

**NEC**

# MultiSync P221W

User's Manual



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**WARNING**

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO, DO NOT USE THIS UNIT'S POLARIZED PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS UNLESS THE PRONGS CAN BE FULLY INSERTED.

REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

**CAUTION**

CAUTION:

TO REDUCE THE RISK OF ELECTRIC SHOCK, MAKE SURE POWER CORD IS UNPLUGGED FROM WALL SOCKET. TO FULLY DISENGAGE THE POWER TO THE UNIT, PLEASE DISCONNECT THE POWER CORD FROM THE AC OUTLET. DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol warns user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.



This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

**CAUTION:** Please use the power cord provided with this display in accordance with the table below. If a power cord is not supplied with this equipment, please contact your supplier. For all other cases, please use a power cord that matches the AC voltage of the power outlet and has been approved by and complies with the safety standard of your particular country.

Plug Type	North America		European Continental	U.K.	Chinese	Japanese
Plug Shape						
Region	U.S.A./Canada	Taiwan	EU (except U.K.)	U.K.	China	Japan
Voltage	120*	110*	230	230	220	100

\*When operating the MultiSync P221W monitor with its AC 125-240V power supply, use a power supply cord that matches the power supply voltage of the AC power outlet being used.

**NOTE:** This product can only be serviced in the country where it was purchased.

## Registration Information

### Declaration

#### Declaration of the Manufacturer

We hereby certify that the colour monitor MultiSync P221W (L227HT) is in compliance with

and marked with

Council Directive 2006/95/EC:

– EN 60950-1

Council Directive 2004/108/EC:

– EN 55022

– EN 61000-3-2

– EN 61000-3-3

– EN 55024



NEC Display Solutions, Ltd.  
4-13-23, Shibaura,  
Minato-Ku  
Tokyo 108-0023, Japan



# Canadian Department of Communications Compliance Statement

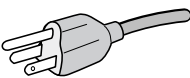
**DOC:** This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

**C-UL:** Bears the C-UL Mark and is in compliance with Canadian Safety Regulations according to CAN/CSA C22.2 No. 60950-1.

## FCC Information

1. Use the attached specified cables with the MultiSync P221W (L227HT) color monitor so as not to interfere with radio and television reception.

- (1) The power supply cord you use must have been approved by and comply with the safety standards of U.S.A., and meet the following condition.

Power supply cord Plug shape	Non shield type, 3-conductor  U.S.A
---------------------------------	--

- (2) Please use the supplied shielded video signal cable, 15-pin mini D-SUB to D-SUB cable or DVI-D to DVI-D cable. Use of other cables and adapters may cause interference with radio and television reception.

2. 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 receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult your dealer or an experienced radio/TV technician for help.

If necessary, the user should contact the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet, prepared by the Federal Communications Commission, helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4.

## Declaration of Conformity

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions. (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

<b>U.S. Responsible Party:</b>	<b>NEC Display Solutions of America, Inc.</b>
<b>Address:</b>	<b>500 Park Blvd, Suite 1100 Itasca, Illinois 60143</b>
<b>Tel. No.:</b>	<b>(630) 467-3000</b>

Type of Product: Display Monitor

Equipment Classification: Class B Peripheral

Models: MultiSync P221W (L227HT)



*We hereby declare that the equipment specified above conforms to the technical standards as specified in the FCC Rules.*

Windows is a registered trademark of Microsoft Corporation. NEC is a registered trademark of NEC Corporation.

ENERGY STAR is a U.S. registered trademark.

ErgoDesign is a registered trademark of NEC Display Solutions, Ltd. in Austria, Benelux, Denmark, France, Germany, Italy, Norway, Spain, Sweden, U.K.

NaViSet is a trademark of NEC Display Solutions Europe GmbH in the countries of EU and Switzerland.

MultiSync is a registered trademark of NEC Display Solutions, Ltd. in the countries of U.K., Italy, Austria, Netherlands, Switzerland, Sweden, Spain, Denmark, Germany, Norway and Finland.

All other brands and product names are trademarks or registered trademarks of their respective owners.

As an ENERGY STAR® Partner, NEC Display Solutions of America, Inc. has determined that this product meets the ENERGY STAR guidelines for energy efficiency. The ENERGY STAR emblem does not represent EPA endorsement of any product or service.

# Recommended use

## Safety Precautions and Maintenance



FOR OPTIMUM PERFORMANCE, PLEASE NOTE  
THE FOLLOWING WHEN SETTING UP AND USING  
THE MULTISYNC LCD COLOUR MONITOR:



- **DO NOT OPEN THE MONITOR.** There are no user serviceable parts inside and opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.
- Do not spill any liquids into the cabinet or use your monitor near water.
- Do not insert objects of any kind into the cabinet slots, as they may touch dangerous voltage points, which can be harmful or fatal or may cause electric shock, fire or equipment failure.
- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.
- Do not place this product on a sloping or unstable cart, stand or table, as the monitor may fall, causing serious damage to the monitor.
- The power supply cord you use must have been approved by and comply with the safety standards of your country. (Type H05VV-F 3G 0.75mm<sup>2</sup> should be used in Europe).
- In U.K, use a BS-approved power cord with molded plug having a black (5A) fuse installed for use with this monitor.
- Do not place any objects onto the monitor and do not use the monitor outdoors.
- The lamps in this product contain mercury. Please dispose according to state, local or federal law.
- Do not bend, crimp or otherwise damage the power cord.
- Do not use monitor in high temperature, humid, dusty, or oily areas.
- Do not cover vent on monitor.
- Do not touch LCD panel surface while transporting, mounting and setting. Applying pressure on the LCD panel can cause serious damage.
- To prevent damage to the LCD monitor caused by tipping over due to earthquakes or other shocks, make sure to install the monitor in a stable location and take measures to prevent falling.

Immediately unplug your monitor from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the monitor.
- If the monitor has been exposed to rain or water.
- If the monitor has been dropped or the cabinet damaged.
- If the monitor does not operate normally by following operating instructions.
- If glass is broken, handle with care.
- If monitor or glass is broken, do not come in contact with the liquid crystal and handle with care.



CAUTION

- Allow adequate ventilation around the monitor so that heat can properly dissipate. Do not block ventilated openings or place the monitor near a radiator or other heat sources. Do not put anything on top of monitor.
- The power cable connector is the primary means of detaching the system from the power supply. The monitor should be installed close to a power outlet which is easily accessible.
- Handle with care when transporting. Save packaging for transporting.
- Carry the monitor holding the built-in handle and bottom frames of the monitor.
- Do not carry holding only the stand.



- **Image Persistence:** Please be aware that LCD Technology may experience a phenomenon known as Image Persistence. Image Persistence occurs when a residual or "ghost" image of a previous image remains visible on the screen. Unlike CRT monitors, LCD monitors' image persistence is not permanent, but constant images being displayed for a long period of time should be avoided. To alleviate image persistence, turn off the monitor for as long as the previous image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

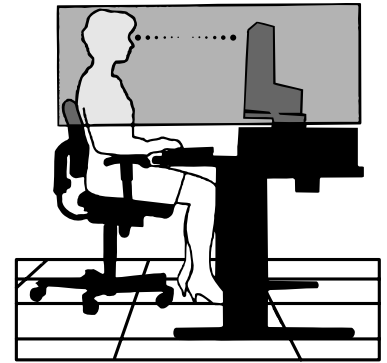
**NOTE:** As with all personal display devices, NEC DISPLAY SOLUTIONS recommends displaying moving images and using a moving screen saver at regular intervals whenever the screen is idle or turning off the monitor when not in use.



CORRECT PLACEMENT AND ADJUSTMENT OF THE MONITOR CAN  
REDUCE EYE, SHOULDER AND NECK FATIGUE. CHECK THE  
FOLLOWING WHEN YOU POSITION THE MONITOR:



- For optimum performance, allow 20 minutes for warm-up.
- Adjust the monitor height so that the top of the screen is at or slightly below eye level. Your eyes should look slightly downward when viewing the middle of the screen.
- Position your monitor no closer than 40 cm and no further away than 70 cm from your eyes. The optimal distance is 50 cm.
- Rest your eyes periodically by focusing on an object at least 20 feet away. Blink often.
- Position the monitor at a 90° angle to windows and other light sources to minimize glare and reflections. Adjust the monitor tilt so that ceiling lights do not reflect on your screen.
- If reflected light makes it hard for you to see your screen, use an anti-glare filter.
- Adjust the monitor's brightness and contrast controls to enhance readability.
- Use a document holder placed close to the screen.
- Position whatever you are looking at most of the time (the screen or reference material) directly in front of you to minimize turning your head while you are typing.
- Avoid displaying fixed patterns on the monitor for long periods of time to avoid image persistence (after-image effects).
- Get regular eye checkups.



