Notice

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User's Guide

Compaq P110 Color Monitor

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Part Number 284986-002

Compaq Computer Corporation

book **1**

E<small>NGLISH</small>

Introduction

The Compaq P110 Color Monitor is a high-resolution, large screen monitor intended for use with high-end graphics controller boards from Compaq. The large screen is recommended for advanced graphics user interfaces (GUIs), high performance graphics and digital video applications such as computer-aided design, computer-aided engineering, desktop publishing, document image processing, and Windows 95 and Windows NT applications.

Product Features

The monitor features include the following:

- 21-inch aperture grille CRT for superior brightness and uniformity with a 19.8-inch (50.2 cm) diagonal viewable image size

- Screen customizing adjustments displayed on-screen in five different languages: English, Dutch, French, German, and Spanish

- Universal Serial Bus Hub interface — four Plug and Play connectors for use with USB peripherals (mouse, etc.)

- Plug and Play capability if supported by your system

- Fault Management and Asset Control

- Multisync with screen expansion

- Twenty-one preset display resolutions including 1600×1200 @ 85 Hz

- Energy Saver feature

- Macintosh-compatible timings with an optional connector (the Macintosh connector is not included with this monitor)

- Compliant with the following regulated specifications:

  ❑ Swedish MPR II 1990

  ❑ EPA Energy Star

  ❑ European Union CE Directives

  ❑ Swedish TCO 1995

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, but not on top of, your computer.

> ⚠ **WARNING:** This monitor weighs approximately 70 pounds and is not intended to be placed on top of a computer. Place the monitor directly on a desktop or other work surface. To reduce the risk of possible injury, do not attempt to lift the monitor by yourself.

2. Remove the cover to the rear panel by grasping the thumb tab and pulling down.

3. Connect one end of the monitor signal cable ❶ to the monitor, and the other end ❷ to the 15-pin connector on the rear panel of the computer and tighten the screws.

✎ Be sure the signal cable aligns with the 15-pin connector. Do not force the cable onto the connector or you may damage the signal cable.

4. Connect the monitor power cord ❸ to the rear panel of the monitor, then plug the other end into an electrical outlet ❹ that is easily accessible and close to the monitor.

⚠ **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.

⚠ **CAUTION:** Be sure that the power outlet you plug your power cord into is easily accessible and located as close to the monitor as possible. When you need to disconnect power to the equipment, be sure to unplug the power cord from the power outlet.

Using USB Connectors
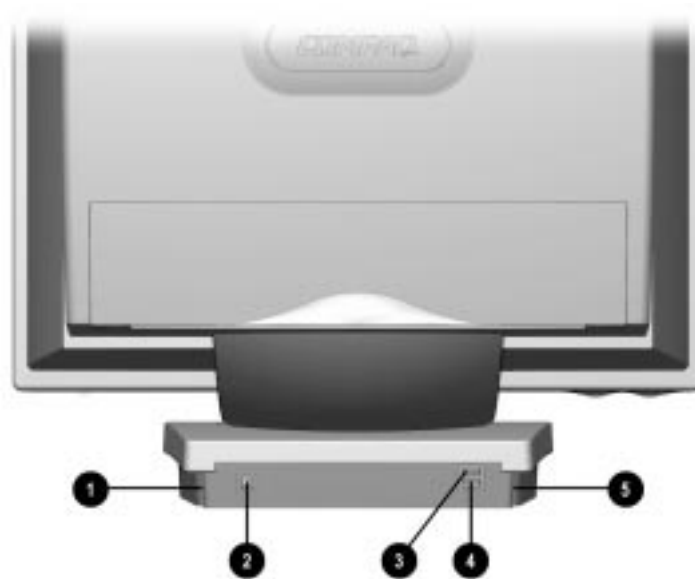
The base of the monitor has five Universal Serial Bus (USB) connectors. Four of these connectors, ❶, ❸, ❹, and ❺, are for connecting USB compatible Plug and Play devices such as a keyboard, mouse, or video camera. USB connector ❷ is used to connect the USB signal cable to the computer. The USB signal cable is included with the monitor.

Using BNC Connectors

A signal cable with BNC connectors may be used in place of the 15-pin signal cable. To connect two computers to the monitor, a BNC connector may be used together with the 15-pin signal cable. If you have separately purchased a signal cable with BNC connectors, use the following instructions to connect the signal cable to the monitor.

✎ Fault Management and Asset Control are not supported by the monitor when BNC connectors are used.

