



APPENDIX G

: USER'S MANUAL

HP LD4200tm LCD Monitor

User Guide



© 2009 Hewlett-Packard Development
Company, L.P.

Microsoft, Windows, and Windows Vista are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

This document contains proprietary information that is protected by copyright. No part of this document may be photocopied, reproduced, or translated to another language without the prior written consent of Hewlett-Packard Company.

First Edition (November 2009)

Document Part Number: 588044-001

About This Guide

This guide provides information on setting up the monitor, installing drivers, using the on-screen display menu, troubleshooting and technical specifications.

- ⚠ **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.
- 📝 **NOTE:** Text set off in this manner provides important supplemental information.

Table of contents

1 Product Features

HP Digital Signage Model	1
--------------------------------	---

2 Safety and Maintenance Guidelines

Important Safety Information	2
Maintenance Guidelines	3
Cleaning the Monitor	3
Shipping the Monitor	3

3 Setting Up the Monitor

Installing the Stand	4
Connecting the Speakers	5
Rotating to the Portrait Position (Select Models)	7
Using the Remote Control	8
Inserting the Batteries	8
Identifying Remote Control Buttons	9
Identifying Rear Components	10
Connecting to External Devices	11
Connecting to the Computer	11
Connecting Daisy Chain Monitors	13
VESA Mounting Support	13
Connecting Video Input	14
Connecting Component Input (480p/720p/1080p/1080i/480i)	15
Connecting HDMI Input (480p/720p/1080i/1080p)	16
Watching AV Outputs	17
Connecting the USB (Universal Serial Bus) Cable	17

4 Operating the Monitor

Software and Utilities	19
The Information File	19
The Image Color Matching File	19
Installing the .INF and .ICM Files	20
Installing from the CD	20

Downloading from the Worldwide Web	20
Screen Adjustment Options	21
Using the Auto-Adjustment Function	22
Using the On-Screen Display Menu	23
Using the Remote Control to Adjust the OSD	23
OSD Menu Selections	24
Selecting An Aspect Ratio Mode	27
Adjusting the Timer Function	28
Clock	28
On/Off Timer	28
Sleep Time	28
Auto Sleep	28
Selecting Options	29
Using the Key Lock	29
Using the ISM Method Option	29
Using the Tile Mode	29

5 Operating the Touch Screen

Touch Software Installation	32
Driver and Configuration Control Panel Utility	33
Touch Device	33
Information	33
Setup	33
Multipoint Touch	35
Option/Tools	35
Popup Control	41
Popup Control Menu	41
Multi Monitor Display	41

Appendix A Troubleshooting

Solving Common Problems	42
Using the Worldwide Web	44
Preparing to Call Technical Support	44

Appendix B Technical Specifications

HP LD4200tm LCD Monitor	45
Recognizing Preset Display Resolutions	47
HP LD4200tm Preset Display Modes	47
DTV Mode	47
Power Indicator	48

Appendix C Controlling the Multiple Product

Connecting the Cable	49
----------------------------	----

RS-232C Configurations	49
Communication Parameter	50
Command Reference List	50
Transmission / Receiving Protocol	51
01. Power (Command : a)	52
02. Input Select (Command : b) (Main Picture Input)	53
03. Aspect Ratio (Command : c) (Main picture format)	53
04. Screen Mute (Command : d)	54
05. Volume Mute (Command : e)	54
06. Volume Control (Command : f)	55
07. Contrast (Command : g)	55
08. Brightness (Command : h)	56
09. Color (Command : i) (Video only)	56
10. Tint (Command : j) (Video only)	57
11. Sharpness (Command : k) (Video only)	57
12. OSD Select (Command : l)	57
13. Remote Lock /Key Lock (Command : m)	58
14. Balance (Command : t)	58
15. Color Temperature (Command : u)v	59
16. Abnomal state (Command : z)	59
17. ISM mode (Command: j p)	60
18. Auto Configure (Command: j u)	60
19. Key (Command : m c)	60
20. Tile Mode (Command : d d)	61
21. Tile H Position (Command : d e)	61
22. Tile V Position (Command : d f)	62
23. Tile H Size (Command : d g)	62
24. Tile V Size (Command : d h)	62
25. Tile ID Set (Command : d i)	62
26. Natural Mode (In Tilemode) (Command : d j)	63
27. Elapsed time return (Command : d l)	63
28. Temperature value (Command : d n)	63
29. Lamp fault Check (Command : d p)	64
30. Auto volume (Command : d u)	64
31. Speaker (Command : d v)	65
32. Time (Command : f a)	65
33. On Timer (On/Off Timer) On, Off (Command : F b)	66
34. Off Timer (On/Off Timer) On, Off (Command : f c)	66
35. On Timer (On/Off Timer) Time (Command : f d)	67
36. Off Timer (On/Off Timer) Time (Command : f e)	68
37. Sleep Time (Command : f f)	68
38. Auto Sleep (Command : f g)	69
39. Power On Delay (Command : f h)	69
40. Language (Command : f i)	70

41. DPM Select (Command : f j)	70
42. Reset (Command : f k)	70
43. S/W Version (Command : f z)	71
44. Input Select (Command : x b)	71
IR Codes	72
Remote Control IR Code	72
Output Wave	72
Configuration of Frame	72
Lead Code	73
Repeat Code	73
Bit Description	73
Frame Interval: Tf	73
IR Codes Table	73

Appendix D Agency Regulatory Notices

Federal Communications Commission Notice	75
Modifications	75
Cables	75
Declaration of Conformity for Products Marked with the FCC Logo (United States Only)	75
Canadian Notice	76
Avis Canadien	76
European Union Regulatory Notice	76
German Ergonomics Notice	77
Japanese Notice	77
Korean Notice	77
Power Cord Set Requirements	77
Japanese Power Cord Requirements	77
Product Environmental Notices	78
Materials Disposal	78
Disposal of Waste Equipment by Users in Private Household in the European Union	78
Chemical Substances	78
HP Recycling Program	78
Restriction of Hazardous Substances (RoHS)	78
Turkey EEE Regulation	79

1 Product Features

HP Digital Signage Model

The HP LCD digital signage monitor has a wide aspect active matrix thin-film transistor (TFT) panel. The monitor feature:

- LD4200tm model, 106.7 cm (42-inch) widescreen diagonal viewable area display with 1920 x 1080 native resolution
- Wide viewing angle up to 178° horizontal and 178° vertical
- Landscape or portrait wall mounting position
- Remote control with AAA type batteries
- Video signal inputs to support HDMI and VGA analog with VGA cable provided
- 
- Video inputs support HDMI, composite, S-video and RS232 signal inputs
- Picture mode, tile mode, color temperature, aspect ratio, audio modes, auto volume, on/off timer, key lock, ISM method and auto config user controls
- PC sound jack, audio ports and speaker ports
- Screen adjustment buttons on the back side of the monitor panel
- On-screen display (OSD) menu in several languages for ease of setup and screen optimization
- Plug and play capability if supported by the system
- Security cable provision on rear panel to lock down the monitor and help prevent theft
- Support VESA compliant mounting interface with 600 x 400 hole pattern
- Optional stand with cable management feature to position monitor on a desktop or table
- Optional mounting speakers
- 
- Optional Thin Client mounting adapter plate
- Software and documentation CD provided

2 Safety and Maintenance Guidelines

Important Safety Information

A power cord is included with the 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 the monitor, refer to the [Power Cord Set Requirements on page 77](#).

⚠ **WARNING!** To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding feature. The grounding plug is an important safety feature.
- Plug the power cord in a grounded (earthed) outlet that is easily accessible at all times.
- Disconnect power from the product by unplugging the power cord from the electrical outlet.

For your safety, 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.

To reduce the risk of serious injury, read the *Safety and Comfort Guide*. It describes proper workstation, setup, posture, and health and work habits for computer users, and provides important electrical and mechanical safety information. This guide is located on the Web at <http://www.hp.com/ergo> and/or on the documentation CD, if one is included with the monitor.

⚠ **CAUTION:** For the protection of the monitor, as well as the computer, connect all power cords for the 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 the equipment, if surge protection fails.

Use the appropriate and correctly sized furniture designed to properly support your HP LCD monitor.

⚠ **WARNING!** LCD monitors that are inappropriately situated on dressers, bookcases, shelves, desks, speakers, chests, or carts may fall over and cause personal injury.

Care should be taken to route all cords and cables connected to the LCD monitor so that they can not be pulled, grabbed, or tripped over.

Maintenance Guidelines

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

- Do not open the monitor cabinet or attempt to service this product yourself. Adjust only those controls that are covered in the operating instructions. If the monitor is not operating properly or has been dropped or damaged, contact an authorized HP 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 the 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 the monitor off when not in use. You can substantially increase the life expectancy of the monitor by using a screen saver program and turning off the monitor when not in use.
- 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 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 or moisture.
- When removing the monitor base, you must lay the monitor face down on a soft area to prevent it from getting scratched, defaced, or broken.

Cleaning the Monitor

1. Turn off the monitor and the computer.
2. Unplug the monitor from the wall outlet.
3. Clean the monitor plastics with a clean cloth dampened with water.
4. Clean the monitor screen with an antistatic screen cleaner.

△ **CAUTION:** Do not use benzene, thinner, ammonia, or any other volatile substances to clean the 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 the monitor.

3 Setting Up the Monitor

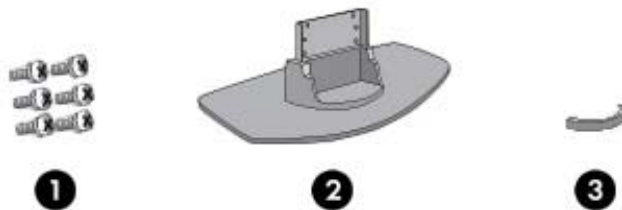
To set up the monitor, ensure that the power is turned off to the monitor, computer system, and other attached devices, then follow the instructions below.

Installing the Stand

1. Remove the six screws (1), monitor stand (2) and cable management clip (3) from the box.

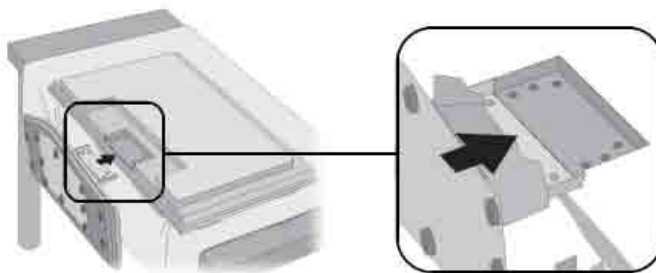
 **NOTE:** The LD4200tm stand uses six M4 x 12mm screws.

Figure 3-1 Stand Accessory Contents



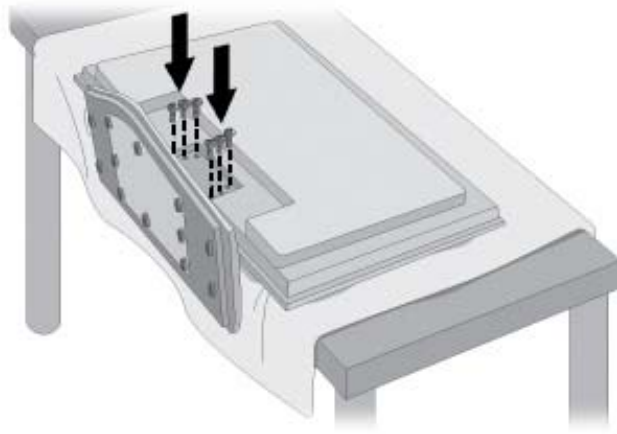
2. Place a soft cloth on the table and place the product with the screen facing downward. Connect the stand as shown in the following illustrations.

Figure 3-2 Sliding the Stand Onto the Monitor



3. Use the screws to secure the stand to the rear side of the product.

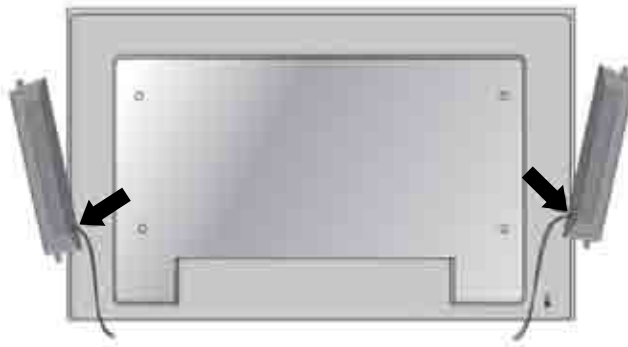
Figure 3-3 Securing the Stand to the Monitor



Connecting the Speakers

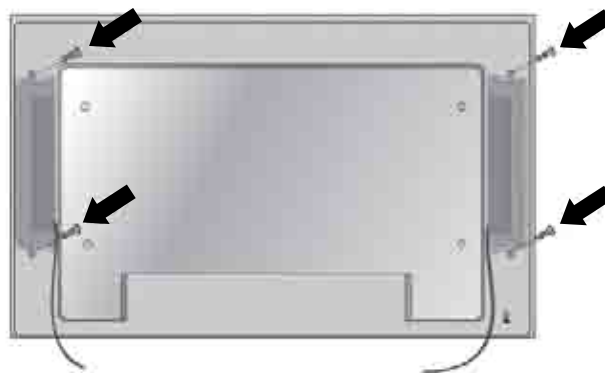
1. Mount the speakers onto the product.

Figure 3-4 Mounting the Speakers



2. Use the four Taptite D3 x 12mm screws to secure the speakers to the monitor.

Figure 3-5 Securing the Speakers to the Monitor



3. After installing the speakers, use the cable holders and cable ties (available on select models) to organize the speaker cables.

