

# S70 Monitor Guide

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# Introduction

Congratulations on your purchase of a Hewlett-Packard Multi-Frequency monitor. One of the most versatile monitors available today, the **S70** automatically adjusts its vertical and horizontal scanning frequencies to those of your computer's graphics adapter. The **S70** provides crisp text and vivid color graphic displays when used with Multi-Frequency and compatible graphics adapters (see specifications).

## Precautions

To prevent electric shock do not remove screws or back cover.

There are no user-serviceable parts inside the monitor. Refer servicing to qualified service personnel.

**DO NOT REMOVE THE TILT/SWIVEL BASE!**

The input power source:

The **monitor** is designed to be Full Range from AC 100V to AC 240V.



**Warning:** *This appliance should be grounded.*

Always connect the display to a grounded, three-prong power outlet. Use only the factory-supplied power cord.

Do not put the monitor or other heavy objects on the power supply cord. A damaged power cord may cause fire or electric shock.

Do not insert objects into the monitor. They may cause fire or failure.

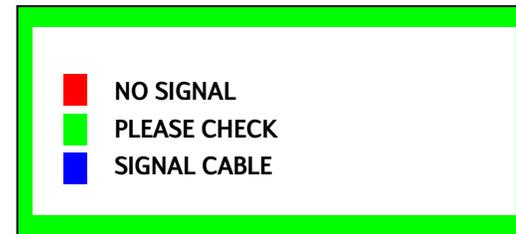
Do not allow liquids to fall into the cabinet.

- 1** To reduce eye fatigue, avoid using the display in direct sunlight or other bright lights.
- 2** Do not operate the monitor beyond the specified temperature and humidity range (see specifications).
- 3** For proper operation, keep the monitor adequately ventilated.
- 4** Keep the monitor away from transformers, motors, fans or strong magnetic fields.
- 5** If the monitor does not operate properly, turn off the power switch and then unplug the monitor.
- 6** When an irregular supply is applied, a protection circuit will turn off the monitor (the power indicator will also be turned off). If this happens, turn off the power switch and wait at least 30 seconds before turning it on again.

## Features

- 1 Automatically scans horizontal frequencies ranged from 30kHz to 70kHz and vertical frequencies ranged from 50Hz to 100Hz.
- 2 Meets DPMS and NUTEK power-saving standards.
- 3 All functions can be controlled by On-Screen Display.
- 4 Plug-and-play compatibility.
- 5 Full-scan display—15.9-inch diagonal viewable image size.
- 6 Rotation (tilt control).
- 7 Self-test—When you disconnect the signal cable from the PC, the display will produce as below:

### SELF-TEST PATTERN



- 8 Color temperature selection—9300K / 6550K / user adjustable.

# Specifications

Power Source	AC 100–240V, 50/60Hz (Full Range)	Input Signals	
Power Consumption	1 Normal: 100W Max.	Video	Analog 0.7 Vp-p / 75 ohm positive
	2 Stand-by Mode: <15W	Separate Sync	positive / negative
	3 Suspend Mode: <15W	Synchronization	
	4 Off Mode: <5W	Horizontal	30KHz to 70KHz
Picture Tube	90° deflection, 0.27mm dot pitch 15.9" Diagonal (viewable) low radiation, nonglare Antistatic. Light transmission 53%, MPR II	Vertical	50Hz to 120Hz
		Active Display Area	
		Horizontal	306mm typical
Maximum Resolution	1280 x 1024 at 60Hz refresh rate	Vertical	230mm typical
		Safety Standard	UL / CSA / TÜV
		EMI Standard	FCC Class B, EN50082-1, EN55022