### Ergonomics

To realize the maximum ergonomics benefits, we recommend the following:

- Adjust the Brightness until the background raster disappears.
- Do not position the Contrast control to its maximum setting.
- Use the preset Size and Position controls with standard signals.
- Use the preset Colour Setting.
- Use non-interlaced signals with a vertical refresh rate between 60-75 Hz.
- Do not use primary colour blue on a dark background, as it is difficult to see and may produce eye fatigue to insufficient contrast.

### Cleaning the LCD Panel

- When the liquid crystal panel is stained with dust or dirt, please wipe with soft cloth gently.
- Please do not rub the LCD panel with hard material.
- Please do not apply pressure to the LCD surface.
- Please do not use OA cleaner it will cause deterioration or discolor on the LCD surface.

### Cleaning the Cabinet

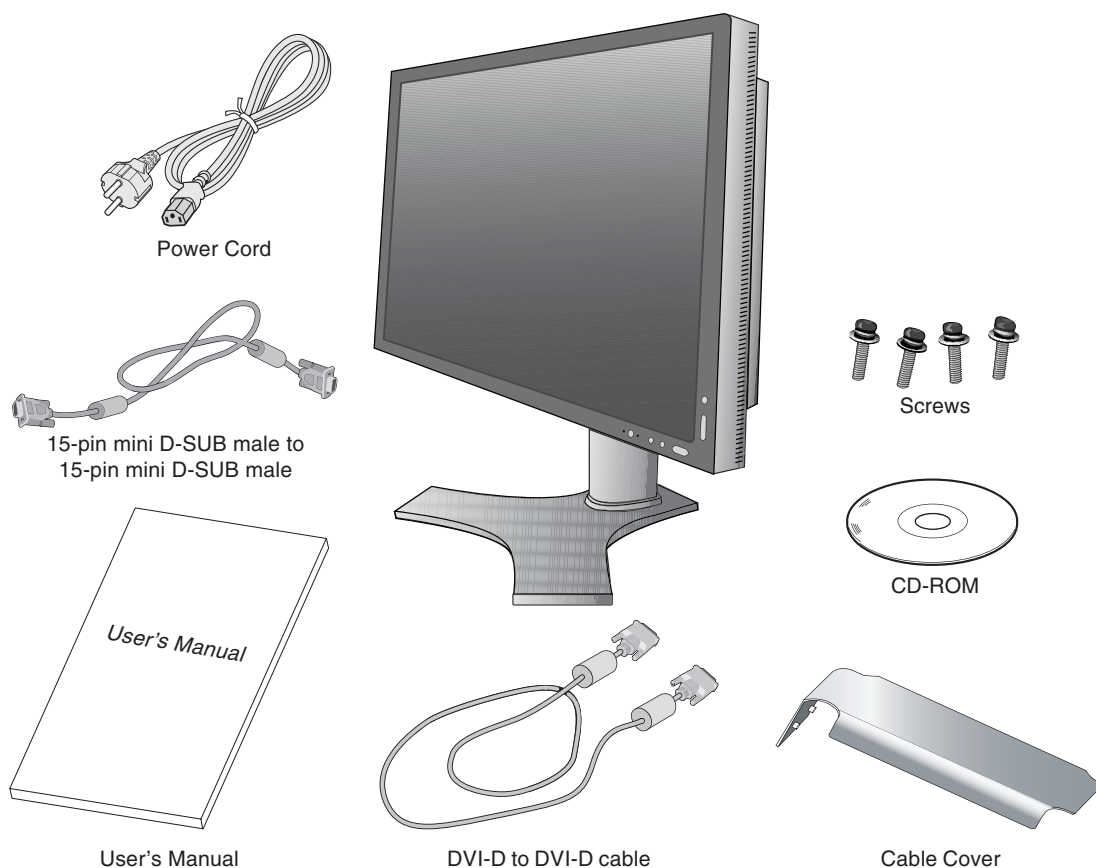
- Unplug the power supply
- Gently wipe the cabinet with a soft cloth
- To clean the cabinet, dampen the cloth with a neutral detergent and water, wipe the cabinet and follow with a dry cloth.

**NOTE:** Many plastics are used on the surface of the cabinet. DO NOT clean with benzene, thinner, alkaline detergent, alcoholic system detergent, glass cleaner, wax, polish cleaner, soap powder, or insecticide. Do not touch rubber or vinyl to the cabinet for a long time. These types of fluids and fabrics can cause the paint to deteriorate, crack or peel.

# Contents

Your new NEC monitor box\* should contain the following:

- MultiSync P221W monitor with tilt/swivel/pivot/height adjust stand
- Power Cord
- Video Signal Cable (15-pin mini D-SUB male to 15-pin mini D-SUB male)
- Video Signal Cable (DVI-D to DVI-D cable)
- User's Manual
- CD-ROM
- Cable Cover
- Screw (4-M4 x 14) (to mount the monitor to a flexible arm (page 9))



**NOTE:** This monitor can be equipped with optional loudspeakers: "MultiSync Sound bar". Please ask your dealer or check our website <http://www.nec-display-solutions.com>



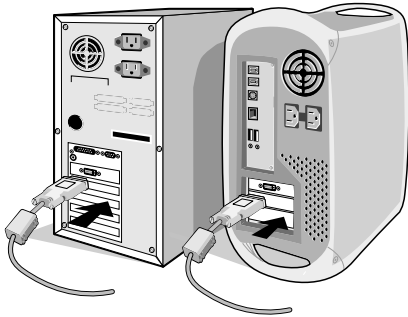
\* Remember to save your original box and packing material to transport or ship the monitor.



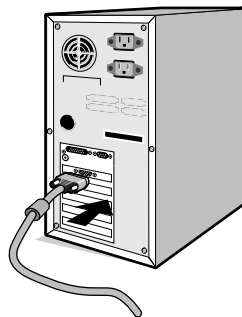
# Quick Start

To attach the LCD monitor to your system, follow these instructions:

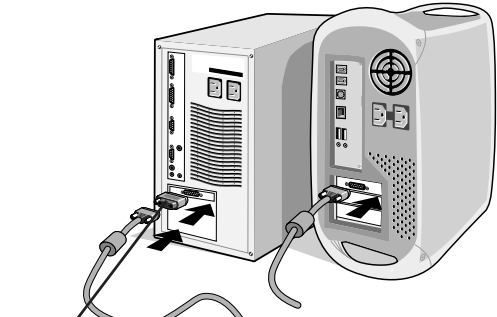
1. Turn off the power to your computer.
2. **For the PC or MAC with DVI digital output:** Connect the DVI signal cable to the connector of the display card in your system (**Figure A.1**). Tighten all screws.  
**For the PC with Analog output:** Connect the 15-pin mini D-SUB signal cable to the connector of the display card in your system (**Figure A.2**). Tighten all screws.  
**For the MAC:** Connect the Macintosh cable adapter to the computer, then attach the 15-pin mini D-SUB signal cable to the Macintosh cable adapter (**Figure B.1**). Tighten all screws.



**Figure A.1**



**Figure A.2**



Macintosh  
Cable Adapter  
(not included)

**Figure B.1**

**NOTE:** Some Macintosh systems do not require a Macintosh cable adapter.

3. Place hands on each side of the monitor to tilt the LCD panel 30-degree angle and lift up to the highest position (**Figure C.1**).
4. Connect all cables to the appropriate connectors (**Figure C.1**).

**NOTE:** Incorrect cable connections may result in irregular operation, damage display quality/components of LCD module and/or shorten the module's life.

5. To keep the cables neatly organized, place them into the cable management system that is built into the stand.

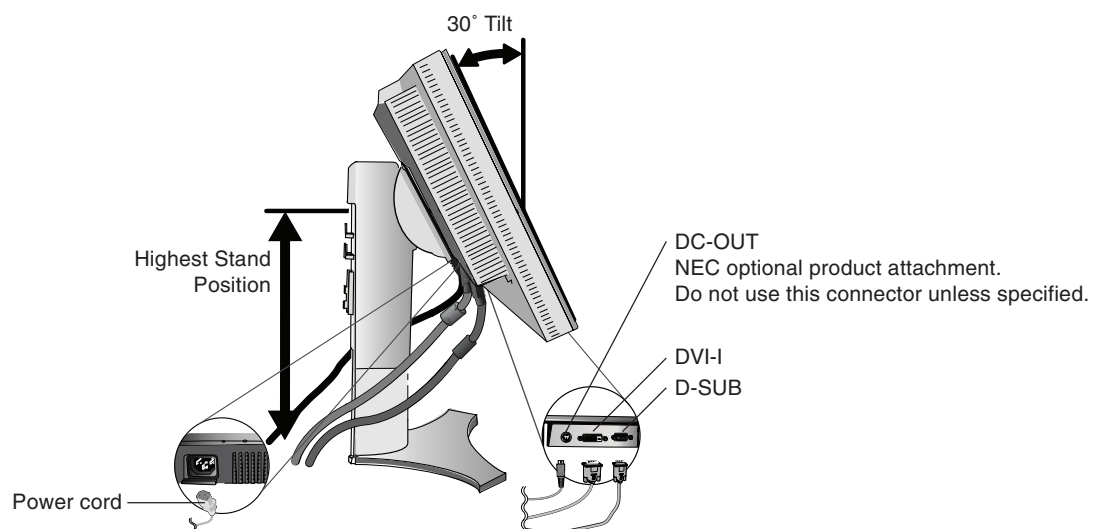
Place the power cable into the specific hooks as indicated (**Figure C.2**).