Figure 3-6 Using the Cable Holders (Feature Available on Select Models)

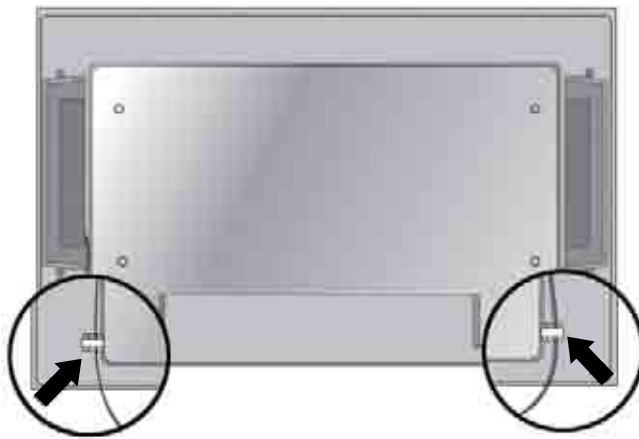
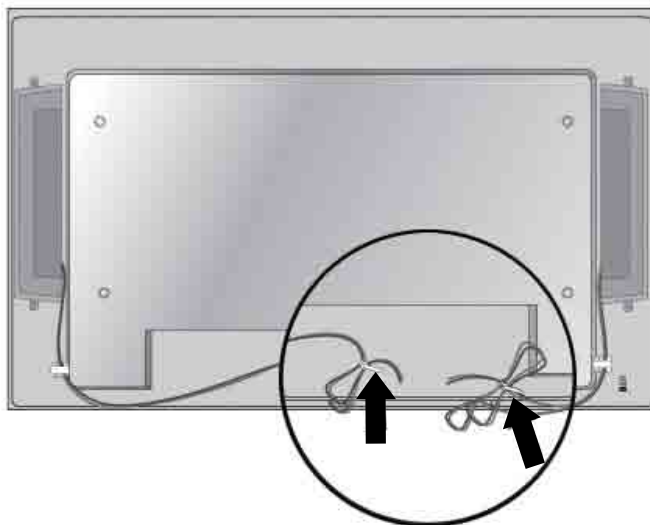
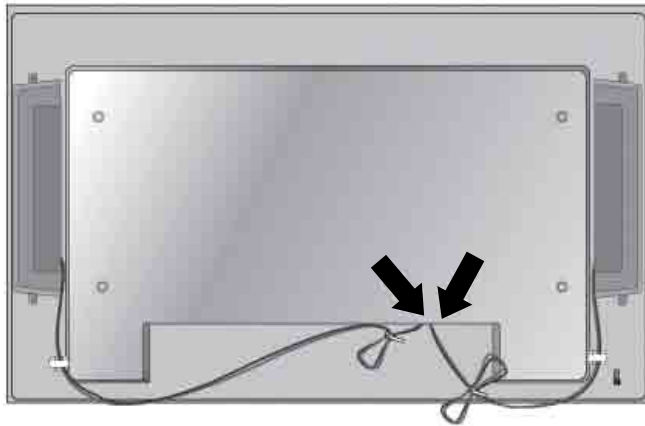


Figure 3-7 Using the Cable Ties (Feature Available on Select Models)



4. After installing the speakers, connect the input terminal with a proper color match.

Figure 3-8 Connecting to the Input Terminal

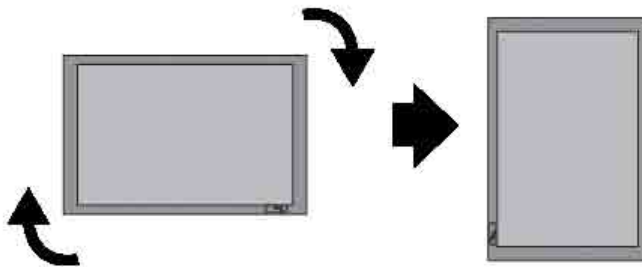


Rotating to the Portrait Position (Select Models)

When installing the monitor in the portrait position, rotate it clockwise based on its front. The monitor can be rotated in only one direction.

 **NOTE:** The monitor cannot be rotated if it is installed on the stand.

Figure 3-9 Installing Portrait



 **NOTE:**

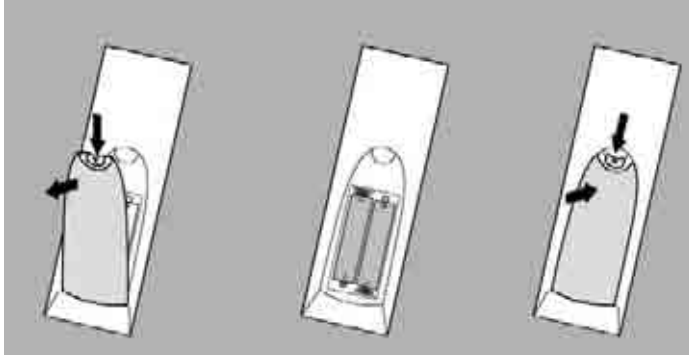
Using the Remote Control

Inserting the Batteries

1. Slide off the battery cover.
2. Insert the batteries with correct polarity (+/-).
3. Close the battery cover.

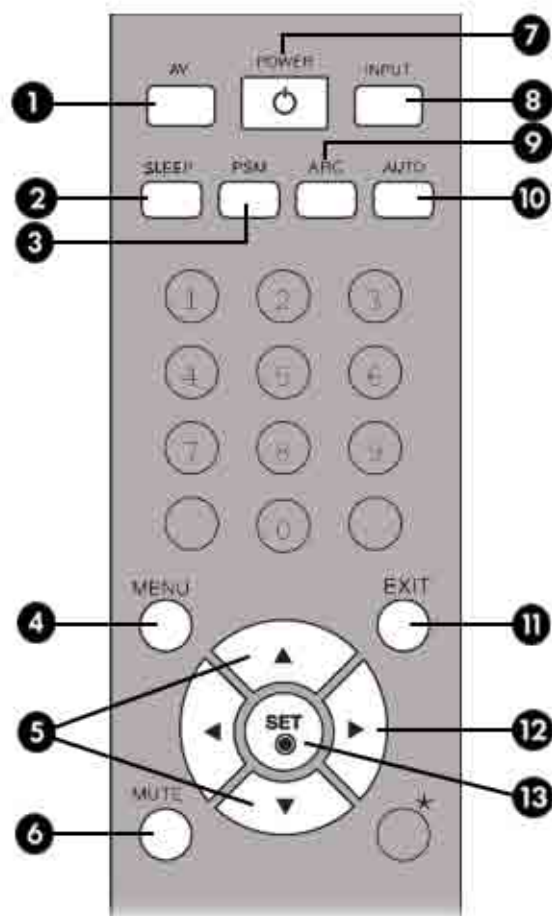
 **NOTE:** Dispose of used batteries in the recycle bin to prevent environmental pollution.

Figure 3-10 Inserting Batteries



Identifying Remote Control Buttons

Figure 3-11 Remote Control Buttons

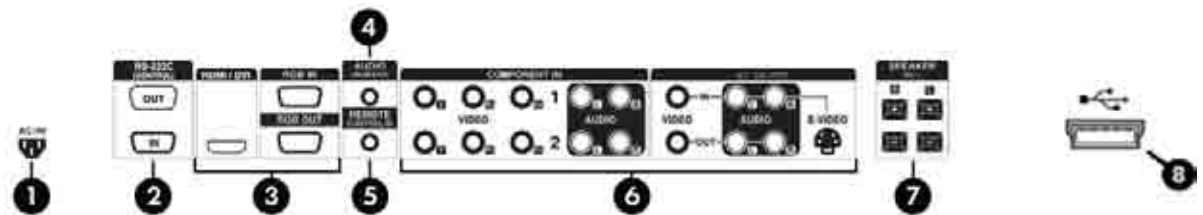


Component	Function
1 AV	Toggles through video: AV > Component1 > Component2 > RGB PC > HDMI/DVI.
2 Sleep	When watching AV , RGB PC , HDMI/DVI , Component1 , Component2 , the product will be automatically turned off after a certain period of time. Press the button repetitively to select an appropriate time duration.
3 PSM	Toggles through present video settings.
4 Menu	Opens the menu selection.
5 Up and Down	Provides up and down direction adjustment.
6 Mute	Turns off sound.
7 Power	Turns the monitor on and off.
8 Input Select	Selects the video signal input. If you press the button once, the input signal window will open. Select the signal input type you want using the up or down button.
9 ARC	Aspect Ratio Correction. Toggles through aspect ratio options.
10 Auto	Automatic adjustment function (operational for the analog signal only).
11 Exit	Exits the menu.

Component	Function	
12	Volume	Adjusts the sound up and down.
13	Set (Check)	Press to select a menu item or save changes.

Identifying Rear Components

Figure 3-12 Rear Components (The product image in the user guide could be different from the actual image)



Component	Function	
1	Power connector	Connects the AC power cord to the monitor
2	RS-232C serial ports	Connects to RS-232 devices
3	RGB PC, HDMI/DVI Ports	HDMI supports High Definition input and HDCP (High-bandwidth Digital Content Protection). Some devices require HDCP in order to display HD signals
4	PC Sound Jack	Connects the audio cable to the line-out jack of the PC sound card
5	Wired Remote Control Port	Connects a wired remote control to the monitor
6	AV Ports	Connects the video and audio equipment to the monitor
7	Speaker Ports	Connects the speakers to the monitor
8	USB Port	Connects the monitor and the PC with USB cable

 **NOTE:** The line-out terminal is used to connect to the speaker, including a built-in amplifier (AMP). Be sure the connecting terminal of the PC sound card is checked before connecting. If the Audio Out of the PC sound card has only Speaker Out, reduce the PC volume. If the Audio Out of the PC sound card supports both Speaker Out and Line Out, convert to Line Out using the card jumper of the program. Refer to the manual that comes with the sound card for additional instructions.

Connecting to External Devices

Connecting to the Computer

1. Be sure the monitor, computer and all attached devices are turned off.
2. Connect the signal input cable:
 - a. For analog operation, connect the VGA (D-sub) signal cable to the RGB IN (1) connector on the rear of the monitor and the other end to the VGA connector (2) on the computer.

 **NOTE:** If connecting to a Mac computer, use the standard Macintosh adapter (3).

Figure 3-13 Connecting the VGA Signal Cable



- b. For digital operation, connect the HDMI to DVI signal cable (not included) to the HDMI/DVI (1) connector on the rear of the monitor and the other end to the DVI connector (2) on the computer.

 **NOTE:** Use shielded signal interface cables with ferrite cores to maintain standard compliance for this product.

Figure 3-14 Connecting the HDMI to DVI Signal Cable



3. Connect the audio cable (sold separately) to the Audio (RGB/DVI) (1) connector on the rear of the monitor and the other end to the line out jack (2) on the computer.

Figure 3-15 Connecting the Audio



4. Connect the AC power cord to the power connector (1) on the rear of the monitor and the other end to an electrical outlet (2).

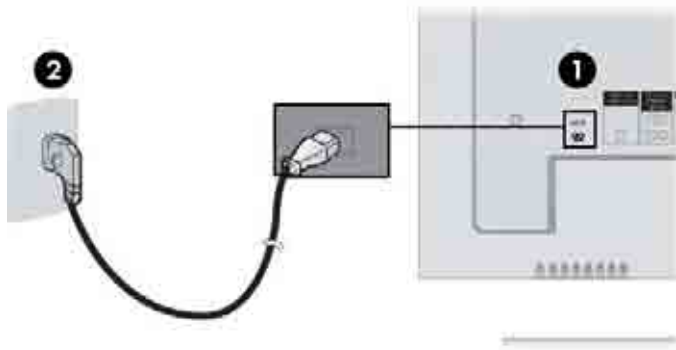
⚠ **WARNING!** To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding feature. The grounding plug is an important safety feature.
- Plug the power cord in a grounded (earthed) outlet that is easily accessible at all times.
- Disconnect power from the product by unplugging the power cord from the electrical outlet.

For your safety, 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.

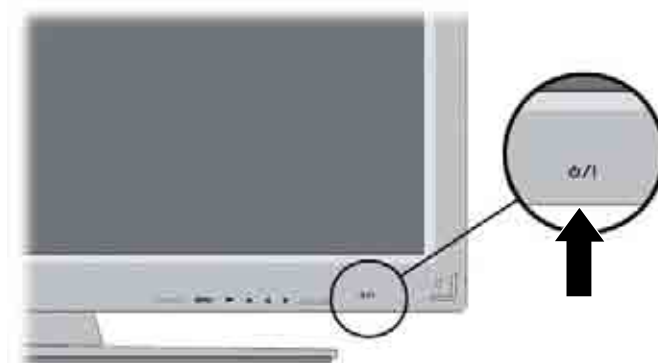
To reduce the risk of serious injury, read the *Safety and Comfort Guide*. It describes proper workstation, setup, posture, and health and work habits for computer users, and provides important electrical and mechanical safety information. This guide is located on the Web at <http://www.hp.com/ergo> and/or on the documentation CD, if one is included with the monitor.

Figure 3-16 Connecting the Power Cord



5. Turn on power to the monitor by pressing the front panel power button.

Figure 3-17 Front Panel Power Button



6. Turn on the computer.
7. Select an input signal.

Press the INPUT button on the remote control to select the input signal. Press the SET button to save your change.

Or, press the SOURCE button on the back side of the monitor panel. Press the AUTO/SET button to save your change.

- a. When connecting with a VGA signal input cable, select the **RGB PC** from the Input menu.
- b. When connecting with a HDMI to DVI signal input cable, select **HDMI/DVI** from the Input menu.

 **NOTE:** If connecting two computers, connect the signal cables (HDMI to DVI and VGA) to each computer. Press the INPUT button on the remote control to select the computer use.

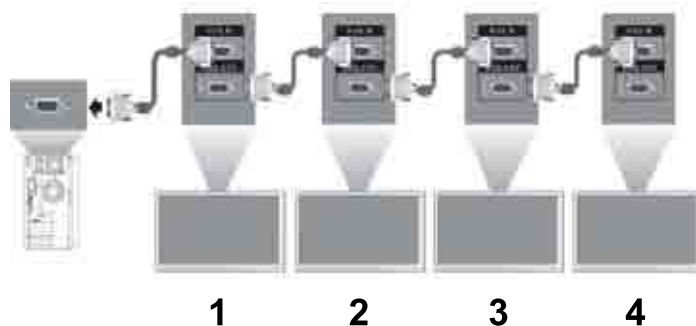
 **CAUTION:** Burn-in damage may occur on monitors that display the same static image on the screen for a prolonged period of time (12 consecutive hours of non-use). To avoid burn-in image damage on the monitor screen, you should always activate a screen saver application or turn off the monitor when it is not in use for a prolonged period of time or cycle between 5 minutes of static information and 10 seconds of a moving image. Image retention is a condition that may occur on all LCD screens. Screen burn-in is not covered under the HP warranty.

Connecting Daisy Chain Monitors

Use this function when displaying analog RGB inputs of a computer to the other product.

To use different products connected to each other, connect one end of the signal input cable (15-pin D-Sub VGA signal cable) to the RGB Out connector of product 1 and connect the other end of the RGB In connector of other products.

Figure 3-18 Connecting Several Monitors to the Computer

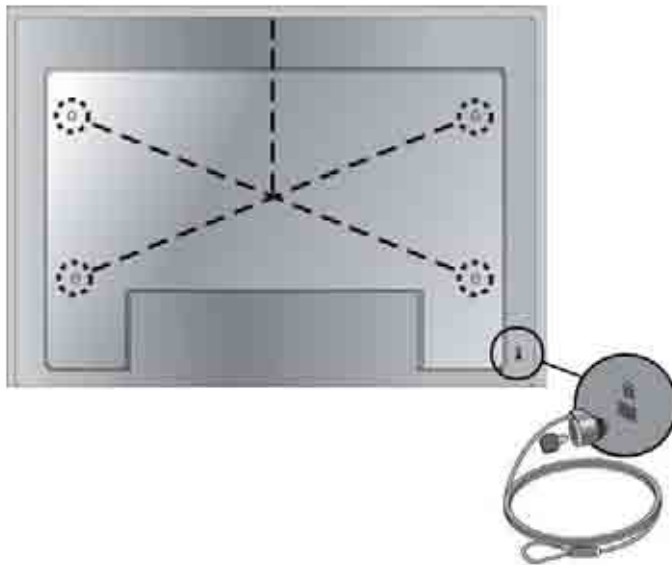


VESA Mounting Support

This product supports a VESA FDMI compliant mounting interface. On the rear of the monitor are four VESA mounting holes that allow you to install a mounting device to the monitor. The mounting devices are purchased separately and not available from HP. Refer to the instructions included with the mount for additional information.