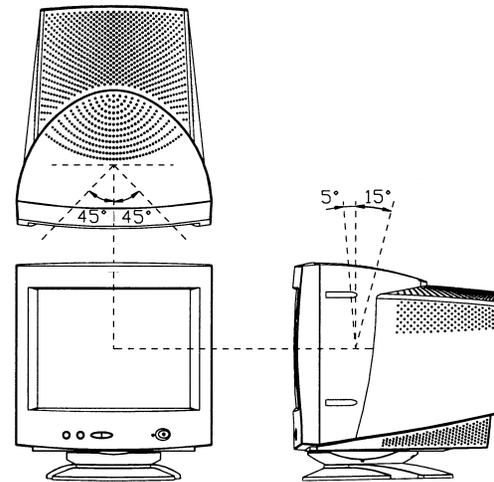
### Environmental Conditions

Operating Temperature	0° ~ 40°
Operating Humidity	10% ~ 80% (non-condensing)
Storage Temperature	-40° ~ +65°
Storage Humidity	5% ~ 95%
High Voltage	26KV
Dimensions (W x H x D)	416mm x 443mm x 455mm
Weight (Net)	17.1 kg

### *Tilt and Swivel Operation:*

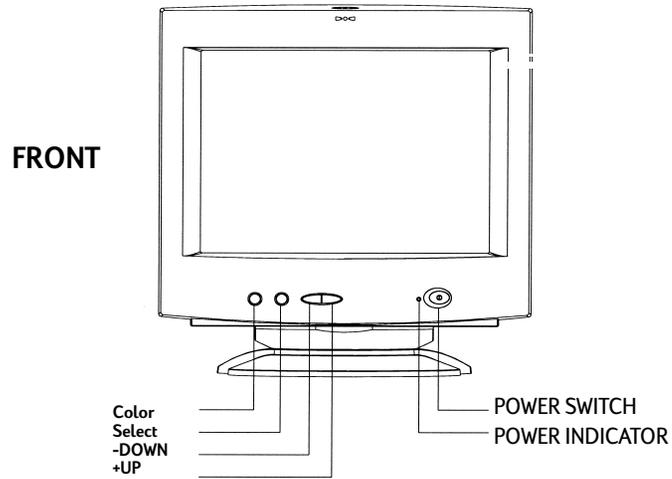
The swivel range is normally limited to 45 degrees to the right and the left of the front position (marked by a small molded pip on the top front of the base).

The tilt range is normally limited at an angle of -5 degrees forwards and +15 degrees backwards. This allows you to set the screen angle to the viewing position most comfortable to you.

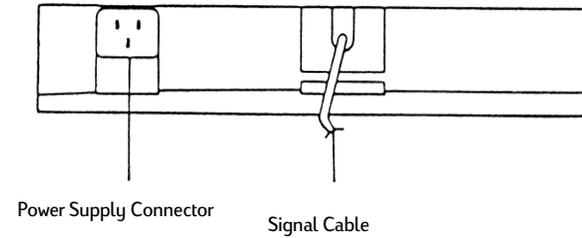


# Control Locations and Functions

**Note:** *Locations of display controls are shown below.  
Operation of controls is explained in the following pages.*



## REAR





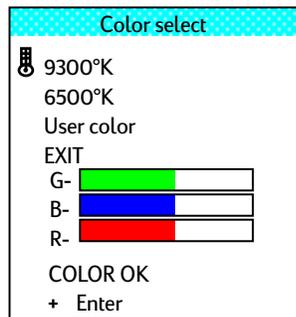
ICON	NAME	FUNCTION
	Horizontal position	To adjust the horizontal position of the display
	Horizontal size	To adjust the width of the display
	Vertical position	To adjust the vertical position of the display
	Vertical size	To adjust the height of the display
	Pincushion	To adjust any tapering or bowing of the sides
	Trapezoid	To adjust the top and bottom of the image to the same size
	Rotation	To adjust the display tilt

ICON	NAME	FUNCTION
	OSD horizontal position	To enable the OSD menu to be moved horizontally
	Side Pin Balance	To straighten the left or right side of the image
	Parallelogram	To square the image
	Degauss	To degauss the display
	OSD display time	To set "on screen display" time to either 10, 20 or 30 seconds.
	Recall	To recall the original factory display settings
	Exit	To remove the OSD menu

#### 4 Color Temperature Adjustment

- A. Press the COLOR key to display the color temperature control menu.