Place the DVI cable and the 15-pin mini D-Sub signal cable into the hooks as indicated (**Figure C.2**).

When using the monitor in Portrait mode, place the DVI cable and the 15-pin mini D-Sub signal cable into the hooks as indicated (**Figure C.3**).

6. Make sure all cables are resting flat against the stand (**Figure C.2**).

Please check Tilt, Rise and Lower monitor screen and screen rotation when you manage cables.



**Figure C.1**



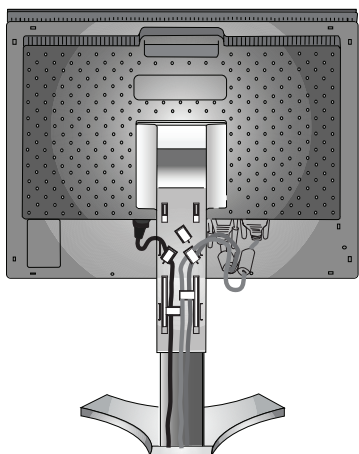


Figure C.2

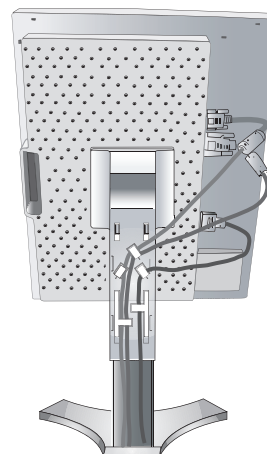


Figure C.3

7. Hold all cables firmly and place the cable cover onto the stand (**Figure D.1**). To remove the cable cover, lift the cover off as shown in **Figure D.2**.
8. Connect one end of the power cord to the AC inlet on the back of the monitor and the other end to the power outlet.

**NOTE:** Please refer to Caution section of this manual for proper selection of AC power cord.

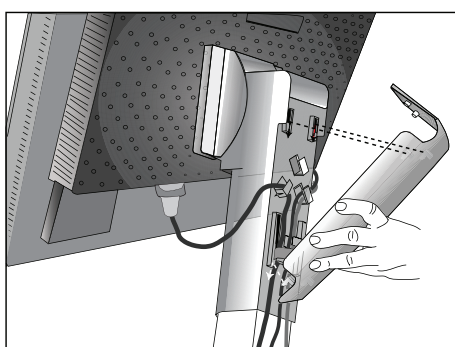


Figure D.1

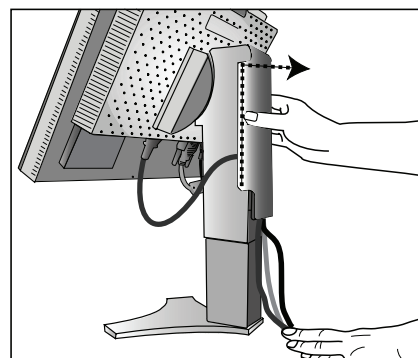


Figure D.2

9. The Vacation Switch on the back side of the monitor, near the AC inlet, must be turned on. Turn on the monitor with the front power button (**Figure E.1**) and the computer.

**NOTE:** The Vacation Switch is a true on/off switch. If this switch is on the OFF position, the monitor cannot be turned on using the front button. DO NOT switch on/off repeatedly.

10. No-touch auto adjust automatically adjusts the monitor to optimal settings upon initial setup for most timings. For further adjustments, use the following OSD controls:

- Auto Contrast (Analog input only)
- Auto Adjust (Analog input only)

Refer to the **Controls** section of this User's Manual for a full description of these OSD controls.

**NOTE:** If you have any problems, please refer to the **Troubleshooting** section of this User's Manual.

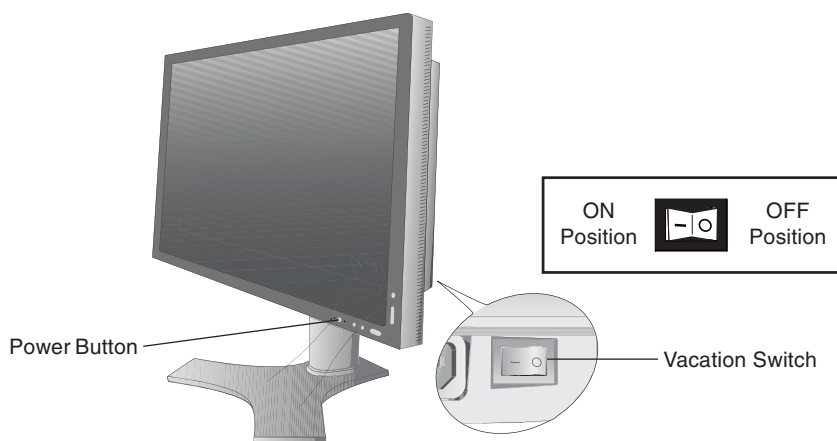


Figure E.1

## Raise and Lower Monitor Screen

The monitor may be raised or lowered in either Portrait or Landscape mode.

To raise or lower screen, place hands on each side of the monitor and lift or lower to the desired height (**Figure RL.1**).

**NOTE:** Handle with care when raising or lowering the monitor screen.

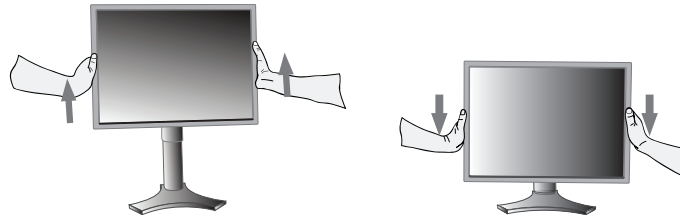


Figure RL.1

## Screen Rotation

Before rotating, the screen must be raised to the highest level to avoid knocking the screen on the desk or pinching with your fingers.

To raise the screen, place hands on each side of the monitor and lift up to the highest position (**Figure RL.1**).

To rotate screen, place hands on each side of the monitor screen and turn clockwise from Landscape to Portrait or counter-clockwise from Portrait to Landscape (**Figure R.1**).

To rotate OSD menu between landscape and portrait, refer to “Controls” section.

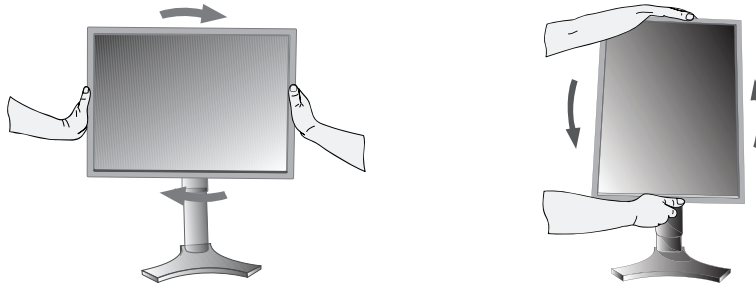


Figure R.1

## Tilt

Grasp top and bottom sides of the monitor screen with your hands and adjust the tilt as desired (**Figure TS.1**).



Figure TS.1

## Swivel

Grasp both sides of the monitor screen with your hands and adjust the swivel as desired (**Figure TS.2**).



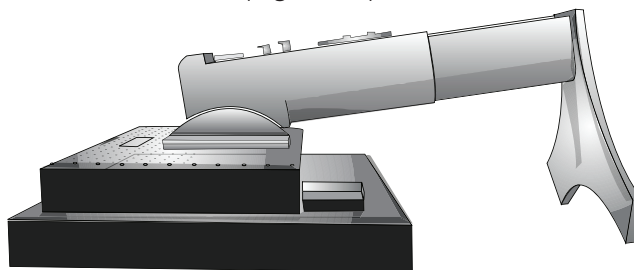
Figure TS.2

**NOTE:** Handle with care when tilting the monitor screen.

## Remove Monitor Stand for Mounting

To prepare the monitor for alternate mounting purposes:

1. Disconnect all cables.
2. Place hands on each side of the monitor and lift up to the highest position.
3. Place monitor face down on a non-abrasive surface (**Figure S.1**).