A security cable provision is available on the rear of the monitor to help prevent theft. The cable and lock are available separate and can be purchased from HP.

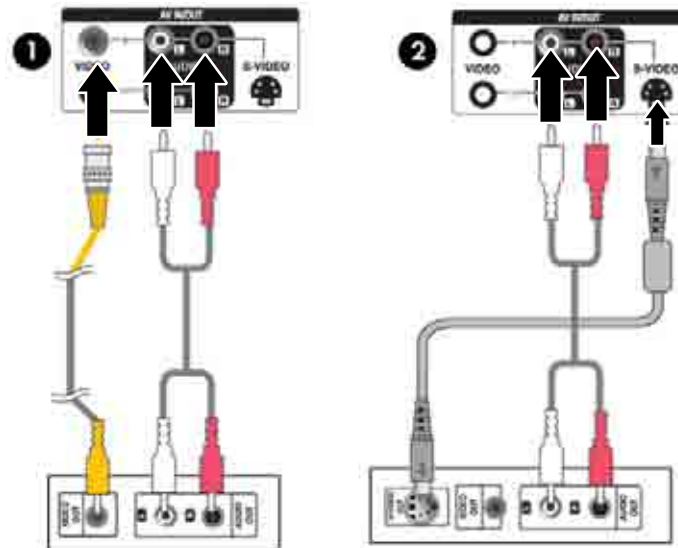
Figure 3-19 VESA Mounting Holes



Connecting Video Input

1. Connect the video cable (sold separately) as shown in the following illustration, and then connect the power cable.
 - a. When connecting with a BNC cable (1), connect the input terminal to the monitor and VCR/DVD receiver.
 - b. When connecting with an S-Video cable (2), connect the S-Video input terminal to the monitor and VCR/DVD receiver to watch high image quality movies.

Figure 3-20 Connecting with the BNC and Audio Cables to VCR/DVD Receiver



2. Select an input signal.

Press the INPUT button on the remote control to select the input signal. Press the SET button to save your change.

Or, press the SOURCE button on the back side of the monitor panel. Press the AUTO/SET button to save your change.

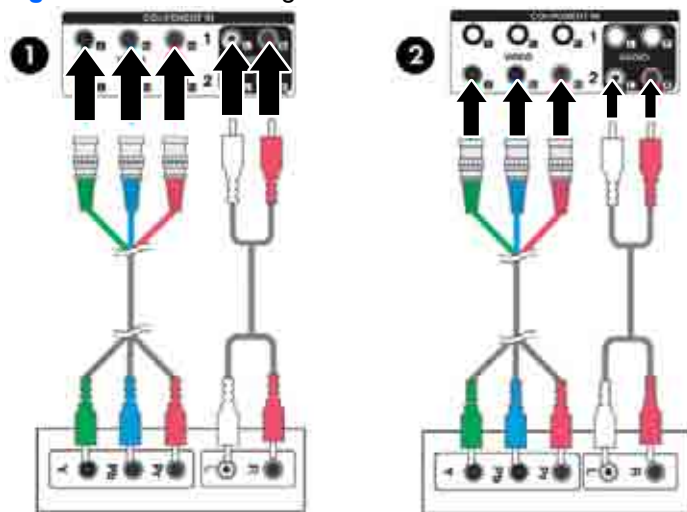
- a. When connecting with a BNC cable, select **AV** from the Input menu.
- b. When connecting with an S-Video cable, select **AV** from the Input menu.

 **NOTE:** When the BNC cable is connected simultaneously with S-Video cable, the S-Video input has a priority.

Connecting Component Input (480p/720p/1080p/1080i/480i)

1. Connect the video/audio cable (sold separately) as shown in the following illustration, and then connect the power cord. Connect the Component1 (1) or Component2 (2) input terminal to the monitor and HDTV receiver.

Figure 3-21 Connecting the BNC and Audio Cables to HDTV Receiver



 **NOTE:** Some devices may require HDCP in order to display HD signals. Component does not support HDCP.

2. Select an input signal.

Press the INPUT button on the remote control to select the input signal. Press the SET button to save your change.

Or, press the SOURCE button on the back side of the monitor panel. Press the AUTO/SET button to save your change.
 - a. Select **Component1** from the Input menu.
 - b. Select **Component2** from the Input menu.

Connecting HDMI Input (480p/720p/1080i/1080p)

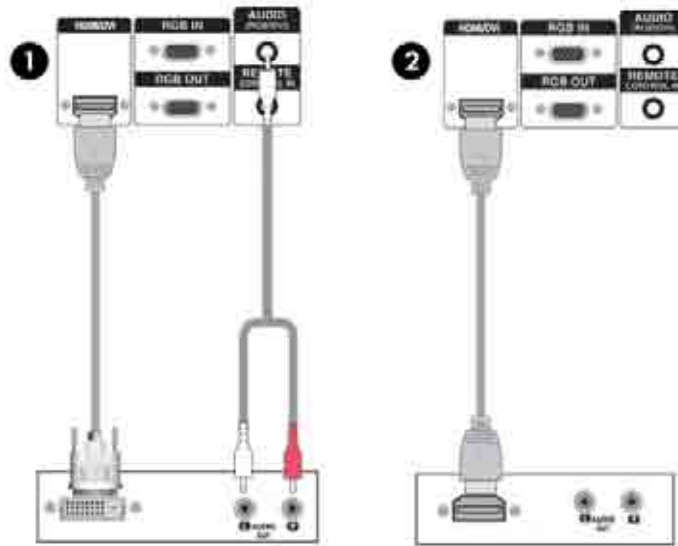
HDMI supports High Definition Input and HDCP (High-bandwidth Digital Content Protection). Some devices require HDCP in order to display HD signals.

1. Connect the video/audio cable (sold separately) as shown in the following illustration, and then connect the power cord.

(1) Connect an HDMI to DVI signal cable and RCA-PC audio cable to the monitor and VCR/DVD/Set-top box

(2) Connecting an HDMI signal cable to the monitor and DVR/DVD/Set-top box

Figure 3-22 Connecting HDMI Input to VCR/DVD/Set-Top Box



2. Select an input signal.

Press the INPUT button on the remote control to select the input signal. Press the SET button to save your change.

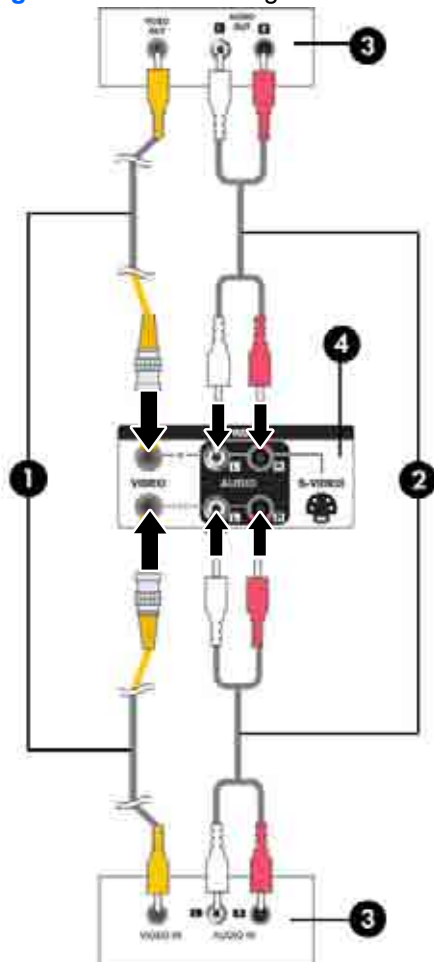
Or, press the SOURCE button on the back side of the monitor panel. Press the AUTO/SET button to save your change.

When connecting with an HDMI to DVI signal cable or HDMI signal input cable, select **HDMI/DVI** from the Input menu.

Watching AV Outputs

When using AV input, you can connect the AV Out to other monitors. Connect the BNC cable (1) and audio cable (2) to the video/TV (3) and to the monitor (4).

Figure 3-23 Connecting AV Out

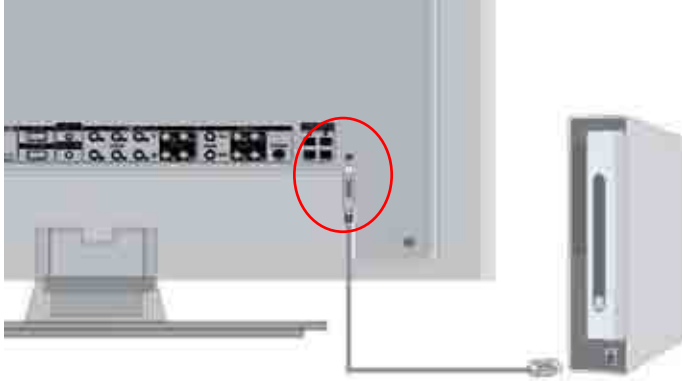


Connecting the USB (Universal Serial Bus) Cable

Use the touch screen functionality by connecting the monitor and the computer with a USB cable. Connect the USB cable for the touch screen before installing the Touch Driver Program.

 **NOTE:** The monitor's USB terminal supports USB 2.0 and full speed (12Mbps).

Figure 3-24 Connecting the USB Cable



4 Operating the Monitor

Software and Utilities

The CD that comes with the monitor contains files that you can install on the computer to enhance the performance of the monitor.

- HP monitor driver software, which automatically detects the computer's Microsoft Operating System and installs the corresponding .INF (Information) and .ICM (Image Color Matching) driver files that are used to configure the HP monitor
- Touch drivers (refer to chapter 5 for installation instructions)
- Auto-adjustment pattern utility to optimize the display

PDF Complete is supplied on this CD and can be installed from the menu.



NOTE: If the monitor does not include a CD, the .INF and .ICM files can be downloaded from the HP monitors support Web site. See [Downloading from the Worldwide Web on page 20](#) in this chapter.

The Information File

The setup information, or .INF file, defines monitor resources used by Microsoft Windows operating systems to ensure monitor compatibility with the computer's graphics adapter.

The Image Color Matching File

The image color matching, or .ICM file, is a color data file that is used in conjunction with graphics applications to provide consistent color matching from monitor screen to printer, or from scanner to the monitor screen. The .ICM file is only activated from within the graphics applications that support this feature.

Installing the .INF and .ICM Files

After you determine that you need to update, you can install the .INF and .ICM files from the CD or download them.

Installing from the CD

To install the .INF and .ICM files on the computer from the CD:

1. Insert the CD in the computer CD-ROM drive. The CD menu is displayed.
2. View the **Monitor Driver Software Readme** file.
3. Select **Install Monitor Driver Software**.
4. Follow the on-screen instructions.
5. Ensure that the proper resolution and refresh rates appear in the Windows Display control panel.



NOTE: You may need to install the digitally signed monitor .INF and .ICM files manually from the CD in the event of an installation error. Refer to the Monitor Driver Software Readme file on the CD.

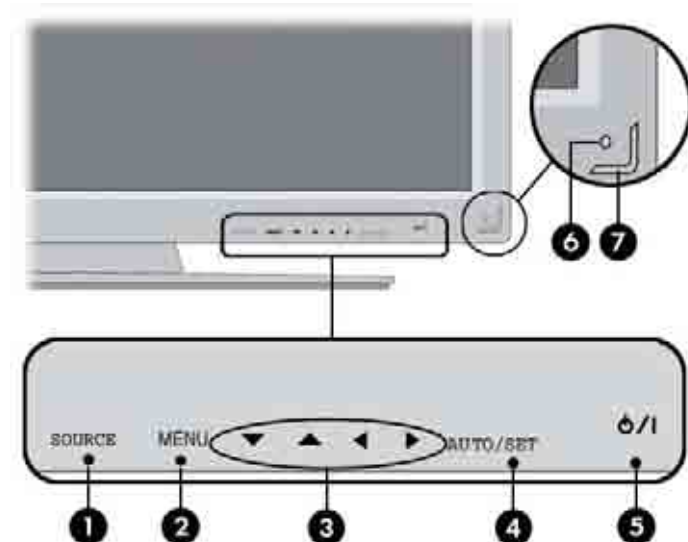
Downloading from the Worldwide Web

To download the latest version of .INF and .ICM files from the HP monitors support Web site:

1. Refer to <http://www.hp.com/support> and select the country region.
2. Follow the links for the monitor to the support page and download page.
3. Ensure the system meets the requirements.
4. Download the software by following the instructions.

Screen Adjustment Options

Figure 4-1 Front Panel Controls



Component	Function
1 Source	Toggles between video inputs: • AV - Composite Video, S-Video • Component1 - HDTV, DVD • Component2 - HDTV, DVD • RGB PC - VGA or 15-pin D-Sub analog signal • HDMI/DVI - Digital signal
2 Menu	Opens or closes the OSD (On-screen Display) menu screen.
3 OSD Select/Adjust buttons	Selects an OSD menu icon or adjusts the settings in the OSD screen. ◀ ▶ Adjusts the volume
4 Auto/Set	When OSD window is closed, activates the auto adjustment feature to optimize the screen image. When OSD window is open, press to select a menu item or save changes.
5 Power	Press to turn on the power. Press again to turn it off.
6 IR Receiver	Receives signals from the remote control.
7 Power Indicator	Lights up blue when the display operates normally (on mode). If the display is in sleep (Energy Saving) mode, the indicator color changes to amber.

Using the Auto-Adjustment Function

You can optimize the screen performance for the VGA (analog) input by using the Auto/Set button on the monitor (AUTO button on the remote control) and the auto-adjustment pattern software utility on the CD provided.

Do not use this procedure if the monitor is using an HDMI to DVI input. If the monitor is using a VGA (analog) input, this procedure can correct the following image quality conditions:

- Fuzzy or unclear focus
- Ghosting, streaking or shadowing effects
- Faint vertical bars
- Thin, horizontal scrolling lines
- An off-center picture

To use the auto-adjustment feature:

1. Allow the monitor to warm up for 20 minutes before adjusting.
2. Press the **Auto/Set** button on the back side of the monitor panel.
If the result is not satisfactory, continue with the procedure.
3. Insert the CD in the disc drive. The CD menu is displayed.
4. Select **Open Auto-Adjustment Software**. The setup test pattern is displayed.
5. Press the **Auto/Set** button on the back side of the monitor panel to produce a stable, centered image.
6. Press the **ESC** key or any other key on the keyboard to exit the test pattern.

Using the On-Screen Display Menu

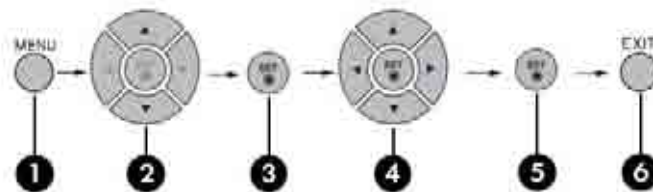
The monitor settings can be adjusted from the On-Screen Display (OSD) menu.