1. Connect the five BNC connectors to the monitor. Push in and twist the connectors clockwise until they are locked into place. The color of the wires may vary, so refer to the manufacturer's instructions included with the BNC connectors. Usually, the connectors are color coded from left to right in the following order:

   ❶ Red (R) for the red video connector

   ❷ Green (G) for the green video connector

   ❸ Blue (B) for the blue video connector

   ❹ White for horizontal sync (H)

   ❺ Black for vertical sync (V)

⚠ **CAUTION:** When using a signal cable with BNC connectors, make sure the BNC/D-Sub control on the monitor's on-screen display is set to the correct setting.

2. Connect the other end of the signal cable to the 15-pin graphics connector on the back of your computer.

3. Connect the power cord as previously illustrated.

> ⚠ **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.

> △ **CAUTION:** Be sure that the power outlet you plug your power cord into is easily accessible and located as close to the monitor as possible. When you need to disconnect power to the equipment, be sure to unplug the power cord from the power outlet.

Operating the Monitor

Front Control Panel

Icon	Control	Function
❶	Light Sensor	Automatically adjusts contrast and brightness to an appropriate level. This function is turned On and Off using the on-screen display.
❷	Contrast Dial	Adjusts Contrast.
❸	Brightness Dial	Adjusts Brightness.
❹ 📑	Select Button	1. Launches on-screen display. 2. Selects function adjustments. 3. Exits menus and on-screen display.
❺ -	Minus Button	Selects or adjusts the functions.
❻ +	Plus Button	Selects or adjusts the functions.
❼ ⏻	Power Switch	Turns the monitor on and off.
❽	Power LED	1. Green indicates monitor is turned on. 2. Yellow indicates suspend mode. 3. Amber indicates sleep mode.

On-Screen Display Settings

The adjustments for screen settings are located in the on-screen display and can be viewed in one of five available languages. The on-screen Main Menu displays the following nine functions:

■ Size and Position - Adjusts the width, height, and horizontal and vertical position of the screen.

■ Geometry - Provides adjustments to correct pincushion, pincushion balance, trapezoid, parallelogram, and tilt.

■ Overscan - Zooms out and enlarges the screen.

■ Light Sensor - When turned on, compensates for ambient room lighting by automatically adjusting the monitor's brightness and contrast settings.

■ Color - Adjusts screen color balance, beam landing, and convergence.

■ Moire - Minimizes interference patterns that occasionally appear on the screen.

■ Degauss - Corrects image distortion or color impurity caused by external magnetic fields.

■ Input: DSub (BNC) - Select when using a 15-pin signal cable and BNC connectors together. If you are using only one of these cables/connectors, this function automatically adjusts.

■ Language - Lists five languages available to display on-screen menus.

■ Management - Allows On/Off selection of power saving and display modes; displays monitor serial number, and performs a Master Reset (Master Reset resets all display modes to their original settings).

■ Factory Reset - Resets the operating display mode to its factory setting.

Some functions will have up to three menu levels.

✎ This monitor uses an aperture grille CRT for excellent screen performance. At times the shadows of two small horizontal lines may appear on the screen background. This is not a defect. The wires are there to reduce susceptibility to horizontal vibration.

How to Adjust Settings

To launch the on-screen display Main Menu:

1. Press the *Select* button ❶ on the monitor front panel. The Main Menu will display on the monitor screen.

2. To select an item from the Main Menu, scroll down by pressing the *Minus* (-) button ❷ located on the monitor front panel. To reverse or back up, press the *Plus* (+) button ❸.

3. Highlight your choice and press the *Select* button ❶ again.

   For example, to select the Position menu, press the *Minus* button ❷ until Size and Position is highlighted, then press the *Select* button ❶ to choose it.

Monitor with On-Screen Display

4. A second level menu displays with expanded menu items. Again, to make a selection, press the *Minus* (-) button ❷ to scroll down or press the *Plus* (+) button ❸ to reverse or back up.

5. Highlight your choice, then select *Save and Return*. To void any changes made, select *Cancel* instead of *Save and Return.*

6. Adjust the third level menu displays in the same manner.

7. To exit from the on-screen menu, select *Exit* from the Main Menu. If the display is a second or third level menu, select *Save and Return* or *Cancel,* then select *Exit* from the Main Menu.

The on-screen display is easy to use, just follow the instructions on the screen.

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 when they are requested by a software program and will provide the user with a properly sized and centered display.