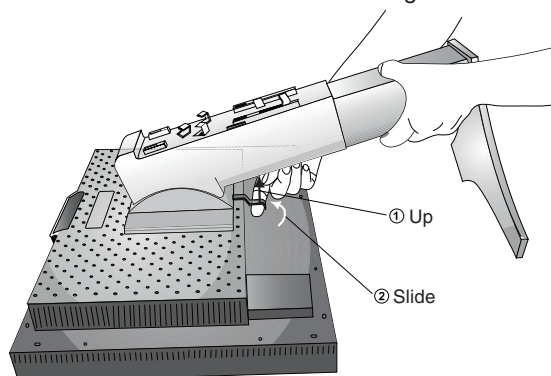


**Figure S.1**

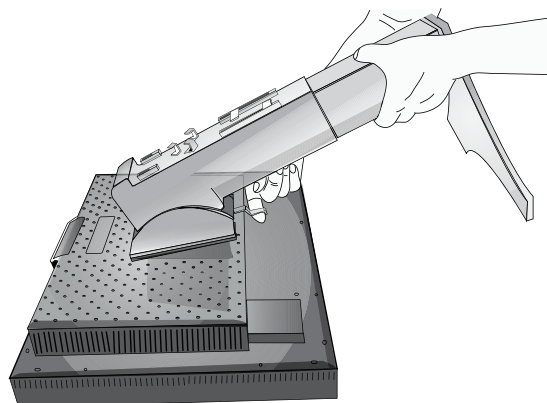
4. Place one hand around the base and one hand on the Quick Release Lever. Move the Quick Release Lever in the direction indicated by the arrows (**Figure S.2**).
5. Lift up the bottom of the stand to unhook it from the monitor (**Figure S.3**). The monitor can now be mounted using an alternate method. Reverse process to reattach stand.

**NOTE:** Use only VESA-compatible alternative mounting method (100 mm pitch).

**NOTE:** Handle with care when removing monitor stand.



**Figure S.2**



**Figure S.3**

## Flexible Arm Installation

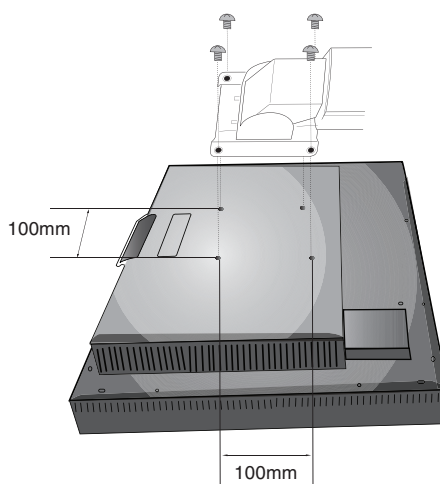
This LCD monitor is designed for use with a flexible arm.

1. Follow the instructions on how Remove Monitor Stand for Mounting to remove the stand.
2. Change the 4 screws that were removed from the stand removal to attach the flexible arm to the monitor (**Figure F.1**).

**Caution:**

- When mounting, use **ONLY** the screws (4 pcs) that were removed from the stand to avoid damage to the monitor or stand.
- The monitor should only be used with an approved arm (e.g. GS mark).
- When using mounting accessories (e.g. VESA (100 x 100)), use M4 size screws (Length: bracket thickness + 10mm). Recommended Fasten Force: 98 - 137N•cm.
- To avoid blocking vent, keep adequate space above and behind the monitor when using with flexible arm.

**NOTE:** The mounting stand must be able to sustain at least 24.4 kg and be UL certified.



Weight of LCD assembly: 6.1 kg MAX

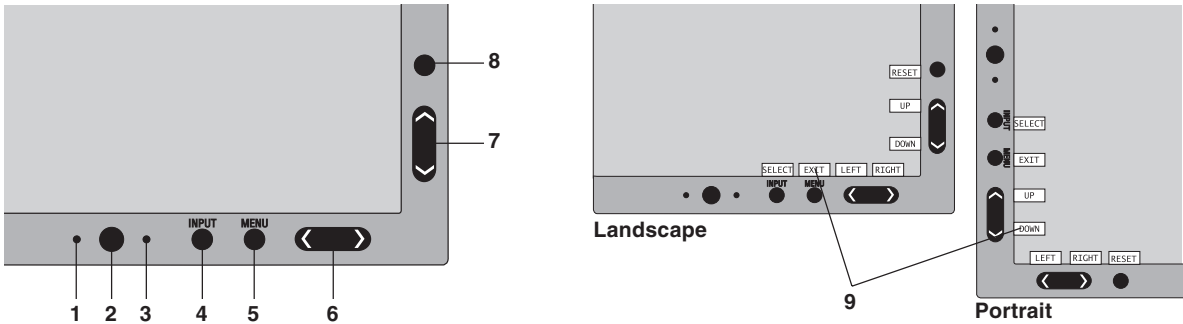
**Figure F.1**

# Controls

## OSD (On-Screen Display) control buttons on the front of the monitor function as follows:

To access OSD menu, press any of the control buttons (EXIT, LEFT, RIGHT, UP, DOWN).  
To change signal input, press the SELECT button.

**NOTE:** OSD must be closed in order to change signal input.



1 Ambibright Sensor	Detects the level of ambient lighting allowing the monitor to make adjustments to various settings resulting in a more comfortable viewing experience. Do not cover this sensor.
2 Power	Turns the monitor on and off.
3 LED	Indicates that the power is on. Can be changed between blue and green in the Advanced OSD Control menu.
4 INPUT/SELECT	Enters OSD sub menus. Changes the input source when not in the OSD Control menu.
5 MENU/EXIT	Opens OSD control menu. Exits the OSD sub menu. Exits OSD Control menu.
6 LEFT/RIGHT	Navigates to the left or right through the OSD Control menu.
7 UP/DOWN	Navigates up or down through the OSD Control menu.
8 RESET/ROTATE OSD	Resets the OSD back to factory settings. When pressed when the OSD is not showing, rotates the OSD Control menu between portrait and landscape mode*.
9 KEY GUIDE	The Key Guide appears on screen when the OSD control menu is accessed. The Key Guide will rotate when the OSD control menu is rotated.

\* The “LEFT/RIGHT” and “UP/DOWN” buttons functionality is interchangeable depending on the orientation (landscape/portrait) of the OSD.



## Brightness/Contrast Controls

### BRIGHTNESS

Adjusts the overall image and background screen brightness.

### CONTRAST

Adjusts the image brightness in relation to the background.

### AUTO CONTRAST (Analog input only)

Adjusts the image displayed for non-standard video inputs.

## ECO MODE

Decreases the amount of power consumed by reducing the brightness level.

**OFF:** Set brightness variable range from 0% to 100%.

**1:** Set brightness variable range from 0% to 75%.

**2:** Set brightness variable range from 0% to 50%.

**CUSTOM:** Decreases the brightness level as determined by the user.

Refer to the Advanced OSD menu for custom setting instructions.

## AUTO BRIGHTNESS

**OFF:** No function.

**ON:** Adjusts the brightness automatically, by detecting the brightness level of your environment and adjusting the monitor with the best BRIGHTNESS setting\*<sup>1</sup>.

**NOTE:** Do not cover environmental brightness sensor (Ambibright sensor).

\*<sup>1</sup>: Please refer to Page 20 for full "Auto Brightness" information.

## BLACK LEVEL

Adjust the black level.



## Auto Adjust (Analog input only)

Automatically adjusts the Image Position and H. Size settings and Fine settings.



## Image Controls

### LEFT / RIGHT (Analog input only)

Controls Horizontal Image Position within the display area of the LCD.

### DOWN / UP (Analog input only)

Controls Vertical Image Position within the display area of the LCD.

### H.SIZE (V.SIZE) (Analog input only)

Adjusts the horizontal size by increasing or decreasing this setting.

If the "AUTO Adjust function" do not give you a satisfactory picture setting, a further tuning can be performed using the "H.Size (or V.Size)" function (dot clock). For this a Moiré test pattern could be used. This function may alter the width of the picture. Use Left/Right Menu to center the image on the screen. If the H.Size (or V.Size) is wrongly calibrated, the result would look like on the left drawing. The image should be homogeneous.

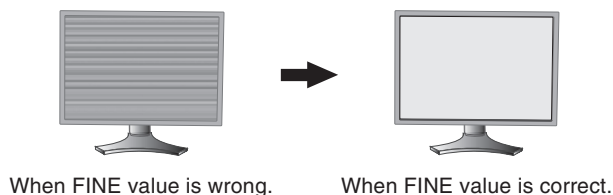


### FINE (Analog input only)

Improves focus, clarity and image stability by increasing or decreasing this setting.

If the "Auto Adjust function" and the "H.Size" function do not give you a satisfactory picture setting, a fine tuning can be performed using the "Fine" function.

For this a Moiré test pattern could be used. If the Fine value is wrongly calibrated, the result would look like on the left drawing. The image should be homogeneous.



## INPUT RESOLUTION (Analog Input Only)

Selects resolution's priority of input signal to one of the following pair: 1360 x 768, 1680 x 1050 or 1280 x 768, 1680 x 1050 or 1024 x 768, 1400 x 1050.

**1360 x 768, 1680 x 1050:** Determines the resolution to 1360 x 768, 1680 x 1050.

**1280 x 768, 1680 x 1050:** Determines the resolution to 1280 x 768, 1680 x 1050.

**1024 x 768, 1400 x 1050:** Determines the resolution to 1024 x 768, 1400 x 1050.



## Colour Control Systems

**Colour Control System:** Nine colour presets select the desired colour setting (sRGB, NATIVE, Option1 and Option2 colour presets are standard and cannot be changed).