Icon	Main Menu	Function Description
	Picture	Adjusts screen brightness, contrast and color
	Audio	Adjusts the audio options
	Time	Adjusts the timer options
	Option	Adjusts the screen status according to the circumstances
	Information	Adjusts Set ID and check serial number and software version

Using the Remote Control to Adjust the OSD

Use the OSD to adjust the screen image based on your viewing preferences. To access the OSD, do the following:

1. If the monitor is not already on, press the power button to turn on the monitor.



2. Press the MENU button (1) on the remote control.
3. To access a control, use the ▼ ▲ buttons (2).
4. When the icon you want becomes highlighted, press the SET button (3).
5. Use the ▼ ▲ ◀ ▶ buttons (4) to adjust the item to the desired level.
6. Accept the changes by pressing the SET (5) button.
7. Exit the OSD menu by pressing the EXIT button (6).

OSD Menu Selections

The following table lists the On-Screen Display (OSD) menu selections and their functional descriptions.

Icon	Main Menu	Submenu	Description
	Picture	Picture Mode	Selects your screen presets. Toggle between: • Vivid - select to display with a sharp image. • Standard - the most general and natural screen display status. • Cinema - lowers brightness by one level. • Sport - displays with a soft image. • Game - to enjoy dynamic image when playing a game. • User 1, 2 - allows the user defined settings: ◦ Backlight: controls the brightness of the screen, adjust the brightness of the LCD panel. ◦ Contrast: adjusts the difference between the light and dark levels. ◦ Color: adjusts the color to desired level. ◦ Sharpness: adjusts the clearness of the screen. ◦ Tint: adjusts the tint to a desired level. ◦ Expert: compensates for each image mode, or adjust image values according to a particular image (applies only to User 2 menu.) NOTE: If the Picture Mode setting in the Picture menu is set to Vivid, Standard, Cinema, Sport or Game, the subsequent menus will be automatically set.
		Color Temperature	Selects color settings: • Cool - slightly bluish white. • Medium - slightly purplish white. • Warm - slightly reddish white. • User - select this option to use the user-defined settings and set your own colors levels: ◦ Red ◦ Green ◦ Blue

Icon	Main Menu	Submenu	Description
		Advanced	Selects the following screen color adjustment settings: • Gamma - set your own gamma value. On the monitor, high gamma values display whitish images and low gamma values display high contrast images. • Film Mode - function works in the following mode: AV, Component 480i. When you watch a movie, this function adjusts the set to the best picture appearance. • Black Level - function works in the following mode: AV (NTSC), HDMI/DVI adjusts the contrast and the brightness of the screen using the black level of the screen. • NR - removing the noise up to the point where it does not damage the original picture.
		Aspect Ratio	Selects the image size of the screen to: • 16:9 - widescreen mode. • Just Scan - allows you to enjoy the transmitted data fully without any images cut off. (This menu is activated only in 720p, 1080p and 1080i in Component mode.) • Original - the aspect ratio is not adjusted from the original. It is set by the program being watched. • 4:3 - the picture format is 4:3 aspect ratio. • 1:1 - the aspect ratio is not adjusted from the original. Used in PC mode. (Only HDMI/DVI PC, RGB PC) • 14:9 - programs are viewed normally in 14:9 with black bars added to the top and bottom. The 4:3 programs are magnified on the top/bottom and left/right sides. • Zoom1,2 - 4:3 programs are magnified until they fill the 16:9 screen. The top and bottom will be cut off.
		Picture Reset	Returns the Picture Mode, Color Temperature, and Advance menu settings to the default factory settings.
		Screen	Adjusts the screen video to: • Auto config (RGB PC Input only): This button is for the automatic adjustment of the screen position, clock and phase. This function is available for analog signals only. • Manual Config: If the picture isn't clear after auto adjustment and characters are still trembling, adjust the picture phase manually using the following functions: ◦ Clock - minimizes any vertical bars or strips visible on the screen background. The horizontal screen size will also change. This function is available for analog signals only. The clock function is not available in Component, HDMI/DVI/AV. ◦ Phase - adjusts the focus of the display. This item allows you to move any horizontal noise and clear or sharpen the image of characters. This function is available for analog signals only. The phase function is not available in Component, HDMI/DVI/AV.

Icon	Main Menu	Submenu	Description
			◦ H-Position - moves the screen position horizontally. ◦ V-Position - moves the screen position vertically. ◦ H-Size - adjusts the horizontal size of the screen. ◦ V-Size - adjusts the vertical size of the screen.
			XGA Mode (RGB-PC only) - provides improved or better picture quality, select the same mode corresponding to computer resolution.
			Reset: returns Manual Config to the default factory settings.
	Audio	Sound Mode	Automatically selects the best sound tone quality depending on the video type that you're currently watching: • Clear Voice - differentiates the human sound from others and helps users listen to human voices better. • Standard - most commanding and natural audio. • Music - select the option to enjoy the original sound when listening to the music. • Cinema - select this option to enjoy sublime sound. • Sport - select this option to watch sports broadcasting. • Game - select this option to enjoy dynamic sound when playing a game. • User - select this option to use the user-defined audio settings. NOTE: When connected to a computer and the Sound Mode setting, the audio menu is Clear Voice, Standard, Music, Cinema or Sport. The available menus are Balance, Auto Volume, Speaker.
		Auto Volume	Adjusts uneven sound volumes across all channels or signals automatically to the most appropriate level. To use this feature select On.
		Balance	Use this function to balance sound from the left and right speakers.
		Speaker	Adjusts internal speaker status. If you want to use an external hi-fi stereo system, turn off the internal speakers of the set.
	Time	Clock	Resets the clock if the current time is incorrect.
		On/Off Timer	The time off automatically switches the set to standby at the pre-set time.
		Sleep Time	Automatically turns off power when the time set by a user is passed.
		Auto Sleep	If active and there is no input signal, the set switches to off mode automatically after 10 minutes.
		Power On Delay	When connecting multiple monitors and turning the power on, the monitors are turned on individually to prevent overload.

Icon	Main Menu	Submenu	Description
	Option	Language	Selects the language in which the OSD menu is displayed.
		Key Lock	Sets up the monitor so that it can only be used with the remote control. This feature can prevent unauthorized viewing.
		ISM Method	Avoids allowing a fixed or burn-in image to remain on the screen for a long period of time.
		Power Indicator	Sets the power indicator on the front of the monitor to On or Off.
		DPM (Display Power Management) Select	Turns the power saving mode on or off.
		Tile Mode	Enlarges the screen and is also used with several products to view the screen. To use this function, it: • must be displayed with several other products. • must be in a function that can be connected to RS232C or RGB Out.
	Information	Factory Reset	Select this option to return to the default factory settings.
		Set ID	Assigns a unique Set ID number (name assignment) to each product when several products are connected for display. Specify the number (1 ~ 99) using the up and down buttons and exit. Use the assigned Set ID to individually control each product using the Product Control Program.
		Serial No	Displays the serial numbers of the product.
		SW Version	Displays the software version.

Selecting An Aspect Ratio Mode

The aspect ratio modes available for your selection depends on the current input source. Use the following table to determine which mode is available for your monitor.

ARC \ Mode	AV	Component	HDMI/DVI		RGB
			DTV	PC	PC
16:9	X	X	X	X	X
Just Scan		X	X		
Original	X				
4:3	X	X	X	X	X
1:1				X	X
14:9	X				
Zoom1	X				
Zoom2	X				

Adjusting the Timer Function

Use the remote control to set the following timer options.

Clock

The Clock menu allows you to reset the clock manually if the current time is incorrect. To reset the clock:

1. Press the MENU button and then use ▼ ▲ buttons to select the **Time** menu.
2. Press the ► button and then use ▼ ▲ buttons to select the Clock menu.
3. Press the ► button and then use ▼ ▲ buttons to set the hour (00~23).
4. Press the ► button and then use ▼ ▲ buttons to set the minutes (00~59).

On/Off Timer

The on/off timer menu lets you set the monitor to automatically switch to standby at a pre-set time:

1. Press the MENU button and then use ▼ ▲ buttons to select the Time menu.
2. Press the ► button and then use ▼ ▲ buttons to select On/Off Timer.
3. Press the ► button and then use ▼ ▲ buttons to set the hour (00~23).
4. Press the ► button and then use ▼ ▲ buttons to set the minutes (00~59).
5. Press the ► button and then use ▼ ▲ buttons to select On or Off.

Sleep Time

The sleep time menu lets you set the monitor power to automatically turn off when the time set by a user is passed.

1. Press the MENU button and then use ▼ ▲ buttons to select the Sleep Time menu.
2. Press the ► button and then use ▼ ▲ buttons to set the hour (00~23).
3. Press the ► button and then use ▼ ▲ buttons to set the minutes (00~59).

Auto Sleep

To set the monitor to switch to the off mode automatically after 10 minutes if Auto Sleep is active and there is no input signal:

1. Press the MENU button and then use ▼ ▲ buttons to select the Auto Sleep menu.
2. Press the ► button and then use ▼ ▲ buttons to select On or Off.



NOTE: In the event of a power interruption (disconnection or power failure), the Sleep Time clock must be reset.

NOTE: Once the On or Off time is set, these functions operate daily at the preset time. Off time function overrides On time function if they are set to the same time. When On time is operated, input screen is turned on as it was turned off.

Selecting Options

Using the Key Lock

The monitor can be set up so you can only use the remote control. To lock or unlock the OSD screen adjustment:

1. Open the OSD menu and select Option.
2. Select Key Lock from the menu list.
3. To lock the OSD screen adjustment, set the Key Lock tab to the ON position.
4. To unlock the OSD screen adjustment, press the MENU button on the remote control and set the Key Lock tab to the Off position.

Using the ISM Method Option

A frozen or still picture from a PC/Video game that is displayed on the screen for a prolonged period of time could result in a ghost image remaining even when you change the image. To avoid a fixed or burn-in image to remain on the screen for a long period of time:

1. Open the OSD menu and select Option.
2. Select ISM Method from the menu list.
3. Select one of the following menu options:
 - Normal - leave on normal if you don't foresee image burn-in being a problem.
 - White wash - white wash fills the screen with solid white. This helps removes permanent images burned into the screen. A permanent image may be impossible to clear entirely with white wash.
 - Orbiter - may help prevent ghost images. However, it is best not to allow any fixed image to remain on the screen. To avoid a permanent image on the screen, the screen will move every 2 minutes.
 - Inversion - this function inverts the panel color of the screen. The panel color is automatically inverted every 30 minutes.
 - Dot Wash - this function moves the black dots of the screen. The black dots are automatically moved every 5 second.

Using the Tile Mode

Tile Mode is used to enlarge the screen and also used with several products to view the screen. This function must be displayed with various other products and connected to RS-232C or RGB Out.

Tile mode allows you to:

- Choose tile alignment and set the ID of the current product to set location
- Set column by row (r = 1, 2, 3, 4, 5; c = 1, 2, 3, 4, 5) up to 5 x 5
- Configure an integration screen as well as configure one by one display



NOTE: Adjustments made to the settings will be saved only after pressing the SET button on the remote control.

Figure 4-2 Tile Mode Enlarged Screen



Figure 4-3 Tile Mode Product 1 ~ 4: C(2) x R(2)

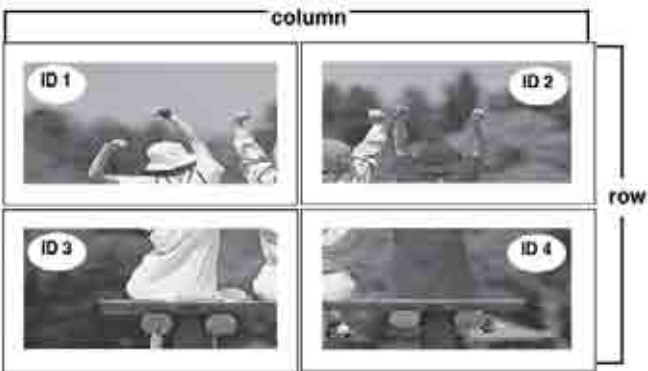


Figure 4-4 Tile Mode Product 1 ~ 9: C(3) x R(3)

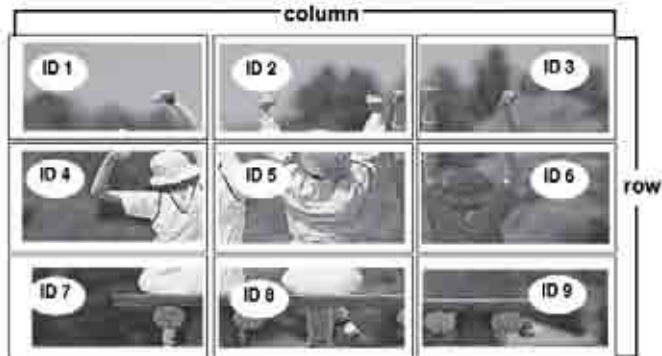


Figure 4-5 Tile Mode Product 1 ~ 2: C(2) x R(1)

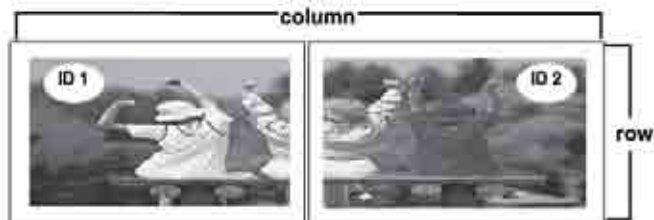
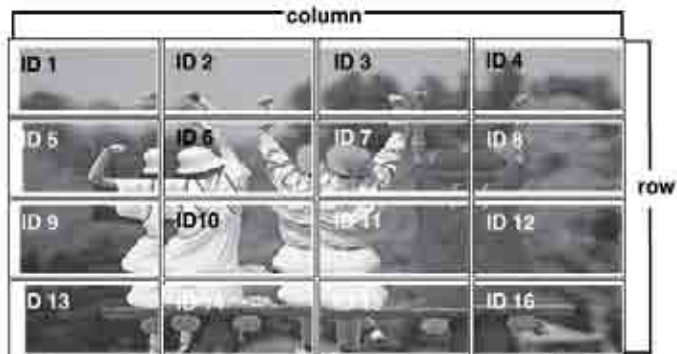


Figure 4-6 Tile Mode Product 1 ~ 16: C(4) x R(4)



Use the following menu selections to adjust the Tile Mode:

- **H-Size** - adjusts the horizontal size of the screen taking into account the size of the bezel.
- **V-Size** - adjusts the vertical size of the screen taking into account the size of the bezel.
- **H-Position** - moves the screen position horizontally.
- **V-Position** - moves the screen position vertically.
- **Reset** - function to initialize and release Tile. All Tile settings are released when selecting Tile recall and the screen returns to Full screen.
- **Tile ID** - selects the location of the Tile by setting an ID.
- **Natural** - the image is omitted by the distance between the screens to be naturally shown.

Use the **Factory Reset** option to return to the default factory settings.

5 Operating the Touch Screen

The touch driver software controls the functionality of the Infrared Touch Screen. Once you install the touch driver, you can select, launch, and drag objects using the touch screen. To make a selection, touch the screen.

Touch Software Installation

The CD that comes with LD4200tm monitor contains files that you can install to communicate with the touch screen and use the touch screen with Windows applications.