Display Resolutions

Memory Channels	Resolutions
1. Industry Standard	640 × 350 at 31.5 kHz/70 Hz
2. VESA	640 × 350 at 37.9 kHz/85 Hz
3. Industry Standard	640 × 480 at 31.5 kHz/60 Hz
4. VESA	640 × 480 at 37.5 kHz/75 Hz
5. VESA	640 × 480 at 43.3 kHz/85 Hz
6. Industry Standard	720 × 400 at 31.5 kHz/70 Hz
7. VESA	720 × 400 at 37.9 kHz/85 Hz
8. VESA	800 × 600 at 37.8 kHz/60 Hz
9. VESA	800 × 600 at 46.9 kHz/75 Hz
10. VESA	800 × 600 at 53.7 kHz/85 Hz
11. Macintosh Compatible	832 × 624 at 49.7 kHz/75 Hz
12. VESA	1024 × 768 at 48.4 kHz/60 Hz
13. VESA	1024 × 768 at 60 kHz/75 Hz
14. VESA	1024 × 768 at 68.7 kHz/85 Hz
15. Macintosh Compatible	1152 × 870 at 68.7 kHz/75 Hz
16. VESA	1280 × 1024 at 64.0 kHz/60 Hz
17. VESA	1280 × 1024 at 80.0 kHz/75 Hz
18. VESA	1280 × 1024 at 91.2 kHz/85 Hz
19. VESA	1600 × 1200 at 75 kHz/60 Hz
20. VESA	1600 × 1200 at 93.8 kHz/75 Hz
21. VESA	1600 × 1200 at 106.3 kHz/85 Hz

User Modes

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

■ You are not using a Compaq 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. User changes can be made to any or all of these modes and saved in memory. The monitor automatically stores the new setting, then automatically recognizes the new mode just as it does a preset mode. In addition to the 21 preset modes that can be changed and stored, there are 15 user modes that can be entered and stored.

To revert back to the factory default settings, select *Reset* from the *Factory Reset* menu in the on-screen display, and the factory default resolutions will replace the user changes made for the operating original display mode.

Energy Saver Feature

The energy saver feature has three different modes of operation:

■ Full power mode

■ Suspend mode

■ Sleep mode

By selecting settings in the computer's Energy Saver utility, you are able to determine the length of inactivity before the monitor goes into suspend or sleep mode.

The following table describes the monitor energy saver levels available during the different modes of operation.

Energy Saver Levels*		
Mode	Power Usage	Description
Full Power	Less than 160 watts	ON = Normal operation Power LED is green.
Suspend	Less than 15 watts	Monitor screen is blanked. Power LED turns yellow. Full power mode returns quickly.
Sleep	Less than 8 watts	Monitor screen is blanked. Power LED turns amber. There is a brief warm-up period before returning to full power mode.

*The energy saver levels listed are for the monitor only and do not include any USB devices connected to the USB ports. For information on specific USB power levels, refer to the reference manual that comes with the USB device.

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

✎ The energy saver features for monitors only work when connected to computers that have energy saver features.

Care and Maintenance

This section explains how to care for and maintain your Compaq monitor during normal everyday use.

Protecting the Monitor

To protect your monitor from overheating and other types of damage, follow these suggestions:

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

■ When you connect the monitor to an outlet or extension cord, 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.

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

■ Unplug the monitor from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners.

■ 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 place plants on top of the monitor. Water or dirt from the plant may fall into the vents.

■ Do not drop the 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 the monitor in a well-ventilated area, away from excessive light, heat, and moisture. Keep the monitor away from high capacity transformers, electric motors, and other strong magnetic fields.

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

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 any antistatic CRT screen cleaner.

> **CAUTION:** Do not use benzene, thinner, or any volatile substance to clean the monitor. These chemicals may damage the cabinet finish.

Shipping the Monitor

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

Adjusting Picture Quality

Allow the monitor to warm up for 30 minutes before performing the following procedures. The picture image stabilizes after a warm-up period.

Optimizing Contrast

For best results, set your screen to a dark background (such as the DOS prompt) before adjusting the following settings:

1. Set the brightness and contrast controls to their lowest settings.

2. Increase brightness until the background portions of the screen are visible, then slowly reduce brightness until the background is just extinguished.

3. Adjust contrast control to your preference.

Optimizing Focus

The default image size is preset at the factory. The Size and Position controls in the on-screen display can be used to increase the screen size beyond the default setting. However, expanding the screen image beyond the default settings may degrade the focus at the outer edge of the screen.

To enhance focus, use the lowest brightness level that gives satisfactory results in your viewing environment.

✎ Settings that maximize contrast may not offer optimum focus, and settings that maximize focus may not offer optimum contrast.

appendix

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 Compaq Computer Corporation 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.

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.

German Ergonomics Notice

Compaq Computers, when tested with the Compaq 630 Series monitors, were evaluated and found compliant to the requirements of ZH 1/618 (German Safety Regulations for Display Work Places in the Office Sector) in the Text Mode (720×400) using MS-DOS Version 3.31 (or higher) and BASICA as published by Compaq Computer Corporation.