**R,G,B:** Increases or decreases Red, Green or Blue colour depending upon which is selected. The change in colour will appear on screen and the direction (increase or decrease) will be shown by the bars.

**NATIVE:** Original colour presented by the LCD panel that is unadjustable.

**sRGB:** sRGB mode dramatically improves the colour fidelity in the desktop environment by a single standard RGB colour space. With this colour supported environment, the operator could easily and confidently communicate colour without further colour management overhead in the most common situations.

**PROGRAMMABLE:** The colour tone that was set up with the downloaded application software is reflected.

**Option1:** The white point is set to Clear Base color temperature and the gamma curve is a near DICOM simulation.

**Option2:** The white point is set to Blue Base color temperature and the gamma curve is a near DICOM simulation.

**NOTE:** To reset a poor image setting, turn on the monitor by using front power button while holding "RESET" and "SELECT" buttons at the same time.



## Tools

### DVI SELECTION

This function selects the DVI input mode (DVI-I). When the DVI selection has been changed, the computer has to be restarted.

**DIGITAL:** DVI digital input is available.

**ANALOG:** DVI analog input is available.

**NOTE:** For the MAC with digital output: Before turning on the MAC, the DVI Input mode must be set to DIGITAL in "DVI SELECTION" of OSD by pressing "SELECT" button then "CONTROL" button when the DVI signal cable is connected to the DVI-I connector (DVI-I) of the monitor. Otherwise the MAC may not turn on.

**NOTE:** Depending on the PC and Video card used, or when another Video signal cable is attached, this function may not operate.

### VIDEO DETECT

Selects the method of video detection when more than one computer is connected.

**FIRST:** The video input has to be switched to "FIRST" mode. When current video input signal is not present, then the monitor searches for a video signal from the other video input port. If the video signal is present in the other port, then the monitor switches the video source input port to the new found video source automatically. The monitor will not look for other video signals while the current video source is present.

**NONE:** The Monitor will not search the other video input port unless the monitor is turned on.

### EXPANSION MODE

Selects the zoom mode.

**FULL:** The image is expanded to 1680 x 1050, regardless of the resolution.

**ASPECT:** The image is expanded without changing the aspect ratio.

**OFF:** The image is not expanded.

### OFF TIMER

Monitor will automatically power-down when the end user has selected a pre-determined amount of time.

Before powering off, a message will appear on the screen asking the user if they want to delay the turn off time by 60 minutes. Press any OSD button to delay the turn off time.

### IPM

The Intelligent Power Manager allows the monitor to enter into a power saving mode after a period of inactivity. The IPM has two settings.

**STANDARD:** Monitor enters power save mode automatically when the input signal is lost.

**OPTION:** Monitor enters power save mode automatically when the amount of surrounding light goes below the level that is determined by the user. The level can be adjusted in Tag 5 of the Advanced OSD Control menu.

When in power save mode, the LED on the front of the monitor becomes dark green or blue. While in power save mode, push any of the front buttons, except for POWER and SELECT to return to normal.

When the amount of surrounding light returns to normal levels, the monitor will automatically return to normal mode.



## FACTORY PRESET

Selecting Factory Preset allows you to reset all OSD control settings (BRIGHTNESS, CONTRAST, ECO MODE, AUTO BRIGHTNESS, BLACK LEVEL, IMAGE CONTROLS, COLOUR CONTROL SYSTEMS, DVI SELECTION, VIDEO DETECT, EXPANSION MODE, OFF TIMER, OFF MODE, OSD LEFT/RIGHT, OSD DOWN/UP, OSD TURN OFF) back to the factory settings. Individual settings can be reset by highlighting the control to be reset and pressing the RESET button.



## MENU Tools

### LANGUAGE

OSD control menus are available in eight languages.

### OSD LEFT/RIGHT

You can choose where you would like the OSD control image to appear on your screen. Selecting OSD Location allows you to manually adjust the position of the OSD control menu left or right.

### OSD DOWN/UP

You can choose where you would like the OSD control image to appear on your screen. Selecting OSD Location allows you to manually adjust the position of the OSD control menu Up or Down.

### OSD TURN OFF

The OSD control menu will stay on as long as it is use. In the OSD Turn Off submenu, you can select how long the monitor waits after the last touch of a button to shut off the OSD control menu. The preset choices are 10-120 seconds by 5 seconds step.

### OSD LOCK OUT

This control completely locks out access to all OSD control functions. When attempting to activate OSD controls while in the Lock Out mode, a screen will appear indicating the OSD controls are locked out.

There are four types of OSD LOCK OUT:

**OSD LOCK OUT with BRIGHTNESS and CONTRAST control:** To activate the OSD Lock Out function, press SELECT, then “UP” button and hold down simultaneously. To deactivate the OSD Lock Out, press SELECT, then “UP” button and hold down simultaneously while in the OSD menu. BRIGHTNESS and CONTRAST can be adjusted while in the lock out mode.

**OSD LOCK OUT with no control:** To activate the OSD Lock Out function, press SELECT, then “Right” button and hold down simultaneously. To deactivate the OSD Lock Out, press SELECT, then “Right” button and hold down simultaneously while in the OSD menu. No controls can be adjusted while in the lock out mode.

**OSD LOCK OUT with BRIGHTNESS (only) control:** To activate the OSD Lock Out function, press SELECT, then “Down” and “Left” buttons and hold down simultaneously. To deactivate the OSD Lock Out, press SELECT, then “Down” and “Left” buttons and hold down simultaneously while in the OSD menu. BRIGHTNESS can be adjusted while in the lock out mode.

**CUSTOM:** Refer to the Advanced OSD Menu.

### HOT KEY

You can adjust the brightness and contrast directly. When this function is set to ON, you can adjust the brightness with “Left” or “Right”, contrast with “Down” or “Up” buttons, while the OSD menu is off. The standard OSD can be accessed with the EXIT button.



## Information

Provides information about the current resolution display and technical data including the preset timing being used and the horizontal and vertical frequencies. Indicates the model and serial numbers of your monitor.

**CARBON SAVINGS:** Display the estimated carbon saving information in kg.

The carbon footprint factor in the carbon saving calculation is based on the OECD (2006 Edition).

## OSD Warning

OSD Warning menus disappear with Exit button.

**NO SIGNAL:** This function gives a warning when there is no Horizontal or Vertical Sync. After power is turned on or when there is a change of input signal, the **No Signal** window will appear.

**OUT OF RANGE:** This function gives a recommendation of the optimized resolution and refresh rate. After the power is turned on or there is a change of input signal or the video signal doesn't have proper timing, the **Out Of Range** menu will appear.

**NOTE:** It is possible to change the DVI selection or to change the IPM settings while the “NO SIGNAL” or “OUT OF RANGE” messages are displayed.



# Specifications

Monitor Specifications		MultiSync P221W Monitor	Notes
LCD Module	Diagonal: Viewable Image Size: Native Resolution (Pixel Count):	55.9 cm/22.0 inches 55.9 cm/22.0 inches 1680 x 1050	Active matrix; thin film transistor (TFT) liquid crystal display (LCD); 0.282 mm dot pitch; 300 cd/m <sup>2</sup> white luminance; 1000:1 contrast ratio, typical.
Input Signal	Video: Sync:	ANALOG 0.7 Vp-p/75 Ohms Separate sync.TTL Level Horizontal sync. Positive/Negative Vertical sync. Positive/Negative Composite sync. Positive/Negative Sync on Green (Video 0.7 Vp-p and Sync Negative 0.3 Vp-p)	Digital Input: DVI
Display Colours		16,777,216	Depends on display card used.
Synchronization Range	Horizontal: Vertical:	31.5 kHz to 81.1 kHz 56 Hz to 75 Hz	Automatically Automatically
Viewing Angle	Left/Right: Up/Down:	±89° (CR > 10) ±89° (CR > 10)	
Image Formation Time		16 ms (Typ.)	
Resolutions Supported		720 x 400*1 at 70 Hz 640 x 480*1 at 60 Hz to 75 Hz 800 x 600*1 at 56 Hz to 75 Hz 832 x 624*1 at 75 Hz 1024 x 768*1 at 60 Hz to 75 Hz 1152 x 864*1 at 75 Hz 1152 x 870*1 at 75 Hz 1280 x 960*1 at 60 Hz to 75 Hz 1280 x 1024*1 at 60 Hz to 75 Hz 1360 x 768*1 at 60 Hz 1440 x 900*1 at 60 Hz to 75 Hz 1440 x 1050*1 at 60 Hz to 75 Hz 1680 x 1050 at 60 Hz.....	Some systems may not support all modes listed.              NEC DISPLAY SOLUTIONS cites recommended resolution at 60 Hz for optimal display performance.
Active Display Area	Landscape: Horiz.: Vert.: Portrait: Horiz.: Vert.:	474 mm/18.7 inches 296 mm/11.7 inches 296 mm/11.7 inches 474 mm/18.7 inches	
Power Supply		AC 100-240 V ~ 50/60 Hz	
Current Rating		0.95 - 0.40 A (with Option)	
Dimensions	Landscape:  Portrait:  Height Adjustment:	506.4 mm (W) x 410 - 560 mm (H) x 247.3 mm (D) 19.9 inches (W) x 16.1 - 22.0 inches (H) x 9.7 inches (D) 328.7 mm (W) x 517.9 - 648.9 mm (H) x 247.3 mm (D) 12.9 inches (W) x 20.4 - 25.5 inches (H) x 9.7 inches (D) 150 mm / 5.9 inches (Landscape) 131 mm / 5.1 inches (Portrait)	
Weight	Net (with stand): Gross (with carton box):	8.5 kg (18.7 lbs) 10.7 kg (23.6 lbs)	
Environmental Considerations	Operating Temperature: Humidity: Altitude: Storage Temperature: Humidity: Altitude:	5°C to 35°C/41°F to 95°F 20% to 80% 0 to 6,562 Feet/0 to 2,000 m -10°C to 60°C/14°F to 140°F 10% to 85% 0 to 6,562 Feet/0 to 2,000 m	