To install the touch driver:

1. Insert the CD in the computer CD-ROM. The CD menu is displayed.
2. Click **Install Touch Driver**. To continue, click **Next**.
3. Read the license agreement and click **Yes** to accept the terms of the License Agreement. To install the touch driver, you must accept the agreement to install the driver.
4. Choose a destination location. Select a folder where setup will install files. Install in the default folder or browse and select another folder, and then click **Next**.
5. Select a Program Folder and click **Next** to continue.
6. Review the settings. If you want to change the settings, click **Back**. Click **Next** to begin copying files.
7. If Windows can't verify the publisher of the driver software, click **Install this driver software anyway** or click **Continue Anyway**. Since this driver software was obtained from HP, don't stop the installation.
8. After setup has finished installing the touch driver, select **Yes** to restart and click **Finish**.
9. Connect Touch screen monitor cable (USB) to your PC.

After installing the touch driver, connecting the USB cable, and restarting your computer, the **Found New Hardware Wizard** is displayed to complete the driver installation. To install the IR Touch Device Driver:

1. Select **Yes, this time only** and click **Next** to continue.
2. Select **Install from a list or specific location (Advanced)** and click **Next** to continue.
3. In the **Browse For Folder** window that displays, select the folder that contains drivers for your hardware.

4. In the **Choose your search and installation options** window, accept the default option of **Search for the best driver in these locations** and the checked **Include this location in the search**. Click **Next** to continue.
5. Select the **RNDPLUS Touch USB Driver (oem25.inf)** in the hardware list and click **Next**.
6. If a Hardware Installation warning displays about the driver not passing Windows Logo testing, click **Continue Anyway**.
7. When prompted that files are needed from the IR Touch Controller Installation Disk, browse to the location of the file and click **OK**.
8. When the wizard finishes installing the software, click **Finish** to close the wizard.

To Uninstall the Touch Monitor driver:

1. Select **Start > Programs > Uninstall iNexio Touch Driver** to open the IR Touch Driver Setup Maintenance program and modify or uninstall the current installation.
2. Select the **Remove** option to remove all installed features and click **Next**.
3. Click **Yes** to confirm you want to remove the touch driver.
4. Select **Yes** and click **Finish** to restart the computer to complete the uninstall process.

 **NOTE:** This version of the touch driver software supports USB controllers. The USB terminal supports USB 2.0 and full speed (12Mbps).

Driver and Configuration Control Panel Utility

With the Touch Control Panel utility, you can configure the full touch screen functionality for all software applications running under Microsoft Windows. The setup and configuration options are grouped on seven tabs labeled **Touch Device**, **Information**, **Setup**, **Multipoint Touch**, **Options/Tools**, **Popup Control**, **Popup Control Menu** and **Multi Monitor Display**. Each tab provides additional settings that may be modified for a specific application or user. The settings and options you select will depend on those application and user requirements.

Opening the Touch Utility — Double-click the “iNexio Driver” icon on the desktop or select **Start > Programs -iNexio > iNexio Touch Driver** to open the Driver and Configuration Control Panel Utility. Click on the following seven tabs to configure the touch Driver.

Touch Device

The Touch Device tab displays setting information. It displays the **Port No.**, **Firmware Version**, **Device name**, **Comm. Device** settings.

Information

The Information tab displays the copyright and warning information about the Touch Monitor Driver.

Setup

The Setup tab displays the setup options available to select or modify touch properties related to mode, sound, speed, area, action and rotation.

- **Sound effect**

In the Sound effect section, the Touch device has two button action modes labeled **Touch down** and **Lift up**. The **No Sound** mode is an option to mute the click sound. Select from the three **Sound effect** options:

- **No Sound** — Select to mute the sound when you Touch down or Lift up your finger from the touch screen.
- **Touch down** — Select for the action and sound to occur when you Touch down.

Enables you to create an immediate button action as soon as you touch the screen. Touching in this mode causes a button down action at the cursor location, followed by a short pause and then a button up action. You can leave your finger on the screen but only a single touch is registered until you lift your finger off the screen and touch down again to create a double-click action.

 **NOTE:** Touching the screen is equivalent to pressing and releasing the mouse button. The action occurs as soon as you touch the screen. This mode is the best for button based applications, like a calculator.

- **Lift up** — Select for the action and sound to occur when you Lift up.

Enables you to position the cursor where you want before creating a button action. Touch in the Lift up mode causes the cursor to follow your finger for more accurate touch. When you want to select an item, lift your finger off the screen to cause a button down action at the cursor location, which is followed by a short pause and then the button up occurs.

 **NOTE:** Touching the screen is equivalent to moving the mouse position. The button down/button up action occurs when you remove your finger from the screen. This mode is useful for applications requiring greater accuracy because it lets you carefully position the cursor prior to acting on it.

- **Sound Tone/Sound Frequency** — Move the **Low/High** slider to adjust the tone of the sound. Move the **Short/Long** slider to adjust the duration of the sound.
- **Double Click Speed** — Move the slider to define how fast or slow you need to touch in order to produce a double-click.
- **Double Click Area** — Move the slider to define the space in which you must touch in order to produce a double-click.
- **Double Click Test** — Click to test the double-click speed and area specified in **Double Click Speed** and **Double Click Area**.
- **Touch Action** — Select either the **Drawing Mode** or the Touch only Mode to customize your Touch Monitor with the applications it will control.
 - **Drawing Mode** — Select if graphic illustration applications are used, especially where drawing and dragging are important. In Drawing Mode, a touch is equivalent to pressing and holding down the mouse button. Consider using this mode when immediate reaction to touch is most important. In this mode, lifting off is equivalent to releasing the mouse button.
 - **Touch only Mode** — Select if clicking type actions are only needed for navigating in the application. Drawing and/or dragging are not supported in this mode.
- **Touch Rotation** — Select the proper degree to adjust the touch (cursor) position, in the case of a touch screen not properly mounted on the display.

Multipoint Touch

The Multipoint Touch displays the default configuration that can be modified to adjust the touch parameters related to applications, touch order, and modifying size of the touch object.

- **Enable Mouse Action** — By default, touch action can be recognized on all Windows programs. By disabling this option, the touch is no longer recognized on all Windows programs. You can also use the Popup Control Menu to enable the function again.
- **First Touch Only** — By default, the first touch point is not disturbed by the second touch while the first touch remains on the touch screen.
- **Enable Multi-Touch Limit** — The size of a touch object can be adjusted in the **X-Width Limit** and **Y-Width Limit** functions described below.

 **NOTE:** The touch driver has the area recognition function on Single and Multipoint touch. With the **X-Width Limit** and **Y-Width Limit** functions, the size of a touch object can be adjusted on X Y limit in connection with **Enable Multi-Touch Limit**.

- **Allow XY range** — Check to allow the XY range to be recognized within the size of the specified X-width and Y-width limits.
 - **Limit XY range** — Check to allow the XY range to be recognized without the size of the specified X-width and Y-width limits.
- **X-Width Limit** — Move the right and left slider arrows to specify the Start and End range to define the X-Width Limit.
- **Y-Width Limit** — Move the right and left slider arrows to specify the Start and End range to define the Y-Width Limit.

Option/Tools

The Options/Tools tab displays the tools available to calibrate and test the touch screen properties.

- **Right Button** — Click the **Right Button tool** to open a Windows right mouse button simulation on the touch screen. When this application is run, it displays a typical two-button mouse icon in a small window on the desktop. The Right Button tool can also be opened from the **Start** menu. Select **Start > All Programs > Touch Click Control**.
 - By default, the Right Button shows the left button shaded, indicating that the left button is active. Touch the desktop or an application and it will produce a left-click consistent with the Button settings in the Control Panel.
 - Touch the Right Button and the shading will change to show the right mouse button active. Touch the desktop or an application and it will produce a right-click.
- **Touch Calibration** — Use this tool to calibrate the touch screen.

 **NOTE:** The calibration process aligns the touch screen with the underlying monitor images. Specifically, calibration defines the dimensions of the active area of the touch screen and locates the center of the touch screen. If the screen is not calibrated, the active area of the touch screen may not be aligned properly or may be unnecessarily small in size. Once calibrated, the information is saved by the touch screen for each video resolution. Therefore, you only need to re-calibrate the touch screen the first time you change to a particular video resolution.

Clicking **Auto calibration** runs a calibration process automatically based on the resolution without user interaction. For more accuracy, use the following instructions and also refer to the following **Fine Coordinate Correction** function section.

- Click **Calibration**. This starts the calibration process. When the black screen displays, a blinking circle guides you through the calibration process pointing to the appropriate target.
- Touch the screen with your fingertip positioned at the center of the circle. The circle will stop blinking and display a white filled circle.
- Touch each additional calibration target until all the circles stop blinking. After this action, the process ends and the calibration screen closes.

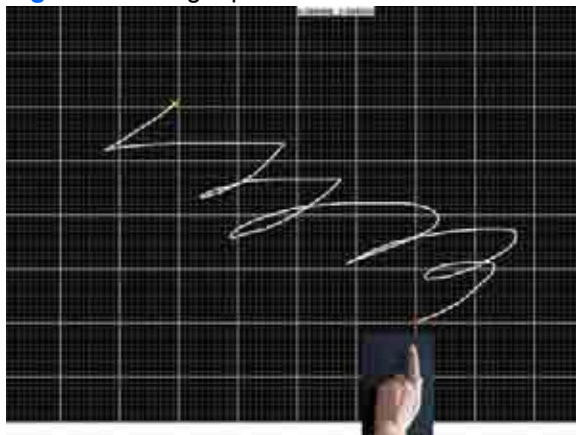
Figure 5-1 Touch Calibration Screen



△ **CAUTION:** If you accidentally touched the screen in the wrong place during calibration, this will distort the touch screen calibration. Test to make sure you are satisfied with the calibration results.

- **Drawing Test Tool** — Use this tool to test calibration and to determine if you need more accuracy provided by the **Fine Coordinate Correction** function. This program is for drawing test purposes and is available only in Drawing Mode.
 - **Single-point** — Select **Single-point** and click **Touch Test** to test with your finger on the touch screen.

Figure 5-2 Single-point Touch Test



- **Multi-point** — Select **Multi-point** and click **Touch Test** to test with your fingers and palms simultaneously on the touch screen.

When testing in Multi-point, the parts of area cognition and multi-points are shown in red circles.

Figure 5-3 Multi-point Touch Test with Palms

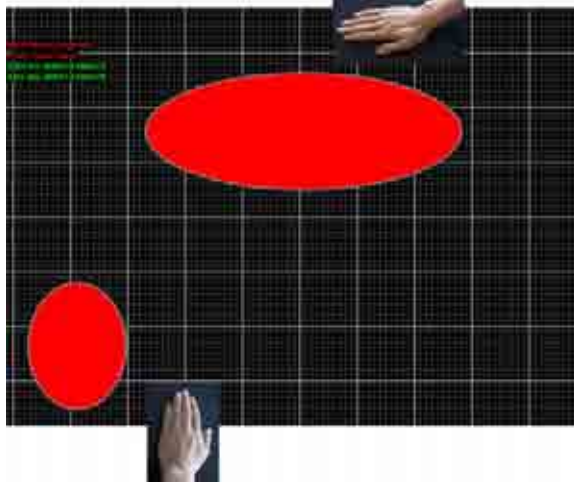
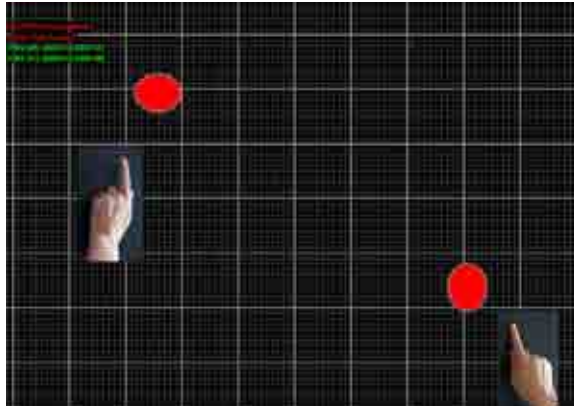
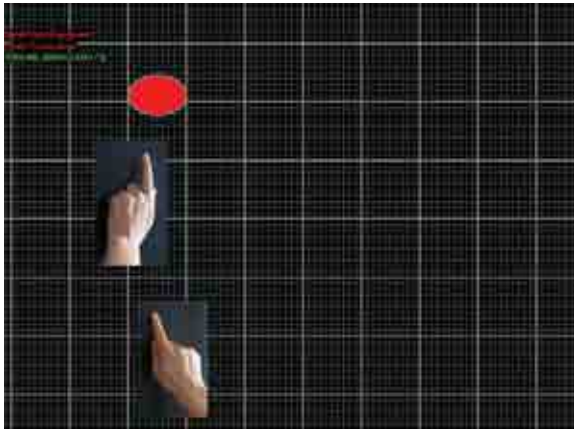


Figure 5-4 Multi-point Touch Test with Fingers



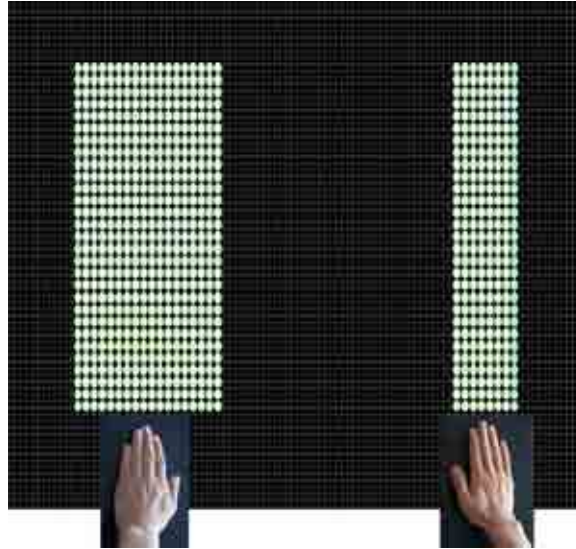
- **Multi-point Touch Test (First Touch Only)** — As you perform the multi-point touch test and when touch points are at the same axis of X or Y coordinates, the second touch point is not shown. This result is purposely programmed to not recognize the second touch in this context.

Figure 5-5 Multi-point Touch Test — First Touch Only



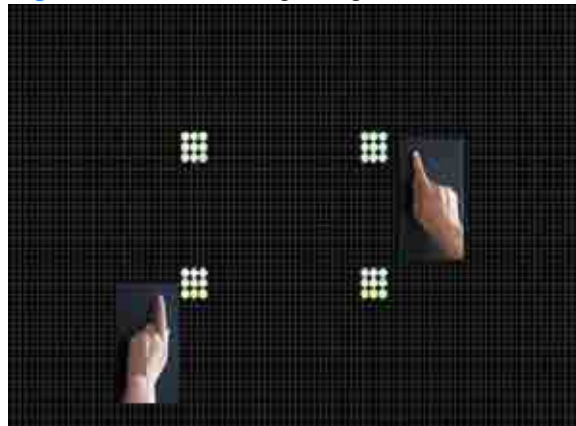
- **Multitouch View** — Use this tool as a reference when developing software for the Touch Monitor with the API (Application Program Interface). Select either **Multi-point** or **Single-point** and click **Multitouch View** and touch the screen with your fingers or palms simultaneously. The test shows the area of LED sensors that are recognized upon touch.