Color Temperature Adjustment Menu

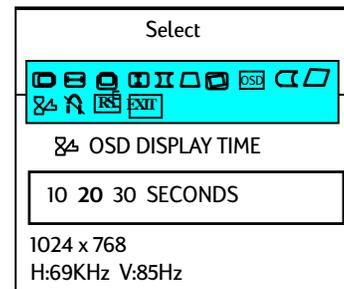


- B. Press the COLOR key to move to your desired color or to EXIT. To select a color or to exit, press the UP or DOWN key when the selection is highlighted (blue background).

- C. When the "USER COLOR" is selected, press the COLOR key to move between the colors. Press the UP or DOWN key to change color settings, or to exit the "USER COLOR" mode when the "COLOR OK" is highlighted.

#### 5 OSD Display Time Adjustment

- A. Press the  key to display the geometric adjustment menu.



- B. Continue to press the  key until the  function is selected and 10 20 30 seconds appears in the OSD as above.

- C. Press either the UP or DOWN (▼▲) key to select the required time; the selected time will change in color from white to yellow.
- D. Following completion of any readjustments, the OSD will remain on the screen for the selected period of time before disappearing automatically.

## 6 Degauss Control

- A. Press the ◀▶ key to display the geometric adjustment menu.
- B. Press the ◀▶ key to select the degauss icon .
- C. Press either the UP or DOWN (▼▲) key; the degauss function will then automatically occur.

## 7 Recall Control (to recall original factory settings)

- A. Press the ◀▶ key to display the geometric adjustment menu.

- B. Press the ◀▶ key again until the  function is selected.
- C. Press either the UP or DOWN (▼▲) key; the display will then return to the initial factory settings.

## 8 Exit

- A. Press the ◀▶ key to display the geometric adjustment menu.
- B. Press the ◀▶ key again until the  function is selected.
- C. Press either the UP or DOWN (▼▲) key; the OSD menu will immediately disappear.
- D. If the Exit function is not used the OSD menu will automatically disappear after the timing period has expired.

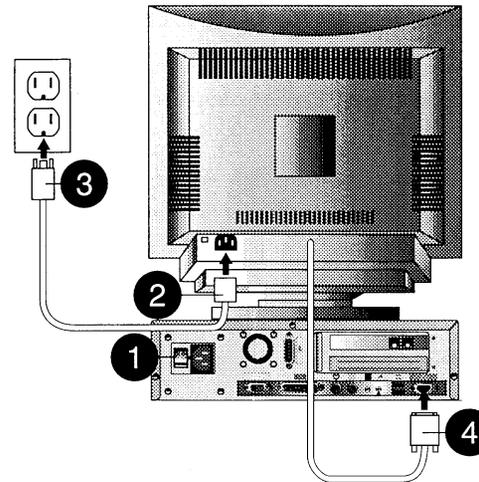
# Connections

Your monitor has two connecting cables: a Power Supply Cord, which connects to a wall outlet, surge protector or other power source, and a Signal Cable, which connects to the graphics adapter of your computer. To ensure safety and correct operation, always follow these four steps when connecting the monitor:

- 1 Make sure the monitor and computer are turned off. (See previous section on safety.)
- 2 Connect the power cord to the back of the display.
- 3 Plug the other end of the cable into a grounded outlet.
- 4 Connect the video cable on the monitor to the 15-pin video graphics connector on the rear panel of the computer, and tighten the fastening screws.

(If you have an HP Pavilion computer, this port is marked in orange. For other computers, check your computer manual for the video port location.)