\*1 Interpolated Resolutions: When resolutions are shown that are lower than the pixel count of the LCD module, text may appear different. This is normal and necessary for all current flat panel technologies when displaying non-native resolutions full screen. In flat panel technologies, each dot on the screen is actually one pixel, so to expand resolutions to full screen, an interpolation of the resolution must be done.

**NOTE:** Technical specifications are subject to change without notice.

# Features

**Ambix Technology:** Dual input technology allowing both analog and digital inputs off of one connector (DVI-I) as well as additional legacy analog support off of a traditional 15-pin mini D-SUB connector. Provides traditional MultiSync technology compatibility for analog as well as TMDS-based (Transition Minimized Differential Signalling) digital compatibility for digital inputs. TMDS-based digital interfaces include DVI-D, DFP and P&D.

**DVI-I:** The integrated interface ratified by the Digital Display Working Group (DDWG) that allows both digital and analog connectors off of one port. The "I" stands for integration for both digital and analog, The digital portion is DVI-based.

**DVI-D:** The digital-only subset of DVI ratified by the Digital Display Working Group (DDWG) for digital connections between computers and displays. As a digital-only connector, analog support is not provided off a DVI-D connector. As a DVI-based digital only connection, only a simple adapter is necessary for compatibility between DVI-D and other DVI-based digital connectors such as DFP and P&D.

**DFP (Digital Flat Panel):** An all-digital interface for flat panel monitors which is signal compatible with DVI. As a DVI-based digital only connection, only a simple adapter is necessary for compatibility between DFP and other DVI-based digital connectors such as DVI and P&D.

**P&D (Plug and Display):** The VESA standard for digital flat panel monitor interfaces. It is more robust than DFP since it allows for other options off a signal connector (options like USB, analog video and IEEE-1394-995). The VESA committee has recognized that DFP is a subset of P&D. As a DVI-based connector (for the digital input pins), only a simple adapter is necessary for compatibility between P&D and other DVI-based digital connector such as DVI and DFP.

**Pivoting Stand:** Allows users to adjust the monitor to the orientation that best fits their application, either Landscape orientation for wide documents, or portrait orientation for the ability to preview a full page on one screen at one time. The Portrait orientation is also perfect for full screen video conferencing.

**Reduced Footprint:** Provides the ideal solution for environments requiring superior image quality but with size and weight limitations. The monitor's small footprint and low weight allow it to be moved or transported easily from one location to another.

**Colour Control Systems:** Allows you to adjust the colours on your screen and customize the colour accuracy of your monitor to a variety of standards.

**OSD (On-Screen Display) Controls:** Allow you to quickly and easily adjust all elements of your screen image via simple to use on-screen menus.

**ErgoDesign Features:** Enhance human ergonomics to improve the working environment, protect the health of the user and save money. Examples include OSD controls for quick and easy image adjustments, tilt base for preferred angle of vision, small footprint and compliance with MPRII and TCO guidelines for lower emissions.

**Plug and Play:** The Microsoft® solution with the Windows® operating system facilitates setup and installation by allowing the monitor to send its capabilities (such as screen size and resolutions supported) directly to your computer, automatically optimizing display performance.

**IPM (Intelligent Power Manager) System:** Provides innovative power-saving methods that allow the monitor to shift to a lower power consumption level when on but not in use, saving two-thirds of your monitor energy costs, reducing emissions and lowering the air conditioning costs of the workplace.

**Multiple Frequency Technology:** Automatically adjusts monitor to the display card's scanning frequency, thus displaying the resolution required.

**FullScan Capability:** Allows you to use the entire screen area in most resolutions, significantly expanding image size.

**Wide Viewing Angle Technology:** Allows the user to be able to see the monitor from any angle (178 degrees) from any orientation — Portrait or Landscape. Provides full 178° viewing angles either up, down, left or right.

**VESA Standard Mounting Interface:** Allows users to connect their MultiSync monitor to any VESA standard third party mounting arm or bracket. Allows for the monitor to be mounted on a wall or an arm using any third party compliant device.

**NaViSet:** Is a ground-breaking software family, developed by NEC Display Solutions Europe GmbH, providing intuitive access to all monitor setting controls and remote diagnosis via the Windows interface, based upon the VESA standard, DDC/CI. Using a standard VGA or DVI signal cable, NaViSet can either benefit single users or, with NaViSet Administrator, can reduce the Total Cost of Ownership through remote network-wide maintenance, diagnosis and asset-reporting.

**No-touch Auto Adjust (Analog input only):** No-touch auto adjust automatically adjusts the monitor to optimal settings upon initial setup.

**sRGB Colour Control:** A new optimized colour management standard which allows for colour matching on computer displays and other peripherals. The sRGB, which is based on the calibrated colour space, allows for optimal colour representation and backward compatibility with other common colour standards.

**Adjustable stand with pivot capability:** Adds flexibility to your viewing preferences.

**Quick Release stand:** Allows fast removal.

**AmbiBright technology:** Automatically adjusts the backlight level depending on the level of ambient lighting.

**Environmental Impact:** Annual typical maximum operating carbon footprint of this monitor (world-wide average) is approximately 66.1 kg (calculated by: rated wattage x 8 hours per day x 5 days a week x 45 weeks per year x Power-to- Carbon conversion factor - conversion factor is based on OECD publication of global CO2 emissions 2006 Edition). This monitor has a manufacturing carbon footprint of approximately 29.8 kg.

**Note:** The manufacturing and operating carbon footprints are calculated by a unique algorithm developed exclusively by NEC for its monitors.

# Troubleshooting

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## No picture

- The signal cable should be completely connected to the display card/computer.
- The display card should be completely seated in its slot.
- Check the Vacation Switch should be in the ON position (see page 7).
- Front Power Switch and computer power switch should be in the ON position.
- Check to make sure that a supported mode has been selected on the display card or system being used. (Please consult display card or system manual to change graphics mode.)
- Check the monitor and your display card with respect to compatibility and recommended settings.
- Check the signal cable connector for bent or pushed-in pins.
- Check the signal input “DVI-I” or “D-Sub”.
- Ensure the DVI input mode is set to DIGITAL when the MAC digital output is connected to the DVI-I connector.
- If the front LED is dark green or dark blue, check the status of the IPM mode (see page 12).

## Power Button does not respond

- Unplug the power cord of the monitor from the AC outlet to turn off and reset the monitor.
- Check the Vacation Switch on the back side of the monitor.

## Image Persistence

- Image persistence is when a residual or “ghost” image of a previous image remains visible on the screen. Unlike CRT monitors, LCD monitors’ image persistence is not permanent, but constant images being displayed for a long period of time should be avoided. To alleviate image persistence, turn off the monitor for as long as the previous image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

**NOTE:** As with all personal display devices, NEC DISPLAY SOLUTIONS recommends using a moving screen saver at regular intervals whenever the screen is idle or turning off the monitor when not in use.

## Message “OUT OF RANGE” is displayed (screen is either blank or shows rough images only)

- Image is displayed only roughly (pixels are missing) and OSD warning “OUT OF RANGE” is displayed: Either signal clock or resolution is too high. Choose one of the supported modes.
- OSD warning “OUT OF RANGE” is displayed on a blank screen: Signal frequency is out of range. Choose one of the supported modes.

## Image is unstable, unfocused or swimming is apparent

- Signal cable should be completely attached to the computer.
- Use the OSD Image Adjust controls to focus and adjust display by increasing or decreasing the fine total. When the display mode is changed, the OSD Image Adjust settings may need to be readjusted.
- Check the monitor and your display card with respect to compatibility and recommended signal timings.
- If your text is garbled, change the video mode to non-interlace and use 60Hz refresh rate.

## LED on monitor is not lit (*no green, blue or amber colour can be seen*)

- Power Switch should be in the ON position and power cord should be connected.