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, Compaq Computer Corporation 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.

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:

■ EN55022 (CISPR 22) - Radio Frequency Interference

■ EN50082-1 (IEC801-2, IEC801-3, IEC801-4) - Electromagnetic Immunity

■ EN61000-3-2 - Harmonic Distortion Compliance

■ EN60950 (IEC950) - Product Safety

Japanese Notice

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SPECIFICATIONS

Compaq P110 Color Monitor		
Display	21-in aperture grille CRT	53.3 cm
Viewable Image Size	19.8-in diagonal	50.2 cm
Face Treatment	Antiglare/antireflective/antistatic coatings	
Weight (Unpacked)	70 lb	32 kg
Maximum Dimensions		
Height	20.6 in	52.4 cm
Depth	19.8 in	50.2 cm
Width	20.1 in	51.1 cm
Maximum Graphics Resolution	1600 X 1200 at 85 Hz Refresh Rate	
Text Mode	720 X 400	
Aperture Grille Pitch	0.25 mm (center)	
Horizontal Frequency	31 to 107 kHz	
Vertical Frequency	60 to 160 Hz	
Environmental Requirements Temperature		
Operating Temperature	50 to 95°F	10 to 35°C
Storage Temperature	-22 to 140°F	-30 to 60°C
Humidity (Non-Condensing)		
Operating	20 to 80%	
Non-Operating	5 to 90%	
Power Source	100 - 240 VAC, 50 - 60 Hz	
Power Consumption	< 160 watts	
USB Connectors	1 upstream port to connect hub to the computer	
	4 downstream ports to connect up to 4 USB peripherals	
Input Terminal	15-pin D-type connector with cable	
	5 BNC connectors (cable not included)	

Acceptable Signal Transmission Schemes

The following input sync information is for users who connect this monitor to a non-Compaq computer. You may need to provide your own cables or connectors to the computer. If you are a nontechnical user and need more information than is provided, contact a Compaq authorized dealer, reseller, or a service provider.

Use the following signal transmission schemes when BNC connectors are connected to the monitor.

Separate TTL Syncs, Separate Videos

Connect all five—Red, Green, Blue, Black and White—of the interface connections.

Composite Sync, Separate Analog Videos

Connect the Red, Green, and Blue video inputs and the horizontal sync input.

Sync Signal Definition: Horizontal and vertical sync signals are both provided through the horizontal input.

Connector Pin Assignments

Signal Cable		
Connector	Pin	Signal
	1	Red Video
	2	Green Video
	3	Blue Video
	4	Open
	5	Return
	6	Red Gnd
	7	Green Gnd
	8	Blue Gnd
	9	Reserved (No Pin)
	10	Sync Return
	11	Open
	12*	Bidirectional Data (SDA)
	13	H-Sync/Composite Sync
	14	V-Sync
	15*	Data Clock (SCL)

* DDC Signals

Color Display Values

CIE* Chromaticity Coordinates		
	x	y
Red	0.625	0.340
Green	0.280	0.595
Blue	0.155	0.070
White Point (9300 K)	0.281 (+/- .015)	0.311 (+/- .015)
White Point (6500 K)	0.313 (+/- .015)	0.329 (+/- .015)
Gamma: 2.5		

*Commission International d'Eclairage, 1931 Standard.

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 220-240V.

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.

Power cord sets must meet the requirements of the country where you use the monitor. For more information on power cord set requirements, contact your Compaq authorized dealer, reseller or service provider.

General Requirements

The requirements listed below are applicable to all countries:

1. The length of the power cord set must be at least 5.00 feet (1.5 m) and a maximum of 9.75 feet (3.0 m).

2. All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be used.

3. The power cord set must have a minimum current capacity of 10A and a nominal voltage rating of 125 or 250 volts AC, as required by each country's power system.

4. The appliance coupler must meet the mechanical configuration of an EN 60 320/IEC 320 Standard Sheet C13 connector, for mating with appliance inlet on the rear of the unit.

Country-Specific Requirements

Power Cord Set Requirements: By Country		
Country	Accredited Agency	Applicable Note Numbers
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	JIS	3
The Netherlands	KEMA	1
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1
United Kingdom	BSI	1
United States	UL	2

Notes:

1. The flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 0.75 mm^2 conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.

2. The flexible cord must be Type SVT or equivalent, No. 18 AWG, 3-conductor. The wall plug must be a two-pole grounding type with a NEMA 5-15P (15A, 125V) or NEMA 6-15P (15A 250V) configuration.

The appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. The flexible cord must be Type VCT or VCTF, 3-conductor, 0.75mm^2 conductor size. The wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (15A, 125V) configuration.