Figure 5-6 Using Multitouch View with Palms



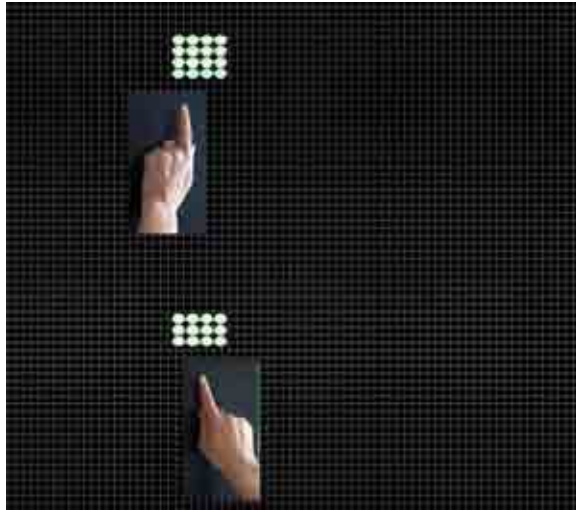
There are virtual images besides the real touch point when fingers are positioned at different X or Y coordinates. The virtual images move in regulation according to the real touch points. Content developers should refer to this virtual image regulation.

Figure 5-7 Virtual Image Regulation



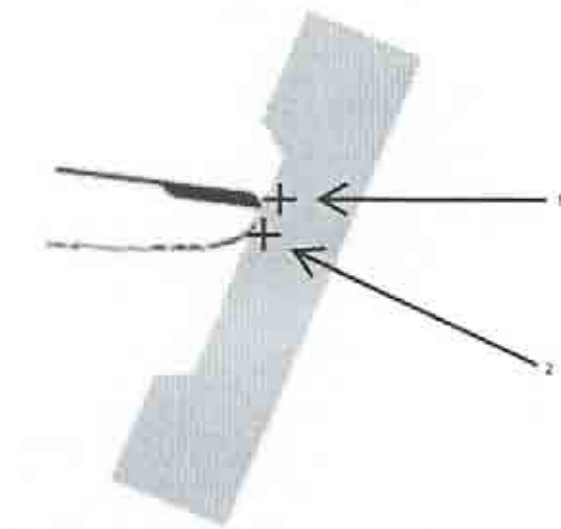
- **Multitouch View (Second Touch active)** — The second touch is shown at the same axis of X or Y coordinates for reference for developers.

Figure 5-8 Multitouch View — First and Second Touch active



- **Fine Coordinate Correction** — After you calibrate the touch screen, the Touch Point (2) and cursor should be located directly underneath your finger when you touch the screen. However, you may prefer to offset the Optical Point (1) or cursor slightly above your touch point so you can see the cursor and point more easily and precisely to small objects. The Touch Cursor Shift option lets you define the distance between your fingertip and the position of the cursor on the screen. Offsetting the cursor is helpful when selecting small items, such as single letters in word processing, check boxes, or radio buttons. Click [Up] [Down] [Left] [Right] to make X or Y offset. Click **Reset** to restore to default.

Figure 5-9 Offsetting Optical Point from Touch Point



Screen Shift Correction — It is possible for the screen image to extend beyond the edge of the monitor bezel. In this case, it may be difficult to touch items at the left and right edges of the screen. Normally a monitor has an auto scaling function to correct. However, you can use the Screen shift function to adjust the auto scaled image for more accuracy. Click [X Zoom (+or-)] and [Y Zoom (+or-)] to adjust the screen image. Click **Reset** to restore to default.

Popup Control

The **Popup Control** tab displays the parameter controls to enable the Popup Control Menu and specify how and where it can open from the touch screen.

- **Popup Control START / STOP** — Click to start or stop the Popup Control Menu.
- **Popup Activate Area** — Specify the active areas to touch to open the Popup Control Menu on the touch screen. The Popup Control Menu displays on the screen when you touch your finger on the activated areas in the **Popup Active Area** and remove your finger after the fixed time specified in the **Popup Activate Time**.
- **Area Allow Percent** — Use the slider bars on the **X Area Allow** and **Y Area Allow** to specify the size of area where you touch the screen to open the Popup Control Menu.
- **Popup Activate Time** — Specify the seconds required to touch down and then lift up your finger before the **Popup Control Menu** will open. Specifying a time delay prevents random touches from opening the **Popup Control Menu**.

Popup Control Menu

The **Popup Control Menu** can be displayed by the user once it is configured and started in **Popup Control** tab in the touch driver. The following items are shown in the menu for quick user access.

- **Disable Mouse Action** — Touch action is not recognized on all programs on the screen. By re-click, the option is back to the basic function.
- **Enable Touch Area Limit** — The size of a touch object can be adjusted on X Y limit.
- **Open Touch Control Panel** — Click for the Touch Control Panel to display.
- **Exit** — Click to close the Popup Control Menu.

Multi Monitor Display

The Multi Monitor Display tab displays the options to map the monitor and touch screen together and to activate and configure multi-monitor support.

When mapping multiple monitors, you must map each touch screen to a monitor in the **Touch Devices Monitor Mapping** window. Click **Mapping>>** and double-click the icon of the desired monitor. You must do this in order to individually calibrate and configure each touch screen connected to your system.

In Multi-monitor mode, check **Support multiple monitors** to activate this option. Select **Clone mode**, **Independent mode**, or **Stretch mode** depending on your required configuration.

- **Clone Mode** — Select to make one of the monitors as the primary one. All other monitors have the same image as the primary monitor. The touch screen on each monitor functions as clone mode too.
- **Independent Mode** — Select to make all screens show the same image and the touch screen on each monitor functions independently.
- **Stretch Mode** — Select to make all screens combine as a single image. In this mode the touch screen on each monitor functions independently.

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 image is displayed.	Power cord not connected.	Be sure the power cord is properly connected to the outlet. • Verify that the outlet has power to it. • Check that the fuse or breaker has not tripped or burned out. See if the power switch is turned on. May need service.
Power is on, power indicator is blue, but the screen appears extremely dark.	Screen needs adjustments.	Adjust brightness and contrast again. Backlight may need repair.
Power indicator is amber.	Monitor in power saving mode.	Move the mouse or press any key on the keyboard. Turn off equipment and then back on.
Out of Range message appears.	Input signal is out of frequency range.	The signal from the PC (video card) is out of the vertical or horizontal frequency range of the monitor. Adjust the frequency range by referring to the specifications in this manual (maximum resolution: RGB - 1920 x 1080 @ 60Hz; HDMI - 1920 x 1080 @ 60Hz). NOTE: Vertical Frequency - to enable the user to watch the monitor display, screen image should be changed tens of times every second like a fluorescent lamp. The vertical frequency or refresh rate is the times of image display per second. The unit is measured in Hz. Horizontal Frequency - the horizontal interval is the time to display one vertical line. When 1 is divided by the horizontal interval, the number of horizontal lines displayed every second can be tabulated as the horizontal frequency. The unit is measured in kHz.

Problem	Possible Cause	Solution
Check signal cable message appears.	Signal cable is not connected.	The signal cable between the PC and monitor is not connected. Check the signal cable. Press the INPUT button on the remote control to check the input signal.
"Unknown Product" message appears when the monitor is connected.	Monitor driver is not installed.	Install the monitor driver, which is provided with the monitor or download from the HP Web site (http://www.hp.com). See if the plug & play function is supported by referring to the video card's user manual.
"Key Lock On" message appears when pressing the Menu button.	Key Lock function is turned on.	The control locking function prevents unintentional OSD setting change due to careless usage. To unlock the controls, simultaneously press the Menu button and ► button for several seconds. (You cannot set this function using the remote control buttons. You can set this function in the monitor only.)
The screen looks abnormal; screen position is wrong.	Screen is out of adjustment.	D-sub analog signal - press the AUTO button on the remote control to automatically select the optimal screen status that fits into the current mode. If the adjustment is not satisfactory, use the Position OSD menu. Check that the video card resolution and frequency are supported by the monitor. If the frequency is out of range, set to the recommended resolution in the Control Panel > Display > Setting menu of the operating system.
Lines appear on the background screen.	Screen is out of adjustment.	D-sub analog signal - press the AUTO button on the remote control to automatically select the optimal screen status that fits into the current mode. If the adjustment is not satisfactory, use the Clock OSD menu.
Horizontal noise appears or the characters look blurred.	Screen is out of adjustment.	D-sub analog signal - press the AUTO button on the remote control to automatically select the optimal screen status that fits into the current mode. If the adjustment is not satisfactory, use the Phase OSD menu.
The screen displays abnormally.	Using an incorrect Input signal.	The proper input signal is not connected to the signal port. Connect the signal cable that matches with the source input signal.
An after image appears when the monitor is turned off.	Using a fixed image too long.	If you used a fixed image for a long time, the pixels may be damaged. Use a screen-saver function.

Problem	Possible Cause	Solution
No sound.	Audio cable not connected.	Check that the audio cable is properly connected. Adjust the volume. Check if the sound is set properly.
Sound is too dull.	Equalizer is not balanced.	Select the appropriate sound equalize.
Sound is too low.	Sound needs adjusting.	Adjust the volume by pressing the volume buttons on the remote control.
Screen has poor color resolution (16 colors).	Color is not set correctly.	Set the number of colors to more than 24 bits (true color). Select Control Panel > Display > Settings > Color table menu in the operating system.
Screen color is unstable or monocolored.	Signal cable or video card connection is loose.	Check the connection status of the signal cable or reinsert the PC video card.
Black spots appear on the screen.	Characteristics of the LCD panel.	Several pixels (red, green, white or black color) may appear on the screen, which can be attributable to the unique characteristics of the LCD panel. It is not a malfunction of the LCD.
The power suddenly turned off.	Sleep timer setting turned on or power interrupted.	Check that the sleep timer is set. Check the power control settings. If power is turned off after the message, "CAUTION! FAN ERROR!" appears, the fan is out of order. Contact your local service center.

Using the Worldwide Web

For the online access to technical support information, self-solve tools, online assistance, community forums of IT experts, broad multivendor knowledge base, monitoring and diagnostic tools, go to <http://www.hp.com/support>

Preparing to Call Technical Support

If you can not solve a problem using the troubleshooting tips in this section, you may need to call technical support. Contact your regional HP authorized service provider. Have the following information available when you call:

- Monitor model number
- Serial number for the monitor
- Purchase date on invoice
- Conditions under which the problem occurred
- Error messages received
- Hardware configuration
- Hardware and software you are using

B Technical Specifications

 **NOTE:** All performance specifications are provided by the component manufacturers. Performance specifications represent the highest specification of all HP's component manufacturers' typical level specifications for performance and actual performance may vary either higher or lower.

HP LD4200tm LCD Monitor

Table B-1 HP LD4200tm Specifications

Display	106.73 cm	42 inches
Type	TFT LCD	
Viewable Image Size	106.73 cm diagonal	42-inch diagonal
Pixel Pitch	0.681 mm x 0.681 mm	
Maximum Weight		
Without Stand & Speaker	30.18 kg	66.53 lbs.
With Speaker	30.98 kg	68.30 lbs.
With Stand	33.44 kg	73.72 lbs.
With Stand & Speaker	34.24 kg	75.49 lbs.
Dimensions (Without Stand & Speaker)		
Height	59.14 cm	23.2 inches
Depth	12.14 cm	4.7 inches
Width	99.9 cm	39.3 inches
Dimensions (With Speaker)		
Height	59.14 cm	23.2 inches
Depth	12.14 cm	4.7 inches
Width	99.9 cm	39.3 inches
Dimensions (With Stand)		
Height	68.0 cm	26.7 inches
Depth	29.3 cm	11.5 inches
Width	99.9 cm	39.3 inches

Table B-1 HP LD4200tm Specifications (continued)

Dimensions (With Stand & Speaker)		
Height	68.0 cm	26.7 inches
Depth	29.3 cm	11.5 inches
Width	99.9 cm	39.3 inches
Power		
Rated Voltage	AC 100-240V ~50/60Hz 2.2 A	
Power Consumption		
On Mode	220W Typical	
Sleep Mode	≤ 1W (RGB) / 4W (HDMI/DVI)	
Off Mode	≤ 1W	
Maximum Resolution		
RGB	1920 x 1080 @ 60Hz	
HDMI/DVI	1920 x 1080 @ 60Hz (if supported by OS or video card type)	
Recommended Resolution		
RGB	1920 x 1080 @ 60Hz	
HDMI/DVI	1920 x 1080 @ 60Hz (if supported by OS or video card type)	
Horizontal Frequency		
RGB	30 - 83kHz	
HDMI/DVI	30 - 83kHz	
Vertical Frequency		
RGB	56 - 76Hz	
HDMI/DVI	56 - 60Hz	
Synchronization Type		
Composite/Separate/Digital		
Input Connector		
15-pin D-Sub type, HDMI (digital), S-Video, Composite Video, Component, RS-232C		
Environmental Conditions		
Operating Temperature		
0 ~ 35° C, Humidity 10% ~ 80%		
Storage Temperature		
-20 ~ 60° C, Humidity 5% ~ 90%		
Audio (Select Models)		
RMS Audio Output		
10W + 10W (R+L)		
Input Sensitivity		
0.7 rms		
Speaker Impedance		
8 Ohms		

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.

HP LD4200tm Preset Display Modes

Table B-2 HP LD4200tm Factory Preset Display Modes

Preset	Pixel Format	Horz Freq (kHz)	Vert Freq (Hz)
1	640 x 350	31.469	70.8
2	720 x 400	31.468	70.8
*3	640 x 480	31.469	59.94
4	640 x 480	37.5	75
*5	800 x 600	37.879	60.317
6	800 x 600	46.875	75
7	832 x 624	49.725	74.55
*8	1024 x 768	48.363	60
9	1024 x 768	60.123	75.029
*10	1280 x 720	44.772	59.855
*11	1280 x 768	47.7	60
*12	1360 x 768	47.72	54.799
*13	1366 x 768	47.4	60
*14	1280 x 1024	63.981	60.02
15	1280 x 1024	79.98	75.02
16	1600 x 1200	75	60
*17	1680 x 1050	65.290	60
*18	1920 x 1080	67.5	60
1 ~18 RGB Mode			
* HDMI/DVI Mode			

DTV Mode

	Component	HDMI/DVI (DTV)
480i	o	x
480p	o	o
720p	o	o

	Component	HDMI/DVI (DTV)
1080i	o	o
1080p	o	o

 **NOTE:** DTV/PC selection on RGB and HDMI/DVI inputs is available for PC resolutions 640 x 480/60Hz, 1280 x 720/60Hz, 1920 x 1080/60Hz and DTV resolutions: 480p, 720p, 1080p.

Power Indicator

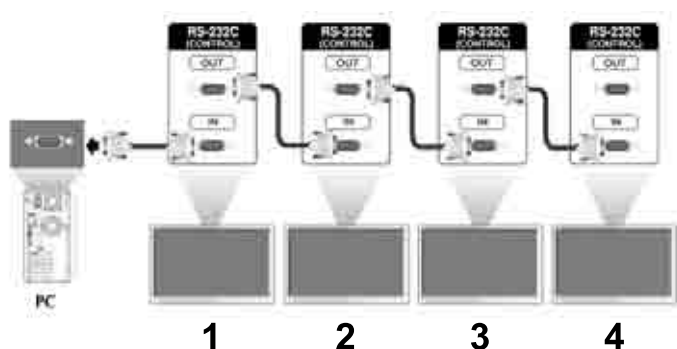
Mode	Indicator Light
On Mode	Blue
Sleep Mode	Amber
Off Mode	

C Controlling the Multiple Product

Use this method to connect several monitors to a single computer. You can control several monitors at a time by connecting them to a single computer.