## Picture is not as bright

- Make sure ECO MODE and AUTO BRIGHTNESS are turned off.
- If the brightness fluctuates make sure AUTO BRIGHTNESS is turned off.

## Display image is not sized properly

- Use the OSD Image Adjust controls to increase or decrease the Coarse total.
- Check to make sure that a supported mode has been selected on the display card or system being used. (Please consult display card or system manual to change graphics mode.)

## No Video

- If no video is present on the screen, turn the Power button off and on again.
- Make certain the computer is not in a power-saving mode (touch the keyboard or mouse).

## Self Diagnosis

- The LCD display is equipped with the ability to self diagnose abnormalities. When the LCD detects a problem, the LED on the front flashes in a pattern of long and short blinks, depending on the type of problem detected.
- If the LED detects a problem, please refer service to qualified personnel.

# Appendix

If you need detailed information about the controls, please use the advanced menu.

## <How to use the advanced menu>

- Turn off your monitor.
- Turn on your monitor by pushing the “POWER” and “SELECT” button at the same time for at least one second simultaneously. Then press the control buttons (EXIT, LEFT, RIGHT, UP, DOWN).
- You will see the Advanced menu.  
This menu is larger than the normal OSD.

## <How to exit the advanced menu>

- Turn off and restart your monitor in the normal way.

To make an adjustment, ensure that the tag is highlighted, then press “SELECT”.

To move to another tag, press “EXIT”, then press “Left” or “Right” to highlight another tag.

Tag1	Brightness	Adjusts the overall image and screen background brightness. Press “Left” or “Right” to adjust.
	Contrast	Adjusts the image brightness and contrast in relation to the background. Press “Left” or “Right” to adjust.
	Auto Contrast (Analog input only)	Adjusts the image displayed for non-standard video inputs. Press “SELECT” to adjust. Any adjustment requires the image to have white portions.
	Auto Black Level (Analog input only)	Automatically adjusts the black level. Any adjustment requires the image to have black portions. Press “SELECT” to activate Auto Adjust.
	ECO Mode	Decreases the amount of power consumed by reducing the brightness level. OFF: Set brightness variable range from 0% to 100%. 1: Set brightness variable range from 0% to 75%. 2: Set brightness variable range from 0% to 50%. CUSTOM: Decreases the brightness level as determined by the user.
	ECO Mode Custom	Allows the user to set a preferred brightness level when ECO Mode is in use.
	Auto Brightness	OFF: No function. ON: Adjusts the brightness automatically, by detecting the brightness level of your environment and adjusting the monitor with your BRIGHTNESS setting. NOTE: Do not cover environmental brightness sensor (Ambibright sensor).
	Black Level	Allows you to manually adjust the black level. Press “Left” or “Right” to adjust.
	LOW BRIGHTNESS	ON: Reduces the brightness level. OFF: Default setting.
Tag2	Auto Adjust (Analog input only)	Automatically adjusts the Image Position and H.Size settings and Fine settings. Press “SELECT” to activate Auto Adjustment.
Tag3	LEFT/RIGHT (Analog input only)	Controls Horizontal Image Position within the display area of the LCD. Press “Left” or “Right” to adjust.
	DOWN/UP (Analog input only)	Controls Vertical Image Position within the display area of the LCD. Press “Left” or “Right” to adjust.
	H. Size (Analog input only)	Adjusts the horizontal size of the screen. If the “AUTO Adjust function” do not give you a satisfactory picture setting, a further tuning can be performed using the “H.Size (V.Size)” function (dot clock). For this a Moiré test pattern could be used. This function may alter the width of the picture. Use left/Right Menu to center the image on the screen. If the H.Size (V.Size) is wrongly calibrated, the result would look like on the left drawing. The image should be homogeneous.
	Fine (Analog input only)	Improve focus, clarity and image stability by increasing or decreasing this setting. If the “Auto Adjust function” and the “H.Size” function do not give you a satisfactory picture setting, a fine tuning can be performed using the “Fine” function. For this a Moiré test pattern could be used. If the Fine value is wrongly calibrated, the result would look like on the left drawing. The image should be homogeneous.
	Sync Threshold (Analog input only)	Adjusts the slice level of a synchronization signal. Adjusts the sensitivity of the separate or composite input signals. Try this option if the FINE adjustment does not successfully eliminate the noise.

	Input Resolution (Analog input only)	Selects resolution's priority of input signal to one of the following pair: 1360 x 768, 1680 x 1050 or 1280 x 768, 1680 x 1050 or 1024 x 768, 1400 x 1050. <b>1360 x 768, 1680 x 1050:</b> Determines the resolution to 1360 x 768, 1680 x 1050. <b>1280 x 768, 1680 x 1050:</b> Determines the resolution to 1280 x 768, 1680 x 1050. <b>1024 x 768, 1400 x 1050:</b> Determines the resolution to 1024 x 768, 1400 x 1050.
Tag4	Color Control	<p>Colour Control System: Nine colour presets select the desired colour setting (sRGB, NATIVE, Option1 and Option2 colour presets are standard and cannot be changed). R,G,B: Increases or decreases Red, Green or Blue colour depending upon which is selected.</p> <p>NATIVE: Original colour presented by the LCD panel that is unadjustable.</p> <p>sRGB: sRGB mode dramatically improves the colour fidelity in the desktop environment by a single standard RGB colour space. With this colour supported environment, the operator could easily and confidently communicate colour without further colour management overhead in the most common situations.</p> <p>PROGRAMMABLE: The colour tone that was set up with the downloaded application software is reflected.</p> <p>Option1: The white point is set to Clear Base color temperature and the gamma curve is a near DICOM simulation.</p> <p>Option2: The white point is set to Blue Base color temperature and the gamma curve is a near DICOM simulation.</p> <p>Gamma Selection: Allows you to manually select the brightness level of greyscale. There are two selections: 2.2: The value is fixed at 2.2. 1.8: The value is fixed at 1.8.</p>
Tag5	DVI Selection	<p>This function selects the DVI input mode. When the DVI selection has been changed, you must restart your computer. Press "Left" or "Right" to select.</p> <p>DIGITAL: DVI digital input is available.</p> <p>ANALOG: DVI analog input is available.</p>
	Video Detect	<p>Selects the method of video detection when more than one computer is connected. Press "Left" or "Right" to select.</p> <p>FIRST: The video input has to be switched to "FIRST" mode. When current video input signal is not present, then the monitor searches for a video signal from the other video input port. If the video signal is present in the other port, then the monitor switches the video source input port to the new found video source automatically. The monitor will not look for other video signals while the current video source is present.</p> <p>NONE: The Monitor will not search the other video input port unless the monitor is turned on.</p>
	Expansion Mode	<p>Selects the zoom mode.</p> <p>FULL: The image is expanded to 1680 x 1050, regardless of the resolution.</p> <p>ASPECT: The image is expanded without changing the aspect ratio.</p> <p>OFF: The image is not expanded.</p>
	Off Timer	<p>Monitor will automatically turn off after the preset time period from power on with the ON/OFF function. When you select "ON", press "SELECT" and "Left" or "Right" to adjust. Before powering off, a message will appear on the screen asking the user if they want to delay the turn off time by 60 minutes. Press any OSD button to delay the turn off time.</p>
	IPM (Intelligent Power Manager)	<p>The Intelligent Power Manager allows the monitor to enter into a power saving mode after a period of inactivity. The IPM has two settings.</p> <p>STANDARD: Monitor enters power save mode automatically when the input signal is lost.</p> <p>OPTION: Monitor enters power save mode automatically when the amount of surrounding light goes below the level that is determined by the user.</p>
	IPM Setting	Adjusts the luminance value for IPM.
	LED Brightness	Controls the brightness of the LED on the monitor.
	LED Color	The LED on the front can be blue or green.
	Screen Saver Motion	<p>Use the SCREEN SAVER to reduce the risk of image persistence.</p> <p>Screen image is moves periodically in 4 directions in order to reduce the risk of image retention. Screen image can be set to move periodically in intervals from 10 to 900 seconds in 10 seconds increments.</p>
	DDC/CI	DDC/CI ENABLE/ DISABLE: Turns on or off the two way communication and control of the monitor.



