,11) - Electromagnetic Immunity
- EN61000-3-2 (IEC61000-3-2) – Power Line Harmonics
- EN61000-3-3 (IEC61000-3-3) – Power Line Flicker
- EN60950 (IEC950) - Product Safety

Japanese Notice

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。
取扱説明書に従って正しい取り扱いをして下さい。

Korean Notice

B급 기기 (가정용 정보통신기기)

이 기기는 가정용으로 전자파적합등록을 한 기기로서
주거지역에서는 물론 모든지역에서 사용할 수 있습니다.

EPA Energy Star Compliance

Monitors that are marked with the Energy Star Logo meet the
requirements of the EPA Energy Star program. As an Energy Star
Partner, Hewlett Packard has determined that this product meets
the Energy Star guidelines for energy efficiency. Specific details
on using the Energy Saving features can be found in the energy
saver or power management section of the computer manual.

Power Cord Set Requirements

The monitor power supply is provided with Automatic Line Switching (ALS). This feature allows the monitor to operate on input voltages between 100-120V or 200-240V.

The power cord set (flexible cord or wall plug) received with the monitor meets the requirements for use in the country where you purchased the equipment.

If you need to obtain a power cord for a different country, you should purchase a power cord that is approved for use in that country.

The power cord must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product. In addition, the cross-sectional area of the wire must be a minimum of 0.75 mm² or 18AWG, and the length of the cord must be between 6 feet (1.8 m) and 12 feet (3.6 m). If you have questions about the type of power cord to use, contact your HP authorized service provider.

A power cord should be routed so that it is not likely to be walked on or pinched by items placed upon it or against it. Particular attention should be paid to the plug, electrical outlet, and the point where the cord exits from the product.

HP Recycling Program

HP offers product end-of-life return programs for HP and other manufacturers' hardware in several geographic areas.

The terms and availability of these programs vary by geography because of differences in regulatory requirements and local customer demand. For information on the HP recycling program, refer to the HP Web site at: http://www.hp.com/hpinfo/globalcitizenship/environment/ recycle/hardware.html.