**Note:** *Don't force the cable into the connector; line it up carefully so you don't bend the pins.*

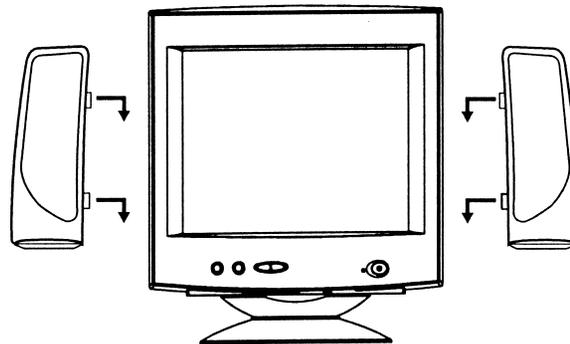


## Connecting the Speakers

The display is designed for use with speakers supplied with HP Pavilion computers.

To connect the speakers:

- 1 Identify the left and right speakers. You can tell which side a speaker fits onto by its mounting pegs. The side of the speaker with mounting pegs fits against the side of the display.
- 2 Fit the pegs of the right speaker into the corresponding holes on the right side of the display, then push down until the speaker is secure.
- 3 Fit the pegs of the left speaker into the corresponding holes on the left side of the display, then push down until the speaker is secure.

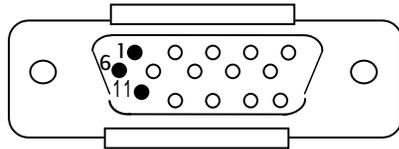


To make mounting easier, angle the speaker slightly toward the center of the display, then insert the pegs.

Refer to your computer setup poster for instructions to connect your speakers to the PC.

# Pin Assignments and Signal Levels

## 15-Pin D-SUB male video connector



## SIGNAL LEVEL

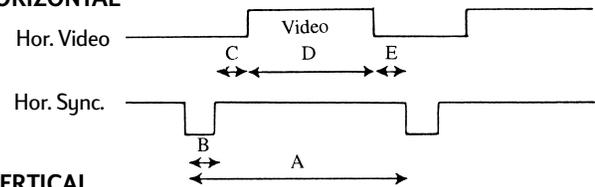
**Note:** *The signal level at pin 1,2,3 is 0.7 Vp-p.  
The signal level at pin 13,14 is 5 Vp-p.*

PIN NO.	SIGNAL	PIN NO.	SIGNAL
1	RED	9	+5V FROM PC
2	GREEN	10	DIGITAL GROUND
3	BLUE	11	MONITOR SENSE1
4	DIGITAL GROUND	12	SDA (DDC1/2B)
5	RETURN (DDC2B)	13	H. SYNC.
6	GROUND	14	V. SYNC.
7	GROUND	15	SCL (DDC2B)
8	GROUND		

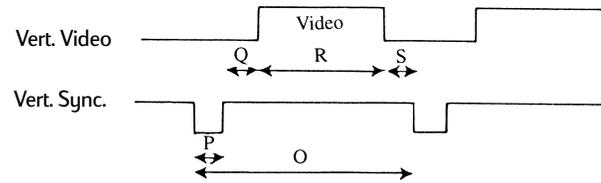
# Timing Charts

## SEPARATE SYNC.

### HORIZONTAL



### VERTICAL



## FACTORY MODES

Mode No.	1	2	3	4	5	Unit
Resolution	640 x 480	720 x 400	640 x 480	800 x 600	640 x 480	
Horizontal Frequency	31.468	31.468	37.500	37.878	43.269	KHz
(A) Horizontal	31.778	31.778	26.667	26.4	23.1	usec
(B) Horizontal Pulse Width	3.813	3.813	2.032	3.2	1.556	usec
(C) Horizontal Back Porch	1.907	1.907	3.810	2.2	2.222	usec
(D) Horizontal Active Area	25.422	25.422	20.318	20.0	17.778	usec
(E) Horizontal Front Porch	0.636	0.636	0.18	1.0	1.556	usec
(F) H. Sync. Polarity	-	-	-	+	-	
Vertical Frequency	59.943	70.000	75.000	60.31	85.0	Hz
(O) Vertical Period	16.683	14.268	13.333	16.579	11.764	msec
(P) Vertical Pulse Width	0.064	0.064	0.08	0.1056	0.069	msec
(Q) Vertical Back Porch	1.049	1.112	0.427	0.607	0.578	msec
(R) Vertical Active Area	15.253	12.711	12.800	15.84	11.093	msec
(S) Vertical Front Porch	0.318	0.381	0.027	0.0264	0.023	msec
(T) V. Sync. Polarity	-	+	-	+	-	
(U) Interlaced	No	No	No	No	No	