Connecting the Cable

Connect the RS-232C cable as shown in the following illustration. The RS-232C protocol is used for communication between the computer and the monitor. You can turn the monitor on/off, select an input source or adjust the OSD menu from the computer.



RS-232C Configurations

7-Wire Configurations				3-Wire Configurations			
(Standard RS-232C cable)				(Not Standard)			
PC		Monitor		PC		Monitor	
RXD	2	3	TXD	RXD	2	3	TXD
TXD	3	2	RXD	TXD	3	2	RXD
GND	5	5	GND	GND	5	5	GND
DTR	4	6	DSR	DTR	4	6	DSR
DSR	6	4	DTR	DSR	6	4	DTR
RTS	7	8	CTS	RTS	7	8	CTS
CTS	8	7	RTS	CTS	8	7	RTS
D-Sub		D-Sub 9		D-Sub		D-Sub 9	
(Female)		(Female)		(Female)		(Female)	

Communication Parameter

- Baud Rate: 9600baudRate (UART)
- Data Length: 8bits
- Parity Bit: None
- Stop Bit: 1bit
- Flow Control: None
- Communication Code: ASCII code
- Use a crossed (reverse) cable

Command Reference List

	COMMAND1	COMMAND2	DATA1	DATA2	DATA3
01. Power	k	a	00H -01H		
02. Input Select	k	b	02H -09H		
03. Aspect Ratio	k	c	01H -09H		
04. Screen Mute	k	d	00H -01H		
05. Volume Mute	k	e	00H -01H		
06. Volume Control	k	f	00H -64H		
07. Contrast	k	g	00H -64H		
08. Brightness	k	h	00H -64H		
09. Color	k	i	00H -64H		
10. Tint	k	j	00H -64H		
11. Sharpness	k	k	00H -64H		
12. OSD Select	k	l	00H -01H		
13. Remote Lock/ key Lock	k	m	00H -01H		
14. Balance	k	t	00H -64H		
15. Color Temperature	k	u	00H -03H		
16. Abnormal state	k	z	FFH		
17. ISM mode	j	p	00H -10H		
18. Auto configuration	j	u	01H		
19. Key	m	c	Key Code		
20. Tile Mode	d	d	00H -55H		
21. Tile H Position	d	e	00H -64H		
22. Tile V Position	d	f	00H -64H		
23. Tile H Size	d	g	00H -64H		

	COMMAND1	COMMAND2	DATA1	DATA2	DATA3
24. Tile V Size	d	h	00H -64H		
25. Tile ID Set	d	i	00H -19H		
26. Natural Mode (In Tilemode)	d	j	00H -01H		
27. Elapsed time return	d	l	FFH		
28. Temperature value	d	n	FFH		
29. Lamp fault check	d	p	FFH		
30. Auto Volume	d	u	00H -01H		
31. Speaker	d	v	00H -01H		
32. Time	f	a	00H -06H	00H - 17H	0 - 3BH
33. On Timer (On/Off Timer) On, Off	f	b	00H, FFH		
34. Off Timer (On/Off Timer) On, Off	f	c	00H, FFH		
35. On Timer (On/Off Timer) Time	f	d	00H -07H	00H - 17H	00 - 3BH
36. Off Timer (On/Off Timer) Time	f	e	00H -07H	00H - 17H	00 - 3BH
37. Sleep Time	f	f	00H -08H		
38. Auto Sleep	f	g	00H -01H		
39. Power On Delay	f	h	00H -64H		
40. Language	f	i	00H -09H		
41. DPM Select	f	j	00H -01H		
42. Reset	f	k	00H -02H		
43. S/W Version	f	z	FFH		
44. Input Select	x	b	20H -A0H		

Transmission / Receiving Protocol

Transmission

[Command1][Command2][][Set ID][][Data][Cr]

*[Command 1]: First command. (k)

*[Command 2]: Second command.(a ~ u)

*[Set ID]: Set up the Set ID number of product.

range : 01H~63H. by setting '00H', server can control all products.

* In case of operating with more than 2 sets using set ID as '0' at the same time, it should not be checked the ack message.

Because all sets will send the ack message, so it's impossible to check the whole ack messages.

*[DATA]: To transmit command data.

Transmit 'FF' data to read status of command.

*[Cr]: Carriage Return

ASCII code '0x0D'

*[]: ASCII code Space (0x20)'

OK Acknowledgement

```
[Command2][ ][Set ID][ ][OK][Data][x]
```

*The Product transmits ACK (acknowledgement) based on this format when receiving normal data. At this time, if the data is in data read mode, it indicates present status data.

If the data is in data write mode, it returns the data of the PC computer.

Error Acknowledgement

```
[Command2][ ][Set ID][ ][NG][Data][x]
```

*If there is error, it returns NG

01. Power (Command : a)

To control Power On/Off of the Set.

Transmission

```
[k][a][ ][Set ID][ ][Data][Cr]
```

Data 0 : Power Off 1 : Power On

Acknowledgement

```
[a][ ][Set ID][ ][OK][Data][x]
```

To show the status of Power On/Off.

Transmission

```
[k][a][ ][Set ID][ ][FF][Cr]
```

Acknowledgement

```
[a][ ][Set ID][ ][OK][Data][x]
```

Data 0 : Power Off 1 : Power On

02. Input Select (Command : b) (Main Picture Input)

To select input source for the Set.

You can also select an input source using the INPUT button on the remote control.

Transmission

[k][b][][Set ID][][Data][Cr]

Data 2: AV

4 : Component 1

5 : Component 2

7 : RGB (PC)

8 : HDMI (DTV)

9 : HDMI (PC)

Acknowledgement

[b][][Set ID][][OK][Data][x]

Data 2 : AV

4 : Component 1

5 : Component 2

7 : RGB (PC)

8 : HDMI (DTV)

9 : HDMI (PC)

03. Aspect Ratio (Command : c) (Main picture format)

To adjust the screen format.

You can also adjust the screen format using the ARC (Aspect Ratio Control) button on remote control or in the Screen menu.

Transmission

[k][c][][Set ID][][Data][Cr]

Data 1 : Normal Screen (4:3)

2 : Wide Screen (16 :9)

- 4 : Zoom1 (AV)
- 5 : Zoom2 (AV)
- 6 : Original (AV)
- 7 : 14:9 (AV)
- 9 : Just Scan(HD DTV), 1:1 (RGB PC, HDMI/DVI PC)

Acknowledgement

[c][][Set ID][][OK][Data][x]

04. Screen Mute (Command : d)

To select screen mute on/off.

Transmission

[k][d][][Set ID][][Data][Cr]

Data 0 : Screen mute off (Picture on)

1 : Screen mute on (Picture off)

Acknowledgement

[d][][Set ID][][OK][Data][x]

05. Volume Mute (Command : e)

To control On/Off of the Volume Mute.

Transmission

[k][e][][Set ID][][Data][Cr]

Data 0 : Volume Mute On (Volume Off)

1 : Volume Mute Off (Volume On)

Acknowledgement

[e][][Set ID][][OK][Data][x]

Data 0 : Volume Mute On (Volume Off)

1 : Volume Mute Off (Volume On)

06. Volume Control (Command : f)

To adjust Volume.

Transmission

```
[k][f][ ][Set ID][ ][Data][Cr]
```

Data Min : 00H ~ Max : 64H

(Hexadecimal code)

Acknowledgement

```
[f][ ][Set ID][ ][OK][Data][x]
```

Data Min : 00H ~ Max : 64H

Refer to “Real data mapping” in this appendix.

07. Contrast (Command : g)

To adjust screen contrast. You can also adjust the contrast in the Picture menu.

Transmission

```
[k][g][ ][Set ID][ ][Data][Cr]
```

Data Min : 00H ~ Max : 64H

Refer to “Real data mapping” as shown below.

Acknowledgement

```
[g][ ][Set ID][ ][OK][Data][x]
```

* Real data mapping

0 : Step 0

:

A : Step 10

:

F : Step 15

10 : Step 16

:

64 : Step 100

08. Brightness (Command : h)

To adjust screen brightness. You can also adjust the brightness in the Picture menu.

Transmission

```
[k][h][ ][Set ID][ ][Data][Cr]
```

Data Min : 00H ~ Max : 64H

Refer to “Real data mapping” as shown below.

Acknowledgement

```
[h][ ][Set ID][ ][OK][Data][x]
```

* Real data mapping

0 : Step

:

A : Step 10

:

F : Step 15

10 : Step 16

:

64 : Step 100

09. Color (Command : i) (Video only)

To adjust the screen color. You can also adjust the color in the Picture menu.

Transmission

```
[k][i][ ][Set ID][ ][Data][Cr]
```

Data Min : 00H ~ Max : 64H (Hexadecimal code)

Refer to “Real data mapping” in the previous section of this appendix.

Acknowledgement

```
[i][ ][Set ID][ ][OK][Data][x]
```

Data Min : 00H ~ Max : 64H

10. Tint (Command : j) (Video only)

To adjust the screen tint. You can also adjust the tint in the Picture menu.

Transmission

```
[k][j][ ][Set ID][ ][Data][Cr]
```

Data Red: 00H ~ Green: 64H (Hexadecimal code)

Refer to "Real data mapping" in the previous section of this appendix.

Acknowledgement

```
[ ][ ][Set ID][ ][OK][Data][x]
```

Data Red: 00H ~ Green: 64H

* Tint Real data mapping

0 : Step 0 - Red

:

64 : Step 100 - Green

11. Sharpness (Command : k) (Video only)

To adjust the screen Sharpness. You can also adjust the sharpness in the Picture menu.

Transmission

```
[k][k][ ][Set ID][ ][Data][Cr]
```

Data Min : 00H ~ Max : 64H

(Hexadecimal code)

Refer to "Real data mapping" in the previous section of this appendix.

Acknowledgement

```
[k][ ][Set ID][ ][OK][Data][x]
```

Data Min : 00H ~ Max : 64H

12. OSD Select (Command : l)

To control OSD on/off to the set.

Transmission

[k][l][][Set ID][][Data][Cr]

Data 0 : OSD Off 1 : OSD On

Acknowledgement

[l][][Set ID][][OK][Data][x]

Data 0 : OSD Off 1 : OSD On

13. Remote Lock /Key Lock (Command : m)

To control Remote Lock on/off to the set.

This function, when controlling RS-232C, locks the remote control and the local keys.

Transmission

[k][m][][Set ID][][Data][Cr]

Data 0 : Off 1 : On

Acknowledgement

[m][][Set ID][][OK][Data][x]

Data 0 : Off 1 : On

14. Balance (Command : t)

To adjust the sound balance.

Transmission

[k][t][][Set ID][][Data][Cr]

Data Min : 00H ~ Max : 64H

(Hexadecimal code)

Refer to "Real data mapping" in the previous section of the appendix

Acknowledgement

[t][][Set ID][][OK][Data][x]

Data Min : 00H ~ Max : 64H

Balance : L50 ~ R50

15. Color Temperature (Command : u)v

To adjust the screen color temperature.

Transmission

[k][u][][Set ID][][Data][Cr]

Data 0 : Medium

1 : Cool

2 : Warm

3 : User

Acknowledgement

[u][][Set ID][][OK][Data][x]

Data 0 : Medium

1 : Cool

2 : Warm

3 : User

16. Abnomal state (Command : z)

Abnormal State : Used to Read the power off status when Stand-by mode.

Transmission

[k][z][][Set ID][][Data][Cr]

Data FF : Read

0 : Normal (Power on and signal exist)

1 : No signal (Power on)

2 : Turn the monitor off by remote control

3 : Turn the monitor off by sleep time function

4 : Turn the monitor off by RS-232C function

8 : Turn the monitor off by off time function

9 : Turn the monitor off by auto off function

Acknowledgement

[z][][Set ID][][OK][Data][x]

17. ISM mode (Command: j p)

Used to select the afterimage preventing function.

Transmission

[j][p][][Set ID][][Data][Cr]

Data 1H : Inversion

2H : Orbiter

4H : White Wash

8H : Normal

10H : Dot Wash

Acknowledgement

[p][][Set ID][][OK][Data][x]

18. Auto Configure (Command: j u)

To adjust picture position and minimize image shaking automatically. It works only in RGB(PC) mode.

Transmission

[j][u][][Set ID][][Data][Cr]

Data 1 : To set auto configure

Acknowledgement

[u][][Set ID][][OK][Data][x]

19. Key (Command : m c)

To send IR remote key code.

Transmission

[m][c][][Set ID][][Data][Cr]

Data Key code : Refer to page IR Codes Table.

Acknowledgement

[c][][Set ID][][OK][Data][x]

20. Tile Mode (Command : d d)

Change a Tile Mode.

Transmission

[d][d][][Set ID][][Data][Cr]

Data	Description
00	Tile mode is off.
12	1 x 2 mode(column x row)
13	1 x 3 mode
14	1 x 4 mode
...	...
55	5 x 5 mode

*The data can not be set to 0X or X0 except 00

Acknowledgement

[d][][Set ID][][OK/NG][Data][x]

21. Tile H Position (Command : d e)

To set the Horizontal position.

Transmission

[d][e][][Set ID][][Data][Cr]

Data Min : 00H ~ Max : 64H

Acknowledgement

[e][][Set ID][][OK/NG][Data][x]

22. Tile V Position (Command : d f)

To set the Vertical position.

Transmission

```
[d][f][Set ID][Data][Cr]
```

Data Min : 00H ~ Max : 64H

Acknowledgement

```
[f][Set ID][OK/NG][Data][x]
```

23. Tile H Size (Command : d g)

To set the Horizontal size.

Transmission

```
[d][g][Set ID][Data][Cr]
```

Data Min : 00H ~ Max : 64H

Acknowledgement

```
[g][Set ID][OK/NG][Data][x]
```

24. Tile V Size (Command : d h)

To set the Vertical size.

Transmission

```
[d][h][Set ID][Data][Cr]
```

Data Min : 00H ~ Max : 64H

Acknowledgement

```
[h][Set ID][OK/NG][Data][x]
```

25. Tile ID Set (Command : d i)

To assign the Tile ID for Tiling function.

Transmission

[d][i][Set ID][Data][Cr]

Data Min : 00H ~ Max : 19H

(Hexadecimal code)

Acknowledgement

[i][Set ID][OK/NG][Data][x]

26. Natural Mode (In Tilemode) (Command : d j)

The image is omitted by the distance between the screens to be naturally shown.

Transmission

[d][j][Set ID][Data][Cr]

Data 0 : Natural Off

1 : Natural On

ff : Read Status

Acknowledgement

[i][Set ID][OK/NG][Data][x]

27. Elapsed time return (Command : d l)

To read the elapsed time.

Transmission

[d][l][Set ID][Data][Cr]

* The data is always FF(in Hex).

Acknowledgement

[i][Set ID][OK/NG][Data][x]

* The data means used hours. (Hexadecimal code)

28. Temperature value (Command : d n)

To read the inside temperature value.

Transmission

[d][n][Set ID][Data][Cr]

* The data is always FF(in Hex).