	Factory Preset	Selecting Factory Preset allows you to reset all OSD control settings back to the factory settings. Highlighting the control to be reset and pressing the RESET button can reset individual settings.
Tag6	Language	OSD control menus are available in eight languages. Press “Left” or “Right” to select.
	OSD LEFT/RIGHT	You can choose where you would like the OSD control image to appear on your screen. Selecting OSD Location allows you to manually adjust the position of the OSD control menu left or right.
	OSD DOWN/UP	You can choose where you would like the OSD control image to appear on your screen. Selecting OSD Location allows you to manually adjust the position of the OSD control menu up or down.
	OSD Turn off	The OSD control menu will stay on as long as it is use. You can select how long the monitor waits after the last touch of a button to shut off the OSD control menu. The preset choices are 10-120 seconds by 5 seconds step.
	OSD Lock Out	<p>This control completely locks out access to all OSD control functions. When attempting to activate OSD controls while in the Lock Out mode, a screen will appear indicating the OSD controls are locked out.</p> <p>There are three types of OSD LOCK OUT:</p> <p>OSD LOCK OUT with BRIGHTNESS and CONTRAST control: To activate the OSD Lock Out function, press SELECT, then “UP” button and hold down simultaneously. To deactivate the OSD Lock Out, press SELECT, then “UP” button and hold down simultaneously while in the OSD menu. BRIGHTNESS and CONTRAST can be adjusted while in the lock out mode.</p> <p>OSD LOCK OUT with no control: To activate the OSD Lock Out function, press SELECT, then “Right” button and hold down simultaneously. To deactivate the OSD Lock Out, press SELECT, then “Right” button and hold down simultaneously while in the OSD menu. No controls can be adjusted while in the lock out mode.</p> <p>OSD LOCK OUT with BRIGHTNESS (only) control: To activate the OSD Lock Out function, press SELECT, then “Down” and “Left” buttons and hold down simultaneously. To deactivate the OSD Lock Out, press SELECT, then “Down” and “Left” buttons and hold down simultaneously while in the OSD menu. BRIGHTNESS can be adjusted while in the lock out mode.</p> <p>CUSTOM: Press RESET and EXIT to enter the CUSTOM Menu. Select ENABLE or DISABLE for POWER KEY, INPUT SEL, BRIGHTNESS, CONTRAST, ECO MODE, WARNING. To Deactivate the OSD Lock Out function, press RESET and EXIT to bring up the LOCK OUT warning.</p> <p>Press SELECT, SELECT, &lt;, &gt;, &lt;, &gt;, EXIT.</p>
	Hot Key	<p>When this function is activated; the brightness and contrast of the monitor can be adjusted without entering the OSD menu by using the front buttons.</p> <p>The “Left” or “Right” buttons adjust the brightness level.</p> <p>The “Down” or “Up” buttons adjust the contrast level.</p>
	Signal Information	Signal information can be displayed in the corner of the screen. Signal information is either “On/Off”.
Tag7	Information	<p>Provides information about the current display resolution Technical data, including the preset timing currently being used and the horizontal and vertical frequencies is also displayed.</p> <p>CARBON SAVINGS: Display the estimated carbon saving information in kg.</p> <p>The carbon footprint factor in the carbon saving calculation is based on the OECD (2006 Edition).</p>

# Using the Auto Brightness function

The brightness of the LCD screen can be set to increase or decrease depending on the amount of ambient light within the room. If the room is bright, the monitor becomes correspondingly bright. If the room is dim, then the monitor will dim accordingly. The purpose of this function is to make the viewing experience more comfortable to the eye in a variety of lighting conditions.

The Auto Brightness function is set to OFF by default.

## SETUP

Use the following procedure to select the Brightness Range that the monitor will use when the Auto Brightness function is activated.

1. Set the BRIGHT level. This is the brightness level that the monitor will go up to when the ambient light level is highest. Make sure the room is at its brightest when setting this level.  
Select "ON" in the AUTO BRIGHTNESS menu (**Figure 1**). Then use the front buttons to move the cursor up to the BRIGHTNESS setting. Choose the desired brightness level (**Figure 2**).



Figure 1



Figure 2

2. Set the DARK level. This is the level of brightness that the monitor will go down to when the ambient light level is low. Make sure the room is at its darkest when setting this level.  
Then use the front buttons to move the cursor up to the BRIGHTNESS setting. Choose the desired brightness level (**Figure 3**).



Figure 3

When the "Auto Brightness" function is enabled the Brightness level of the screen changes automatically according to the lighting conditions of the room (**Figure 4**).

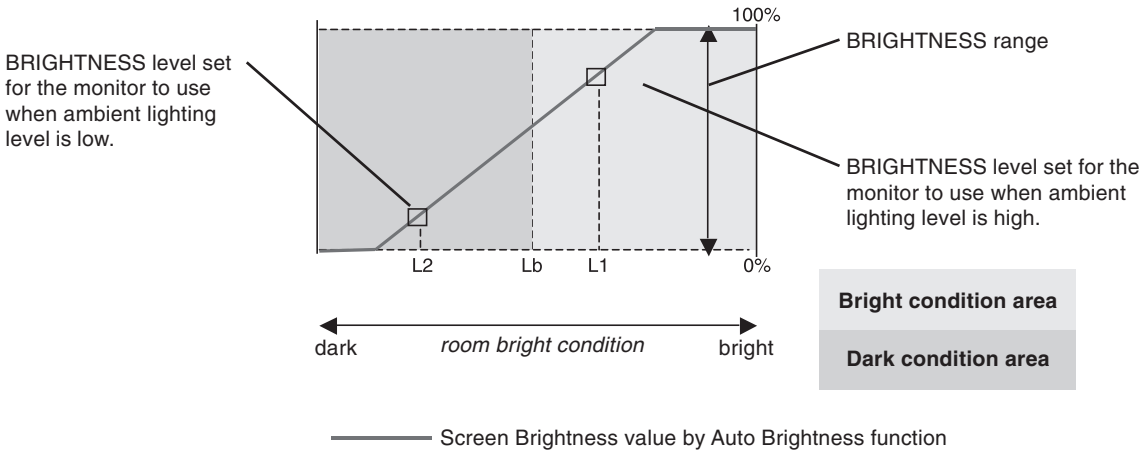


Figure 4

Lb: Border between bright and dim lighting conditions; set at factory  
L1: BRIGHTNESS level set for the monitor to use when ambient lighting level is high ( $L1 > Lb$ )  
L2 : BRIGHTNESS level set for the monitor to use when ambient lighting level is low ( $L2 < Lb$ )  
L1 and L2 are the brightness levels set by the user to compensate for changes in ambient lighting.



# TCO Development



## Congratulations!

The display you have just purchased carries the TCO'03 Displays label. This means that your display is designed, manufactured and tested according to some of the strictest quality and environmental requirements in the world. This makes for a high performance product, designed with the user in focus that also minimizes the impact on our natural environment.

Some of the features of the TCO'03 Display requirements:

### Ergonomics

- Good visual ergonomics and image quality in order to improve the working environment for the user and to reduce sight and strain problems. Important parameters are luminance, contrast, resolution, reflectance, colour rendition and image stability.

### Energy

- Energy-saving mode after a certain time – beneficial both for the user and the environment
- Electrical safety

### Emissions

- Electromagnetic fields
- Noise emissions

### Ecology

- The product must be prepared for recycling and the manufacturer must have a certified environmental management system such as EMAS or ISO 14 001
- Restrictions on:
  - chlorinated and brominated flame retardants and polymers
  - heavy metals such as cadmium, mercury and lead.

The requirements included in this label have been developed by TCO Development in co-operation with scientists, experts, users as well as manufacturers all over the world. Since the end of the 1980s TCO has been involved in influencing the development of IT equipment in a more user-friendly direction. Our labelling system started with displays in 1992 and is now requested by users and IT-manufacturers all over the world.

For more information, please visit  
**[www.tcodevelopment.com](http://www.tcodevelopment.com)**

# Manufacturer's Recycling and Energy Information

NEC DISPLAY SOLUTIONS is strongly committed to environmental protection and sees recycling as one of the company's top priorities in trying to minimize the burden placed on the environment. We are engaged in developing environmentally-friendly products, and always strive to help define and comply with the latest independent standards from agencies such as ISO (International Organisation for Standardization) and TCO (Swedish Trades Union).

## Disposing of your old NEC product

The aim of recycling is to gain an environmental benefit by means of re-use, upgrading, reconditioning or reclamation of material. Dedicated recycling sites ensure that environmentally harmful components are properly handled and securely disposed. To ensure the best recycling of our products, **NEC DISPLAY SOLUTIONS offers a variety of recycling procedures** and gives advice on how to handle the product in an environmentally sensitive way, once it has reached the end of its life.

All required information concerning the disposal of the product and country-specific information on recycling facilities can be found on our following websites:

<http://www.nec-display-solutions.com/greencompany/> (in Europe),

<http://www.nec-display.com> (in Japan) or

<http://www.necdisplay.com> (in USA).

## Energy Saving

This monitor features an advanced energy saving capability. When a VESA Display Power Management Signalling (DPMS) Standard signal is sent to the monitor, the Energy Saving mode is activated. The monitor enters a single Energy Saving mode.

Mode	Power consumption	LED colour
Maximum Operation	Approx. 72W	Green or Blue
Energy Saving Mode	Less than 2W	Amber
Off Mode	Less than 1W	Unlit

## WEEE Mark (European Directive 2002/96/EC)



### Within the European Union

EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your NEC display products, please follow the guidance of your local authority, or ask the shop where you purchased the product, or if applicable, follow any agreements made between yourself and NEC.

The mark on electrical and electronic products only applies to the current European Union Member States.

### Outside the European Union

If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.