## FACTORY MODES

Mode No.	6	7	8	9	10	Unit
Resolution	800 x 600	1024 x 768	800 x 600	1024 x 768	1024 x 768	
Horizontal Frequency	46.875	48.363	53.674	68.667	56.476	KHz
(A) Horizontal	21.333	20.677	18.631	14.561	17.707	usec
(B) Horizontal Pulse Width	1.616	2.092	1.138	1.013	1.813	usec
(C) Horizontal Back Porch	3.232	2.462	2.702	2.2	1.92	usec
(D) Horizontal Active Area	16.162	15.754	14.222	10.836	13.653	usec
(E) Horizontal Front Porch	0.323	0.369	0.702	0.471	0.521	usec
(F) H. Sync. Polarity	+	-	+	+	-	
Vertical Frequency	75.000	60.004	85.061	85	70.069	Hz
(O) Vertical Period	13.333	16.666	11.756	11.764	14.272	msec
(P) Vertical Pulse Width	0.064	0.124	0.056	0.044	0.106	msec
(Q) Vertical Back Porch	0.448	0.600	0.503	0.524	0.513	msec
(R) Vertical Active Area	12.800	15.88	11.179	11.182	13.599	msec
(S) Vertical Front Porch	0.021	0.062	0.019	0.014	0.054	msec
(T) V. Sync. Polarity	+	-	+	+	-	
(U) Interlaced	No	No	No	No	No	

# Troubleshooting

Before you call an authorized service center, please check if the following items are properly connected. If a nonstandard personal computer or graphics

adapter is being used, make sure the pin assignments of the signal input connector and the signal timing meet the specifications detailed previously.

PROBLEM	CHECKS	LOCATION
No Picture or POWER indicator off.	* AC cord plugged in * POWER switch on * Signal cable connected	Rear Front Rear
No picture, POWER indicator off, AC cord plugged in, POWER switch on.	* Turn off POWER switch, wait at least 30 seconds, turn it back on.	Front
Image is not centered.	* V-CENTERING Control * H-PHASE Control	Front Front
No picture, POWER indicator on.	* CONTRAST Control * BRIGHTNESS Control	Front Front

# Automatic Power Saving

## Introduction

“Green Concept” has prevailed throughout the information market of the world for some years. EPA (Environmental Protection Agency) stipulates that all information products sold to the UNITED STATES should meet the requirement of environmental protection. Thus, we promote a series of monitors with power-saving features which meet the “EPA” energy star requirement. Below are the criteria:

## Features

When the monitor is connected to an unpowered PC or when both horizontal and vertical syncs are not present, the monitor will enter the “off” state and the power LED will be amber.

When either horizontal or vertical sync is absent, the monitor will automatically enter the “Suspend” or “Stand-by” state and the power LED color will be yellow.

When the PC recovers from the sleep state by either operation of the keyboard or mouse, the monitor will power up normally and the power LED will be green.

## Power Consumption

The monitor power is reduced to less than 5 Watts in the power save “OFF” state and meets the U.S.A “EPA” energy star requirement and VESA “DPMS” requirement.

## 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.

## 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 0.1mR/hr (1 $\mu$ Sv/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.

## Cables

Connections to this device must be made with shielded cables with metallic REI/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.

## **EPA Energy Star**

Monitors that are marked with the Energy Star logo meet the requirements of the EPA Energy Star program. Specific details on using the Energy Star features can be found in the energy saver or power management section of the manual that comes with the computer the monitor is connected to.

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