Acknowledgement

[n][Set ID][OK/NG][Data][x]

* The data is 1 byte long in Hexadecimal.

29. Lamp fault Check (Command : d p)

To check lamp fault.

Transmission

[d][p][Set ID][Data][Cr]

* The data is always FF(in Hex).

Acknowledgement

[p][Set ID][OK/NG][Data][x]

Data 0 : Lamp Fault

1 : Lamp OK

30. Auto volume (Command : d u)

Automatically adjust the volume level.

Transmission

[d][u][Set ID][Data][Cr]

Data 0 : Off

1 : On

Acknowledgement

[u][Set ID][OK/NG][Data][x]

31. Speaker (Command : d v)

Turn the speaker on or off.

Transmission

[d][v][Set ID][Data][Cr]

Data 0 : Off

1 : On

Acknowledgement

[v][Set ID][OK/NG][Data][x]

32. Time (Command : f a)

Set the current time.

Transmission

[f][a][Set ID][Data1][Data2][Data3][Cr]

[Data1]

0 : Monday

1 : Tuesday

2 : Wednesday

3 : Thursday

4 : Friday

5 : Saturday

6 : Sunday

[Data2]

0H~17H (Hours)

[Data3]

00H~3BH (Minutes)

Acknowledgement

[a][Set ID][OK/NG][Data1][Data2][Data3][x]

*When reading data, FFH is inputted for [Data1], [Data2] and [Data3]. In other cases, all are treated as NG.

33. On Timer (On/Off Timer) On, Off (Command : F b)

Set days for On Timer.

Transmission

[f][b][Set ID][Data1][Data2][Cr]

[Data1]

0 (Write), FFH(Read)

[Data2]

00H~FFH

bit0 : Monday On Timer On(1), Off(0)

bit1 : Tuesday On Timer On(1), Off(0)

bit2 : Wednesday On Timer On(1), Off(0)

bit3 : Thursday On Timer On(1), Off(0)

bit4 : Friday On Timer On(1), Off(0)

bit5 : Saturday On Timer On(1), Off(0)

bit6 : Sunday On Timer On(1), Off(0)

bit7 : Everyday On Timer On(1), Off(0)

Acknowledgement

[b][Set ID][OK/NG][Data1][Data2][x]

34. Off Timer (On/Off Timer) On, Off (Command : f c)

Set days for Off Timer.

Transmission

[f][c][Set ID][Data1][Data2][Cr]

[Data1]

0 (Write), FFH(Read)

[Data2]

00H~FFH

bit0 : Monday Off Timer On(1), Off(0)
bit1 : Tuesday Off Timer On(1), Off(0)
bit2 : Wednesday Off Timer On(1), Off(0)
bit3 : Thursday Off Timer On(1), Off(0)
bit4 : Friday Off Timer On(1), Off(0)
bit5 : Saturday Off Timer On(1), Off(0)
bit6 : Sunday Off Timer On(1), Off(0)
bit7 : Everyday Off Timer On(1), Off(0)

Acknowledgement

[c][Set ID][OK/NG][Data1][Data2][x]

35. On Timer (On/Off Timer) Time (Command : f d)

Set On Timer.

Transmission

[f][d][Set ID][Data1][Data2][Data3][Cr]

[Data1]

0 : Monday
1 : Tuesday
2 : Wednesday
3 : Thursday
4 : Friday
5 : Saturday
6 : Sunday
7 : Everyday

[Data2]

00H~17H (Hours)

[Data3]

00H~3BH (Minutes)

Acknowledgement

[d][Set ID][OK/NG][Data1][Data2][Data3][x]

*When reading data, FFH is inputted for [Data2], [Data3]. In other cases, all are treated as NG.

36. Off Timer (On/Off Timer) Time (Command : f e)

Set Off Timer.

Transmission

[f][e][Set ID][Data1][Data2][Data3][Cr]

[Data1]

0 : Monday

1 : Tuesday

2 : Wednesday

3 : Thursday

4 : Friday

5 : Saturday

6 : Sunday

7 : Everyday

[Data2]

00H~17H (Hours)

[Data3]

00H~3BH (Minutes)

Acknowledgement

[e][Set ID][OK/NG][Data1][Data2][Data3][x]

* When reading data, FFH is inputted for [Data2], [Data3]. In other cases, all are treated as NG.

37. Sleep Time (Command : f f)

Set Sleep Time.

Transmission

[f][f][Set ID][Data][Cr]

Data

0 : Off

1 : 10

2 : 20

3 : 30

4 : 60

5 : 90

6 : 120

7 : 180

8 : 240

(Orderly)

Acknowledgement

[f][Set ID][OK/NG][Data][x]

38. Auto Sleep (Command : f g)

Set Auto Sleep.

Transmission

[f][g][Set ID][Data][Cr]

Data 0 : Off

1 : On

Acknowledgement

[g][Set ID][OK/NG][Data][x]

39. Power On Delay (Command : f h)

Set the schedule delay when the power is turned on (Unit: second).

Transmission

[f][h][Set ID][Data][Cr]

Data : 00H ~ 64H (Data value)

Acknowledgement

[h][Set ID][OK/NG][Data][x]

40. Language (Command : f i)

Set the OSD language.

Transmission

[f][i][Set ID][Data][Cr]

Data

0 : English

1 : France

2 : Deutch

3 : Spanish

4 : Italian

5 : Portuguese

6 : Chinese

7 : Japanese

8 : Korean

9 : Russian

Acknowledgement

[i][Set ID][OK/NG][Data][x]

41. DPM Select (Command : f j)

Set the DPM (Display Power Management) function.

Transmission

[f][j][Set ID][Data][Cr]

Data 0 : Off

1 : On

Acknowledgement

[j][Set ID][OK/NG][Data][x]

42. Reset (Command : f k)

Execute the Picture, Screen and Factory Reset functions.

Transmission

[f][k][][Set ID][][Data][Cr]

Data

0 : Picture Reset

1 : Screen Reset

2 : Factory Reset

Acknowledgement

[k][][Set ID][][OK/NG][Data][x]

43. S/W Version (Command : f z)

Check the software version.

Transmission

[f][z][][Set ID][][Data][Cr]

Data FFH : Read

Acknowledgement

[z][][Set ID][][OK/NG][Data][x]

44. Input Select (Command : x b)

To select input source for the Set.

Transmission

[x][b][][Set ID][][Data][Cr]

Data 20H : AV

40H : Component 1

41H : Component 2

60H : RGB (PC)

90H : HDMI/DVI (DTV)

A0H : HDMI/DVI (PC)

Acknowledgement

[b][][Set ID][][OK][Data][x]

Data 20H : AV

40H : Component 1

41H : Component 2

60H : RGB (PC)

90H : HDMI/DVI (DTV)

A0H : HDMI/DVI (PC)

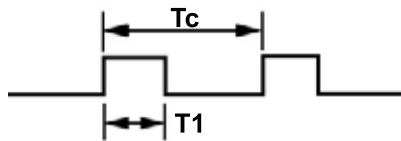
IR Codes

Use this method to connect your wired remote control port on the monitor.

Remote Control IR Code

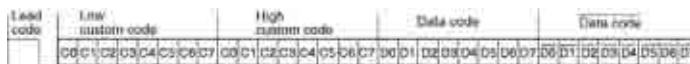
Output Wave

- Single pulse, modulated with 37.9KHz signal at 455kHz
- Carrier Frequency
 - $FCAR = 1/T_c = f_{osc}/12$
 - Duty Ratio = $T_1/T_c = 1/3$

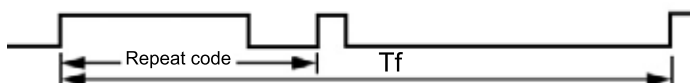


Configuration of Frame

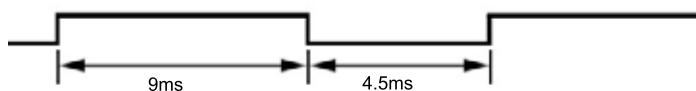
- First Frame



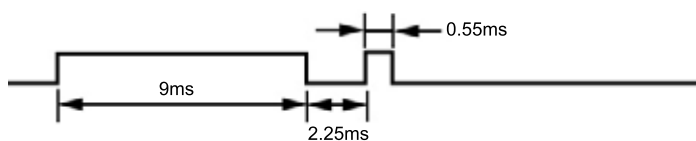
- Repeat Frame



Lead Code

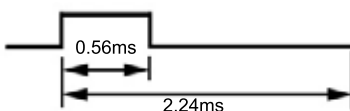
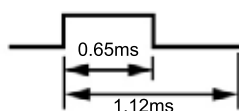


Repeat Code



Bit Description

- Bit "0"
- Bit "1"



Frame Interval: T_f

The waveform is transmitted as long as a key is depressed.



IR Codes Table

Code(Hexa)	Function	Note
00	▲	R/C Button
01	▼	R/C Button
02	VOL(▶)	R/C Button
03	VOL(◀)	R/C Button
08	POWER ON/OFF	R/C Button (Power On/Off)
C4	POWER ON	Discrete IR Code (Only Power On)
C5	POWER OFF	Discrete IR Code (Only Power On)
09	MUTE	R/C Button
98	AV	R/C Button
0B	INPUT	R/C Button
0E	SLEEP	R/C Button

Code(Hexa)	Function	Note
43	MENU	R/C Button
5B	EXIT	R/C Button
6E	PSM	R/C Button
44	SET	R/C Button
10	Number Key 0	R/C Button
11	Number Key 1	R/C Button
12	Number Key 2	R/C Button
13	Number Key 3	R/C Button
14	Number Key 4	R/C Button
15	Number Key 5	R/C Button
16	Number Key 6	R/C Button
17	Number Key 7	R/C Button
18	Number Key 8	R/C Button
19	Number Key 9	R/C Button
5A	AV	Discrete IR Code(Input AV Selection)
BF	COMPONENT1	Discrete IR Code(Input COMPONENT1 Selection)
D4	COMPONENT2	Discrete IR Code(Input COMPONENT2 Selection)
D5	RGB PC	Discrete IR Code(Input RGB PC Selection)
C6	HDMI/DVI	Discrete IR Code(Input HDMI/DVI Selection)
79	ARC	R/C Button
76	ARC (4:3)	Discrete IR Code(Only 4:3 mode)
77	ARC (16:9)	Discrete IR Code(Only 16:9 mode)
AF	ARC (ZOOM)	Discrete IR Code(Only ZOOM1, ZOOM2 mode)
99	AUTO CONFIC	Discrete IR Code

D 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 Company 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 the 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.
2. This device must accept any interference received, including interference that may cause undesired operation.

For questions regarding the product, contact:

Hewlett Packard Company
P. O. Box 692000, Mail Stop 530113
Houston, Texas 77269-2000
Or, call 1-800-HP-INVENT (1-800 474-6836)

For questions regarding this FCC declaration, contact:

Hewlett Packard Company
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.

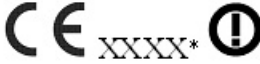
European Union Regulatory Notice

This product complies with the following EU Directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

Compliance with these directives implies conformity to applicable harmonized European standards (European Norms) which are listed on the EU Declaration of Conformity issued by Hewlett-Packard for this product or product family.

This compliance is indicated by the following conformity marking placed on the product:

 This marking is valid for non-Telecom products and EU harmonized Telecom products (e.g. Bluetooth).	 This marking is valid for EU non-harmonized Telecom products. *Notified body number (used only if applicable - refer to the product label)
This marking is valid for non-Telecom products and EU harmonized Telecom products (e.g. Bluetooth)	This marking is valid for EU non-harmonized Telecom products. *Notified body number (used only if applicable — refer to the product label).

German Ergonomics Notice

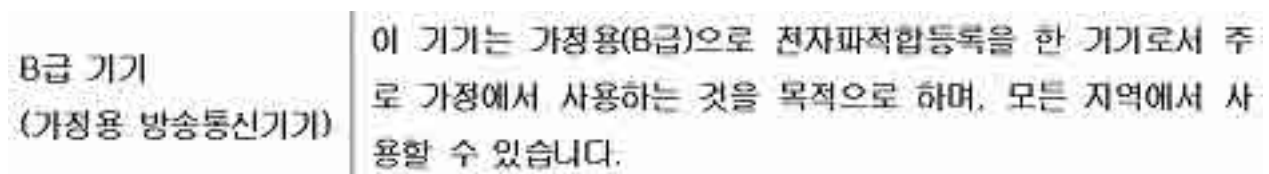
HP products which bear the "GS" approval mark, when forming part of a system comprising HP brand computers, keyboards and monitors that bear the "GS" approval mark, meet the applicable ergonomic requirements. The installation guides included with the products provide configuration information.

Japanese Notice

この装置は、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。

VCCI-B

Korean Notice



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 18 AWG, 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 an authorized HP 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.

Japanese Power Cord Requirements

For use in Japan, use only the power cord received with this product.

△ **CAUTION:** Do not use the power cord received with this product on any other products.

Product Environmental Notices

Materials Disposal

This HP product contains mercury in the fluorescent lamp in the display LCD that might require special handling at end-of-life.

Disposal of this material can be regulated because of environmental considerations. For disposal or recycling information, contact the local authorities or the Electronic Industries Alliance (EIA)
<http://www.eiae.org>.

Disposal of Waste Equipment by Users in Private Household in the European Union



This symbol on the product or on its packaging indicates that this product must not be disposed of with your household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling or waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact the local city office, the household waste disposal service or the shop where you purchased the product.

Chemical Substances

HP is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and Council). A chemical information report for this product can be found at <http://www.hp.com/go/reach>.

HP Recycling Program

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries. For more information about recycling programs, go to <http://www.hp.com/recycle>.

Restriction of Hazardous Substances (RoHS)

A Japanese regulatory requirement, defined by specification JIS C 0950, 2005, mandates that manufacturers provide Material Content Declarations for certain categories of electronic products offered for sale after July 1, 2006. To view the JIS C 0950 material declaration for this product, visit <http://www.hp.com/go/jisc0950>.

2008年、日本における製品含有表示方法、JISC0950が公示されました。製造事業者は、2006年7月1日以降に販売される電気・電子機器の特定化学物質の含有につきまして情報提供を義務付けられました。製品の部材表示につきましては、www.hp.com/go/jisc0950を参照してください。

有毒有害物质/元素的名称及含量表

根据中国
《电子信息产品污染控制管理办法》

液晶显示器

部件名称	有毒有害物质和元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
液晶显示器显示面板	X	X	○	○	○	○
机箱/其它	X	○	○	○	○	○

CRT 显示器

部件名称	有毒有害物质和元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
阴极射线管	X	○	○	○	○	○
机箱/其它	X	○	○	○	○	○

O: 表示该有毒或有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。

X: 表示该有毒或有害物质至少在该部件所用的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

表中标有“X”的所有部件都符合欧盟 RoHS 法规 — “欧洲议会和欧盟理事会 2003 年 1 月 27 日关于电子电器设备中限制使用某些有害物质的 2002/95/EC 号指令”。

注: 环保使用期限的参考标识取决于产品正常工作的温度和湿度等条件。

Turkey EEE Regulation

In Conformity with the EEE Regulation

EEE Yönetmeliğine Uygundur